



FCC&IC TEST REPORT

FCC ID: 2BD6V-ET1036

IC: 31814-ET1036

On Behalf of

PETAVERSE PTE. LTD.

Petority Smart Collar (Tag)

Model No.: ET1036-OWPC, ET1036-DGPC

Prepared for : PETAVERSE PTE. LTD.
Address : 6 RAFFLES QUAY, #14-06, SINGAPORE (048580)

Prepared By : Shenzhen PSI Testing Co., Ltd.
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TEST REPORT DECLARATION

Applicant : PETAVERSE PTE. LTD.
Address : 6 RAFFLES QUAY, #14-06, SINGAPORE (048580)
Manufacturer : PETAVERSE PTE. LTD.
Address : 6 RAFFLES QUAY, #14-06, SINGAPORE (048580)
EUT Description : Petority Smart Collar (Tag)
(A) Model No. : ET1036-OWPC, ET1036-DGPC
(B) Trademark : Petority

Measurement Standard Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247

RSS-247 Issue 3, RSS-Gen Issue 5, ANSI C63.10:2013, CISPR 16-1-4:2010

The device described above is tested by Shenzhen PSI Testing Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits both conducted and radiated emissions. The test results are contained in this test report and Shenzhen PSI Testing Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After the test, our opinion is that EUT compliance with the requirement of the above standards.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen PSI Testing Co., Ltd.

Tested by (name + signature).....:

Jensen Wang
Test Engineer

Jensen Wang

Approved by (name + signature).....:

Simple Guan
Project Manager

Simple Guan

Date of issue.....:

January 31, 2024

Revision History

Revision	Issue Date	Revisions	Revised By
V0	January 31, 2024	Initial released Issue	Jensen Wang



1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

Test Item	Standards Paragraph	Result
Conducted Emission	FCC Part 15: 15.207 RSS-GEN(8.8), ANSI C63.10 :2013	P
6dB Bandwidth	FCC PART 15:15.247(a)(2) RSS-247(5.2 a), ANSI C63.10 :2013	P
Output Power	FCC Part 15: 15.247(b)(3) RSS-247(5.4 d), ANSI C63.10 :2013	P
Radiated Spurious Emission	FCC Part 15: 15.209, FCC Part 15: 15.247(d) RSS-Gen(8.9), RSS-247(5.5), ANSI C63.10 :2013	P
Conducted Spurious & Band Edge Emission	FCC Part 15: 15.247(d) RSS-Gen(8.9), RSS-247(5.5), ANSI C63.10 :2013	P
Power Spectral Density	FCC PART 15:15.247(e) RSS-247(5.2 b), ANSI C63.10 :2013	P
Radiated Band Edge Emission	FCC Part 15: 15.247(d) RSS-GEN(6.13), ANSI C63.10 :2013	P
Frequency stability	RSS-GEN(6.11)	P
Antenna Requirement	FCC Part 15: 15.203 RSS-GEN(6.8)	P
Note: 1. P is an abbreviation for Pass. 2. F is an abbreviation for Fail. 3. N/A is an abbreviation for Not Applicable.		

1. Pass: The EUT complies with the essential requirements in the standard.

2. Frequency Stability: The manufacturer stated in the user's manual.

3. The conclusion of this test report is judged by actual test data without considering measurement uncertainty.

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT Name : Petority Smart Collar (Tag)
Model No. : ET1036-OWPC, ET1036-DGPC
DIFF. : There is no difference between the models except the appearance color. So all the test were performed on the model ET1036-DGPC.
Power supply : DC 5V from USB, DC 3.7V from battery

2.4G WIFI :
Operation frequency : 2412MHz-2462MHz for IEEE 802.11 b, g, n/HT20
2422MHz~2452MHz for IEEE802.11n/HT40
Channel No. : 802.11b/802.11g /802.11n(HT20): 11CH
802.11(HT40): 7CH
Modulation type : IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK)
IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK)
IEEE 802.11n :OFDM(64QAM, 16QAM, QPSK, BPSK)
Antenna Type : Internal antenna, Maximum Gain is 4.33dBi.
Software version : V1.0
Hardware version : V3.6
Intend use environment : Residential, commercial and light industrial environment
Note : Antenna information is provided by applicant.
Testing lab is not responsible for the accuracy of the information.

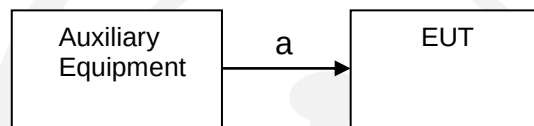
2.2. Accessories of Device (EUT)

Accessories : /
 Manufacturer : /
 Model : /
 Input : /
 Output : /

2.3. Tested Supporting System Details

No.	Description	Manufacturer	Model	Serial Number	Certification or SDOC
1	Adapter	Keyulong	KE020A-PCD	/	/
2	Petority Smart Collar (Base)	PETAVERSE	ET1036-DGPC	/	/

2.4. Block Diagram of Connection Between EUT and Simulators



Signal Cable Description of the above Support Units

No.	Port Name	Cable	Length	Shielded (Yes or No)	Detachable (Yes or No)
(a)	USB Port	USB Cable	1m	No	Yes

2.5. Test Mode Description

Duty cycle :100%Keeping TX			
Mode	Data rate (Mbps)	Channel	Frequency (MHz)
IEEE 802.11b	1	Low :CH1	2412
	1	Middle: CH6	2437
	1	High: CH11	2462
IEEE 802.11g	6	Low :CH1	2412
	6	Middle: CH6	2437
	6	High: CH11	2462
IEEE 802.11 n/HT20	6.5	Low :CH1	2412
	6.5	Middle: CH6	2437
	6.5	High: CH11	2462
IEEE 802.11 n/HT40	13	Low :CH3	2422
	13	Middle: CH6	2437
	13	High: CH9	2452
Note: According exploratory test, EUT will have maximum output power in those data rate. So those data rate were used for all test.			

Channel list:					
For IEEE 802.11b, g, n/HT20					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
CH1	2412	CH5	2432	CH9	2452
CH2	2417	CH6	2437	CH10	2457
CH3	2422	CH7	2442	CH11	2462
CH4	2427	CH8	2447		
For IEEE 802.11 n/HT40					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
CH1	2422	CH5	2442		
CH2	2427	CH6	2447		
CH3	2432	CH7	2452		
CH4	2437				

2.6. Test Conditions

Items	Required	Actual
Temperature range:	15-35°C	24°C
Humidity range:	25-75%	56%
Pressure range:	86-106kPa	98kPa

2.7. Test Facility

Shenzhen PSI Testing Co., Ltd.

1-2F, Building 5, Yudafu Industrial Park, No. 10, Xingye West Road, Shajing Street, Bao'an District, Shenzhen, Guangdong, China 518104

September 13, 2024 File on Federal Communication Commission
Registration Number: 916281

July 15, 2019 Certificated by IC
Registration Number: 31123
CAB identifier: CN0158

2.8. Measurement Uncertainty

(95% confidence levels, k=2)

Item	Uncertainty
Uncertainty for Power point Conducted Emissions Test	2.17dB
Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)	3.5dB
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	2.74dB(Polarize: V)
	2.76dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 18GHz)	4.29dB(Polarize: V)
	4.82dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (18GHz to 40GHz)	4.31dB(Polarize: V)
	4.30dB(Polarize: H)
Uncertainty for radio frequency	48.24KHz
Uncertainty for conducted RF Power	0.41dB
Uncertainty for Power Spectral Density	0.39 dB

2.9. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Firmware Version	Last Cal.	Cal. Interval
1.	9*6*6 anechoic chamber	SKET	9*6*6	N/A	/	2022.12.20	3 Year
2.	Test Receiver	Rohde&Schwarz	ESCI 7	101032/003	4.42 SP3	2023.12.19	1 Year
3.	L.I.S.N.#1	Rohde&Schwarz	ENV216	102282	/	2023.12.19	1 Year
4.	L.I.S.N.#2	RFT	NNB111	13835240	/	2023.12.19	1 Year
5.	Loop Antenna	Schwarz beck	FMZB 1519B	00128	/	2023.04.03	2 Year
6.	Bilog Antenna	Schwarz beck	VULB 9168	01448	/	2022.12.26	2 Year
7.	Spectrum Analyzer	Rohde&Schwarz	FSV-40N	101648	3.70	2023.12.19	1 Year
8.	Horn Antenna	Schwarz beck	BBHA 9120 D	02706	/	2022.12.26	2 Year
9.	Amplifier	SKET	LAPA_01G1 8G-45dB	SK20220329 01	/	2023.12.19	1 Year
10.	Horn Antenna	Schwarz beck	BBHA 9170	00946	/	2022.12.25	2 Year
11.	Amplifier	SKET	LNPA_0118 G-45	SK20200108 01	/	2023.12.19	1 Year
12.	RF Power Probe	Rohde&Schwarz	NRP-Z11	1138.3004.02 -1111533-Fz	/	2023.12.19	1 Year
13.	RF Sensor Unit	Tachoy	TR1029-2	20220428P0 08	/	2023.12.19	1 Year
For Test Software Information							
Item	Software Name	Manufacturer		Version			
RE	EMC-I	SKET		V1.5.0.3			
CE	EMC-I	SKET		V1.5.0.3			
RF	RTS	TACHOY		V1.0.0			

3. SPURIOUS EMISSION

3.1. Test Limits

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

15.205 Restricted frequency band

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)

RSS-GEN Restricted frequency band

Table 7 – Restricted frequency bands ^{Note 1}		
MHz	MHz	GHz
0.090 - 0.110	149.9 - 150.05	9.0 - 9.2
0.495 - 0.505	156.52475 - 156.52525	9.3 - 9.5
2.1735 - 2.1905	156.7 - 156.9	10.6 - 12.7
3.020 - 3.026	162.0125 - 167.17	13.25 - 13.4
4.125 - 4.128	167.72 - 173.2	14.47 - 14.5
4.17725 - 4.17775	240 – 285	15.35 - 16.2
4.20725 - 4.20775	322 - 335.4	17.7 - 21.4
5.677 - 5.683	399.9 - 410	22.01 - 23.12
6.215 - 6.218	608 - 614	23.6 - 24.0
6.26775 - 6.26825	960 - 1427	31.2 - 31.8
6.31175 - 6.31225	1435 - 1626.5	36.43 - 36.5

8.291 - 8.294	1645.5 - 1646.5	Above 38.6
8.362 - 8.366	1660 - 1710	
8.37625 - 8.38675	1718.8 - 1722.2	
8.41425 - 8.41475	2200 - 2300	
12.29 - 12.293	2310 - 2390	
12.51975 - 12.52025	2483.5 - 2500	
12.57675 - 12.57725	2655 - 2900	
13.36 - 13.41	3260 - 3267	
16.42 - 16.423	3332 - 3339	
16.69475 - 16.69525	3345.8 - 3358	
16.80425 - 16.80475	3500 - 4400	
25.5 - 25.67	4500 - 5150	
37.5 - 38.25	5350 - 5460	
73 - 74.6	7250 - 7750	
74.8 - 75.2	8025 - 8500	
108 - 138		

Note 1: Certain frequency bands listed in table 7 and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.

15.209 Limit

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V}/\text{m}$	$\text{dB}(\mu\text{V})/\text{m}$
0.009-0.490	300	$2400/\text{F}(\text{KHz})$	/
0.490-1.705	30	$24000/\text{F}(\text{KHz})$	/
1.705-30	30	30	29.5
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	
Note 1: The peak limit is 20 dB higher than the average limit			
Note 2: Peak limit applies (AVG limit + 20 dB) as well as RSS-247 Section 5.5			

Harmonic emissions limits comply with below 54 $\text{dB}\mu\text{V}/\text{m}$ at 3m. Other emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or comply with the radiated emissions limits specified in section 15.209(a) limit in the table below has to be followed.

Table 5 – General field strength limits at frequencies above 30 MHz

Frequency (MHz)	Field strength ($\mu\text{V/m}$ at 3 m)
30 – 88	100
88 – 216	150
216 – 960	200
Above 960	500

Table 6 – General field strength limits at frequencies below 30 MHz

Frequency	Magnetic field strength (H-Field) ($\mu\text{A/m}$)	Measurement distance (m)
9 - 490 kHz ^{Note 1}	$6.37/F$ (F in kHz)	300
490 - 1705 kHz	$63.7/F$ (F in kHz)	30
1.705 - 30 MHz	0.08	30

Note 1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

3.2. Test Procedure

The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1GHz. The EUT was placed on a rotating 0.8 m high above ground for below 1GHz and 1.5m high for above 1GHz testing, the table was rotated 360 degrees to determine the position of the highest radiation

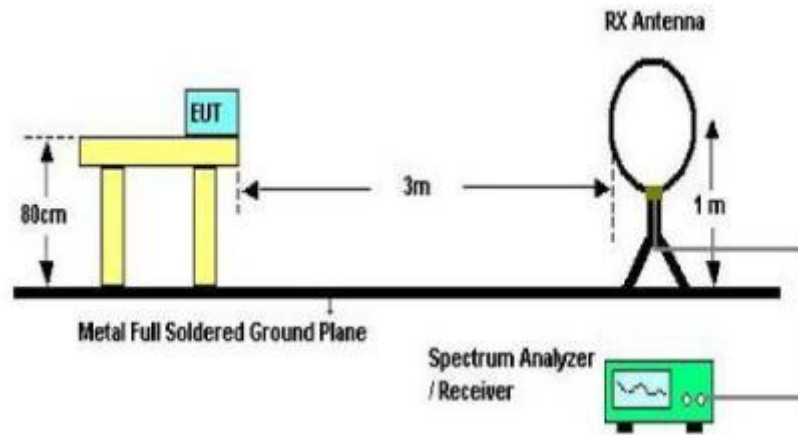
The Test antenna shall vary between 1m and 4m, both Horizontal and Vertical antenna are set of make measurement.

The initial step in collecting radiated emission data is a spectrum analyzer Peak detector mode pre-scanning the measurement frequency range. Significant Peaks are then marked. and then Quasi Peak Detector mode premeasured

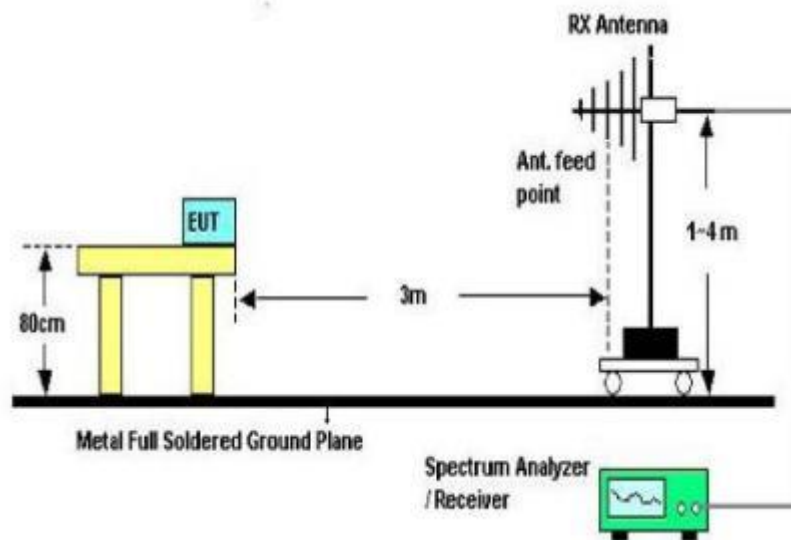
If Peak value comply with QP limit below 1GHz, the EUT deemed to comply with QP limit. But the Peak value and average value both need to comply with applicable limit above 1GHz.

For the actual test configuration, please see the test setup photo.

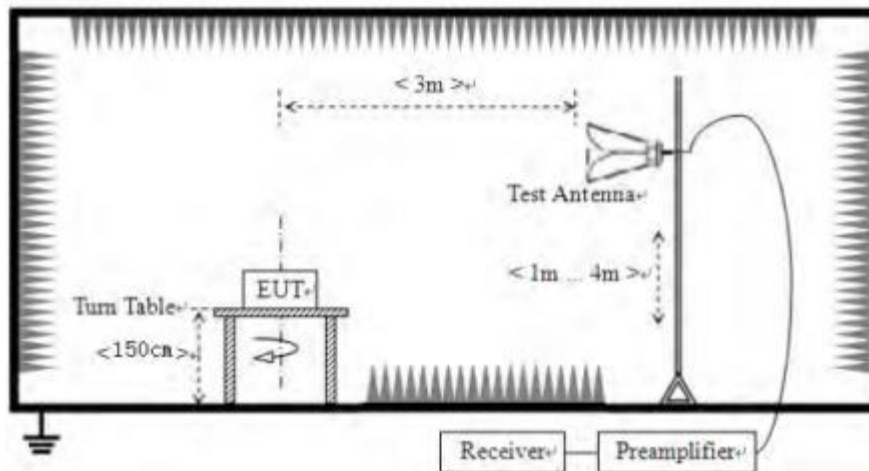
3.3. Test Setup



Below 30MHz Test Setup



Above 30MHz Test Setup



Above 1GHz Test Setup

3.4. Test Results

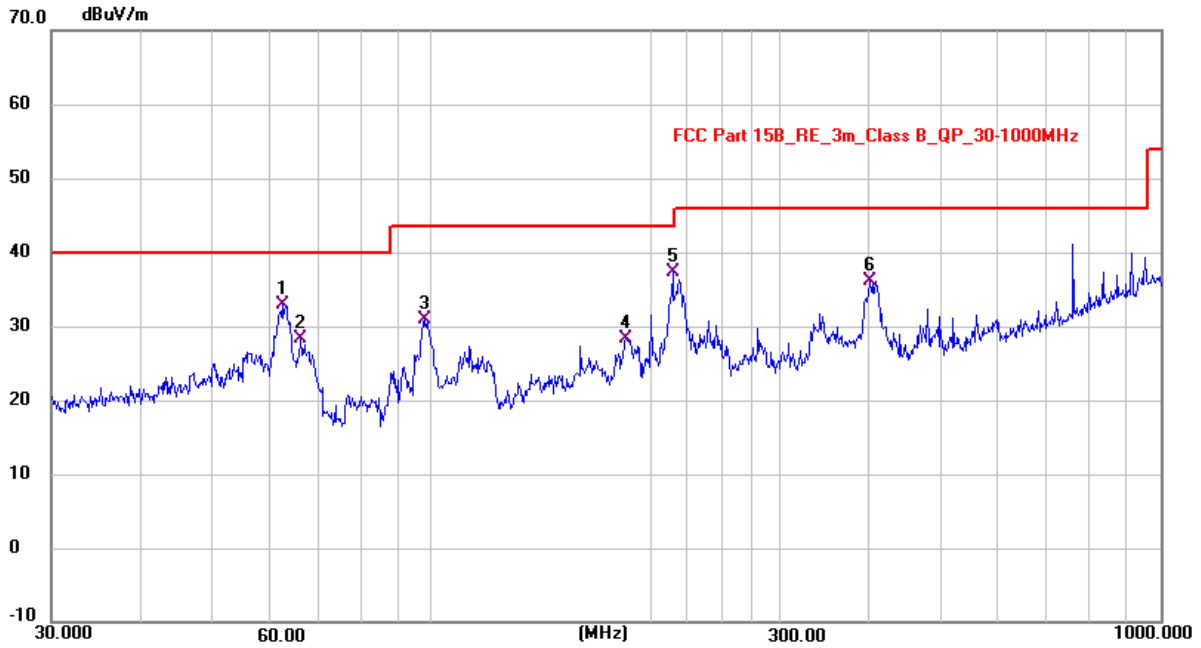
We have scanned from 9kHz to the 10th harmonic of the EUT's highest frequency.
Detailed information please see the following page.

From 9KHz to 30MHz:	
Test Date : 2024.1.12	Temperature : 24°C
Test Engineer : Jensen Wang	Humidity : 56%
Test Mode : IEEE 802.11b mode	
Test Results : PASS	
Note:	The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



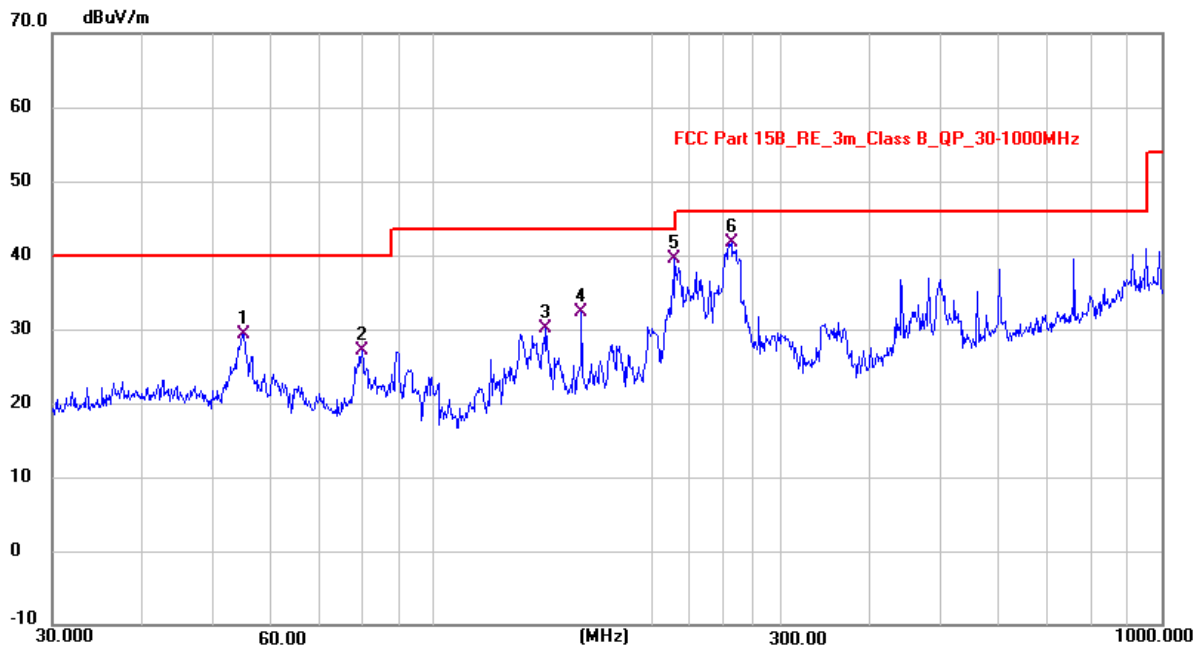
From 30MHz to 1000MHz:	
Test Date : 2024.1.12	Temperature : 24°C
Test Engineer : Jensen Wang	Humidity : 56%
Test Mode : IEEE 802.11b mode	
Test Results : PASS	
Note:	1. The test results are listed in next pages. 2. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector and quasi-peak detector need not be carried out. 3. All modes have been tested, and only worst data of IEEE 802.11b mode, Channel 2437MHz (AC 120V/ 60Hz) was listed in this report.



Polarization: Vertical

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	62.3492	21.05	11.90	32.95	40.00	-7.05	QP
2	66.1790	16.89	11.50	28.39	40.00	-11.61	QP
3	97.5841	21.51	9.34	30.85	43.50	-12.65	QP
4	185.0567	17.36	10.97	28.33	43.50	-15.17	QP
5 *	214.0446	26.77	10.53	37.30	43.50	-6.20	QP
6	400.0810	19.97	16.19	36.16	46.00	-9.84	QP

Note: Result=Reading + Correct Factor. Margin= Result-Limit.

Polarization: Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	55.0998	16.59	12.66	29.25	40.00	-10.75	QP
2	79.9753	18.58	8.45	27.03	40.00	-12.97	QP
3	143.2004	17.12	12.89	30.01	43.50	-13.49	QP
4	159.9944	19.02	13.26	32.28	43.50	-11.22	QP
5 *	214.9850	28.95	10.56	39.51	43.50	-3.99	QP
6	257.1965	29.32	12.34	41.66	46.00	-4.34	QP

Note: Result=Reading + Correct Factor. Margin= Result-Limit.

From 1GHz to 25GHz:	
Test Date : 2024.1.12	Temperature : 24°C
Test Engineer : Jensen Wang	Humidity : 56%
Test Mode : WIFI mode	
Test Results : PASS	
Note:	1. The test results are listed in next pages. 2. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector and quasi-peak detector need not be carried out. 3. If the limits for the measurement with the average detector are met when using a receiver with a quasi-peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector need not be carried out.



Test Mode : IEEE 802.11b TX Low								
No.	Freq MHz	Polarity	Reading (dBuV/m)	Correct Factor	Result (dBuV/m)	Limit (dBuV/m)	Margin	Remark
1	4824	V	92.68	-27.27	65.41	74.00	-8.59	Peak
2	4824	V	72.71	-27.27	45.44	54.00	-8.56	Avg
3	7236	--	--	--	--	--	--	--
4	9648	--	--	--	--	--	--	--
5	4824	H	90.16	-27.27	62.89	74.00	-11.11	Peak
6	4824	H	71.08	-27.27	43.81	54.00	-10.19	Avg
7	7236	--	--	--	--	--	--	--
8	9648	--	--	--	--	--	--	--
Test Mode : IEEE 802.11b TX Mid								
1	4874	V	93.06	-27.79	65.27	74.00	-8.73	Peak
2	4874	V	72.32	-27.79	44.53	54.00	-9.47	Avg
3	7311	--	--	--	--	--	--	--
4	9748	--	--	--	--	--	--	--
5	4874	H	92.76	-27.79	64.97	74.00	-9.03	Peak
6	4874	H	68.57	-27.79	40.78	54.00	-13.22	Avg
7	7311	--	--	--	--	--	--	--
8	9748	--	--	--	--	--	--	--
Test Mode : IEEE 802.11b TX High								
1	4924	V	92.34	-28.30	64.04	74.00	-9.96	Peak
2	4924	V	71.39	-28.30	43.09	54.00	-10.91	Avg
3	7386	--	--	--	--	--	--	--
4	9848	--	--	--	--	--	--	--
5	4924	H	92.59	-28.30	64.29	74.00	-9.71	Peak
6	4924	H	68.78	-28.30	40.48	54.00	-13.52	Avg
7	7386	--	--	--	--	--	--	--
8	9848	--	--	--	--	--	--	--
Note: 1. Means other frequency and mode comply with standard requirements and at least have 20dB margin. 2. Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain. Result=Reading + Correct Factor. Margin= Result-Limit.								

Test Mode : IEEE 802.11g TX Low								
No.	Freq MHz	Polarity	Reading (dBuV/m)	Correct Factor	Result (dBuV/m)	Limit (dBuV/m)	Margin	Remark
1	4824	V	92.73	-27.27	65.46	74.00	-8.54	Peak
2	4824	V	71.20	-27.27	43.93	54.00	-10.07	Avg
3	7236	--	--	--	--	--	--	--
4	9648	--	--	--	--	--	--	--
5	4824	H	92.05	-27.27	64.78	74.00	-9.22	Peak
6	4824	H	69.63	-27.27	42.36	54.00	-11.64	Avg
7	7236	--	--	--	--	--	--	--
8	9648	--	--	--	--	--	--	--
Test Mode : IEEE 802.11g TX Mid								
1	4874	V	95.25	-27.79	67.46	74.00	-6.54	Peak
2	4874	V	71.21	-27.79	43.42	54.00	-10.58	Avg
3	7311	--	--	--	--	--	--	--
4	9748	--	--	--	--	--	--	--
5	4874	H	91.79	-27.79	64.00	74.00	-10.00	Peak
6	4874	H	69.39	-27.79	41.60	54.00	-12.40	Avg
7	7311	--	--	--	--	--	--	--
8	9748	--	--	--	--	--	--	--
Test Mode : IEEE 802.11g TX High								
1	4924	V	93.11	-28.30	64.81	74.00	-9.19	Peak
2	4924	V	73.50	-28.30	45.20	54.00	-8.80	Avg
3	7386	--	--	--	--	--	--	--
4	9848	--	--	--	--	--	--	--
5	4924	H	90.68	-28.30	62.38	74.00	-11.62	Peak
6	4924	H	69.48	-28.30	41.18	54.00	-12.82	Avg
7	7386	--	--	--	--	--	--	--
8	9848	--	--	--	--	--	--	--
Note:	1. Means other frequency and mode comply with standard requirements and at least have 20dB margin. 2. Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain. Result=Reading + Correct Factor. Margin= Result-Limit.							

Test Mode : IEEE 802.11n/HT20 TX Low								
No.	Freq MHz	Polarity	Reading (dBuV/m)	Correct Factor	Result (dBuV/m)	Limit (dBuV/m)	Margin	Remark
1	4824	V	95.30	-27.27	68.03	74.00	-5.97	Peak
2	4824	V	73.67	-27.27	46.40	54.00	-7.60	Avg
3	7236	--	--	--	--	--	--	--
4	9648	--	--	--	--	--	--	--
5	4824	H	90.26	-27.27	62.99	74.00	-11.01	Peak
6	4824	H	68.43	-27.27	41.16	54.00	-12.84	Avg
7	7236	--	--	--	--	--	--	--
8	9648	--	--	--	--	--	--	--
Test Mode : IEEE 802.11n/HT20 TX Mid								
1	4874	V	93.36	-27.79	65.57	74.00	-8.43	Peak
2	4874	V	72.46	-27.79	44.67	54.00	-9.33	Avg
3	7311	--	--	--	--	--	--	--
4	9748	--	--	--	--	--	--	--
5	4874	H	91.49	-27.79	63.70	74.00	-10.30	Peak
6	4874	H	68.65	-27.79	40.86	54.00	-13.14	Avg
7	7311	--	--	--	--	--	--	--
8	9748	--	--	--	--	--	--	--
Test Mode : IEEE 802.11n/HT20 TX High								
1	4924	V	93.35	-28.30	65.05	74.00	-8.95	Peak
2	4924	V	72.99	-28.30	44.69	54.00	-9.31	Avg
3	7386	--	--	--	--	--	--	--
4	9848	--	--	--	--	--	--	--
5	4924	H	89.46	-28.30	61.16	74.00	-12.84	Peak
6	4924	H	71.93	-28.30	43.63	54.00	-10.37	Avg
7	7386	--	--	--	--	--	--	--
8	9848	--	--	--	--	--	--	--
Note:	1. Means other frequency and mode comply with standard requirements and at least have 20dB margin. 2. Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain. Result=Reading + Correct Factor. Margin= Result-Limit.							

Test Mode : IEEE 802.11n/HT40 TX Low								
No.	Freq MHz	Polarity	Reading (dBuV/m)	Correct Factor	Result (dBuV/m)	Limit (dBuV/m)	Margin	Remark
1	4844	V	94.24	-27.27	66.97	74.00	-7.03	Peak
2	4844	V	74.51	-27.27	47.24	54.00	-6.76	Avg
3	7266	--	--	--	--	--	--	--
4	9688	--	--	--	--	--	--	--
5	4844	H	91.31	-27.27	64.04	74.00	-9.96	Peak
6	4844	H	69.14	-27.27	41.87	54.00	-12.13	Avg
7	7266	--	--	--	--	--	--	--
8	9688	--	--	--	--	--	--	--
Test Mode : IEEE 802.11n/HT40 TX Mid								
1	4874	V	92.90	-27.79	65.11	74.00	-8.89	Peak
2	4874	V	71.04	-27.79	43.25	54.00	-10.75	Avg
3	7311	--	--	--	--	--	--	--
4	9748	--	--	--	--	--	--	--
5	4874	H	89.12	-27.79	61.33	74.00	-12.67	Peak
6	4874	H	68.02	-27.79	40.23	54.00	-13.77	Avg
7	7311	--	--	--	--	--	--	--
8	9748	--	--	--	--	--	--	--
Test Mode : IEEE 802.11n/HT40 TX High								
1	4904	V	95.63	-28.30	67.33	74.00	-6.67	Peak
2	4904	V	71.22	-28.30	42.92	54.00	-11.08	Avg
3	7356	--	--	--	--	--	--	--
4	9808	--	--	--	--	--	--	--
5	4904	H	89.12	-28.30	60.82	74.00	-13.18	Peak
6	4904	H	68.29	-28.30	39.99	54.00	-14.01	Avg
7	7356	--	--	--	--	--	--	--
8	9808	--	--	--	--	--	--	--
Note: 1. Means other frequency and mode comply with standard requirements and at least have 20dB margin. 2. Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain. Result=Reading + Correct Factor. Margin= Result-Limit.								

4. POWER LINE CONDUCTED EMISSION

4.1. Test Limits

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 -0.50	66 -56*	56 - 46*
0.50 -5.00	56	46
5.00 -30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

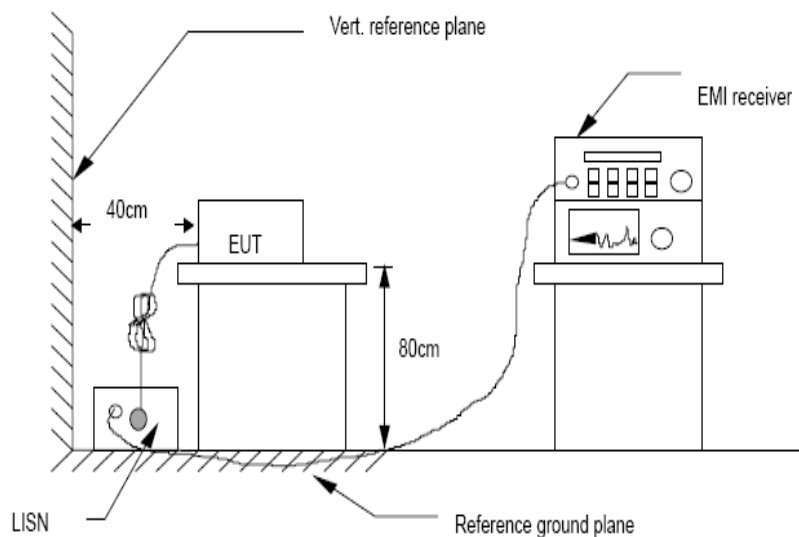
3. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

4.2. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10:2013 on Conducted Emission Measurement.

The bandwidth of test receiver is set at 9 kHz.

4.3. Test Setup

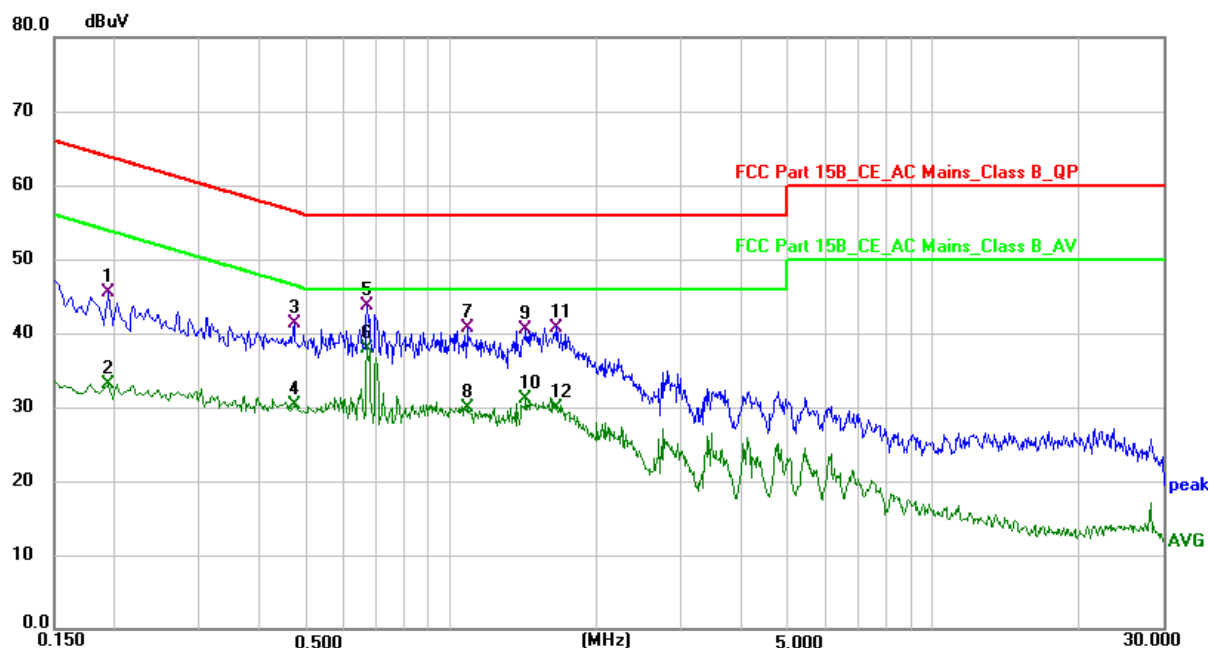


4.4. Test Results

Test Date	: 2023.12.26	Temperature	: 24°C
Test Engineer	: Jensen Wang	Humidity	: 56%
Test Mode	: IEEE 802.11b mode		
Test Results	: PASS		
Note:	1. The test results are listed in next pages. 2. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector and quasi-peak detector need not be carried out. 3. If the limits for the measurement with the average detector are met when using a receiver with a quasi-peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector need not be carried out. 4. All modes have been tested, and only worst data of IEEE 802.11b mode, Channel 2437MHz (AC 120V/ 60Hz) was listed in this report.		



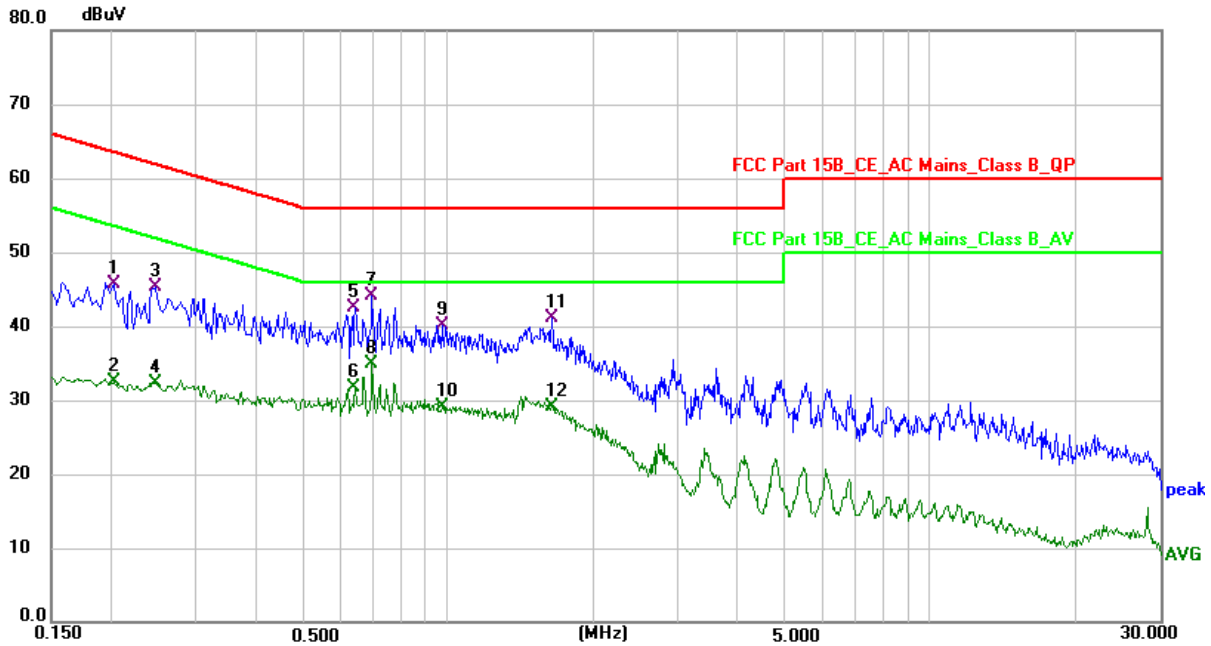
Polarization: L



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1940	35.60	9.95	45.55	63.86	-18.31	QP	P
2	0.1940	23.16	9.95	33.11	53.86	-20.75	AVG	P
3	0.4700	31.49	9.82	41.31	56.51	-15.20	QP	P
4	0.4700	20.42	9.82	30.24	46.51	-16.27	AVG	P
5	0.6700	34.21	9.50	43.71	56.00	-12.29	QP	P
6 *	0.6700	28.44	9.50	37.94	46.00	-8.06	AVG	P
7	1.0780	31.36	9.41	40.77	56.00	-15.23	QP	P
8	1.0780	20.47	9.41	29.88	46.00	-16.12	AVG	P
9	1.4260	31.10	9.40	40.50	56.00	-15.50	QP	P
10	1.4260	21.62	9.40	31.02	46.00	-14.98	AVG	P
11	1.6540	31.40	9.40	40.80	56.00	-15.20	QP	P
12	1.6540	20.58	9.40	29.98	46.00	-16.02	AVG	P

Note: Result=Reading + Correct Factor. Margin= Result-Limit.

Polarization: N



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.2020	35.65	10.04	45.69	63.53	-17.84	QP	P
2	0.2020	22.48	10.04	32.52	53.53	-21.01	AVG	P
3	0.2460	35.28	9.93	45.21	61.89	-16.68	QP	P
4	0.2460	22.31	9.93	32.24	51.89	-19.65	AVG	P
5	0.6419	32.63	9.78	42.41	56.00	-13.59	QP	P
6	0.6419	21.94	9.78	31.72	46.00	-14.28	AVG	P
7	0.6940	34.25	9.78	44.03	56.00	-11.97	QP	P
8 *	0.6940	25.15	9.78	34.93	46.00	-11.07	AVG	P
9	0.9700	30.54	9.54	40.08	56.00	-15.92	QP	P
10	0.9700	19.64	9.54	29.18	46.00	-16.82	AVG	P
11	1.6380	31.67	9.35	41.02	56.00	-14.98	QP	P
12	1.6380	19.67	9.35	29.02	46.00	-16.98	AVG	P

Note: Result=Reading + Correct Factor. Margin= Result-Limit.

5. Out-of-band Emissions

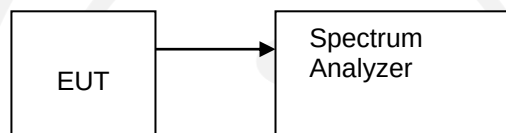
5.1. Test Limits

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 FCC Part 15.209(a) is not required.

5.2. Test Procedure

Connect the transmitter output to spectrum analyzer using a low loss RF cable, and set the spectrum analyzer to RBW=100 kHz, VBW= 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, band edge and out-of-band emissions.

5.3. Test Setup



5.4. Test Results

PASS.

The test results are listed in next pages.

Band Edge: Pass**1 Reference_Level_NVNT_ANT1_802_11b_2412****2 Bandedge_NVNT_ANT1_802_11b_2412**

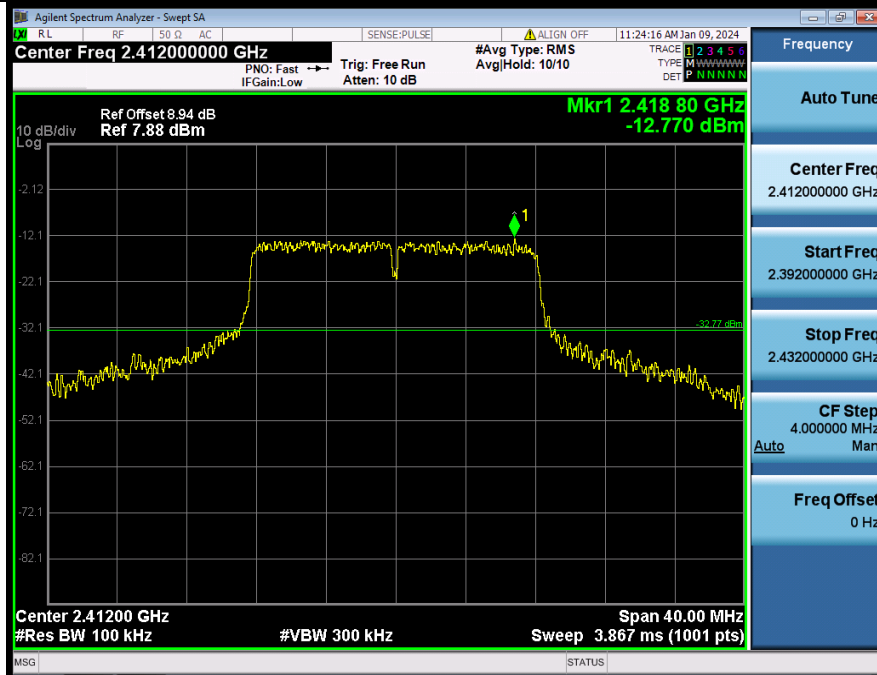
1 Reference Level_NVNT_ANT1_802_11b_2462



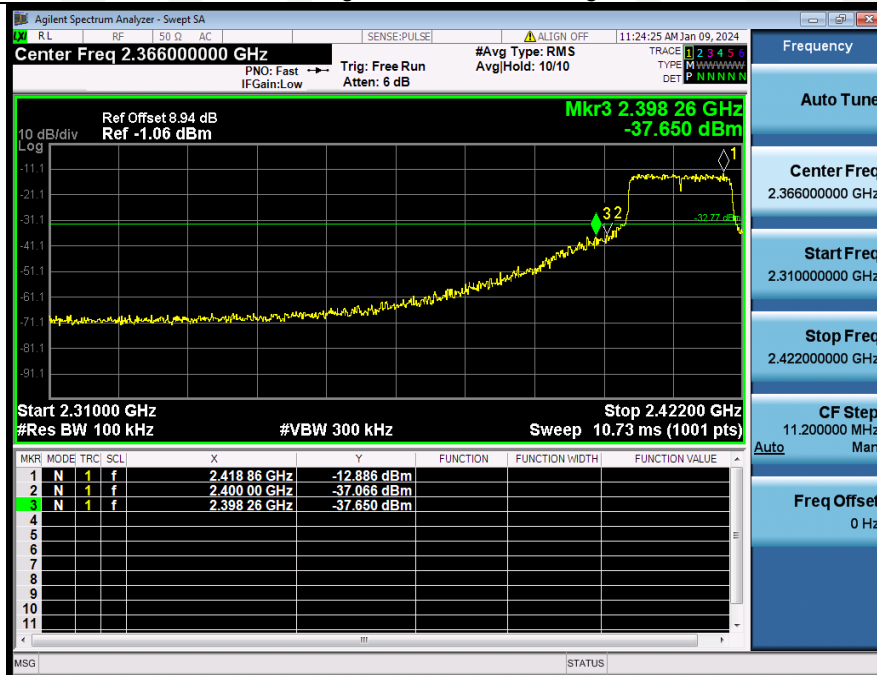
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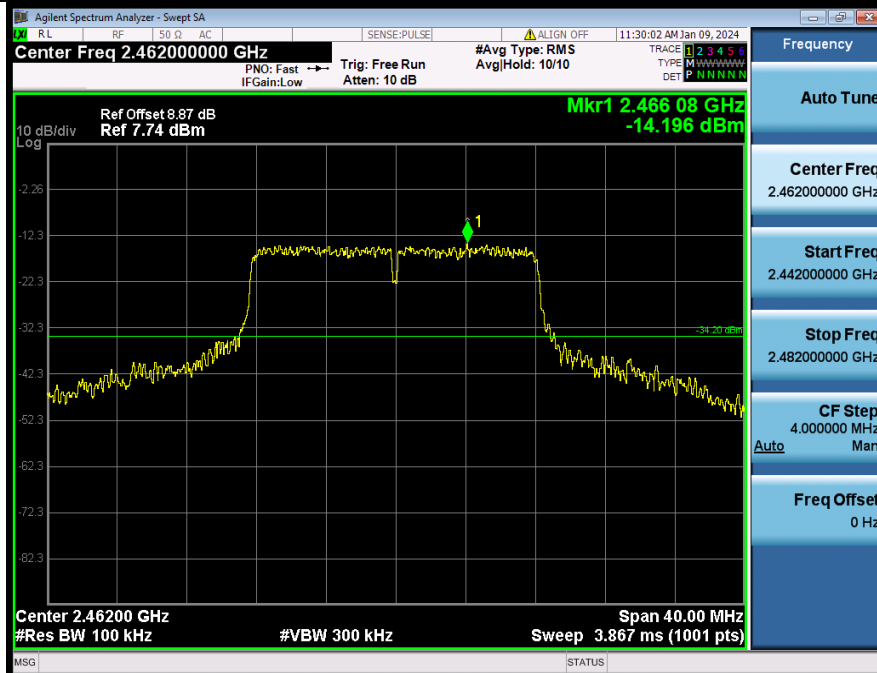
1 Reference Level_NVNT_ANT1_802_11g_2412



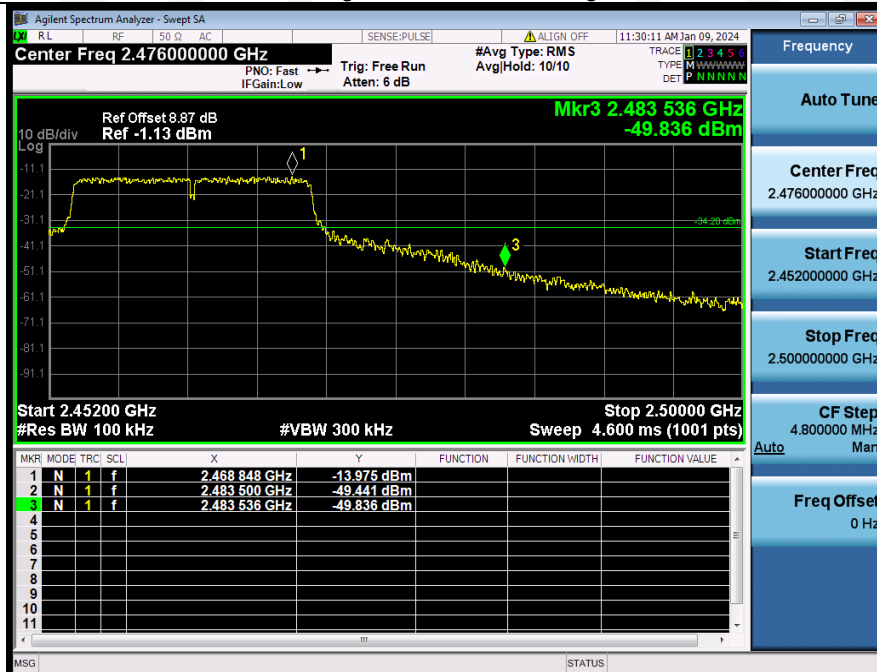
2_Bandedge_NVNT_ANT1_802_11g_2412



1 Reference Level_NVNT_ANT1_802_11g_2462



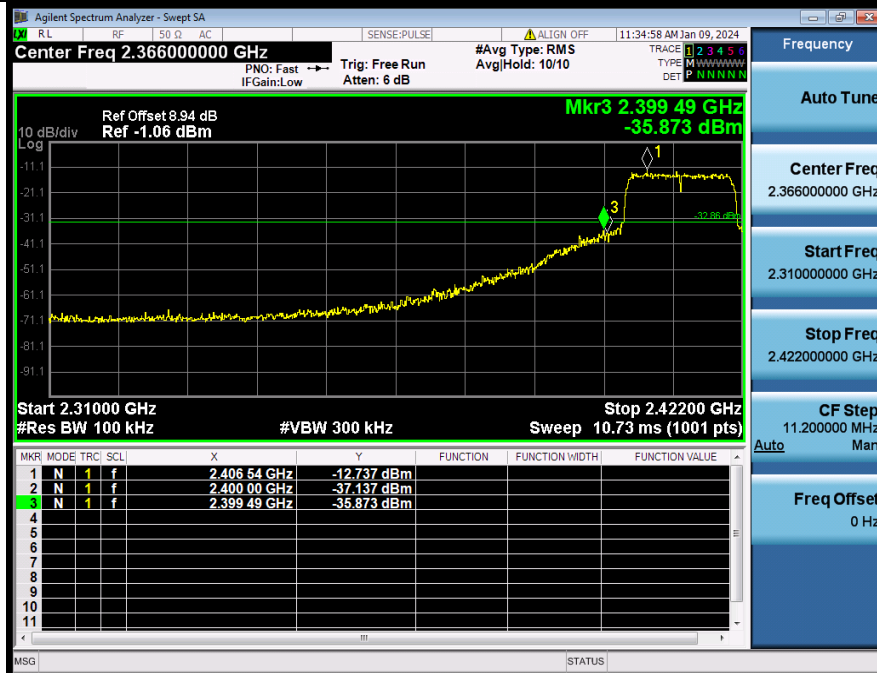
2 Bandedge_NVNT_ANT1_802_11g_2462



1 Reference_Level_NVNT_ANT1_802_11n(HT20)_2412



2 Bandedge_NVNT_ANT1_802_11n(HT20)_2412



1_Reference_Level_NVNT_ANT1_802_11n(HT20)_2462



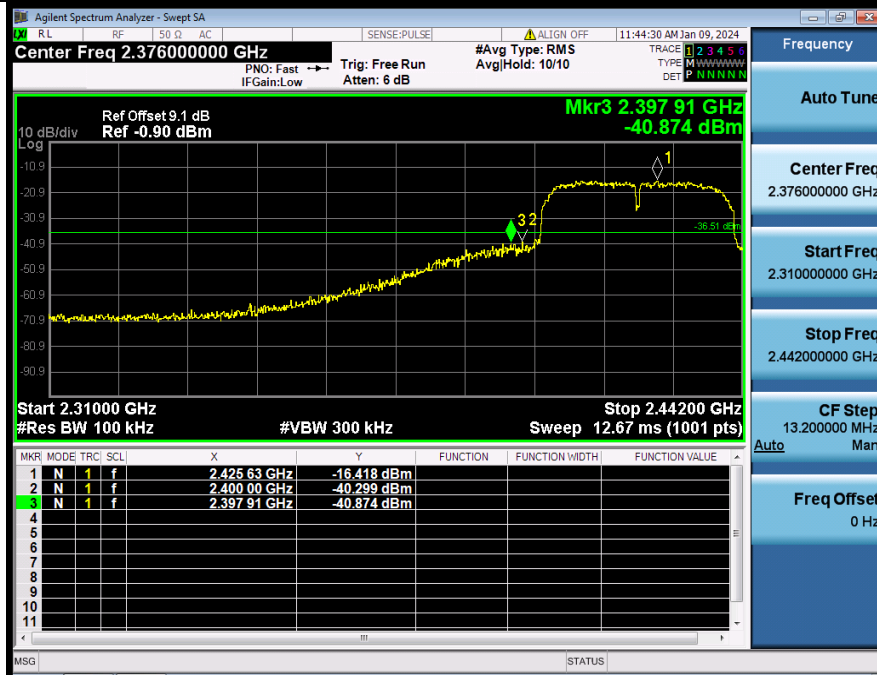
2_Bandedge_NVNT_ANT1_802_11n(HT20)_2462



1 Reference_Level_NVNT_ANT1_802_11n(HT40) 2422



2 Bandedge_NVNT_ANT1_802_11n(HT40) 2422

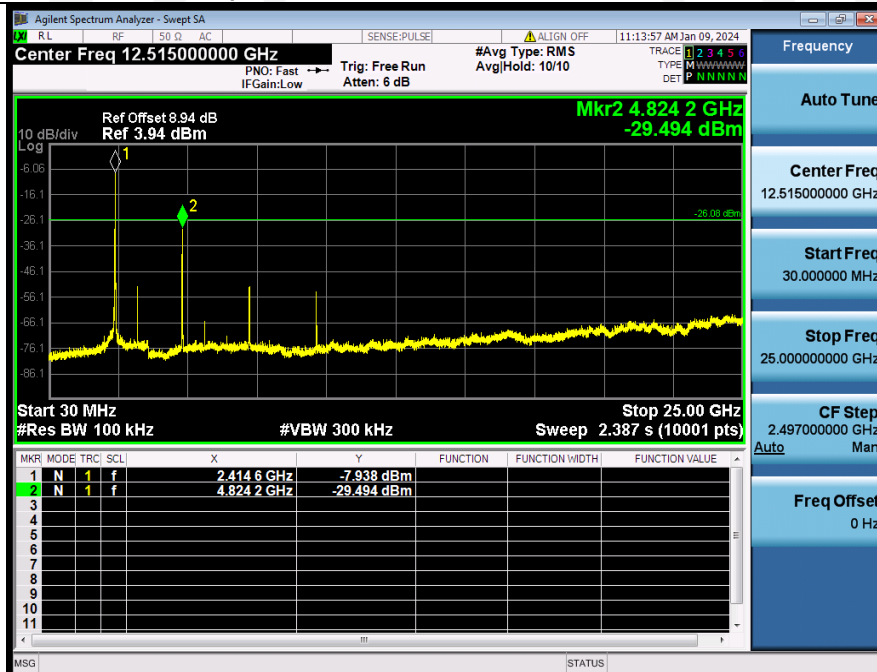


1 Reference_Level_NVNT_ANT1_802_11n(HT40)_2452



2 Bandedge_NVNT_ANT1_802_11n(HT40)_2452

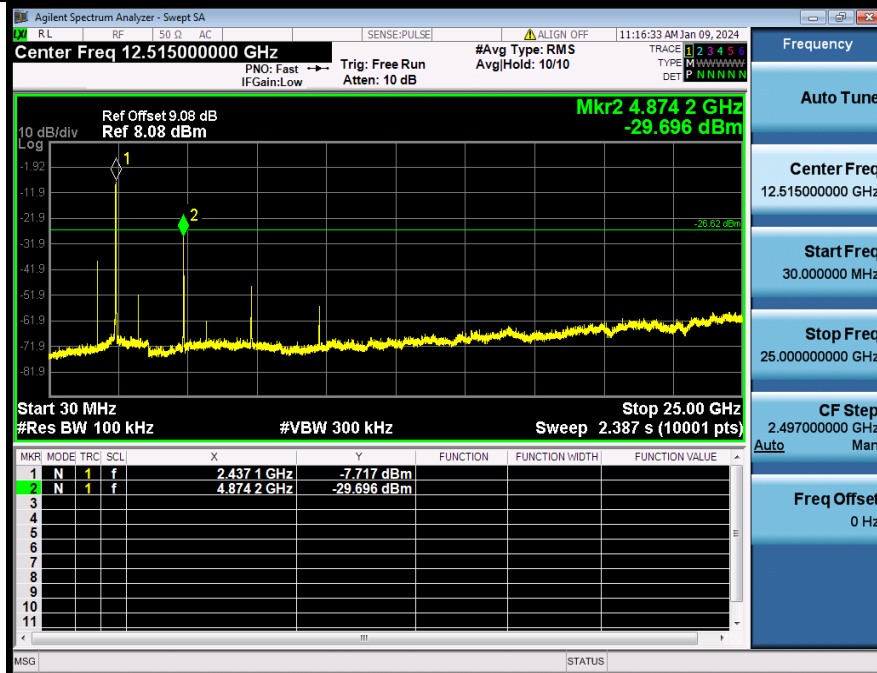


Conducted spurious emission: Pass**1 Reference Level NVNT ANT1 802 11b 2412****2 Spurious Emission NVNT ANT1 802 11b 2412**

1 Reference Level_NVNT_ANT1_802_11b_2437



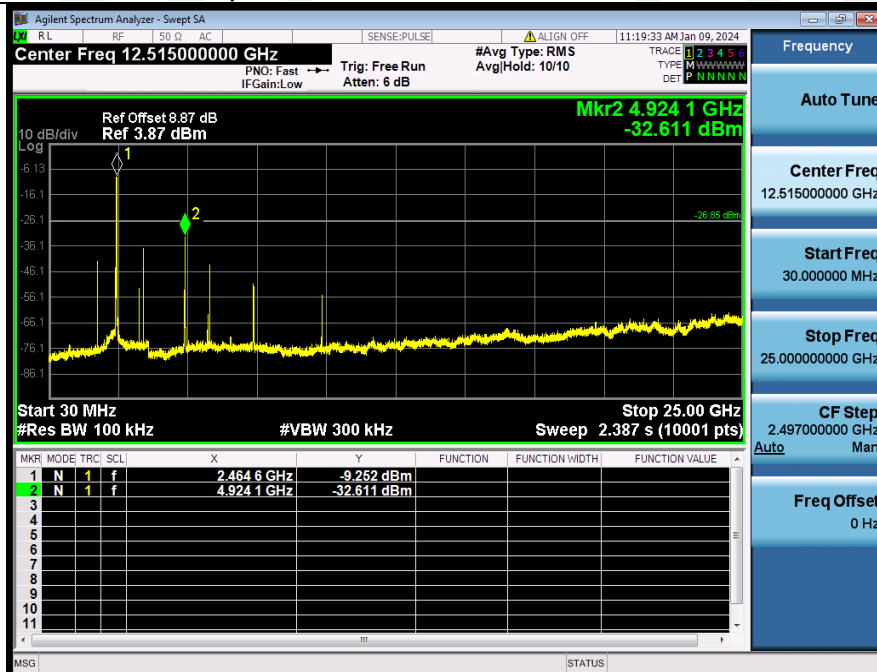
2 Spurious Emission_NVNT_ANT1_802_11b_2437



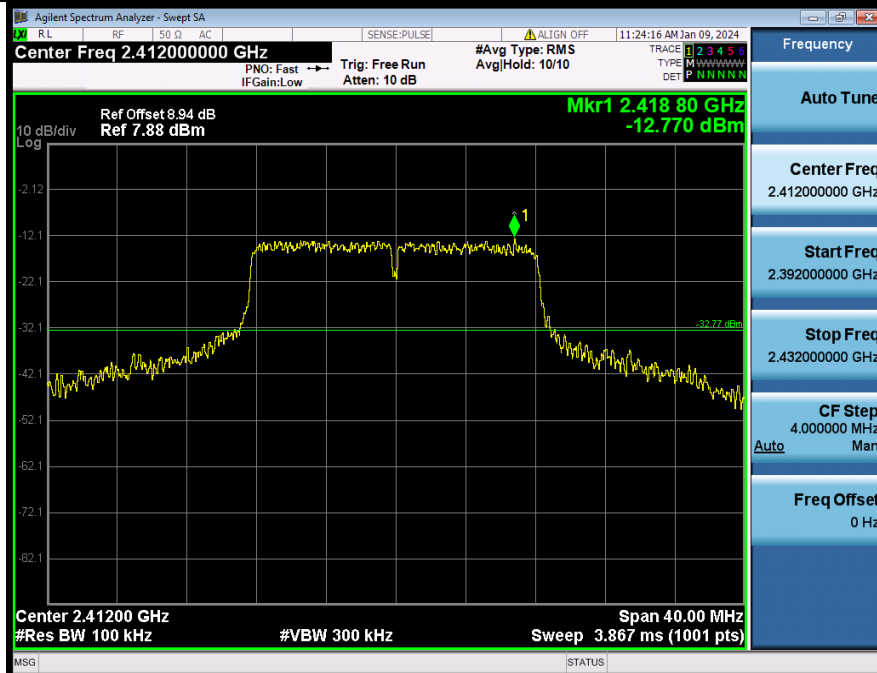
1 Reference Level NVNT_ANT1_802_11b_2462



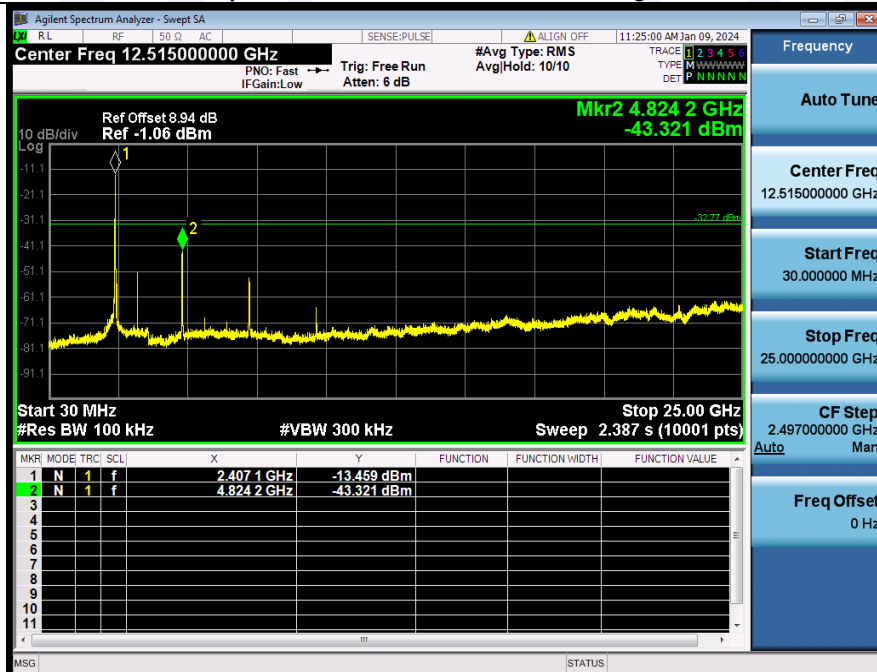
2 Spurious Emission NVNT_ANT1_802_11b_2462



1 Reference Level_NVNT_ANT1_802_11g_2412



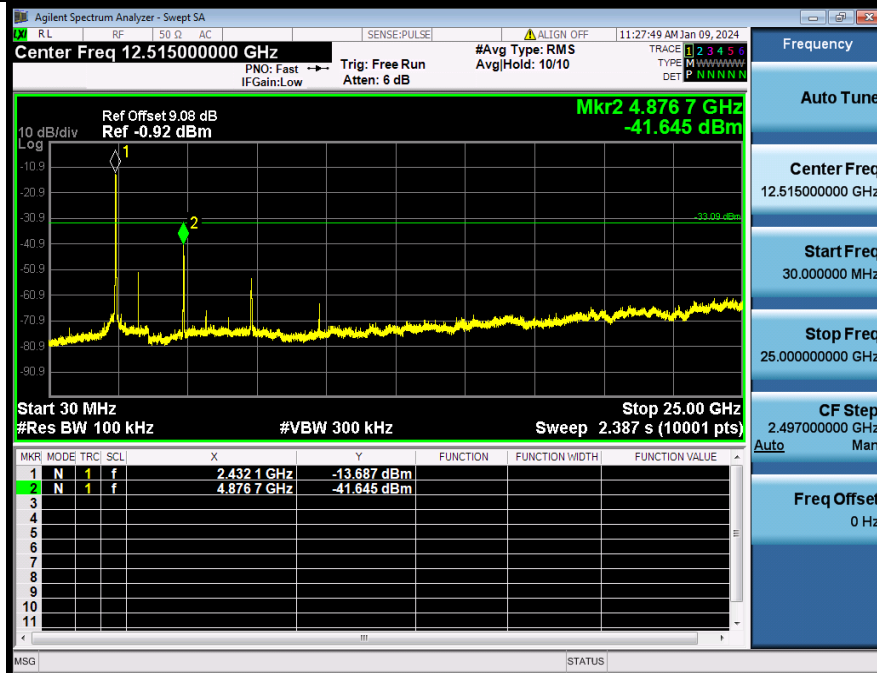
2_Spurious_Emission_NVNT_ANT1_802_11g_2412



1 Reference Level_NVNT_ANT1_802_11g_2437



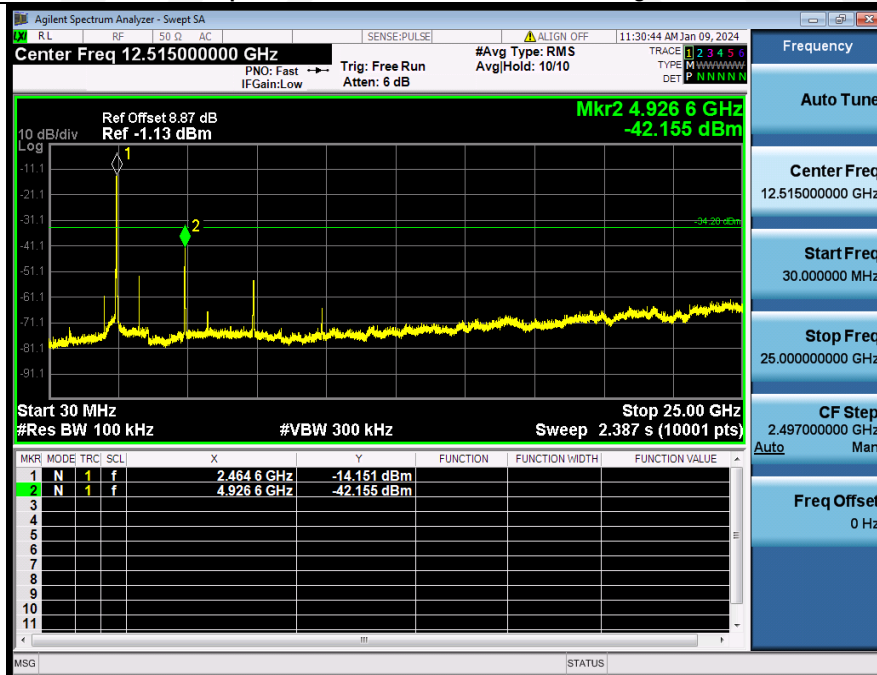
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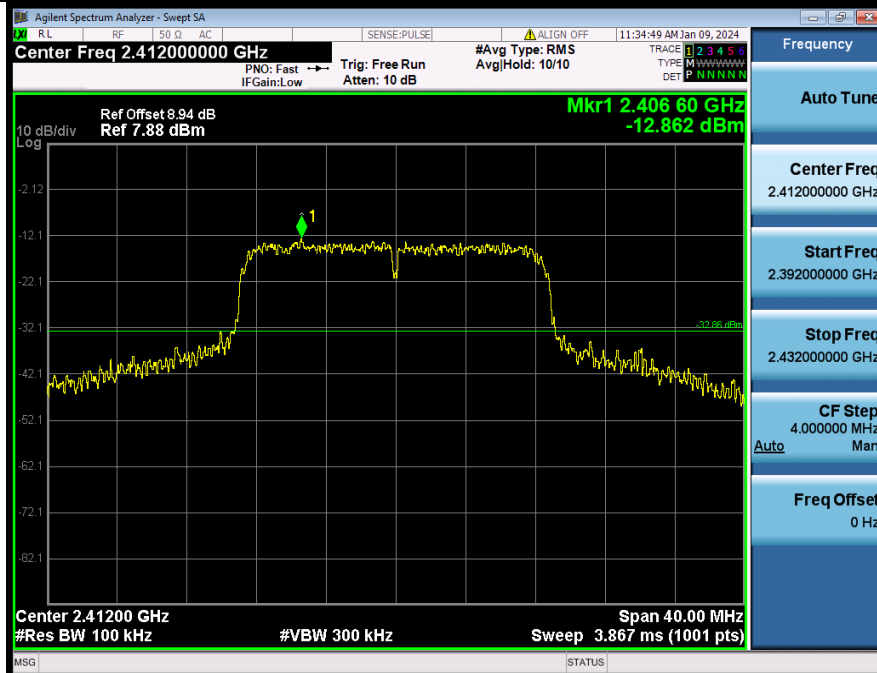
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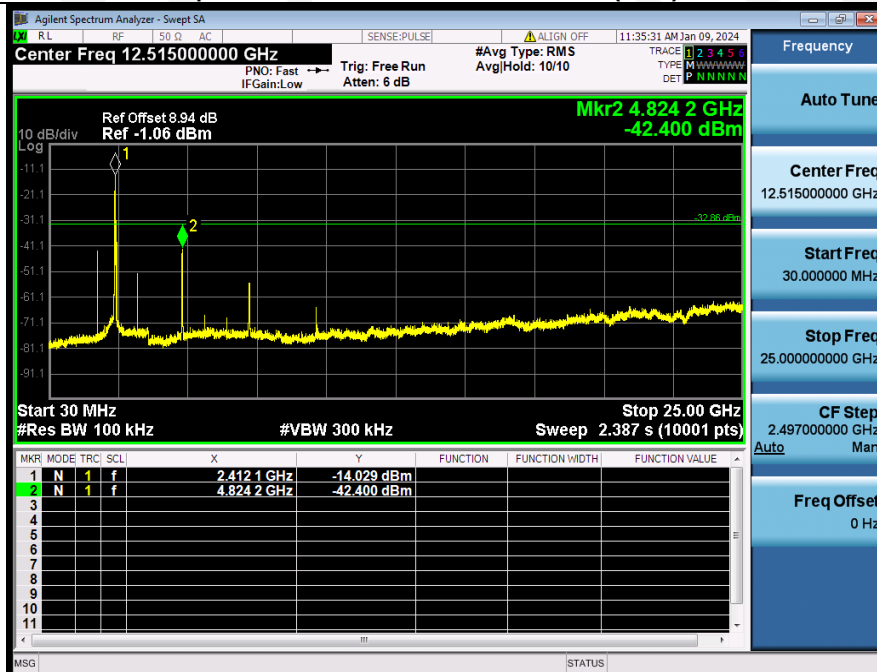
2_Spurious_Emission_NVNT_ANT1_802_11g_2462



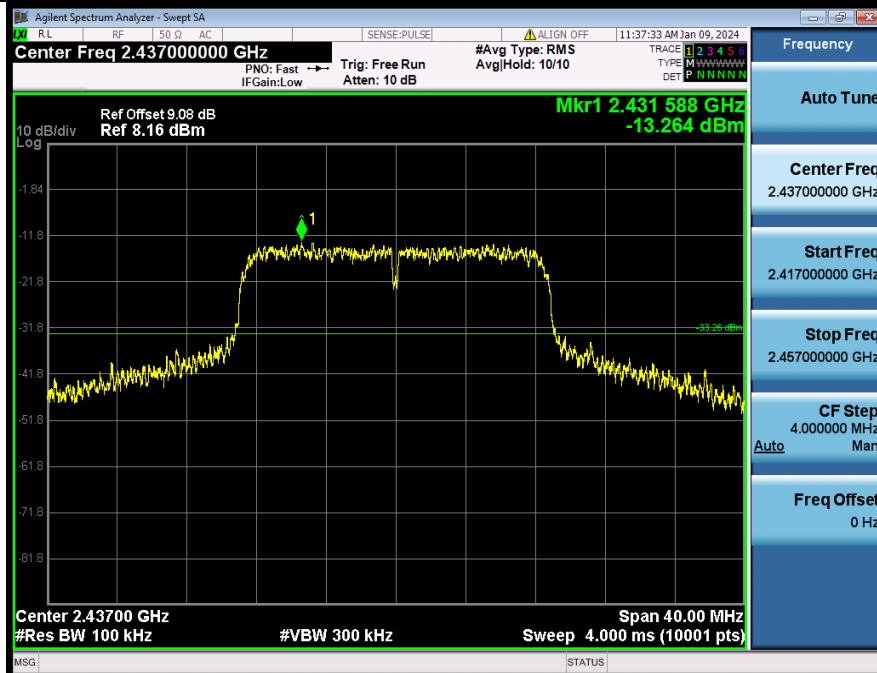
1 Reference Level NVNT ANT1_802_11n(HT20) 2412



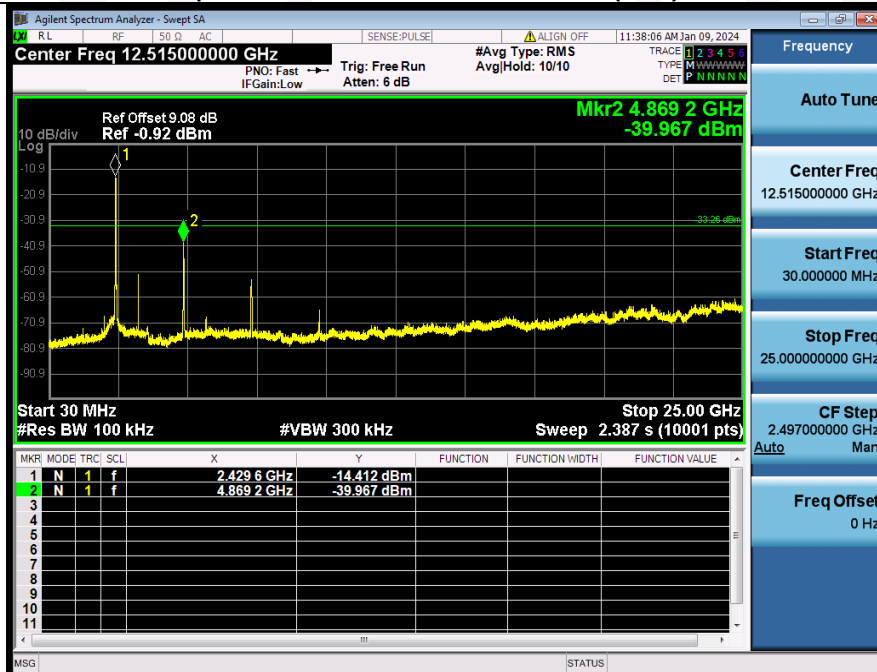
2 Spurious Emission NVNT ANT1_802_11n(HT20) 2412



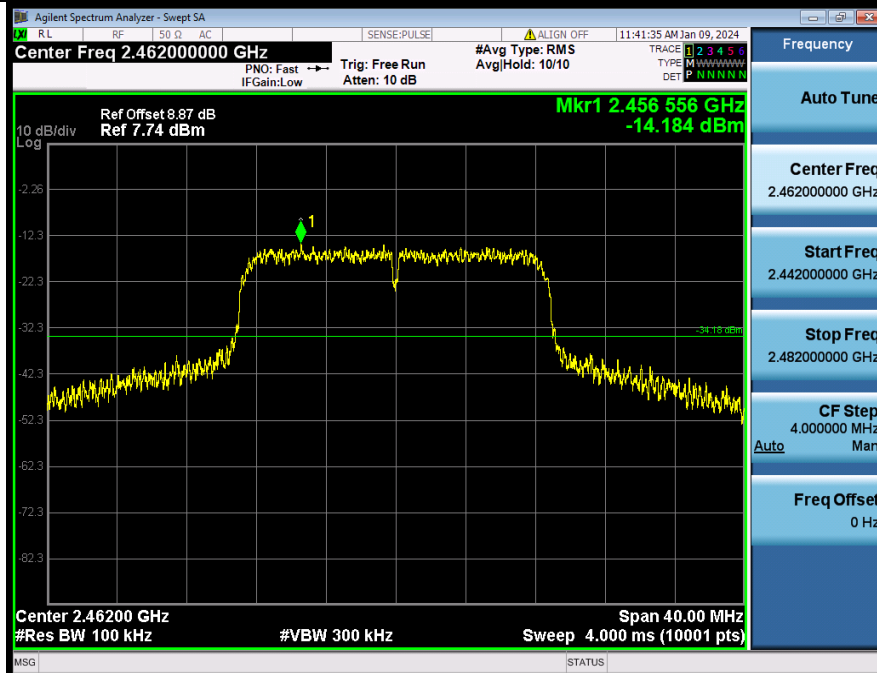
1_Reference_Level_NVNT_ANT1_802_11n(HT20)_2437



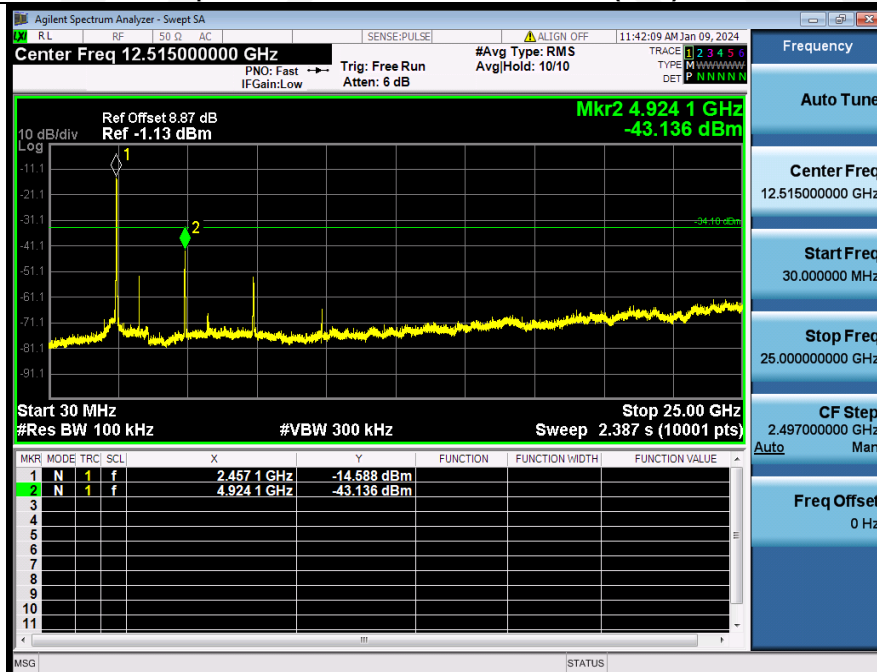
2_Spurious Emission_NVNT_ANT1_802_11n(HT20)_2437



1_Reference_Level_NVNT_ANT1_802_11n(HT20)_2462



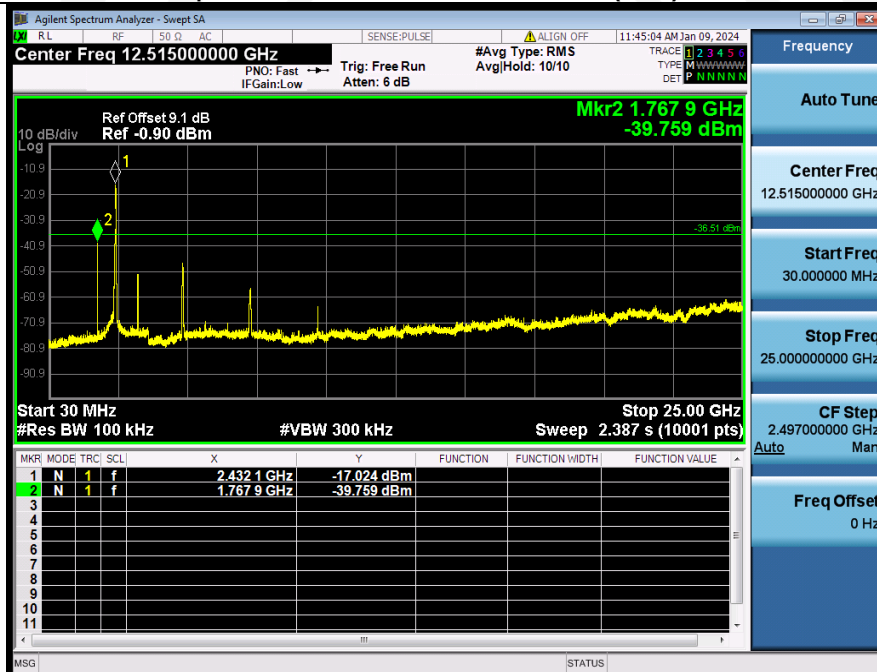
2_Spurious Emission_NVNT_ANT1_802_11n(HT20)_2462



1 Reference_Level_NVNT_ANT1_802_11n(HT40) 2422



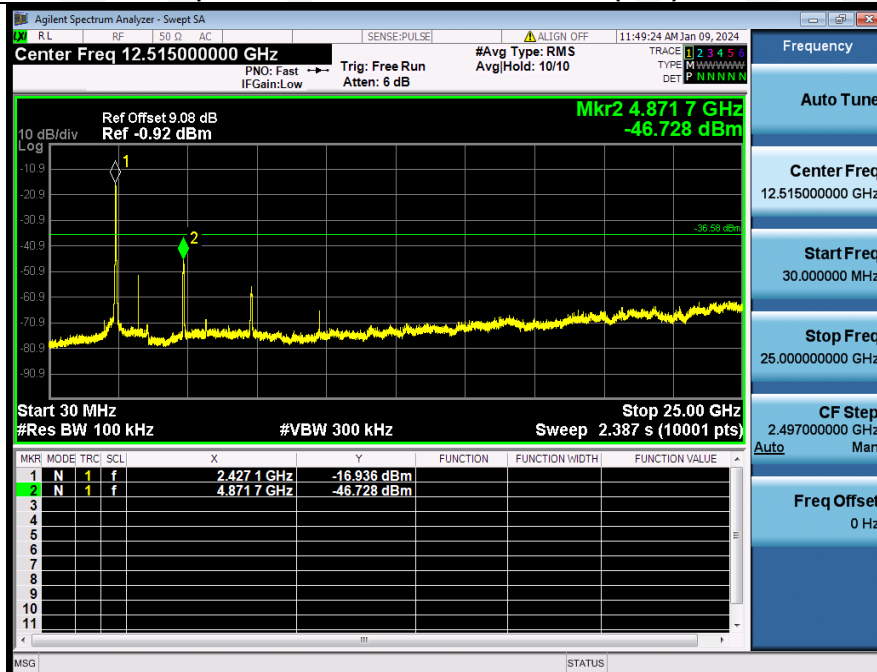
2 Spurious Emission_NVNT_ANT1_802_11n(HT40) 2422



1 Reference_Level_NVNT_ANT1_802_11n(HT40) 2437



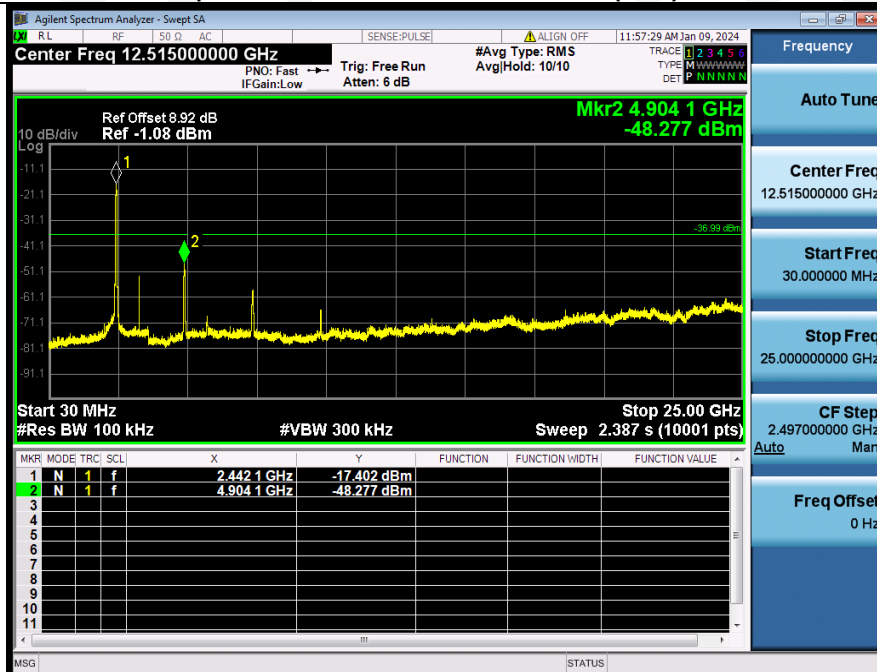
2 Spurious Emission_NVNT_ANT1_802_11n(HT40) 2437



1 Reference Level NVNT ANT1_802_11n(HT40) 2452



2 Spurious Emission NVNT ANT1_802_11n(HT40) 2452



6. CONDUCTED MAXIMUM OUTPUT POWER

6.1. Test limits

Please refer RSS-247 & FCC PART 15:15.247.

Regulation 15.247(b) The limit of Maximum Peak Output Power Measurement is 1 W(30dBm)

6.2. Test Procedure

Details see the KDB558074 D01 Meas Guidance v05r02

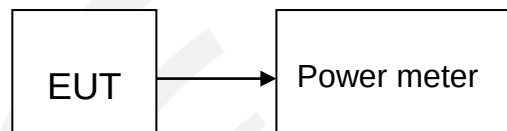
6.2.1 Place the EUT on the table and set it in transmitting mode.

6.2.2 Connected the EUT's antenna port to peak power meter by 20dB attenuator.

6.2.3 Measure out each mode and each bands peak output power of EUT.

Note: The cable loss and attenuator loss were offset into measure device as amplitude offset.

6.3. Test Setup



6.4. Test Results

Condition	Antenna	Modulation	Frequency (MHz)	Detector	Total Power(dBm)	ANT Gain(dBi)	EIRP/ERP (dBm)	Limit (dBm)	EIRP/ERP Limit(dBm)	Result
NVNT	ANT1	802.11b	2412.00	Peak	9.73	4.33	14.06	30	36	Pass
NVNT	ANT1	802.11b	2437.00	Peak	9.24	4.33	13.57	30	36	Pass
NVNT	ANT1	802.11b	2462.00	Peak	8.68	4.33	13.01	30	36	Pass
NVNT	ANT1	802.11g	2412.00	Peak	8.46	4.33	12.79	30	36	Pass
NVNT	ANT1	802.11g	2437.00	Peak	8.31	4.33	12.64	30	36	Pass
NVNT	ANT1	802.11g	2462.00	Peak	7.41	4.33	11.74	30	36	Pass
NVNT	ANT1	802.11n(HT20)	2412.00	Peak	8.49	4.33	12.82	30	36	Pass
NVNT	ANT1	802.11n(HT20)	2437.00	Peak	8.33	4.33	12.66	30	36	Pass
NVNT	ANT1	802.11n(HT20)	2462.00	Peak	7.34	4.33	11.67	30	36	Pass
NVNT	ANT1	802.11n(HT40)	2422.00	Peak	8.07	4.33	12.40	30	36	Pass
NVNT	ANT1	802.11n(HT40)	2437.00	Peak	7.97	4.33	12.30	30	36	Pass
NVNT	ANT1	802.11n(HT40)	2452.00	Peak	7.46	4.33	11.79	30	36	Pass

Note: The test results already include the Duty factor.

7. PEAK POWER SPECTRAL DENSITY

7.1. Test limits

7.1.1 Please refer RSS-247 & FCC PART 15: 15.247.

7.1.2 For direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

7.1.3 The direct sequence operating of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

7.2. Test Procedure

Details see the KDB558074 D01 Meas Guidance v05r02

7.2.1 Place the EUT on the table and set it in transmitting mode.

7.2.2 Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

7.2.3 Set the spectrum analyzer as RBW = 3kHz(Set the RBW to: $3\text{ kHz} \leq \text{RBW} \leq 100\text{ kHz}$.), VBW = 10kHz(Set the VBW $\geq 3 \times \text{RBW}$), span $\geq 1.5 \times \text{DTS bandwidth}$., detail see the test plot.

7.2.4 Record the max reading.

7.2.5 Repeat the above procedure until the measurements for all frequencies are completed.

7.3. Test Setup



7.4. Test Results

Condition	Antenna	Modulation	Frequency (MHz)	PSD(dBm/30kHz)	RB factor(dB)	PSD(dBm/3kHz)	limit(dBm/3kHz)	Result
NVNT	ANT1	802.11b	2412.00	-11.52	-10.00	-21.52	8	Pass
NVNT	ANT1	802.11b	2437.00	-11.96	-10.00	-21.96	8	Pass
NVNT	ANT1	802.11b	2462.00	-12.45	-10.00	-22.45	8	Pass
NVNT	ANT1	802.11g	2412.00	-15.89	-10.00	-25.89	8	Pass
NVNT	ANT1	802.11g	2437.00	-16.09	-10.00	-26.09	8	Pass
NVNT	ANT1	802.11g	2462.00	-16.94	-10.00	-26.94	8	Pass
NVNT	ANT1	802.11n(HT20)	2412.00	-15.85	-10.00	-25.85	8	Pass
NVNT	ANT1	802.11n(HT20)	2437.00	-15.96	-10.00	-25.96	8	Pass
NVNT	ANT1	802.11n(HT20)	2462.00	-16.93	-10.00	-26.93	8	Pass
NVNT	ANT1	802.11n(HT40)	2422.00	-18.90	-10.00	-28.90	8	Pass
NVNT	ANT1	802.11n(HT40)	2437.00	-19.29	-10.00	-29.29	8	Pass
NVNT	ANT1	802.11n(HT40)	2452.00	-19.65	-10.00	-29.65	8	Pass

Note: The test results already include the Duty factor.



Power Spectral Density_NVNT_ANT1_802_11b_2412



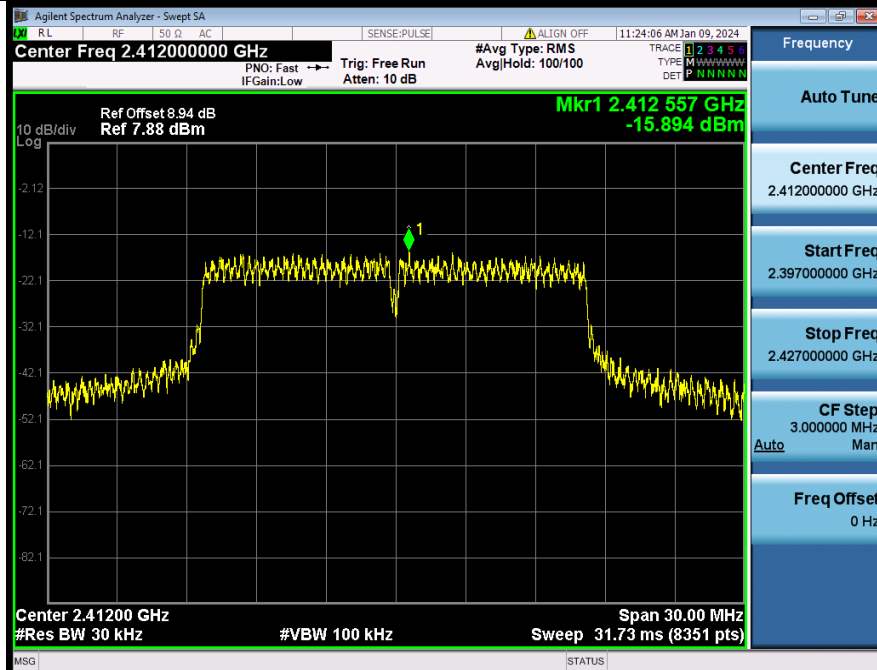
Power Spectral Density_NVNT_ANT1_802_11b_2437



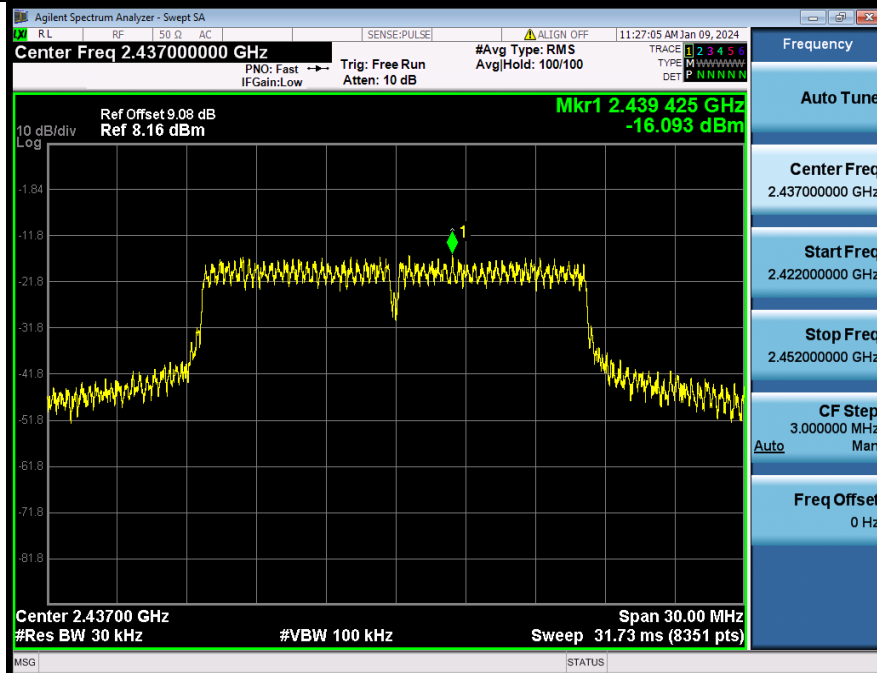
Power Spectral Density NVNT_ANT1_802_11b_2462



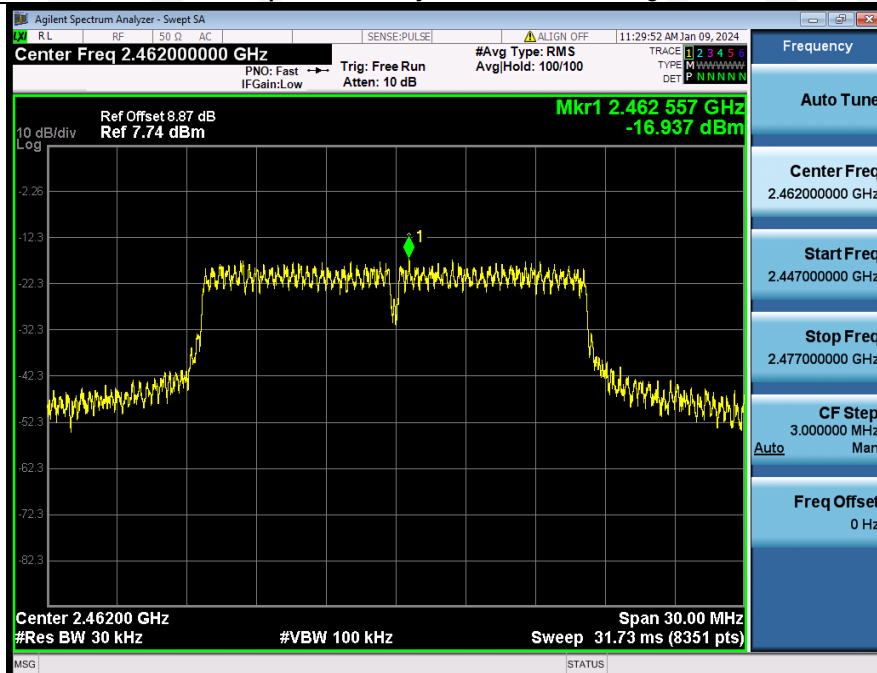
Power Spectral Density NVNT_ANT1_802_11g_2412



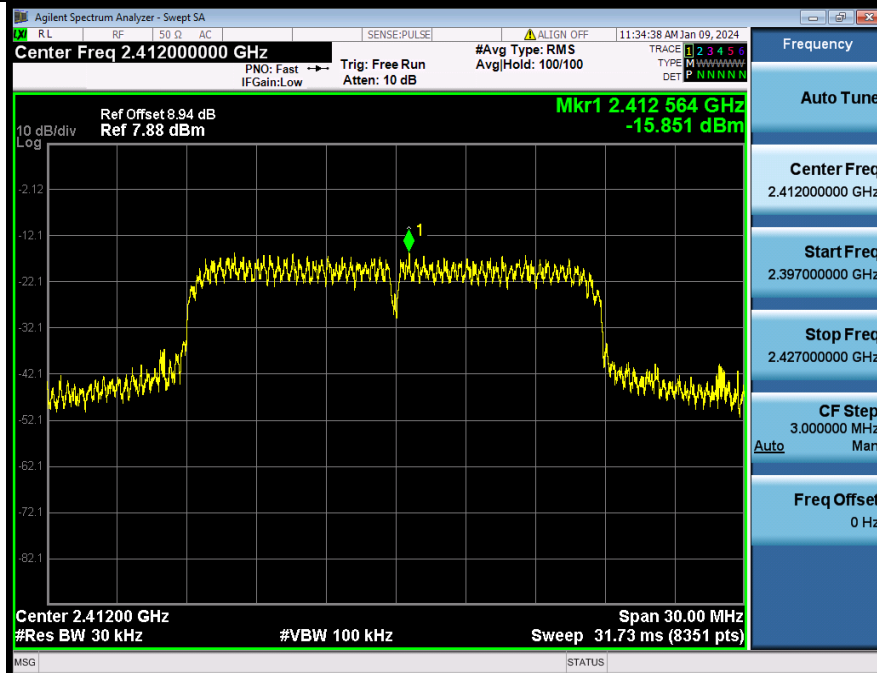
Power Spectral Density NVNT_ANT1_802_11g_2437



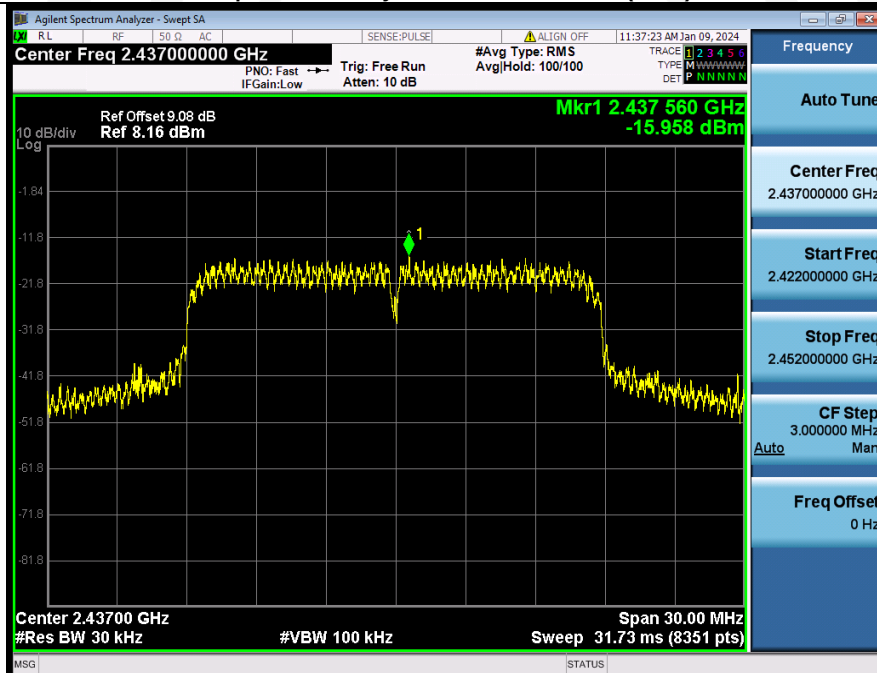
Power Spectral Density NVNT_ANT1_802_11g_2462



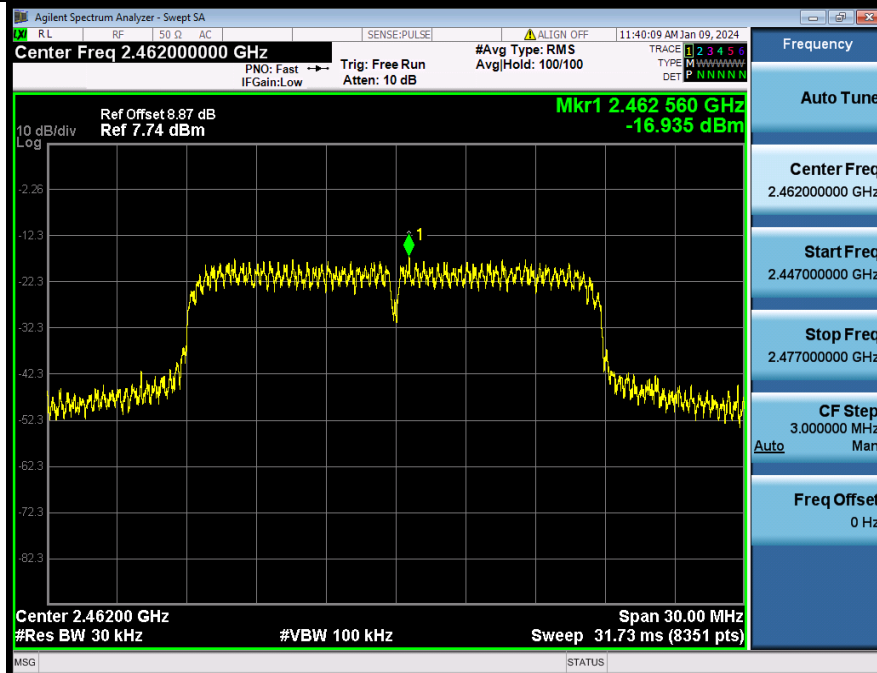
Power Spectral Density NVNT_ANT1_802_11n(HT20)_2412



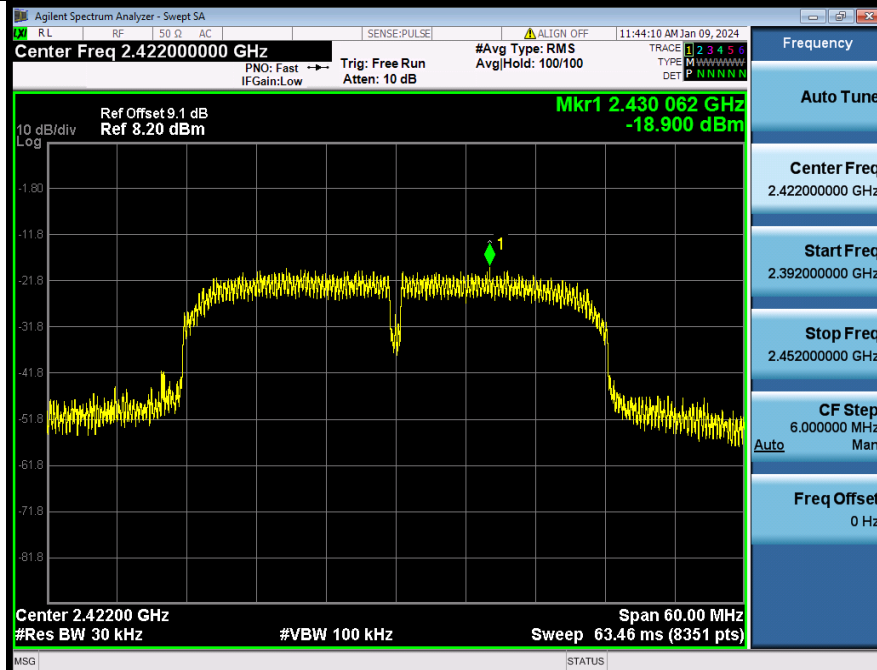
Power Spectral Density NVNT_ANT1_802_11n(HT20)_2437



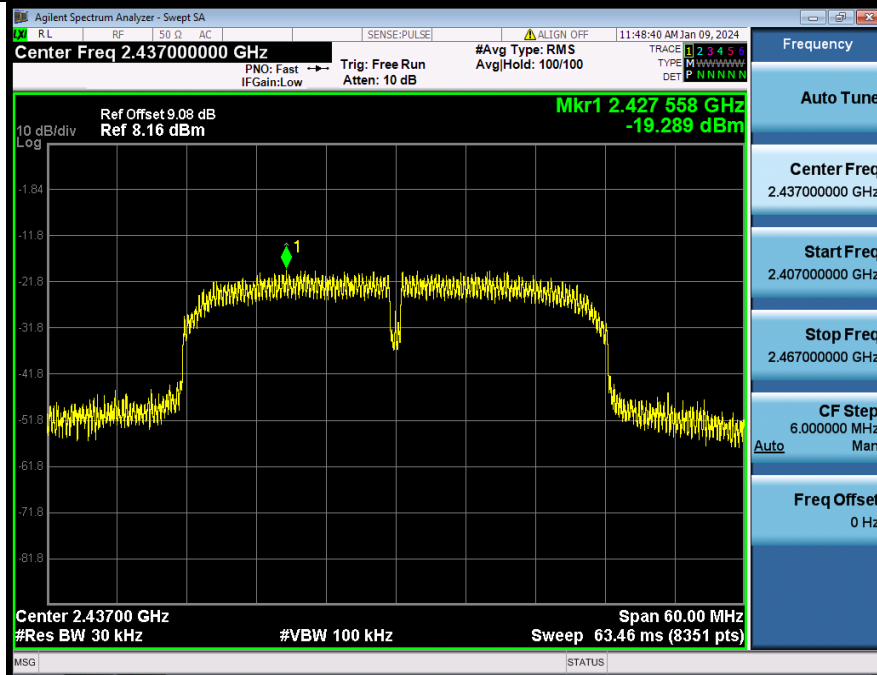
Power Spectral Density NVNT_ANT1_802_11n(HT20)_2462



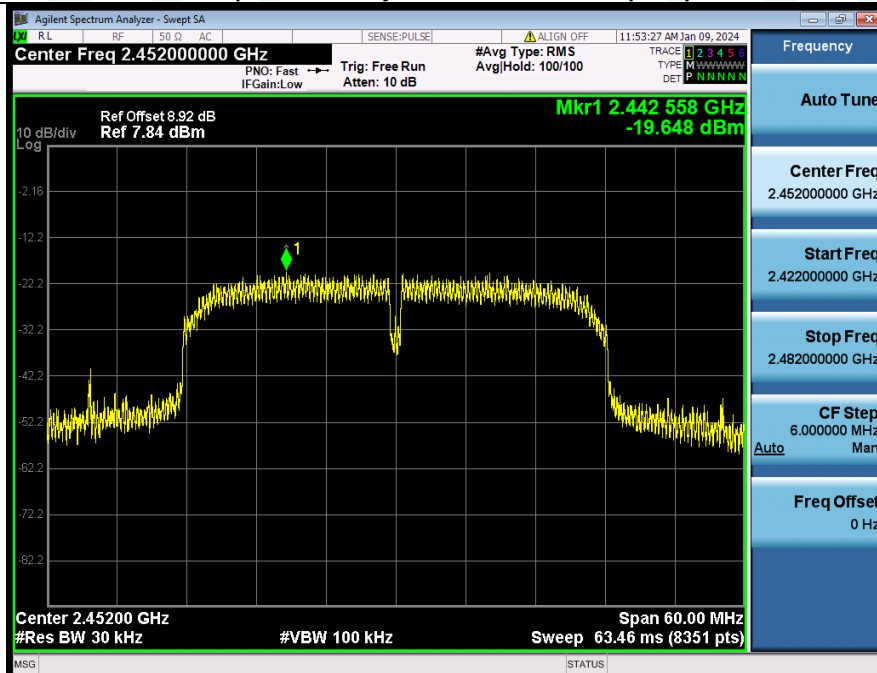
Power Spectral Density NVNT_ANT1_802_11n(HT40)_2422



Power Spectral Density NVNT_ANT1_802_11n(HT40)_2437



Power Spectral Density NVNT_ANT1_802_11n(HT40)_2452



8. BANDWIDTH

8.1. Test limits

Please refer RSS-247 & FCC PART 15: 15.247

For direct sequence systems, the minimum 6dB bandwidth shall be at least 500 kHz.

8.2. Test Procedure

Details see the KDB558074 D01 Meas Guidance v05r02

- a) The bandwidth is measured at an amplitude level reduced 6dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.
- b) The test receiver set RBW = 100kHz, VBW $\geq$ 3*RBW =300kHz,, Peak Detector, Sweep time set auto, detail see the test plot.

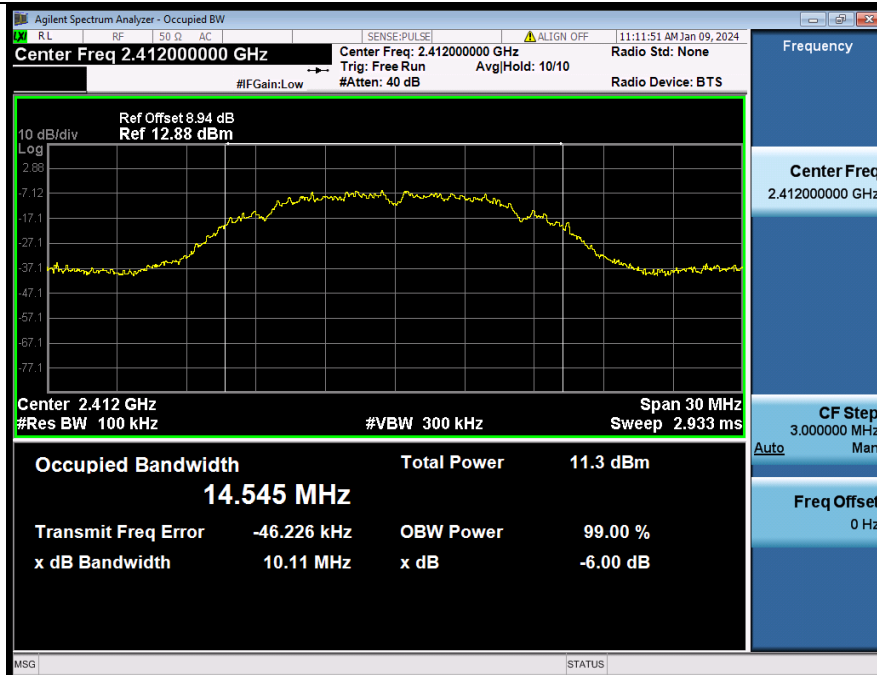
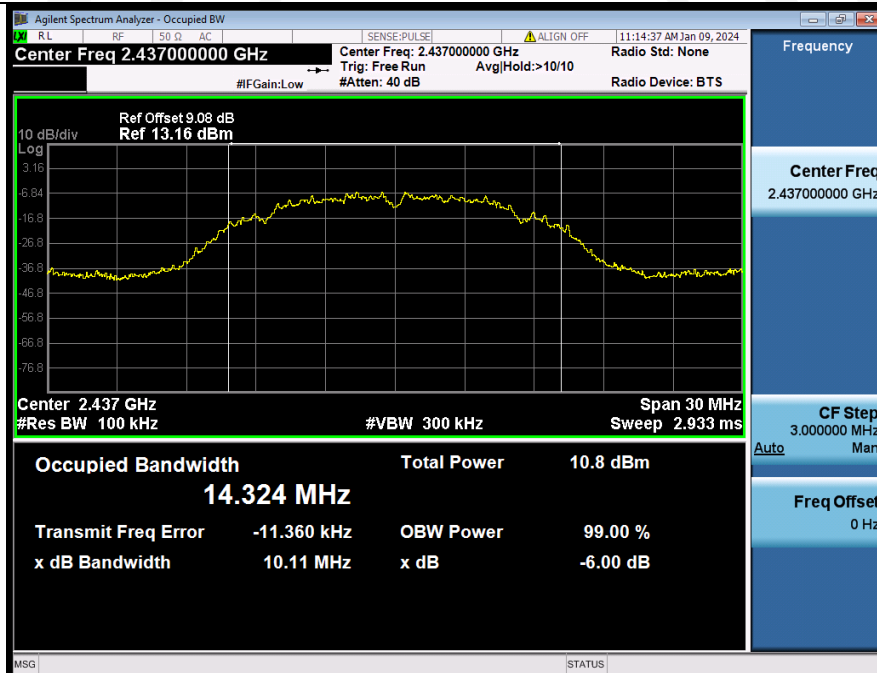
8.3. Test Setup

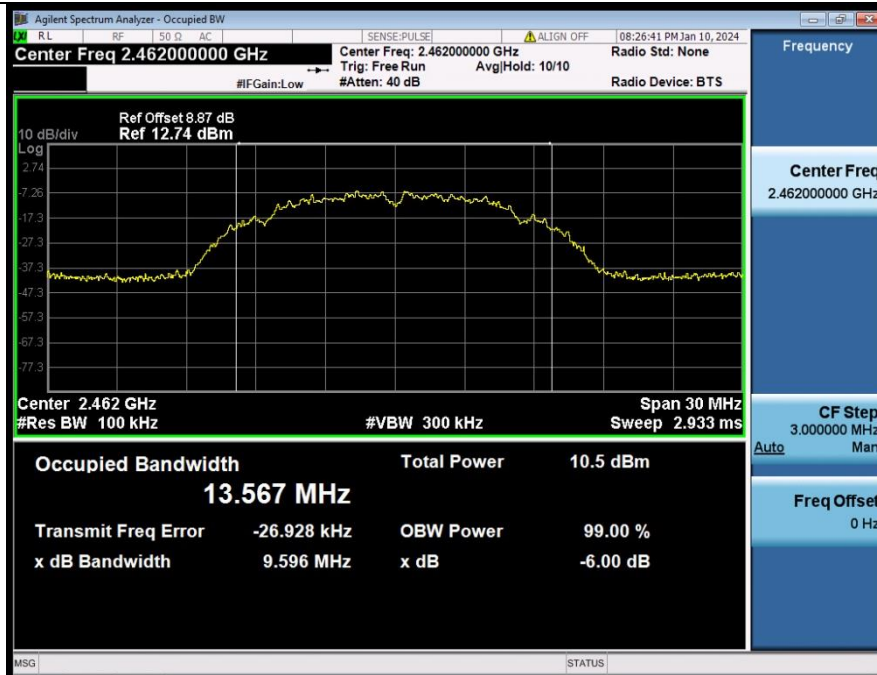
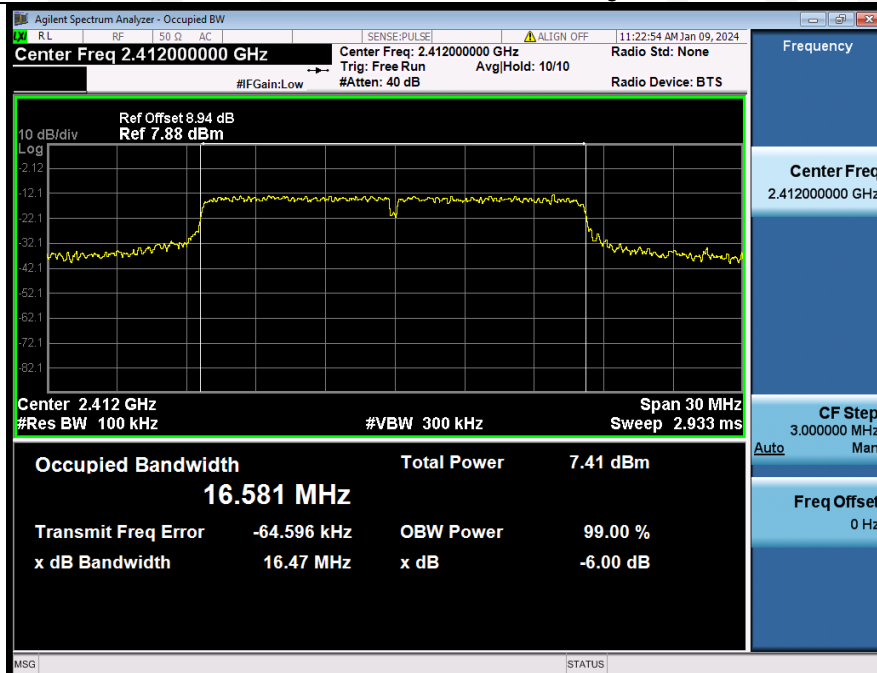


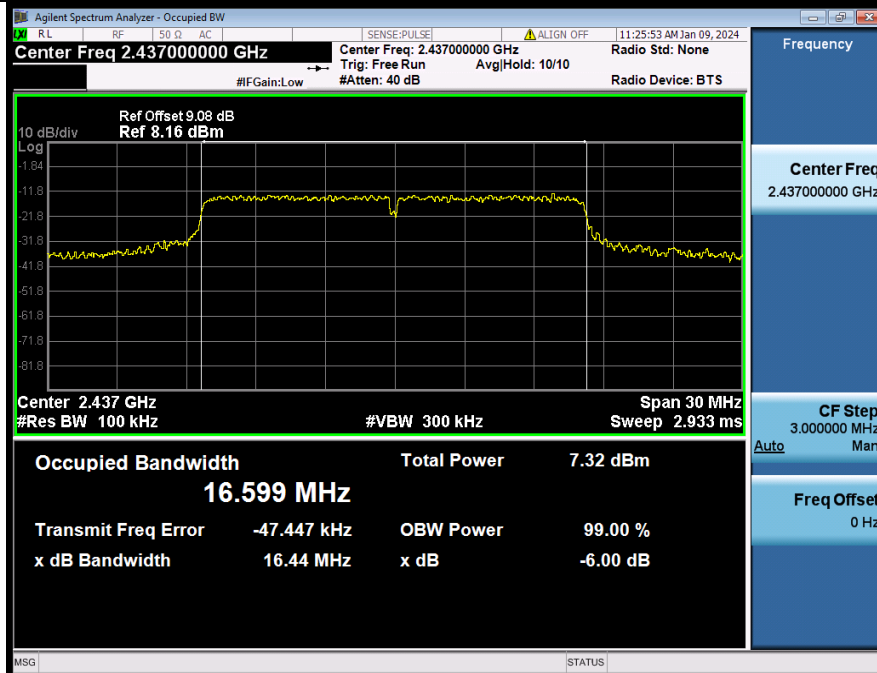
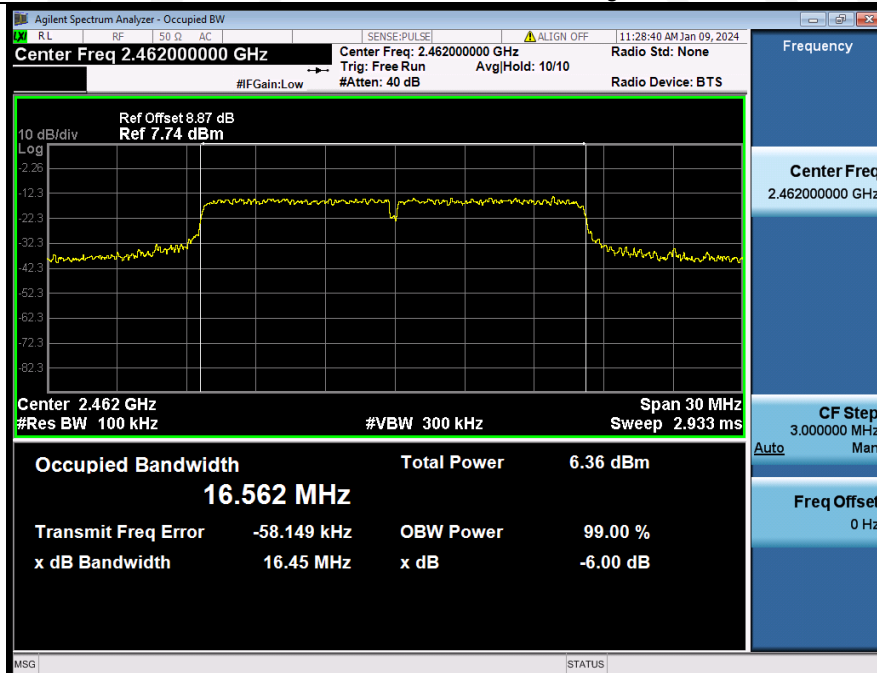
8.4. Test Results

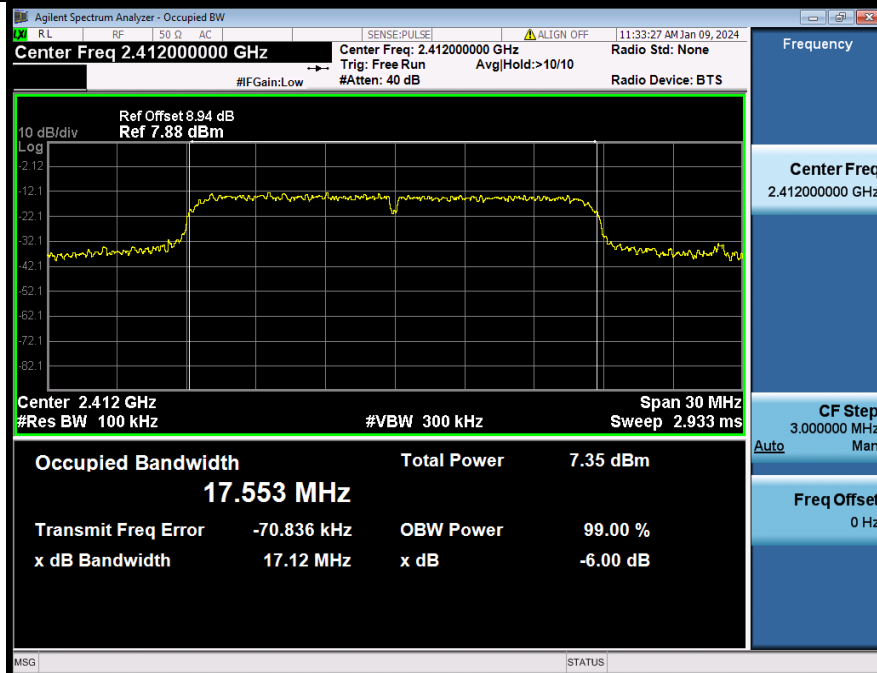
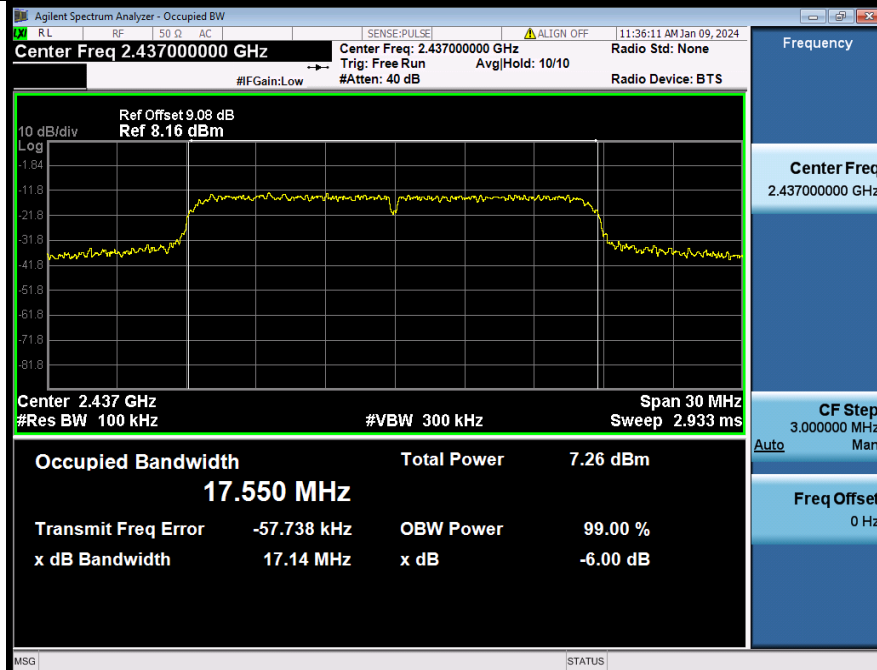
-6dB Bandwidth

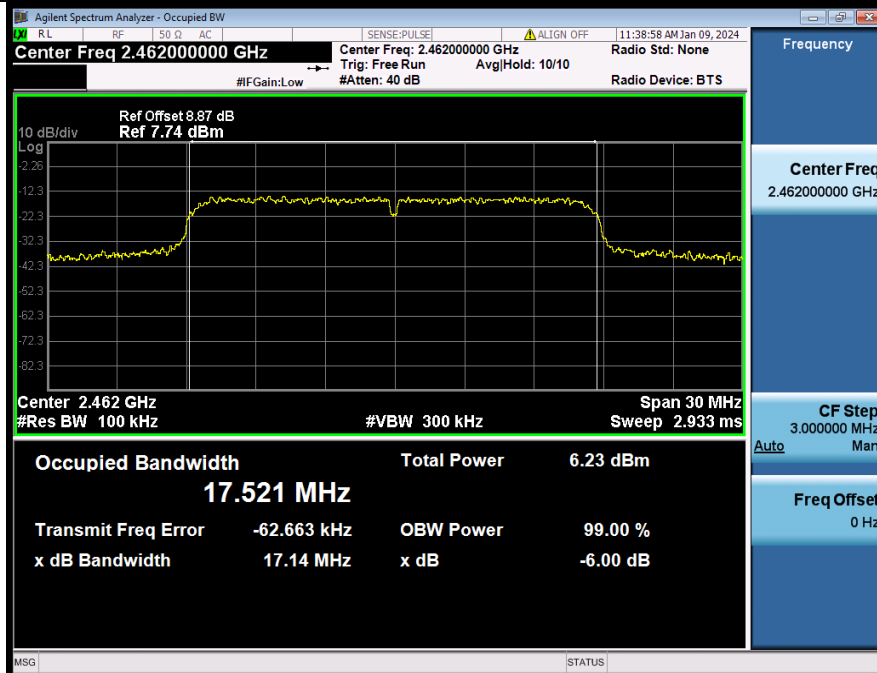
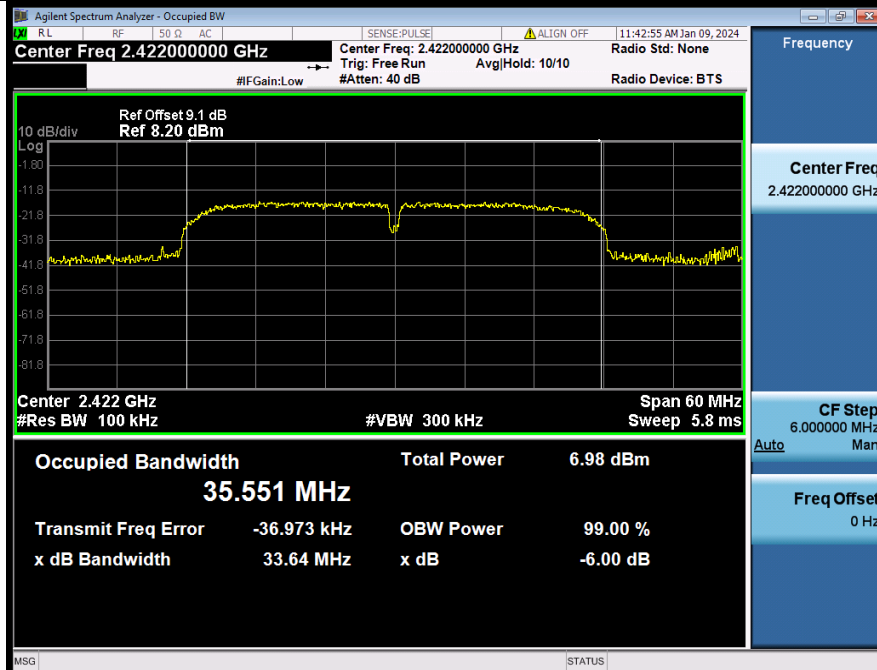
Condition	Antenna	Modulation	Frequency (MHz)	-6dB BW(MHz)	limit(kHz)	Result
NVNT	ANT1	802.11b	2412.00	10.11	500	Pass
NVNT	ANT1	802.11b	2437.00	10.11	500	Pass
NVNT	ANT1	802.11b	2462.00	9.60	500	Pass
NVNT	ANT1	802.11g	2412.00	16.47	500	Pass
NVNT	ANT1	802.11g	2437.00	16.44	500	Pass
NVNT	ANT1	802.11g	2462.00	16.45	500	Pass
NVNT	ANT1	802.11n(HT20)	2412.00	17.12	500	Pass
NVNT	ANT1	802.11n(HT20)	2437.00	17.14	500	Pass
NVNT	ANT1	802.11n(HT20)	2462.00	17.14	500	Pass
NVNT	ANT1	802.11n(HT40)	2422.00	33.64	500	Pass
NVNT	ANT1	802.11n(HT40)	2437.00	33.42	500	Pass
NVNT	ANT1	802.11n(HT40)	2452.00	33.63	500	Pass

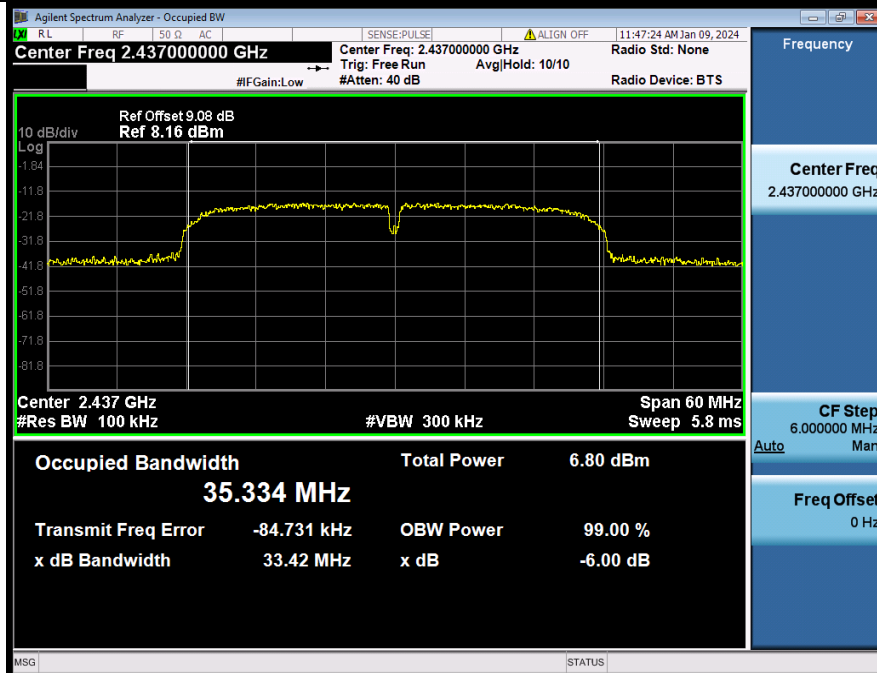
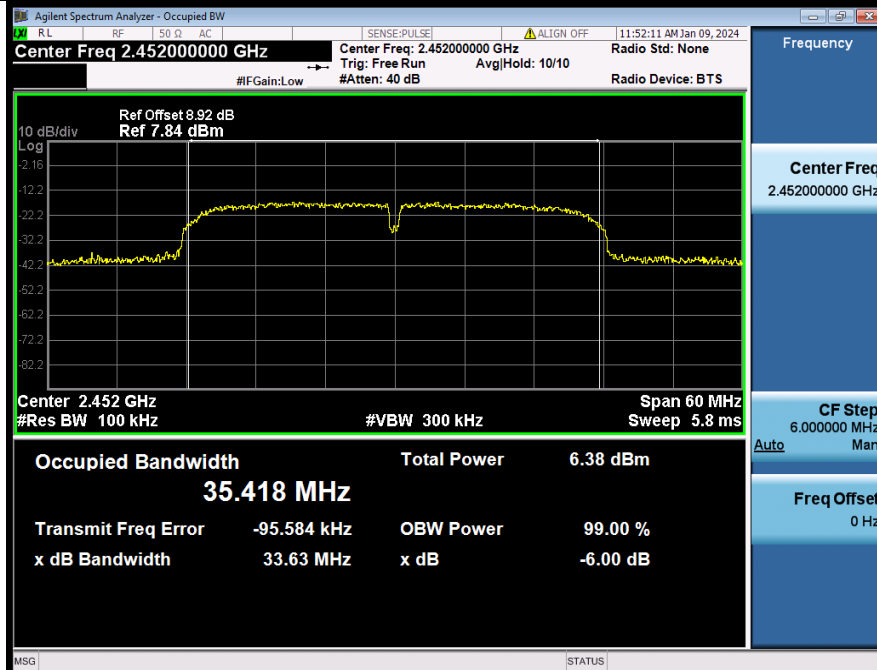
-6dB Bandwidth_NVNT_ANT1_802_11b_2412**-6dB Bandwidth_NVNT_ANT1_802_11b_2437**

-6dB Bandwidth_NVNT_ANT1_802_11b_2462**-6dB Bandwidth_NVNT_ANT1_802_11g_2412**

-6dB Bandwidth_NVNT_ANT1_802_11g_2437**-6dB Bandwidth_NVNT_ANT1_802_11g_2462**

-6dB Bandwidth NVNT_ANT1_802_11n(HT20)_2412**-6dB Bandwidth NVNT_ANT1_802_11n(HT20)_2437**

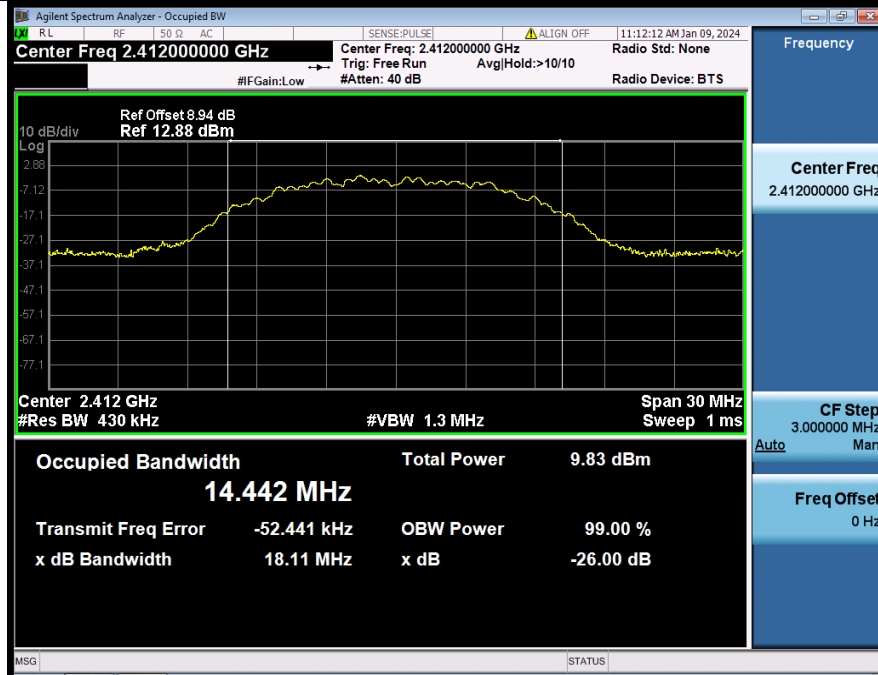
-6dB Bandwidth NVNT_ANT1_802_11n(HT20)_2462**-6dB Bandwidth NVNT_ANT1_802_11n(HT40)_2422**

-6dB Bandwidth NVNT_ANT1_802_11n(HT40)_2437**-6dB Bandwidth NVNT_ANT1_802_11n(HT40)_2452**

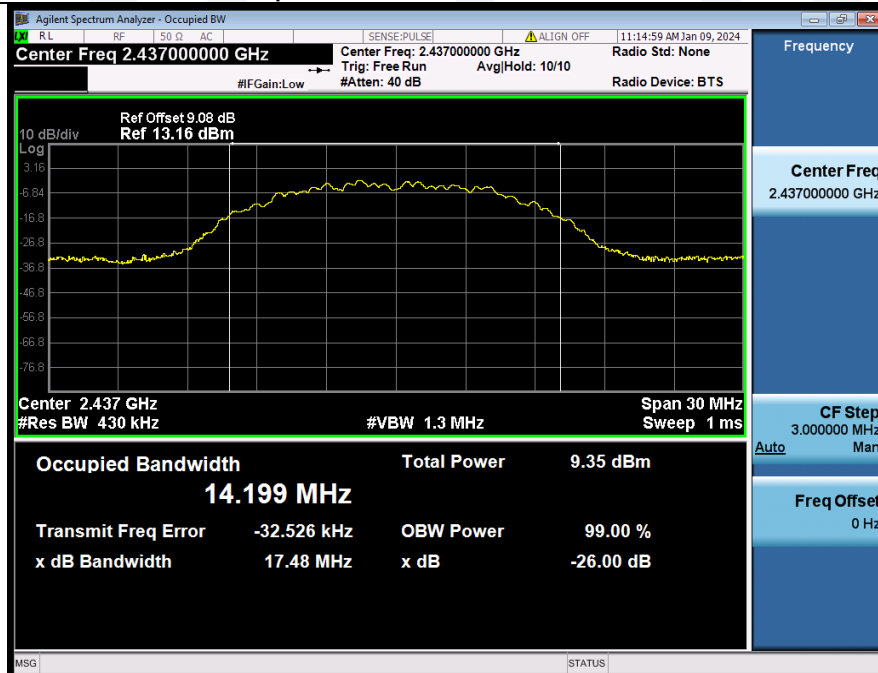
99% Occupied Bandwidth

Condition	Antenna	Modulation	Frequency (MHz)	99%BW(MHz)
NVNT	ANT1	802.11b	2412.00	14.442
NVNT	ANT1	802.11b	2437.00	14.199
NVNT	ANT1	802.11b	2462.00	13.572
NVNT	ANT1	802.11g	2412.00	17.422
NVNT	ANT1	802.11g	2437.00	17.428
NVNT	ANT1	802.11g	2462.00	17.332
NVNT	ANT1	802.11n(HT20)	2412.00	17.983
NVNT	ANT1	802.11n(HT20)	2437.00	17.954
NVNT	ANT1	802.11n(HT20)	2462.00	17.904
NVNT	ANT1	802.11n(HT40)	2422.00	35.546
NVNT	ANT1	802.11n(HT40)	2437.00	35.460
NVNT	ANT1	802.11n(HT40)	2452.00	35.520

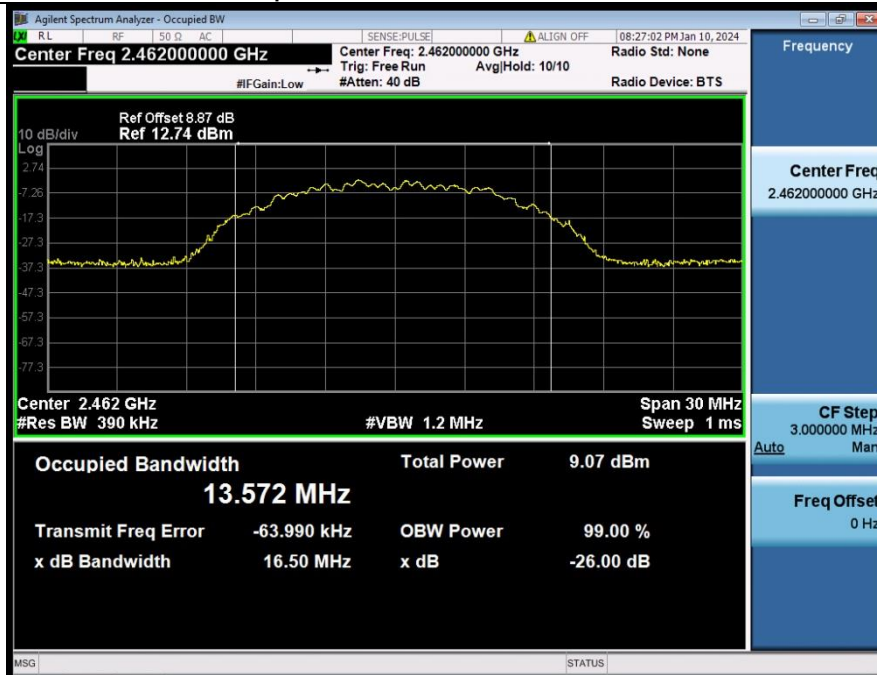
99% Occupied Bandwidth NVNT ANT1 802_11b 2412



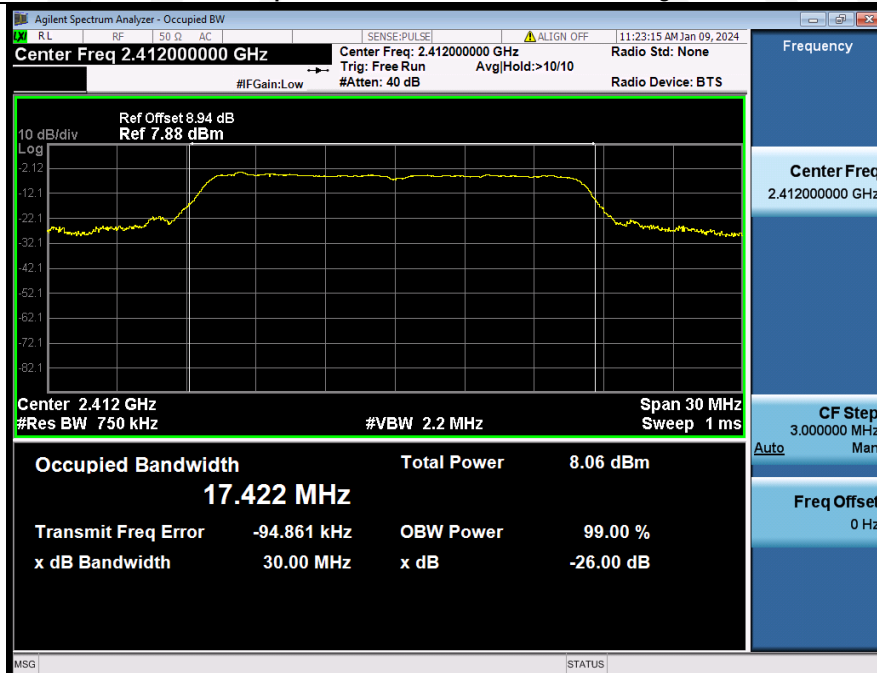
99% Occupied Bandwidth NVNT ANT1 802_11b 2437



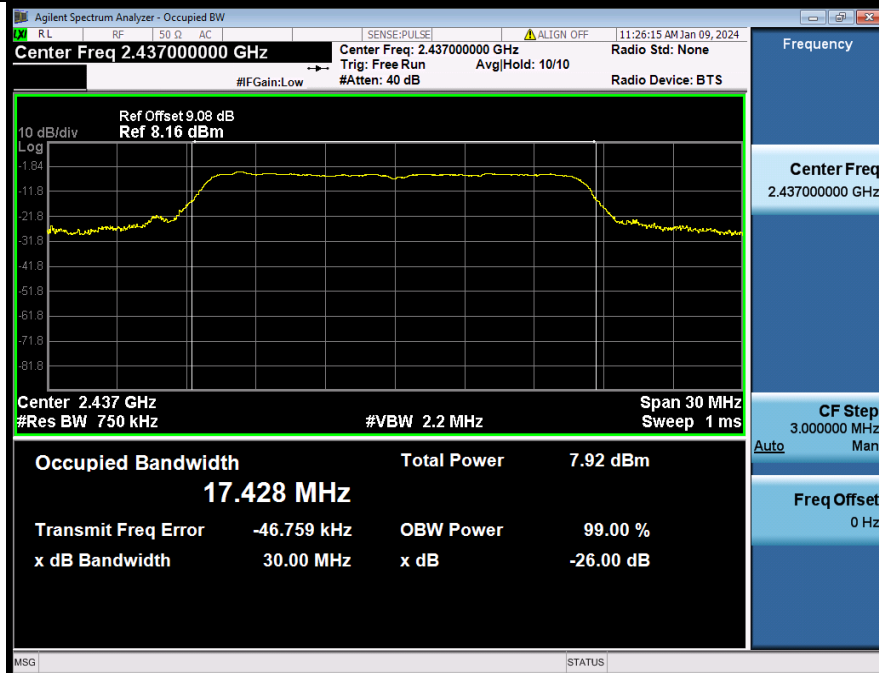
99% Occupied Bandwidth NVNT ANT1 802_11b 2462



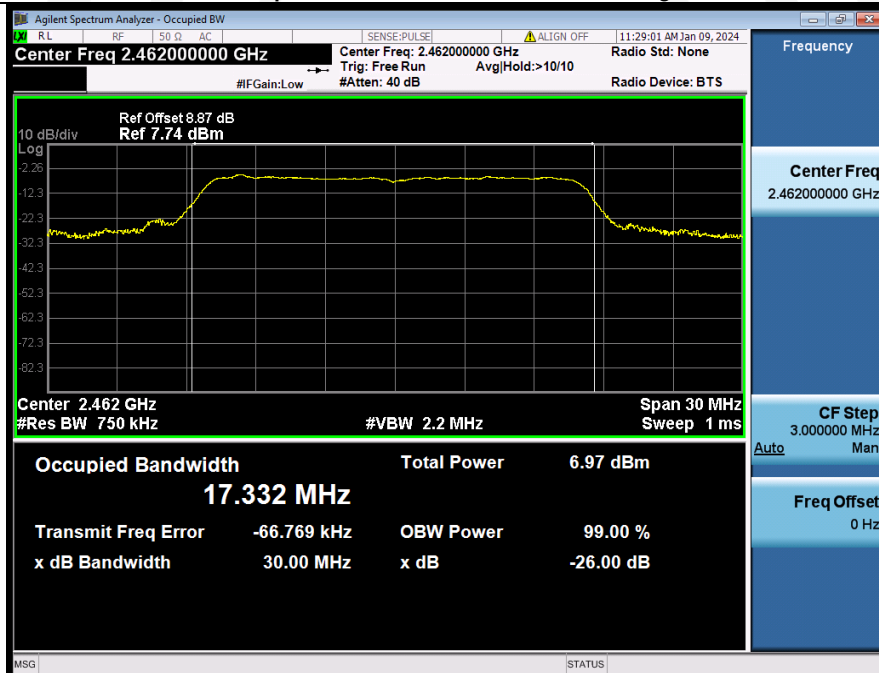
99% Occupied Bandwidth NVNT ANT1 802_11g 2412



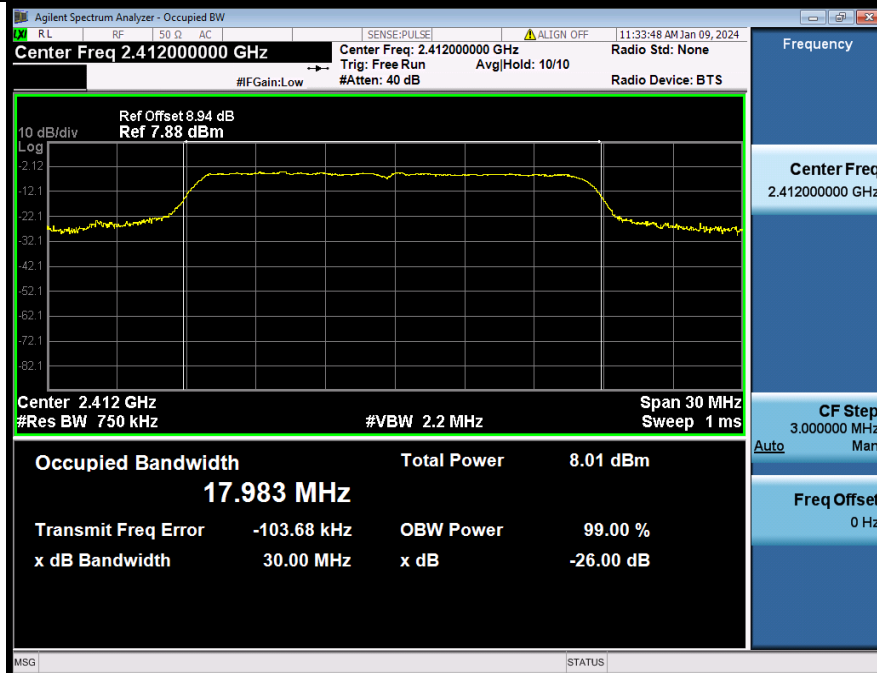
99% Occupied Bandwidth NVNT ANT1 802_11g 2437



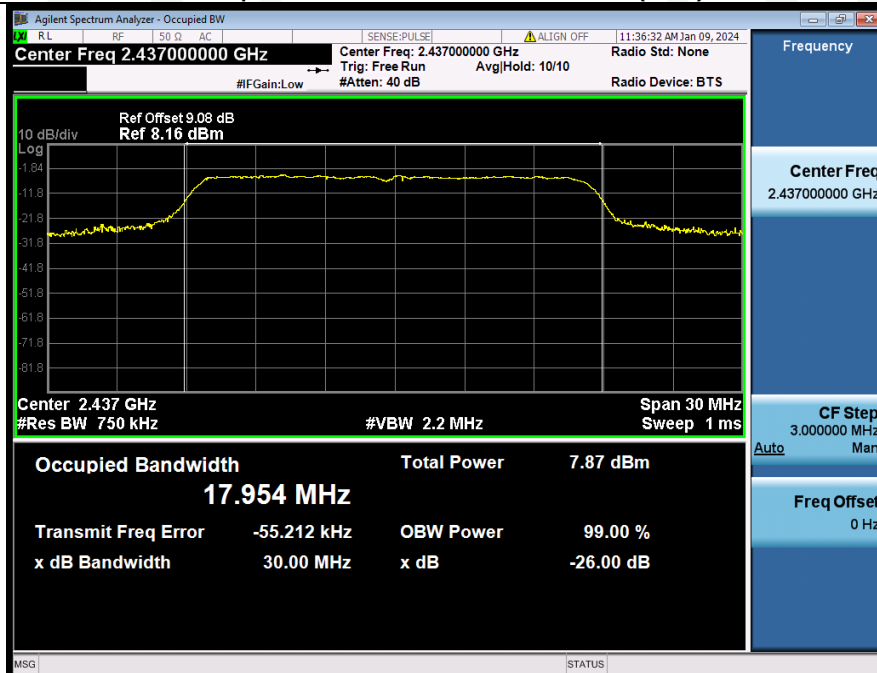
99% Occupied Bandwidth NVNT ANT1 802_11g 2462



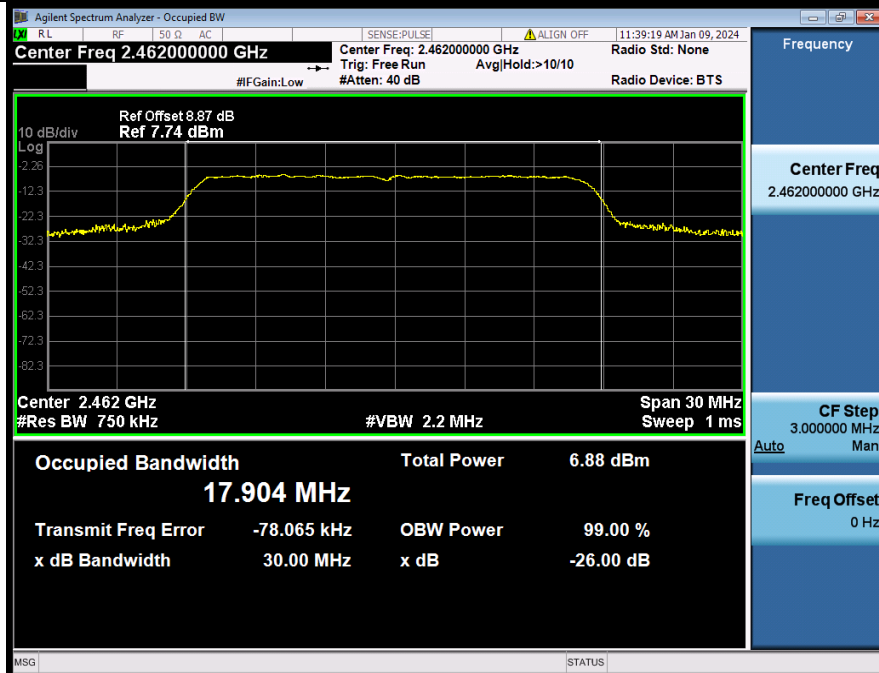
99% Occupied Bandwidth NVNT_ANT1_802_11n(HT20)_2412



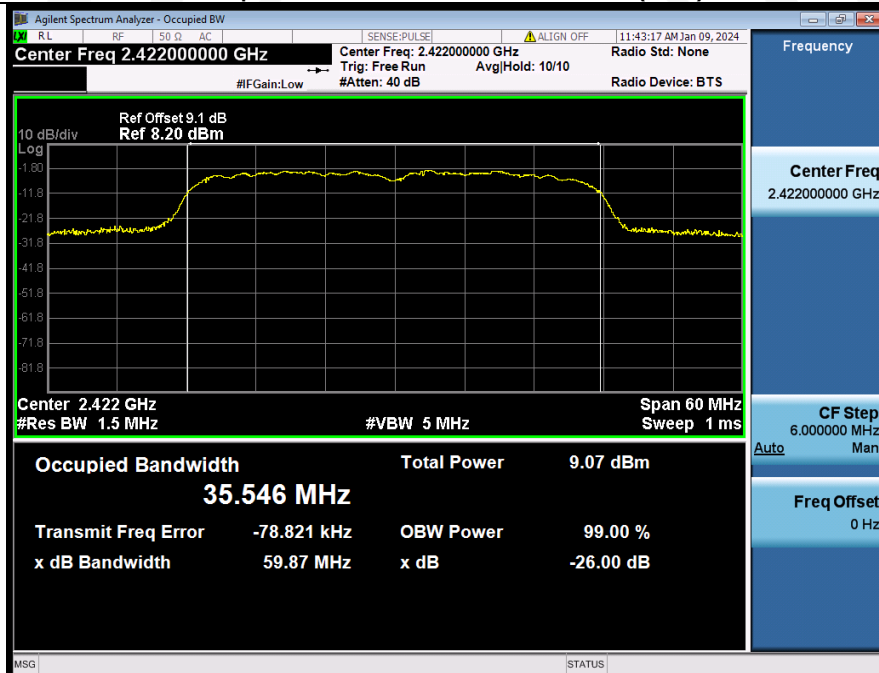
99% Occupied Bandwidth NVNT_ANT1_802_11n(HT20)_2437



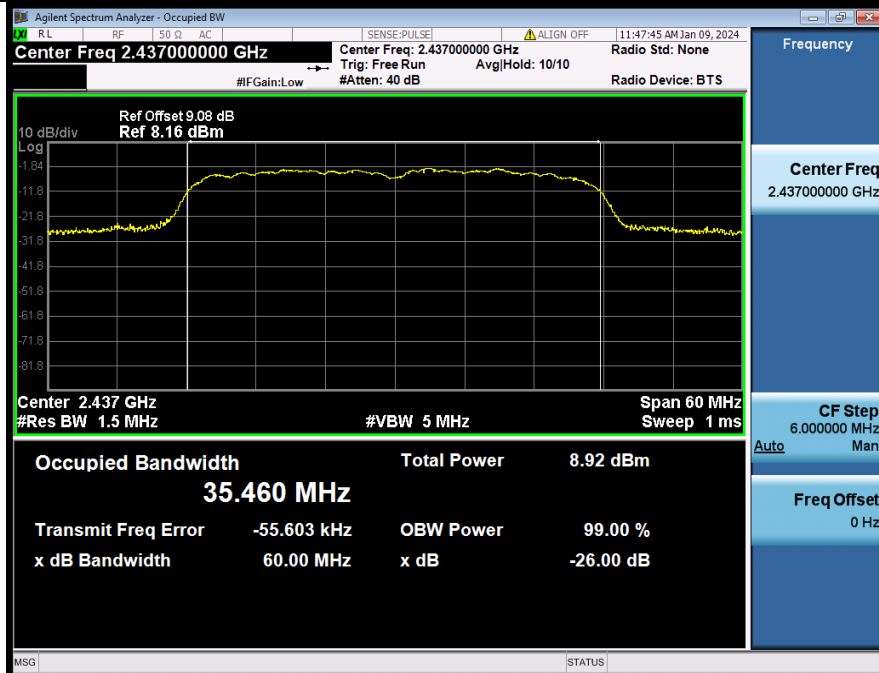
99% Occupied Bandwidth NVNT ANT1 802_11n(HT20) 2462



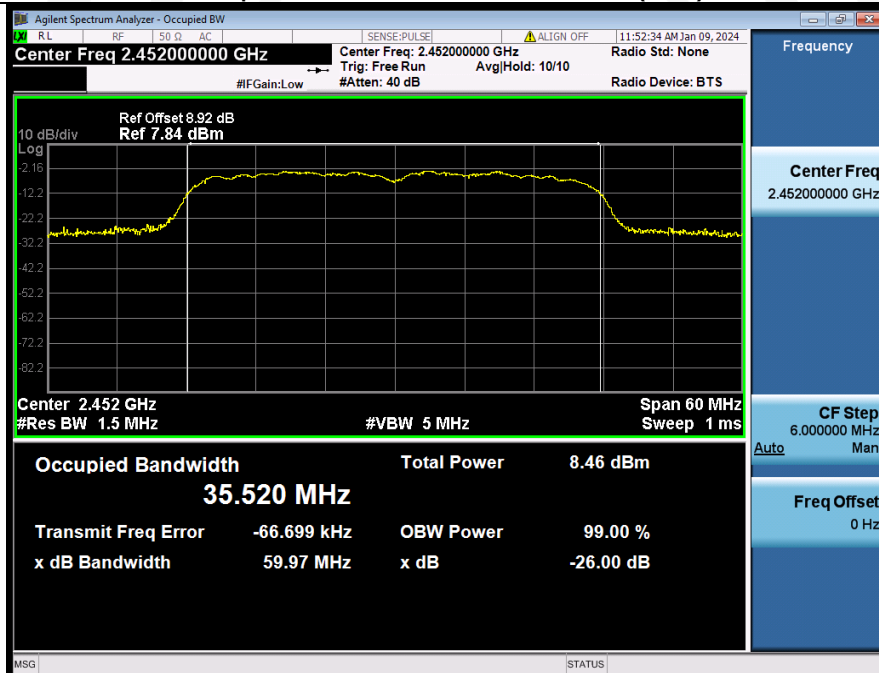
99% Occupied Bandwidth NVNT ANT1 802_11n(HT40) 2422



99% Occupied Bandwidth NVNT_ANT1_802_11n(HT40)_2437



99% Occupied Bandwidth NVNT_ANT1_802_11n(HT40)_2452



9. BAND EDGE CHECK

9.1. Test limits

Please refer RSS-GEN & FCC PART 15: 15.247

All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits and RSS-GEN limits.

9.2. Test Procedure

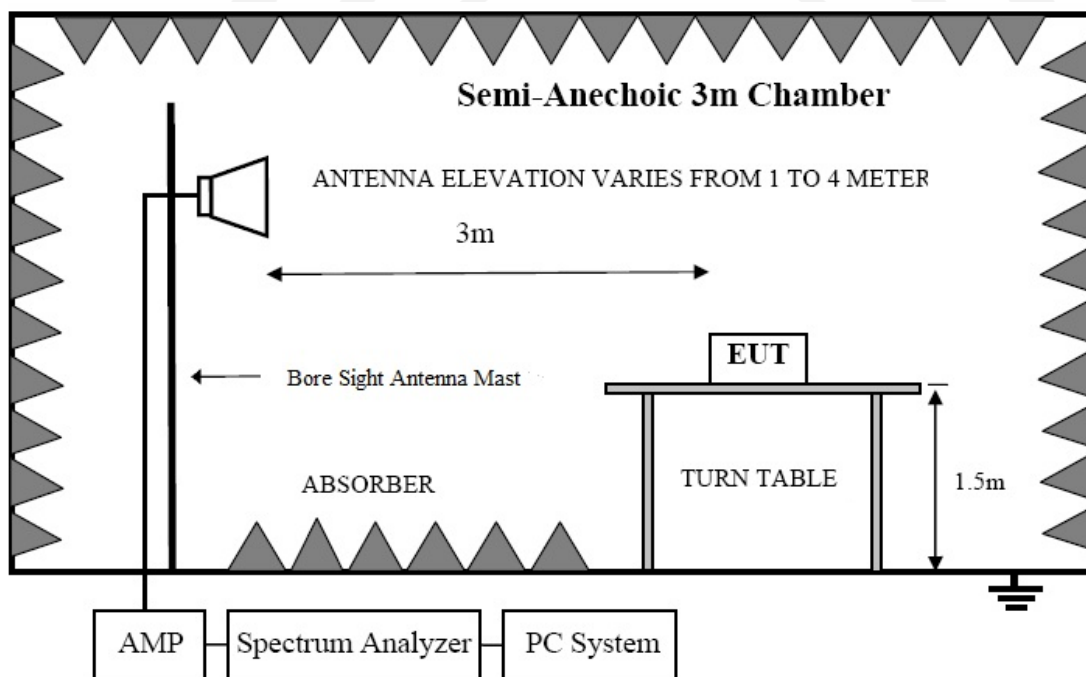
Details see the KDB558074 D01 Meas Guidance v05r02

9.2.1 Put the EUT on a 1.5m high table, power on the EUT. Emissions were scanned and measured rotating the EUT to 360 degrees, Find the maximum Emission

9.2.2 Check the spurious emissions out of band.

9.2.3 RBW 1MHz, VBW 3MHz, peak detector for peak value, RBW 1MHz, VBW 10Hz, RMS detector for AV value.

9.3. Test Setup



9.4. Test Results

Test Date : 2024.1.12					Temperature : 24℃			
Test Engineer : Jensen Wang					Humidity : 56%			
Test Results : PASS								
Frequency Range : 2310MHz~2410MHz								
Test Mode : IEEE 802.11b TX 2412MHz								
No.	Freq MHz	Polarity	Reading (dBuV/m)	Correct Factor	Result (dBuV/m)	Limit (dBuV/m)	Margin	Remark
1	2390	H	72.72	-21.62	51.10	74.00	-22.90	Peak
2	2390	H	--	-21.62	--	54.00	--	Avg
3	2400	H	77.23	-26.08	51.15	74.00	-22.85	Peak
4	2400	H	--	-26.08	--	54.00	--	Avg
1	2390	V	67.35	-21.62	45.73	74.00	-28.27	Peak
2	2390	V	--	-21.62	--	54.00	--	Avg
3	2400	V	76.59	-26.08	50.51	74.00	-23.49	Peak
4	2400	V	--	-26.08	--	54.00	--	Avg
Frequency Range : 2450MHz~2550MHz								
Test Mode : IEEE 802.11b TX 2462MHz								
1	2483.5	H	73.95	-25.84	48.11	74.00	-25.89	Peak
2	2483.5	H	--	-25.84	--	54.00	--	Avg
1	2483.5	V	75.46	-25.84	49.62	74.00	-24.38	Peak
2	2483.5	V	--	-25.84	--	54.00	--	Avg
Note: 1. Means other frequency and mode comply with standard requirements and at least have 20dB margin. 2. Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain. Result=Reading + Correct Factor. Margin= Result-Limit. 3. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector need not be carried out.								

Frequency Range : 2310MHz~2410MHz								
Test Mode : IEEE 802.11g TX 2412MHz								
No.	Freq MHz	Polarity	Reading (dBuV/m)	Correct Factor	Result (dBuV/m)	Limit (dBuV/m)	Margin	Remark
1	2390	H	71.97	-21.62	50.35	74.00	-23.65	Peak
2	2390	H	--	-21.62	--	54.00	--	Avg
3	2400	H	76.11	-26.08	50.03	74.00	-23.97	Peak
4	2400	H	--	-26.08	--	54.00	--	Avg
1	2390	V	70.60	-21.62	48.98	74.00	-25.02	Peak
2	2390	V	--	-21.62	--	54.00	--	Avg
3	2400	V	76.60	-26.08	50.52	74.00	-23.48	Peak
4	2400	V	--	-26.08	--	54.00	--	Avg
Frequency Range : 2450MHz~2550MHz								
Test Mode : IEEE 802.11g TX 2462MHz								
1	2483.5	H	75.99	-25.84	50.15	74.00	-23.85	Peak
2	2483.5	H	--	-25.84	--	54.00	--	Avg
1	2483.5	V	71.66	-25.84	45.82	74.00	-28.18	Peak
2	2483.5	V	--	-25.84	--	54.00	--	Avg
Note: 1. Means other frequency and mode comply with standard requirements and at least have 20dB margin. 2. Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain. Result=Reading + Correct Factor. Margin= Result-Limit. 3. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector need not be carried out.								

Frequency Range : 2310MHz~2410MHz								
Test Mode : IEEE 802.11n/HT20 TX 2412MHz								
No.	Freq MHz	Polarity	Reading (dBuV/m)	Correct Factor	Result (dBuV/m)	Limit (dBuV/m)	Margin	Remark
1	2390	H	71.28	-21.62	49.66	74.00	-24.34	Peak
2	2390	H	--	-21.62	--	54.00	--	Avg
3	2400	H	76.45	-26.08	50.37	74.00	-23.63	Peak
4	2400	H	--	-26.08	--	54.00	--	Avg
1	2390	V	69.62	-21.62	48.00	74.00	-26.00	Peak
2	2390	V	--	-21.62	--	54.00	--	Avg
3	2400	V	77.89	-26.08	51.81	74.00	-22.19	Peak
4	2400	V	--	-26.08	--	54.00	--	Avg
Frequency Range : 2450MHz~2550MHz								
Test Mode : IEEE 802.11n/HT20 TX 2462MHz								
1	2483.5	H	74.28	-25.84	48.44	74.00	-25.56	Peak
2	2483.5	H	--	-25.84	--	54.00	--	Avg
1	2483.5	V	74.24	-25.84	48.40	74.00	-25.60	Peak
2	2483.5	V	--	-25.84	--	54.00	--	Avg
Note: 1. Means other frequency and mode comply with standard requirements and at least have 20dB margin. 2. Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain. Result=Reading + Correct Factor. Margin= Result-Limit. 3. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector need not be carried out.								

Frequency Range : 2310MHz~2410MHz								
Test Mode : IEEE 802.11n/HT40 TX 2422MHz								
No.	Freq MHz	Polarity	Reading (dBuV/m)	Correct Factor	Result (dBuV/m)	Limit (dBuV/m)	Margin	Remark
1	2390	H	69.99	-21.62	48.37	74.00	-25.63	Peak
2	2390	H	--	-21.62	--	54.00	--	Avg
3	2400	H	77.72	-26.08	51.64	74.00	-22.36	Peak
4	2400	H	--	-26.08	--	54.00	--	Avg
1	2390	V	70.47	-21.62	48.85	74.00	-25.15	Peak
2	2390	V	--	-21.62	--	54.00	--	Avg
3	2400	V	76.39	-26.08	50.31	74.00	-23.69	Peak
4	2400	V	--	-26.08	--	54.00	--	Avg
Frequency Range : 2450MHz~2550MHz								
Test Mode : IEEE 802.11n/HT20 TX 2452MHz								
1	2483.5	H	74.74	-25.84	48.90	74.00	-25.10	Peak
2	2483.5	H	--	-25.84	--	54.00	--	Avg
1	2483.5	V	72.10	-25.84	46.26	74.00	-27.74	Peak
2	2483.5	V	--	-25.84	--	54.00	--	Avg
Note: 1. Means other frequency and mode comply with standard requirements and at least have 20dB margin. 2. Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain. Result=Reading + Correct Factor. Margin= Result-Limit. 3. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector need not be carried out.								

10. FREQUENCY STABILITY

10.1. Test limit

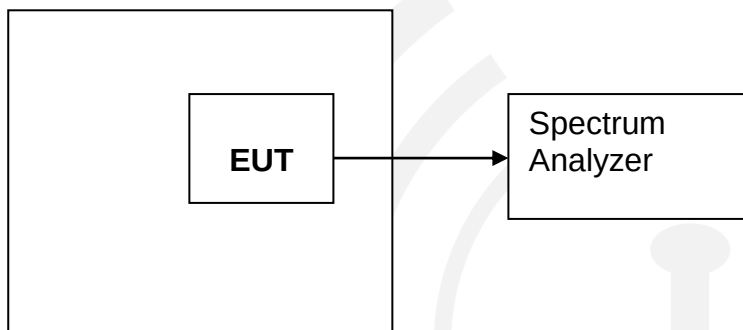
Please refer section RSS-Gen.

Regulation RSS-Gen If the frequency stability of the licence-exempt radio apparatus is not specified in the applicable RSS, the fundamental emissions of the radio apparatus should be kept within at least the central 80% of its permitted operating frequency band in order to minimize the possibility of out-of-band operation. In addition, its occupied bandwidth shall be entirely outside the restricted bands and the prohibited TV bands of 54-72 MHz, 76-88 MHz, 174-216 MHz, and 470-602 MHz, unless otherwise indicated.

10.2. Test Procedure

The following equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

10.3. Test Setup



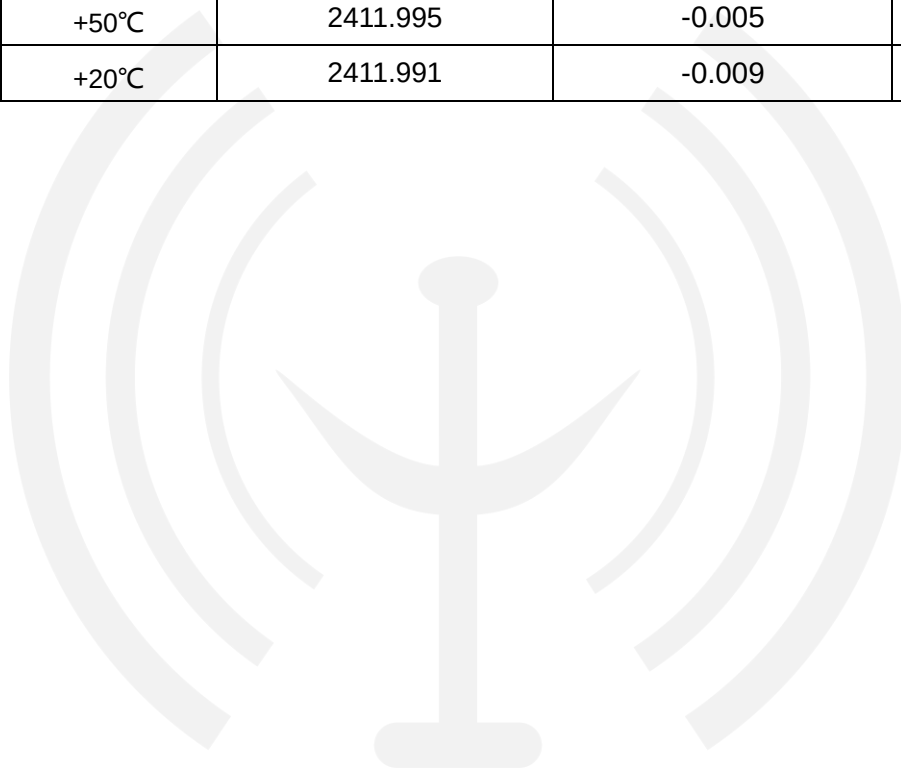
Temperature controller

10.4. Test Results

PASS.

Detailed information please see the following page.
(Reflect the worst mode data.)

Assigned Frequency(MHz): 2412MHz				
Voltage	Temperature	Measured Frequency(MHz)	Frequency stability(MHz)	Limit(MHz)
Low: DC 3.33V	+20°C	2411.986	-0.014	±0.020
Normal DC 3.7V	-10°C	2411.983	-0.017	±0.020
	-5°C	2411.995	-0.005	±0.020
	0°C	2411.992	-0.008	±0.020
	+10°C	2411.993	-0.007	±0.020
	+20°C	2411.989	-0.011	±0.020
	+30°C	2411.993	-0.007	±0.020
	+40°C	2411.986	-0.014	±0.020
	+50°C	2411.995	-0.005	±0.020
High: DC 4.07V	+20°C	2411.991	-0.009	±0.020



11. ANTENNA REQUIREMENT

11.1. Standard 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. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

11.2. Antenna Connected Construction

The antenna connector is unique antenna and no consideration of replacement. Please see EUT photo for details.

11.3. Results

The EUT antenna is integrated antenna. It complies with the standard requirement.



12.Photos of test setup

Reference to the **appendix I Test Setup Photo** for details.

13. Photos of EUT

Reference to the **appendix II external photos** and **appendix III internal photos** for details.

----- END OF REPORT-----

