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

TEST REPORT

FCC ID: 2ADMF-HC06

Applicant	:	Shenzhen KEYES DIY Robot Co.,Ltd
Address	:	Room1601 Jingxing Building, Changyong Road, Long Hua Xin Qu District, Shenzhen, China.

Equipment Under Test (EUT):

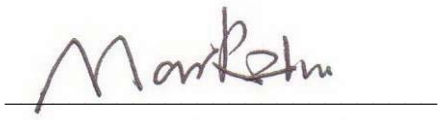
Name	:	bluetooth module
Model	:	keyes HC-06, keyes hc-05, FUNDUINO HC-06, FUNDUINO hc-05

In Accordance with: FCC PART 15, SUBPART C: 2013 (Section 15.247)

Report No : CST-TCB141028057
Date of Test : November 05- 14, 2014
Date of Issue : November 17, 2014
Test Result: **PASS**

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

Authorized Signature



(Mark Zhu)
General Manager

Contents

1. General Information

1.1. Description of Device (EUT)

EUT	: bluetooth module
Model No.	: keyes HC-06, keyes hc-05, FUNDUINO HC-06, FUNDUINO hc-05
DIFF	All model's the function, software and electric circuit are the same , only with the product model named different, so all the test were performed on the model keyes HC-06
Trade mark	: N/A
Power supply	: DC 3.3V
Radio Technology	: Bluetooth 2.1+EDR
Operation frequency	: 2402-2480MHz
Modulation	: GFSK, π/4 DQPSK, 8-DPSK,
Channel No.	79
Antenna Type	: PCB Antenna, max gain 0 dBi
Applicant	: Shenzhen KEYES DIY Robot Co.,Ltd
Address	: Room1601 Jingxing Building, Changyong Road, Long Hua Xin Qu District, Shenzhen, China.
Manufacturer	: Shenzhen KEYES DIY Robot Co.,Ltd
Address	: Room1601 Jingxing Building, Changyong Road, Long Hua Xin Qu District, Shenzhen, China.

1.2. Accessories of device (EUT)

N/A

1.3. Test Lab information

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

FCC Registered No.:197647
IC Registered No.: 8528B

2. Summary of test

2.1. Summary of test result

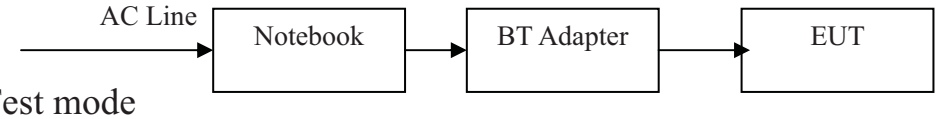
Description of Test Item	Standard	Results
Maximum Peak Output Power	FCC Part 15: 15.247(b)(1)	PASS
Bandwidth	FCC Part 15: 15.215	PASS
Carrier Frequency Separation	FCC Part 15: 15.247(a)(1)	PASS
Number Of Hopping Channel	FCC Part 15: 15.247(a)(1)(iii)	PASS
Dwell Time	FCC Part 15: 15.247(a)(1)(iii)	PASS
Radiated Emission	FCC Part 15: 15.209 FCC Part 15: 15.247(d)	PASS
Band Edge Compliance	FCC Part 15: 15.247(d)	PASS
Power Line Conducted Emissions	FCC Part 15: 15.207	PASS
Antenna requirement	FCC Part 15: 15.203	PASS

2.2. Assistant equipment used for test

Description	:	Notebook
Manufacturer	:	ACER
Model No.	:	ZQT
Note：This Notebook has been approved By FCC Doc.		

2.3. Block Diagram

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



2.4. Test mode

Keep the EUT work in Continuous TX mode, and select test channel, wireless mode

Tested mode, channel, and data rate information		
Mode	Channel	Frequency (MHz)
BDR:GFSK	Low :CH0	2402
	Middle: CH39	2441
	High: CH78	2480
EDR:π/4 DQPSK	Low :CH0	2402
	Middle: CH39	2441
	High: CH78	2480
EDR:8-DPSK	Low :CH0	2402
	Middle: CH39	2441
	High: CH78	2480

2.5. Test Conditions

Temperature range	22-25℃
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	2.42dB	
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)	3.54dB	Polarize: V
	4.1dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	2.08dB	Polarize: H
	2.56dB	Polarize: V
Uncertainty for radio frequency	1×10-9	
Uncertainty for conducted RF Power	0.65dB	
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.	Cal. Due day	Cal Interval
3m Semi-Anechoic	ETS-LINDGREN	N/A	SEL0017	2015.01.19	1Year
Spectrum analyzer	Agilent	E4407B	MY49510055	2015.01.19	1Year
Receiver	R&S	ESCI	101165	2015.01.19	1Year
Receiver	R&S	ESCI	101202	2015.01.19	1Year
Bilog Antenna	SCHWARZBECK	VULB 9168	9168-438	2015.01.21	1Year
Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D(1201)	2015.01.21	1Year
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170 D(1432)	2015.01.21	1Year
Active Loop Antenna	Beijing Daze	ZN30900A	SEL0097	2015.01.19	1Year
L.I.S.N.	SCHWARZBECK	NSLK8126	8126466	2015.01.19	1Year
Cable	Resenberger	SUCOFLEX 104	MY6562/4	2015.01.19	1Year
Cable	Resenberger	SUCOFLEX 104	309972/4	2015.01.19	1Year
Cable	Resenberger	SUCOFLEX 104	329112/4	2015.01.19	1Year
Power Meter	Anritsu	ML2487A	6K00001491	2015.01.19	1Year
Power sensor	Anritsu	ML2491A	32516	2015.01.19	1Year
Pre-amplifier	SCHWARZBECK	BBV9743	9743-019	2015.01.19	1Year
Pre-amplifier	Quietek	AP-180C	CHM-0602012	2015.01.19	1Year

3. Maximum Peak Output power

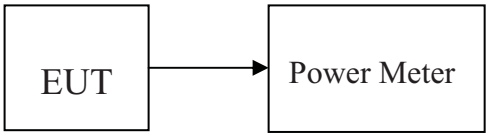
3.1. Limit

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 module		M/N: keyes HC-06			
Test date: 2014-11-12		Test site: RF site		Tested by: Store	
Mode	Freq (MHz)	PK Output Power (dBm)	PK Output Power (mW)	Limit (dBm)	Test result
GFSK	2402	2.13	1.63	21.00	PASS
	2441	2.28	1.69	21.00	
	2480	2.07	1.61	21.00	
π/4-DQPSK	2402	1.53	1.42	21.00	
	2441	1.36	1.37	21.00	
	2480	1.57	1.44	21.00	
8-DPSK	2402	1.48	1.41	21.00	
	2441	1.21	1.32	21.00	
	2480	1.52	1.42	21.00	

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

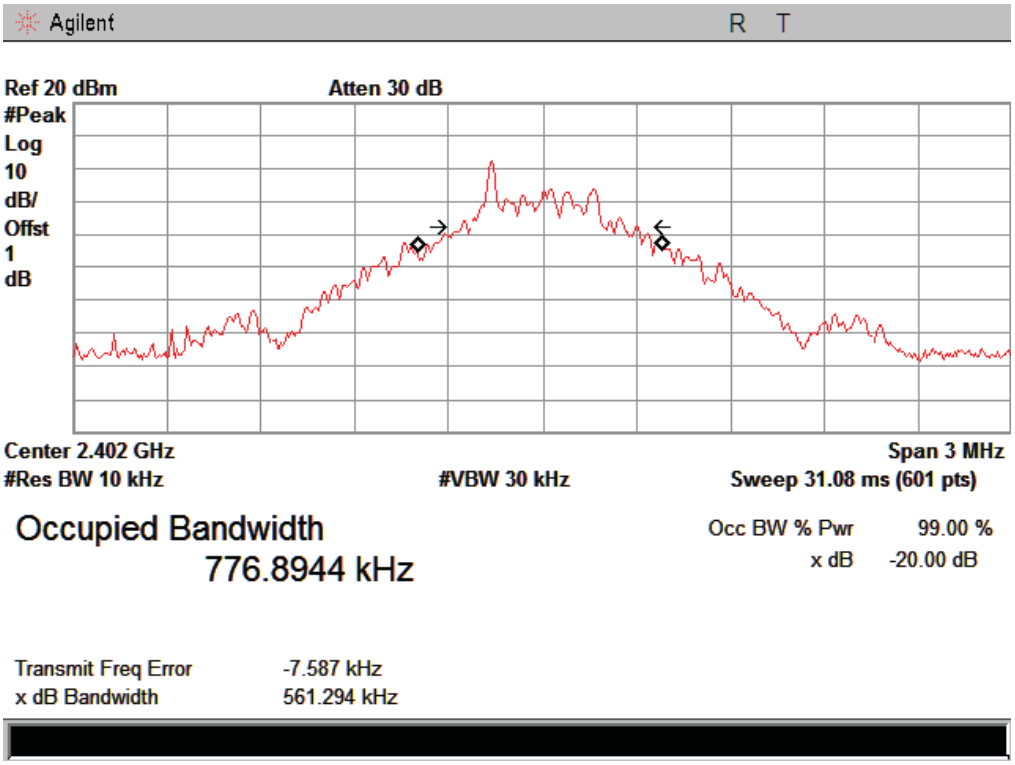
The transmitter output was coupled to a spectrum analyzer via a antenna. The bandwidth of the fundamental frequency was measured by spectrum analyzer with RBW≥1% of the 20dB bandwidth and VBW≥RBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

4.3. Test Result

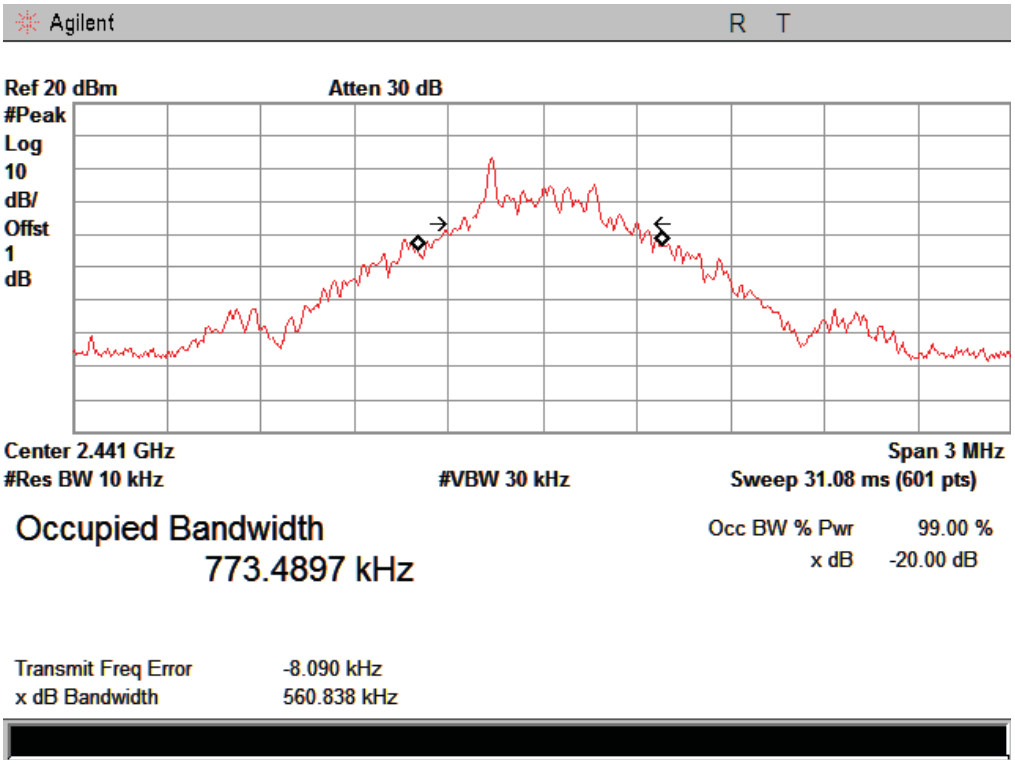
EUT: bluetooth module		M/N: keyes HC-06		
Test date: 2014-11-14		Test site: RF site	Tested by: Store	
Mode	Freq (MHz)	20dB Bandwidth (MHz)	Limit (kHz)	Conclusion
GFSK	2402	0.561	N/A	PASS
	2441	0.561		
	2480	0.562		
8-DPSK	2402	0.917		
	2441	0.915		
	2480	0.931		

Orginal Test data For 20dB bandwidth
GFSK

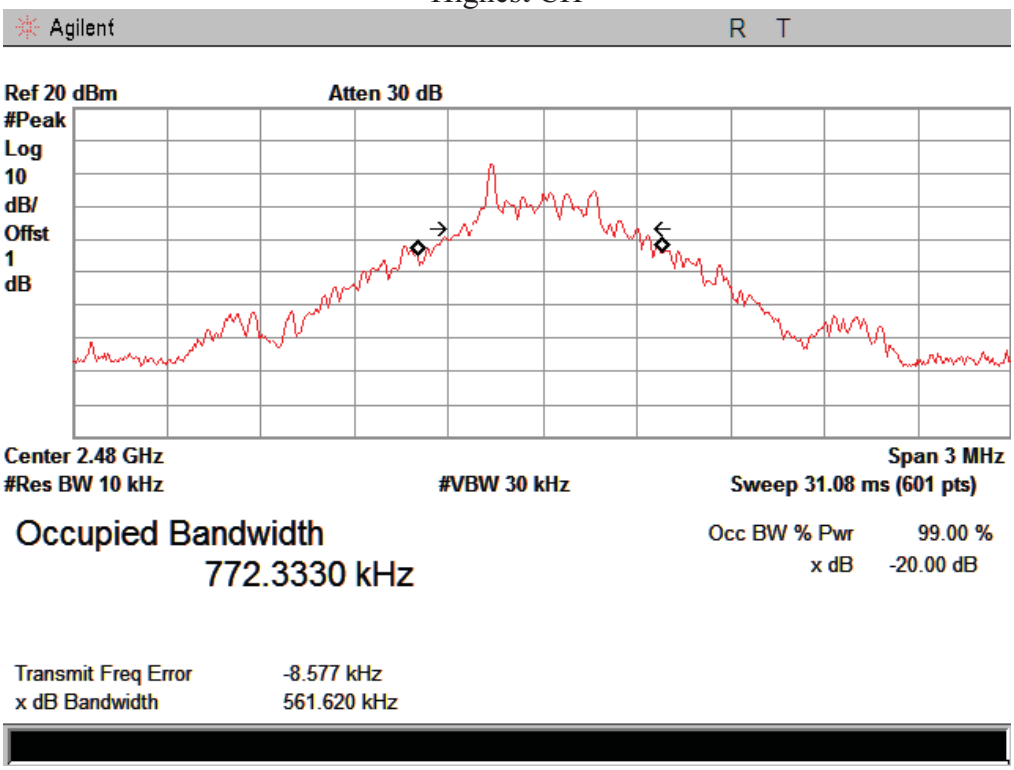
Lowest CH



Middle CH

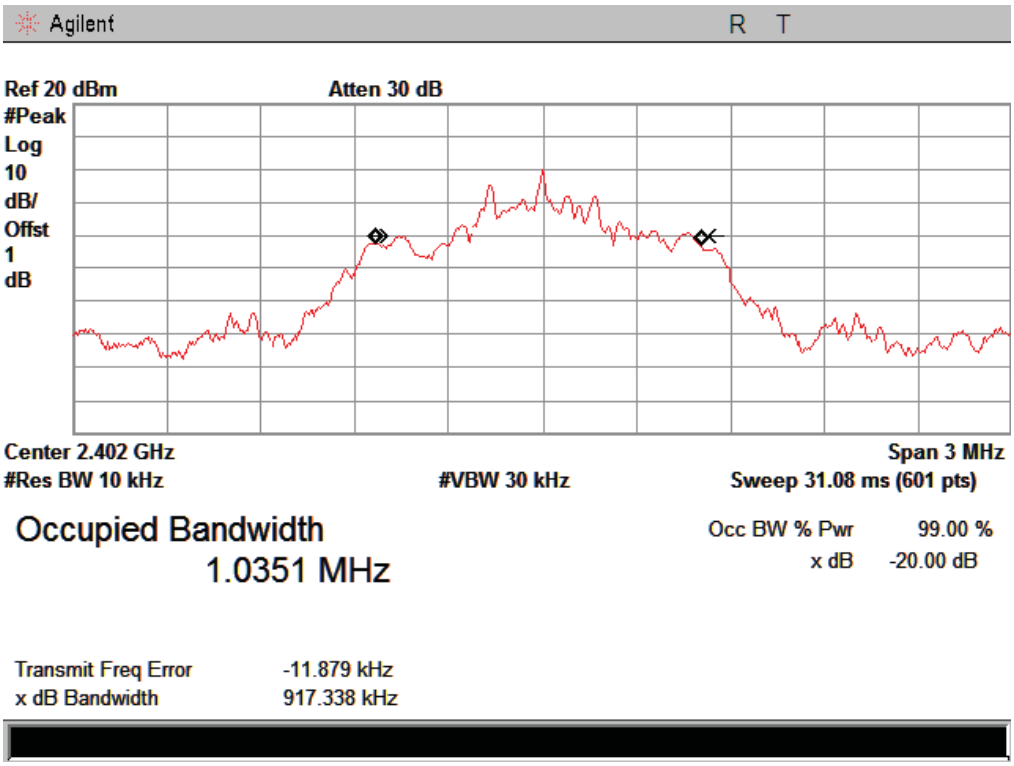


Highest CH

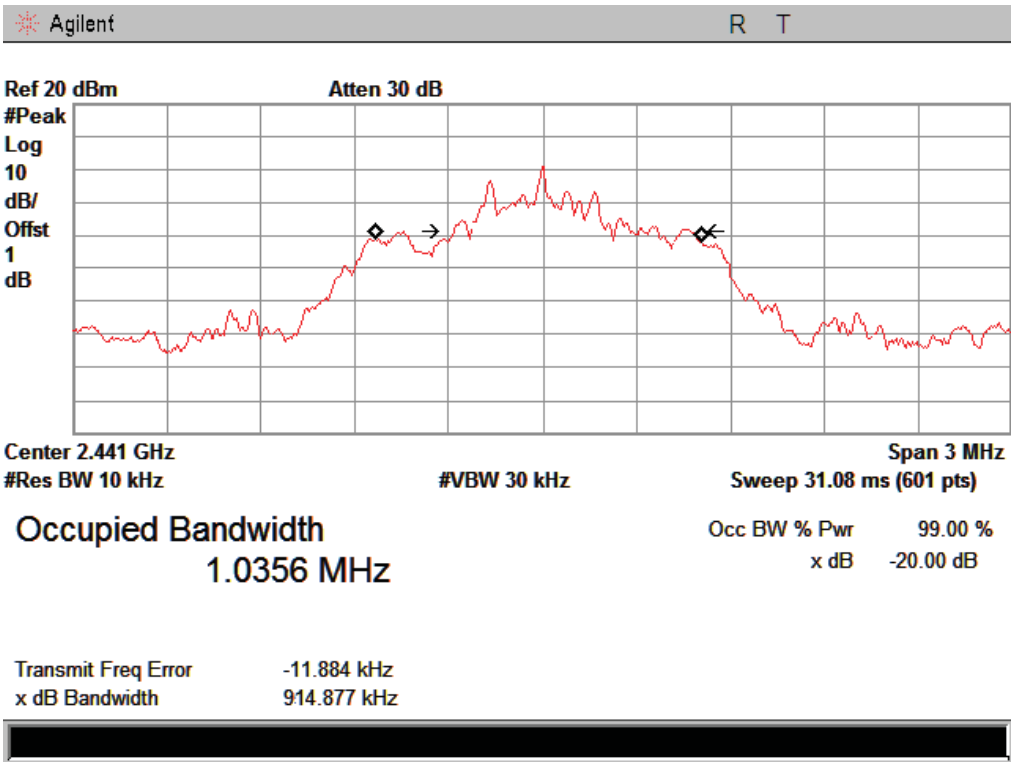


8-DPSK

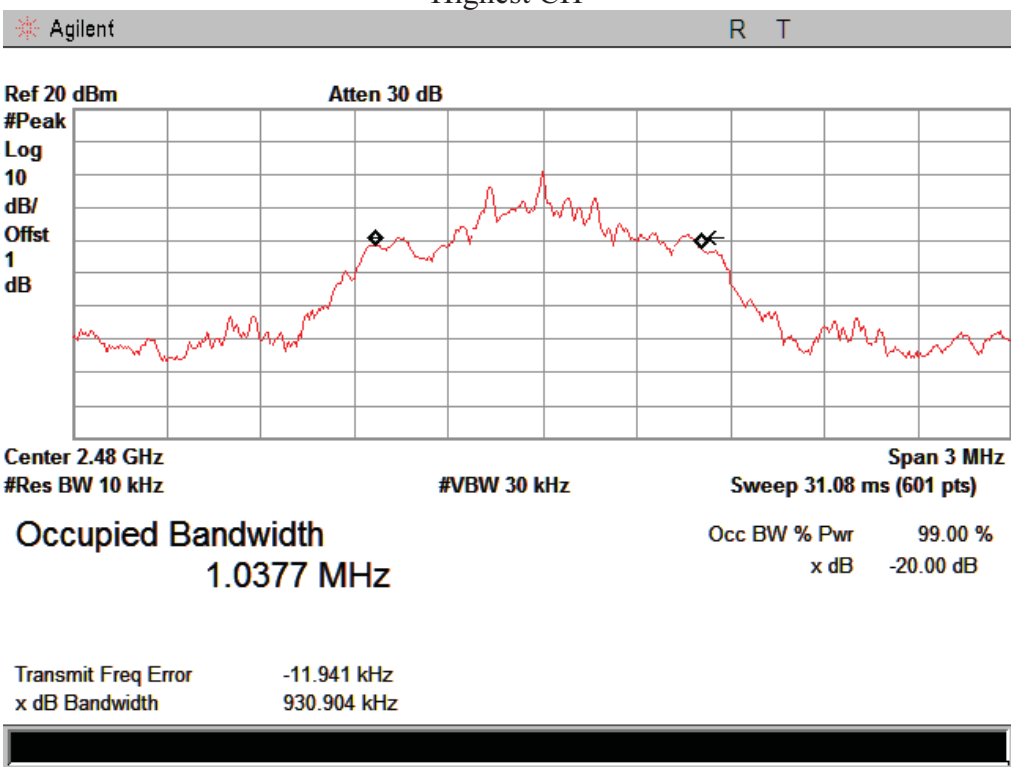
Lowest CH



Middle CH



Highest CH



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 100 kHz RBW and 300 kHz VBW.

5.3. Test Result

GFSK:

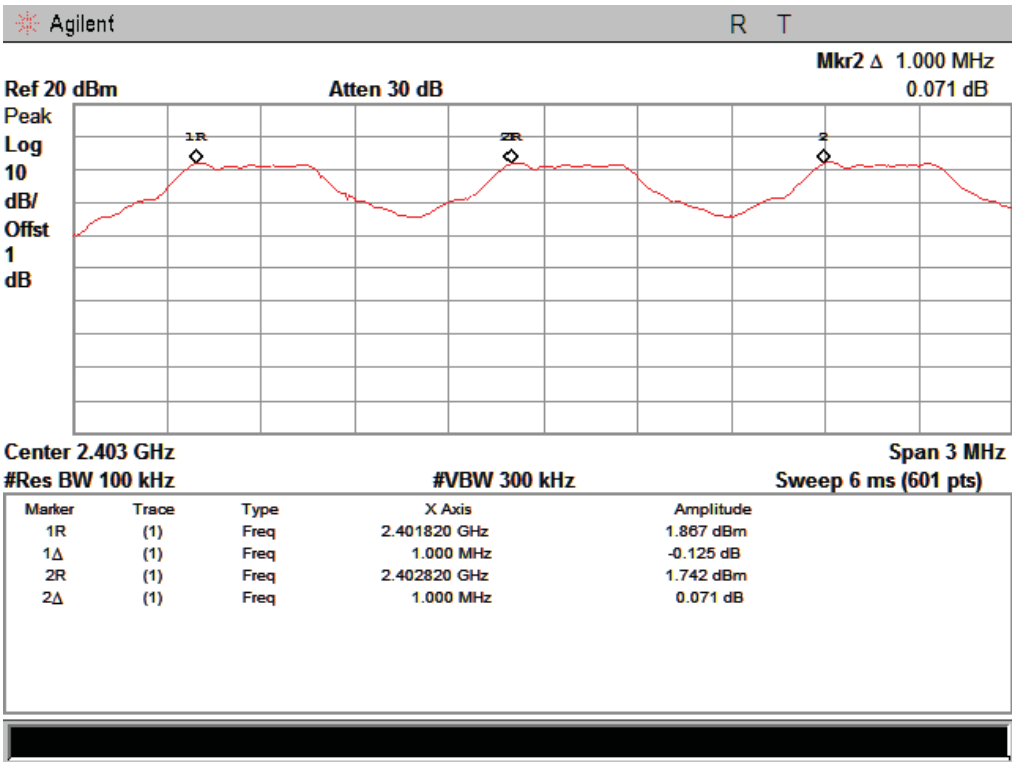
EUT: bluetooth module M/N: keyes HC-06				
Test date: 2014-11-14		Test site: RF site	Tested by: Store	
Mode	Channel separation (MHz)	20dB Bandwidth (MHz)	Limit (MHz)	Conclusion
Lowest	1.000	0.561	2/3 20dB bandwidth or 25kHZ	PASS
Middle	1.000	0.560		
Highest	1.000	0.562		

8-DPSK

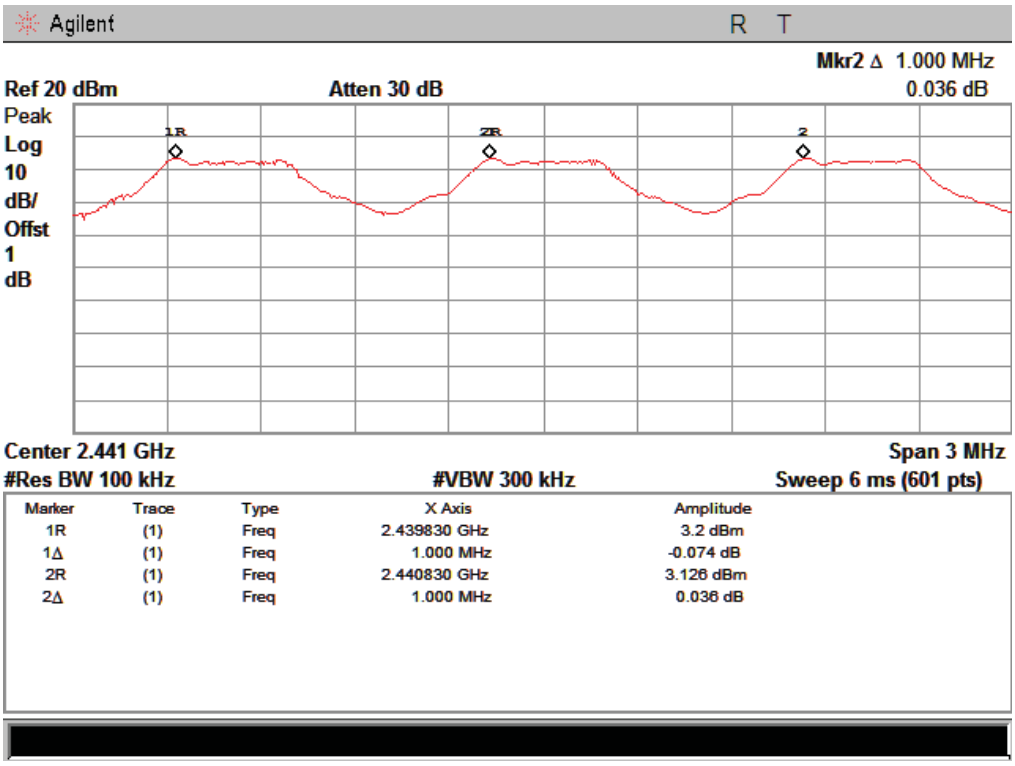
EUT: bluetooth module M/N: keyes HC-06				
Test date: 2014-11-12		Test site: RF site	Tested by: Store	
Mode	Channel separation (MHz)	20dB Bandwidth (MHz)	Limit (MHz)	Conclusion
Lowest	1.000	0.917	2/3 20dB bandwidth or 25kHZ	PASS
Middle	1.000	0.915		
Highest	1.000	0.931		

Orginal test data for channel separation

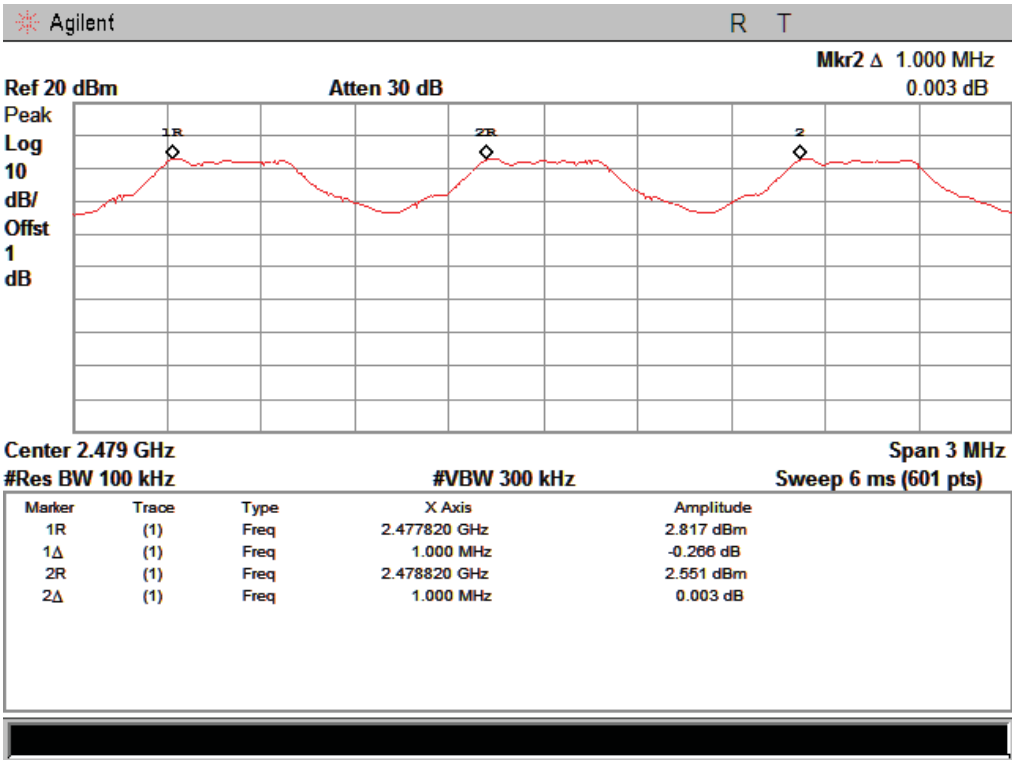
GFSK



Lowest

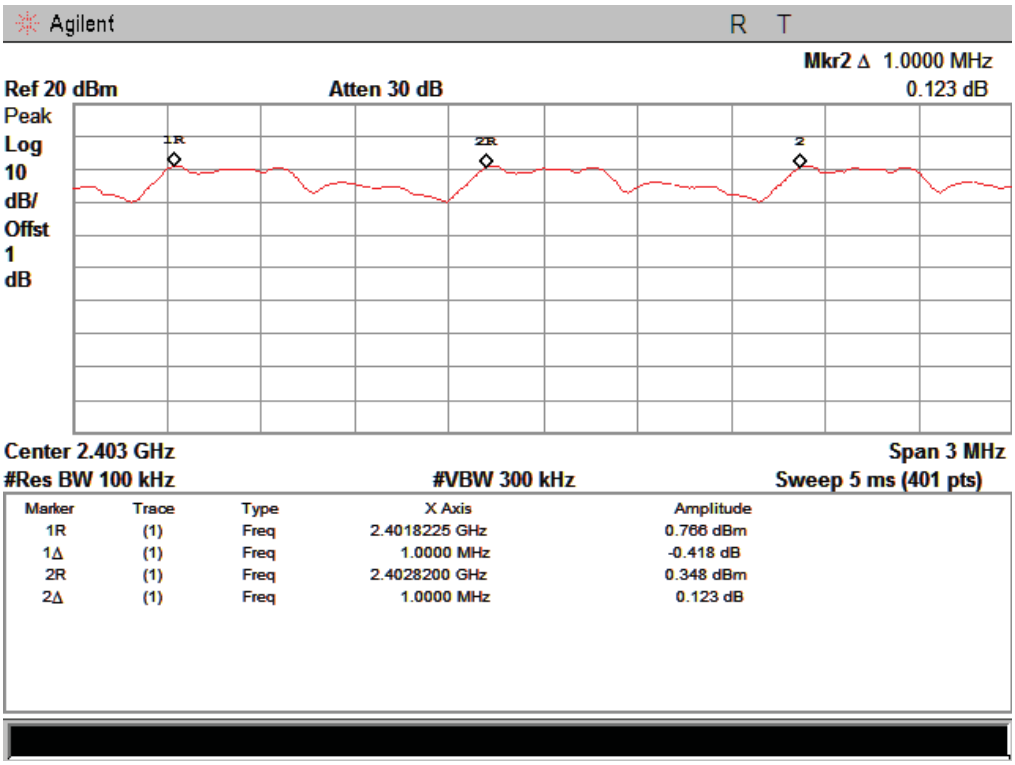


Middle

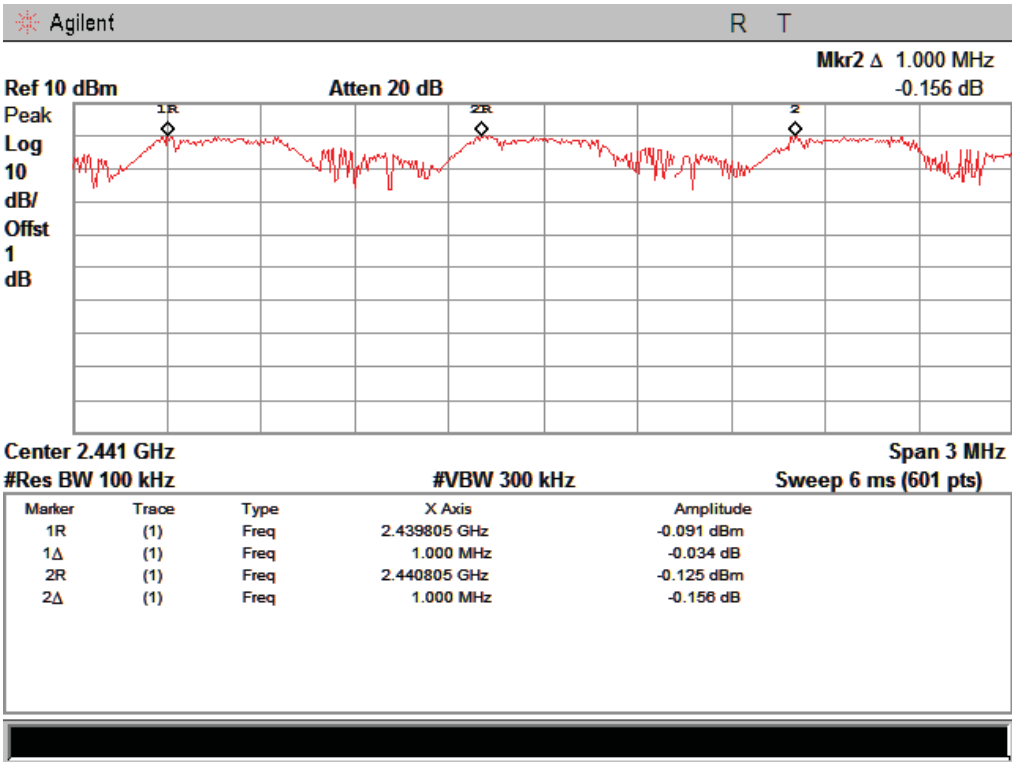


Highest

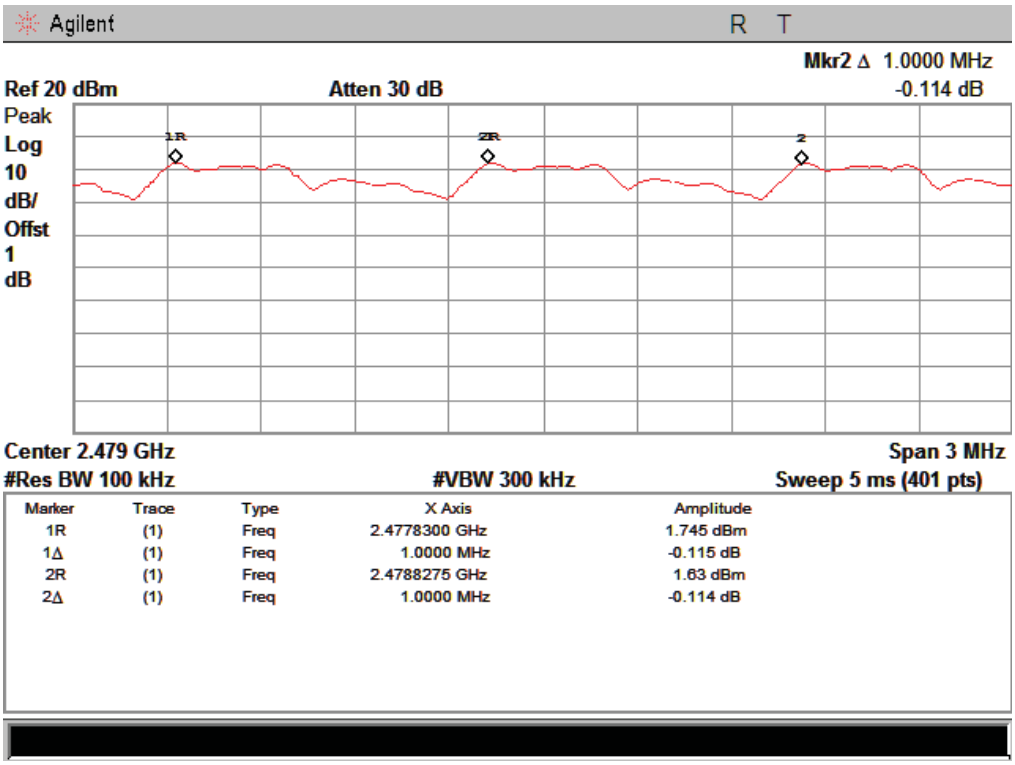
8-DPSK



Lowest



Middle



Highest

6. Number Of Hopping Channel

6.1. Limit

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

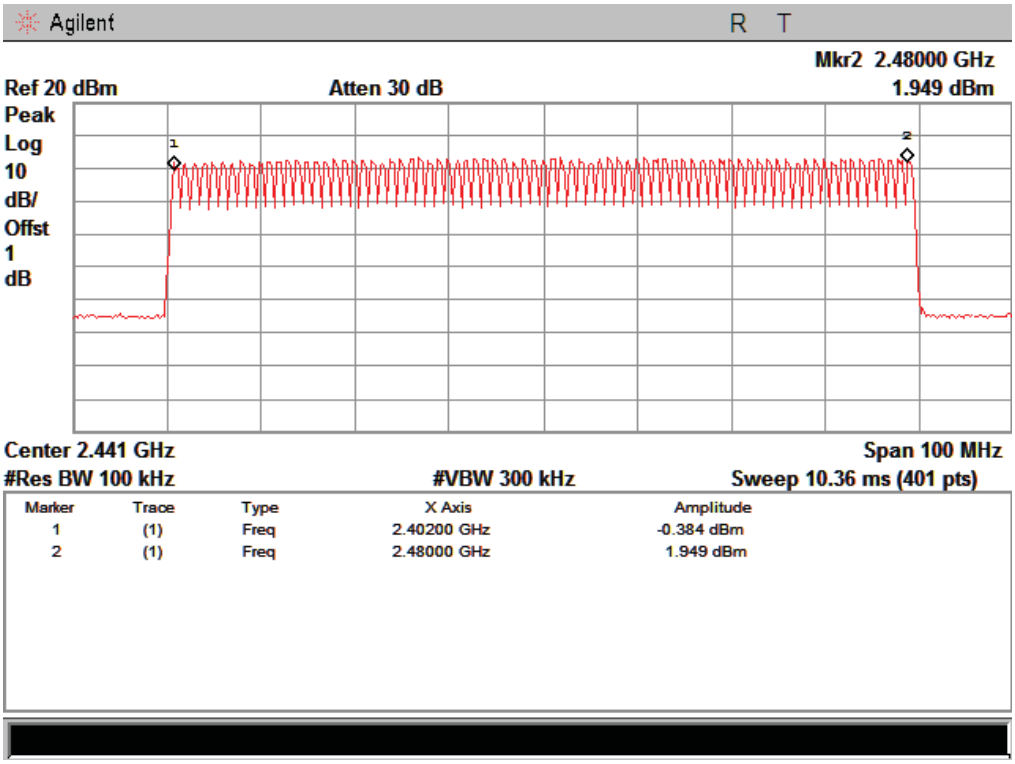
6.2. Test Procedure

The transmitter output was coupled to a spectrum analyzer via a antenna. The number of hopping channel was measured by spectrum analyzer with 100kHz RBW and 300kHz VBW.

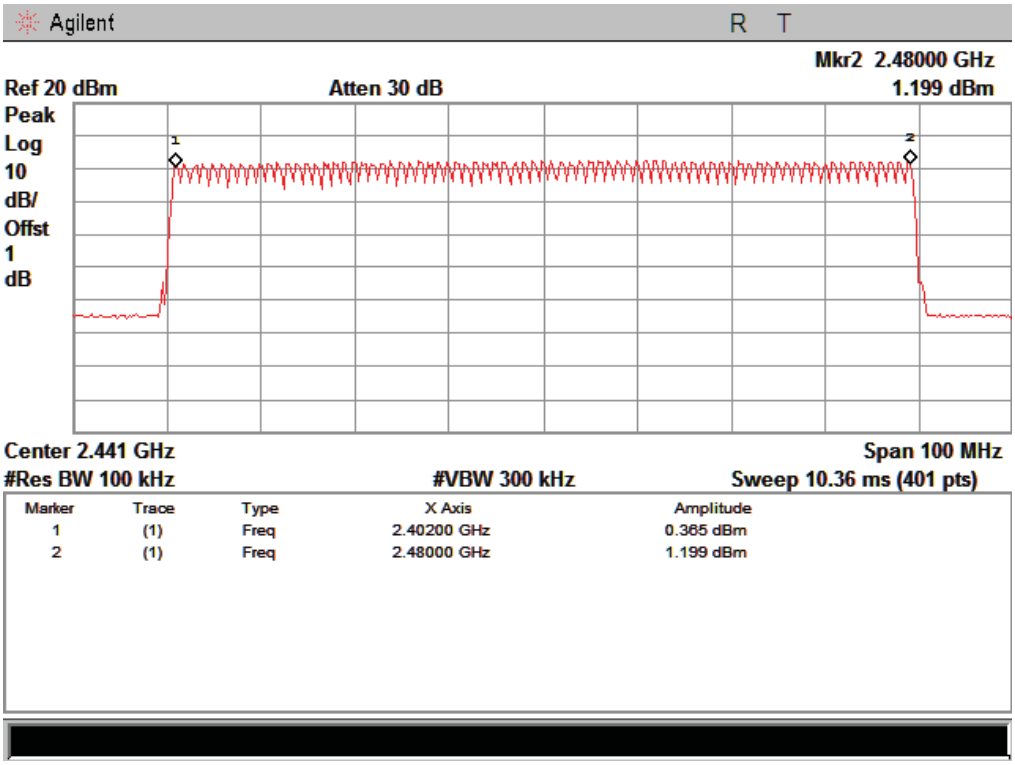
6.3. Test Result

EUT: bluetooth module M/N: keyes HC-06			
Test date: 2014-10-14	Test site: RF site	Tested by: Store	
Mode	Number of hopping channel	Limit	Conclusion
GFSK	79	>15	PASS
Pi/4-DQPSK	79		
8-DPSK	79		

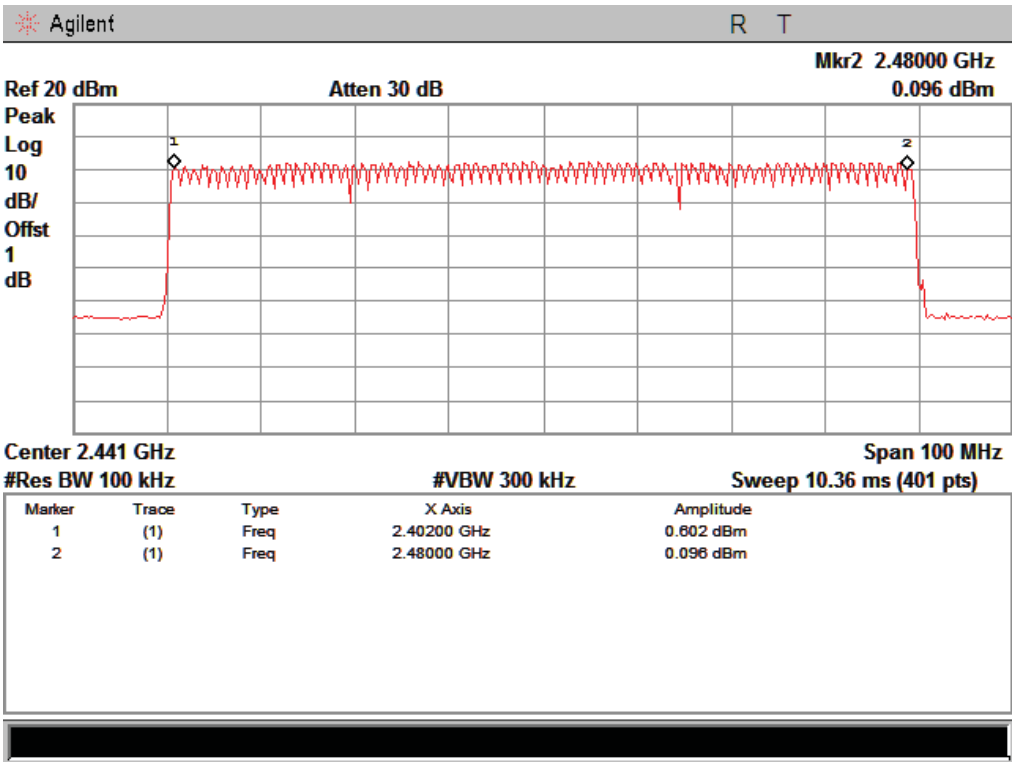
Original test data for hopping channel number
GFSK



Pi/4-DQPSK



8-DPSK


Agilent
R T
Mkr2 2.48000 GHz
Ref 20 dBm
Atten 30 dB
0.096 dBm
Peak
Log
10
dB/
Offst
1
dB
1
2
Center 2.441 GHz
Span 100 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 10.36 ms (401 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.40200 GHz 0.602 dBm
2 (1) Freq 2.48000 GHz 0.096 dBm

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.

Mode	Packet	Pulse Duration（ms）	Dwell time (second)	Limit (second)（s）	Result
GFSK	DH1	0.41	0.131	0.4	Pass
	DH3	1.66	0.266		
	DH5	2.89	0.308		
Pi/4DQPSK	2-DH1	0.42	0.134	0.4	Pass
	2-DH3	1.67	0.267		
	2-DH5	2.95	0.315		
8-DPSK	3-DH1	0.42	0.134	0.4	Pass
	3-DH3	1.66	0.266		
	3-DH5	2.92	0.312		

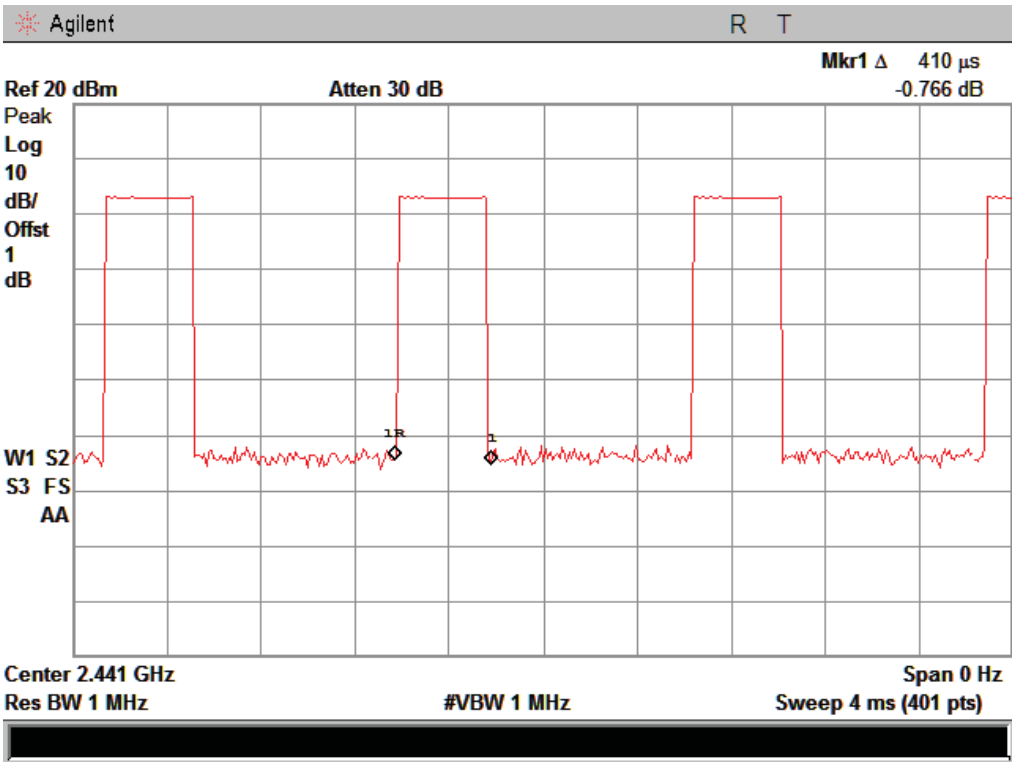
Note: 1 A period time = 0.4 (s) * 79 = 31.6(s)

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

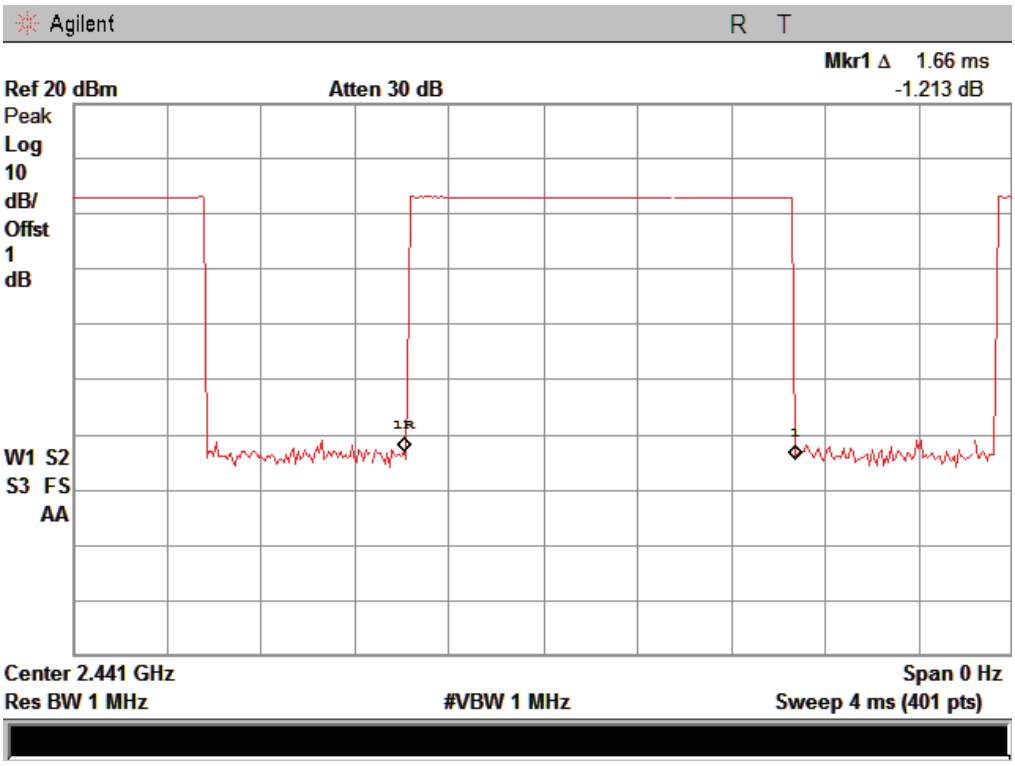
DH3 time slot = Pulse Duration * (1600/(4*79)) * A period time

DH5 time slot = Pulse Duration * (1600/(6*79)) * A period time

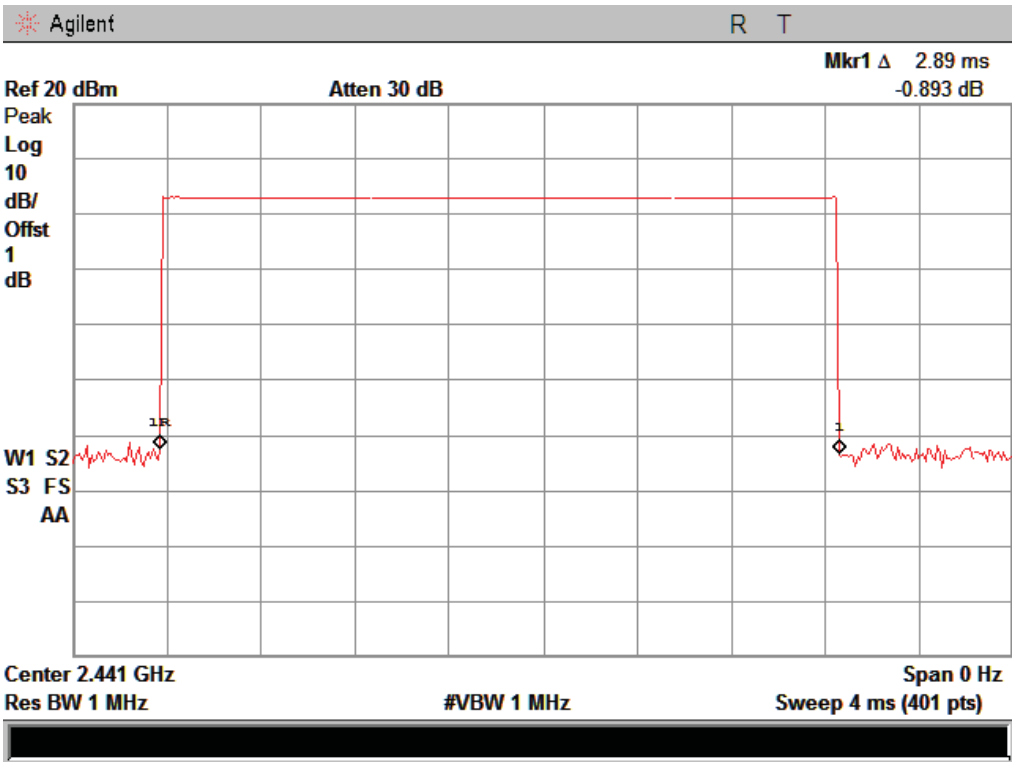
DH1:


Agilent
R T
Mkr1 Δ 410 µs
-0.766 dB
Ref 20 dBm
Atten 30 dB
Peak
Log
10
dB/
Offst
1
dB
W1 S2
S3 FS
AA
Center 2.441 GHz
Res BW 1 MHz
#VBW 1 MHz
Span 0 Hz
Sweep 4 ms (401 pts)

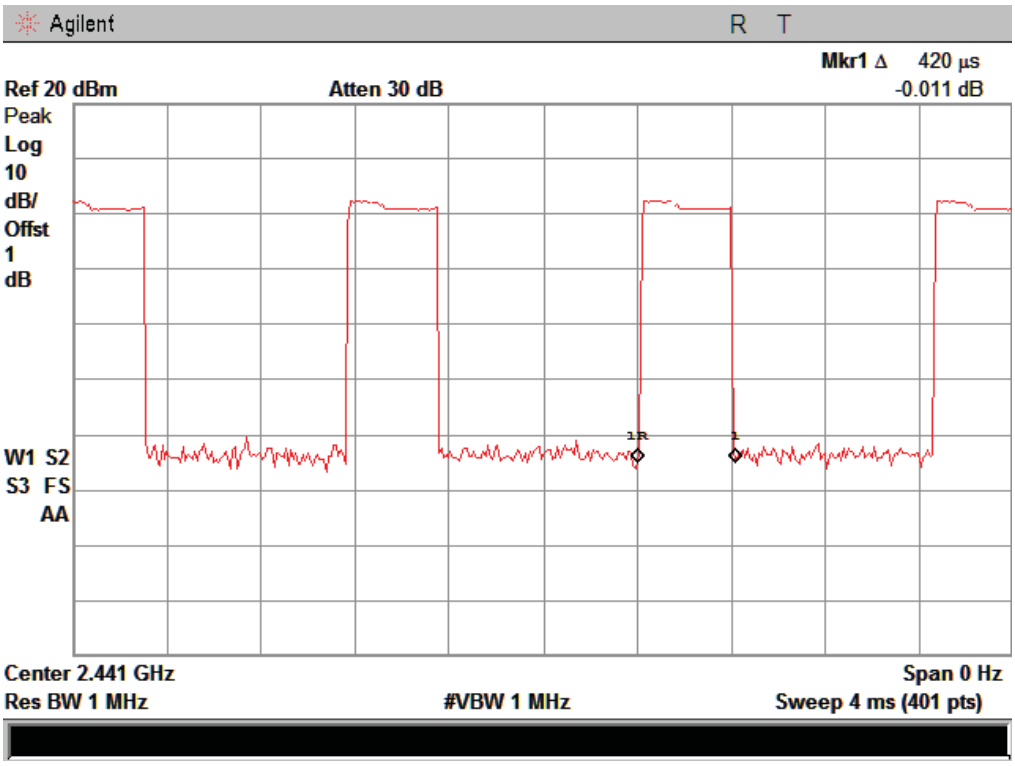
DH3:


Agilent
R T
Mkr1 Δ 1.66 ms
-1.213 dB
Ref 20 dBm
Atten 30 dB
Peak
Log
10
dB/
Offst
1
dB
W1 S2
S3 FS
AA
Center 2.441 GHz
Res BW 1 MHz
#VBW 1 MHz
Span 0 Hz
Sweep 4 ms (401 pts)

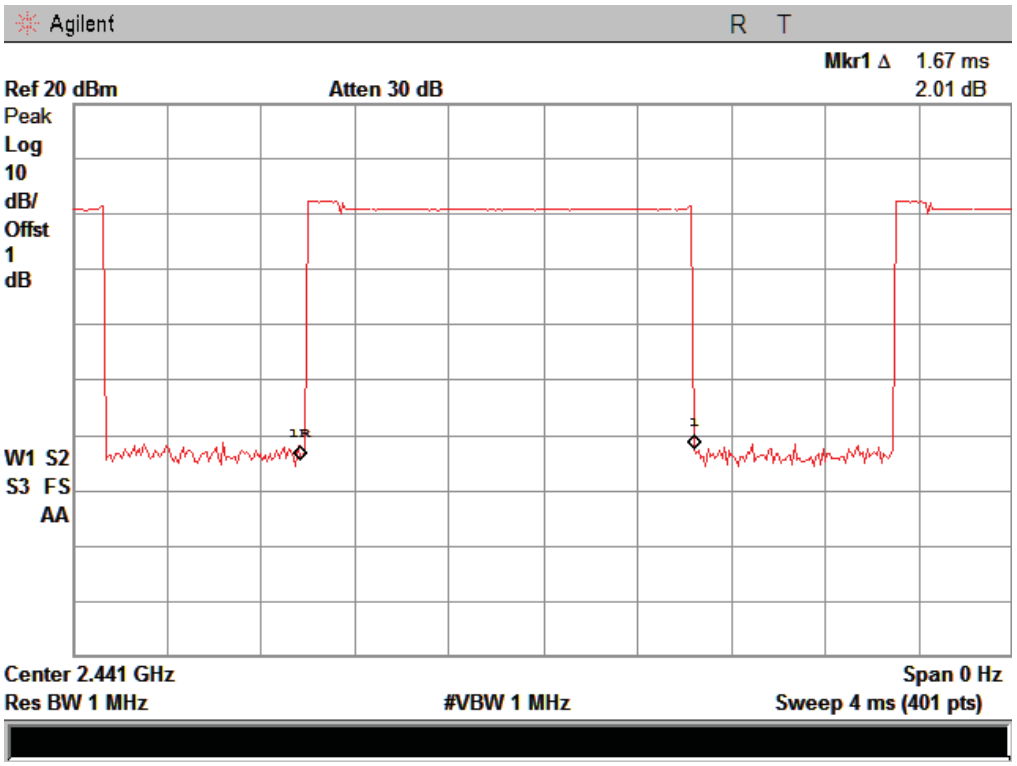
DH5:


Agilent
R T
Mkr1 Δ 2.89 ms
-0.893 dB
Ref 20 dBm
Atten 30 dB
Peak
Log
10
dB/
Offst
1
dB
W1 S2
S3 FS
AA
Center 2.441 GHz
Res BW 1 MHz
#VBW 1 MHz
Span 0 Hz
Sweep 4 ms (401 pts)

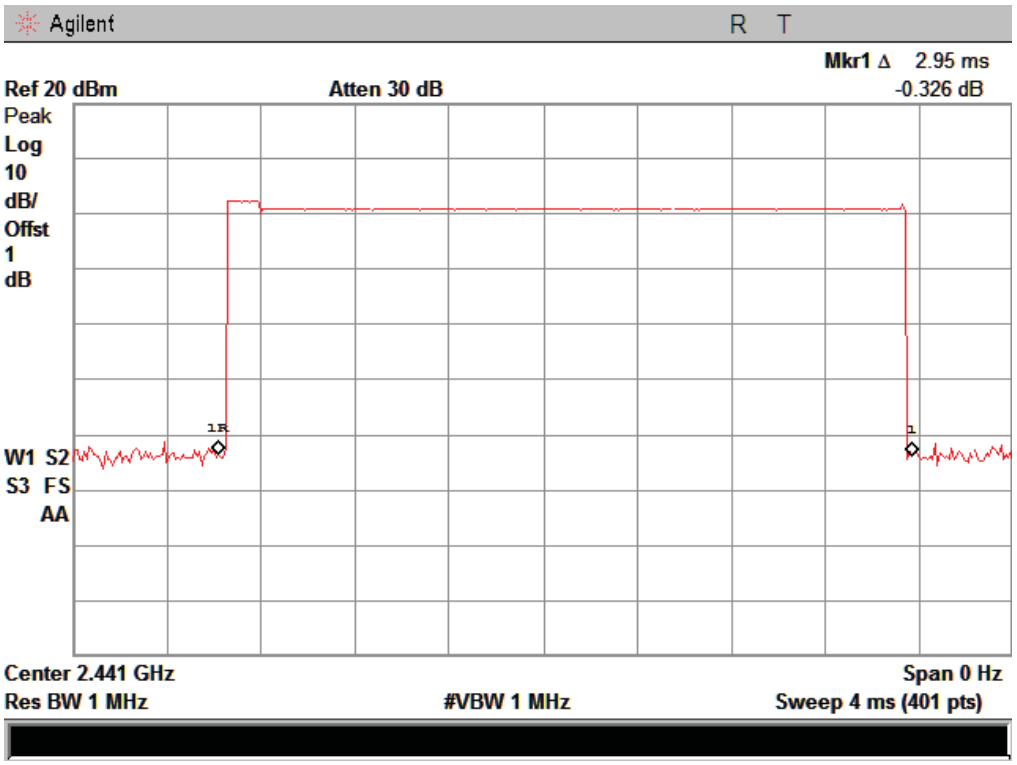
2DH1:


Agilent
R T
Mkr1 Δ 420 µs
-0.011 dB
Ref 20 dBm
Atten 30 dB
Peak
Log
10
dB/
Offst
1
dB
W1 S2
S3 FS
AA
Center 2.441 GHz
Res BW 1 MHz
#VBW 1 MHz
Span 0 Hz
Sweep 4 ms (401 pts)

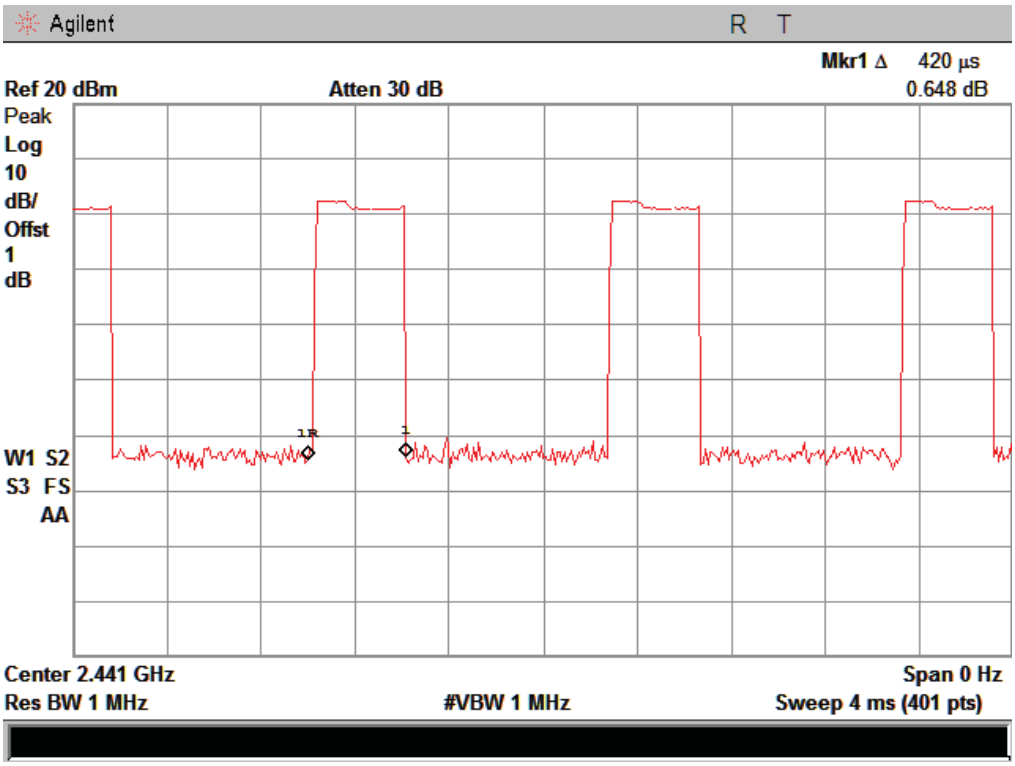
2DH3:


Agilent
R T
Mkr1 Δ 1.67 ms
2.01 dB
Ref 20 dBm
Atten 30 dB
Peak
Log
10
dB/
Offst
1
dB
W1 S2
S3 FS
AA
Center 2.441 GHz
Res BW 1 MHz
#VBW 1 MHz
Span 0 Hz
Sweep 4 ms (401 pts)

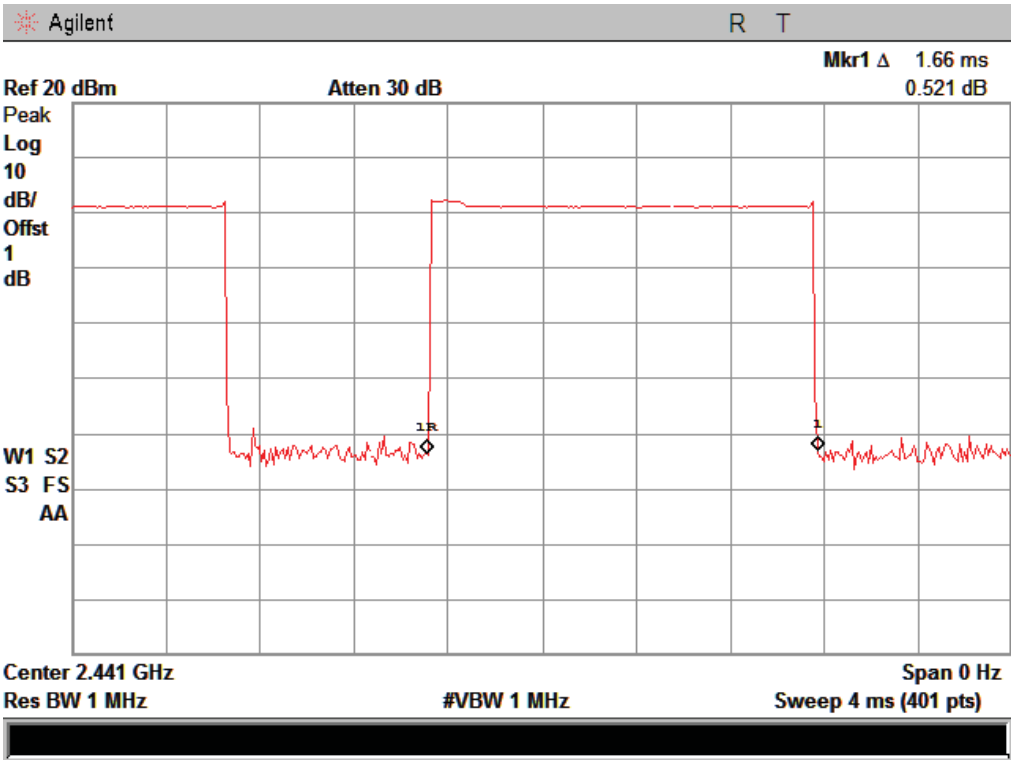
2DH5:


Agilent
R T
Mkr1 Δ 2.95 ms
-0.326 dB
Ref 20 dBm
Atten 30 dB
Peak
Log
10
dB/
Offst
1
dB
W1 S2
S3 FS
AA
Center 2.441 GHz
Res BW 1 MHz
#VBW 1 MHz
Span 0 Hz
Sweep 4 ms (401 pts)

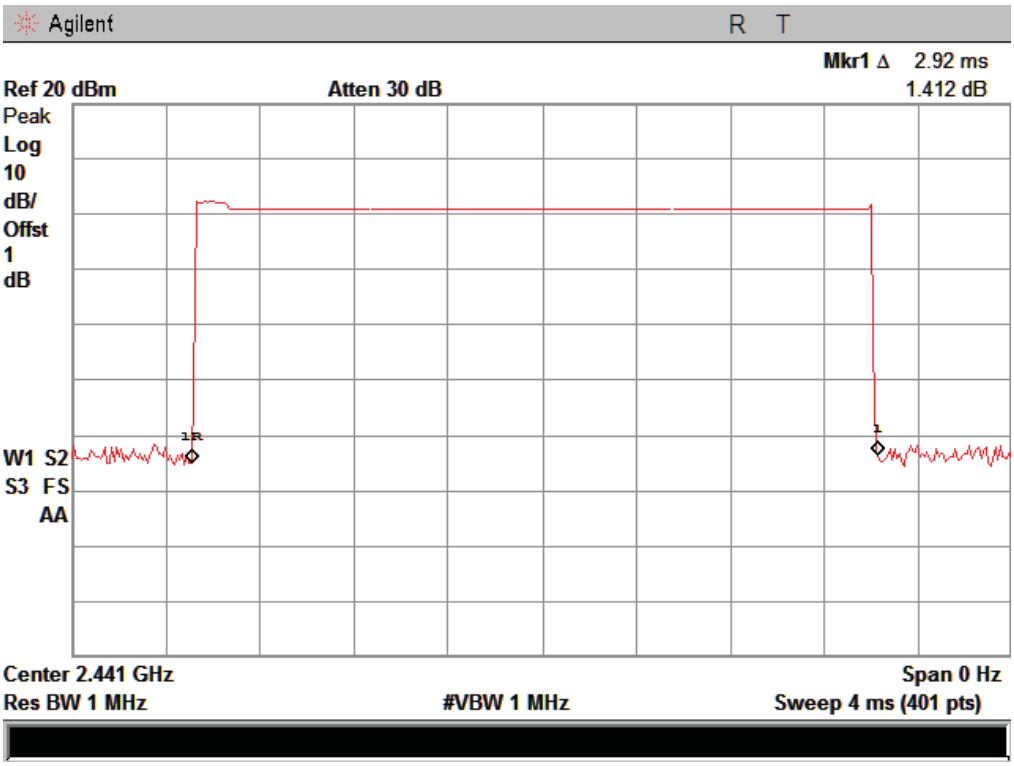
3DH1:


Agilent
R T
Mkr1 Δ 420 µs
0.648 dB
Ref 20 dBm
Atten 30 dB
Peak
Log
10
dB/
Offst
1
dB
W1 S2
S3 FS
AA
Center 2.441 GHz
Res BW 1 MHz
#VBW 1 MHz
Span 0 Hz
Sweep 4 ms (401 pts)

3DH3:


Agilent
R T
Mkr1 Δ 1.66 ms
0.521 dB
Ref 20 dBm
Atten 30 dB
Peak
Log
10
dB/
Offst
1
dB
W1 S2
S3 FS
AA
Center 2.441 GHz
Res BW 1 MHz
#VBW 1 MHz
Span 0 Hz
Sweep 4 ms (401 pts)

3DH5:


Agilent
R T
Mkr1 Δ 2.92 ms
1.412 dB
Ref 20 dBm
Atten 30 dB
Peak
Log
10
dB/
Offst
1
dB
W1 S2
S3 FS
AA
Center 2.441 GHz
Res BW 1 MHz
#VBW 1 MHz
Span 0 Hz
Sweep 4 ms (401 pts)

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

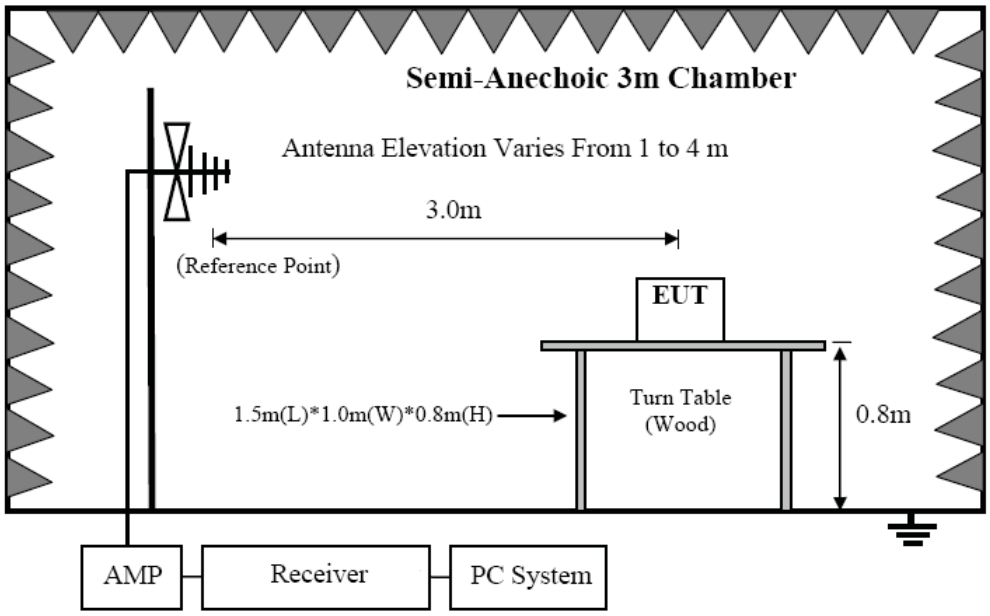
MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 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

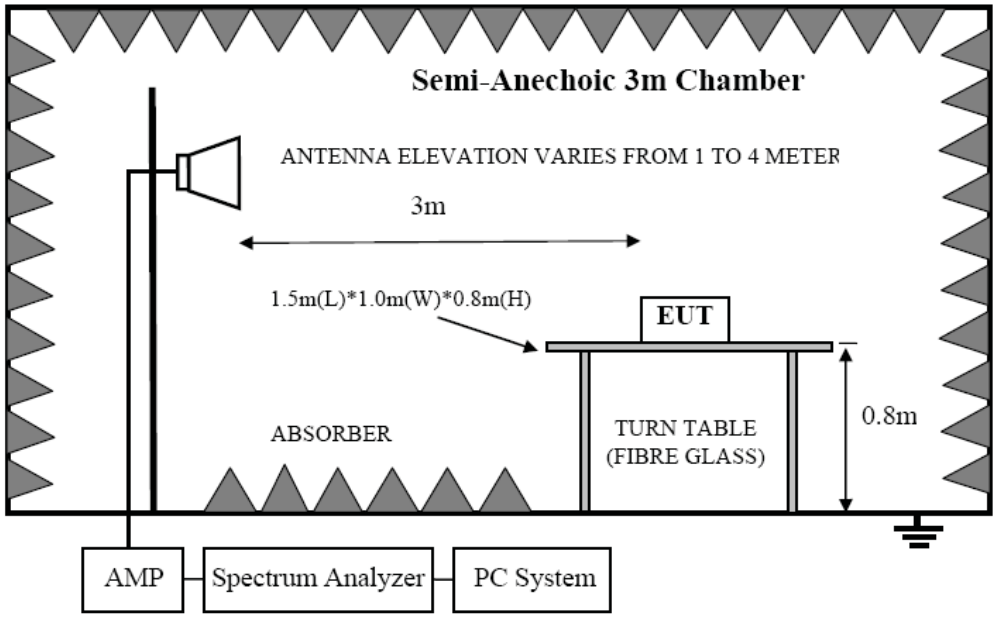
FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
0.009-0.490	300	2400/F(KHz)	/
0.490-1.705	30	24000/F(KHz)	/
1.705-30	30	30	29.5
30~88	3	100	40.0
88~216	3	150	43.5
216~960	3	200	46.0
960~1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

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) Power supplied by DC 5V From PC AC120V/60Hz or DC 3.7V from battery.
(d) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produce highest emissions
(4) Spectrum frequency from 9 kHz 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 2003 on 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.

8.4. Test Result

We have scanned the 10th harmonic from 9 kHz to the EUT.
Detailed information please see the following page.

From 9 kHz to 30 MHz: Conclusion: PASS

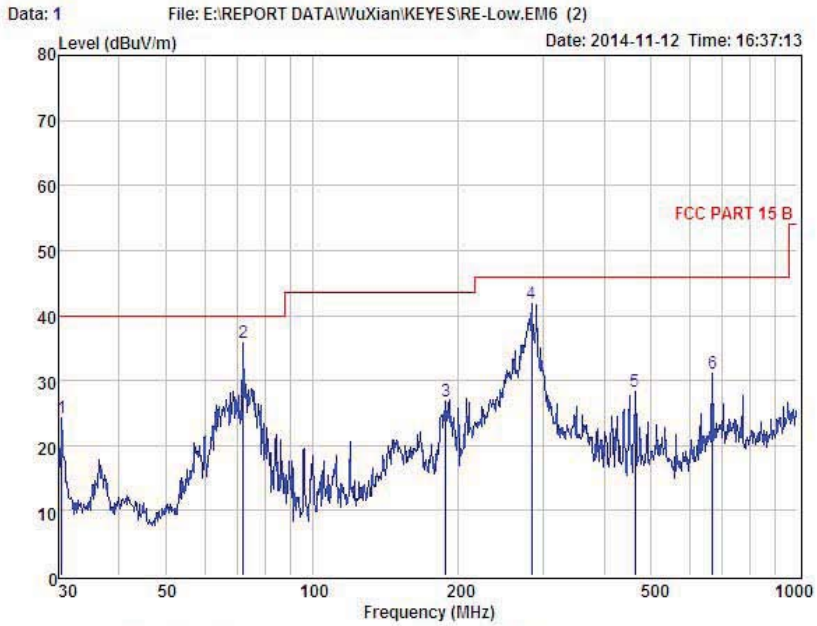
Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Remark: All three modulations of EUT have been tested, only show the test data of the worst modulation（GFSK） in this report, And GFSK low channel is worse case for 30MHz-1GHz test .

From 30MHz to 1000MHz: Conclusion: PASS

Horizontal:

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com



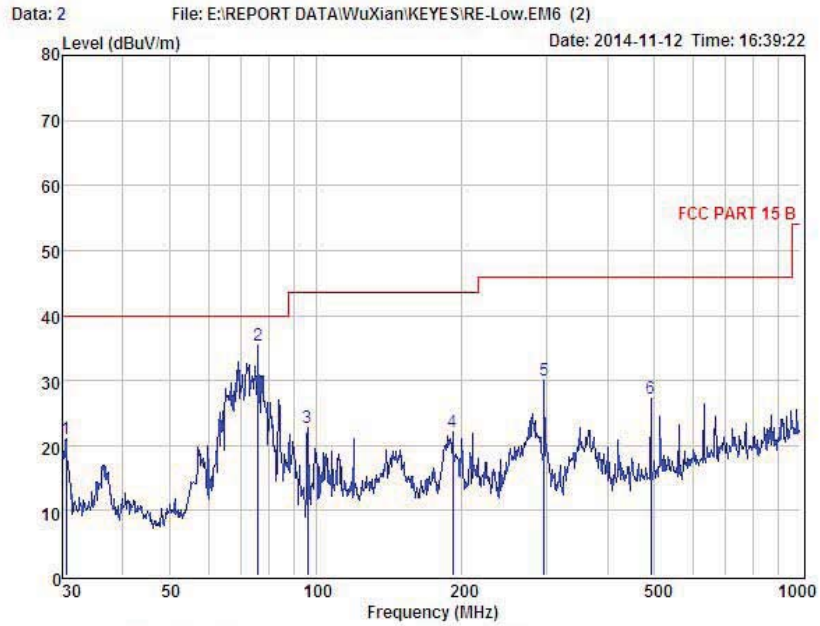
Condition : FCC PART 15 B 3m POL: HORIZONTAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : GFSK TX 2402MHz
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 25.2°C
Hum : 56%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	30.42	41.90	13.22	30.91	0.03	24.24	40.00	-15.76	QP
2	72.08	56.43	10.51	31.41	0.19	35.72	40.00	-4.28	QP
3	188.41	46.85	10.71	31.25	0.55	26.86	43.50	-16.64	QP
4	282.99	59.89	12.45	31.00	0.56	41.90	46.00	-4.10	QP
5	462.35	41.93	16.08	30.66	0.98	28.33	46.00	-17.67	QP
6	668.14	41.06	19.30	30.31	1.01	31.06	46.00	-14.94	QP

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

Vertical:

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com



Condition : FCC PART 15 B 3m POL: VERTICAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : GFSK TX 2402MHz
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 25.2°C
Hum : 56%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	30.53	38.64	13.22	30.95	0.07	20.98	40.00	-19.02	QP
2	75.98	56.63	9.90	31.45	0.25	35.33	40.00	-4.67	QP
3	96.10	43.97	9.87	31.57	0.41	22.68	43.50	-20.82	QP
4	191.75	42.47	10.36	31.35	0.58	22.06	43.50	-21.44	QP
5	296.18	47.25	12.71	30.89	0.87	29.94	46.00	-16.06	QP
6	490.74	40.23	16.41	30.57	1.08	27.15	46.00	-18.85	QP

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

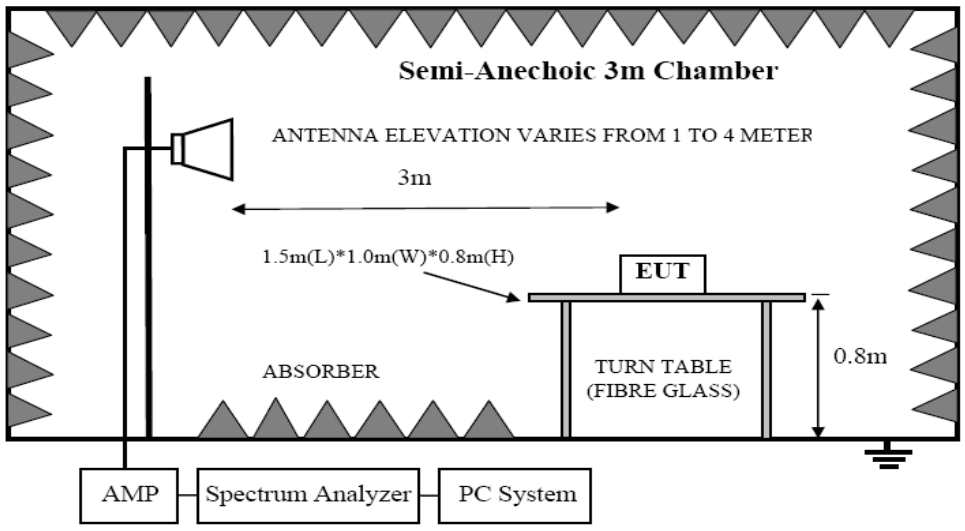
1GHz—25GHz Radiated emissison Test result									
EUT: bluetooth module M/N: keyes HC-06									
Power: DC 3.3V									
Test date: 2014-11-12 Test site: 3m Chamber Tested by: Store									
Test mode: GFSK Tx CH0 2402MHz									
Antenna polarity: Vertical									
No	Freq (MHz)	Read Level (dBuV/m)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4804	51.65	33.95	10.18	34.26	61.52	74	12.48	PK
2	4804	36.83	33.95	10.18	34.26	46.70	54	7.30	AV
3	7206	/							
4	9608	/							
5	12010	/							
Antenna Polarity: Horizontal									
1	4804	52.56	33.95	10.18	34.26	62.43	74	11.57	PK
2	4804	38.20	33.95	10.18	34.26	48.07	54	5.93	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.									

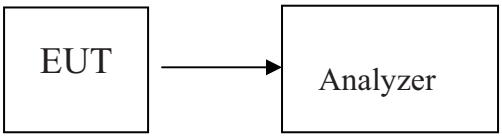
1GHz—25GHz Radiated emissison Test result									
EUT: bluetooth module M/N: keyes HC-06									
Power: DC 3.3V									
Test date: 2014-11-12 Test site: 3m Chamber Tested by: Store									
Test mode: GFSK Tx CH39 2441MHz									
Antenna polarity: Vertical									
No	Freq (MHz)	Read Level (dBuV/m)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4882	52.79	33.93	10.2	34.29	62.63	74	11.37	PK
2	4882	38.71	33.93	10.2	34.29	48.55	54	5.45	AV
3	7323	/							
4	9764	/							
5	12205	/							
Antenna Polarity: Horizontal									
1	4882	51.24	33.93	10.2	34.29	61.08	74	12.92	PK
2	4882	39.25	33.93	10.2	34.29	49.09	54	4.91	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 modules M/N: keyes HC-06									
Power: DC 3.3V									
Test date: 2014-11-12 Test site: 3m Chamber Tested by: Store									
Test mode: GFSK Tx CH78 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	50.14	33.98	10.22	34.25	60.09	74	13.91	PK
2	4960	39.28	33.98	10.22	34.25	49.23	54	4.77	AV
3	7440	/							
4	9920	/							
5	12400	/							
Antenna Polarity: Horizontal									
1	4960	51.32	33.98	10.22	34.25	61.27	74	12.73	PK
2	4960	38.16	33.98	10.22	34.25	48.11	54	5.89	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

Please refer section15.247

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

9.3. Test Procedure

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

9.3.2 Check the spurious emissions out of band.

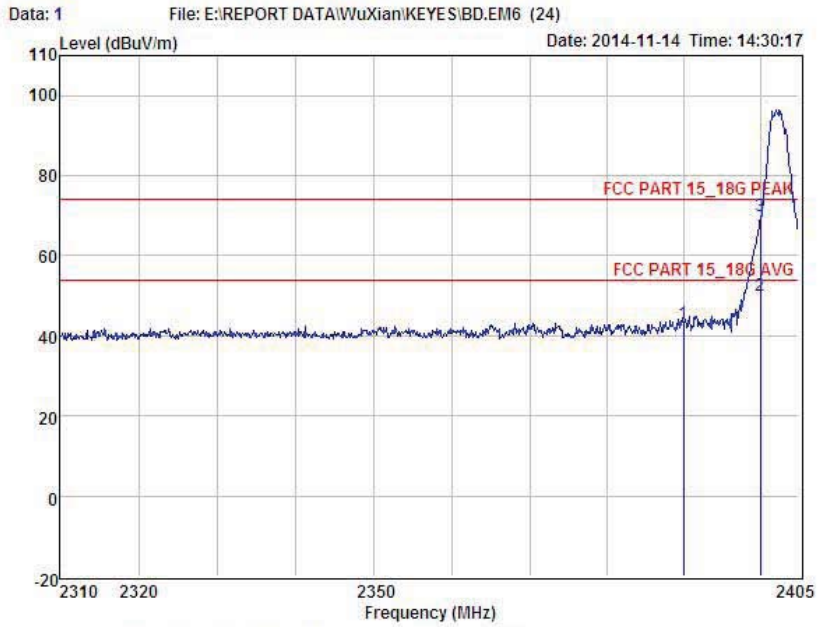
9.3.3 RBW, VBW Setting, please see the following test plot.

9.4. Test Result

PASS. (See below detailed test data)

Radiated Method
GFSK：CH LOW :

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com

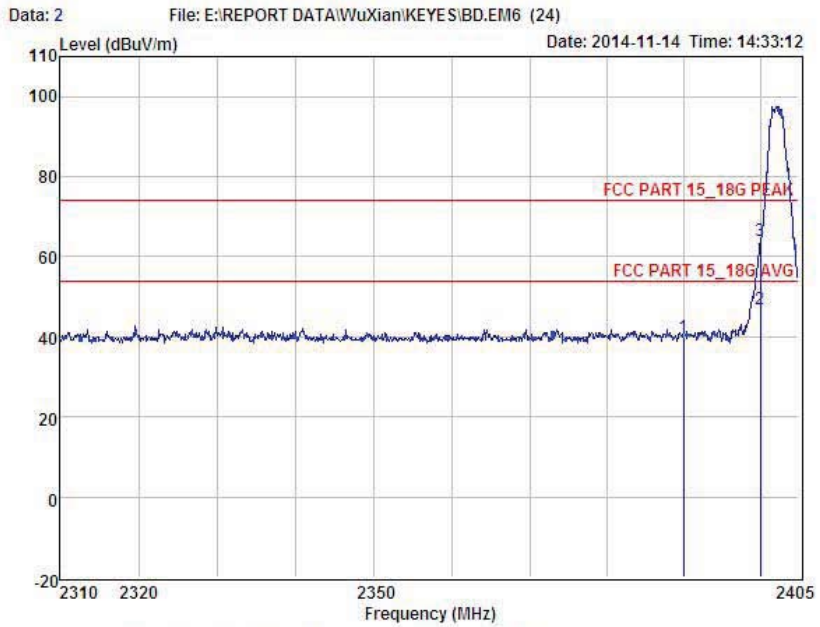


Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : GFSK TX Low CH0
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	46.43	27.62	34.97	3.92	43.00	74.00	-31.00	Peak
2	2400.00	53.52	27.62	34.97	3.94	50.11	54.00	-3.89	Average
3	2400.00	73.32	27.62	34.97	3.94	69.91	74.00	-4.09	Peak

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

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com



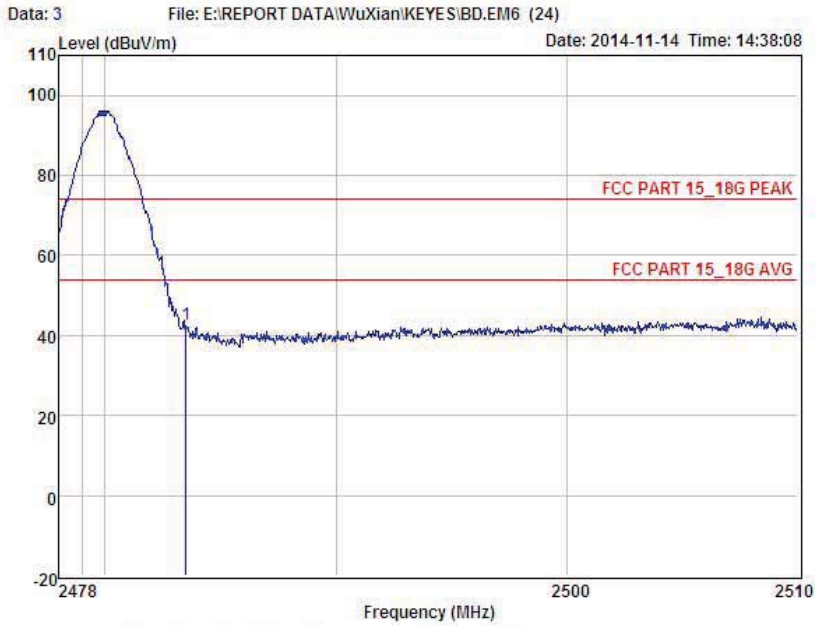
Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : GFSK TX Low CH0
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	43.53	27.62	34.97	3.92	40.10	74.00	-33.90	Peak
2	2400.00	50.42	27.62	34.97	3.94	47.01	54.00	-6.99	Average
3	2400.00	67.27	27.62	34.97	3.94	63.86	74.00	-10.14	Peak

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

CH High :

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com

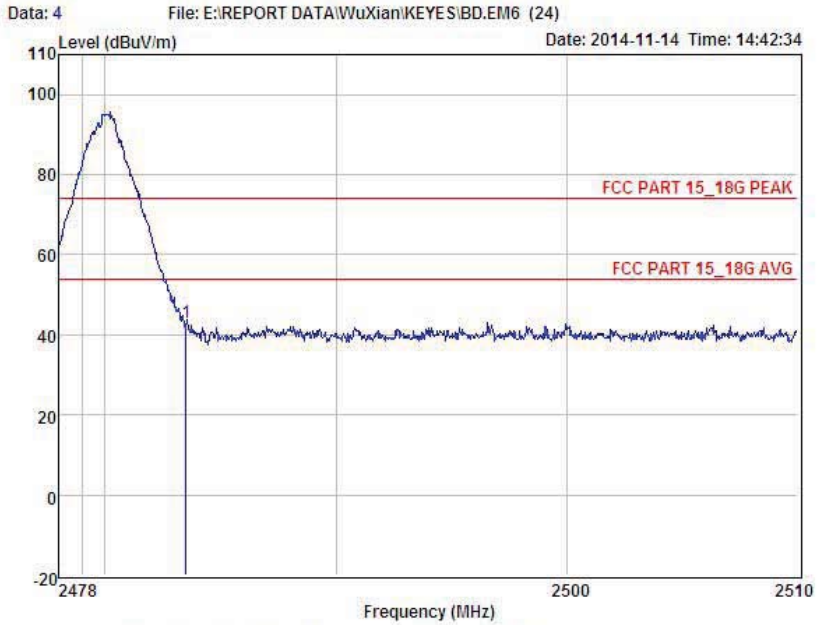


Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : GFSK TX High CH78
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2483.50	46.15	27.59	34.97	4.00	42.77	74.00	-31.23	Peak

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

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com



Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : GFSK TX High CH78
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

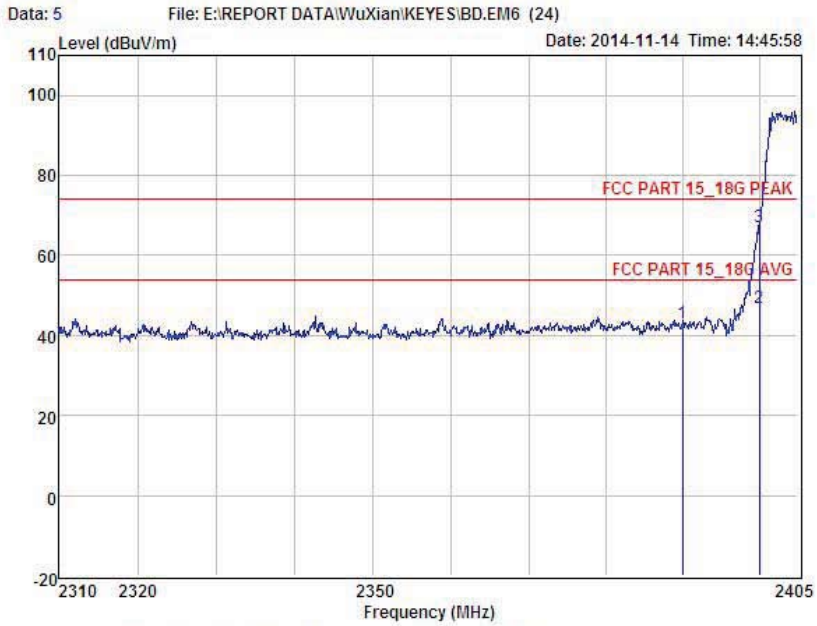
Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2483.50	46.55	27.59	34.97	4.00	43.17	74.00	-30.83	Peak

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

Hopping

Lowest CH：

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com

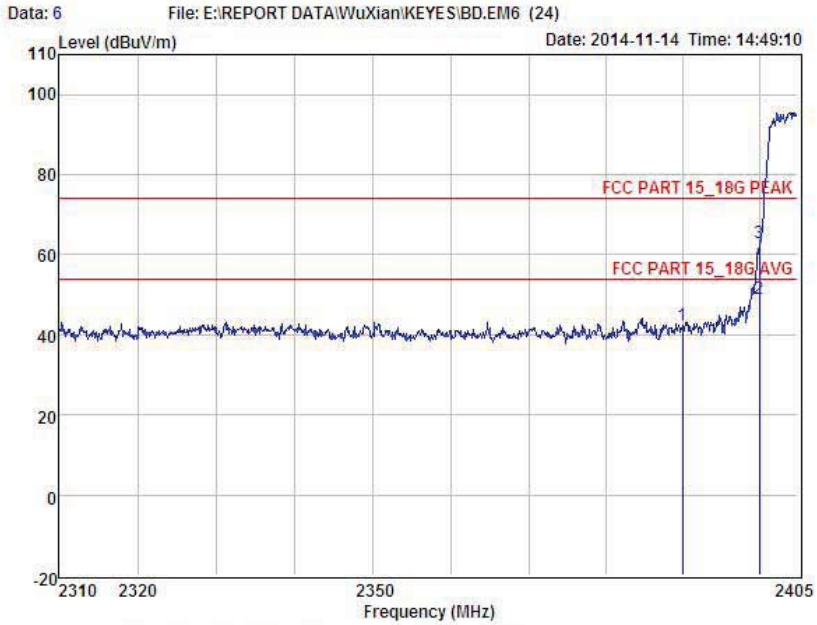


Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : Hopping mode (GFSK) CH0
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	46.39	27.62	34.97	3.92	42.96	74.00	-31.04	Peak
2	2400.00	50.33	27.62	34.97	3.94	46.92	54.00	-7.08	Average
3	2400.00	70.64	27.62	34.97	3.94	67.23	74.00	-6.77	Peak

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

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com



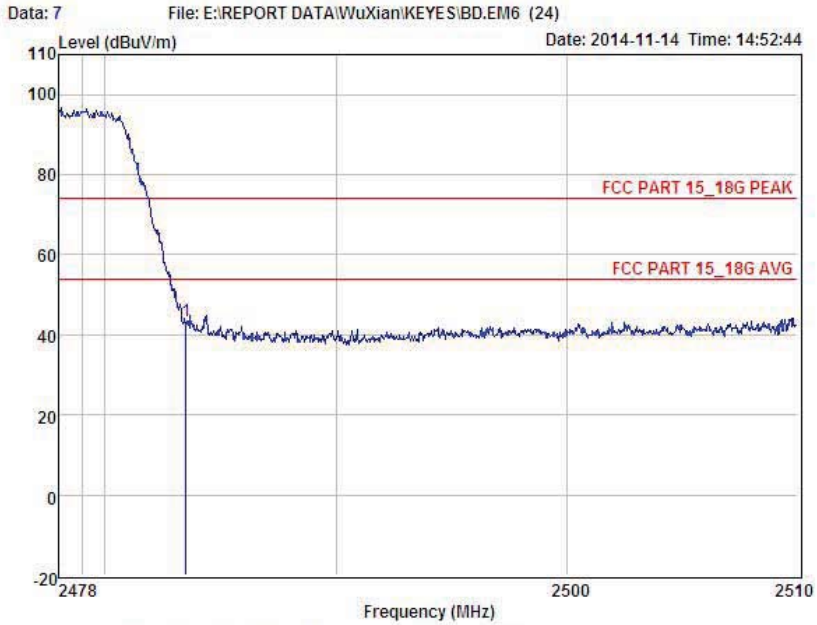
Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : Hopping mode (GFSK) CH0
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	45.71	27.62	34.97	3.92	42.28	74.00	-31.72	Peak
2	2400.00	52.58	27.62	34.97	3.94	49.17	54.00	-4.83	Average
3	2400.00	66.31	27.62	34.97	3.94	62.90	74.00	-11.10	Peak

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

Highest CH：

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com



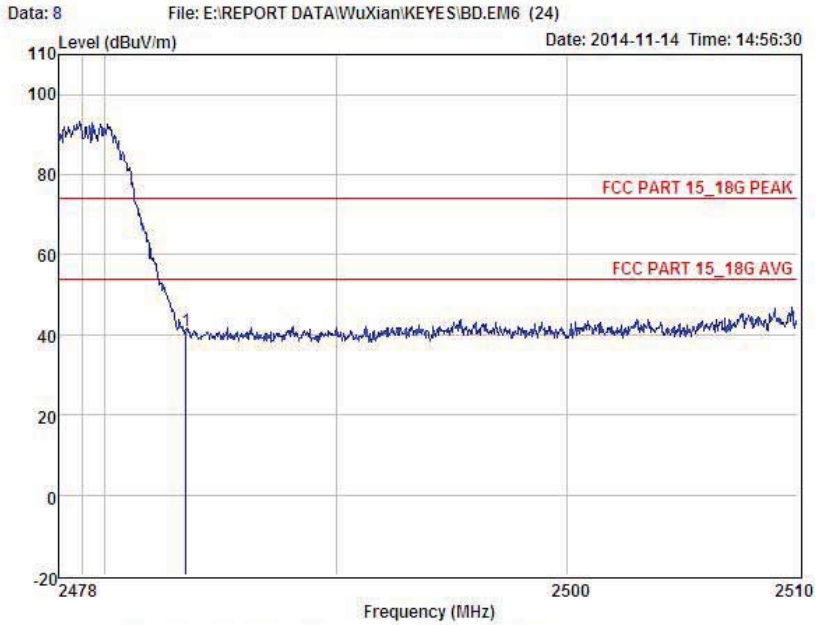
Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : Hopping mode (GFSK) CH78
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2483.50	46.79	27.59	34.97	4.00	43.41	74.00	-30.59	Peak

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

c

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com



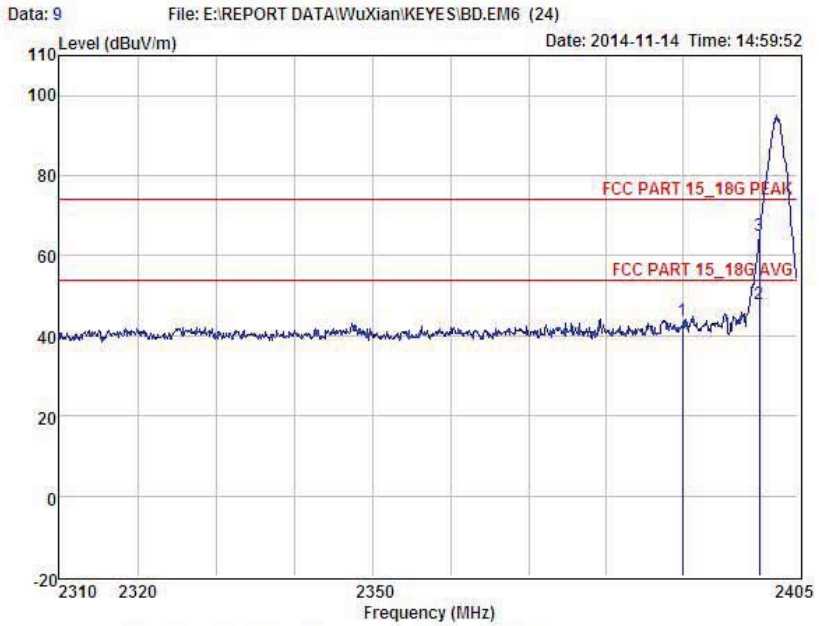
Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : Hopping mode (GFSK) CH78
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2483.50	44.27	27.59	34.97	4.00	40.89	74.00	-33.11	Peak

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

Pi/4-DQPSK
Lowest CH :

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com

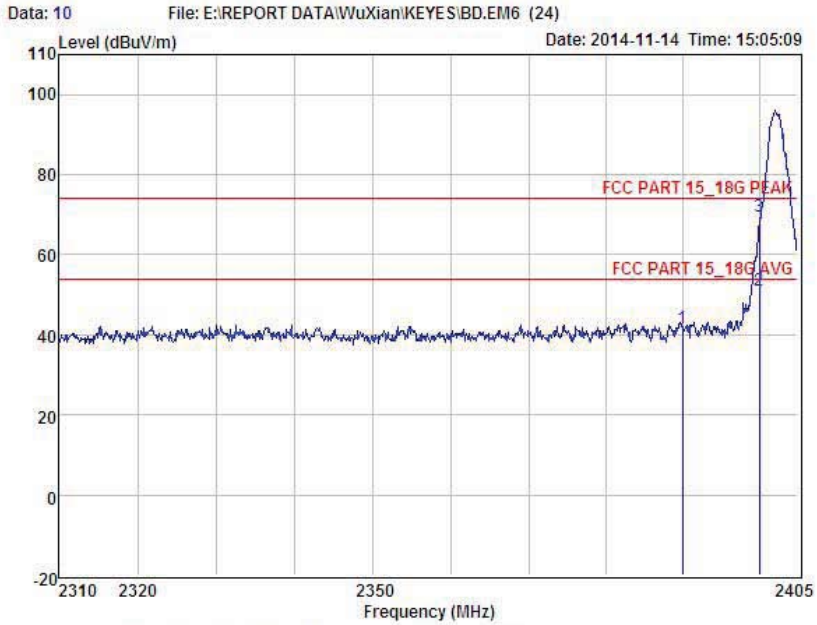


Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : π/4DQPSK TX Low CH0
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	47.17	27.62	34.97	3.92	43.74	74.00	-30.26	Peak
2	2400.00	51.54	27.62	34.97	3.94	48.13	54.00	-5.87	Average
3	2400.00	68.35	27.62	34.97	3.94	64.94	74.00	-9.06	Peak

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

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com



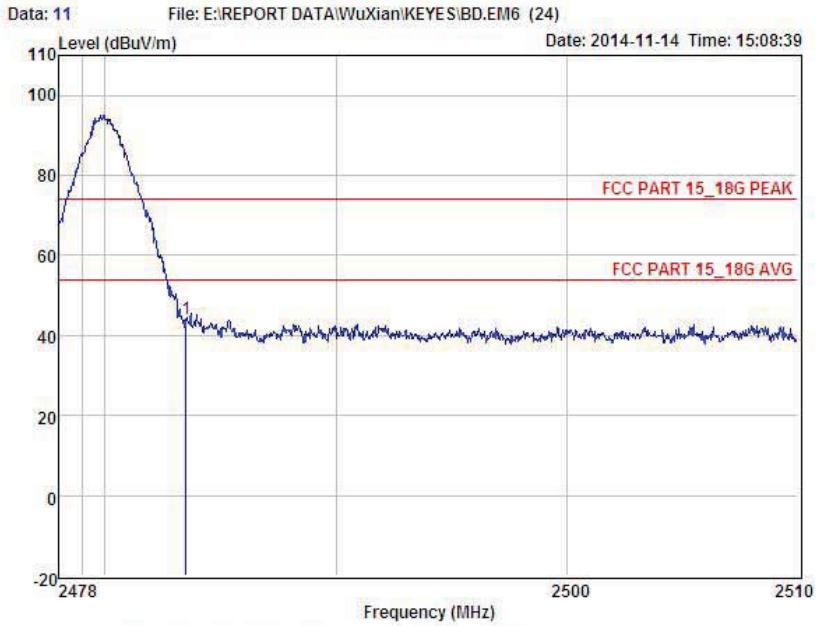
Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : π/4DQPSK TX Low CH0
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	45.12	27.62	34.97	3.92	41.69	74.00	-32.31	Peak
2	2400.00	54.68	27.62	34.97	3.94	51.27	54.00	-2.73	Average
3	2400.00	72.91	27.62	34.97	3.94	69.50	74.00	-4.50	Peak

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

Highest CH:

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com

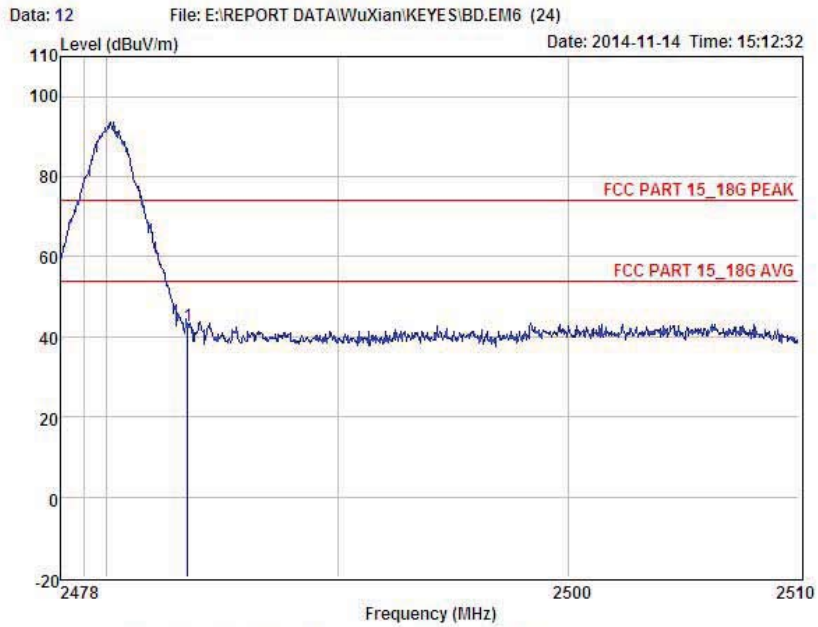


Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : π/4DQPSK TX High CH78
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2483.50	47.36	27.59	34.97	4.00	43.98	74.00	-30.02	Peak

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

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com



Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : n/4DQPSK TX High CH78
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

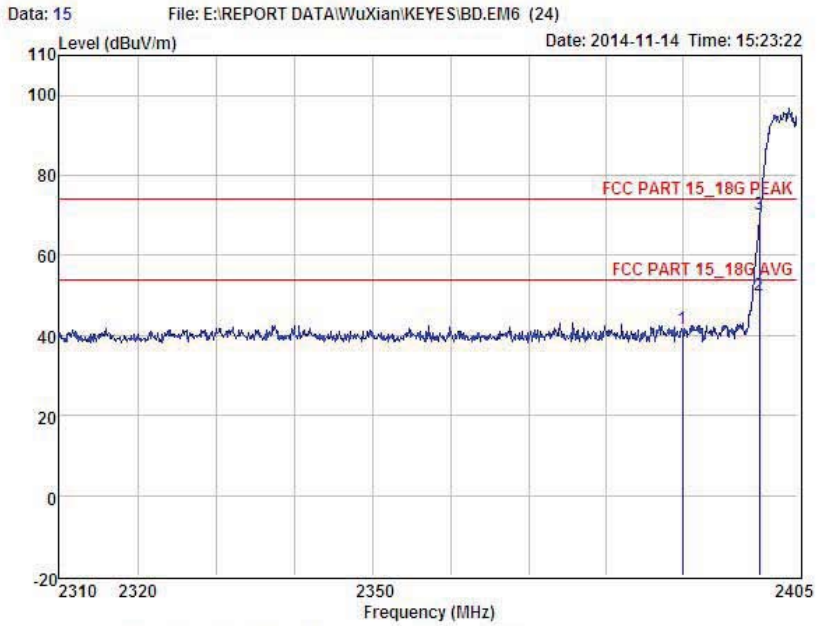
Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2483.50	46.26	27.59	34.97	4.00	42.88	74.00	-31.12	Peak

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

Hopping mode:

Lowest CH :

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com

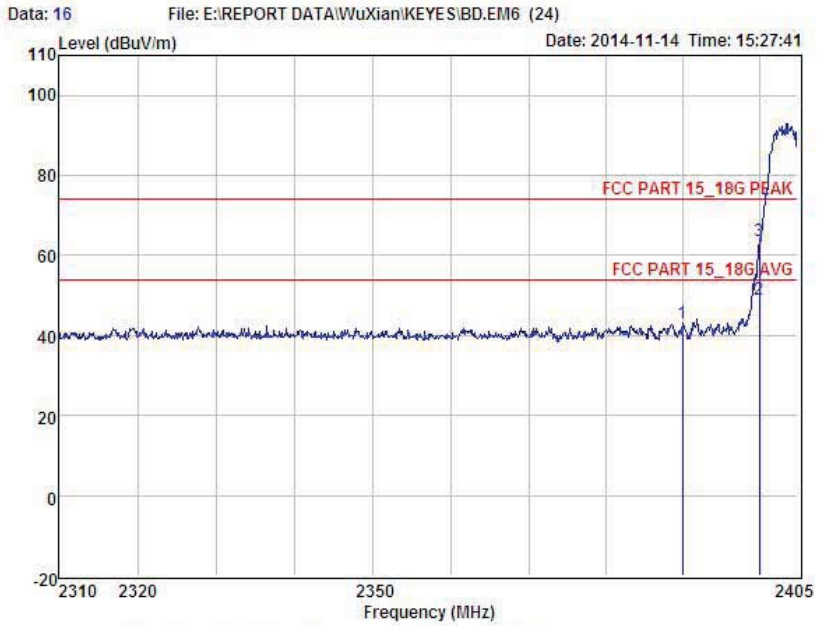


Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : Hopping mode (π/4DQPSK) CH0
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	45.14	27.62	34.97	3.92	41.71	74.00	-32.29	Peak
2	2400.00	53.38	27.62	34.97	3.94	49.97	54.00	-4.03	Average
3	2400.00	73.66	27.62	34.97	3.94	70.25	74.00	-3.75	Peak

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

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com



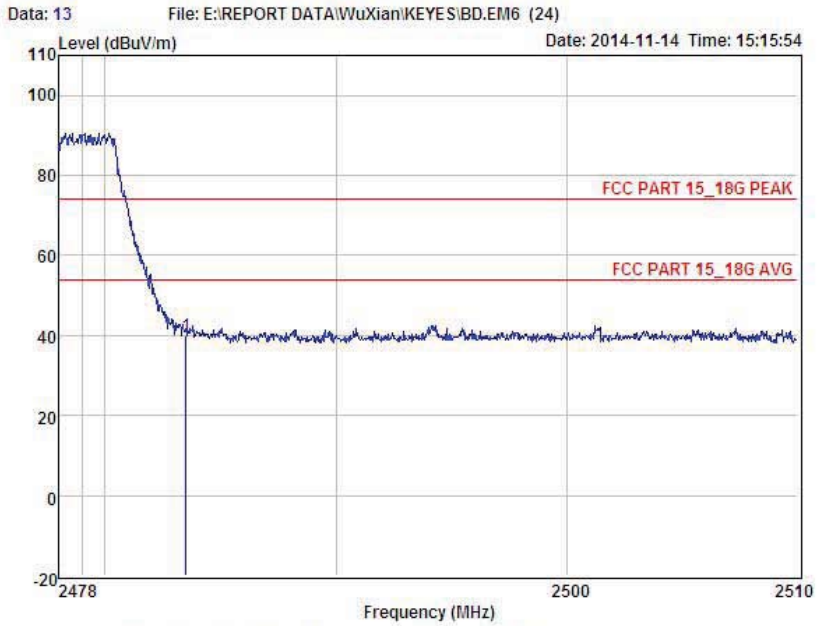
Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : Hopping mode (π/4DQPSK) CH0
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	46.38	27.62	34.97	3.92	42.95	74.00	-31.05	Peak
2	2400.00	52.30	27.62	34.97	3.94	48.89	54.00	-5.11	Average
3	2400.00	67.18	27.62	34.97	3.94	63.77	74.00	-10.23	Peak

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

Highest CH:

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com

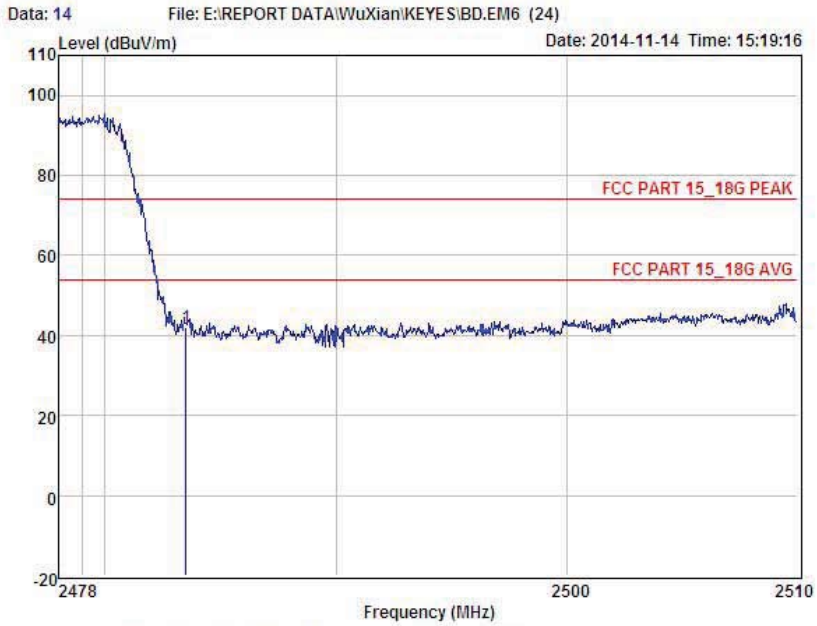


Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : Hopping mode (π/4DQPSK) CH78
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2483.50	43.41	27.59	34.97	4.00	40.03	74.00	-33.97	Peak

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

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com



Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : Hopping mode (π/4DQPSK) CH78
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

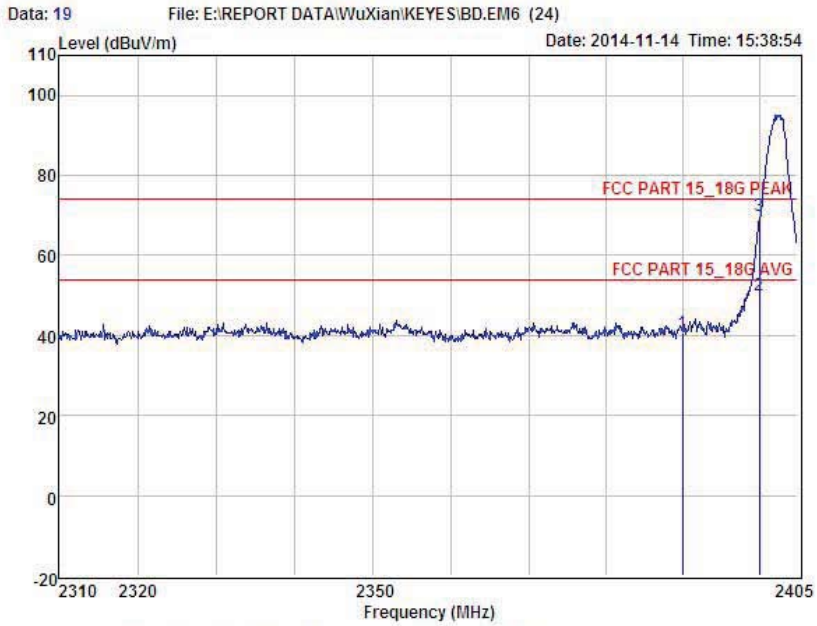
Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2483.50	45.53	27.59	34.97	4.00	42.15	74.00	-31.85	Peak

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

8-DPSK

Lowest CH:

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com

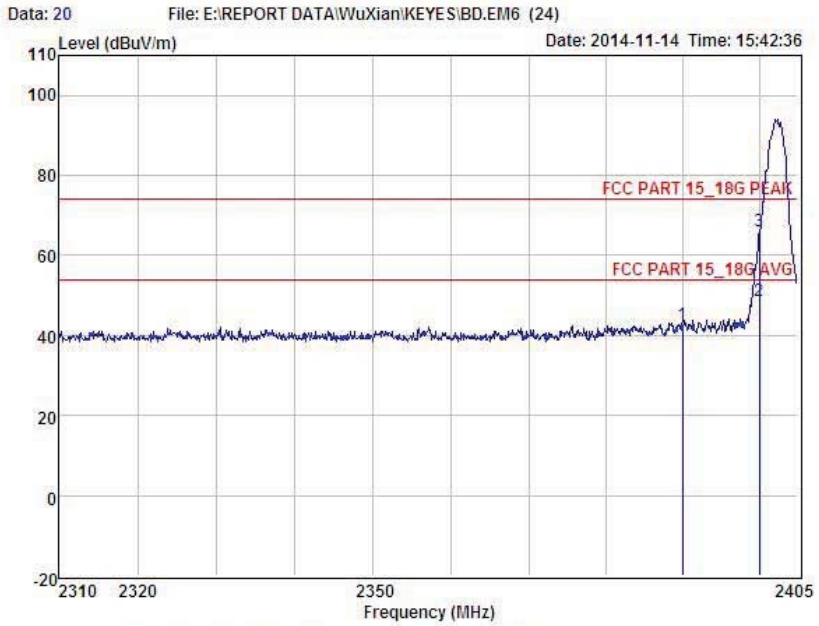


Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : 8-DPSK TX Low CH0
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	44.15	27.62	34.97	3.92	40.72	74.00	-33.28	Peak
2	2400.00	53.40	27.62	34.97	3.94	49.99	54.00	-4.01	Average
3	2400.00	73.24	27.62	34.97	3.94	69.83	74.00	-4.17	Peak

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

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com



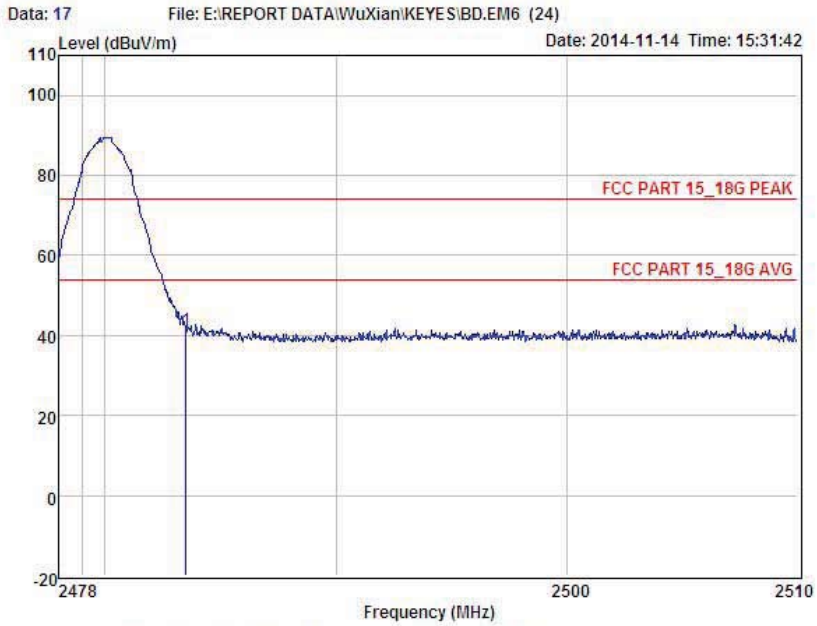
Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : 8-DPSK TX Low CH0
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	46.06	27.62	34.97	3.92	42.63	74.00	-31.37	Peak
2	2400.00	52.13	27.62	34.97	3.94	48.72	54.00	-5.28	Average
3	2400.00	69.32	27.62	34.97	3.94	65.91	74.00	-8.09	Peak

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

Highest CH:

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com

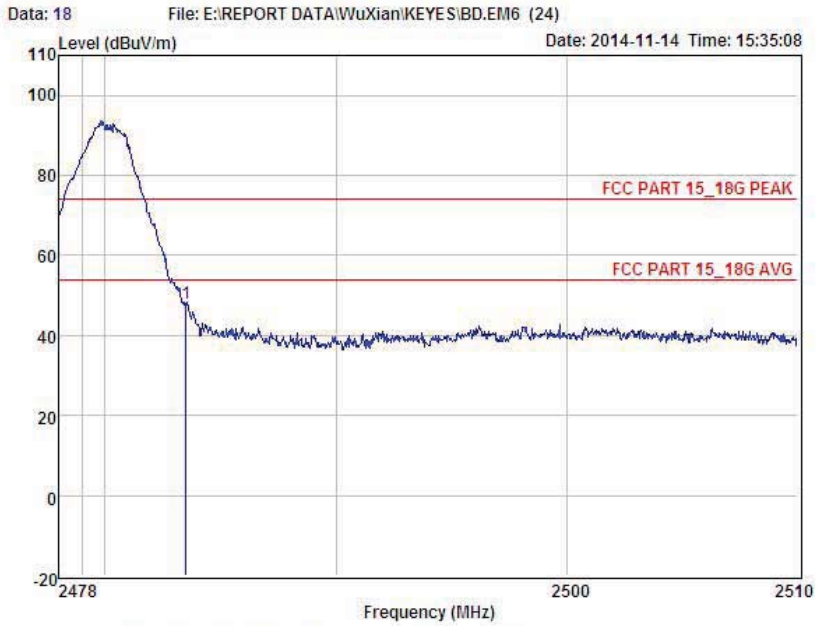


Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : 8-DPSK TX High CH78
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2483.50	44.75	27.59	34.97	4.00	41.37	74.00	-32.63	Peak

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

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com



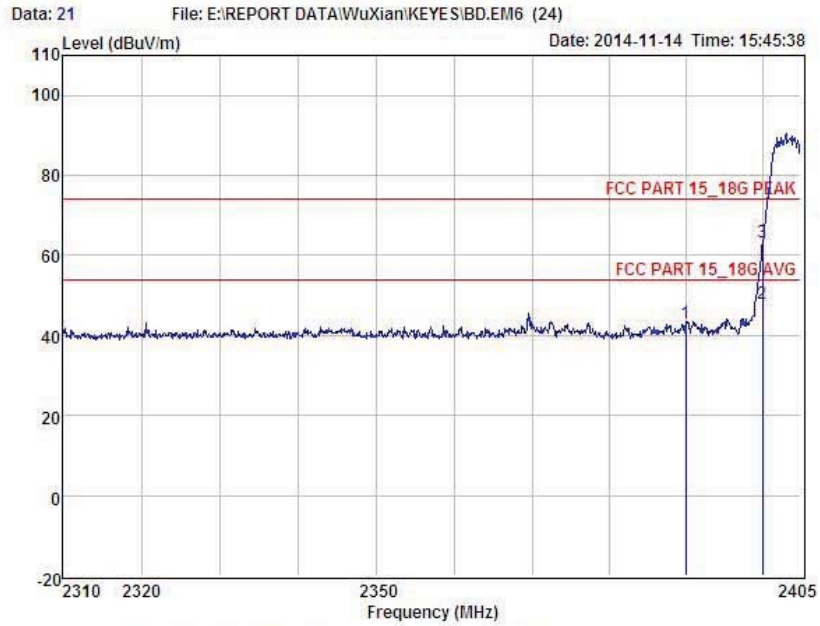
Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : 8-DPSK TX High CH78
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2483.50	51.34	27.59	34.97	4.00	47.96	74.00	-26.04	Peak

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

Hopping mode:

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com

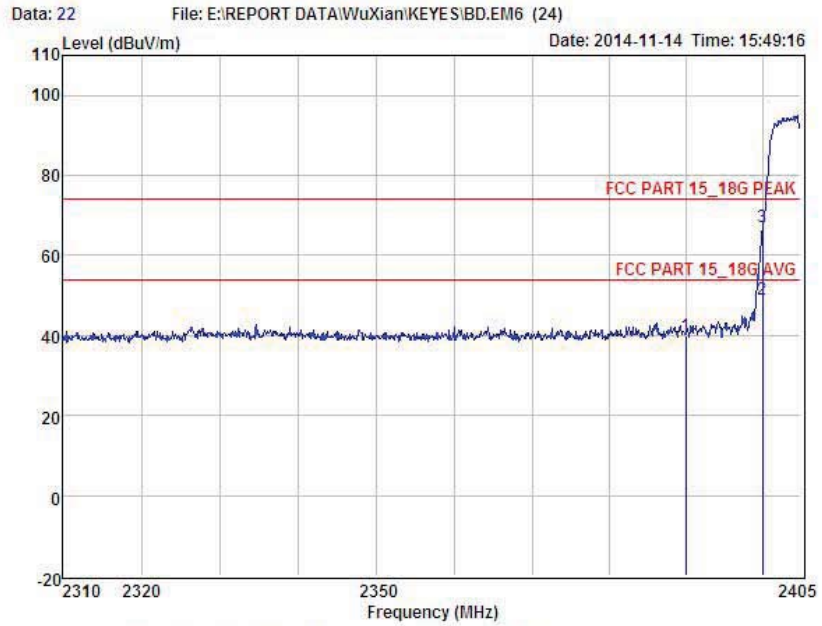


Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : Hopping mode (8-DPSK) CH0
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	46.55	27.62	34.97	3.92	43.12	74.00	-30.88	Peak
2	2400.00	51.32	27.62	34.97	3.94	47.91	54.00	-6.09	Average
3	2400.00	66.54	27.62	34.97	3.94	63.13	74.00	-10.87	Peak

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

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com

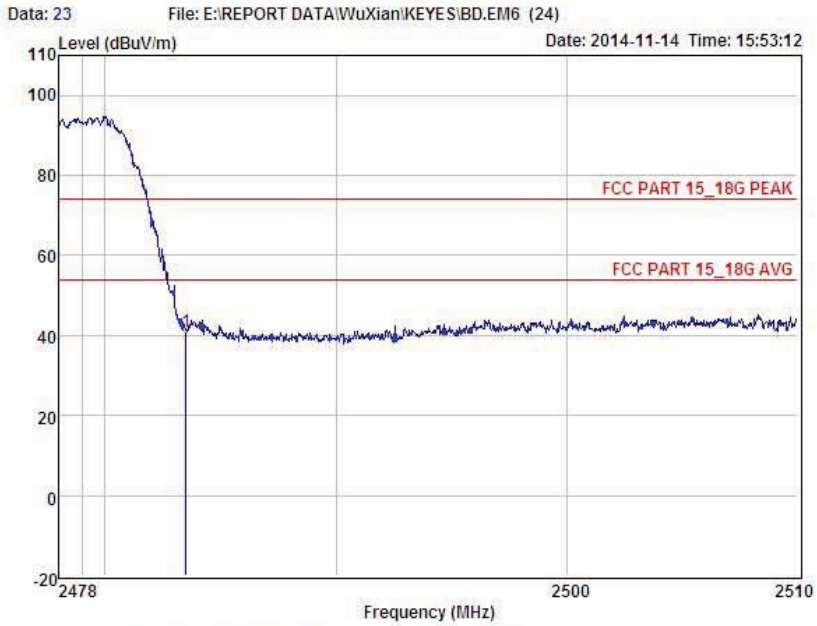


Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : Hopping mode (8-DPSK) CH0
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	43.46	27.62	34.97	3.92	40.03	74.00	-33.97	Peak
2	2400.00	52.39	27.62	34.97	3.94	48.98	54.00	-5.02	Average
3	2400.00	70.52	27.62	34.97	3.94	67.11	74.00	-6.89	Peak

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

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com

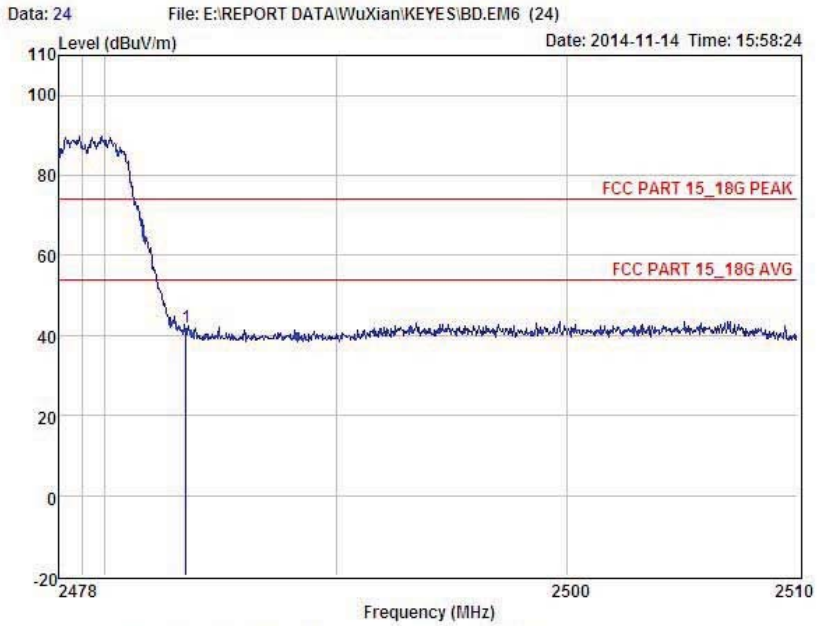


Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : Hopping mode (8-DPSK) CH78
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2483.50	44.42	27.59	34.97	4.00	41.04	74.00	-32.96	Peak

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

Shenzhen Certification Technology Service Co., Ltd.
2F, Building B, East Area of Nanchang Second Industrial Zone,
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China
Tel: 4006786199 FAX: +86-755-26736857
Website: http://www.cessz.com Email: Service@cessz.com



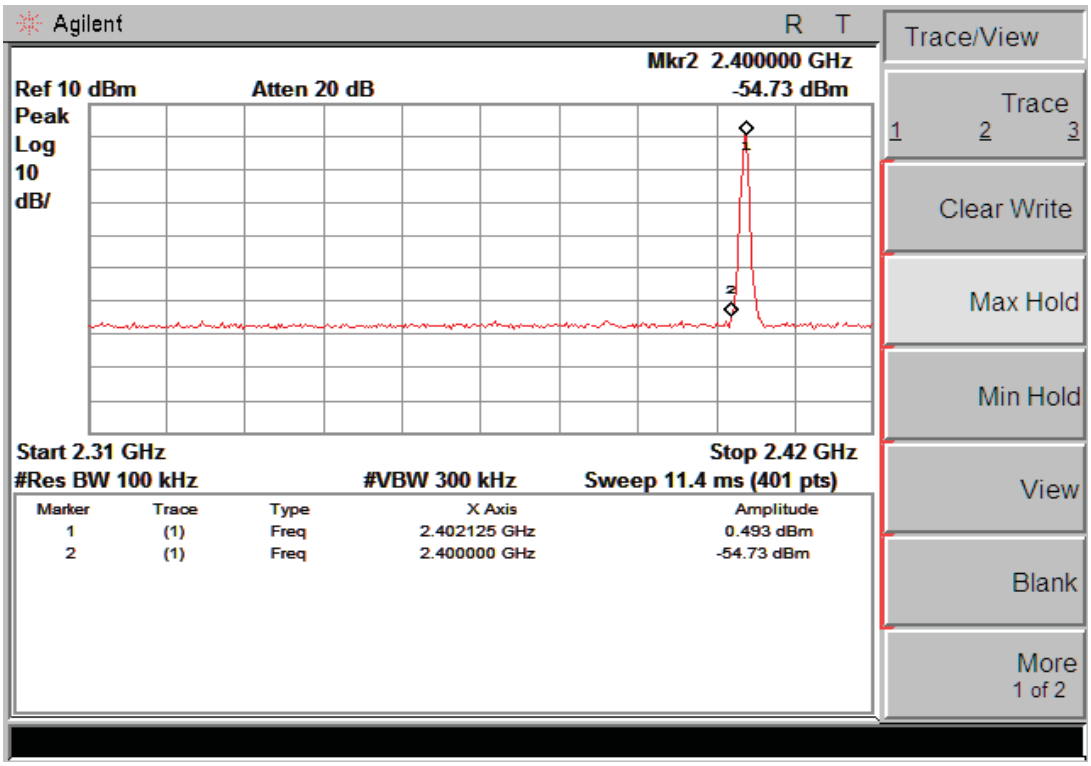
Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL
EUT : bluetooth module
Model No : keyes HC-06
Test Mode : Hopping mode (8-DPSK) CH78
Power : DC 3.3V From Bluetooth Adapter
Test Engineer : Store
Remark :
Temp : 24.2℃
Hum : 54%

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2483.50	45.43	27.59	34.97	4.00	42.05	74.00	-31.95	Peak

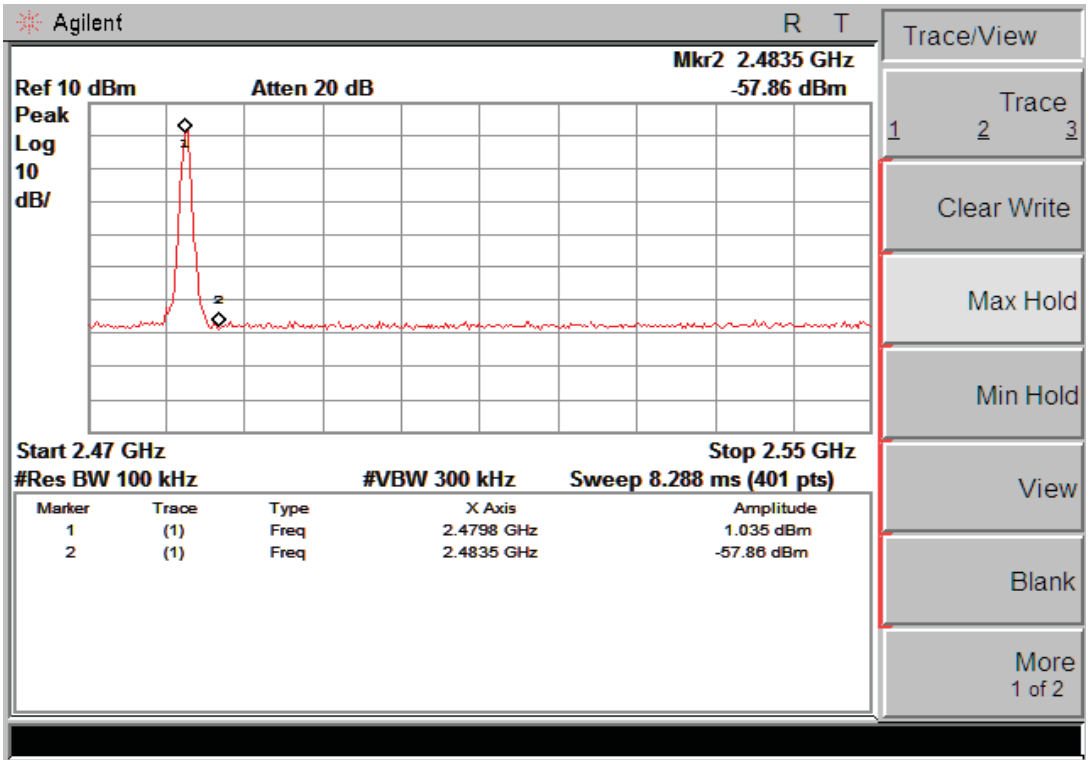
Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

Conducted Method

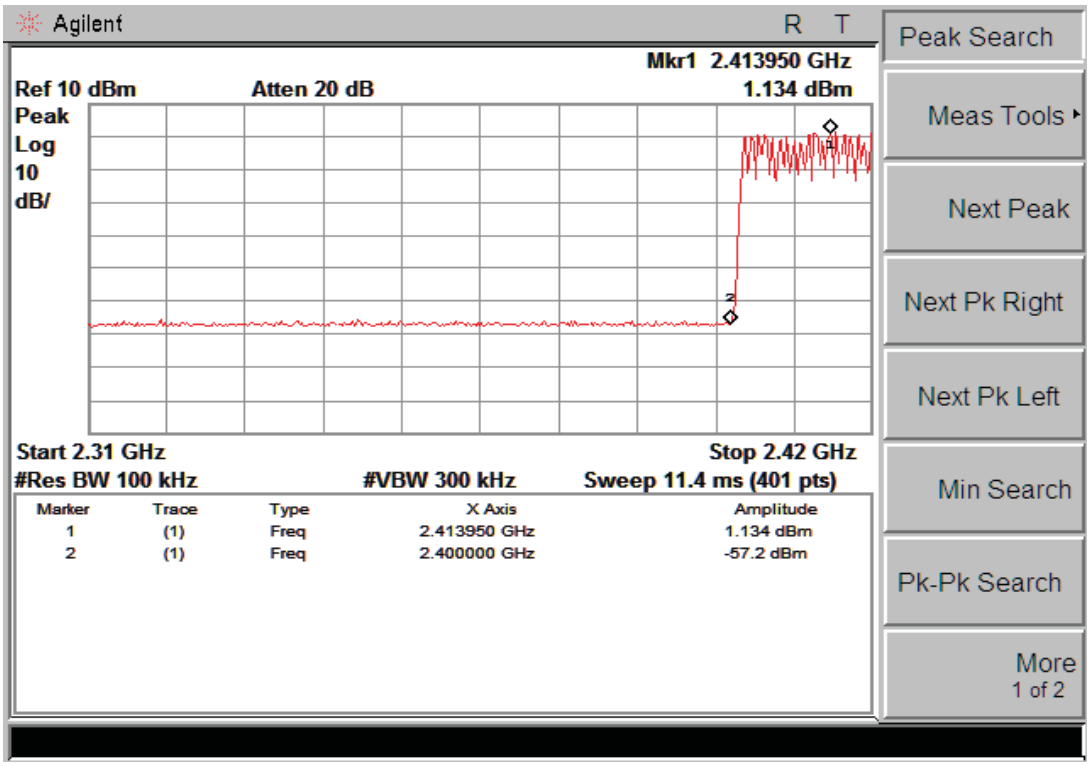
GFSK: CH Low



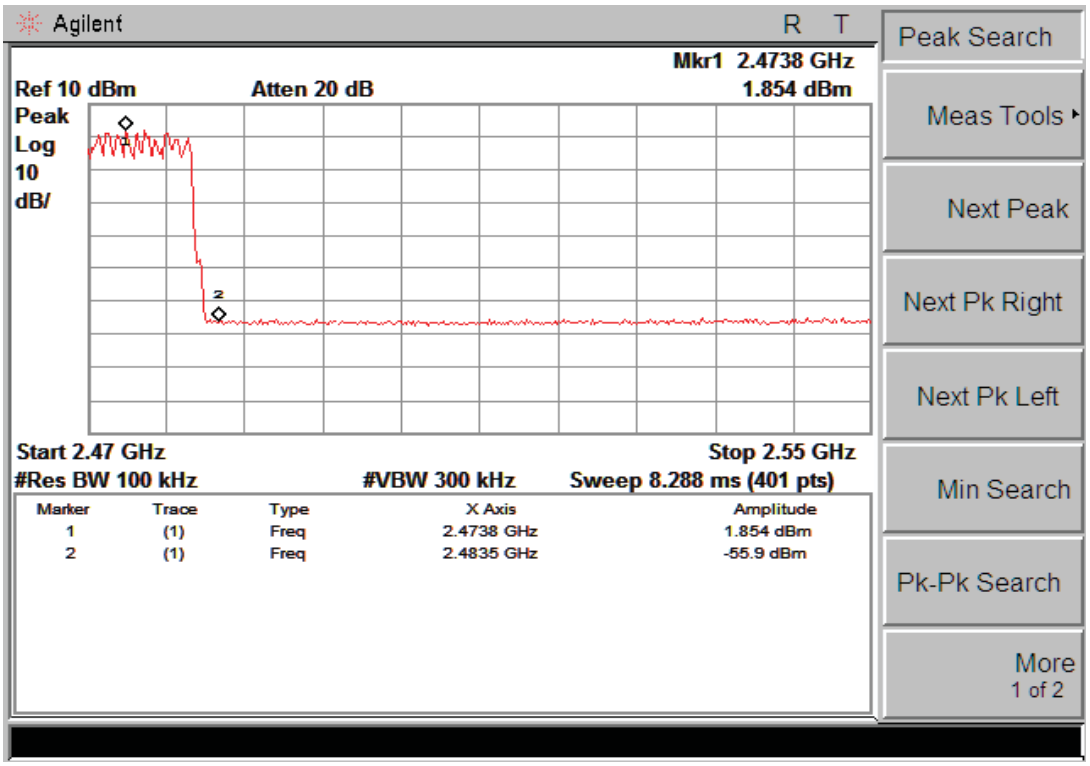
GFSK: CH High



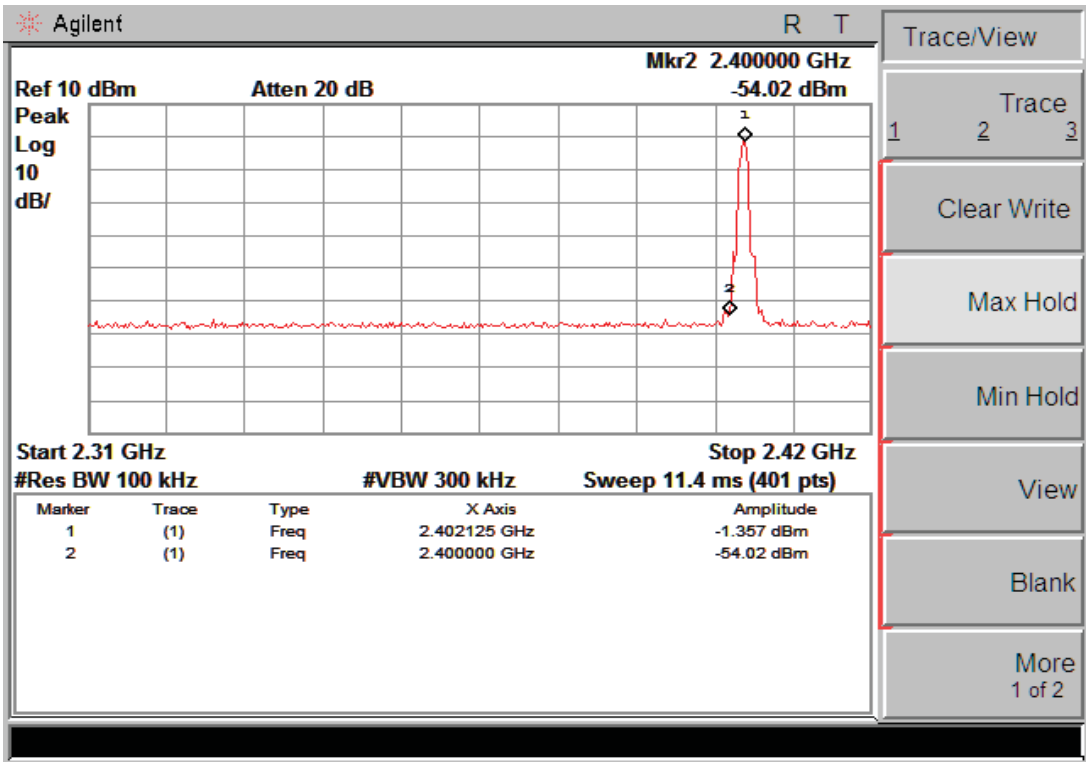
GFSK: CH Low Hopping



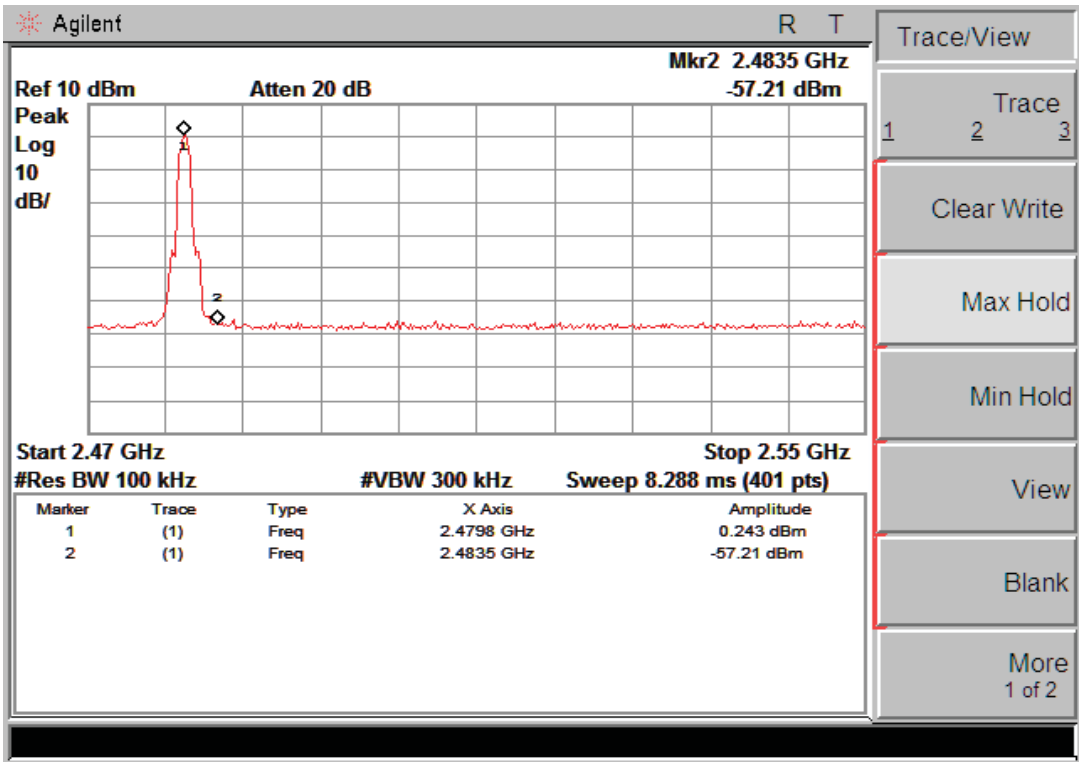
GFSK: CH High Hopping



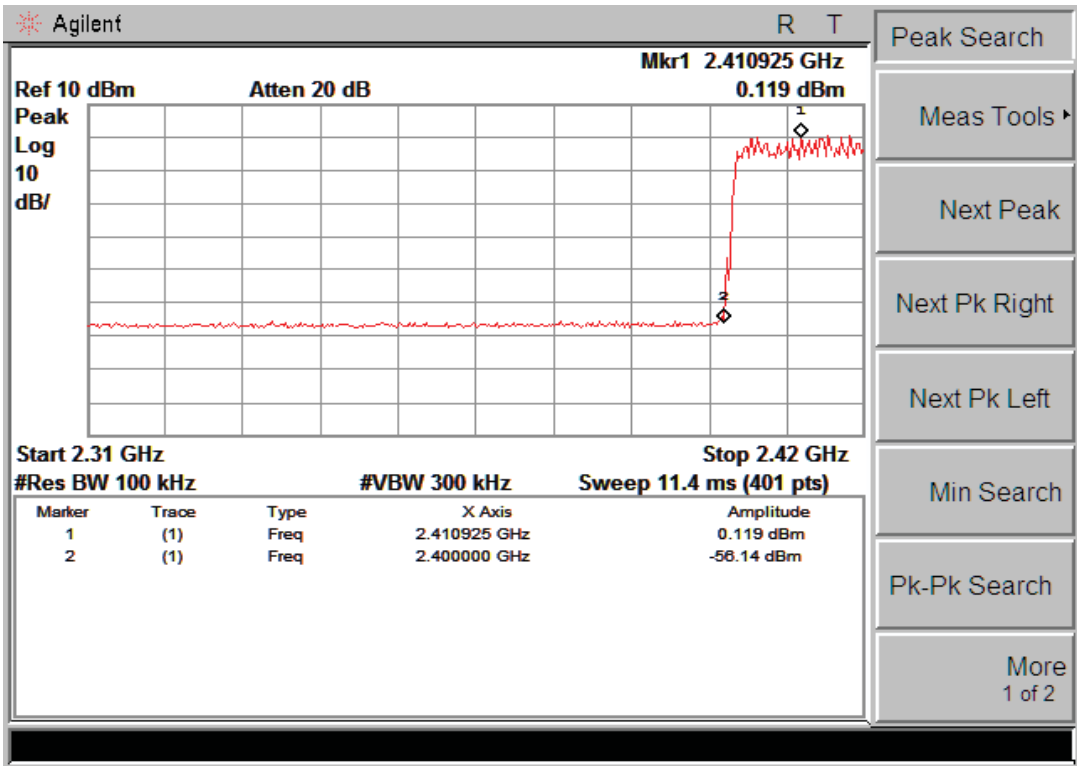
π /4 DQPSK: CH Low



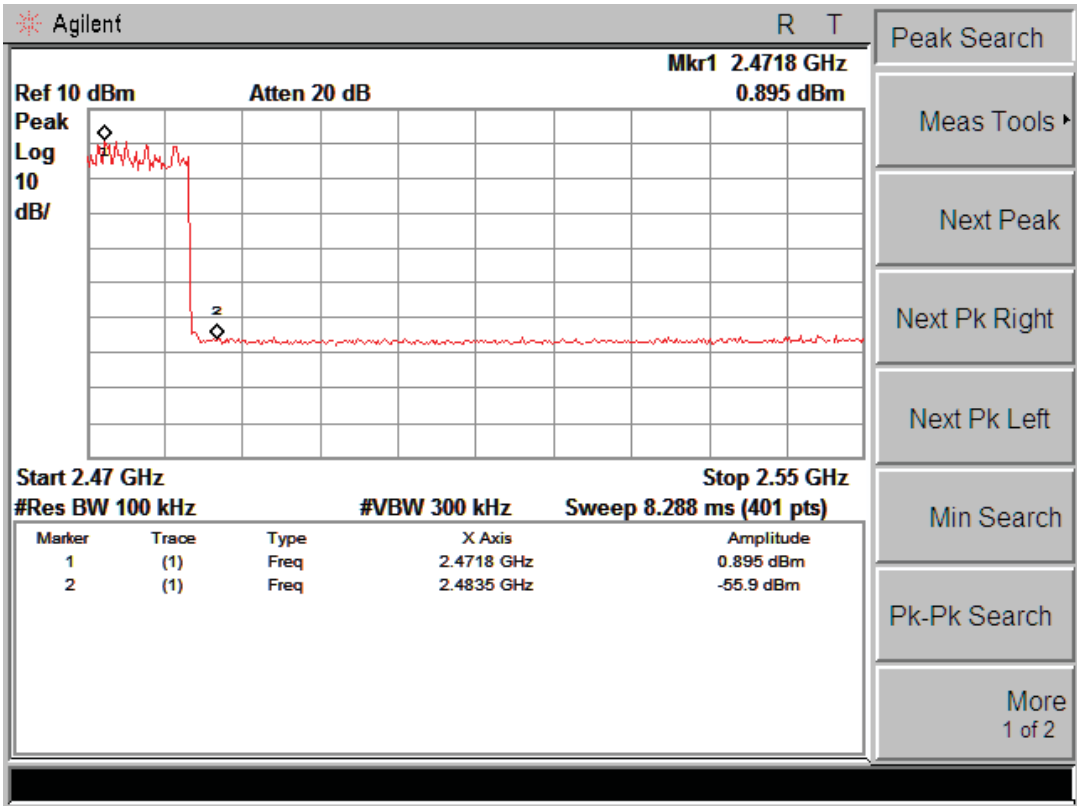
π /4 DQPSK: CH High



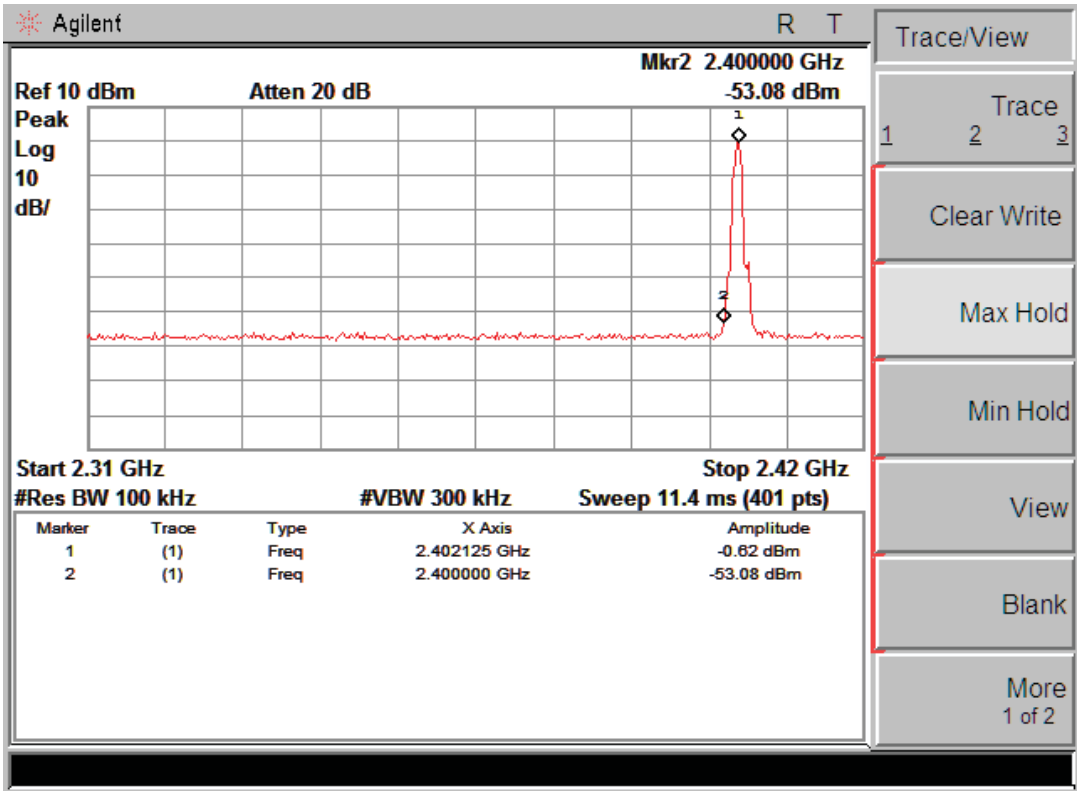
π /4 DQPSK: CH Low Hopping



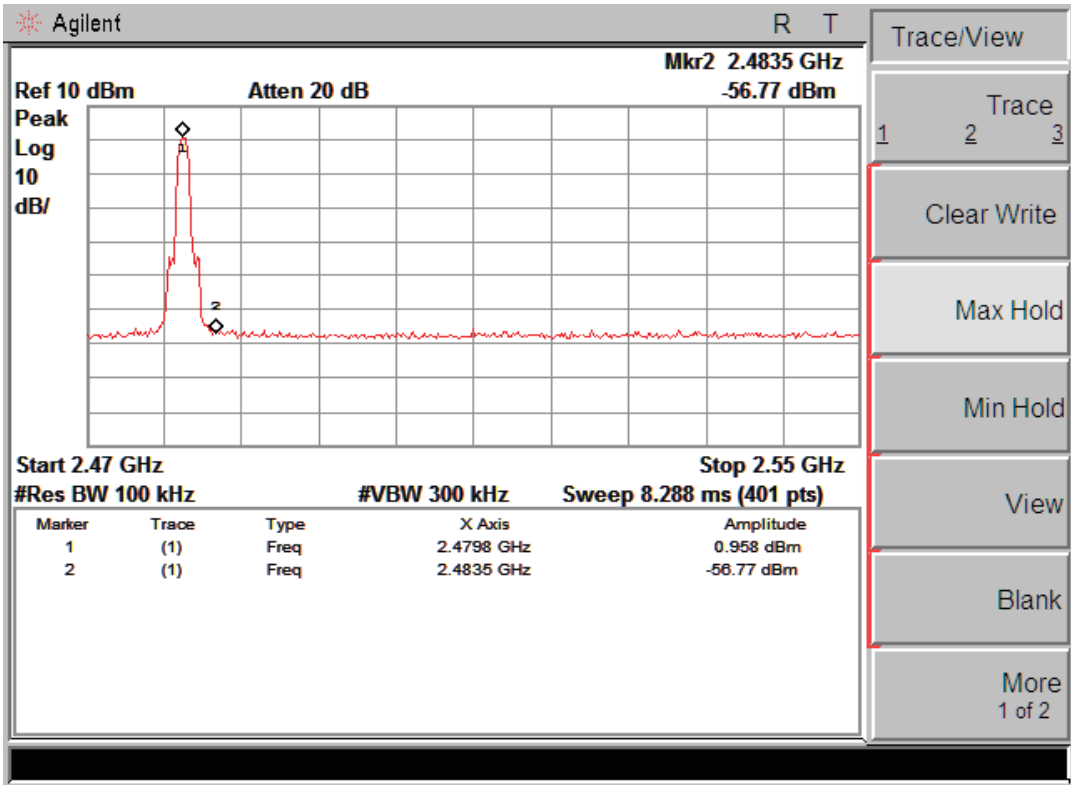
π /4 DQPSK: CH High Hopping



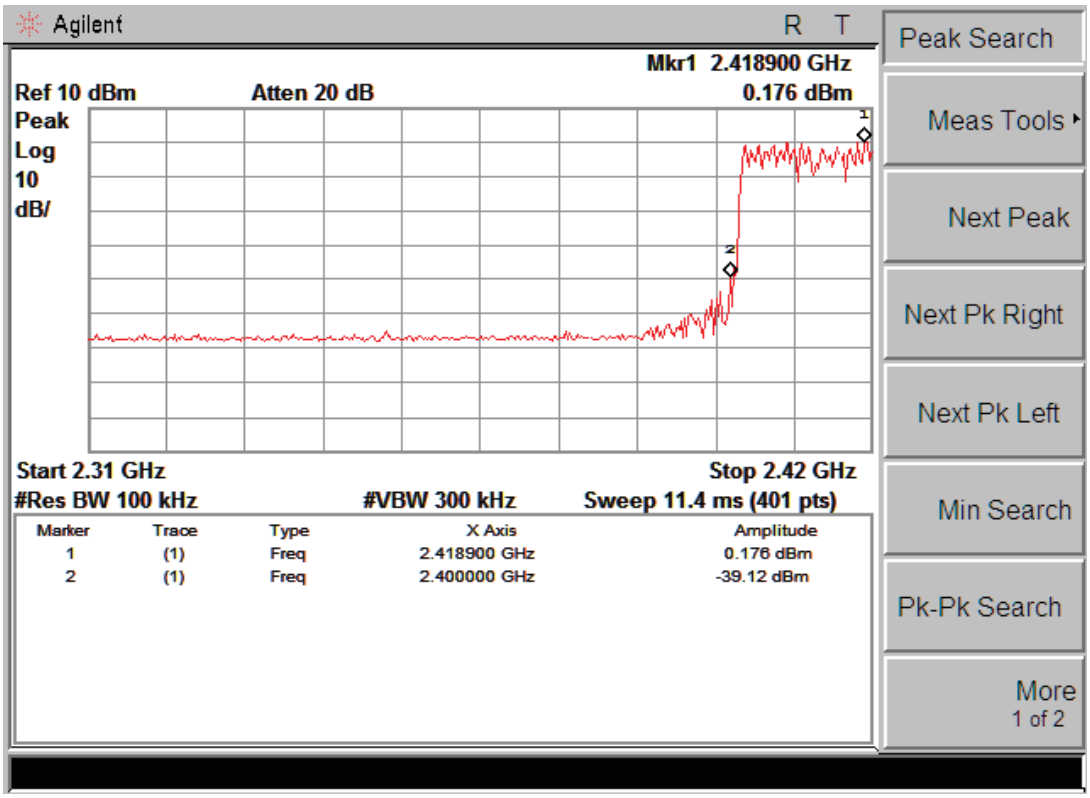
8- DPSK: CH Low



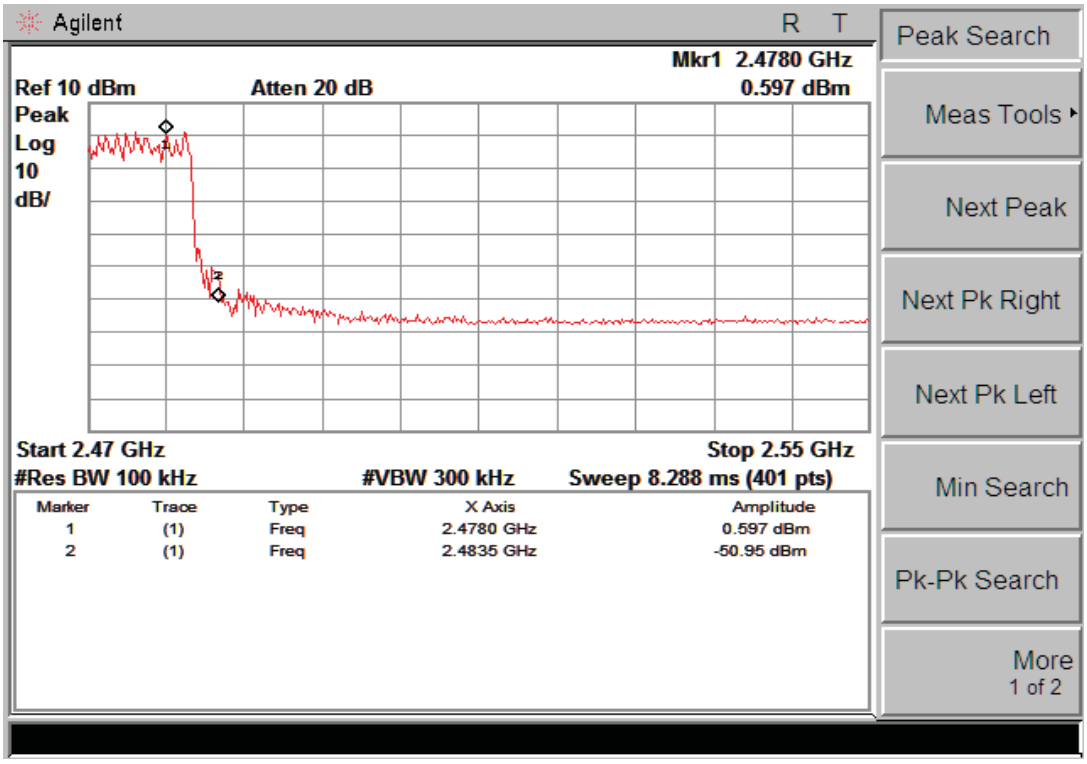
8- DPSK: CH High



8- DPSK: CH Low Hopping

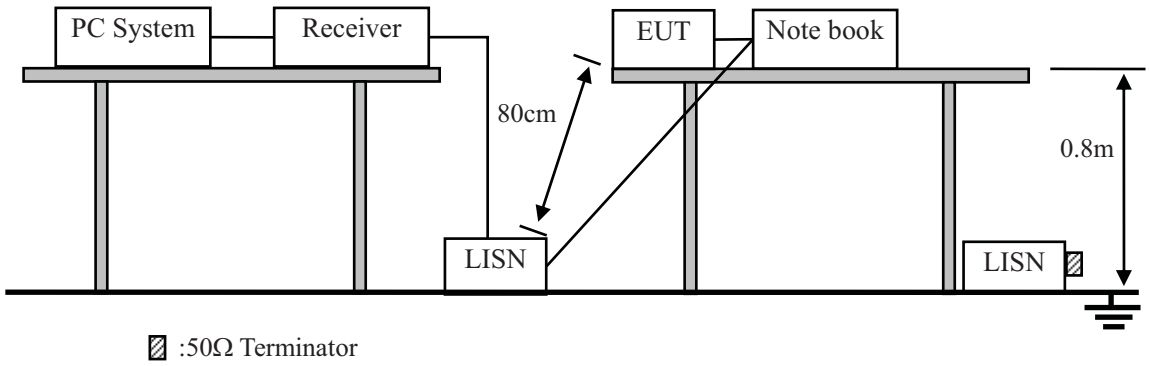


8- DPSK: CH High Hopping



10. Power Line Conducted Emissions

10.1. Block Diagram of Test Setup



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

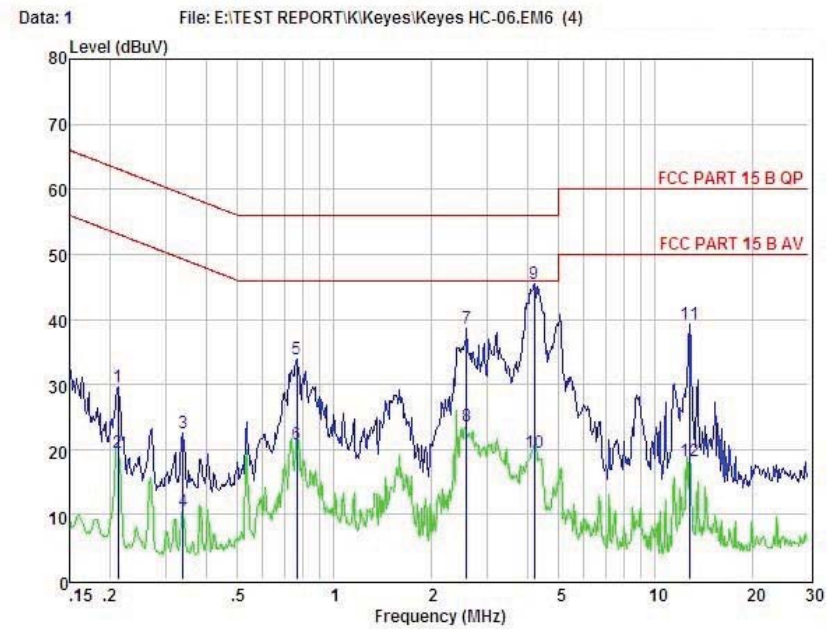
Notes: 1. * Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

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 2003 on conducted Emission test.
(4) The bandwidth of test receiver is set at 10 kHz.
(5) The frequency range from 150 KHz to 30MHz is checked.

10.4. Test Result

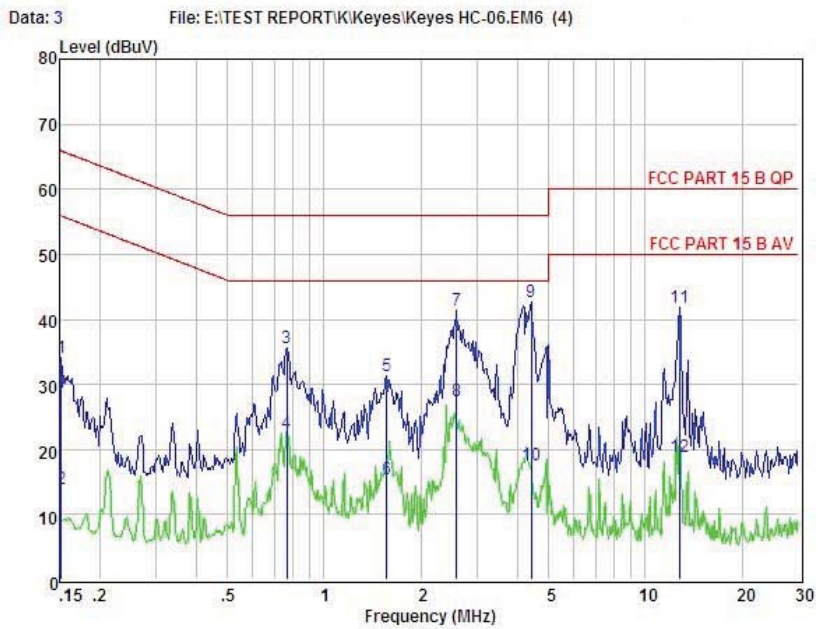
PASS. (See below detailed test data)



Condition : FCC PART 15 B QP POL: NEUTRAL Temp:24℃ Hum:56%
EUT : bluetooth module
Model No : Keyes HC-06
Test Mode : Charging and Link mode
Power : DC 3.3V From Bluetooth Adapter With PC
Test Engineer: Store
Remark :

Item	Freq	Read	LISN Factor	Preamp Factor	Cable Lose	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	0.213	19.66	0.03	-9.72	0.10	29.51	63.10	-33.59	QP
2	0.213	9.66	0.03	-9.72	0.10	19.51	53.10	-33.59	Average
3	0.339	12.68	0.03	-9.72	0.10	22.53	59.22	-36.69	QP
4	0.339	0.68	0.03	-9.72	0.10	10.53	49.22	-38.69	Average
5	0.767	23.96	0.04	-9.71	0.10	33.81	56.00	-22.19	QP
6	0.767	10.96	0.04	-9.71	0.10	20.81	46.00	-25.19	Average
7	2.581	28.76	0.06	-9.70	0.11	38.63	56.00	-17.37	QP
8	2.581	13.76	0.06	-9.70	0.11	23.63	46.00	-22.37	Average
9	4.202	35.65	0.08	-9.69	0.12	45.54	56.00	-10.46	QP
10	4.202	9.65	0.08	-9.69	0.12	19.54	46.00	-26.46	Average
11	12.784	29.30	0.24	-9.44	0.22	39.20	60.00	-20.80	QP
12	12.784	8.30	0.24	-9.44	0.22	18.20	50.00	-31.80	Average

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



Condition : FCC PART 15 B QP POL: LINE Temp:24℃ Hum:56%
EUT : bluetooth module
Model No : Keyes HC-06
Test Mode : Charging and Link mode
Power : DC 3.3V From Bluetooth Adapter With PC
Test Engineer: Store
Remark :

Item	Freq	Read	LISN Factor	Preamp Factor	Cable Lose	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	0.152	24.16	0.03	-9.72	0.10	34.01	65.91	-31.90	QP
2	0.152	4.16	0.03	-9.72	0.10	14.01	55.91	-41.90	Average
3	0.767	25.65	0.04	-9.71	0.10	35.50	56.00	-20.50	QP
4	0.767	12.65	0.04	-9.71	0.10	22.50	46.00	-23.50	Average
5	1.568	21.48	0.05	-9.71	0.10	31.34	56.00	-24.66	QP
6	1.568	5.48	0.05	-9.71	0.10	15.34	46.00	-30.66	Average
7	2.581	31.59	0.06	-9.70	0.11	41.46	56.00	-14.54	QP
8	2.581	17.59	0.06	-9.70	0.11	27.46	46.00	-18.54	Average
9	4.407	32.74	0.09	-9.68	0.12	42.63	56.00	-13.37	QP
10	4.407	7.74	0.09	-9.68	0.12	17.63	46.00	-28.37	Average
11	12.784	31.89	0.24	-9.44	0.22	41.79	60.00	-18.21	QP
12	12.784	8.89	0.24	-9.44	0.22	18.79	50.00	-31.21	Average

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

11. Antenna Requirements

Standard requirement:	FCC Part15 C Section 15.203 /247(c)

15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an

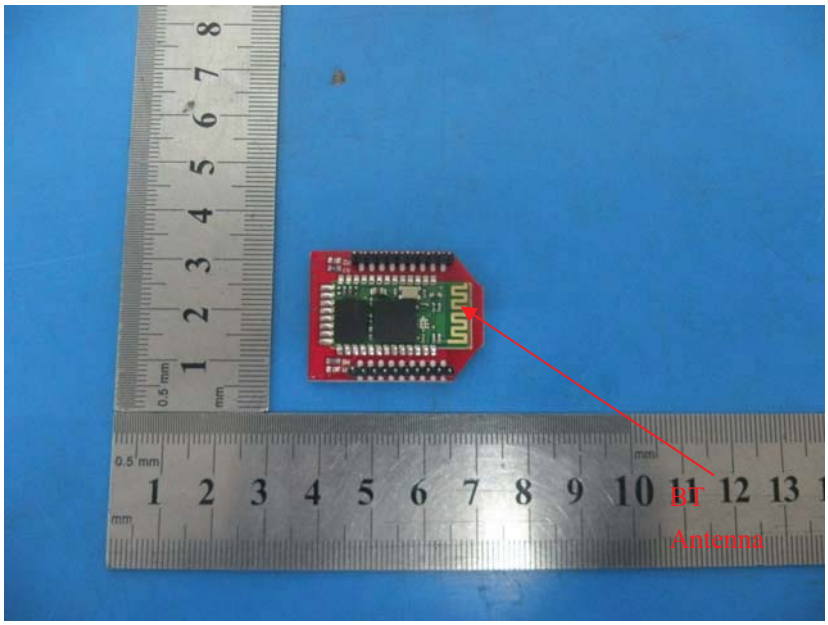
antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(c) (1)(i) requirement:

(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

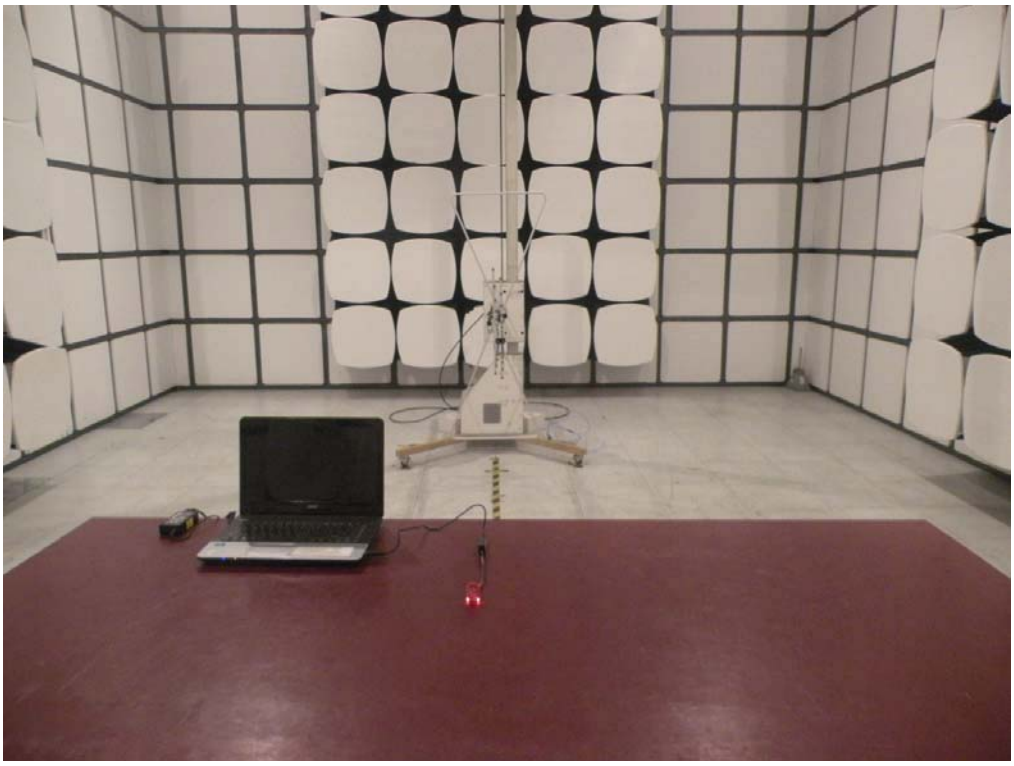
E.U.T Antenna:	

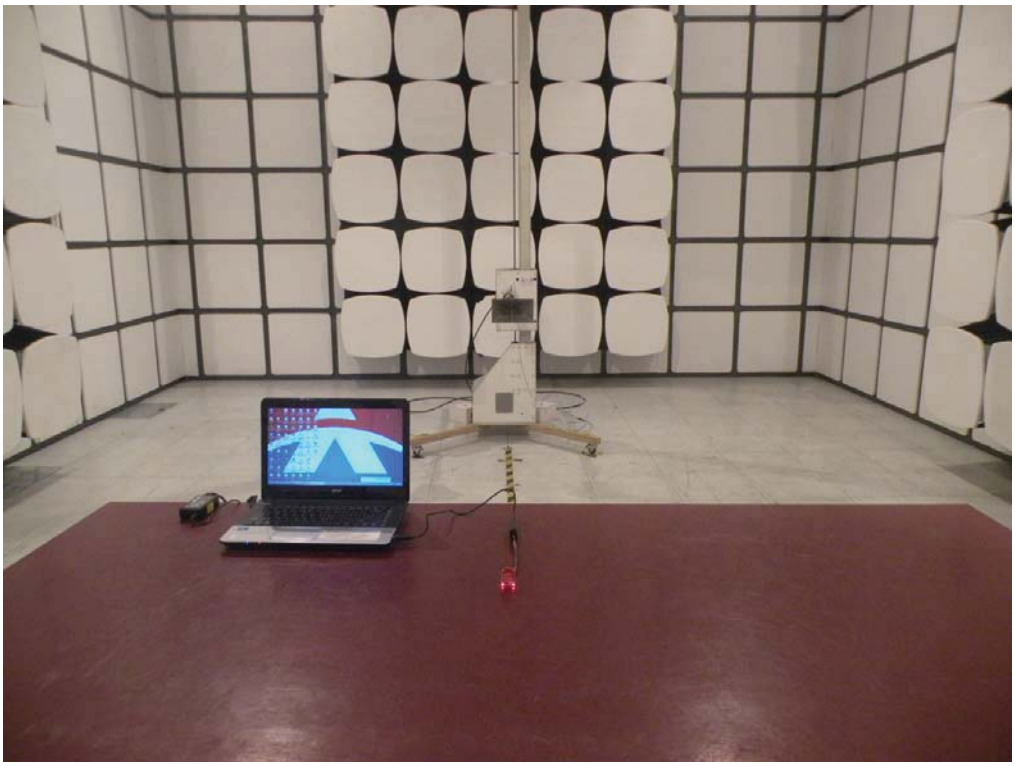
The antenna is PCB antenna, which permanently attached, and the best case gain of the antenna is 0 dBi.



12. Test setup photo

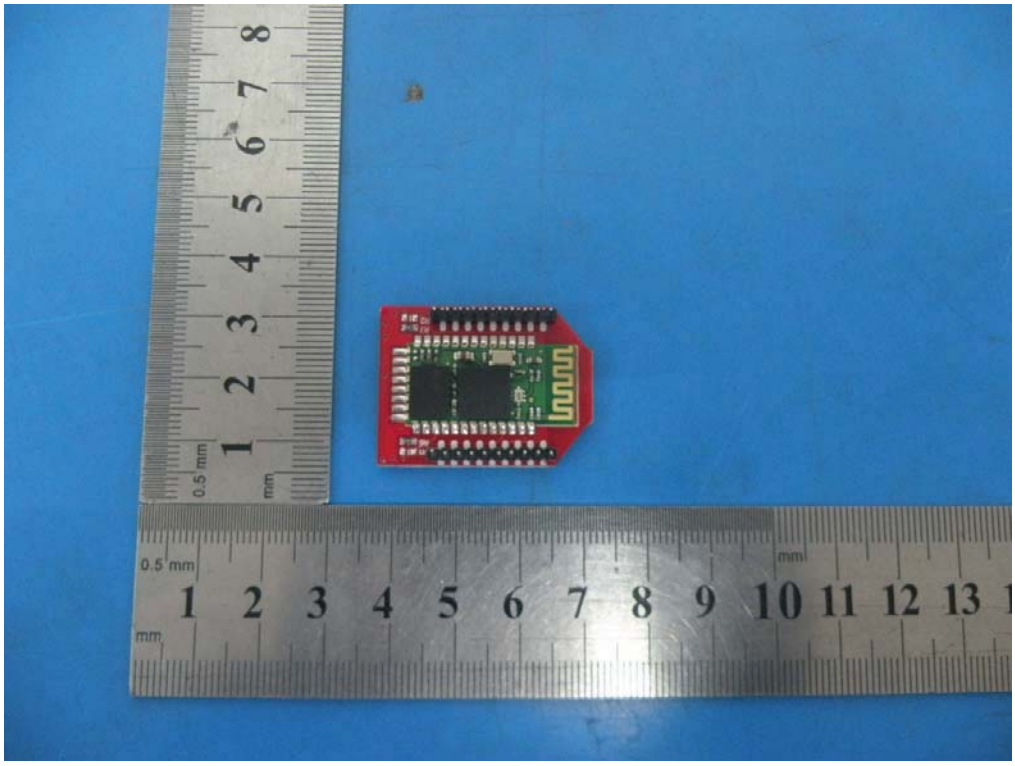
12.1. Photos of Radiated emission

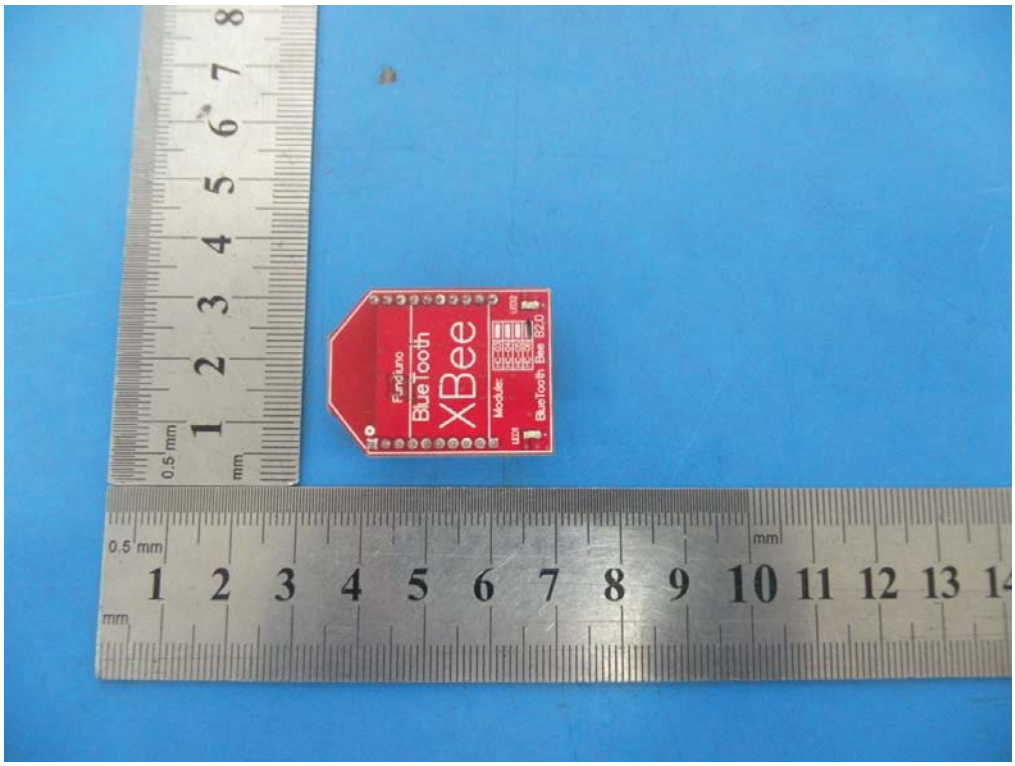




12.2.Photos of Conducted Emission test

13. Photos of EUT





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