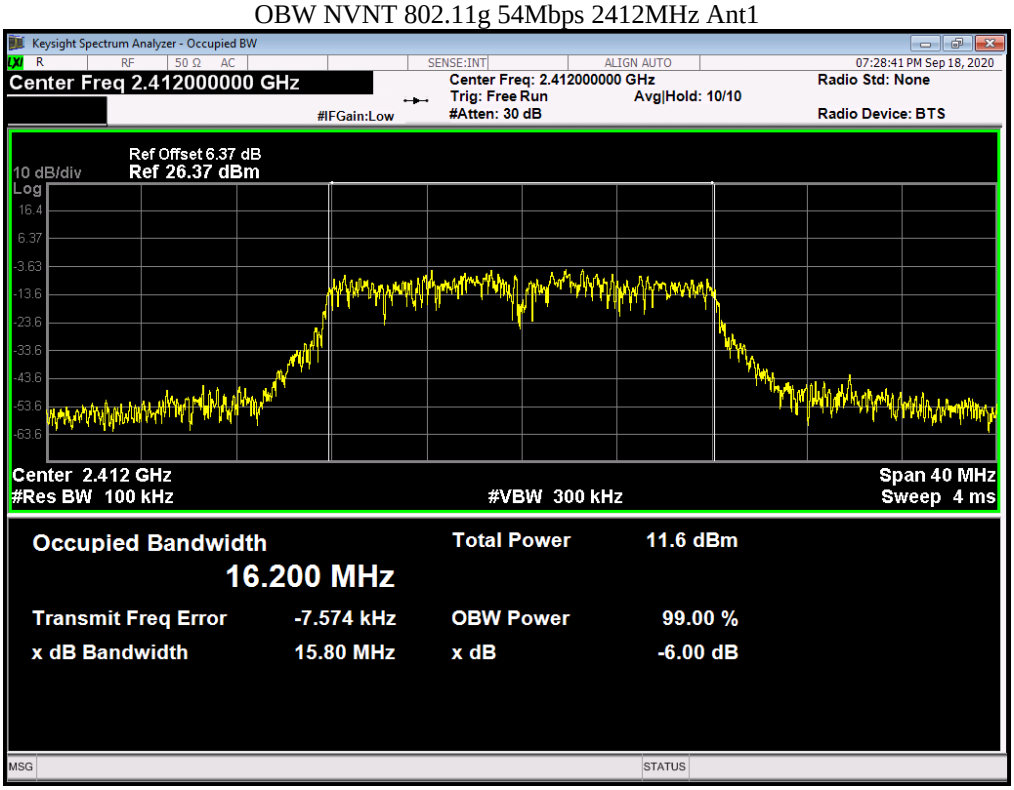
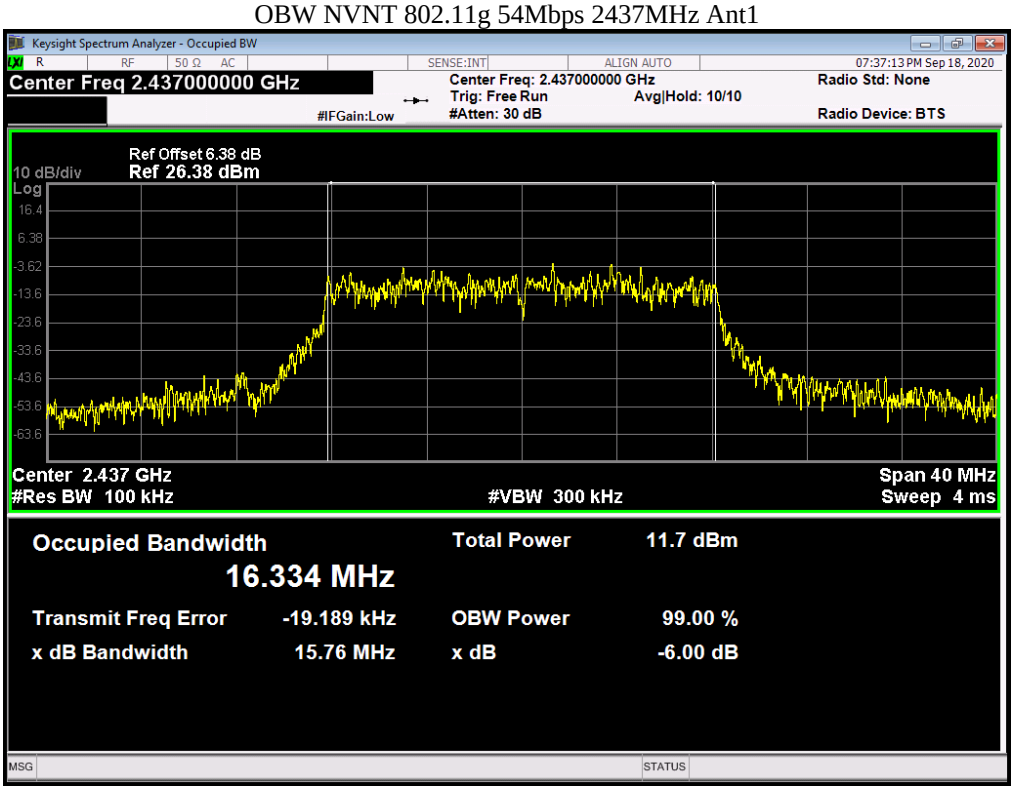
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	802.11g 54Mbps	2412	Ant 1	16.2003	15.8014	0.5	Pass
NVNT	802.11g 54Mbps	2437	Ant 1	16.3344	15.7641	0.5	Pass
NVNT	802.11g 54Mbps	2462	Ant 1	16.2504	14.5372	0.5	Pass

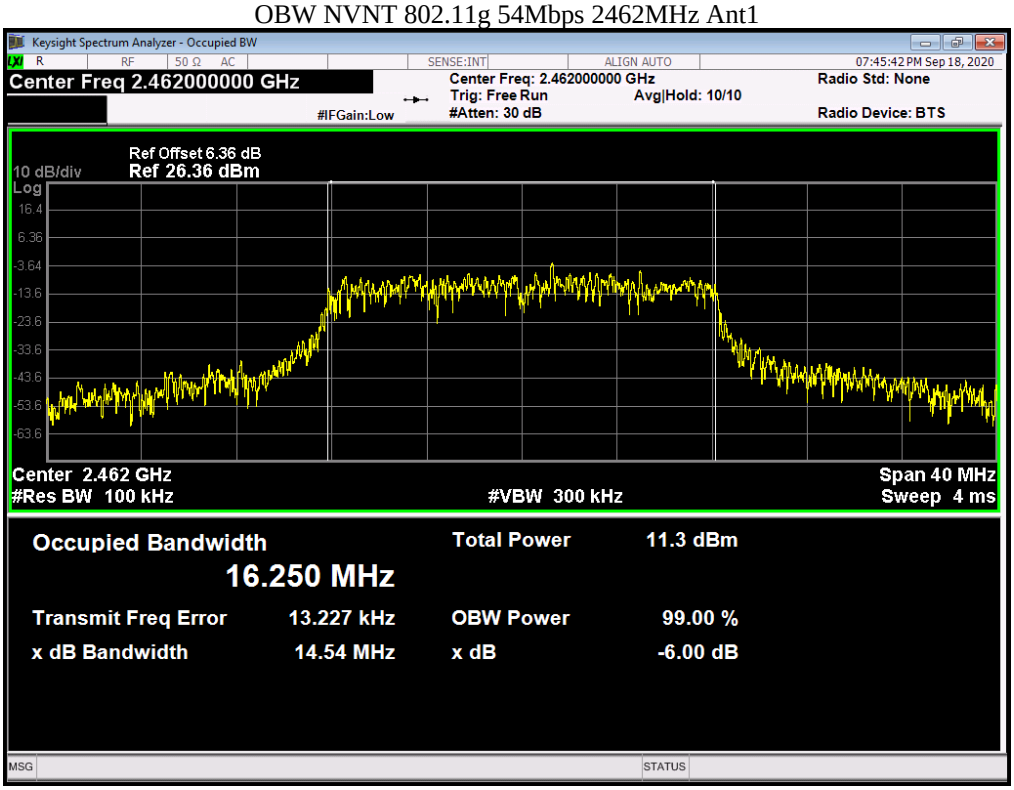
OBW NVNT 802.11g 54Mbps 2412MHz Ant1



OBW NVNT 802.11g 54Mbps 2437MHz Ant1

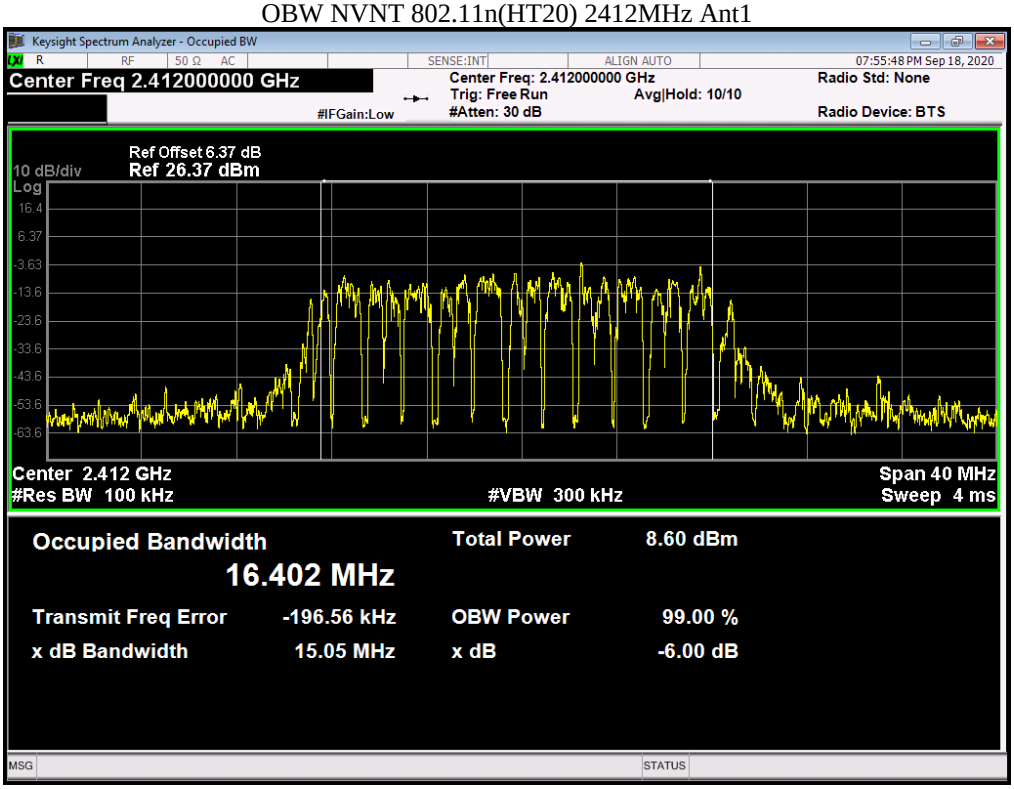


OBW NVNT 802.11g 54Mbps 2462MHz Ant1

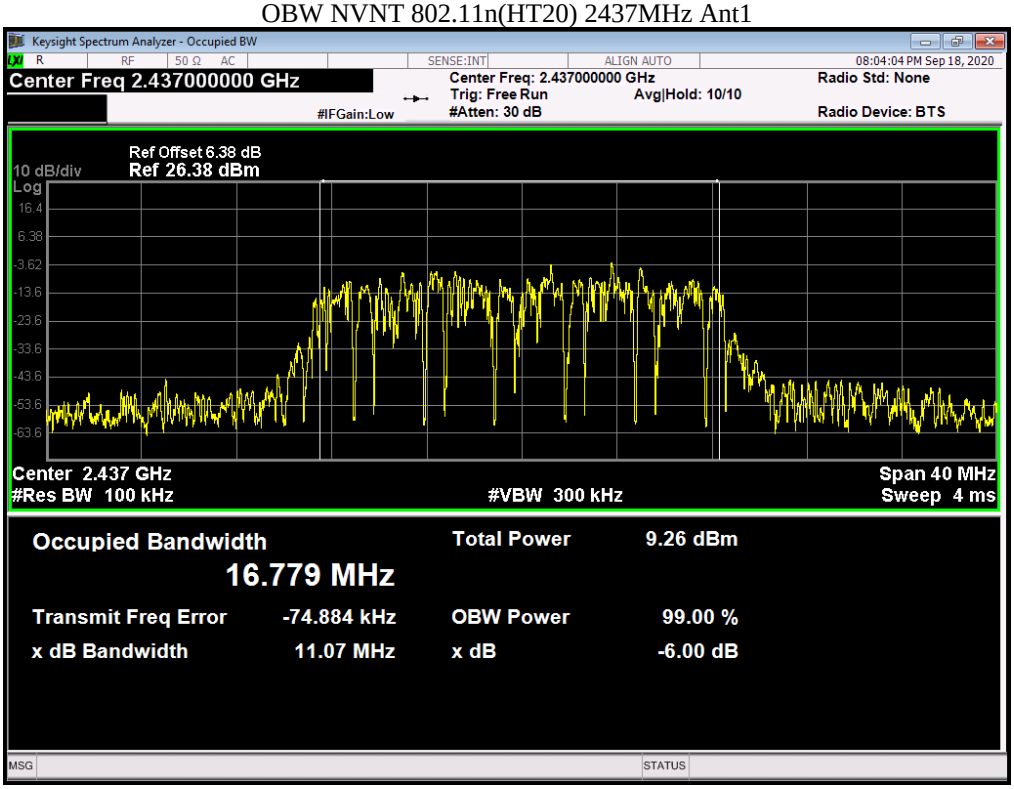


Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	802.11n(HT20)	2412	Ant 1	16.4017	15.0507	0.5	Pass
NVNT	802.11n(HT20)	2437	Ant 1	16.7791	11.0706	0.5	Pass
NVNT	802.11n(HT20)	2462	Ant 1	17.0698	15.5565	0.5	Pass

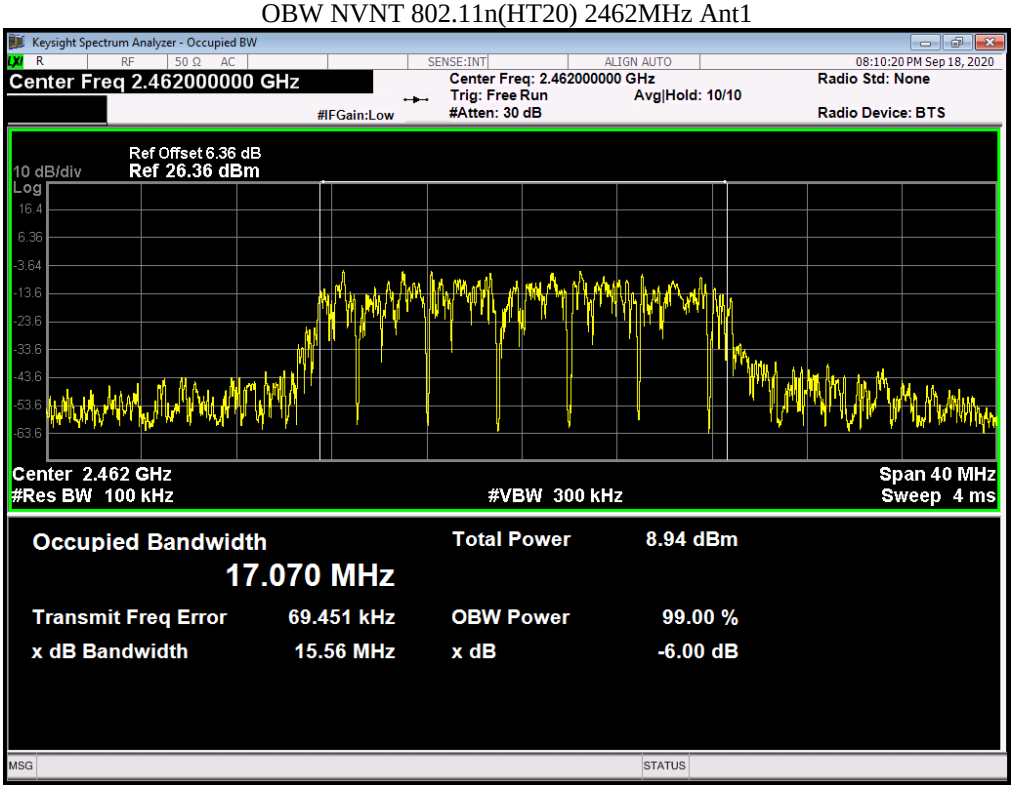
OBW NVNT 802.11n(HT20) 2412MHz Ant1



OBW NVNT 802.11n(HT20) 2437MHz Ant1

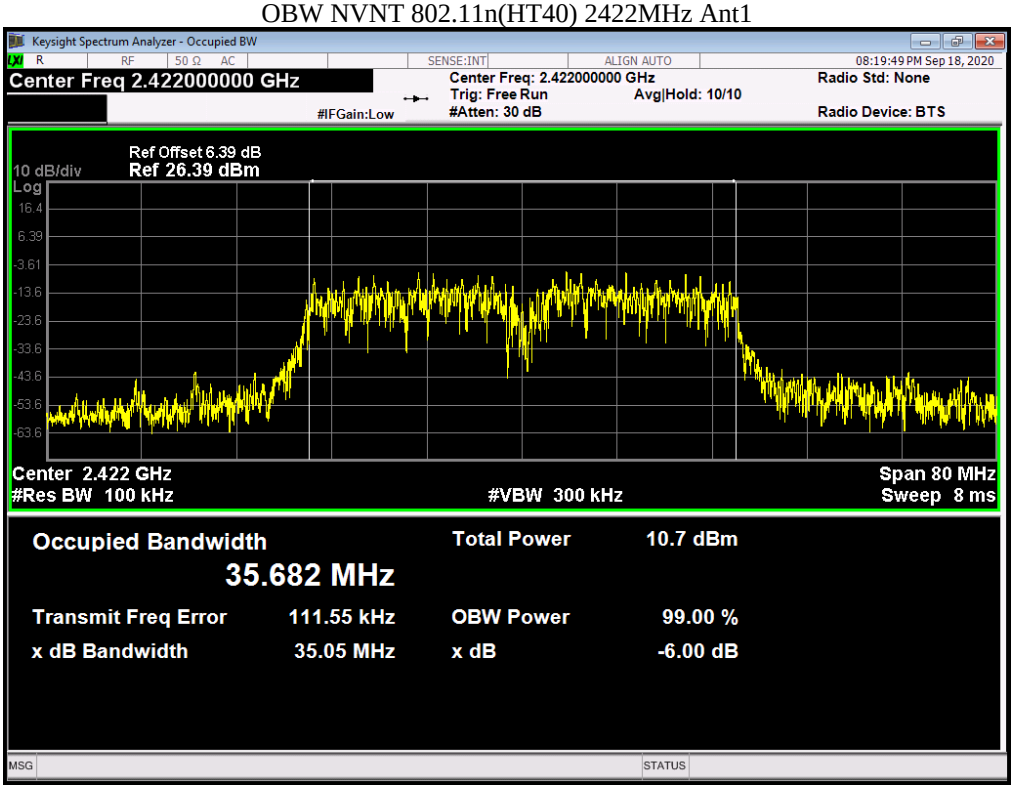


OBW NVNT 802.11n(HT20) 2462MHz Ant1

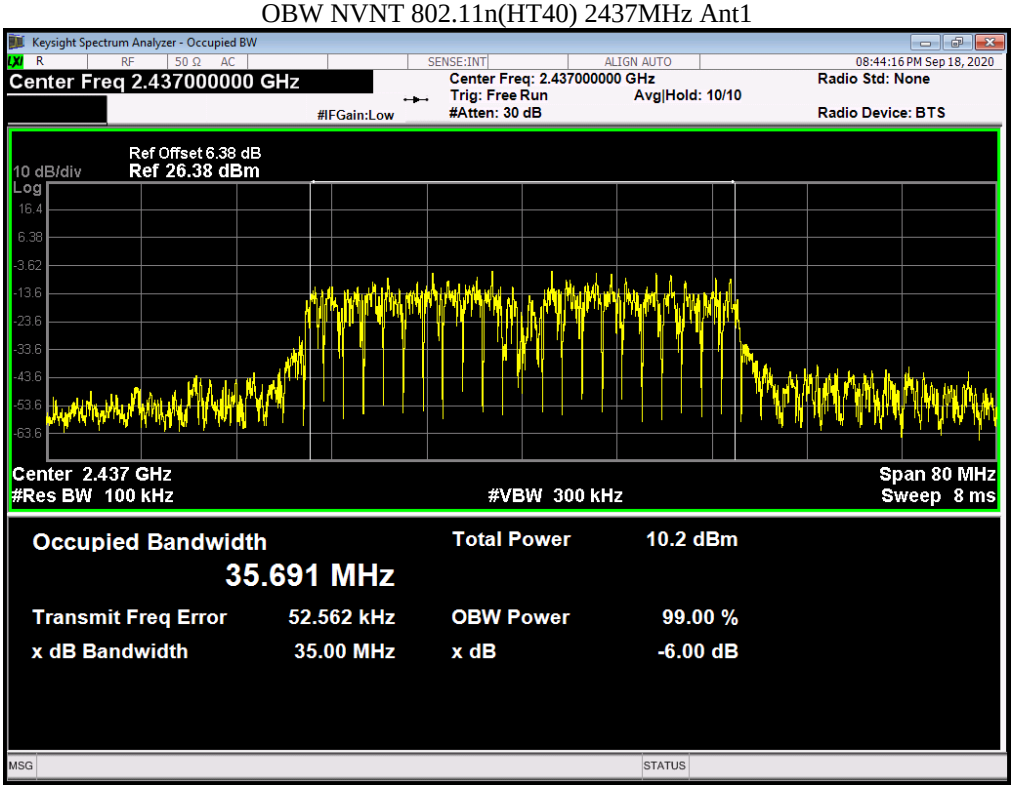


Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	802.11n(HT40)	2422	Ant 1	35.6821	35.0468	0.5	Pass
NVNT	802.11n(HT40)	2437	Ant 1	35.6912	34.9953	0.5	Pass
NVNT	802.11n(HT40)	2452	Ant 1	35.8633	34.9155	0.5	Pass

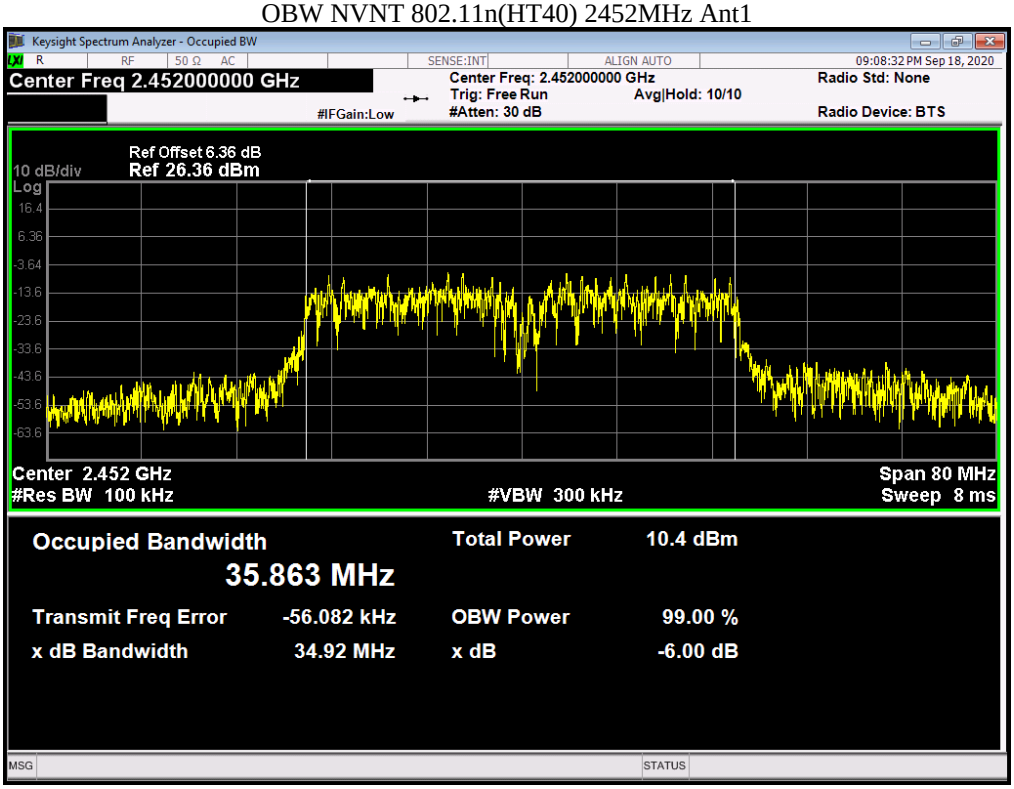
OBW NVNT 802.11n(HT40) 2422MHz Ant1



OBW NVNT 802.11n(HT40) 2437MHz Ant1



OBW NVNT 802.11n(HT40) 2452MHz Ant1

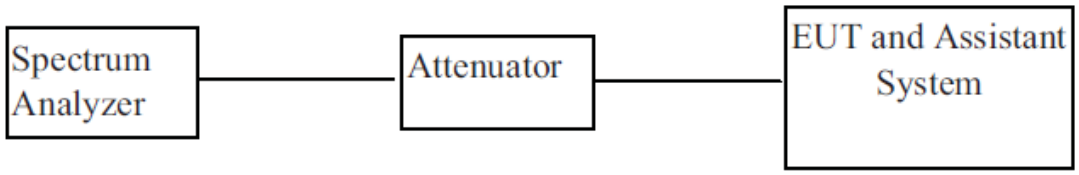


7. Band Edges Measurement

7.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	MXA Signal Analyzer	KEYSIGHT	N9020A	MY54510476	2020/05/25	1 Year

7.2. BLOCK DIAGRAM OF TEST SETUP



7.3. Limit

Below –30dB of the highest emission level of operating band (In 100 kHz Resolution Bandwidth)

7.4. Test Procedure

The transmitter output was connected to the spectrum analyzer via a low lose cable.

Set RBW of spectrum analyzer to 100 KHz and VBW of spectrum analyzer to 300 KHz with convenient frequency span including 100 KHz bandwidth from band edge.

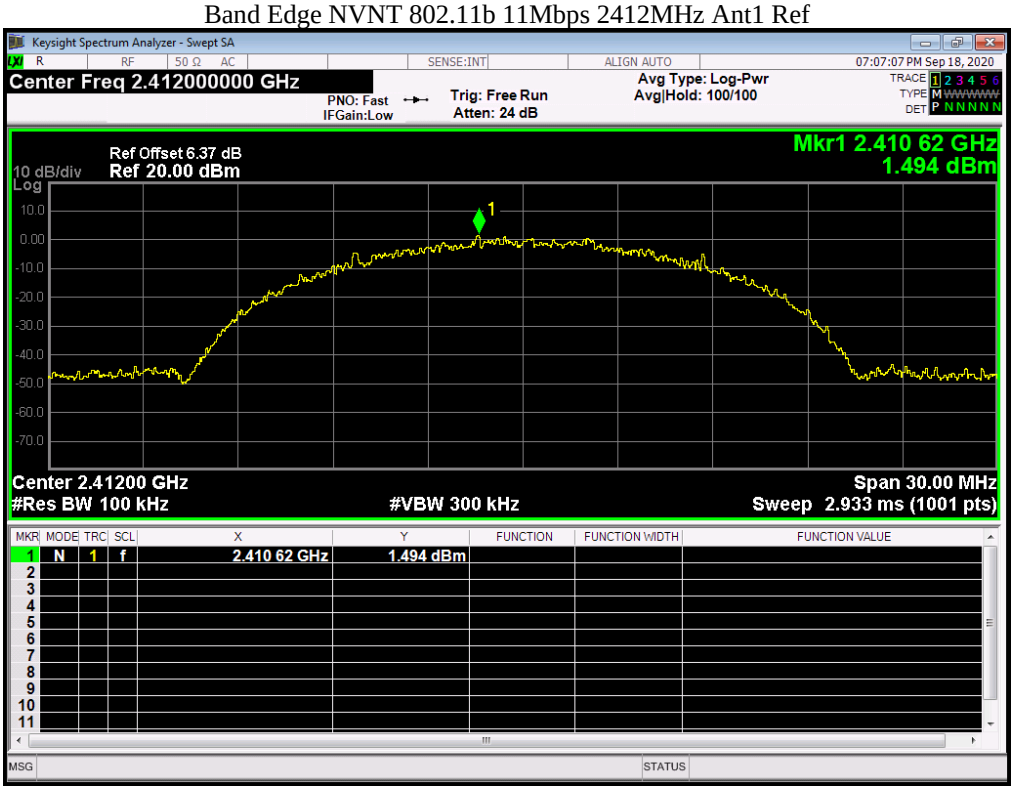
Peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 30dB relative to the maximum measured in-band peak PSD level.

The band edges was measured and recorded.

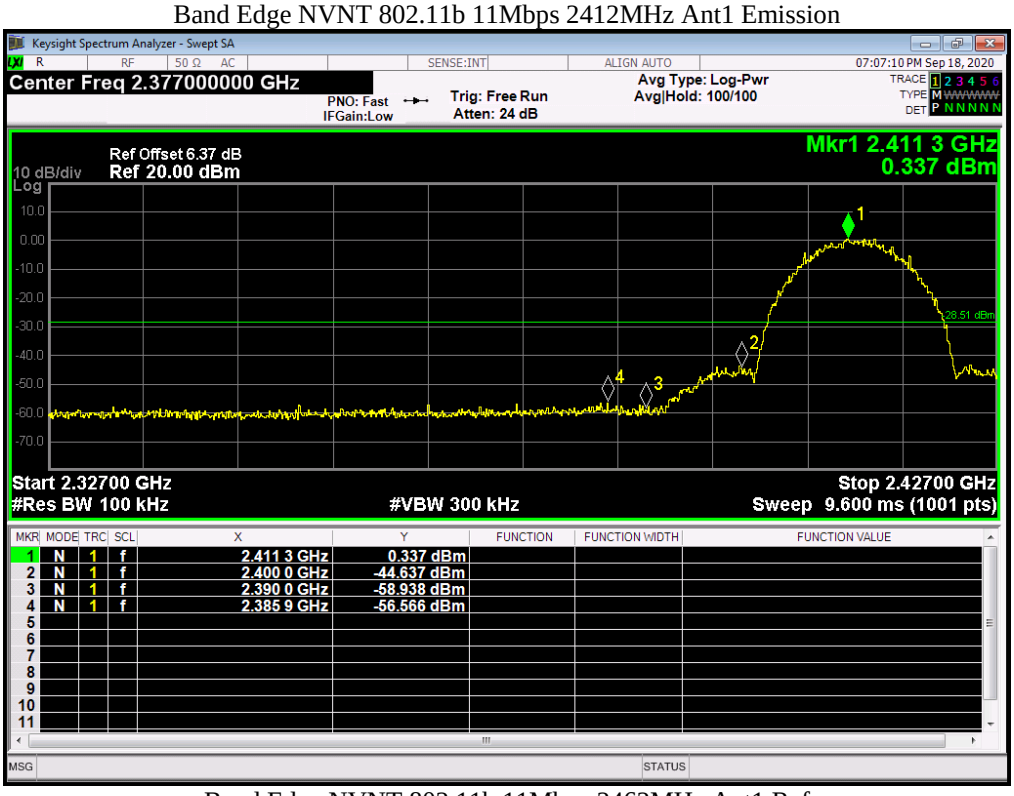
7.5. Test result

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	802.11b 11Mbps	2412	Ant 1	-58.054	-30	Pass
NVNT	802.11b 11Mbps	2462	Ant 1	-58.798	-30	Pass

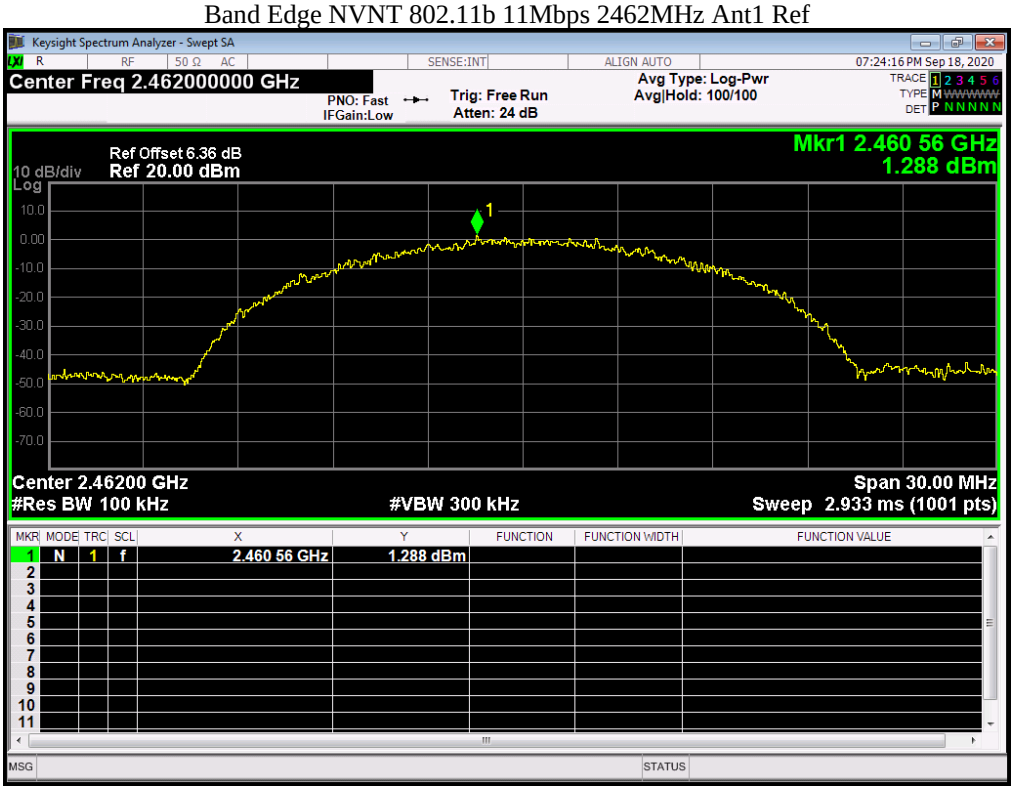
Band Edge NVNT 802.11b 11Mbps 2412MHz Ant1 Ref



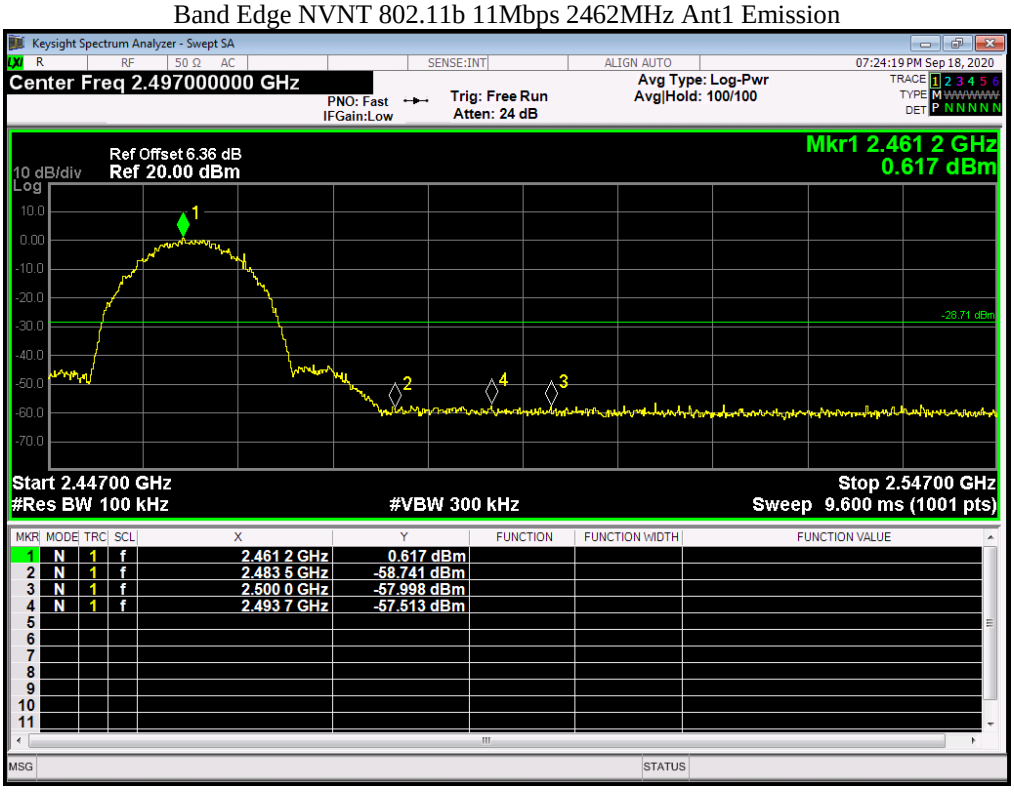
Band Edge NVNT 802.11b 11Mbps 2412MHz Ant1 Emission



Band Edge NVNT 802.11b 11Mbps 2462MHz Ant1 Ref

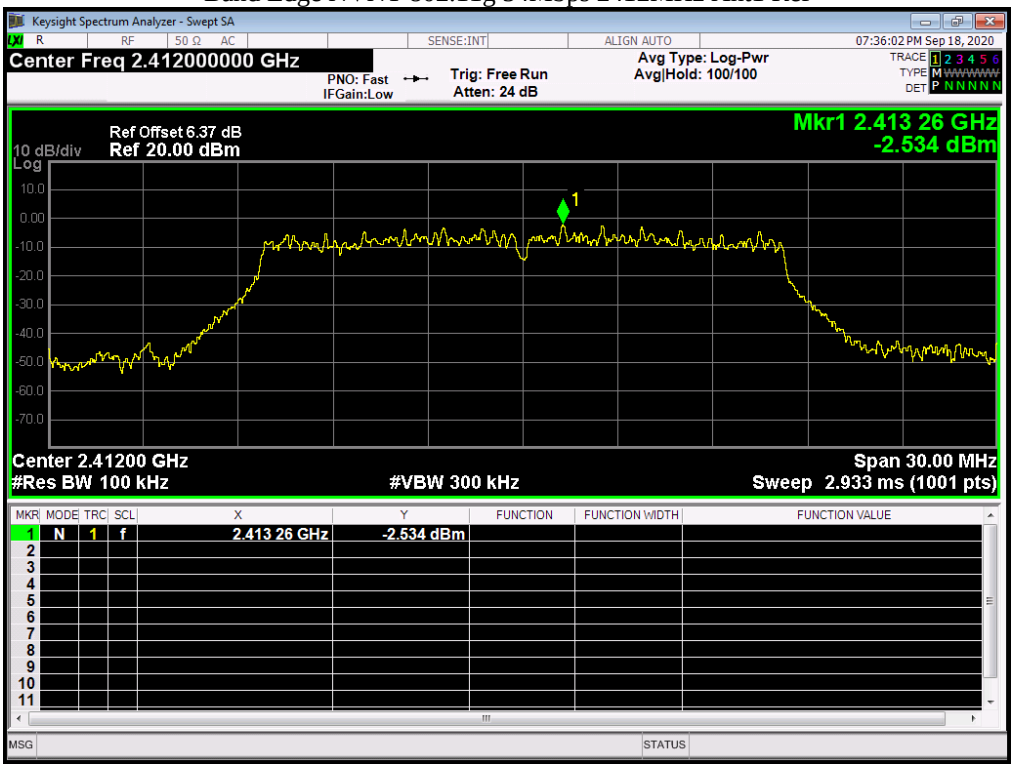


Band Edge NVNT 802.11b 11Mbps 2462MHz Ant1 Emission

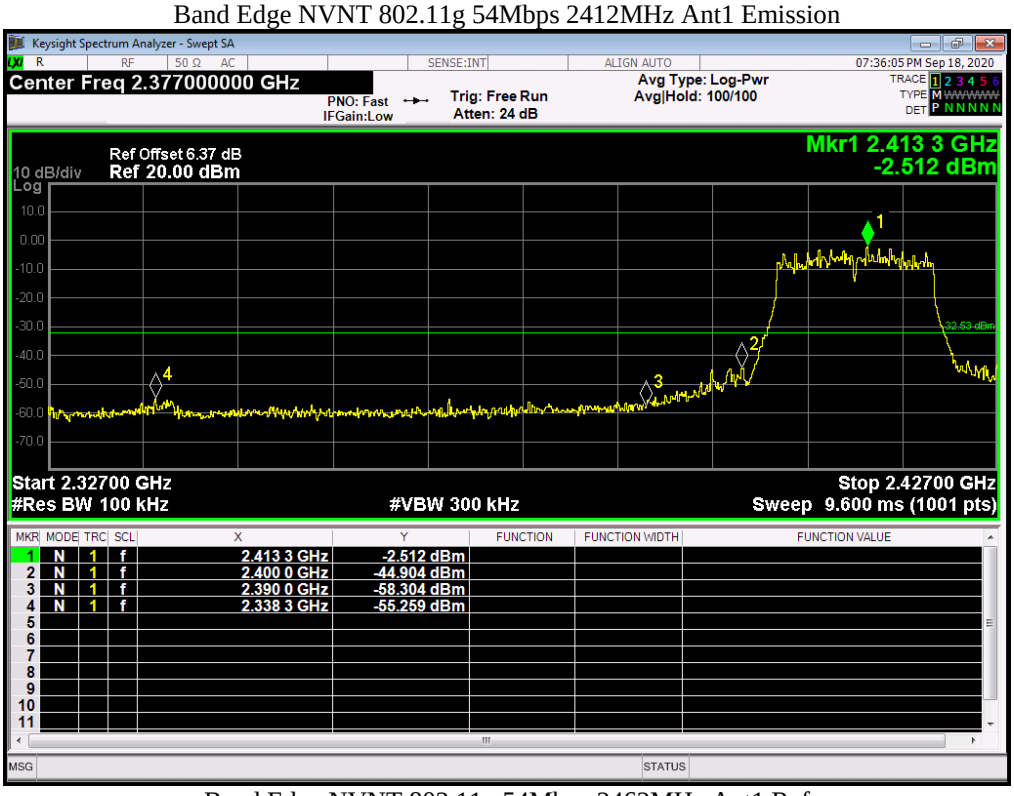


Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	802.11g 54Mbps	2412	Ant 1	-52.716	-30	Pass
NVNT	802.11g 54Mbps	2462	Ant 1	-46.903	-30	Pass

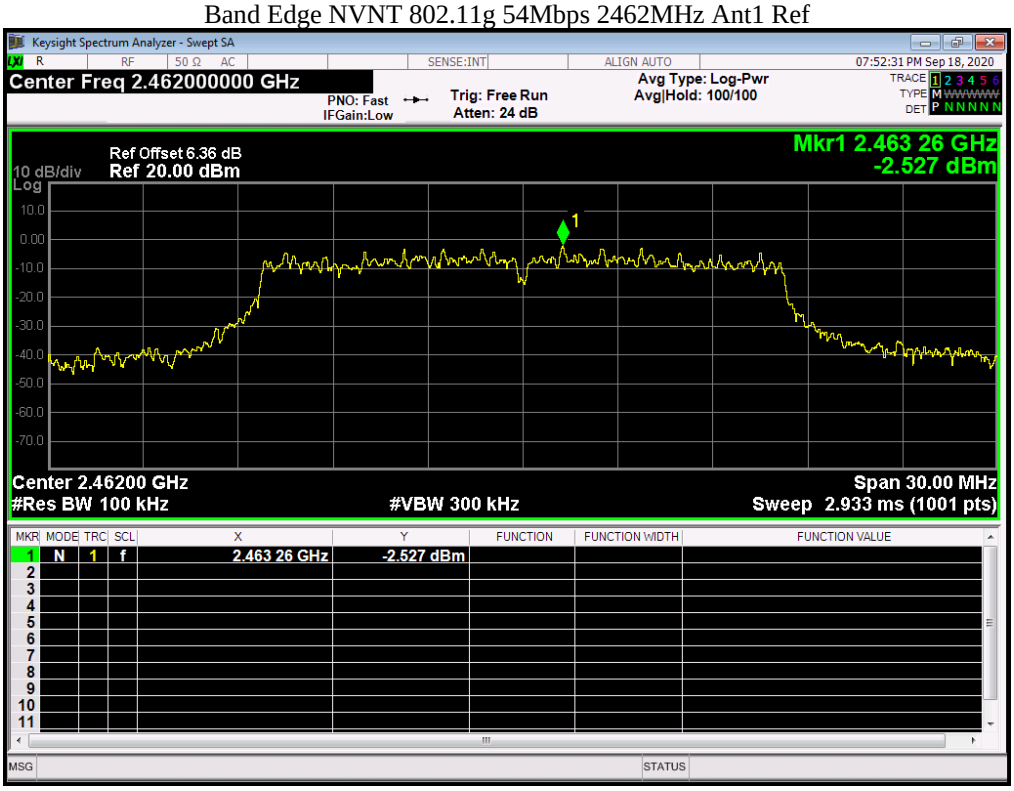
Band Edge NVNT 802.11g 54Mbps 2412MHz Ant1 Ref



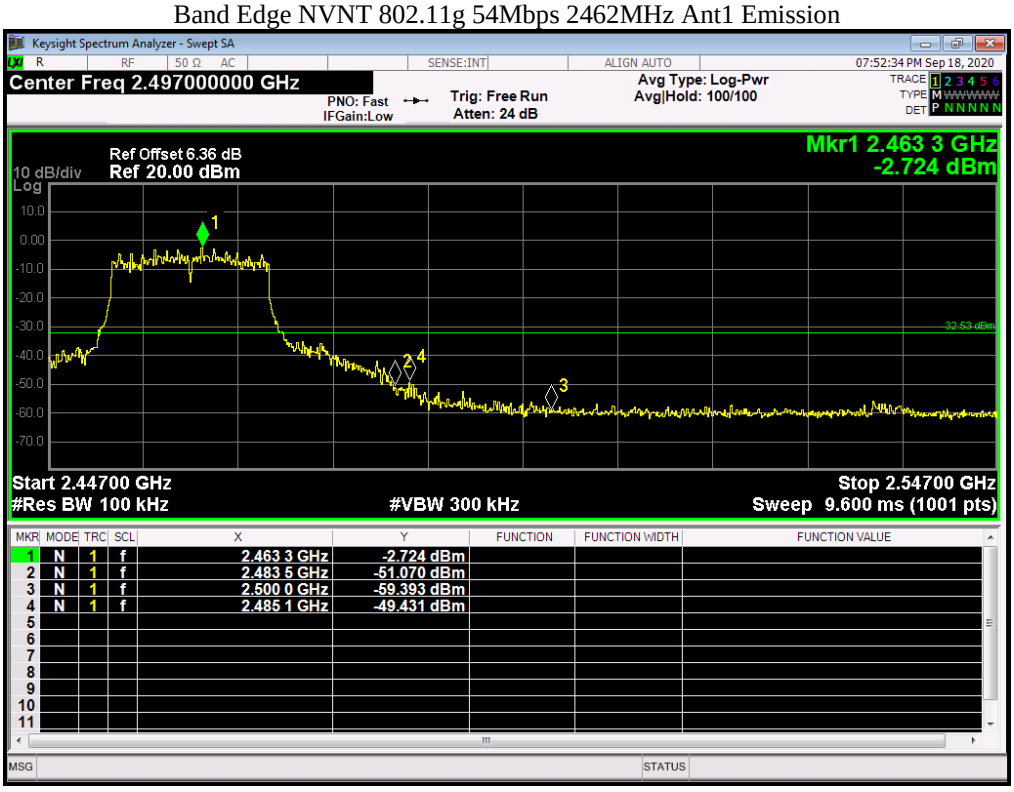
Band Edge NVNT 802.11g 54Mbps 2412MHz Ant1 Emission



Band Edge NVNT 802.11g 54Mbps 2462MHz Ant1 Ref

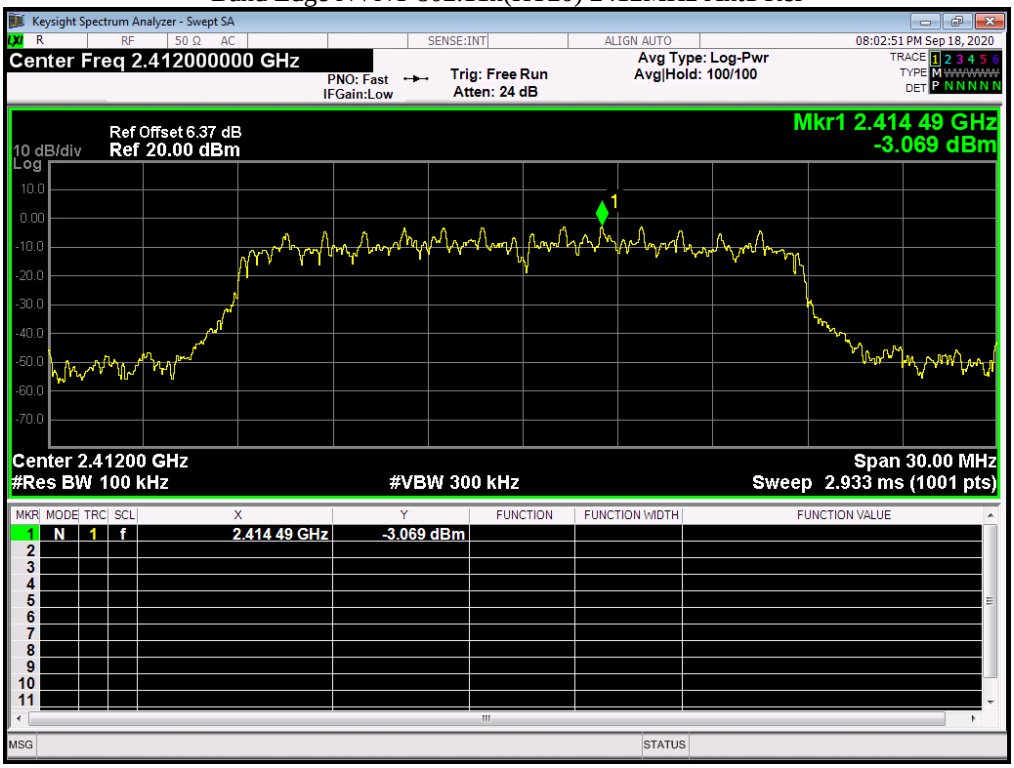


Band Edge NVNT 802.11g 54Mbps 2462MHz Ant1 Emission

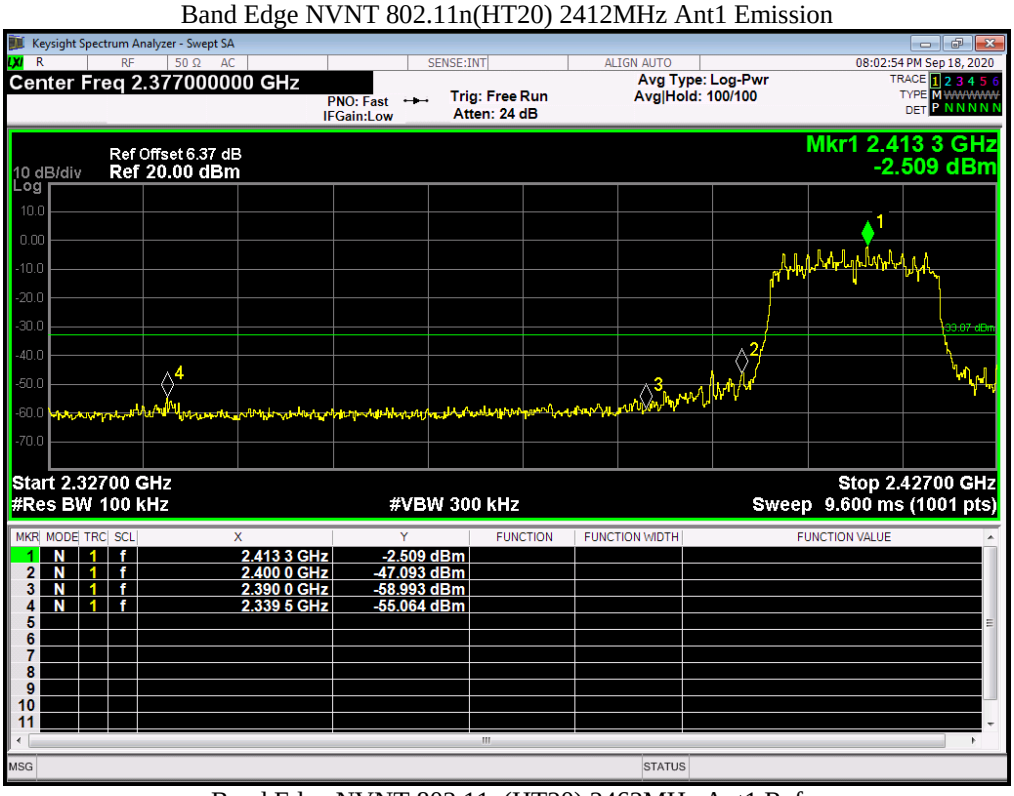


Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	802.11n(HT20)	2412	Ant 1	-51.991	-30	Pass
NVNT	802.11n(HT20)	2462	Ant 1	-47.842	-30	Pass

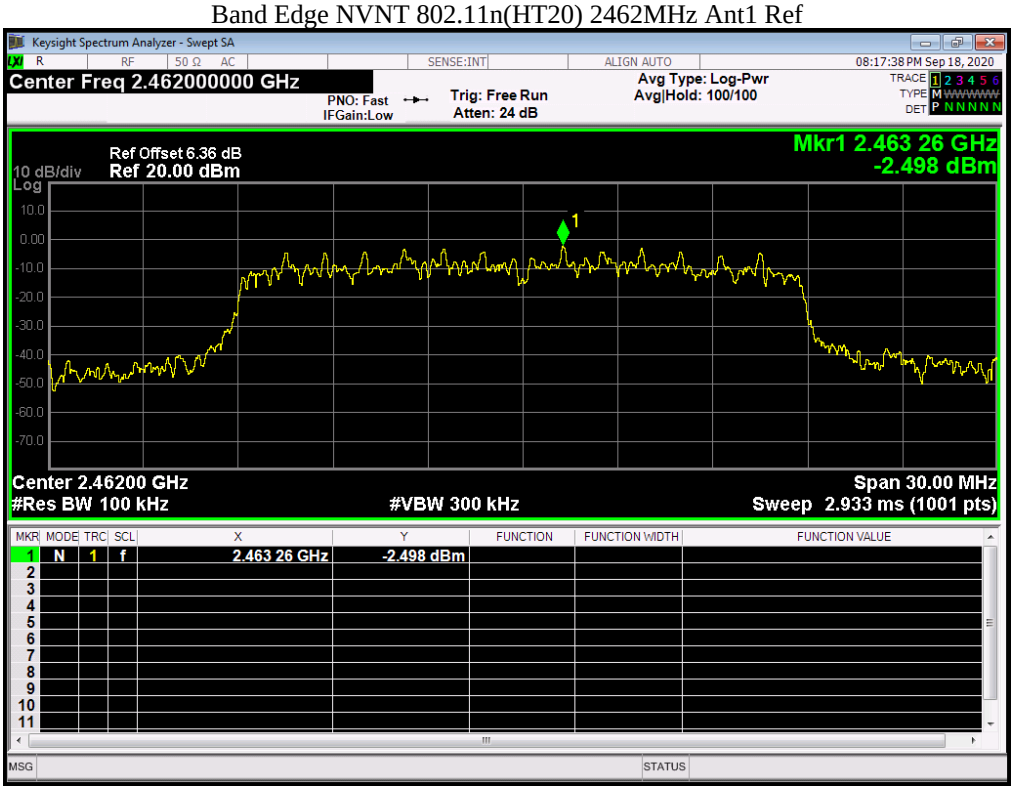
Band Edge NVNT 802.11n(HT20) 2412MHz Ant1 Ref



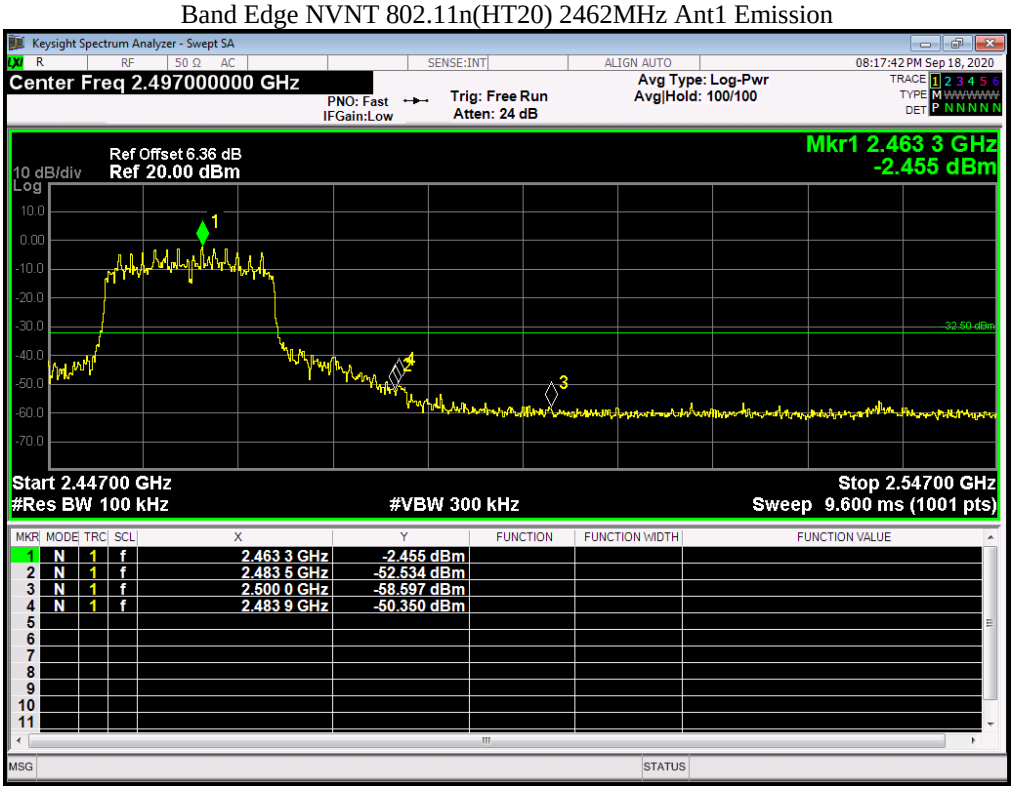
Band Edge NVNT 802.11n(HT20) 2412MHz Ant1 Emission



Band Edge NVNT 802.11n(HT20) 2462MHz Ant1 Ref

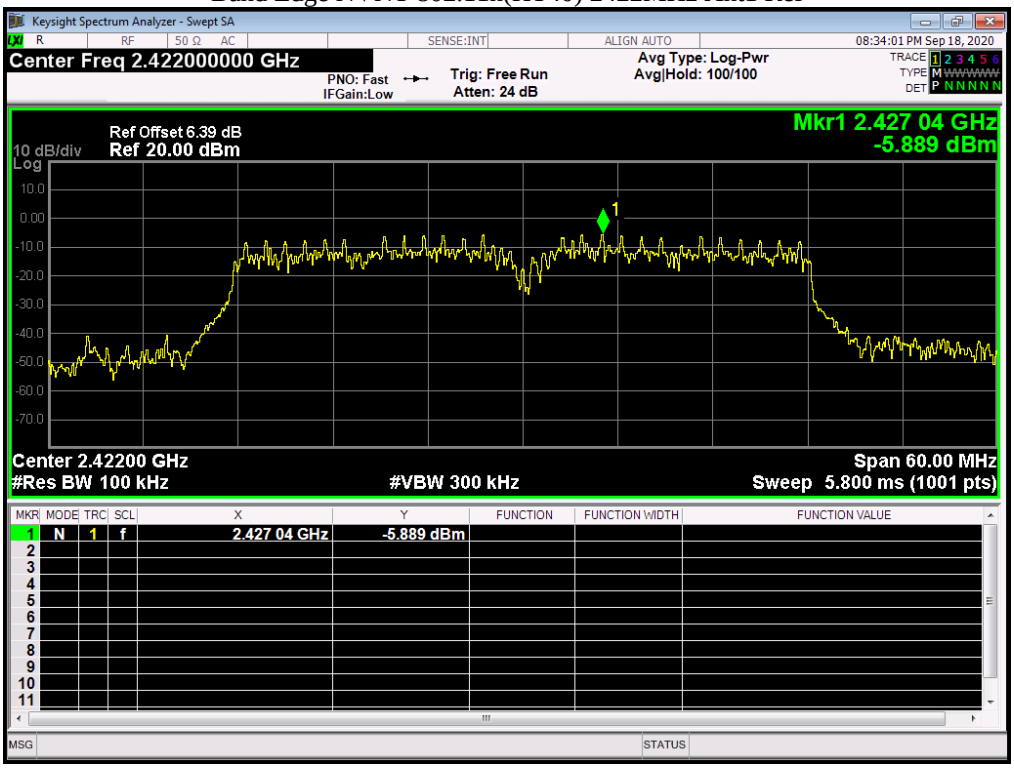


Band Edge NVNT 802.11n(HT20) 2462MHz Ant1 Emission

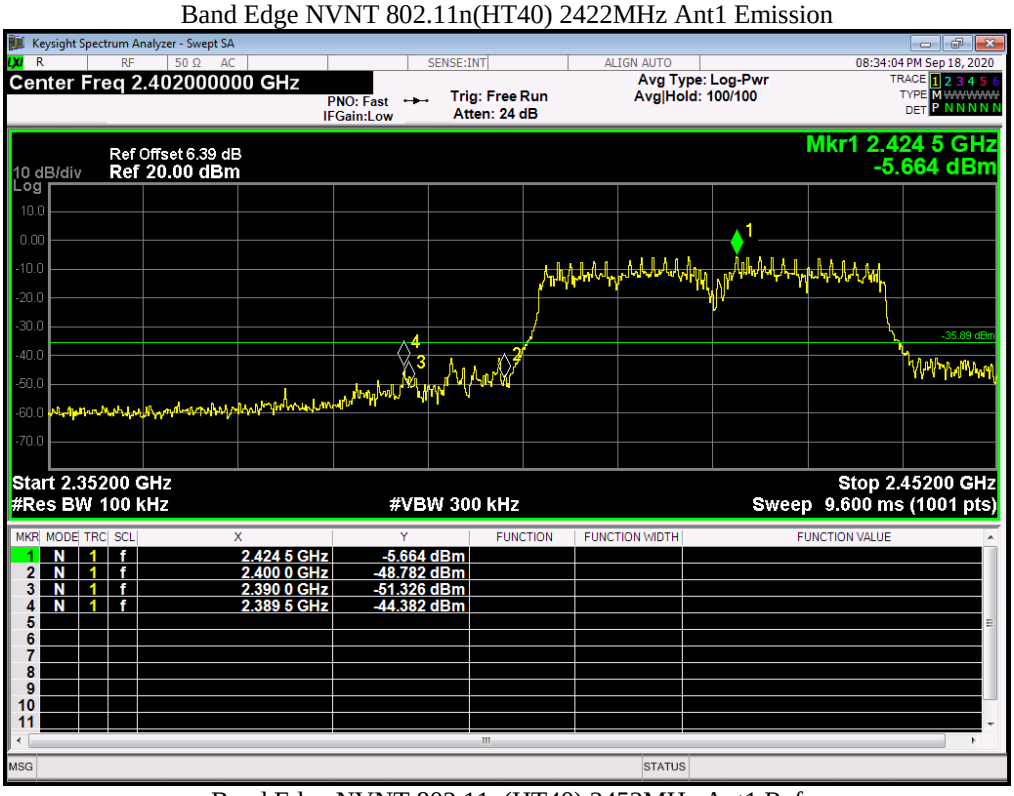


Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	802.11n(HT40)	2422	Ant 1	-38.491	-30	Pass
NVNT	802.11n(HT40)	2452	Ant 1	-33.347	-30	Pass

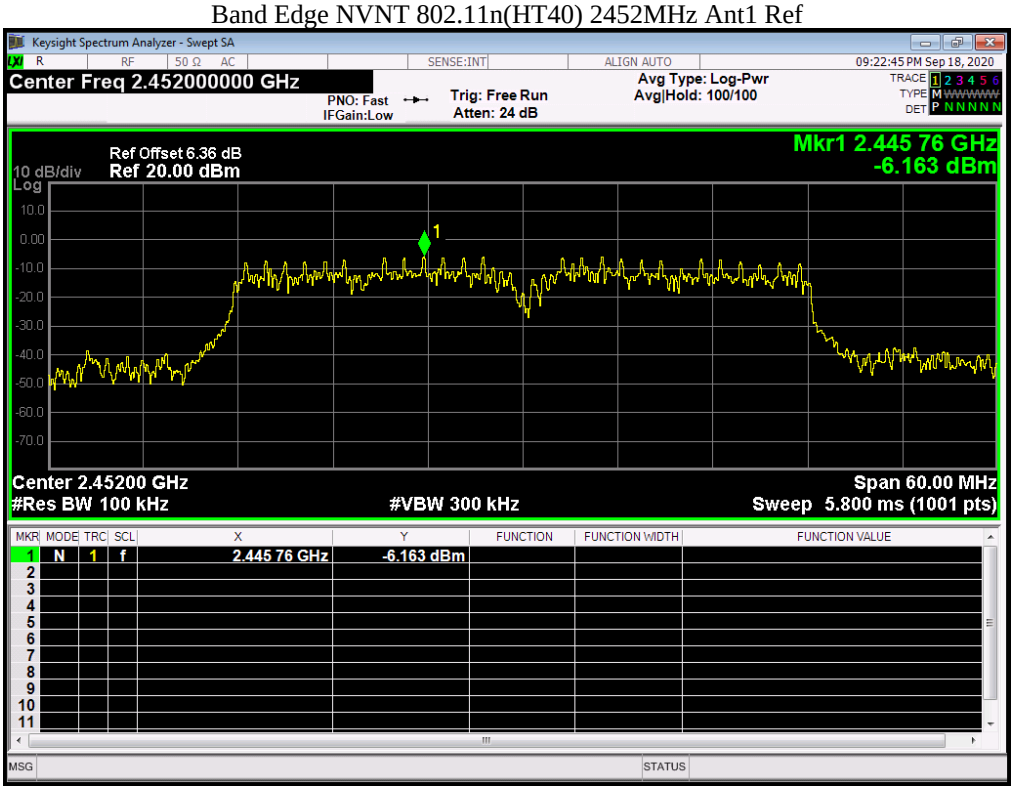
Band Edge NVNT 802.11n(HT40) 2422MHz Ant1 Ref



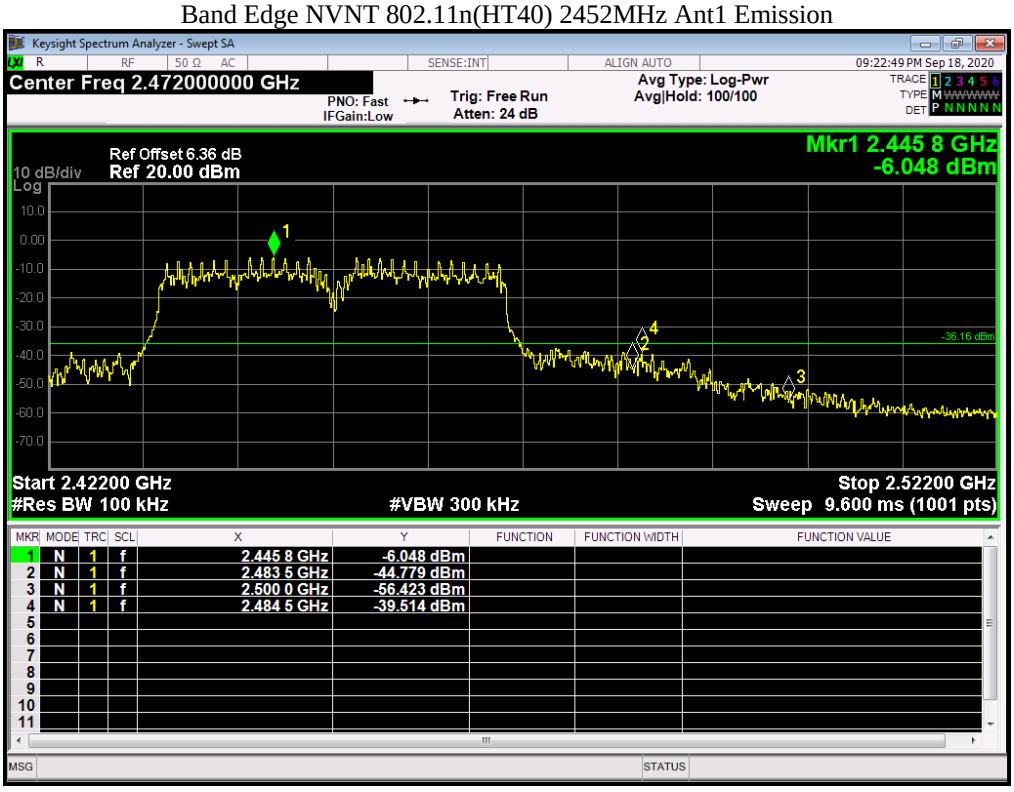
Band Edge NVNT 802.11n(HT40) 2422MHz Ant1 Emission



Band Edge NVNT 802.11n(HT40) 2452MHz Ant1 Ref



Band Edge NVNT 802.11n(HT40) 2452MHz Ant1 Emission

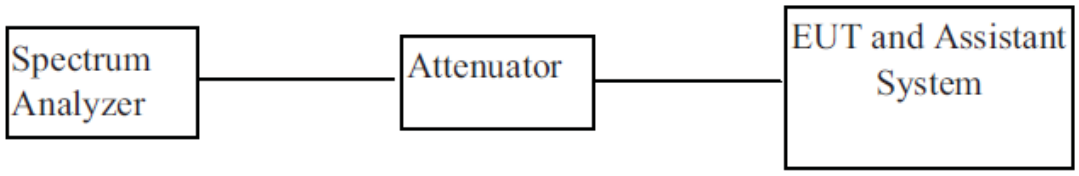


8. Conducted Spurious Emission

8.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	MXA Signal Analyzer	KEYSIGHT	N9020A	MY54510476	2019/06/21	1 Year

8.2. BLOCK DIAGRAM OF TEST SETUP



8.3. Limit

In any 100 KHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power.

In addition, radiation 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)

8.4. Test Procedure

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator

2, Set the EUT Work on the top, the middle and the bottom operation frequency individually.

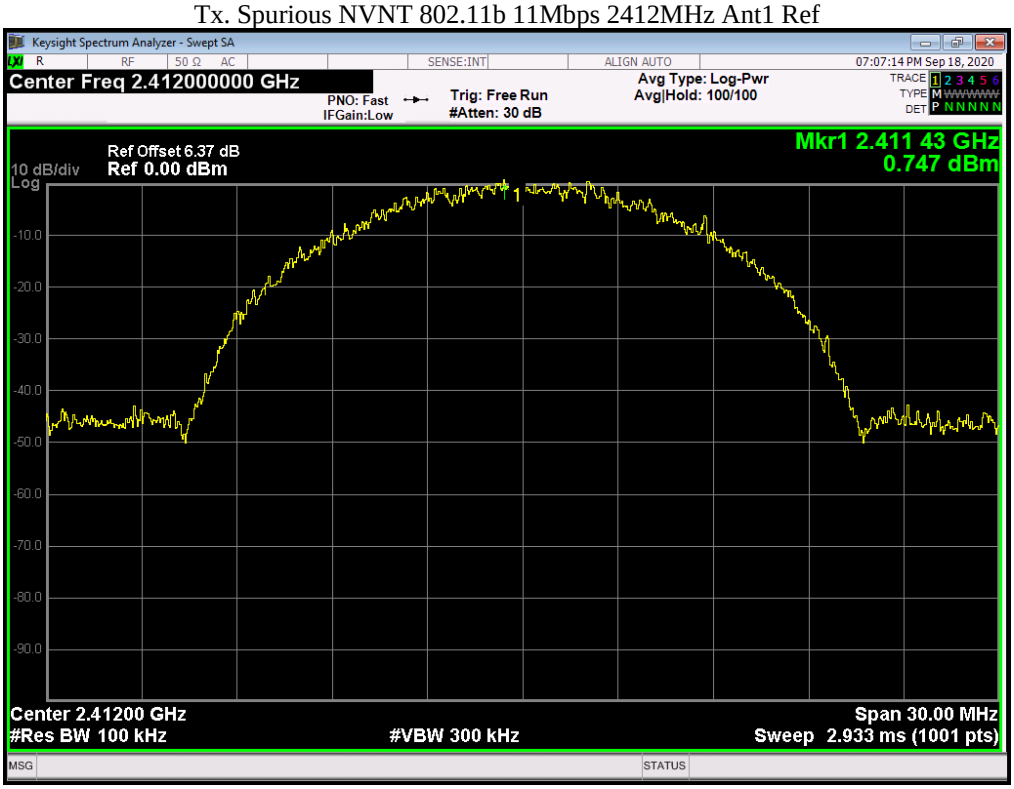
3. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements. Owing to satisfy the requirements of the number of measurement points, we set the RBW=1MHz, VBW > RBW, scan up through 10th harmonic, and consider the tested results as the worst case, if the tested results conform to the requirement, we can deem that the real tested results(set the RBW=100KHz, VBW > RBW) are conform to the requirement.

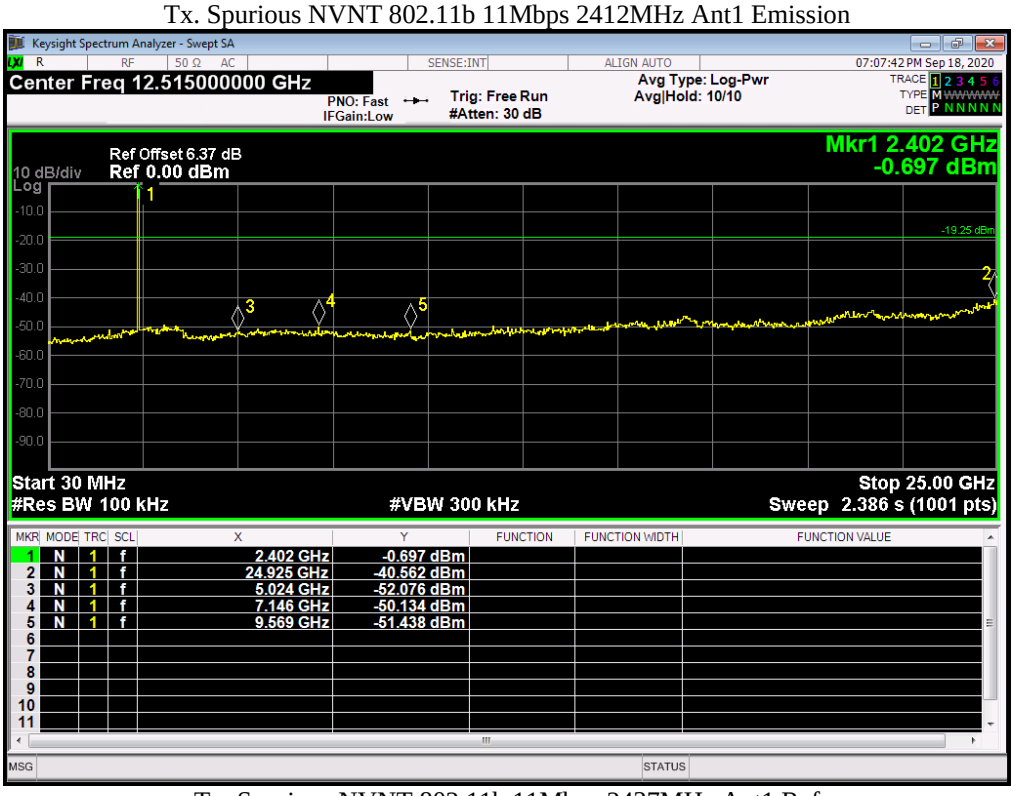
8.5. Test result

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	802.11b 11Mbps	2412	Ant 1	-41.307	-30	Pass
NVNT	802.11b 11Mbps	2437	Ant 1	-42.234	-30	Pass
NVNT	802.11b 11Mbps	2462	Ant 1	-43.114	-30	Pass

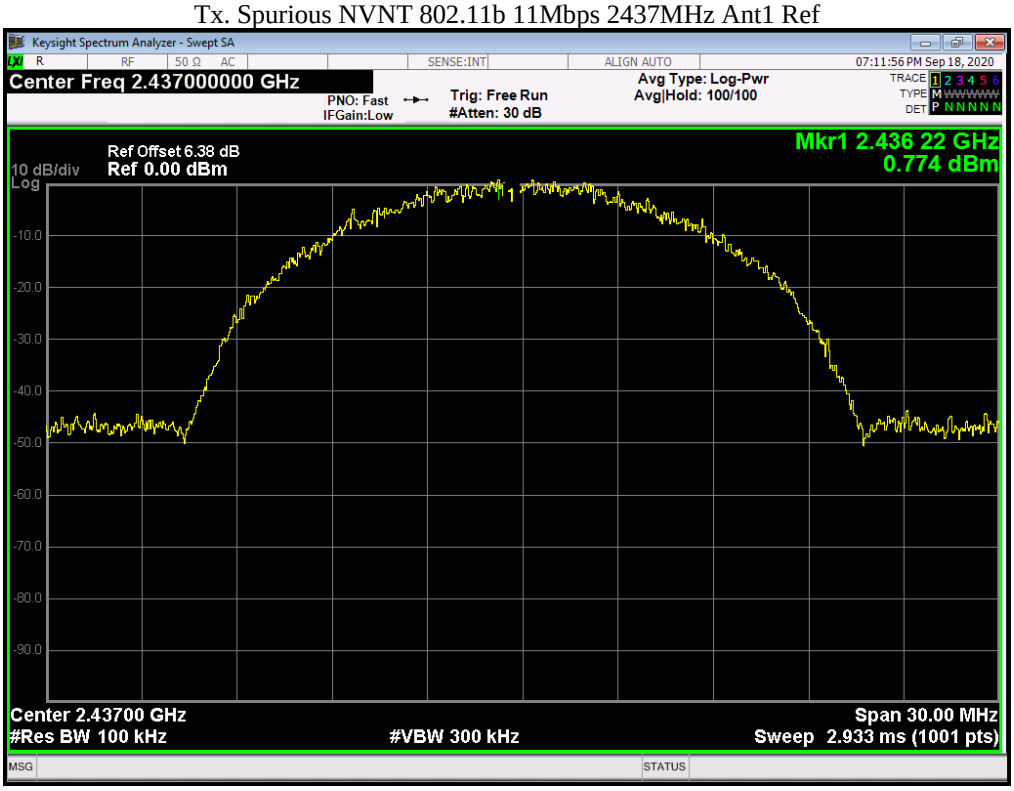
Tx. Spurious NVNT 802.11b 11Mbps 2412MHz Ant1 Ref



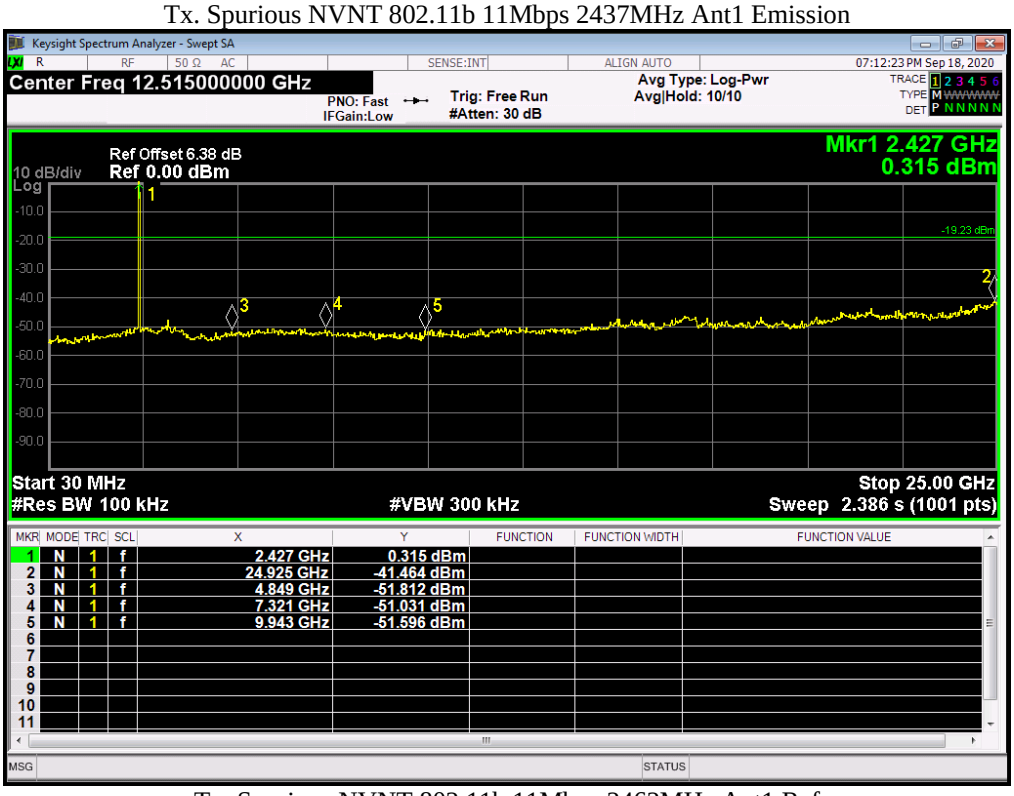
Tx. Spurious NVNT 802.11b 11Mbps 2412MHz Ant1 Emission



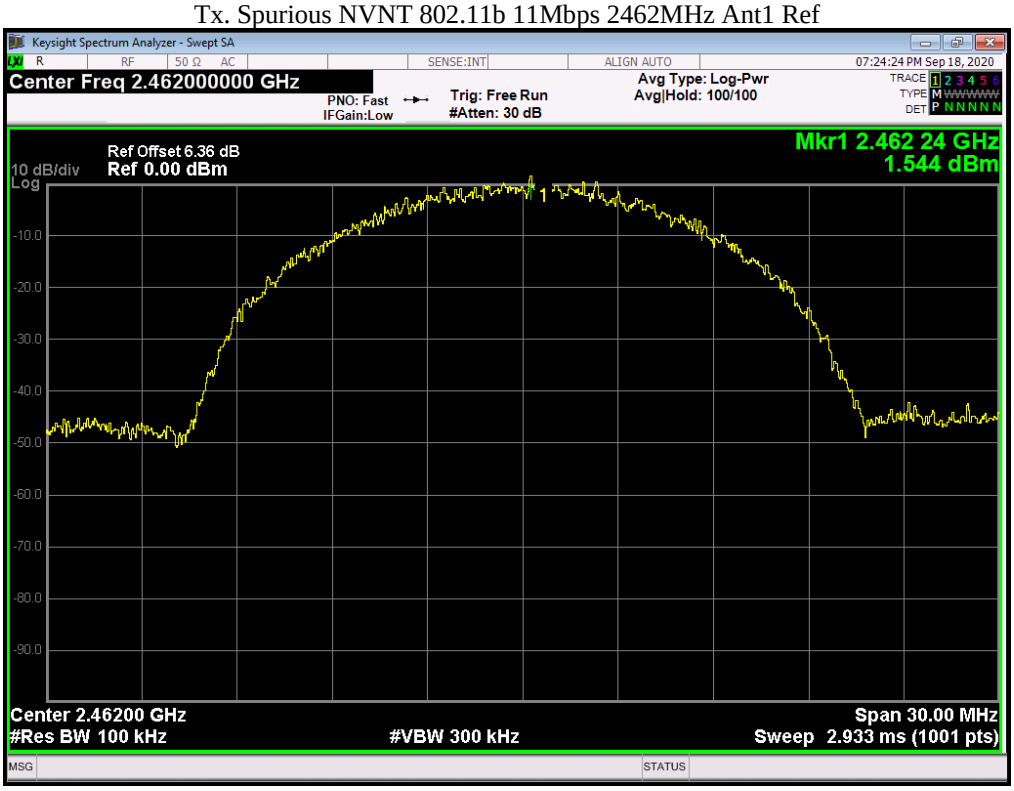
Tx. Spurious NVNT 802.11b 11Mbps 2437MHz Ant1 Ref



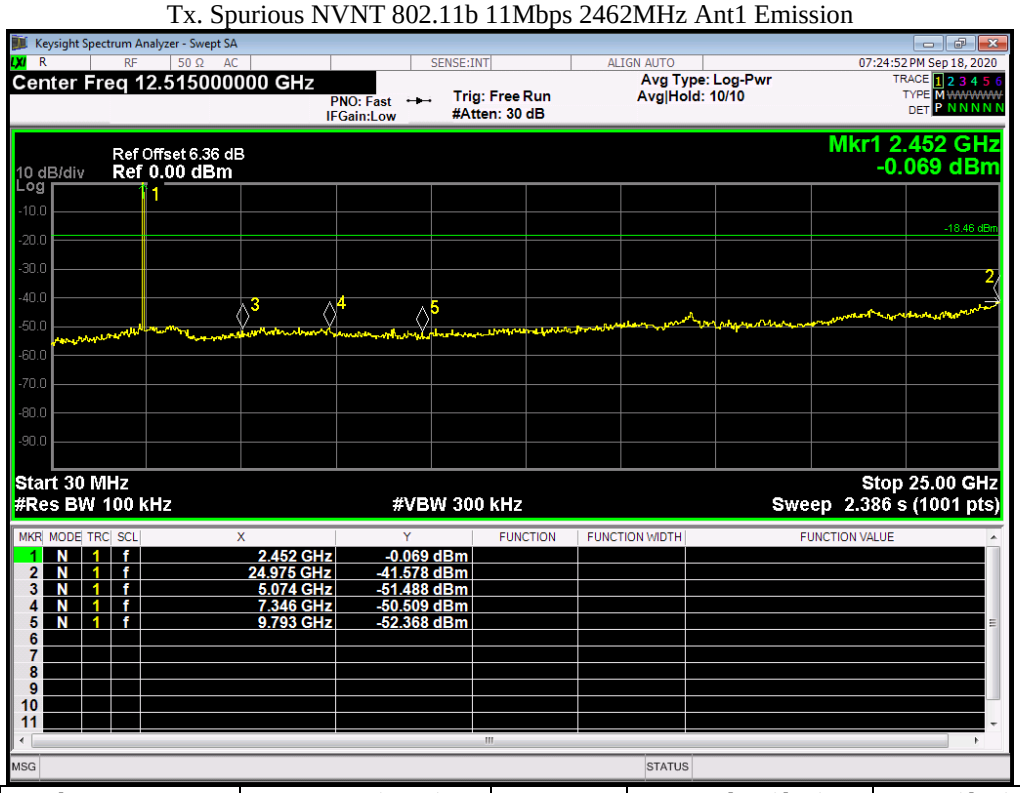
Tx. Spurious NVNT 802.11b 11Mbps 2437MHz Ant1 Emission



Tx. Spurious NVNT 802.11b 11Mbps 2462MHz Ant1 Ref

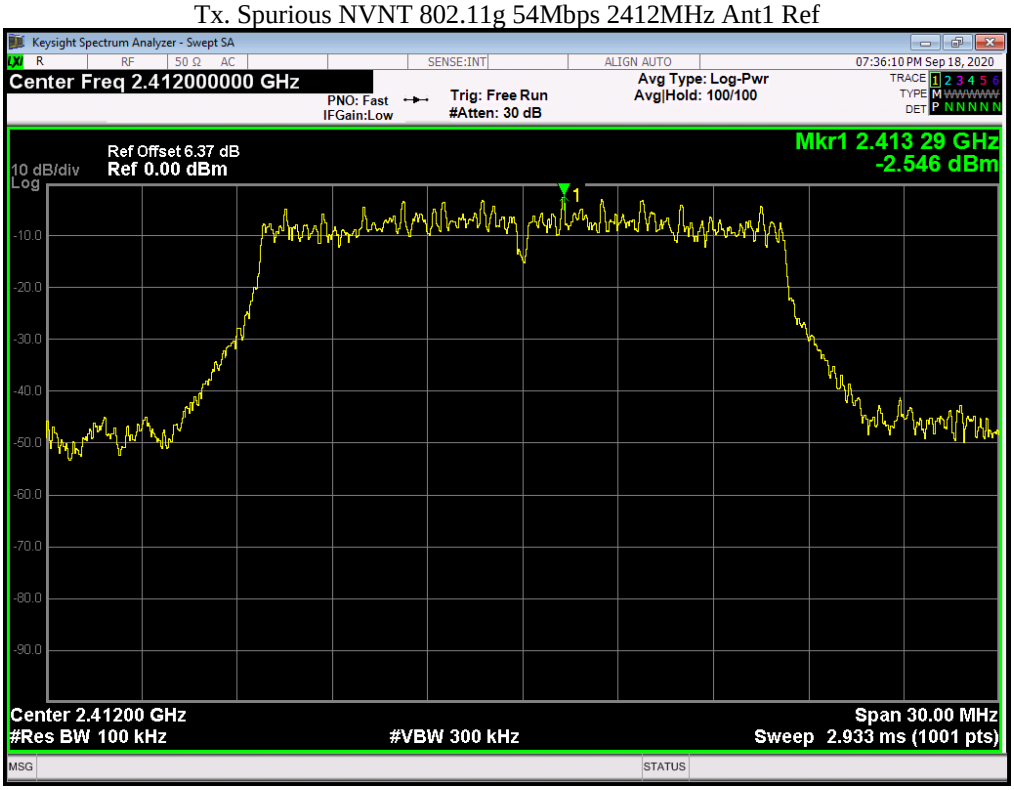


Tx. Spurious NVNT 802.11b 11Mbps 2462MHz Ant1 Emission

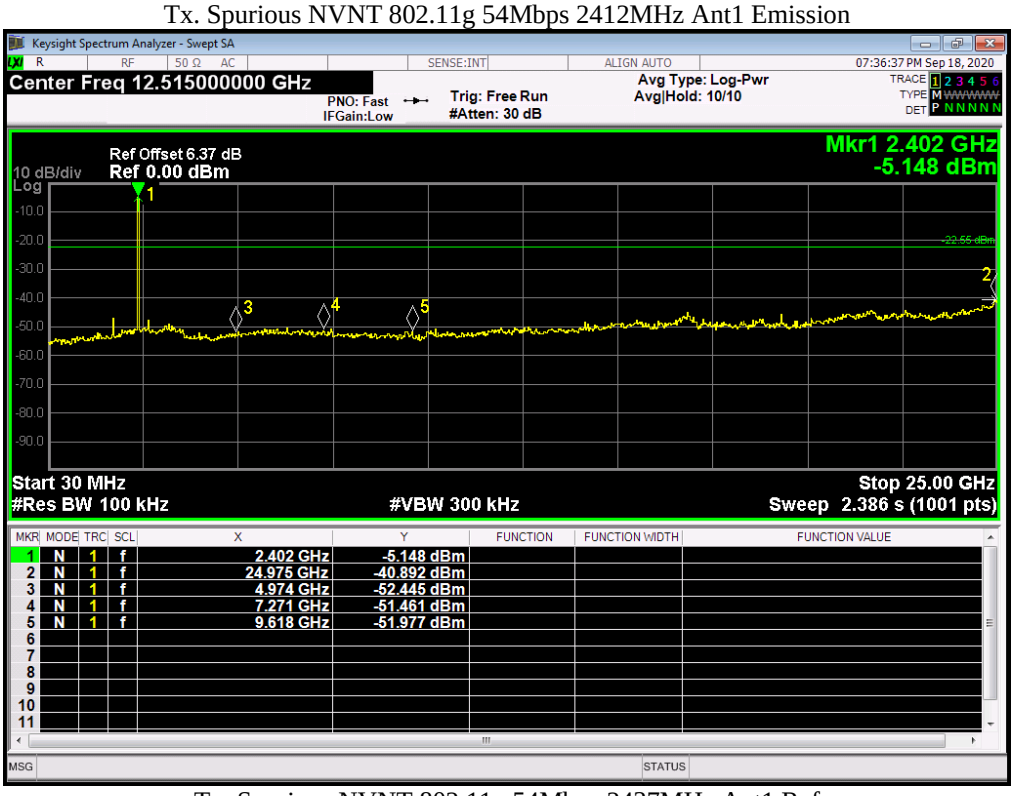


Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	802.11g 54Mbps	2412	Ant 1	-38.344	-30	Pass
NVNT	802.11g 54Mbps	2437	Ant 1	-39.151	-30	Pass
NVNT	802.11g 54Mbps	2462	Ant 1	-37.116	-30	Pass

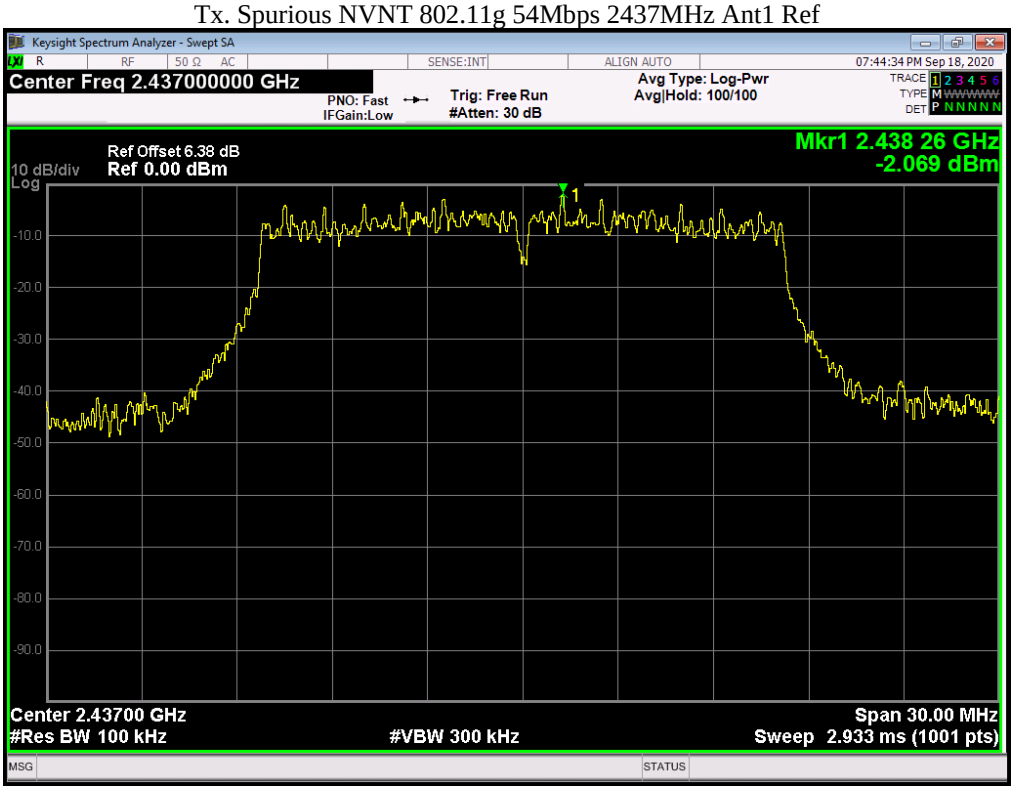
Tx. Spurious NVNT 802.11g 54Mbps 2412MHz Ant1 Ref



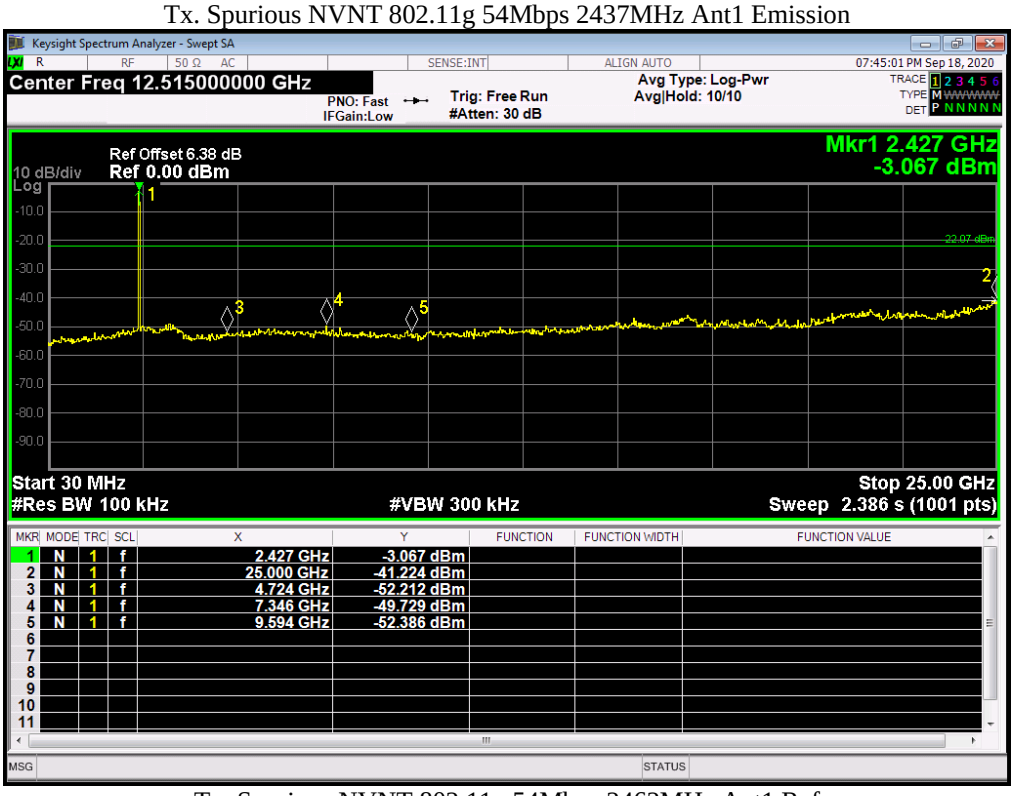
Tx. Spurious NVNT 802.11g 54Mbps 2412MHz Ant1 Emission



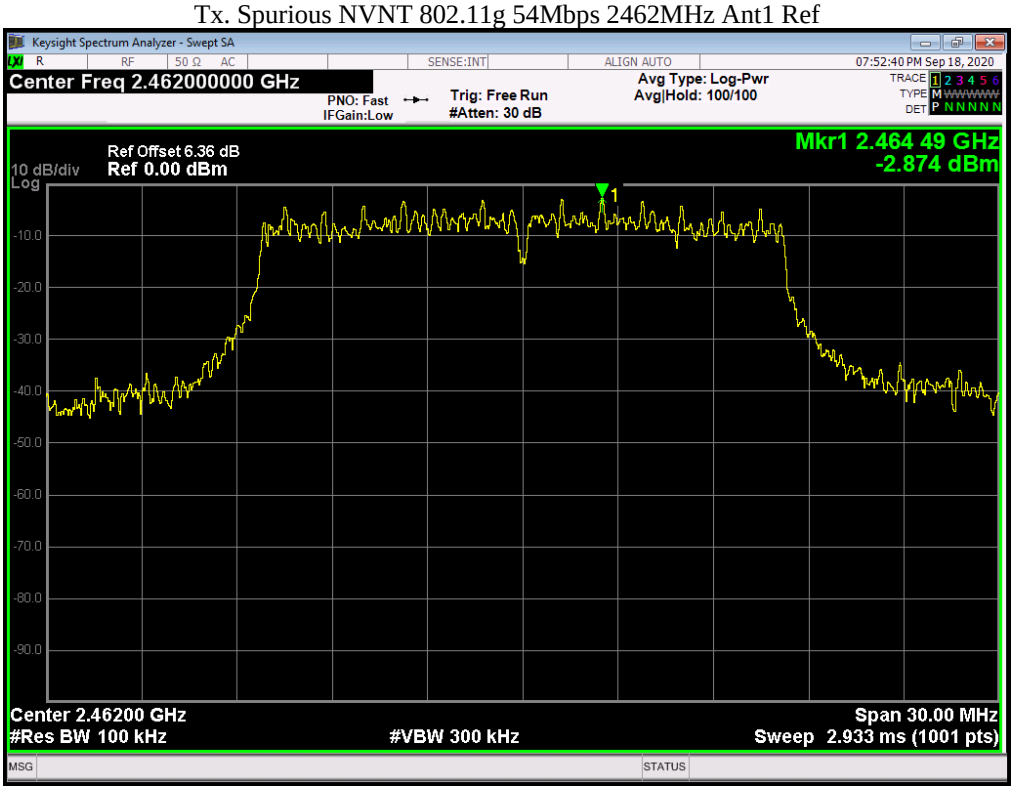
Tx. Spurious NVNT 802.11g 54Mbps 2437MHz Ant1 Ref



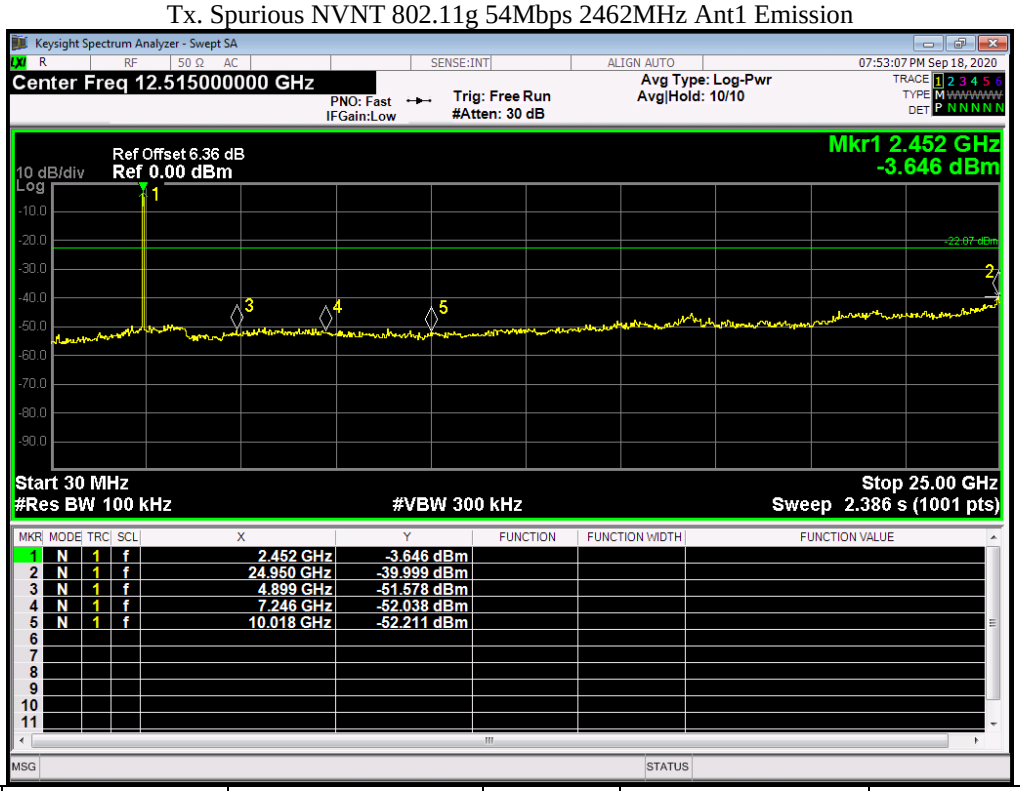
Tx. Spurious NVNT 802.11g 54Mbps 2437MHz Ant1 Emission



Tx. Spurious NVNT 802.11g 54Mbps 2462MHz Ant1 Ref

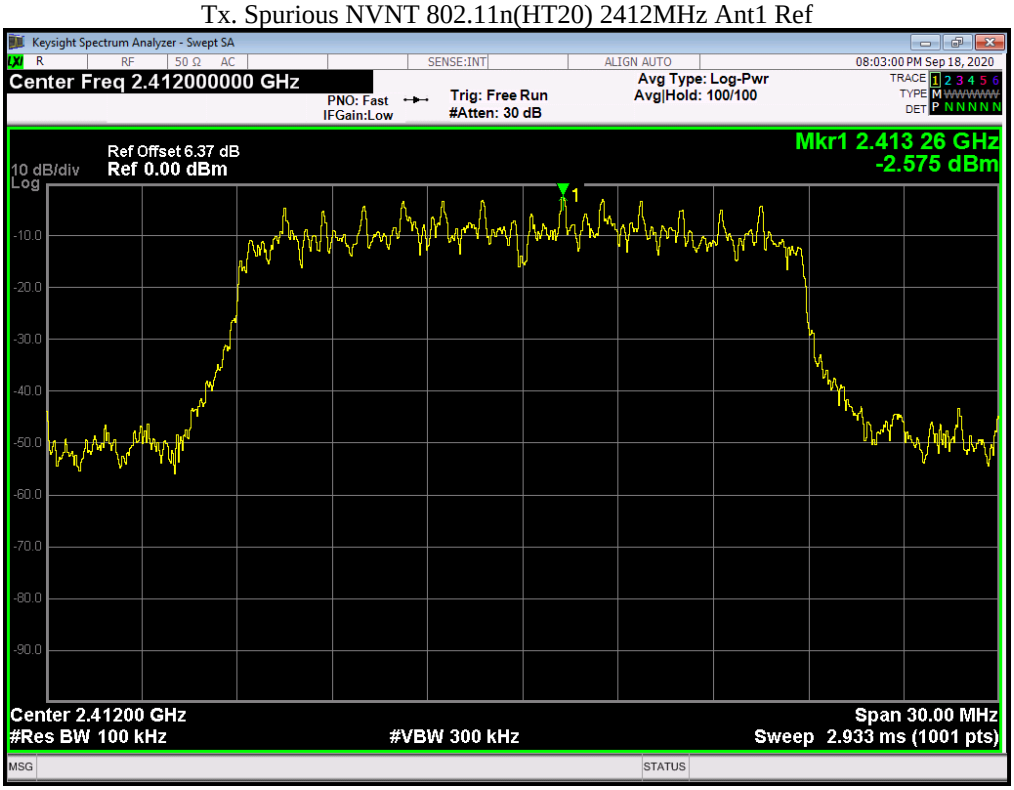


Tx. Spurious NVNT 802.11g 54Mbps 2462MHz Ant1 Emission

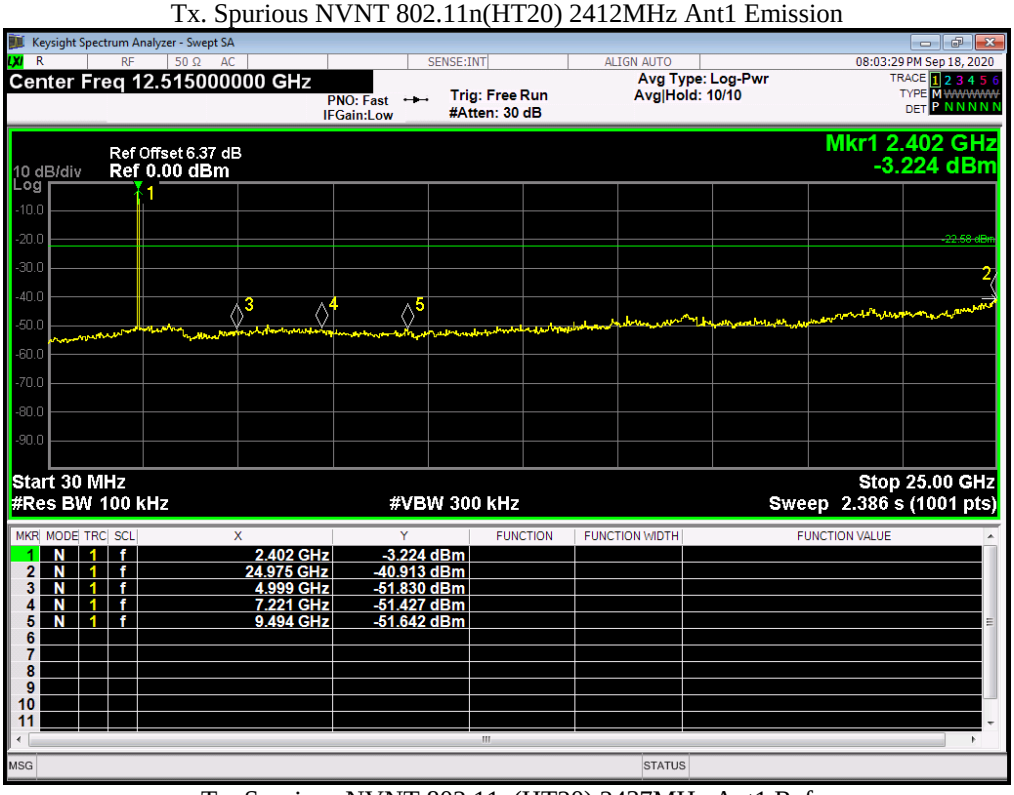


Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	802.11n(HT20)	2412	Ant 1	-38.335	-30	Pass
NVNT	802.11n(HT20)	2437	Ant 1	-37.904	-30	Pass
NVNT	802.11n(HT20)	2462	Ant 1	-37.772	-30	Pass

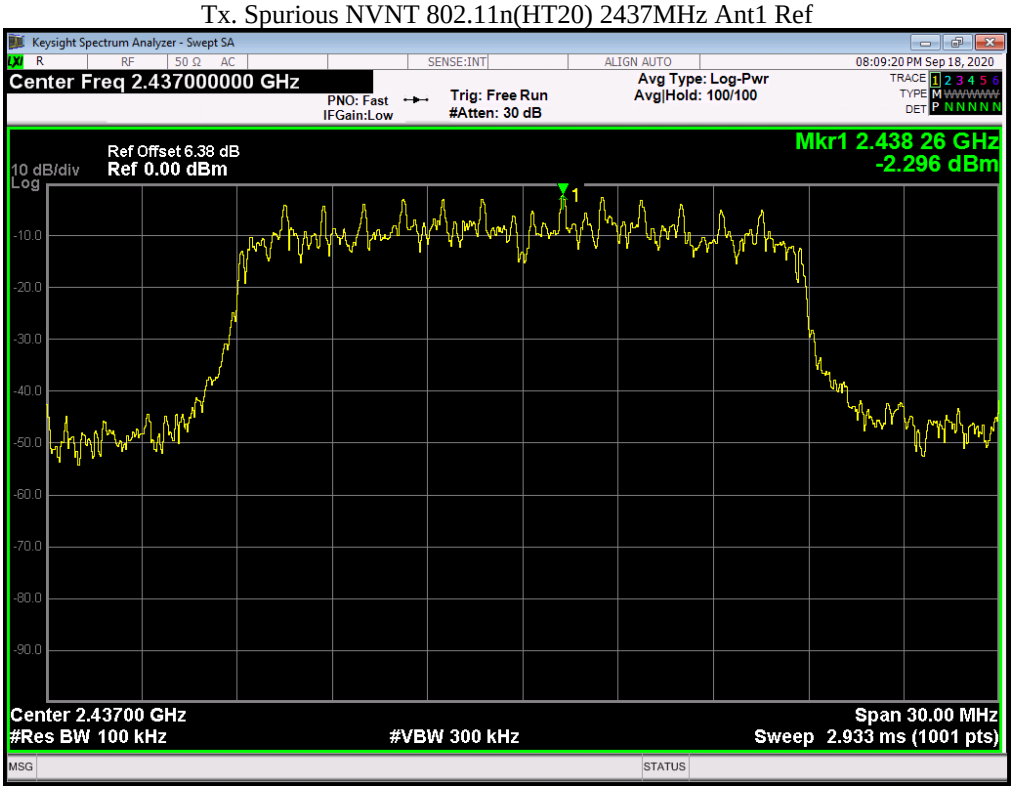
Tx. Spurious NVNT 802.11n(HT20) 2412MHz Ant1 Ref



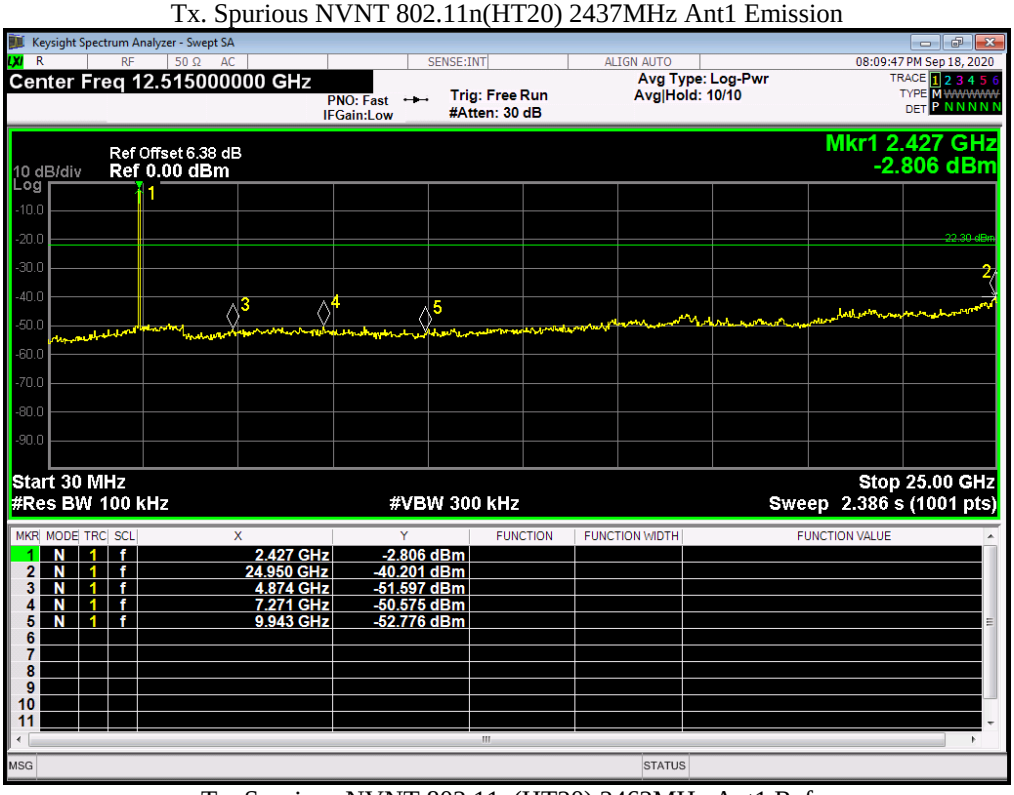
Tx. Spurious NVNT 802.11n(HT20) 2412MHz Ant1 Emission



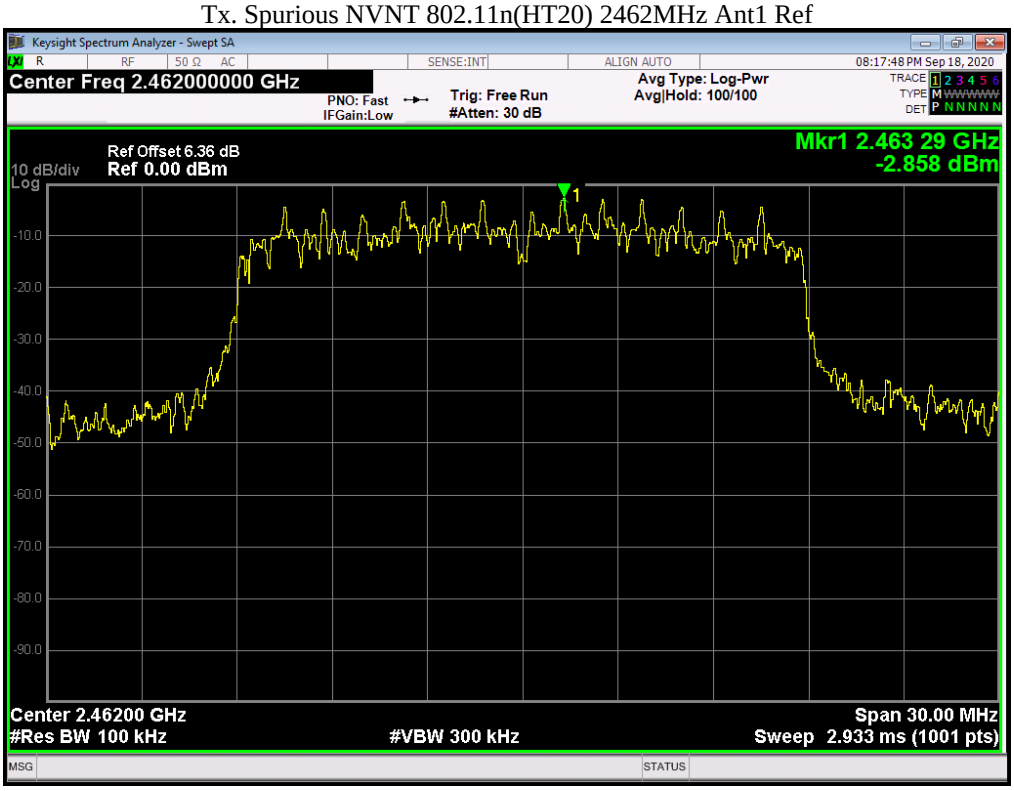
Tx. Spurious NVNT 802.11n(HT20) 2437MHz Ant1 Ref



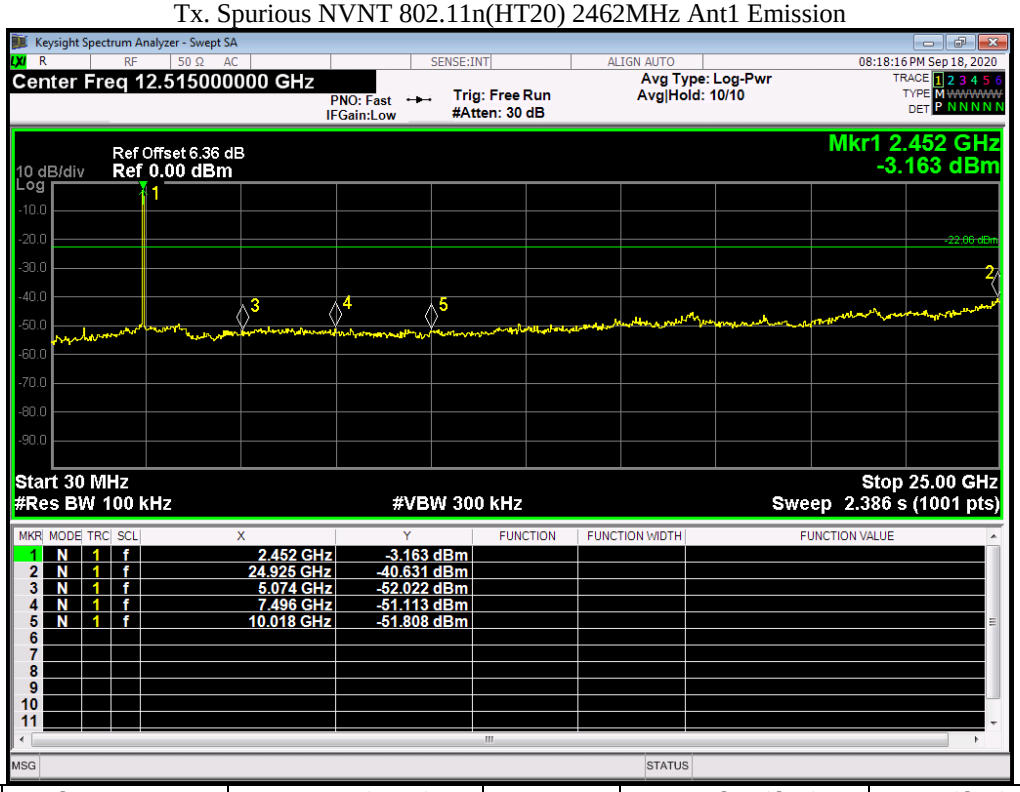
Tx. Spurious NVNT 802.11n(HT20) 2437MHz Ant1 Emission



Tx. Spurious NVNT 802.11n(HT20) 2462MHz Ant1 Ref

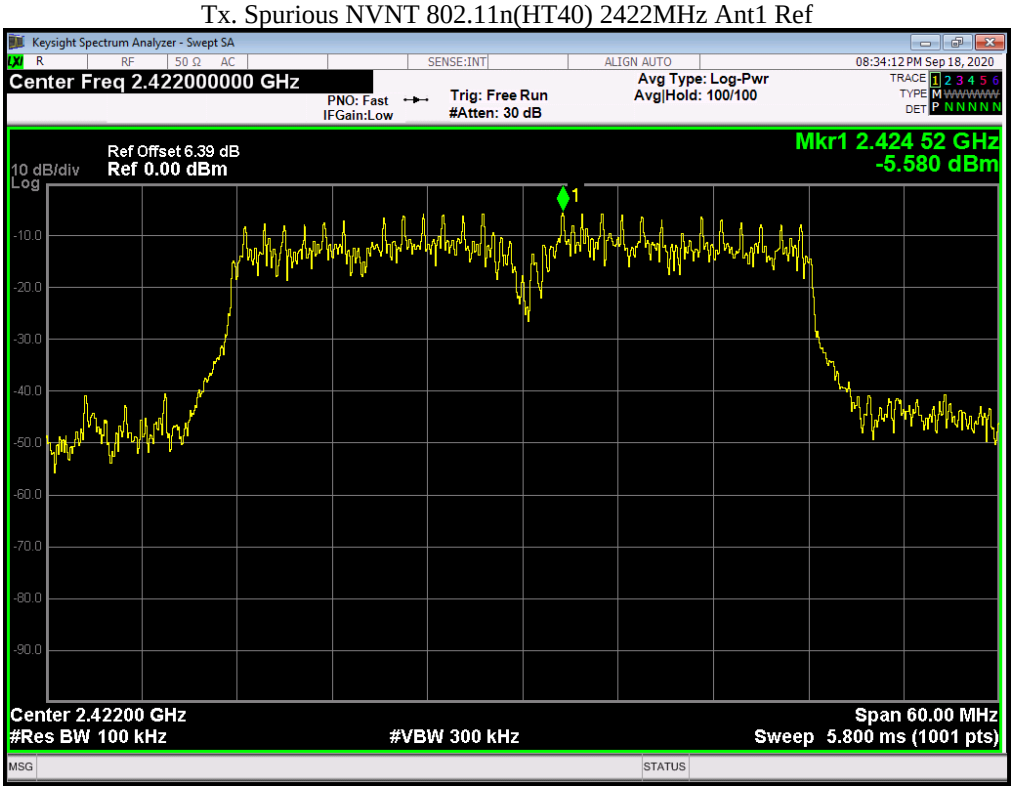


Tx. Spurious NVNT 802.11n(HT20) 2462MHz Ant1 Emission

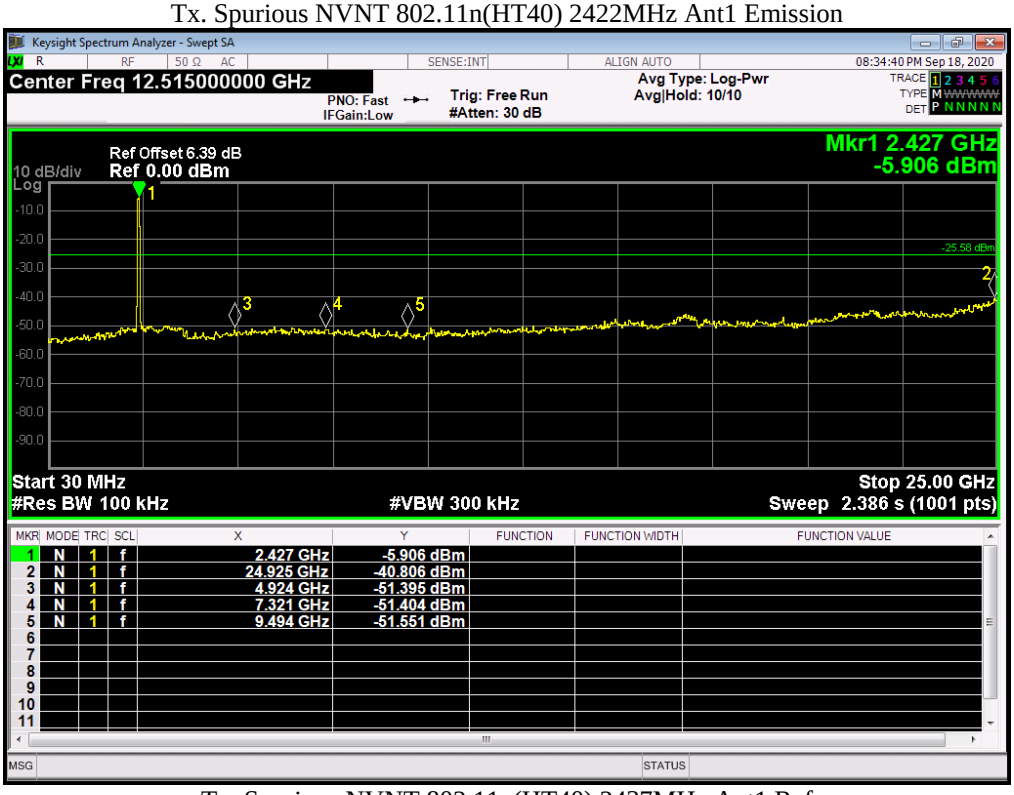


Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	802.11n(HT40)	2422	Ant 1	-35.22	-30	Pass
NVNT	802.11n(HT40)	2437	Ant 1	-34.094	-30	Pass
NVNT	802.11n(HT40)	2452	Ant 1	-35.109	-30	Pass

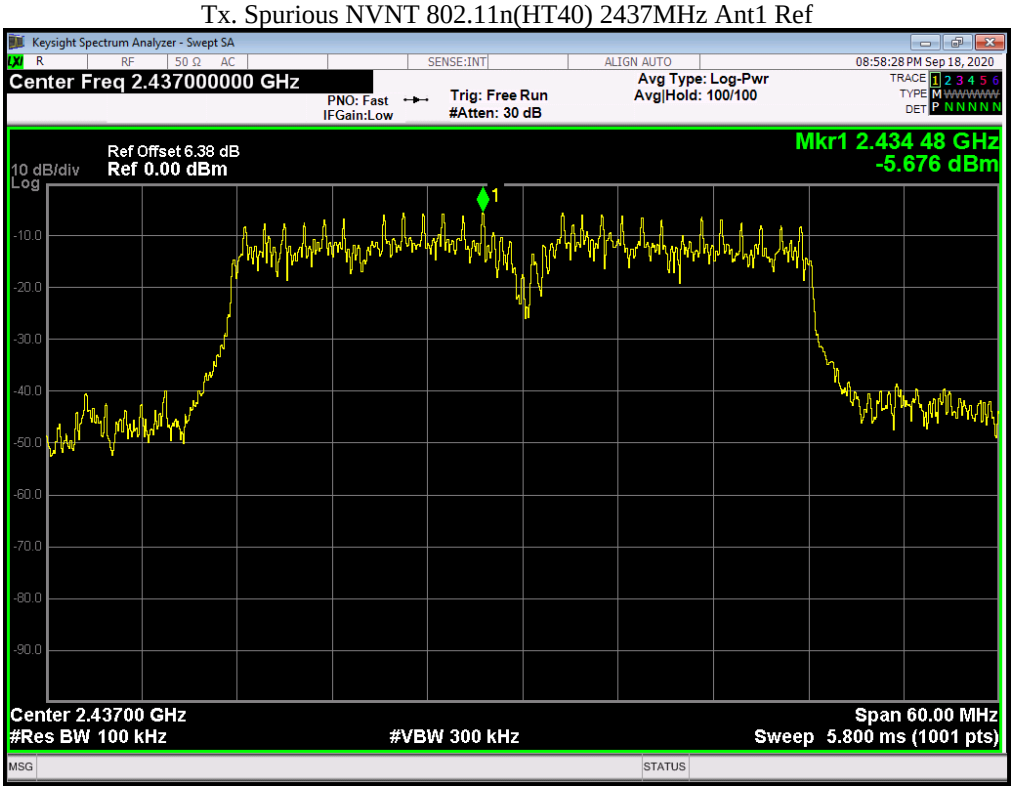
Tx. Spurious NVNT 802.11n(HT40) 2422MHz Ant1 Ref



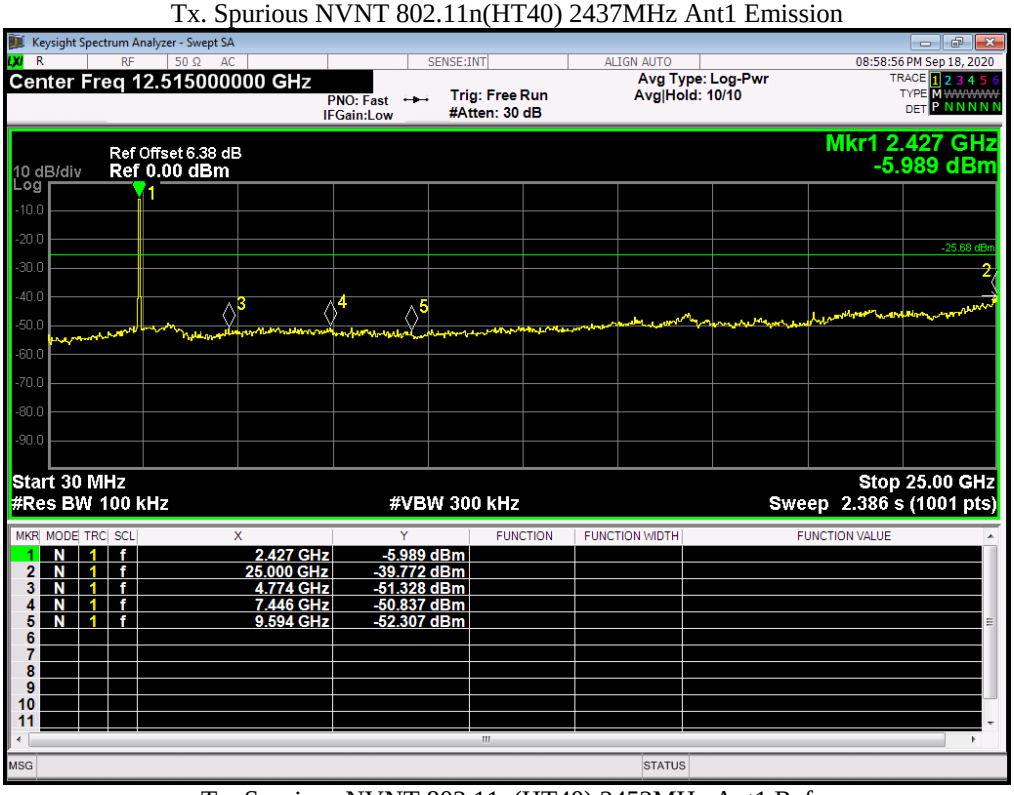
Tx. Spurious NVNT 802.11n(HT40) 2422MHz Ant1 Emission



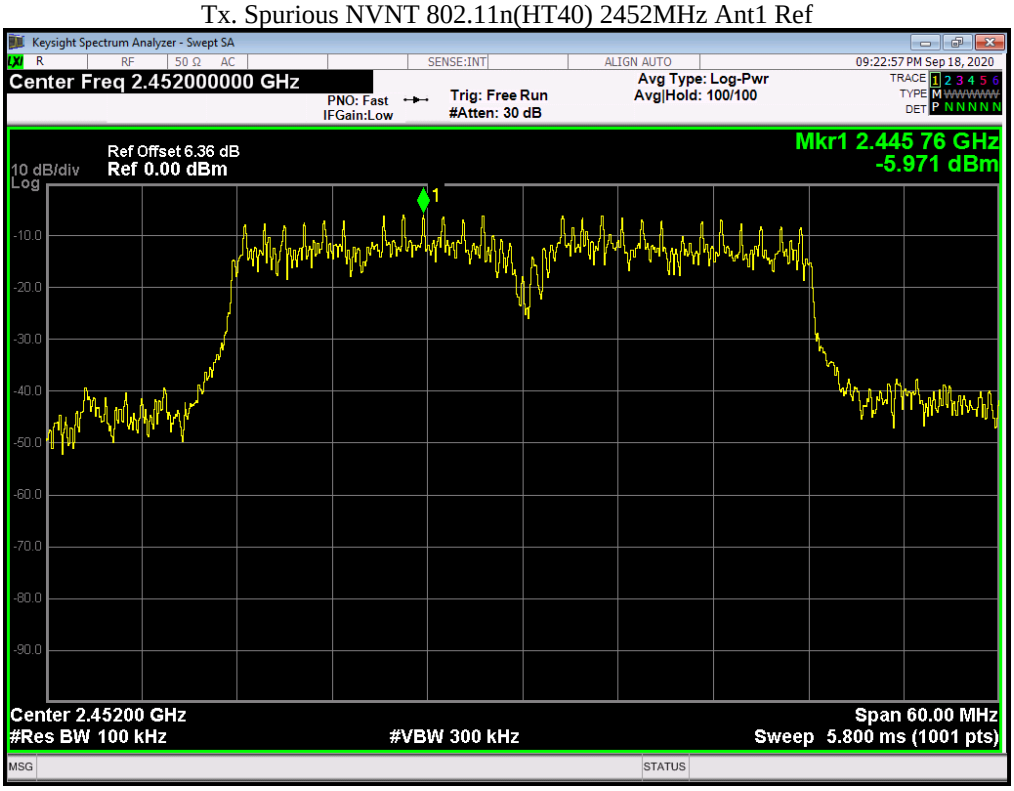
Tx. Spurious NVNT 802.11n(HT40) 2437MHz Ant1 Ref



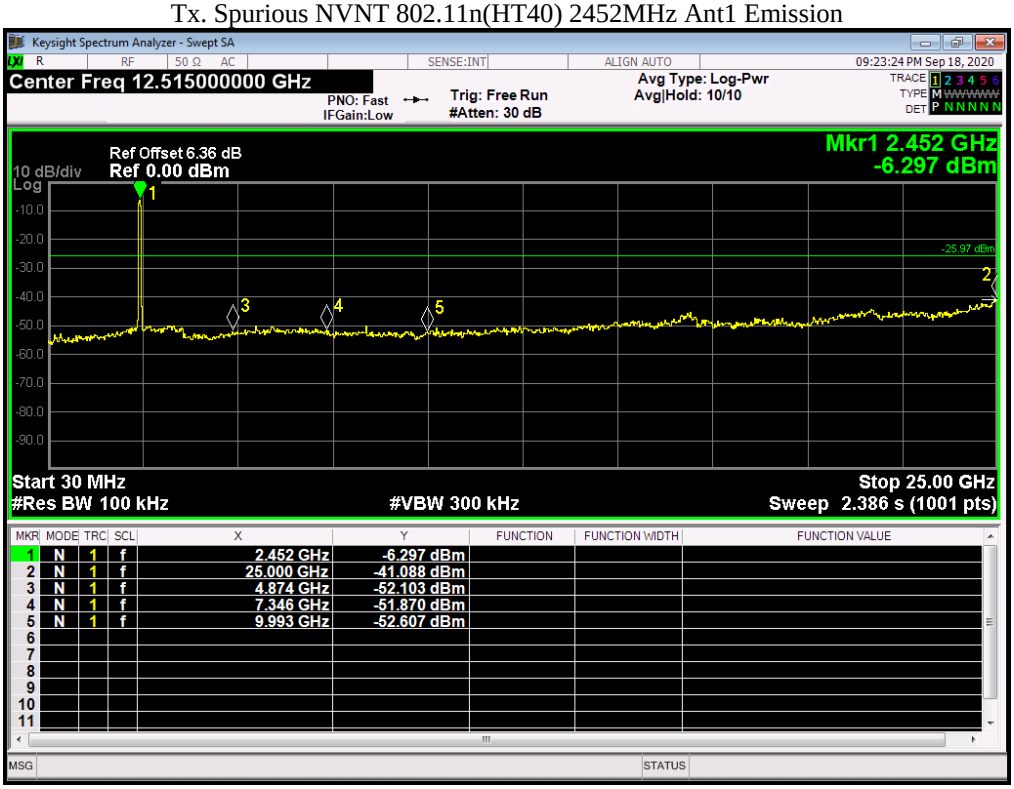
Tx. Spurious NVNT 802.11n(HT40) 2437MHz Ant1 Emission



Tx. Spurious NVNT 802.11n(HT40) 2452MHz Ant1 Ref



Tx. Spurious NVNT 802.11n(HT40) 2452MHz Ant1 Emission

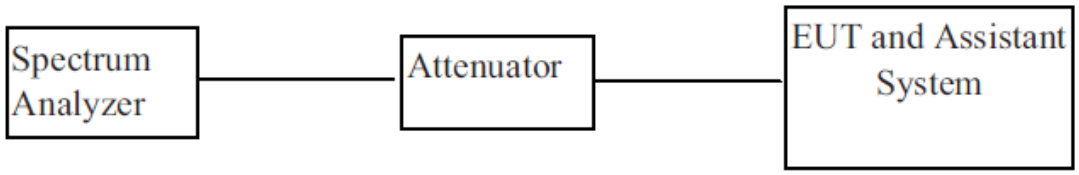


9. Conducted Output Power Spectral Density

9.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	MXA Signal Analyzer	KEYSIGHT	N9020A	MY54510476	2020/05/25	1 Year

9.2. Block diagram of test setup



9.3. Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

9.4. Test Procedure

(1). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator

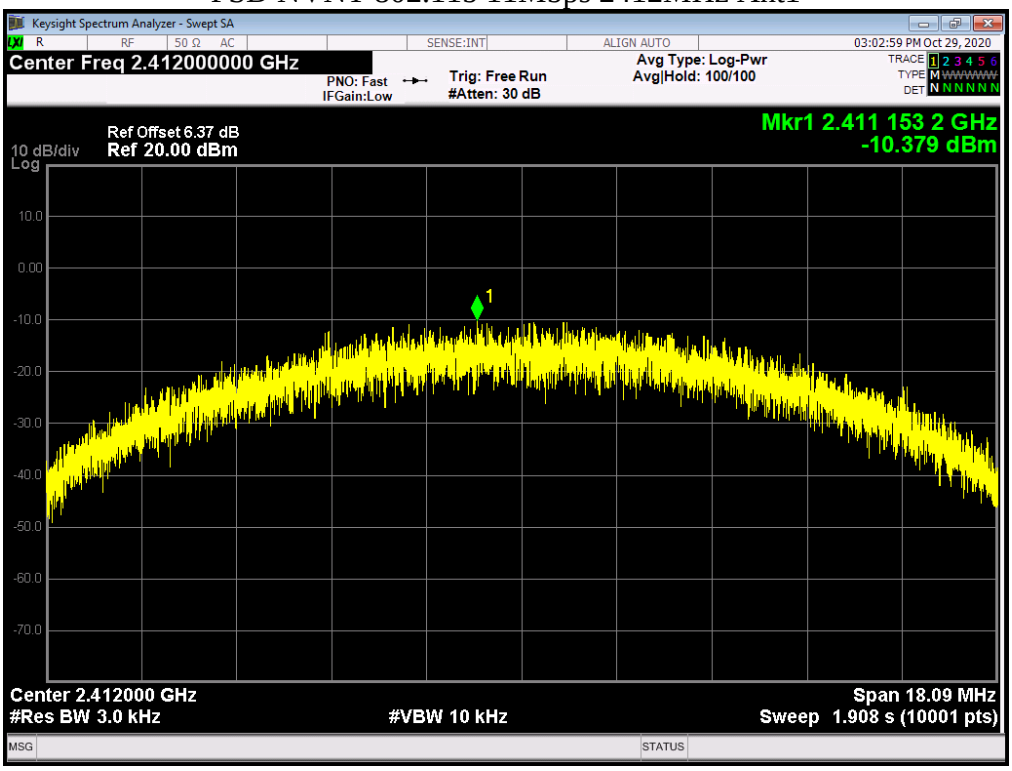
(2). Set the EUT Work on the top, the middle and the bottom operation frequency individually.

(3). Set SPA Trace 1 Max hold, then View.

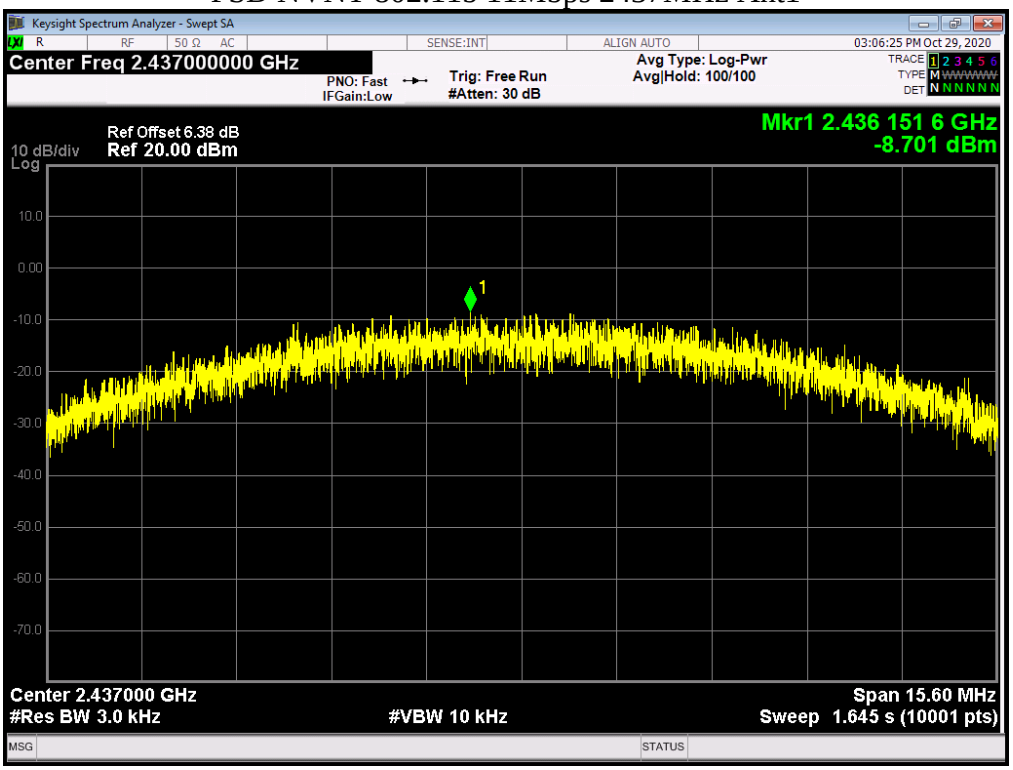
9.5. Test result

Condition	Mode	Frequency (MHz)	Antenna	Max PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	802.11b 11Mbps	2412	Ant 1	-10.379	8	Pass
NVNT	802.11b 11Mbps	2437	Ant 1	-8.701	8	Pass
NVNT	802.11b 11Mbps	2462	Ant 1	-10.184	8	Pass

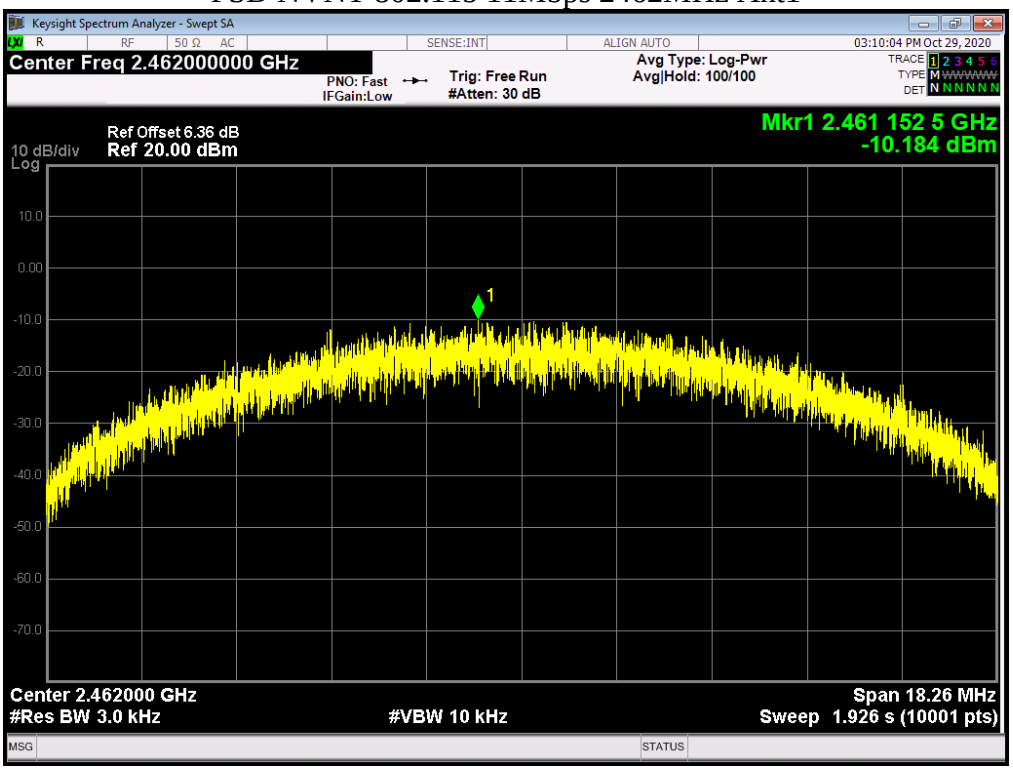
PSD NVNT 802.11b 11Mbps 2412MHz Ant1



PSD NVNT 802.11b 11Mbps 2437MHz Ant1

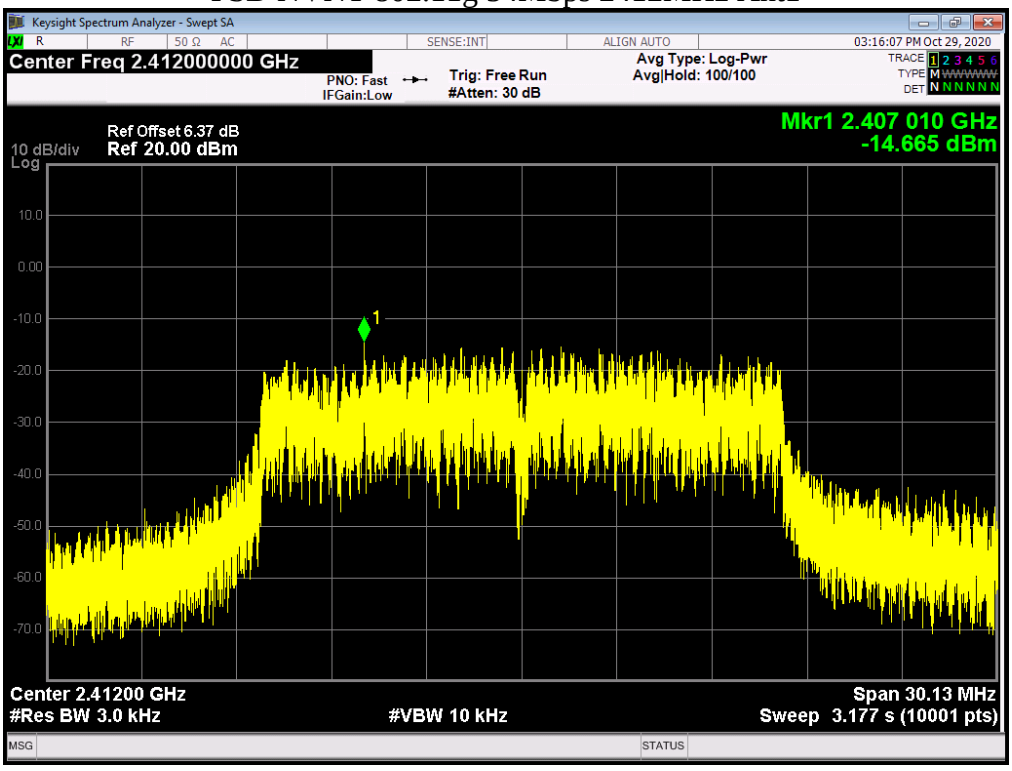


PSD NVNT 802.11b 11Mbps 2462MHz Ant1

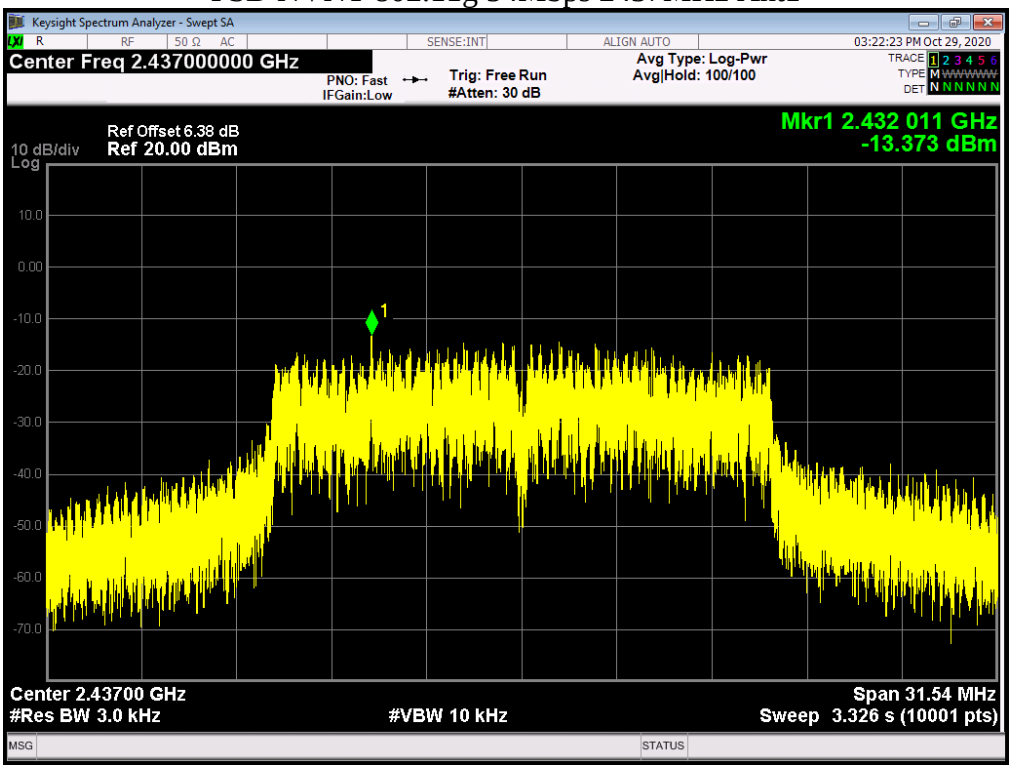


Condition	Mode	Frequency (MHz)	Antenna	Max PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	802.11g 54Mbps	2412	Ant 1	-14.665	8	Pass
NVNT	802.11g 54Mbps	2437	Ant 1	-13.373	8	Pass
NVNT	802.11g 54Mbps	2462	Ant 1	-14.408	8	Pass

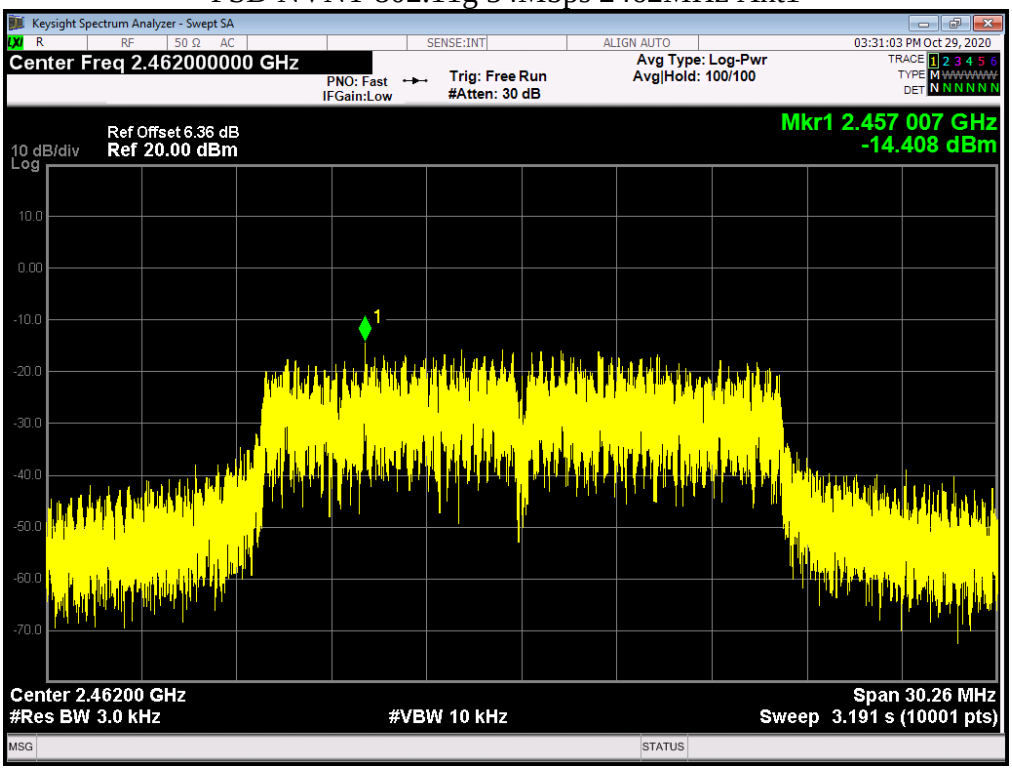
PSD NVNT 802.11g 54Mbps 2412MHz Ant1



PSD NVNT 802.11g 54Mbps 2437MHz Ant1

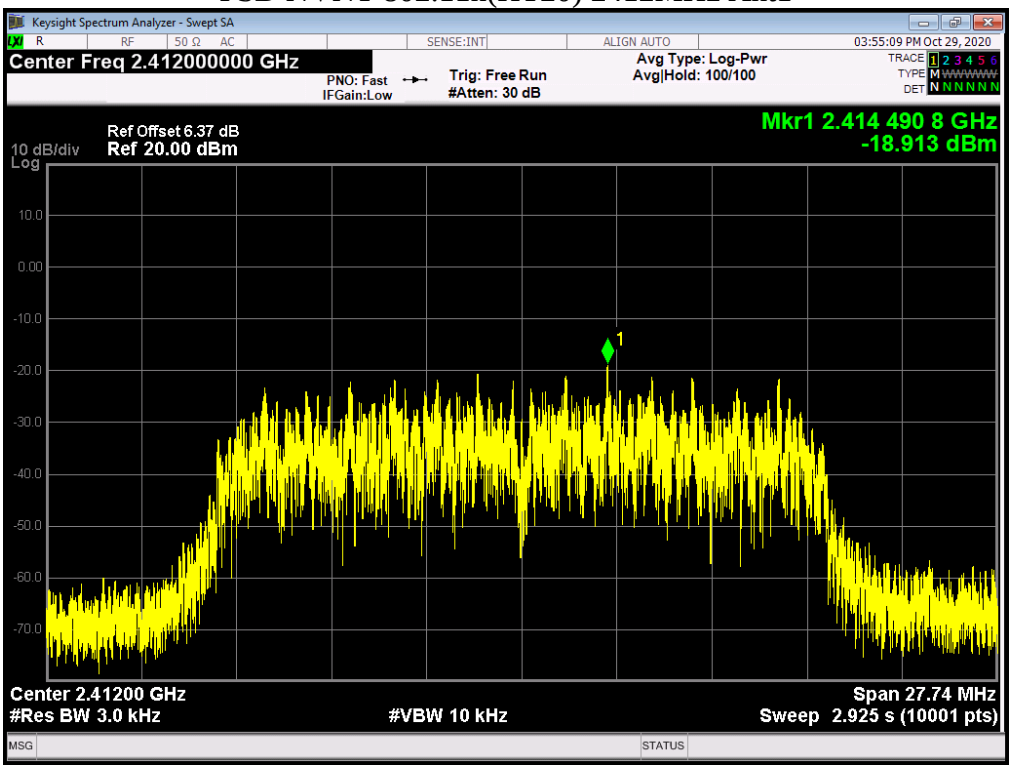


PSD NVNT 802.11g 54Mbps 2462MHz Ant1

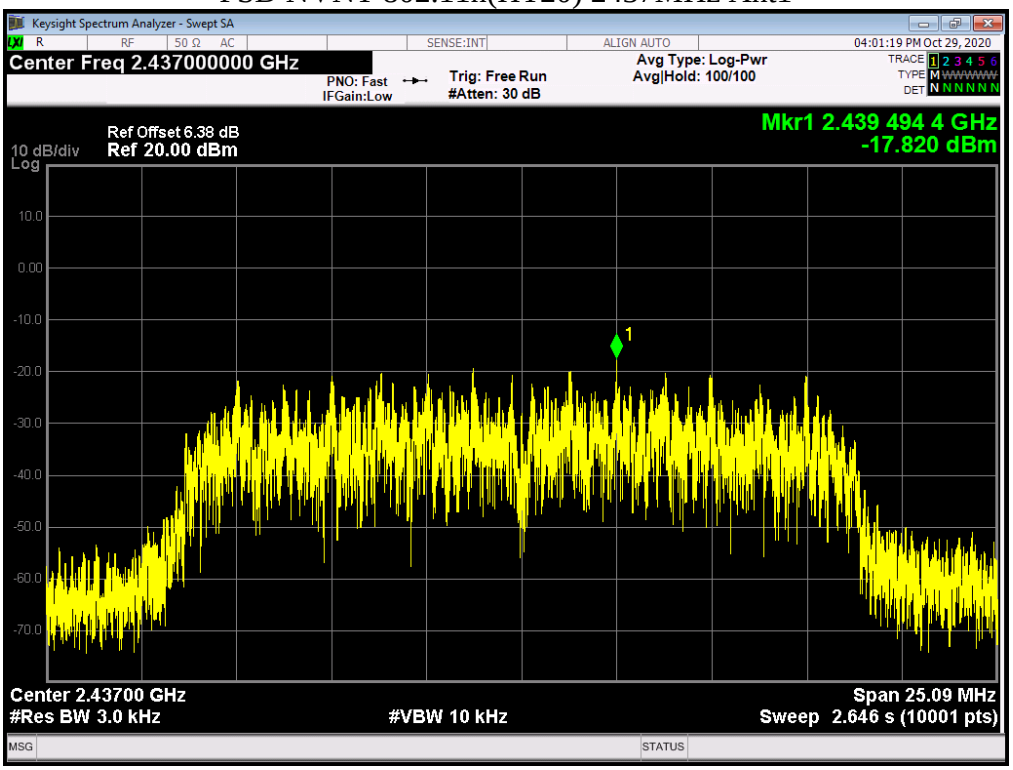


Condition	Mode	Frequency (MHz)	Antenna	Max PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	802.11n(HT20)	2412	Ant 1	-18.913	8	Pass
NVNT	802.11n(HT20)	2437	Ant 1	-17.82	8	Pass
NVNT	802.11n(HT20)	2462	Ant 1	-18.365	8	Pass

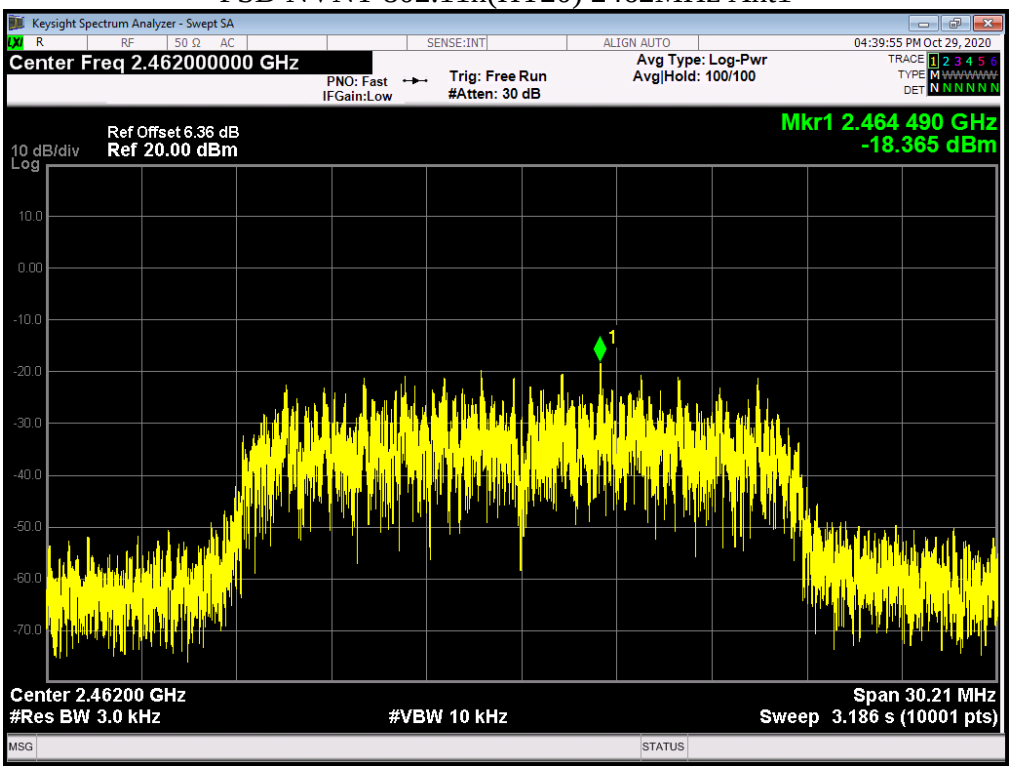
PSD NVNT 802.11n(HT20) 2412MHz Ant1



PSD NVNT 802.11n(HT20) 2437MHz Ant1

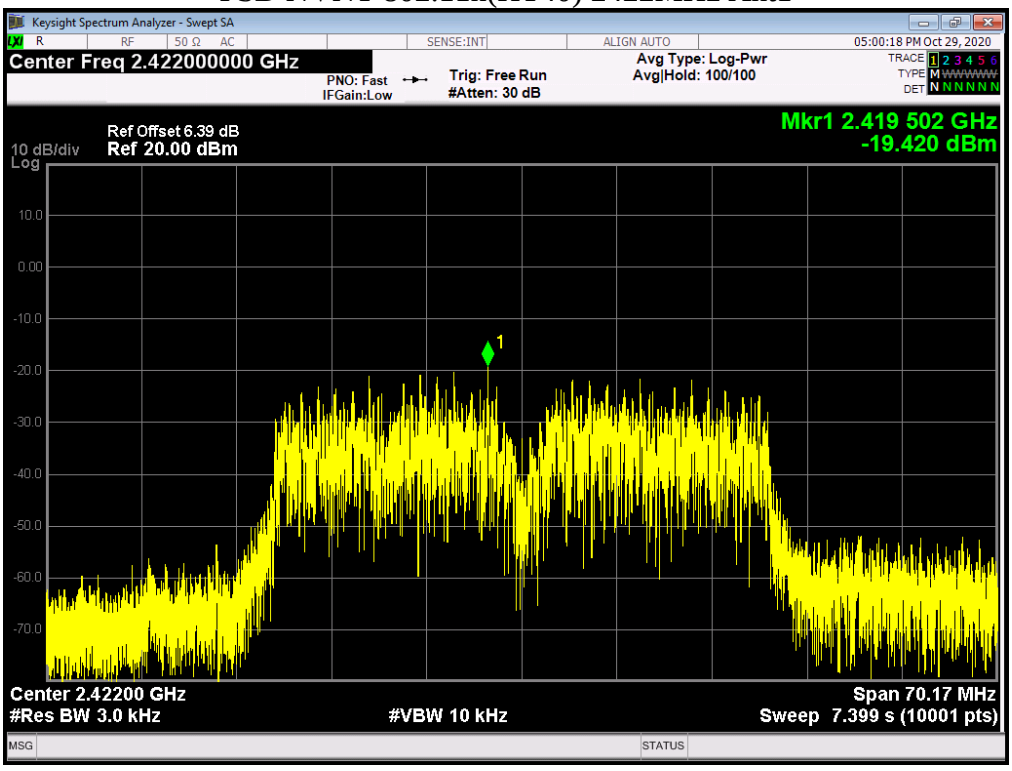


PSD NVNT 802.11n(HT20) 2462MHz Ant1

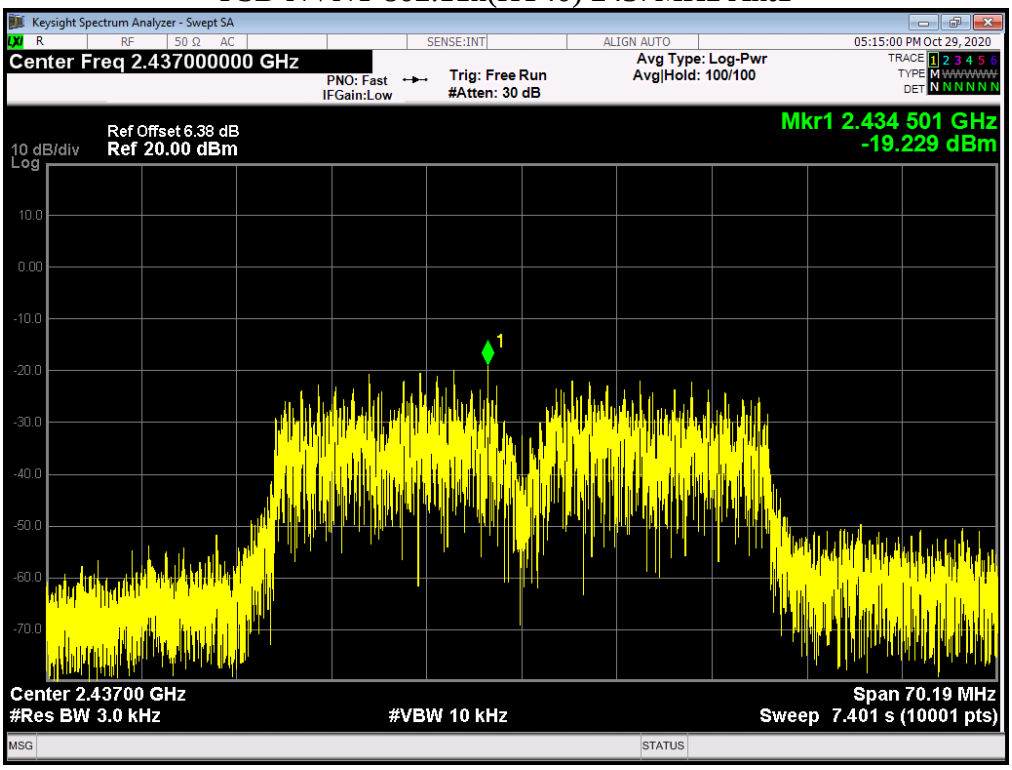


Condition	Mode	Frequency (MHz)	Antenna	Max PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	802.11n(HT40)	2422	Ant 1	-19.42	8	Pass
NVNT	802.11n(HT40)	2437	Ant 1	-19.229	8	Pass
NVNT	802.11n(HT40)	2452	Ant 1	-19.591	8	Pass

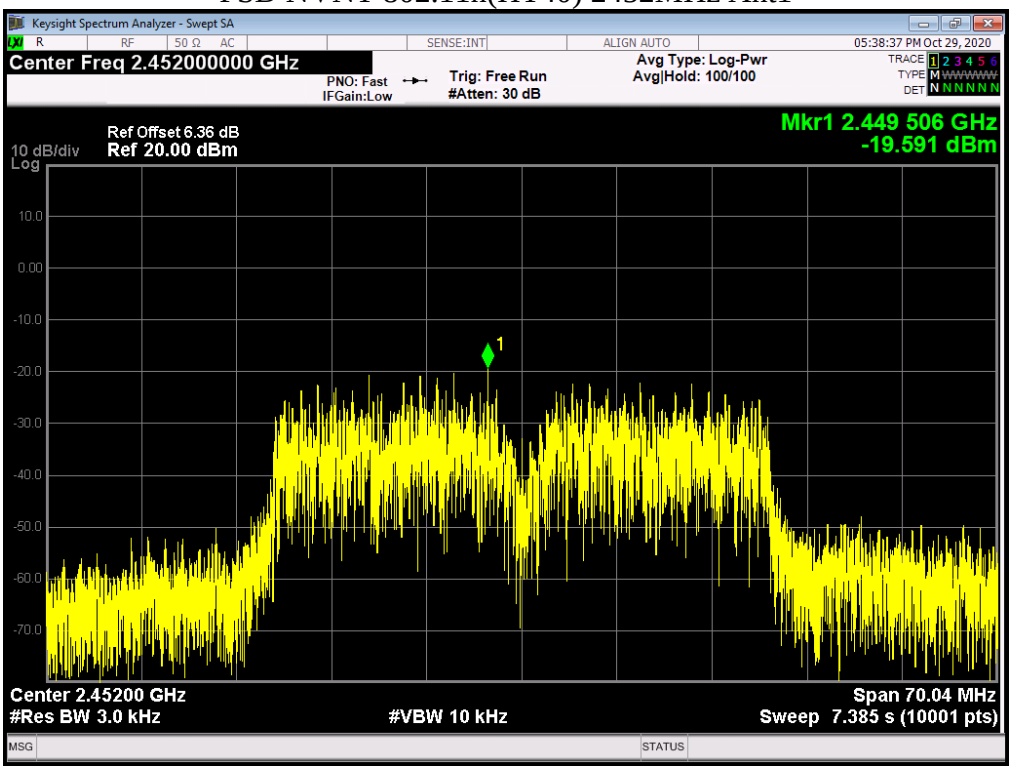
PSD NVNT 802.11n(HT40) 2422MHz Ant1



PSD NVNT 802.11n(HT40) 2437MHz Ant1



PSD NVNT 802.11n(HT40) 2452MHz Ant1



10. Antenna Requirement

10.1. Standard requirement

15.203 requirement: For intentional device, according to 15.203: 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.

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.

10.2. EUT Antenna

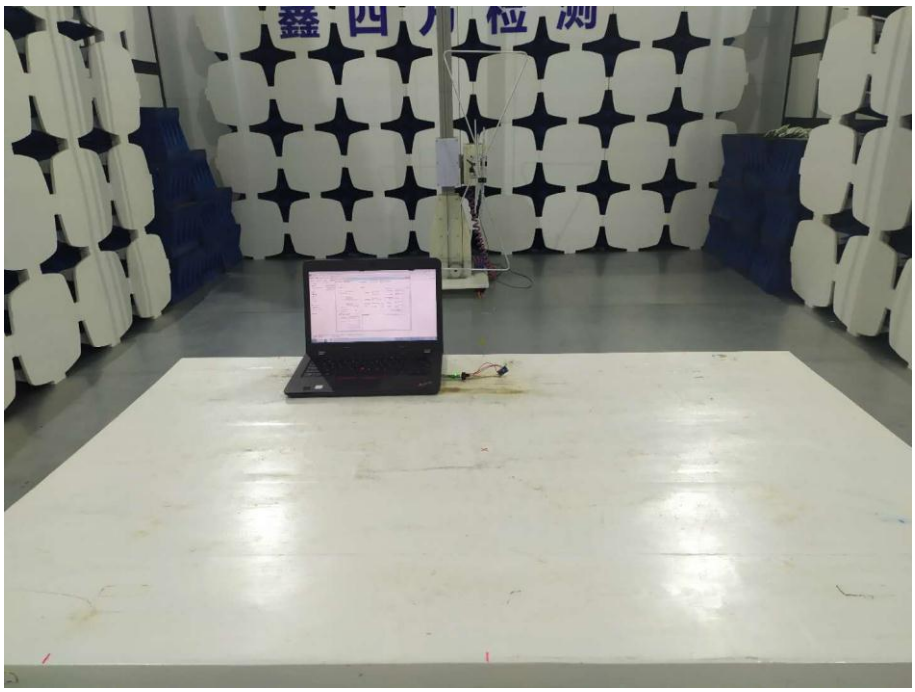
The antenna is Integral Antenna and no consideration of replacement. Antenna gain is Maximum 0 dBi from 2.4GHz to 2.5GHz.

11. Test setup photograph

11.1. Photos of power line conducted emission test

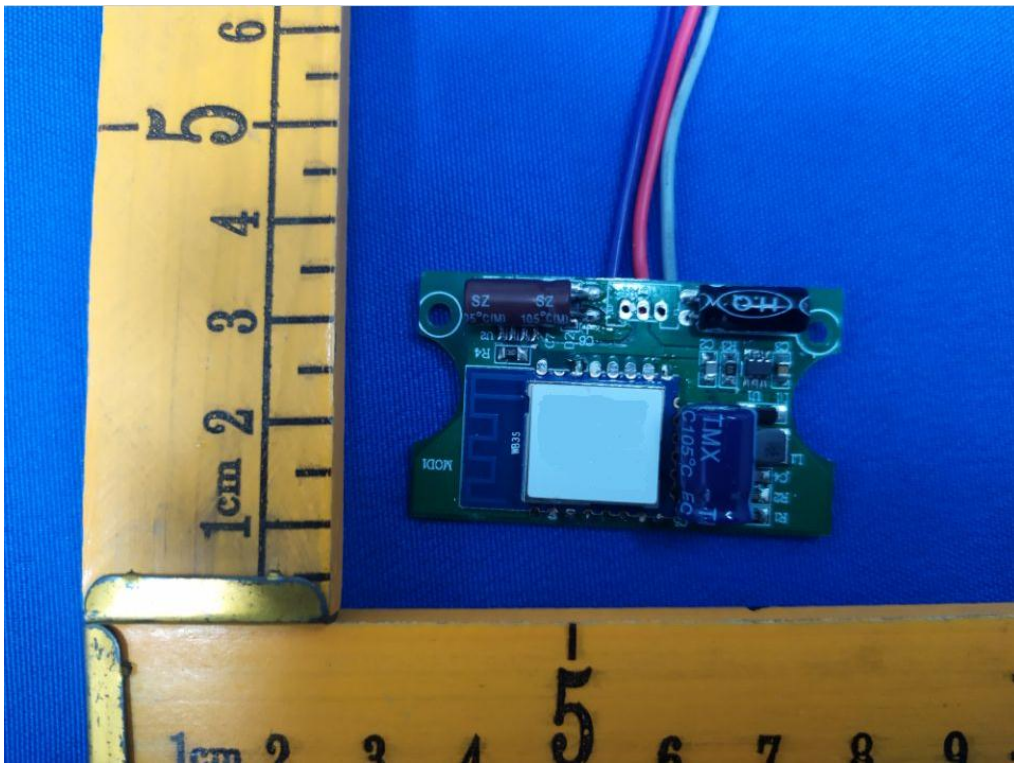
11.2. Photos of radiated emission test

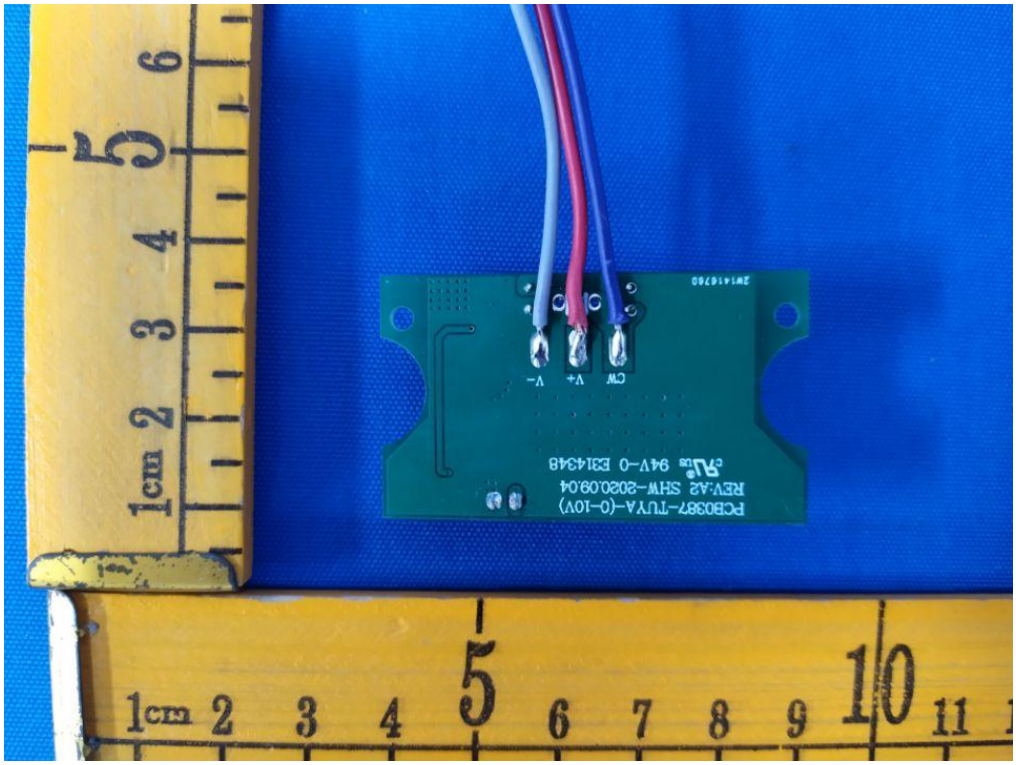
30MHz – 1GHz

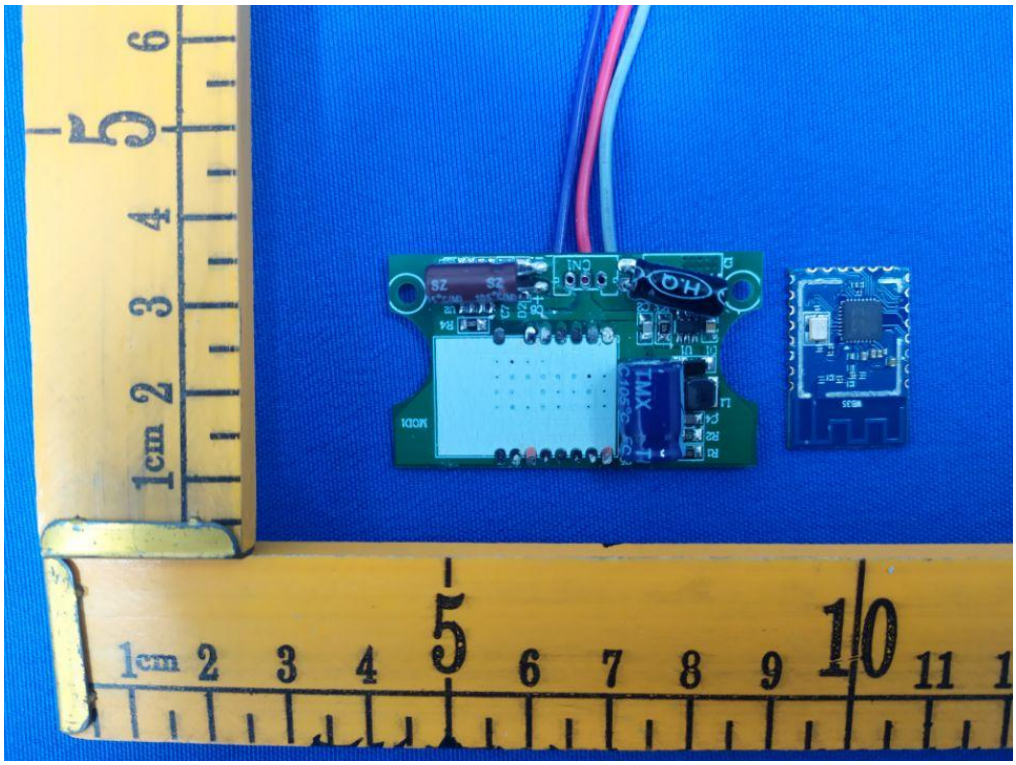


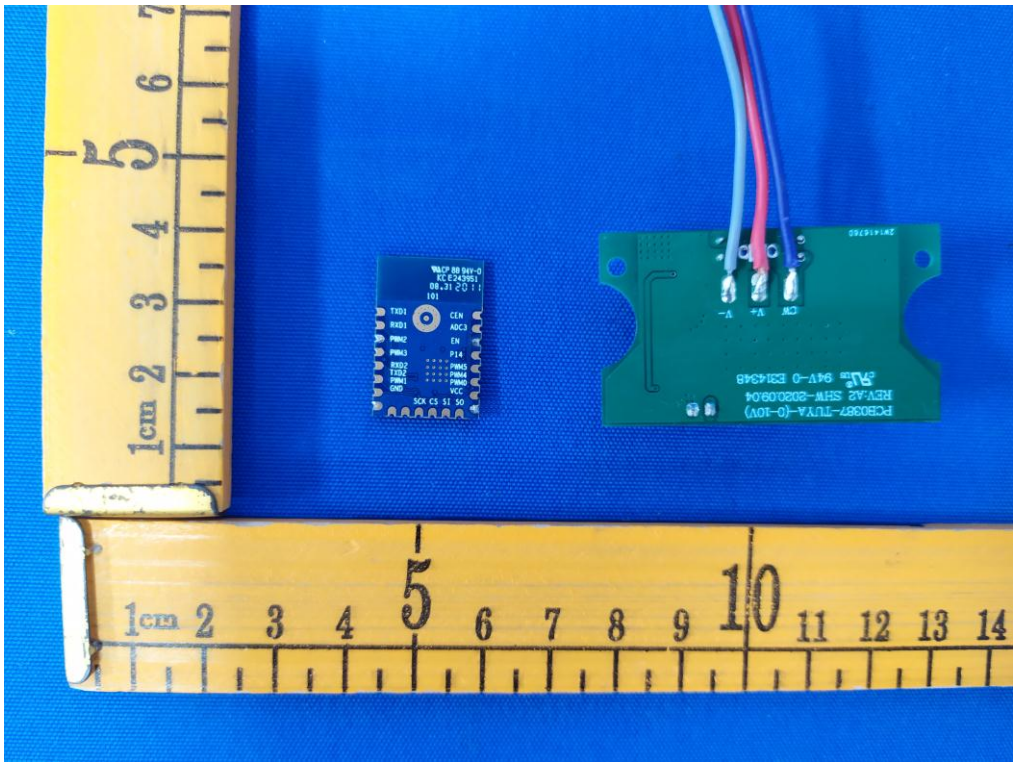
Above 1GHz

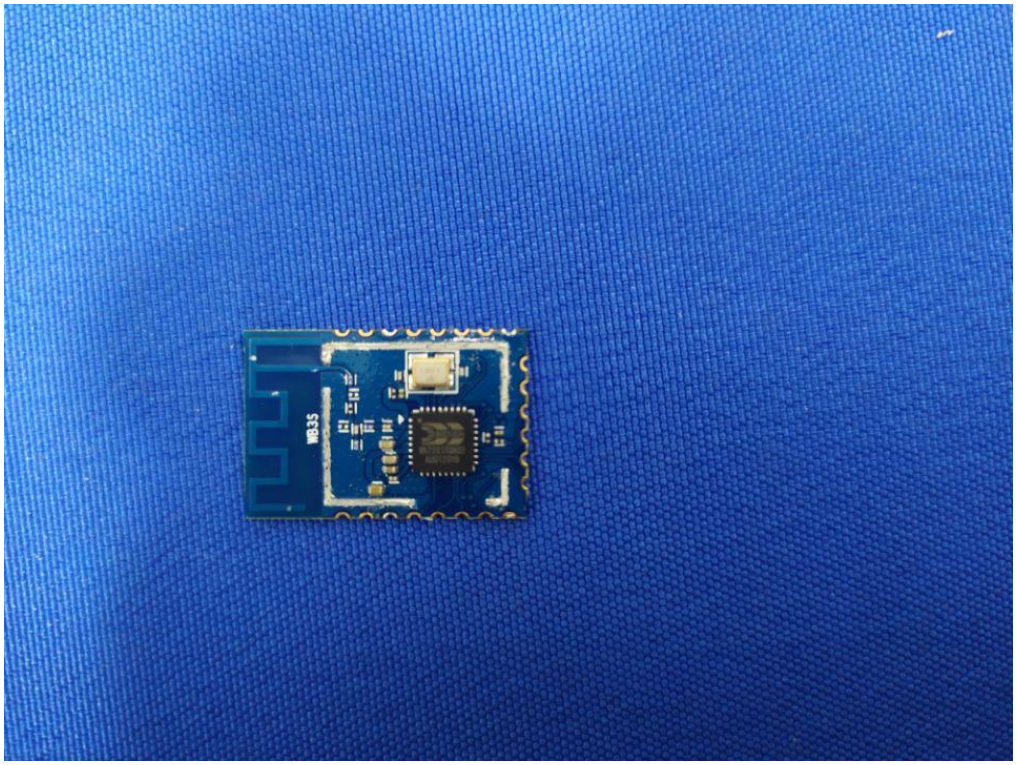
12. Photos of the EUT

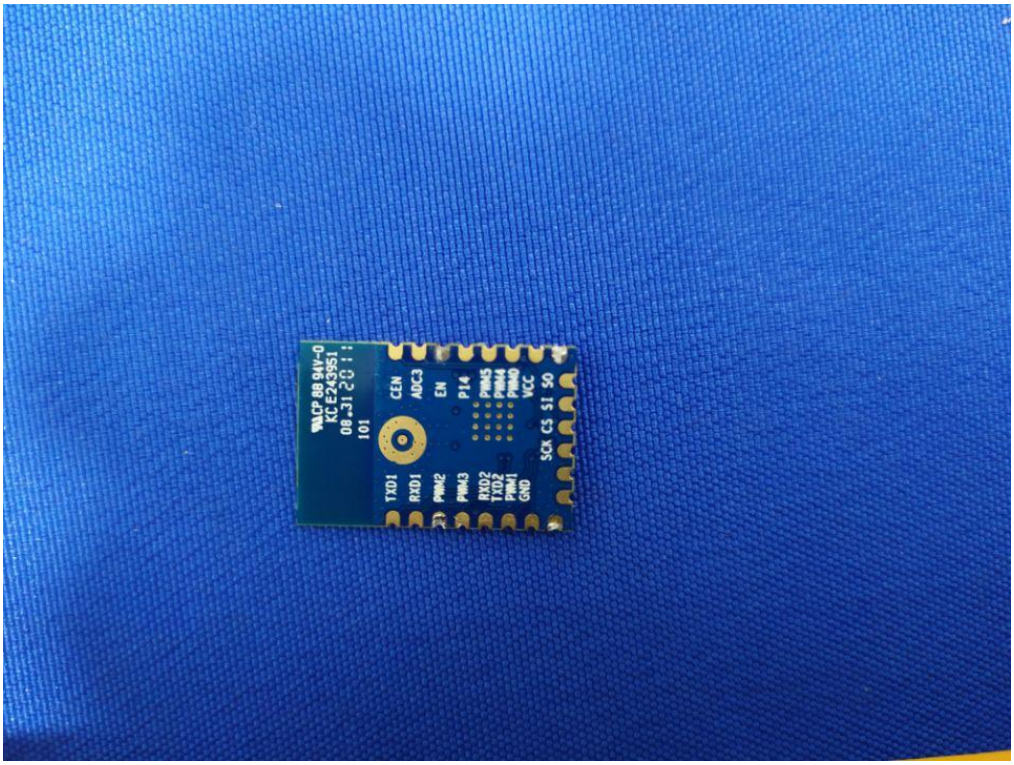












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