FCC RADIO TEST REPORT

FCC ID: 2AGPMHJ-580B

Applicant	:	Tangshan HongJia electronic technology co., LTD.
Address	:	352 No. 2 # building power springs in Qianxi County, Tangshan City, Hebei Province

Equipment Under Test (EUT):

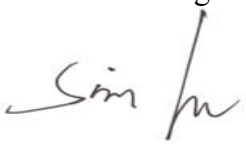
Name	:	HongJia electronic bluetooth BLE4.0 ultra-low power module
Model	:	HJ-580B, HJ580(L), HJ-580B(L), HJ-580IM, HJ-680(L), HJ-680B(L), HJ-680IM, HJ-254, HJ-WUS, HJ-WL
Trade Name	:	**HongJia**

In Accordance with: FCC PART 15, SUBPART C : 2014 (Section 15.247)

Standards	**:** FCC PART 15, SUBPART C : 2014 (Section 15.247)
Report No	**:** CTB151107001Q
Date of Test	**:** November 16- 23, 2015
Date of Issue	**:** November 24, 2015

Tset Result : **PASS**

In the configuration tested, the EUT complied with the standards specified above
Authorized Signature



(Simon Lee)
Manager

TABLE OF CONTENT

1 General Information

1.1 Description of Device (EUT)

EUT	:	HongJia electronic bluetooth BLE4.0 ultra-low power module
Model No.	:	HJ-580B, HJ580(L), HJ-580B(L), HJ-580IM, HJ-680(L), HJ-680B(L), HJ-680IM, HJ-254, HJ-WUS, HJ-WL
DIFF		All model's the function, software and electric circuit are the same, so all the test were performed on the model HJ-580B.
Trade mark	:	**HongJia**
Power supply	:	DC 3.3V From DC Power
Radio Technology	:	Bluetooth 4.0
Operation frequency	:	2402-2480MHz
Modulation	:	GFSK
Antenna Type	:	Integrated Antenna, max gain 0dBi.
Applicant	:	Tangshan HongJia electronic technology co., LTD.
Address	:	352 No. 2 # building power springs in Qianxi County, Tangshan City, Hebei Province
Manufacturer	:	Tangshan HongJia electronic technology co., LTD.
Address	:	352 No. 2 # building power springs in Qianxi County, Tangshan City, Hebei Province

1.2 Accessories of device (EUT)

Accessories 1	NIL
Type	NIL

1.3 Description of Test Facility

Shenzhen CTB Testing Technology Co., Ltd.

10th floor, West Logistics Information Center Building,
Fuyong Town , Bao'an District, Shenzhen City, P.R.C

FCC Registered No.: 671575

2 EMC Equipment List

Equipment	Manufacture	Model No.	Serial No.	Cal. Due day	Cal Interval
3m Semi-Anechoic Chamber	Frankonia	N/A	N/A	2016.04.09	1Year
EMI Test receiver	Rohde&Schwarz	ESCS30	100085	2016.04.09	1Year
Signal Analyzer	Agilent	4407B	MY49600138	2016.04.09	1 Year
Bilog Antenna	SCHAFFNER CHASE	CBL6143	N/A	2016.04.09	1Year
Horn Antenna	SCHAFFNER CHASE	BBHA 9120D	BBHA 9120 D(1206)	2016.04.09	1Year
Amplifier	EM	EM-30180	060568	2016.04.09	1Year
Power Meter	Anritsu	ML2487A	6K00001491	2016.08.15	1Year
Power sensor	Anritsu	ML2491A	32516	2016.08.15	1Year
Coaxial Cable	SZHTW	N/A	C-01	2016.04.09	1Year
Coaxial Cable	SZHTW	N/A	C-02	2016.04.09	1Year
Coaxial Cable	SZHTW	N/A	C-03	2016.04.09	1Year
Test Receiver	Rohde&Schwarz	ESCS30	100086	2016.04.09	1 Year
L.I.S.N.	Schwarzbeck	NSLK8126	8126466	2016.04.09	1 Year
50 Ω Coaxial Switch	Anritsu	MP59B	6200264326	2016.04.09	1 Year
10dB Attenuator	Schwarzbeck	9516F	9620	2016.04.09	1 Year

3 Test Procedure

POWER LINE CONDUCTED INTERFERENCE: The test procedure used was ANSI Standard C63.4-2009 using a 50 u H LISN. Both Lines were observed. The bandwidth of the receiver was 10kHz with an appropriate sweep speed. The ambient temperature of the EUT was 25℃ with a humidity of 58%.

RADIATION INTERFERENCE: The test procedure used was ANSI Standard C63.4-2009 using a ANRITSU spectrum analyzer with a pre-selector. The analyzer was calibrated in dB above a micro volt at the output of the antenna. The resolution bandwidth was 100kHz and the video bandwidth was 300 kHz up to 1 GHz and 1 MHz with a video BW of 3MHz above 1 GHz. The ambient temperature of the EUT was 25℃ with a humidity of 58%.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer and cable loss. The antenna correction factors and cable loss are stated in terms of dB. The gain of the Pre-selector was accounted for in the Spectrum Analyzer Meter Reading.
Example:
Freq (MHz) METER READING + ACF + CABLE = FS
33.20 dBuV + 10.36 dB + 0.9 dB= 44.46 dBuV/m @ 3m
ANSI STANDARD C63.4-2009 10.1.7 MEASUREMENT PROCEDURES: The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The EUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation. When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes. The situation was similar for the conducted measurement except that the table did not rotate. The EUT was setup as described in ANSI Standard C63.4-2009 10.1.7 with the EUT 40 cm from the vertical ground wall.

4 Summary of Measurement

4.1 Summary of test result

Test Item	Test Requirement	Standards Paragraph	Result
Spurious Emission	FCC PART 15	Section 15.247&15.209	Compliance
Conduction Emission	FCC PART 15	Section 15.207	Compliance
Bandwidth Test	FCC PART 15	Section 15.247	Compliance
Peak Power	FCC PART 15	Section 15.247	Compliance
Power Density	FCC PART 15	Section 15.247	Compliance
Band Edge	FCC PART 15	Section 15.247	Compliance
Antenna Requirement	FCC PART 15	Section 15.203	Compliance
Note: N/A means this test item is not applicable for this device.			

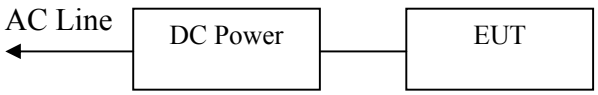
Note: The EUT has been tested as an independent unit. And Continual Transmitting in maximum power (Fully charged battery is used during the test)

EUT is configured to transmit continuously (Duty cycle) is 100%，average correction factor = 20 log 1=0

4.2 Test connection

1, For radiated emissions test: EUT was placed on a turn table, which is 0.8 meter high above ground. EUT was be set into BT TX mode by Bluesuite software before test

TX Mode :



(EUT is HongJia electronic bluetooth BLE4.0 ultra-low power module)

4.3 Assistant equipment used for test

Description	:	AC to DC Power
Manufacturer	:	Shanghai Wen-hua Power Equipment Co., Ltd.
Model No.	:	WYJ-100V10A
Remark	:	FCC VOC Approved

4.4 Test mode

The test software "CSR.exe" was used to control EUT work in Continuous TX mode, and select test channel, wireless mode

Tested mode, channel, and data rate information		
Mode	Channel	Frequency (MHz)
GFSK	Low :CH0	2402
	Middle: CH19	2442
	High: CH39	2480

4.5 Test Conditions

Temperature range	21-25℃
Humidity range	40-75%
Pressure range	86-106kPa

4.6 Measurement Uncertainty (95% confidence levels, k=2)

Item	MU	Remark
Uncertainty for Power point Conducted Emissions Test	2.40dB	
Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)	2.15 dB	Polarize: V
	2.56dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	3.54dB	Polarize: V
	4.20dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	2.12dB	Polarize: H
	2.52dB	Polarize: V
Uncertainty for radio frequency	1×10-9	
Uncertainty for DC and low frequency voltages	0.05%	

5 Spurious Emission

5.1 Radiation Emission

5.1.1 Radiation Emission Limits(15.209)

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

Harmonic emissions limits comply with below 54 dBuV/m at 3m. Other 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 comply with the radiated emissions limits specified in section 15.209(a) limit in the table below has to be followed.

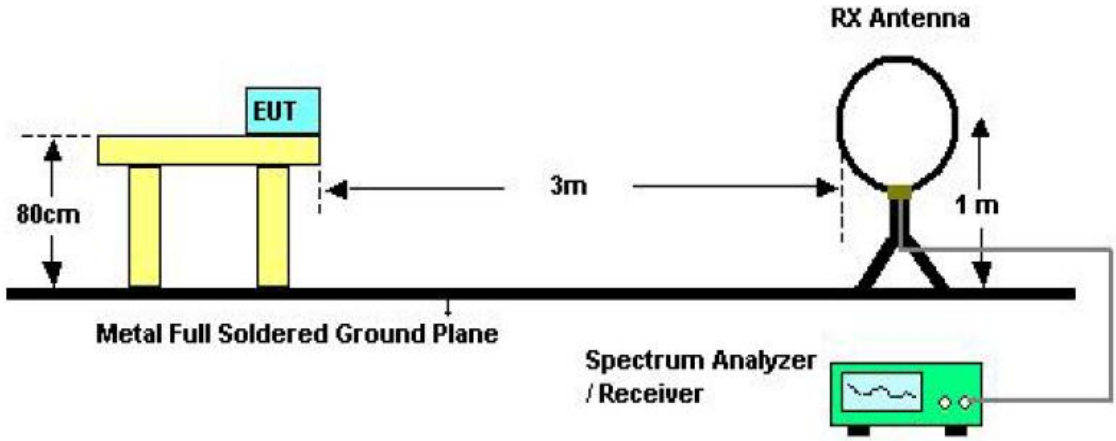
NOTE:

a) The tighter limit applies at the band edges.

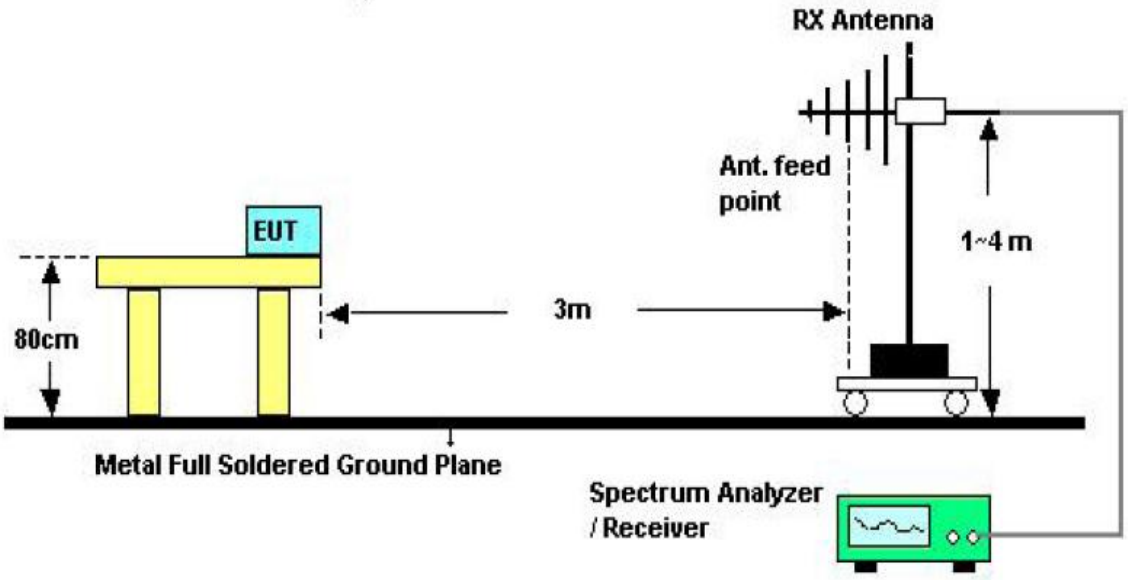
b) Emission Level(dB uV/m)=20log Emission Level(Uv/m)

5.1.2 Test Setup

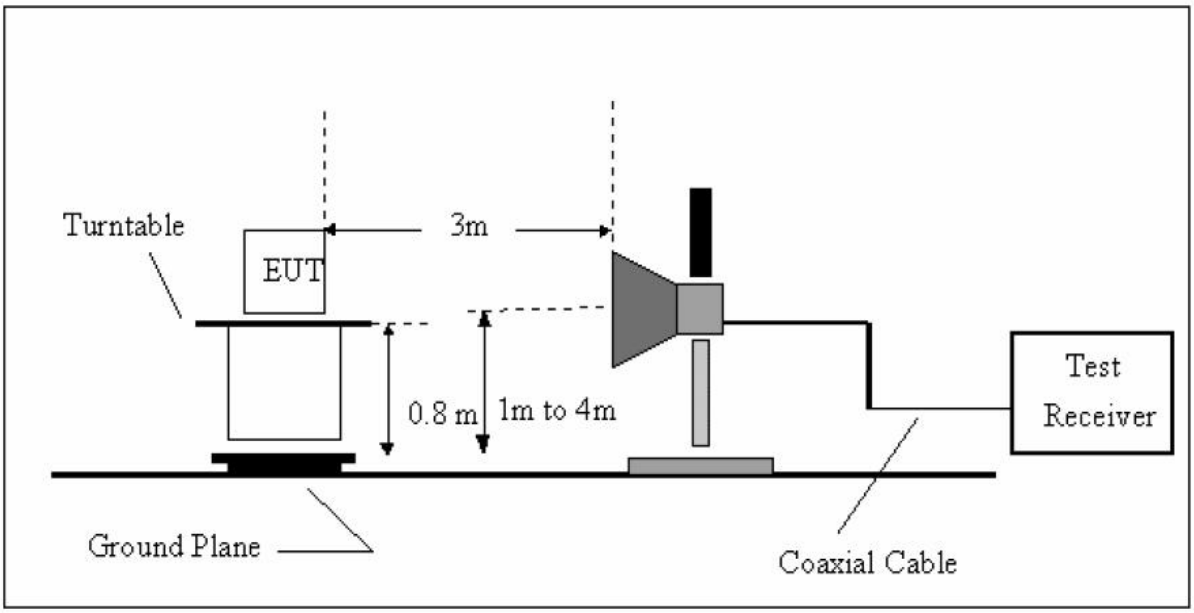
See the next page



Below 30MHz Test Setup



30MHz-1GHz Test Setup



Above 1GHz Test Setup

5.1.3 Test Procedure

a) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1GHz, The EUT was placed on a rotating 0.8 m high above ground, The table was rotated 360 degrees to determine the position of the highest radiation
b) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set of make measurement.
c) The initial step in collecting conducted emission data is a spectrum analyzer Peak detector mode pre-scanning the measurement frequency range. Significant Peaks are then marked. and then Qusia Peak Detector mode premeasured
d) If Peak value comply with QP limit Below 1GHz.The EUT deemed to comply with QP limit. But the Peak value and average value both need to comply with applicable limit above 1GHz.
e) For the actual test configuration, please see the test setup photo.

5.1.4 Test Equipment Setting For emission test Result.

9KHz~150KHz	RBW 200Hz	VBW1KHz
150KHz~30MHz	RBW 9KHz	VBW 30KHz
30MHZ~1GHz	RBW 120KHz	VBW 300KHz
Above 1GHz	RBW 1MHz	VBW 3MHz

5.1.5 Test Condition

Continual Transmitting in maximum power.

5.1.6 Test Result

We have scanned the 10th harmonic from 9KHz to the EUT.

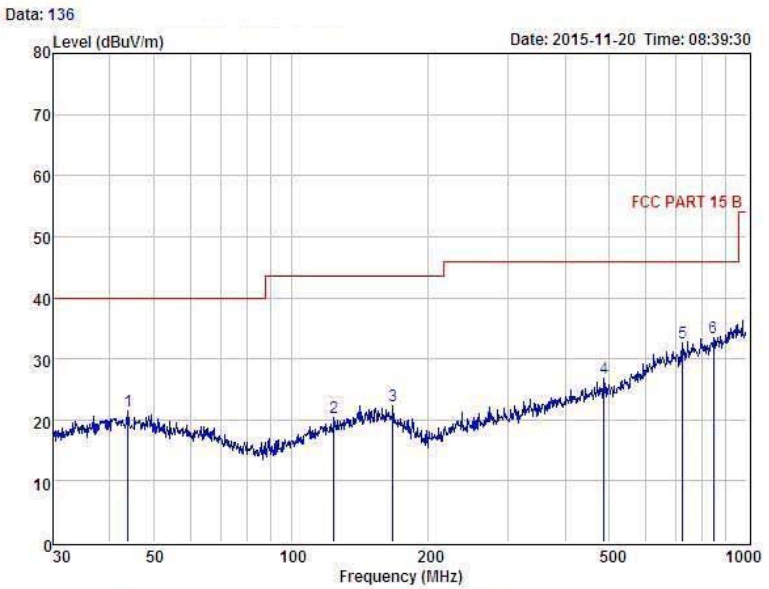
Detailed information please see the following page.

From 9KHz to 30MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

From 30MHz to 1000MHz: Conclusion: PASS

Horizontal:

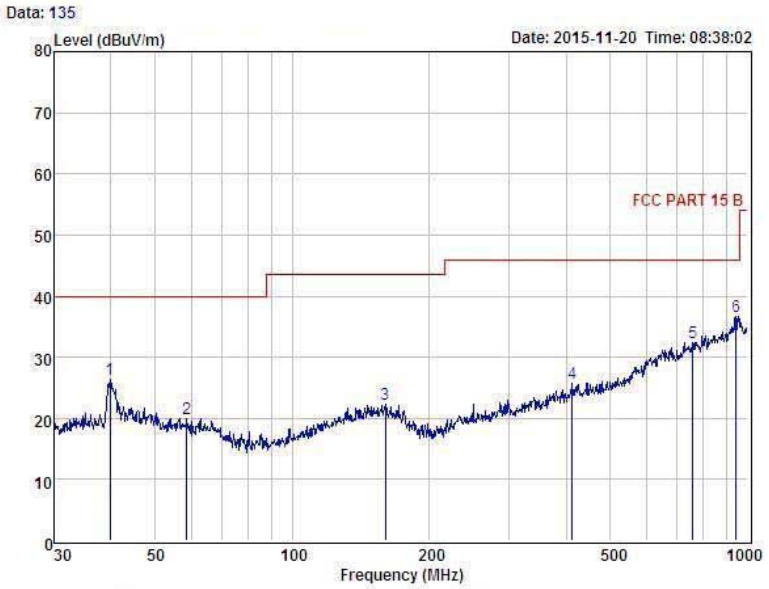


Condition : FCC PART 15 B 3m POL: HORIZONTAL
EUT :
Model No :
Test Mode : TX GFSK 2402MHz
Power :
Test Engineer :
Remark :

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	43.81	37.63	13.79	29.96	0.09	21.55	40.00	-18.45	Peak
2	124.13	37.08	12.46	29.59	0.33	20.28	43.50	-23.22	Peak
3	167.24	37.41	13.56	29.13	0.40	22.24	43.50	-21.26	Peak
4	485.61	36.59	16.33	27.19	0.98	26.71	46.00	-19.29	Peak
5	724.26	36.70	19.97	25.65	1.54	32.56	46.00	-13.44	Peak
6	845.09	35.48	21.01	24.82	1.68	33.35	46.00	-12.65	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

Vertical:



Condition : FCC PART 15 B 3m POL: VERTICAL
EUT :
Model No :
Test Mode : TX GFSK 2402MHz
Power :
Test Engineer :
Remark :

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	39.85	43.04	14.07	30.85	0.17	26.43	40.00	-13.57	Peak
2	58.61	37.96	12.75	30.89	0.23	20.05	40.00	-19.95	Peak
3	160.35	36.88	14.14	29.16	0.44	22.30	43.50	-21.20	Peak
4	411.82	36.91	15.04	27.20	0.93	25.68	46.00	-20.32	Peak
5	758.04	36.12	20.36	25.33	1.34	32.49	46.00	-13.51	Peak
6	942.13	38.35	22.09	24.98	1.19	36.65	46.00	-9.35	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

Above 1GHz：Conclusion: PASS

1GHz—25GHz Radiated emissison Test result									
EUT: HongJia electronic bluetooth BLE4.0 ultra-low power module M/N: HJ-580B									
Power: DC 3.3V From DC Power									
Test date: 2015-11-19 Test site: 3m Chamber Tested by: Mason									
Test mode: Tx CH0 2402MHz									
Antenna polarity: Vertical									
No	Freq (MHz)	Read Level (dBuV/m)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4804	43.04	33.95	10.18	34.26	52.91	74	21.09	PK
2	4804	32.80	33.95	10.18	34.26	42.67	54	11.33	AV
3	7206	/							
4	9608	/							
5	12010	/							
Antenna Polarity: Horizontal									
1	4804	41.69	33.95	10.18	34.26	51.56	74	22.44	PK
2	4804	32.56	33.95	10.18	34.26	42.43	54	11.57	AV
3	7206	/							
4	9608	/							
5	12010	/							
Note: 1,Measuring frequency from 1GHz to 25GHz 2,Spectrum Set for PK measure: RBW=1MHz, VBW=1MHz, Sweep time=Auto, Detector: PK 2,Spectrum Set for AV measure: RBW=1MHz, VBW=3MHz, Sweep time=Auto, Detector: RMS 3, Result = Read level + Antenna factor + cable loss-Amp factor 4, All the other emissions not reported were too low to read and deemed to comply with FCC limit.									

1GHz—25GHz Radiated emissison Test result									
EUT: HongJia electronic bluetooth BLE4.0 ultra-low power module M/N: HJ-580B									
Power: DC 3.3V From DC Power									
Test date: 2015-11-19 Test site: 3m Chamber Tested by: Mason									
Test mode: Tx CH20 2442MHz									
Antenna polarity: Vertical									
No	Freq (MHz)	Read Level (dBuV/m)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4884	42.87	34.02	10.20	34.33	52.71	74	21.29	PK
2	4884	33.54	34.02	10.20	34.33	43.38	54	10.62	AV
3	7326	/							
4	9768	/							
5	12210	/							
Antenna Polarity: Horizontal									
1	4884	43.20	34.02	10.18	34.33	53.04	74	20.96	PK
2	4884	32.48	34.02	10.18	34.33	42.32	54	11.68	AV
3	7326	/							
4	9768	/							
5	12210	/							
Note: 1,Measuring frequency from 1GHz to 25GHz 2,Spectrum Set for PK measure: RBW=1MHz, VBW=1MHz, Sweep time=Auto, Detector: PK 2,Spectrum Set for AV measure: RBW=1MHz, VBW=3MHz, Sweep time=Auto, Detector: RMS 3, Result = Read level + Antenna factor + cable loss-Amp factor 4, All the other emissions not reported were too low to read and deemed to comply with FCC limit.									

1GHz—25GHz Radiated emissison Test result									
EUT: HongJia electronic bluetooth BLE4.0 ultra-low power module M/N: HJ-580B									
Power: DC 3.3V From DC Power									
Test date: 2015-11-19 Test site: 3m Chamber Tested by: Mason									
Test mode: Tx CH39 2480MHz									
Antenna polarity: Vertical									
No	Freq (MHz)	Read Level (dBuV/m)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4960	43.54	34.13	10.22	34.54	53.49	74	20.51	PK
2	4960	32.61	34.13	10.22	34.54	42.56	54	11.44	AV
3	7440	/							
4	9920	/							
5	12400	/							
Antenna Polarity: Horizontal									
1	4960	42.87	34.13	10.22	34. 54	52.82	74	21.18	PK
2	4960	31.69	34.13	10.22	34. 54	41.64	54	12.36	AV
3	7440	/							
4	9920	/							
5	12400	/							
Note: 1,Measuring frequency from 1GHz to 25GHz 2,Spectrum Set for PK measure: RBW=1MHz, VBW=1MHz, Sweep time=Auto, Detector: PK 2,Spectrum Set for AV measure: RBW=1MHz, VBW=3MHz, Sweep time=Auto, Detector: RMS 3, Result = Read level + Antenna factor + cable loss-Amp factor 4, All the other emissions not reported were too low to read and deemed to comply with FCC limit.									

6 POWER LINE CONDUCTED EMISSION

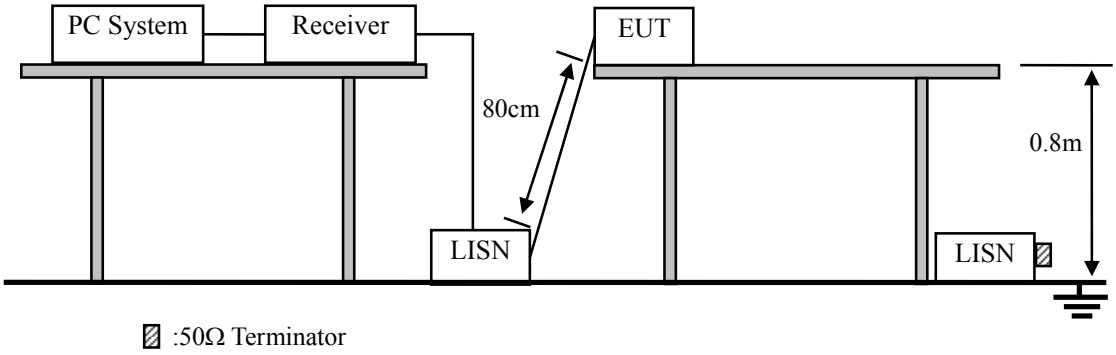
6.1 Conducted Emission Limits(15.207)

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 -0.50	66 -56*	56 - 46*
0.50 -5.00	56	46
5.00 -30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

3.The limit decreases in line with the logarithm of the frequency in the rang of 0.15 to 0.50 MHz.

6.2 Test Setup

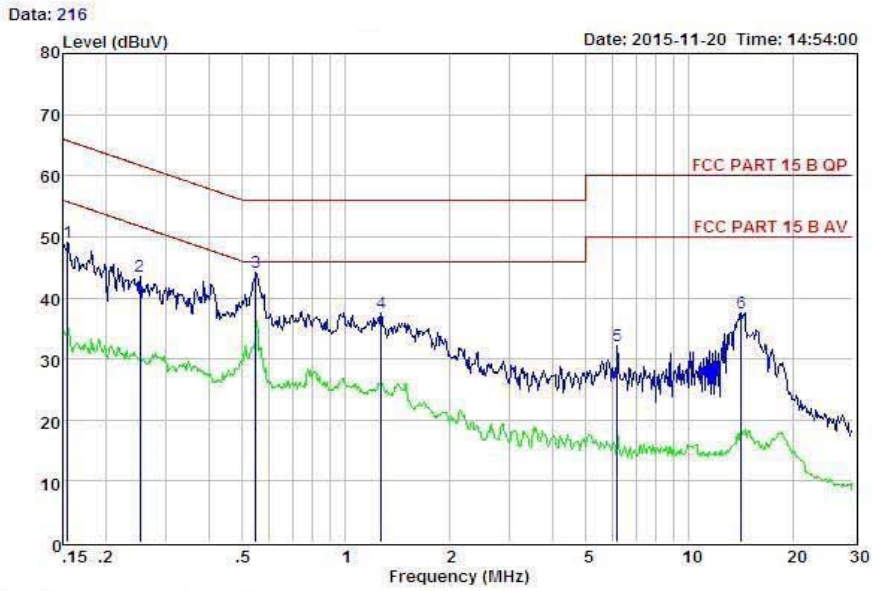


6.3 Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4-2009 on Conducted Emission Measurement.
The bandwidth of test receiver (R & S ESCS30) is set at 9 kHz.

6.4 Test Results

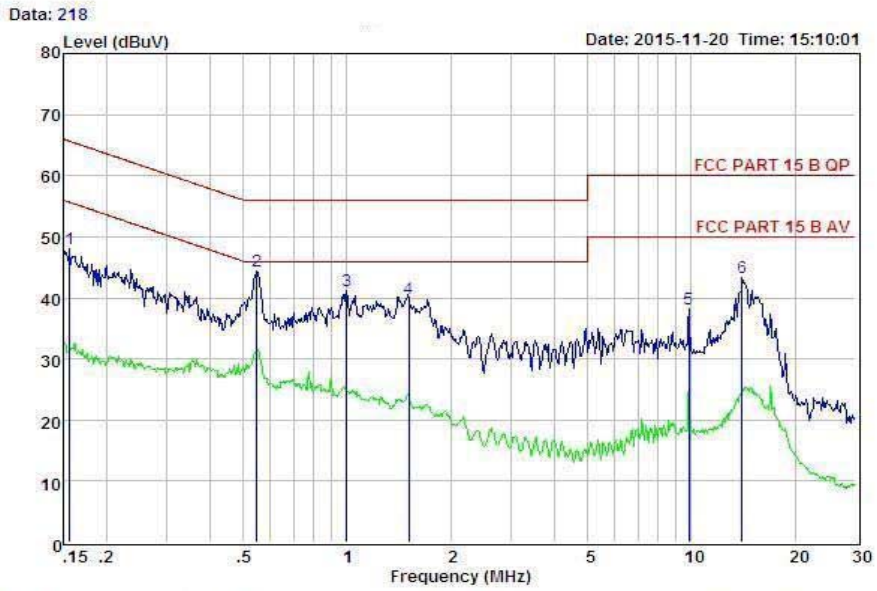
PASS. (See below detailed test data)



Condition : FCC PART 15 B QP POL: LINE
EUT :
Model No :
Test Mode : TX GFSK 2402MHz
Power :
Test Engineer:
Remark :

Item	Freq	Read	LISN Factor	Attenuator Factor	Cable Lose	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	0.155	39.52	0.03	-9.52	0.10	49.17	65.74	-16.57	Peak
2	0.252	33.75	0.03	-9.56	0.10	43.44	61.69	-18.25	Peak
3	0.546	34.48	0.03	-9.58	0.10	44.19	56.00	-11.81	Peak
4	1.269	27.82	0.05	-9.65	0.10	37.62	56.00	-18.38	Peak
5	6.186	21.90	0.11	-9.97	0.14	32.12	60.00	-27.88	Peak
6	14.213	27.17	0.23	-9.87	0.23	37.50	60.00	-22.50	Peak

Remarks: Level = Read + LISN Factor - Attenuator Factor + Cable loss



Condition : FCC PART 15 B QP POL: NEUTRAL
EUT :
Model No :
Test Mode : TX GFSK 2402MHz
Power :
Test Engineer:
Remark :

Item	Freq	Read	LISN Factor	Attenuator Factor	Cable Lose	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	0.156	38.34	0.03	-9.52	0.10	47.99	65.65	-17.66	Peak
2	0.546	34.63	0.03	-9.58	0.10	44.34	56.00	-11.66	Peak
3	1.000	31.33	0.04	-9.63	0.10	41.10	56.00	-14.90	Peak
4	1.511	29.97	0.05	-9.68	0.10	39.80	56.00	-16.20	Peak
5	9.861	27.77	0.18	-9.93	0.21	38.09	60.00	-21.91	Peak
6	14.063	33.10	0.23	-9.87	0.23	43.43	60.00	-16.57	Peak

Remarks: Level = Read + LISN Factor - Attenuator Factor + Cable loss

7 Conducted Maximum Output Power

7.1 Test limit

Please refer section15.247.

Regulation 15.247(b) The limit of Maximum Peak Output Power Measurement is 1W(30dBm)

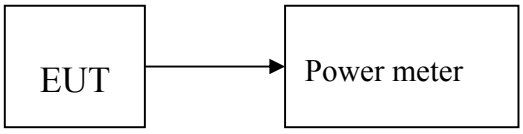
7.2 Test Procedure

7.2.1 Connected the EUT's antenna port to peak power meter by 20dB attenuator.

7.2.2 Measure out each mode and each bands peak output power of EUT.

Note: The cable loss and attenuator loss were offset into measure device as amplitude offset. Details see the KDB558074 D01 DTS Meas Guidance v03r02.

7.3 Test Setup



7.4 Test Results

PASS

Detailed information please see the Below.

Channel	Frequency (MHz)	PEAK Output Power (dBm)	PEAK Output Power (mW)	Limit (dBm)
CH0	2402	-1.582	0.695	30
CH19	2440	-1.841	0.655	30
CH39	2480	-2.114	0.615	30

8 PEAK POWER SPECTRAL DENSITY

8.1 Test limit

8.1.1 Please refer section15.247.

8.1.2 For direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

8.1.3 The direct sequence operating of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

8.2 Method of measurement

Details see the KDB558074 D01 DTS Meas Guidance v03r02.

8.2.1 Place the EUT on the table and set it in transmitting mode.

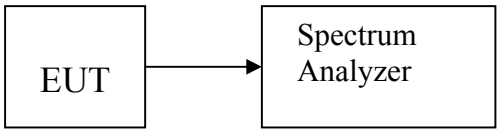
8.2.2 Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

8.2.3 Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, span=1.5OBW, detail see the test plot.

8.2.4 Record the max reading.

8.2.5 Repeat the above procedure until the measurements for all frequencies are completed.

8.3 Test Setup



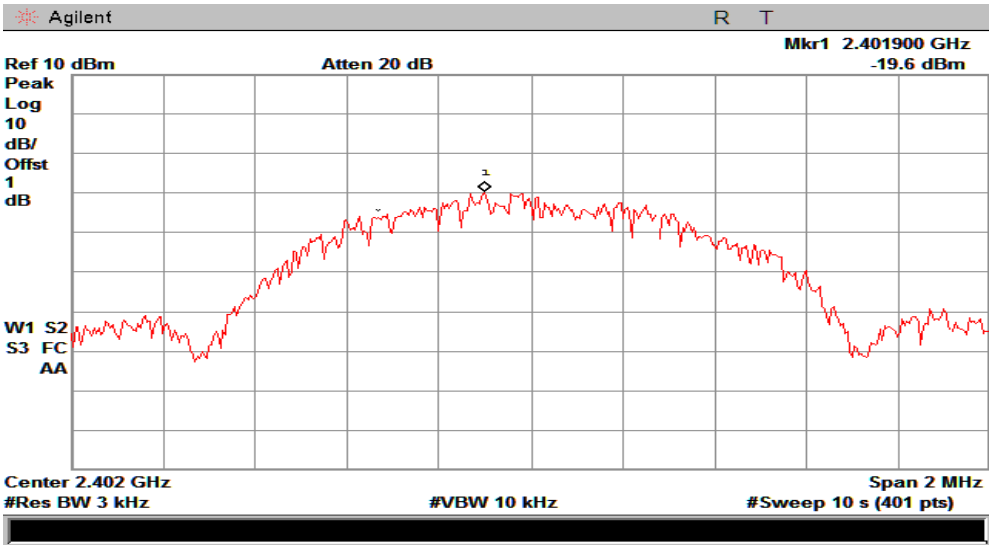
8.4 Test Results

PASS.

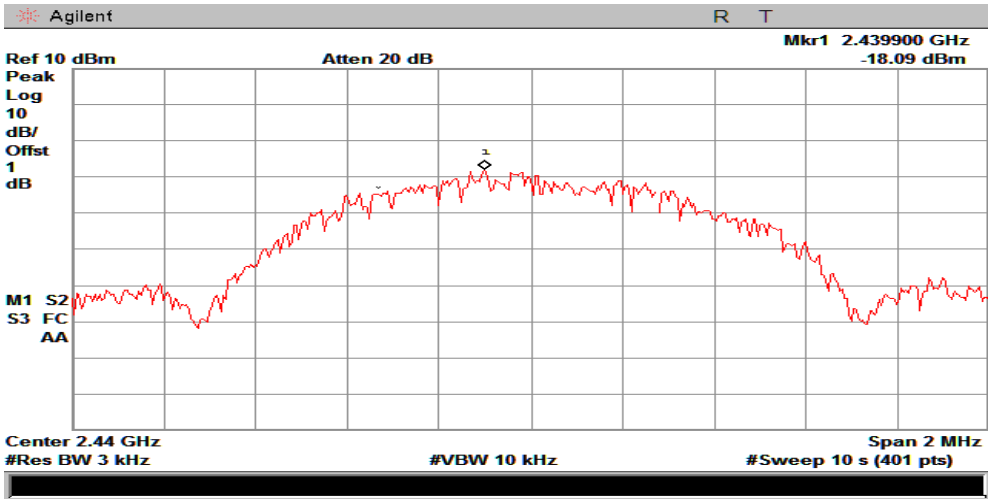
Detailed information please see the following page.

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limit (dBm)	Result
CH0	2402	-19.60	8	PASS
CH19	2440	-18.09	8	PASS
CH39	2480	-18.02	8	PASS

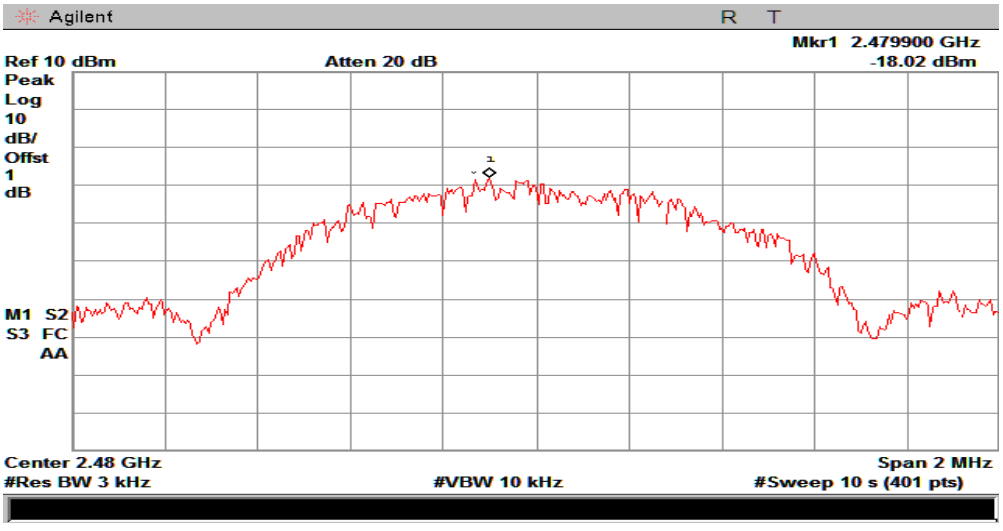
CH Low :



CH Mid :



CH High :



9 Bandwidth

9.1 Test limit

Please refer section15.247

For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz.

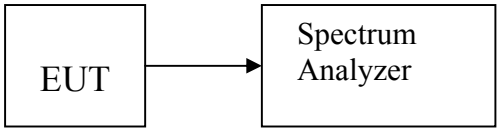
9.2 Method of measurement

Details see the KDB558074 D01 DTS Meas Guidance v03r02.

a)The bandwidth is measured at an amplitude level reduced 20dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

b) The test receiver set RBW =100KHz, VBW≥3RBW, Sweep time set auto, detail see the test plot, Peak detector is used .

9.3 Test Setup



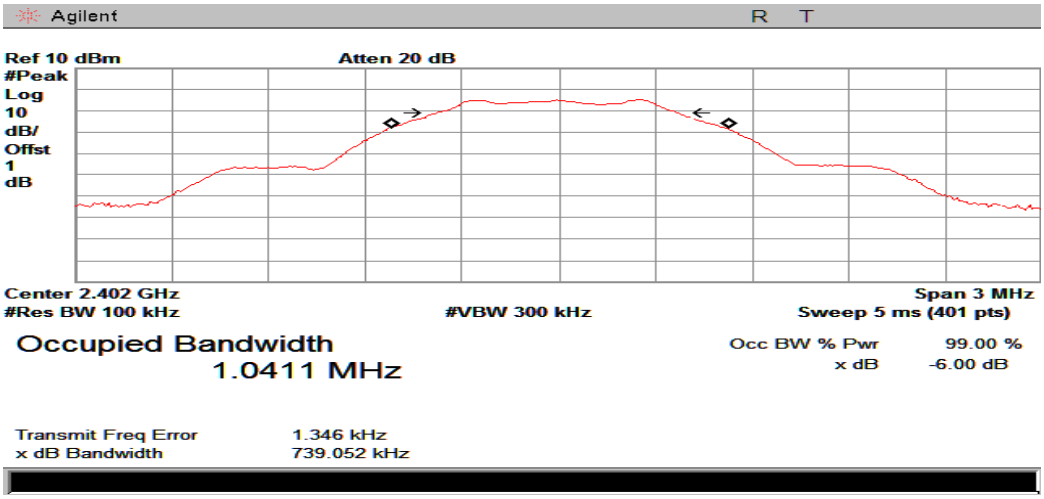
9.4 Test Results

PASS.

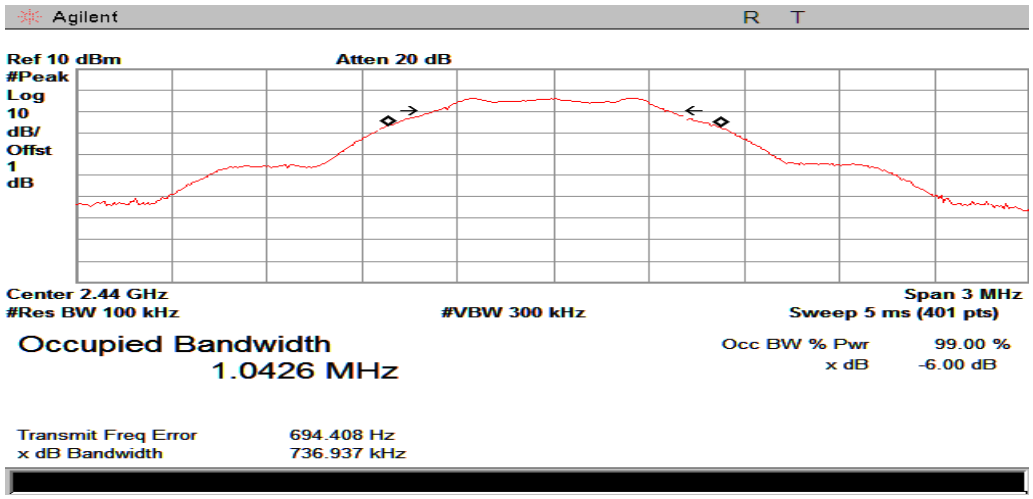
Detailed information please see the following page.

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
CH0	2402	0.739	0.5	PASS
CH19	2440	0.737	0.5	PASS
CH39	2480	0.737	0.5	PASS

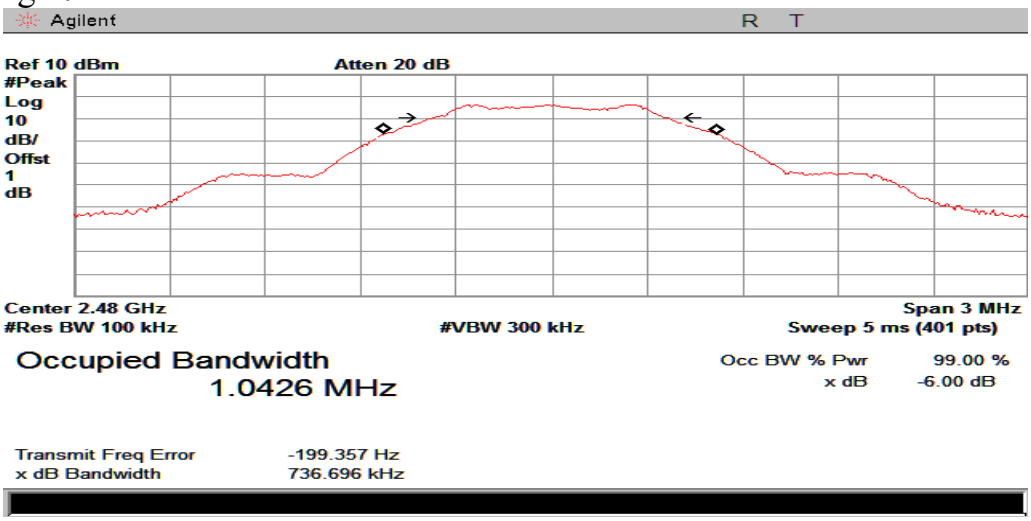
CH Low :



CH Mid :



CH High :



10 Band Edge Check

10.1 Test limit

Please refer section15.247

All the lower and upper band-edges emissions appearing within restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

10.2 Test Procedure

12.2.1 Put the EUT on a 0.8m high table, power on the EUT. Emissions were scanned and measured rotating the EUT to 360 degrees, Find the maximum Emission

12.2.2 Check the spurious emissions out of band.

12.2.3 RBW, VBW Setting, please see the following.

1: Spectrum Set for PK measure: RBW=1MHz, VBW=1MHz, Sweep time=Auto, Detector: PK

2:Spectrum Set for AV measure: RBW=1MHz, VBW=3MHz, Sweep time=Auto, Detector: RMS

10.3 Test Setup

Same as 5.2.2.

10.4 Test Result

PASS.

Detailed information please see the following page.

Radiated Method

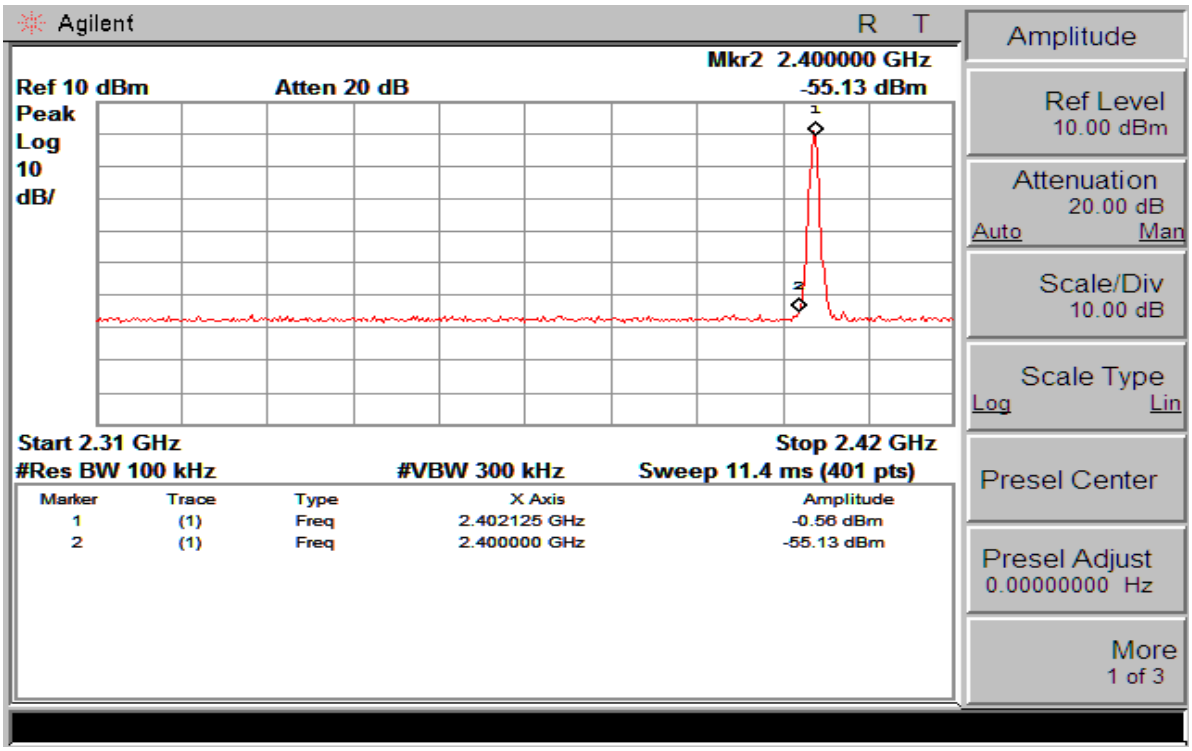
Band Edge Test result								
EUT: HongJia electronic bluetooth BLE4.0 ultra-low power module M/N: HJ-580B								
Power: DC 3.3V From DC Power								
Test date: 2015-11-20 Test site: 3m Chamber Tested by: Mason								
Test mode: Tx CH Low 2402MHz								
Antenna polarity: Vertical								
Freq (MHz)	Read Level (dBuV/m)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2390	43.79	27.62	3.92	34.97	40.36	74	33.64	PK
2390	/	27.62	3.92	34.97	/	54	/	AV
2400	51.58	27.62	3.94	34.97	48.17	74	25.83	PK
2400	/	27.62	3.94	34.97	/	54	/	AV
Antenna Polarity: Horizontal								
2390	44.04	27.62	3.92	34.97	40.61	74	33.39	PK
2390	/	27.62	3.92	34.97	/	54	/	AV
2400	52.12	27.62	3.94	34.97	48.71	74	25.29	PK
2400	/	27.62	3.94	34.97	/	54	/	AV
Note: 1, Spectrum Set for PK measure: RBW=1MHz, VBW=1MHz, Sweep time=Auto, Detector: PK 2, Spectrum Set for AV measure: RBW=1MHz, VBW=10Hz, Sweep time=Auto, Detector: PK 3, Result = Read level + Antenna factor + cable loss-Amp factor 4, All the other emissions not reported were too low to read and deemed to comply with FCC limit.								

Band Edge Test result								
EUT: HongJia electronic bluetooth BLE4.0 ultra-low power module M/N: HJ-580B								
Power: DC 3.3V From DC Power								
Test date: 2015-11-20 Test site: 3m Chamber Tested by: Mason								
Test mode: Tx CH High 2480MHz								
Antenna polarity: Vertical								
Freq (MHz)	Read Level (dBuV/m)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2483.5	42.78	27.59	4.00	34.97	39.40	74	34.60	PK
2483.5	/	27.59	4.00	34.97	/	54	/	AV
Antenna Polarity: Horizontal								
2483.5	43.67	27.59	4.00	34.97	40.29	74	33.71	PK
2483.5	/	27.59	4.00	34.97	/	54	/	AV

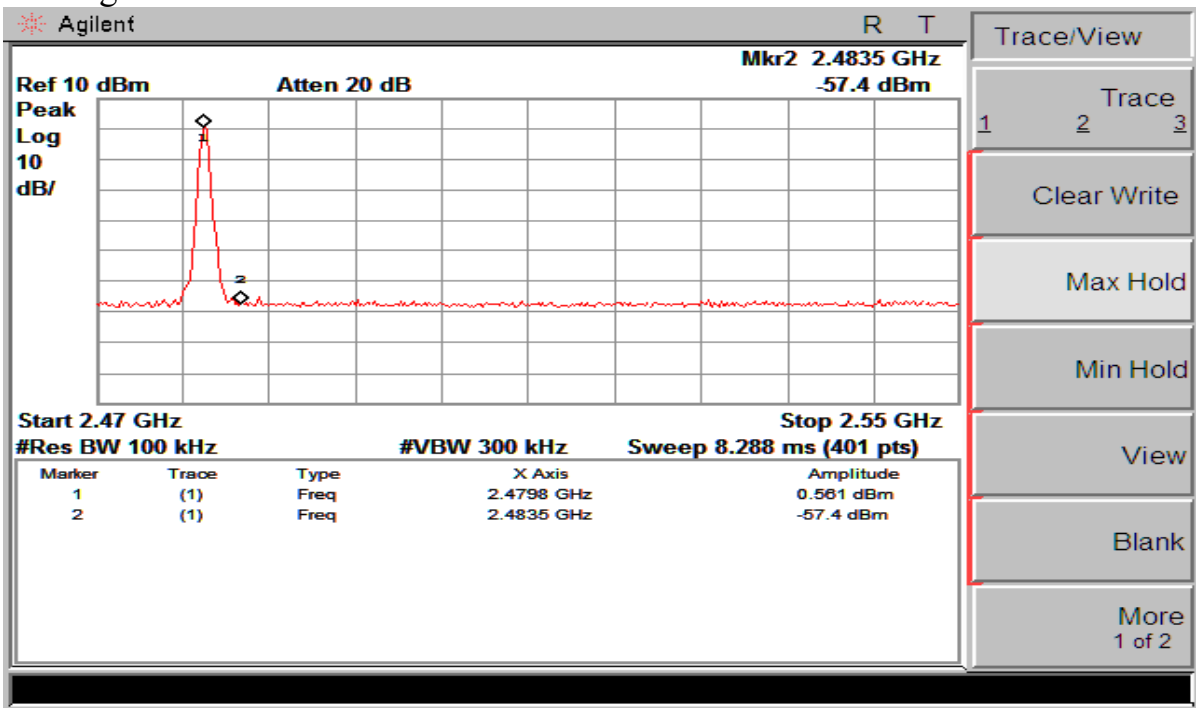
Note:
1, Spectrum Set for PK measure: RBW=1MHz, VBW=1MHz, Sweep time=Auto, Detector: PK
2, Spectrum Set for AV measure: RBW=1MHz, VBW=10Hz, Sweep time=Auto, Detector: PK
3, Result = Read level + Antenna factor + cable loss-Amp factor
4, All the other emissions not reported were too low to read and deemed to comply with FCC limit.

Conducted Method

CH LOW :



CH High :



11 Antenna Requirement

11.1 Standard 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 shall be considered sufficient to comply with the provisions of this Section. 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.

11.2 Antenna Connected Construction

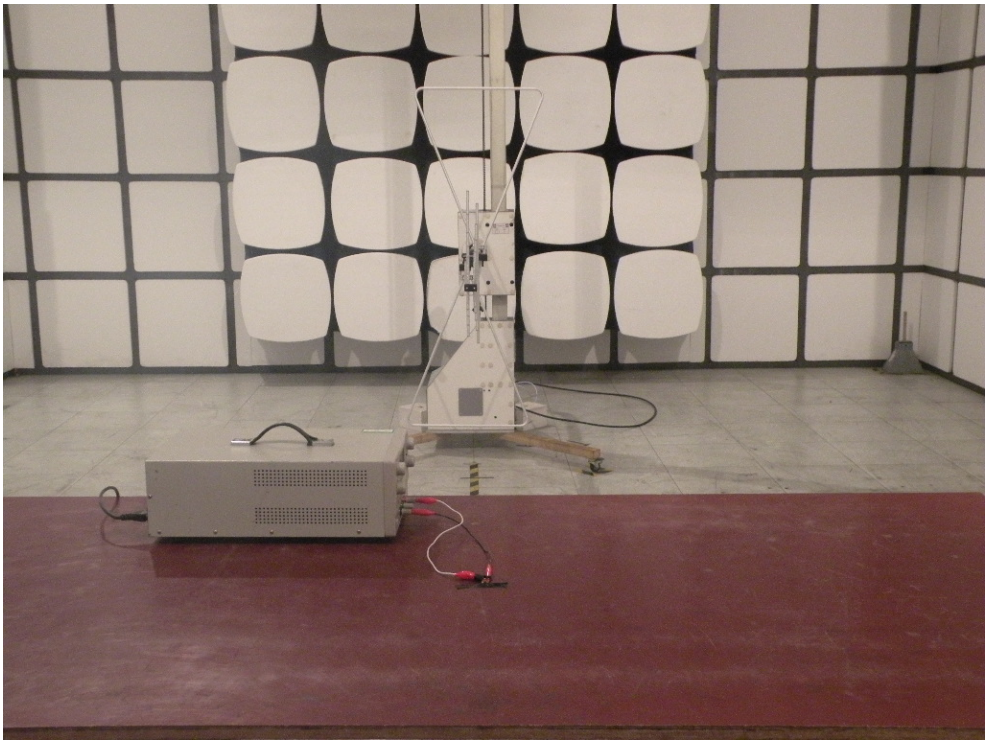
The directional gains of antenna used for transmitting is 0dBi, and de-signed with permanent attachment and no consideration of replacement. Please see EUT photo for details.

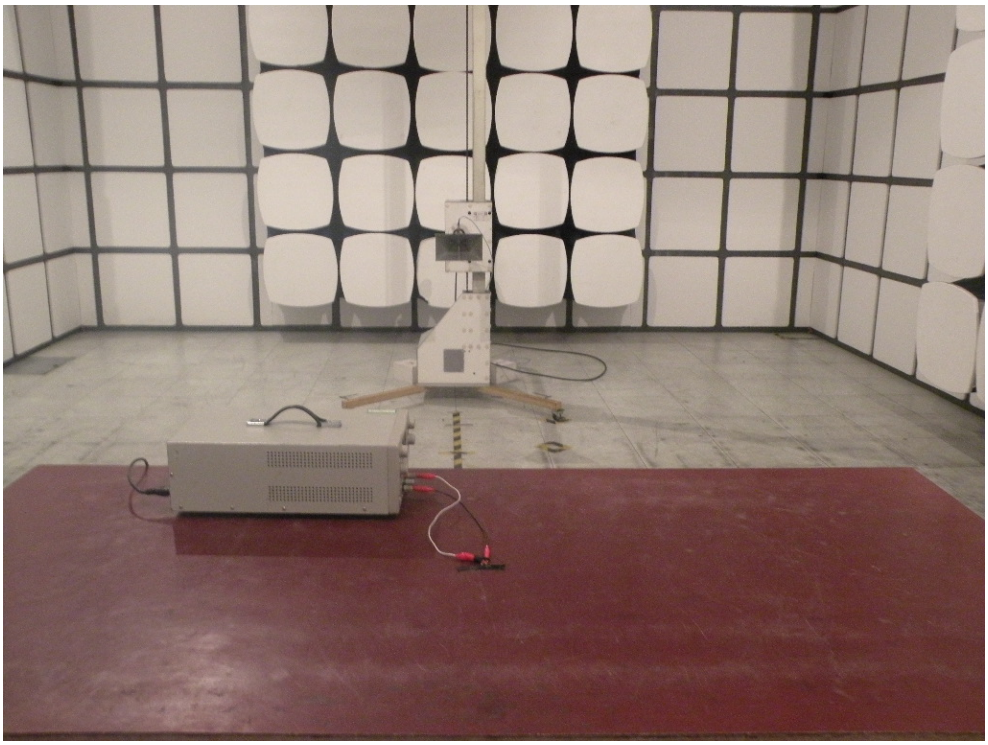
11.3 Result

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

12 Photographs of Test Setup

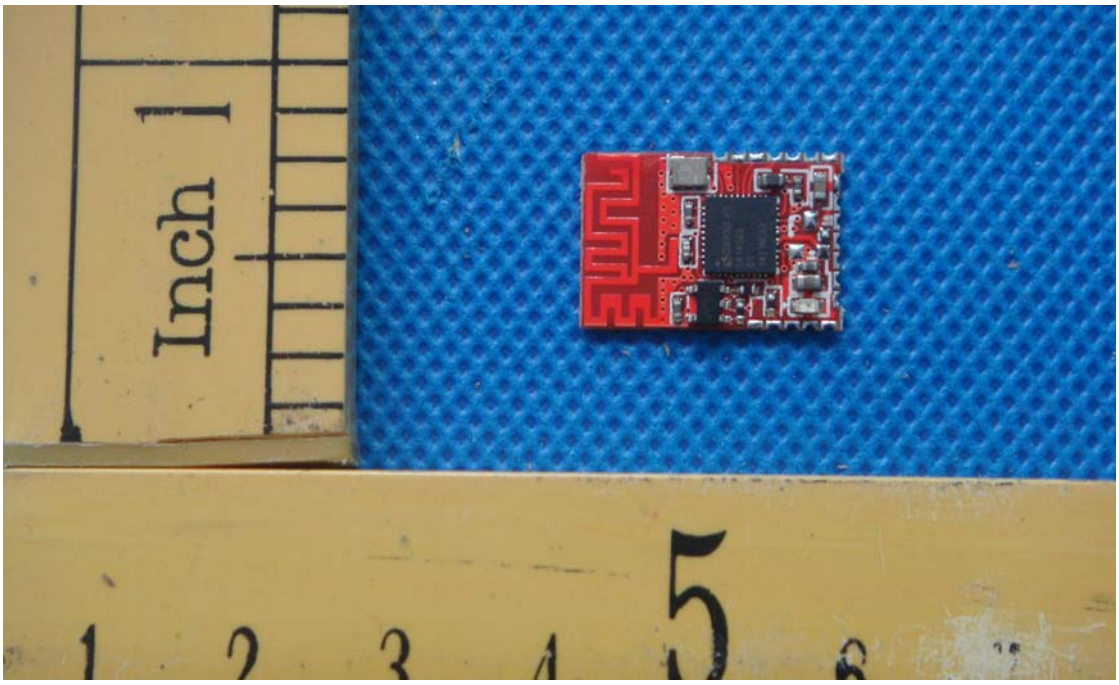
4.7 Photos of Radiated emission





4.8 Photos of Conducted Emission test

13 Photographs of EUT



---------END OF THE REPORT-------