

# FCC Test Report

Product Name	Bluetooth Headset
Model No.	OTE130L (left earbud), OTE130R (right earbud), CPB130 (wireless charging case)
FCC ID.	BCE-OTE130

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

Date of Receipt	Aug. 28, 2020
Issued Date	Sep. 19, 2020
Report No.	2080865R-E3032110108
Report Version	V1.0



The test results relate only to the samples tested.

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

This report must not be used to claim product endorsement by TAF or any agency of the government.

The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

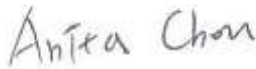
# Test Report

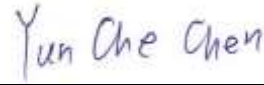
Issued Date: Sep. 19, 2020


Report No.: 2080865R-E3032110108



Product Name	Bluetooth Headset
Applicant	GN Audio A/S
Address	Lautrupbjerg 7, 2750 Ballerup, Denmark
Manufacturer	GN Audio A/S
Model No.	OTE130L (left earbud), OTE130R (right earbud), CPB130 (wireless charging case)
FCC ID.	BCE-OTE130
EUT Rated Voltage	DC 3.7V by Battery
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 :   
( Senior Engineering Adm. Specialist / Anita Chou )

Tested By :   
( Engineer / Yunche Chen )

Approved By :   
( Director / Vincent Lin )

## TABLE OF CONTENTS

Description	Page
<b>1. GENERAL INFORMATION .....</b>	<b>6</b>
1.1. EUT Description.....	6
1.2. Tested System Details.....	9
1.3. Configuration of Tested System .....	9
1.4. EUT Exercise Software .....	10
1.5. Test Facility .....	11
1.6. List of Test Equipment.....	12
1.7. Uncertainty .....	14
<b>2. CONDUCTED EMISSION .....</b>	<b>15</b>
2.1. Test Setup .....	15
2.2. Limits.....	15
2.3. Test Procedure .....	16
2.4. Test Result of Conducted Emission .....	17
<b>3. PEAK POWER OUTPUT .....</b>	<b>21</b>
3.1. Test Setup .....	21
3.2. Limit .....	21
3.3. Test Procedure .....	21
3.4. Test Result of Peak Power Output .....	22
<b>4. RADIATED EMISSION .....</b>	<b>25</b>
4.1. Test Setup .....	25
4.2. Limits.....	26
4.3. Test Procedure .....	27
4.4. Test Result of Radiated Emission .....	28
<b>5. RF ANTENNA CONDUCTED TEST .....</b>	<b>60</b>
5.1. Test Setup .....	60
5.2. Limits.....	60
5.3. Test Procedure .....	60
5.4. Test Result of RF Antenna Conducted Test .....	61
<b>6. BAND EDGE .....</b>	<b>64</b>
6.1. Test Setup .....	64
6.2. Limit .....	65
6.3. Test Procedure .....	65
6.4. Test Result of Band Edge .....	66
<b>7. CHANNEL NUMBER.....</b>	<b>84</b>
7.1. Test Setup .....	84
7.2. Limit .....	84
7.3. Test Procedure .....	84
7.4. Test Result of Channel Number.....	85
<b>8. CHANNEL SEPARATION.....</b>	<b>88</b>
8.1. Test Setup .....	88
8.2. Limit .....	88
8.3. Test Procedure .....	88
8.4. Test Result of Channel Separation.....	89
<b>9. DWELL TIME.....</b>	<b>95</b>
9.1. Test Setup .....	95
9.2. Limit .....	95
9.3. Test Procedure .....	95
9.4. Test Result of Dwell Time .....	96
<b>10. OCCUPIED BANDWIDTH .....</b>	<b>102</b>
10.1. Test Setup .....	102
10.2. Limits.....	102
10.3. Test Procedure .....	102
10.4. Test Result of Occupied Bandwidth .....	103
<b>11. DUTY CYCLE .....</b>	<b>109</b>
11.1. Test Setup .....	109
11.2. Test Procedure .....	109
11.3. Test Result of Duty Cycle.....	110
<b>12. EMI REDUCTION METHOD DURING COMPLIANCE TESTING .....</b>	<b>113</b>

---

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

## **Revision History**

Report No.	Version	Description	Issued Date
2080865R-E3032110108	V1.0	Initial issue of report.	2020-09-19

## 1. GENERAL INFORMATION

### 1.1. EUT Description

Product Name	Bluetooth Headset
Trade Name	Jabra
Model No.	OTE130L (left earbud), OTE130R (right earbud), CPB130 (wireless charging case)
FCC ID.	BCE-OTE130
Frequency Range	2402-2480MHz
Channel Number	79
Type of Modulation	FHSS: GFSK(1Mbps) / $\pi$ /4DQPSK(2Mbps) / 8DPSK(3Mbps)
Antenna Type	Monopole Antenna
Channel Control	Auto
Antenna Gain	Refer to the table "Antenna List"
USB Cable	Non-Shielded, 0.35m

#### Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	Jabra	Jabra Elite 85t	Monopole Antenna	-1.51 dBi in 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.
5. The circuit schematics and components of Left earbud (OTE130R) and Left earbud (OTE130L) are the same. So is the antenna, output power and software. The PCB layout of Left earbud and Left earbud are mirrored, but there are small variations in layout due to non-symmetries of certain component footprints (e.g. IC's).
6. Right ear and Left ear mode of the EUT, only the worst case(Left ear) is shown in the report.  
(Addition test of Radiated Emission below 1GHz for Right ear.)

Test Mode	Mode 1: Transmit - 1Mbps (GFSK) Mode 2: Transmit - 2Mbps ( $\pi/4$ DQPSK) Mode 3: Transmit - 3Mbps (8DPSK) Mode 4: Charge
-----------	--



## 1.2. Tested System Details

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

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	DELL	Latitude E5440	FS9TK32	Non-Shielded, 0.8m

### BT mode

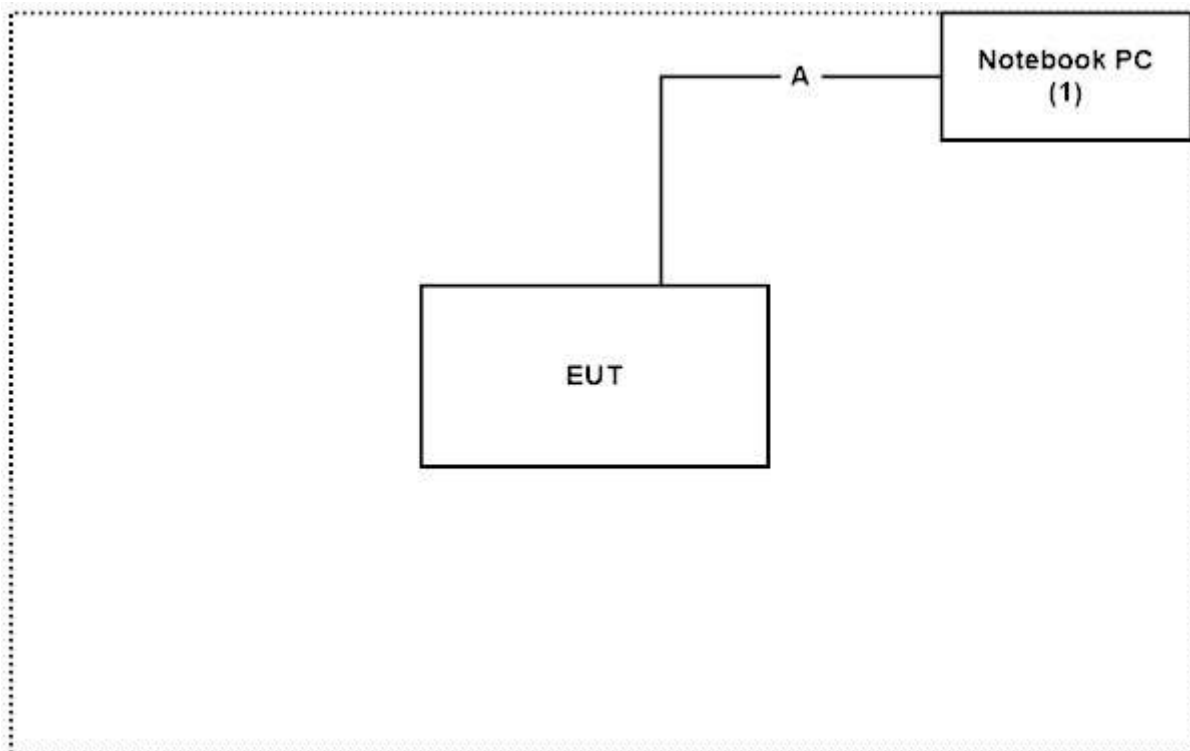
Signal Cable Type		Signal cable Description
A	USB Cable	Non-Shielded, 1.7m

### Charge mode

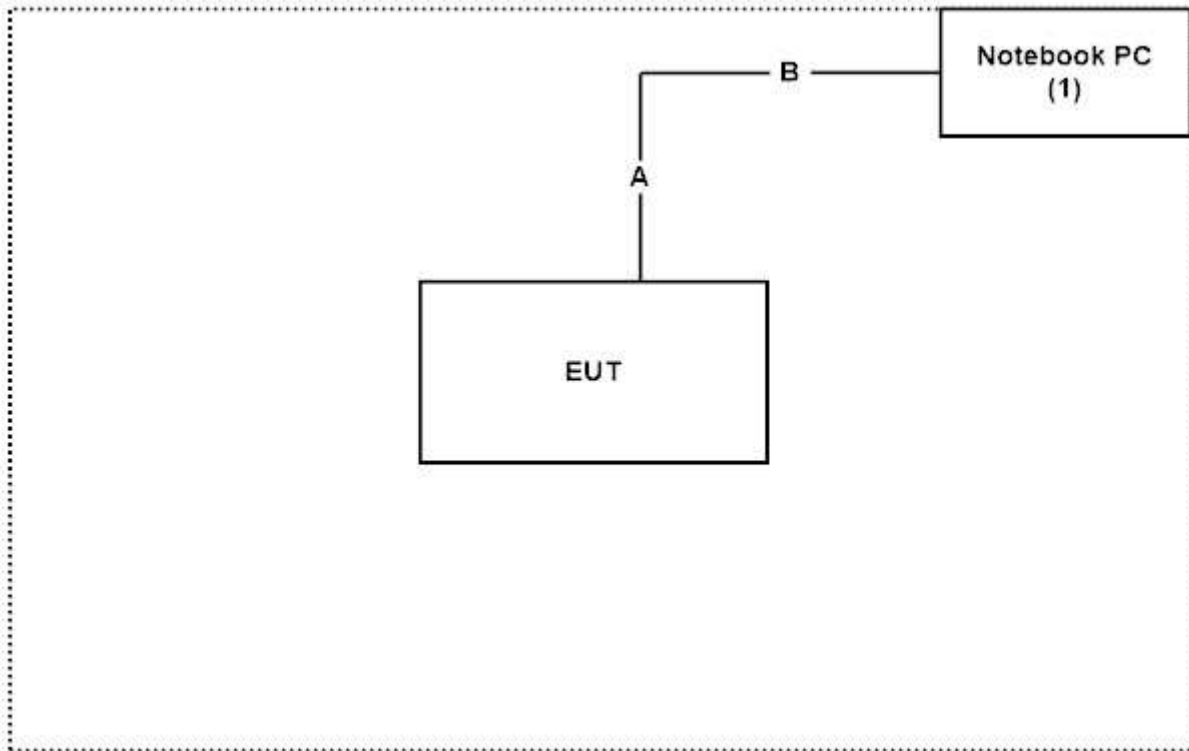
Signal Cable Type		Signal cable Description
A	USB Cable	Non-Shielded, 0.35m
B	USB Cable	Non-Shielded, 1.7m

## 1.3. Configuration of Tested System

### BT mode



Charge mode



#### 1.4. EUT Exercise Software

1. Setup the EUT as shown in Section 1.4.
2. Execute software “BTCLI\_Interface\_01.exe” 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.

### 1.5. Test Facility

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual
Conducted Emission	Temperature (°C)	10~40 °C	26.5 °C
	Humidity (%RH)	10~90 %	56.0 %
Radiated Emission	Temperature (°C)	10~40 °C	26.1 °C
	Humidity (%RH)	10~90 %	73.0 %
Conductive	Temperature (°C)	10~40 °C	28.0 °C
	Humidity (%RH)	10~90 %	72.9 %

**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](mailto:info.tw@dekra.com)  
Website: <http://www.dekra.com.tw>

## 1.6. 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	2020/04/06	2021/04/05
X	Spectrum Analyzer	Agilent	N9010A	MY53470892	2019/09/25	2020/09/24
X	Peak Power Analyzer	Keysight	8990B	MY51000410	2020/07/01	2021/06/30
X	Wideband Power Sensor	Keysight	N1923A	MY56080003	2020/07/01	2021/06/30
X	Wideband Power Sensor	Keysight	N1923A	MY56080004	2020/07/01	2021/06/30
X	EMI Test Receiver	R&S	ESCS 30	100369	2019/11/27	2020/11/26
X	LISN	R&S	ENV216	101105	2020/04/27	2021/04/26
X	LISN	R&S	ESH3-Z5	836679/014	2020/04/26	2021/04/25
X	Coaxial Cable	DEKRA	RG 400	LC018-RG	2020/06/19	2021/06/18

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	Test Receiver	R&S	ESR7	101602	2019/12/16	2020/12/15
X	Signal Analyzer	R&S	FSV40	101869	2020/06/24	2021/06/23
X	Loop Antenna	Teseq	HLA6121	37133	2019/10/15	2021/10/14
X	Bilog Antenna	Schaffner Chase	CBL6112B	2916	2020/01/20	2021/01/19
X	Coaxial Cable	DEKRA	L1907-001C	280280.F141.1000D	2020/07/09	2021/07/08
X	Amplifier	EMCI	EMC001330	980254	2020/07/28	2021/06/10
X	Horn Antenna	ETS-LINDGREN	3117	00228113	2020/05/28	2021/05/27
X	Coaxial Cable	DEKRA	L1907-002C	280280.F141.1000D	2020/07/09	2021/07/08
X	Amplifier	EMCI	EMC05820SE	980361	2019/09/23	2020/09/22
X	Amplifier	SGH	PRAMP118	20200202	2020/03/17	2021/03/16
X	Horn Antenna	Com-Power	AH-1840	101101	2019/10/31	2020/10/30
X	Amplifier + Cable	EMCI	EMC184045SE	980369	2020/04/23	2021/04/22
	Bilog Antenna	Schaffner Chase	CBL6112B	2916	2020/01/20	2021/01/19
	Coaxial Cable	DEKRA	L1907-003C	00100A1B3A120M	2020/07/09	2021/07/08
	Amplifier	EMCI	EMC001330	980255	2020/03/17	2021/03/16
	Horn Antenna	ETS-LINDGREN	3117	00228111	2020/05/28	2021/05/27
	Amplifier	SGH	PRAMP0510	20200206	2020/03/17	2021/03/16
	Amplifier	SGH	PRAMP118	20200202	2020/03/17	2021/03/16
X	Filter	MICRO-TRONICS	BRM50702	G270	2020/08/08	2021/08/07
X	Filter	MICRO-TRONICS	BRM50716	G196	2020/08/08	2021/08/07

**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.

## 1.7. Uncertainty

Uncertainties have been calculated according to the DEKRA internal document, and is described in each test chapter of this report.

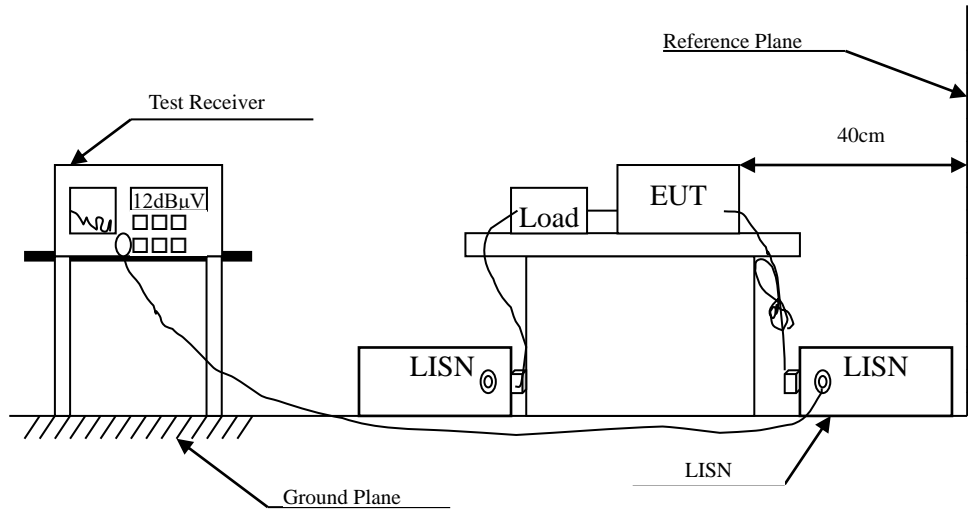
The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95%.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Test item	Uncertainty	
Conducted Emission	$\pm 3.42\text{dB}$	
Peak Power Output	Power Meter $\pm 0.89\text{dB}$	Spectrum Analyzer $\pm 2.06\text{dB}$
Radiated Emission	9kHz~30MHz: $\pm 3.88\text{dB}$ 30MHz~1GHz: $\pm 4.06\text{dB}$ 1GHz~18GHz: $\pm 3.71\text{dB}$ 18GHz~40GHz: $\pm 3.73\text{dB}$ 40GHz~50GHz: $\pm 3.75\text{dB}$ 50GHz~325GHz: $\pm 4.39\text{dB}$	
RF antenna conducted test	$\pm 2.06\text{dB}$	
Band Edge	9kHz~30MHz: $\pm 3.88\text{dB}$ 30MHz~1GHz: $\pm 4.06\text{dB}$ 1GHz~18GHz: $\pm 3.71\text{dB}$ 18GHz~40GHz: $\pm 3.73\text{dB}$ 40GHz~50GHz: $\pm 3.75\text{dB}$ 50GHz~325GHz: $\pm 4.39\text{dB}$	
Channel Separation	$\pm 1544.74\text{Hz}$	
Dwell Time	$\pm 2.31\text{msec}$	
Occupied Bandwidth	$\pm 1544.74\text{Hz}$	
Duty Cycle (2.4GHz)	$\pm 2.31\text{msec}$	

## 2. Conducted Emission

### 2.1. Test Setup



### 2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dB $\mu$ V) 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 investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

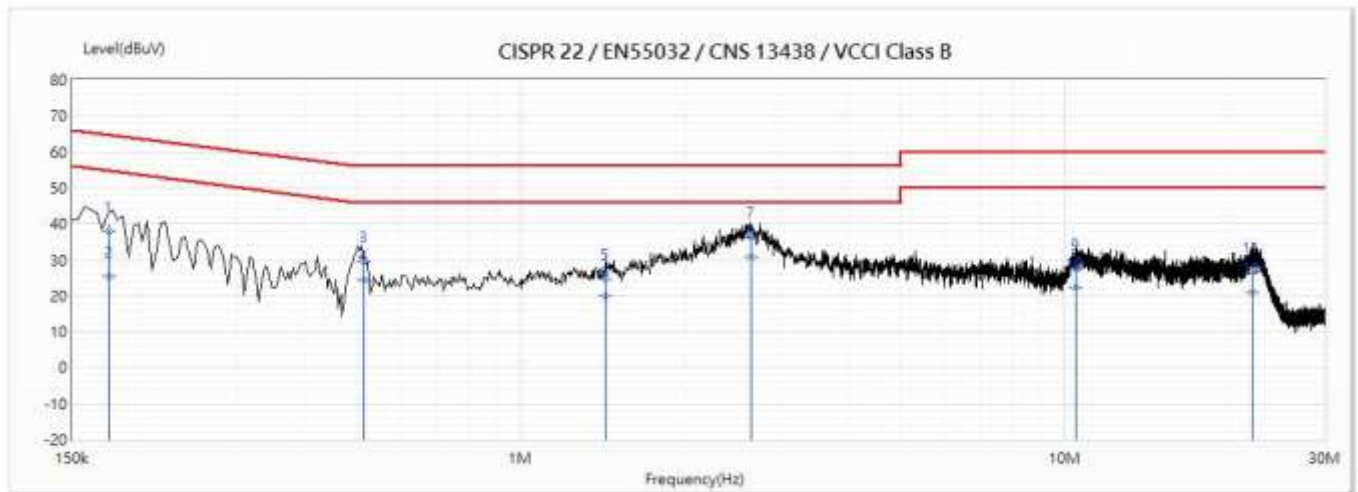
The EUT was setup to ANSI C63.4, 2014; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.



## 2.4. Test Result of Conducted Emission

Product : Bluetooth Headset  
 Test Item : Conducted Emission Test  
 Test date : 2020/09/02  
 Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2441MHz)

Line 1



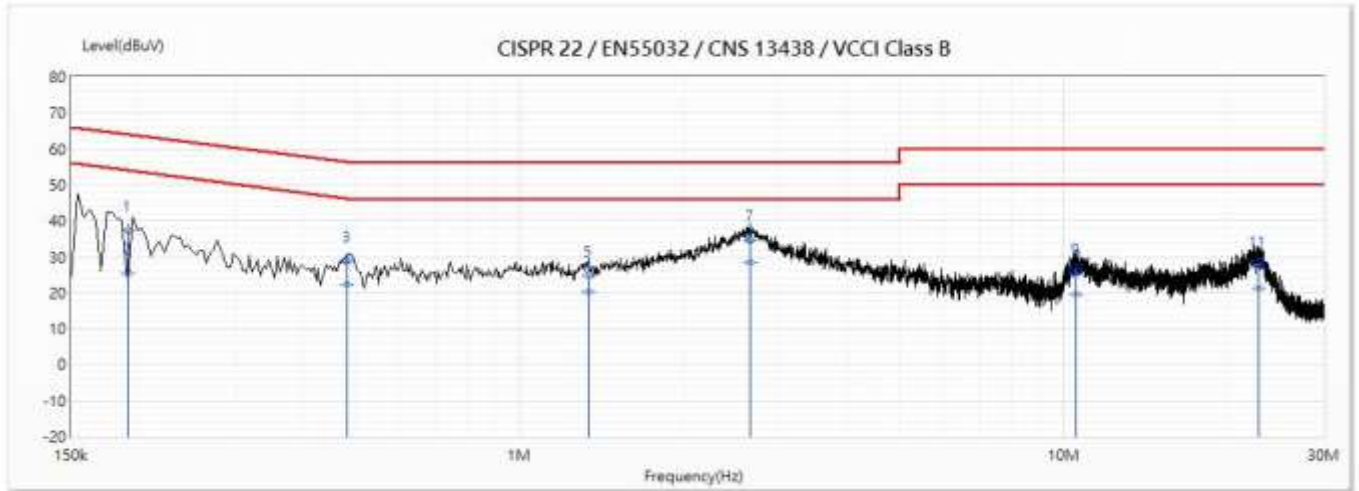
No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.176	38.07	64.69	-26.62	28.27	9.80	QP
2	0.176	25.54	54.69	-29.16	15.73	9.80	AV
3	0.514	29.38	56.00	-26.62	19.58	9.80	QP
4	0.514	24.52	46.00	-21.48	14.72	9.80	AV
5	1.431	24.87	56.00	-31.13	15.05	9.82	QP
6	1.431	19.82	46.00	-26.18	9.99	9.82	AV
7	2.645	36.26	56.00	-19.74	26.39	9.88	QP
*8	2.645	30.88	46.00	-15.12	21.01	9.88	AV
9	10.46	27.37	60.00	-32.63	17.29	10.08	QP
10	10.46	22.41	50.00	-27.59	12.33	10.08	AV
11	22.064	26.68	60.00	-33.32	16.46	10.22	QP
12	22.064	20.93	50.00	-29.07	10.71	10.22	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Bluetooth Headset  
 Test Item : Conducted Emission Test  
 Test date : 2020/09/02  
 Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2441MHz)

## Line 2



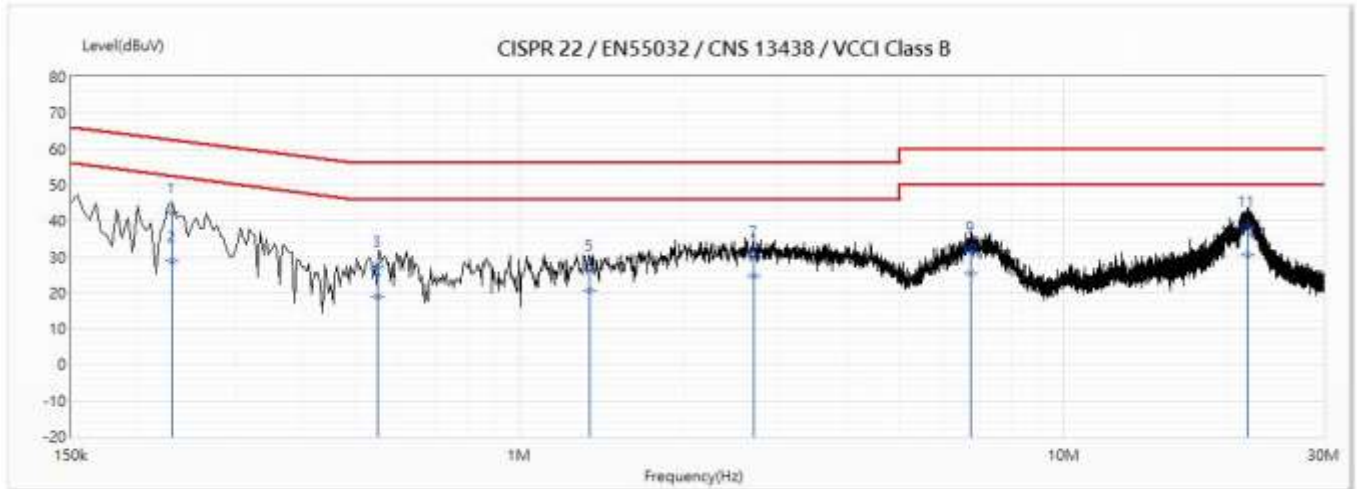
No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.19	37.30	64.02	-26.72	27.51	9.78	QP
2	0.19	25.55	54.02	-28.47	15.76	9.78	AV
3	0.48	28.69	56.33	-27.64	18.90	9.79	QP
4	0.48	22.47	46.33	-23.86	12.68	9.79	AV
5	1.34	24.71	56.00	-31.29	14.90	9.80	QP
6	1.34	20.44	46.00	-25.56	10.64	9.80	AV
7	2.652	34.51	56.00	-21.49	24.65	9.86	QP
*8	2.652	28.36	46.00	-17.64	18.50	9.86	AV
9	10.529	25.33	60.00	-34.67	15.22	10.11	QP
10	10.529	19.43	50.00	-30.57	9.33	10.11	AV
11	22.827	27.49	60.00	-32.51	17.10	10.39	QP
12	22.827	21.29	50.00	-28.71	10.90	10.39	AV

## Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Bluetooth Headset  
 Test Item : Conducted Emission Test  
 Test date : 2020/09/02  
 Test Mode : Mode 4: Charge

## Line 1



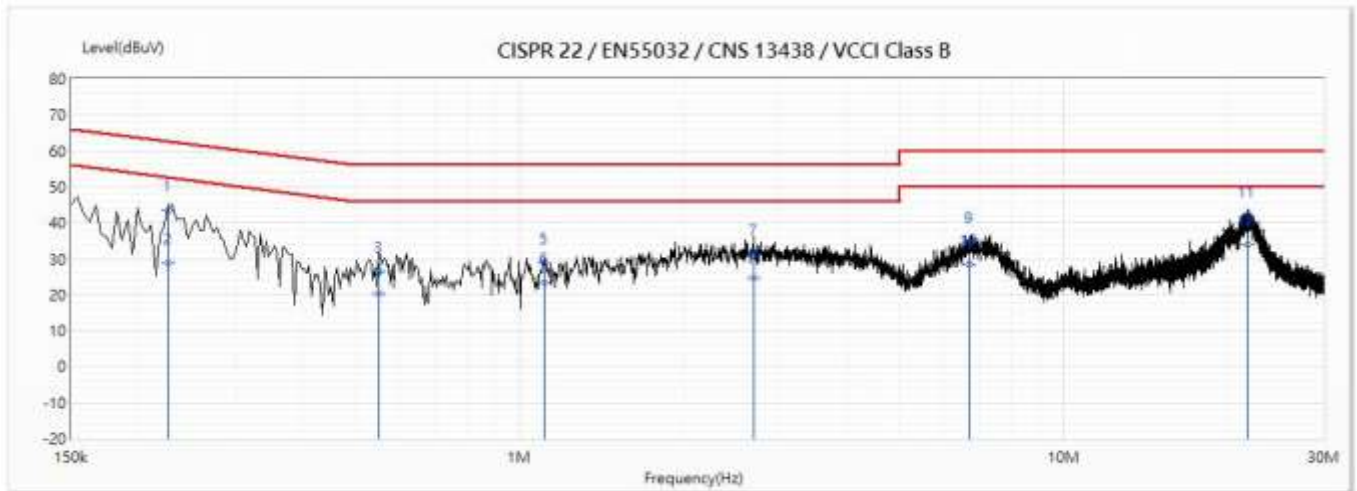
No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.229	42.45	62.49	-20.04	32.66	9.79	QP
2	0.229	28.71	52.49	-23.78	18.92	9.79	AV
3	0.547	27.47	56.00	-28.53	17.67	9.79	QP
4	0.547	18.78	46.00	-27.22	8.99	9.79	AV
5	1.341	26.57	56.00	-29.43	16.74	9.83	QP
6	1.341	20.69	46.00	-25.31	10.85	9.83	AV
7	2.689	30.27	56.00	-25.73	20.38	9.90	QP
8	2.689	24.54	46.00	-21.46	14.64	9.90	AV
9	6.728	31.42	60.00	-28.58	21.41	10.01	QP
10	6.728	25.54	50.00	-24.46	15.52	10.01	AV
11	21.742	38.54	60.00	-21.46	28.28	10.26	QP
*12	21.742	30.65	50.00	-19.35	20.40	10.26	AV

## Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Bluetooth Headset  
 Test Item : Conducted Emission Test  
 Test date : 2020/09/02  
 Test Mode : Mode 4: Charge

## Line 2



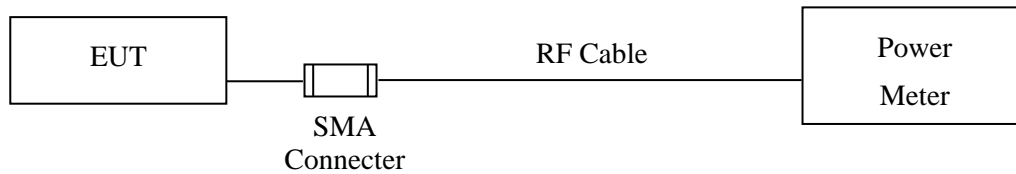
No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.226	43.45	62.59	-19.13	33.68	9.77	QP
2	0.226	28.76	52.59	-23.83	18.98	9.77	AV
3	0.55	26.51	56.00	-29.49	16.73	9.78	QP
4	0.55	20.36	46.00	-25.64	10.58	9.78	AV
5	1.109	28.67	56.00	-27.33	18.86	9.81	QP
6	1.109	23.20	46.00	-22.80	13.38	9.81	AV
7	2.688	31.08	56.00	-24.92	21.20	9.88	QP
8	2.688	24.77	46.00	-21.23	14.89	9.88	AV
9	6.72	34.63	60.00	-25.37	24.61	10.01	QP
10	6.72	28.50	50.00	-21.50	18.48	10.01	AV
11	21.745	41.86	60.00	-18.14	31.45	10.41	QP
*12	21.745	33.79	50.00	-16.21	23.37	10.41	AV

## Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

### 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. Test Result of Peak Power Output

Product : Bluetooth Headset  
Test Item : Peak Power Output  
Test date : 2020/09/09  
Test Mode : Mode 1: Transmit - 1Mbps (GFSK)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit	Result
Channel 00	2402	8.39	1 Watt= 30 dBm	Pass
Channel 39	2441	9.17	1 Watt= 30 dBm	Pass
Channel 78	2480	8.37	1 Watt= 30 dBm	Pass

Product : Bluetooth Headset  
Test Item : Peak Power Output  
Test date : 2020/09/09  
Test Mode : Mode 2: Transmit - 2Mbps ( $\pi/4$ DQPSK)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit	Result
Channel 00	2402	10.47	1 Watt= 30 dBm	Pass
Channel 39	2441	11.86	1 Watt= 30 dBm	Pass
Channel 78	2480	10.46	1 Watt= 30 dBm	Pass

Product : Bluetooth Headset  
Test Item : Peak Power Output  
Test Site : No.3 OATS  
Test date : 2020/09/09  
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK)

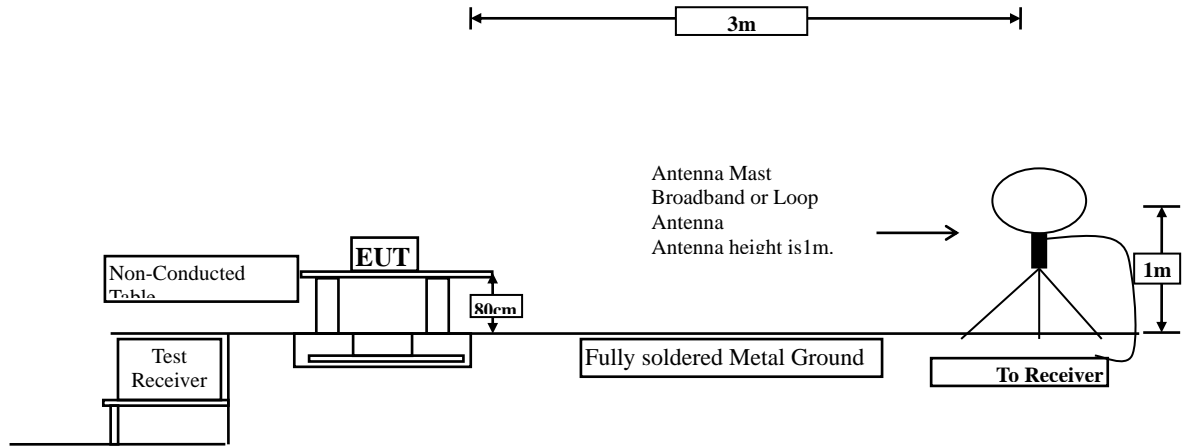
Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit	Result
Channel 00	2402	10.51	1 Watt= 30 dBm	Pass
Channel 39	2441	11.85	1 Watt= 30 dBm	Pass
Channel 78	2480	10.47	1 Watt= 30 dBm	Pass



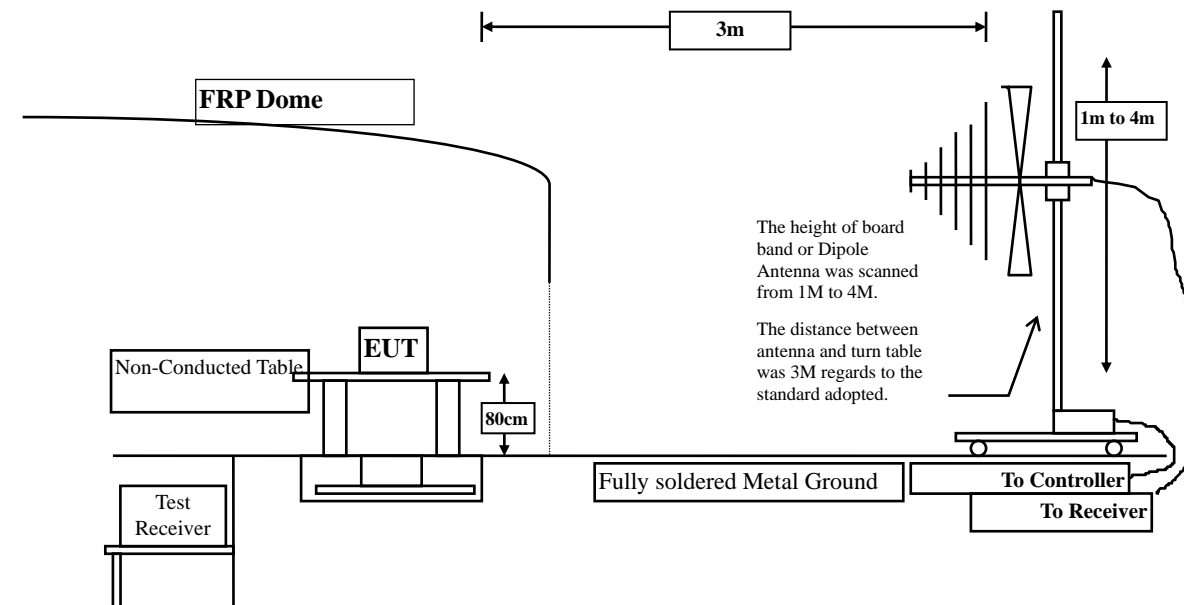
#### 4. Radiated Emission

##### 4.1. Test Setup

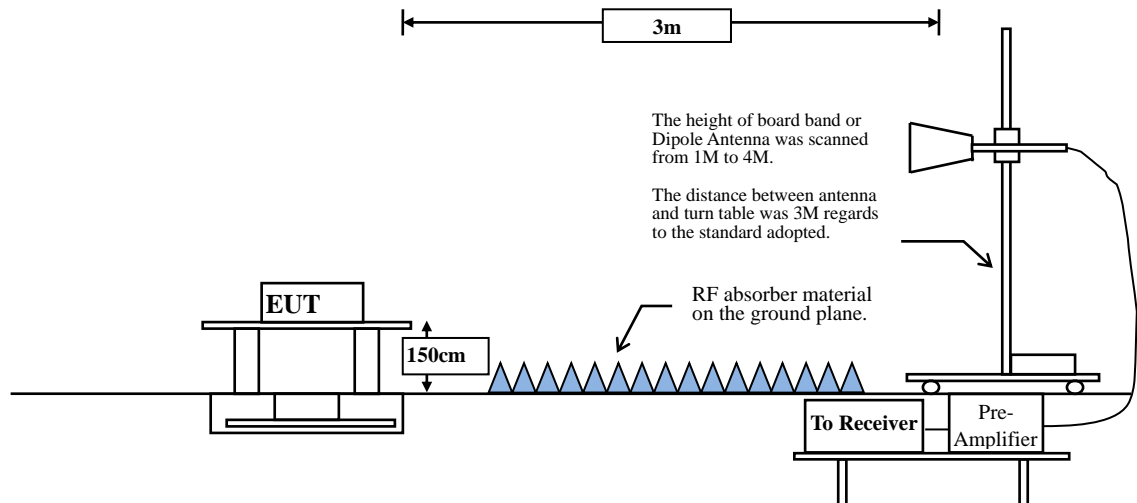
Under 30MHz



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.

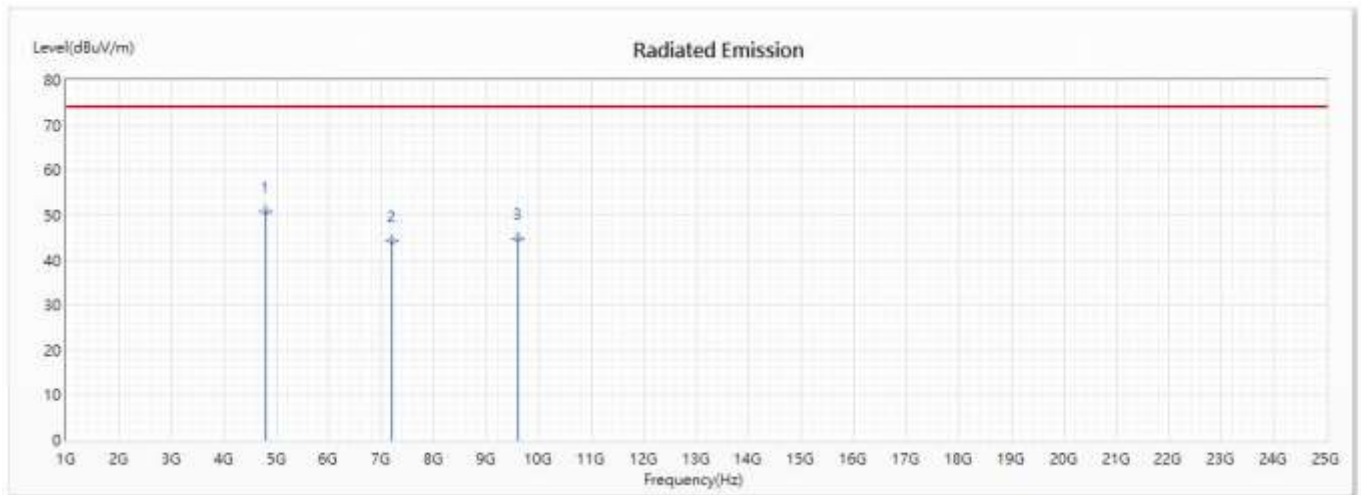
The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.

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

#### 4.4. Test Result of Radiated Emission

Product : Bluetooth Headset  
 Test Item : Harmonic Radiated Emission  
 Test date : 2020/09/09  
 Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(2402MHz)

Horizontal



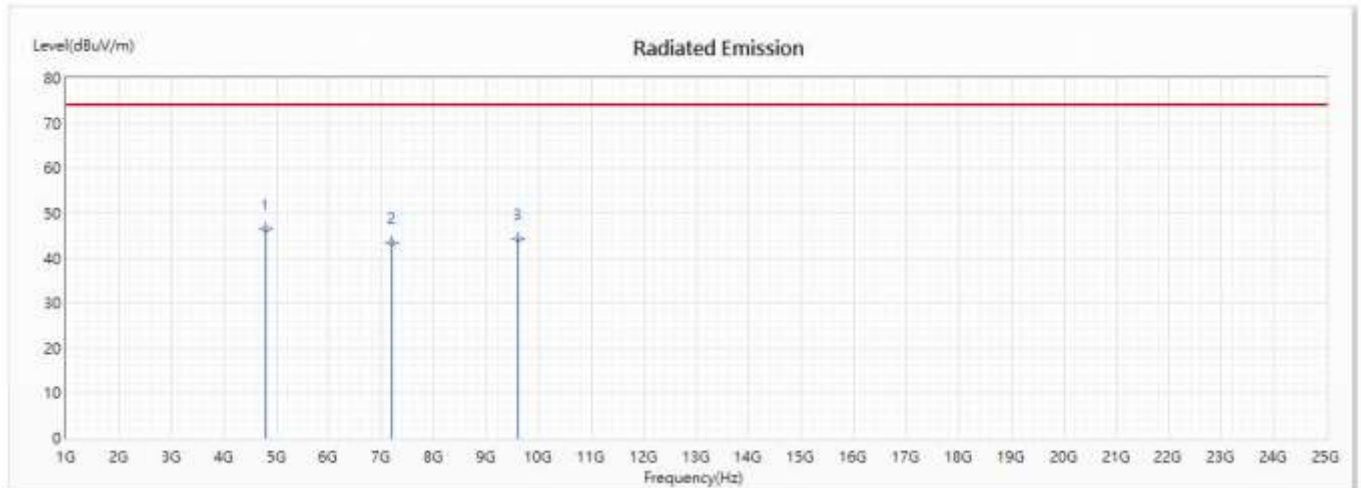
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4804	50.87	74.00	-23.13	61.48	-10.61	PK
2	7206	44.21	74.00	-29.79	52.90	-8.69	PK
3	9608	44.67	74.00	-29.33	53.79	-9.12	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Bluetooth Headset  
 Test Item : Harmonic Radiated Emission  
 Test date : 2020/09/09  
 Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(2402MHz)

## Vertical



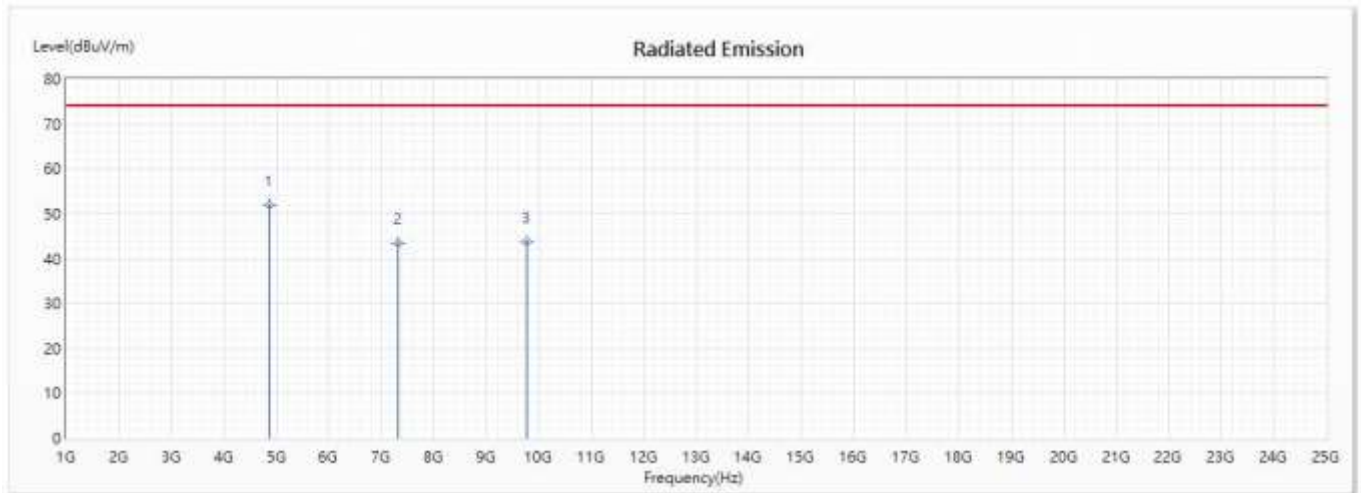
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4804	46.36	74.00	-27.64	56.97	-10.61	PK
2	7206	43.42	74.00	-30.58	52.11	-8.69	PK
3	9608	44.16	74.00	-29.84	53.28	-9.12	PK

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Bluetooth Headset  
 Test Item : Harmonic Radiated Emission  
 Test date : 2020/09/09  
 Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(2441MHz)

## Horizontal



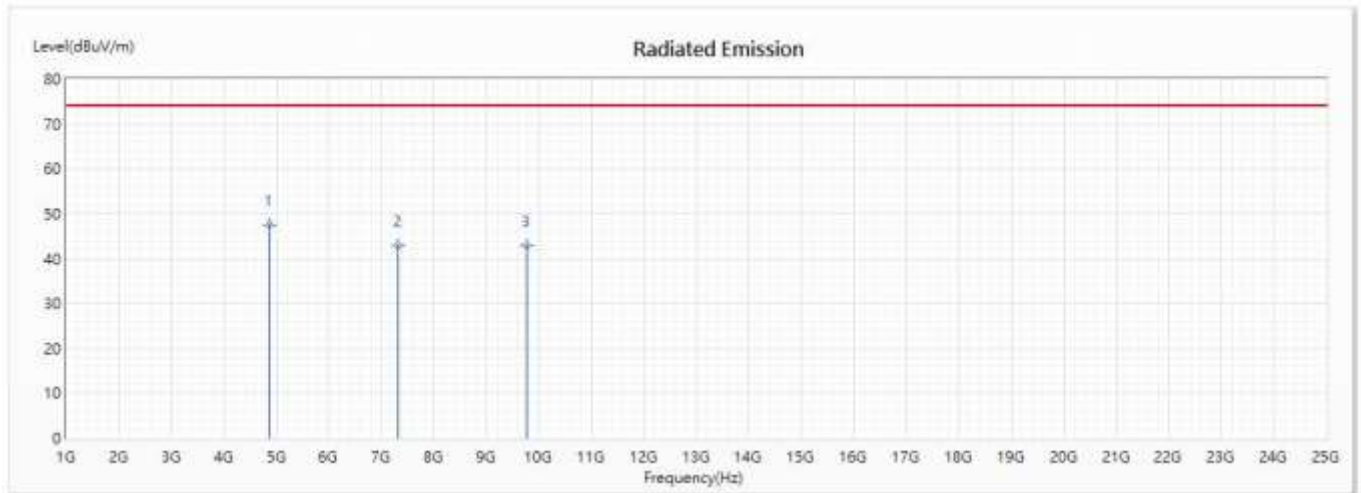
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4882	51.98	74.00	-22.02	62.22	-10.24	PK
2	7323	43.51	74.00	-30.49	52.66	-9.15	PK
3	9764	43.57	74.00	-30.43	52.65	-9.08	PK

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Bluetooth Headset  
 Test Item : Harmonic Radiated Emission  
 Test date : 2020/09/09  
 Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(2441MHz)

#### Vertical



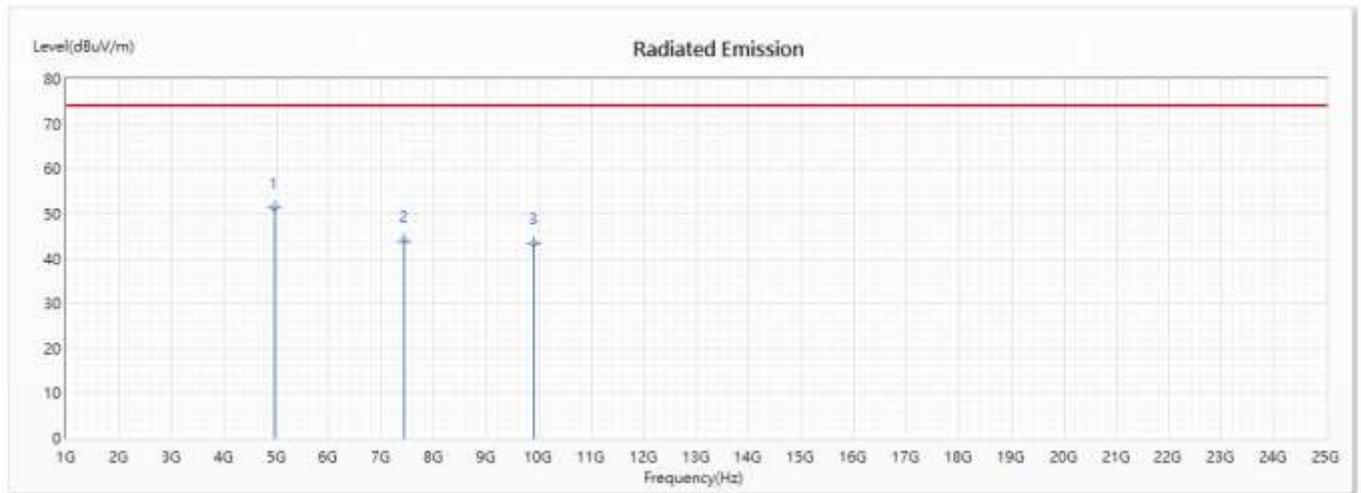
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4882	47.51	74.00	-26.49	57.75	-10.24	PK
2	7323	42.81	74.00	-31.19	51.96	-9.15	PK
3	9764	42.82	74.00	-31.18	51.90	-9.08	PK

#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Bluetooth Headset  
 Test Item : Harmonic Radiated Emission  
 Test date : 2020/09/09  
 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	51.21	74.00	-22.79	61.26	-10.05	PK
2	7440	44.00	74.00	-30.00	53.47	-9.47	PK
3	9920	43.49	74.00	-30.51	51.67	-8.18	PK

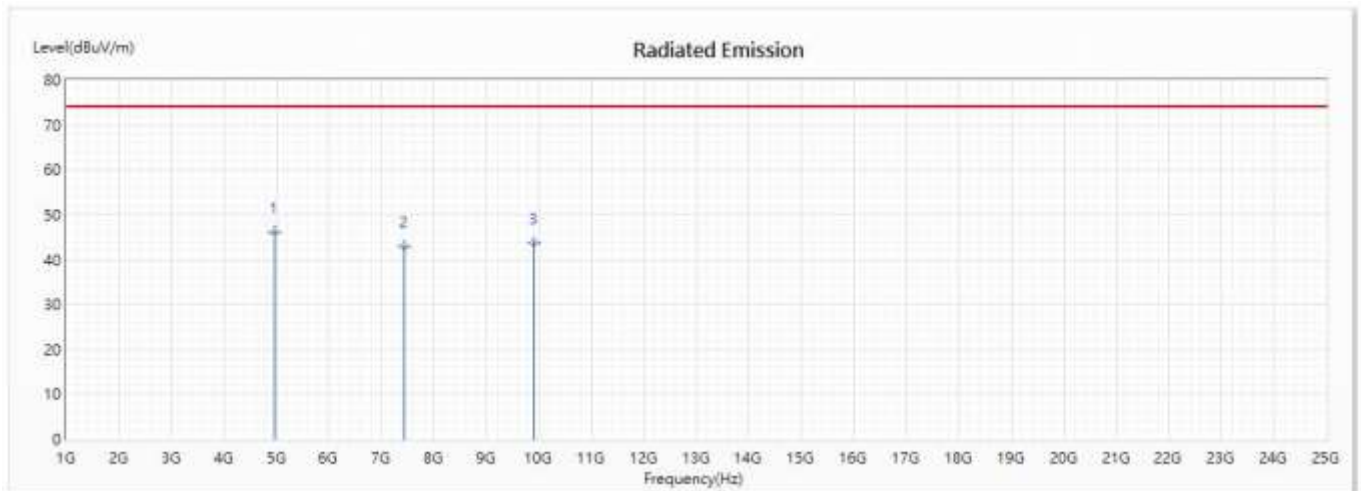
#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product : Bluetooth Headset  
 Test Item : Harmonic Radiated Emission  
 Test date : 2020/09/09  
 Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(2480MHz)

## Vertical



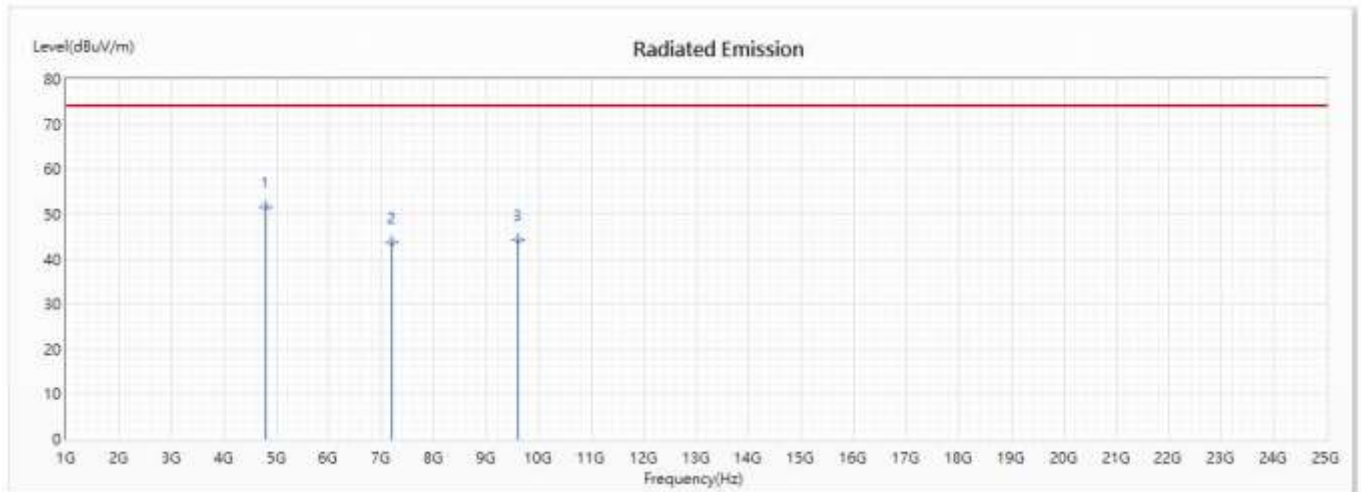
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4960	46.03	74.00	-27.97	56.08	-10.05	PK
2	7440	42.81	74.00	-31.19	52.28	-9.47	PK
3	9920	43.70	74.00	-30.30	51.88	-8.18	PK

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Bluetooth Headset  
 Test Item : Harmonic Radiated Emission  
 Test date : 2020/09/09  
 Test Mode : Mode 2: Transmit - 2Mbps ( $\pi/4$ DQPSK) (2402MHz)

#### Horizontal



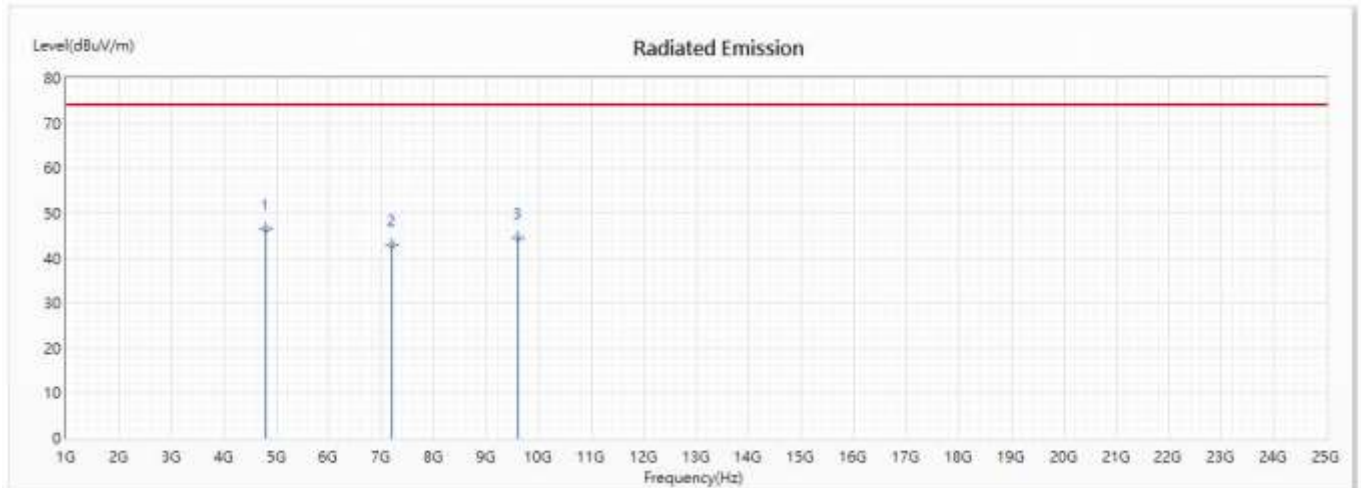
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4804	51.49	74.00	-22.51	62.10	-10.61	PK
2	7206	43.75	74.00	-30.25	52.44	-8.69	PK
3	9608	44.27	74.00	-29.73	53.39	-9.12	PK

#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Bluetooth Headset  
 Test Item : Harmonic Radiated Emission  
 Test date : 2020/09/09  
 Test Mode : Mode 2: Transmit - 2Mbps ( $\pi/4$ DQPSK) (2402MHz)

## Vertical



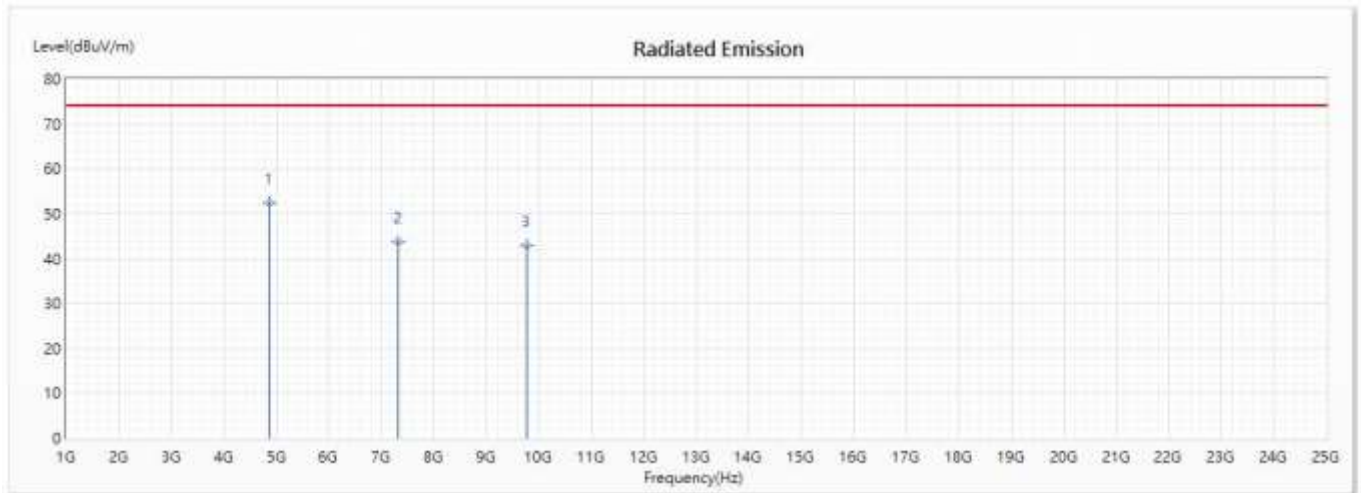
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4804	46.48	74.00	-27.52	57.09	-10.61	PK
2	7206	42.84	74.00	-31.16	51.53	-8.69	PK
3	9608	44.56	74.00	-29.44	53.68	-9.12	PK

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Bluetooth Headset  
 Test Item : Harmonic Radiated Emission  
 Test date : 2020/09/09  
 Test Mode : Mode 2: Transmit - 2Mbps ( $\pi/4$ DQPSK) (2441MHz)

## Horizontal



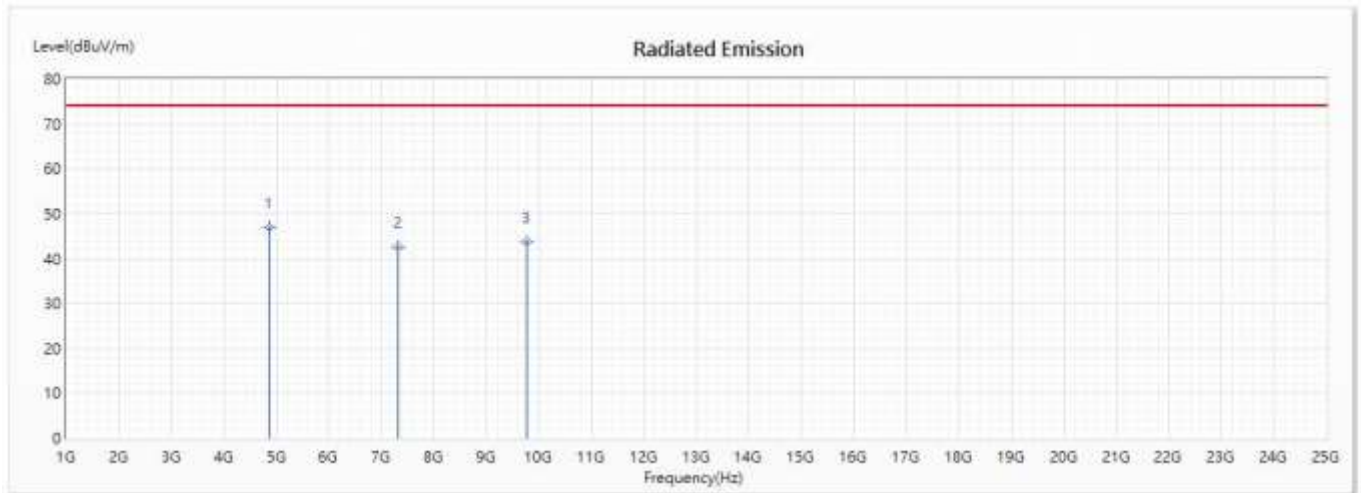
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4882	52.49	74.00	-21.51	62.73	-10.24	PK
2	7323	43.56	74.00	-30.44	52.71	-9.15	PK
3	9764	42.90	74.00	-31.10	51.98	-9.08	PK

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Bluetooth Headset  
 Test Item : Harmonic Radiated Emission  
 Test date : 2020/09/09  
 Test Mode : Mode 2: Transmit - 2Mbps ( $\pi/4$ DQPSK) (2441MHz)

### Vertical



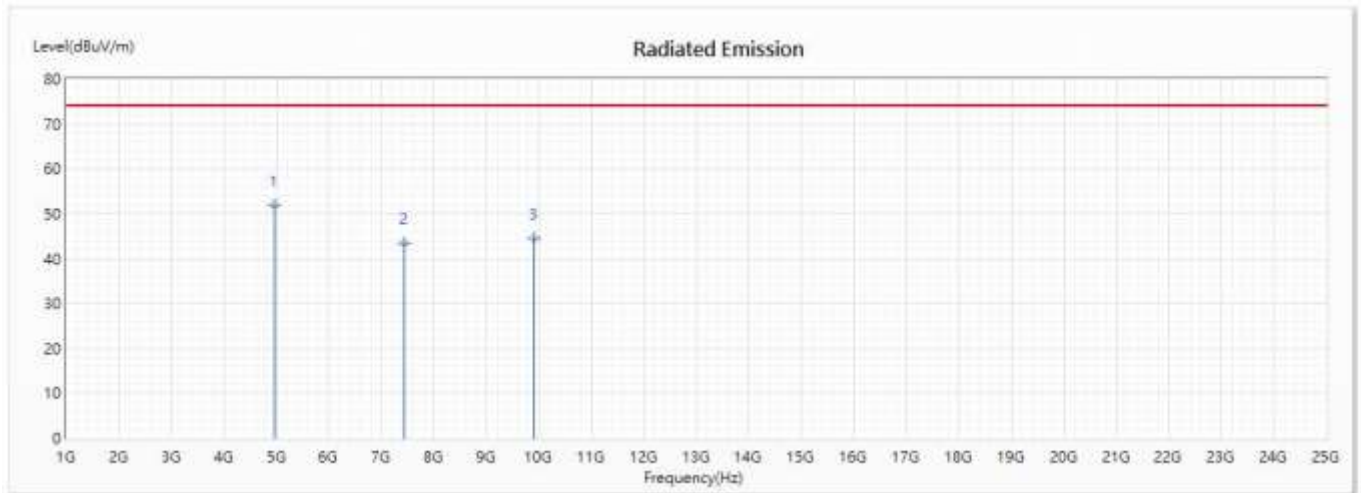
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4882	47.01	74.00	-26.99	57.25	-10.24	PK
2	7323	42.47	74.00	-31.53	51.62	-9.15	PK
3	9764	43.73	74.00	-30.27	52.81	-9.08	PK

### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Bluetooth Headset  
 Test Item : Harmonic Radiated Emission  
 Test date : 2020/09/09  
 Test Mode : Mode 2: Transmit - 2Mbps ( $\pi/4$ DQPSK) (2480MHz)

## Horizontal



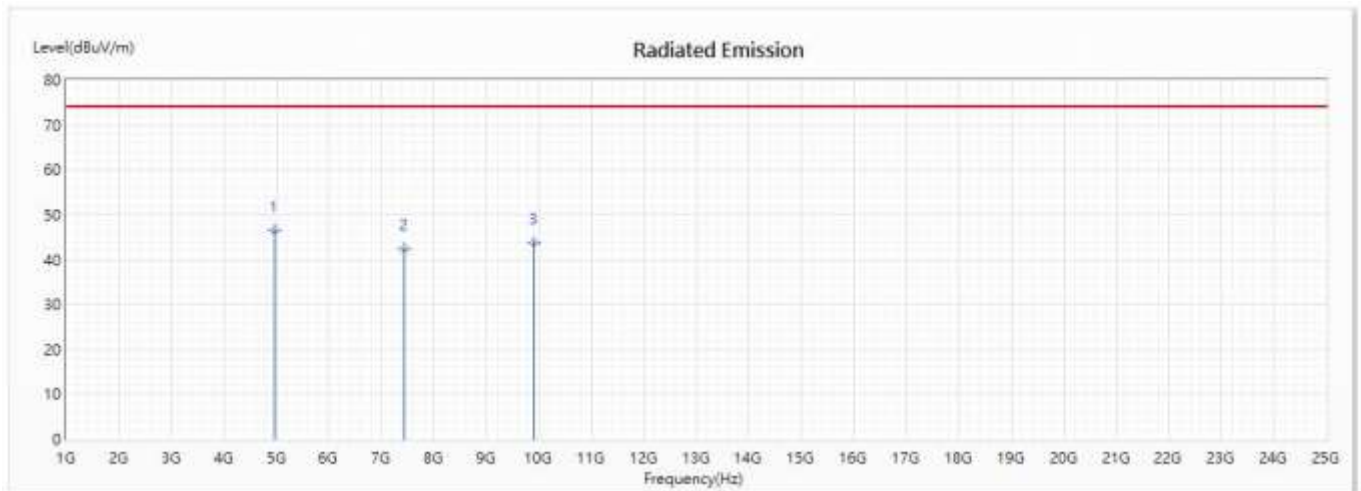
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4960	51.84	74.00	-22.16	61.89	-10.05	PK
2	7440	43.47	74.00	-30.53	52.94	-9.47	PK
3	9920	44.55	74.00	-29.45	52.73	-8.18	PK

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Bluetooth Headset  
 Test Item : Harmonic Radiated Emission  
 Test date : 2020/09/09  
 Test Mode : Mode 2: Transmit - 2Mbps ( $\pi/4$ DQPSK)(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	46.29	74.00	-27.71	56.34	-10.05	PK
2	7440	42.34	74.00	-31.66	51.81	-9.47	PK
3	9920	43.55	74.00	-30.45	51.73	-8.18	PK

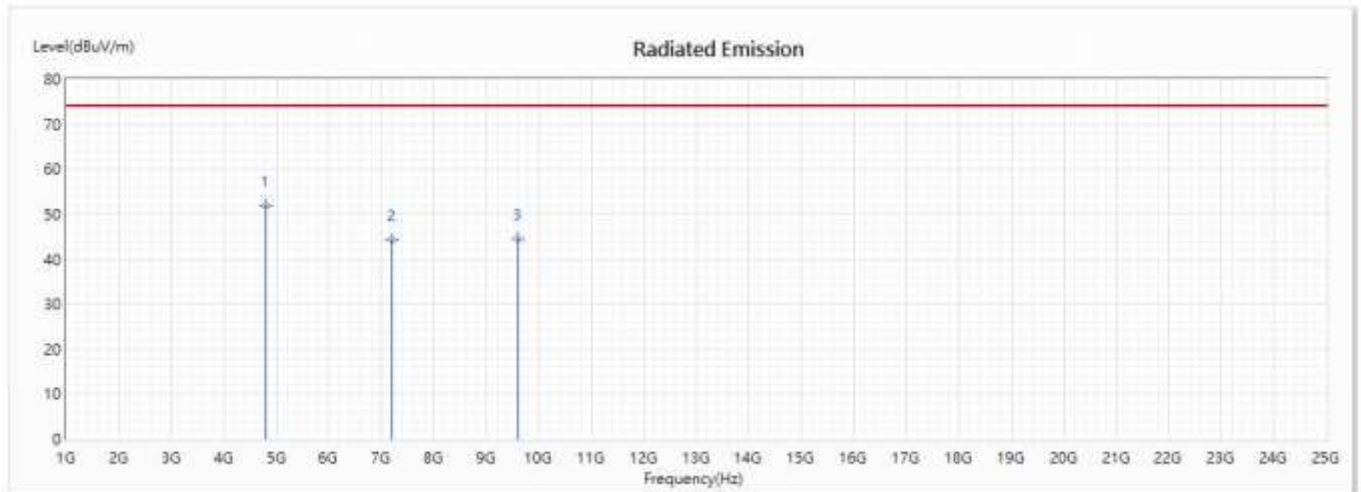
## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product : Bluetooth Headset  
 Test Item : Harmonic Radiated Emission  
 Test date : 2020/09/09  
 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	51.80	74.00	-22.20	62.41	-10.61	PK
2	7206	44.25	74.00	-29.75	52.94	-8.69	PK
3	9608	44.45	74.00	-29.55	53.57	-9.12	PK

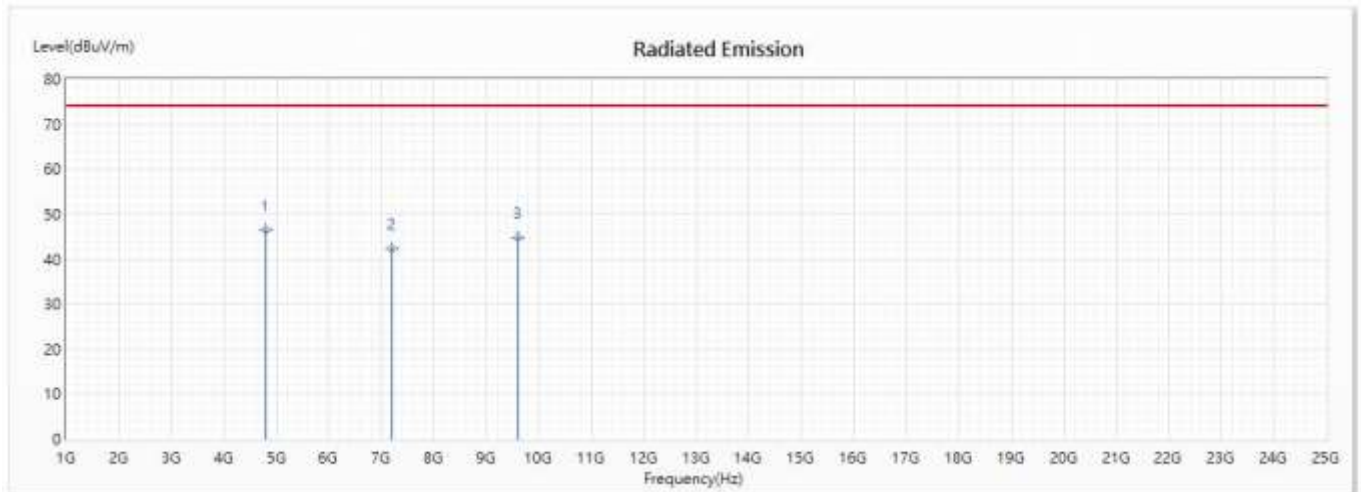
#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product : Bluetooth Headset  
 Test Item : Harmonic Radiated Emission  
 Test date : 2020/09/09  
 Test Mode : Mode 3: Transmit - 3Mbps (8DPSK)(2402MHz)

## Vertical



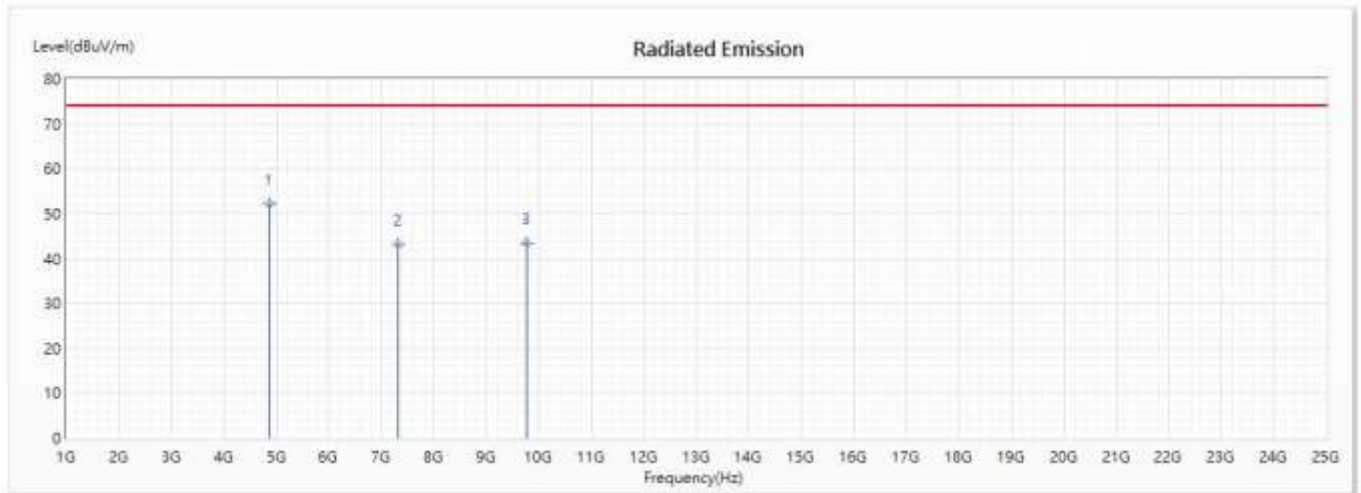
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4804	46.33	74.00	-27.67	56.94	-10.61	PK
2	7206	42.45	74.00	-31.55	51.14	-8.69	PK
3	9608	44.69	74.00	-29.31	53.81	-9.12	PK

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Bluetooth Headset  
 Test Item : Harmonic Radiated Emission  
 Test date : 2020/09/09  
 Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2441MHz)

## Horizontal



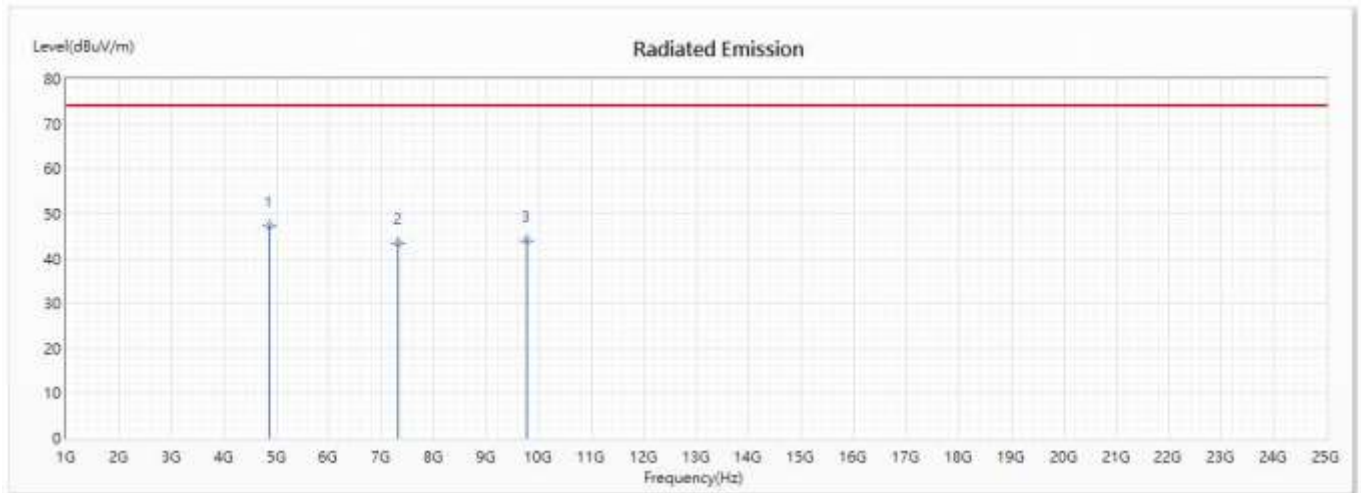
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4882	52.23	74.00	-21.77	62.47	-10.24	PK
2	7323	43.11	74.00	-30.89	52.26	-9.15	PK
3	9764	43.36	74.00	-30.64	52.44	-9.08	PK

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Bluetooth Headset  
 Test Item : Harmonic Radiated Emission  
 Test date : 2020/09/09  
 Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2441MHz)

### Vertical



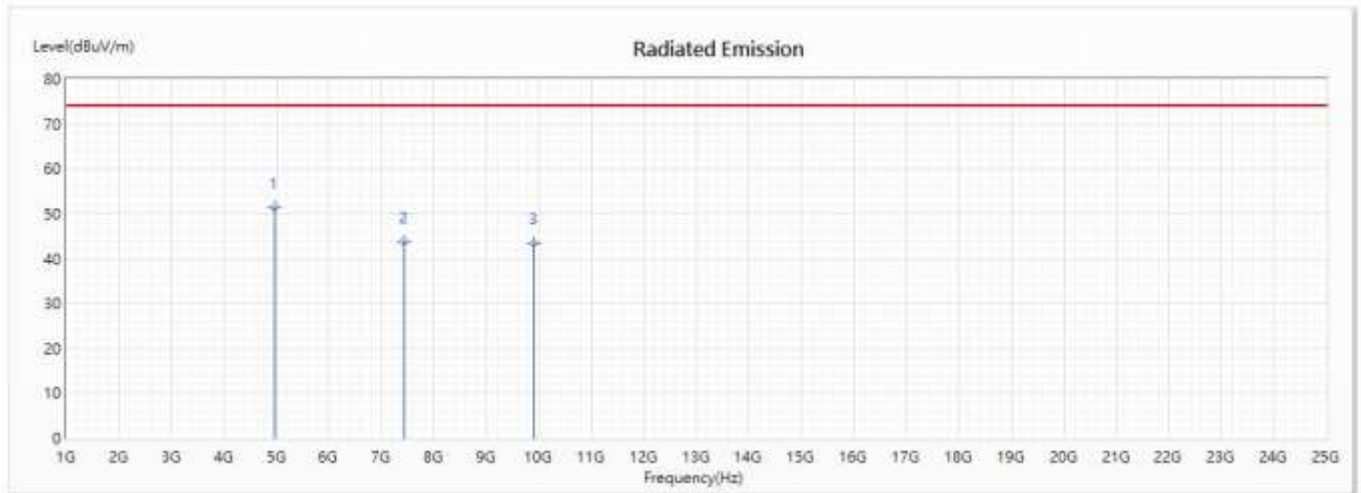
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4882	47.21	74.00	-26.79	57.45	-10.24	PK
2	7323	43.28	74.00	-30.72	52.43	-9.15	PK
3	9764	43.91	74.00	-30.09	52.99	-9.08	PK

### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Bluetooth Headset  
 Test Item : Harmonic Radiated Emission  
 Test date : 2020/09/09  
 Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2480MHz)

#### Horizontal



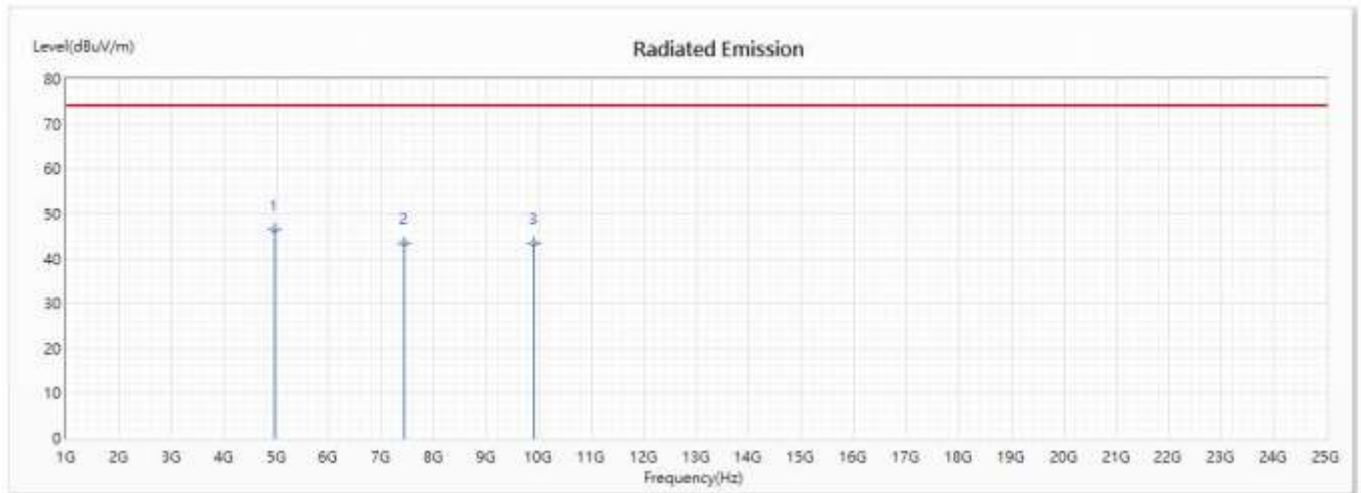
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4960	51.37	74.00	-22.63	61.42	-10.05	PK
2	7440	43.56	74.00	-30.44	53.03	-9.47	PK
3	9920	43.41	74.00	-30.59	51.59	-8.18	PK

#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Bluetooth Headset  
 Test Item : Harmonic Radiated Emission  
 Test date : 2020/09/09  
 Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2480MHz)

#### Vertical



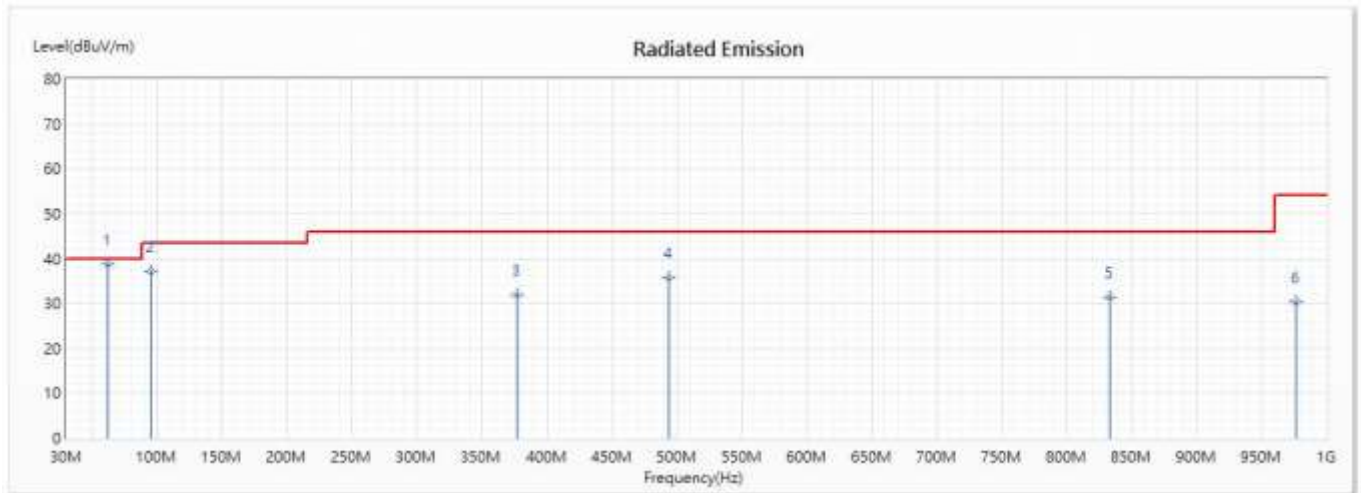
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4960	46.28	74.00	-27.72	56.33	-10.05	PK
2	7440	43.29	74.00	-30.71	52.76	-9.47	PK
3	9920	43.54	74.00	-30.46	51.72	-8.18	PK

#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. 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 : 2020/09/02  
 Test Mode : Mode 1: Transmit - 1Mbps (GFSK) (2441MHz) ( Left ear)

#### Horizontal



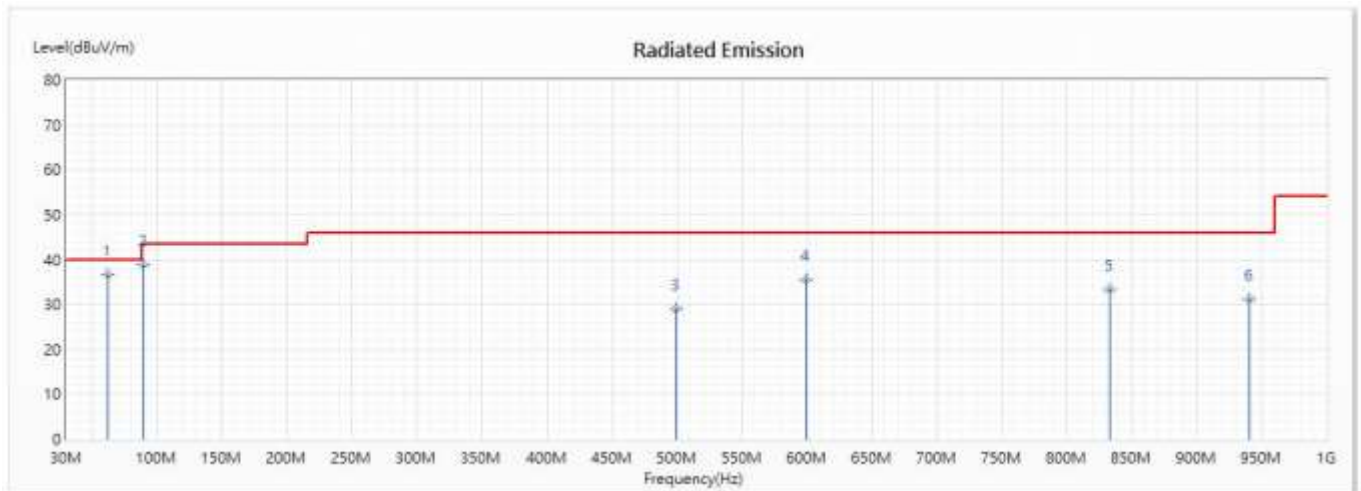
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	62.333	38.85	40.00	-1.15	52.43	-13.58	QP
2	94.667	37.10	43.50	-6.40	47.57	-10.47	QP
3	377.232	31.92	46.00	-14.08	36.16	-4.24	QP
4	493.913	35.79	46.00	-10.21	39.22	-3.43	QP
5	832.71	31.45	46.00	-14.55	32.84	-1.39	QP
6	976.101	30.28	54.00	-23.72	30.75	-0.47	QP

#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. 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 : 2020/09/02  
 Test Mode : Mode 1: Transmit - 1Mbps (GFSK) (2441MHz) ( Left ear)

#### Vertical



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	62.333	36.67	40.00	-3.33	50.25	-13.58	QP
2	89.043	38.71	43.50	-4.79	49.18	-10.47	QP
3	499.536	28.91	46.00	-17.09	31.80	-2.89	QP
4	599.348	35.43	46.00	-10.57	37.10	-1.67	QP
5	832.71	33.42	46.00	-12.58	34.81	-1.39	QP
6	940.957	31.13	46.00	-14.87	31.68	-0.55	QP

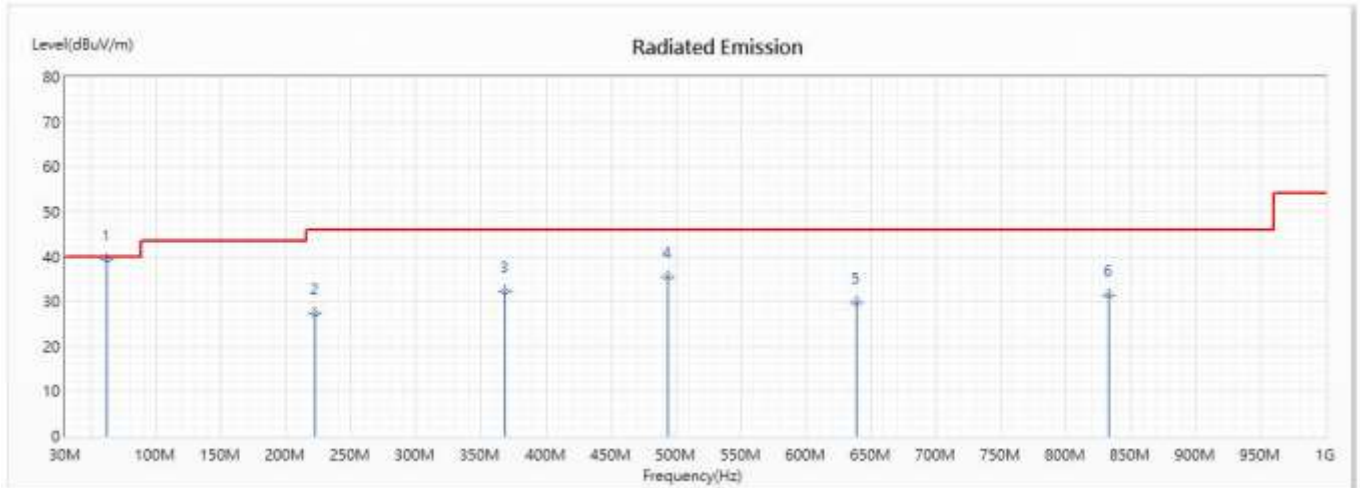
#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. 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 : 2020/09/02  
 Test Mode : Mode 2: Transmit - 2Mbps ( $\pi/4$ DQPSK) (2441MHz) ( Left ear)

#### Horizontal



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	62.333	39.29	40.00	-0.71	52.87	-13.58	QP
2	222.594	27.40	46.00	-18.60	37.84	-10.44	QP
3	368.797	32.27	46.00	-13.73	36.98	-4.71	QP
4	493.913	35.36	46.00	-10.64	38.79	-3.43	QP
5	638.71	29.85	46.00	-16.15	31.16	-1.31	QP
6	832.71	31.53	46.00	-14.47	32.92	-1.39	QP

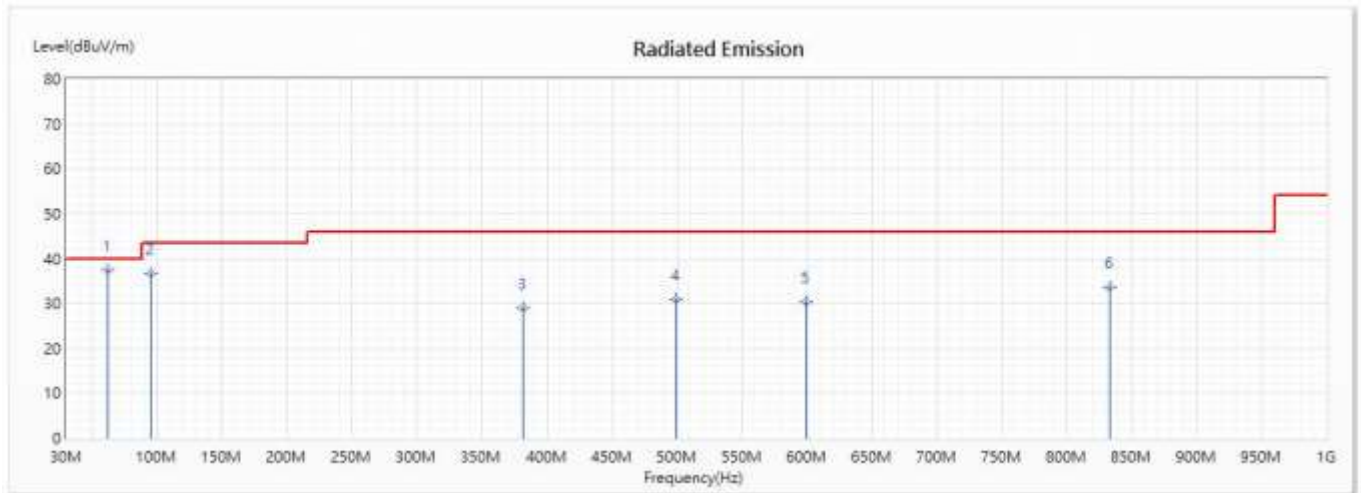
#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. 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 : 2020/09/02  
 Test Mode : Mode 2: Transmit - 2Mbps ( $\pi/4$ DQPSK) (2441MHz) ( Left ear)

## Vertical



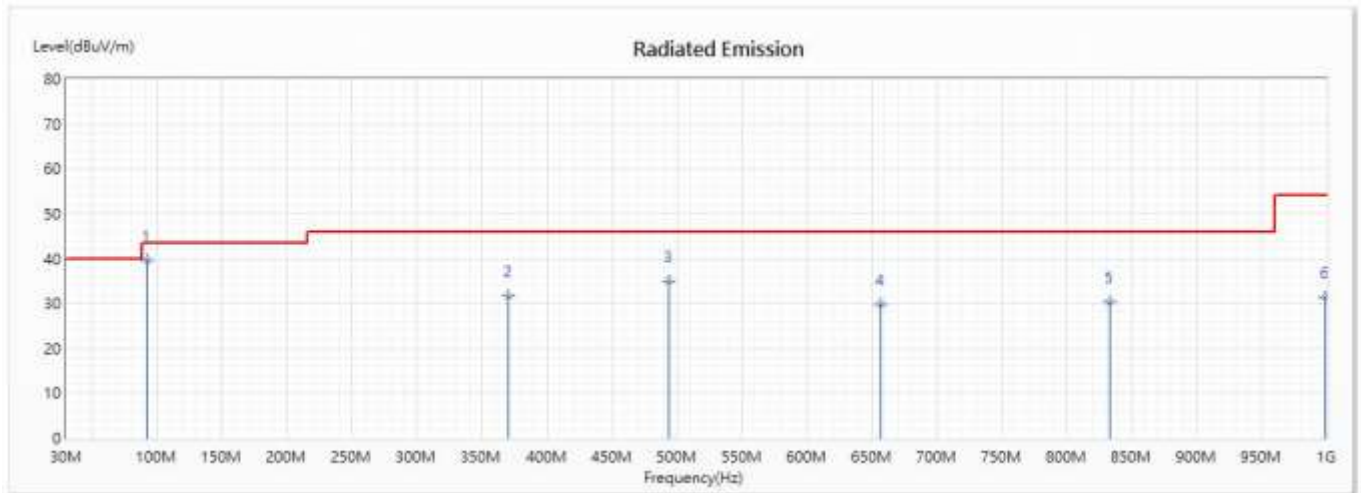
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	62.333	37.27	40.00	-2.73	50.85	-13.58	QP
2	94.667	36.70	43.50	-6.80	47.17	-10.47	QP
3	381.449	28.89	46.00	-17.11	33.08	-4.19	QP
4	499.536	30.86	46.00	-15.14	33.75	-2.89	QP
5	599.348	30.24	46.00	-15.76	31.91	-1.67	QP
6	832.71	33.56	46.00	-12.44	34.95	-1.39	QP

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. 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 : 2020/09/02  
 Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2441MHz) ( Left ear)

#### Horizontal



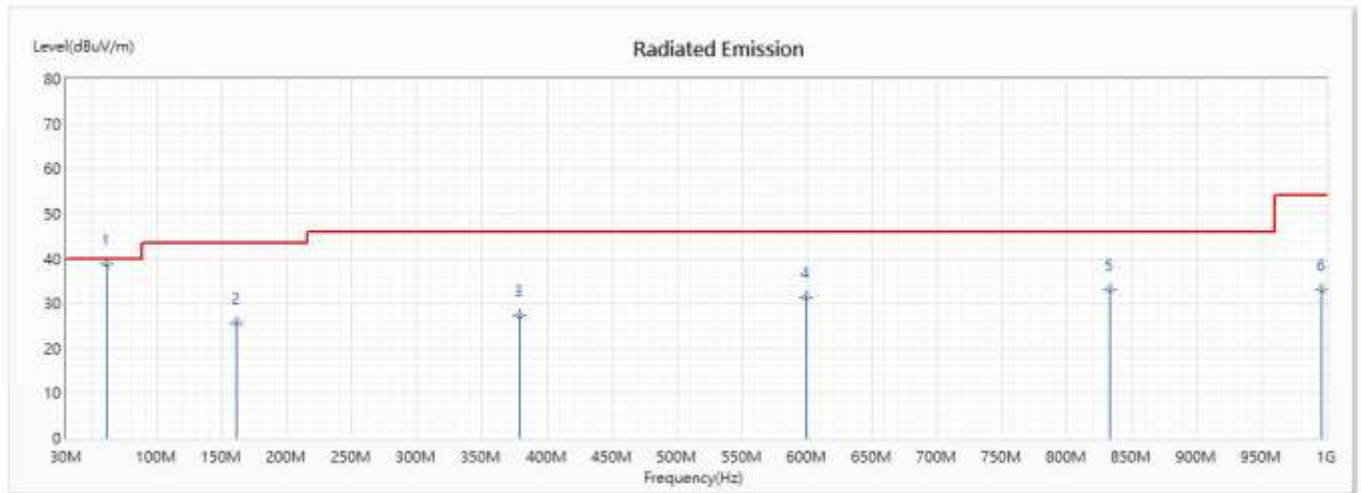
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	91.855	39.61	43.50	-3.89	49.91	-10.30	QP
2	370.203	31.65	46.00	-14.35	36.34	-4.69	QP
3	493.913	35.05	46.00	-10.95	38.48	-3.43	QP
4	656.986	29.76	46.00	-16.24	31.09	-1.33	QP
5	832.71	30.38	46.00	-15.62	31.77	-1.39	QP
6	998.594	31.28	54.00	-22.72	32.15	-0.87	QP

#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. 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 : 2020/09/02  
 Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2441MHz) ( Left ear)

## Vertical



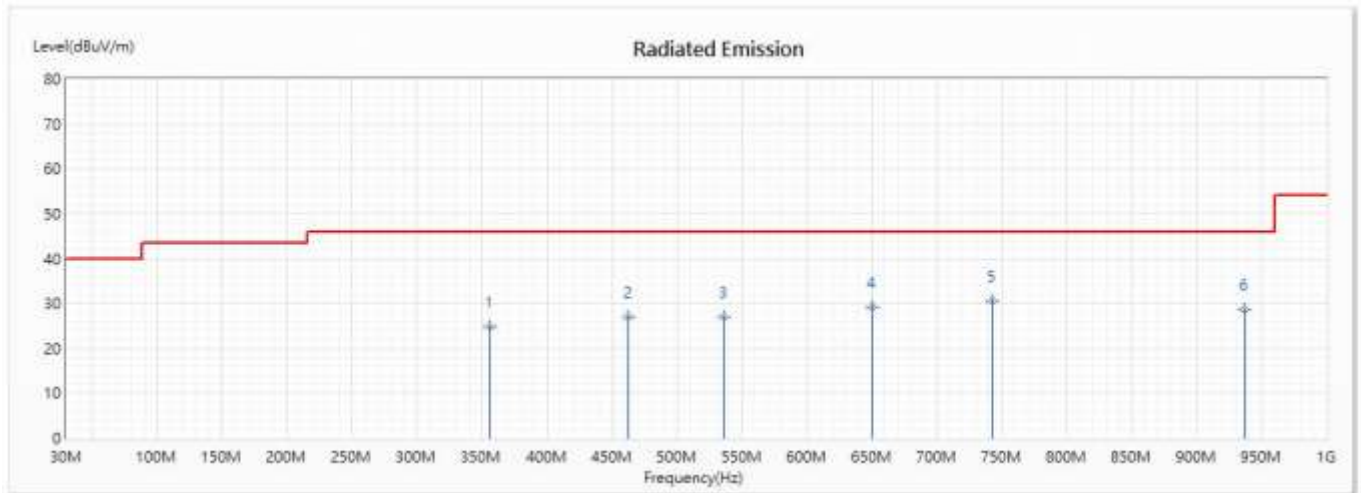
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	60.928	38.81	40.00	-1.19	52.05	-13.24	QP
2	160.739	25.54	43.50	-17.96	39.08	-13.54	QP
3	378.638	27.39	46.00	-18.61	31.56	-4.17	QP
4	599.348	31.32	46.00	-14.68	32.99	-1.67	QP
5	832.71	33.16	46.00	-12.84	34.55	-1.39	QP
6	995.783	32.93	54.00	-21.07	33.80	-0.87	QP

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. 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 : 2020/09/02  
 Test Mode : Mode 1: Transmit - 1Mbps (GFSK) (2441MHz) (Right ear)

#### Horizontal



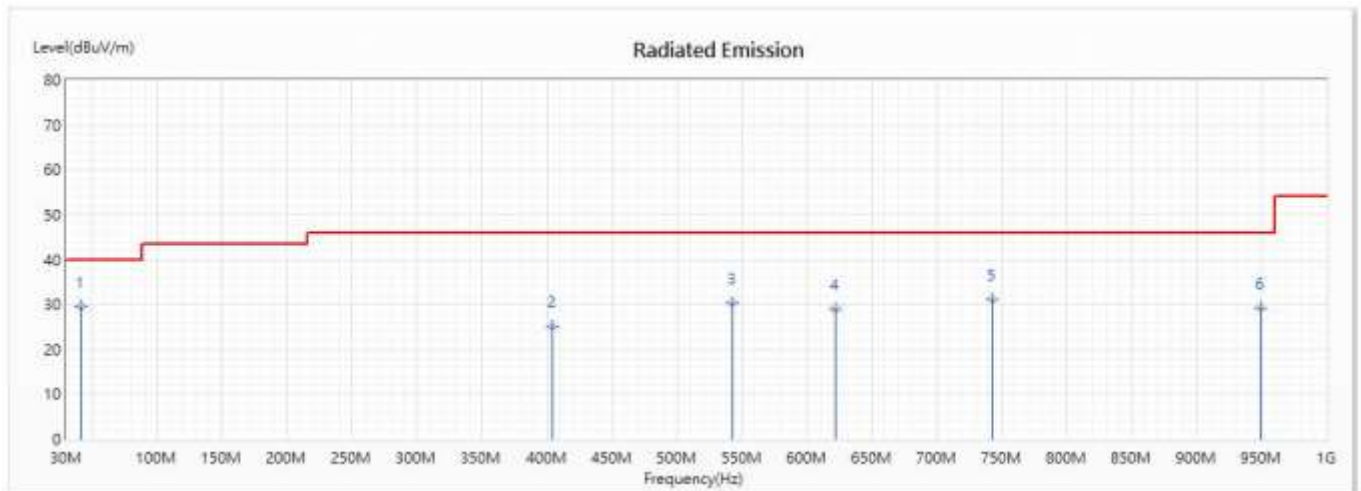
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	356.145	24.84	46.00	-21.16	29.99	-5.15	QP
2	462.986	26.93	46.00	-19.07	31.06	-4.13	QP
3	536.087	27.08	46.00	-18.92	29.56	-2.48	QP
4	649.957	29.09	46.00	-16.91	30.54	-1.45	QP
* 5	742.739	30.58	46.00	-15.42	31.50	-0.92	QP
6	936.739	28.66	46.00	-17.34	29.46	-0.80	QP

#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. 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 : 2020/09/02  
 Test Mode : Mode 1: Transmit - 1Mbps (GFSK) (2441MHz) (Right ear)

#### Vertical



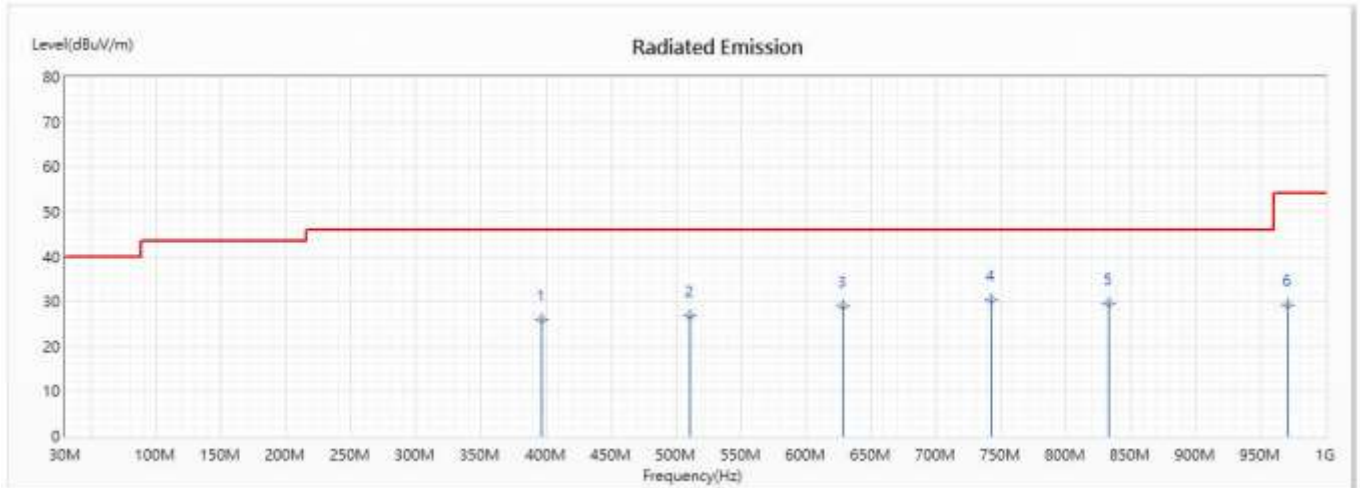
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	41.246	29.37	40.00	-10.63	41.30	-11.93	QP
2	403.942	25.22	46.00	-20.78	30.34	-5.12	QP
3	543.116	30.24	46.00	-15.76	32.92	-2.68	QP
4	621.841	28.86	46.00	-17.14	29.75	-0.89	QP
5	742.739	31.02	46.00	-14.98	31.94	-0.92	QP
6	949.391	29.15	46.00	-16.85	29.89	-0.74	QP

#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. 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 : 2020/09/02  
 Test Mode : Mode 2: Transmit - 2Mbps ( $\pi/4$ DQPSK) (2441MHz) (Right ear)

#### Horizontal



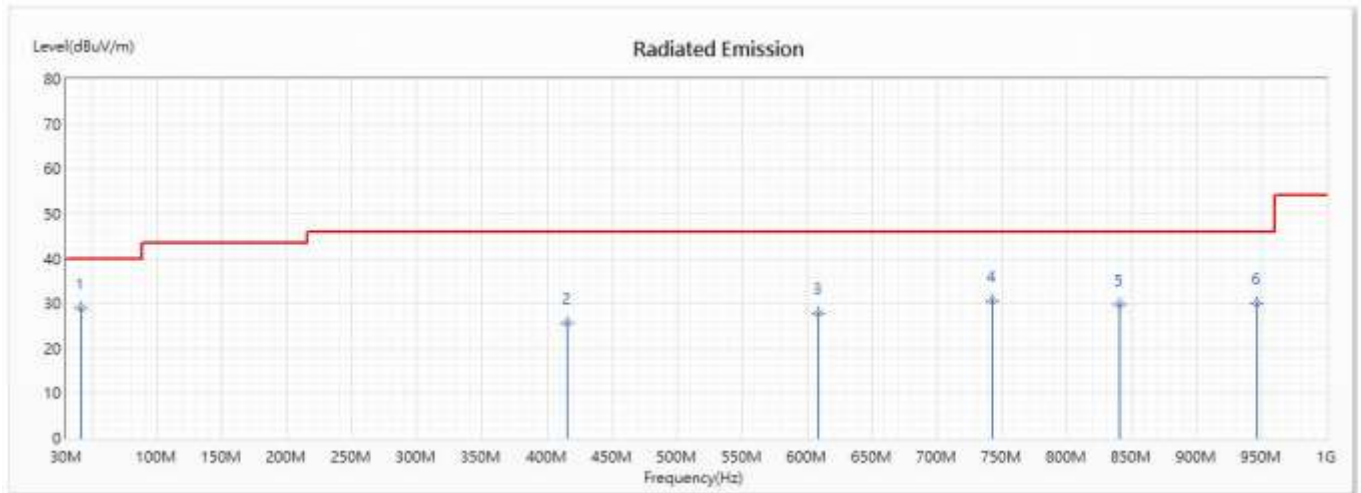
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	396.913	25.98	46.00	-20.02	31.12	-5.14	QP
2	510.783	26.77	46.00	-19.23	29.75	-2.98	QP
3	628.87	28.90	46.00	-17.10	29.98	-1.08	QP
* 4	742.739	30.30	46.00	-15.70	31.22	-0.92	QP
5	832.71	29.50	46.00	-16.50	30.89	-1.39	QP
6	970.478	29.24	54.00	-24.76	29.95	-0.71	QP

#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. 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 : 2020/09/02  
 Test Mode : Mode 2: Transmit - 2Mbps ( $\pi/4$ DQPSK) (2441MHz) (Right ear)

## Vertical



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	41.246	28.98	40.00	-11.02	40.91	-11.93	QP
2	415.188	25.72	46.00	-20.28	30.44	-4.72	QP
3	609.188	27.82	46.00	-18.18	29.19	-1.37	QP
4	742.739	30.71	46.00	-15.29	31.63	-0.92	QP
5	841.145	29.71	46.00	-16.29	31.42	-1.71	QP
6	946.58	29.92	46.00	-16.08	30.58	-0.66	QP

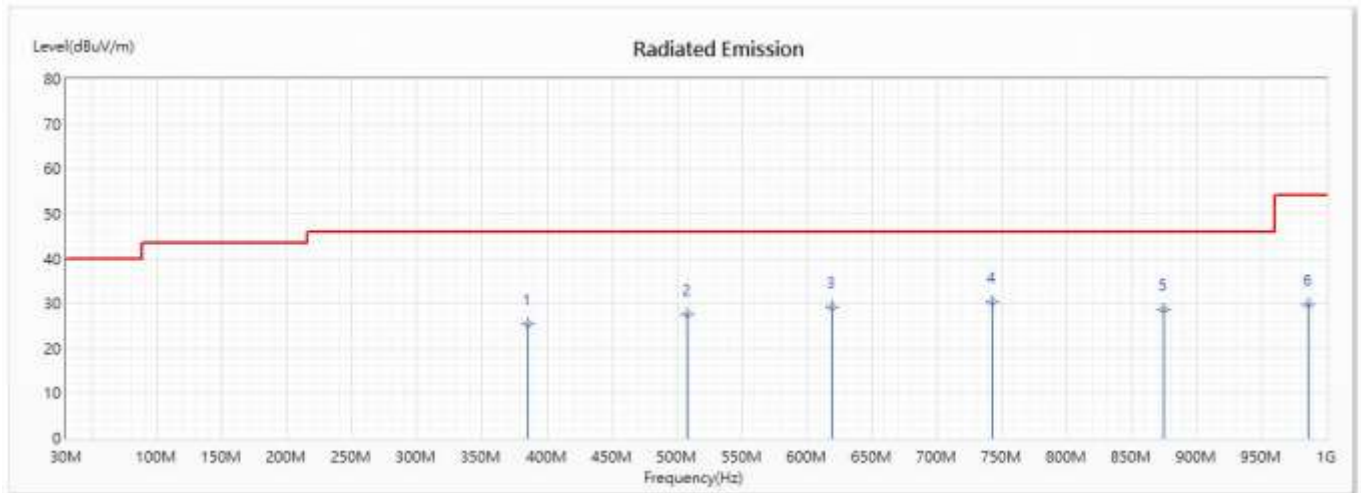
## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. 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 : 2020/09/02  
 Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2441MHz) (Right ear)

#### Horizontal



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	385.667	25.26	46.00	-20.74	29.70	-4.44	QP
2	507.971	27.46	46.00	-18.54	30.37	-2.91	QP
3	619.029	29.12	46.00	-16.88	30.03	-0.91	QP
* 4	742.739	30.22	46.00	-15.78	31.14	-0.92	QP
5	874.884	28.70	46.00	-17.30	30.49	-1.79	QP
6	985.942	29.88	54.00	-24.12	30.51	-0.63	QP

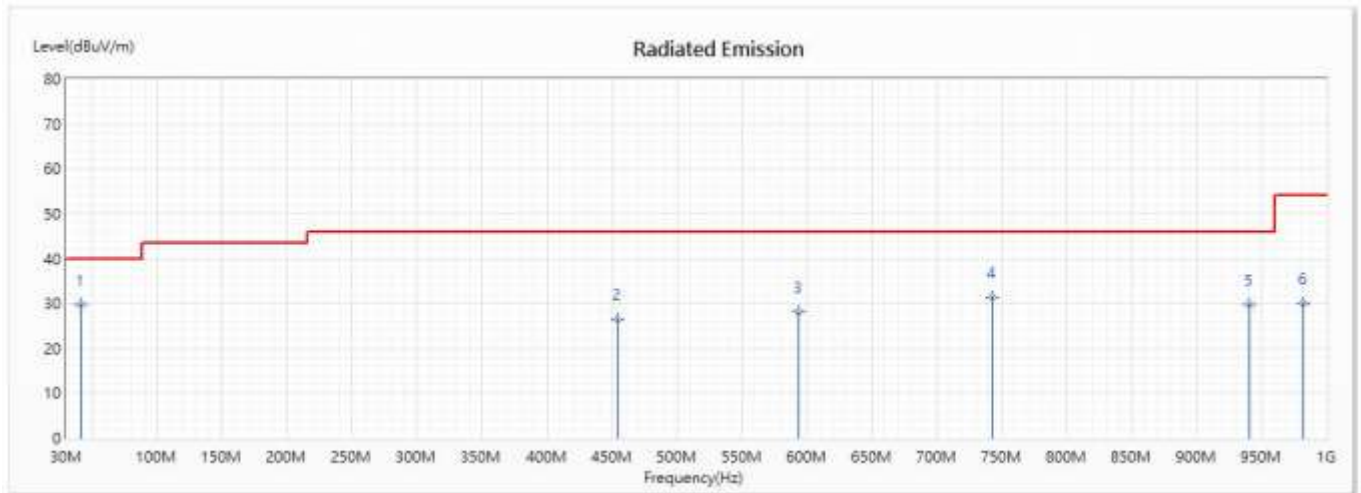
#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. 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 : 2020/09/02  
 Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (2441MHz) (Right ear)

## Vertical



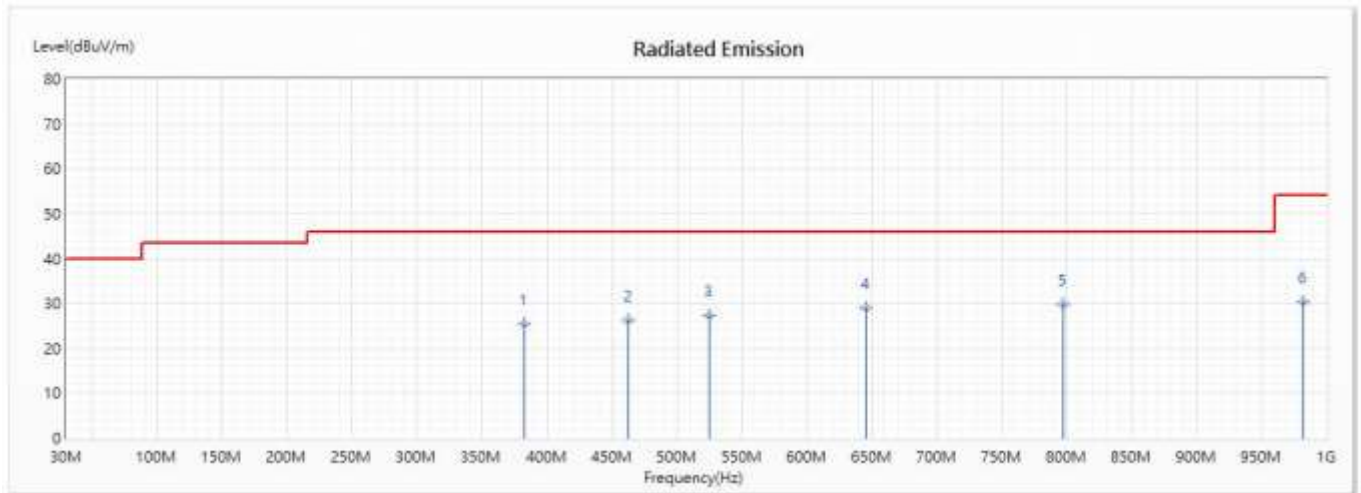
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	41.246	29.73	40.00	-10.27	41.66	-11.93	QP
2	454.551	26.54	46.00	-19.46	30.52	-3.98	QP
3	593.725	28.24	46.00	-17.76	30.16	-1.92	QP
4	742.739	31.30	46.00	-14.70	32.22	-0.92	QP
5	940.957	29.85	46.00	-16.15	30.40	-0.55	QP
6	981.725	30.05	54.00	-23.95	30.53	-0.48	QP

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. 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 : 2020/09/17  
 Test Mode : Mode 4: Charge

#### Horizontal



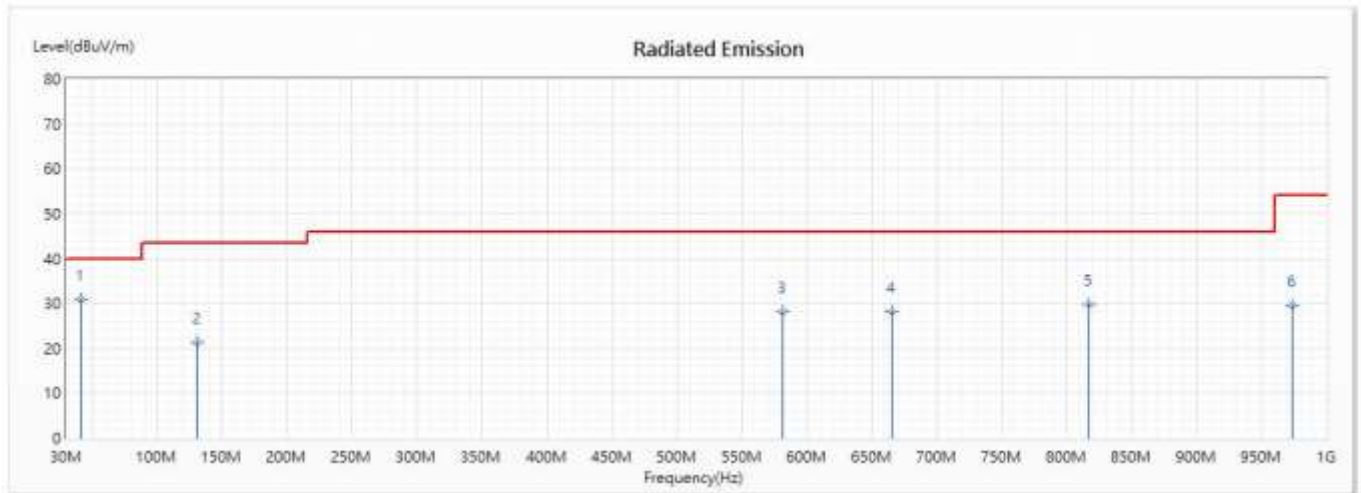
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	382.855	25.46	46.00	-20.54	29.74	-4.28	QP
2	462.986	26.33	46.00	-19.67	30.46	-4.13	QP
3	524.841	27.35	46.00	-18.65	30.10	-2.75	QP
4	645.739	28.96	46.00	-17.04	30.45	-1.49	QP
* 5	797.565	29.68	46.00	-16.32	30.66	-0.98	QP
6	981.725	30.25	54.00	-23.75	30.73	-0.48	QP

#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. 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 : 2020/09/17  
 Test Mode : Mode 4: Charge

## Vertical



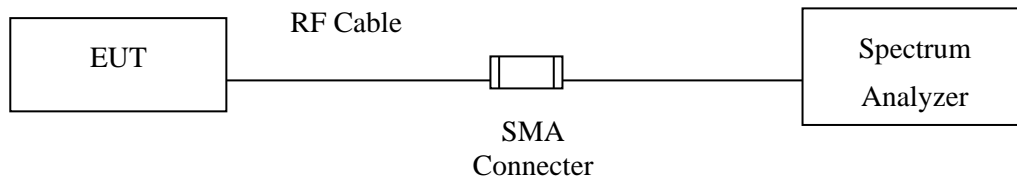
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	41.246	30.72	40.00	-9.28	42.65	-11.93	QP
2	131.217	21.17	43.50	-22.33	29.71	-8.54	QP
3	581.072	28.12	46.00	-17.88	31.08	-2.96	QP
4	665.42	28.04	46.00	-17.96	29.59	-1.55	QP
5	817.246	29.76	46.00	-16.24	30.54	-0.78	QP
6	973.29	29.40	54.00	-24.60	29.97	-0.57	QP

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. 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.

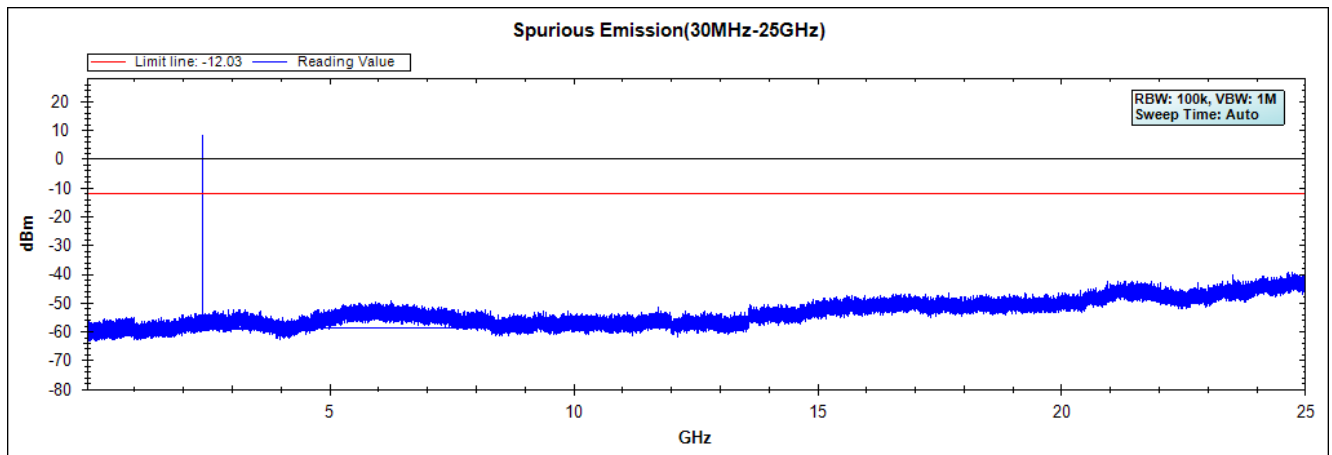
### 5.3. Test Procedure

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

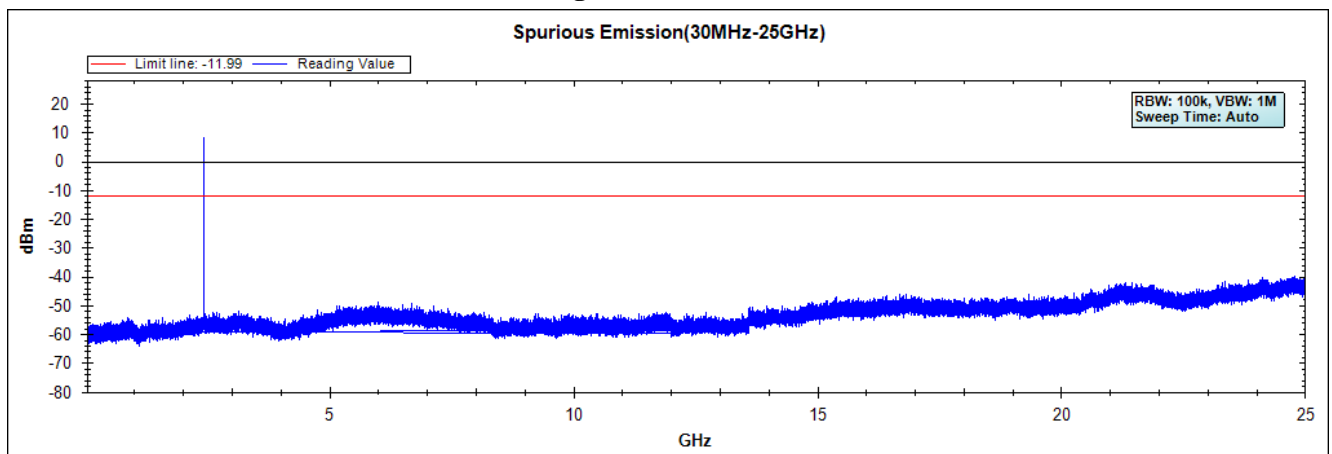
#### 5.4. Test Result of RF Antenna Conducted Test

Product : Bluetooth Headset  
Test Item : RF Antenna Conducted Test  
Test Site : No.3 OATS  
Test date : 2020/09/03  
Test Mode : Mode 1: Transmit - 1Mbps (GFSK)

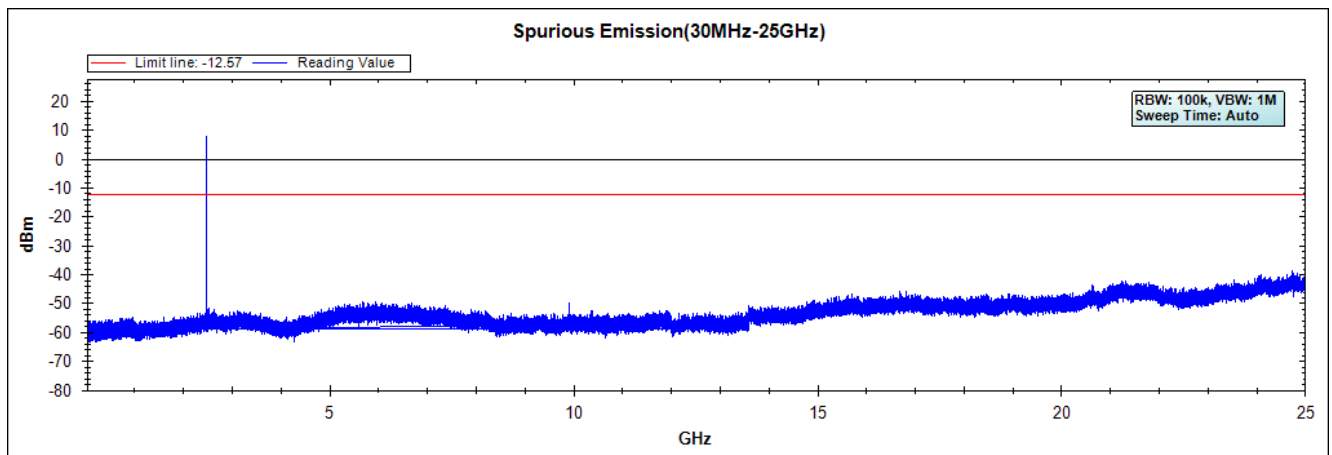
**Figure Channel 00:**



**Figure Channel 39:**

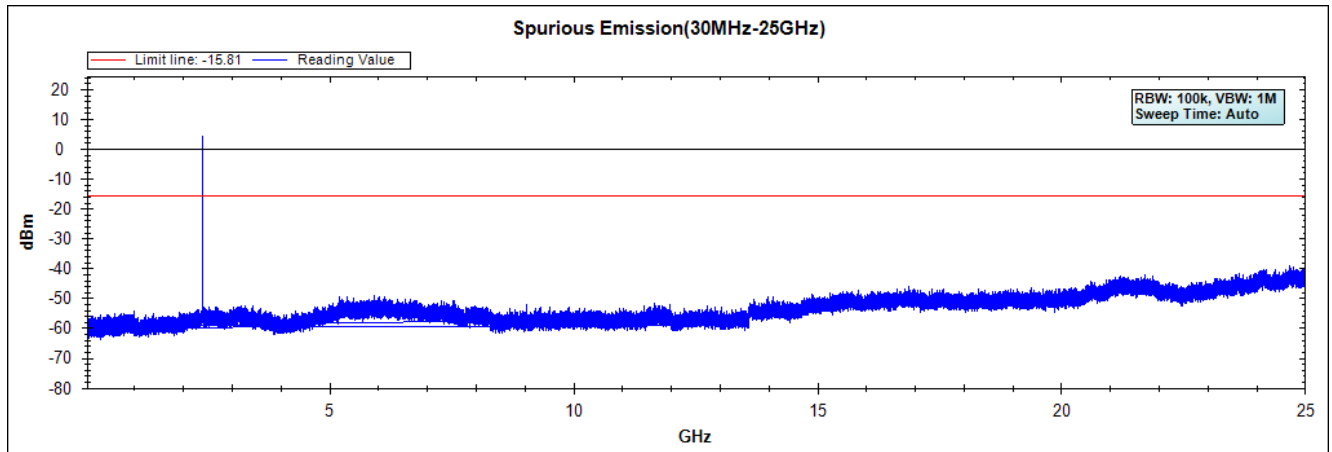
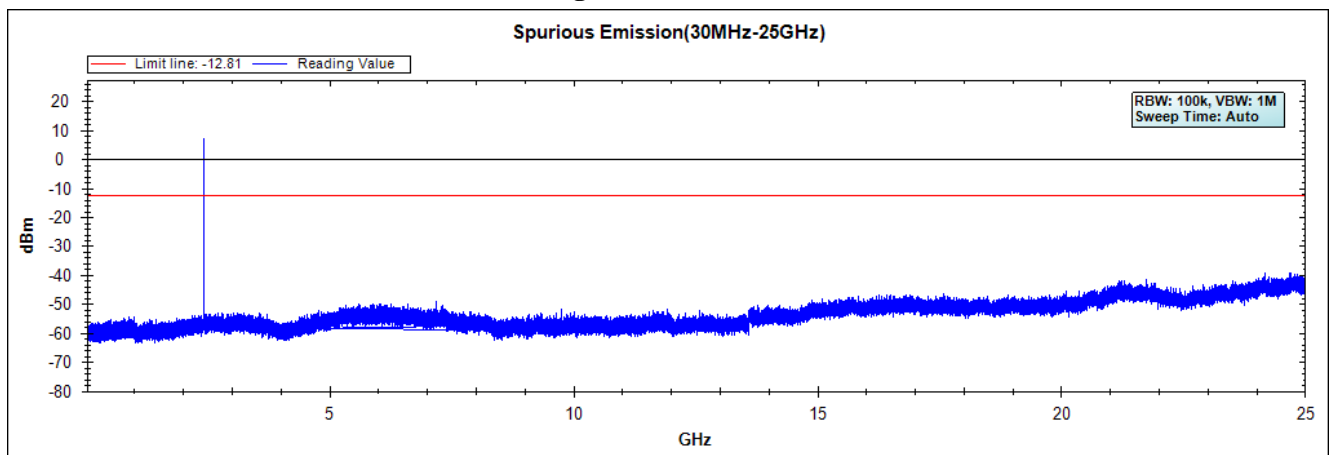
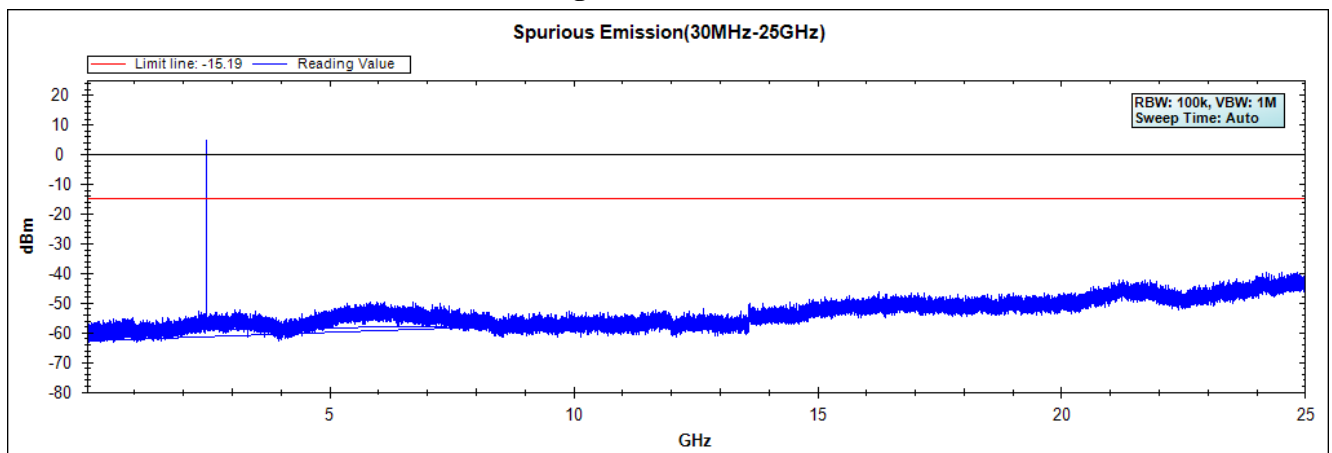


**Figure Channel 78:**



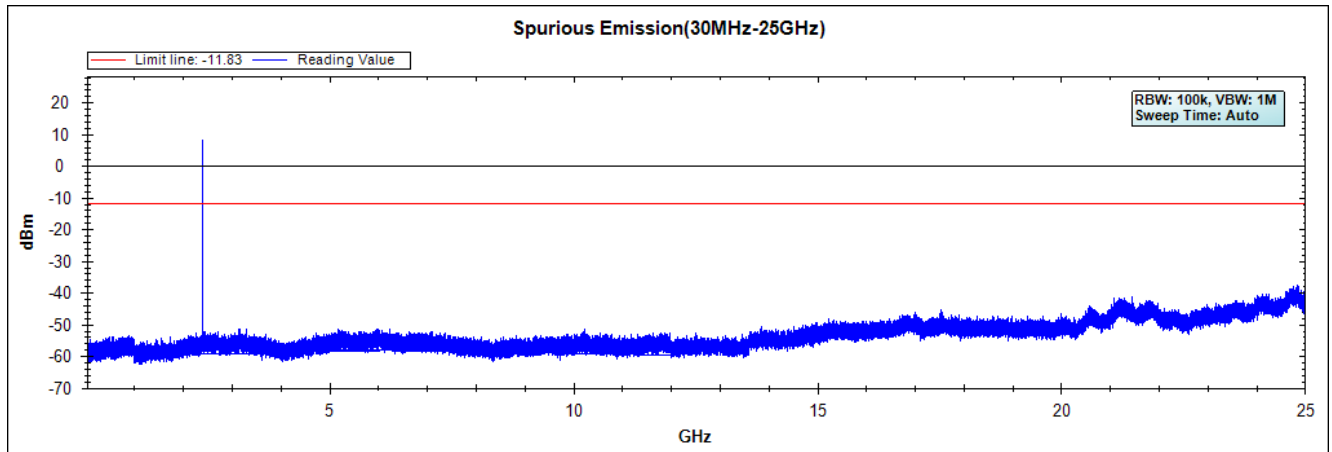
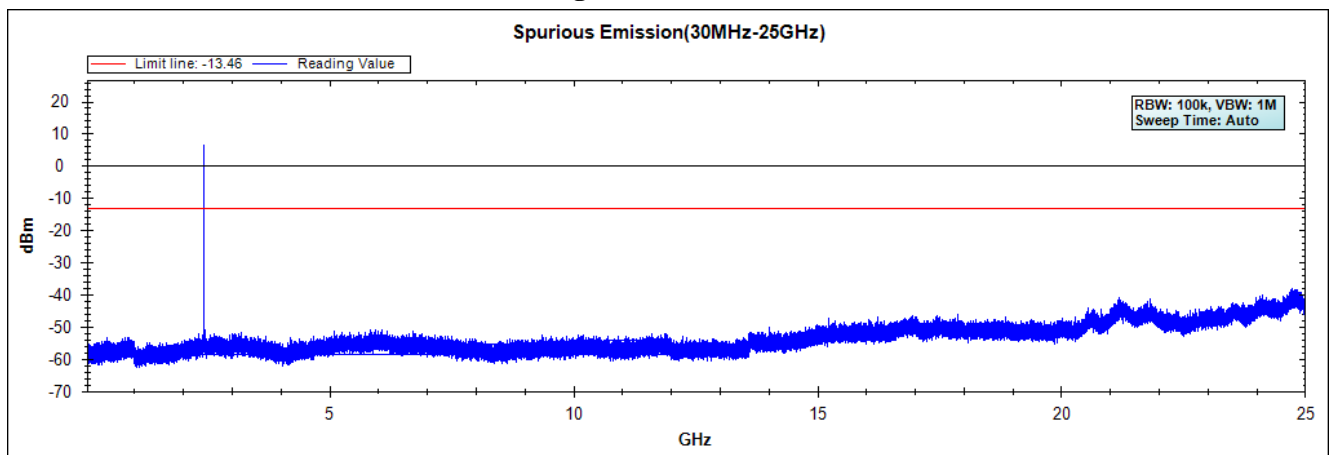
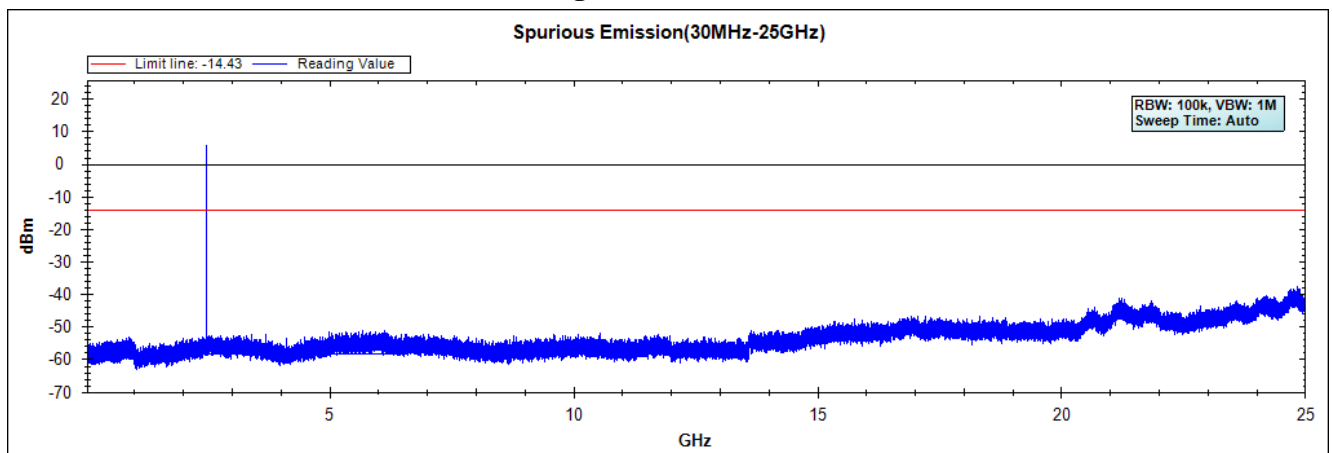
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : Bluetooth Headset  
Test Item : RF Antenna Conducted Test  
Test Site : No.3 OATS  
Test date : 2020/09/03  
Test Mode : Mode 2: Transmit - 2Mbps ( $\pi/4$ DQPSK)

**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 Site : No.3 OATS  
Test date : 2020/09/03  
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK)

**Figure Channel 00:****Figure Channel 39:****Figure Channel 78:**

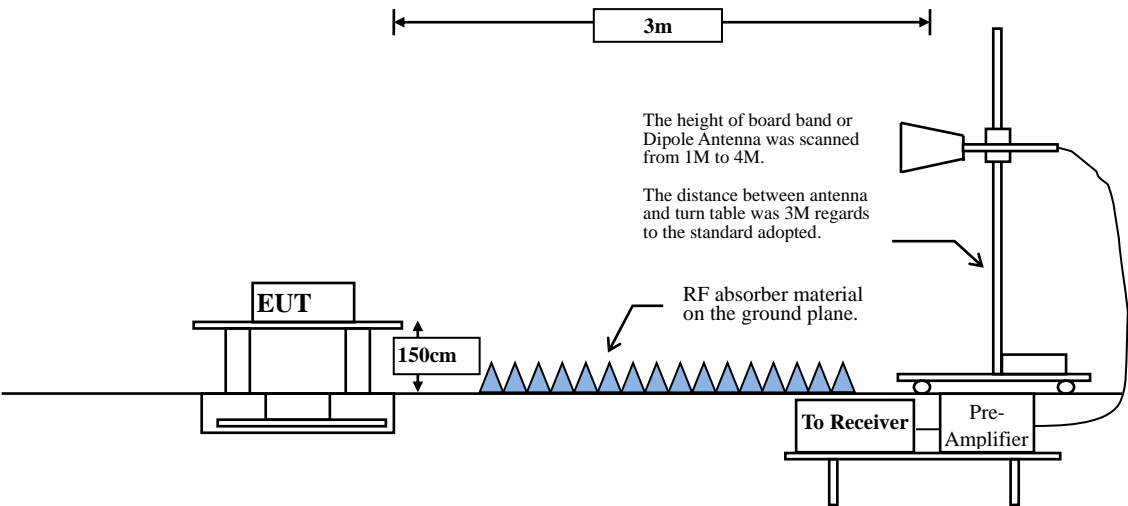
Note: The above test pattern is synthesized by multiple of the frequency range.

6. Band Edge

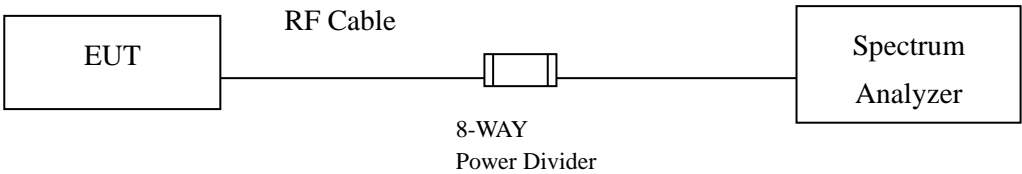
6.1. Test Setup

RF Radiated Measurement:

Above 1GHz



RF Conducted Measurement





## **6.2. Limit**

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. 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.

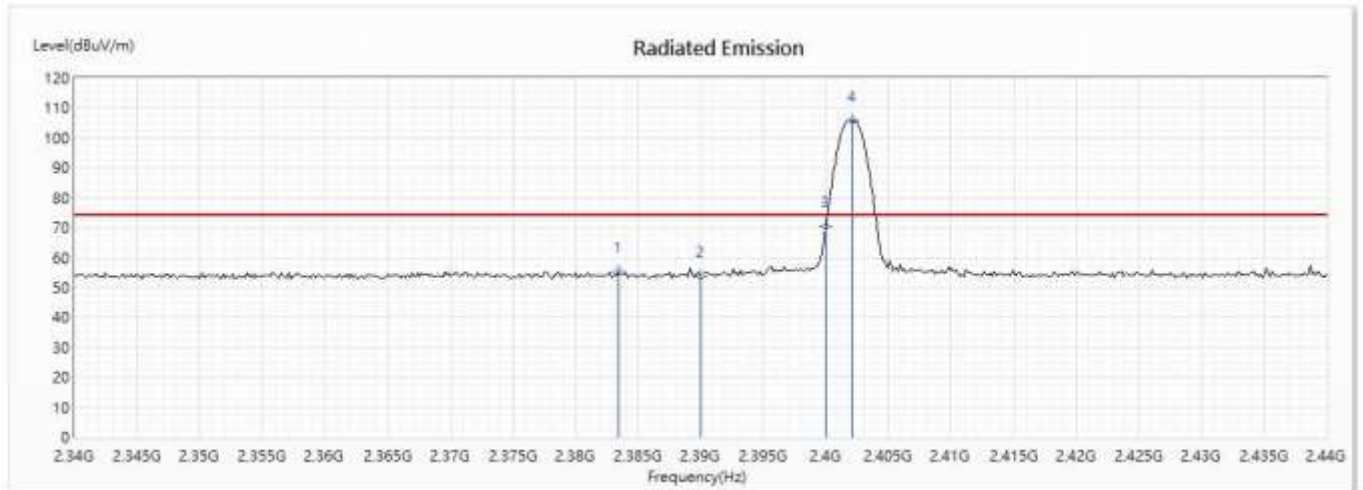
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

The bandwidth setting below 1GHz and above 1GHz on the field strength meter is 120 kHz and 1MHz, respectively.

#### 6.4. Test Result of Band Edge

Product : Bluetooth Headset  
 Test Item : Band Edge  
 Test date : 2020/09/02  
 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	2383.478	55.43	74.00	-18.57	41.41	14.02	PK
2	2390	53.82	74.00	-20.18	39.81	14.01	PK
3	2400	70.62	--	--	56.63	13.99	PK
! 4	2402.174	105.58	--	--	91.60	13.98	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. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

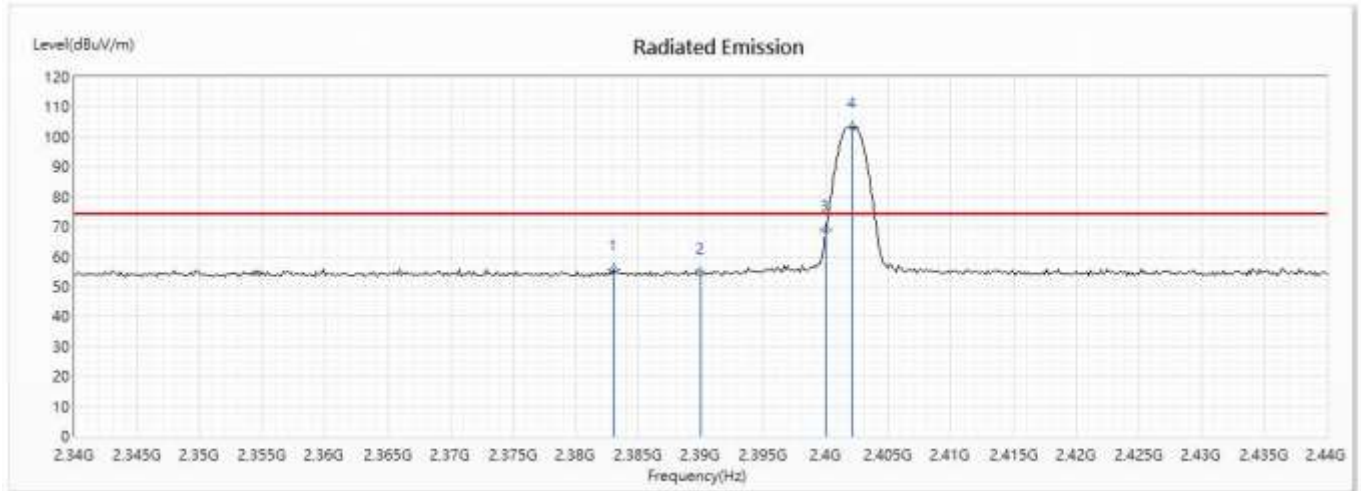
Channel No.	Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Measurement (dBμV/m)	Margin (dB)	Limit (dBuV/m)
00 (Average)	2383.478	55.43	-30.752	24.678	-29.322	54.000
00 (Average)	2390	53.82	-30.752	23.068	-30.932	54.000
00 (Average)	2400	70.62	-30.752	39.868	--	--
00 (Average)	2402.174	105.58	-30.752	74.828	--	--

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 : 2020/09/02  
 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	2383.043	55.80	74.00	-18.20	41.78	14.02	PK
2	2390	54.64	74.00	-19.36	40.63	14.01	PK
3	2400	68.64	--	--	54.65	13.99	PK
! 4	2402.174	103.33	--	--	89.35	13.98	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. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

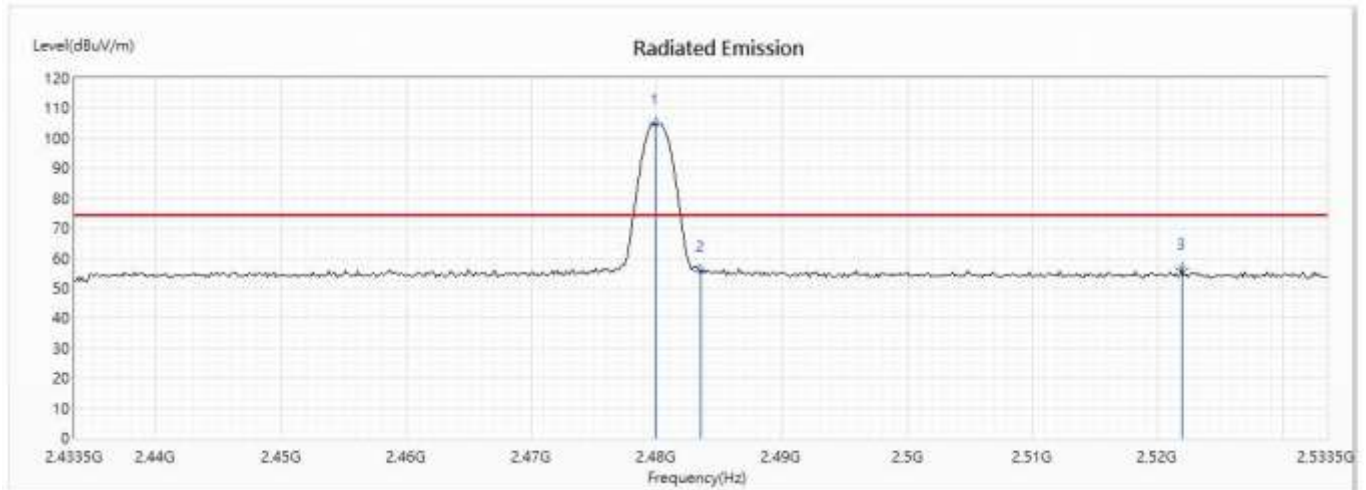
Channel No.	Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Measurement (dBμV/m)	Margin (dB)	Limit (dBuV/m)
00 (Average)	2383.043	55.8	-30.752	25.048	-28.952	54.000
00 (Average)	2390	54.64	-30.752	23.888	-30.112	54.000
00 (Average)	2400	68.64	-30.752	37.888	--	--
00 (Average)	2402.174	103.33	-30.752	72.578	--	--

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 : 2020/09/02  
 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	104.79	--	--	90.96	13.83	PK
2	2483.5	55.69	74.00	-18.31	41.88	13.81	PK
3	2521.906	56.47	74.00	-17.53	42.84	13.63	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. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

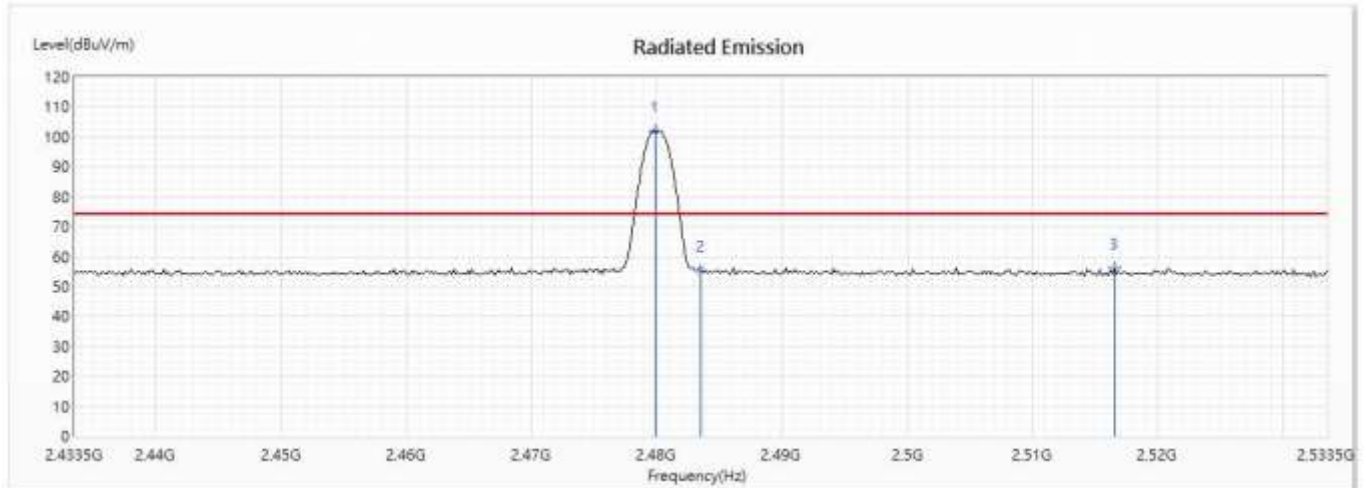
Channel No.	Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Measurement (dBμV/m)	Margin (dB)	Limit (dBuV/m)
78 (Average)	2479.877	104.79	-30.752	74.038	--	--
78 (Average)	2483.5	55.69	-30.752	24.938	-29.062	54.000
78 (Average)	2521.906	56.47	-30.752	25.718	-28.282	54.000

#### 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 : 2020/09/02  
 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	101.94	--	--	88.11	13.83	PK
2	2483.5	55.20	74.00	-18.80	41.39	13.81	PK
3	2516.543	55.99	74.00	-18.01	42.33	13.66	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. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

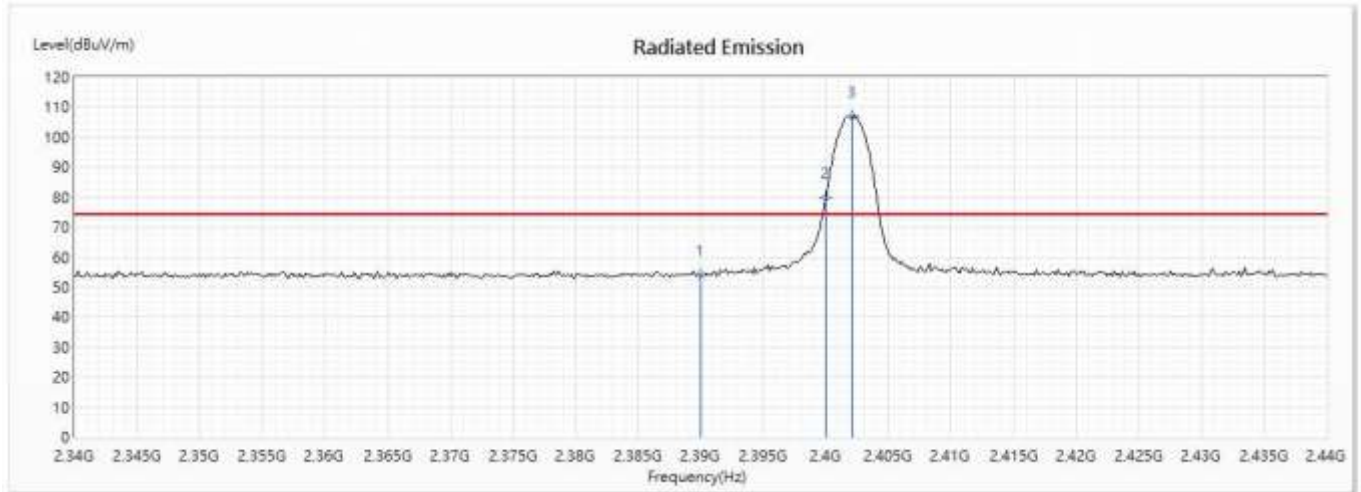
Channel No.	Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Measurement (dBμV/m)	Margin (dB)	Limit (dBuV/m)
78 (Average)	2479.877	101.94	-30.752	71.188	--	--
78 (Average)	2483.5	55.2	-30.752	24.448	-29.552	54.000
78 (Average)	2516.543	55.99	-30.752	25.238	-28.762	54.000

#### 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 : 2020/09/02  
 Test Mode : Mode 2: Transmit - 2Mbps ( $\pi/4$ DQPSK) (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	54.24	74.00	-19.76	40.23	14.01	PK
! 2	2400	80.03	--	--	66.04	13.99	PK
! 3	2402.174	107.01	--	--	93.03	13.98	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. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Channel No.	Frequency (MHz)	Peak Measurement (dB $\mu$ V/m)	Duty Cycle Factor (dB)	Measurement (dB $\mu$ V/m)	Margin (dB)	Limit (dBuV/m)
00 (Average)	2390	54.24	-30.752	23.488	-30.512	54.000
00 (Average)	2400	80.03	-30.752	49.278	--	--
00 (Average)	2402.174	107.01	-30.752	76.258	--	--

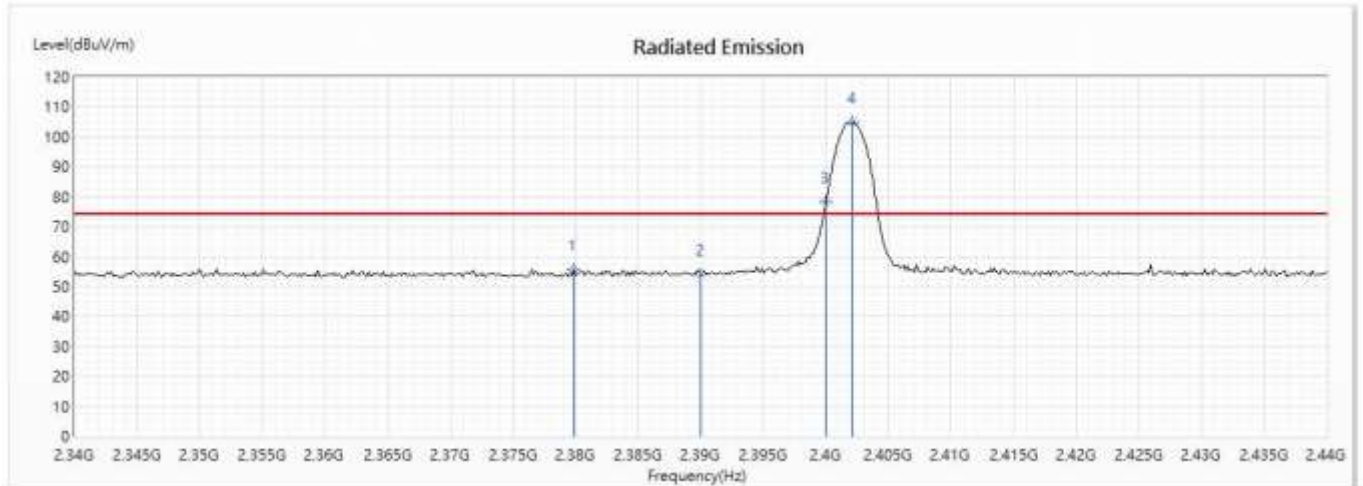
#### Note:

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 : 2020/09/02  
 Test Mode : Mode 2: Transmit - 2Mbps ( $\pi/4$ DQPSK) (2402MHz)

### Vertical



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2379.855	55.83	74.00	-18.17	41.81	14.02	PK
2	2390	54.14	74.00	-19.86	40.13	14.01	PK
! 3	2400	78.24	--	--	64.25	13.99	PK
! 4	2402.174	104.68	--	--	90.70	13.98	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. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

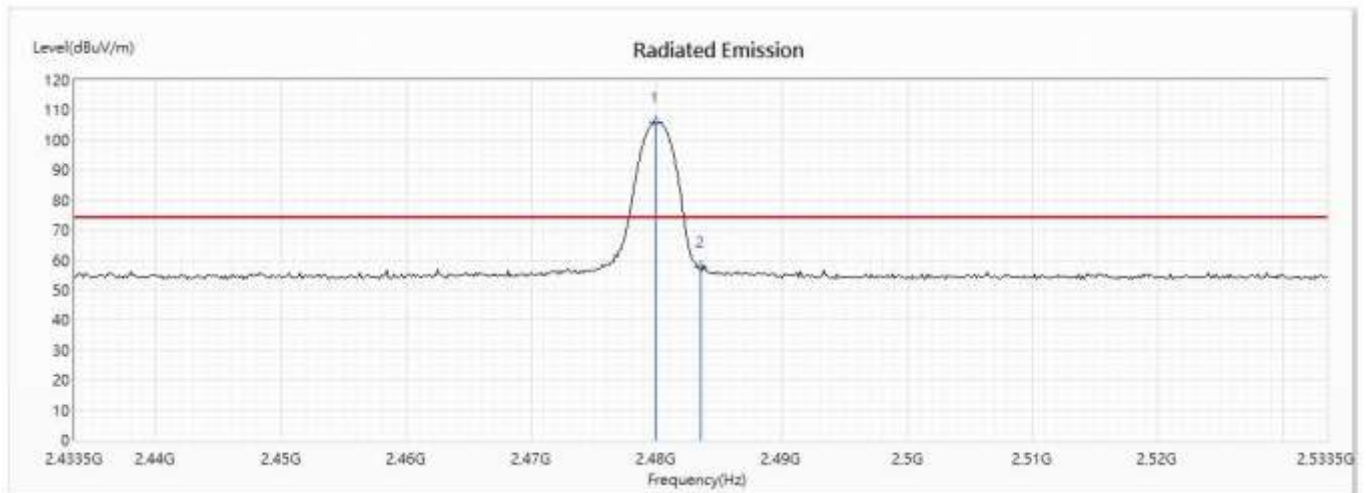
Channel No.	Frequency (MHz)	Peak Measurement (dB $\mu$ V/m)	Duty Cycle Factor (dB)	Measurement (dB $\mu$ V/m)	Margin (dB)	Limit (dBuV/m)
00 (Average)	2379.855	55.83	-30.752	25.078	-28.922	54.000
00 (Average)	2390	54.14	-30.752	23.388	-30.612	54.000
00 (Average)	2400	78.24	-30.752	47.488	--	--
00 (Average)	2402.174	104.68	-30.752	73.928	--	--

#### 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 : 2020/09/02  
 Test Mode : Mode 2: Transmit - 2Mbps ( $\pi/4$ QPSK) (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	105.90	--	--	92.07	13.83	PK
2	2483.5	57.61	74.00	-16.39	43.80	13.81	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. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Channel No.	Frequency (MHz)	Peak Measurement (dB $\mu$ V/m)	Duty Cycle Factor (dB)	Measurement (dB $\mu$ V/m)	Margin (dB)	Limit (dBuV/m)
78 (Average)	2479.877	105.9	-30.752	75.148	--	--
78 (Average)	2483.5	57.61	-30.752	26.858	-27.142	54.000

#### Note:

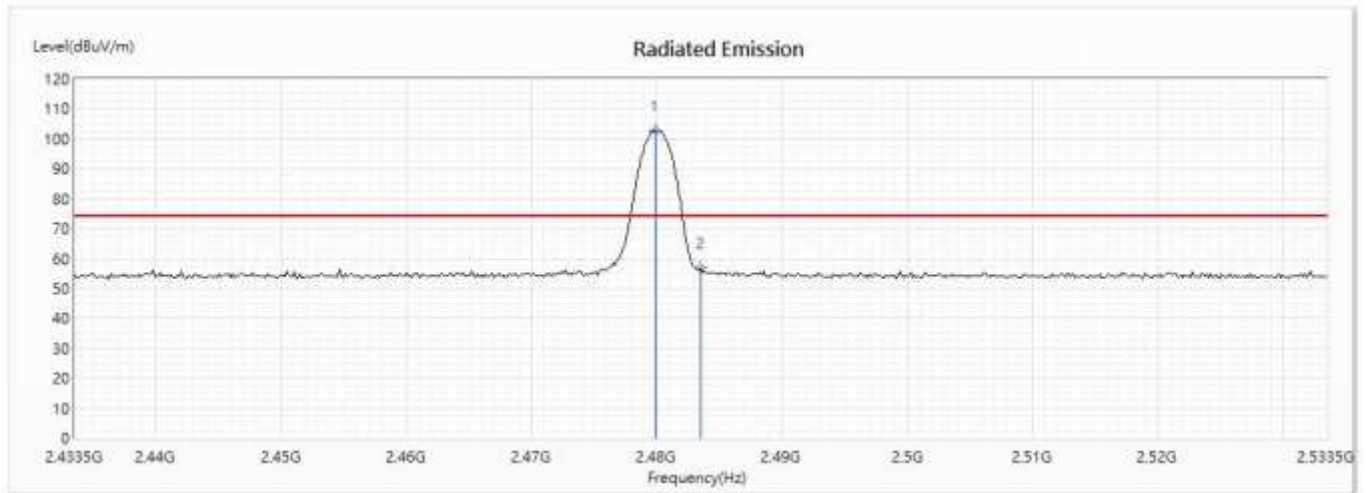
1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 11.

Product : Bluetooth Headset



Test Item : Band Edge  
 Test Site : No.3 OATS  
 Test date : 2020/09/02  
 Test Mode : Mode 2: Transmit - 2Mbps ( $\pi/4$ DQPSK) (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	102.66	--	--	88.83	13.83	PK
2	2483.5	56.75	74.00	-17.25	42.94	13.81	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. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

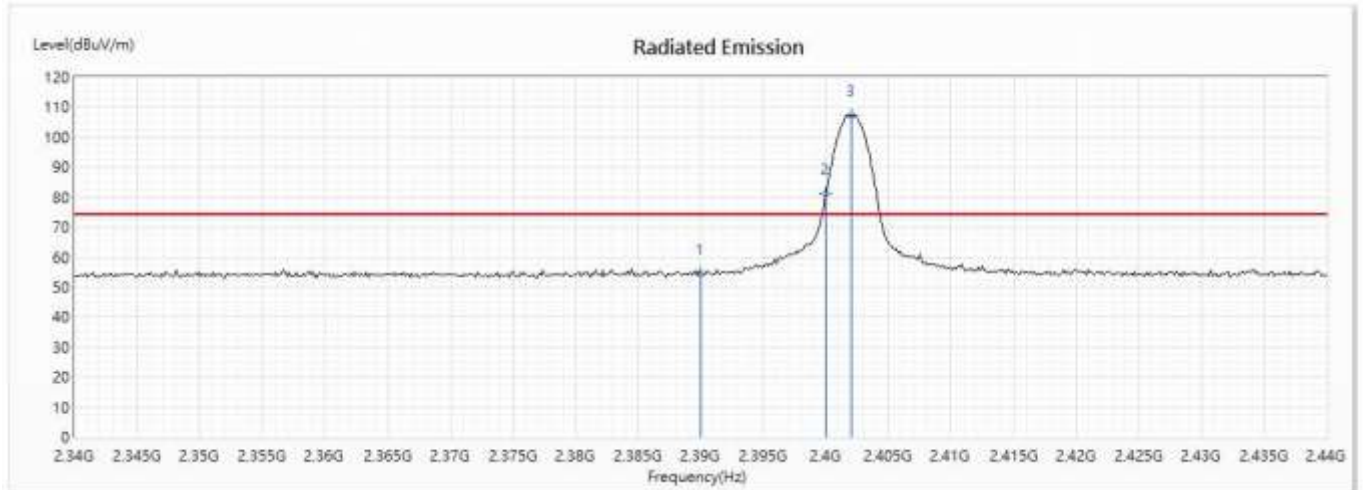
Channel No.	Frequency (MHz)	Peak Measurement (dB $\mu$ V/m)	Duty Cycle Factor (dB)	Measurement (dB $\mu$ V/m)	Margin (dB)	Limit (dBuV/m)
78 (Average)	2479.877	96.997	-30.752	66.245	--	--
78 (Average)	2483.5	50.279	-30.752	19.527	-34.473	54.000

#### 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 : 2020/09/02  
 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	54.66	74.00	-19.34	40.65	14.01	PK
! 2	2400	81.08	--	--	67.09	13.99	PK
! 3	2402.029	107.34	--	--	93.35	13.99	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. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

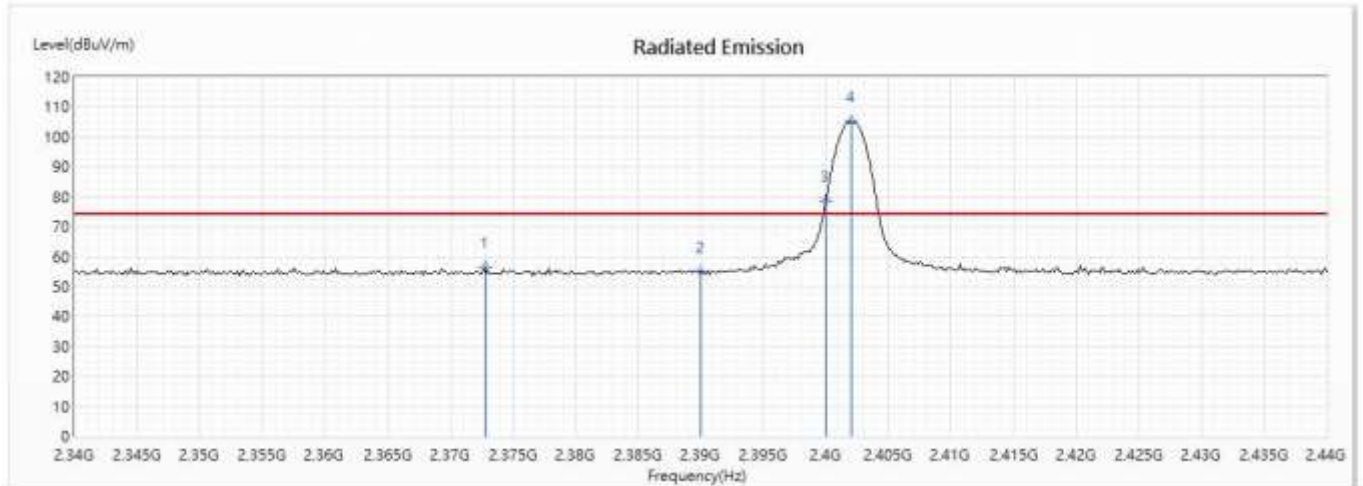
Channel No.	Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Measurement (dBμV/m)	Margin (dB)	Limit (dBuV/m)
00 (Average)	2390	54.66	-30.752	23.908	-30.092	54.000
00 (Average)	2400	81.08	-30.752	50.328	--	--
00 (Average)	2402.029	107.34	-30.752	76.588	--	--

#### 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 : 2020/09/02  
 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	2372.754	56.39	74.00	-17.61	42.36	14.03	PK
2	2390	54.98	74.00	-19.02	40.97	14.01	PK
! 3	2400	78.83	--	--	64.84	13.99	PK
! 4	2402.029	105.08	--	--	91.09	13.99	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. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

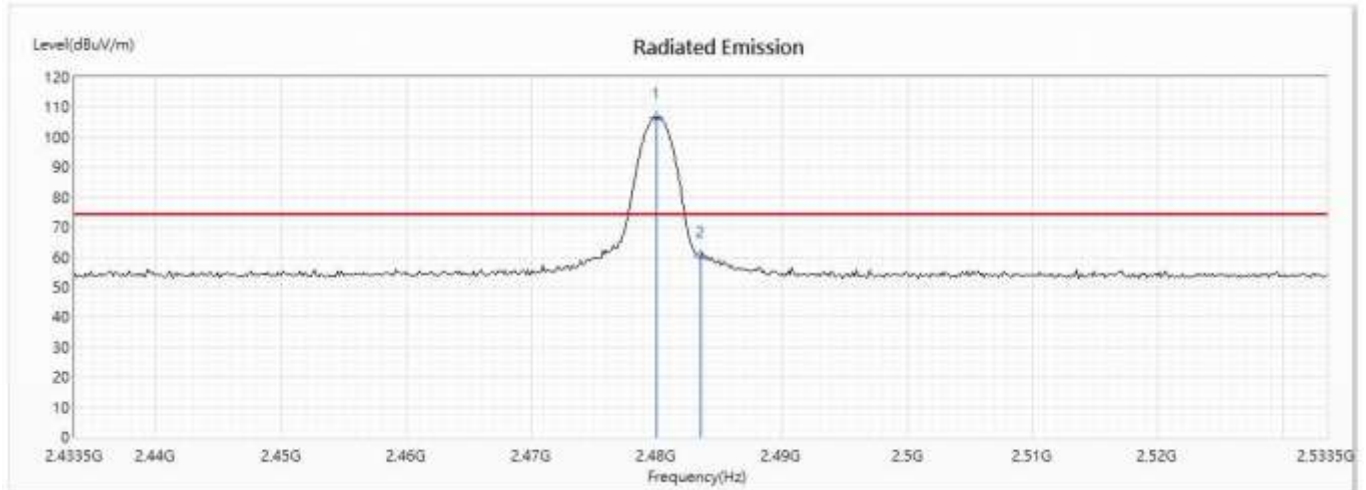
Channel No.	Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Measurement (dBμV/m)	Margin (dB)	Limit (dBuV/m)
00 (Average)	2372.754	56.39	-30.752	25.638	-28.362	54.000
00 (Average)	2390	54.98	-30.752	24.228	-29.772	54.000
00 (Average)	2400	78.83	-30.752	48.078	--	--
00 (Average)	2402.029	105.08	-30.752	74.328	--	--

#### 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 : 2020/09/02  
 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	106.48	--	--	92.65	13.83	PK
2	2483.5	60.25	74.00	-13.75	46.44	13.81	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. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

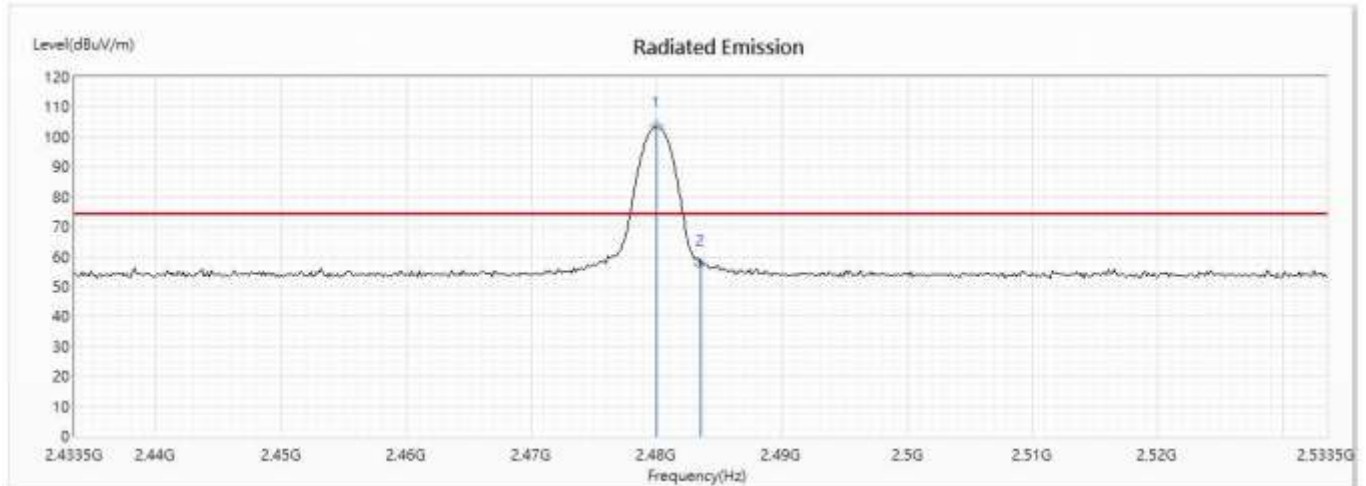
Channel No.	Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Measurement (dBμV/m)	Margin (dB)	Limit (dBuV/m)
78 (Average)	2480.022	106.48	-30.752	75.728	--	--
78 (Average)	2483.5	60.25	-30.752	29.498	-24.502	54.000

#### 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 : 2020/09/02  
 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	103.53	--	--	89.70	13.83	PK
2	2483.5	57.51	74.00	-16.49	43.70	13.81	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. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Channel No.	Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Measurement (dBμV/m)	Margin (dB)	Limit (dBuV/m)
78 (Average)	2480.022	103.53	-30.752	72.778	--	--
78 (Average)	2483.5	57.51	-30.752	26.758	-27.242	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 : 2020/09/02  
 Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(Hopping off)

Measurement Level	Result
$\Delta$ (dB)	
> 20	PASS

Figure Channel 00 Hopping:

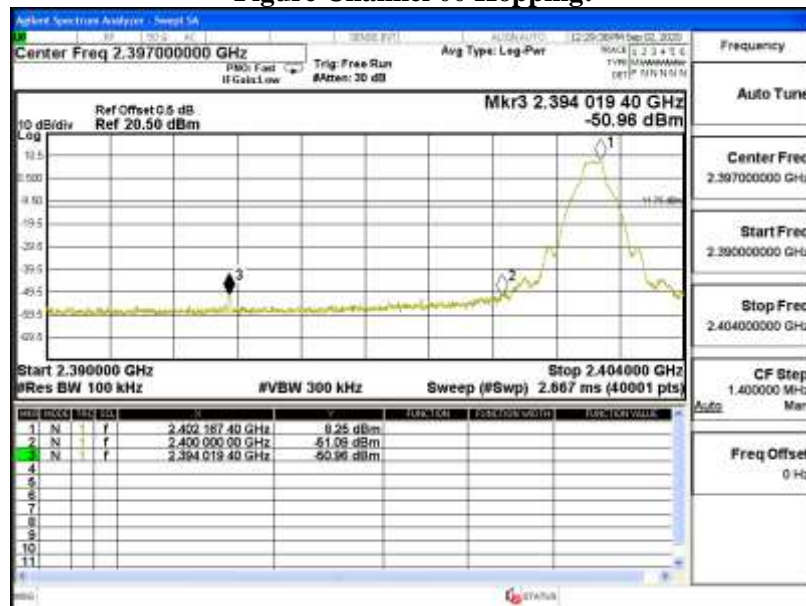
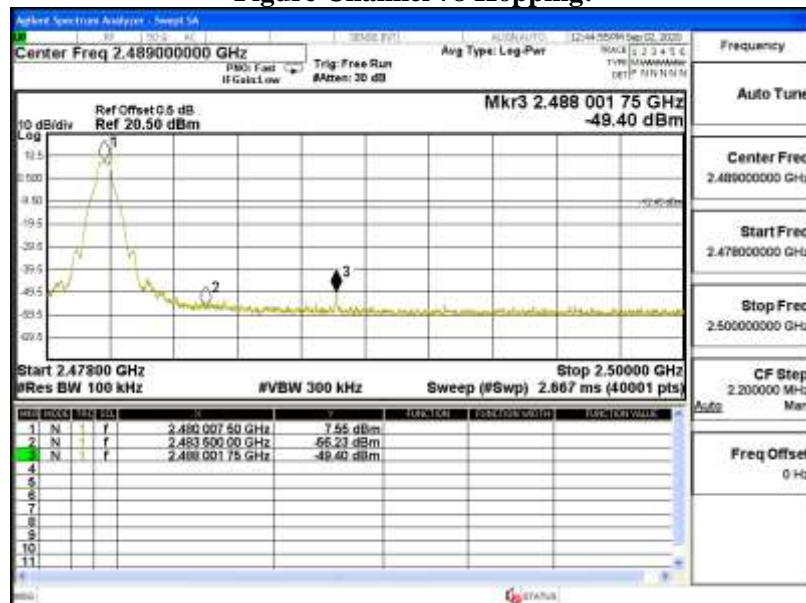


Figure Channel 78 Hopping:





Product : Bluetooth Headset  
 Test Item : Band Edge  
 Test date : 2020/09/02  
 Test Mode : Mode 2: Transmit - 2Mbps ( $\pi/4$ DQPSK)(Hopping off)

Measurement Level $\Delta$ (dB)	Result
> 20	PASS

Figure Channel 00 Hopping:

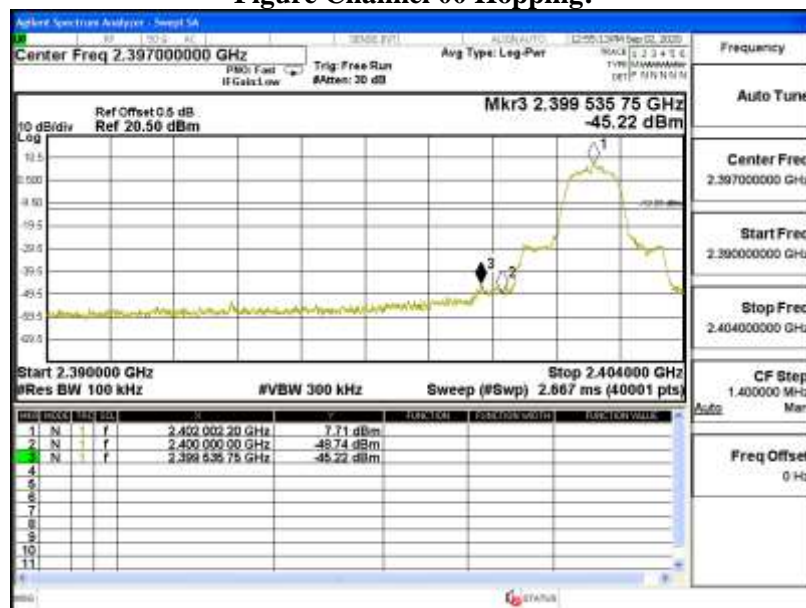
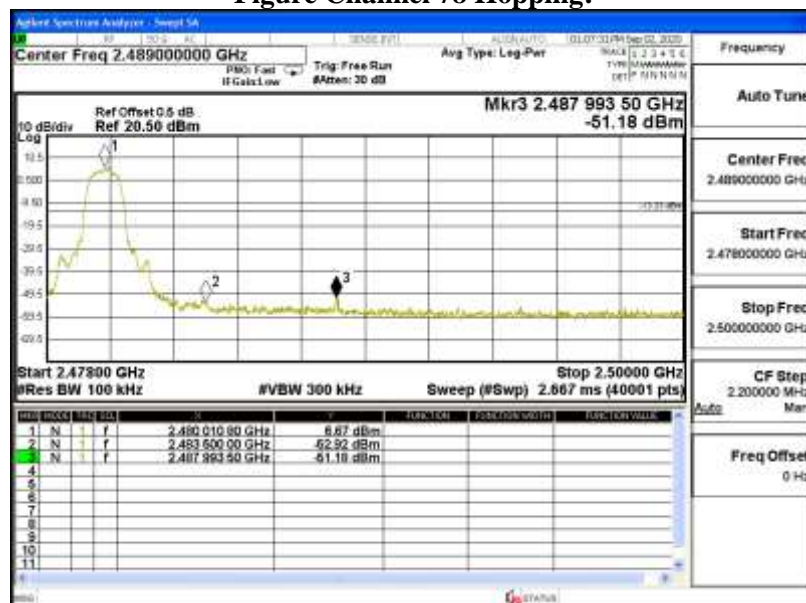


Figure Channel 78 Hopping:



Product : Bluetooth Headset  
 Test Item : Band Edge  
 Test date : 2020/09/02  
 Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (Hopping off)

Measurement Level	Result
$\Delta$ (dB)	
> 20	PASS

Figure Channel 00 Hopping:

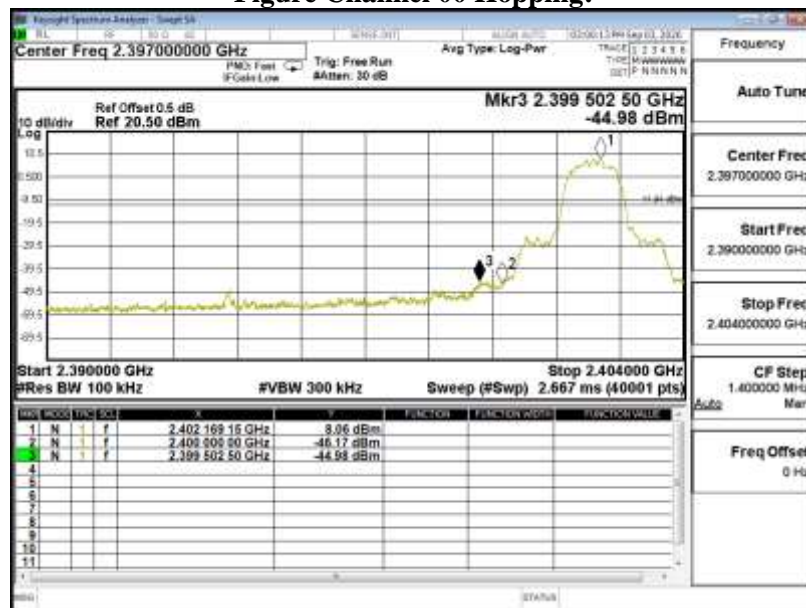
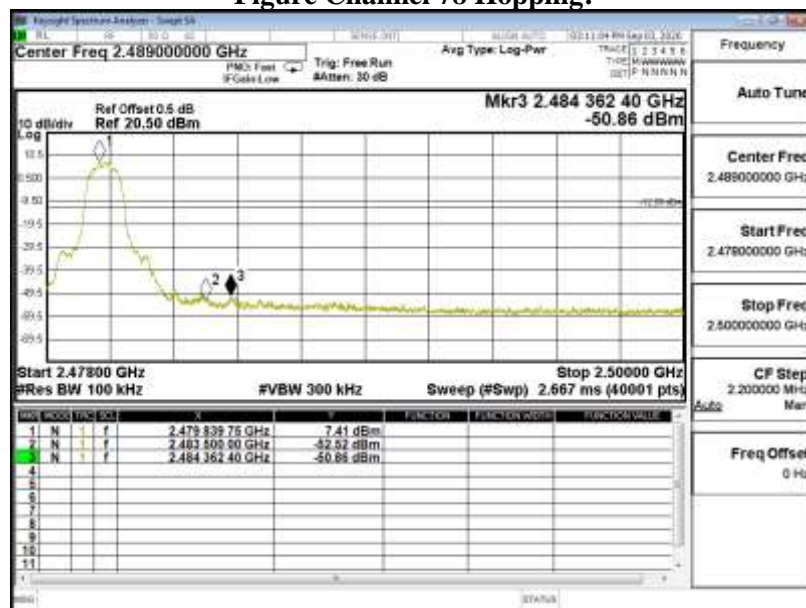


Figure Channel 78 Hopping:





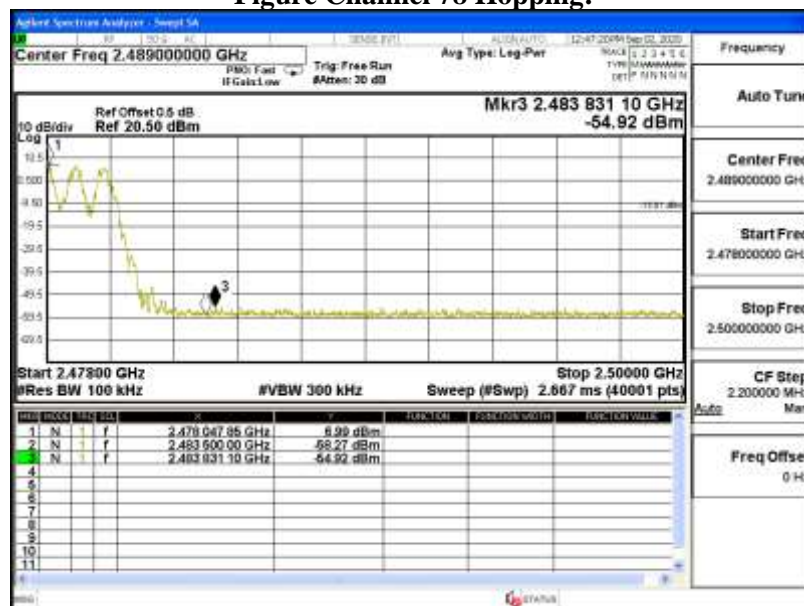
Product : Bluetooth Headset  
 Test Item : Band Edge  
 Test date : 2020/09/02  
 Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(Hopping on)

Measurement Level	Result
$\Delta$ (dB)	
> 20	PASS

Figure Channel 00 Hopping:



Figure Channel 78 Hopping:



Product : Bluetooth Headset  
 Test Item : Band Edge  
 Test date : 2020/09/02  
 Test Mode : Mode 2: Transmit - 2Mbps ( $\pi/4$ DQPSK)(Hopping on)

Measurement Level $\Delta$ (dB)	Result
> 20	PASS

Figure Channel 00 Hopping:

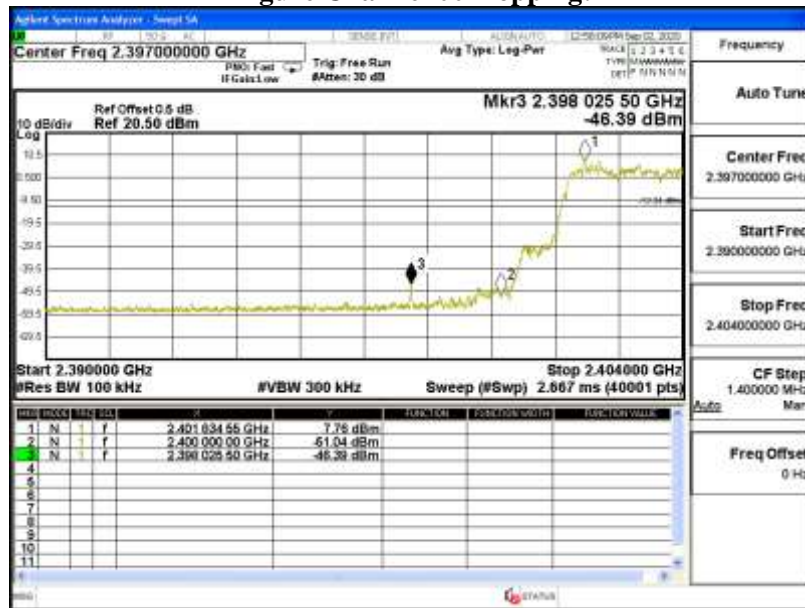
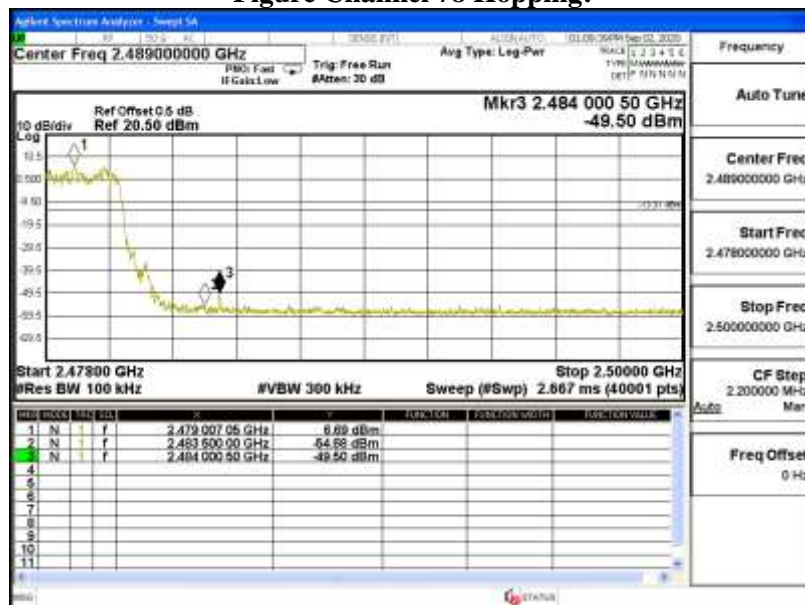


Figure Channel 78 Hopping:



Product : Bluetooth Headset  
 Test Item : Band Edge  
 Test date : 2020/09/03  
 Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (Hopping on)

Measurement Level $\Delta$ (dB)	Result
> 20	PASS

Figure Channel 00 Hopping:

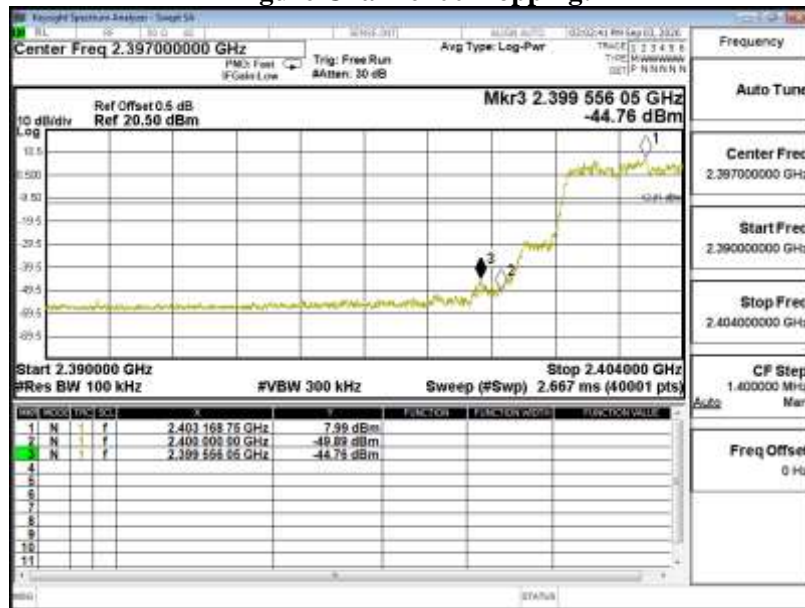
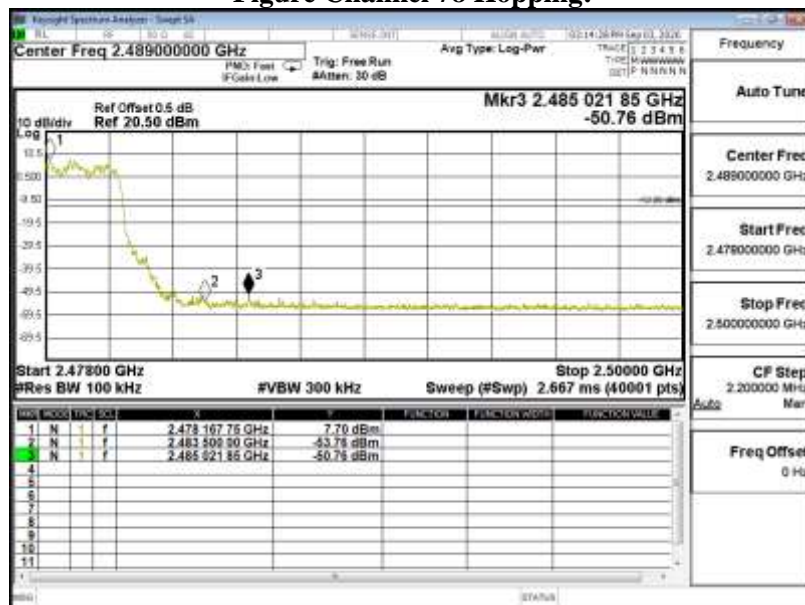
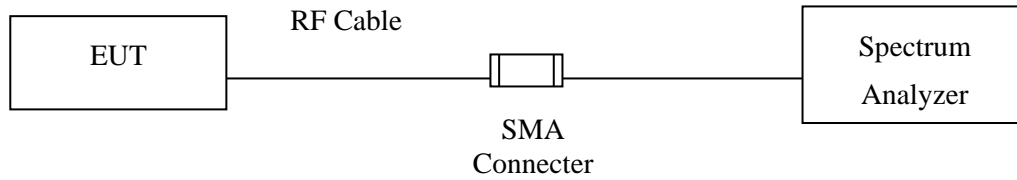


Figure Channel 78 Hopping:



## 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

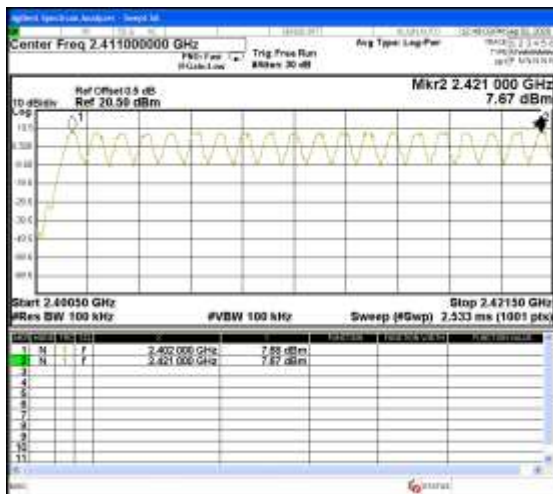
Tested according to FHSS test procedure of KDB558074 section 9 (b for compliance to FCC 47CFR 15.247 requirements.

## 7.4. Test Result of Channel Number

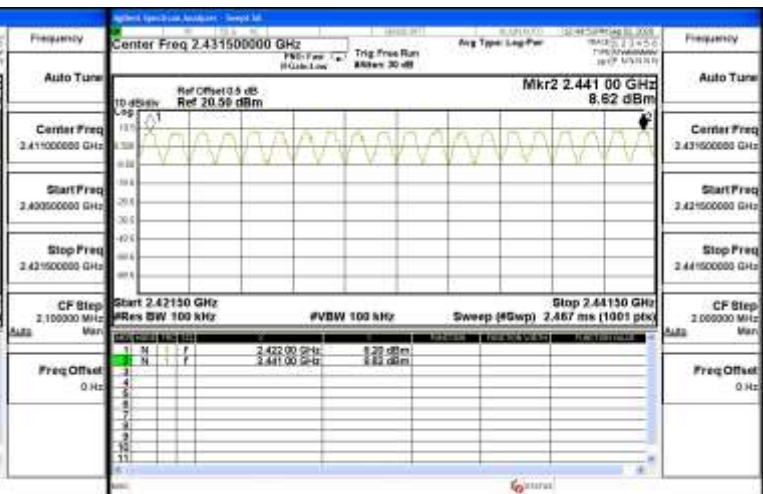
Product : Bluetooth Headset  
 Test Item : Channel Number  
 Test date : 2020/09/02  
 Test Mode : Mode 1: Transmit - 1Mbps (GFSK)

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

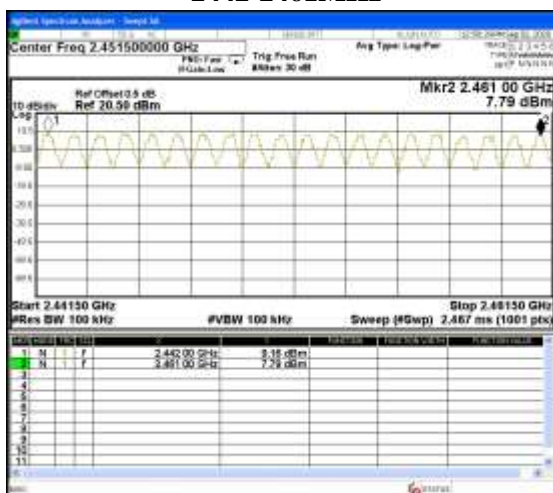
2402-2421MHz



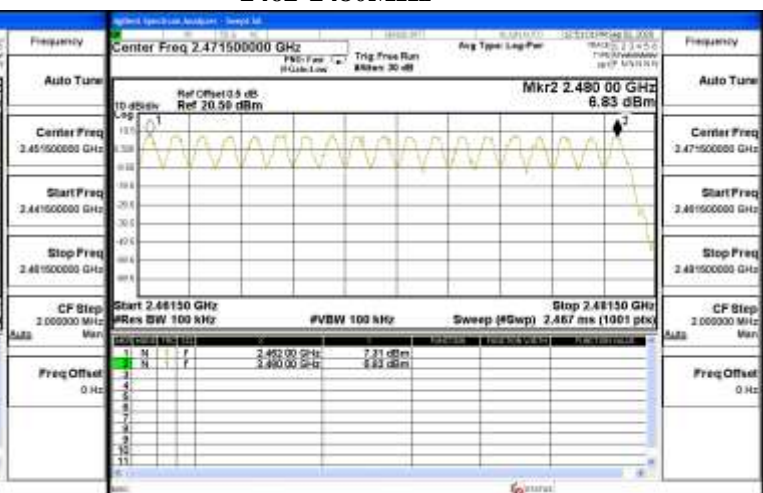
2422-2441MHz



2442-2461MHz



2462-2480MHz





Product : Bluetooth Headset  
 Test Item : Channel Number  
 Test date : 2020/09/02  
 Test Mode : Mode 2: Transmit - 2Mbps ( $\pi/4$ DQPSK)

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

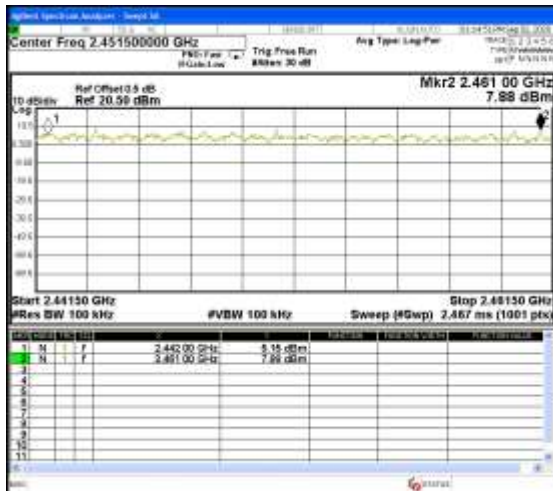
2402-2421MHz



2422-2441MHz



2442-2461MHz



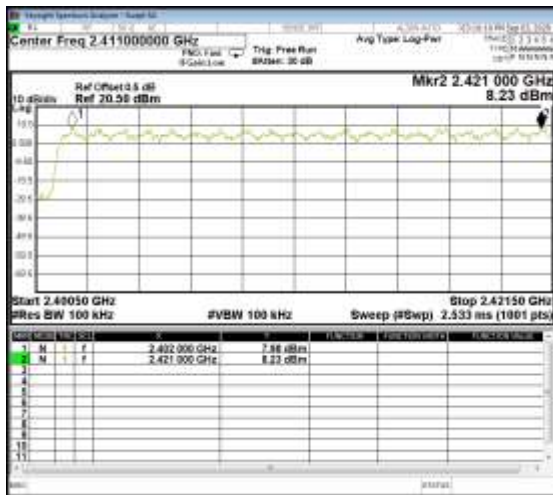
2462-2480MHz



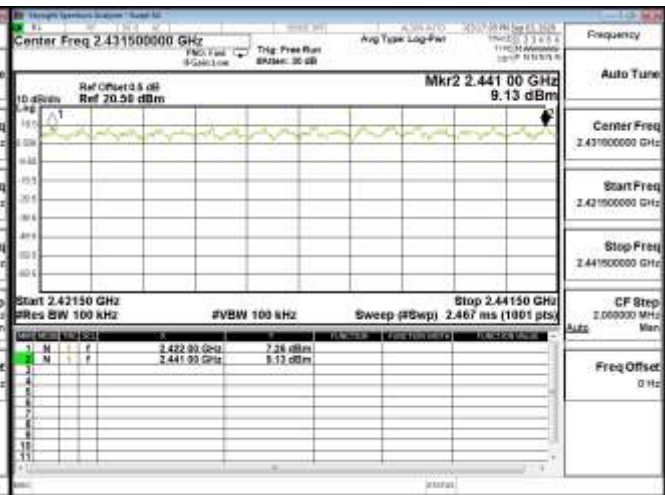
Product : Bluetooth Headset  
 Test Item : Channel Number  
 Test date : 2020/09/03  
 Test Mode : Mode 3: Transmit - 3Mbps (8DPSK)

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

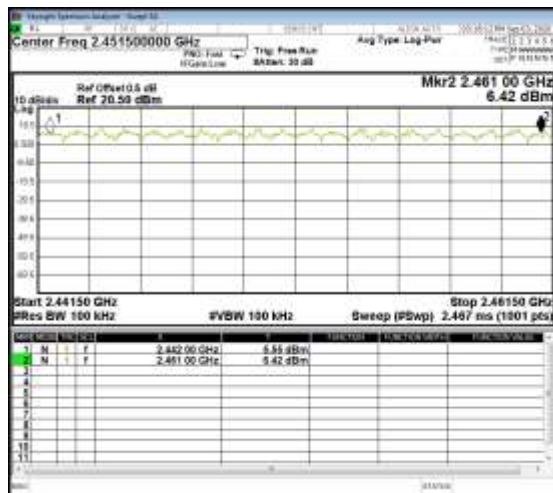
2402-2421MHz



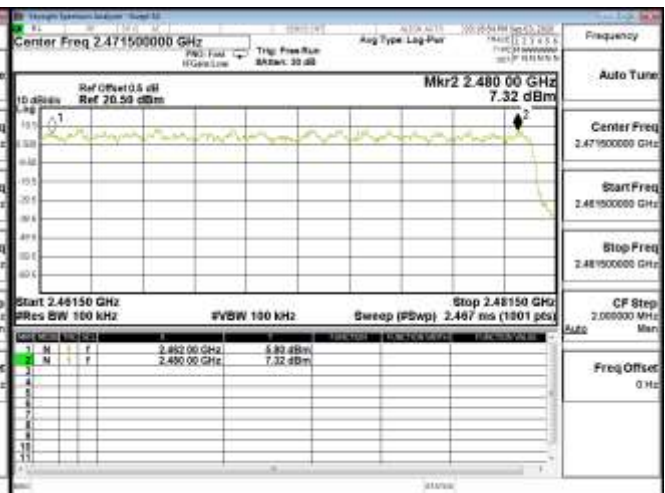
2422-2441MHz



2442-2461MHz

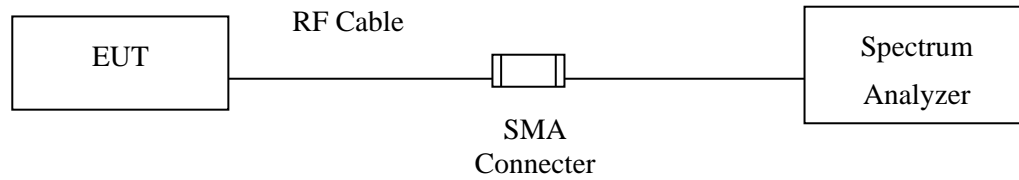


2462-2480MHz



## 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).



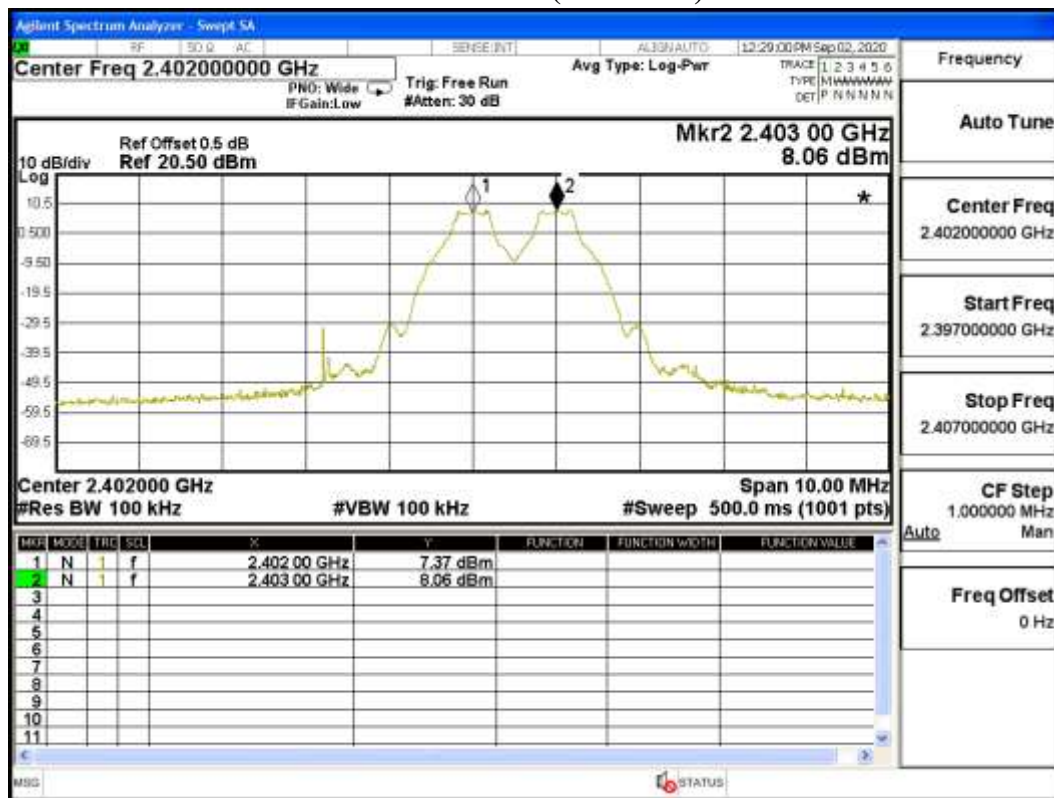
#### 8.4. Test Result of Channel Separation

Product : Bluetooth Headset  
 Test Item : Channel Separation  
 Test date : 2020/09/02  
 Test Mode : Mode 1: Transmit - 1Mbps (GFSK)

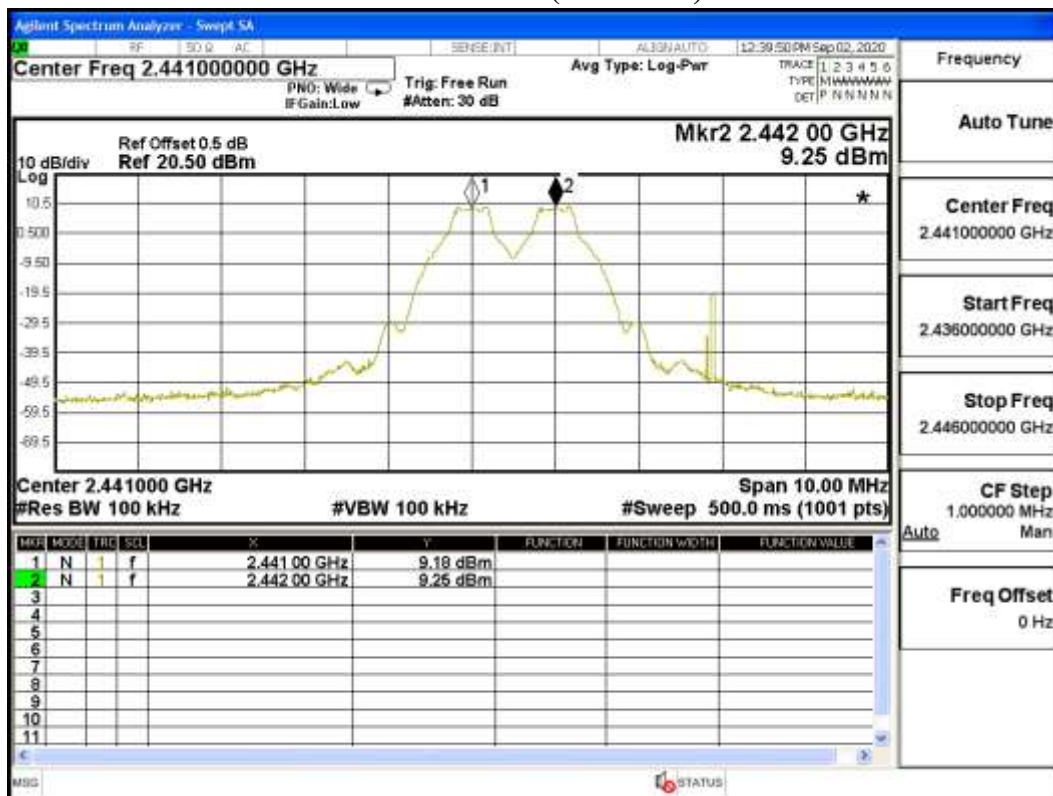
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Limit	Limit of (2/3)*20dB	Result
			(kHz)	Bandwidth (kHz)	
00	2402	1000	>25 kHz	644.0	Pass
39	2441	1000	>25 kHz	642.0	Pass
78	2480	1000	>25 kHz	644.0	Pass

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

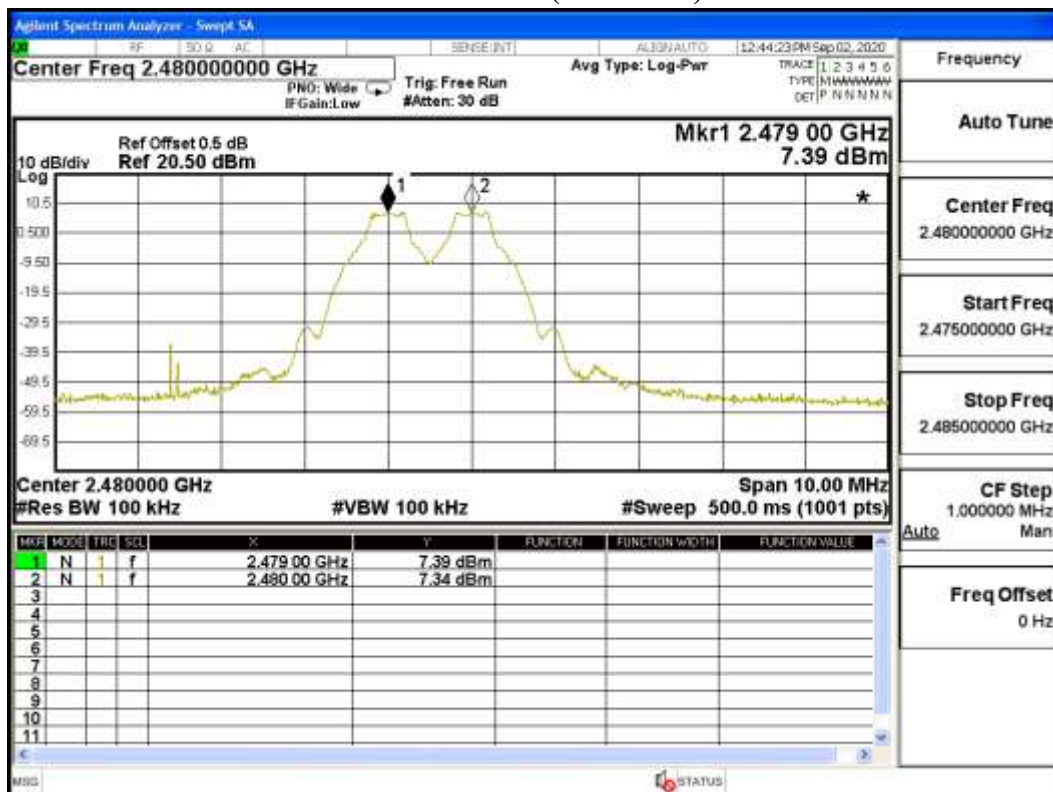
#### Channel 00 (2402MHz)



## Channel 39 (2441MHz)



## Channel 78 (2480MHz)

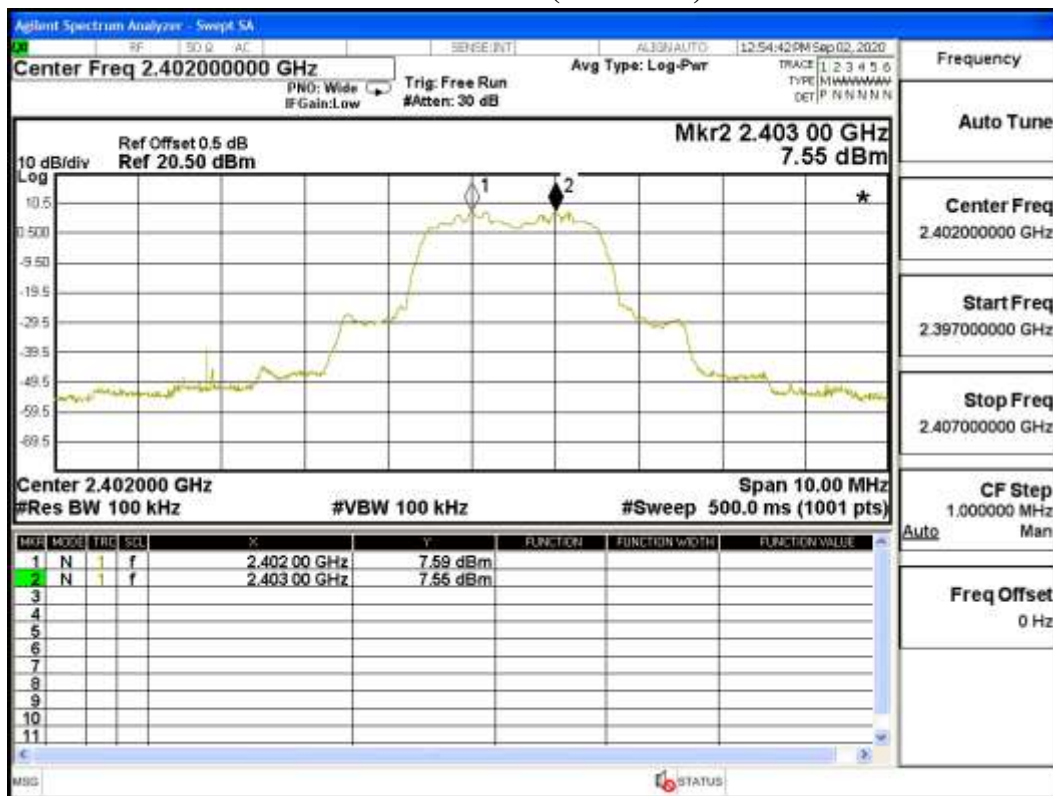


Product : Bluetooth Headset  
 Test Item : Channel Separation  
 Test date : 2020/09/02  
 Test Mode : Mode 2: Transmit - 2Mbps ( $\pi/4$ DQPSK)

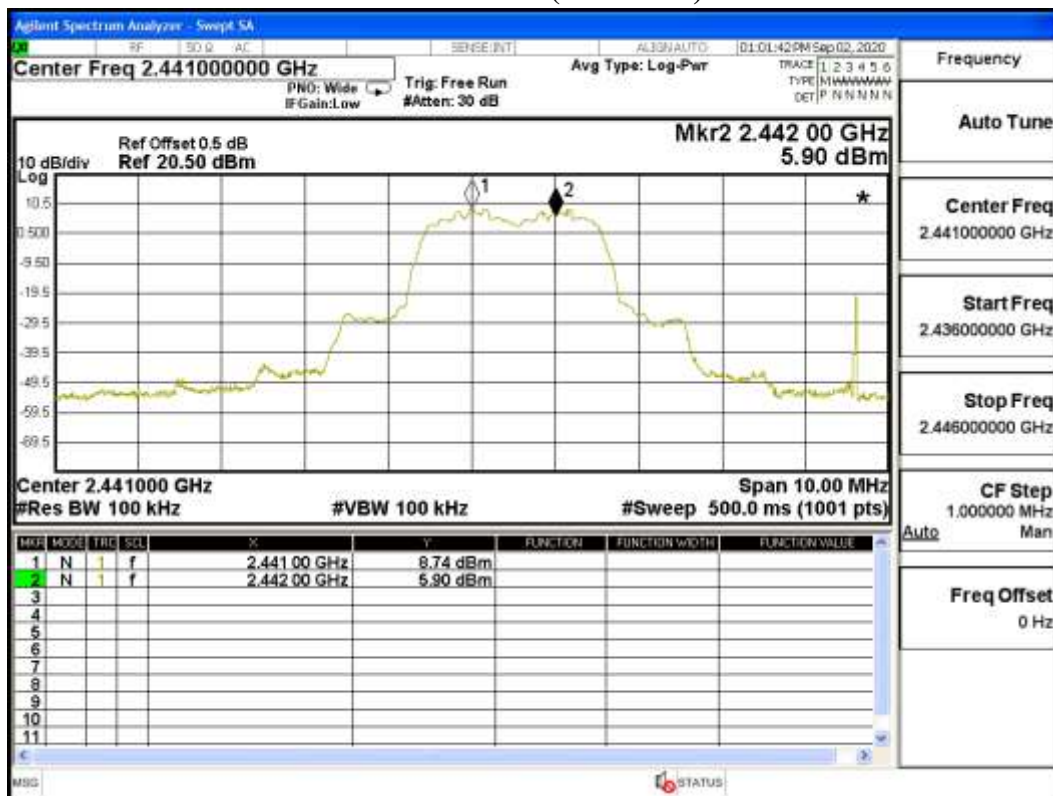
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Limit	Limit of (2/3)*20dB	Result
			(kHz)	Bandwidth (kHz)	
00	2402	1000	>25 kHz	892.0	Pass
39	2441	1000	>25 kHz	890.0	Pass
78	2480	1000	>25 kHz	892.0	Pass

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

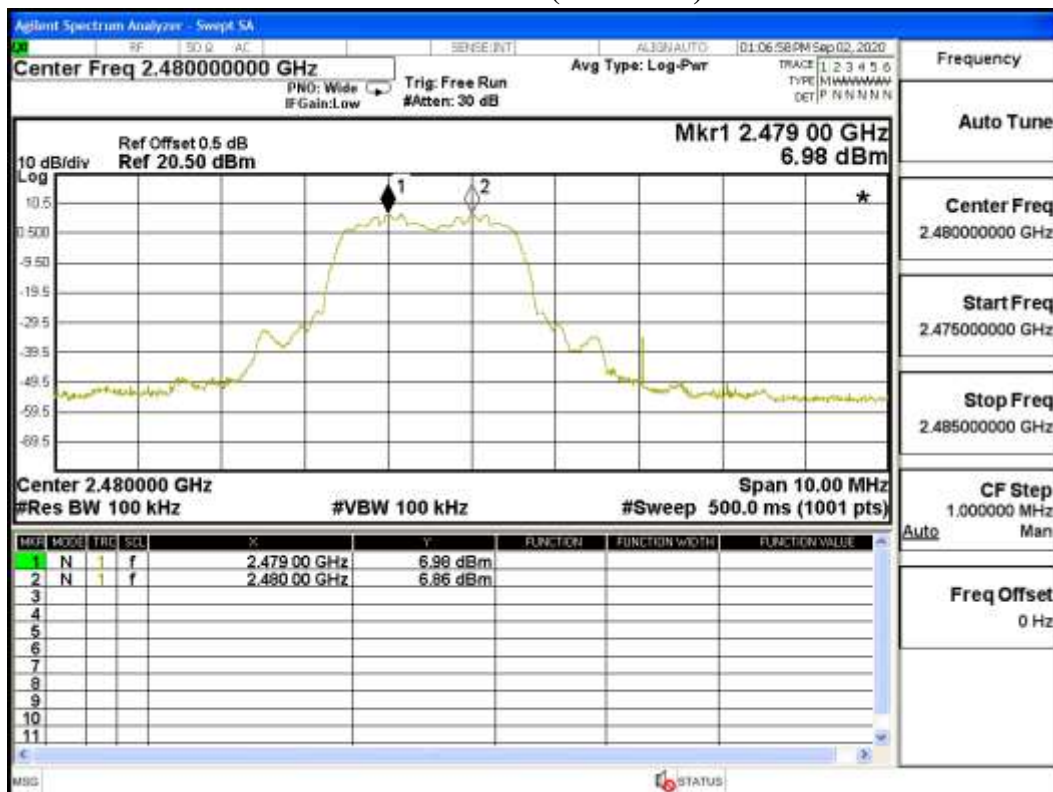
### Channel 00 (2402MHz)



## Channel 39 (2441MHz)



## Channel 78 (2480MHz)

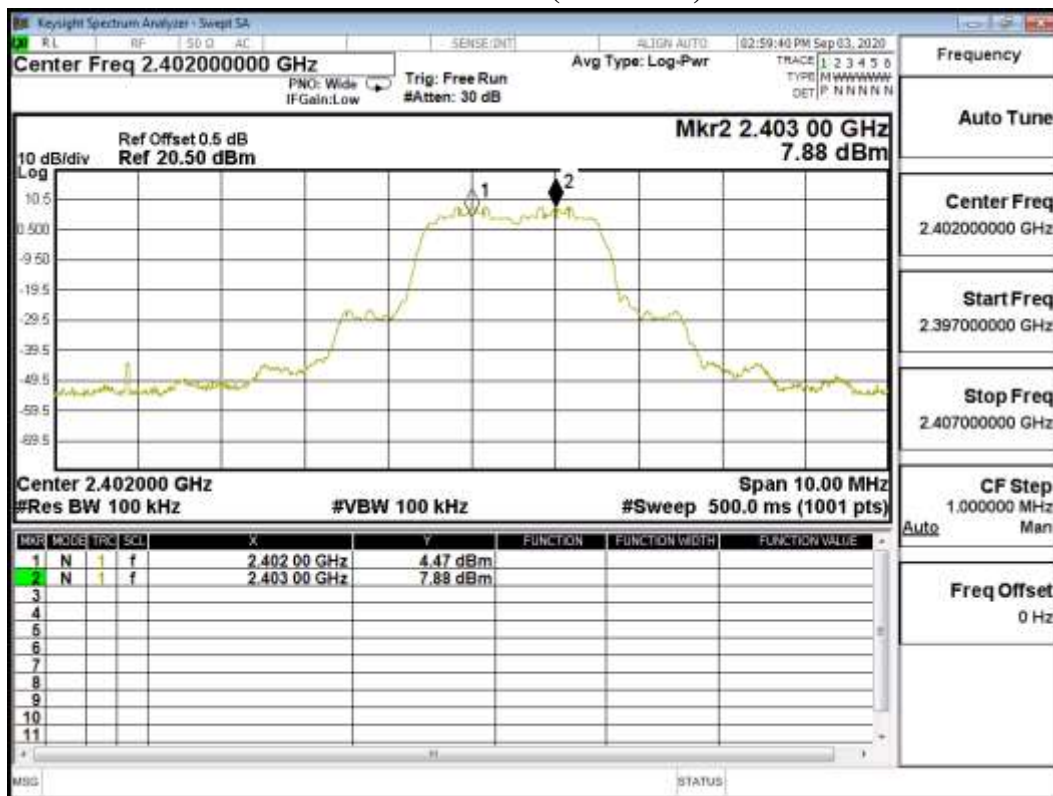


Product : Bluetooth Headset  
 Test Item : Channel Separation  
 Test date : 2020/09/03  
 Test Mode : Mode 3: Transmit - 3Mbps (8DPSK)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Limit	Limit of (2/3)*20dB	Result
			(kHz)	Bandwidth (kHz)	
00	2402	1000	>25 kHz	876.0	Pass
39	2441	1000	>25 kHz	878.0	Pass
78	2480	1000	>25 kHz	876.0	Pass

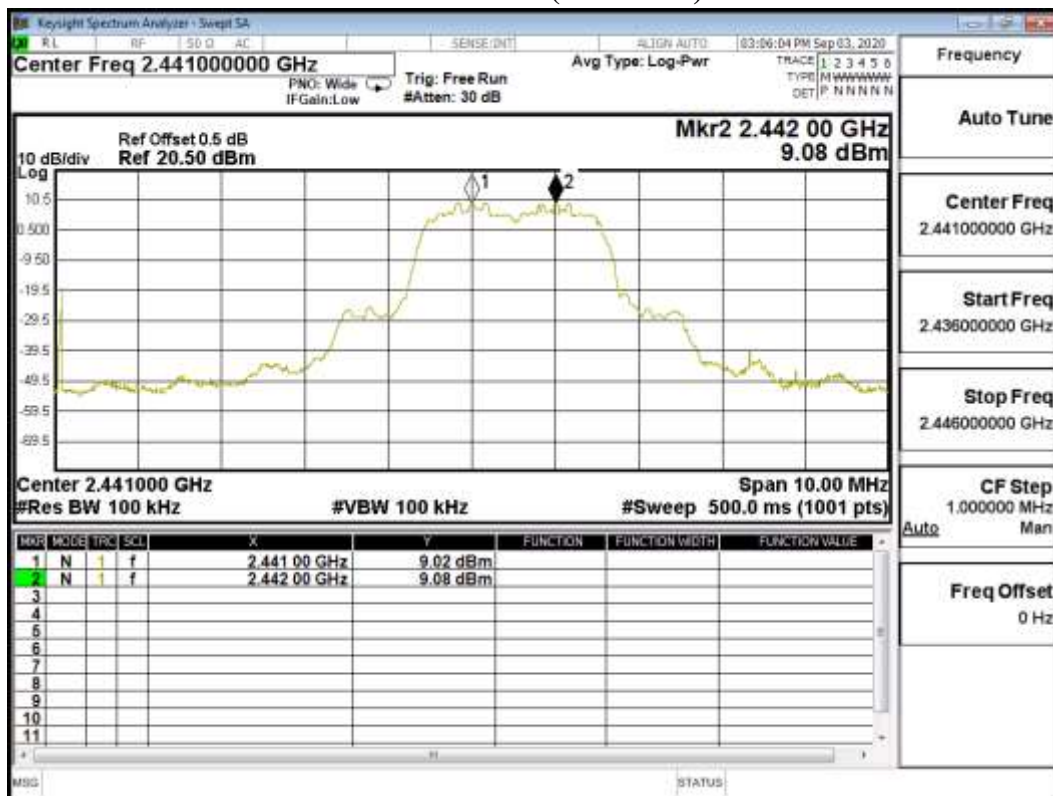
NOTE: The 20dB Bandwidth is refer to section 10.

### Channel 00 (2402MHz)

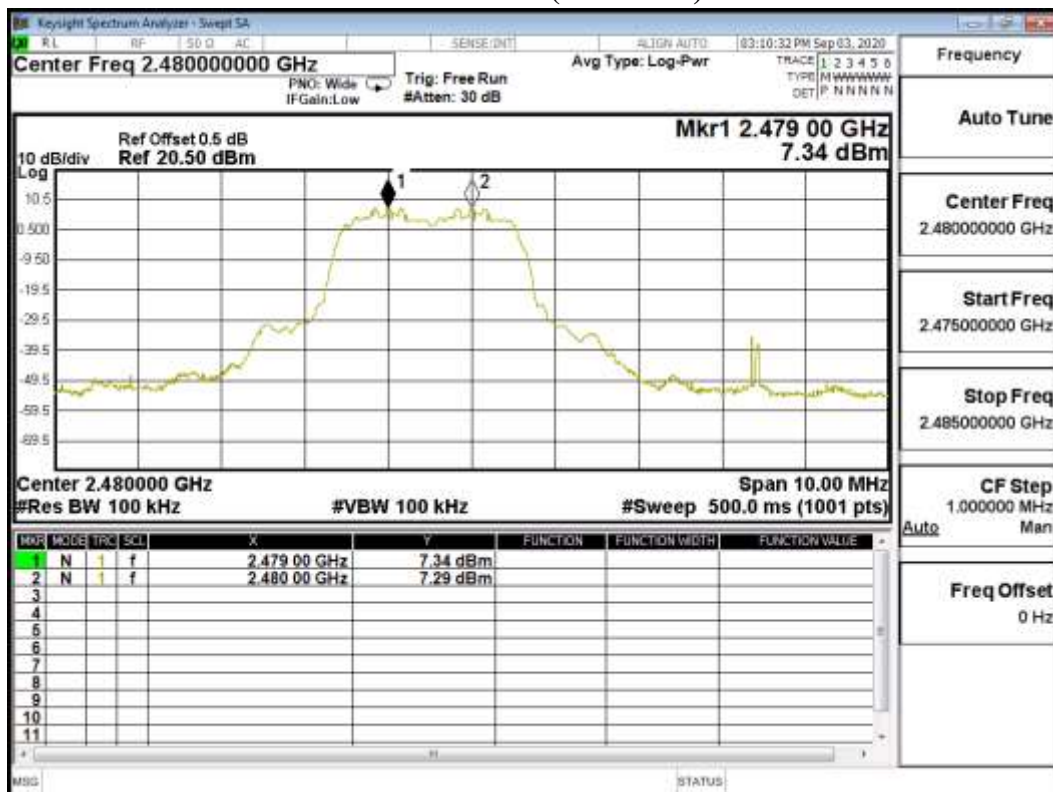




## Channel 39 (2441MHz)

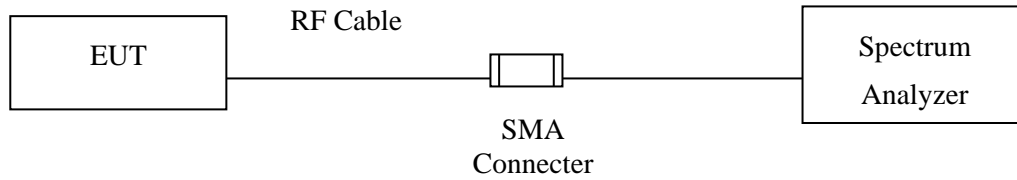


## Channel 78 (2480MHz)



## 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. Test Result of Dwell Time

Product : Bluetooth Headset  
Test Item : Dwell Time  
Test date : 2020/09/03  
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	108	31600	312.120	400	Pass
2441	2.880	108	31600	311.040	400	Pass
2480	2.890	107	31600	309.230	400	Pass

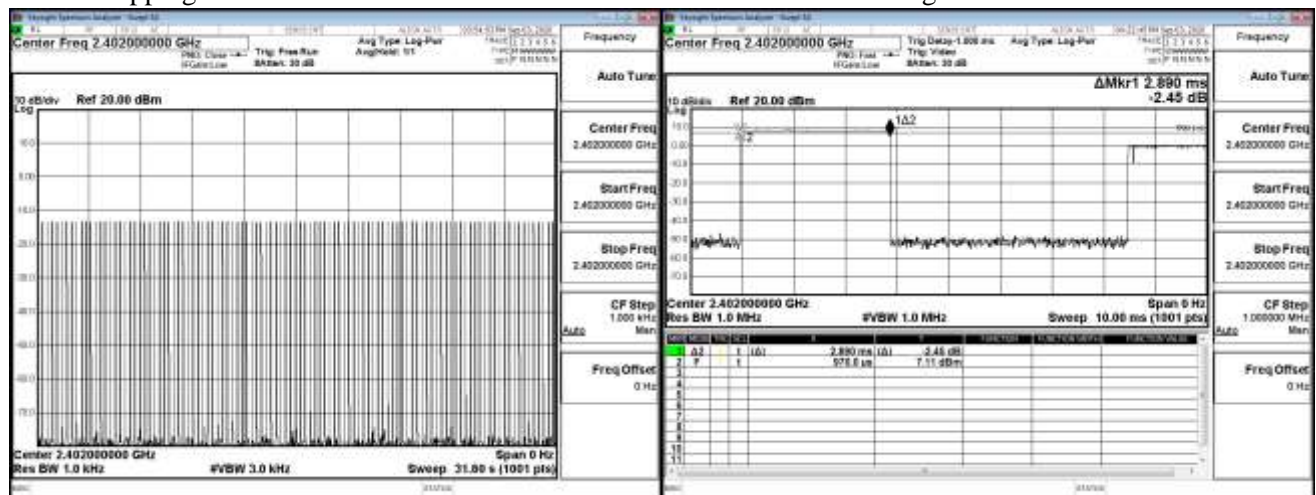
Dwell time = Time slot length\*Hopping of number

Sweep time= 79 CHannel \* 0.4



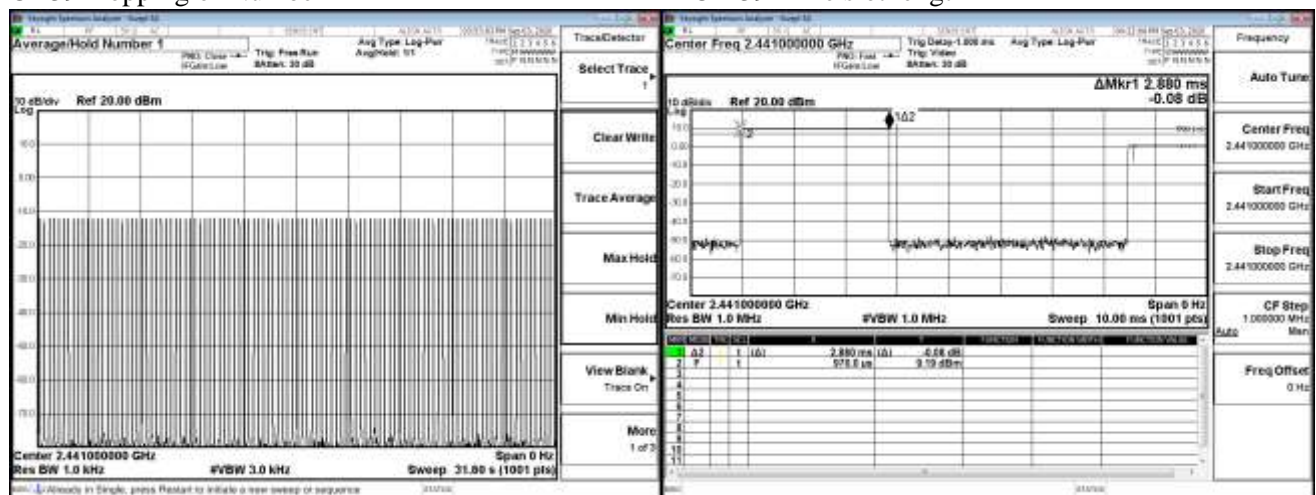
## CH 00 Hopping of Number

## CH 00 Time slot length



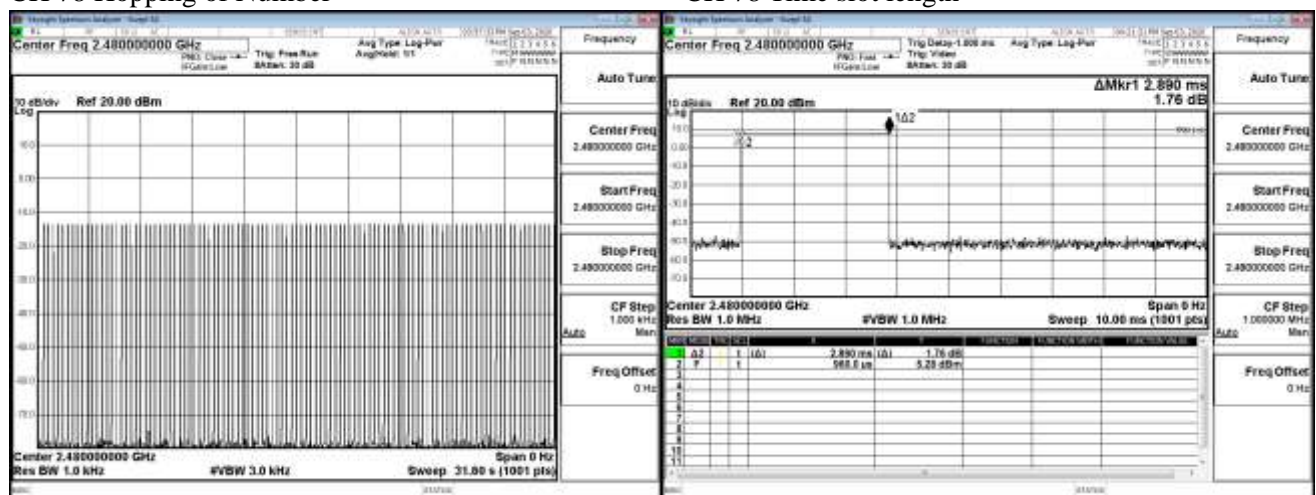
## CH39 Hopping of Number

## CH 39 Time slot length



## CH 78 Hopping of Number

## CH 78 Time slot length



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 date : 2020/09/03  
Test Mode : Mode 2: Transmit - 2Mbps ( $\pi/4$ DQPSK) (Channel 00,39,78 –DH5)

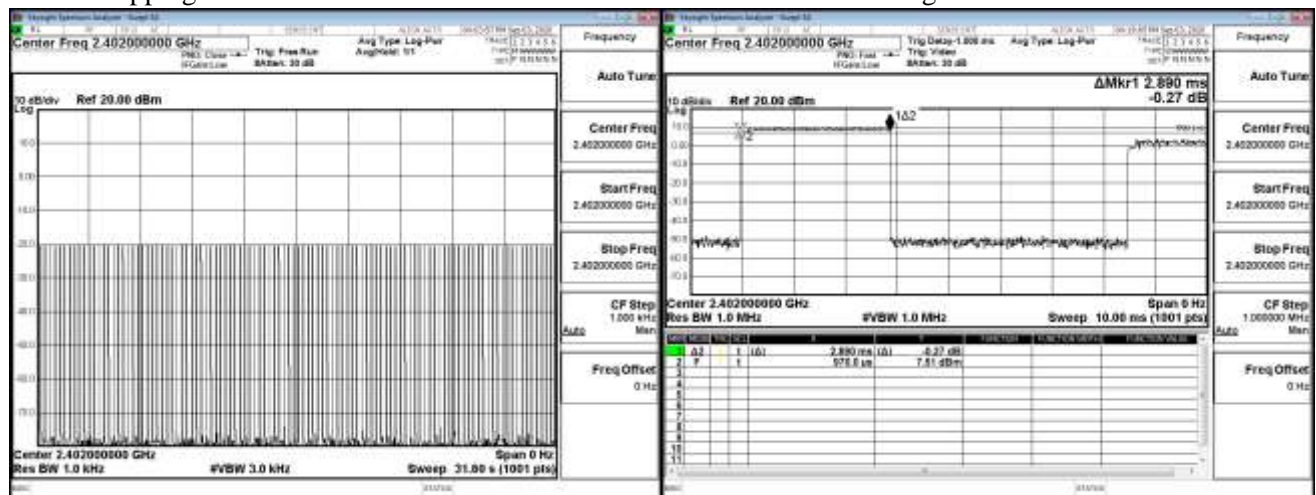
Frequency (MHz)	Time slot length (ms)	Hopping of Number	Sweep time (ms)	Dwell Time (ms)	Limit (ms)	Result
2402	2.890	107	31600	309.230	400	Pass
2441	2.890	107	31600	309.230	400	Pass
2480	2.890	108	31600	312.120	400	Pass

Dwell time = Time slot length\*Hopping of number

Sweep time= 79 CHannel \* 0.4

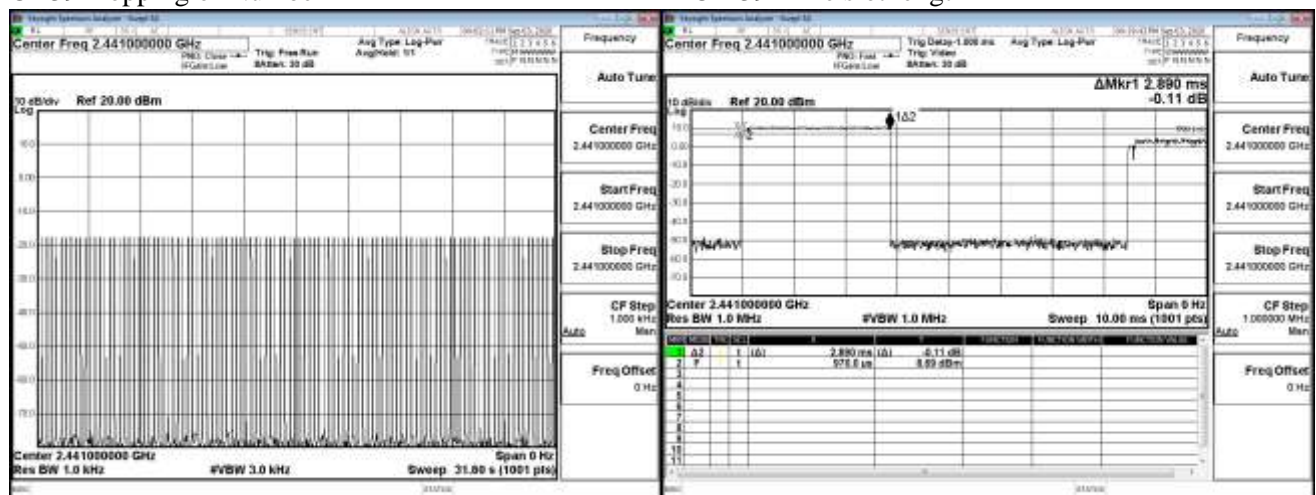
## CH 00 Hopping of Number

## CH 00 Time slot length



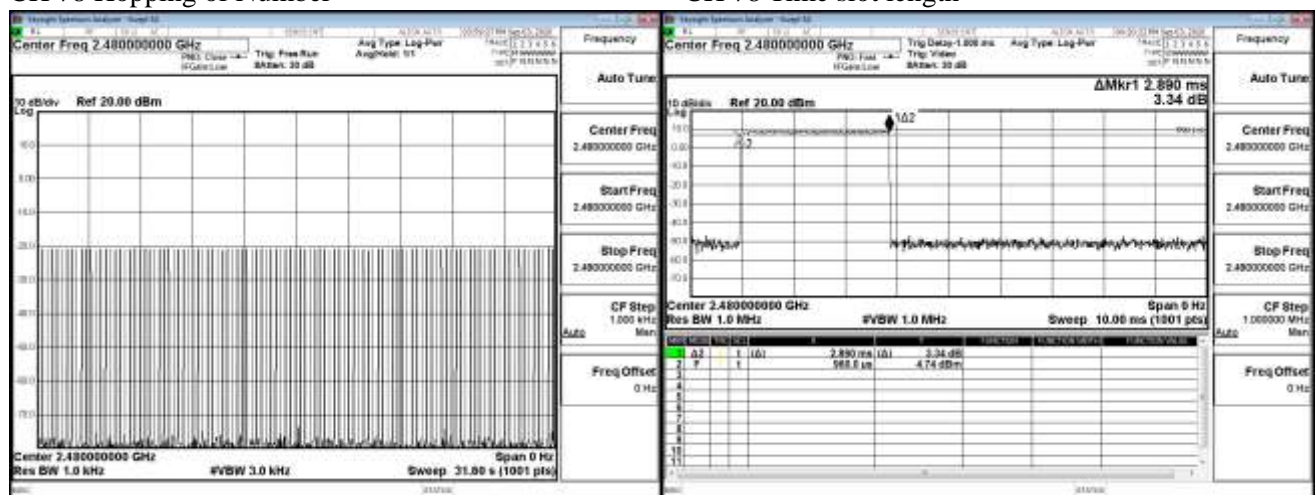
## CH39 Hopping of Number

## CH 39 Time slot length



## CH 78 Hopping of Number

## CH 78 Time slot length



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 date : 2020/09/03  
Test Mode : Mode 3: Transmit - 3Mbps (8DPSK) (Channel 00,39,78 –DH5)

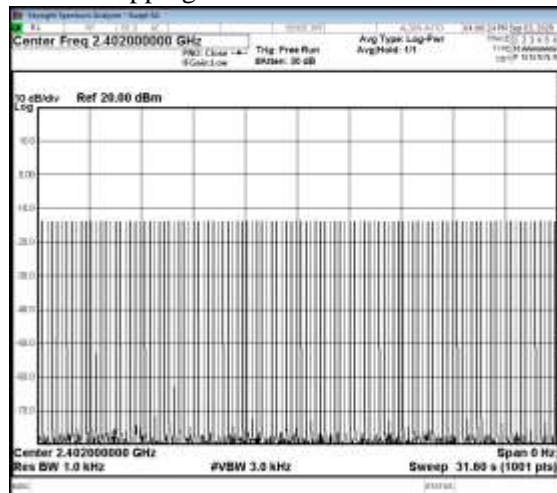
Frequency (MHz)	Time slot length (ms)	Hopping of Number	Sweep time (ms)	Dwell Time (ms)	Limit (ms)	Result
2402	2.900	107	31600	310.300	400	Pass
2441	2.890	108	31600	312.120	400	Pass
2480	2.890	108	31600	312.120	400	Pass

Dwell time = Time slot length\*Hopping of number

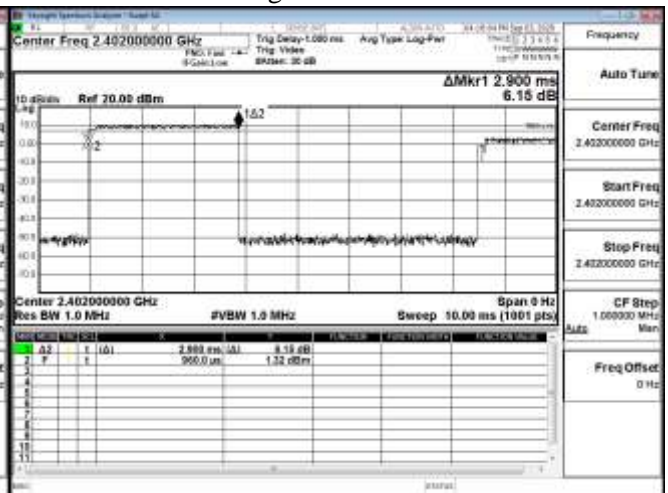
Sweep time= 79 CHannel \* 0.4



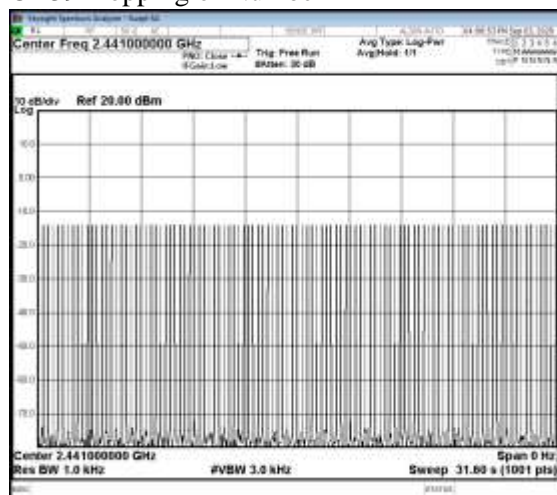
## CH 00 Hopping of Number



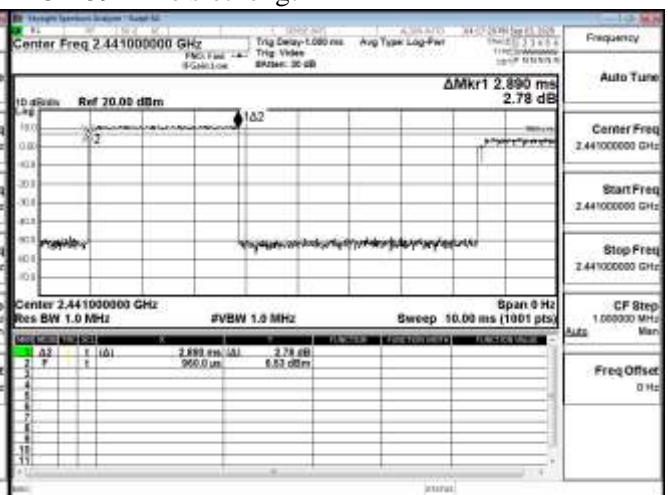
## CH 00 Time slot length



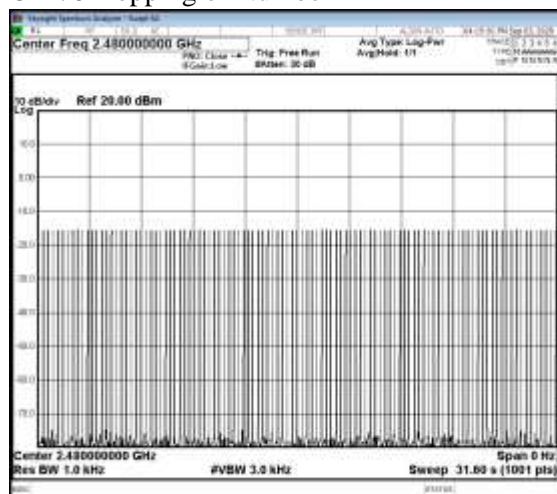
## CH39 Hopping of Number



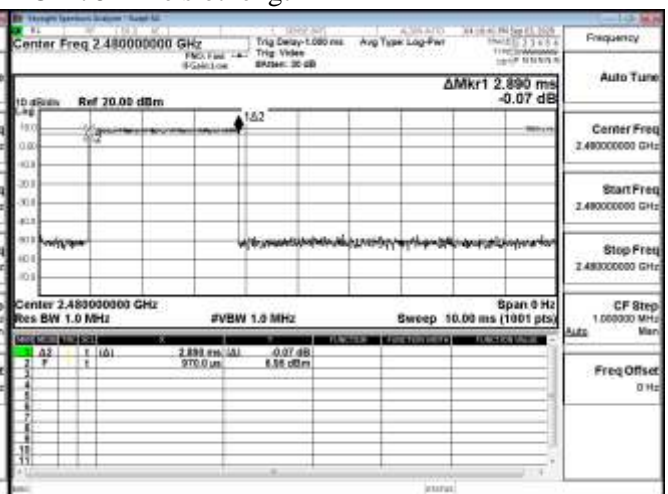
## CH 39 Time slot length



## CH 78 Hopping of Number



## CH 78 Time slot length

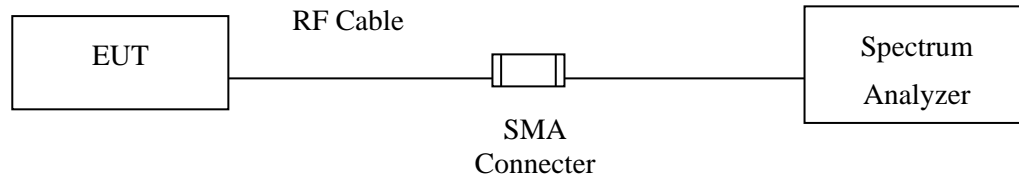


Note:

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. Test Result of Occupied Bandwidth

Product : Bluetooth Headset  
 Test Item : Occupied Bandwidth Data  
 Test date : 2020/09/02  
 Test Mode : Mode 1: Transmit - 1Mbps (GFSK)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	966	--	NA
39	2441	963	--	NA
78	2480	966	--	NA

Figure Channel 00:

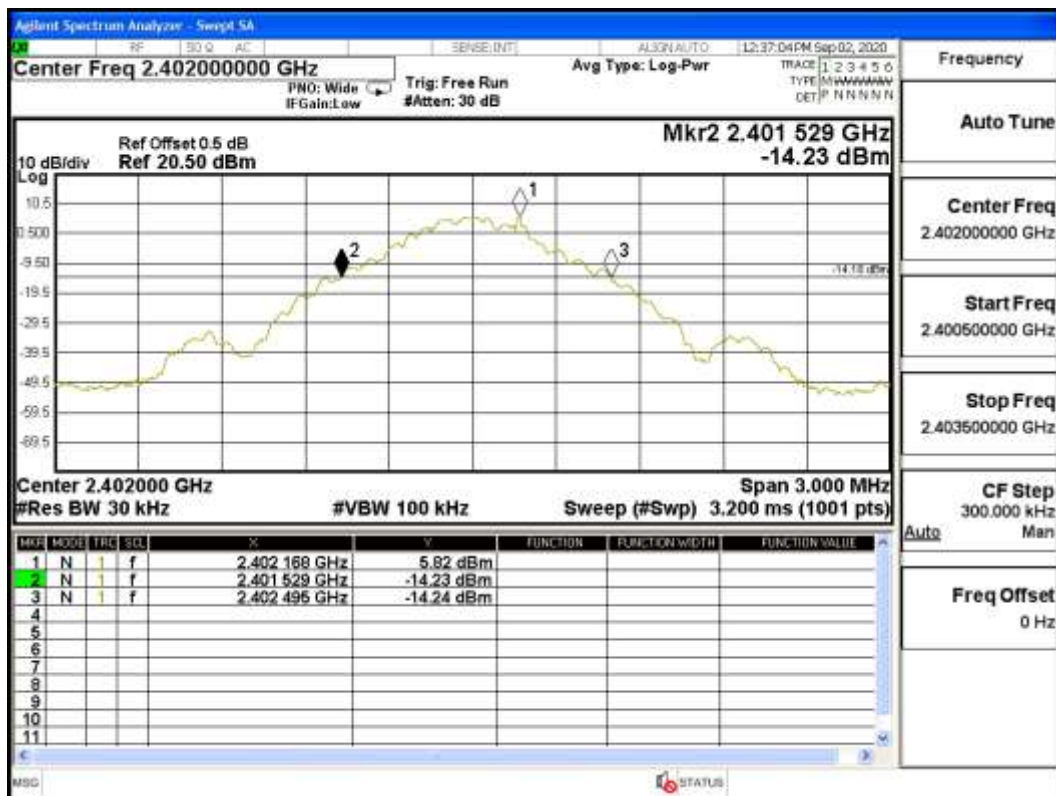


Figure Channel 39:

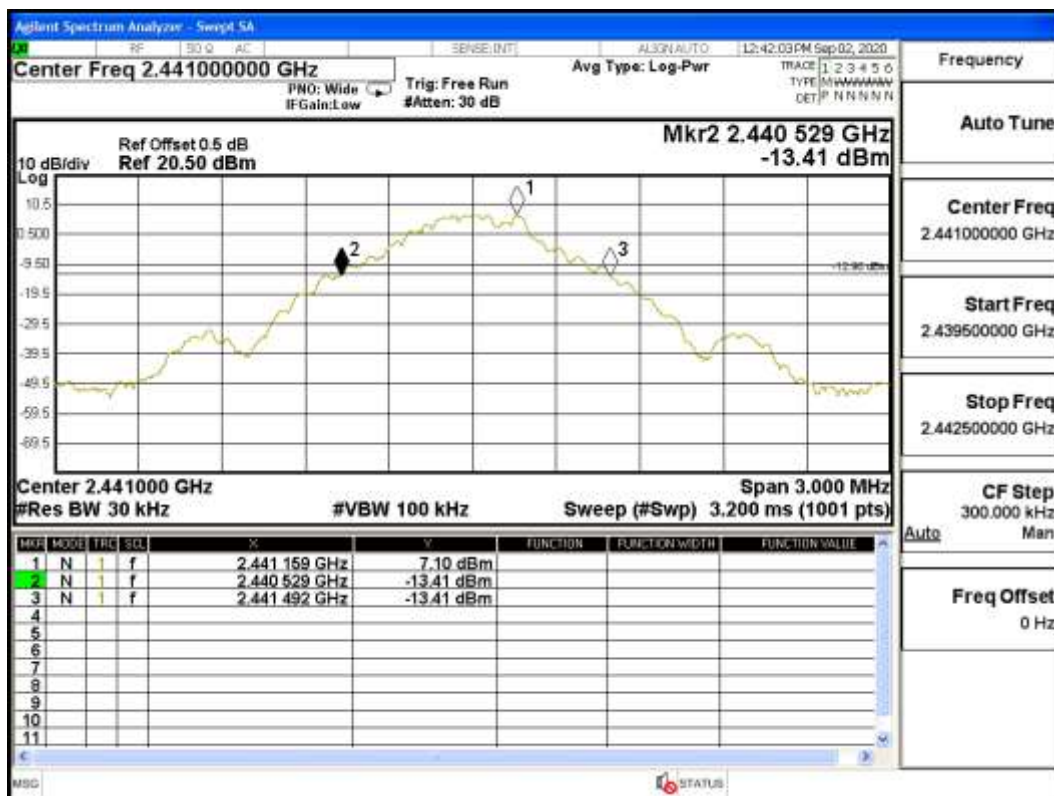
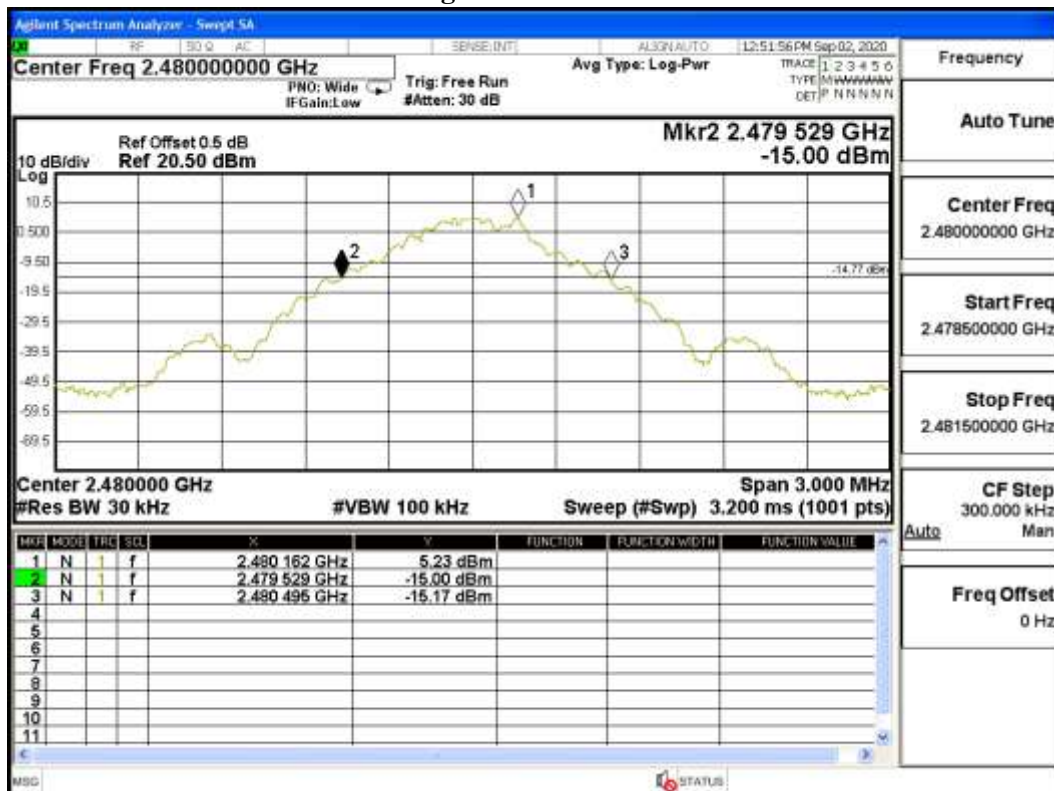


Figure Channel 78:





Product : Bluetooth Headset  
 Test Item : Occupied Bandwidth Data  
 Test date : 2020/09/02  
 Test Mode : Mode 2: Transmit - 2Mbps ( $\pi/4$ DQPSK)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1338	--	NA
39	2441	1335	--	NA
78	2480	1338	--	NA

Figure Channel 00:

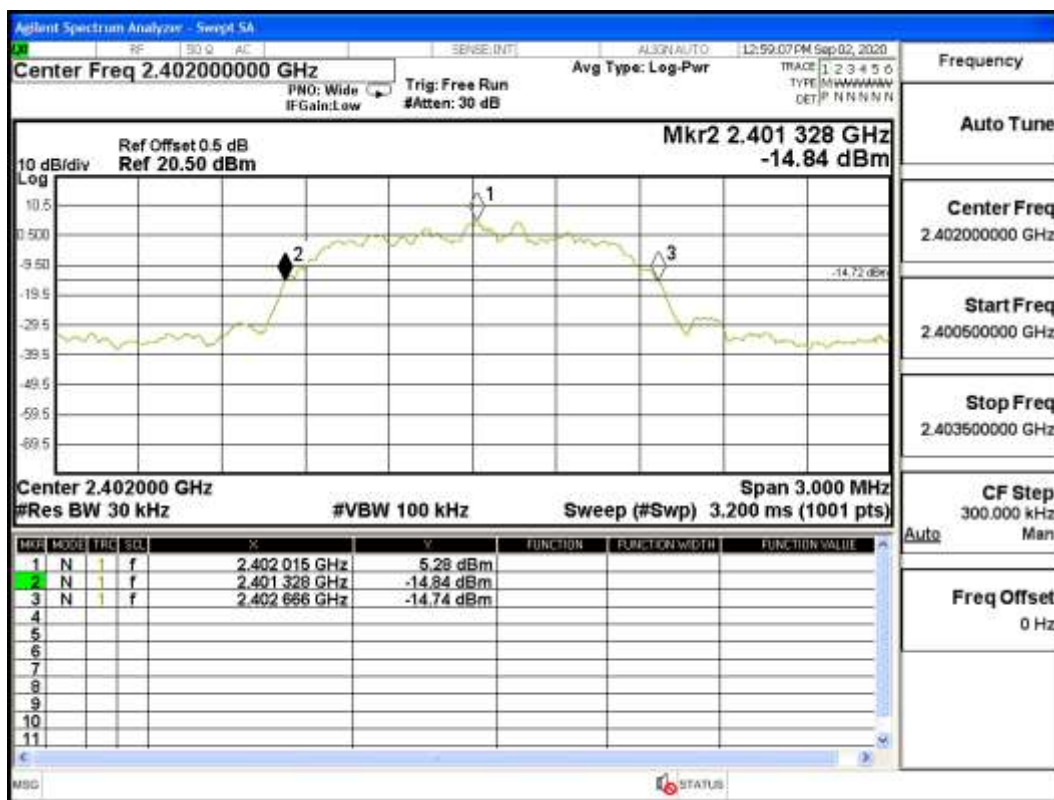


Figure Channel 39:

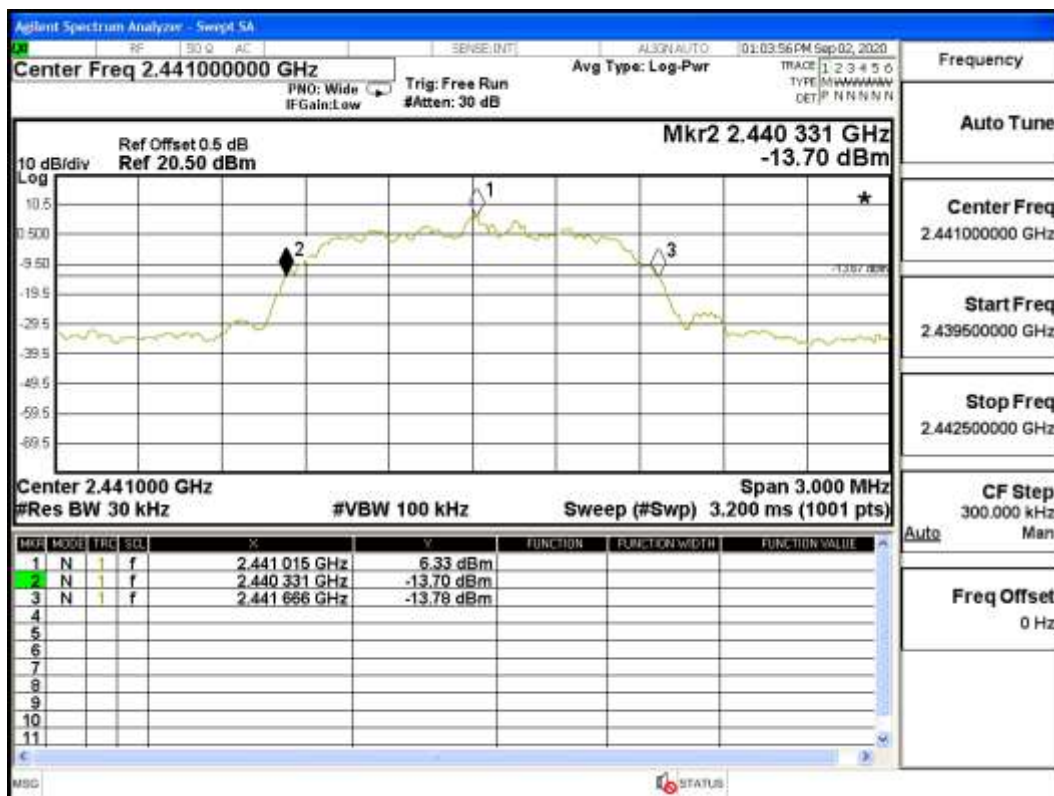
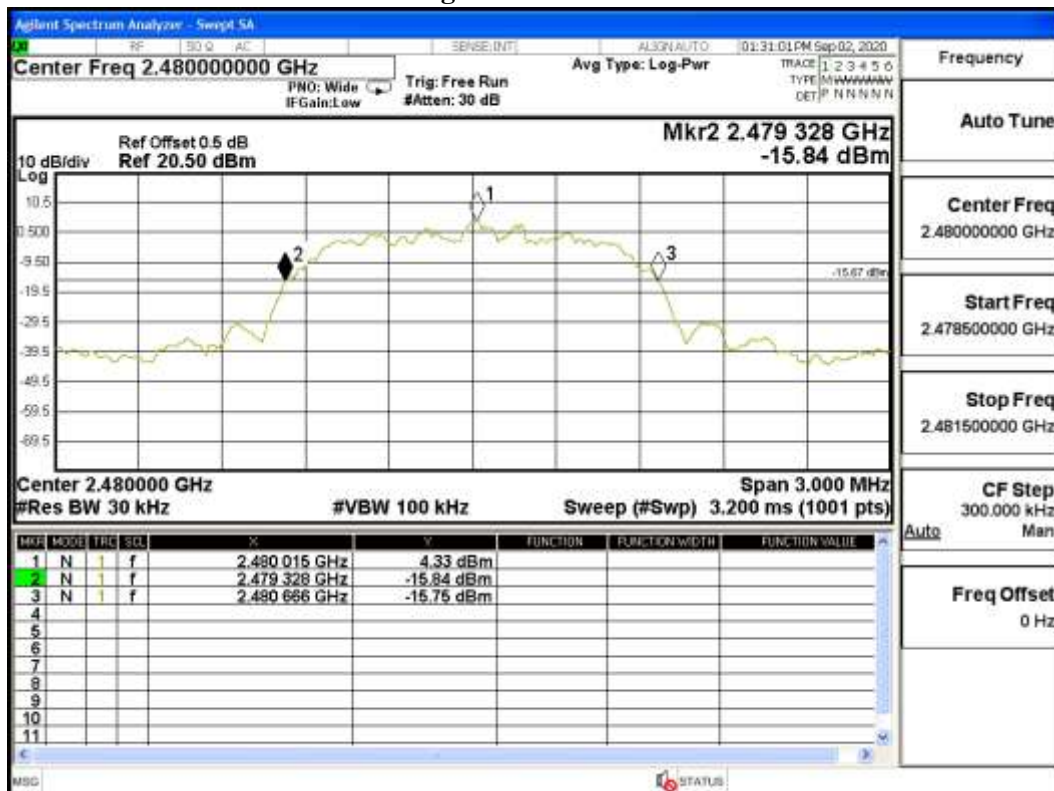


Figure Channel 78:



Product : Bluetooth Headset  
 Test Item : Occupied Bandwidth Data  
 Test date : 2020/09/03  
 Test Mode : Mode 3: Transmit - 3Mbps (8DPSK)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1314	--	NA
39	2441	1317	--	NA
78	2480	1314	--	NA

Figure Channel 00:

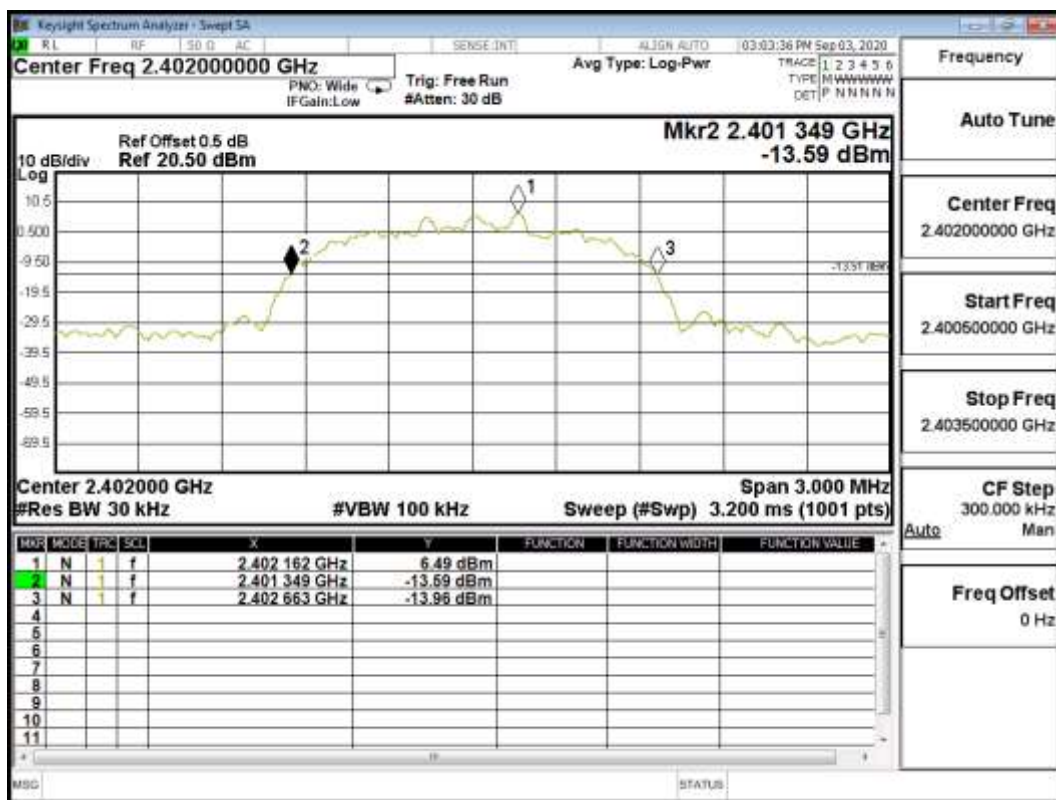


Figure Channel 39:

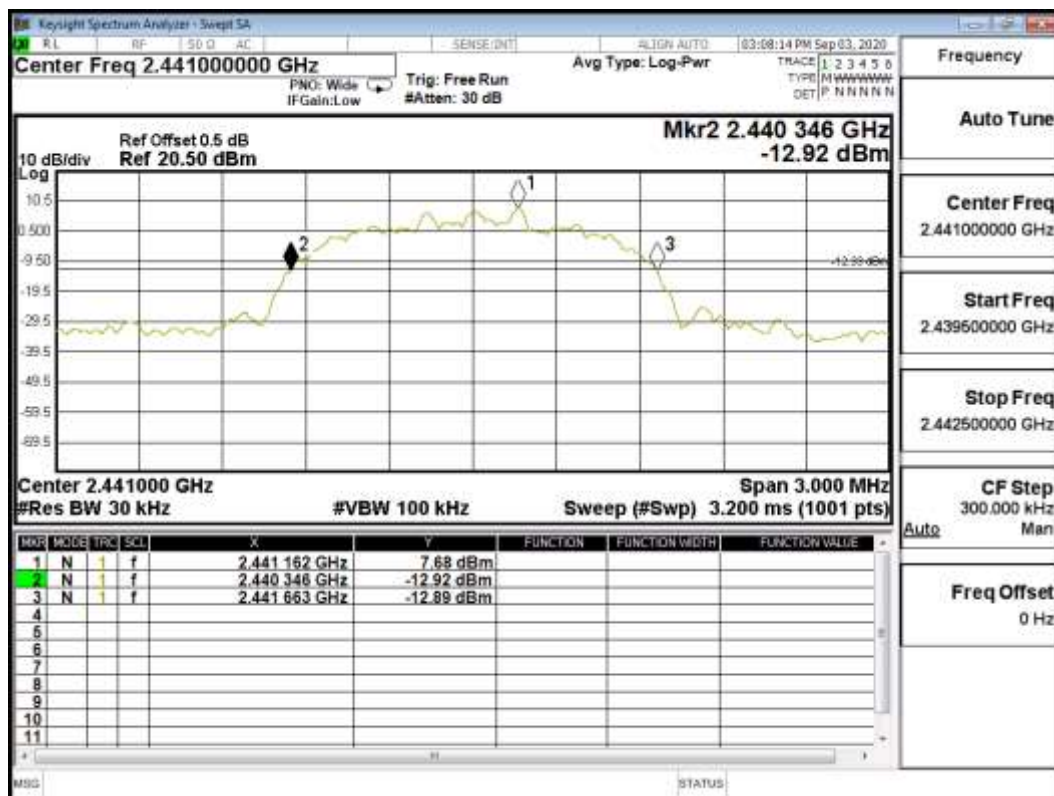
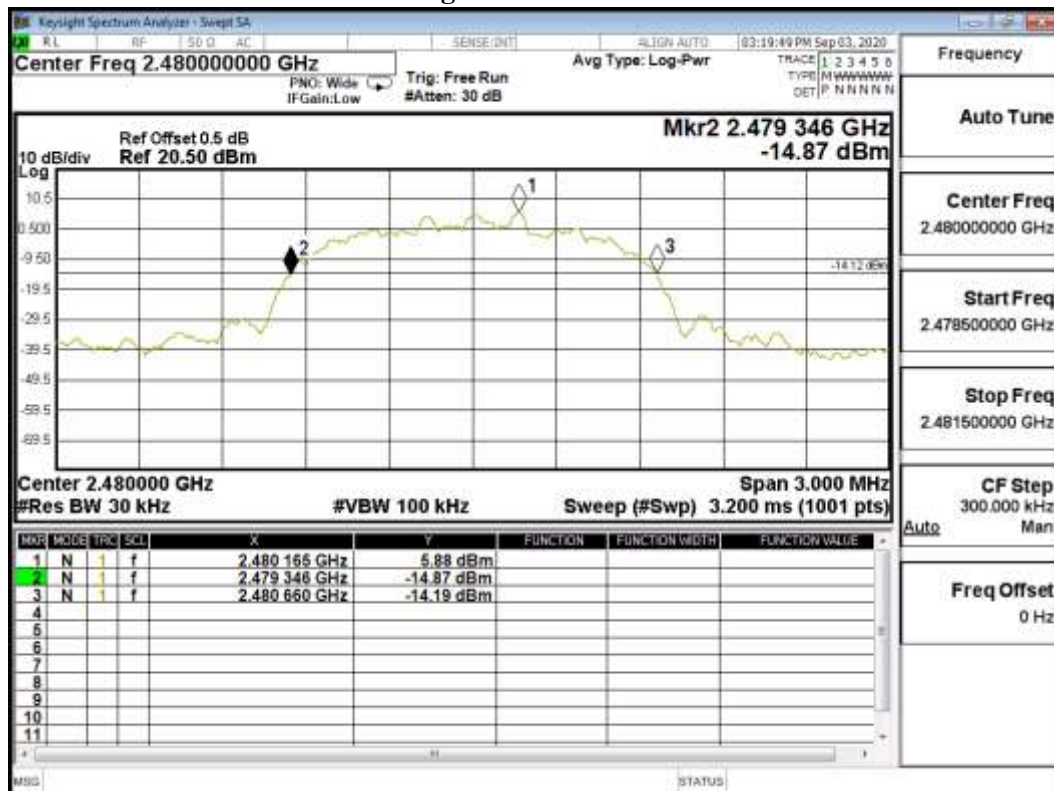
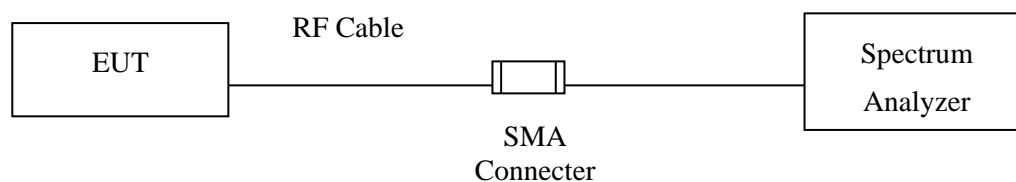


Figure Channel 78:



## 11. Duty Cycle

### 11.1. Test Setup

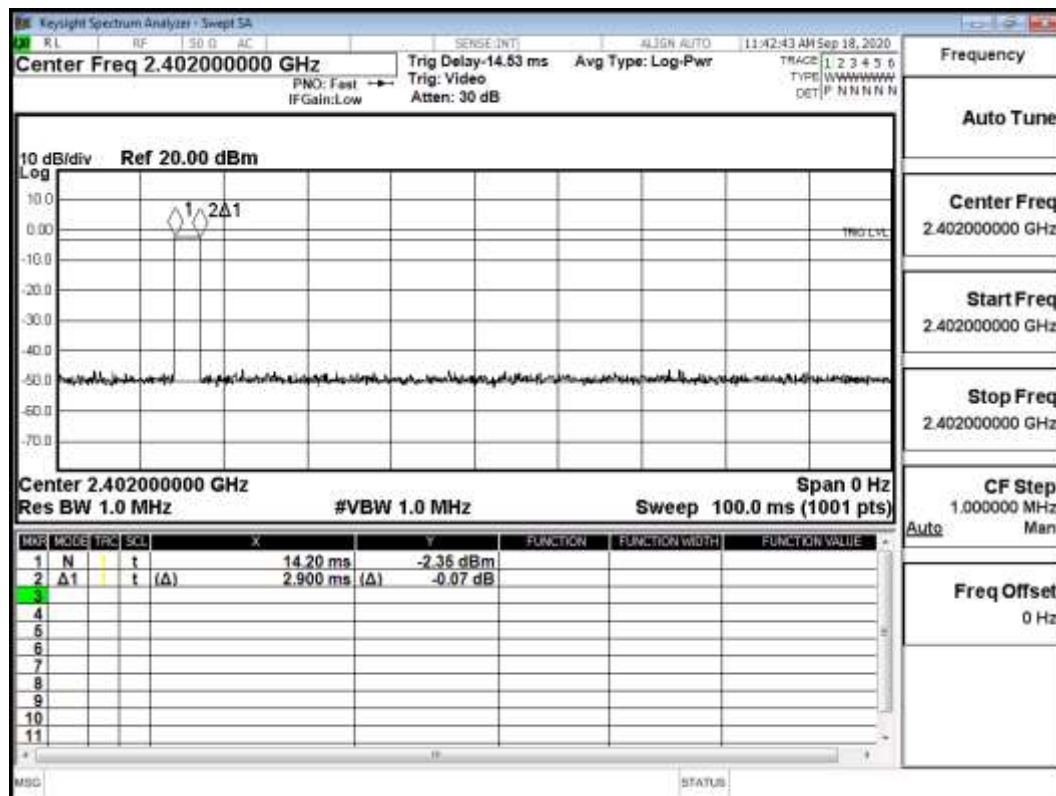


### 11.2. Test Procedure

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

### 11.3. Test Result of Duty Cycle

Product : Bluetooth Headset  
 Test Item : Duty Cycle  
 Test date : 2020/09/18  
 Test Mode : Mode 1: Transmit - 1Mbps (GFSK)



Time on of 100ms= 2.900ms

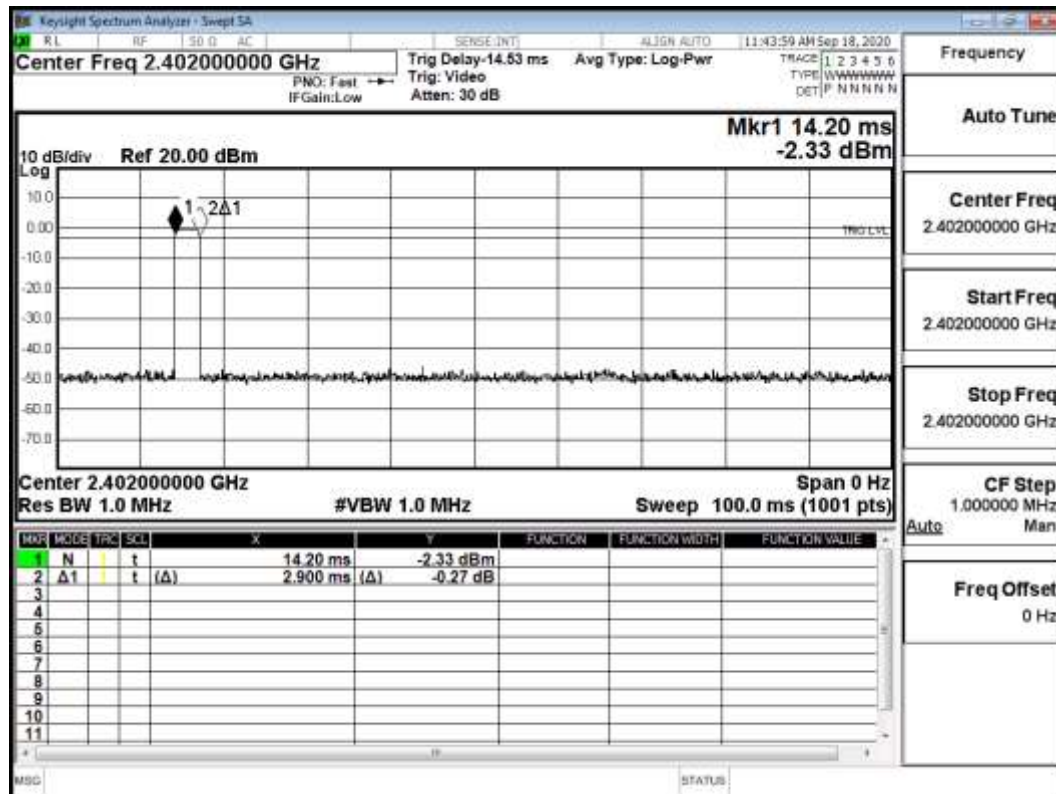
Duty Cycle=2.900ms / 100ms= 0.029

Duty Cycle correction factor= 20 LOG 0.029= -30.752 dB

Duty Cycle correction factor	-30.752	dB
------------------------------	---------	----



Product : Bluetooth Headset  
 Test Item : Duty Cycle  
 Test date : 2020/09/18  
 Test Mode : Mode 2: Transmit - 2Mbps ( $\pi/4$ DQPSK)



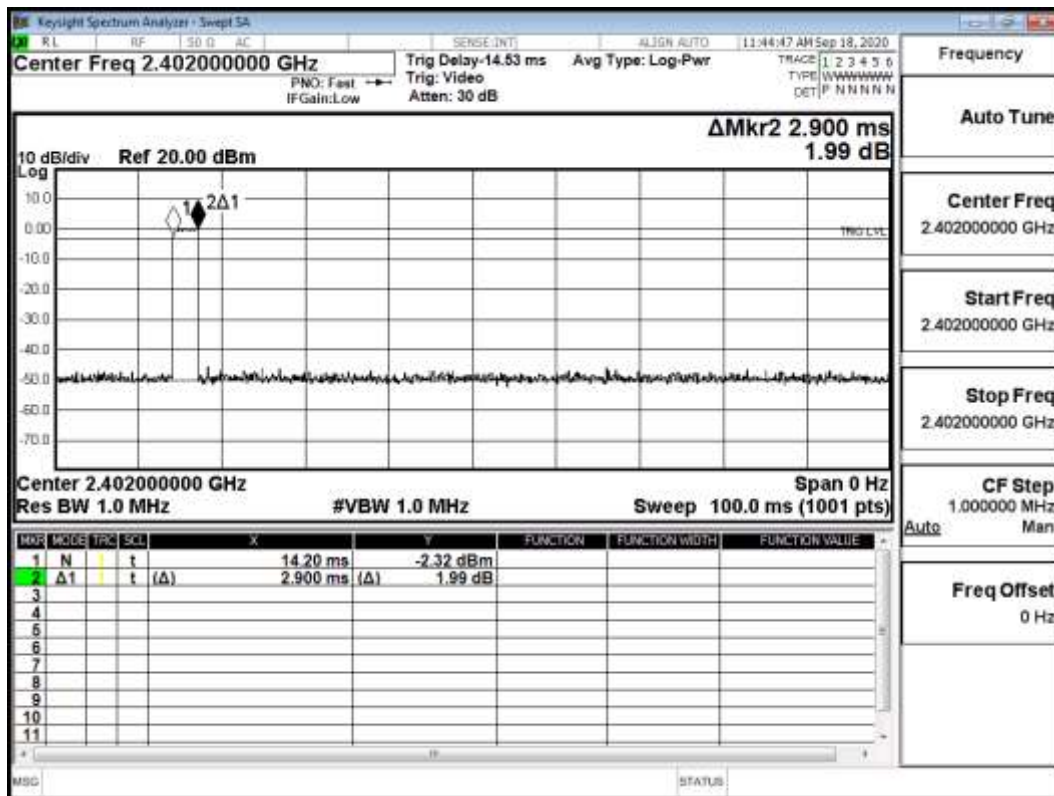
Time on of 100ms=2.900ms

Duty Cycle=2.900ms / 100ms= 0.029

Duty Cycle correction factor= 20 LOG 0.029= -30.752 dB

Duty Cycle correction factor	-30.752	dB
------------------------------	---------	----

Product : Bluetooth Headset  
 Test Item : Duty Cycle  
 Test date : 2020/09/18  
 Test Mode : Mode 3: Transmit - 3Mbps (8DPSK)



Time on of 100ms=2.900ms

Duty Cycle=2.900ms / 100ms= 0.029

Duty Cycle correction factor= 20 LOG 0.029= -30.752 dB

Duty Cycle correction factor	-30.752	dB
------------------------------	---------	----



## **12. EMI Reduction Method During Compliance Testing**

No modification was made during testing.