



FCC TEST REPORT

FCC ID: 2BAYW-XPEJ012

On Behalf of

ZhenShi Information Technology (Shenzhen) Co., Ltd

Mibro OpenEar

Model No.: XPEJ012

Prepared for : ZhenShi Information Technology (Shenzhen) Co., Ltd
Address : RM1401-1403, 1408, Tower E, Galaxy World, Minzhi Street, Longhua
District, Shenzhen, China

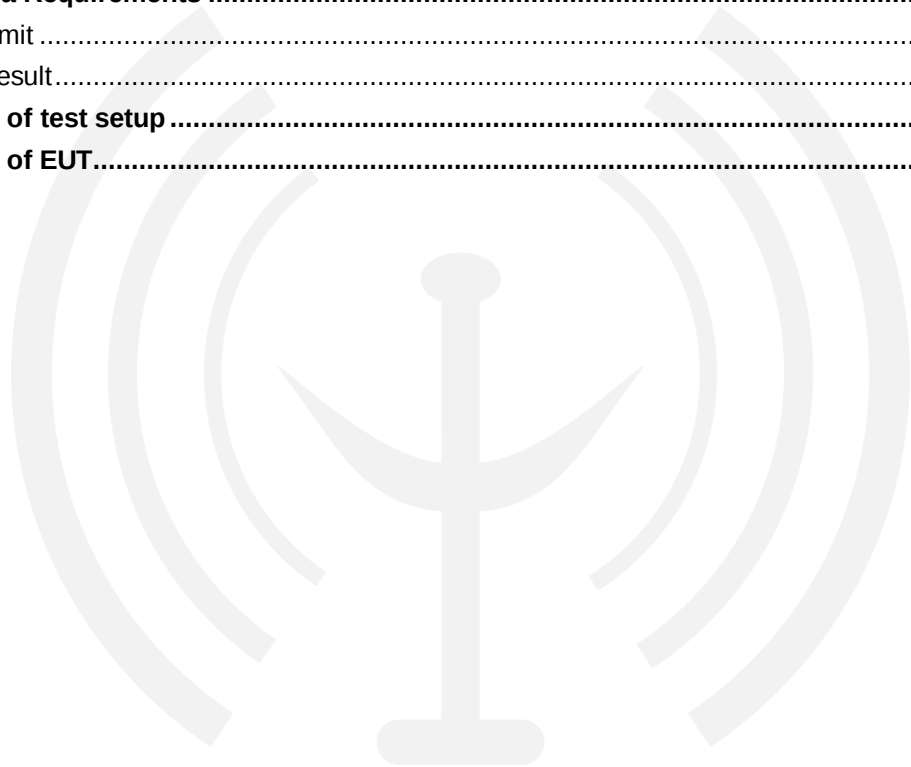
Prepared By : Shenzhen PSI Testing Co., Ltd.
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TEST REPORT DECLARATION

Applicant : ZhenShi Information Technology (Shenzhen) Co., Ltd
Address : RM1401-1403, 1408, Tower E, Galaxy World, Minzhi Street, Longhua District,
Shenzhen, China
Manufacturer : ZhenShi Information Technology (Shanghai) Co., Ltd
Address : Room 4015, Building 2, No.588 Zixing Road, Minhang District, Shanghai, China
EUT Description : Mibro OpenEar
(A) Model No. : XPEJ012
(B) Trademark : **mibro**

Measurement Standard Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247,

ANSI C63.10-2013

Test Result: PASS

The device described above is tested by Shenzhen PSI Testing Co., Ltd. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The test results are contained in this test report and Shenzhen PSI Testing Co., Ltd. is assumed full responsibility for the accuracy and completeness of test. Also, this report shows that the EUT is technically compliant with the FCC Part15 requirements.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen PSI Testing Co., Ltd.

Tested by (name + signature).....: Jensen Wang
Test Engineer

Jensen Wang

Approved by (name + signature).....: Simple Guan
Project Manager

Simple Guan

Date of issue.....: December 18, 2024

Revision History

Revision	Issue Date	Revisions	Revised By
V0	December 18, 2024	Initial released Issue	Jensen Wang



1. Summary Of Standards And Results

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

Test Item	Standards Paragraph	Result
Maximum Peak Output Power	FCC Part 15: 15.247(b)(1)	P
Bandwidth	FCC Part 15:15.247(a)(1)	P
Carrier Frequency Separation	FCC Part 15: 15.247(a)(1)	P
Number Of Hopping Channel	FCC Part 15: 15.247(a)(1)	P
Dwell Time	FCC Part 15: 15.247(a)(1)	P
Radiated Spurious Emission	FCC Part 15: 15.209 FCC Part 15: 15.205	P
Out-of-band Emissions	FCC Part 15: 15.247(d)	P
Radiated Band Edge Emission	FCC Part 15: 15.247(d)	P
Power Line Conducted Emissions	FCC Part 15: 15.207	P
Antenna requirement	FCC Part 15: 15.203	P
Note: 1. P is an abbreviation for Pass. 2. F is an abbreviation for Fail. 3. N/A is an abbreviation for Not Applicable. 4. Conclusion determination rules of this report: Unless there are clear provisions on measurement uncertainty in the standard or customer requirements, decision by actual test data without considering measurement uncertainty. 5. Measurement method usage KDB 558074 D01 15.247 Meas Guidance v05r02.		

2. General Information

2.1. Description of Device (EUT)

Description/PMN : Mibro OpenEar

Model List : XPEJ012

Diff : N/A

Test Voltage : DC 3.7V from battery, DC 5V from Charging Case

Radio Technology : Bluetooth V5.4 EDR

Operation frequency : 2402MHz-2480MHz

Modulation : GFSK, $\pi/4$ -DQPSK, 8 DPSK

Channel No. : 79 Channels

Channel Separation : 1MHz

Antenna Type : Left earphone :Internal Antenna, max gain -1.86dBi.
Right earphone :Internal Antenna, max gain 0.73dBi.

Software version : V1.0

Hardware version : V1.0

Intend use environment : Residential, commercial and light industrial environment

Note : Antenna information is provided by applicant.
Testing lab is not responsible for the accuracy of the information.

Because the antennas of the left and right earphones are different, they are both tested.

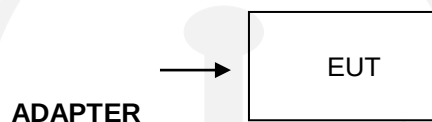
2.2. Accessories of Device (EUT)

Accessories	: Charging Case
Manufacturer	: ZhenShi Information Technology (Shanghai) Co., Ltd
Model	: N/A
Input	: N/A
Output	: N/A

2.3. Tested Supporting System Details

No.	Description	Manufacturer	Model	Serial Number
1	Adapter	Baseus	CCXFK65CC	N/A
2	USB Cable	N/A	N/A	N/A

2.4. Block Diagram of connection between EUT and simulators



2.5. Test Mode Description

The test software used to control EUT work in Continuous TX mode, and select test channel, wireless mode

Tested mode, channel, and data rate information		
Mode	Channel	Frequency (MHz)
GFSK / Pi/4-DQPSK / 8 DPSK Carrier Tx Mode	CH0	2402
	CH39	2441
	CH78	2480
GFSK / Pi/4-DQPSK / 8 DPSK hopping on Tx Mode	CH0 to CH78	2402 to 2480
GFSK / Pi/4-DQPSK / 8 DPSK hopping off Tx Mode	CH0	2402
	CH39	2441
	CH78	2480

2.6. Test Conditions

Items	Required	Actual
Temperature range:	15-35°C	26°C
Humidity range:	25-75%	54%
Pressure range:	86-106kPa	98kPa

2.7. Test Facility

Shenzhen PSI Testing Co., Ltd.

1-2/F., Building 5, Yudafu Industrial Park, No.10, Xingye West Road, Shajing Subdistrict, Bao'an District, Shenzhen, Guangdong, China

September 13, 2023 File on Federal Communication Commission

Registration Number: 916281

2.8. Measurement Uncertainty

(95% confidence levels, k=2)

Item	Uncertainty
Uncertainty for Power line Conducted Emissions Test	2.17dB
Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)	3.5dB
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	2.74dB(Polarize: V)
	2.76dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 18GHz)	4.29dB(Polarize: V)
	4.82dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (18GHz to 40GHz)	4.31 dB(Polarize: V)
	4.30 dB(Polarize: H)
Uncertainty for radio frequency	48.24KHz
Uncertainty for conducted RF Power	0.41dB
Uncertainty for Power Spectral Density	0.39 dB
Occupied Bandwidth	968Hz
Conducted Spurious Emission	1.26dB

2.9. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Firmware Version	Last Cal.	Cal. Interval
1.	9*6*6 anechoic chamber	SKET	9*6*6	N/A	/	2022.12.20	3 Year
2.	Test Receiver	Rohde&Schwarz	ESCI 7	101032/003	4.42 SP3	2023.12.19	1 Year
3.	L.I.S.N.#1	Rohde&Schwarz	ENV216	102282	/	2023.12.19	1 Year
4.	L.I.S.N.#2	RFT	NNB111	13835240	/	2023.12.19	1 Year
5.	Loop Antenna	Schwarz beck	FMZB 1519B	00128	/	2023.04.03	2 Year
6.	Bilog Antenna	Schwarz beck	VULB 9168	01448	/	2022.12.26	2 Year
7.	Spectrum Analyzer	Rohde&Schwarz	FSV-40N	101648	3.70	2023.12.19	1 Year
8.	Horn Antenna	Schwarz beck	BBHA 9120 D	02706	/	2022.12.26	2 Year
9.	Amplifier	SKET	LAPA_01G18 G-45dB	SK20220329 01	/	2023.12.19	1 Year
10.	Horn Antenna	Schwarz beck	BBHA 9170	00946	/	2022.12.25	2 Year
11.	Amplifier	SKET	LNPA_0118G -45	SK20200108 01	/	2023.12.19	1 Year
12	RF Power Probe	Rohde&Schwarz	NRP-Z11	1138.3004.02 -1111533-Fz	/	2023.12.19	1 Year
13	RF Sensor Unit	Tachoy	TR1029-2	20220428P0 08	/	2023.12.19	1 Year
14	Temp. & Humid Chamber	Auchno	9606	/	/	2023.12.19	1 Year
15	Regulated DC Power Supply	Xinouhua	ADC120V10 A	2022112516 38		2023.12.19	1 Year
16	Spectrum Analyzer	Agilent	N9020A	MY51281067	A.14.03	2023.12.19	1 Year

For Test Software Information

Item	Software Name	Manufacturer	Version
RE	EZ_EMC	Farad	PSI-3A1
CE	EZ_EMC	Farad	PSI-3A1
RF	RTS	TACHOY	V1.0.0

3. Maximum Peak Output Power

3.1. Limit

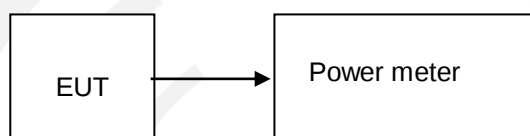
Please refer FCC part 15.247 & RSS-247.

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts, the e.i.r.p shall not exceed 4W

3.2. Test Procedure

The transmitter output is connected to the RF Power meter. The Power meter is set to the peak power detection.

3.3. Test Setup



3.4. Test Result

Left earphone:

Condition	Antenna	Modulation	Frequency (MHz)	Max. Conducted Power(dBm)	Max. Conducted Power(mW)	Limit(mW)	Result
NVNT	ANT1	1-DH1	2402.00	-0.37	0.92	1000	Pass
NVNT	ANT1	1-DH1	2441.00	-0.19	0.96	1000	Pass
NVNT	ANT1	1-DH1	2480.00	-0.51	0.89	1000	Pass
NVNT	ANT1	2-DH1	2402.00	0.54	1.13	125	Pass
NVNT	ANT1	2-DH1	2441.00	0.73	1.18	125	Pass
NVNT	ANT1	2-DH1	2480.00	0.40	1.10	125	Pass
NVNT	ANT1	3-DH1	2402.00	0.69	1.17	125	Pass
NVNT	ANT1	3-DH1	2441.00	0.66	1.16	125	Pass
NVNT	ANT1	3-DH1	2480.00	0.46	1.11	125	Pass

Right earphone:

Condition	Antenna	Modulation	Frequency (MHz)	Max. Conducted Power(dBm)	Max. Conducted Power(mW)	Limit(mW)	Result
NVNT	ANT1	1-DH1	2402.00	-0.91	0.81	1000	Pass
NVNT	ANT1	1-DH1	2441.00	-0.39	0.91	1000	Pass
NVNT	ANT1	1-DH1	2480.00	-0.63	0.86	1000	Pass
NVNT	ANT1	2-DH1	2402.00	0.16	1.04	125	Pass
NVNT	ANT1	2-DH1	2441.00	0.57	1.14	125	Pass
NVNT	ANT1	2-DH1	2480.00	0.29	1.07	125	Pass
NVNT	ANT1	3-DH1	2402.00	0.81	1.21	125	Pass
NVNT	ANT1	3-DH1	2441.00	1.26	1.34	125	Pass
NVNT	ANT1	3-DH1	2480.00	0.98	1.25	125	Pass

4. Bandwidth

4.1. Limit

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in RSS-GEN, FCC Section 15.247(a)(1), must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

4.2. Test Procedure

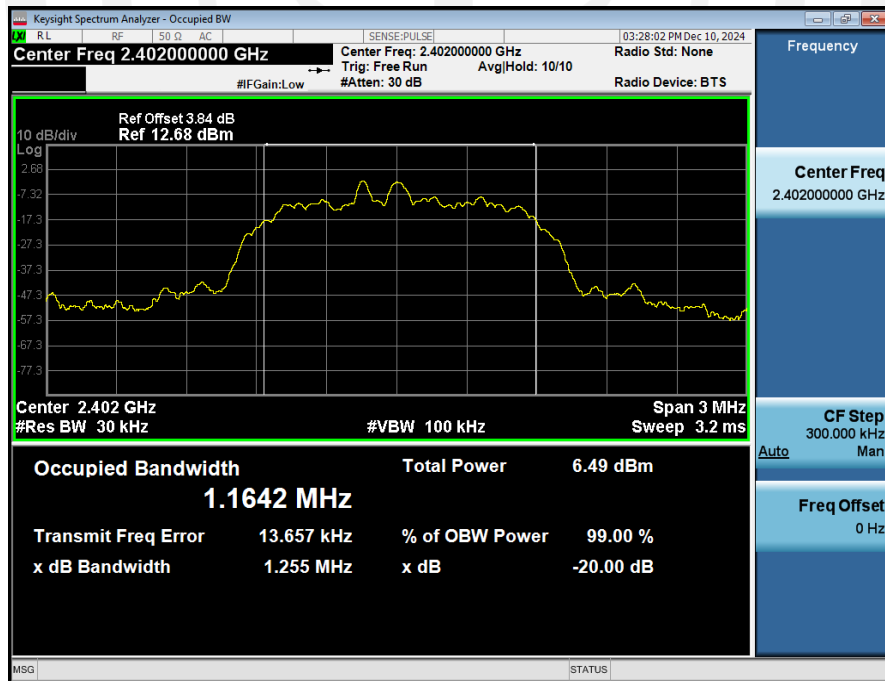
The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 30kHz RBW and 100kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

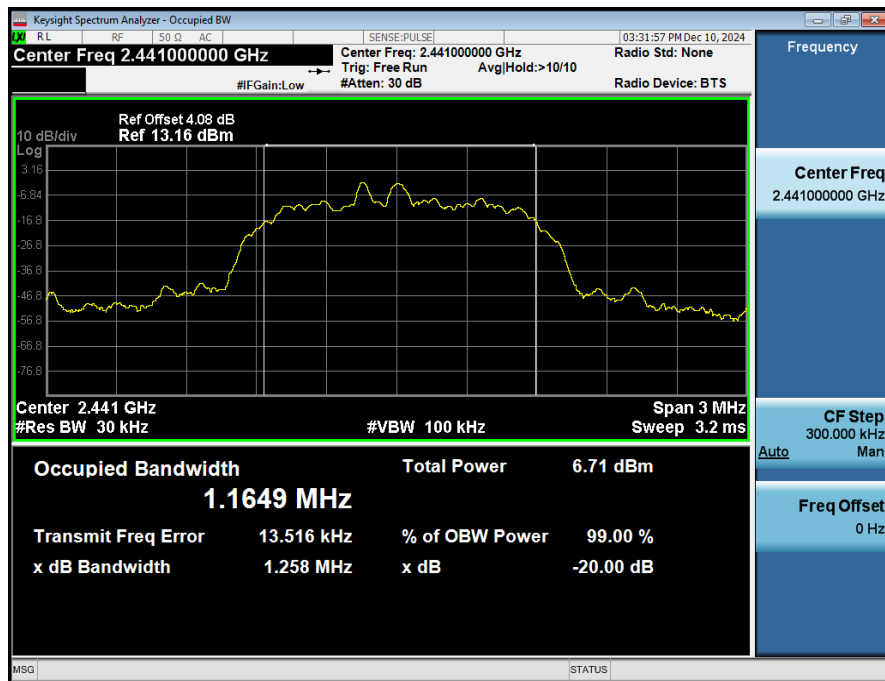
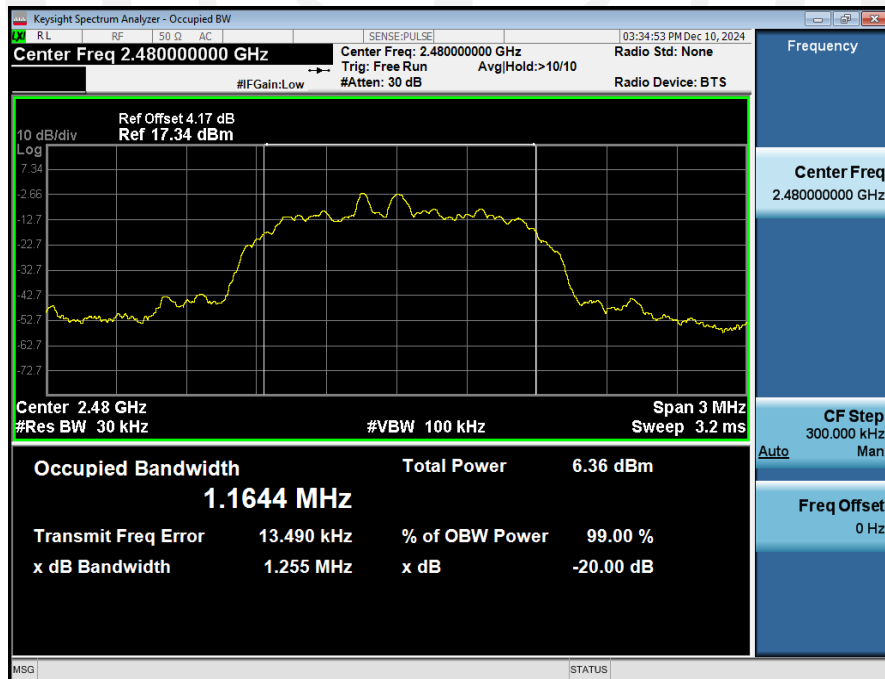
4.3. Test Result

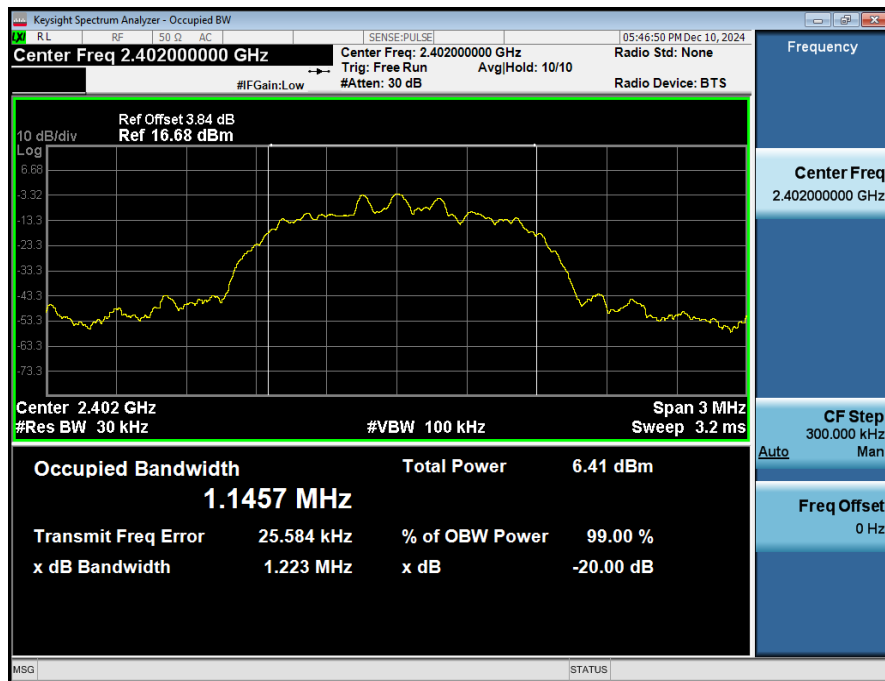
Left earphone:

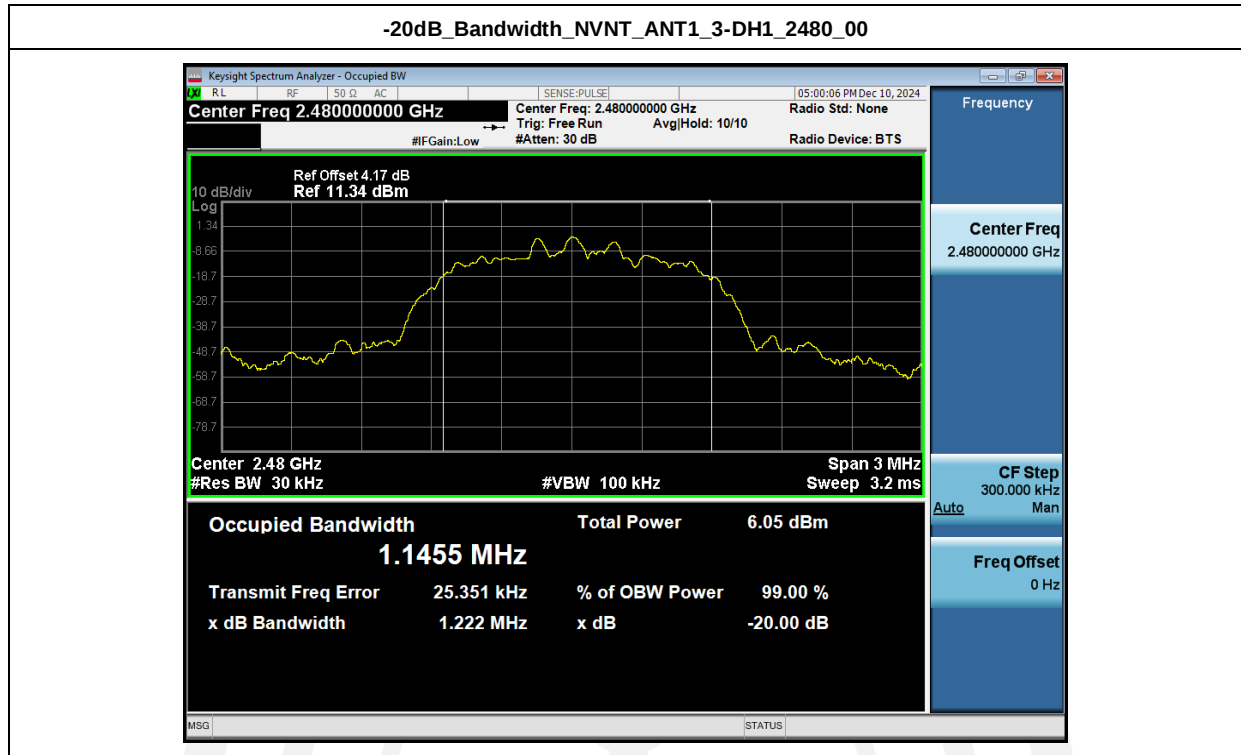
Condition	Antenna	Modulation	Frequency (MHz)	-20dB BW(MHz)	if larger than CFS
NVNT	ANT1	1-DH1	2402.00	0.878	No
NVNT	ANT1	1-DH1	2441.00	0.879	No
NVNT	ANT1	1-DH1	2480.00	0.881	No
NVNT	ANT1	2-DH1	2402.00	1.255	Yes
NVNT	ANT1	2-DH1	2441.00	1.258	Yes
NVNT	ANT1	2-DH1	2480.00	1.255	Yes
NVNT	ANT1	3-DH1	2402.00	1.223	Yes
NVNT	ANT1	3-DH1	2441.00	1.222	Yes
NVNT	ANT1	3-DH1	2480.00	1.222	Yes

-20dB_Bandwidth_NVNT_ANT1_1-DH1_2402_00**-20dB_Bandwidth_NVNT_ANT1_1-DH1_2441_00**

-20dB_Bandwidth_NVNT_ANT1_1-DH1_2480_00**-20dB_Bandwidth_NVNT_ANT1_2-DH1_2402_00**

-20dB_Bandwidth_NVNT_ANT1_2-DH1_2441_00**-20dB_Bandwidth_NVNT_ANT1_2-DH1_2480_00**

-20dB_Bandwidth_NVNT_ANT1_3-DH1_2402_00**-20dB_Bandwidth_NVNT_ANT1_3-DH1_2441_00**



Condition	Antenna	Modulation	Frequency (MHz)	99%BW(MHz)
NVNT	ANT1	1-DH1	2402.00	0.821
NVNT	ANT1	1-DH1	2441.00	0.823
NVNT	ANT1	1-DH1	2480.00	0.826
NVNT	ANT1	2-DH1	2402.00	1.163
NVNT	ANT1	2-DH1	2441.00	1.164
NVNT	ANT1	2-DH1	2480.00	1.166
NVNT	ANT1	3-DH1	2402.00	1.146
NVNT	ANT1	3-DH1	2441.00	1.146
NVNT	ANT1	3-DH1	2480.00	1.147

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99%_Occupied_Bandwidth_NVNT_ANT1_1-DH1_2441_00



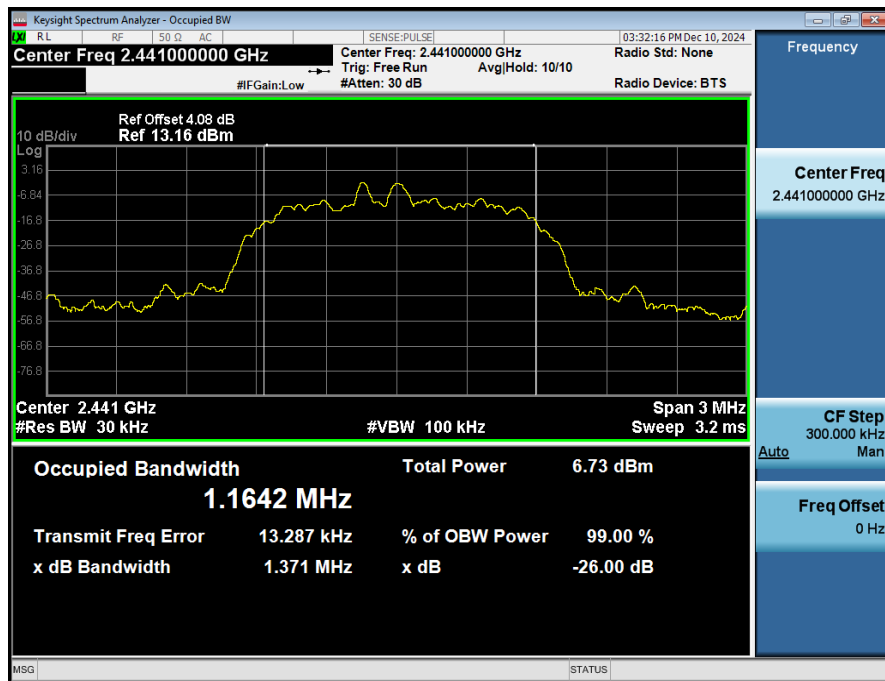
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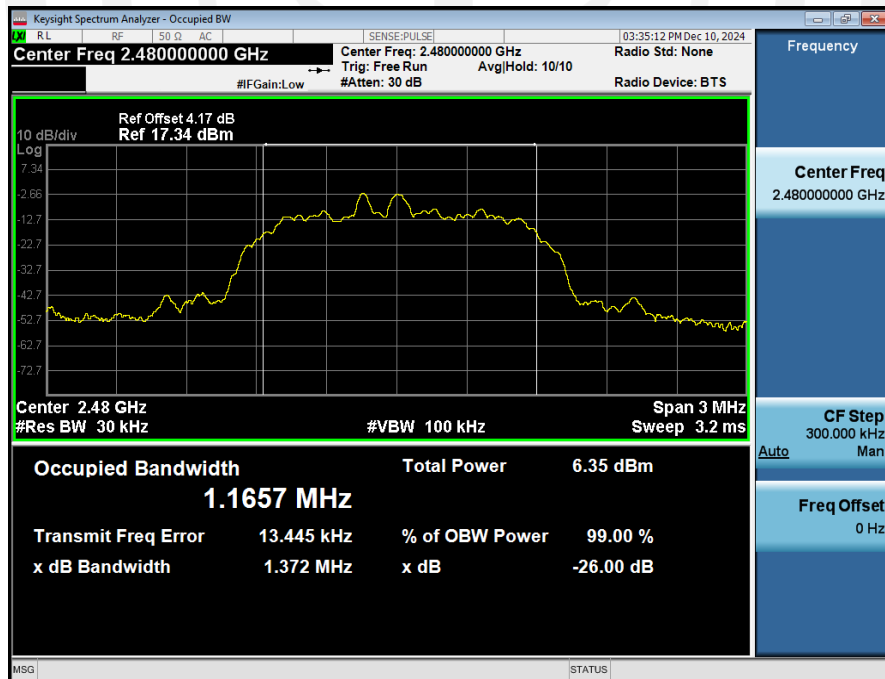
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99%_Occupied_Bandwidth_NVNT_ANT1_2-DH1_2441_00



99%_Occupied_Bandwidth_NVNT_ANT1_2-DH1_2480_00

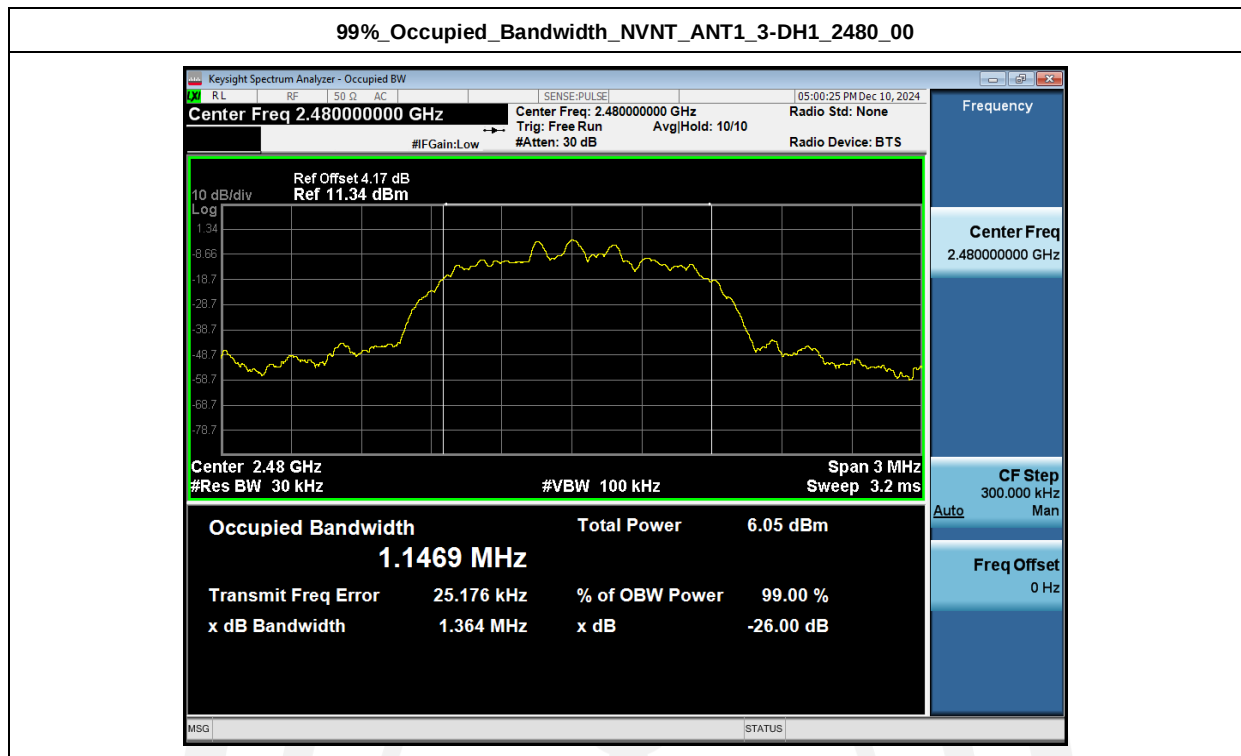


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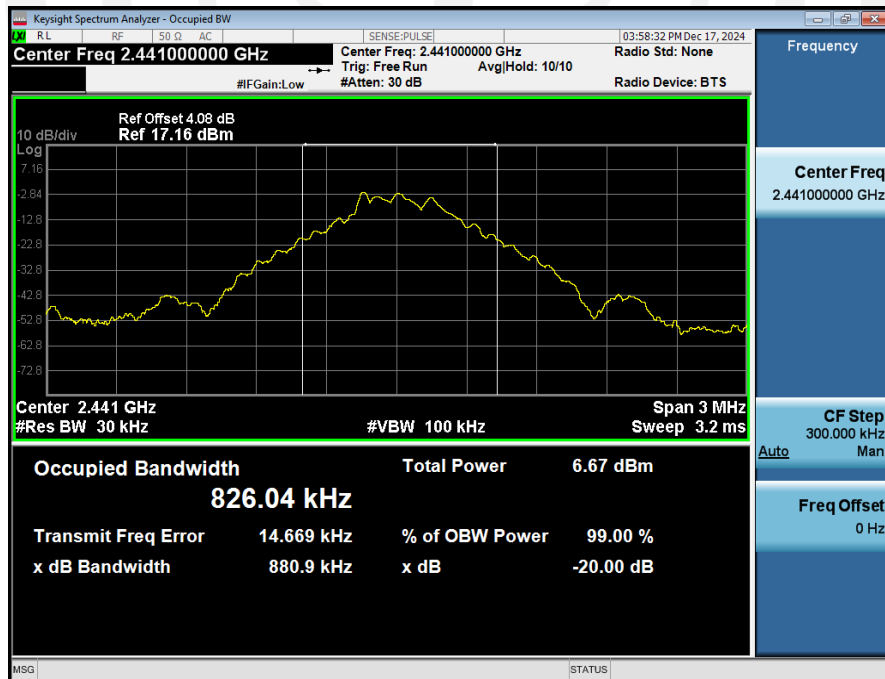
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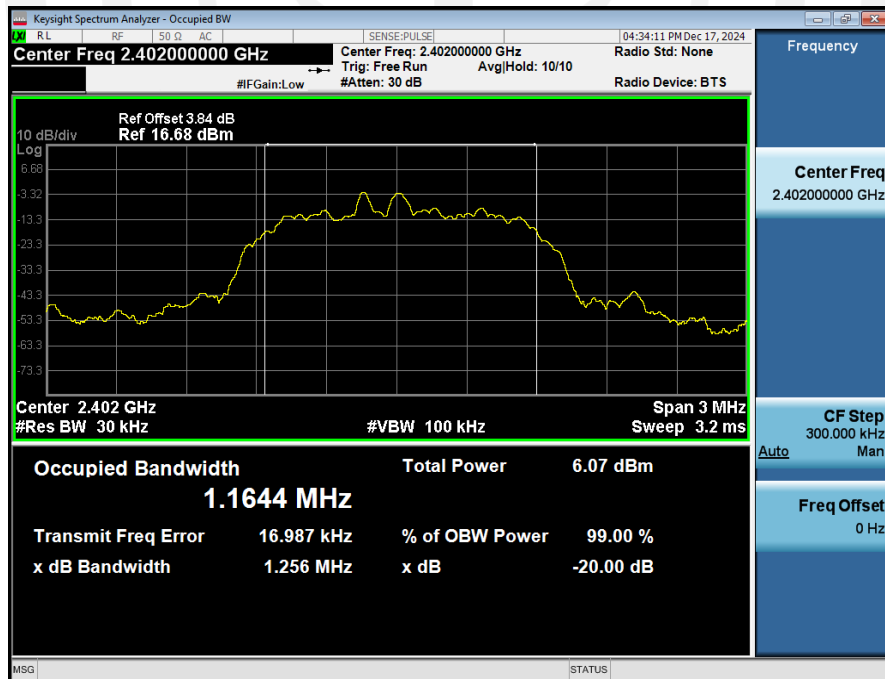


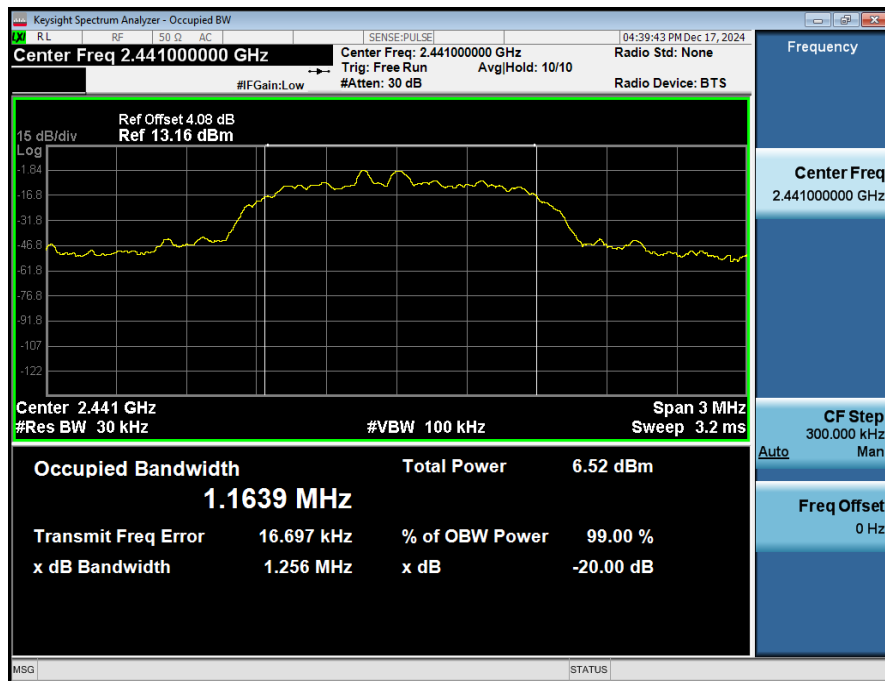
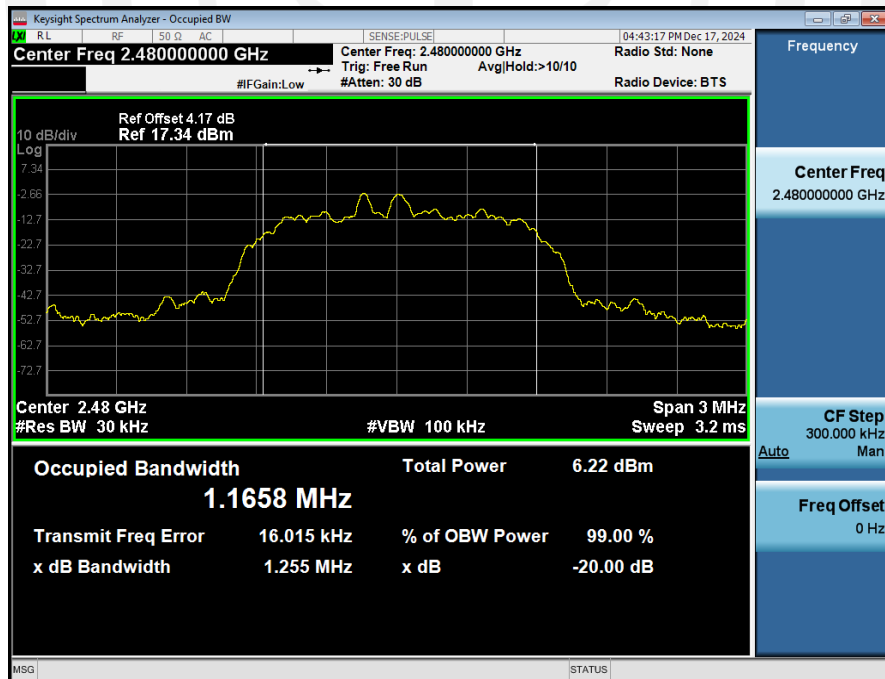


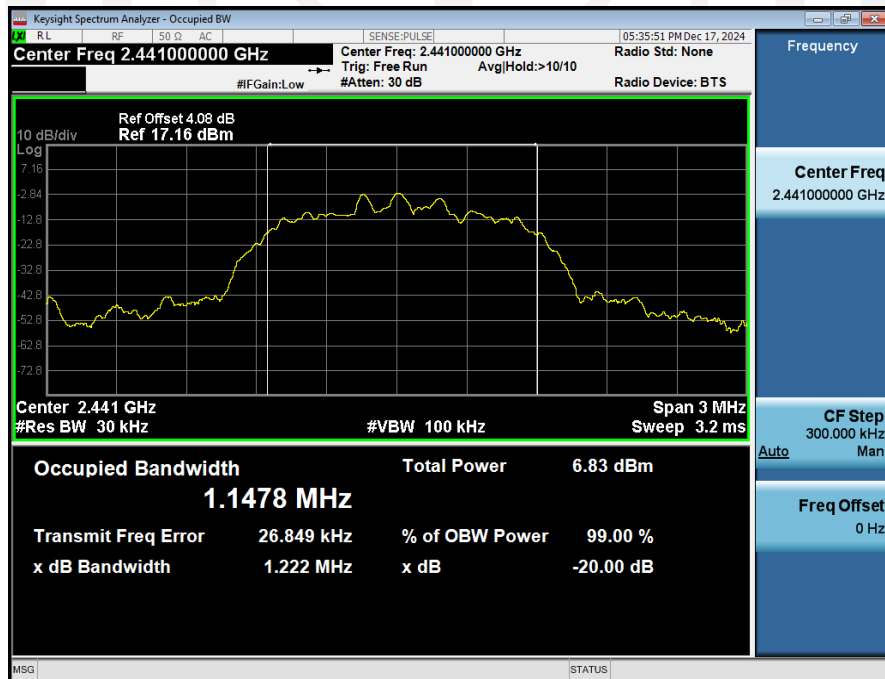
Right earphone:

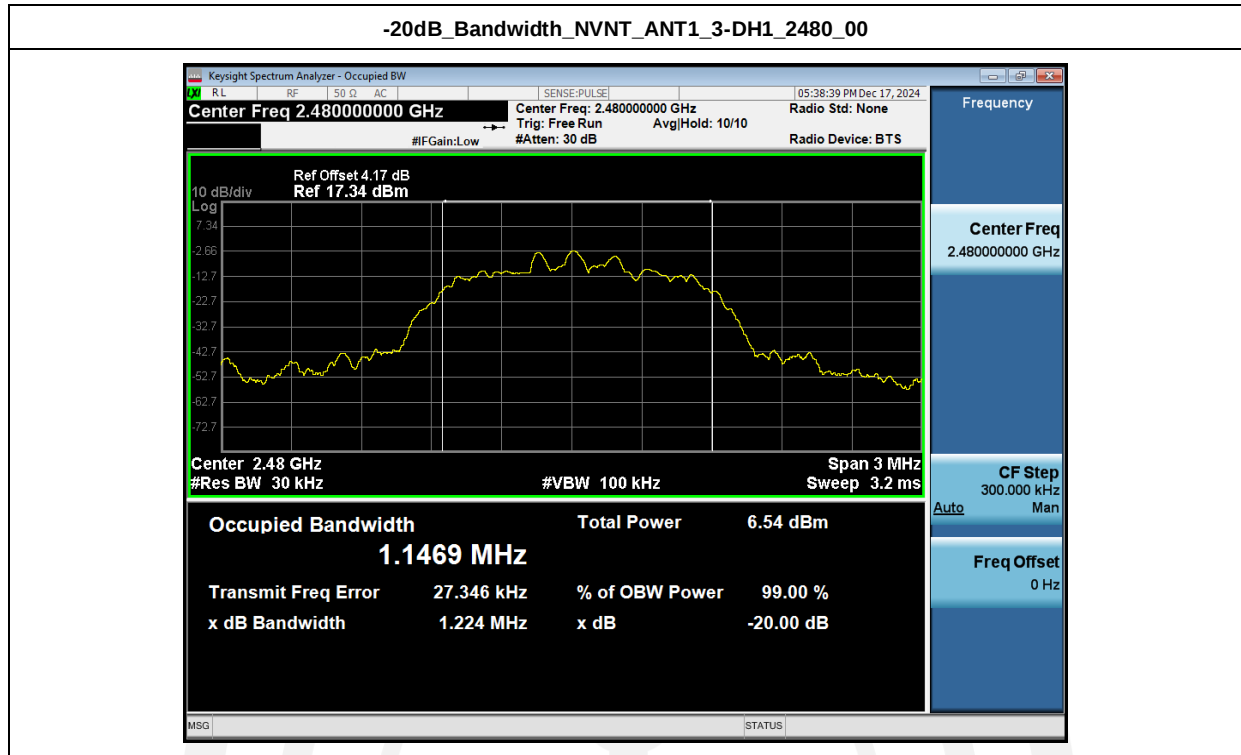
Condition	Antenna	Modulation	Frequency (MHz)	-20dB BW(MHz)	if larger than CFS
NVNT	ANT1	1-DH1	2402.00	0.879	No
NVNT	ANT1	1-DH1	2441.00	0.881	No
NVNT	ANT1	1-DH1	2480.00	0.882	No
NVNT	ANT1	2-DH1	2402.00	1.256	Yes
NVNT	ANT1	2-DH1	2441.00	1.256	Yes
NVNT	ANT1	2-DH1	2480.00	1.255	Yes
NVNT	ANT1	3-DH1	2402.00	1.224	Yes
NVNT	ANT1	3-DH1	2441.00	1.222	Yes
NVNT	ANT1	3-DH1	2480.00	1.224	Yes

-20dB_Bandwidth_NVNT_ANT1_1-DH1_2402_00**-20dB_Bandwidth_NVNT_ANT1_1-DH1_2441_00**

-20dB_Bandwidth_NVNT_ANT1_1-DH1_2480_00**-20dB_Bandwidth_NVNT_ANT1_2-DH1_2402_00**

-20dB_Bandwidth_NVNT_ANT1_2-DH1_2441_00**-20dB_Bandwidth_NVNT_ANT1_2-DH1_2480_00**

-20dB_Bandwidth_NVNT_ANT1_3-DH1_2402_00**-20dB_Bandwidth_NVNT_ANT1_3-DH1_2441_00**

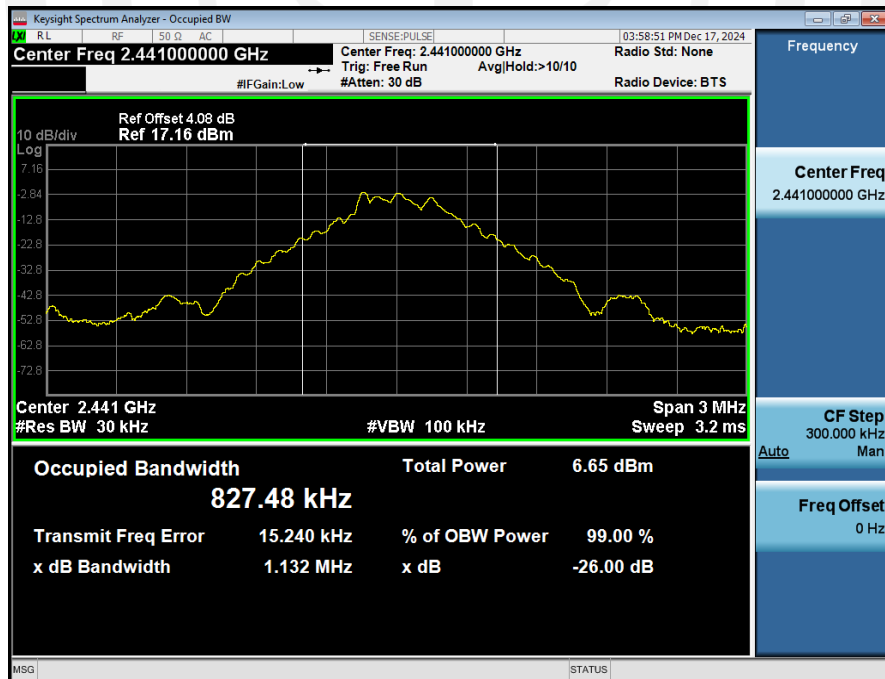


Condition	Antenna	Modulation	Frequency (MHz)	99% BW (MHz)
NVNT	ANT1	1-DH1	2402.00	0.822
NVNT	ANT1	1-DH1	2441.00	0.827
NVNT	ANT1	1-DH1	2480.00	0.828
NVNT	ANT1	2-DH1	2402.00	1.164
NVNT	ANT1	2-DH1	2441.00	1.163
NVNT	ANT1	2-DH1	2480.00	1.165
NVNT	ANT1	3-DH1	2402.00	1.150
NVNT	ANT1	3-DH1	2441.00	1.148
NVNT	ANT1	3-DH1	2480.00	1.148

99%_Occupied_Bandwidth_NVNT_ANT1_1-DH1_2402_00



99%_Occupied_Bandwidth_NVNT_ANT1_1-DH1_2441_00



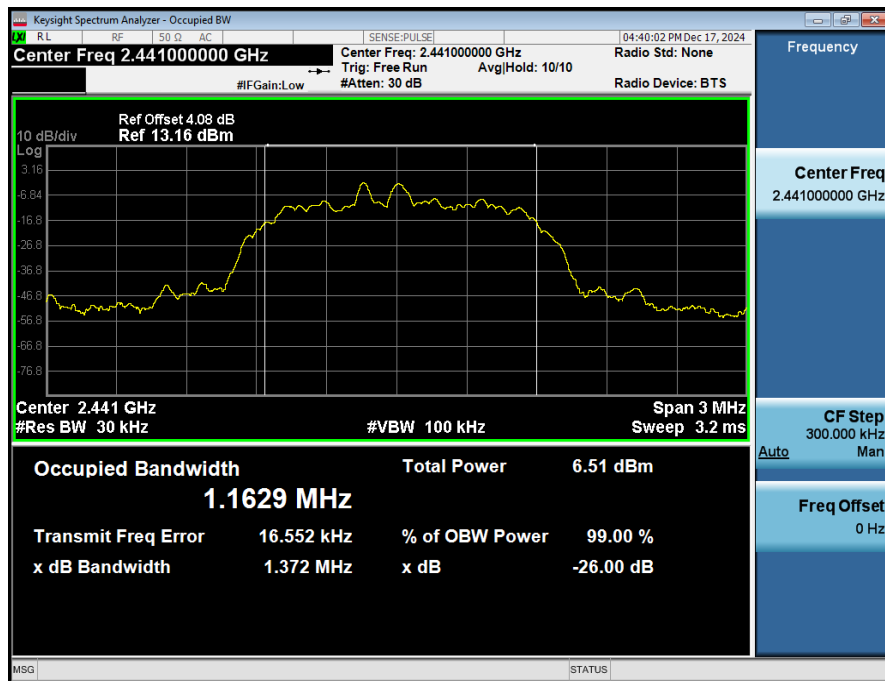
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99%_Occupied_Bandwidth_NVNT_ANT1_2-DH1_2402_00



99%_Occupied_Bandwidth_NVNT_ANT1_2-DH1_2441_00



99%_Occupied_Bandwidth_NVNT_ANT1_2-DH1_2480_00



99%_Occupied_Bandwidth_NVNT_ANT1_3-DH1_2402_00



99%_Occupied_Bandwidth_NVNT_ANT1_3-DH1_2441_00



99%_Occupied_Bandwidth_NVNT_ANT1_3-DH1_2480_00



5. Carrier Frequency Separation

5.1. 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.

Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW

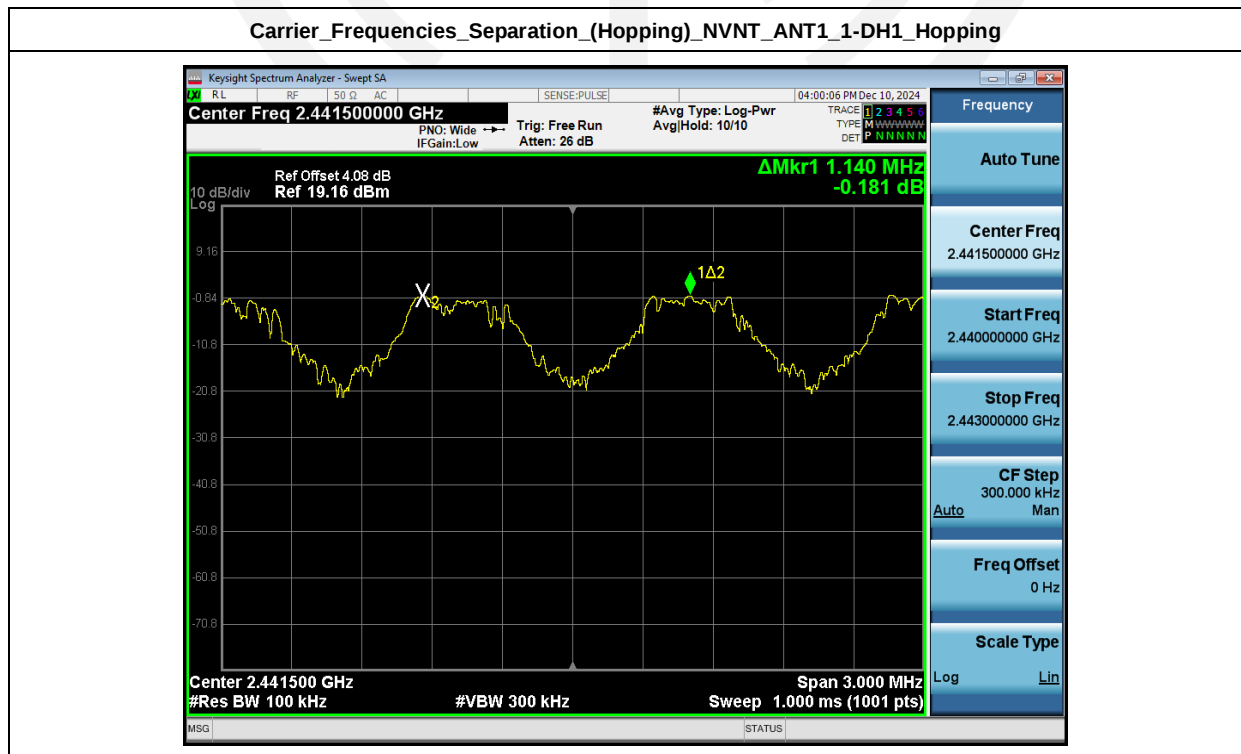
5.2. Test Procedure

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The carrier frequency was measured by spectrum analyzer with 100kHz RBW and 300kHz VBW.

5.3. Test Result

Left earphone:

Condition	Antenna	Modulation	Frequency(MHz)	Hopping NO.0 (MHz)	Hopping NO.1 (MHz)	Carrier Frequencies Separation(MHz)	Limit(MHz)	Result
NVNT	ANT1	1-DH1	2441.00	2440.861	2442.001	1.14	0.879	Pass
NVNT	ANT1	2-DH1	2441.00	2441.002	2441.860	0.86	0.839	Pass
NVNT	ANT1	3-DH1	2441.00	2440.861	2441.857	1.00	0.815	Pass



Carrier_Frequencies_Separation_(Hopping)_NVNT_ANT1_2-DH1_Hopping



Carrier_Frequencies_Separation_(Hopping)_NVNT_ANT1_3-DH1_Hopping



Carrier_Frequencies_Separation_(Hopping)_NVNT_ANT1_2-DH1_Hopping



Carrier_Frequencies_Separation_(Hopping)_NVNT_ANT1_3-DH1_Hopping



6. Number Of Hopping Channel

6.1. Limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels

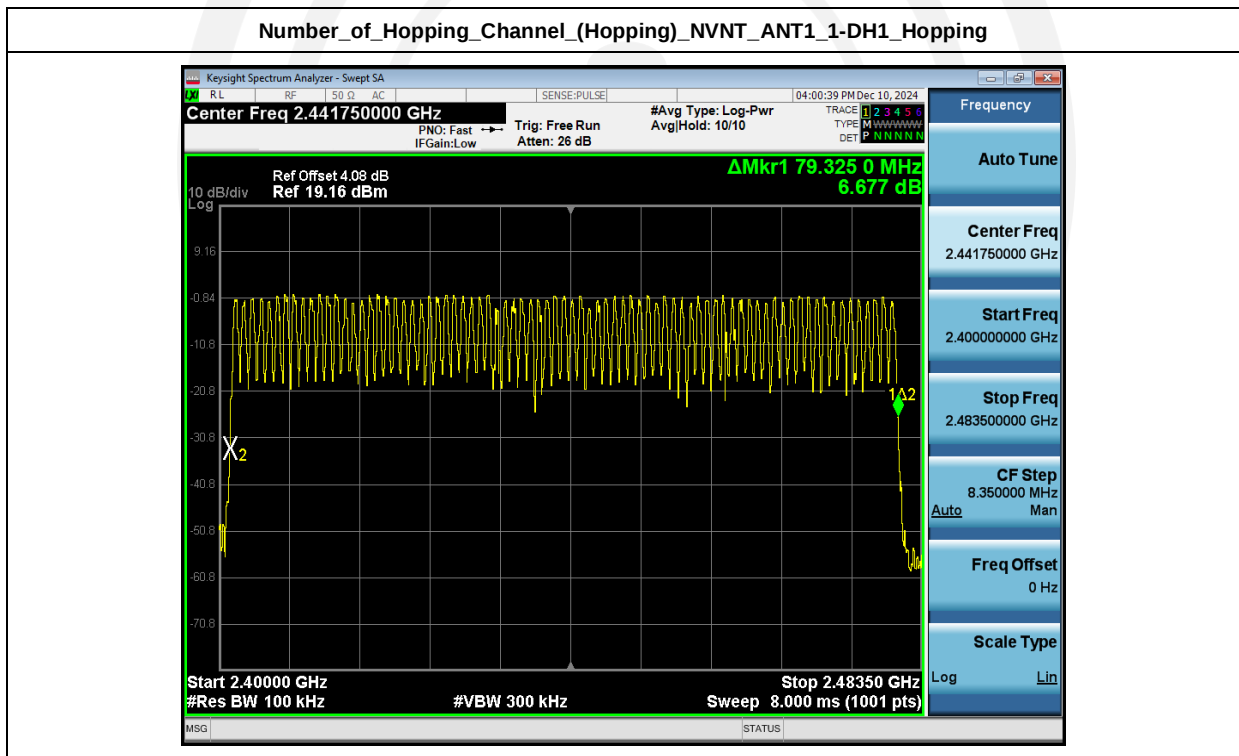
6.2. Test Procedure

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The number of hopping channel was measured by spectrum analyzer with 100kHz RBW and 300KHz VBW.

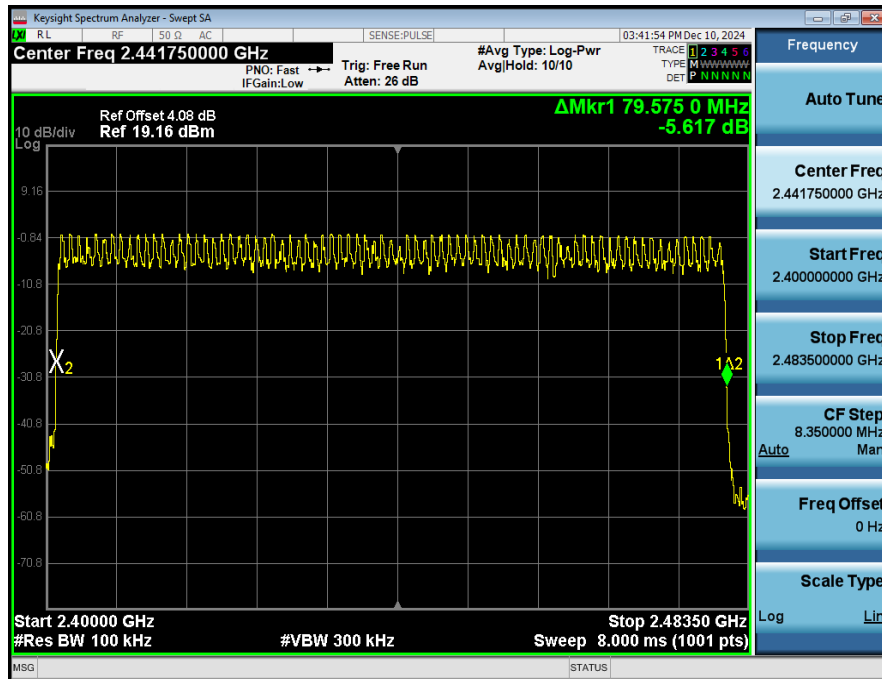
6.3. Test Result

Left earphone:

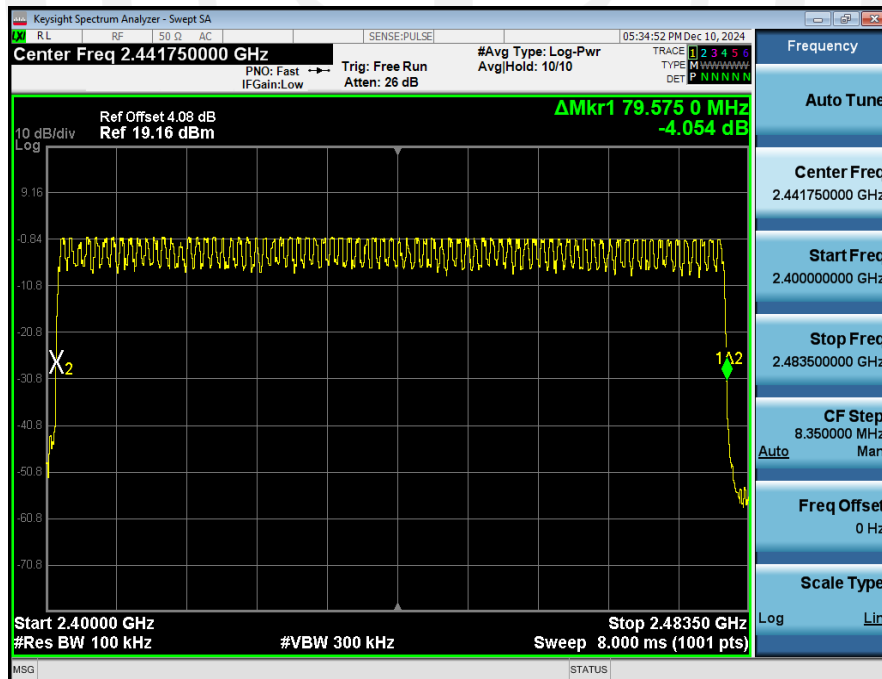
Condition	Antenna	Modulation	Hopping Num	Limit	Result
NVNT	ANT1	1-DH1	79	15	Pass
NVNT	ANT1	2-DH1	79	15	Pass
NVNT	ANT1	3-DH1	79	15	Pass



Number_of_Hopping_Channel_(Hopping)_NVNT_ANT1_2-DH1_Hopping



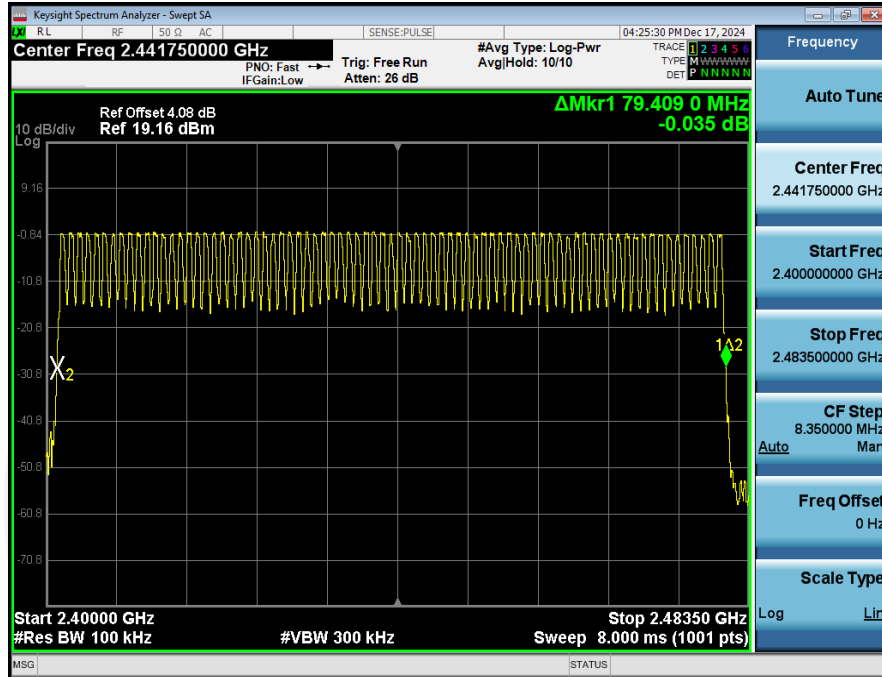
Number_of_Hopping_Channel_(Hopping)_NVNT_ANT1_3-DH1_Hopping



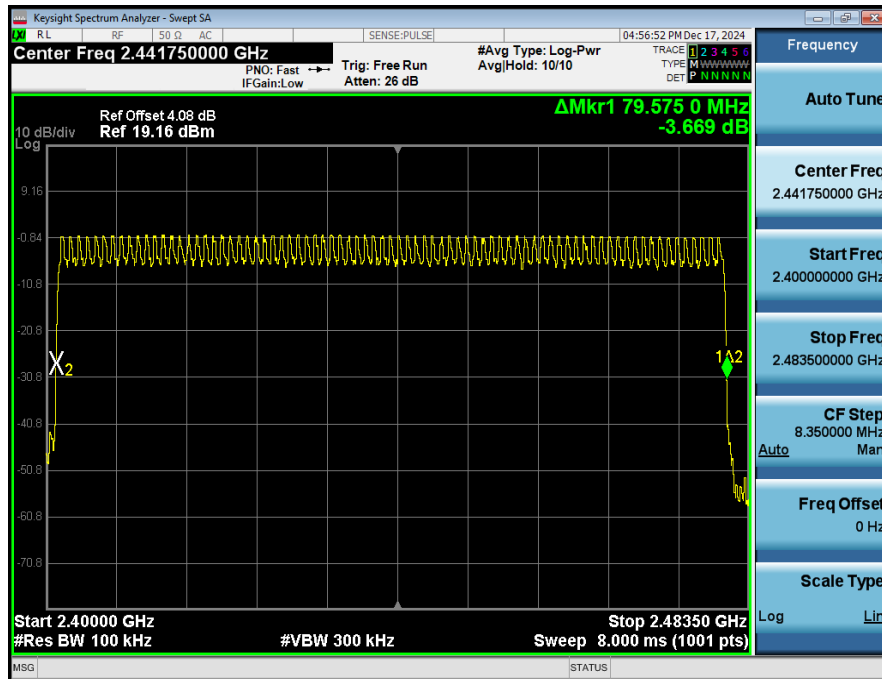
Right earphone:

Condition	Antenna	Modulation	Hopping Num	Limit	Result
NVNT	ANT1	1-DH1	79	15	Pass
NVNT	ANT1	2-DH1	79	15	Pass
NVNT	ANT1	3-DH1	79	15	Pass

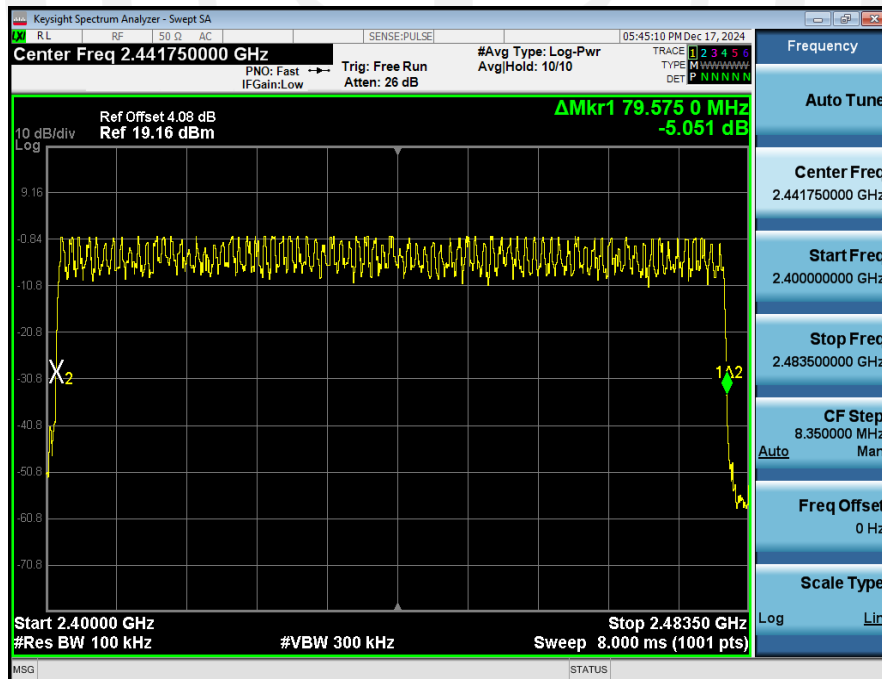
Number_of_Hopping_Channel_(Hopping)_NVNT_ANT1_1-DH1_Hopping



Number_of_Hopping_Channel_(Hopping)_NVNT_ANT1_2-DH1_Hopping



Number_of_Hopping_Channel_(Hopping)_NVNT_ANT1_3-DH1_Hopping



7. Dwell Time

7.1. Test limit

Please refer FCC part 15.247 & RSS-247.

Frequency hopping systems operating in the 2400MHz-2483.5 MHz. The average time of occupancy on any frequency shall not greater than 0.4 s within period of 0.4 seconds multiplied by the number of hopping channel employed.

7.2. Test Procedure

7.2.1. Place the EUT on the table and set it in transmitting mode.

7.2.2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

7.2.3. Set center frequency of spectrum analyzer = operating frequency.

7.2.4. Set the spectrum analyzer as RBW, VBW=1MHz, Span = 0Hz, Sweep = auto.

7.2.5. Repeat above procedures until all frequency measured were complete.

7.3. Test Result

Note:

1. The test period: $T = 0.4 \text{ Second/Channel} \times 79 \text{ Channel} = 31.6 \text{ s}$

2. Dwell Time=Pulse Time* Hops Number

Left earphone:

Condition	Antenna	Packet Type	Pulse Time(ms)	Hops	Dwell Time(ms)	Limit(s)	Result
NVNT	ANT1	1-DH1	0.384	321.00	123.264	0.40	Pass
NVNT	ANT1	2-DH1	0.384	320.00	122.880	0.40	Pass
NVNT	ANT1	3-DH1	0.384	320.00	122.880	0.40	Pass
NVNT	ANT1	1-DH3	1.641	154.00	252.714	0.40	Pass
NVNT	ANT1	1-DH5	2.887	91.00	262.717	0.40	Pass
NVNT	ANT1	2-DH3	1.645	157.00	258.265	0.40	Pass
NVNT	ANT1	2-DH5	2.893	101.00	292.193	0.40	Pass
NVNT	ANT1	3-DH3	1.645	157.00	258.265	0.40	Pass
NVNT	ANT1	3-DH5	2.895	116.00	335.820	0.40	Pass

KeySight Spectrum Analyzer - Swept SA

Center Freq 2.441000000 GHz

Trig Delay: 500.0 μ s #Avg Type: Log-Pwr

PNO: Fast IFGain: Low Trg: Video Atten: 26 dB

Ref Offset 4.08 dB Ref 19.16 dBm

Δ Mkr1 384.0 μ s -39.85 dB

Center 2.441000000 GHz Span 0 Hz

Res BW 1.0 MHz #VBW 1.0 MHz Sweep 10.00 ms (30001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	A2	1	t	(Δ)	384.0 μ s	(Δ)		-39.85 dB
2	F	1	t		499.0 μ s			-8.65 dBm

MSG [STATUS]

The screenshot displays a Keysight Spectrum Analyzer interface. The main plot shows a signal at 2.441 GHz with a span of 0 Hz. The signal is represented by a yellow trace. A green marker is visible at 11.46 s. The plot is labeled with 'Center Freq 2.441000000 GHz' and 'Span 0 Hz'. The resolution bandwidth (Res BW) is 1.0 MHz, and the sweep time is 31.60 s (30001 pts). The plot also shows 'Ref Offset 4.08 dB' and 'Ref 24.08 dBm'. The plot is labeled with 'Mkr1 11.46 s' and '-0.23 dBm'. The plot is labeled with '10 dB/div' and 'Log'. The plot is labeled with 'PNO: Fast' and 'IFGain: Low'. The plot is labeled with 'Trig: Free Run' and 'Atten: 30 dB'. The plot is labeled with '#Avg Type: Log-Pwr'. The plot is labeled with 'TRACE 1' and 'TYPE W' and 'DET P' and 'NNNNN'. The plot is labeled with 'Auto Tune' and 'Center Freq 2.441000000 GHz' and 'Start Freq 2.441000000 GHz' and 'Stop Freq 2.441000000 GHz' and 'CF Step 1.000000 MHz' and 'Auto' and 'Man' and 'Freq Offset 0 Hz' and 'Scale Type Log' and 'Lin'. The plot is labeled with 'MSG' and 'STATUS'.

Dwell Time_(Hopping)_NVNT_ANT1_2-DH1_2441_00_One_Burst_Time

The screenshot displays a Keysight Spectrum Analyzer interface. At the top, the title bar reads "Keysight Spectrum Analyzer - Swept SA". Below it, the main display area shows a frequency spectrum plot. The plot has a vertical axis labeled "Log" ranging from -70.8 to 10 dB/div. A horizontal green line indicates the "TRIG LVL" at approximately -10.8 dB. A yellow signal trace is visible, with a green marker labeled "X2" pointing to a peak at -13.70 dB. The plot also shows "Ref Offset 4.08 dB" and "Ref 19.16 dBm". To the right of the plot, there are several status indicators: "Center Freq 2.441000000 GHz", "Trig Delay-500.0 μs", "#Avg Type: Log-Pwr", "PNO: Fast", "IFGain:Low", "Atten: 26 dB", "TYPE W", "DET P", and "ΔMkr1 384.0 μs -13.70 dB". Below the plot, there are more settings: "Res BW 1.0 MHz", "#VBW 1.0 MHz", "Sweep 10.00 ms (30001 pts)", and "Span 0 Hz". On the far right, there is a sidebar with various controls: "Frequency", "Auto Tune", "Center Freq 2.441000000 GHz", "Start Freq 2.441000000 GHz", "Stop Freq 2.441000000 GHz", "CF Step 1.000000 MHz", "Man", "Freq Offset 0 Hz", "Scale Type", and "Log Lin". At the bottom, there is a table with columns: "MKR", "MODE", "TRC", "SCN", "X", "Y", "FUNCTION", "FUNCTION WIDTH", and "FUNCTION VALUE". The table contains two rows of data:

MKR	MODE	TRC	SCN	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	A2	t	(Δ)	384.0 μs (Δ)	-13.70 dB			
2	F	t		499.0 μs	-3.33 dBm			

Keysight Spectrum Analyzer - Swept SA

Center Freq 2.441000000 GHz

Ref Offset 4.08 dB
Ref 24.08 dBm

10 dB/div
Log

Mkr1 2.388 s
-0.61 dBm

Center 2.441000000 GHz
Res BW 1.0 MHz
#VBW 1.0 MHz
Sweep 31.60 s (30001 pts)

Span 0 Hz

Frequency

Auto Tune

Center Freq
2.441000000 GHz

Start Freq
2.441000000 GHz

Stop Freq
2.441000000 GHz

CF Step
1.000000 MHz
Auto Man

Freq Offset
0 Hz

Scale Type
Log Lin

Dwell Time (Hopping) NVNT_ANT1_3-DH1_2441_00_One_Burst_Time

Keysight Spectrum Analyzer - Swept SA

Center Freq 2.441000000 GHz Trig Delay 500.0 μ s #Avg Type: Log-Pwr TRACE 1 2 3 4 5 6
 PNO: Fast →→→ Trig: Video TYPE W W W W W W W W W W
 IF Gain: Low Atten: 26 dB DET P N N N N N N

Ref Offset 4.08 dB Δ Mkr1 384.0 μ s
 Ref 19.16 dBm -15.23 dB

10 dB/div Log TRIG LVL

Center 2.441000000 GHz Span 0 Hz
 Res BW 1.0 MHz #VBW 1.0 MHz Sweep 10.00 ms (30001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ 2	t	(Δ)	384.0 μ s	(Δ) -15.23 dB			
2	F	t		499.0 μ s	-7.87 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG STATUS

Frequency

Auto Tune

Center Freq 2.441000000 GHz

Start Freq 2.441000000 GHz

Stop Freq 2.441000000 GHz

CF Step 1.000000 MHz
 Auto Man

Freq Offset 0 Hz

Scale Type Log Lin

Keysight Spectrum Analyzer - Swept SA

Center Freq 2.441000000 GHz

Ref Offset 4.08 dB
Ref 24.08 dBm

Trig: Free Run
Atten: 30 dB

#Avg Type: Log-Pwr

TRACE 012 34 5 6
TYPE W W W W W W W W
DET P N N N N N

Mkr1 19.28 s
-0.55 dBm

10. dB/div
Log

Center 2.441000000 GHz
Res BW 1.0 MHz
#VBW 1.0 MHz
Span 0 Hz
Sweep 31.60 s (30001 pts)

Frequency

Auto Tune

Center Freq
2.441000000 GHz

Start Freq
2.441000000 GHz

Stop Freq
2.441000000 GHz

CF Step
1.000000 MHz
Man

Auto

Freq Offset
0 Hz

Scale Type
Log

Lin

MSG

STATUS

Dwell_Time(Hopping)_NVNT_ANT1_1-DH3_2441_00_One_Burst_Time

Keysight Spectrum Analyzer - Swept SA

R L RF 50 Ω AC SENSE:PULSE 04:26:28 PM Dec 10, 2024

Center Freq 2.441000000 GHz Trig Delay-500.0 μs #Avg Type: Log-Pwr TRACE 1 2 3 4 5 6
PNO: Fast IFGain:Low Trig: Video Atten: 26 dB TYPE W NNNNN DET P NNNNN

Ref Offset 4.08 dB ΔMkr1 1.641 ms
Ref 19.16 dBm -51.34 dB

10 dB/div Log X₂

Center 2.441000000 GHz Span 0 Hz
Res BW 1.0 MHz #VBW 1.0 MHz Sweep 10.00 ms (30001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	A2	1	t (Δ)	1.641 ms (Δ)	-51.34 dB			
2	F	1	t	499.0 μs	-9.90 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG STATUS

Frequency Auto Tune Center Freq 2.441000000 GHz Start Freq 2.441000000 GHz Stop Freq 2.441000000 GHz CF Step 1.000000 MHz Man Auto Freq Offset 0 Hz Scale Type Lin Log Lin

Keysight Spectrum Analyzer - Swept SA

Center Freq 2.441000000 GHz

Ref Offset 4.08 dB
Ref 24.08 dBm

10 dB/div
Log

PNO: Fast
IFGain: Low

Trig: Free Run
Atten: 30 dB

#Avg Type: Log-Pwr

TRACE 1 2 3 4 5 6
TYPE W W W W W W W W
DET P N N N N N

04:27:09 PM Dec 10, 2024

Frequency

Auto Tune

Center Freq
2.441000000 GHz

Start Freq
2.441000000 GHz

Stop Freq
2.441000000 GHz

CF Step
1.000000 MHz
Auto Man

Freq Offset
0 Hz

Scale Type
Log Lin

Mkr1 2.378 s
-0.79 dBm

Center 2.441000000 GHz
Res BW 1.0 MHz
#VBW 1.0 MHz
Sweep 31.60 s (30001 pts)
Span 0 Hz

MSG | STATUS

Dwell_Time_(Hopping)_NVNT_ANT1_1-DH5_2441_00_One_Burst_Time

Keysight Spectrum Analyzer - Swept SA
RL RF SFO AC SENSE:PULSE 04:28:03 PM Dec 10, 2024

Center Freq 2.441000000 GHz Trig Delay: 500.0 μs #Avg Type: Log-Pwr
PNO: Fast → IFGain: Low Attenuation: 26 dB TYPE: W W W W W W W W DET: P N N N N N

Ref Offset 4.08 dB ΔMkr1 2.887 ms
Ref 19.16 dBm -16.82 dB

10 dB/div Log
X₂ Y₁ TRIG LVL

Center 2.441000000 GHz Span 0 Hz
Res BW 1.0 MHz #VBW 1.0 MHz Sweep 10.00 ms (30001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ	t	(Δ)	2.887 ms	(Δ) -16.82 dB			
2	F	t		499.0 μs	-7.91 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG STATUS

Frequency
Auto Tune
Center Freq 2.441000000 GHz
Start Freq 2.441000000 GHz
Stop Freq 2.441000000 GHz
CF Step 1.000000 MHz Man
Freq Offset 0 Hz
Scale Type Log Lin

Keysight Spectrum Analyzer - Swept SA

Center Freq 2.441000000 GHz

Ref Offset 4.08 dB
Ref 24.08 dBm

10 dB/div
Log

Mkr1 5.146 s
-0.83 dBm

Center Freq 2.441000000 GHz

Start Freq 2.441000000 GHz

Stop Freq 2.441000000 GHz

CF Step 1.000000 MHz
Auto

Freq Offset 0 Hz

Scale Type Log

Center 2.441000000 GHz

Res BW 1.0 MHz

#VBW 1.0 MHz

Span 0 Hz

Sweep 31.60 s (30001 pts)

The image shows a Keysight Spectrum Analyzer interface. The main display is a log-frequency plot with a yellow signal trace. A green marker labeled '1' is positioned at 5.146 s and -0.83 dBm. The y-axis is labeled '10 dB/div' and 'Log'. The x-axis is labeled 'Center 2.441000000 GHz', 'Res BW 1.0 MHz', '#VBW 1.0 MHz', 'Span 0 Hz', and 'Sweep 31.60 s (30001 pts)'. The right side of the interface contains a control panel with various settings like 'Auto Tune', 'Center Freq', 'Start Freq', 'Stop Freq', 'CF Step', 'Freq Offset', and 'Scale Type'.

Dwell_Time_(Hopping)_NVNT_ANT1_2-DH3_2441_00_One_Burst_Time

Keysight Spectrum Analyzer - Swept SA

RL RF SO AC SENSE:PULSE 04:29:09 PM Dec 10, 2024

Center Freq 2.441000000 GHz Trig Delay: 500.0 μ s #Avg Type: Log-Pwr
PNO: Fast IFGain: Low Trig: Video Atten: 26 dB

TRACE 1 2 3 4 5 6
TYPE W W W W W W W W
DET P N N N N N N

Ref Offset 4.08 dB Δ Mkr1 1.645 ms
Ref 19.16 dBm -17.60 dB

10 dB/div Log

9.16
-0.84
-10.8
-20.8
-30.8
-40.8
-50.8
-60.8
-70.8

TRG LVL

Center 2.441000000 GHz Span 0 Hz
Res BW 1.0 MHz #VBW 1.0 MHz Sweep 10.00 ms (30001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ 2	t	(Δ)	1.645 ms	(Δ) -17.60 dB			
2	F	t		499.0 μ s	-8.02 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG STATUS

Frequency

Auto Tune

Center Freq
2.441000000 GHz

Start Freq
2.441000000 GHz

Stop Freq
2.441000000 GHz

CF Step
1.000000 MHz
Man

Auto

Freq Offset
0 Hz

Scale Type
Log Lin

Keysight Spectrum Analyzer - Swept SA

Center Freq 2.441000000 GHz

PNO: Fast IFGain: Low Trig: Free Run Atten: 30 dB #Avg Type: Log-Pwr

TRACE 1 2 3 4 5 6 TYPE WWWWWWWW DET P NNNNN

Ref Offset 4.08 dB Ref 24.08 dBm

Mkr1 22.84 s -0.44 dBm

10 dB/div Log

Center 2.441000000 GHz Res BW 1.0 MHz #VBW 1.0 MHz Span 0 Hz Sweep 31.60 s (30001 pts)

Auto Tune

Center Freq 2.441000000 GHz

Start Freq 2.441000000 GHz

Stop Freq 2.441000000 GHz

CF Step 1.000000 MHz Man

Freq Offset 0 Hz

Scale Type Log Lin

MSG STATUS

Dwell_Time_(Hopping)_NVNT_ANT1_2-DH5_2441_00_One_Burst_Time

Keysight Spectrum Analyzer - Swept SA

Center Freq **2.441000000 GHz** Trig Delay: 500.0 μ s #Avg Type: Log-Pwr
 PNO: Fast IFGain: Low Atten: 26 dB

Ref Offset 4.08 dB Ref 19.16 dBm Δ Mkr1 2.893 ms -13.94 dB

10 dB/div Log

Center **2.441000000 GHz** Span **0 Hz**
 Res BW **1.0 MHz** #VBW **1.0 MHz** Sweep **10.00 ms (30001 pts)**

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ 2	t	(Δ)	2.893 ms	(Δ) -13.94 dB			
2	F	t		499.0 μ s	-9.09 dBm			

MSG STATUS

Keysight Spectrum Analyzer - Swept SA

Center Freq 2.441000000 GHz

Ref Offset 4.08 dB
Ref 24.08 dBm

Mkr1 21.91 s
-0.44 dBm

Center 2.441000000 GHz
Res BW 1.0 MHz
Span 0 Hz

Auto Tune

Center Freq
2.441000000 GHz

Start Freq
2.441000000 GHz

Stop Freq
2.441000000 GHz

CF Step
1.000000 MHz
Man

Freq Offset
0 Hz

Scale Type
Log

MSG STATUS

Dwell Time (Hopping)_NVNT_ANT1_3-DH3_2441_00_One_Burst_Time

Keysight Spectrum Analyzer - Swept SA

Center Freq 2.441000000 GHz Trig Delay: 500.0 μ s #Avg Type: Log-Pwr TRACE 1 2 3 4 5 6
 PNO: Fast Trig: Video TYPE W W W W W W W W
 IF Gain: Low Atten: 26 dB DET P N N N N N N

Ref Offset 4.08 dB Δ Mkr1 1.645 ms
 Ref 19.16 dBm -22.61 dB

10 dB/div Log

Center 2.441000000 GHz Span 0 Hz
 Res BW 1.0 MHz #VBW 1.0 MHz Sweep 10.00 ms (30001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ 2	1	t	(Δ)	1.645 ms	(Δ)	-22.61 dB	
2	F	1	t		499.0 μ s	-5.88 dBm		
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG STATUS

Frequency

Auto Tune

Center Freq 2.441000000 GHz

Start Freq 2.441000000 GHz

Stop Freq 2.441000000 GHz

CF Step 1.000000 MHz
 Auto Man

Freq Offset 0 Hz

Scale Type
 Log Lin

Keysight Spectrum Analyzer - Swept SA

Center Freq 2.441000000 GHz

Ref Offset 4.08 dB
Ref 24.08 dBm

10 dB/div
Log

Mkr1 29.16 s
-0.43 dBm

Center Freq 2.441000000 GHz

Start Freq 2.441000000 GHz

Stop Freq 2.441000000 GHz

CF Step 1.000000 MHz
Auto Man

Freq Offset 0 Hz

Scale Type Log Lin

Center 2.441000000 GHz

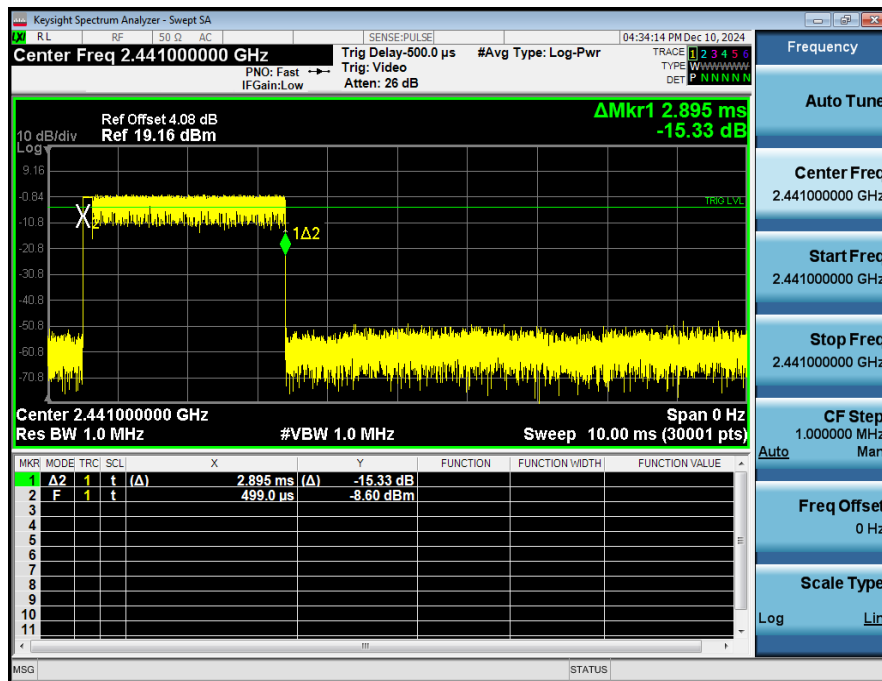
Res BW 1.0 MHz

#VBW 1.0 MHz

Span 0 Hz

Sweep 31.60 s (30001 pts)

Dwell_Time_(Hopping)_NVNT_ANT1_3-DH5_2441_00_One_Burst_Time



Dwell_Time_(Hopping)_NVNT_ANT1_3-DH5_2441_00_Accumulated

