FCC Test Report

Product Name	Bluetooth Headset
Model No.	HSC120W
FCC ID.	BCE-HSC120W

Applicant	GN Audio A/S
Address	Lautrupbjerg 7, 2750 Ballerup, Denmark

Date of Receipt	Dec. 03, 2019
Issued Date	Feb. 19, 2020
Report No.	19C0025R-RFUSP01V00
Report Version	V1.0

Testing Laboratory
3023

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 report of the equipment and evaluated measurement uncertainty herein.
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Test Report

Issued Date: Feb. 19, 2020
Report No.: 19C0025R-RFUSP01V00

Product Name	Bluetooth Headset
Applicant	GN Audio A/S
Address	Lautrupbjerg 7, 2750 Ballerup, Denmark
Manufacturer	GN Audio A/S
Model No.	HSC120W
FCC ID.	BCE-HSC120W
EUT Rated Voltage	DC 3.7V (By battery) or DC 5V (By USB)
EUT Test Voltage	DC 3.7V (By battery)
Trade Name	Jabra
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C ANSI C63.4: 2014, ANSI C63.10: 2013
Test Result	Complied

Documented By : Peggy Tu

(Adm. Assistant / Peggy Tu)

Tested By : Yun Che Chen

(Engineer / Yunche Chen)

Approved By :

(Director / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Bluetooth Headset
Trade Name	Jabra
Model No.	HSC120W
FCC ID.	BCE-HSC120W
Frequency Range	2402-2480MHz
Channel Number	79
Type of Modulation	FHSS: GFSK(1Mbps) /π/4DQPSK(2Mbps) / 8DPSK(3Mbps)
Antenna Type	PCB antenna
Channel Control	Auto
Antenna Gain	Refer to the table “Antenna List”
USB Cable	Brand: Jabra, Non-shielded, 1.2m
Audio Cable	Brand: Jabra, Non-shielded, 1.2m
Audio Adapter	Brand: Jabra

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	Jabra	HSC120W	PCB antenna	5.23dBi for 2.4GHz

Note: The antenna of EUT is conforming to FCC 15.203.

Center Frequency of Each Channel:

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

Note:

1. The EUT is a Bluetooth Headset with a built-in Bluetooth V5.0, V2.1+EDR transceiver, this report for Bluetooth V2.1+EDR.
2. These tests were conducted on a sample for the purpose of demonstrating compliance of Bluetooth transmitter with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
4. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test Mode	Mode 1: Transmit - 1Mbps (GFSK) Mode 2: Transmit - 2Mbps (π/4DQPSK) Mode 3: Transmit - 3Mbps (8DPSK)

1.3. Tested System Details

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

BT mode

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	DELL	Latitude 5580	GDZN7H2	Non-Shielded, 0.8m

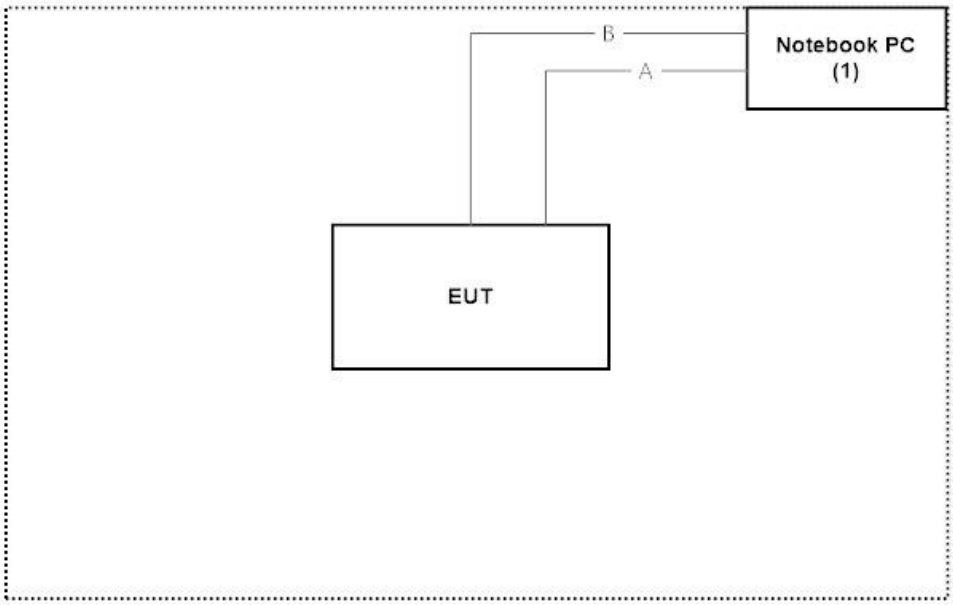
Adapter mode

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	DELL	Latitude 5580	GDZN7H2	Non-Shielded, 0.8m
2	Adapter	SAMSUNG	EP-TA20JWS	R37H2CMJ873DK3	N/A

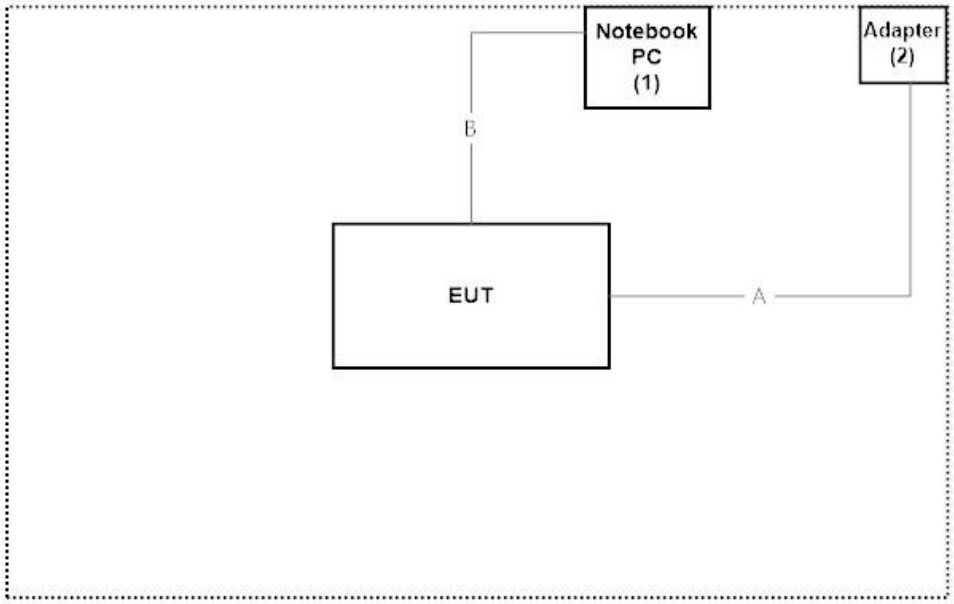
Signal Cable Type		Signal cable Description
A	USB Cable	Non-shielded, 1.2m
B	Audio Cable	Non-shielded, 1.2m

1.4. Configuration of Tested System

BT mode



Adapter mode



1.5. EUT Exercise Software

1. Setup the EUT as shown in Section 1.4.
2. Execute software “Blue test 3, Ver.3.2.0” on the EUT.
3. Configure the test mode, the test channel, and the data rate.
4. Press “OK” to start the continuous Transmit.
5. Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual
Conducted Emission	Temperature (°C)	10~40 °C	21.8 °C
	Humidity (%RH)	10~90 %	52 %
Radiated Emission	Temperature (°C)	10~40 °C	24 ℃
	Humidity (%RH)	10~90 %	61 %
Conductive	Temperature (°C)	10~40 °C	24.8 ℃
	Humidity (%RH)	10~90 %	52.8 %

USA : FCC Registration Number: TW3023

Canada : IC Registration Number: 4075A

Site Description: Accredited by TAF
Accredited Number: 3023

Test Laboratory: DEKRA Testing and Certification Co., Ltd
Address: No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan, R.O.C.
Phone number: 886-2-8601-3788
Fax number: 886-2-8601-3789
Email address: info.tw@dekra.com
Website: http://www.dekra.com.tw

1.7. List of Test Equipment

For Conducted measurements /CB3/SR8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
	Temperature Chamber	WIT GROUP	TH-1S-B	EQ-201-00146	2019/02/26	2020/02/25
X	Spectrum Analyzer	Agilent	N9010A	MY53470892	2019/09/25	2020/09/24
X	Peak Power Analyzer	Keysight	8990B	MY51000410	2019/07/30	2020/07/29
X	Wideband Power Sensor	Keysight	N1923A	MY56080003	2019/07/30	2020/07/29
X	Wideband Power Sensor	Keysight	N1923A	MY56080004	2019/07/30	2020/07/29
X	EMI Test Receiver	R&S	ESCS 30	100369	2019/11/19	2020/11/18
X	LISN	R&S	ENV216	101105	2019/04/10	2020/04/09
X	LISN	R&S	ESH3-Z5	836679/014	2019/04/10	2020/04/09
X	Coaxial Cable	DEKRA	RG 400	LC018-RG	2019/06/20	2020/06/19

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : DEKRA Conduction Test SystemV9.0.5.

For Radiated measurements /Site3/CB8

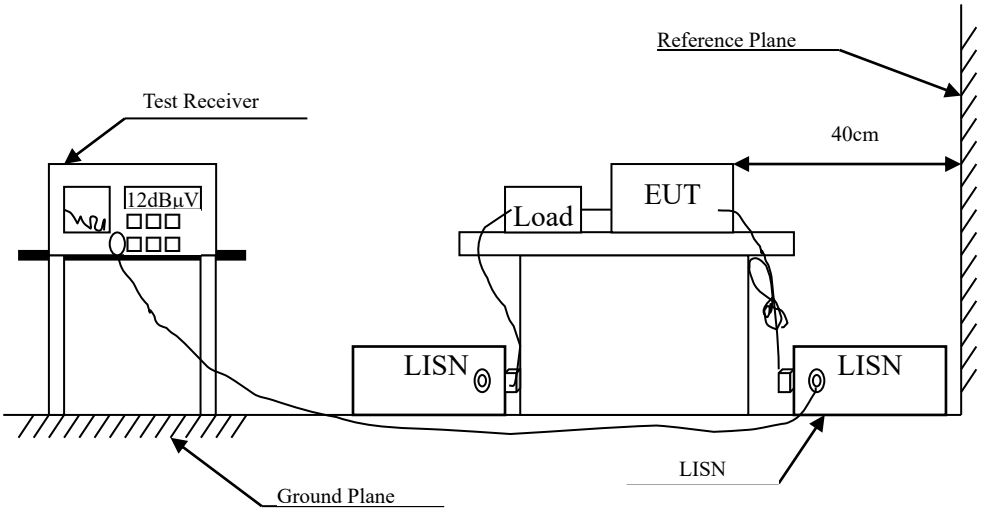
	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
X	Spectrum Analyzer	R&S	FSP40	100170	2019/03/11	2020/03/10
X	Loop Antenna	Teseq	HLA6121	37133	2019/10/15	2021/10/14
X	Bilog Antenna	Schaffner Chase	CBL6112B	2794	2019/06/23	2020/06/22
X	Coaxial Cable	DEKRA	L1907-001C	280280.F141.1000D	2019/07/10	2020/07/09
X	Amplifier	EMCI	EMC001330	980254	2019/08/22	2020/08/21
X	Horn Antenna	ETS-LINDGREN	3117	00228113	2019/05/02	2020/05/01
X	Coaxial Cable	DEKRA	L1907-002C	280280.F141.1000D	2019/07/10	2020/07/09
X	Amplifier	EMCI	EMC05820SE	980362	2019/06/26	2020/06/25
	Amplifier	EMCI	EMC051845SE	SN980632	2019/08/08	2020/08/07
	Horn Antenna	Com-Power	AH-1840	101101	2019/10/31	2020/10/30
	Amplifier + Cable	EMCI	EMC184045SE	980369	2019/04/16	2020/04/15
	Bilog Antenna	Schaffner Chase	CBL6112B	2916	2019/06/23	2020/06/22
	Coaxial Cable	DEKRA	L1907-003C	00100A1B3A120M	2019/07/10	2020/07/09
	Amplifier	EMCI	EMC001330	980255	2019/06/28	2020/06/27
X	Filter	MICRO-TRONICS	BRM50702	G270	2019/08/08	2020/08/07
	Filter	MICRO-TRONICS	BRM50716	G196	2019/08/08	2020/08/07

Note:

1. Loop Antenna is calibrated every two years, the other equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : DEKRA Test SystemV1.1.

2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBμV) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

2.3. Test Procedure

The EUT and Peripherals are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

The EUT setup and the test procedure are according to ANSI C63.4, 2014 to comply with the requirements of FCC 47CFR Subpart C.

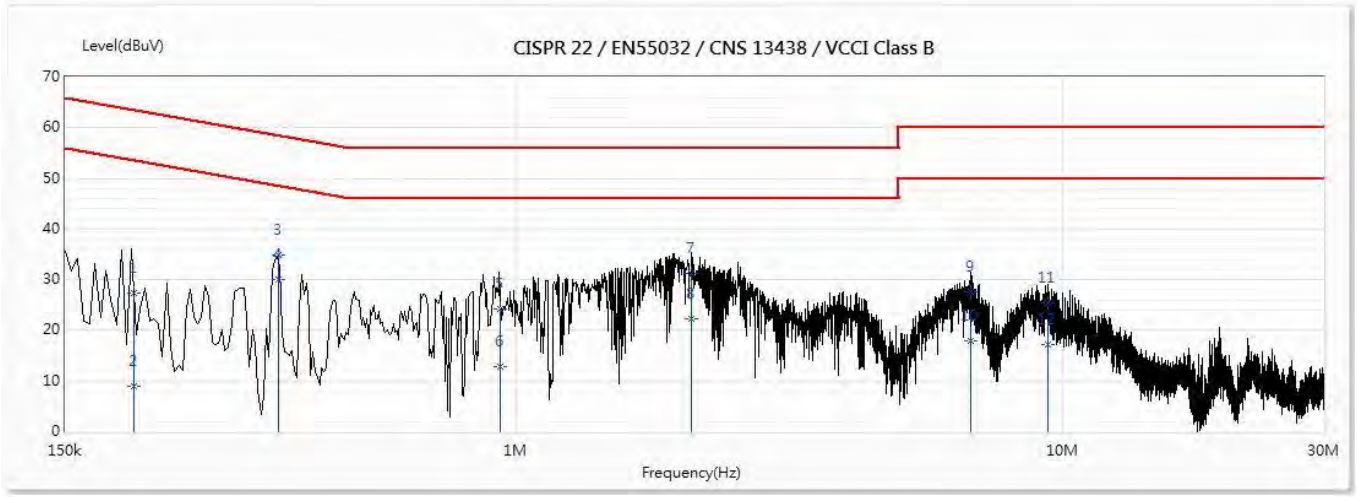
2.4. Uncertainty

± 2.26 dB

2.5. Test Result of Conducted Emission

Product : Bluetooth Headset
Test Item : Conducted Emission Test
Test date : 2019/12/19
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2441MHz)

Line 1



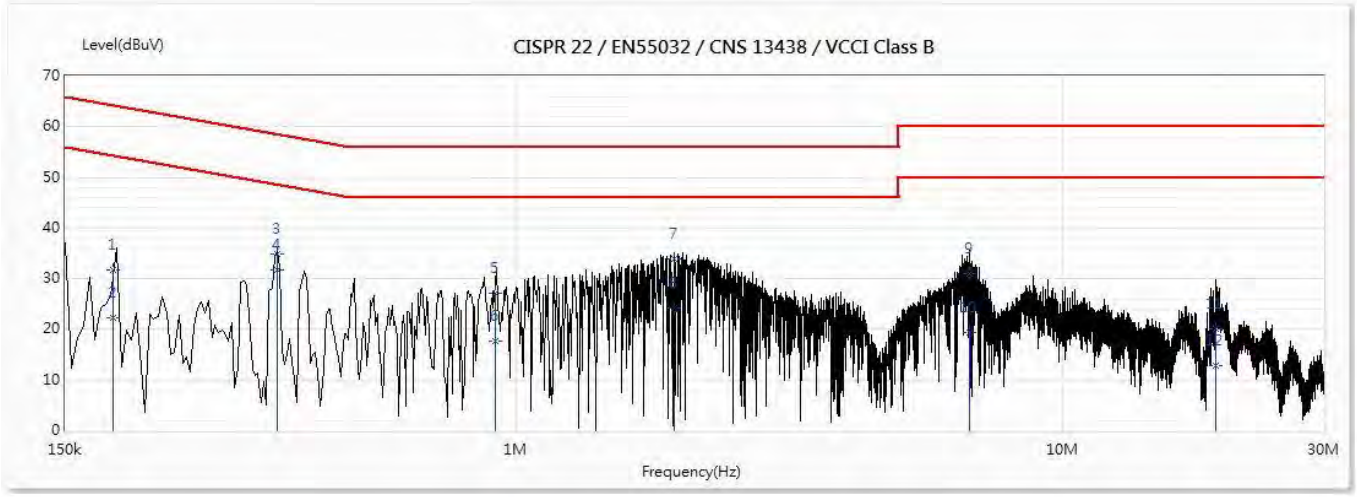
No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.2	27.40	63.62	-36.21	17.71	9.69	QP
2	0.2	8.89	53.62	-44.72	-0.80	9.69	AV
3	0.368	34.83	58.55	-23.72	25.13	9.70	QP
*4	0.368	30.08	48.55	-18.48	20.38	9.70	AV
5	0.938	24.27	56.00	-31.73	14.55	9.73	QP
6	0.938	12.94	46.00	-33.06	3.21	9.73	AV
7	2.095	31.35	56.00	-24.65	21.57	9.78	QP
8	2.095	22.29	46.00	-23.71	12.51	9.78	AV
9	6.799	27.71	60.00	-32.29	17.78	9.93	QP
10	6.799	17.84	50.00	-32.16	7.91	9.93	AV
11	9.375	25.33	60.00	-34.67	15.33	10.00	QP
12	9.375	17.31	50.00	-32.69	7.30	10.00	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.

Product : Bluetooth Headset
Test Item : Conducted Emission Test
Test date : 2019/12/19
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2441MHz)

Line 2



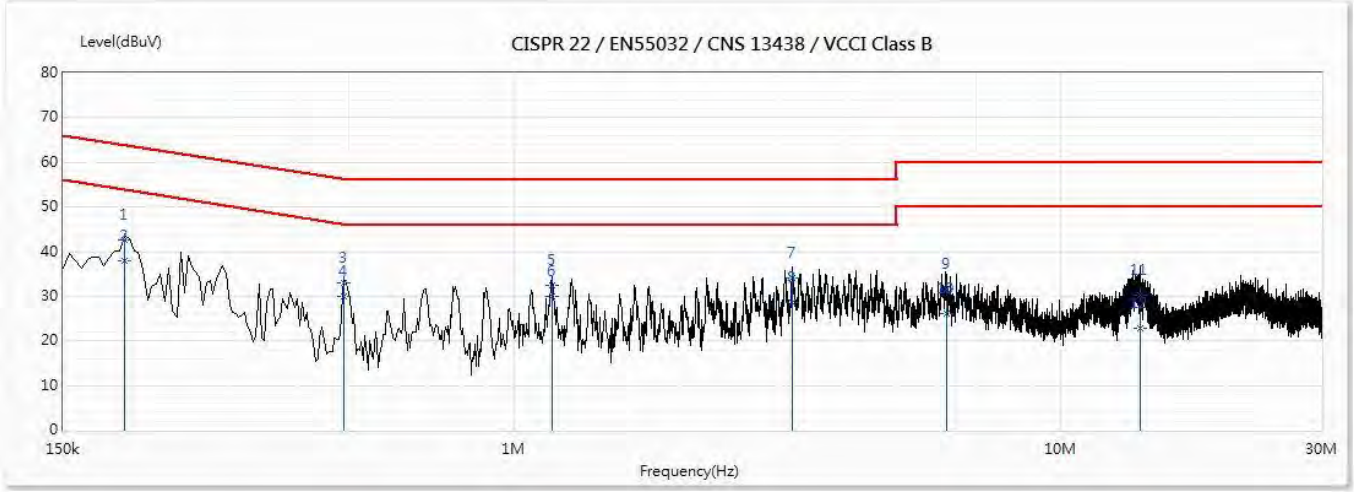
No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.184	31.75	64.32	-32.56	22.03	9.72	QP
2	0.184	22.30	54.32	-32.02	12.58	9.72	AV
3	0.367	34.95	58.58	-23.62	25.23	9.73	QP
*4	0.367	31.68	48.58	-16.90	21.95	9.73	AV
5	0.919	27.08	56.00	-28.92	17.32	9.77	QP
6	0.919	17.66	46.00	-28.34	7.89	9.77	AV
7	1.949	33.92	56.00	-22.08	24.10	9.82	QP
8	1.949	24.15	46.00	-21.85	14.33	9.82	AV
9	6.754	30.98	60.00	-29.02	21.00	9.99	QP
10	6.754	19.46	50.00	-30.54	9.47	9.99	AV
11	19.006	20.10	60.00	-39.90	9.77	10.34	QP
12	19.006	12.94	50.00	-37.06	2.61	10.34	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.

Product : Bluetooth Headset
Test Item : Conducted Emission Test
Test date : 2020/02/18
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2441MHz) -Adapter

Line 1



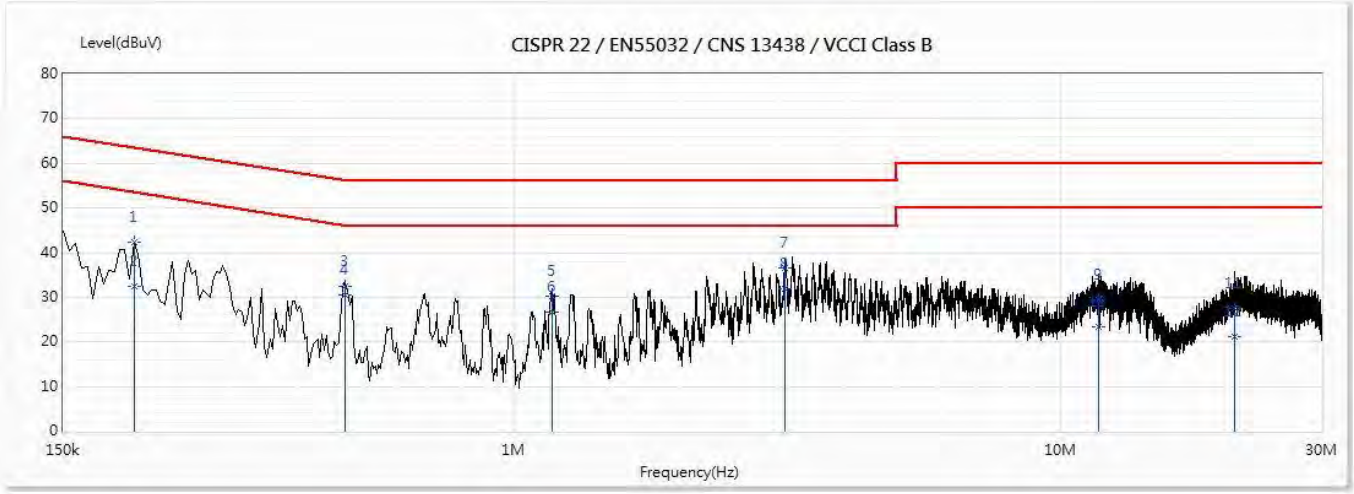
No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.194	42.55	63.84	-21.29	32.86	9.69	QP
*2	0.194	37.91	53.84	-15.94	28.21	9.69	AV
3	0.49	32.97	56.17	-23.20	23.27	9.70	QP
4	0.49	30.03	46.17	-16.14	20.33	9.70	AV
5	1.173	32.40	56.00	-23.60	22.66	9.74	QP
6	1.173	29.88	46.00	-16.12	20.14	9.74	AV
7	3.229	34.14	56.00	-21.86	24.32	9.82	QP
8	3.229	28.63	46.00	-17.37	18.81	9.82	AV
9	6.173	31.74	60.00	-28.26	21.82	9.91	QP
10	6.173	26.00	50.00	-24.00	16.09	9.91	AV
11	13.963	30.34	60.00	-29.66	20.25	10.09	QP
12	13.963	22.91	50.00	-27.09	12.83	10.09	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.

Product : Bluetooth Headset
Test Item : Conducted Emission Test
Test date : 2020/02/18
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2441MHz)-Adapter

Line 2



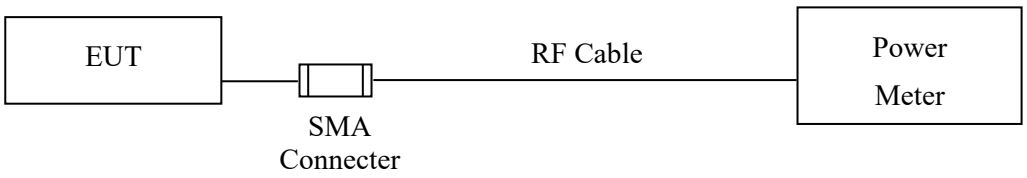
No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.202	42.22	63.53	-21.31	32.50	9.72	QP
2	0.202	32.32	53.53	-21.21	22.60	9.72	AV
3	0.491	32.38	56.16	-23.78	22.65	9.73	QP
4	0.491	30.59	46.16	-15.57	20.86	9.73	AV
5	1.176	30.12	56.00	-25.88	20.35	9.78	QP
6	1.176	26.73	46.00	-19.27	16.95	9.78	AV
7	3.133	36.53	56.00	-19.47	26.67	9.86	QP
*8	3.133	31.90	46.00	-14.10	22.04	9.86	AV
9	11.721	29.53	60.00	-30.47	19.40	10.13	QP
10	11.721	23.31	50.00	-26.69	13.17	10.13	AV
11	20.787	27.47	60.00	-32.53	17.10	10.37	QP
12	20.787	21.21	50.00	-28.79	10.84	10.37	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.

3. Peak Power Output

3.1. Test Setup



3.2. Limit

The maximum peak power shall be less 1Watt.

3.3. Test Procedure

Tested according to FHSS test procedure of KDB 558074 section 9 (b for compliance to FCC 47CFR 15.247 requirements.

3.4. Uncertainty

± 1.19 dB

3.5. Test Result of Peak Power Output

Product : Bluetooth Headset
Test Item : Peak Power Output
Test date : 2019/12/10
Test Mode : Mode 1: Transmit - 1Mbps (GFSK)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit	Result
Channel 00	2402.00	8.55	1 Watt= 30 dBm	Pass
Channel 39	2441.00	8.47	1 Watt= 30 dBm	Pass
Channel 78	2480.00	8.46	1 Watt= 30 dBm	Pass

Product : Bluetooth Headset
Test Item : Peak Power Output
Test date : 2019/12/10
Test Mode : Mode 2: Transmit - 2Mbps (π/4DQPSK)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit	Result
Channel 00	2402.00	10.48	1 Watt= 30 dBm	Pass
Channel 39	2441.00	10.40	1 Watt= 30 dBm	Pass
Channel 78	2480.00	10.39	1 Watt= 30 dBm	Pass

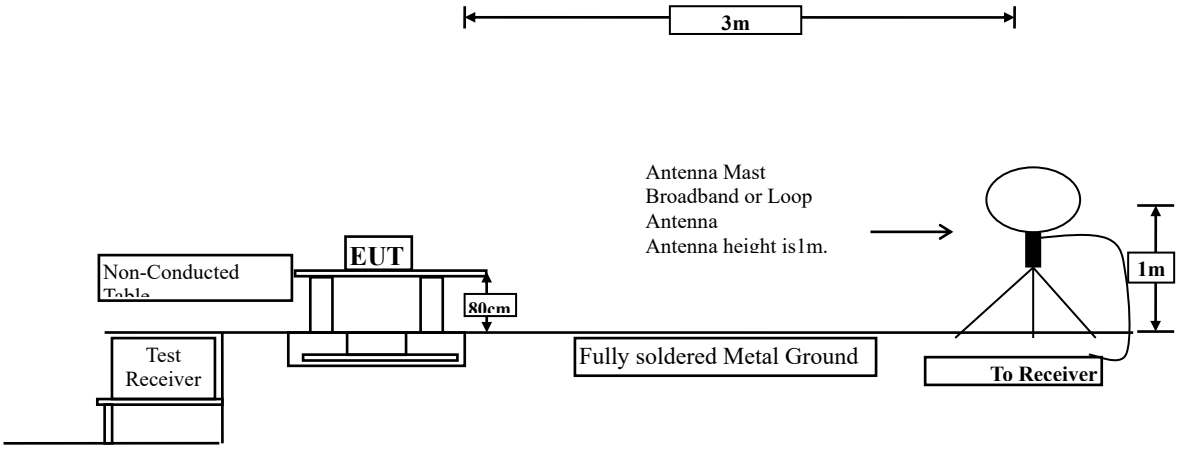
Product : Bluetooth Headset
Test Item : Peak Power Output
Test date : 2019/12/10
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit	Result
Channel 00	2402.00	11.00	1 Watt= 30 dBm	Pass
Channel 39	2441.00	10.92	1 Watt= 30 dBm	Pass
Channel 78	2480.00	10.91	1 Watt= 30 dBm	Pass

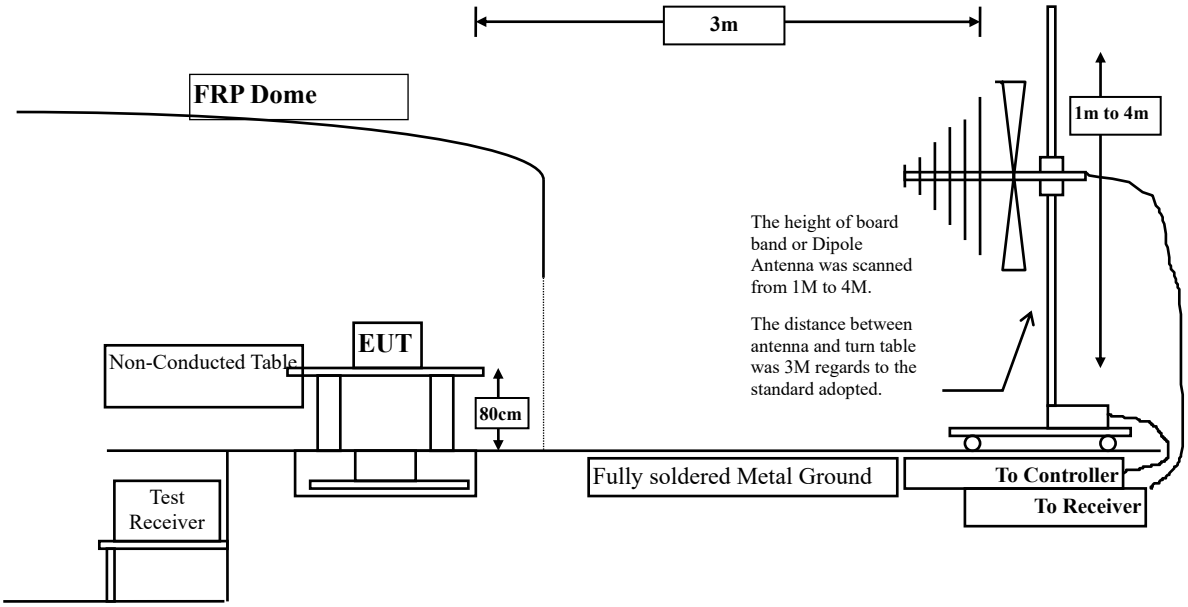
4. Radiated Emission

4.1. Test Setup

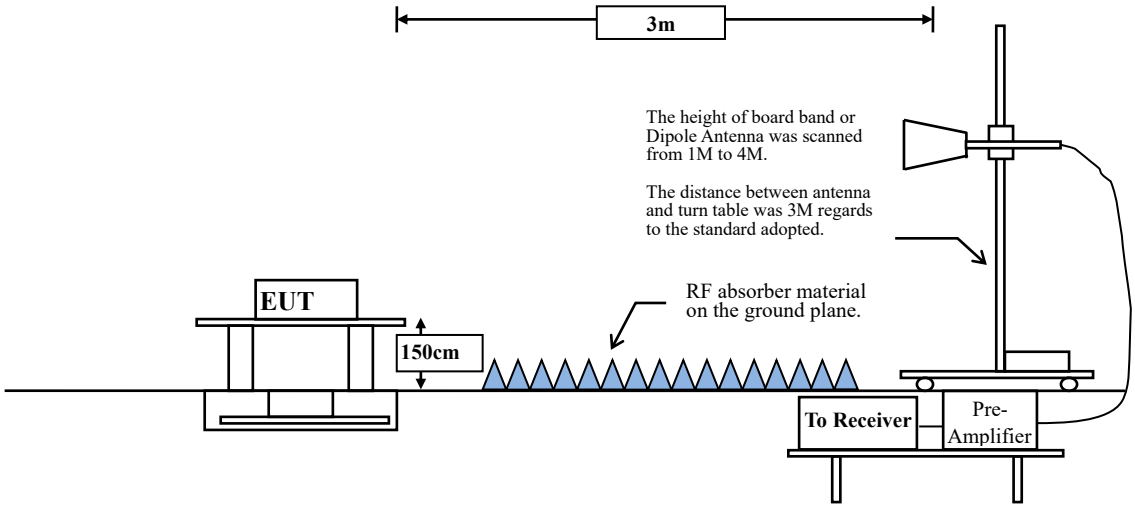
Under 30MHz



Below 1GHz



Above 1GHz



4.2. Limits

➢ **General Radiated Emission Limits**

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks: 1. RF Voltage (dBμV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

4.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested compliance to FCC 47CFR 15.247 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground,when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.

The measurement frequency range form 9kHz - 10th Harmonic of fundamental was investigated.

4.4. Uncertainty

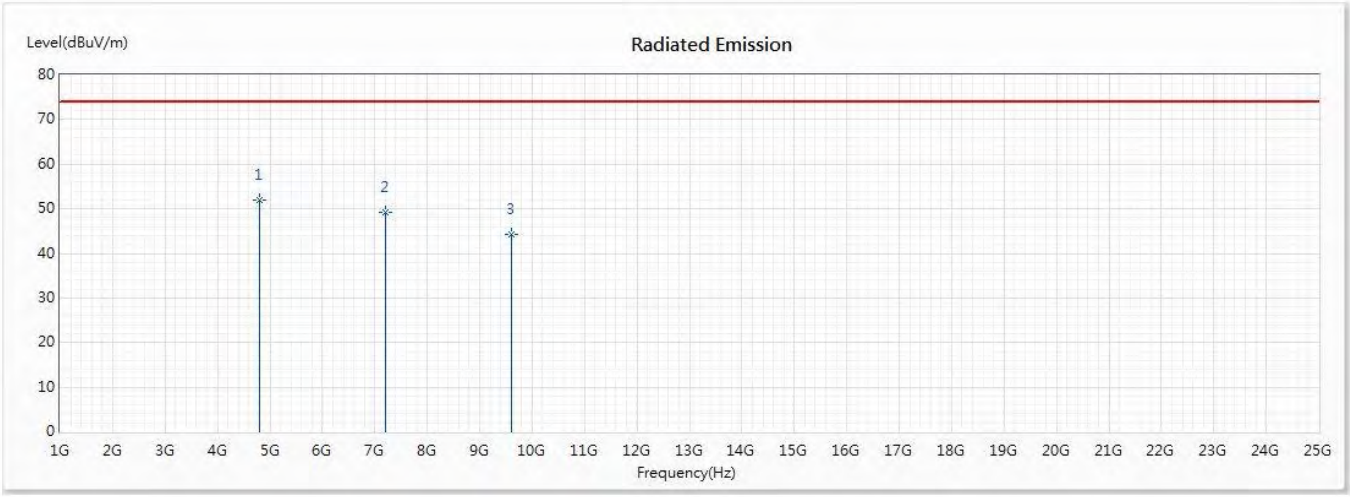
± 4.08 dB above 1GHz

± 4.22 dB below 1GHz

4.5. Test Result of Radiated Emission

Product : Bluetooth Headset
Test Item : Harmonic Radiated Emission
Test date : 2019/12/19
Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(2402MHz)

Horizontal



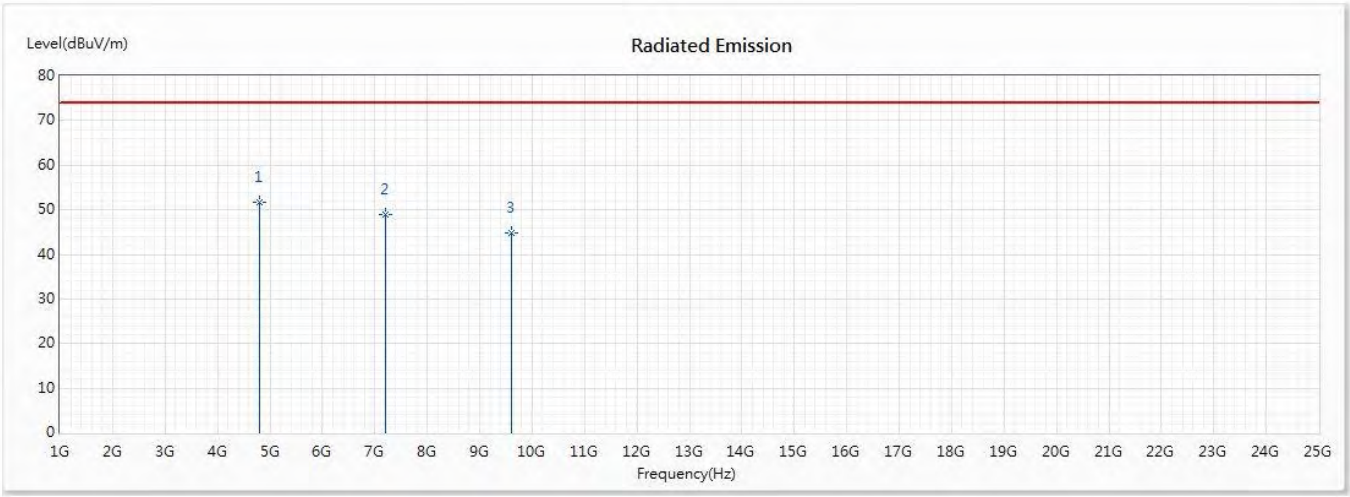
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4804	51.97	74.00	-22.03	64.12	-12.15	PK
2	7206	49.08	74.00	-24.92	62.22	-13.14	PK
3	9608	44.34	74.00	-29.66	57.76	-13.42	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Bluetooth Headset
Test Item : Harmonic Radiated Emission
Test date : 2019/12/19
Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(2402MHz)

Vertical



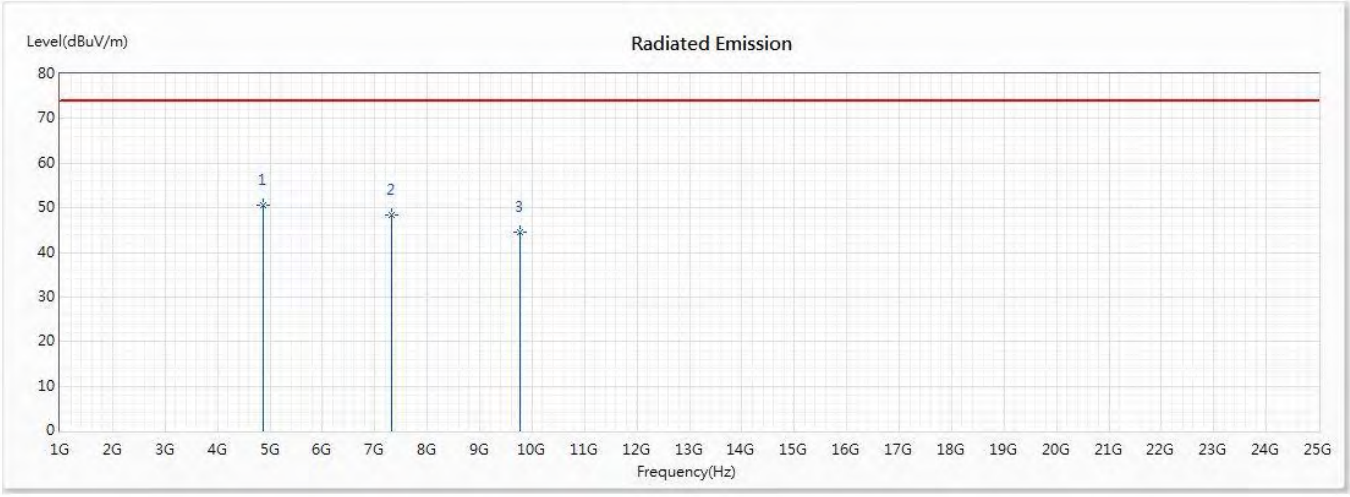
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4804	51.80	74.00	-22.20	63.95	-12.15	PK
2	7206	48.84	74.00	-25.16	61.98	-13.14	PK
3	9608	44.73	74.00	-29.27	58.15	-13.42	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Bluetooth Headset
Test Item : Harmonic Radiated Emission
Test date : 2019/12/19
Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(2441MHz)

Horizontal



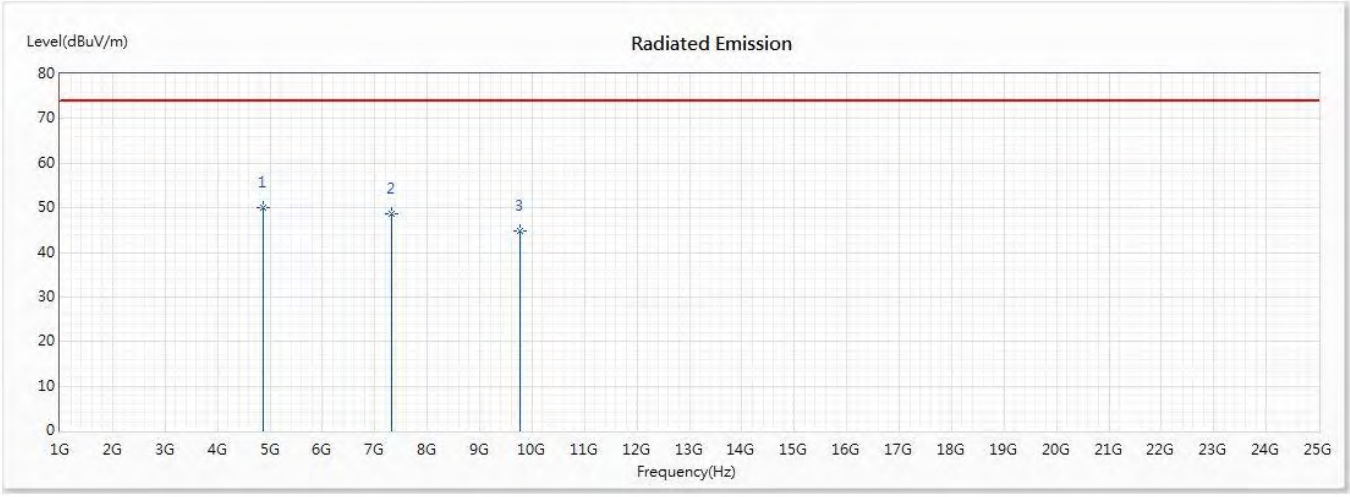
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4882	50.65	74.00	-23.35	62.24	-11.59	PK
2	7323	48.41	74.00	-25.59	61.98	-13.57	PK
3	9764	44.54	74.00	-29.46	57.06	-12.52	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Bluetooth Headset
Test Item : Harmonic Radiated Emission
Test date : 2019/12/19
Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(2441MHz)

Vertical



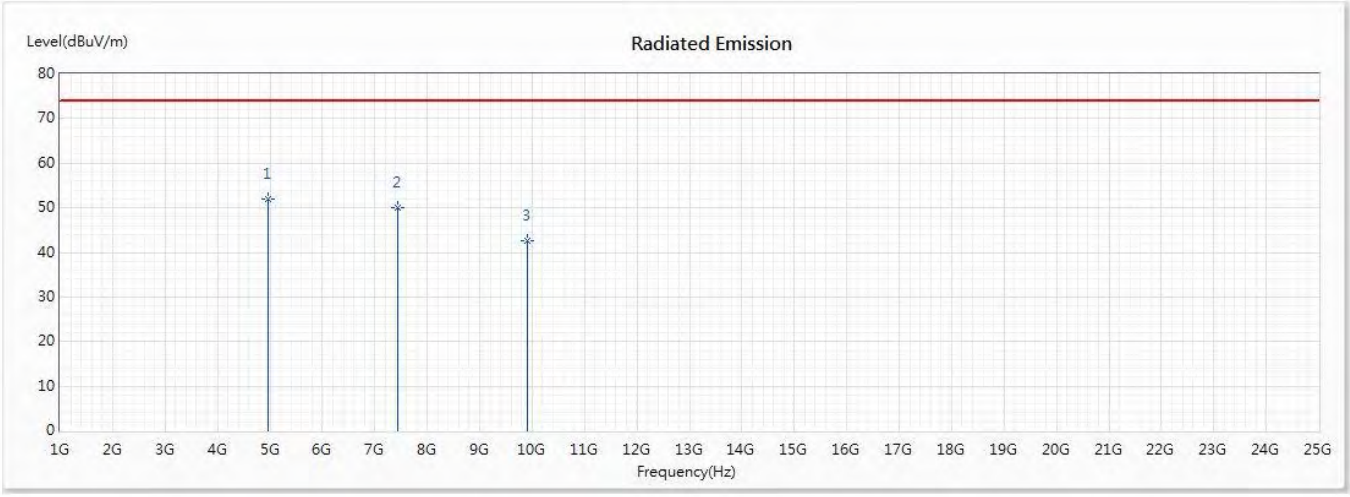
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4882	50.07	74.00	-23.93	61.66	-11.59	PK
2	7323	48.64	74.00	-25.36	62.21	-13.57	PK
3	9764	44.90	74.00	-29.10	57.42	-12.52	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Bluetooth Headset
Test Item : Harmonic Radiated Emission
Test date : 2019/12/19
Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(2480MHz)

Horizontal



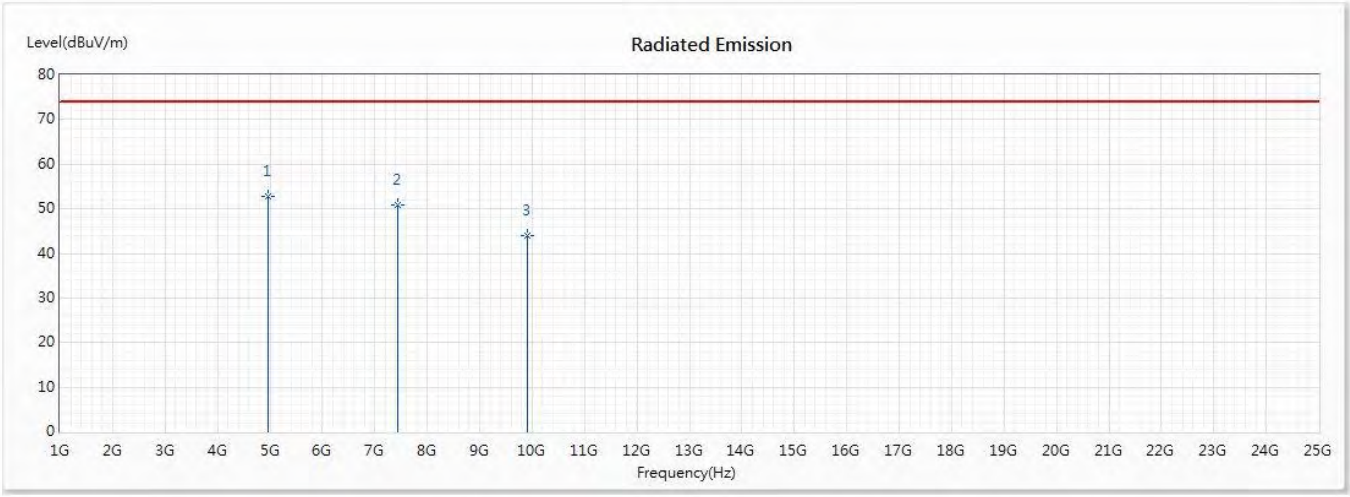
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4960	52.01	74.00	-21.99	62.90	-10.89	PK
2	7440	49.93	74.00	-24.07	64.55	-14.62	PK
3	9920	42.65	74.00	-31.35	56.88	-14.23	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Bluetooth Headset
Test Item : Harmonic Radiated Emission
Test date : 2019/12/19
Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(2480MHz)

Vertical



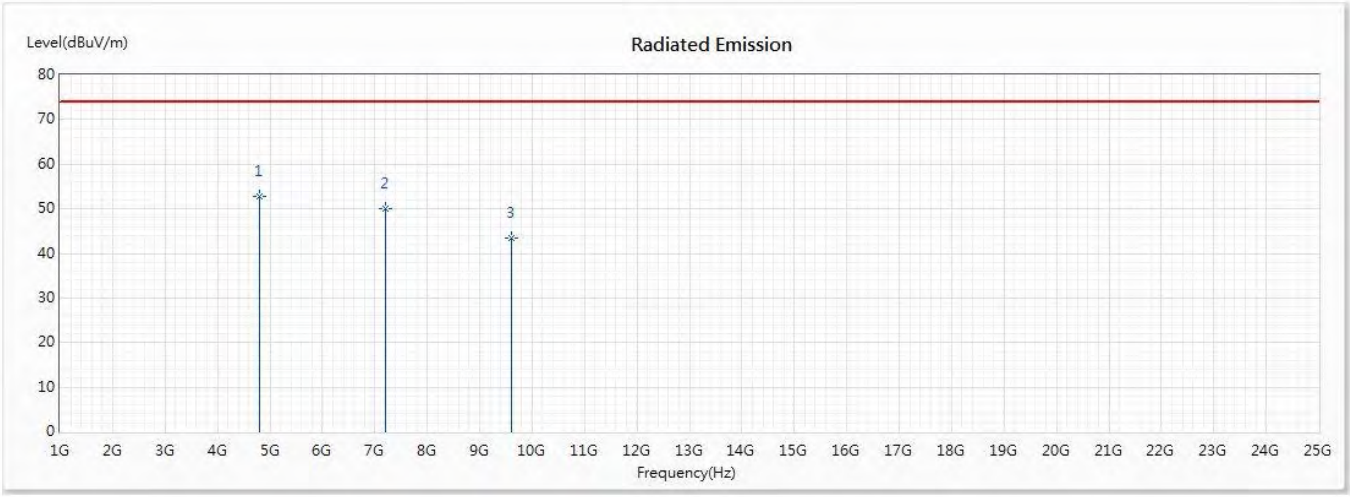
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4960	52.76	74.00	-21.24	63.65	-10.89	PK
2	7440	50.74	74.00	-23.26	65.36	-14.62	PK
3	9920	43.88	74.00	-30.12	58.11	-14.23	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Bluetooth Headset
Test Item	:	Harmonic Radiated Emission
Test date	:	2019/12/19
Test Mode	:	Mode 2: Transmit - 2Mbps (π/4DQPSK) (2402MHz)

Horizontal



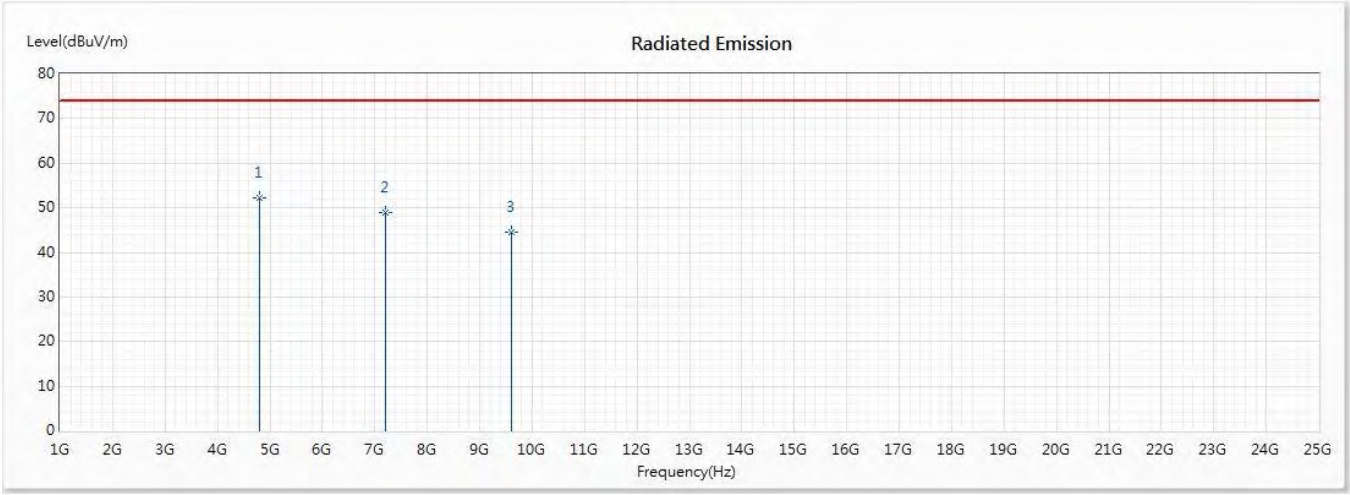
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4804	52.67	74.00	-21.33	64.82	-12.15	PK
2	7206	50.13	74.00	-23.87	63.27	-13.14	PK
3	9608	43.53	74.00	-30.47	56.95	-13.42	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Bluetooth Headset
Test Item : Harmonic Radiated Emission
Test date : 2019/12/19
Test Mode : Mode 2: Transmit - 2Mbps (π/4DQPSK) (2402MHz)

Vertical



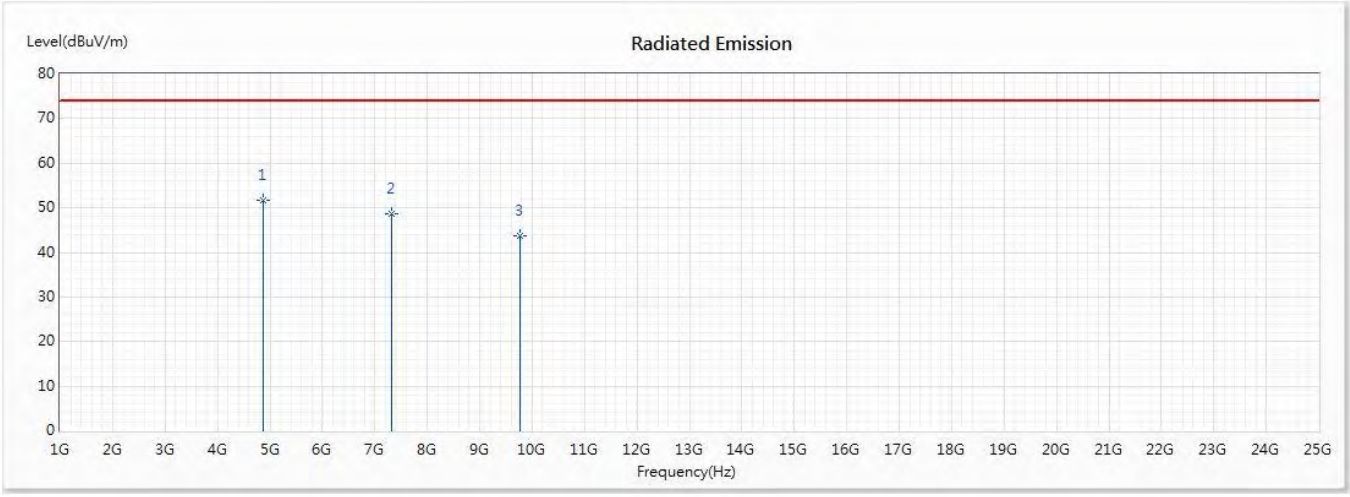
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4804	52.37	74.00	-21.63	64.52	-12.15	PK
2	7206	48.85	74.00	-25.15	61.99	-13.14	PK
3	9608	44.60	74.00	-29.40	58.02	-13.42	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Bluetooth Headset
Test Item : Harmonic Radiated Emission
Test date : 2019/12/19
Test Mode : Mode 2: Transmit - 2Mbps (π/4DQPSK) (2441MHz)

Horizontal



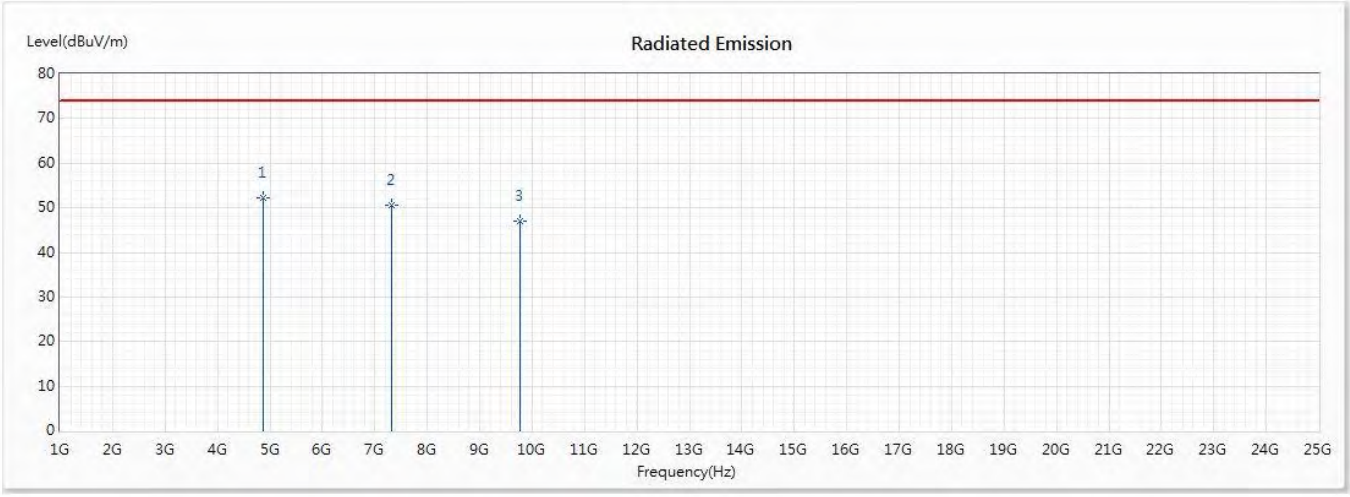
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4882	51.60	74.00	-22.40	63.19	-11.59	PK
2	7323	48.57	74.00	-25.43	62.14	-13.57	PK
3	9764	43.83	74.00	-30.17	56.35	-12.52	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Bluetooth Headset
Test Item : Harmonic Radiated Emission
Test date : 2019/12/19
Test Mode : Mode 2: Transmit - 2Mbps (π/4DQPSK) (2441MHz)

Vertical



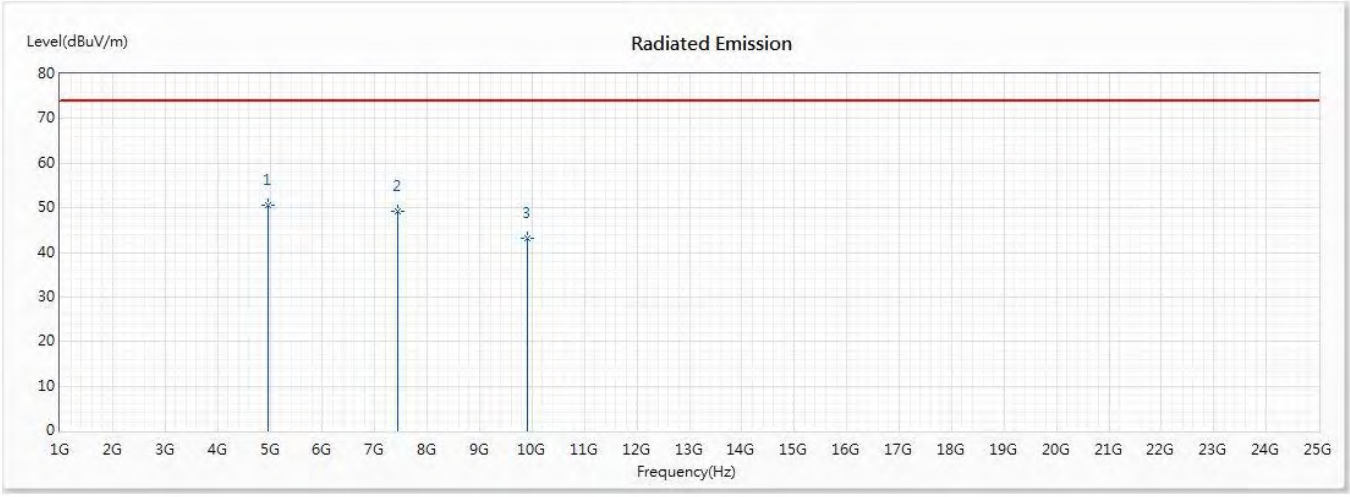
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4882	52.30	74.00	-21.70	63.89	-11.59	PK
2	7323	50.53	74.00	-23.47	64.10	-13.57	PK
3	9764	47.02	74.00	-26.98	59.54	-12.52	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Bluetooth Headset
Test Item : Harmonic Radiated Emission
Test date : 2019/12/19
Test Mode : Mode 2: Transmit - 2Mbps (π/4DQPSK) (2480MHz)

Horizontal



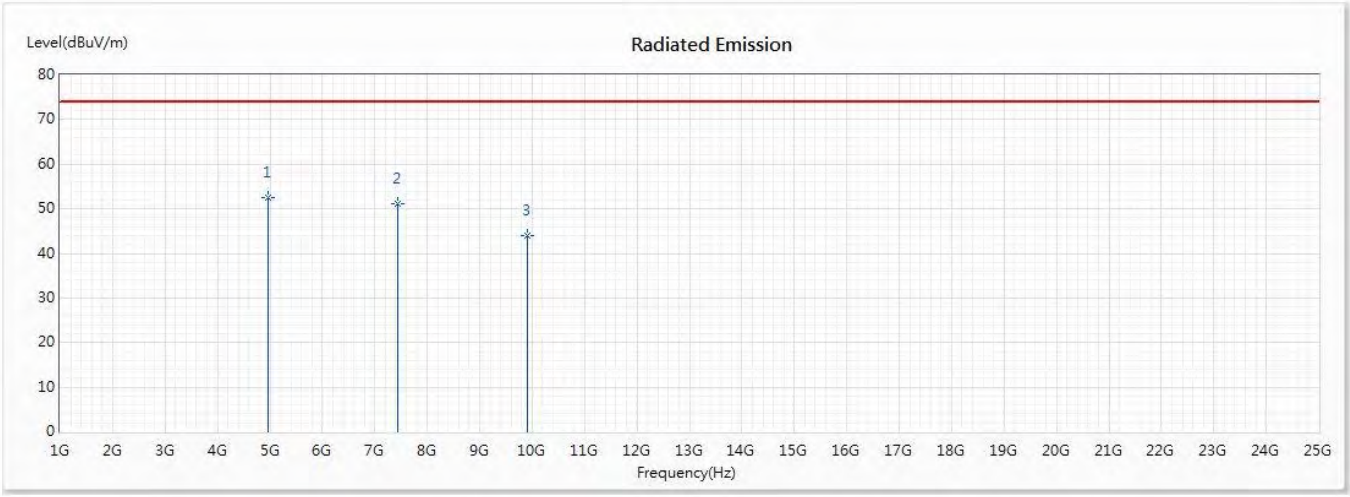
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4960	50.63	74.00	-23.37	61.52	-10.89	PK
2	7440	49.27	74.00	-24.73	63.89	-14.62	PK
3	9920	43.06	74.00	-30.94	57.29	-14.23	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Bluetooth Headset
Test Item : Harmonic Radiated Emission
Test date : 2019/12/19
Test Mode : Mode 2: Transmit - 2Mbps (π/4DQPSK)(2480MHz)

Vertical



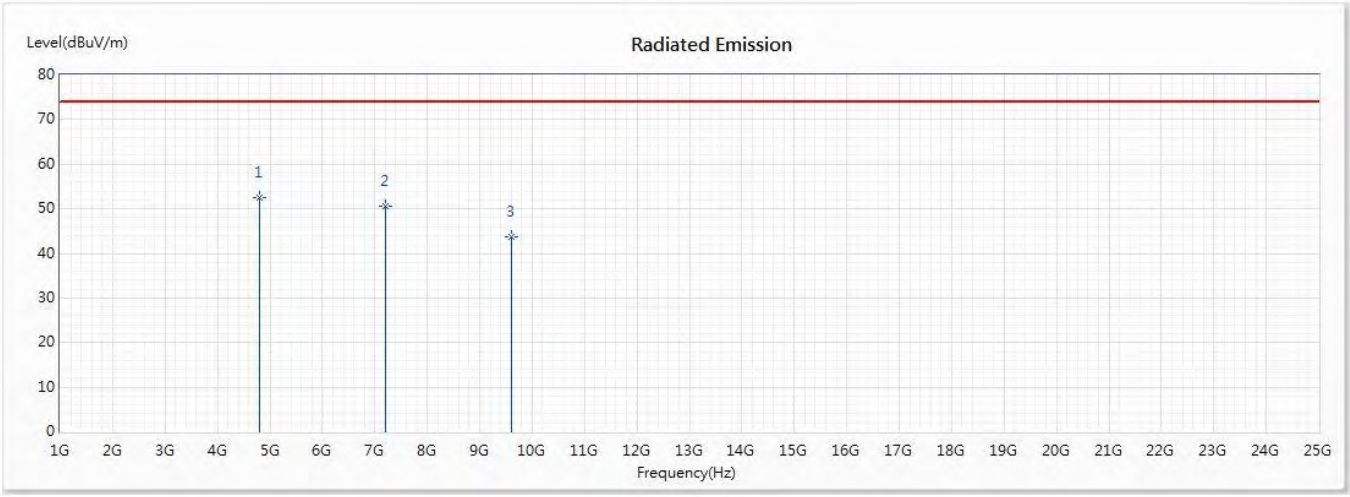
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4960	52.53	74.00	-21.47	63.42	-10.89	PK
2	7440	51.12	74.00	-22.88	65.74	-14.62	PK
3	9920	43.91	74.00	-30.09	58.14	-14.23	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Bluetooth Headset
Test Item : Harmonic Radiated Emission
Test date : 2019/12/19
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK)(2402MHz)

Horizontal



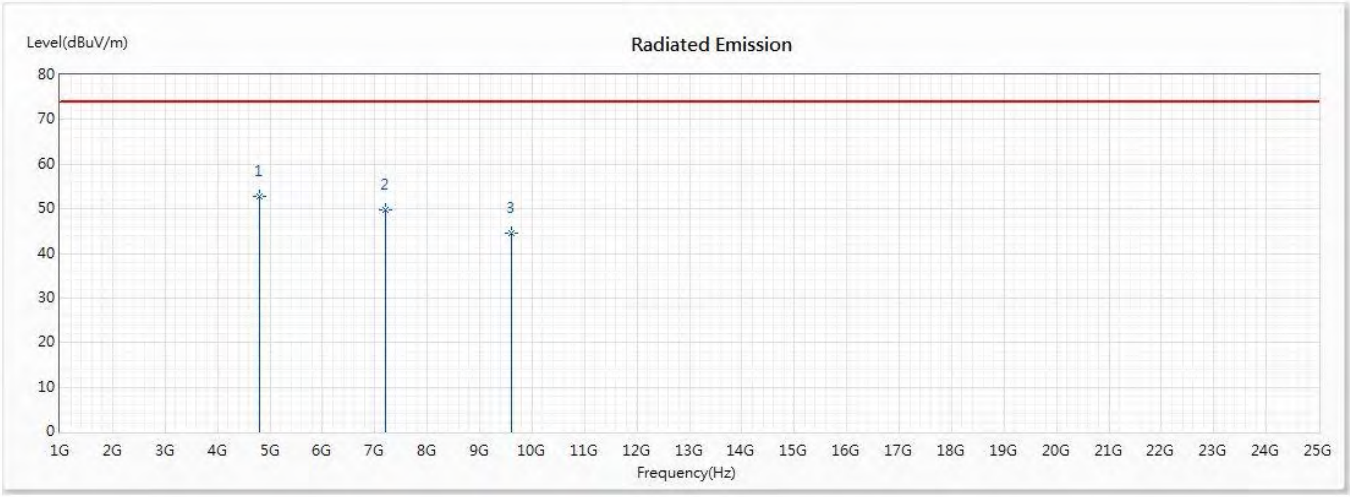
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4804	52.44	74.00	-21.56	64.59	-12.15	PK
2	7206	50.52	74.00	-23.48	63.66	-13.14	PK
3	9608	43.76	74.00	-30.24	57.18	-13.42	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Bluetooth Headset
Test Item : Harmonic Radiated Emission
Test date : 2019/12/19
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK)(2402MHz)

Vertical



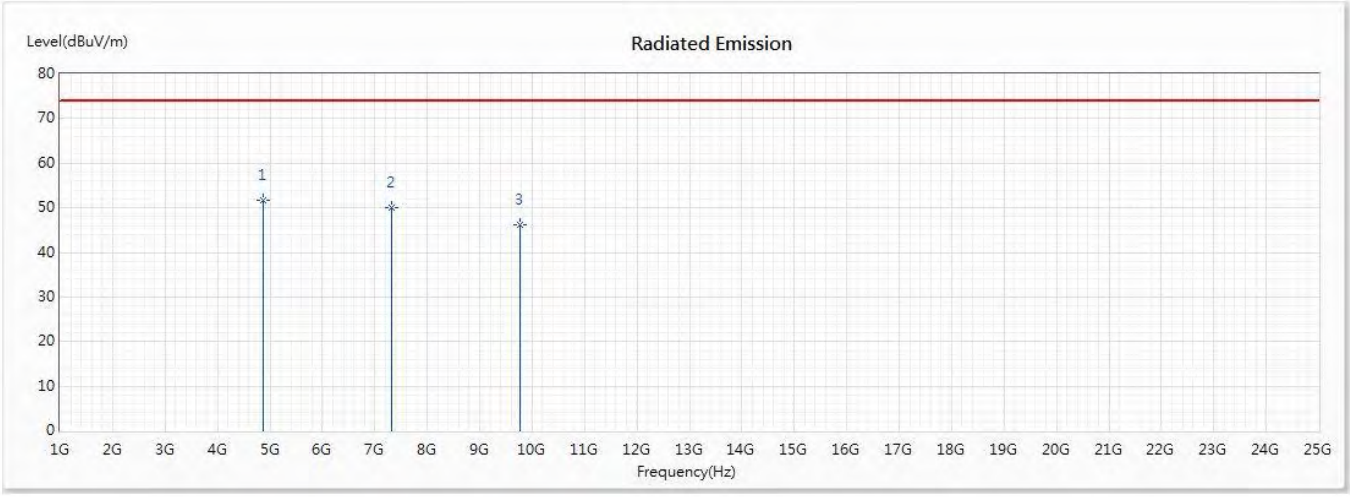
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4804	52.80	74.00	-21.20	64.95	-12.15	PK
2	7206	49.74	74.00	-24.26	62.88	-13.14	PK
3	9608	44.62	74.00	-29.38	58.04	-13.42	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Bluetooth Headset
Test Item : Harmonic Radiated Emission
Test date : 2019/12/19
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2441MHz)

Horizontal



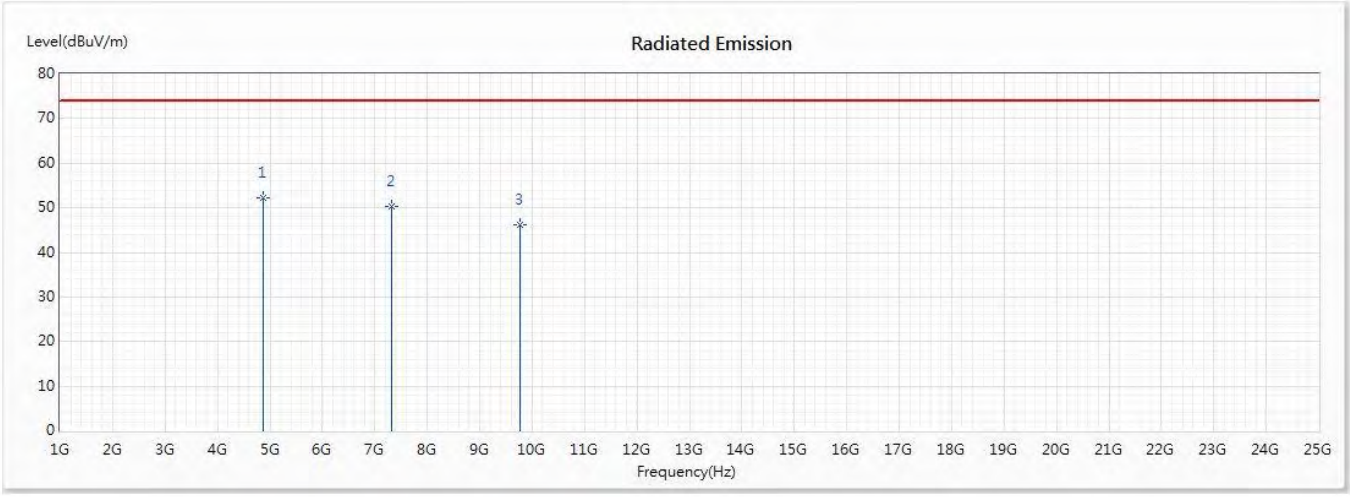
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4882	51.68	74.00	-22.32	63.27	-11.59	PK
2	7323	50.11	74.00	-23.89	63.68	-13.57	PK
3	9764	46.25	74.00	-27.75	58.77	-12.52	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Bluetooth Headset
Test Item : Harmonic Radiated Emission
Test date : 2019/12/19
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2441MHz)

Vertical



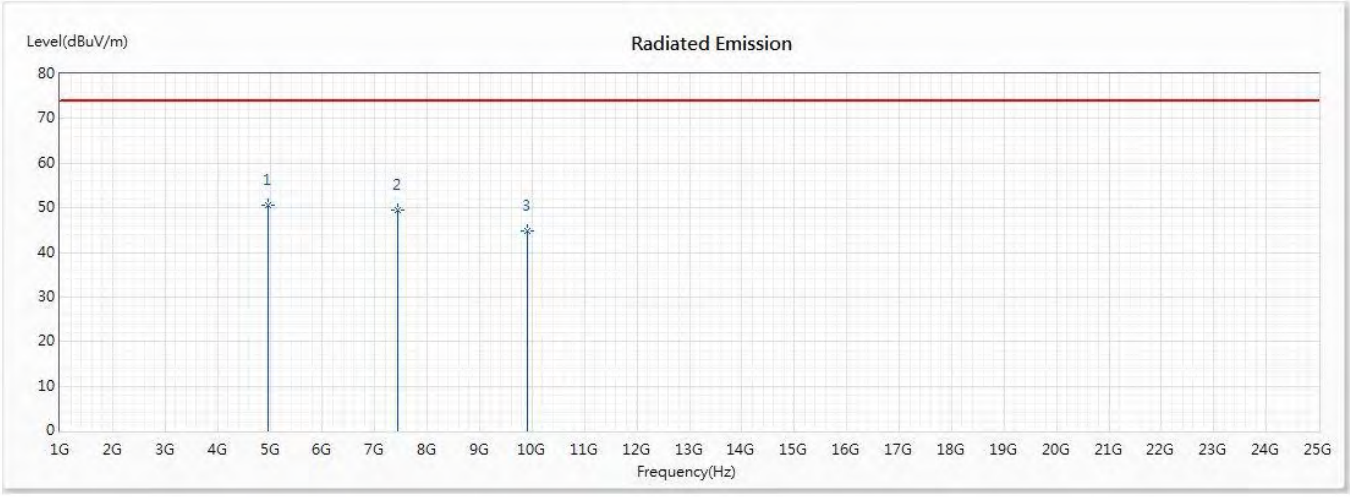
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4882	52.17	74.00	-21.83	63.76	-11.59	PK
2	7323	50.36	74.00	-23.64	63.93	-13.57	PK
3	9764	46.21	74.00	-27.79	58.73	-12.52	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Bluetooth Headset
Test Item : Harmonic Radiated Emission
Test date : 2019/12/19
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2480MHz)

Horizontal



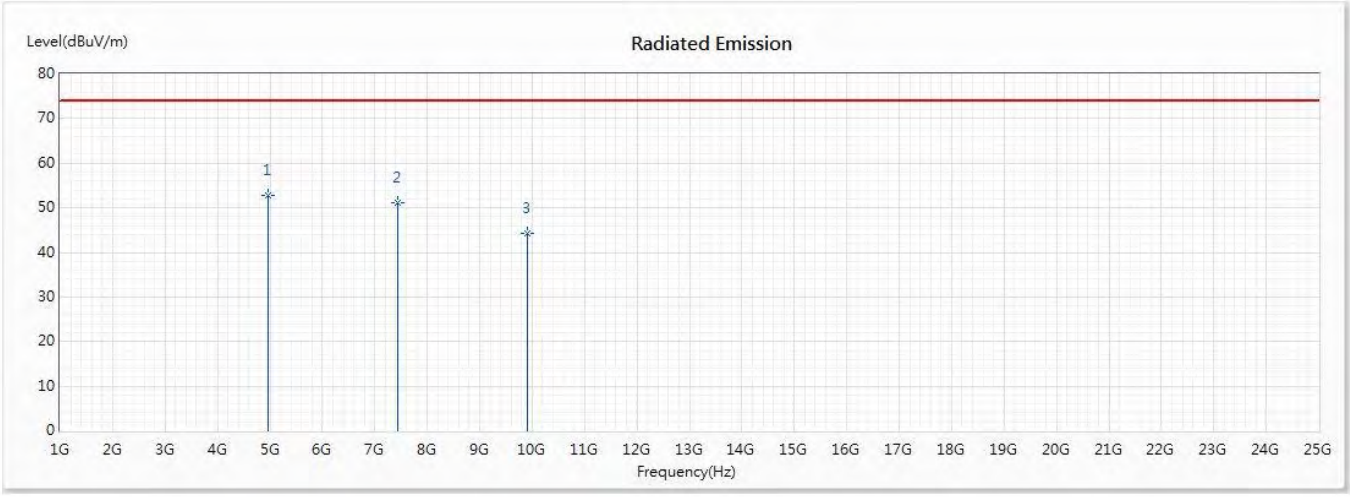
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4960	50.52	74.00	-23.48	61.41	-10.89	PK
2	7440	49.50	74.00	-24.50	64.12	-14.62	PK
3	9920	44.81	74.00	-29.19	59.04	-14.23	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Bluetooth Headset
Test Item : Harmonic Radiated Emission
Test date : 2019/12/19
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2480MHz)

Vertical



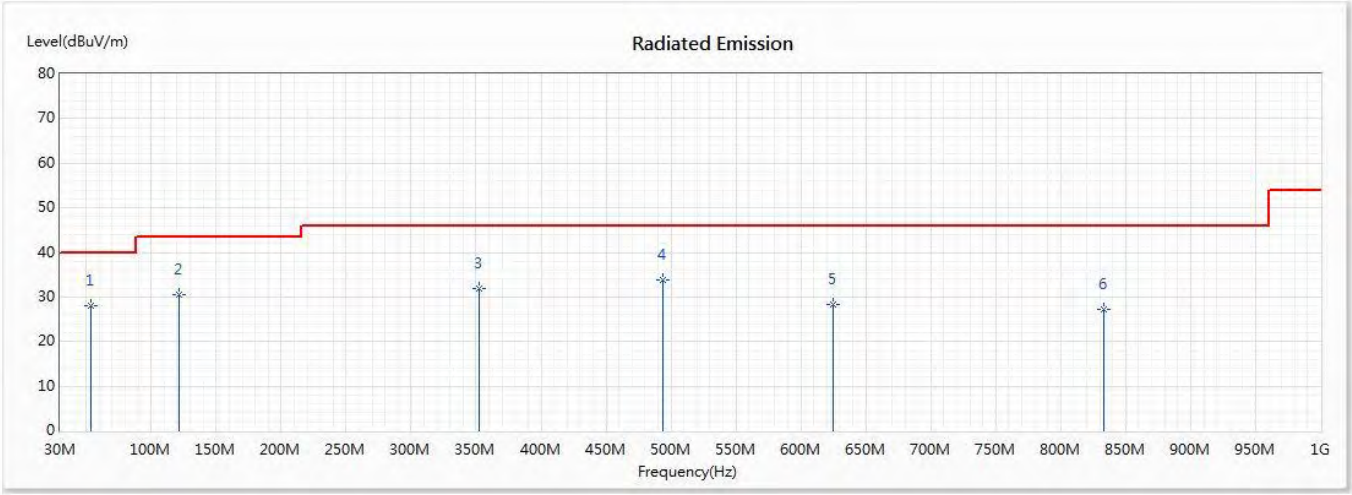
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4960	52.74	74.00	-21.26	63.63	-10.89	PK
2	7440	51.19	74.00	-22.81	65.81	-14.62	PK
3	9920	44.16	74.00	-29.84	58.39	-14.23	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Bluetooth Headset
Test Item : General Radiated Emission
Test date : 2019/12/20
Test Mode : Mode 1: Transmit - 1Mbps (GFSK) (2441MHz)

Horizontal



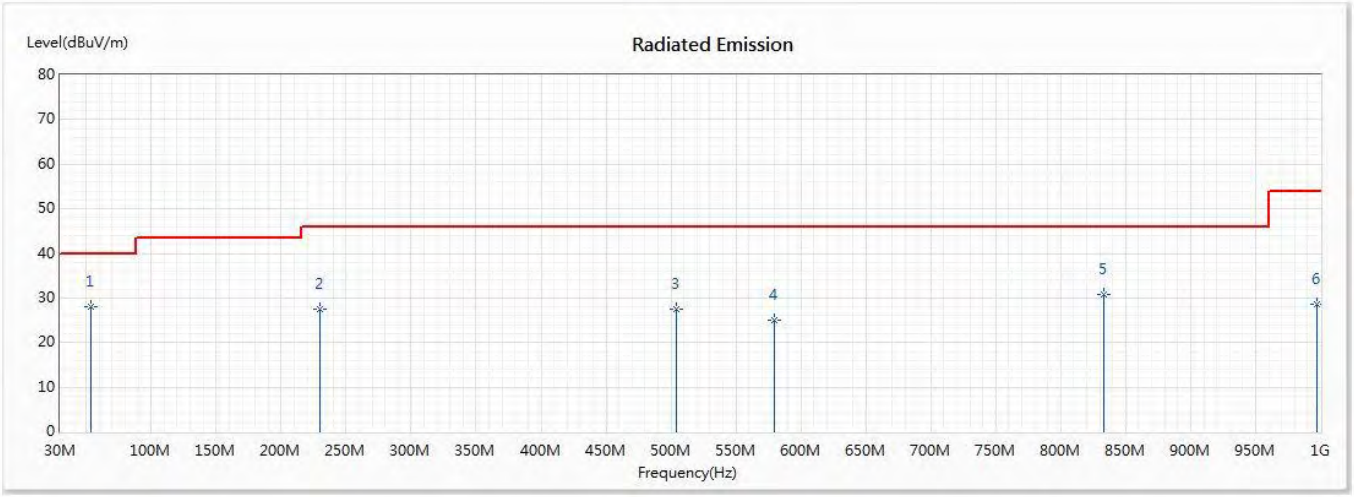
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	53.899	28.15	40.00	-11.85	45.83	-17.68	QP
2	121.377	30.41	43.50	-13.09	47.21	-16.80	QP
3	351.928	32.01	46.00	-13.99	45.22	-13.21	QP
4	493.913	33.75	46.00	-12.25	45.00	-11.25	QP
5	624.652	28.43	46.00	-17.57	36.70	-8.27	QP
6	832.71	27.31	46.00	-18.69	35.94	-8.63	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Bluetooth Headset
Test Item : General Radiated Emission
Test date : 2019/12/20
Test Mode : Mode 1: Transmit - 1Mbps (GFSK) (2441MHz)

Vertical



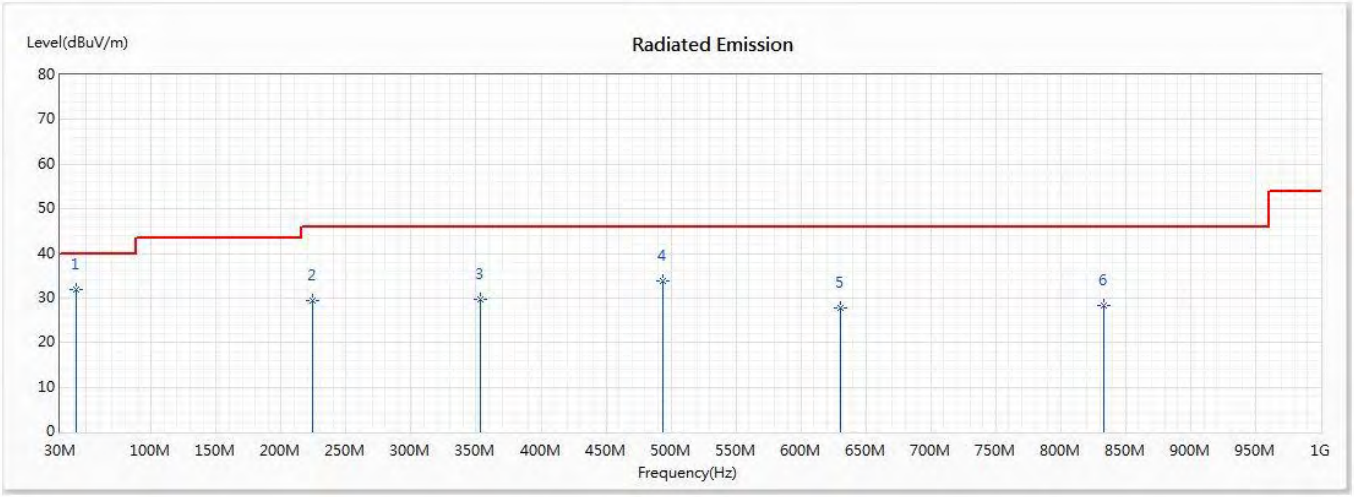
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	53.899	28.12	40.00	-11.88	45.80	-17.68	QP
2	229.623	27.60	46.00	-18.40	45.24	-17.64	QP
3	503.754	27.49	46.00	-18.51	38.41	-10.92	QP
4	579.667	25.02	46.00	-20.98	32.57	-7.55	QP
5	832.71	30.71	46.00	-15.29	39.34	-8.63	QP
6	997.188	28.65	54.00	-25.35	36.65	-8.00	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Bluetooth Headset
Test Item : General Radiated Emission
Test date : 2019/12/20
Test Mode : Mode 2: Transmit - 2Mbps (π/4DQPSK) (2441MHz)

Horizontal



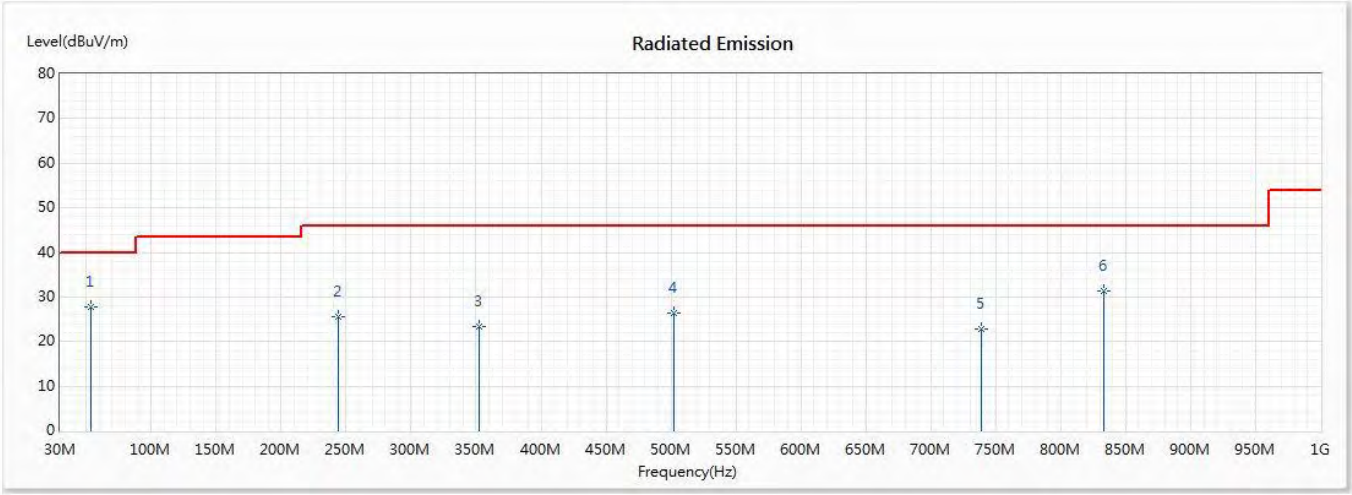
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	42.652	31.82	40.00	-8.18	50.19	-18.37	QP
2	224	29.52	46.00	-16.48	47.39	-17.87	QP
3	353.333	29.70	46.00	-16.30	42.83	-13.13	QP
4	493.913	33.72	46.00	-12.28	44.97	-11.25	QP
5	630.275	27.84	46.00	-18.16	36.33	-8.49	QP
6	832.71	28.20	46.00	-17.80	36.83	-8.63	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Bluetooth Headset
Test Item : General Radiated Emission
Test date : 2019/12/20
Test Mode : Mode 2: Transmit - 2Mbps (π/4DQPSK) (2441MHz)

Vertical



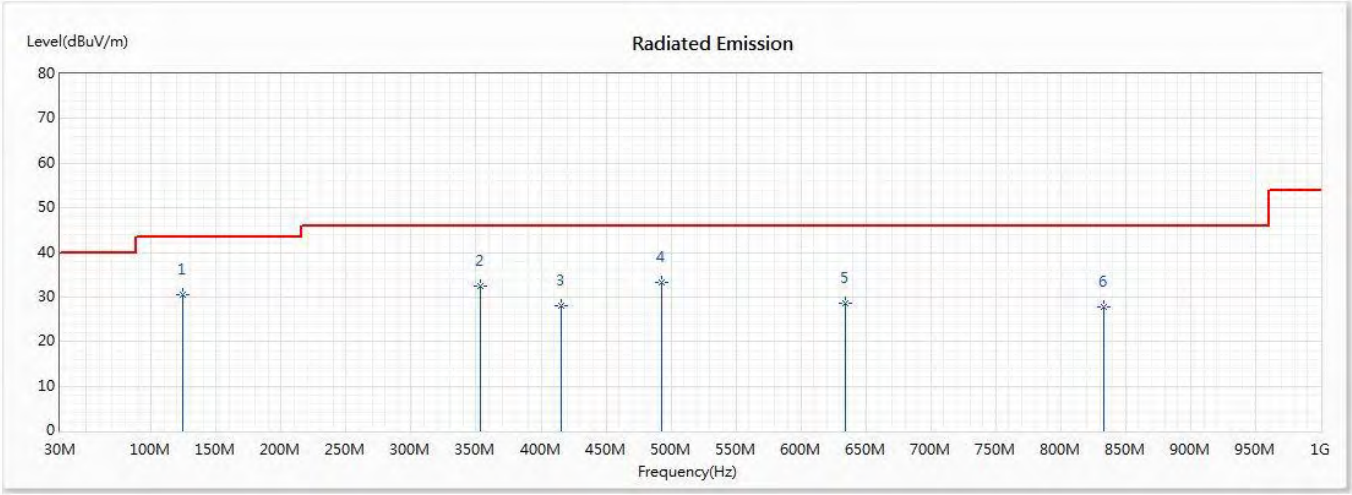
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	53.899	27.70	40.00	-12.30	45.38	-17.68	QP
2	243.681	25.62	46.00	-20.38	43.96	-18.34	QP
3	351.928	23.25	46.00	-22.75	36.46	-13.21	QP
4	502.348	26.27	46.00	-19.73	37.15	-10.88	QP
5	738.522	22.93	46.00	-23.07	28.68	-5.75	QP
6	832.71	31.40	46.00	-14.60	40.03	-8.63	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Bluetooth Headset
Test Item : General Radiated Emission
Test date : 2019/12/20
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2441MHz)

Horizontal



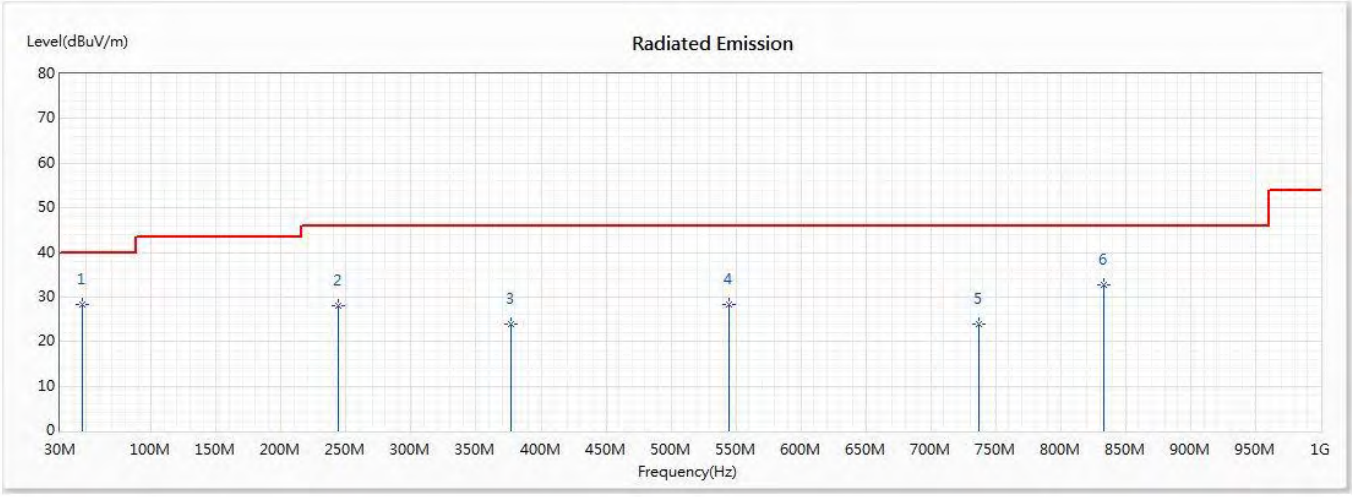
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	124.188	30.65	43.50	-12.85	47.21	-16.56	QP
2	353.333	32.35	46.00	-13.65	45.48	-13.13	QP
3	415.188	28.02	46.00	-17.98	40.68	-12.66	QP
* 4	492.507	33.30	46.00	-12.70	44.64	-11.34	QP
5	634.493	28.59	46.00	-17.41	37.22	-8.63	QP
6	832.71	27.68	46.00	-18.32	36.31	-8.63	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Bluetooth Headset
Test Item : General Radiated Emission
Test date : 2019/12/20
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2441MHz)

Vertical



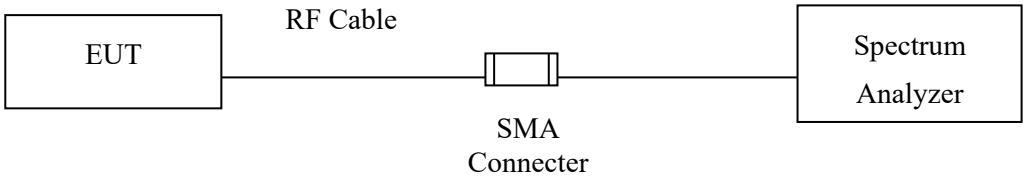
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	46.87	28.37	40.00	-11.63	46.50	-18.13	QP
2	243.681	28.09	46.00	-17.91	46.43	-18.34	QP
3	377.232	23.93	46.00	-22.07	36.06	-12.13	QP
4	544.522	28.31	46.00	-17.69	39.52	-11.21	QP
5	737.116	23.87	46.00	-22.13	29.87	-6.00	QP
6	832.71	32.65	46.00	-13.35	41.28	-8.63	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

5. RF Antenna Conducted Test

5.1. Test Setup



5.2. Limits

According to FCC Section 15.247(d). In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

5.3. Test Procedure

Tested according to FHSS test procedure of KDB558074 section 9 b) for compliance to FCC 47CFR 15.247 requirements.

5.4. Uncertainty

± 1.20dB

5.5. Test Result of RF Antenna Conducted Test

Product	:	Bluetooth Headset
Test Item	:	RF Antenna Conducted Test
Test date	:	2019/12/10
Test Mode	:	Mode 1: Transmit - 1Mbps (GFSK)

Figure Channel 00:

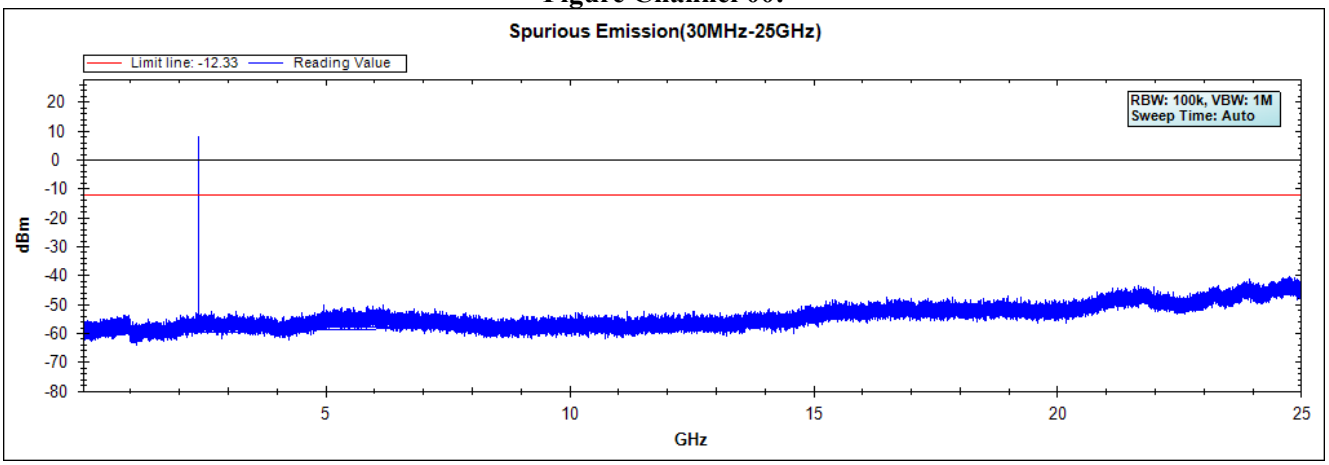


Figure Channel 39:

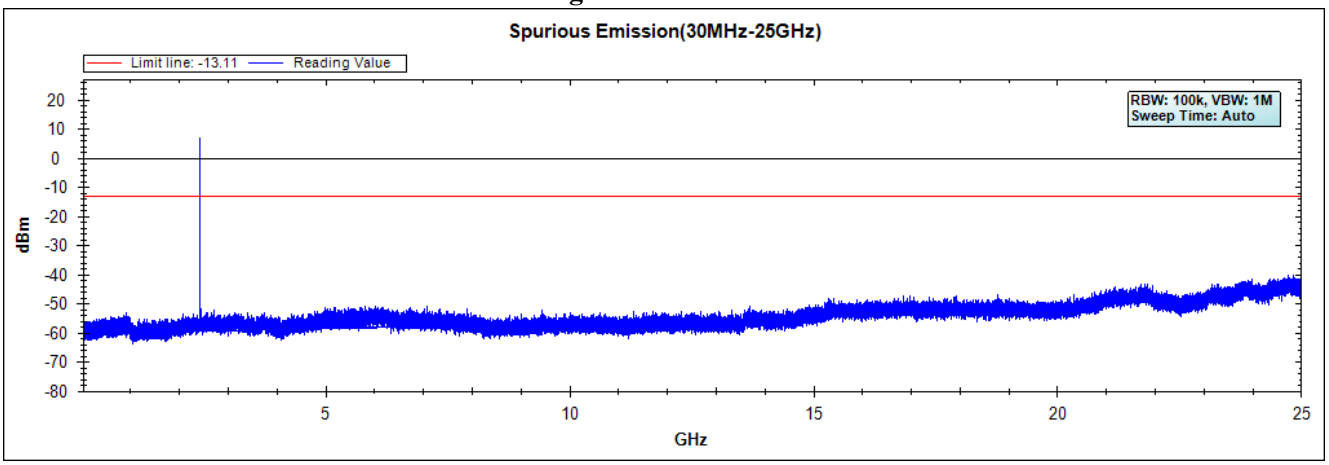
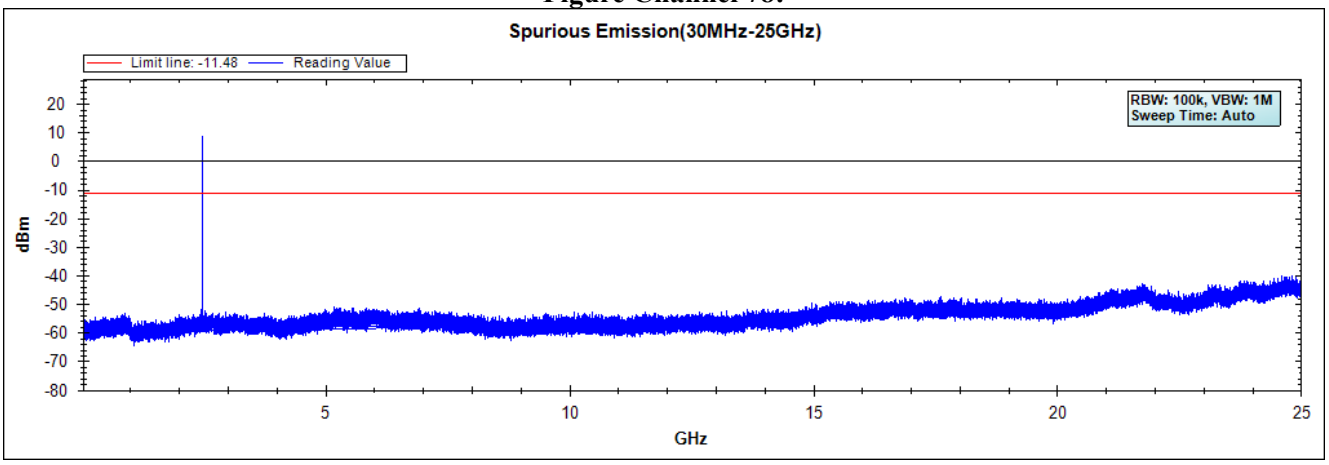


Figure Channel 78:



Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	Bluetooth Headset
Test Item	:	RF Antenna Conducted Test
Test date	:	2019/12/10
Test Mode	:	Mode 2: Transmit - 2Mbps (π/4DQPSK)

Figure Channel 00:

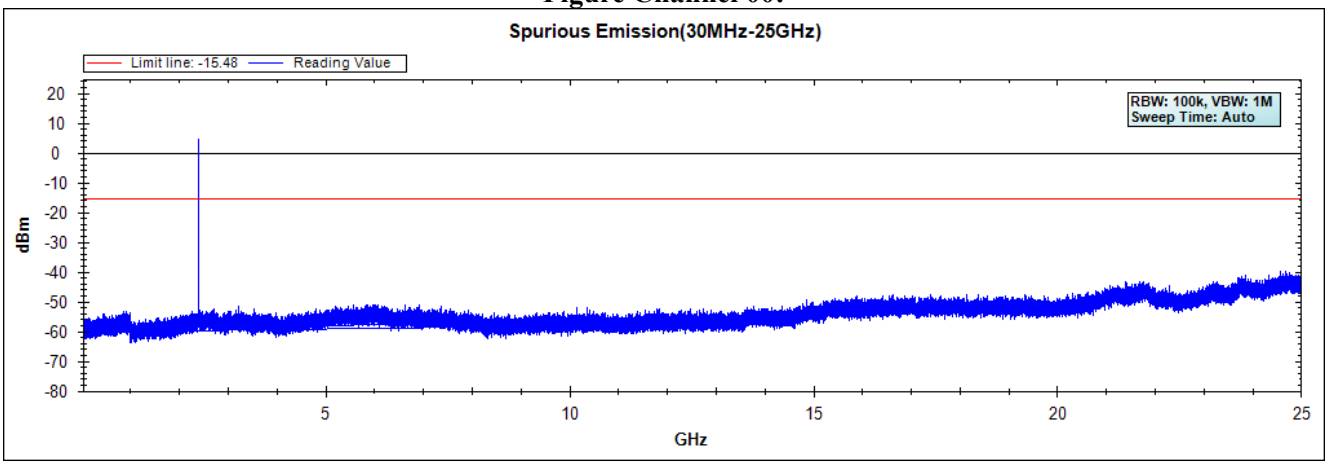


Figure Channel 39:

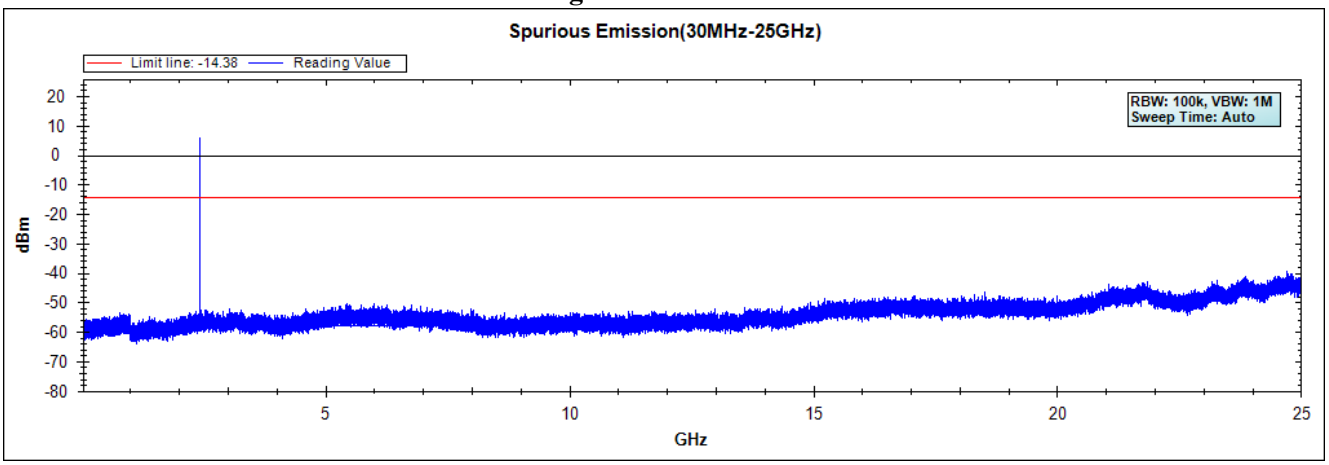
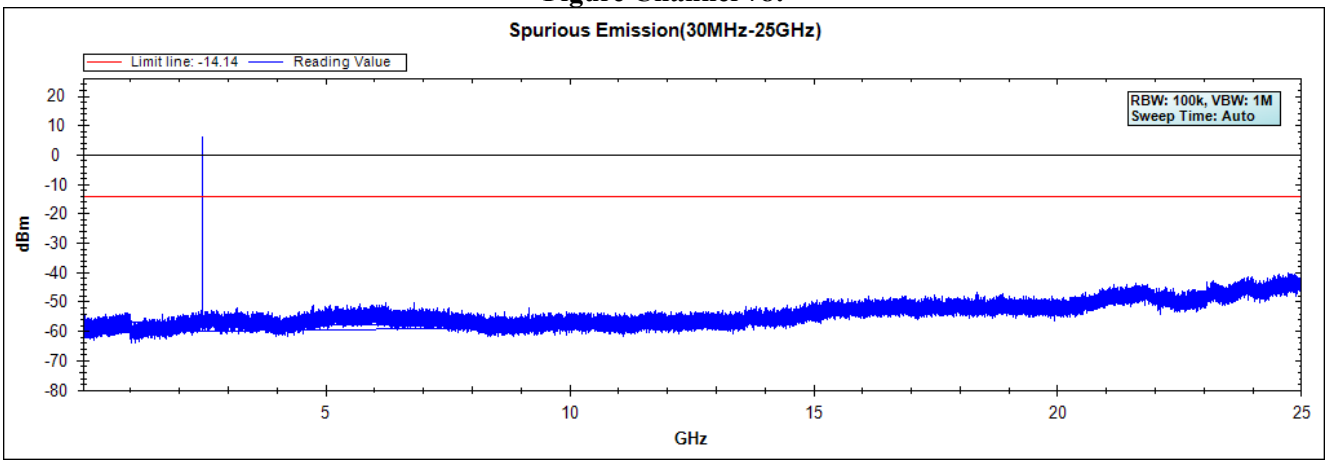


Figure Channel 78:



Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	Bluetooth Headset
Test Item	:	RF Antenna Conducted Test
Test date	:	2019/12/10
Test Mode	:	Mode 3: Transmit - 3Mbps (8DPSK)

Figure Channel 00:

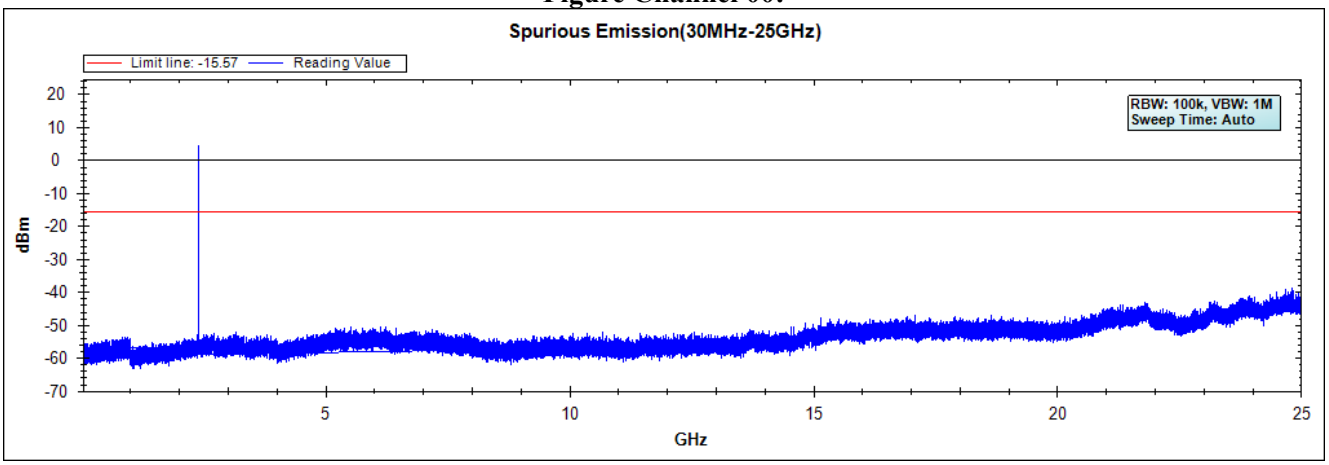


Figure Channel 39:

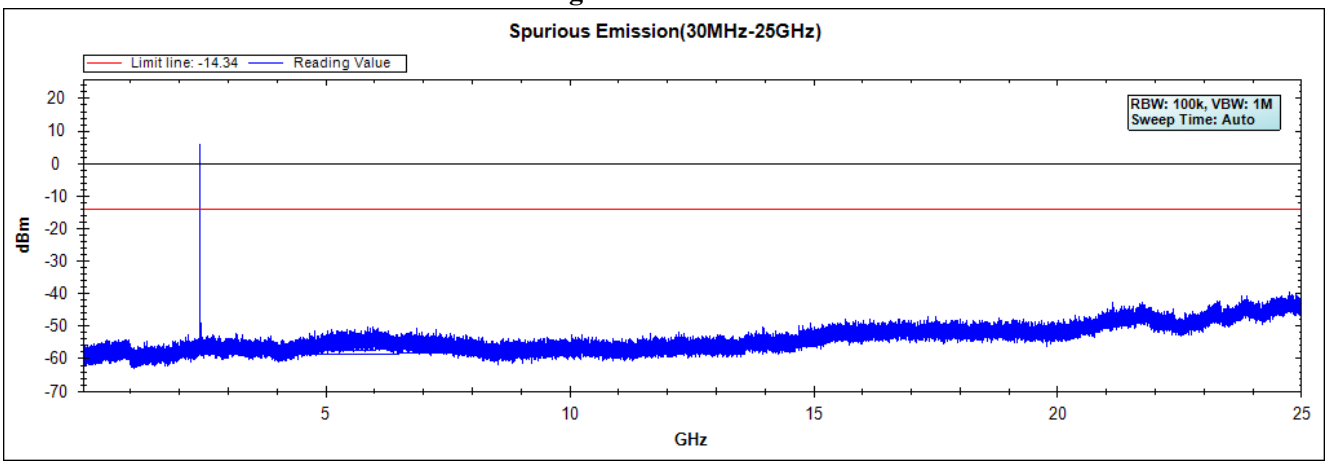
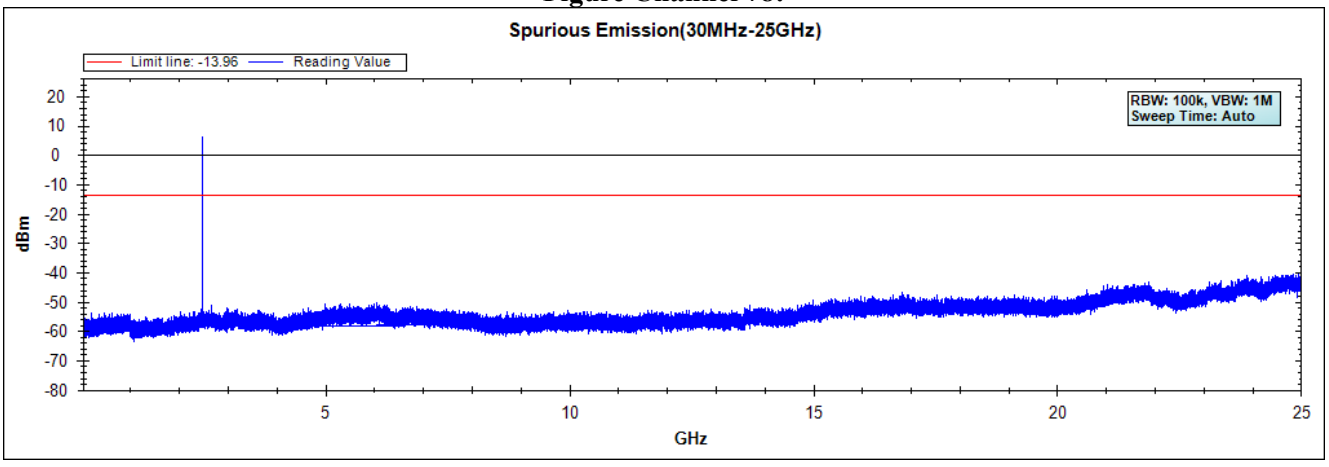


Figure Channel 78:



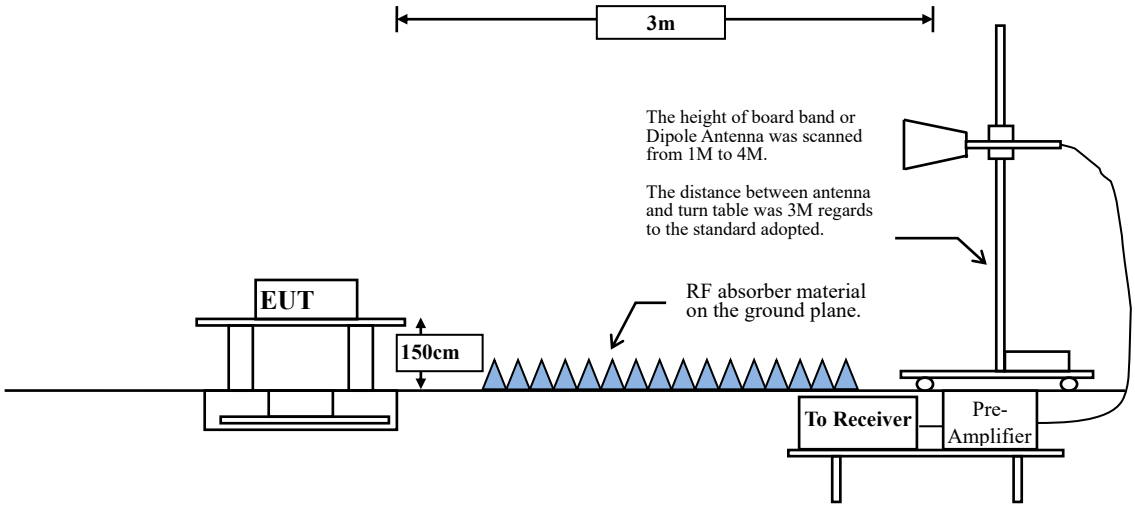
Note: The above test pattern is synthesized by multiple of the frequency range.

6. Band Edge

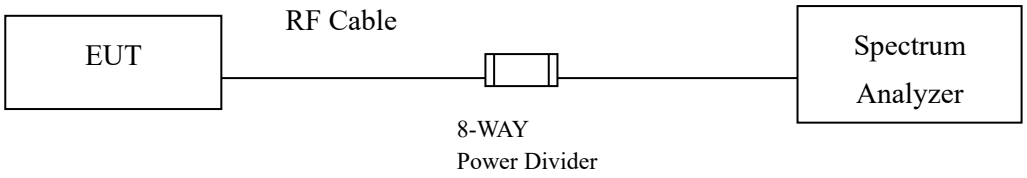
6.1. Test Setup

RF Radiated Measurement:

Above 1GHz



RF Conducted Measurement



6.2. Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

6.3. Test Procedure

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.
The bandwidth setting below 1GHz and above 1GHz on the field strength meter is 120 kHz and 1MHz, respectively.

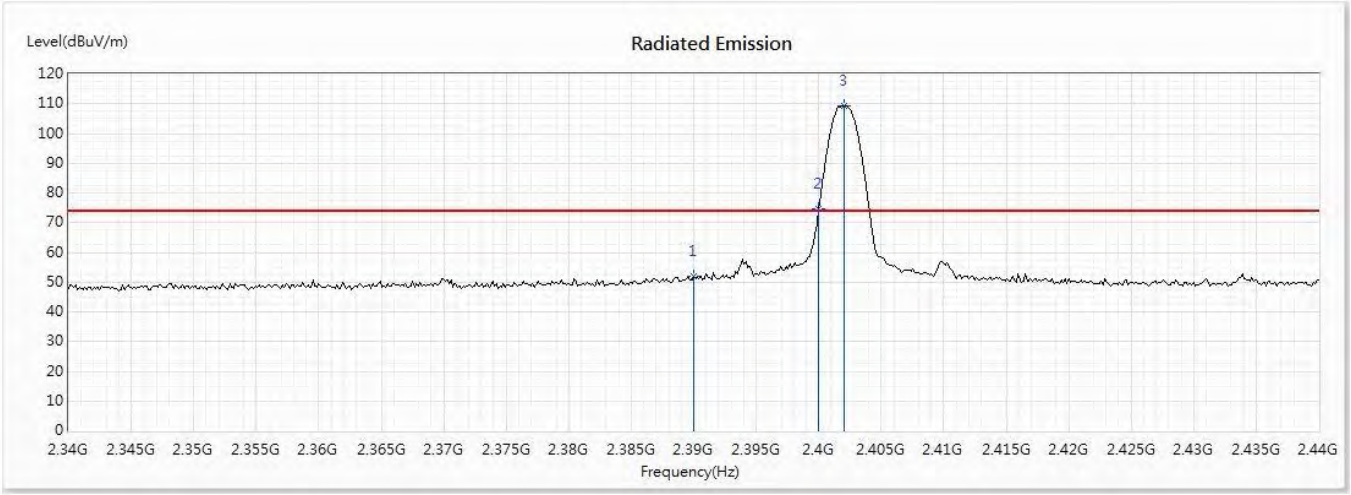
6.4. Uncertainty

± 4.08 dB above 1GHz
± 4.22 dB below 1GHz

6.5. Test Result of Band Edge

Product : Bluetooth Headset
Test Item : Band Edge
Test date : 2019/12/19
Test Mode : Mode 1: Transmit - 1Mbps (GFSK) (2402MHz)

Horizontal



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	51.97	74.00	-22.03	39.08	12.89	PK
! 2	2400	74.74	--	--	61.78	12.96	PK
! 3	2402.029	109.08	--	--	96.11	12.97	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.

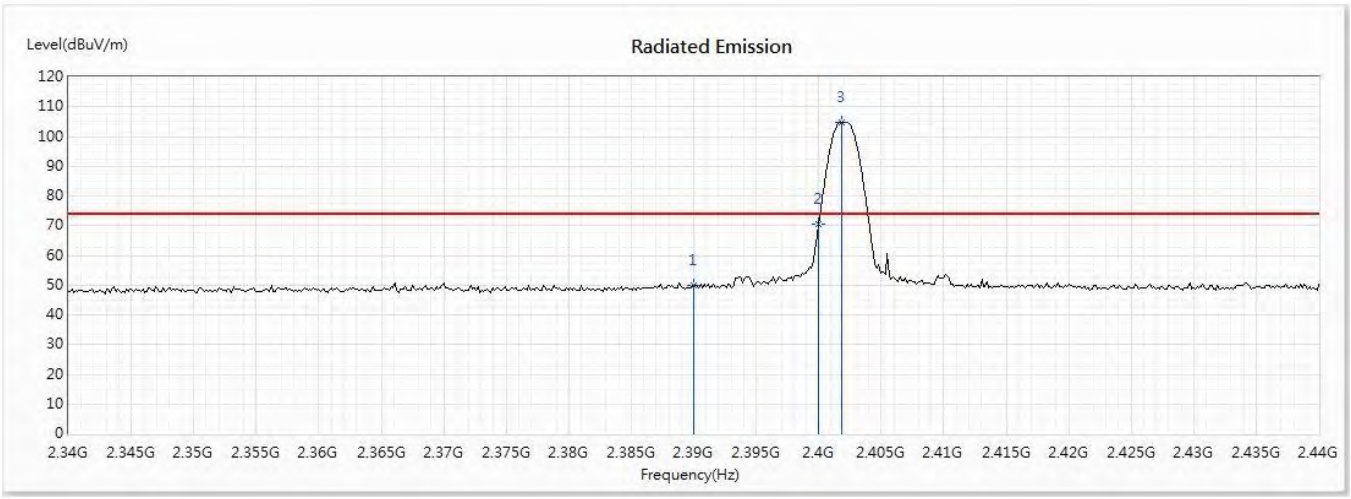
Channel No.	**Frequency (MHz)**	**Peak Measurement (dBµV/m)**	**Duty Cycle Factor (dB)**	**Measurement (dBµV/m)**	**Margin (dB)**	**Limit (dBuV/m)**
00 (Average)	2390	51.97	-31.057	20.913	-33.087	54.000
00 (Average)	2400	74.74	-31.057	43.683	--	--
00 (Average)	2402.029	109.08	-31.057	78.023	--	--

Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 11.

Product : Bluetooth Headset
Test Item : Band Edge
Test date : 2019/12/19
Test Mode : Mode 1: Transmit - 1Mbps (GFSK) (2402MHz)

Vertical



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	49.93	74.00	-24.07	37.04	12.89	PK
2	2400	70.39	--	--	57.43	12.96	PK
! 3	2401.884	104.90	--	--	91.93	12.97	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.

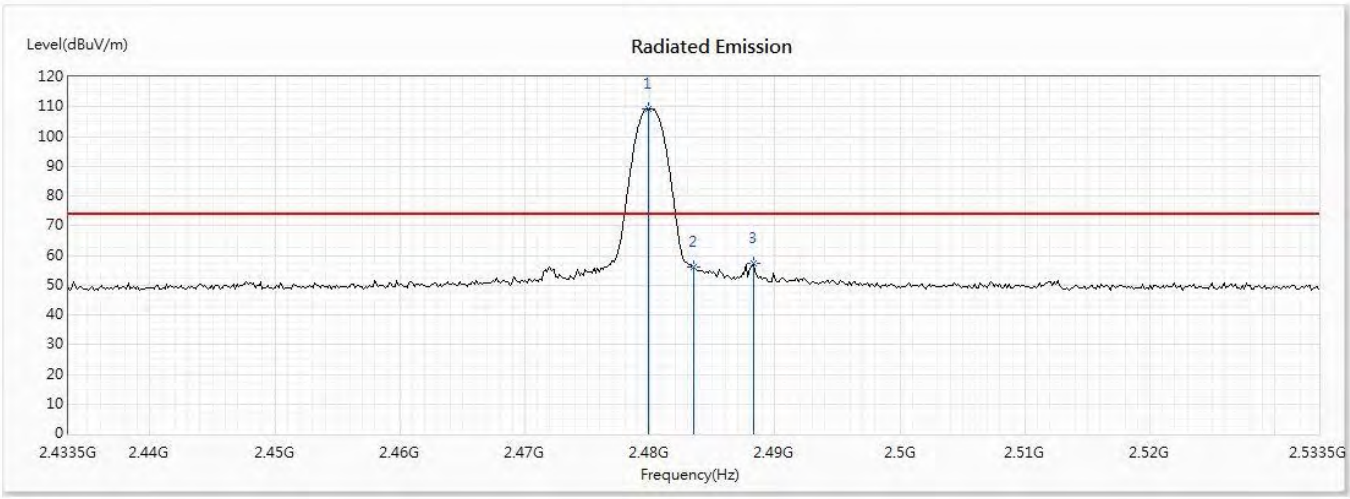
Channel No.	**Frequency (MHz)**	**Peak Measurement (dBµV/m)**	**Duty Cycle Factor (dB)**	**Measurement (dBµV/m)**	**Margin (dB)**	**Limit (dBuV/m)**
00 (Average)	2390	49.93	-31.057	18.873	-35.127	54.000
00 (Average)	2400	70.39	-31.057	39.333	--	--
00 (Average)	2401.884	104.9	-31.057	73.843	--	--

Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 11.

Product : Bluetooth Headset
Test Item : Band Edge
Test date : 2019/12/19
Test Mode : Mode 1: Transmit - 1Mbps (GFSK) (2480MHz)

Horizontal



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2479.877	109.19	--	--	95.82	13.37	PK
2	2483.5	56.27	74.00	-17.73	42.89	13.38	PK
3	2488.283	57.49	74.00	-16.51	44.10	13.39	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.

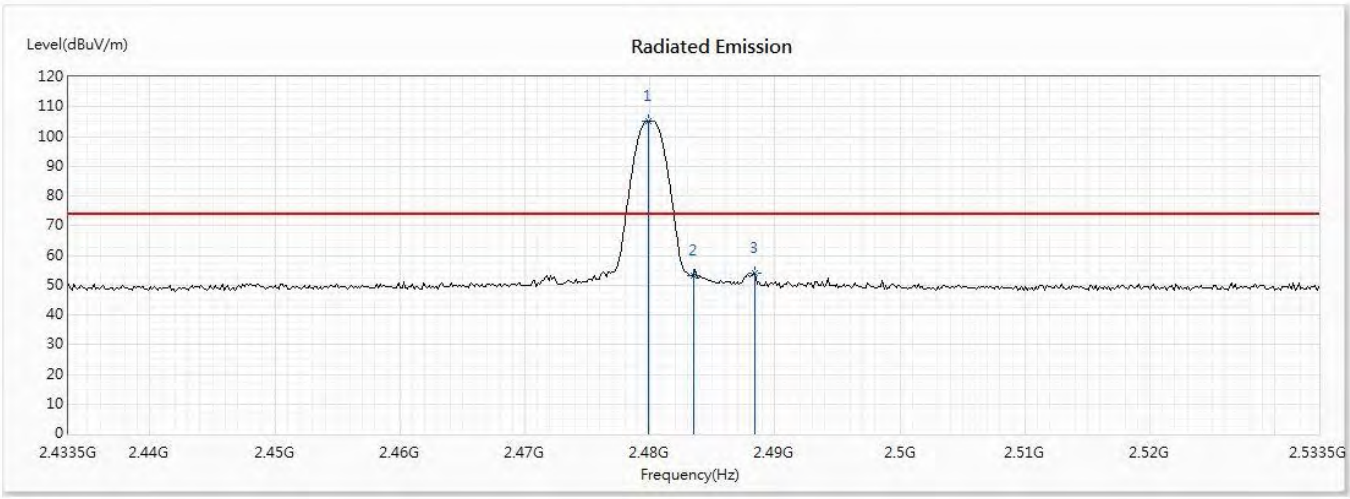
Channel No.	**Frequency (MHz)**	**Peak Measurement (dBµV/m)**	**Duty Cycle Factor (dB)**	**Measurement (dBµV/m)**	**Margin (dB)**	**Limit (dBuV/m)**
78 (Average)	2479.877	109.19	-31.057	78.133	--	--
78 (Average)	2483.5	56.27	-31.057	25.213	-28.787	54.000
78 (Average)	2488.283	57.49	-31.057	26.433	-27.567	54.000

Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 11.

Product : Bluetooth Headset
Test Item : Band Edge
Test date : 2019/12/19
Test Mode : Mode 1: Transmit - 1Mbps (GFSK) (2480MHz)

Vertical



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2479.877	105.24	--	--	91.87	13.37	PK
2	2483.5	53.22	74.00	-20.78	39.84	13.38	PK
3	2488.428	53.89	74.00	-20.11	40.50	13.39	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.

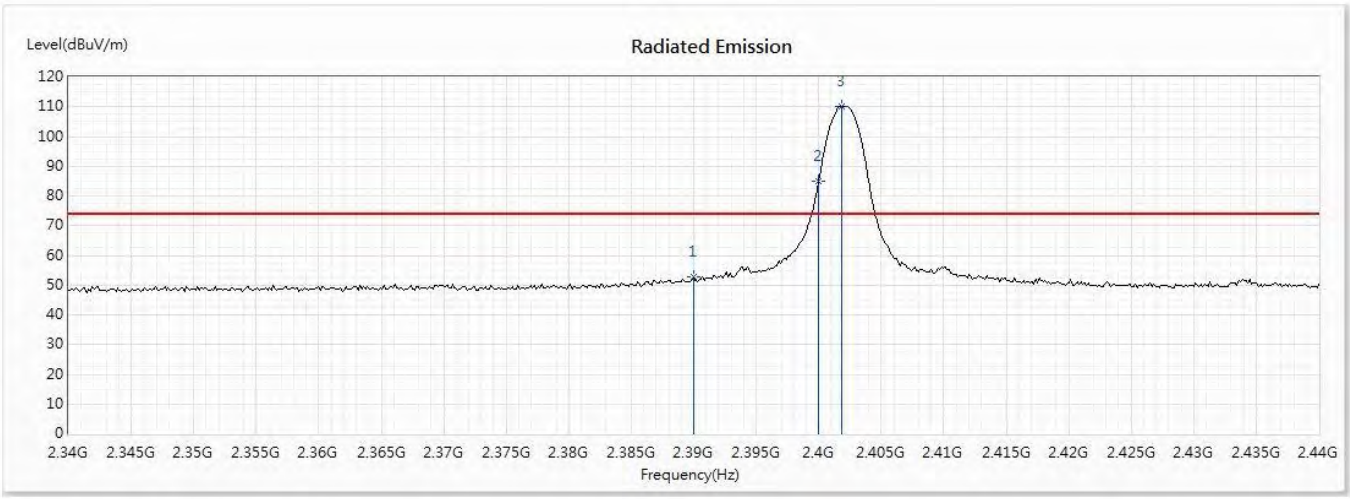
Channel No.	**Frequency (MHz)**	**Peak Measurement (dBµV/m)**	**Duty Cycle Factor (dB)**	**Measurement (dBµV/m)**	**Margin (dB)**	**Limit (dBuV/m)**
78 (Average)	2479.877	105.24	-31.057	74.183	--	--
78 (Average)	2483.5	53.22	-31.057	22.163	-31.837	54.000
78 (Average)	2488.428	53.89	-31.057	22.833	-31.167	54.000

Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 11.

Product : Bluetooth Headset
Test Item : Band Edge
Test date : 2019/12/19
Test Mode : Mode 2: Transmit - 2Mbps (π/4DQPSK) (2402MHz)

Horizontal



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	52.61	74.00	-21.39	39.72	12.89	PK
! 2	2400	84.87	--	--	71.91	12.96	PK
! 3	2401.884	110.25	--	--	97.28	12.97	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.

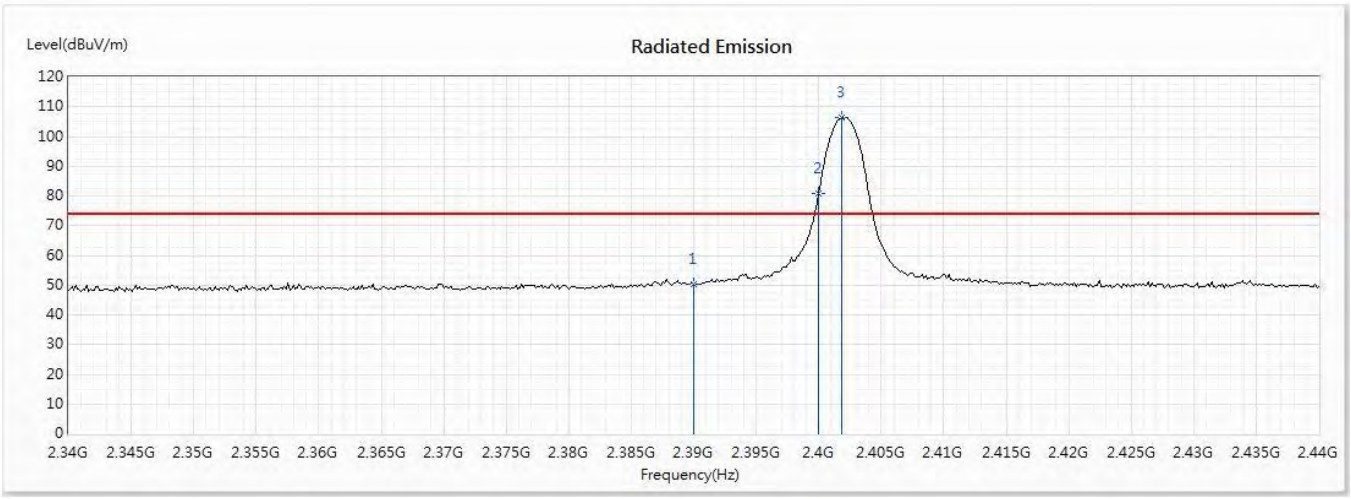
Channel No.	**Frequency (MHz)**	**Peak Measurement (dBµV/m)**	**Duty Cycle Factor (dB)**	**Measurement (dBµV/m)**	**Margin (dB)**	**Limit (dBuV/m)**
00 (Average)	2390	52.61	-31.057	21.553	-32.447	54.000
00 (Average)	2400	84.87	-31.057	53.813	--	--
00 (Average)	2401.884	110.25	-31.057	79.193	--	--

Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 11.

Product : Bluetooth Headset
Test Item : Band Edge
Test date : 2019/12/19
Test Mode : Mode 2: Transmit - 2Mbps (π/4DQPSK) (2402MHz)

Vertical



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	50.23	74.00	-23.77	37.34	12.89	PK
! 2	2400	80.94	--	--	67.98	12.96	PK
! 3	2401.884	106.21	--	--	93.24	12.97	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.

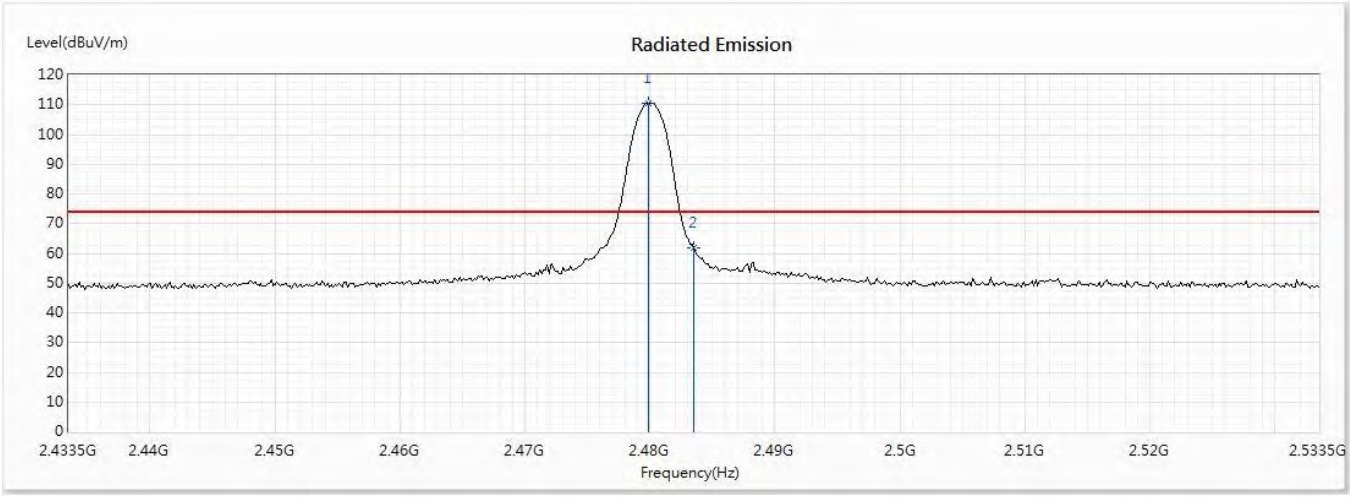
Channel No.	**Frequency (MHz)**	**Peak Measurement (dBµV/m)**	**Duty Cycle Factor (dB)**	**Measurement (dBµV/m)**	**Margin (dB)**	**Limit (dBuV/m)**
00 (Average)	2390	50.23	-31.057	19.173	-34.827	54.000
00 (Average)	2400	80.94	-31.057	49.883	--	--
00 (Average)	2401.884	106.21	-31.057	75.153	--	--

Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 11.

Product : Bluetooth Headset
Test Item : Band Edge
Test date : 2019/12/19
Test Mode : Mode 2: Transmit - 2Mbps (π/4DQPSK) (2480MHz)

Horizontal



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2479.877	110.53	--	--	97.16	13.37	PK
2	2483.5	61.70	74.00	-12.30	48.32	13.38	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.

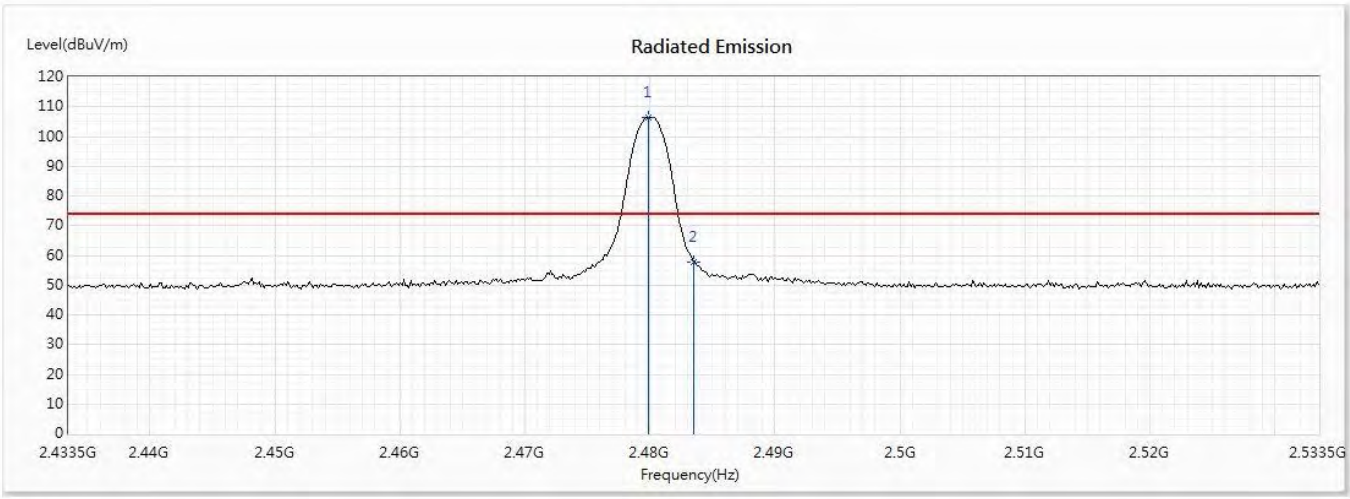
Channel No.	**Frequency (MHz)**	**Peak Measurement (dBµV/m)**	**Duty Cycle Factor (dB)**	**Measurement (dBµV/m)**	**Margin (dB)**	**Limit (dBuV/m)**
78 (Average)	2479.877	110.53	-31.057	79.473	--	--
78 (Average)	2483.5	61.70	-31.057	30.643	-23.357	54.000

Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 11.

Product : Bluetooth Headset
Test Item : Band Edge
Test date : 2019/12/19
Test Mode : Mode 2: Transmit - 2Mbps (π/4DQPSK) (2480MHz)

Vertical



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2479.877	106.58	--	--	93.21	13.37	PK
2	2483.5	57.86	74.00	-16.14	44.48	13.38	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.

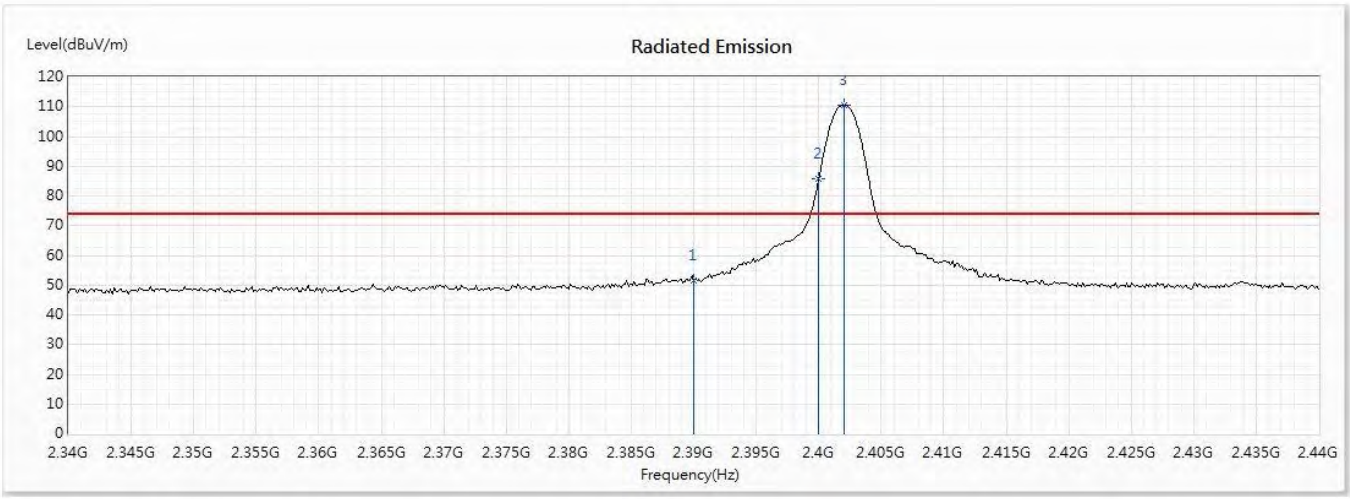
Channel No.	**Frequency (MHz)**	**Peak Measurement (dBµV/m)**	**Duty Cycle Factor (dB)**	**Measurement (dBµV/m)**	**Margin (dB)**	**Limit (dBuV/m)**
78 (Average)	2479.877	106.58	-31.057	75.523	--	--
78 (Average)	2483.5	57.86	-31.057	26.803	-27.197	54.000

Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 11.

Product : Bluetooth Headset
Test Item : Band Edge
Test date : 2019/12/19
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2402MHz)

Horizontal



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	51.69	74.00	-22.31	38.80	12.89	PK
! 2	2400	85.69	--	--	72.73	12.96	PK
! 3	2402.029	110.62	--	--	97.65	12.97	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.

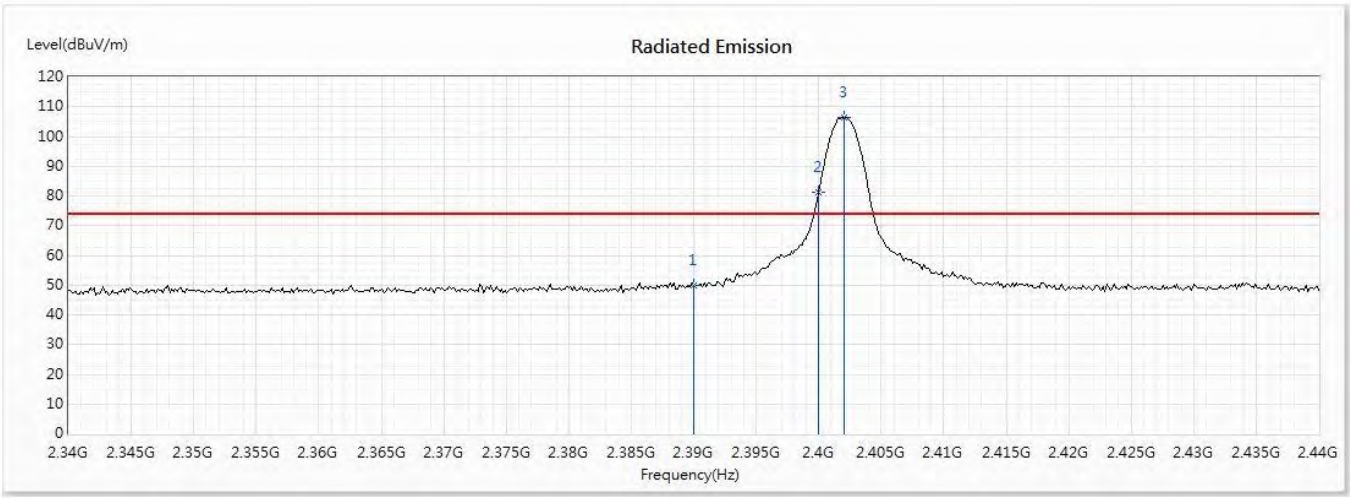
Channel No.	**Frequency (MHz)**	**Peak Measurement (dBµV/m)**	**Duty Cycle Factor (dB)**	**Measurement (dBµV/m)**	**Margin (dB)**	**Limit (dBuV/m)**
00 (Average)	2390	51.69	-31.057	20.633	-33.367	54.000
00 (Average)	2400	85.69	-31.057	54.633	--	--
00 (Average)	2402.029	110.62	-31.057	79.563	--	--

Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 11.

Product : Bluetooth Headset
Test Item : Band Edge
Test date : 2019/12/19
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2402MHz)

Vertical



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	50.07	74.00	-23.93	37.18	12.89	PK
! 2	2400	81.40	--	--	68.44	12.96	PK
! 3	2402.029	106.53	--	--	93.56	12.97	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.

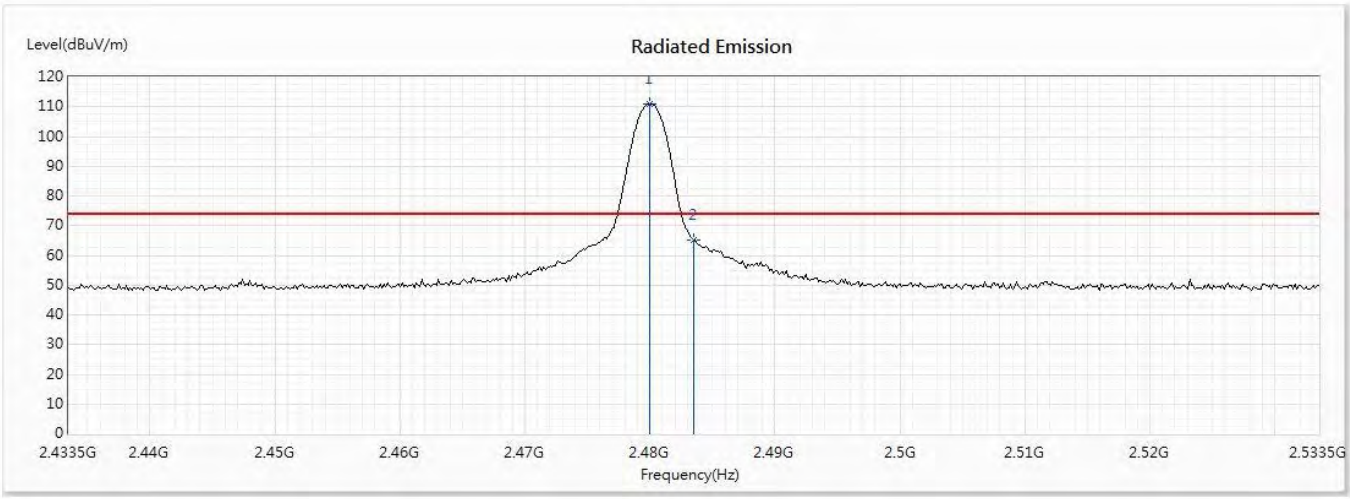
Channel No.	**Frequency (MHz)**	**Peak Measurement (dBµV/m)**	**Duty Cycle Factor (dB)**	**Measurement (dBµV/m)**	**Margin (dB)**	**Limit (dBuV/m)**
00 (Average)	2390	50.07	-31.057	19.013	-34.987	54.000
00 (Average)	2400	81.4	-31.057	50.343	--	--
00 (Average)	2402.029	106.53	-31.057	75.473	--	--

Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 11.

Product : Bluetooth Headset
Test Item : Band Edge
Test date : 2019/12/19
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2480MHz)

Horizontal



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2480.022	110.88	--	--	97.51	13.37	PK
2	2483.5	65.21	74.00	-8.79	51.83	13.38	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.

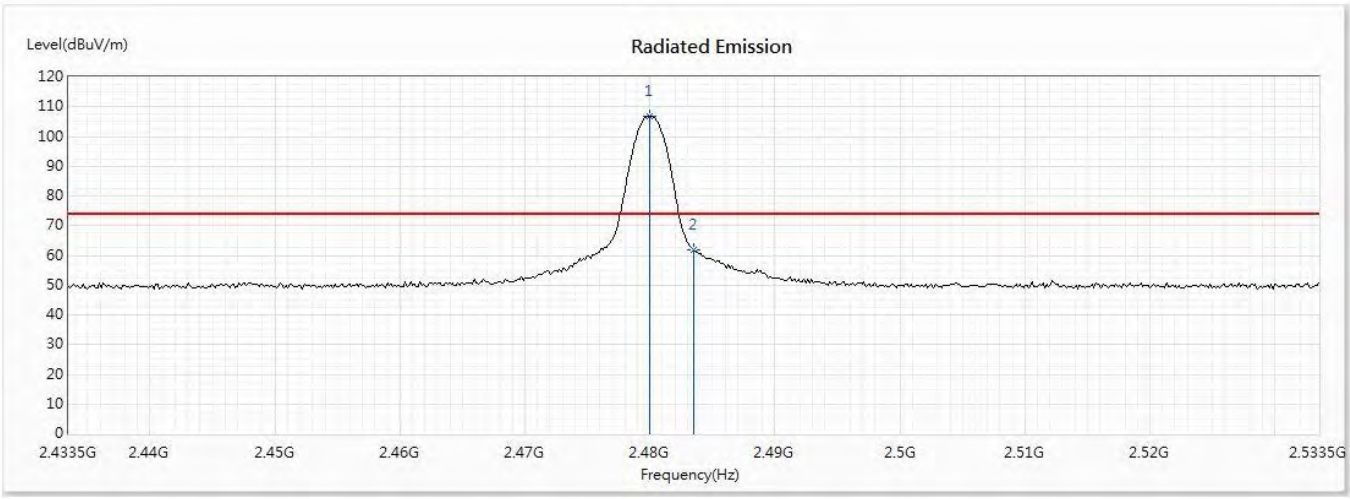
Channel No.	**Frequency (MHz)**	**Peak Measurement (dBµV/m)**	**Duty Cycle Factor (dB)**	**Measurement (dBµV/m)**	**Margin (dB)**	**Limit (dBuV/m)**
78 (Average)	2480.022	110.88	-31.057	79.823	--	--
78 (Average)	2483.5	65.21	-31.057	34.153	-19.847	54.000

Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 11.

Product : Bluetooth Headset
Test Item : Band Edge
Test date : 2019/12/19
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2480MHz)

Vertical



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2480.022	106.93	--	--	93.56	13.37	PK
2	2483.5	61.78	74.00	-12.22	48.40	13.38	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.

Channel No.	**Frequency (MHz)**	**Peak Measurement (dBµV/m)**	**Duty Cycle Factor (dB)**	**Measurement (dBµV/m)**	**Margin (dB)**	**Limit (dBuV/m)**
78 (Average)	2480.022	106.93	-31.057	75.873	--	--
78 (Average)	2483.5	61.78	-31.057	30.723	-23.277	54.000

Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 11.

Product : Bluetooth Headset
Test Item : Band Edge
Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(Hopping off)

Measurement Level Δ (dB)	Result
> 20	PASS

Figure Channel 00:

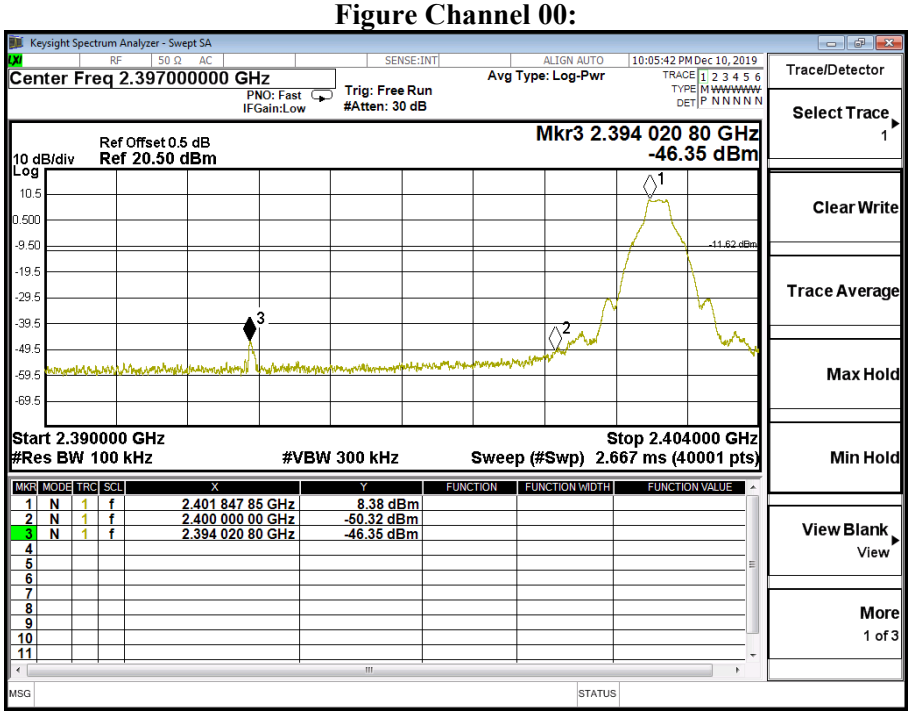
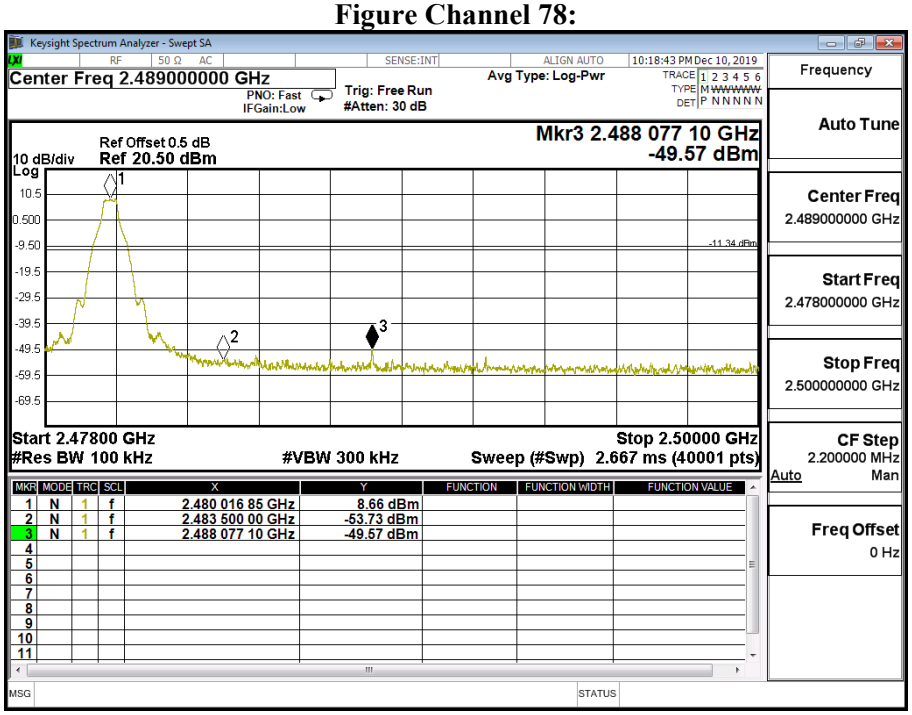


Figure Channel 78:



Product : Bluetooth Headset
Test Item : Band Edge
Test Mode : Mode 2: Transmit - 2Mbps (π/4DQPSK)(Hopping off)

Measurement Level Δ (dB)	Result
> 20	PASS

Figure Channel 00:

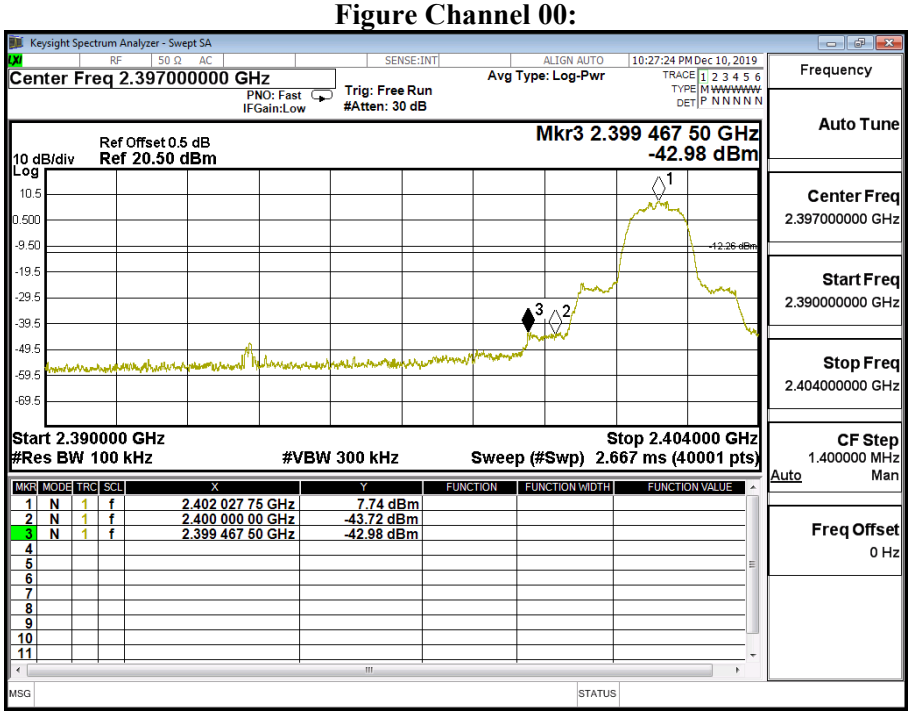
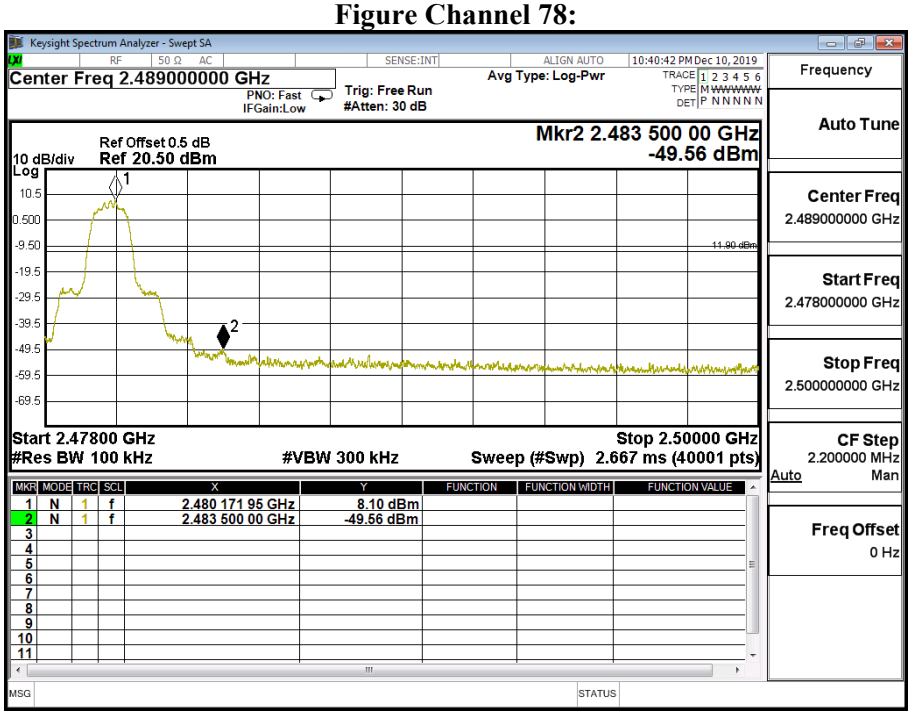


Figure Channel 78:



Product : Bluetooth Headset
Test Item : Band Edge
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (Hopping off)

Measurement Level Δ (dB)	Result
> 20	PASS

Figure Channel 00:

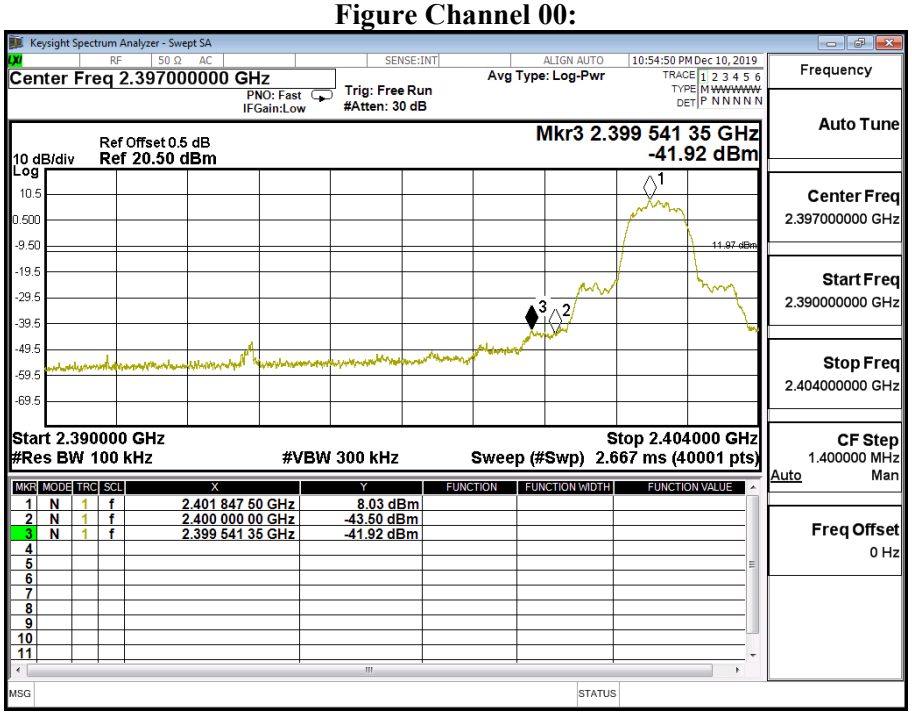
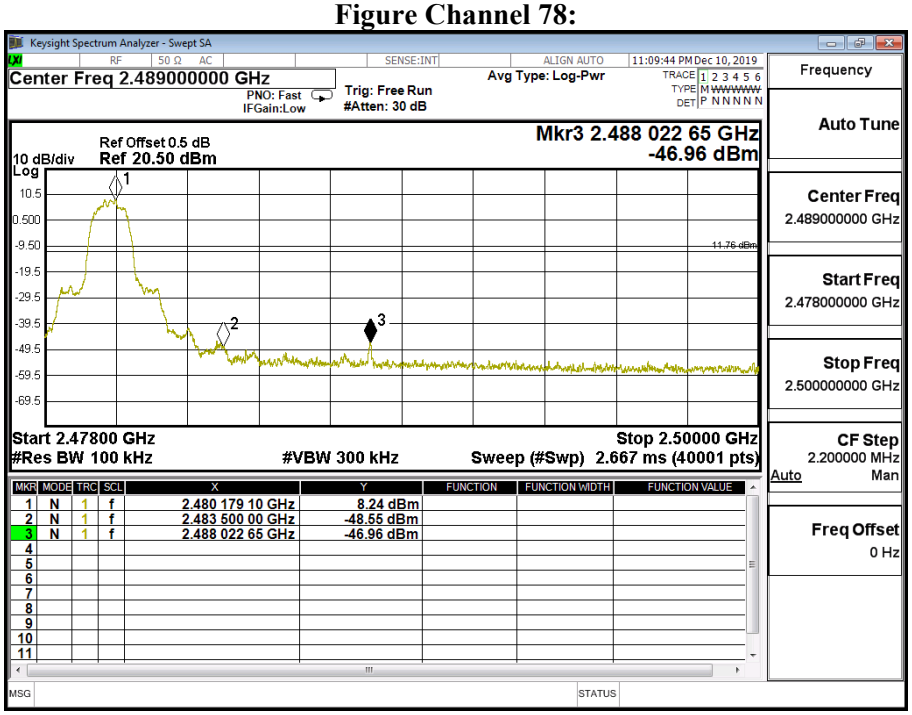


Figure Channel 78:



Product : Bluetooth Headset
Test Item : Band Edge
Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(Hopping on)

Measurement Level Δ (dB)	Result
> 20	PASS

Figure Channel 00 Hopping:

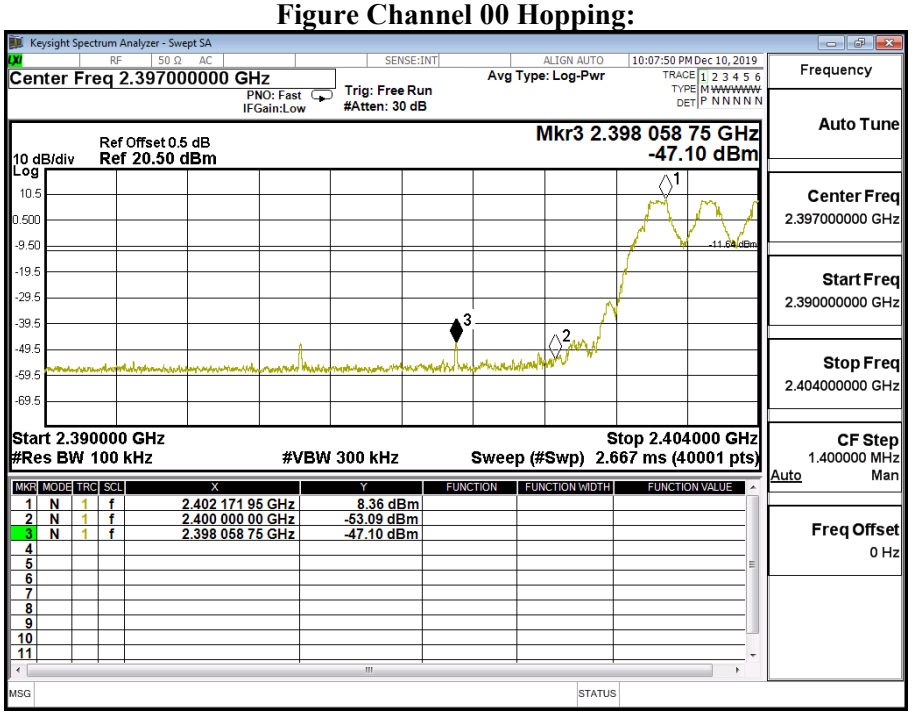
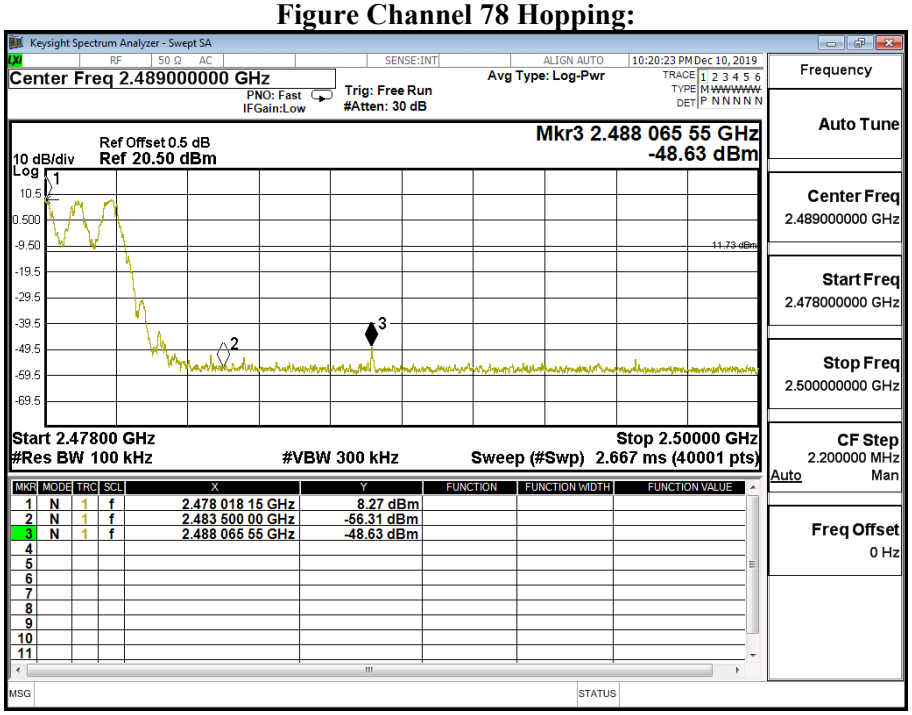


Figure Channel 78 Hopping:



Product : Bluetooth Headset
Test Item : Band Edge
Test Mode : Mode 2: Transmit - 2Mbps (π/4DQPSK)(Hopping on)

Measurement Level Δ (dB)	Result
> 20	PASS

Figure Channel 00 Hopping:

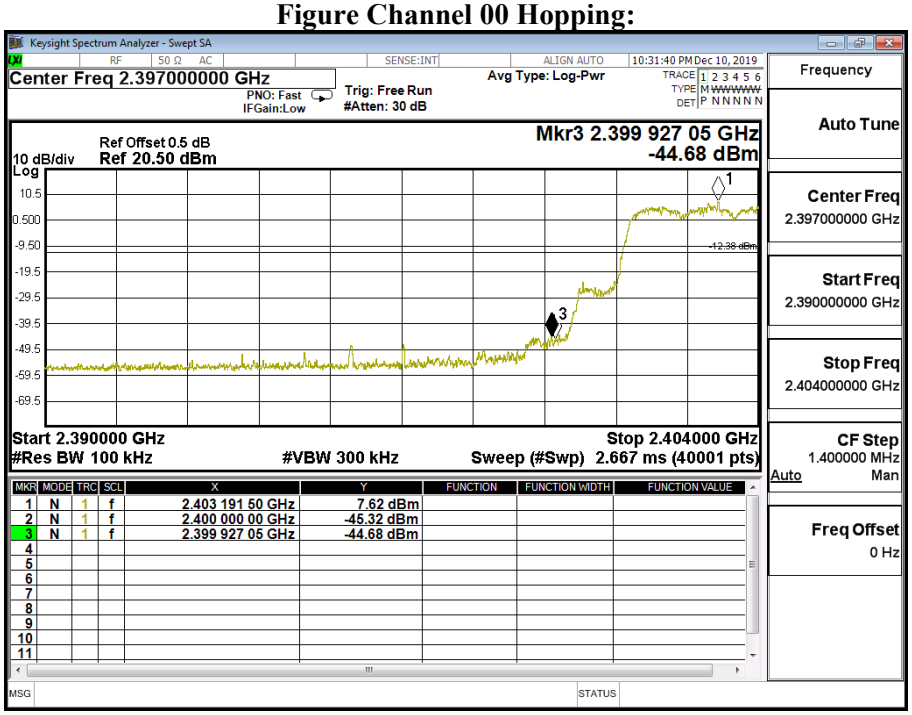
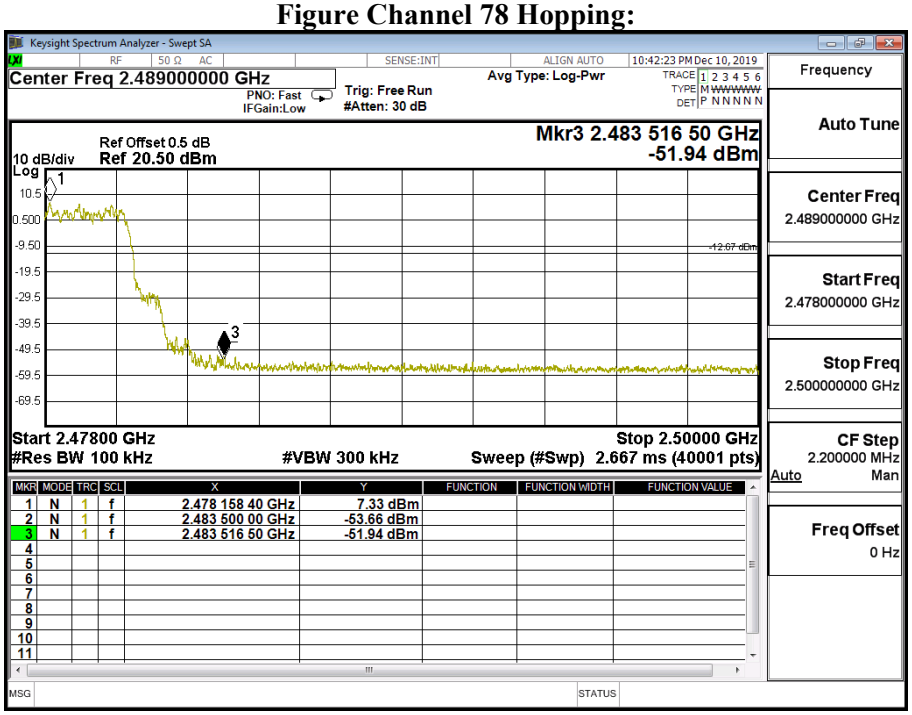


Figure Channel 78 Hopping:



Product : Bluetooth Headset
Test Item : Band Edge
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (Hopping on)

Measurement Level Δ (dB)	Result
> 20	PASS

Figure Channel 00 Hopping:

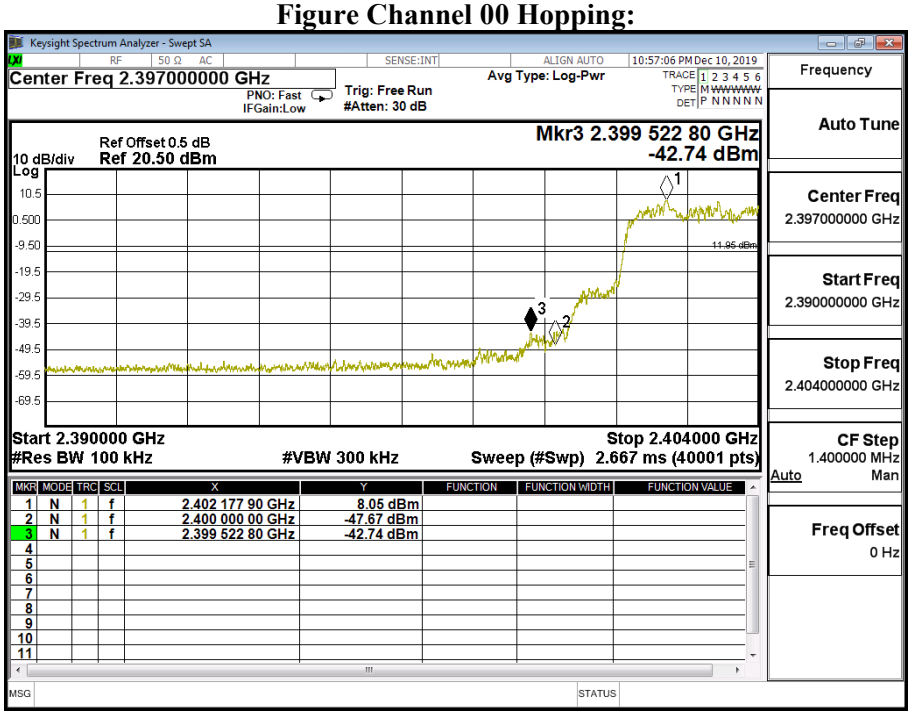
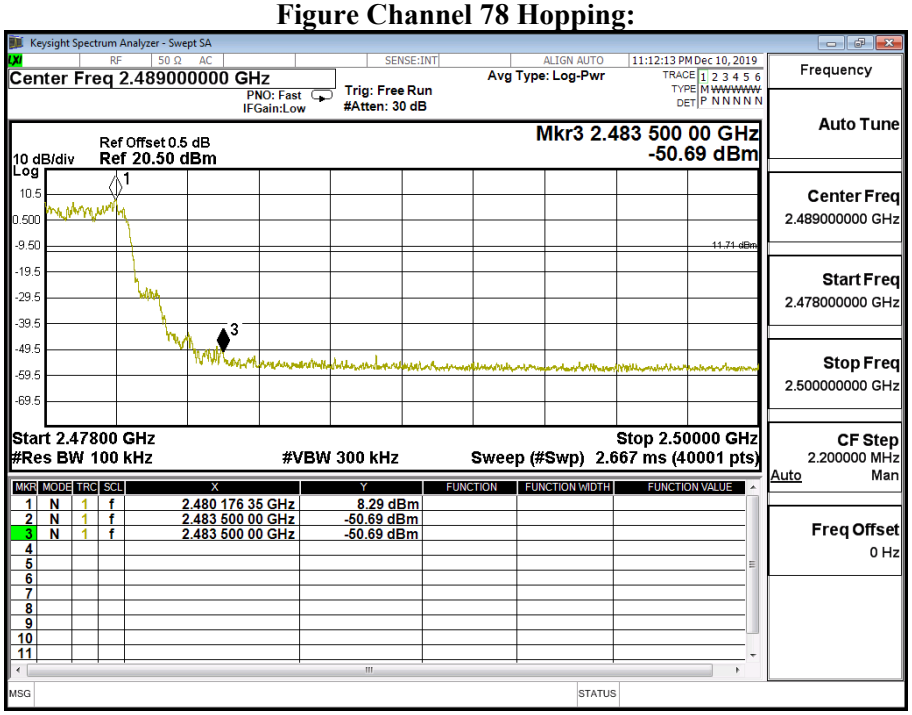
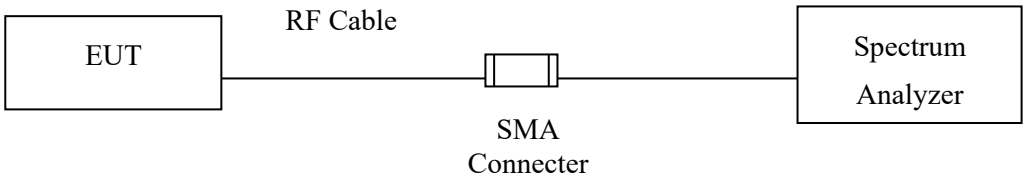


Figure Channel 78 Hopping:



7. Channel Number

7.1. Test Setup



7.2. Limit

Frequency hopping systems operating in the 2400-2483.5 MHz bands shall use at least 75 hopping frequencies.

7.3. Test Procedure

Tested according to FHSS test procedure of KDB558074 section 9 (b for compliance to FCC 47CFR 15.247 requirements.

7.4. Uncertainty

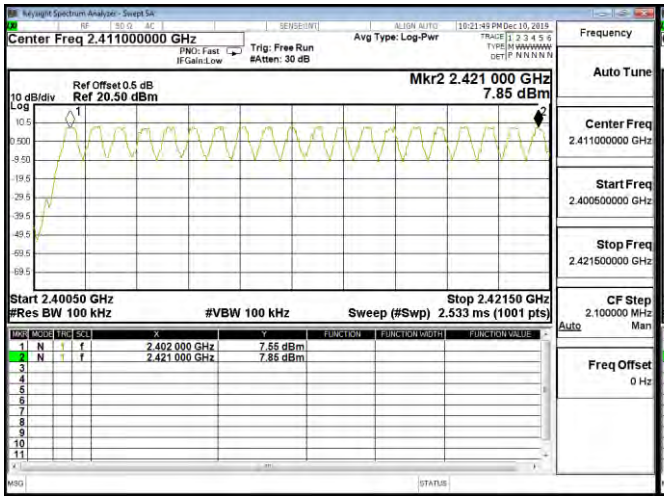
N/A

7.5. Test Result of Channel Number

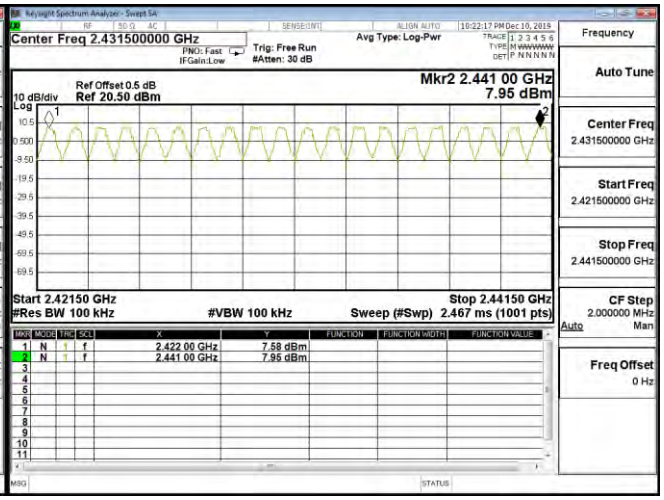
Product : Bluetooth Headset
Test Item : Channel Number
Test Mode : Mode 1: Transmit - 1Mbps (GFSK)

Frequency Range (MHz)	Measurement (Hopping Channel)	Required Limit (Hopping Channel)	Result
2402 ~ 2480	79	>75	Pass

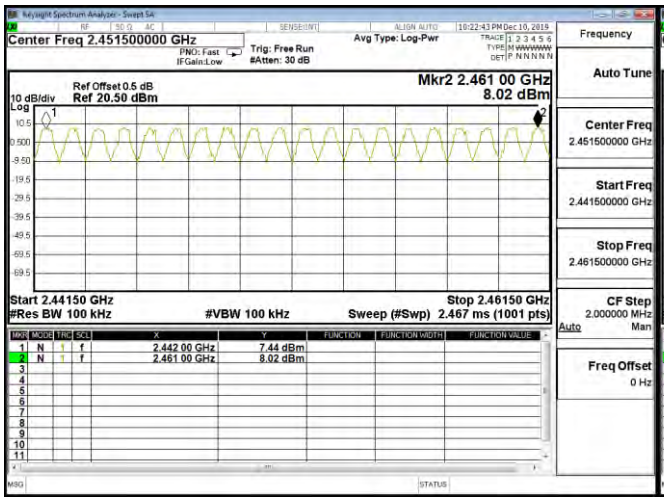
2402-2421MHz



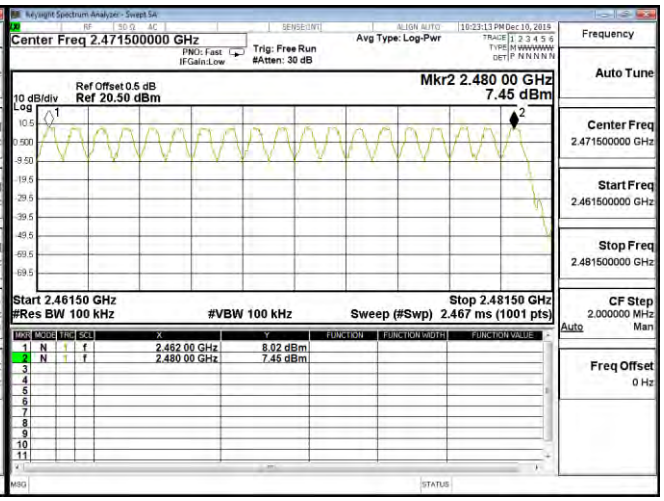
2422-2441MHz



2442-2461MHz



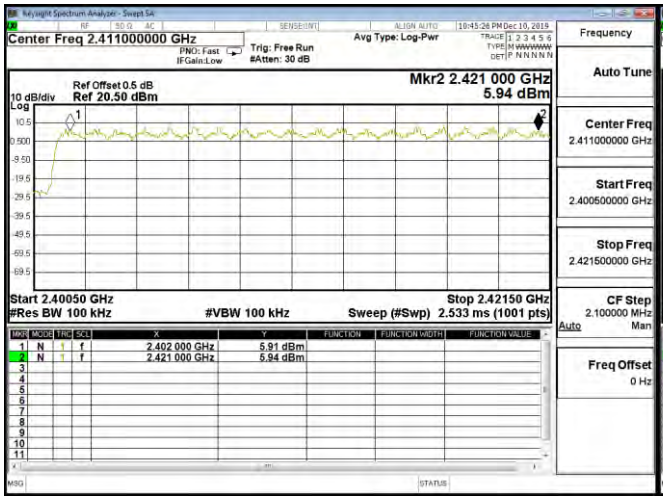
2462-2480MHz



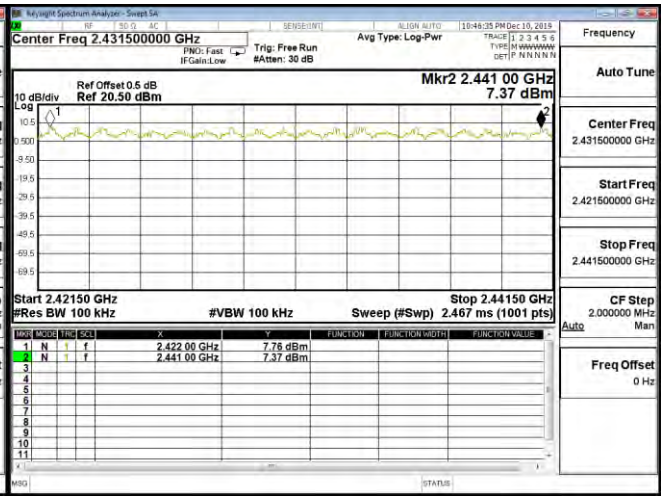
Product : Bluetooth Headset
Test Item : Channel Number
Test Mode : Mode 2: Transmit - 2Mbps (π/4DQPSK)

Frequency Range (MHz)	Measurement (Hopping Channel)	Required Limit (Hopping Channel)	Result
2402 ~ 2480	79	>75	Pass

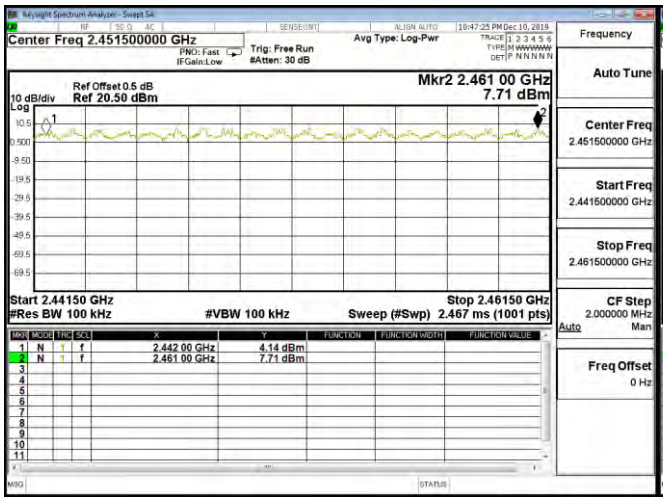
2402-2421MHz



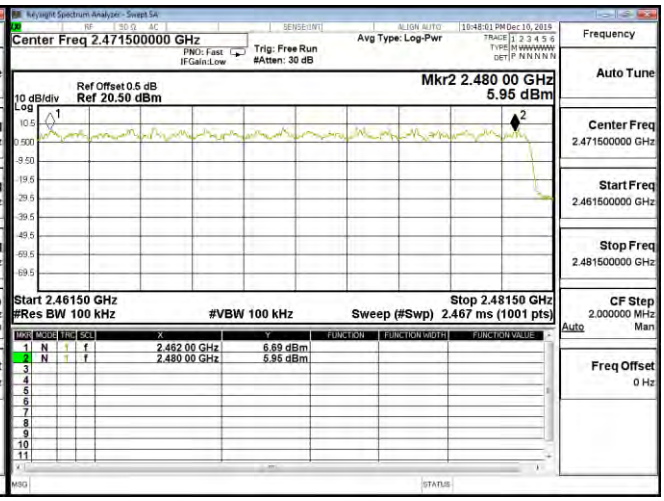
2422-2441MHz



2442-2461MHz



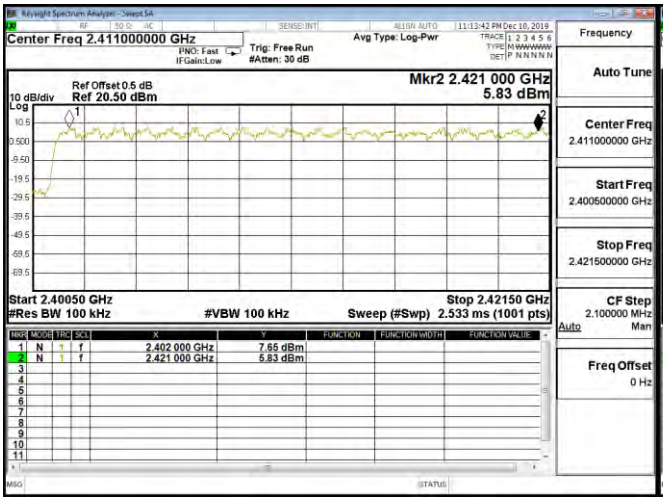
2462-2480MHz



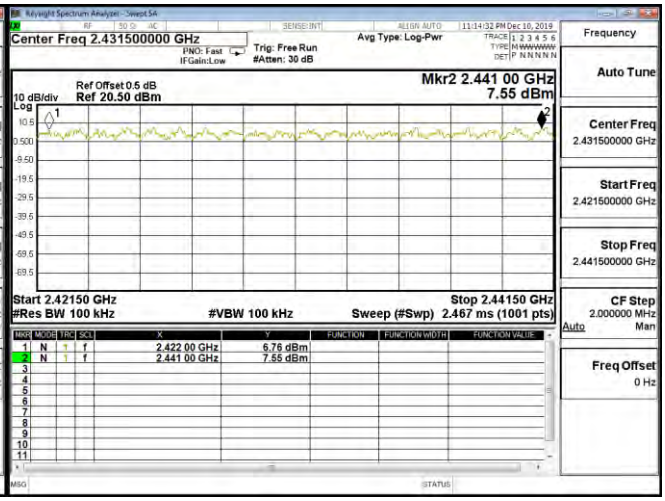
Product : Bluetooth Headset
Test Item : Channel Number
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK)

Frequency Range (MHz)	Measurement (Hopping Channel)	Required Limit (Hopping Channel)	Result
2402 ~ 2480	79	>75	Pass

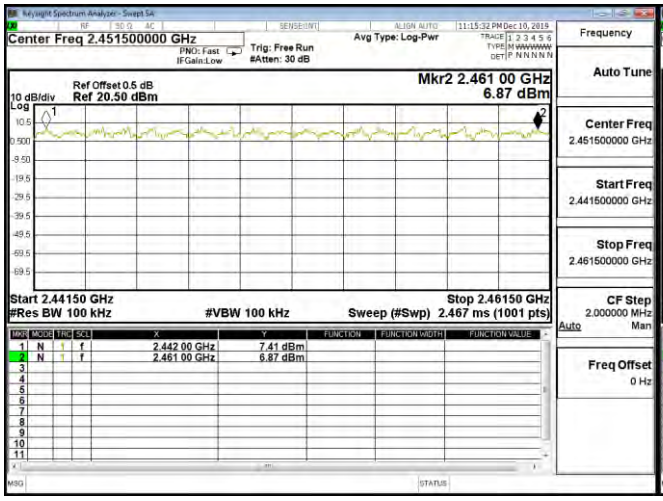
2402-2421MHz



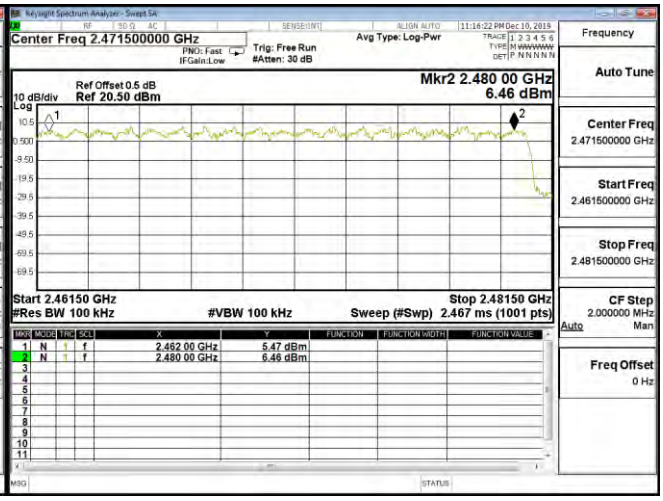
2422-2441MHz



2442-2461MHz

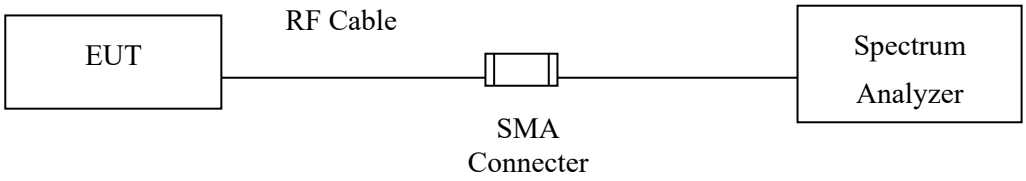


2462-2480MHz



8. Channel Separation

8.1. Test Setup



8.2. Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

8.3. Test Procedure

Tested according to FHSS test procedure of KDB558074 section 9 (b for compliance to FCC 47CFR 15.247 requirements.

8.4. Uncertainty

± 283Hz

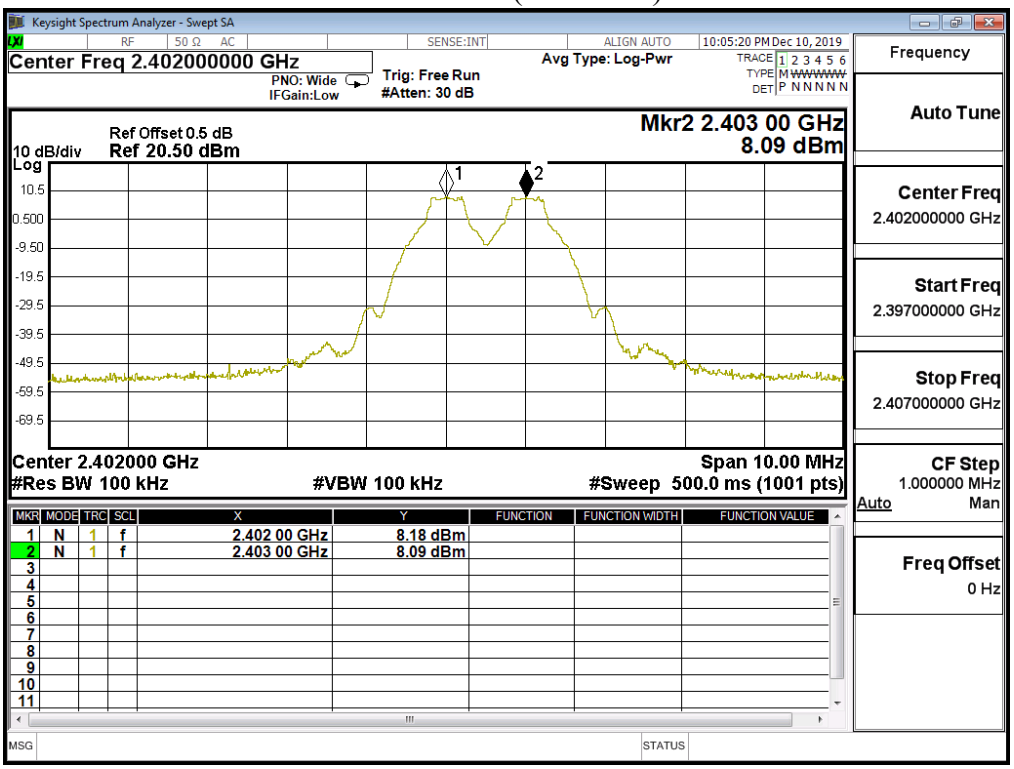
8.5. Test Result of Channel Separation

Product : Bluetooth Headset
Test Item : Channel Separation
Test Mode : Mode 1: Transmit - 1Mbps (GFSK)

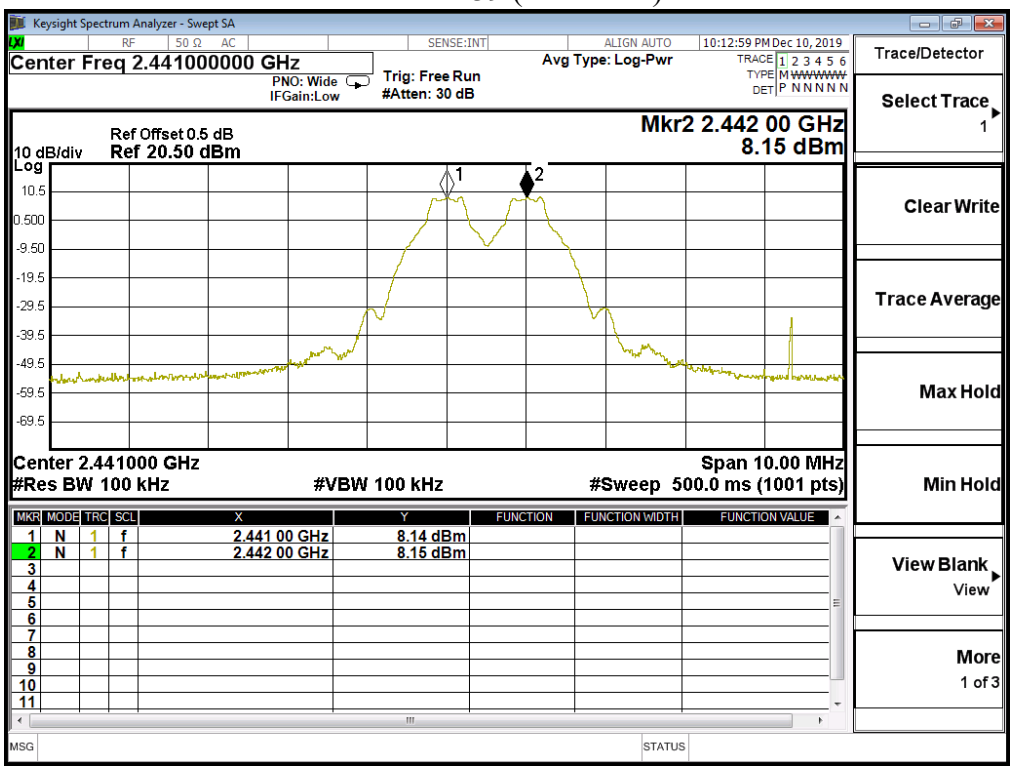
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Limit (kHz)	Limit of (2/3)*20dB Bandwidth (kHz)	Result
00	2402	1000	>25 kHz	646.0	Pass
39	2441	1000	>25 kHz	642.0	Pass
78	2480	1000	>25 kHz	642.0	Pass

NOTE: The 20dB Bandwidth is refer to section 10.

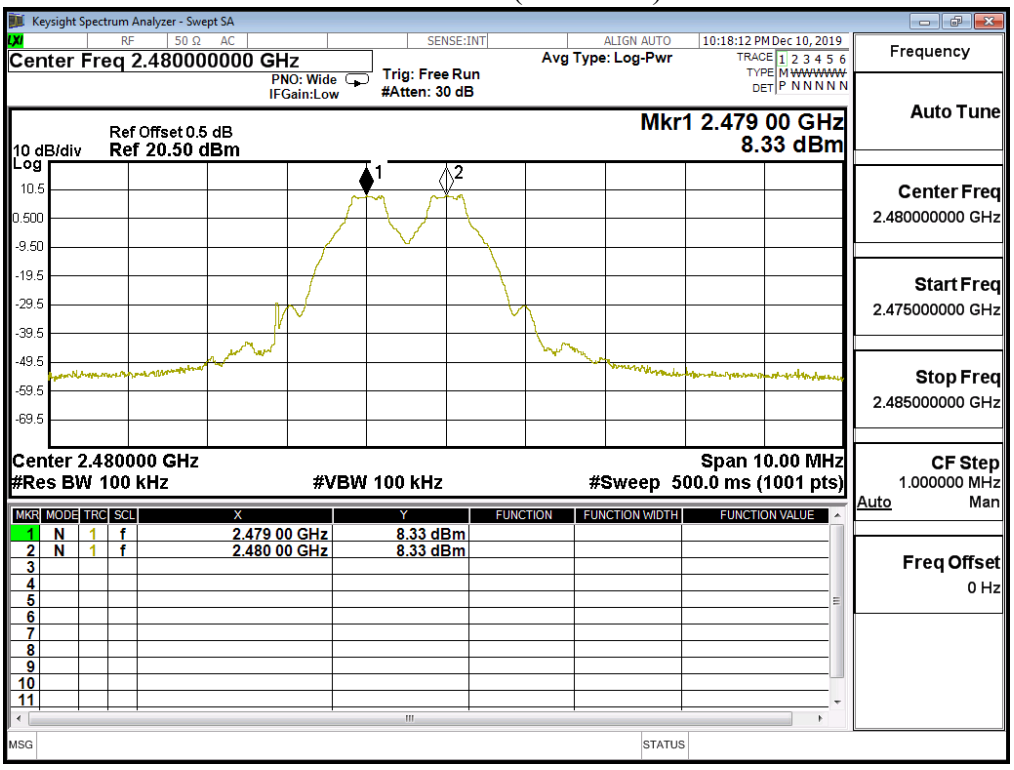
Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)

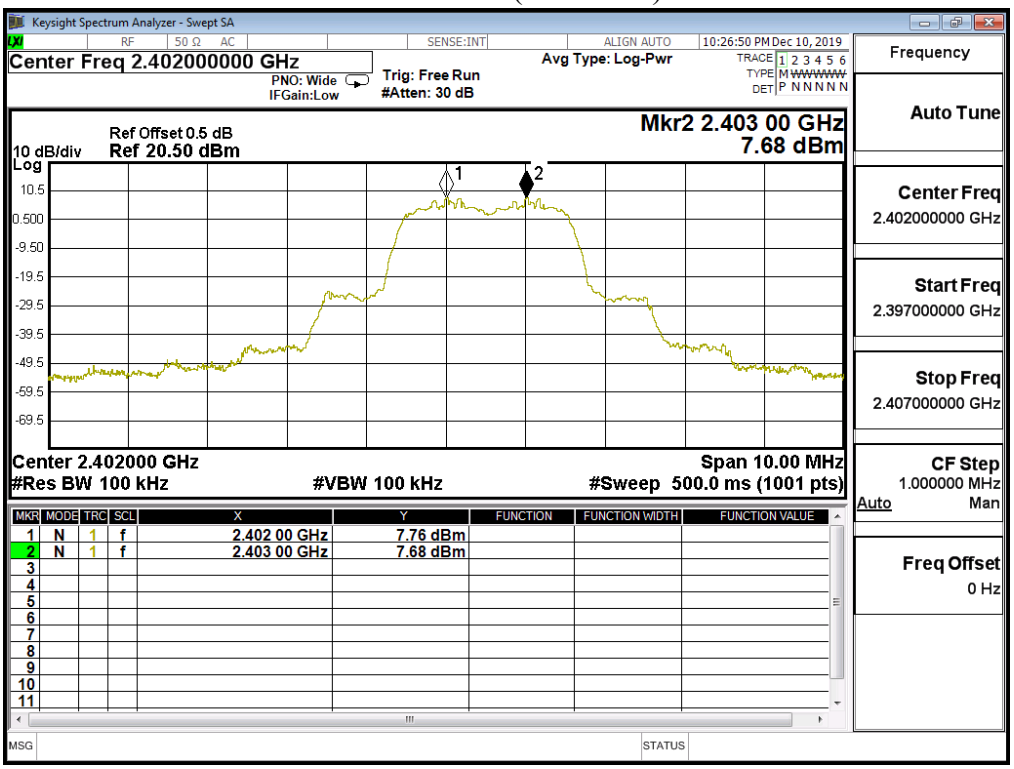


Product : Bluetooth Headset
Test Item : Channel Separation
Test Mode : Mode 2: Transmit - 2Mbps (π/4DQPSK)

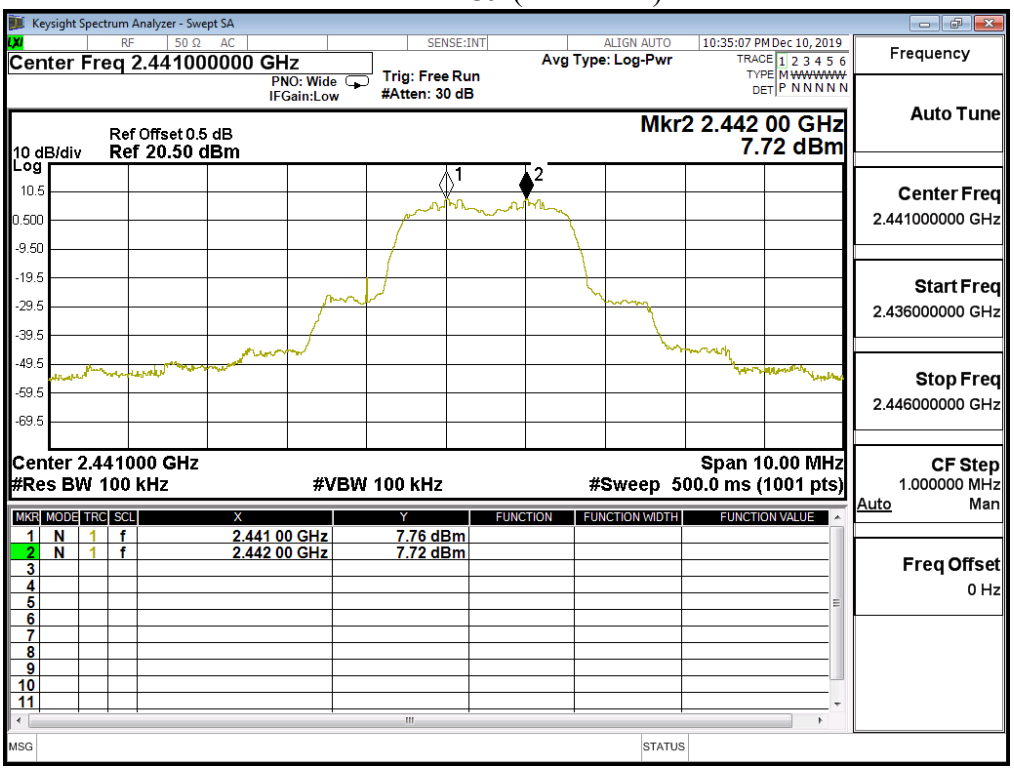
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Limit (kHz)	Limit of (2/3)*20dB Bandwidth (kHz)	Result
00	2402	1000	>25 kHz	892.0	Pass
39	2441	1000	>25 kHz	892.0	Pass
78	2480	1000	>25 kHz	892.0	Pass

NOTE: The 20dB Bandwidth is refer to section 10.

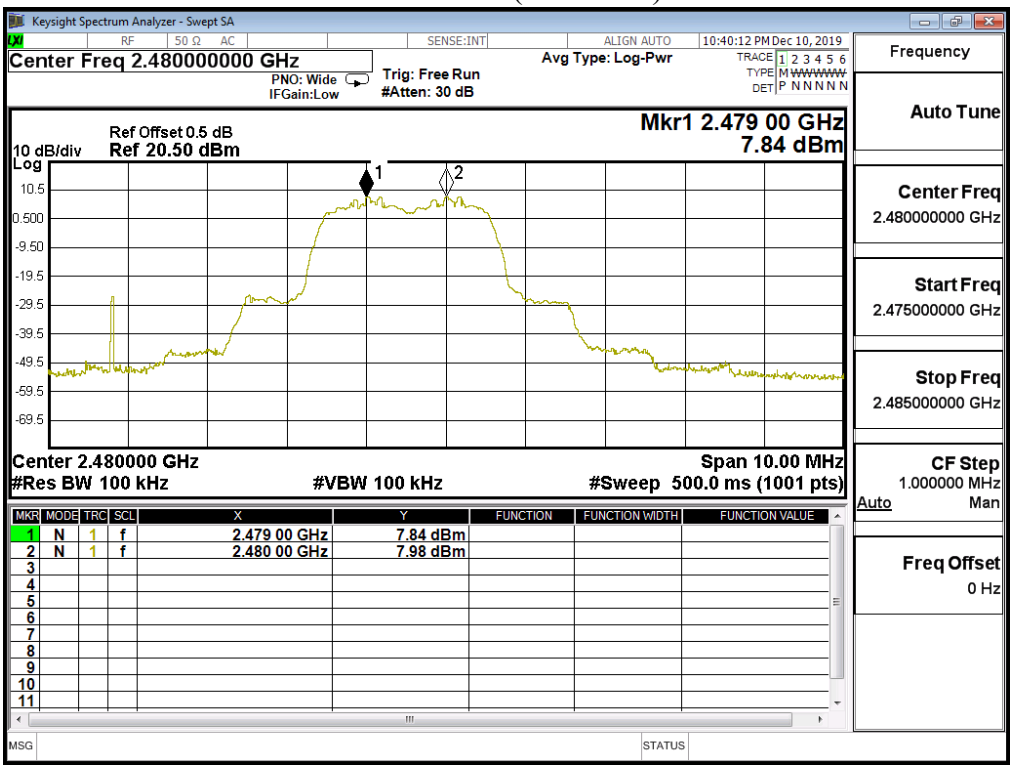
Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)

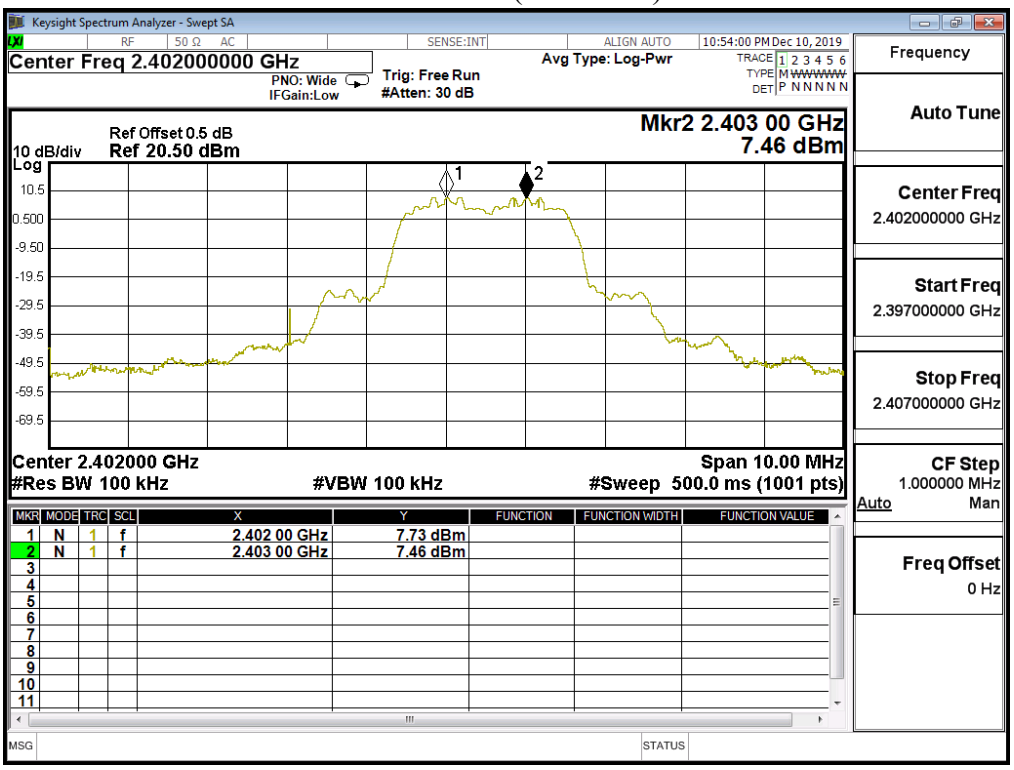


Product : Bluetooth Headset
Test Item : Channel Separation
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK)

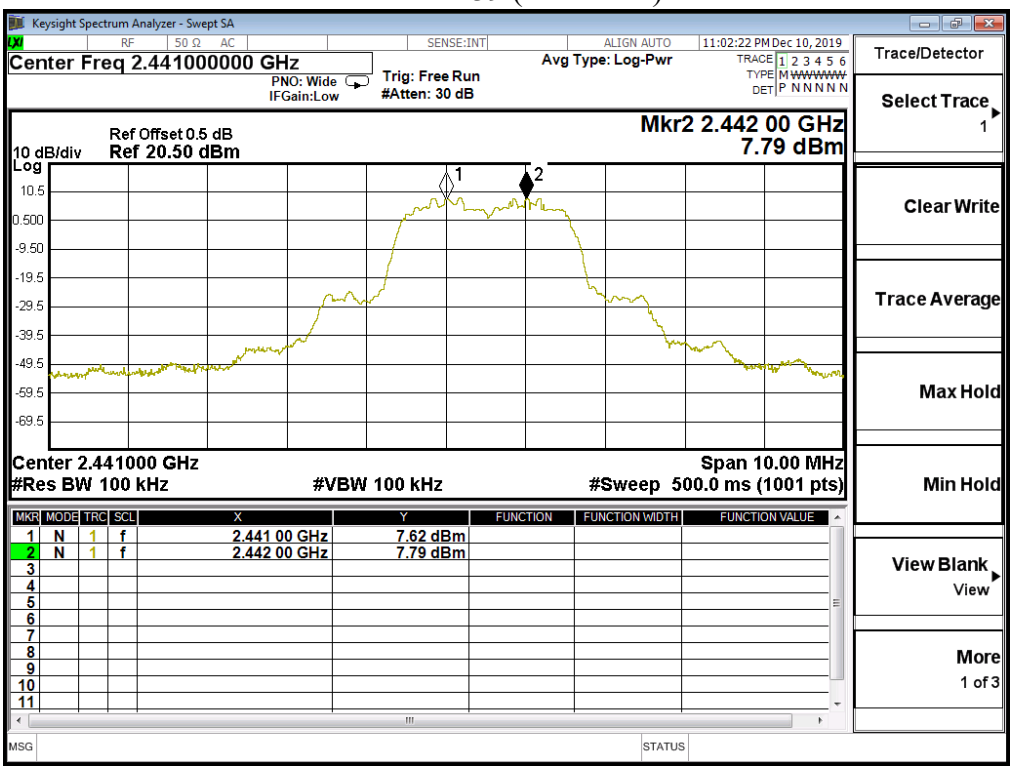
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Limit (kHz)	Limit of (2/3)*20dB Bandwidth (kHz)	Result
00	2402	1000	>25 kHz	878.0	Pass
39	2441	1000	>25 kHz	878.0	Pass
78	2480	1000	>25 kHz	878.0	Pass

NOTE: The 20dB Bandwidth is refer to section 10.

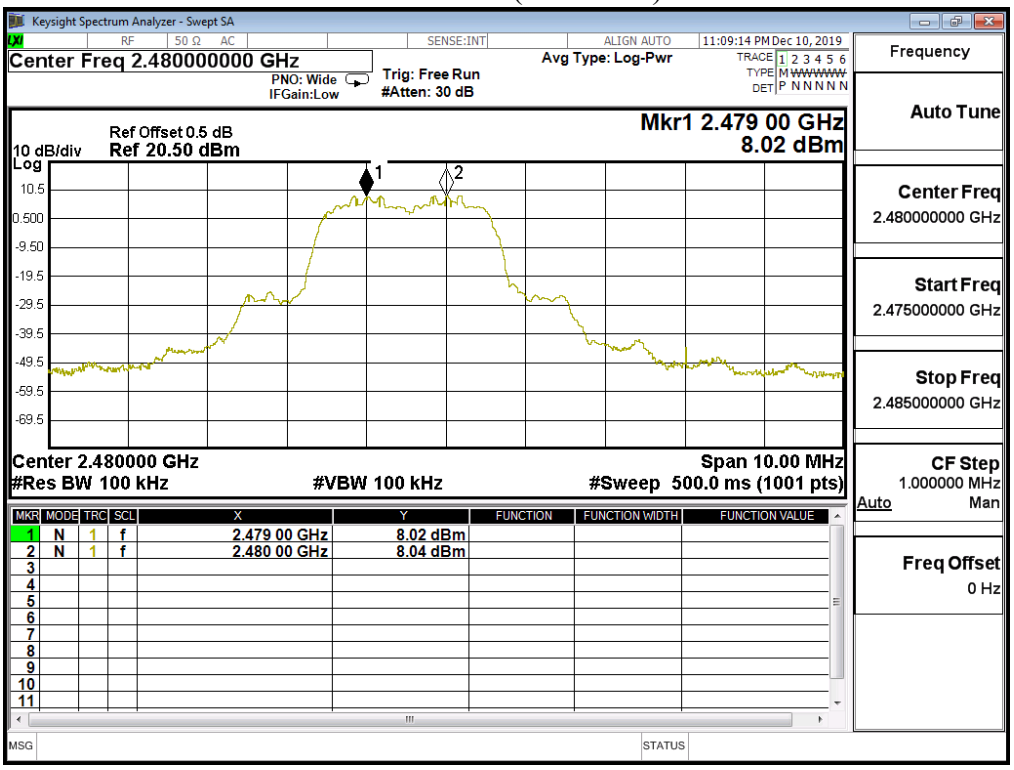
Channel 00 (2402MHz)



Channel 39 (2441MHz)

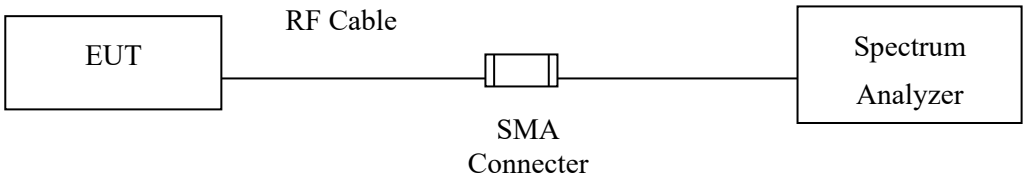


Channel 78 (2480MHz)



9. Dwell Time

9.1. Test Setup



9.2. Limit

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.

9.3. Test Procedure

Tested according to FHSS test procedure of KDB558074 section 9 (b for compliance to FCC 47CFR 15.247 requirements.

9.4. Uncertainty

± 25msec

9.5. Test Result of Dwell Time

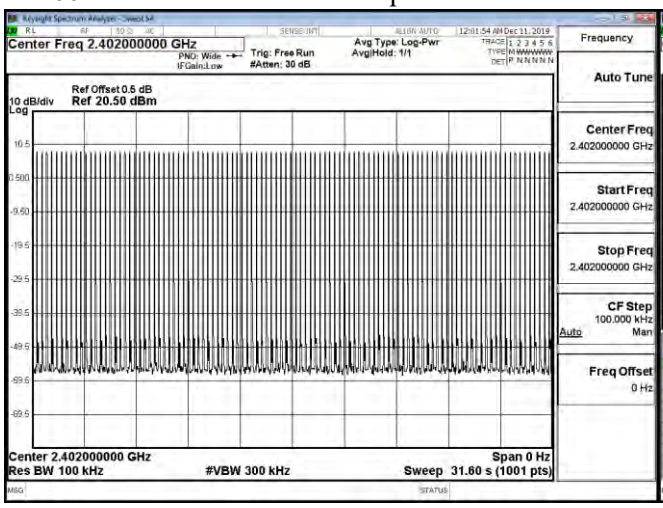
Product : Bluetooth Headset
Test Item : Dwell Time
Test Mode : Mode 1: Transmit - 1Mbps (GFSK) (Channel 00,39,78 –DH5)

Frequency (MHz)	Time slot length (ms)	Hopping of Number	Sweep time (ms)	Dwell Time (ms)	Limit (ms)	Result
2402	2.890	120	31600	346.800	400	Pass
2441	2.880	120	31600	345.600	400	Pass
2480	2.890	120	31600	346.800	400	Pass

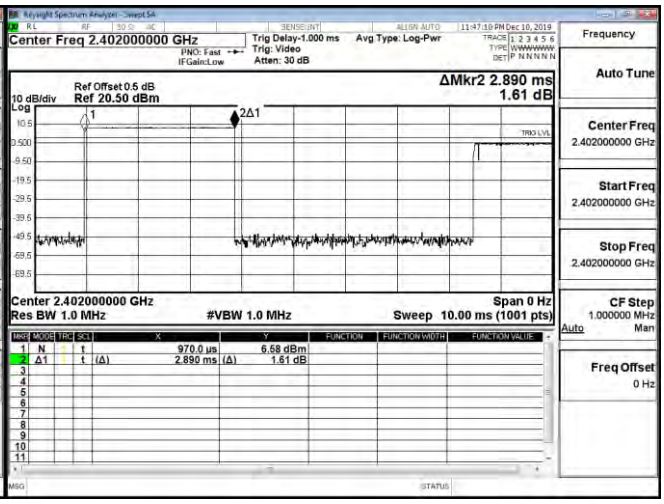
Dwell time = Time slot length*Hopping of number

Sweep time= 79 CHannel * 0.4

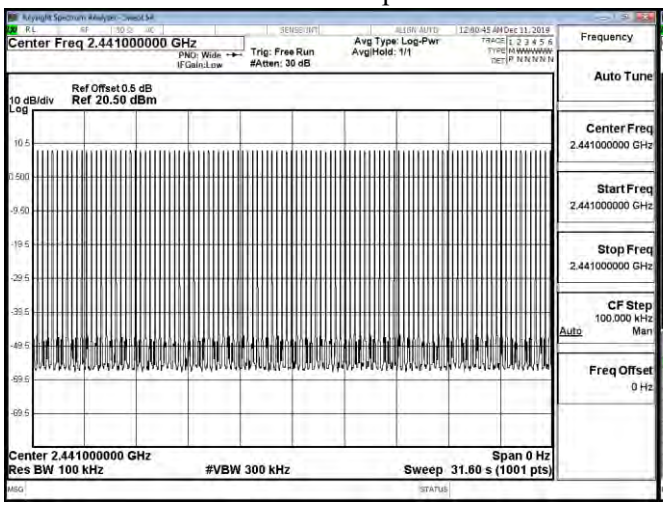
CH 00 Time Interval between hops



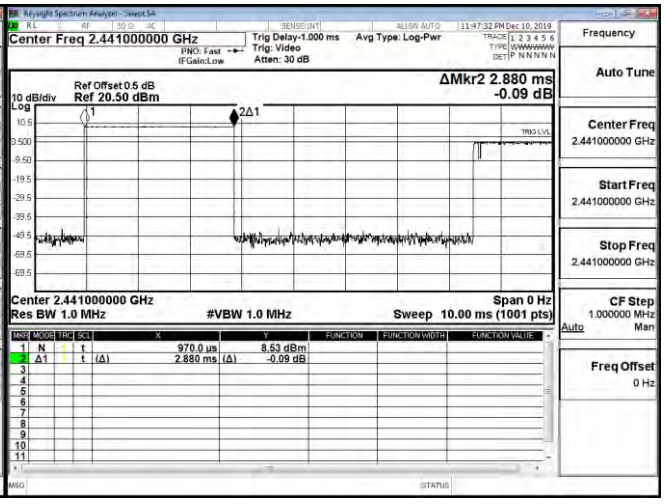
CH 00 Transmission Time



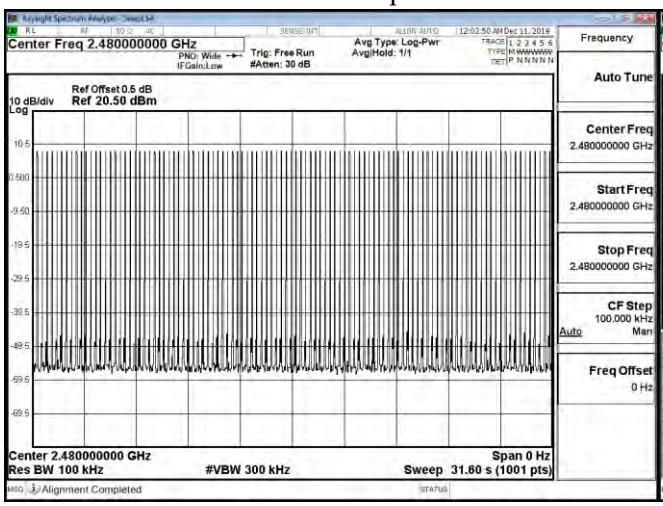
CH39 Time Interval between hops



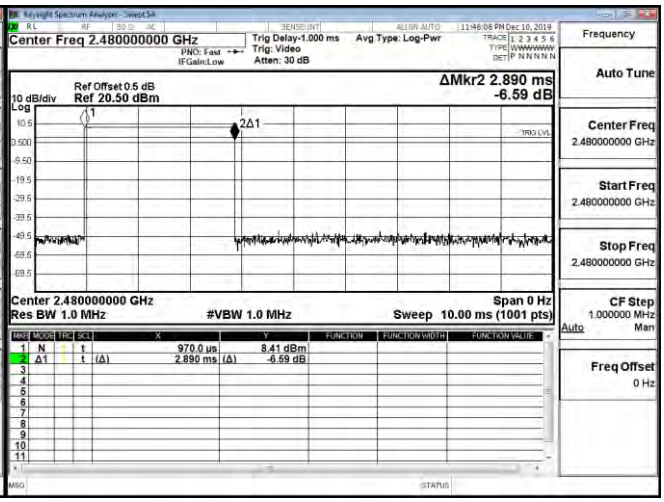
CH 39Transmission Time



CH 78 Time Interval between hops



CH 78 Transmission Time



Note:

The dwell times of the packet type of DH1, DH3, and DH5 are tested. Only the worst case is shown on the report.

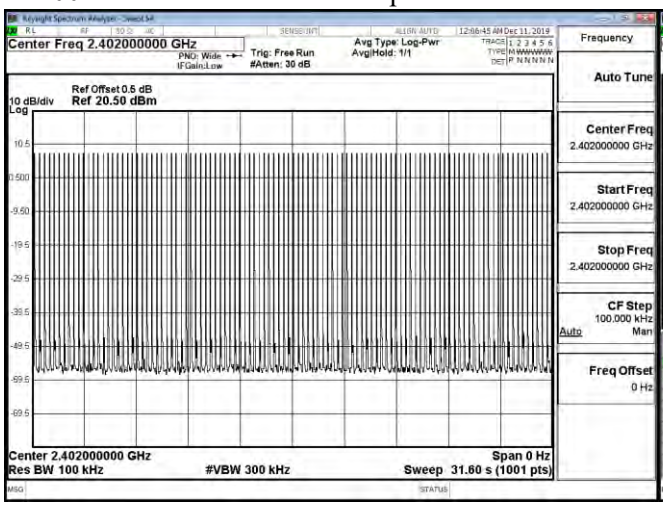
Product : Bluetooth Headset
Test Item : Dwell Time
Test Mode : Mode 2: Transmit - 2Mbps (π/4DQPSK) (Channel 00,39,78 –DH5)

Frequency (MHz)	Time slot length (ms)	Hopping of Number	Sweep time (ms)	Dwell Time (ms)	Limit (ms)	Result
2402	2.890	106	31600	306.340	400	Pass
2441	2.890	106	31600	306.340	400	Pass
2480	2.890	106	31600	306.340	400	Pass

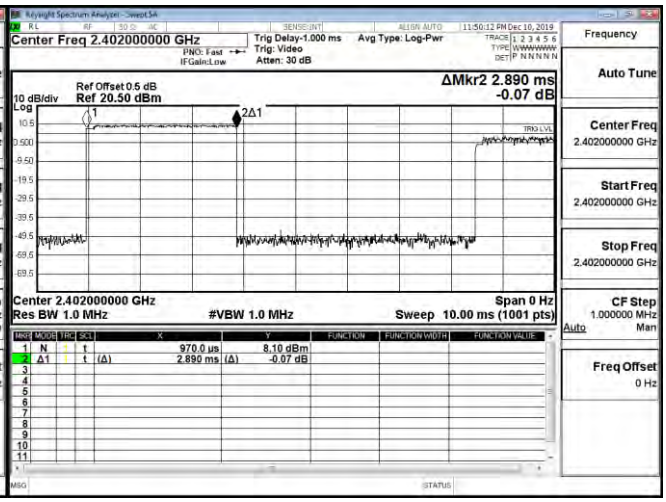
Dwell time = Time slot length*Hopping of number

Sweep time= 79 CHannel * 0.4

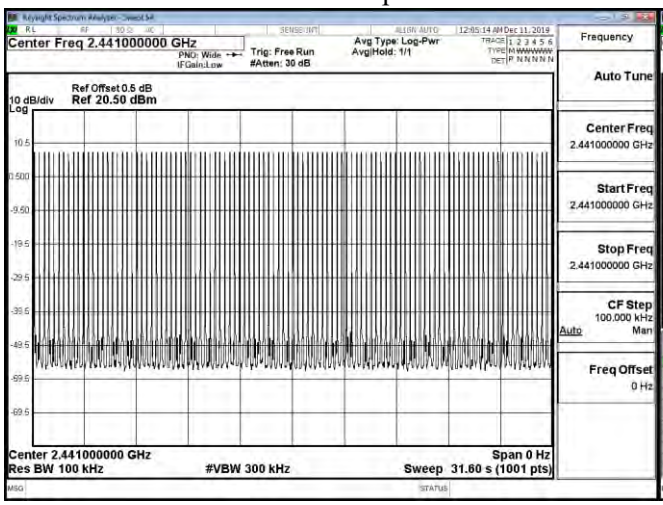
CH 00 Time Interval between hops



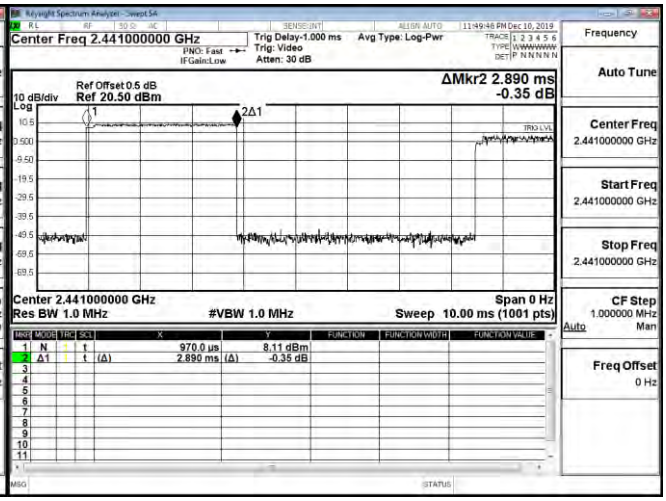
CH 00 Transmission Time



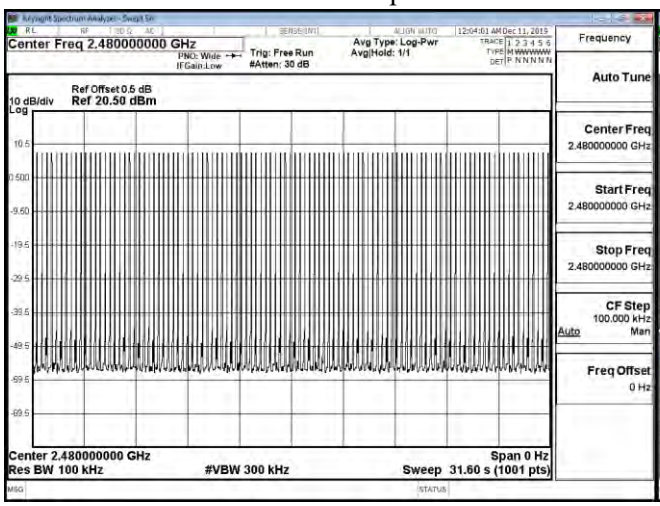
CH39 Time Interval between hops



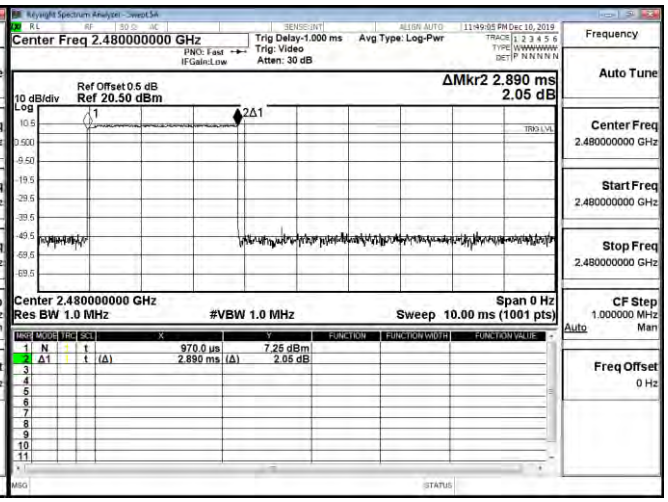
CH 39Transmission Time



CH 78 Time Interval between hops



CH 78 Transmission Time



Note:

The dwell times of the packet type of DH1, DH3, and DH5 are tested. Only the worst case is shown on the report.

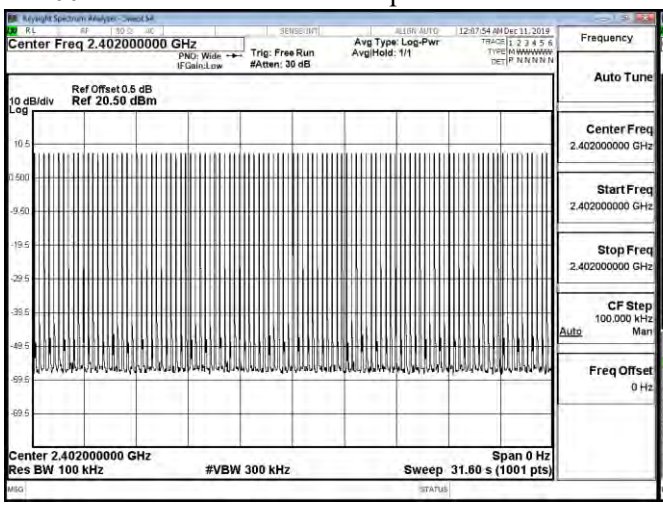
Product : Bluetooth Headset
Test Item : Dwell Time
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (Channel 00,39,78 –DH5)

Frequency (MHz)	Time slot length (ms)	Hopping of Number	Sweep time (ms)	Dwell Time (ms)	Limit (ms)	Result
2402	2.890	108	31600	312.120	400	Pass
2441	2.890	107	31600	309.230	400	Pass
2480	2.900	109	31600	316.100	400	Pass

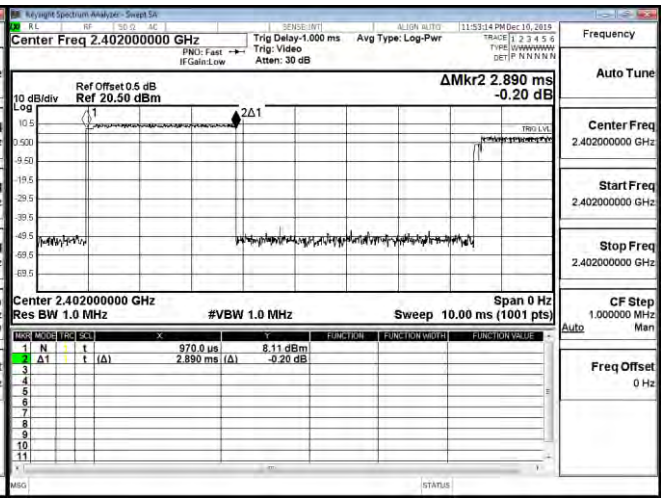
Dwell time = Time slot length*Hopping of number

Sweep time= 79 CHannel * 0.4

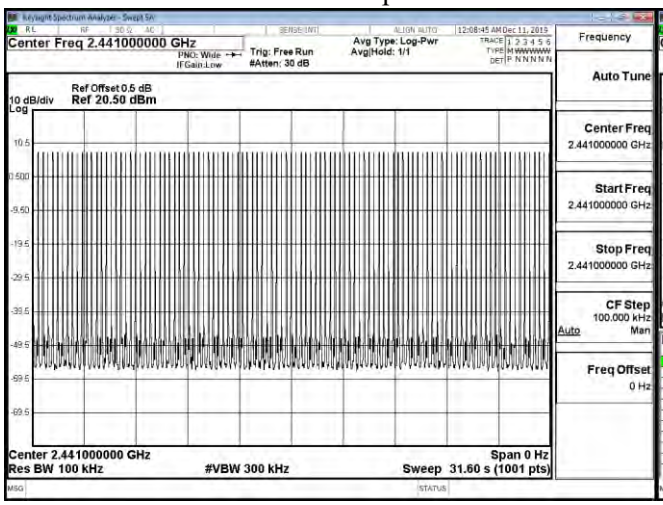
CH 00 Time Interval between hops



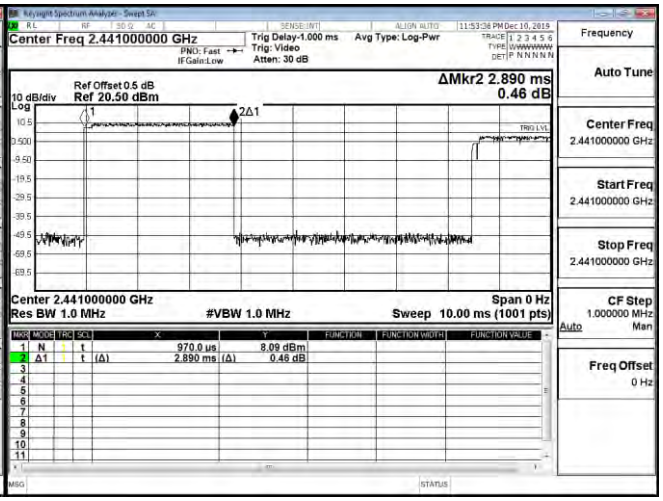
CH 00 Transmission Time



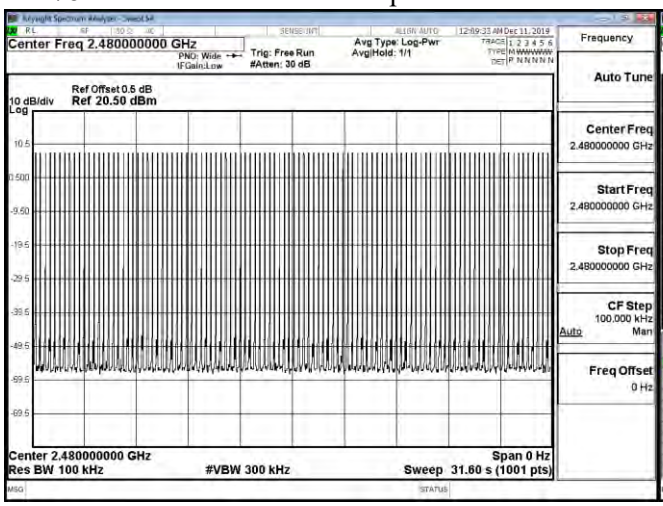
CH39 Time Interval between hops



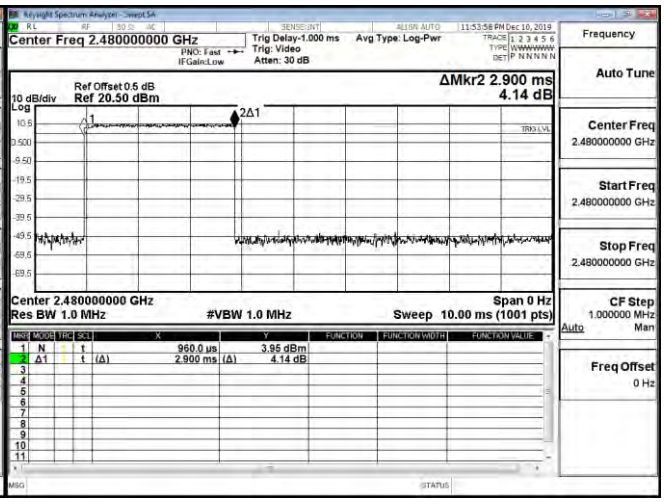
CH 39Transmission Time



CH 78 Time Interval between hops



CH 78 Transmission Time

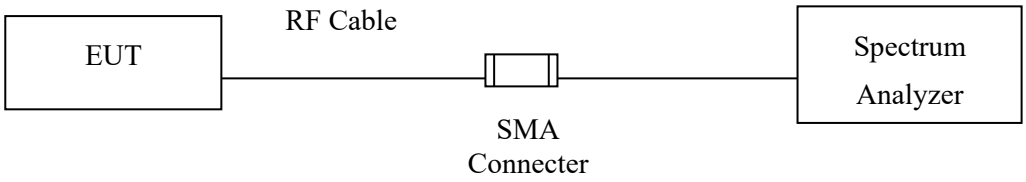


Note:

The dwell times of the packet type of DH1, DH3, and DH5 are tested. Only the worst case is shown on the report.

10. Occupied Bandwidth

10.1. Test Setup



10.2. Limits

N/A

10.3. Test Procedure

Tested according to FHSS test procedure of KDB558074 section 9 (b for compliance to FCC 47CFR 15.247 requirements.

10.4. Uncertainty

± 283Hz

10.5. Test Result of Occupied Bandwidth

Product : Bluetooth Headset
Test Item : Occupied Bandwidth Data
Test Mode : Mode 1: Transmit - 1Mbps (GFSK)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	969	--	NA
39	2441	963	--	NA
78	2480	963	--	NA

Figure Channel 00:

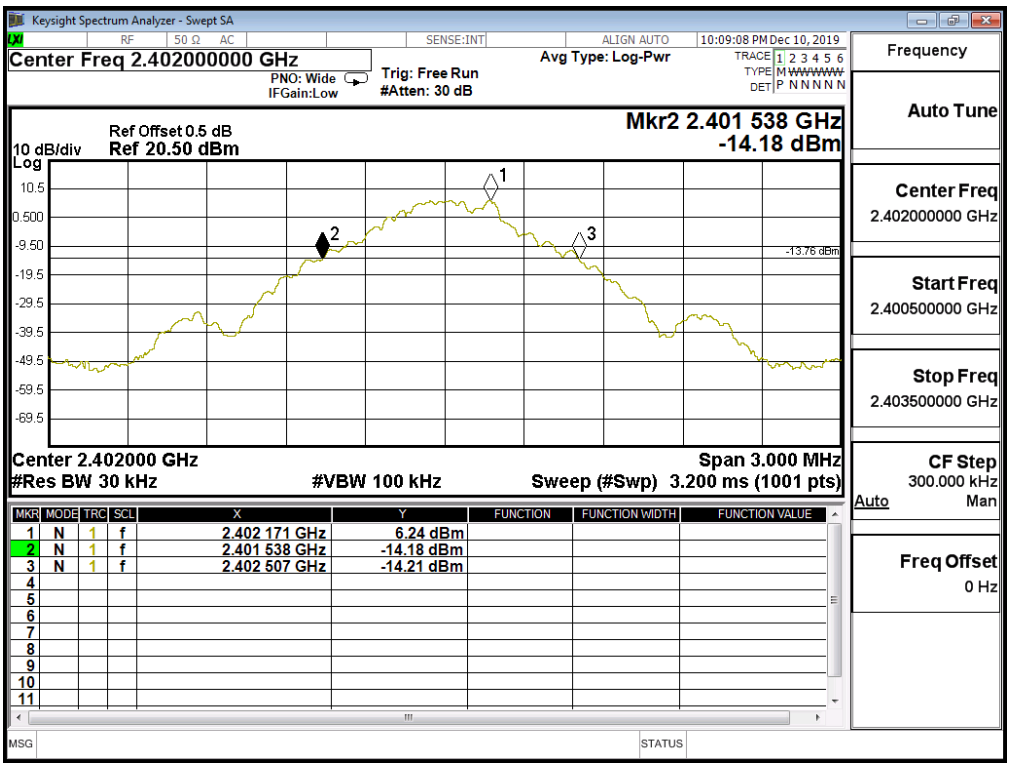


Figure Channel 39:

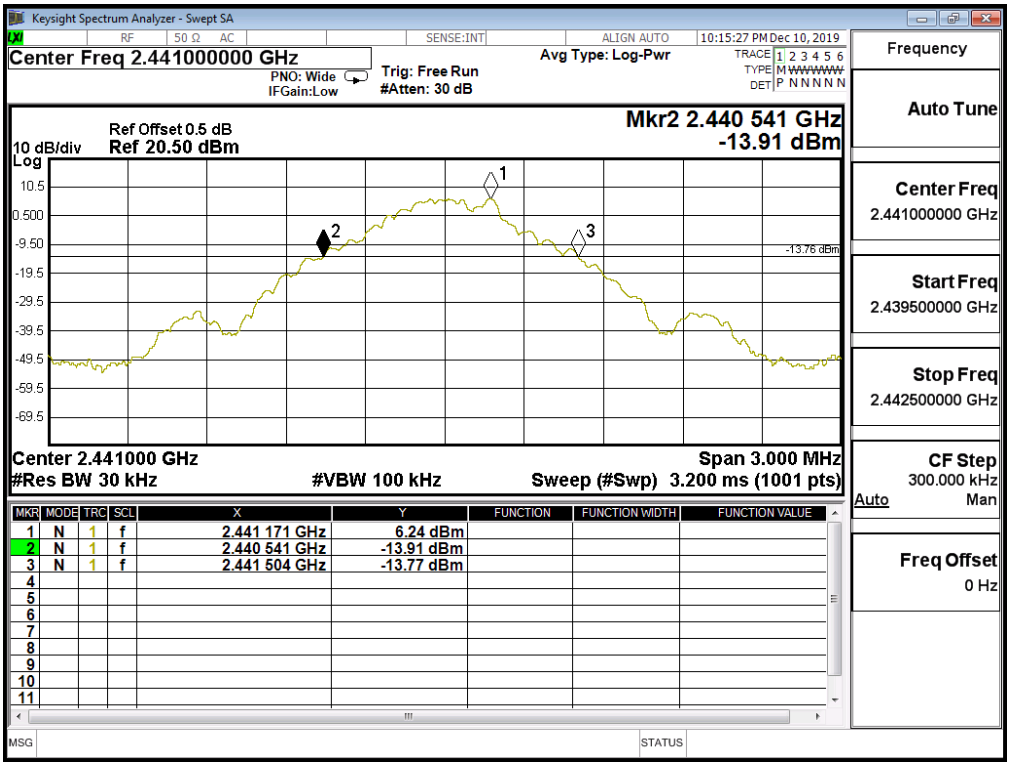
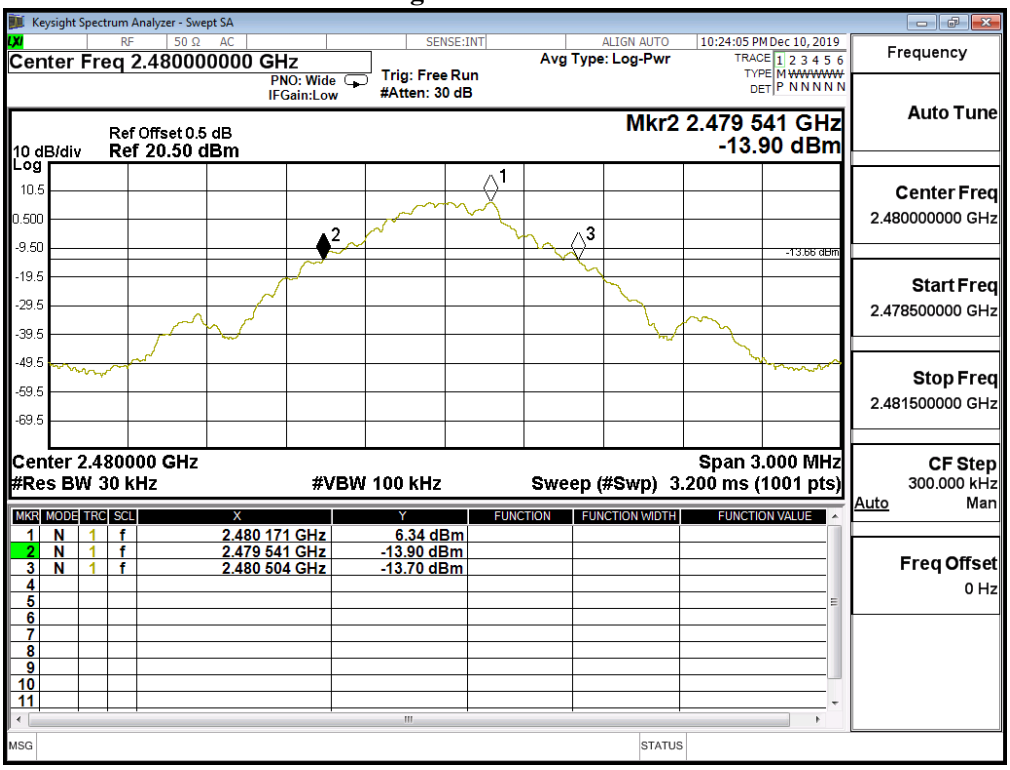


Figure Channel 78:



Product : Bluetooth Headset
Test Item : Occupied Bandwidth Data
Test Mode : Mode 2: Transmit - 2Mbps (π/4DQPSK)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1338	--	NA
39	2441	1338	--	NA
78	2480	1338	--	NA

Figure Channel 00:

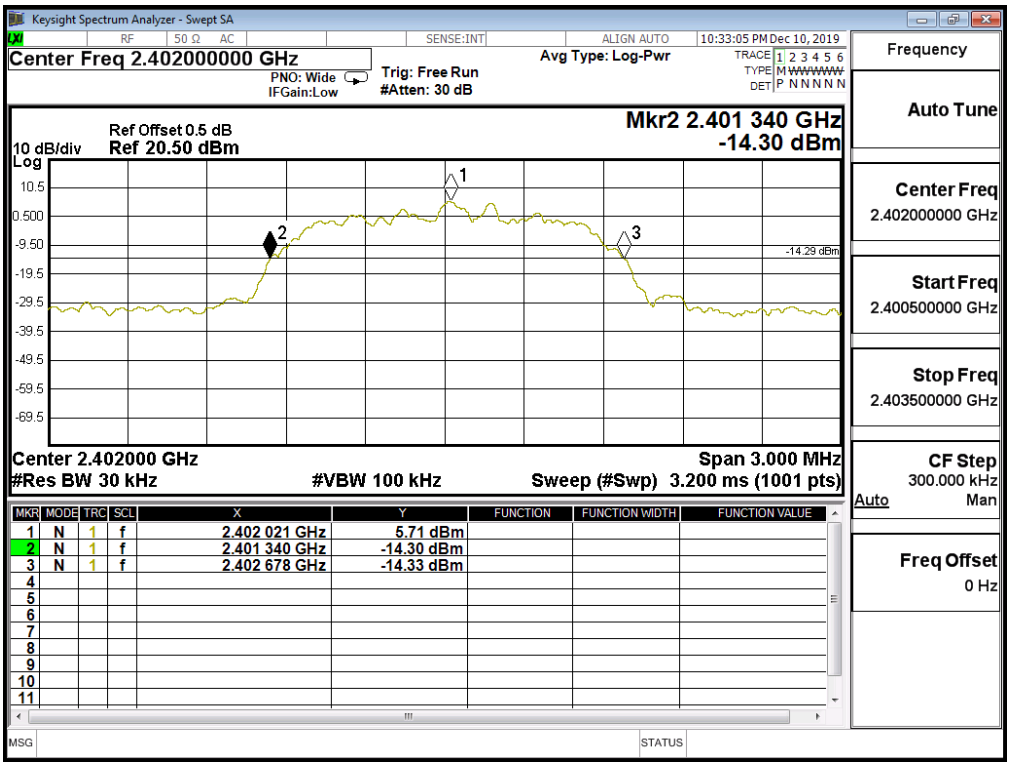


Figure Channel 39:

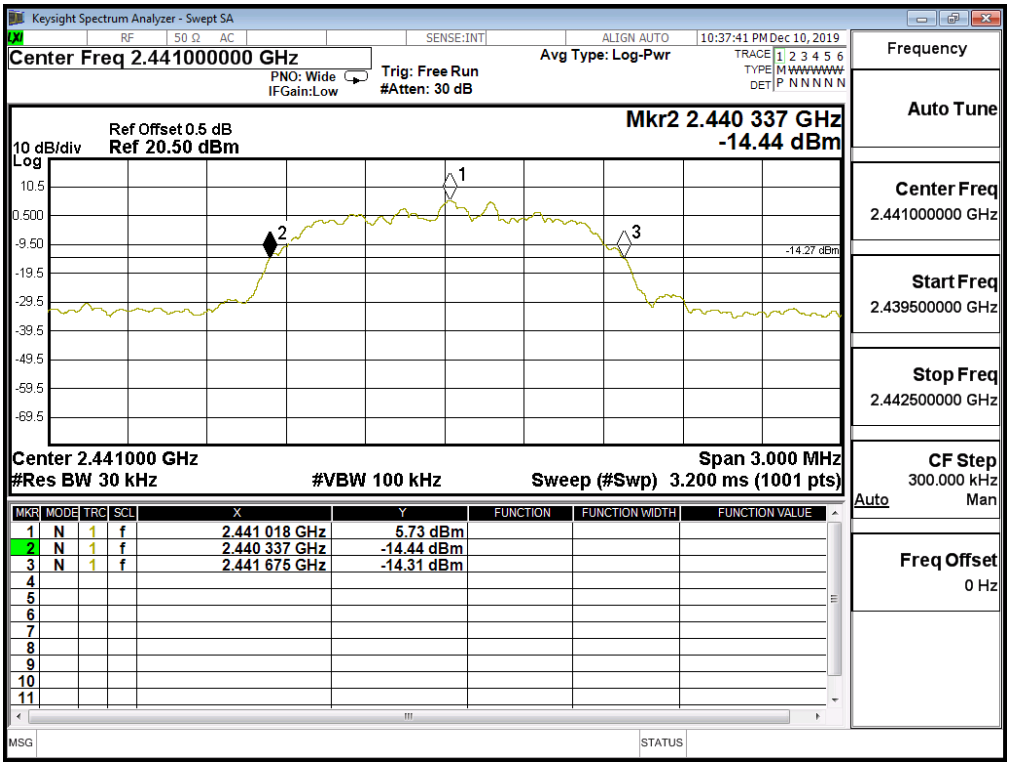
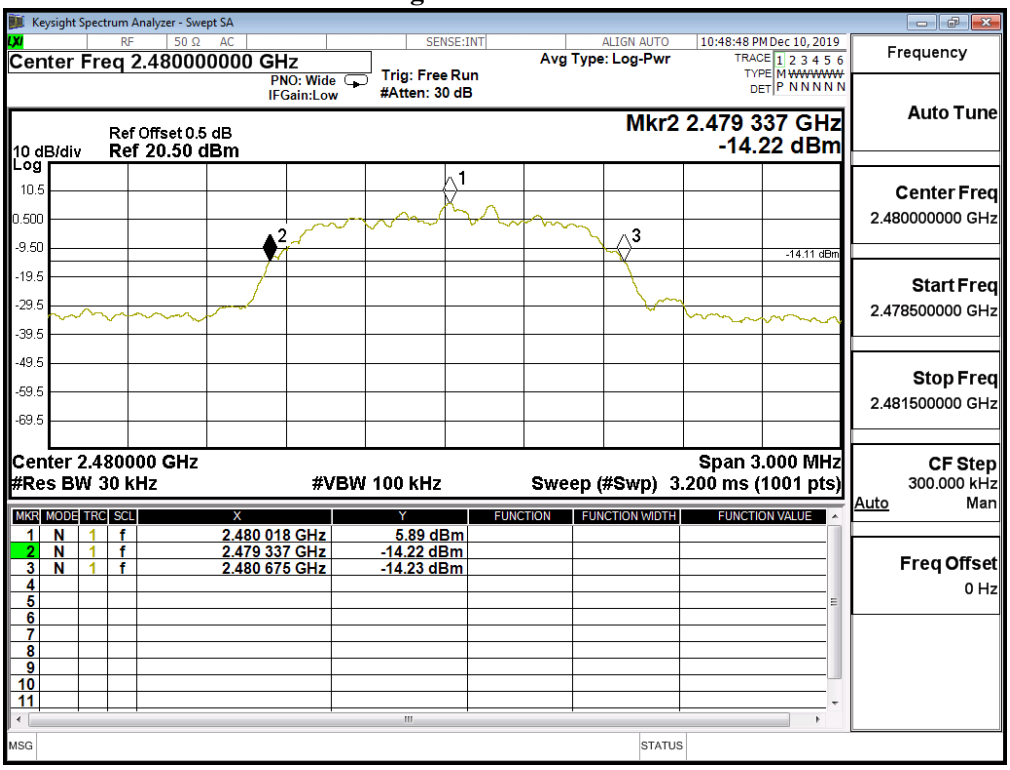


Figure Channel 78:



Product : Bluetooth Headset
Test Item : Occupied Bandwidth Data
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1317	--	NA
39	2441	1317	--	NA
78	2480	1317	--	NA

Figure Channel 00:

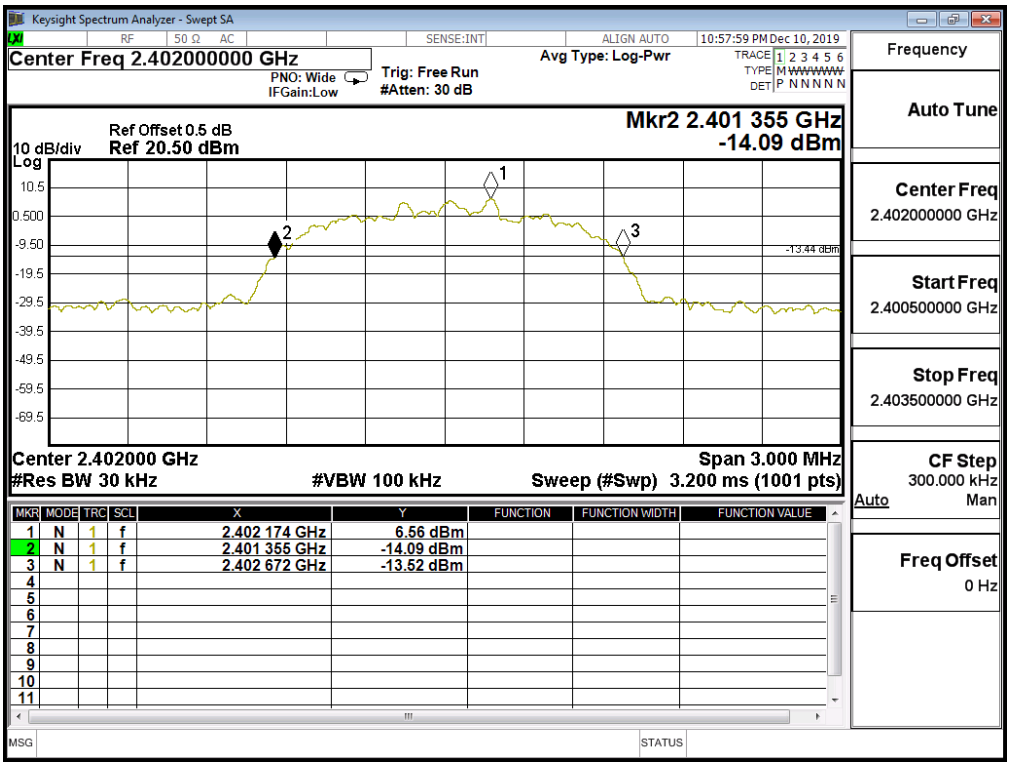


Figure Channel 39:

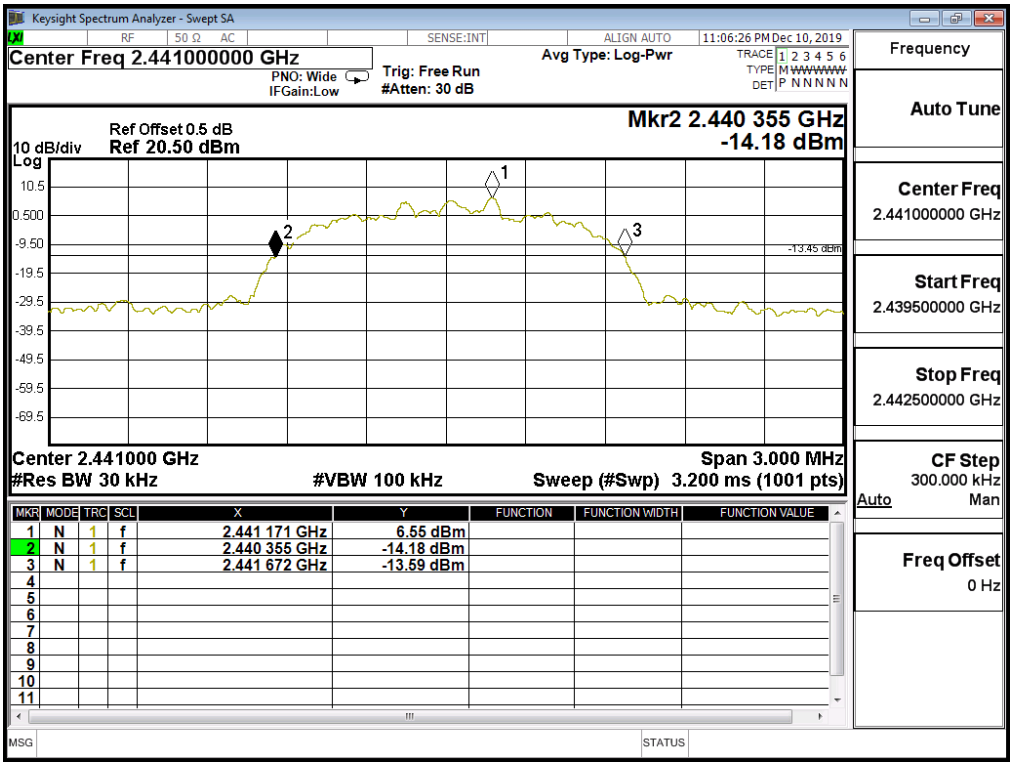
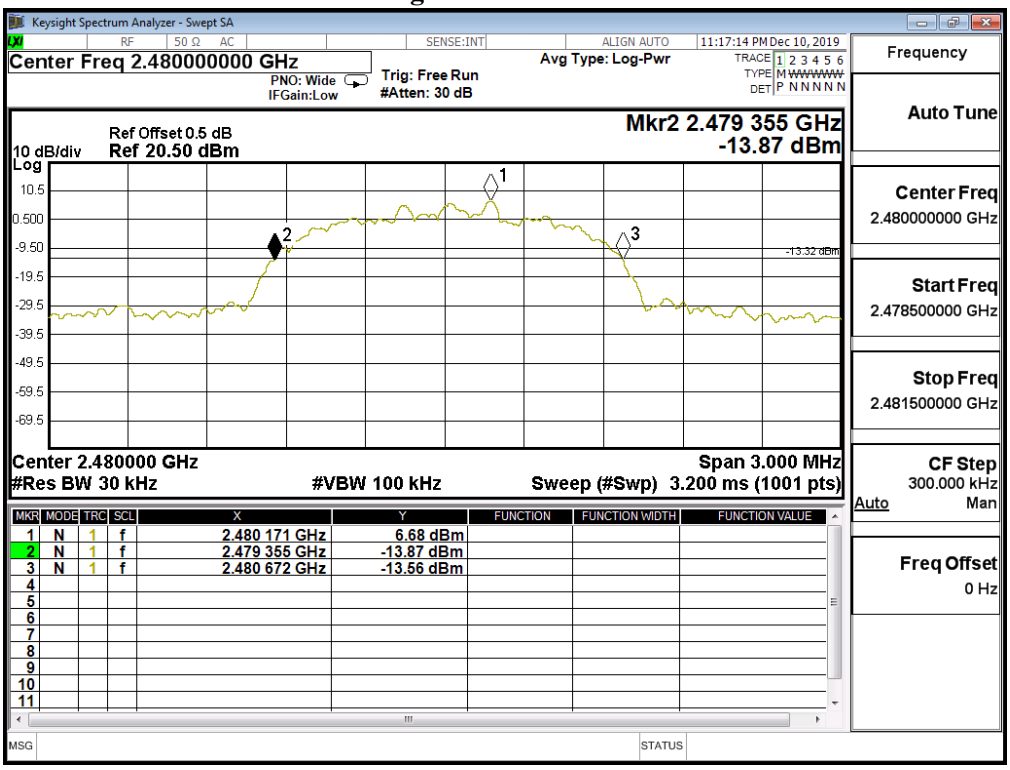
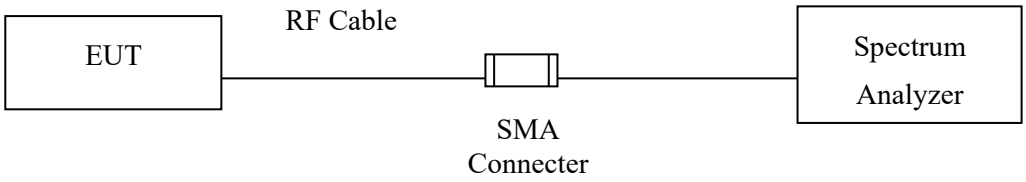


Figure Channel 78:



11. Duty Cycle

11.1. Test Setup

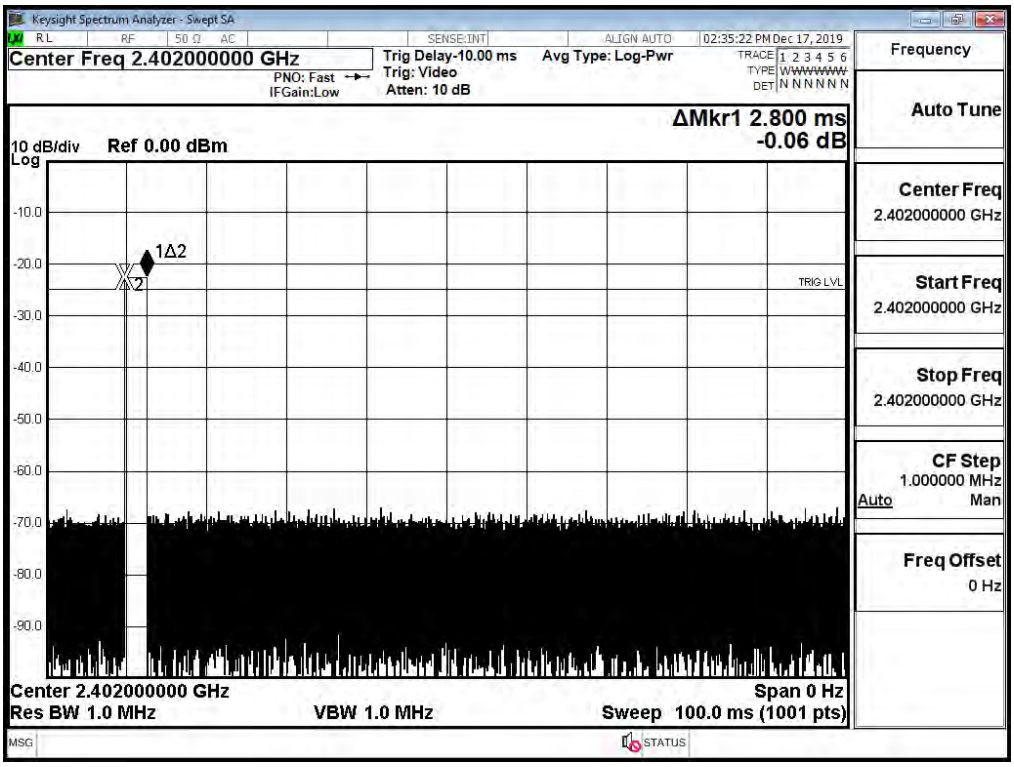


11.2. Uncertainty

± 25msec

11.3. Test Result of Duty Cycle

Product : Bluetooth Headset
Test Item : Duty Cycle
Test Mode : Mode 1: Transmit - 1Mbps (GFSK)



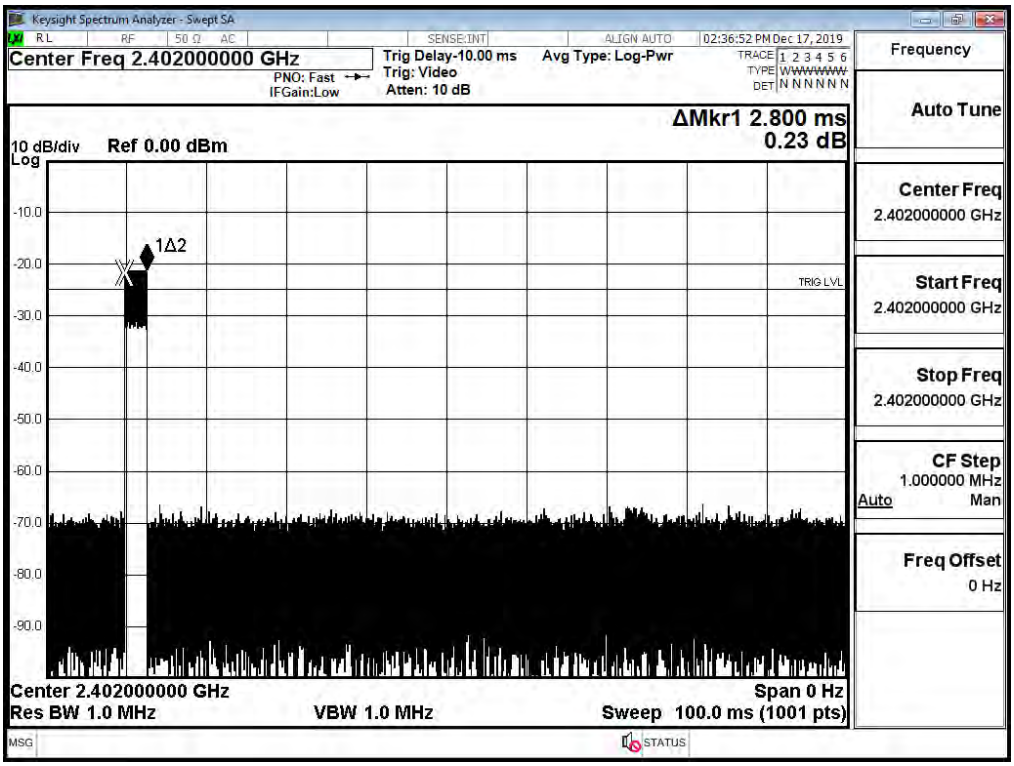
Time on of 100ms=2.800ms

Duty Cycle=2.8ms / 100ms= 0.028

Duty Cycle correction factor= 20 LOG 0.028= -31.057 dB

Duty Cycle correction factor	**-31.057**	**dB**

Product : Bluetooth Headset
Test Item : Duty Cycle
Test Mode : Mode 2: Transmit - 2Mbps (π/4DQPSK)



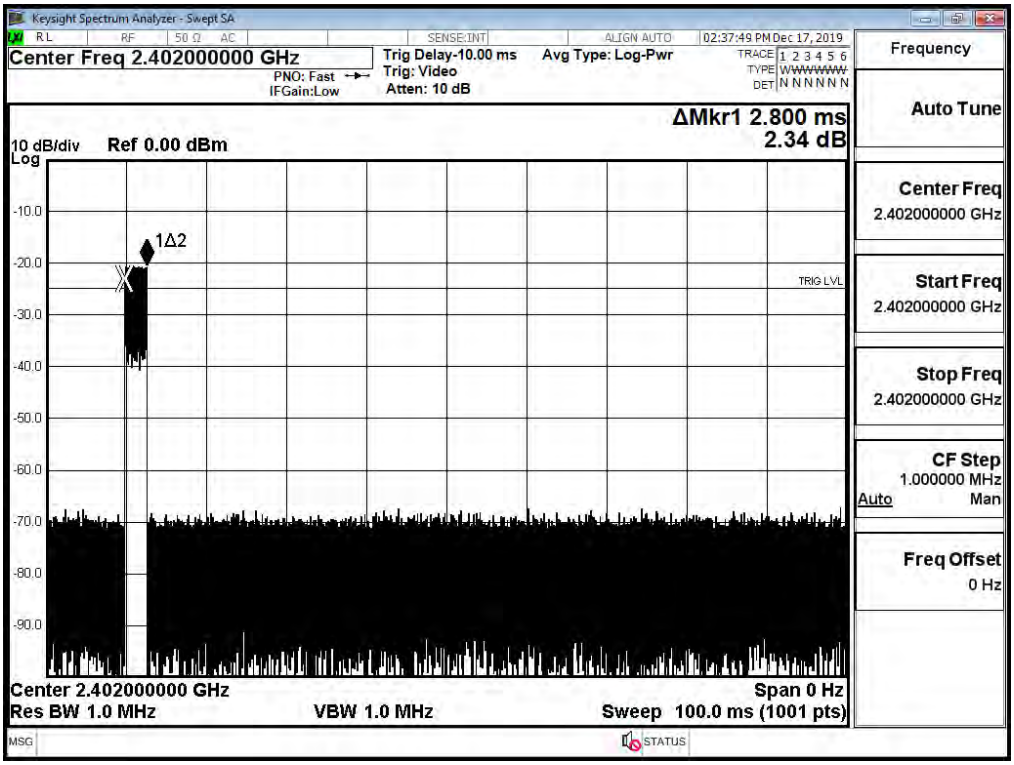
Time on of 100ms=2.800ms

Duty Cycle=2.8ms / 100ms= 0.028

Duty Cycle correction factor= 20 LOG 0.028= -31.057 dB

Duty Cycle correction factor	**-31.057**	**dB**

Product : Bluetooth Headset
Test Item : Duty Cycle
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK)



Time on of 100ms=2.800ms

Duty Cycle=2.8ms / 100ms= 0.028

Duty Cycle correction factor= 20 LOG 0.028= -31.057 dB

Duty Cycle correction factor	**-31.057**	**dB**

12. EMI Reduction Method During Compliance Testing

No modification was made during testing.