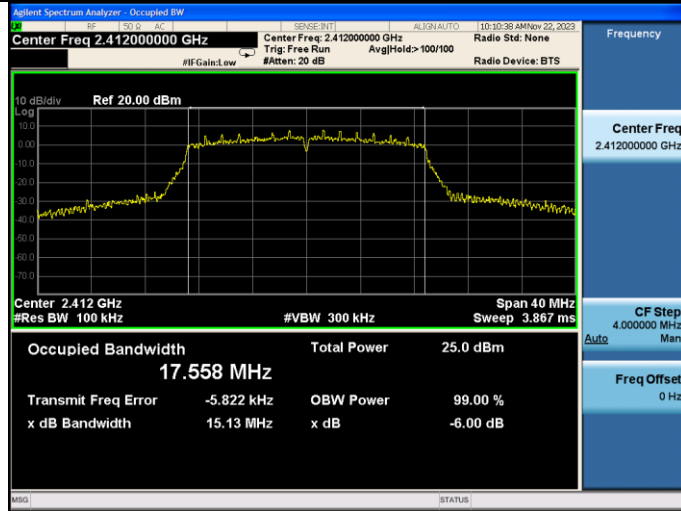


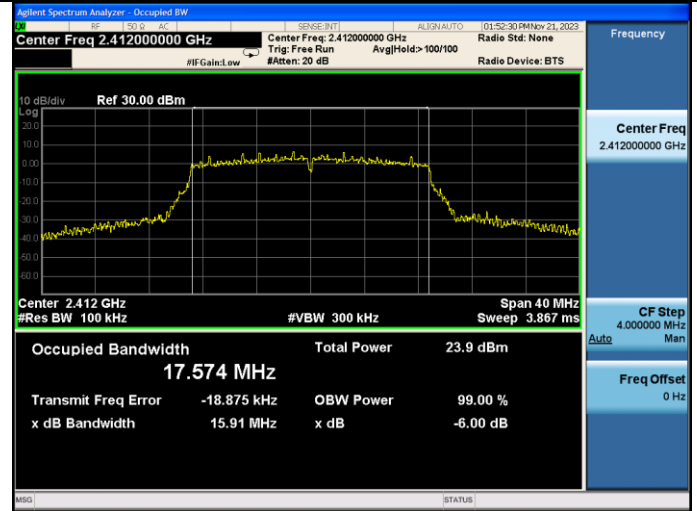
**ANTA:**

Test Mode: IEEE 802.11n HT20  
Test CH1: 2412MHz

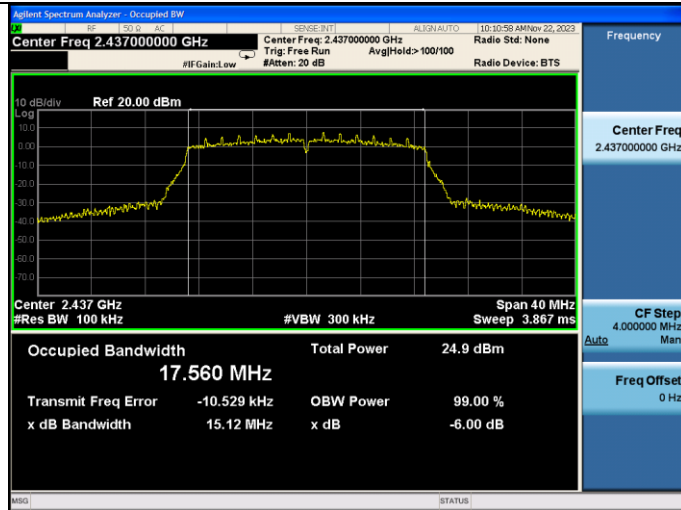


**ANTB:**

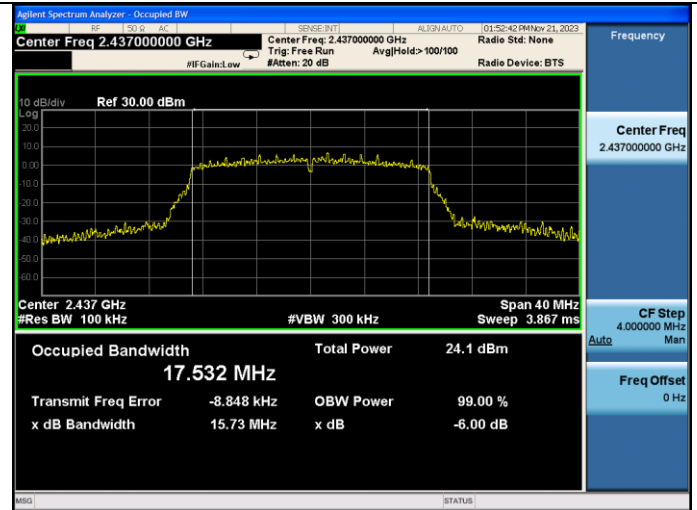
Test Mode: IEEE 802.11n HT20  
Test CH1: 2412MHz



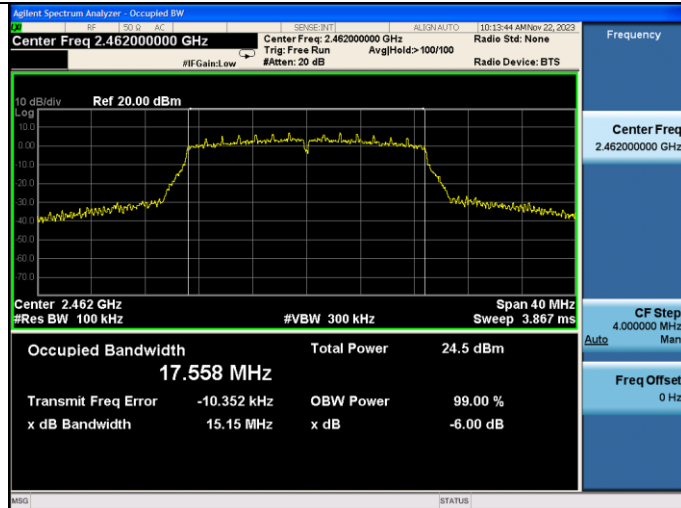
**Test CH6: 2437MHz**



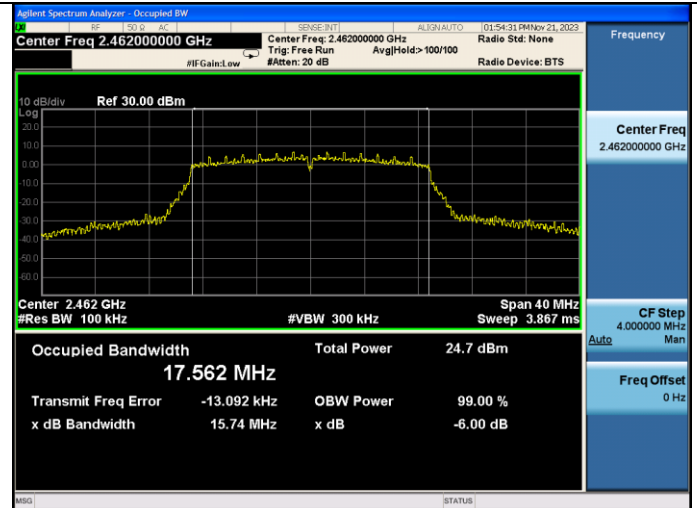
**Test CH6: 2437MHz**



**Test CH11: 2462MHz**

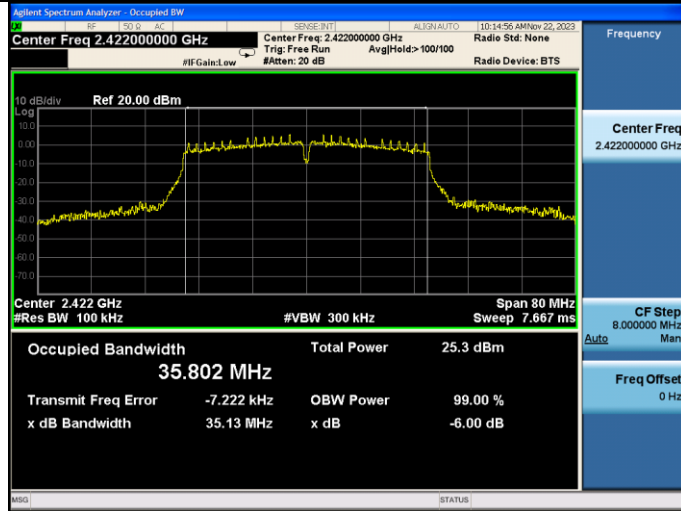


**Test CH11: 2462MHz**



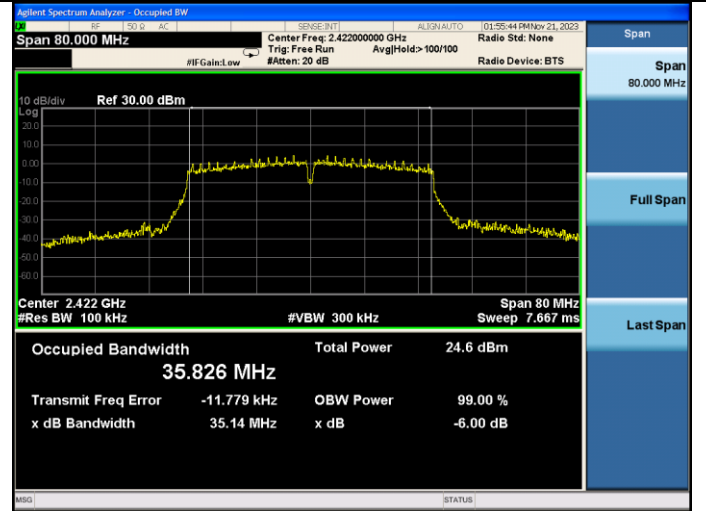
**ANTA:**

Test Mode: IEEE 802.11n HT40  
Test CH3: 2422MHz

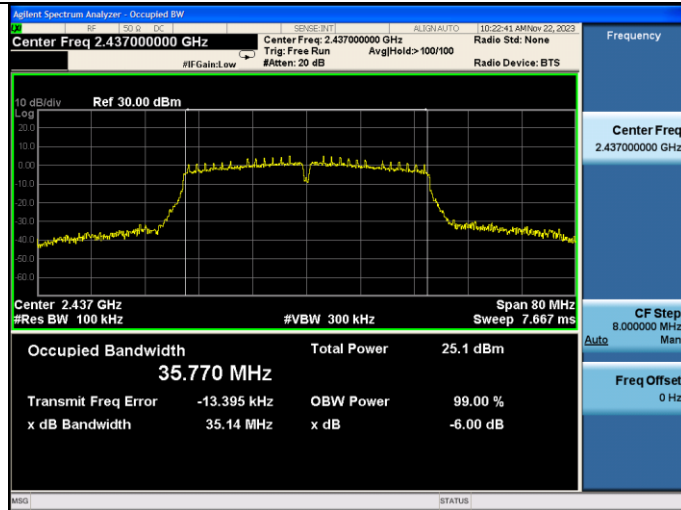


**ANTB:**

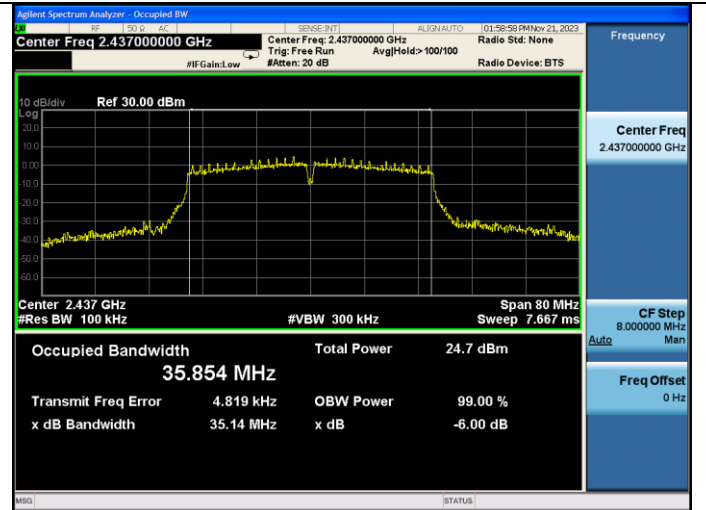
Test Mode: IEEE 802.11n HT40  
Test CH3: 2422MHz



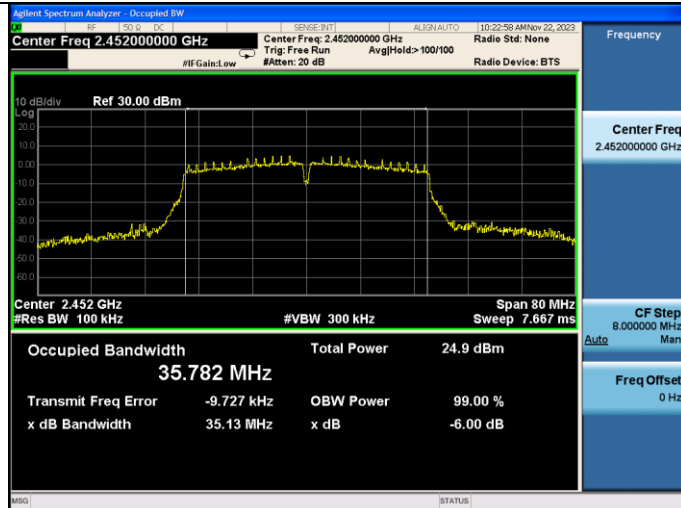
**Test CH6: 2437MHz**



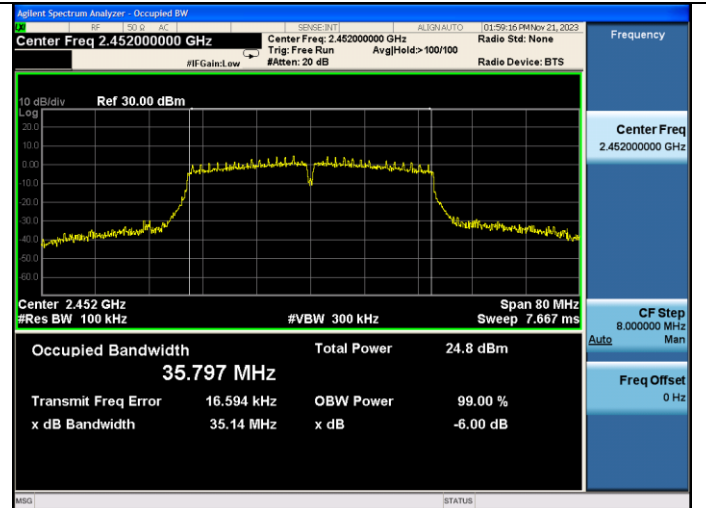
**Test CH6: 2437MHz**



**Test CH9: 2452MHz**



**Test CH9: 2452MHz**



## 8. OUTPUT POWER TEST

### 8.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	PXA Signal Analyzer	Agilent	N9030A	MY51380221	Apr.01,23	1 Year
2.	Power meter	Anritsu	ML2487A	6K00003262	Jun.26,23	1 Year
3.	Power sensor	Anritsu	MA2491A	0332516	Jun.26,23	1 Year
4.	RF Cable	HUBER+SUHNER	SUCOFLE X-106	505238/6	Apr.02,23	1 Year

### 8.2. Limit (FCC Part 15C 15.247 b(3))

For systems using digital modulation in the 2400—2483.5MHz, The Peak output Power shall not exceed 1W(30dBm), 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.

### 8.3. Test Procedure

- 1, Connected the EUT’s antenna port to measure device by 10dB attenuator.
- 2, Use the test method descried in ANSI C63.10-2013 clause 11.9.2.2.2 Method AVGSA-1.
  - 1) Set span to at least 1.5 times the OBW.
  - 2) Set RBW = 1% to 5% of the OBW, not to exceed 1 MHz.
  - 3) Set VBW  $\geq [3 \times \text{RBW}]$ .
  - 4) Number of points in sweep  $\geq [2 \times \text{span} / \text{RBW}]$ . (This gives bin-to-bin spacing  $\leq \text{RBW} / 2$ , so that narrowband signals are not lost between frequency bins.)
  - 5) Sweep time = auto.
  - 6) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
  - 7) If transmit duty cycle  $< 98\%$ , use a sweep trigger with the level set to enable triggering only on full power pulses. The transmitter shall operate at the maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no OFF intervals) or at duty cycle  $\geq 98\%$ , and if each transmission is entirely at the maximum power control level, then the trigger shall be set to “free run.”
  - 8) Trace average at least 100 traces in power averaging (rms) mode.
  - 9) Compute power by integrating the spectrum across the OBW of the signal using the instrument’s band power measurement function, with band limits set equal to the OBW band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

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

**8.4. Test Results**

EUT: Wi-Fi Module		
M/N: U9W44		
Test date: 2023-11-13~14	Pressure: 103.3±1.0 kpa	Humidity: 51.5±3.0%
Tested by: lili	Test site: RF site	Temperature: 22.5±0.6 °C

**SISO:**

Test Mode	CH	Power Set	Duty factor (dB)		Output Power(dBm)		Limit (dBm)
			ANT0	ANT1	ANT0	ANT1	
11b	CH1	23	0.00	0.00	16.04	14.74	30
	CH6	23	0.00	0.00	15.86	15.29	
	CH11	23	0.00	0.00	15.82	15.30	
11g	CH1	23	0.09	0.12	19.05	18.05	30
	CH6	23	0.09	0.12	18.79	18.26	
	CH11	23	0.09	0.12	18.75	18.41	
11n HT20	CH1	23	0.10	0.09	18.14	16.96	30
	CH6	23	0.10	0.09	17.73	17.17	
	CH11	23	0.10	0.09	17.63	17.34	
11n HT40	CH3	23	0.21	0.19	18.10	17.01	30
	CH6	23	0.21	0.19	17.81	17.18	
	CH9	23	0.21	0.19	17.75	17.32	

Conclusion: PASS

**MIMO:**

Test Mode	CH	Power Set	Duty factor (dB)		Output Power (dBm)		Total (dBm)	Limit (dBm)
			ANT0	ANT1	ANTA	ANTB		
11b	CH1	23	0.00	0.00	16.01	14.84	18.48	30
	CH6	23	0.00	0.00	15.73	15.19	18.48	
	CH11	23	0.00	0.00	15.67	15.25	18.48	
11g	CH1	23	0.10	0.09	19.01	18.12	21.60	30
	CH6	23	0.10	0.09	18.52	18.05	21.30	
	CH11	23	0.10	0.09	18.63	18.40	21.53	
11n HT20	CH1	23	0.11	0.09	17.93	17.02	20.51	30
	CH6	23	0.11	0.09	17.54	17.07	20.32	
	CH11	23	0.11	0.09	17.56	17.36	20.47	
11n HT40	CH3	23	0.23	0.23	18.01	17.10	20.59	30
	CH6	23	0.23	0.23	17.59	17.20	20.41	
	CH9	23	0.23	0.23	17.66	17.22	20.46	

Conclusion: PASS

 Note: 1. Directional Gain=  $10 \log[(10^{-3.77/20} + 10^{-1.15/20})^2 / 2]$  dB = 0.6487 dB < 6 dB.

 Directional Gain=  $10 \log[(10^{-3.77/10} + 10^{-1.15/10}) / 2]$  dB = -2.2653 dB < 6 dB.

2. U9W44 supports and operates in both correlated MIMO signals and uncorrelated MIMO signals.

**SISO:**

**ANTA:**

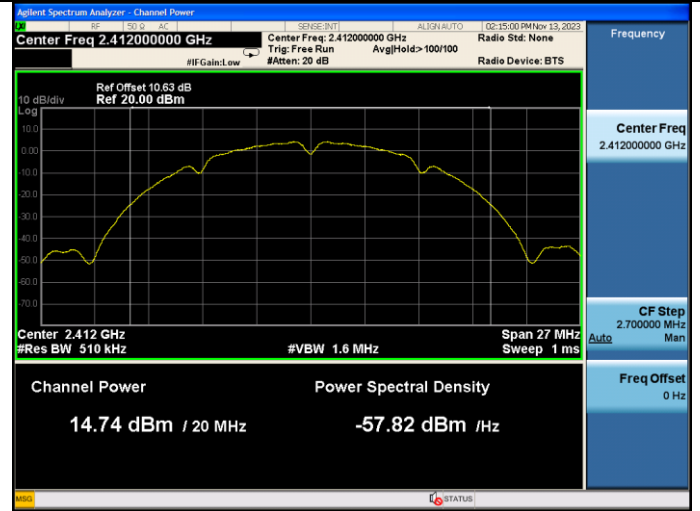
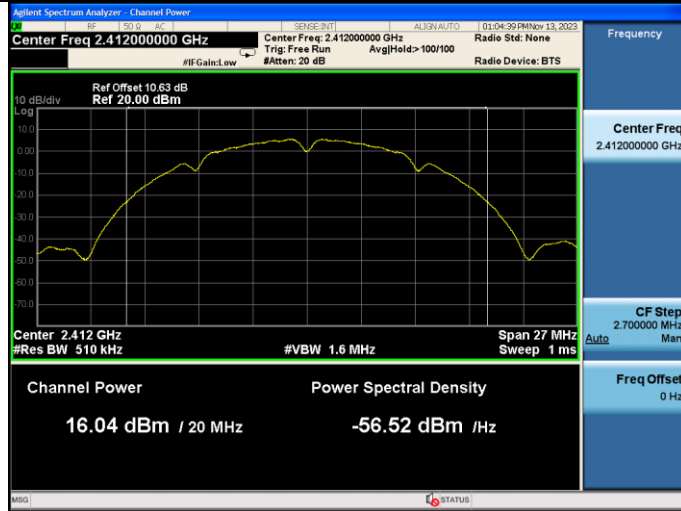
Test Mode: IEEE 802.11b

Test CH1: 2412MHz

**ANTB:**

Test Mode: IEEE 802.11b

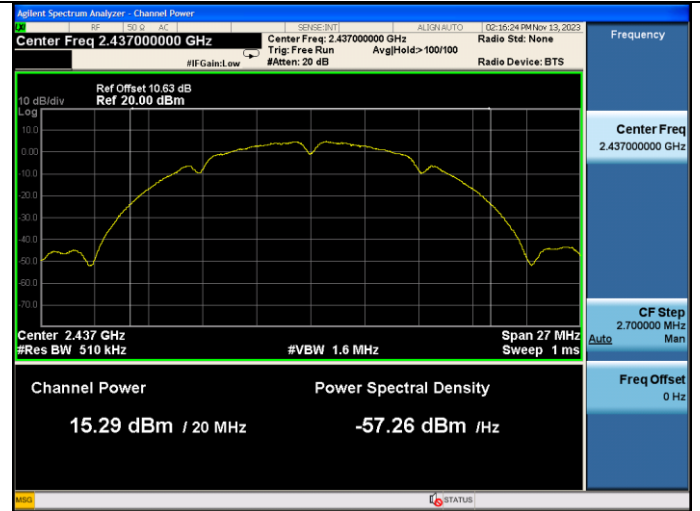
Test CH1: 2412MHz



**Test CH6: 2437MHz**



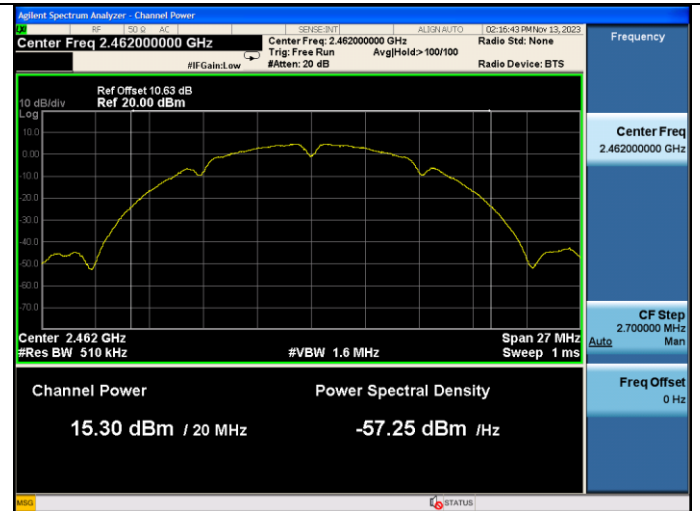
**Test CH6: 2437MHz**



**Test CH11: 2462MHz**

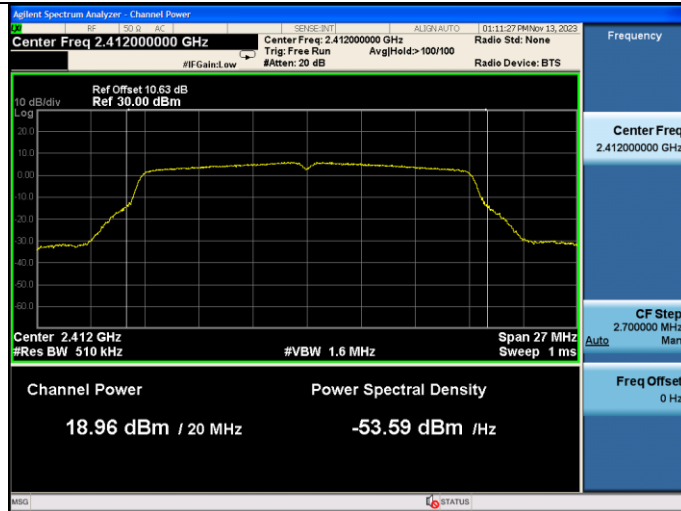


**Test CH11: 2462MHz**



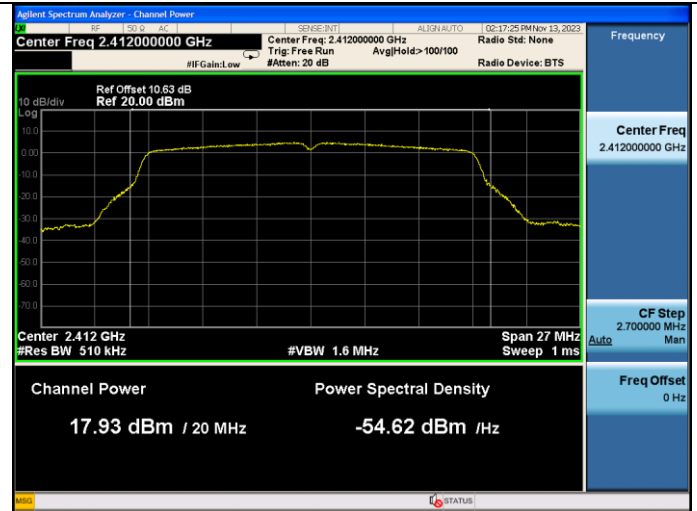
**ANTA:**

Test Mode: IEEE 802.11g  
Test CH1: 2412MHz

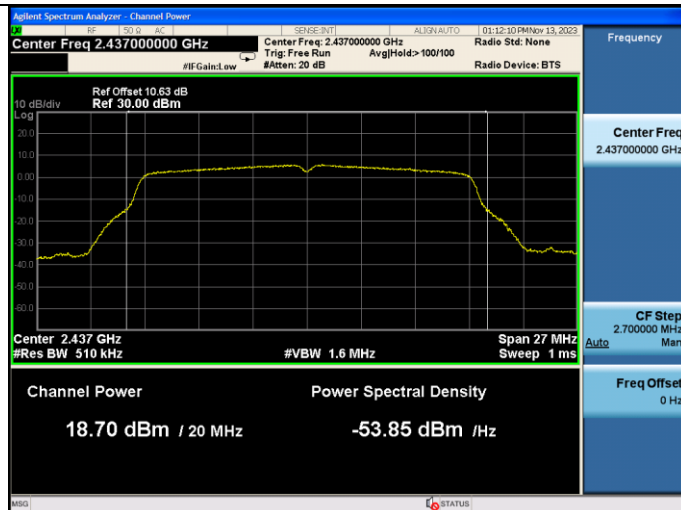


**ANTB:**

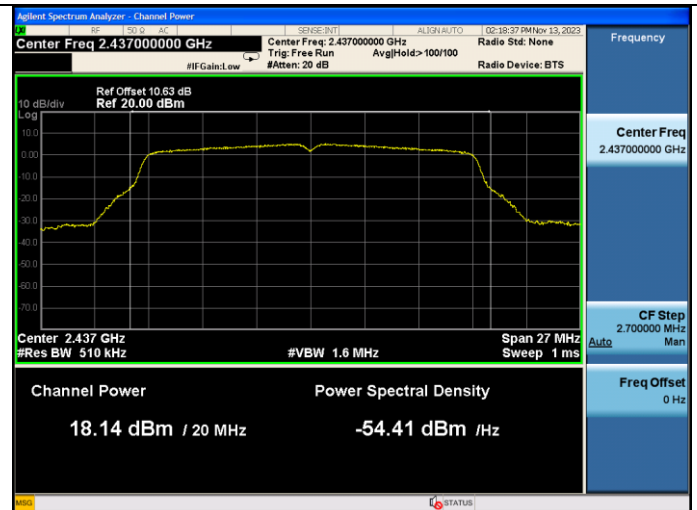
Test Mode: IEEE 802.11g  
Test CH1: 2412MHz



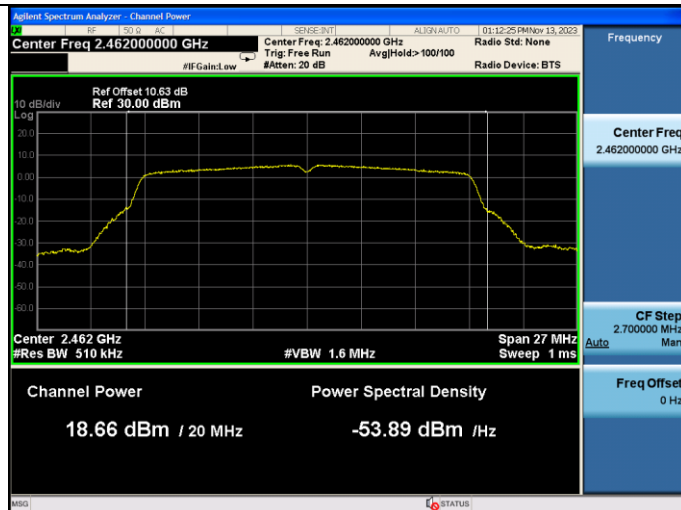
**Test CH6: 2437MHz**



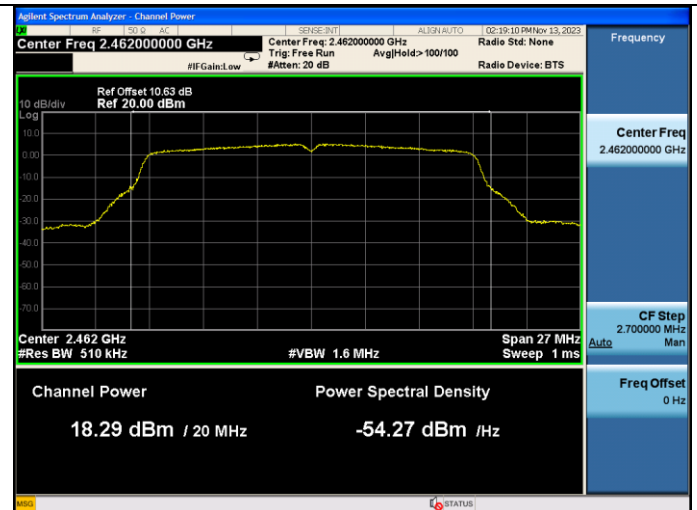
**Test CH6: 2437MHz**



**Test CH11: 2462MHz**



**Test CH11: 2462MHz**



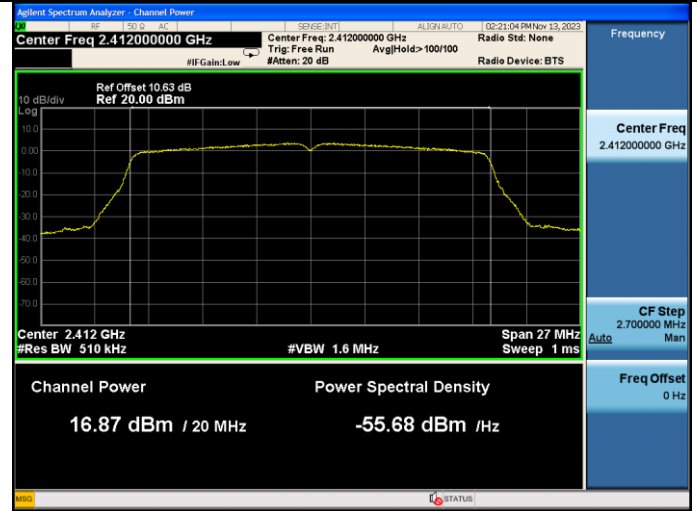
**ANTA:**

Test Mode: IEEE 802.11n HT20  
Test CH1: 2412MHz

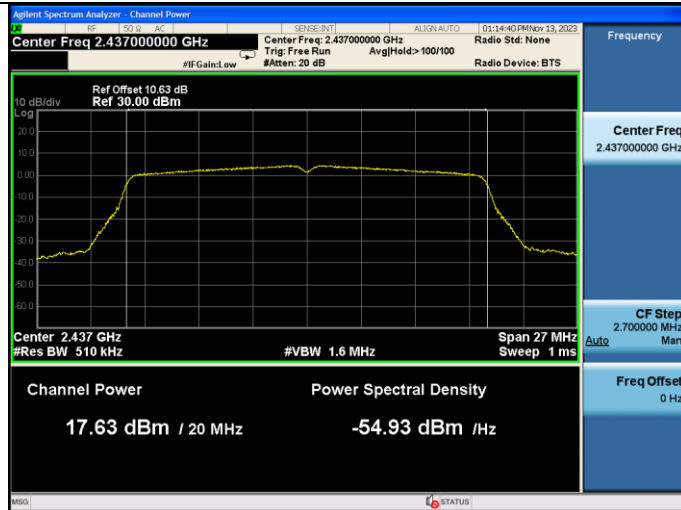


**ANTB:**

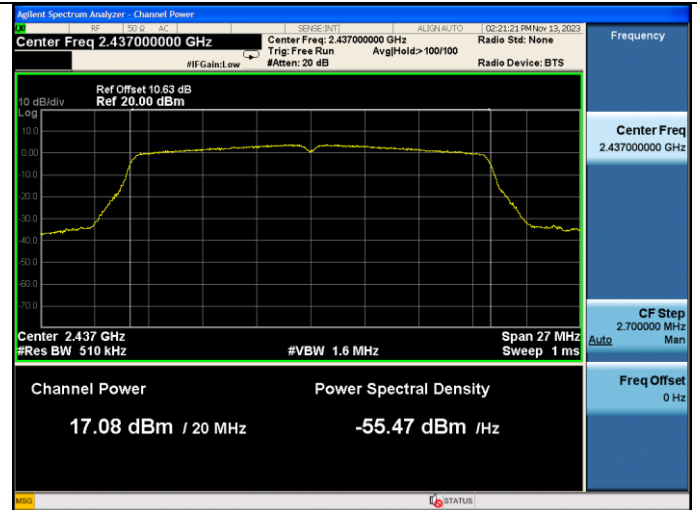
Test Mode: IEEE 802.11n HT20  
Test CH1: 2412MHz



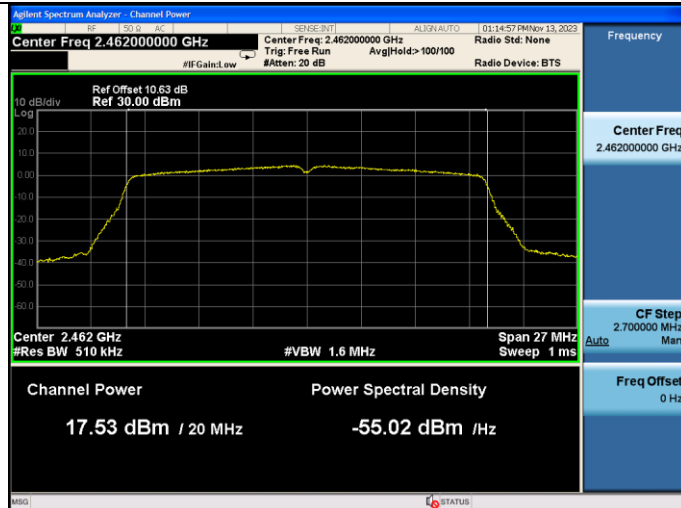
**Test CH6: 2437MHz**



**Test CH6: 2437MHz**



**Test CH11: 2462MHz**

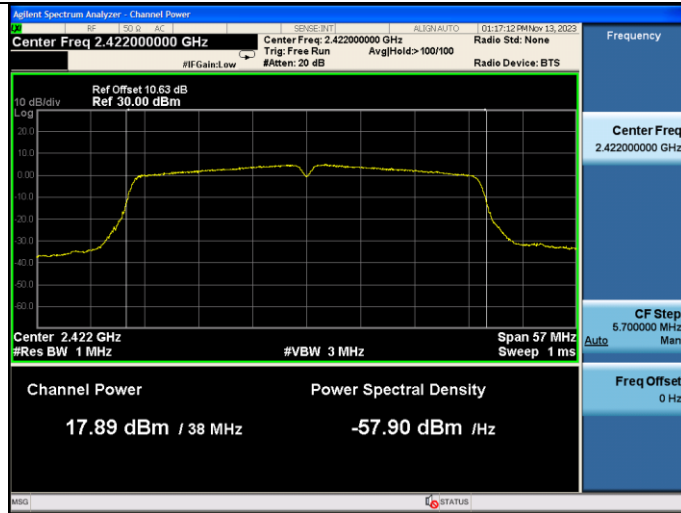


**Test CH11: 2462MHz**



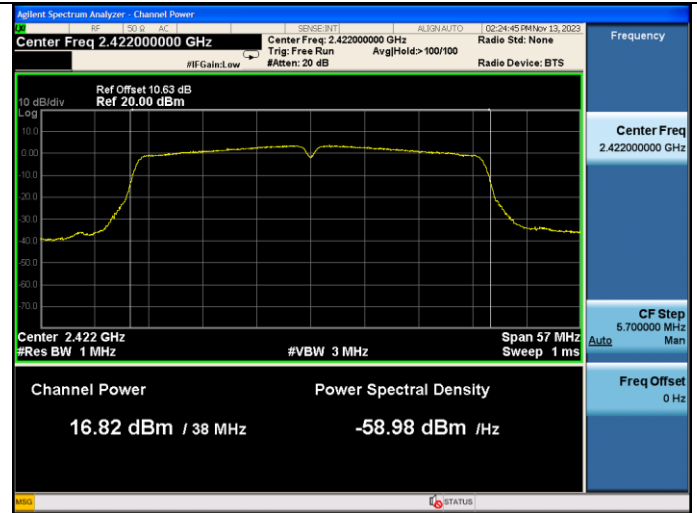
**ANTA:**

Test Mode: IEEE 802.11n HT40  
Test CH3: 2422MHz

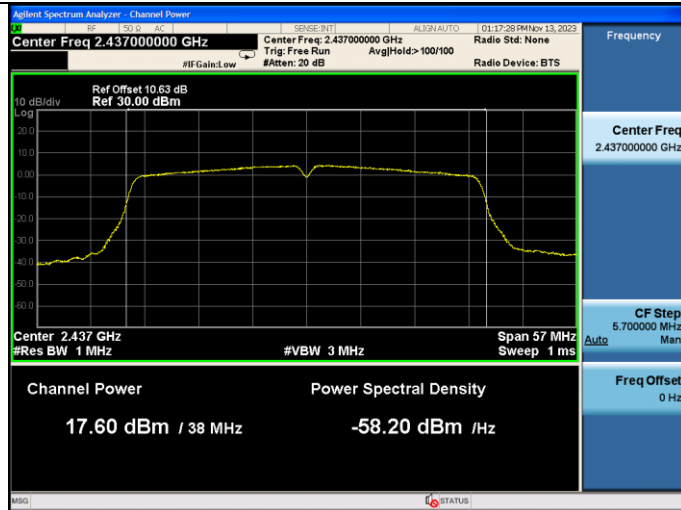


**ANTB:**

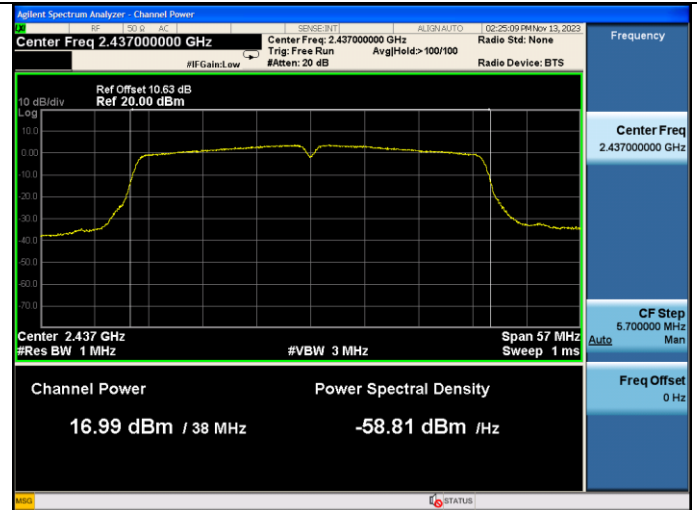
Test Mode: IEEE 802.11n HT40  
Test CH3: 2422MHz



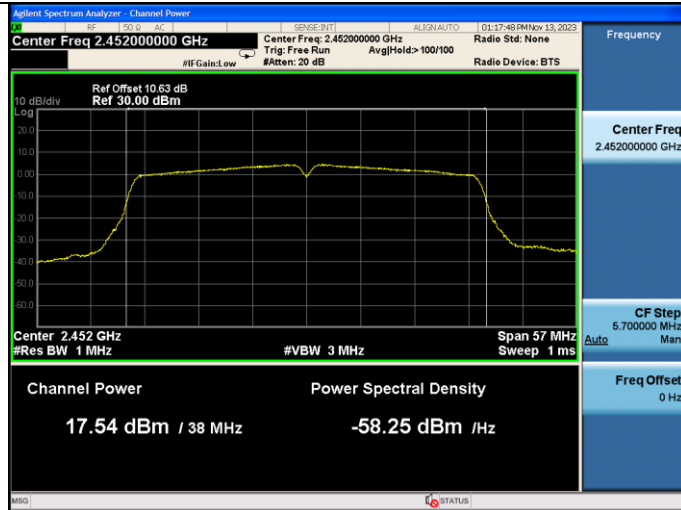
**Test CH6: 2437MHz**



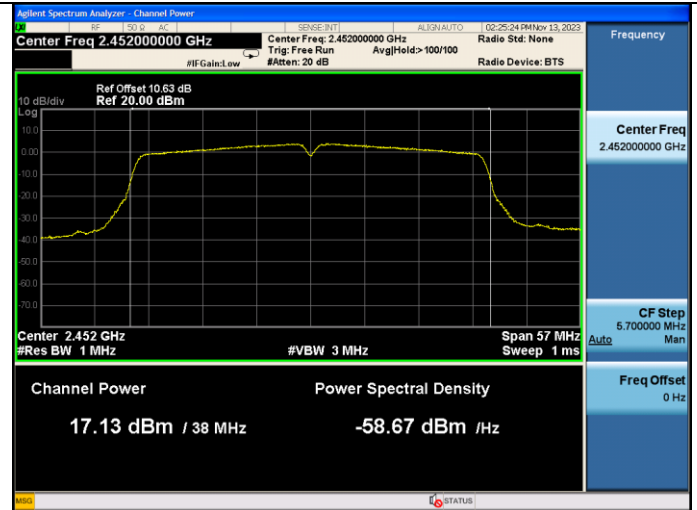
**Test CH6: 2437MHz**



**Test CH9: 2452MHz**



**Test CH9: 2452MHz**



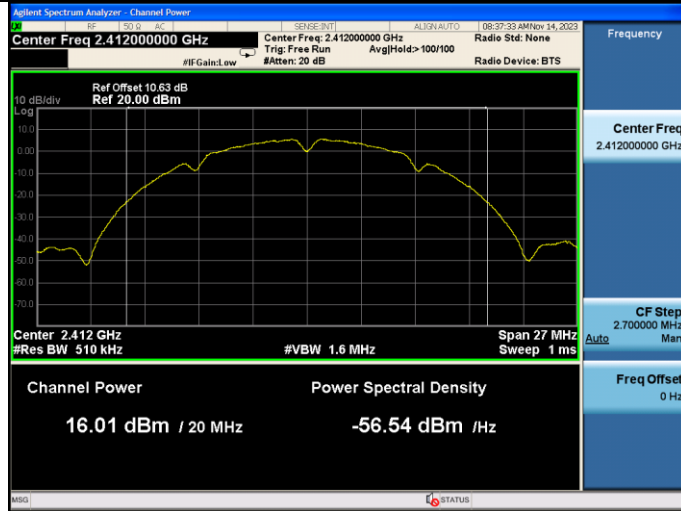


**MIMO:**

**ANTA:**

Test Mode: IEEE 802.11b

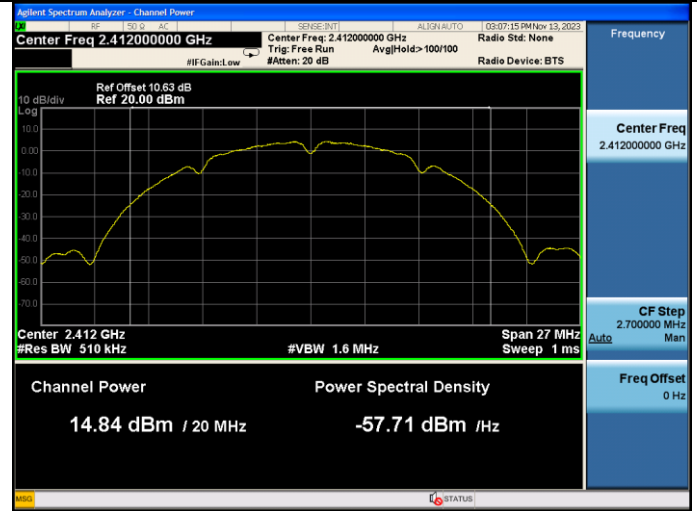
Test CH1: 2412MHz



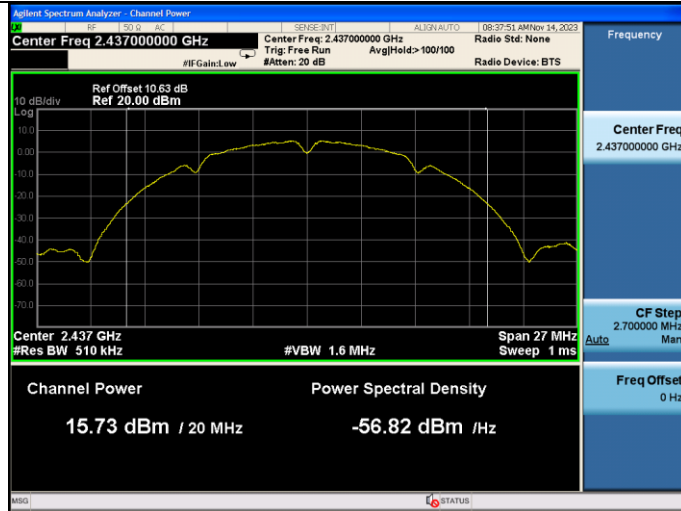
**ANTB:**

Test Mode: IEEE 802.11b

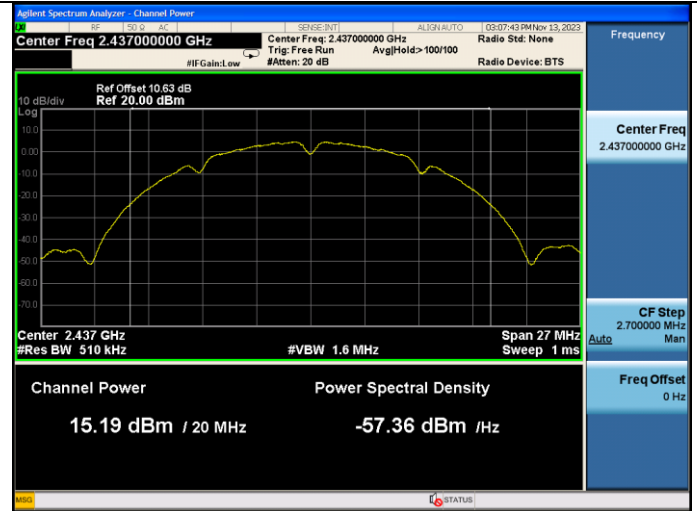
Test CH1: 2412MHz



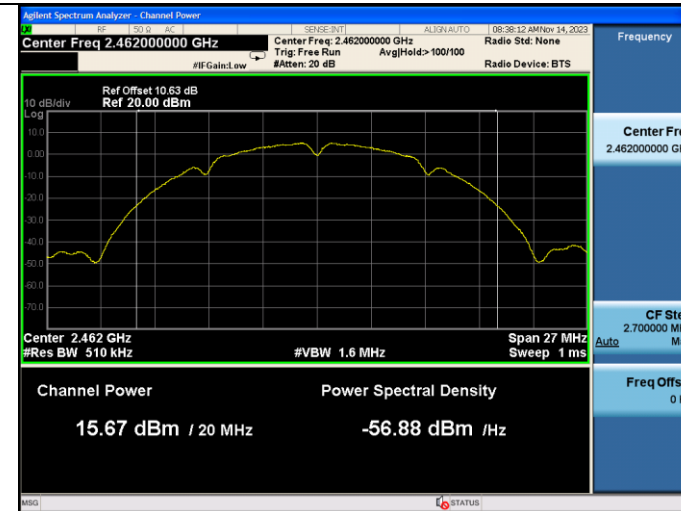
**Test CH6: 2437MHz**



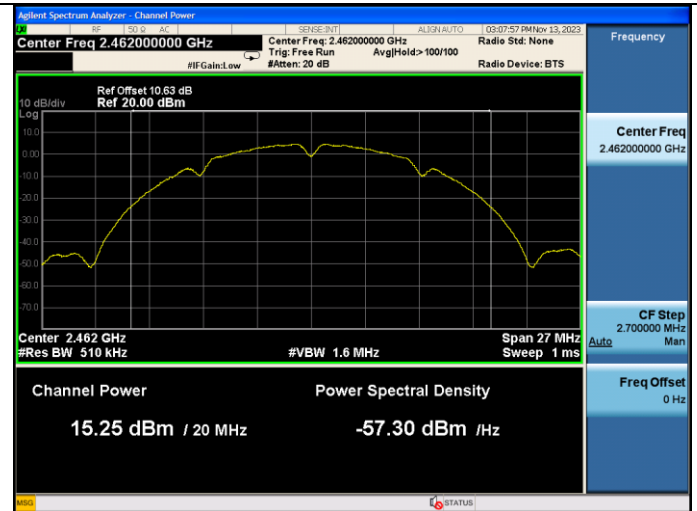
**Test CH6: 2437MHz**



**Test CH11: 2462MHz**

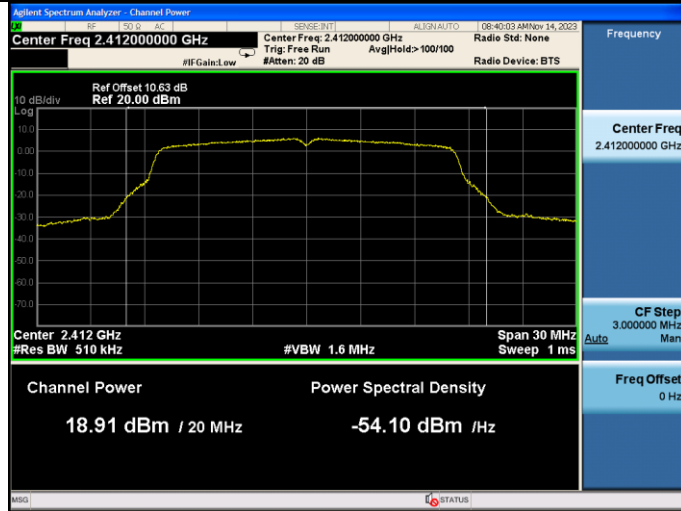


**Test CH11: 2462MHz**



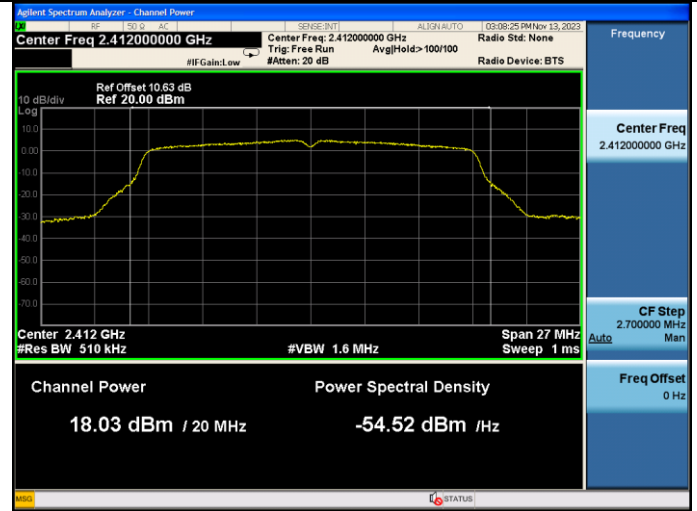
ANTA:

Test Mode: IEEE 802.11g  
Test CH1: 2412MHz

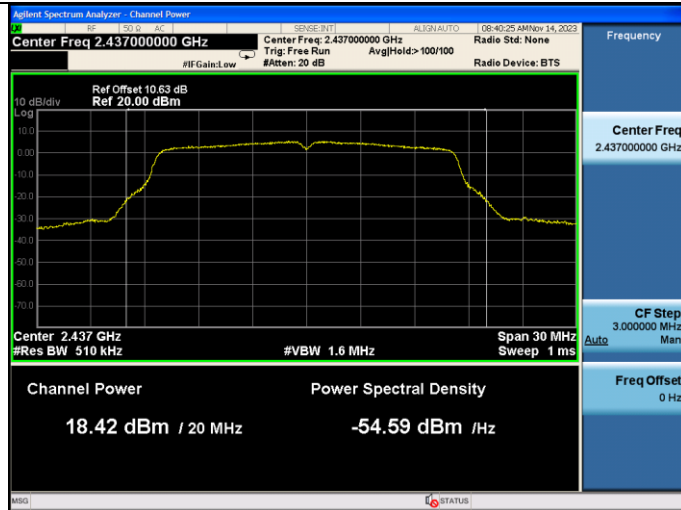


ANTB:

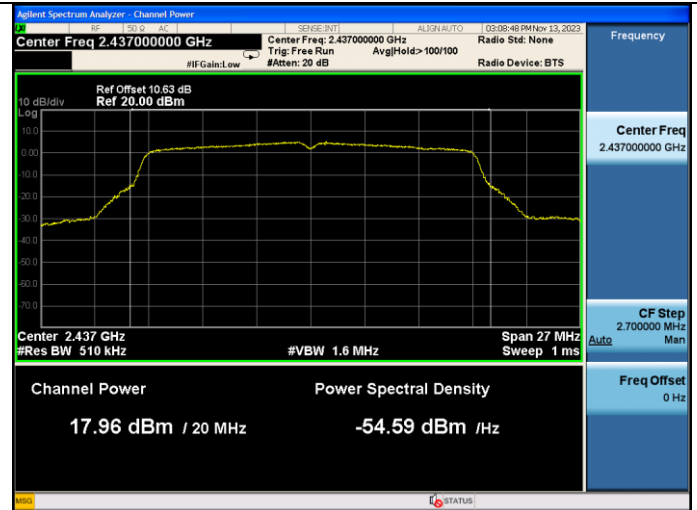
Test Mode: IEEE 802.11g  
Test CH1: 2412MHz



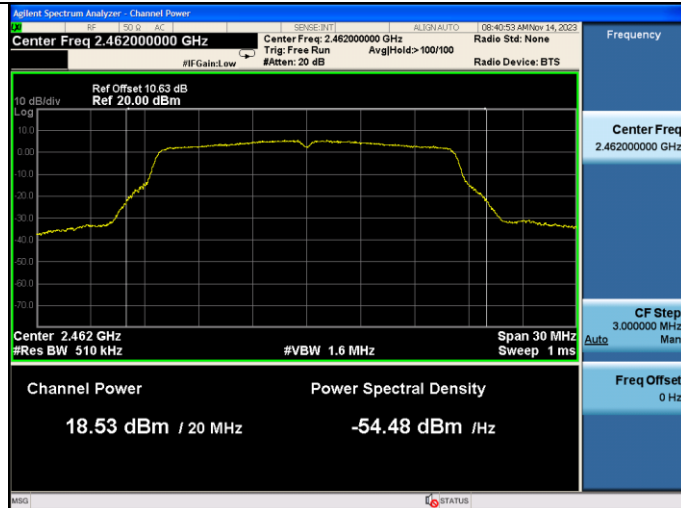
Test CH6: 2437MHz



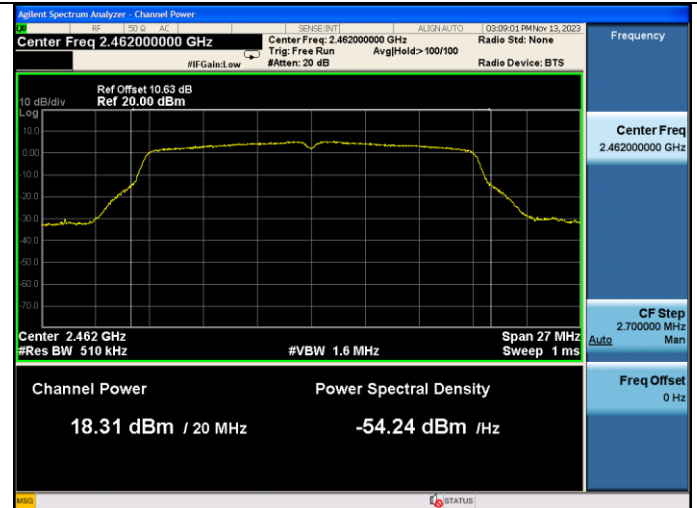
Test CH6: 2437MHz



Test CH11: 2462MHz

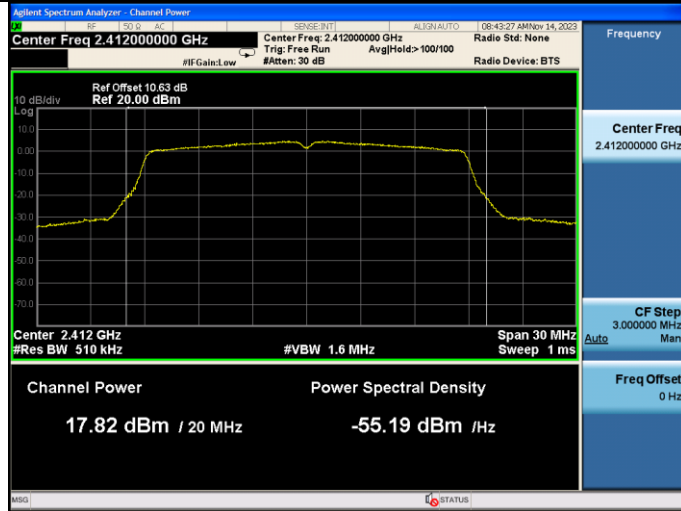


Test CH11: 2462MHz



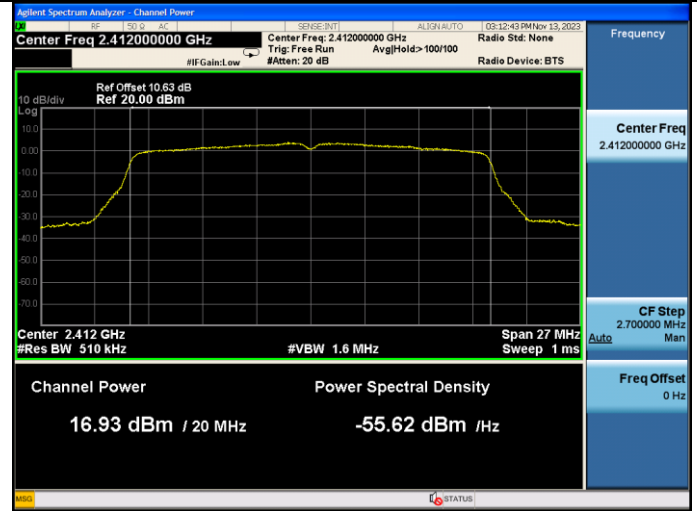
**ANTA:**

Test Mode: IEEE 802.11n HT20  
Test CH1: 2412MHz

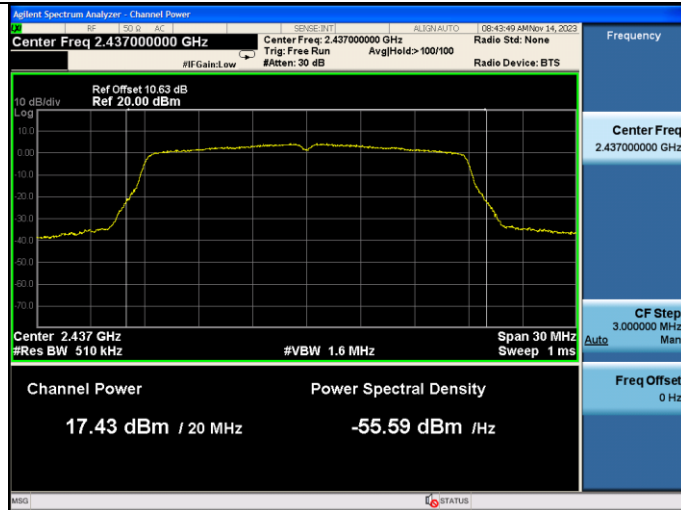


**ANTB:**

Test Mode: IEEE 802.11n HT20  
Test CH1: 2412MHz



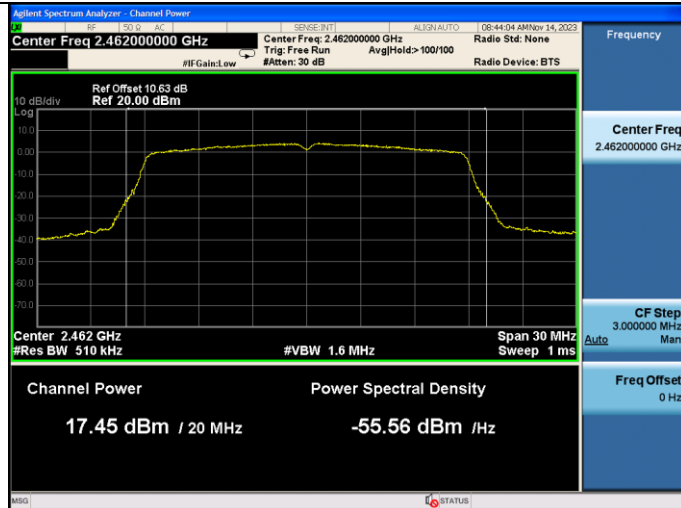
**Test CH6: 2437MHz**



**Test CH6: 2437MHz**



**Test CH11: 2462MHz**



**Test CH11: 2462MHz**

