Test Report

FCC Part15 Subpart C

Product Name : Bluetooth Headphone Beanie

Model No. : 8386657 & 8393529

FCC ID : 2AH2P-BNB018

Applicant : DECATHLON USA LLC

Address : 2151 Boulevard Lapinière Brossard QC J4W 2T5 Canada

Date of Receipt : Sep. 29, 2019

Test Date : Apr. 08, 2018 ~ Jul. 11, 2018

Issued Date : Oct. 08, 2019

Report No. : 1992198R-RF-US-P06V03

Report Version : V 1.0

Test Report Certification

Issued Date : Oct. 08, 2019
Report No.   : 1992198R-RF-US-P06V03

Product Name	:	Bluetooth Headphone Beanie
Applicant	:	DECATHLON USA LLC
Address	:	2151 Boulevard Lapinière Brossard QC J4W 2T5 Canada
Manufacturer	:	DECATHLON SA
Address	:	4 Boulevard de Mons - 59665 Villeneuve d' Ascq - FRANCE
Model No.	:	8386657 & 8393529
FCC ID	:	2AH2P-BNB018
EUT Voltage	:	DC 5V
Test Voltage	:	AC120V/60Hz
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart C
		KDB DA 00-705 Released March 30, 2000
		ANSI C63.10: 2013
Test Result	:	Complied
Performed Location	:	DEKRA Testing & Certification (Suzhou) Co., Ltd.
		No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006, Jiangsu, China
		TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098
		FCC Designation Number: CN1199

Documented By   :

(Adm. Specialist: Kitty Li)

Reviewed By   :

(Senior Project Manager: Frank He)

Approved By   :

(Engineering Supervisor: Jack Zhang)

TABLE OF CONTENTS

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
1992198R-RF-US-P06V03	V1.0	Initial Issued Report	Oct. 08, 2019

1.   General Information

1.1. EUT Description

Product Name	Bluetooth Headphone Beanie
Model No.	8386657 & 8393529
Working Voltage	DC 5V
Test Voltage	AC120V/60Hz
Bluetooth Specification	V4.0
Frequency Range	2402- 2480 MHz
Channel Number	79
Channel Separation	1MHz
Type of Modulation	GFSK, Pi/4 DQPSK, 8DPSK
Data Rate	1Mbps(GFSK), 2Mbps(Pi/4 DQPSK), 3Mbps(8DPSK)
Antenna Type	Reference to Antenna List
Peak Antenna Gain	Reference to Antenna List

Note:

 1. The chip Bluetooth version is V4.0, but only support BDR/EDR, don't support BLE.

 2. The different model name is only for different style of the hat.

Bluetooth Working Frequency of Each Channel: (For BDR+EDR)							
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

Model No.	N/A					
Antenna manufacturer	N/A					
Antenna Delivery	☒	1*TX+1*RX	☐	2*TX+2*RX	☐	3*TX+3*RX
Antenna technology	☒	SISO				
	☐	MIMO	☐	Basic		
			☐	CDD		
			☐	Sectorized		
			☐	Beam-forming		
Antenna Type	☐	External	☐	Dipole		
			☐	Sectorized		
	☒	Internal	☐	PIFA		
			☐	PCB		
			☐	Ceramic Chip Antenna		
		☒	Monopole Antenna			

Antenna Technology	Ant Gain (dBi)
☒ SISO	0

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
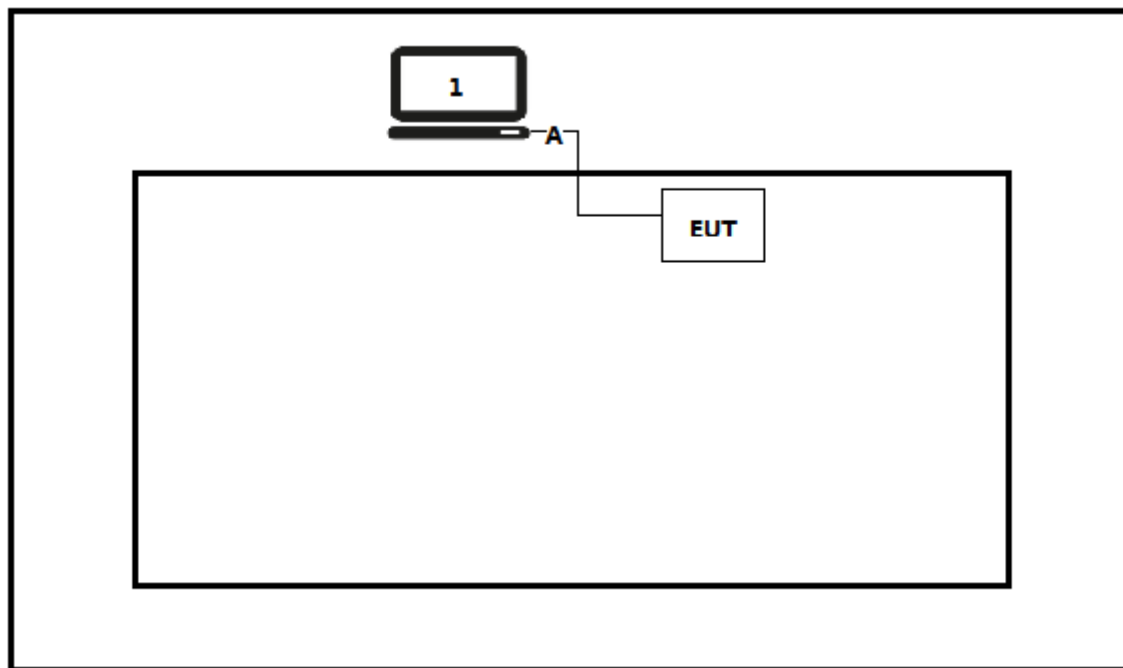
Test setup Diagram- Radiated Emission
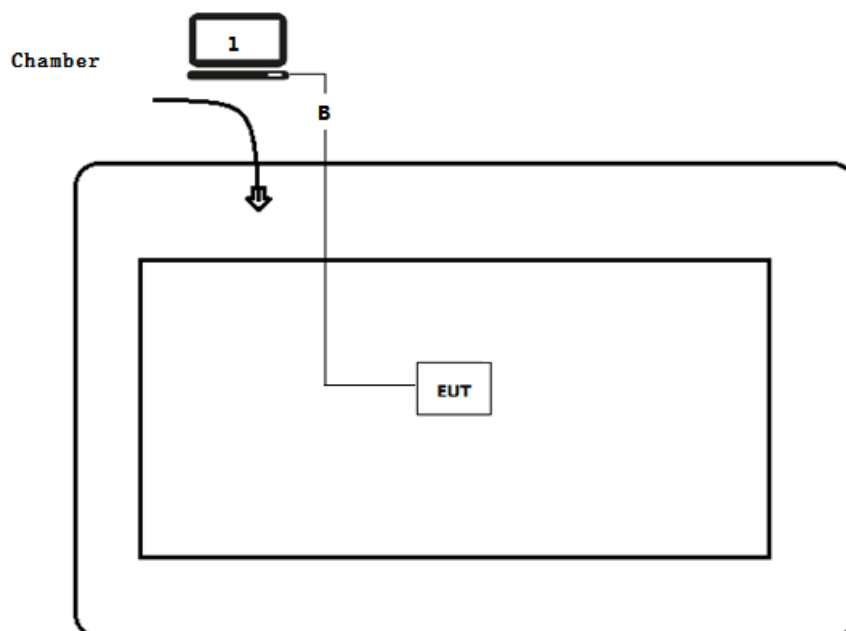
1.6   EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of all equipment.
3	Run RF software, 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:

Performed Test Item	Normative References	Test Performed	Deviation
Conducted Emission	FCC CFR Title 47 Part 15 Subpart C Section 15.207	Yes	No
Emissions in restricted frequency bands	FCC CFR Title 47 Part 15 Subpart C Section 15.209	Yes	No
20dB Bandwidth	FCC CFR Title 47 Part 15 Subpart C Section 15.247(a)(1)	Yes	No
Carrier Frequency Separation	FCC CFR Title 47 Part 15 Subpart C Section 15.247(a)(1)	Yes	No
Number of Hopping Frequencies	FCC CFR Title 47 Part 15 Subpart C Section 15.247(a)(1)(iii)	Yes	No
Time of Occupancy (Dwell Time)	FCC CFR Title 47 Part 15 Subpart C Section 15.247(a)(1)(iii)	Yes	No
Peak Output Power	FCC CFR Title 47 Part 15 Subpart C Section 15.247(b)(1)	Yes	No
Emissions in non-restricted frequency bands	FCC CFR Title 47 Part 15 Subpart C Section 15.215(c), 15.247(d)	Yes	No
Radiated Emission Band Edge	FCC CFR Title 47 Part 15 Subpart C 15.247(d)	Yes	No
Antenna Requirement	FCC CFR Title 47 Part 15 Subpart C Section 15.203	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	2017.07.16	2018.07.15
Two-Line V-Network	R&S	ENV 216	101044	2017.09.15	2018.09.15
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	N/A	N/A
50ohm Termination	SHX	TF2	07081402	2017.09.15	2018.09.15
Temperature/Humidity Meter	Zhichen	ZC1-2	TR1-TH	2018.01.05	2019.01.04
Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

3.2. Test Setup

AC Power Line Conducted Emission test setup
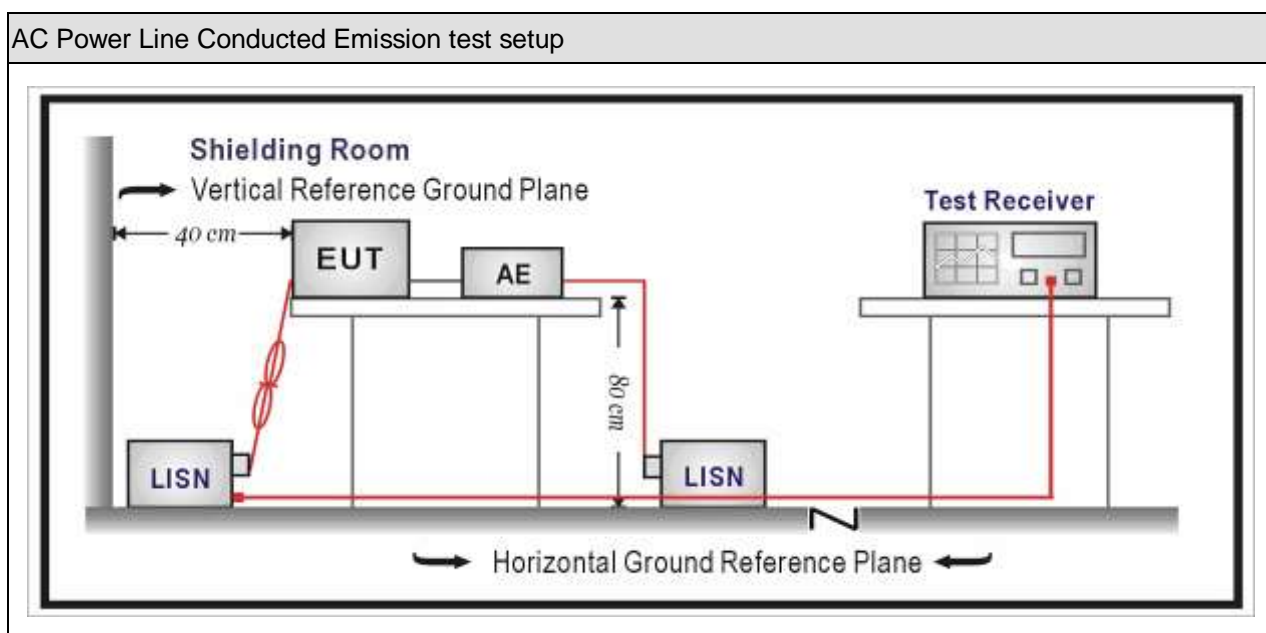
3.3. Limit

Frequency of Emission	Conducted Limit	
(MHz)	Quasi-peak (dBµV)	Average(dBµV)
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

Engineer: Smith	
Site: TR1	Time: 2018/04/21
Limit: FCC_Part15.207_CE_AC Power	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Line
EUT: Bluetooth Headphone Beanie	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2402MHz by DH5	
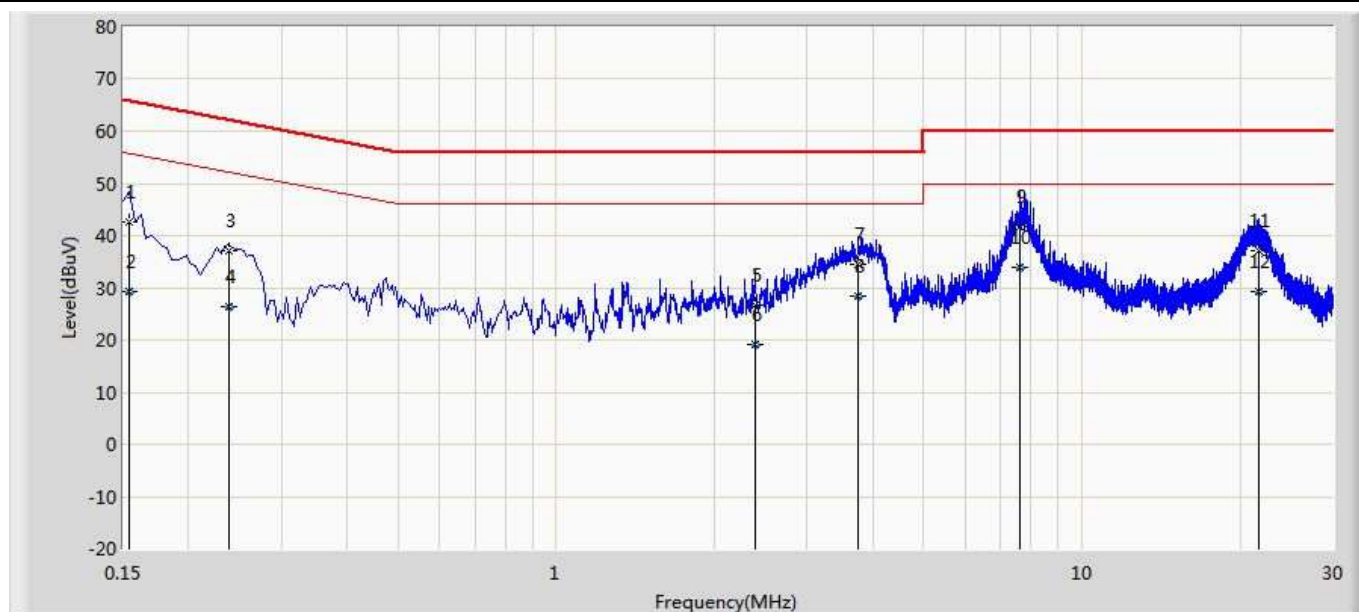
No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.154	42.482	32.848	-23.299	65.781	9.609	0.025	0.000	QP
2		0.154	29.236	19.602	-26.545	55.781	9.609	0.025	0.000	AV
3		0.238	36.975	27.345	-25.191	62.166	9.600	0.030	0.000	QP
4		0.238	26.490	16.860	-25.675	52.166	9.600	0.030	0.000	AV
5		2.390	26.684	16.971	-29.316	56.000	9.616	0.096	0.000	QP
6		2.390	19.062	9.349	-26.938	46.000	9.616	0.096	0.000	AV
7		3.746	34.479	24.717	-21.521	56.000	9.639	0.122	0.000	QP
8		3.746	28.509	18.748	-17.491	46.000	9.639	0.122	0.000	AV
9		7.602	41.604	31.715	-18.396	60.000	9.714	0.175	0.000	QP
10	*	7.602	34.004	24.114	-15.996	50.000	9.714	0.175	0.000	AV
11		21.702	37.192	26.638	-22.808	60.000	10.253	0.301	0.000	QP
12		21.702	29.156	18.603	-20.844	50.000	10.253	0.301	0.000	AV

Note:

1. " * ", means this data is the worst emission level.

2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

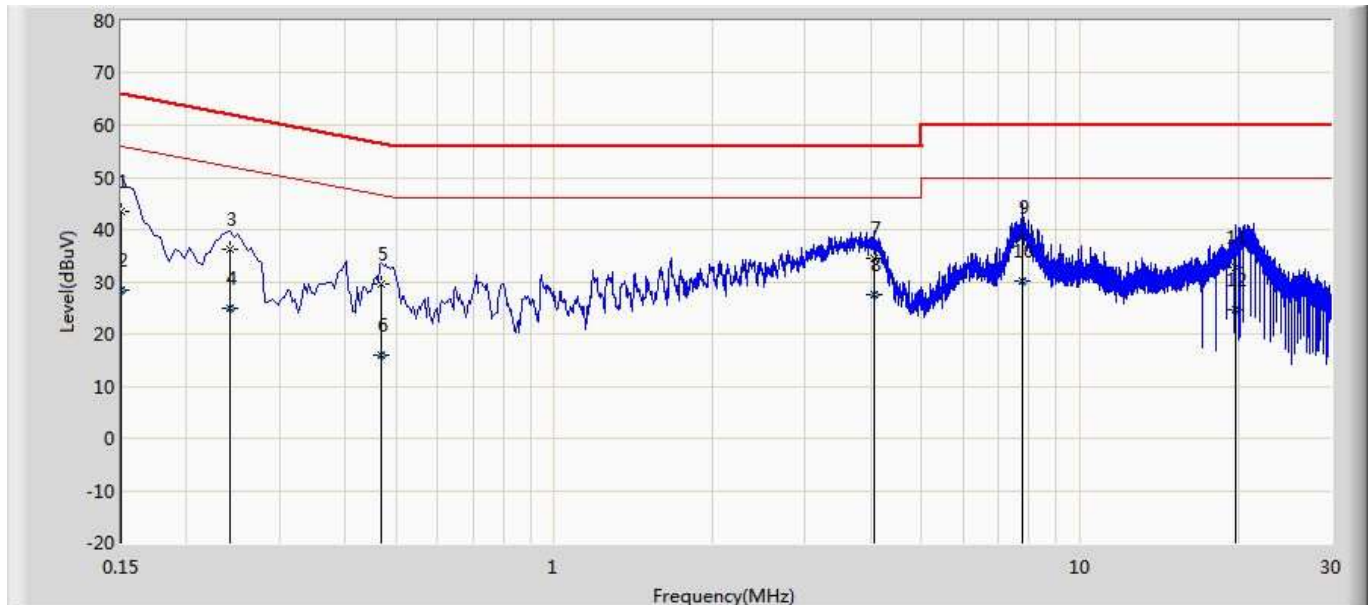| Engineer: Smith	
Site: TR1	Time: 2018/04/21
Limit: FCC_Part15.207_CE_AC Power	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Neutral
EUT: Bluetooth Headphone Beanie	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2402MHz by DH5	

No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.150	43.607	33.988	-22.393	66.000	9.594	0.025	0.000	QP
2		0.150	28.380	18.762	-27.620	56.000	9.594	0.025	0.000	AV
3		0.242	36.184	26.555	-25.843	62.027	9.598	0.030	0.000	QP
4		0.242	25.029	15.400	-26.999	52.027	9.598	0.030	0.000	AV
5		0.470	29.667	20.036	-26.846	56.514	9.591	0.041	0.000	QP
6		0.470	15.986	6.355	-30.527	46.514	9.591	0.041	0.000	AV
7		4.062	34.454	24.688	-21.546	56.000	9.637	0.128	0.000	QP
8	*	4.062	27.669	17.904	-18.331	46.000	9.637	0.128	0.000	AV
9		7.762	38.642	28.742	-21.358	60.000	9.723	0.178	0.000	QP
10		7.762	30.183	20.283	-19.817	50.000	9.723	0.178	0.000	AV
11		19.726	32.816	22.361	-27.184	60.000	10.168	0.287	0.000	QP
12		19.726	24.499	14.044	-25.501	50.000	10.168	0.287	0.000	AV

Note:

1. " * ", means this data is the worst emission level.

2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).
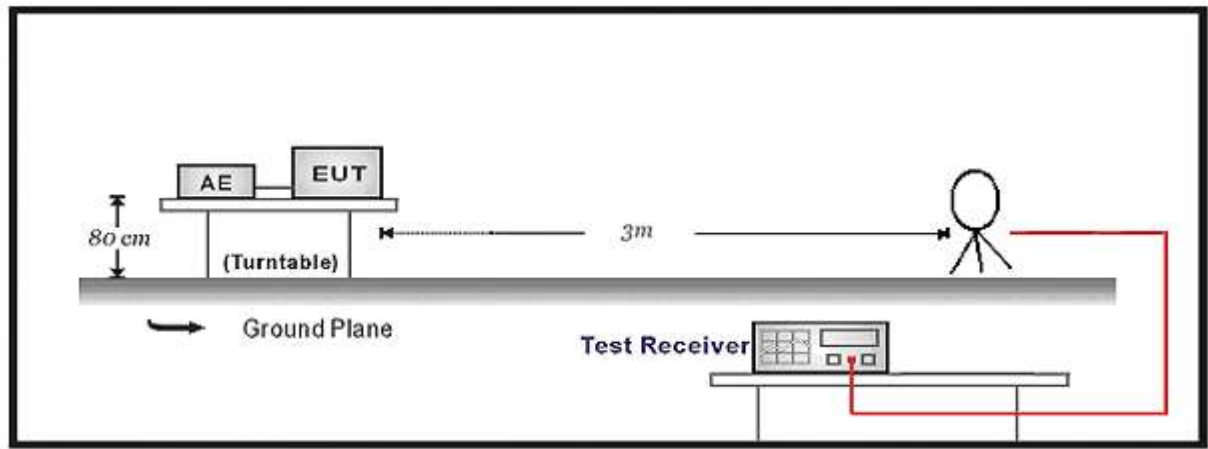
4. Emissions in restricted frequency bands

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	2017.03.29	2019.03.28
Loop Antenna	R&S	HFH2-Z2	833799/003	2017.11.16	2018.11.15
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2017.10.16	2018.10.15
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2018.03.02	2019.03.01
Temperature/Humidity Meter	Zhichen	ZC1-2	AC2-TH	2018.01.04	2019.01.03
Note: All equipment are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

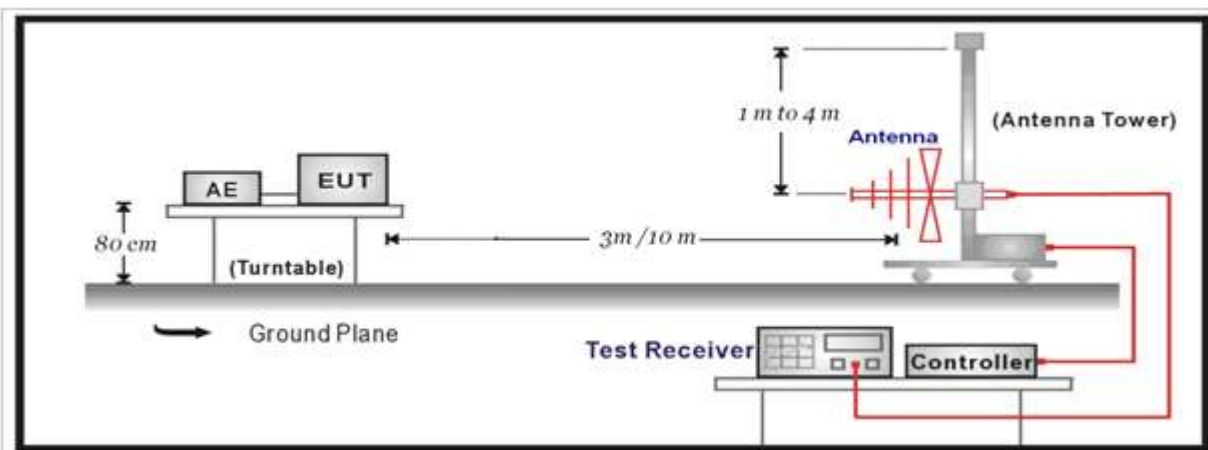| Radiated Emission(Above 1GHz) / AC-5					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2018.01.04	2019.01.03
Preamplifier	Miteq	NSP1800-25	1364185	2017.05.06	2019.05.05
Preamplifier	QuieTek	AP-040G	CHM-0906001	2017.05.06	2019.05.05
DRG Horn	ETS-Lindgren	3117	00123988	2018.01.22	2019.01.21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2017.11.25	2018.11.24
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	2017.06.10	2019.06.09
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2018.01.04	2019.01.03
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:
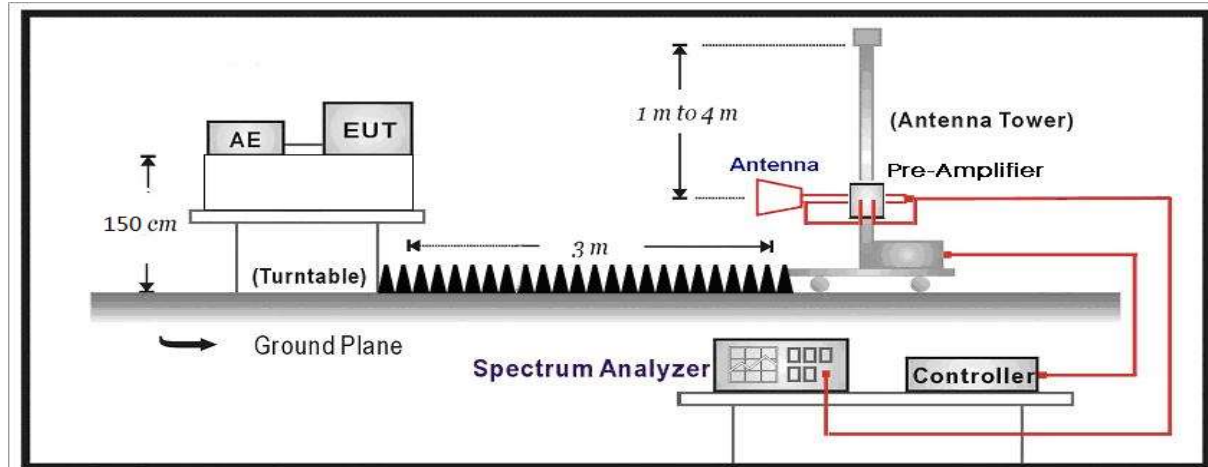
4.3. Limit

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			

Restricted Band Emissions Limit			
Frequency (MHz)	Field strength (µV/m)	Field strength (dBµV/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

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: ALLEN	
Site: AC5	Time: 2018/07/10 - 10:27
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth Headphone Beanie	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by DH5	
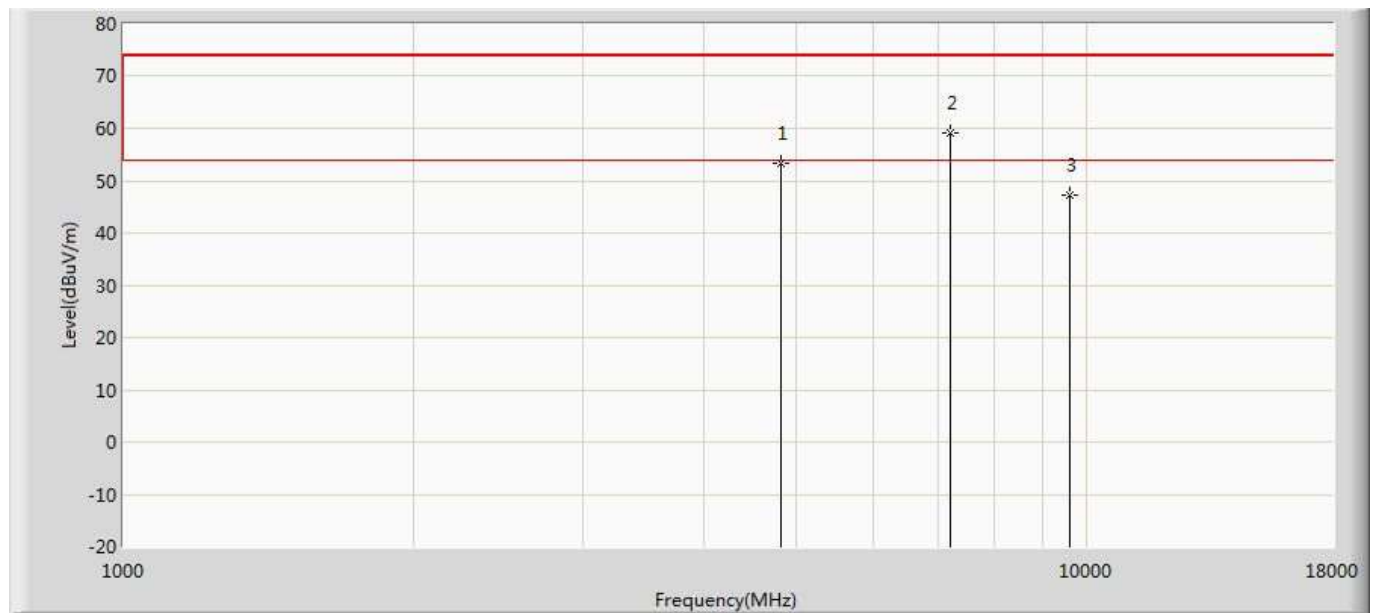
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4808.000	53.322	53.131	-20.678	74.000	0.191	PK
2	*	7205.000	59.111	55.690	-14.889	74.000	3.421	PK
3		9608.000	47.145	38.625	-26.855	74.000	8.519	PK
2		7205.000	59.111	28.311	-25.689	54.000	-30.800	AV

Engineer: ALLEN	
Site: AC5	Time: 2018/07/10 - 10:27
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Bluetooth Headphone Beanie	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by DH5	
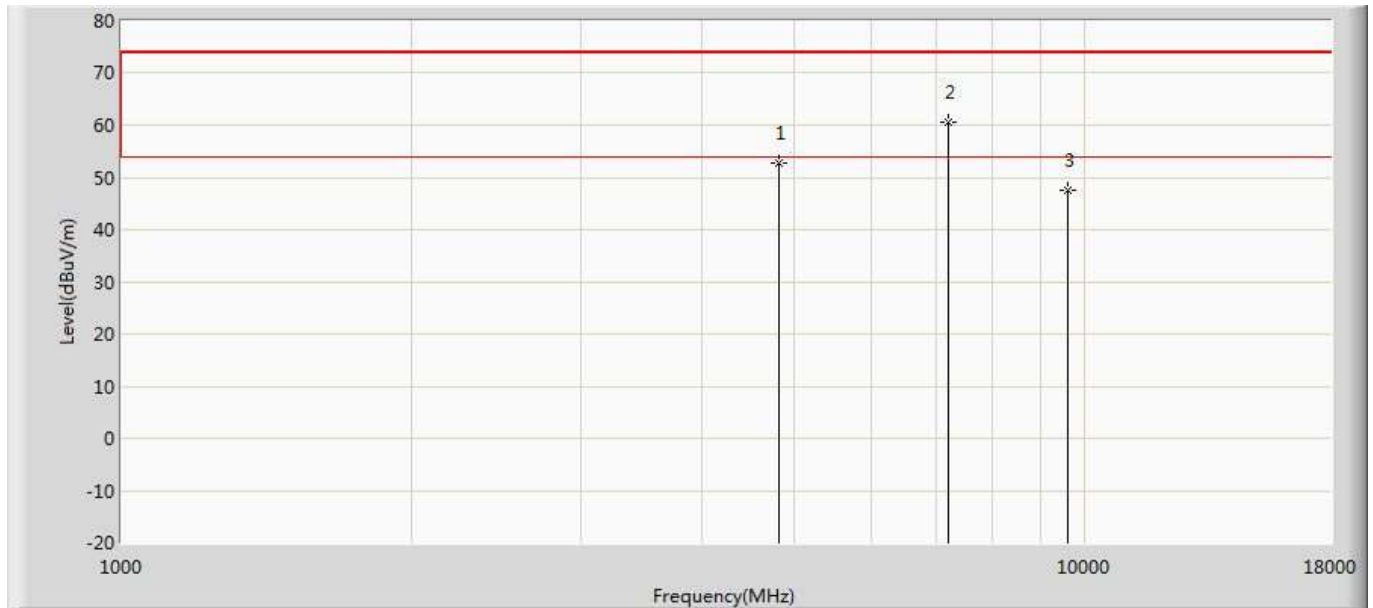
N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4808.000	52.837	52.646	-21.163	74.000	0.191	PK
2	*	7205.000	60.458	57.037	-13.542	74.000	3.421	PK
3		9608.000	47.559	39.039	-26.441	74.000	8.519	PK
2		7205.000	60.458	29.658	-24.342	54.000	-30.800	AV

Engineer: ALLEN	
Site: AC5	Time: 2018/07/10 - 10:32
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth Headphone Beanie	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2441MHz by DH5	

N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4884.500	55.700	55.275	-18.300	74.000	0.424	PK
2	*	7324.000	58.298	54.696	-15.702	74.000	3.602	PK
3		9764.000	47.826	38.462	-26.174	74.000	9.365	PK
1		4884.500	55.700	24.900	-29.100	54.000	-30.800	AV
2	*	7324.000	58.298	27.498	-26.502	54.000	-30.800	AV

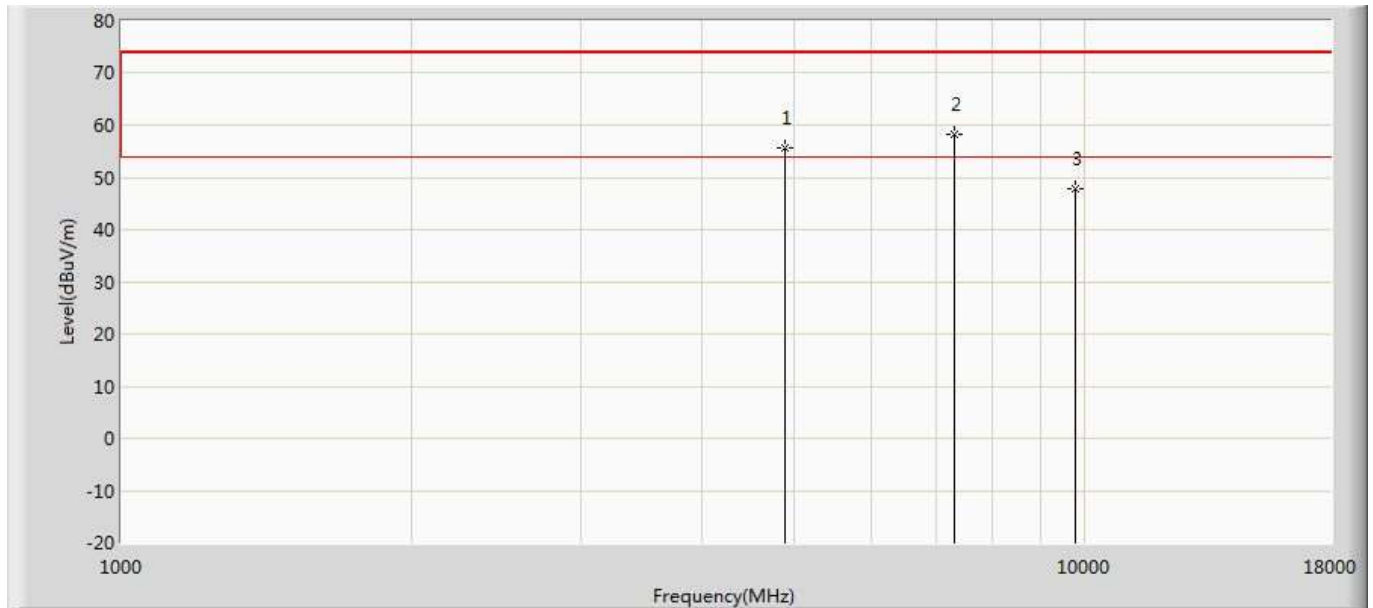| Engineer: ALLEN	
Site: AC5	Time: 2018/07/10 - 10:32
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Bluetooth Headphone Beanie	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2441MHz by DH5	

N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4884.500	48.841	48.416	-25.159	74.000	0.424	PK
2	*	7324.000	58.336	54.734	-15.664	74.000	3.602	PK
3		9764.000	48.362	38.998	-25.638	74.000	9.365	PK
2	*	7324.000	58.336	27.536	-26.464	54.000	-30.800	AV

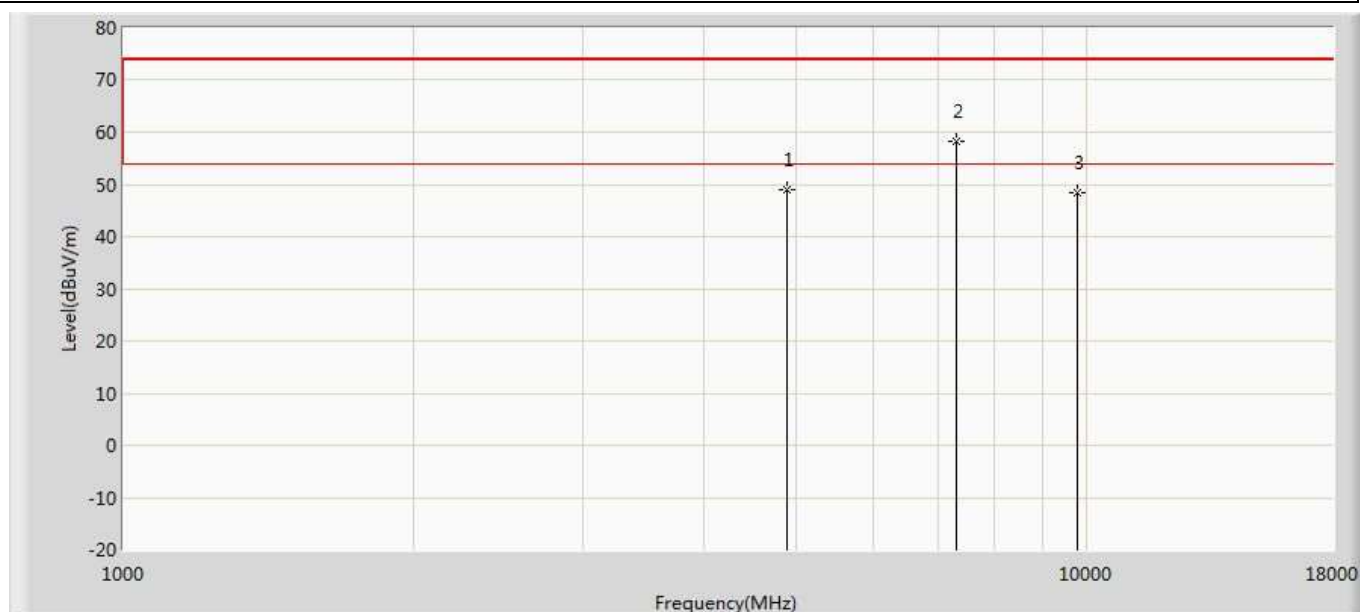| Engineer: ALLEN	
Site: AC5	Time: 2018/07/10 - 10:32
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth Headphone Beanie	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by DH5	

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4961.000	50.139	49.473	-23.861	74.000	0.666	PK
2	*	7443.000	60.249	55.420	-13.751	74.000	4.829	PK
3		9920.000	47.562	39.161	-26.438	74.000	8.401	PK
2	*	7443.000	60.249	29.449	-24.551	54.000	-30.800	AV

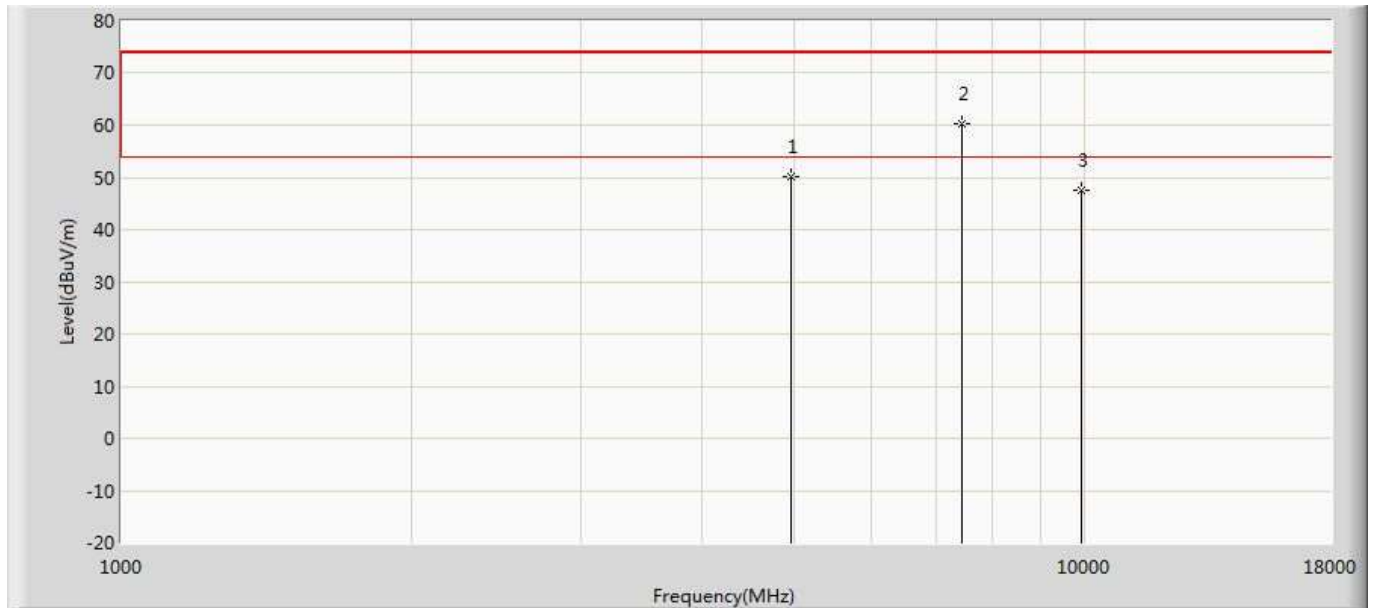|	
Engineer: ALLEN	
Site: AC5	Time: 2018/07/10 - 10:32
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Bluetooth Headphone Beanie	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by DH5	

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4961.000	49.041	48.375	-24.959	74.000	0.666	PK
2	*	7443.000	62.736	57.907	-11.264	74.000	4.829	PK
3		9920.000	47.722	39.321	-26.278	74.000	8.401	PK
2	*	7443.000	62.736	31.936	-22.064	54.000	-30.800	AV

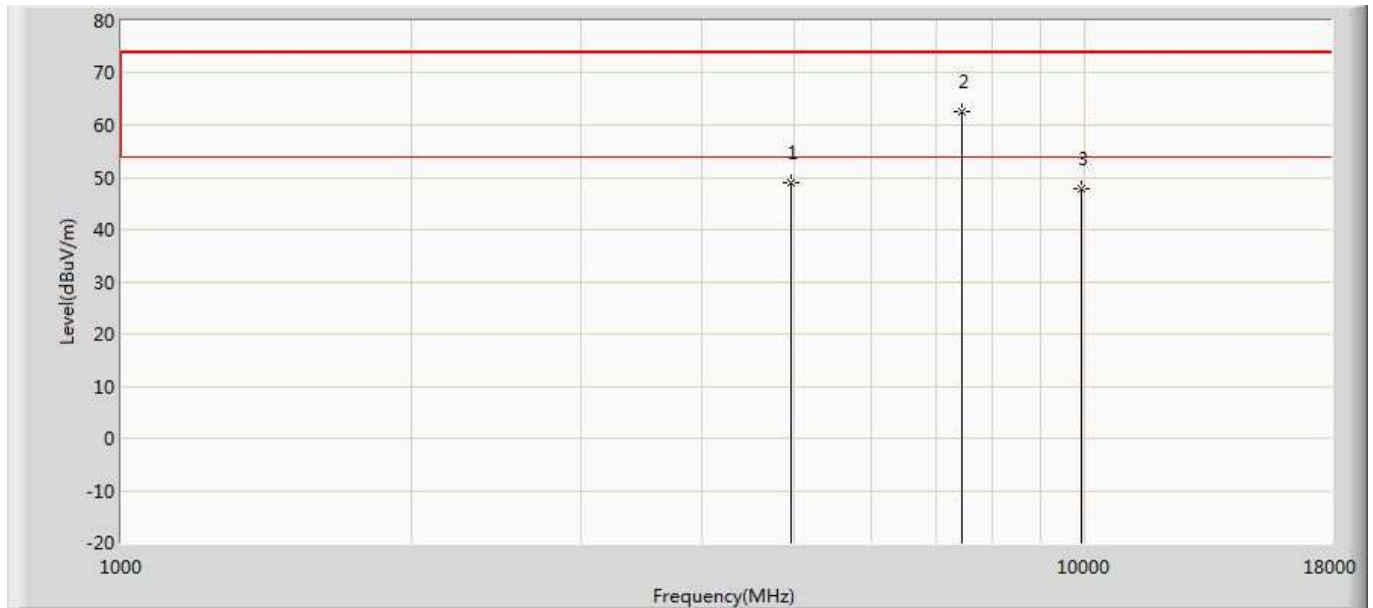|	
Engineer: ALLEN	
Site: AC5	Time: 2018/07/10 - 10:32
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth Headphone Beanie	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by 2DH5	

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4808.000	48.294	48.103	-25.706	74.000	0.191	PK
2	*	7205.000	55.908	52.487	-18.092	74.000	3.421	PK
3		9608.000	47.836	39.316	-26.164	74.000	8.519	PK
2	*	7205.000	55.908	25.108	-28.892	54.000	-30.800	AV

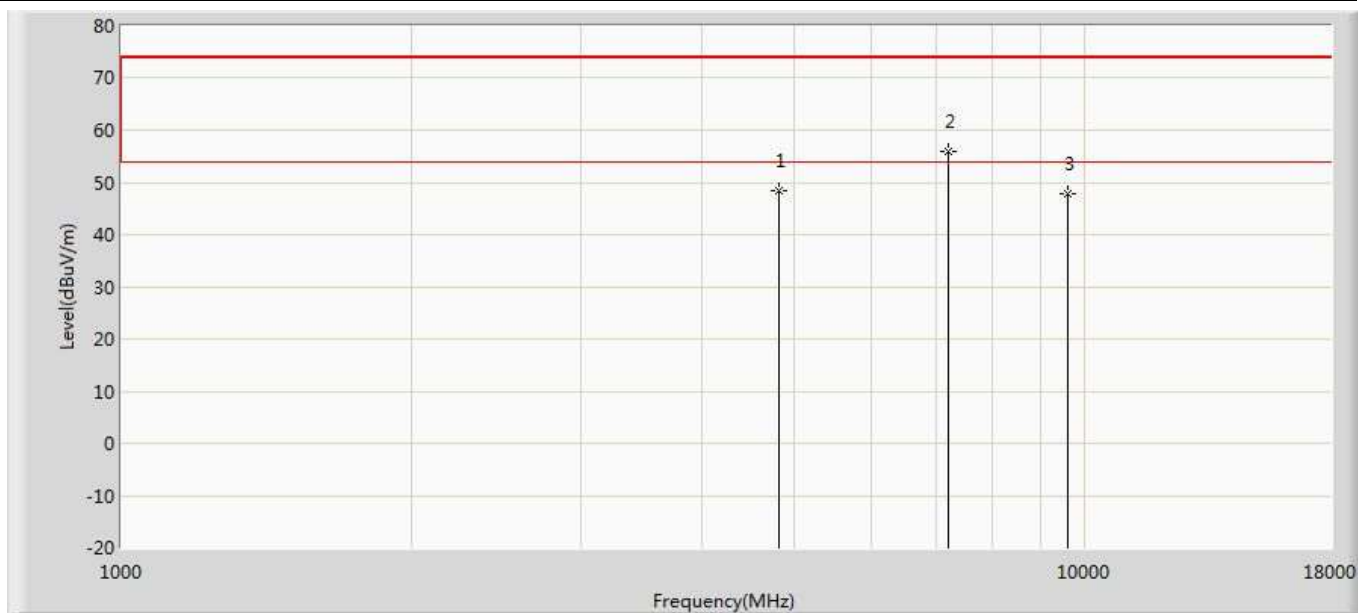|	
Engineer: ALLEN	
Site: AC5	Time: 2018/07/10 - 10:32
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Bluetooth Headphone Beanie	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by 2DH5	

N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4808.000	47.574	47.383	-26.426	74.000	0.191	PK
2	*	7205.000	56.024	52.603	-17.976	74.000	3.421	PK
3		9608.000	47.615	39.095	-26.385	74.000	8.519	PK
2	*	7205.000	56.024	25.224	-28.776	54.000	-30.800	AV

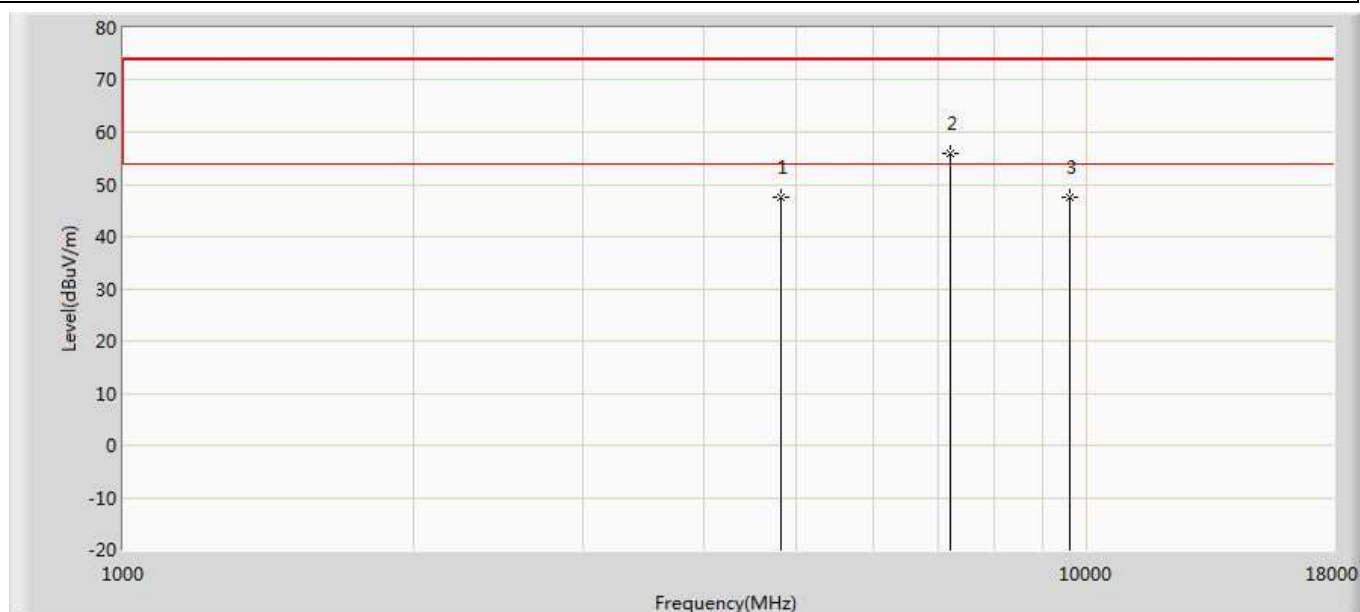|	
Engineer: ALLEN	
Site: AC5	Time: 2018/07/10 - 10:32
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth Headphone Beanie	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2441MHz by 2DH5	

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4884.500	47.044	46.619	-26.956	74.000	0.424	PK
2	*	7324.000	52.791	49.189	-21.209	74.000	3.602	PK
3		9764.000	48.677	39.313	-25.323	74.000	9.365	PK

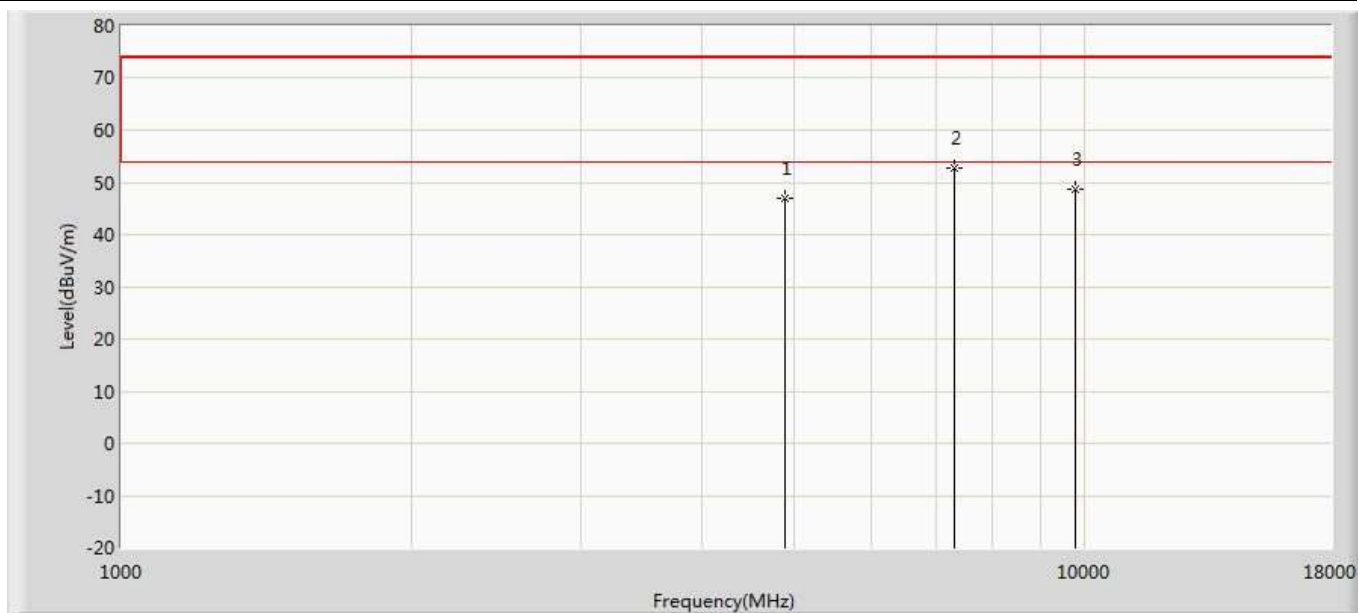| Engineer: ALLEN	
Site: AC5	Time: 2018/07/10 - 10:32
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Bluetooth Headphone Beanie	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2441MHz by 2DH5	

N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4884.500	49.404	48.979	-24.596	74.000	0.424	PK
2	*	7324.000	57.692	54.090	-16.308	74.000	3.602	PK
3		9764.000	47.667	38.303	-26.333	74.000	9.365	PK
2	*	7324.000	57.692	26.892	-27.108	54.000	-30.800	AV

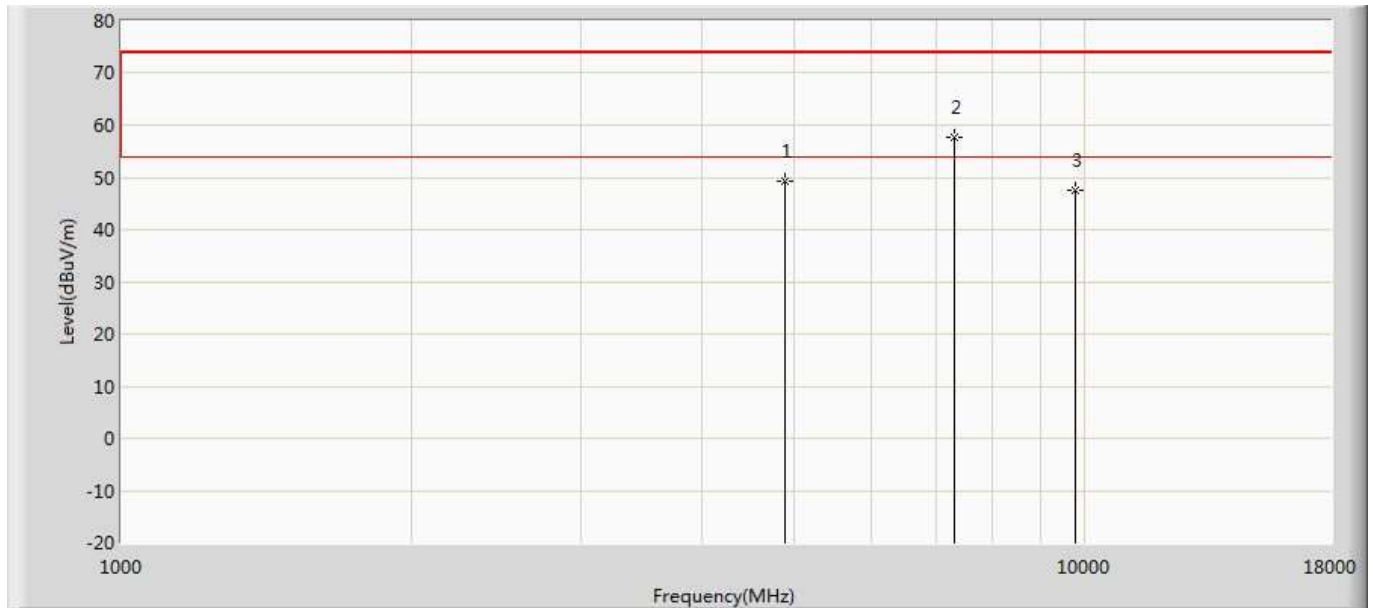| Engineer: ALLEN	
Site: AC5	Time: 2018/07/10 - 10:33
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth Headphone Beanie	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by 2DH5	

N o	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4961.000	47.126	46.460	-26.874	74.000	0.666	PK
2	*	7443.000	53.762	48.933	-20.238	74.000	4.829	PK
3		9920.000	47.805	39.404	-26.195	74.000	8.401	PK

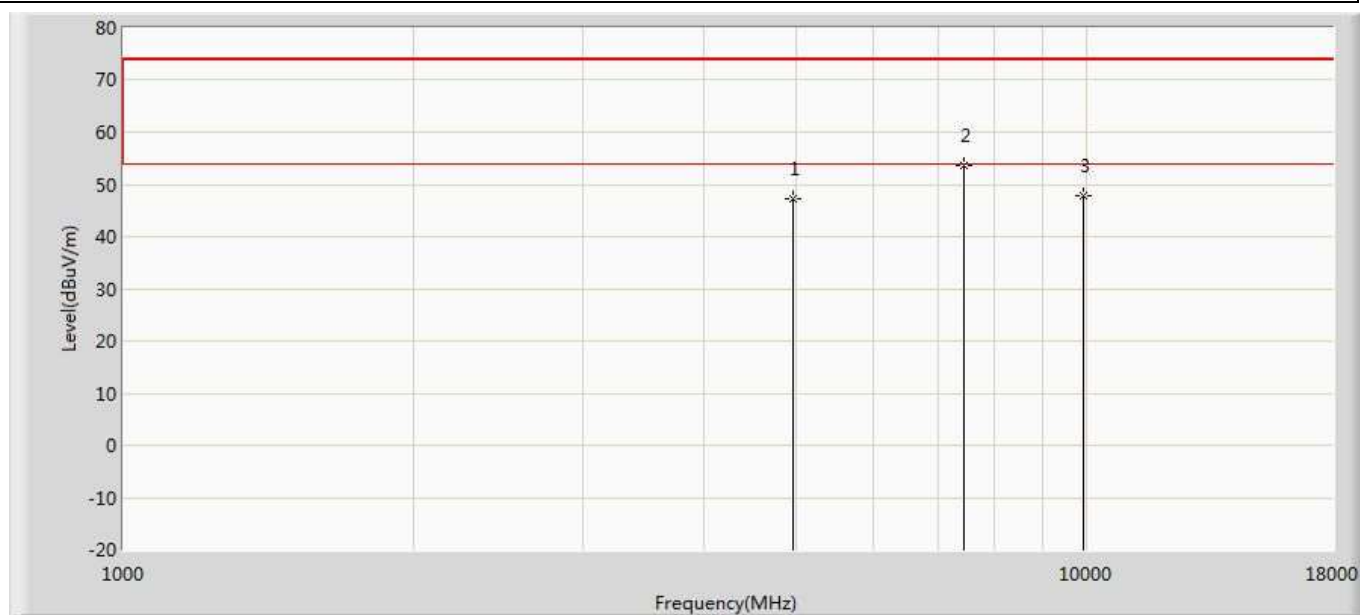|	
Engineer: ALLEN	
Site: AC5	Time: 2018/07/10 - 10:33
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Bluetooth Headphone Beanie	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by 2DH5	

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	45.485	44.814	-28.515	74.000	0.671	PK
2	*	7443.000	58.250	53.421	-15.750	74.000	4.829	PK
3		9920.000	47.261	38.860	-26.739	74.000	8.401	PK
2	*	7443.000	58.250	27.450	-26.550	54.000	-30.800	AV

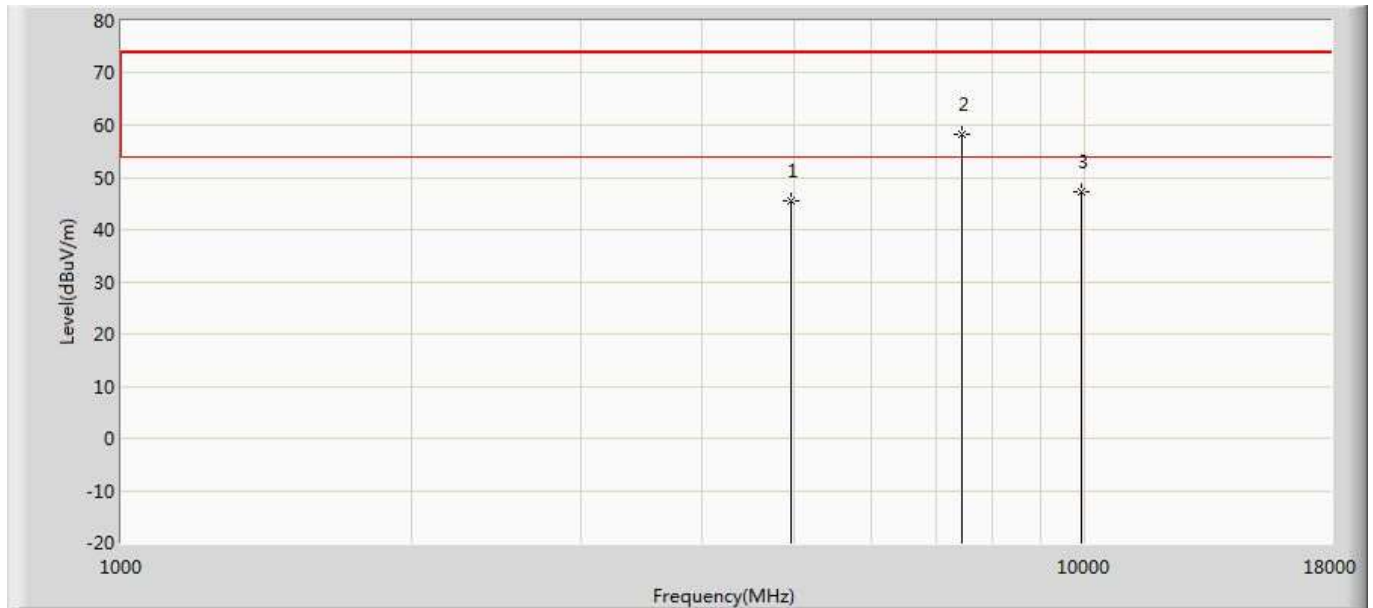| Engineer: ALLEN	
Site: AC5	Time: 2018/07/10 - 10:33
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth Headphone Beanie	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by 3DH5	

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	47.382	47.153	-26.618	74.000	0.229	PK
2	*	7205.000	54.839	51.418	-19.161	74.000	3.421	PK
3		9608.000	47.322	38.802	-26.678	74.000	8.519	PK
2	*	7205.000	54.839	24.039	-29.961	54.000	-30.800	AV

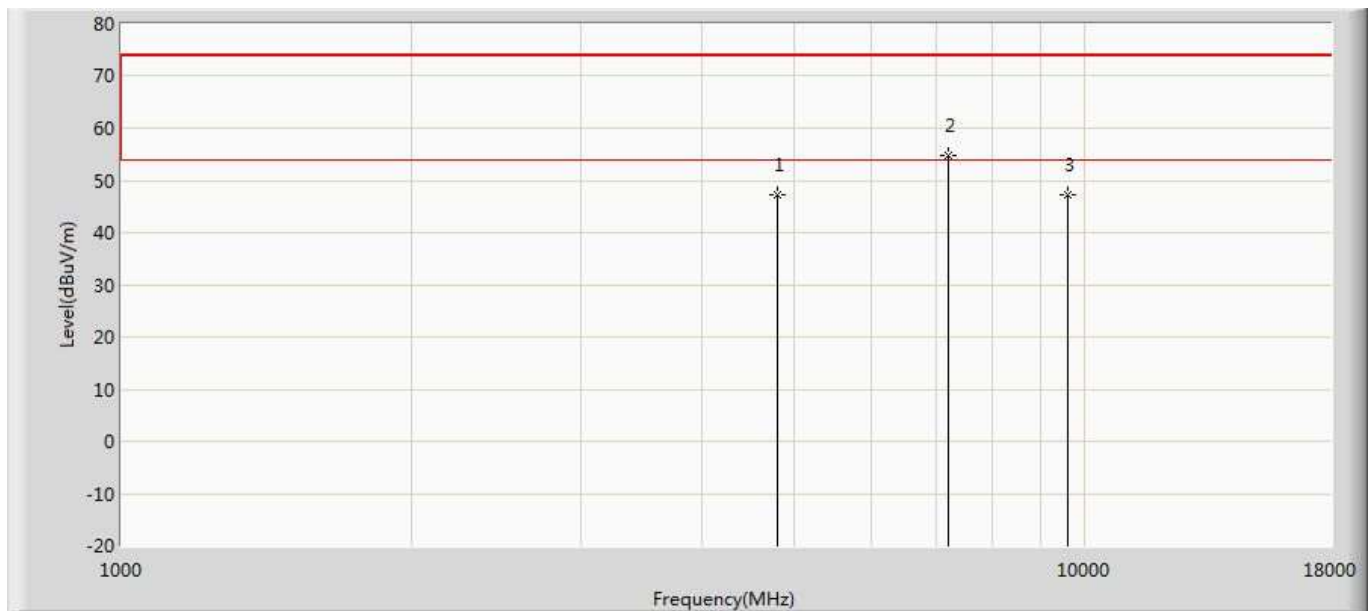|	
Engineer: ALLEN	
Site: AC5	Time: 2018/07/10 - 10:33
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Bluetooth Headphone Beanie	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by 3DH5	

N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	47.877	47.648	-26.123	74.000	0.229	PK
2	*	7205.000	54.839	51.418	-19.161	74.000	3.421	PK
3		9608.000	47.366	38.846	-26.634	74.000	8.519	PK
2	*	7205.000	54.839	24.039	-29.961	54.000	-30.800	AV

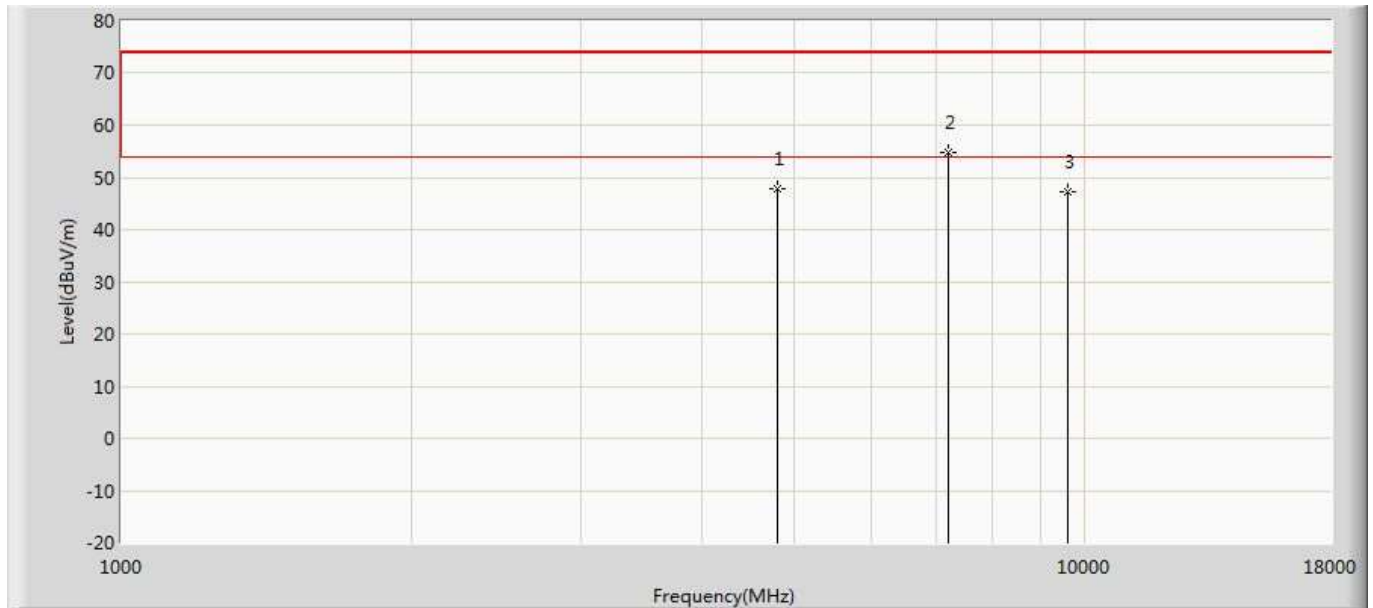| Engineer: ALLEN	
Site: AC5	Time: 2018/07/10 - 10:33
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth Headphone Beanie	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2441MHz by 3DH5	

N o	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4882.000	45.381	44.921	-28.619	74.000	0.460	PK
2	*	7324.000	54.203	50.601	-19.797	74.000	3.602	PK
3		9764.000	48.335	38.971	-25.665	74.000	9.365	PK
2	*	7324.000	54.203	23.403	-30.597	54.000	-30.800	AV

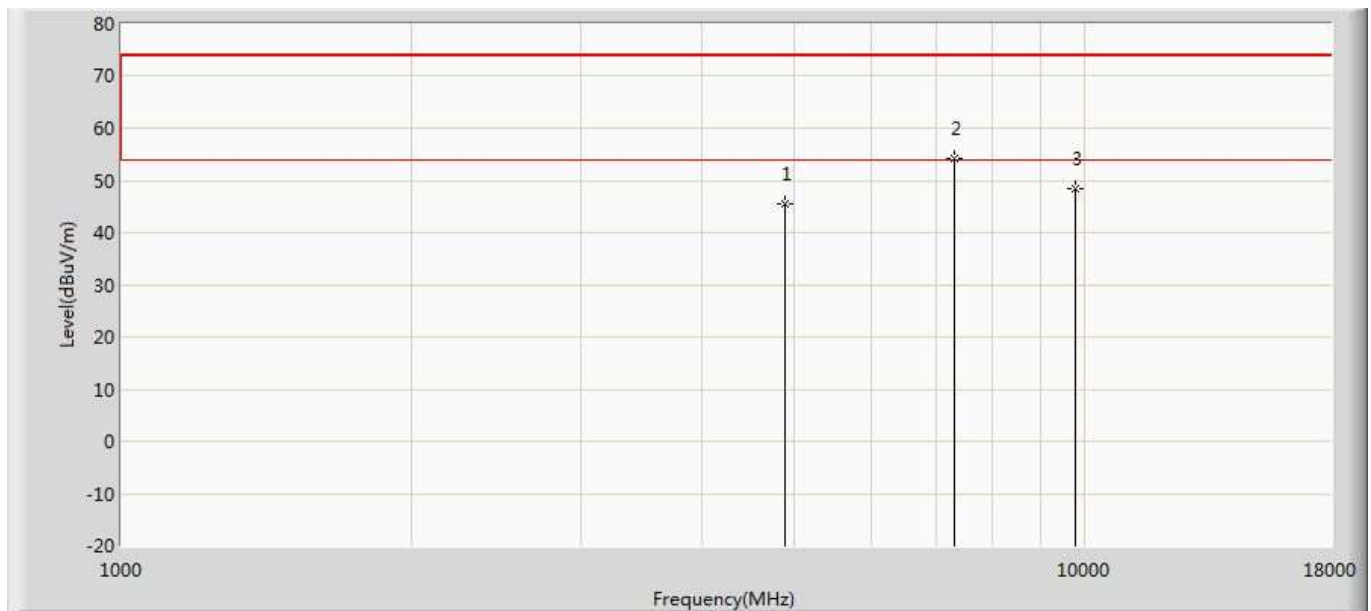|	
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Site: AC5	Time: 2018/07/10 - 10:33
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Bluetooth Headphone Beanie	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2441MHz by 3DH5	

N o	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4884.500	48.465	48.040	-25.535	74.000	0.424	PK
2	*	7324.000	57.884	54.282	-16.116	74.000	3.602	PK
3		9764.000	47.750	38.386	-26.250	74.000	9.365	PK
2	*	7324.000	57.884	27.084	-26.916	54.000	-30.800	AV

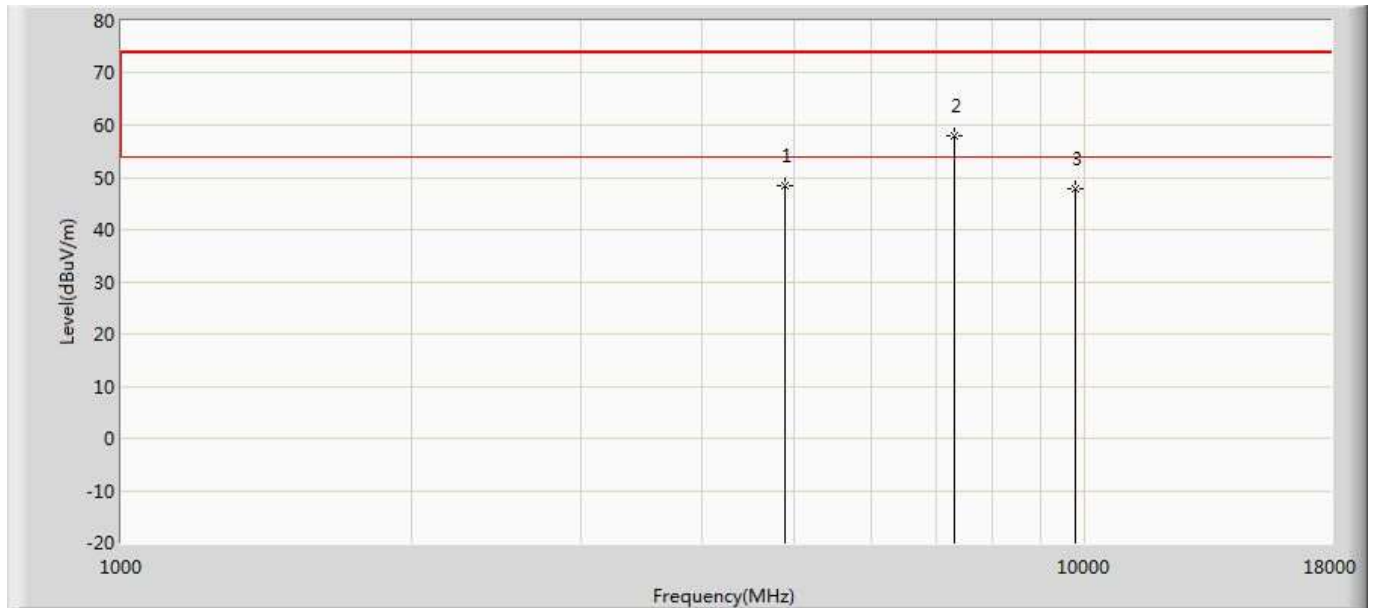|	
Engineer: ALLEN	
Site: AC5	Time: 2018/07/10 - 10:33
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth Headphone Beanie	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by 3DH5	

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	46.937	46.266	-27.063	74.000	0.671	PK
2	*	7443.000	55.163	50.334	-18.837	74.000	4.829	PK
3		9920.000	47.018	38.617	-26.982	74.000	8.401	PK
2	*	7443.000	55.163	24.363	-29.637	54.000	-30.800	AV

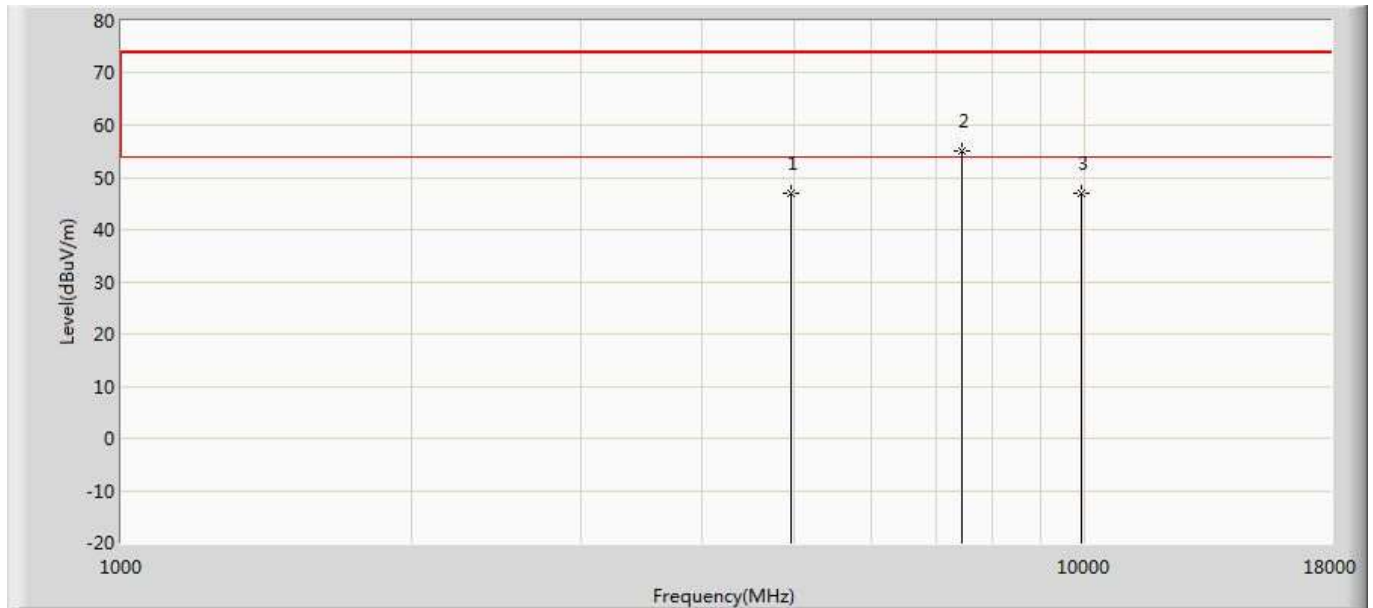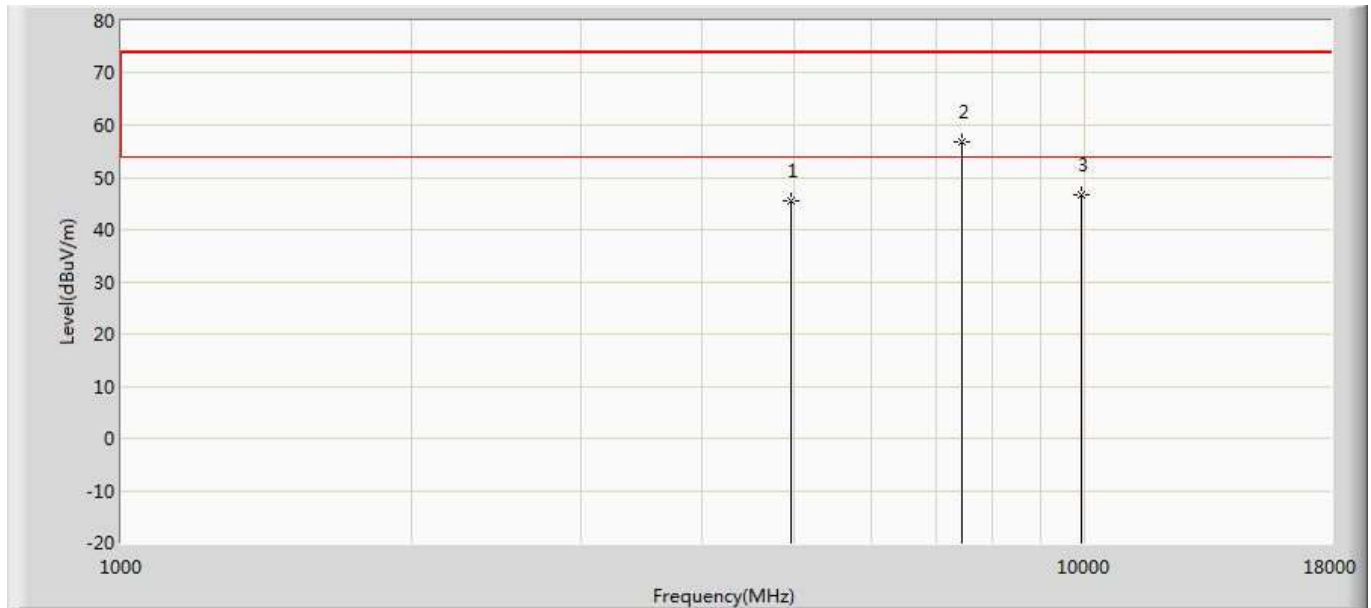| Engineer: ALLEN	
Site: AC5	Time: 2018/07/10 - 10:33
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Bluetooth Headphone Beanie	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by 3DH5	

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	45.616	44.945	-28.384	74.000	0.671	PK
2	*	7443.000	56.763	51.934	-17.237	74.000	4.829	PK
3		9920.000	46.675	38.274	-27.325	74.000	8.401	PK
2	*	7443.000	56.763	25.963	-28.037	54.000	-30.800	AV

The worst case of Radiated Emission below 1GHz:

Site: AC3	Time: 2018/04/23
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: AC3_3m (30-1000MHz)	Polarity: Horizontal
EUT: Bluetooth Headphone Beanie	Power: DC 1.5V
Note: Mode 1:Transmit at 2402MHz by DH5	
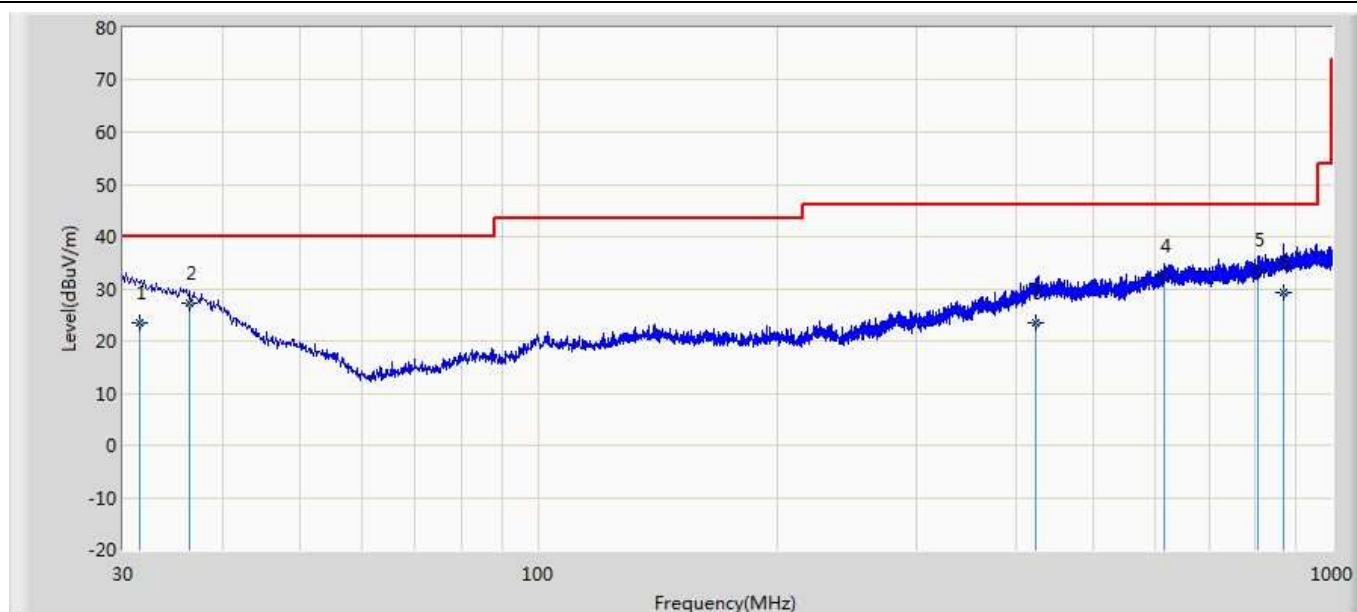
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/ m)	Probe (dB/ m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		31.448	23.414	-3.700	-16.586	40.000	20.652	6.462	0.000	200	76	QP
2		36.415	27.361	2.100	-12.639	40.000	18.759	6.502	0.000	100	236	QP
3		423.860	23.570	-3.800	-22.430	46.000	19.403	7.968	0.000	100	360	QP
4		615.417	32.373	3.500	-13.627	46.000	20.406	8.467	0.000	200	198	QP
5	*	806.927	33.575	3.700	-12.425	46.000	20.975	8.900	0.000	100	205	QP
6		869.100	29.360	-2.500	-16.640	46.000	22.829	9.031	0.000	200	107	QP

Note:

1. " * ", means this data is the worst emission level.

2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

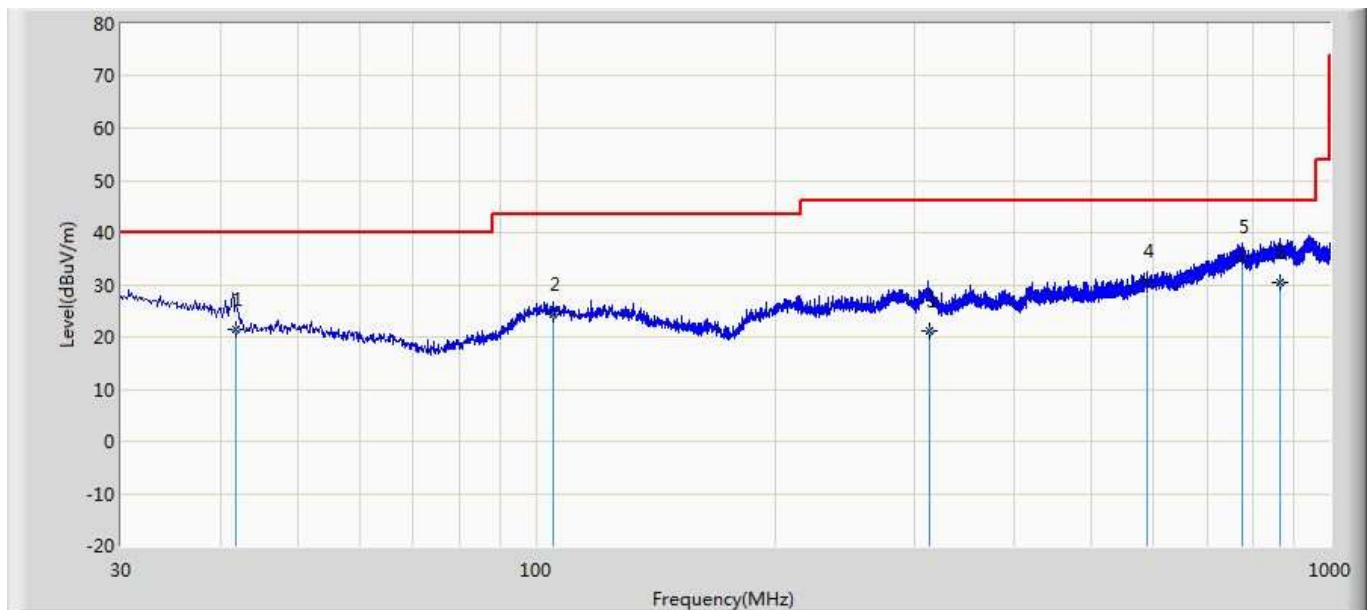| Site: AC3	Time: 2018/04/23
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: AC3_3m (30-1000MHz)	Polarity: Vertical
EUT: Bluetooth Headphone Beanie	Power: DC 1.5V
Note: Mode 1:Transmit at 2402MHz by DH5	

N o	Mar k	Frequen cy (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/ m)	Prob e (dB/ m)	Cabl e (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Typ e
1		41.819	21.355	3.500	-18.645	40.000	11.31 8	6.53 7	0.00 0	100	104	QP
2		104.956	24.401	2.400	-19.099	43.500	15.12 8	6.87 3	0.00 0	100	360	QP
3		312.697	21.144	-3.800	-24.856	46.000	17.28 9	7.65 5	0.00 0	100	200	QP
4		588.615	30.822	3.500	-15.178	46.000	18.92 0	8.40 2	0.00 0	200	104	QP
5	*	774.540	35.424	3.100	-10.576	46.000	23.49 4	8.83 0	0.00 0	100	58	QP
6		865.818	30.304	-2.500	-15.696	46.000	23.77 9	9.02 6	0.00 0	200	76	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 Anlyzer	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

20dB Occupied Bandwidth test setup:
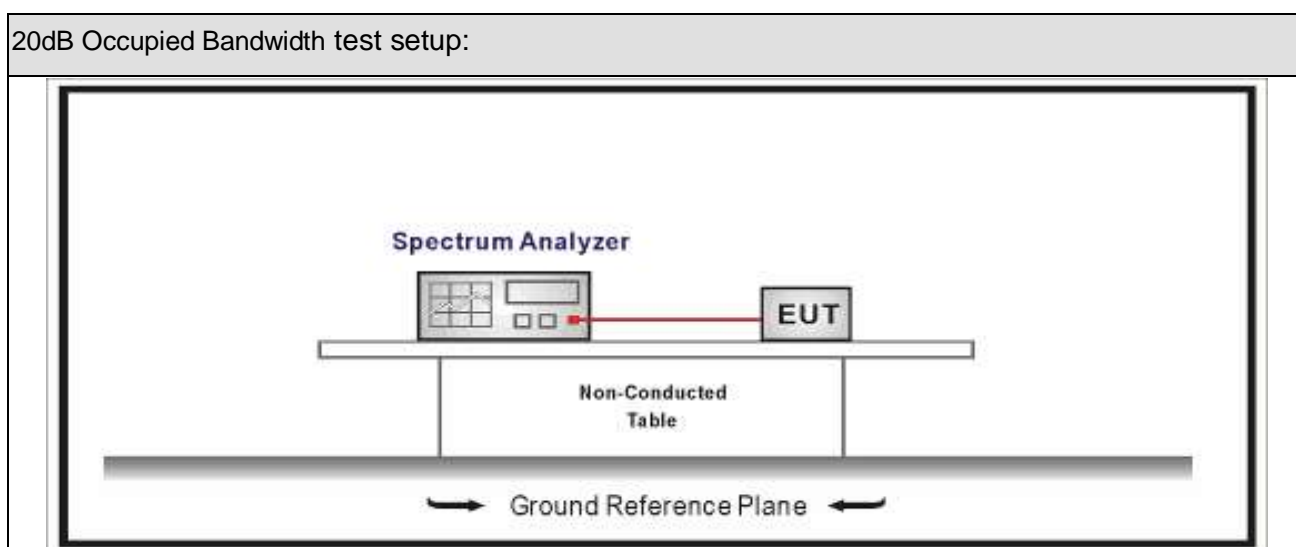
5.3 Limit

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
☒	DA 00-705	N/A	20 dB Bandwidth

5.5 Uncertainty

The measurement uncertainty is defined as ± 1 kHz

5.6 Test Result

Product Name	:	Bluetooth Headphone Beanie	Power	:	AC 120V/60Hz
Test Mode	:	Mode 1~3	Test Site	:	TR-8
Test Date	:	2018.04.18	Test Engineer	:	Allen

Mode1:

Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
00	2402	944.3	882.58
39	2441	926.7	889.31
78	2480	925.3	881.34

Mode2:

Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
00	2402	1327	1153
39	2441	1352	1256
78	2480	1369	1223.8

Mode3:

Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
00	2402	1318	1209.6
39	2441	1350	1272.6
78	2480	1373	1247.3

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 Anlyzer	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

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	:	Bluetooth Headphone Beanie	Power	:	AC 120V/60Hz
Test Mode	:	Mode 1~3	Test Site	:	TR-8
Test Date	:	2018.05.22	Test Engineer	:	Allen

Mode1:

Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
00	2402	1000	629.5	Pass
39	2441	1000	617.8	Pass
78	2480	1000	616.9	Pass

Mode2:

Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
00	2402	1000	884.7	Pass
39	2441	1000	901.3	Pass
78	2480	1000	912.7	Pass

Mode3:

Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
00	2402	1000	878.7	Pass
39	2441	1000	900.0	Pass
78	2480	1000	915.3	Pass

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 Anlyzer	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

Number of Hopping Frequencies test setup:
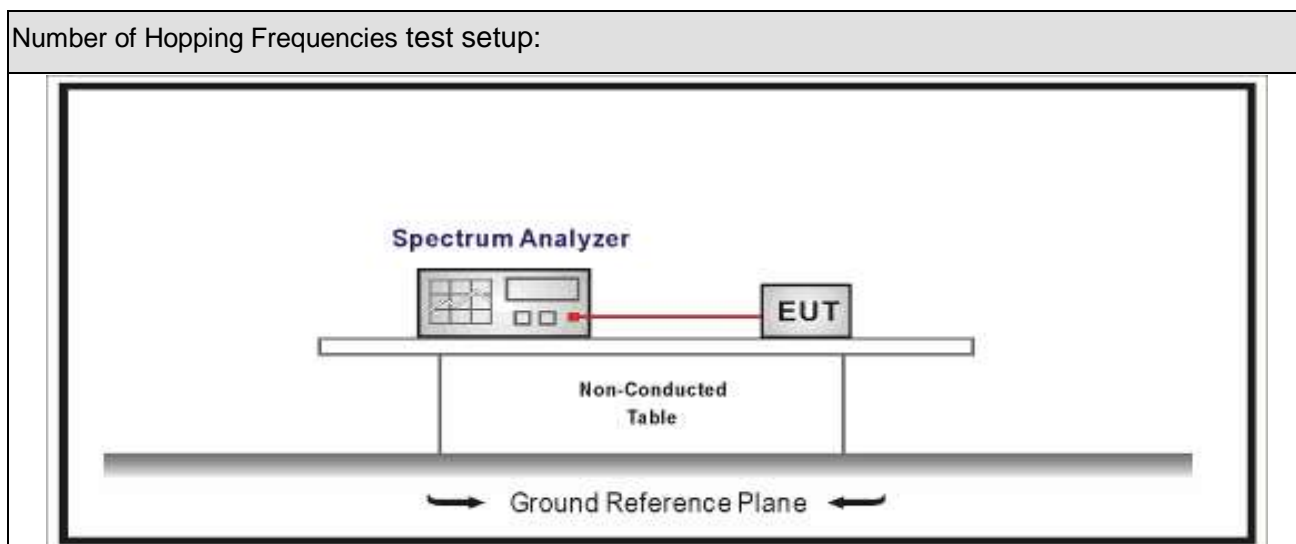
7.3. Limit

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

7.6. Test Result

Product Name	:	Bluetooth Headphone Beanie	Power	:	AC 120V/60Hz
Test Mode	:	Mode 1	Test Site	:	TR-8
Test Date	:	2018.05.08	Test Engineer	:	Allen

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

2402 - 2480MHz

Product Name	:	Bluetooth Headphone Beanie	Power	:	AC 120V/60Hz
Test Mode	:	Mode 2	Test Site	:	TR-8
Test Date	:	2018.05.08	Test Engineer	:	Allen

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

2402 - 2480 MHz

Product Name	:	Bluetooth Headphone Beanie	Power	:	AC 120V/60Hz
Test Mode	:	Mode 3	Test Site	:	TR-8
Test Date	:	2018.05.08	Test Engineer	:	Allen

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 Anlyzer	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

Time of Occupancy (Dwell Time) test setup:
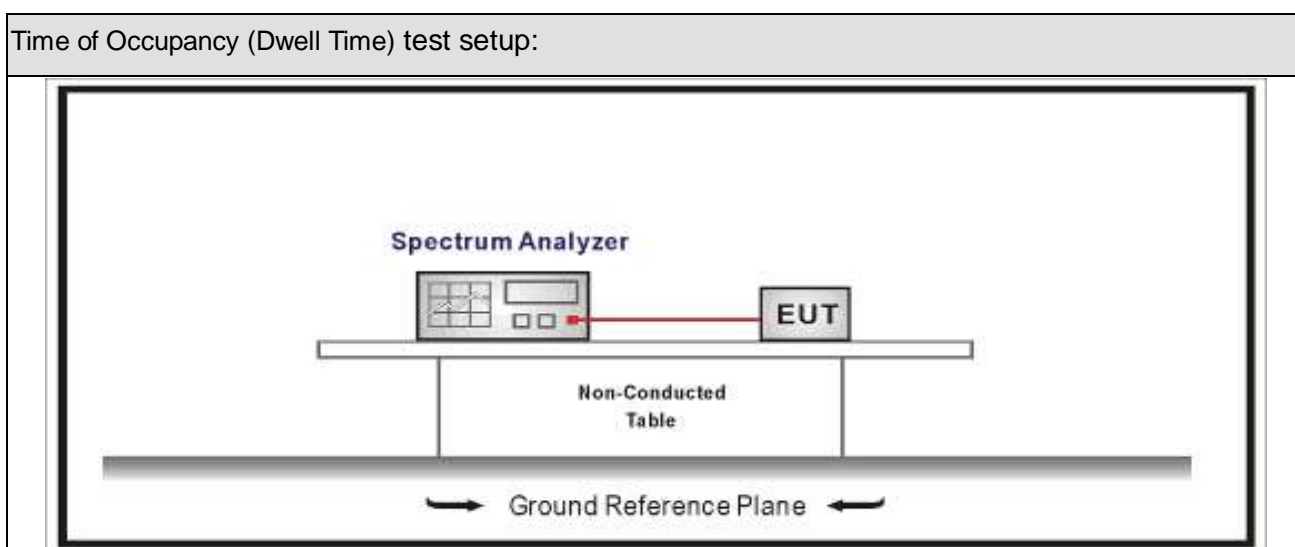
8.3. Limit

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	:	Bluetooth Headphone Beanie	Power	:	AC 120V/60Hz
Test Mode	:	Mode 1(GFSK_DH5)	Test Site	:	TR-8
Test Date	:	2018.07.10	Test Engineer	:	Allen

Channel No.	Frequency (MHz)	Time of Occupancy (ms)	Limit (ms)	Result
00	2402	316.24	< 400	Pass

Note1: Test Time Period: 0.4*79=31.6sec

Note2: Time of Occupancy= pulse time*pulse number

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

Channel 00 (2402MHz)-(DH5)
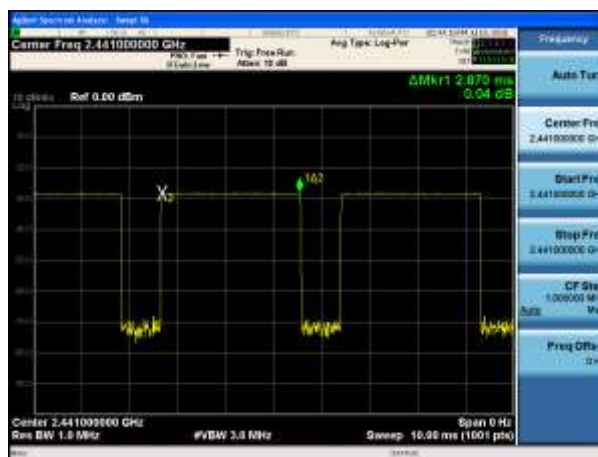
Product Name	:	Bluetooth Headphone Beanie	Power	:	AC 120V/60Hz
Test Mode	:	Mode 2(Pi/4 DQPSK_DH5)	Test Site	:	TR-8
Test Date	:	2018.07.10	Test Engineer	:	Allen

Channel No.	Frequency (MHz)	Time of Occupancy (ms)	Limit (ms)	Result
00	2402	317.34	< 400	Pass

Note1: Test Time Period: 0.4*79=31.6sec

Note2: Time of Occupancy= pulse time*pulse number

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

Channel 00 (2402MHz)-(2DH5)

Product Name	:	Bluetooth Headphone Beanie	Power	:	AC 120V/60Hz
Test Mode	:	Mode 3(8DPSK_DH5)	Test Site	:	TR-8
Test Date	:	2018.07.10	Test Engineer	:	Allen

Channel No.	Frequency (MHz)	Time of Occupancy (ms)	Limit (ms)	Result
00	2402	316.24	< 400	Pass

Note1: Test Time Period: 0.4*79=31.6sec

Note2: Time of Occupancy= pulse time*pulse number

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

Channel 00 (2402MHz)-(3DH5)

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 Anlyzer	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

Peak Output Power test setup:
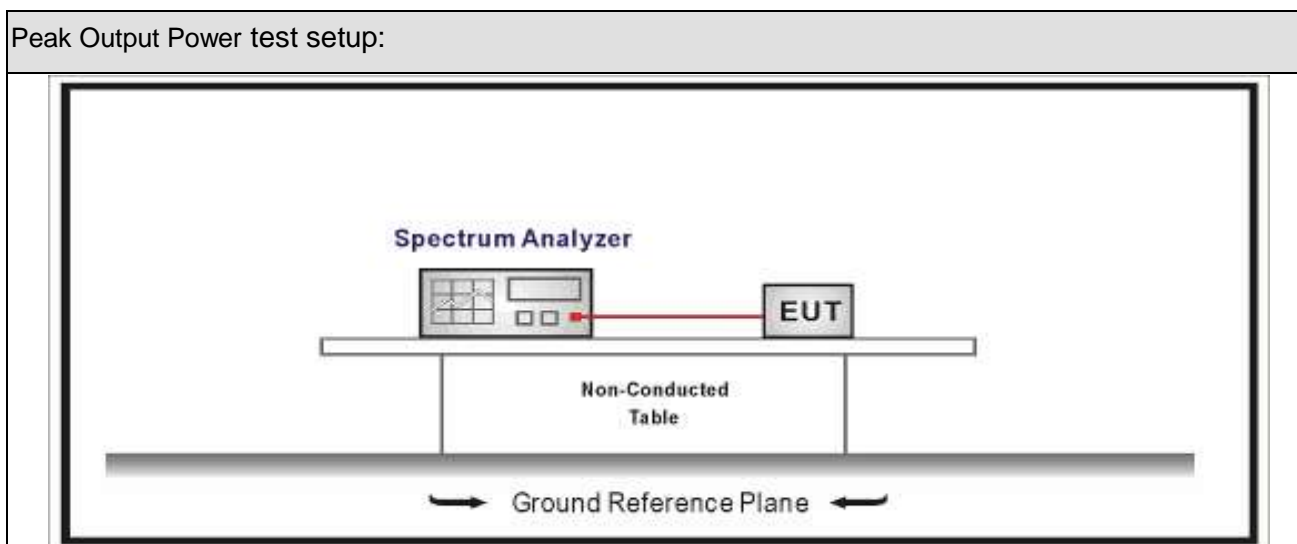
9.3. Limit

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	:	Bluetooth Headphone Beanie	Power	:	AC 120V/60Hz
Test Mode	:	Mode 1	Test Site	:	TR-8
Test Date	:	2018.07.10	Test Engineer	:	Allen

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
00	2402	2.58	21.00	Pass
39	2441	2.67	21.00	Pass
78	2480	3.01	21.00	Pass

Product Name	:	Bluetooth Headphone Beanie	Power	:	AC 120V/60Hz
Test Mode	:	Mode 2	Test Site	:	TR-8
Test Date	:	2018.07.10	Test Engineer	:	Allen

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
00	2402	3.08	21.00	Pass
39	2441	3.11	21.00	Pass
78	2480	3.21	21.00	Pass

Product Name	:	Bluetooth Headphone Beanie	Power	:	AC 120V/60Hz
Test Mode	:	Mode 3	Test Site	:	TR-8
Test Date	:	2018.07.10	Test Engineer	:	Allen

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
00	2402	2.98	21.00	Pass
39	2441	3.34	21.00	Pass
78	2480	3.68	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 Anlyzer	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

Emissions in non-restricted frequency bands test setup:
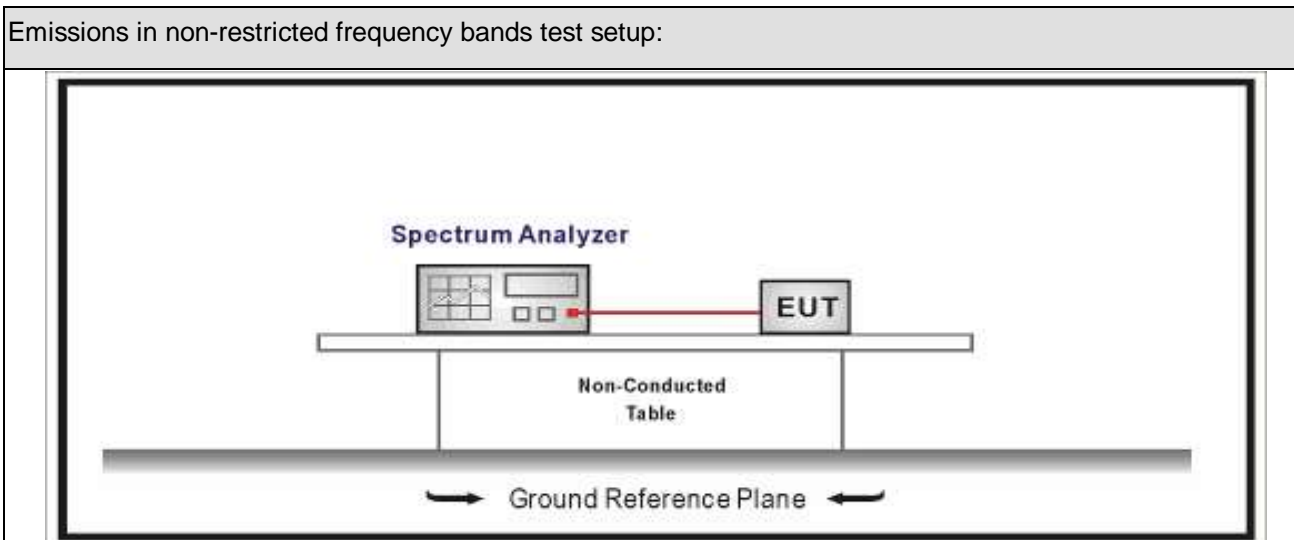
10.3.   Limit

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	:	Bluetooth Headphone Beanie	Power	:	AC 120V/60Hz
Test Mode	:	Mode 1~4	Test Site	:	TR-8
Test Date	:	2018.05.08	Test Engineer	:	Allen

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	-1.801	2400.00	-46.652	44.851	>20	Pass
1	78	2480	-3.053	2500.00	-45.180	42.127	>20	Pass
2	00	2402	-8.538	2400.00	-46.415	37.877	>20	Pass
2	78	2480	-7.838	2500.00	-46.276	38.438	>20	Pass
3	00	2402	-4.340	2394.85	-45.587	41.247	>20	Pass
3	78	2480	-7.564	2500.00	-46.427	38.863	>20	Pass
4	00~78	00~78	-1.420	2400.00	-46.914	45.494	>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.

Mode2 CH00(2402MHz)
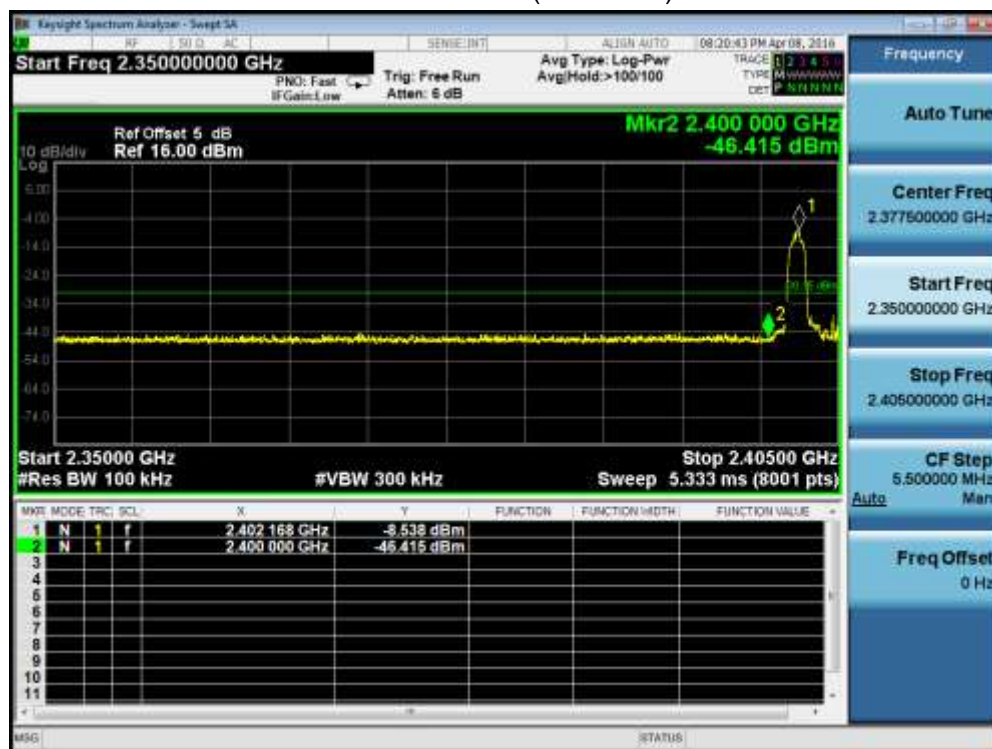
11. Radiated Emission Band Edge

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	2017.07.16	2018.07.15
Pre-Amplifier	Miteq	NSP1800-25	1364185	2018.05.03	2019.05.02
DRG Horn Antenna	ETS-Lindgren	3117	00167055	2017.07.12	2018.07.11
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2017.09.18	2018.09.17
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	2018.01.05	2019.01.04

11.2. Test Setup

Above 1GHz Test Setup:
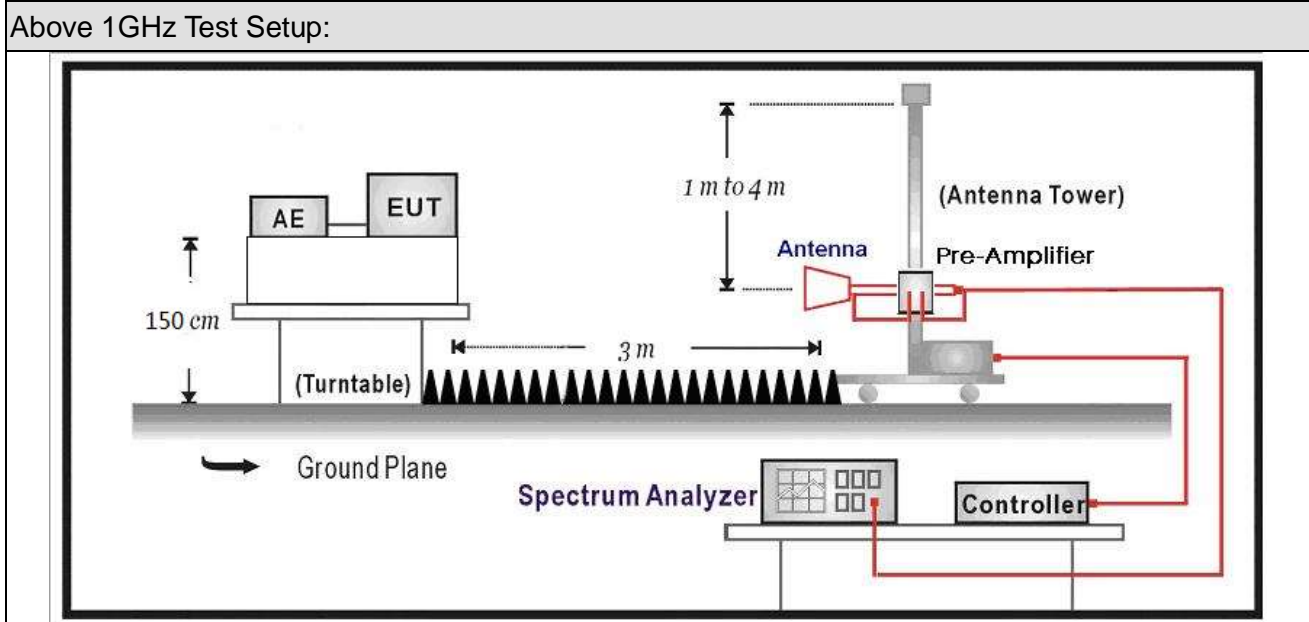
11.3. Limit

Band edge Limit				
Frequency bands (MHz)	Detector	Limit (dBµV/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
☒	DA 00-705	N/A	duty cycle correction factor
☒	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

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 Factor

| Test Mode	Pluse Time (ms)	Pluse Number	Accumulated Transmit Time (ms)	Duty Factor (dB)
Mode 3	2.9	1	2.9	-30.8
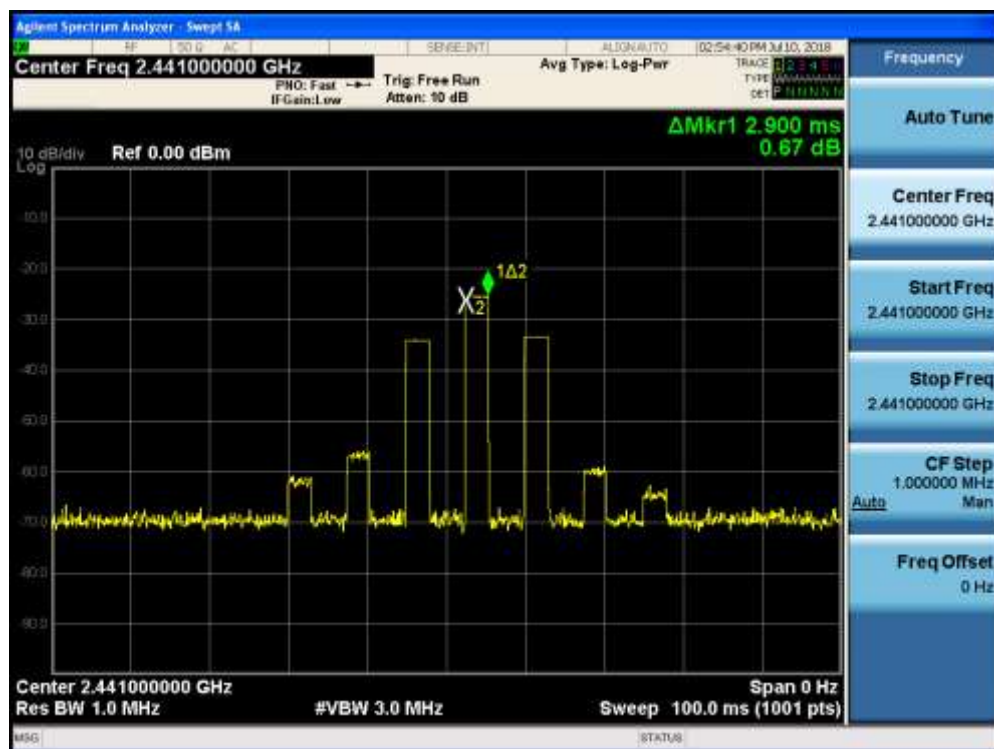
| Pulse Number |
|---|
| |
| Note: Duty Factor =20Log(Accumulated Transmit Time/ 100ms) |

11.7. Test Result

Engineer: ALLEN	
Site: AC5	Time: 2018/07/05 - 17:33
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth Headphone Beanie	Power: 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by DH5	
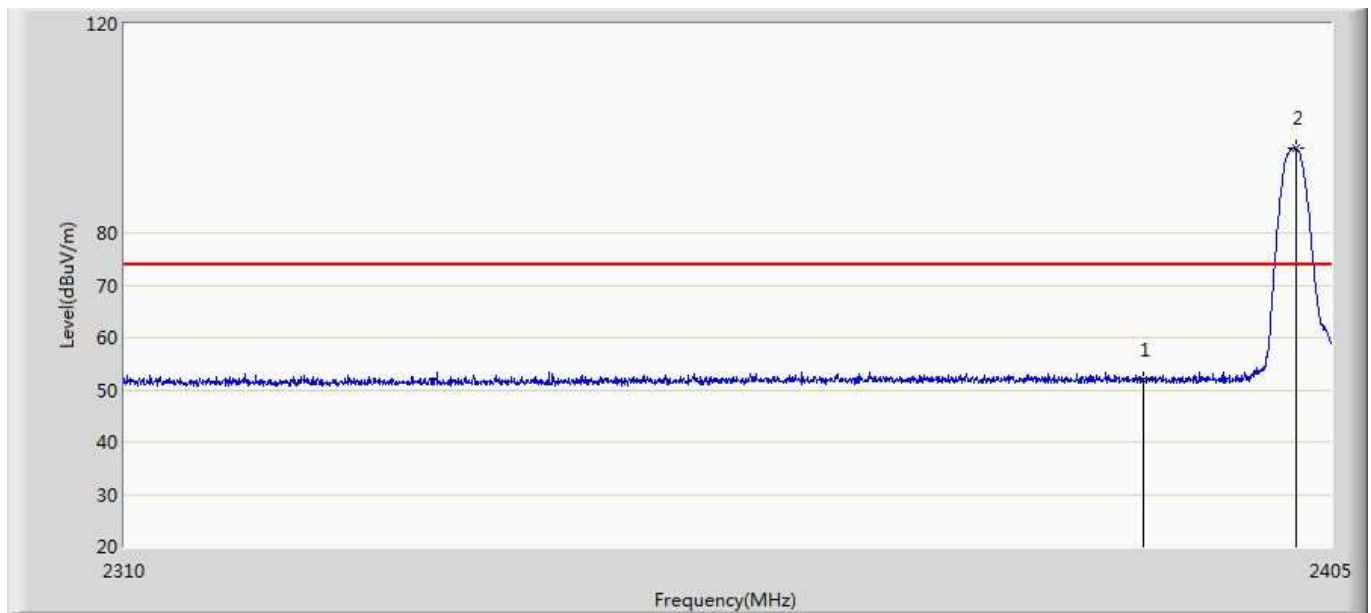
N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	51.794	15.370	-22.206	74.000	36.424	PK
2	*	2402.198	96.360	59.966	22.360	74.000	36.394	PK

N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	51.794	20.994	-33.006	54.000	-30.800	AV
2	*	2402.198	96.360	65.560	11.560	54.000	-30.800	AV

Engineer: ALLEN	
Site: AC5	Time: 2018/07/05 - 17:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Bluetooth Headphone Beanie	Power: 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by DH5	
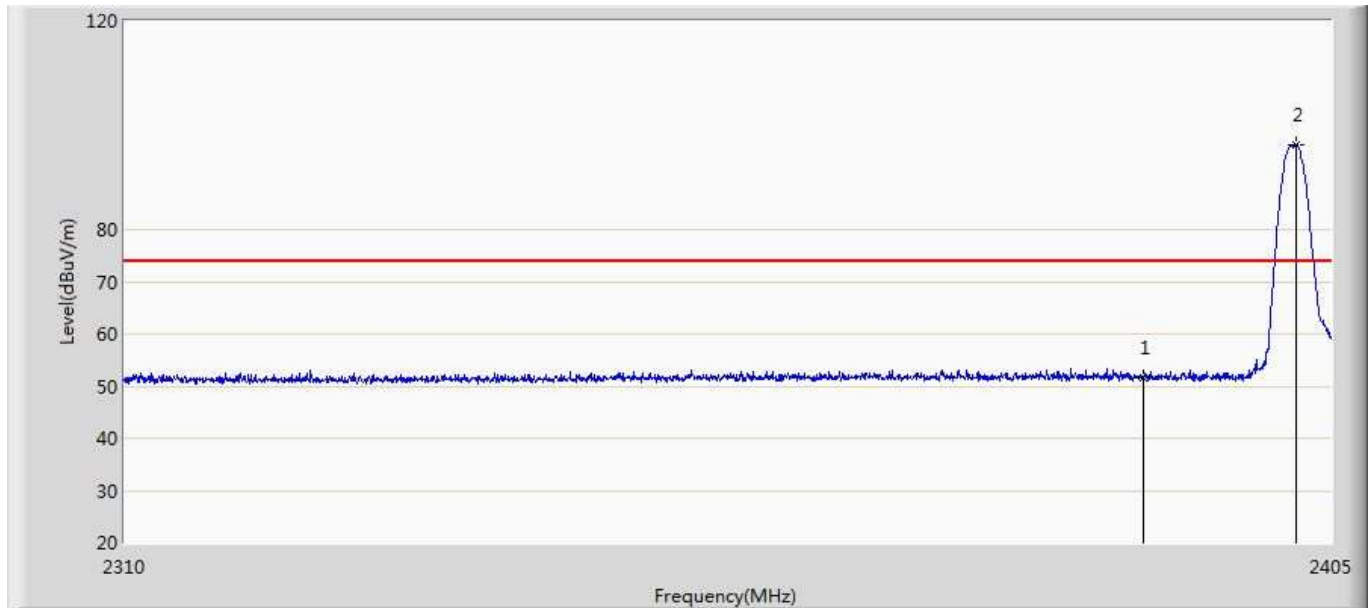
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	51.564	15.140	-22.436	74.000	36.424	PK
2	*	2402.198	96.338	59.944	NA	74.000	36.394	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	51.564	20.764	-33.236	54.000	-30.800	AV
2	*	2402.198	96.338	65.538	NA	54.000	-30.800	AV

Engineer: ALLEN	
Site: AC5	Time: 2018/07/05 - 17:49
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth Headphone Beanie	Power: 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by DH5	
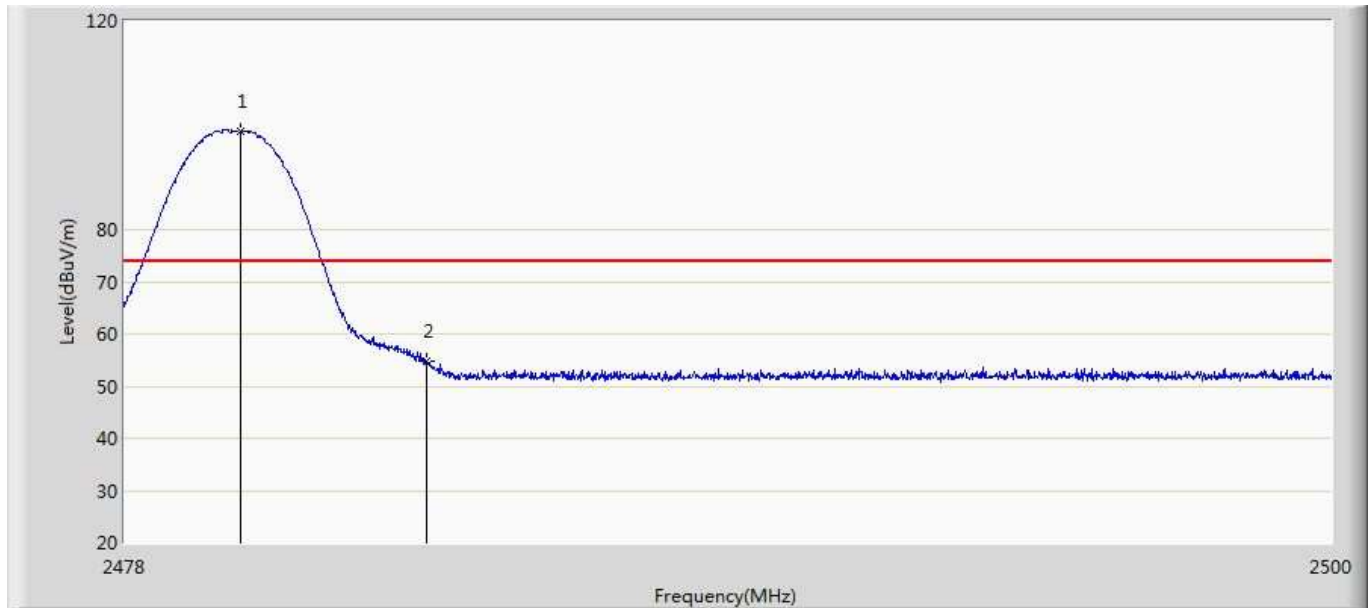
N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.112	98.968	62.328	NA	74.000	36.640	PK
2		2483.500	54.784	18.138	-19.216	74.000	36.646	PK

N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.112	98.968	68.168	NA	54.000	-30.800	AV
2		2483.500	54.784	23.984	-30.016	54.000	-30.800	AV

Engineer: ALLEN	
Site: AC5	Time: 2018/07/05 - 17:52
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Bluetooth Headphone Beanie	Power: 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by DH5	
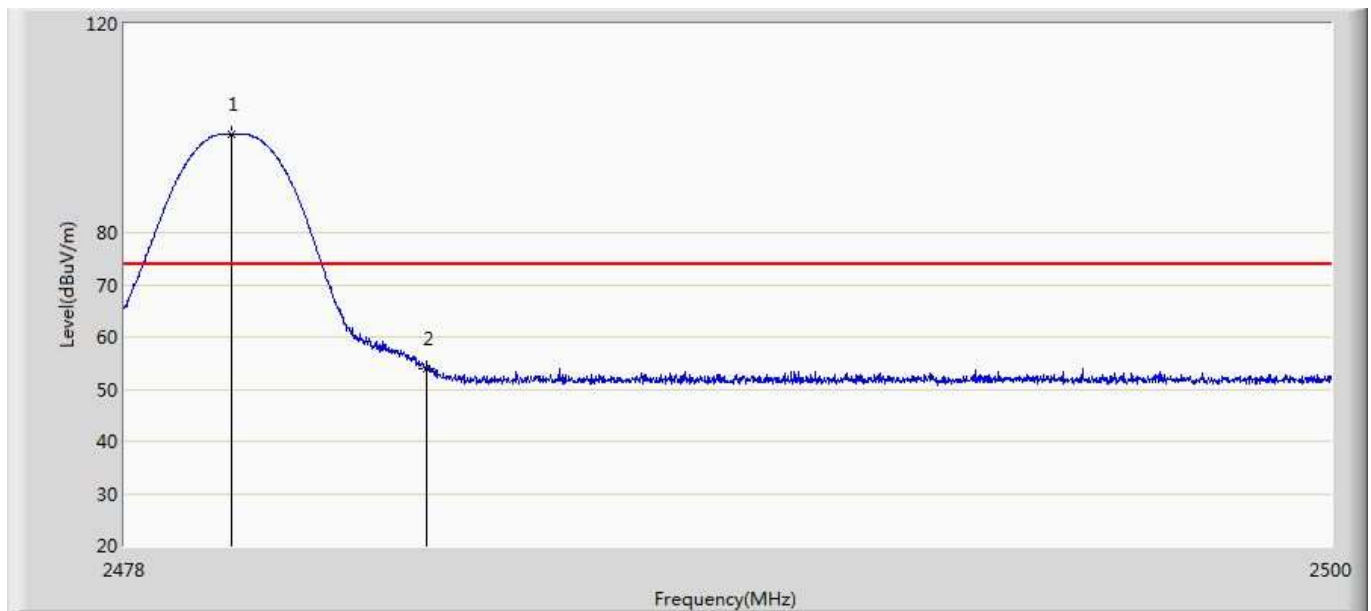
N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.947	98.876	62.236	NA	74.000	36.640	PK
2		2483.500	54.049	17.403	-19.951	74.000	36.646	PK

N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.947	98.876	68.076	NA	54.000	-30.800	AV
2		2483.500	54.049	23.249	-30.751	54.000	-30.800	AV

![DEKRA]

Engineer: ALLEN	
Site: AC5	Time: 2018/07/05 - 17:54
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth Headphone Beanie	Power: 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by 2DH5	
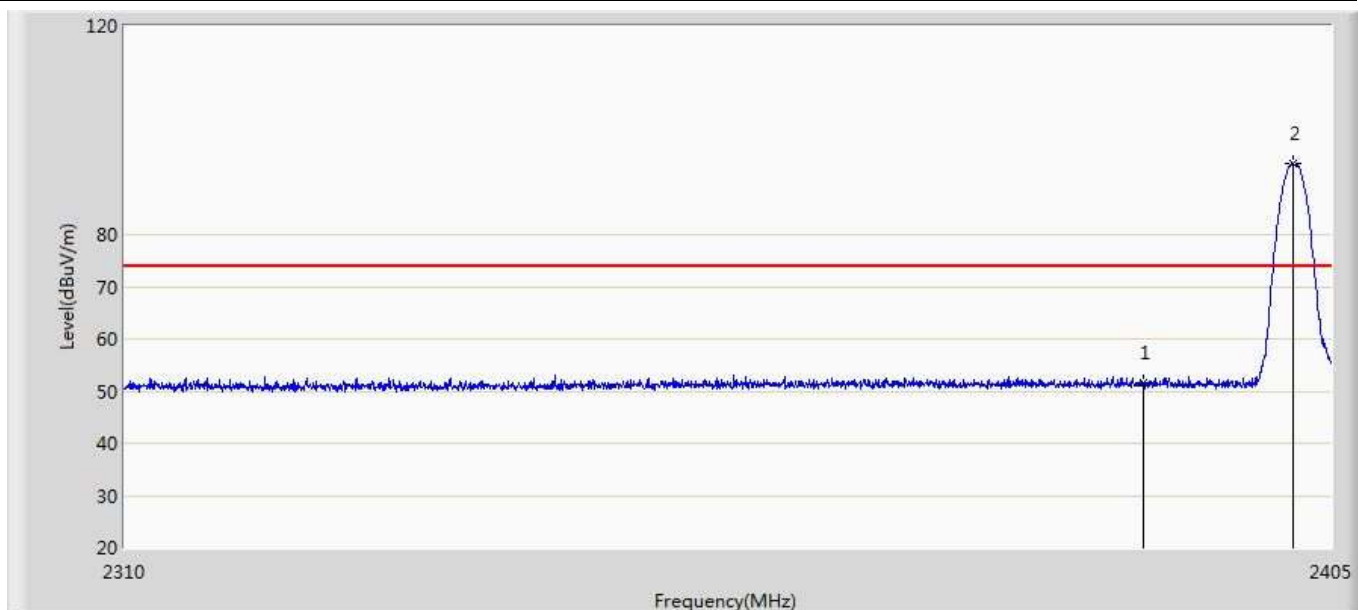
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	51.622	15.198	-22.378	74.000	36.424	PK
2	*	2401.913	93.512	57.118	NA	74.000	36.394	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	51.622	20.822	-33.178	54.000	-30.800	AV
2	*	2401.913	93.512	62.712	NA	54.000	-30.800	AV

| Engineer: ALLEN	
Site: AC5	Time: 2018/07/05 - 17:57
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Bluetooth Headphone Beanie	Power: 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by 2DH5	
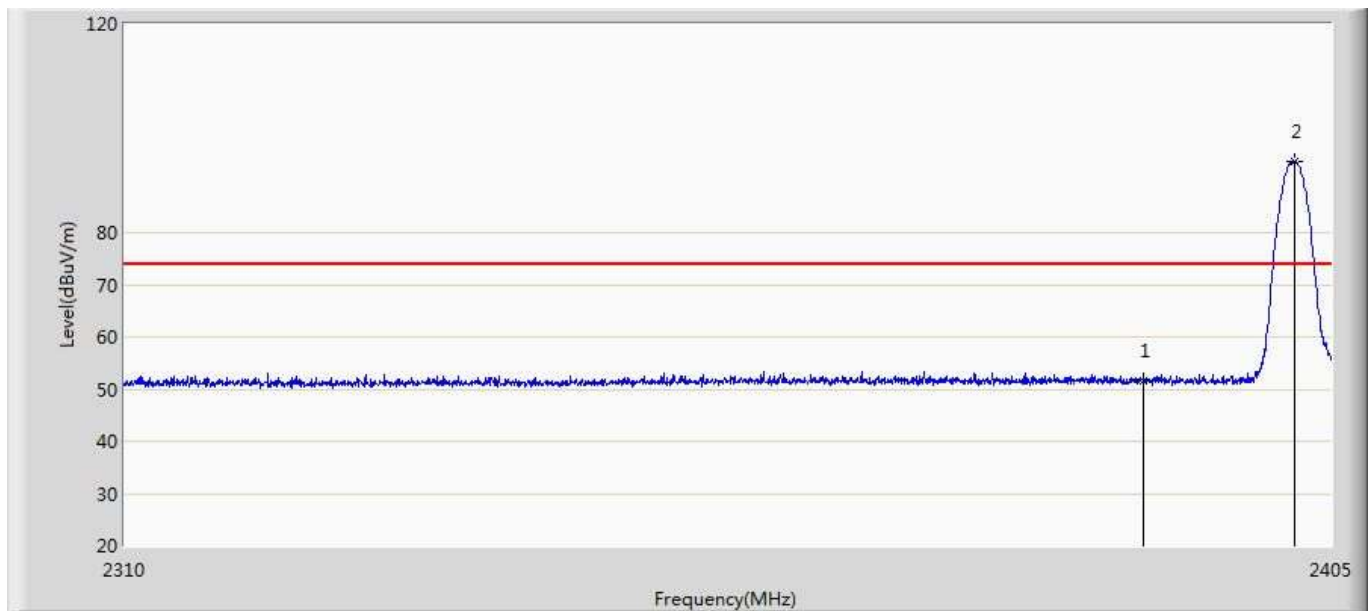
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	51.493	15.069	-22.507	74.000	36.424	PK
2	*	2402.055	93.664	57.270	NA	74.000	36.394	PK

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	51.493	20.693	-33.307	54.000	-30.800	AV
2	*	2402.055	93.664	62.864	NA	54.000	-30.800	AV

Engineer: ALLEN	
Site: AC5	Time: 2018/07/05 - 18:00
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth Headphone Beanie	Power: 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by 2DH5	
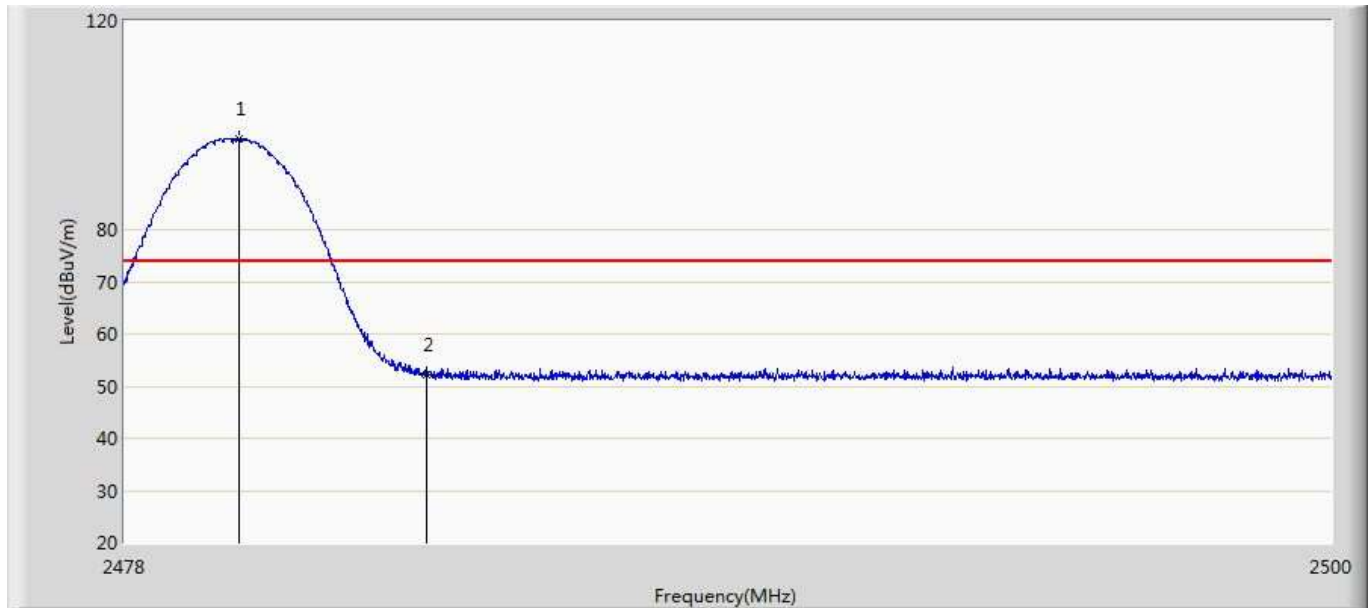
N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.079	97.357	60.717	NA	74.000	36.640	PK
2		2483.500	52.197	15.551	-21.803	74.000	36.646	PK

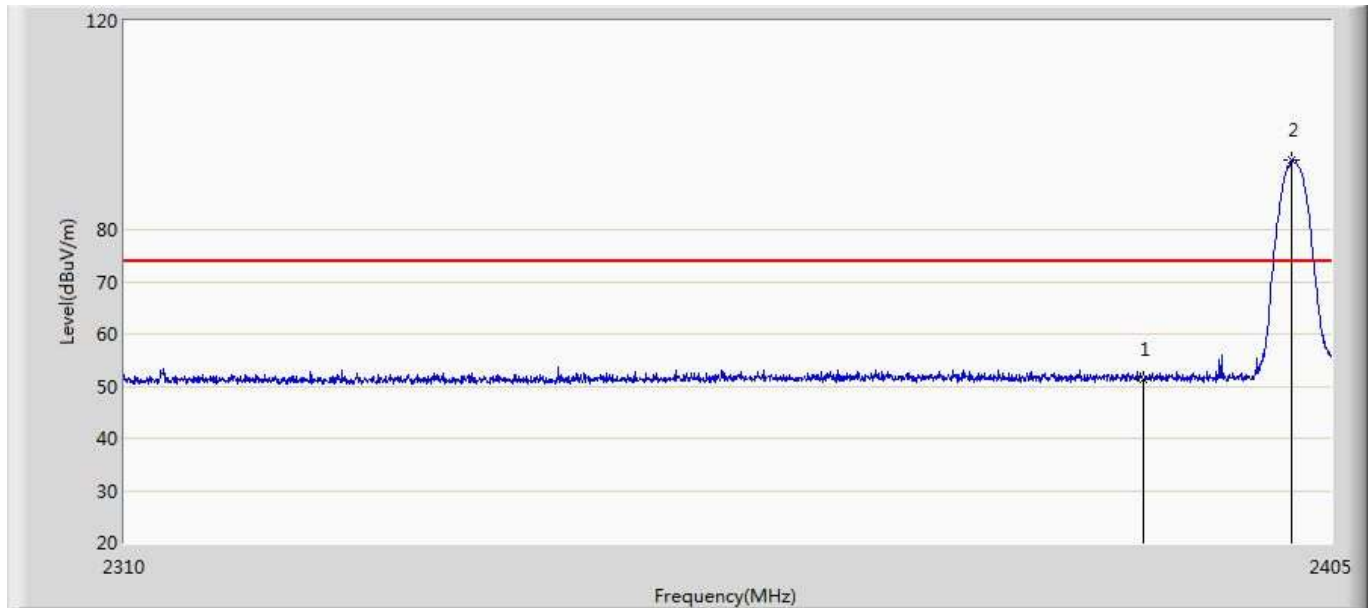| N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.079	97.357	66.557	NA	54.000	-30.800	AV
2		2483.500	52.197	21.397	-32.603	54.000	-30.800	AV

Engineer: ALLEN	
Site: AC5	Time: 2018/07/05 - 18:02
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Bluetooth Headphone Beanie	Power: 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by 2DH5	
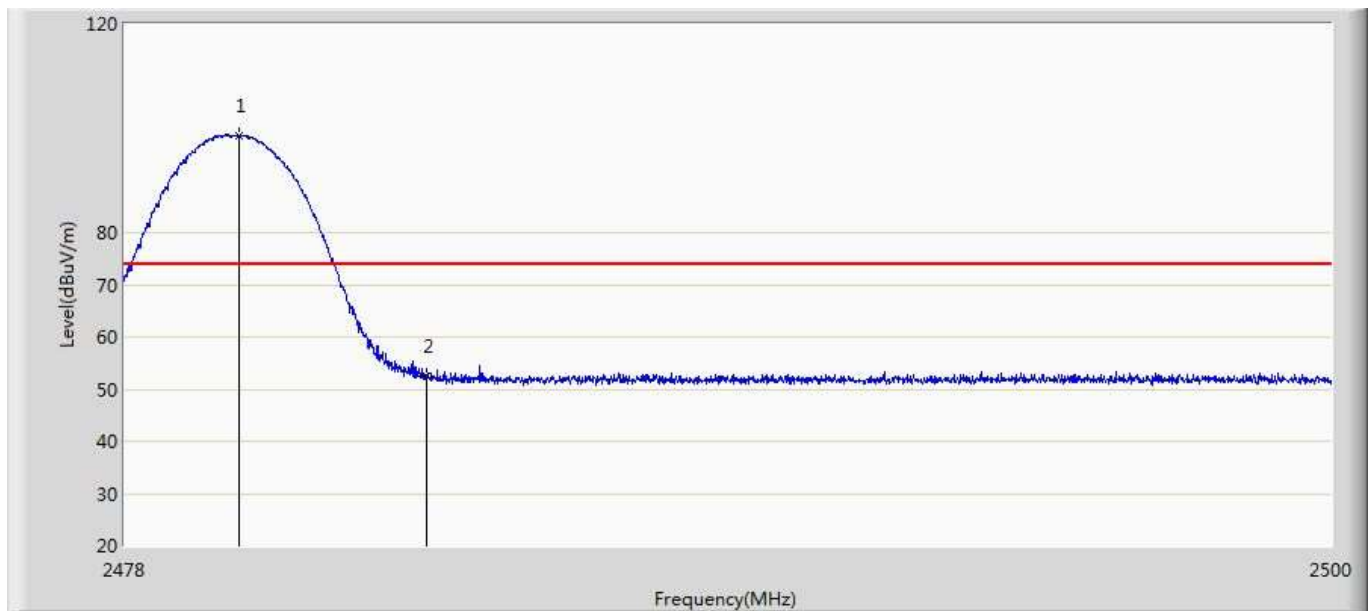
N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.079	98.566	61.926	NA	74.000	36.640	PK
2		2483.500	52.605	15.959	-21.395	74.000	36.646	PK

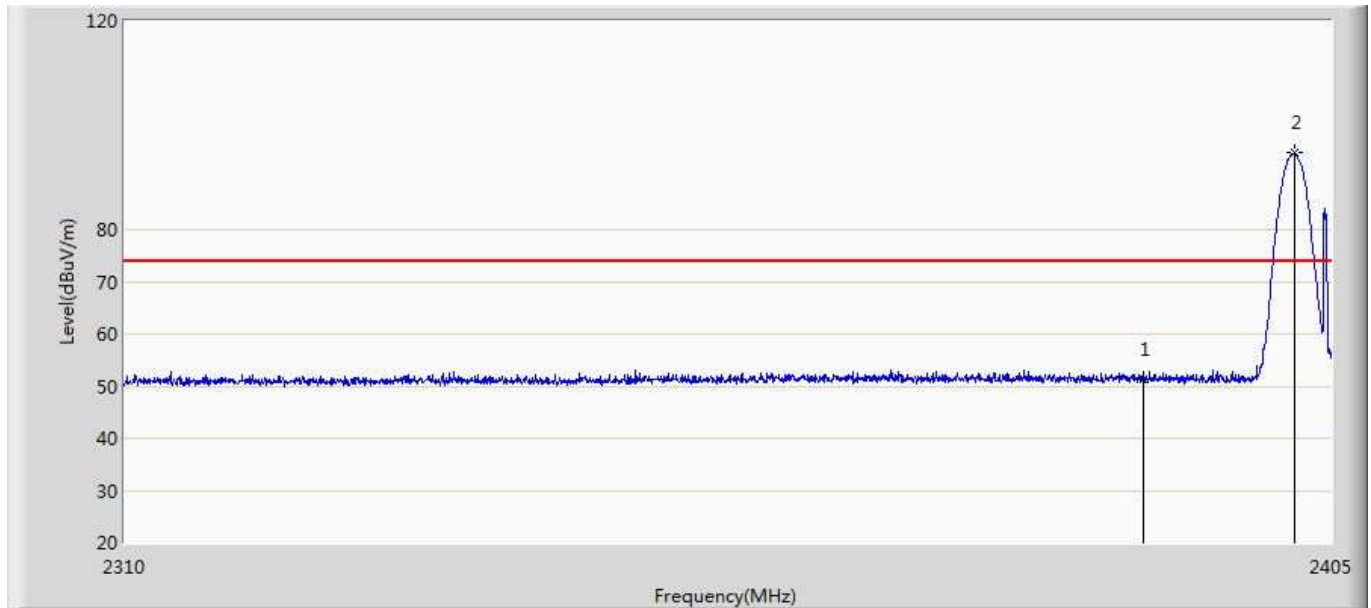| N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.079	98.566	67.766	NA	54.000	-30.800	AV
2		2483.500	52.605	21.805	-32.195	54.000	-30.800	AV

![DEKRA]

Engineer: ALLEN	
Site: AC5	Time: 2018/07/05 - 18:05
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth Headphone Beanie	Power: 120V/60Hz
Note: Mode 1: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	51.390	14.966	-22.610	74.000	36.424	PK
2	*	2401.865	93.223	56.829	NA	74.000	36.394	PK

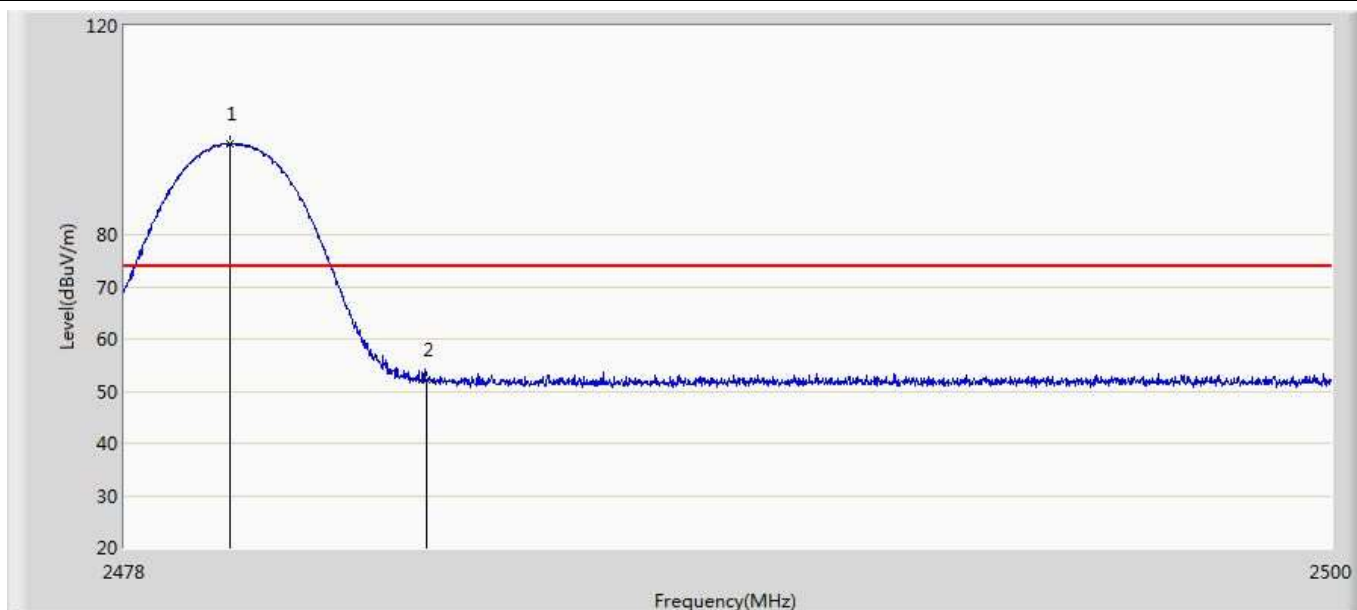| No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	51.390	20.590	-33.410	54.000	-30.800	AV
2	*	2401.865	93.223	62.423	NA	54.000	-30.800	AV

Engineer: ALLEN	
Site: AC5	Time: 2018/07/05 - 18:09
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Bluetooth Headphone Beanie	Power: 120V/60Hz
Note: Mode 1: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	51.194	14.770	-22.806	74.000	36.424	PK
2	*	2402.055	94.646	58.252	NA	74.000	36.394	PK

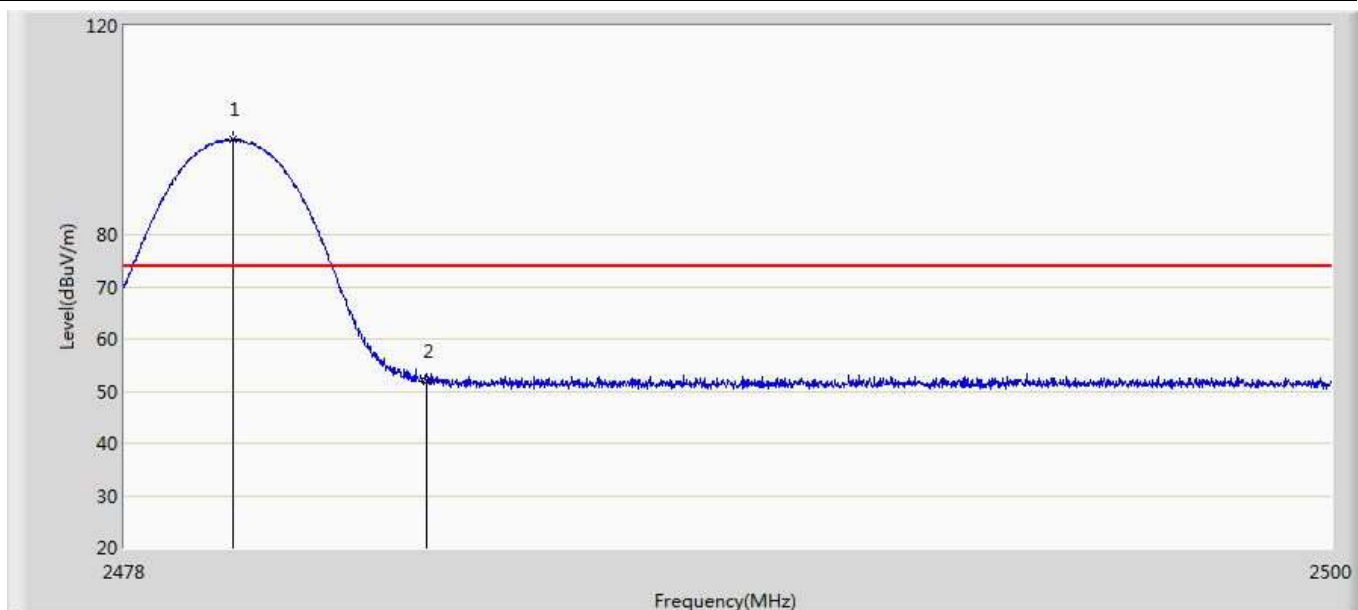| No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	51.194	20.394	-33.606	54.000	-30.800	AV
2	*	2402.055	94.646	63.846	NA	54.000	-30.800	AV

Engineer: ALLEN	
Site: AC5	Time: 2018/07/05 - 18:12
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Bluetooth Headphone Beanie	Power: 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by 3DH5	

N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.925	97.495	60.855	NA	74.000	36.640	PK
2		2483.500	52.126	15.480	-21.874	74.000	36.646	PK

N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.925	97.495	66.695	NA	54.000	-30.800	AV
2		2483.500	52.126	21.326	-32.674	54.000	-30.800	AV

Engineer: ALLEN	
Site: AC5	Time: 2018/07/05 - 18:14
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Bluetooth Headphone Beanie	Power: 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by 3DH5	

N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.980	98.207	61.567	NA	74.000	36.640	PK
2		2483.500	51.918	15.272	-22.082	74.000	36.646	PK

N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.980	98.207	67.407	NA	54.000	-30.800	AV
2		2483.500	51.918	21.118	-32.882	54.000	-30.800	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 ———————