



# **TEST REPORT**

Applicant Name : Address : Zeeva International Limited Suite 1007B, 10th Floor, Exchange Tower, 33 Wang Chiu Road, Kowloon Bay, Hong Kong RA221110-53016E-RF 2ADM5-EP-0679

Report Number : FCC ID:

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

# **Sample Description**

Product Type:
Test Model:
Trade Mark:
Date Received:
Date of Test:
Report Date:

S23 SPORTHOOK TWS EP-0679 N/A 2022-11-10 2022-11-15 to 2022-11-17 2022-11-20

Test Result:

Pass\*

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

# **Prepared and Checked By:**

Roger, Ling

Roger.Ling 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 " $\star$ ".

Shenzhen Accurate Technology Co., Ltd. is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with an asterisk '\*'. Customer model name, addresses, names, trademarks etc. are not considered data.

This report cannot be reproduced except in full, without prior written approval of the Company. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

### 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

Version 11: 2021-11-09

Page 1 of 58

FCC-BT

# **TABLE OF CONTENTS**

GENERAL INFORMATION	4
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	
OBJECTIVE	
Test Methodology Measurement Uncertainty	
TEST FACILITY	
SYSTEM TEST CONFIGURATION	
DESCRIPTION OF TEST CONFIGURATION	6
EUT EXERCISE SOFTWARE	
Special Accessories Equipment Modifications	
EQUIPMENT MODIFICATIONS	
BLOCK DIAGRAM OF TEST SETUP	
SUMMARY OF TEST RESULTS	8
TEST EQUIPMENT LIST	9
FCC§15.247 (i), §1.1307 (b) – RF EXPOSURE	10
APPLICABLE STANDARD	10
TEST RESULT	10
FCC §15.203 – ANTENNA REQUIREMENT	11
APPLICABLE STANDARD	11
ANTENNA CONNECTOR CONSTRUCTION	
FCC §15.205, §15.209 & §15.247(d) - RADIATED EMISSIONS	
APPLICABLE STANDARD	
EUT SETUP EMI Test Receiver & Spectrum Analyzer Setup	
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP TEST PROCEDURE	
FACTOR & MARGIN CALCULATION	
TEST DATA	13
FCC §15.247(a) (1)-CHANNEL SEPARATION TEST	19
APPLICABLE STANDARD	
Test Procedure	
TEST DATA	
FCC §15.247(a) (1) – 20 dB EMISSION BANDWIDTH & 99% OCCUPIED BANDWIDTH	
APPLICABLE STANDARD	
TEST PROCEDURE	
TEST DATA	
FCC §15.247(a) (1) (iii)-QUANTITY OF HOPPING CHANNEL TEST	
APPLICABLE STANDARD	
Test Procedure Test Data	
FCC §15.247(a) (1) (iii) - TIME OF OCCUPANCY (DWELL TIME)	
APPLICABLE STANDARD	
Test Procedure	
TEST DATA	

# Shenzhen Accurate Technology Co., Ltd.Report No.: RA221110-53016E-RFFCC §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT46APPLICABLE STANDARD46TEST PROCEDURE46TEST DATA46FCC §15.247(d) - BAND EDGES TESTING52APPLICABLE STANDARD52TEST PROCEDURE52TEST PROCEDURE52TEST PROCEDURE52TEST PROCEDURE52TEST PROCEDURE52TEST DATA52

# **GENERAL INFORMATION**

Product	S23 SPORTHOOK TWS
Tested Model	EP-0679
SKU	BLACK - 7545015, BLUE - 7545016 RED - 7545017, WHITE - 7545018
UPC	BLACK - 1922345250669, BLUE - 1922345250676 RED - 1922345250683, WHITE - 1922345250690
Frequency Range	2402~2480MHz
Maximum conducted Peak output power	0.86dBm
Modulation Technique	BDR(GFSK)/EDR( 1/4-DQPSK)/EDR(8DPSK)
Antenna Specification*	Internal Antenna: 0dBi(It is provided by the applicant)
Voltage Range	DC 3.7V from battery
Sample number	RA221110-53016E-RF-S1(RF Radiated Test) RA221110-53016E-RF-S2(RF Conducted Test) (Assigned by ATC, Shenzhen)
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.

# Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		5%
RF output pov	wer, conducted	0.73dB
Unwanted Emis	ssion, conducted	1.6dB
	30MHz - 1GHz	4.28dB
Emissions, Radiated	1GHz - 18GHz	4.98dB
Rudiucu	18GHz - 26.5GHz	5.06dB
Tempe	erature	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 (ISEDC), 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 "BT\_Tool V1.1.0"\* was used during testing and the power level was Default Power level 7\*.

# **Special Accessories**

N/A.

# **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**

	EUT	I.U Meter
Non-Conductive Table 80/150 cm above Ground Plane	1.5 Meters	

# SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§ 15.247 (i), §1.1307 (b)	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 is powered by battery when use Bluetooth.

Note: The right and left earbuds are identical, please refer to the Declaration letter for more detail, only the right earbud was full tested and reported.

# **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	2022/11/08	2023/11/07		
A.H. Systems, inc.	Preamplifier	PAM-0118P	135	2022/11/08	2023/11/07		
Quinstar	Amplifier	QLW-184055 36-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	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 En	nission Test Softw	ware: e3 19821b (V	/9)			
		RF Conducte					
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	2021/12/14	2022/12/13		
Unknown	RF Coaxial Cable	No.33	RF-03	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) – RF EXPOSURE

# **Applicable Standard**

According to FCC §2.1093 and §1.1307(b), 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 v01, clause 2.1.3.1-SAR-Based Exemption:

A more comprehensive exemption, considering a variable power threshold that depends on both the separation distance and power, is provided in § 1.1307(b)(3)(i)(B). This exemption is applicable to the frequency range between 300 MHz and 6 GHz, with test separation distances between 0.5 cm and 40 cm, and for all RF sources in fixed, mobile, and portable device exposure conditions.

Accordingly, a RF source is considered an RF exempt device if its available maximum time-averaged (matched conducted) power or its effective radiated power (ERP), whichever is greater, are below a specified threshold. This exemption threshold was derived based on general population 1-g SAR requirements and is detailed in Appendix C.

# **Test Result**

For worst case:

Mode	Frequency	Maximum Tune-up Conducted Power	Antenna Gain				ERP	Distance	Excl	Based usion shold	SAR-Based Exclusion
	(MHz)	(dBm)	(dBi)	(dBd)	(dBm)	(mm)	(mW)	(dBm)			
BDR/EDR	2402-2480	1	0	-2.15	-1.15	5	2.717	4.34	Yes		

Note 1: The tune-up power was declared by the applicant. Note 2: 0dBd=2.15dBi.

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 on board antenna arrangement, which was permanently attached and the antenna gain is 0 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Result: Compliant.

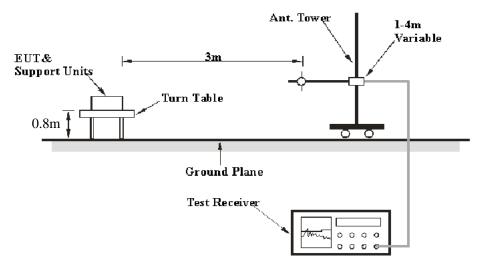
# FCC §15.205, §15.209 & §15.247(d) - RADIATED EMISSIONS

# **Applicable Standard**

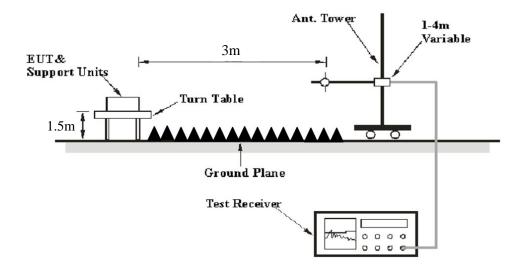
FCC §15.205; §15.209; §15.247(d)

# **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

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.

If the maximized peak measured value complies with the limit, then it is unnecessary to perform QP/Average measurement.

# **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**

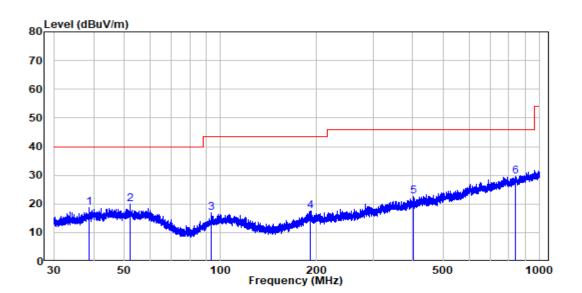
Temperature:	25 °C
<b>Relative Humidity:</b>	57 %
ATM Pressure:	101.0 kPa

The testing was performed by Jimi Zheng on 2022-11-17.

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)

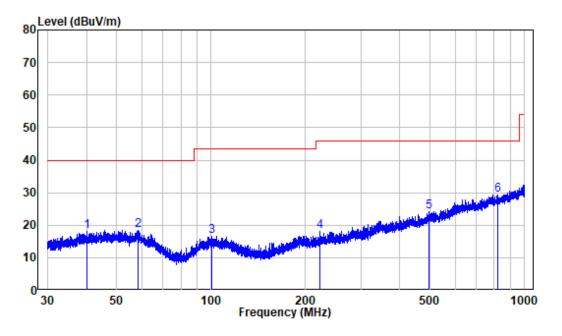
# Below 1GHz: 8DPSK Low Channel



# Horizontal

Site :	chamber
Condition:	3m HORIZONTAL
Job No. :	RA221110-53016E-RF
Test Mode:	BT Transmitting

	Freq	Factor			Limit Line		Remark
-	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	38.667	-10.67	29.51	18.84	40.00	-21.16	Peak
2	52.002	-9.97	29.91	19.94	40.00	-20.06	Peak
3	93.727	-12.77	29.70	16.93	43.50	-26.57	Peak
4	190.906	-11.43	29.01	17.58	43.50	-25.92	Peak
5	400.607	-6.73	29.26	22.53	46.00	-23.47	Peak
6	837.345	0.24	29.26	29.50	46.00	-16.50	Peak



### Vertical

Site : chamber Condition: 3m VERTICAL Job No. : RA221110-53016E-RF Test Mode: BT Transmitting

	Freq	Factor			Limit Line		Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	40.012	-10.34	28.32	17.98	40.00	-22.02	Peak
2	58.510	-10.08	28.45	18.37	40.00	-21.63	Peak
3	100.185	-11.78	28.43	16.65	43.50	-26.85	Peak
4	222.755	-11.33	29.47	18.14	46.00	-27.86	Peak
5	495.283	-4.45	28.59	24.14	46.00	-21.86	Peak
6	818.475	-0.06	29.45	29.39	46.00	-16.61	Peak

# Above 1GHz (worst case for 8DPSK):

Frequency	Receiver		Turntable Angle	Rx Antenna		Factor	Absolute Level	Limit	Margin
(MHz)	Reading	PK/AV	Degree	Height	Polar	( <b>dB</b> / <b>m</b> )	(dBuV/m)	(dBuV/m)	( <b>dB</b> )
	(dBuV)		Degree	( <b>m</b> )	(H/V)		````		
				Low Ch	annel				
2310	46.71	РК	165	2.2	Н	-7.23	39.48	74	-34.52
2310	47.10	РК	36	1.6	V	-7.23	39.87	74	-34.13
2390	47.66	PK	136	1.4	Н	-7.21	40.45	74	-33.55
2390	51.87	PK	239	1.3	V	-7.21	44.66	74	-29.34
4804	54.40	PK	75	2.1	Н	-3.52	50.88	74	-23.12
4804	55.55	PK	106	1.6	V	-3.52	52.03	74	-21.97
				Middle C	hannel				
4882	49.67	PK	150	1.9	Н	-3.37	46.3	74	-27.70
4882	50.19	РК	220	2.0	V	-3.37	46.82	74	-27.18
				High Ch	annel				
2483.5	47.04	PK	212	2.0	Н	-7.20	39.84	74	-34.16
2483.5	49.00	РК	219	1.5	V	-7.20	41.8	74	-32.20
2500	47.75	PK	326	2.1	Н	-7.18	40.57	74	-33.43
2500	49.39	РК	55	1.2	V	-7.18	42.21	74	-31.79
4960	49.52	РК	280	1.4	Н	-3.01	46.51	74	-27.49
4960	48.94	PK	258	1.7	V	-3.01	45.93	74	-28.07

### Note:

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

Absolute Level (Corrected Amplitude) = Factor + Reading

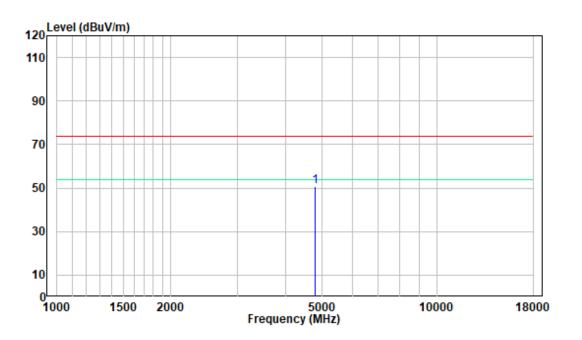
Margin = Absolute Level – Limit

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.

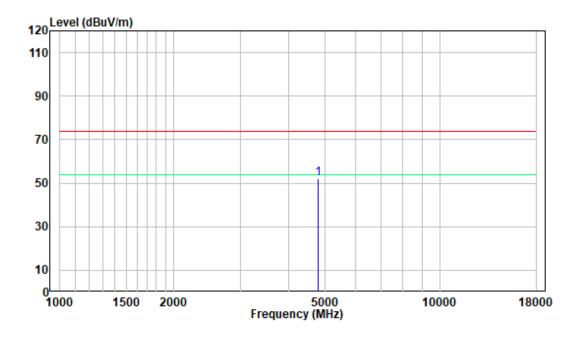
# 1 GHz - 18 GHz: (Pre-Scan plots)

# Worst case for 8DPSK, Low Channel:



Horizontal

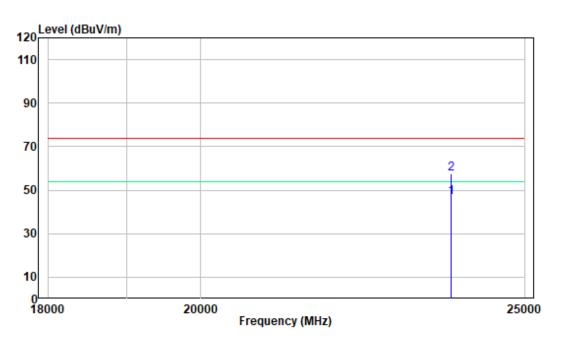
# Vertical



Shenzhen Accurate Technology Co., Ltd.

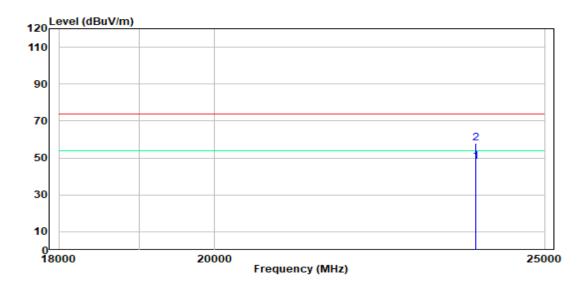
# 18-25GHz: (Pre-Scan plots)

# Worst case for 8DPSK, Low Channel:



### Horizontal

### Vertical



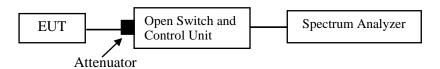
# FCC §15.247(a) (1)-CHANNEL SEPARATION TEST

# **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**

Temperature:	24 °C
Relative Humidity:	48 %
ATM Pressure:	101.0 kPa

The testing was performed by Glenn Jiang on 2022-11-15.

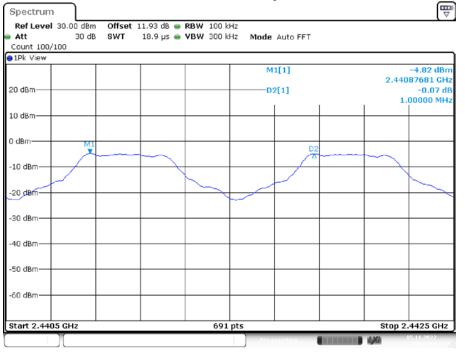
### EUT operation mode: Transmitting

Test Result: Compliant.

Test Mode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Нор	1	>=0.630	PASS
2DH5	Ant1	Нор	1.003	>=0.854	PASS
3DH5	Ant1	Нор	1	>=0.848	PASS

Note: The limit = (2/3) \* 20dB bandwidth

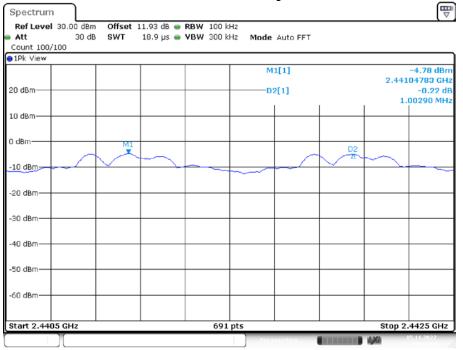
Please refer to the below plots:



DH5\_Ant1\_Hop

Date: 15.NOV.2022 16:23:53

### 2DH5\_Ant1\_Hop



Date: 15.NOV.2022 16:31:01

# Shenzhen Accurate Technology Co., Ltd.

		_
Spectrum		E
Ref Level 30.00 dBm	n Offset 11.93 dB 🖷 RBW 100 kHz	
Att 30 dB	3 SWT 18.9 µs 👄 VBW 300 kHz Mode Auto FFT	
Count 100/100		
1Pk View		
	M1[1]	-4.72 dBn
		2.44105073 GH
20 dBm	D2[1]	-0.06 dE 1.00000 MH;
		1.00000 MHz
10 dBm		
0 dBm	M1 000	
		$\sim$
-10 dBm		
-20 dBm		
-30 dBm		
-So ubili		
-40 dBm		
-40 dBm		
-50 dBm		
-60 dBm		
Start 2.4405 GHz	691 pts	Stop 2.4425 GHz
	·	
	Measuring	16:10:59

3DH5\_Ant1\_Hop

Date: 15.NOV.2022 16:48:59

# 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.

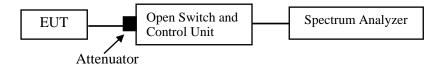
• The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.

• 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:	24 °C
<b>Relative Humidity:</b>	48 %
ATM Pressure:	101.0 kPa

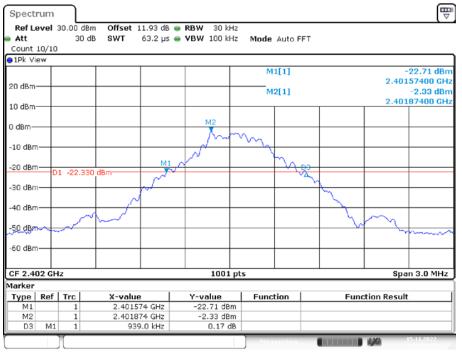
The testing was performed by Glenn Jiang on 2022-11-15.

EUT operation mode: Transmitting

Test Result: Compliant.

Test Mode	Antenna	Channel	20db EBW[MHz]	99% OCCUPIED BANDWIDTH[MHz]	Verdict
		2402	0.939	0.830	PASS
DH5	Ant1	2441	0.939	0.830	PASS
		2480	0.945	0.884	PASS
		2402	1.281	1.154	PASS
2DH5	Ant1	2441	1.278	1.151	PASS
		2480	1.281	1.160	PASS
		2402	1.272	1.163	PASS
3DH5	Ant1	2441	1.266	1.163	PASS
		2480	1.269	1.175	PASS

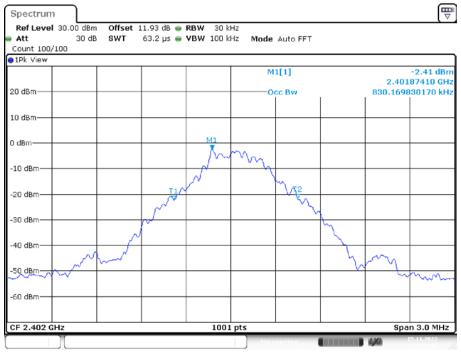
Please refer to the below plots:



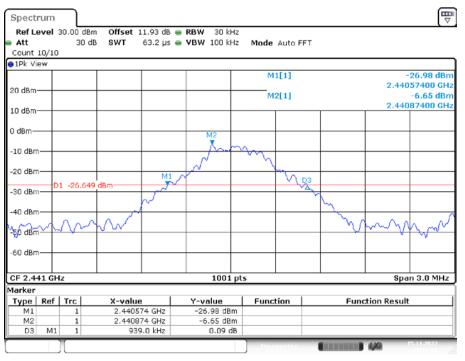
### 20 dB EMISSION BANDWIDTH\_DH5\_Ant1\_2402

Date: 15.NOV.2022 15:55:25

# 99% OCCUPIED BANDWIDTH\_DH5 \_Ant1\_2402



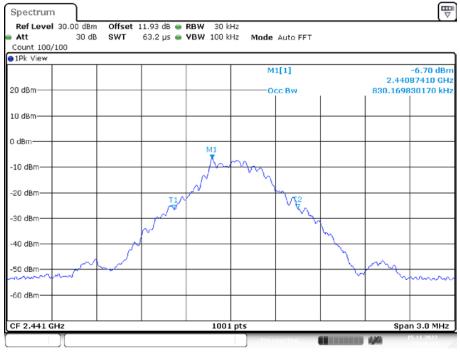
Date: 15.NOV.2022 15:55:42



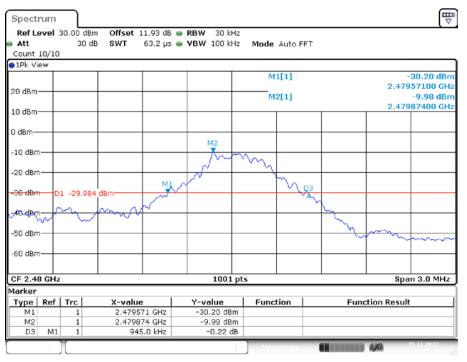
20 dB EMISSION BANDWIDTH\_DH5 \_Ant1\_2441

Date: 15.NOV.2022 15:56:28

# 99% OCCUPIED BANDWIDTH\_DH5 \_Ant1\_2441



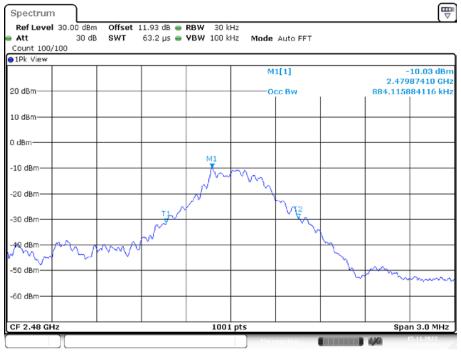
Date: 15.NOV.2022 15:56:45



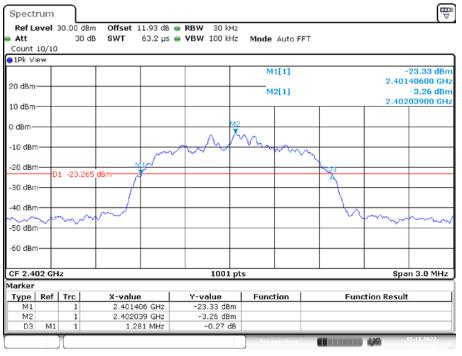
20 dB EMISSION BANDWIDTH\_DH5 \_Ant1\_2480

Date: 15.NOV.2022 15:57:13





Date: 15.NOV.2022 15:57:29



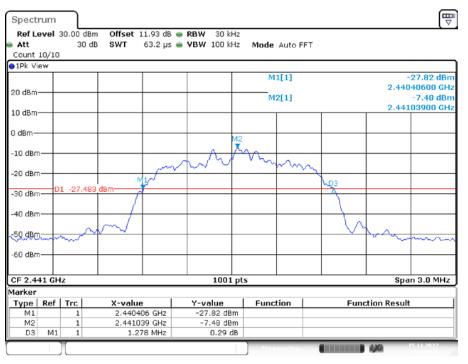
### 20 dB EMISSION BANDWIDTH\_2DH5 \_Ant1\_2402

Date: 15.NOV.2022 15:58:28

# 99% OCCUPIED BANDWIDTH\_2DH5 \_Ant1\_2402



Date: 15.NOV.2022 15:58:45



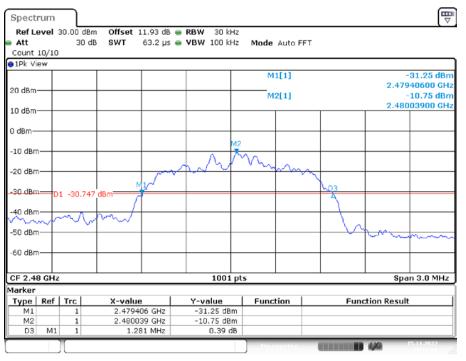
# 20 dB EMISSION BANDWIDTH\_2DH5 \_Ant1\_2441

Date: 15.NOV.2022 15:59:45

# 99% OCCUPIED BANDWIDTH\_2DH5 \_Ant1\_2441



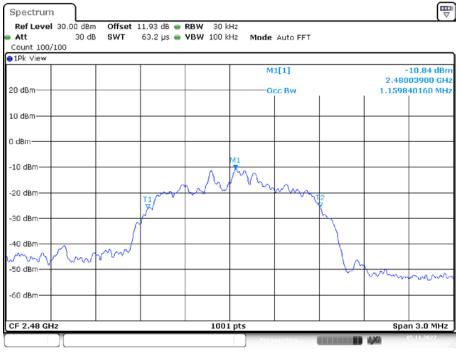
Date: 15.NOV.2022 16:00:01



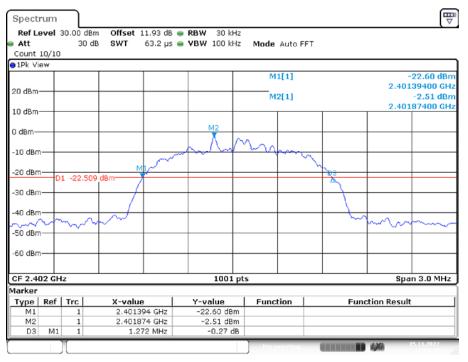
# 20 dB EMISSION BANDWIDTH \_2DH5\_Ant1\_2480

Date: 15.NOV.2022 16:03:06

# 99% OCCUPIED BANDWIDTH \_2DH5\_Ant1\_2480



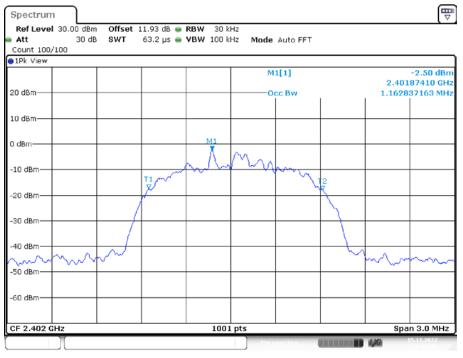
Date: 15.NOV.2022 16:03:23



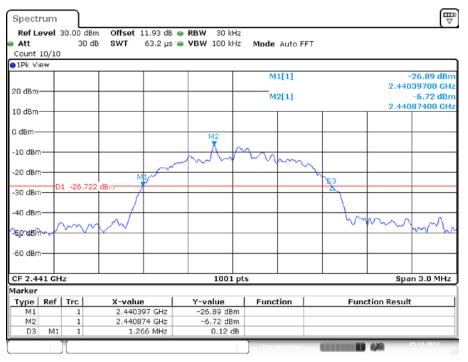
# 20 dB EMISSION BANDWIDTH\_3DH5\_Ant1\_2402

Date: 15.NOV.2022 16:11:28

# 99% OCCUPIED BANDWIDTH\_3DH5\_Ant1\_2402



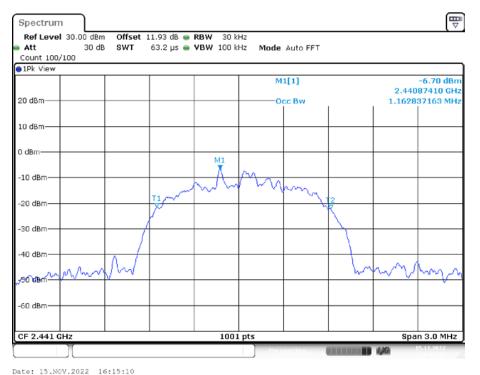
Date: 15.NOV.2022 16:11:45

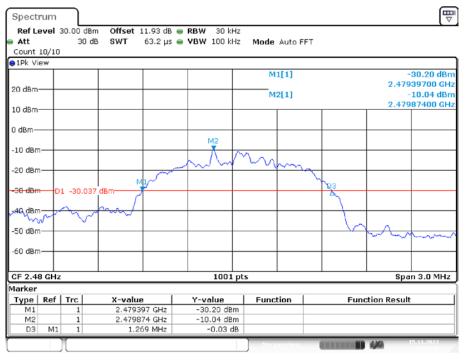


# 20 dB EMISSION BANDWIDTH\_3DH5\_Ant1\_2441

Date: 15.NOV.2022 16:14:53

# 99% OCCUPIED BANDWIDTH\_3DH5\_Ant1\_2441





### 20 dB EMISSION BANDWIDTH\_3DH5\_Ant1\_2480

Date: 15.NOV.2022 16:15:48

# 99% OCCUPIED BANDWIDTH\_3DH5\_Ant1\_2480



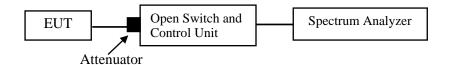
# FCC §15.247(a) (1) (iii)-QUANTITY OF HOPPING CHANNEL TEST

# **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:	24 °C
Relative Humidity:	48 %
ATM Pressure:	101.0 kPa

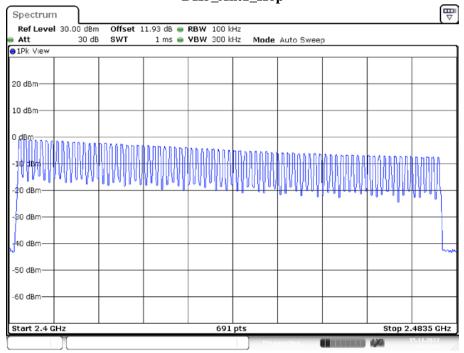
The testing was performed by Glenn Jiang on 2022-11-15.

EUT operation mode: Transmitting

Test Result: Compliant.

Test Mode	Antenna	Channel	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	>=15	PASS
2DH5	Ant1	Hop	79	>=15	PASS
3DH5	Ant1	Нор	79	>=15	PASS

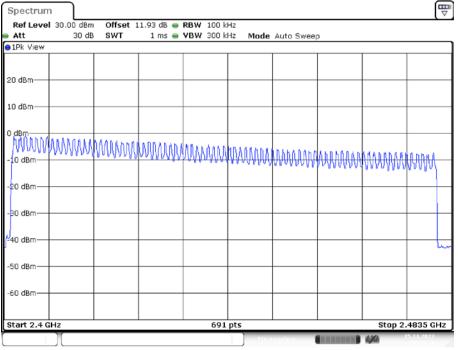
Please refer to the below plots:



DH5\_Ant1\_Hop

Date: 15.NOV.2022 16:25:06

# 2DH5\_Ant1\_Hop



Date: 15.NOV.2022 16:33:11

# Shenzhen Accurate Technology Co., Ltd.

			5	$DII3_$		1_11(	P			
Spectrum	<u> </u>									Ę
Ref Level	30.00 dBm	1 Offset	11.93 dB 😑	<b>RBW</b> 10	0 kHz					
Att	30 dB	3 SWT	1 ms 👄	<b>VBW</b> 30	0 kHz	Mode	Auto Swee	р		
1Pk View										
20 dBm —										
10 dBm					_					
					_					
- FRAULA	MAANAAAA	hh/ikaana	MID-MARKS							
0 dBm	1028000	AAAmAAAAA	1448899999	hadada	UUUIV	ann	LADHA ARAA	<b>AFENDAVD</b>	RUN LUANA	влины
			mmy				10	1000000	alloadlar	Annah
1 1										
20 dBm										
-B0 dBm										
40 dBm-					_					
										U V
-50 dBm										
-60 dBm										
-00 ubiii										
Start 2.4 G	Hz			. 6	i91 pts				Stop 2	4835 GHz
						Mez	suring		420	15.11.2022
						)				



Date: 15.NOV.2022 16:50:45

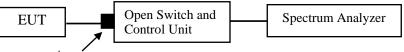
# FCC §15.247(a) (1) (iii) - TIME OF OCCUPANCY (DWELL TIME)

# **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 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



Attenuator

# **Test Data**

### **Environmental Conditions**

Temperature:	24 °C
Relative Humidity:	48 %
ATM Pressure:	101.0 kPa

The testing was performed by Glenn Jiang on 2022-11-15.

### EUT operation mode: Transmitting

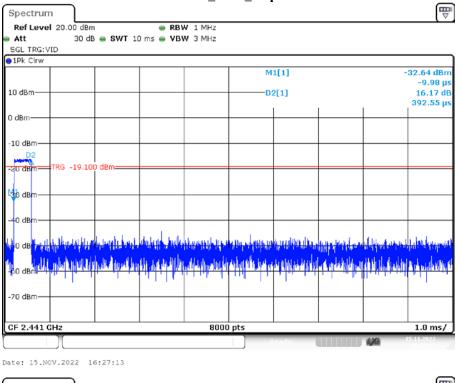
Test Result: Compliant.

Test Mode	Antenna	Channel	Burst Width [ms]	Total Hops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Нор	0.39	320	0.126	<=0.4	PASS
DH3	Ant1	Нор	1.64	170	0.279	<=0.4	PASS
DH5	Ant1	Hop	2.88	120	0.346	<=0.4	PASS
2DH1	Ant1	Нор	0.40	320	0.129	<=0.4	PASS
2DH3	Ant1	Нор	1.65	180	0.297	<=0.4	PASS
2DH5	Ant1	Hop	2.89	130	0.376	<=0.4	PASS
3DH1	Ant1	Нор	0.41	320	0.13	<=0.4	PASS
3DH3	Ant1	Нор	1.65	180	0.296	<=0.4	PASS
3DH5	Ant1	Нор	2.89	130	0.376	<=0.4	PASS

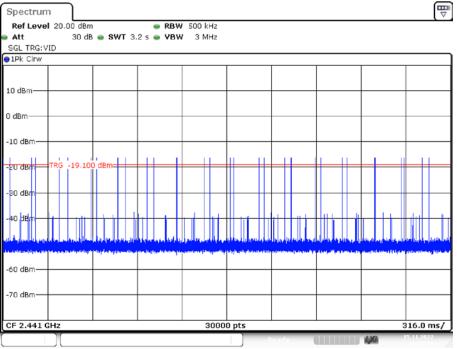
Note 1: A period time=0.4\*79=31.6(s), Result=Burst Width\*Total Hops

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)



DH1\_Ant1\_Hop

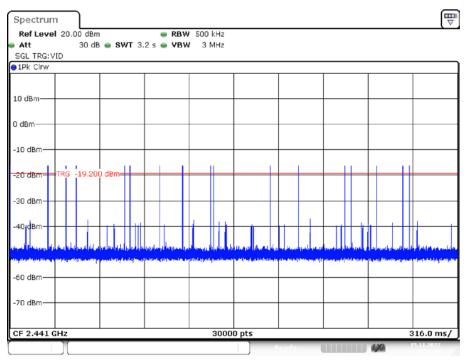


Date: 15.NOV.2022 16:27:18

							32.11 dBr -9.98 µ 15.59 d
					I	t I	l.64146 m
02 5 -19.200 dBm=							
	_						
	المعطولين وال	uu kalan ay		Malana	ակետրին,	ahlilla da	he makes
on tolentices	and technological	dinata na ta		ili, Nieline, Lu	ndal da Aldada	dank ald Add s	hillink Manda
	D2 5 -19.200 dBm=	3 -19.200 dBm	3 -19.200 dBm			D2 D2 S -19.200 dBm 	D2 D2 D2 D2 D2 D2 D2 D2 D2 D2

DH3\_Ant1\_Hop

Date: 15.NOV.2022 16:26:43



Date: 15.NOV.2022 16:26:48

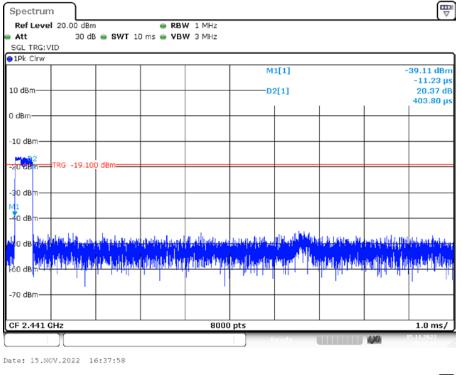
SGL TRG:VID 1Pk Cirw							
			м	1[1]		-	32.10 dBn
LO dBm			D				-9.98 μ 15.30 di
LO UBIN				2[1]		:	15.30 at 2.88161 m
) dBm							
10 dBm							
20 dBm TRG -19.100 d	IBm P2						
dBm							
40 dBm							
0 dBm	a the colu		States and the second	state and so it	land lat	برايد بمريدات	ليرب الماليين
U dBm	I ALL AND A A A A A A A A A A A A A A A A A A		t of tale 1	a barra te	in the second	The second second	
50 dBm	74 <u>10 50</u> 366	. Will and the state of the sta	li de i de juli	1914 Wear	<u> i Nalana</u>	provide a state of the state of	deligitida.
		1. T	10 Y	10. 1. 11.			" "
70 dBm							
CF 2.441 GHz	I	8000	pts				1.0 ms/

DH5\_Ant1\_Hop

Date: 15.NOV.2022 16:25:24

Spectrum			
Ref Level 20.00 dBm	RBW 500 kHz		
Att 30 dB 🖷 SWT 3	2 s 👄 <b>VBW</b> 3 MHz		
SGL TRG: VID			
1Pk Cirw			
10 dBm			
) dBm			
abin			
-10 dBm			
-10 dBin			
20 dBm TRG -19.100 dBm			
-30 dBm			
40 dBm			
i ili i sa na ang ang ang ang ang ang ang ang ang	المحق المحدقة العربية ومناجع ومردوا الدراعة وحرج والمرد المحق	a starting and the second termine	ality, a gast a sure sure of
والمتحمية والأرد ومترا المتعاصية والمعرفية والمراجع والمراجع والمراجع	and in the lease of any spin a shirt for the short of the large sector in	and the second second second statement of the	والمرجع والمراجع والأدوار والمرجع والمتعرب والمراجع
-60 dBm			
-70 dBm			
CF 2.441 GHz	30000 pts		316.0 ms/
		Ready	15.11.2022

Date: 15.NOV.2022 16:25:29



2DH1\_Ant1\_Hop

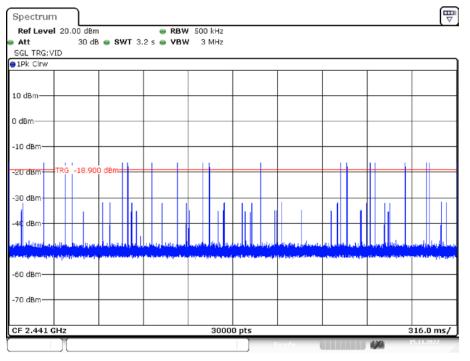
₽ Spectrum Ref Level 20.00 dBm 🔵 RBW 500 kHz Att 30 dB 😑 SWT 3.2 s 👄 VBW 3 MHz SGL TRG: VID ●1Pk Clrw 10 dBm-0 dBm--10 dBm -20 dB λĠ. -19.100dBm -30 dB -60 dBm--70 dBm-CF 2.441 GHz 30000 pts 316.0 ms/

Date: 15.NOV.2022 16:38:03

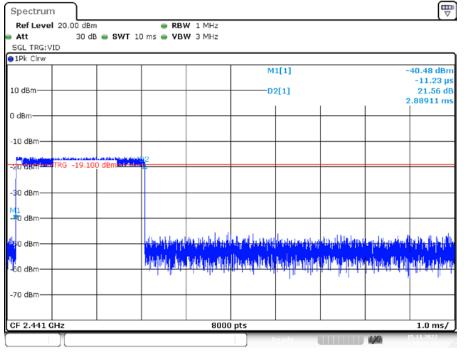
		_				
			N N	11[1]		-33.41 dBn -9.98 μ
.0 dBm		_	D	2[1]		14.71 di
						1.64771 m
) dBm						
10 dBm						
Million in such as the site of	و همه -18.900 dBm===					
0 dBm						
Y						
40 dBm						
	4	يو يار ي				
0 dBm			had all the property of the last	highlight the set of the	Haite Part Area Mark	<u>Yhdelled han an a</u>
		an an an Intalandala ka	adaladina adalah ba	a baddad ddanaadda	al daha Maharata ng Daha	al adda activity of
r 1			- THE PARTY OF THE PARTY OF THE		and the state of the state	
50 dBm	and the divides	- 10 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	and the state of a		a contra colo la	
50 dBm		<u>, , , , , , , , , , , , , , , , , , , </u>	In Fillande et e		a se relative la	

2DH3\_Ant1\_Hop

Date: 15.NOV.2022 16:37:26

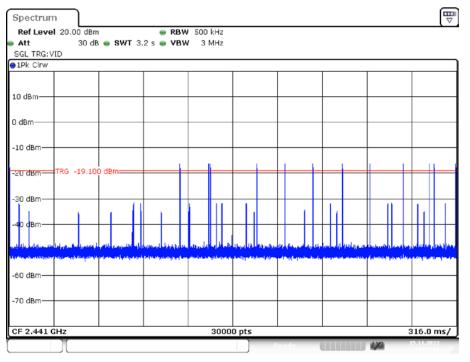


Date: 15.NOV.2022 16:37:31

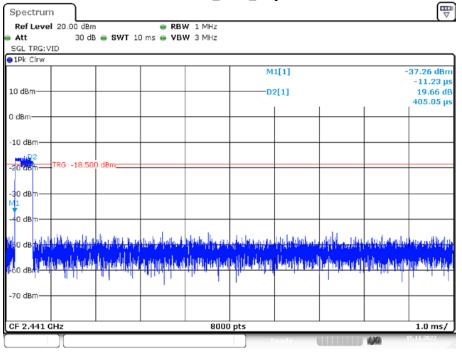


2DH5\_Ant1\_Hop

Date: 15.NOV.2022 16:39:56

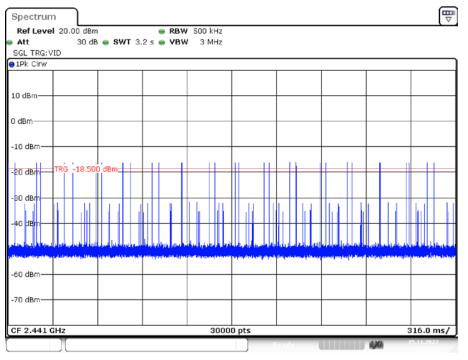


Date: 15.NOV.2022 16:40:02



3DH1\_Ant1\_Hop

Date: 15.NOV.2022 16:52:06

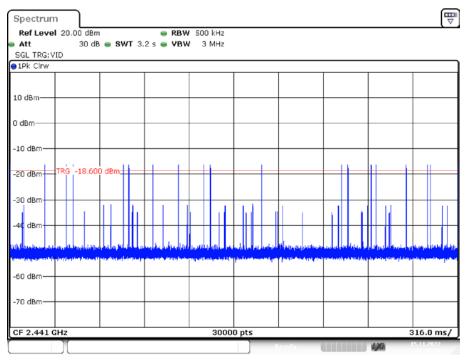


Date: 15.NOV.2022 16:52:11

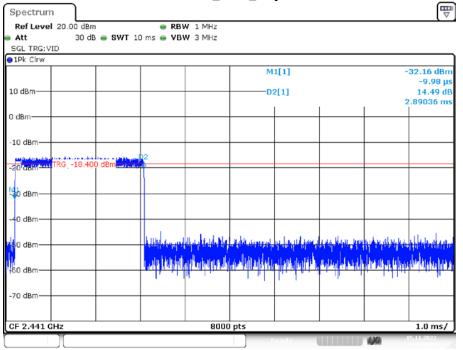
SGL TRG: VID			) ms 👄 🛛 🗛						
1Pk Cirw					м	1[1]			-31.54 dBrr
									-9.98 µs
10 dBm					D:	2[1]			13.08 dE 1.64646 ms
0 dBm									
-10 dBm									
-20 <sup>°</sup> aBhr	-18.600	dBm							
1 30 dBm									
0 dBm		eralde the di	dina ani dan		e den det de con	الإيرانيا أورانيا ما	ماريطيون	a ha anta	
4		ամեստ	trada de dade	مد أيديا للاليان	south following	ANNUS INCOM	al reliabilities for	S	n an faith a stain.
60 dBm	- 1	<del>de de d</del> l	Ad out of the	<u>than di ki</u> t	all district the	<mark>ti bi Diant is la</mark>	lite in set de	ese tilin ella co	di lunda i a
70 dBm									
CF 2.441 GHz				8000	pts				1.0 ms/

3DH3\_Ant1\_Hop

Date: 15.NOV.2022 16:51:34

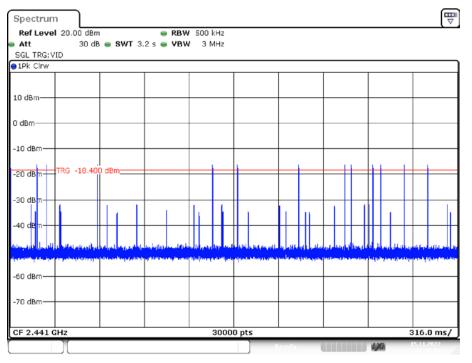


Date: 15.NOV.2022 16:51:40



3DH5\_Ant1\_Hop

Date: 15.NOV.2022 16:51:03



Date: 15.NOV.2022 16:51:09

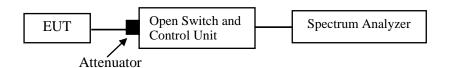
# FCC §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT

## **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:	24 °C
Relative Humidity:	48 %
ATM Pressure:	101.0 kPa

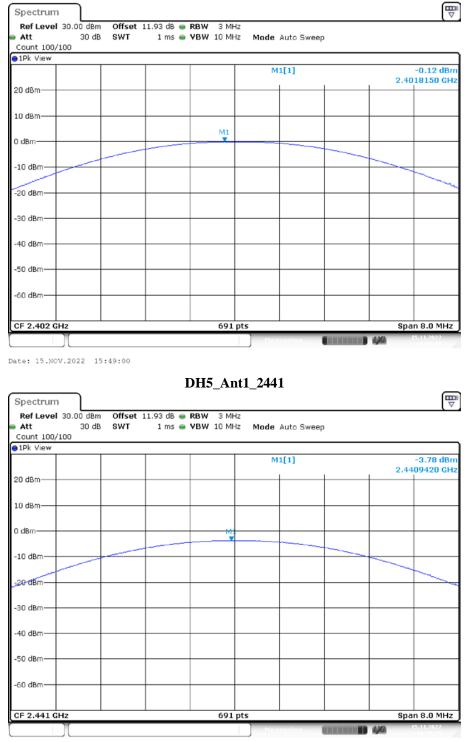
The testing was performed by Glenn Jiang on 2022-11-15.

EUT operation mode: Transmitting

Test Result: Compliant.

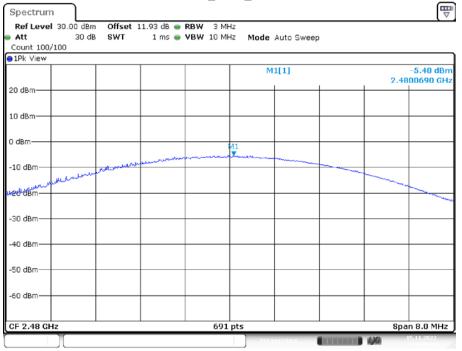
Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
		2402	-0.12	<=20.97	PASS
DH5	Ant1	2441	-3.78	<=20.97	PASS
		2480	-5.48	<=20.97	PASS
	Ant1	2402	0.44	<=20.97	PASS
2DH5		2441	-3.58	<=20.97	PASS
		2480	-6.75	<=20.97	PASS
		2402	0.86	<=20.97	PASS
3DH5	Ant1	2441	-3.05	<=20.97	PASS
		2480	-5.80	<=20.97	PASS

Please refer to the below plots:



DH5\_Ant1\_2402

Date: 15.NOV.2022 16:18:35



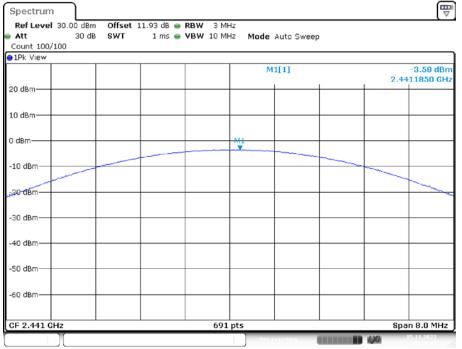
DH5\_Ant1\_2480

Date: 15.NOV.2022 16:19:11

#### 2DH5\_Ant1\_2402



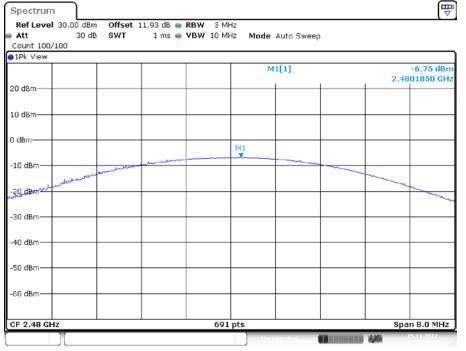
Date: 15.NOV.2022 15:50:31



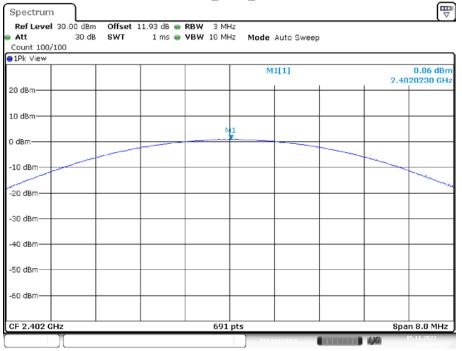
2DH5\_Ant1\_2441

Date: 15.NOV.2022 15:50:45

#### 2DH5\_Ant1\_2480



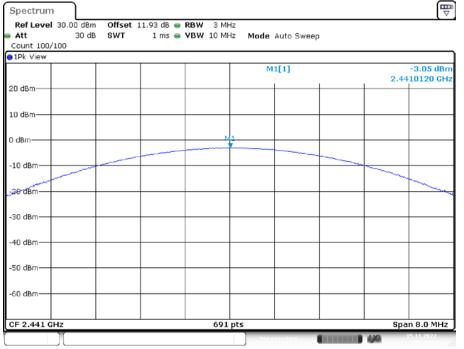
Date: 15.NOV.2022 15:51:08



3DH5\_Ant1\_2402

Date: 15.NOV.2022 15:51:34

#### 3DH5\_Ant1\_2441



Date: 15.NOV.2022 15:51:53

Ref Level         30.00 dBm         Offset         11.93 dB         RBW         3 MHz           Att         30 dB         SWT         1 ms         VBW         10 MHz         Mode         Auto Sweep           Count 100/100	
Count 100/100 ) IPk View	
M1[1]	
	-5.80 dBm 2.4799420 GHz
20 dBm	2.4799420 012
10 dBm-	
D dBm M1	
-10 dBm	
20.deman and a constant	
(h) sterr	
-30 dBm	
40 dBm	
-50 dBm	
co.do	
-60 dBm	
CF 2.48 GHz 691 pts	Span 8.0 MHz

3DH5\_Ant1\_2480

Date: 15.NOV.2022 15:52:09

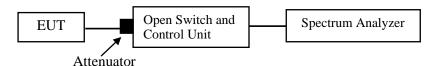
# FCC §15.247(d) - BAND EDGES TESTING

## 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:	24 °C
<b>Relative Humidity:</b>	48 %
ATM Pressure:	101.0 kPa

The testing was performed by Glenn Jiang on 2022-11-15.

EUT operation mode: Transmitting

#### Test Result: Compliant

Please refer to the below plots:

## DH5: Band Edge-Left Side Hopping

Spectr			0.						Ū.
Ref Le	vel		dBm Offse dB SWT		RBW 100 kHz VBW 300 kHz				
Count 3	00/3			240.5 µs (	• • • • • • • • • • • • • • • • • • •	Mode Auto	FFI		
1Pk Vie		00							
THE TIC	<u> </u>					M1[1]		-0.92	dBr
								2.402950	
LO dBm—						M2[1]		-47.40	dBr
) dBm—								2.400000	o 🖏
abiii									- 11
10 dBm-	+								<del>- Ni</del>
									_ JR
20 dBm-	Þ	1 -20.9	920 dBm					+	+
30 dBm-									
SU UBIII-									Т
40 dBm-	+		_				M4	M3	-
					and the second sec			ulululum	
SO dBm	A Prove		andreas	- alternation	Charles Charles	· Conner Jacoure		- Chrowite the state	~
60 dBm-									
OU UBIII-									
70 dBm-	$\rightarrow$								
Start 2.	3 GH	z			691 pt	s		Stop 2.405	GHz
larker						-			
	Ref	Trc	X-va	lue	Y-value	Function	Fu	nction Result	
M1		1		0295 GHz	-0.92 dBm				
M2		1		2.4 GHz	-47.40 dBm				
MЗ		1		2.39 GHz	-44.05 dBm				
M4		1	2.37	8065 GHz	-42.96 dBm				

Date: 15.NOV.2022 16:21:40

#### ₽ Spectrum Ref Level 20.00 dBm Offset 11.93 dB 🖷 RBW 100 kHz Att 30 dB Count 300/300 ●1Pk View -0.56 dBm 2.401880 GHz M1[1] 10 dBm--47.76 dBm 2.400000 GHz M2[1] 0 dBm--10 dBm--20 dBm-D1 -20.560 dBr -30 dBm M4 -40 dBm МЗ Ma Sousm ANY -60 dBm -70 dBm-Start 2.3 GHz 691 pts Stop 2.405 GHz Marker Y-value -0.56 dBm -47.76 dBm -47.69 dBm Type Ref Trc Function Result X-value Function 2.40188 GHz M1 1 M2 2.4 GHz 2.39 GHz 2.376087 GHz 1 ΜЗ 1 M4 -42.18 dBm **II** 4/0

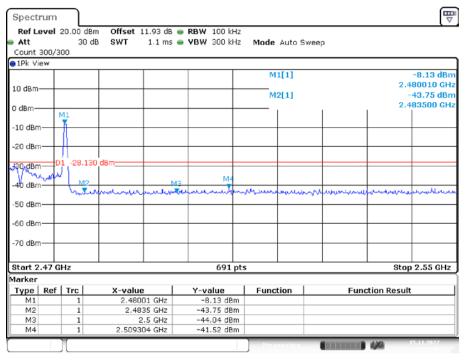
Single

Date: 15.NOV.2022 15:55:57

			mobbi			
Spectrum						Ē
Ref Level	20.00 dBi	m Offset 11.93 dB	RBW 100 kHz			
Att	30 d	B SWT 1.1 ms	VBW 300 kHz	Mode Auto S	weep	
Count 300/3	:00					
1Pk View						
				M1[1]		-7.17 dBn
10 dBm						2.470060 GH
				M2[1]		-42.81 dBn
dBm						2.483500 GH
1,000,000,000,000,000,000,000,000,000,0	\ <del>J</del>					
ארואנאענ	l) –					
20 96 <del>11 Y II</del> A	i l					
30 dBm 0	1 -27.17	D dBm				
	No.				M4	
40 dBm	M2	N music and a music		maliante in more		mananananan
I	00000		and the second	contraction of the second	and the second	man man management
50 dBm —						
60 dBm						
70 dBm						
/0 40						
Start 2.47 G	Hz		691 pts			Stop 2.55 GHz
larker	112		051 pc			0000 2100 0112
	Trc	X-value	Y-value	Function	Eunctie	on Result
M1	1	2.47006 GHz	-7.17 dBm	Function	Function	JII Kesuk
M2	1	2.4835 GHz	-42.81 dBm			
MЗ	1	2.5 GHz	-43.49 dBm			
M4	1	2.53087 GHz	-41.16 dBm			
	10				for a second sec	

## DH5: Band Edge- Right Side Hopping

Date: 15.NOV.2022 16:28:11



Single

Date: 15.NOV.2022 15:57:44

## 2DH5: Band Edge-Left Side Hopping

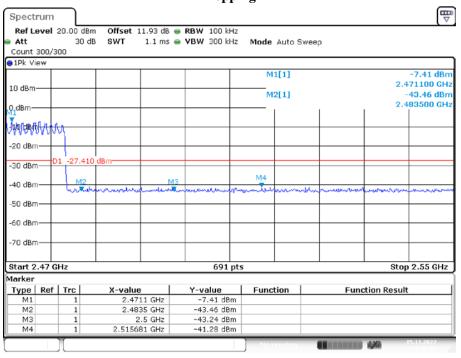
•	um	<b>ل</b> 20.00 ر	dam Offcat	11.01.dB	• RBW 100 kHz			E C
Att	ver		)dB SWT		VBW 300 kHz	Mode Auto P	ET	
Count :	300/3		000	240.5 ps 4	<b>1011</b> 300 KHZ	Mode Adtor		
1Pk Vie		00						
						M1[1]		-1.27 dBr
0 dBm-								2.404010 GH
U UBIII-						M2[1]		-48.39 dBr
dBm—	$\rightarrow$							2.400000 GÅ
								1. 1
10 dBm	+							
20 dBm	≠D	1 -21.3	270 dBm	-				
30 dBm								
o ubiii								
40 dBm	+						M4	
-	~	nuels A	In section of Land	and the second	remand	man Anna	man marker	In Mannamite
50 dBm		- Willy -				0 m - o a prime		
50 dBm								
JU UBIII								
70 dBm	$\rightarrow$							
tart 2	3 GH	z			691 pt	s		Stop 2.405 GHz
arker	o ui				00100	2		otop zitoo dite
Type	Ref	Trc	X-valı	ie I	Y-value	Function	Eur	nction Result
M1		1		401 GHz	-1.27 dBm	. anotion	1 41	and the same
M2		1		2.4 GHz	-48.39 dBm			
MЗ		1	2	2.39 GHz	-48.76 dBm			
M4		1	2,378	065 GHz	-42.62 dBm			

Date: 15.NOV.2022 16:29:57

#### ₽ Spectrum Ref Level 20.00 dBm Offset 11.93 dB 🖷 RBW 100 kHz Att 30 dB Count 300/300 ●1Pk View -0.73 dBm 2.401880 GHz M1[1] 10 dBm--49.16 dBm 2.400000 GHz M2[1] 0 dBm--10 dBm--20 dBm— D1 -20.730 dBr -30 dBm -40 dBm м МЗ when **ชชาช**ยิก -60 dBm -70 dBm-Start 2.3 GHz 691 pts Stop 2.405 GHz Marker Y-value -0.73 dBm -49.16 dBm -49.83 dBm Type Ref Trc Function Result X-value Function 2.40188 GHz M1 1 M2 2.4 GHz 2.39 GHz 2.376087 GHz 1 ΜЗ 1 M4 -43.09 dBm 1

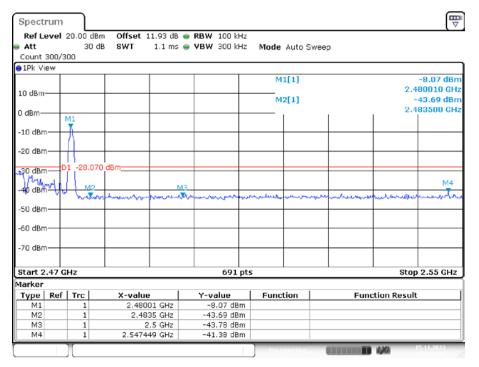
Single

Date: 15.NOV.2022 15:59:00



#### 2DH5: Band Edge- Right Side Hopping

Date: 15.NOV.2022 16:38:59

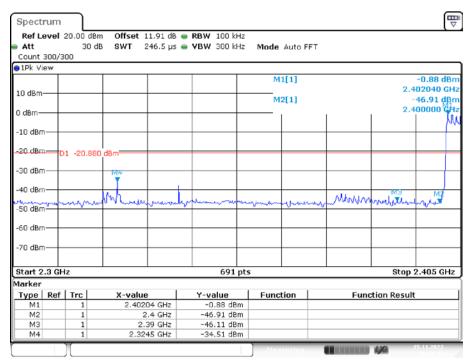


#### Single

Date: 15.NOV.2022 16:03:38

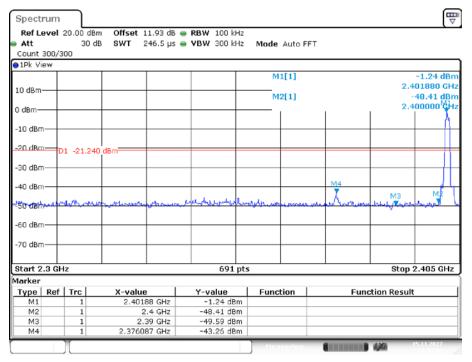
Version 11: 2021-11-09

## 3DH5: Band Edge-Left Side Hopping



Date: 15.NOV.2022 16:47:41

## Single

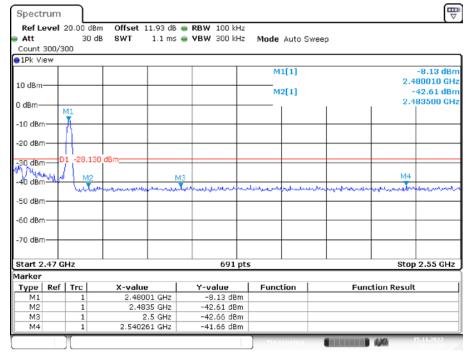


Date: 15.NOV.2022 16:12:00

			порри	ug			
Spectrum						Ē	
Ref Level	20.00 dB	m Offset 11.93 dB	) 👄 RBW 100 kHz				
Att	30 d	IB SWT 1.1 ms	; 👄 VBW 300 kHz	Mode Auto S	weep		
Count 300/3	800						
1Pk View							
				M1[1]		-7.16 dBm	
.0 dBm						2.471100 GH	
				M2[1]		-43.22 dBm	
l <mark>i</mark> dBm——					1	2.483500 GH	
	0						
idititation of the second s	W.						
20 dBm							
	1						
30 dBm 🕂	1 -27.16	0 dBm					
	M2		мз			M4	
40 dBm —	M2			with a set of a second second second	An and a star when when		
50 dBm							
50 dBm							
70 dBm —							
tart 2.47 G	Hz		691 pts	:		Stop 2.55 GHz	
arker							
Type   Ref	Trc	X-value	Y-value	Function	Fur	iction Result	
M1	1	2.4711 GHz	-7.16 dBm				
M2	1	2.4835 GHz	-43.22 dBm				
MЗ	1	2.5 GHz	-42.22 dBm				
M4	1	2.548377 GHz	-41.15 dBm				

## 3DH5: Band Edge- Right Side Hopping

Date: 15.NOV.2022 16:52:48



Single

Date: 15.NOV.2022 16:16:19

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

Version 11: 2021-11-09