FCC TEST REPORT

FCC ID: 2AI6IHV-BT018

Product	:	Bluetooth receiver and emitter
Model Name	:	HV-BT018,HV-BT015,HV-BT017,HV-BT019,HV-BT020 HV-BT021,HV-BT022,HV-BT023,HV-BT024,HV-BT025
Brand	:	HAVIT
Report No.	:	PTC801713160722E-FC01

Prepared for

Guangzhou Havit Technology Co.,LTD

ROOM 1307,13F,PHASE 2 B,C BUILDING OF POLY WORLD TRADE CENTER,

NO.1000,XINGANG EAST ROAD,HAIZHU, GuangDong, China

Prepared by

DongGuan Precise Testing Service Co.,Ltd.

Building D, Baoding Technology Park, Guangming Road 2, Guangming Community

Dongcheng District, Dongguan, Guangdong, China

TEST RESULT CERTIFICATION

Applicant's name	:	Guangzhou Havit Technology Co.,LTD
Address	:	ROOM 1307,13F,PHASE 2 B,C BUILDING OF POLY WORLD TRADE CENTER,NO.1000,XINGANG EAST ROAD,HAIZHU, GuangDong, China
Manufacture's name	:	Guangzhou Havit Technology Co.,LTD
Address	:	ROOM 1307,13F,PHASE 2 B,C BUILDING OF POLY WORLD TRADE CENTER,NO.1000,XINGANG EAST ROAD,HAIZHU, GuangDong, China
Product name	:	Bluetooth receiver and emitter
Model name	:	HV-BT018,HV-BT015,HV-BT017,HV-BT019,HV-BT020 HV-BT021,HV-BT022,HV-BT023,HV-BT024,HV-BT025
Standards	:	FCC CFR47 Part 15 Section 15.247 47 CFR Part 1.1307(2015) 47 CFR Part 2.1093 (2015)
Test procedure	:	ANSI C63.10:2013, KDB 558074 D01 DTS MEAS GUIDANCE V03R05
Test Date	:	Jul.30,2016 - Aug. 15, 2016
Date of Issue	:	Aug. 17, 2016
Test Result	:	Pass

This device described above has been tested by PTC, 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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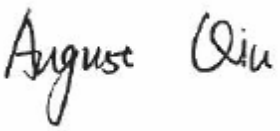
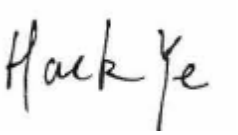
Testing Engineer



August Qiu

Technical Manager



Hack Ye

Authorized Signatory

Chris Du

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2 Test Summary

Test Items	Test Requirement	Result
Conduct Emission	15.207	PASS
Radiated Spurious Emissions	15.205(a) 15.209 15.247(d)	PASS
Conducted Spurious Emission	15.247(d)	PASS
Band edge	15.247(d) 15.205(a)	PASS
6dB Bandwidth	15.247(a)(2)	PASS
Maximum Peak Output Power	15.247(b)(1)	PASS
Power Spectral Density	15.247(e)	PASS
Antenna Requirement	15.203	PASS

3 General Information

3.1 General Description of E.U.T.

Product Name	:	Bluetooth receiver and emitter
Model Name	:	HV-BT018,HV-BT015,HV-BT017,HV-BT019,HV-BT020 HV-BT021,HV-BT022,HV-BT023,HV-BT024,HV-BT025
Model Description	:	Only the model names and colors are different
Bluetooth Version:	:	BLE4.0
Frequency Range:	:	2402-2480MHz, 40 channels
Antenna installation:	:	PCB Print Antenna
Antenna Gain:	:	0dBi
Type of Modulation	:	GFSK
Power supply	:	DC 3.7 power by battery, charging by USB port

3.2 Channel List

BLE							
Channel No.	**Frequency (MHz)**	**Channel No.**	**Frequency (MHz)**	**Channel No.**	**Frequency (MHz)**	**Channel No.**	**Frequency (MHz)**
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

3.3 Test Mode

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

Modulation	Test mode	Low channel	Middle channel	High channel
GFSK(BLE)	Transmitting	2402MHz	2440MHz	2480MHz

3.4 Test Site

Dongguan Precise Testing Service Co., Ltd.

Building D,Baoding Technology Park,Guangming Road2, Dongcheng District, Dongguan, Guangdong, China, Dongguan, 523129

China

FCC Registration Number: 371540

IC Registration Number: 12191A-1

4 Equipment During Test

4.1 Equipments List

RF Conducted Test							
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	EMC Analyzer (9k~26.5GHz)	Agilent	E4407B	MY45109572	July 15, 2016	July 14, 2017	1 year
2	EXA Signal Analyzer	Keysight	N9010A	MY50520207 526B25MPB W7X	July 15, 2016	July 14, 2017	1 year
3	EMI Test Receiver	R&S	ESCI	101155	July 15, 2016	July 14, 2017	1 year
Radiated Emissions							
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	3m Anechoic Chamber	CHENGYU	966	PTS-001	July 4, 2016	July 4, 2017	1 year
2	EMI Test Receiver	Rohde&Schwarz	ESCI	101417	July 15, 2016	July 14, 2017	1 year
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3355	July 15, 2016	July 14, 2017	1 year
4	Amplifier	EM	EM-30180	060538	July 15, 2016	July 14, 2017	1 year
5	Horn Antenna	SCHWARZBECK	BBHA9120 D	9120D-1246	July 15, 2016	July 14, 2017	1 year
6	Loop Antenna	SCHWARZBECK	FMZB1516	9130D-1243	July 15, 2016	July 14, 2017	1 year
7	Spectrum Analyzer	Agilent	N9020A	MY49100060	July 15, 2016	July 14, 2017	1 year
8	Horn Antenna	Schwarzbeck	BBHA 9170	9170-0741	July 15, 2016	July 14, 2017	1 year
9	PreAmplifier	Agilent	8449B	Agilent	July 15, 2016	July 14, 2017	1 year
10	Spectrum Analyzer	Agilent	E4407B	MY45108040	July 15, 2016	July 14, 2017	1 year

Conducted Emissions							
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Shielded Roomr	CHENGYU	843	PTS-002	June 6, 2016	June5, 2017	1 year
2	EMI Test Receiver	R&S	ESCI	101155	July 15, 2016	July 14, 2017	1 year
3	LISN	SCHWARZBECK	NSLK 8128	8128-289	July 15, 2016	July 14, 2017	1 year
4	Cable	LARGE	RF300	-	July 15, 2016	July 14, 2017	1 year

4.2 Measurement Uncertainty

Parameter	**Uncertainty**
RF output power, conducted	±1.0dB
Power Spectral Density, conducted	±2.2dB
Radio Frequency	± 1 x 10^{-6}
Bandwidth	± 1.5 x 10^{-6}
Time	±2%
Duty Cycle	±2%
Temperature	±1℃
Humidity	±5%
DC and low frequency voltages	±3%
Conducted Emissions (150kHz~30MHz)	±3.64dB
Radiated Emission(30MHz~1GHz)	±5.03dB
Radiated Emission(1GHz~25GHz)	±4.74dB

5 Conducted Emission

Test Requirement:	:	FCC CFR 47 Part 15 Section 15.207
Test Method:	:	ANSI C63.10:2013
Test Result:	:	PASS
Frequency Range:	:	150kHz to 30MHz
Class/Severity:	:	Class B
Limit:	:	66-56 dBμV between 0.15MHz & 0.5MHz
	:	56 dBμV between 0.5MHz & 5MHz
	:	60 dBμV between 5MHz & 30MHz
Detector:	:	Peak for pre-scan(9kHz Resolution Bandwidth)

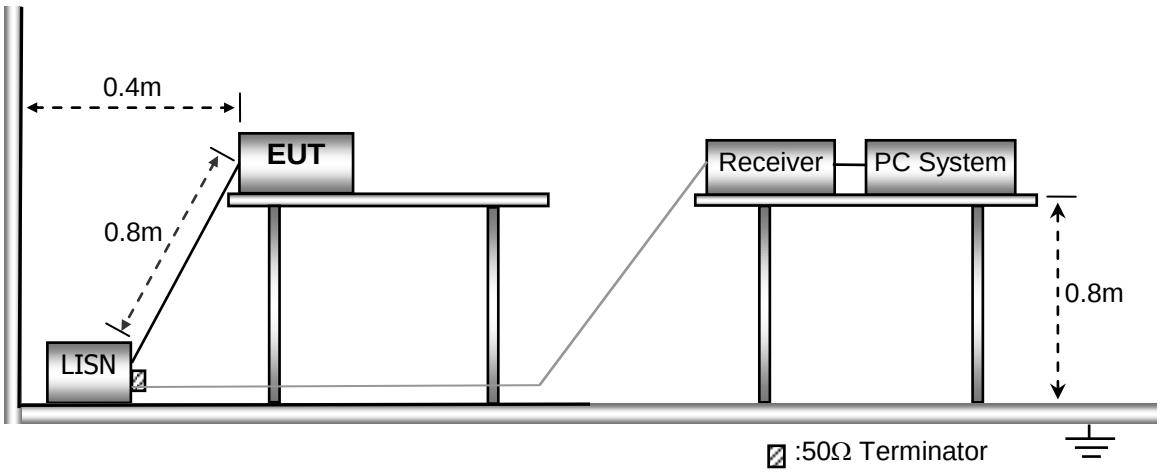
5.1 E.U.T. Operation

Operating Environment:

Temperature:	:	25.5 °C
Humidity:	:	51 % RH
Atmospheric Pressure:	:	101.2kPa
EUT Operation:	:	Refer to section 3.3

5.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10:2013.



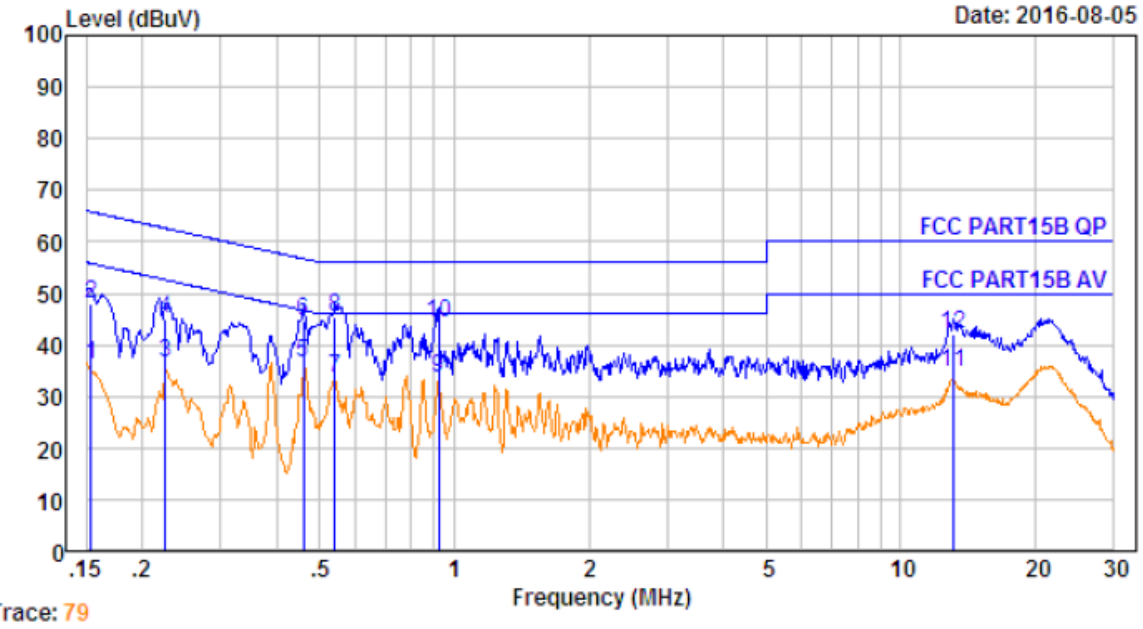
5.3 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

5.4 Conducted Emission Test Result

For BLE low CH is worst case

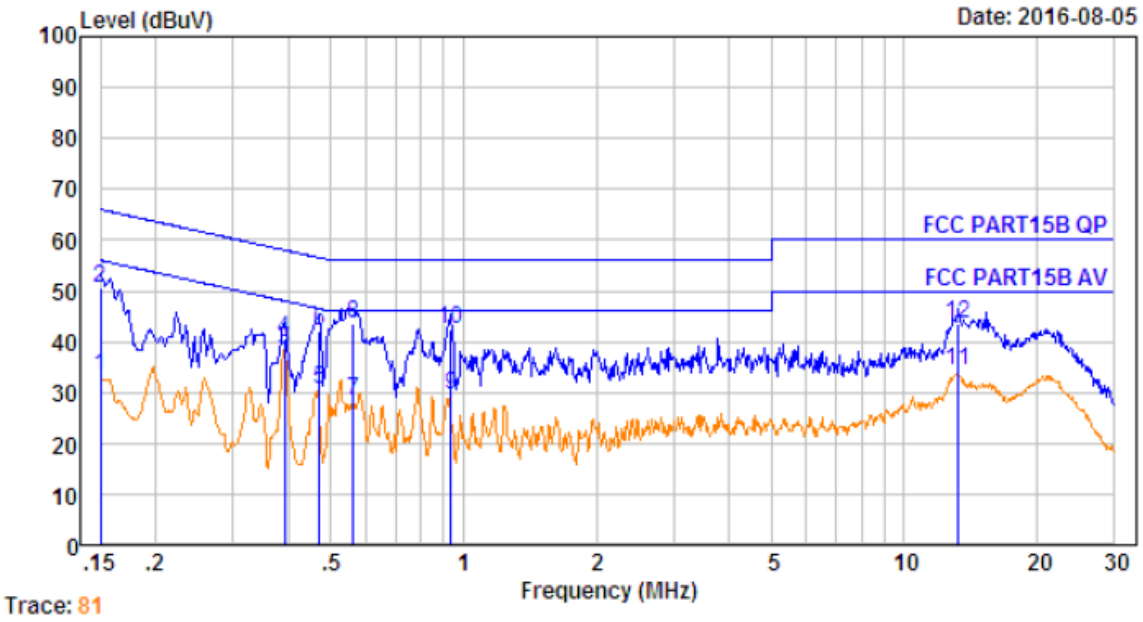
Live line:



Test mode: TX transmit

No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBuV	Emission Level dBuV	Limit dBuV	Over Limit dB	Remark
1.	0.154	10.60	0.60	25.01	36.21	55.78	-19.57	Average
2.	0.154	10.60	0.60	36.81	48.01	65.78	-17.77	QP
3.	0.226	10.62	0.60	25.16	36.38	52.61	-16.23	Average
4.	0.226	10.62	0.60	33.86	45.08	62.61	-17.53	QP
5.	0.459	10.64	0.60	25.17	36.41	46.71	-10.30	Average
6.	0.459	10.64	0.60	33.27	44.51	56.71	-12.20	QP
7.	0.541	10.65	0.60	22.38	33.63	46.00	-12.37	Average
8.	0.541	10.65	0.60	33.98	45.23	56.00	-10.77	QP
9.	0.923	10.67	0.60	22.15	33.42	46.00	-12.58	Average
10.	0.923	10.67	0.60	32.95	44.22	56.00	-11.78	QP
11.	13.127	10.77	0.60	23.18	34.55	50.00	-15.45	Average
12.	13.127	10.77	0.60	30.78	42.15	60.00	-17.85	QP

Neutral line:



Test mode: TX transmit

No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBuV	Emission Level dBuV	Limit dBuV	Over Limit dB	Remark
1.	0.150	10.60	0.60	22.13	33.33	56.00	-22.67	Average
2.	0.150	10.60	0.60	39.43	50.63	66.00	-15.37	QP
3.	0.393	10.64	0.60	26.99	38.23	47.99	-9.76	Average
4.	0.393	10.64	0.60	29.49	40.73	57.99	-17.26	QP
5.	0.471	10.64	0.60	19.41	30.65	46.49	-15.84	Average
6.	0.471	10.64	0.60	30.71	41.95	56.49	-14.54	QP
7.	0.561	10.65	0.60	17.31	28.56	46.00	-17.44	Average
8.	0.561	10.65	0.60	32.41	43.66	56.00	-12.34	QP
9.	0.938	10.67	0.60	18.34	29.61	46.00	-16.39	Average
10.	0.938	10.67	0.60	31.04	42.31	56.00	-13.69	QP
11.	13.197	10.77	0.60	23.01	34.38	50.00	-15.62	Average
12.	13.197	10.77	0.60	32.21	43.58	60.00	-16.42	QP

6 Radiated Spurious Emissions

Test Requirement: : FCC CFR47 Part 15 Section 15.209 & 15.247

Test Method: : ANSI C63.10:2013,KDB 558074 D01 DTS MEAS GUIDANCE V03R05

Test Result: : PASS

Measurement Distance: : 3m

Limit: : See the follow table

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	$20\log^{(2400/F(kHz))}$ + 80
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	$20\log^{(24000/F(kHz))}$ + 40
1.705 ~ 30	30	30	100 * 30	$20\log^{(30)}$ + 40
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

6.1 EUT Operation

Operating Environment :

Temperature: : 23.5 °C

Humidity: : 51.1 % RH

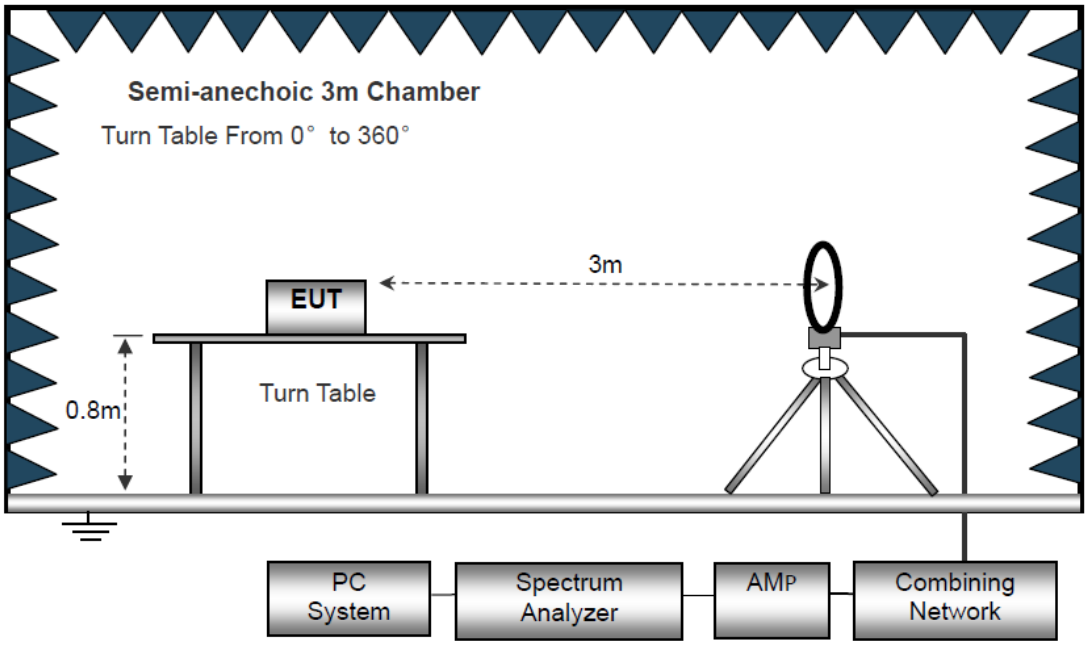
Atmospheric Pressure: : 101.2kPa

EUT Operation : : Refer to section 3.3

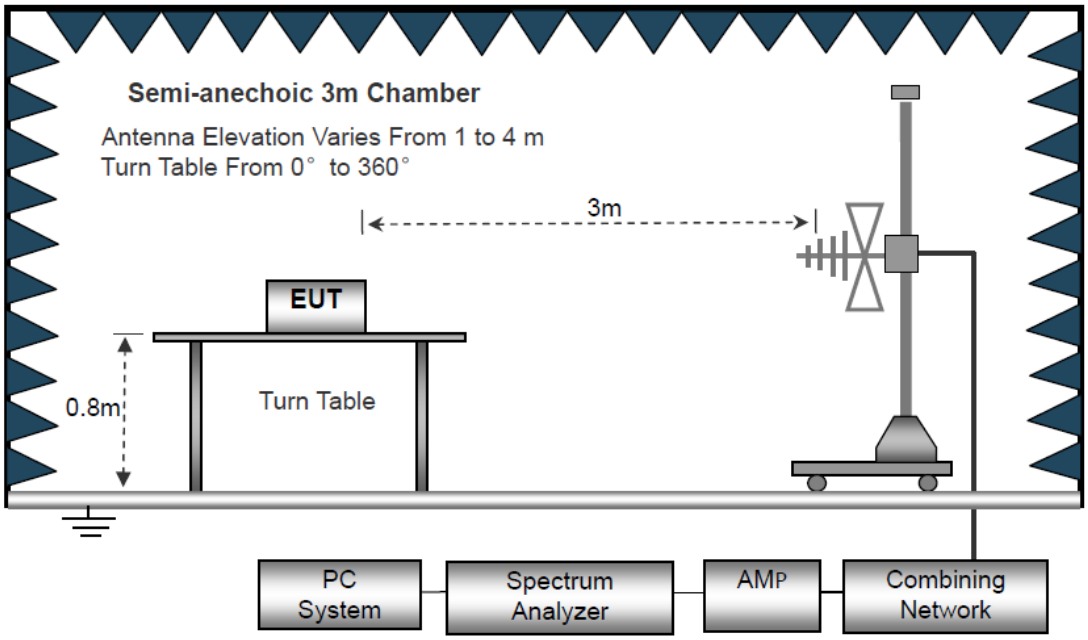
6.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site

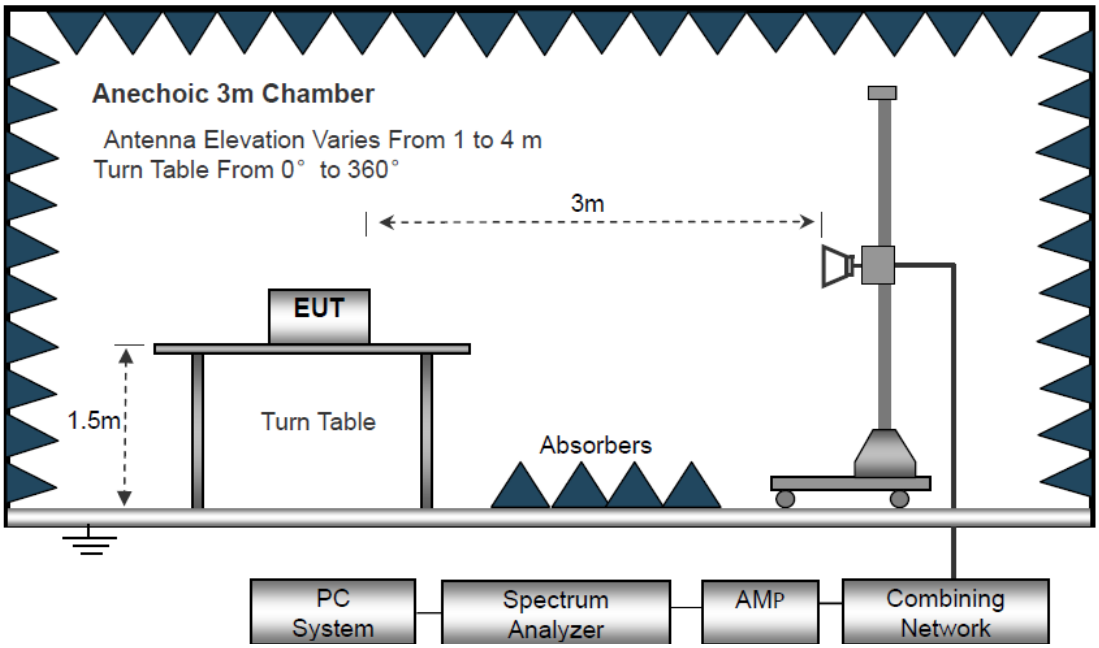
The test setup for emission measurement below 30MHz



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz



6.3 Spectrum Analyzer Setup

Below 30MHz

IF Bandwidth		10kHz
Resolution Bandwidth		10kHz
Video Bandwidth		10kHz

30MHz ~ 1GHz

Detector	:	PK
Resolution Bandwidth	:	100kHz
Video Bandwidth	:	300kHz
Detector	:	QP
Resolution Bandwidth	:	120kHz
Video Bandwidth	:	300kHz

Above 1GHz

Detector	:	PK
Resolution Bandwidth	:	1MHz
Video Bandwidth	:	3MHz
Detector	:	AV
Resolution Bandwidth	:	1MHz
Video Bandwidth	:	10Hz

6.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane for below 1GHz and 1.5m for above 1GHz.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.

3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.

5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

6. Repeat above procedures until the measurements for all frequencies are complete.

7. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.

6.5 Summary of Test Results

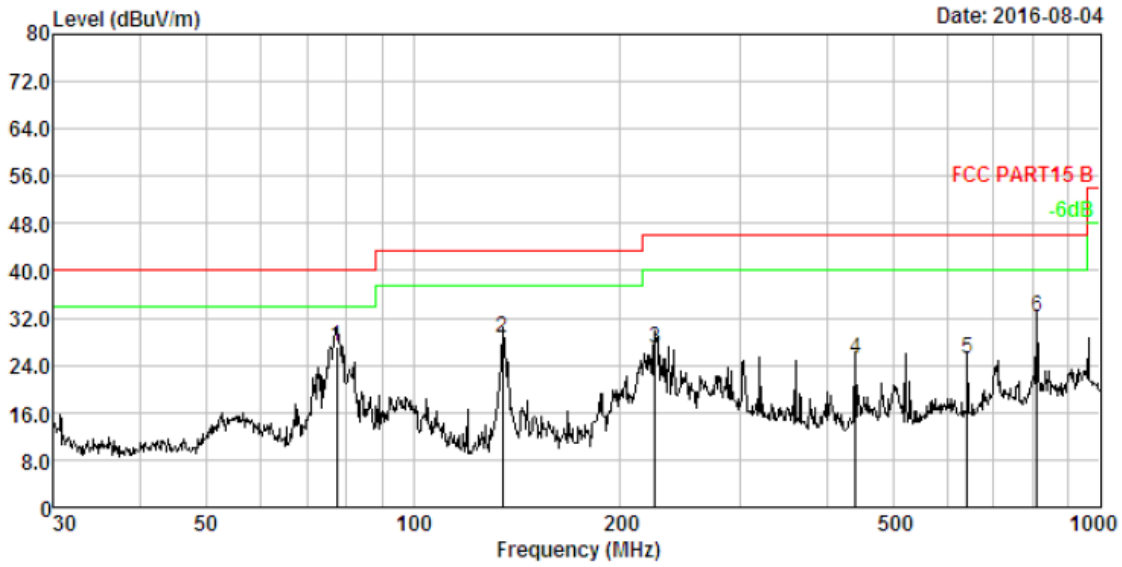
Test Frequency: Below 30MHz

The measurements were more than 20 dB below the limit and not reported.

Test Frequency: 30MHz ~ 1GHz

All applicable test modes have been tested and only the worst case (BLE TX in middle channel) is recorded.

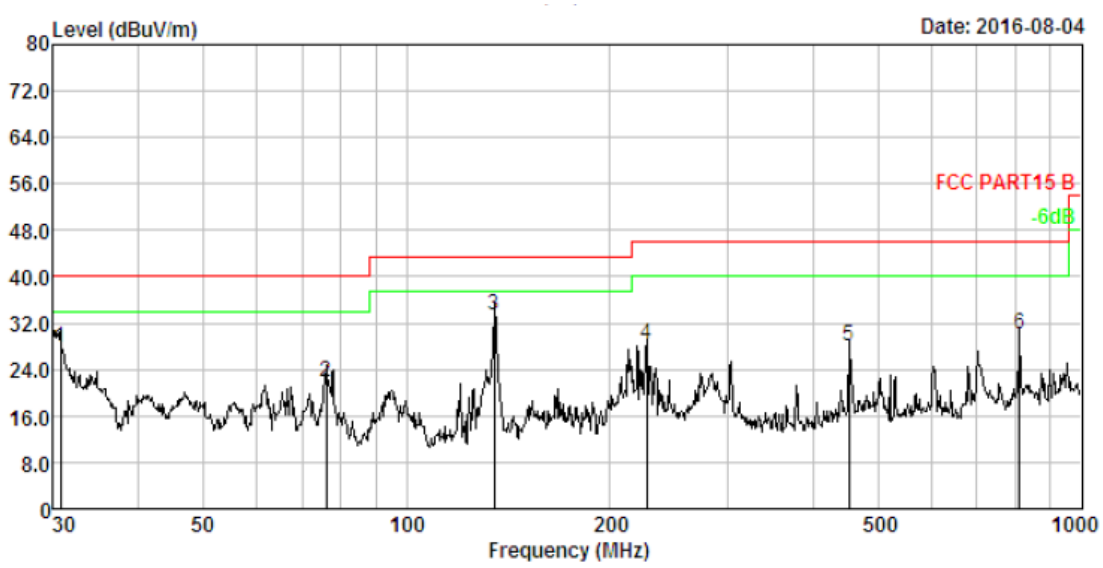
Antenna Polarization: Horizontal



No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	77.321	1.91	9.35	46.17	30.30	27.13	40.00	-12.87	QP
2.	135.032	2.42	13.00	43.61	30.49	28.54	43.50	-14.96	QP
3.	225.308	2.88	11.02	43.61	30.67	26.84	46.00	-19.16	QP
4.	440.196	3.49	16.21	36.33	30.90	25.13	46.00	-20.87	QP
5.	640.611	3.83	19.45	32.80	31.04	25.04	46.00	-20.96	QP
6.	810.265	4.04	21.83	37.57	31.12	32.32	46.00	-13.68	QP

Remark:Emission Level=Reading+Cable Loss+ANT Factor-AMP Factor

Antenna Polarization: Vertical



No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	30.745	1.08	13.23	43.46	29.98	27.79	40.00	-12.21	QP
2.	75.977	1.90	9.65	40.49	30.29	21.75	40.00	-18.25	QP
3.	135.032	2.42	13.00	48.39	30.49	33.32	43.50	-10.18	QP
4.	226.894	2.89	11.10	45.01	30.67	28.33	46.00	-17.67	QP
5.	452.720	3.51	16.40	38.98	30.91	27.98	46.00	-18.02	QP
6.	810.265	4.04	21.83	35.42	31.12	30.17	46.00	-15.83	QP

Remark:Emission Level=Reading+Cable Loss+ANT Factor-AMP Factor

Test Frequency: 1GHz ~ 25GHz

All the modulation modes have been tested, and the worst result was report as below:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark	Polarization
Low Channel (2402 MHz)-Above 1G							
4804.589	56.10	-3.64	52.46	74.00	-21.54	Pk	Vertical
4804.589	40.10	-3.64	36.46	54.00	-17.54	AV	Vertical
7206.541	60.99	-0.95	60.04	74.00	-13.96	Pk	Vertical
7206.541	42.10	-0.95	41.15	54.00	-12.85	AV	Vertical
4804.7	59.32	-3.64	55.68	74.00	-18.32	Pk	Horizontal
4804.7	42.43	-3.64	38.79	54.00	-15.21	AV	Horizontal
7206.622	57.89	-0.95	56.94	74.00	-17.06	Pk	Horizontal
7206.622	42.07	-0.95	41.12	54.00	-12.88	AV	Horizontal
Mid Channel (2440 MHz)-Above 1G							
4880.638	60.99	-3.68	57.31	74.00	-16.69	Pk	Vertical
4880.638	39.32	-3.68	35.64	54.00	-18.36	AV	Vertical
7320.539	59.32	-0.82	58.50	74.00	-15.50	Pk	Vertical
7320.539	41.99	-0.82	41.17	54.00	-12.83	AV	Vertical
4880.622	59.07	-3.68	55.39	74.00	-18.61	Pk	Horizontal
4880.622	41.76	-3.68	38.08	54.00	-15.92	AV	Horizontal
7320.466	58.10	-0.82	57.28	74.00	-16.72	Pk	Horizontal
7320.466	41.99	-0.82	41.17	54.00	-12.83	AV	Horizontal
High Channel (2480 MHz)- Above 1G							
4960.948	57.89	-3.59	54.30	74.00	-19.70	Pk	Vertical
4960.948	40.76	-3.59	37.17	54.00	-16.83	AV	Vertical
7440.663	58.07	-0.68	57.39	74.00	-16.61	Pk	Vertical
7440.663	40.07	-0.68	39.39	54.00	-14.61	AV	Vertical
4960.539	58.32	-3.59	54.73	74.00	-19.27	Pk	Horizontal
4960.539	40.40	-3.59	36.81	54.00	-17.19	AV	Horizontal
7440.696	61.76	-0.68	61.08	74.00	-12.92	Pk	Horizontal
7440.696	41.21	-0.68	40.53	54.00	-13.47	AV	Horizontal

Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).

(2) Emission Level= Reading Level+Probe Factor +Cable Loss.

Radiated band edge:

All the modulation modes have been tested and all other emissions more than 20dB below the limit, the worst result was report as below:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Polarization
1Mbps							
2390	60.89	-13.06	47.83	74.00	-26.17	Pk	Vertical
2390	59.96	-13.06	46.90	54.00	-7.10	AV	Vertical
2390	60.58	-13.06	47.52	74.00	-26.48	Pk	Horizontal
2390	59.69	-13.06	46.63	54.00	-7.37	AV	Horizontal
2483.5	61.72	-12.78	48.94	74.00	-25.06	Pk	Vertical
2483.5	61.44	-12.78	48.66	54.00	-5.34	AV	Vertical
2483.5	61.61	-12.78	48.83	74.00	-25.17	Pk	Horizontal
2483.5	61.24	-12.78	48.46	54.00	-5.54	AV	Horizontal

Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).

(2) Emission Level= Reading Level+Probe Factor +Cable Loss.

7 Conducted Spurious Emission

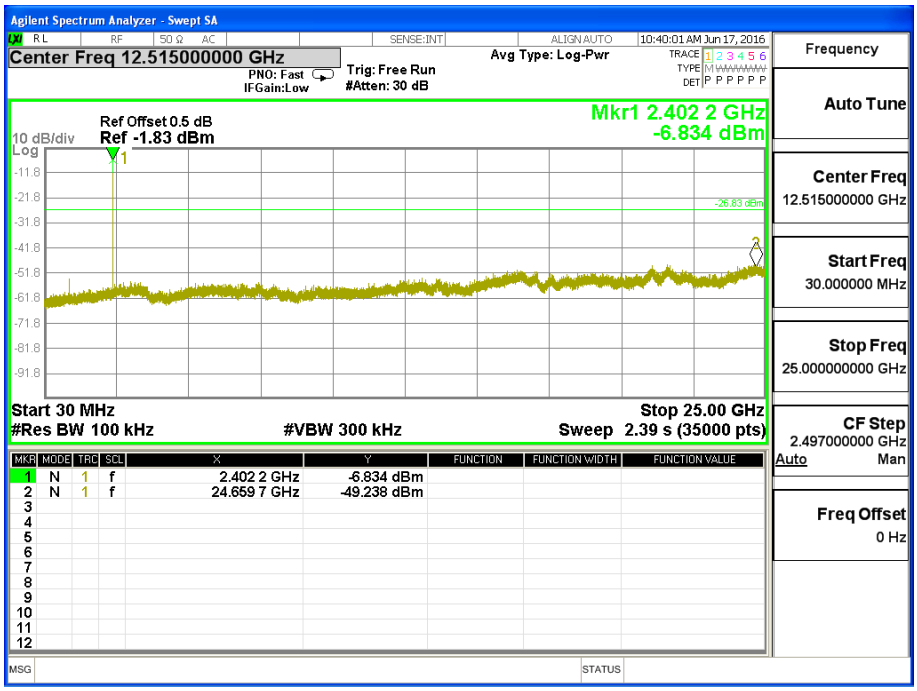
Test Requirement	:	FCC CFR47 Part 15 Section 15.247
Test Method	:	ANSI C63.10:2013,KDB 558074 D01 DTS MEAS GUIDANCE V03R05
Test Limit	:	Regulation 15.247 (d),In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).
Test Mode	:	Refer to section 3.3

7.1 Test Procedure

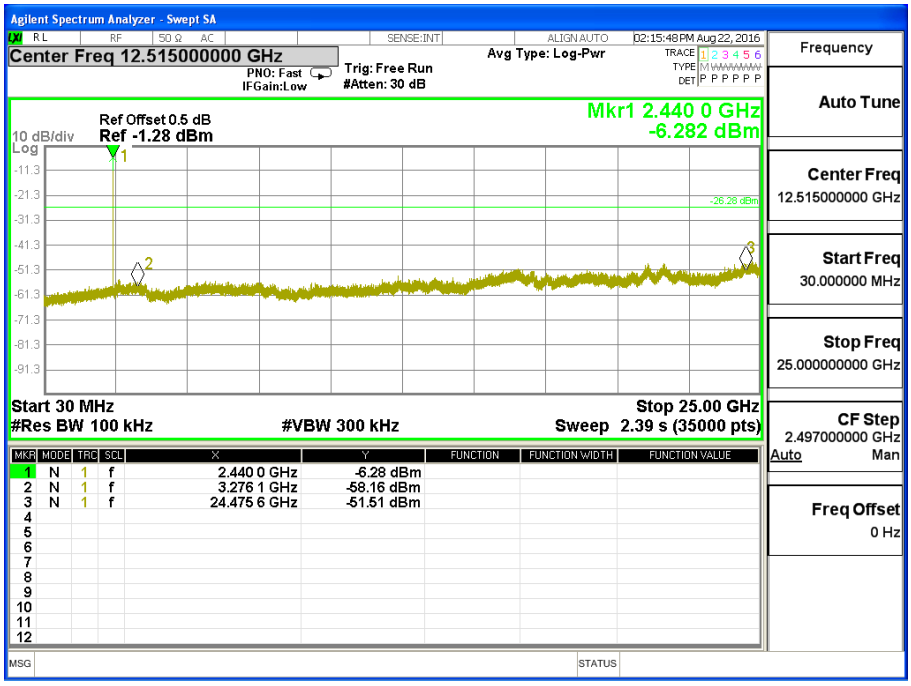
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz, Sweep = auto
Detector function = peak, Trace = max hold

7.2 Test Result

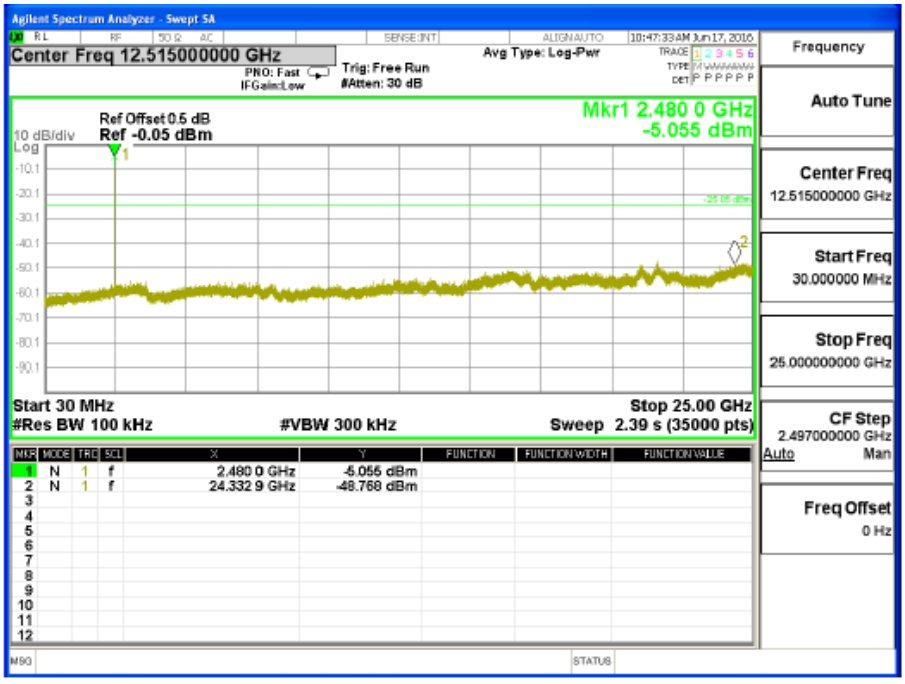
BLE Low Channel



BLE Middle Channel



BLE High Channel



8 Band Edge Measurement

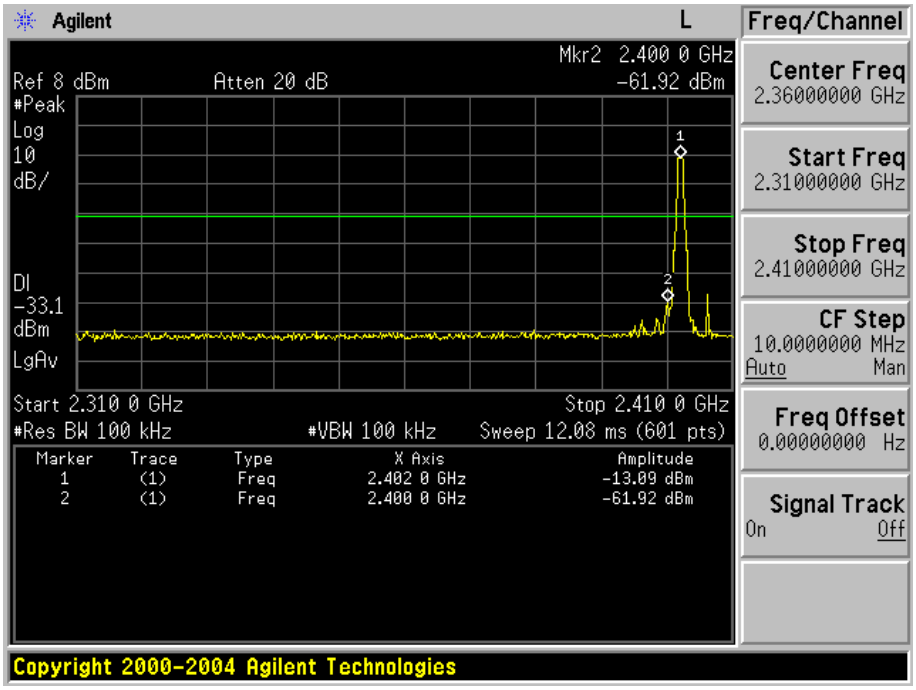
Test Requirement	:	Section 15.247(d) In addition, radiated emissions which fall in the restricted bands. as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).
Test Method	:	ANSI C63.10:2013,KDB 558074 D01 DTS MEAS GUIDANCE V03R05
Test Limit	:	Regulation 15.247 (d),In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).
Test Mode	:	Refer to section 3.3

8.1 Test Procedure

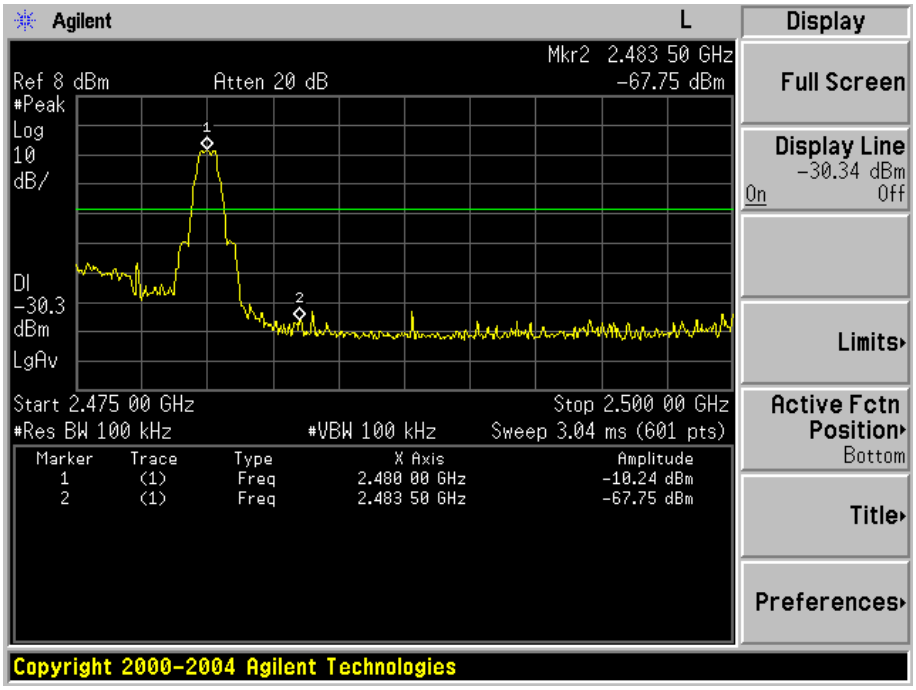
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz, Sweep = auto
Detector function = peak, Trace = max hold

8.2 Test Result

GFSK Band edge-left side



GFSK Band edge-right side



9 6dB Bandwidth Measurement

Test Requirement	:	FCC CFR47 Part 15 Section 15.247
Test Method	:	ANSI C63.10:2013, KDB 558074 D01 DTS MEAS GUIDANCE V03R05
Test Limit		Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.
Test Mode	:	Refer to section 3.3

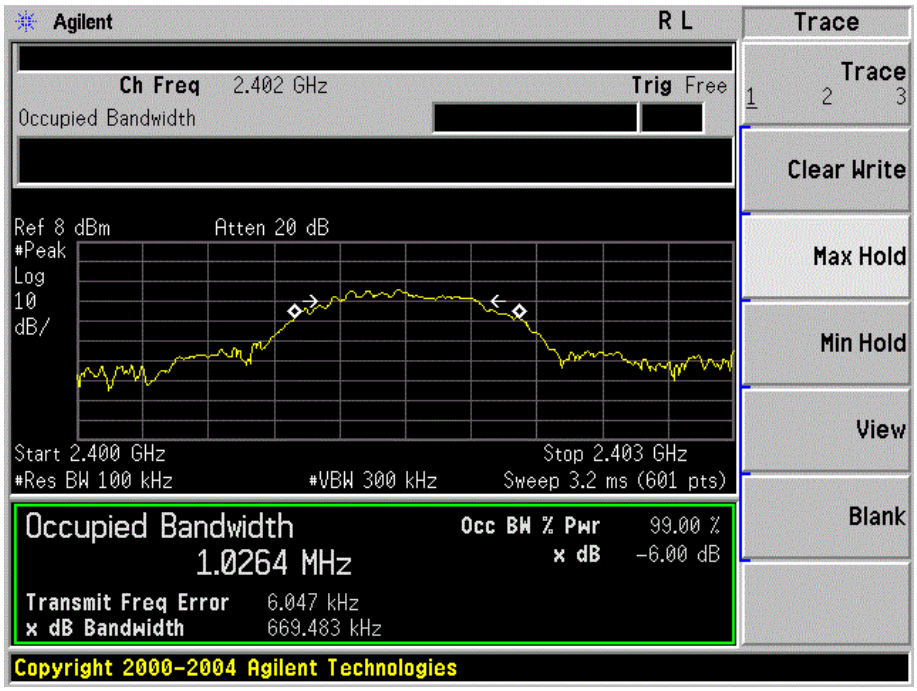
9.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: For BLE, RBW = 100 kHz, VBW = 300kHz, For WIFI, RBW = 100kHz, VBW = 300kHz,

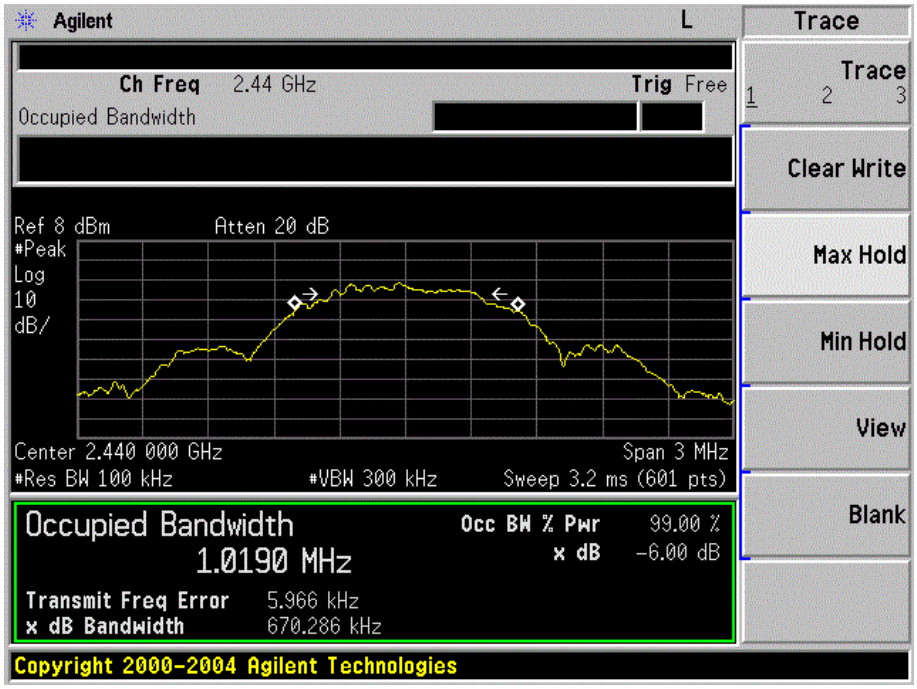
9.2 Test Result

Modulation	Bandwidth(KHz)			Limit
	Low Channel	Middle Channel	High Channel	
GFSK(BLE)	669.483	670.286	665.476	≥500kHz

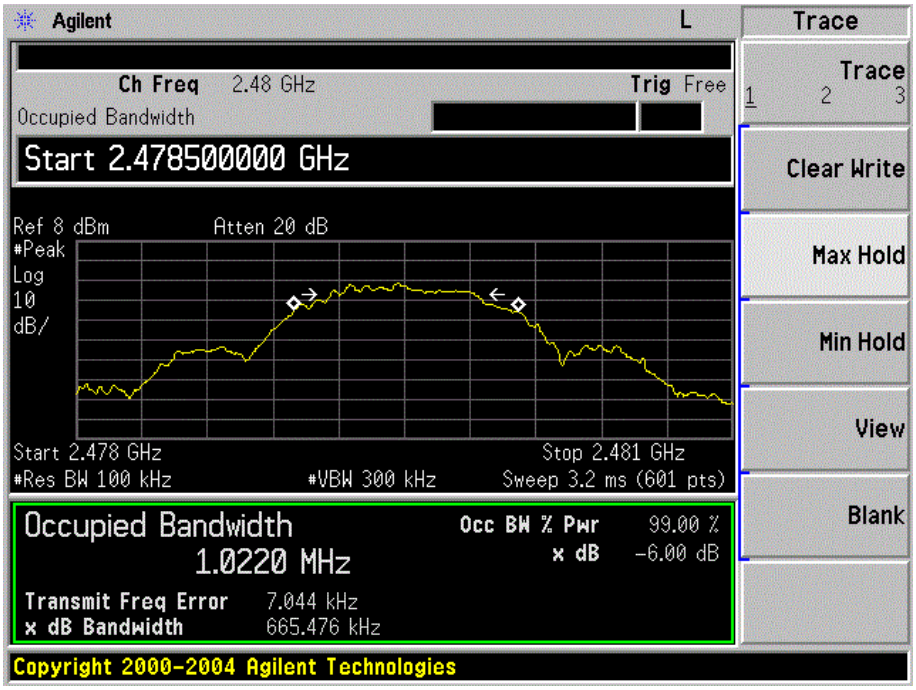
GFSK(BLE) Low Channel



GFSK(BLE) Middle Channel



GFSK(BLE) High Channel



10 Maximum Peak Output Power

Test Requirement	:	FCC CFR47 Part 15 Section 15.247
Test Method	:	ANSI C63.10:2013, KDB 558074 D01 DTS MEAS GUIDANCE V03R05
Test Limit	:	Regulation 15.247 (b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power.
Test Mode	:	Refer to section 3.3

10.1Test Procedure

KDB 558074 D01 DTS Meas Guidance V03R05

section 9.1.1 (For BLE)

This procedure shall be used when the measurement instrument has available a resolution bandwidth that is greater than the DTS bandwidth.

a)Set the RBW ≥ DTS bandwidth.

b)Set VBW ≥ 3 RBW.

c)Set span ≥ 3 x RBW

d)Sweep time = auto couple.

e)Detector = peak.

f)Trace mode = max hold.

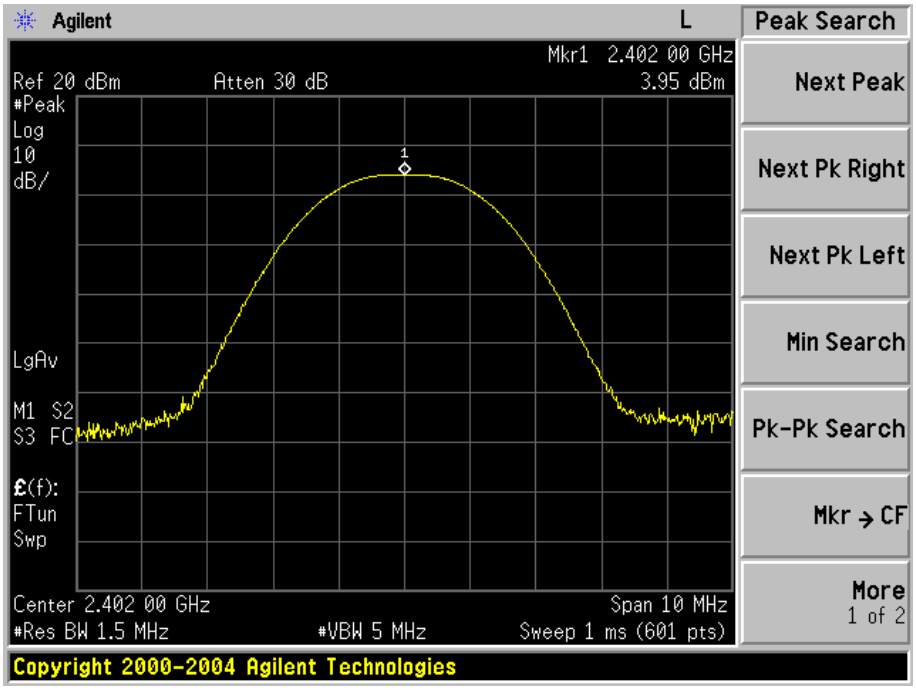
g) Allow trace to fully stabilize.

h) Use peak marker function to determine the peak amplitude level.

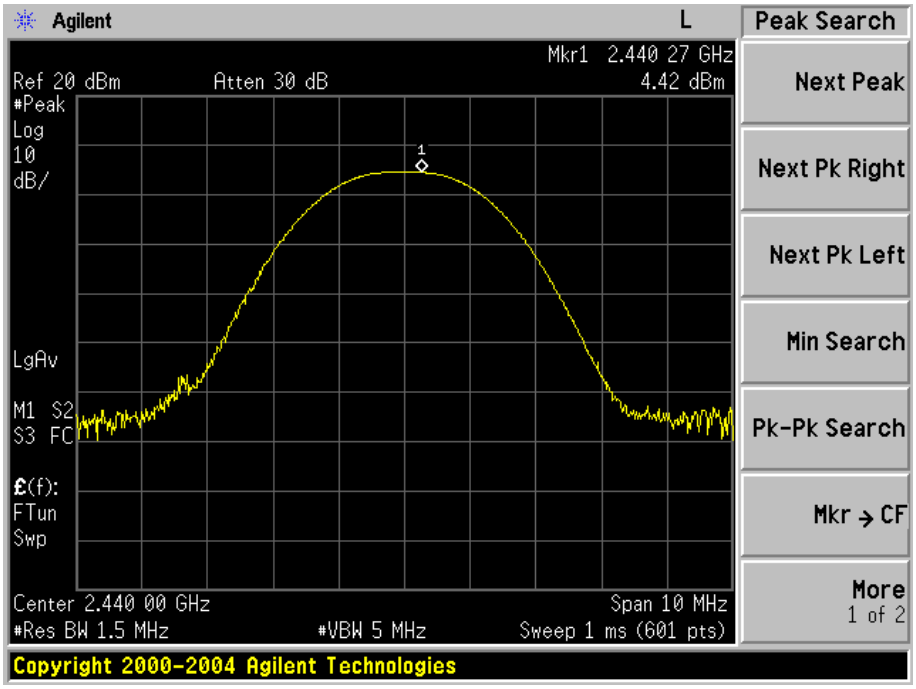
10.2Test Result

Modulation	Maximum Peak Output Power (dBm)			Limit
	Low Channel	Middle Channel	High Channel	
GFSK(BLE)	3.95	4.42	4.66	1W(30dBm)

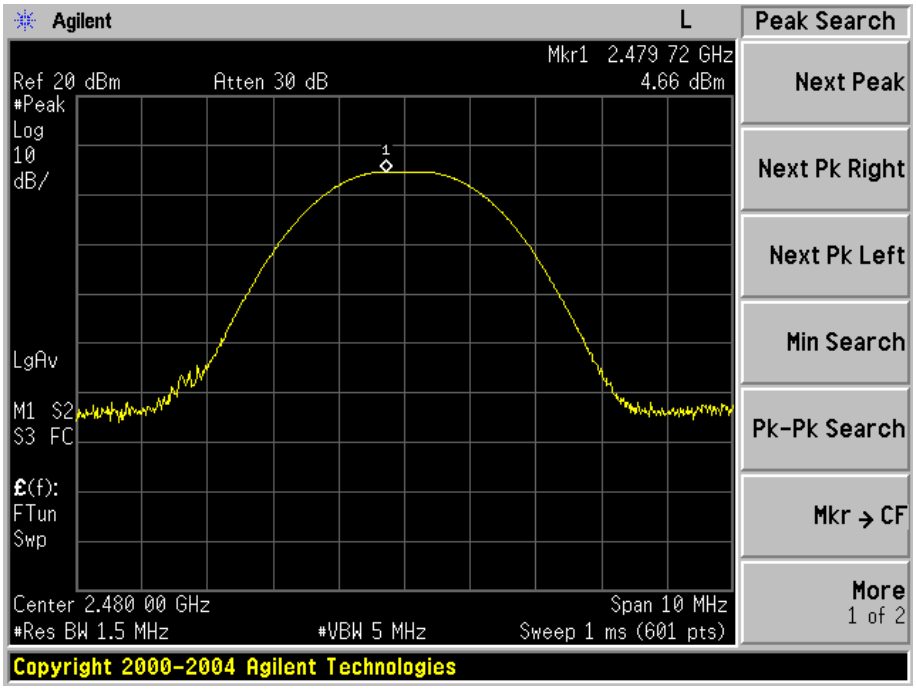
GFSK(BLE) Low Channel



GFSK(BLE) Middle Channel



GFSK(BLE) High Channel



11 Power Spectral density

Test Requirement	:	FCC CFR47 Part 15 Section 15.247
Test Method	:	ANSI C63.10:2013, KDB 558074 D01 DTS MEAS GUIDANCE V03R05
Test Limit	:	Regulation 15.247(f) The power spectral density conducted from the intentional radiator to the antenna due to the digital modulation operation of the hybrid system, with the frequency hopping operation turned off, shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.
Test Mode	:	Refer to section 3.3

11.1 Test Procedure

KDB 558074 D01 DTS Meas Guidance V03R05

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

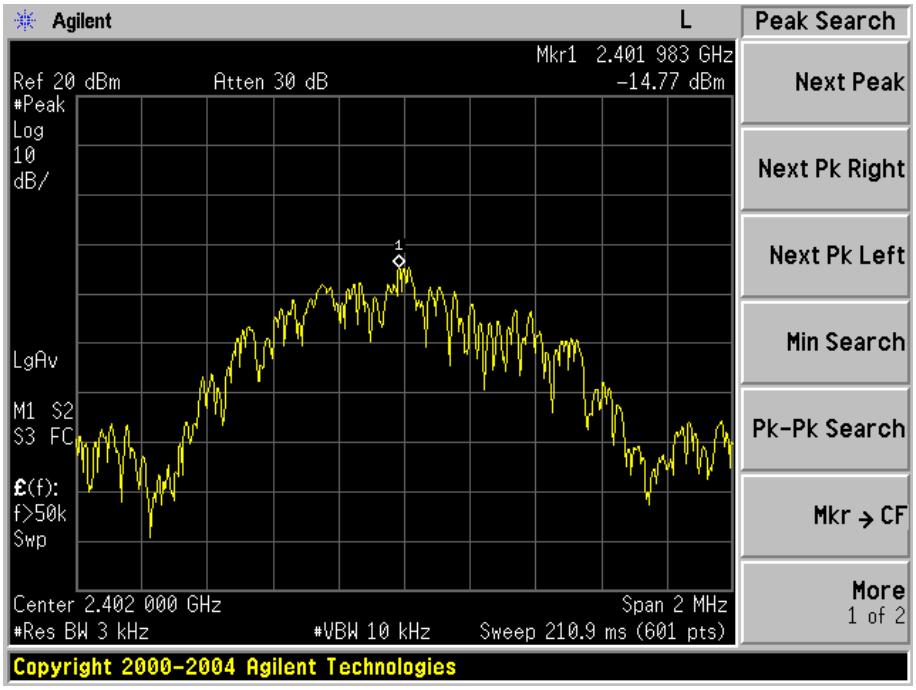
2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz , Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.

3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

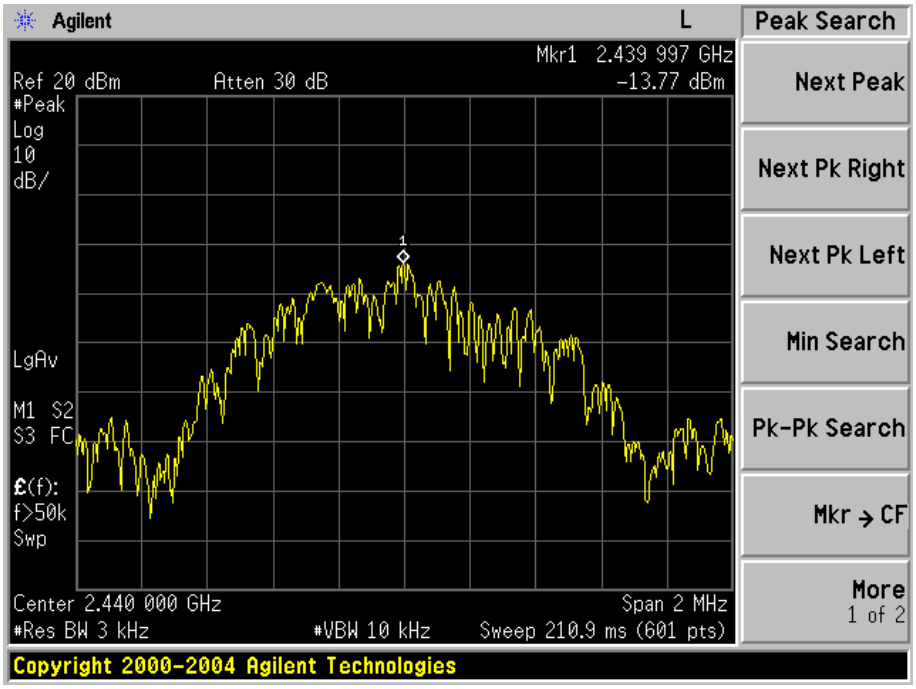
11.2 Test Result

Modulation	Power Spectral density (dBm/3kHz)			Limit
	Low Channel	Middle Channel	High Channel	
GFSK(BLE)	-14.77	-13.77	-13.66	8dBm/3kHz

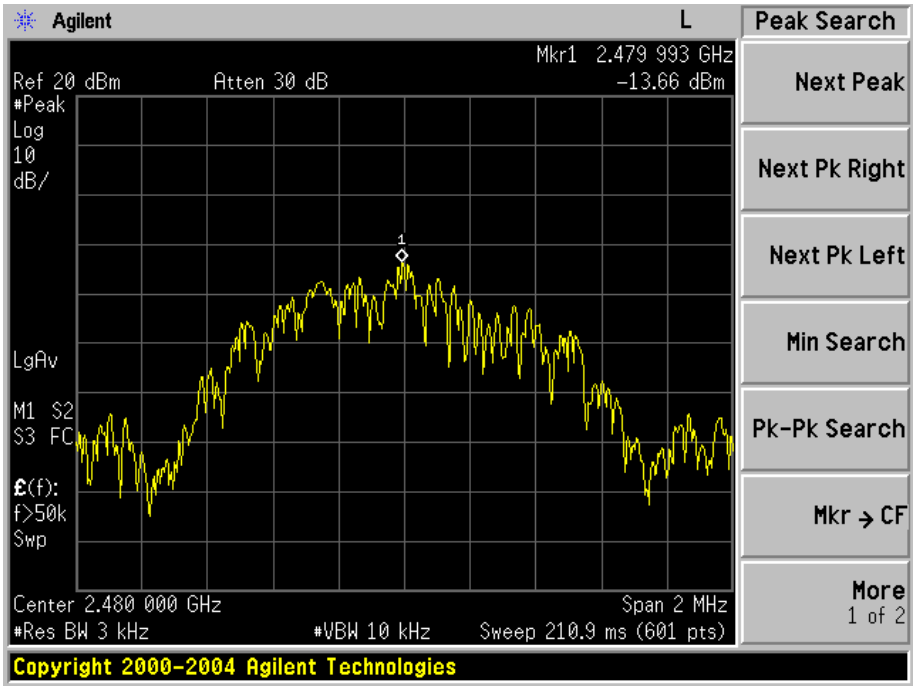
GFSK(BLE) Low Channel



GFSK(BLE) Middle Channel



GFSK(BLE) High Channel

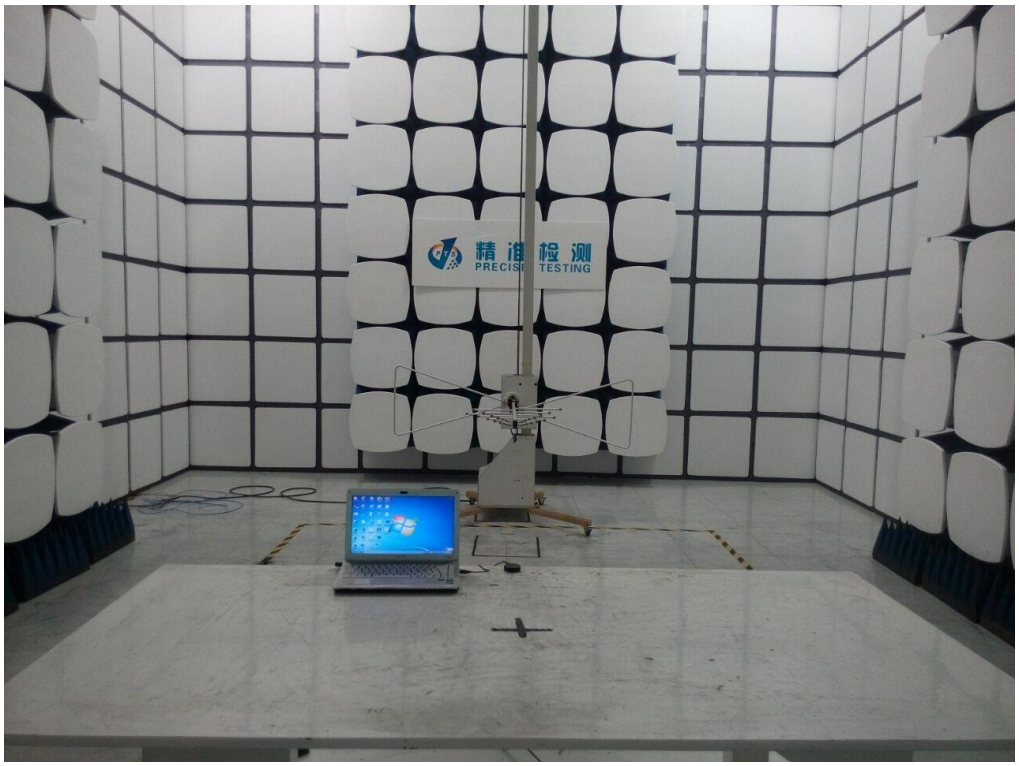


12 Antenna Requirement

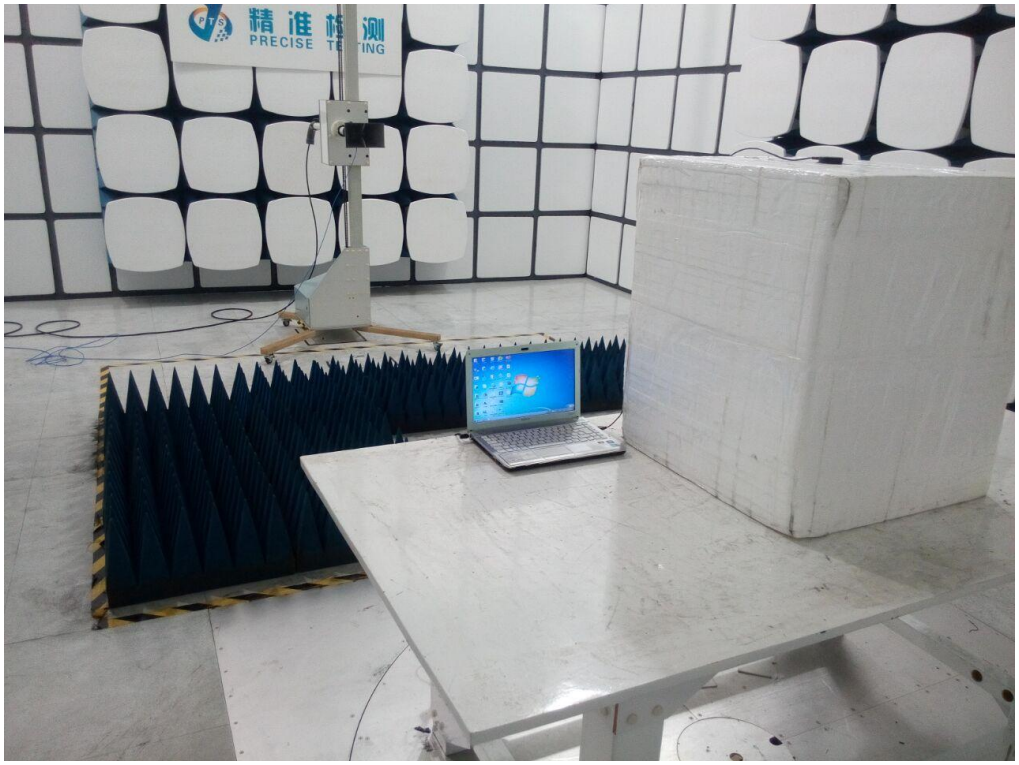
According to the FCC part15.203, a transmitter can only be sold or operated with antennas with which it was approved. This product has an PCB print antenna which meet the requirement of this section.

13 Test Setup

Radiated Spurious Emissions
From 30MHz-1000MHz



Above 1GHz

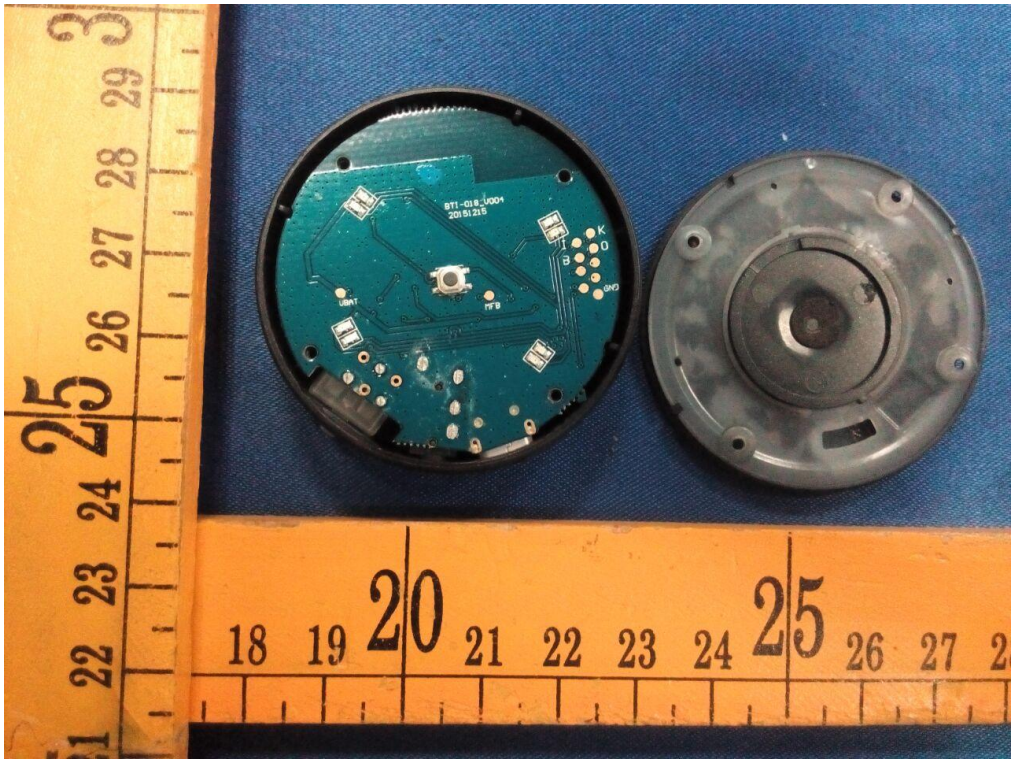


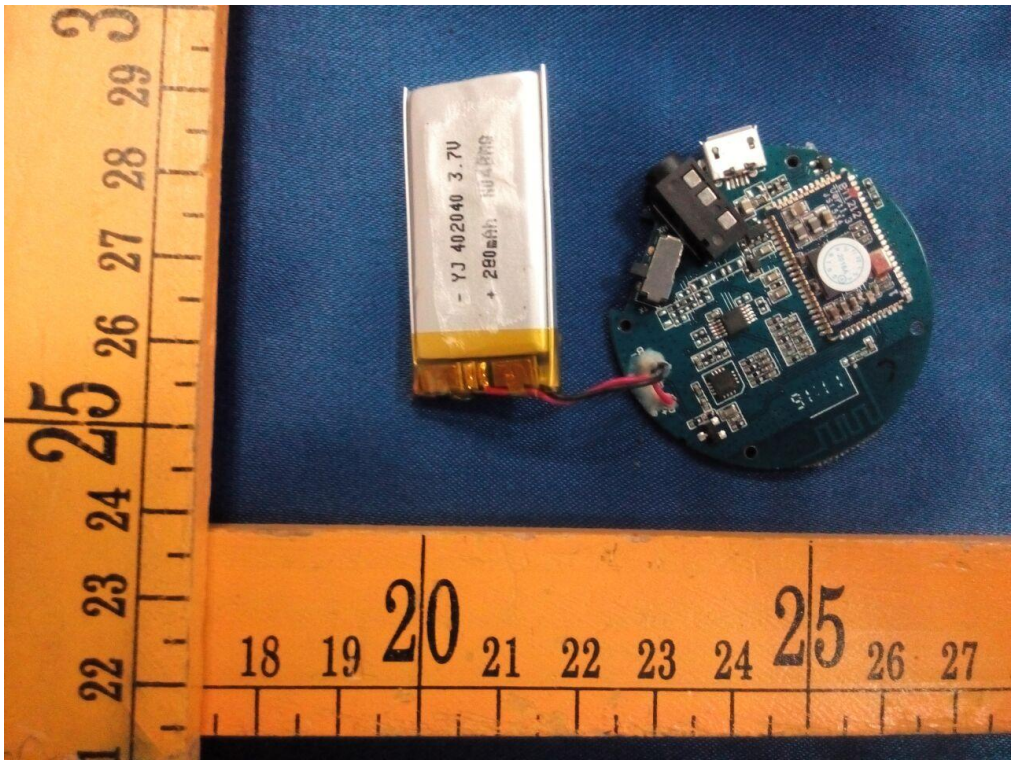
14 EUT Photos

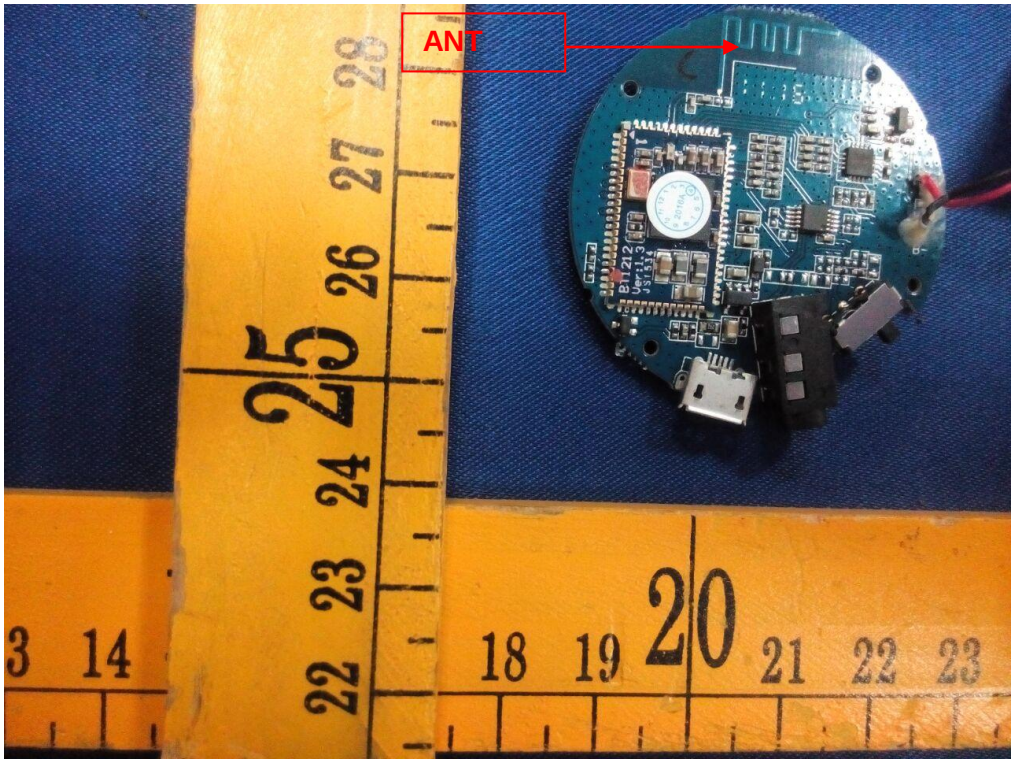
External Photos


haute
TX
RX

Internal Photos



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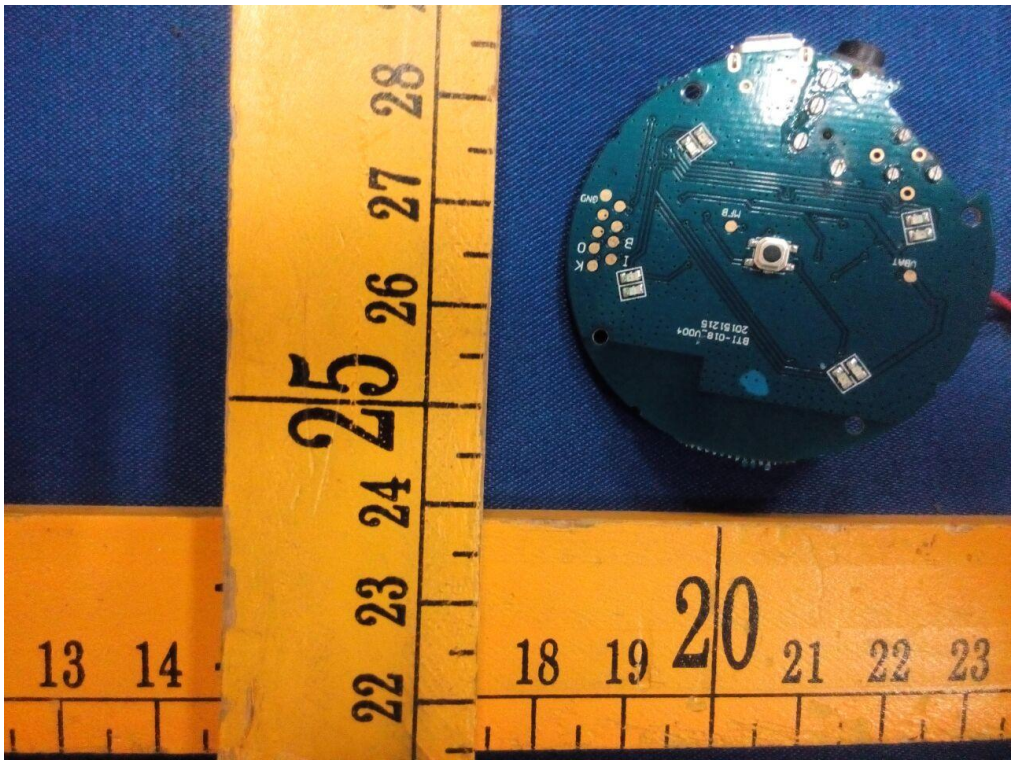

******THE END REPORT******