



TEST REPORT

16/F, Block C, 2nd Phase of Central Avenue, Haihong Industrial Area,

Hong Kong Etech Groups Ltd.

SZ3220822-38209E-RF

2A3ZO-EOT6-21111174

Xixiang, Baoan District, Shenzhen

Applicant Name : Address :

Report Number : FCC ID:

Test Standard (s) FCC PART 15.247

Sample Description

Product Type: Model name: Date Received: Date of Test: Report Date:

Test Result:

Mini Portable printer UPT-1228,UPT-1230, UPT-1232 2022-08-22 2022-08-29 to 2022-10-22 2022-10-25

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

Pass*

Prepared and Checked By:

Jeff-Jvan

Jeff Jiang EMC Engineer

Approved By:

Candry . Cr

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.

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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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GENERAL INFORMATION

Product	Mini Portable printer
Tested Model	UPT-1228
Multiple model	UPT-1230,UPT-1232
Frequency Range	2402~2480MHz
Maximum conducted Peak output power	2.85dBm
Modulation Technique	BDR(GFSK)/EDR(π/4-DQPSK)/EDR(8DPSK)
Antenna Specification*	Internal Antenna: -0.58dBi(provided by the applicant)
Voltage Range	DC 5V from Adapter or DC 3.7V from battery
Sample number	SZ3220822-38209E-RF-S1 (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, 15.207, 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.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Cha	nnel Bandwidth	5%
RF Fre	equency	$0.082*10^{-7}$
RF output por	wer, conducted	0.73dB
Unwanted Emi	ssion, conducted	1.6dB
AC Power Lines C	onducted Emissions	2.72dB
	9kHz - 30MHz	2.66dB
	30MHz - 1GHz	4.28dB
Emissions, Radiated	1GHz - 18GHz	4.98dB
Radiated	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 4297.01

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

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in an engineering mode.

EUT Exercise Software

Software "FCC_assist_1.0.2.2"* was used during testing and the power level was 10*.

Special Accessories

N/A.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

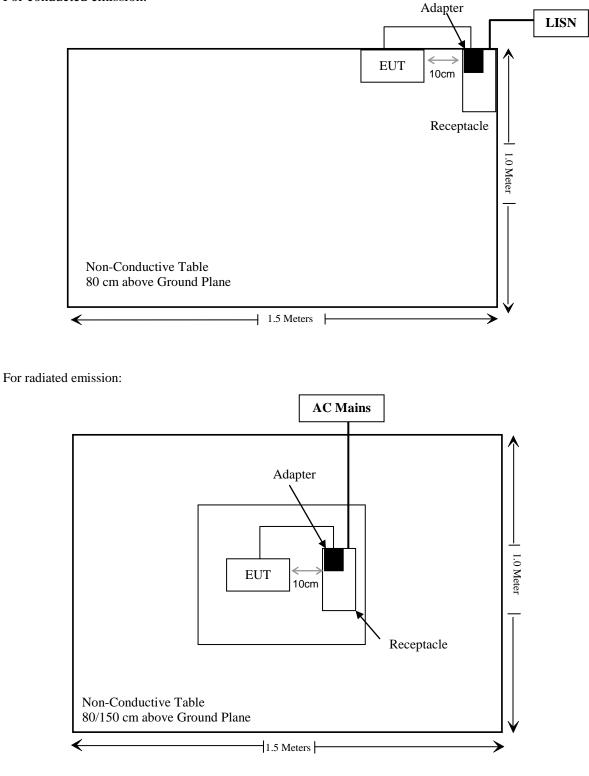
Manufacturer	Description	Model	Serial Number
BLU	Adapter	US-BB 1000	US110278502

External I/O Cable

Cable Description	Length (m)	From/Port	То
Un-shielding Detachable USB Cable	0.5	EUT	Adapter
Unshielded Un-detachable AC cable	1.2	LISN	Receptacle

Block Diagram of Test Setup

For conducted emission:



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	Compliant
§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

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESCI	100784	2021/12/13	2022/12/12
Rohde & Schwarz	L.I.S.N.	ENV216	101314	2021/12/13	2022/12/12
Anritsu Corp	50 Coaxial Switch	MP59B	6100237248	2021/12/13	2022/12/12
Unknown	RF Coaxial Cable	No.17	N0350	2021/12/14	2022/12/13
	Conducted E	mission Test Sof	tware: e3 19821b (V9)	•
		Radiated Emissi	ons Test		
Rohde & Schwarz	Test Receiver	ESR	102725	2021/12/13	2022/12/12
Rohde & Schwarz	Spectrum Analyzer	FSV40	101949	2021/12/13	2022/12/12
SONOMA INSTRUMENT	Amplifier	310 N	186131	2021/11/09	2022/11/08
Quinstar	Amplifier	QLW-184055 36-J0	15964001002	2021/11/11	2022/11/10
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2021/07/06	2024/07/05
Schwarzbeck	HORN ANTENNA	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.12	N040	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.13	N300	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.14	N800	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.15	N600	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.16	N650	2021/12/14	2022/12/13
Radiated Emission Test Software: e3 19821b (V9)					
RF Conducted Test					
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	ERP _{20cm}	Distance	Excl	Based usion shold	SAR-Based Exclusion
	(MHz)	(dBm)	(dBi)	(dBd)	(dBm)	(mW)	(mm)	(mW)	(dBm)	
BDR/EDR	2402-2480	3.0	-0.58	-2.73	0.27	3060	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 Antenna arrangement, which was permanently attached and the antenna gain is -0.58 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

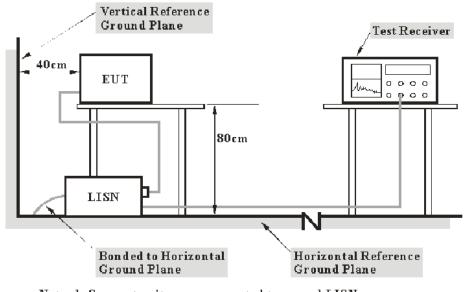
Result: Compliant.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207(a)

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The measurement procedure of EUT setup is according with ANSI C63.10-2013. The related limit was specified in FCC Part 15.207.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final data was recorded in the Quasi-peak and average detection mode.

Factor & Margin Calculation

The factor is calculated by adding LISN VDF (Voltage Division Factor) and Cable Loss. The basic equation is as follows:

Factor = LISN VDF + Cable Loss

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

Over Limit = Level – Limit Level = Read Level + Factor

Test Data

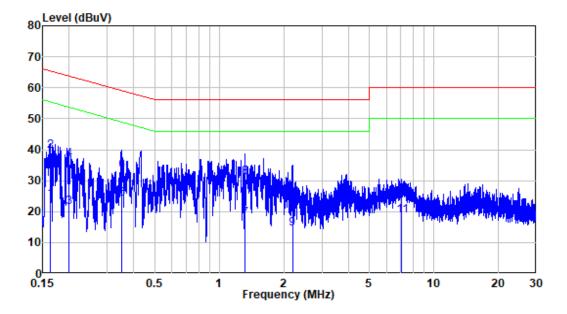
Environmental Conditions

Temperature:	23 °C
Relative Humidity:	40 %
ATM Pressure:	101.1 kPa

The testing was performed by Jason Liu on 2022-08-30.

EUT operation mode: BT

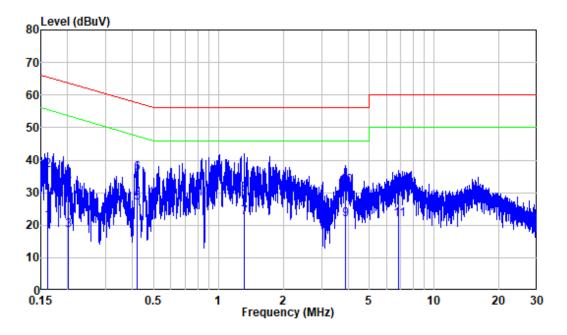
AC 120V/60 Hz, Line



Site	:	Shielding Room
Condition	:	Line
Job No.	:	SZ3220822-38209E-RF
Mode	:	BT
Power	:	AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.163	9.80	14.19	23.99	55.33	-31.34	Average
2	0.163	9.80	29.60	39.40	65.33	-25.93	QP
3	0.200	9.80	11.73	21.53	53.62	-32.09	Average
4	0.200	9.80	26.94	36.74	63.62	-26.88	QP
5	0.352	9.80	14.42	24.22	48.91	-24.69	Average
6	0.352	9.80	23.54	33.34	58.91	-25.57	QP
7	1.315	9.81	8.02	17.83	46.00	-28.17	Average
8	1.315	9.81	21.18	30.99	56.00	-25.01	QP
9	2.190	9.82	4.82	14.64	46.00	-31.36	Average
10	2.190	9.82	14.74	24.56	56.00	-31.44	QP
11	7.067	9.87	8.98	18.85	50.00	-31.15	Average
12	7.067	9.87	14.67	24.54	60.00	-35.46	QP

AC 120V/60 Hz, Neutral



Site	:	Shielding Room
Condition	:	Neutral
Job No.	:	SZ3220822-38209E-RF
Mode	:	BT
Power	:	AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.161	9.80	11.33	21.13	55.41	-34.28	Average
2	0.161	9.80	27.16	36.96	65.41	-28.45	QP
3	0.201	9.80	8.62	18.42	53.57	-35.15	Average
4	0.201	9.80	23.07	32.87	63.57	-30.70	QP
5	0.421	9.80	16.98	26.78	47.43	-20.65	Average
6	0.421	9.80	26.22	36.02	57.43	-21.41	QP
7	1.315	9.81	12.62	22.43	46.00	-23.57	Average
8	1.315	9.81	19.74	29.55	56.00	-26.45	QP
9	3.878	9.84	11.88	21.72	46.00	-24.28	Average
10	3.878	9.84	22.23	32.07	56.00	-23.93	QP
11	6.855	9.97	11.91	21.88	50.00	-28.12	Average
12	6.855	9.97	20.69	30.66	60.00	-29.34	QP

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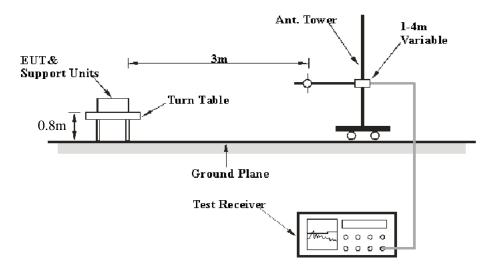
FCC §15.205, §15.209 & §15.247(d) – RADIATED EMISSIONS

Applicable Standard

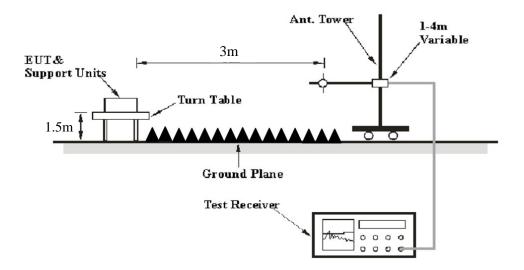
FCC §15.205; §15.209; §15.247(d)

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 an 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

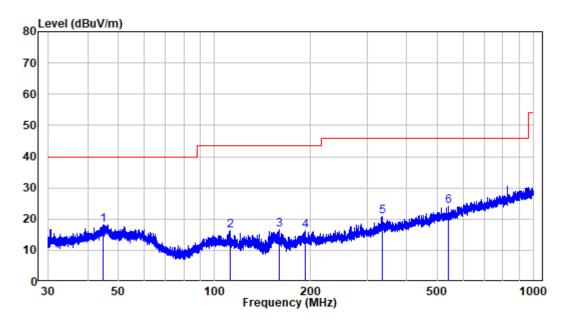
Temperature:	25~28 °C
Relative Humidity:	57~61 %
ATM Pressure:	101 kPa

The testing was performed by Level Li from 2022-08-29 to 2022.09-06.

EUT operation mode: Charging + BT Transmitting

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

Below 1GHz: 8DPSK, Middle Channel:

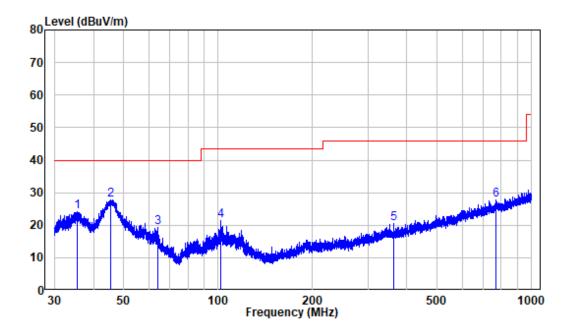


Horizontal

Site : chamber Condition: 3m HORIZONTAL Job No. : SZ3220822-38209E-RF Test Mode: Charging+BT Transmitting

	Freq	Factor			Limit Line		Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	44.881	-9.93	28.19	18.26	40.00	-21.74	Peak
2	111.542	-12.17	28.54	16.37	43.50	-27.13	Peak
3	158.946	-14.36	30.84	16.48	43.50	-27.02	Peak
4	191.745	-11.29	27.60	16.31	43.50	-27.19	Peak
5	336.035	-7.58	28.32	20.74	46.00	-25.26	Peak
6	539.951	-3.91	27.97	24.06	46.00	-21.94	Peak





Site :	chamber
Condition:	3m VERTICAL
Job No. :	SZ3220822-38209E-RF
Test Mode:	Charging+BT Transmitting

	Freq	Factor			Limit Line		Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	35.453	-11.38	35.55	24.17	40.00	-15.83	Peak
	45.515	-9.97	37.61	27.64	40.00	-12.36	Peak
3	64.179	-12.21	31.45	19.24	40.00	-20.76	Peak
4	101.823	-11.59	33.11	21.52	43.50	-21.98	Peak
5	362.031	-7.62	28.03	20.41	46.00	-25.59	Peak
6	769.085	-0.23	28.02	27.79	46.00	-18.21	Peak

Above 1GHz (worst case for 8DPSK):

Frequency	Rece	eiver	Turntable	Rx Ai	ntenna	Factor	Factor Absolute		Margin
(MHz)	Reading (dBuV)	PK/Ave	Angle Degree	Height (m)	Polar (H/V)	(dB/m)	Level (dBuV/m)	Limit (dBuV/m)	(dB)
	Low Channel								
2310	55.02	РК	130	1.4	Н	-7.23	47.79	74	-26.21
2310	54.86	РК	180	2.0	V	-7.23	47.63	74	-26.37
2390	54.64	РК	355	1.5	Н	-7.21	47.43	74	-26.57
2390	54.93	РК	260	1.6	V	-7.21	47.72	74	-26.28
4804	48.21	РК	274	1.2	Н	-3.52	44.69	74	-29.31
4804	47.05	РК	210	1.7	V	-3.52	43.53	74	-30.47
				Middle Ch	annel				
4882	48.82	РК	126	1.1	Н	-3.37	45.45	74	-28.55
4882	46.21	РК	54	1.0	V	-3.37	42.84	74	-31.16
				High Cha	nnel				
2483.5	54.76	РК	251	1.4	Н	-7.2	47.56	74	-26.44
2483.5	54.59	РК	136	1.7	V	-7.2	47.39	74	-26.61
2500	54.51	РК	69	1.6	Н	-7.18	47.33	74	-26.67
2500	55.59	РК	190	1.8	V	-7.18	48.41	74	-25.59
4960	48.22	РК	319	1.6	Н	-3.01	45.21	74	-28.79
4960	48.42	РК	131	1.4	V	-3.01	45.41	74	-28.59

Note:

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

Absolute Level (Corrected Amplitude) = Factor + Reading

Margin = Absolute Level (Corrected Amplitude) – Limit

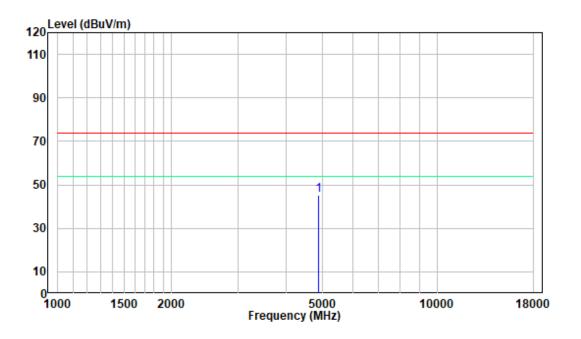
The other spurious emission which is in the noise floor level was not recorded.

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.

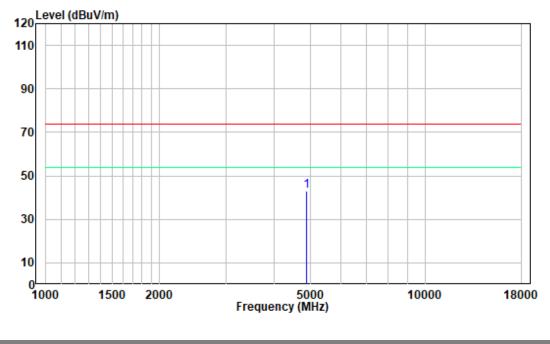
1 GHz - 18 GHz: (Pre-Scan plots)

Worst case for 8DPSK, Middle Channel:

Horizontal





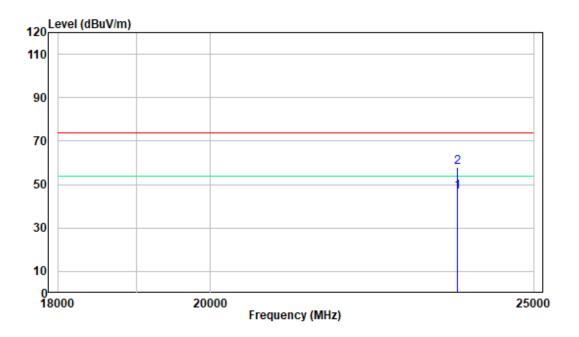


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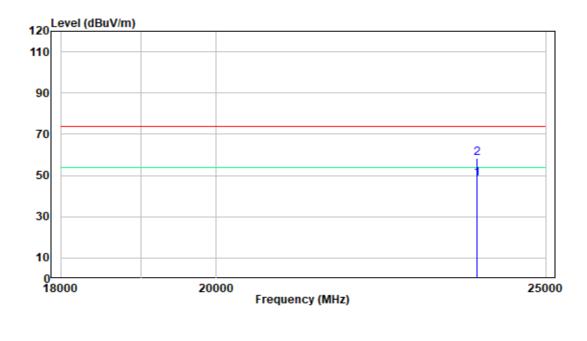
18-25GHz: (Pre-Scan plots)

Worst case for 8DPSK, Middle Channel:

Horizontal



Vertical



Version 11: 2021-11-09

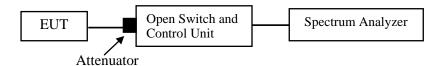
FCC §15.247(a) (1)-CHANNEL SEPARATION TEST

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 TX 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:	23-25℃
Relative Humidity:	49-51 %
ATM Pressure:	101.0-101.1kPa

The testing was performed by Glenn. Jiang from 2022-08-30 to 2022-10-22.

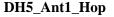
EUT operation mode: Transmitting

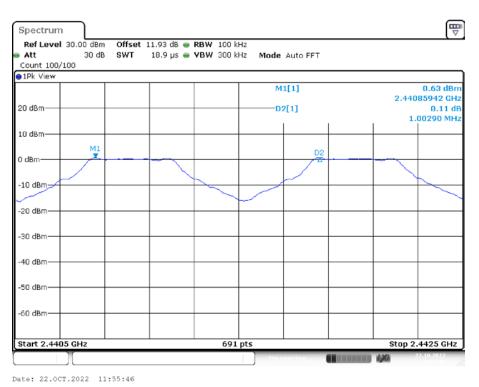
Test Result: Compliant.

Test Mode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Нор	1.003	>=0.707	PASS
2DH5	Ant1	Нор	1	>=0.888	PASS
3DH5	Ant1	Нор	1.003	>=0.868	PASS

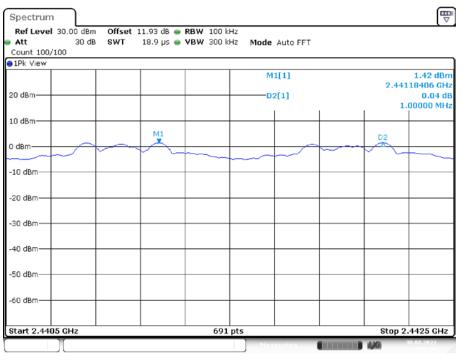
Note: The limit = (2/3) * 20dB bandwidth

Please refer to the below plots:

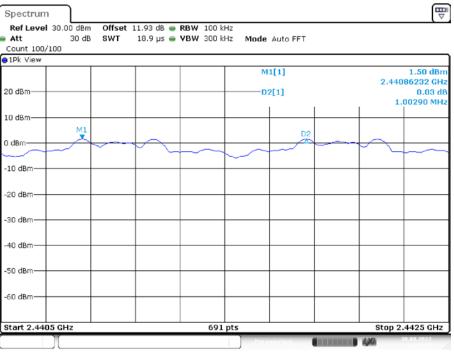




2DH5_Ant1_Hop



Date: 30.AUG.2022 14:33:08



3DH5_Ant1_Hop

Date: 30.AUG.2022 14:45:50

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.

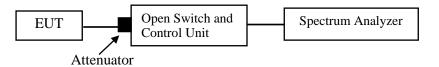
• The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.

• 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 TX 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:	23-25°C
Relative Humidity:	49-51 %
ATM Pressure:	101.0-101.1kPa

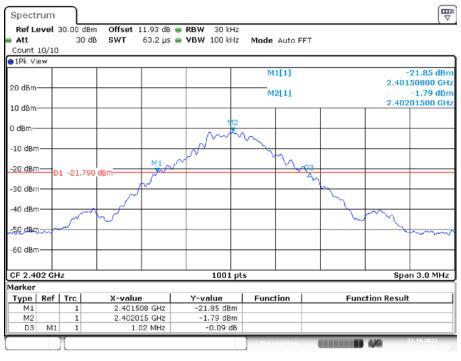
The testing was performed by Glenn.Jiang from 2022-08-30 to 2022-10-22.

EUT operation mode: Transmitting

Test Result: Compliant.

Test Mode	Antenna	Channel	20db EBW[MHz]	99% OCCUPIED BANDWIDTH[MHz]	Verdict
DH5	Ant1	2402	1.020	0.899	PASS
		2441	1.060	0.914	PASS
		2480	1.060	0.926	PASS
2DH5	Ant1	2402	1.326	1.187	PASS
		2441	1.326	1.193	PASS
		2480	1.332	1.199	PASS
3DH5	Ant1	2402	1.299	1.187	PASS
		2441	1.302	1.196	PASS
		2480	1.299	1.202	PASS

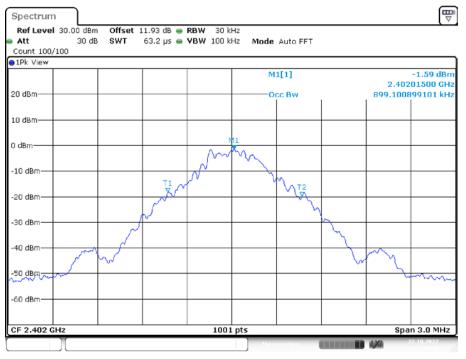
Please refer to the below plots:



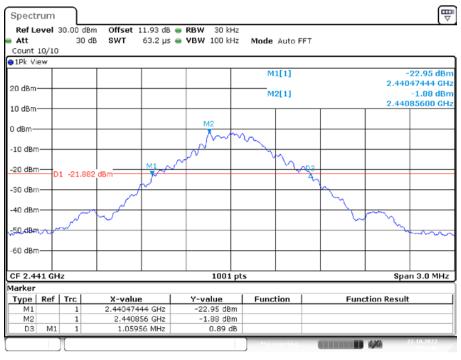
20 dB EMISSION BANDWIDTH_DH5 _Ant1_2402

Date: 22.0CT.2022 10:51:25





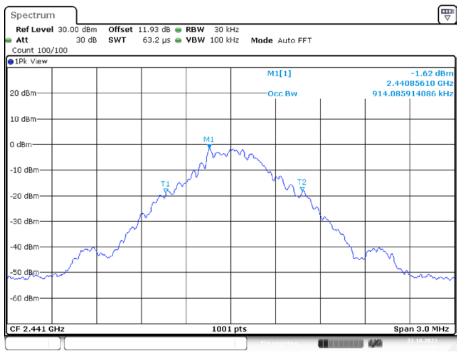
Date: 22.0CT.2022 11:51:49



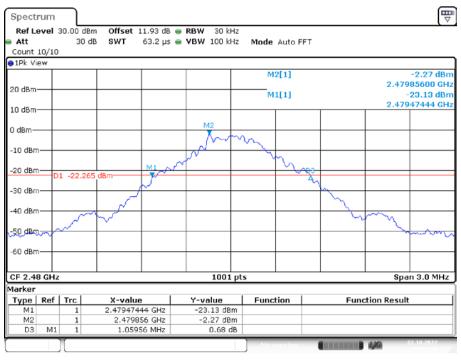
20 dB EMISSION BANDWIDTH_DH5 _Ant1_2441

Date: 22.0CT.2022 10:52:42





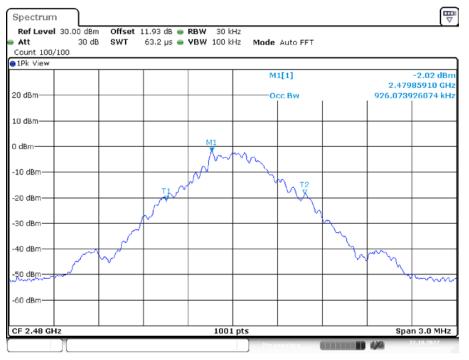
Date: 22.0CT.2022 11:52:57



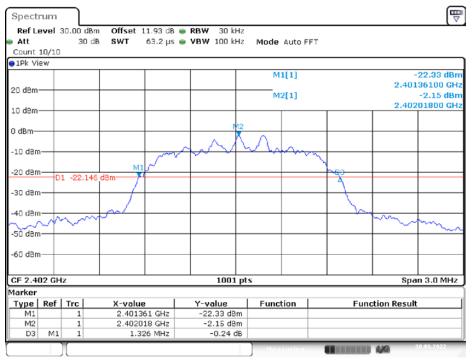
20 dB EMISSION BANDWIDTH _DH5_Ant1_2480

Date: 22.0CT.2022 10:53:26





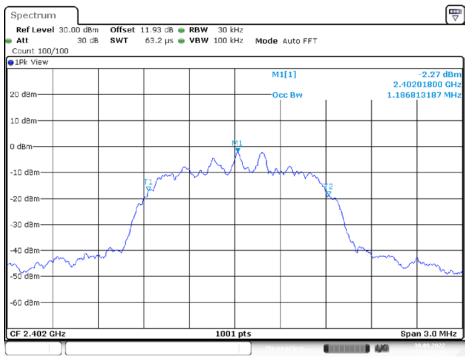
Date: 22.0CT.2022 11:54:03



20 dB EMISSION BANDWIDTH_2DH5 _Ant1_2402

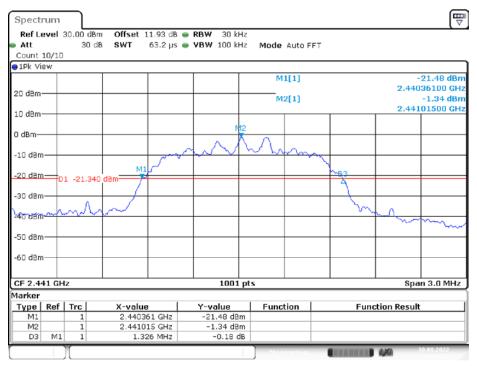
Date: 30.AUG.2022 14:22:09





Date: 30.AUG.2022 14:22:26





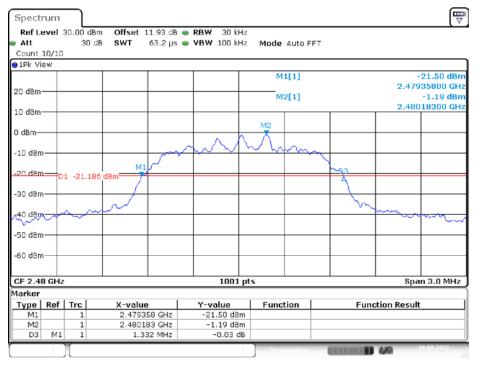
Date: 30.AUG.2022 14:23:25





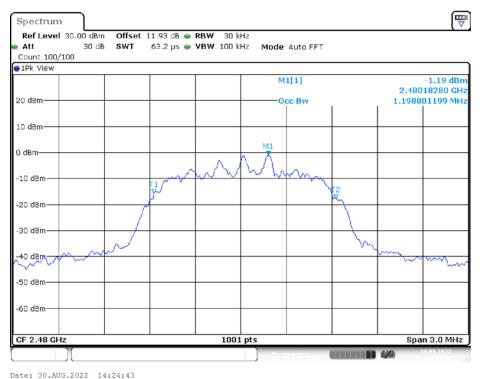
Date: 30.AUG.2022 14:23:42

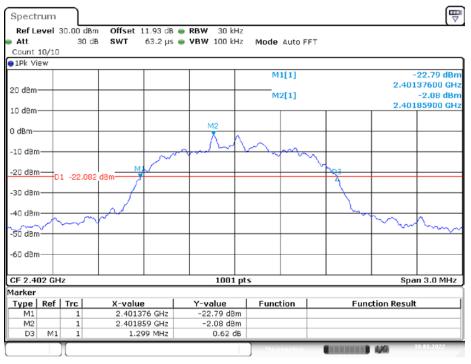
20 dB EMISSION BANDWIDTH _2DH5_Ant1_2480



Date: 30.AUG.2022 14:24:26



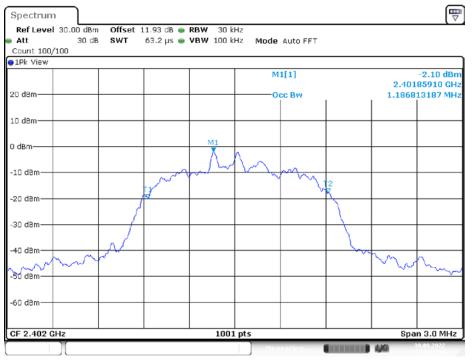




20 dB EMISSION BANDWIDTH_3DH5_Ant1_2402

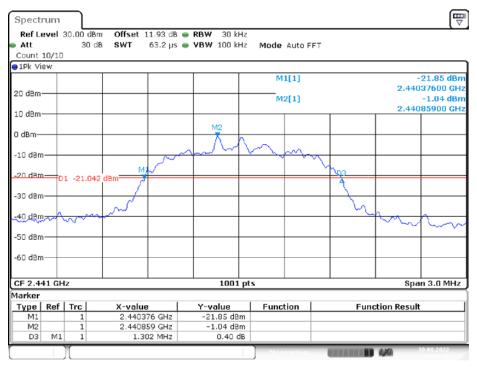
Date: 30.AUG.2022 14:25:39





Date: 30.AUG.2022 14:25:56



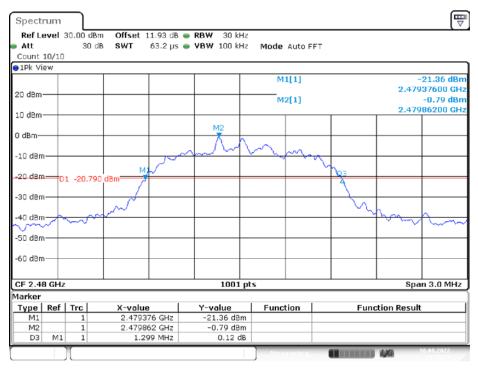


Date: 30.AUG.2022 14:26:49









Date: 30.AUG.2022 14:28:27





Version 11: 2021-11-09

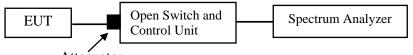
FCC §15.247(a) (1) (iii)-QUANTITY OF HOPPING CHANNEL TEST

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.



Attenuator

Test Data

Environmental Conditions

Temperature:	23-25°C		
Relative Humidity:	49-51 %		
ATM Pressure:	101.0-101.1kPa		

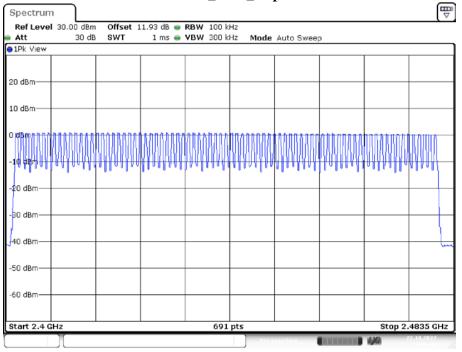
The testing was performed by Glenn. Jiang from 2022-08-30 to 2022-10-22.

EUT operation mode: Transmitting

Test Result: Compliant.

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

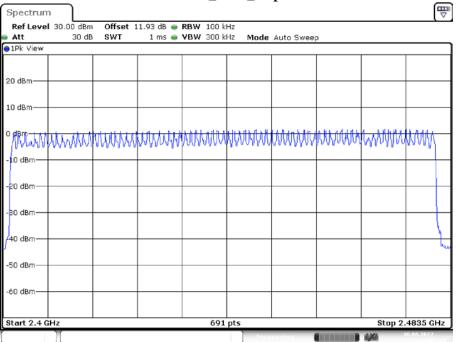
Please refer to the below plots:



DH5_Ant1_Hop

Date: 22.0CT.2022 13:06:43

2DH5_Ant1_Hop



Date: 30.AUG.2022 14:33:40

Spectrum Ref Level 30.00 dBm Offset 11.93 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Auto Sweep IPk View 20 dBm 10 dBm <th>6</th>	6
Att 30 dB SWT 1 ms VBW 300 kHz Mode Auto Sweep 1Pk View 20 dBm	
• IPk View 20 dBm 10 dBm • ####WUMUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU	<u> </u>
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10 dBm	
10 dBm - 0 dBm - 10 dBm - 20 dBm - 30 dBm	
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0 #\$P@WYDDUDUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU	
-10 dBm	
-10 dBm	
-10 dBm	1.1
-20 dBm	WYS -
-20 dBm	
30 dBm	
-B0 dBm	- 1
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40 dBm	- N
+O UBII	
-50 dBm	
-60 dBm	
Start 2.4 GHz 691 pts Stop 2.483	5 GHz
Measuring	2022

3DH5_Ant1_Hop

Date: 30.AUG.2022 14:47:04

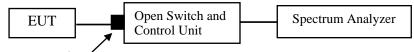
FCC §15.247(a) (1) (iii) - TIME OF OCCUPANCY (DWELL TIME)

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:	23-25°C
Relative Humidity:	49-51 %
ATM Pressure:	101.0-101.1kPa

The testing was performed by Glenn. Jiang from 2022-08-30 to 2022-10-22.

EUT operation mode: Transmitting

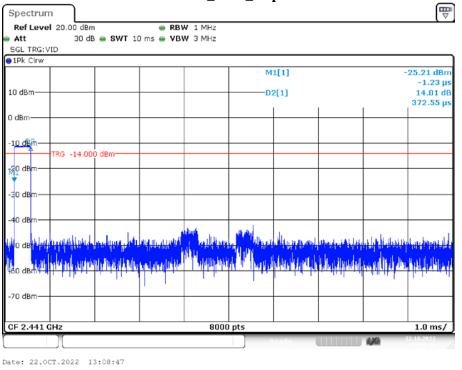
Test Result: Compliant.

Test Mode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Нор	0.37	320	0.118	<=0.4	PASS
DH3	Ant1	Нор	1.62	180	0.292	<=0.4	PASS
DH5	Ant1	Нор	2.86	120	0.343	<=0.4	PASS
2DH1	Ant1	Нор	0.39	320	0.124	<=0.4	PASS
2DH3	Ant1	Нор	1.63	180	0.294	<=0.4	PASS
2DH5	Ant1	Нор	2.87	110	0.316	<=0.4	PASS
3DH1	Ant1	Нор	0.38	330	0.126	<=0.4	PASS
3DH3	Ant1	Нор	1.63	160	0.26	<=0.4	PASS
3DH5	Ant1	Нор	2.87	100	0.287	<=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

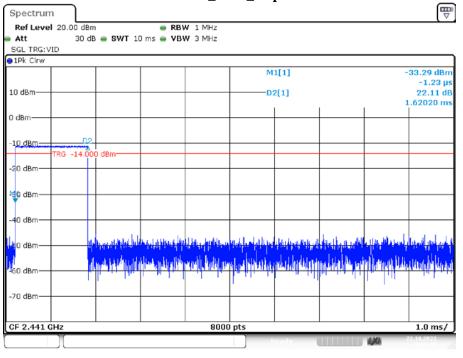
Note 3: Hoping Number in 3.16s=Total of highest signals in 3.16s (Second high signals were other channel)



DH1_Ant1_Hop

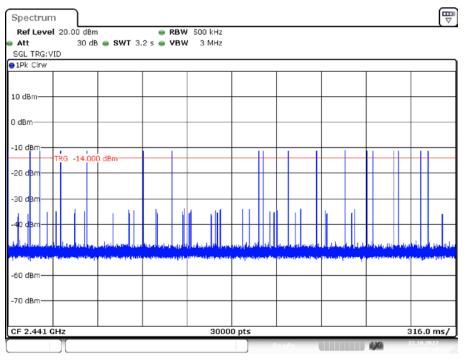
₽ Spectrum Ref Level 20.00 dBm RBW 500 kHz 30 dB 🖷 SWT 3.2 s 👄 VBW 3 MHz Att SGL TRG: VID ⊖1Pk Clrw 10 dBm-0 dBm -10 dBr RG -14.000 dBm -20 dB -30 d**e** -60 dBm -70 dBm-30000 pts 316.0 ms/ CF 2.441 GHz 110

Date: 22.0CT.2022 13:08:53

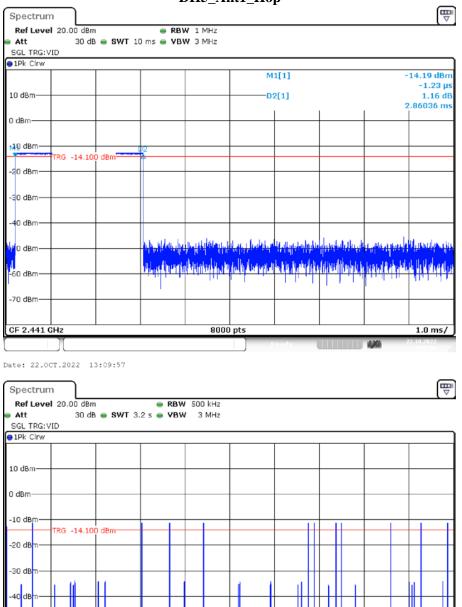


DH3_Ant1_Hop

Date: 22.0CT.2022 13:08:09



Date: 22.0CT.2022 13:08:15



DH5_Ant1_Hop

Date: 22.0CT.2022 13:10:03

-60 dBm-

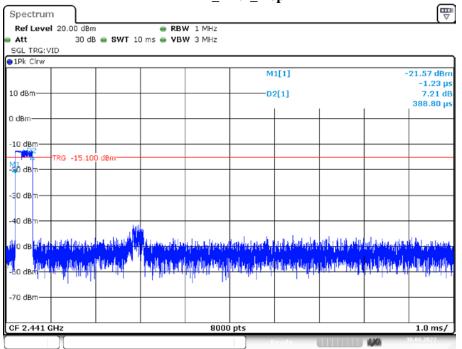
CF 2.441 GHz

Version 11: 2021-11-09

30000 pts

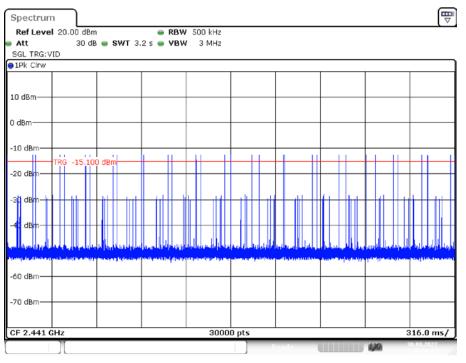
316.0 ms/

110



2DH1_Ant1_Hop

Date: 30.AUG.2022 19:50:18

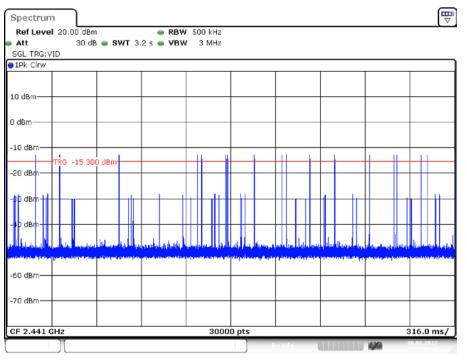


Date: 30.AUG.2022 19:50:23

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0 dBm								
Ť								
40 dBm								
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2DH3_Ant1_Hop

Date: 30.AUG.2022 19:49:36

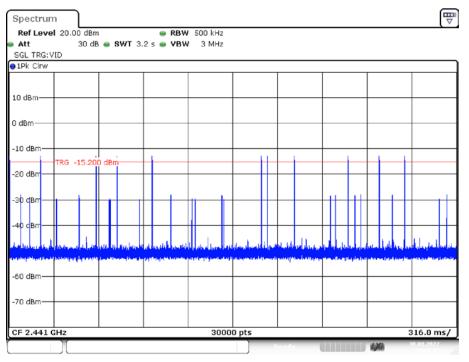


Date: 30.AUG.2022 19:49:41

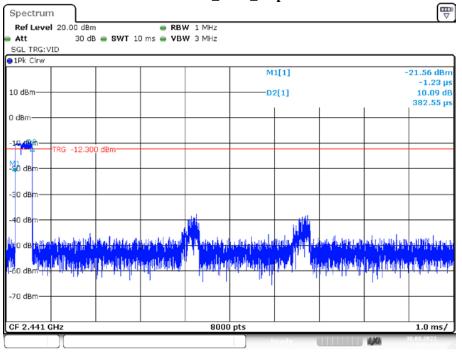
1 1		M1[1]		-25.22 dBm
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LO dBm		D2[1]		10.72 dE
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70 dBm		- I I I I I I I I I I I I I I I I I I I		

2DH5_Ant1_Hop

Date: 30.AUG.2022 19:49:02

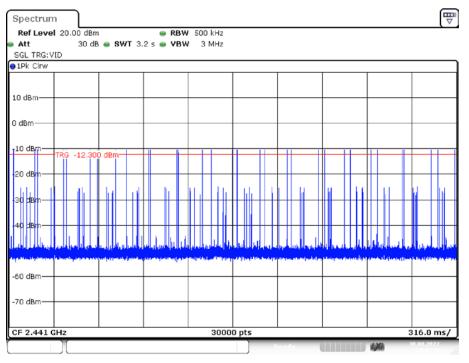


Date: 30.AUG.2022 19:49:08

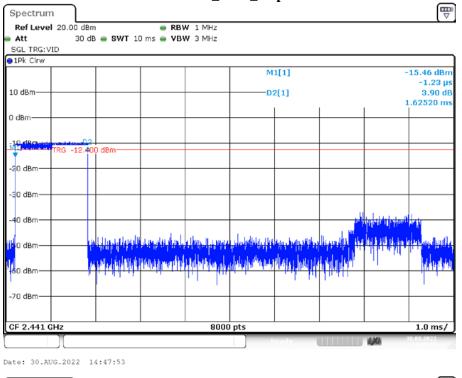


3DH1_Ant1_Hop

Date: 30.AUG.2022 14:48:24



Date: 30.AUG.2022 14:48:30



3DH3_Ant1_Hop

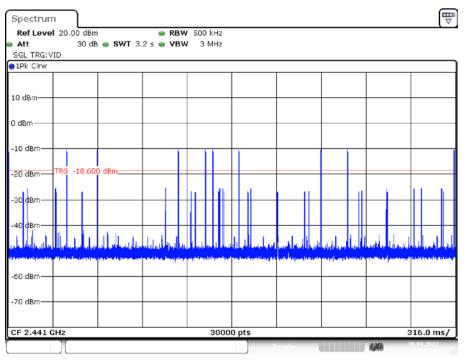
₽ Spectrum Ref Level 20.00 dBm 👄 RBW 500 kHz 30 dB 🖷 SWT 3.2 s 👄 VBW 3 MHz Att SGL TRG: VID ⊖1Pk Clrw 10 dBm-0 dBm -10 dBr -12.400 dBm -20 dB dB dB -60 dBm -70 dBm-30000 pts 316.0 ms/ CF 2.441 GHz LX0

Date: 30.AUG.2022 14:47:58

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3DH5_Ant1_Hop

Date: 30.AUG.2022 14:47:19



Date: 30.AUG.2022 14:47:24

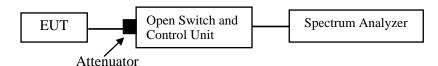
FCC §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT

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 TX mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to one test equipment.
- 3. Add a correction factor to the display.



Test Data

Environmental Conditions

Temperature:	23-25°C
Relative Humidity:	49-51 %
ATM Pressure:	101.0-101.1kPa

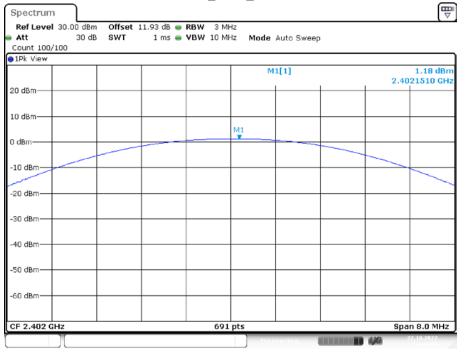
The testing was performed by Glenn. Jiang from 2022-08-30 to 2022-10-22.

EUT operation mode: Transmitting

Test Result: Compliant.

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict	
		2402	1.18	<=20.97	PASS	
DH5	Ant1	2441	1.1	<=20.97	PASS	
			2480	0.61	<=20.97	PASS
		2402	1.8	<=20.97	PASS	
2DH5	Ant1	2441	2.54	<=20.97	PASS	
		2480	2.64	<=20.97	PASS	
		2402	1.89	<=20.97	PASS	
3DH5	Ant1	2441	2.78	<=20.97	PASS	
		2480	2.85	<=20.97	PASS	

Please refer to the below plots:



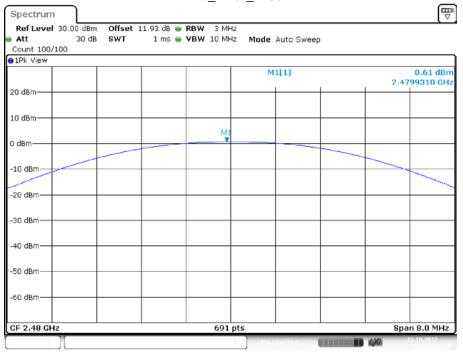
DH5_Ant1_2402

Date: 22.0CT.2022 11:49:03

DH5_Ant1_2441



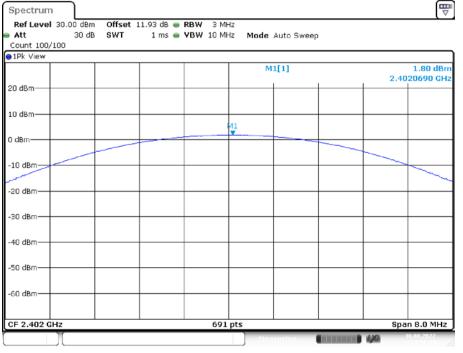
Date: 22.0CT.2022 11:49:30



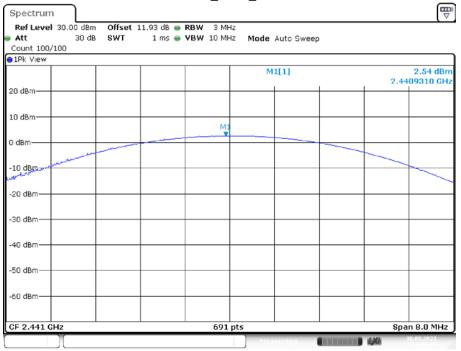
DH5_Ant1_2480

Date: 22.0CT.2022 11:49:53

2DH5_Ant1_2402



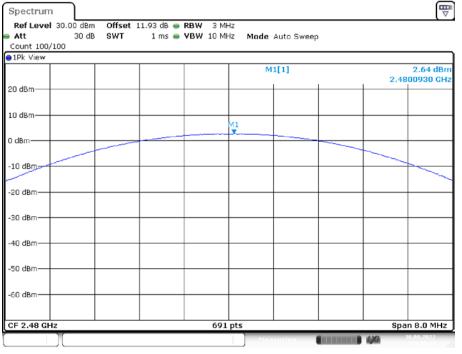
Date: 30.AUG.2022 14:18:34



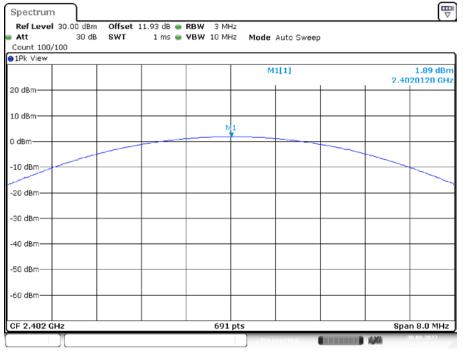
2DH5_Ant1_2441

Date: 30.AUG.2022 14:19:05

2DH5_Ant1_2480



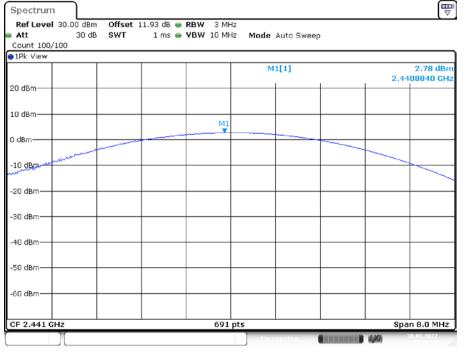
Date: 30.AUG.2022 14:19:29



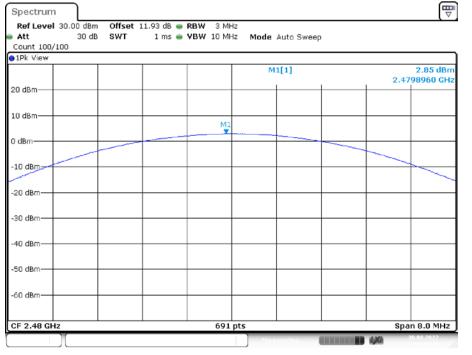
3DH5_Ant1_2402

Date: 30.AUG.2022 14:20:04

3DH5_Ant1_2441



Date: 30.AUG.2022 14:20:27



3DH5_Ant1_2480

Date: 30.AUG.2022 14:20:45

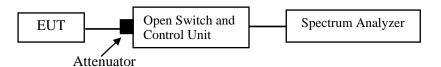
FCC §15.247(d) - BAND EDGES TESTING

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 TX 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:	23-25°C
Relative Humidity:	49-51 %
ATM Pressure:	101.0-101.1kPa

The testing was performed by Glenn. Jiang from 2022-08-30 to 2022-10-22.

EUT operation mode: Transmitting

Test Result: Compliant

Please refer to the below plots:

DH5: Band Edge-Left Side Hopping

Att 30 dB SWT 246.5 µs VBW 300 kHz Mode Auto FFT Count 300/300 10 11 0.52 dB 11 2.404010 G 2.404010 G 2.404010 G 2.404010 G 2.404010 G 2.404000 G 11 140.93 dB 11 140.93 dB 11 140.93 dB 11 <td< th=""><th></th><th>20.00 dB</th><th>m Offset 11 91 dB</th><th>- RBW 100 kHz</th><th></th><th></th><th></th></td<>		20.00 dB	m Offset 11 91 dB	- RBW 100 kHz			
Count 300/300 M1[1] 0.52 de 2.404010 G 10 dBm M2[1] -48.93 de 2.400000 G 10 dBm M2[1] -48.93 de 2.400000 G 10 dBm 1 2.40000 G 10 dBm 2.40000 G 2.40000 G 10 dBm 2.40000 G 2.40000 G 10 dBm 1 1.40 dBm 2.40000 G 20 dBm 1 1 2.40000 G 30 dBm 1 1 2.4000 G 40 dBm 1 2.400 M 1 60 dBm 691 pts Stop 2.405 GH Stop 2.405 GH Function Result M1 1 2.40401 GHz 0.52 dBm M1 1 2.40401 GHz 0.52 dBm					Mode Auto F	FT	
M1[1] 0.52 de 10 dBm 2.404010 G 0 dBm M2[1] 0 dBm 2.400000 G 10 dBm 2.400000 G 10 dBm 2.400000 G 10 dBm 2.400000 G 10 dBm 10 dBm 20 dBm 2.400000 G 10 dBm 10 dBm 20 dBm 10 dBm 30 dBm 10 dBm 30 dBm 10 dBm 30 dBm 10 dBm 30 dBm 10 dBm 30 dBm 10 dBm 30 dBm 10 dBm 30 dBm 10 dBm 30 dBm 10 dBm 10 dBm 10 dBm <th></th> <th></th> <th>10 011 210.0 ps</th> <th>- 1 D H 566 KH2</th> <th>MODE ACTOR</th> <th></th> <th></th>			10 011 210.0 ps	- 1 D H 566 KH2	MODE ACTOR		
10 dBm 2.404010 G 0 dBm M2[1] 0 dBm 2.400000 G 10 dBm 2.400000 G 10 dBm 2.400000 G 10 dBm 2.400000 G 10 dBm 1.00 dBm 20 dBm 01 -19.480 dBm 30 dBm 1.00 dBm 40 dBm 1.0.52 dBm 41 dBm 1.00 dBm							
10 dBm M2[1] -48.93 dE 0 dBm 2.400000 G 2.400000 G 10 dBm 2.40000 G 2.40000 G 20 dBm 0 dBm 0 dBm 20 dBm 0 dBm 0 dBm 30 dBm 0 dBm 0 dBm 30 dBm 0 dBm 0 dBm 30 dBm 0 dBm 0 dBm 40 dBm 0 dBm 0 dBm 30 dBm 0 dBm 0 dBm 40 dBm 0 dBm 0 dBm 60 dBm 0 dBm 0 dBm 70 dBm 0 dBm 0 dBm 70 dBm 0 dBm 0 dBm Stop 2.405 GH Exerct X-value You Provide Function Function Result M1 1 0.52 dBm M2 1 0.40401 GHz 0.52 dBm 0 dBm					M1[1]		0.52 dBn
M2[1] -48.93 dB 10 dBm 2.400000 G 10 dBm 2.400000 G 20 dBm 01 -19.480 dBm 20 dBm 01 -19.480 dBm 30 dBm 01 -19.480 dBm 40 dBm 01 -19.480 dBm 30 dBm 01 -19.480 dBm 30 dBm 01 -19.480 dBm 30 dBm 01 -19.480 dBm 40 dBm 01 -19.480 dBm 30 dBm 01 -19.480 dBm 40 dBm 01 -19.480 dBm 30 dBm 01 -19.480 dBm 40 dBm 01 -19.480 dBm 30 dBm 01 -19.480 dBm 40 dBm 01 -19.480 dBm 90 dBm 01 -19.480 dBm 60 dBm 01 -19.480 dBm 70 dBm 01 -19.480 dBm 8tart 2.3 GHz 691 pts Stop 2.405 GH Iarker Type Ref Trc X-value Y - value Y -value M1 1 2.4 GHz -48.93 dBm							2.404010 GH
10 dBm 10 dBm 10 dBm 10 dBm 20 dBm 01 -19.480 dBm 10 dBm 30 dBm 10 dBm 10 dBm 40 dBm 10 dBm 10 dBm 50 dBm 10 dBm 10 dBm 60 dBm 10 dBm 10 dBm 60 dBm 10 dBm 10 dBm 70 dBm 10 dBm 10 dBm 70 dBm 10 dBm 10 dBm 11 2.40401 GHz 0.52 dBm M2 1 2.4 GHz -48.93 dBm					M2[1]		-48.93 dB _f
20 dBm 30 dBm 40 dBm 40 dBm 50 dBm 40 dBm 50 dBm 40 dBm) dBm —					1	2.400000 GH
20 dBm 30 dBm 40 dBm 40 dBm 50 dBm 40 dBm 50 dBm 40 dBm							1 I M
30 dBm 40 dBm 50 dBm 50 dBm 50 dBm 50 dBm 50 dBm 50 dBm 70 dB	10 dBm-						
30 dBm 40 dBm 40 dBm 50 dBm 50 dBm 50 dBm 70 dBm 70 dBm 70 dBm 70 dBm 1 2.40401 GHz 1 2.4 GHz 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		01 -19.48	0 dBm				· · · · ·
40 dBm 40 dBm							
Stratt Control M3	30 dBm —						
String of dBm M3							
영상 (BB)	40 dBm-+			1	1 ⁴⁴		M3 M2
60 dBm 70 dBm 70 dBm start 2.3 GHz 691 pts Stop 2.405 GH arker Type Ref Trc X-value Y-value Function Function Result M1 1 2.40401 GHz 0.52 dBm M2 1 2.4 GHz -48.93 dBm	a for the state	Anna me	and more more the	In municipation while	Mulanter	muhannahaman	almente Mary dea water
To dBm Figure 1 G91 pts Stop 2.405 GH arker 691 pts Stop 2.405 GH Type Ref Trc X-value Y-value Function Function Result M1 1 2.40401 GHz 0.52 dBm Mitian State State M2 1 2.4 GHz -48.93 dBm State State					· ·		
Start 2.3 GHz 691 pts Stop 2.405 GH arker	60 dBm —						
Start 2.3 GHz 691 pts Stop 2.405 GH larker Type Ref Trc X-value Y-value Function Function Result M1 1 2.40401 GHz 0.52 dBm Mition Function Result M2 1 2.4 GHz -48.93 dBm Function Function Result							
Marker Y-value Function Function Result M1 1 2.40401 GHz 0.52 dBm 0.52 dBm M2 1 2.4 GHz -48.93 dBm 0.52 dBm	70 dBm-+						
Marker Y-value Function Function Result M1 1 2.40401 GHz 0.52 dBm 0.52 dBm M2 1 2.4 GHz -48.93 dBm 0.52 dBm							
Number Name Ref Trc X-value Function Function Result M1 1 2.40401 GHz 0.52 dBm 0.52 dBm 0.52 dBm M2 1 2.4 GHz -48.93 dBm 0.52 dBm 0.52 dBm		Hz		691 pts	<u>،</u>		Stop 2.405 GHz
M1 1 2.40401 GHz 0.52 dBm M2 1 2.4 GHz -48.93 dBm							
M2 1 2.4 GHz -48.93 dBm	larker				Function	Fur	nction Result
	larker Type Ref			0.52 dBm			
M3 1 1 2 39 GH2 -49 21 dBm	arker Type Ref M1	1		40.00 d0			
M4 1 2.355543 GHz -45.49 dBm	larker Type Ref M1	1		-48.93 dBm -49.20 dBm			

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Single

Spectrum						T T
Ref Level			🖷 RBW 100 kHz			
Att	30 d	#B SWT 246.5 μs	👄 VBW 300 kHz	Mode Auto F	FT	
Count 300/3	00					
1Pk View						
				M1[1]		0.83 dBr
10 dBm						2.401880 GH
				M2[1]		-47.94 ៨គ្នា
) dBm						2.400000 QH
-10 dBm						
	1 -19.17					
20 dBm D	1 -19.17	U UBIN				
30 dBm						
-40 dBm						014
			11 4.1.			M3 M3M2
\$6rdBmA4	Mynels	where the second se	mound	ه و المحلم ا	and the startes of the second s	man anna an
60 dBm						
70 dBm						
-/U dBm						
Start 2.3 GH	z		691 pts	;		Stop 2.405 GHz
larker						
Type Ref		X-value	Y-value	Function	Fur	nction Result
M1	1	2.40188 GHz	0.83 dBm			
M2	1	2.4 GHz	-47.94 dBm			
M3	1	2.39 GHz 2.397696 GHz	-49.24 dBm -46.03 dBm			
M4		Z. SY/DYD GHZ I	-40.03 UBM			

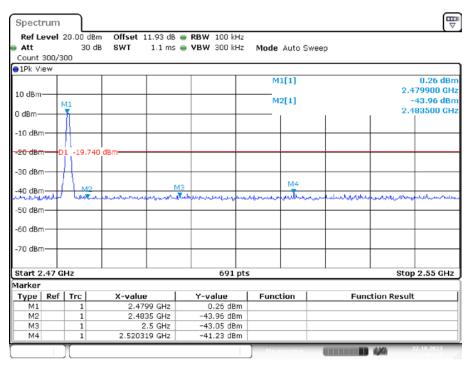
Date: 22.0CT.2022 11:52:04

DH5: Band Edge- Right Side Hopping

Spectrum									₩
Ref Level : Att Count 300/3	30			RBW 100 kHz VBW 300 kHz	Mode Auto	Sweep			
∋1Pk View									
					M1[1]				3 dBn
10 dBm					M2[1]			2.47990 -43.2	
	11				m2[1]			2.48350	
9 dBro 10 dBro 10 dBro	\mathbb{A}								
	1 -20.2	30 dBm							
30 dBm	M2	,	ма				M4		
40 dBm	Land		round	_	and when we	havenut	mburn	you wanter	when
60 dBm —									
70 dBm									
Start 2.47 G	Hz			691 pt	5			Stop 2.53	i GHz
larker									
	Trc	X-value		Y-value	Function		Functio	on Result	
M1	1	2.4799		-0.23 dBm					
M2 M3	1	2.4835	GHz GHz	-43.26 dBm -42.52 dBm					
M3 M4	1	2.530754		-42.52 dBm -41.98 dBm					
)[Measurin			22.10.2	122

Date: 22.0CT.2022 13:09:21

Single



Date: 22.0CT.2022 11:54:18

Version 11: 2021-11-09

2DH5: Band Edge-Left Side Hopping

Ref Li	evel	20.00 dB	m Offset 11.91 dB	RBW 100 kHz			
Att		30 d		VBW 300 kHz	Mode Auto I	FFT	
Count	300/3	00					
1Pk Vi	<u> </u>						
					M1[1]		-0.38 dBr
.0 dBm							2.401880 GH
U aBm					M2[1]		-47.90 dBr
dBm-							2.400000 GH
ubin-							
10 dBm	n——						
20 dBrr		1 -20.38	0 dBm				
30 dBrr	+-י						
40 dBm	.						
			The second secon				M3 M3
50 dBrr	Julas	major	mary mound through the same	& Manyadam	un marting men	munio	mululinengent
50 dBm	∩—+-						
70 dBm	∩—+						
tart 2	.3 GF	z		691 pts	;		Stop 2.405 GHz
arker							
Type	Ref	Trc	X-value	Y-value	Function	Fu	nction Result
M1		1	2.40188 GHz	-0.38 dBm			
		1	2.4 GHz	-47.90 dBm			
M2		1	2.39 GHz	-47.53 dBm			
M2 M3 M4		1	2.333783 GHz	-44.54 dBm			

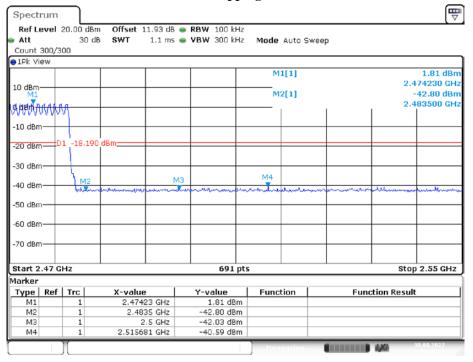
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Single

Spect										7
	evel :	20.00 de			RBW 100 kHz					
Att		30 (dB SWT	246.5 µs	VBW 300 kHz	Mode Aut	to FFT			
Count :		00								
1Pk Vi	ew .									
						M1[1]	1			0.18 dBr
LO dBm-	_									401880 GH
						M2[1]	1			-49.74 dBi
) dBm—			_	+	+			1	1 2.4	100000 OH
										1 1
-10 dBm	-									
20 dBm		1 -19.82	00 d0 m							
20 0011	70	1 -19.62								
30 dBm										
										1 11
-40 dBm	-		_		714					+ + +
e e de c			المراجع ال	Land L	manupertor			and have	M3	M2
St dan	-	er Brayer Sil		Carlone are	A Contraction	entrations a figure		Provinsion of the second		CONTRACTOR OF
60 dBm										
OU UBII										
70 dBm										
Start 2	2 CH	7							Ston	2.405 GHz
larker	.5 611	2			091 pc	3			Stop	2.405 0112
Type	Ref	Tro	X-valu	• I	Y-value	Function		Eup	ction Resul	•
M1	Rei	1		88 GHz	0.18 dBm	Function	-	Full	cion resul	
M2		1		2.4 GHz	-49.74 dBm					
M3		1		39 GHz	-48.88 dBm					
M4		1	2.3429	13 GHz	-46.08 dBm					
	_					-	_			

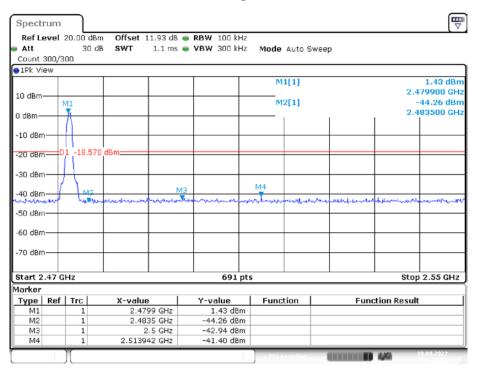
Date: 30.AUG.2022 14:22:42

2DH5: Band Edge- Right Side Hopping



Date: 30.AUG.2022 14:40:35

Single



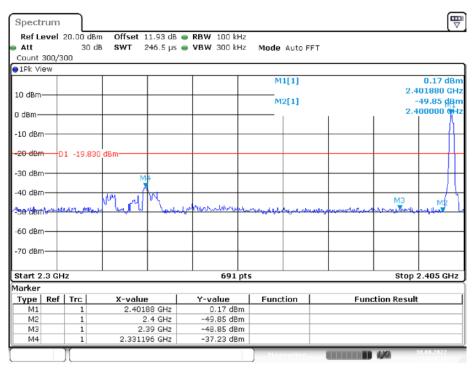
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3DH5: Band Edge-Left Side Hopping

Definere	20.00 dBn	Offerst 11 01 d	B 👄 RBW 100 kHz			V
Att	1 20.00 asr 30 di			Mada Autor		
Count 300,		5 5WI 240.5 µ	s 👄 VBW 300 kHz	MODE AUTO I		
1Pk View	300					
JIFK VIEW				M1[1]		0.75 dBn
				WILI		2.403860 GH
10 dBm				M2[1]		-47.71 dBg
				m2[1]		2.400000 GH
0 dBm——					1	
-10 dBm						
-10 aBm						
20 d8m-	D1 -19.250	dBm				
20 000						
-30 dBm						
			M4			
-40 dBm—			7			M3 M2
al my hard a	marken	hapelonenpero	Momentermenter	in march and	nen manya	
-50 dBm						
-60 dBm						
-00 ubiii						
-70 dBm						
Dt				-		Stop 2.405 GHz
Start 2.3 0	HZ		691 pt	5		Stup 2.405 GH2
1arker	e I I		1			
	f Trc	X-value	Y-value	Function	Fun	ction Result
M1 M2	1	2.40386 GHz 2.4 GHz	0.75 dBm -47.71 dBm			
M2 M3	1	2.4 GHZ 2.39 GHz	-47.37 dBm			
M4	1	2.338957 GHz				
		2.000001 0/12		1	1	

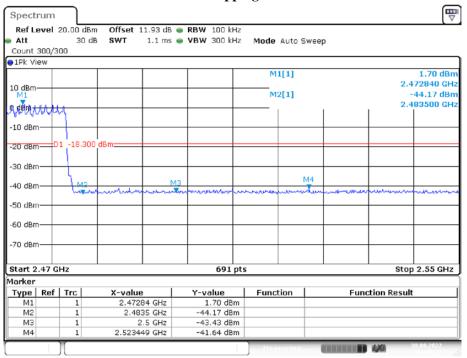
Date: 30.AUG.2022 14:43:12

Single



Date: 30.AUG.2022 14:26:11

3DH5: Band Edge- Right Side Hopping



Date: 30.AUG.2022 14:49:22

Single

₽ Spectrum Ref Level 20.00 dBm Offset 11.93 dB 👄 RBW 100 kHz 30 dB SWT 1.1 ms 👄 VBW 300 kHz Mode Auto Sweep Att Count 300/300 ●1Pk View M1[1] 1.22 dBn 2.479900 GHz 10 dBm M2[1] -44.30 dBn М1 2.483500 GHz 0 dBm -10 dBm -18.780 -20 dBm dBr -30 dBm M4 M3 -40 dBm diama. har Juli s Muniter -50 dBm -60 dBm -70 dBm-Start 2.47 GHz 691 pts Stop 2.55 GHz Marker Type Ref Trc X-value Y-value Function Function Result 2.4799 GHz M1 1 1.22 dBm M2 2.4835 GHz -44.30 dBm 1 -43.23 dBm ΜЗ 2.5 GHz 1 Μ4 2.524029 GHz -41.77 dBm 1 446

Date: 30.AUG.2022 14:28:59

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

Version 11: 2021-11-09