



# **TEST REPORT**

Applicant Name : Address :

Report Number : FCC ID: ORAIMO TECHNOLOGY LIMITED FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL CENTRE 19-25 SHAN MEI STREET FOTAN NT HONGKONG RA230301-09348E-RF-00A 2AXYP-OSW-34

# Test Standard (s)

FCC PART 15.247

# **Sample Description**

Smart Watch
OSW-34
N/A
oraimo
2023/03/01
2023/04/19

Test Result:

Pass\*

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

# Prepared and Checked By:

Dave Liang

Dave Liang 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.

 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

 Tel: +86 755-26503290
 Fax: +86 755-26503396
 Web: www.atc-lab.com

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# **DOCUMENT REVISION HISTORY**

Revision Number	Report Number	Description of Revision	Date of Revision
0	RA230301-09348E-RF-00A	Original Report	2023/04/19

# **GENERAL INFORMATION**

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

Frequency Range	Bluetooth: 2402~2480MHz
Maximum conducted Peak output power	Bluetooth: 2.75dBm
Modulation Technique	Bluetooth: GFSK, π/4-DQPSK, 8DPSK
Antenna Specification*	-1.92 dBi (provided by the applicant)
Voltage Range	DC 3.8V from battery or DC 5V from USB port
Sample serial number	22MT-2 for Radiated Emissions Test 22MT-3 for RF Conducted Test (Assigned by ATC)
Sample/EUT Status	Good condition

# 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, 15.207, 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.

Each test item follows test standards and with no deviation.

# **Measurement Uncertainty**

Para	meter	Uncertainty
Harmoni	c Current	0.512%, k=2
Occupied Char	nnel Bandwidth	5%
RF Fre	equency	0.082*10 <sup>-7</sup>
RF output pov	wer, conducted	0.71dB
Unwanted Emis	ssion, conducted	1.6dB
AC Power Lines	9k-30MHz	2.74dB, k=2
Conducted Emissions	150kHz-30MHz	2.92dB, k=2
Audio Frequency Response		0.1dB
Low Pass Filter Response		1.2dB
Modulation Limiting		1%
	9kHz - 30MHz	2.06dB
<b>.</b>	30MHz - 1GHz	5.08dB
Emissions, Radiated	1GHz - 18GHz	4.96dB
Radiated	18GHz - 26.5GHz	5.16dB
	26.5GHz - 40GHz	4.64dB
Temp	erature	1°C
Hun	nidity	6%
Supply	voltages	0.4%

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 Floor 1, KuMaKe Building, Dongzhou Community, Guangming Street, Guangming District, Shenzhen, Guangdong, 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 429 7.01.

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 30241.

# SYSTEM TEST CONFIGURATION

# **Description of Test Configuration**

The system was configured for testing in an engineering mode.

# **EUT Exercise Software**

"FCC\_V2.24.exe \*" exercise software was used and the power level is 1\*. The software and power level was provided by the manufacturer.

# **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
/	/	/	/

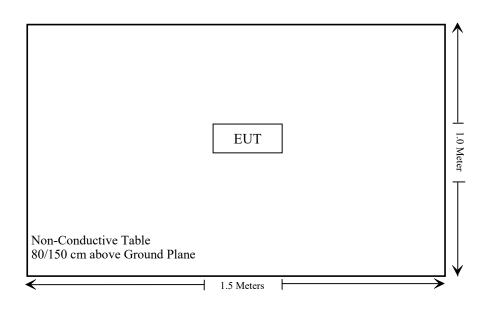
# External I/O Cable

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

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# **Block Diagram of Test Setup**

For Radiated Emissions:



# SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (i), §1.1307 (b) (3) & §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: The device was powered by battery when use Bluetooth function.

# **TEST EQUIPMENT LIST**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
		Radiated emiss	ion test		
Rohde& Schwarz	Test Receiver	ESR	102725	2022/11/25	2023/11/24
Rohde&Schwarz	Spectrum Analyzer	FSV40	101949	2022/11/25	2023/11/24
SONOMA INSTRUMENT	Amplifier	310 N	186131	2022/11/08	2023/11/07
A.H. Systems, inc.	Preamplifier	PAM-0118P	135	2022/11/08	2023/11/07
Quinstar	Amplifier	QLW- 18405536-J0	15964001002	2022/11/08	2023/11/07
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2021/07/06	2024/07/05
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2022/11/30	2025/11/29
Schwarzbeck	HORN ANTENNA	BBHA9170	9170-359	2022/12/26	2025/12/25
Radiated Emission Test Software: e3 19821b (V9)					
Unknown	RF Coaxial Cable	No.10	N050	2022/11/25	2023/11/24
Unknown	RF Coaxial Cable	No.11	N1000	2022/11/25	2023/11/24
Unknown	RF Coaxial Cable	No.12	N040	2022/11/25	2023/11/24
Unknown	RF Coaxial Cable	No.13	N300	2022/11/25	2023/11/24
Unknown	RF Coaxial Cable	No.14	N800	2022/11/25	2023/11/24
Unknown	RF Coaxial Cable	No.15	N600	2022/11/25	2023/11/24
Unknown	RF Coaxial Cable	No.16	N650	2022/11/25	2023/11/24
Wainwright	High Pass Filter	WHKX3.6/18 G-10SS	5	2022/11/25	2023/11/24
RF conducted test					
Rohde&Schwarz	Spectrum Analyzer	FSV-40	101590	2022/11/25	2023/11/24
Tonscend	RF Control Unit	JS0806-2	19G8060182	2022/10/24	2023/10/23
WEINSCHEL	10dB Attenuator	5324	AU 3842	2022/11/25	2023/11/24
Unknown	RF Coaxial Cable	No.31	RF-01	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) (3) &§2.1093 – RF EXPOSURE

## **Applicable Standard**

According to FCC §2.1093 and §1.1307(b) (3), 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 D04 Interim General RF Exposure Guidance

SAR-Based Exemption:

SAR-based thresholds are derived based on frequency, power, and separation distance of the RF source. The formula defines the thresholds in general for either available maximum timeaveraged power or maximum time-averaged ERP, whichever is greater.

Per § 1.1307(b)(3)(i)(B), for single RF sources (i.e., any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2) of this section): A single RF source is exempt if:

the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold  $P_{th}$  (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive).  $P_{th}$  is given by:

$$P_{th} (mW) = \begin{cases} ERP_{20 \ cm} (d/20 \ cm)^{x} & d \le 20 \ cm \\ ERP_{20 \ cm} & 20 \ cm < d \le 40 \ cm \end{cases}$$

Where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\ cm}\sqrt{f}}\right)$$
 and  $f$  is in GHz;

and

$$ERP_{20\ cm}\ (\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases}$$

d = the separation distance (cm);

#### For worst case:

Exemption limit:

For f=2.48GHz, d=0.5cm, the  $P_{th}=2.72$ mW

The higher of the available maximum time-averaged power or effective radiated power (ERP):

The antenna gain is -1.92dBi (-4.07dBd), 0dBd=2.15dBi

The maximum tune-up conducted power is 3.0dBm (2.0mW), which less than 2.72 mW@2480MHz exemption limit

So the stand-alone SAR test can be exempted.

# 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 antenna, which was permanently attached, and the maximum antenna gain is -1.92dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Result: Compliant.

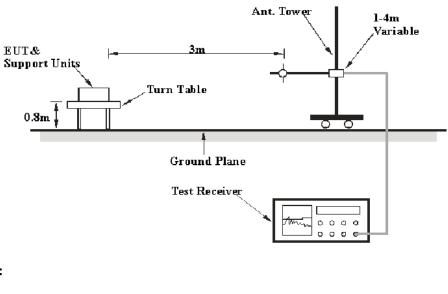
# FCC §15.205, §15.209 & §15.247(d) – RADIATED EMISSIONS

# Applicable Standard

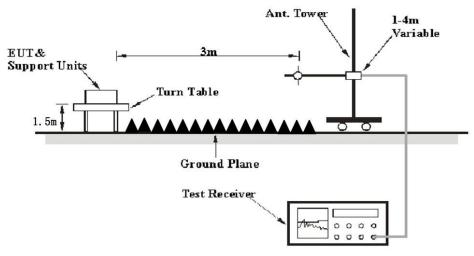
FCC §15.205; §15.209; §15.247(d)

# **EUT Setup**

Below 1 GHz:







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

For average measurement:

Use the duty cycle factor correction factor method per 15.35(c). Duty cycle=On time/100milliseconds, On time=N1\*L1+N2\*L2+...Nn-1\*Ln-1+Nn\*Ln, where N1 is number of type 1 pulses, L1 is length of type 1 pulse, etc. Average Emission Level=Peak Emission Level+20\*log(Duty cycle)

#### **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:	24~27.3 ℃
<b>Relative Humidity:</b>	57~64 %
ATM Pressure:	101.0 kPa

*The testing was performed by Jason Liu on 2023-04-11 for below 1GHz and on 2023-04-12 for above 1GHz* 

EUT operation mode: Transmitting

Note: Pre-scan in the X, Y and Z axes of orientation, the worst case X-axis of orientation was recorded

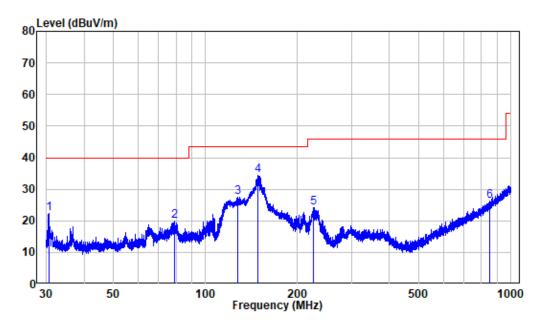
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#### 30MHz-1GHz: (worst case is 8DPSK Mode, low channel)

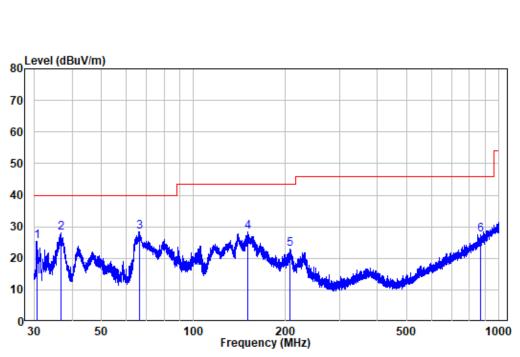
Note: When the test result of Peak was less than the limit of QP, just the peak value was recorded.

#### Horizontal:



Site :	chamber
Condition:	3m HORIZONTAL
Job No. :	RA230301-09348E-RF
Test Mode:	BT Transmitting

	Freq	Factor			Limit Line		Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	30.624	-14.35	36.64	22.29	40.00	-17.71	Peak
2	78.861	-13.21	33.27	20.06	40.00	-19.94	Peak
3	127.497	-10.70	38.19	27.49	43.50	-16.01	Peak
4	148.181	-10.38	44.78	34.40	43.50	-9.10	Peak
5	226.199	-11.49	35.78	24.29	46.00	-21.71	Peak
6	854.025	-2.35	28.47	26.12	46.00	-19.88	Peak





Site : chamber Condition: 3m VERTICAL Job No. : RA230301-09348E-RF Test Mode: BT Transmitting

	Freq	Factor			Limit Line		Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	30.624	-14.35	39.85	25.50	40.00	-14.50	Peak
2	36.766	-14.47	42.42	27.95	40.00	-12.05	Peak
3	66.645	-13.80	42.18	28.38	40.00	-11.62	Peak
4	150.670	-10.37	38.72	28.35	43.50	-15.15	Peak
5	207.395	-10.84	33.69	22.85	43.50	-20.65	Peak
6	868.369	-1.74	29.33	27.59	46.00	-18.41	Peak

Frequency	Re	ceiver	Turntable	Rx Ar	ntenna	Factor	Corrected	Limit	Margin
Frequency (MHz)	Reading (dBµV)	PK/Ave	Angle Degree	Height (m)	Polar (H/V)	(dB/m)	Ampitude (dBµV/m)	(dBuV/m)	(dB)
			Low C	hannel(2	2402MH	[z)			
2378.6	66.21	РК	118	2.2	Н	-10.73	55.48	74	-18.52
2332.86	65.11	РК	285	2.5	V	-10.61	54.50	74	-19.50
2390	64.94	РК	279	1.5	Н	-10.70	54.24	74	-19.76
2390	64.25	РК	255	1.6	V	-10.70	53.55	74	-20.45
4804	62.84	РК	288	1.3	Н	-6.11	56.73	74	-17.27
4804	63.12	РК	316	1.3	V	-6.11	57.01	74	-16.99
			Middle (	Channel	(2441M	Hz)			
4882	64.03	РК	70	2	Н	-5.90	58.13	74	-15.87
4882	62.23	РК	33	2	V	-5.90	56.33	74	-17.67
			High C	hannel(2	2480 MF	łz)			
2483.5	66.21	РК	219	2.5	Н	-10.55	55.66	74	-18.34
2483.5	65.10	РК	238	1.5	V	-10.55	54.55	74	-19.45
2488.28	67.17	РК	153	2.1	Н	-10.51	56.66	74	-17.34
2491.7	66.93	РК	88	1.4	V	-10.48	56.45	74	-17.55
4960	61.65	РК	290	1.5	Н	-5.47	56.18	74	-17.82
4960	60.05	РК	36	1.5	V	-5.47	54.58	74	-19.42

# Above 1GHz: (worst case is 8DPSK Mode, 3DH5)

Field Strength of Average								
Frequency	Peak Measurement	Polar	Duty Cycle Correction	Corrected	FCC Part 15.247			
(MHz)	@3m (dBµV/m)	(H/V)	Factor (dB)	Ampitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)		
		Lo	w Channel(240	2MHz)				
2378.6	55.48	Н	-24.66	30.82	54	-23.18		
2332.86	54.50	V	-24.66	29.84	54	-24.16		
2390	54.24	Н	-24.66	29.58	54	-24.42		
2390	53.55	V	-24.66	28.89	54	-25.11		
4804	56.73	Н	-24.66	32.07	54	-21.93		
4804	57.01	V	-24.66	32.35	54	-21.65		
		Mic	ldle Channel(24	41MHz)	<u> </u>			
4882	58.13	Н	-24.66	33.47	54	-20.53		
4882	56.33	V	-24.66	31.67	54	-22.33		
		Hi	gh Channel(248	0MHz)	<u> </u>			
2483.5	55.66	Н	-24.66	31.00	54	-23.00		
2483.5	54.55	V	-24.66	29.89	54	-24.11		
2488.28	56.66	Н	-24.66	32.00	54	-22.00		
2491.7	56.45	V	-24.66	31.79	54	-22.21		
4960	56.18	Н	-24.66	31.52	54	-22.48		
4960	54.58	V	-24.66	29.92	54	-24.08		

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Note:

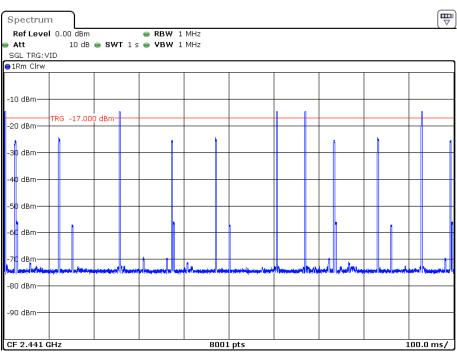
Absolute Level = Corrected Factor + Reading Margin = Corrected. Amplitude - Limit Average level= Peak level+ Duty Cycle Corrected Factor The other emissions which was 20dB below limit or in noise floor level was not recorded.

Worst case duty cycle:

Refer the plots, the maximum hops in 100ms period was 2(second high signal was from other channels) Duty cycle = Ton/100ms = 2.925\*2/100=0.0585

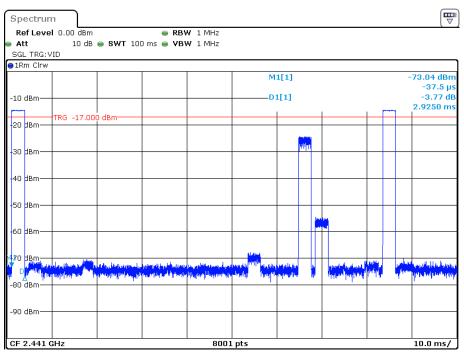
Duty Cycle Corrected Factor = 20lg (Duty cycle) = 20lg0.0585 = -24.66

#### **Duty cycle**



Date: 12.APR.2023 09:11:47

Report No.: RA230301-09348E-RF-00A



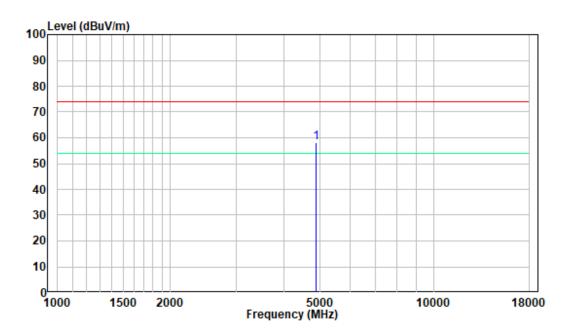
Date: 12.APR.2023 09:08:35

Report No.: RA230301-09348E-RF-00A

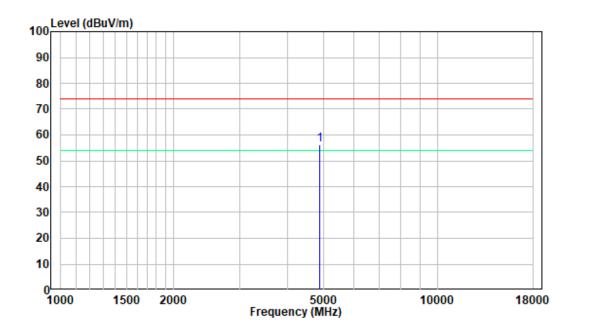
## 1-18GHz

Pre-scan for Middle Channel

Horizontal:



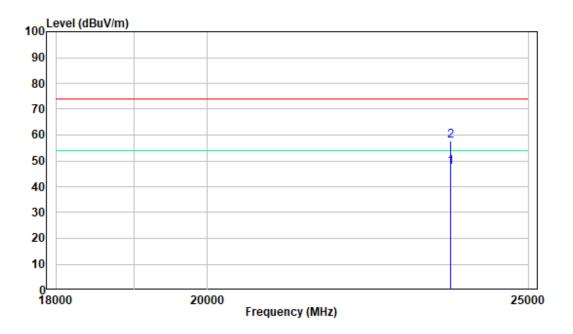
## Vertical:



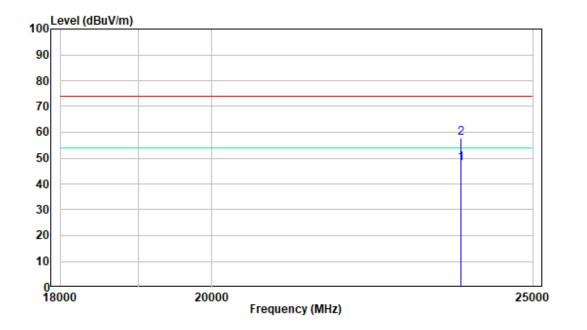
# 18-25GHz

Pre-scan for Middle Channel

Horizontal:



#### Vertical:



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

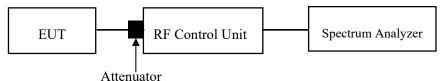
## **Applicable Standard**

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**

Test Method: ANSI C63.10-2013 Clause 7.8.2

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



#### **Test Data**

#### **Environmental Conditions**

Temperature:	23 °C
<b>Relative Humidity:</b>	60 %
ATM Pressure:	101.0 kPa

The testing was performed by Jacob Huang on 2023-04-10.

EUT operation mode: Transmitting

# 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**

Test Method: ANSI C63.10-2013 Clause 7.8.7 & Clause 6.9.2

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.

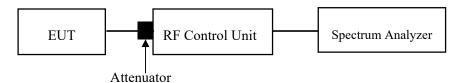
• The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.

• 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>	60 %		
ATM Pressure:	101.0 kPa		

The testing was performed by Jacob Huang on 2023-04-10.

EUT operation mode: Transmitting

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

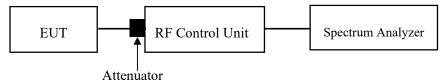
# **Applicable Standard**

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**

Test Method: ANSI C63.10-2013 Clause 7.8.3

- 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>	60 %		
ATM Pressure:	101.0 kPa		

The testing was performed by Jacob Huang on 2023-04-10.

EUT operation mode: Transmitting

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

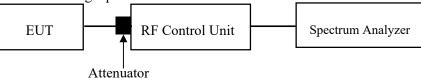
# **Applicable Standard**

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**

Test Method: ANSI C63.10-2013 Clause 7.8.4

- 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 0Hz.
- 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
<b>Relative Humidity:</b>	60 %
ATM Pressure:	101.0 kPa

The testing was performed by Jacob Huang on 2023-04-14.

EUT operation mode: Transmitting

# 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**

Test Method: ANSI C63.10-2013 Clause 7.8.5

- 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.



Attenuator

# **Test Data**

## **Environmental Conditions**

Temperature:	23 °C
<b>Relative Humidity:</b>	60 %
ATM Pressure:	101.0 kPa

The testing was performed by Jacob Huang on 2023-04-10.

EUT operation mode: Transmitting

# FCC §15.247(d) - BAND EDGES TESTING

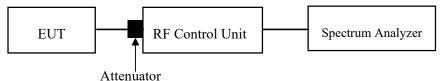
# **Applicable Standard**

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**

Test Method: ANSI C63.10-2013 Clause 7.8.6 & Clause 6.10

- 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>	60 %		
ATM Pressure:	101.0 kPa		

The testing was performed by Jacob Huang on 2023-04-10.

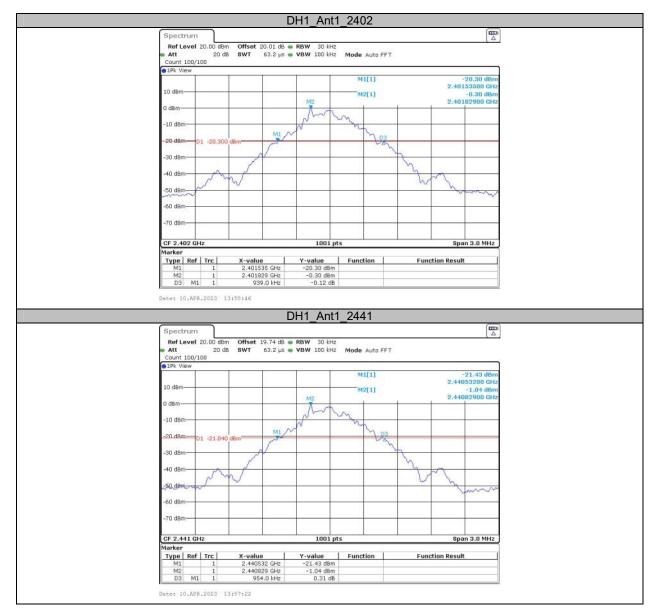
EUT operation mode: Transmitting

# APPENDIX

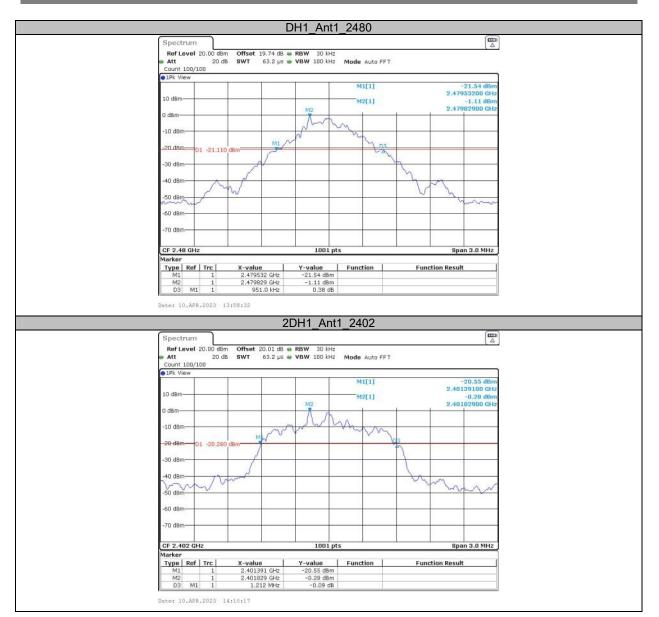
# Appendix A: 20dBEmission Bandwidth Test Result

Test Mode	Antenna	Freq(MHz)	20dB EBW[MHz]	Limit[MHz]	Verdict
		2402	0.94		
DH1	Ant1	2441	0.95		
		2480	0.95		
		2402	1.21		
2DH1	Ant1	2441	1.21		
		2480	1.21		
		2402	1.22		
3DH1	Ant1	2441	1.21		
		2480	1.21		

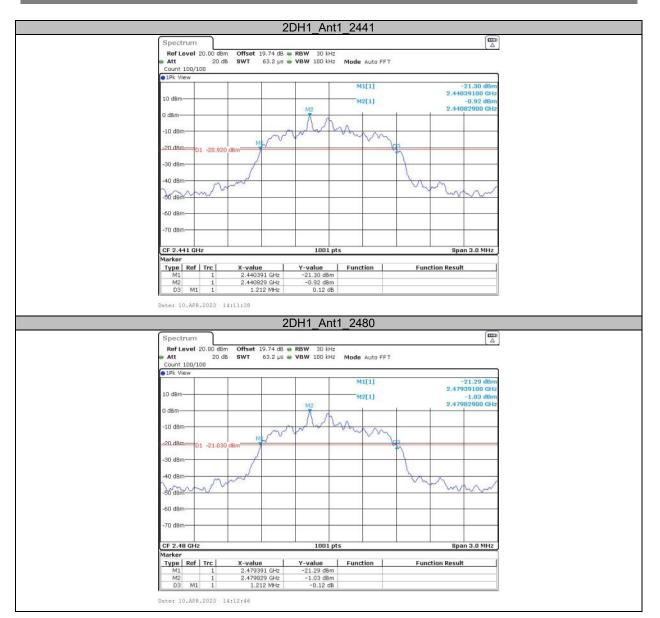
# **Test Graphs**



Report No.: RA230301-09348E-RF-00A



Report No.: RA230301-09348E-RF-00A



Report No.: RA230301-09348E-RF-00A



#### Report No.: RA230301-09348E-RF-00A



# Appendix B: Occupied Channel Bandwidth Test Result

Test Mode	Antenna	Freq(MHz)	OCB [MHz]	Limit[MHz]	Verdict
DH1	Ant1	2402	0.896		
		2441	0.899		
		2480	0.896		
2DH1	Ant1	2402	1.133		
		2441	1.133		
		2480	1.136		
3DH1	Ant1	2402	1.118		
		2441	1.118		
		2480	1.118		

# **Test Graphs**



Report No.: RA230301-09348E-RF-00A



Report No.: RA230301-09348E-RF-00A



Report No.: RA230301-09348E-RF-00A



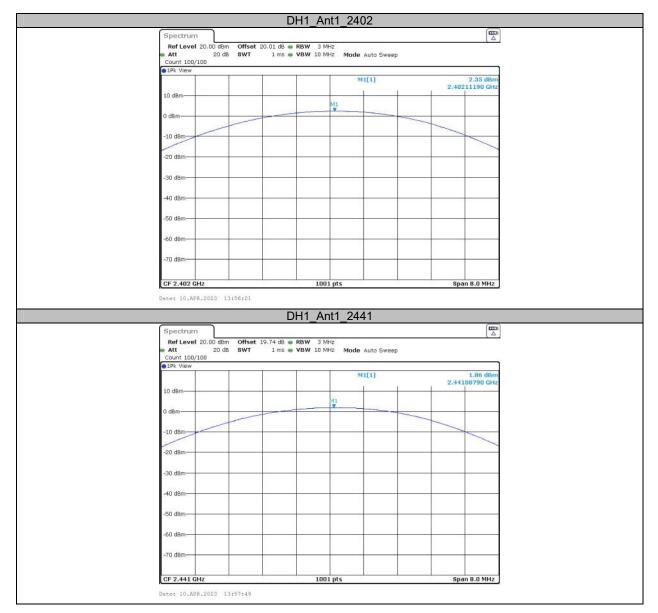
#### Report No.: RA230301-09348E-RF-00A



# Appendix C: Maximum conducted output power Test Result Peak

Test Mode	Antenna	Freq(MHz)	Conducted Peak Powert[dBm]	Conducted Limit[dBm]	Verdict
		2402	2.35	≤20.97	PASS
DH1	Ant1	2441	1.86	≤20.97	PASS
		2480	1.95	≤20.97	PASS
		2402	2.49	≤20.97	PASS
2DH1	Ant1	2441	1.97	≤20.97	PASS
		2480	2.03	≤20.97	PASS
		2402	2.75	≤20.97	PASS
3DH1	Ant1	2441	2.23	≤20.97	PASS
		2480	2.30	≤20.97	PASS

# **Test Graphs**



Report No.: RA230301-09348E-RF-00A



Report No.: RA230301-09348E-RF-00A



Report No.: RA230301-09348E-RF-00A



#### Report No.: RA230301-09348E-RF-00A

Spectru	IIII						
		et 19.74 dB 🖷 RB	3W 3 MHz			1-	
📾 Att	20 dB SW		BW 10 MHz Mod	e Auto Sweep			
Count 10							
• 1Pk View	w					0.00 10	
				M1[1]		2.30 dBm 2.48015180 GHz	
10 dBm-	-			1 1			
			MI	1 1			
0 dBm-							
-10 dBm-							
au doin							
-20 dBm-							
-20 ubin-				1			
-30 dBm-							
2022							
-40 dBm-							
252702							
-50 dBm-							
1000000							
-60 d8m-				1	-		
570-5107.2							
-70 dBm-				-			
CF 2.48	CH3	_	1001 pts			Pean P. 0 Mila	
CF 2.48	GHZ		1001 pts			Span 8.0 MHz	l

# Appendix D: Carrier frequency separation Test Result

Test Mode	Antenna	Freq(MHz)	Result[MHz]	Limit[MHz]	Verdict
DH1	Ant1	Нор	1.003	≥0.633	PASS
2DH1	Ant1	Нор	1.000	≥0.807	PASS
3DH1	Ant1	Нор	1.003	≥0.813	PASS

# **Test Graphs**



#### Report No.: RA230301-09348E-RF-00A

Spectrum				
Ref Level 20.00 dBm				
Att 20 dB Count 100/100	SWT 18.9 µs 🖷 VBW 1	300 kHz Mode Auto FFT		
e 1Pk View				
		M1[1]	1.16 dBm	
10 dBm		_D2[1]	2.44116087 GHz 0.36 dB	
20 0011	541		1.00290 MHz	
0 dBm	MI		02	
-10 dBm				
-20 dBm				
-30 dBm				
2002272				
-40 dBm				
104102				
-50 dBm				
60 dB-				
-60 dBm				
-70 dBm-				
-yo dan				
Start 2.4405 GHz	C	691 pts	Stop 2.4425 GHz	

# Appendix E: Time of occupancy Test Result

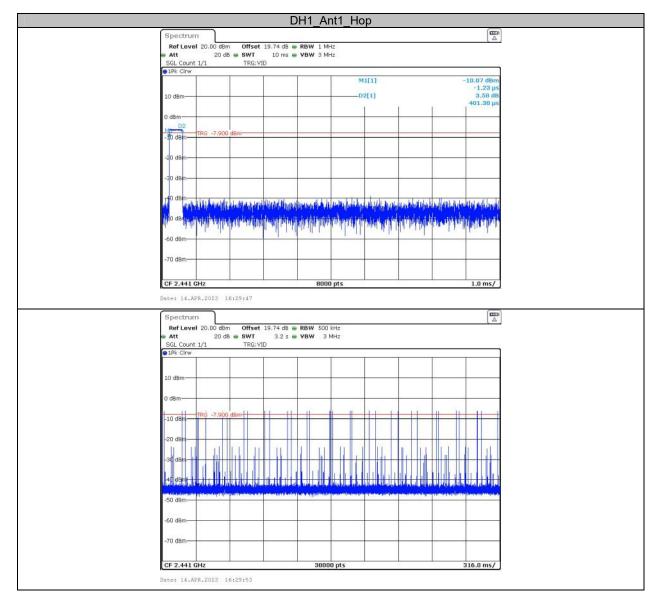
Test Mode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Нор	0.40	330	0.132	≤0.4	PASS
DH3	Ant1	Нор	1.65	160	0.264	≤0.4	PASS
DH5	Ant1	Нор	2.89	120	0.347	≤0.4	PASS
2DH1	Ant1	Нор	0.39	330	0.130	≤0.4	PASS
2DH3	Ant1	Нор	1.64	170	0.278	≤0.4	PASS
2DH5	Ant1	Нор	2.88	120	0.345	≤0.4	PASS
3DH1	Ant1	Нор	0.39	320	0.126	≤0.4	PASS
3DH3	Ant1	Нор	1.63	140	0.229	≤0.4	PASS
3DH5	Ant1	Нор	2.88	130	0.374	≤0.4	PASS

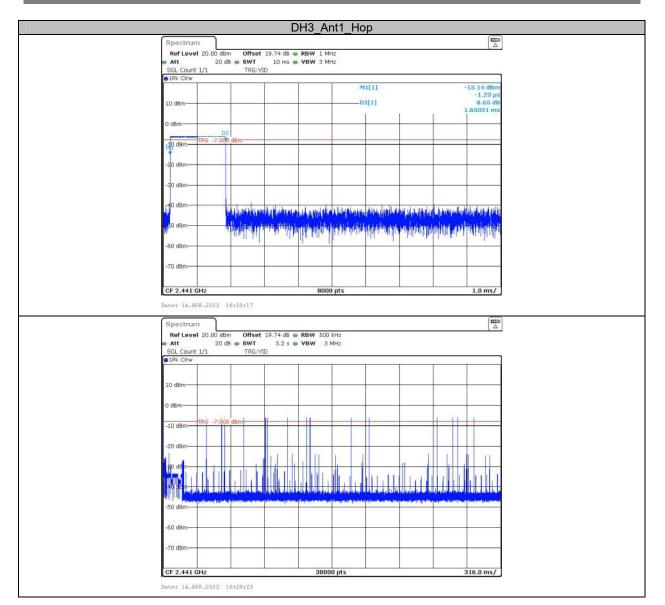
Note 1: A period time=0.4\*79=31.6(S), Result=BurstWidth\*Totalhops

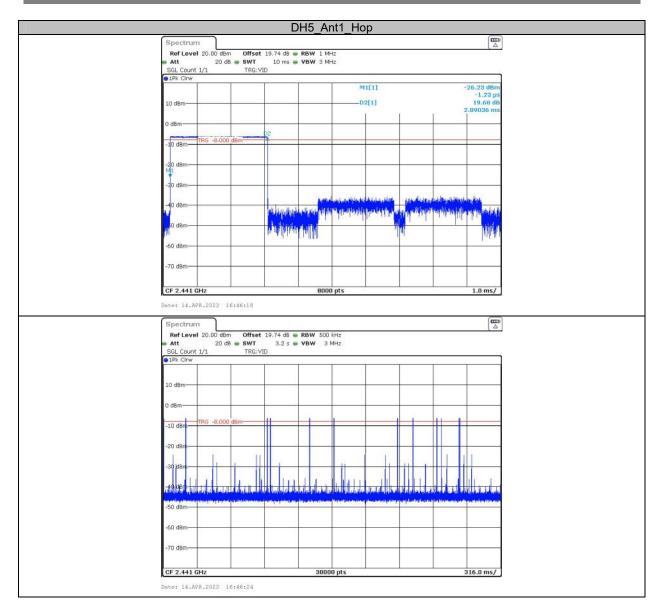
Note 2: Totalhops=Hopping Number in 3.16s\*10

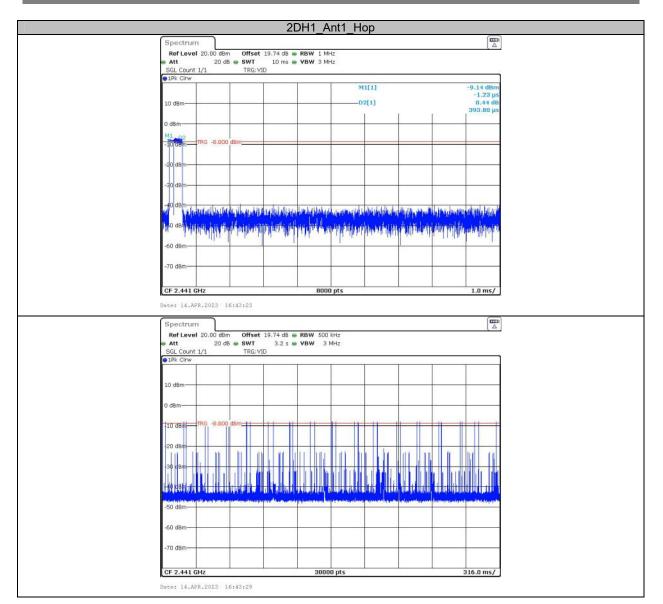
Note 3: Hopping Number in 3.16s=Total of highest signals in 3.16s(Second high signals were other channel)

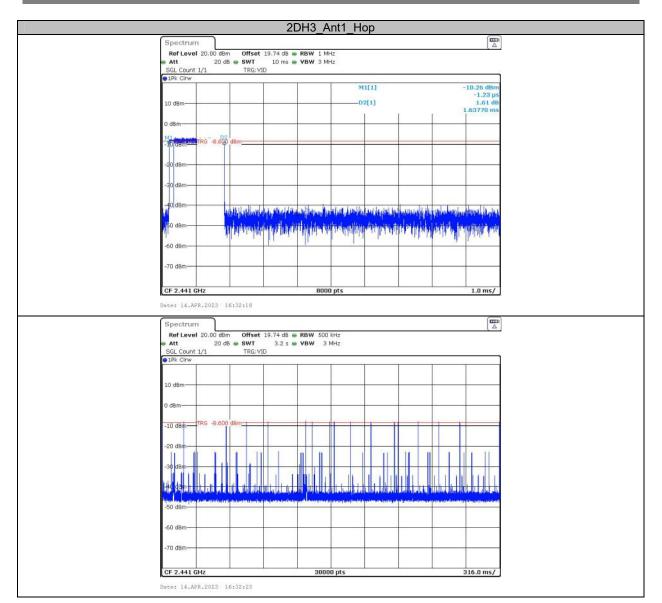
# **Test Graphs**



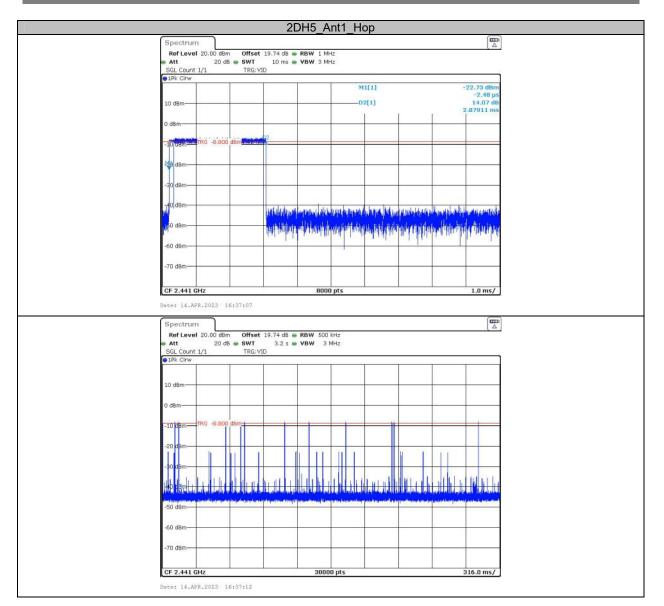




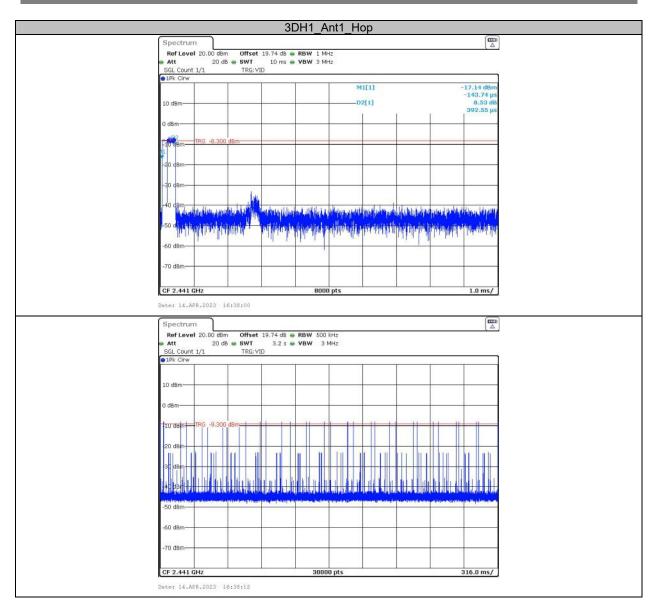




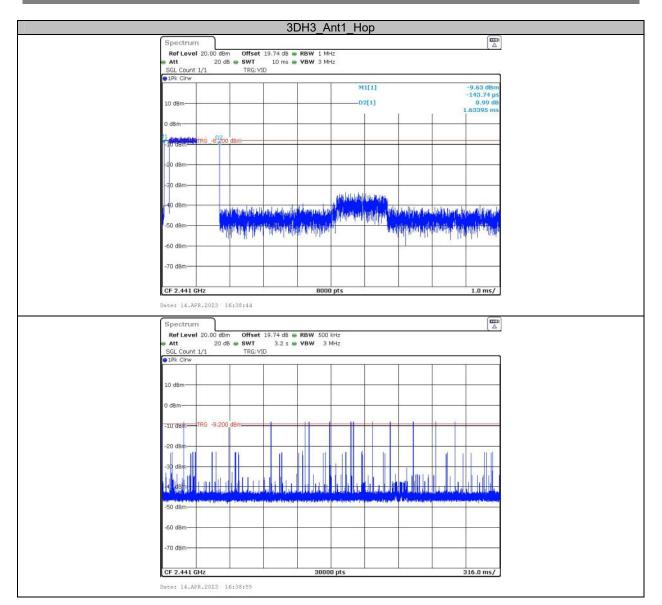
Report No.: RA230301-09348E-RF-00A



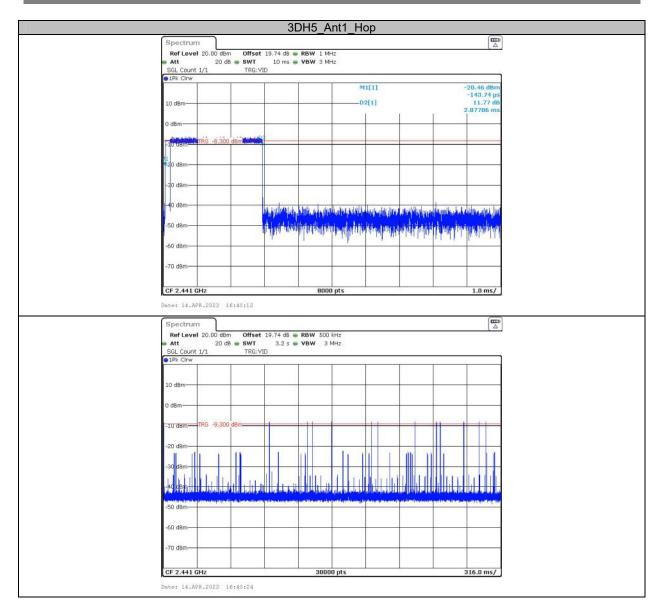
Report No.: RA230301-09348E-RF-00A



#### Report No.: RA230301-09348E-RF-00A



Report No.: RA230301-09348E-RF-00A



# Appendix F: Number of hopping channels Test Result

Test Mode	Antenna	Freq(MHz)	Result[Num]	Limit[Num]	Verdict
DH1	Ant1	Нор	79	≥15	PASS
2DH1	Ant1	Нор	79	≥15	PASS
3DH1	Ant1	Нор	79	≥15	PASS

# **Test Graphs**



#### Report No.: RA230301-09348E-RF-00A

Spectrum	3DH1_Ant1_Hop	
	t 20.01 dB 🖷 RBW 100 kHz	
att 20 dB SWT	1 ms . VBW 300 kHz Mode Auto Sweep	
Count 1000/1000		
• 1Pk View		
10 dBm-		
O #\$#AHEAHAAEAAEAAEAA	ANNO ANNA ANNA ANNA ANNA ANNA ANNA ANNA	THE NAME AND A DESCRIPTION OF A
	สกุลสุทธภารณาและหนึ่งสุทธิ์สุทธิ์สุทธิ์สุทธิ์สุทธิ์สุทธิ์สุทธิ์ส	anaanaanaanaan
-10 dBm-		
-20 dBm		
-30 dBm		
al an in		
40 dBm-		
-50 d8m-		land
-SU UBIN-		
-60 d8m-		
-ou upin-		
-70 dBm-		
-/ 0 0Bitt-		
Start 2.4 GHz	691 pts	Stop 2.4835 GHz

# Appendix G: Band edge measurements Test Graphs

				E	)H1	Ant1 L	ow 2	402				
Spectr	1102						_				ſ	
		0.00.49~	Offer	20.01		BW 100 kHz					1	Δ,
e Att	- eei 2					BW 300 kHz	Mode 4	uto FFT				
Count 3			a and really									_
●1Pk Vie	ew.		-									
255							M1	[1]		2,40	1.55 di 18560 di	
10 dBm-			-	-	-		M2	[1]		-	50.62 di	Bm
0 dBm-				_					-	2.40	000060 0	BHz
											1	
-10 dBm-	1						1				1 IL	
-20 dBm-	01	-18.450	dBm	-	-						11	
-30 dBm-												
-40 dBm-	-		<u> </u>	_					-		14	14
							M		MB		112	
USD dBox	and to	- Concerna	con	Anner	manter	Magazine and	moule	- and a starter	1 Duncon	ang water		in
-60 d8m-				- 2	-						-	
100000000												
-70 dBm-	3			-								
01-02-7	0.5.0											
Start 2. Marker	35 GH	12				691 pts				Stop	2.405 GH	HZ
Type	Ref	Trc	X-va	lue	1	Y-value	Functi	on I	Fund	tion Result	t .	1
M1		1	2.40	1856 GH	2	1.55 dBm						
M2	-	1		2.4 GH 2.39 GH		-50.62 dBm -51.11 dBm						_
MB												
M3 M4		1	2.382	7609 GH	2	-47.78 dBm						
M4	100	1	2.382	7609 GH	2	-47.78 dBm						
	.APR.	1	2.382	7609 GH	2	-47.78 dBm						
M4	.APR.	1	2.382	7609 GH	2	-47.78 dBm	iah 2	480				
Date: 10	001606	1	2.382	7609 GH	2	-47.78 dBm Ant1_H	igh_2	480			6	
Date: 10 Spectr	um	1	2.382 3:56:08	7609 GH	H1_	-47.78 dBm Ant1_H	igh_2	480			[	
M4 Date: 10 Spectr Ref Le	um	1 2023 1 0.00 dBn	2.382 3:56:08	7609 GH	: H1 IB • RI	-47.78 dBm		A10 84	20		[	
M4 Date: 10 Spectr Ref Le Att Count 3	'um vel 2	1 2023 1 0.00 dBn 20 dB	2.382 3:56:08	7609 GH	: H1 IB • RI	-47.78 dBm Ant1_H		A10 84	p		[1	E
M4 Date: 10 Spectr Ref Le	'um vel 2	1 2023 1 0.00 dBn 20 dB	2.382 3:56:08	7609 GH	: H1 IB • RI	-47.78 dBm	Mode /	luto Swee	p			
M4 Date: 10 Spectr Ref Le Att Count 3	'um vel 2	1 2023 1 0.00 dBn 20 dB	2.382 3:56:08	7609 GH	: H1 IB • RI	-47.78 dBm		luto Swee	p		0.99 di	Bm
M4 Date: 10 Spectr Ref Le Att Count 3	um vel 2 :00/30	1 2023 1 0,00 dBn 20 dB	2.382 3:56:08	7609 GH	: H1 IB • RI	-47.78 dBm	Mode /	Auto Swee	ib			Bm 3Hz
M4 Date: 10 Spectr Ref Le Att Count 3 1Pk Vie 10 dBm-	'um vel 2	1 2023 1 0,00 dBn 20 dB	2.382 3:56:08	7609 GH	: H1 IB • RI	-47.78 dBm	Mode /	Auto Swee	9p	-	0.99 di 179900 G	Bm 3Hz Bm
M4 Date: 10 Spectr Ref Le Att Count 3 IPk Vie	um vel 2 :00/30	1 2023 1 0,00 dBn 20 dB	2.382 3:56:08	7609 GH	: H1 IB • RI	-47.78 dBm	Mode /	Auto Swee	8p	-	0.99 di 179900 G -48.90 di	Bm 3Hz Bm
M4 Date: 10 Spectr Ref Le Att Count 3 1Pk Vie 10 dBm-	um vel 2 100/30	1 2023 1 0,00 dBn 20 dB	2.382 3:56:08	7609 GH	: H1 IB • RI	-47.78 dBm	Mode /	Auto Swee	PP	-	0.99 di 179900 G -48.90 di	Bm 3Hz Bm
M4 Date: 10 Spectr Ref Le Att Count 3 IPk Vie 10 dBm- -10 dBm-	wel 2	1 2023 1 200 dBn 20 dB 1	2.382	7609 GH	: H1 IB • RI	-47.78 dBm	Mode /	Auto Swee	ip	-	0.99 di 179900 G -48.90 di	Bm 3Hz Bm
M4 Date: 10 Spectr Ref Le Att Count 3 ID dBm- 0 dBm-	wel 2	1 2023 1 0,00 dBn 20 dB	2.382	7609 GH	: H1 IB • RI	-47.78 dBm	Mode /	Auto Swee	ip	-	0.99 di 179900 G -48.90 di	Bm 3Hz Bm
M4 Date: 10 Spectr Ref Le Att Count 3 IPk Vie 10 dBm- -10 dBm-	Wel 2	1 2023 1 200 dBn 20 dB 1	2.382	7609 GH	: H1 IB • RI	-47.78 dBm	Mode /	Auto Swee	ip	-	0.99 di 179900 G -48.90 di	Bm 3Hz Bm
M4           Date: 10           Ref Le           Att           Count 3           IPk Vie           10 dBm-           0 dBm-           -10 dBm-           -20 dBm-           -30 dBm-	W M	1 2023 1 200 dBn 20 dB 1	2.382	7609 GH	: H1 IB • RI	-47.78 dBm	Mode /	Auto Swee	10 10	-	0.99 di 179900 G -48.90 di	Bm 3Hz Bm
M4 Date: 10 Ref Le Att Count 3 1Pk Vie 10 dBm- -10 dBm- -20 dBm-	W M	1 2023 1 0.00 dBn 20 dB 0 1 -19.010	2.382	7609 GH	H1_	-47.78 dBm	Mode /	Auto Swee	M4	-	0.99 di 179900 G -48.90 di	Bm 3Hz Bm
M4           Date: 10           Ref Le           Att           Count 3           IPk Vie           10 dBm-           0 dBm-           -10 dBm-           -20 dBm-           -30 dBm-	W M 01	1 2023 1 0,00 dBn 20 dB 0	2.382	19.74 1.1 1	: H1 IB • RI	-47.78 dBm	Mode /	Auto Swee		-	0.99 di 179900 G -48.90 di	Bm 3Hz Bm 3Hz
M41           Date: 10           Ref Le           Aff Le           Agental           0 dBm-           -10 dBm-           -20 dBm-           -30 dBm-           -40 dBm-	WW M	1 2023 1 0.00 dBn 20 dB 0 1 -19.010	2.382	19.74 1.1 1	H1_	-47.78 dBm	Mode /	Auto Swee	M4	2.4	0.99 dl 179900 d 48.90 dl 183500 d	Bm 3Hz Bm 3Hz
M4 Date: 10 Spectr RofLe Att Count 3 PIR Vie 10 dBm- 0 dBm- -10 dBm- -20 dBm- -30 dBm- -40 dBm-	WW M	1 2023 1 0.00 dBn 20 dB 0 1 -19.010	2.382	19.74 1.1 1	H1_	-47.78 dBm	Mode /	Auto Swee	M4	2.4	0.99 dl 179900 d 48.90 dl 183500 d	Bm 3Hz Bm 3Hz
M41           Date: 10           Ref Le           Aff Le           Agental           0 dBm-           -10 dBm-           -20 dBm-           -30 dBm-           -40 dBm-	M	1 2023 1 0.00 dBn 20 dB 0 1 -19.010	2.382	19.74 1.1 1	H1_	-47.78 dBm	Mode /	Auto Swee	M4	2.4	0.99 dl 179900 d 48.90 dl 183500 d	Bm 3Hz Bm 3Hz
M4 Date: 10 Ref Le Aff Le Aff Le Count 2 Count	M	1 2023 1 0.00 dBn 20 dB 0 1 -19.010	2.382	19.74 1.1 1	H1_	-47.78 dBm	Mode /	Auto Swee	M4	2.4	0.99 dl 179900 d 48.90 dl 183500 d	Bm 3Hz Bm 3Hz
M4 Date: 10 Ref Le Aff Le Aff Le Count 2 Count	W M	1 2023 1 2000 dBn 20 db 20 db	2.382	19.74 1.1 1	H1_	-47.78 dBm	Mode /	Auto Swee	M4	2.4	0.99 dl 179900 d 48.90 dl 183500 d	Bm 3Hz 8m 3Hz
M44           Date: 10           Ref Le           Aff	Um vel 2 000/30 ww 01 01 01 01 01 01 01 01 01 01 01 01 01	1 2023 1 20 di 0 20 di 0 1 -19.010 -19.010	2.382	19.74 1.1 1	H1	-47.78 dBm Ant1_H BW 100 kHz BW 300 kHz BW 3	Mode /	II] (1]	Internet internet	2.4 Stop	0.99 di 48.90 di 83500 di 93500 di 935000 di 93500 di 935000 di 9350000000 di 93500 di 93500 di 93500 di 93500 di 93500 di 93500	Bm 3Hz 8m 3Hz
M44           Date: 10           Ref Le           Att           Count 3           ● IPk Vie           10 dBm-           0 dBm -           -10 dBm-           -20 dBm-           -30 dBm-           -40 dBm-           -50 dBm-           -50 dBm-           -50 dBm-           -50 dBm-           -50 dBm-           -70 dBm-           -70 dBm-           -70 dBm-           -70 dBm-	Um vel 2 000/30 ww 01 01 01 01 01 01 01 01 01 01 01 01 01	1 2023 1 20 dB 20 dB 0 -19.010 -19.010 -19.010	2:382 3:56:09 0 Offse 3 SWT	L 19.74 1.1 t 1.1 t	H1	-47.78 dBm Ant1_H BW 100 kHz BW 300 kHz BW 300 kHz BW 300 kHz BW 300 kHz C 10 kHz C	Mode /	II] (1]	Internet internet	2.4	0.99 di 48.90 di 83500 di 93500 di 935000 di 93500 di 935000 di 9350000000 di 93500 di 93500 di 93500 di 93500 di 93500 di 93500	Bm 3Hz 8m 3Hz
M4           Date: 10           Ref Le           Aff	Um vel 2 000/30 ww 01 01 01 01 01 01 01 01 01 01 01 01 01	1 2023 1 20 di 20 di 20 di 1 	2:382 3:56:08 0 Offse 3 SWT	L 19.74 1.1 1 1.1	H1	-47.78 dBm Ant1_H BW 100 kHz BW 300 kHz BW 300 kHz BW 300 kHz BW 300 kHz Company	Mode /	II] (1]	Internet internet	2.4 Stop	0.99 di 48.90 di 83500 di 93500 di 935000 di 935000000000000000000000000000000000000	Bm 3Hz 8m 3Hz
M4           Date: 10           Ref Le           Att           Count           Count           10 dBm-           0 dBm-           -10 dBm-           -30 dBm-           -40 dBm-           -30 dBm-           -60 dBm-           -70 dBm- </td <td>Um vel 2 000/30 ww 01 01 01 01 01 01 01 01 01 01 01 01 01</td> <td>1 2023 1 20 di 20 di 20 di 1 19.010 M2 19.010 M2 </td> <td>2:382 2:382 3:56:08 0 Offse 3 SWT 0 Offse 0 Offse 0</td> <td>Lange 25 64</td> <td></td> <td>-47.78 dBm Ant1_H BW 100 kHz BW 300 kHz BW 300 kHz BW 300 kHz Comparison Butters atom bla b</td> <td>Mode /</td> <td>II] (1]</td> <td>Internet internet</td> <td>2.4 Stop</td> <td>0.99 di 48.90 di 83500 di 93500 di 935000 di 935000000000000000000000000000000000000</td> <td>Bm 3Hz 8m 3Hz</td>	Um vel 2 000/30 ww 01 01 01 01 01 01 01 01 01 01 01 01 01	1 2023 1 20 di 20 di 20 di 1 19.010 M2 19.010 M2 	2:382 2:382 3:56:08 0 Offse 3 SWT 0 Offse 0	Lange 25 64		-47.78 dBm Ant1_H BW 100 kHz BW 300 kHz BW 300 kHz BW 300 kHz Comparison Butters atom bla b	Mode /	II] (1]	Internet internet	2.4 Stop	0.99 di 48.90 di 83500 di 93500 di 935000 di 935000000000000000000000000000000000000	Bm 3Hz 8m 3Hz
M41           Date: 10           Ref Le           Att           Counts           ID dBm-           0 dBm-           0 dBm-           -10 dBm-           -30 dBm-           -30 dBm-           -40 dBm-           -50 dBm-           -50 dBm-           -50 dBm-           -60 dBm-           -70 dBm-	Um vel 2 000/30 ww 01 01 01 01 01 01 01 01 01 01 01 01 01	1 2023 1 20 dB 20 dB 20 dB 19.010 19.010 	2:382 2:382 3:56:08 0 Offse 3 SWT 0 Offse 0	L 19.74 1.1 1 1.1 1.1		-47.78 dBm Ant1_H BW 100 kHz BW 100 kHz BW 300 kHz BW 300 kHz BW 300 kHz CH1 AND	Mode /	II] (1]	Internet internet	2.4 Stop	0.99 di 48.90 di 83500 di 93500 di 935000 di 935000000000000000000000000000000000000	Bm 3Hz 8m 3Hz

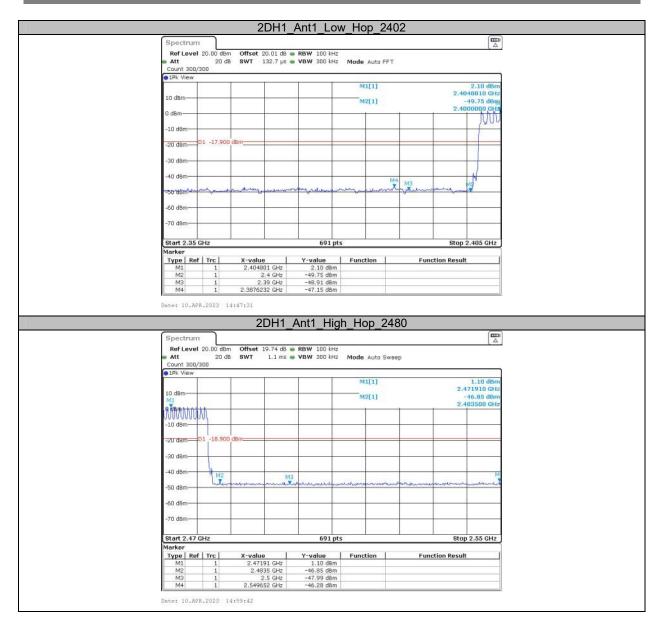
Report No.: RA230301-09348E-RF-00A

General						
Spect	vel 20.00 de	m Offcot 20.01	. dB 🖷 RBW 100 kH;	-		
e Att	20		/ µs 🖷 VBW 300 kH			
Count 3	100/300					
				M1[1]		2.16 dBm
10 dBm-				10(1)		2.4038460 GHz
				M2[1]		-49.33 dBm 2.4000000 GMz
0 dBm-						- MUN
-10 dBm						11/11
-20 dBm	D1 -17.84	ID dBm				
-30 dBm						
-40 dBm	MA				19	
~50° d8m	monter	menningan	mangemen	mbring around	my manunany	M2
	2			a service and the	A COLORED TO A	200
-60 dBm						-
-70 dBm						
	35 GHz		691 p	ts	S	top 2.405 GHz
Marker	Ref   Trc	X-value	Y-value	Function	Function Re	sult l
M1	1	2.403846 G	Hz 2.16 dBm	1		
			Hz -49.33 dBm			
M2 M3	1	2.4 Gł 2.39 Gł	Hz -49.49 d8m	1		
M2 M3 M4	1	2.39 GF 2.3575725 GF	Hz -49.49 dBm	1		
M3 M4	1	2.39 Gł 2.3575725 Gł 14:19:14	Hz -49.49 dBm Hz -45.50 dBm	1	80	
M3 M4	1 .APR.2023	2.39 G 2.3575725 G	Hz -49.49 dBm Hz -45.50 dBm	1	80	
M3 M4 Date: 10 Spect	1 .APR.2023 um	2.39 GH 2.3575725 GH 14:19:14 DH Im Offset 19.74	Hz -49.49 dBm +4z -45.50 dBm 1_Ant1_Hig + dB • RBW 100 kH3	h_Hop_24		
M3 M4 Date: 10 Ref Le Att	1 .APR.2023 um	2.39 GH 2.3575725 GH 14:19:14 DH Im Offset 19.74	Hz -49.49 dBm Hz -45.50 dBm 1_Ant1_Hig	h_Hop_24		
M3 M4 Date: 10 Ref Le Att	1 1 .APR.2023 .vel 20.00 df 20 .000/300	2.39 GH 2.3575725 GH 14:19:14 DH Im Offset 19.74	Hz -49.49 dBm +4z -45.50 dBm 1_Ant1_Hig + dB • RBW 100 kH3	h_Hop_24		
M3 M4 Date: 10 Ref Le Att Count 1Pk Vie	1 1 .APR.2023 .vel 20.00 df 20 .000/300	2.39 GH 2.3575725 GH 14:19:14 DH Im Offset 19.74	Hz -49.49 dBm +4z -45.50 dBm 1_Ant1_Hig + dB • RBW 100 kH3	h_Hop_24		1.13 dBm
M3 M4 Dates 10 Ref Le Att Count :	1 1 .APR.2023 .vel 20.00 df 20 .000/300	2.39 GH 2.3575725 GH 14:19:14 DH Im Offset 19.74	Hz -49.49 dBm +4z -45.50 dBm 1_Ant1_Hig + dB • RBW 100 kH3	h_Hop_24		1.13 dBm 2.478860 GHz -48.32 dBm
M3 M4 Date: 10 Ref Le Att Count 1Pk Vie	1 1 .APR.2023 .vel 20.00 df 20 .000/300	2.39 GH 2.3575725 GH 14:19:14 DH Im Offset 19.74	Hz -49.49 dBm +4z -45.50 dBm 1_Ant1_Hig + dB • RBW 100 kH3	h_Hop_24		1.13 dBm 2.478860 GHz
M3 M4 Date: 10 Ref Le Att Gunt 10 dBm- E KR.m4	1 1 1 .APR,2023 .vel 20.00 df 20. 100/300 .ww	2.39 GH 2.3575725 GH 14:19:14 DH Im Offset 19.74	Hz -49.49 dBm +4z -45.50 dBm 1_Ant1_Hig + dB • RBW 100 kH3	h_Hop_24		1.13 dBm 2.478860 GHz -48.32 dBm
M3 M4 Date: 10 Reft 4 Att Count : 10 dBm- 6 KBm- f40 dBm	1 1 1 1 20 20 20 20 20 20 20 20 20 20 20 20 20	2:39 G 2:3575725 G 14:19:14 im Offset 19:74 ib swr 1:1	Hz -49.49 dBm +4z -45.50 dBm 1_Ant1_Hig + dB • RBW 100 kH3	h_Hop_24		1.13 dBm 2.478860 GHz -48.32 dBm
M3 M4 Date: 10 Ref Le Att Gunt 10 dBm- E KR.m4	1 1 1 1 20 20 20 20 20 20 20 20 20 20 20 20 20	2:39 G 2:3575725 G 14:19:14 im Offset 19:74 ib swr 1:1	Hz -49.49 dBm +4z -45.50 dBm 1_Ant1_Hig + dB • RBW 100 kH3	h_Hop_24		1.13 dBm 2.478860 GHz -48.32 dBm
M3 M4 Date: 10 Reft 4 Att Count : 10 dBm- 6 KBm- f40 dBm	1 1 1 1 1 1 1 1 1 1 1 1 1 1	2:39 G 2:3575725 G 14:19:14 im Offset 19:74 ib swr 1:1	Hz -49.49 dBm +4z -45.50 dBm 1_Ant1_Hig + dB • RBW 100 kH3	h_Hop_24		1.13 dBm 2.478860 GHz -48.32 dBm
M3 M4 Date: 10 Roft L Att Count: 10 dBm- 20 dBm -20 dBm -30 dBm	1 1 1 .APR.2023 wel 20.00 df 20 00/300 ww	2:39 G 2:3575725 G 14:19:14 im Offset 19:74 ib swr 1:1	Hz -49.49 dBm +4z -45.50 dBm 1_Ant1_Hig + dB • RBW 100 kH3	h_Hop_24		1.13 dBm 2.478860 GHz -48.32 dBm
M3 M4 Date: 10 Ref LE Att Count: 10 dBm 6 RAm 70 dBm -20 dBm	1 1 1 1 1 1 1 1 1 1 1 1 1 1	2.39 G 2.3575725 G 14:19:14 m Offset 19.74 88 SWT 1.1	Hz -49,49 dBm -45,50 dBm 1 Ant1_Hig dB • RBW 100 kHz ms • VBW 300 kHz	h_Hop_24		1.13 dBm 2.478860 GHz -48.32 dBm 2.483500 GHz
M3 M4 Date: 10 Roft L Att Count: 10 dBm- 20 dBm -20 dBm -30 dBm	1 1 1 1 1 1 1 1 1 1 1 1 1 1	2.39 G 2.3575725 G 14:19:14 m Offset 19.74 88 SWT 1.1	Hz -40,49 dBm Hz -45.50 dBm 1_Ant1_Hig dB ● RBW 100 kHz ms ● VBW 300 kHz	h_Hop_24		1.13 dBm 2.478860 GHz -48.32 dBm
M3 M4 Date: 10 Ref LE Att Count : 10 dBm- 6 rEAn- rU0 dBm -220 dBm -30 dBm -40 dBm	1 1 . APR.2023 um vel 20.00 di 20 000/300 w u 001 -10.01	2.39 G 2.3575725 G 14:19:14 m Offset 19.74 88 SWT 1.1	Hz -49,49 dBm -45,50 dBm 1 Ant1_Hig dB • RBW 100 kHz ms • VBW 300 kHz	h_Hop_24		1.13 dBm 2.478860 GHz -48.32 dBm 2.483500 GHz
M3 M4 Date: 10 Spect: Ref Lt Att Count: 10 dBm- 6 MBM + -30 dBm -30 dBm -30 dBm -30 dBm -50 dBm -50 dBm	1 1 . APR.2023 um vel 20.00 di 20 100/300 W vel 01 -18.81 M2 M2	2.39 G 2.3575725 G 14:19:14 m Offset 19.74 88 SWT 1.1	Hz -49,49 dBm -45,50 dBm 1 Ant1_Hig dB • RBW 100 kHz ms • VBW 300 kHz	h_Hop_24		1.13 dBm 2.478860 GHz -48.32 dBm 2.483500 GHz
M3 M4 Date: 10 Rofte Att Count: 10 dBm- 6 MBm- 40 dBm -20 dBm -20 dBm -40 dBm -50 dBm	1 1 . APR.2023 um vel 20.00 di 20 100/300 W vel 01 -18.81 M2 M2	2.39 G 2.3575725 G 14:19:14 m Offset 19.74 88 SWT 1.1	Hz -49,49 dBm -45,50 dBm 1 Ant1_Hig dB • RBW 100 kHz ms • VBW 300 kHz	h_Hop_24		1.13 dBm 2.478860 GHz -48.32 dBm 2.483500 GHz
M3 M4 Date: 10 Ref LE Att Count : 10 dBm 20 dBm -20 dBm -50 dBm -50 dBm -70 dBm	1 1 1 1 1 1 1 1 1 1 1 1 1 1	2.39 G 2.3575725 G 14:19:14 m Offset 19.74 88 SWT 1.1	Hz -49.49 dBm -45.50 dBm 1 Ant1_Hig dB • RBW 100 kHz ms • VBW 300 kHz 	h_Hop_24		1.13 dBm 2.470860 GHz -48.32 dBm 2.483500 GHz
M3 M4 Date: 10 Ref LE Att Count : 10 dBm 20 dBm -20 dBm -50 dBm -50 dBm -70 dBm	1 1 . APR.2023 um vel 20.00 di 20 100/300 W vel 01 -18.81 M2 M2	2.39 G 2.3575725 G 14:19:14 m Offset 19.74 88 SWT 1.1	Hz -49,49 dBm -45,50 dBm 1 Ant1_Hig dB • RBW 100 kHz ms • VBW 300 kHz	h_Hop_24		1.13 dBm 2.478860 GHz -48.32 dBm 2.483500 GHz
M3 M4 Date: 10 Spectr Reft L Att count: 10 dBm 50 dBm -20 dBm -30 dBm -50 dBm -50 dBm -70 dBm -70 dBm -70 dBm -70 dBm	1 1 1 1 1 1 1 1 1 1 1 1 1 1	2:39 G 2:3575725 G 14:19:14 m Offset 19:74 8 SWT 1.1 0 0 d8m 0 0 d8m 0 0 d8m 0 0 d8m 0 0 d8m	Hz -49,49 dBm -45,50 dBm 1 Ant1_Hig dB RBW 100 kH ms VBW 300 kH 	h_Hop_24		1.13 dBm 2.470860 GHz -48.32 dBm 2.483500 GHz 
M3 M4 Date: 10 Ref LE Att Count : 10 dBm- 6 rEAn- FU0 dBm -20 dBm -30 dBm -30 dBm -40 dBm -50 dBm -50 dBm -50 dBm -70 dBm	1 1 1 1 1 1 1 1 1 1 1 1 1 1	2:39 G 2:3575725 G 14:19:14 DH im Offset 19:74 26 SWT 1:1 0 dBn 0 dBn 0 dBn 0 dBn 0 dBn 0 dBn	Hz -49.49 dBm Hz -45.50 dBm 1 Ant1_Hig dB ■ RBW 100 kHz ms ● VBW 300 kHz M3 M3 M3 M3 M3 M3 M3 M3 M3 M3	h_Hop_24		1.13 dBm 2.470860 GHz -48.32 dBm 2.483500 GHz 
M3 M4 Date: 10 Spectr Reft L Att count: 10 dBm 50 dBm -20 dBm -30 dBm -50 dBm -50 dBm -70 dBm -70 dBm -70 dBm -70 dBm	1 1 1 1 1 1 1 1 1 1 1 1 1 1	2:39 G 2:3575725 G 14:19:14 m Offset 19:74 8 SWT 1.1 0 0 d8m 0 0 d8m 0 0 d8m 0 0 d8m 0 0 d8m	Hz -49.49 dBm Hz -45.50 dBm 1 Ant1_Hig Hd ● RBW 100 kHz Hd ● RBW 100 kHz Hz ● R	h_Hop_24		1.13 dBm 2.470860 GHz -48.32 dBm 2.483500 GHz 

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