



Test Report

FCC Part15 Subpart C& RSS-247 Issue 2

Product Name : TWS Bluetooth headset

Model No. : BP5100S

FCC ID : AL8-BP5100S

IC : 457A-BP5100S

Applicant : Plantronics, Inc.

Address : 345 Encinal Street, Santa Cruz, CA95060 USA

Date of Receipt : Apr. 24, 2019

Test Date : Apr. 24, 2019 ~ May. 29, 2019

Issued Date : Jun. 03, 2019

Report No. : 1942173R-RF-US-P06V03

Report Version : V1.0

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 : Jun. 03, 2019

Report No. : 1942173R-RF-US-P06V03



Product Name : TWS Bluetooth headset
Applicant : Plantronics, Inc.
Address : 345 Encinal Street, Santa Cruz, CA95060 USA
Manufacturer : Plantronics, Inc.
Address : 345 Encinal Street, Santa Cruz, CA95060 USA
Model No. : BP5100S
FCC ID : AL8-BP5100S
IC : 457A-BP5100S
EUT Voltage : DC 3.3V ~ 4.2V
Test Voltage : AC120V/60Hz
Brand Name : Plantronics
Applicable Standard : FCC CFR Title 47 Part 15 Subpart C
KDB 558074 D01 v05r02
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 CAB identifier:CN0040

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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
1942173R-RF-US-P06V03	V1.0	Initial Issued Report	Jun. 03, 2019

1. General Information

1.1. EUT Description

Product Name	TWS Bluetooth headset
Model No.	BP5100S
EUT Voltage	DC 3.3V ~ 4.2V
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

Note 1: We have evaluated both earphones, shown in the report is the worst data of right earphone.

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	☒	1*TX+1*RX	☐	2*TX+2*RX	☐	3*TX+3*RX
Antenna technology	☒	SISO				
	☐	MIMO	☐	Basic		
			☐	CDD		
			☐	Beam-forming		
Antenna Type	☐	External	☐	Dipole		
	☒	Internal	☐	PIFA		
			☐	PCB		
			☐	Ceramic Chip Antenna		
			☒	Stamping Antenna		
			☐	Metal plate type F antenna		
	☐	Monopole antenna				
Antenna Gain #left	-4.59dBi					
Antenna Gain #right	-4.08dBi					

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.

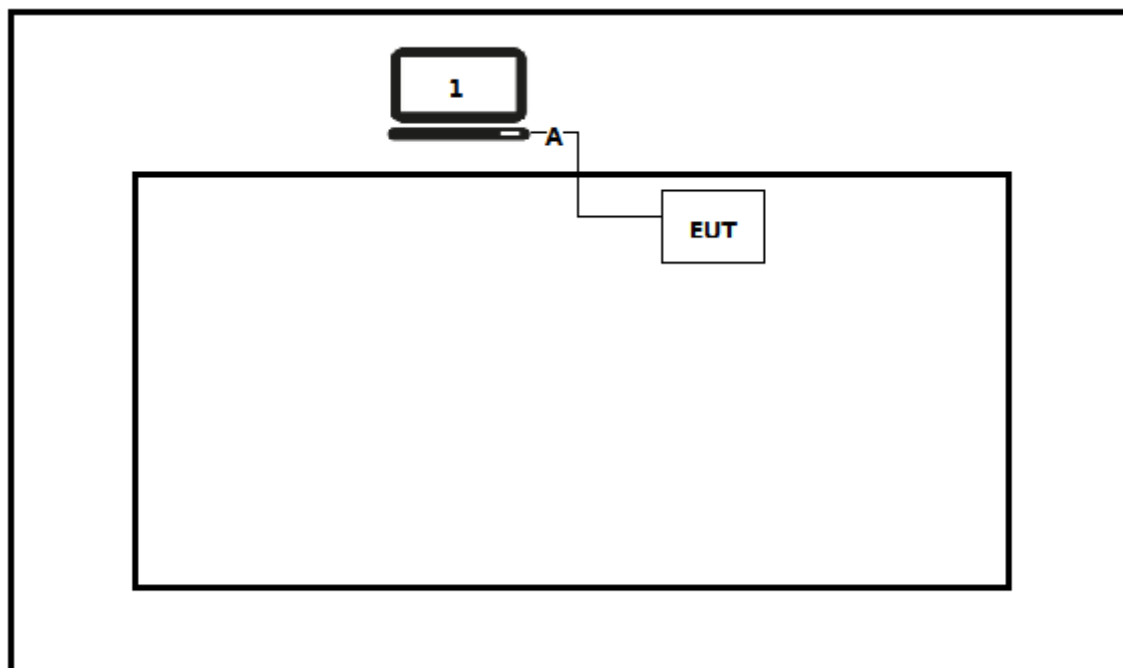
1.4 Tested System Details

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

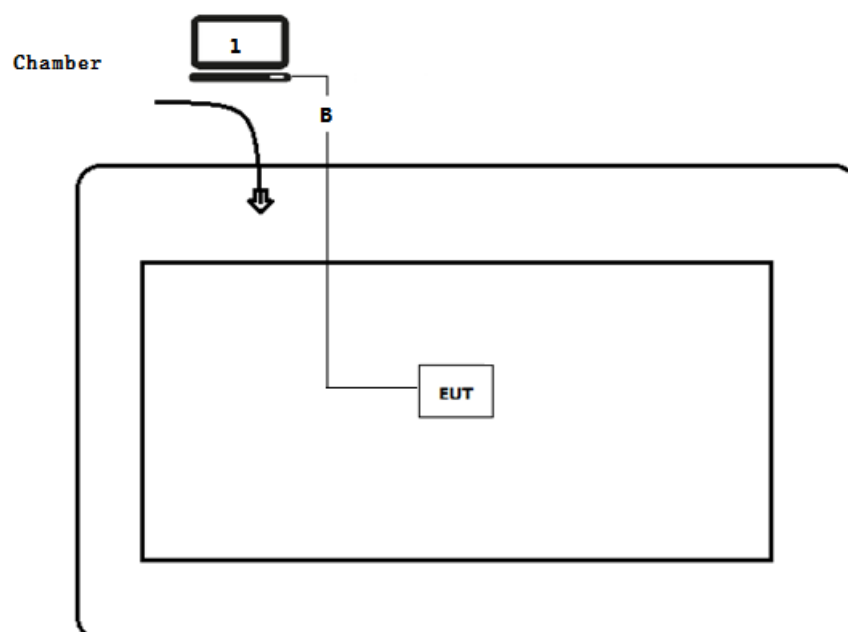
Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook	Think Pad	2526	LV-A3285	Power by adapter
A	USB Cable	N/A	N/A	N/A	Shield, 0.5m
B	USB Cable	N/A	N/A	N/A	Shield, 10m

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

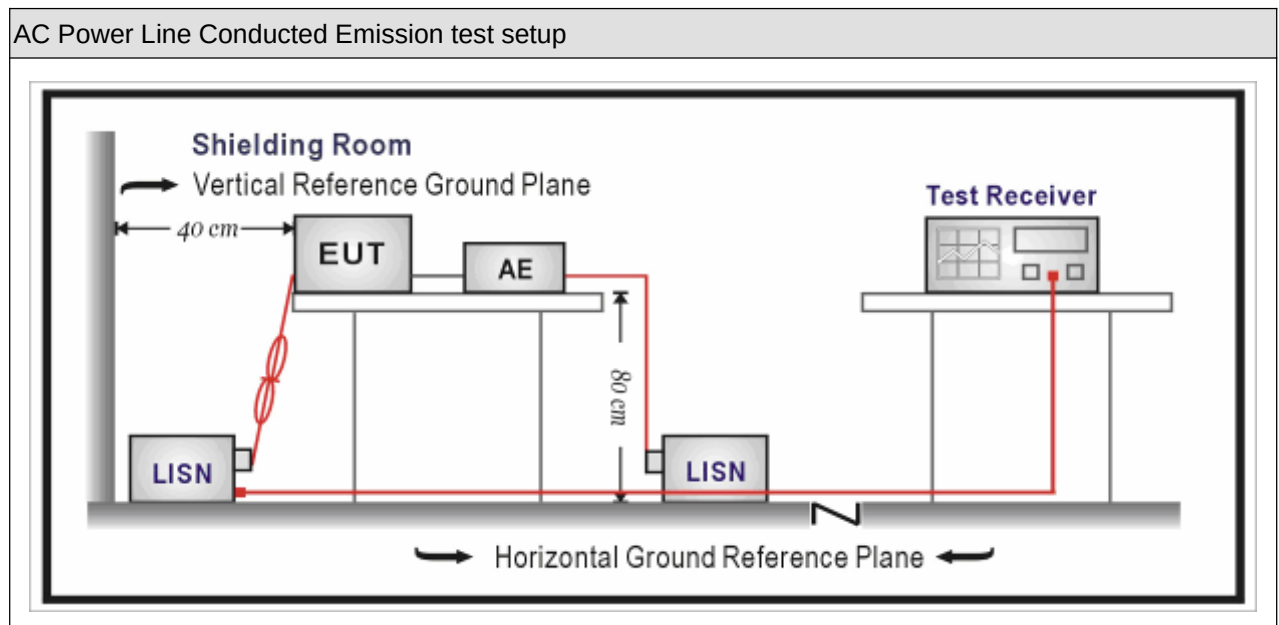
3. Conducted Emission

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	2019.03.05	2020.03.04
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

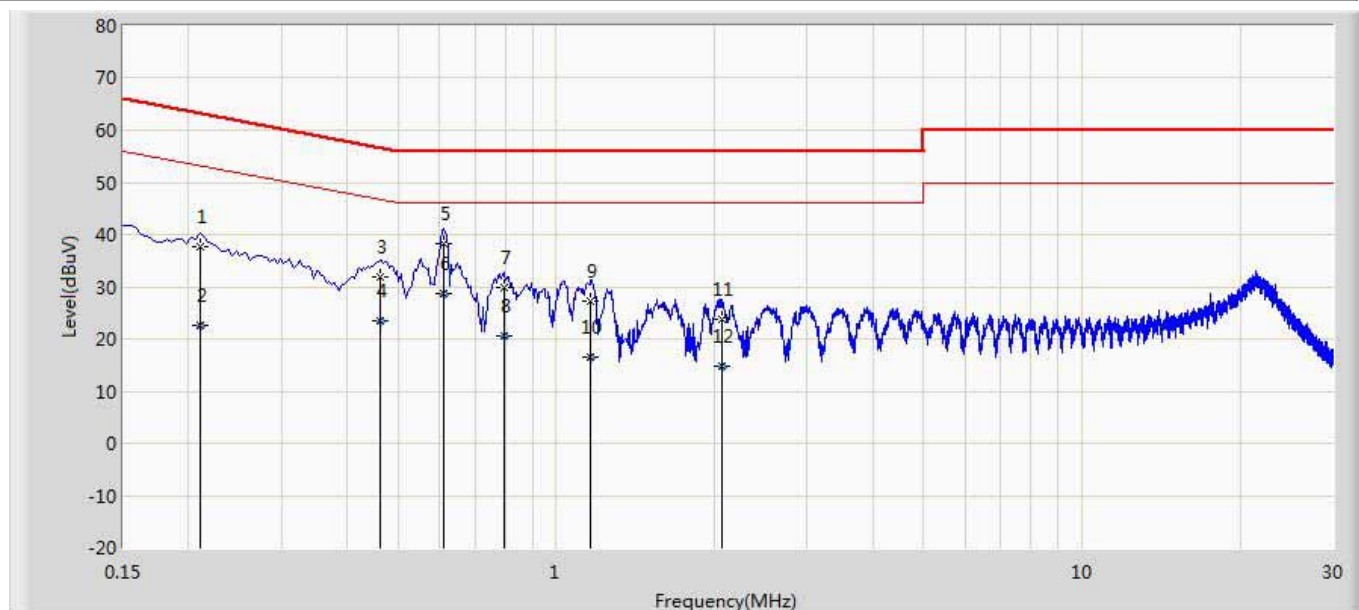
Test Method			
	References Rule	Chapter	Item
☒	ANSI C63.10-2013	6.2	Standard test method for ac power-line conducted emissions from unlicensed wireless devices

3.5. Uncertainty

The measurement uncertainty is defined as ± 2.02 dB

3.6. Test Result

Site: TR1	Time: 2019/04/28
Limit: FCC_Part15.207_CE_AC Power	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Line
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 1	

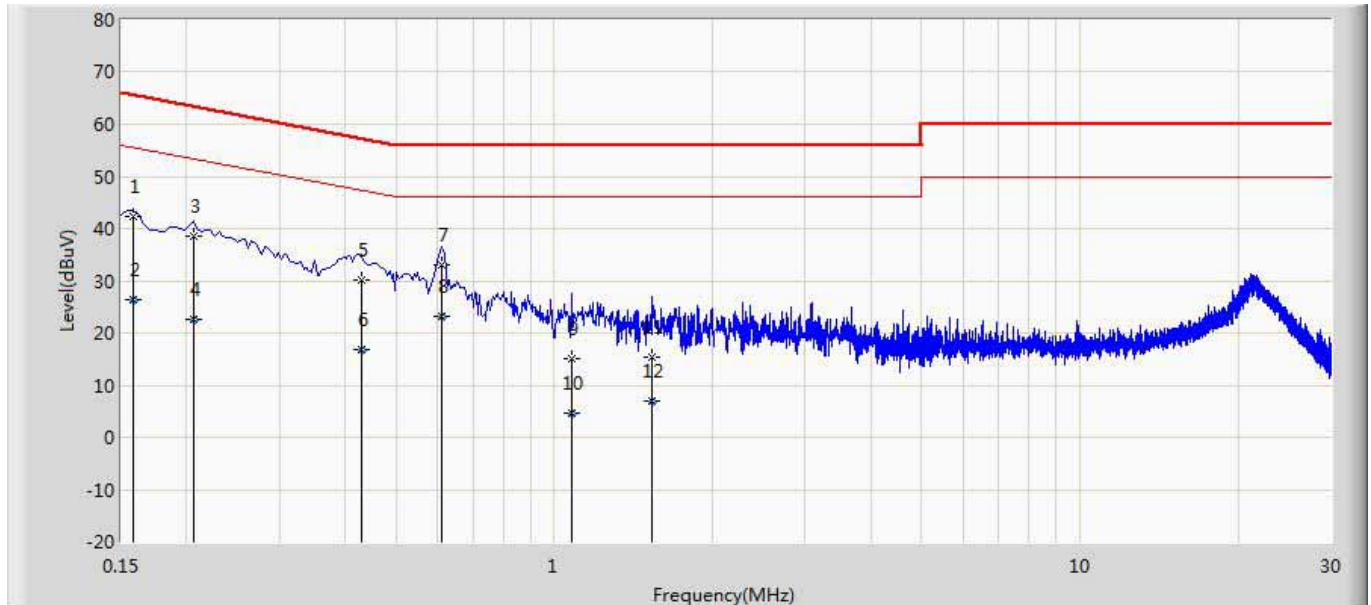


No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.210	37.641	28.012	-25.564	63.205	9.601	0.029	0.000	QP
2		0.210	22.725	13.095	-30.480	53.205	9.601	0.029	0.000	AV
3		0.462	31.929	22.288	-24.728	56.657	9.600	0.041	0.000	QP
4		0.462	23.542	13.901	-23.114	46.657	9.600	0.041	0.000	AV
5		0.610	38.240	28.593	-17.760	56.000	9.600	0.047	0.000	QP
6	*	0.610	28.678	19.031	-17.322	46.000	9.600	0.047	0.000	AV
7		0.794	29.983	20.328	-26.017	56.000	9.603	0.053	0.000	QP
8		0.794	20.624	10.969	-25.376	46.000	9.603	0.053	0.000	AV
9		1.162	27.203	17.529	-28.797	56.000	9.610	0.064	0.000	QP
10		1.162	16.599	6.925	-29.401	46.000	9.610	0.064	0.000	AV
11		2.066	23.761	14.062	-32.239	56.000	9.611	0.088	0.000	QP
12		2.066	14.746	5.046	-31.254	46.000	9.611	0.088	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: 2019/04/28
Limit: FCC_Part15.207_CE_AC Power	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Neutral
EUT: TWS Bluetooth headset	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		0.158	42.385	32.764	-23.183	65.568	9.592	0.029	0.000	QP
2		0.158	26.473	16.852	-29.096	55.568	9.592	0.029	0.000	AV
3		0.206	38.530	28.902	-24.835	63.365	9.599	0.029	0.000	QP
4		0.206	22.742	13.115	-30.623	53.365	9.599	0.029	0.000	AV
5		0.430	30.232	20.600	-27.021	57.253	9.592	0.040	0.000	QP
6		0.430	16.696	7.065	-30.556	47.253	9.592	0.040	0.000	AV
7		0.610	32.912	23.276	-23.088	56.000	9.590	0.047	0.000	QP
8	*	0.610	23.148	13.511	-22.852	46.000	9.590	0.047	0.000	AV
9		1.078	15.134	5.480	-40.866	56.000	9.592	0.062	0.000	QP
10		1.078	4.695	-4.959	-41.305	46.000	9.592	0.062	0.000	AV
11		1.538	15.425	5.749	-40.575	56.000	9.601	0.075	0.000	QP
12		1.538	6.968	-2.708	-39.032	46.000	9.601	0.075	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

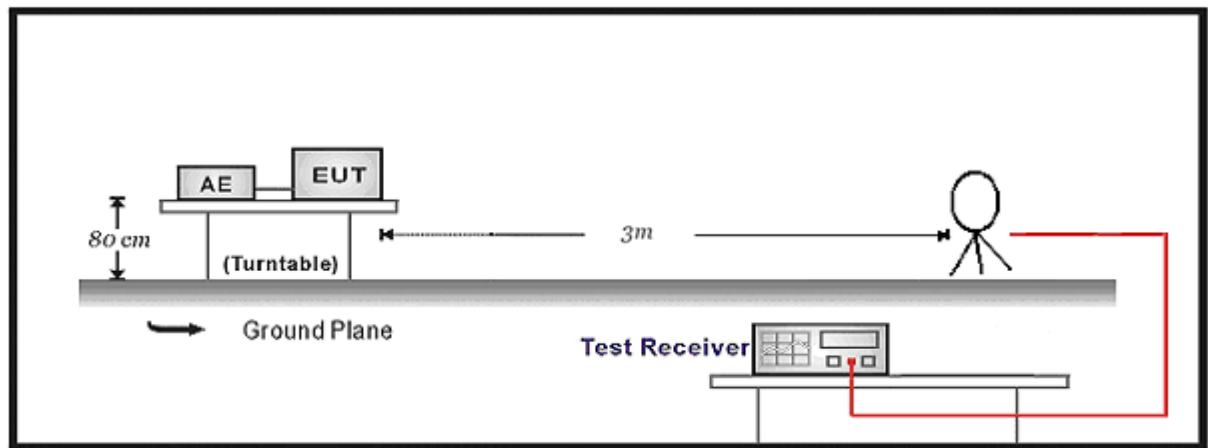
4.1. Test Equipment

Radiated Emission(Below 1GHz) / AC-2					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100573	2019.03.29	2020.03.28
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	2019.03.02	2020.03.01
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.					

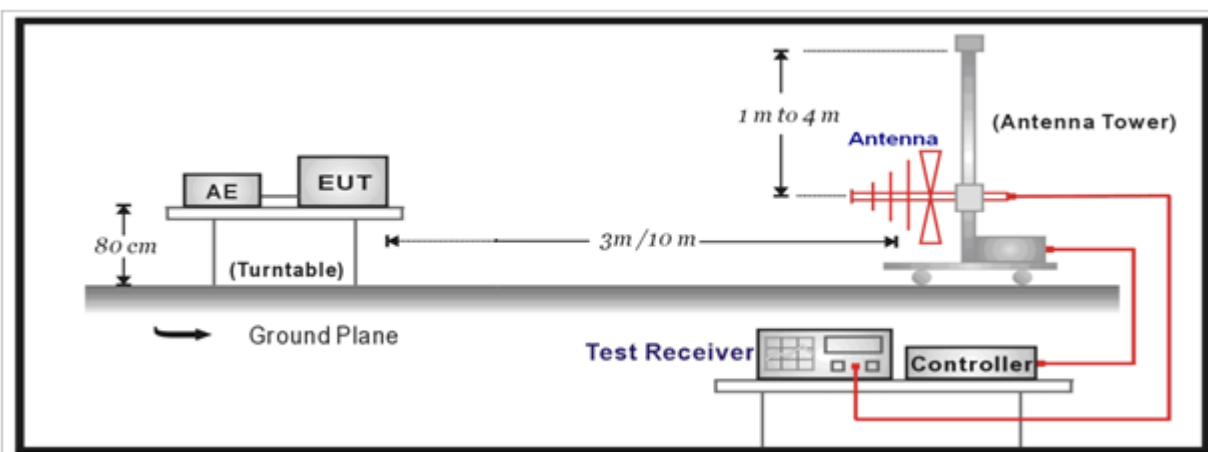
Radiated Emission(Above 1GHz) / AC-5					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2019.01.04	2020.01.03
Preamplifier	Miteq	NSP1800-25	1364185	2018.05.06	2020.05.05
Preamplifier	QuieTek	AP-040G	CHM-0906001	2018.05.06	2020.05.05
DRG Horn	ETS-Lindgren	3117	00123988	2019.01.22	2020.01.21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2018.11.25	2019.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2019.03.02	2020.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2019.03.02	2020.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2019.03.02	2020.03.01
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

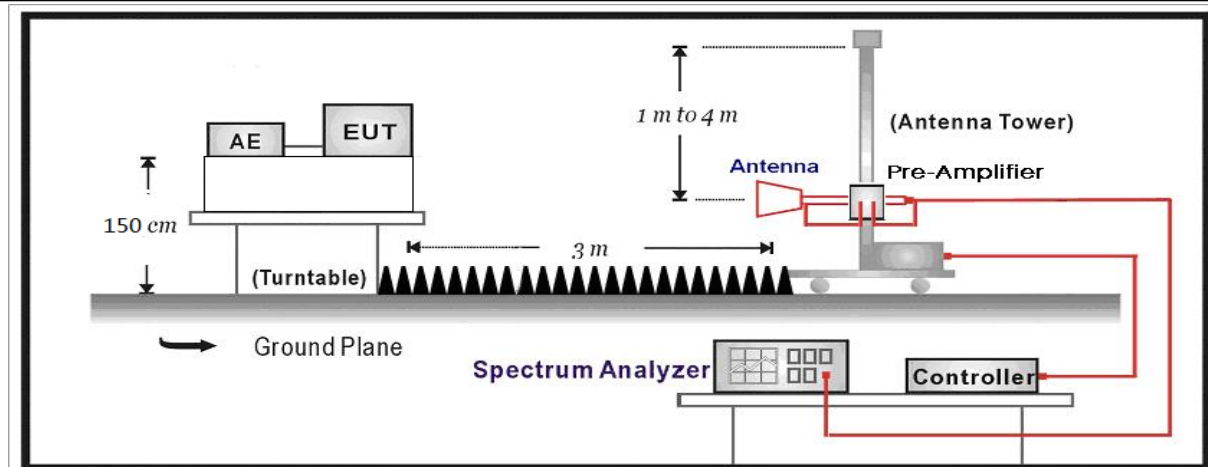
Below 30MHz Test Setup:



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
☒	ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
☒	ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
☒	ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz
☒	ANSI C63.10	7.5	Procedure for determining the average value of pulsed emissions

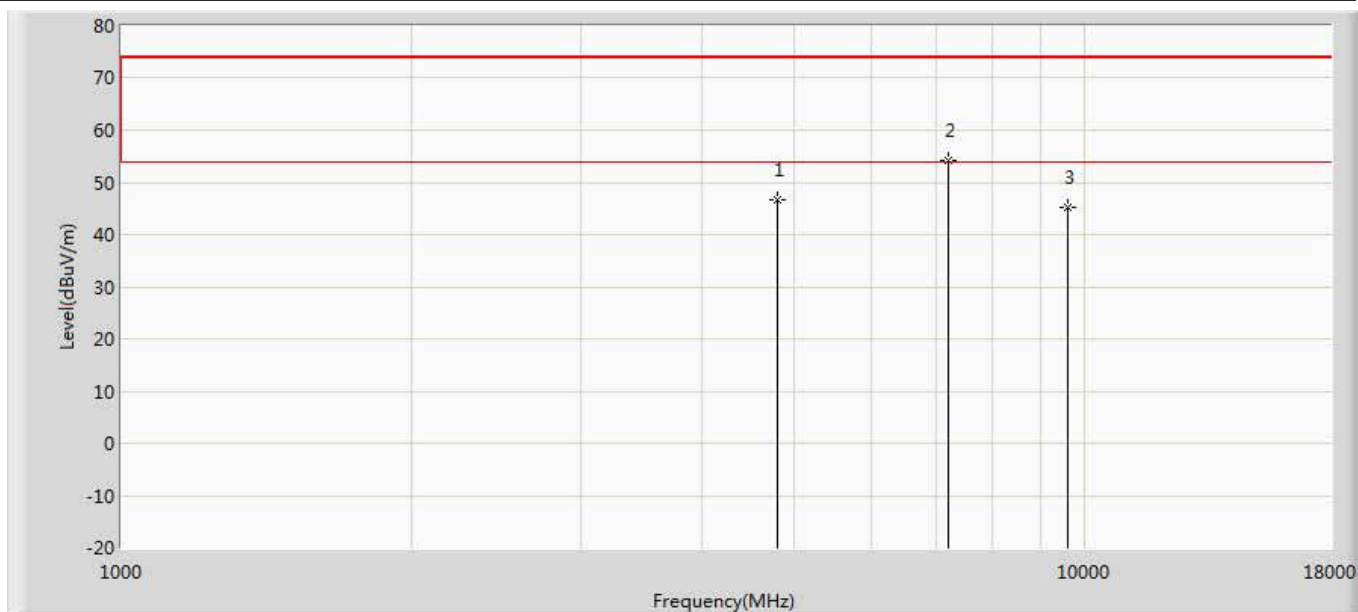
4.5. Uncertainty

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

below 1G is defined as ± 3.8 dB

4.6. Test Result

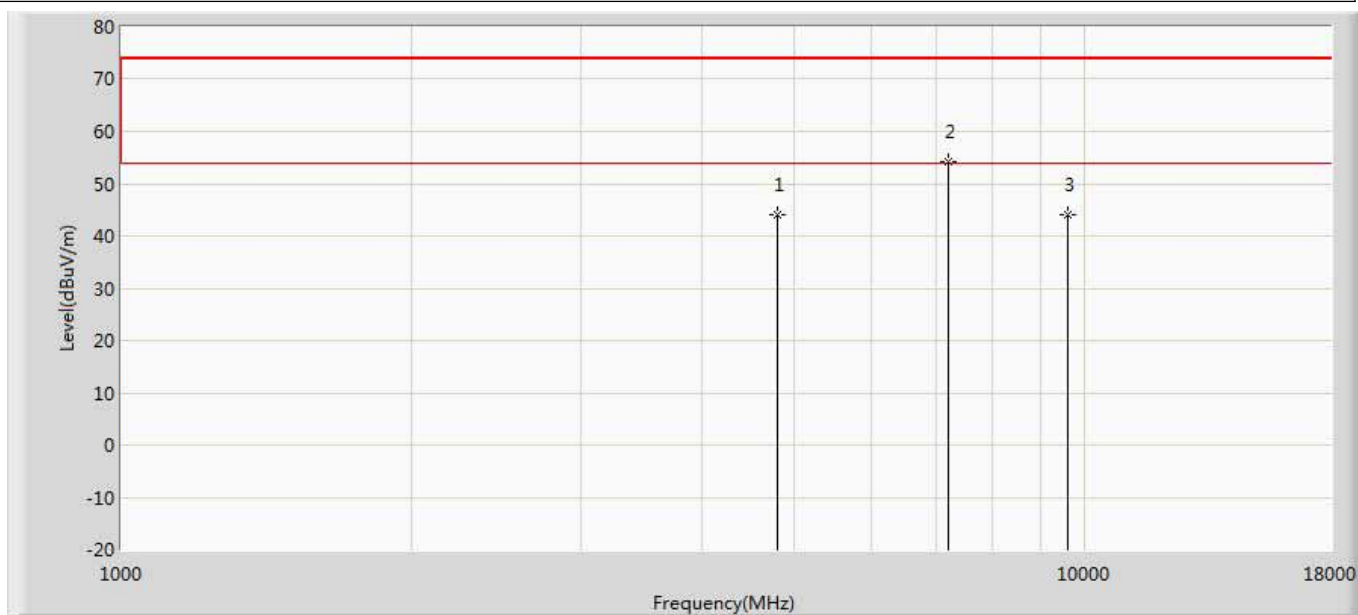
Engineer: Pawn	
Site: AC5	Time: 2019/05/08 - 16:10
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode1:Transmit at 2402MHz by DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4799.500	46.564	44.787	-27.436	74.000	1.777	PK
2	*	7205.000	54.263	49.010	-19.737	74.000	5.253	PK
3		9608.000	45.112	38.243	-28.888	74.000	6.869	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	DCCF (dB)	Type
1		4799.500	15.814	46.564	-38.186	54.000	-30.750	AV
2	*	7205.000	23.513	54.263	-30.487	54.000	-30.750	AV
3		9608.000	14.362	45.112	-39.638	54.000	-30.750	AV

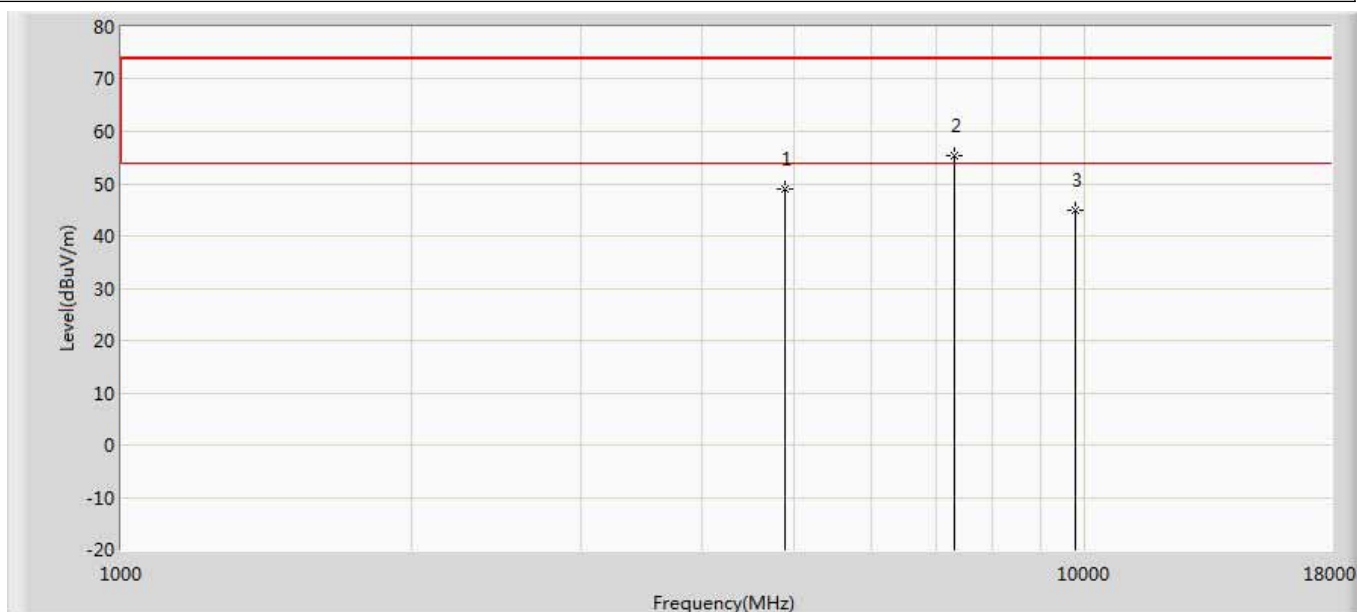
Engineer: Pawn	
Site: AC5	Time: 2019/05/08 - 16:10
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode1:Transmit at 2402MHz by DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	44.131	42.390	-29.869	74.000	1.741	PK
2	*	7205.000	54.061	48.808	-19.939	74.000	5.253	PK
3		9608.000	44.126	37.257	-29.874	74.000	6.869	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	DCCF (dB)	Type
1		4804.000	13.381	44.131	-40.619	54.000	-30.750	AV
2	*	7205.000	23.311	54.061	-30.689	54.000	-30.750	AV
3		9608.000	13.376	44.126	-40.624	54.000	-30.750	AV

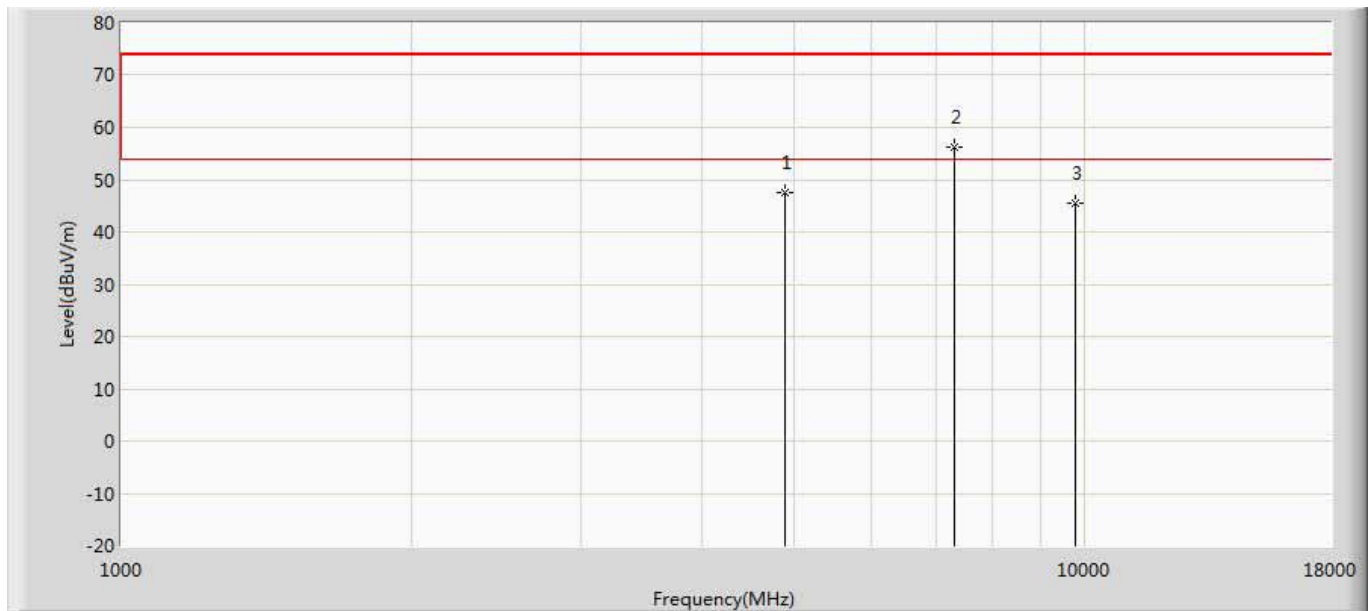
Engineer: Pawn	
Site: AC5	Time: 2019/05/08 - 16:10
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode1:Transmit at 2441MHz by DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4884.500	48.842	47.013	-25.158	74.000	1.829	PK
2	*	7324.000	55.350	49.755	-18.650	74.000	5.595	PK
3		9764.000	44.904	37.661	-29.096	74.000	7.244	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	DCCF (dB)	Type
1		4884.500	18.092	48.842	-35.908	54.000	-30.750	AV
2	*	7324.000	24.600	55.350	-29.400	54.000	-30.750	AV
3		9764.000	14.154	44.904	-39.846	54.000	-30.750	AV

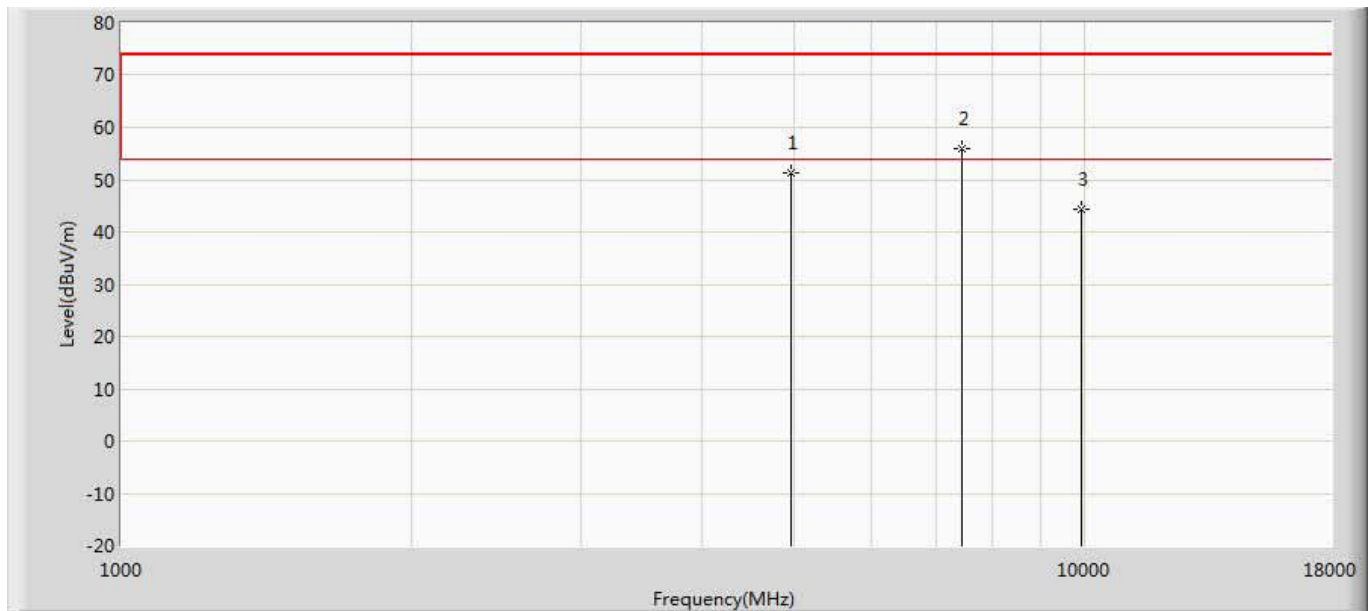
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Site: AC5	Time: 2019/05/08 - 16:10
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode1:Transmit at 2441MHz by DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4884.500	47.664	45.835	-26.336	74.000	1.829	PK
2	*	7324.000	56.144	50.549	-17.856	74.000	5.595	PK
3		9764.000	45.508	38.265	-28.492	74.000	7.244	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	DCCF (dB)	Type
1		4884.500	16.914	47.664	-37.086	54.000	-30.750	AV
2	*	7324.000	25.394	56.144	-28.606	54.000	-30.750	AV
3		9764.000	14.758	45.508	-39.242	54.000	-30.750	AV

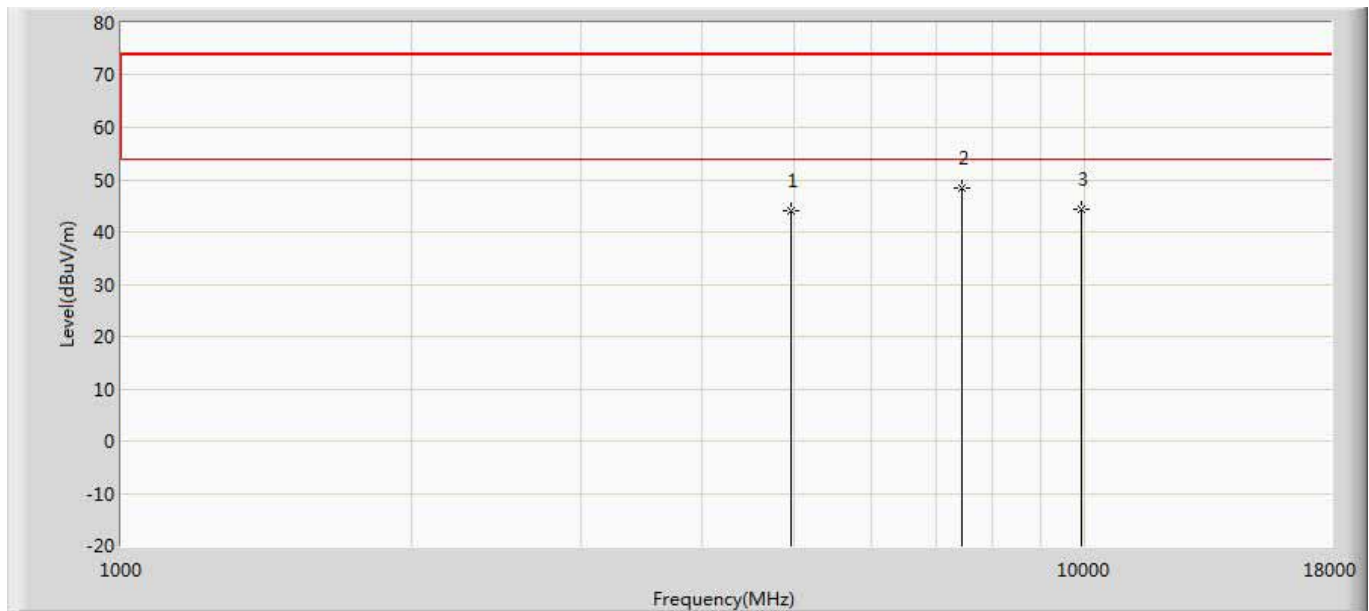
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Site: AC5	Time: 2019/05/08 - 16:10
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode1:Transmit at 2480MHz by DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4961.000	51.241	49.252	-22.759	74.000	1.989	PK
2	*	7443.000	55.949	50.619	-18.051	74.000	5.330	PK
3		9920.000	44.314	37.225	-29.686	74.000	7.088	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	DCCF (dB)	Type
1		4961.000	20.491	51.241	-33.509	54.000	-30.750	AV
2	*	7443.000	25.199	55.949	-28.801	54.000	-30.750	AV
3		9920.000	13.564	44.314	-40.436	54.000	-30.750	AV

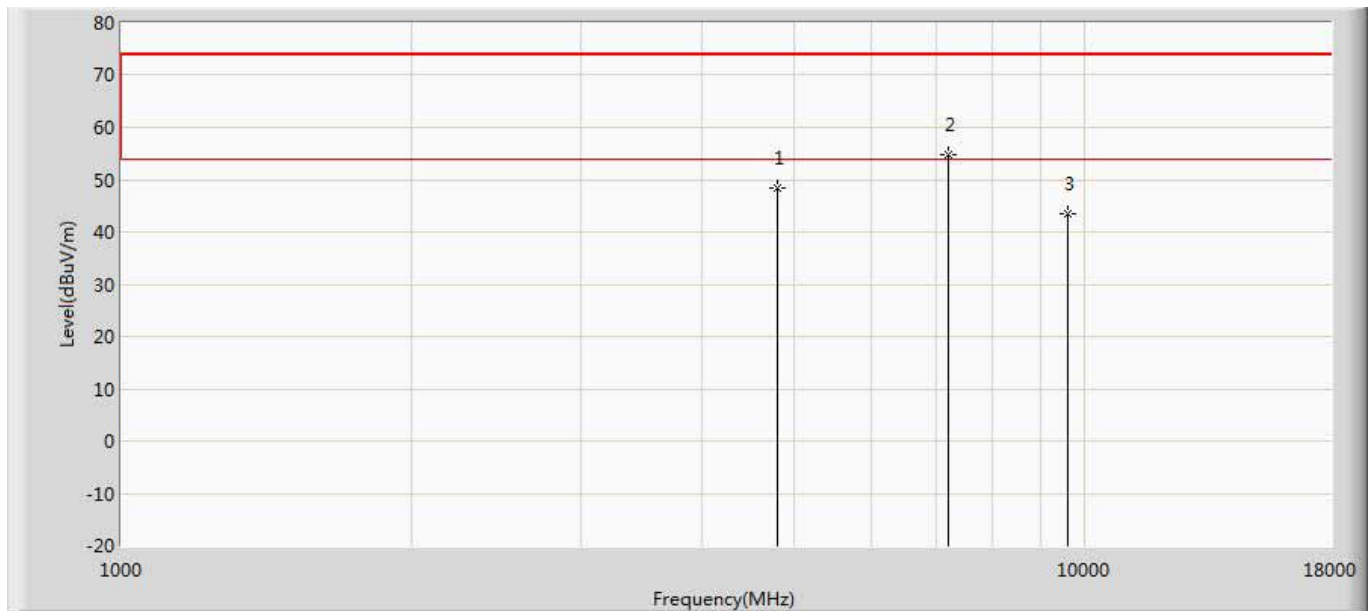
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Site: AC5	Time: 2019/05/08 - 16:10
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode1:Transmit at 2480MHz by DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	44.009	42.028	-29.991	74.000	1.981	PK
2	*	7443.000	48.380	43.050	-25.620	74.000	5.330	PK
3		9920.000	44.240	37.151	-29.760	74.000	7.088	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	DCCF (dB)	Type
1		4960.000	13.259	44.009	-40.741	54.000	-30.750	AV
2	*	7443.000	17.630	48.380	-36.370	54.000	-30.750	AV
3		9920.000	13.490	44.240	-40.510	54.000	-30.750	AV

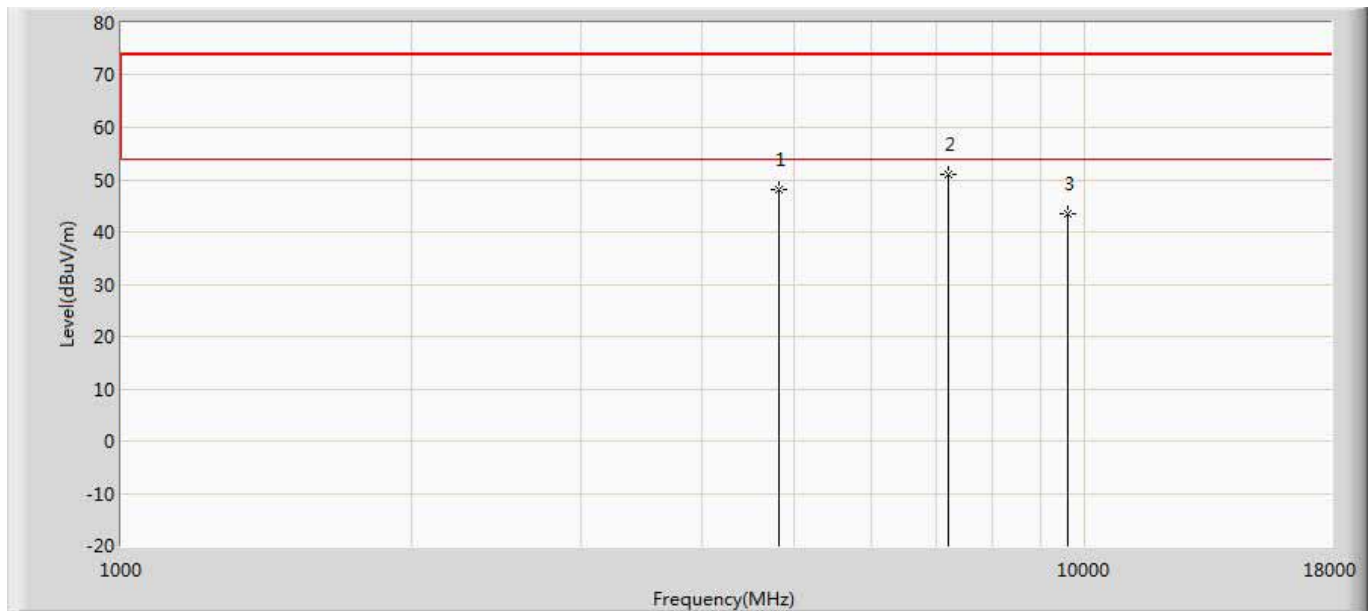
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Site: AC5	Time: 2019/05/08 - 16:10
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode2:Transmit at 2402MHz by 2DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4799.500	48.530	46.753	-25.470	74.000	1.777	PK
2	*	7205.000	54.639	49.386	-19.361	74.000	5.253	PK
3		9608.000	43.413	36.544	-30.587	74.000	6.869	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	DCCF (dB)	Type
1		4799.500	17.780	48.530	-36.220	54.000	-30.750	AV
2	*	7205.000	23.889	54.639	-30.111	54.000	-30.750	AV
3		9608.000	12.663	43.413	-41.337	54.000	-30.750	AV

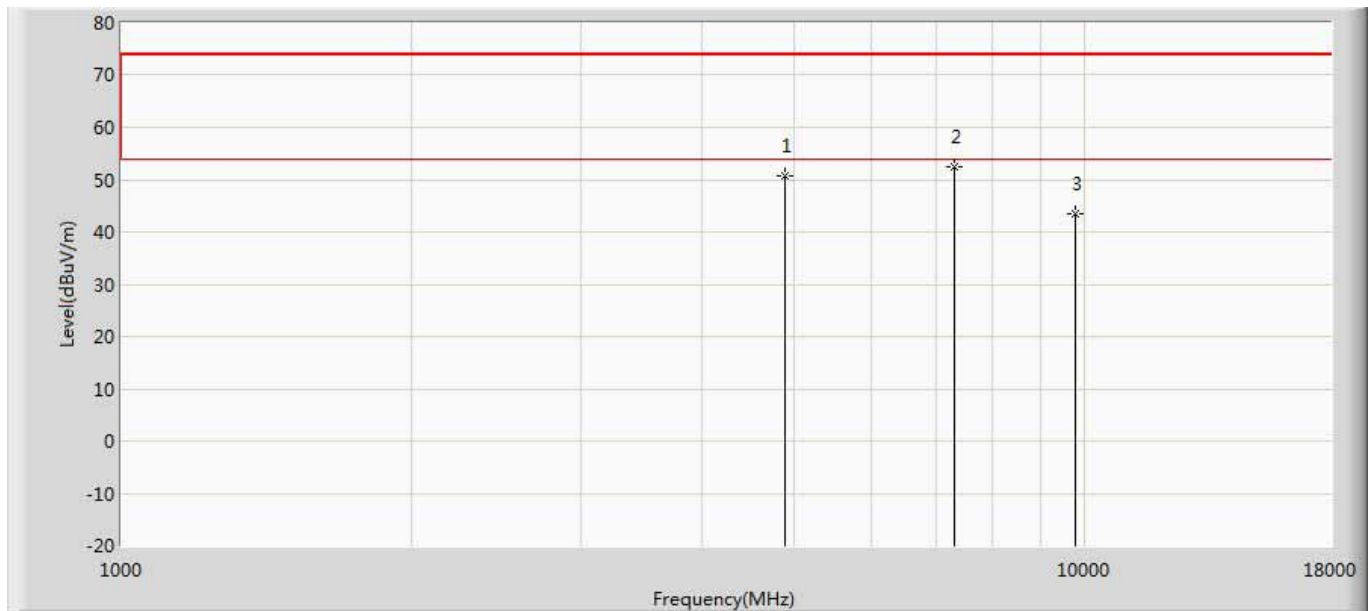
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Site: AC5	Time: 2019/05/08 - 16:10
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode2:Transmit at 2402MHz by 2DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4808.000	47.983	46.274	-26.017	74.000	1.709	PK
2	*	7205.000	51.095	45.842	-22.905	74.000	5.253	PK
3		9608.000	43.602	36.733	-30.398	74.000	6.869	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	DCCF (dB)	Type
1		4808.000	17.233	47.983	-36.767	54.000	-30.750	AV
2	*	7205.000	20.345	51.095	-33.655	54.000	-30.750	AV
3		9608.000	12.852	43.602	-41.148	54.000	-30.750	AV

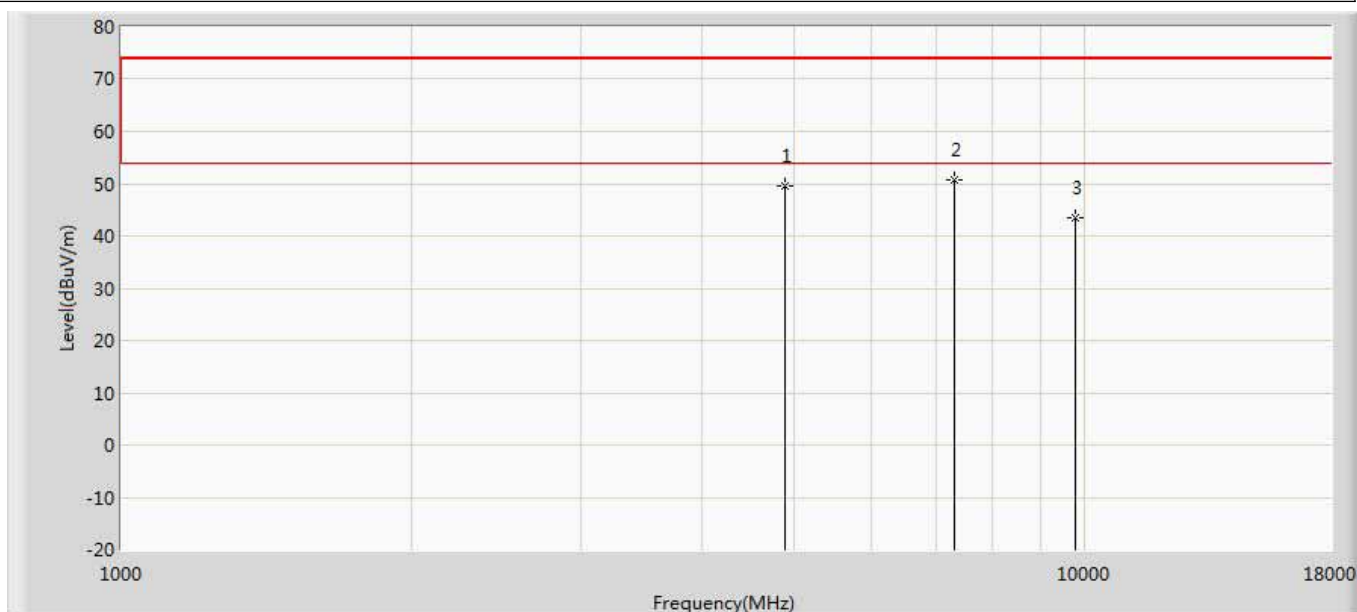
Engineer: Pawn	
Site: AC5	Time: 2019/05/08 - 16:10
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode2:Transmit at 2441MHz by 2DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4884.500	50.640	48.811	-23.360	74.000	1.829	PK
2	*	7324.000	52.489	46.894	-21.511	74.000	5.595	PK
3		9764.000	43.554	36.311	-30.446	74.000	7.244	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	DCCF (dB)	Type
1		4884.500	19.890	50.640	-34.110	54.000	-30.750	AV
2	*	7324.000	21.739	52.489	-32.261	54.000	-30.750	AV
3		9764.000	12.804	43.554	-41.196	54.000	-30.750	AV

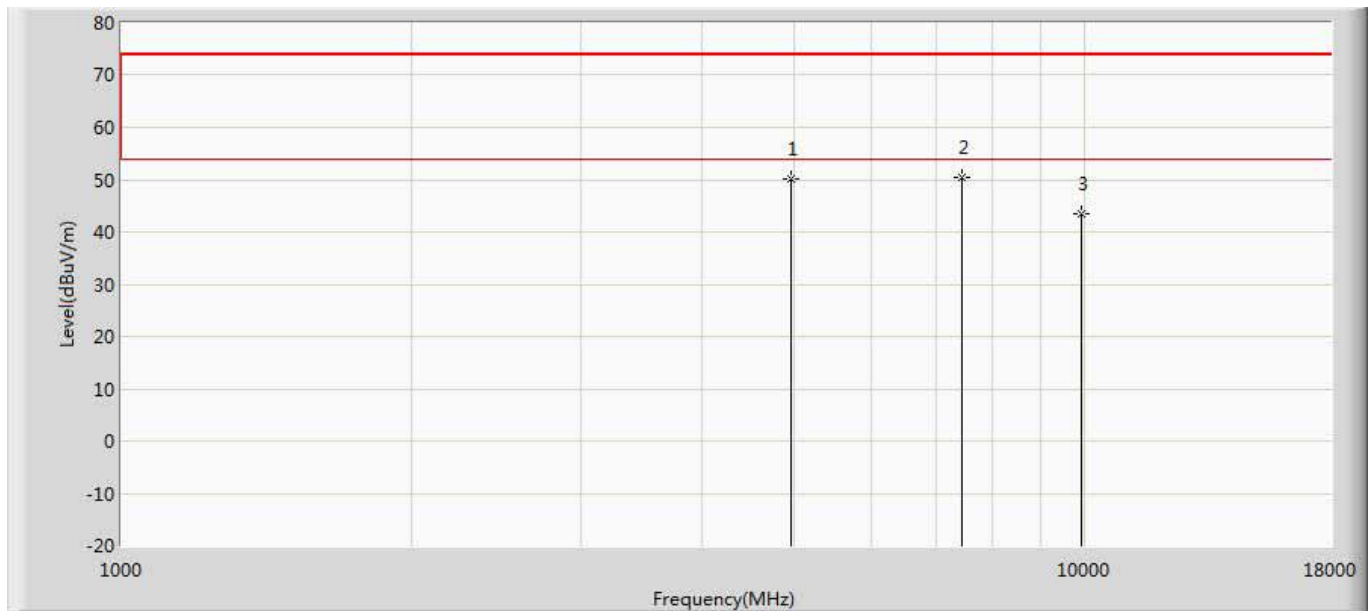
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Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode2:Transmit at 2441MHz by 2DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4884.500	49.642	47.813	-24.358	74.000	1.829	PK
2	*	7324.000	50.657	45.062	-23.343	74.000	5.595	PK
3		9764.000	43.616	36.373	-30.384	74.000	7.244	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	DCCF (dB)	Type
1		4884.500	18.892	49.642	-35.108	54.000	-30.750	AV
2	*	7324.000	19.907	50.657	-34.093	54.000	-30.750	AV
3		9764.000	12.866	43.616	-41.134	54.000	-30.750	AV

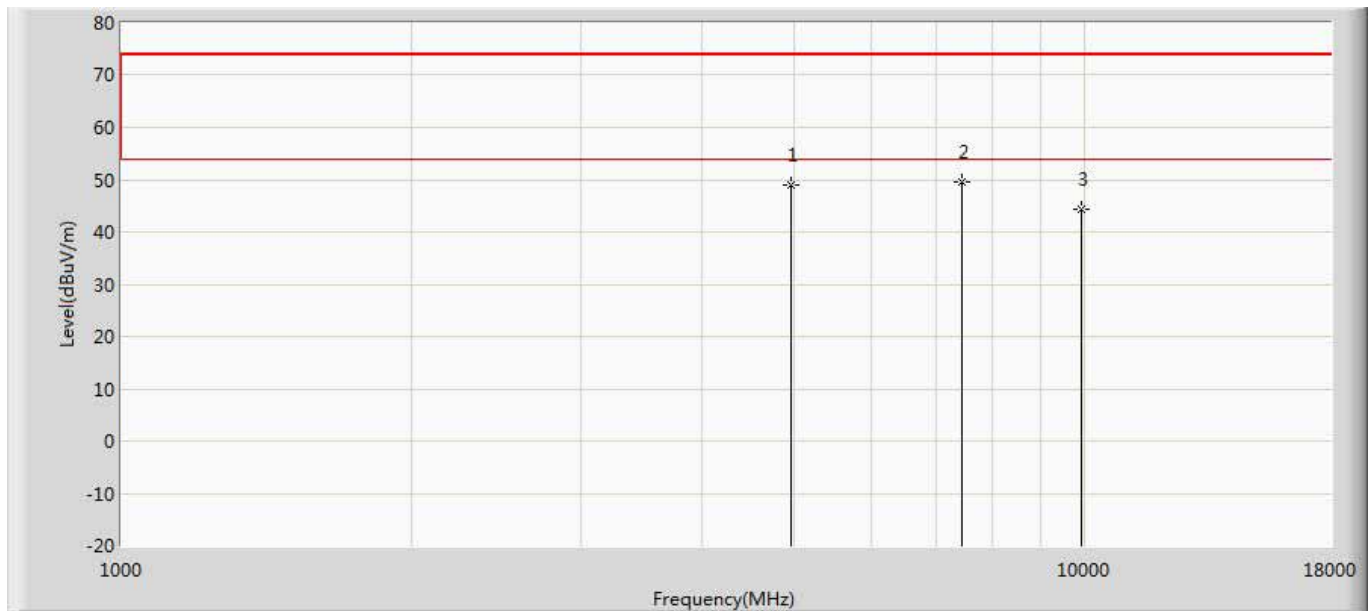
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Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode2:Transmit at 2480MHz by 2DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4961.000	50.207	48.218	-23.793	74.000	1.989	PK
2	*	7443.000	50.460	45.130	-23.540	74.000	5.330	PK
3		9920.000	43.572	36.483	-30.428	74.000	7.088	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	DCCF (dB)	Type
1		4961.000	19.457	50.207	-34.543	54.000	-30.750	AV
2	*	7443.000	19.710	50.460	-34.290	54.000	-30.750	AV
3		9920.000	12.822	43.572	-41.178	54.000	-30.750	AV

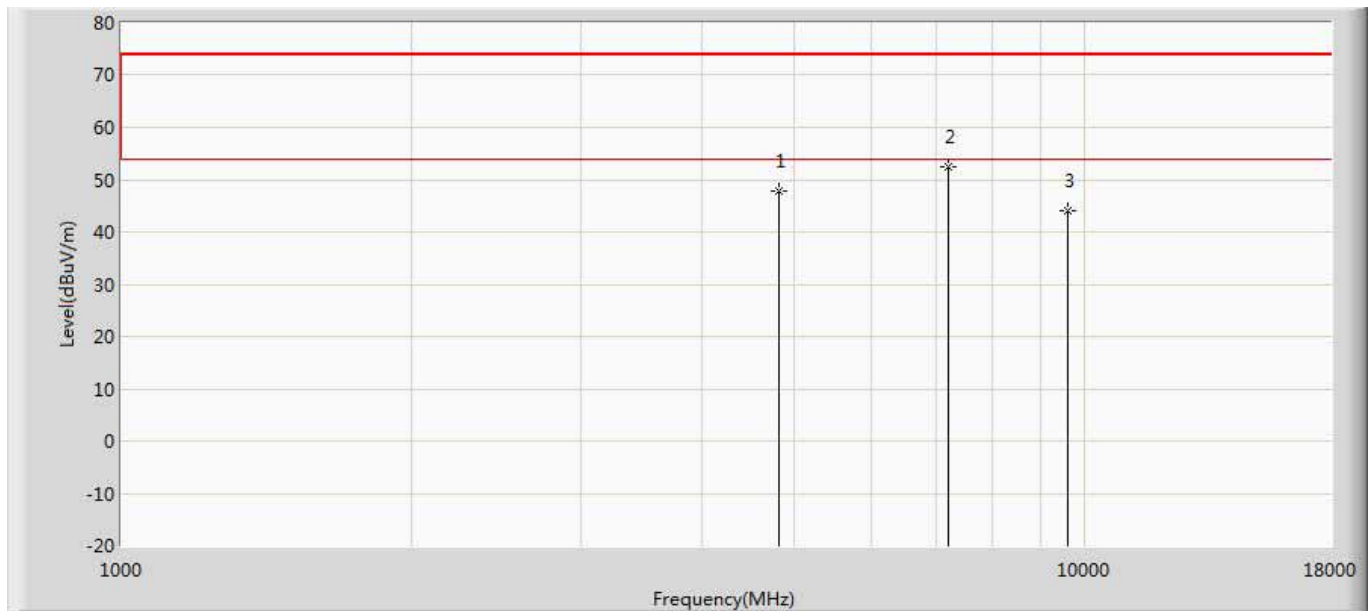
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Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode2:Transmit at 2480MHz by 2DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4961.000	48.948	46.959	-25.052	74.000	1.989	PK
2	*	7443.000	49.511	44.181	-24.489	74.000	5.330	PK
3		9920.000	44.241	37.152	-29.759	74.000	7.088	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	DCCF (dB)	Type
1		4961.000	18.198	48.948	-35.802	54.000	-30.750	AV
2	*	7443.000	18.761	49.511	-35.239	54.000	-30.750	AV
3		9920.000	13.491	44.241	-40.509	54.000	-30.750	AV

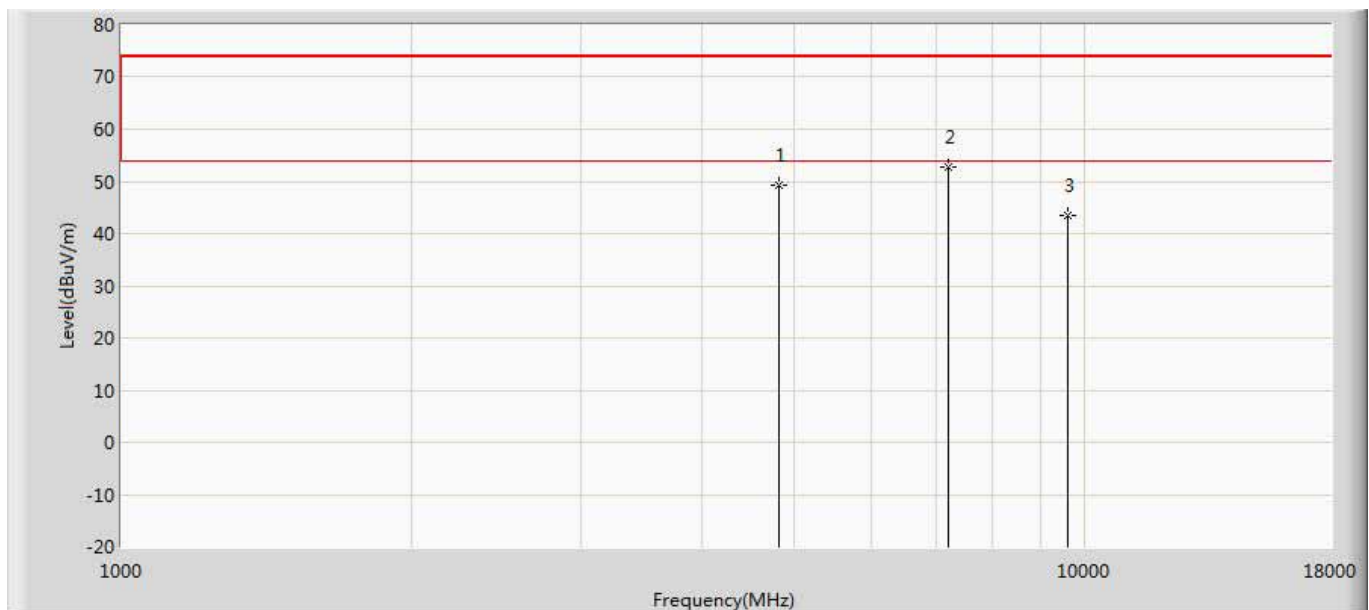
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Site: AC5	Time: 2019/05/08 - 16:11
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode3:Transmit at 2402MHz by 3DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4808.000	47.767	46.058	-26.233	74.000	1.709	PK
2	*	7205.000	52.328	47.075	-21.672	74.000	5.253	PK
3		9608.000	44.076	37.207	-29.924	74.000	6.869	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	DCCF (dB)	Type
1		4808.000	17.017	47.767	-36.983	54.000	-30.750	AV
2	*	7205.000	21.578	52.328	-32.422	54.000	-30.750	AV
3		9608.000	13.326	44.076	-40.674	54.000	-30.750	AV

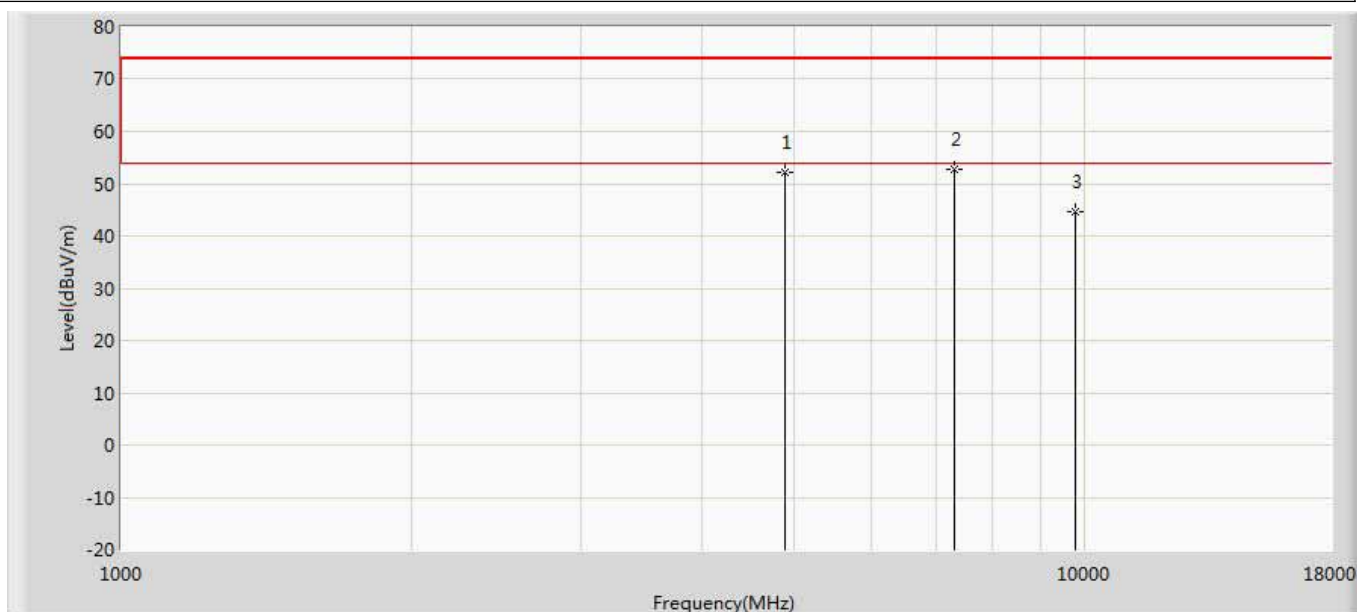
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Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode3:Transmit at 2402MHz by 3DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4808.000	49.147	47.438	-24.853	74.000	1.709	PK
2	*	7205.000	52.664	47.411	-21.336	74.000	5.253	PK
3		9608.000	43.495	36.626	-30.505	74.000	6.869	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	DCCF (dB)	Type
1		4808.000	18.397	49.147	-35.603	54.000	-30.750	AV
2	*	7205.000	21.914	52.664	-32.086	54.000	-30.750	AV
3		9608.000	12.745	43.495	-41.255	54.000	-30.750	AV

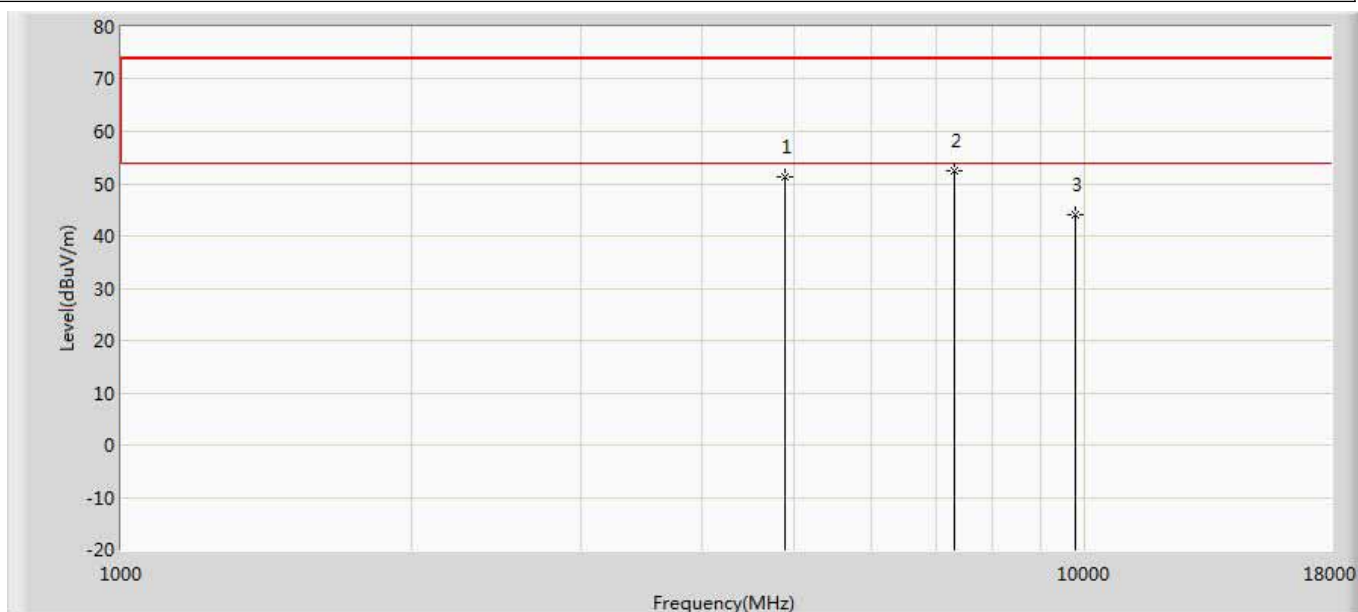
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Site: AC5	Time: 2019/05/08 - 16:11
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode3:Transmit at 2441MHz by 3DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4884.500	52.078	50.249	-21.922	74.000	1.829	PK
2	*	7324.000	52.651	47.056	-21.349	74.000	5.595	PK
3		9764.000	44.576	37.333	-29.424	74.000	7.244	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	DCCF (dB)	Type
1		4884.500	21.328	52.078	-32.672	54.000	-30.750	AV
2	*	7324.000	21.901	52.651	-32.099	54.000	-30.750	AV
3		9764.000	13.826	44.576	-40.174	54.000	-30.750	AV

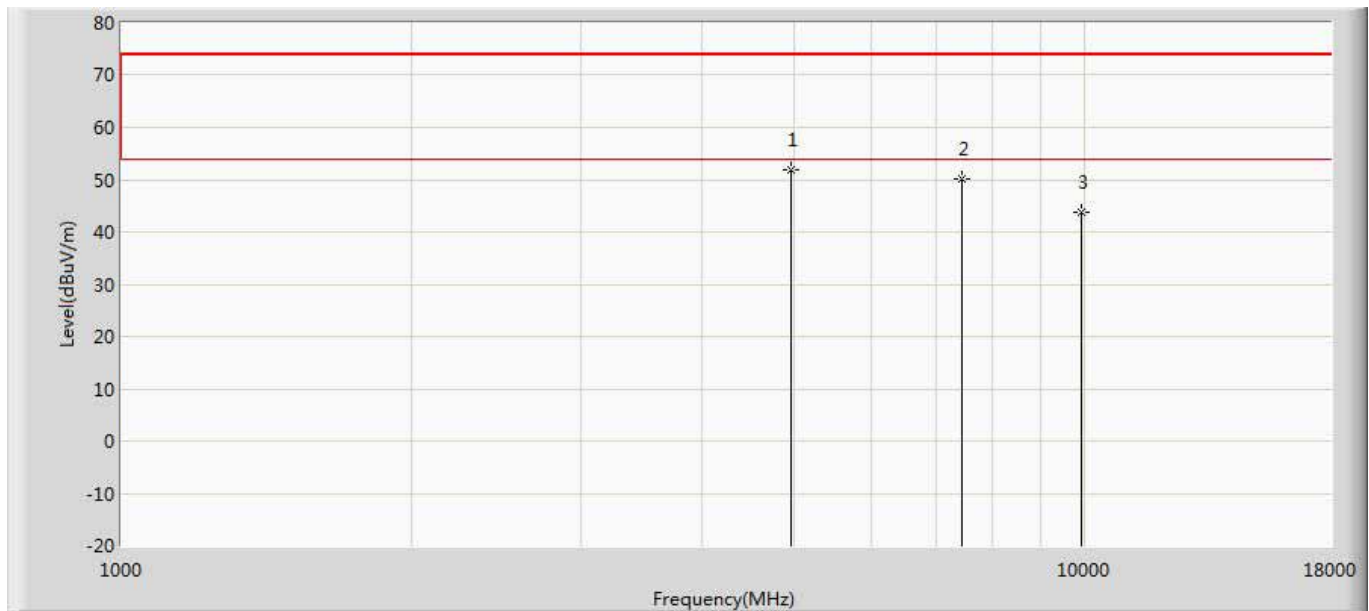
Engineer: Pawn	
Site: AC5	Time: 2019/05/08 - 16:11
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode3:Transmit at 2441MHz by 3DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4884.500	51.344	49.515	-22.656	74.000	1.829	PK
2	*	7324.000	52.525	46.930	-21.475	74.000	5.595	PK
3		9764.000	44.006	36.763	-29.994	74.000	7.244	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	DCCF (dB)	Type
1		4884.500	20.594	51.344	-33.406	54.000	-30.750	AV
2	*	7324.000	21.775	52.525	-32.225	54.000	-30.750	AV
3		9764.000	13.256	44.006	-40.744	54.000	-30.750	AV

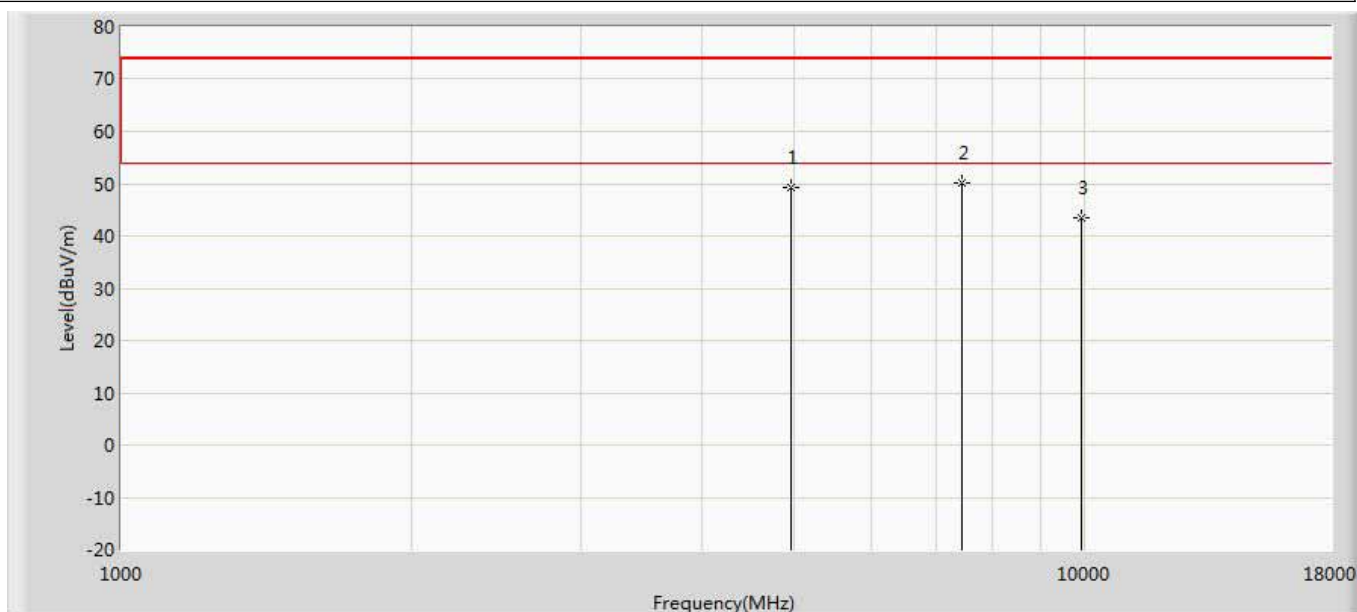
Engineer: Pawn	
Site: AC5	Time: 2019/05/08 - 16:11
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode3:Transmit at 2480MHz by 3DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4961.000	51.768	49.779	-22.232	74.000	1.989	PK
2		7443.000	50.187	44.857	-23.813	74.000	5.330	PK
3		9920.000	43.680	36.591	-30.320	74.000	7.088	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	DCCF (dB)	Type
1	*	4961.000	21.018	51.768	-32.982	54.000	-30.750	AV
2		7443.000	19.437	50.187	-34.563	54.000	-30.750	AV
3		9920.000	12.930	43.680	-41.070	54.000	-30.750	AV

Engineer: Pawn	
Site: AC5	Time: 2019/05/08 - 16:11
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode3: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		4961.000	49.247	47.258	-24.753	74.000	1.989	PK
2	*	7443.000	50.009	44.679	-23.991	74.000	5.330	PK
3		9920.000	43.530	36.441	-30.470	74.000	7.088	PK

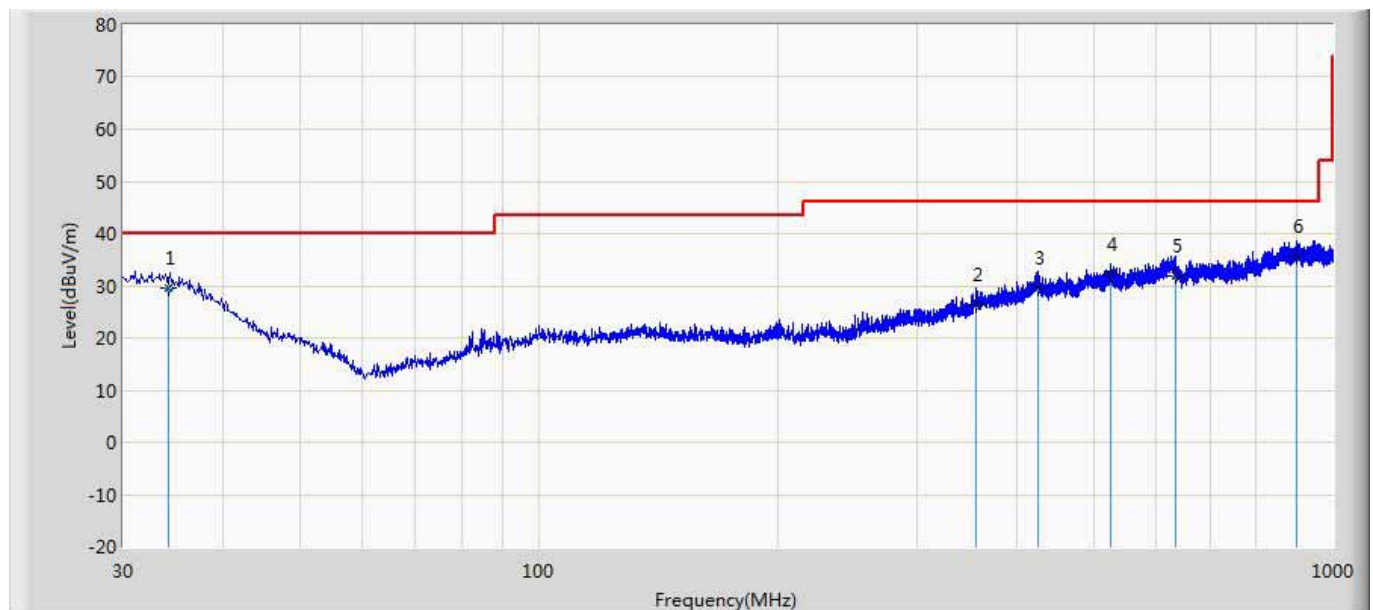
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	DCCF (dB)	Type
1		4961.000	18.497	49.247	-35.503	54.000	-30.750	AV
2	*	7443.000	19.259	50.009	-34.741	54.000	-30.750	AV
3		9920.000	12.780	43.530	-41.220	54.000	-30.750	AV

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: 2019/04/26
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: AC2_3M(30-1000M)	Polarity: Horizontal
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode 1	

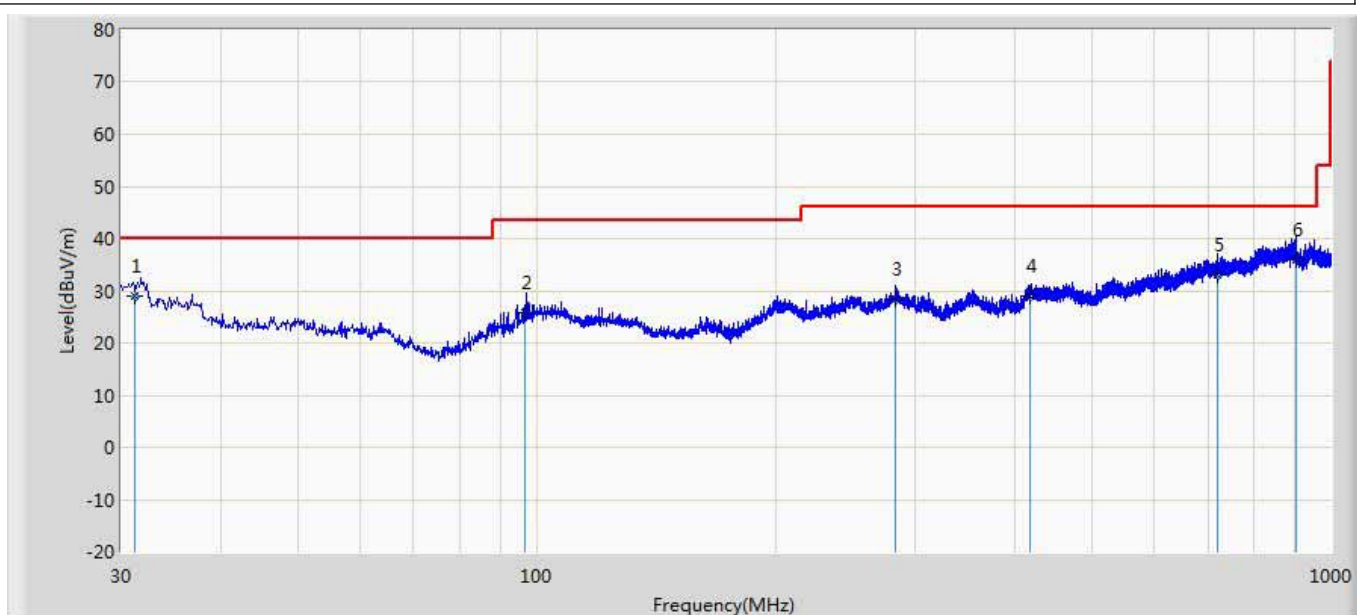


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1	*	34.214	29.555	2.200	-10.445	40.000	20.692	6.663	0.000	100	4	QP
2		355.854	26.303	2.300	-19.697	46.000	16.199	7.804	0.000	100	4	QP
3		425.214	29.459	2.200	-16.541	46.000	19.286	7.972	0.000	100	54	QP
4		524.214	32.227	3.300	-13.773	46.000	20.775	8.152	0.000	100	221	QP
5		632.854	31.828	2.100	-14.172	46.000	21.140	8.588	0.000	100	54	QP
6		900.840	35.534	2.300	-10.466	46.000	23.982	9.252	0.000	100	22	QP

Note:

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

Site: AC2	Time: 2019/04/26
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: AC2_3M(30-1000M)	Polarity: Vertical
EUT: TWS Bluetooth headset	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		31.254	29.109	5.200	-10.891	40.000	17.276	6.633	0.000	100	54	QP
2		96.854	25.846	5.200	-17.654	43.500	13.814	6.832	0.000	100	4	QP
3		283.250	28.389	3.200	-17.611	46.000	17.585	7.603	0.000	100	141	QP
4		418.321	28.888	2.300	-17.112	46.000	18.621	7.966	0.000	100	41	QP
5		720.214	33.087	2.200	-12.913	46.000	22.086	8.802	0.000	100	41	QP
6	*	903.521	35.928	3.200	-10.072	46.000	23.471	9.257	0.000	100	41	QP

Note:

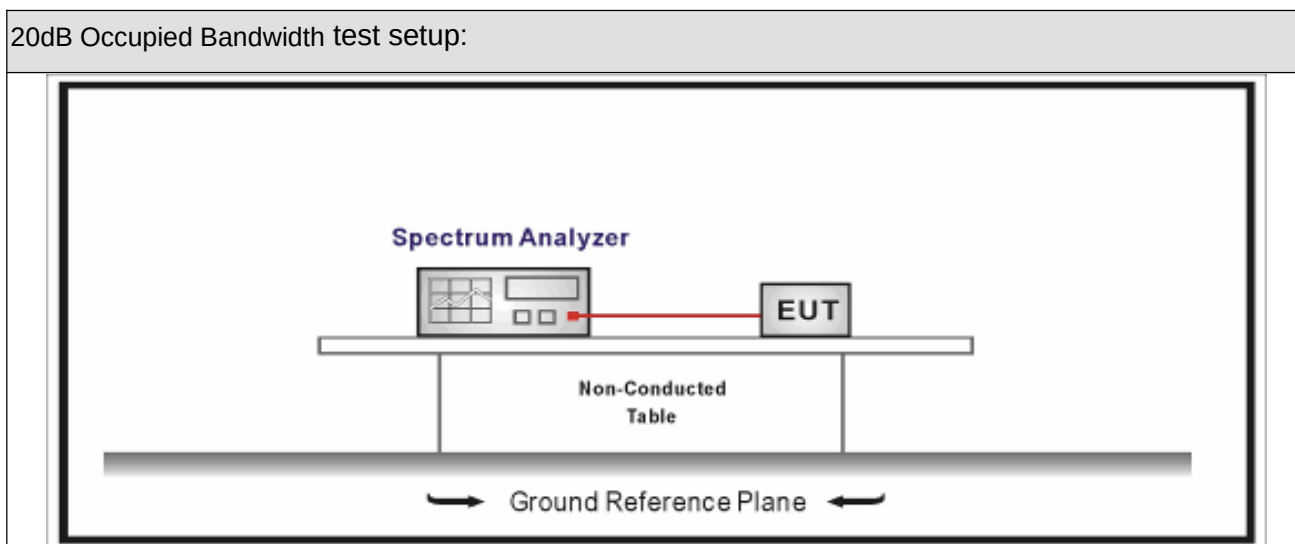
1. " * ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

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	2019.02.04	2020.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2019.04.09	2020.04.08
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2019.04.09	2020.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2019.04.10	2020.04.09
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	
☒	For frequency hopping systems operating in 2400-2483.5 MHz band, within frequency range.
☐	For frequency hopping systems operating in 902-928 MHz band, the maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.
☐	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
☒	ANSI C63.10	6.9.2	Occupied bandwidth tests

5.5 Uncertainty

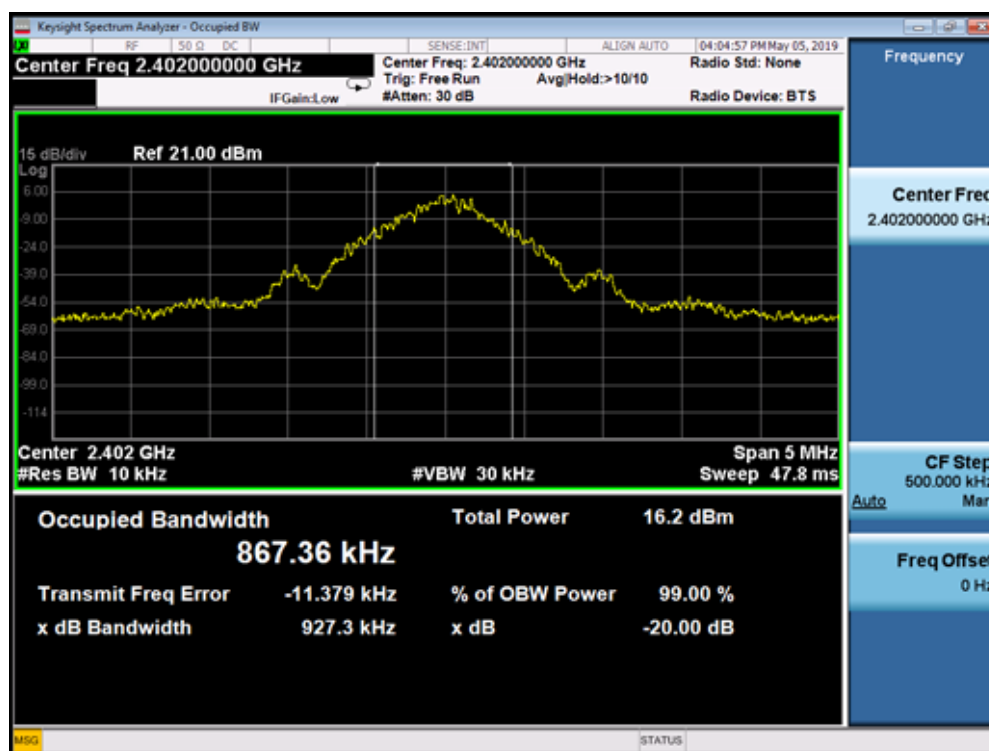
The measurement uncertainty is defined as ± 1 kHz

5.6 Test Result

Product Name	: TWS Bluetooth headset	Test Voltage	: AC 120V/60Hz
Test Mode	: Mode 1	Test Site	: TR-8
Test Date	: 2019.05.05	Test Engineer	: Simon

Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
00	2402	927.3	867.36
39	2441	928.6	867.53
78	2480	919.9	862.61

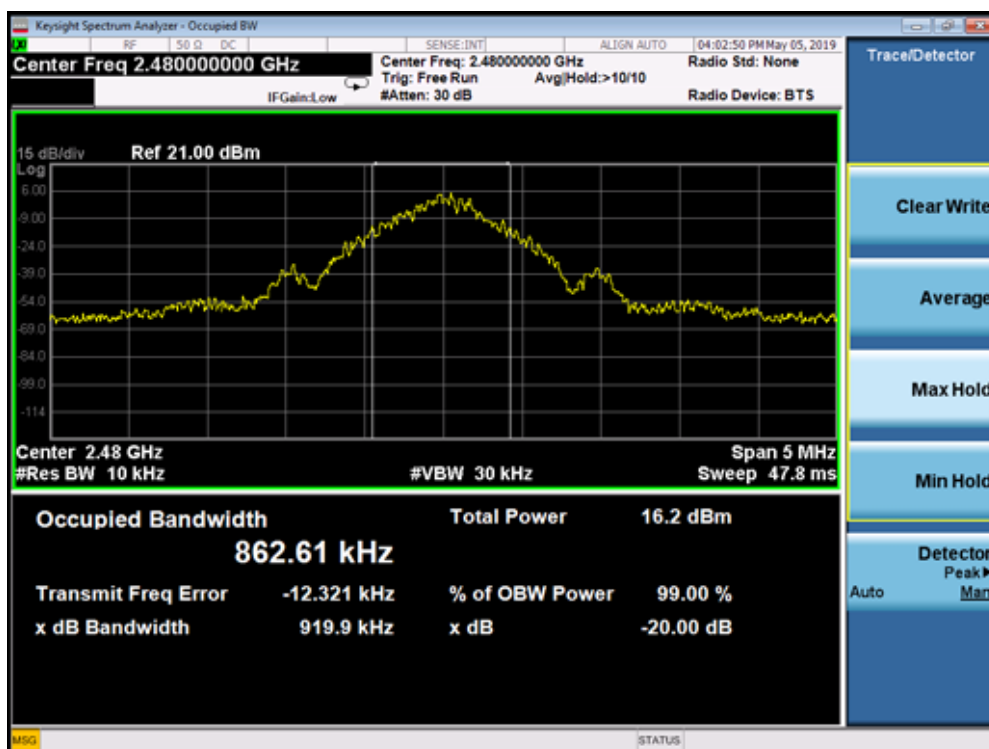
Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)



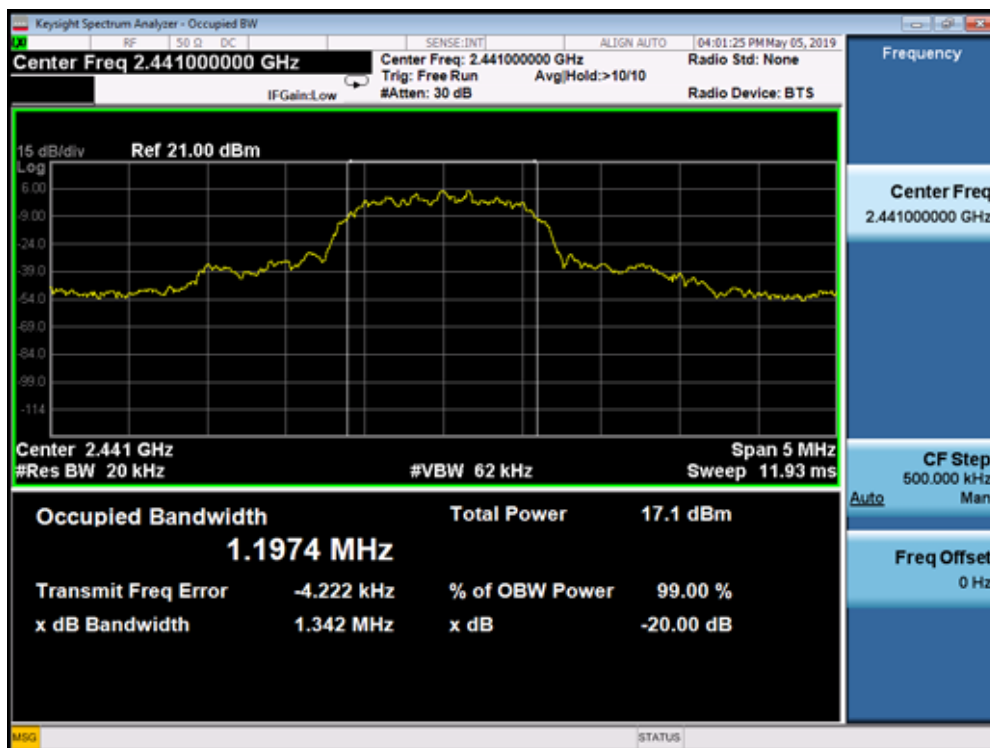
Product Name	: TWS Bluetooth headset	Test Voltage	: AC 120V/60Hz
Test Mode	: Mode 2	Test Site	: TR-8
Test Date	: 2019.05.05	Test Engineer	: Simon

Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
00	2402	1344	1198.7
39	2441	1342	1197.4
78	2480	1330	1195.6

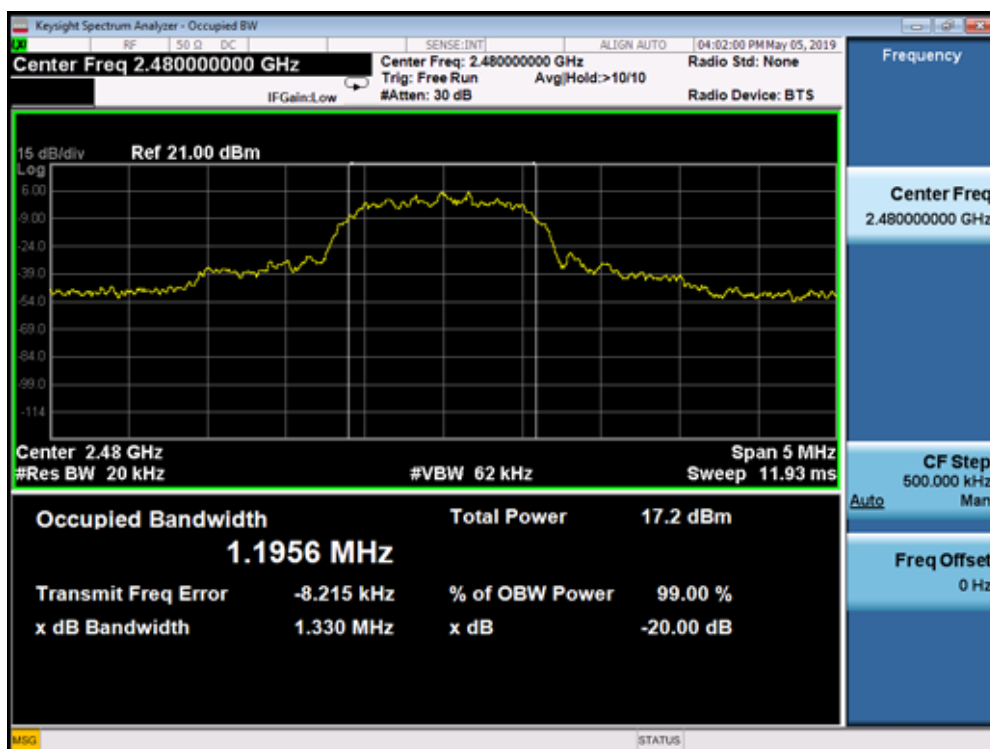
Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)



Product Name	: TWS Bluetooth headset	Power	: AC 120V/60Hz
Test Mode	: Mode 3	Test Site	: TR-8
Test Date	: 2019.05.05	Test Engineer	: Simon

Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
00	2402	1319	1196.6
39	2441	1246	1178.7
78	2480	1328	1198.4

Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)



6. Carrier Frequency Separation

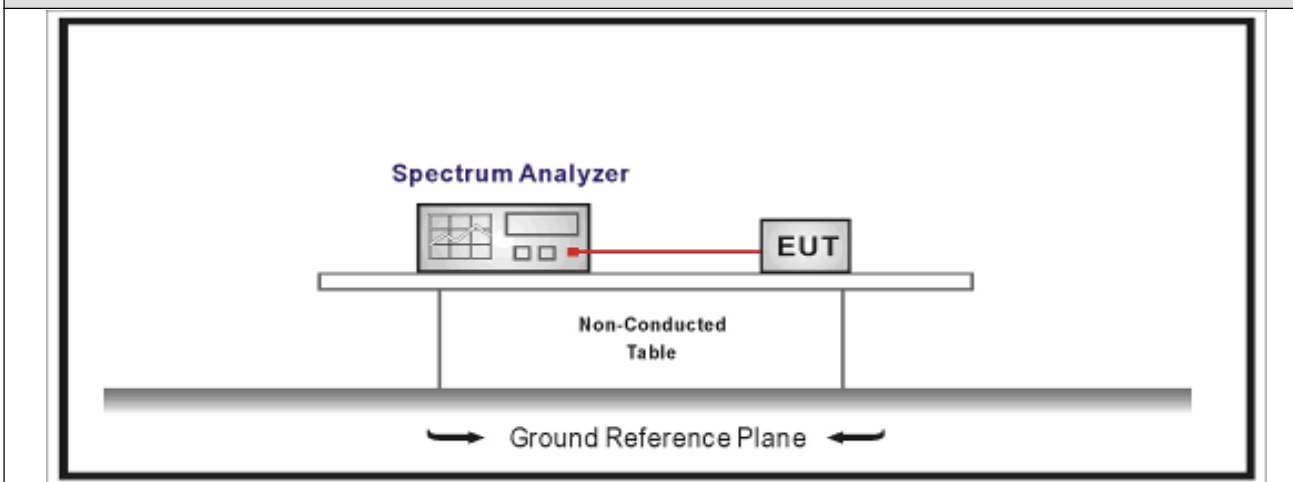
6.1. Test Equipment

Carrier Frequency Separation / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2019.02.04	2020.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2019.04.09	2020.04.08
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2019.04.09	2020.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2019.04.10	2020.04.09

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

6.2. Test Setup

Carrier Frequency Separation test setup:



6.3. Limit

Carrier Frequency Separation	
☒	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.
☒	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.
☐	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;
☐	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.
☐	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
☒	ANSI C63.10	7.8.2	Carrier frequency separation

6.5. Uncertainty

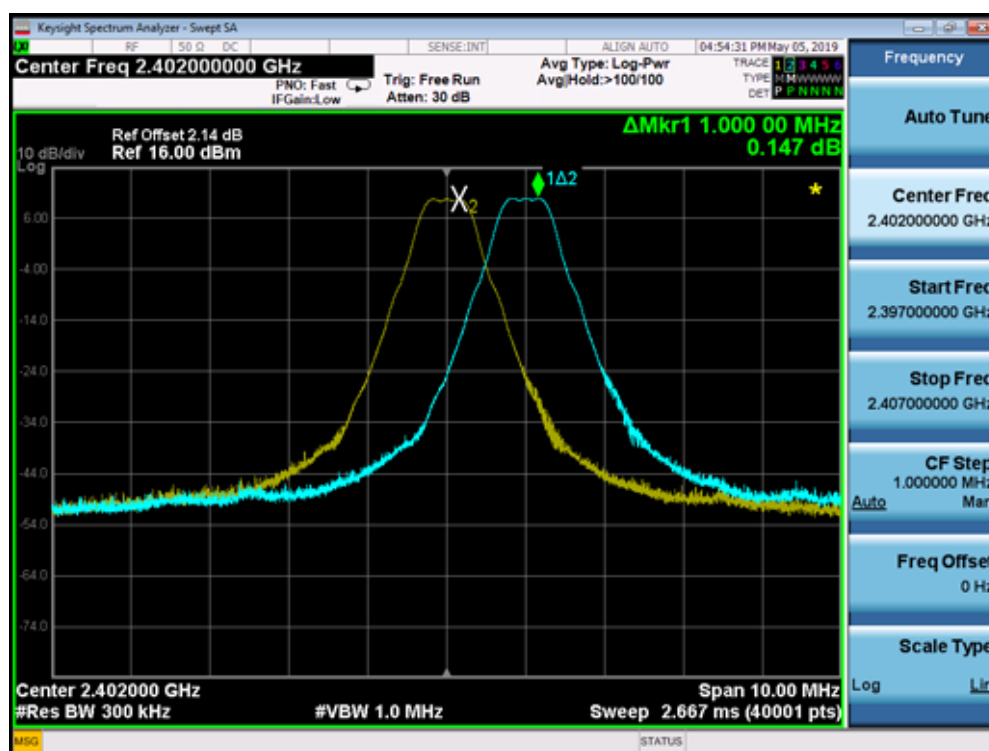
The measurement uncertainty is defined as ± 1 kHz

6.6. Test Result

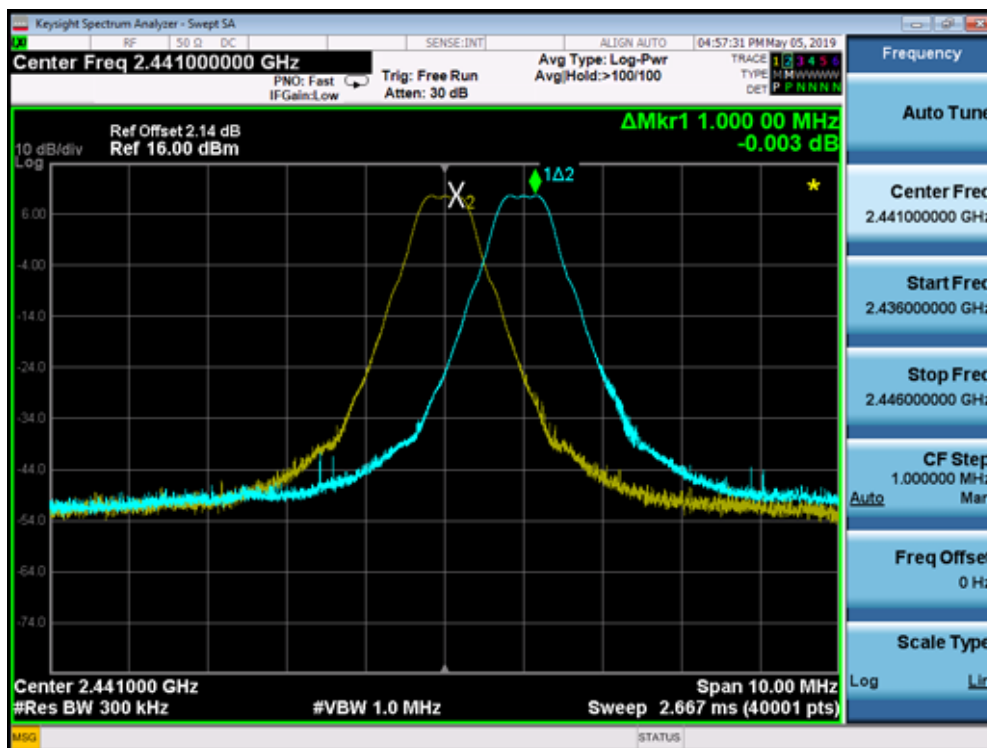
Product Name	: TWS Bluetooth headset	Test Voltage	: AC 120V/60Hz
Test Mode	: Mode 1	Test Site	: TR-8
Test Date	: 2019.05.05	Test Engineer	: Simon

Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
00	2402	1000	927.3	Pass
39	2441	1000	928.6	Pass
78	2480	1000	919.9	Pass

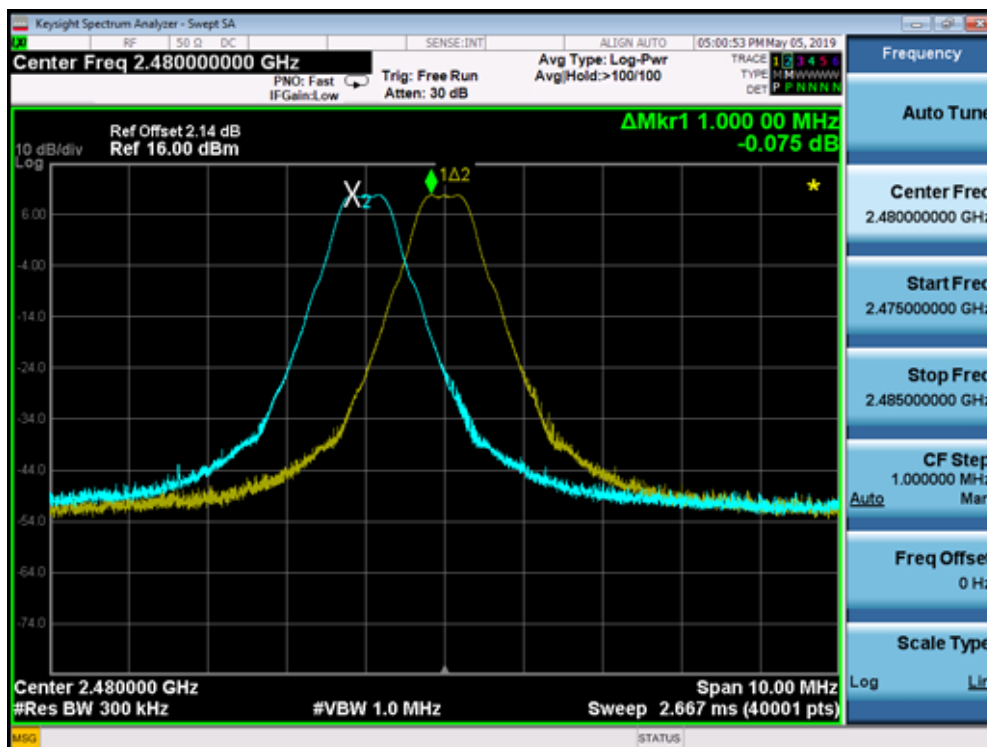
Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)



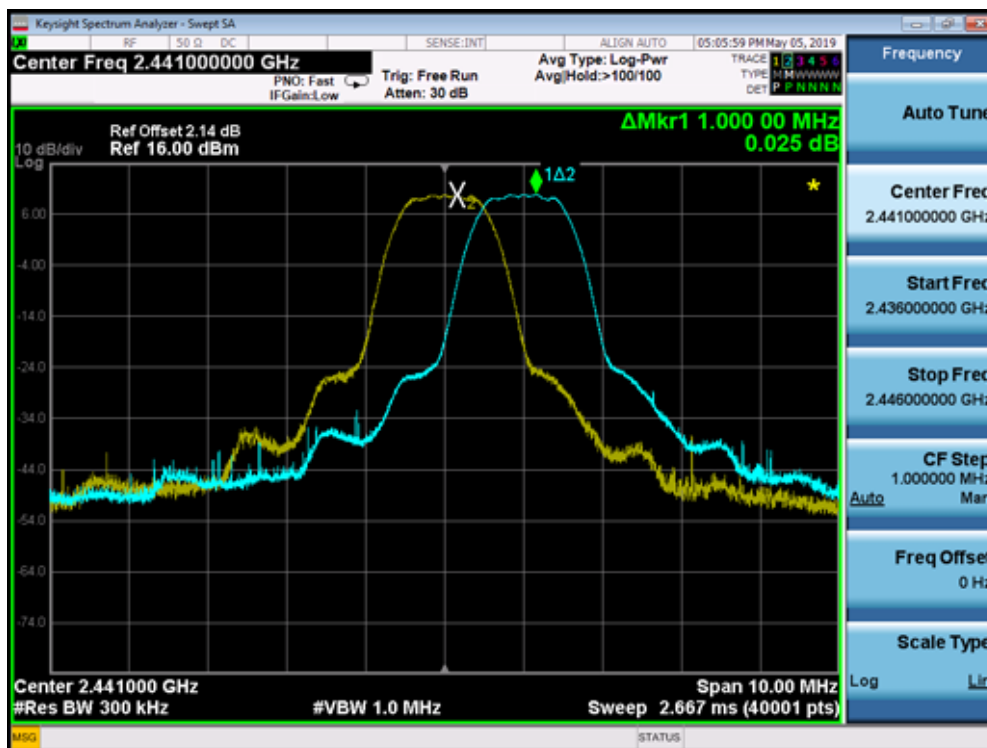
Product Name	: TWS Bluetooth headset	Power	: AC 120V/60Hz
Test Mode	: Mode 2	Test Site	: TR-8
Test Date	: 2019.05.05	Test Engineer	: Simon

Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
00	2402	1000	896.0	Pass
39	2441	1000	894.7	Pass
78	2480	1000	886.7	Pass

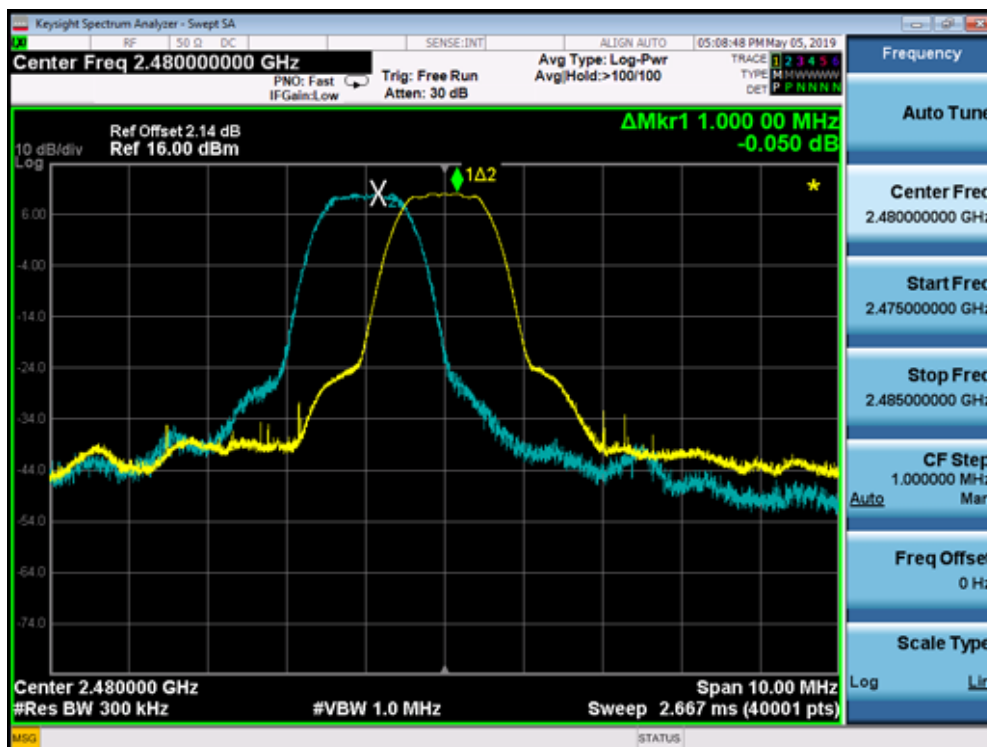
Channel 00 (2402MHz)



Channel 39 (2441MHz)



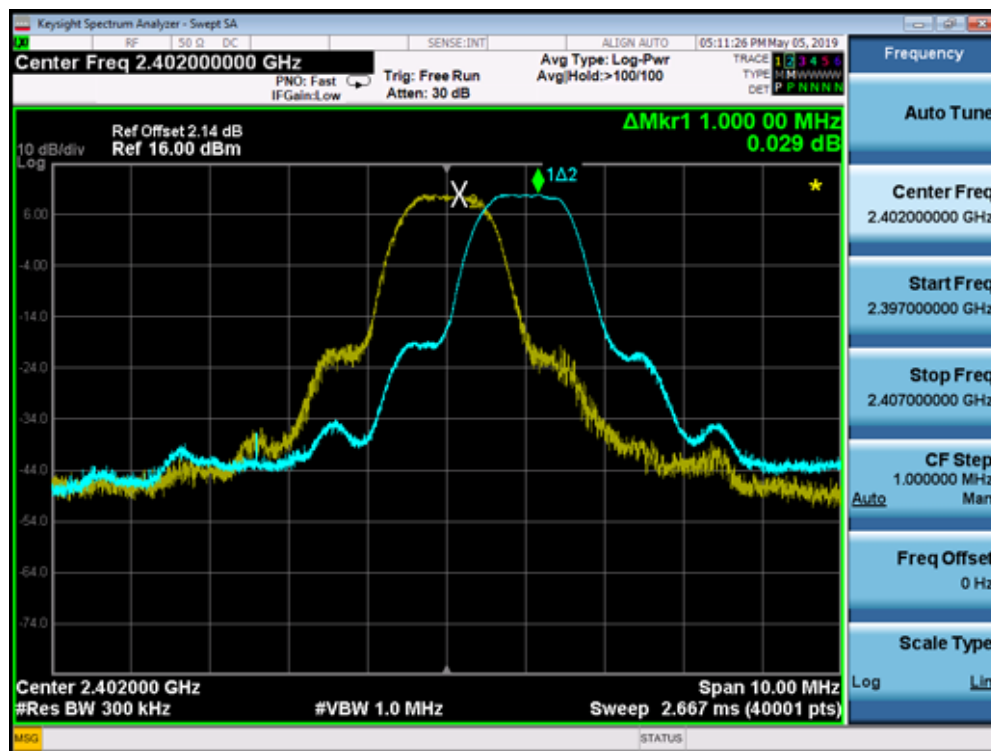
Channel 78 (2480MHz)



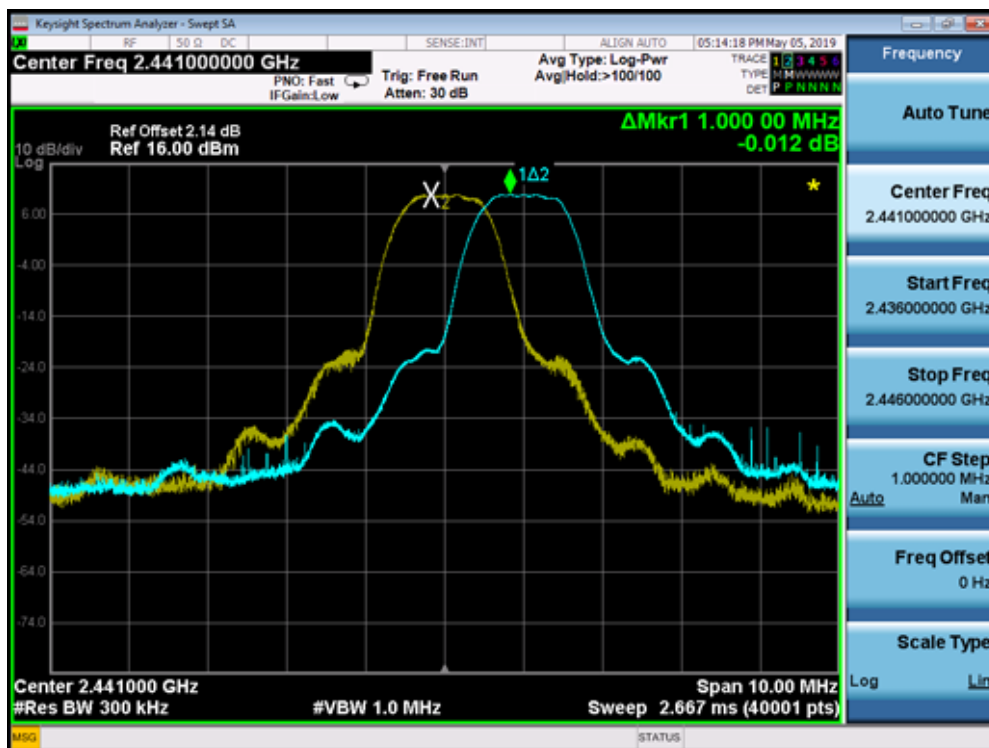
Product Name	: TWS Bluetooth headset	Power	: AC 120V/60Hz
Test Mode	: Mode 3	Test Site	: TR-8
Test Date	: 2019.05.05	Test Engineer	: Simon

Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
00	2402	1000	879.3	Pass
39	2441	1000	830.7	Pass
78	2480	1000	885.3	Pass

Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)

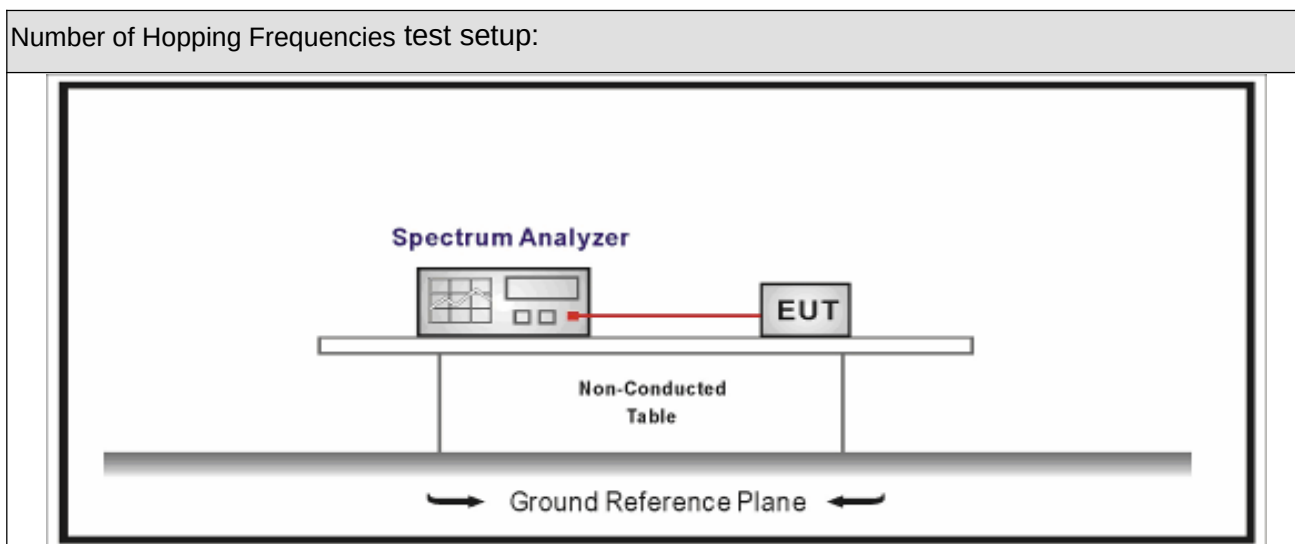


7. Number of Hopping Frequencies

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	2019.02.04	2020.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2019.04.09	2020.04.08
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2019.04.09	2020.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2019.04.10	2020.04.09
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	
☒	For frequency hopping systems operating in the 2400-2483.5 MHz band shall use at least 15 hopping frequencies.
☐	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.
☐	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.
☐	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
☒	ANSI C63.10	7.8.3	Number of Hopping Frequencies

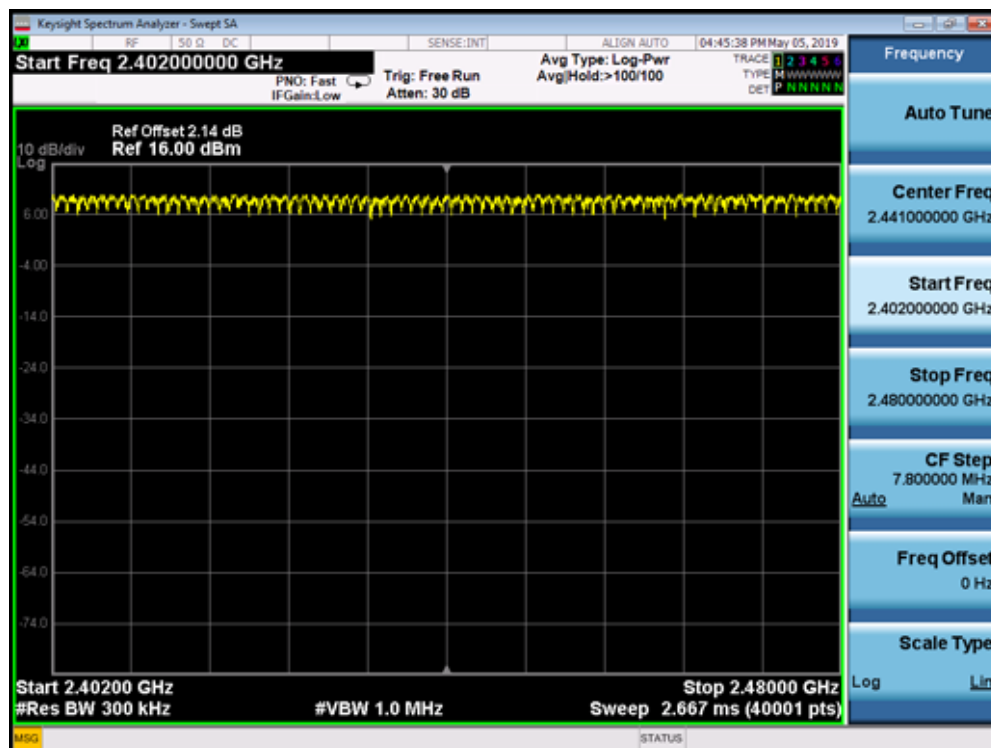
7.5. Uncertainty

The measurement uncertainty is defined as ± 1 kHz

Product Name	: TWS Bluetooth headset	Power	: AC 120V/60Hz
Test Mode	: Mode 2	Test Site	: TR-8
Test Date	: 2019.05.05	Test Engineer	: Simon

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

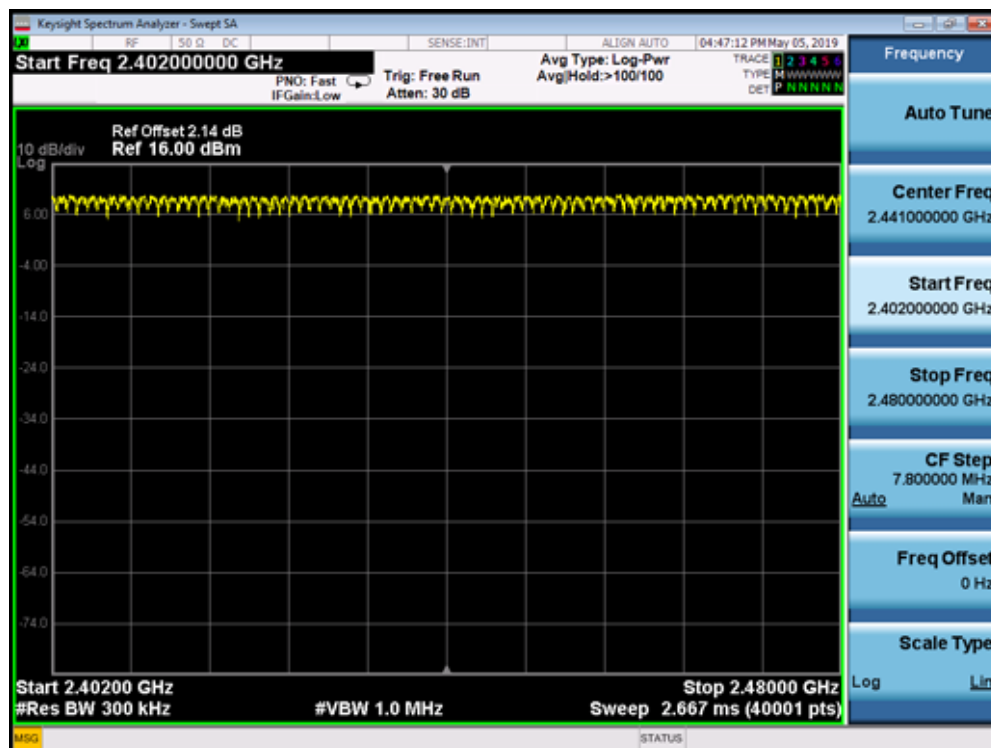
2402 - 2480 MHz



Product Name	: TWS Bluetooth headset	Power	: AC 120V/60Hz
Test Mode	: Mode 3	Test Site	: TR-8
Test Date	: 2019.05.05	Test Engineer	: Simon

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

2402 - 2480 MHz

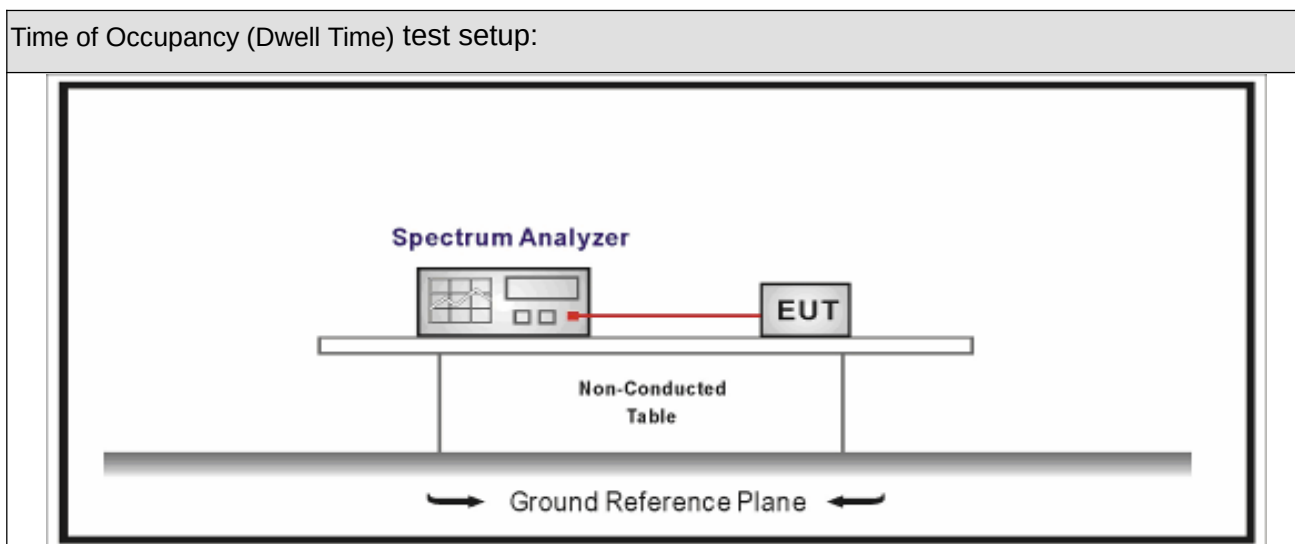


8. Time of Occupancy (Dwell Time)

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	2019.02.04	2020.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2019.04.09	2020.04.08
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2019.04.09	2020.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2019.04.10	2020.04.09
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)	
☒	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.
☐	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
☐	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.
☐	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
☒	ANSI C63.10	7.8.4	Time of Occupancy (Dwell Time)

8.5. Uncertainty

The measurement uncertainty is defined as ± 0.1 us

8.6. Test Result

Product Name	: TWS Bluetooth headset	Test Voltage	: AC 120V/60Hz
Test Mode	: Mode 1(GFSK_DH1)	Test Site	: TR-8
Test Date	: 2019.05.05	Test Engineer	: Simon

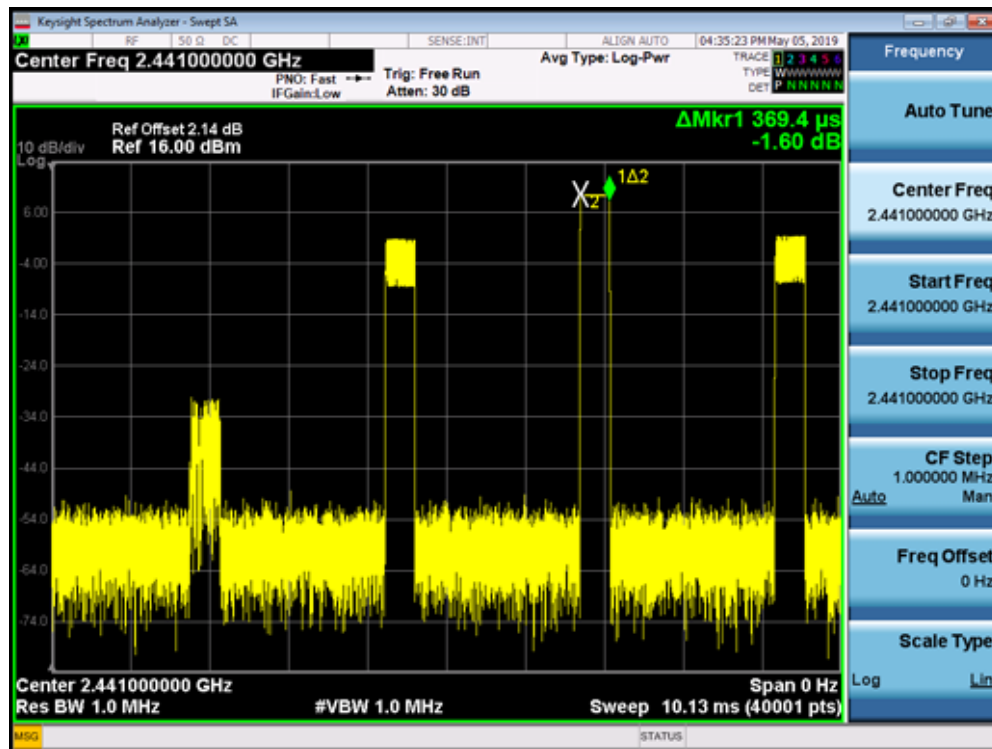
Channel No.	Frequency (MHz)	Time of Occupancy (ms)	Limit (ms)	Result
39	2441	118.208	< 400	Pass

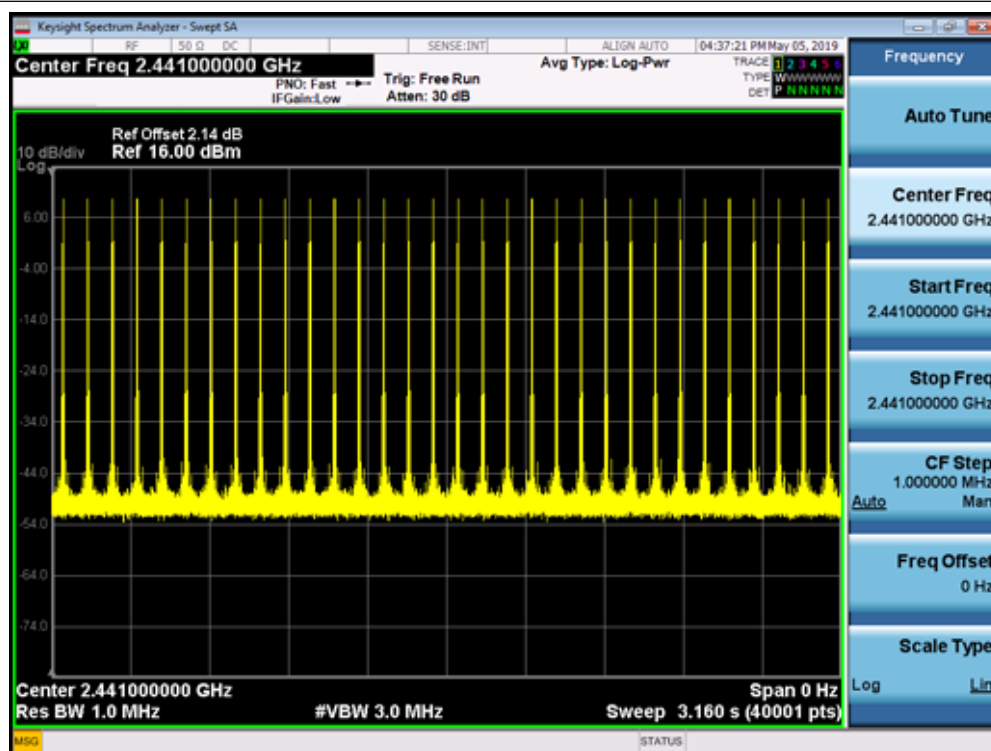
Note1: Test Time Period: $0.4 \times 79 = 31.6 \text{ sec}$

Note2: Time of Occupancy = $0.3694 \times 32 \times 31.6 / 3.16 = 118.208 \text{ ms}$

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

Channel 39 (2441MHz)-(DH1)





Product Name	: TWS Bluetooth headset	Test Voltage	: AC 120V/60Hz
Test Mode	: Mode 1(GFSK_DH3)	Test Site	: TR-8
Test Date	: 2019.05.05	Test Engineer	: Simon

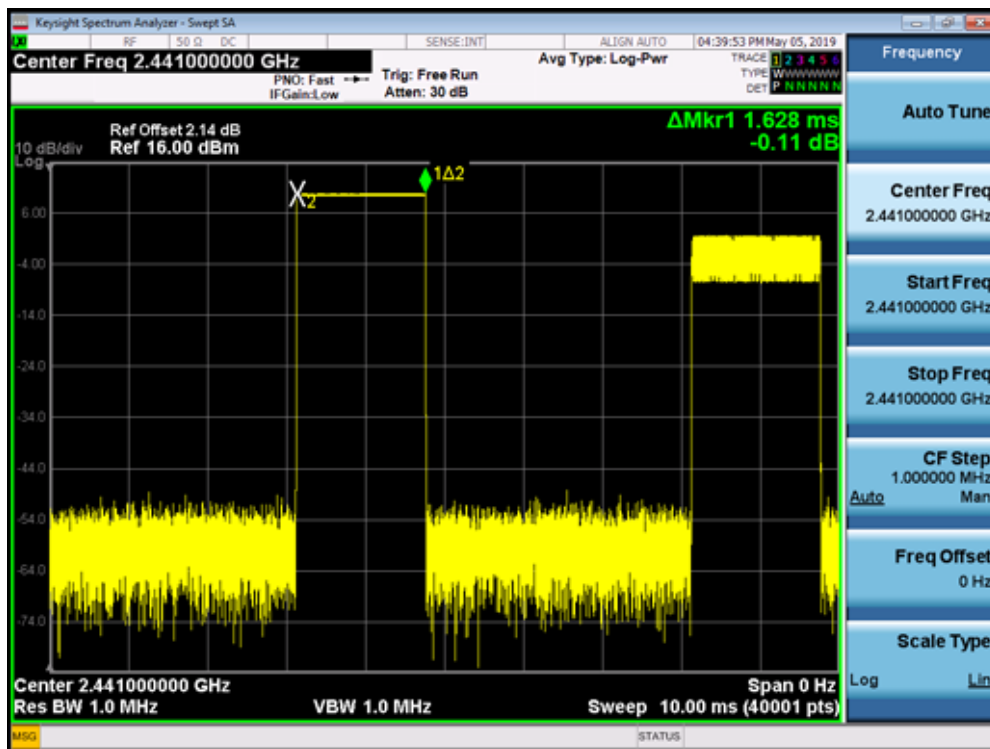
Channel No.	Frequency (MHz)	Time of Occupancy (ms)	Limit (ms)	Result
39	2441	260.48	< 400	Pass

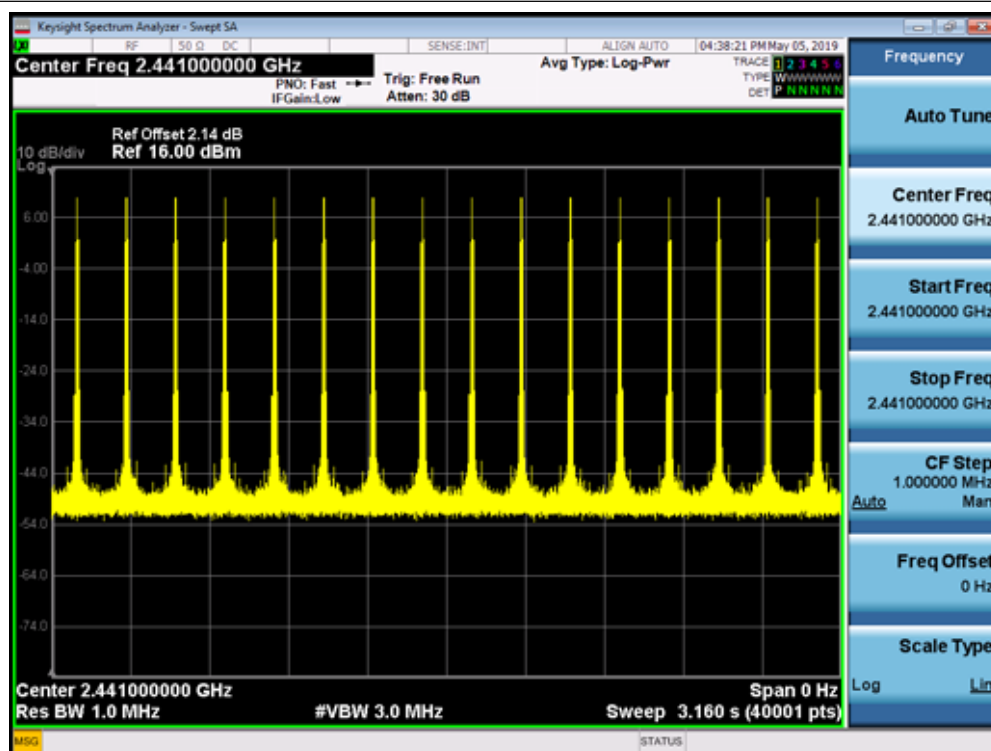
Note1: Test Time Period: $0.4 \times 79 = 31.6 \text{ sec}$

Note2: Time of Occupancy = $1.628 \times 16 \times 31.6 / 3.16 = 260.48 \text{ ms}$

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

Channel 39 (2441MHz) - (DH3)





Product Name	: TWS Bluetooth headset	Test Voltage	: AC 120V/60Hz
Test Mode	: Mode 1(GFSK_DH5)	Test Site	: TR-8
Test Date	: 2019.05.05	Test Engineer	: Simon

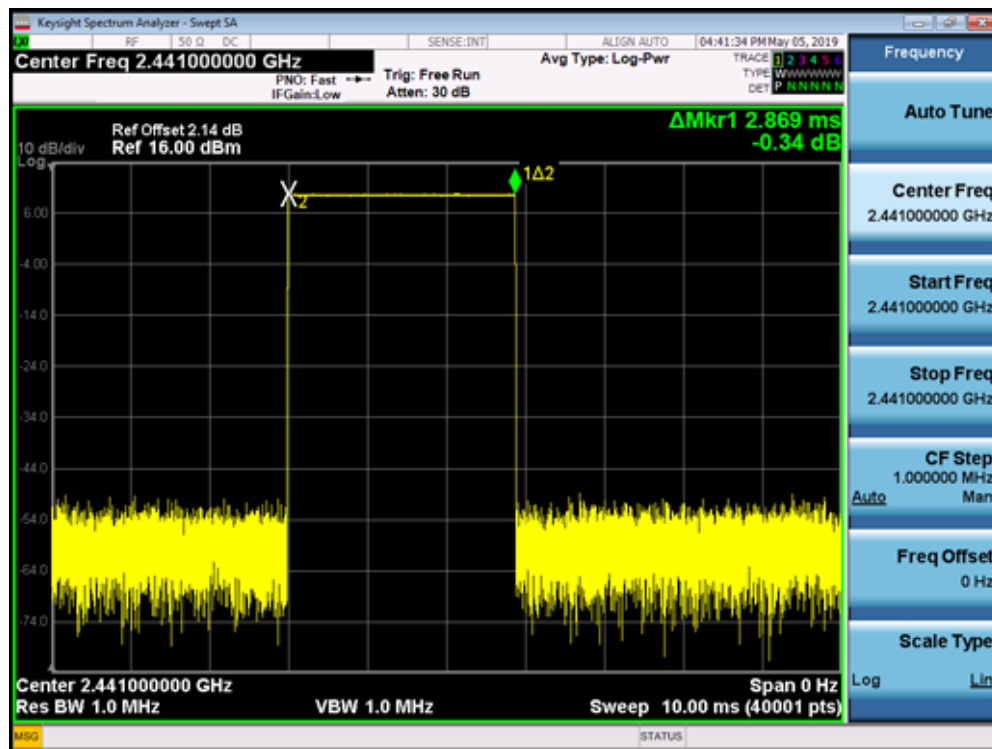
Channel No.	Frequency (MHz)	Time of Occupancy (ms)	Limit (ms)	Result
39	2441	315.59	< 400	Pass

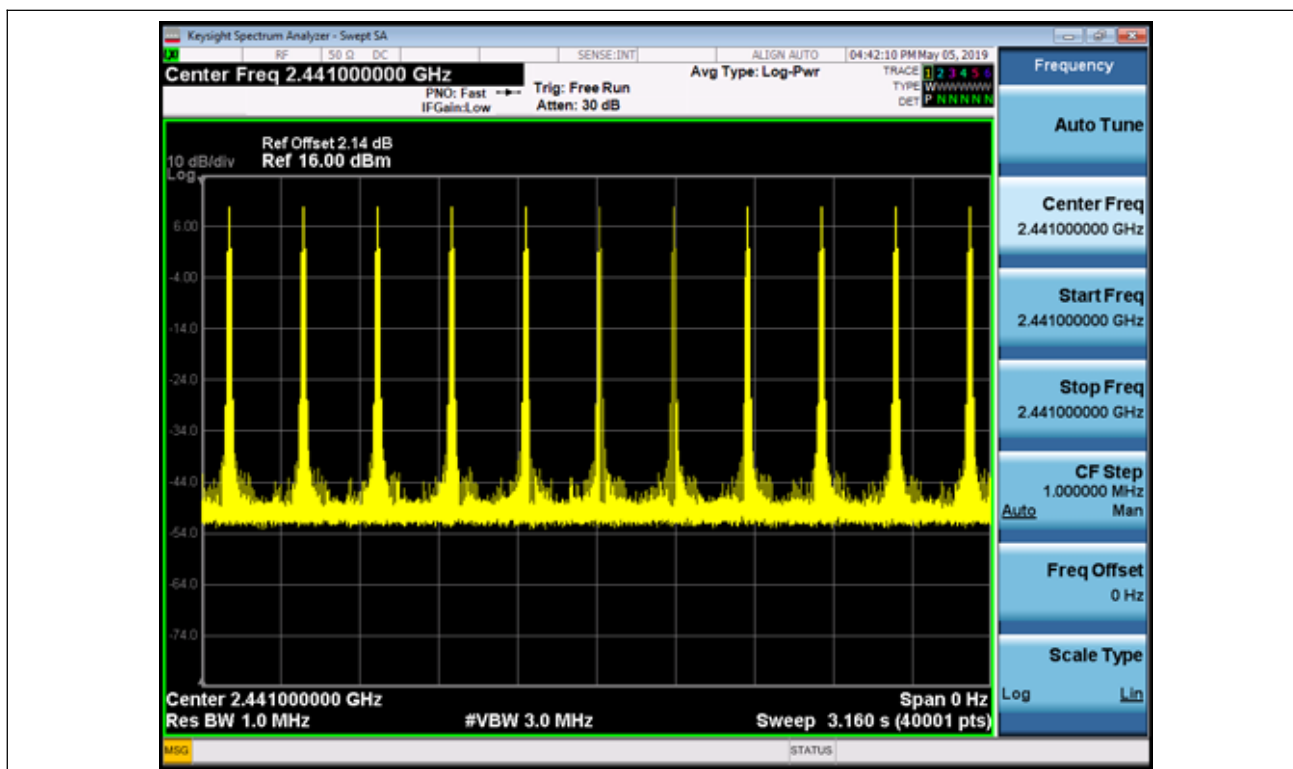
Note1: Test Time Period: $0.4 \times 79 = 31.6 \text{ sec}$

Note2: Time of Occupancy = $2.869 \times 11 \times 31.6 / 3.16 = 315.59 \text{ ms}$

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.

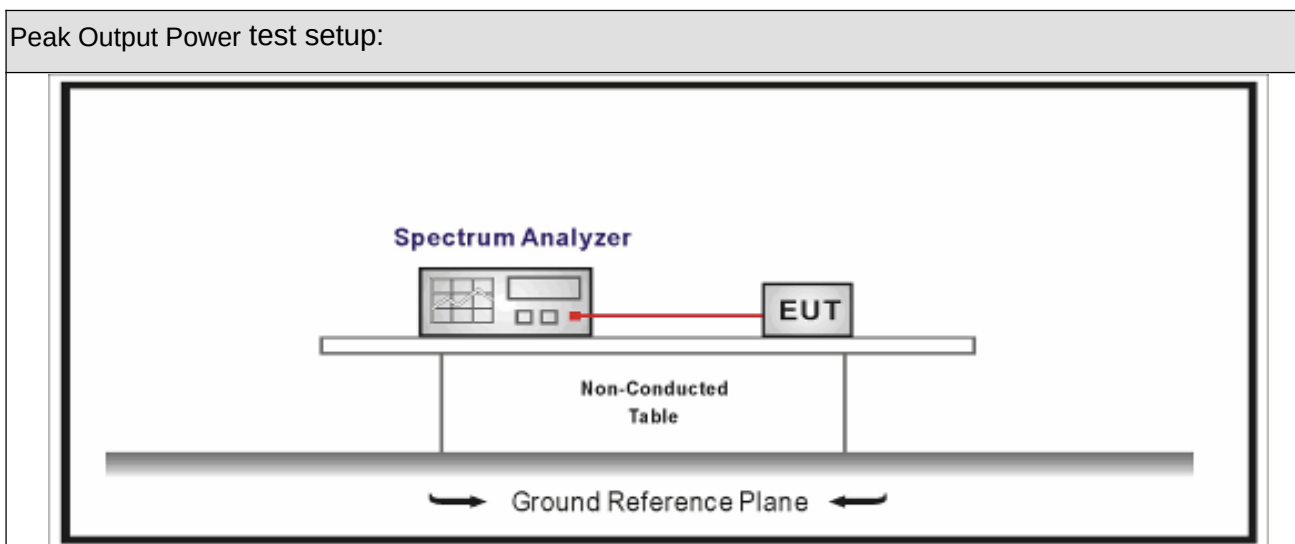
9. Peak Output Power

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	2019.02.04	2020.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2019.04.09	2020.04.08
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2019.04.09	2020.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2019.04.10	2020.04.09

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	
☒	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.
☒	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.
☐	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
☒	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	:	TWS Bluetooth headset	Test Voltage	:	AC 120V/60Hz
Test Mode	:	Mode 1	Test Site	:	TR-8
Test Date	:	2019.05.17	Test Engineer	:	Simon

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
00	2402	10.00	30.00	Pass
39	2441	9.82	30.00	Pass
78	2480	10.20	30.00	Pass

Product Name	:	TWS Bluetooth headset	Test Voltage	:	AC 120V/60Hz
Test Mode	:	Mode 2	Test Site	:	TR-8
Test Date	:	2019.05.17	Test Engineer	:	Simon

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
00	2402	11.87	21.00	Pass
39	2441	11.63	21.00	Pass
78	2480	12.05	21.00	Pass

Product Name	:	TWS Bluetooth headset	Test Voltage	:	AC 120V/60Hz
Test Mode	:	Mode 3	Test Site	:	TR-8
Test Date	:	2019.05.17	Test Engineer	:	Simon

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
00	2402	11.99	21.00	Pass
39	2441	11.86	21.00	Pass
78	2480	12.23	21.00	Pass

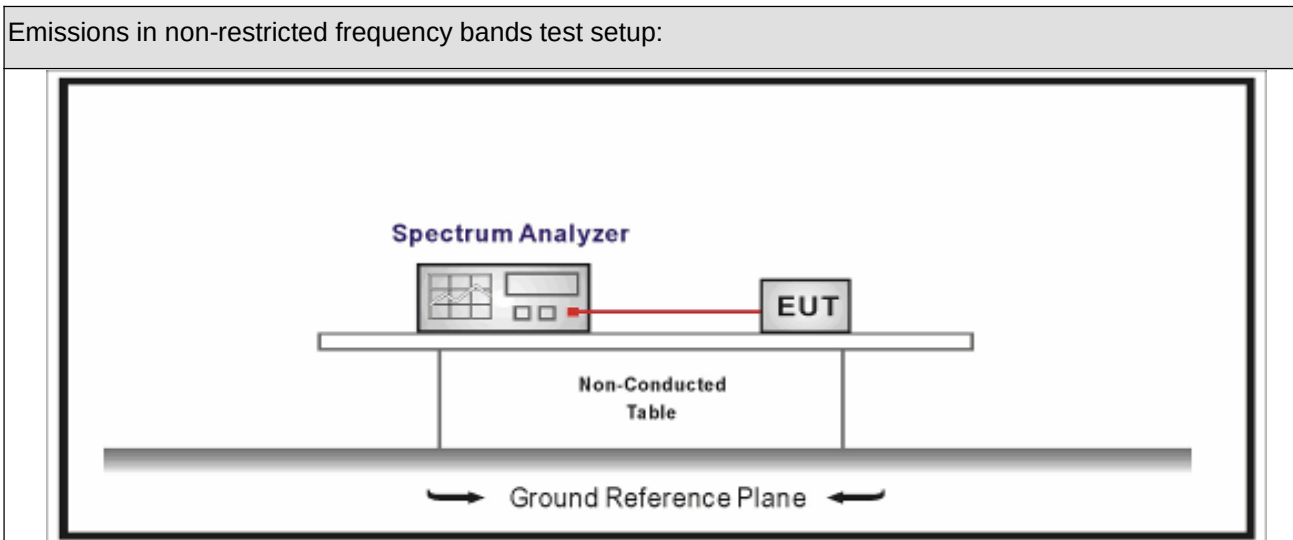
10. Emissions in non-restricted frequency bands

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	2019.02.04	2020.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2019.04.09	2020.04.08
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2019.04.09	2020.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2019.04.10	2020.04.09

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)
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). 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).	

10.4. Test Procedure

Test Method			
	References Rule	Chapter	Description
☒	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

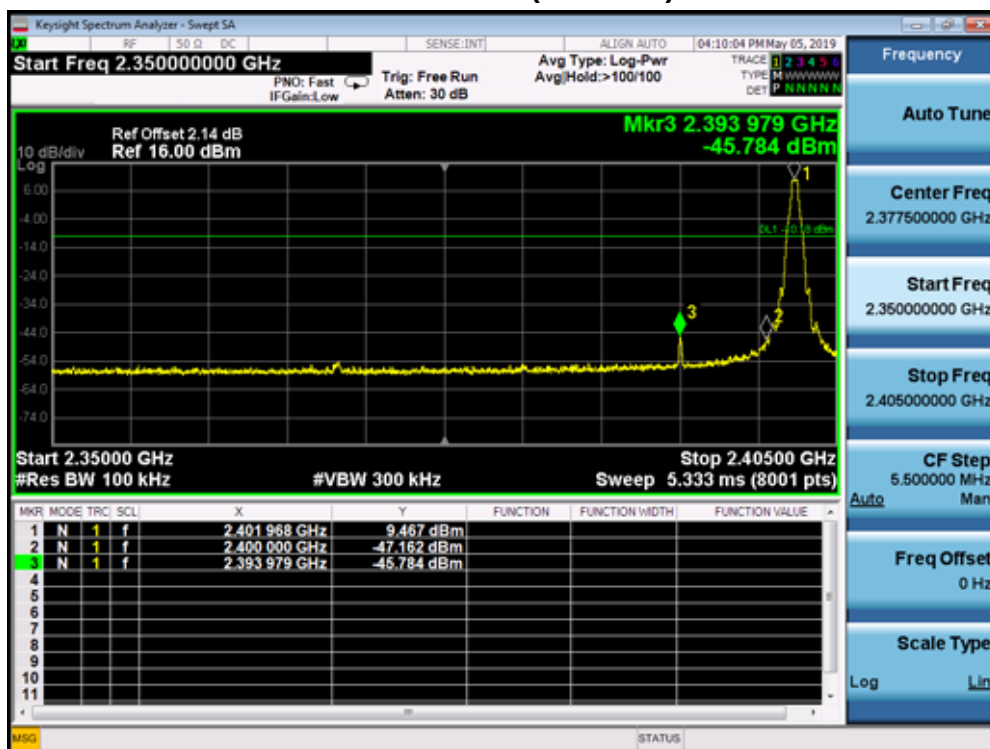
Product Name	: TWS Bluetooth headset	Test Voltage	: AC 120V/60Hz
Test Mode	: Mode 1~4	Test Site	: TR-8
Test Date	: 2019.05.05	Test Engineer	: Simon

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	9.467	2400.00	-45.784	55.251	>20	Pass
1	78	2480	9.985	2500.00	-58.471	68.456	>20	Pass
2	00	2402	9.907	2400.00	-46.289	56.196	>20	Pass
2	78	2480	10.142	2500.00	-57.412	67.554	>20	Pass
3	00	2402	9.764	2400.00	-45.783	55.547	>20	Pass
3	78	2480	10.085	2500.00	-58.394	68.479	>20	Pass
4	00~78	00~78	9.763	2400.00	-57.534	67.297	>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.

Mode1 CH00(2402MHz)



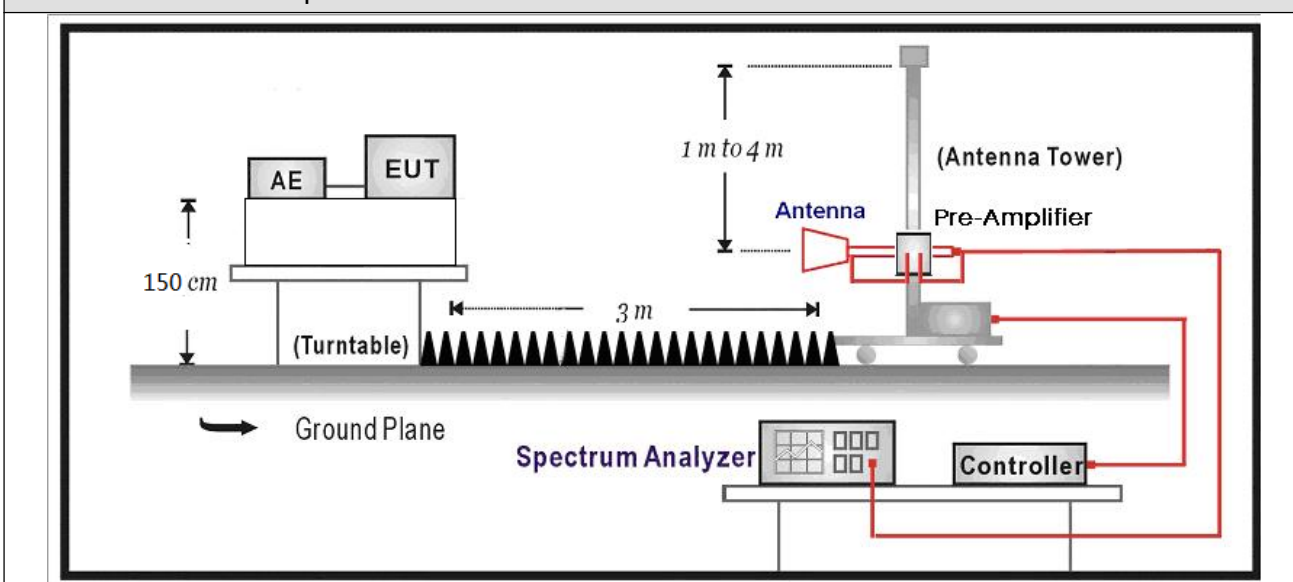
11. Radiated Emission Band Edge

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	2019.05.03	2020.05.02
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	2019.02.28	2020.02.27
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2019.02.28	2020.02.27
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2019.01.05	2020.01.04

11.2. Test Setup

Above 1GHz 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

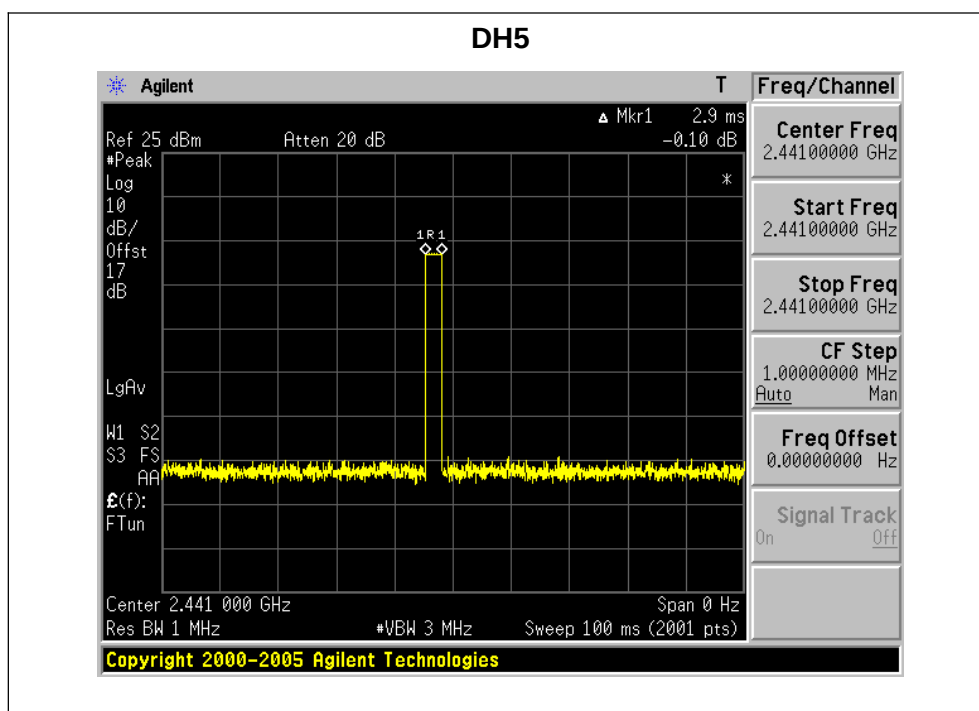
Test Method			
	References Rule	Chapter	Description
☒	ANSI C63.10	6.10	Band-edge testing
	☒ ANSI C63.10	6.10.5	Restricted-band band-edge measurements
	☐ ANSI C63.10	6.10.6	Marker-delta method
☐	ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
☐	ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
☒	ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz
☒	ANSI C63.10	7.5	Procedure for determining the average value of pulsed emissions

11.5. Uncertainty

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

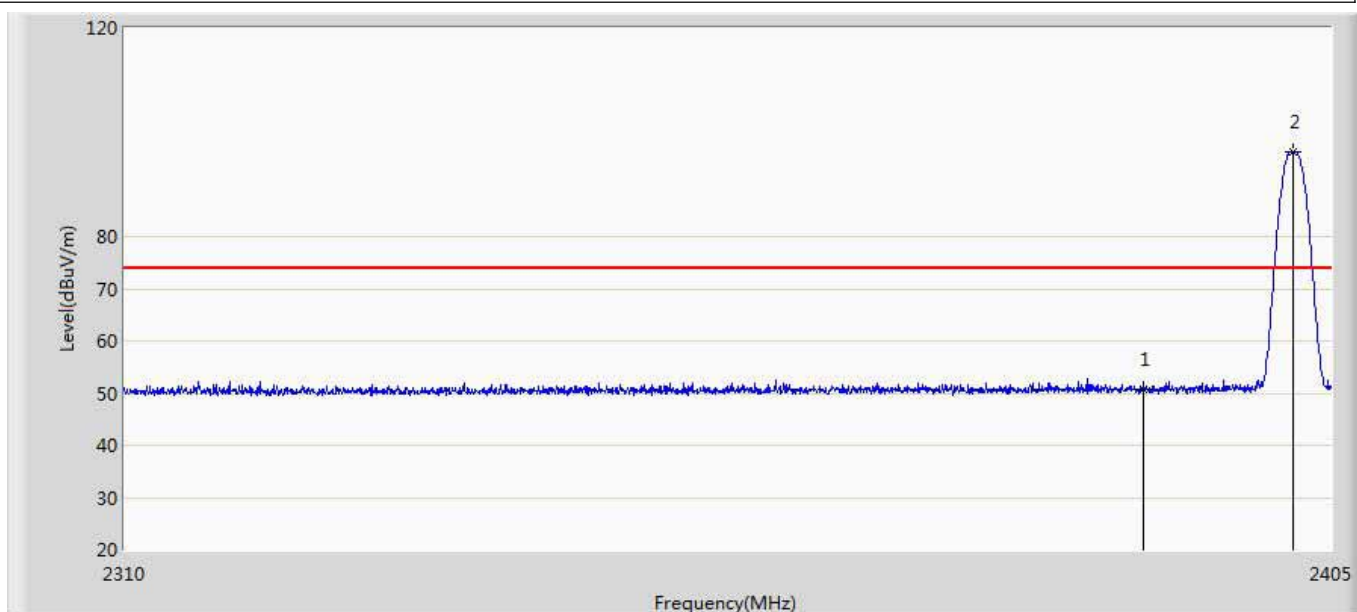
11.6. Duty Cycle

Test Mode	Pulse Time (ms)	Pulse Number	Accumulated Transmit Time (ms)	Duty Factor (dB)
Mode 4	2.9	1	2.9	-30.75



11.7. Test Result

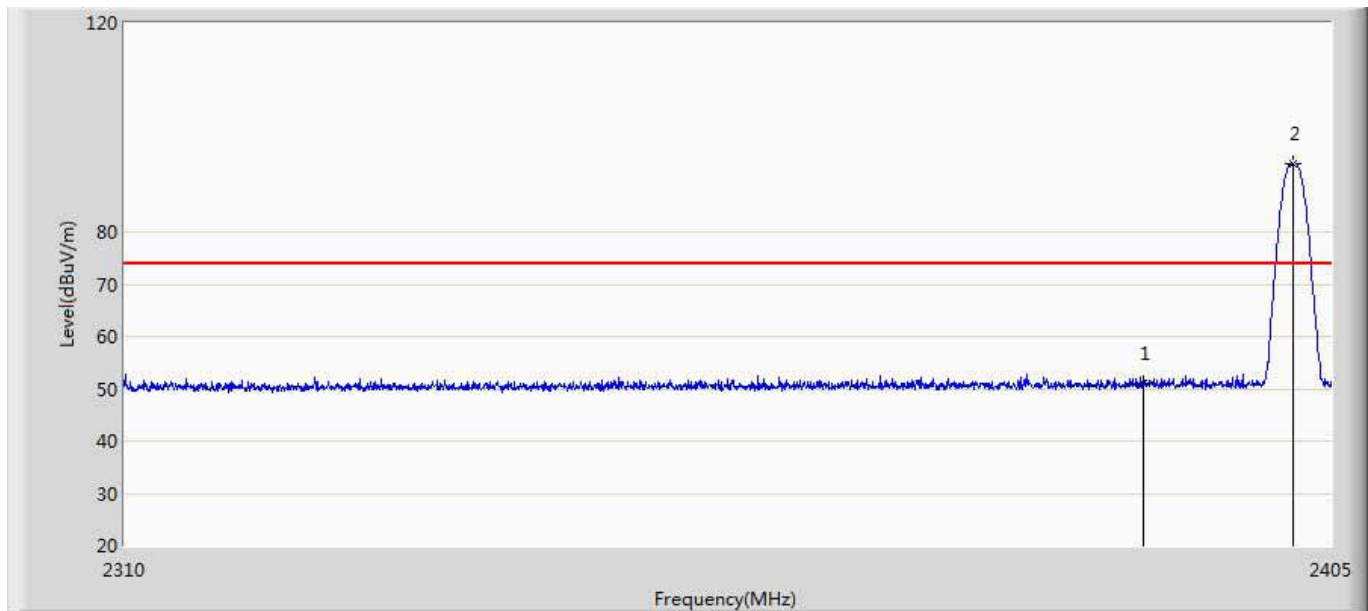
Engineer: Pawn	
Site: AC5	Time: 2019/05/06 - 17:33
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode1:Transmit at 2402MHz by DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	50.580	14.898	-23.420	74.000	35.682	PK
2	*	2401.913	96.342	60.630	N/A	N/A	35.712	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	19.830	50.580	-34.170	54.000	-30.750	AV
2	*	2401.913	65.592	96.342	N/A	N/A	-30.750	AV

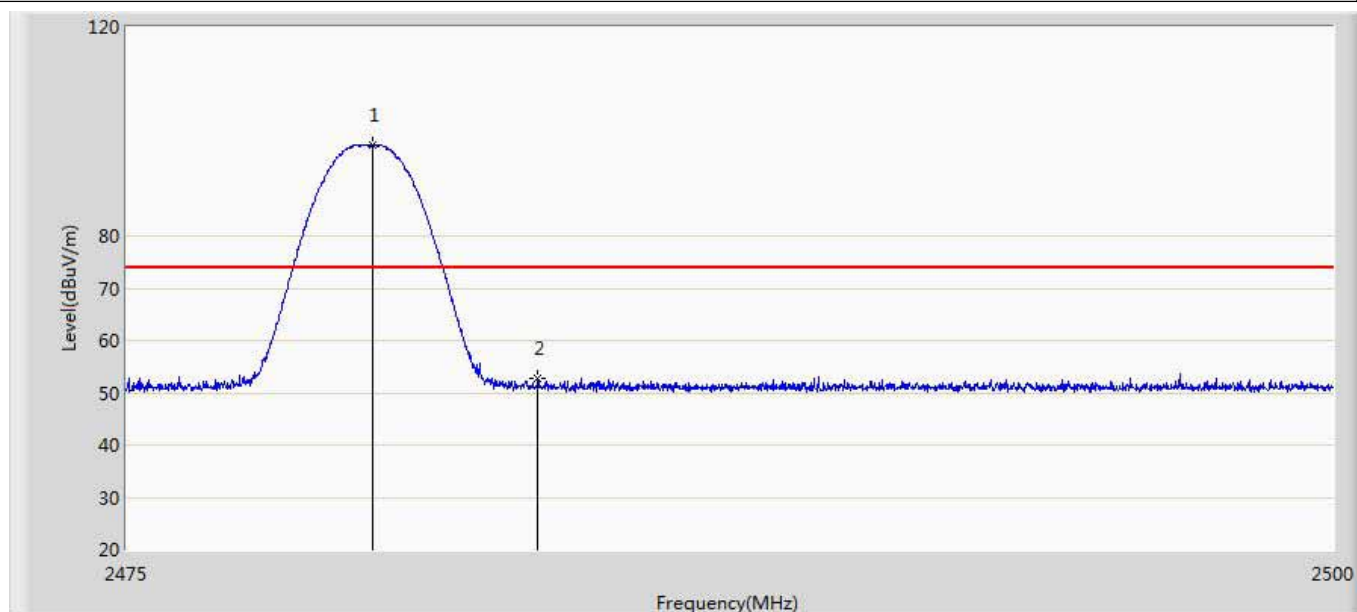
Engineer: Pawn	
Site: AC5	Time: 2019/05/06 - 17:41
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode1:Transmit at 2402MHz by DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	51.148	15.466	-22.852	74.000	35.682	PK
2	*	2401.913	93.031	57.319	N/A	N/A	35.712	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	20.398	51.148	-33.602	54.000	-30.750	AV
2	*	2401.913	62.281	93.031	N/A	N/A	-30.750	AV

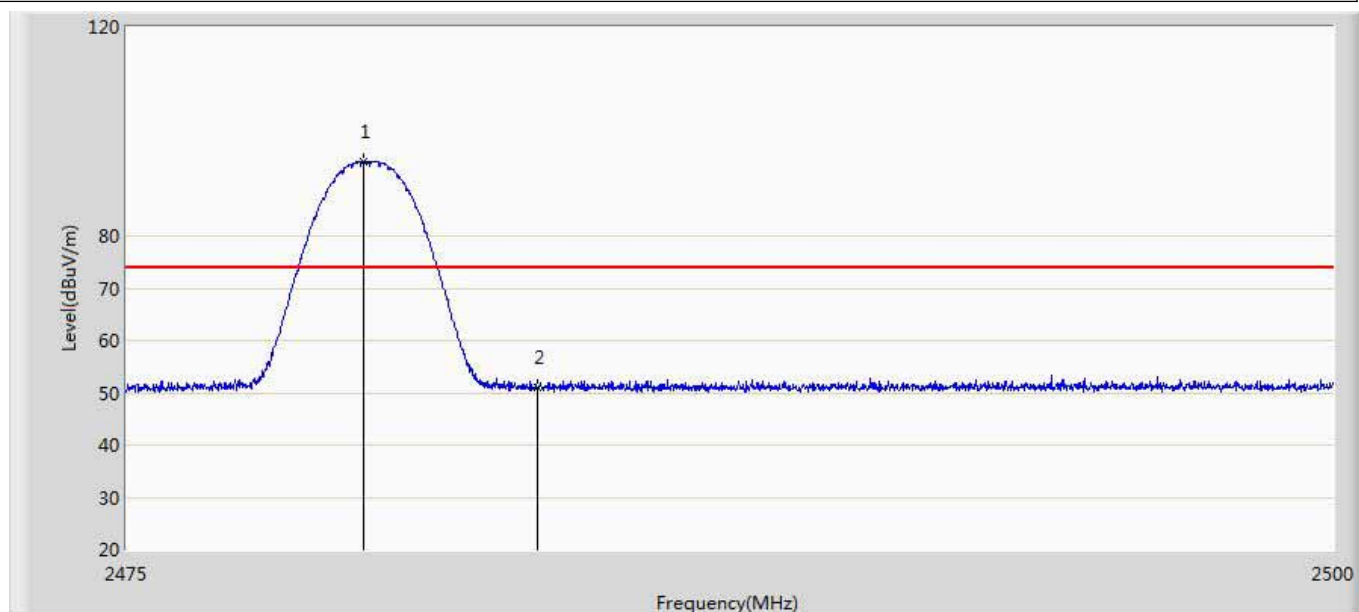
Engineer: Pawn	
Site: AC5	Time: 2019/05/06 - 17:48
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode1:Transmit at 2480MHz by DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.100	97.486	61.619	N/A	N/A	35.867	PK
2		2483.500	52.643	16.751	-21.357	74.000	35.891	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.100	66.736	97.486	N/A	N/A	-30.750	AV
2		2483.500	21.893	52.643	-32.107	54.000	-30.750	AV

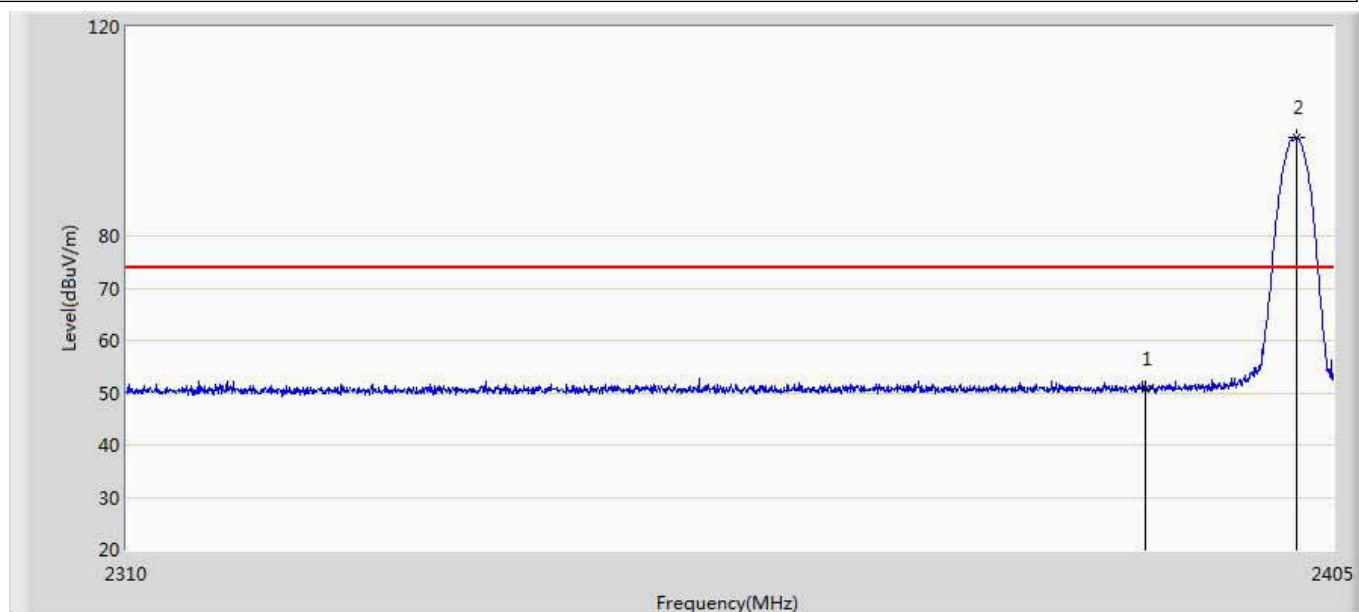
Engineer: Pawn	
Site: AC5	Time: 2019/05/06 - 17:51
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode1:Transmit at 2480MHz by DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.900	94.084	58.218	N/A	N/A	35.866	PK
2		2483.500	50.901	15.009	-23.099	74.000	35.891	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.900	63.334	94.084	N/A	N/A	-30.750	AV
2		2483.500	20.151	50.901	-33.849	54.000	-30.750	AV

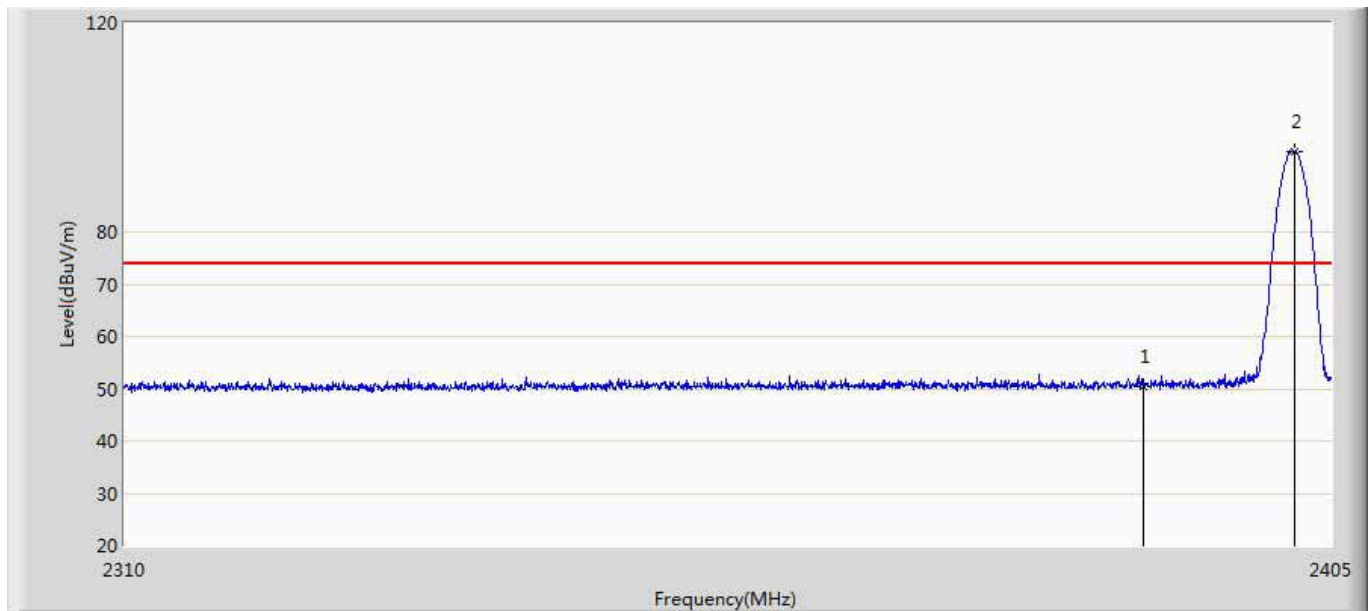
Engineer: Pawn	
Site: AC5	Time: 2019/05/06 - 17:57
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode2:Transmit at 2402MHz by 2DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	50.816	15.134	-23.184	74.000	35.682	PK
2	*	2402.103	98.862	63.149	N/A	N/A	35.713	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	20.066	50.816	-33.934	54.000	-30.750	AV
2	*	2402.103	68.112	98.862	N/A	N/A	-30.750	AV

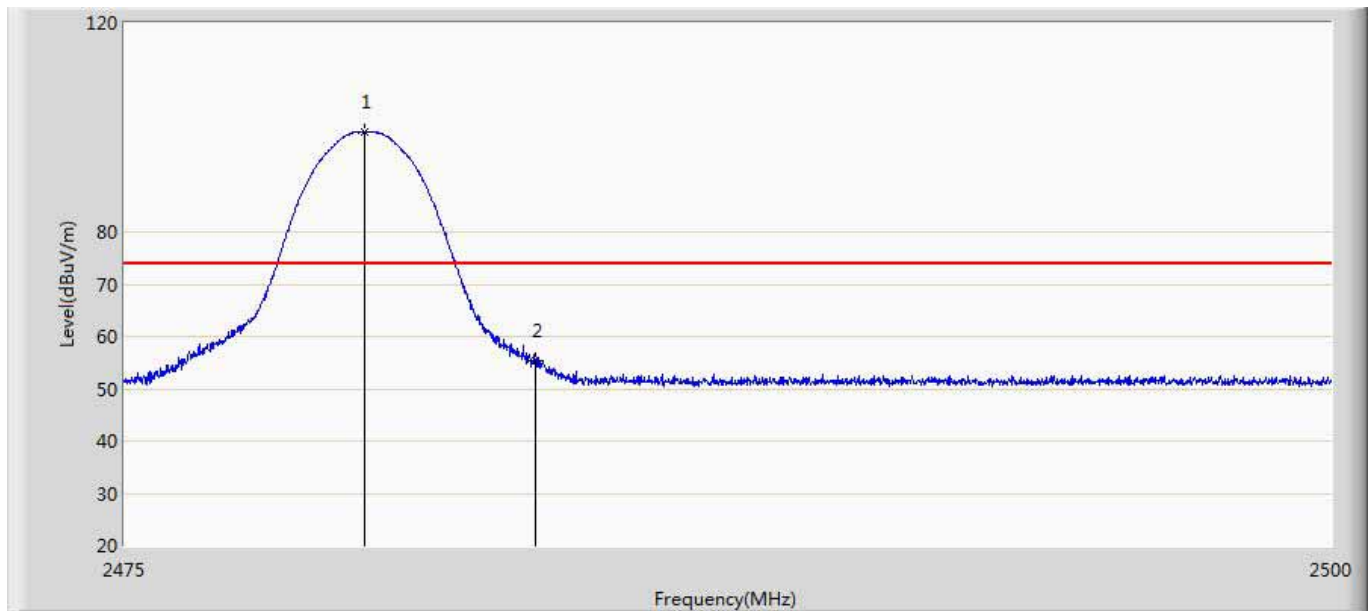
Engineer: Pawn	
Site: AC5	Time: 2019/05/06 - 18:01
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode2:Transmit at 2402MHz by 2DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	50.420	14.738	-23.580	74.000	35.682	PK
2	*	2402.055	95.423	59.710	N/A	N/A	35.712	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	19.670	50.420	-34.330	54.000	-30.750	AV
2	*	2402.055	64.673	95.423	N/A	N/A	-30.750	AV

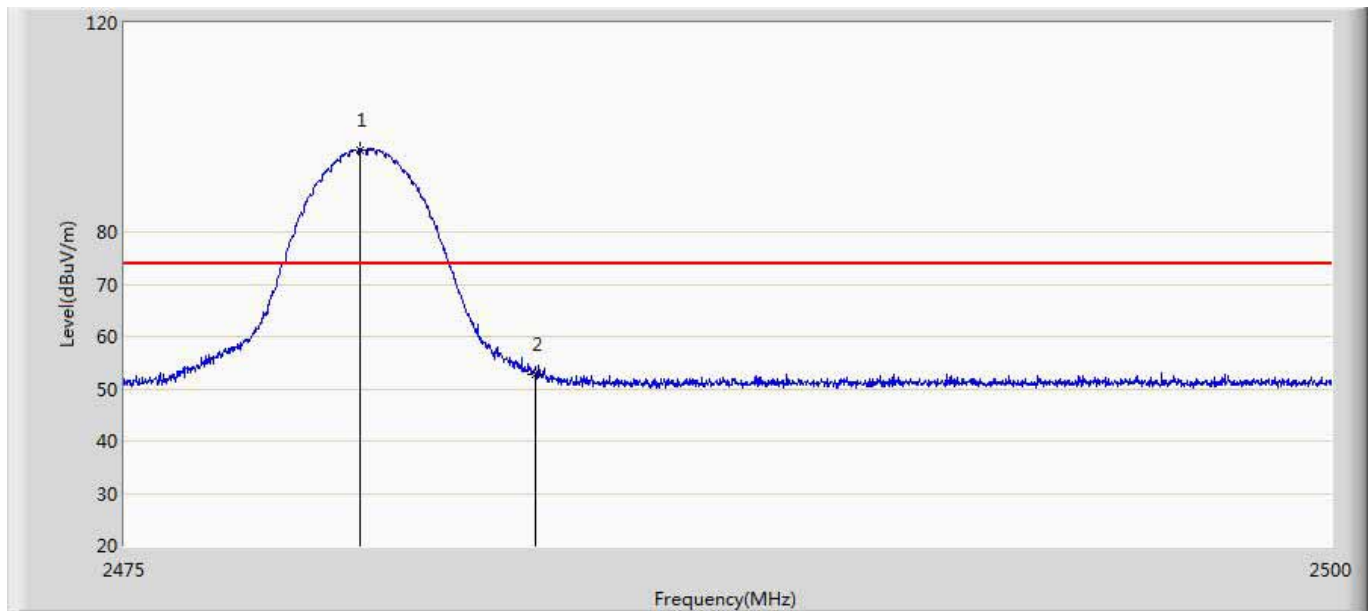
Engineer: Pawn	
Site: AC5	Time: 2019/05/06 - 18:06
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode2:Transmit at 2480MHz by 2DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.975	99.059	63.193	N/A	N/A	35.866	PK
2		2483.500	55.335	19.443	-18.665	74.000	35.891	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.975	68.309	99.059	N/A	N/A	-30.750	AV
2		2483.500	24.585	55.335	-29.415	54.000	-30.750	AV

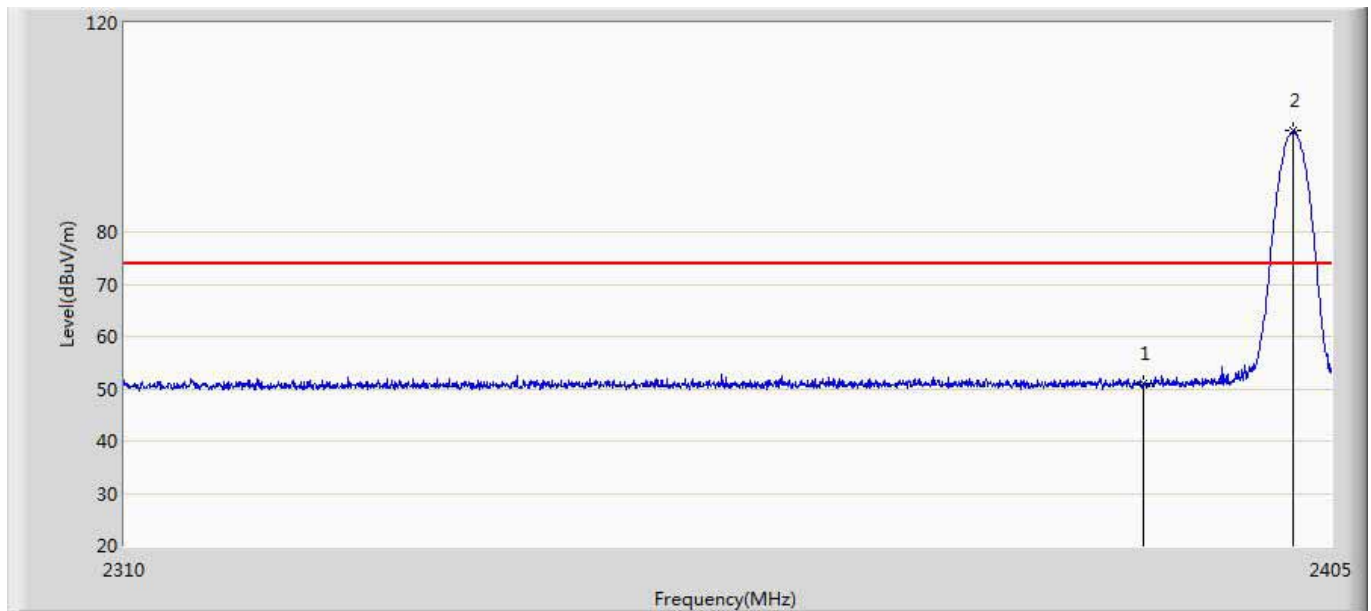
Engineer: Pawn	
Site: AC5	Time: 2019/05/06 - 18:10
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode2:Transmit at 2480MHz by 2DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.863	95.794	59.929	N/A	N/A	35.865	PK
2		2483.500	52.656	16.764	-21.344	74.000	35.891	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.863	65.044	95.794	N/A	N/A	-30.750	AV
2		2483.500	21.906	52.656	-32.094	54.000	-30.750	AV

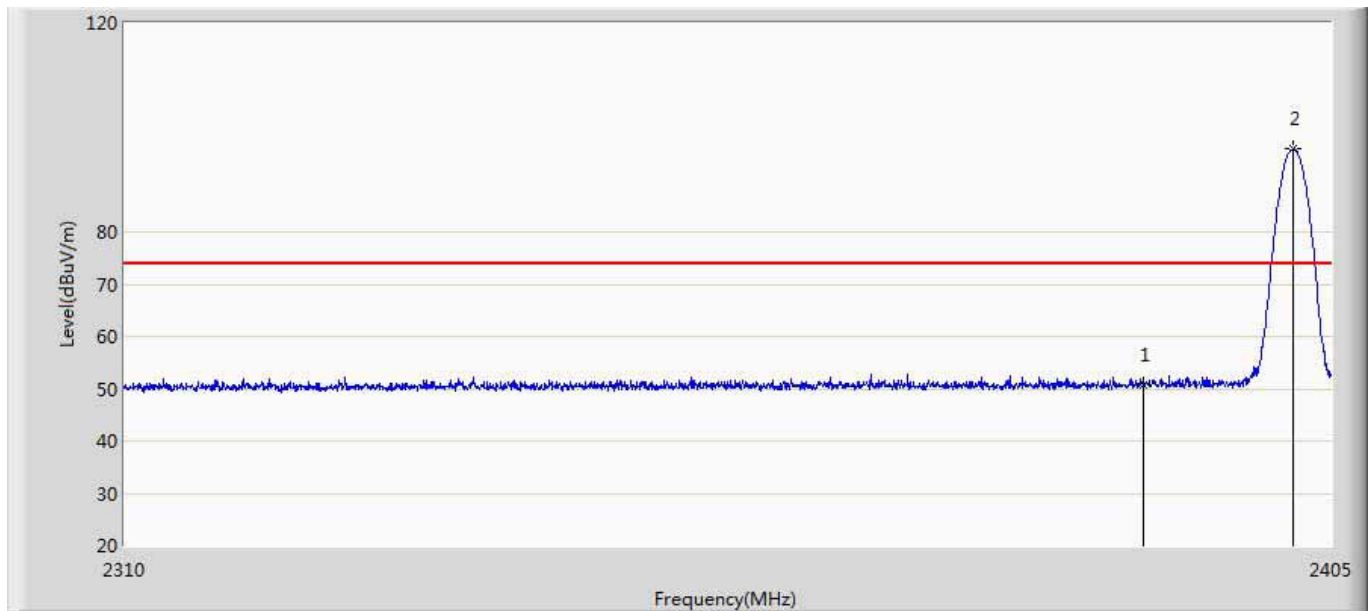
Engineer: Pawn	
Site: AC5	Time: 2019/05/06 - 18:15
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode3:Transmit at 2402MHz by 3DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	50.919	15.237	-23.081	74.000	35.682	PK
2	*	2401.960	99.322	63.609	N/A	N/A	35.712	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	20.169	50.919	-33.831	54.000	-30.750	AV
2	*	2401.960	68.572	99.322	N/A	N/A	-30.750	AV

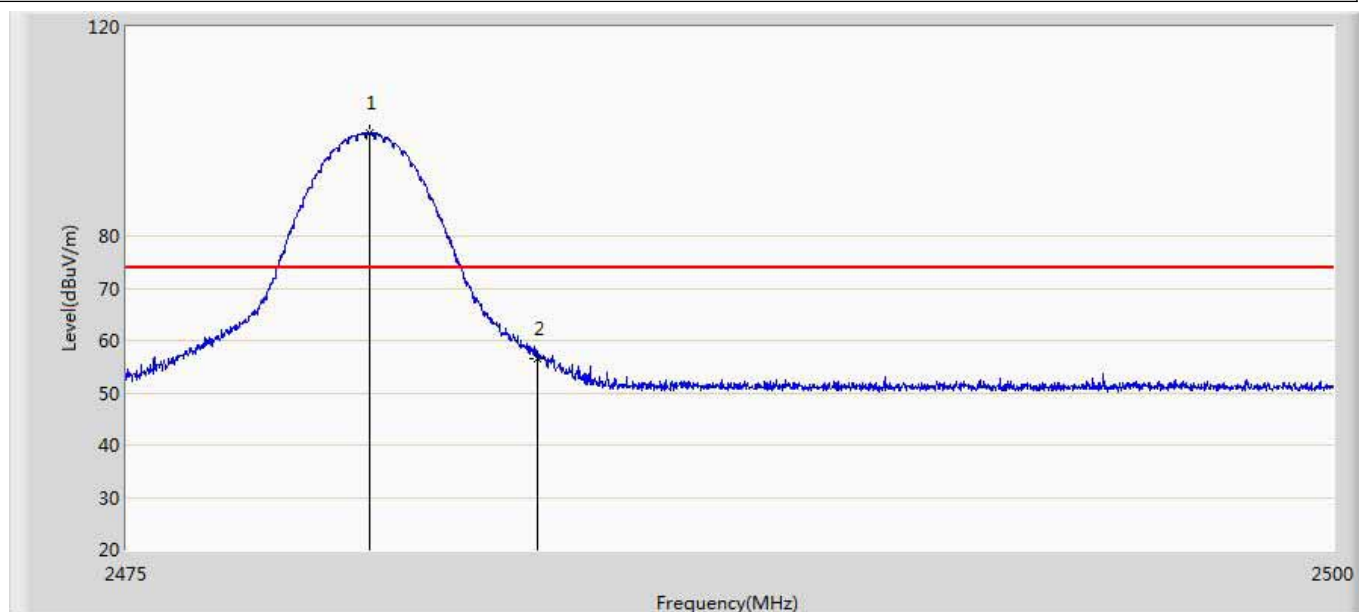
Engineer: Pawn	
Site: AC5	Time: 2019/05/06 - 18:19
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode3:Transmit at 2402MHz by 3DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	50.640	14.958	-23.360	74.000	35.682	PK
2	*	2401.913	95.958	60.246	N/A	N/A	35.712	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	PK Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	19.890	50.640	-34.110	54.000	-30.750	AV
2	*	2401.913	65.208	95.958	N/A	N/A	-30.750	AV

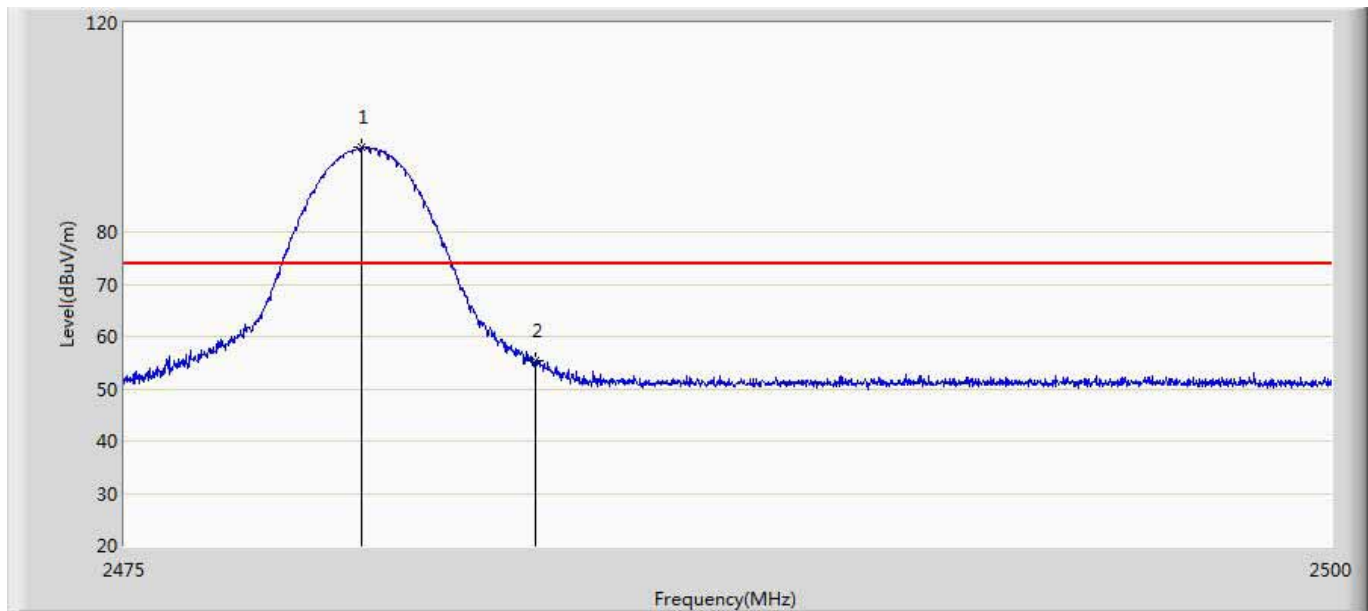
Engineer: Pawn	
Site: AC5	Time: 2019/05/06 - 18:24
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode3:Transmit at 2480MHz by 3DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.012	99.729	63.863	N/A	N/A	35.866	PK
2		2483.500	56.379	20.487	-17.621	74.000	35.891	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.012	68.979	99.729	N/A	N/A	-30.750	AV
2		2483.500	25.629	56.379	-28.371	54.000	-30.750	AV

Engineer: Pawn	
Site: AC5	Time: 2019/05/06 - 18:27
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: TWS Bluetooth headset	Power: AC 120V/60Hz
Note: Mode3: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	*	2479.900	96.111	60.245	N/A	N/A	35.866	PK
2		2483.500	55.288	19.396	-18.712	74.000	35.891	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.900	65.361	96.111	N/A	N/A	-30.750	AV
2		2483.500	24.538	55.288	-29.462	54.000	-30.750	AV

12. Antenna Requirement

12.1. Limit

Antenna Requirement Limit	
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.	

12.2. Antenna Connector Construction

Antenna Connector Construction	
☒	The use of a permanently attached antenna
☐	The antenna use of a unique coupling to the intentional radiator
☐	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 _____