



# TEST REPORT

Applicant Name : Shenzhen VanTop Technology & Innovation Co., Ltd.  
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Report Number : SZNS220224-05849E-RF-00  
FCC ID: 2AQ3A-SP7100R2422

## Test Standard (s)

FCC PART 15.247

## Sample Description

Product Type: R/C QUADCOPTER  
Model No.: SP7100  
Multiple Model(s) No.: SP530,SP650 PRO,SP7200,SP7300,SP7500,SP7100 mini,SP680 (model difference see product declaration letter of similarity )  
Trade Mark: N/A  
Date Received: 2022/02/24  
Report Date: 2022/08/23

Test Result:	Pass*
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\* In the configuration tested, the EUT complied with the standards above.

## Prepared and Checked By:

Nick Fang  
EMC Engineer

## Approved By:

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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## TABLE OF CONTENTS

<b>GENERAL INFORMATION</b> .....	<b>4</b>
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	4
OBJECTIVE .....	4
TEST METHODOLOGY .....	4
MEASUREMENT UNCERTAINTY.....	5
TEST FACILITY .....	5
<b>SYSTEM TEST CONFIGURATION</b> .....	<b>6</b>
DESCRIPTION OF TEST CONFIGURATION .....	6
EUT EXERCISE SOFTWARE .....	6
SPECIAL ACCESSORIES.....	6
EQUIPMENT MODIFICATIONS .....	6
<b>SUMMARY OF TEST RESULTS</b> .....	<b>8</b>
<b>TEST EQUIPMENT LIST</b> .....	<b>9</b>
<b>FCC §1.1307&amp;§2.1093 - RF EXPOSURE</b> .....	<b>10</b>
APPLICABLE STANDARD .....	10
TEST RESULT .....	10
<b>FCC §15.203 – ANTENNA REQUIREMENT</b> .....	<b>11</b>
APPLICABLE STANDARD .....	11
ANTENNA CONNECTOR CONSTRUCTION .....	11
<b>FCC §15.205, §15.209 &amp; §15.247(D) – RADIATED EMISSIONS</b> .....	<b>12</b>
APPLICABLE STANDARD .....	12
EUT SETUP .....	12
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP .....	13
TEST PROCEDURE .....	13
CORRECTED FACTOR & MARGIN CALCULATION .....	13
TEST DATA .....	13
<b>FCC §15.247(A) (1)-CHANNEL SEPARATION TEST</b> .....	<b>21</b>
APPLICABLE STANDARD .....	21
TEST PROCEDURE .....	21
TEST DATA .....	21
<b>FCC §15.247(A) (1) – 20 DB EMISSION BANDWIDTH &amp; 99% OCCUPIED BANDWIDTH</b> .....	<b>23</b>
APPLICABLE STANDARD .....	23
TEST PROCEDURE .....	23
TEST DATA .....	24
<b>FCC §15.247(A) (1) (I)-QUANTITY OF HOPPING CHANNEL TEST</b> .....	<b>26</b>
APPLICABLE STANDARD .....	26
TEST PROCEDURE .....	26
TEST DATA .....	26
<b>FCC §15.247(A) (1) (I) - TIME OF OCCUPANCY (DWELL TIME)</b> .....	<b>28</b>
APPLICABLE STANDARD .....	28
TEST PROCEDURE .....	28
TEST DATA .....	28

**FCC §15.247(B) (2) - PEAK OUTPUT POWER MEASUREMENT .....30**  
    APPLICABLE STANDARD .....30  
    TEST PROCEDURE .....30  
    TEST DATA .....30

**FCC §15.247(D) - BAND EDGES TESTING.....33**  
    APPLICABLE STANDARD .....33  
    TEST PROCEDURE .....33  
    TEST DATA .....33

## GENERAL INFORMATION

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

Frequency Range	2407-2478MHz
Maximum conducted Peak output power	16.34dBm
Modulation Technique	GFSK
Antenna Specification*	2.0dBi (provided by the applicant)
Voltage Range	DC3.7V from battery or DC 5V from USB port
Sample serial number	SZNS220224-05849E-RF-S1 for RF Conducted Test SZNS220224-05849E-RF-S2 for Radiated Emissions (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, 15.209 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

Parameter		Uncertainty
Occupied Channel Bandwidth		5%
RF Frequency		$0.082 \times 10^{-7}$
RF output power, conducted		0.73dB
Unwanted Emission, conducted		1.6dB
AC Power Lines Conducted Emissions		2.72dB
Emissions, Radiated	9kHz - 30MHz	2.66dB
	30MHz - 1GHz	4.28dB
	1GHz - 18GHz	4.98dB
	18GHz - 26.5GHz	5.06dB
	26.5GHz - 40GHz	4.72dB
Temperature		1°C
Humidity		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 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 429 7.01.

Listed by Innovation, Science and Economic Development Canada (ISED), the Registration Number is 5077A.

## SYSTEM TEST CONFIGURATION

### Description of Test Configuration

The system was configured for testing in an engineering mode.

Channel	Frequency (MHz)						
0	2407	4	2454	8	2462	12	2470
1	2428	5	2456	9	2464	13	2472
2	2442	6	2458	10	2466	14	2475
3	2452	7	2460	11	2468	15	2478

Channel 0, 2, 15 was tested

### EUT Exercise Software

No exercise software was used, EUT was configured in testing mode by applicant and the power level is default\*. The power level was provided by applicant

### Special Accessories

No special accessory.

### Equipment Modifications

No modification was made to the EUT tested.

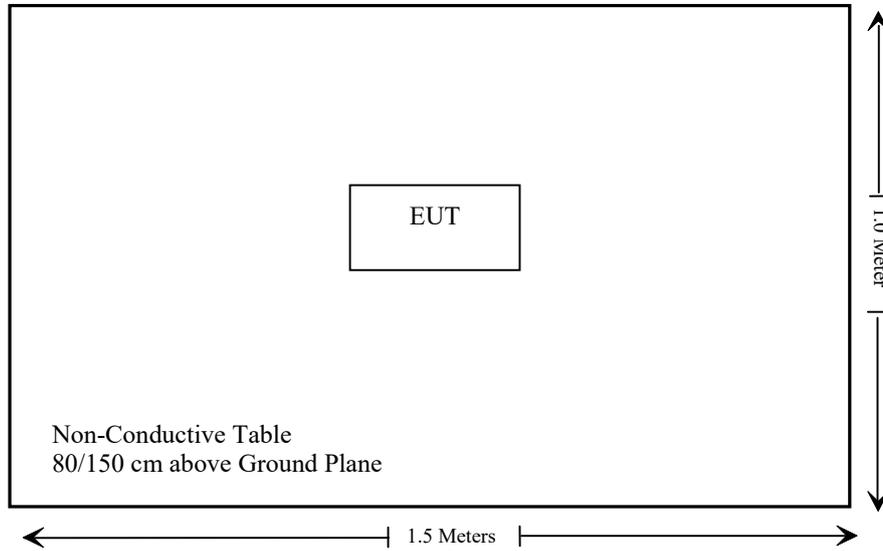
### Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
/	/	/	/

### External I/O Cable

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

**Block Diagram of Test Setup**



**SUMMARY OF TEST RESULTS**

<b>FCC Rules</b>	<b>Description of Test</b>	<b>Result</b>
§1.1307&§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	Compliant
§15.247(a)(1)	Channel Separation Test	Compliant
§15.247(a)(1)(i)	Time of Occupancy (Dwell Time)	Compliant
§15.247(a)(1)(i)	Quantity of hopping channel Test	Compliant
§15.247(b)(2)	Peak Output Power Measurement	Compliant
§15.247(d)	Band edges	Compliant

Not Applicable: The RF function cannot use when in charging.

**TEST EQUIPMENT LIST**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emissions 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-18405536-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
Radiated Emission Test Software: e3 19821b (V9)					
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
RF Conducted Test					
Rohde & Schwarz	Spectrum Analyzer	FSV-40	101495	2021/12/13	2022/12/12
WEINSCHEL	10dB Attenuator	5324	AU 3842	2021/12/14	2022/12/13
Unknown	RF Cable	Unknown	3	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).

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## **FCC §1.1307&§2.1093 - RF EXPOSURE**

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### **Applicable Standard**

FCC§1.1310 and §2.1093.

### **Test Result**

Compliance, please refer to the SAR report: SZNS220224-05849E-SA.

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## **FCC §15.203 – ANTENNA REQUIREMENT**

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### **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 arrangement which was permanently attached and the antenna gain is 2dBi, fulfill the requirement of this section. Please refer to the EUT photos.

**Result:** Compliance.

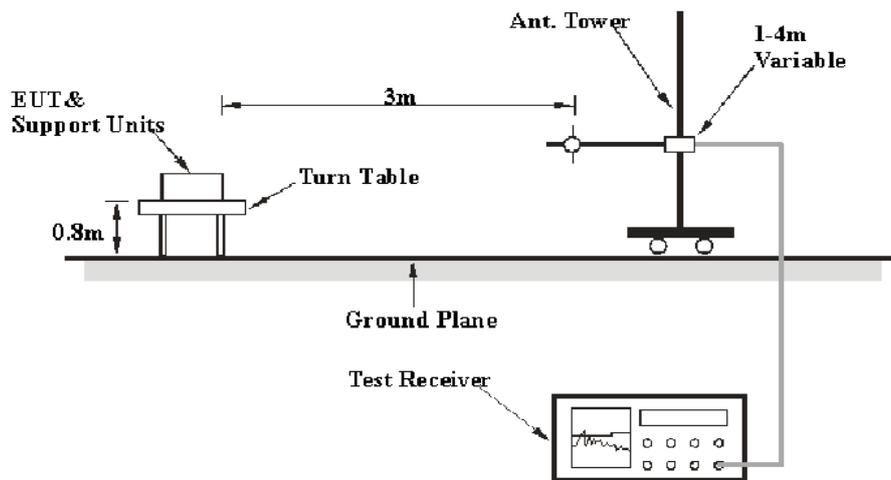
## FCC §15.205, §15.209 & §15.247(d) – RADIATED EMISSIONS

### Applicable Standard

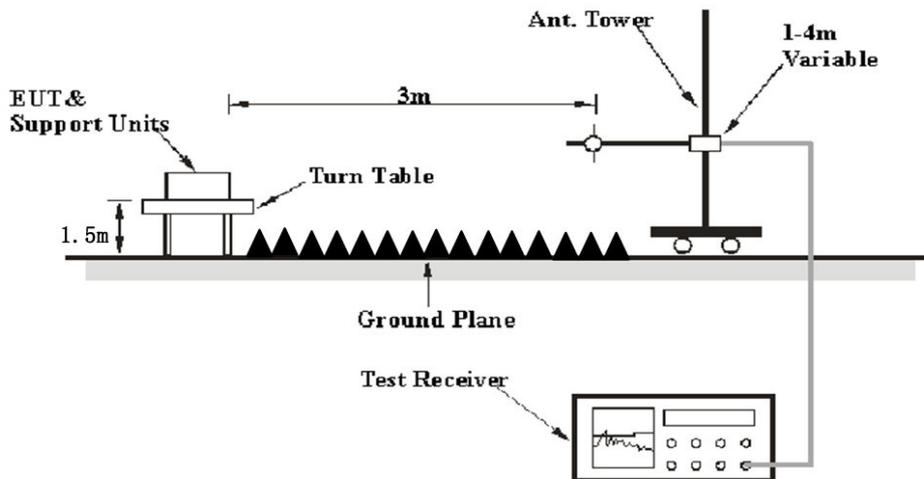
FCC §15.205; §15.209; §15.247(d)

### EUT Setup

Below 1 GHz:



Above 1GHz:



The radiated emission 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	/	PK

For average measurement:

use the duty cycle factor correction factor method per 15.35(c).

Duty cycle=On time/100milliseconds, On time= $N_1*L_1+N_2*L_2+\dots+N_{n-1}*L_{n-1}+N_n*L_n$ ,

where  $N_1$  is number of type 1 pulses,  $L_1$  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.

## Corrected Factor & Margin Calculation

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

$$\text{Corrected Factor} = \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

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

$$\begin{aligned} \text{Margin/Over Limit} &= \text{Corrected Amplitude/Level-Limit} \\ \text{Corrected Amplitude/Level} &= \text{Reading} + \text{Corrected Factor} \end{aligned}$$

## Test Data

### Environmental Conditions

Temperature:	25.6~27°C
Relative Humidity:	50~68 %
ATM Pressure:	101.0 kPa

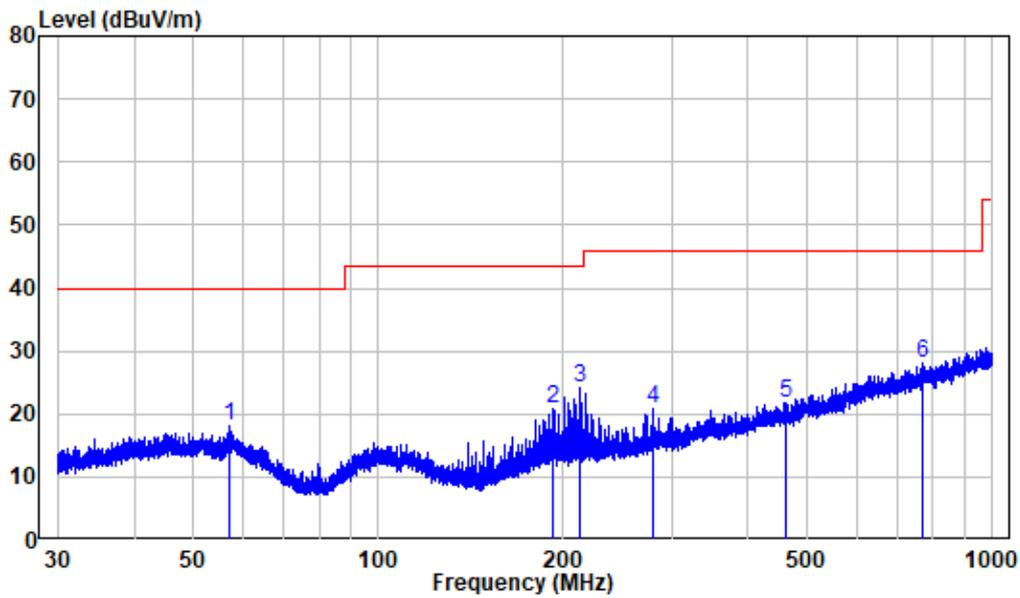
The testing was performed by Nick Fang on 2022-04-13 for below 1GHz, Level Li on 2022-08-15 and 2022-08-22 for above 1GHz.

EUT operation mode: Transmitting (Pre-scan in the X,Y and Z axes of orientation, the worst case X-axes orientation was recorded)

**30MHz-1GHz:** (worst case is low channel)

Note: When the test result of peak was less than the limit of QP more than 6dB, so just peak value were recorded.

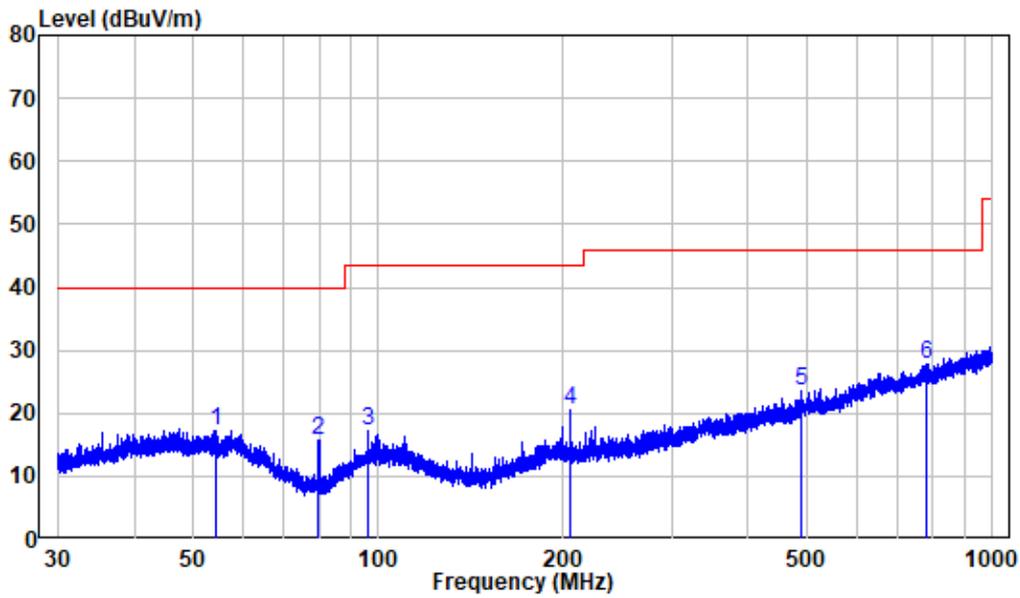
**Horizontal:**



Site : chamber  
 Condition: 3m HORIZONTAL  
 Job No. : SZNS220224-05849E-RF  
 Test Mode: Transmitting

	Freq	Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	57.267	-10.01	28.22	18.21	40.00	-21.79	Peak
2	191.913	-11.26	32.12	20.86	43.50	-22.64	Peak
3	212.456	-11.77	36.02	24.25	43.50	-19.25	Peak
4	280.761	-9.56	30.28	20.72	46.00	-25.28	Peak
5	459.719	-5.42	27.29	21.87	46.00	-24.13	Peak
6	769.085	-0.23	28.27	28.04	46.00	-17.96	Peak

**Vertical**



Site : chamber  
 Condition: 3m VERTICAL  
 Job No. : SZNS220224-05849E-RF  
 Test Mode: Transmitting

	Freq	Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	54.499	-10.32	27.60	17.28	40.00	-22.72	Peak
2	79.975	-16.79	32.41	15.62	40.00	-24.38	Peak
3	96.014	-12.30	29.65	17.35	43.50	-26.15	Peak
4	205.585	-11.83	32.22	20.39	43.50	-23.11	Peak
5	488.598	-4.74	28.25	23.51	46.00	-22.49	Peak
6	780.291	0.07	27.76	27.83	46.00	-18.17	Peak

**Above 1GHz:**

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
	Reading (dB $\mu$ V)	PK/QP/AV		Height (m)	Polar (H/V)				
Low Channel(2407MHz)									
2310	67.38	PK	108	1.9	H	-7.24	60.14	74	-13.86
2390	76.15	PK	136	2.4	H	-7.22	68.93	74	-5.07
2310	67.76	PK	316	1	V	-7.24	60.52	74	-13.48
2390	75.86	PK	258	1.1	V	-7.22	68.64	74	-5.36
4814	69.32	PK	227	1.3	H	-3.51	65.81	74	-8.19
4814	64.57	PK	321	1	V	-3.51	61.06	74	-12.94
Middle Channel(2442MHz)									
4884	70.24	PK	128	2	H	-3.37	66.87	74	-7.13
4884	66.77	PK	292	1.3	V	-3.37	63.4	74	-10.6
High Channel(2478 MHz)									
2483.5	74.33	PK	167	2	H	-7.2	67.13	74	-6.87
2500	76.33	PK	51	1.6	H	-7.18	69.15	74	-4.85
2483.5	71.97	PK	112	2.1	V	-7.2	64.77	74	-9.23
2500	74.19	PK	176	1.1	V	-7.18	67.01	74	-6.99
4956	72.21	PK	56	2.2	H	-3.01	69.2	74	-4.8
4956	67.41	PK	305	2.4	V	-3.01	64.4	74	-9.6

Field Strength of Average							
Frequency (MHz)	Peak Measurement @3m (dB $\mu$ V/m)	Polar (H/V)	Duty Cycle Factor (dB)	Corrected Amplitude (dB $\mu$ V/m)	Part 15.247		
					Limit (dB $\mu$ V/m)	Margin (dB)	Comment
2407MHz							
2310	60.14	H	-35.70	24.44	54	-29.56	Band edge
2390	68.93	V	-35.70	33.23	54	-20.77	Band edge
2310	60.52	H	-35.70	24.82	54	-29.18	Band edge
2390	68.64	V	-35.70	32.94	54	-21.06	Band edge
4814	65.81	H	-35.70	30.11	54	-23.89	Harmonic
4814	61.06	V	-35.70	25.36	54	-28.64	Harmonic
2442MHz							
4884	66.87	H	-35.70	31.17	54	-22.83	Harmonic
4884	63.4	V	-35.70	27.7	54	-26.3	Harmonic
2478MHz							
2483.5	67.13	H	-35.70	31.43	54	-22.57	Band edge
2500	69.15	V	-35.70	33.45	54	-20.55	Band edge
2483.5	64.77	H	-35.70	29.07	54	-24.93	Band edge
2500	67.01	V	-35.70	31.31	54	-22.69	Band edge
4956	69.2	H	-35.70	33.5	54	-20.5	Harmonic
4956	64.4	V	-35.70	28.7	54	-25.3	Harmonic

**Note:**

Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor

Corrected Amplitude = Corrected Factor + Reading

Margin = Corrected. Amplitude - Limit

The other spurious emission which is 20dB to the limit or in noise floor was not recorded.

Average=Peak level+duty cycle factor

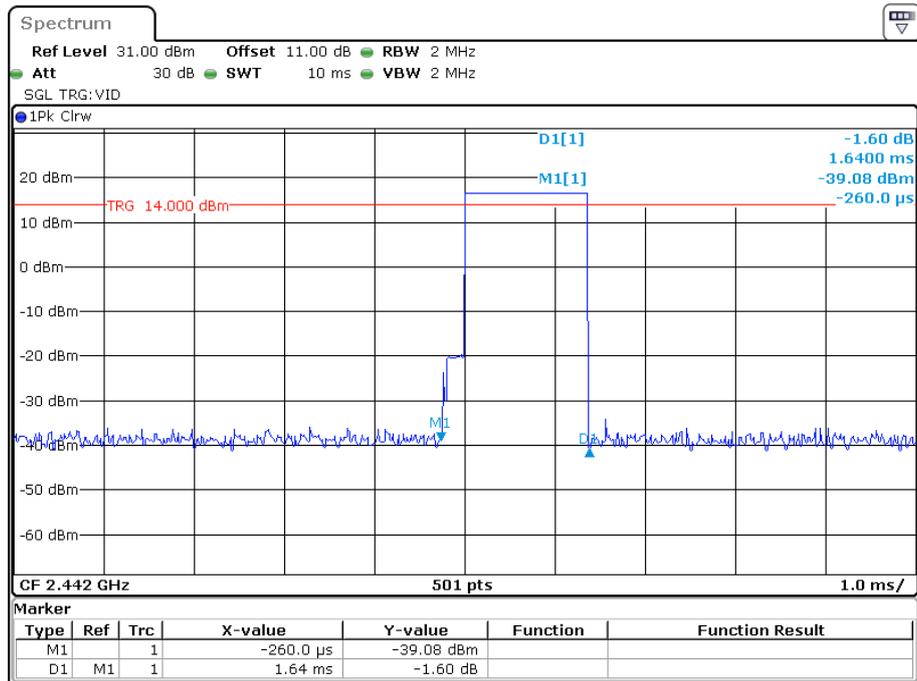
Worst case duty cycle:

Duty cycle = Ton/100ms = 1.64\*1/100=0.0164

Duty Cycle Corrected Factor = 20lg (Duty cycle) = 20lg0.0164 = -35.70

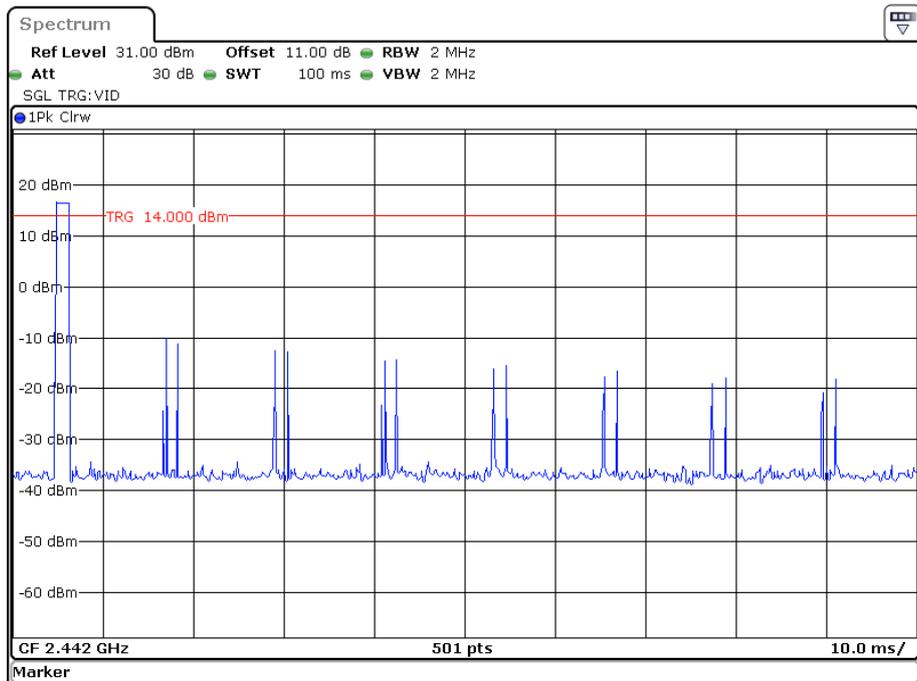
**Duty cycle:**

**Pulse length: 1.64ms**



Date: 22.AUG.2022 09:27:50

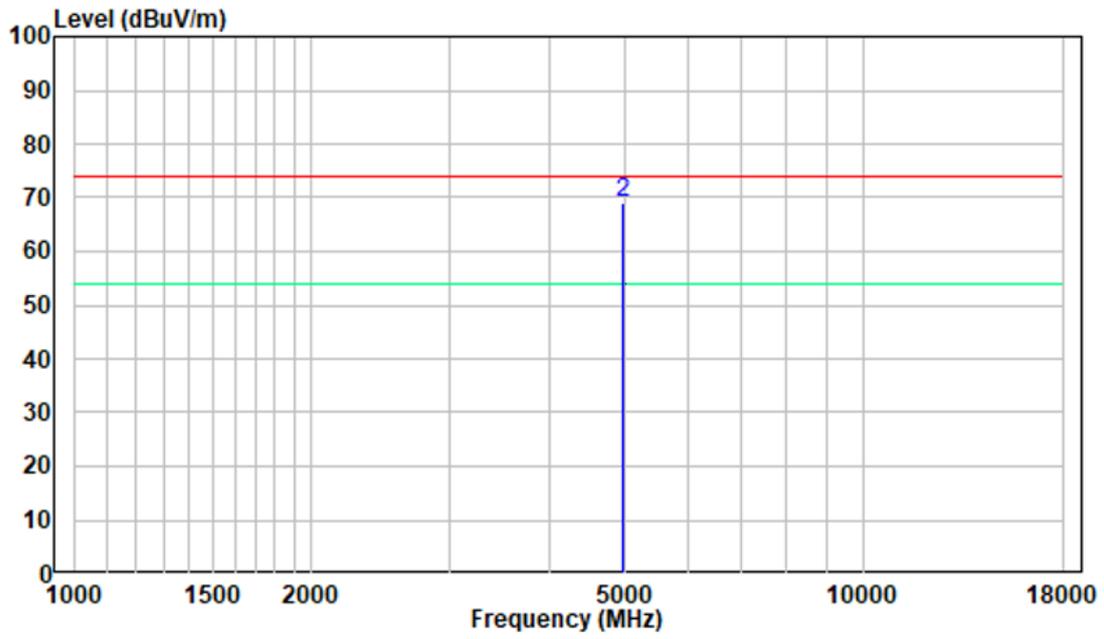
**Maximum Pulse number in 100ms: 1(second high signal is from other channel)**



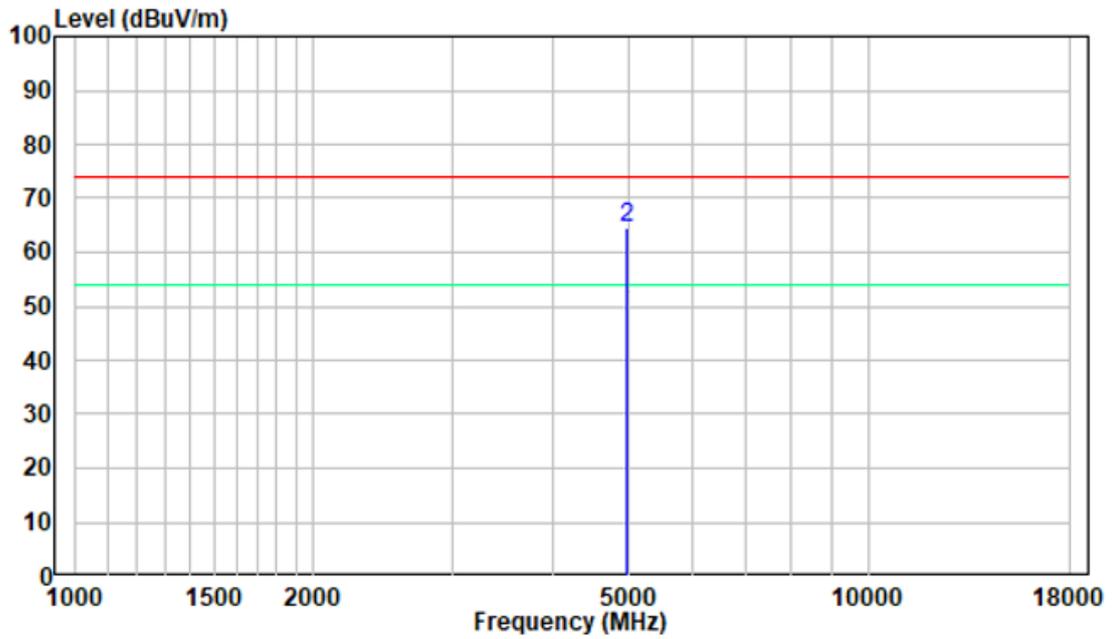
Date: 22.AUG.2022 09:26:29

**1-18GHz**  
**Pre-scan for High Channel**

**Horizontal:**



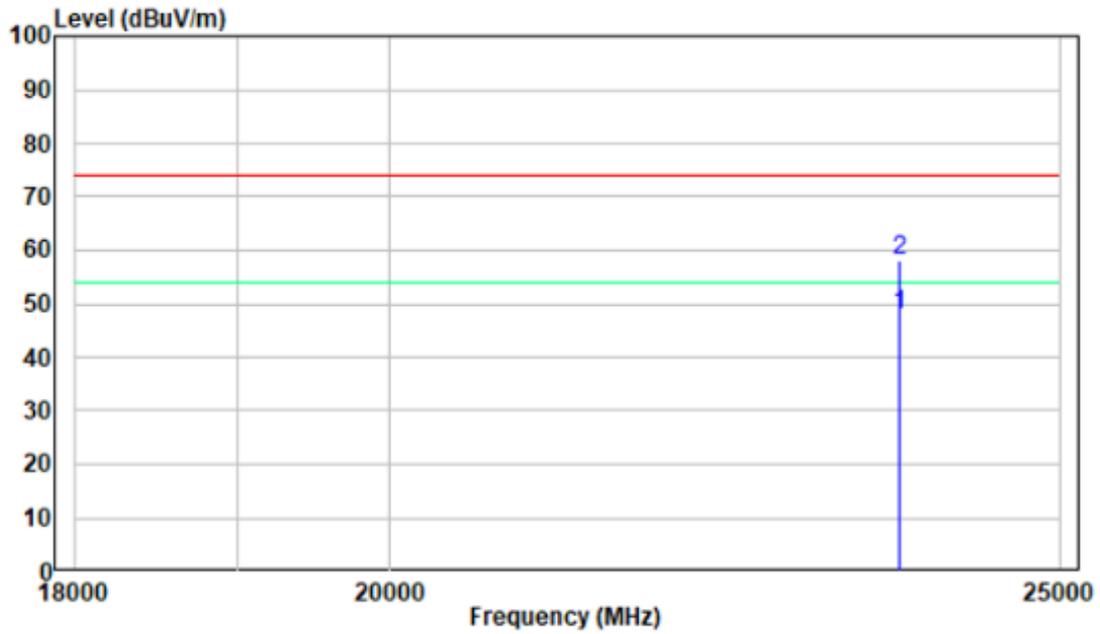
**Vertical:**



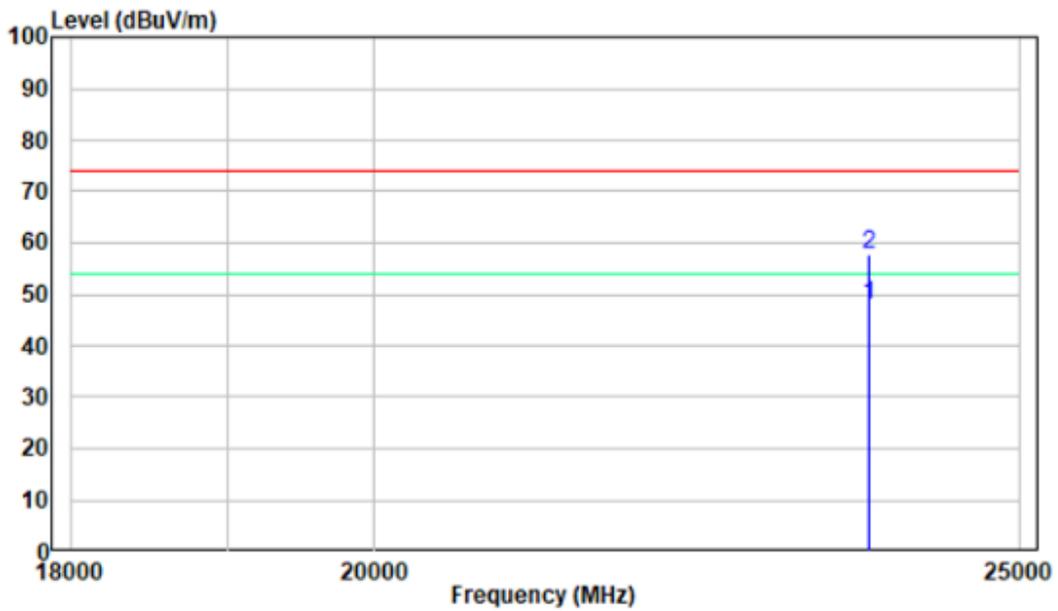
18-25GHz

Pre-scan for High Channel

Horizontal:



Vertical:



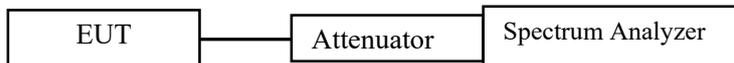
## FCC §15.247(a) (1)-CHANNEL SEPARATION TEST

### Applicable Standard

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater provided the systems operate with an output power no greater than 125 mW. 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.
2. Set the adjacent channel of the EUT and maxhold another trace.
3. Measure the channel separation.



### Test Data

#### Environmental Conditions

<b>Temperature:</b>	27 °C
<b>Relative Humidity:</b>	50 %
<b>ATM Pressure:</b>	101.0 kPa

The testing was performed by Cat Kang on 2022-08-06.

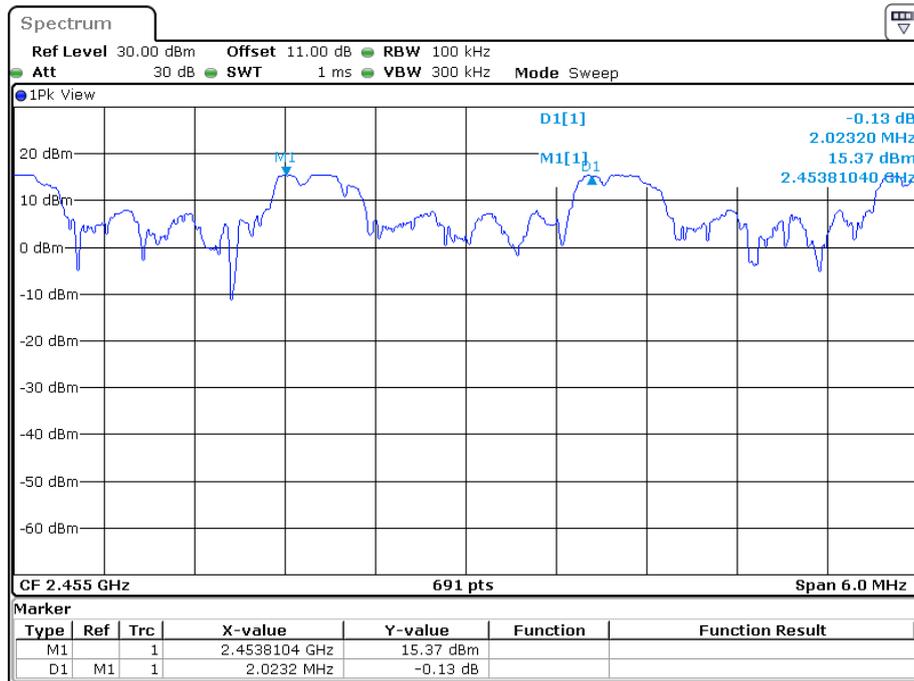
EUT operation mode: Transmitting

Test Result: Compliant.

According to the frequency table and analyzer hopping sequence, the worst case as below:

Test Mode	Channel Separation (MHz)	20 dBc BW (MHz)	Two-thirds of the 20 dB bandwidth (MHz)	Channel Separation Limit	Result
<b>GFSK</b>					
<b>Hopping</b>	2.023	2.961	1.974	> two-thirds of the 20 dB bandwidth	Pass

Please refer to the below plots:



Date: 6.AUG.2022 14:50:30

## 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.

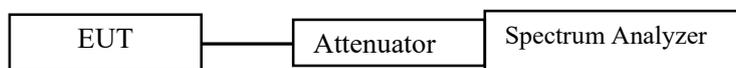
### Test Procedure

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**

<b>Temperature:</b>	27 °C
<b>Relative Humidity:</b>	50 %
<b>ATM Pressure:</b>	101.0 kPa

The testing was performed by Cat Kang on 2022-08-06.

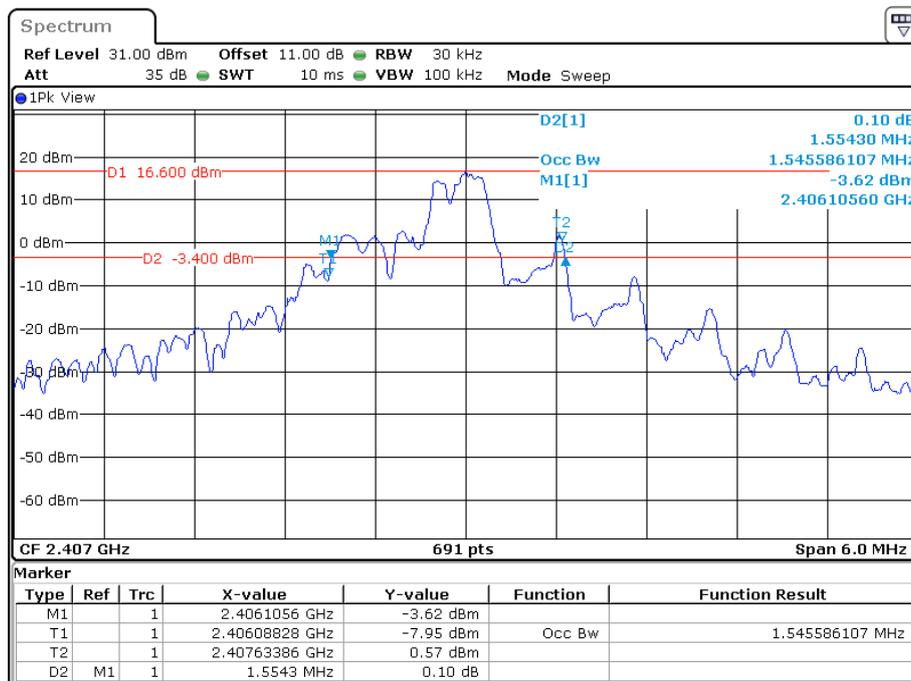
EUT operation mode: Transmitting

Test Result: Compliant.

Mode	Channel	Frequency (MHz)	20 dB Emission Bandwidth (MHz)	OBW (MHz)
GFSK	Low	2407	1.554	1.546
	Middle	2442	2.961	2.848
	High	2478	2.883	2.757

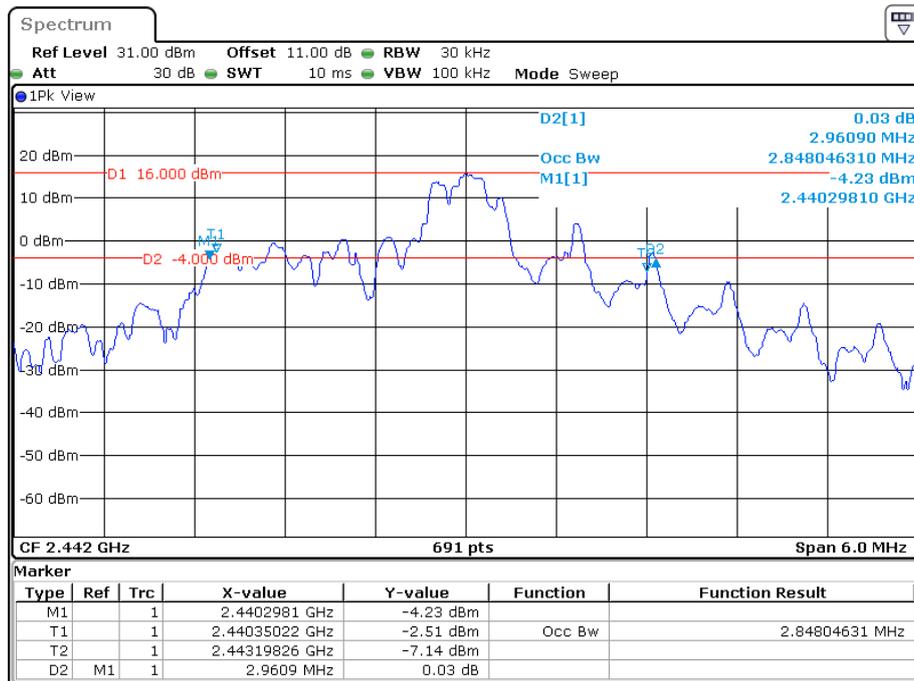
Please refer to the below plots:

**Low Channel**



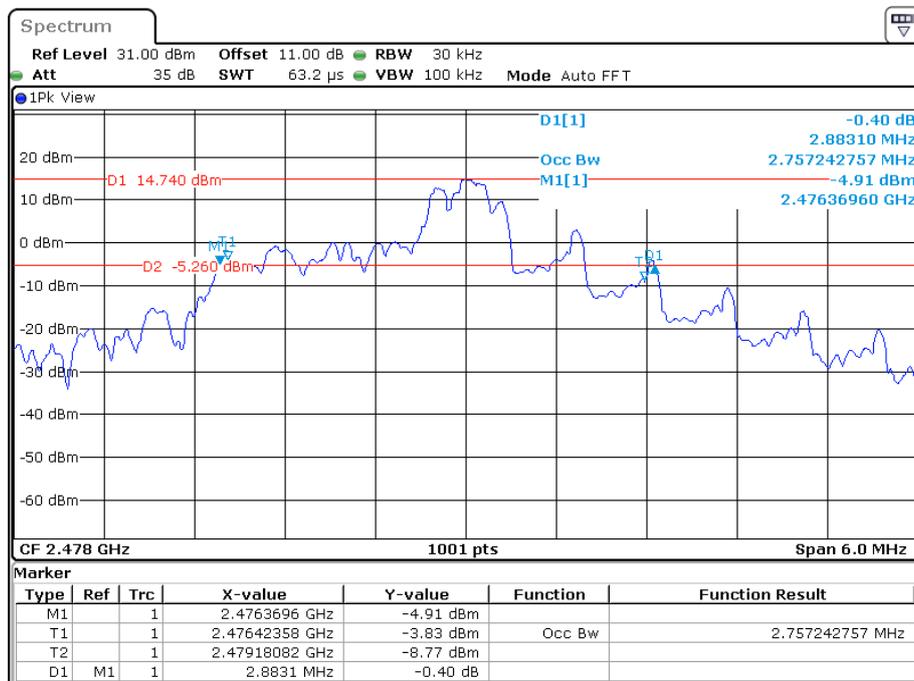
Date: 6.AUG.2022 13:38:49

### Middle Channel



Date: 6.AUG.2022 13:43:38

### High Channel



Date: 6.AUG.2022 17:27:16

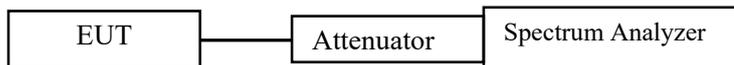
## FCC §15.247(a) (1) (i)-QUANTITY OF HOPPING CHANNEL TEST

### Applicable Standard

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

### 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

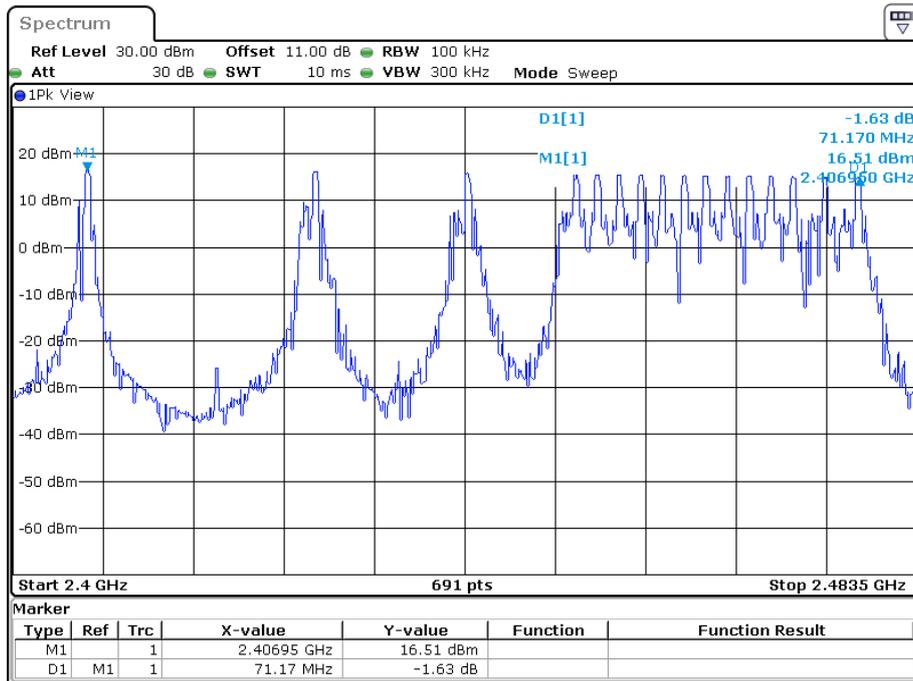
Temperature:	27 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Cat Kang on 2022-08-06.

EUT operation mode: Transmitting

Test Result: Compliant.

Mode	Frequency Range (MHz)	Number of Hopping Channel (CH)	Limit (CH)
GFSK	2400-2483.5	16	≥15



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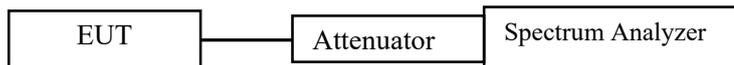
## **FCC §15.247(a) (1) (i) - TIME OF OCCUPANCY (DWELL TIME)**

### **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: 10kHz.
3. Set the VBW  $\geq 3 \times$ 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**

<b>Temperature:</b>	27 °C
<b>Relative Humidity:</b>	50 %
<b>ATM Pressure:</b>	101.0 kPa

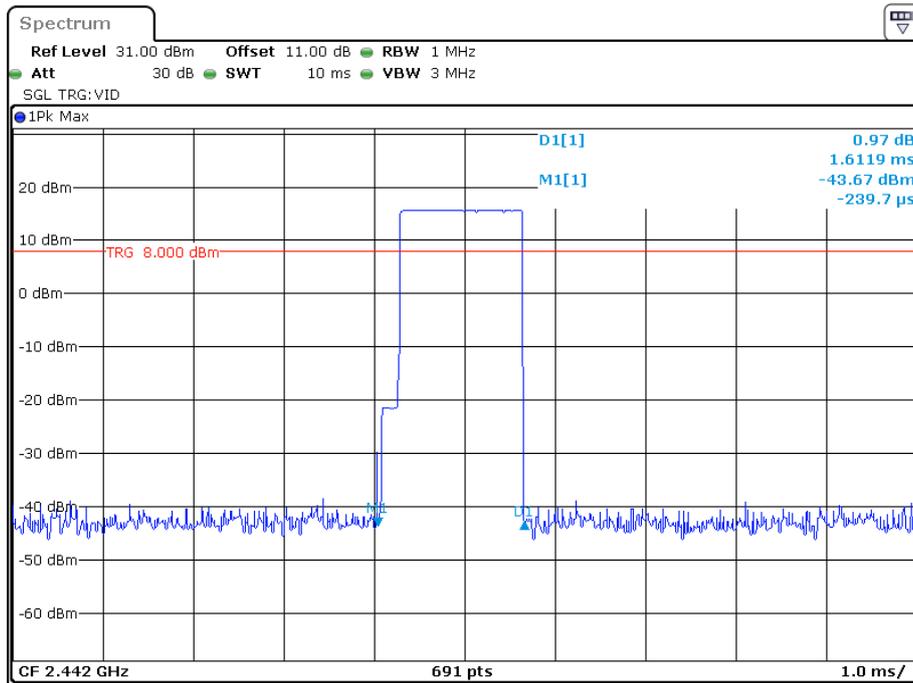
*The testing was performed by Cat Kang from 2022-07-31 to 2022-08-06.*

*EUT operation mode: Transmitting*

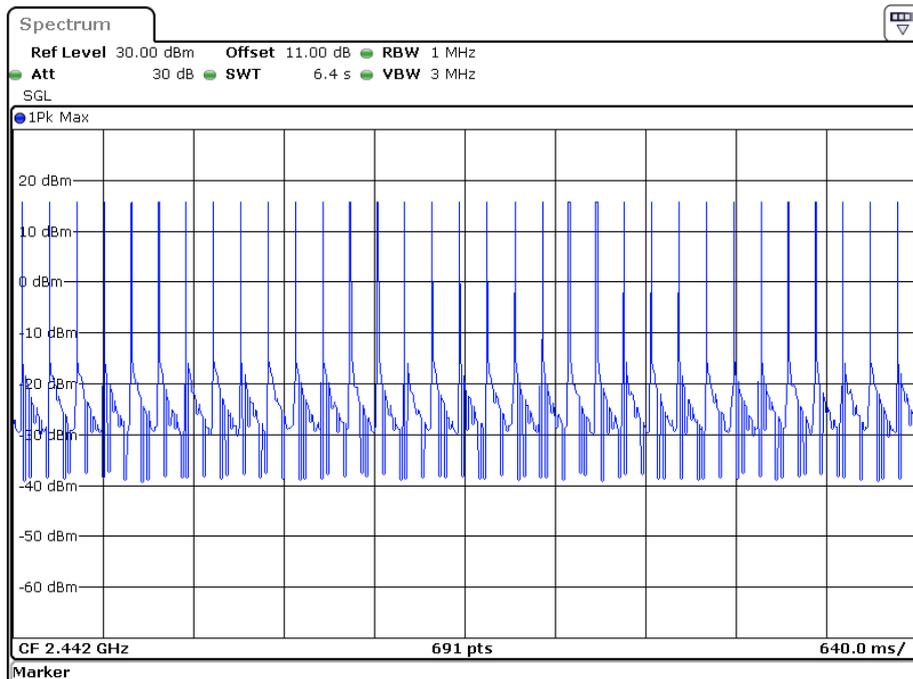
Test Result: Compliant.

Test Mode	Channel	Pulse Time [ms]	Total Hops [Num]	Result[s]	Limit[s]	Verdict
GFSK	Hop	1.612	35	0.056	$\leq 0.4$	PASS

Note : Period time=0.4s\*16=6.4s, Result= Pulse Time\*Total hops



Date: 31.JUL.2022 16:01:06



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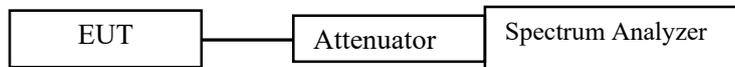
## FCC §15.247(b) (2) - PEAK OUTPUT POWER MEASUREMENT

### 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

<b>Temperature:</b>	27 °C
<b>Relative Humidity:</b>	50 %
<b>ATM Pressure:</b>	101.0 kPa

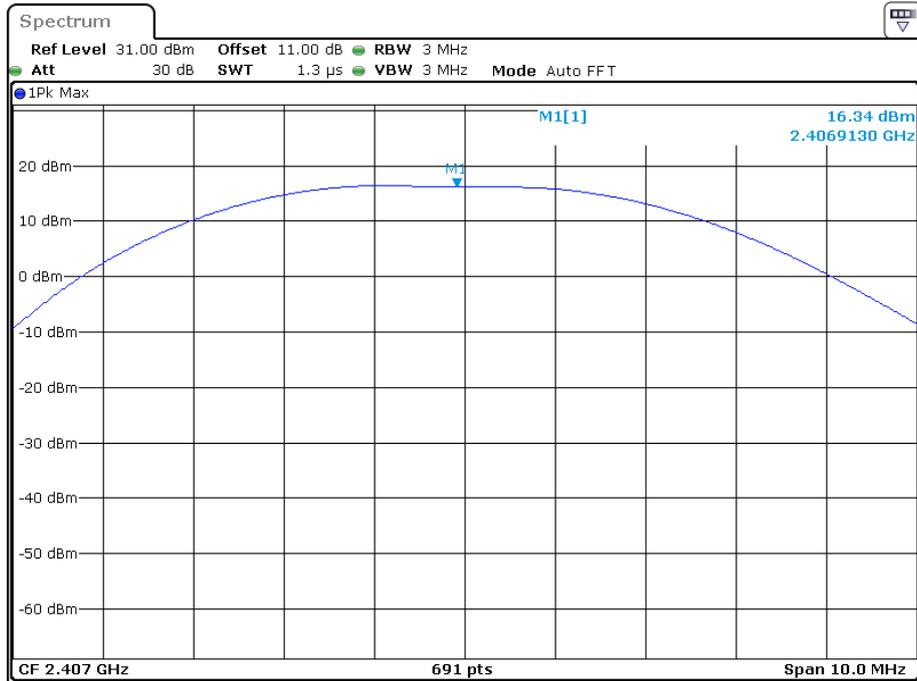
*The testing was performed by Cat Kang on 2022-07-31.*

*EUT operation mode: Transmitting*

Test Result: Compliant.

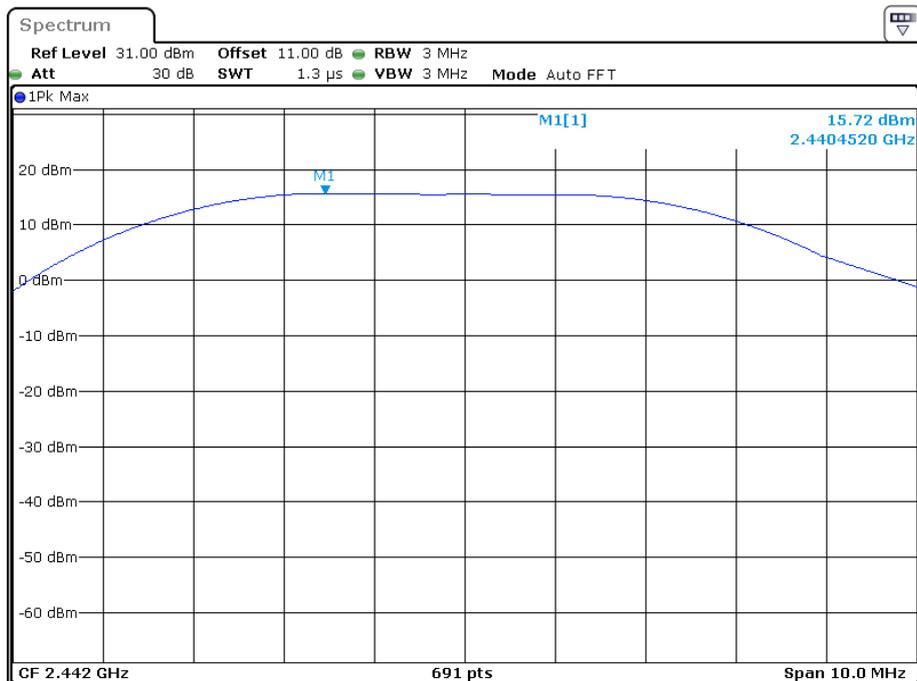
Channel	Frequency (MHz)	Peak Output Power	Limit (dBm)
		(dBm)	
Low	2407	16.34	21
Middle	2442	15.72	21
High	2478	14.78	21

### Low channel



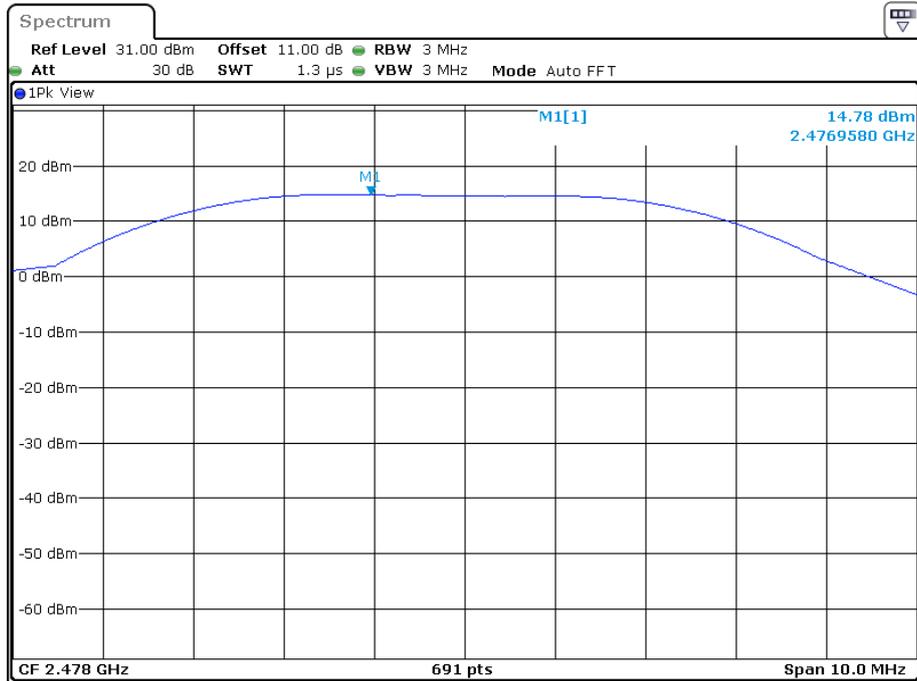
Date: 31.JUL.2022 15:02:50

### Middle channel



Date: 31.JUL.2022 15:04:38

### High channel



Date: 31.JUL.2022 15:01:00

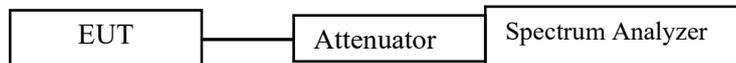
## FCC §15.247(d) - BAND EDGES TESTING

### 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

<b>Temperature:</b>	27 °C
<b>Relative Humidity:</b>	50 %
<b>ATM Pressure:</b>	101.0 kPa

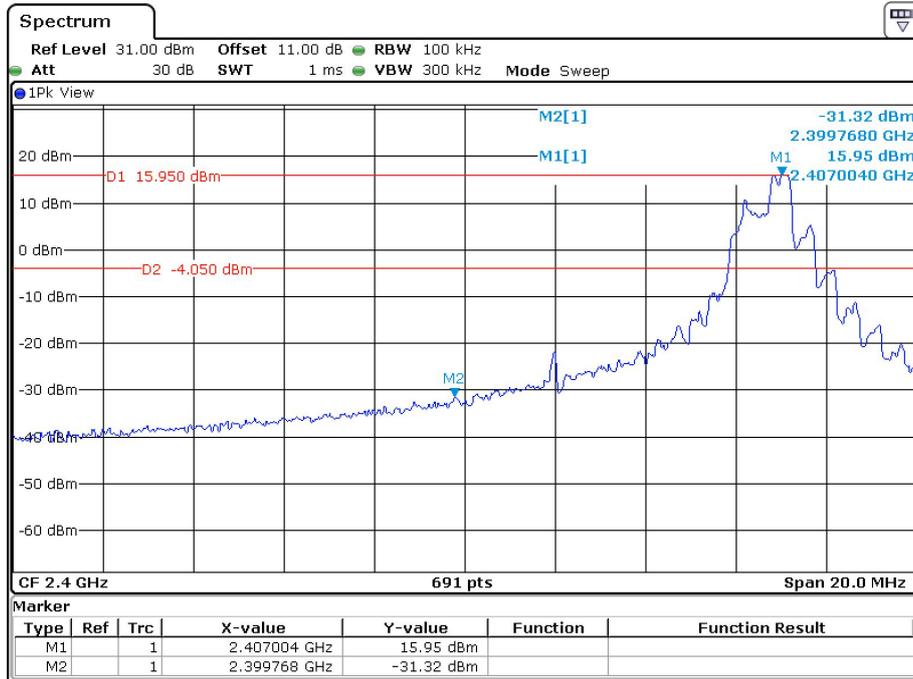
*The testing was performed by Cat Kang on 2022-08-06 and 2022-08-12.*

*EUT operation mode: Transmitting*

Test Result: Compliant.

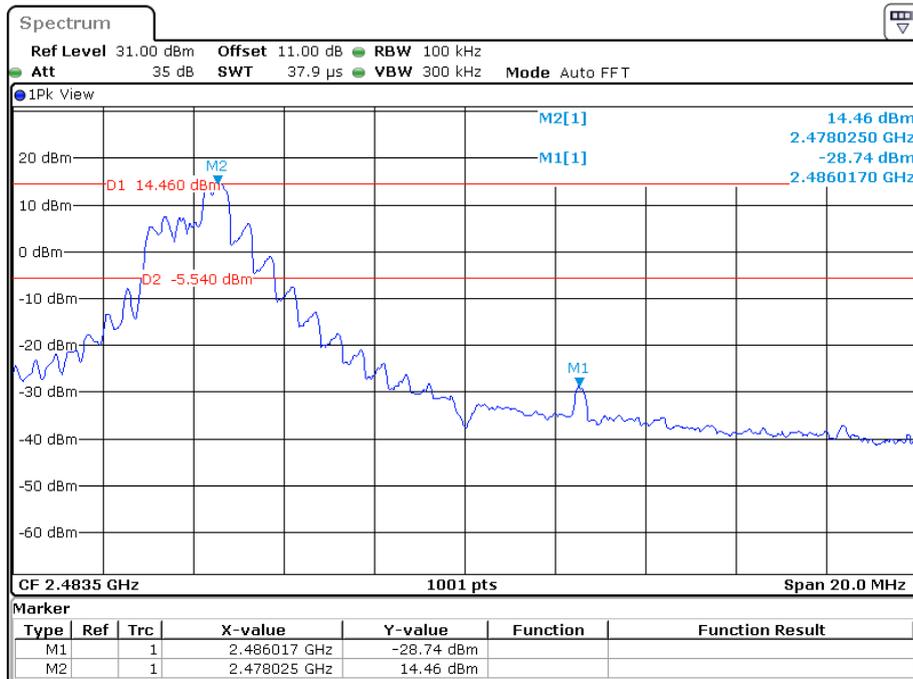
**Conducted Band Edge Result:**

**Low**



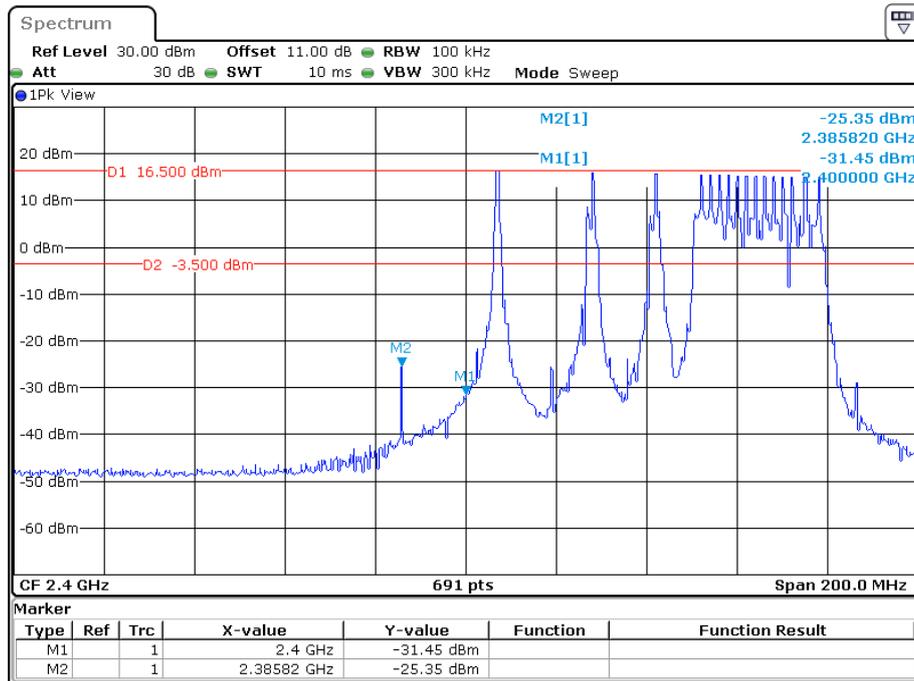
Date: 12.AUG.2022 15:24:22

**High**



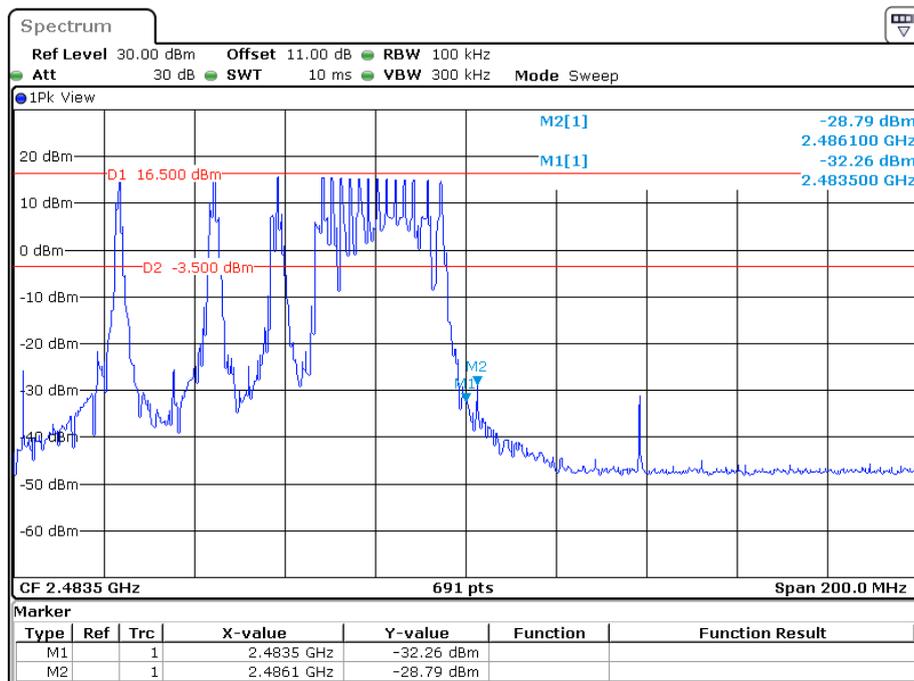
Date: 6.AUG.2022 17:33:55

Low\_Hop



Date: 6.AUG.2022 14:33:58

High\_Hop



Date: 6.AUG.2022 14:41:03

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