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FCC ID WIFI2.4
FCC_2.4G_WIFI (Part15.247) Test Data

1. -6dB Bandwidth

Condition	Antenna	Modulation	Frequency (MHz)	-6dB BW(MHz)	limit(kHz)	Result
NVNT	ANT1	802.11b	2412.00	8.58	500	Pass
NVNT	ANT1	802.11b	2437.00	8.57	500	Pass
NVNT	ANT1	802.11b	2462.00	9.05	500	Pass
NVNT	ANT1	802.11g	2412.00	15.79	500	Pass
NVNT	ANT1	802.11g	2437.00	16.32	500	Pass
NVNT	ANT1	802.11g	2462.00	16.14	500	Pass
NVNT	ANT1	802.11n(HT20)	2412.00	16.87	500	Pass
NVNT	ANT1	802.11n(HT20)	2437.00	17.00	500	Pass
NVNT	ANT1	802.11n(HT20)	2462.00	17.03	500	Pass
NVNT	ANT1	802.11n(HT40)	2422.00	36.02	500	Pass
NVNT	ANT1	802.11n(HT40)	2437.00	35.52	500	Pass
NVNT	ANT1	802.11n(HT40)	2452.00	35.40	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

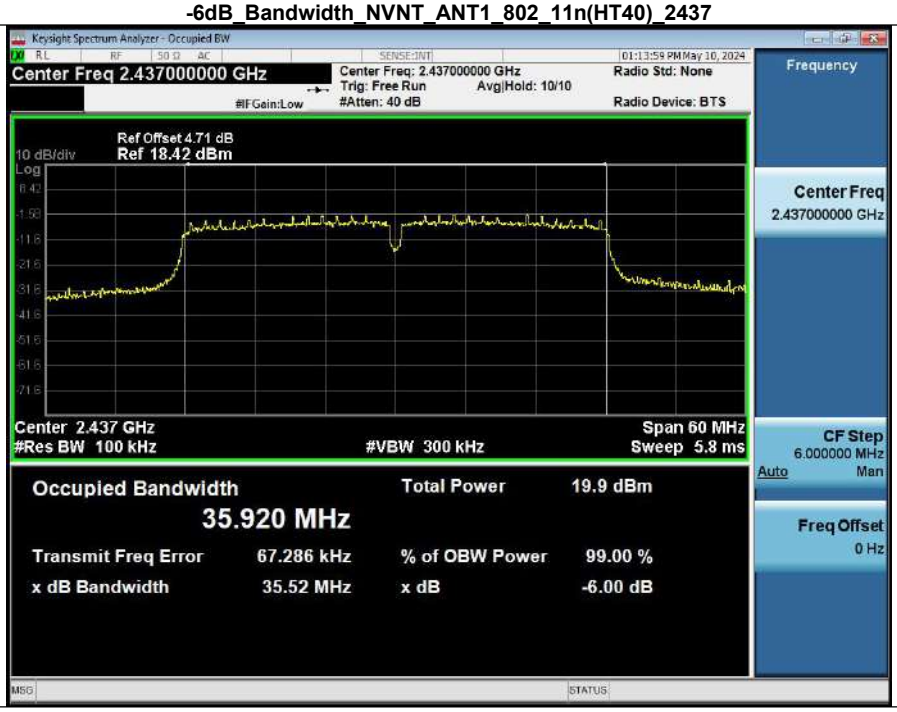
-6dB_Bandwidth_NVNT_ANT1_802_11n(HT20)_2412

-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



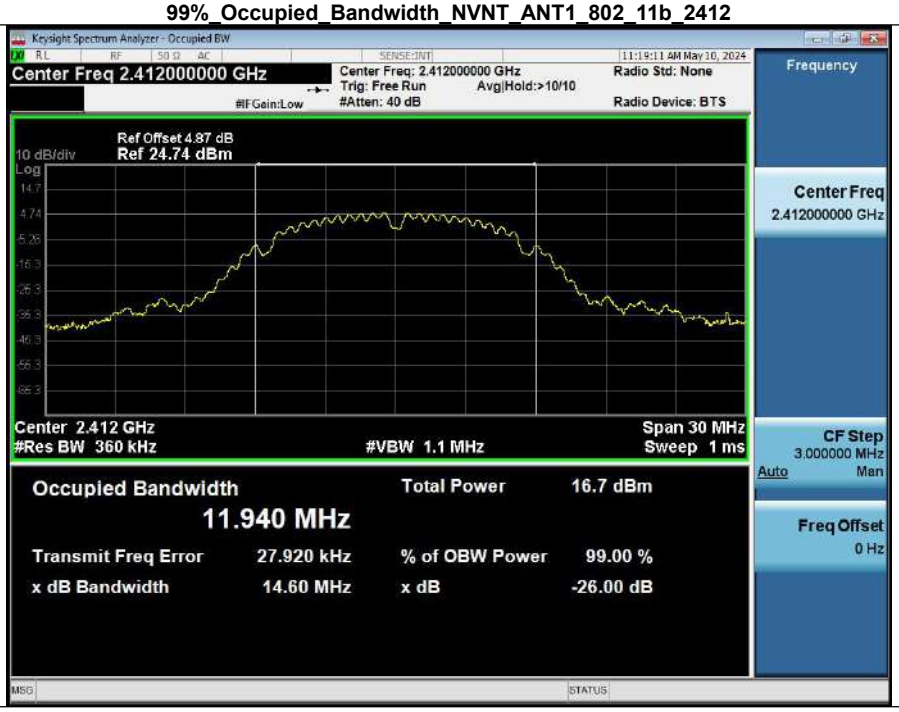
-6dB_Bandwidth_NVNT_ANT1_802_11n(HT40)_2452

Keysight Spectrum Analyzer - Occupied BW
Center Freq 2.452000000 GHz
Center Freq: 2.452000000 GHz
Trig: Free Run
Avg|Hold: 10/10
#Atten: 40 dB
Radio Std: None
Radio Device: BTS
01:17:17 PM May 10, 2024
Frequency
Ref Offset 4.64 dB
10 dB/div
Ref 18.28 dBm
Center Freq
2.452000000 GHz
Center 2.452 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 60 MHz
Sweep 5.8 ms
CF Step
6.000000 MHz
Auto
Man
Occupied Bandwidth
35.959 MHz
Total Power 19.4 dBm
Transmit Freq Error -57.004 kHz
% of OBW Power 99.00 %
x dB Bandwidth 35.40 MHz
x dB -6.00 dB
Freq Offset
0 Hz
MSG
STATUS

2. 99% Occupied Bandwidth

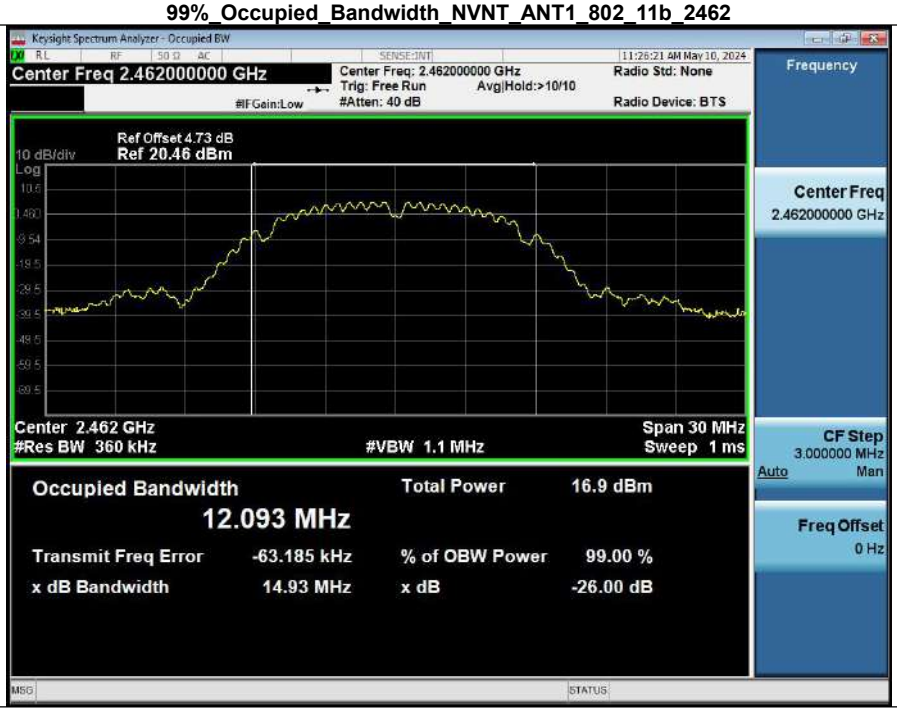
Condition	Antenna	Modulation	Frequency (MHz)	99%%BW(MHz)
NVNT	ANT1	802.11b	2412.00	11.940
NVNT	ANT1	802.11b	2437.00	12.108
NVNT	ANT1	802.11b	2462.00	12.093
NVNT	ANT1	802.11g	2412.00	17.192
NVNT	ANT1	802.11g	2437.00	18.373
NVNT	ANT1	802.11g	2462.00	17.735
NVNT	ANT1	802.11n(HT20)	2412.00	17.786
NVNT	ANT1	802.11n(HT20)	2437.00	18.118
NVNT	ANT1	802.11n(HT20)	2462.00	18.152
NVNT	ANT1	802.11n(HT40)	2422.00	36.734
NVNT	ANT1	802.11n(HT40)	2437.00	36.411
NVNT	ANT1	802.11n(HT40)	2452.00	36.447

99%_Occupied_Bandwidth_NVNT_ANT1_802_11b_2412



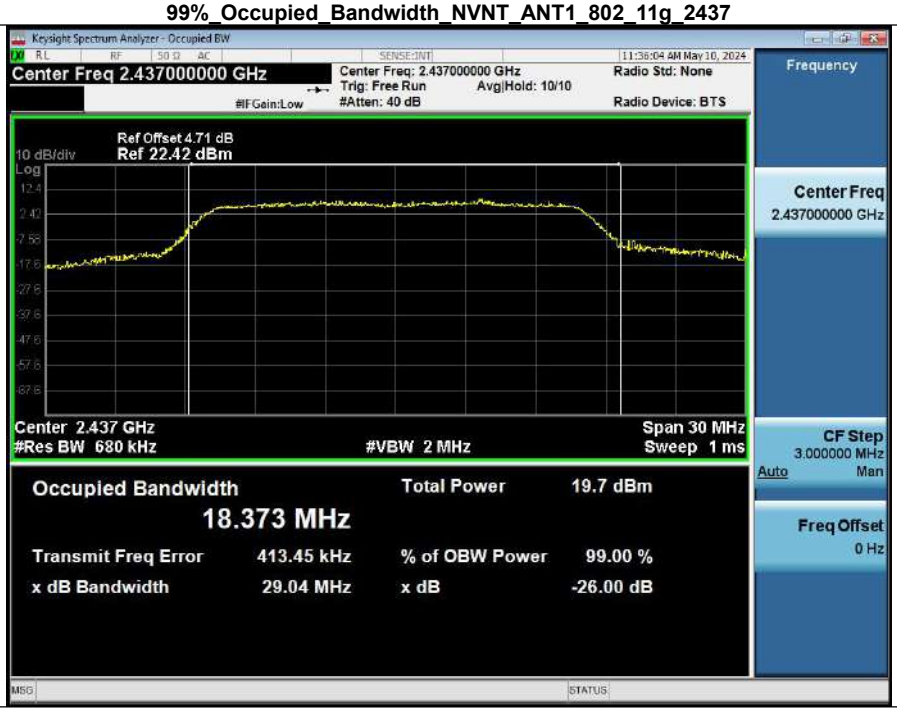
99%_Occupied_Bandwidth_NVNT_ANT1_802_11b_2437

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

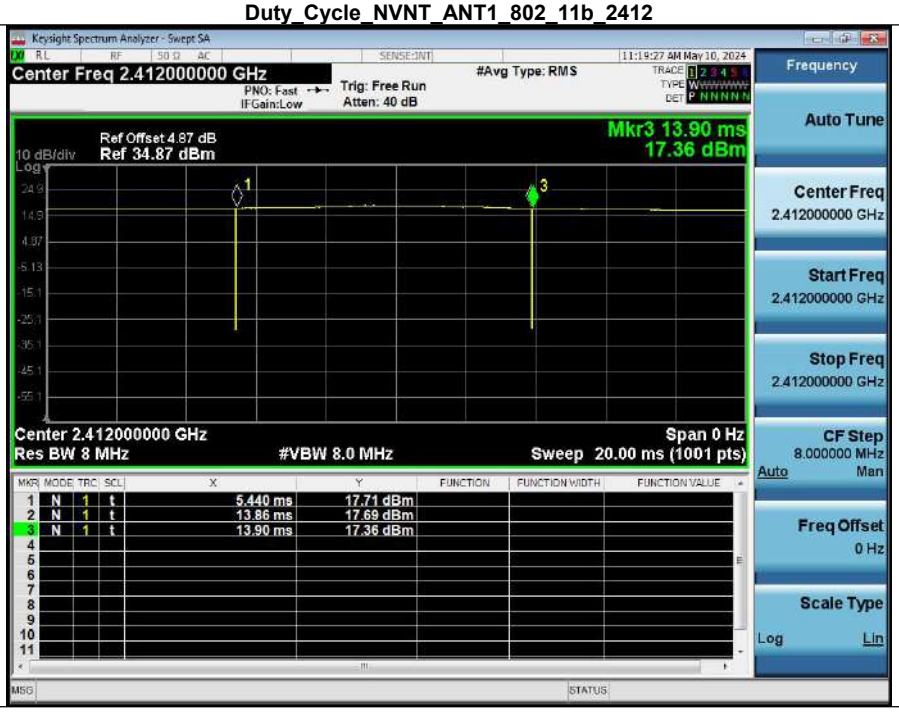
99%_Occupied_Bandwidth_NVNT_ANT1_802_11n(HT40)_2452

Keysight Spectrum Analyzer - Occupied BW
Center Freq 2.452000000 GHz
Center Freq: 2.452000000 GHz
Trig: Free Run
Avg|Hold: 10/10
#Atten: 40 dB
Radio Std: None
Radio Device: BTS
01:17:39 PM May 10, 2024
Frequency
Ref Offset 4.64 dB
10 dB/div
Ref 18.28 dBm
Center Freq
2.452000000 GHz
Center 2.452 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 60 MHz
Sweep 1 ms
CF Step
6.000000 MHz
Auto
Man
Occupied Bandwidth
36.447 MHz
Total Power
20.2 dBm
Transmit Freq Error
-24.575 kHz
% of OBW Power
99.00 %
x dB Bandwidth
55.36 MHz
x dB
-26.00 dB
Freq Offset
0 Hz
MSG
STATUS

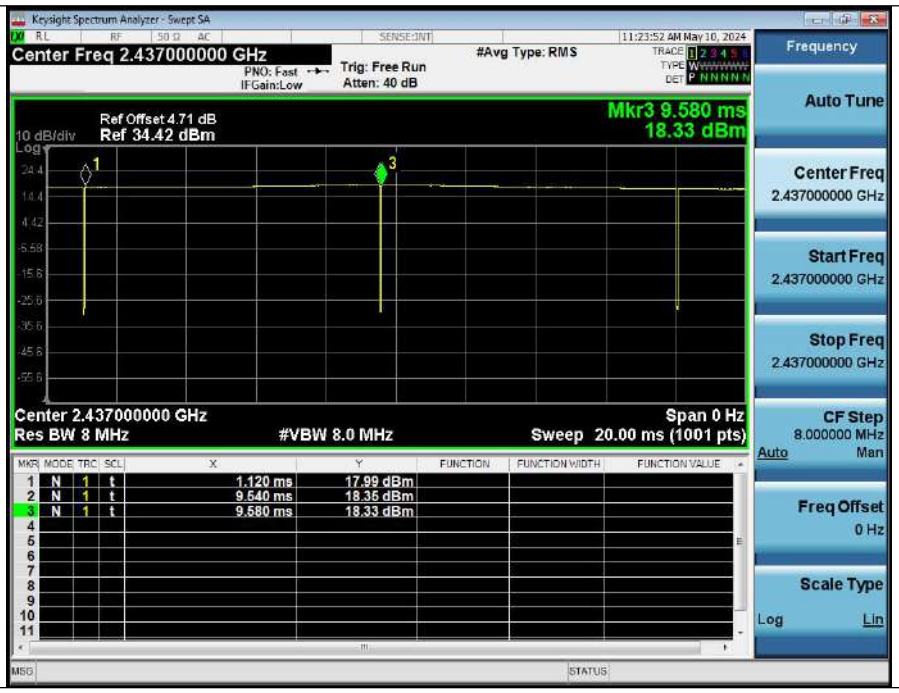
3. Duty Cycle

Condition	Antenna	Modulation	Frequency (MHz)	Duty cycle(%)	Duty factor(dB)
NVNT	ANT1	802.11b	2412.00	99.76	0.00
NVNT	ANT1	802.11b	2437.00	99.76	0.00
NVNT	ANT1	802.11b	2462.00	99.53	0.00
NVNT	ANT1	802.11g	2412.00	97.22	0.12
NVNT	ANT1	802.11g	2437.00	97.26	0.12
NVNT	ANT1	802.11g	2462.00	95.89	0.18
NVNT	ANT1	802.11n(HT20)	2412.00	98.36	0.00
NVNT	ANT1	802.11n(HT20)	2437.00	96.77	0.14
NVNT	ANT1	802.11n(HT20)	2462.00	98.36	0.00
NVNT	ANT1	802.11n(HT40)	2422.00	96.88	0.14
NVNT	ANT1	802.11n(HT40)	2437.00	93.75	0.28
NVNT	ANT1	802.11n(HT40)	2452.00	93.75	0.28

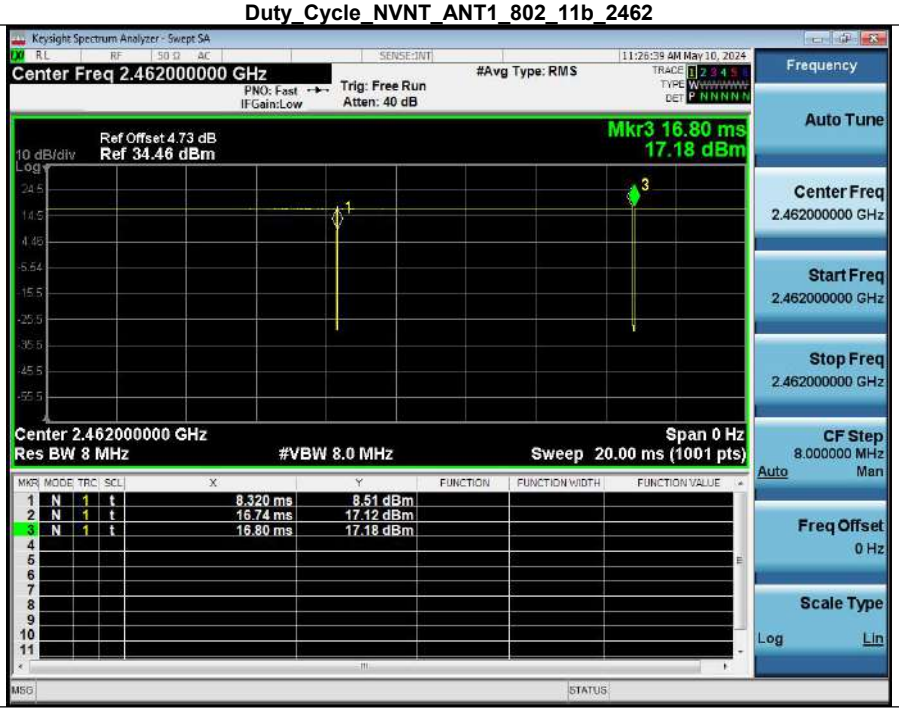
Duty_Cycle_NVNT_ANT1_802_11b_2412



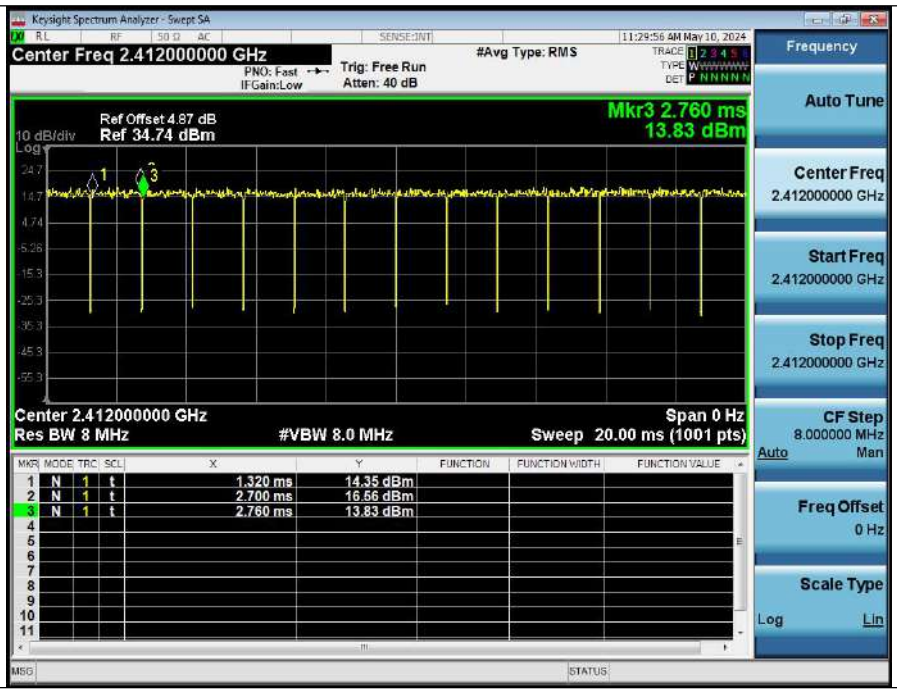
Duty_Cycle_NVNT_ANT1_802_11b_2437



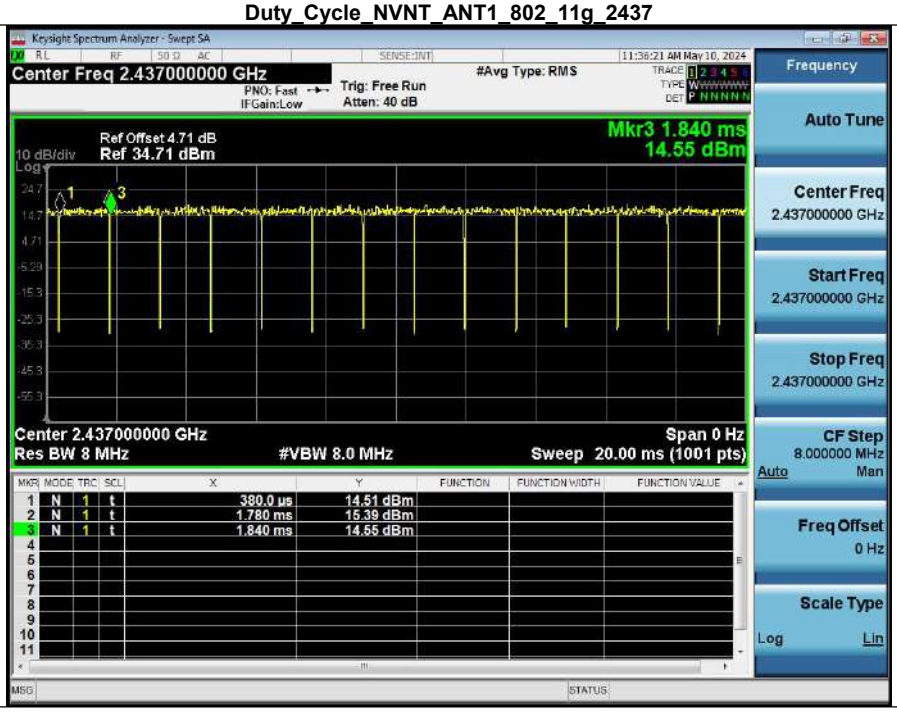
Duty_Cycle_NVNT_ANT1_802_11b_2462



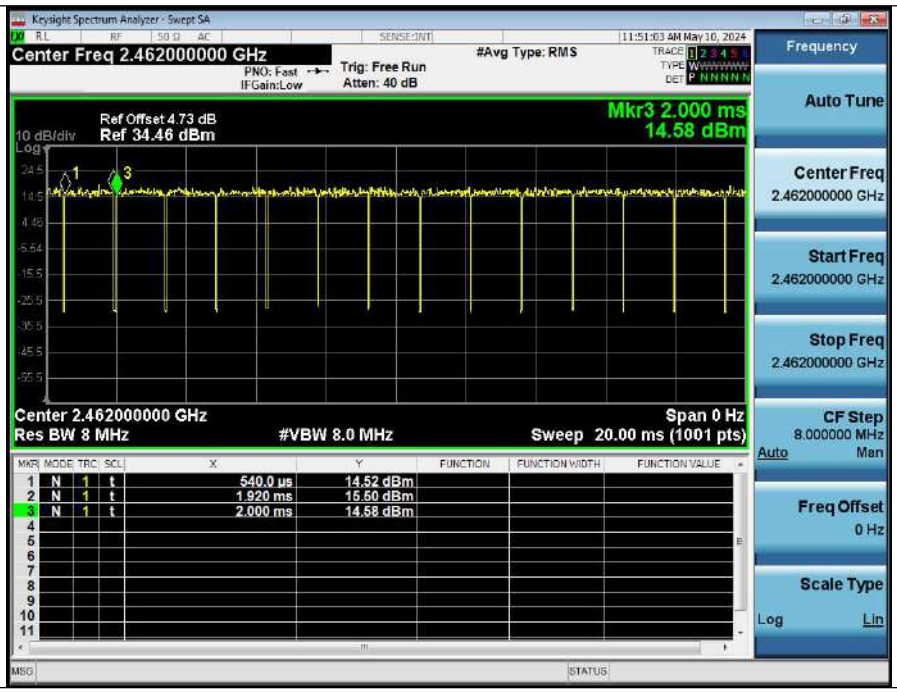
Duty_Cycle_NVNT_ANT1_802_11g_2412



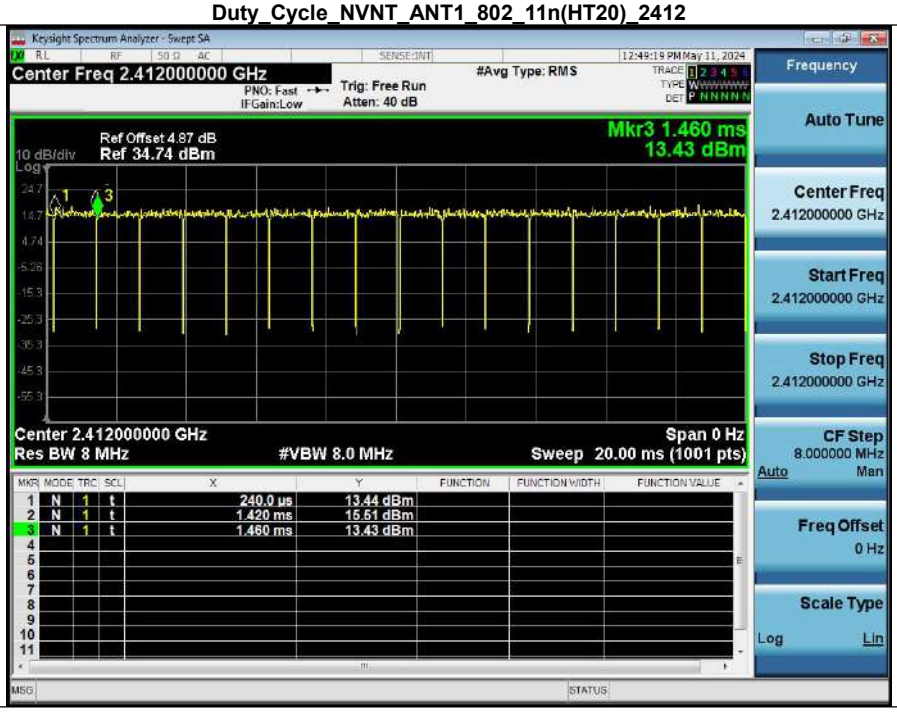
Duty_Cycle_NVNT_ANT1_802_11g_2437



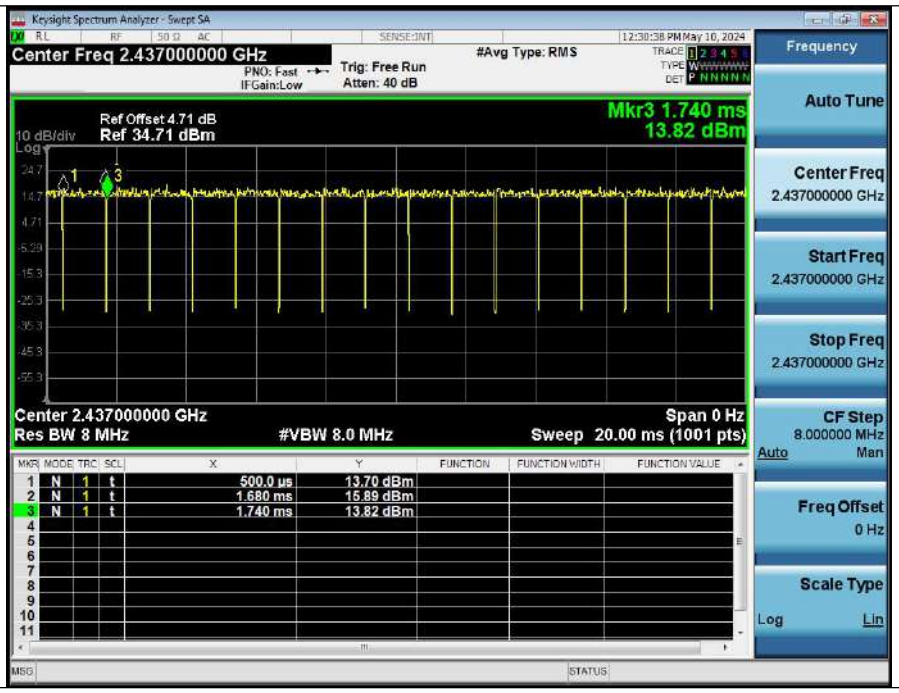
Duty_Cycle_NVNT_ANT1_802_11g_2462



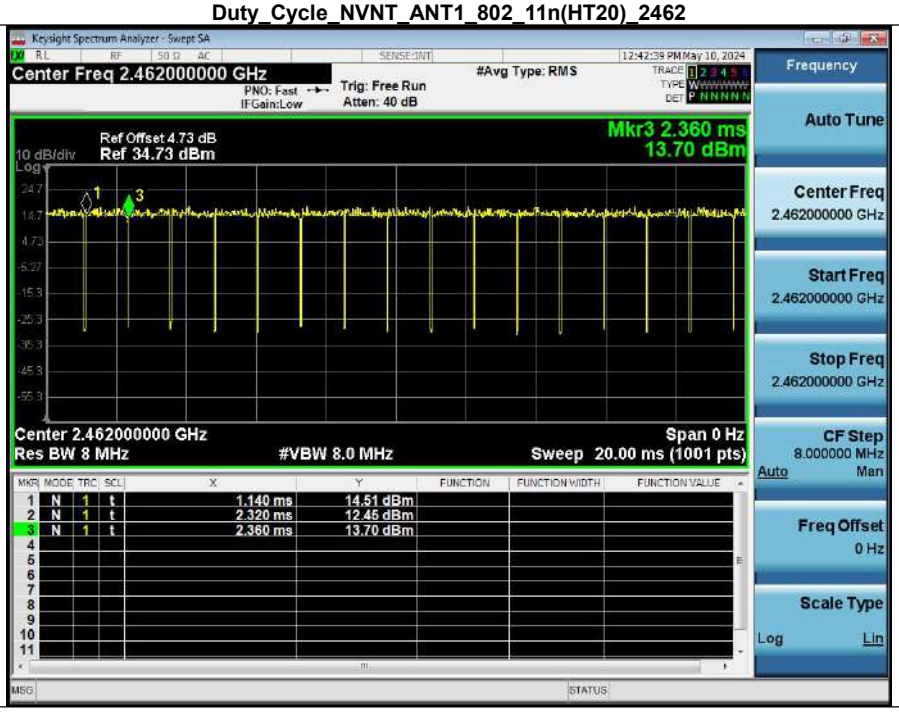
Duty_Cycle_NVNT_ANT1_802_11n(HT20)_2412



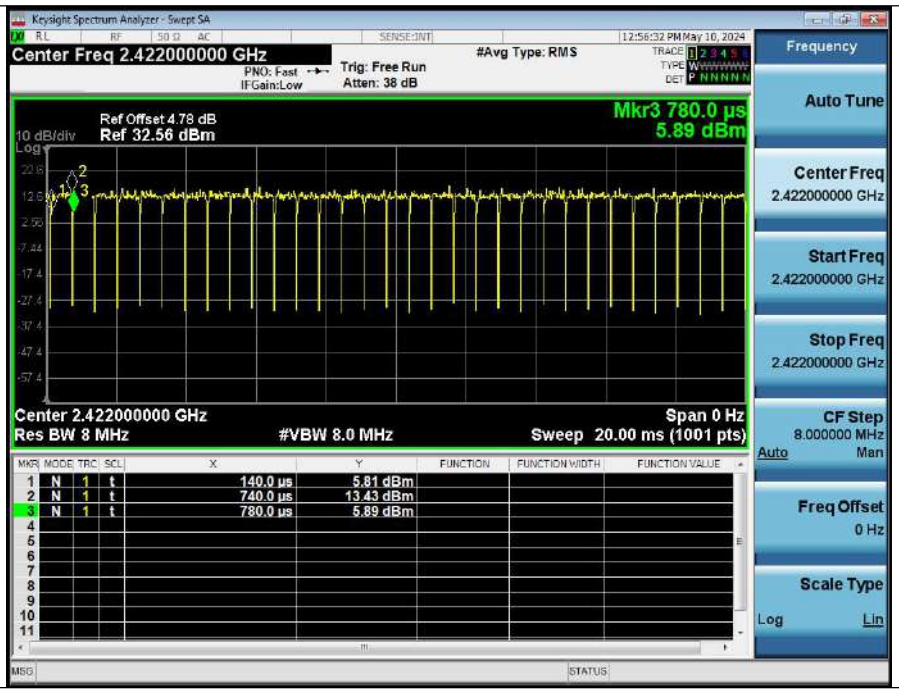
Duty_Cycle_NVNT_ANT1_802_11n(HT20)_2437



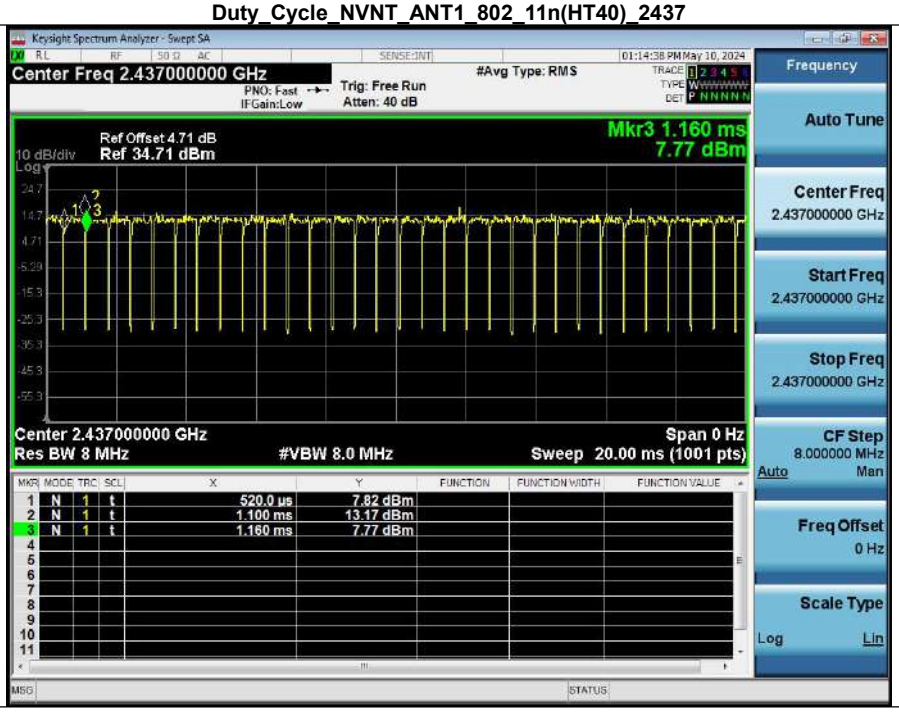
Duty_Cycle_NVNT_ANT1_802_11n(HT20)_2462



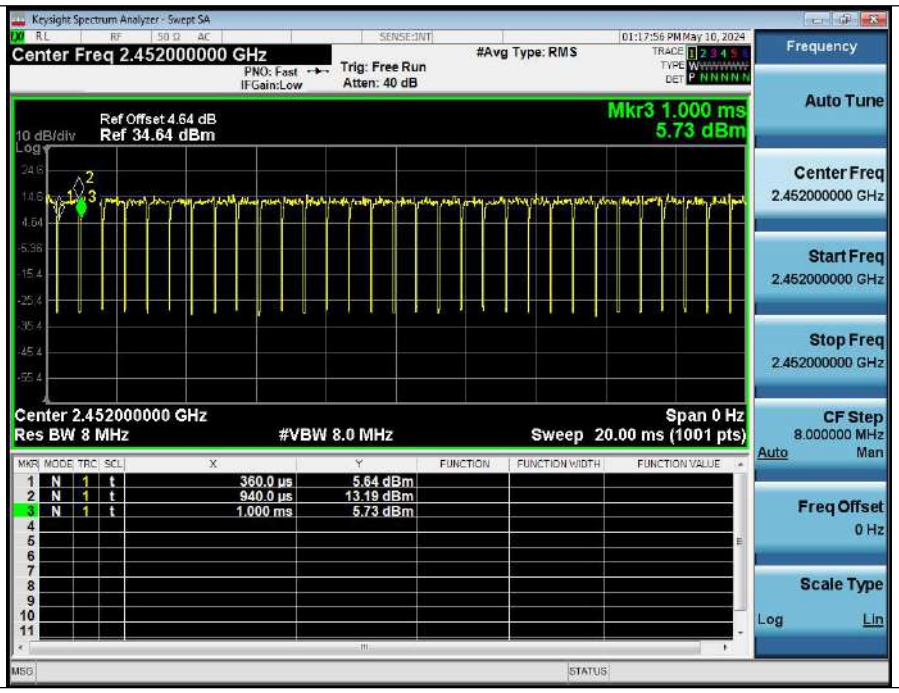
Duty_Cycle_NVNT_ANT1_802_11n(HT40)_2422



Duty_Cycle_NVNT_ANT1_802_11n(HT40)_2437



Duty_Cycle_NVNT_ANT1_802_11n(HT40)_2452


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.452000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 40 dB
#Avg Type: RMS
01:17:56 PM May 10, 2024
Frequency
Auto Tune
Ref Offset 4.64 dB
10 dB/div
Ref 34.64 dBm
Mkr3 1.000 ms
5.73 dBm
Center Freq
2.452000000 GHz
Start Freq
2.452000000 GHz
Stop Freq
2.452000000 GHz
Center 2.452000000 GHz
Span 0 Hz
Res BW 8 MHz
#VBW 8.0 MHz
Sweep 20.00 ms (1001 pts)
CF Step
8.000000 MHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin
1 N 1 t 360.0 µs 5.64 dBm
2 N 1 t 940.0 µs 13.19 dBm
3 N 1 t 1.000 ms 5.73 dBm

4. MAX. Output Power

Condition	Antenna	Modulation	Frequency (MHz)	Detector	Conducted Power(dBm)	limit(dBm)	Result
NVNT	ANT1	802.11b	2412.00	Peak	16.32	30	Pass
NVNT	ANT1	802.11b	2437.00	Peak	16.71	30	Pass
NVNT	ANT1	802.11b	2462.00	Peak	16.53	30	Pass
NVNT	ANT1	802.11g	2412.00	Peak	19.63	30	Pass
NVNT	ANT1	802.11g	2437.00	Peak	20.31	30	Pass
NVNT	ANT1	802.11g	2462.00	Peak	20.14	30	Pass
NVNT	ANT1	802.11n(HT20)	2412.00	Peak	19.43	30	Pass
NVNT	ANT1	802.11n(HT20)	2437.00	Peak	20.17	30	Pass
NVNT	ANT1	802.11n(HT20)	2462.00	Peak	20.09	30	Pass
NVNT	ANT1	802.11n(HT40)	2422.00	Peak	20.44	30	Pass
NVNT	ANT1	802.11n(HT40)	2437.00	Peak	20.38	30	Pass
NVNT	ANT1	802.11n(HT40)	2452.00	Peak	19.86	30	Pass

Remark:

1. *Measured output power at difference data rate for each mode and recorded worst case for each mode.*
2. *Test results including cable loss;*
3. *Worst case data at 1Mbps at IEEE 802.11b; 6Mbps at IEEE 802.11g; 6.5Mbps at IEEE 802.11n HT20; 13.5Mbps at IEEE 802.11n HT40;*

5. Power Spectral Density

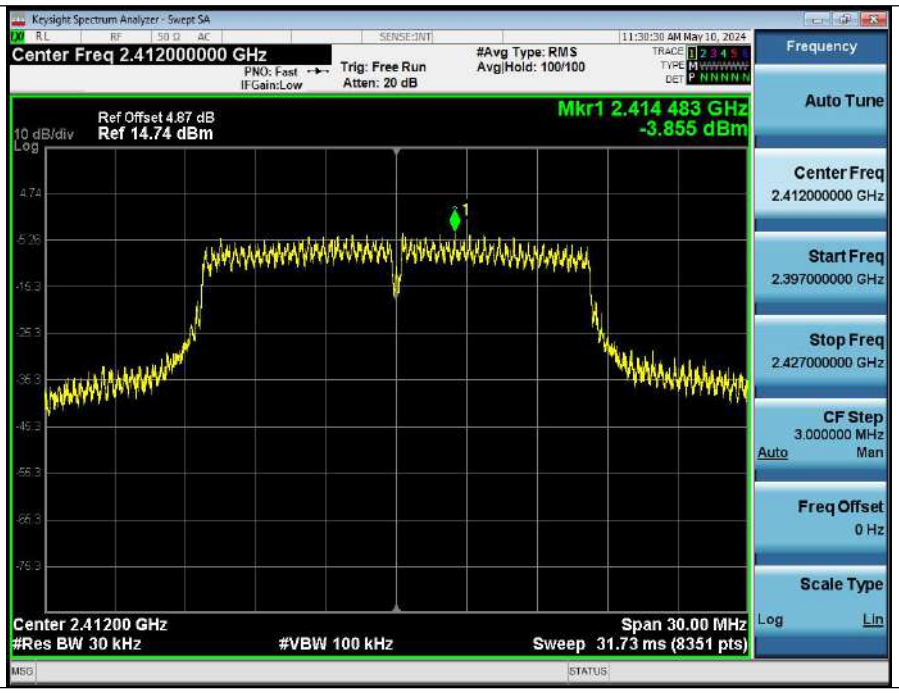
Condition	Antenna	Modulation	Frequency (MHz)	PSD(dBm/30kHz)	Duty factor(dB)	RB factor(dB)	PSD(dBm/3kHz)	limit(dBm/3kHz)	Result
NVNT	ANT1	802.11b	2412.00	3.80	N/A	-10.00	-6.20	8	Pass
NVNT	ANT1	802.11b	2437.00	1.39	N/A	-10.00	-8.61	8	Pass
NVNT	ANT1	802.11b	2462.00	1.15	N/A	-10.00	-8.85	8	Pass
NVNT	ANT1	802.11g	2412.00	-3.85	N/A	-10.00	-13.86	8	Pass
NVNT	ANT1	802.11g	2437.00	-2.38	N/A	-10.00	-12.38	8	Pass
NVNT	ANT1	802.11g	2462.00	-3.04	N/A	-10.00	-13.04	8	Pass
NVNT	ANT1	802.11n(HT20)	2412.00	-4.24	N/A	-10.00	-14.24	8	Pass
NVNT	ANT1	802.11n(HT20)	2437.00	-3.72	N/A	-10.00	-13.72	8	Pass
NVNT	ANT1	802.11n(HT20)	2462.00	-4.03	N/A	-10.00	-14.03	8	Pass
NVNT	ANT1	802.11n(HT40)	2422.00	-6.57	N/A	-10.00	-16.57	8	Pass
NVNT	ANT1	802.11n(HT40)	2437.00	-6.62	N/A	-10.00	-16.62	8	Pass
NVNT	ANT1	802.11n(HT40)	2452.00	-6.52	N/A	-10.00	-16.52	8	Pass

Power_Spectral_Density_NVNT_ANT1_802_11b_2412

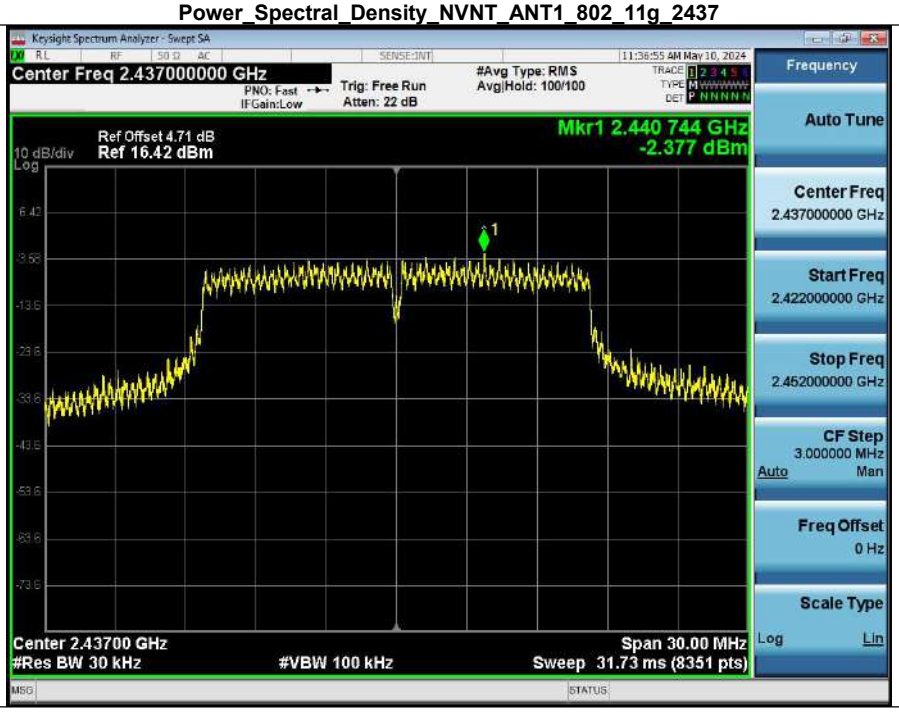
Power_Spectral_Density_NVNT_ANT1_802_11b_2437

Power_Spectral_Density_NVNT_ANT1_802_11b_2462

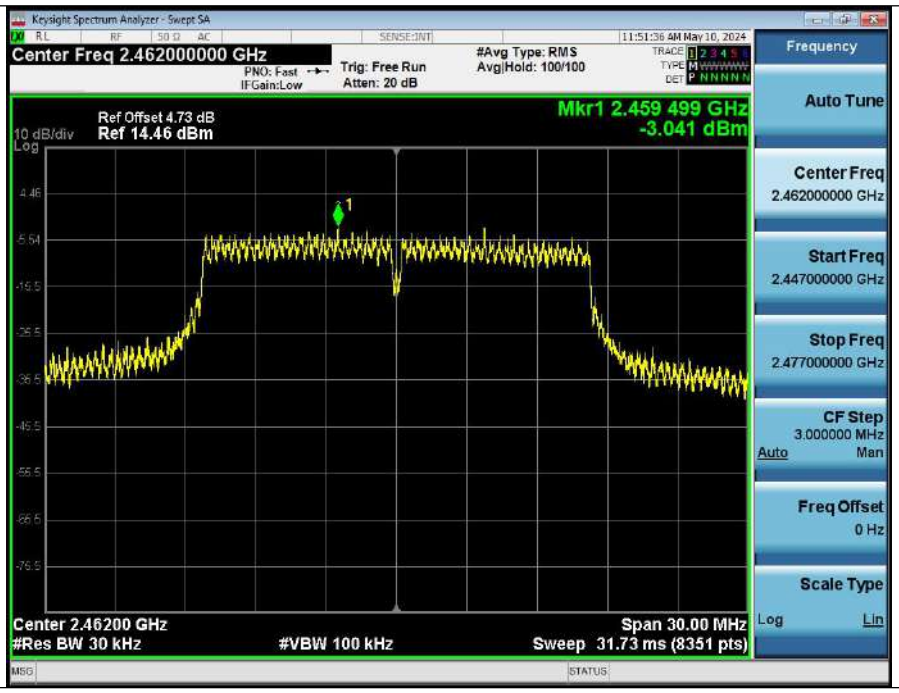
Power_Spectral_Density_NVNT_ANT1_802_11g_2412



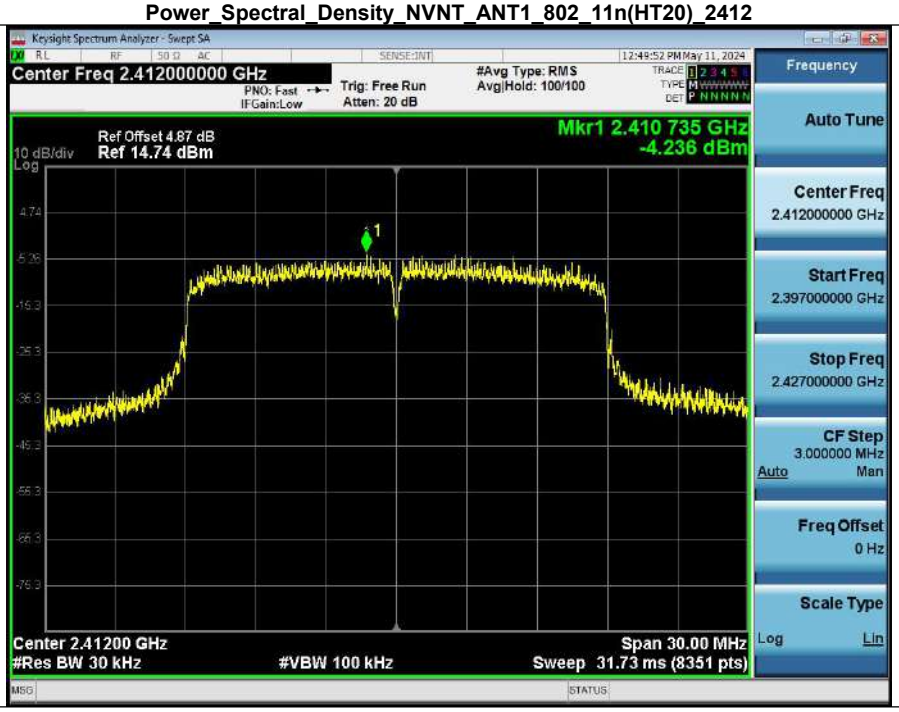
Power_Spectral_Density_NVNT_ANT1_802_11g_2437



Power_Spectral_Density_NVNT_ANT1_802_11g_2462

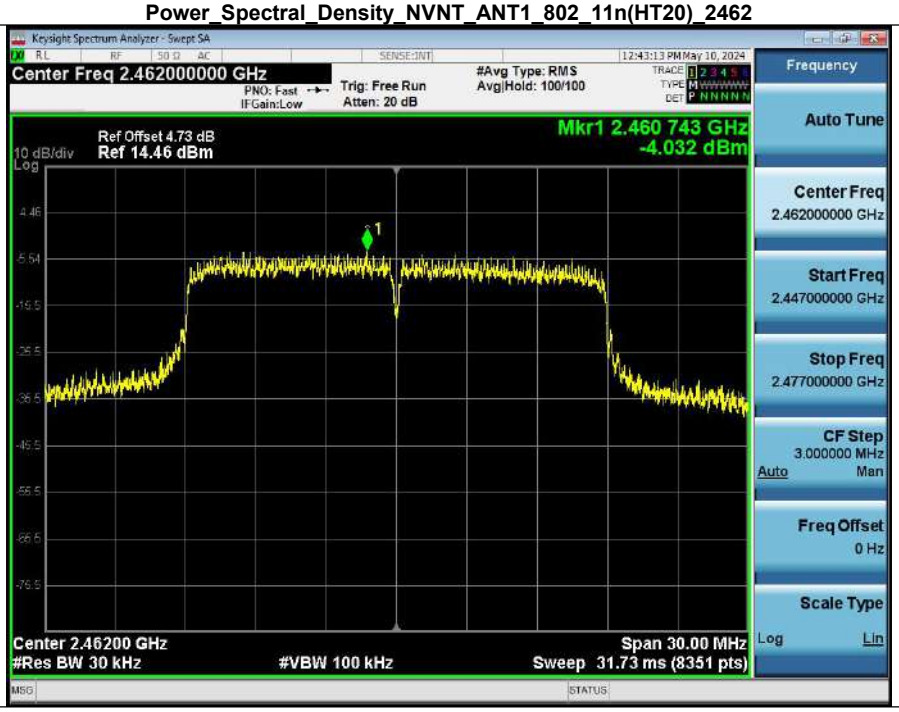


Power_Spectral_Density_NVNT_ANT1_802_11n(HT20)_2412



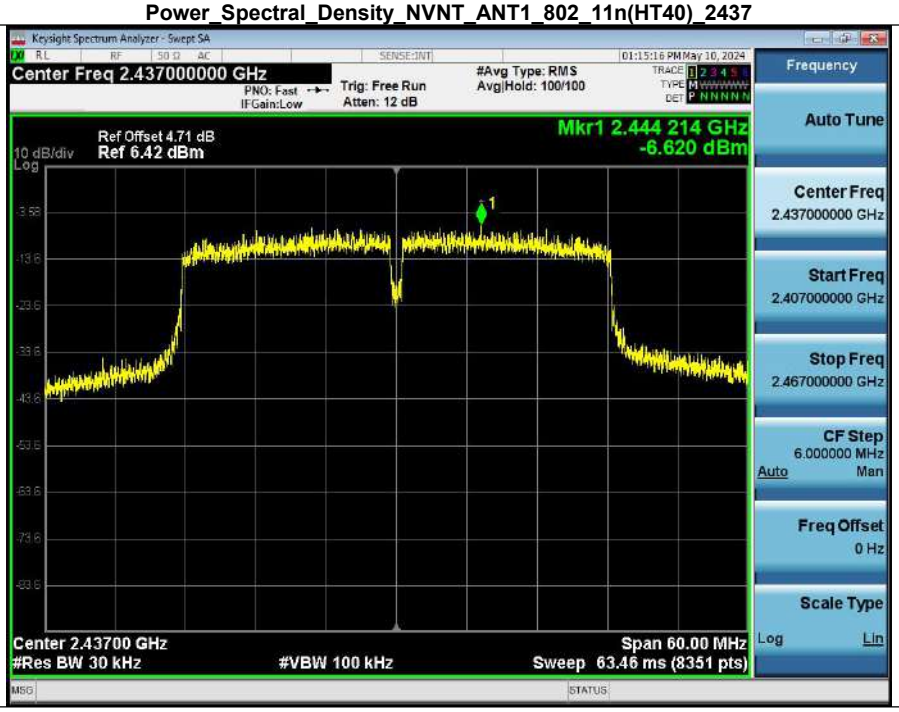
Power_Spectral_Density_NVNT_ANT1_802_11n(HT20)_2437

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

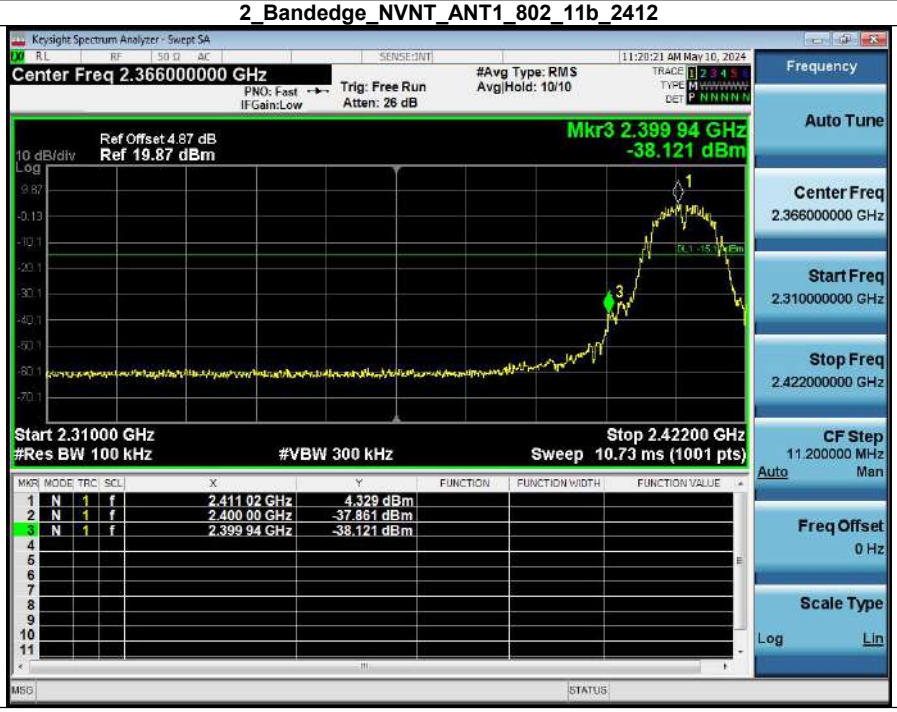
Keysight Spectrum Analyzer - Swept SA
Center Freq 2.452000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 18 dB
#Avg Type: RMS
Avg|Hold: 100/100
01:18:32 PM May 10, 2024
Ref Offset 4.64 dB
10 dB/div
Ref 12.28 dBm
Log
Mkr1 2.446 984 GHz
-6.524 dBm
Center 2.45200 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 60.00 MHz
Sweep 63.46 ms (8351 pts)
Frequency
Auto Tune
Center Freq
2.452000000 GHz
Start Freq
2.422000000 GHz
Stop Freq
2.482000000 GHz
CF Step
6.000000 MHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin

6. Bandedge

Condition	Antenna	Modulation	TX_Frequency (MHz)	Max. Mark_frequency(MHz)	Spurious level(dBm)	limit(dBm)	Result
NVNT	ANT1	802.11b	2412.00	2399.936	-38.121	-15.109	Pass
NVNT	ANT1	802.11b	2462.00	2485.984	-55.845	-14.993	Pass
NVNT	ANT1	802.11g	2412.00	2399.488	-27.731	-18.808	Pass
NVNT	ANT1	802.11g	2462.00	2483.536	-38.707	-18.530	Pass
NVNT	ANT1	802.11n(HT20)	2412.00	2399.152	-30.160	-19.894	Pass
NVNT	ANT1	802.11n(HT20)	2462.00	2484.208	-39.313	-18.985	Pass
NVNT	ANT1	802.11n(HT40)	2422.00	2397.648	-31.174	-21.490	Pass
NVNT	ANT1	802.11n(HT40)	2452.00	2483.612	-35.260	-21.612	Pass

1_Reference_Level_NVNT_ANT1_802_11b_2412

2_Bandedge_NVNT_ANT1_802_11b_2412



1_Reference_Level_NVNT_ANT1_802_11b_2462

2_Bandedge_NVNT_ANT1_802_11b_2462

1_Reference_Level_NVNT_ANT1_802_11g_2412

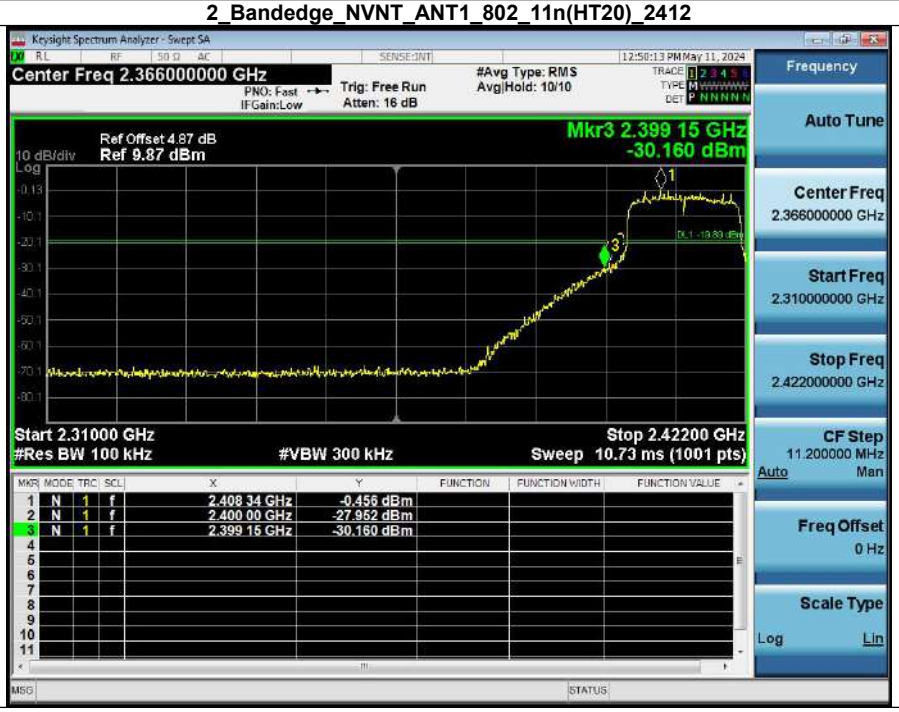
2_Bandedge_NVNT_ANT1_802_11g_2412

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

7. Spurious Emission

Condition	Antenna	Modulation	TX_Frequency (MHz)	Max. Mark_frequency(MHz)	Spurious level(dBm)	limit(dBm)	Result
NVNT	ANT1	802.11b	2412.00	2576.940	-43.411	-15.109	Pass
NVNT	ANT1	802.11b	2437.00	24970.036	-51.721	-15.198	Pass
NVNT	ANT1	802.11b	2462.00	831.537	-26.193	-14.993	Pass
NVNT	ANT1	802.11g	2412.00	704.190	-44.632	-18.808	Pass
NVNT	ANT1	802.11g	2437.00	24947.563	-56.607	-18.324	Pass
NVNT	ANT1	802.11g	2462.00	711.681	-32.755	-18.530	Pass
NVNT	ANT1	802.11n(HT20)	2412.00	711.681	-42.562	-19.894	Pass
NVNT	ANT1	802.11n(HT20)	2437.00	1755.427	-44.972	-19.243	Pass
NVNT	ANT1	802.11n(HT20)	2462.00	5201.287	-48.282	-18.985	Pass
NVNT	ANT1	802.11n(HT40)	2422.00	721.669	-39.880	-21.490	Pass
NVNT	ANT1	802.11n(HT40)	2437.00	706.687	-42.304	-21.635	Pass
NVNT	ANT1	802.11n(HT40)	2452.00	24967.539	-60.470	-21.612	Pass

1_Reference_Level_NVNT_ANT1_802_11b_2412

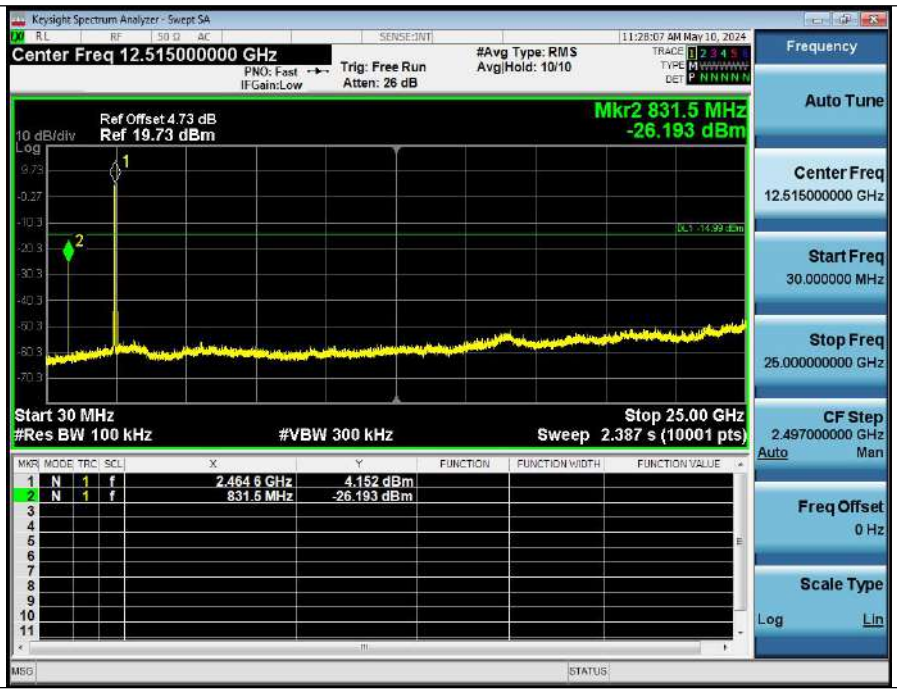
2_Spurious_Emission_NVNT_ANT1_802_11b_2412

1_Reference_Level_NVNT_ANT1_802_11b_2437

2_Spurious_Emission_NVNT_ANT1_802_11b_2437

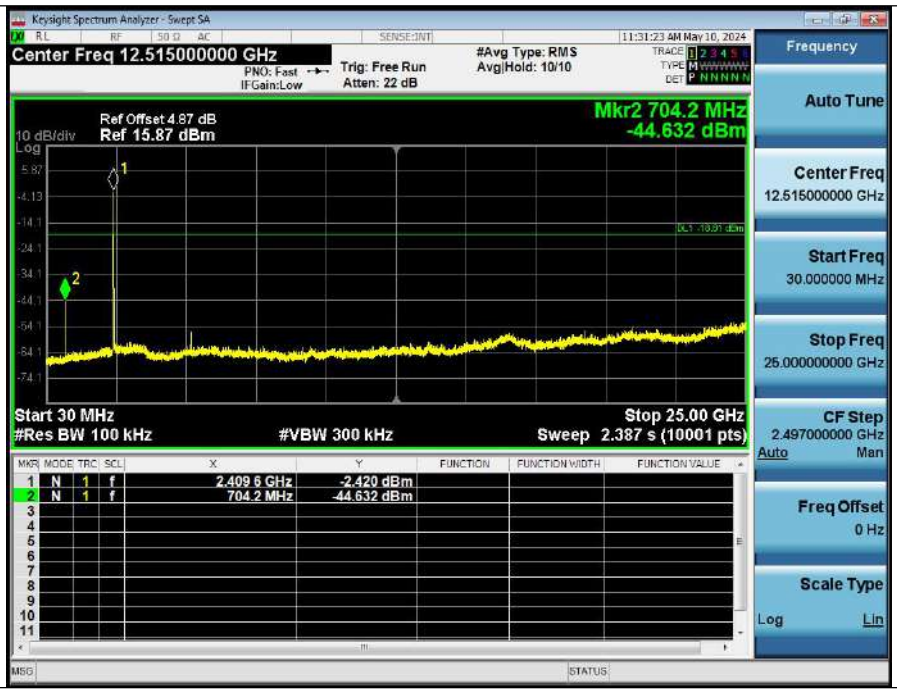
1_Reference_Level_NVNT_ANT1_802_11b_2462

2_Spurious_Emission_NVNT_ANT1_802_11b_2462

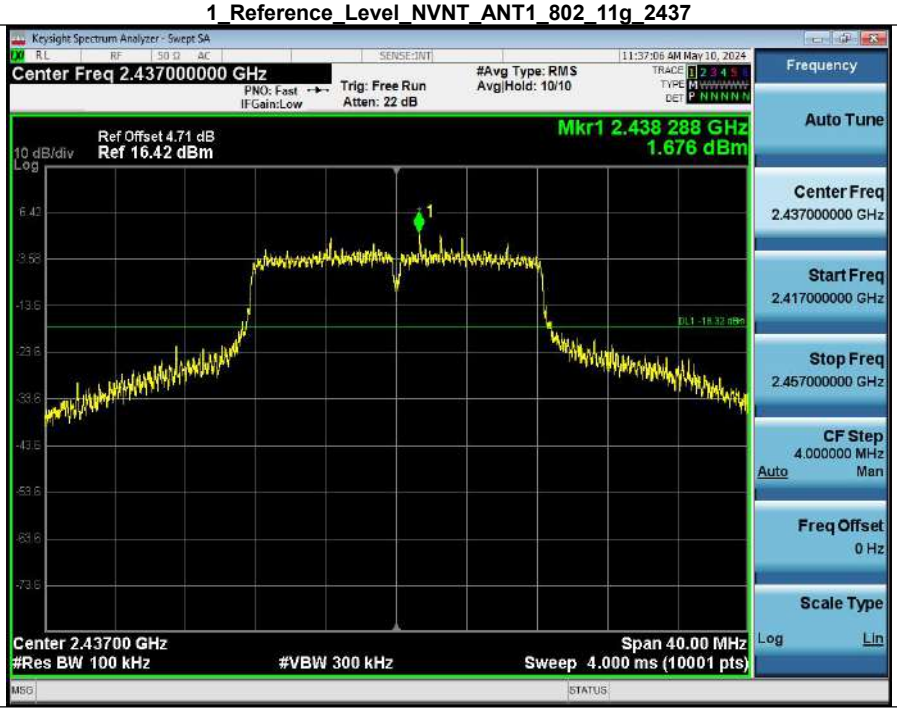


1_Reference_Level_NVNT_ANT1_802_11g_2412

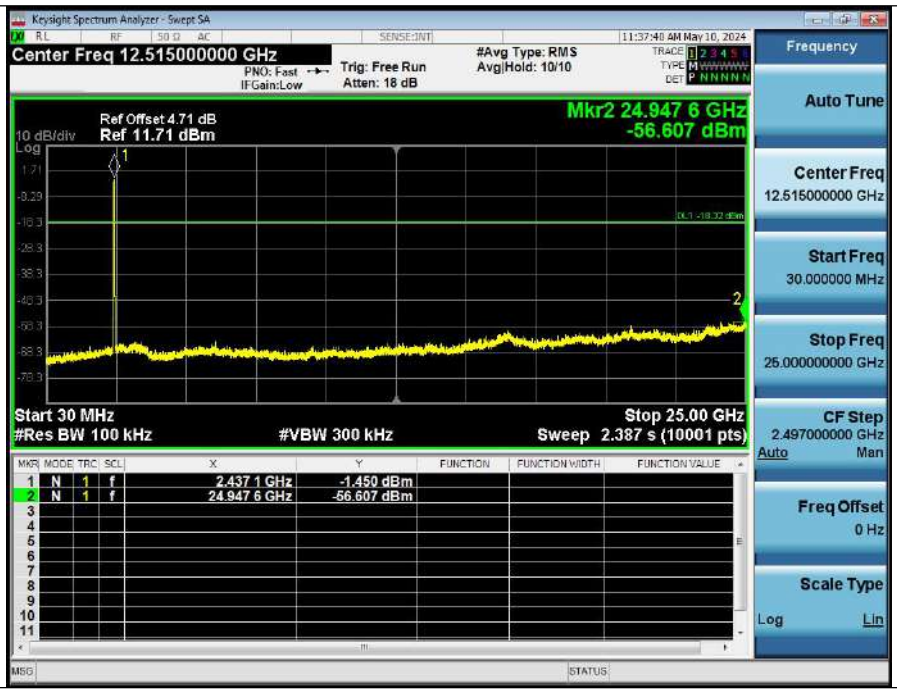
2_Spurious_Emission_NVNT_ANT1_802_11g_2412



1_Reference_Level_NVNT_ANT1_802_11g_2437

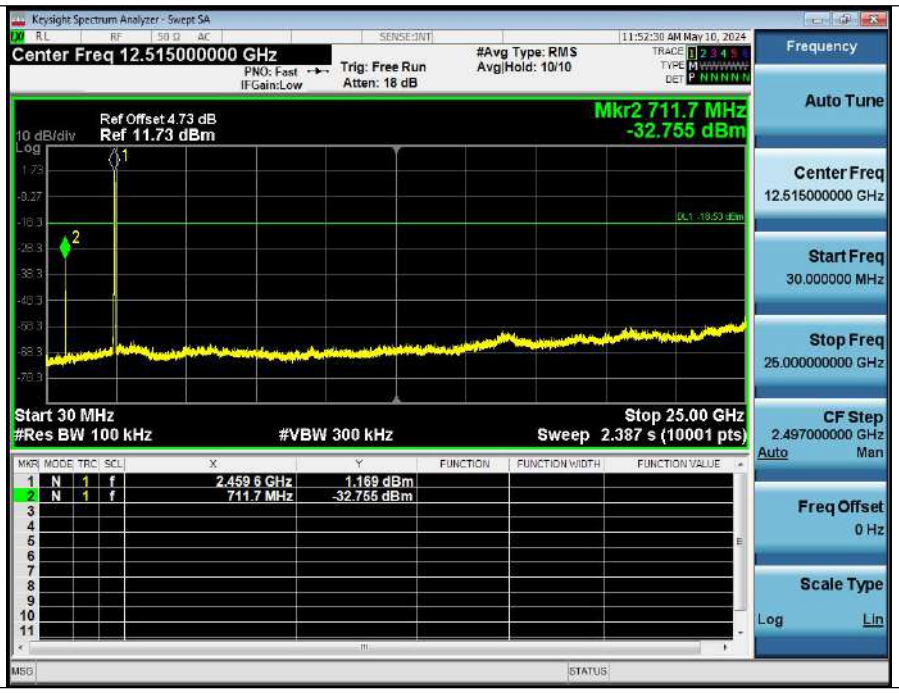


2_Spurious_Emission_NVNT_ANT1_802_11g_2437



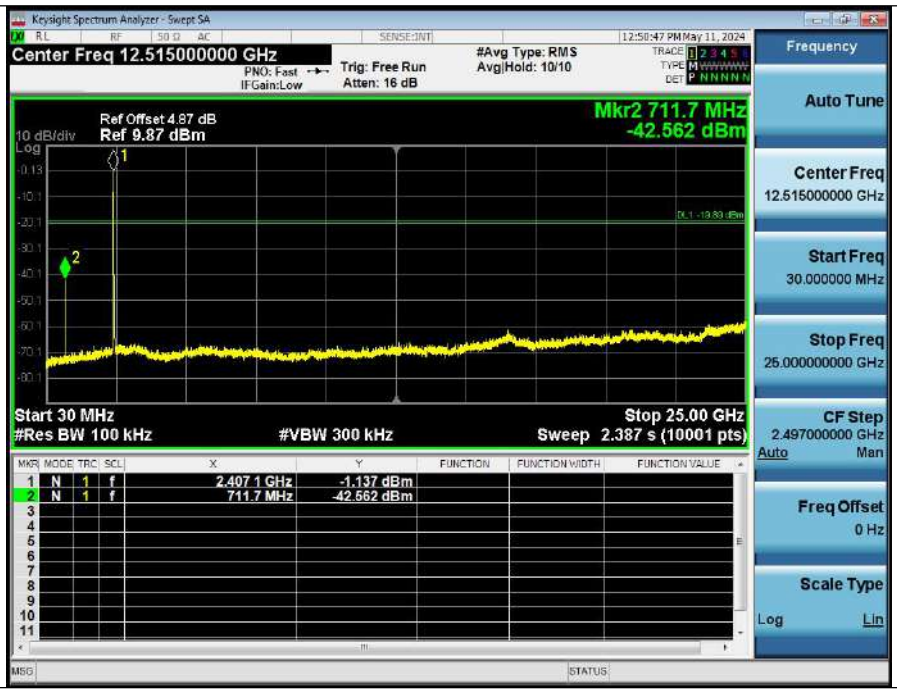
1_Reference_Level_NVNT_ANT1_802_11g_2462

2_Spurious_Emission_NVNT_ANT1_802_11g_2462



1_Reference_Level_NVNT_ANT1_802_11n(HT20)_2412

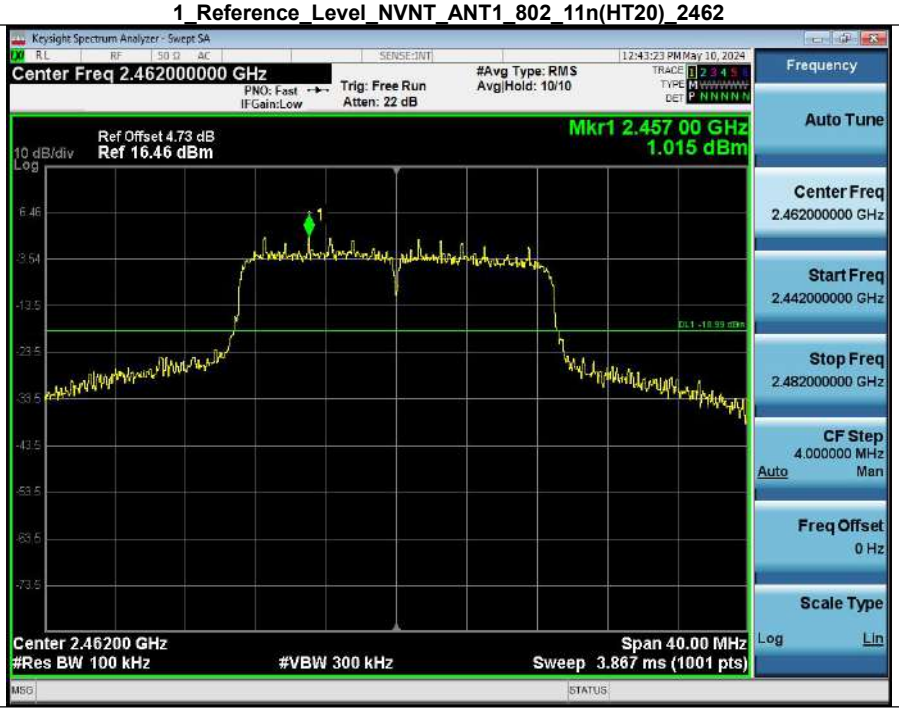
2_Spurious_Emission_NVNT_ANT1_802_11n(HT20)_2412



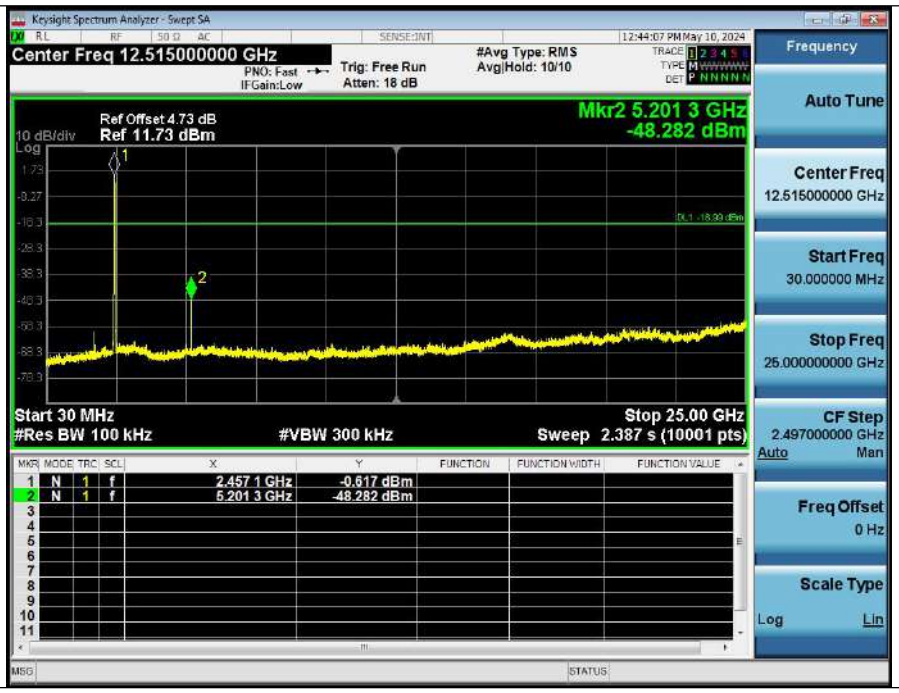
1_Reference_Level_NVNT_ANT1_802_11n(HT20)_2437

2_Spurious_Emission_NVNT_ANT1_802_11n(HT20)_2437

1_Reference_Level_NVNT_ANT1_802_11n(HT20)_2462

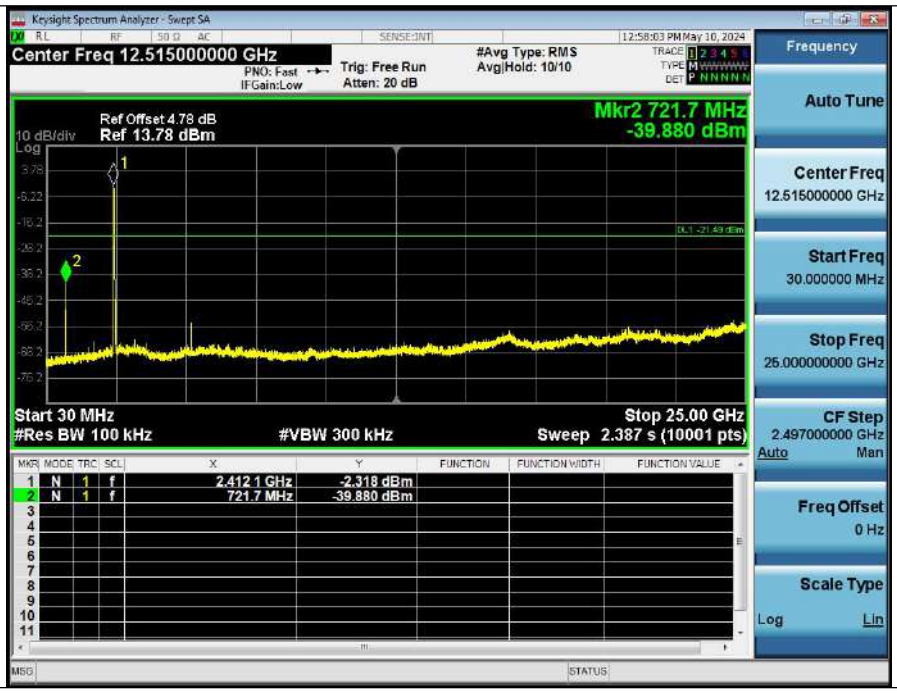


2_Spurious_Emission_NVNT_ANT1_802_11n(HT20)_2462



1_Reference_Level_NVNT_ANT1_802_11n(HT40)_2422

2_Spurious_Emission_NVNT_ANT1_802_11n(HT40)_2422

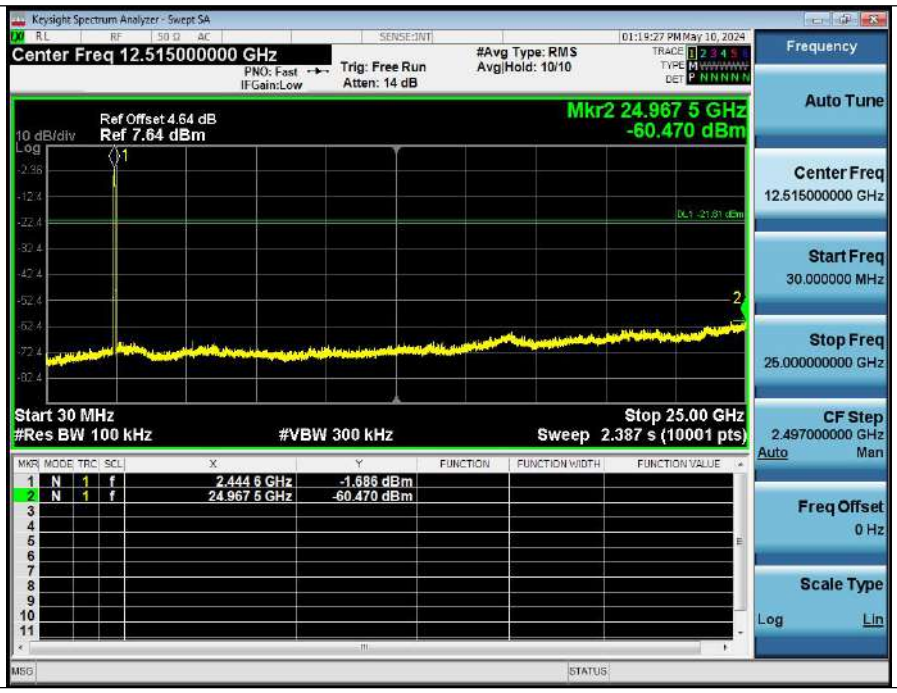


1_Reference_Level_NVNT_ANT1_802_11n(HT40)_2437

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


Keysight Spectrum Analyzer - Swept SA
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 14 dB
#Avg Type: RMS
Avg|Hold: 10/10
01:19:27 PM May 10, 2024
Ref Offset 4.64 dB
10 dB/div
Ref 7.64 dBm
Mkr2 24.967 5 GHz
-60.470 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.387 s (10001 pts)
1 N 1 f 2.444 6 GHz -1.686 dBm
2 N 1 f 24.967 5 GHz -60.470 dBm
Frequency
Auto Tune
Center Freq
12.515000000 GHz
Start Freq
30.000000 MHz
Stop Freq
25.000000000 GHz
CF Step
2.497000000 GHz
Auto Man
Freq Offset
0 Hz
Scale Type
Log Lin