



Test Report

FCC Part15 Subpart C& RSS-247 Issue 2

Product Name : BLUETOOTH EARPHONE
Model No. : LTI510
FCC ID : Y2SLTI510
IC : 9452A-LTI510

Applicant : Libratone A/S
Address : Sundkaj 9,DK-2150 Nordhavn,Denmark

Date of Receipt : Nov. 08, 2018
Test Date : Nov. 08, 2018~ Jan. 10, 2019
Issued Date : Jan. 11, 2019
Report No. : 18B2028R-RF-US-P06V03
Report Version : V1.2

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

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Test Report Certification

Issued Date : Jan. 11, 2019

Report No. : 18B2028R-RF-US-P06V03



Product Name : BLUETOOTH EARPHONE
 Applicant : Libratone A/S
 Address : Sundkaj 9,DK-2150 Nordhavn,Denmark
 Manufacturer : Libratone A/S
 Address : Sundkaj 9,DK-2150 Nordhavn,Denmark
 Model No. : LT1510
 FCC ID : Y2SLTI510
 IC : 9452A-LT1510
 EUT Voltage : DC 3.7 V
 Test Voltage : AC120V/60Hz
 Brand Name : LIBRATONE
 Applicable Standard : FCC CFR Title 47 Part 15 Subpart C
 KDB 558074 D01v05
 ANSI C63.10: 2013
 RSS-Gen Issue 5/RSS-247 Issue 2
 Test Result : Complied
 Performed Location : DEKRA Testing & Certification (Suzhou) Co., Ltd.
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 FCC Designation Number: CN1199; ISED Lab Code: 4075B

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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
18B2028R-RF-US-P06V03	V1.0	Initial Issued Report	Jan. 04, 2019
18B2028R-RF-US-P06V03	V1.1	P51-P54, Modified the 20dB Bandwidth data	Jan. 11, 2019
18B2028R-RF-US-P06V03	V1.2	Add the note of Band Edge	Jan. 11, 2019

1. General Information

1.1. EUT Description

Product Name	BLUETOOTH EARPHONE
Model No.	LTI510
EUT Voltage	DC 3.7 V
Test Voltage	AC120V/60Hz
Bluetooth Specification	V3.0
Frequency Range	2402- 2480 MHz
Channel Number	V3.0: 79
Channel Separation	V3.0: 1MHz
Type of Modulation	V3.0: GFSK, Pi/4 DQPSK, 8DPSK
Data Rate	V3.0: 1Mbps(GFSK), 2Mbps(Pi/4 DQPSK), 3Mbps(8DPSK)
Antenna Type	Reference to Antenna List
Peak Antenna Gain	Reference to Antenna List

Bluetooth Working Frequency of Each Channel: (For V3.0)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
00	2402 MHz	01	2403 MHz	02	2404 MHz	03	2405 MHz
04	2406 MHz	05	2407 MHz	06	2408 MHz	07	2409 MHz
08	2410 MHz	09	2411 MHz	10	2412 MHz	11	2413 MHz
12	2414 MHz	13	2415 MHz	14	2416 MHz	15	2417 MHz
16	2418 MHz	17	2419 MHz	18	2420 MHz	19	2421 MHz
20	2422 MHz	21	2423 MHz	22	2424 MHz	23	2425 MHz
24	2426 MHz	25	2427 MHz	26	2428 MHz	27	2429 MHz
28	2430 MHz	29	2431 MHz	30	2432 MHz	31	2433 MHz
32	2434 MHz	33	2435 MHz	34	2436 MHz	35	2437 MHz
36	2438 MHz	37	2439 MHz	38	2440 MHz	39	2441 MHz
40	2442 MHz	41	2443 MHz	42	2444 MHz	43	2445 MHz
44	2446 MHz	45	2447 MHz	46	2448 MHz	47	2449 MHz
48	2450 MHz	49	2451 MHz	50	2452 MHz	51	2453 MHz
52	2454 MHz	53	2455 MHz	54	2456 MHz	55	2457 MHz
56	2458 MHz	57	2459 MHz	58	2460 MHz	59	2461 MHz
60	2462 MHz	61	2463 MHz	62	2464 MHz	63	2465 MHz
64	2466 MHz	65	2467 MHz	66	2468 MHz	67	2469 MHz
68	2470 MHz	69	2471 MHz	70	2472 MHz	71	2473 MHz
72	2474 MHz	73	2475 MHz	74	2476 MHz	75	2477 MHz
76	2478 MHz	77	2479 MHz	78	2480 MHz	N/A	N/A

1.2 Antenna information

Antenna manufacturer	N/A					
Antenna Delivery	<input checked="" type="checkbox"/>	1*TX+1*RX	<input type="checkbox"/>	2*TX+2*RX	<input type="checkbox"/>	3*TX+3*RX
Antenna technology	<input checked="" type="checkbox"/>	SISO				
	<input type="checkbox"/>	MIMO	<input type="checkbox"/>	Basic		
			<input type="checkbox"/>	CDD		
			<input type="checkbox"/>	Beam-forming		
Antenna Type	<input type="checkbox"/>	External	<input type="checkbox"/>	Dipole		
	<input checked="" type="checkbox"/>	Internal	<input type="checkbox"/>	PIFA		
			<input type="checkbox"/>	PCB		
			<input type="checkbox"/>	Ceramic Chip Antenna		
			<input type="checkbox"/>	Stamping Antenna		
			<input type="checkbox"/>	Metal plate type F antenna		
			<input checked="" type="checkbox"/>	Monopole antenna		
	Antenna Gain	-1.5dBi				

1.3 Mode of Operation

DEKRA has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: Transmitter-1Mbps(GFSK_DH5)
Mode 2: Transmitter-2Mbps(Pi/4 DQPSK_DH5)
Mode 3: Transmitter-3Mbps(8DPSK_DH5)
Mode 4: Transmitter-Hopping

Note:

1. For portable device, radiated spurious emission was verified over X, Y, Z Axis, and shown the worst case on this report.
2. Regards to the frequency band operation for systems using FHSS modulation: normal operation (hopping) was selected to test for conducted spurious test.
3. The extreme test condition for voltage and temperature were declared by the manufacturer.
4. The reading values of all the test items contain cable loss.

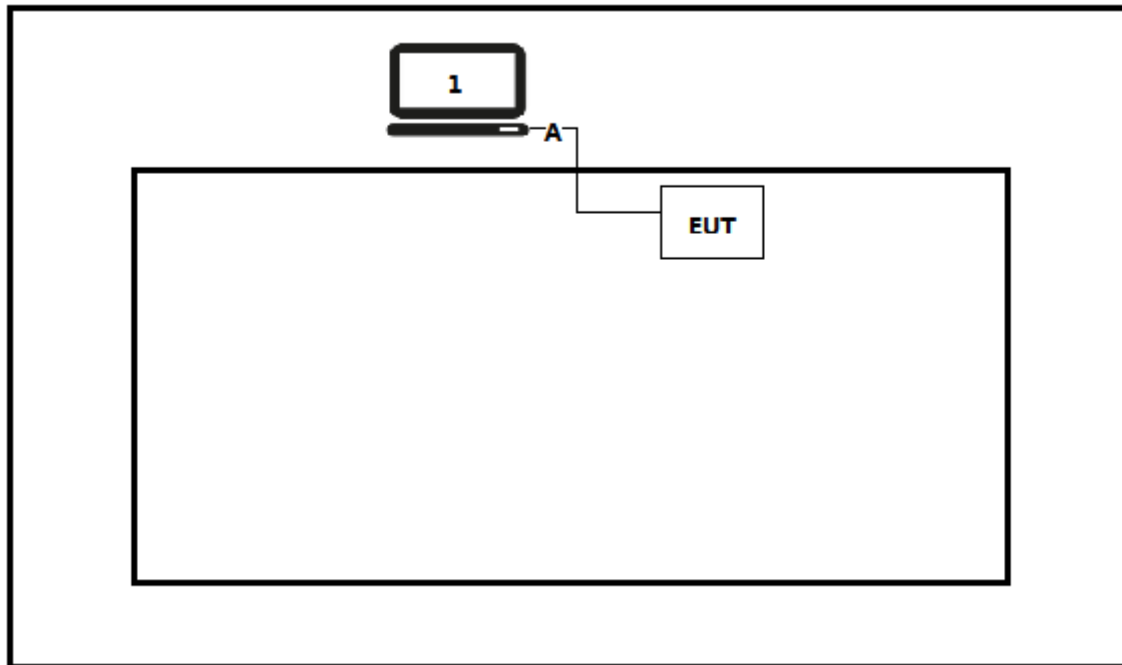
1.4 Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

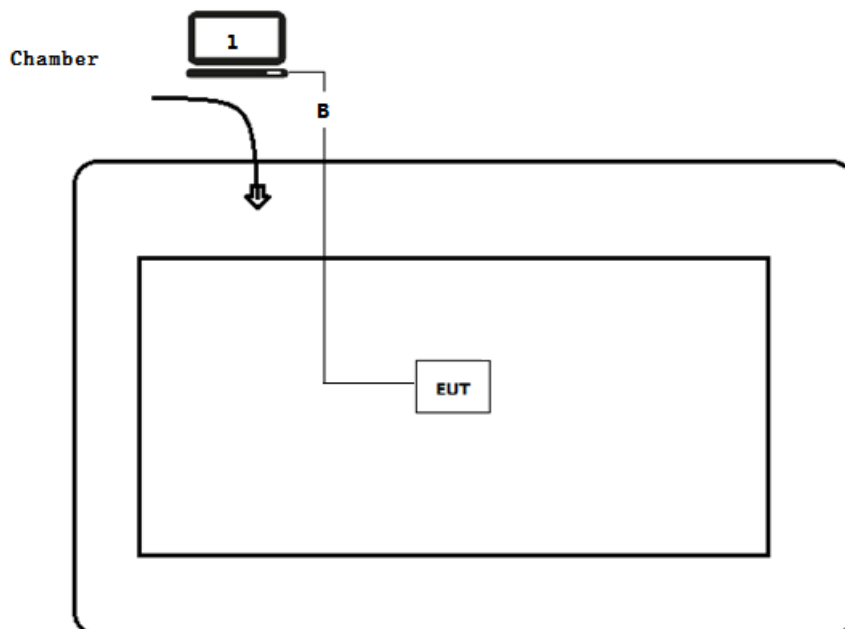
Product	Manufacturer	Model No.	Serial No.	Power Cord
1 Notebook	Think Pad	2526	LV-A3285	Power by adapter
A USB Cable	N/A	N/A	N/A	Shield, 0.5m
B USB Cable	N/A	N/A	N/A	Shield, 10m

1.5 Configuration of Tested System

Test setup Diagram- AC Line Conducted Emission Test



Test setup Diagram- Radiated Emission



1.6 EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of all equipment.
3	Run RF software [Bluetest 3], and set the test mode and channel, then press OK to start to continue transmit.

2. Technical Test

2.1. Summary of Test Result

- No deviations from the test standards
- Deviations from the test standards as below description:

For FCC

Performed Test Item	Normative References	Test Performed	Deviation
Conducted Emission	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.207	Yes	No
Emissions in restricted frequency bands	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.209	Yes	No
20dB Bandwidth	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(a)(1)	Yes	No
Carrier Frequency Separation	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(a)(1)	Yes	No
Number of Hopping Frequencies	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(a)(1)(iii)	Yes	No
Time of Occupancy (Dwell Time)	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(a)(1)(iii)	Yes	No
Peak Output Power	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(b)(1)	Yes	No
Emissions in non-restricted frequency bands	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.215(c), 15.247(d)	Yes	No
Radiated Emission Band Edge	FCC CFR Title 47 Part 15 Subpart C: 2015 15.247(d)	Yes	No
Antenna Requirement	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.203	Yes	No

For ISED

Performed Test Item	Normative References	Test Performed	Deviation
Conducted Emission	RSS-Gen Issue 5 Section 8.8	Yes	No
Radiated Emission	RSS-Gen Issue 5 Section 8.9	Yes	No
20dB Bandwidth	RSS-247 Issue 2 Section 5.1	Yes	No
Carrier Frequency Separation	RSS-247 Issue 2 Section 5.1	Yes	No
Number of Hopping Frequencies	RSS-247 Issue 2 Section 5.1	Yes	No
Time of Occupancy (Dwell Time)	RSS-247 Issue 2 Section 5.1	Yes	No
Peak Output Power	RSS-247 Issue 2 Section 5.4	Yes	No
Emissions in non-restricted frequency bands	RSS-247 Issue 2 Section 5.5	Yes	No
Radiated Emission Band Edge	RSS-Gen Issue 5 Section 8.10	Yes	No
Antenna Requirement	RSS-Gen Issue 5 Section 8.3	Yes	No

2.2. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	21
Humidity (%RH)	25-75	50
Barometric pressure (mbar)	860-1060	950-1000

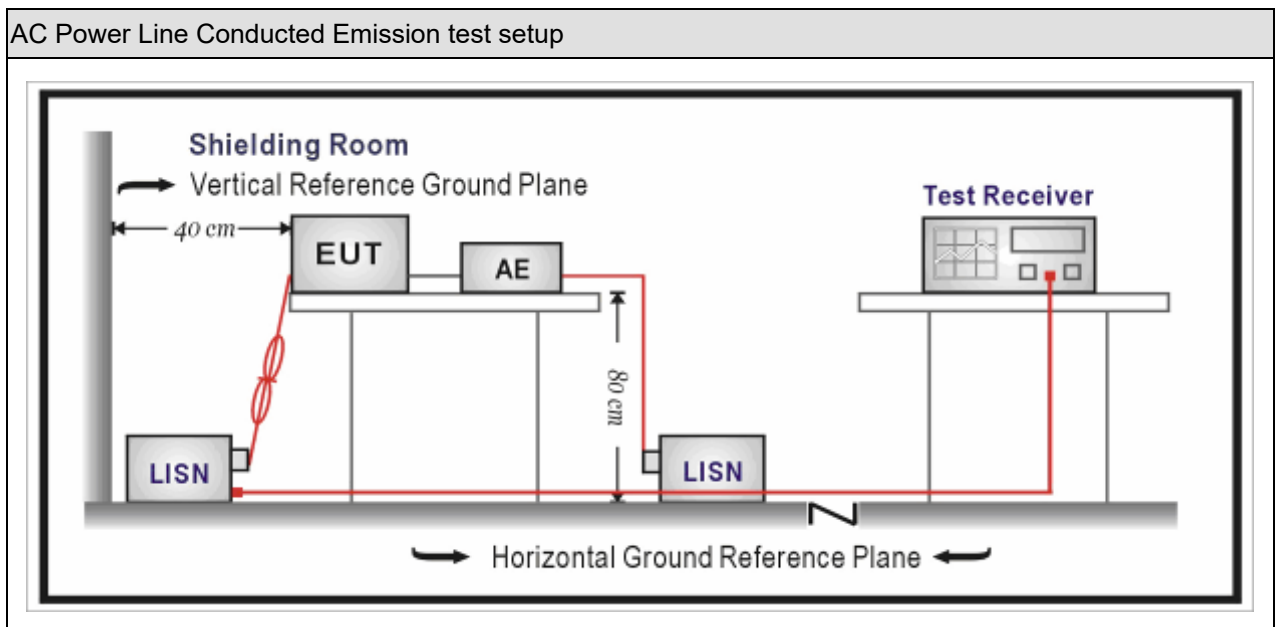
3. Conducted Emission

3.1. Test Equipment

AC Power Line Conducted Emission / TR-1					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100906	2018.03.05	2019.03.04
Two-Line V-Network	R&S	ENV 216	101189	2018.07.16	2019.07.15
Two-Line V-Network	R&S	ENV 216	101044	2018.09.15	2019.09.15
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	N/A	N/A
50ohm Termination	SHX	TF2	07081402	2018.09.15	2019.09.15
Temperature/Humidity Meter	Zhichen	ZC1-2	TR1-TH	2019.01.05	2020.01.04
Quietek EMI V3(test software)	Quietek	N/A	N/A	N/A	N/A

Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

3.2. Test Setup



3.3. Limit

Frequency of Emission (MHz)	Conducted Limit	
	Quasi-peak (dB μ V)	Average (dB μ V)
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

Note 1: The lower limit shall apply at the transition frequencies.
Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

3.4. Test Procedure

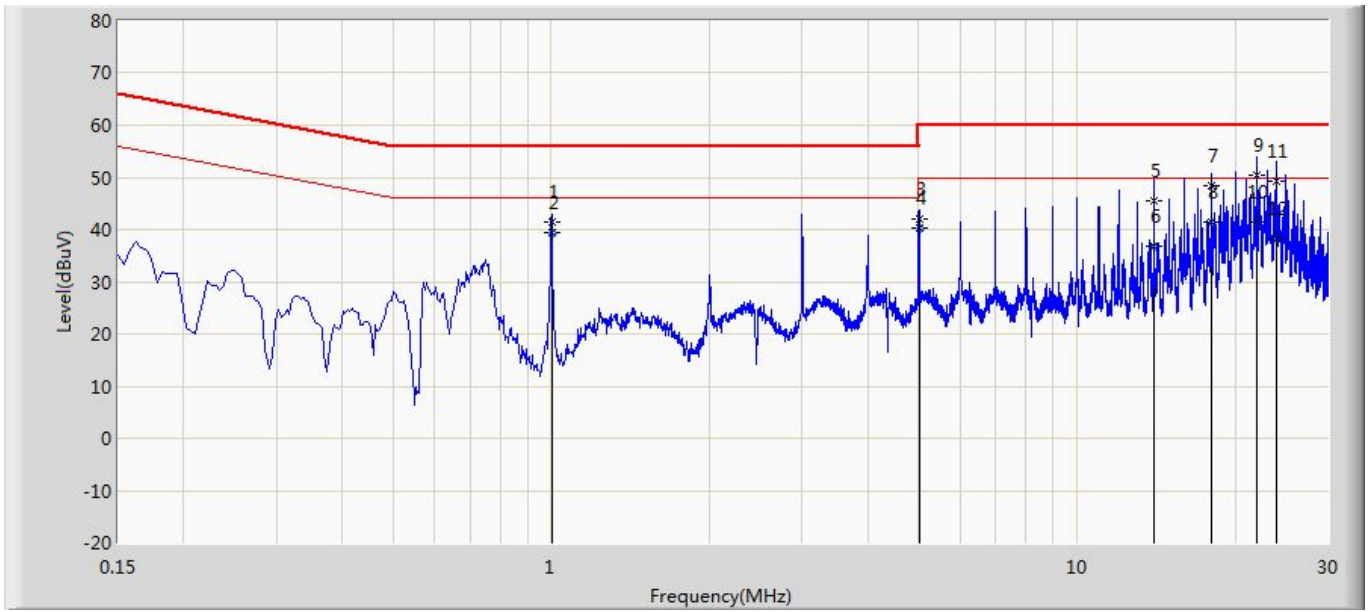
Test Method			
	References Rule	Chapter	Item
<input checked="" type="checkbox"/>	ANSI C63.10-2013	6.2	Standard test method for ac power-line conducted emissions from unlicensed wireless devices

3.5. Uncertainty

The measurement uncertainty is defined as ± 2.02 dB

3.6. Test Result

Site: TR1	Time: 2018/11/14
Limit: FCC_Part15.207_CE_AC Power	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Line
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1	

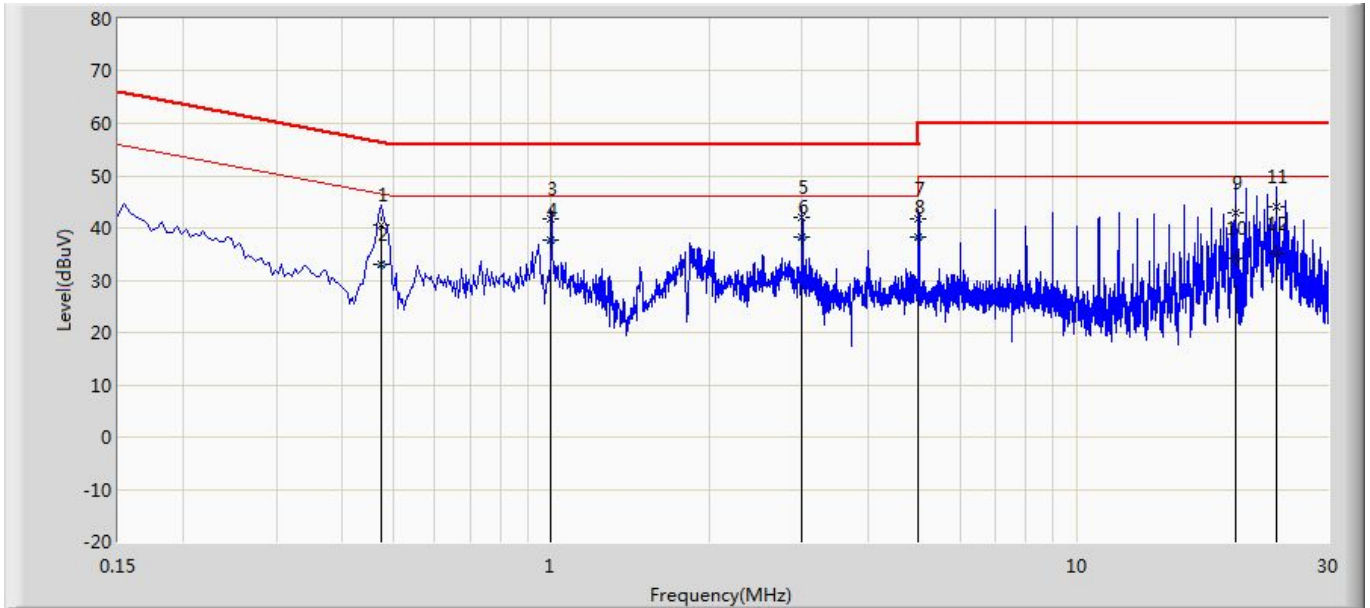


No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		1.002	41.329	31.659	-14.671	56.000	9.610	0.060	0.000	QP
2	*	1.002	39.450	29.780	-6.550	46.000	9.610	0.060	0.000	AV
3		5.002	42.157	32.359	-17.843	60.000	9.660	0.138	0.000	QP
4		5.002	40.318	30.520	-9.682	50.000	9.660	0.138	0.000	AV
5		13.998	45.590	35.480	-14.410	60.000	9.874	0.236	0.000	QP
6		13.998	36.705	26.596	-13.295	50.000	9.874	0.236	0.000	AV
7		18.002	48.442	38.133	-11.558	60.000	10.044	0.266	0.000	QP
8		18.002	41.378	31.068	-8.622	50.000	10.044	0.266	0.000	AV
9		21.998	50.420	39.848	-9.580	60.000	10.271	0.301	0.000	QP
10		21.998	41.307	30.735	-8.693	50.000	10.271	0.301	0.000	AV
11		23.998	49.208	38.491	-10.792	60.000	10.404	0.313	0.000	QP
12		23.998	38.184	27.468	-11.816	50.000	10.404	0.313	0.000	AV

Note:

1. " * ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: TR1	Time: 2018/11/14
Limit: FCC_Part15.207_CE_AC Power	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Neutral
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.474	40.562	30.933	-16.181	56.743	9.590	0.038	0.000	QP
2		0.474	33.070	23.442	-13.672	46.743	9.590	0.038	0.000	AV
3		0.998	41.642	31.991	-14.358	56.000	9.590	0.061	0.000	QP
4		0.998	37.809	28.158	-8.191	46.000	9.590	0.061	0.000	AV
5		2.998	42.039	32.302	-13.961	56.000	9.623	0.113	0.000	QP
6	*	2.998	38.144	28.408	-7.856	46.000	9.623	0.113	0.000	AV
7		4.998	41.677	31.889	-14.323	56.000	9.650	0.138	0.000	QP
8		4.998	38.118	28.330	-7.882	46.000	9.650	0.138	0.000	AV
9		19.998	42.816	32.355	-17.184	60.000	10.180	0.281	0.000	QP
10		19.998	34.071	23.610	-15.929	50.000	10.180	0.281	0.000	AV
11		23.990	44.142	33.266	-15.858	60.000	10.563	0.313	0.000	QP
12		23.990	35.159	24.283	-14.841	50.000	10.563	0.313	0.000	AV

Note:

1. " * ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable+Amp).

4. Emissions in restricted frequency bands

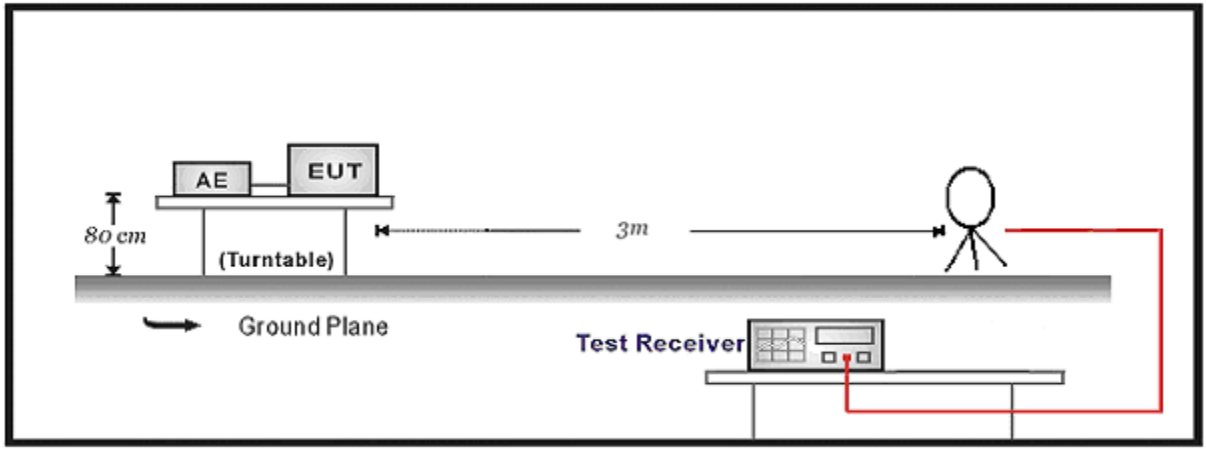
4.1. Test Equipment

Radiated Emission(Below 1GHz) / AC-2					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100573	2018.03.29	2019.03.28
Loop Antenna	R&S	HFH2-Z2	833799/003	2018.11.16	2019.11.15
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2018.10.16	2019.10.15
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2018.03.02	2019.03.01
Temperature/Humidity Meter	Zhichen	ZC1-2	AC2-TH	2019.01.04	2020.01.03
Quietek EMI V3(test software)	Quietek	N/A	N/A	N/A	N/A
Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

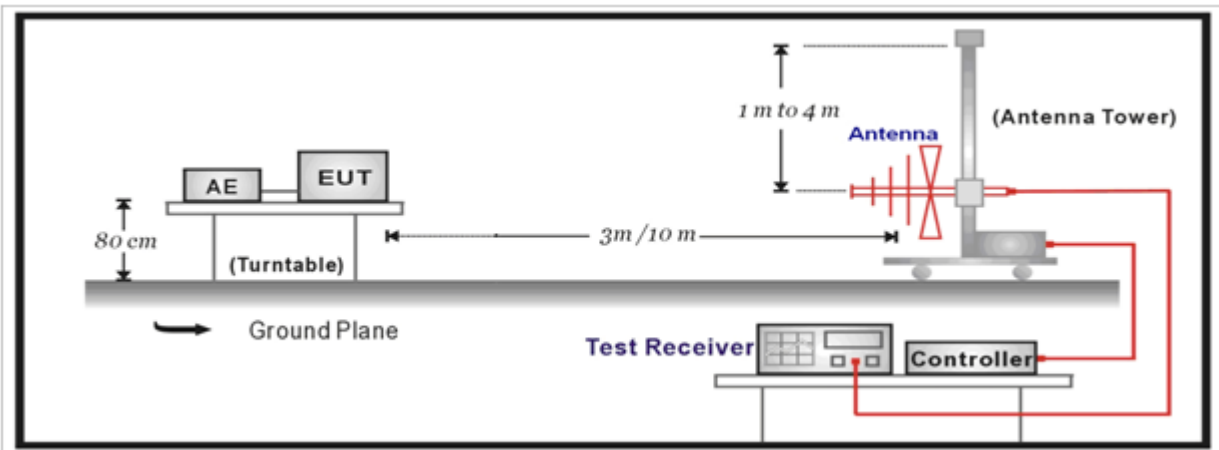
Radiated Emission(Above 1GHz) / AC-5					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2019.01.04	2020.01.03
Preamplifier	Miteq	NSP1800-25	1364185	2017.05.06	2019.05.05
Preamplifier	QuieTek	AP-040G	CHM-0906001	2017.05.06	2019.05.05
DRG Horn	ETS-Lindgren	3117	00123988	2018.01.22	2019.01.21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2018.11.25	2019.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2018.03.02	2019.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2018.03.02	2019.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2018.03.02	2019.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2018.06.10	2019.06.09
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2019.01.04	2020.01.03
Quietek EMI V3(test software)	Quietek	N/A	N/A	N/A	N/A
Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

4.2. Test Setup

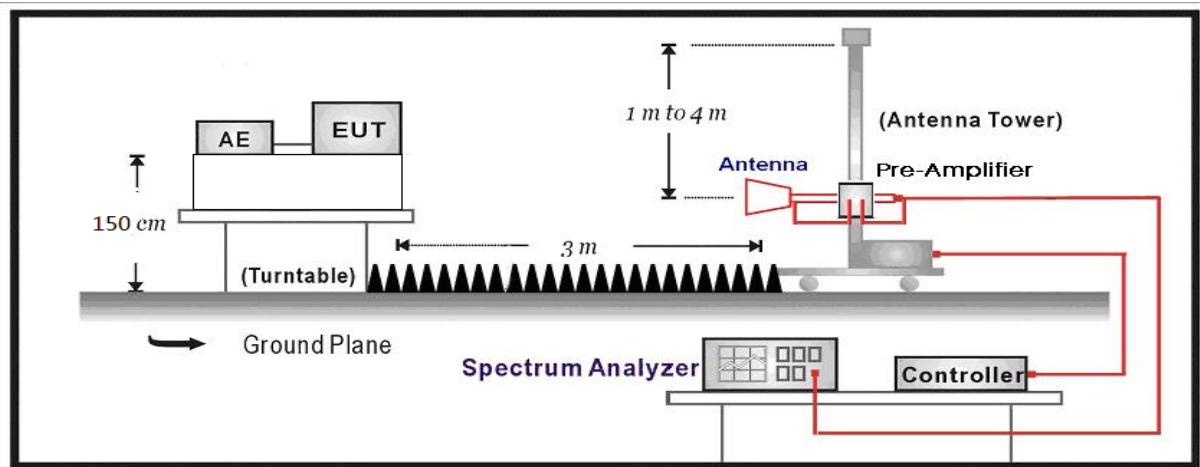
Below 30MHz Test Setup:



30MHz-1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limit

For FCC:

Restricted Bands of operation			
Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 – 0.110	16.42 – 16.423	399.9 – 410	4.5 – 5.15
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
8.81425 – 8.81475	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	
13.36 – 13.41			

For ISED:

Restricted Bands of operation			
Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090-0.110	13.36-13.41	1645.5-1646.5	13.25-13.4
2.1735-2.1905	16.42-16.423	1660-1710	14.47-14.5
3.020-3.026	16.69475-16.69525	1718.8-1722.2	15.35-16.2
4.125-4.128	16.80425-16.80475	2200-2300	17.7-21.4
4.17725-4.17775	25.5-25.67	2310-2390	22.01-23.12
4.20725-4.20775	37.5-38.25	2655-2900	23.6-24.0
5.677-5.683	73-74.6	3260-3267	31.2-31.8
6.215-6.218	74.8-75.2	3332-3339	36.43-36.5
6.26775-6.26825	108-138	3345.8-3358	Above 38.6
6.31175-6.31225	156.52475-156.52525	3500-4400	
8.291-8.294	156.7-156.9	4500-5150	
8.362-8.366	240-285	5350-5460	
8.37625-8.38675	322-335.4	7250-7750	
8.41425-8.41475	399.9-410	8025-8500	
12.29-12.293	608-614	9.0-9.2	
12.51975-12.52025	960-1427	9.3-9.5	
12.57675-12.57725	1435-1626.5	10.6-12.7	

Restricted Band Emissions Limit			
Frequency (MHz)	Field strength (μ V/m)	Field strength (dB μ V/m)	Measurement distance (m)
0.009 - 0.49	2400/F(kHz)	48.5 – 13.8	300 _(Note 1)
0.49 - 1.705	24000/F(kHz)	33.8 - 23	30 _(Note 1)
1.705 - 30	30	29.5	30 _(Note 1)
30 - 88	100	40	3 _(Note 2)
88 - 216	150	43.5	3 _(Note 2)
216 - 960	200	46	3 _(Note 2)
Above 960	500	54	3 _(Note 2)

Note 1: At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

Note 2: At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

4.4. Test Procedure

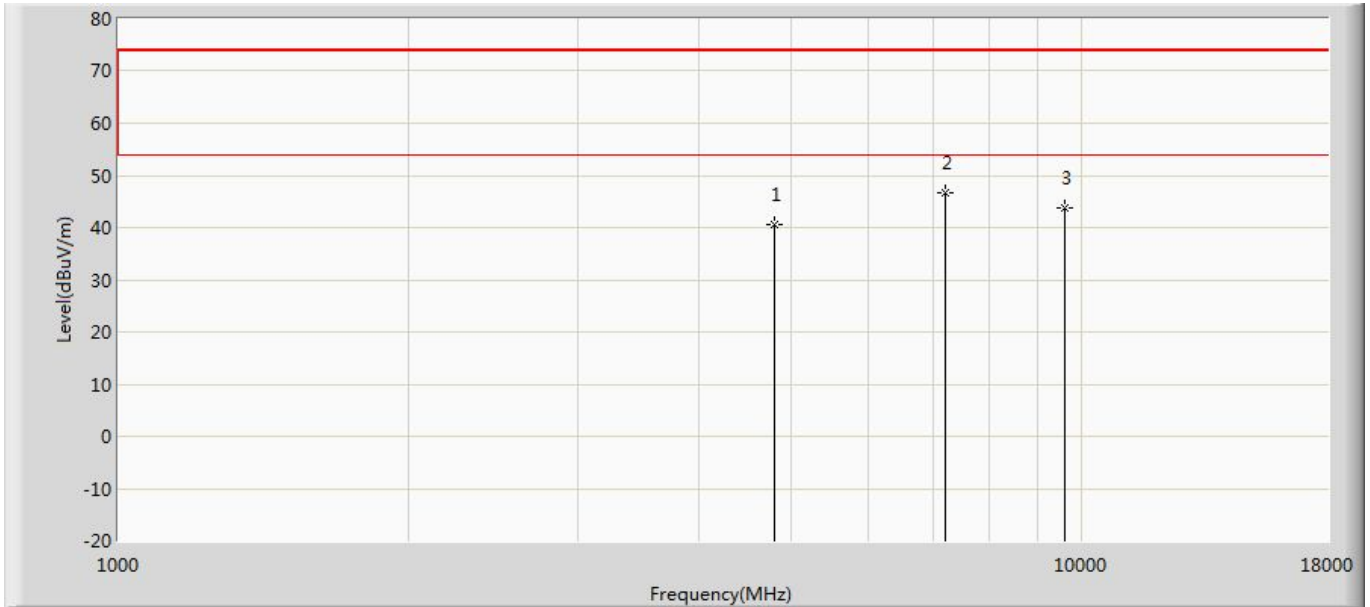
Test Method			
	References Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
<input checked="" type="checkbox"/>	ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
<input checked="" type="checkbox"/>	ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz

4.5. Uncertainty

The measurement uncertainty above 1G is defined as ± 3.9 dB
below 1G is defined as ± 3.8 dB

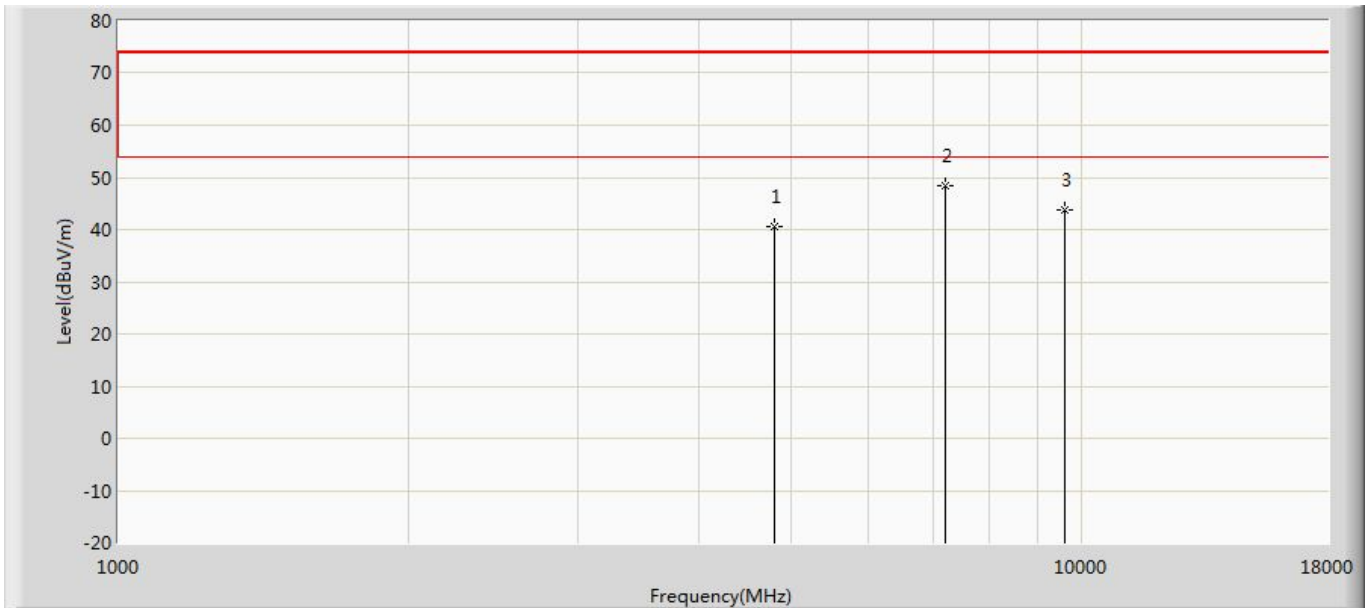
4.6. Test Result

Site: AC5	Time: 2018/12/22 - 19:47
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by DH5	



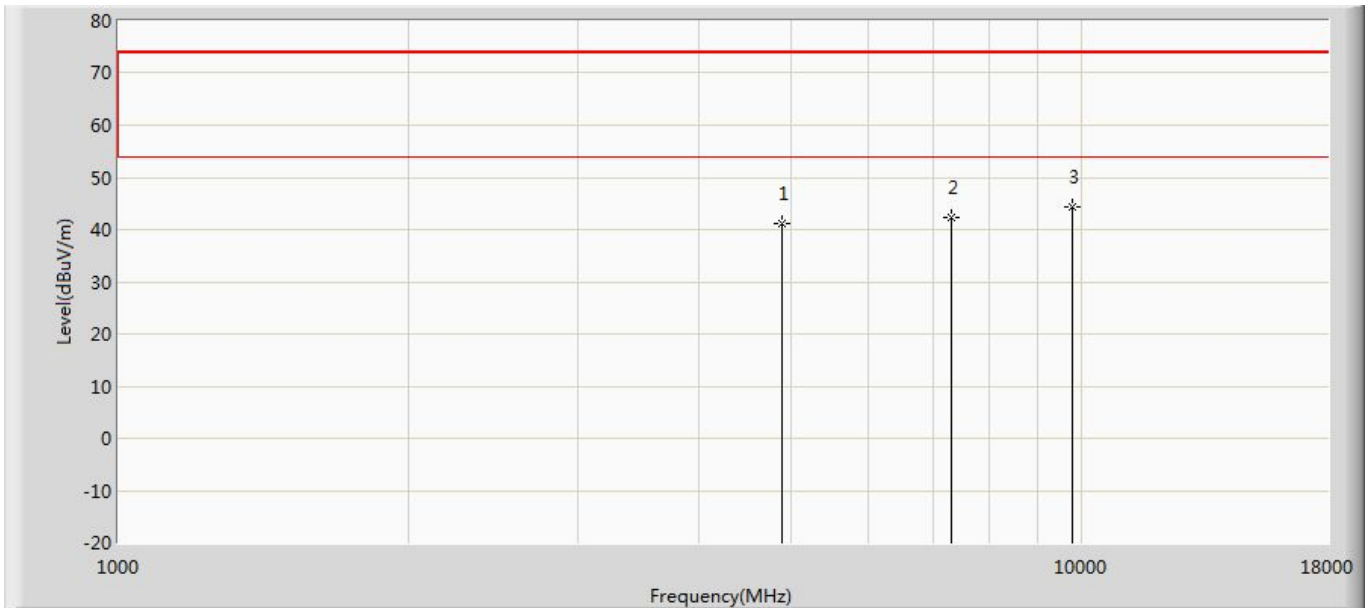
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	40.699	42.422	-33.301	74.000	-1.723	PK
2	*	7205.000	46.715	44.779	-27.285	74.000	1.936	PK
3		9608.000	43.720	38.821	-30.280	74.000	4.899	PK

Site: AC5	Time: 2018/12/22 - 19:47
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by DH5	



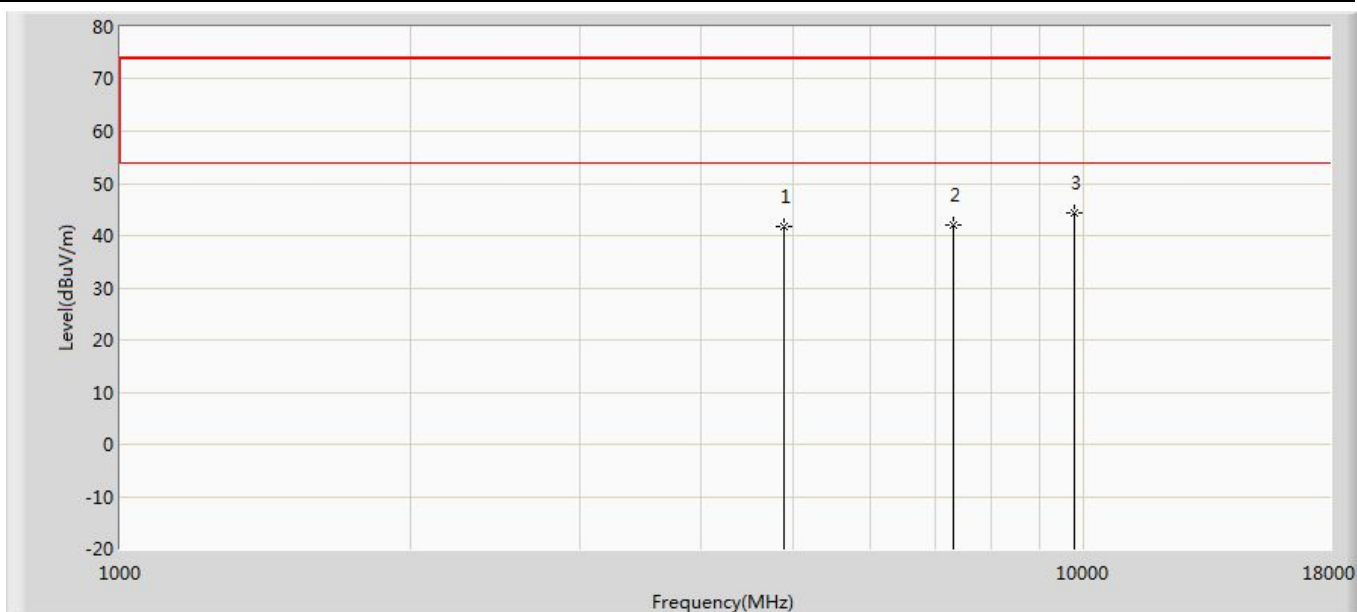
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	40.640	42.363	-33.360	74.000	-1.723	PK
2	*	7205.000	48.477	46.541	-25.523	74.000	1.936	PK
3		9608.000	43.789	38.890	-30.211	74.000	4.899	PK

Site: AC5	Time: 2018/12/22 - 19:48
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2441MHz by DH5	



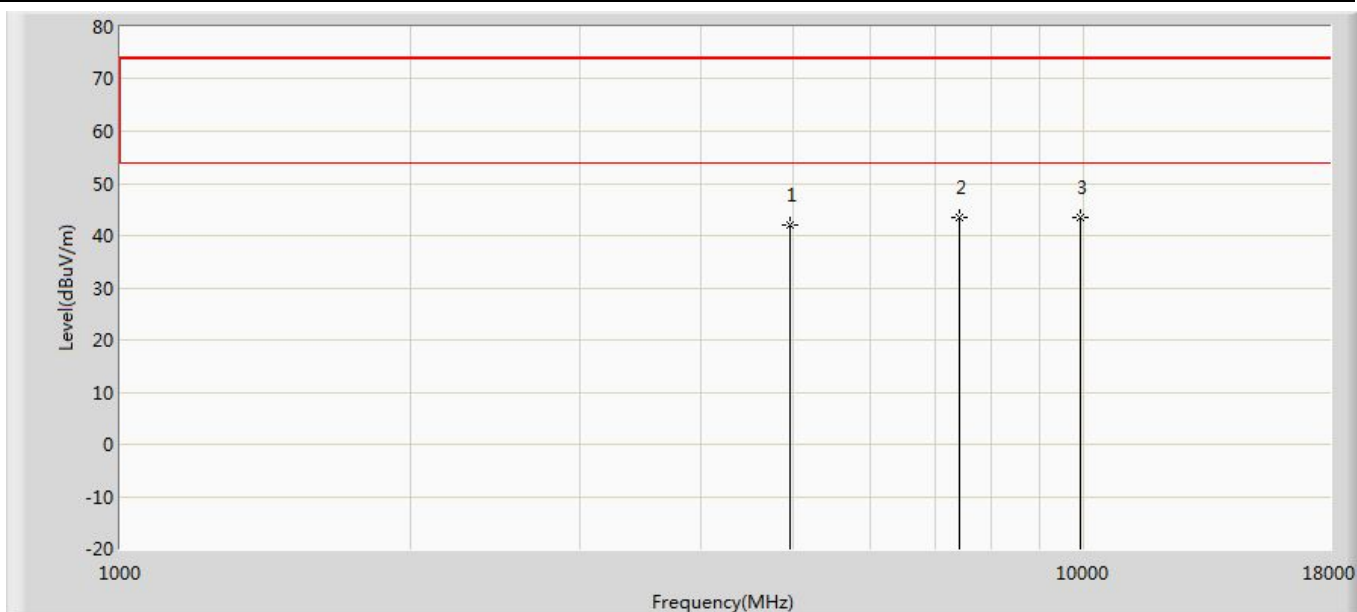
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4882.000	41.303	42.620	-32.697	74.000	-1.317	PK
2		7323.000	42.253	40.345	-31.747	74.000	1.909	PK
3	*	9764.000	44.357	38.357	-29.643	74.000	6.001	PK

Site: AC5	Time: 2018/12/22 - 19:48
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2441MHz by DH5	



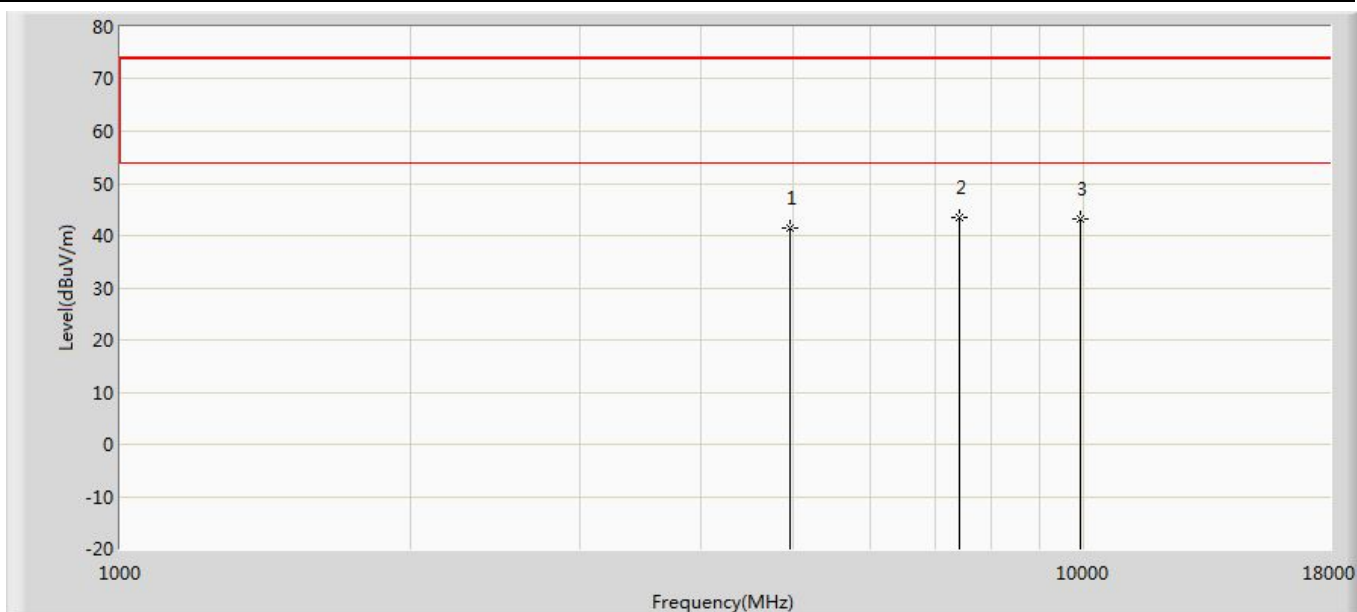
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4882.000	41.671	42.988	-32.329	74.000	-1.317	PK
2		7323.000	42.153	40.245	-31.847	74.000	1.909	PK
3	*	9764.000	44.331	38.331	-29.669	74.000	6.001	PK

Site: AC5	Time: 2018/12/22 - 19:48
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by DH5	



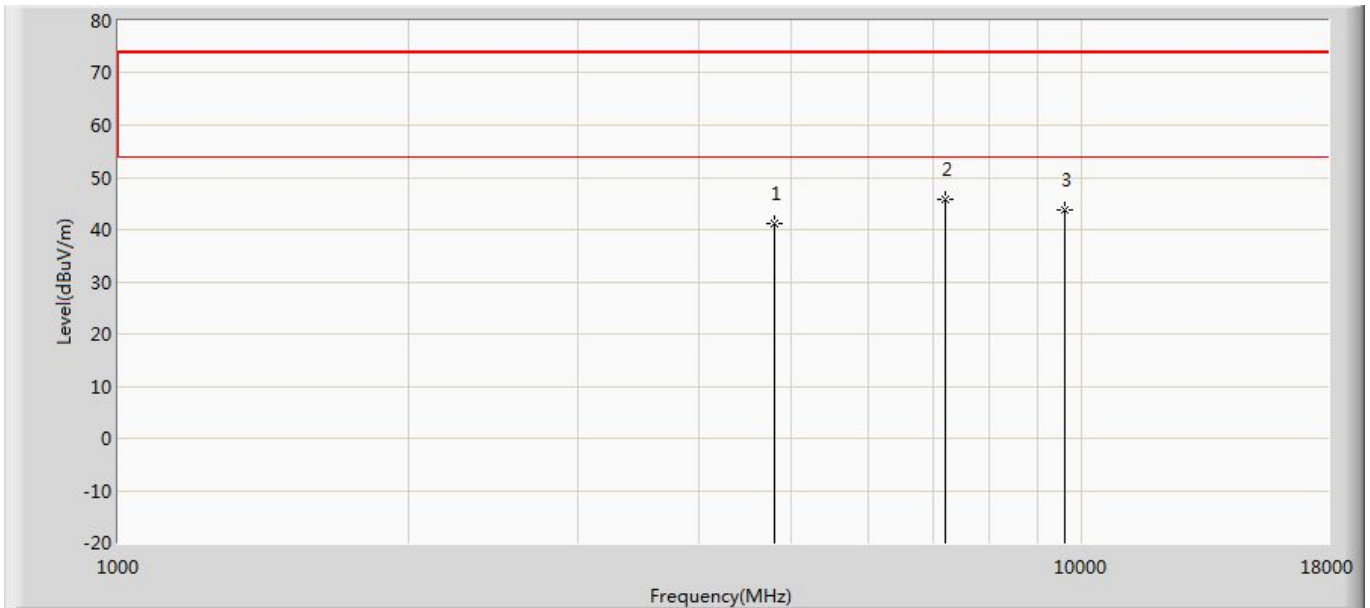
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	42.105	43.253	-31.895	74.000	-1.148	PK
2		7440.000	43.404	40.978	-30.596	74.000	2.426	PK
3	*	9920.000	43.454	38.200	-30.546	74.000	5.253	PK

Site: AC5	Time: 2018/12/22 - 19:48
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by DH5	



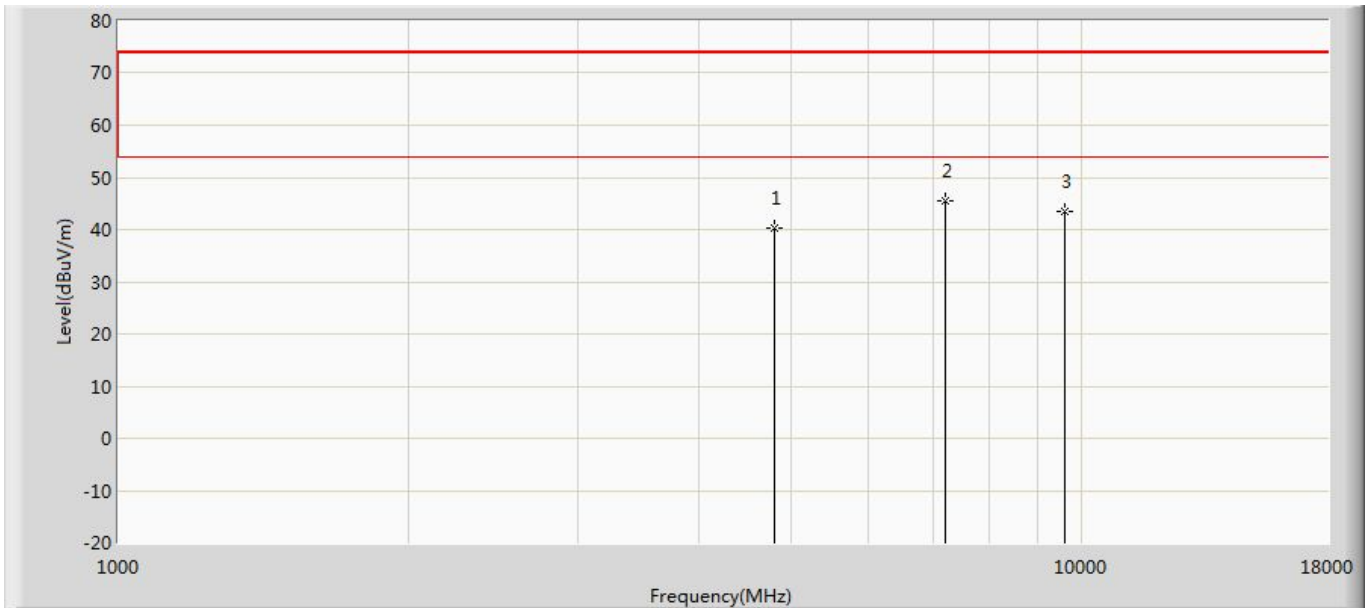
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	41.367	42.515	-32.633	74.000	-1.148	PK
2	*	7440.000	43.545	41.119	-30.455	74.000	2.426	PK
3		9920.000	43.245	37.991	-30.755	74.000	5.253	PK

Site: AC5	Time: 2018/12/22 - 19:48
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by 2DH5	



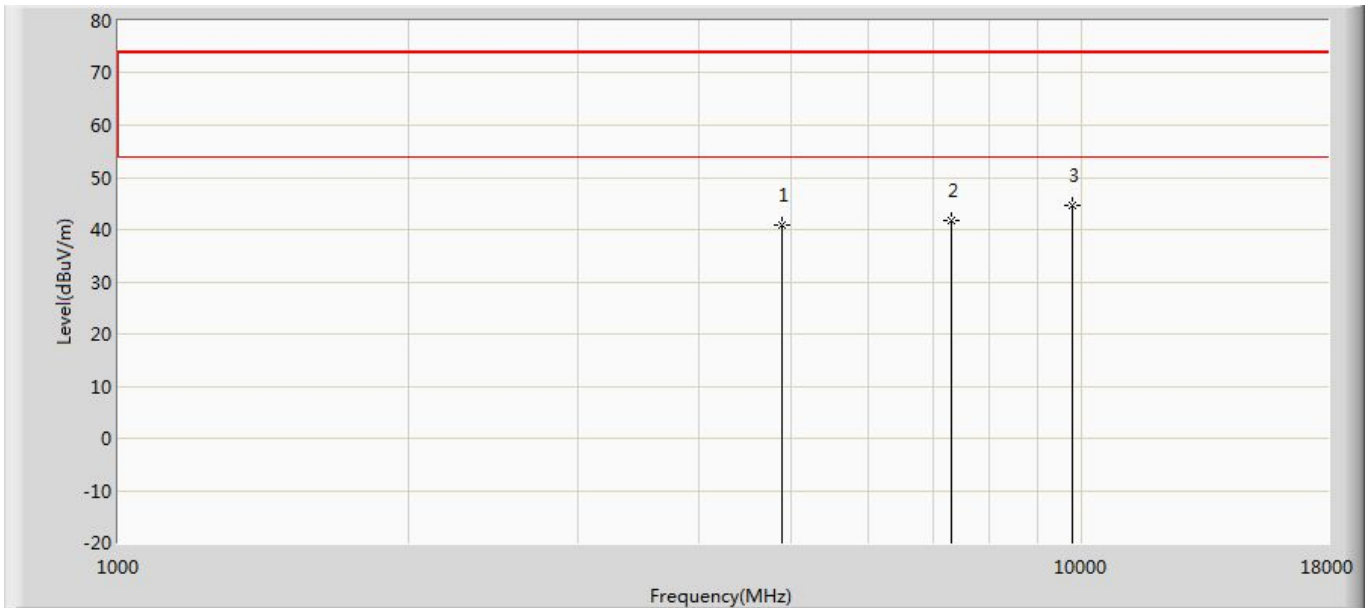
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	41.221	42.944	-32.779	74.000	-1.723	PK
2	*	7205.000	45.880	43.944	-28.120	74.000	1.936	PK
3		9608.000	43.716	38.817	-30.284	74.000	4.899	PK

Site: AC5	Time: 2018/12/22 - 19:48
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by 2DH5	



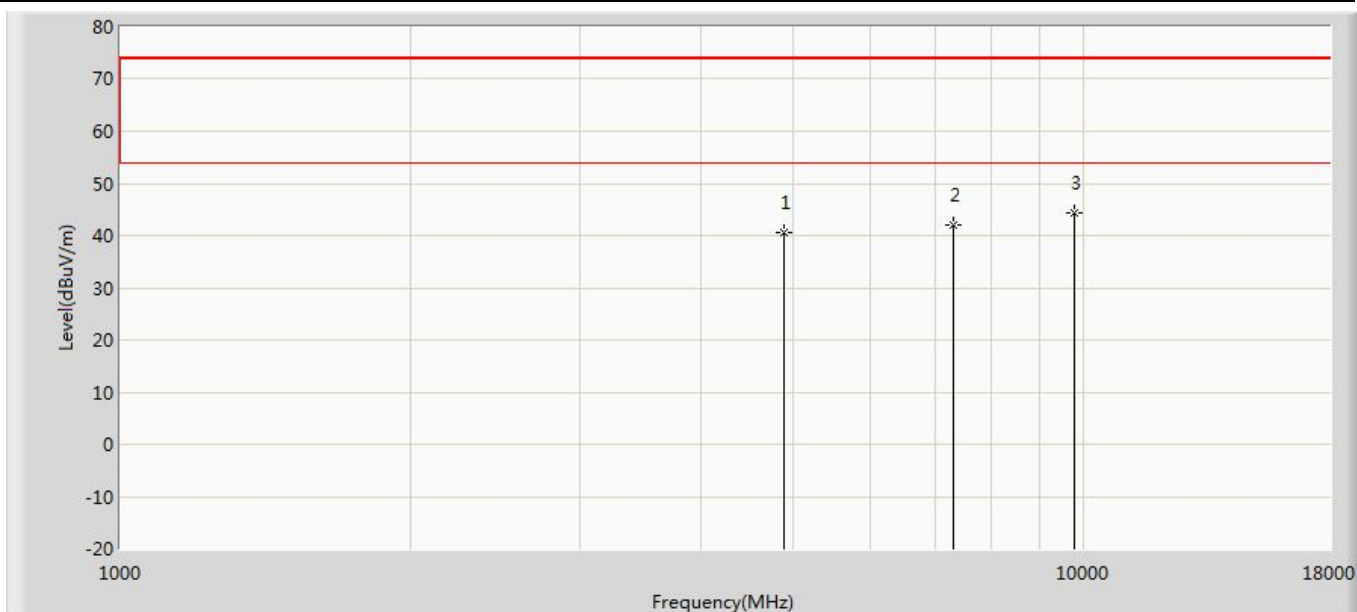
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	40.263	41.986	-33.737	74.000	-1.723	PK
2	*	7205.000	45.561	43.625	-28.439	74.000	1.936	PK
3		9608.000	43.353	38.454	-30.647	74.000	4.899	PK

Site: AC5	Time: 2018/12/22 - 19:48
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2441MHz by 2DH5	



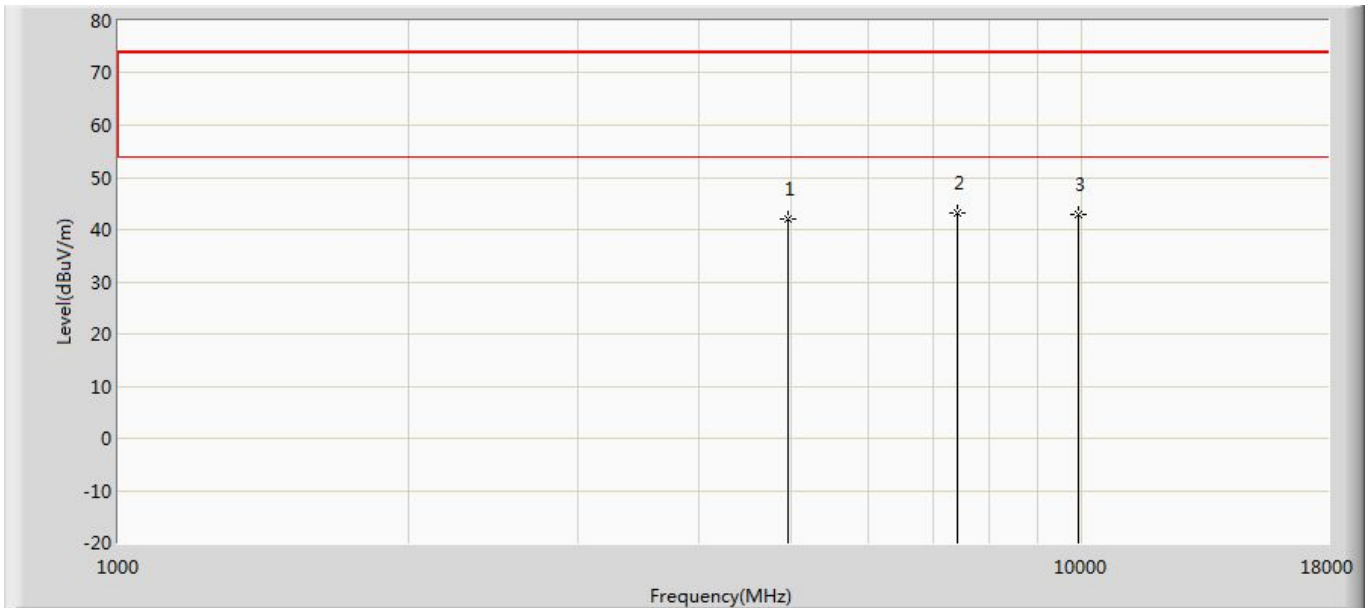
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4882.000	40.819	42.136	-33.181	74.000	-1.317	PK
2		7323.000	41.785	39.877	-32.215	74.000	1.909	PK
3	*	9764.000	44.747	38.747	-29.253	74.000	6.001	PK

Site: AC5	Time: 2018/12/22 - 19:48
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2441MHz by 2DH5	



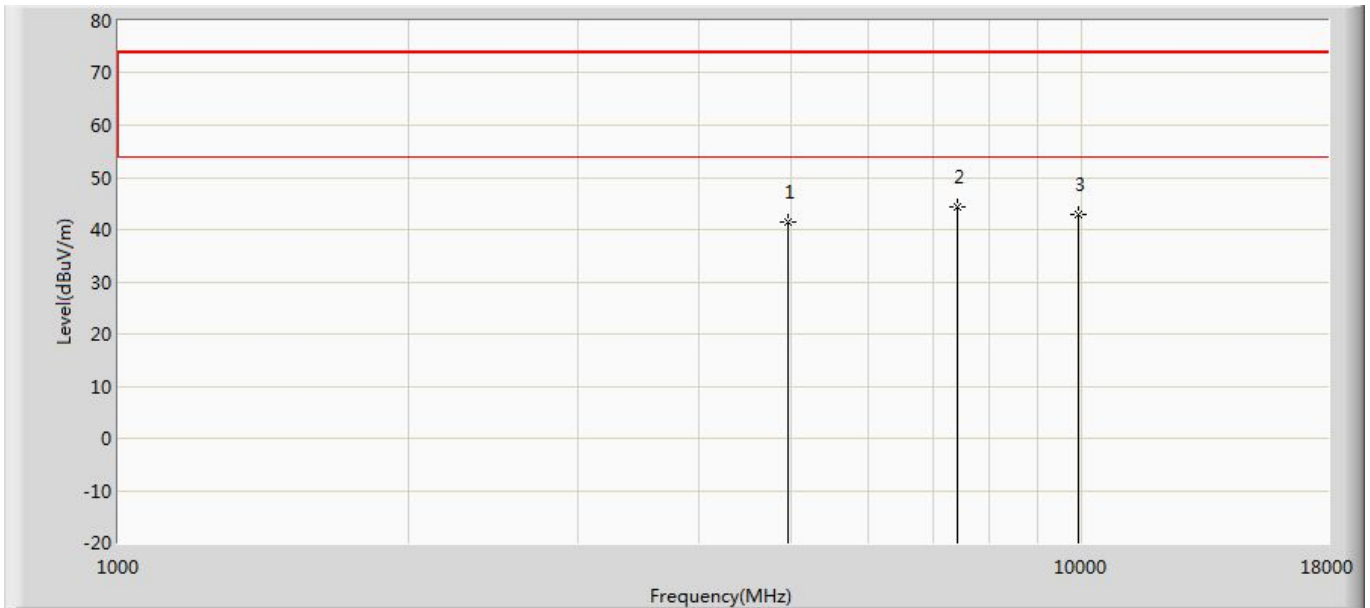
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4882.000	40.584	41.901	-33.416	74.000	-1.317	PK
2		7323.000	42.059	40.151	-31.941	74.000	1.909	PK
3	*	9764.000	44.274	38.274	-29.726	74.000	6.001	PK

Site: AC5	Time: 2018/12/22 - 19:48
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by 2DH5	



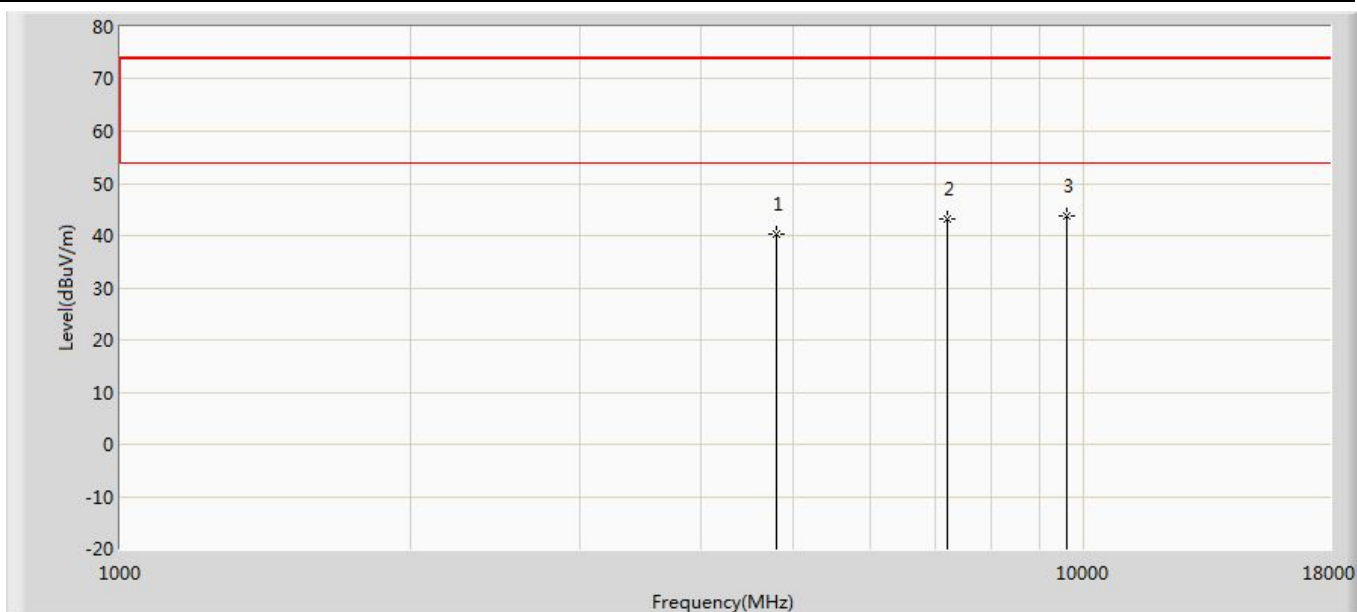
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	41.982	43.130	-32.018	74.000	-1.148	PK
2	*	7440.000	43.144	40.718	-30.856	74.000	2.426	PK
3		9920.000	43.002	37.748	-30.998	74.000	5.253	PK

Site: AC5	Time: 2018/12/22 - 19:49
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by 2DH5	



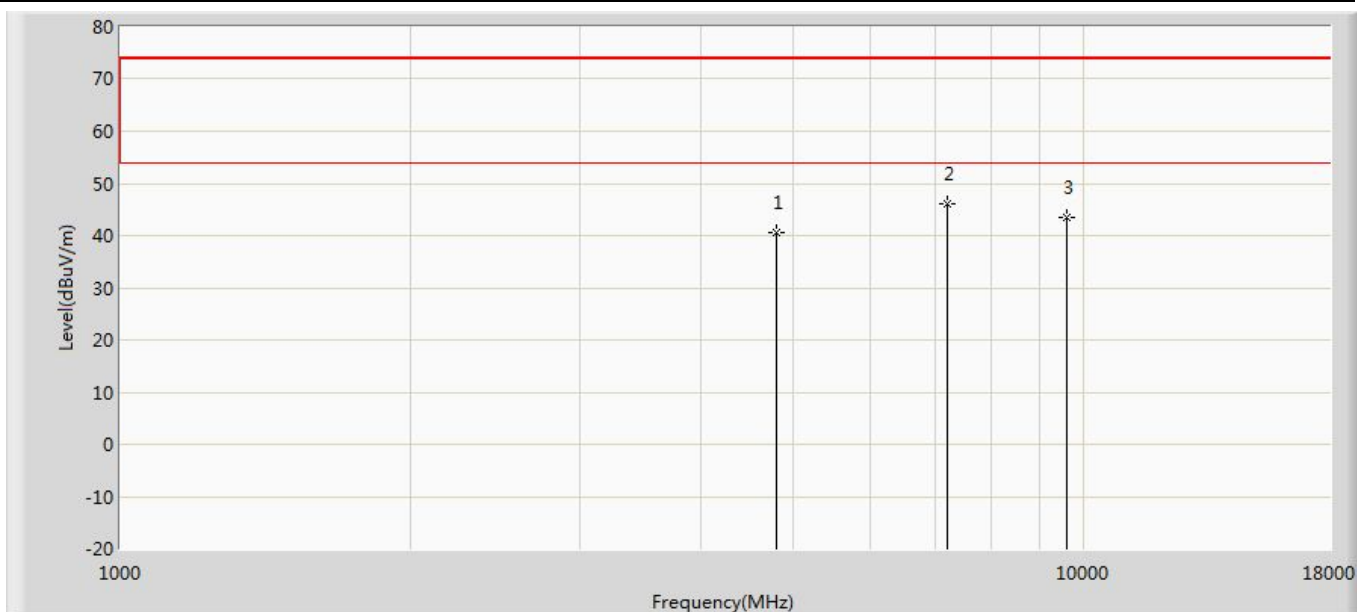
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	41.549	42.697	-32.451	74.000	-1.148	PK
2	*	7440.000	44.203	41.777	-29.797	74.000	2.426	PK
3		9920.000	42.908	37.654	-31.092	74.000	5.253	PK

Site: AC5	Time: 2018/12/22 - 19:50
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by 3DH5	



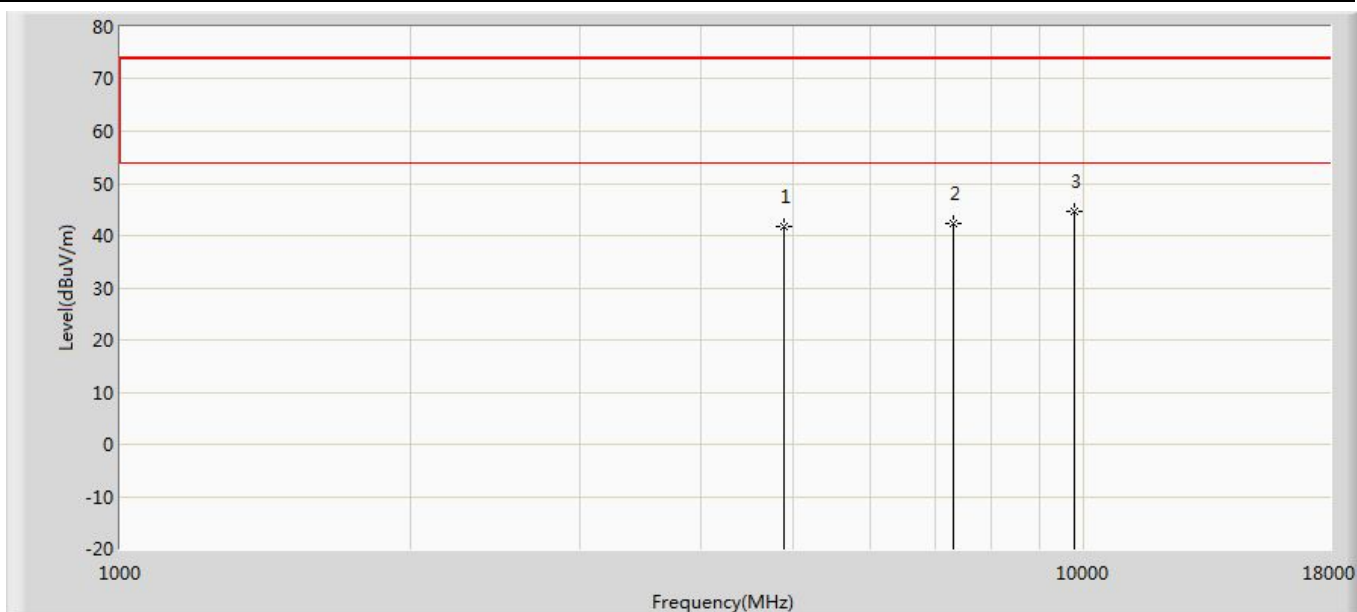
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	40.375	42.098	-33.625	74.000	-1.723	PK
2		7206.000	43.316	41.397	-30.684	74.000	1.919	PK
3	*	9608.000	43.697	38.798	-30.303	74.000	4.899	PK

Site: AC5	Time: 2018/12/22 - 19:50
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by 3DH5	



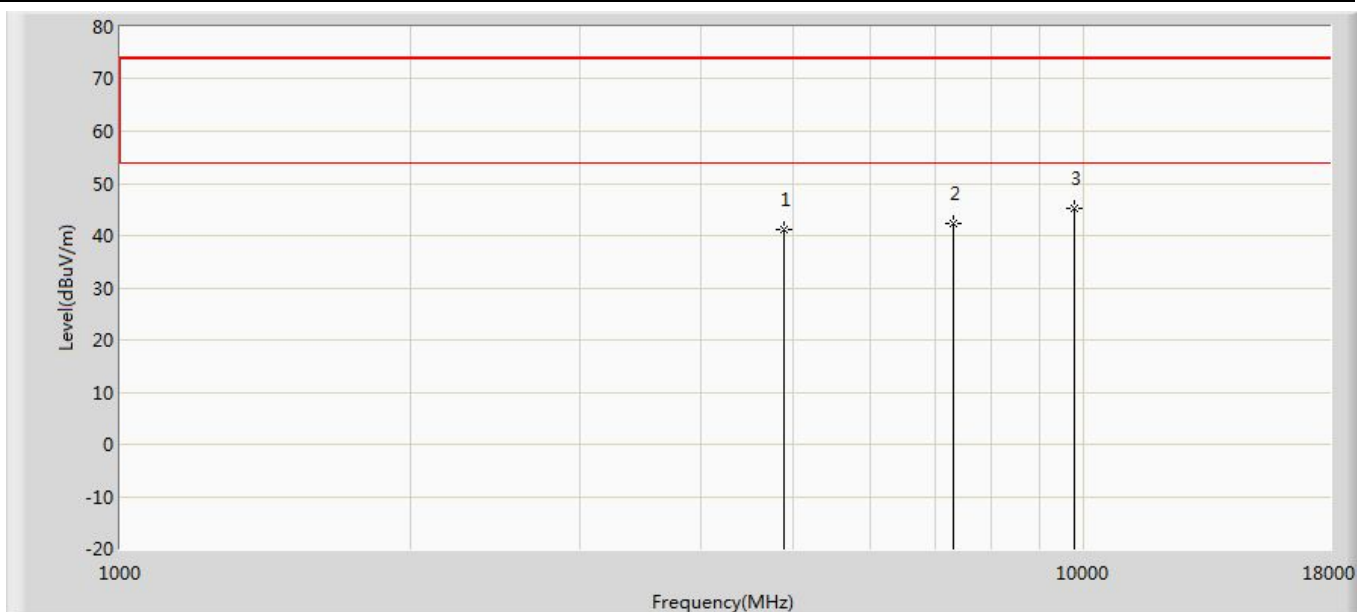
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	40.547	42.270	-33.453	74.000	-1.723	PK
2	*	7205.000	46.099	44.163	-27.901	74.000	1.936	PK
3		9608.000	43.474	38.575	-30.526	74.000	4.899	PK

Site: AC5	Time: 2018/12/22 - 19:50
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2441MHz by 3DH5	



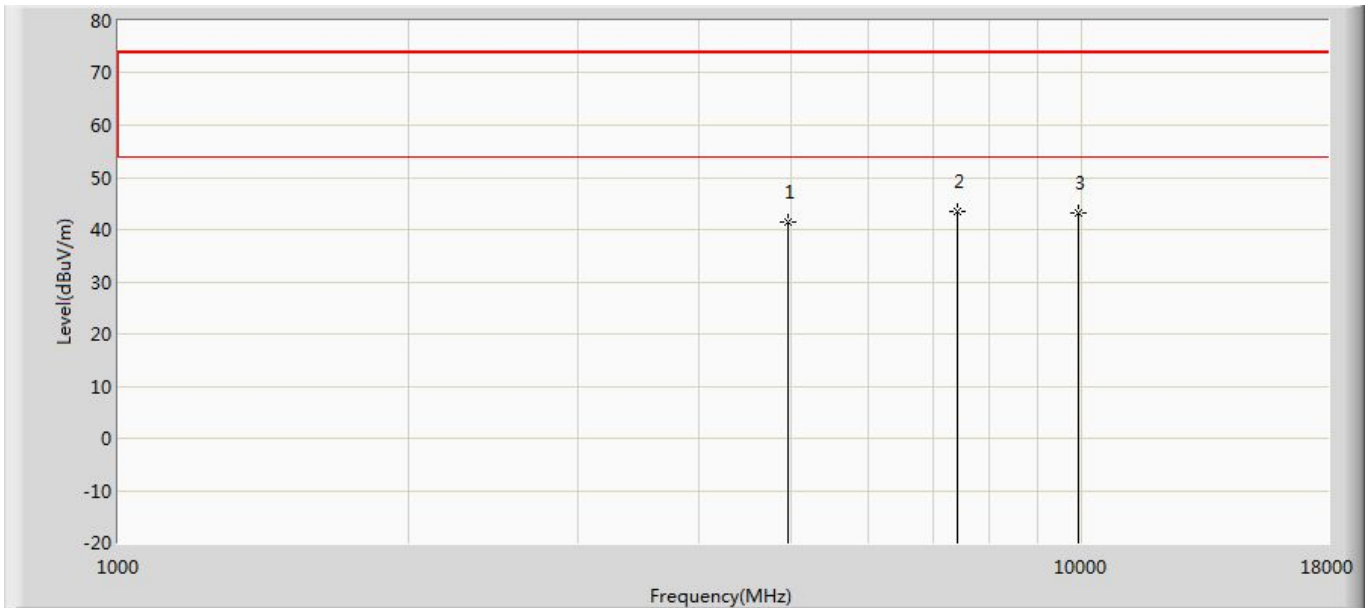
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4882.000	41.611	42.928	-32.389	74.000	-1.317	PK
2		7323.000	42.386	40.478	-31.614	74.000	1.909	PK
3	*	9764.000	44.666	38.666	-29.334	74.000	6.001	PK

Site: AC5	Time: 2018/12/22 - 19:50
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2441MHz by 3DH5	



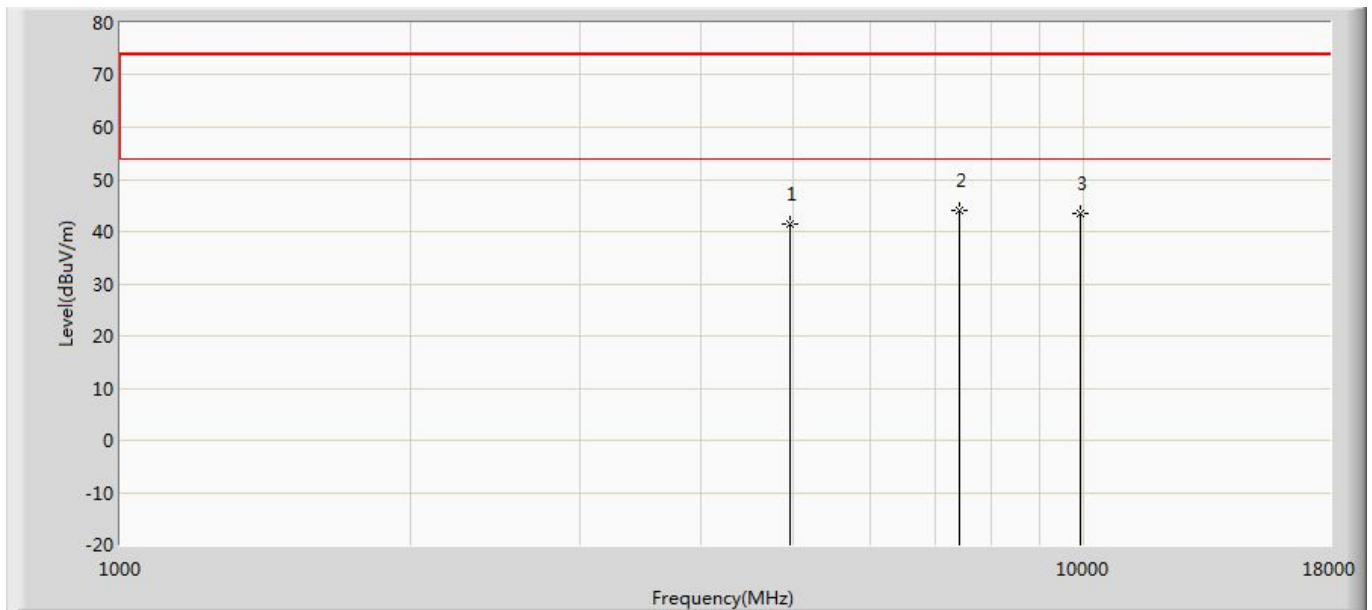
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4882.000	41.265	42.582	-32.735	74.000	-1.317	PK
2		7323.000	42.440	40.532	-31.560	74.000	1.909	PK
3	*	9764.000	45.197	39.197	-28.803	74.000	6.001	PK

Site: AC5	Time: 2018/12/22 - 19:50
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by 3DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	41.528	42.676	-32.472	74.000	-1.148	PK
2	*	7440.000	43.509	41.083	-30.491	74.000	2.426	PK
3		9920.000	43.191	37.937	-30.809	74.000	5.253	PK

Site: AC5	Time: 2018/12/22 - 19:50
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by 3DH5	



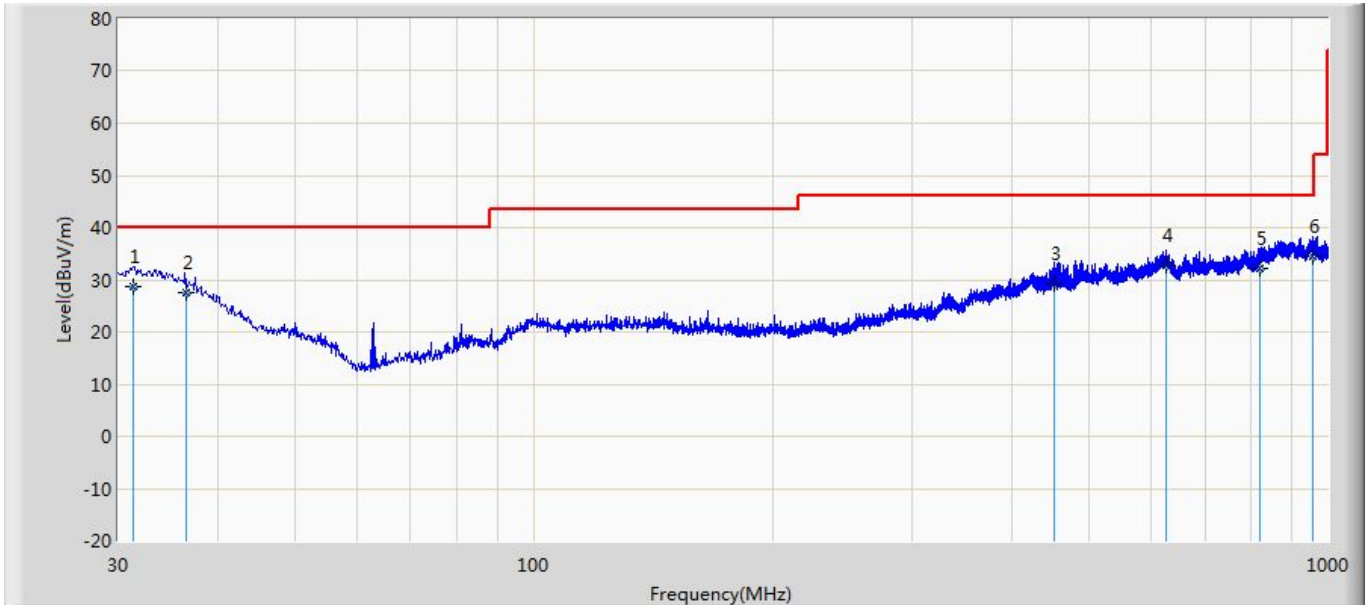
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	41.381	42.529	-32.619	74.000	-1.148	PK
2	*	7440.000	44.187	41.761	-29.813	74.000	2.426	PK
3		9920.000	43.477	38.223	-30.523	74.000	5.253	PK

Note:

1. Measured Level = Reading Level + Factor.
2. The test frequency range, 9kHz~30MHz, 18GHz~26GHz, both of the worst case are at least 20dB below the limits, therefore no data appear in the report.
3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.
4. As the radiated emission was performed, so conducted emission was not tested.

The worst case of Radiated Emission below 1GHz:

Site: AC2	Time: 2018/11/16
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: AC2_3M(30-1000M)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1	

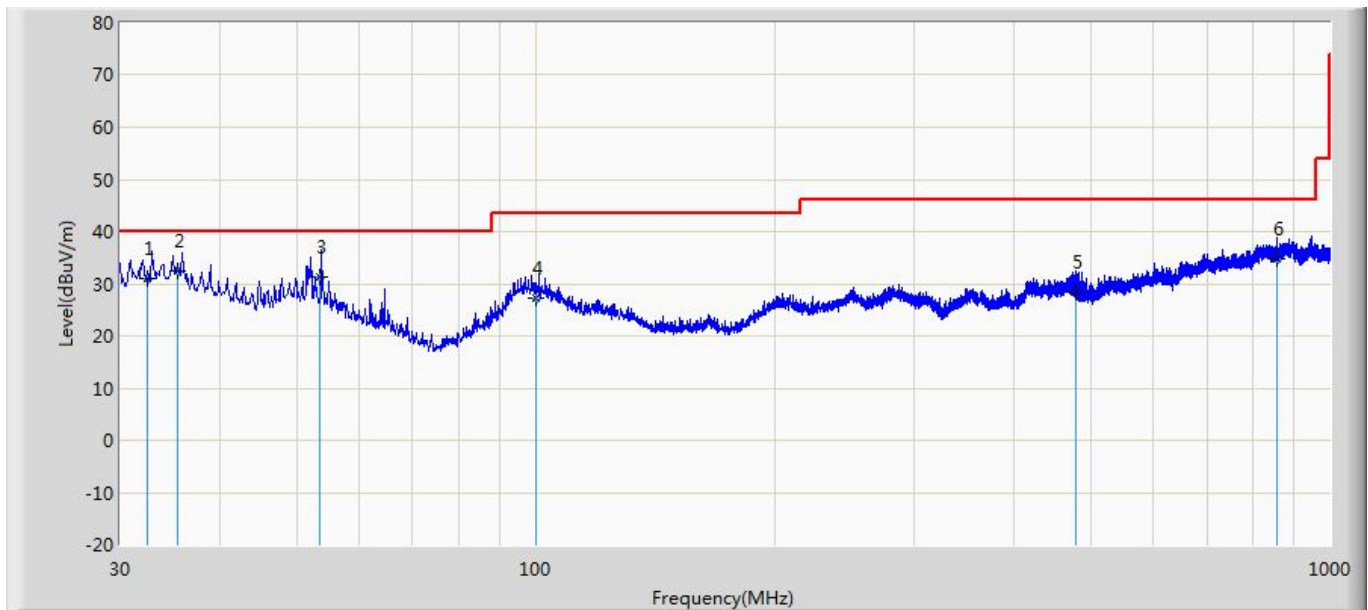


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1	*	31.278	28.694	1.200	-11.306	40.000	20.861	6.633	0.000	300	109	QP
2		36.487	27.668	1.800	-12.332	40.000	19.231	6.636	0.000	300	157	QP
3		452.214	29.386	2.300	-16.614	46.000	19.090	7.996	0.000	289	10	QP
4		626.157	32.628	2.000	-13.372	46.000	22.056	8.572	0.000	300	360	QP
5		821.344	32.300	0.900	-13.700	46.000	22.340	9.061	0.000	200	251	QP
6		956.244	34.365	1.200	-11.635	46.000	23.802	9.363	0.000	300	114	QP

Note:

1. " * ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: AC2	Time: 2018/11/16
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: AC2_3M(30-1000M)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		32.500	31.112	7.600	-8.888	40.000	16.866	6.646	0.000	100	278	QP
2	*	35.364	32.410	9.800	-7.590	40.000	15.950	6.659	0.000	100	298	QP
3		53.497	31.286	13.100	-8.714	40.000	11.581	6.605	0.000	300	273	QP
4		100.158	27.105	5.100	-16.395	43.500	15.133	6.872	0.000	100	100	QP
5		478.214	28.363	2.600	-17.637	46.000	17.742	8.020	0.000	100	24	QP
6		857.297	34.862	2.100	-11.138	46.000	23.615	9.147	0.000	100	105	QP

Note:

1. " * ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

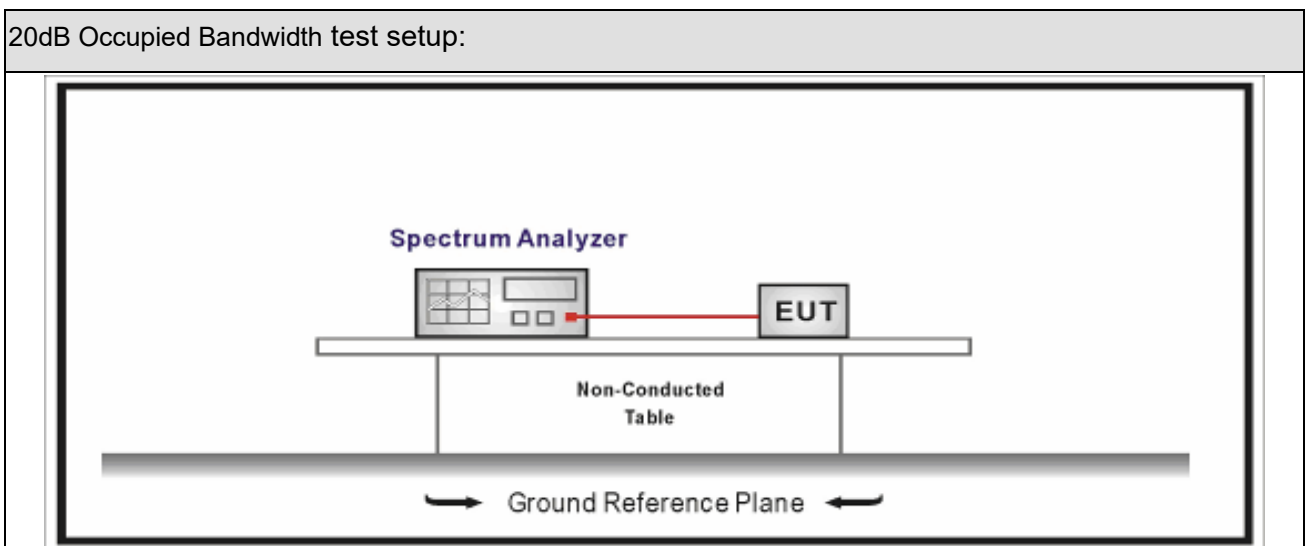
5. 20dB Bandwidth

5.1 Test Equipment

20dB Occupied Bandwidth / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2018.02.04	2019.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2018.04.09	2019.04.08
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2018.04.09	2019.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2018.04.10	2019.04.09

Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

5.2 Test Setup



5.3 Limit

Carrier Frequency Separation	
<input checked="" type="checkbox"/>	For frequency hopping systems operating in 2400-2483.5 MHz band, within frequency range.
<input type="checkbox"/>	For frequency hopping systems operating in 902-928 MHz band, the maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.
<input type="checkbox"/>	For frequency hopping systems operating in 5725-5850 MHz band, the maximum 20 dB bandwidth of the hopping channel is 1 MHz.

5.4 Test Procedure

Test Method			
	References Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	6.9.2	Occupied bandwidth tests

5.5 Uncertainty

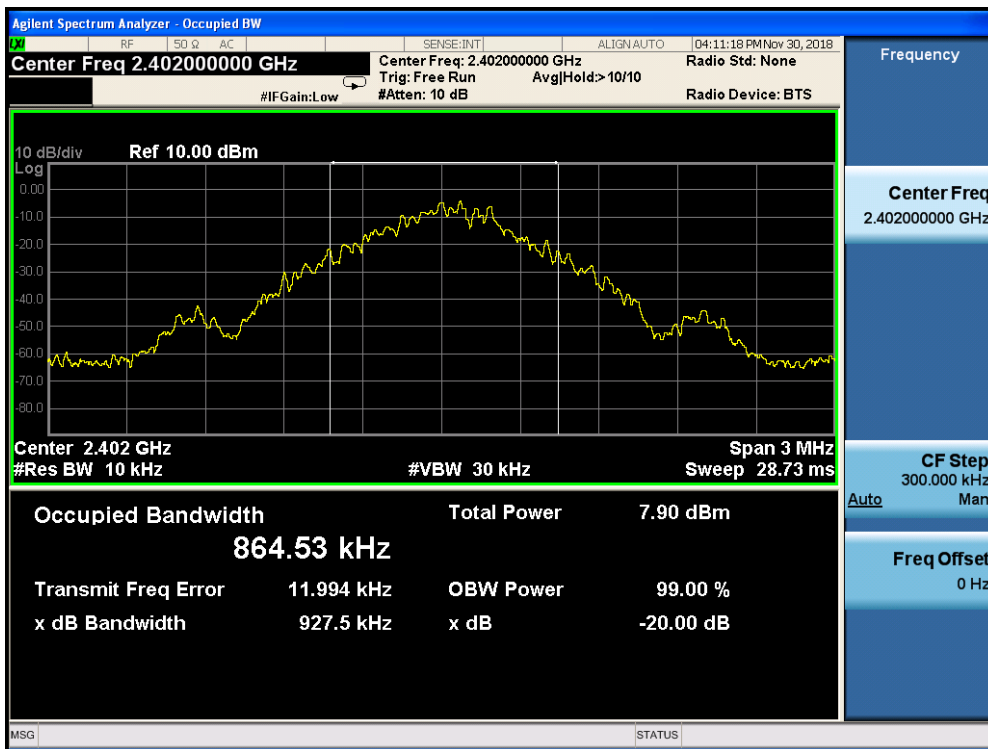
The measurement uncertainty is defined as ± 1 kHz

5.6 Test Result

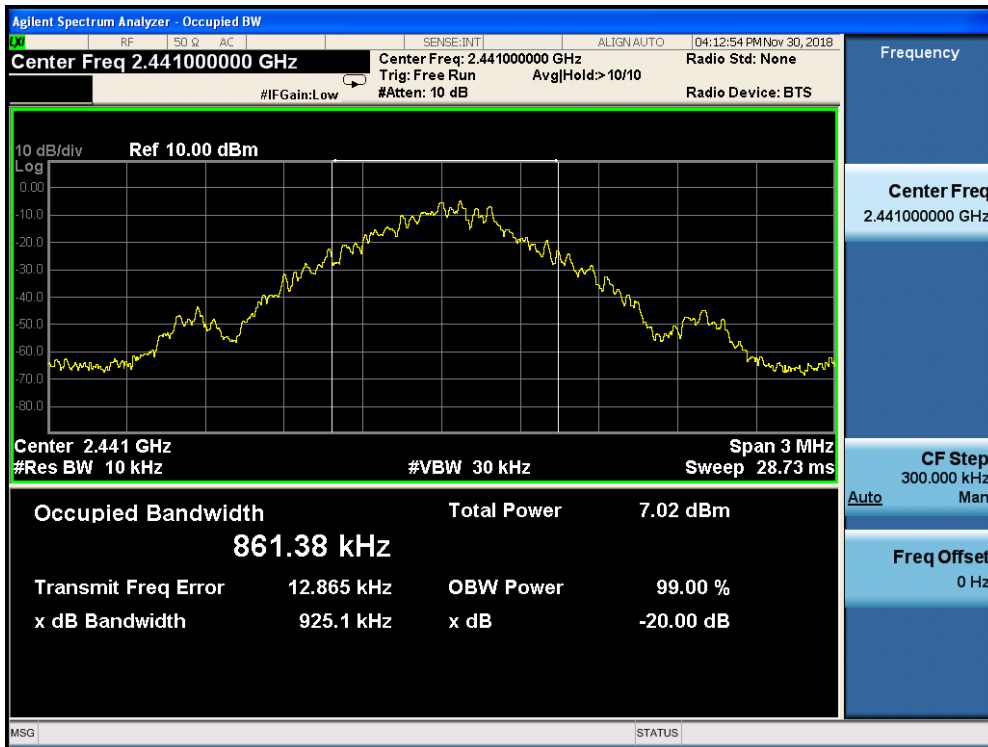
Product Name	: BLUETOOTH EARPHONE	Test Voltage	: AC 120V/60Hz
Test Mode	: Mode 1	Test Site	: TR-8
Test Date	: 2018.11.30	Test Engineer	: Simon

Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
00	2402	927.5	864.53
39	2441	925.1	861.38
78	2480	924.5	859.40

Channel 00 (2402MHz)



Channel 39 (2441MHz)



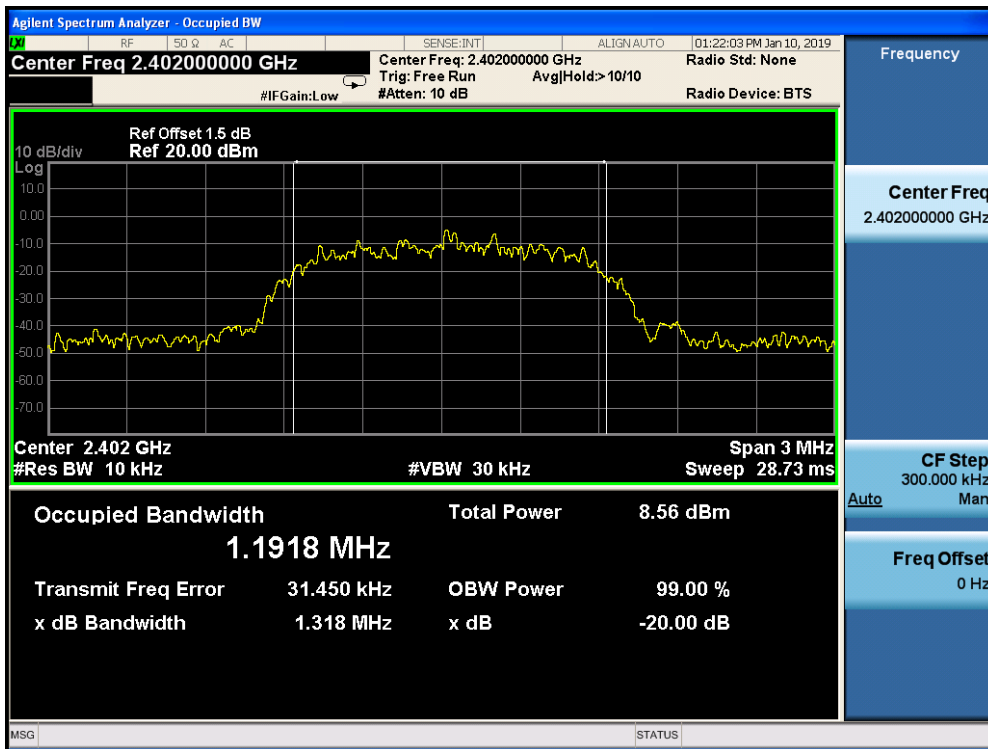
Channel 78 (2480MHz)



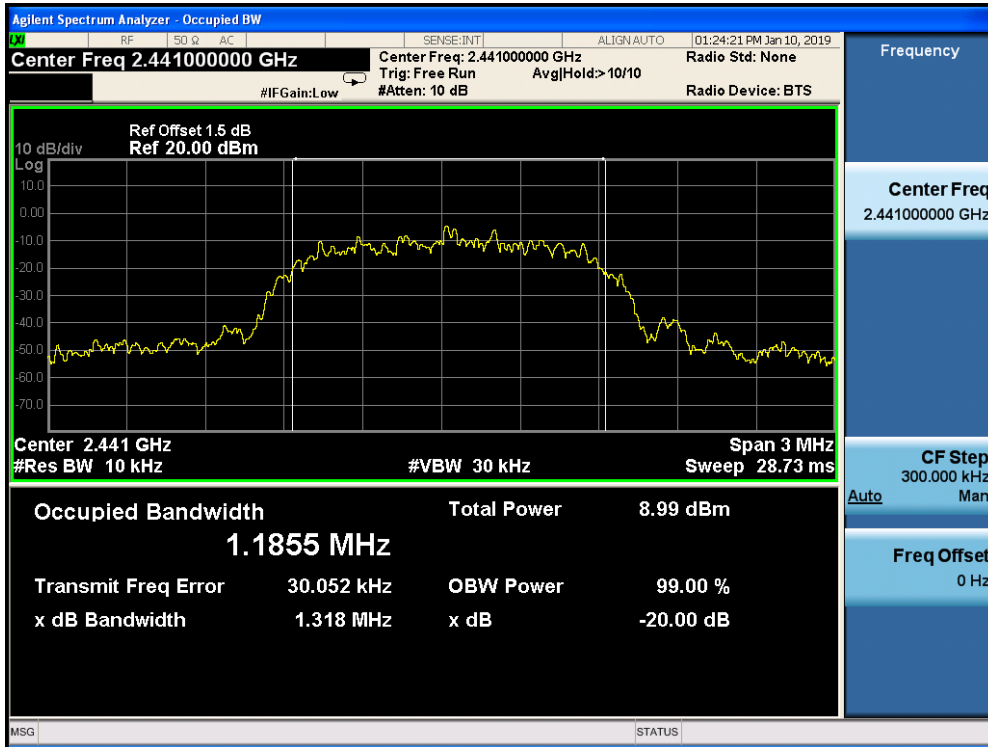
Product Name	: BLUETOOTH EARPHONE	Test Voltage	: AC 120V/60Hz
Test Mode	: Mode 2	Test Site	: TR-8
Test Date	: 2019.01.10	Test Engineer	: Simon

Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
00	2402	1318	1191.8
39	2441	1318	1185.5
78	2480	1325	1196.2

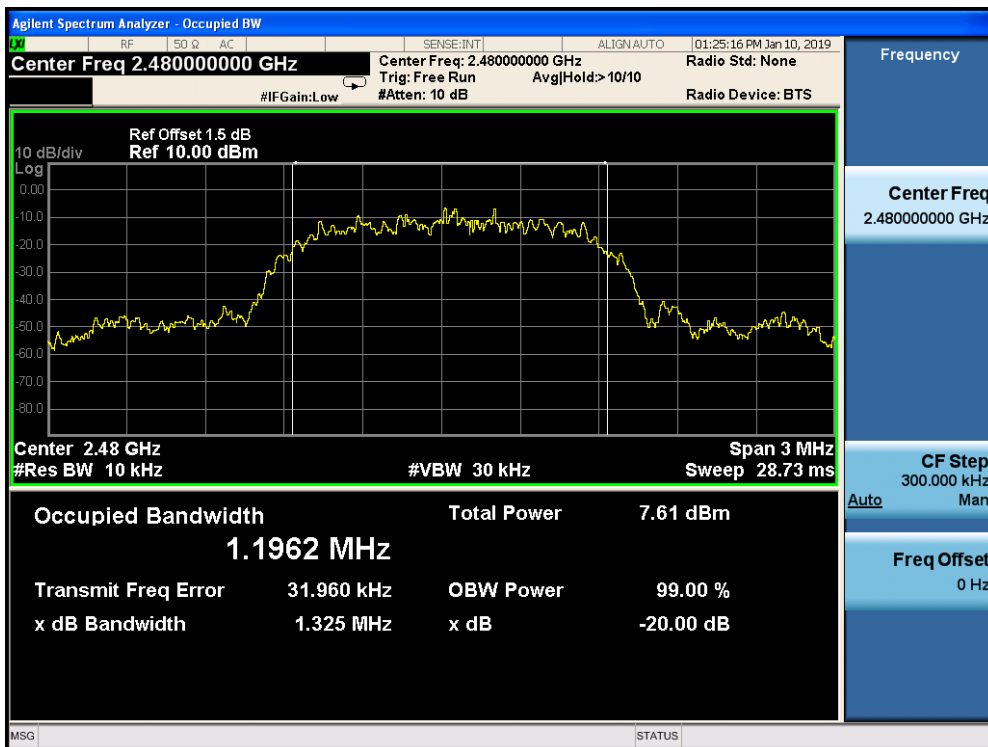
Channel 00 (2402MHz)



Channel 39 (2441MHz)



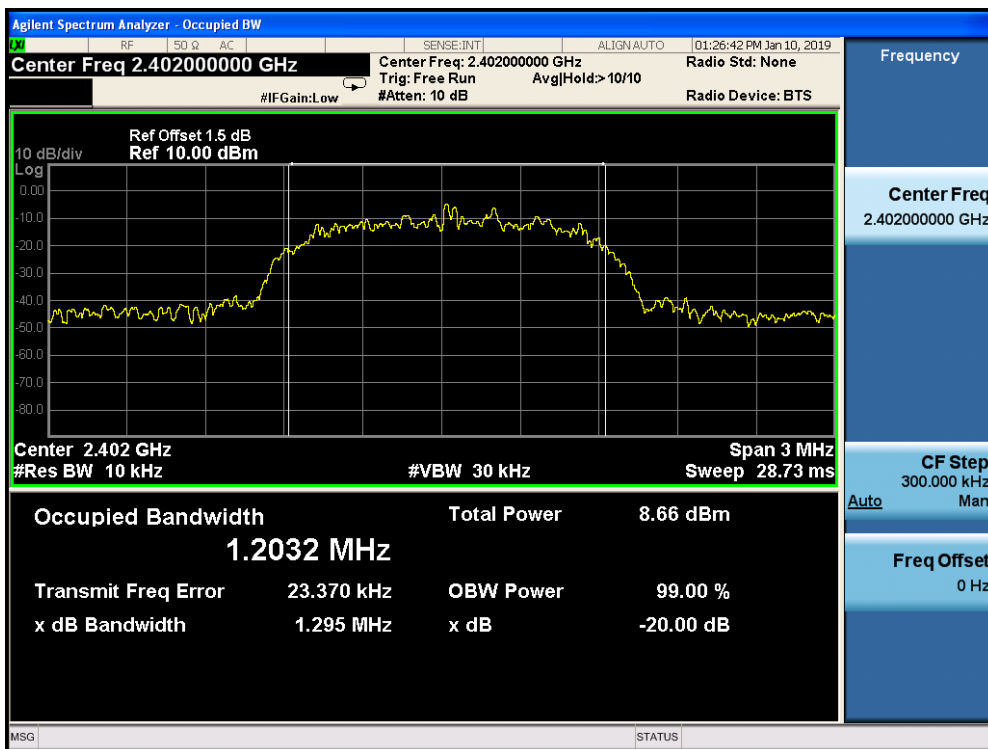
Channel 78 (2480MHz)



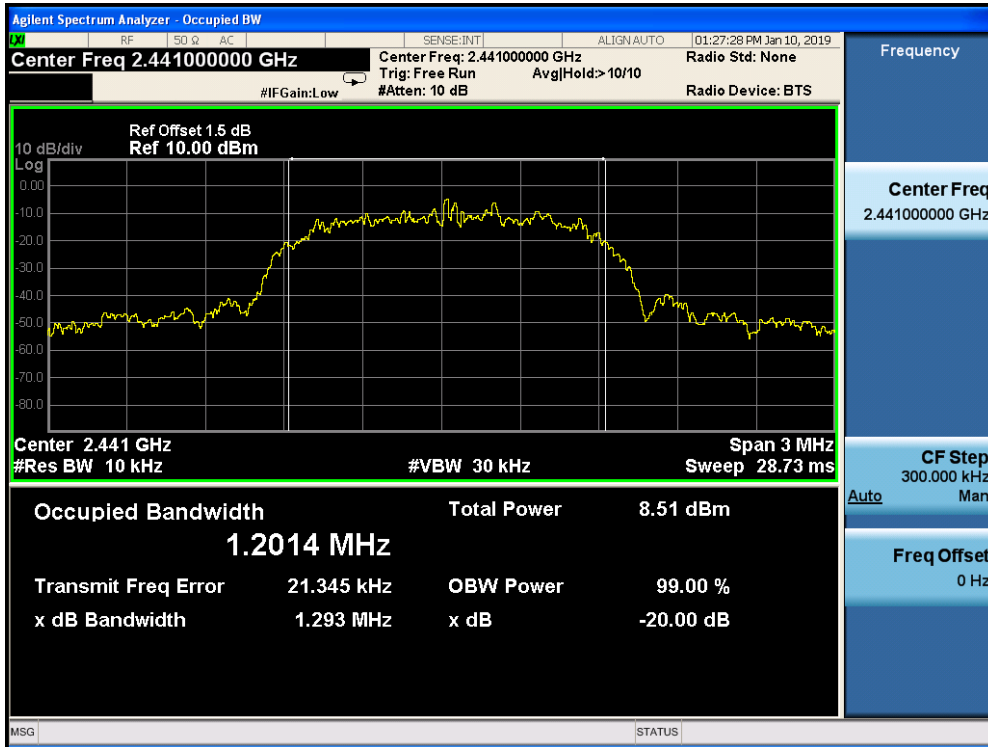
Product Name	: BLUETOOTH EARPHONE	Power	: AC 120V/60Hz
Test Mode	: Mode 3	Test Site	: TR-8
Test Date	: 2019.01.10	Test Engineer	: Simon

Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
00	2402	1295	1203.2
39	2441	1293	1201.4
78	2480	1316	1205.1

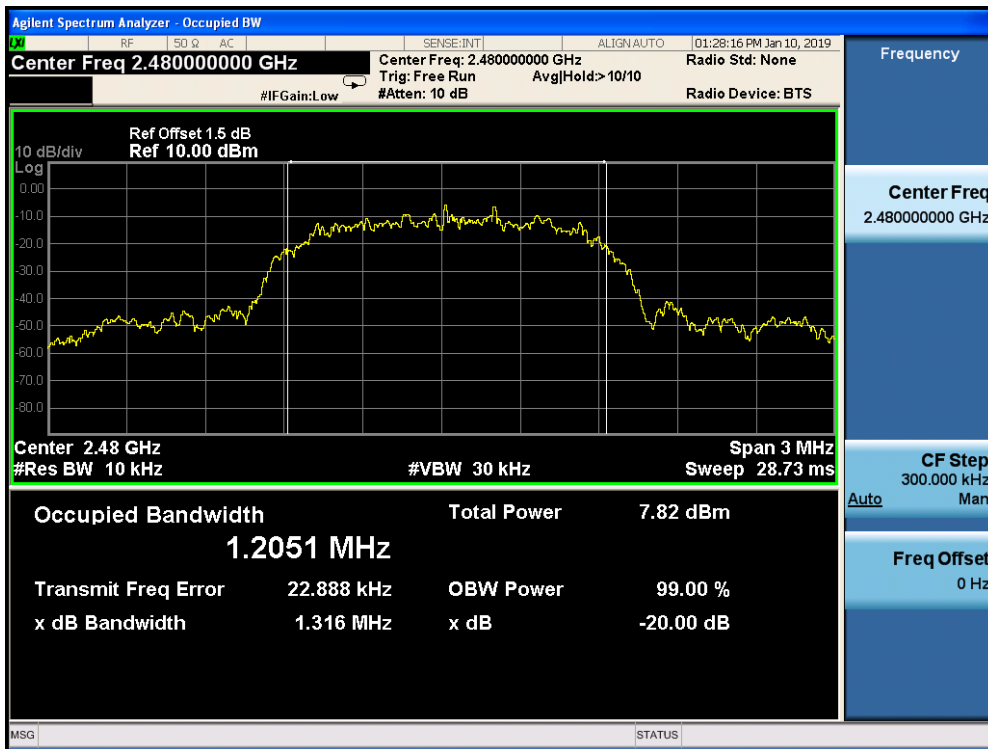
Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)



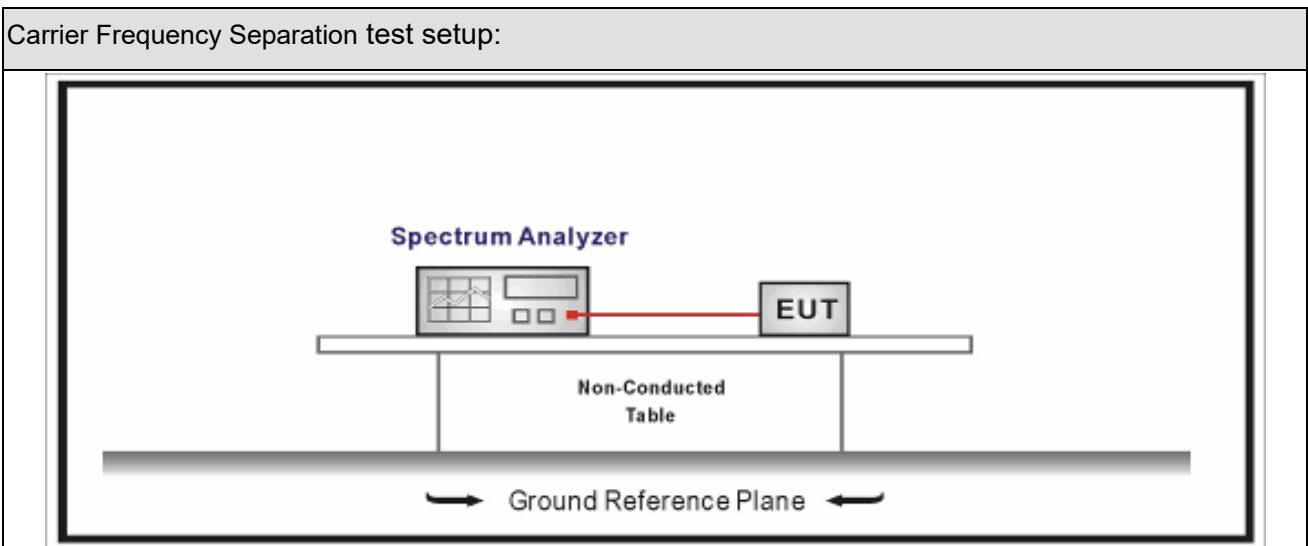
6. Carrier Frequency Separation

6.1. Test Equipment

Carrier Frequency Separation / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2018.02.04	2019.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2018.04.09	2019.04.08
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2018.04.09	2019.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2018.04.10	2019.04.09

Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

6.2. Test Setup



6.3. Limit

Carrier Frequency Separation	
<input type="checkbox"/>	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.
<input checked="" type="checkbox"/>	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.
<input type="checkbox"/>	The 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period;
<input type="checkbox"/>	The 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.
<input type="checkbox"/>	Frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies. The maximum 20 dB bandwidth of the hopping channel is 1 MHz.

6.4. Test Procedure

Test Method			
	References Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	7.8.2	Carrier frequency separation

6.5. Uncertainty

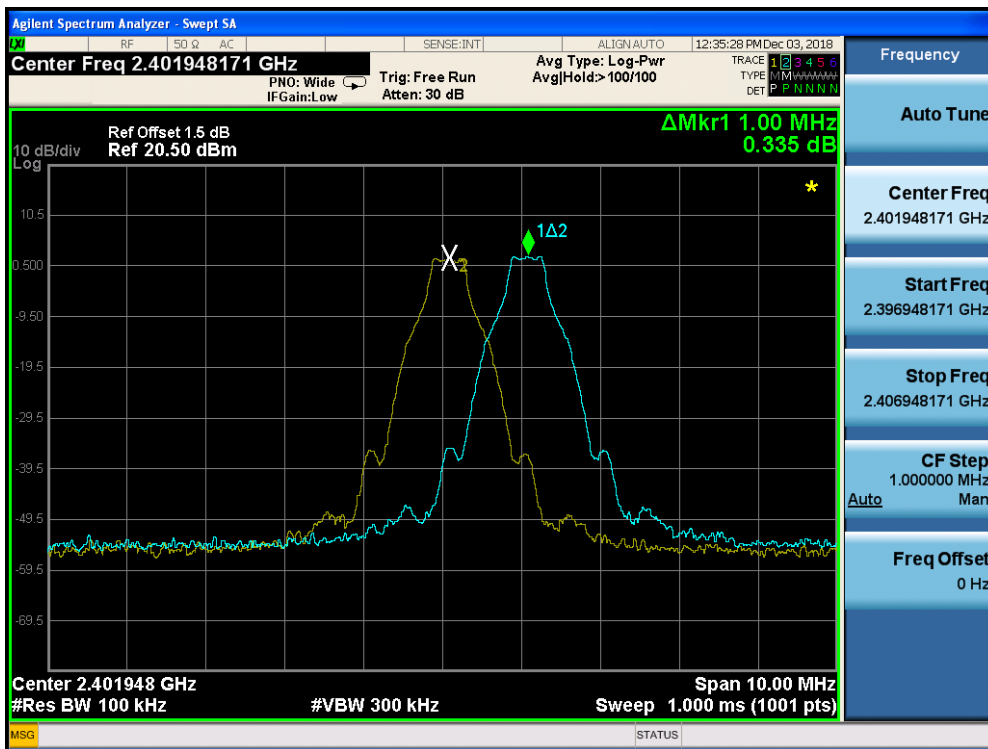
The measurement uncertainty is defined as ± 1 kHz

6.6. Test Result

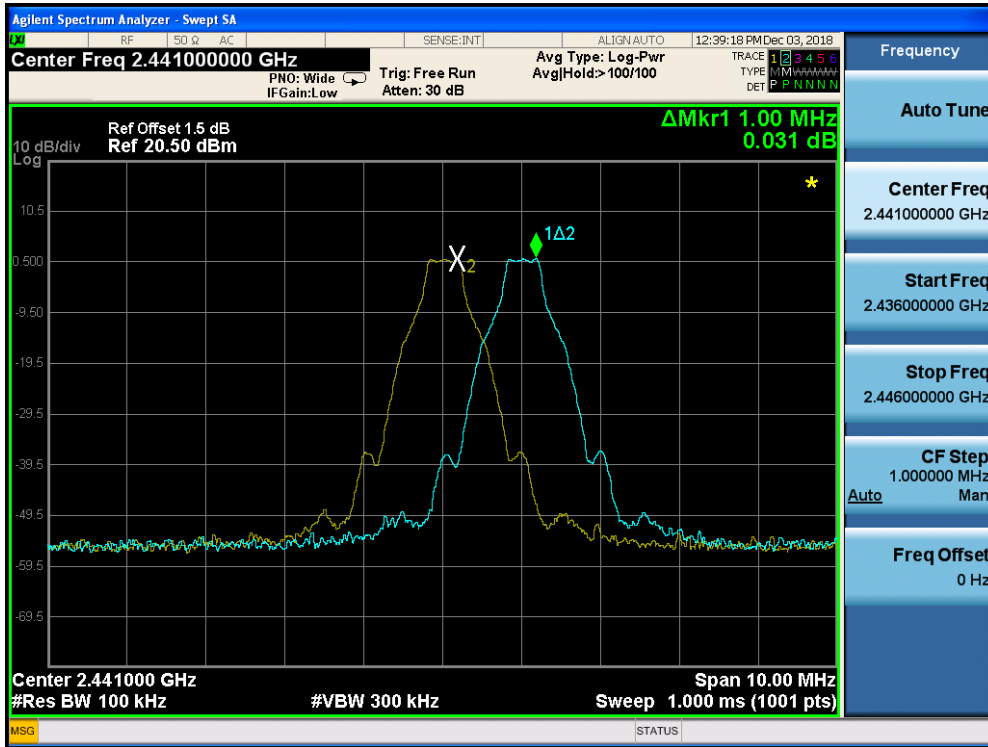
Product Name	: BLUETOOTH EARPHONE	Test Voltage	: AC 120V/60Hz
Test Mode	: Mode 1	Test Site	: TR-8
Test Date	: 2018.12.03	Test Engineer	: Simon

Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
00	2402	1000	618.3	Pass
39	2441	1000	616.7	Pass
78	2480	1000	616.3	Pass

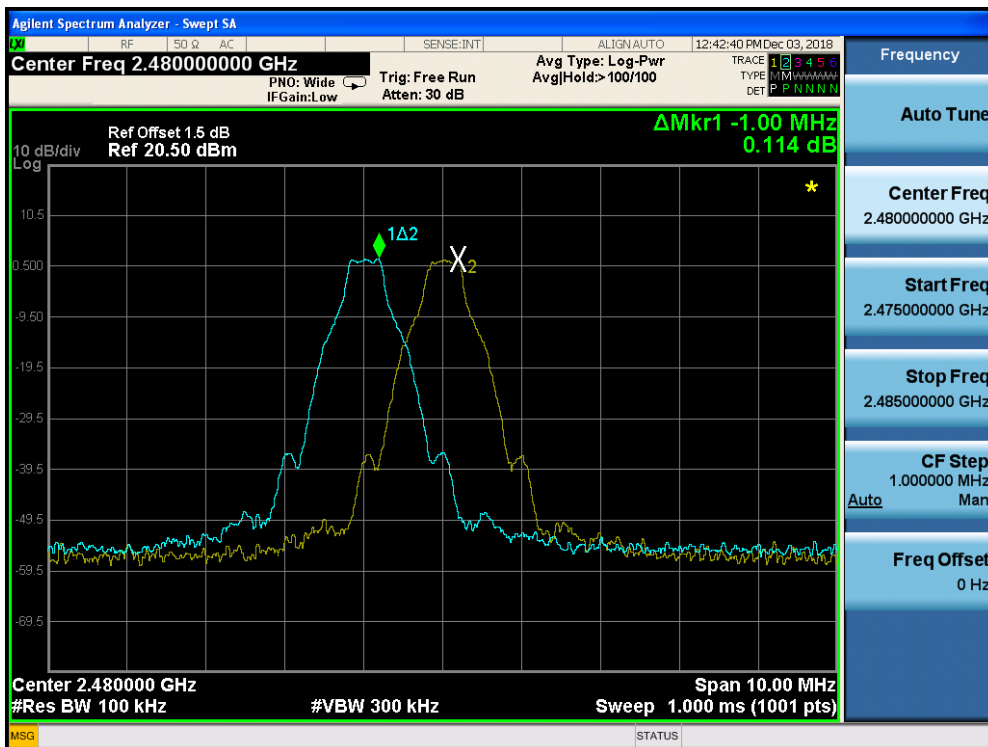
Channel 00 (2402MHz)



Channel 39 (2441MHz)



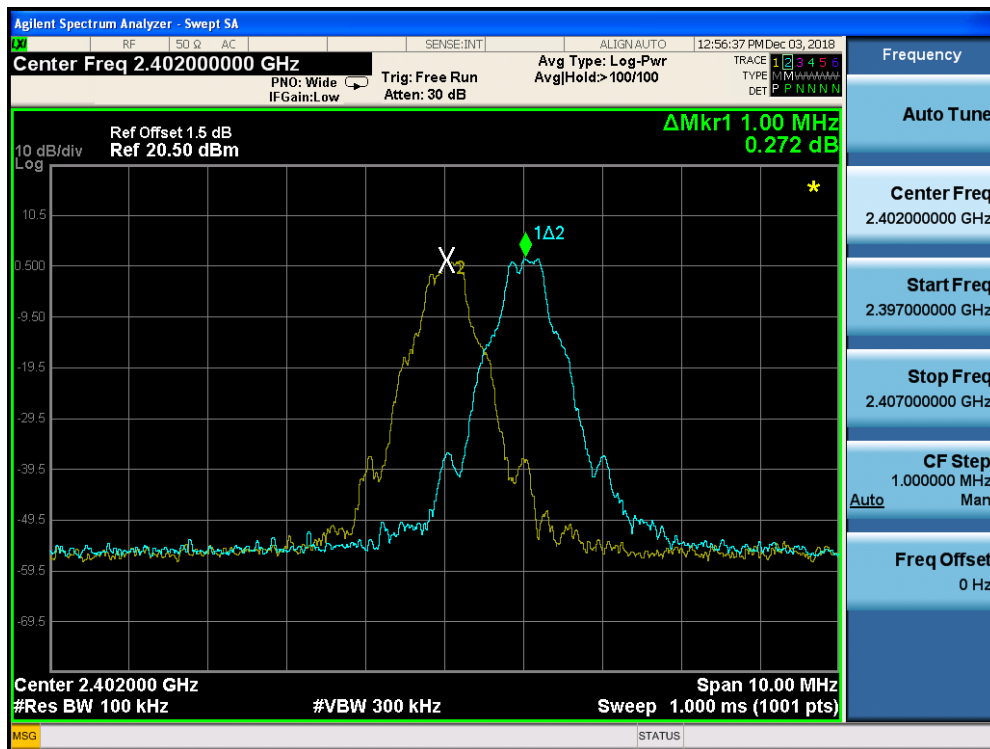
Channel 78 (2480MHz)



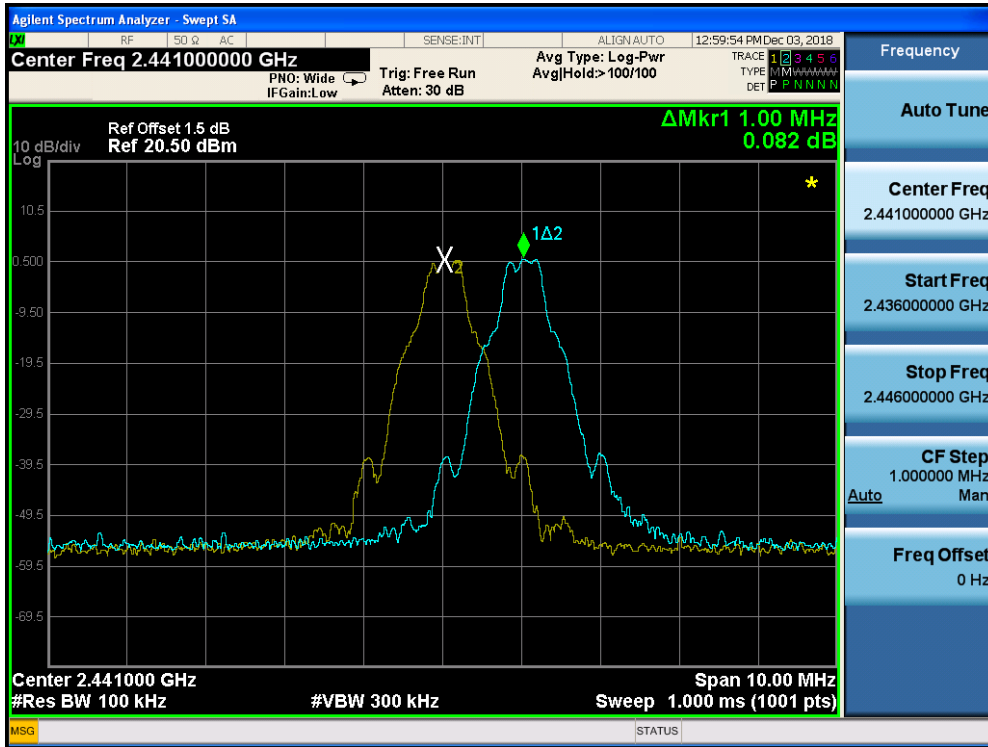
Product Name	: BLUETOOTH EARPHONE	Power	: AC 120V/60Hz
Test Mode	: Mode 2	Test Site	: TR-8
Test Date	: 2018.12.03	Test Engineer	: Simon

Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
00	2402	1000	360.9	Pass
39	2441	1000	360.6	Pass
78	2480	1000	360.1	Pass

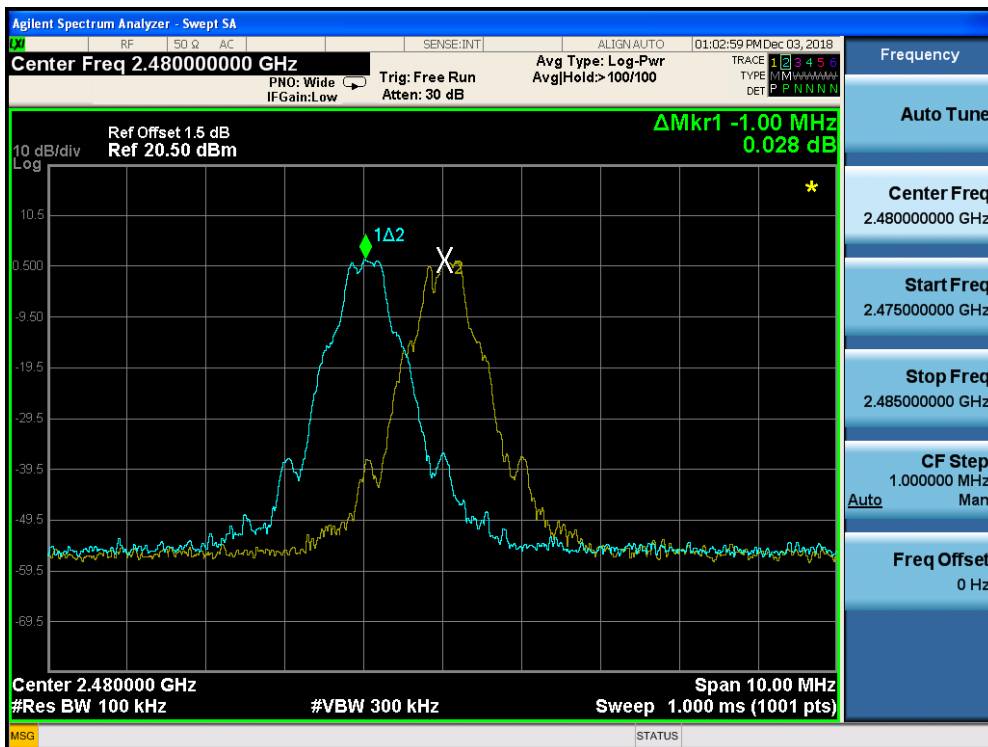
Channel 00 (2402MHz)



Channel 39 (2441MHz)



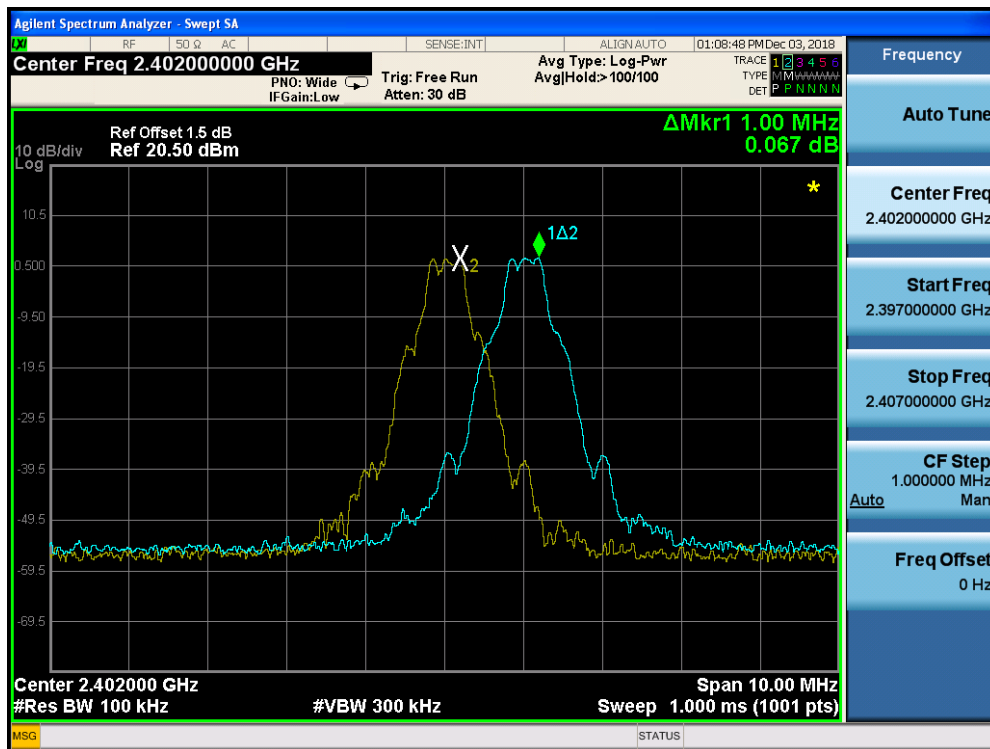
Channel 78 (2480MHz)



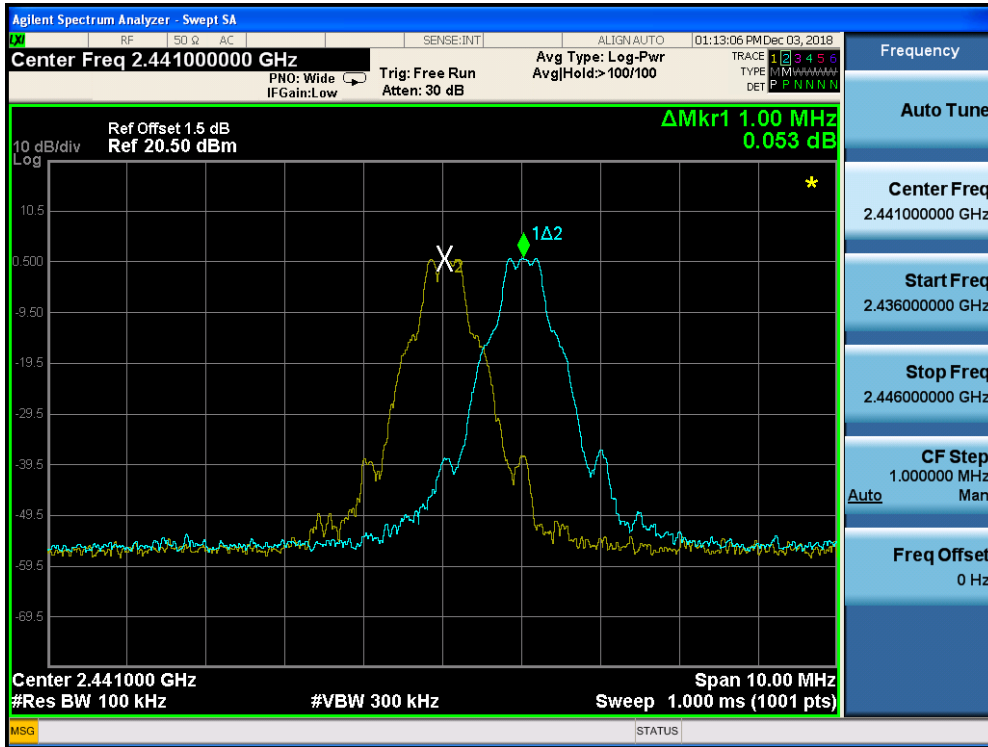
Product Name	: BLUETOOTH EARPHONE	Power	: AC 120V/60Hz
Test Mode	: Mode 3	Test Site	: TR-8
Test Date	: 2018.12.03	Test Engineer	: Simon

Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
00	2402	1000	357.9	Pass
39	2441	1000	357.7	Pass
78	2480	1000	357.5	Pass

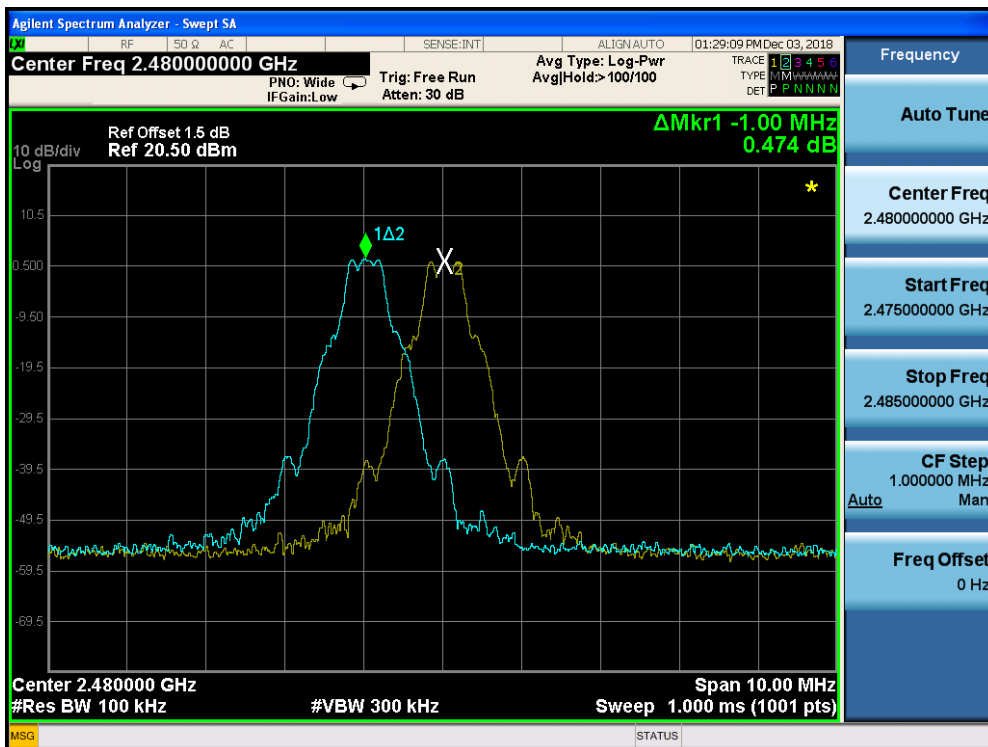
Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)



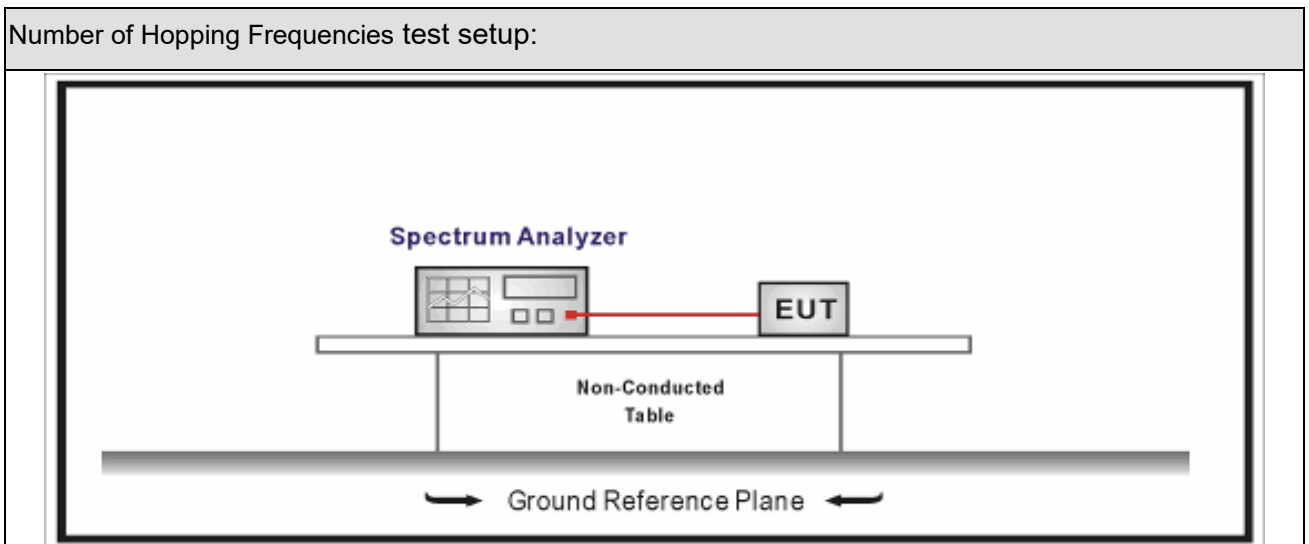
7. Number of Hopping Frequencies

7.1. Test Equipment

Number of Hopping Frequencies / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2018.02.04	2019.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2018.04.09	2019.04.08
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2018.04.09	2019.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2018.04.10	2019.04.09

Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

7.2. Test Setup



7.3. Limit

Carrier Frequency Separation	
<input checked="" type="checkbox"/>	For frequency hopping systems operating in the 2400-2483.5 MHz band shall use at least 15 hopping frequencies.
<input type="checkbox"/>	For frequency hopping systems operating in 902-928 MHz band, if the 20 dB bandwidth of the hopping channel is less than 250 kHz, shall use at least 50 hopping frequencies.
<input type="checkbox"/>	For frequency hopping systems operating in 902-928 MHz band, if the 20 dB bandwidth of the hopping channel is higher than 250 kHz, shall use at least 25 hopping frequencies.
<input type="checkbox"/>	For frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies.

7.4. Test Procedure

Test Method			
	References Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	7.8.3	Number of Hopping Frequencies

7.5. Uncertainty

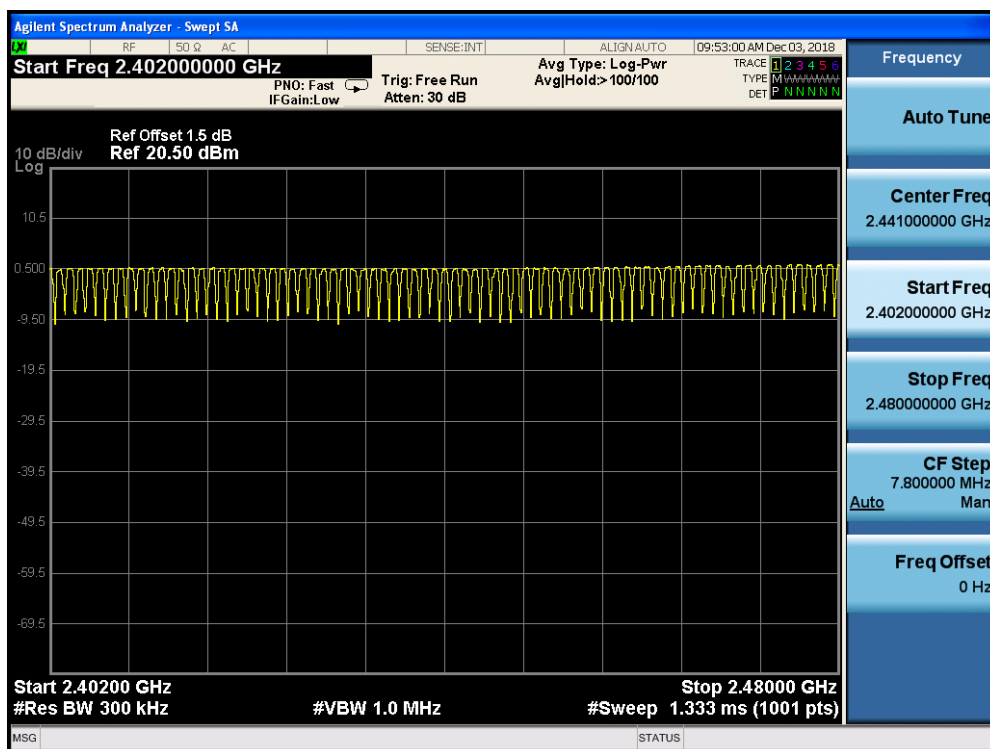
The measurement uncertainty is defined as ± 1 kHz

7.6. Test Result

Product Name	: BLUETOOTH EARPHONE	Test Voltage	: AC 120V/60Hz
Test Mode	: Mode 1	Test Site	: TR-8
Test Date	: 2018.12.03	Test Engineer	: Simon

Frequency Band (MHz)	Number of Hopping Frequencies	Limit	Result
2400 - 2483.5	79	>15	Pass

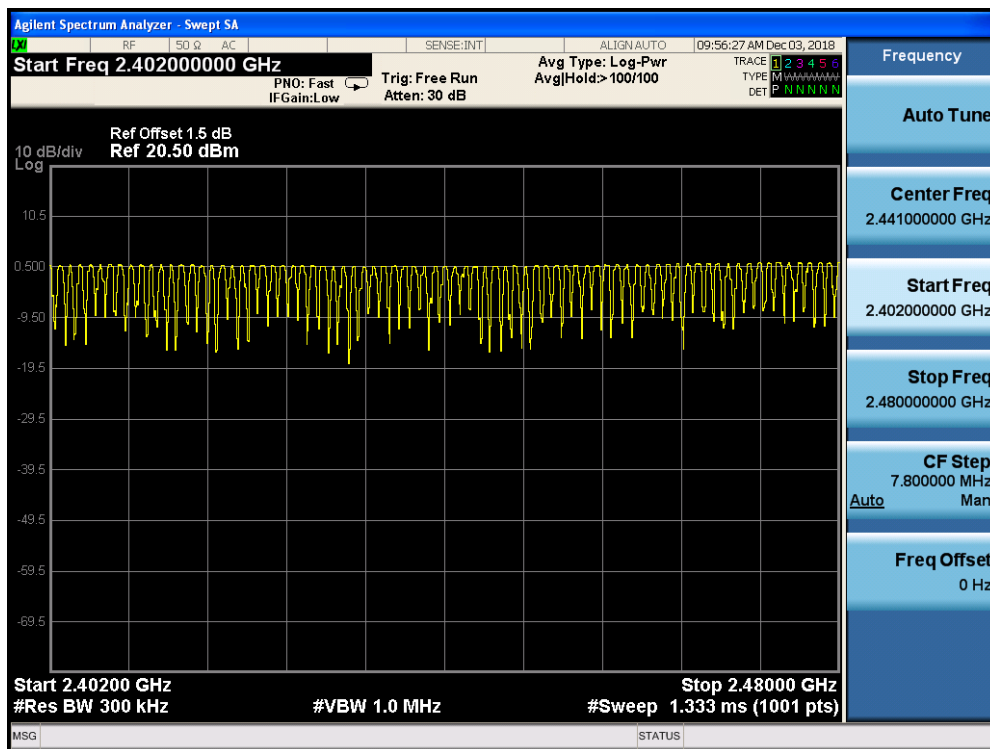
2402 - 2480MHz



Product Name	: BLUETOOTH EARPHONE	Power	: AC 120V/60Hz
Test Mode	: Mode 2	Test Site	: TR-8
Test Date	: 2018.12.03	Test Engineer	: Simon

Frequency Band (MHz)	Number of Hopping Frequencies	Limit	Result
2400 - 2483.5	79	>15	Pass

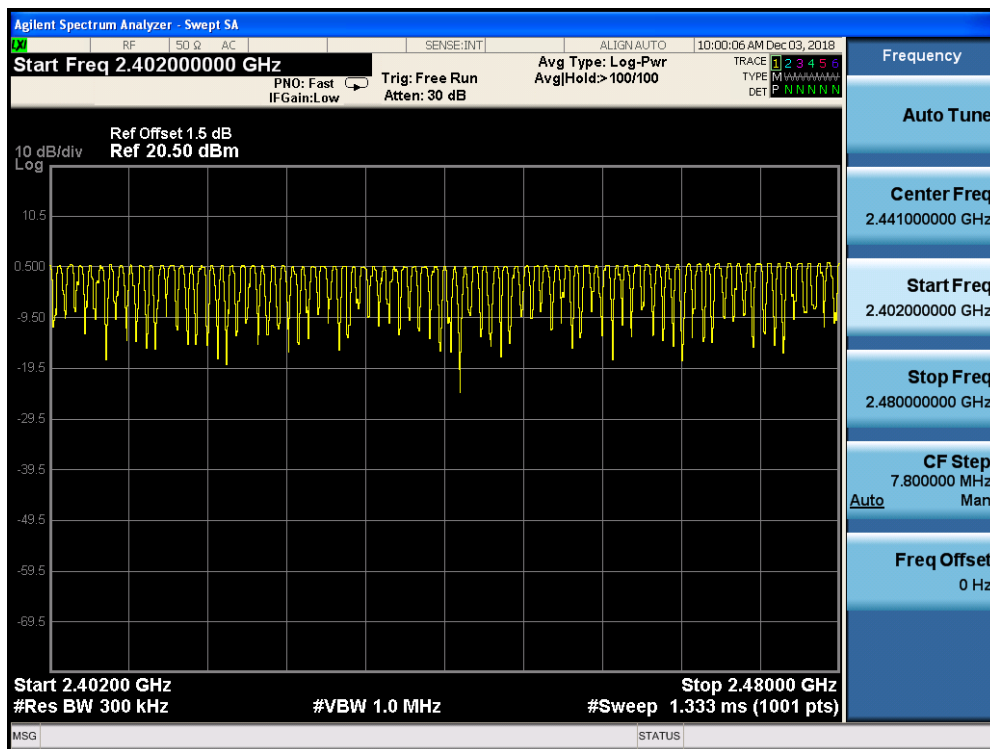
2402 - 2480 MHz



Product Name	: BLUETOOTH EARPHONE	Power	: AC 120V/60Hz
Test Mode	: Mode 3	Test Site	: TR-8
Test Date	: 2018.12.03	Test Engineer	: Simon

Frequency Band (MHz)	Number of Hopping Frequencies	Limit	Result
2400 - 2483.5	79	>15	Pass

2402 - 2480 MHz



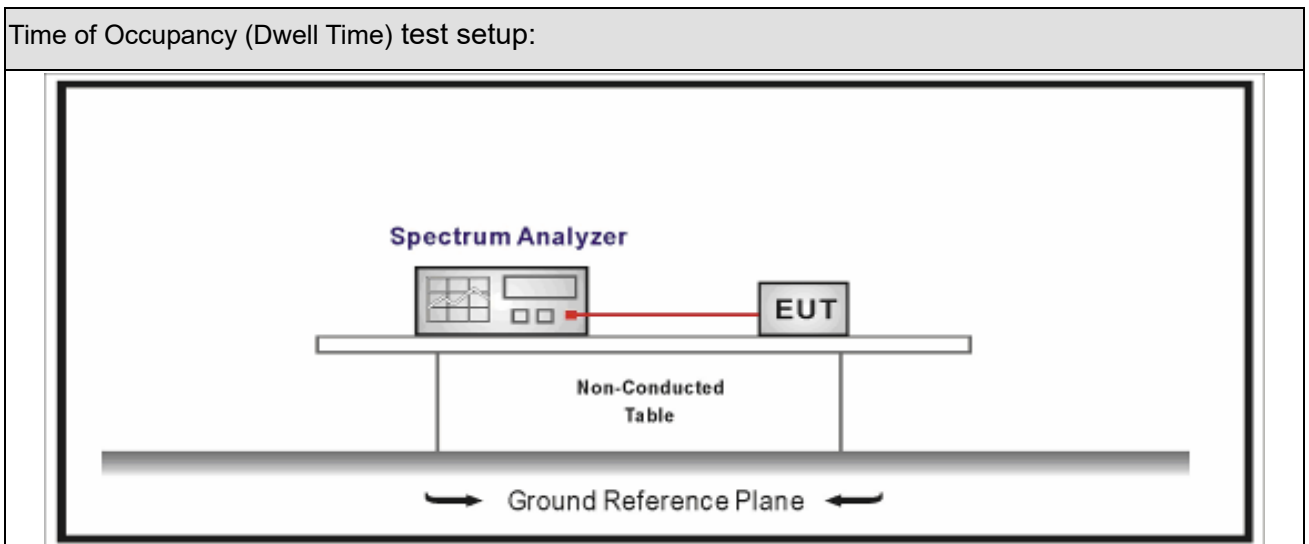
8. Time of Occupancy (Dwell Time)

8.1. Test Equipment

Time of Occupancy (Dwell Time) / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2018.02.04	2019.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2018.04.09	2019.04.08
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2018.04.09	2019.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2018.04.10	2019.04.09

Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

8.2. Test Setup



8.3. Limit

Time of Occupancy (Dwell Time)	
<input checked="" type="checkbox"/>	Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.
<input type="checkbox"/>	For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period
<input type="checkbox"/>	For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping

	frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.
<input type="checkbox"/>	Frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies. The maximum 20 dB bandwidth of the hopping channel is 1 MHz. The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

8.4. Test Procedure

Test Method			
	References Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	7.8.4	Time of Occupancy (Dwell Time)

8.5. Uncertainty

The measurement uncertainty is defined as $\pm 0.1 \text{ us}$

8.6. Test Result

Product Name	: BLUETOOTH EARPHONE	Test Voltage	: AC 120V/60Hz
Test Mode	: Mode 1(GFSK_DH1)	Test Site	: TR-8
Test Date	: 2018.12.27	Test Engineer	: Simon

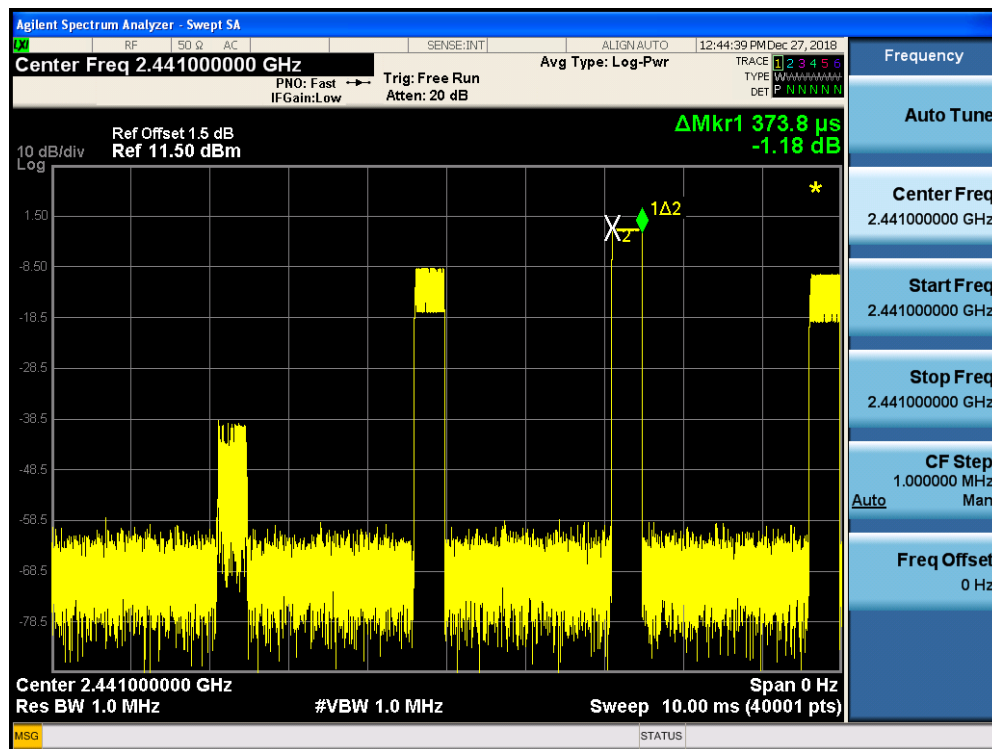
Channel No.	Frequency (MHz)	Time of Occupancy (ms)	Limit (ms)	Result
39	2441	119.616	< 400	Pass

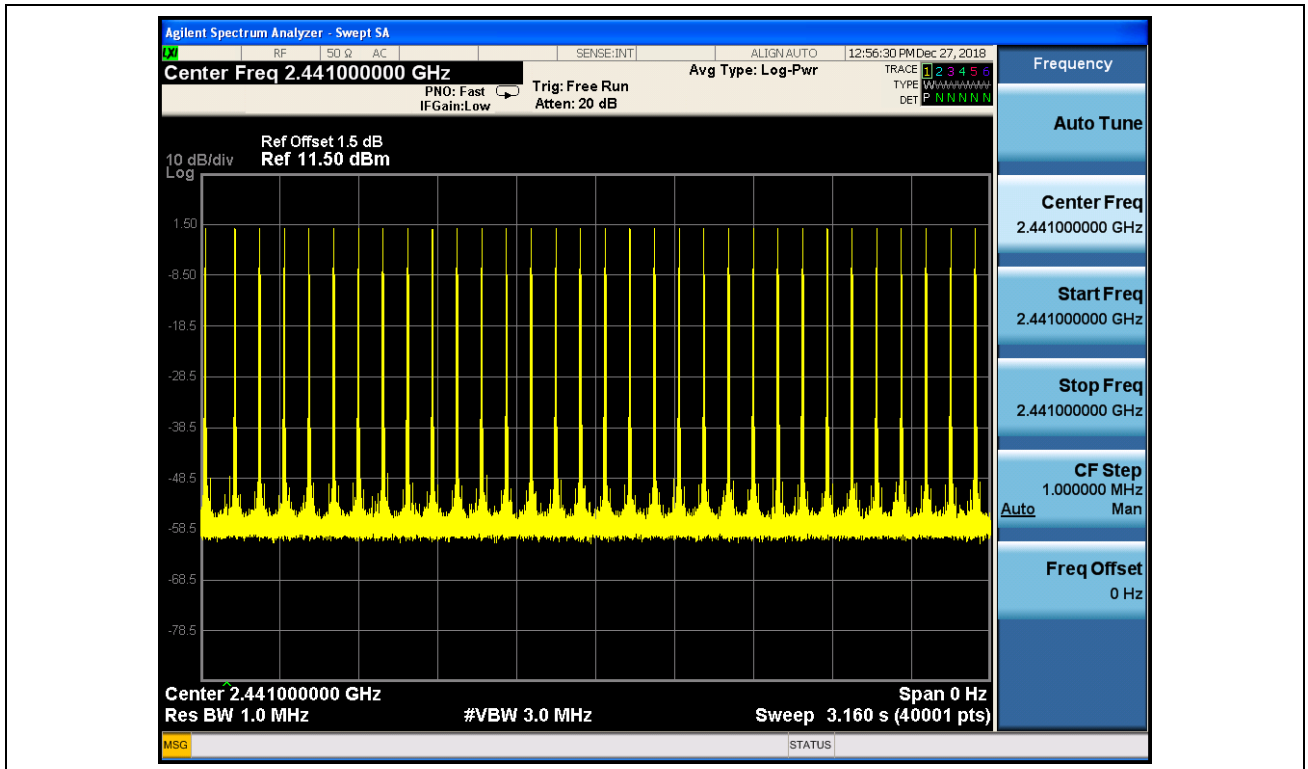
Note1: Test Time Period: $0.4 \times 79 = 31.6 \text{ sec}$

Note2: Time of Occupancy = $0.3738 \times 32 \times 31.6 / 3.16 = 119.616 \text{ ms}$

Note3: We have evaluated different packet type, shown in the report is the worst data.

Channel 39 (2441MHz)-(DH1)





Product Name	: BLUETOOTH EARPHONE	Test Voltage	: AC 120V/60Hz
Test Mode	: Mode 1(GFSK_DH3)	Test Site	: TR-8
Test Date	: 2018.12.27	Test Engineer	: Simon

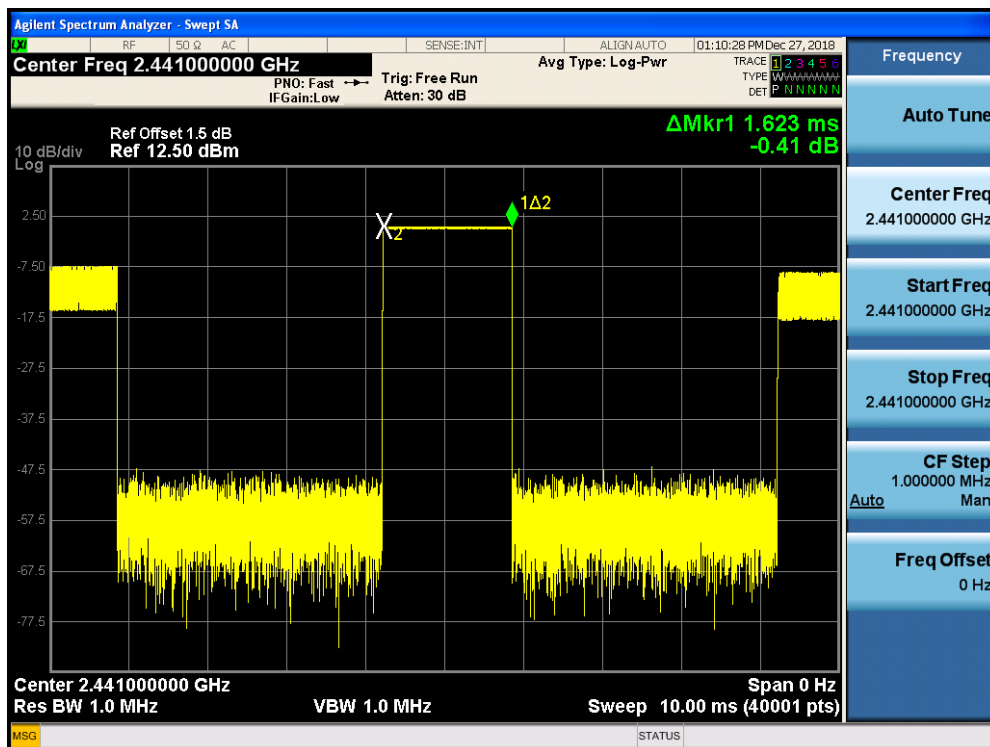
Channel No.	Frequency (MHz)	Time of Occupancy (ms)	Limit (ms)	Result
39	2441	259.68	< 400	Pass

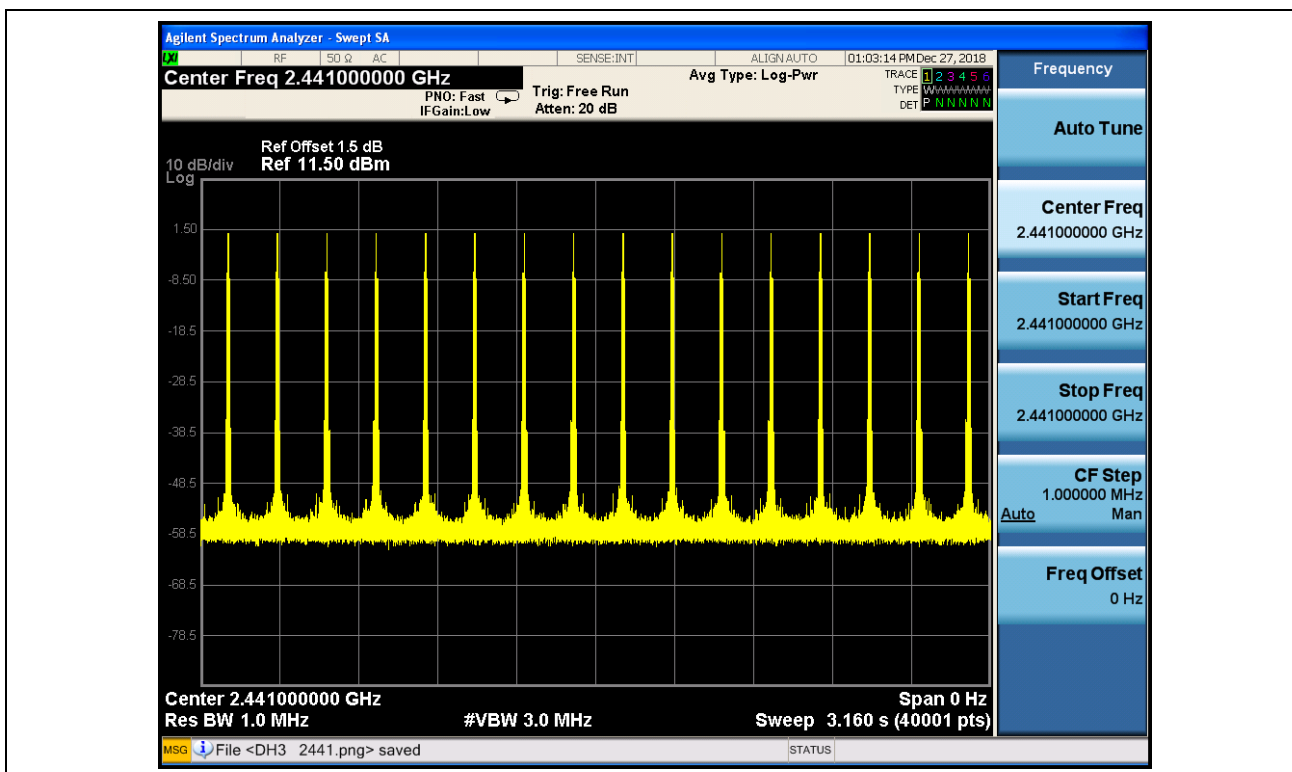
Note1: Test Time Period: $0.4 \times 79 = 31.6 \text{ sec}$

Note2: Time of Occupancy = $1.623 \times 16 \times 31.6 / 3.16 = 259.68 \text{ ms}$

Note3: We have evaluated different packet type, shown in the report is the worst data.

Channel 39 (2441MHz) - (DH3)





Product Name	: BLUETOOTH EARPHONE	Test Voltage	: AC 120V/60Hz
Test Mode	: Mode 1(GFSK_DH5)	Test Site	: TR-8
Test Date	: 2018.12.27	Test Engineer	: Simon

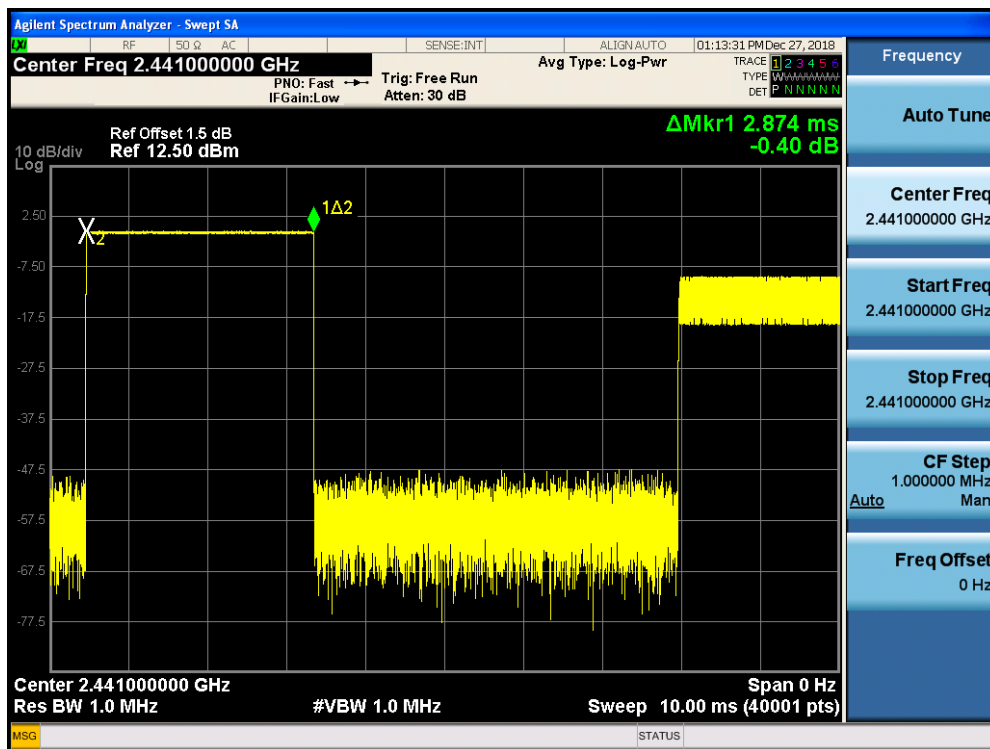
Channel No.	Frequency (MHz)	Time of Occupancy (ms)	Limit (ms)	Result
39	2441	316.14	< 400	Pass

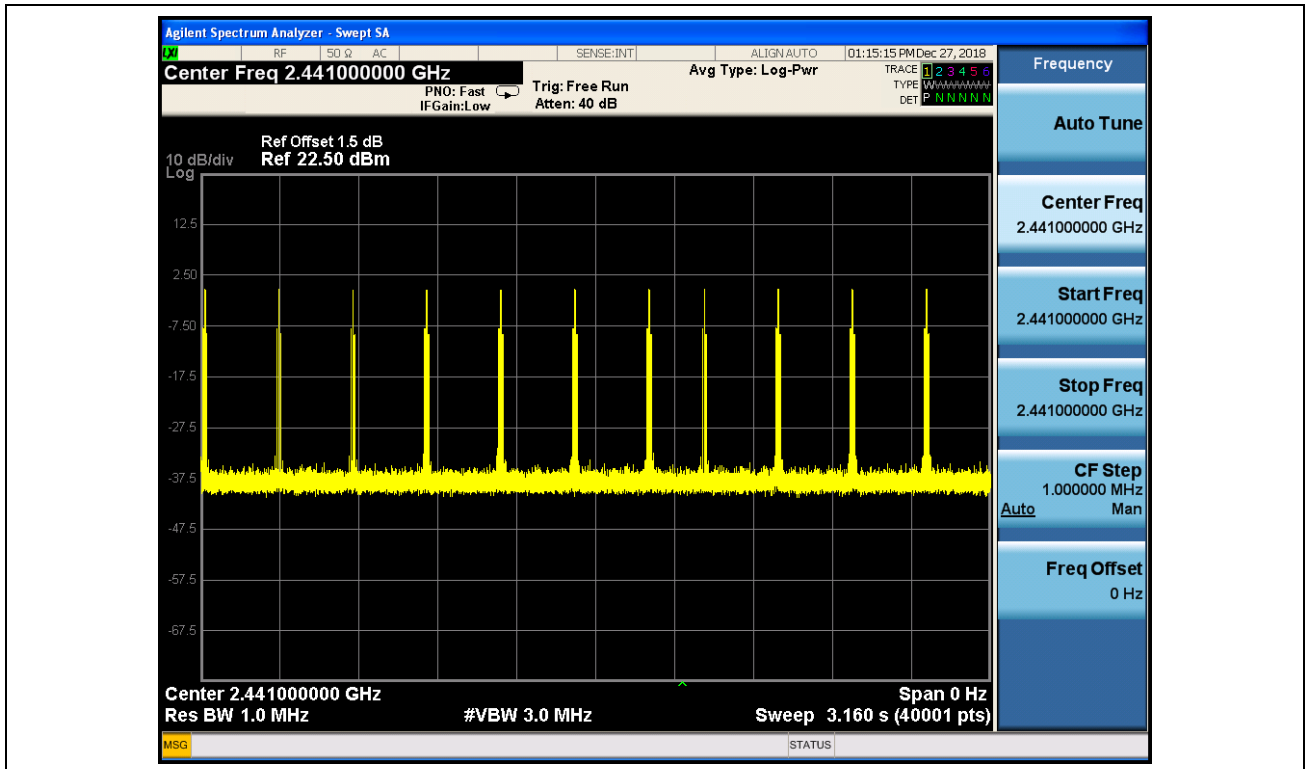
Note1: Test Time Period: $0.4 \times 79 = 31.6 \text{ sec}$

Note2: Time of Occupancy = $2.874 \times 11 \times 31.6 / 3.16 = 316.14 \text{ ms}$

Note3: We have evaluated different packet type, shown in the report is the worst data.

Channel 39 (2441MHz) - (DH5)





Note: The packet time of AFH mode is same as normal mode, due to the packet time of AFH mode multiply with lesser factor is dwell time of $0.4 \times 20 = 8S$, the dwell time of AFH mode comply with the limit.

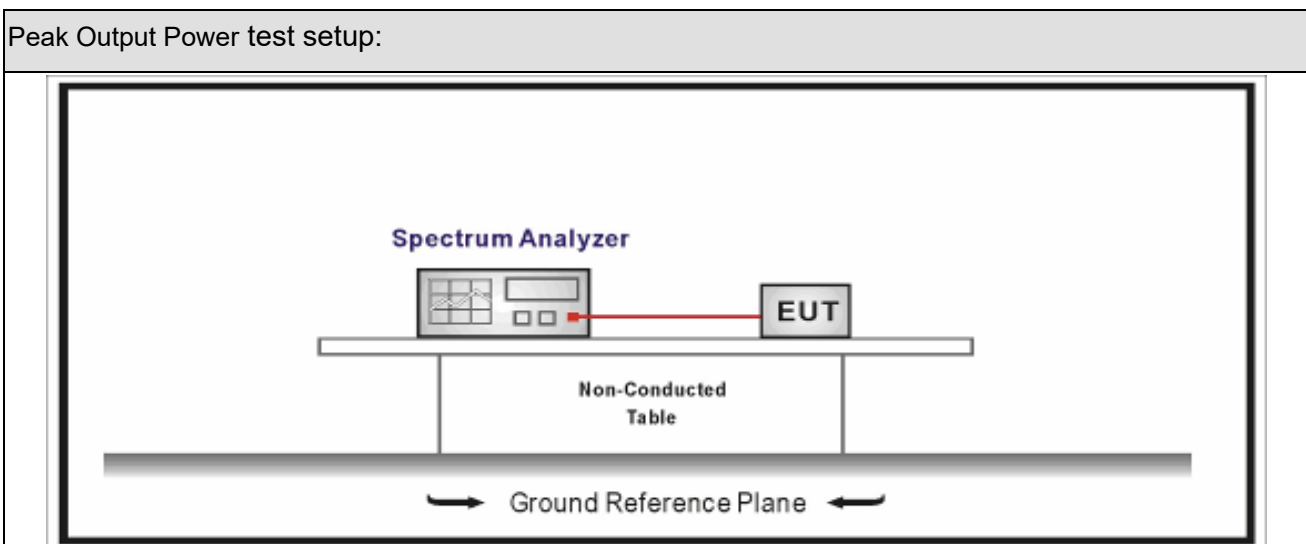
9. Peak Output Power

9.1. Test Equipment

Peak Output Power / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2018.02.04	2019.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2018.04.09	2019.04.08
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2018.04.09	2019.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2018.04.10	2019.04.09

Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

9.2. Test Setup



9.3. Limit

Peak Output Power	
<input type="checkbox"/>	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.
<input checked="" type="checkbox"/>	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.
<input type="checkbox"/>	For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels

9.4. Test Procedure

Test Method			
	References Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	7.8.5	Output power test procedure for frequency-hopping spread-spectrum (FHSS) devices

9.5. Uncertainty

The measurement uncertainty is defined as ± 1.0 dB

9.6. Test Result

Product Name	: BLUETOOTH EARPHONE	Test Voltage	: AC 120V/60Hz
Test Mode	: Mode 1	Test Site	: TR-8
Test Date	: 2018.12.27	Test Engineer	: Simon

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
00	2402	1.82	21.00	Pass
39	2441	1.50	21.00	Pass
78	2480	1.90	21.00	Pass

Product Name	: BLUETOOTH EARPHONE	Test Voltage	: AC 120V/60Hz
Test Mode	: Mode 2	Test Site	: TR-8
Test Date	: 2018.12.27	Test Engineer	: Simon

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
00	2402	2.58	21.00	Pass
39	2441	1.74	21.00	Pass
78	2480	1.81	21.00	Pass



Product Name	: BLUETOOTH EARPHONE	Test Voltage	: AC 120V/60Hz
Test Mode	: Mode 3	Test Site	: TR-8
Test Date	: 2018.12.27	Test Engineer	: Simon

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
00	2402	2.50	21.00	Pass
39	2441	1.73	21.00	Pass
78	2480	1.68	21.00	Pass

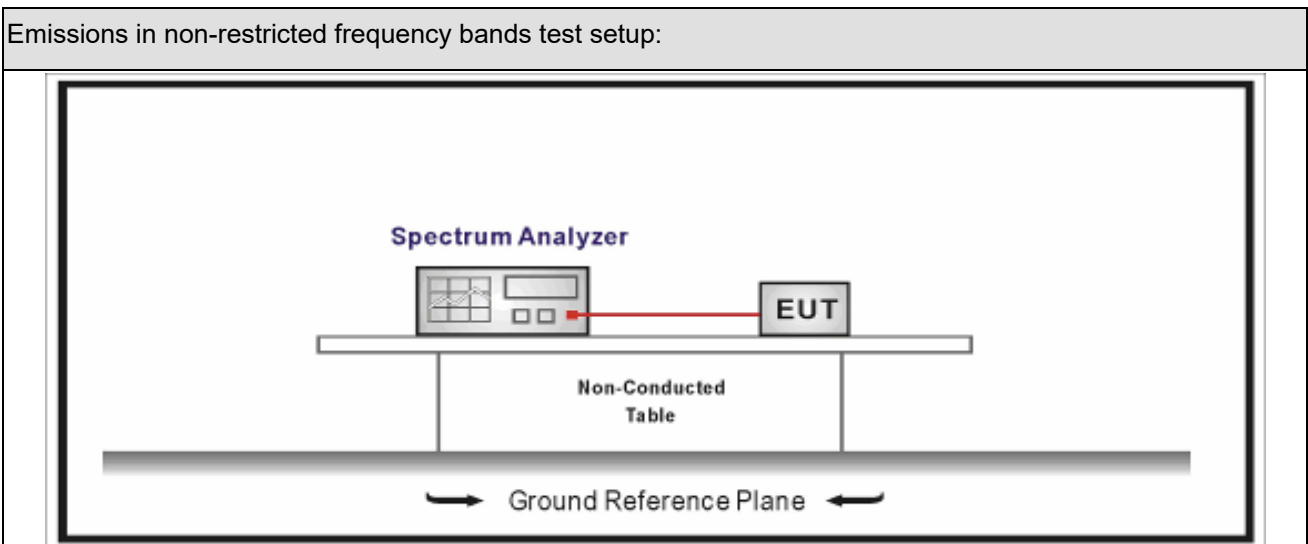
10. Emissions in non-restricted frequency bands

10.1. Test Equipment

Emissions in non-restricted frequency bands / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2018.02.04	2019.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2018.04.09	2019.04.08
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2018.04.09	2019.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2018.04.10	2019.04.09

Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

10.2. Test Setup



10.3. Limit

Un-Restricted Band Emissions Limit	
RF Output power (Detection methods)	Limit(dB)
RF Output power(Average detector)	30c(Note1)
RF Output power(PK detector)	20c(Note2)
<p>Note 1: If maximum conducted (average) output power was used to demonstrate compliance as described in 9.2, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 30 dBc).</p> <p>Note 2: If the maximum peak conducted output power procedure was used, then the peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 20 dBc).</p>	

10.4. Test Procedure

Test Method			
	References Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	7.8.6	Band-edge Compliance of RF Conducted Emissions

10.5. Uncertainty

The measurement uncertainty is defined as ± 1.0 dB

10.6. Test Result

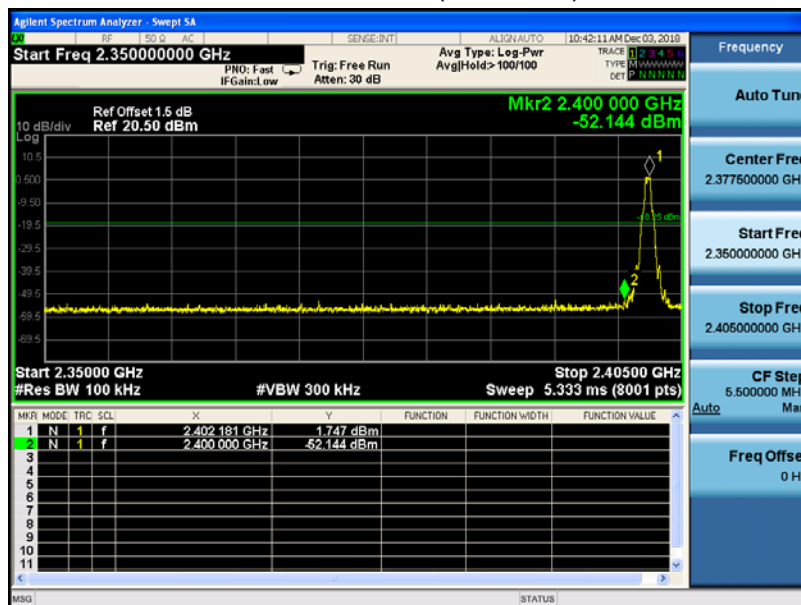
Product Name	: BLUETOOTH EARPHONE	Test Voltage	: AC 120V/60Hz
Test Mode	: Mode 1~4	Test Site	: TR-8
Test Date	: 2018.12.03	Test Engineer	: Simon

Mode	Channel	Test Frequency (MHz)	In-Band PSD[a] (dBm/100kHz)	Frequency (MHz)	Out-Band PSD[b] (dBm/100kHz)	[a]-[b] (dB)	Limit (dB)	Result
1	00	2402	0.978	2400.00	-52.964	53.942	>20	Pass
1	78	2480	1.898	2500.00	-55.132	57.030	>20	Pass
2	00	2402	1.879	2400.00	-54.771	56.650	>20	Pass
2	78	2480	1.463	2500.00	-54.787	56.250	>20	Pass
3	00	2402	1.747	2400.00	-52.144	53.891	>20	Pass
3	78	2480	1.906	2500.00	-55.681	57.587	>20	Pass
4	00~78	00~78	1.864	2400.00	-55.216	57.08	>20	Pass

Note1: The worst case of Emissions in non-restricted frequency bands as below:

2: Mode 1-3, The In-Band PSD is the highest PSD of All channels.

Mode3 CH00(2402MHz)

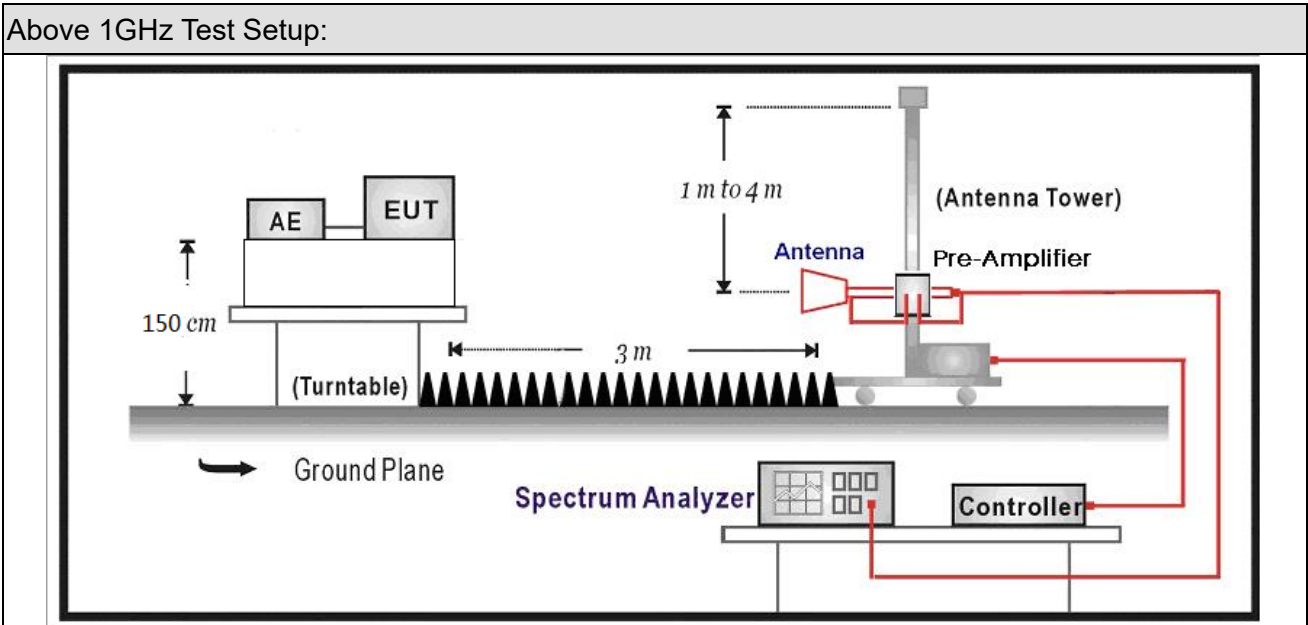


11. Radiated Emission Band Edge

11.1. Test Equipment

Radiated Emission(Above 1GHz) / AC-5					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Receiver	Agilent	N9038A	MY51210196	2018.07.16	2019.07.15
Pre-Amplifier	Miteq	NSP1800-25	1364185	2018.05.03	2019.05.02
DRG Horn Antenna	ETS-Lindgren	3117	00167055	2018.07.12	2019.07.11
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2018.09.18	2019.09.17
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2018.02.28	2019.02.27
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2018.02.28	2019.02.27
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2019.01.05	2020.01.04

11.2. Test Setup



11.3. Limit

Band edge Limit				
Frequency bands (MHz)	Detector	Limit (dB μ V/m)	RBW (MHz)	Distance (m)
2310-2390	PK	74	1	3
2483.5-2500	AV	54	1	3

Note: The field strength of emissions appearing within these frequency bands shall not exceed the limits.

11.4. Test Procedure

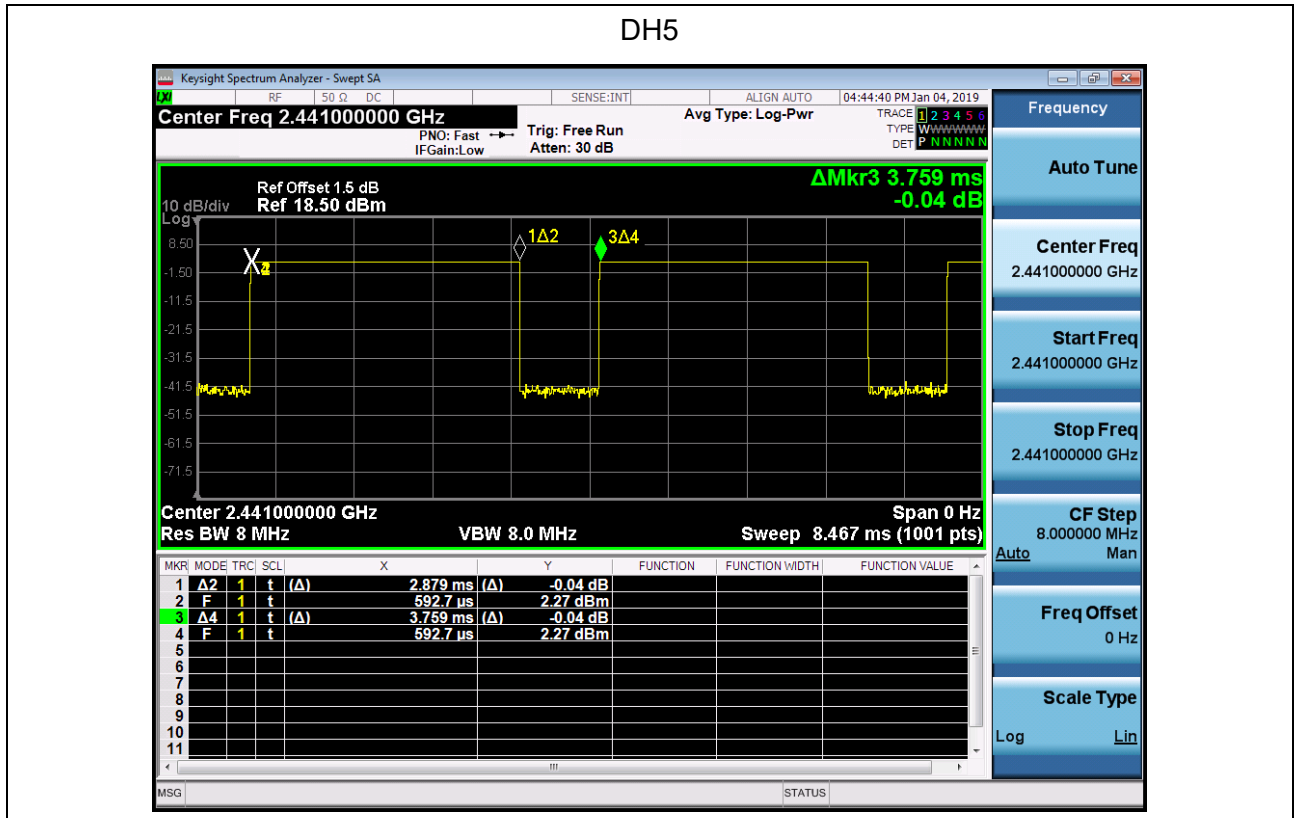
Test Method			
	References Rule	Chapter	Description
<input type="checkbox"/>	DA 00-705	N/A	duty cycle correction factor
<input checked="" type="checkbox"/>	ANSI C63.10	6.10	Band-edge testing
	<input checked="" type="checkbox"/> ANSI C63.10	6.10.5	Restricted-band band-edge measurements
	<input type="checkbox"/> ANSI C63.10	6.10.6	Marker-delta method
<input type="checkbox"/>	ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
<input type="checkbox"/>	ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
<input checked="" type="checkbox"/>	ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz

11.5. Uncertainty

The measurement uncertainty above 1G is defined as ± 3.9 dB
 below 1G is defined as ± 3.8 dB

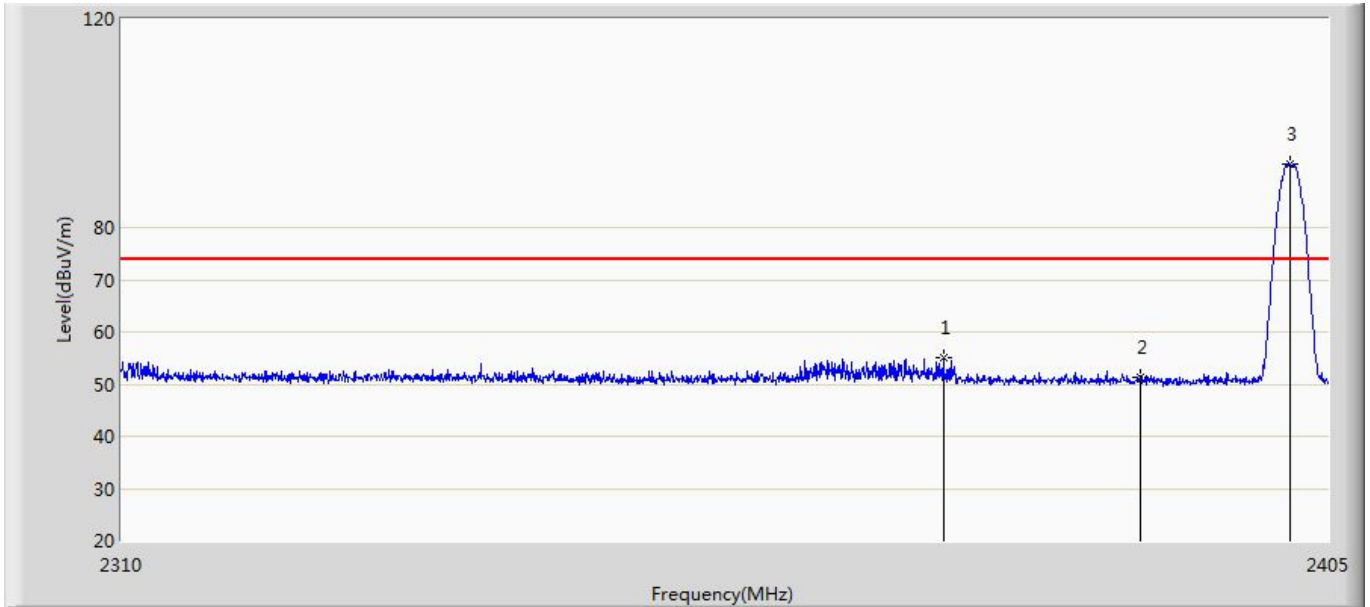
11.6. Duty Cycle

Test Mode	Tx On (ms)	Tx Off (ms)	Reduced VBW (Hz)	Tx On + Tx Off (ms)	Duty Cycle
DH5	2.879	0.880	360	3.759	76.59%



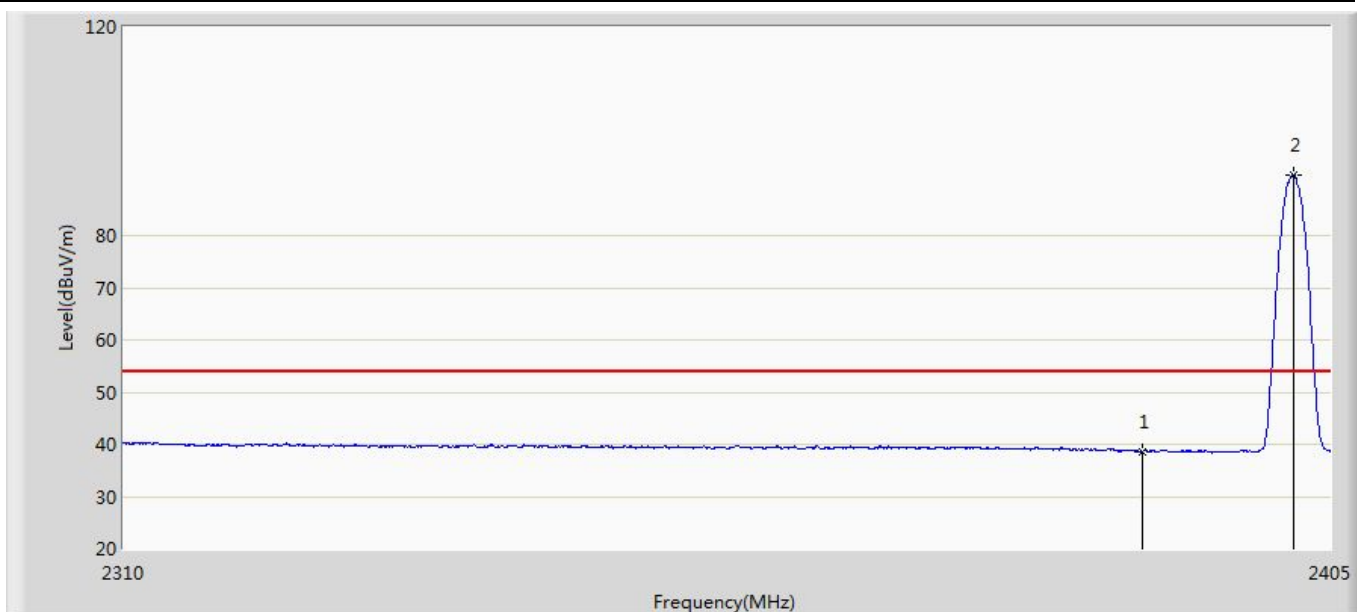
11.7. Test Result

Site: AC5	Time: 2018/12/22 - 15:06
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by DH5	



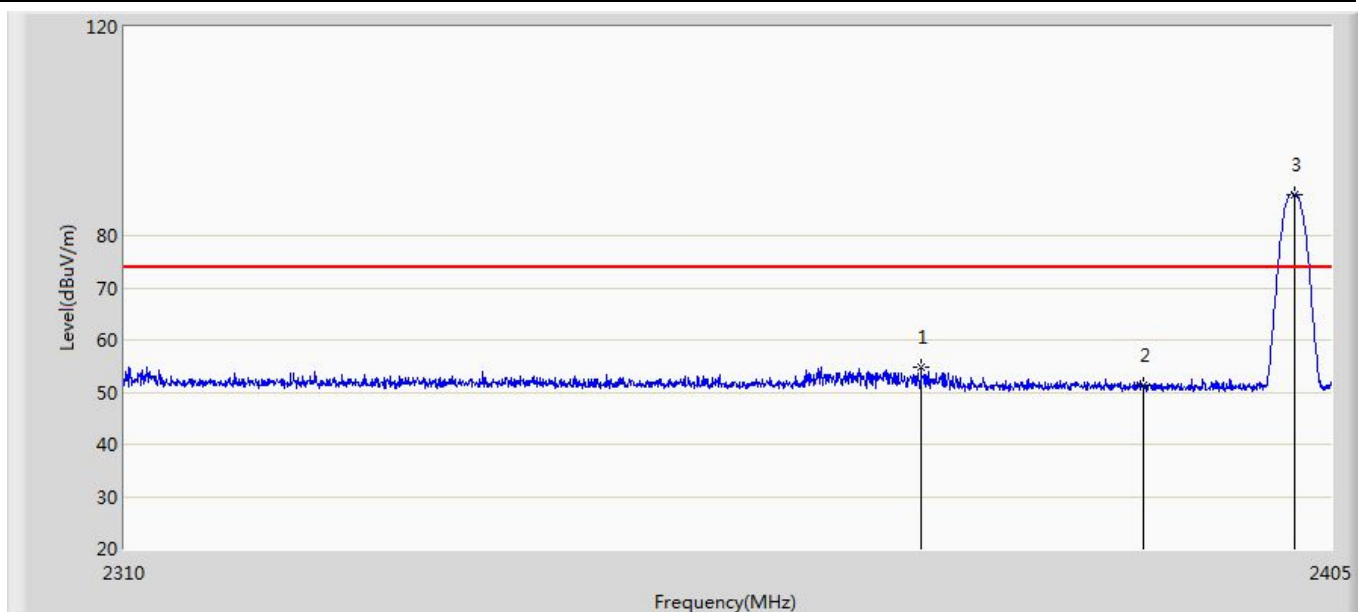
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2374.315	55.189	19.542	-18.811	74.000	35.647	PK
2		2390.000	51.281	15.599	-22.719	74.000	35.682	PK
3	*	2401.913	92.156	56.444	N/A	N/A	35.712	PK

Site: AC5	Time: 2018/12/22 - 15:16
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by DH5	



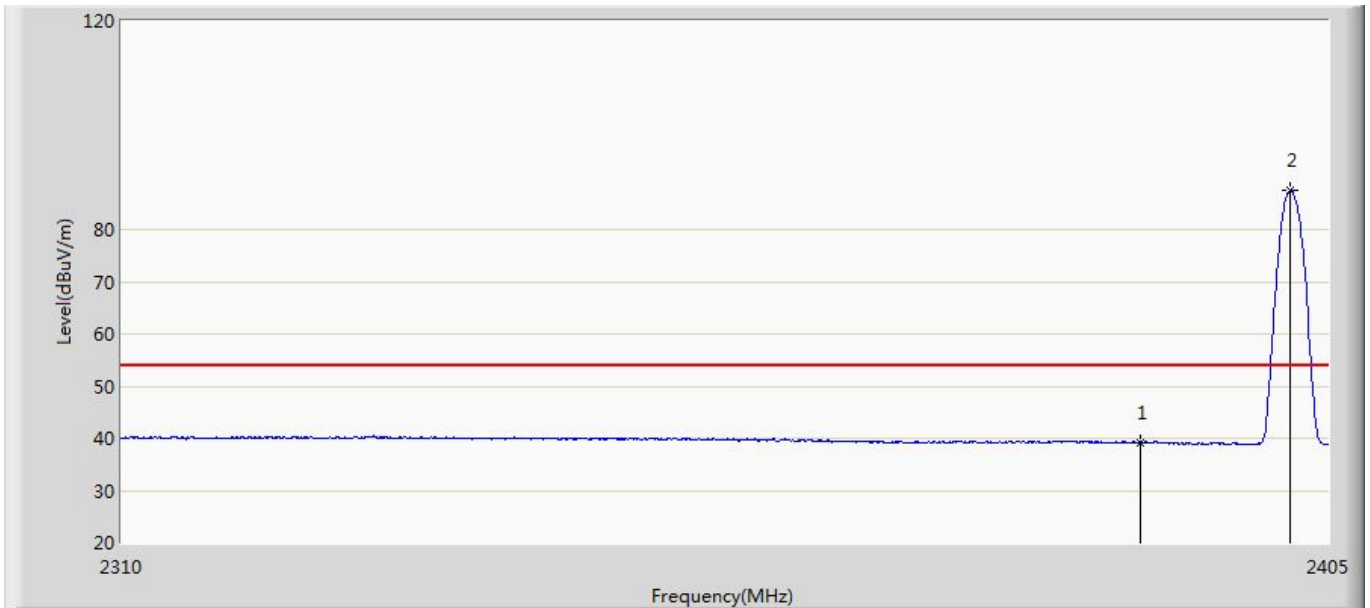
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	38.684	3.002	-15.316	54.000	35.682	AV
2	*	2402.055	91.588	55.875	N/A	N/A	35.712	AV

Site: AC5	Time: 2018/12/22 - 15:24
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by DH5	



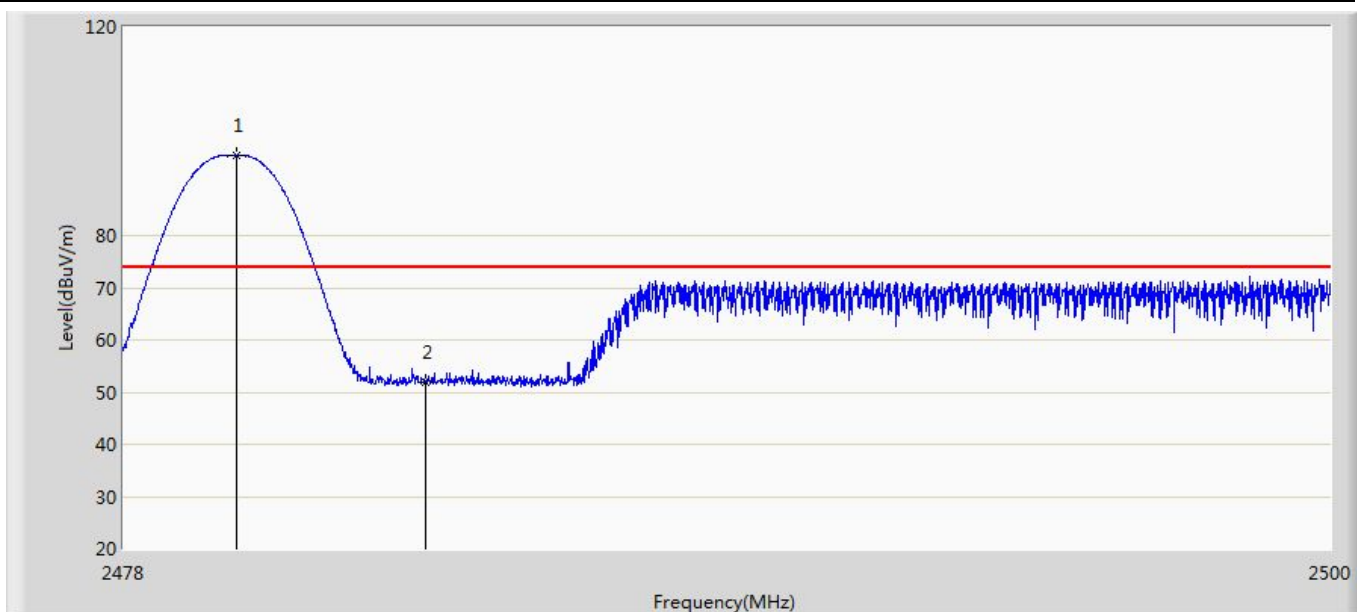
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2372.320	54.872	19.230	-19.128	74.000	35.641	PK
2		2390.000	51.260	15.578	-22.740	74.000	35.682	PK
3	*	2402.055	87.937	52.224	N/A	N/A	35.712	PK

Site: AC5	Time: 2018/12/22 - 15:26
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	39.207	3.525	-14.793	54.000	35.682	AV
2	*	2401.960	87.574	51.861	N/A	N/A	35.712	AV

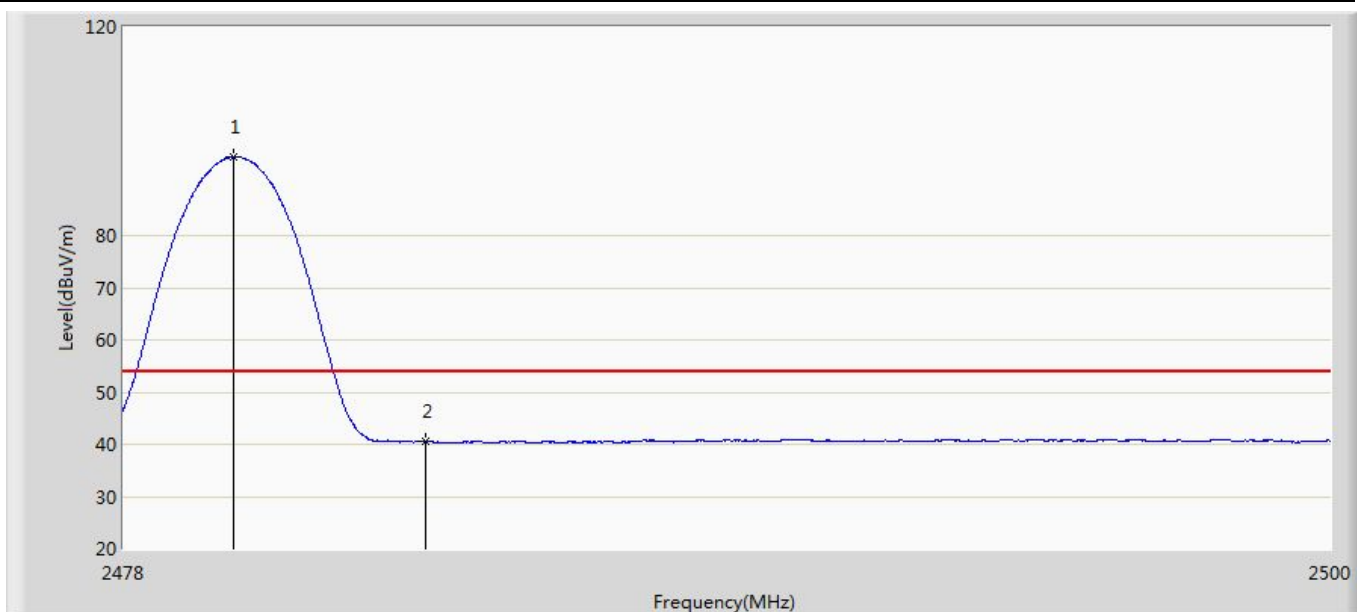
Site: AC5	Time: 2018/12/22 - 15:28
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2480MHz by DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.068	95.333	59.466	N/A	N/A	35.867	PK
2		2483.500	51.902	16.010	-22.098	74.000	35.891	PK

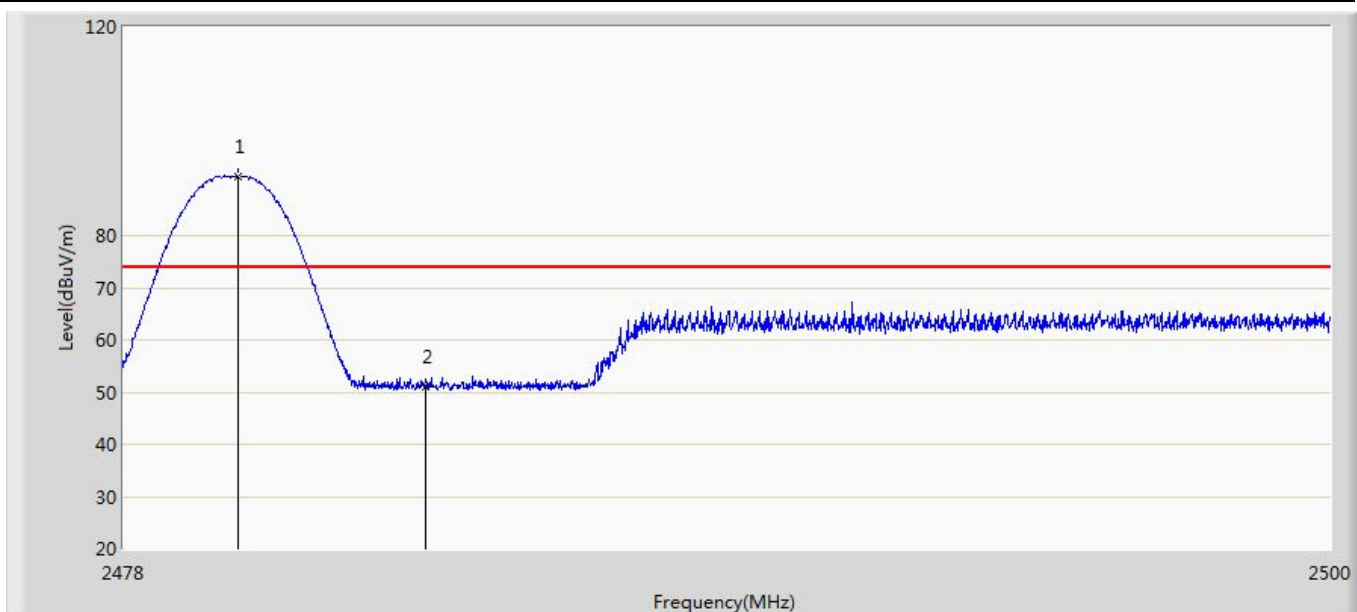
Note: The Qualcomm box (test accessory) caused the emission in these test plots, the emission is not from the EUT.

Site: AC5	Time: 2018/12/22 - 16:19
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.013	95.130	59.264	N/A	N/A	35.866	AV
2		2483.500	40.681	4.789	-13.319	54.000	35.891	AV

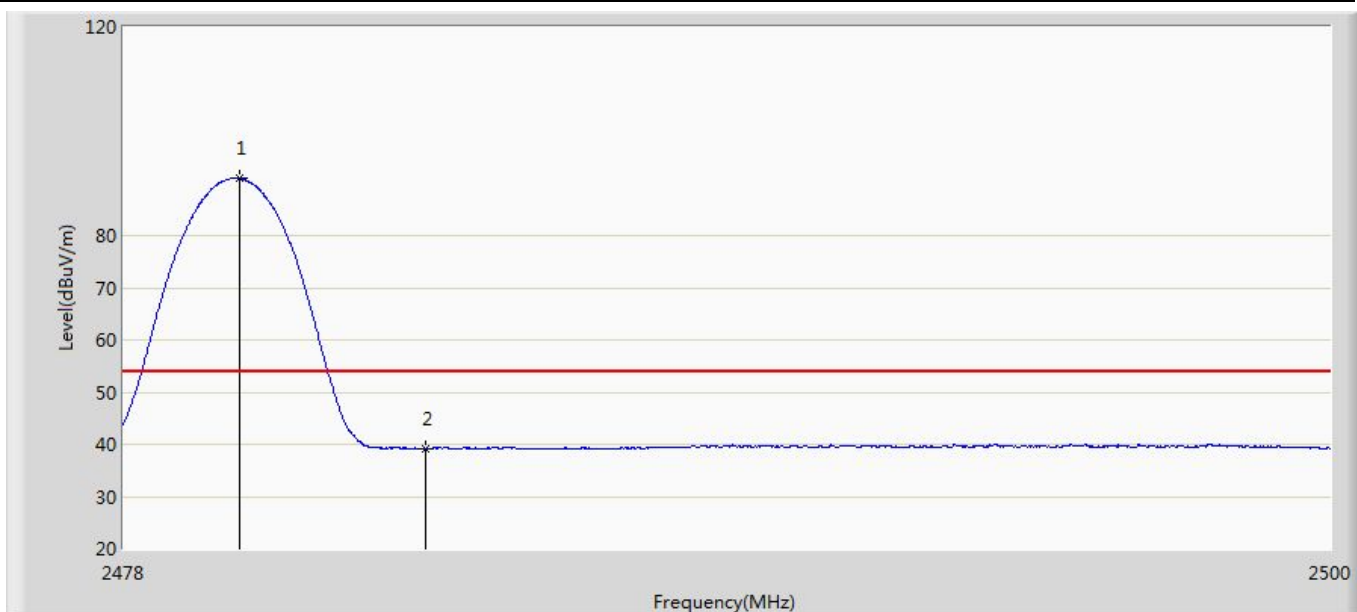
Site: AC5	Time: 2018/12/22 - 16:20
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.079	91.407	55.540	N/A	N/A	35.867	PK
2		2483.500	51.042	15.150	-22.958	74.000	35.891	PK

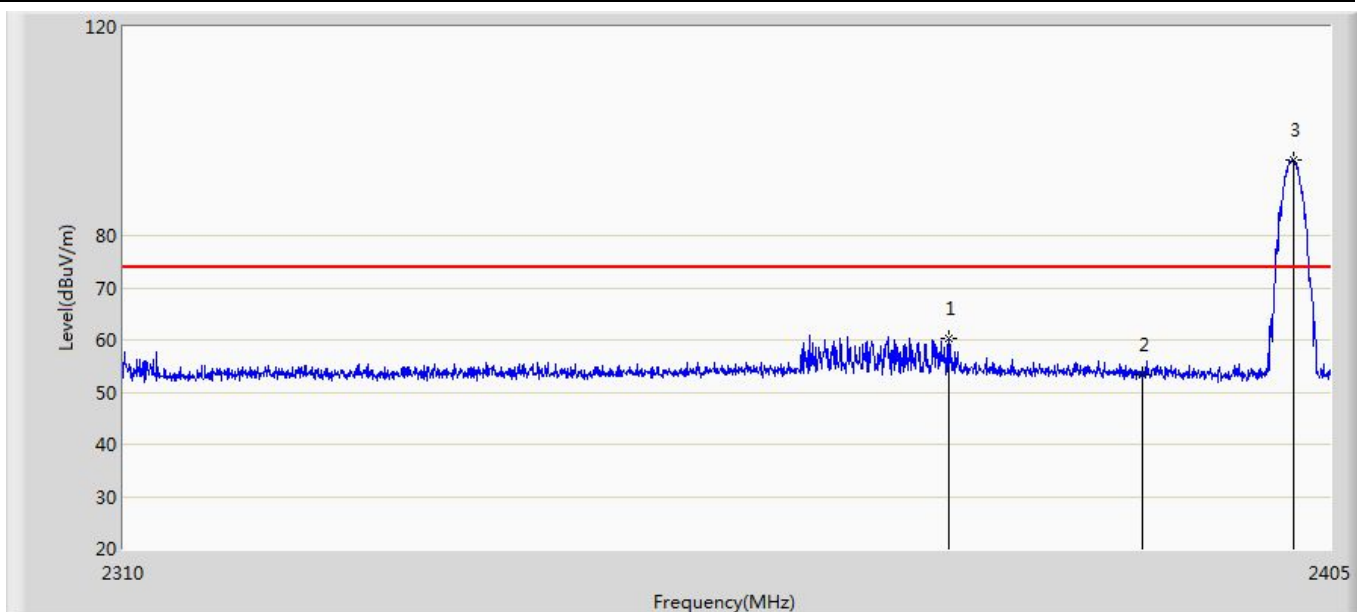
Note: The Qualcomm box (test accessory) caused the emission in these test plots, the emission is not from the EUT.

Site: AC5	Time: 2018/12/22 - 16:21
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by DH5	



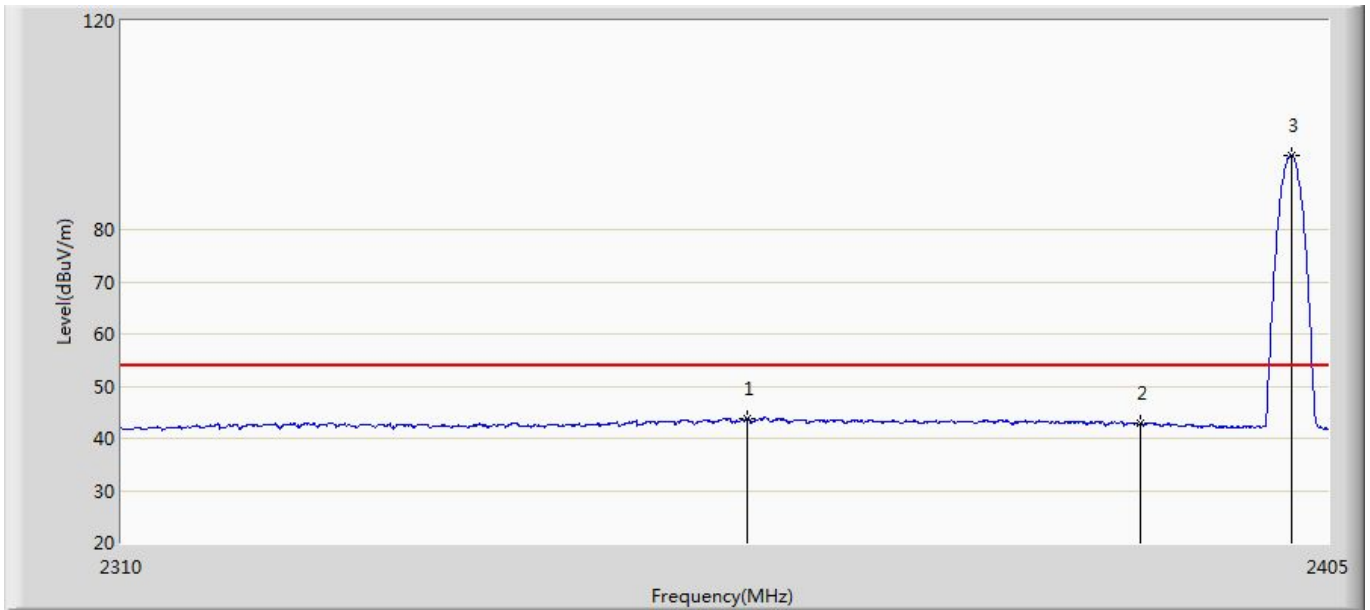
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.112	91.036	55.169	N/A	N/A	35.867	AV
2		2483.500	39.228	3.336	-14.772	54.000	35.891	AV

Site: AC5	Time: 2018/12/22 - 16:24
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by 2DH5	



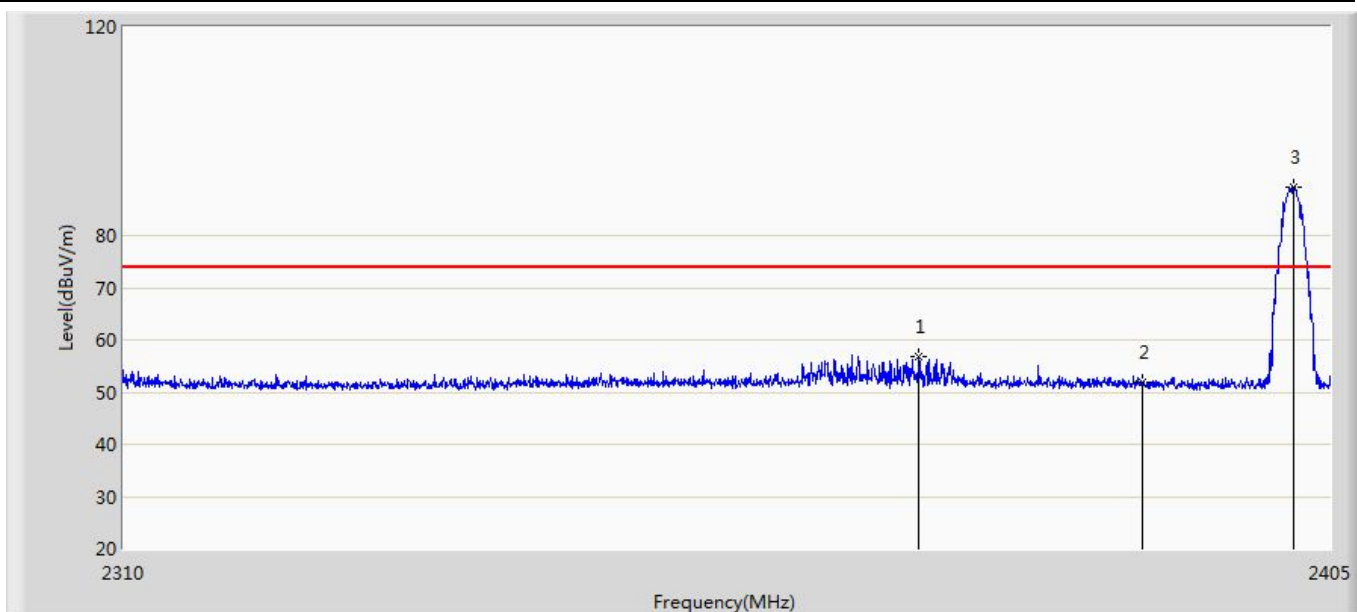
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2374.552	60.276	24.629	-13.724	74.000	35.647	PK
2		2390.000	53.358	17.676	-20.642	74.000	35.682	PK
3	*	2402.055	94.430	58.717	N/A	N/A	35.712	PK

Site: AC5	Time: 2018/12/22 - 16:27
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by 2DH5	



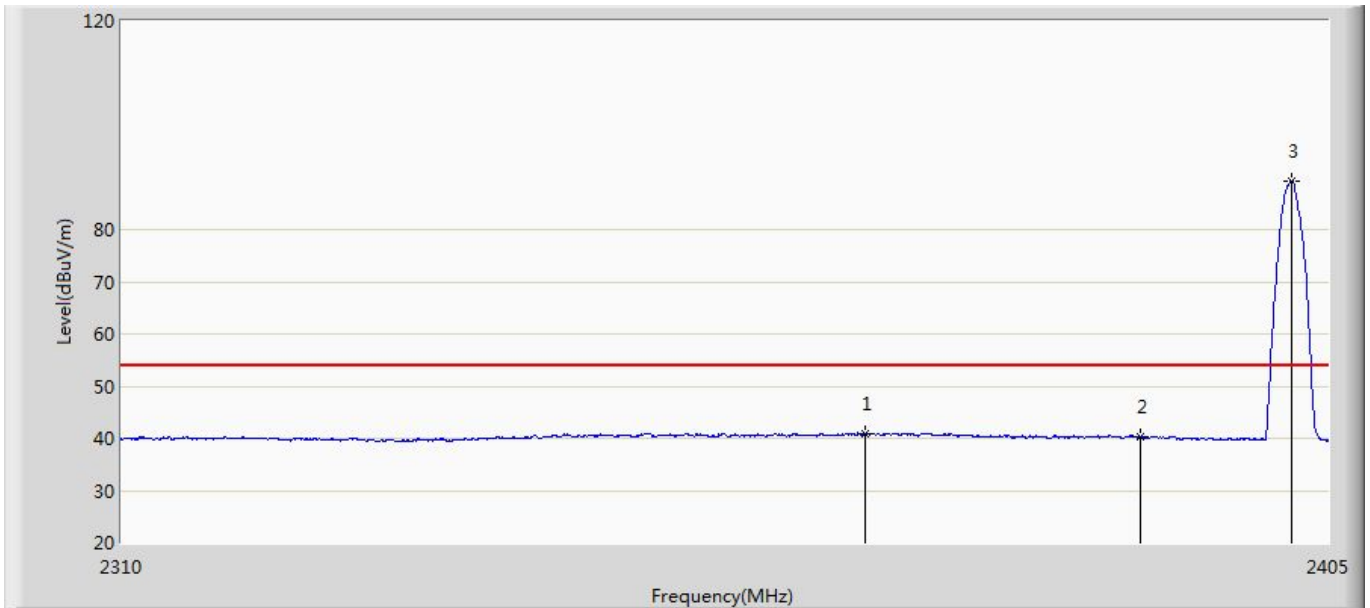
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2358.782	43.790	8.178	-10.210	54.000	35.613	AV
2		2390.000	42.824	7.142	-11.176	54.000	35.682	AV
3	*	2402.103	94.085	58.372	N/A	N/A	35.713	AV

Site: AC5	Time: 2018/12/22 - 16:29
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by 2DH5	



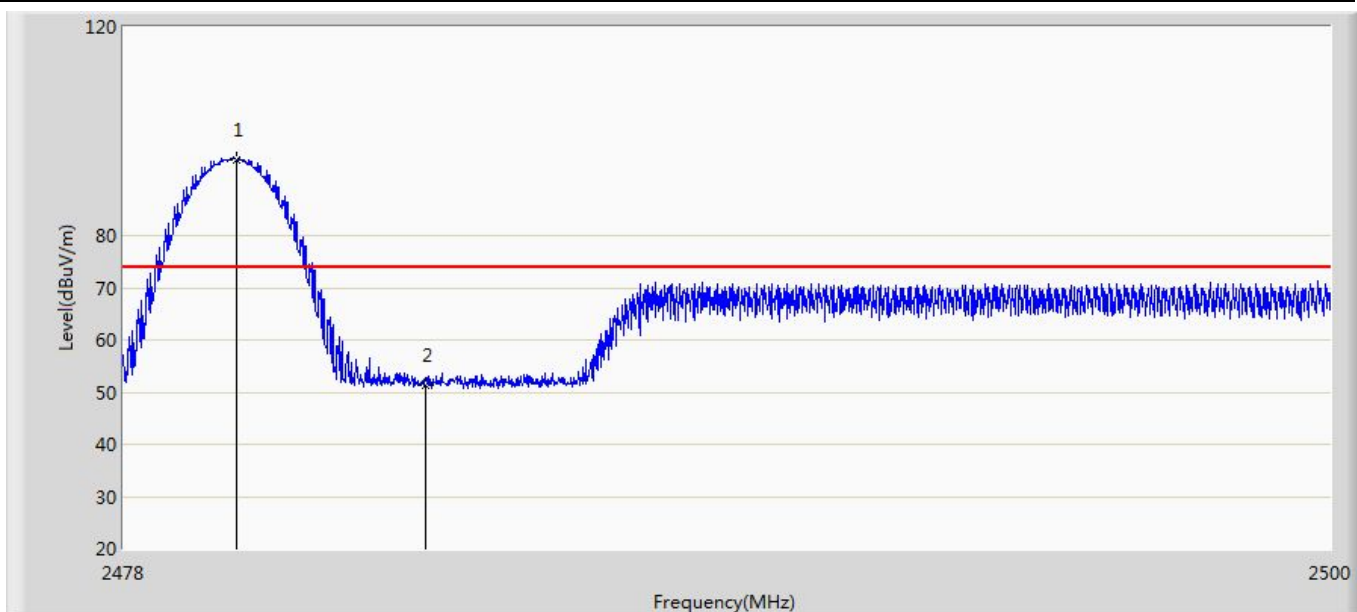
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2372.225	56.715	21.073	-17.285	74.000	35.641	PK
2		2390.000	51.793	16.111	-22.207	74.000	35.682	PK
3	*	2402.055	89.413	53.700	N/A	N/A	35.712	PK

Site: AC5	Time: 2018/12/22 - 16:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by 2DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2368.093	41.007	5.375	-12.993	54.000	35.633	AV
2		2390.000	40.278	4.596	-13.722	54.000	35.682	AV
3	*	2402.055	89.253	53.540	N/A	N/A	35.712	AV

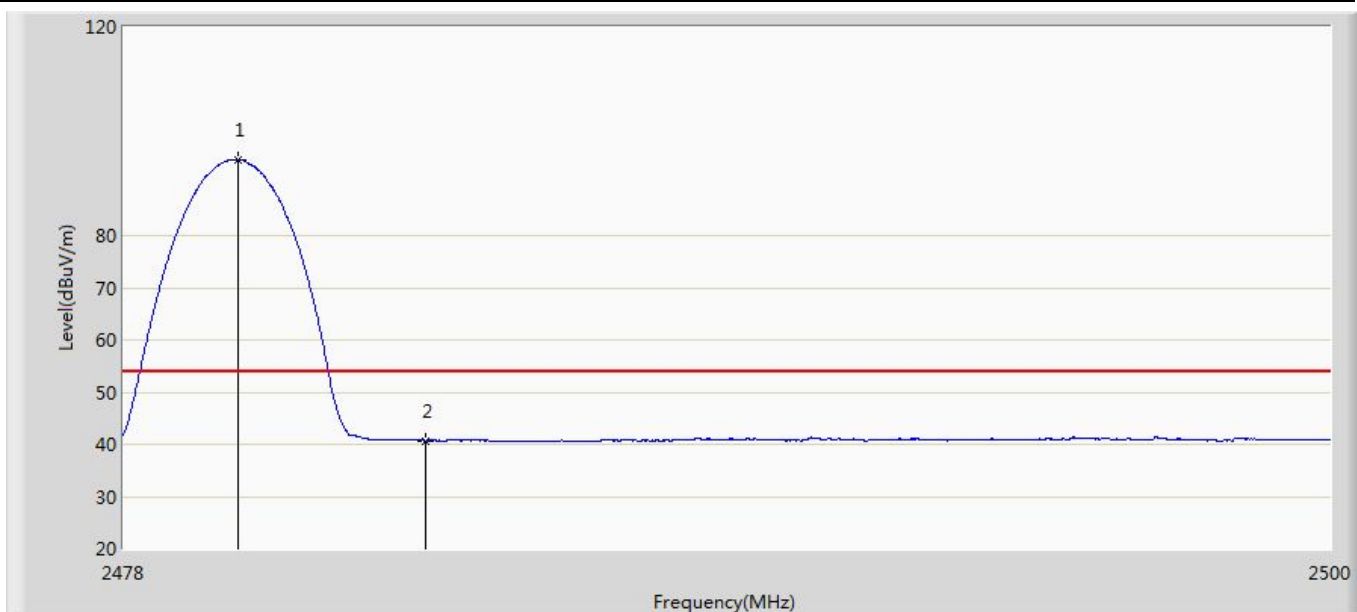
Site: AC5	Time: 2018/12/22 - 16:33
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by 2DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.046	94.633	58.766	N/A	N/A	35.866	PK
2		2483.500	51.171	15.279	-22.829	74.000	35.891	PK

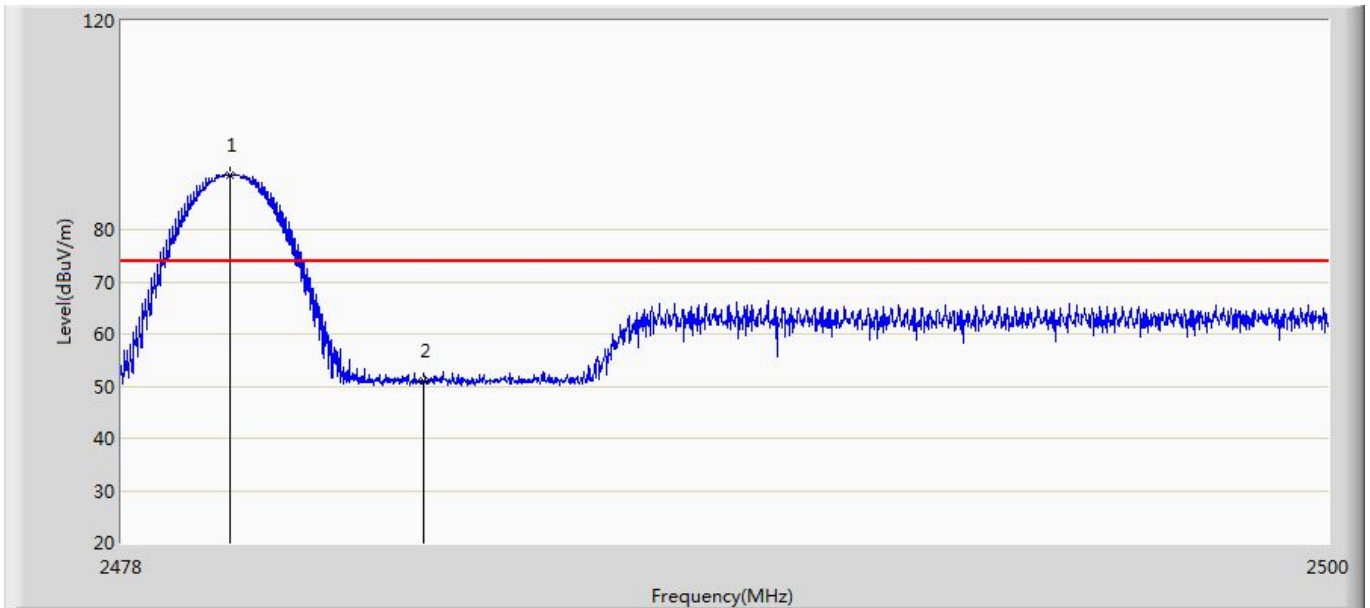
Note: The Qualcomm box (test accessory) caused the emission in these test plots, the emission is not from the EUT.

Site: AC5	Time: 2018/12/22 - 16:36
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by 2DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.079	94.542	58.675	N/A	N/A	35.867	AV
2		2483.500	40.700	4.808	-13.300	54.000	35.891	AV

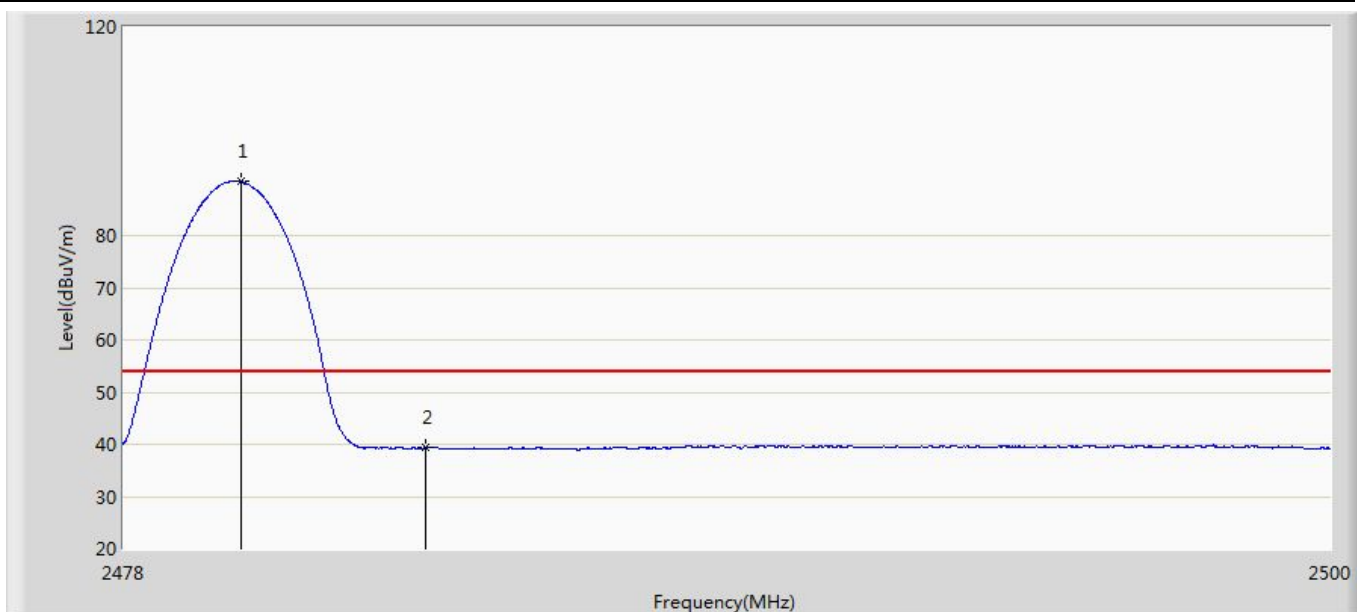
Site: AC5	Time: 2018/12/22 - 16:38
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by 2DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.980	90.579	54.713	N/A	N/A	35.866	PK
2		2483.500	50.935	15.043	-23.065	74.000	35.891	PK

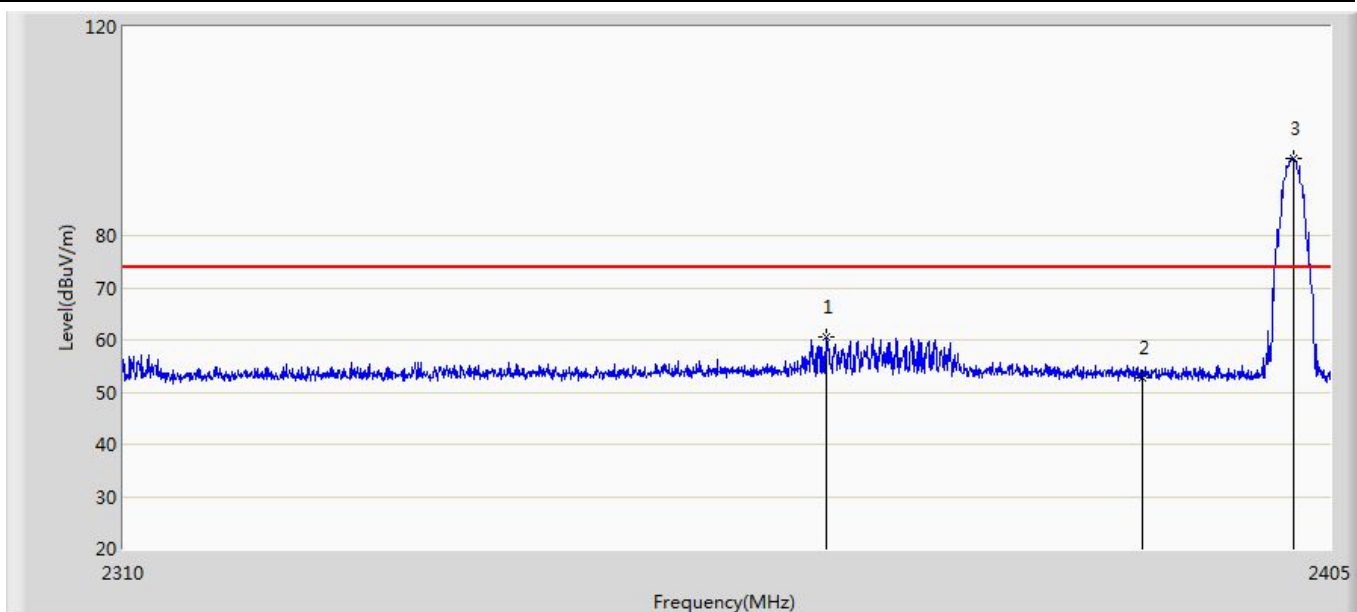
Note: The Qualcomm box (test accessory) caused the emission in these test plots, the emission is not from the EUT.

Site: AC5	Time: 2018/12/22 - 16:39
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by 2DH5	



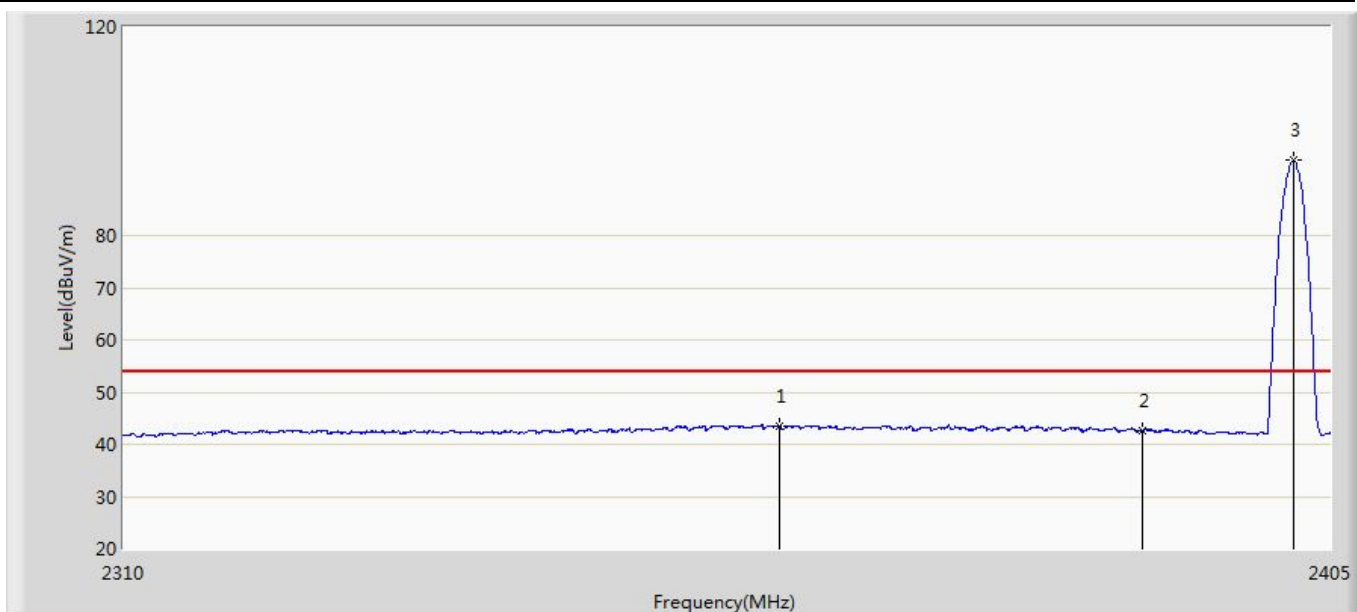
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.145	90.369	54.502	N/A	N/A	35.867	AV
2		2483.500	39.346	3.454	-14.654	54.000	35.891	AV

Site: AC5	Time: 2018/12/22 - 16:41
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by 3DH5	



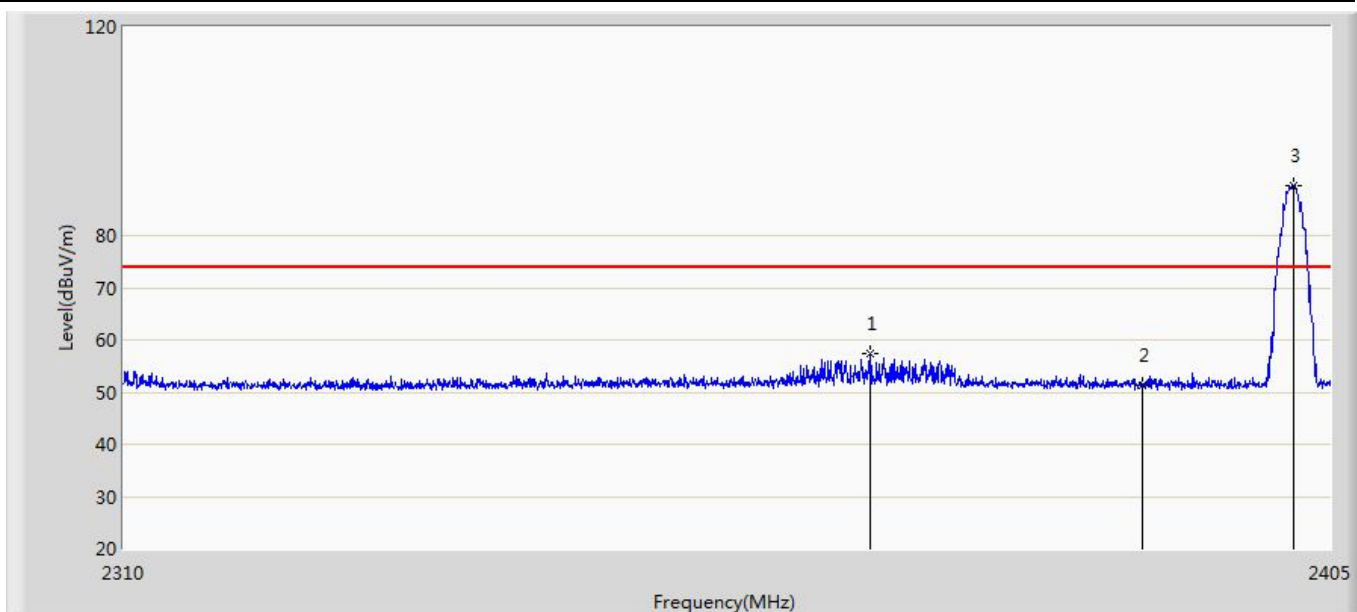
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2364.910	60.456	24.831	-13.544	74.000	35.625	PK
2		2390.000	52.848	17.166	-21.152	74.000	35.682	PK
3	*	2402.055	94.815	59.102	N/A	N/A	35.712	PK

Site: AC5	Time: 2018/12/22 - 16:44
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by 3DH5	



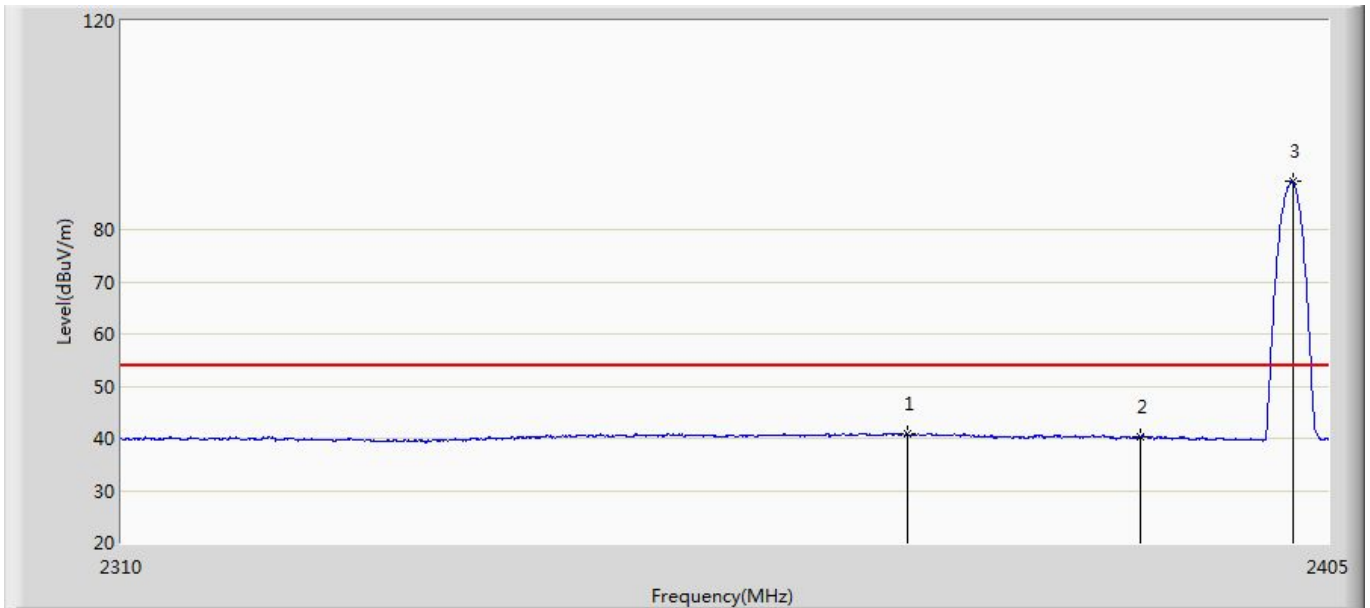
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2361.205	43.586	7.970	-10.414	54.000	35.616	AV
2		2390.000	42.645	6.963	-11.355	54.000	35.682	AV
3	*	2402.055	94.380	58.667	N/A	N/A	35.712	AV

Site: AC5	Time: 2018/12/22 - 16:47
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by 3DH5	



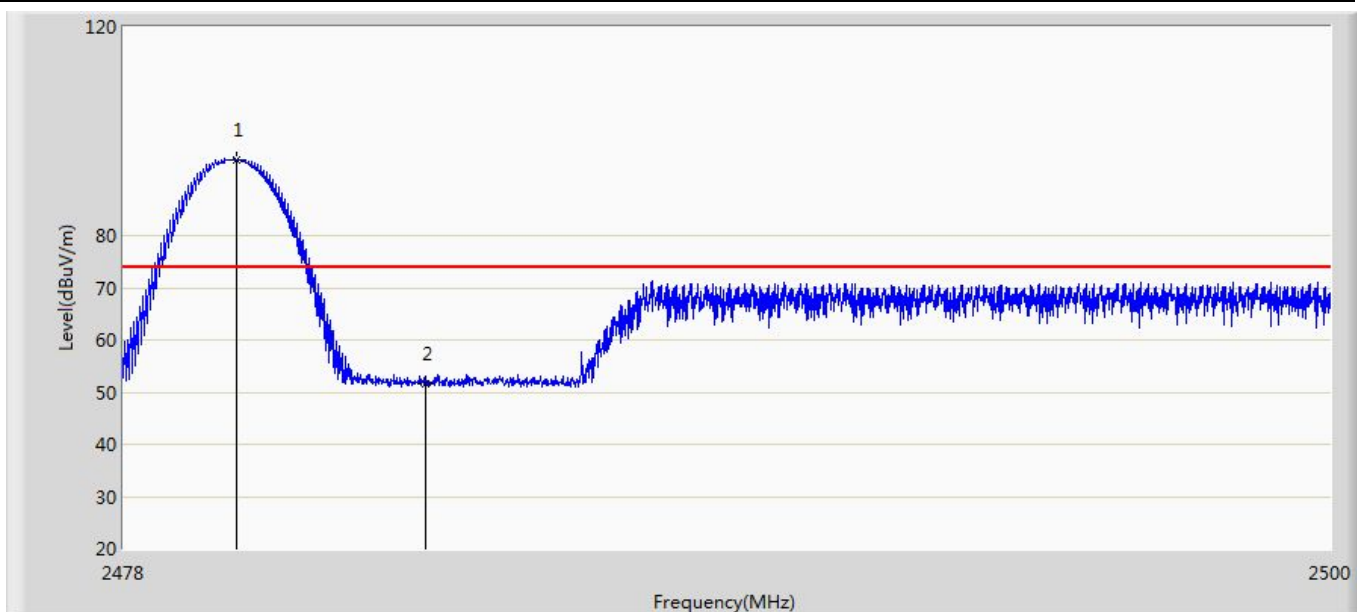
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2368.377	57.302	21.669	-16.698	74.000	35.633	PK
2		2390.000	51.357	15.675	-22.643	74.000	35.682	PK
3	*	2402.055	89.638	53.925	N/A	N/A	35.712	PK

Site: AC5	Time: 2018/12/22 - 16:47
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by 3DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2371.512	40.733	5.093	-13.267	54.000	35.641	AV
2		2390.000	40.382	4.700	-13.618	54.000	35.682	AV
3	*	2402.198	89.257	53.544	N/A	N/A	35.714	AV

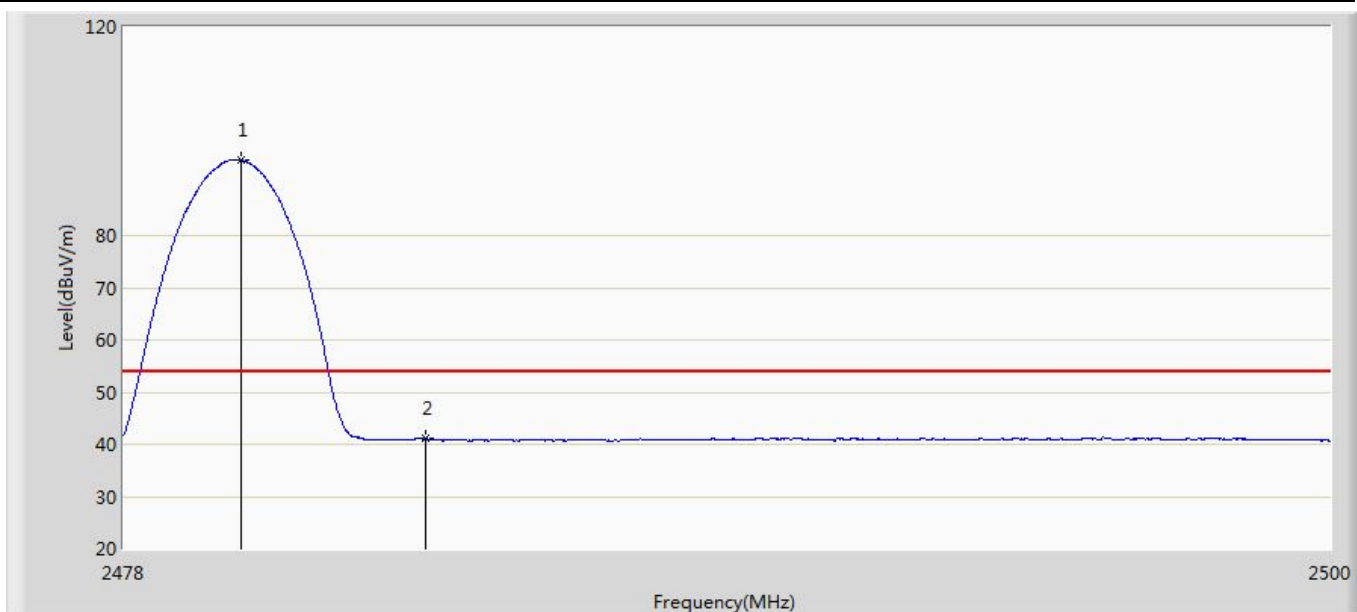
Site: AC5	Time: 2018/12/22 - 16:53
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by 3DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.046	94.550	58.683	N/A	N/A	35.866	PK
2		2483.500	51.605	15.713	-22.395	74.000	35.891	PK

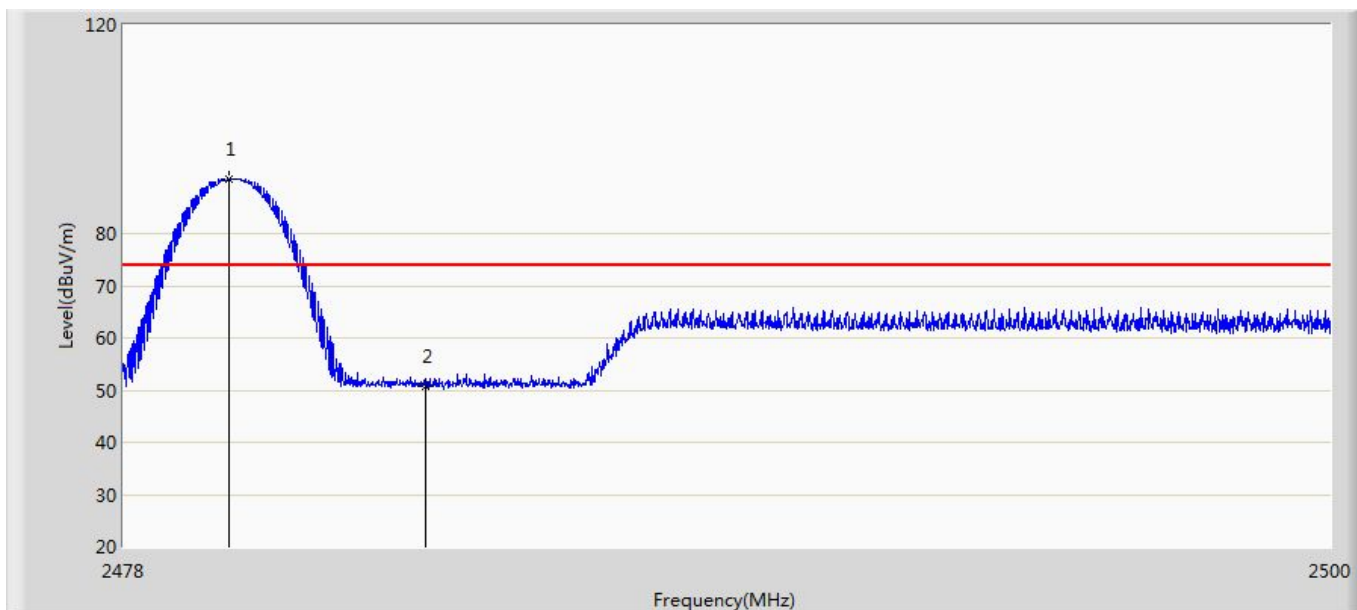
Note: The Qualcomm box (test accessory) caused the emission in these test plots, the emission is not from the EUT.

Site: AC5	Time: 2018/12/22 - 16:56
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by 3DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.145	94.387	58.520	N/A	N/A	35.867	AV
2		2483.500	41.039	5.147	-12.961	54.000	35.891	AV

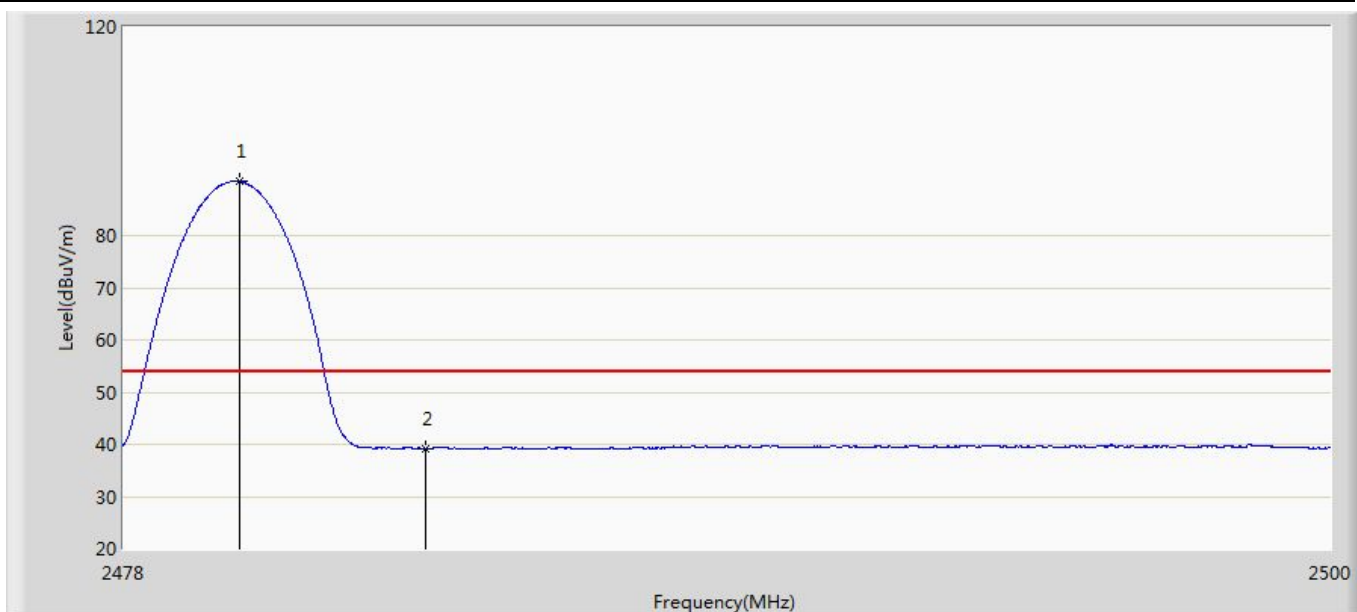
Site: AC5	Time: 2018/12/22 - 16:58
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by 3DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.914	90.445	54.579	N/A	N/A	35.866	PK
2		2483.500	50.641	14.749	-23.359	74.000	35.891	PK

Note: The Qualcomm box (test accessory) caused the emission in these test plots, the emission is not from the EUT.

Site: AC5	Time: 2018/12/22 - 16:59
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by 3DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.112	90.438	54.571	N/A	N/A	35.867	AV
2		2483.500	39.081	3.189	-14.919	54.000	35.891	AV

12. Antenna Requirement

12.1. Limit

Antenna Requirement Limit
<p>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.</p>

12.2. Antenna Connector Construction

Antenna Connector Construction	
<input checked="" type="checkbox"/>	The use of a permanently attached antenna
<input type="checkbox"/>	The antenna use of a unique coupling to the intentional radiator
<input type="checkbox"/>	The use of a nonstandard antenna jack or electrical connector
Please refer to the attached document "Internal Photograph" to show the antenna connector.	

_____ The End _____