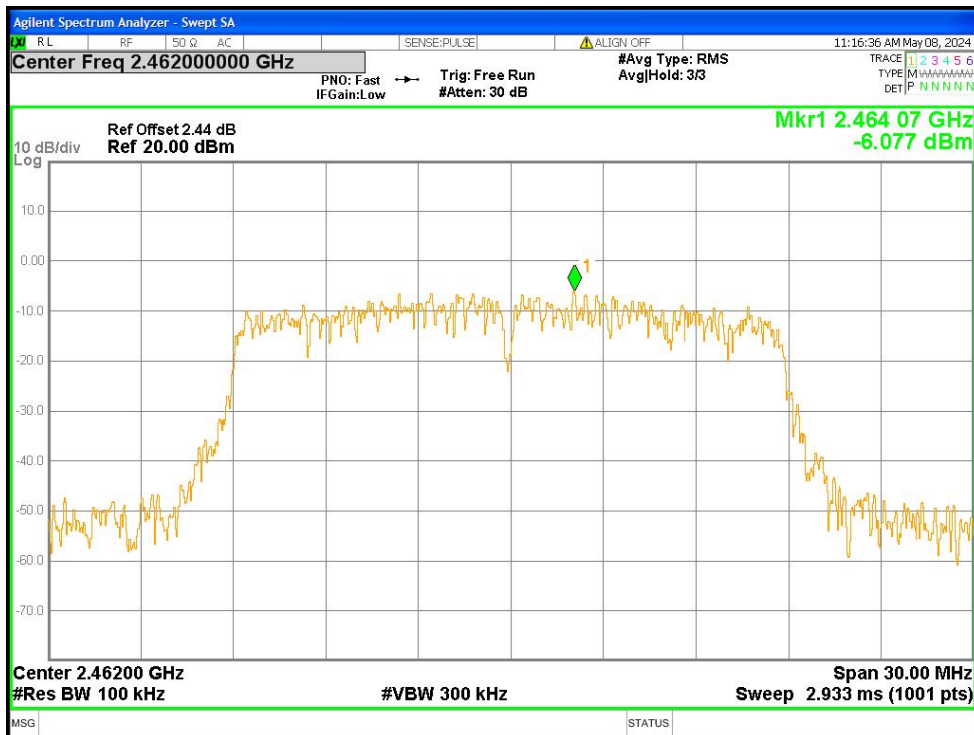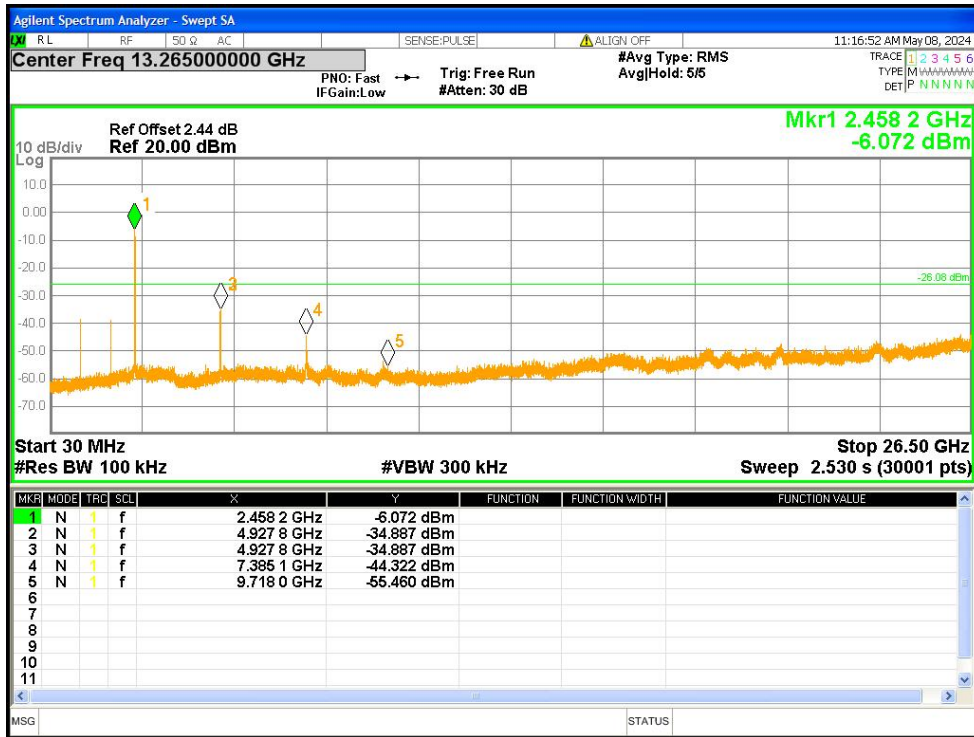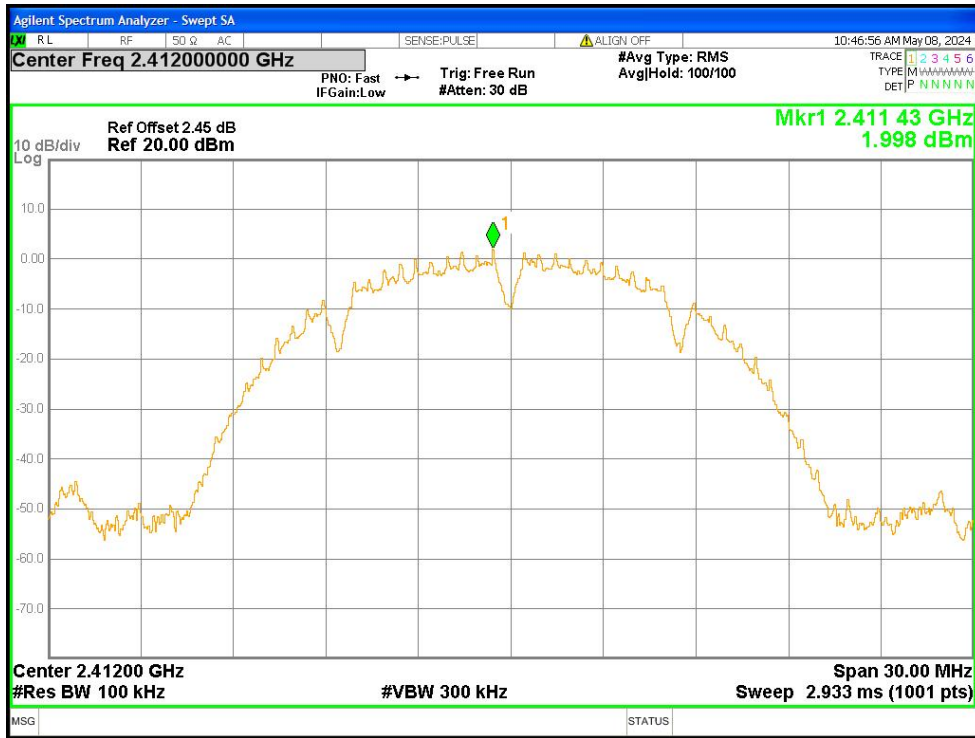Tx. Spurious NVNT n20 2437MHz Ant1 Emission
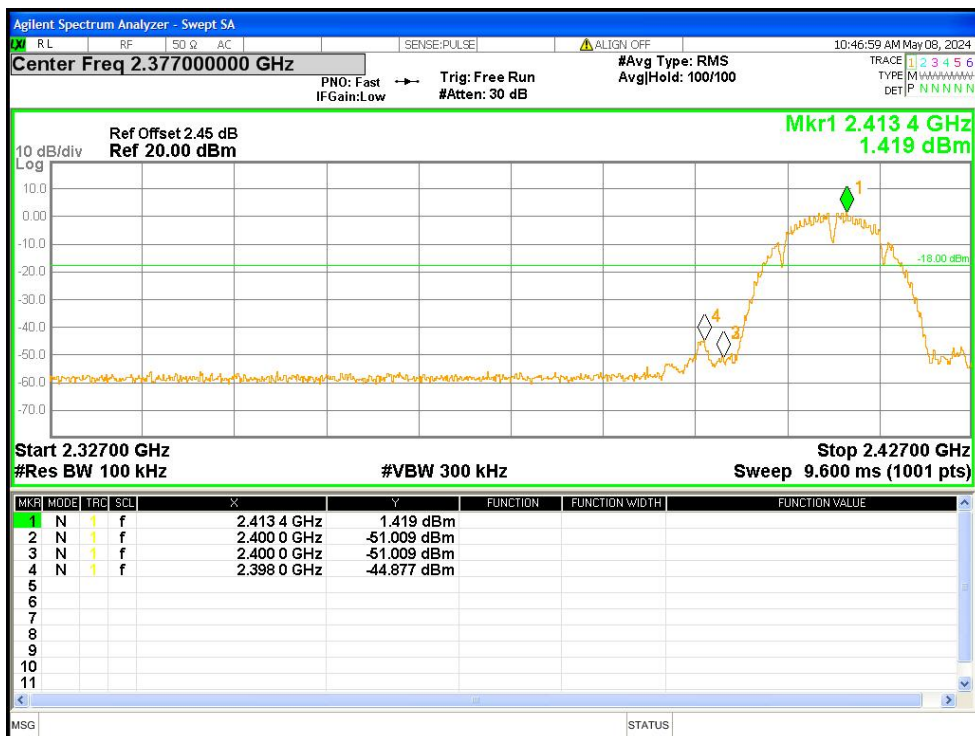

Tx. Spurious NVNT n20 2462MHz Ant1 Ref

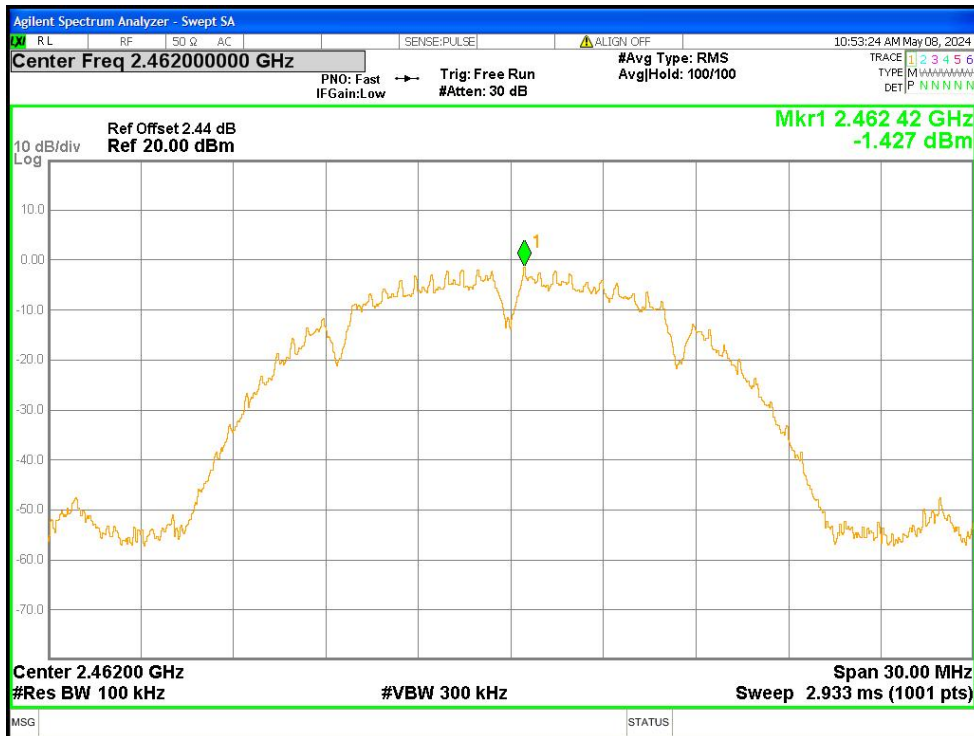Tx. Spurious NVNT n20 2462MHz Ant1 Emission

Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
b	2412	Ant1	-46.87	-20	Pass
b	2462	Ant1	-53.32	-20	Pass
g	2412	Ant1	-41.69	-20	Pass
g	2462	Ant1	-50.98	-20	Pass
n20	2412	Ant1	-38.98	-20	Pass
n20	2462	Ant1	-48.75	-20	Pass

Band Edge NVNT b 2412MHz Ant1 Ref

Band Edge NVNT b 2412MHz Ant1 Emission

Band Edge NVNT b 2462MHz Ant1 Ref
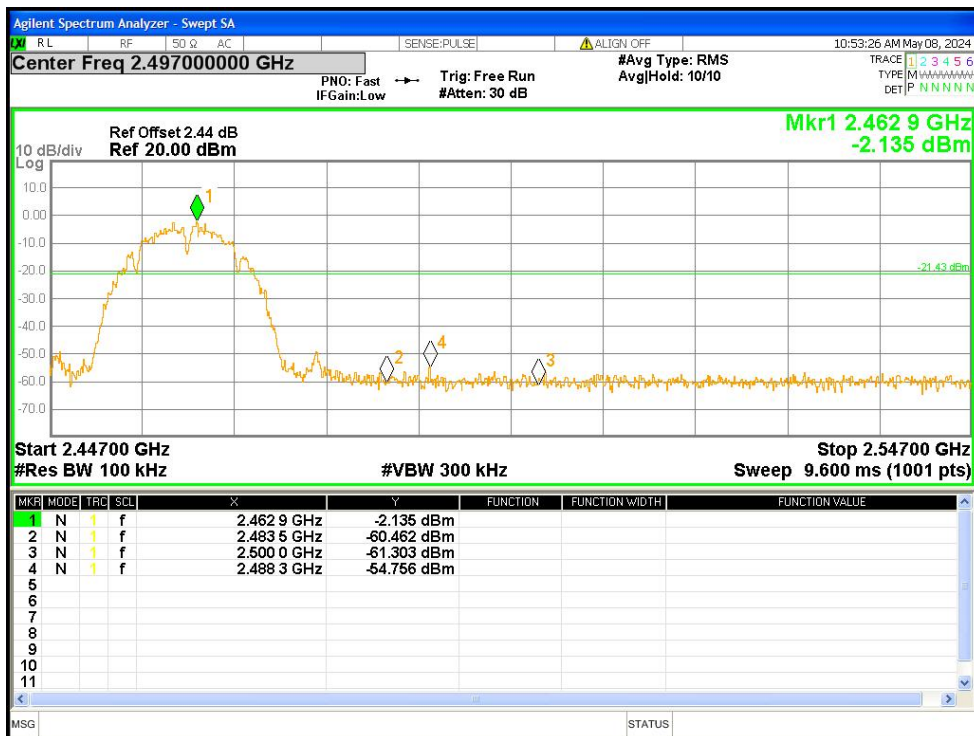

Band Edge NVNT b 2462MHz Ant1 Emission

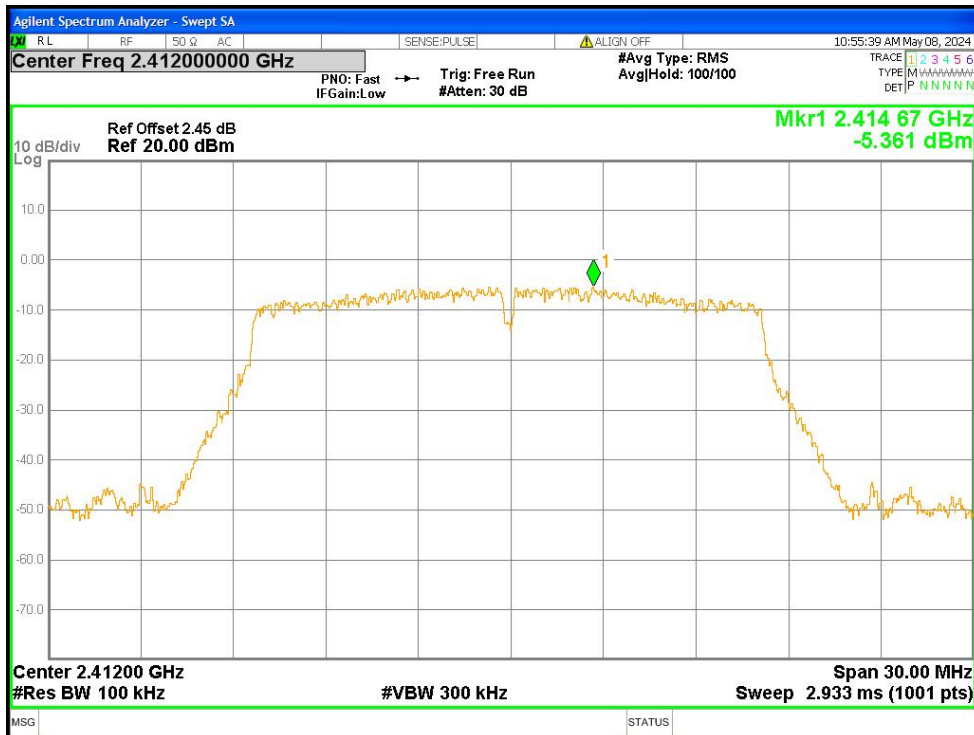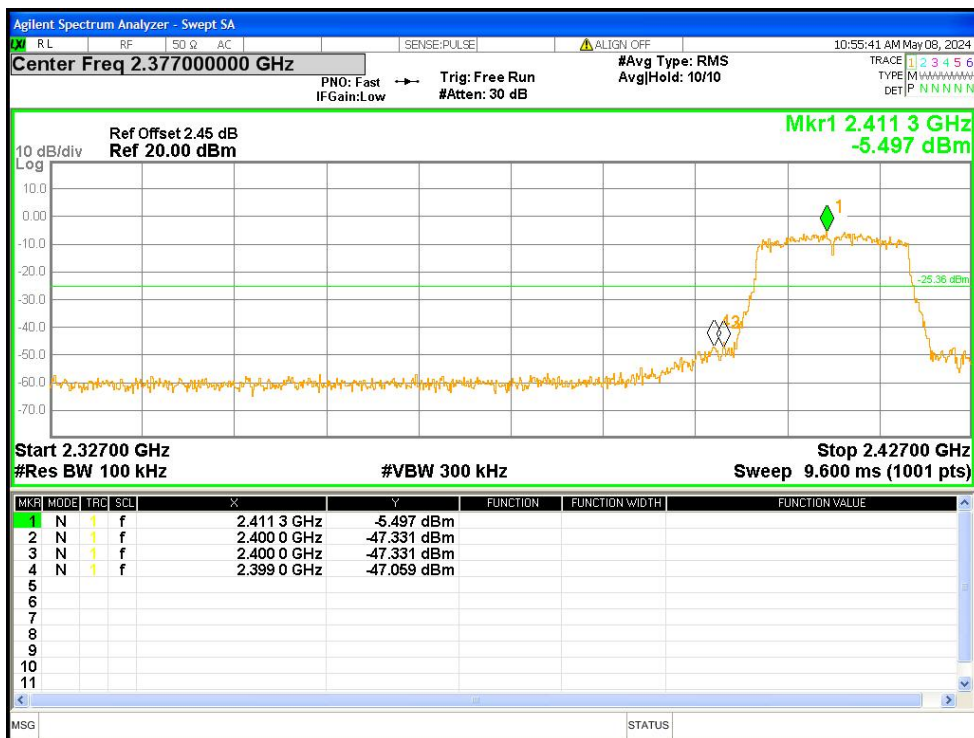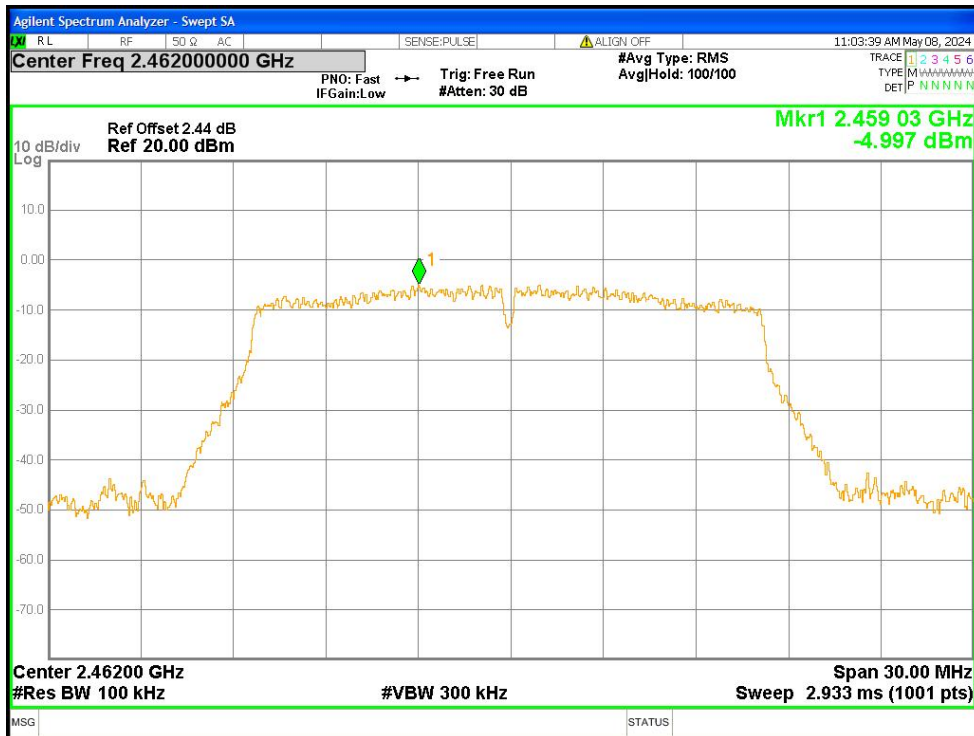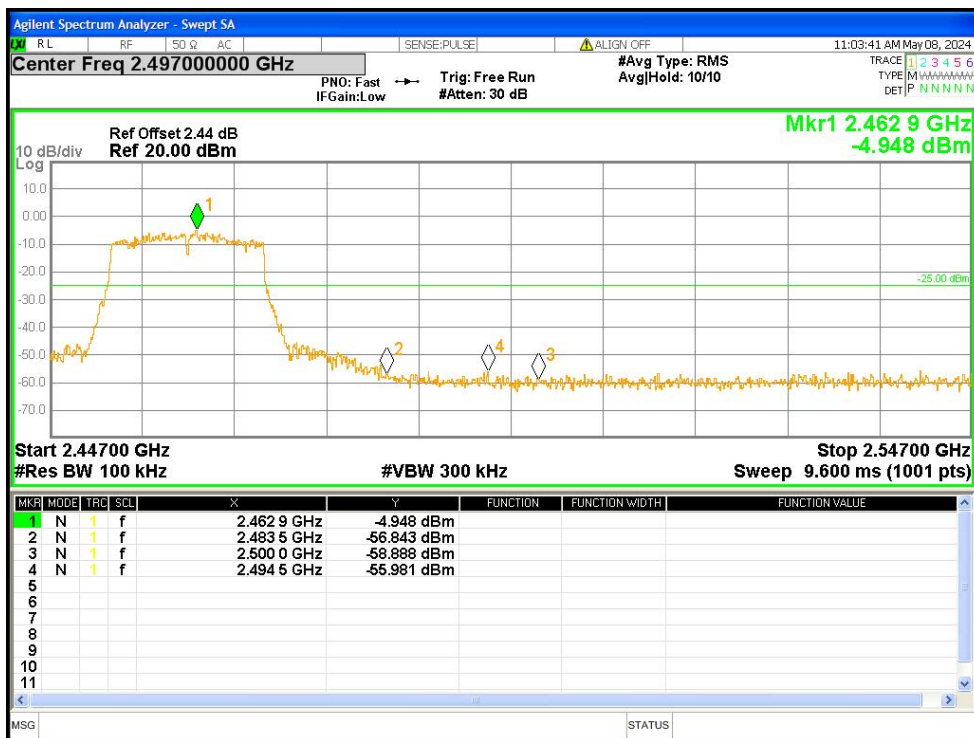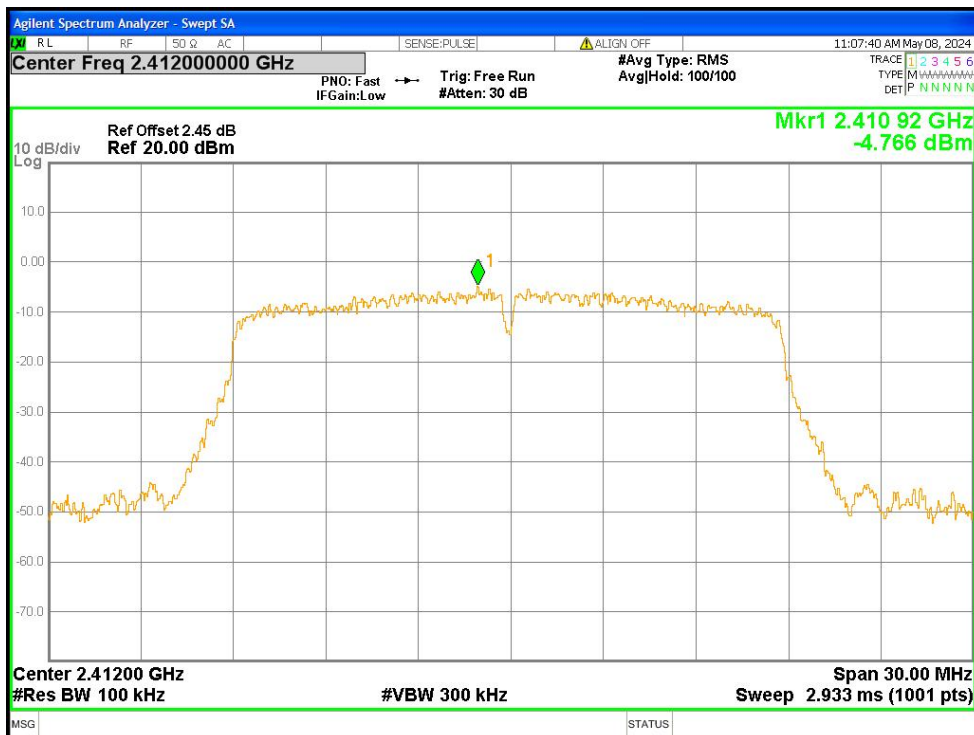Band Edge NVNT g 2412MHz Ant1 Ref

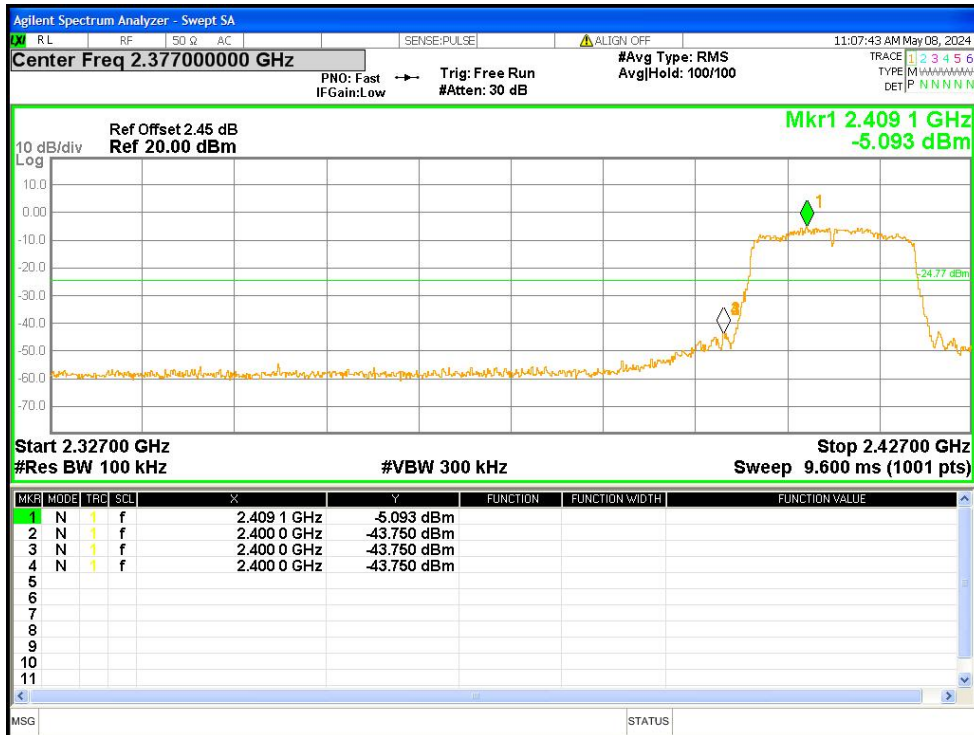

Band Edge NVNT g 2412MHz Ant1 Emission
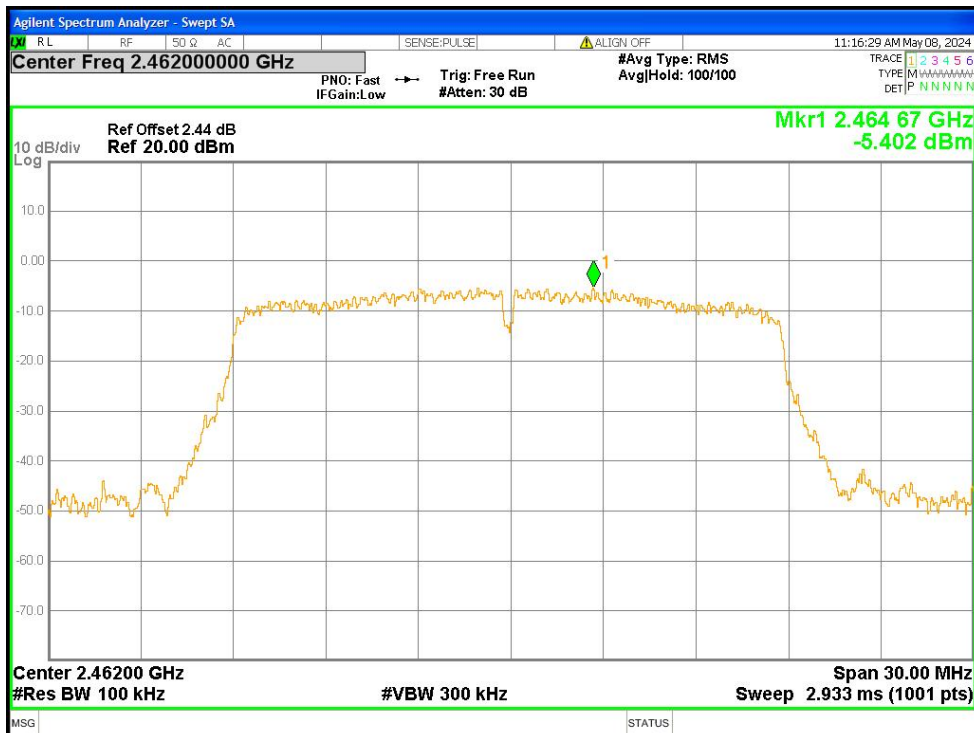
Band Edge NVNT g 2462MHz Ant1 Ref

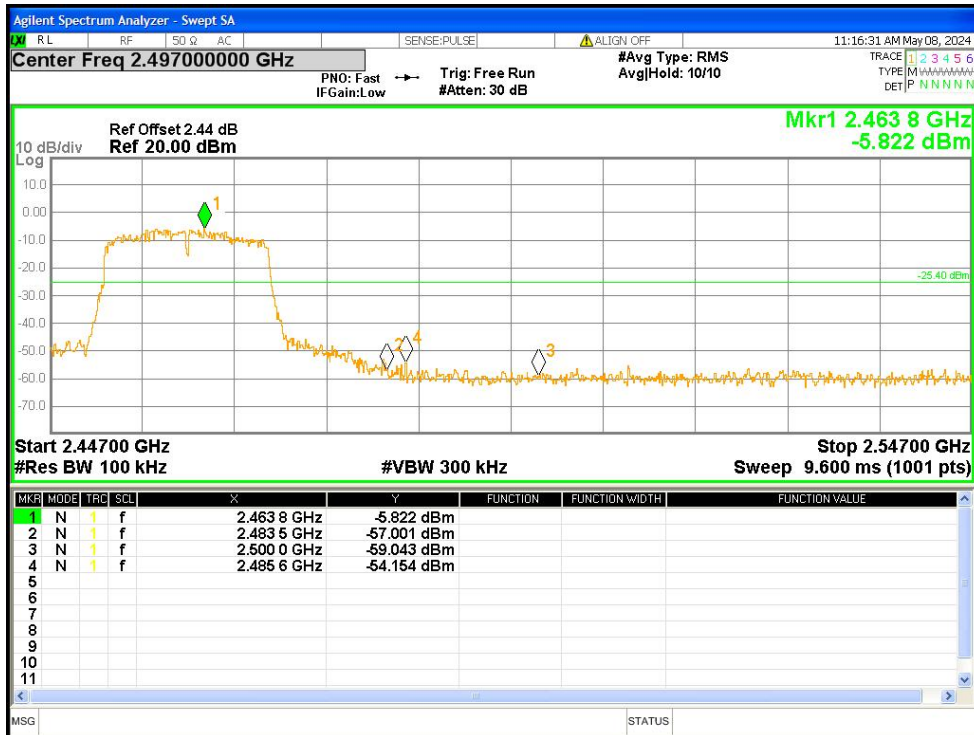Band Edge NVNT g 2462MHz Ant1 Emission

Band Edge NVNT n20 2412MHz Ant1 Ref

Band Edge NVNT n20 2412MHz Ant1 Emission

Band Edge NVNT n20 2462MHz Ant1 Ref

Band Edge NVNT n20 2462MHz Ant1 Emission

10. CHANNEL BANDWIDTH

Test Requirement:	RSS-Gen 6.7
Test Method:	RSS-Gen

10.1 CONFORMANCE LIMIT

No limit requirement.

10.2 TEST PROCEDURE

The EUT was operating in Bluetooth transmitter mode and controlled its channel. Printed out the test result from the spectrum by hard copy function.

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

Set to the maximum power setting and enable the EUT transmit continuously

Set RBW = 1-5% of 99% occupied bandwidth.

Set the video bandwidth (VBW) ≥3*RBW.

Set Span= approximately 2 to 3 times OBW

Set Detector = Peak.

Set Trace mode = max hold.

Set Sweep = auto couple.

If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies. Measure and record the results in the test report.

10.3 DEVIATION FROM STANDARD

No deviation.

10.4 TEST SETUP

10.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

10.6 TEST RESULTS

Mode	Channel Frequency (MHz)	99% Occupied Bandwidth (MHz)	Verdict
b	2412	13.320	PASS
b	2437	13.338	PASS
b	2462	13.350	PASS
g	2412	16.312	PASS
g	2437	16.323	PASS
g	2462	16.334	PASS
n20	2412	17.310	PASS
n20	2437	17.320	PASS
n20	2462	17.314	PASS
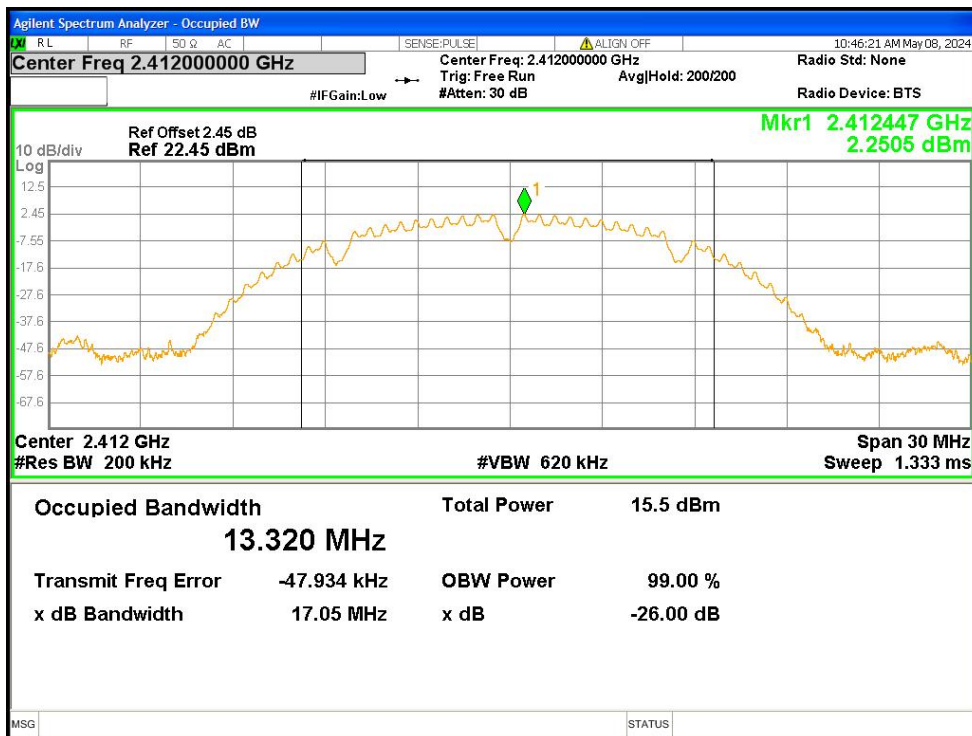
OBW NVNT b 2412MHz Ant1
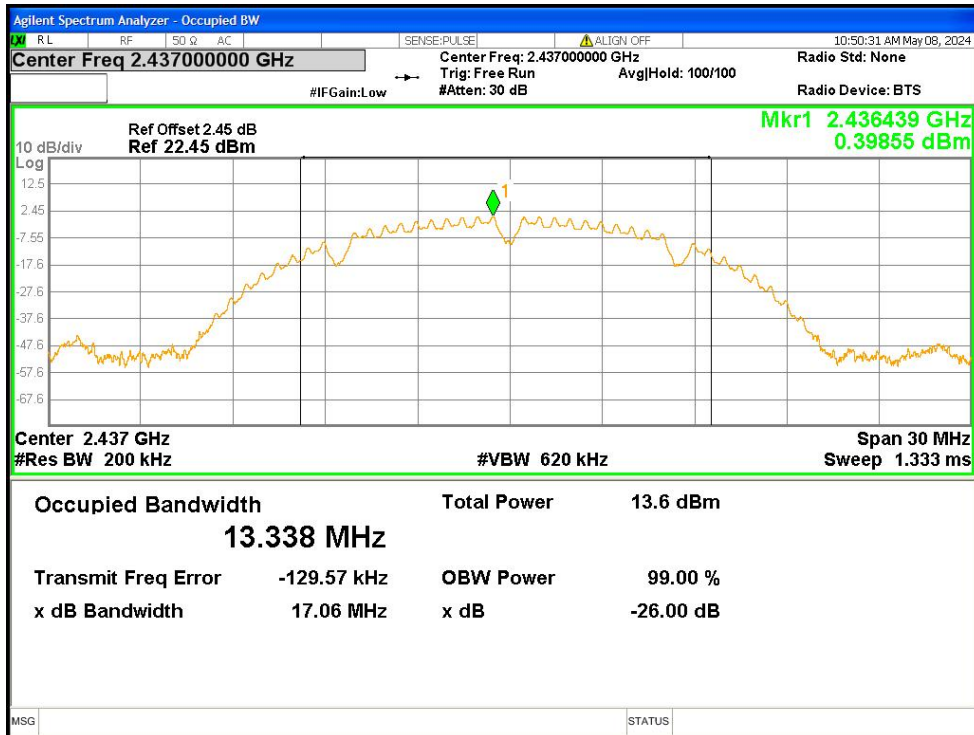
OBW NVNT b 2437MHz Ant1
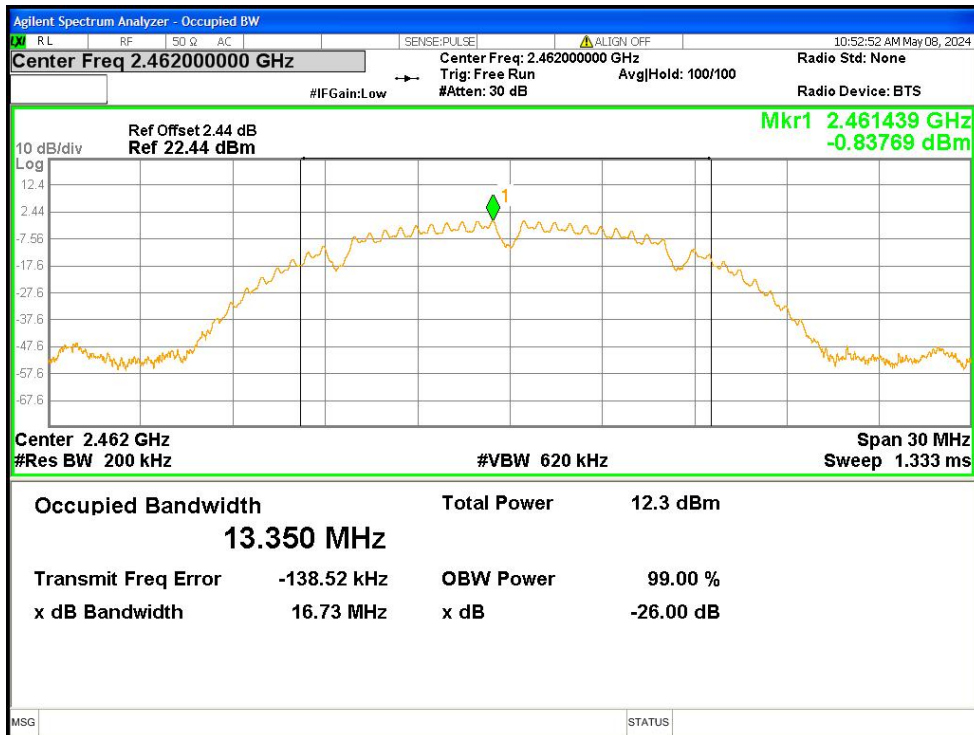
OBW NVNT b 2462MHz Ant1
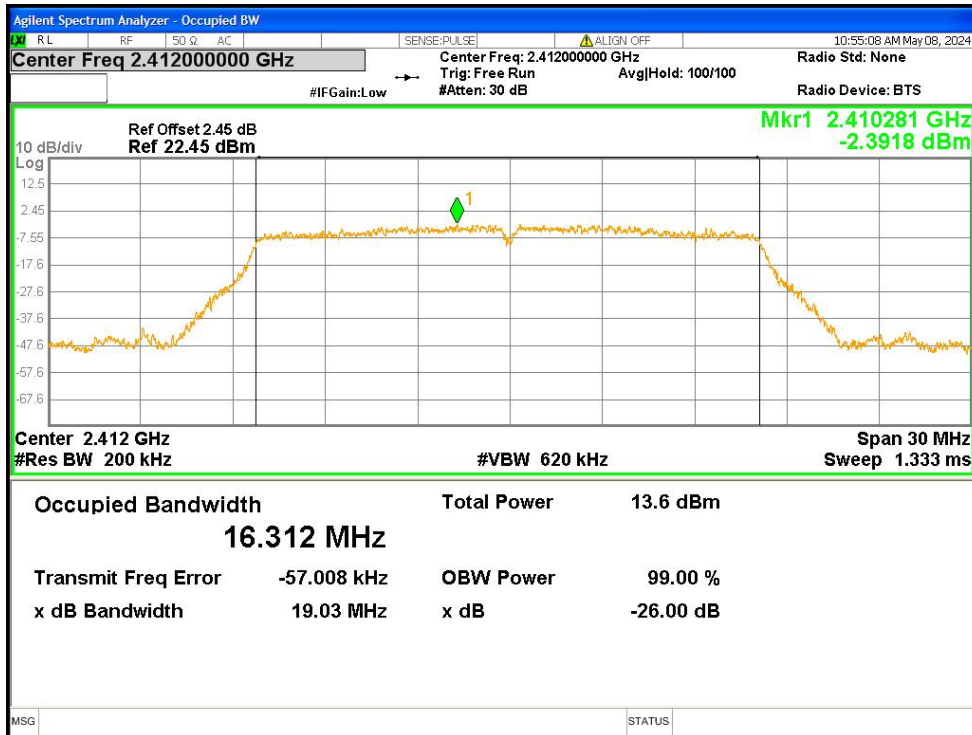
OBW NVNT g 2412MHz Ant1

OBW NVNT g 2437MHz Ant1

OBW NVNT g 2462MHz Ant1

OBW NVNT n20 2412MHz Ant1

Agilent Spectrum Analyzer - Occupied BW

R L   RF   50 Ω   AC   SENSE:PULSE   ALIGN OFF   11:10:59 AM May 08, 2024

Center Freq 2.437000000 GHz

Center Freq: 2.437000000 GHz   Radio Std: None
Trig: Free Run   Avg|Hold: 100/100
#IFGain:Low   #Atten: 30 dB   Radio Device: BTS

Ref Offset 2.45 dB
10 dB/div   Ref 22.45 dBm

Mkr1 2.434237 GHz
-2.3143 dBm

Log
12.5
2.45
-7.55
-17.6
-27.6
-37.6
-47.6
-57.6
-67.6

Center 2.437 GHz   Span 30 MHz
#Res BW 200 kHz   #VBW 620 kHz   Sweep 1.333 ms

Occupied Bandwidth		Total Power	12.7 dBm
17.320 MHz			
Transmit Freq Error	-85.182 kHz	OBW Power	99.00 %
x dB Bandwidth	19.21 MHz	x dB	-26.00 dB

MSG   STATUS

OBW NVNT n20 2437MHz Ant1

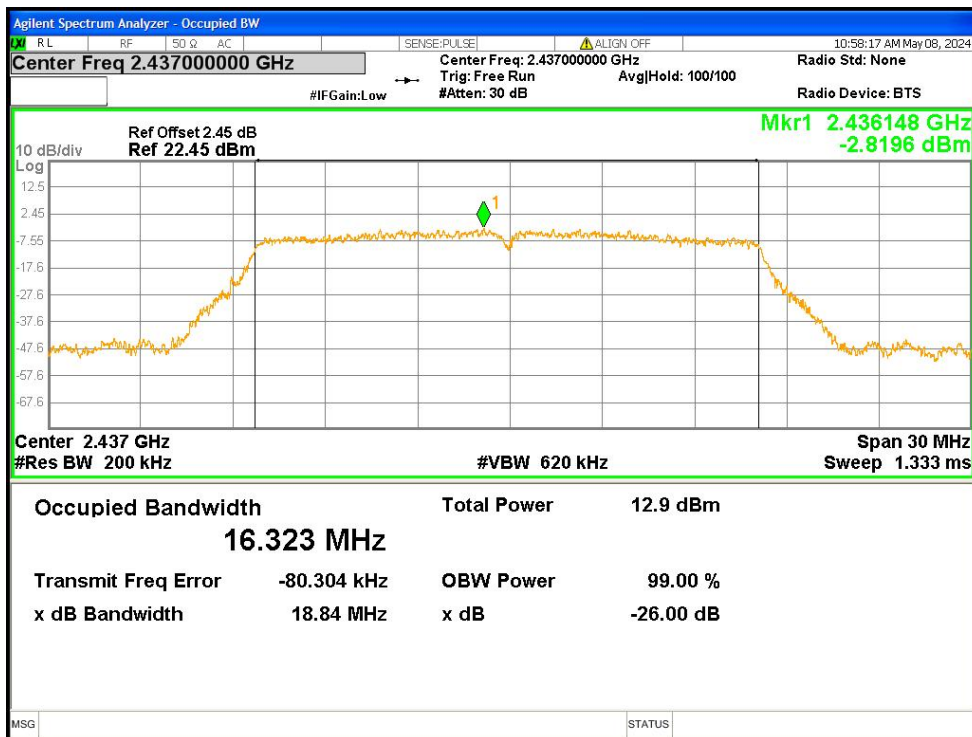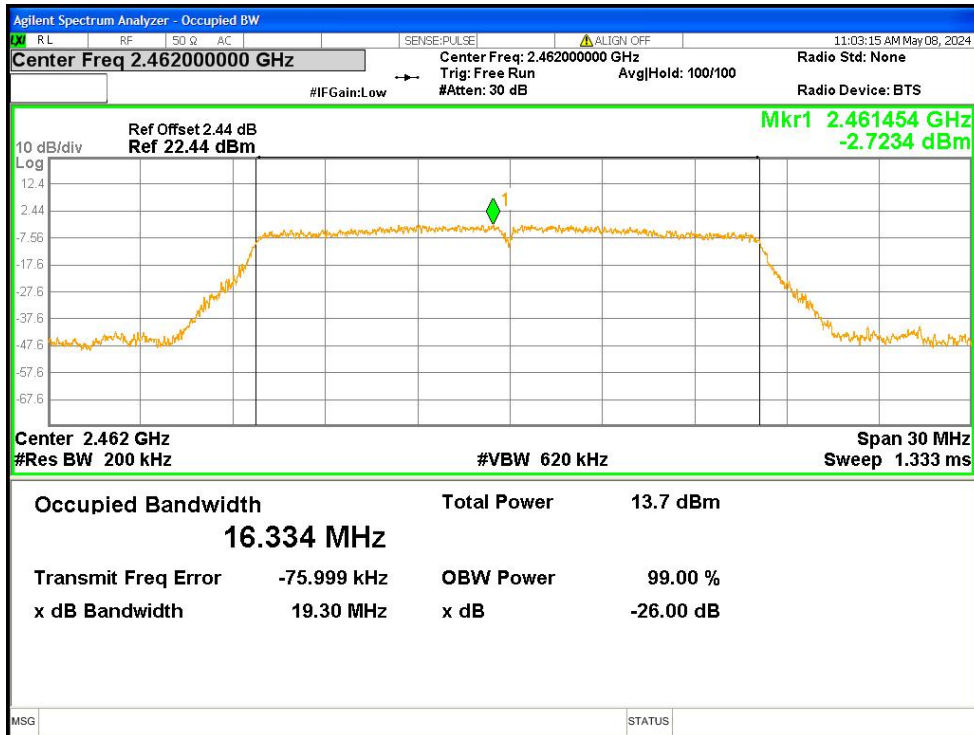Agilent Spectrum Analyzer - Occupied BW

R L   RF   50 Ω   AC   SENSE:PULSE   ALIGN OFF   11:15:43 AM May 08, 2024

Center Freq 2.462000000 GHz

Center Freq: 2.462000000 GHz   Radio Std: None
Trig: Free Run   Avg|Hold: 100/100
#IFGain:Low   #Atten: 30 dB   Radio Device: BTS

Ref Offset 2.44 dB
10 dB/div   Ref 22.44 dBm

Mkr1 2.458619 GHz
-2.3490 dBm

Log
12.4
2.44
-7.56
-17.6
-27.6
-37.6
-47.6
-57.6
-67.6

Center 2.462 GHz   Span 30 MHz
#Res BW 200 kHz   #VBW 620 kHz   Sweep 1.333 ms

Occupied Bandwidth		Total Power	13.6 dBm
17.314 MHz			
Transmit Freq Error	-76.236 kHz	OBW Power	99.00 %
x dB Bandwidth	19.24 MHz	x dB	-26.00 dB

MSG   STATUS

OBW NVNT n20 2462MHz Ant1

11. ANTENNA REQUIREMENT

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
	RSS-Gen Section 6.8, RSS-247 Section 5.4

15.203 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, 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.

15.247(c) (1)(i) requirement:

(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

For intentional device, according to RSS-Gen Issue 5 Section 6.8:

The applicant for equipment certification, as per RSP-100, must provide a list of all antenna types that may be used with the licence-exempt transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna.

Licence-exempt transmitters that have received equipment certification may operate with different types of antennas. However, it is not permissible to exceed the maximum equivalent isotropically radiated power (e.i.r.p.) limits specified in the applicable standard (RSS) for licence-exempt apparatus.

RSS-247 Section 5.4

(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

EUT Antenna:
The WIFI 2.4G antenna is PCB Antenna, the best case gain for the antenna is -0.51dBi, reference to the appendix II for details

12. TEST SETUP PHOTO

Reference to the appendix I for details.

13. EUT CONSTRUCTIONAL DETAILS

Reference to the appendix II for details.

※※※※※ END OF REPORT ※※※※※