

RF TEST REPORT

For

MAYFLASH LIMITED

Product Name: F700 dongle

Model(s): F700 dongle

Report Reference No. : POCE230818309HRW

FCC ID : 2ASVQ-DONGLE

Applicant's Name : MAYFLASH LIMITED

Address : 3/F,Buiding No.1,TingWei Industrial Park,LiuFang Rd, No.67, BaoAn, Shenzhen, China.

Testing Laboratory : Shenzhen POCE Technology Co., Ltd.

Address : 102 Building H1 & 1/F., Building H, Hongfa Science & Technology Park, Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China

Test Specification Standard : 47 CFR Part 15.247
ANSI C63.10-2013 & KDB 558074 D01 Meas Guidance v05r02

Date of Receipt : August 09, 2023

Date of Test : August 09, 2023 to August 30, 2023

Data of Issue : August 30, 2023

Result : Pass

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Revision History Of Report

Version	Description	REPORT No.	Issue Date
V1.0	Original	POCE230818309HRW	August 30, 2023

NOTE1:

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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Machael Mo/ Manager

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1 TEST SUMMARY

1.1 Test Standards

The tests were performed according to following standards:

47 CFR Part 15.247: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

1.2 Summary of Test Result

Item	Standard	Requirement	Result
Antenna requirement	47 CFR Part 15.247	47 CFR 15.203	Pass
Conducted Emission at AC power line	47 CFR Part 15.247	47 CFR 15.207(a)	Pass
Occupied Bandwidth	47 CFR Part 15.247	47 CFR 15.247(a)(2)	Pass
Maximum Conducted Output Power	47 CFR Part 15.247	47 CFR 15.247(b)(3)	Pass
Power Spectral Density	47 CFR Part 15.247	47 CFR 15.247(e)	Pass
Emissions in non-restricted frequency bands	47 CFR Part 15.247	47 CFR 15.247(d)	Pass
Band edge emissions (Radiated)	47 CFR Part 15.247	47 CFR 15.247(d)	Pass
Emissions in restricted frequency bands (below 1GHz)	47 CFR Part 15.247	47 CFR 15.247(d)	Pass
Emissions in restricted frequency bands (above 1GHz)	47 CFR Part 15.247	47 CFR 15.247(d)	Pass

Note: 1.N/A -this device(EUT) is not applicable to this testing item
2. RF-conducted test results including cable loss.

2 GENERAL INFORMATION

2.1 Client Information

Applicant's Name : MAYFLASH LIMITED
Address : 3/F,Buiding No.1,TingWei Industrial Park,LiuFang Rd, No.67, BaoAn, Shenzhen, China.

Manufacturer : MAYFLASH LIMITED
Address : 3/F,Buiding No.1,TingWei Industrial Park,LiuFang Rd, No.67, BaoAn, Shenzhen, China.

2.2 Description of Device (EUT)

Product Name:	F700 dongle
Sample number:	230818002
Model/Type reference:	F700 dongle
Series Model:	/
Model Difference:	/
Product Description:	F700 dongle
Operation Frequency:	2402MHz to 2480MHz
Number of Channels:	40
Modulation Type:	GFSK
Antenna Type:	PCB ANTENNA
Antenna Gain:	2.23dBi
Hardware Version:	V03
Software Version:	V2.0

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402 MHz	11	2422 MHz	21	2442 MHz	31	2462 MHz
2	2404 MHz	12	2424 MHz	22	2444 MHz	32	2464 MHz
3	2406 MHz	13	2426 MHz	23	2446 MHz	33	2466 MHz
4	2408 MHz	14	2428 MHz	24	2448 MHz	34	2468 MHz
5	2410 MHz	15	2430 MHz	25	2450 MHz	35	2470 MHz
6	2412 MHz	16	2432 MHz	26	2452 MHz	36	2472 MHz
7	2414 MHz	17	2434 MHz	27	2454 MHz	37	2474 MHz
8	2416 MHz	18	2436 MHz	28	2456 MHz	38	2476 MHz
9	2418 MHz	19	2438 MHz	29	2458 MHz	39	2478 MHz
10	2420 MHz	20	2440 MHz	30	2460 MHz	40	2480 MHz

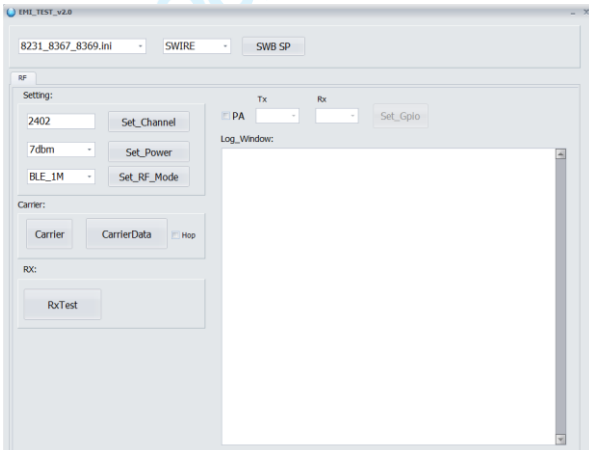
Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	Frequency (MHz)
Lowest channel	2402MHz
Middle channel	2440MHz
Highest channel	2480MHz

2.3 Description of Test Modes

No	Title	Description
TM1	TX mode	Keep the EUT works in continuously transmitting mode with GFSK modulation.

Title	Description
TM1	Keep the EUT works in continuously transmitting mode with GFSK modulation.
	☒ Special software is used. ☐ Through engineering command into the engineering mode. engineering command: *##3646633##* ☐ Other method:
	Special software: 

2.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Description	Manufacturer	Model No.	Remark	Certification
1	adapter	huawei	HW-100100C01	Provide by lab	SDOC
2	PC	DELL	TP00067A	Provide by lab	SDOC

2.5 Equipments Used During The Test

Conducted Emission at AC power line

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal. Due Date
Shielding room	CY	8*4*3	20160102	2023/1/26	2025/1/25
Pulse Limiter	Schwarzbeck	VTSD 9561	561-G071	2023/2/27	2024/2/26
Cable	Schwarzbeck	/	/	2023/2/27	2024/2/26
Test Receiver	Rohde & Schwarz	ESPI	1164.6607K03-102109-MH	2023/6/13	2024/6/12
L.I.S.N	R&S	ESH3-Z5	831.5518.52	2022/12/29	2023/12/28
L.I.S.N	Schwarzbeck	NSLK 8126	NSLK 8126	/	/
50ΩCoaxial Switch	Anritsu	MP59B	M20531	/	/
EMI Testsoftware	Farad	EZ -EMC	V1.1.42	/	/

Emissions in restricted frequency bands and RF

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Test Receiver	R&S	ESCI	102109	2023/6/13	2024/6/12
Spectrum Analyzer	R&S	FSP30	1321.3008K40-101729-jR	2023/6/14	2024/6/13
966 Chamber	CY	9*6*6	20160101	2023/1/26	2025/1/25
Bore-sighting Antenna rack	PBB	1308503	16033	/	/
Loop antenna	ZHINAN	ZN30900C	ZN30900C	2021/7/5	2024/7/4
Broadband Antenna	Sunol Sciences	JB6 Antenna	A090414	2023/5-21	2025/5-20
Horn Antenna	Sunol Sciences	DRH-118	A091114	2023/5/13	2025/5/12
Horn antenna	COM-POWER	AH-1840(40G)	10100008	2023/4/5	2025/4/4
Power APM(LF)	Schwarzbeck	BBV9743	9743-151	2023/6/13	2024/6/12
Power APM(HF)	Schwarzbeck	BBV9718	9718-282	2023/6/13	2024/6/12
Cable(LF)#2	Schwarzbeck	/	/	2023/2/27	2024/2/26
Cable(LF)#1	Schwarzbeck	/	/	2023/2/27	2024/2/26
Cable(HF)#2	Schwarzbeck	AK9515E	96250	2023/2/28	2024/2/27
Cable(HF)#1	Schwarzbeck	SYV-50-3-1	/	2023/2/27	2024/2/26
Power divider	MIDEWEST	PWD-2533	SMA-79	2023/5/11	2026/5/10
signal generator	Keysight	N5181A	MY48180415	2022/12/10	2023/12/9
signal generator	Keysight	N5182A	MY50143455	2022/12/29	2023/12/28
Spectrum Analyzer	Keysight	N9020A	MY53420323	2022/12/29	2023/12/28
RF Sensor Unit	TACHOY	TR1029-2	000001	/	/
RF Control Unit	TACHOY	TR1029-1	000001	/	/
Position Controller	MF	MF-7802	/	/	/
EMI Testsoftware	Farad	EZ -EMC	V1.1.42	/	/
RF TestSoftware	TACHOY	RTS-01	V2.0.0.0	/	/

2.6 Statement Of The Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Disturbance (0.15~30MHz)	$\pm 3.41\text{dB}$
Occupied Bandwidth	$\pm 3.63\%$
RF power density	$\pm 0.234\%$
Radio Frequency	2×10^{-7}
RF conducted power	$\pm 0.733\text{dB}$
Duty cycle	$\pm 3.1\%$
Conducted Spurious emissions	$\pm 1.98\text{dB}$
Radiated Emission (Above 1GHz)	$\pm 5.46\text{dB}$
Radiated Emission (Below 1GHz)	$\pm 5.79\text{dB}$
Note: (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.	

2.7 Identification of Testing Laboratory

Company Name:	Shenzhen POCE Technology Co., Ltd.
Address:	101-102 Building H5 & 1/F., Building H, Hongfa Science & Technology Park, Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China
Phone Number:	+86-13267178997
Fax Number:	86-755-29113252

Identification of the Responsible Testing Location

Company Name:	Shenzhen POCE Technology Co., Ltd.
Address:	101-102 Building H5 & 1/F., Building H, Hongfa Science & Technology Park, Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China
Phone Number:	+86-13267178997
Fax Number:	86-755-29113252
FCC Registration Number:	0032847402
Designation Number:	CN1342
Test Firm Registration No.:	778666
A2LA Certificate Number:	6270.01

2.8 Announcement

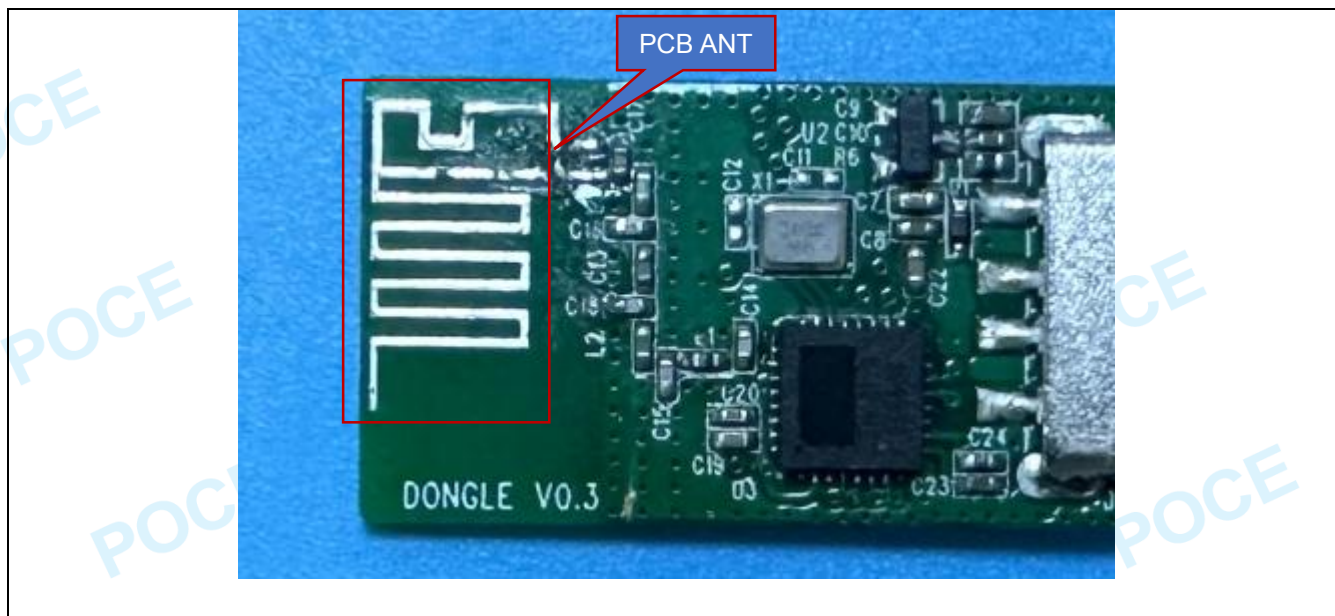
- (1) The test report reference to the report template version v0.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) This document may not be altered or revised in any way unless done so by POCE and all revisions are duly noted in the revisions section.
- (5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
- (6) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

3 Evaluation Results (Evaluation)

3.1 Antenna requirement

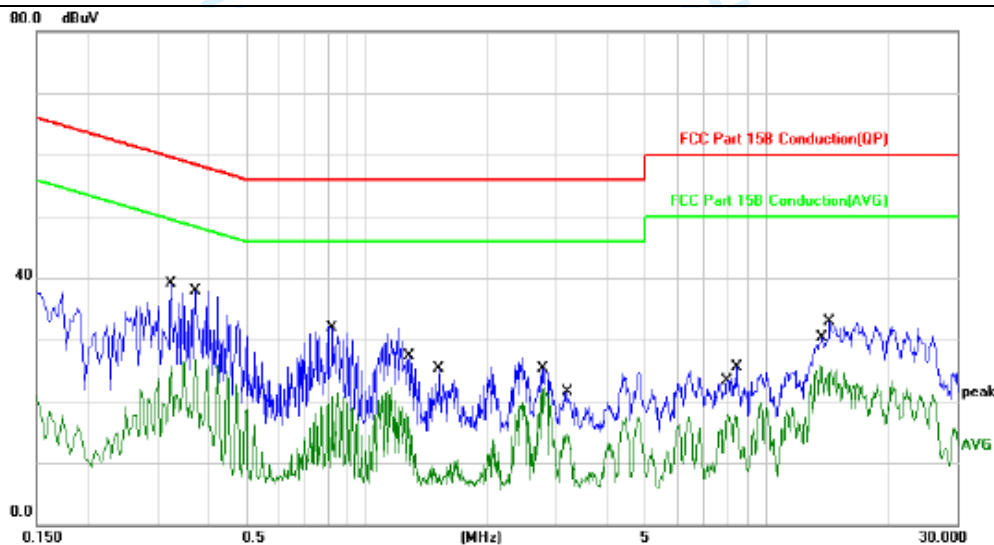
Test Requirement:	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.
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3.1.1 Conclusion:



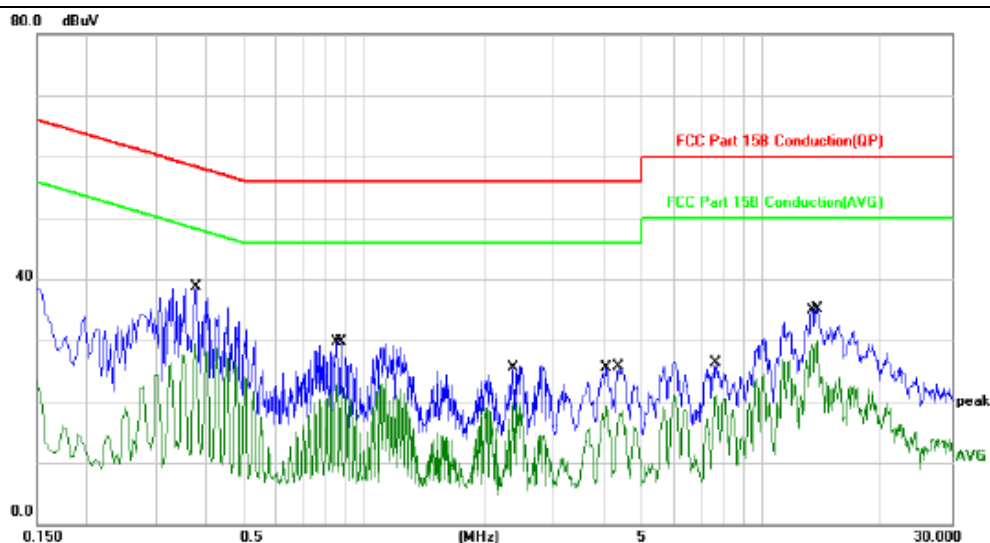
4.1.3 Test Data:

TM1 / Line: Line / Band: 2400-2483.5 MHz / BW: 1 / CH: M



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.3260	39.03	-0.02	39.01	59.55	-20.54	QP	
2		0.3738	26.70	-0.02	26.68	48.41	-21.73	AVG	
3		0.8258	31.95	-0.08	31.87	56.00	-24.13	QP	
4		0.8258	20.85	-0.08	20.77	46.00	-25.23	AVG	
5		1.2740	17.72	-0.16	17.56	46.00	-28.44	AVG	
6		1.5260	25.51	-0.19	25.32	56.00	-30.68	QP	
7		2.7980	22.56	-0.17	22.39	46.00	-23.61	AVG	
8		3.1739	21.62	-0.18	21.44	56.00	-34.56	QP	
9		8.0176	18.02	-0.19	17.83	50.00	-32.17	AVG	
10		8.4177	25.72	-0.18	25.54	60.00	-34.46	QP	
11		13.6859	26.05	-0.17	25.88	50.00	-24.12	AVG	
12		14.4337	33.02	-0.21	32.81	60.00	-27.19	QP	

TM1 / Line: Neutral / Band: 2400-2483.5 MHz / BW: 1 / CH: M



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.3738	29.48	-0.02	29.46	48.41	-18.95	AVG	
2		0.3780	38.62	-0.01	38.61	58.32	-19.71	QP	
3		0.8498	22.80	-0.08	22.72	46.00	-23.28	AVG	
4		0.8739	29.77	-0.09	29.68	56.00	-26.32	QP	
5		2.3740	25.78	-0.25	25.53	56.00	-30.47	QP	
6		2.3740	20.17	-0.25	19.92	46.00	-26.08	AVG	
7		4.0499	19.41	-0.20	19.21	46.00	-26.79	AVG	
8		4.3498	25.96	-0.21	25.75	56.00	-30.25	QP	
9		7.6737	26.53	-0.28	26.25	60.00	-33.75	QP	
10		7.6737	21.36	-0.28	21.08	50.00	-28.92	AVG	
11		13.3978	35.01	-0.16	34.85	60.00	-25.15	QP	
12		13.6979	30.10	-0.17	29.93	50.00	-20.07	AVG	

Note:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Measurement Level = Reading level + Correct Factor, Over = Limit - Measurement

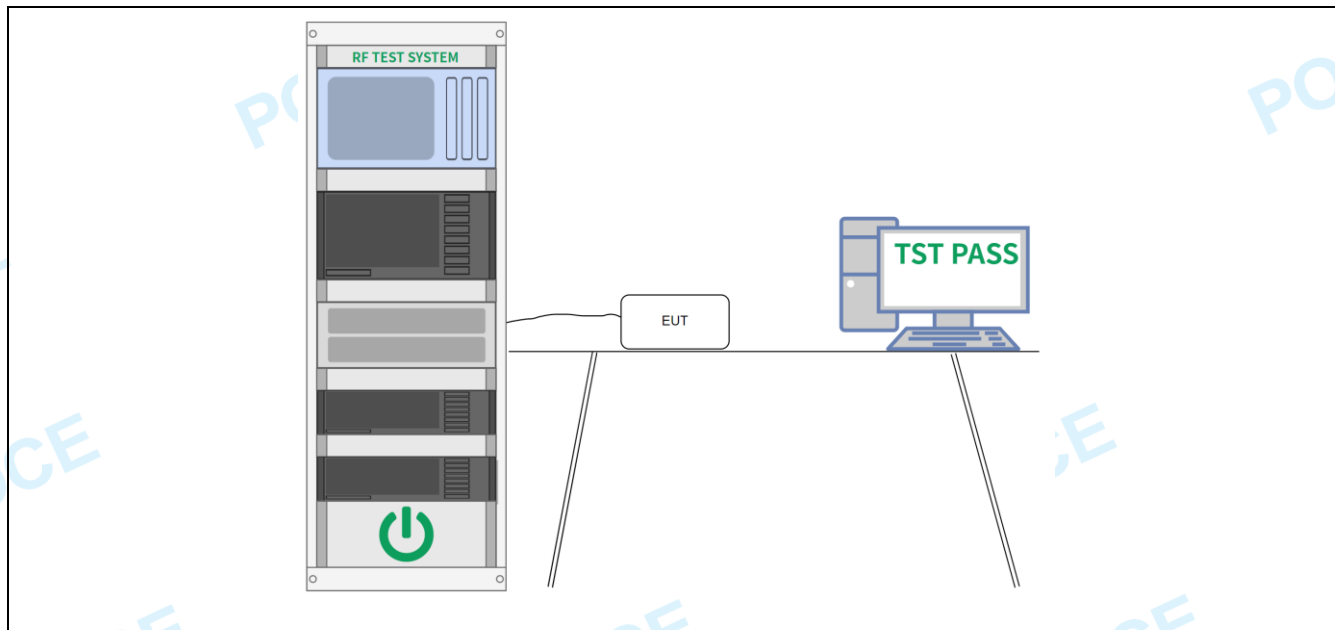
4.2 Occupied Bandwidth

Test Requirement:	47 CFR 15.247(a)(2)
Test Limit:	Refer to 47 CFR 15.247(a)(2), Systems using digital modulation techniques may operate in the 902-928 MHz, and 2400-2483.5 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.
Test Method:	ANSI C63.10-2020, section 11.8 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	11.8.1 Option 1 The steps for the first option are as follows: a) Set RBW = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz. b) Set the VBW $\geq [3 \times \text{RBW}]$. c) Detector = peak. d) Trace mode = max-hold. e) Sweep = No faster than coupled (auto) time. f) Allow the trace to stabilize. g) Measure the maximum width of the emission by placing two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “-6 dB down amplitude”. If a marker is below this “-6 dB down amplitude” value, then it shall be as close as possible to this value. 11.8.2 Option 2 The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described in 11.8.1 (i.e., RBW = 100 kHz, VBW $\geq 3 \times \text{RBW}$, and peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥ 6 dB.

4.2.1 E.U.T. Operation:

Operating Environment:					
Temperature:	22.6 °C	Humidity:	50.3 %	Atmospheric Pressure:	102 kPa
Pre test mode:	TM1				
Final test mode:	TM1				

4.2.2 Test Setup Diagram:



4.2.3 Test Data:

Please Refer to Appendix for Details.

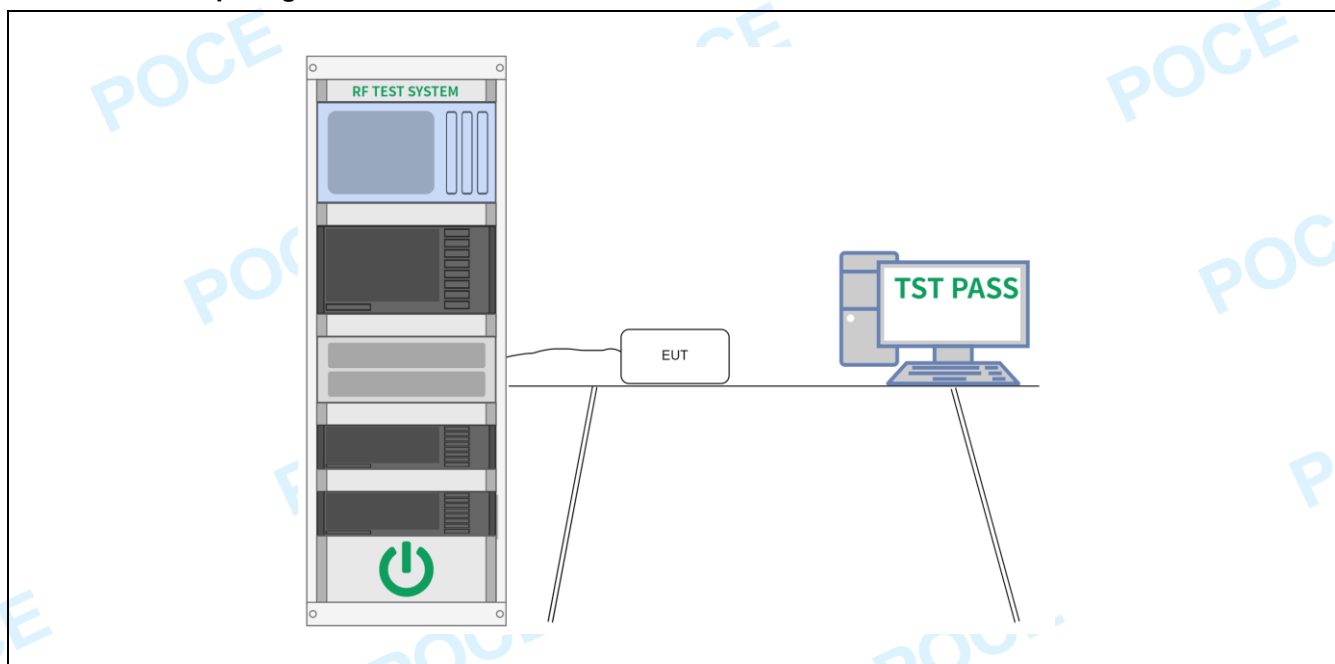
4.3 Maximum Conducted Output Power

Test Requirement:	47 CFR 15.247(b)(3)
Test Limit:	Refer to 47 CFR 15.247(b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.
Test Method:	ANSI C63.10-2020 section 11.9.1 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2020, section 11.9.1 Maximum peak conducted output power

4.3.1 E.U.T. Operation:

Operating Environment:					
Temperature:	22.6 °C	Humidity:	50.3 %	Atmospheric Pressure:	102 kPa
Pre test mode:	TM1				
Final test mode:	TM1				

4.3.2 Test Setup Diagram:



4.3.3 Test Data:

Please Refer to Appendix for Details.

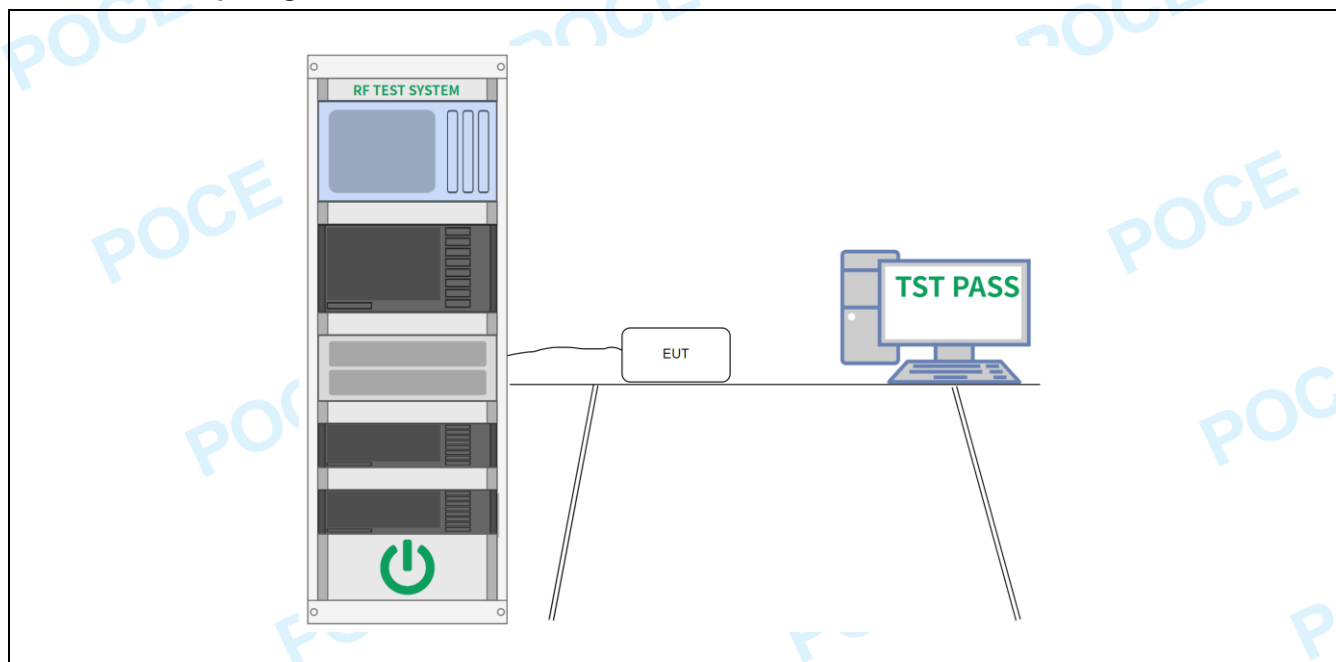
4.4 Power Spectral Density

Test Requirement:	47 CFR 15.247(e)
Test Limit:	Refer to 47 CFR 15.247(e), For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.
Test Method:	ANSI C63.10-2020, section 11.10 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2020, section 11.10, Maximum power spectral density level in the fundamental emission

4.4.1 E.U.T. Operation:

Operating Environment:					
Temperature:	22.6 °C	Humidity:	50.3 %	Atmospheric Pressure:	102 kPa
Pre test mode:	TM1				
Final test mode:	TM1				

4.4.2 Test Setup Diagram:



4.4.3 Test Data:

Please Refer to Appendix for Details.

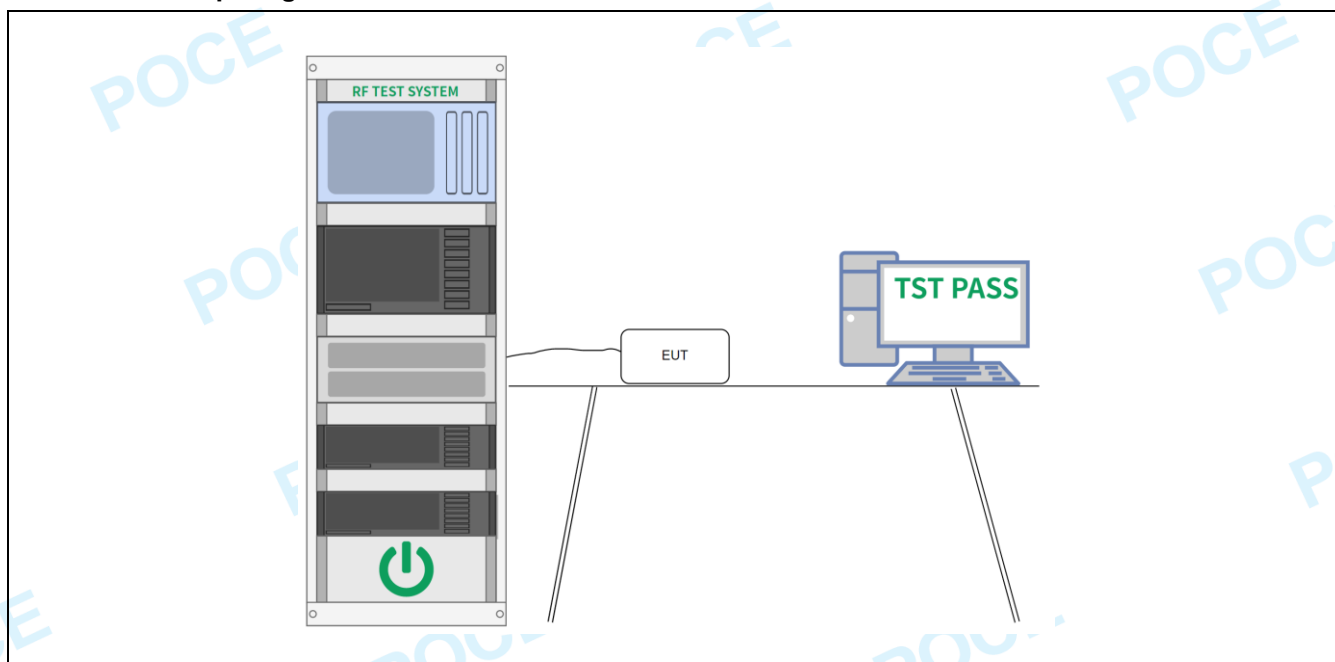
4.5 Emissions in non-restricted frequency bands

Test Requirement:	47 CFR 15.247(d)
Test Limit:	Refer to 47 CFR 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.
Test Method:	ANSI C63.10-2020 section 11.11 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2020 Section 11.11.1, Section 11.11.2, Section 11.11.3

4.5.1 E.U.T. Operation:

Operating Environment:					
Temperature:	22.6 °C	Humidity:	50.3 %	Atmospheric Pressure:	102 kPa
Pre test mode:	TM1				
Final test mode:	TM1				

4.5.2 Test Setup Diagram:



4.5.3 Test Data:

Please Refer to Appendix for Details.

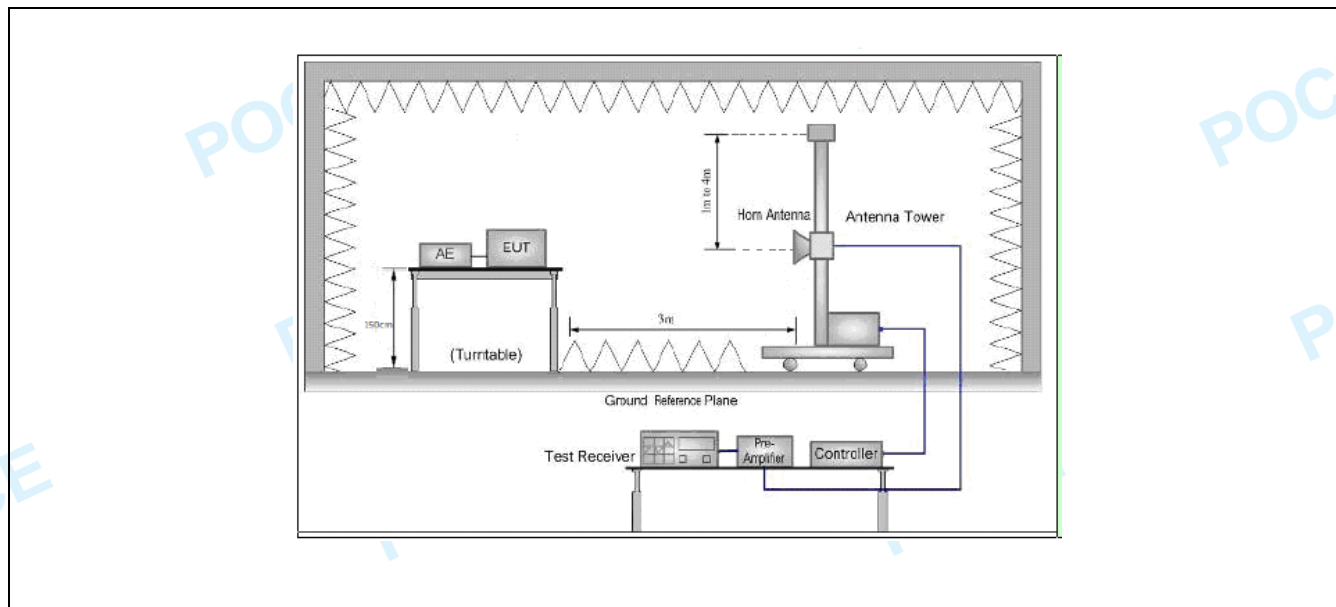
4.6 Band edge emissions (Radiated)

Test Requirement:	Refer to 47 CFR 15.247(d), 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 Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.			
Test Method:	ANSI C63.10-2020 section 6.10 KDB 558074 D01 15.247 Meas Guidance v05r02		
Procedure:	ANSI C63.10-2020 section 6.10.5.2		

4.6.1 E.U.T. Operation:

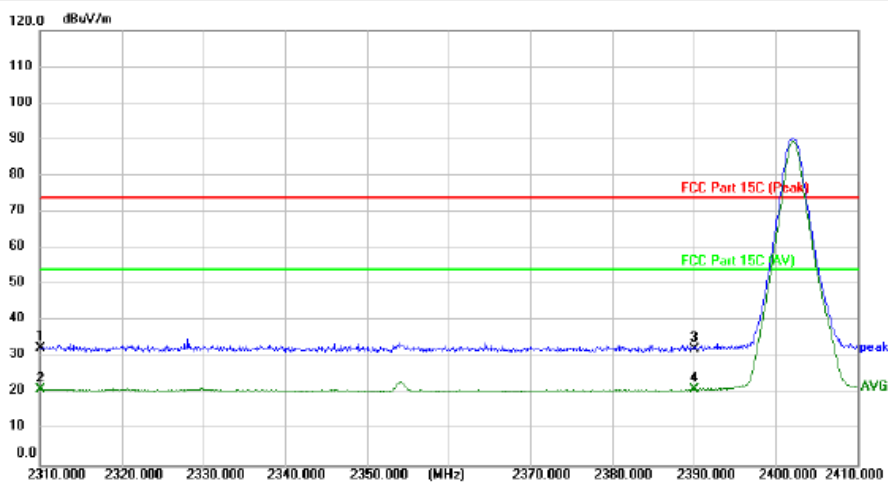
Operating Environment:					
Temperature:	22.6 °C	Humidity:	50.3 %	Atmospheric Pressure:	102 kPa
Pre test mode:	TM1				
Final test mode:	TM1				

4.6.2 Test Setup Diagram:



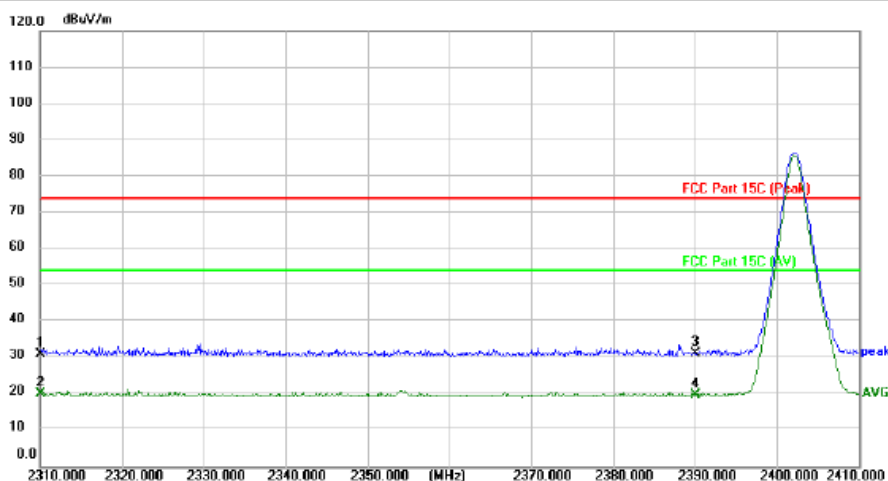
4.6.3 Test Data:

TM1 / Polarization: Horizontal / Band: 2.4G / BW: 1 / CH: L



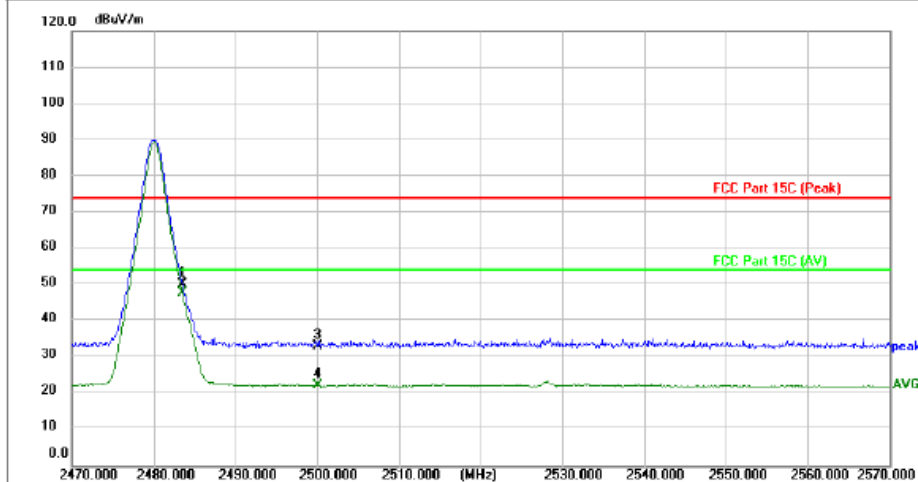
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	39.53	-6.93	32.60	74.00	-41.40	peak			P	
2 *	2310.000	28.07	-6.93	21.14	54.00	-32.86	AVG			P	
3	2390.000	39.03	-6.72	32.31	74.00	-41.69	peak			P	
4	2390.000	27.78	-6.72	21.06	54.00	-32.94	AVG			P	

TM1 / Polarization: Vertical / Band: 2.4G / BW: 1 / CH: L



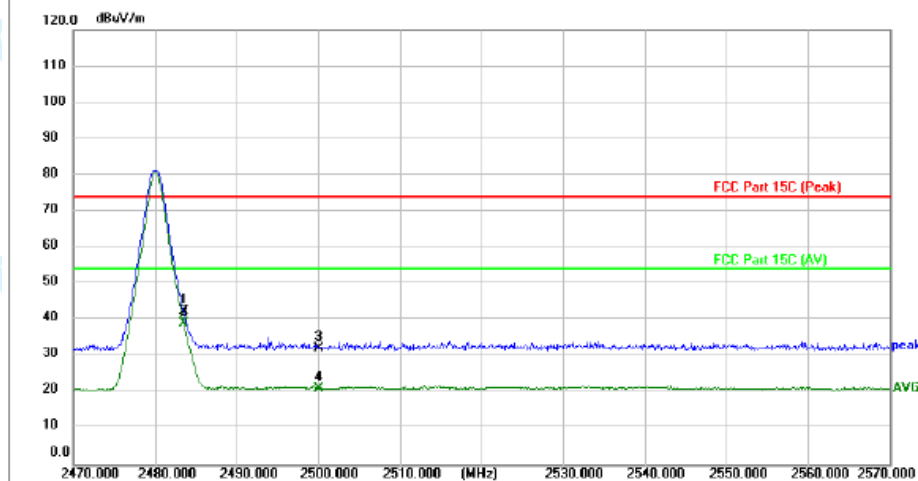
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	39.15	-8.23	30.92	74.00	-43.08	peak			P	
2 *	2310.000	28.50	-8.23	20.27	54.00	-33.73	AVG			P	
3	2390.000	39.24	-7.91	31.33	74.00	-42.67	peak			P	
4	2390.000	27.86	-7.91	19.95	54.00	-34.05	AVG			P	

TM1 / Polarization: Horizontal / Band: 2.4G / BW: 1 / CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	56.82	-6.47	50.35	74.00	-23.65	peak			P	
2 *	2483.500	54.38	-6.47	47.91	54.00	-6.09	AVG			P	
3	2500.000	39.72	-6.43	33.29	74.00	-40.71	peak			P	
4	2500.000	28.84	-6.43	22.41	54.00	-31.59	AVG			P	

TM1 / Polarization: Vertical / Band: 2.4G / BW: 1 / CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	49.88	-7.54	42.34	74.00	-31.66	peak	150		P	
2 *	2483.500	46.78	-7.54	39.24	54.00	-14.76	AVG	150		P	
3	2500.000	39.79	-7.48	32.31	74.00	-41.69	peak	150		P	
4	2500.000	28.72	-7.48	21.24	54.00	-32.76	AVG	150		P	

Remark:

1.Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.

2. Over= Measurement Level - Limit

Measurement Level=Test receiver reading + correction factor

Correction Factor= Antenna Factor + Cable loss – Pre-amplifier

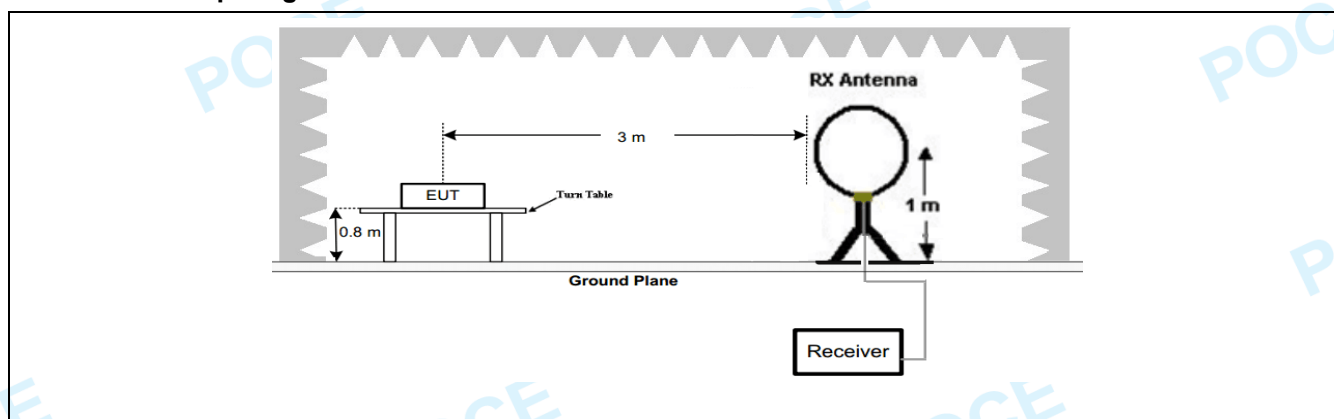
4.7 Emissions in restricted frequency bands (below 1GHz)

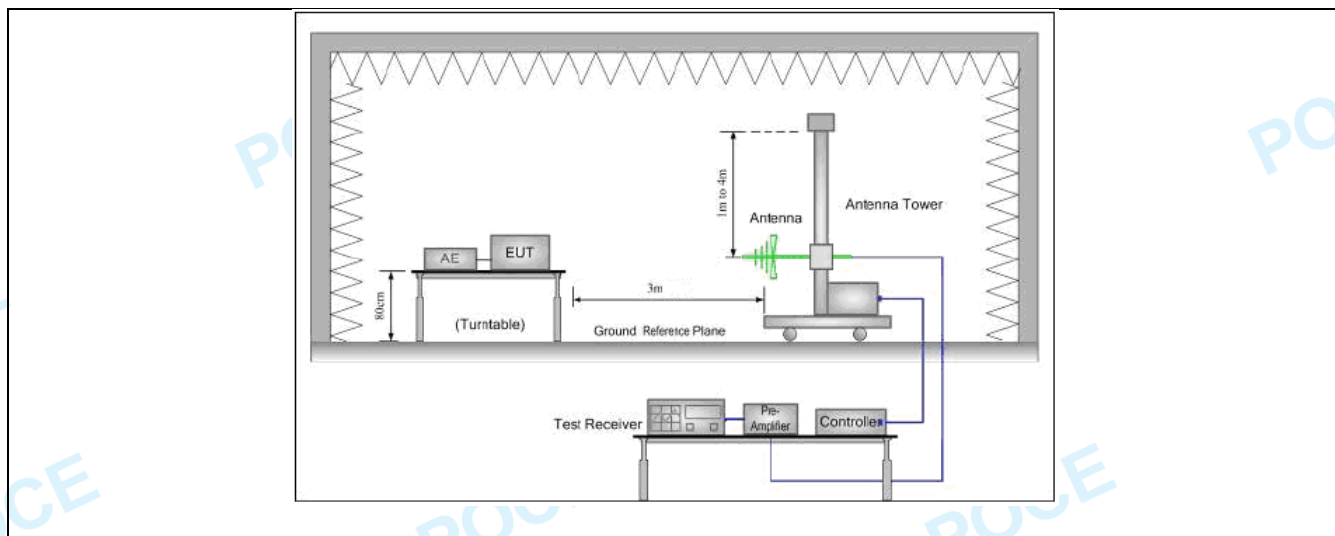
Test Requirement:	Refer to 47 CFR 15.247(d), In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).`		
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.			
Test Method:	ANSI C63.10-2020 section 6.6.4 KDB 558074 D01 15.247 Meas Guidance v05r02		
Procedure:	ANSI C63.10-2020 section 6.6.4		

4.7.1 E.U.T. Operation:

Operating Environment:			
Temperature:	22.6 °C	Humidity:	50.3 %
Pre test mode:	TM1		
Final test mode:	TM1		

4.7.2 Test Setup Diagram:





4.7.3 Test Data:

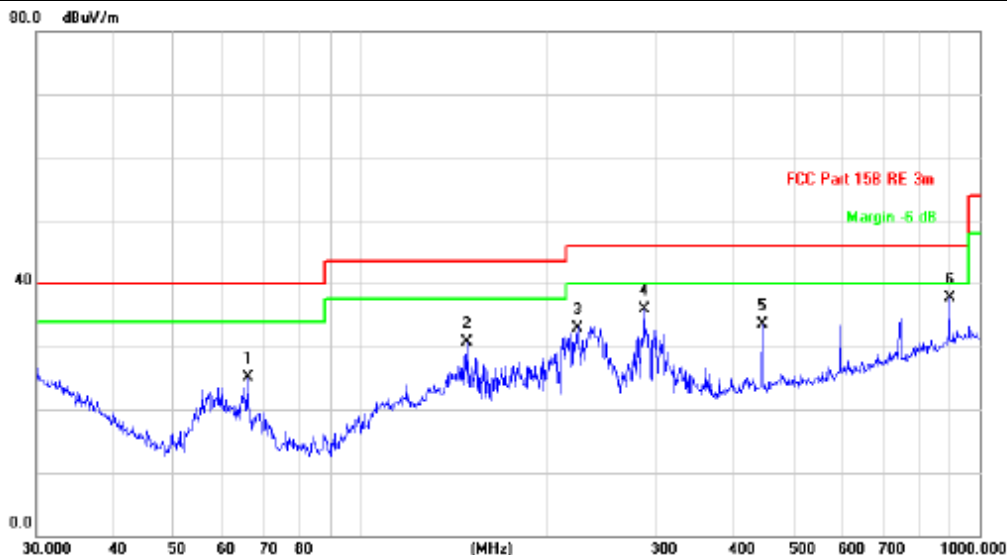
Between 9KHz – 30MHz

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

NOTE: Test data only records the worst mode or worst channel.

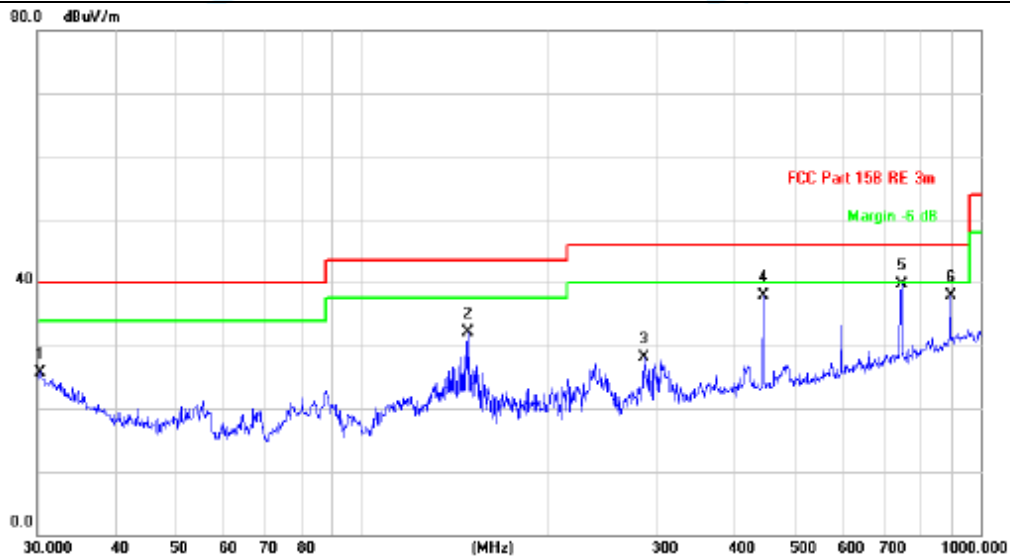
Between 30MHz – 1000MHz

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: M



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1	65.8031	36.29	-11.23	25.06	40.00	-14.94	QP	100	243
2	148.4410	36.69	-5.98	30.71	43.50	-12.79	QP	100	335
3	224.5193	39.47	-6.47	33.00	46.00	-13.00	QP	100	214
4	286.9823	39.96	-3.96	36.00	46.00	-10.00	QP	100	122
5	446.4141	34.15	-0.65	33.50	46.00	-12.50	QP	100	21
6 *	893.8567	30.56	7.18	37.74	46.00	-8.26	QP	100	207

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: M



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1		30.3171	23.45	2.35	25.80	40.00	-14.20	QP	100	168	
2		148.4410	38.05	-5.98	32.07	43.50	-11.43	QP	100	224	
3		285.9778	32.00	-3.96	28.04	46.00	-17.96	QP	100	297	
4		446.4141	38.52	-0.65	37.87	46.00	-8.13	QP	100	185	
5	*	744.8661	34.97	4.83	39.80	46.00	-6.20	QP	100	45	
6		893.8567	30.79	7.18	37.97	46.00	-8.03	QP	100	290	

Remark: Over= Measurement Level - Limit

Measurement Level=Test receiver reading + correction factor

Correction Factor= Antenna Factor + Cable loss – Pre-amplifier

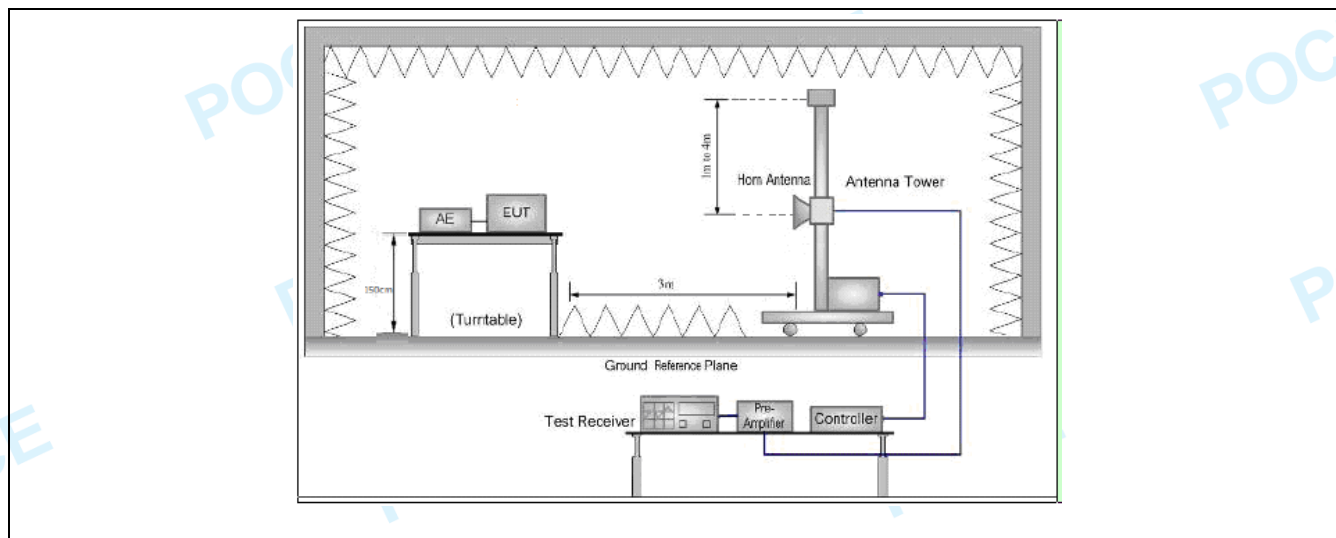
4.8 Emissions in restricted frequency bands (above 1GHz)

Test Requirement:	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 Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.			
Test Method:	ANSI C63.10-2020 section 6.6.4 KDB 558074 D01 15.247 Meas Guidance v05r02		
Procedure:	ANSI C63.10-2020 section 6.6.4		

4.8.1 E.U.T. Operation:

Operating Environment:			
Temperature:	22.6 °C	Humidity:	50.3 %
Pre test mode:	TM1		
Final test mode:	TM1		

4.8.2 Test Setup Diagram:



4.8.3 Test Data:

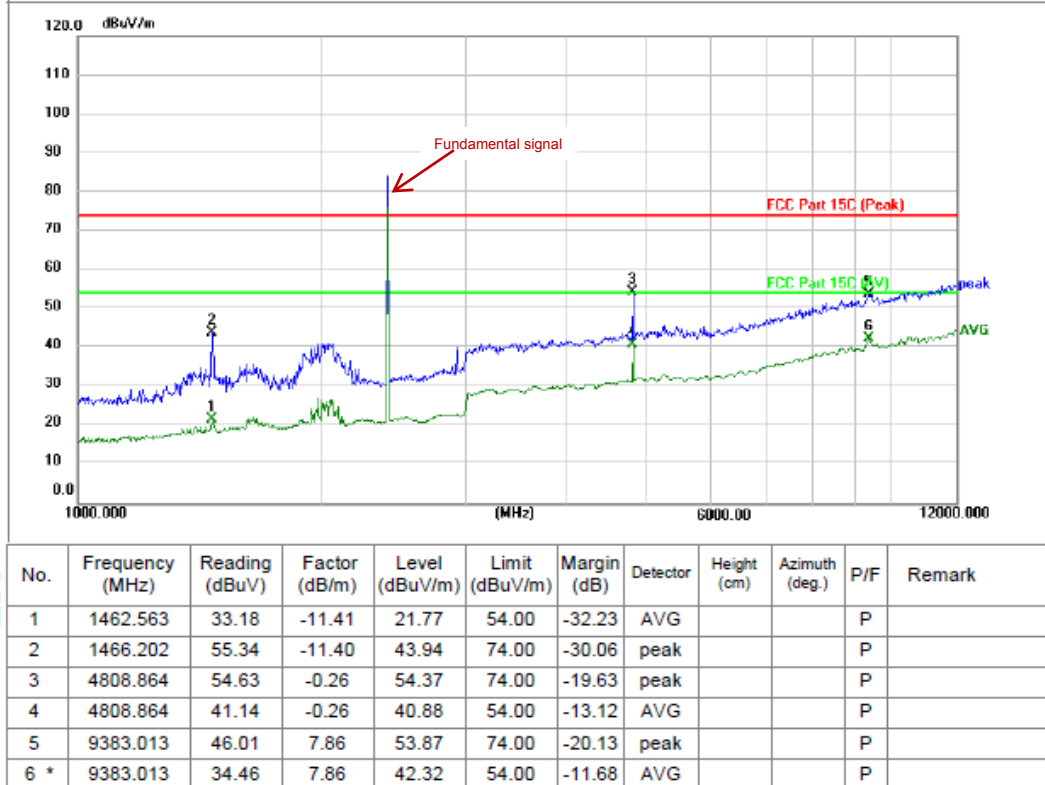
Test results only record the worst mode or channel, and test frequency to 12GHz.

TM1 / Polarization: Horizontal / Band: 2.4G / BW: 1 / CH: L



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	4808.864	53.70	-0.88	52.82	74.00	-21.18	peak			P	
2	4808.864	39.32	-0.88	38.44	54.00	-15.56	AVG			P	
3 *	9383.013	33.89	8.07	41.96	54.00	-12.04	AVG			P	
4	9406.358	44.68	8.08	52.76	74.00	-21.24	peak			P	

TM1 / Polarization: Vertical / Band: 2.4G / BW: 1 / CH: L



Remark: Margin = Limit – Level

Correction Factor= Antenna Factor + Cable loss – Pre-amplifier

Level=Test receiver reading + correction factor

Note:

Per ANSI C63.10-2013, if there are two or more antnnas, the conducted powers at Core 0, Core 1,..., Core i were first measured separately, as shown in the section above(this product oly have one antenna). The measured values were then summed in linear power units then converted back to dBm.

Sample Multiple antennas Calculation: Core 0 + Core 1 +...Core i. = MIMO/CDD
(i is the number of antennas)

(#VALUE! mW + XX mW) = #VALUE! mW = XX dBm

Sample e.i.r.p. Calculation:

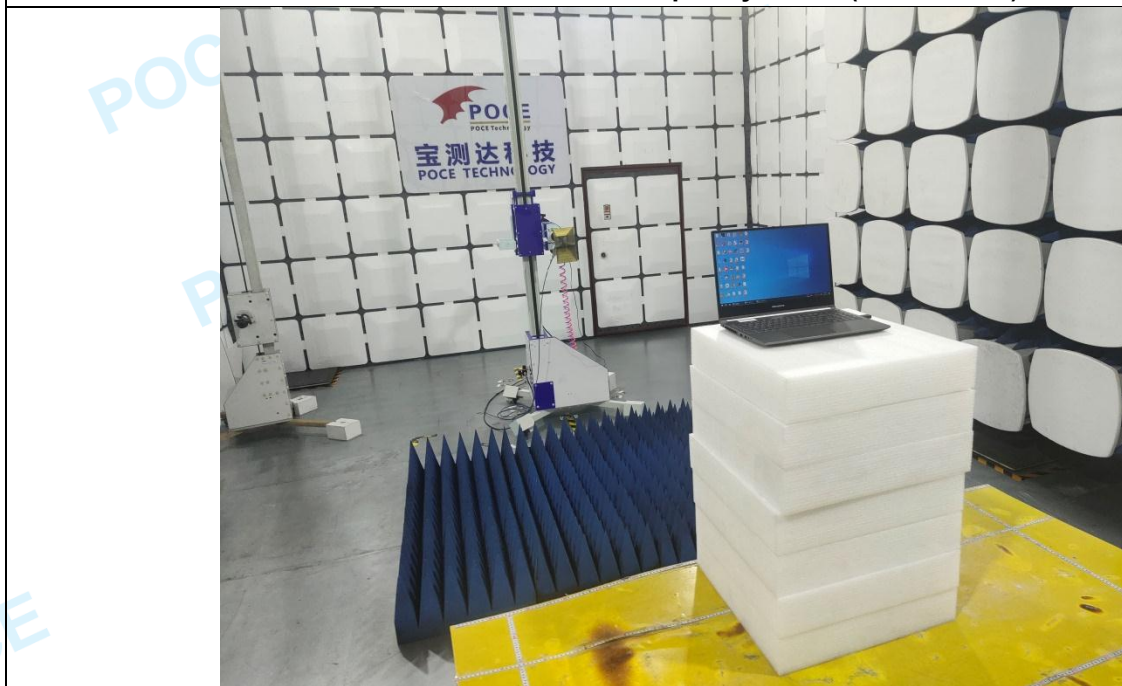
XX dBm= Conducted Power (dBm) + Ant gain (dBi)

5 TEST SETUP PHOTOS

Emissions in restricted frequency bands (below 1GHz)



Emissions in restricted frequency bands (above 1GHz)

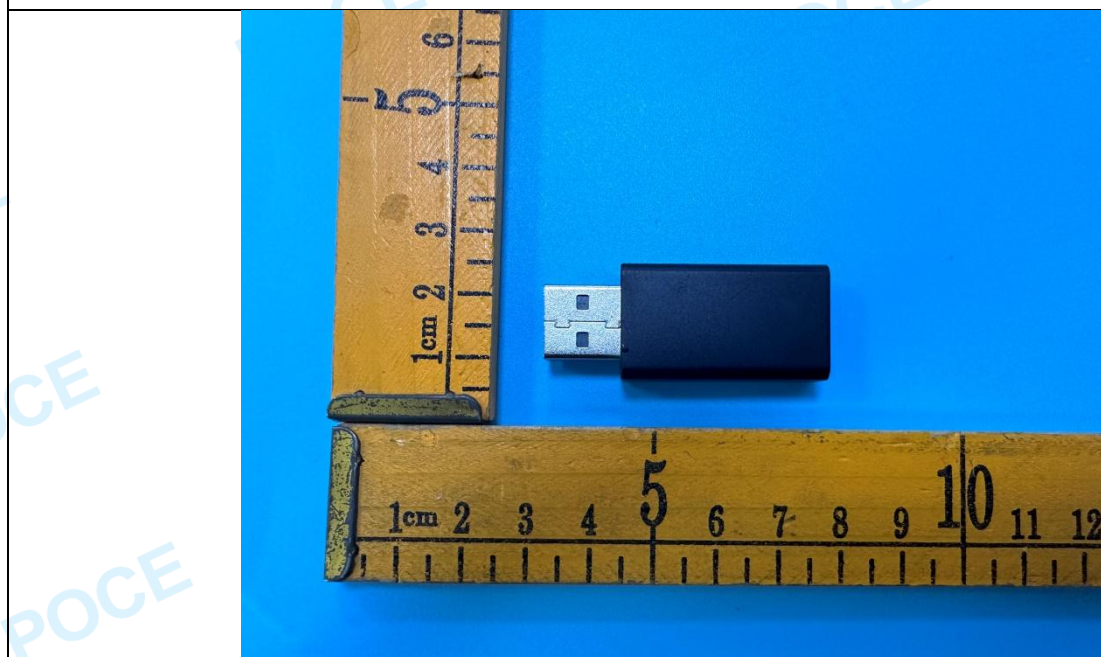


Conducted Emission at AC power line



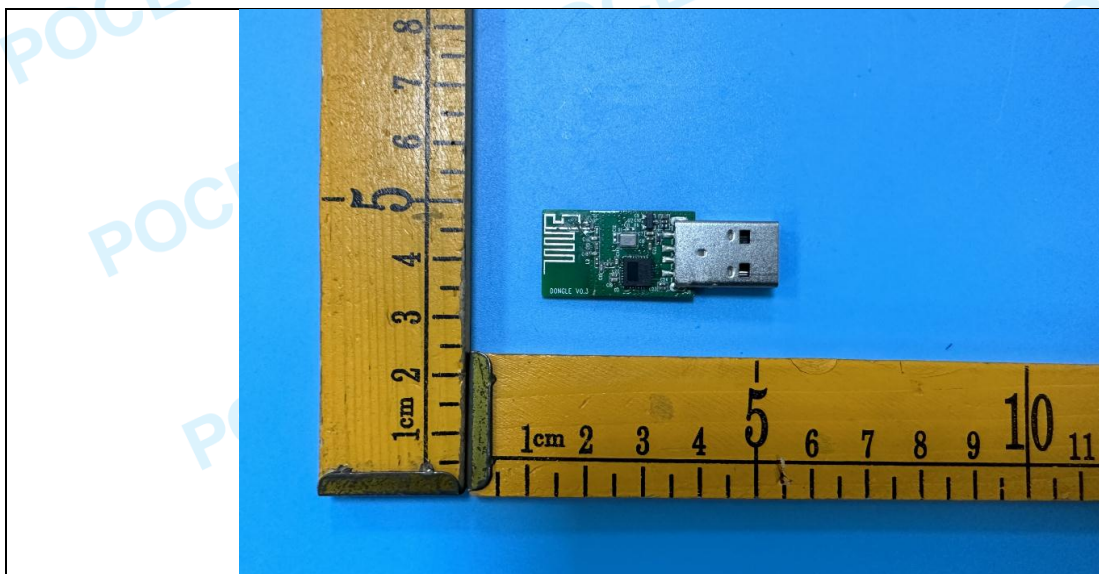
6 PHOTOS OF THE EUT

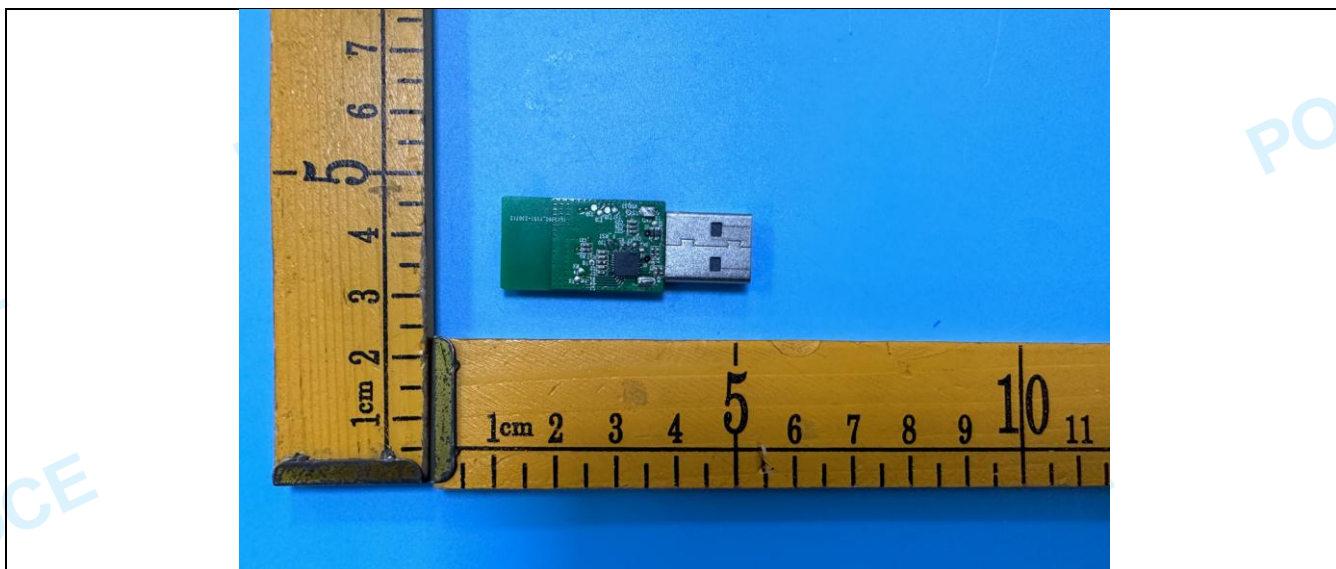
External





Internal

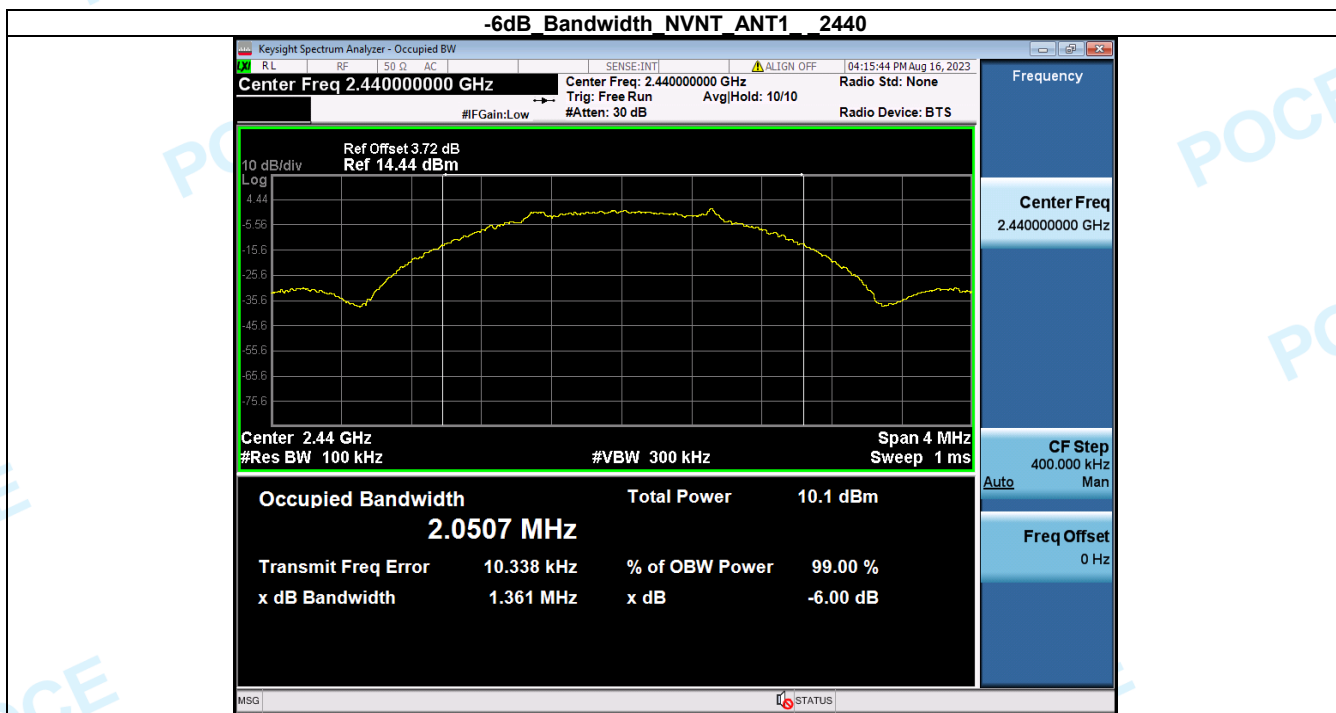
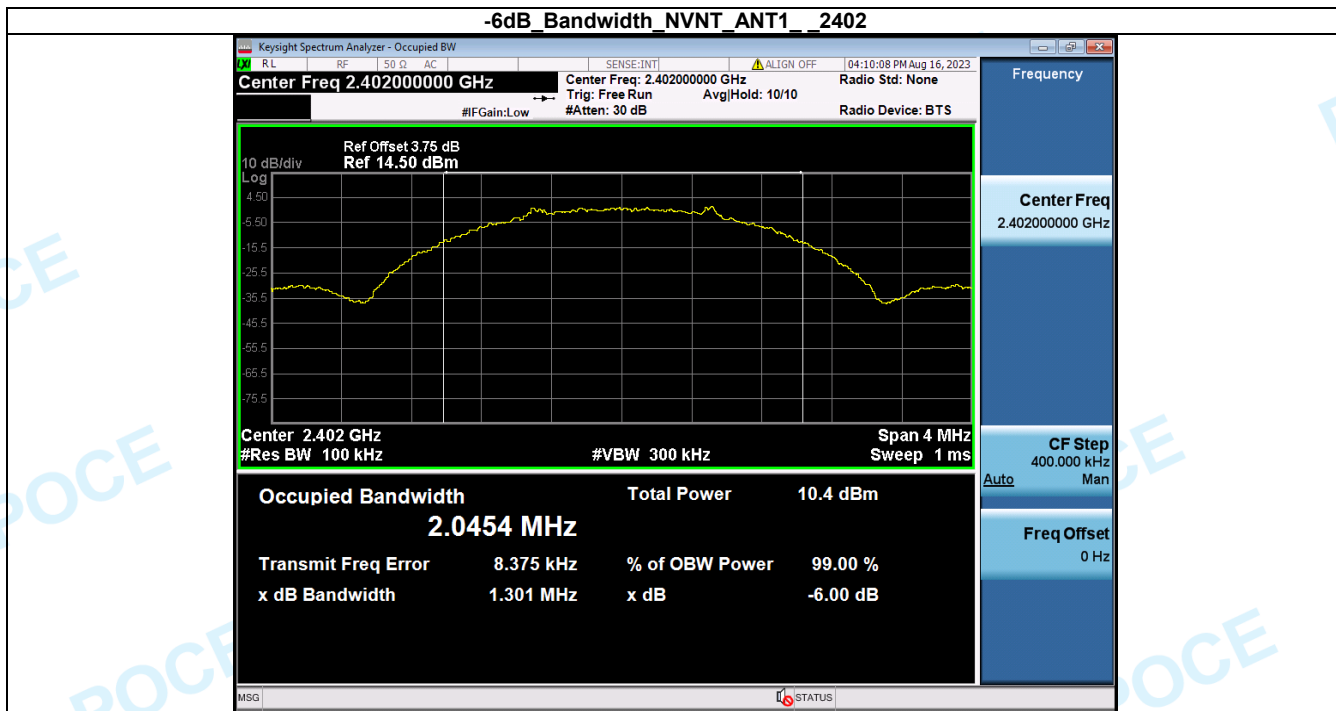


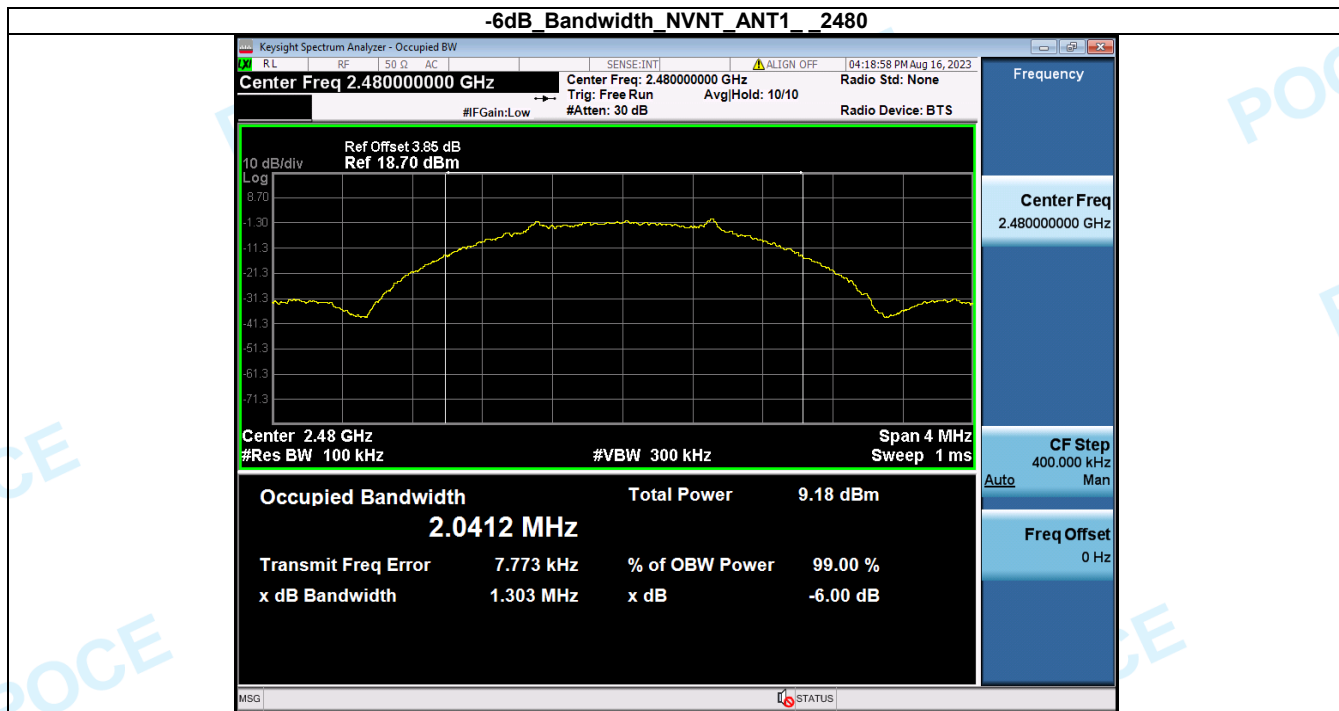


Appendix

1. -6dB Bandwidth

Condition	Antenna	Frequency (MHz)	-6dB BW(kHz)	limit(kHz)	Result
NVNT	ANT1	2402.00	1301.43	500	Pass
NVNT	ANT1	2440.00	1361.28	500	Pass
NVNT	ANT1	2480.00	1303.03	500	Pass

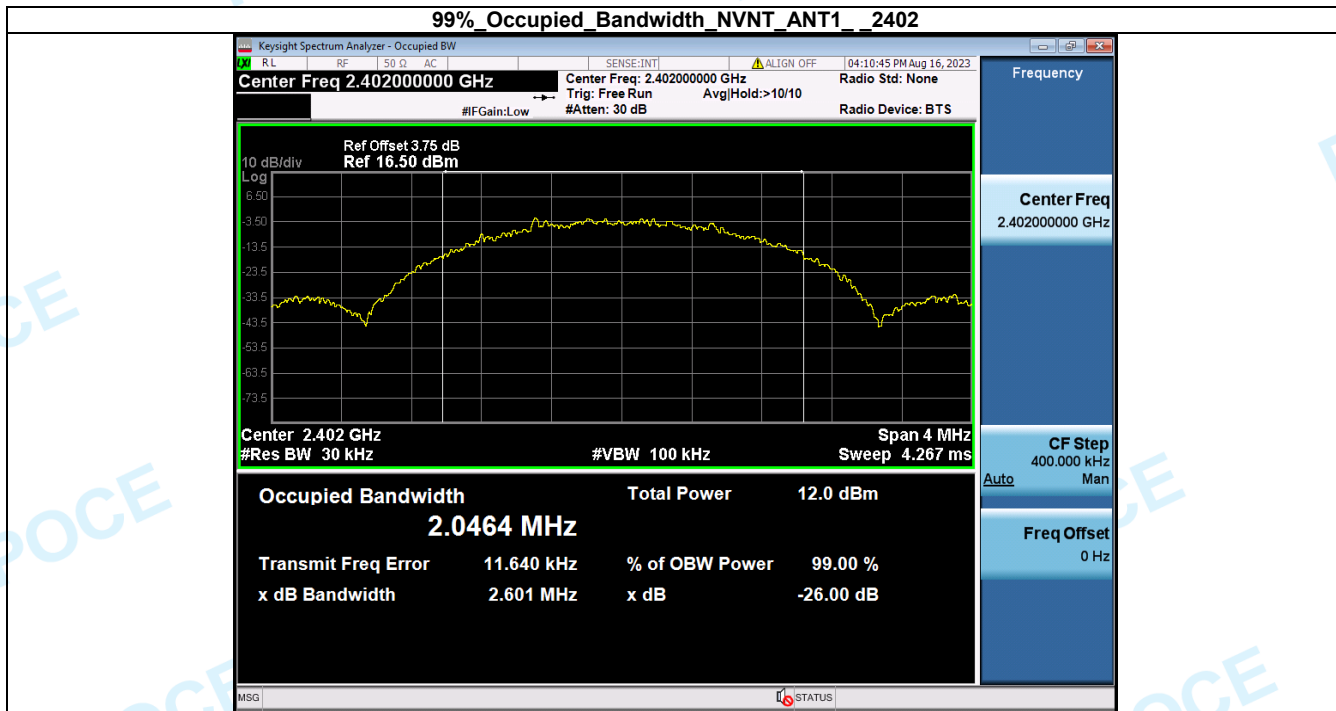




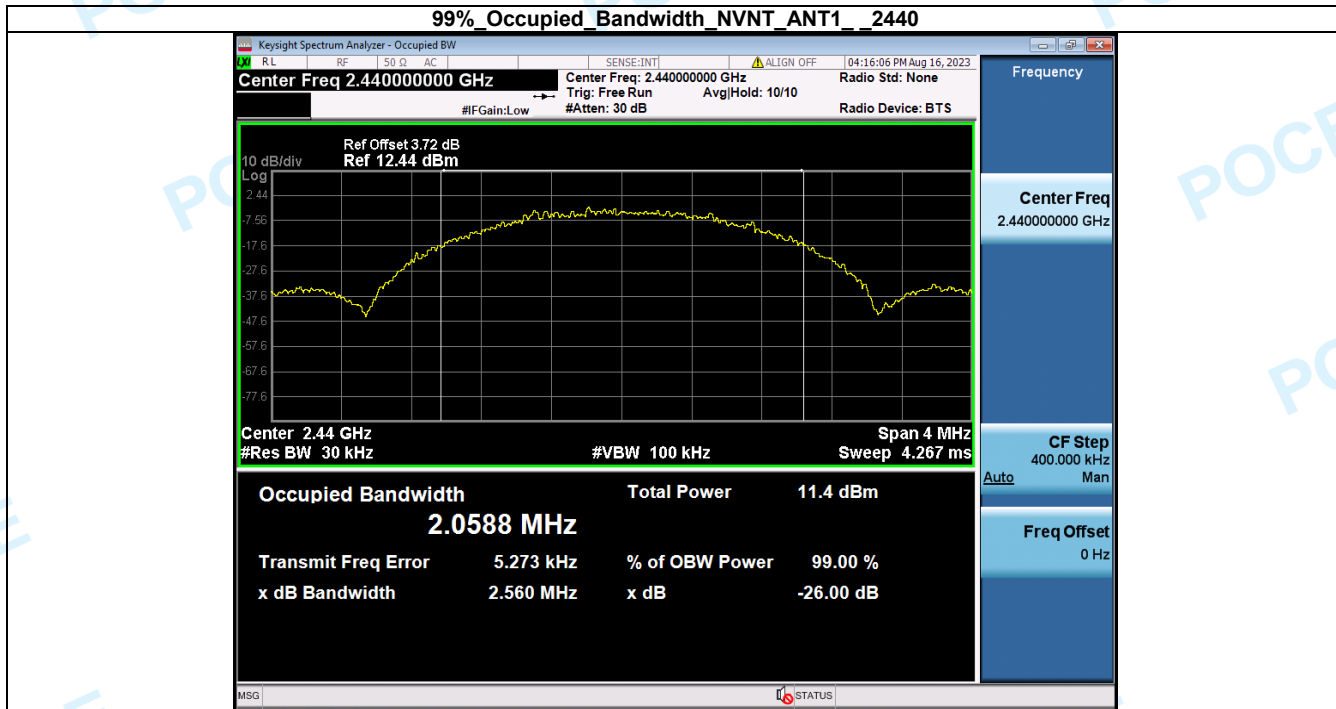
2. 99% Occupied Bandwidth

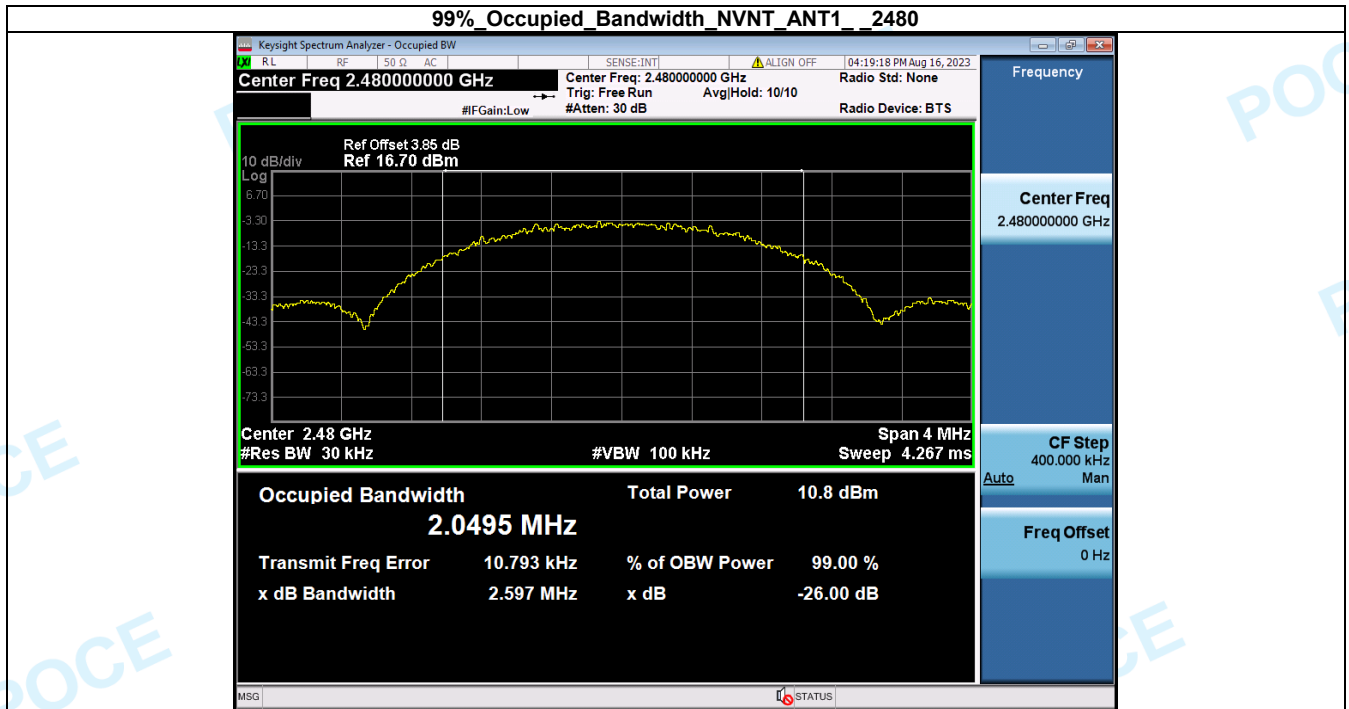
Condition	Antenna	Frequency (MHz)	99% BW (MHz)
NVNT	ANT1	2402.00	2.046
NVNT	ANT1	2440.00	2.059
NVNT	ANT1	2480.00	2.050

99%_Occupied_Bandwidth_NVNT_ANT1_2402



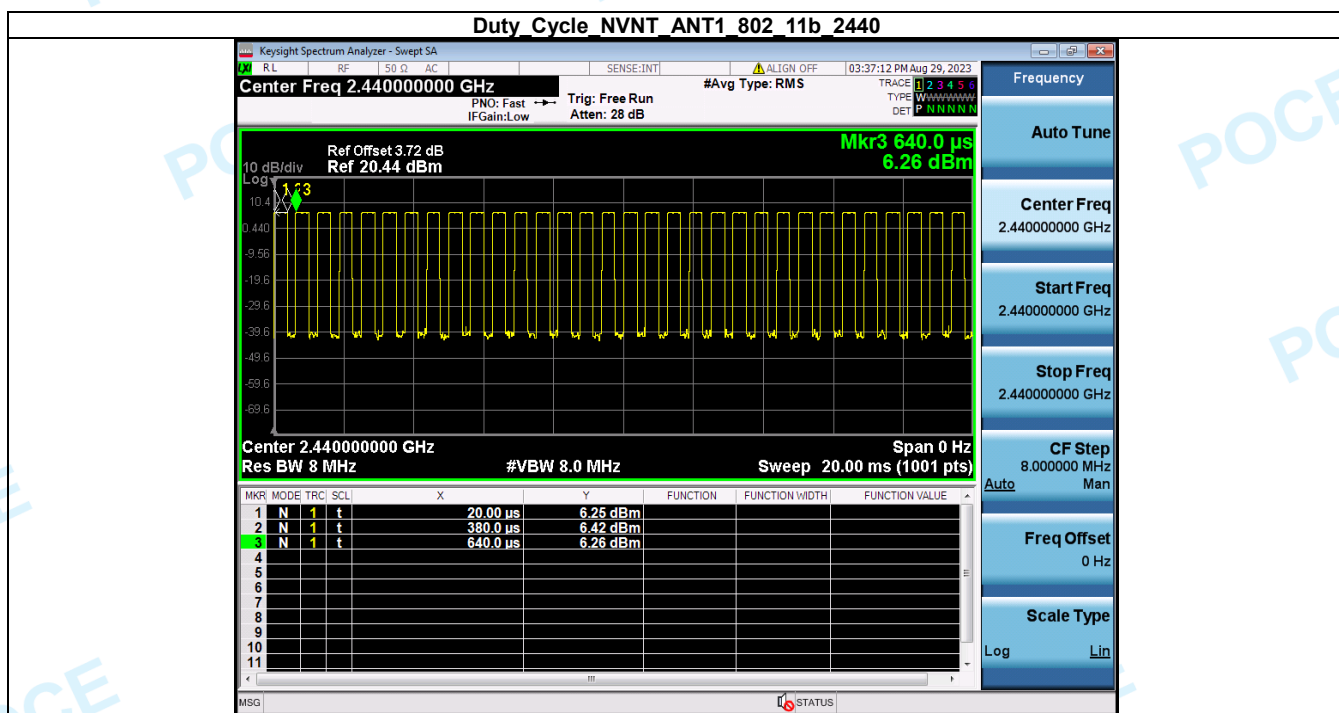
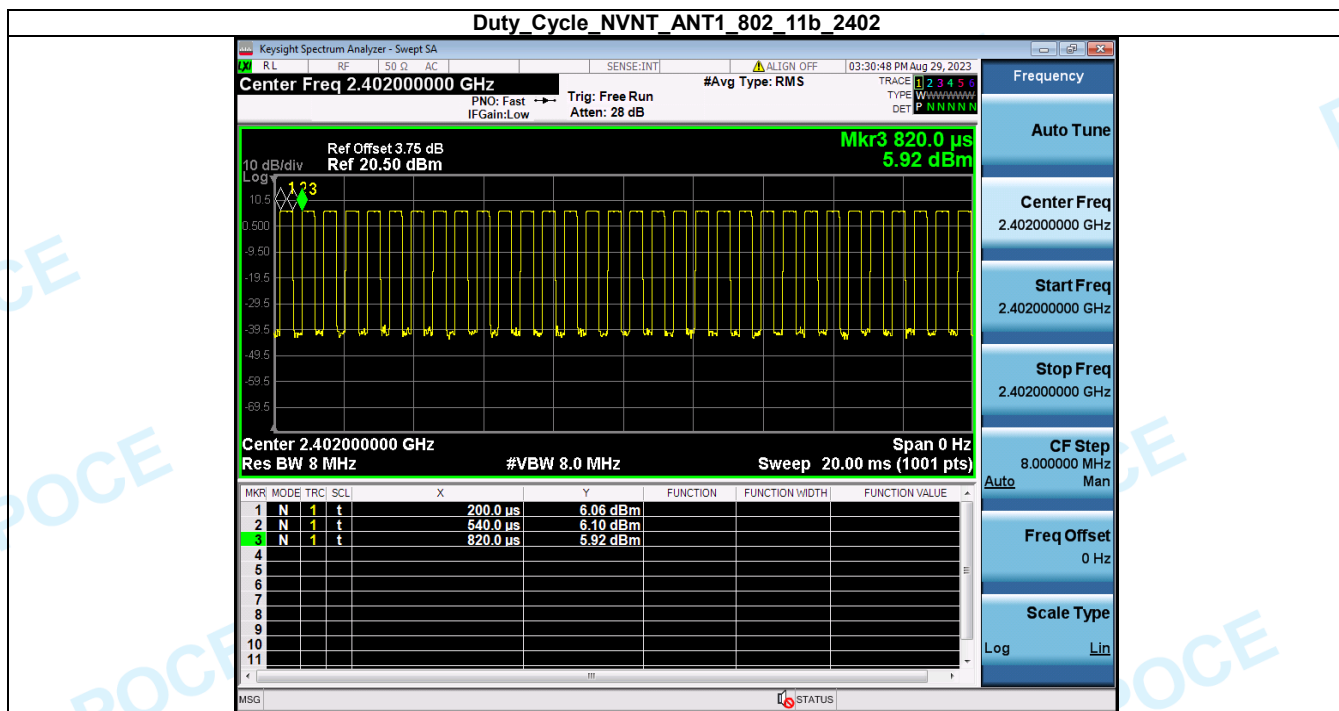
99%_Occupied_Bandwidth_NVNT_ANT1_2440

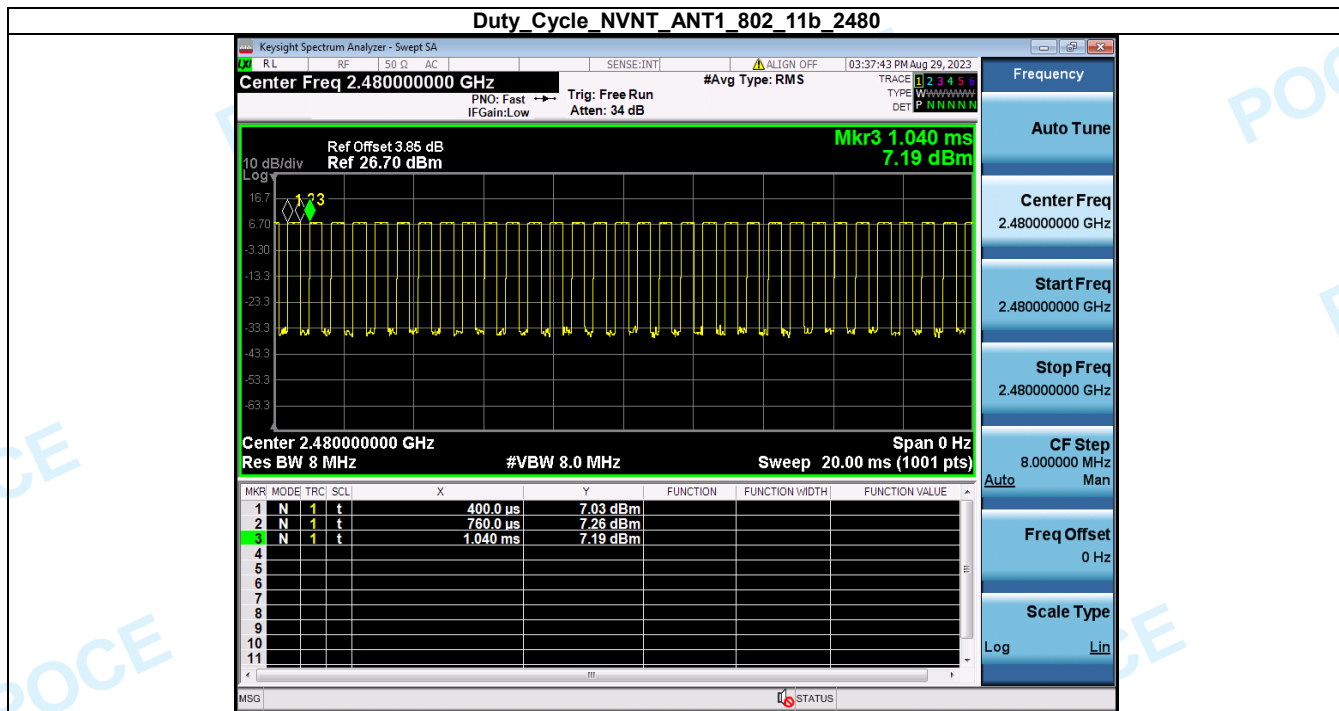




3. Duty Cycle

Condition	Antenna	Modulation	Frequency (MHz)	Dutycycle(%)	Duty_factor
NVNT	ANT1	802.11b	2402.00	54.84	2.61
NVNT	ANT1	802.11b	2440.00	58.06	2.36
NVNT	ANT1	802.11b	2480.00	56.25	2.50





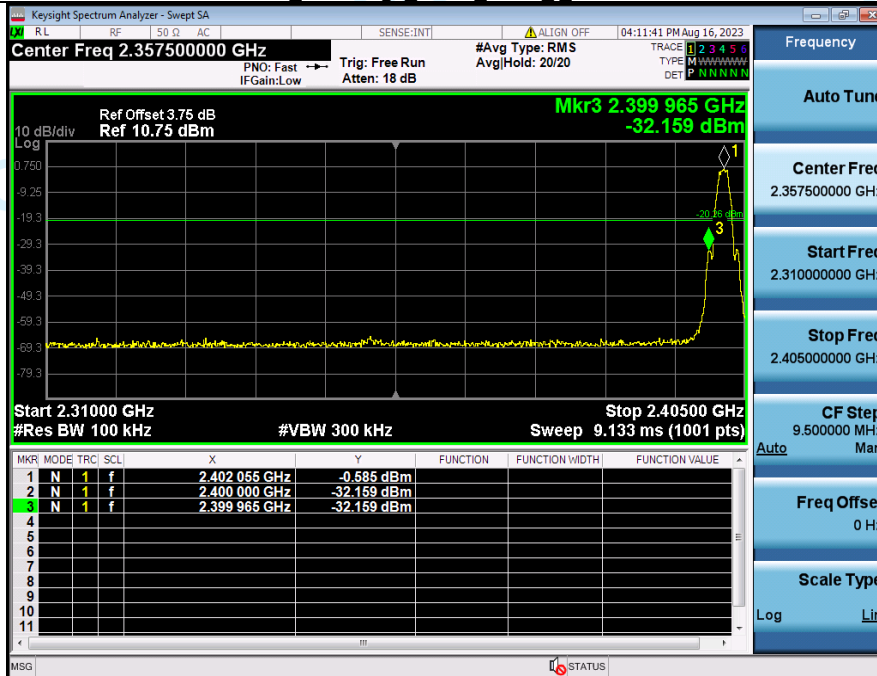
4. Bandedge

Condition	Antenna	TX_Frequency (MHz)	Max. Mark Frequency (MHz)	Spurious level(dBm)	limit(dBm)	Result
NVNT	ANT1	2402	2399.965	-32.159	-20.256	Pass
NVNT	ANT1	2480	2483.550	-59.481	-21.123	Pass

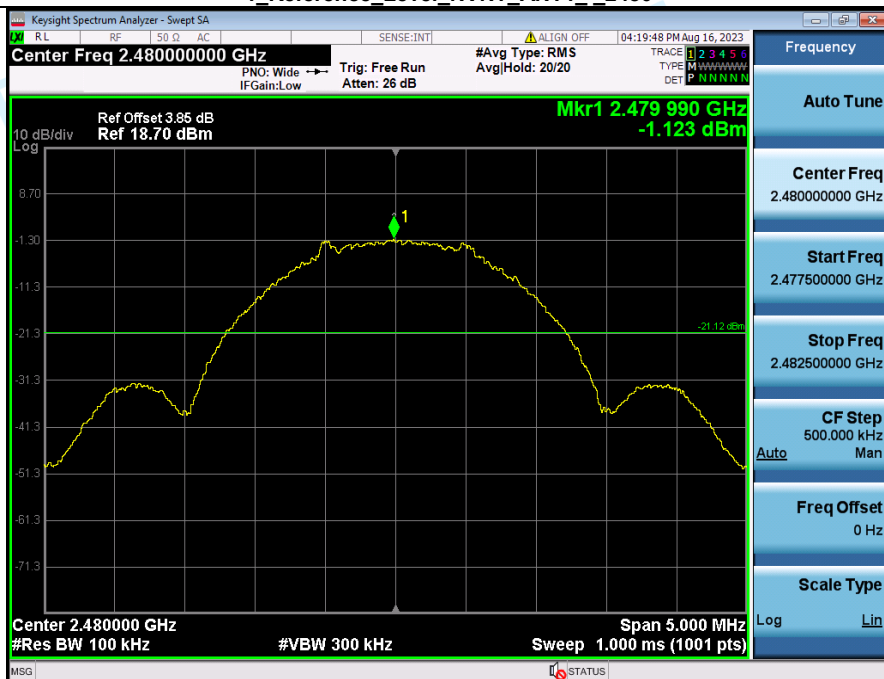
1_Reference_Level_NVNT_ANT1_2402



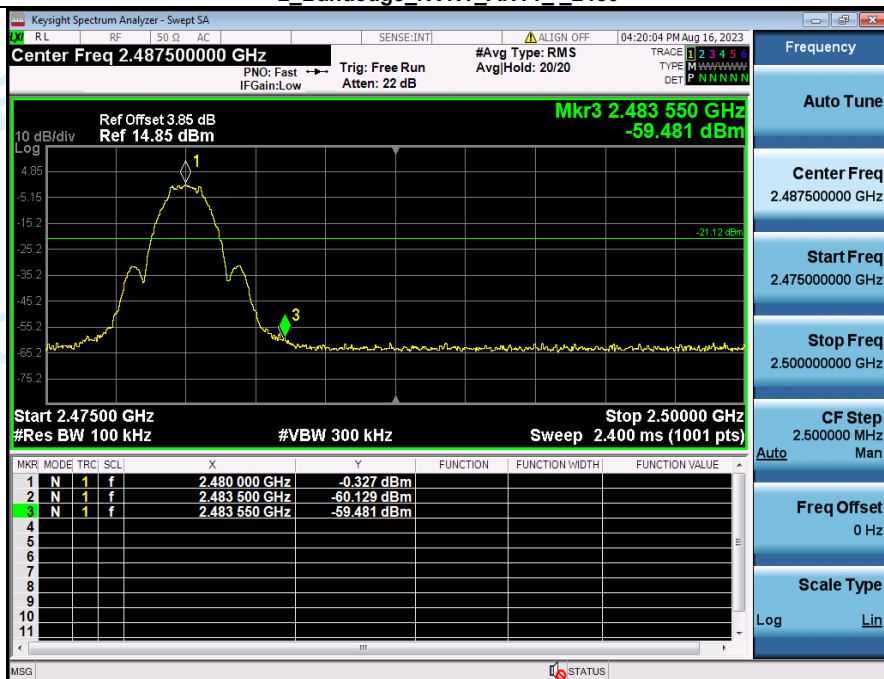
2_Bandedge_NVNT_ANT1_2402



1 Reference_Level_NVNT_ANT1_2480

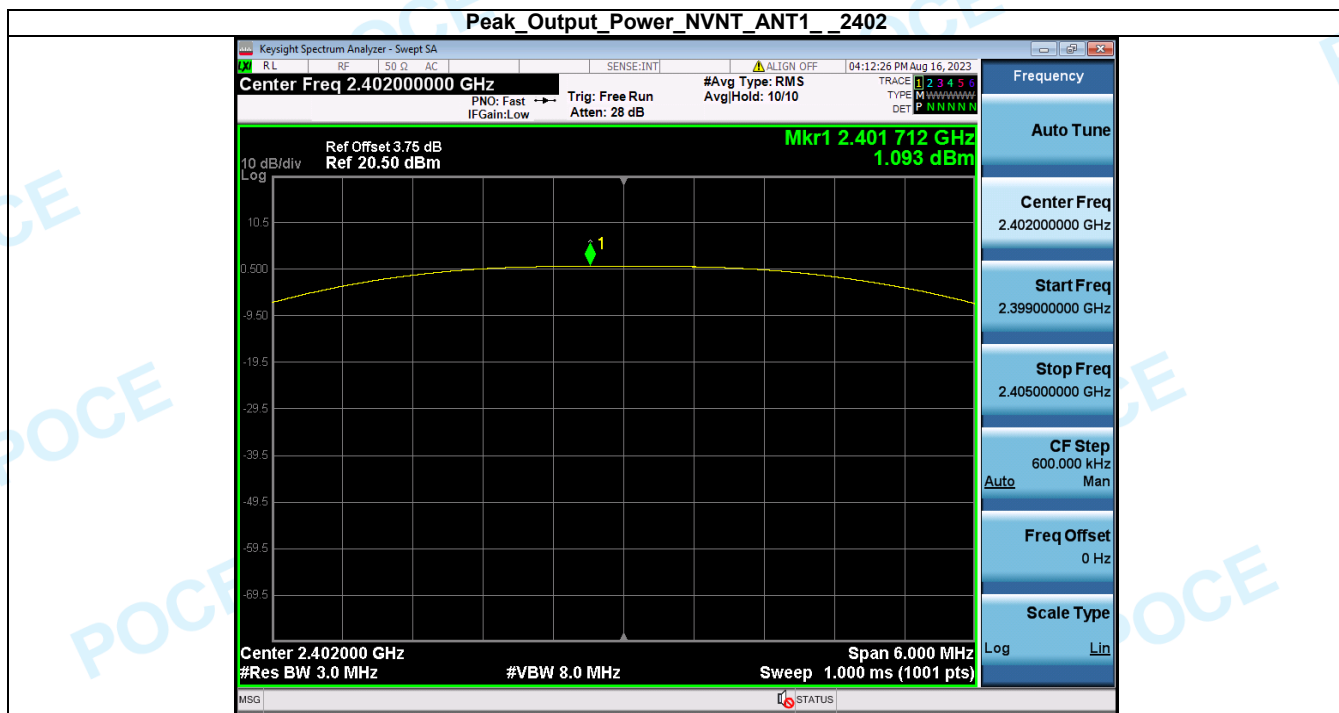


2 Bandedge_NVNT_ANT1_2480

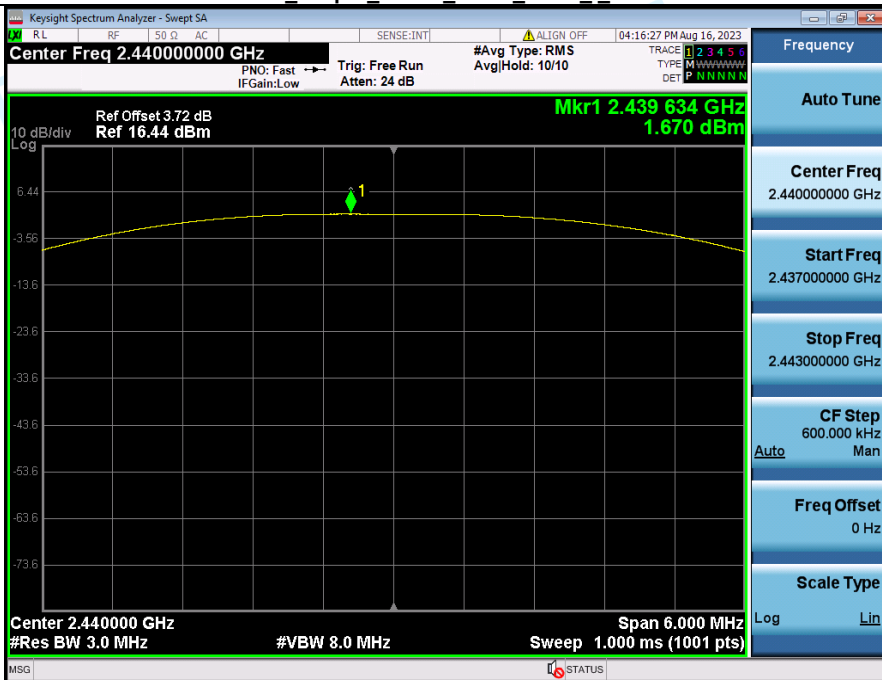


5. Peak Output Power

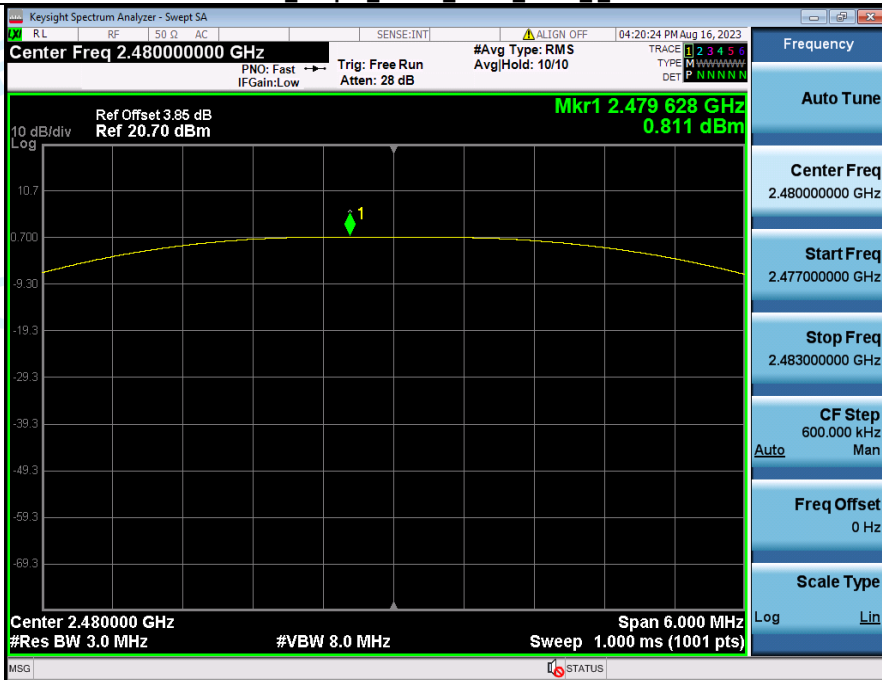
Condition	Antenna	Frequency (MHz)	Max. Conducted Power(dBm)	Max. Conducted Power(mW)	Limit(mW)	Result
NVNT	ANT1	2402	1.09	1.29	1000	Pass
NVNT	ANT1	2440	1.67	1.47	1000	Pass
NVNT	ANT1	2480	0.81	1.21	1000	Pass



Peak_Output_Power_NVNT_ANT1_2440



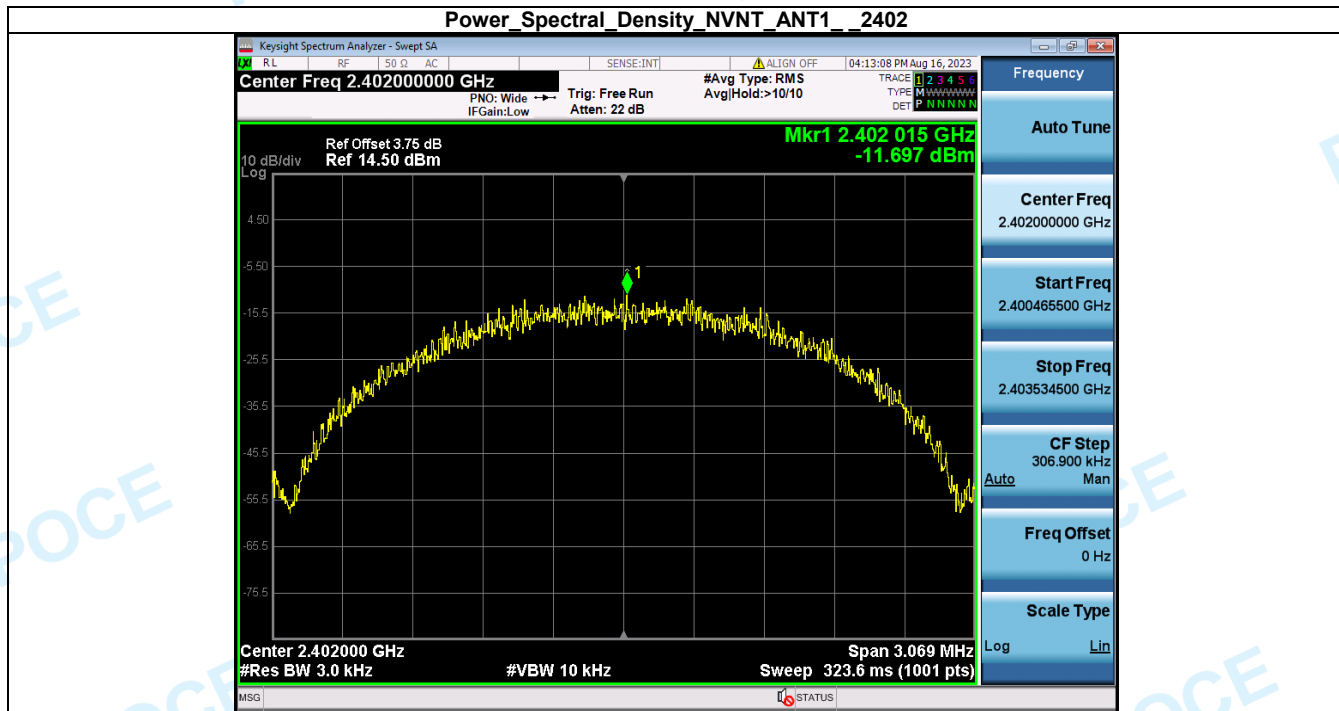
Peak_Output_Power_NVNT_ANT1_2480



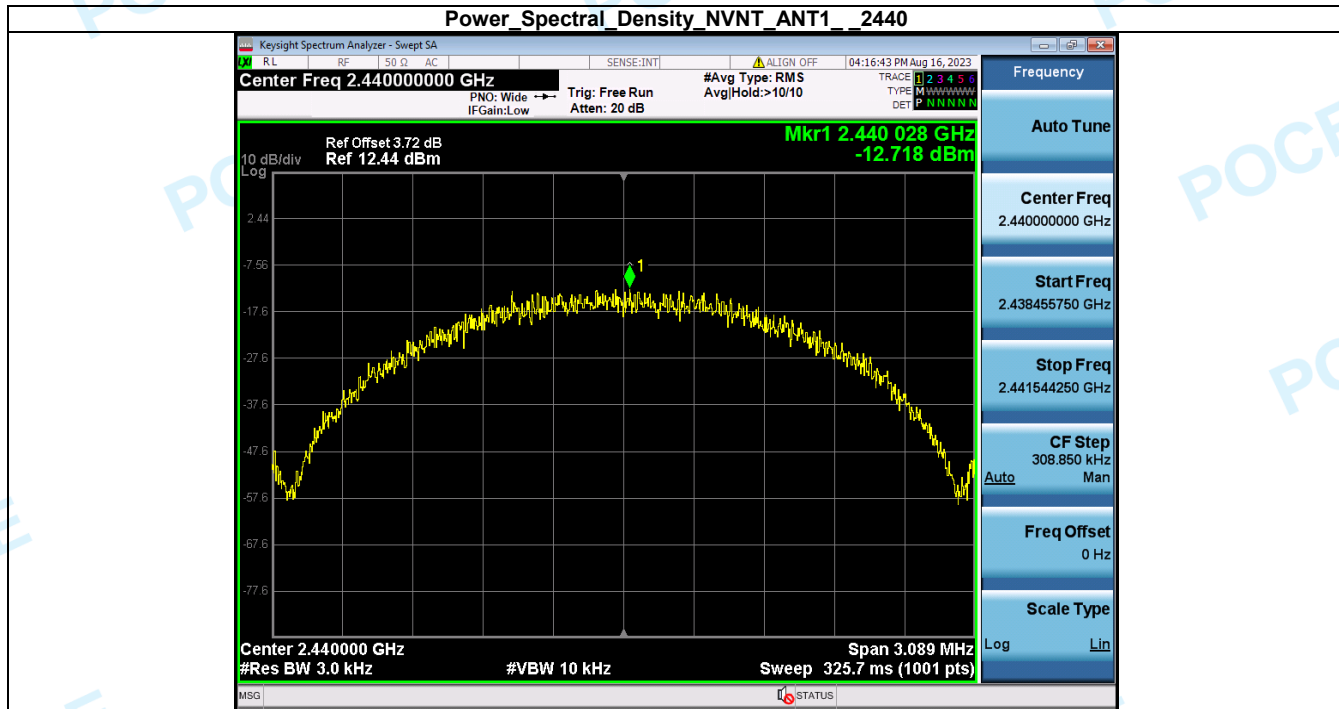
6. Power Spectral Density

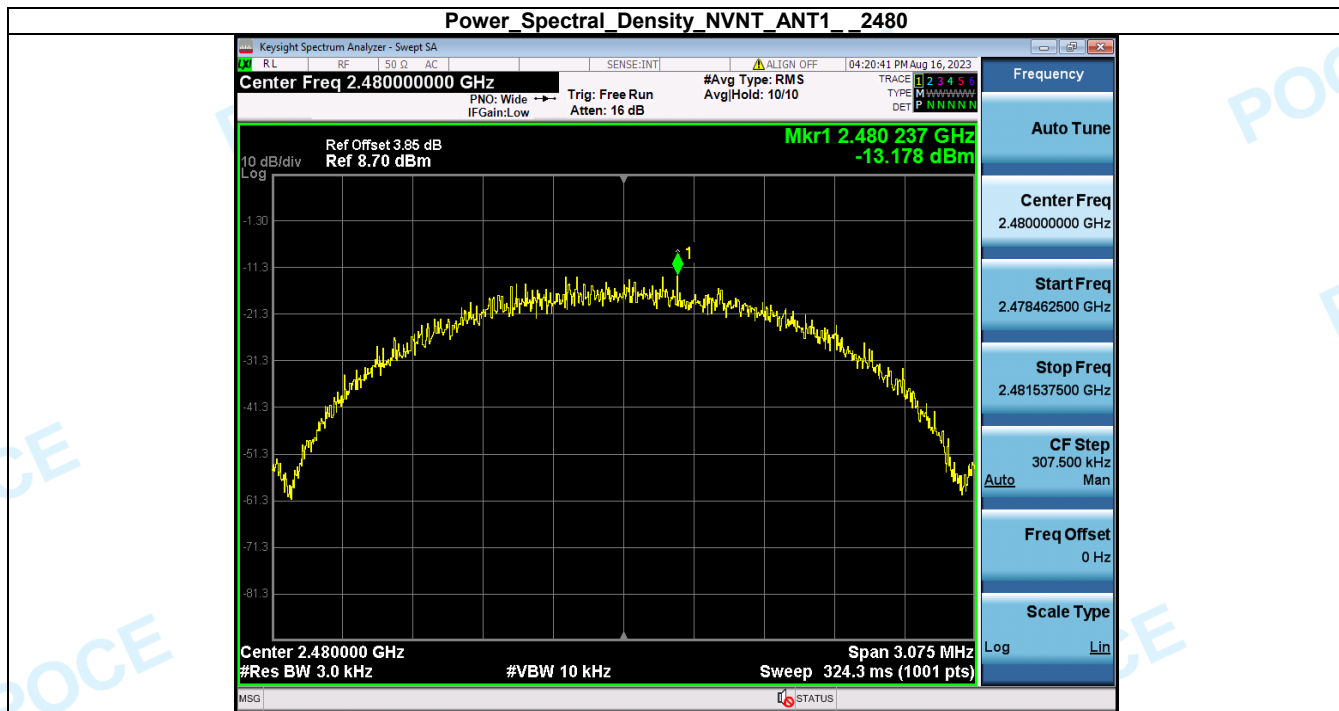
Condition	Antenna	Frequency (MHz)	Power Spectral Density(dBm)	Limit(dBm/3kHz)	Result
NVNT	ANT1	2402	-11.70	8	Pass
NVNT	ANT1	2440	-12.72	8	Pass
NVNT	ANT1	2480	-13.18	8	Pass

Power_Spectral_Density_NVNT_ANT1_2402



Power_Spectral_Density_NVNT_ANT1_2440

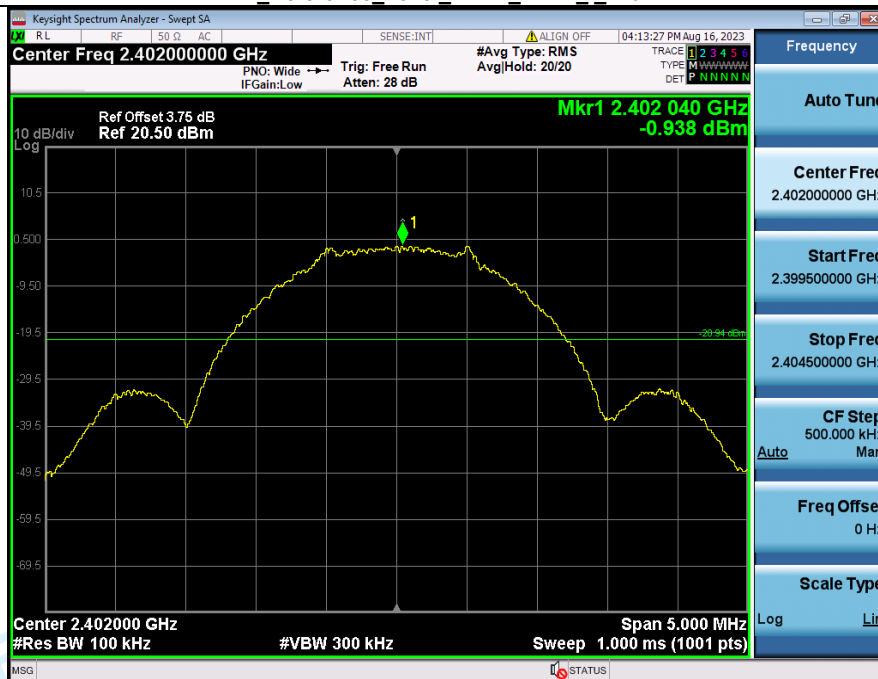




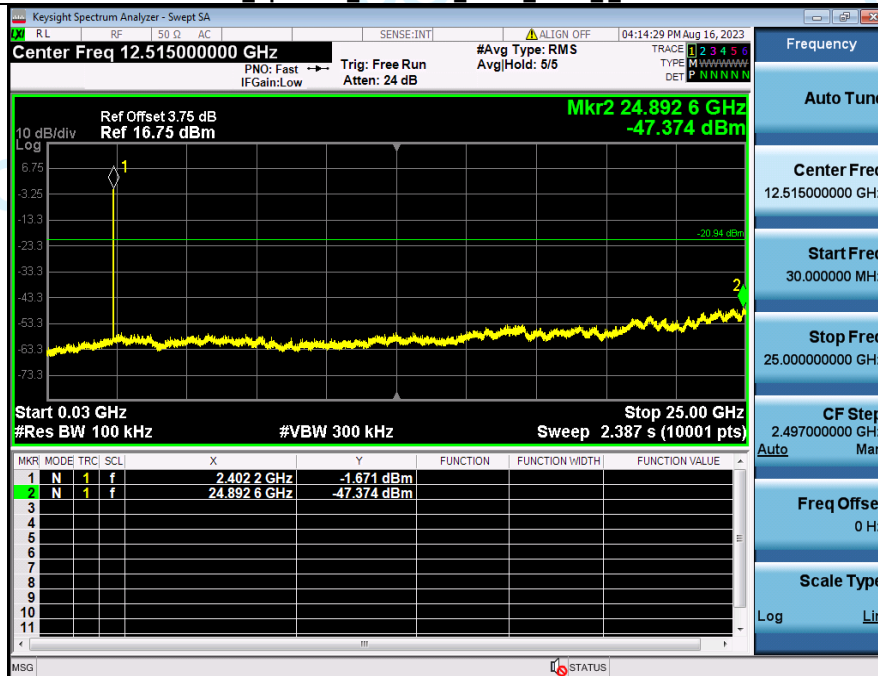
7. Spurious Emission

Condition	Antenna	TX_Frequency(MHz)	Spurious MAX.Value(dBm)	Limit	Result
NVNT	ANT1	2402	-47.374	-20.938	Pass
NVNT	ANT1	2440	-52.024	-19.919	Pass
NVNT	ANT1	2480	-48.174	-21.123	Pass

1_Reference_Level_NVNT_ANT1_2402



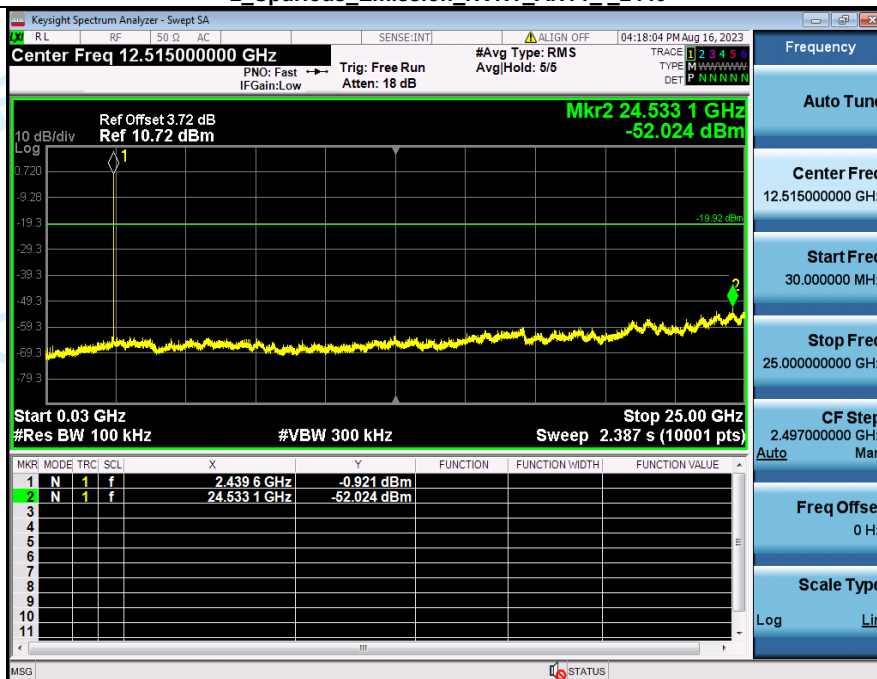
2_Spurious_Emission_NVNT_ANT1_2402



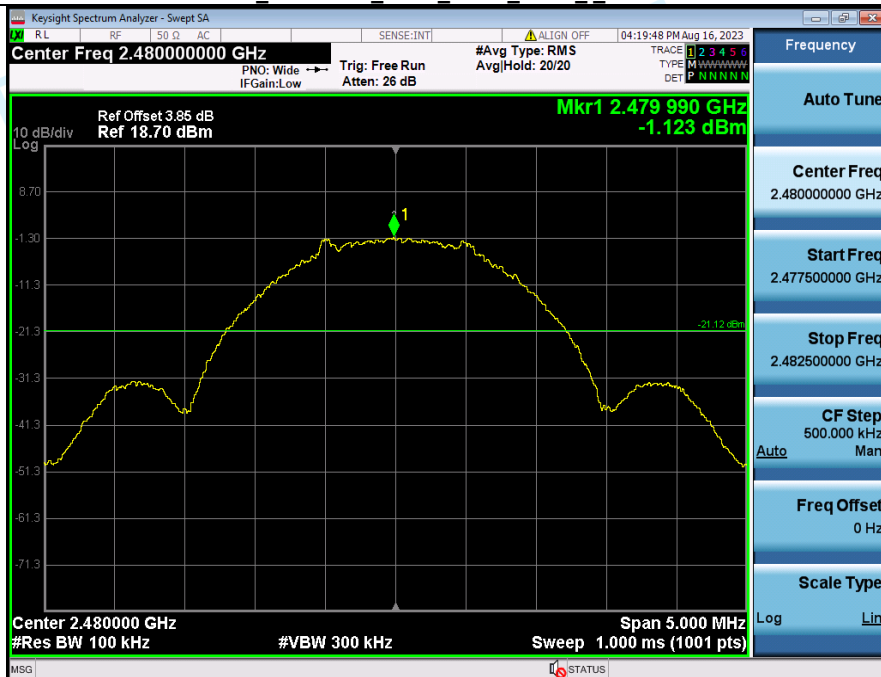
1 Reference_Level_NVNT_ANT1_2440



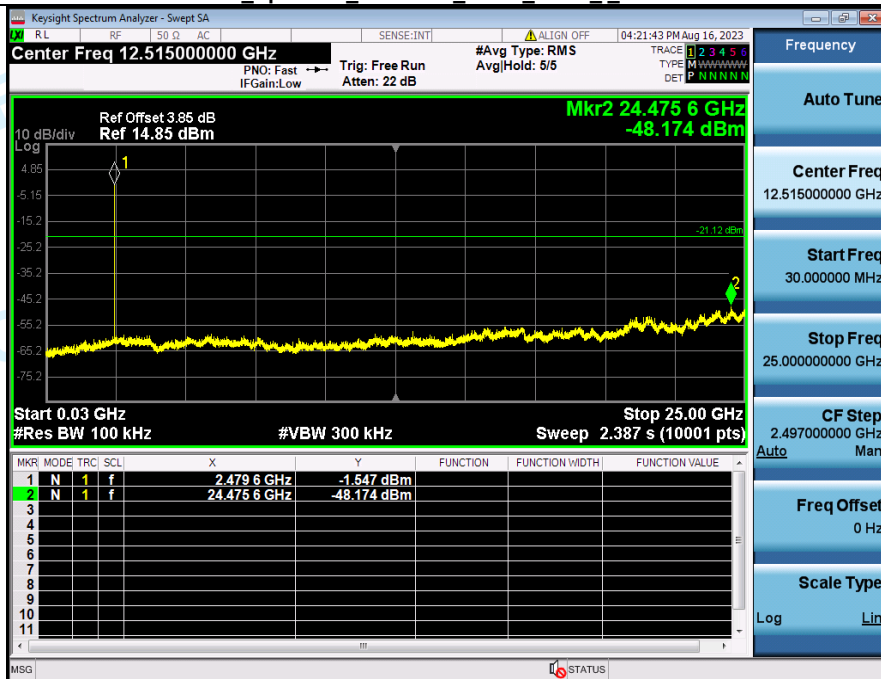
2 Spurious Emission_NVNT_ANT1_2440



1 Reference_Level_NVNT_ANT1_2480



2 Spurious_Emission_NVNT_ANT1_2480



***** End of Report *****