TEST REPORT

Applicant Name:	YEALINK(XIAMEN) NETWORK TECHNOLOGY CO.,LTD.
Address:	No.666 Hu'an Rd,Huli District Xiamen City, Fujian, P.R. China
Report Number:	2401W50954E-RFA
FCC ID:	T2C-ROOMPANELE2
IC:	10741A-ROOMPANELE2

Test Standard (s)

FCC PART 15.247; RSS-GEN ISSUE 5, FEBRUARY 2021 AMENDMENT 2;
RSS-247 ISSUE 3, AUGUST 2023

Sample Description

Product Type:	Room Scheduling Panel
Model No.:	RoomPanel E2
Multiple Model(s) No.:	N/A
Trade Mark:	Yealink
Date Received:	2024/08/08
Issue Date:	2024/09/25

Test Result:	Pass▲

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

Prepared and Checked By:

Gala Liu
RF Engineer

Approved By:

Nancy Wang
RF Supervisor

Note: The information marked# is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report. Customer model name, addresses, names, trademarks etc. are included.
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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	2401W50954E-RFA	Original Report	2024/09/25

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

HVIN	RoomPanel E2
FVIN	RoomPanel E2
Product	Room Scheduling Panel
Tested Model	RoomPanel E2
Multiple Model(s)	N/A
Frequency Range	Bluetooth: 2402-2480MHz
Transmit Power	7.67dBm
Modulation Technique	Bluetooth: GFSK, π/4-DQPSK, 8DPSK
Antenna Specification#	2.52dBi (provided by the applicant)
Voltage Range	DC 12V from adapter or DC 48V from POE
Sample serial number	2POY-5 for Conducted and Radiated Emissions Test 2POY-1 for RF Conducted Test (Assigned by BACL, Shenzhen)
Sample/EUT Status	Good condition
Adapter Information	Model: YLPS121250C1-US Input: 100-240V~50/60Hz 0.5A Output: 12V, 1.25A

Objective

This test report is in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communication Commissions rules, section 15.203, 15.205, 15.207, 15.209, 15.247 rules and RSS-247 Issue 3, August 2023, RSS-GEN Issue 5, Feb. 2021Amendment 2 of the Innovation, Science and Economic Development Canada 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 and RSS-247 Issue 3, August 2023, RSS-GEN Issue 5, Feb. 2021Amendment 2 of the Innovation, Science and Economic Development Canada rules.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Each test item follows test standards and with no deviation.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		±5%
RF output power, conducted		0.72 dB(k=2, 95% level of confidence)
AC Power Lines Conducted Emissions	9kHz-150kHz	3.94dB(k=2, 95% level of confidence)
	150kHz-30MHz	3.84dB(k=2, 95% level of confidence)
Radiated Emissions	9kHz - 30MHz	3.30dB(k=2, 95% level of confidence)
	30MHz~200MHz (Horizontal)	4.48dB(k=2, 95% level of confidence)
	30MHz~200MHz (Vertical)	4.55dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Horizontal)	4.85dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Vertical)	5.05dB(k=2, 95% level of confidence)
	1GHz - 6GHz	5.35dB(k=2, 95% level of confidence)
	6GHz - 18GHz	5.44dB(k=2, 95% level of confidence)
	18GHz - 40GHz	5.16dB(k=2, 95% level of confidence)
Temperature		±1℃
Humidity		±1%
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 Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West) , 6F, 7F, the 3rd Phase of Wan Li Industrial Building D, Shihua Rd, FuTian Free Trade Zone, Shenzhen, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 715558, the FCC Designation No. : CN5045.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0023.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in an engineering mode.

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	40	2442
1	2403	41	2443
2	2404	42	2444
…	…	…	…
…	…	…	…
36	2438	75	2477
37	2439	76	2478
38	2440	77	2479
39	2441	78	2480

EUT was tested with Channel 0, 39 and 78.

EUT Exercise Software

"Authentication Tool.exe v2.0.11.0#" exercise software was used and the power level is Default#. The software and power level was provided by the applicant.

Special Accessories

No special accessory.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Unknown	Receptacle	Unknown	Unknown
DELL	Notebook	Latitude E6410	11429208685
Grandstream	Router	GWN7664	20VXSV2M7262C104
TP-LINK	POE	TL-POE2412G	T240050-2-PoE

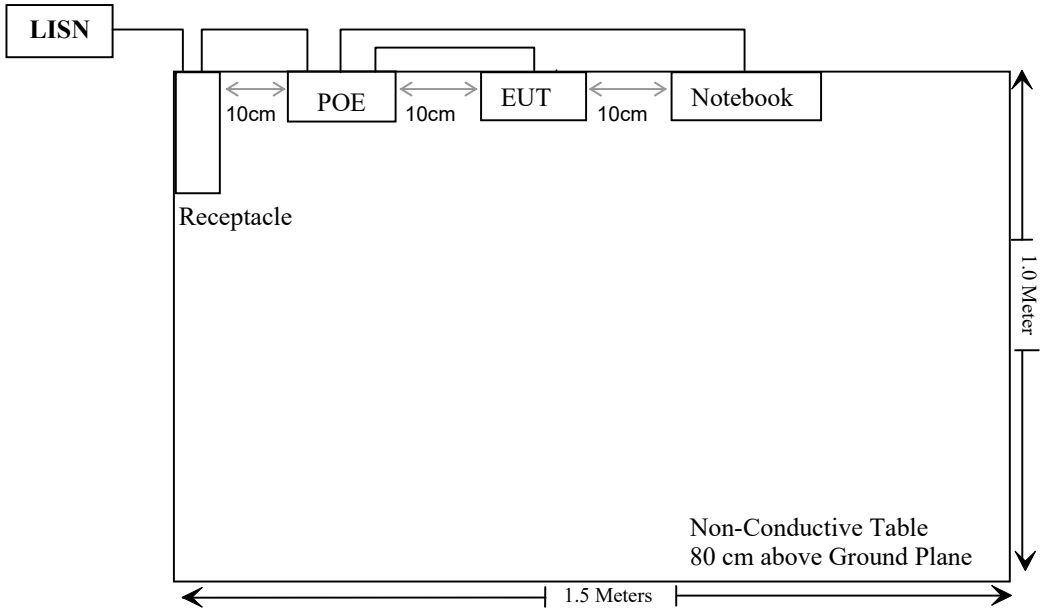
External I/O Cable

Cable Description	Length (m)	From Port	To
Un-shielding Un-Detachable AC Cable	1.5	Receptacle	LISN/AC Mains
Un-shielding Detachable AC Cable	1.0	Receptacle/AC Mains	POE
Un-shielding Detachable RJ45 Cable	1.0	POE	EUT
Un-shielding Detachable RJ45 Cable	2.0	POE	Notebook
Un-shielding Un-Detachable DC Cable	2.0	Adapter	EUT
Un-shielding Detachable RJ45 Cable	2.0	EUT	Notebook
Un-shielding Detachable RJ45 Cable	5.0	POE	EUT
Un-shielding Detachable RJ45 Cable	8.0	EUT	Router

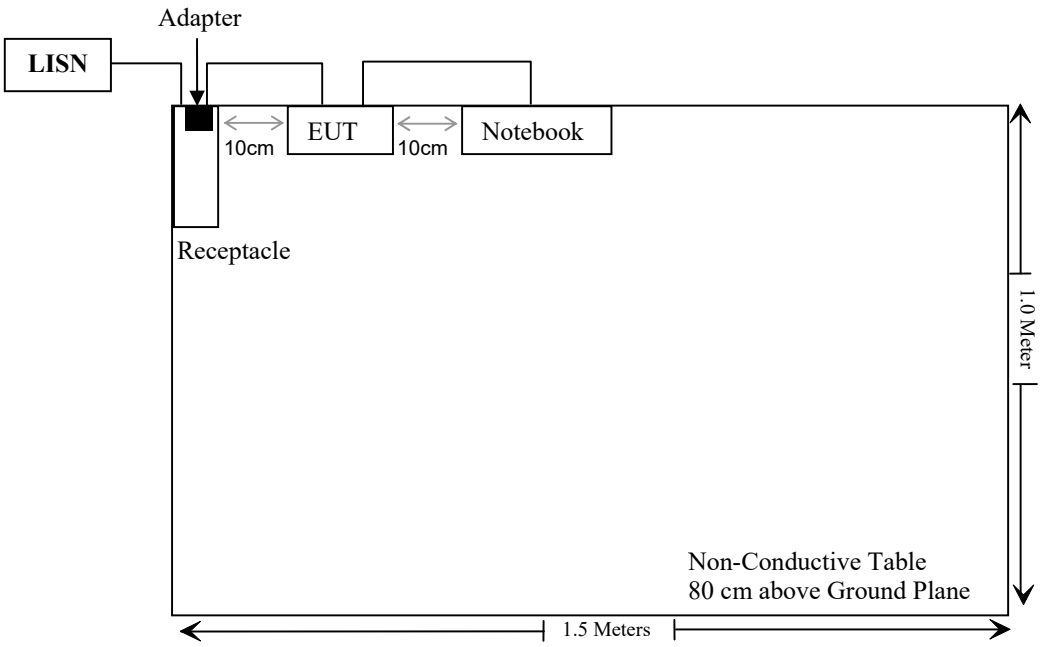
Block Diagram of Test Setup

For Conducted Emissions:

For POE

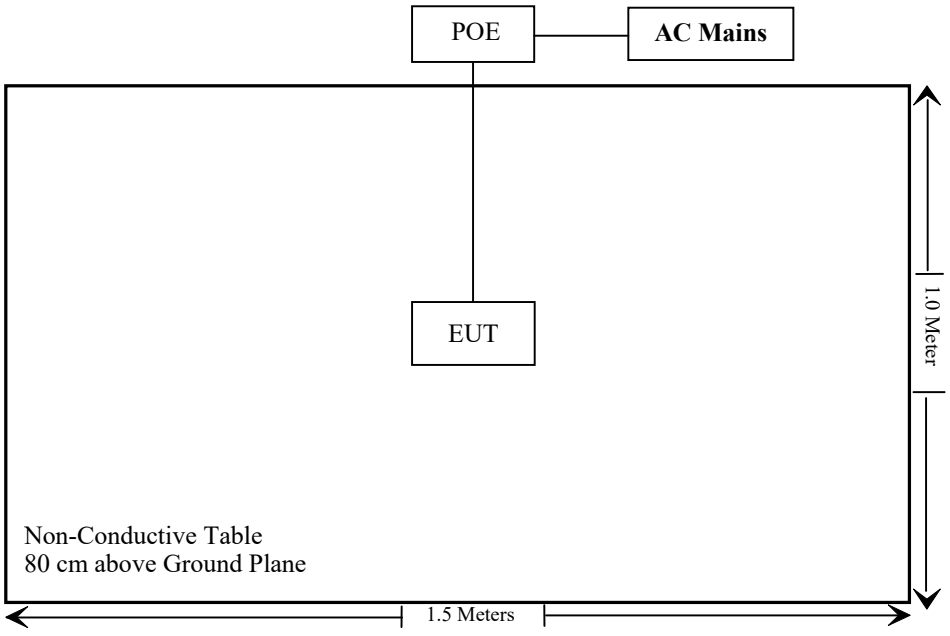


For Adapter



For Radiated Emissions below 1GHz

For POE



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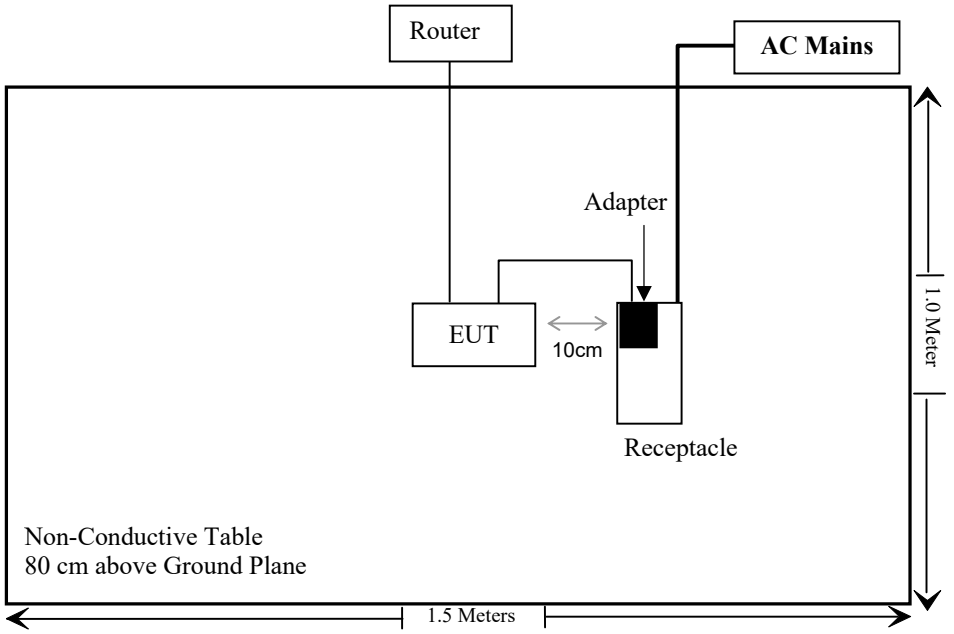
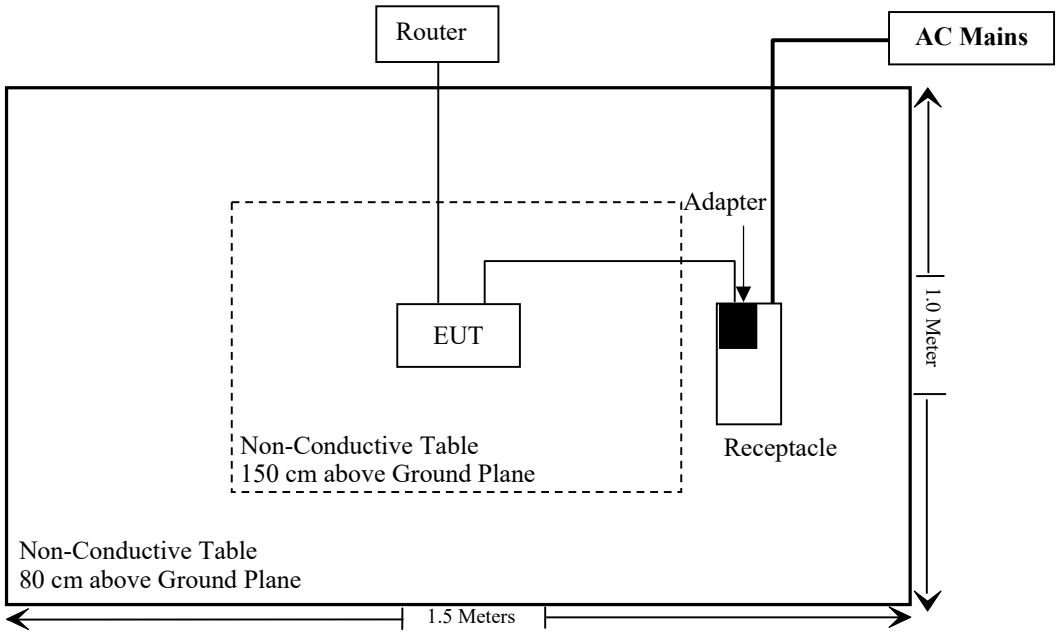


For Radiated Emissions above1GHz



SUMMARY OF TEST RESULTS

FCC Rules	RSS Rules	Description of Test	Result
§1.1307 (b) & §2.1091	/	MPE-Based Exemption	Compliant
/	RSS-102 § 2.5.2	Exemption Limits for Routine Evaluation – RF Exposure Evaluation	Compliant
FCC §15.203	RSS-Gen §6.8	Antenna Requirement	Compliant
FCC §15.207(a)	RSS-Gen §8.8	AC Line Conducted Emissions	Compliant
FCC §15.205, §15.209, §15.247(d)	RSS-247 § 5.5, RSS-GEN § 8.10	Radiated Emissions	Compliant
FCC §15.247(a)(1)	RSS-247 § 5.1(a), RSS-GEN § 6.7	20 dB Emission Bandwidth & 99% Occupied Bandwidth	Compliant
FCC §15.247(a)(1)	RSS-247 § 5.1 (b)	Channel Separation Test	Compliant
FCC §15.247(a)(1)(iii)	RSS-247 § 5.1 (d)	Time of Occupancy (Dwell Time)	Compliant
FCC §15.247(a)(1)(iii)	RSS-247 § 5.1 (d)	Quantity of hopping channel Test	Compliant
FCC §15.247(b)(1)	RSS-247 § 5.1(b) &§ 5.4(b)	Peak Output Power Measurement	Compliant
FCC §15.247(d)	RSS-247 § 5.5	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	101120	2024/01/16	2025/01/15
Rohde & Schwarz	LISN	ENV216	101613	2024/01/16	2025/01/15
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2024/05/21	2025/05/20
Unknown	CE Cable	Unknown	UF A210B-1-0720-504504	2024/05/21	2025/05/20
Audix	EMI Test software	E3	191218(V9)	NCR	NCR
Radiated Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESR3	102455	2024/01/16	2025/01/15
Sonoma instrument	Pre-amplifier	310 N	186238	2024/05/21	2025/05/20
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2023/07/20	2026/07/19
Unknown	Cable	Chamber A Cable 1	N/A	2024/06/18	2025/06/17
Unknown	Cable	XH500C	J-10M-A	2024/06/18	2025/06/17
BACL	Active Loop Antenna	1313-1A	4031911	2024/05/14	2027/05/13
Unknown	Cable	2Y194	0735	2024/05/21	2025/05/20
Unknown	Cable	PNG214	1354	2024/05/21	2025/05/20
Audix	EMI Test software	E3	19821b(V9)	NCR	NCR
Rohde & Schwarz	Spectrum Analyzer	FSV40	101605	2024/03/27	2025/03/26
COM-POWER	Pre-amplifier	PA-122	181919	2024/06/18	2025/06/17
Schwarzbeck	Horn Antenna	BBHA9120D(1201)	1143	2023/07/26	2026/07/25
Unknown	RF Cable	KMSE	735	2024/06/18	2025/06/17
Unknown	RF Cable	UFA147	219661	2024/06/18	2025/06/17
JD	Multiplex Switch Test Control Set	DT7220FSU	DQ77926	2024/06/18	2025/06/17
A.H.System	Pre-amplifier	PAM-1840VH	190	2024/06/18	2025/06/17
Electro-Mechanics Co	Horn Antenna	3116	9510-2270	2023/09/18	2026/09/17
Audix	EMI Test software	E3	191218(V9)	NCR	NCR

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Tonscend	RF control Unit	JS0806-2	19D8060154	2023/09/06	2024/09/05
Rohde & Schwarz	Spectrum Analyzer	FSV40	101473	2024/01/16	2025/01/15
MARCONI	10dB Attenuator	6534/3	2942	2024/06/27	2025/06/26

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §1.1307 (B) & §2.1091- MPE-BASED EXEMPTION

Applicable Standard

According to subpart 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

According to KDB 447498 D04 Interim General RF Exposure Guidance

MPE-Based Exemption:

General frequency and separation-distance dependent MPE-based effective radiated power (ERP) thresholds are in Table B.1 [Table 1 of § 1.1307(b)(1)(i)(C)] to support an exemption from further evaluation from 300 kHz through 100 GHz.

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	1,920 R^2.
1.34-30	3,450 R^2/f^2.
30-300	3.83 R^2.
300-1,500	0.0128 R^2f.
1,500-100,000	19.2R^2.

For multiple RF sources: Multiple RF sources are exempt if:

in the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation:

$$\sum_{i=1}^{a} \frac{P_i}{P_{th,i}} + \sum_{j=1}^{b} \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^{c} \frac{Evaluated_k}{Exposure\ Limit_k} \leq 1$$

Result

Mode	Frequency (MHz)	Tune up conducted power#	Antenna Gain#		ERP		Evaluation Distance (m)	ERP Limit (mW)
		(dBm)	(dBi)	(dBd)	(dBm)	(mW)		
BT	2402-2480	8.0	2.52	0.37	8.37	6.87	0.2	768
BLE	2402-2480	6.0	2.52	0.37	6.37	4.34	0.2	768
2.4G Wi-Fi	2412-2462	24.0	2.52	0.37	24.37	273.53	0.2	768
5.2G Wi-Fi	5180-5240	17.0	3.73	1.58	18.58	72.11	0.2	768
5.3G Wi-Fi	5260-5320	16.5	3.73	1.58	18.08	64.27	0.2	768
5.6G Wi-Fi	5500-5700	15.0	3.73	1.58	16.58	45.50	0.2	768
5.8G Wi-Fi	5745-5825	15.0	3.73	1.58	16.58	45.50	0.2	768

Note: 1. The tune up conducted power and antenna gain was declared by the applicant.
2. The BT, 2.4G Wi-Fi and 5G Wi-Fi cannot transmit at same time.
3. 0dBd=2.15dBi

NFC:

Mode	Frequency (MHz)	Maximum E-Field (dBuV/m@3m)	Maximum EIRP (dBm)	ERP		Evaluation Distance (m)	ERP Limit (mW)
				(dBm)	(mW)		
NFC	13.56	67.73	-27.47	-29.62	0.0011	0.2	751

Note: EIRP = E-Field – 95.2 @3m, ERP = EIRP-2.15

Simultaneous transmitting consideration (worst case):

The ratio= $ERP_{2.4G\ Wi\text{-}Fi}$/limit + ERP_{NFC}/limit = 273.53/768+ 0.0011/751 =0.356＜1.0

So simultaneous exposure is compliant.

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliant

RSS-102 § 2.5.2 –EXEMPTION LIMITS FOR ROUTINE EVALUATION-RF EXPOSURE EVALUATION

Applicable Standard

According to RSS-102 § (2.5.2):

2.5.2 Exemption Limits for Routine Evaluation — RF Exposure Evaluation

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz[6] and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $22.48/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2}\ f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

Result

For worst case:

Mode	Frequency (MHz)	Maximum tune-up conducted power[#] (dBm)	Antenna Gain[#] (dBi)	Maximum tune-up EIRP (dBm)	Maximum tune-up EIRP (mW)	Evaluation Distance (cm)	Limit (mW)
BT	2402-2480	8.0	2.52	10.52	11.27	20	2676
BLE	2402-2480	6.0	2.52	8.52	7.11	20	2676
2.4G Wi-Fi	2412-2462	24.0	2.52	26.52	448.75	20	2684
5.2G Wi-Fi	5180-5240	17.0	3.73	20.73	118.30	20	4525
5.3G Wi-Fi	5260-5320	16.5	3.73	20.23	105.44	20	4573
5.6G Wi-Fi	5500-5700	15.0	3.73	18.73	74.64	20	4714
5.8G Wi-Fi	5745-5825	15.0	3.73	18.73	74.64	20	4857

Note: 1. The tune up conducted power and antenna gain was declared by the applicant.
2. The BT, 2.4G Wi-Fi and 5G Wi-Fi cannot transmit at same time.

NFC:

Mode	Frequency (MHz)	Maximum E-Field (dBuV/m@3m)	Maximum EIRP		Evaluation Distance (m)	Limit (mW)
			(dBm)	(mW)		
NFC	13.56	67.73	-27.47	0.0018	0.2	1000

Note: EIRP = E-Field – 95.2 @3m

To maintain compliance with the IC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: The RF Exposure evaluation can be exempted.

FCC §15.203 & RSS-GEN §6.8 - ANTENNA REQUIREMENT

Applicable Standard

According to § 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 user of a standard antenna jack or electrical connector is prohibited.

Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be res ponsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.
b. Antenna must use a unique type of connector to attach to the EUT.
c. Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).

When measurements at the antenna port are used to determine the RF output power, the effective gain of the device’s antenna shall be stated, based on a measurement or on data from the antenna’s manufacturer.

The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.

For licence-exempt equipment with detachable antennas, the user manual shall also contain the following notice in a conspicuous location:

This radio transmitter [enter the device's ISED certification number] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device. Immediately following the above notice, the manufacturer shall provide a list of all antenna types which can be used with the transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna type.

Antenna Connector Construction

The EUT has one internal antenna arrangement which was permanently attached for Bluetooth and the maximum antenna gain# is 2.52dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Antenna Type	Antenna Gain#	Impedance	Frequency Range
FPC	2.52dBi	50Ω	2.4~2.5GHz

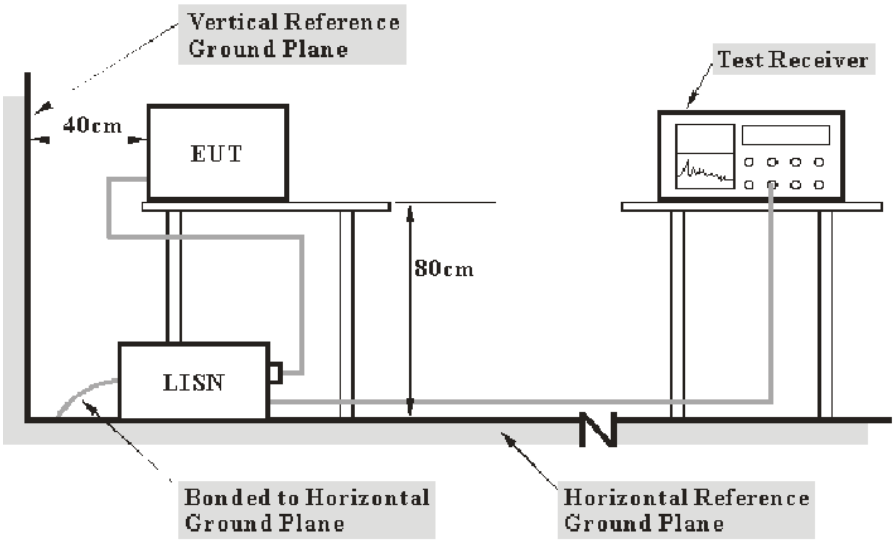
Result: Compliant

FCC §15.207 (a) & RSS-GEN § 8.8 - AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207(a), RSS-GEN § 8.8

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 & RSS-Gen.

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

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 & Over Limit 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

Note: The term "cable loss" refers to the combination of a cable and a 10dB transient limiter (attenuator).

Test Data

Environmental Conditions

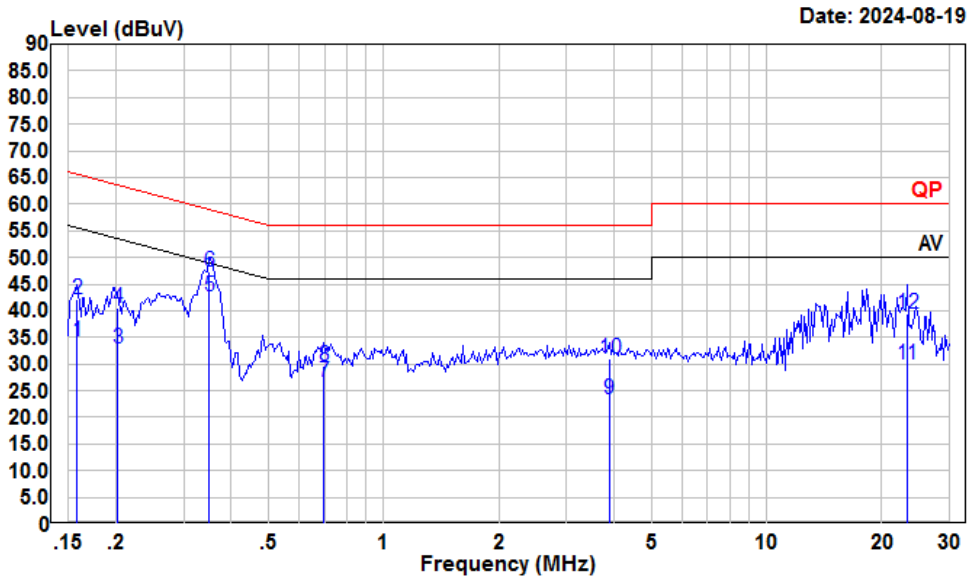
Temperature:	26 ℃
Relative Humidity:	71 %
ATM Pressure:	101 kPa

The testing was performed by Macy Shi on 2024-08-19.

EUT operation mode: Transmitting (Maximum output power mode, 8DPSK Low Channel)

For POE

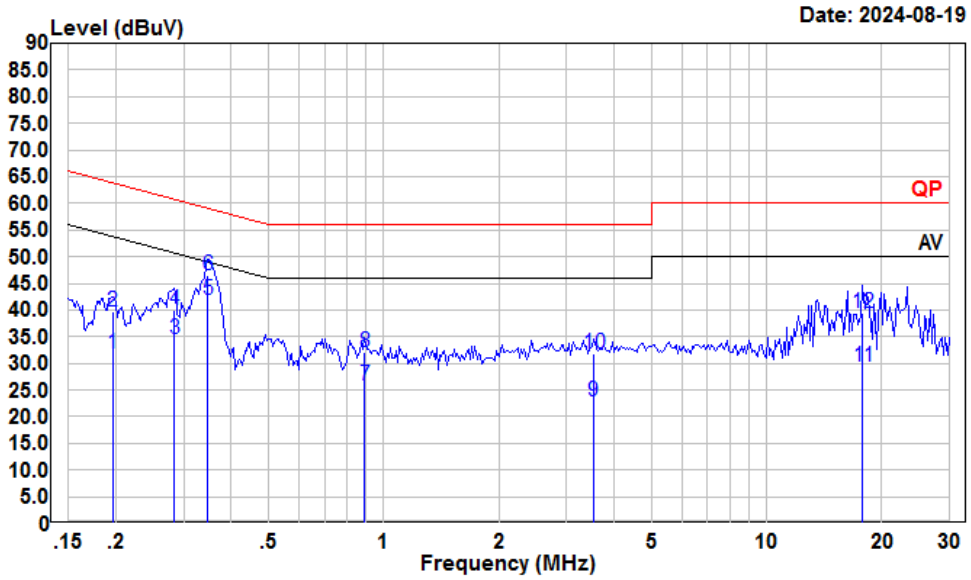
AC 120V/60 Hz, Line



Condition: Line
Project : 2401W50954E-RF
tester : Macy.shi
Note : BT

	Freq	Read Level	LISN Level	Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.158	13.19	34.19	10.88	10.12	55.56	-21.37	Average
2	0.158	21.16	42.16	10.88	10.12	65.56	-23.40	QP
3	0.202	11.93	32.82	10.80	10.09	53.54	-20.72	Average
4	0.202	19.54	40.43	10.80	10.09	63.54	-23.11	QP
5	0.350	21.85	42.59	10.62	10.12	48.96	-6.37	Average
6	0.350	26.58	47.32	10.62	10.12	58.96	-11.64	QP
7	0.697	6.03	26.68	10.50	10.15	46.00	-19.32	Average
8	0.697	9.12	29.77	10.50	10.15	56.00	-26.23	QP
9	3.881	2.98	23.50	10.31	10.21	46.00	-22.50	Average
10	3.881	10.47	30.99	10.31	10.21	56.00	-25.01	QP
11	23.263	9.04	29.97	10.75	10.18	50.00	-20.03	Average
12	23.263	18.47	39.40	10.75	10.18	60.00	-20.60	QP

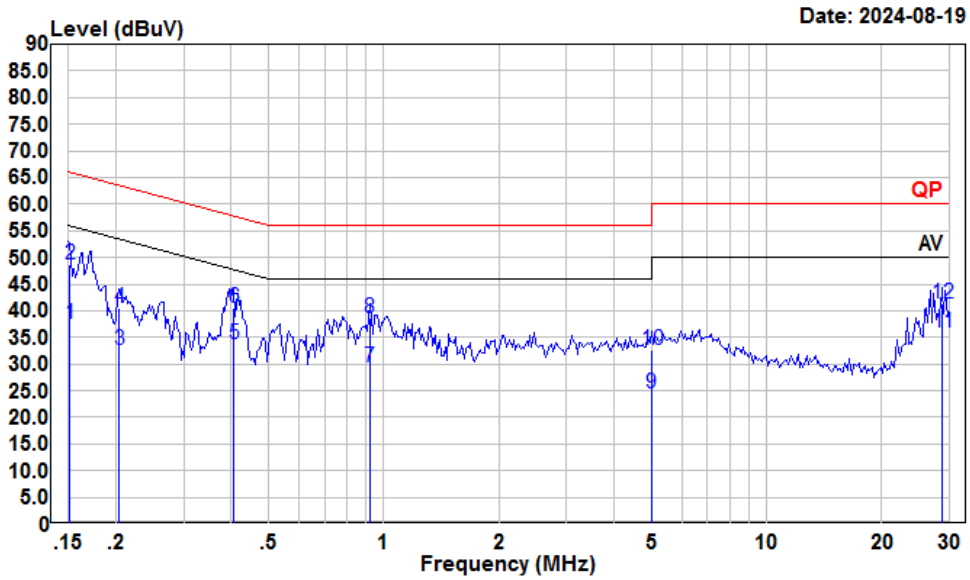
AC 120V/60 Hz, Neutral



Condition: Neutral
Project : 2401W50954E-RF
tester : Macy.shi
Note : BT

	Freq	Read Level	LISN Level	Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.195	11.28	31.79	10.42	10.09	53.80	-22.01	Average
2	0.195	19.07	39.58	10.42	10.09	63.80	-24.22	QP
3	0.283	13.86	34.47	10.51	10.10	50.72	-16.25	Average
4	0.283	19.50	40.11	10.51	10.10	60.72	-20.61	QP
5	0.346	21.26	41.96	10.58	10.12	49.05	-7.09	Average
6	0.346	25.92	46.62	10.58	10.12	59.05	-12.43	QP
7	0.890	4.86	25.79	10.83	10.10	46.00	-20.21	Average
8	0.890	11.04	31.97	10.83	10.10	56.00	-24.03	QP
9	3.528	2.17	22.77	10.40	10.20	46.00	-23.23	Average
10	3.528	11.11	31.71	10.40	10.20	56.00	-24.29	QP
11	17.849	8.55	29.48	10.74	10.19	50.00	-20.52	Average
12	17.849	18.64	39.57	10.74	10.19	60.00	-20.43	QP

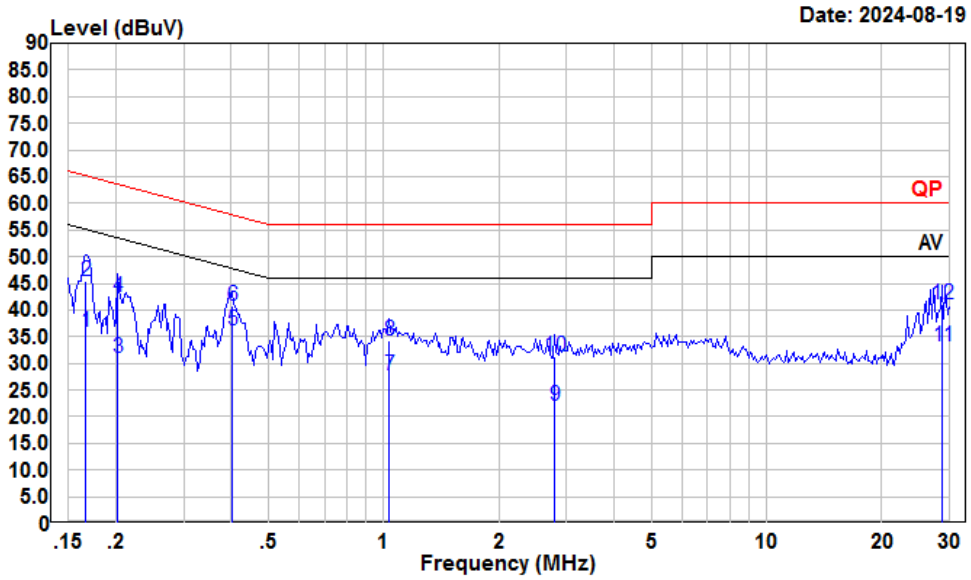
For Adapter
AC 120V/60 Hz, Line



Condition: Line
Project : 2401W50954E-RF
tester : Macy.shi
Note : BT

	Freq	Read Level	LISN Level	Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.152	16.48	37.51	10.90	10.13	55.91	-18.40	Average
2	0.152	27.77	48.80	10.90	10.13	65.91	-17.11	QP
3	0.204	11.81	32.69	10.79	10.09	53.45	-20.76	Average
4	0.204	19.69	40.57	10.79	10.09	63.45	-22.88	QP
5	0.406	13.09	33.76	10.57	10.10	47.73	-13.97	Average
6	0.406	19.90	40.57	10.57	10.10	57.73	-17.16	QP
7	0.918	8.75	29.27	10.42	10.10	46.00	-16.73	Average
8	0.918	18.17	38.69	10.42	10.10	56.00	-17.31	QP
9	5.005	3.83	24.39	10.38	10.18	50.00	-25.61	Average
10	5.005	12.01	32.57	10.38	10.18	60.00	-27.43	QP
11	28.755	15.07	35.82	10.54	10.21	50.00	-14.18	Average
12	28.755	20.56	41.31	10.54	10.21	60.00	-18.69	QP

AC 120V/60 Hz, Neutral



Condition: Neutral
Project : 2401W50954E-RF
tester : Macy.shi
Note : BT

	Freq	Read Level	LISN Level	Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.167	15.22	35.85	10.53	10.10	55.12	-19.27	Average
2	0.167	24.79	45.42	10.53	10.10	65.12	-19.70	QP
3	0.202	10.51	31.00	10.40	10.09	53.54	-22.54	Average
4	0.202	22.05	42.54	10.40	10.09	63.54	-21.00	QP
5	0.402	15.54	36.27	10.63	10.10	47.81	-11.54	Average
6	0.402	20.06	40.79	10.63	10.10	57.81	-17.02	QP
7	1.032	6.87	27.86	10.88	10.11	46.00	-18.14	Average
8	1.032	13.30	34.29	10.88	10.11	56.00	-21.71	QP
9	2.794	1.58	22.16	10.40	10.18	46.00	-23.84	Average
10	2.794	10.64	31.22	10.40	10.18	56.00	-24.78	QP
11	28.755	12.55	33.28	10.52	10.21	50.00	-16.72	Average
12	28.755	20.21	40.94	10.52	10.21	60.00	-19.06	QP

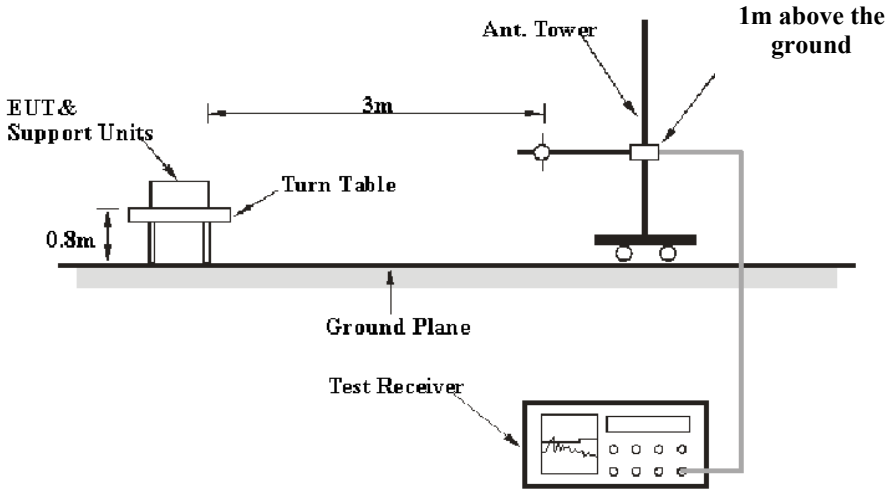
FCC §15.209, §15.205 & §15.247(D) & RSS-247§ 5.5 - SPURIOUS EMISSIONS

Applicable Standard

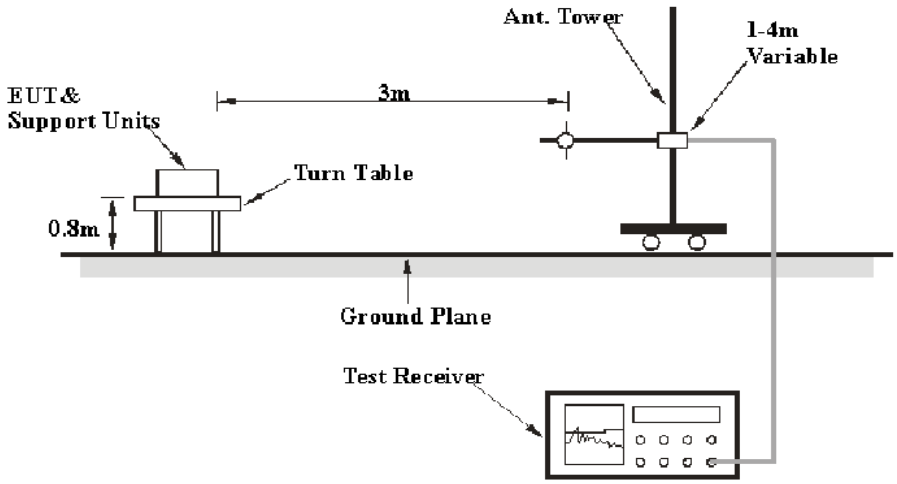
FCC §15.205; §15.209; §15.247(d); RSS-247§ 5.5; RSS-GEN § 8.10

EUT Setup

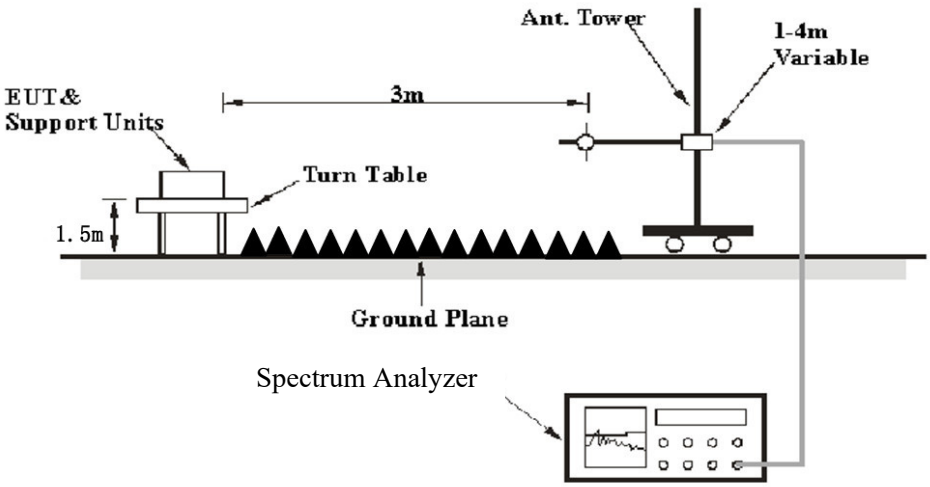
9 kHz-30MHz:



30MHz-1GHz:



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, RSS-247, RSS-Gen 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
9 kHz – 150 kHz	/	/	200 Hz	QP
	300 Hz	1 kHz	/	PK
150 kHz – 30 MHz	/	/	9 kHz	QP
	10 kHz	30 kHz	/	PK
30 MHz – 1000 MHz	/	/	120 kHz	QP
	100 kHz	300 kHz	/	PK
Above 1 GHz	Harmonics & Band Edge			
	1MHz	3 MHz	/	PK
	Average Emission Level=Peak Emission Level+20*log(Duty cycle)			
	Other Emissions			
	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	Average

For Duty cycle 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.

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 except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz, average detection modes for frequency bands 9–90 kHz and 110–490 kHz, peak and average detection modes for frequencies above 1 GHz.

For 9 kHz-30MHz, the report shall list the six emissions with the smallest margin relative to the limit, for each of the three antenna orientations (parallel, perpendicular, and ground-parallel) unless the margin is greater than 20 dB.

For 9k-30MHz, if the maximized peak measured value complies with under the QP/Average limit more than 6dB, then it is unnecessary to perform QP/Average measurement.

All emissions under the average limit and under the noise floor have not recorded in the report.

Factor & Over Limit/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:	22~25 ℃
Relative Humidity:	50~54 %
ATM Pressure:	101 kPa

The testing was performed by Anson Su on 2024-08-29 for below 1GHz and Zenos Qiao on 2024-08-27 for above 1GHz.

EUT operation mode: Transmitting

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

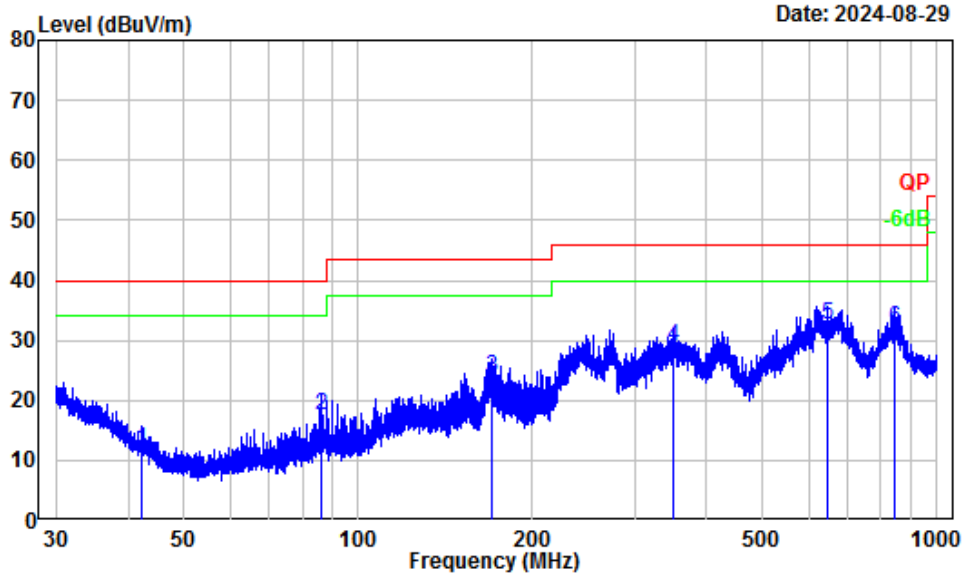
9 kHz-30MHz: *(Maximum output power mode, 8DPSK Low Channel)*

The amplitude of spurious emissions attenuated more than 20 dB below the limit was not recorded.

30MHz-1GHz: *(Maximum output power mode, 8DPSK Low Channel)*

For POE

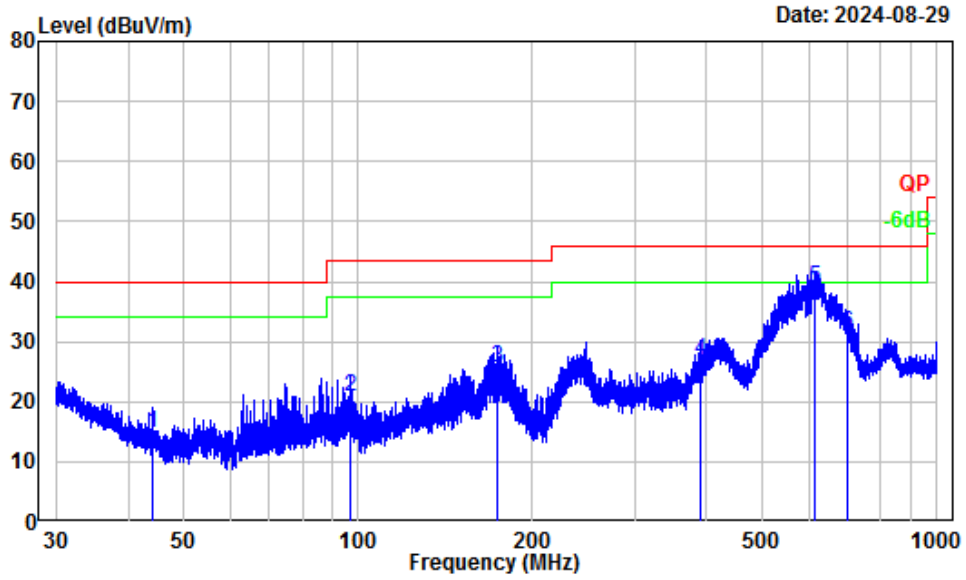
Horizontal



Site : Chamber A
Condition : 3m Horizontal
Project Number: 2401W50954E-RF
Test Mode : BT Transmitting
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	42.25	-14.04	25.69	11.65	40.00	-28.35	QP
2	86.01	-18.08	35.67	17.59	40.00	-22.41	QP
3	170.49	-13.14	36.85	23.71	43.50	-19.79	QP
4	349.71	-10.17	39.06	28.89	46.00	-17.11	QP
5	645.69	-4.22	36.87	32.65	46.00	-13.35	QP
6	846.20	-1.72	33.84	32.12	46.00	-13.88	QP

Vertical

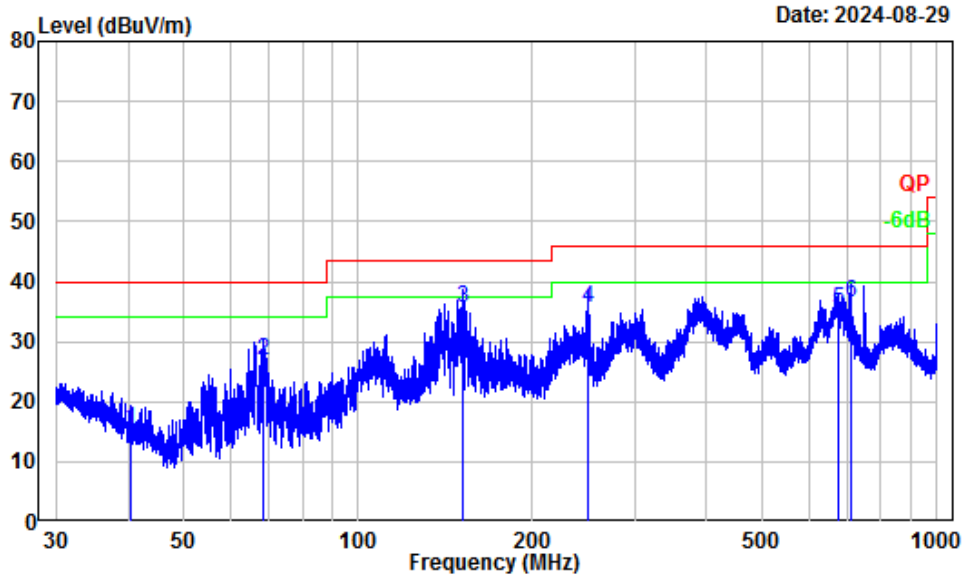


Site : Chamber A
Condition : 3m Vertical
Project Number: 2401W50954E-RF
Test Mode : BT Transmitting
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	43.97	-15.15	30.01	14.86	40.00	-25.14	QP
2	96.65	-16.89	37.81	20.92	43.50	-22.58	QP
3	173.81	-13.36	39.10	25.74	43.50	-17.76	QP
4	390.72	-8.85	35.83	26.98	46.00	-19.02	QP
5	615.56	-4.96	43.85	38.89	46.00	-7.11	QP
6	700.22	-3.52	35.05	31.53	46.00	-14.47	QP

For Adapter

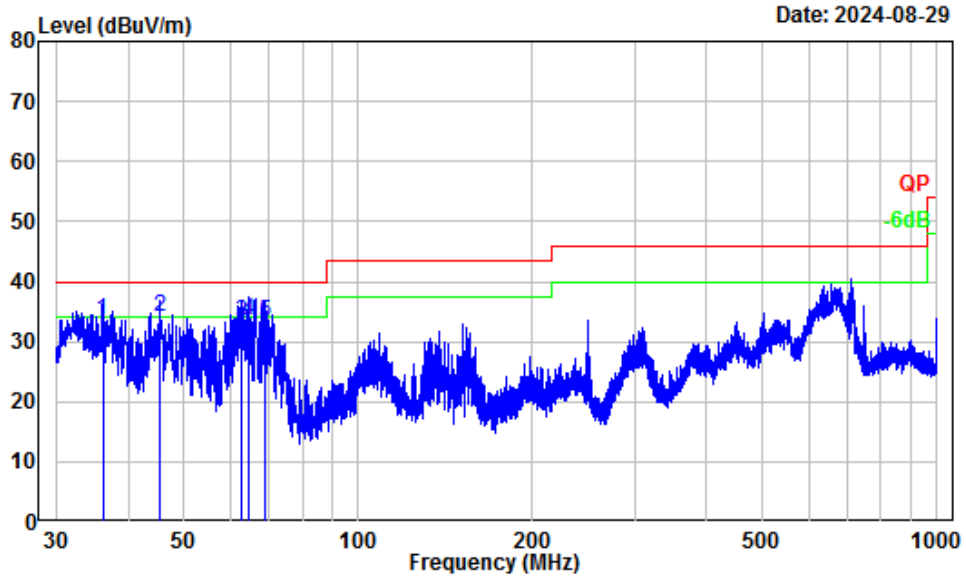
Horizontal



Site : Chamber A
Condition : 3m Horizontal
Project Number: 2401W50954E-RF
Test Mode : BT Transmitting
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	40.35	-12.61	27.89	15.28	40.00	-24.72	QP
2	68.45	-17.88	44.71	26.83	40.00	-13.17	QP
3	151.53	-12.50	48.09	35.59	43.50	-7.91	QP
4	249.97	-13.09	48.62	35.53	46.00	-10.47	QP
5	675.80	-3.80	39.12	35.32	46.00	-10.68	QP
6	709.80	-3.42	39.90	36.48	46.00	-9.52	QP

Vertical



Site : Chamber A
Condition : 3m Vertical
Project Number: 2401W50954E-RF
Test Mode : BT Transmitting
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	36.14	-9.59	43.19	33.60	40.00	-6.40	QP
2	45.26	-16.03	50.00	33.97	40.00	-6.03	QP
3	62.76	-18.11	51.30	33.19	40.00	-6.81	QP
4	64.77	-18.00	51.50	33.50	40.00	-6.50	QP
5	68.99	-17.87	50.99	33.12	40.00	-6.88	QP

Above 1GHz: *(Worst case is Adapter Power Supply)*

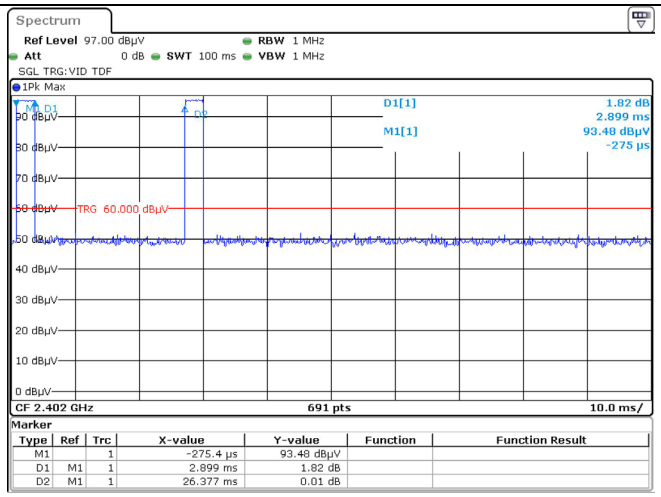
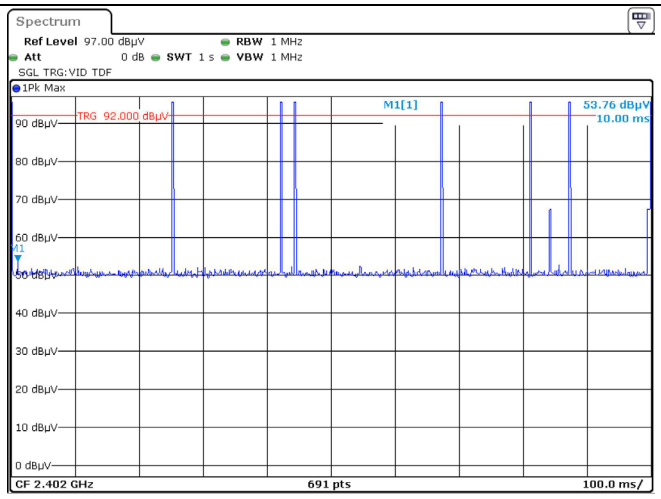
Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	PK/Ave					
8DPSK							
Low Channel 2402MHz							
2385.25	55.32	PK	H	-2.93	52.39	74	-21.61
2386.94	55.15	PK	V	-2.93	52.22	74	-21.78
4804.00	49.82	PK	H	2.42	52.24	74	-21.76
4804.00	50.17	PK	V	2.42	52.59	74	-21.41
Middle Channel 2441MHz							
4882.00	52.36	PK	H	2.58	54.94	74	-19.06
4882.00	52.69	PK	V	2.58	55.27	74	-18.73
High Channel 2480MHz							
2483.56	55.94	PK	H	-3.17	52.77	74	-21.23
2483.73	55.67	PK	V	-3.17	52.50	74	-21.50
4960.00	50.35	PK	H	2.68	53.03	74	-20.97
4960.00	50.78	PK	V	2.68	53.46	74	-20.54

Note:
Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
Corrected Amplitude = Factor + Reading
Margin = Corrected. Amplitude - Limit
The other spurious emission which is in the noise floor level was not recorded.

Field Strength of Average							
Frequency (MHz)	**Peak Measurement @3m (dBµV/m)**	**Polar (H/V)**	**Duty Cycle Corrected Factor (dB)**	**Average Level (dBµV/m)**	**Limit (dBµV/m)**	**Margin (dB)**	**Comment**
Low Channel 2402MHz							
2385.25	52.39	H	-24.73	27.66	54	-26.34	Bandedge
2386.94	52.22	V	-24.73	27.49	54	-26.51	Bandedge
4804.00	52.24	H	-24.73	27.51	54	-26.49	Harmonic
4804.00	52.59	V	-24.73	27.86	54	-26.14	Harmonic
Middle Channel 2441MHz							
4882.00	54.94	H	-24.73	30.21	54	-23.79	Harmonic
4882.00	55.27	V	-24.73	30.54	54	-23.46	Harmonic
High Channel 2480MHz							
2483.56	52.77	H	-24.73	28.04	54	-25.96	Bandedge
2483.73	52.50	V	-24.73	27.77	54	-26.23	Bandedge
4960.00	53.03	H	-24.73	28.30	54	-25.70	Harmonic
4960.00	53.46	V	-24.73	28.73	54	-25.27	Harmonic

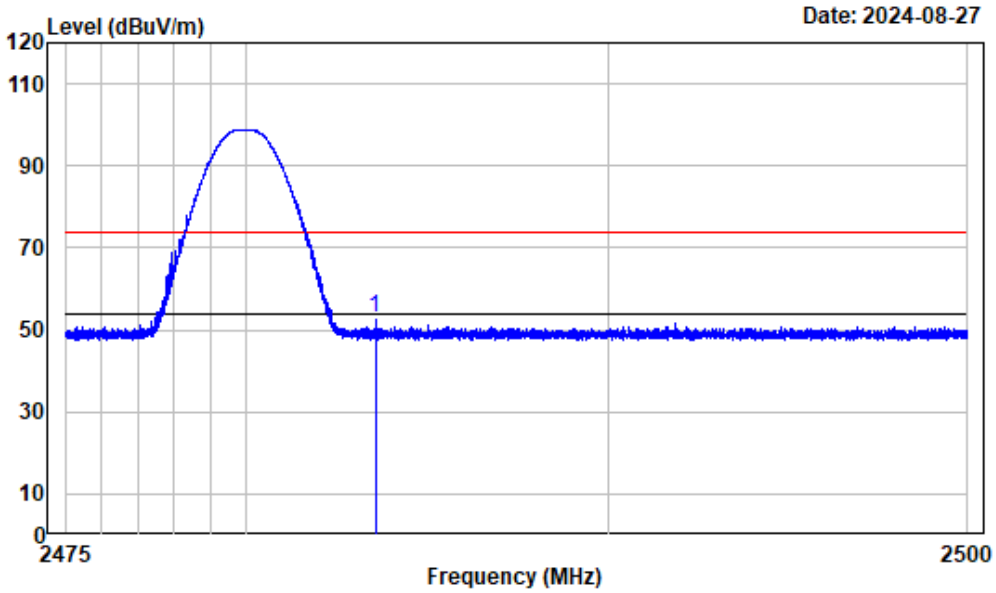
Note: Average level= Peak level+ Duty Cycle Corrected Factor

Worst case duty cycle:
Duty Cycle = Ton/100ms = 2.899*2/100=0.05798
Duty Cycle Corrected Factor = 20lg (Duty Cycle) = 20lg0.05798 = -24.73

Duty Cycle (100ms)	
Duty Cycle (1s)	

Test plots for worst Band Edge Measurements (Radiated):

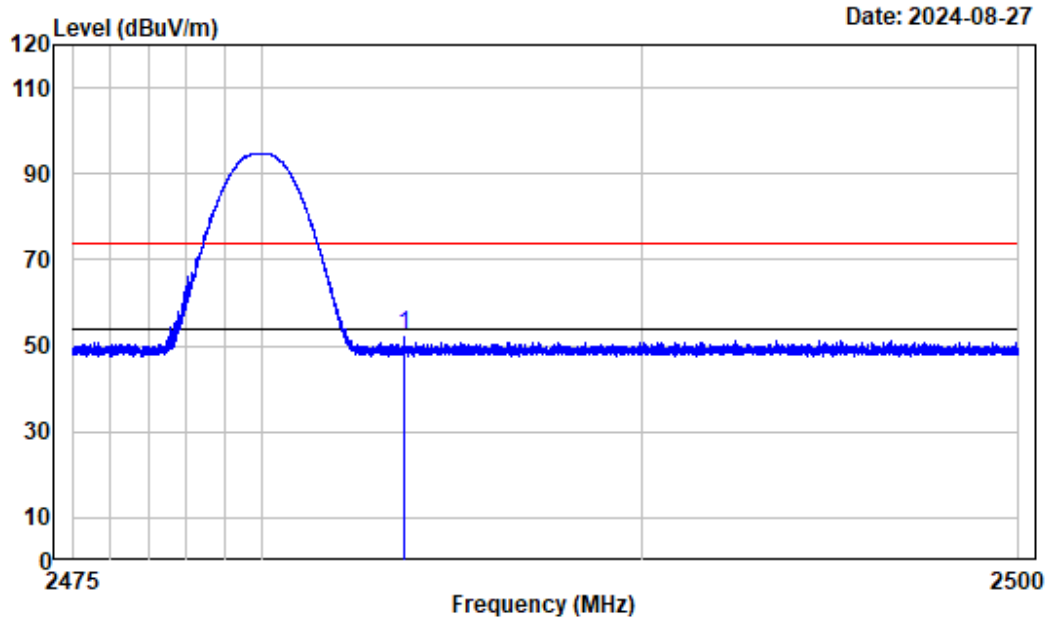
8DPSK			
Test Channel:	**2480MHz**	**Ant. Polar. :**	**Horizontal**



Condition : Horizontal
Project No.: 2401W50954E-RF
Tester : Zenos Qiao
Note : BT-3DH5-2480

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.560	-3.17	55.94	52.77	74.00	-21.23	Peak

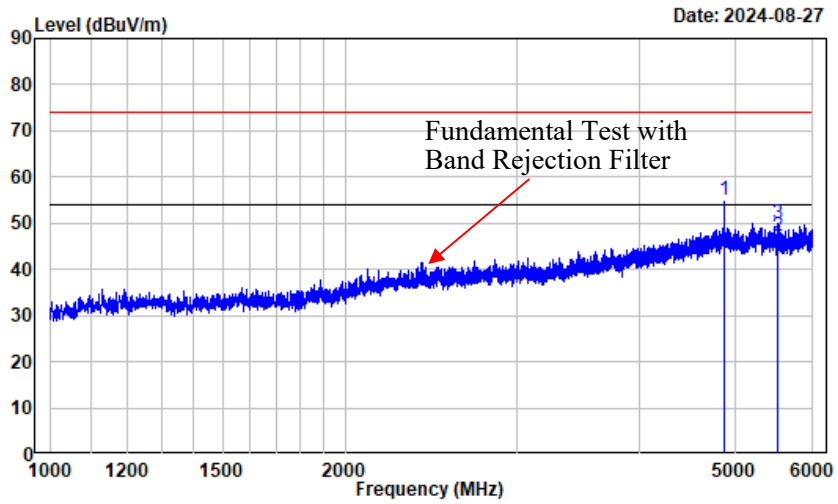
8DPSK			
Test Channel:	**2480MHz**	**Ant. Polar. :**	**Vertical**



Condition : Vertical
Project No.: 2401W50954E-RF
Tester : Zenos Qiao
Note : BT-3DH5-2480

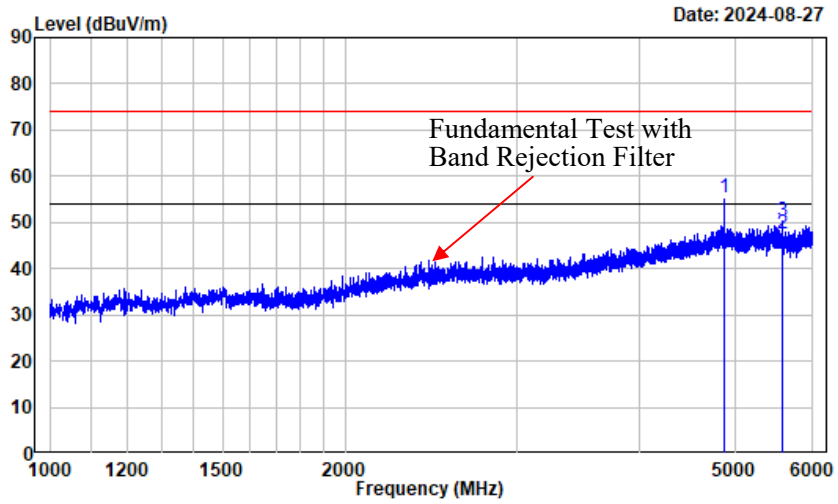
	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.731	-3.17	55.67	52.50	74.00	-21.50	Peak

Listed with the worst harmonic margin test plot:

Horizontal	
1-6GHz	 Condition : Horizontal Project No.: 2401W50954E-RF Tester : Zenos Qiao Note : BT-3DH5-2440 Freq / Factor / Read Level / Limit Level / Limit Line / Over Limit / Remark MHz / dB/m / dBuV / dBuV/m / dBuV/m / dB 1 4882.000 2.58 52.36 54.94 74.00 -19.06 Peak 2 5530.000 2.97 44.40 47.37 54.00 -6.63 Average 3 5530.000 2.97 47.09 50.06 74.00 -23.94 Peak

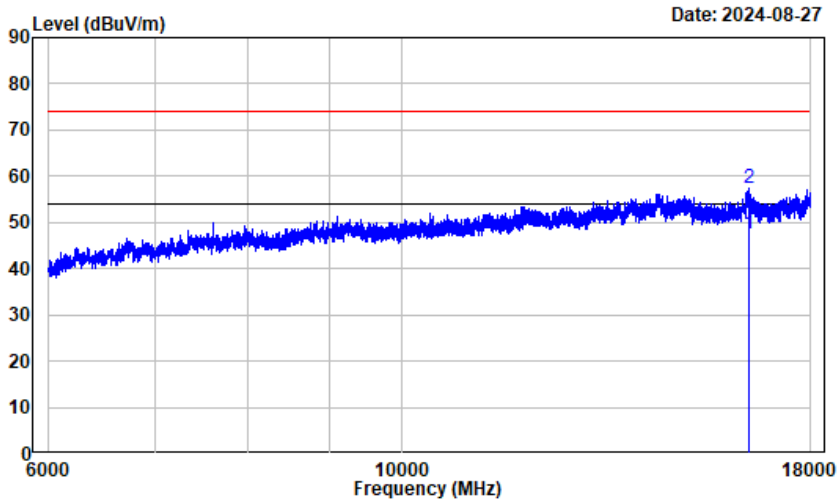
Vertical

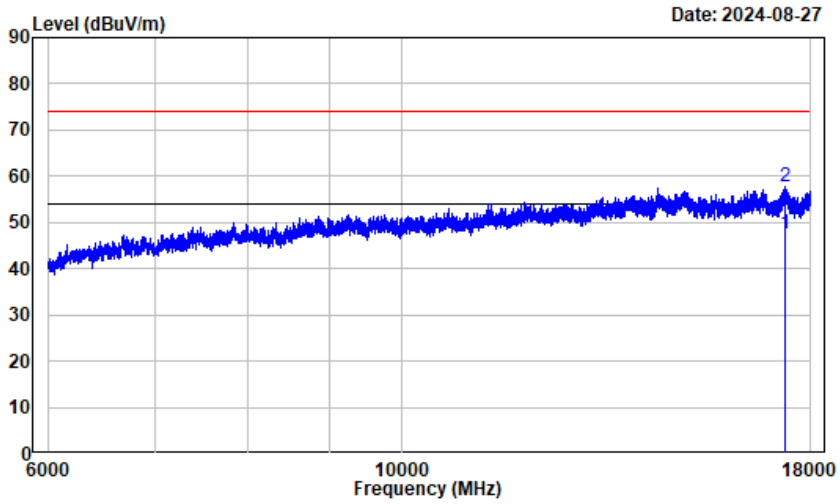
1-6GHz

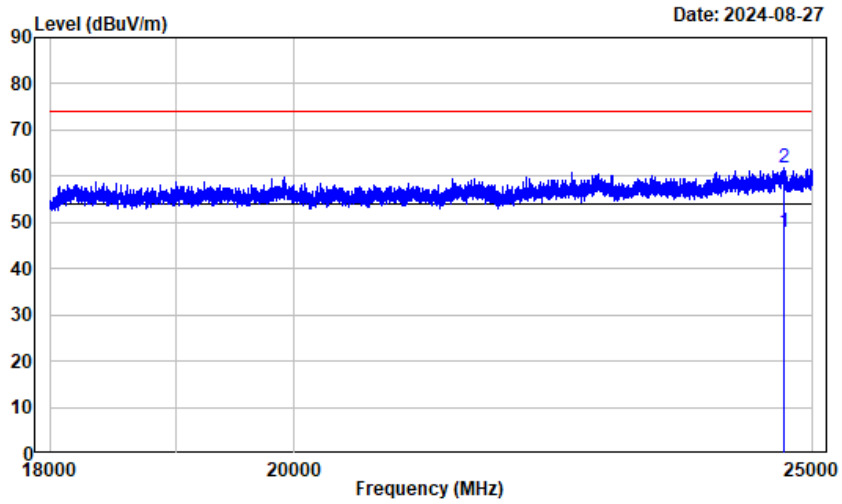


Condition : Vertical
Project No.: 2401W50954E-RF
Tester : Zenos Qiao
Note : BT-3DH5-2441

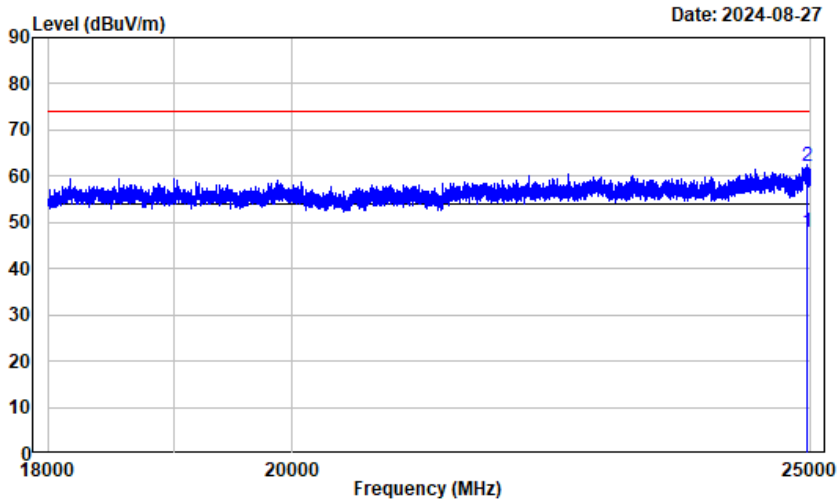
	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4882.000	2.58	52.69	55.27	74.00	-18.73	Peak
2	5580.625	2.90	44.58	47.48	54.00	-6.52	Average
3	5580.625	2.90	47.39	50.29	74.00	-23.71	Peak

Horizontal	
6-18GHz	 Condition : Horizontal Project No.: 2401W50954E-RF Tester : Zenos Qiao Note : BT-3DH5-2441 Freq / Factor / Read Level / Level / Limit Line / Over Limit / Remark MHz / dB/m / dBuV / dBuV/m / dBuV/m / dB 1 16471.500 15.64 31.92 47.56 54.00 -6.44 Average 2 16471.500 15.64 41.89 57.53 74.00 -16.47 Peak

Vertical	
6-18GHz	 Condition : Vertical Project No.: 2401W50954E-RF Tester : Zenos Qiao Note : BT-3DH5-2441 Freq / Factor / Read Level / Level / Limit Line / Over Limit / Remark MHz / dB/m / dBuV / dBuV/m / dBuV/m / dB 1 17355.000 19.63 28.06 47.69 54.00 -6.31 Average 2 17355.000 19.63 38.12 57.75 74.00 -16.25 Peak

Horizontal	
18-25GHz	 Condition : Horizontal Project No.: 2401W50954E-RF Tester : Zenos Qiao Note : BT-3DH5-2441

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	24694.630	18.76	29.04	47.80	54.00	-6.20	Average
2	24694.630	18.76	43.12	61.88	74.00	-12.12	Peak

Vertical	
18-25GHz	 Condition : Vertical Project No.: 2401W50954E-RF Tester : Zenos Qiao Note : BT-3DH5-2441 Freq / Factor / Read Level / Level / Limit Line / Over Limit / Remark MHz / dB/m / dBuV / dBuV/m / dBuV/m / dB 1 24963.250 18.42 29.52 47.94 54.00 -6.06 Average 2 24963.250 18.42 43.74 62.16 74.00 -11.84 Peak

FCC §15.247(a) (1) & RSS-247 § 5.1 (b) - CHANNEL SEPARATION TEST

Applicable Standard

According to FCC §15.247(a) (1):

Frequency hopping systems shall have hoping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

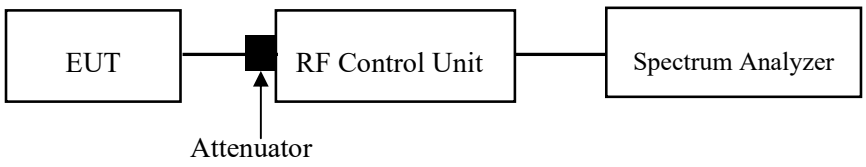
According to RSS-247 § 5.1 (b):

Frequency hopping systems (FHSs) 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, FHSs operating in the band 2400-2483.5 MHz 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 that the systems operate with an output power no greater than 0.125 W. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

Test Procedure

Test Method: ANSI C63.10-2013 Clause 7.8.2

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



Test Data

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	47 %
ATM Pressure:	101 kPa

The testing was performed by Tom Tan on 2024-08-15.

EUT operation mode: Transmitting

Test Result: Compliant. Please refer to the Appendix.

FCC §15.247(a) (1) & RSS-247 § 5.1 (a), RSS-GEN § 6.7 - 20 dB EMISSION BANDWIDTH & 99% OCCUPIED BANDWIDTH

Applicable Standard

According to FCC §15.247(a) (1):

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.

According to RSS-247 § 5.1 (a), RSS-GEN § 6.7:

The occupied bandwidth or the "99% emission bandwidth" is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.
In some cases, the "x dB bandwidth" is required, which is defined as the frequency range between two points, one at the lowest frequency below and one at the highest frequency above the carrier frequency, at which the maximum power level of the transmitted emission is attenuated x dB below the maximum in-band power level of the modulated signal, where the two points are on the outskirts of the in-band emission.

The following conditions shall be observed for measuring the occupied bandwidth and x 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 / x 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 / x 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 Procedure

Test Method: ANSI C63.10-2013 Clause 7.8.7 &Clause 6.9.2&RSS-Gen §6.7

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

a. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency.
The span range for the EMI receiver or spectrum analyzer shall be between two times and fivetimes the OBW.

b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW andvideo bandwidth (VBW) shall be approximately three times RBW, unless otherwise specifiedby the applicable requirement.

c) Set the reference level of the instrument as required, keeping the signal from exceeding themaximum input mixer level for linear operation. In general, the peak of the spectral envelopeshall be more than [10 log (OBW/RBW)] below the reference level.

d) Steps a) through c) might require iteration to adjust within the specified tolerances.

e) The dynamic range of the instrument at the selected RBW shall be more than 10 dB below thetarget "−xx dB down" requirement; that is, if the requirement calls for measuring the −20 dBOBW, the instrument noise floor at the selected RBW shall be at least 30 dB below thereference value.

f) Set detection mode to peak and trace mode to max hold.

g) Determine the reference value: Set the EUT to transmit an un-modulated carrier or modulatedsignal, as applicable. Allow the trace to stabilize. Set the spectrum analyzer marker to thehighest level of the displayed trace (this is the reference value).

h) Determine the "−xx dB down amplitude" using [(reference value) −xx]. Alternatively, this calculation may be made by using the marker-delta function of the instrument.

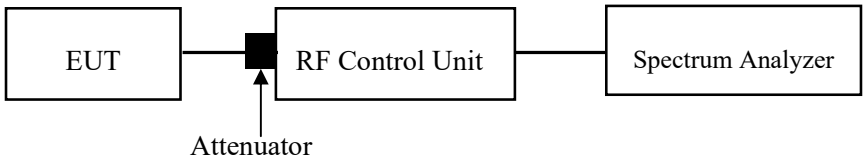
i) If the reference value is determined by an un-modulated carrier, then turn the EUT modulation on, and either clear the existing trace or start a new trace on the spectrum analyzer and allow thenew trace to stabilize. Otherwise, the trace from step g) shall be used for step j).

j) Place two markers, one at the lowest frequency and the other at the highest frequency of theenvelope of the spectral display, such that each marker is at or slightly below the "- xx" dB downamplitude"determined in step h). If a marker is below this "−xx dB down amplitude"value,then it shall be as close as possible to this value. The occupied bandwidth is the frequencydifference between the two markers. Alternatively, set a marker at the lowest frequency of theenvelope of the spectral display, such that the marker is at or slightly below the "- xx dB downamplitude" determined in step h). Reset the marker-delta function and move the marker to theother side of the emission until the delta marker amplitude is at the same level as the referencemarker amplitude. The marker-delta frequency reading at this point is the specified emissionbandwidth.

k) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrumentdisplay; the plot axes and the scale units per division shall be clearly labeled. Tabular data maybe reported in addition to the plot(s).

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. Procedure as below

a. The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
b. The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW (for RSS rules, VBW shall not be smaller than three times the RBW, unless otherwise specified by the applicable requirement).
c. Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level.
d. Step a) through step c) might require iteration to adjust within the specified range.
e. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
f. Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
g. If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power 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; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.
h. The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data maybe reported in addition to the plot(s).



Test Data

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	47 %
ATM Pressure:	101 kPa

The testing was performed by Tom Tan on 2024-08-15.

EUT operation mode: Transmitting

Test Result: Compliant. Please refer to the Appendix.

FCC §15.247(a) (1) (iii) & RSS-247 § 5.1 (d) - QUANTITY OF HOPPING CHANNEL TEST

Applicable Standard

According to FCC §15.247(a) (1) (iii):

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.

According to RSS-247 § 5.1 (d):

Frequency hopping systems (FHSS) operating in the band 2400-2483.5 MHz shall use at least 15 hopping 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. Transmissions on particular hopping frequencies may be avoided or suppressed provided that at least 15 hopping channels are used.

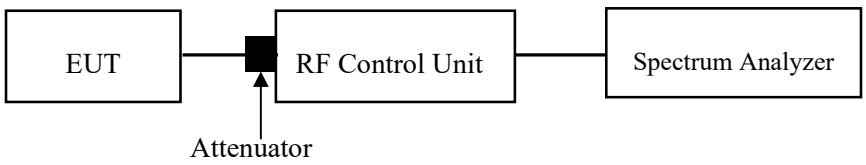
Test Procedure

Test Method: ANSI C63.10-2013 Clause 7.8.3

1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.

2. Set the EUT in hopping mode from first channel to last.

3. By using the max-hold function record the quantity of the channel.



Note: Limit=20 dB bandwidth*2/3

Test Data

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	47 %
ATM Pressure:	101 kPa

The testing was performed by Tom Tan on 2024-08-15.

EUT operation mode: Transmitting

Test Result: Compliant. Please refer to the Appendix.

FCC §15.247(a) (1) (iii) & RSS-247 § 5.1 (d) - TIME OF OCCUPANCY (DWELL TIME)

Applicable Standard

According to FCC §15.247(a) (1) (iii):

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.

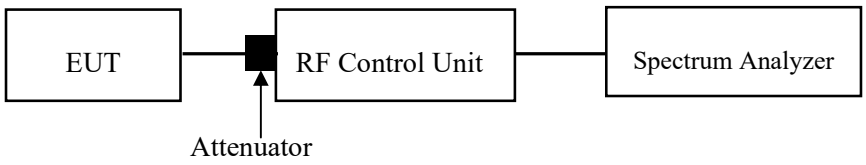
According to RSS-247 § 5.1 (d):

Frequency hopping systems (FHSs) operating in the band 2400-2483.5 MHz shall use at least 15 hopping 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. Transmissions on particular hopping frequencies may be avoided or suppressed provided that at least 15 hopping channels are used.

Test Procedure

Test Method: ANSI C63.10-2013 Clause 7.8.4

1. The EUT was worked in channel hopping.
2. Set the RBW to: 1MHz.
3. Set the VBW ≥ 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



Note 1: A period time=0.4*79=31.6(S), Result=BurstWidth*Totalhops
Note 2: Totalhops=Hopping Number in 3.16s*10
Note 3: Hopping Number in 3.16s=Total of highest signals in 3.16s(Second high signals were other channel)

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	47 %
ATM Pressure:	101 kPa

The testing was performed by Tom Tan on 2024-08-15.

EUT operation mode: Transmitting

Test Result: Compliant. Please refer to the Appendix.

FCC §15.247(b) (1) & RSS-247§ 5.1(b) &§ 5.4(b) - PEAK OUTPUT POWER MEASUREMENT

Applicable Standard

According to FCC §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.

According to RSS-247§ 5.1(b) &§ 5.4(b):

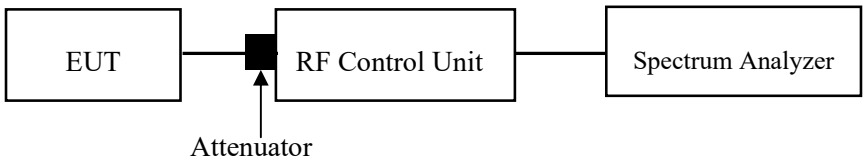
For frequency hopping systems (FHSs) operating in the band 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1.0 W if the hopset uses 75 or more hopping channels; the maximum peak conducted output power shall not exceed 0.125 W if the hopset uses less than 75 hopping channels. The e.i.r.p. shall not exceed 4 W (see Section 5.4(e) for exceptions).

Frequency hopping systems (FHSs) 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, FHSs operating in the band 2400-2483.5 MHz 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 that the systems operate with an output power no greater than 0.125 W.

Test Procedure

Test Method: ANSI C63.10-2013 Clause 7.8.5

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



Test Data

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	47 %
ATM Pressure:	101 kPa

The testing was performed by Tom Tan on 2024-08-15.

EUT operation mode: Transmitting

Test Result: Compliant. Please refer to the Appendix.

FCC §15.247(d) & RSS-247 § 5.5 - BAND EDGES TESTING

Applicable Standard

According to FCC §15.247(d).

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)).

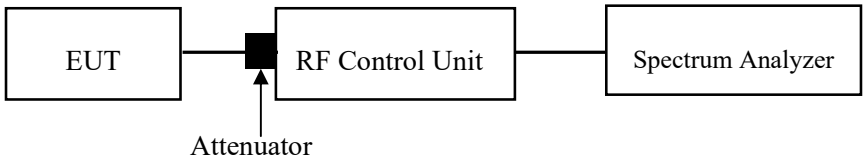
According to RSS-247 § 5.5.

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(e), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

Test Procedure

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

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



Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	47 %
ATM Pressure:	101 kPa

The testing was performed by Tom Tan on 2024-08-15.

EUT operation mode: Transmitting

Test Result: Compliant. Please refer to the Appendix.

EUT PHOTOGRAPHS

Please refer to the attachment 2401W50954E-RF External photo and 2401W50954E-RF Internal photo.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2401W50954E-RFA Test Setup photo.

APPENDIX

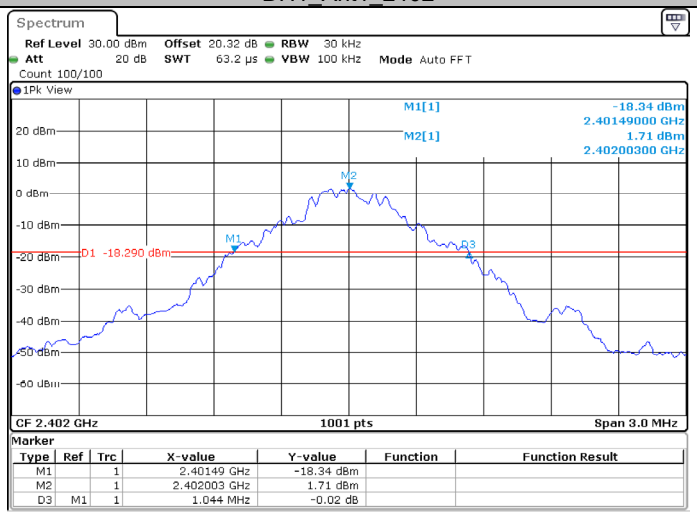
Appendix A: 20dB Emission Bandwidth

Test Result

Test Mode	Antenna	Frequency[MHz]	20dB EBW[MHz]	Limit[MHz]	Verdict
DH1	Ant1	2402	1.044	---	---
		2441	1.044	---	---
		2480	1.044	---	---
2DH1	Ant1	2402	1.359	---	---
		2441	1.359	---	---
		2480	1.359	---	---
3DH1	Ant1	2402	1.320	---	---
		2441	1.317	---	---
		2480	1.320	---	---

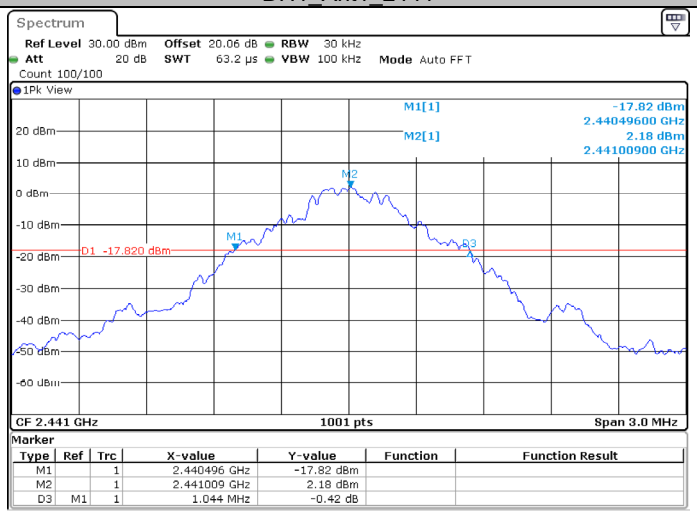
Test Graphs

DH1_Ant1_2402



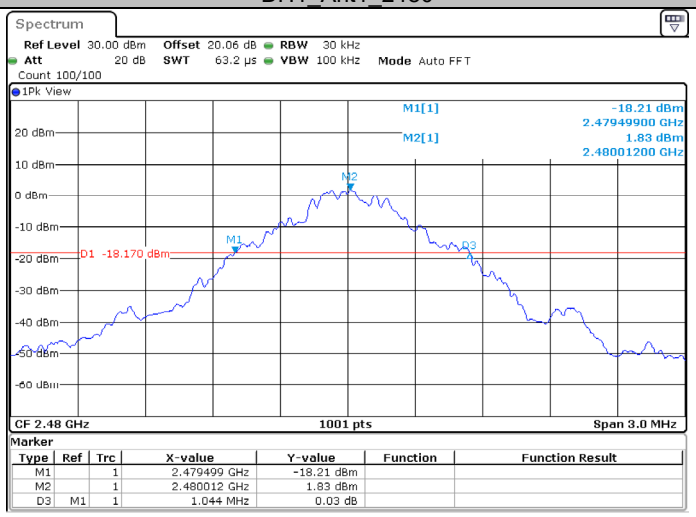
ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 17:50:22

DH1_Ant1_2441



ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 17:51:35

DH1_Ant1_2480

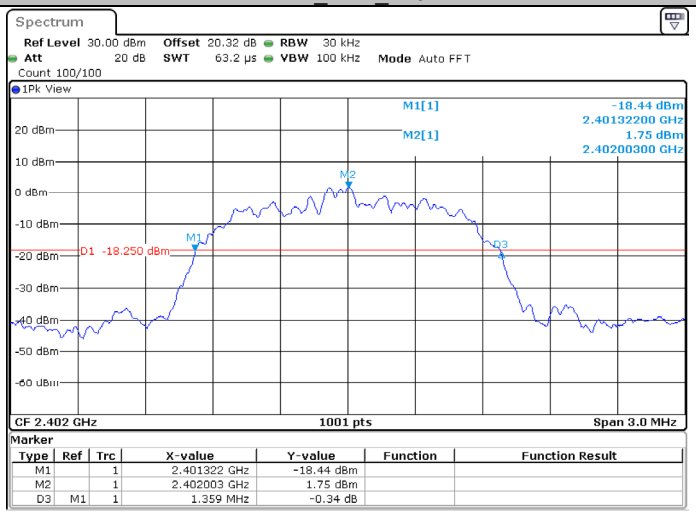


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.479499 GHz	-18.21 dBm		
M2		1	2.480012 GHz	1.83 dBm		
D3	M1	1	1.044 MHz	0.03 dB		

ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 17:52:33

2DH1_Ant1_2402

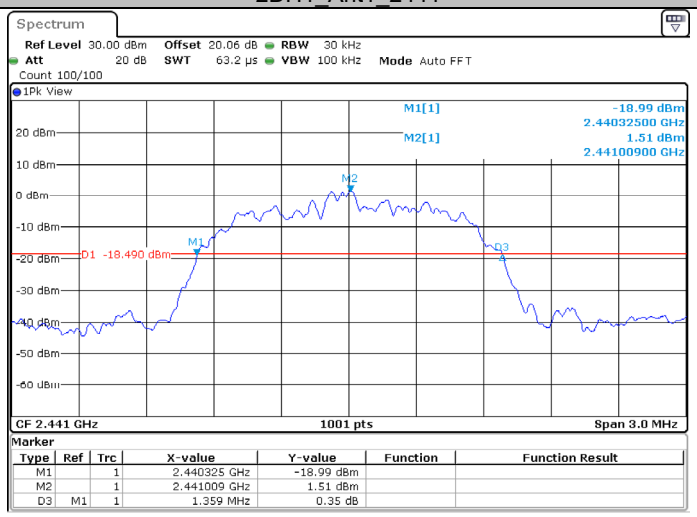


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.401322 GHz	-18.44 dBm		
M2		1	2.402003 GHz	1.75 dBm		
D3	M1	1	1.359 MHz	-0.34 dB		

ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 17:55:26

2DH1_Ant1_2441

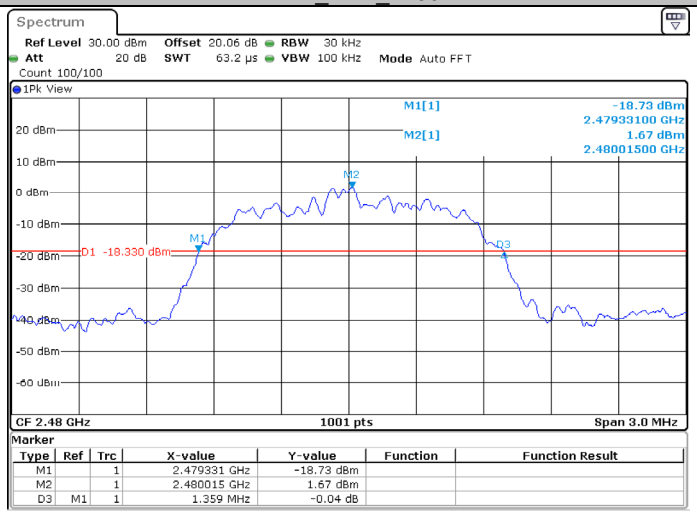


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.440325 GHz	-18.99 dBm		
M2		1	2.441009 GHz	1.51 dBm		
D3	M1	1	1.359 MHz	0.35 dB		

ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 17:56:15

2DH1_Ant1_2480

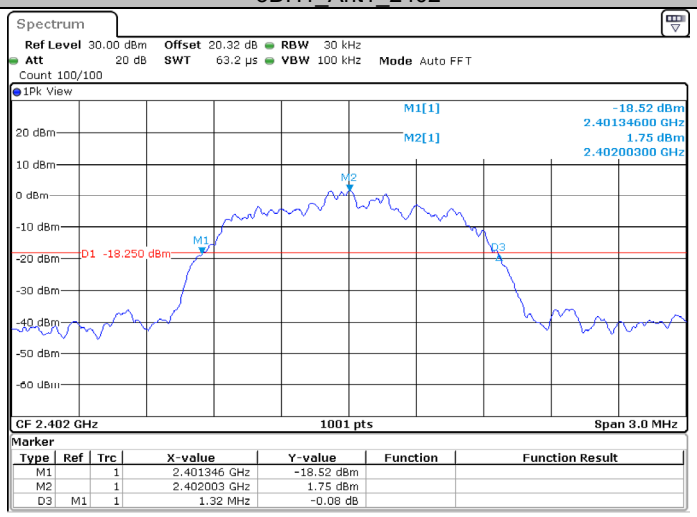


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.479331 GHz	-18.73 dBm		
M2		1	2.480015 GHz	1.67 dBm		
D3	M1	1	1.359 MHz	-0.04 dB		

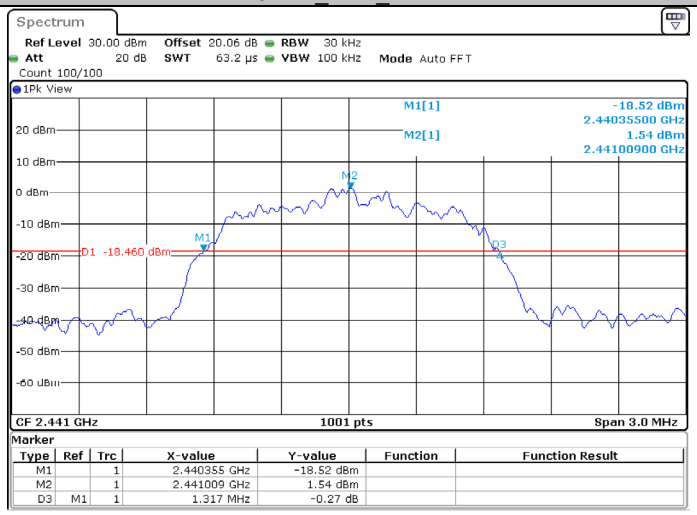
ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 17:59:41

3DH1_Ant1_2402



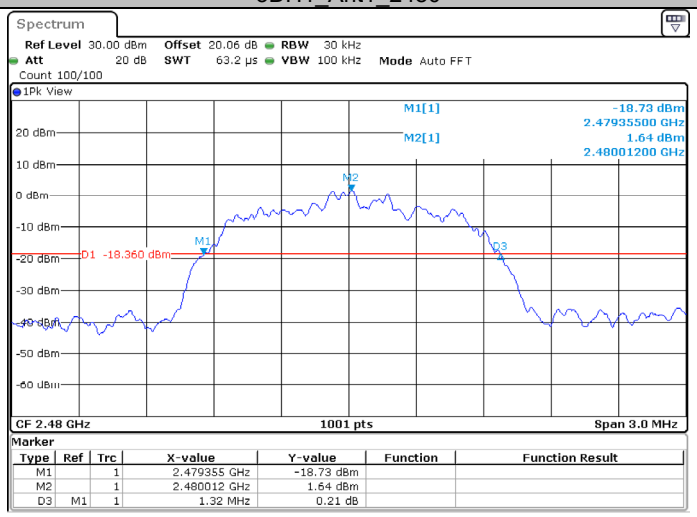
ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 18:00:56

3DH1_Ant1_2441



ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 18:02:27

3DH1_Ant1_2480



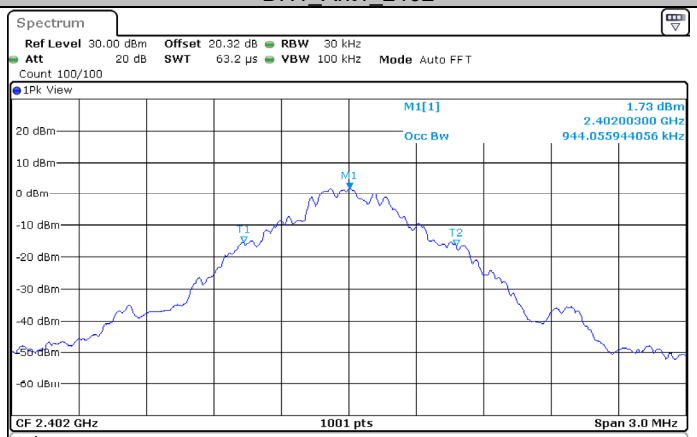
Appendix B: Occupied Channel Bandwidth

Test Result

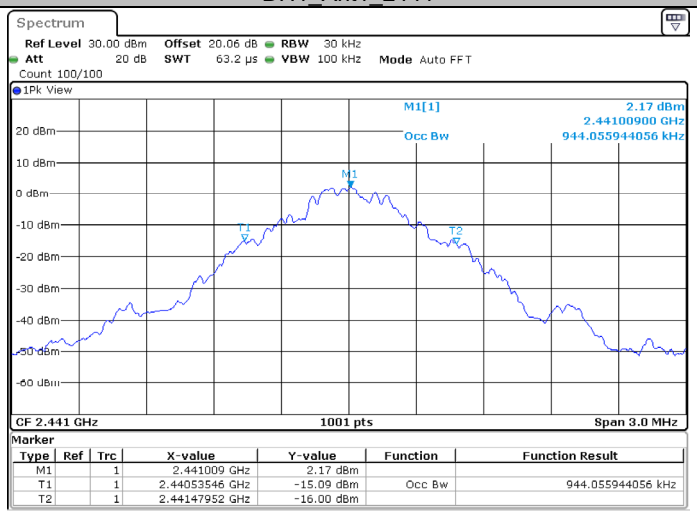
Test Mode	Antenna	Frequency[MHz]	OCB [MHz]	Limit[MHz]	Verdict
DH1	Ant1	2402	0.944	---	---
		2441	0.944	---	---
		2480	0.947	---	---
2DH1	Ant1	2402	1.199	---	---
		2441	1.199	---	---
		2480	1.202	---	---
3DH1	Ant1	2402	1.181	---	---
		2441	1.181	---	---
		2480	1.181	---	---

Test Graphs

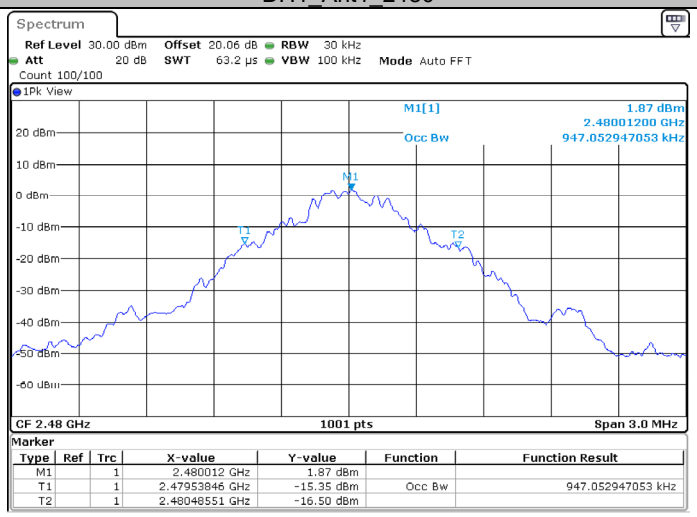
DH1_Ant1_2402



DH1_Ant1_2441

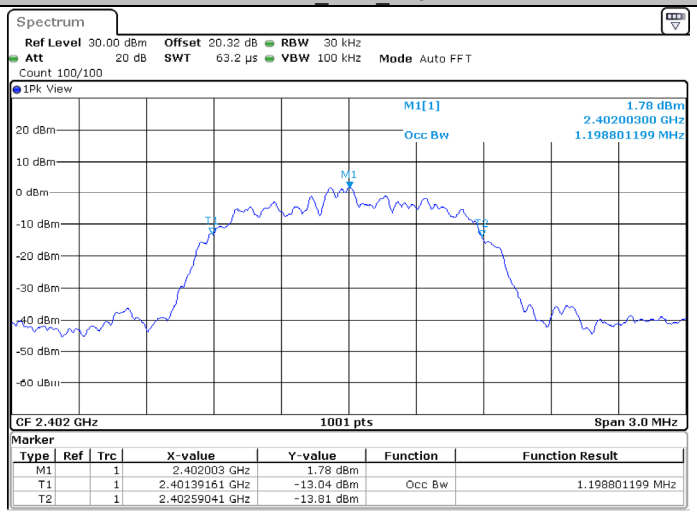


DH1_Ant1_2480



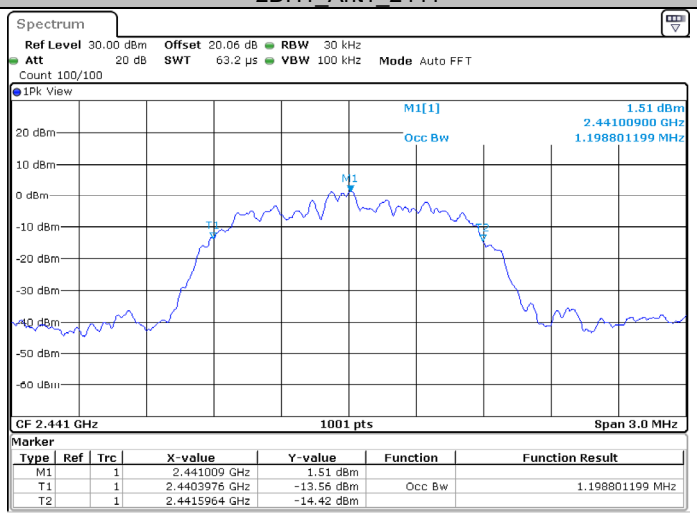
ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 17:52:39

2DH1_Ant1_2402



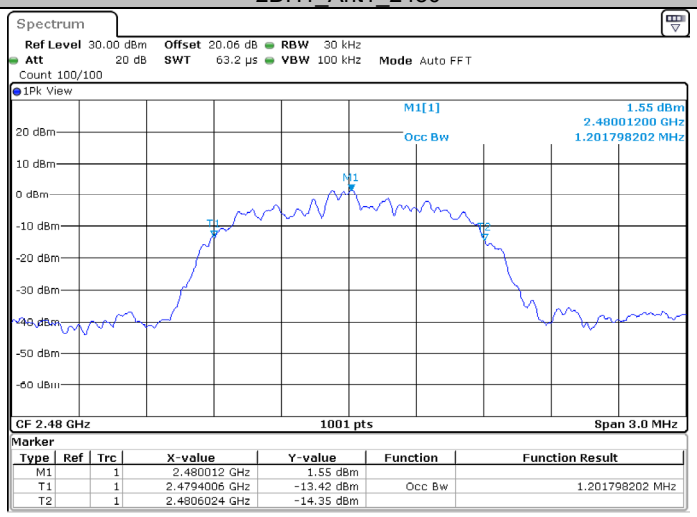
ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 17:55:31

2DH1_Ant1_2441



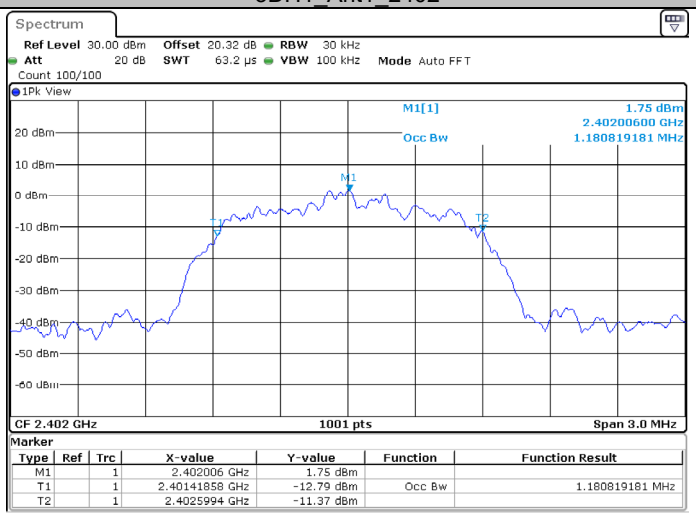
ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 17:56:21

2DH1_Ant1_2480



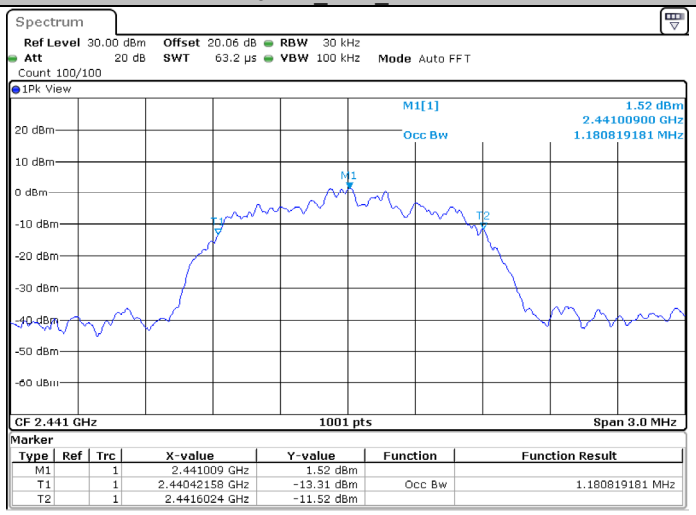
ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 17:59:47

3DH1_Ant1_2402



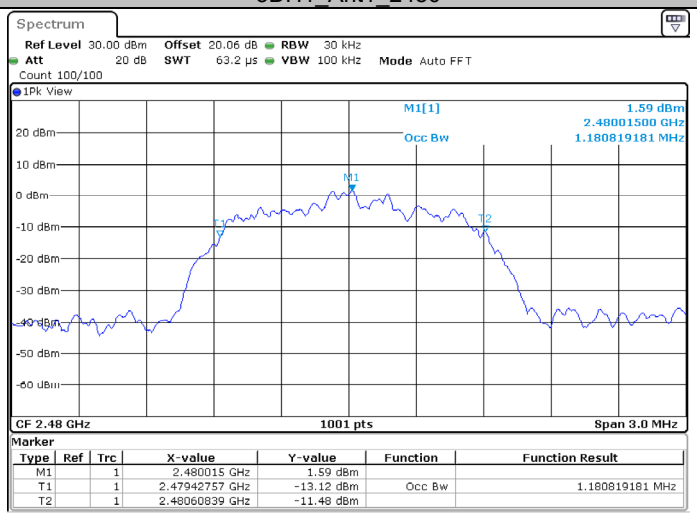
ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 18:01:02

3DH1_Ant1_2441



ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 18:03:04

3DH1_Ant1_2480



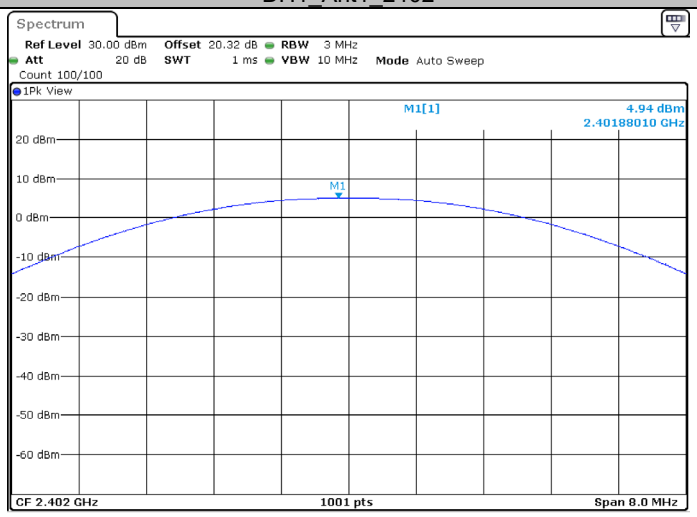
Appendix C: Maximum conducted Peak output power

Test Result

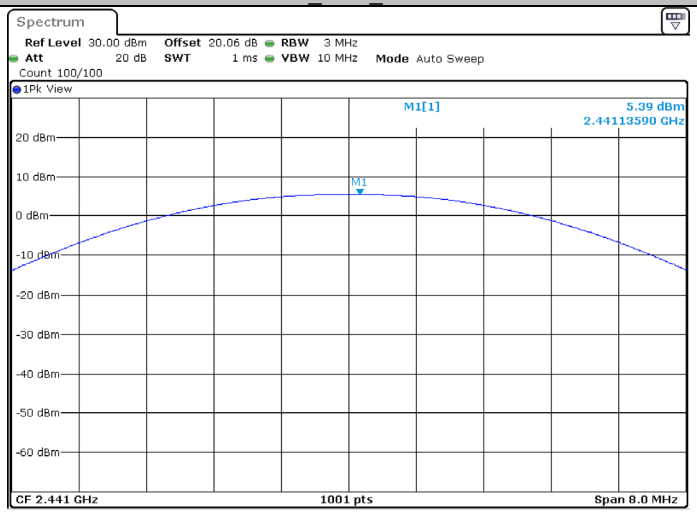
Test Mode	Antenna	Channel	Result [dBm]	Limit [dBm]	EIRP[dBm]	EIRP Limit [dBm]	Verdict
DH1	Ant1	2402	4.94	≤20.97	7.46	≤36	PASS
		2441	5.39	≤20.97	7.91	≤36	PASS
		2480	5.08	≤20.97	7.60	≤36	PASS
2DH1	Ant1	2402	7.17	≤20.97	9.69	≤36	PASS
		2441	6.89	≤20.97	9.41	≤36	PASS
		2480	6.93	≤20.97	9.45	≤36	PASS
3DH1	Ant1	2402	7.67	≤20.97	10.19	≤36	PASS
		2441	7.36	≤20.97	9.88	≤36	PASS
		2480	7.42	≤20.97	9.94	≤36	PASS

Test Graphs

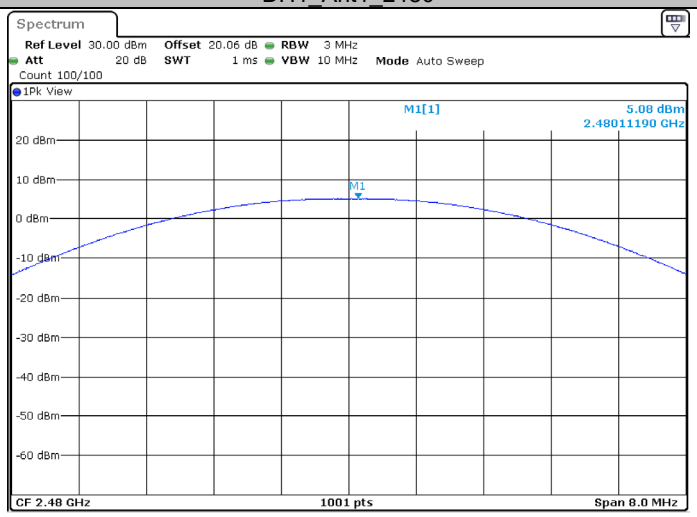
DH1_Ant1_2402



DH1_Ant1_2441

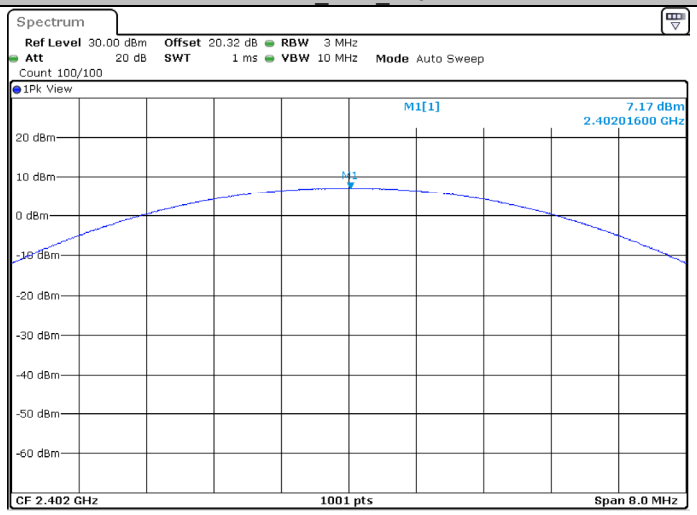


DH1_Ant1_2480



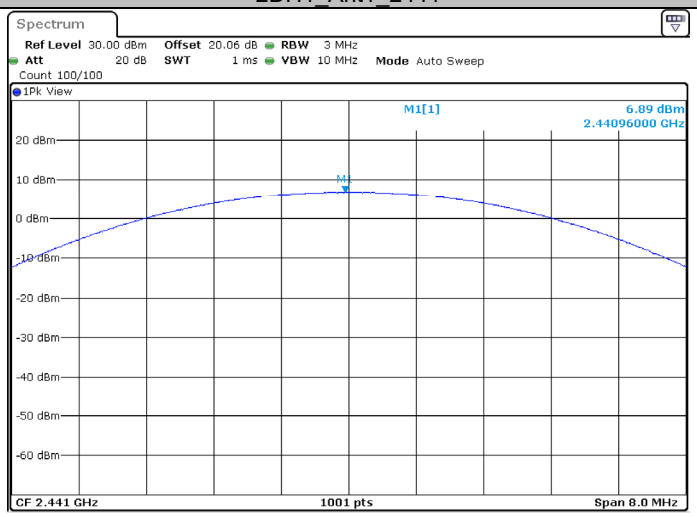
ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 17:52:57

2DH1_Ant1_2402

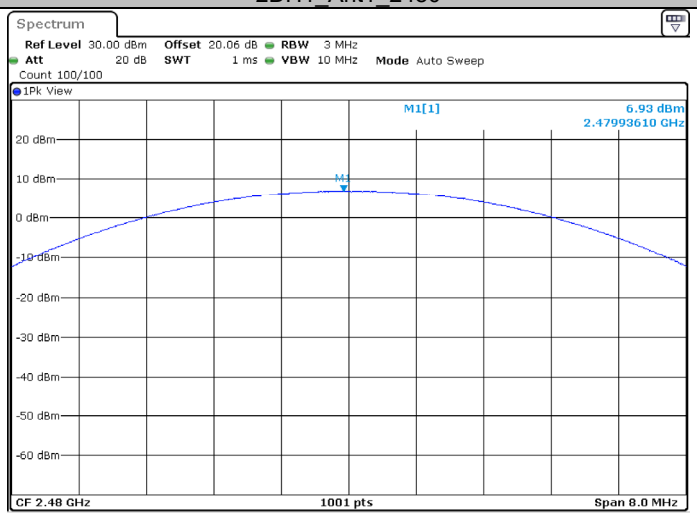


ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 17:55:48

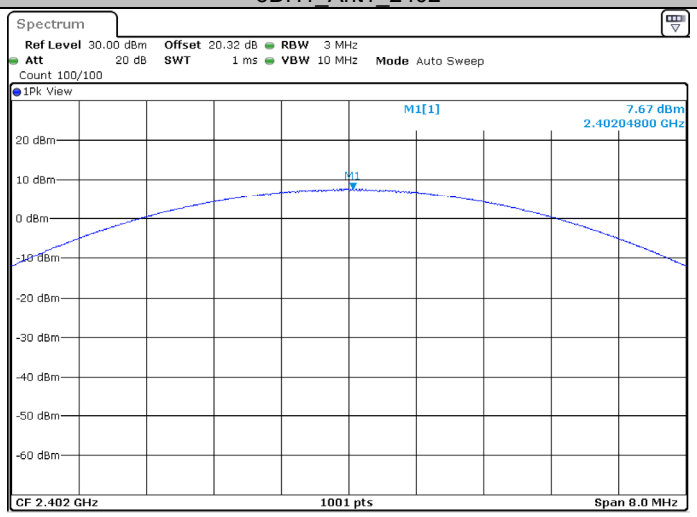
2DH1_Ant1_2441



2DH1_Ant1_2480

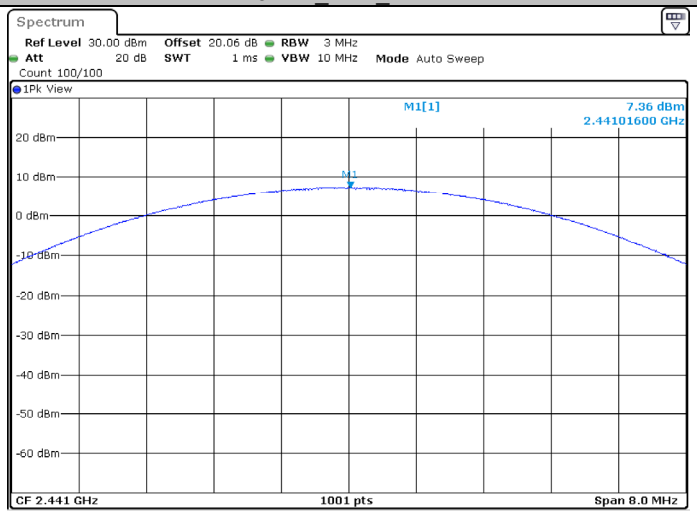


3DH1_Ant1_2402



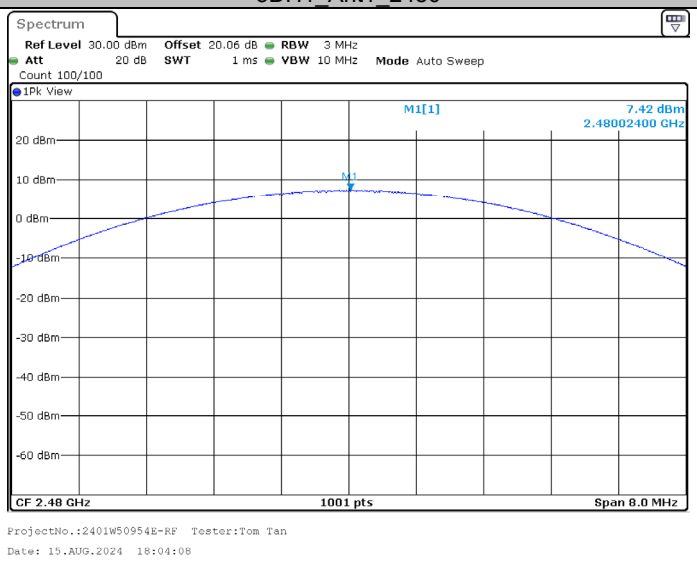
ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 18:01:28

3DH1_Ant1_2441



ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 18:02:45

3DH1_Ant1_2480



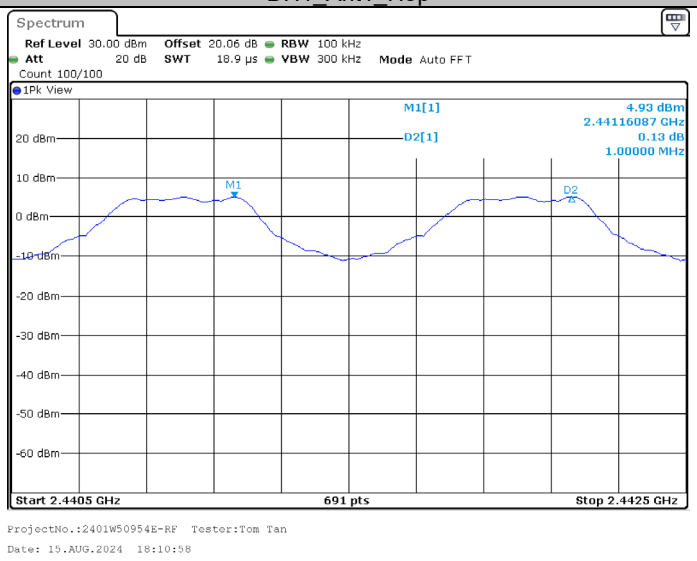
Appendix D: Carrier frequency separation

Test Result

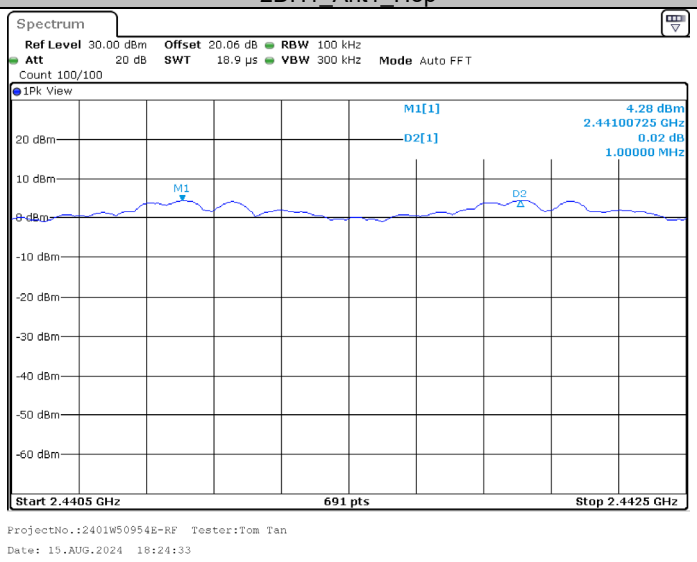
Test Mode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH1	Ant1	Hop	1.000	≥0.696	PASS
2DH1	Ant1	Hop	1.000	≥0.906	PASS
3DH1	Ant1	Hop	1.003	≥0.880	PASS

Test Graphs

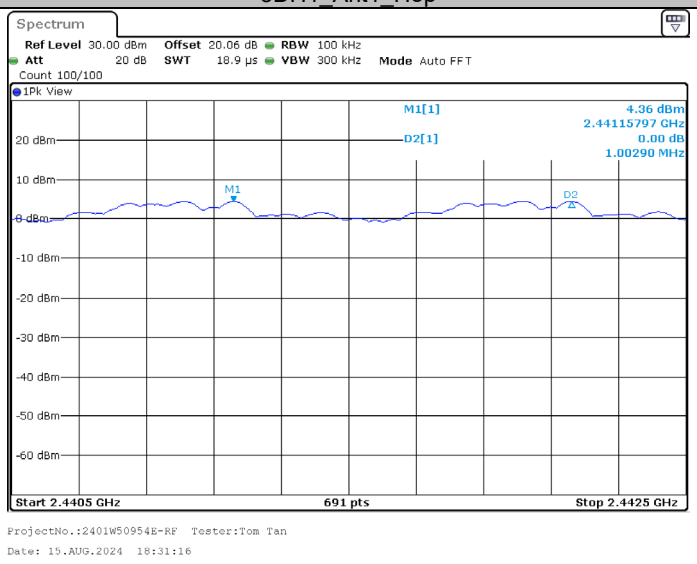
DH1_Ant1_Hop



2DH1_Ant1_Hop



3DH1_Ant1_Hop



Appendix E: Time of occupancy

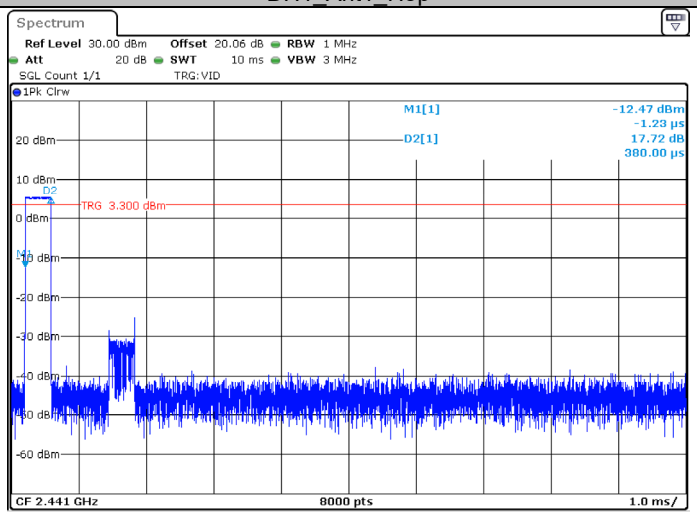
Test Result

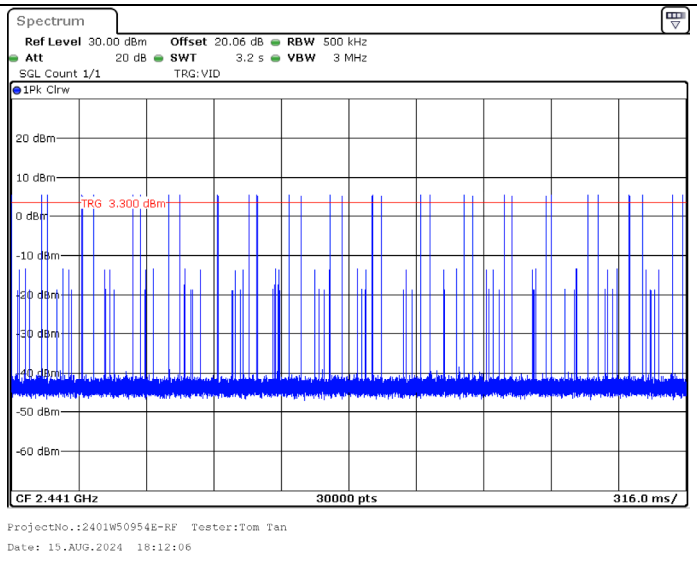
Test Mode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.380	330	0.125	≤0.4	PASS
DH3	Ant1	Hop	1.626	140	0.228	≤0.4	PASS
DH5	Ant1	Hop	2.868	120	0.344	≤0.4	PASS
2DH1	Ant1	Hop	0.386	320	0.124	≤0.4	PASS
2DH3	Ant1	Hop	1.630	170	0.277	≤0.4	PASS
2DH5	Ant1	Hop	2.870	110	0.316	≤0.4	PASS
3DH1	Ant1	Hop	0.386	330	0.127	≤0.4	PASS
3DH3	Ant1	Hop	1.629	160	0.261	≤0.4	PASS
3DH5	Ant1	Hop	2.872	110	0.316	≤0.4	PASS

Note 1: A period time=0.4*79=31.6(S), Result=BurstWidth*Totalhops
Note 2: Totalhops=Hopping Number in 3.16s*10
Note 3: Hopping Number in 3.16s=Total of highest signals in 3.16s(Second high signals were other channel)

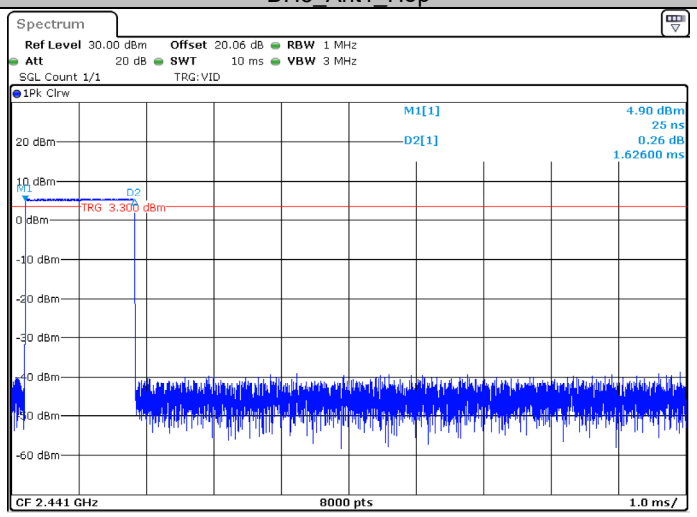
Test Graphs

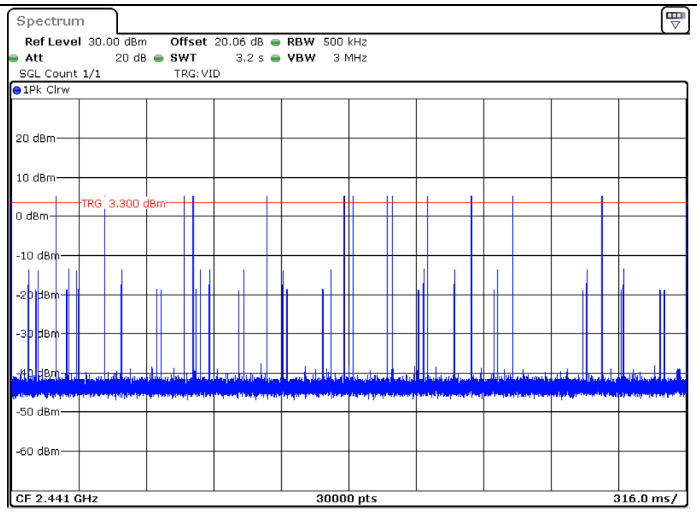
DH1_Ant1_Hop

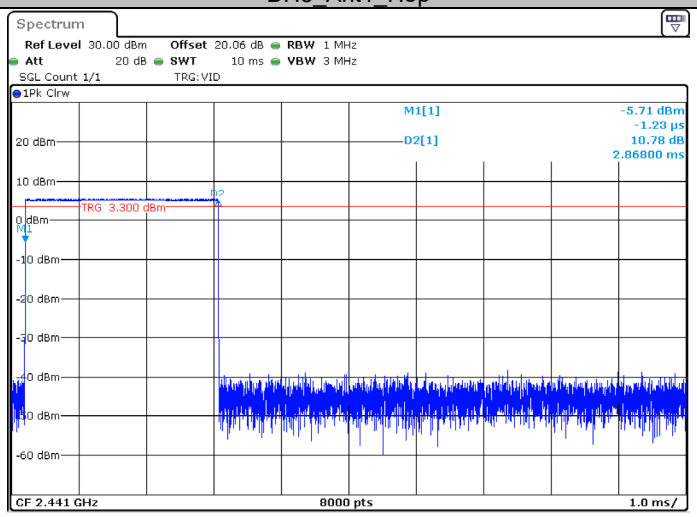
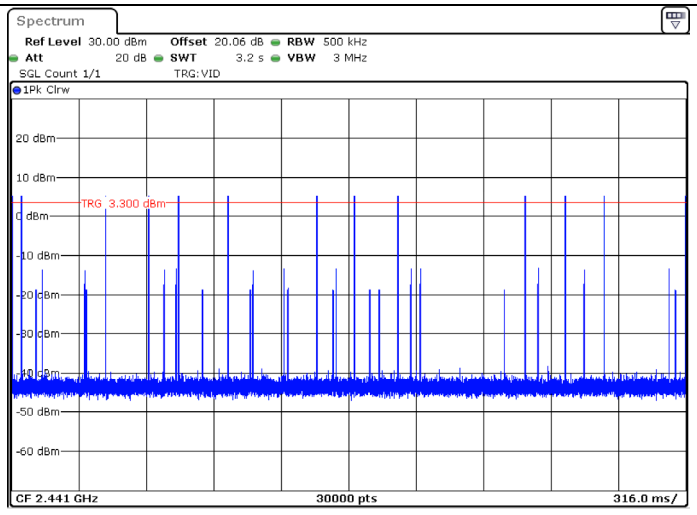


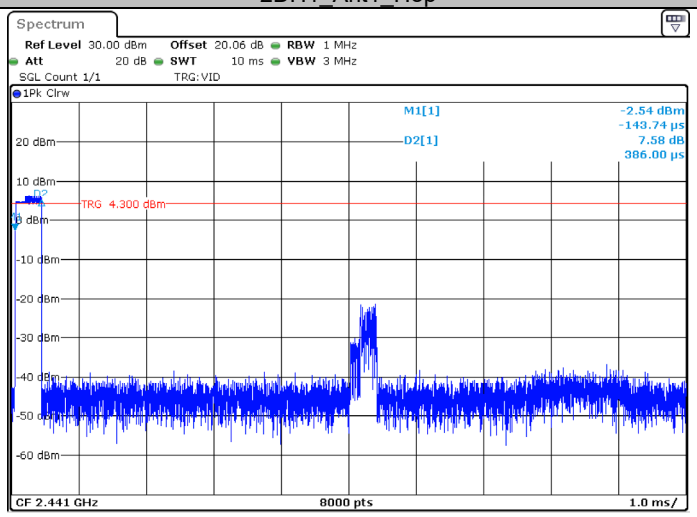
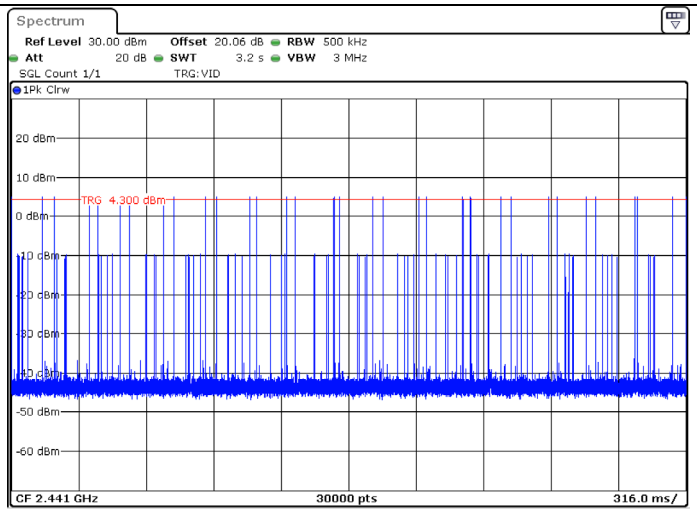


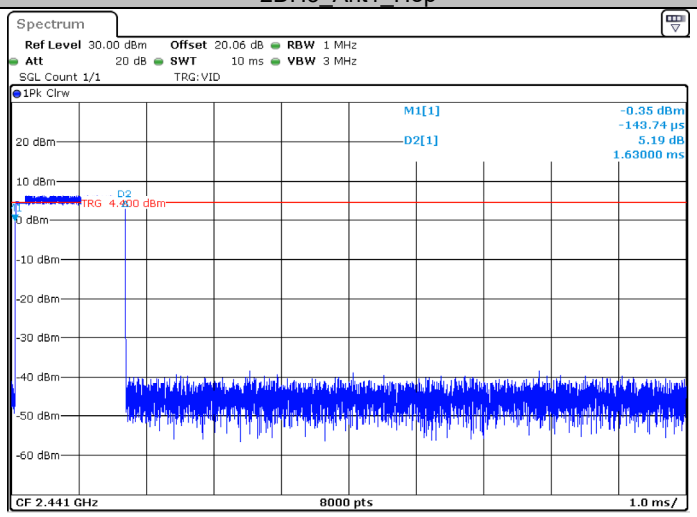
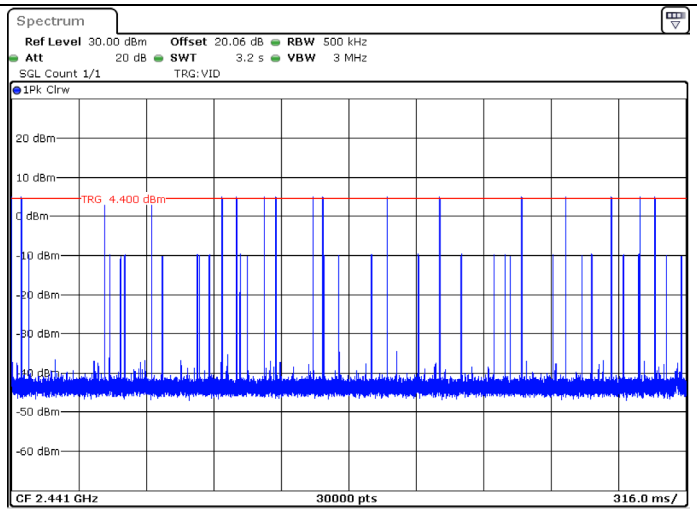
DH3_Ant1_Hop

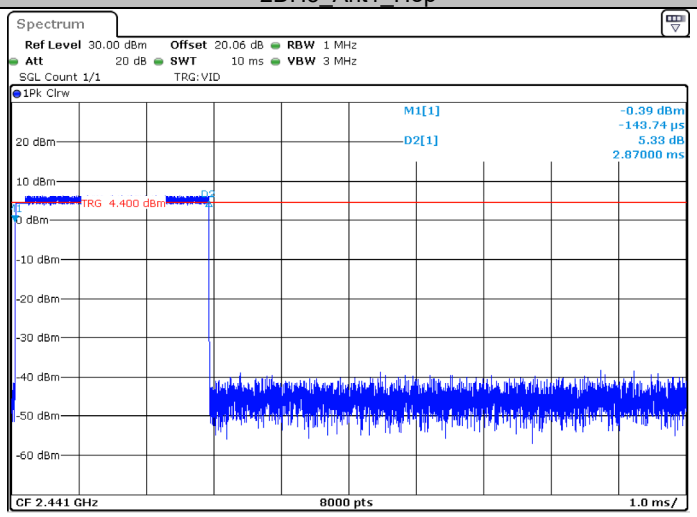
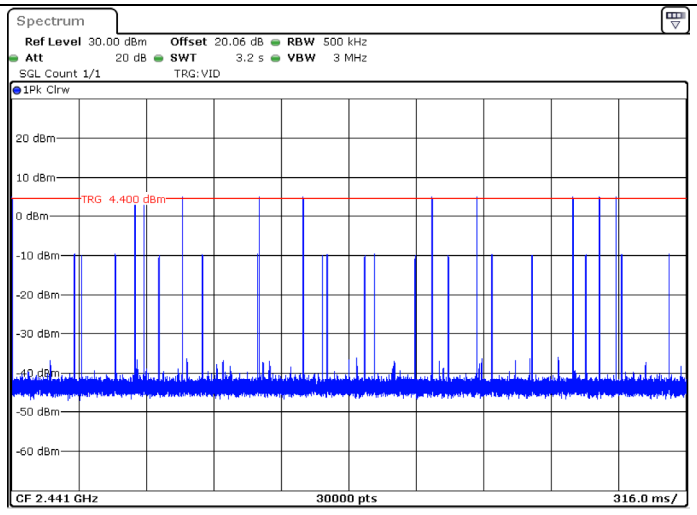

Spectrum
Ref Level 30.00 dBm Offset 20.06 dB RBW 1 MHz
Att 20 dB SWT 10 ms VBW 3 MHz
SGL Count 1/1 TRG:VID
1Pk Clrw
M1[1] 4.90 dBm
25 ns
D2[1] 0.26 dB
1.62600 ms
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
M1
D2
TRG 3.300 dBm
CF 2.441 GHz
8000 pts
1.0 ms/
ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 18:12:41

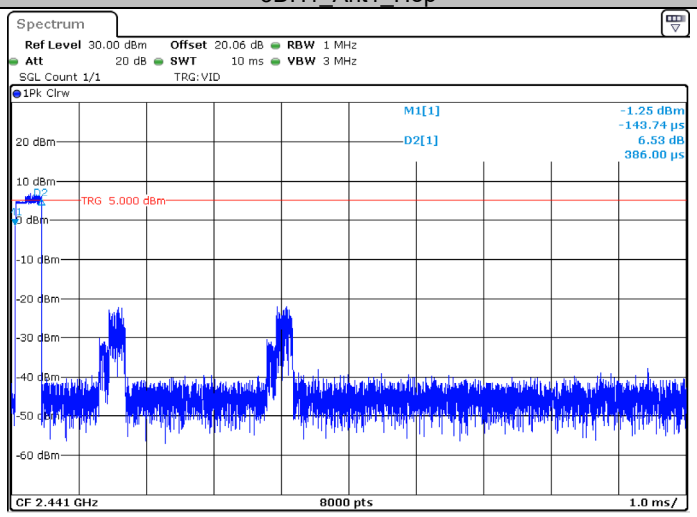
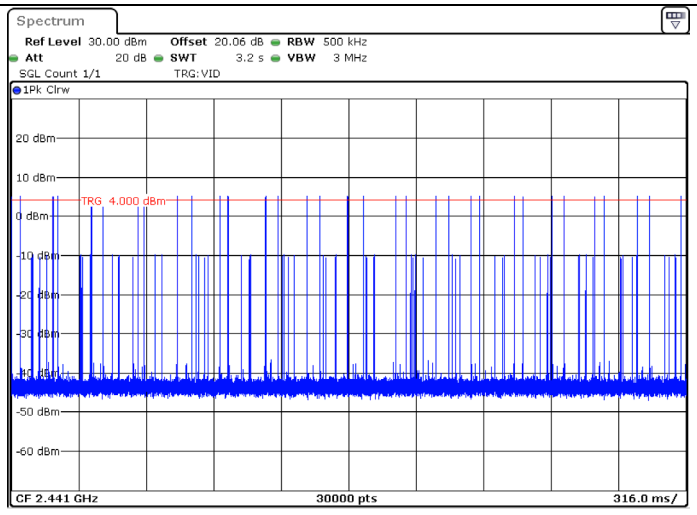

Spectrum
Ref Level 30.00 dBm Offset 20.06 dB RBW 500 kHz
Att 20 dB SWT 3.2 s VBW 3 MHz
SGL Count 1/1 TRG:VID
1Pk Clrw
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
TRG 3.300 dBm
CF 2.441 GHz
30000 pts
316.0 ms/
ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 18:12:46

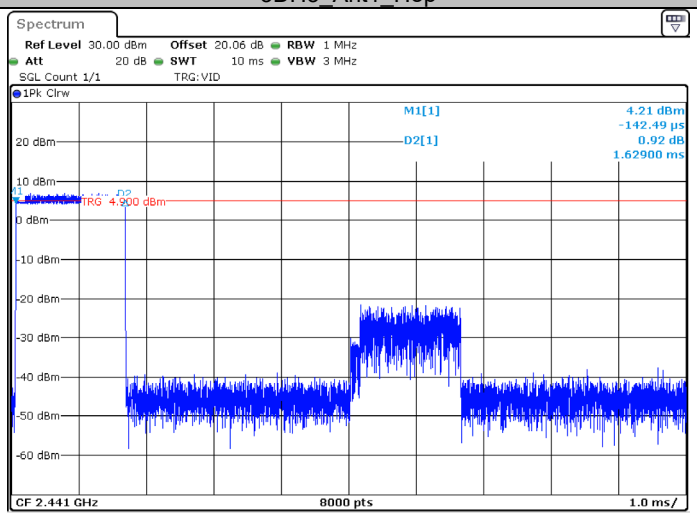
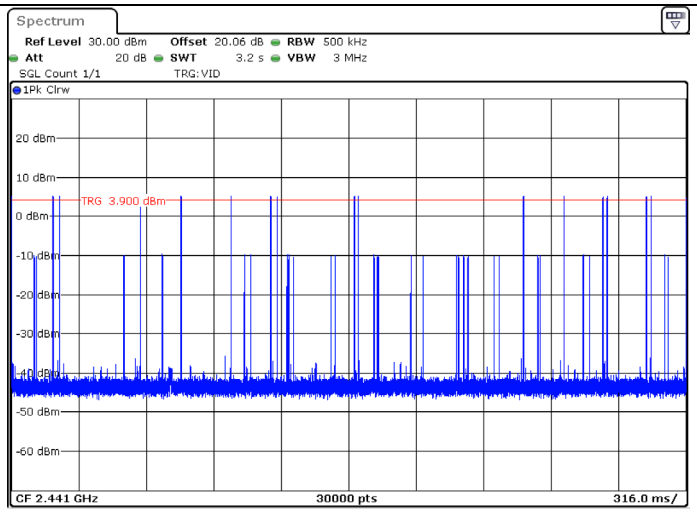
DH5_Ant1_Hop
 Spectrum Ref Level 30.00 dBm Offset 20.06 dB RBW 1 MHz Att 20 dB SWT 10 ms VBW 3 MHz SGL Count 1/1 TRG:VID 1Pk Clrw M1[1] -5.71 dBm -1.23 µs D2[1] 10.78 dB 2.86800 ms TRG 3.300 dBm CF 2.441 GHz 8000 pts 1.0 ms/ ProjectNo.:2401W50954E-RF Tester:Tom Tan Date: 15.AUG.2024 18:13:34
 Spectrum Ref Level 30.00 dBm Offset 20.06 dB RBW 500 kHz Att 20 dB SWT 3.2 s VBW 3 MHz SGL Count 1/1 TRG:VID 1Pk Clrw TRG 3.300 dBm CF 2.441 GHz 30000 pts 316.0 ms/ ProjectNo.:2401W50954E-RF Tester:Tom Tan Date: 15.AUG.2024 18:13:39

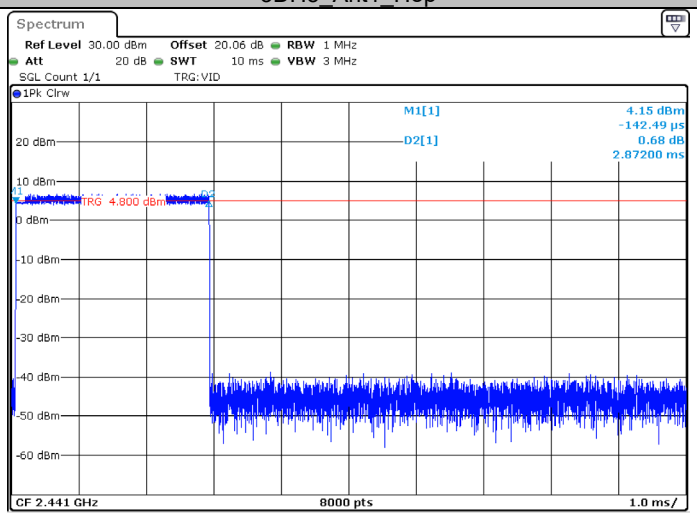
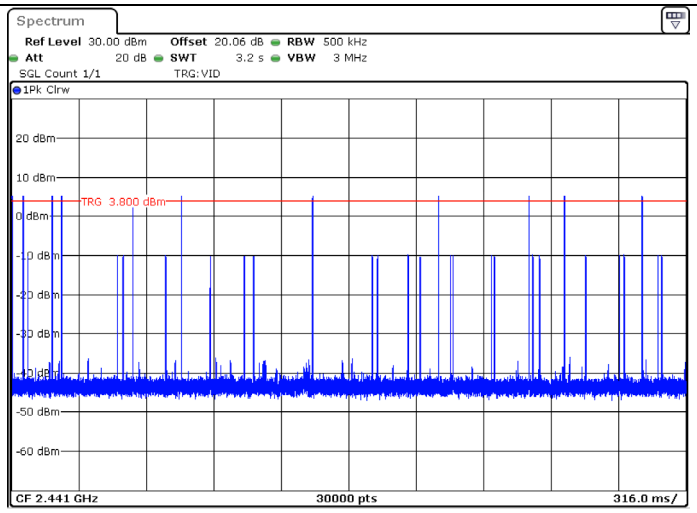
2DH1_Ant1_Hop



2DH3_Ant1_Hop
 ProjectNo.:2401W50954E-RF Tester:Tom Tan Date: 15.AUG.2024 18:26:23
 ProjectNo.:2401W50954E-RF Tester:Tom Tan Date: 15.AUG.2024 18:26:28

2DH5_Ant1_Hop



3DH1_Ant1_Hop



3DH3_Ant1_Hop



3DH5_Ant1_Hop



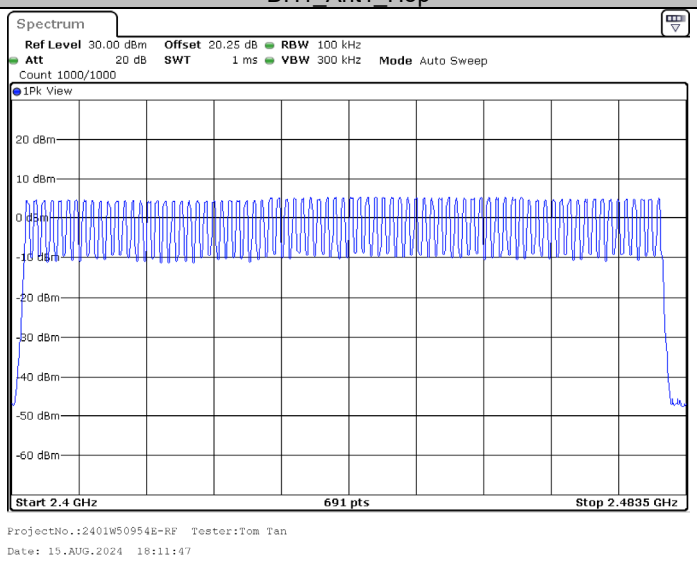
Appendix F: Number of hopping channels

Test Result

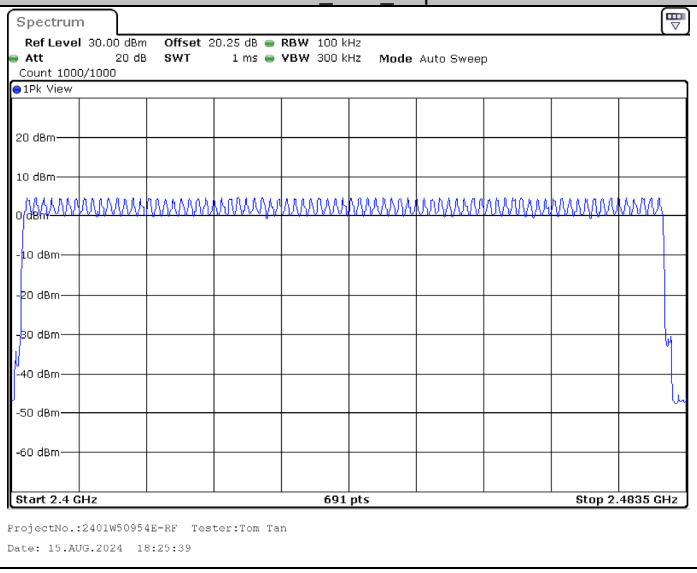
Test Mode	Antenna	Channel	Result[Num]	Limit[Num]	Verdict
DH1	Ant1	Hop	79	≥15	PASS
2DH1	Ant1	Hop	79	≥15	PASS
3DH1	Ant1	Hop	79	≥15	PASS

Test Graphs

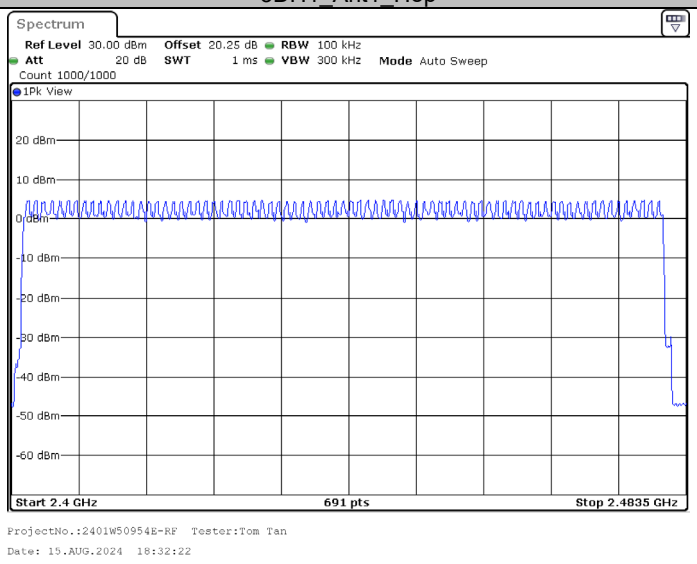
DH1_Ant1_Hop



2DH1_Ant1_Hop



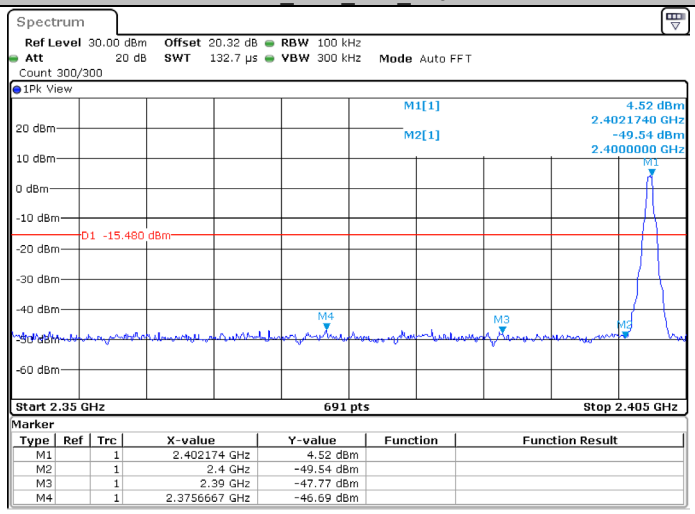
3DH1_Ant1_Hop



Appendix G: Band edge measurements

Test Graphs

DH1_Ant1_Low_2402

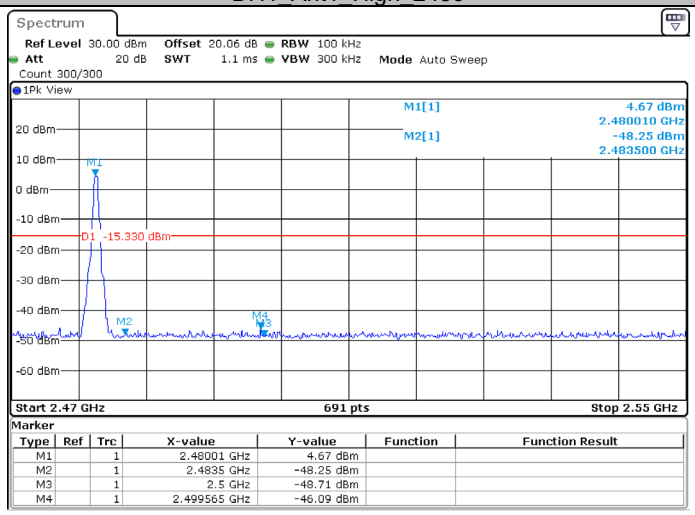


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.402174 GHz	4.52 dBm		
M2		1	2.4 GHz	-49.54 dBm		
M3		1	2.39 GHz	-47.77 dBm		
M4		1	2.3756667 GHz	-46.69 dBm		

ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 17:50:38

DH1_Ant1_High_2480

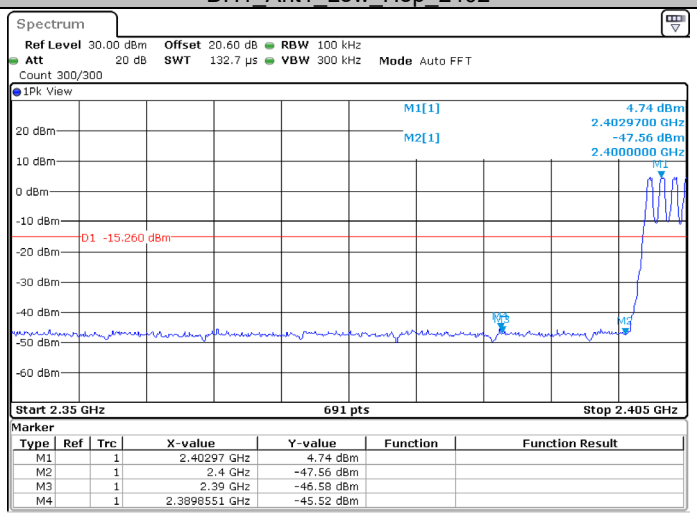


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.48001 GHz	4.67 dBm		
M2		1	2.4835 GHz	-48.25 dBm		
M3		1	2.5 GHz	-48.71 dBm		
M4		1	2.499565 GHz	-46.09 dBm		

ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 17:52:47

DH1_Ant1_Low_Hop_2402

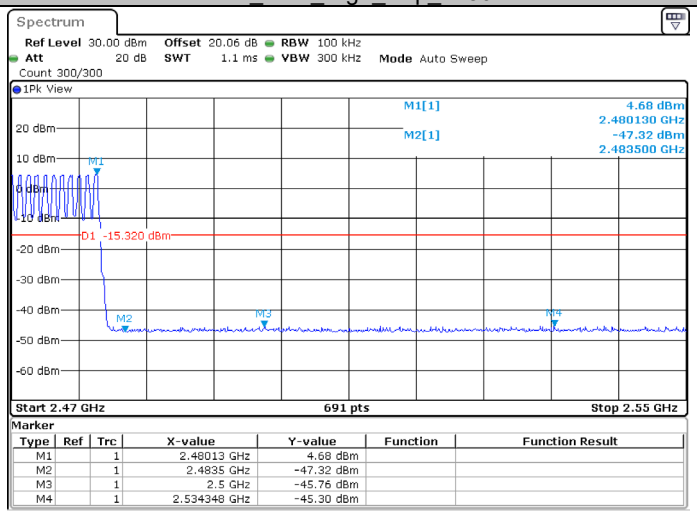


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.40297 GHz	4.74 dBm		
M2		1	2.4 GHz	-47.56 dBm		
M3		1	2.39 GHz	-46.58 dBm		
M4		1	2.3898551 GHz	-45.52 dBm		

ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 18:09:52

DH1_Ant1_High_Hop_2480

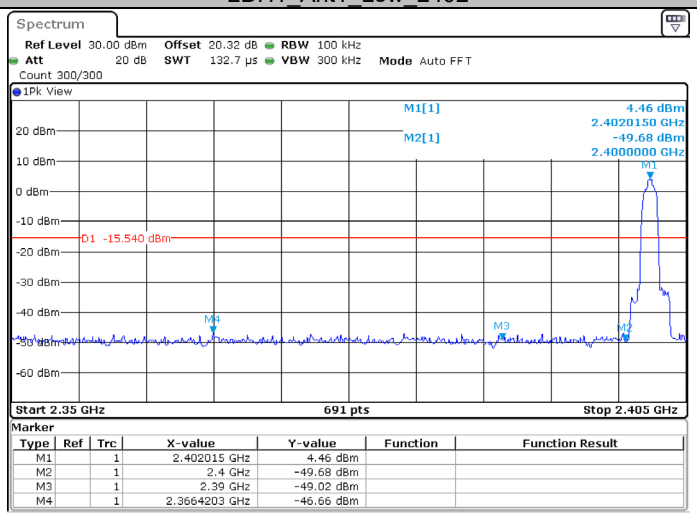


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.48013 GHz	4.68 dBm		
M2		1	2.4835 GHz	-47.32 dBm		
M3		1	2.5 GHz	-45.76 dBm		
M4		1	2.534348 GHz	-45.30 dBm		

ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 18:21:07

2DH1_Ant1_Low_2402



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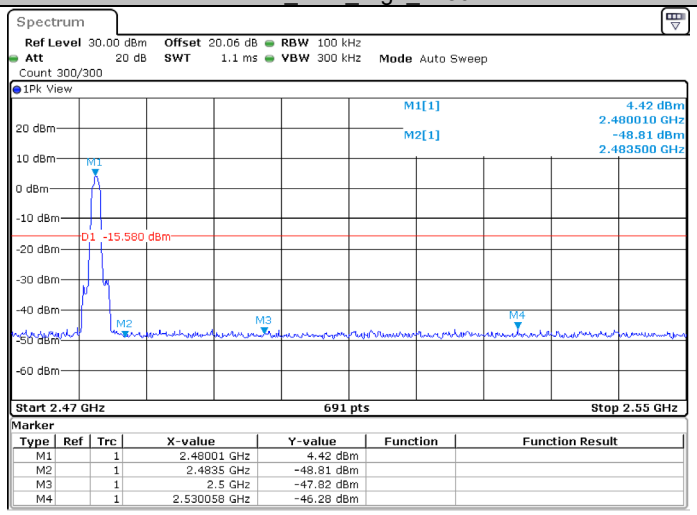
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.402015 GHz	4.46 dBm		
M2		1	2.4 GHz	-49.68 dBm		
M3		1	2.39 GHz	-49.02 dBm		
M4		1	2.3664203 GHz	-46.66 dBm		

ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 17:55:40

2DH1_Ant1_High_2480



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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.48001 GHz	4.42 dBm		
M2		1	2.4835 GHz	-48.81 dBm		
M3		1	2.5 GHz	-47.82 dBm		
M4		1	2.530058 GHz	-46.28 dBm		

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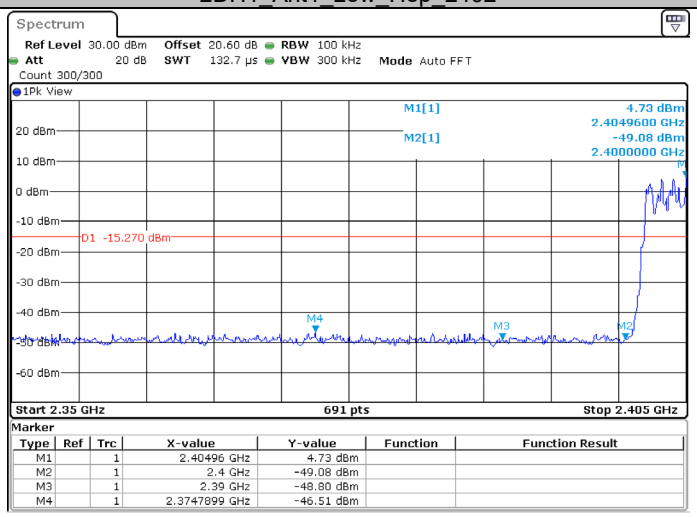
2DH1_Ant1_Low_Hop_2402



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.40496 GHz	4.73 dBm		
M2		1	2.4 GHz	-49.08 dBm		
M3		1	2.39 GHz	-48.80 dBm		
M4		1	2.3747899 GHz	-46.51 dBm		

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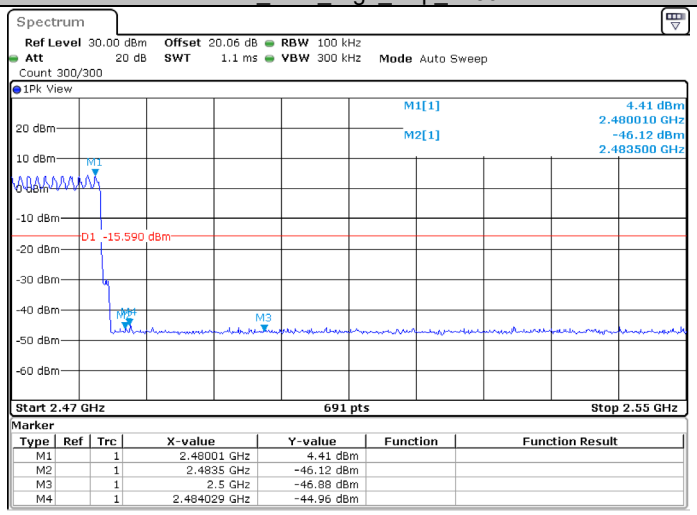
Date: 15.AUG.2024 18:23:03

2DH1_Ant1_High_Hop_2480



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.48001 GHz	4.41 dBm		
M2		1	2.4835 GHz	-46.12 dBm		
M3		1	2.5 GHz	-46.88 dBm		
M4		1	2.484029 GHz	-44.96 dBm		

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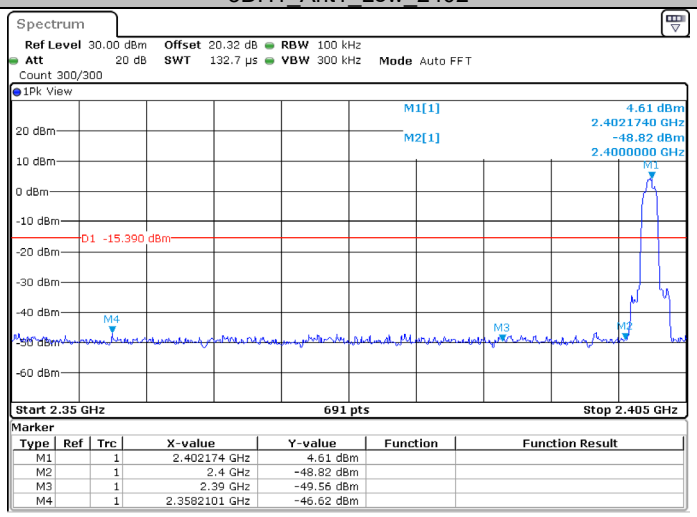
Date: 15.AUG.2024 18:29:14

3DH1_Ant1_Low_2402



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.402174 GHz	4.61 dBm		
M2		1	2.4 GHz	-48.82 dBm		
M3		1	2.39 GHz	-49.56 dBm		
M4		1	2.3582101 GHz	-46.62 dBm		

ProjectNo.:2401W50954E-RF Tester:Tom Tan
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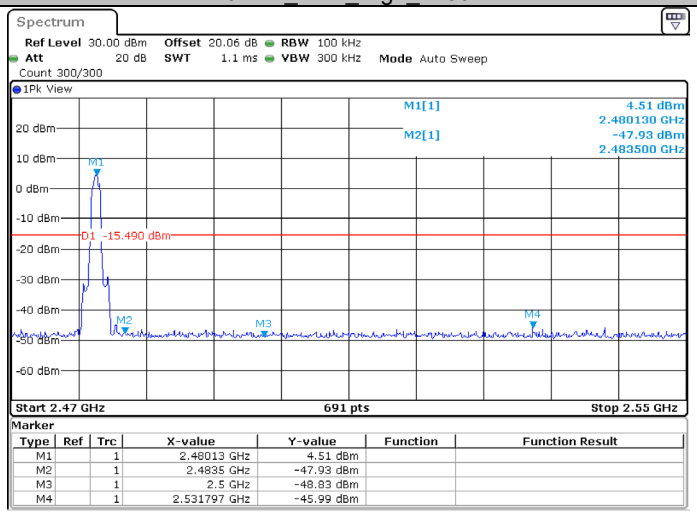
3DH1_Ant1_High_2480

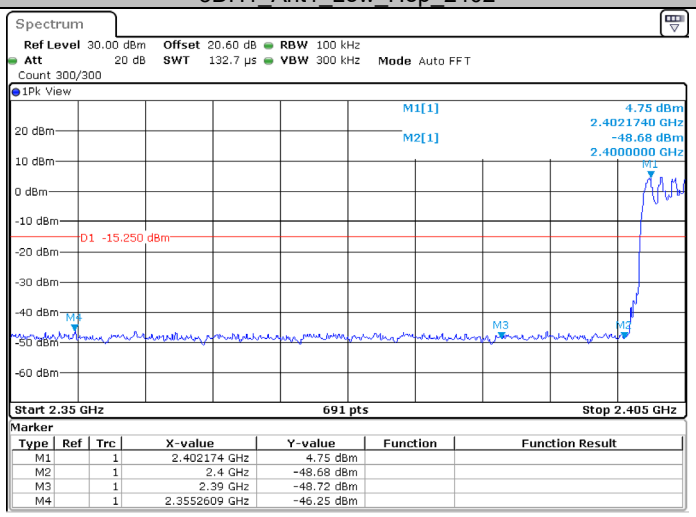


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.48013 GHz	4.51 dBm		
M2		1	2.4835 GHz	-47.93 dBm		
M3		1	2.5 GHz	-48.83 dBm		
M4		1	2.531797 GHz	-45.99 dBm		

ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 18:03:56

3DH1_Ant1_Low_Hop_2402



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.402174 GHz	4.75 dBm		
M2		1	2.4 GHz	-48.68 dBm		
M3		1	2.39 GHz	-48.72 dBm		
M4		1	2.3552609 GHz	-46.25 dBm		

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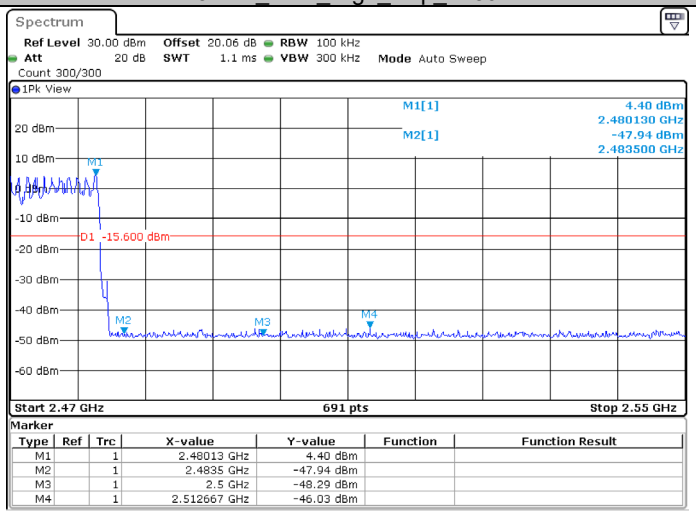
3DH1_Ant1_High_Hop_2480



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.48013 GHz	4.40 dBm		
M2		1	2.4835 GHz	-47.94 dBm		
M3		1	2.5 GHz	-48.29 dBm		
M4		1	2.512667 GHz	-46.03 dBm		

ProjectNo.:2401W50954E-RF Tester:Tom Tan
Date: 15.AUG.2024 18:34:34

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