

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

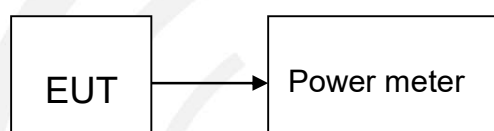
1 Place the EUT on the table and set it in transmitting mode.

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

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

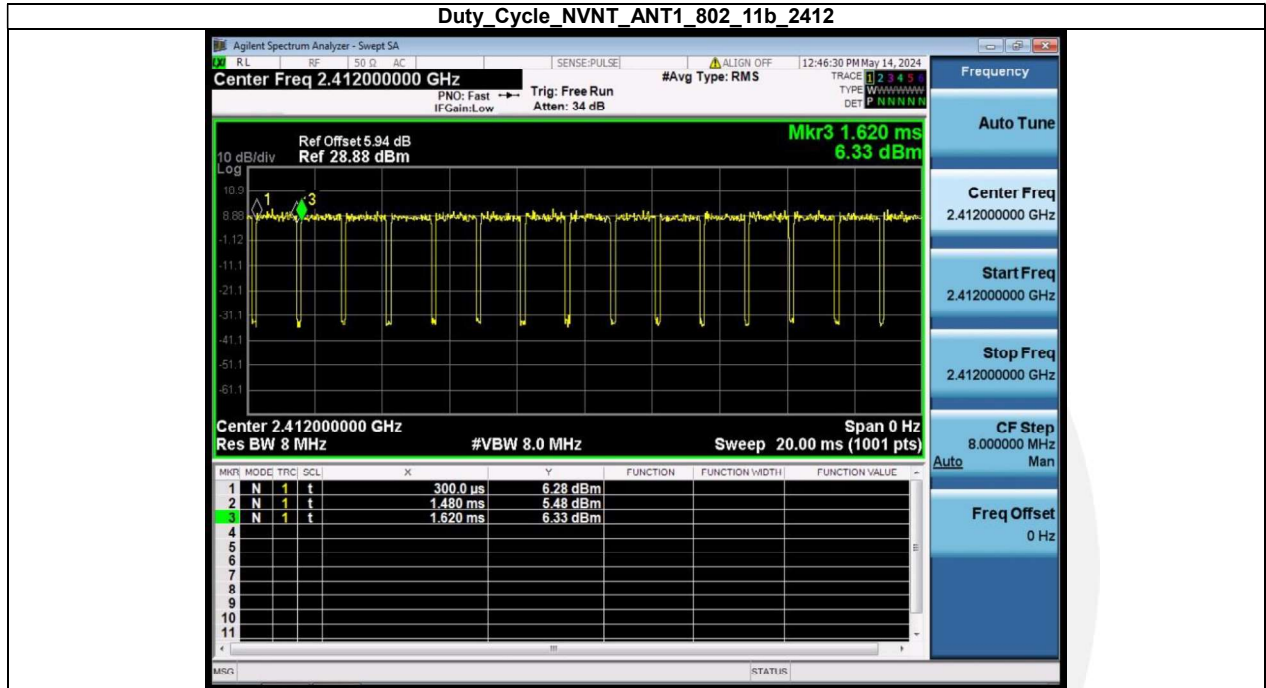


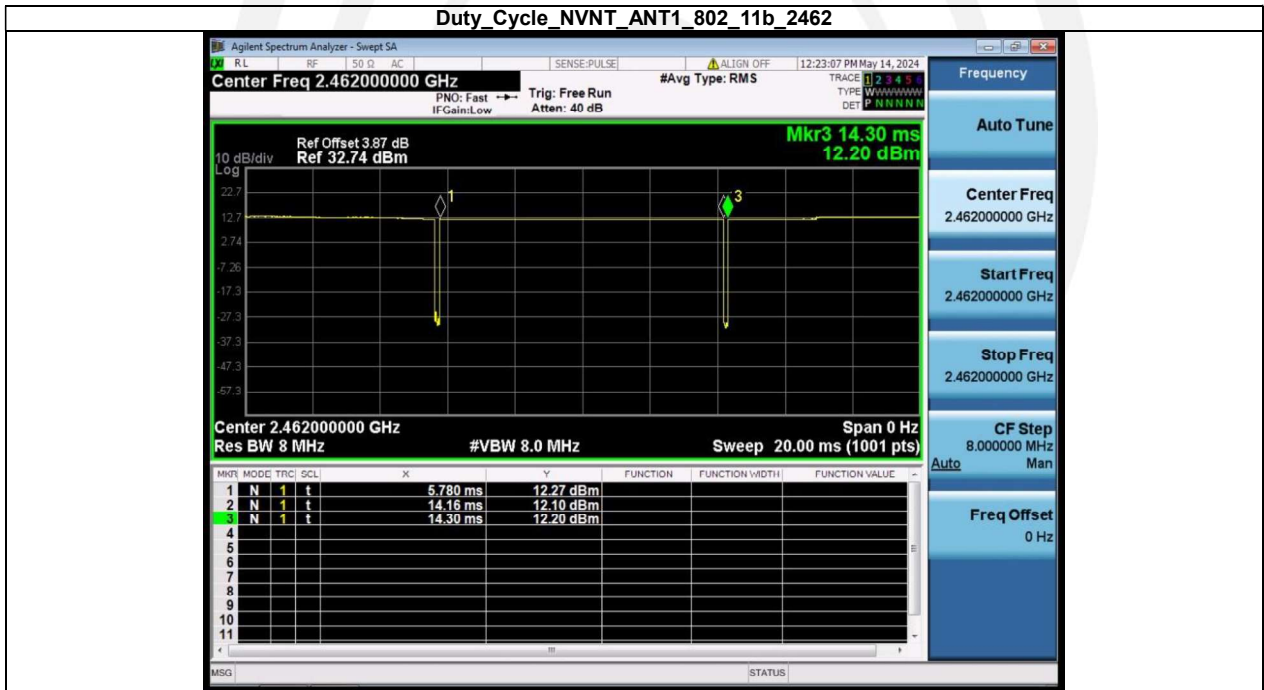
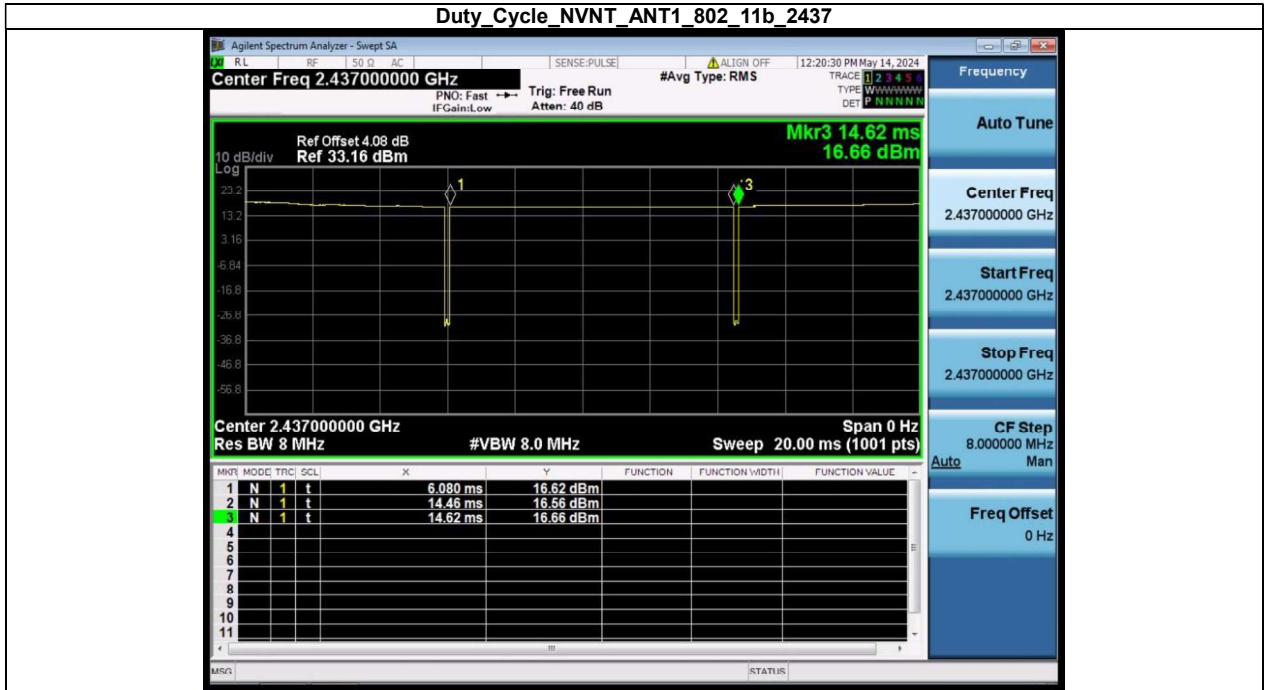
6.4. Test Results

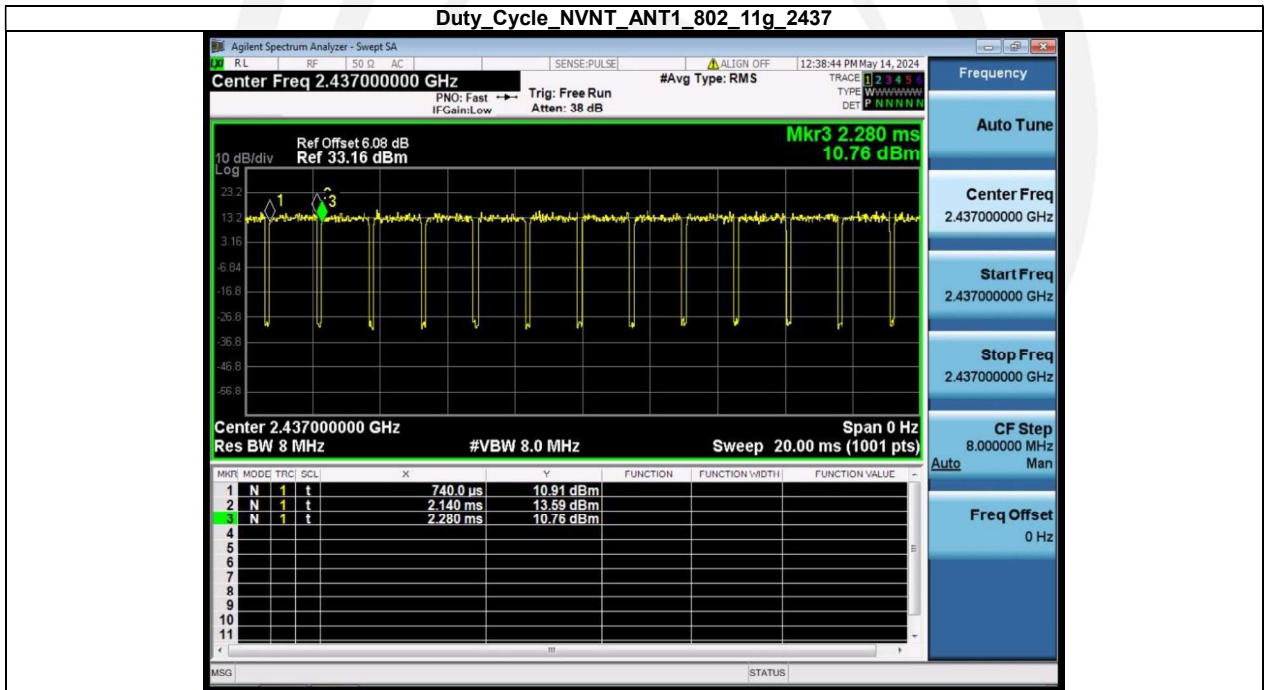
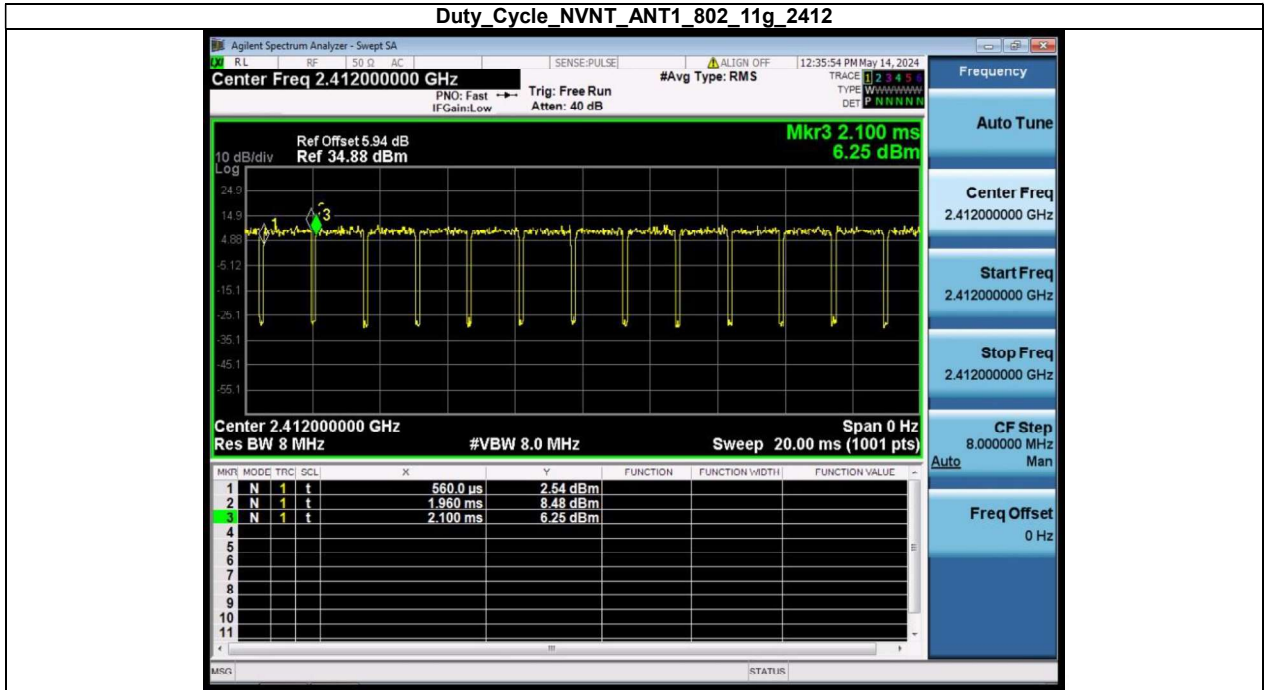
Note: The duty factor is already included in the results

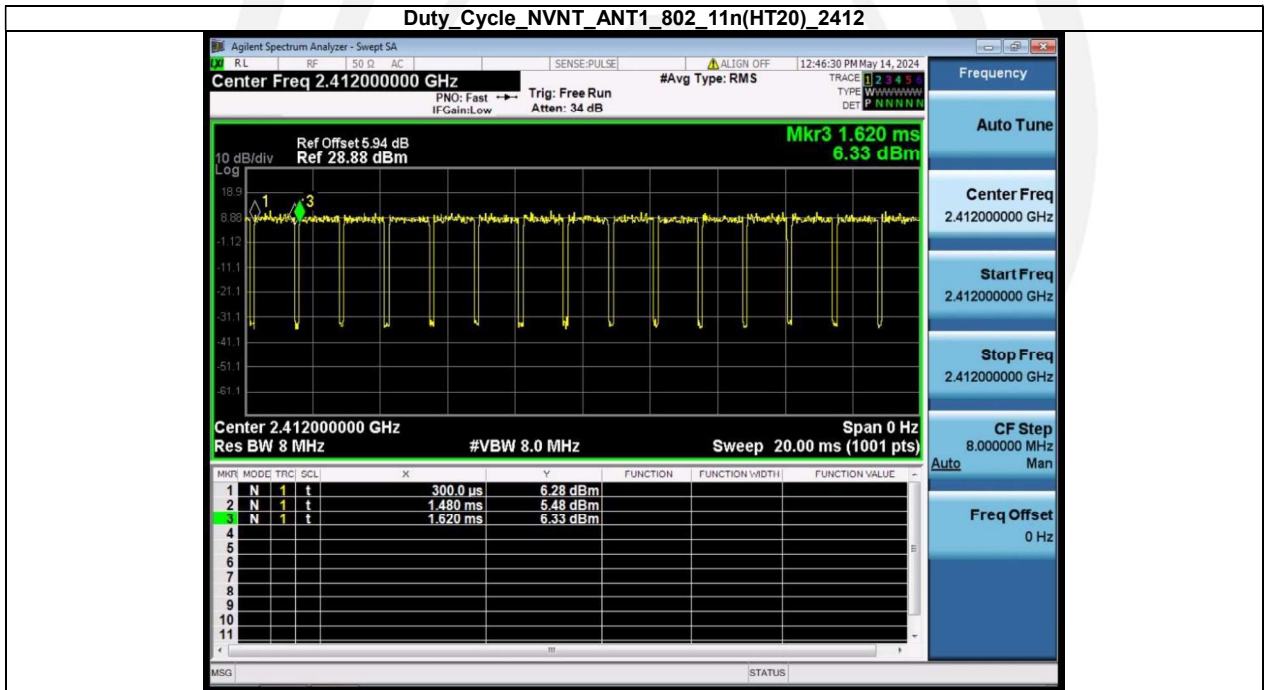
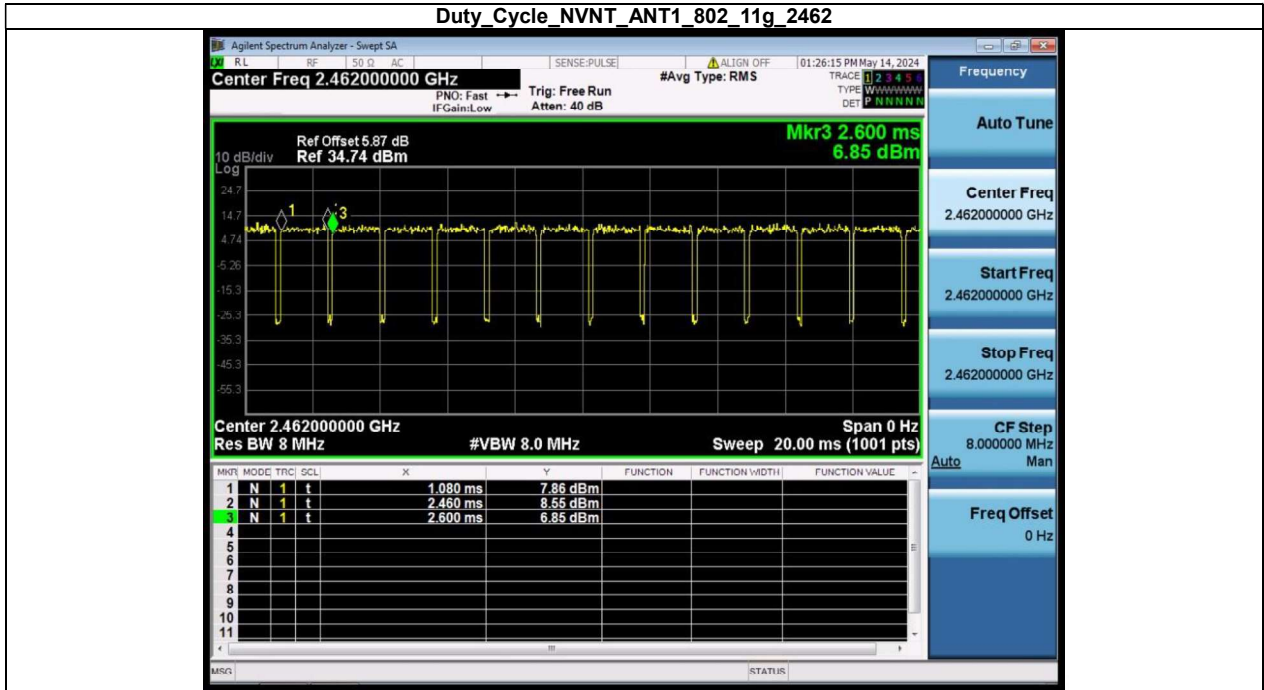
Condition	Antenna	Modulation	Frequency (MHz)	Detector	Total Power(dBm)	limit(dBm)	Result
NVNT	ANT1	802.11b	2412.00	Peak	11.95	30	Pass
NVNT	ANT1	802.11b	2437.00	Peak	16.00	30	Pass
NVNT	ANT1	802.11b	2462.00	Peak	11.85	30	Pass
NVNT	ANT1	802.11g	2412.00	Peak	12.02	30	Pass
NVNT	ANT1	802.11g	2437.00	Peak	16.25	30	Pass
NVNT	ANT1	802.11g	2462.00	Peak	12.73	30	Pass
NVNT	ANT1	802.11n(HT20)	2412.00	Peak	12.36	30	Pass
NVNT	ANT1	802.11n(HT20)	2437.00	Peak	16.47	30	Pass
NVNT	ANT1	802.11n(HT20)	2462.00	Peak	12.99	30	Pass

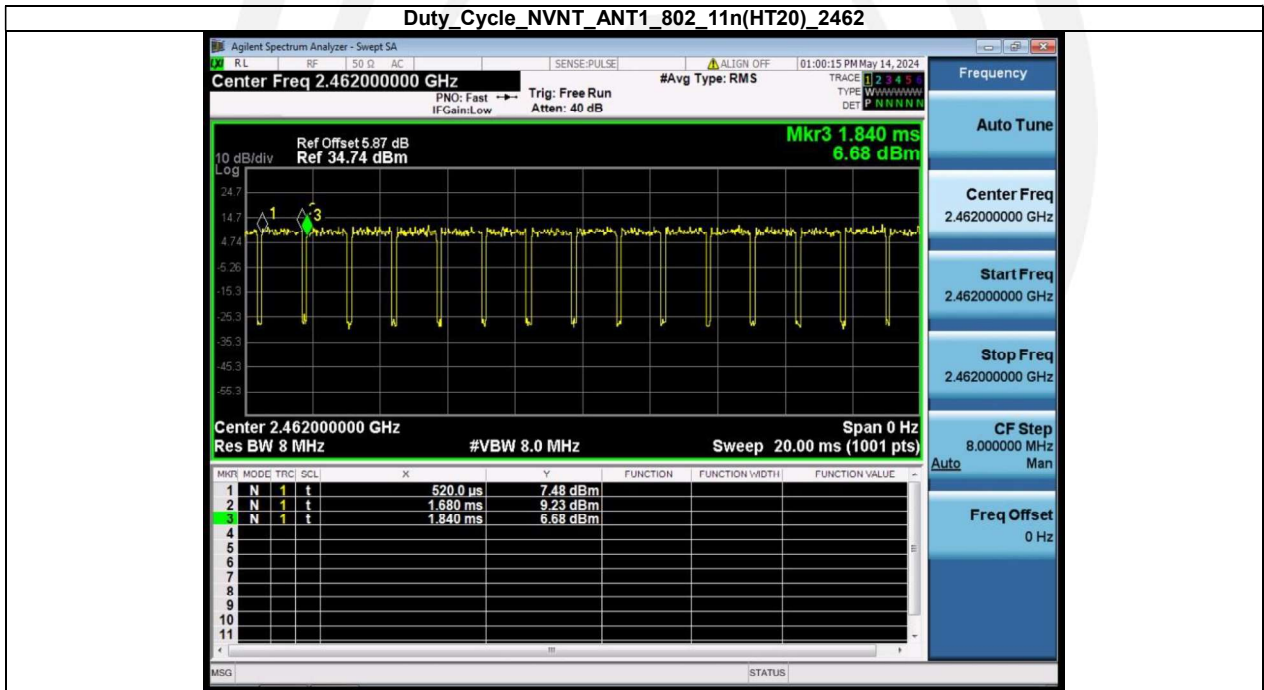
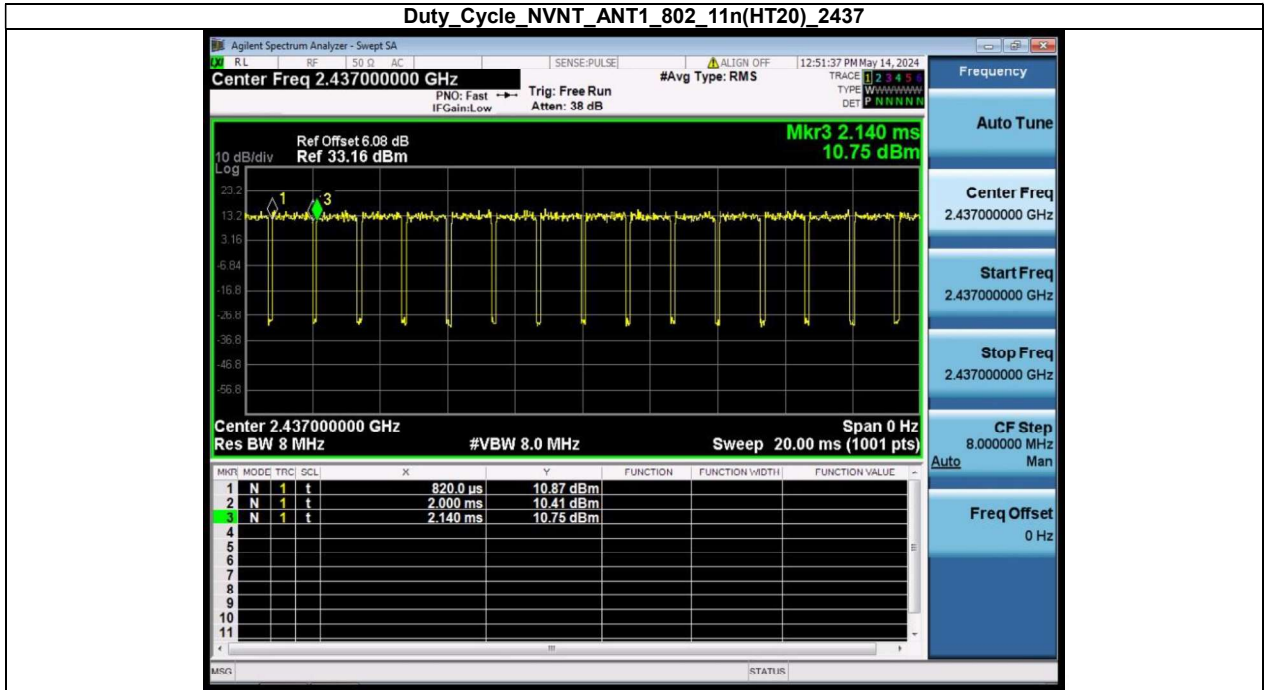
Condition	Antenna	Modulation	Frequency (MHz)	Duty cycle(%)	Duty factor(dB)
NVNT	ANT1	802.11b	2412.00	90.91	0.41
NVNT	ANT1	802.11b	2437.00	98.36	0.00
NVNT	ANT1	802.11b	2462.00	98.59	0.00
NVNT	ANT1	802.11g	2412.00	92.21	0.35
NVNT	ANT1	802.11g	2437.00	92.21	0.35
NVNT	ANT1	802.11g	2462.00	92.11	0.36
NVNT	ANT1	802.11n(HT20)	2412.00	90.91	0.41
NVNT	ANT1	802.11n(HT20)	2437.00	90.91	0.41
NVNT	ANT1	802.11n(HT20)	2462.00	89.39	0.49











7. Peak Power Spectral Density

7.1. Test limits

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

6.1.2 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.

6.1.3 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

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

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

6.2.3 Set the spectrum analyzer as RBW = 100kHz(Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.), VBW = 300kHz(Set the VBW $\geq 3 \times \text{RBW}$), span $\geq 1.5 \times \text{DTS bandwidth}$., detail see the test plot.

6.2.4 Record the max reading.

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

7.3. Test Setup



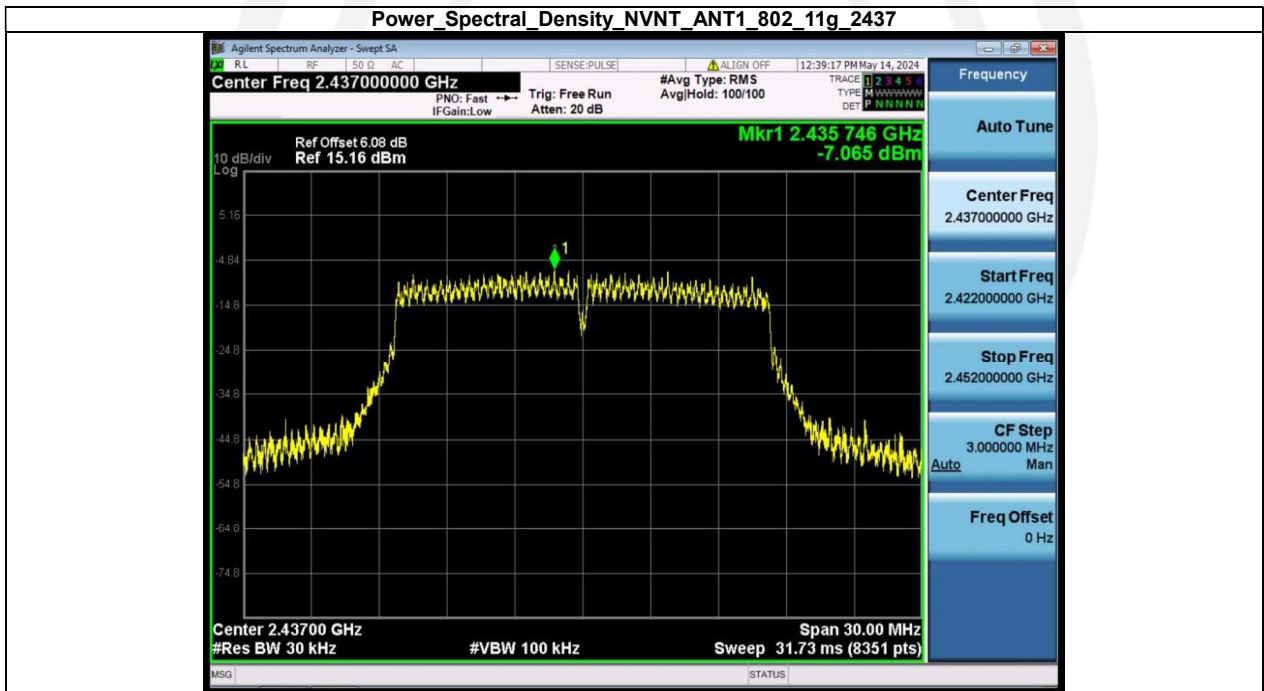
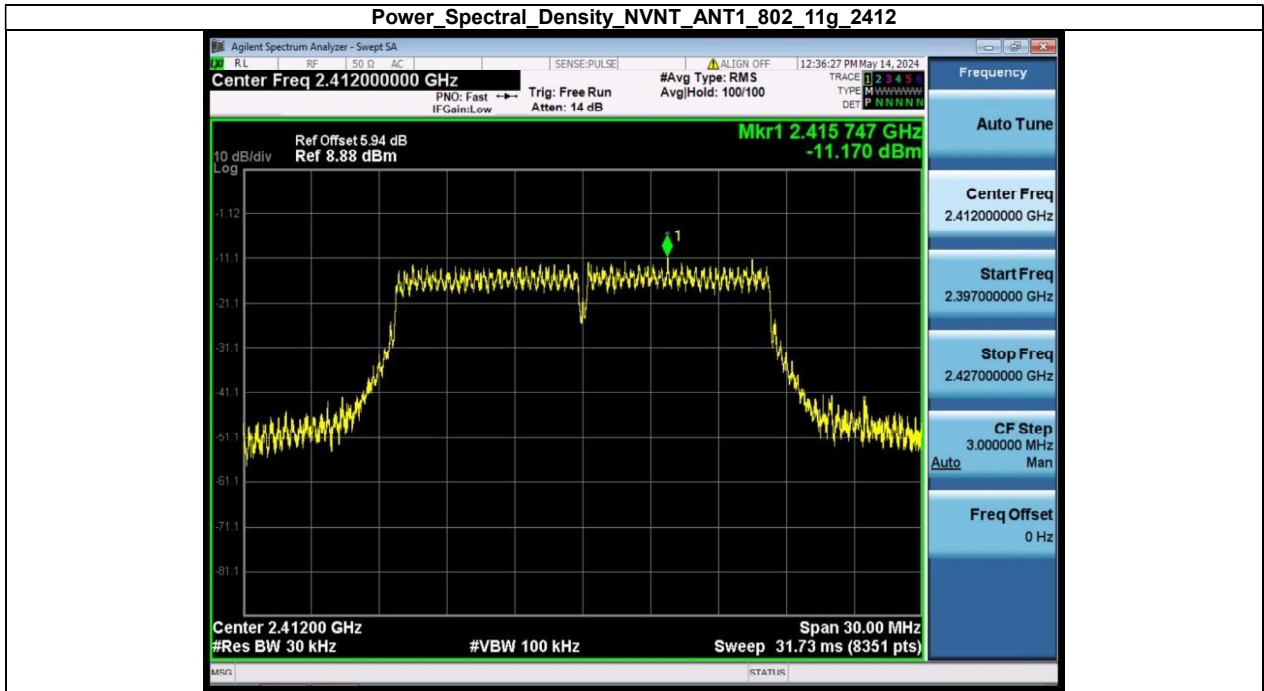
7.4. Test Results

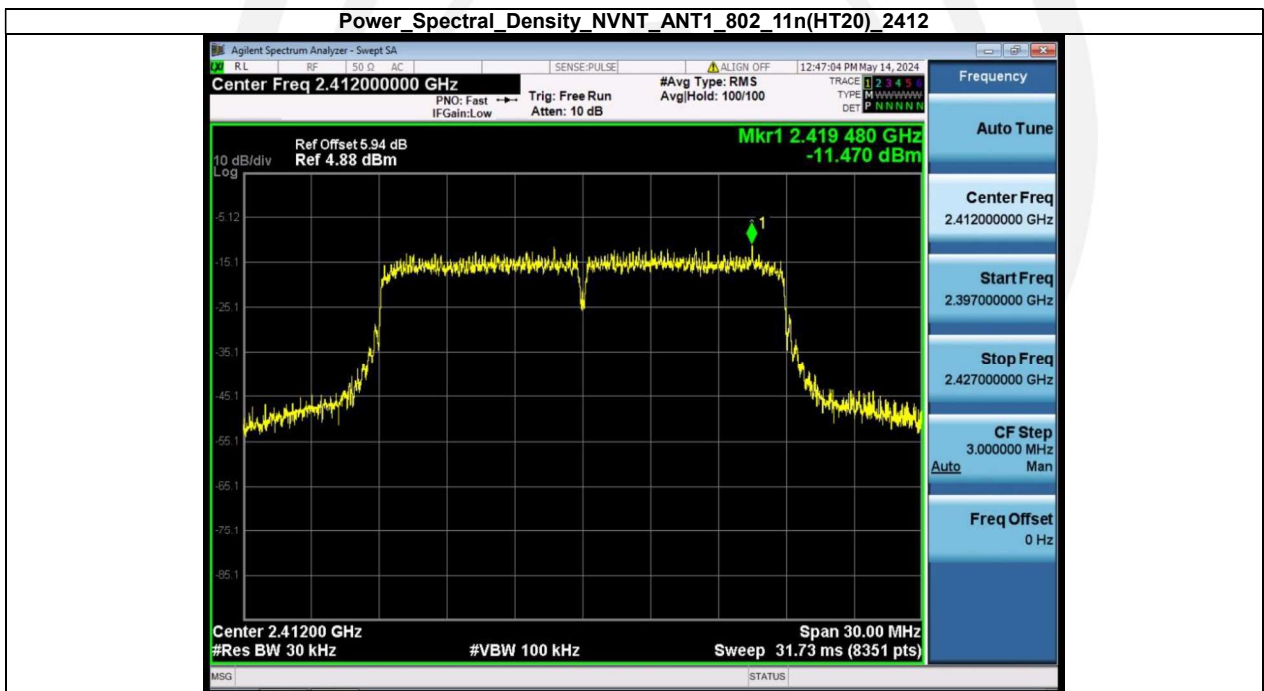
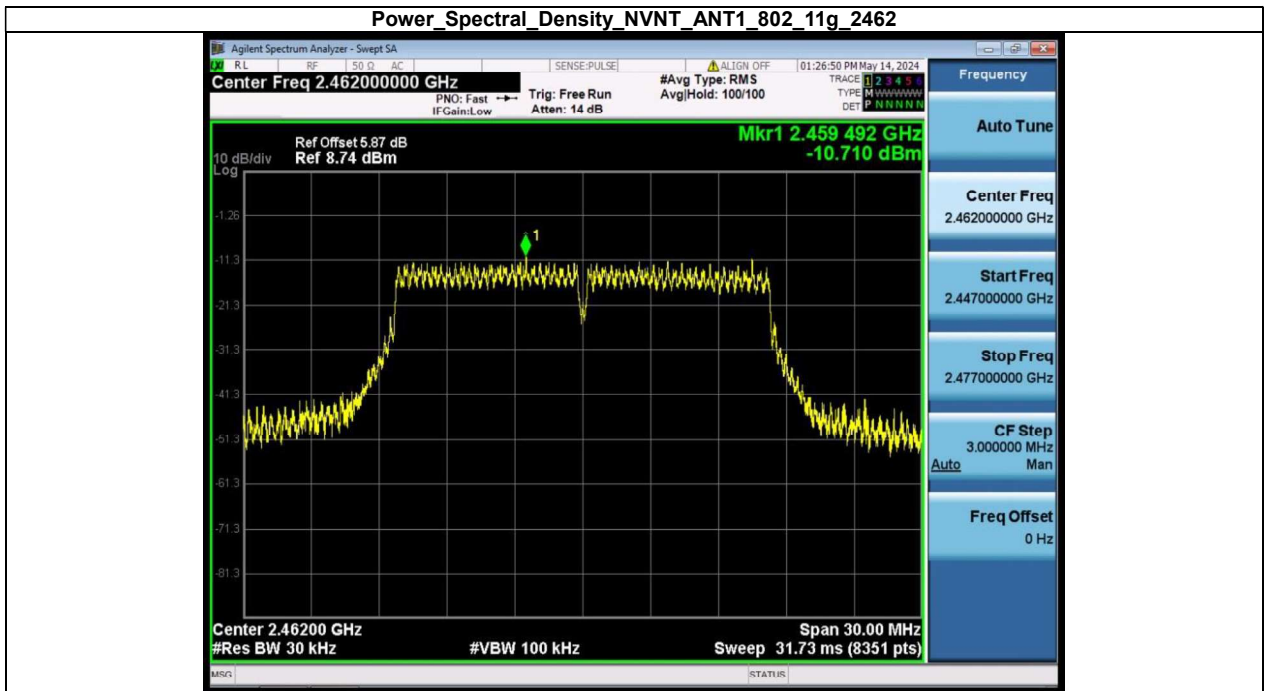
Note: The duty factor is already included in the results

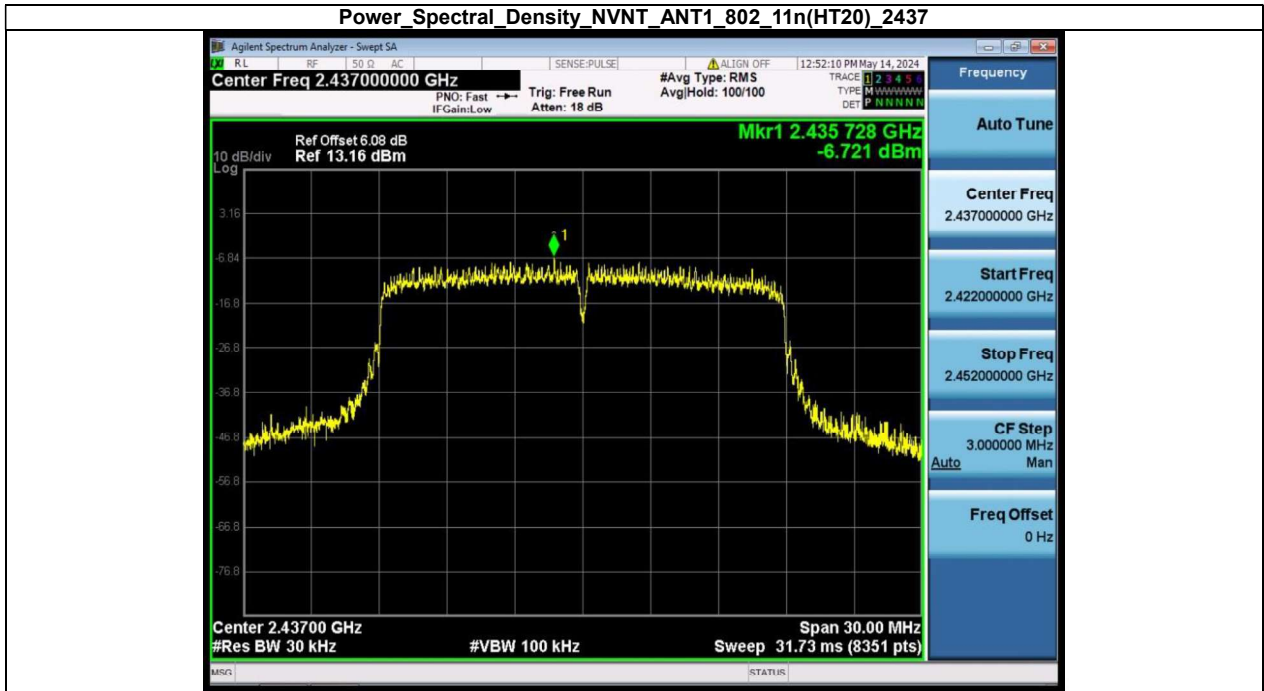
Condition	Antenna	Modulation	Frequency (MHz)	PSD(dBm/30kHz)	RB factor(dB)	PSD(dBm/3kHz)	limit(dBm/3kHz)	Result
NVNT	ANT1	802.11b	2412.00	-4.24	-10.00	-14.24	8	Pass
NVNT	ANT1	802.11b	2437.00	1.08	-10.00	-8.92	8	Pass
NVNT	ANT1	802.11b	2462.00	-0.45	-10.00	-10.45	8	Pass
NVNT	ANT1	802.11g	2412.00	-11.17	-10.00	-21.17	8	Pass
NVNT	ANT1	802.11g	2437.00	-7.07	-10.00	-17.07	8	Pass
NVNT	ANT1	802.11g	2462.00	-10.71	-10.00	-20.71	8	Pass
NVNT	ANT1	802.11n(HT20)	2412.00	-11.47	-10.00	-21.47	8	Pass
NVNT	ANT1	802.11n(HT20)	2437.00	-6.72	-10.00	-16.72	8	Pass
NVNT	ANT1	802.11n(HT20)	2462.00	-10.90	-10.00	-20.90	8	Pass











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.

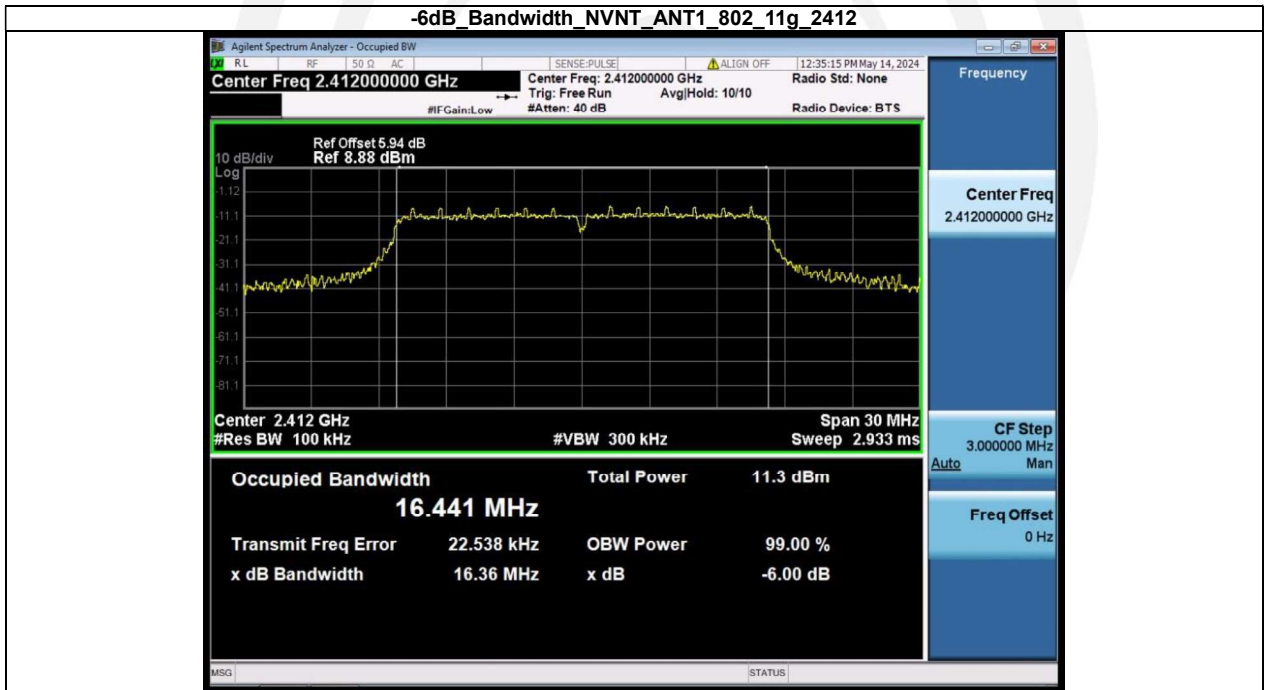
8.3. Test Setup

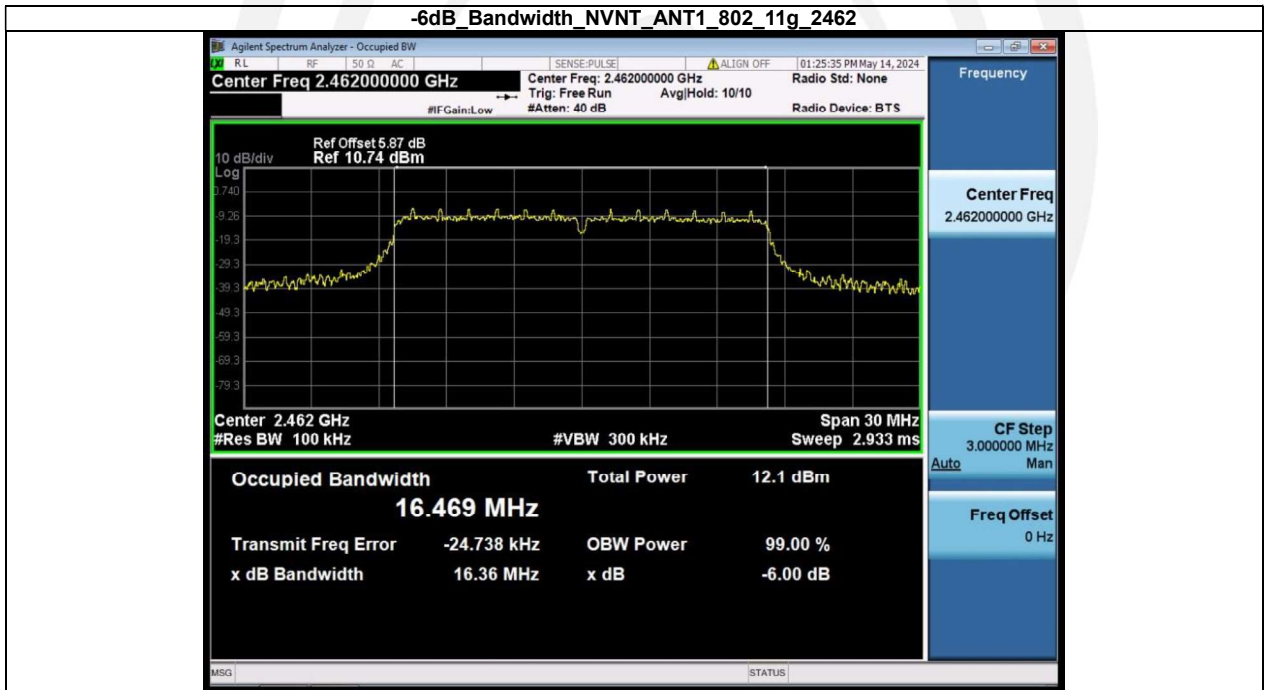
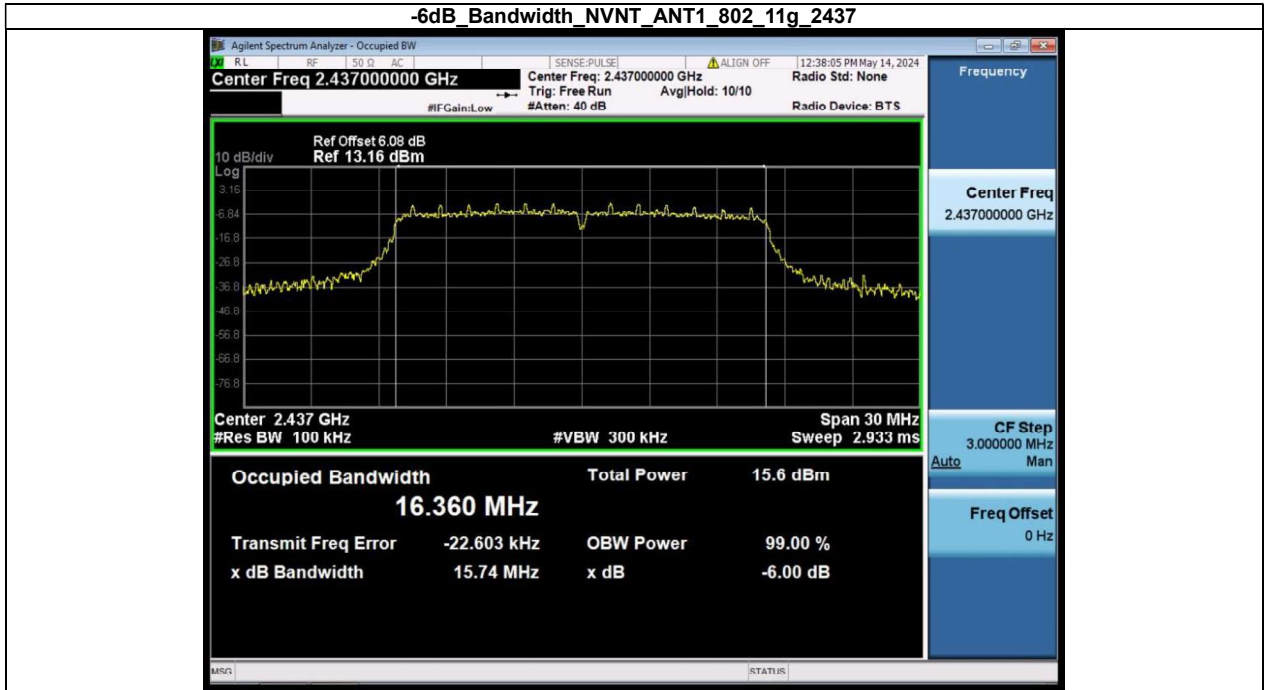


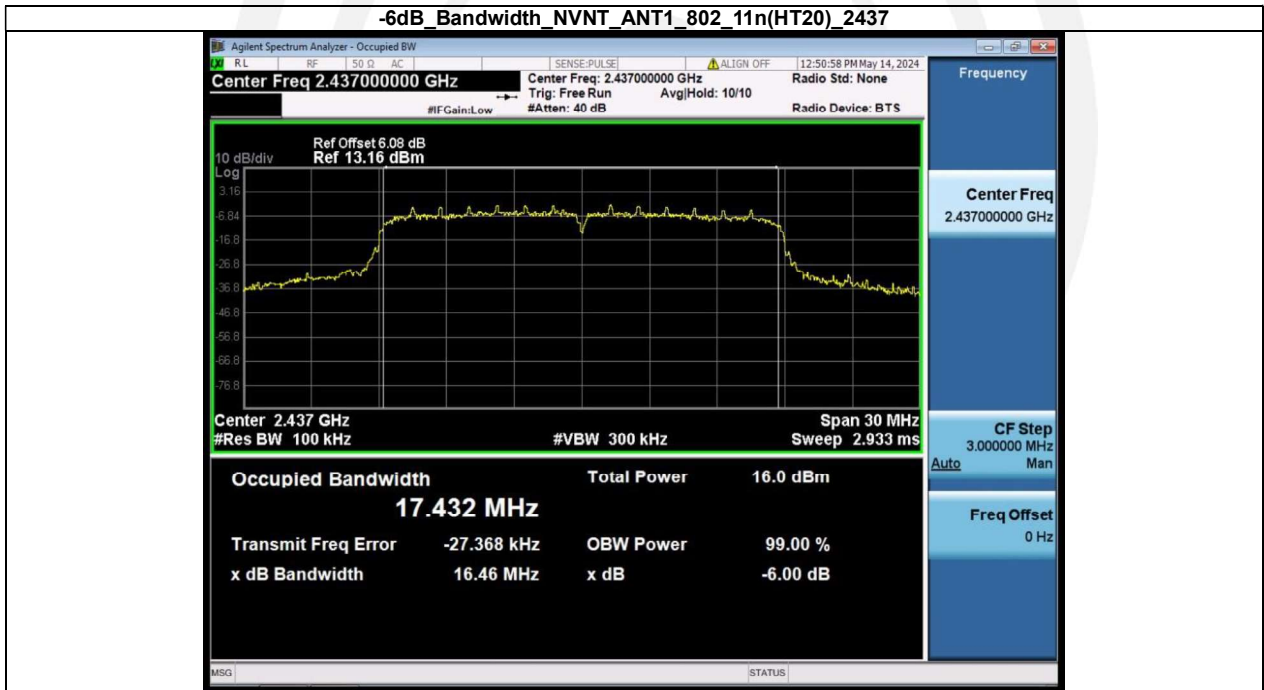
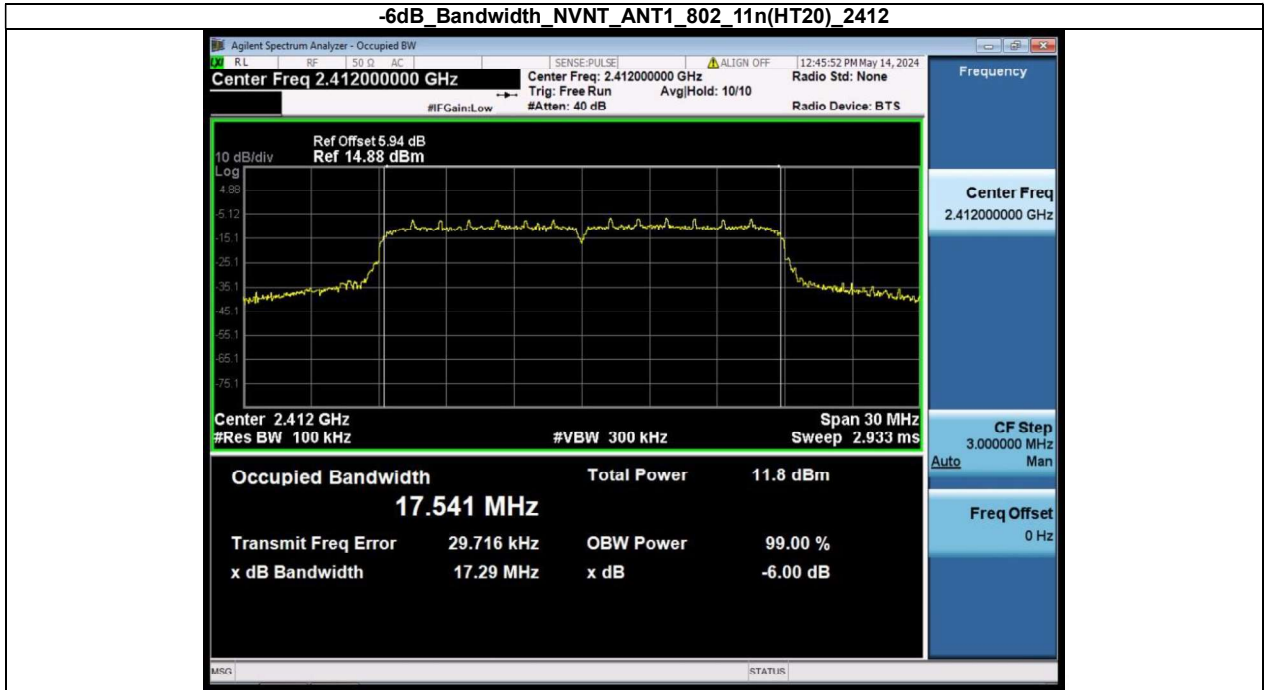
8.4. Test Results

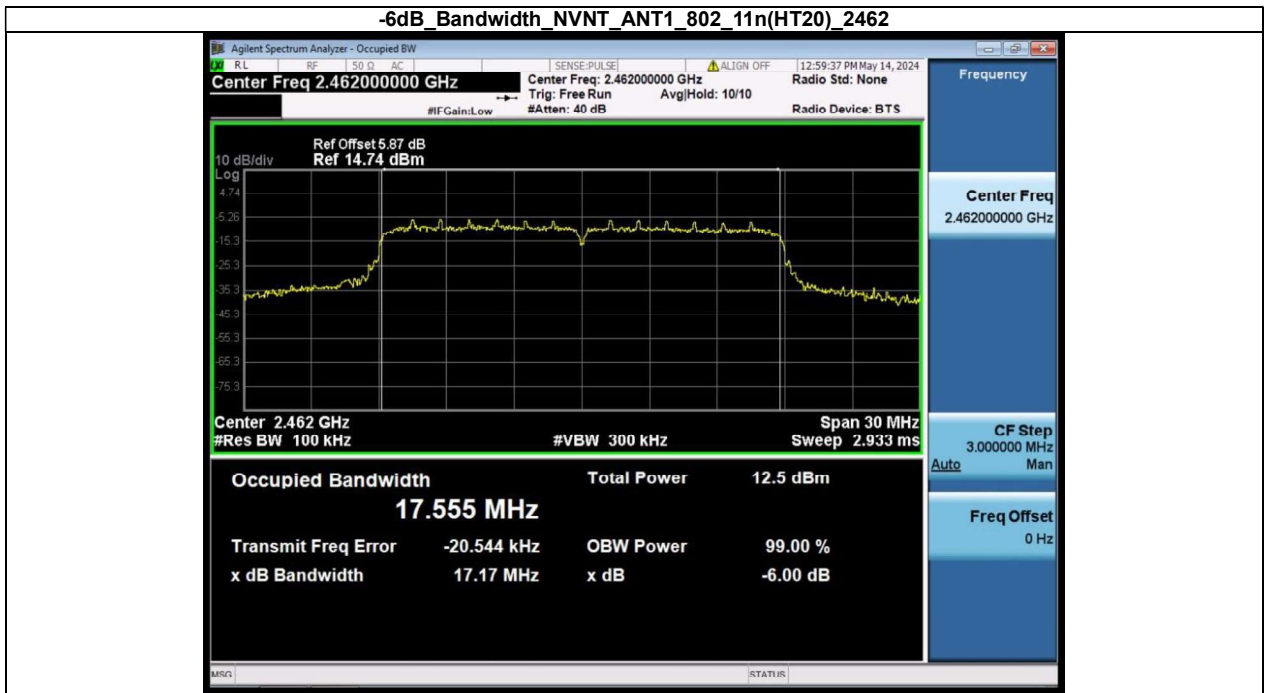
Condition	Antenna	Modulation	Frequency (MHz)	-6dB BW(MHz)	limit(kHz)	Result
NVNT	ANT1	802.11b	2412.00	9.60	500	Pass
NVNT	ANT1	802.11b	2437.00	9.57	500	Pass
NVNT	ANT1	802.11b	2462.00	9.61	500	Pass
NVNT	ANT1	802.11g	2412.00	16.36	500	Pass
NVNT	ANT1	802.11g	2437.00	15.74	500	Pass
NVNT	ANT1	802.11g	2462.00	16.36	500	Pass
NVNT	ANT1	802.11n(HT20)	2412.00	17.29	500	Pass
NVNT	ANT1	802.11n(HT20)	2437.00	16.46	500	Pass
NVNT	ANT1	802.11n(HT20)	2462.00	17.17	500	Pass



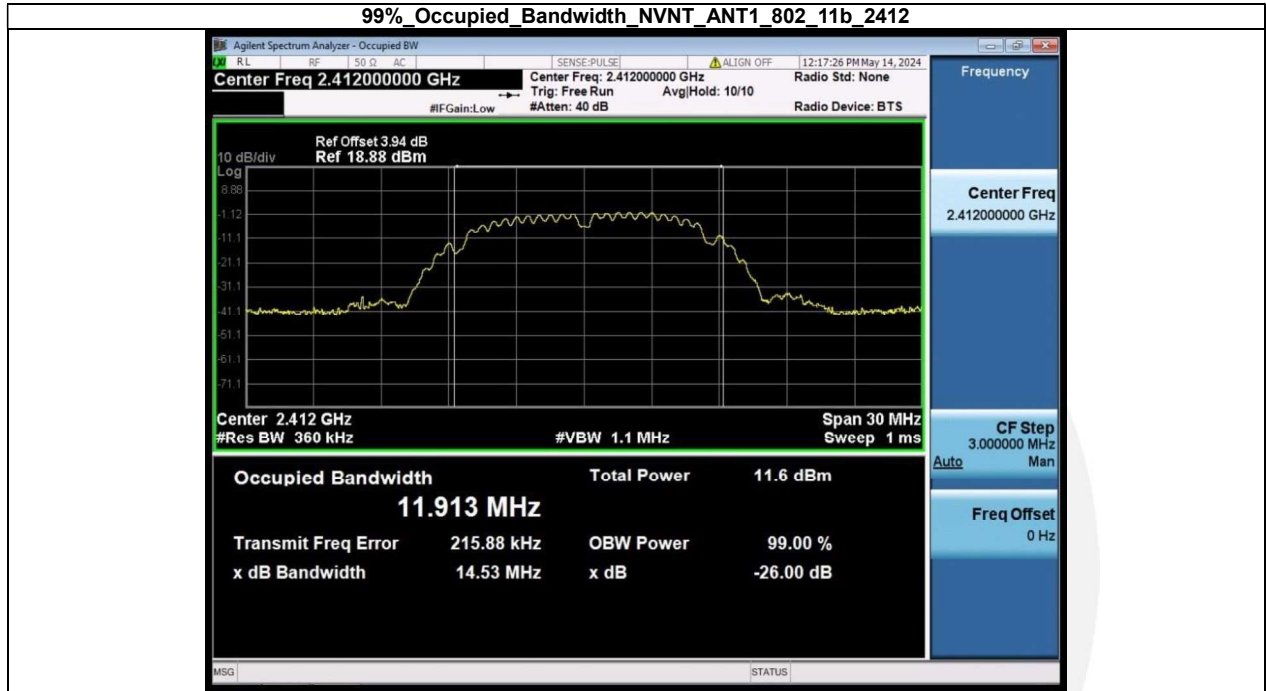


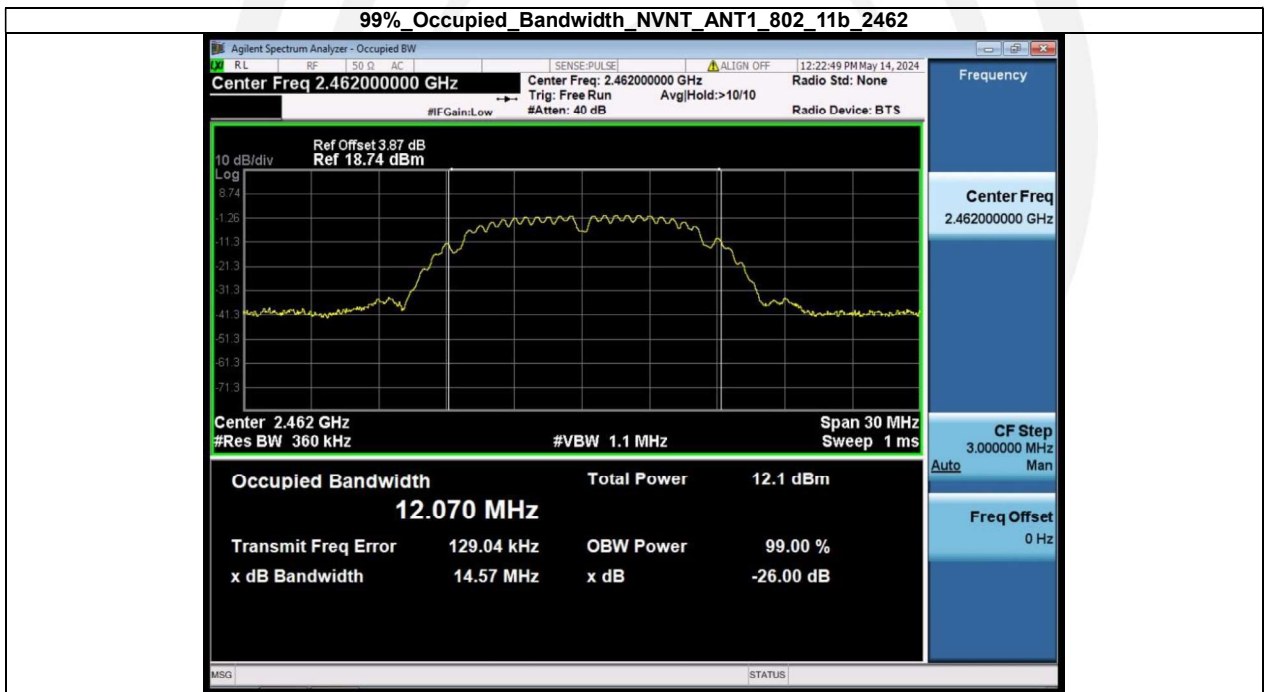
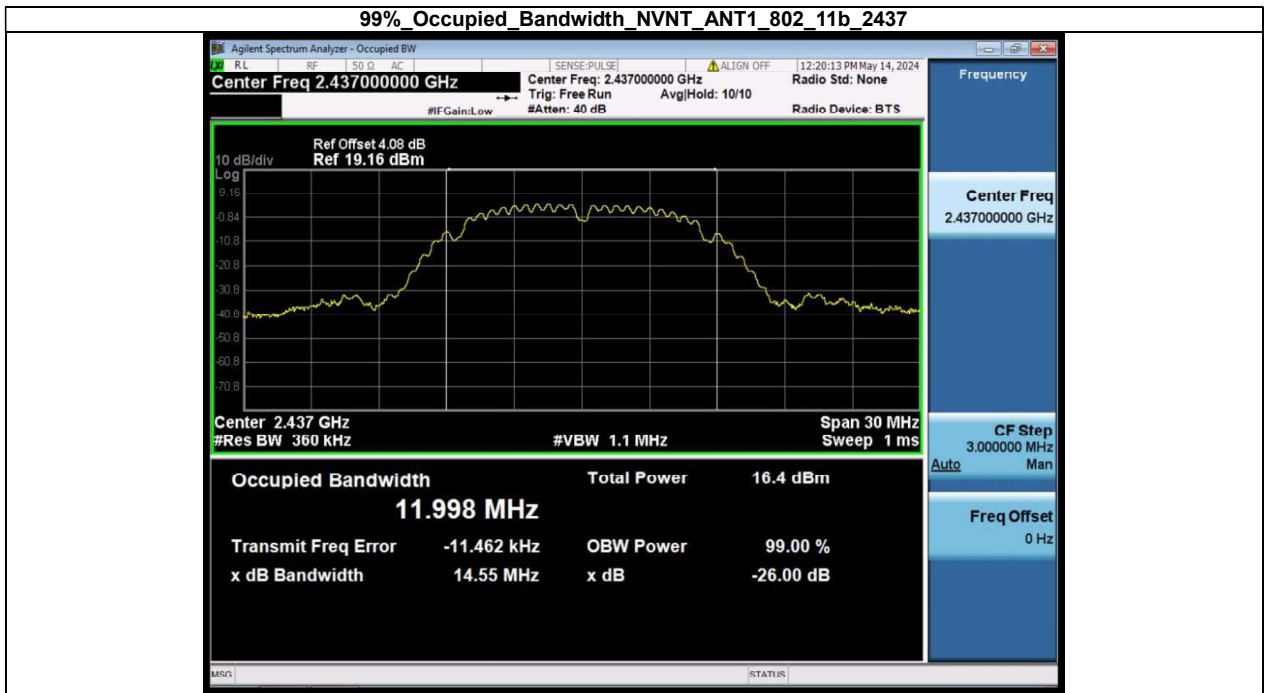


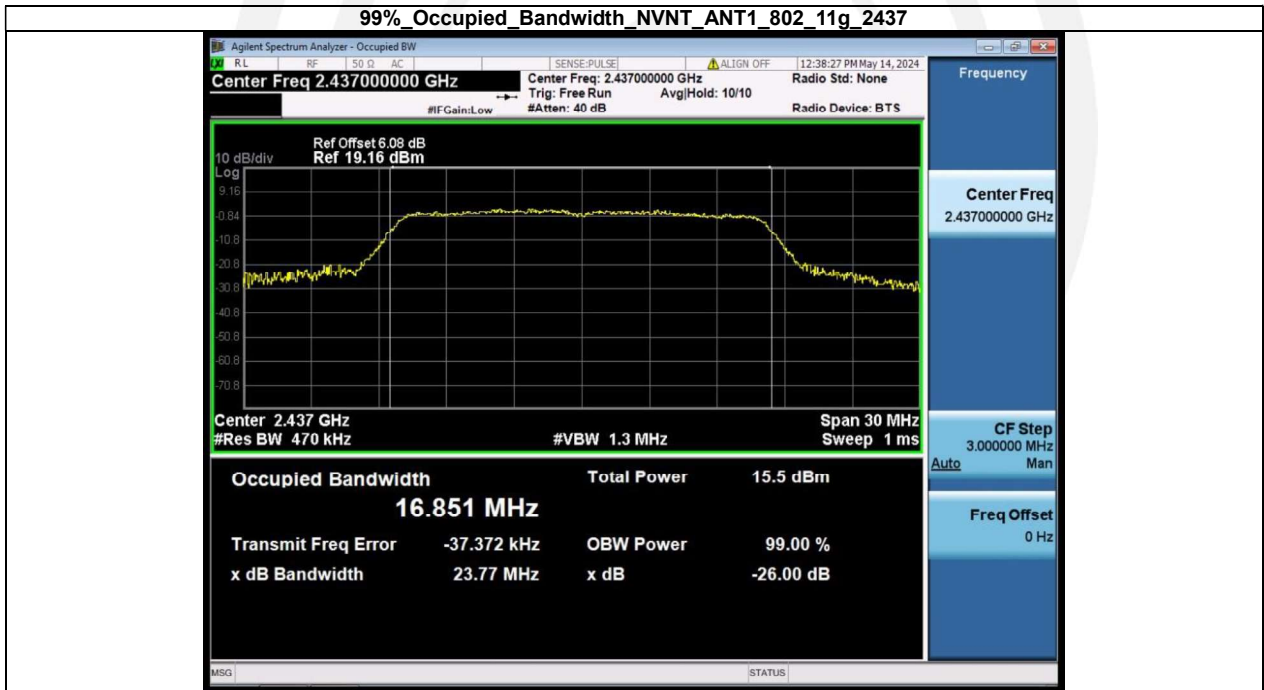
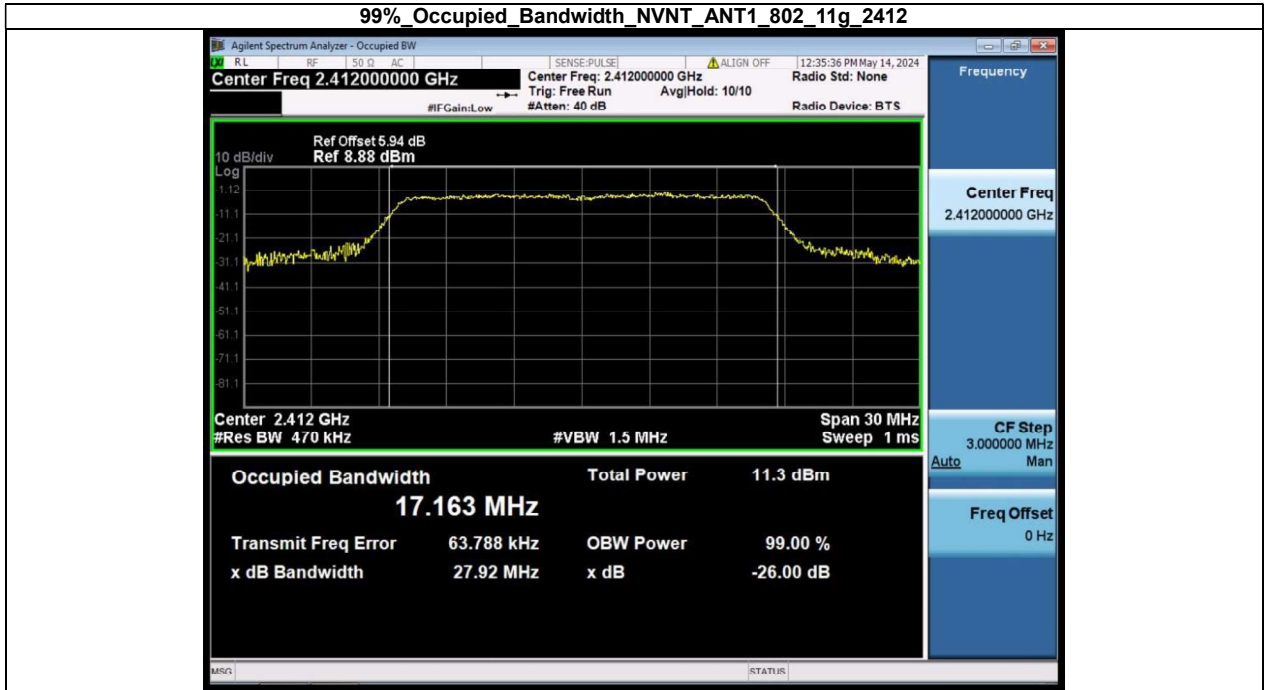


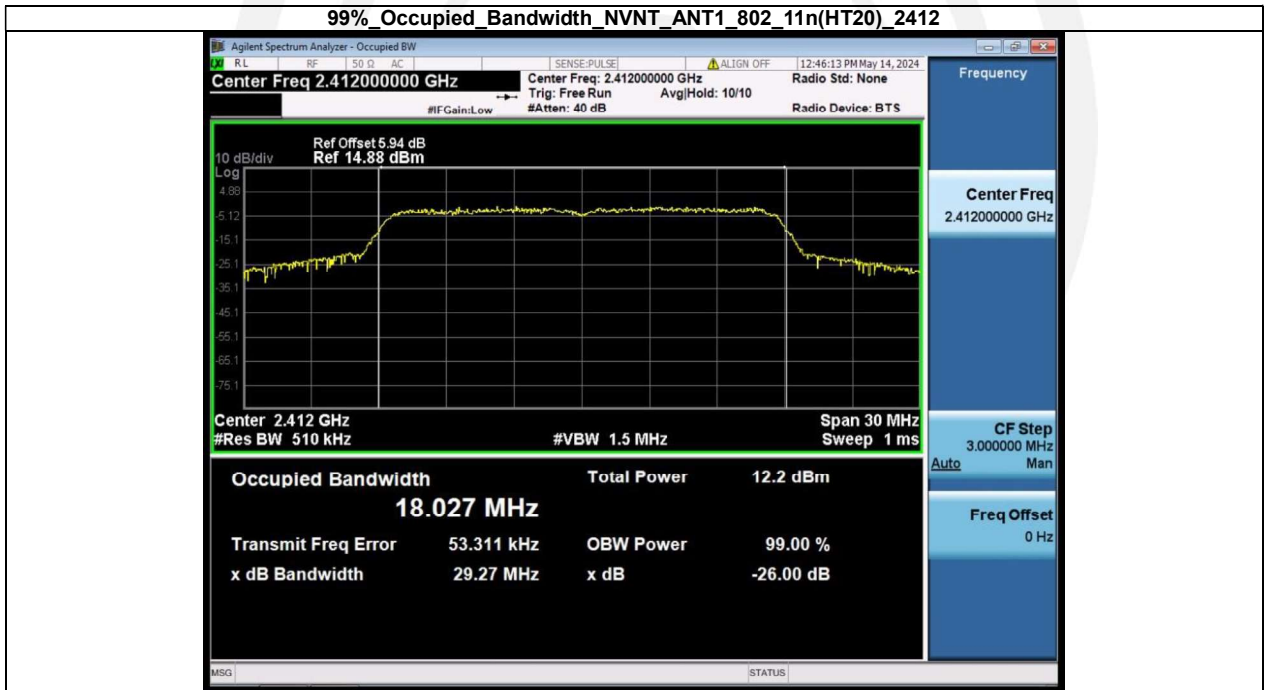
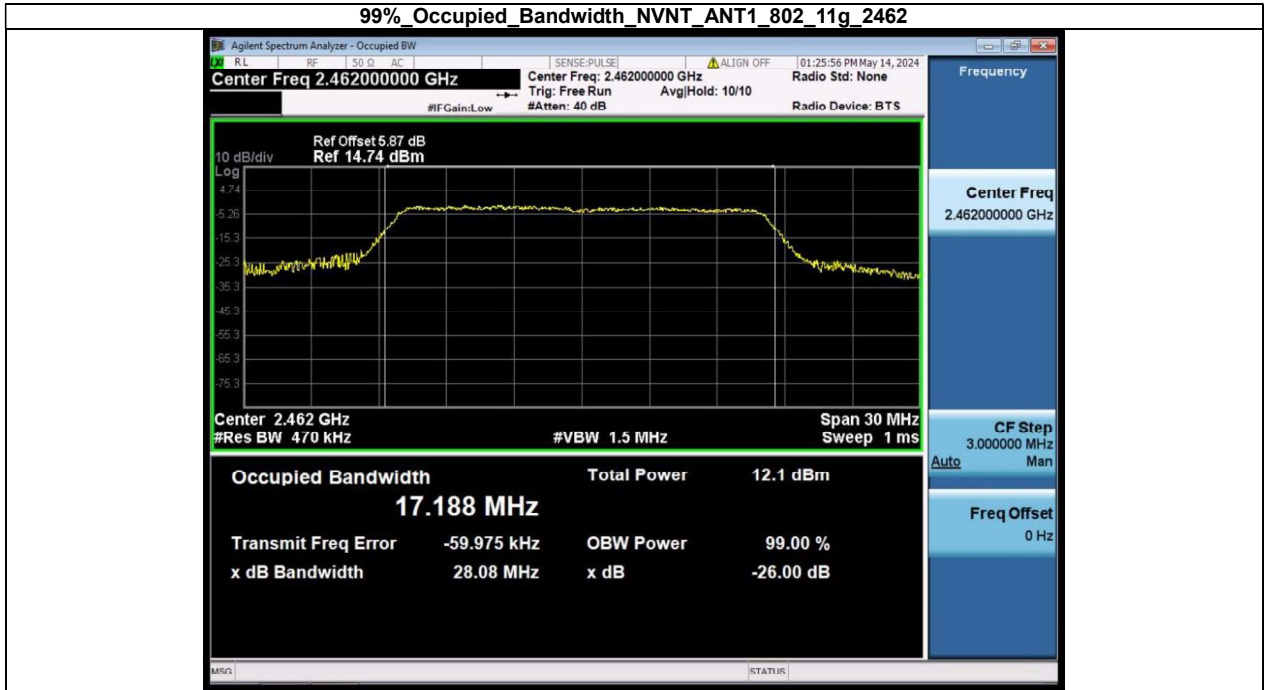


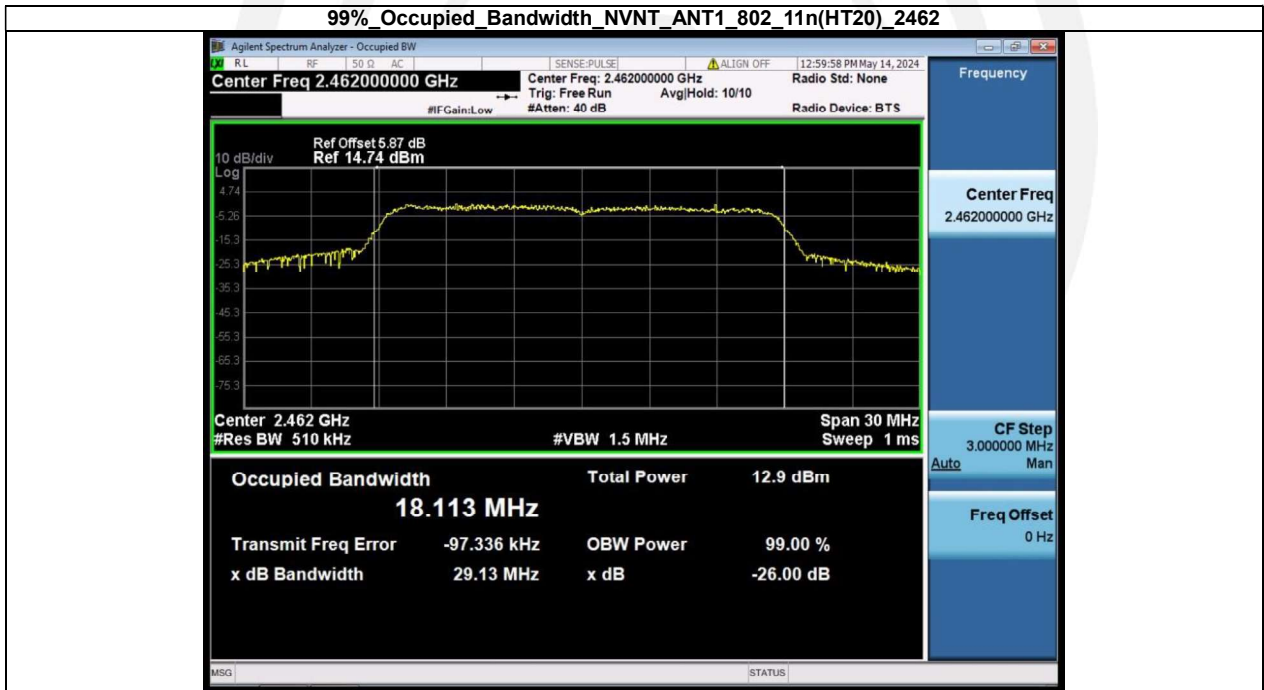
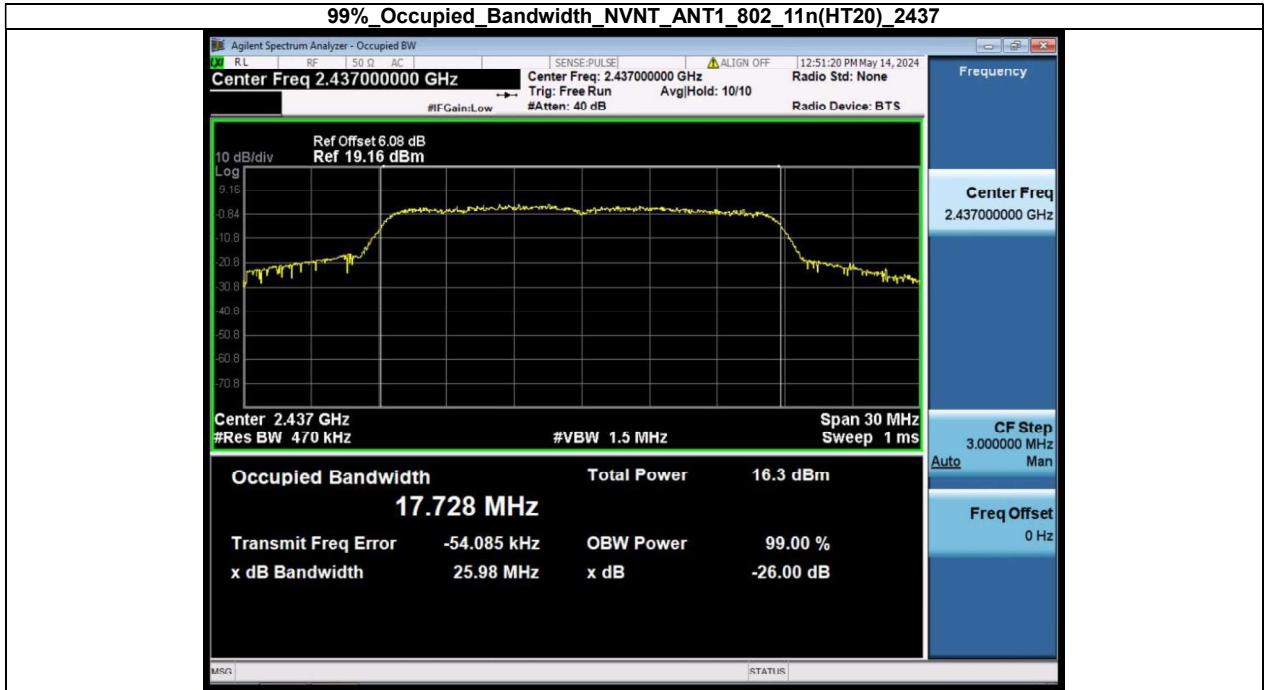
Condition	Antenna	Modulation	Frequency (MHz)	99% BW (MHz)
NVNT	ANT1	802.11b	2412.00	11.913
NVNT	ANT1	802.11b	2437.00	11.998
NVNT	ANT1	802.11b	2462.00	12.070
NVNT	ANT1	802.11g	2412.00	17.163
NVNT	ANT1	802.11g	2437.00	16.851
NVNT	ANT1	802.11g	2462.00	17.188
NVNT	ANT1	802.11n(HT20)	2412.00	18.027
NVNT	ANT1	802.11n(HT20)	2437.00	17.728
NVNT	ANT1	802.11n(HT20)	2462.00	18.113





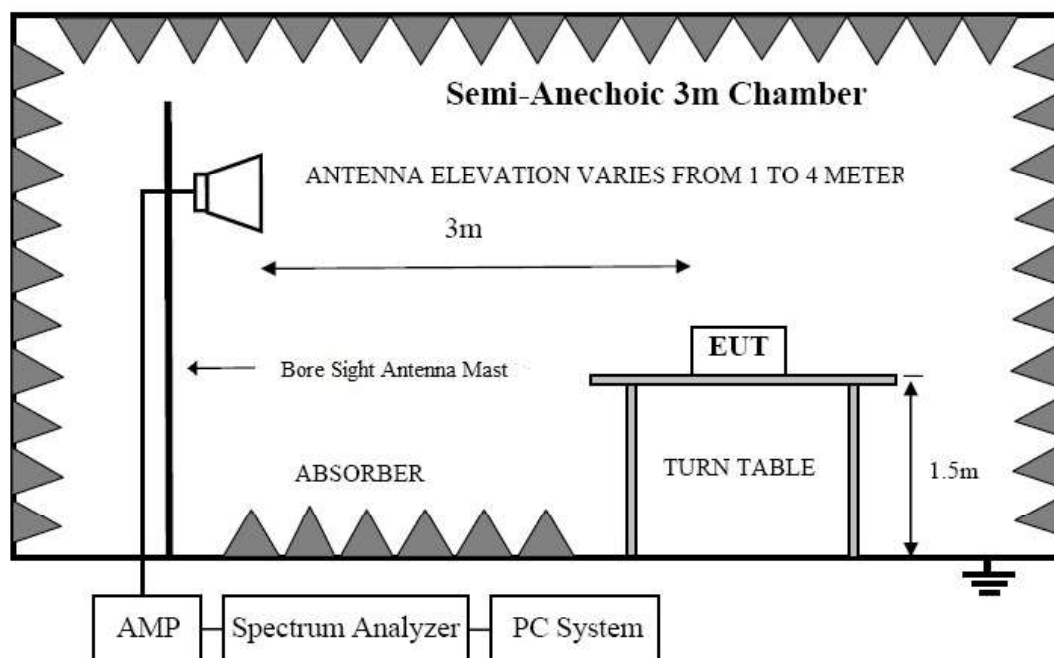






9. Band Edge Test

9.1. Block Diagram of Test Setup



9.2. Test Limit

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)).

9.3. Test Procedure

Refer to ANSI C 63.10, Clause 6.10.

All restriction band and non- restriction band have been tested, only worse case is reported.

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.

9.4. Test Results

Test Date : 2024.05.21						Temperature : 26°C			
Test Engineer : Felix Pang						Humidity : 54%			
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	71.34	-21.62	49.72	74.00	-24.28	Peak	
2	2390	H	--	-21.62	--	54.00	--	Avg	
3	2400	H	75.57	-26.08	49.49	74.00	-24.51	Peak	
4	2400	H	--	-26.08	--	54.00	--	Avg	
1	2390	V	69.50	-21.62	47.88	74.00	-26.12	Peak	
2	2390	V	--	-21.62	--	54.00	--	Avg	
3	2400	V	77.48	-26.08	51.40	74.00	-22.60	Peak	
4	2400	V	--	-26.08	--	54.00	--	Avg	
Frequency Range : 2450MHz~2550MHz									
Test Mode : IEEE 802.11b TX 2462MHz									
1	2483.5	H	74.37	-25.84	48.53	74.00	-25.47	Peak	
2	2483.5	H	--	-25.84	--	54.00	--	Avg	
1	2483.5	V	73.21	-25.84	47.37	74.00	-26.63	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	72.94	-21.62	51.32	74.00	-22.68	Peak
2	2390	H	--	-21.62	--	54.00	--	Avg
3	2400	H	76.30	-26.08	50.22	74.00	-23.78	Peak
4	2400	H	--	-26.08	--	54.00	--	Avg
1	2390	V	69.66	-21.62	48.04	74.00	-25.96	Peak
2	2390	V	--	-21.62	--	54.00	--	Avg
3	2400	V	77.17	-26.08	51.09	74.00	-22.91	Peak
4	2400	V	--	-26.08	--	54.00	--	Avg
Frequency Range : 2450MHz~2550MHz								
Test Mode : IEEE 802.11g TX 2462MHz								
1	2483.5	H	74.97	-25.84	49.13	74.00	-24.87	Peak
2	2483.5	H	--	-25.84	--	54.00	--	Avg
1	2483.5	V	74.53	-25.84	48.69	74.00	-25.31	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	70.07	-21.62	48.45	74.00	-25.55	Peak
2	2390	H	--	-21.62	--	54.00	--	Avg
3	2400	H	78.63	-26.08	52.55	74.00	-21.45	Peak
4	2400	H	--	-26.08	--	54.00	--	Avg
1	2390	V	69.81	-21.62	48.19	74.00	-25.81	Peak
2	2390	V	--	-21.62	--	54.00	--	Avg
3	2400	V	76.00	-26.08	49.92	74.00	-24.08	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	76.89	-25.84	51.05	74.00	-22.95	Peak
2	2483.5	H	--	-25.84	--	54.00	--	Avg
1	2483.5	V	74.48	-25.84	48.64	74.00	-25.36	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. Antenna Requirement

10.1. Standard Requirement

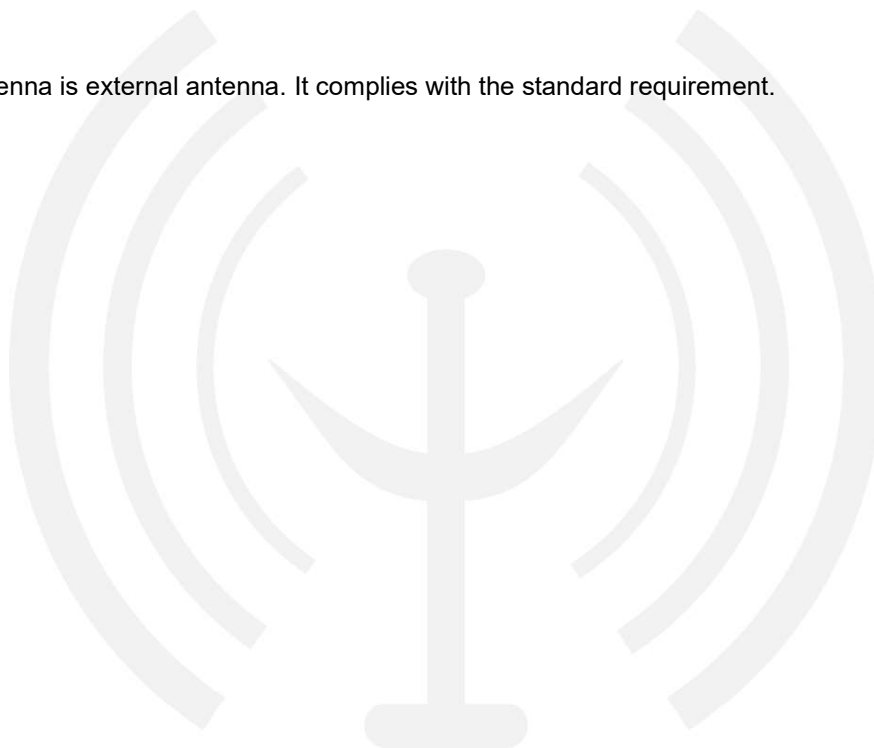
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply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

10.2. Antenna Connected Construction

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

10.3. Results

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



11. Photos of test setup

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

12. Photos of EUT

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

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

