



## **TEST REPORT**

Applicant Name : Address : Zeeva International Limited Suite 1007B, 10th Floor, Exchange Tower, 33 Wang Chiu Road, Kowloon Bay, Hong Kong SZ3211230-68247E-RF 2ADM5-EP-0658-R

Report Number : FCC ID:

**Test Standard (s)** FCC PART 15.247

#### **Sample Description**

Product Type: Model No.: Date Received: Date of Test: Report Date: TWS IN EAR BEAN EARBUDS EP-0658 2021-12-30 2022-01-06 to 2022-02-21 2022-02-25

Test Result:

Pass\*

\* In the configuration tested, the EUT complied with the standards above.

#### Prepared and Checked By:

Ting Lü EMC Engineer

**Approved By:** 

Candry . Li

Candy Li EMC Engineer

Note: This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "\* ".

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Shenzhen Accurate Technology Co., Ltd.	Report No.: SZ3211230-68247E-RF
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APPLICABLE STANDARD	
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#### **GENERAL INFORMATION**

Product	TWS IN EAR BEAN EARBUDS
Tested Model No.	EP-0658
SKU Number	Black: 5635044 White: 5635045 Purple: 5635046 Rose Gold: 5635047
UPN Number	Black: 1922342950456 White: 1922342950463 Purple: 1922342950470 Rose Gold: 1922342950487
Frequency Range	2402~2480MHz
Maximum conducted Peak output power	-1.48dBm
Modulation Technique	GFSK, π/4-DQPSK, 8DPSK
Antenna Specification*	Internal PCB Antenna: -0.58dBi(provided by the applicant)
Voltage Range	DC 3.7V from battery
Sample number	SZ3211230-68247E-RF-S1
Sample/EUT Status	Good condition

#### Product Description for Equipment under Test (EUT)

#### Objective

This test report is in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communication Commission rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, section 15.203, 15.205, 15.209 and 15.247 rules.

#### **Test Methodology**

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

All emissions measurement was performed at Shenzhen Accurate Technology Co., Ltd. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Parameter		Uncertainty
Occupied Channel Bandwidth		5%
RF output po	ower, conducted	0.73dB
Unwanted Emission, conducted		1.6dB
AC Power Lines Conducted Emissions		2.72dB
<b>.</b>	30MHz - 1GHz	4.28dB
Emissions, Radiated	1GHz - 18GHz	4.98dB
Radiated	18GHz - 26.5GHz	5.06dB
Temperature		1°C
Humidity		6%
Supply	y voltages	0.4%

#### **Measurement Uncertainty**

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

#### **Test Facility**

The test site used by Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 708358, the FCC Designation No.: CN1189.

Accredited by American Association for Laboratory Accreditation (A2LA). The Certificate Number is 4297.01

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0016. The Registration Number is 5077A.

## SYSTEM TEST CONFIGURATION

#### **Description of Test Configuration**

The system was configured for testing in an engineering mode.

#### **EUT Exercise Software**

Software "FCC\_assist\_1.0.2.2"\* was used during testing and the power level was 10\*.

#### **Special Accessories**

No special accessory.

#### **Equipment Modifications**

No modification was made to the EUT tested.

#### **Support Equipment List and Details**

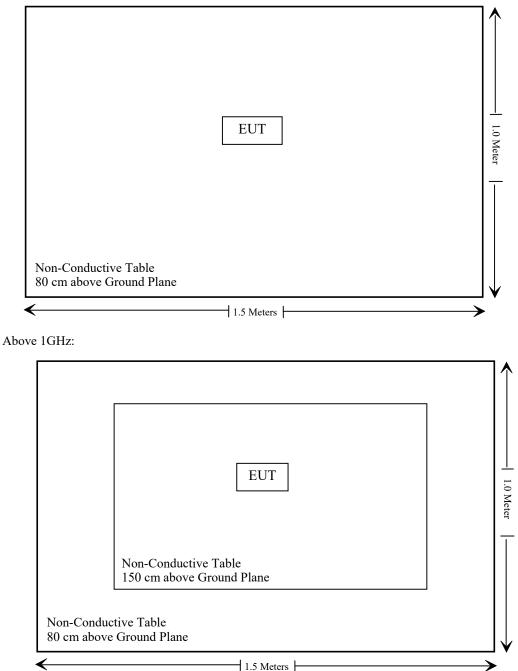
Manufacturer	Description	Model	Serial Number
/	/	/	/

#### External I/O Cable

Cable Description	Length (m)	From/Port	То
/	/	/	/

#### **Block Diagram of Test Setup** For radiated emission:

#### Below 1GHz:



1.5 Meters

## SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC§15.247 (i), §1.1307 (b) (1) &§2.1093	RF Exposure	Compliant
§15.203	Antenna Requirement	Compliant
§15.207(a)	AC Line Conducted Emissions	Not Applicable
§15.205, §15.209 & §15.247(d)	Radiated Emissions	Compliant
§15.247(a)(1)	20 dB Emission Bandwidth & 99% Occupied Bandwidth	Compliant
§15.247(a)(1)	Channel Separation Test	Compliant
§15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	Compliant
§15.247(a)(1)(iii)	Quantity of hopping channel Test	Compliant
§15.247(b)(1)	Peak Output Power Measurement	Compliant
§15.247(d)	Band edges	Compliant

Not Applicable: EUT is operated by battery only.

## **TEST EQUIPMENT LIST**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
		Radiated Emissi	ons Test		
Rohde & Schwarz	Test Receiver	ESR	102725	2021/12/13	2022/12/12
Rohde & Schwarz	Spectrum Analyzer	FSV40	101949	2021/12/13	2022/12/12
SONOMA INSTRUMENT	Amplifier	310 N	186131	2021/11/09	2022/11/08
A.H. Systems, inc.	Preamplifier	PAM-0118P	135	2021/11/09	2022/11/08
Quinstar	Amplifier	QLW-184055 36-J0	15964001002	2021/11/11	2022/11/10
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2021/07/06	2024/07/05
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2020/01/05	2023/01/04
Schwarzbeck	HORN ANTENNA	BBHA9170	9170-359	2020/01/05	2023/01/04
Wainwright	High Pass Filter	WHKX3.6/18 G-10SS	5	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.10	N050	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.11	N1000	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.12	N040	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.13	N300	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.14	N800	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.15	N600	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.16	N650	2021/12/14	2022/12/13
Radiated Emission Test Software: e3 19821b (V9)					
		RF Conducted	d Test		1
Rohde & Schwarz	Spectrum Analyzer	FSV-40	101495	2021/12/13	2022/12/12
Rohde & Schwarz	Open Switch and Control Unit	OSP120 + OSP-B157	101244 + 100866	2021/12/13	2022/12/12
WEINSCHEL	10dB Attenuator	5324	AU 3842	Each	time
Unknown	RF Coaxial Cable	No.32	RF-02	Each	time

\* **Statement of Traceability:** Shenzhen Accurate Technology Co., Ltd. attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

## FCC§15.247 (i), §1.1307 (b) (1) &§2.1093 – RF EXPOSURE

#### Applicable Standard

According to FCC §2.1093 and §1.1307(b) (1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB 447498 D01 General RF Exposure Guidance

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq$  50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]

 $[\sqrt{f(GHz)}] \le 3.0$  for 1-g SAR and  $\le 7.5$  for 10-g extremity SAR, where

1. f(GHz) is the RF channel transmit frequency in GHz.

2. Power and distance are rounded to the nearest mW and mm before calculation.

3. The result is rounded to one decimal place for comparison.

4. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test Exclusion.

#### **Test Result:**

For worst case:

Mode	Frequency		n Tune-up wer	Calculated Distance	Calculated	Threshold	SAR Test
	(MHz)	(dBm)	(mW)	(mm)	Value	(1-g SAR)	Exclusion
Bluetooth	2402-2480	-1	0.79	5	0.3	3.0	Yes

Result: Compliant.

## FCC §15.203 – ANTENNA REQUIREMENT

#### Applicable Standard

According to FCC § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

#### Antenna Connector Construction

The EUT has one internal PCB Antenna arrangement, which was permanently attached and the antenna gain is -0.58dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Result: Compliant.

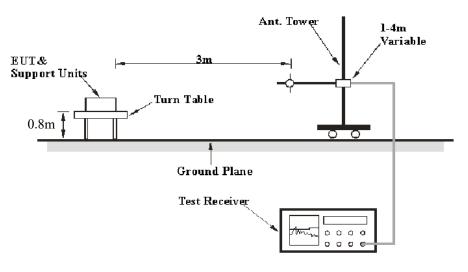
## FCC §15.205, §15.209 & §15.247(d) – RADIATED EMISSIONS

#### Applicable Standard

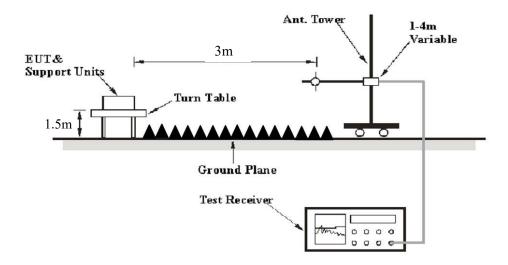
FCC §15.205; §15.209; §15.247(d)

#### **EUT Setup**

Below 1 GHz:



#### Above 1GHz:



The radiated emission performed in the 3 meters, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, FCC 15.247 limits.

#### EMI Test Receiver & Spectrum Analyzer Setup

The EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	РК
Above I GHZ	1 MHz	10 Hz	/	Average

#### **Test Procedure**

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All final data was recorded in Quasi-peak detection mode for frequency range of 30 MHz -1 GHz and peak and Average detection modes for frequencies above 1 GHz.

#### Factor & Margin Calculation

The Factor is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain. The basic equation is as follows:

Factor = Antenna Factor + Cable Loss - Amplifier Gain

The "**Over Limit/Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over Limit/margin of -7dB means the emission is 7dB below the limit. The equation for calculation is as follows:

Over Limit/Margin = Level / Corrected Amplitude – Limit Level / Corrected Amplitude = Read Level + Factor

#### **Test Data**

#### **Environmental Conditions**

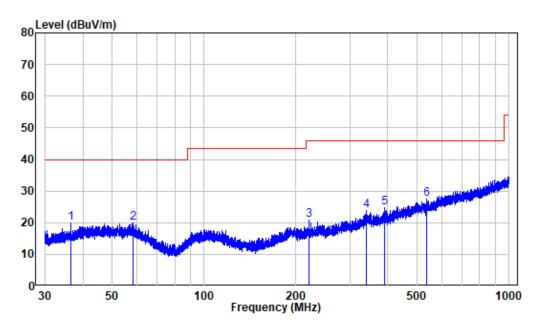
Temperature:	19-20 °С
<b>Relative Humidity:</b>	58-61%
ATM Pressure:	101.7kPa

The testing was performed by Chao Mo from 2022-02-18 to 2022-02-21.

EUT operation mode: BT Transmitting

(Scan with GFSK,  $\pi/4$ -DQPSK, 8DPSK mode at X axis, Y axis, Z axis, the worst case is 8DPSK Mode at X axis)

#### Below 1GHz: 8DPSK Mode, High Channel

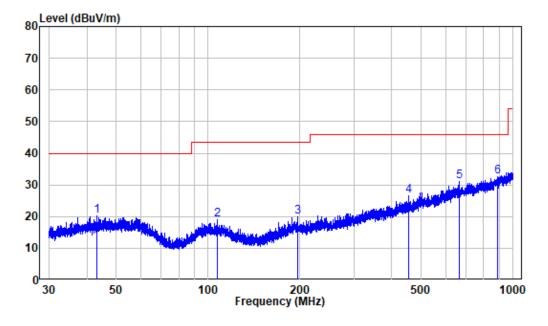


Horizontal

Site :	chamber
Condition:	3m HORIZONTAL
Job No. :	SZ3211230-68247E-RF
Test Mode:	BT Transmitting

	Freq	Factor			Limit Line		Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	36.589	-11.09	30.98	19.89	40.00	-20.11	Peak
2	58.433	-10.06	29.86	19.80	40.00	-20.20	Peak
3	220.714	-11.39	32.07	20.68	46.00	-25.32	Peak
4	340.632	-7.40	31.15	23.75	46.00	-22.25	Peak
5	390.038	-6.89	31.54	24.65	46.00	-21.35	Peak
6	537.589	-4.16	31.54	27.38	46.00	-18.62	Peak





Site : chamber Condition: 3m VERTICAL Job No. : SZ3211230-68247E-RF Test Mode: BT Transmitting

	Freq	Factor			Limit Line		Remark
-	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	43.126	-9.94	30.02	20.08	40.00	-19.92	Peak
2	106.806	-11.95	31.06	19.11	43.50	-24.39	Peak
3	196.424	-11.57	31.47	19.90	43.50	-23.60	Peak
4	455.107	-5.51	32.20	26.69	46.00	-19.31	Peak
5	666.095	-1.66	32.90	31.24	46.00	-14.76	Peak
6	887.610	1.00	31.50	32.50	46.00	-13.50	Peak

#### Above 1GHz (worst case):

Frequency	Receiver		Turntable AngleRx Antenna		Factor	Absolute Level	Limit	Margin	
(MHz)	Reading	PK/AV	Degree	Height	Polar	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)
	(dBuV)		Degree	(m)	(H/V)		· · · · ·		
Low Channel									
2310	51.97	РК	254	1.2	Н	-7.23	44.74	74	-29.26
2310	50.93	PK	263	1.4	V	-7.23	43.7	74	-30.3
2390	52.29	PK	89	1.8	Н	-7.21	45.08	74	-28.92
2390	54.59	РК	172	1.0	V	-7.21	47.38	74	-26.62
4804	51.9	РК	348	2.0	Н	-3.52	48.38	74	-25.62
4804	46.62	РК	311	1.4	V	-3.52	43.1	74	-30.9
				Middle C	hannel				
4882	51.88	PK	239	1.1	Н	-3.37	48.51	74	-25.49
4882	48.63	РК	164	1.6	V	-3.37	45.26	74	-28.74
				High Ch	annel				
2483.5	54.35	PK	137	1.3	Н	-7.2	47.15	74	-26.85
2483.5	54.97	PK	152	2.1	V	-7.2	47.77	74	-26.23
2500	52.57	РК	234	1.0	Н	-7.18	45.39	74	-28.61
2500	51.83	РК	66	1.3	V	-7.18	44.65	74	-29.35
4960	51.7	РК	319	1.1	Н	-3.01	48.69	74	-25.31
4960	48.95	РК	97	1.7	V	-3.01	45.94	74	-28.06

Note:

Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor Absolute Level (Corrected Amplitude) = Factor + Reading

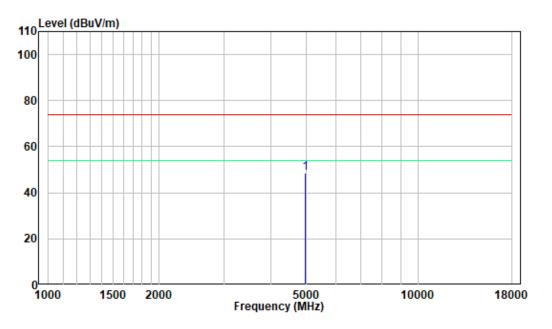
Margin = Absolute Level - Limit

The other spurious emission which is in the noise floor level was not recorded. For above 1GHz, the test result of peak was 20dB below to the limit of peak, which can be compliant to the average limit, so just peak value was recorded.

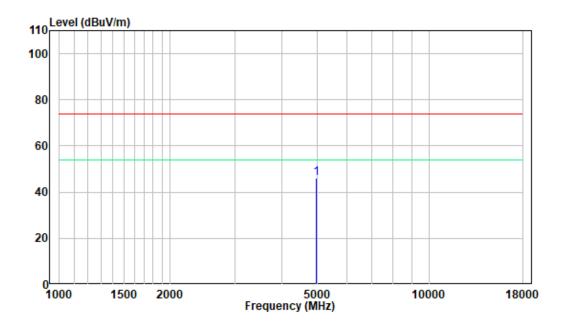
#### 1 GHz - 18 GHz: (Pre-Scan plots)

#### High Channel

#### Horizontal



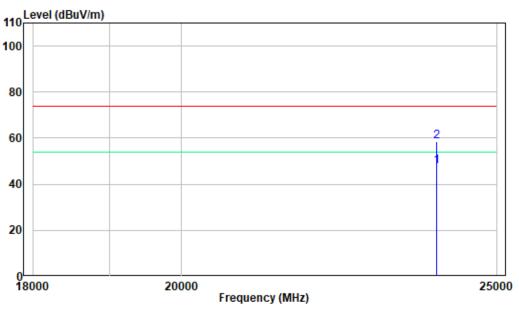
#### Vertical



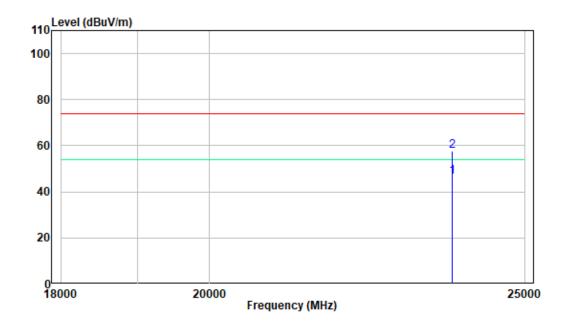
#### 18-25GHz: (Pre-Scan plots)

#### High Channel

#### Horizontal



Vertical



## FCC §15.247(a) (1)-CHANNEL SEPARATION TEST

#### **Applicable Standard**

Frequency hopping systems shall have hoping 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. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

#### **Test Procedure**

- 1.
- Set the EUT in transmitting mode, maxhold the channel. Set the adjacent channel of the EUT and maxhold another trace. 2.
- 3. Measure the channel separation.

#### **Test Data**

#### **Environmental Conditions**

Temperature:	23 °C
<b>Relative Humidity:</b>	57 %
ATM Pressure:	102.0 kPa

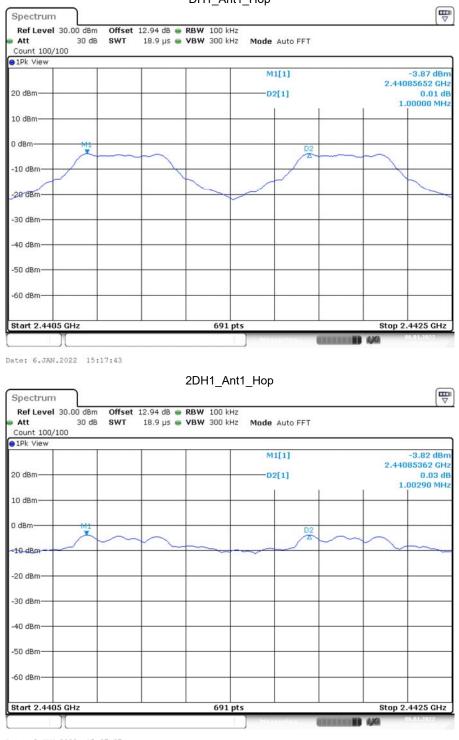
The testing was performed by Paul Liu on 2022-01-06

#### EUT operation mode: Transmitting

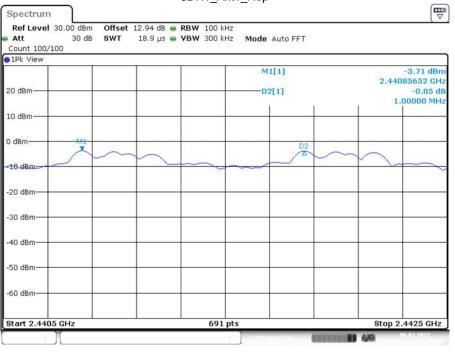
Test Result: Compliant.

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH1	Ant1	Нор	1	>=0.590	PASS
2DH1	Ant1	Нор	1.003	>=0.834	PASS
3DH1	Ant1	Нор	1	>=0.812	PASS

Please refer to the below plots:



Date: 6.JAN.2022 15:27:27



3DH1\_Ant1\_Hop

Date: 6.JAN.2022 15:38:42

# FCC §15.247(a) (1) – 20 dB EMISSION BANDWIDTH & 99% OCCUPIED BANDWIDTH

#### **Applicable Standard**

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.

#### **Test Procedure**

The following conditions shall be observed for measuring the occupied bandwidth and 20 dB bandwidth:

• The transmitter shall be operated at its maximum carrier power measured under normal test conditions.

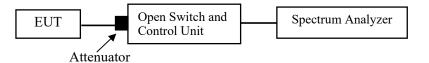
• The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.

• The detector of the spectrum analyzer shall be set to "Sample". However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or "Max Hold") may be necessary to determine the occupied / 20 dB bandwidth if the device is not transmitting continuously.

• The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied / 20 dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

Note: It may be necessary to repeat the measurement a few times until the RBW and VBW are in compliance with the above requirement.

For the 99% emission bandwidth, the trace data points are recovered and directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached, and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded. The difference between the two recorded frequencies is the occupied bandwidth (or the 99% emission bandwidth).



### Test Data

#### **Environmental Conditions**

Temperature:	23 °C
<b>Relative Humidity:</b>	57 %
ATM Pressure:	102.0 kPa

The testing was performed by Paul Liu on 2022-01-06.

EUT operation mode: Transmitting

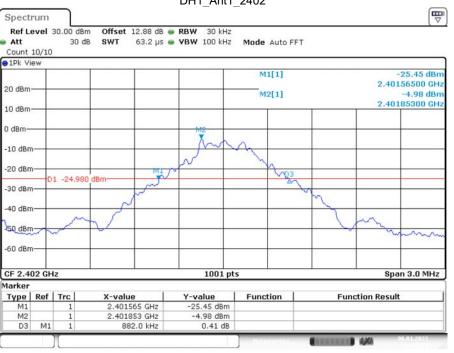
Test Result: Compliant.

TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
		2402	0.882	2401.565	2402.447		PASS
DH1	Ant1	2441	0.885	2440.565	2441.450		PASS
		2480	0.882	2479.565	2480.447		PASS
		2402	1.251	2401.385	2402.636		PASS
2DH1	Ant1	2441	1.251	2440.385	2441.636		PASS
		2480	1.251	2479.385	2480.636		PASS
		2402	1.218	2401.418	2402.636		PASS
3DH1	Ant1	2441	1.218	2440.418	2441.636		PASS
		2480	1.218	2479.418	2480.636		PASS

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
		2402	0.83	2401.595	2402.426		PASS
DH1	Ant1	2441	0.836	2440.592	2441.429		PASS
		2480	0.836	2479.592	2480.429		PASS
		2402	1.166	2401.425	2402.590		PASS
2DH1	Ant1	2441	1.169	2440.422	2441.590		PASS
		2480	1.166	2479.425	2480.590		PASS
		2402	1.154	2401.446	2402.599		PASS
3DH1	Ant1	2441	1.157	2440.443	2441.599		PASS
		2480	1.16	2479.443	2480.602		PASS

Please refer to the below plots:

#### **20 dB EMISSION BANDWIDTH**



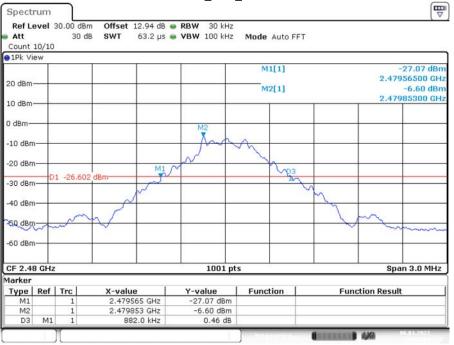
DH1\_Ant1\_2402

Date: 6.JAN.2022 14:58:25

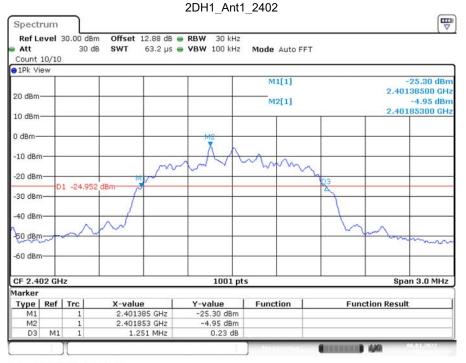
DH1\_Ant1\_2441



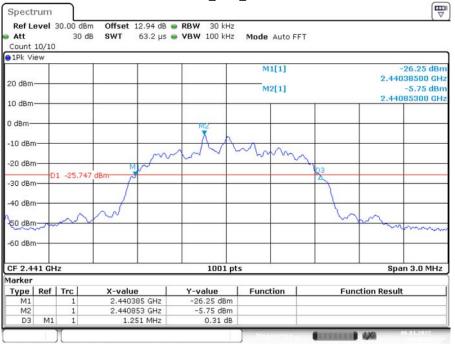
Date: 6.JAN.2022 14:59:48



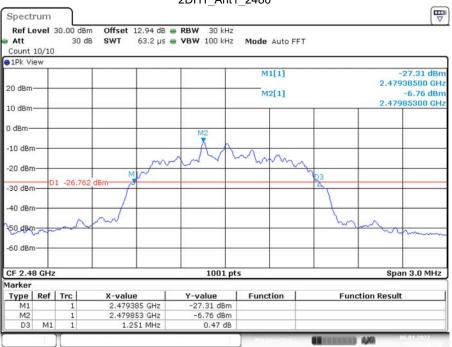
Date: 6.JAN.2022 15:01:08



Date: 6.JAN.2022 15:02:24



Date: 6.JAN.2022 15:05:12

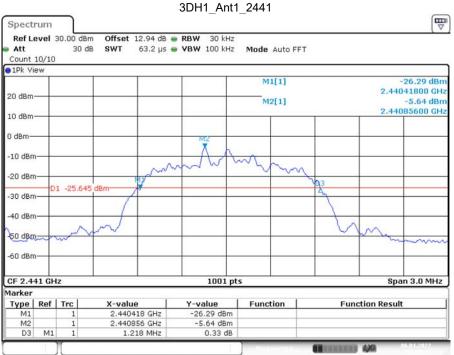


2DH1\_Ant1\_2480

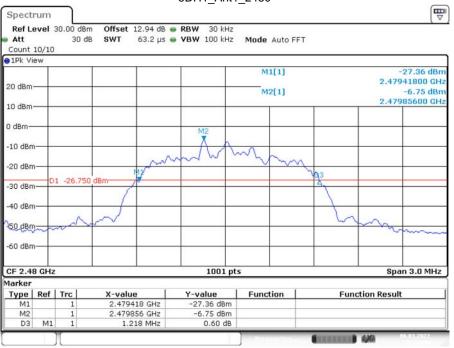
Date: 6.JAN.2022 15:06:39



Date: 6.JAN.2022 15:08:01

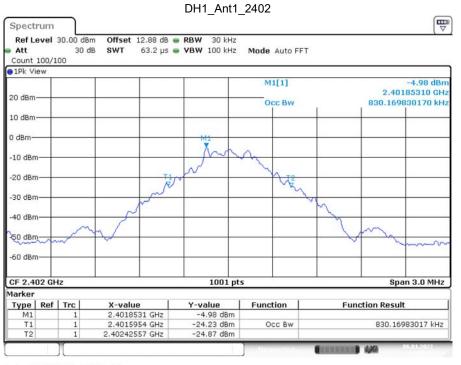


Date: 6.JAN.2022 15:09:13



Date: 6.JAN.2022 15:12:08

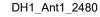
#### 99% OCCUPIED BANDWIDTH

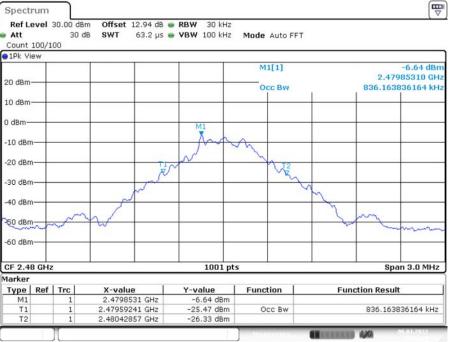


Date: 6.JAN.2022 14:58:42



Date: 6.JAN.2022 15:00:10

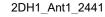




Date: 6.JAN.2022 15:01:29



Date: 6.JAN.2022 15:04:18

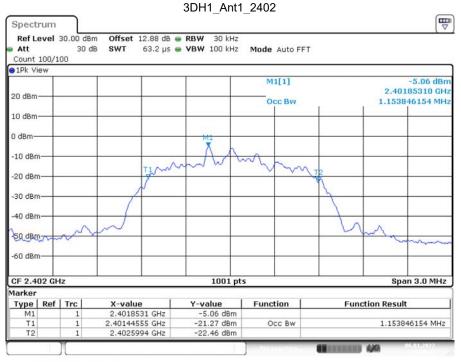




Date: 6.JAN.2022 15:05:58



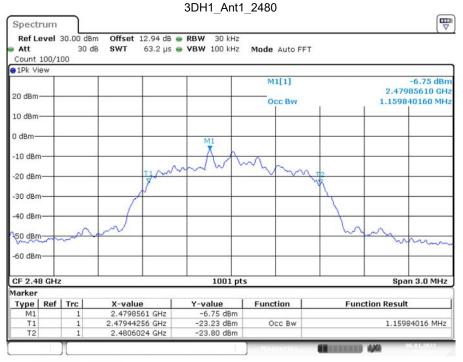
Date: 6.JAN.2022 15:06:58



Date: 6.JAN.2022 15:08:21



Date: 6.JAN.2022 15:09:37



Date: 6.JAN.2022 15:12:29

## FCC §15.247(a) (1) (iii)-QUANTITY OF HOPPING CHANNEL TEST

#### **Applicable Standard**

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

#### **Test Procedure**

- 1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
- 2. Set the EUT in hopping mode from first channel to last.
- 3. By using the max-hold function record the quantity of the channel.

#### Test Data

#### **Environmental Conditions**

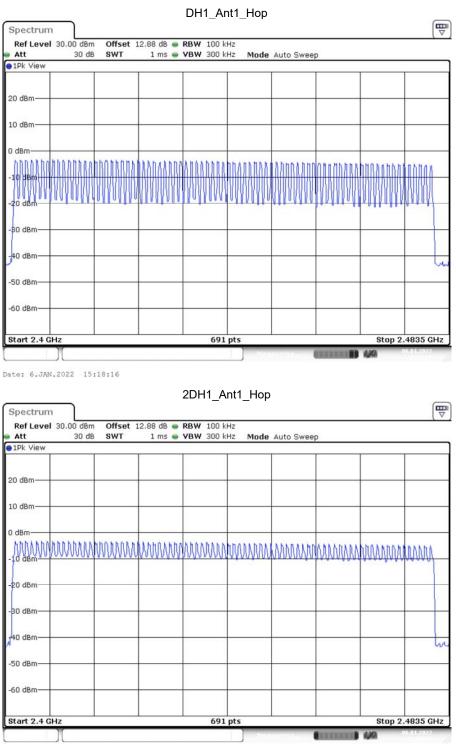
Temperature:	23 °C
<b>Relative Humidity:</b>	57 %
ATM Pressure:	102.0 kPa

The testing was performed by Paul Liu on 2022-01-06.

EUT operation mode: Transmitting

Test Result: Compliant.

TestMode	Antenna	Channel	Result[Num]	Limit[Num]	Verdict
DH1	Ant1	Нор	79	>=15	PASS
2DH1	Ant1	Нор	79	>=15	PASS
3DH1	Ant1	Нор	79	>=15	PASS



Date: 6.JAN.2022 15:28:59

		<b>VBW</b> 300 k	Hz Mode	Auto Swee	p		
	_						
	_						
		Concerner 1					
MANNAN	MANNAN	APANAMA	MANAN	TTYVUT	MANANA	MAMM	MAN
	_				e		
							U.

Date: 6.JAN.2022 15:39:24

## FCC §15.247(a) (1) (iii) - TIME OF OCCUPANCY (DWELL TIME)

#### **Applicable Standard**

Frequency hopping systems in the 2400-2483.5 MHz shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

#### **Test Procedure**

- 1. The EUT was worked in channel hopping.
- 2. Set the RBW to: 1MHz.
- 3. Set the VBW  $\geq$  3×RBW.
- 4. Set the span to  $\overline{0}$ Hz.
- 5. Detector = peak.
- 6. Sweep time = auto couple.
- 7. Trace mode = max hold.
- 8. Allow trace to fully stabilize.
- 9. Recorded the time of single pulses

#### Test Data

#### **Environmental Conditions**

Temperature:	23 °C
Relative Humidity:	57 %
ATM Pressure:	102.0 kPa

The testing was performed by Paul Liu on 2022-01-06.

EUT operation mode: Transmitting

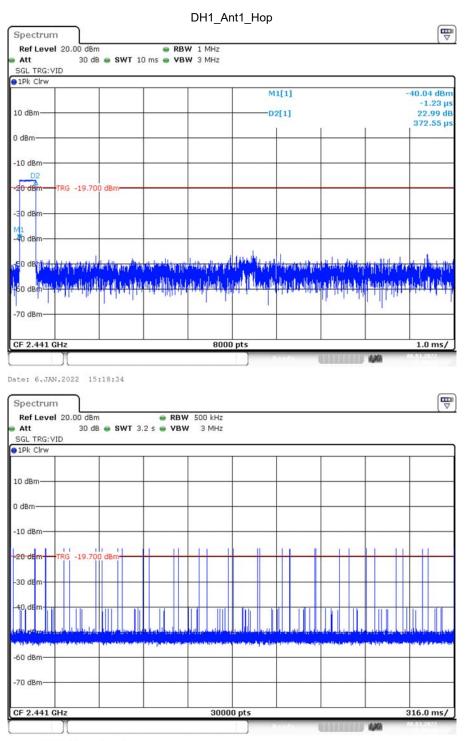
Test Result: Compliant.

TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Нор	0.37	330	0.123	<=0.4	PASS
DH3	Ant1	Нор	1.62	170	0.276	<=0.4	PASS
DH5	Ant1	Нор	2.86	120	0.343	<=0.4	PASS
2DH1	Ant1	Нор	0.38	330	0.126	<=0.4	PASS
2DH3	Ant1	Нор	1.63	190	0.309	<=0.4	PASS
2DH5	Ant1	Нор	2.87	130	0.373	<=0.4	PASS
3DH1	Ant1	Нор	0.38	330	0.126	<=0.4	PASS
3DH3	Ant1	Нор	1.63	160	0.26	<=0.4	PASS
3DH5	Ant1	Нор	2.87	110	0.315	<=0.4	PASS

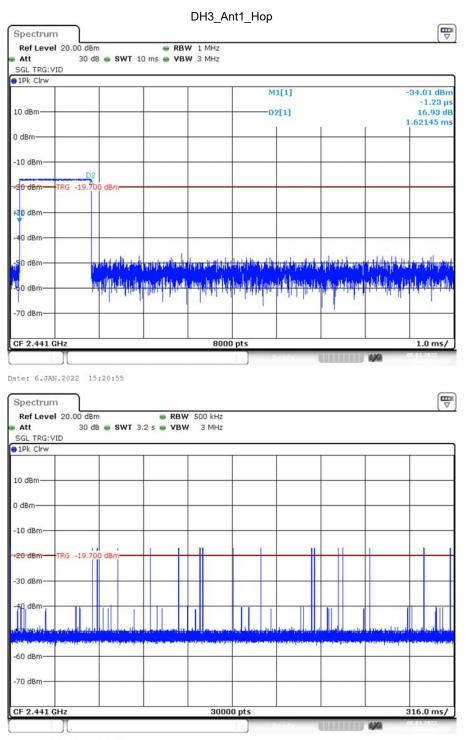
Note 1: A period time=0.4\*79=31.6(s), Result=Burst Width\*Total Hops

Note 2: Total Hops =Hopping Number in 3.16s\*10

Note 3: Hoping Number in 3.16s=Total of highest signals in 3.16s (Second high signals were other channel)



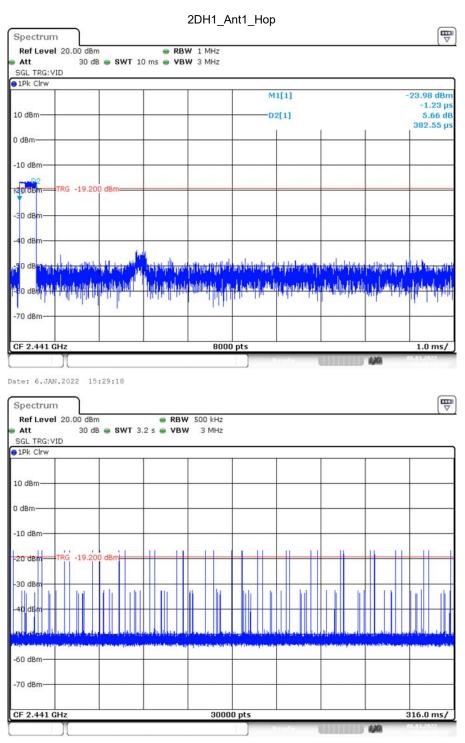
Date: 6.JAN.2022 15:18:39



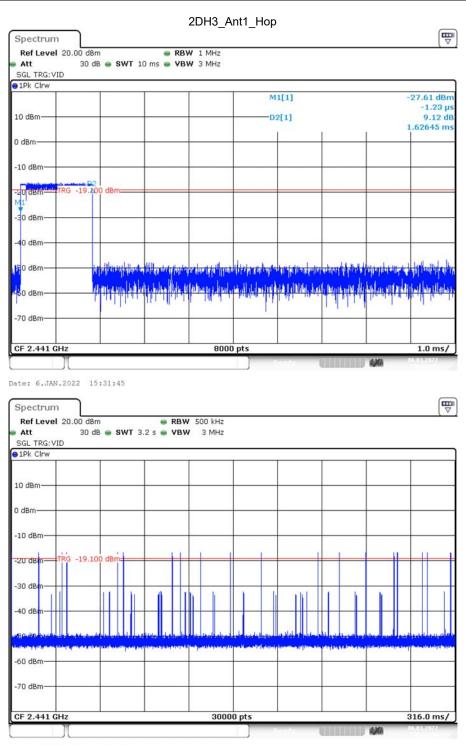
Date: 6.JAN.2022 15:21:01

		DH5_Ar	nt1_Hop				6
Spectrum							T T
Ref Level 20.00 dBm		W 1 MHz					
	SWT 10 ms 🖷 VB	W 3 MHz					
BGL TRG: VID 1Pk Clrw							
	1		M	1[1]			-21.29 dB
3140							-1.23
0 dBm		-	D	2[1]			4.29 d 2.86036 m
				1	Ê l	1	2.00030 11
dBm							
10 dBm							
LO UBIII	02	· · · · · · · · · · · · · · · · · · ·					
0 dBm TRG -19.600 dBm					2		_
		1					
0 d8m							
40 dBm		-					
	1. 57.1			1278		- NI	
0 dBm	to de to da co		Legis With the first	and and a sale	And different	. Wahahahaha	the balance
	La La La La						to a collection.
50 dBm	A SULLIN.	Elyber Bergh ; la	- and a line of the	ten kli beli i	to the skie	Mails AV	
	1.000	1.0	1	1.0.10	- a start -	1.	
70 dBm		-					_
							1.0 ms/
te: 6.JAN.2022 15:21:	32	8000	) pts	les el u		440	05.01.2022
](		8000	) pts	2e adu		djalih	- 05 01.2022
te: 6.JAN.2022 15:21:3 Spectrum Ref Level 20.00 dBm Att 30 dB S S		₩ 500 kHz	) pts	te s du		i ji Ki	05.01.2022
te: 6.JAN.2022 15:21: Spectrum Ref Level 20.00 dBm Att 30 dB • 5 SGL TRG:VID	e RBV	₩ 500 kHz	) pts	Ready.		1.040	05.01.2022
te: 6.JAN.2022 15:21:3 Spectrum Ref Level 20.00 dBm Att 30 dB S S	e RBV	₩ 500 kHz	) pts	toodu.		1 <b>1634</b> 21	05.01.2022
te: 6.JAN.2022 15:21: Spectrum Ref Level 20.00 dBm Att 30 dB • 5 SGL TRG:VID	e RBV	₩ 500 kHz	) pts	leodu.		4,451	05.01.2022
te: 6.JAN.2022 15:21: Spectrum Ref Level 20.00 dBm Att 30 dB • 5 SGL TRG:VID	e RBV	₩ 500 kHz		leodu.			05.01.2022
te: 6.JAN.2022 15:21:2 Spectrum Ref Level 20.00 dBm Att 30 dB • 5 SGL TRG:VID 1Pk Clrw 0 dBm	e RBV	₩ 500 kHz		teodu			05.01.2022
te: 6.JAN.2022 15:21:3 Spectrum Ref Level 20.00 dBm Att 30 dB • 5 SGL TRG:VID 1Pk Clrw	e RBV	₩ 500 kHz		teodu			05.01.2022
te: 6.JAN.2022 15:21:2 Spectrum Ref Level 20.00 dBm Att 30 dB • 5 SGL TRG:VID 1Pk Clrw 0 dBm	e RBV	₩ 500 kHz		teodu			05.01.2022
te: 6.JAN.2022 15:21:2 Spectrum Ref Level 20.00 dBm Att 30 dB • 5 SGL TRG:VID 1Pk Clrw 0 dBm	e RBV	₩ 500 kHz		teodu			05.01.2022
te: 6.JAN.2022 15:21:3 Spectrum Ref Level 20.00 dBm Att 30 dB 9 5 SGL TRG: VID 1Pk Clrw 0 dBm dBm 10 dBm	● RB\ SWT 3.2 s ● VB\	₩ 500 kHz		teodu			05.01.2022
te: 6.JAN.2022 15:21:3 Spectrum Ref Level 20.00 dBm Att 30 dB 9 S SGL TRG:VID 1Pk Clrw 0 dBm dBm 10 dBm	● RB\ SWT 3.2 s ● VB\	₩ 500 kHz		ke odw			05.01.2022
te: 6.JAN.2022 15:21:3 Spectrum Ref Level 20.00 dBm Att 30 dB 9 5 SGL TRG: VID 1Pk Clrw 0 dBm dBm 10 dBm TRG -19.600 dBm	● RB\ SWT 3.2 s ● VB\	₩ 500 kHz		ke odw			05.01.2022
te: 6.JAN.2022 15:21:3 Spectrum Ref Level 20.00 dBm Att 30 dB 9 5 SGL TRG: VID 1Pk Clrw 0 dBm dBm 10 dBm	● RB\ SWT 3.2 s ● VB\	₩ 500 kHz					05.01.2022
te: 6.JAN.2022 15:21:3 Spectrum Ref Level 20.00 dBm Att 30 dB 9 5 SGL TRG: VID 1Pk Clrw 0 dBm dBm 10 dBm TRG -19.600 dBm	● RB\ SWT 3.2 s ● VB\	₩ 500 kHz					05.01.2022
te: 6.JAN.2022 15:21:3 Spectrum Ref Level 20.00 dBm Att 30 dB 9 5 SGL TRG:VID 1Pk Clrw 0 dBm dBm 10 dBm TRG -19.600 dBm 30 dBm	● RB\ SWT 3.2 s ● VB\	₩ 500 kHz					05.01.2022
te: 6.JAN.2022 15:21:3 Spectrum Ref Level 20.00 dBm Att 30 dB 9 5 SGL TRG:VID 1Pk Clrw 0 dBm dBm 10 dBm TRG -19.600 dBm 30 dBm	● RB\ SWT 3.2 s ● VB\	₩ 500 kHz					05.01.2022
te: 6.JAN.2022 15:21:3 Spectrum Ref Level 20.00 dBm Att 30 dB 9 5 SGL TRG:VID 1Pk Clrw 0 dBm dBm 10 dBm TRG -19.600 dBm 30 dBm	● RB\ SWT 3.2 s ● VB\	₩ 500 kHz					05.01.2022
te: 6.JAN.2022 15:21:3 Spectrum Ref Level 20.00 dBm Att 30 dB 9 5 SGL TRG:VID 1Pk Clrw 0 dBm dBm 10 dBm TRG -19.600 dBm 30 dBm	● RB\ SWT 3.2 s ● VB\	₩ 500 kHz					05.01.2022
te: 6.JAN.2022 15:21:3  Pectrum  Ref Level 20.00 dBm  Att 30 dB  SGL TRG:VID  1Pk Clrw  0 dBm  10 dBm  20 dBm  TRG -19.600 dBm  40 dBm  50 dBm  50 dBm	● RB\ SWT 3.2 s ● VB\	₩ 500 kHz					05.01.2022
te: 6.JAN.2022 15:21:2 Pectrum Ref Level 20.00 dBm Att 30 dB • 5 SGL TRG: VID 1Pk Clrw 0 dBm 10 dBm 20 dBm TRG -19.600 dBm 30 dBm 40 dBm	● RB\ SWT 3.2 s ● VB\	₩ 500 kHz					05.01.2022
te: 6.JAN.2022 15:21:3  Pectrum  Ref Level 20.00 dBm  Att 30 dB  SGL TRG:VID  1Pk Clrw  0 dBm  10 dBm  20 dBm  TRG -19.600 dBm  40 dBm  50 dBm  50 dBm	● RB\ SWT 3.2 s ● VB\	₩ 500 kHz					05.01.2022

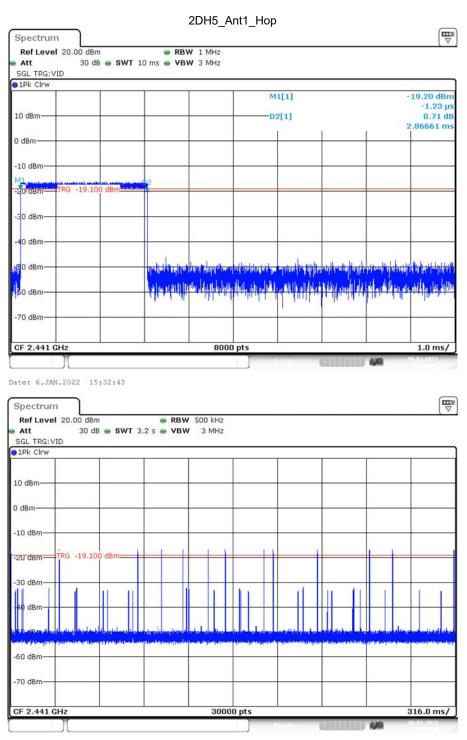
Date: 6.JAN.2022 15:21:38



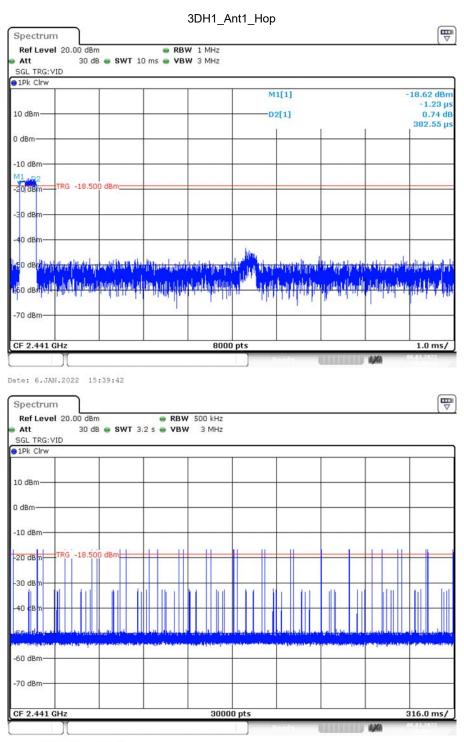
Date: 6.JAN.2022 15:29:23



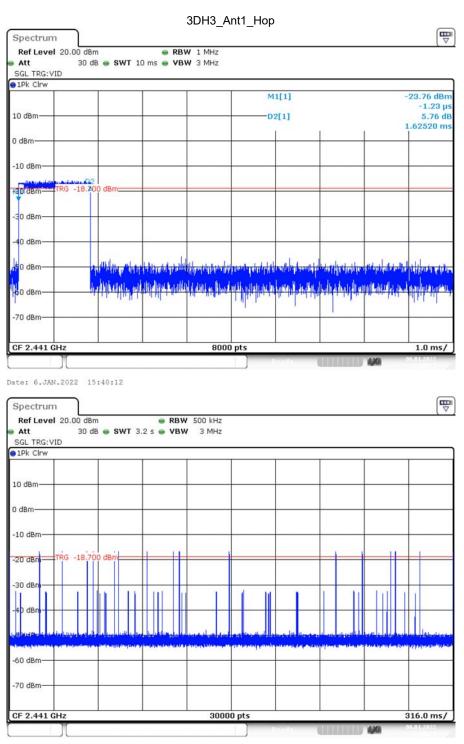
Date: 6.JAN.2022 15:31:51



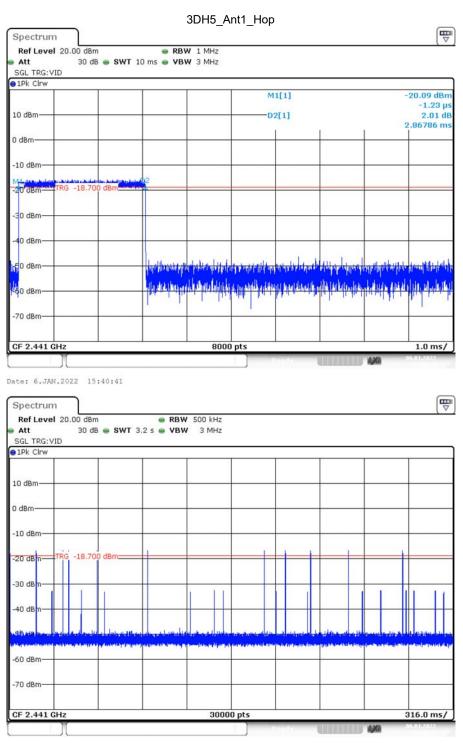
Date: 6.JAN.2022 15:32:49



Date: 6.JAN.2022 15:39:47



Date: 6.JAN.2022 15:40:17



Date: 6.JAN.2022 15:40:46

# FCC §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT

## Applicable Standard

According to §15.247(b) (1), 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. And for all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts.

## **Test Procedure**

- 1. Place the EUT on a bench and set in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to one test equipment.
- 3. Add a correction factor to the display.

## Test Data

#### **Environmental Conditions**

Temperature:	23 °C
<b>Relative Humidity:</b>	57 %
ATM Pressure:	102.0 kPa

The testing was performed by Paul Liu on 2022-01-06.

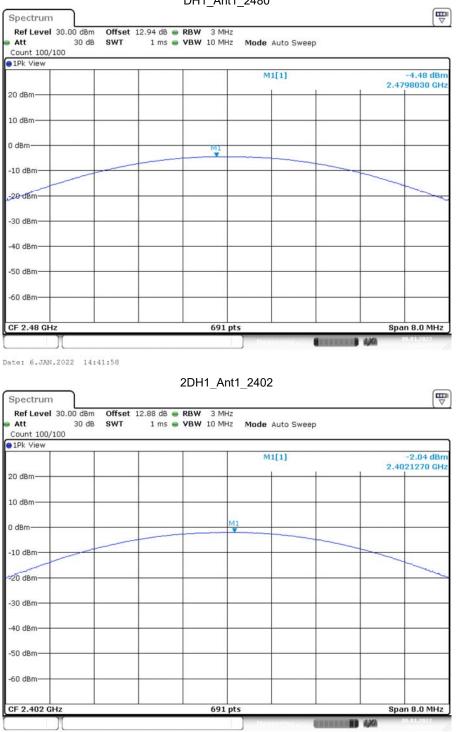
#### EUT operation mode: Transmitting

Test Result: Compliant.

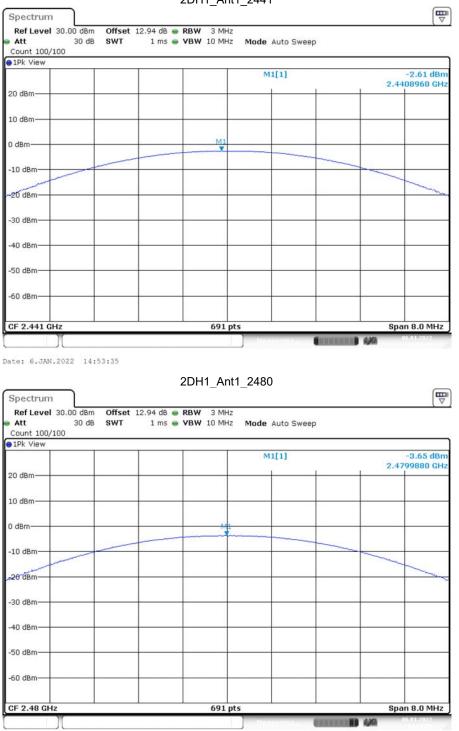
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
		2402	-2.81	<=20.97	PASS
DH1	Ant1	2441	-3.41	<=20.97	PASS
		2480	-4.48	<=20.97	PASS
		2402	-2.04	<=20.97	PASS
2DH1	Ant1	2441	-2.61	<=20.97	PASS
		2480	-3.65	<=20.97	PASS
		2402	-1.48	<=20.97	PASS
3DH1	Ant1	2441	-2	<=20.97	PASS
		2480	-3	<=20.97	PASS



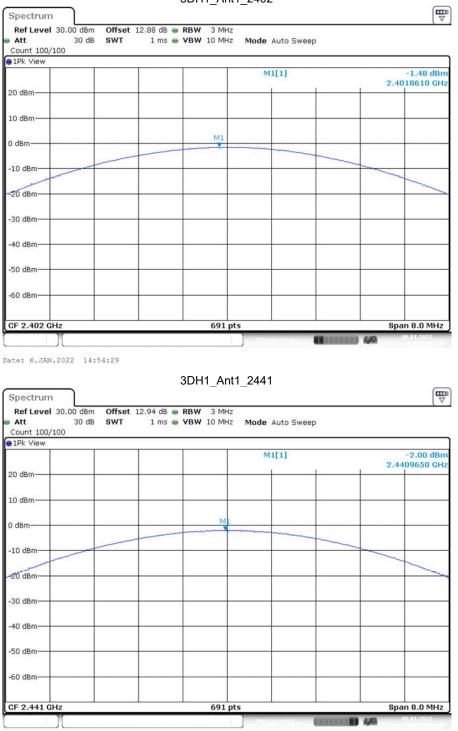
Date: 6.JAN.2022 14:38:29



Date: 6.JAN.2022 14:51:52



Date: 6.JAN.2022 14:54:00



Date: 6.JAN.2022 14:54:50

Att 30 dB SWT Count 100/100	.94 dB ● RBW 3 MHz 1 ms ● VBW 10 MHz Mode Auto Sweep	
1Pk View	M1[1]	-3.00 dBn 2.4799190 GH
20 dBm-		
10 dBm		
0 dBm	M1	
-10 dBm		
-26°dBm		
-30 dBm		
-40 dBm		
-50 dBm		
-60 dBm		
CF 2.48 GHz	691 pts	Span 8.0 MHz

Date: 6.JAN.2022 14:55:10

# FCC §15.247(d) - BAND EDGES TESTING

## **Applicable Standard**

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 a radiated 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, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

## **Test Procedure**

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Remove the antenna from the EUT and then connect to a low loss RF cable from the antenna port to a EMI test receiver, then turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.
- 3. Set RBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
- 4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
- 5. Repeat above procedures until all measured frequencies were complete.

## Test Data

### **Environmental Conditions**

Temperature:	23 °C
<b>Relative Humidity:</b>	57 %
ATM Pressure:	102.0 kPa

The testing was performed by Paul Liu on 2022-01-06

EUT operation mode: Transmitting

Test Result: Compliant.

Att Count	300/3	20.00 d8 30			W 100 kHz W 300 kHz	Mode	Auto FF1	r		
1Pk Vi	€₩					M	[1]			-3.19 dBm
10 dBm·	+									01880 GHz
						M	2[1]			49.92 dBm
0 dBm—	+								2.4	
-10 dBm	$\perp$									
-20 dBm		1 -23.19	90 dBm							
-30 dBm	-						_			
00 001										
-40 dBm	+			M				-		
-se'deh	me	Amapin	where an and have a series	windy	maumun	to a Desiter	in when we	highly about and	M3	Ma
-50 abii		0								
-60 dBm	+							-		
-70 dBm							-			
Start 2	.3 GH	Iz			691 pts	5			Stop	2.405 GHz
1arker										
Type	Ref	Trc	X-value		-value	Funct	ion	Fun	ction Result	
M1		1	2.40188 GH		-3.19 dBm					
M2		1	2.4 GH		-49.92 dBm					
M3 M4		1	2.39 GH 2.341239 GH		-50.42 dBm -45.04 dBm					

DH1 Ant1 Low 2402

Date: 6.JAN.2022 14:58:57

#### DH1\_Ant1\_High\_2480

	rum evel :	20.00 dBr 30 d					
Count	300/3		5 5WI 1.1 ms	VBW 300 kHz	Mode Auto 9	sweep	
1Pk Vi	ew						
					M1[1]		-4.79 dBn
10 dBm	-			-	NO[4]		2.479900 GH
					M2[1]		-44.11 dBn 2.483500 GH
0 dBm—	1	<u>41</u> ▼					2.465500 GH
-10 dBm		1					
		11					
-20 dBm		h		-		1	
-30 dBm		1 -24.790	) dBm				
-30 ubii	·			-	S 1		
40 dBm		M2		I3 M4			
hand	100	wound	have been and and the second and	amendering	- www.www.	mounded	man man sand about
50 dBm	<u>ו</u> רי						
-60 dBm	-						
	°						
-70 dBm	+						
Start 2	.47 G	Hz		691 pts	19 C		Stop 2.55 GHz
larker							
Туре	Ref	Trc	X-value	Y-value	Function	Fun	iction Result
M1 M2		1	2.4799 GHz 2.4835 GHz	-4.79 dBm -44.11 dBm			
M3		1	2.4835 GHZ 2.5 GHZ	-44.11 dBm			
M4	_	1	2.511507 GHz	-41.88 dBm			
	1.1	11			1	<b>CHARGE STR</b>	AXA

Date: 6.JAN.2022 15:01:44

Spect		20.00 dB	m Offset 13.10 dB	RBW 100 kHz				V
Att		30 0		• VBW 300 kHz	Mode Auto I	FFT		
Count	300/3	00						
1Pk Vi	ew							
					M1[1]		-3.20 dB	
10 dBm	-						2.401880 G	
					M2[1]		-48.69 dB	
0 dBm-	-			+ +		i i	2.400000	H
								11
-10 dBm								Ш
-20 dBm								ľ
20 000	D	1 -23.20	0 dBm	-				-
-30 dBm								_
-40 dBm				10	4		M3 MS	-
Sti den	man	wowner	almographic the province	manueround	hourson	and muniniquela	M3 M3	
-30 UBI								
-60 dBm	-					-		_
-70 dBm	-		-					_
Start 2	.3 GH	z	57	691 pt:	5		Stop 2.405 GH	Ιz
Marker	£				54.			_
Туре	Ref	Trc	X-value	Y-value	Function	Func	tion Result	
M1		1	2.40188 GHz	-3.20 dBm				
M2	ļ	1	2.4 GHz	-48.69 dBm				
M3 M4	_	1	2.39 GHz 2.355391 GHz	-48.28 dBm -45.52 dBm				_
1414		1	5.000041 GHZ	-45.52 UBM				_
		1			Measuring	STREET, STREET	05:01:2022	

DH1\_Ant1\_Low\_Hop\_2402

Date: 6.JAN.2022 15:16:19

#### DH1\_Ant1\_High\_Hop\_2480

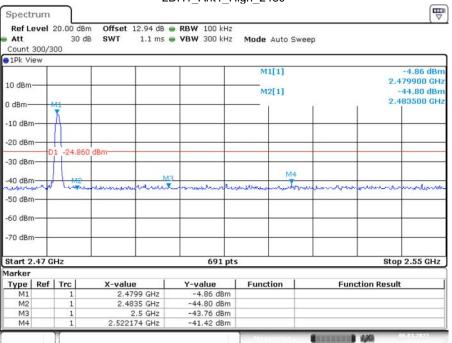
Spectrum						
Ref Level Att			<ul> <li>RBW 100 kHz</li> <li>VBW 300 kHz</li> </ul>	Mode Auto 9	Sween	
Count 300/			• 1011 000 1112	Mode Adio a	and the p	
1Pk View						
				M1[1]		-4.71 dBm
10 dBm						2.471910 GHz
IN CARENON!				M2[1]		-42.06 dBm
0/dBm					1	2.483500 GHz
ABBAAAA	hh					
110 98 111	m					
-20 dBn4	VYI –					
	D1 -24.7	10 dBm	-			
-30 dBm-						
40 d0m	Ma	2	13			M4
-40 dBm	Lul	An manager and	Munaurline man		and real and a second	momentermenter
-50 dBm			2000 10 10 10 10 10 10 10 10 10 10 10 10			
-60 dBm						
-70 dBm						
-/o ubiii						
Start 2.47	GHz		691 pts	8		Stop 2.55 GHz
Marker						
Type   Re	f   Trc	X-value	Y-value	Function	Fun	ction Result
M1	1	2.47191 GHz	-4.71 dBm			
M2	1	2.4835 GHz	-42.06 dBm			
M3 M4	1	2.5 GHz 2.536087 GHz	-43.42 dBm -41.93 dBm			
	37	2.00001 012	12195 dom	1	-	45.01.2022
				Mental Mental III	COLUMN STREET,	14,44

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Spectrum						
Ref Level Att Count 300/3	30 d		<ul> <li>RBW 100 kHz</li> <li>VBW 300 kHz</li> </ul>	Mode Auto F	FT	
1Pk View						
				M1[1]		-3.19 dBn
10 dBm-			_			2.401880 GH
17-12-012-01-01-01-01-01-01-01-01-01-01-01-01-01-				M2[1]		-49.10 dBn
0 dBm					1	2.400000 GH
						N N
-10 dBm					-	
-20 dBm						
-20 dBm	01 -23.19	0 dBm				
-30 dBm						
-40 dBm			M/4			
		the property of the party of the second	A an and a second			M3 M3
-90 demond	a downards	where we have been and the	Marked by marked	and the party of the	man and a second second	mun por a finge n
-60 dBm						
-70 dBm			_			
/ dbiii						
Start 2.3 GH	Ηz		691 pts	8		Stop 2.405 GHz
Marker	12 I I I	2	111	9 5	5	
Type   Ref	Trc	X-value	Y-value	Function	Fund	ction Result
M1	1	2.40188 GHz	-3.19 dBm			
M2	1	2.4 GHz	-49.10 dBm			
M3	1	2.39 GHz	-49.05 dBm			
M4	1	2.349 GHz	-45.83 dBm			
1	1			Measuring	Concession in the local division in the loca	05.01.2022

2DH1\_Ant1\_Low\_2402

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2DH1\_Ant1\_High\_2480

Date: 6.JAN.2022 15:07:13

 $\square$ 

Att	evel	20.00 dB 30 d		RBW 100 kHz	Mode Auto F	FT		
Count		00	Co principal and and					
01Pk Vi	ew							
					M1[1]			-2.96 dBr
10 dBm	+			-	M2[1]			02800 GH 47.40 dBr
0 dBm—					mz[1]			00000 GH
u asm—								I. II
-10 dBm	-							N
								(L)
-20 dBm		1 -22.96	0 dBm	_		_		
-30 dBm								
50 001	·							
-40 dBm	1-17	14					M3	M2
-50 dBm	who	haynen	upagramponue	mannum	mangenterman	mynematic	any here	are have
-30 UBII	' <b>T</b>	10						
-60 dBm	+			-				
-70 dBm								
Start 2	.3 GH	z		691 pts	5		Stop 2	2.405 GHz
1arker	e				and a			
Type	Ref	Trc	X-value	Y-value	Function	Function Result		
M1		1	2.4028 GHz	-2.96 dBm				
M2	Ļ,	1	2.4 GHz	-47.40 dBm				
M3	ļ	1	2.39 GHz 2.312478 GHz	-47.32 dBm -45.49 dBm				
M4		1						

2DH1\_Ant1\_Low\_Hop\_2402

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#### 2DH1\_Ant1\_High\_Hop\_2480

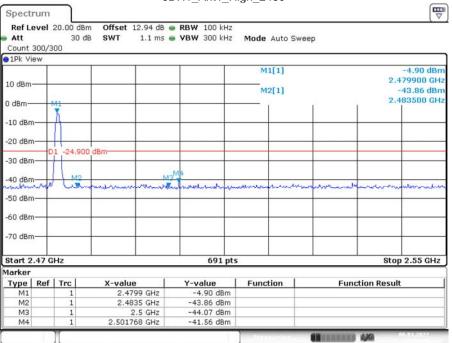
Spect	rum				0					
Ref L Att Count	0.1.00.1				RBW 100 kHz VBW 300 kHz		uto Sv	veep		
01Pk V	iew									2
						M1[	1]			-4.63 dBm
10 dBm	-		-		-	L LOI				2.470870 GHz
-						M2[	1]			-42.37 dBm 2.483500 GHz
0.dBm-		4							1	2.400000 0112
YANA	ww	4								_
-20 dBr			530 dBm							-
-30 dBr		1 -24.0	530 GBM							
-40 dBr	°	M	2	M3		munder	mente	مىرىدىن (يەرىيەر مەرىيەر مەر	with the second and a second	M4
-50 dBr	n+									
-60 dBr	n+									_
-70 dBr	∩+							_		
Start 2	2.47 G	Hz			691 pt	s				top 2.55 GHz
Marker										
Туре	Ref		X-value		Y-value	Functio	on	F	unction Re	sult
M1 M2		1	2.47087		-4.63 dBm -42.37 dBm					
M2 M3		1		GHZ	-42.37 dBm -41.83 dBm					
M4		1	2.546522		-41.50 dBm					
		1				Measu	ring		III) 440	06.01.2022

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Spectrum							
Ref Level Att	20.00 dB 30 d		• <b>RBW</b> 100 kHz • <b>VBW</b> 300 kHz	Mode Auto F	FT		
Count 300/3	300						
1Pk View							
				M1[1]		-3.65 dB	
10 dBm					2.402040 GH		
				M2[1]		-49.42 dBn	
0 dBm			+ +			2.400000 BH	
						l I	
-10 dBm							
-20 dBm							
-20 ubiii	01 -23.65	0 dBm					
-30 dBm			-			· · · · · · · · · · · · · · · · · · ·	
-40 dBm			M4			M3 M2	
uto until 107	ne has set to	un manual and	and and and and another	A Harris a his factor	ma had a lander		
-50 0811	the stage is to			A	A Contraction	Mary Barren Contraction	
-60 dBm							
-70 dBm		-	-				
Start 2.3 G	Hz	54	691 pts	8		Stop 2.405 GHz	
Marker							
Type   Ref	Trc	X-value	Y-value	Function	Fund	tion Result	
M1	1	2.40204 GHz	-3.65 dBm				
M2	1	2.4 GHz	-49.42 dBm				
M3	1	2.39 GHz	-48.13 dBm				
M4	1	2.350978 GHz	-46.14 dBm				
1	1		1	Measuring	Succession in the	4.3/2 05.01.2022	

3DH1\_Ant1\_Low\_2402

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3DH1\_Ant1\_High\_2480

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Att	evel	20.00 dB 30 (		RBW 100 kHz VBW 300 kHz	Mode Auto F	FT			
Count	300/3	00	55 A.M.S. A.M.S.A.M.		House Hoter	A. 5.			
●1Pk Vi	ew								
					M1[1]		-2.89 dBr 2.403860 GH		
10 dBm	-			-	110111				
					M2[1]		-47.39 dBr 2.400000 GN		
0 dBm-	-					1 1	2.400000 01		
-10 dBm			_	_			M		
10 0.011	·								
-20 dBm		1 -22.89	10 dBro	-					
00 d0-		1 -22.05	O OBIN						
-30 dBm									
-40 dBm	r—				41		M3 M2		
aunotae	Auno	Marcal	and poplation mound	mountainment	In the aller	northerenter	M3 M2		
-50 dBm									
-60 dBm									
-70 dBm	-								
Start 2.3 GHz 69			691 pt	pts Stop 2.405 GHz					
Marker	ŧ .	2 108	20			а.			
	Ref		X-value	Y-value	Function	Funct	ion Result		
M1		1	2.40386 GHz	-2.89 dBm					
M2 M3	ļ	1	2.4 GHz 2.39 GHz	-47.39 dBm -47.35 dBm					
M3	_	1	2.39 GHz	-44.53 dBm					
		- <b>-</b>	_1000 at 16			5			

3DH1\_Ant1\_Low\_Hop\_2402

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3DH1\_Ant1\_High\_Hop\_2480

Spect	rum							
Ref Lo Att Count		20.00 d 30 00		<ul> <li>RBW 100 kHz</li> <li>VBW 300 kHz</li> </ul>	Mode Auto S	Sweep		
1Pk Vi	ew							
					M1[1]		-4.77 dBm 2.473880 GHz -43.58 dBm 2.483500 GHz	
10 dBm	+							
				M2[1]				
0 dBm-							1	
hayeh	AN	4					-	
-20 dBm				_				
-30 dBm		1 -24.7	70 dBm					
-40 dBm	,	M2		43			114	
-50 dBm		had	mannen	S	nuthighting	- market - Analy	en hour and	
-60 dBm								
-00 ubii	· —							
-70 dBm	+							
Start 2	.47 G	Hz		691 pts	1		Stop 2.55 GHz	
1arker	ł							
Туре	Ref	Trc	X-value	Y-value	Function	Fui	nction Result	
M1		1	2.47388 GHz	-4.77 dBm				
M2		1	2.4835 GHz	-43.58 dBm		1		
M3 M4	-	1	2.5 GHz 2.534464 GHz	-44.69 dBm -41.98 dBm				
	1.1	Y			Measuring		4,44	

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#### \*\*\*\*\* END OF REPORT \*\*\*\*\*