TEST REPORT

FCC ID: 2ALEO-M8

For

Shenzhen Yimei Electronic Technology Co., Ltd.

Bluetooth Microphone

Model No.	:	M8
Trade Name	:	N/A
Prepared for	:	Shenzhen Yimei Electronic Technology Co., Ltd.
Address	:	3F, Building 3, Beiguang Industrial Park, Liangbai Road, Egongling Village, Longgang Dist., Shenzhen, China
Prepared by	:	Shenzhen Alpha Product Testing Co., Ltd.
Address	:	Building B, East Area of Nanchang Second, Industrial Zone, Gushu 2nd Road, Bao'an, Shenzhen, China
Report No.	:	T1870290 01
Date of Receipt	:	March 7, 2017
Date of Test	:	March 7, 2017 - March 16, 2017
Date of Report	:	March 16, 2017
Version Number	:	REV0

Contents

DECLARATION

Applicant	:	Shenzhen Yimei Electronic Technology Co., Ltd.
Manufacturer	:	Shenzhen Yimei Electronic Technology Co., Ltd.
Product	:	Bluetooth Microphone
(A) Model No.	:	M8
(B) Trade Name	:	N/A
(C) Power supply	:	DC 3.7V From battery, DC 5V From USB Port

Measurement Standard Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247: 2016,
ANSI C63.4:2014 ;ANSI C63.10:2013

The device described above is tested by Shenzhen Alpha Product Testing Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits both conducted and radiated emissions. The test results are contained in this test report and Shenzhen Alpha Product Testing Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After the test, our opinion is that EUT compliance with the requirement of the above standards.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen Alpha Product Testing Co., Ltd.

Tested by (name + signature).....…..:	Reak Yang Test Engineer	Reak Yang ……
Approved by (name + signature)…....:	Simple Guan Project Manager	……
Date of issue…… ……..:		March 16, 2017

1. General Information

1.1. Description of Device (EUT)

EUT	:	Bluetooth Microphone
Model No.	:	M8
Trade mark	:	N/A
Power supply	:	DC 3.7V From battery, DC 5V From USB Port
Radio Technology	:	Bluetooth 3.0 + EDR
Operation frequency	:	2402-2480MHz
Modulation	:	GFSK, π /4 DQPSK, 8- DPSK
Antenna Type	:	Integral Antenna, Max antenna gain 0dBi.
Software version		N/A
Hardware version		N/A
Applicant	:	Shenzhen Yimei Electronic Technology Co., Ltd.
Address	:	3F, Building 3, Beiguang Industrial Park, Liangbai Road, Egongling Village, Longgang Dist., Shenzhen, China
Manufacturer	:	Shenzhen Yimei Electronic Technology Co., Ltd.
Address	:	3F, Building 3, Beiguang Industrial Park, Liangbai Road, Egongling Village, Longgang Dist., Shenzhen, China

1.2. Accessories of device (EUT)

Accessories : USB charging cable

Type : N/A

1.3. Test Lab information

Shenzhen Alpha Product Testing Co., Ltd.

Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China

FCC Registered No.: 203110

2. Summary of test

2.1. Summary of test result

Description of Test Item	Standard	Results
Maximum Peak Output Power	FCC Part 15: 15.247(b)(1) ANSI C63.4 :2014	PASS
Bandwidth	FCC Part 15: 15.215 ANSI C63.4 :2014	PASS
Carrier Frequency Separation	FCC Part 15: 15.247(a)(1) ANSI C63.4 :2014	PASS
Number Of Hopping Channel	FCC Part 15: 15.247(a)(1)(iii) ANSI C63.4 :2014	PASS
Dwell Time	FCC Part 15: 15.247(a)(1)(iii) ANSI C63.4 :2014	PASS
Radiated Emission	FCC Part 15: 15.209 FCC Part 15: 15.247(d) ANSI C63.4 :2014	PASS
Band Edge Compliance	FCC Part 15: 15.247(d) ANSI C63.4 :2014	PASS
Power Line Conducted Emissions	FCC Part 15: 15.207 ANSI C63.4 :2014	PASS
Antenna requirement	FCC Part 15: 15.203	PASS
Note: Test with the test procedure Blue tool.		

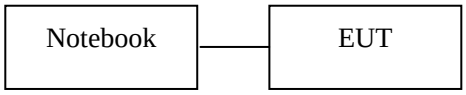
2.2. Assistant equipment used for test

Description	:	Notebook PC
Manufacturer	:	ACER
Model No.	:	ZQT
NOTE: FCC DOC approved.		

2.3. Block Diagram

1, For radiated emissions test: EUT was placed on a turn table, which is 0.8 meter high above ground for blew 1GHz, 1.5 meter high above ground for above 1GHz. EUT was be set into BT test mode by software before test.

2, For Power Line Conducted Emissions Test



2.4. Test mode

The test software 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 :CH1	2402
	Middle: CH40	2441
	High: CH79	2480

Tested mode, channel, and data rate information		
Mode	Channel	Frequency (MHz)
π /4 DQPSK	Low :CH1	2402
	Middle: CH40	2441
	High: CH79	2480

Tested mode, channel, and data rate information		
Mode	Channel	Frequency (MHz)
8- DPSK	Low :CH1	2402
	Middle: CH40	2441
	High: CH79	2480

2.5. Test Conditions

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

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

Item	MU	Remark
Uncertainty for Power point Conducted Emissions Test	2.71dB	
Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)	2.13 dB	Polarize: V
	2.57dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	3.90dB	Polarize: V
	3.92dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	4.28dB	Polarize: H
	4.26dB	Polarize: V
Uncertainty for radio frequency	1×10-9	
Uncertainty for conducted RF Power	0.16dB	
Uncertainty for temperature	0.2℃	
Uncertainty for humidity	1%	
Uncertainty for DC and low frequency voltages	0.06%	

2.7. Test Equipment

Equipment	Manufacture	Model No.	Serial No.	Due cal.	Cal Interval
3m Semi-Anechoic	CHENYU	N/A	N/A	2020.07.20	4Year
Spectrum analyzer	Agilent	E4407B	MY46185649	2017.09.28	1Year
Receiver	R&S	ESPI	101873	2017.09.28	1Year
Receiver	R&S	ESCI	101165	2017.09.28	1Year
Bilog Antenna	SCHWARZBECK	VULB 9168	VULB9168-438	2018.09.29	2Year
Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D(1201)	2018.09.29	2Year
L.I.S.N.#1	Schwarzbeck	NSLK8126	8126466	2017.09.28	1 Year
L.I.S.N.#2	ROHDE&SCHWARZ	ENV216	101043	2017.09.28	1 Year
Cable	Resenberger	N/A	No.1	2017.09.28	1Year
Cable	SCHWARZBECK	N/A	No.2	2017.09.28	1Year
Cable	SCHWARZBECK	N/A	No.3	2017.09.28	1Year
Pre-amplifier	HP	HP8347A	2834A00455	2017.09.28	1Year
Pre-amplifier	Agilent	8449B	3008A02664	2017.09.28	1Year
vector Signal Generator	Agilent	N5182A	MY49060042	2017.09.28	1 Year
vector Signal Generator	Agilent	E4438C	US44271917	2017.09.28	1 Year
X-series USB Peak and Average Power Sensor	Agilent	U2021XA	MY54080020	2017.09.28	1 Year
X-series USB Peak and Average Power Sensor	Agilent	U2021XA	MY54110001	2017.09.28	1 Year
Signal Analyzer	Agilent	N9020A	MY48030494	2017.09.28	1 Year

3. Maximum Peak Output power

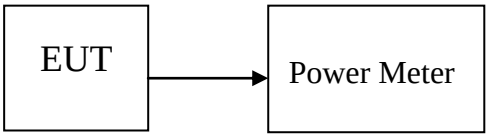
3.1. Limit

Please refer section15.247.
For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts, the e.i.r.p shall not exceed 4W

3.2. Test Procedure

The transmitter output is connected to the RF Power Meter. The RF Power Meter is set to the peak power detection.

3.3. Test Setup



3.4. Test Result

EUT: Bluetooth Microphone M/N: M8					
Test date: 2017-3-11		Test site: RF site Tested by: Reak			
Mode	Freq (MHz)	PK Output Power (dBm)	PK Output Power (mW)	Limit (dBm)	Margin (dB)
GFSK	2402	1.56	1.432	21	19.440
	2441	1.17	1.309	21	19.830
	2480	0.71	1.178	21	20.290
π /4 DQPSK,	2402	0.34	1.081	21	20.660
	2441	-0.23	0.948	21	21.230
	2480	-0.71	0.849	21	21.710
8- DPSK	2402	0.22	1.052	21	20.780
	2441	-0.35	0.923	21	21.350
	2480	-0.82	0.828	21	21.820
Conclusion: PASS					

4. Bandwidth

4.1. Limit

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

4.2. Test Procedure

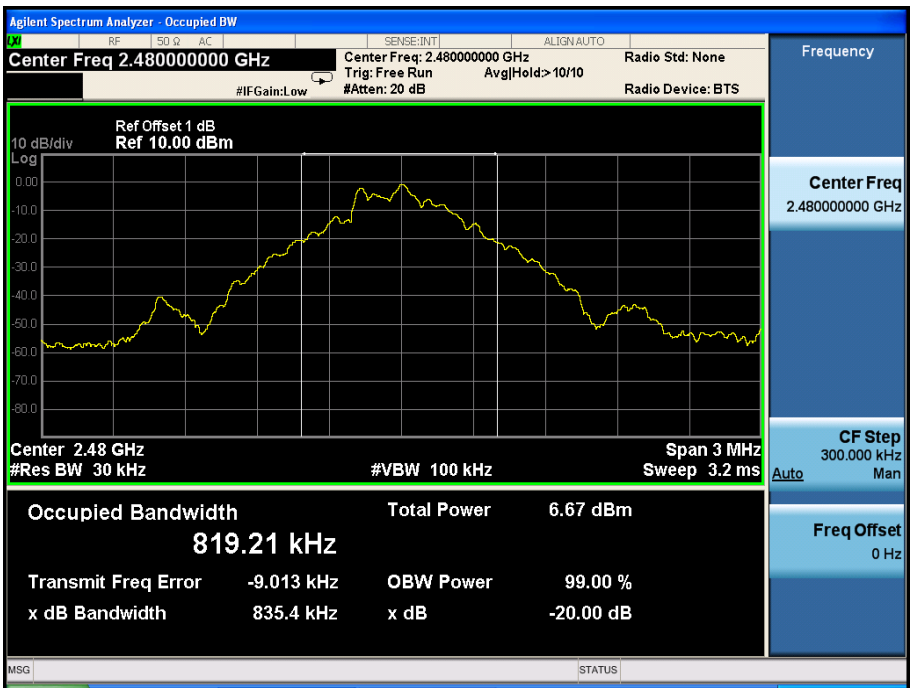
The transmitter output was coupled to a spectrum analyzer via a antenna. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 30kHz RBW and 100kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

4.3. Test Result

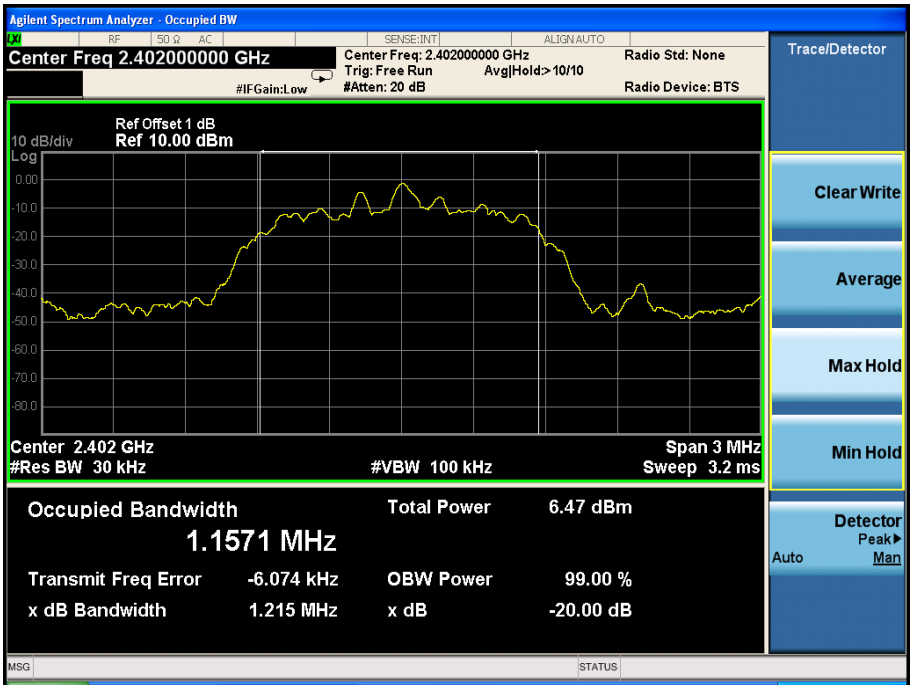
EUT: Bluetooth Microphone M/N: M8				
Test date: 2017-3-11	Test site: RF site	Tested by: Reak		
Mode	Freq (MHz)	20dB Bandwidth (KHz)	Limit (kHz)	Conclusion
GFSK	2402	850.4	/	PASS
	2441	835.3	/	PASS
	2480	835.4	/	PASS
π /4 DQPSK	2402	1215	/	PASS
	2441	1219	/	PASS
	2480	1212	/	PASS
8- DPSK	2402	1215	/	PASS
	2441	1219	/	PASS
	2480	1216	/	PASS

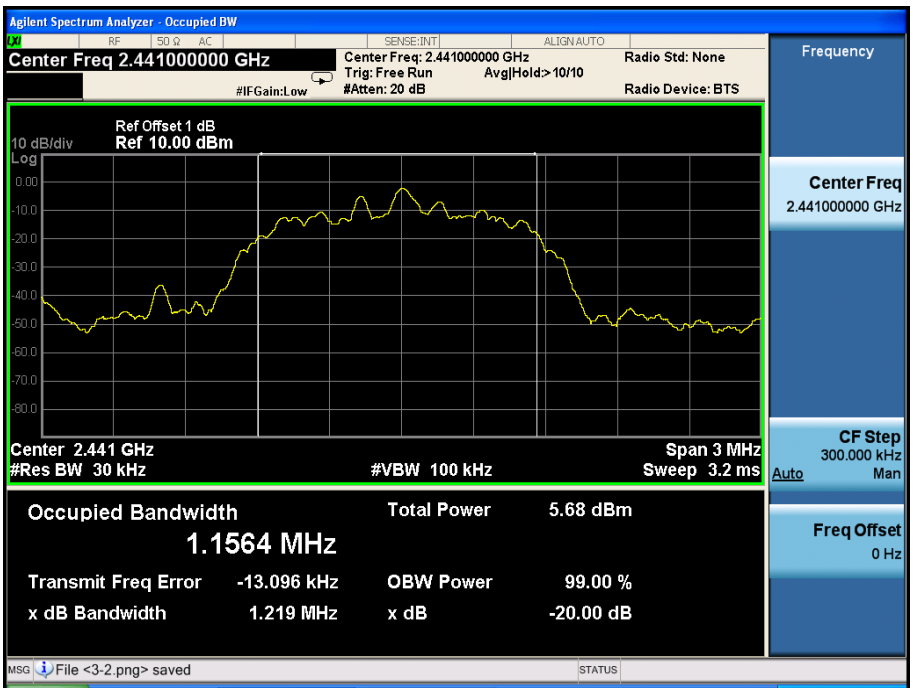
Orginal Test data For 20dB bandwidth

GFSK:


Agilent Spectrum Analyzer - Occupied BW
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 20 dB
Radio Std: None
Radio Device: BTS
#IFGain:Low
Ref Offset 1 dB
10 dB/div
Ref 10.00 dBm
Log
Center 2.48 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 3 MHz
Sweep 3.2 ms
Occupied Bandwidth
819.21 kHz
Total Power 6.67 dBm
Transmit Freq Error -9.013 kHz
OBW Power 99.00 %
x dB Bandwidth 835.4 kHz
x dB -20.00 dB
Frequency
Center Freq
2.480000000 GHz
CF Step
300.000 kHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

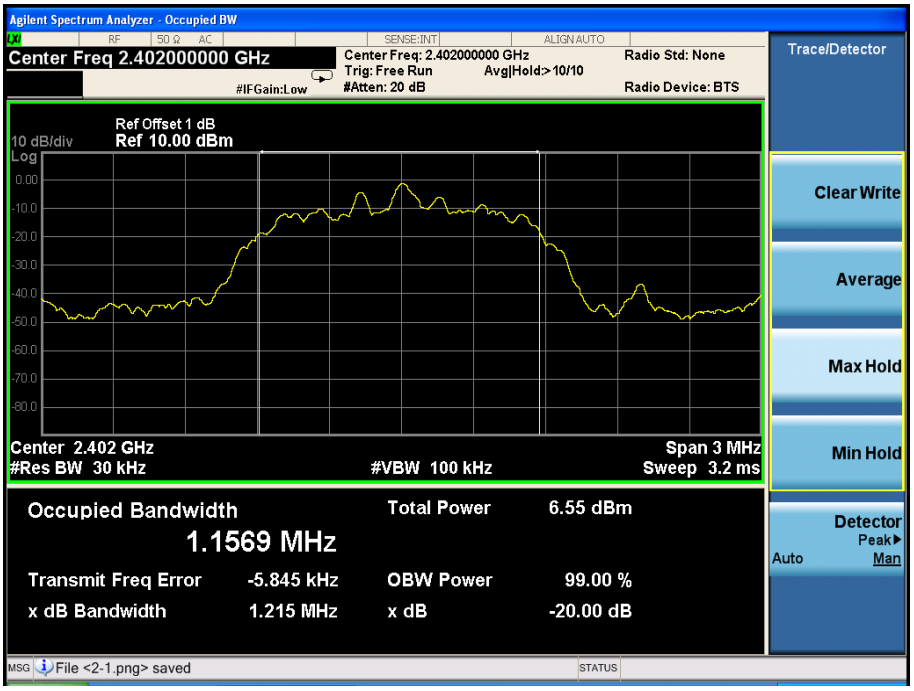
π /4 DQPSK:

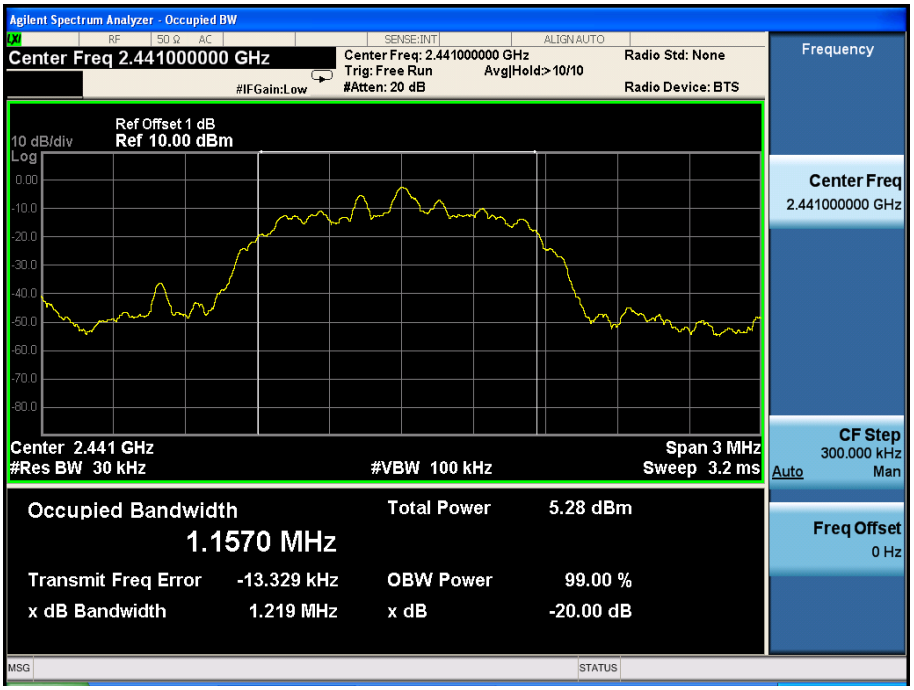

Agilent Spectrum Analyzer - Occupied BW
Center Freq 2.402000000 GHz
Center Freq: 2.402000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 20 dB
Radio Std: None
Radio Device: BTS
#IFGain:Low
Ref Offset 1 dB
10 dB/div
Ref 10.00 dBm
Log
Center 2.402 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 3 MHz
Sweep 3.2 ms
Occupied Bandwidth
1.1571 MHz
Total Power 6.47 dBm
Transmit Freq Error -6.074 kHz
OBW Power 99.00 %
x dB Bandwidth 1.215 MHz
x dB -20.00 dB
Trace/Detector
Clear Write
Average
Max Hold
Min Hold
Detector
Peak
Auto
Man
MSG
STATUS

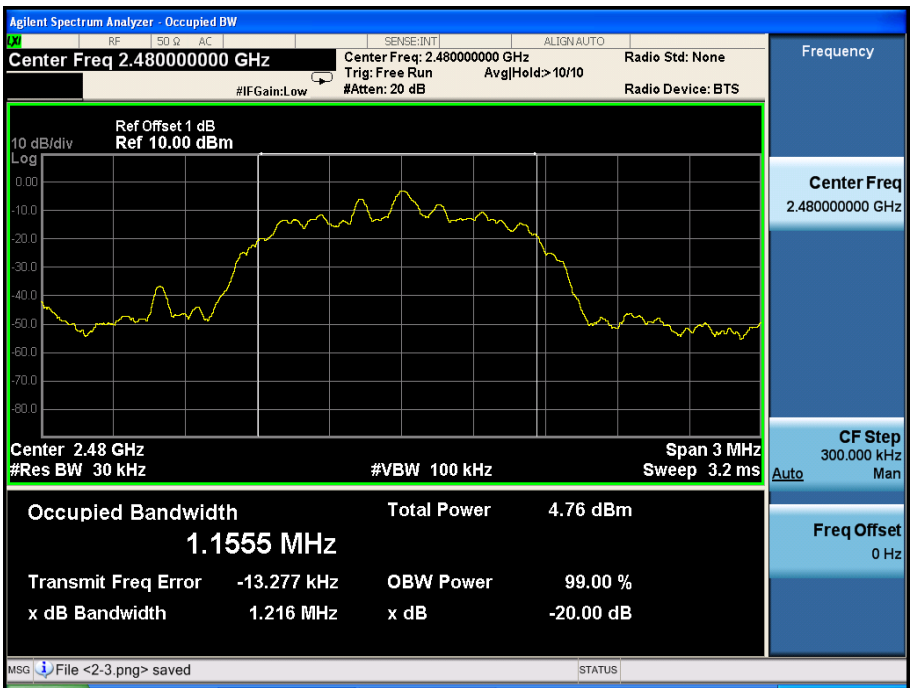

Agilent Spectrum Analyzer - Occupied BW
Center Freq 2.441000000 GHz
Center Freq: 2.441000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 20 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
Ref Offset 1 dB
10 dB/div
Ref 10.00 dBm
Log
Center 2.441 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 3 MHz
Sweep 3.2 ms
Occupied Bandwidth
1.1564 MHz
Total Power 5.68 dBm
Transmit Freq Error -13.096 kHz
OBW Power 99.00 %
x dB Bandwidth 1.219 MHz
x dB -20.00 dB
MSG
File <3-2.png> saved
STATUS
Frequency
Center Freq
2.441000000 GHz
CF Step
300.000 kHz
Auto
Man
Freq Offset
0 Hz


Agilent Spectrum Analyzer - Occupied BW
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 20 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
Ref Offset 1 dB
10 dB/div
Ref 10.00 dBm
Log
Center 2.48 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 3 MHz
Sweep 3.2 ms
Occupied Bandwidth
1.1536 MHz
Total Power 4.45 dBm
Transmit Freq Error -13.535 kHz
OBW Power 99.00 %
x dB Bandwidth 1.212 MHz
x dB -20.00 dB
MSG
STATUS
Frequency
Center Freq
2.480000000 GHz
CF Step
300.000 kHz
Auto
Man
Freq Offset
0 Hz

8- DPSK:


Agilent Spectrum Analyzer - Occupied BW
Center Freq 2.402000000 GHz
Center Freq: 2.402000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 20 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
Trace/Detector
Ref Offset 1 dB
10 dB/div
Ref 10.00 dBm
Log
Clear Write
Average
Max Hold
Min Hold
Center 2.402 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 3 MHz
Sweep 3.2 ms
Occupied Bandwidth
1.1569 MHz
Total Power
6.55 dBm
Transmit Freq Error
-5.845 kHz
OBW Power
99.00 %
x dB Bandwidth
1.215 MHz
x dB
-20.00 dB
Detector
Peak
Auto
Man
File <2-1.png> saved
STATUS


Agilent Spectrum Analyzer - Occupied BW
Center Freq 2.441000000 GHz
Center Freq: 2.441000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 20 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
Frequency
Ref Offset 1 dB
10 dB/div
Ref 10.00 dBm
Log
Center Freq
2.441000000 GHz
Center 2.441 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 3 MHz
Sweep 3.2 ms
CF Step
300.000 kHz
Auto
Man
Occupied Bandwidth
1.1570 MHz
Total Power
5.28 dBm
Transmit Freq Error
-13.329 kHz
OBW Power
99.00 %
x dB Bandwidth
1.219 MHz
x dB
-20.00 dB
Freq Offset
0 Hz
STATUS


Agilent Spectrum Analyzer - Occupied BW
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
Center Freq 2.480000000 GHz
#IFGain:Low
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 20 dB
Radio Std: None
Radio Device: BTS
Frequency
Ref Offset 1 dB
10 dB/div
Ref 10.00 dBm
Log
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Center 2.48 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 3 MHz
Sweep 3.2 ms
Occupied Bandwidth
1.1555 MHz
Total Power 4.76 dBm
Transmit Freq Error -13.277 kHz
OBW Power 99.00 %
x dB Bandwidth 1.216 MHz
x dB -20.00 dB
Center Freq
2.480000000 GHz
CF Step
300.000 kHz
Auto
Man
Freq Offset
0 Hz
MSG
File <2-3.png> saved
STATUS

5. Carrier Frequency Separation

5.1. Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW

5.2. Test Procedure

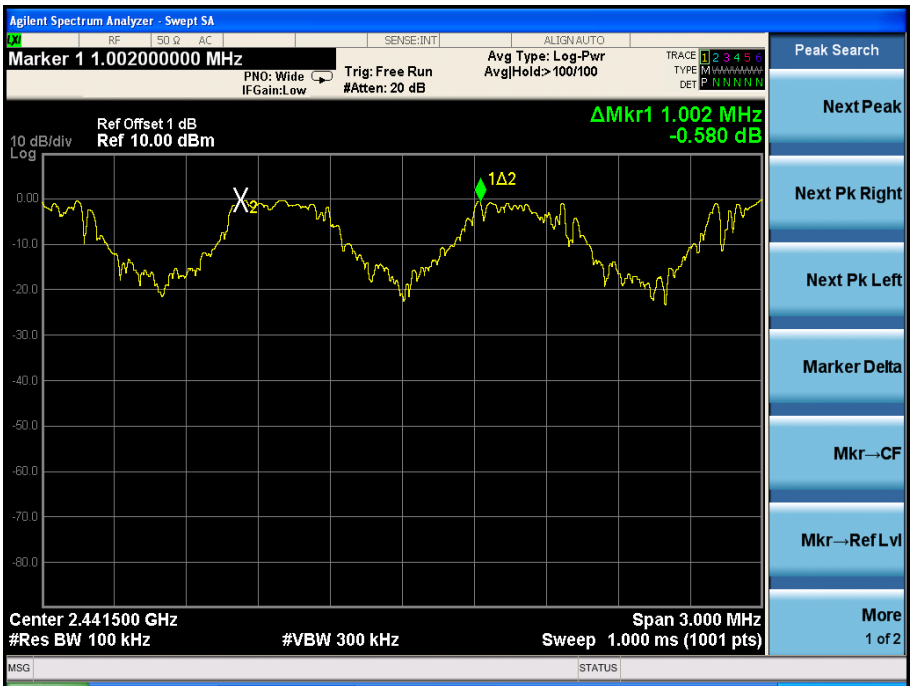
The transmitter output was coupled to a spectrum analyzer via a antenna. The carrier frequency was measured by spectrum analyzer with 30kHz RBW and 100kHz VBW.

5.3. Test Result

EUT: Bluetooth Microphone M/N: M8				
Test date: 2017-3-11		Test site: RF site	Tested by: Reak	
Mode/Channel	Channel separation (MHz)	20dB Bandwidth (KHz)	Limit (KHz) 2/3 20dB bandwidth	Conclusion
GFSK	1.002	850.4	566.933	PASS
π /4 DQPSK	1.002	1219	812.667	PASS
8- DPSK	1.005	1219	812.667	PASS

Orginal test data for channel separation

GFSK



π /4 DQPSK

8- DPSK:


Agilent Spectrum Analyzer - Swept SA
Marker 1 Δ 1.005000000 MHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ref Offset 1 dB
10 dB/div
Log
Ref 10.00 dBm
ΔMkr1 1.005 MHz
0.500 dB
1Δ2
Center 2.441500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 3.000 MHz
Sweep 1.000 ms (1001 pts)
File <2.png> saved
Marker
Select Marker
Normal
Delta
Fixed
Off
Properties
More
1 of 2

6. Number Of Hopping Channel

6.1. Limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels

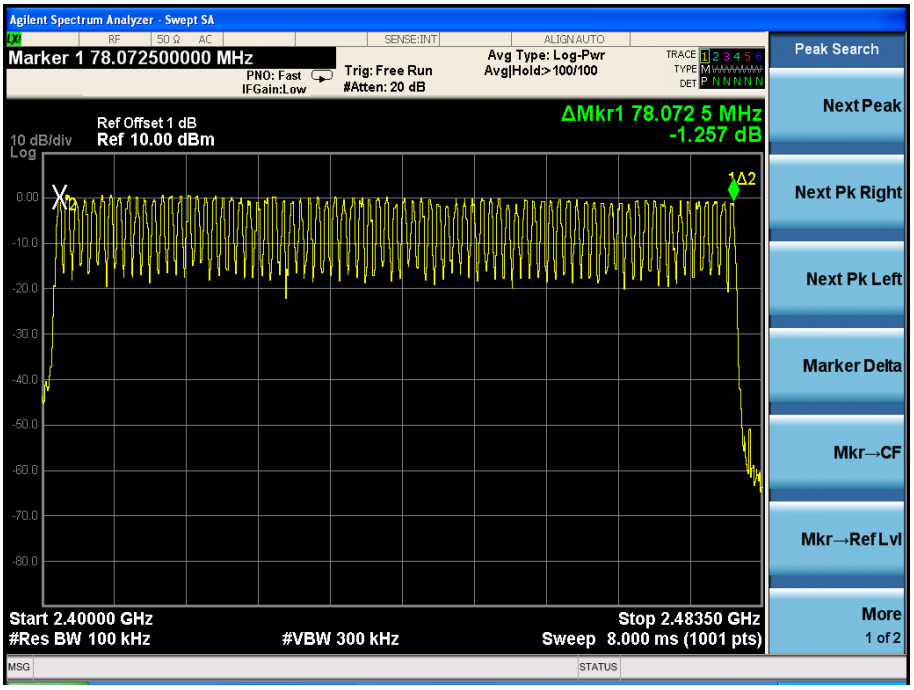
6.2. Test Procedure

The transmitter output was coupled to a spectrum analyzer via a antenna. The number of hopping channel was measured by spectrum analyzer with 300kHz RBW and 1MHz VBW.

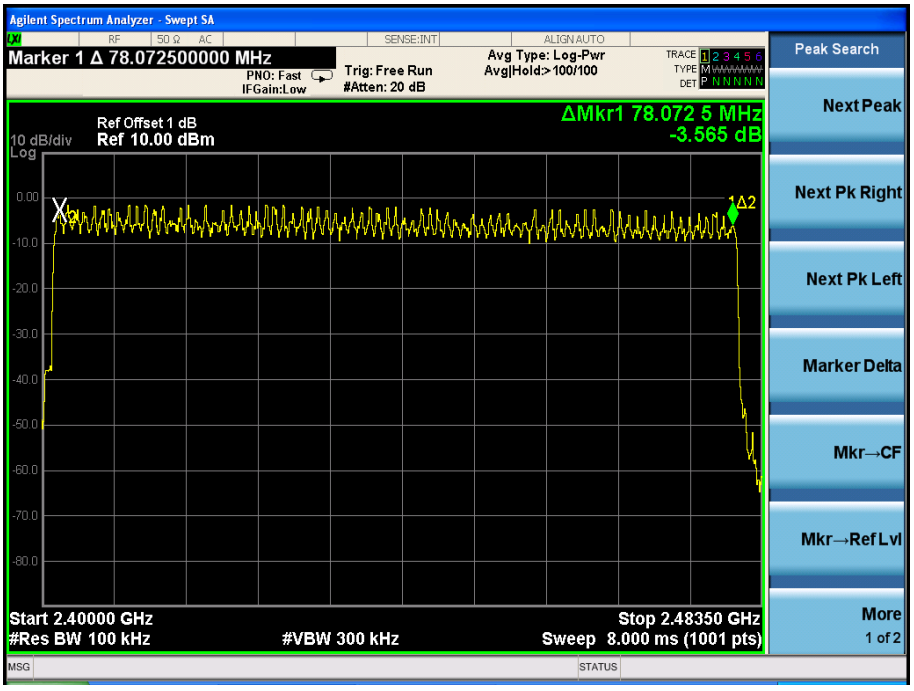
6.3. Test Result

EUT: Bluetooth Microphone M/N: M8			
Test date: 2017-3-11	Test site: RF site	Tested by: Reak	
Mode	Number of hopping channel	Limit	Conclusion
GFSK	79	>15	PASS
π /4 DQPSK	79	>15	PASS
8- DPSK	79	>15	PASS

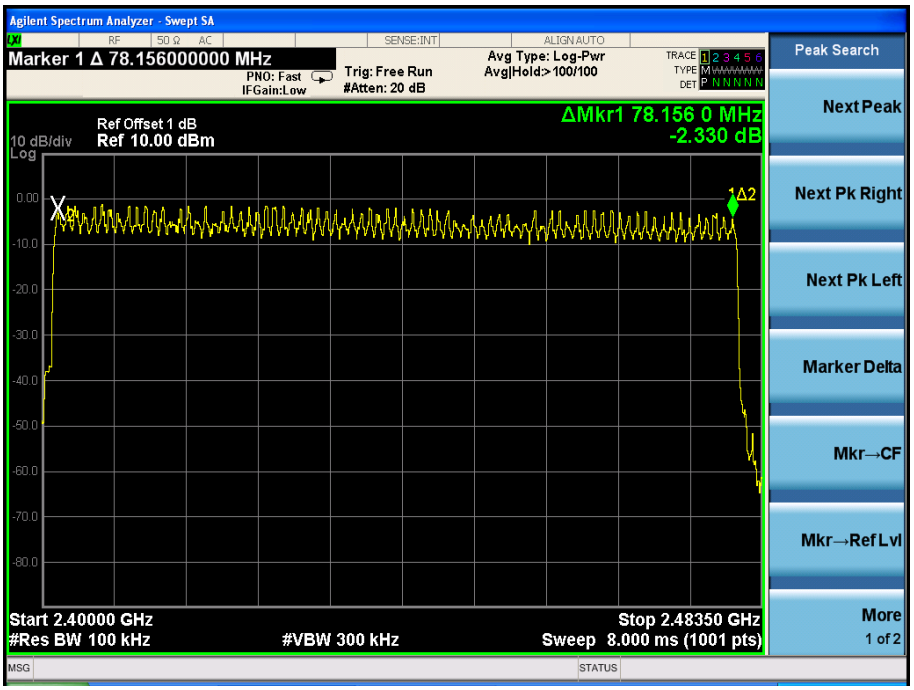
Original test data for hopping channel number
GFSK



π /4 DQPSK



8- DPSK:


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
Marker 1 Δ 78.156000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Ref Offset 1 dB
10 dB/div
Log
Ref 10.00 dBm
ΔMkr1 78.156 0 MHz
-2.330 dB
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
1Δ2
Start 2.40000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.48350 GHz
Sweep 8.000 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

7. Dwell Time

7.1. Test limit

Please refer section15.247

According to §15.247(a)(1)(iii), Frequency hopping systems operating in the 2400MHz-2483.5 MHz. The average time of occupancy on any frequency shall not greater than 0.4 s within period of 0.4 sec- onds multiplied by the number of hopping channel employed.

7.2. Test Procedure

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

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

7.2.3. Set center frequency of spectrum analyzer = operating frequency.

7.2.4. Set the spectrum analyzer as RBW, VBW=1MHz, Span = 0Hz, Sweep = auto.

7.2.5. Repeat above procedures until all frequency measured were complete.

7.3. Test Results

PASS.

Detailed information please see the following page.

EUT: Bluetooth Microphone M/N: M8						
Test date: 2017-3-11		Test site: RF site		Tested by: Reak		
Mode	Data Packet	Frequency (MHz)	Pulse Duration (ms)	Dwell Time (s)	Limit (s)	Conclusion
GFSK	DH1	2462	0.388	0.248	<0.4	PASS
	DH3	2462	1.66	0.354	<0.4	PASS
	DH5	2462	2.888	0.370	<0.4	PASS
π /4 DQPSK	DH1	2441	0.408	0.261	<0.4	PASS
	DH3	2441	1.624	0.346	<0.4	PASS
	DH5	2441	2.896	0.371	<0.4	PASS
8- DPSK	DH1	2441	0.404	0.259	<0.4	PASS
	DH3	2441	1.624	0.346	<0.4	PASS
	DH5	2441	2.896	0.371	<0.4	PASS

Note: 1 A period time = 0.4 (s) * 79 = 31.6(s)

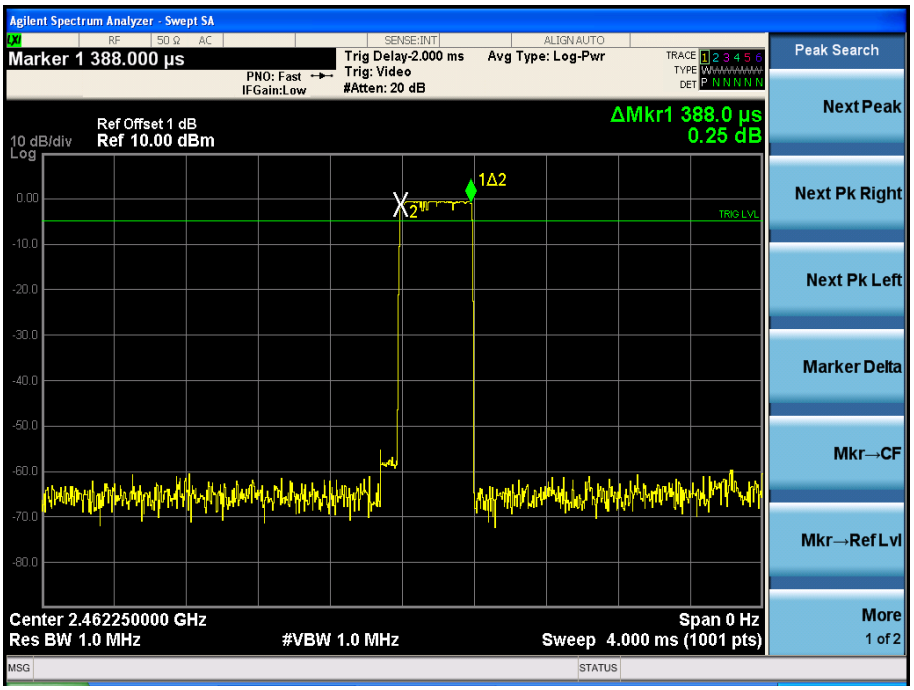
2 DH1 time slot = Pulse Duration * (1600/(1*79)) * A period time/1000

DH3 time slot = Pulse Duration * (1600/(3*79)) * A period time/1000

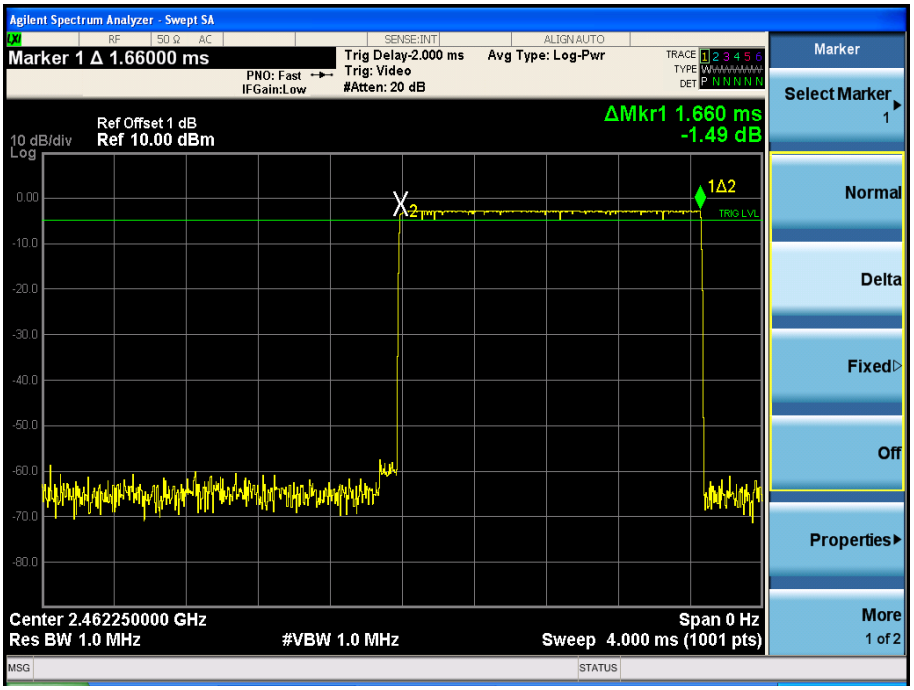
DH5 time slot = Pulse Duration * (1600/(5*79)) * A period time/1000

GFSK

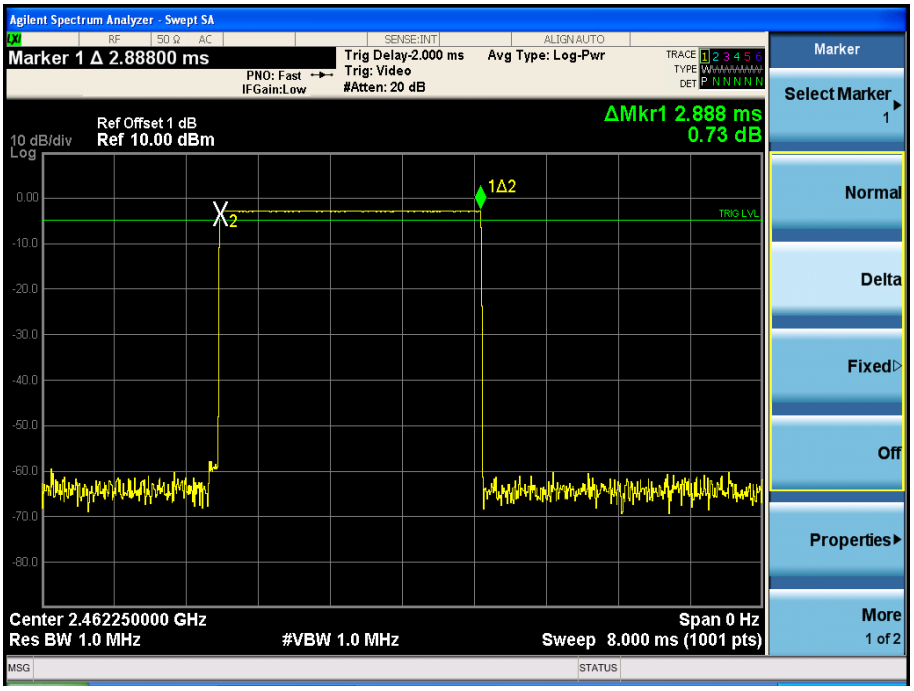
DH1:


Agilent Spectrum Analyzer - Swept SA
Marker 1 388.000 µs
PNO: Fast
IFGain:Low
Trig Delay-2.000 ms
Trig: Video
#Atten: 20 dB
Avg Type: Log-Pwr
Ref Offset 1 dB
10 dB/div
Ref 10.00 dBm
ΔMkr1 388.0 µs
0.25 dB
1Δ2
Center 2.462250000 GHz
Res BW 1.0 MHz
#VBW 1.0 MHz
Span 0 Hz
Sweep 4.000 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

DH3:

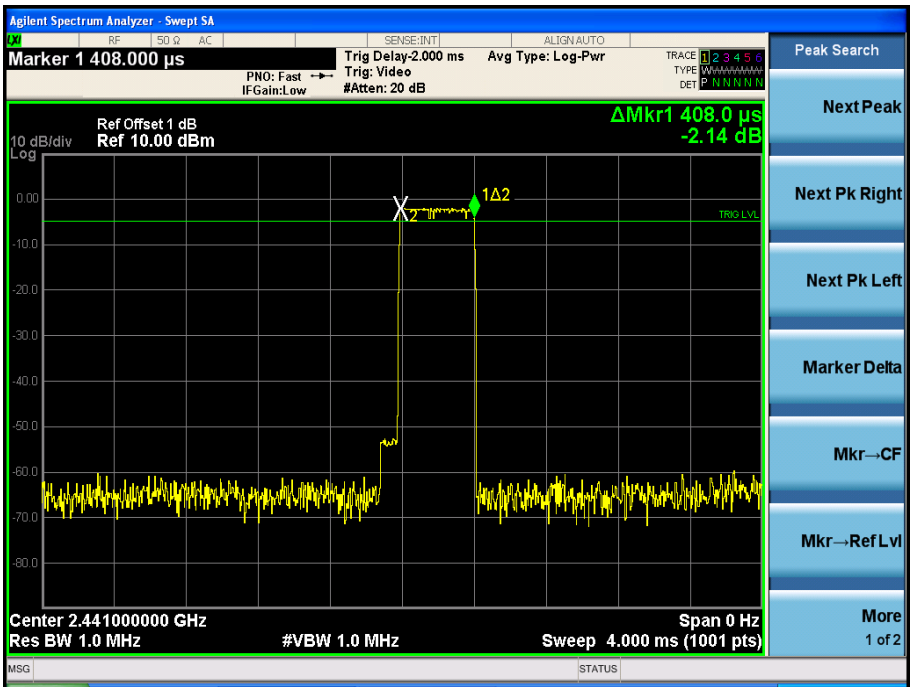

Agilent Spectrum Analyzer - Swept SA
Marker 1 Δ 1.66000 ms
PNO: Fast
IFGain:Low
Trig Delay-2.000 ms
Trig: Video
#Atten: 20 dB
Avg Type: Log-Pwr
Ref Offset 1 dB
10 dB/div
Ref 10.00 dBm
ΔMkr1 1.660 ms
-1.49 dB
1Δ2
Center 2.462250000 GHz
Res BW 1.0 MHz
#VBW 1.0 MHz
Span 0 Hz
Sweep 4.000 ms (1001 pts)
Marker
Select Marker
Normal
Delta
Fixed
Off
Properties
More
1 of 2

DH5

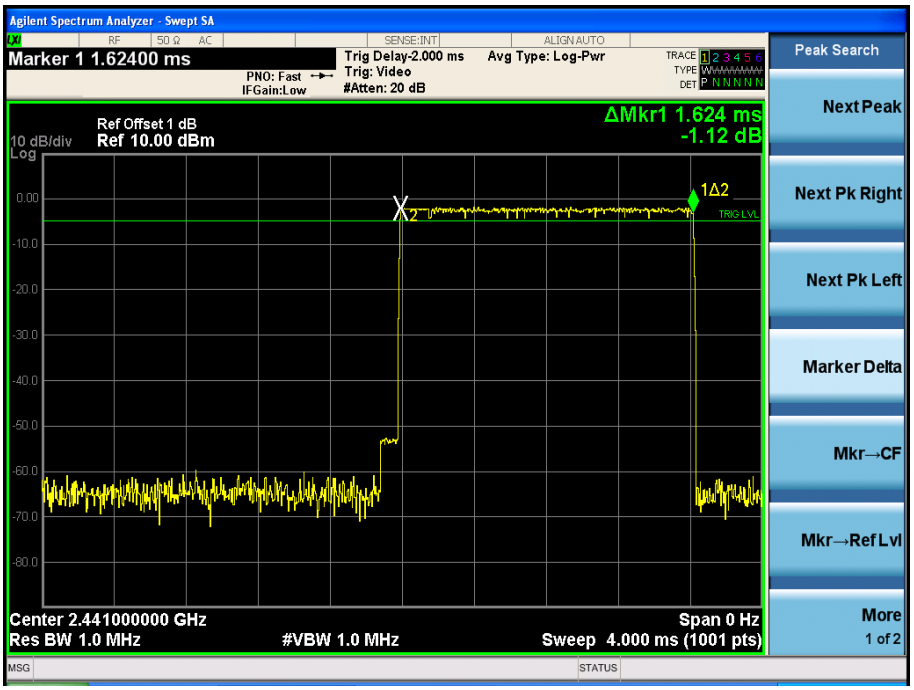


π /4 DQPSK

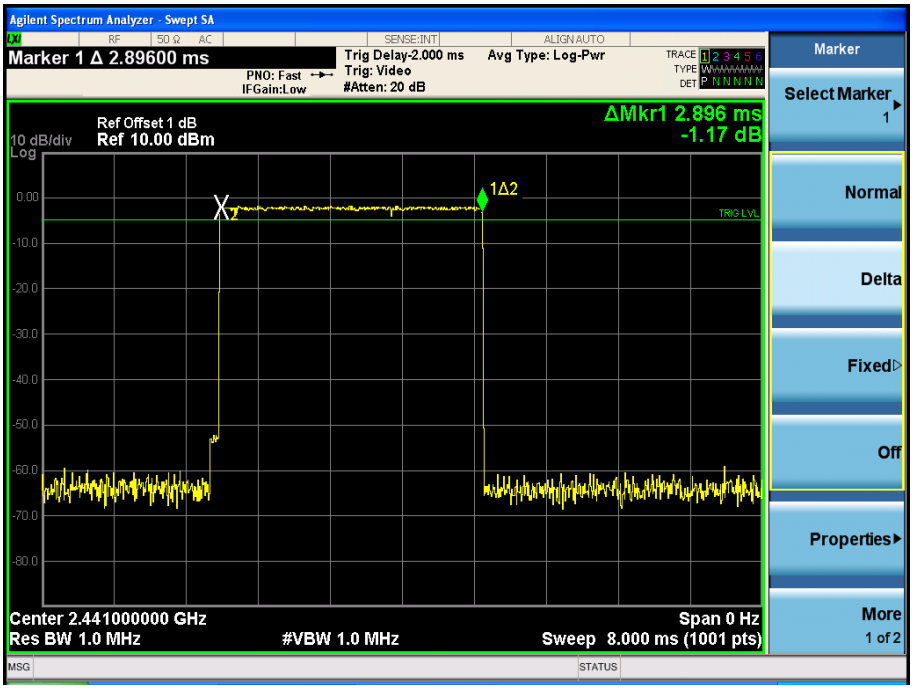
DH1



DH3

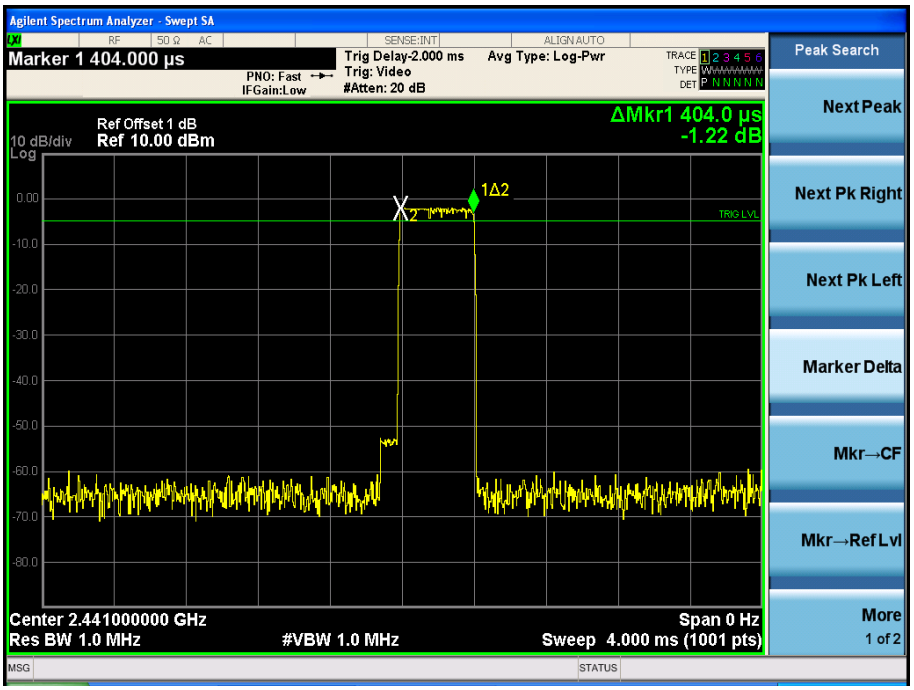

Agilent Spectrum Analyzer - Swept SA
Marker 1 1.62400 ms
PNO: Fast
IFGain:Low
Trig Delay-2.000 ms
Trig: Video
#Atten: 20 dB
Avg Type: Log-Pwr
Ref Offset 1 dB
10 dB/div
Ref 10.00 dBm
ΔMkr1 1.624 ms
-1.12 dB
1Δ2
Center 2.441000000 GHz
Res BW 1.0 MHz
#VBW 1.0 MHz
Span 0 Hz
Sweep 4.000 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

DH5

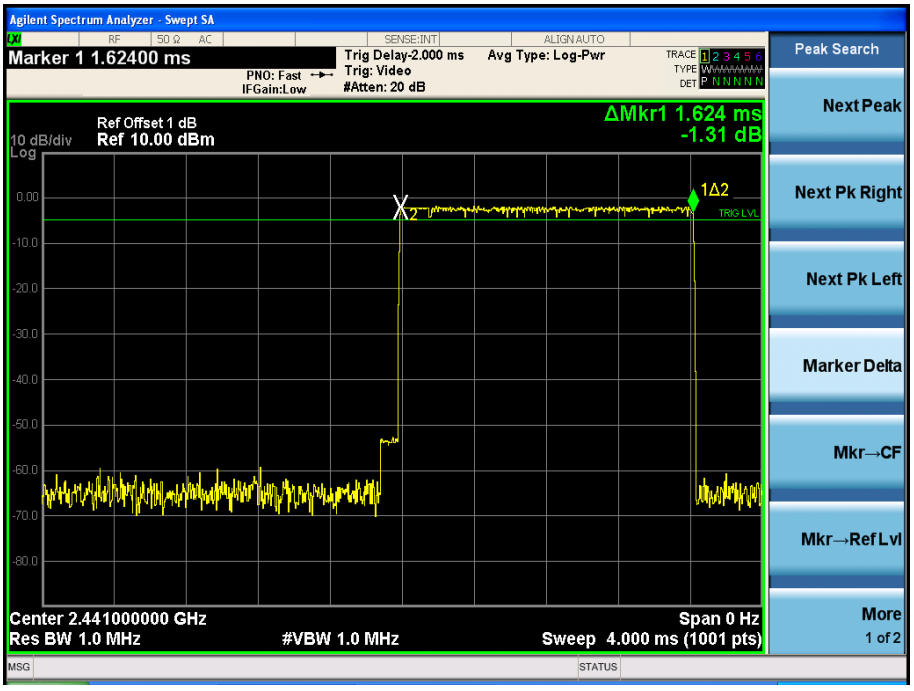

Agilent Spectrum Analyzer - Swept SA
Marker 1 Δ 2.89600 ms
PNO: Fast
IFGain:Low
Trig Delay-2.000 ms
Trig: Video
#Atten: 20 dB
Avg Type: Log-Pwr
Ref Offset 1 dB
10 dB/div
Ref 10.00 dBm
ΔMkr1 2.896 ms
-1.17 dB
1Δ2
Center 2.441000000 GHz
Res BW 1.0 MHz
#VBW 1.0 MHz
Span 0 Hz
Sweep 8.000 ms (1001 pts)
Marker
Select Marker
Normal
Delta
Fixed
Off
Properties
More
1 of 2

8- DPSK:

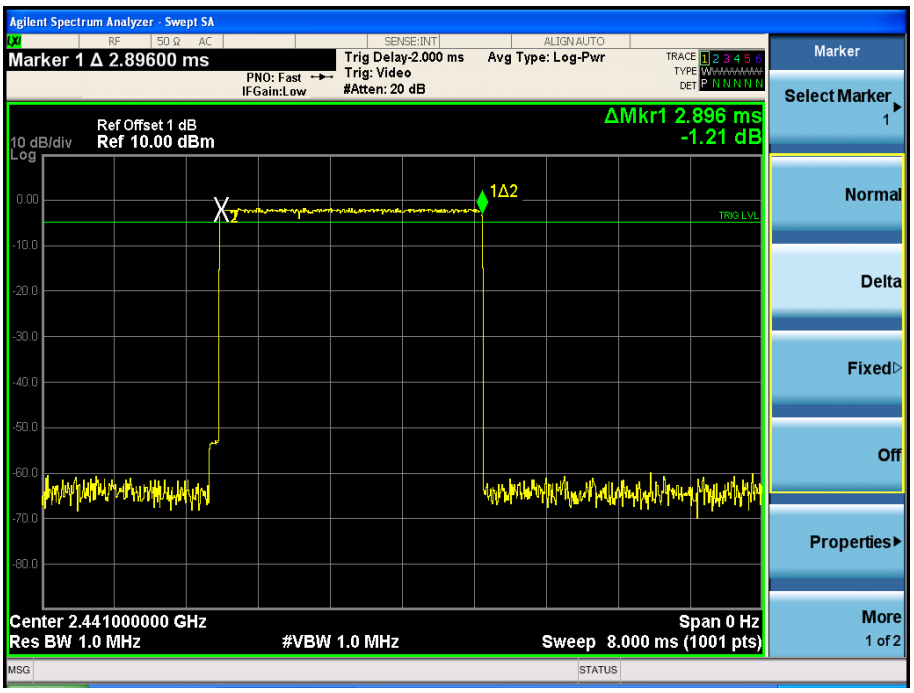
DH1:



DH3:



DH5:


Agilent Spectrum Analyzer - Swept SA
Marker 1 Δ 2.89600 ms
PNO: Fast
IFGain:Low
Trig Delay-2.000 ms
Trig: Video
#Atten: 20 dB
Avg Type: Log-Pwr
Ref Offset 1 dB
10 dB/div Ref 10.00 dBm
Log
ΔMkr1 2.896 ms
-1.21 dB
1Δ2
TRIG LVL
Center 2.441000000 GHz
Res BW 1.0 MHz
#VBW 1.0 MHz
Span 0 Hz
Sweep 8.000 ms (1001 pts)
Marker
Select Marker
1
Normal
Delta
Fixed
Off
Properties
More
1 of 2
MSG
STATUS

8. Radiated emissions

8.1. Limit

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

15.205 Restricted frequency band

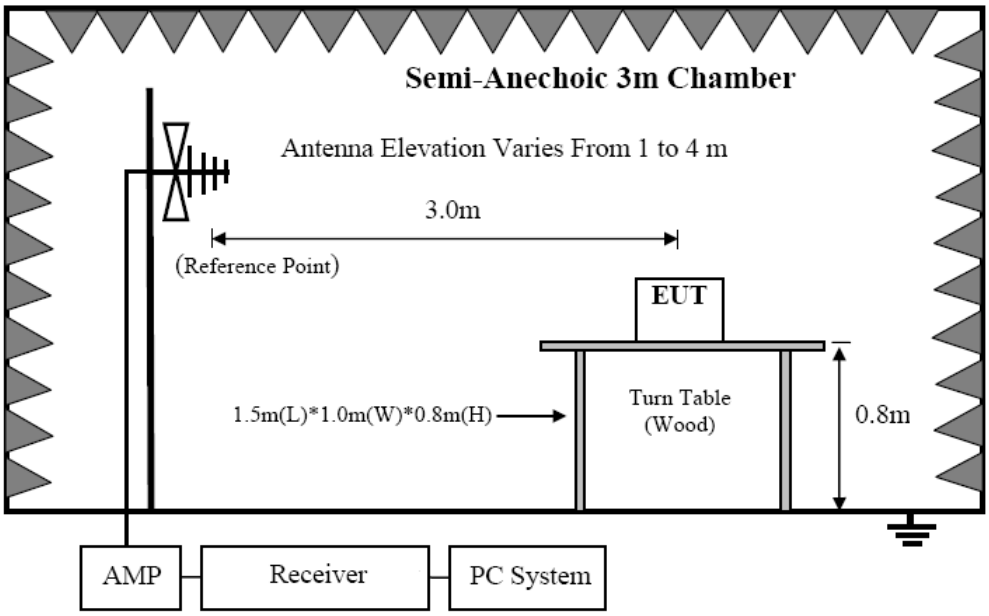
MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])

15.209 Limit

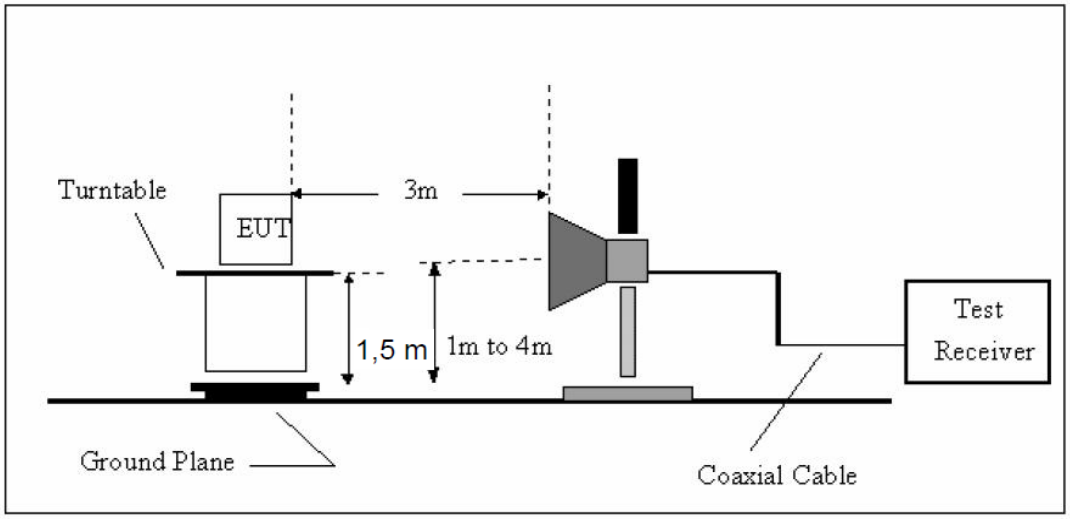
FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
0.009-0.490	300	2400/F(KHz)	/
0.490-1.705	30	24000/F(KHz)	/
1.705-30	30	30	29.5
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

8.2. Block Diagram of Test setup

8.2.1 In 3m Anechoic Chamber Test Setup Diagram for below 1GHz



8.2.2 In 3m Anechoic Chamber Test Setup Diagram for frequency above 1GHz



Note: For harmonic emissions test a appropriate high pass filter was inserted in the input port of AMP.

8.3. Test Procedure

(1) EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber.
(2) Setup EUT and simulator as shown in section 1.4 and 6.1
(3) Test antenna was located 3m from the EUT on an adjustable mast. Below pre-scan procedure was first performed in order to find prominent radiated emissions.
(a) Change work frequency or channel of device if practicable.
(b) Change modulation type of device if practicable.
(c) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions
(4) Spectrum frequency from 9KHz to 25GHz (tenth harmonic of fundamental frequency) was investigated
(5) For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4 :2014on Radiated Emission test.
(6) For emissions above 1GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1MHz, VBW is set at 3MHz for Peak measure; RBW is set at 1MHz, VBW is set at 10Hz for Average measure. PK detector is for both.

8.4. Test Result

We have scanned the 10th harmonic from 9KHz to the EUT's highest frequency.. 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

Site LAB
Limit: FCC Class B Radiation
EUT: Bluetooth Microphone
M/N: M8
Mode: TX mode
Note:

Polarization: *Horizontal*
Power: DC 5V
Distance: 3m

Temperature: 26
Humidity: 53 %

Radiated Emission Measurement

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		59.8588	20.30	13.00	33.30	40.00	-6.70	QP			
2		129.9225	15.17	13.23	28.40	43.50	-15.10	peak			
3		183.8440	18.17	11.68	29.85	43.50	-13.65	peak			
4	*	280.0237	29.13	12.97	42.10	46.00	-3.90	QP			
5		408.9459	18.91	15.86	34.77	46.00	-11.23	peak			
6		701.7610	8.35	20.40	28.75	46.00	-17.25	peak			

Note:1. *:Maximum data; x:Over limit; !:over margin.
2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

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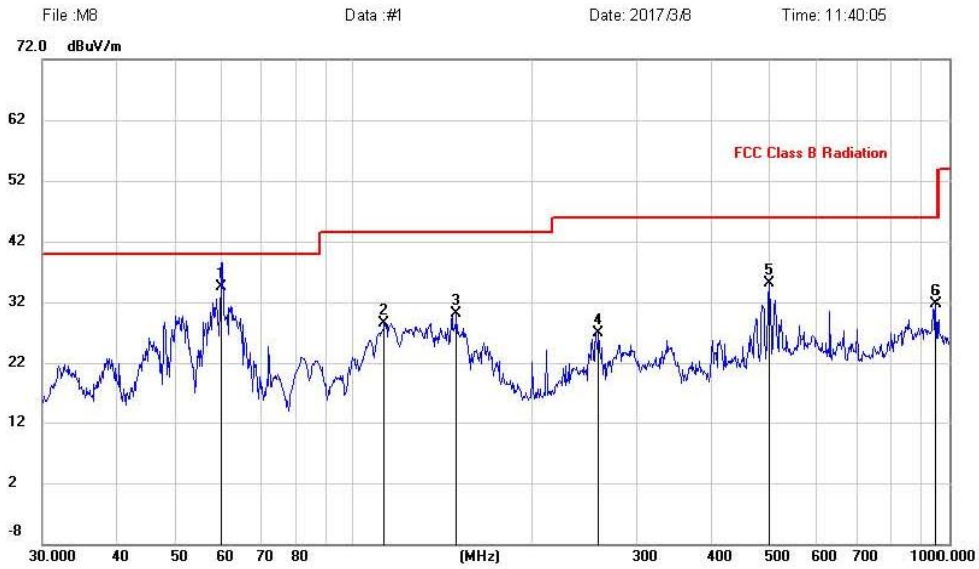
Site LAB
Limit: FCC Class B Radiation
EUT: Bluetooth Microphone
M/N: M8
Mode: TX mode
Note:

Polarization: *Vertical*
Power: DC 5V
Distance: 3m

Temperature: 26
Humidity: 53 %

Radiated Emission Measurement



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	59.8588	21.60	13.00	34.60	40.00	-5.40	QP			
2		112.5243	16.82	11.78	28.60	43.50	-14.90	peak			
3		148.9625	15.59	14.47	30.06	43.50	-13.44	peak			
4		257.4221	14.68	12.27	26.95	46.00	-19.05	peak			
5		499.4246	17.80	17.21	35.01	46.00	-10.99	peak			
6		952.0937	8.18	23.58	31.76	46.00	-14.24	peak			

Note:1. *:Maximum data; x:Over limit; !:over margin.
2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

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Remark: All modes have been tested, and only worst data of GFSK mode, Channel 2402MHz was listed in this report.

1GHz—25GHz Radiated emissison Test result									
EUT: Bluetooth Microphone M/N: M8									
Power: DC 3.7V From battery									
Test date: 2017-3-13 Test site: 3m Chamber Tested by: Reak									
Test mode: GFSK Tx CH1 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	44.17	33.95	10.18	34.26	54.04	74	19.96	PK
2	4804	32.96	33.95	10.18	34.26	42.83	54	11.17	AV
3	7206	/							
4	9608	/							
5	12010	/							
Antenna Polarity: Horizontal									
1	4804	45.66	33.95	10.18	34.26	55.53	74	18.47	PK
2	4804	34.23	33.95	10.18	34.26	44.1	54	9.9	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=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.

1GHz—25GHz Radiated emissison Test result									
EUT: Bluetooth Microphone M/N: M8									
Power: DC 3.7V From battery									
Test date: 2017-3-13 Test site: 3m Chamber Tested by: Reak									
Test mode: GFSK Tx CH40 2441MHz									
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	4882	43.38	33.93	10.2	34.29	53.22	74	20.78	PK
2	4882	33.01	33.93	10.2	34.29	42.85	54	11.15	AV
3	7323	/							
4	9764	/							
5	12205	/							
Antenna Polarity: Horizontal									
1	4882	44.71	33.93	10.2	34.29	54.55	74	19.45	PK
2	4882	34.25	33.93	10.2	34.29	44.09	54	9.91	AV
3	7323	/							
4	9764	/							
5	12205	/							

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=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.

1GHz—25GHz Radiated emissison Test result									
EUT: Bluetooth Microphone M/N: M8									
Power: DC 3.7V From battery									
Test date: 2017-3-13 Test site: 3m Chamber Tested by: Reak									
Test mode: GFSK Tx CH79 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	42.95	33.98	10.22	34.25	52.9	74	21.1	PK
2	4960	32.34	33.98	10.22	34.25	42.29	54	11.71	AV
3	7440	/							
4	9920	/							
5	12400	/							
Antenna Polarity: Horizontal									
1	4960	44.16	33.98	10.22	34.25	54.11	74	19.89	PK
2	4960	33.72	33.98	10.22	34.25	43.67	54	10.33	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=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.

1GHz—25GHz Radiated emissison Test result									
EUT: Bluetooth Microphone M/N: M8									
Power: DC 3.7V From battery									
Test date: 2017-3-13 Test site: 3m Chamber Tested by: Reak									
Test mode: π /4 DQPSK Tx CH1 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	43.78	33.95	10.18	34.26	53.65	74	20.35	PK
2	4804	33.41	33.95	10.18	34.26	43.28	54	10.72	AV
3	7206	/							
4	9608	/							
5	12010	/							
Antenna Polarity: Horizontal									
1	4804	45.32	33.95	10.18	34.26	55.19	74	18.81	PK
2	4804	34.83	33.95	10.18	34.26	44.7	54	9.3	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=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.

1GHz—25GHz Radiated emissison Test result									
EUT: Bluetooth Microphone M/N: M8									
Power: DC 3.7V From battery									
Test date: 2017-3-13 Test site: 3m Chamber Tested by: Reak									
Test mode: π /4 DQPSK Tx CH40 2441MHz									
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	4882	43.45	33.98	10.2	34.25	53.38	74	20.62	PK
2	4882	33.1	33.98	10.2	34.25	43.03	54	10.97	AV
3	7323	/							
4	9764	/							
5	12205	/							
Antenna Polarity: Horizontal									
1	4882	45.46	33.93	10.2	34.29	55.3	74	18.7	PK
2	4882	35.03	33.93	10.2	34.29	44.87	54	9.13	AV
3	7323	/							
4	9764	/							
5	12205	/							
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=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.									

1GHz—25GHz Radiated emissison Test result									
EUT: Bluetooth Microphone M/N: M8									
Power: DC 3.7V From battery									
Test date: 2017-3-13 Test site: 3m Chamber Tested by: Reak									
Test mode: π /4 DQPSK Tx CH79 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	43.33	33.98	10.22	34.25	53.28	74	20.72	PK
2	4960	32.83	33.98	10.22	34.25	42.78	54	11.22	AV
3	7440	/							
4	9920	/							
5	12400	/							
Antenna Polarity: Horizontal									
1	4960	45.72	33.98	10.22	34.25	55.67	74	18.33	PK
2	4960	33.82	33.98	10.22	34.25	43.77	54	10.23	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=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.

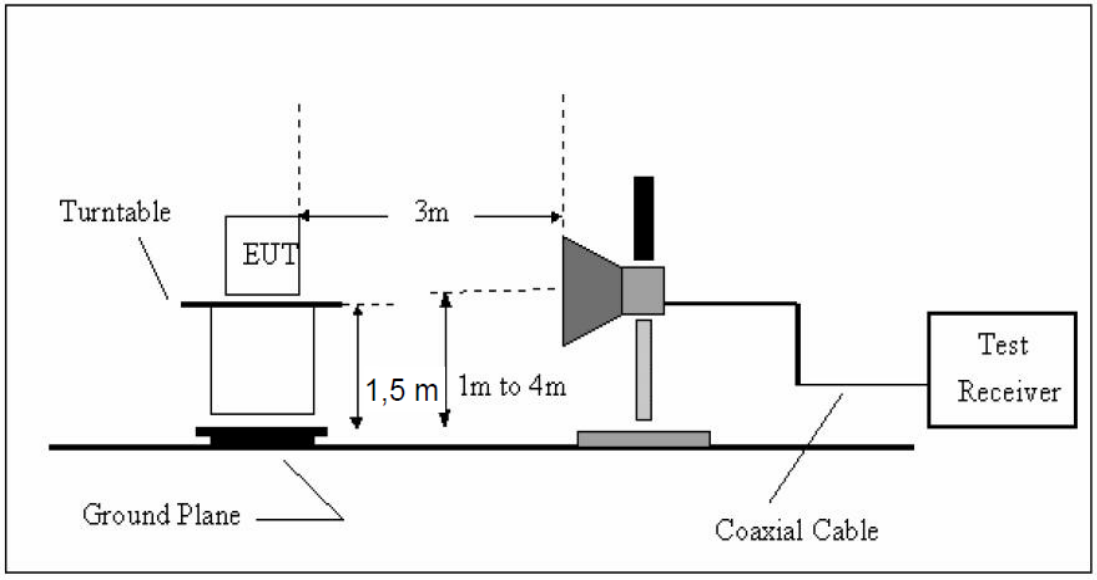
1GHz—25GHz Radiated emissison Test result									
EUT: Bluetooth Microphone M/N: M8									
Power: DC 3.7V From battery									
Test date: 2017-3-13 Test site: 3m Chamber Tested by: Reak									
Test mode: 8- DQPSK Tx CH1 2402MHz									
Antenna polarity: Vertical									
No	Freq (MHz)	Read Level (dBuV/m)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4804	43.92	33.95	10.18	34.26	53.79	74	20.21	PK
2	4804	33.41	33.95	10.18	34.26	43.28	54	10.72	AV
3	7206	/							
4	9608	/							
5	12010	/							
Antenna Polarity: Horizontal									
1	4804	45.31	33.95	10.18	34.26	55.18	74	18.82	PK
2	4804	34.77	33.95	10.18	34.26	44.64	54	9.36	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=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.									

1GHz—25GHz Radiated emission Test result									
EUT: Bluetooth Microphone M/N: M8									
Power: DC 3.7V From battery									
Test date: 2017-3-13 Test site: 3m Chamber Tested by: Reak									
Test mode: 8- DQPSK Tx CH40 2441MHz									
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	4882	43.58	33.93	10.2	34.29	53.42	74	20.58	PK
2	4882	33.02	33.93	10.2	34.29	42.86	54	11.14	AV
3	7323	/							
4	9764	/							
5	12205	/							
Antenna Polarity: Horizontal									
1	4882	44.32	33.93	10.2	34.29	54.16	74	19.84	PK
2	4882	33.68	33.93	10.2	34.29	43.52	54	10.48	AV
3	7323	/							
4	9764	/							
5	12205	/							
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=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.									

1GHz—25GHz Radiated emissison Test result									
EUT: Bluetooth Microphone M/N: M8									
Power: DC 3.7V From battery									
Test date: 2017-3-13 Test site: 3m Chamber Tested by: Reak									
Test mode: 8- DQPSK Tx CH79 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	43.45	33.98	10.22	34.25	53.4	74	20.6	PK
2	4960	33.02	33.98	10.22	34.25	42.97	54	11.03	AV
3	7440	/							
4	9920	/							
5	12400	/							
Antenna Polarity: Horizontal									
1	4960	44.95	33.98	10.22	34.25	54.9	74	19.1	PK
2	4960	34.27	33.98	10.22	34.25	44.22	54	9.78	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=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.									

9. Band Edge Compliance

9.1. Block Diagram of Test Setup



9.2. Limit

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.

9.3. Test Procedure

All restriction band and non- restriction band have been tested ， only worse case is reported.

9.4. Test Result

PASS. (See below detailed test data)

Radiated Method

GFSK (CH Low)

Band Edge Test result								
EUT: Bluetooth Microphone M/N: M8								
Power: DC 3.7V From battery								
Test date: 2017-3-13 Test site: 3m Chamber Tested by: Reak								
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	43.64	27.62	3.92	34.97	40.21	74	33.79	**PK**
Antenna Polarity: Horizontal								
2390	45.82	27.62	3.92	34.97	42.39	74	31.61	**PK**

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.

GFSK (CH High)

Band Edge Test result								
EUT: Bluetooth Microphone M/N: M8								
Power: DC 3.7V From battery								
Test date: 2017-3-13 Test site: 3m Chamber Tested by: Reak								
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	43.62	27.89	4	34.97	40.54	74	33.46	**PK**
Antenna Polarity: Horizontal								
2483.5	46.19	27.89	4	34.97	43.11	74	30.89	**PK**

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.

GFSK (Hopping Low)

Band Edge Test result								
EUT: Bluetooth Microphone M/N: M8								
Power: DC 3.7V From battery								
Test date: 2017-3-13 Test site: 3m Chamber Tested by: Reak								
Test mode: Tx								
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	43.77	27.62	3.92	34.97	40.34	74	33.66	**PK**
Antenna Polarity: Horizontal								
2390	46.82	27.62	3.92	34.97	43.39	74	30.61	**PK**

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.

GFSK (Hopping High)

Band Edge Test result								
EUT: Bluetooth Microphone M/N: M8								
Power: DC 3.7V From battery								
Test date: 2017-3-13 Test site: 3m Chamber Tested by: Reak								
Test mode: Tx								
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	43.37	27.89	4	34.97	40.29	74	33.71	**PK**
Antenna Polarity: Horizontal								
2483.5	45.93	27.89	4	34.97	42.85	74	31.15	**PK**

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.

π /4 DQPSK (CH Low)

Band Edge Test result								
EUT: Bluetooth Microphone M/N: M8								
Power: DC 3.7V From battery								
Test date: 2017-3-13 Test site: 3m Chamber Tested by: Reak								
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	43.31	27.62	3.92	34.97	39.88	74	34.12	**PK**
Antenna Polarity: Horizontal								
2390	47.08	27.62	3.92	34.97	43.65	74	30.35	**PK**

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.

π /4 DQPSK (CH High)

Band Edge Test result								
EUT: Bluetooth Microphone M/N: M8								
Power: DC 3.7V From battery								
Test date: 2017-3-13 Test site: 3m Chamber Tested by: Reak								
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	42.61	27.89	4	34.97	39.53	74	34.47	PK
Antenna Polarity: Horizontal								
2483.5	45.87	27.89	4	34.97	42.79	74	31.21	PK

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.

π /4 DQPSK (Hopping Low)

Band Edge Test result								
EUT: Bluetooth Microphone M/N: M8								
Power: DC 3.7V From battery								
Test date: 2017-3-13 Test site: 3m Chamber Tested by: Reak								
Test mode: Tx								
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	43.35	27.62	3.92	34.97	39.92	74	34.08	**PK**
Antenna Polarity: Horizontal								
2390	47.48	27.62	3.92	34.97	44.05	74	29.95	**PK**

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.

π /4 DQPSK (Hopping High)

Band Edge Test result								
EUT: Bluetooth Microphone M/N: M8								
Power: DC 3.7V From battery								
Test date: 2017-3-13 Test site: 3m Chamber Tested by: Reak								
Test mode: Tx								
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	43.72	27.89	4	34.97	40.64	74	33.36	PK
Antenna Polarity: Horizontal								
2483.5	47.38	27.89	4	34.97	44.3	74	29.7	PK

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.

8- DPSK (CH Low)

Band Edge Test result								
EUT: Bluetooth Microphone M/N: M8								
Power: DC 3.7V From battery								
Test date: 2017-3-13 Test site: 3m Chamber Tested by: Reak								
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	42.82	27.62	3.92	34.97	39.39	74	34.61	**PK**
Antenna Polarity: Horizontal								
2390	46.38	27.62	3.92	34.97	42.95	74	31.05	**PK**

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.

8- DPSK (CH High)

Band Edge Test result								
EUT: Bluetooth Microphone M/N: M8								
Power: DC 3.7V From battery								
Test date: 2017-3-13 Test site: 3m Chamber Tested by: Reak								
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	42.73	27.89	4	34.97	39.65	74	34.35	**PK**
Antenna Polarity: Horizontal								
2483.5	46.39	27.89	4	34.97	43.31	74	30.69	**PK**

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.

8- DPSK (Hopping Low)

Band Edge Test result								
EUT: Bluetooth Microphone M/N: M8								
Power: DC 3.7V From battery								
Test date: 2017-3-13 Test site: 3m Chamber Tested by: Reak								
Test mode: Tx								
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	43.37	27.62	3.92	34.97	39.94	74	34.06	**PK**
Antenna Polarity: Horizontal								
2390	45.92	27.62	3.92	34.97	42.49	74	31.51	**PK**

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.

8- DPSK (Hopping High)

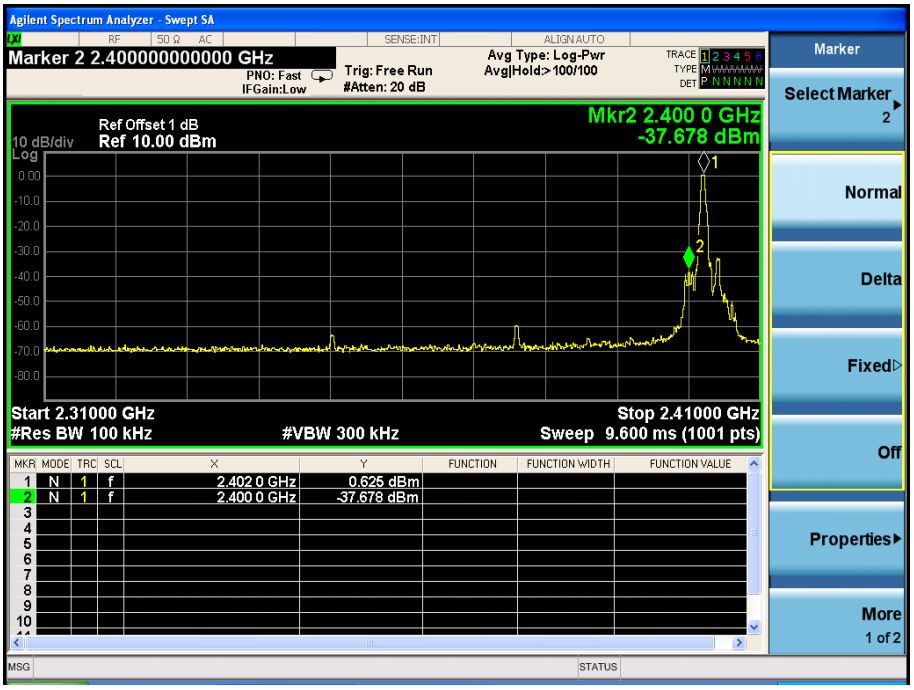
Band Edge Test result								
EUT: Bluetooth Microphone M/N: M8								
Power: DC 3.7V From battery								
Test date: 2017-3-13 Test site: 3m Chamber Tested by: Reak								
Test mode: Tx								
Antenna polarity: Vertical								
Freq (MHz)	Read Level (dBuV/m)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2483.5	43.82	27.89	4	34.97	40.74	74	33.26	PK
Antenna Polarity: Horizontal								
2483.5	47.31	27.89	4	34.97	44.23	74	29.77	PK

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

GFSK

CH LOW :



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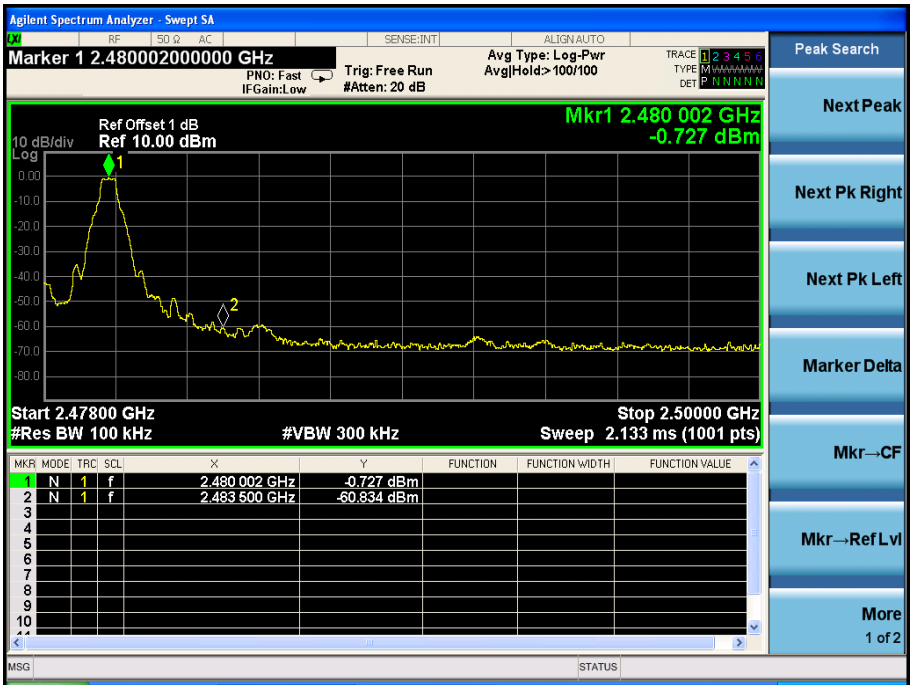
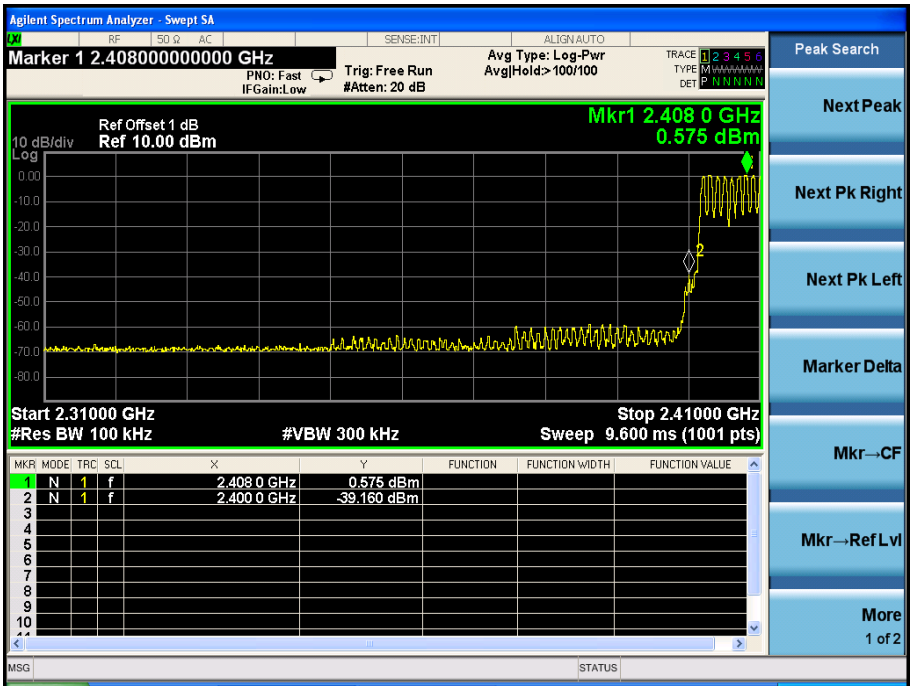


Hopping

Low



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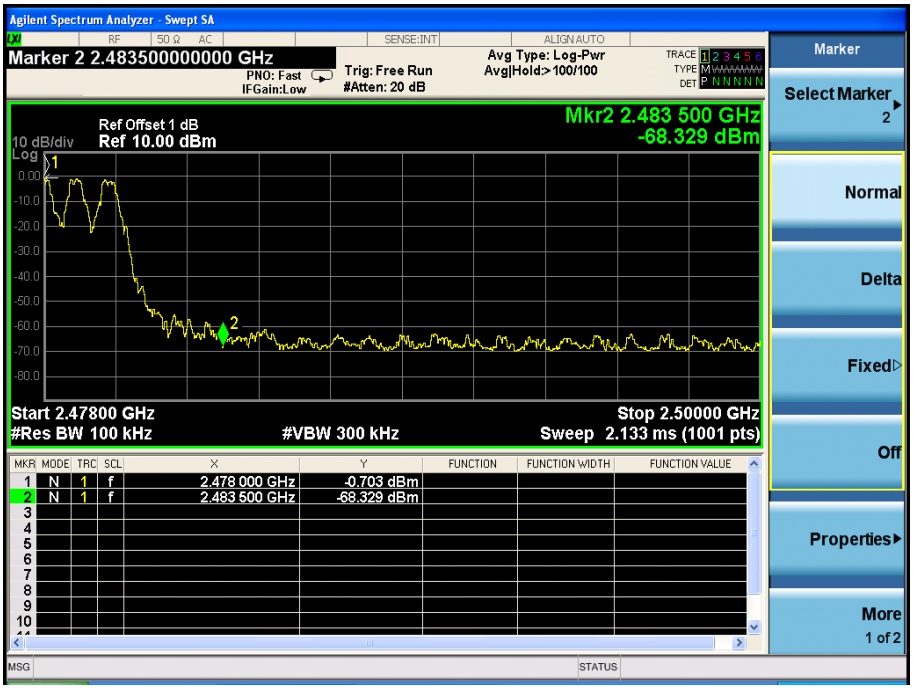
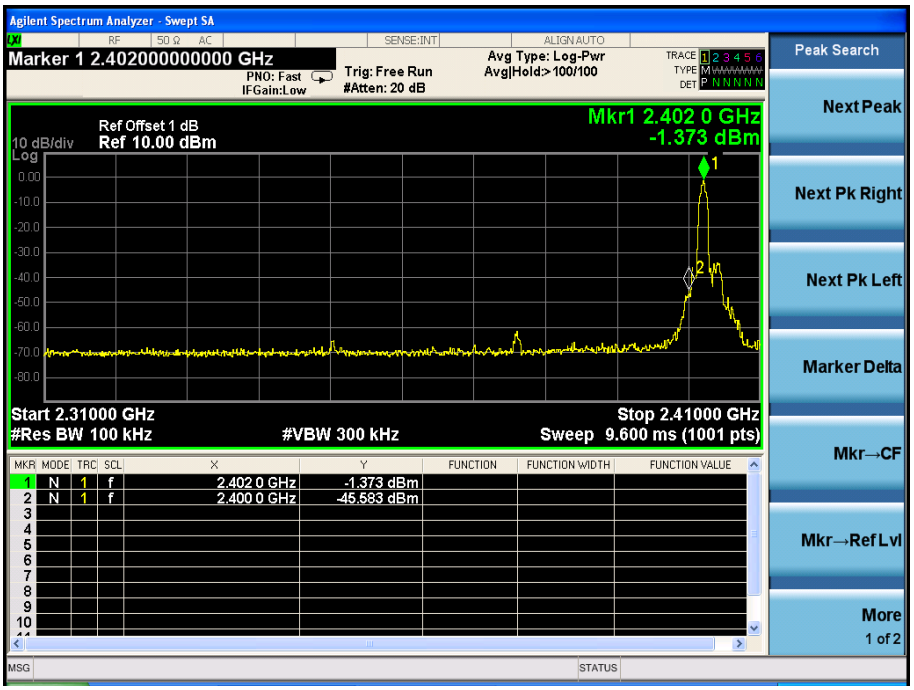


π /4 DQPSK

Low



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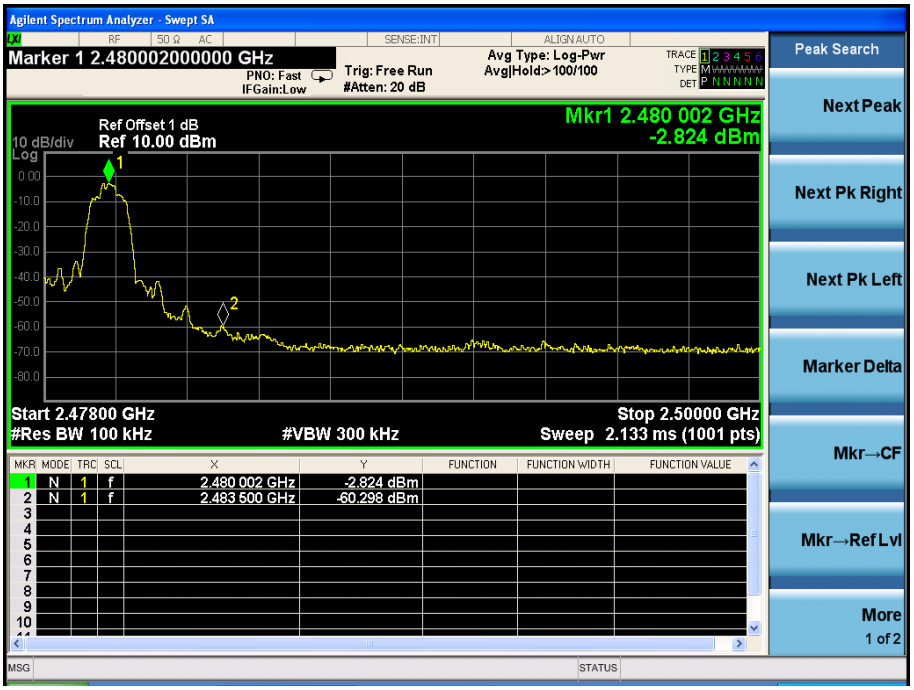

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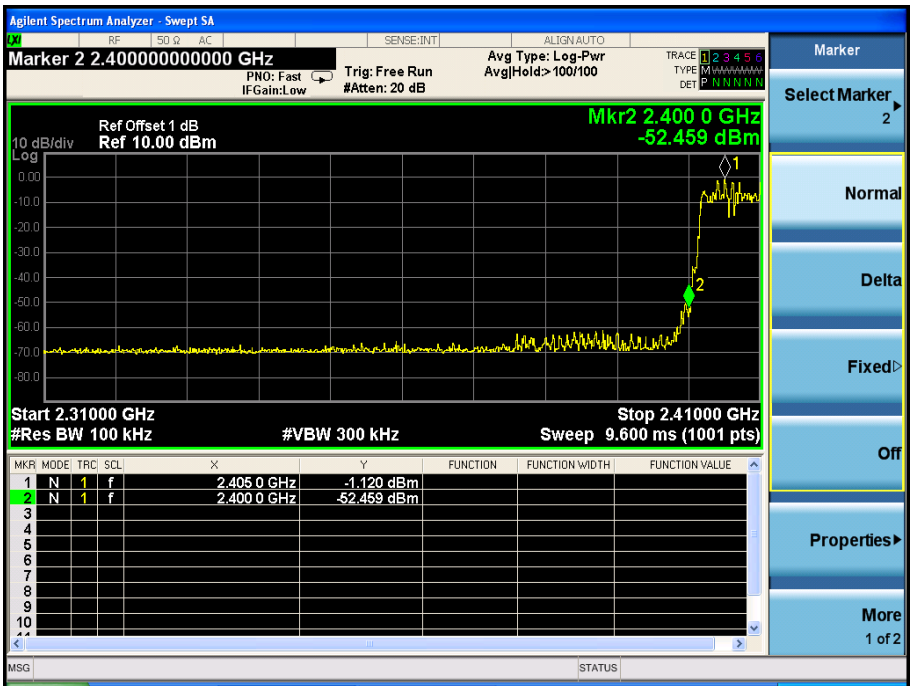

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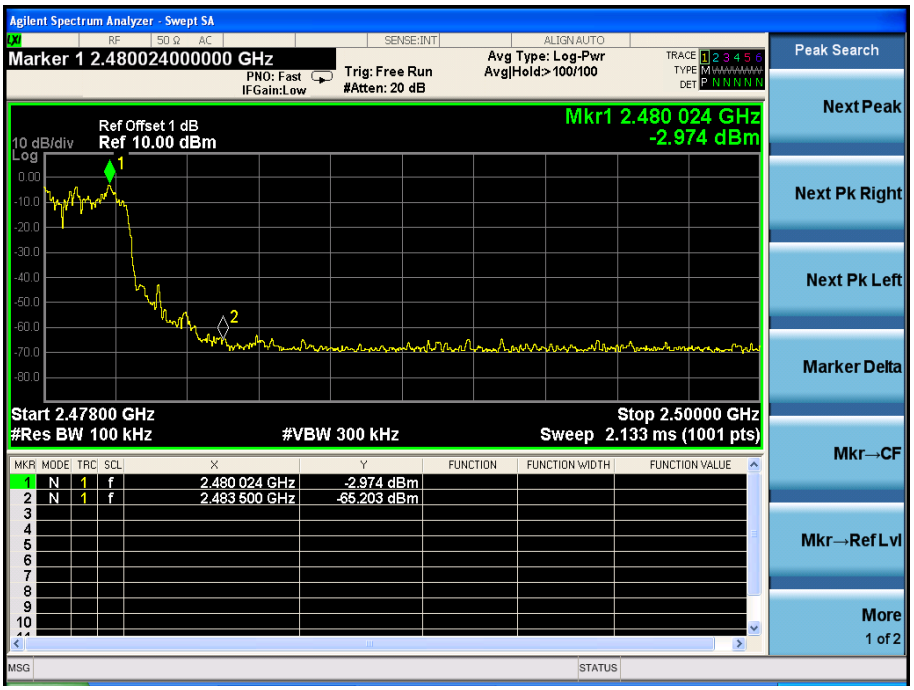
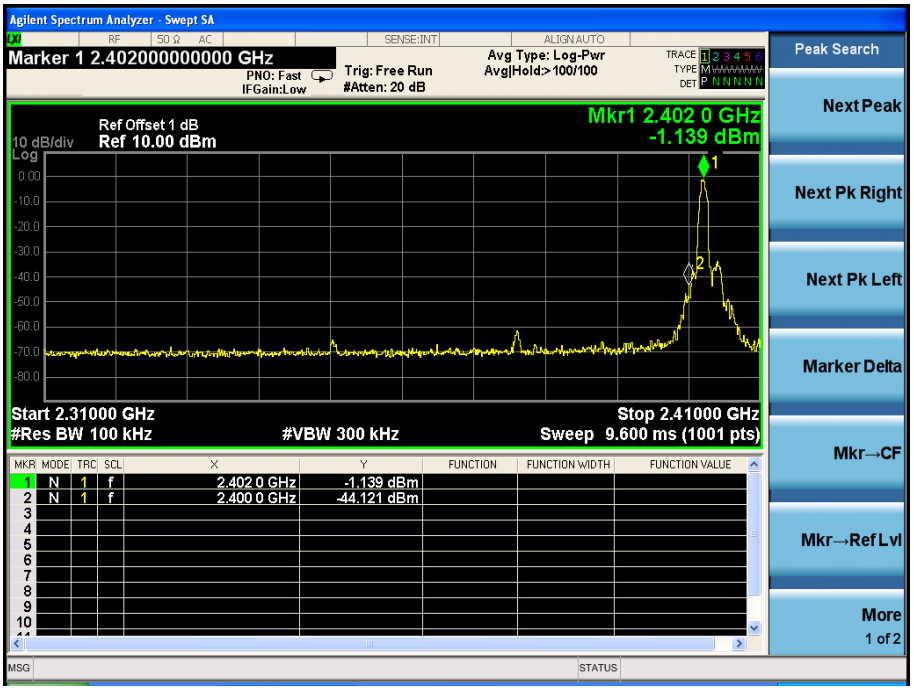


8- DPSK:

Low



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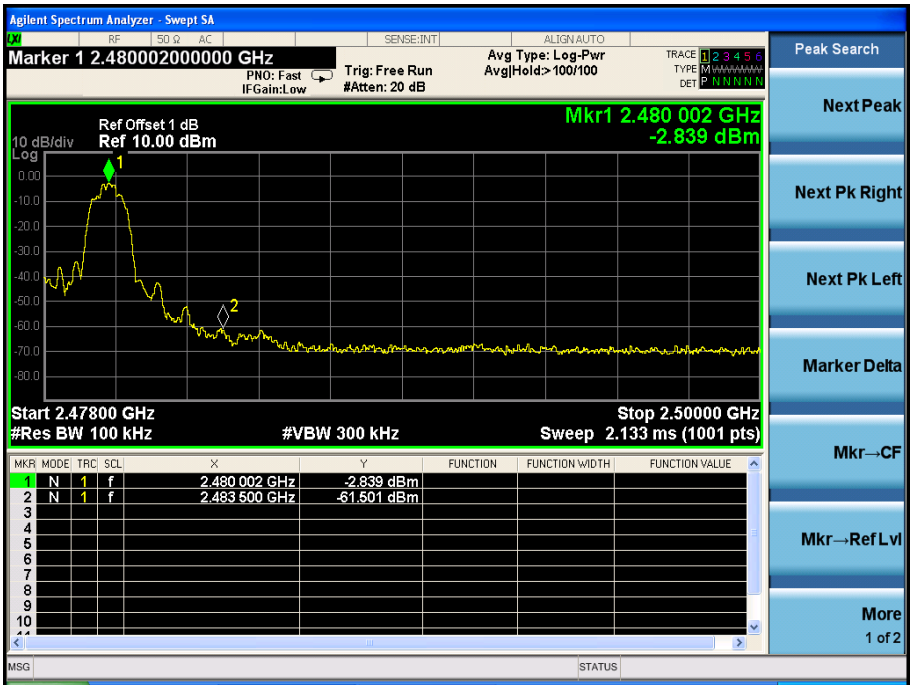
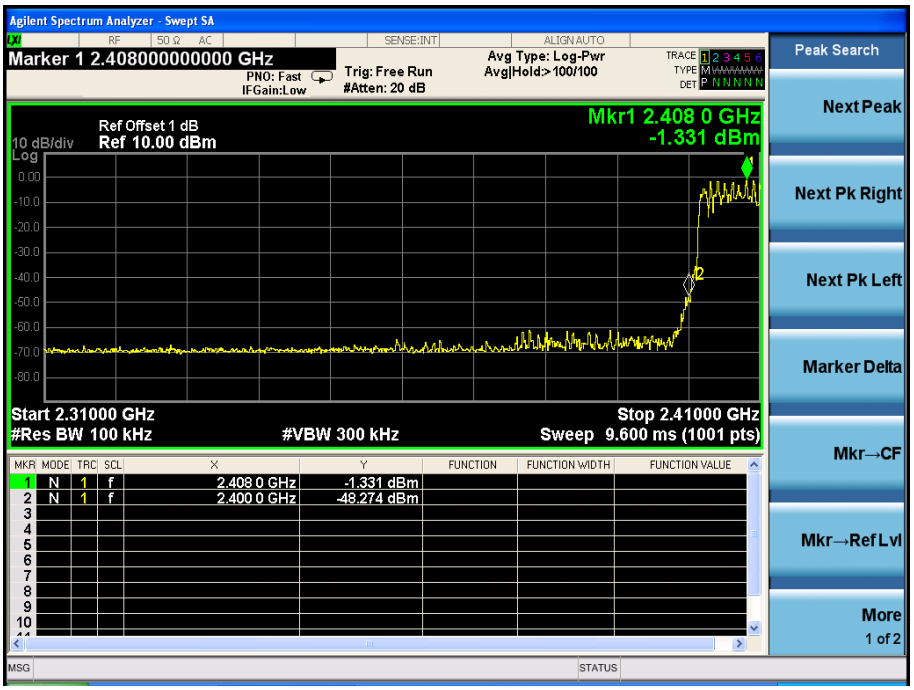
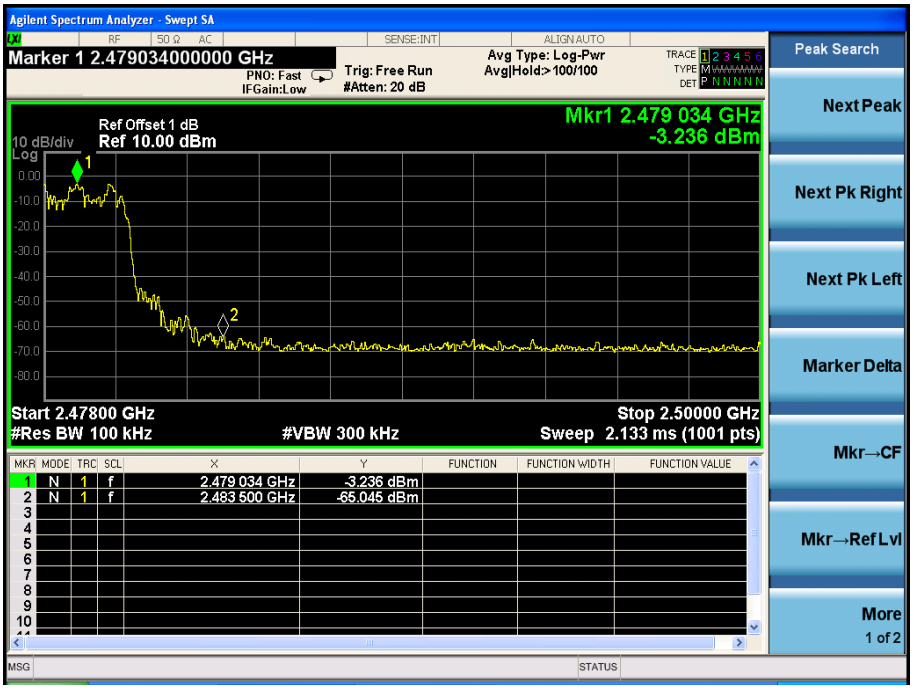


Hopping

Low

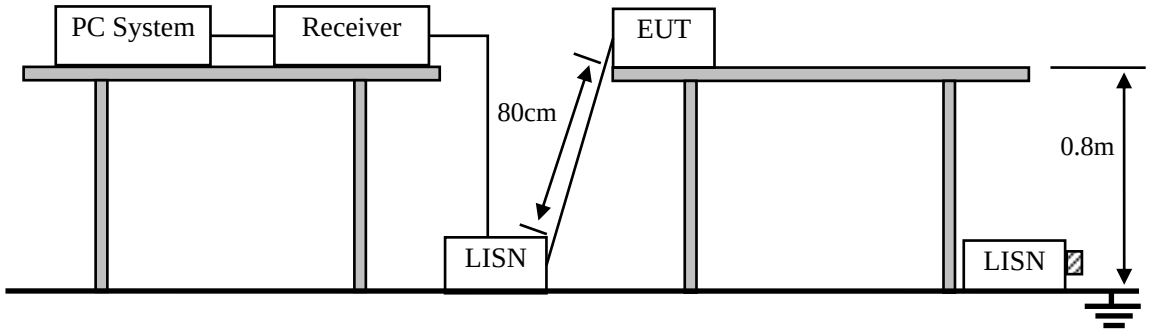


High



10. Power Line Conducted Emissions

10.1. Block Diagram of Test Setup



:50Ω Terminator

10.2. Limit

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

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

10.3. Test Procedure

(1) The EUT was placed on a non-metallic table, 80cm above the ground plane.
(2) Setup the EUT and simulator as shown in 10.1
(3) The EUT Power connected to the power mains through a power adapter and a line impedance stabilization network (L.I.S.N1). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N2), this provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4 :2014on conducted Emission test.
(4) The bandwidth of test receiver is set at 10KHz.
(5) The frequency range from 150 KHz to 30MHz is checked.

10.4.Test Result

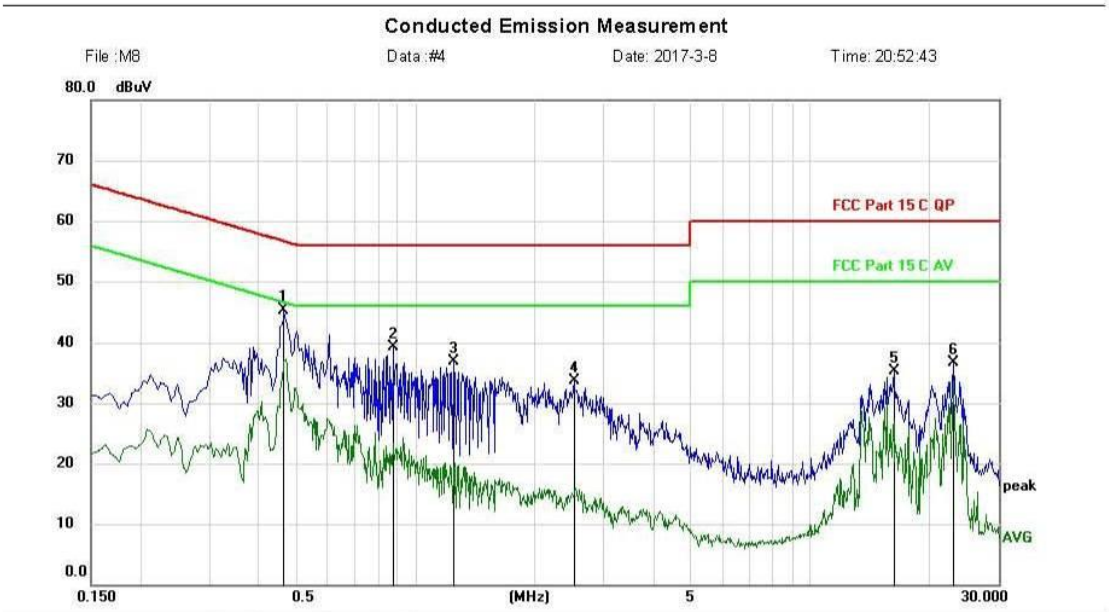
PASS. (See below detailed test data)

Note: If QP Result comply with AV limit, AV Result is deemed to comply with AV limit

Site: LAB
Limit: FCC Part 15 C QP
EUT: Bluetooth Microphone
M/N: M8
Mode: TX mode
Note:

Phase: L1
Power: DC 5V

Temperature: 24.1
Humidity: 54 %



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.4650	35.51	9.78	45.29	56.60	-11.31	peak	
2		0.8745	29.57	9.82	39.39	56.00	-16.61	peak	
3		1.2435	26.99	9.85	36.84	56.00	-19.16	peak	
4		2.5215	23.82	9.98	33.80	56.00	-22.20	peak	
5		16.2285	24.81	10.48	35.29	60.00	-24.71	peak	
6		23.1315	26.05	10.66	36.71	60.00	-23.29	peak	

*:Maximum data x:Over limit !:over margin (Reference Only

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

E:\EZ-EMC\Test Report\Y\Yimei\M8.db #4 Page: 1 Engineer Signature:

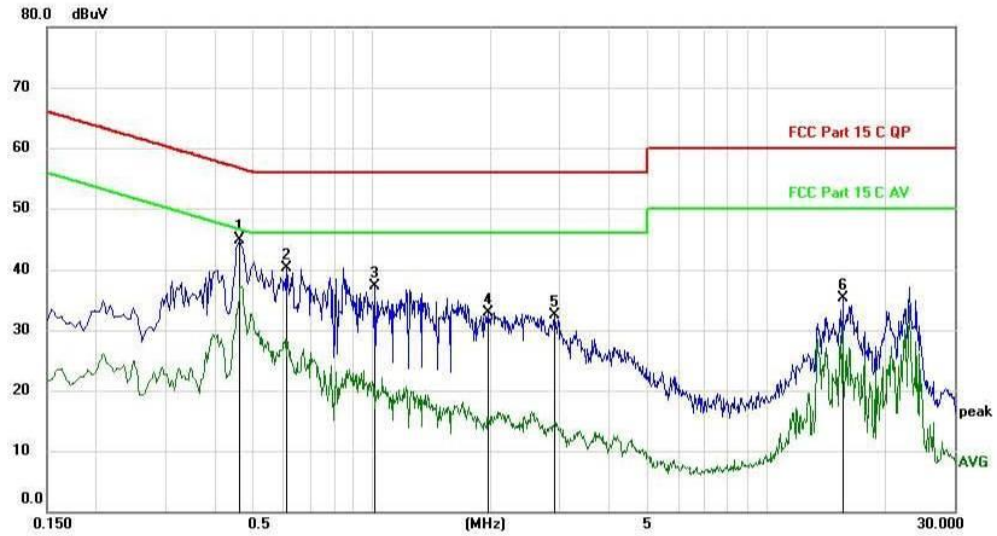
Site: LAB
Limit: FCC Part 15 C QP
EUT: Bluetooth Microphone
M/N: M8
Mode: TX mode
Note:

Phase: N
Power: DC 5V

Temperature: 24.1
Humidity: 54 %

Conducted Emission Measurement

File :M8 Data :#3 Date: 2017-3-8 Time: 20:51:28



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.4650	35.03	9.78	44.81	56.60	-11.79	peak	
2		0.6134	30.44	9.79	40.23	56.00	-15.77	peak	
3		1.0184	27.43	9.83	37.26	56.00	-18.74	peak	
4		1.9724	23.04	9.92	32.96	56.00	-23.04	peak	
5		2.9130	22.55	10.03	32.58	56.00	-23.42	peak	
6		15.6165	24.91	10.44	35.35	60.00	-24.65	peak	

*:Maximum data x:Over limit !:over margin (Reference Only

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

E:\EZ-EMC\Test Report\Y\Yime\M8.db #3 *Page: 1* Engineer Signature:

11. Antenna Requirements

11.1. Limit

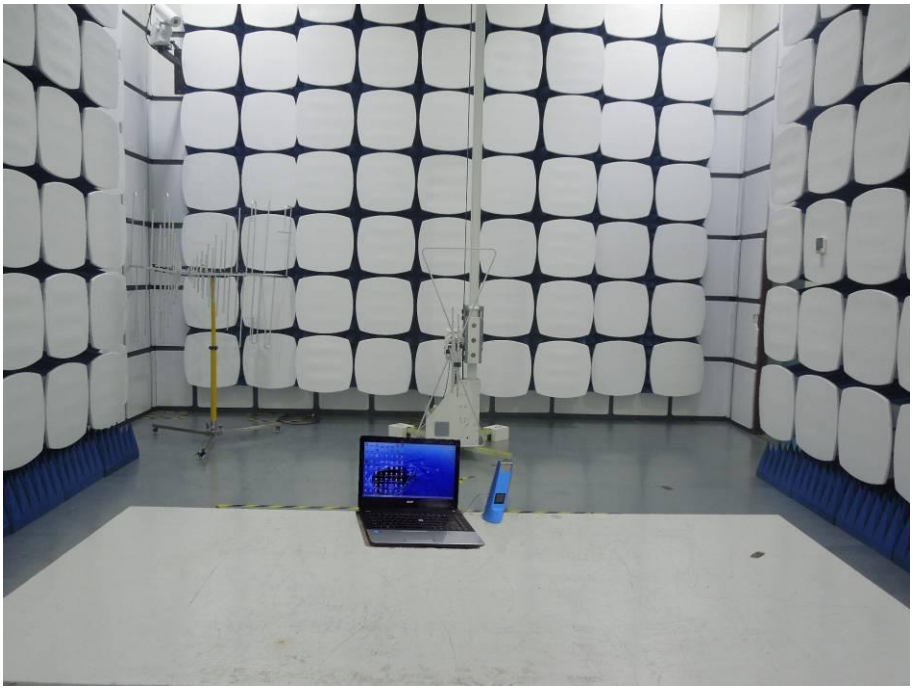
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

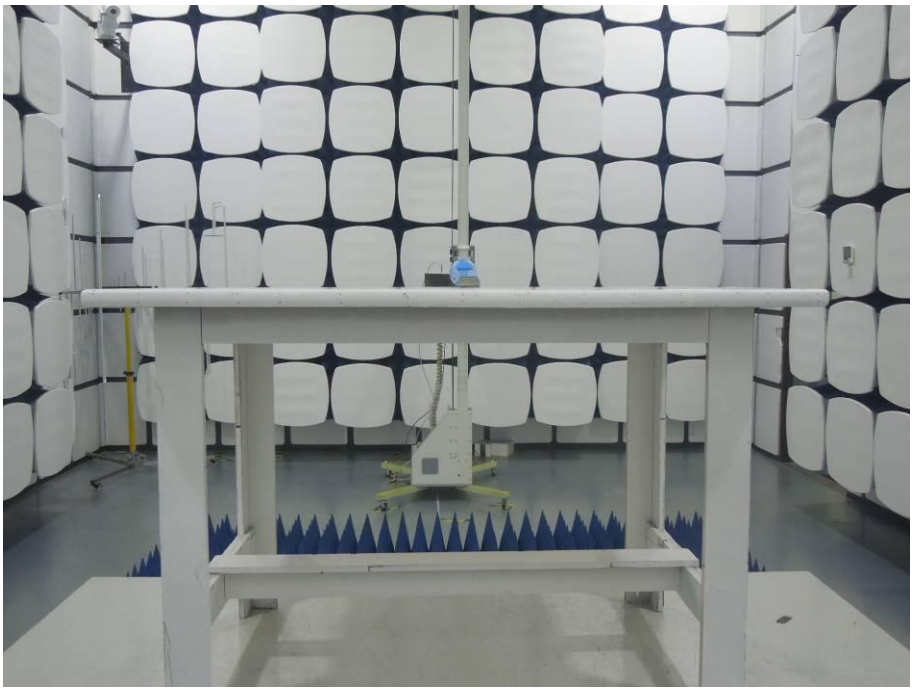
11.2. Result

The antennas used for this product are PCB Antenna for Bluetooth, no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is only 0dBi for Bluetooth.

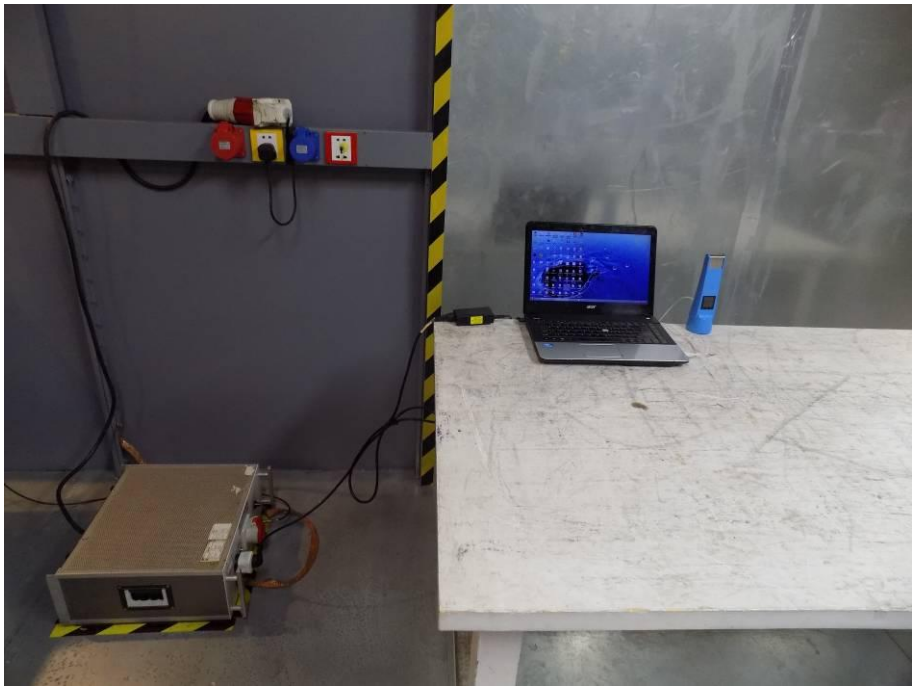
12. Test setup photo

12.1. Photos of Radiated emission

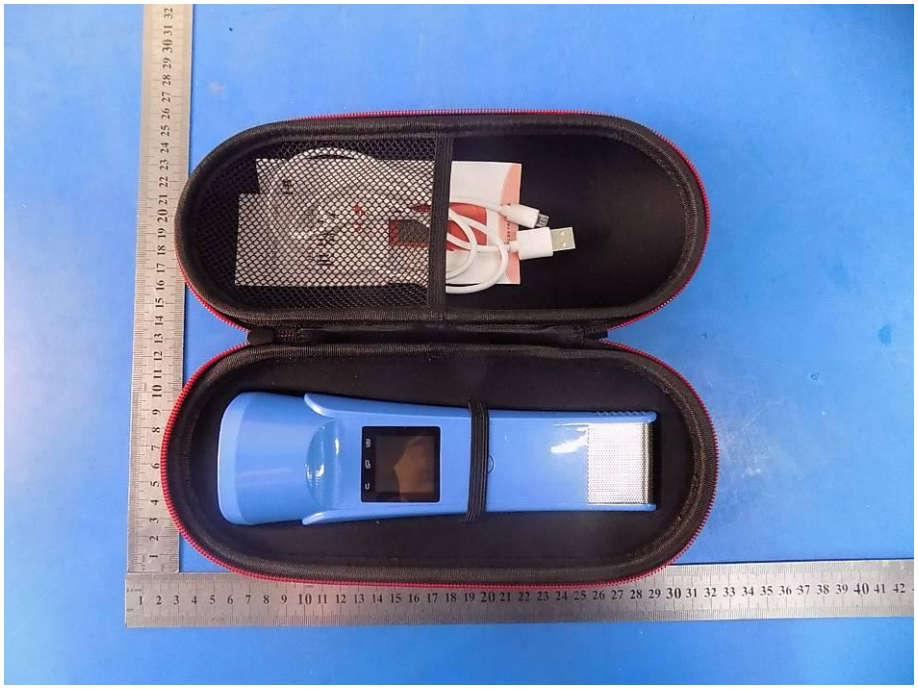


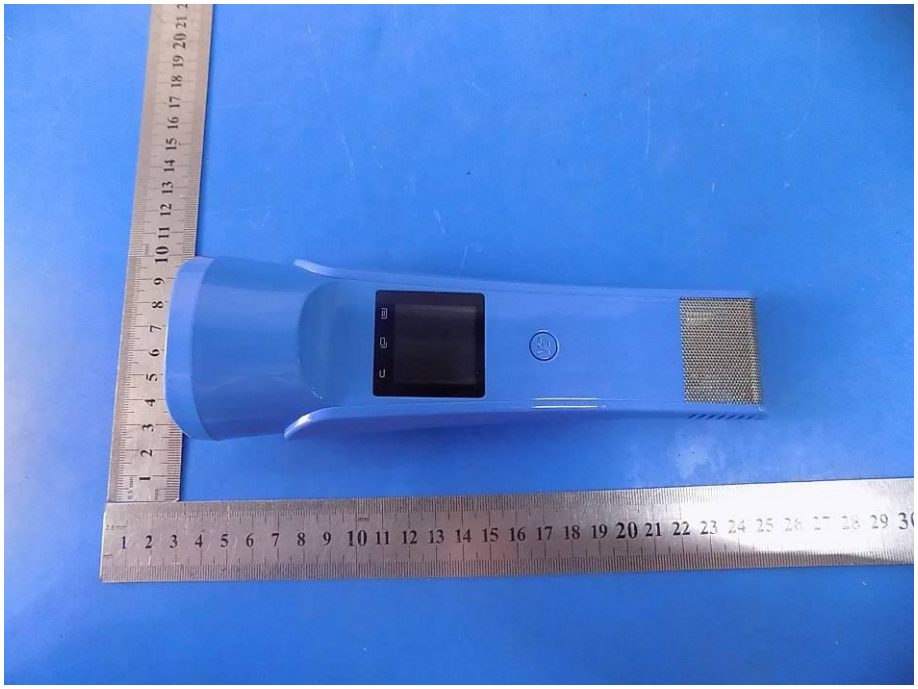


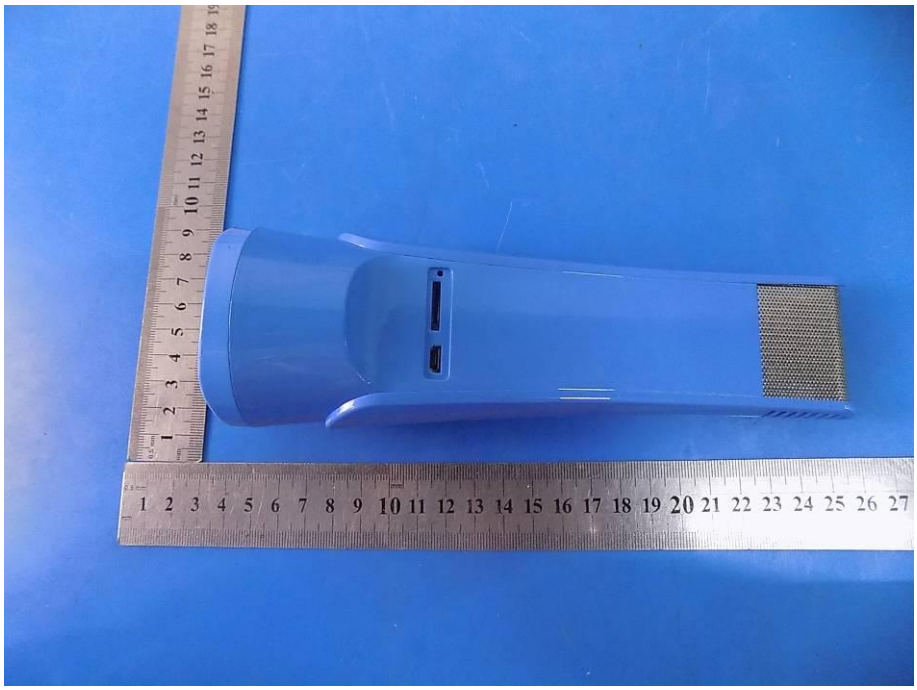
12.2.Photos of Conducted Emission test

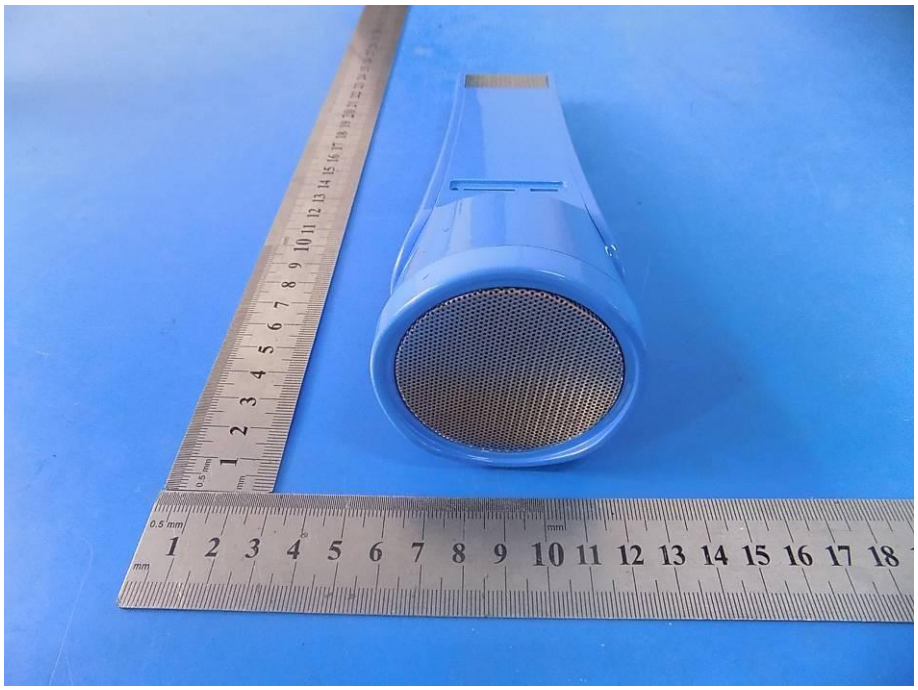


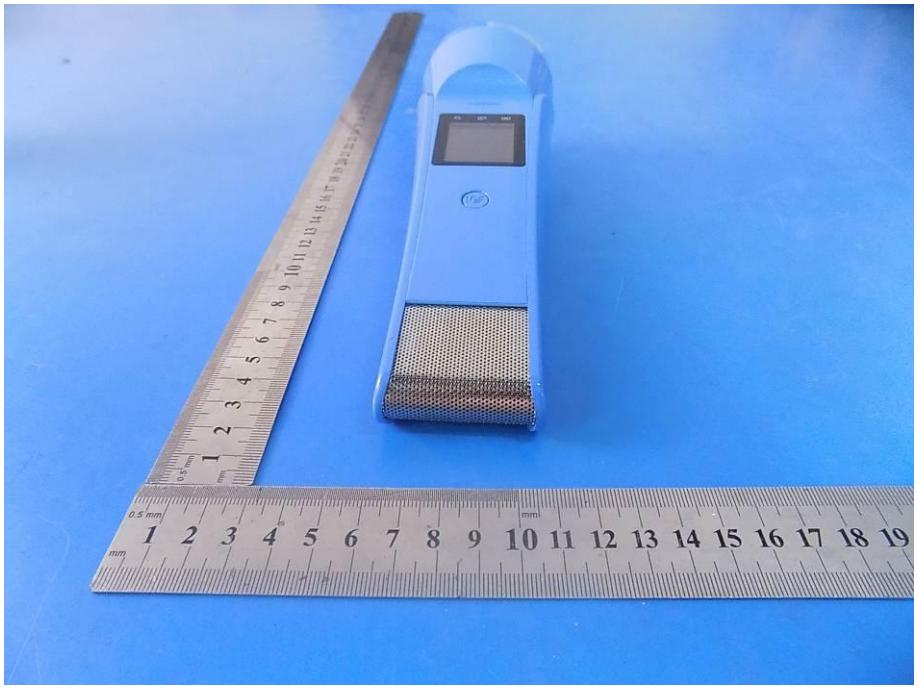
13. Photos of EUT

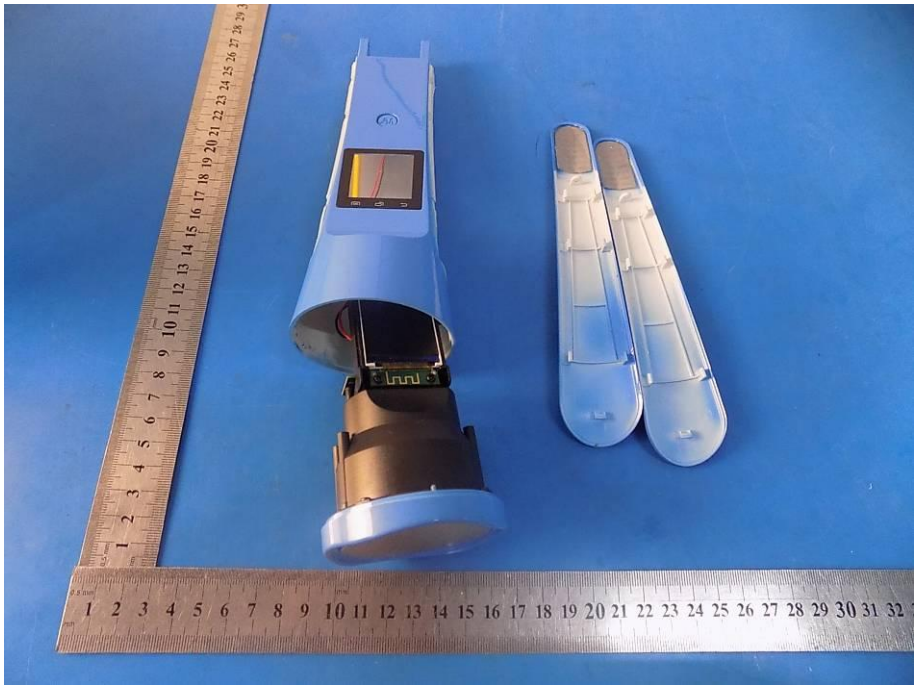


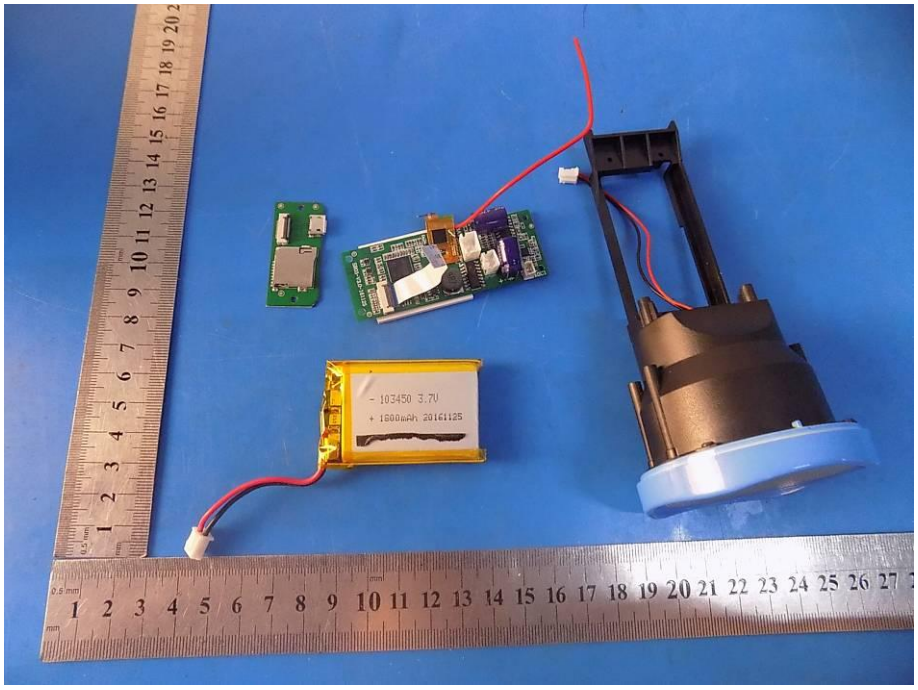


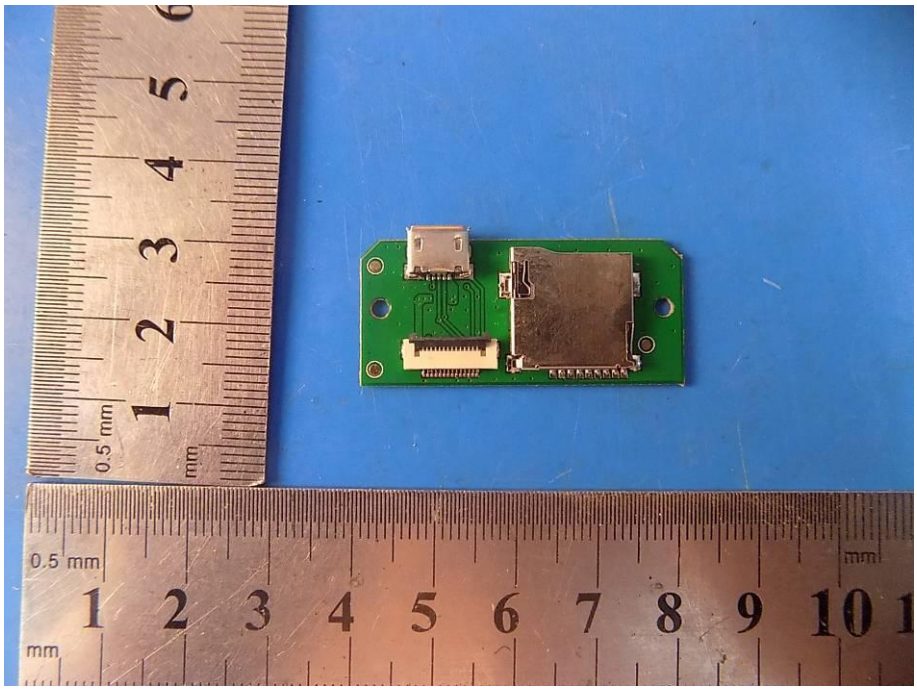


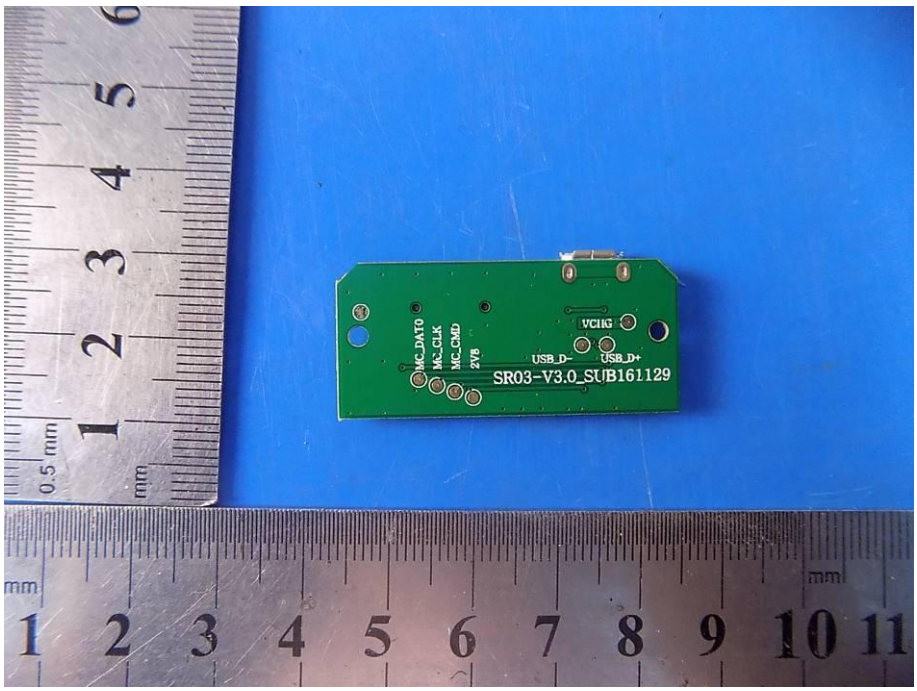


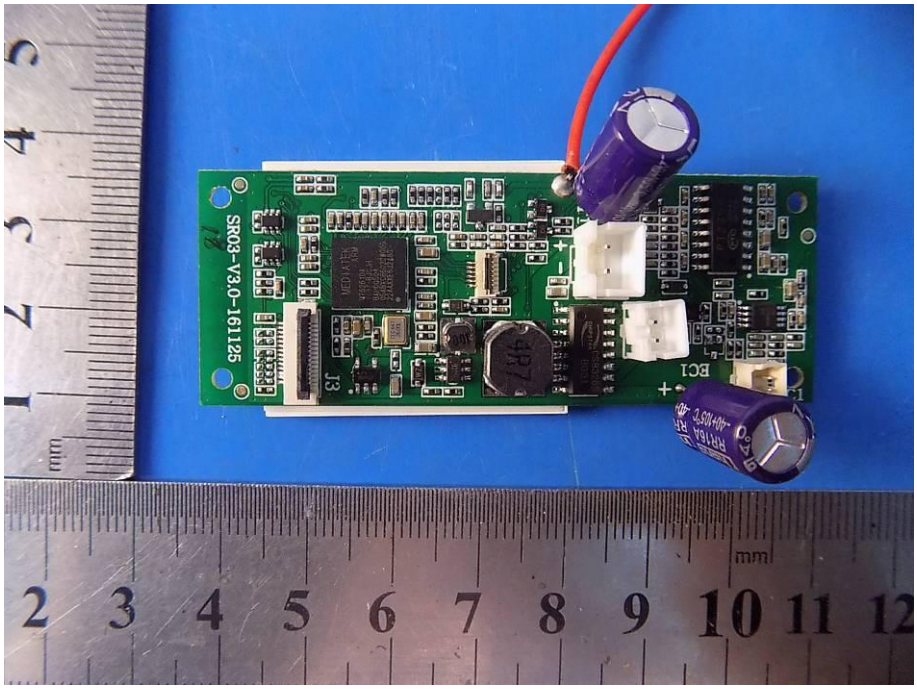


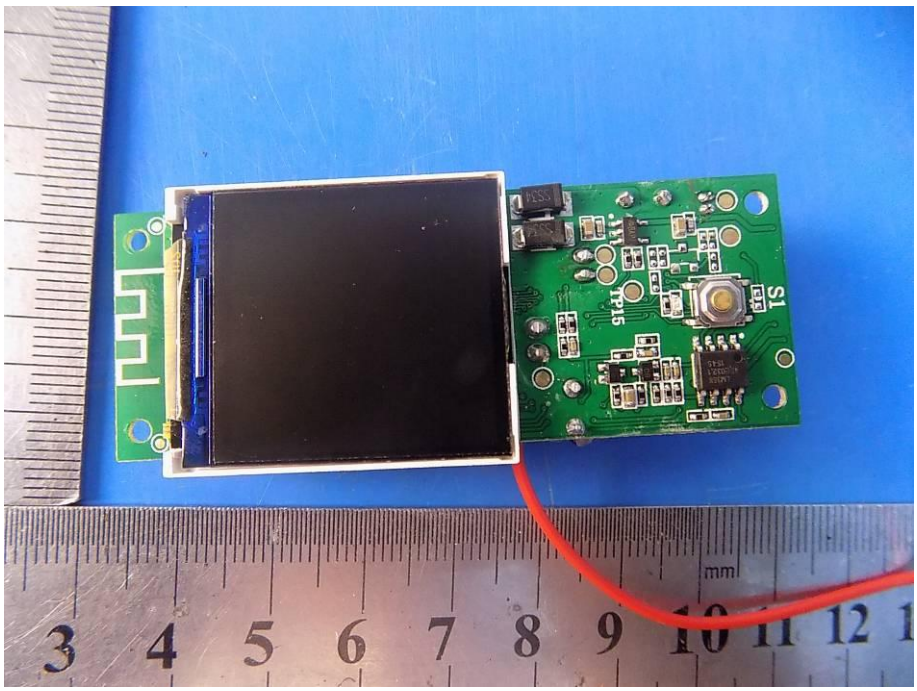


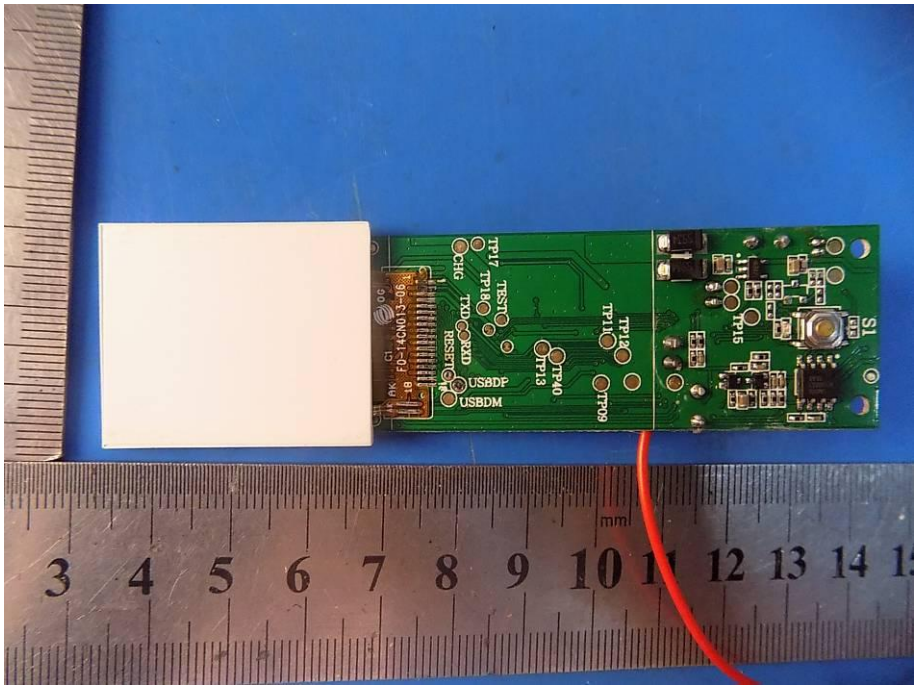

- 103450 3.7V
+ 1800mAh 20161125


0.5 mm
mm


MC_DAT0
MC_CLK
MC_CMD
2V8
USB_D-
USB_D+
VCING
SR03-V3.0_SUB161129


SR03-V3.0-161125
J3
BC1





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