REPORT FOR TEST DATA
FCC ID: 2BENR-DH-313

Product	:	DH Series of intelligent switches
Model Name	:	DH-313
Brand	:	N/A
Report No.	:	NCT23044243E-5

Prepared for

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Prepared by

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Table of Contents

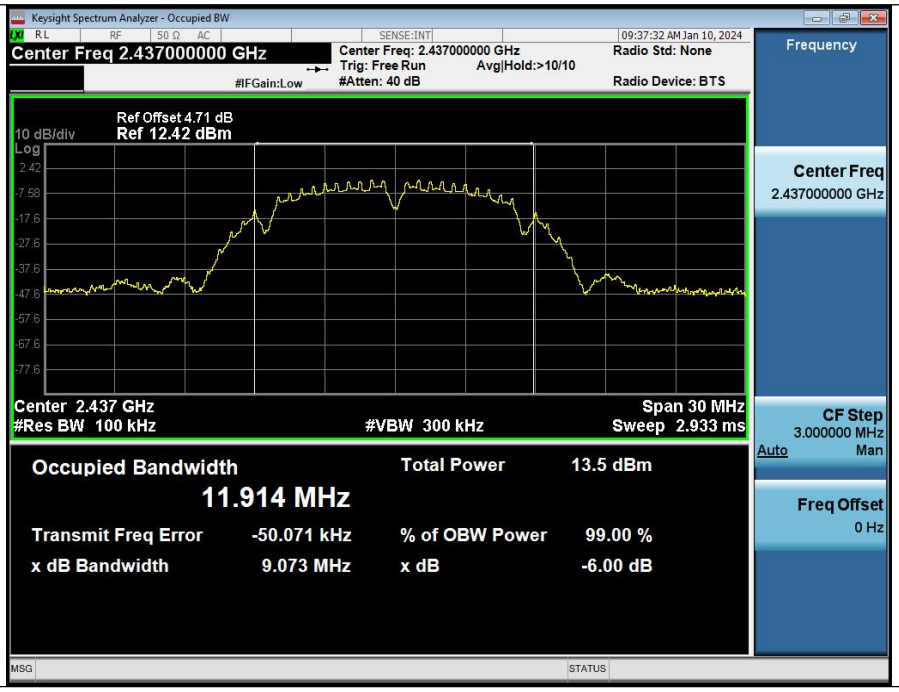
FCC_2.4G_WIFI (Part15.247) Test Data

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	9.07	500	Pass
NVNT	ANT1	802.11b	2462.00	9.04	500	Pass
NVNT	ANT1	802.11g	2412.00	15.15	500	Pass
NVNT	ANT1	802.11g	2437.00	16.36	500	Pass
NVNT	ANT1	802.11g	2462.00	15.50	500	Pass
NVNT	ANT1	802.11n(HT20)	2412.00	15.59	500	Pass
NVNT	ANT1	802.11n(HT20)	2437.00	17.02	500	Pass
NVNT	ANT1	802.11n(HT20)	2462.00	16.29	500	Pass
NVNT	ANT1	802.11n(HT40)	2422.00	35.06	500	Pass
NVNT	ANT1	802.11n(HT40)	2437.00	36.21	500	Pass
NVNT	ANT1	802.11n(HT40)	2452.00	35.21	500	Pass

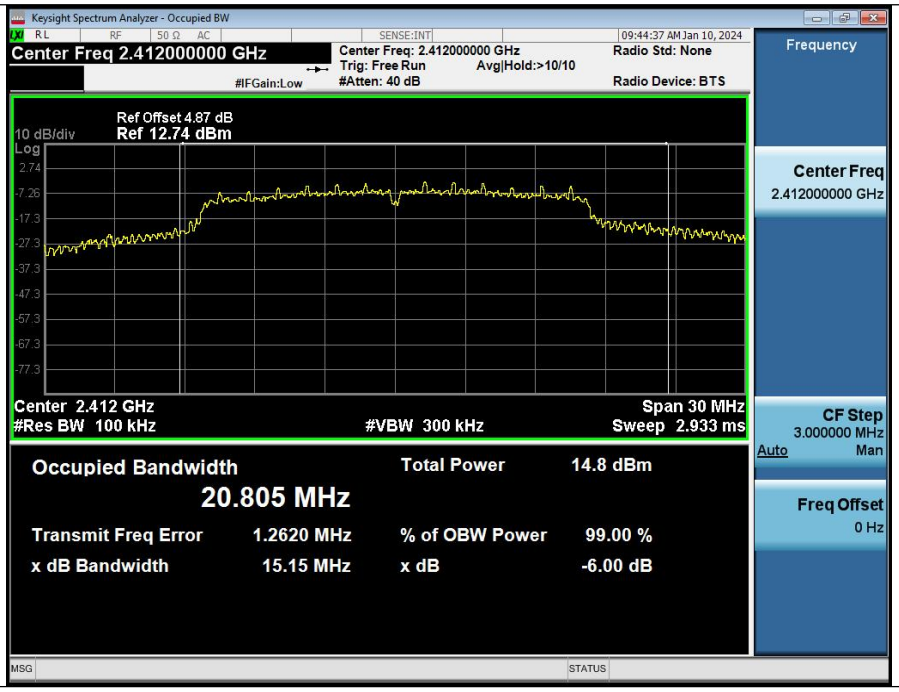
-6dB_Bandwidth_NVNT_ANT1_802_11b_2412

-6dB_Bandwidth_NVNT_ANT1_802_11b_2437

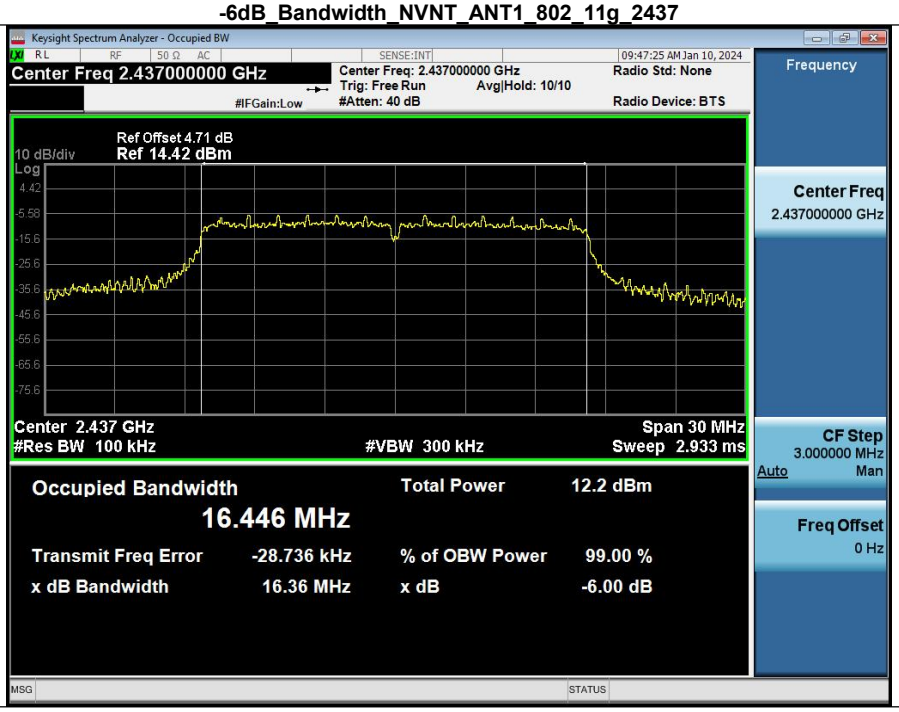


-6dB_Bandwidth_NVNT_ANT1_802_11b_2462

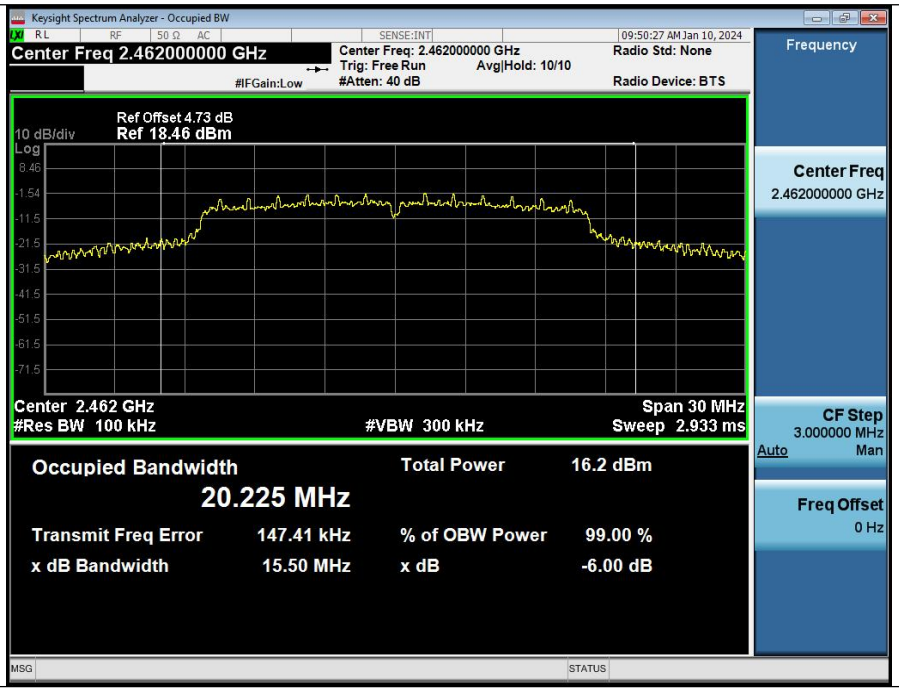
-6dB_Bandwidth_NVNT_ANT1_802_11g_2412



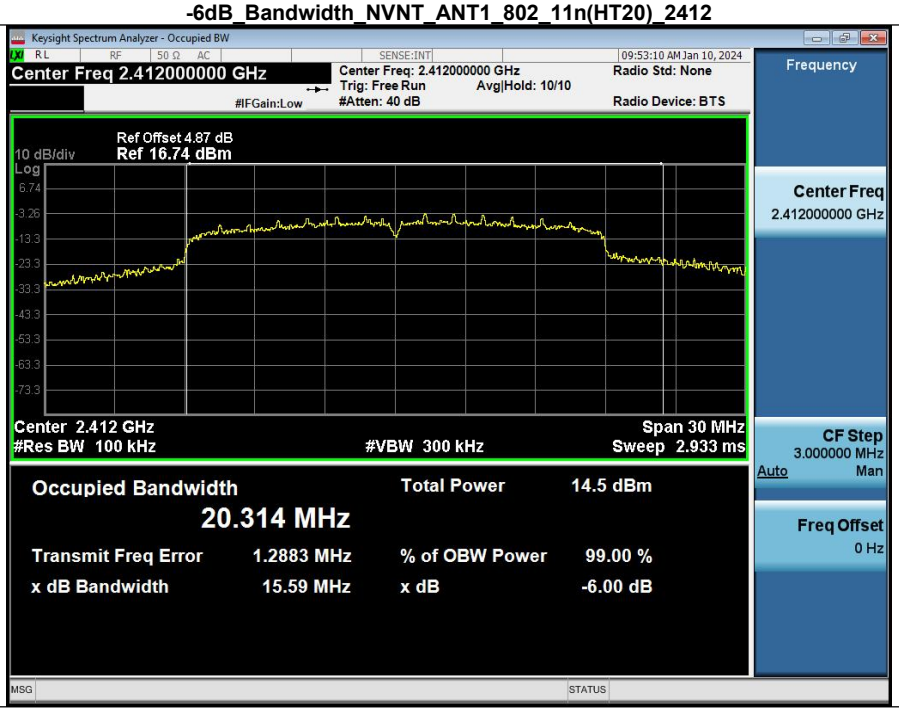
-6dB_Bandwidth_NVNT_ANT1_802_11g_2437



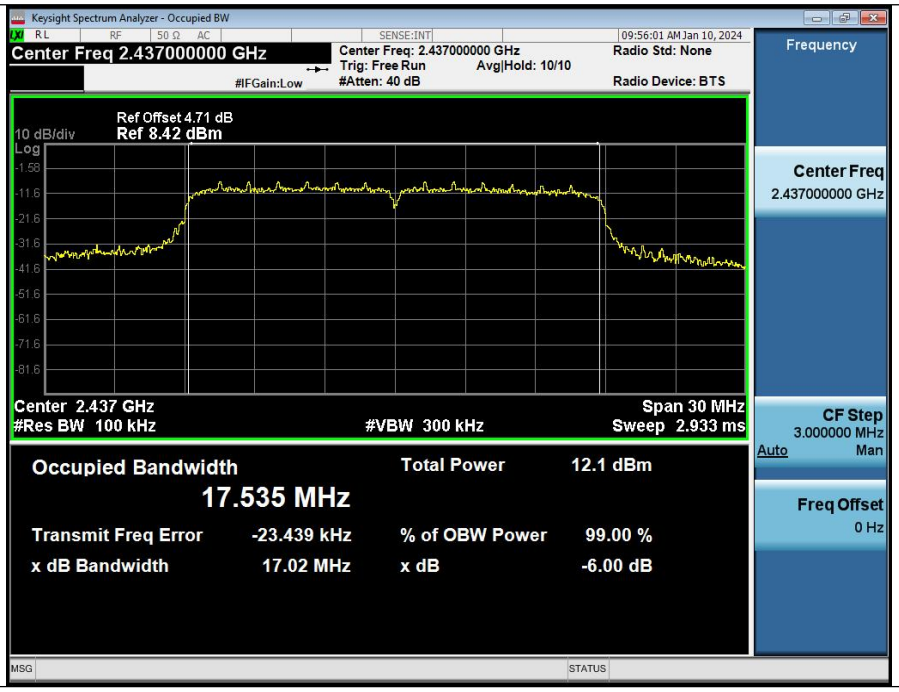
-6dB_Bandwidth_NVNT_ANT1_802_11g_2462



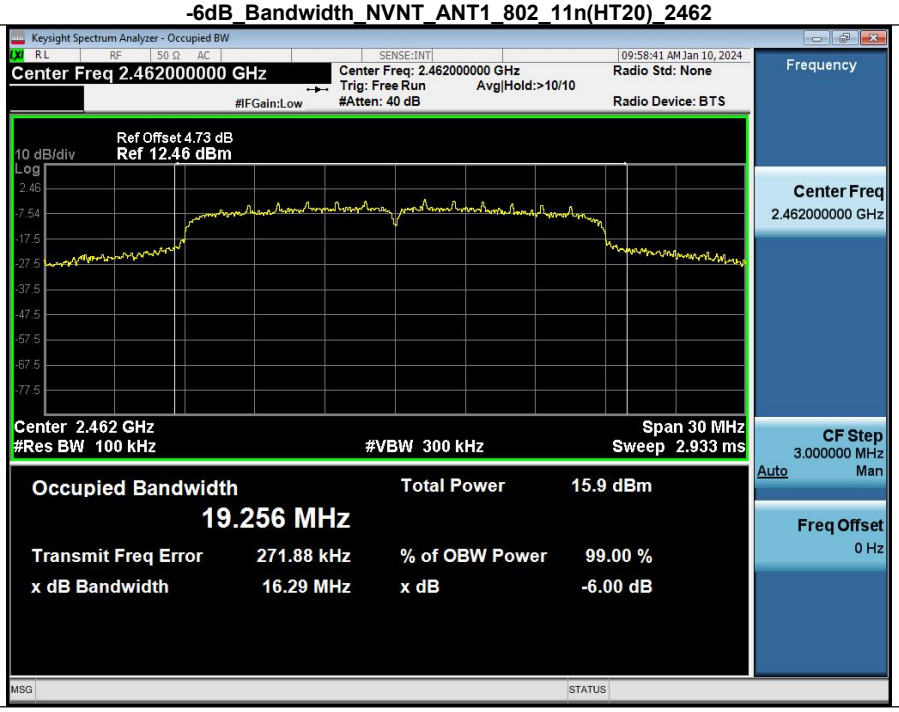
-6dB_Bandwidth_NVNT_ANT1_802_11n(HT20)_2412



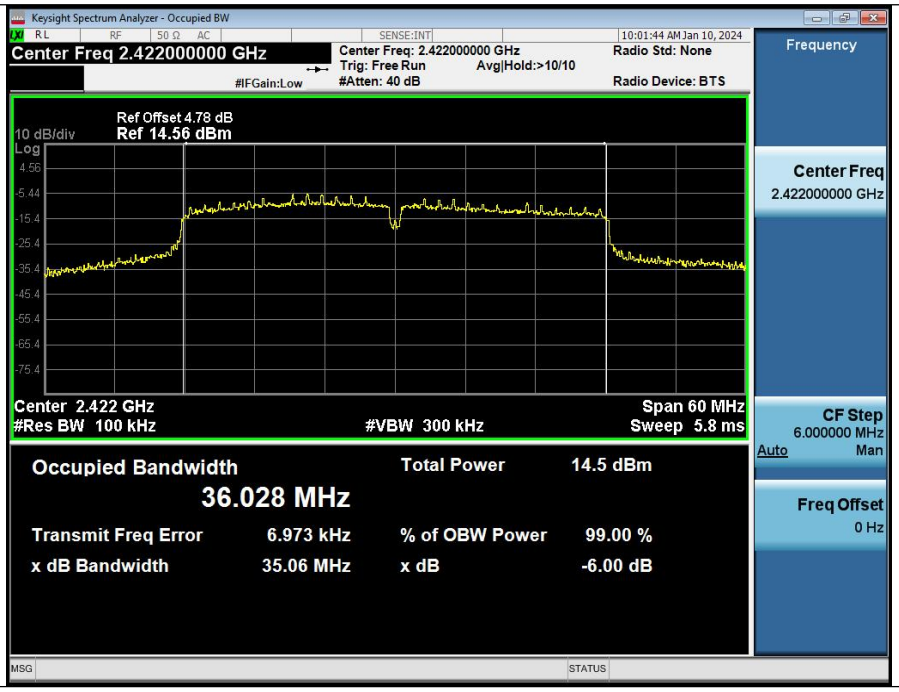
-6dB_Bandwidth_NVNT_ANT1_802_11n(HT20)_2437



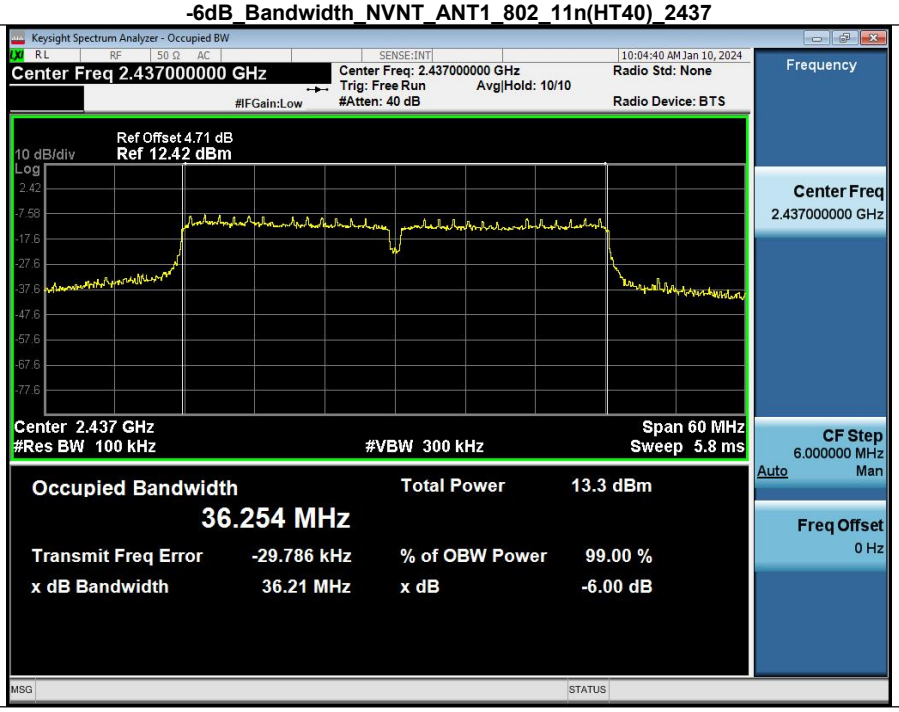
-6dB_Bandwidth_NVNT_ANT1_802_11n(HT20)_2462



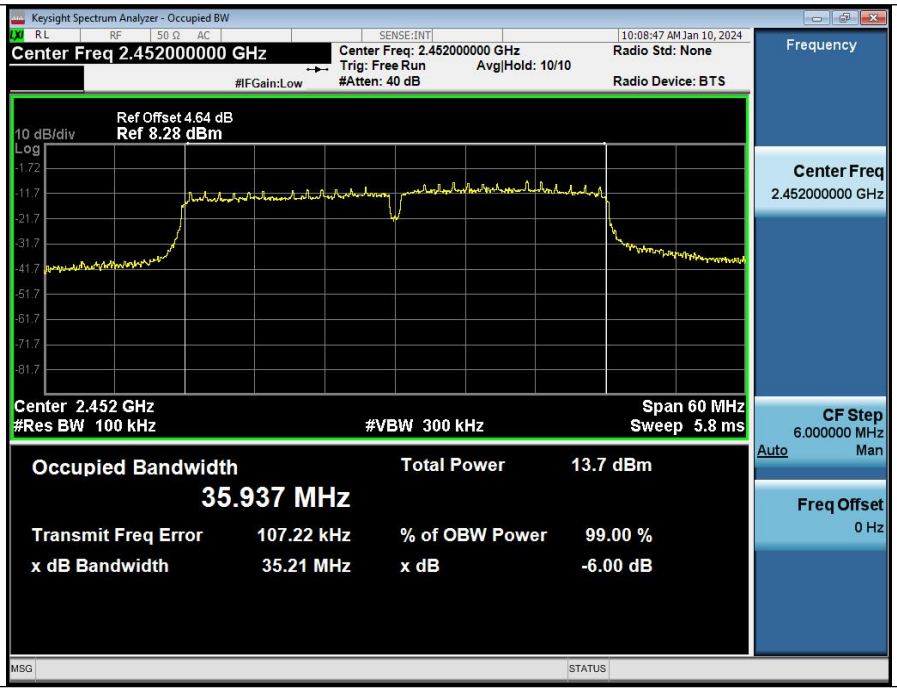
-6dB_Bandwidth_NVNT_ANT1_802_11n(HT40)_2422



-6dB_Bandwidth_NVNT_ANT1_802_11n(HT40)_2437



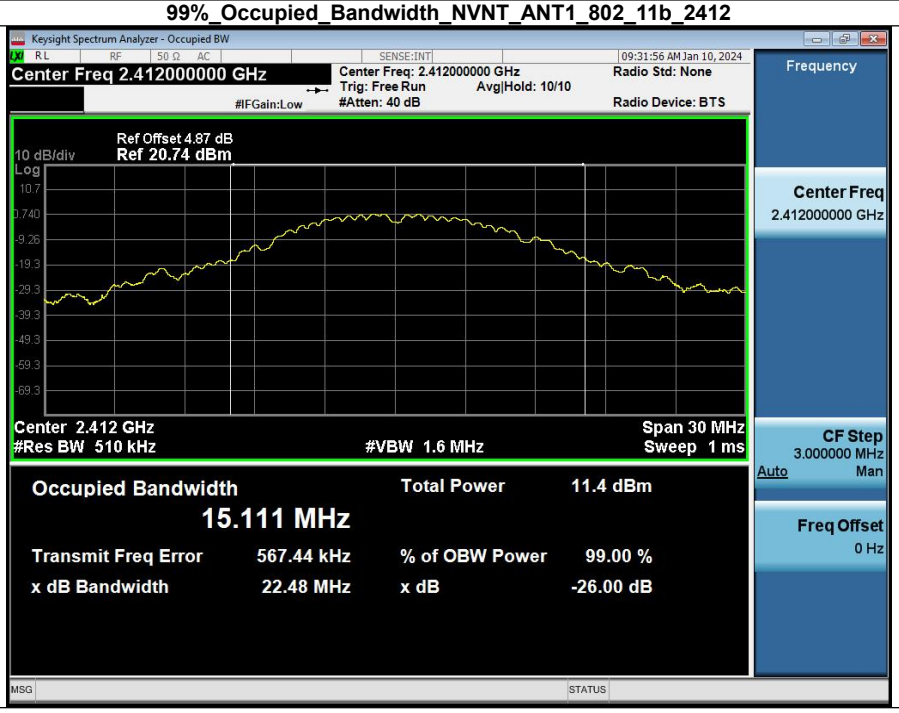
-6dB_Bandwidth_NVNT_ANT1_802_11n(HT40)_2452


Keysight Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:INT
10:08:47 AM Jan 10, 2024
Center Freq 2.452000000 GHz
#IFGain:Low
Center Freq: 2.452000000 GHz
Trig: Free Run
Avg|Hold: 10/10
#Atten: 40 dB
Radio Std: None
Radio Device: BTS
Frequency
Ref Offset 4.64 dB
10 dB/div
Ref 8.28 dBm
Log
-1.72
-11.7
-21.7
-31.7
-41.7
-51.7
-61.7
-71.7
-81.7
Center 2.452 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 60 MHz
Sweep 5.8 ms
Occupied Bandwidth
35.937 MHz
Total Power
13.7 dBm
Transmit Freq Error
107.22 kHz
% of OBW Power
99.00 %
x dB Bandwidth
35.21 MHz
x dB
-6.00 dB
Center Freq
2.452000000 GHz
CF Step
6.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

2. 99% Occupied Bandwidth

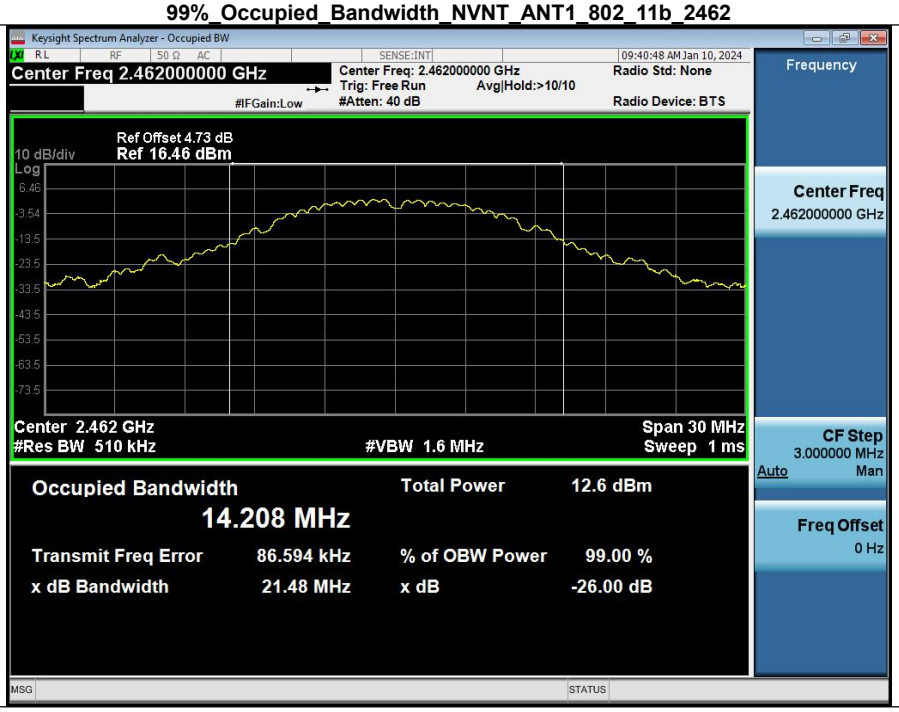
Condition	Antenna	Modulation	Frequency (MHz)	99%%BW(MHz)
NVNT	ANT1	802.11b	2412.00	15.111
NVNT	ANT1	802.11b	2437.00	11.999
NVNT	ANT1	802.11b	2462.00	14.208
NVNT	ANT1	802.11g	2412.00	22.258
NVNT	ANT1	802.11g	2437.00	17.280
NVNT	ANT1	802.11g	2462.00	21.578
NVNT	ANT1	802.11n(HT20)	2412.00	21.220
NVNT	ANT1	802.11n(HT20)	2437.00	17.982
NVNT	ANT1	802.11n(HT20)	2462.00	20.142
NVNT	ANT1	802.11n(HT40)	2422.00	36.609
NVNT	ANT1	802.11n(HT40)	2437.00	37.332
NVNT	ANT1	802.11n(HT40)	2452.00	36.510

99%_Occupied_Bandwidth_NVNT_ANT1_802_11b_2412



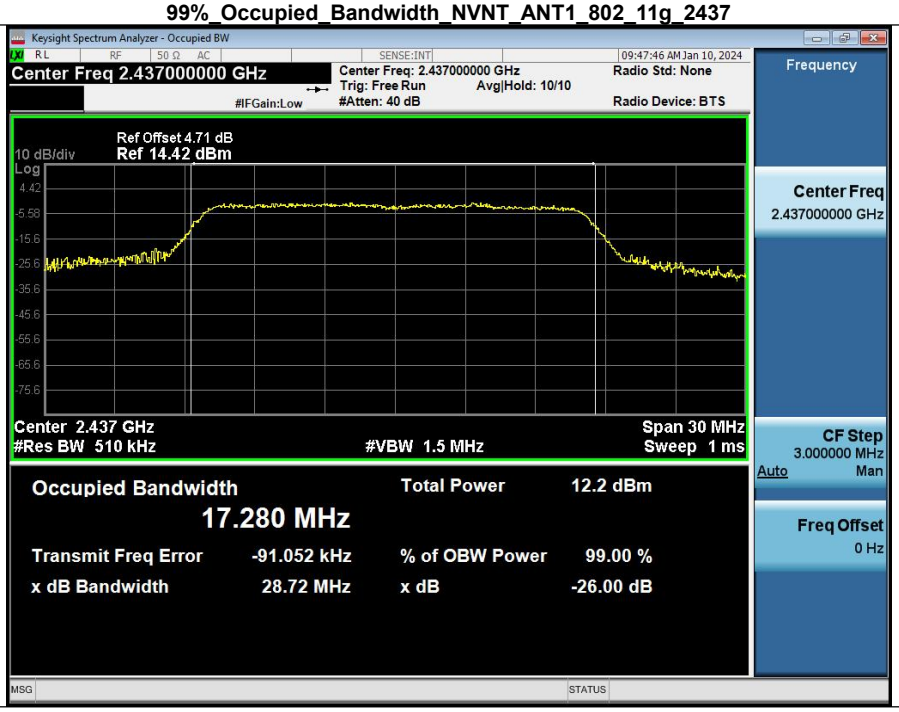
99%_Occupied_Bandwidth_NVNT_ANT1_802_11b_2437

99%_Occupied_Bandwidth_NVNT_ANT1_802_11b_2462

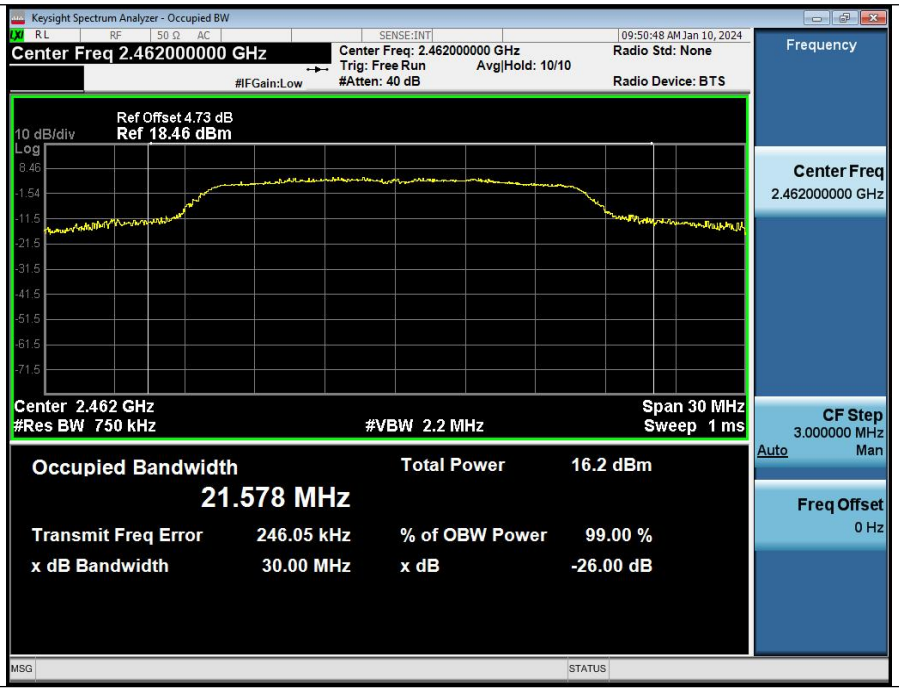


99%_Occupied_Bandwidth_NVNT_ANT1_802_11g_2412

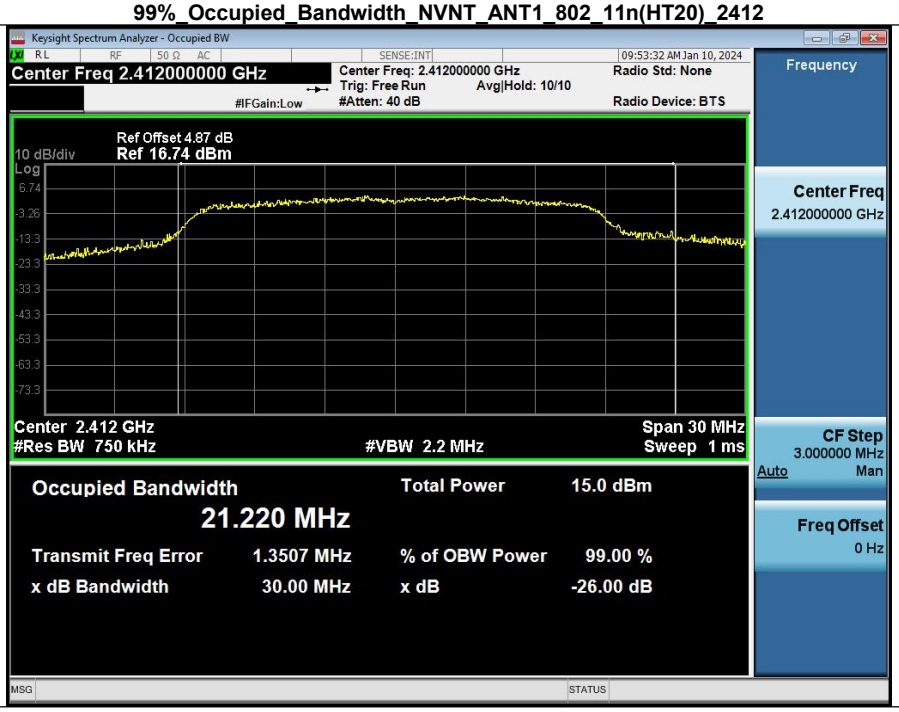
99%_Occupied_Bandwidth_NVNT_ANT1_802_11g_2437



99%_Occupied_Bandwidth_NVNT_ANT1_802_11g_2462

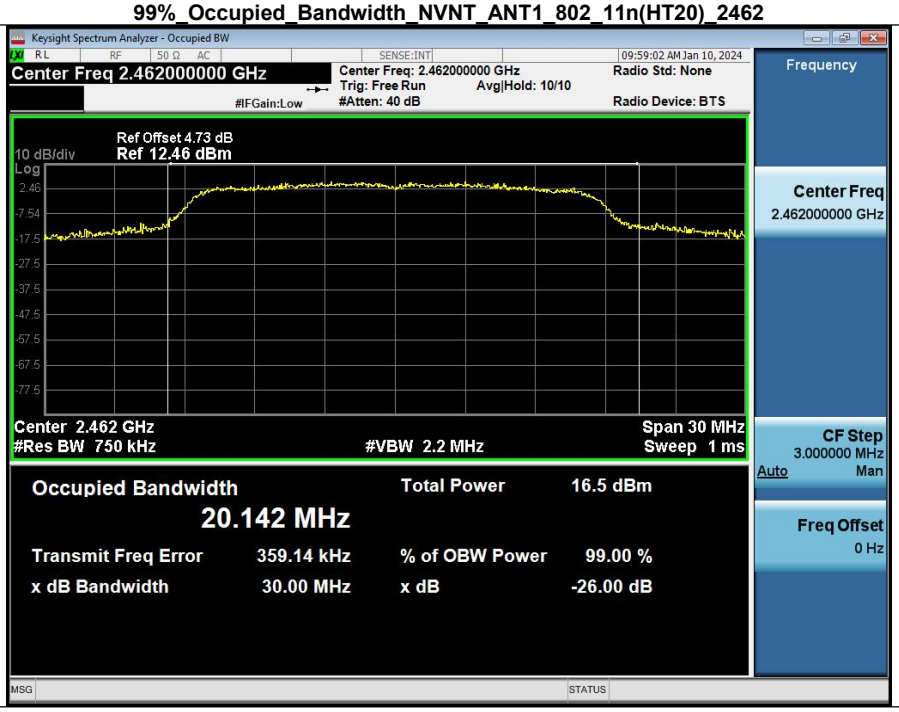


99%_Occupied_Bandwidth_NVNT_ANT1_802_11n(HT20)_2412



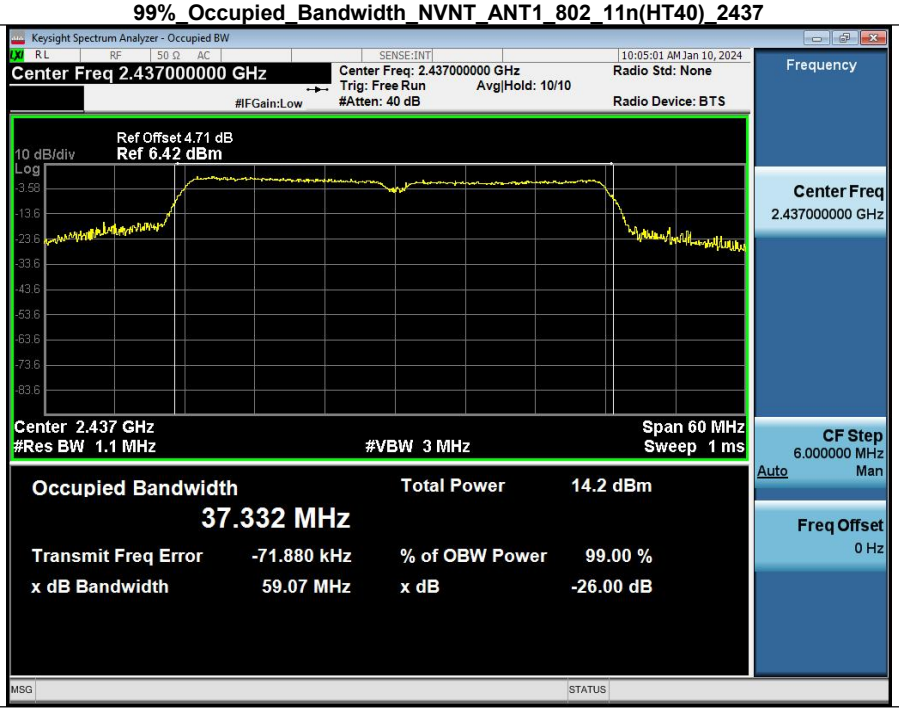
99%_Occupied_Bandwidth_NVNT_ANT1_802_11n(HT20)_2437

99%_Occupied_Bandwidth_NVNT_ANT1_802_11n(HT20)_2462

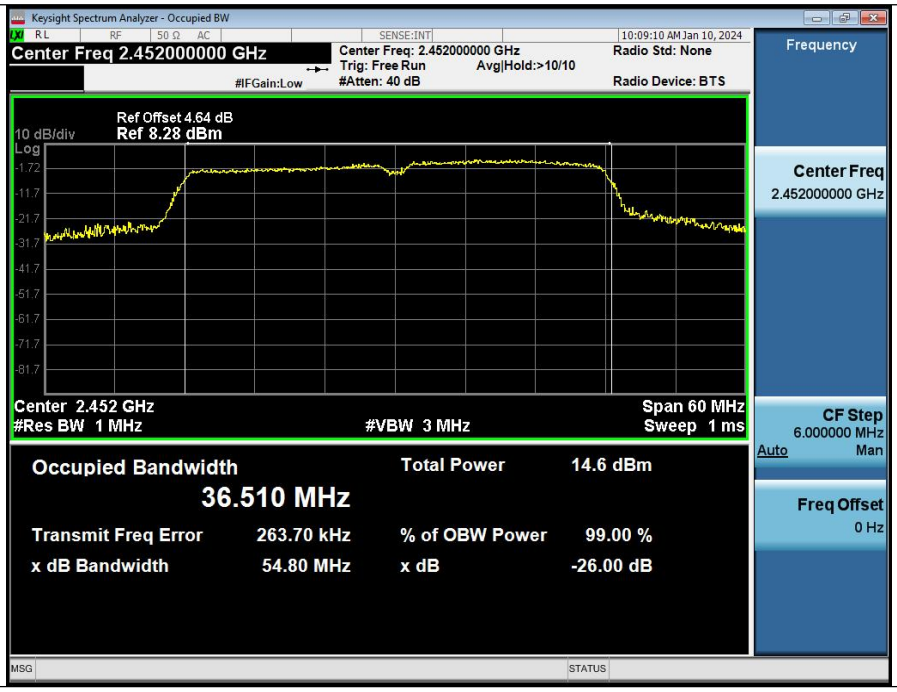


99%_Occupied_Bandwidth_NVNT_ANT1_802_11n(HT40)_2422

99%_Occupied_Bandwidth_NVNT_ANT1_802_11n(HT40)_2437



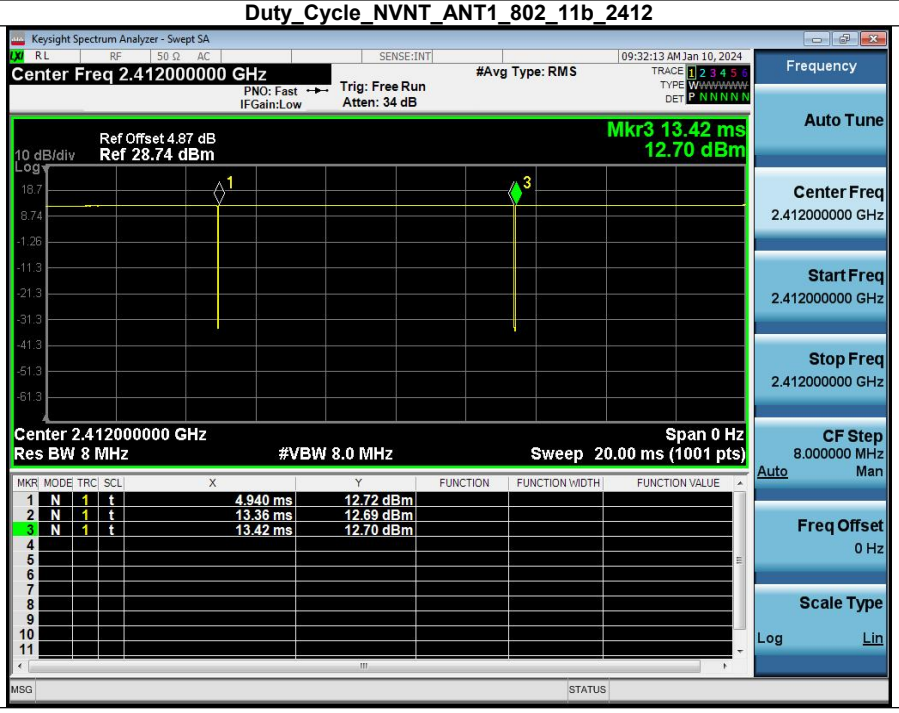
99%_Occupied_Bandwidth_NVNT_ANT1_802_11n(HT40)_2452


Keysight Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:INT
10:09:10 AM Jan 10, 2024
Center Freq 2.452000000 GHz
#IFGain:Low
Center Freq: 2.452000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 40 dB
Radio Std: None
Radio Device: BTS
Frequency
Ref Offset 4.64 dB
10 dB/div
Ref 8.28 dBm
Log
-1.72
-11.7
-21.7
-31.7
-41.7
-51.7
-61.7
-71.7
-81.7
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
36.510 MHz
Total Power
14.6 dBm
Transmit Freq Error
263.70 kHz
% of OBW Power
99.00 %
x dB Bandwidth
54.80 MHz
x dB
-26.00 dB
Freq Offset
0 Hz
MSG
STATUS

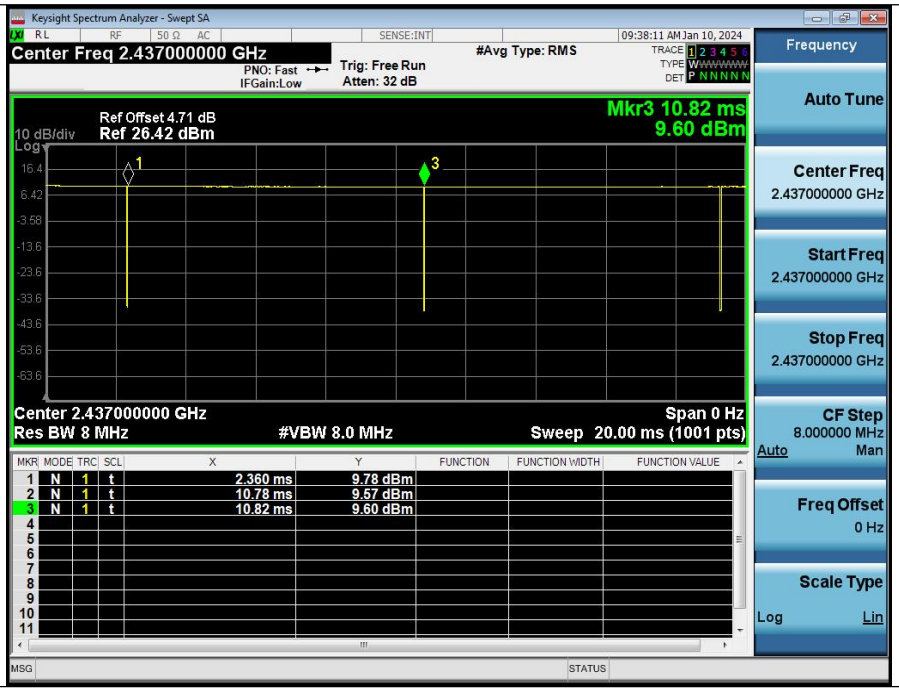
3. Duty Cycle

Condition	Antenna	Modulation	Frequency (MHz)	Duty cycle(%)	Duty factor(dB)
NVNT	ANT1	802.11b	2412.00	99.53	0.00
NVNT	ANT1	802.11b	2437.00	99.76	0.00
NVNT	ANT1	802.11b	2462.00	99.76	0.00
NVNT	ANT1	802.11g	2412.00	98.61	0.00
NVNT	ANT1	802.11g	2437.00	97.26	0.12
NVNT	ANT1	802.11g	2462.00	97.26	0.12
NVNT	ANT1	802.11n(HT20)	2412.00	96.77	0.14
NVNT	ANT1	802.11n(HT20)	2437.00	96.77	0.14
NVNT	ANT1	802.11n(HT20)	2462.00	96.77	0.14
NVNT	ANT1	802.11n(HT40)	2422.00	93.75	0.28
NVNT	ANT1	802.11n(HT40)	2437.00	93.75	0.28
NVNT	ANT1	802.11n(HT40)	2452.00	96.88	0.14

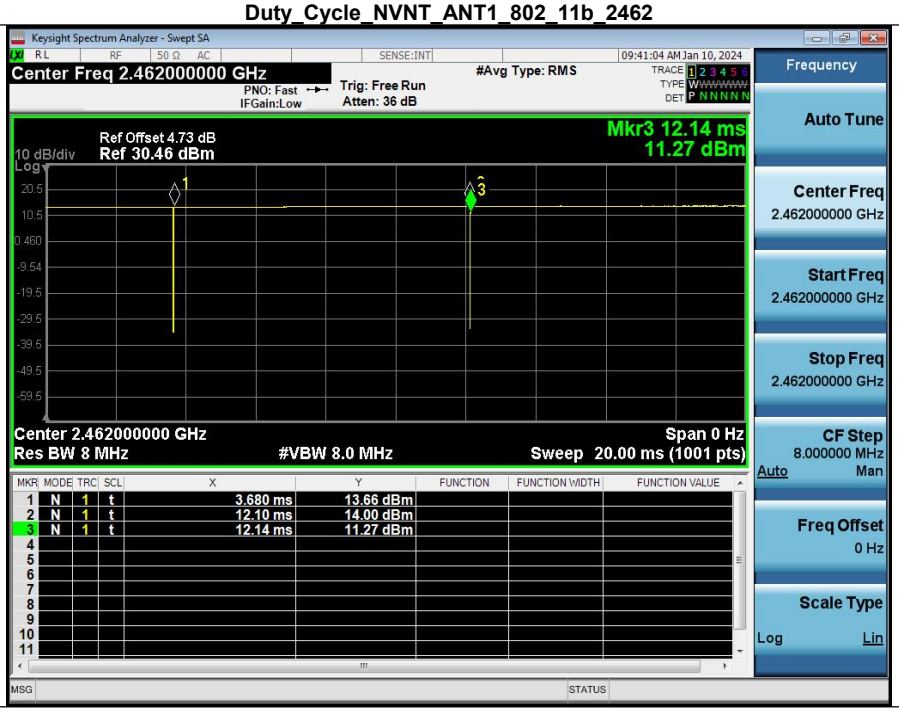
Duty_Cycle_NVNT_ANT1_802_11b_2412



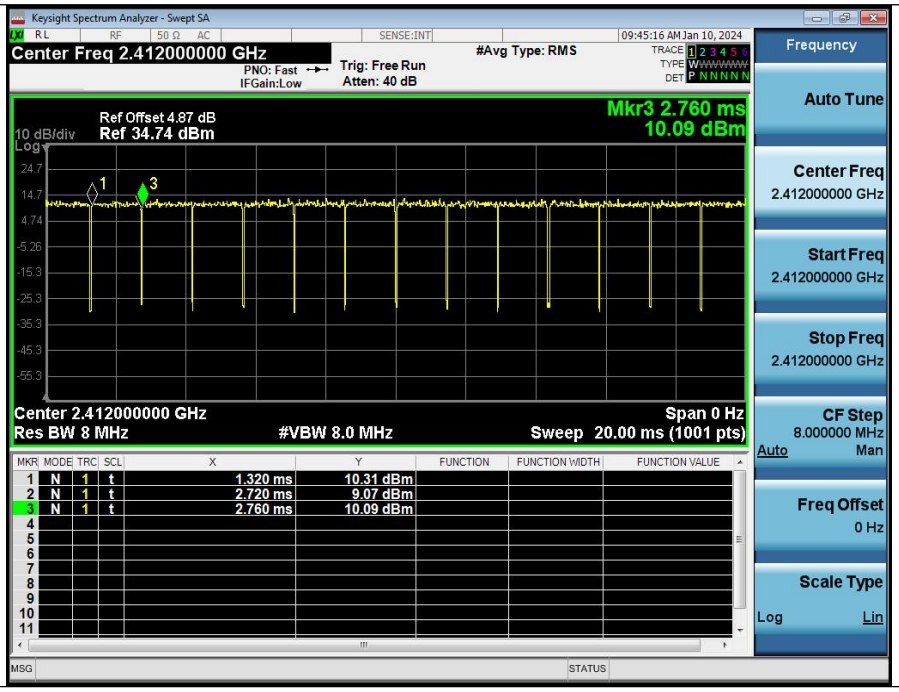
Duty_Cycle_NVNT_ANT1_802_11b_2437



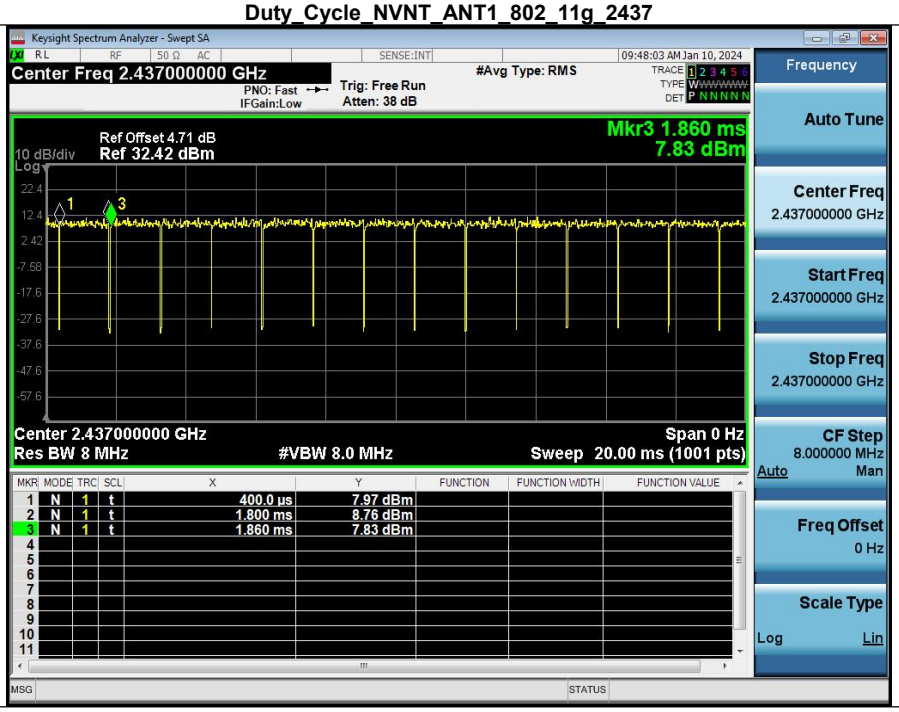
Duty_Cycle_NVNT_ANT1_802_11b_2462



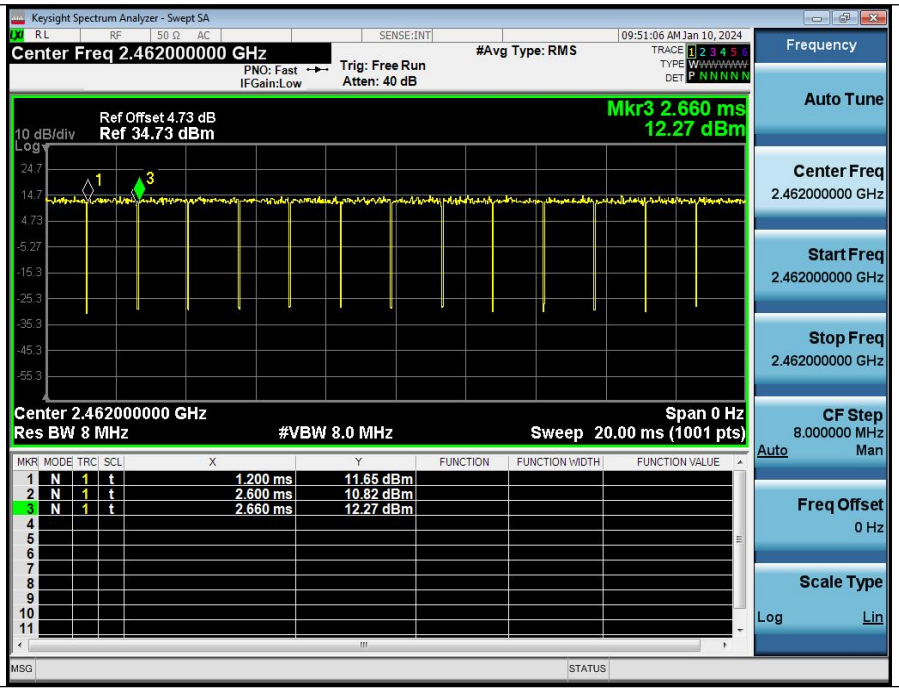
Duty_Cycle_NVNT_ANT1_802_11g_2412



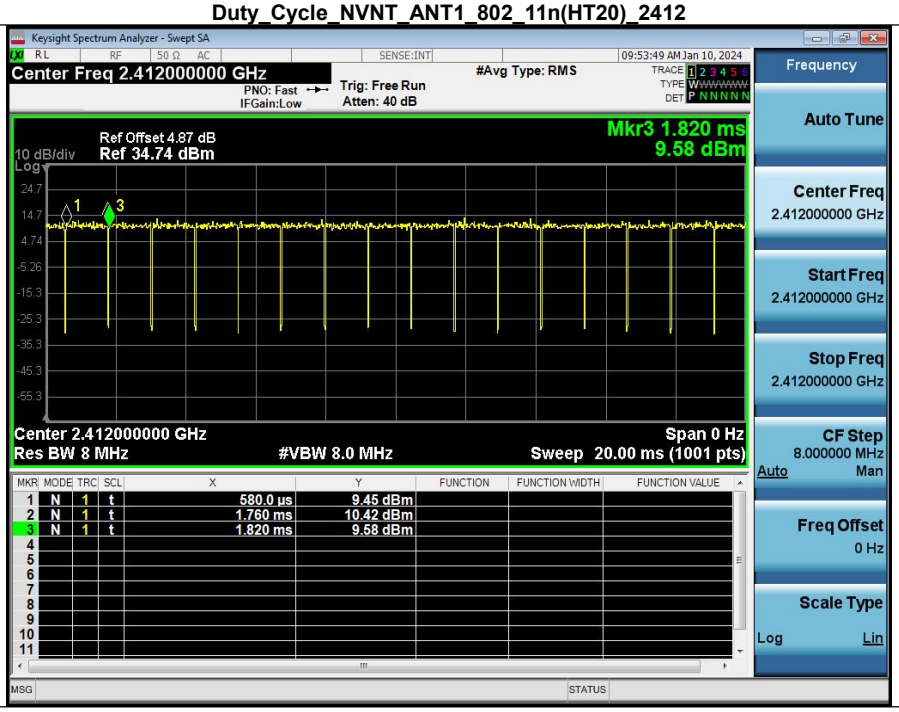
Duty_Cycle_NVNT_ANT1_802_11g_2437



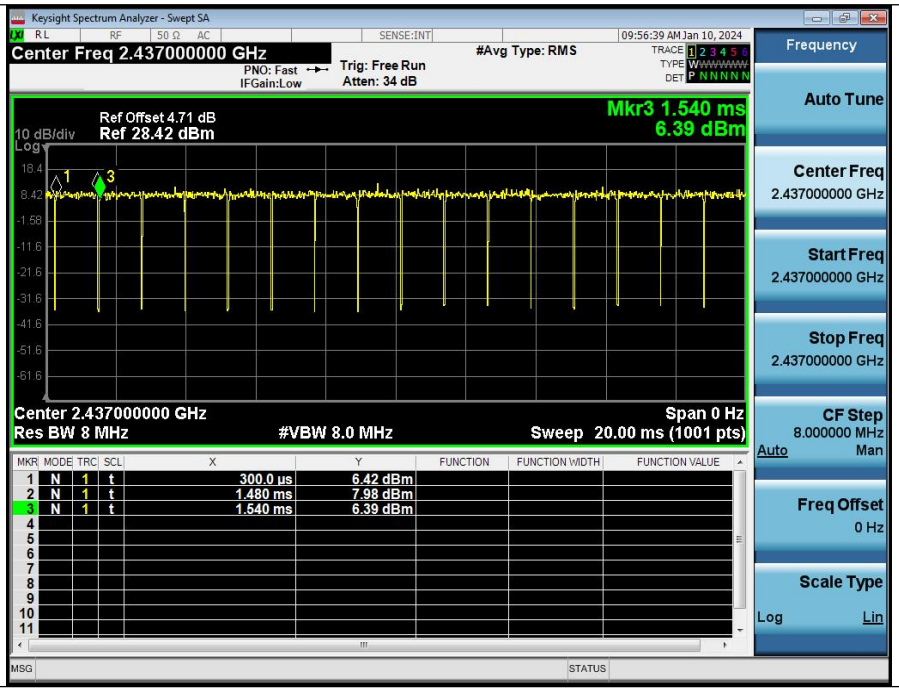
Duty_Cycle_NVNT_ANT1_802_11g_2462



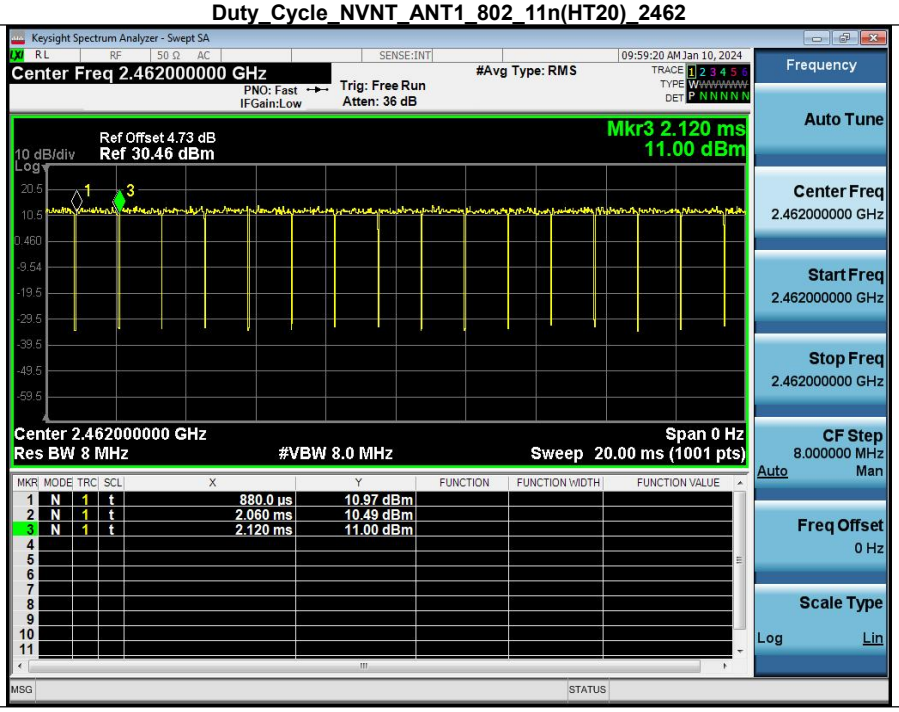
Duty_Cycle_NVNT_ANT1_802_11n(HT20)_2412



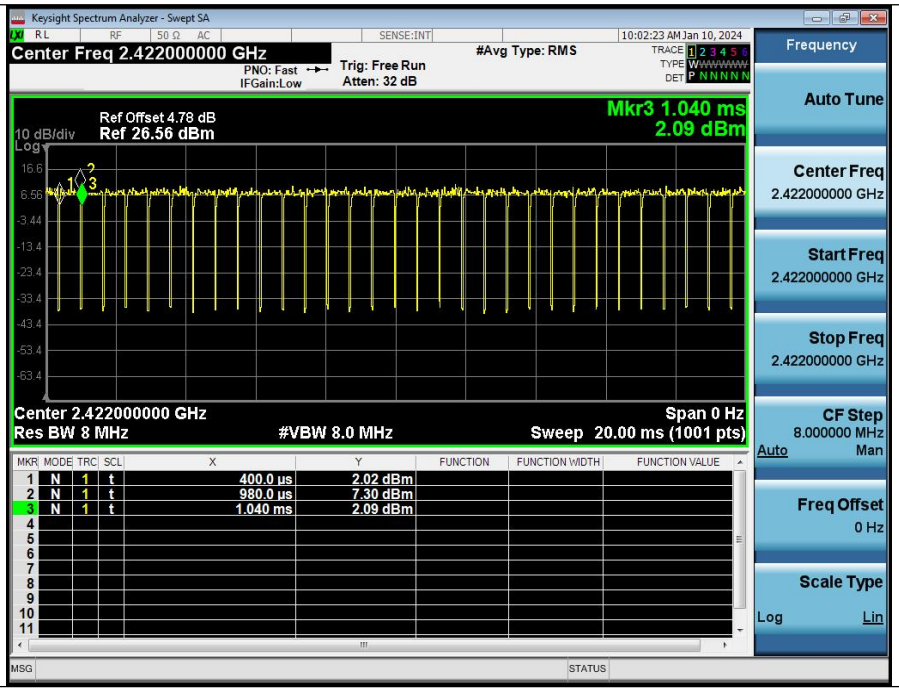
Duty_Cycle_NVNT_ANT1_802_11n(HT20)_2437



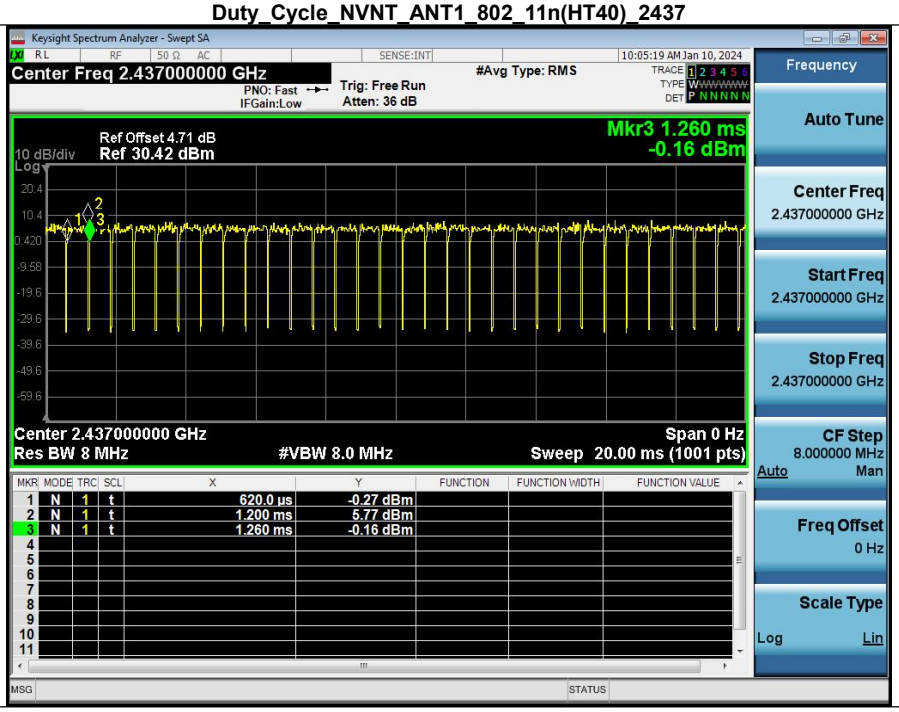
Duty_Cycle_NVNT_ANT1_802_11n(HT20)_2462



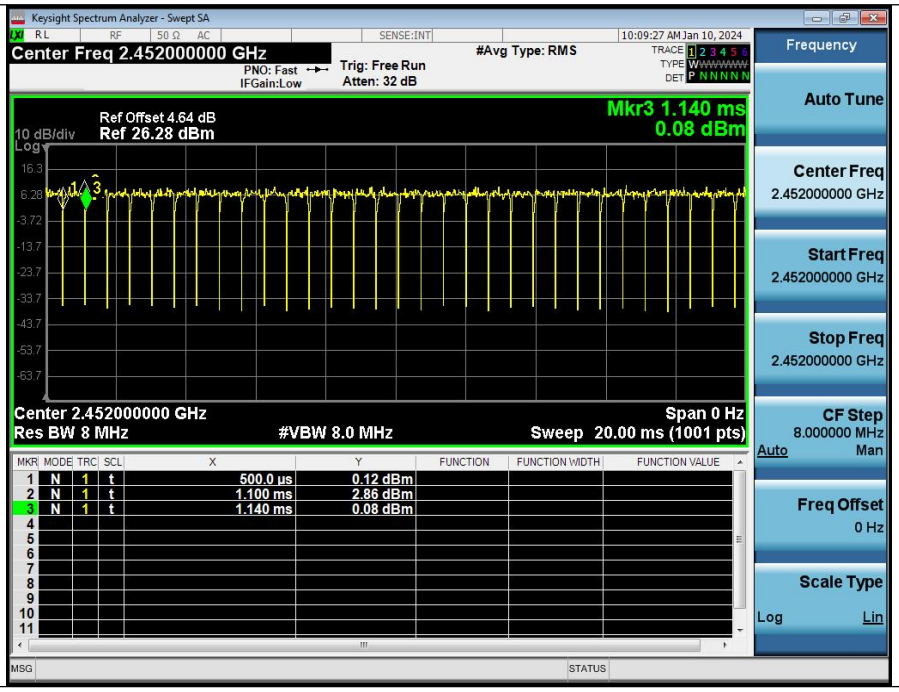
Duty_Cycle_NVNT_ANT1_802_11n(HT40)_2422



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: 32 dB
#Avg Type: RMS
10:09:27 AM Jan 10, 2024
Ref Offset 4.64 dB
10 dB/div
Ref 26.28 dBm
Log
Mkr3 1.140 ms
0.08 dBm
Center 2.452000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 20.00 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 t 500.0 µs 0.12 dBm
2 N 1 t 1.100 ms 2.86 dBm
3 N 1 t 1.140 ms 0.08 dBm
Frequency
Auto Tune
Center Freq
2.452000000 GHz
Start Freq
2.452000000 GHz
Stop Freq
2.452000000 GHz
CF Step
8.000000 MHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin
MSG
STATUS

4. MAX. Output Power

Condition	Antenna	Modulation	Frequency (MHz)	Detector	Conducted Power(dBm)	limit(dBm)	Result
NVNT	ANT1	802.11b	2412.00	Peak	11.73	30	Pass
NVNT	ANT1	802.11b	2437.00	Peak	9.14	30	Pass
NVNT	ANT1	802.11b	2462.00	Peak	13.06	30	Pass
NVNT	ANT1	802.11g	2412.00	Peak	15.04	30	Pass
NVNT	ANT1	802.11g	2437.00	Peak	12.85	30	Pass
NVNT	ANT1	802.11g	2462.00	Peak	16.50	30	Pass
NVNT	ANT1	802.11n(HT20)	2412.00	Peak	14.80	30	Pass
NVNT	ANT1	802.11n(HT20)	2437.00	Peak	12.65	30	Pass
NVNT	ANT1	802.11n(HT20)	2462.00	Peak	16.32	30	Pass
NVNT	ANT1	802.11n(HT40)	2422.00	Peak	14.86	30	Pass
NVNT	ANT1	802.11n(HT40)	2437.00	Peak	13.59	30	Pass
NVNT	ANT1	802.11n(HT40)	2452.00	Peak	14.17	30	Pass

5. Power Spectral Density

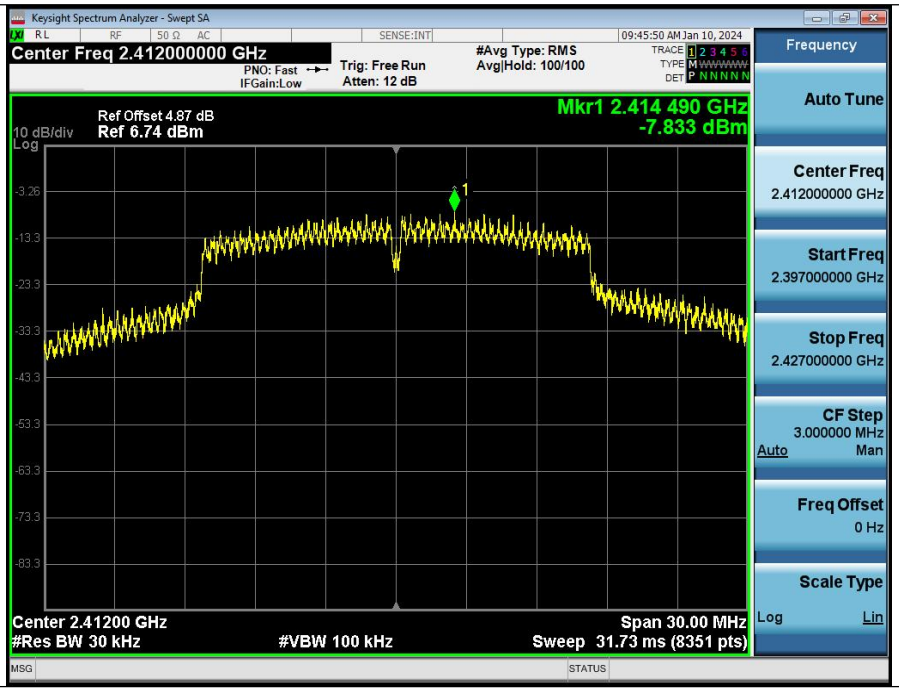
Condition	Antenna	Modulation	Frequency (MHz)	PSD(dBm/30kHz)	RB factor(dB)	PSD(dBm/3kHz)	limit(dBm/3kHz)	Result
NVNT	ANT1	802.11b	2412.00	-3.66	-10.00	-13.66	8	Pass
NVNT	ANT1	802.11b	2437.00	-4.87	-10.00	-14.87	8	Pass
NVNT	ANT1	802.11b	2462.00	-2.19	-10.00	-12.19	8	Pass
NVNT	ANT1	802.11g	2412.00	-7.83	-10.00	-17.83	8	Pass
NVNT	ANT1	802.11g	2437.00	-10.09	-10.00	-20.09	8	Pass
NVNT	ANT1	802.11g	2462.00	-6.04	-10.00	-16.04	8	Pass
NVNT	ANT1	802.11n(HT20)	2412.00	-8.23	-10.00	-18.23	8	Pass
NVNT	ANT1	802.11n(HT20)	2437.00	-11.53	-10.00	-21.53	8	Pass
NVNT	ANT1	802.11n(HT20)	2462.00	-6.75	-10.00	-16.75	8	Pass
NVNT	ANT1	802.11n(HT40)	2422.00	-11.14	-10.00	-21.14	8	Pass
NVNT	ANT1	802.11n(HT40)	2437.00	-12.99	-10.00	-22.99	8	Pass
NVNT	ANT1	802.11n(HT40)	2452.00	-12.55	-10.00	-22.55	8	Pass

Power_Spectral_Density_NVNT_ANT1_802_11b_2412

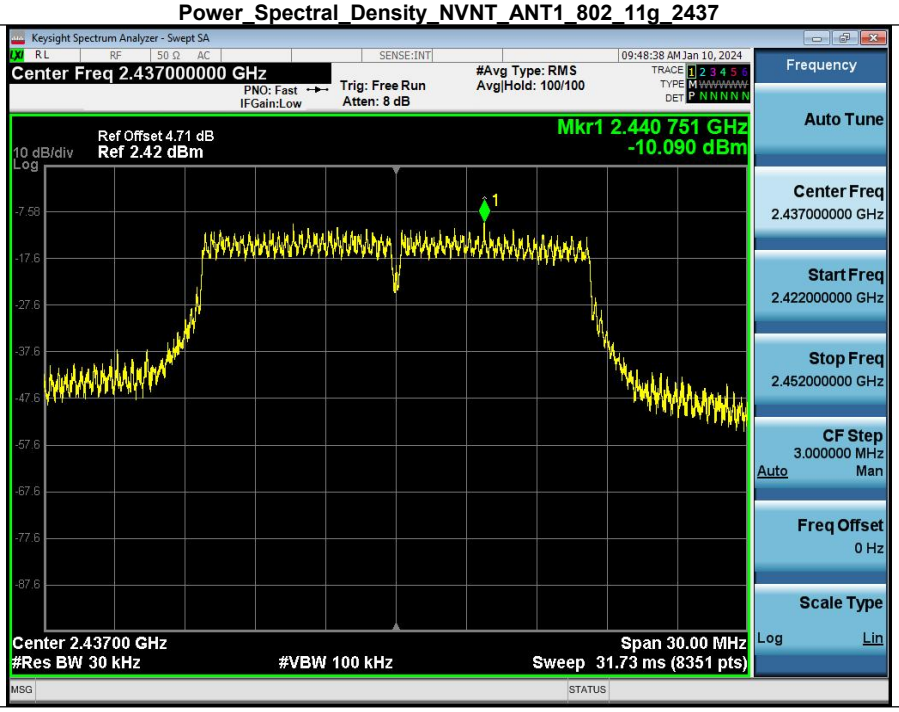
Power_Spectral_Density_NVNT_ANT1_802_11b_2437

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