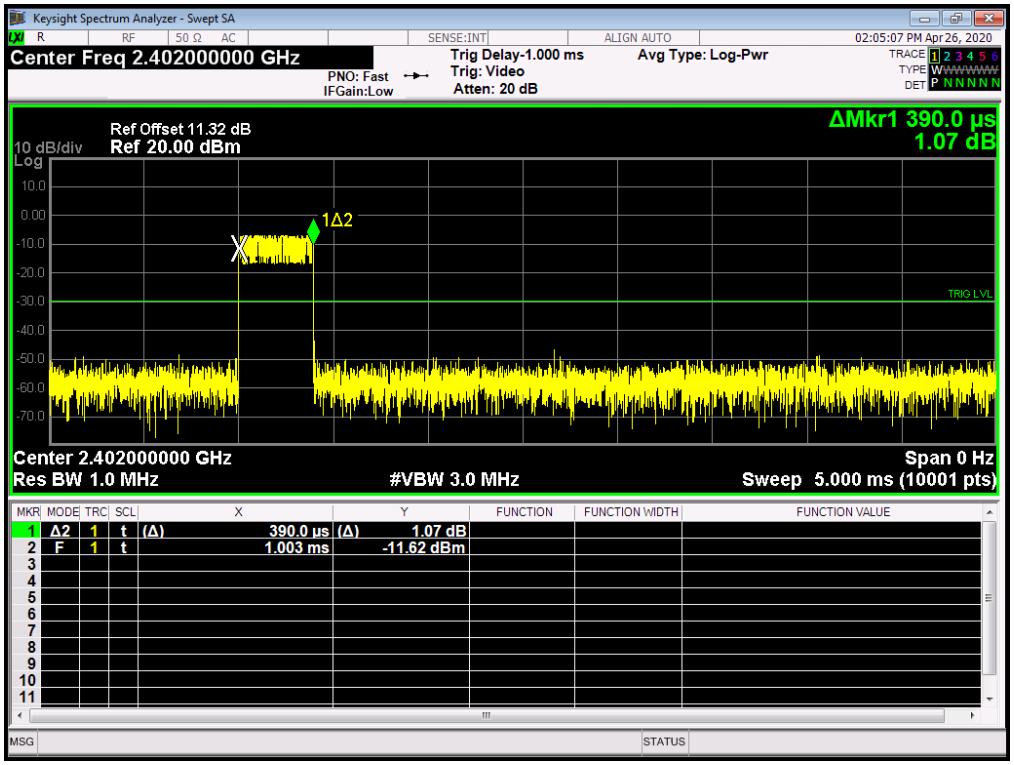
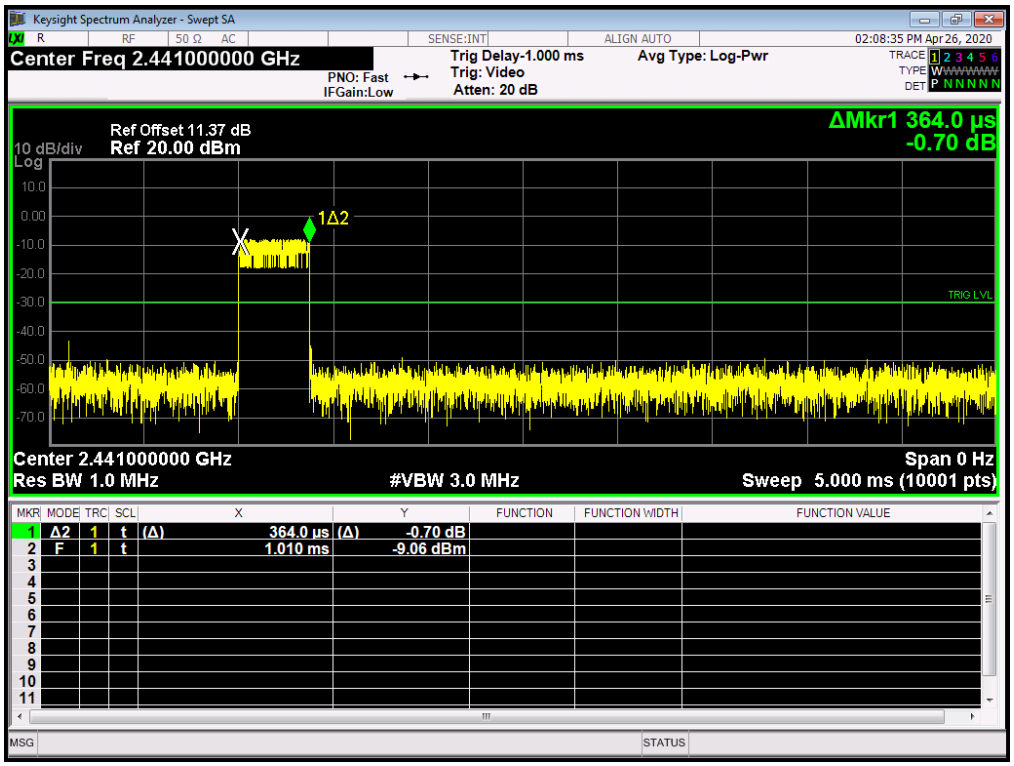
Condition	Mode	Frequency (MHz)	Pulse Time (ms)	Total Dwell Time (ms)	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH1	2402	0.39	124.8	31600	400	Pass
NVNT	1-DH1	2441	0.364	116.48	31600	400	Pass
NVNT	1-DH1	2480	0.3875	124	31600	400	Pass

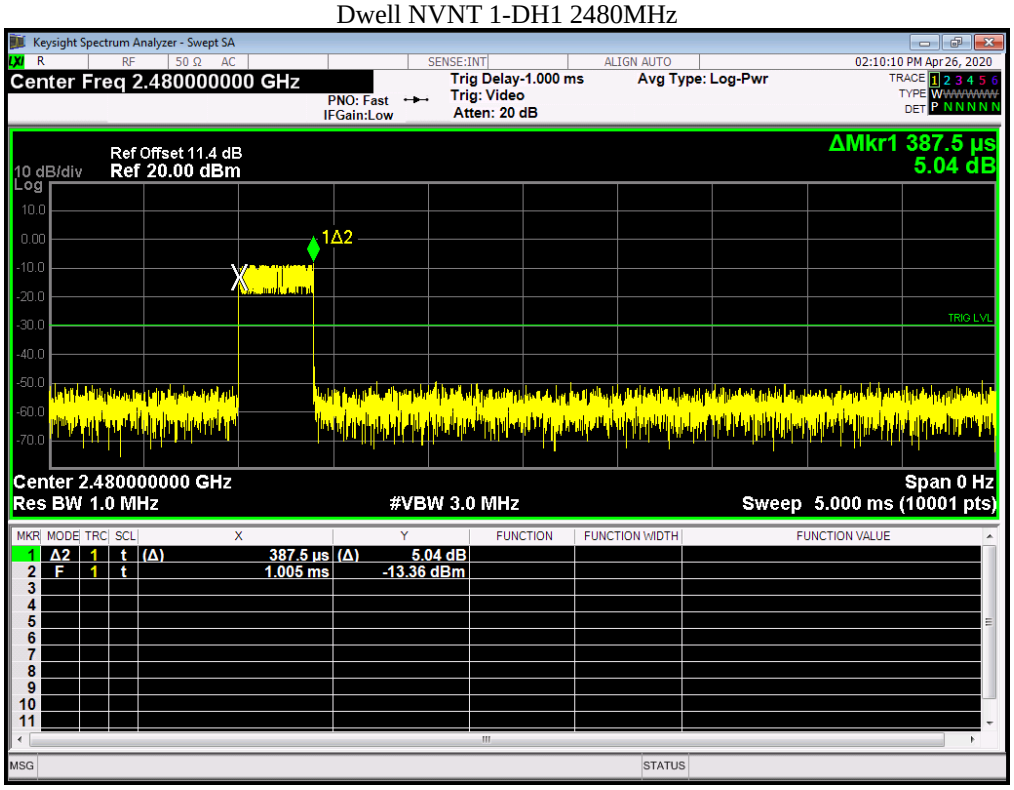
Dwell NVNT 1-DH1 2402MHz



Dwell NVNT 1-DH1 2441MHz

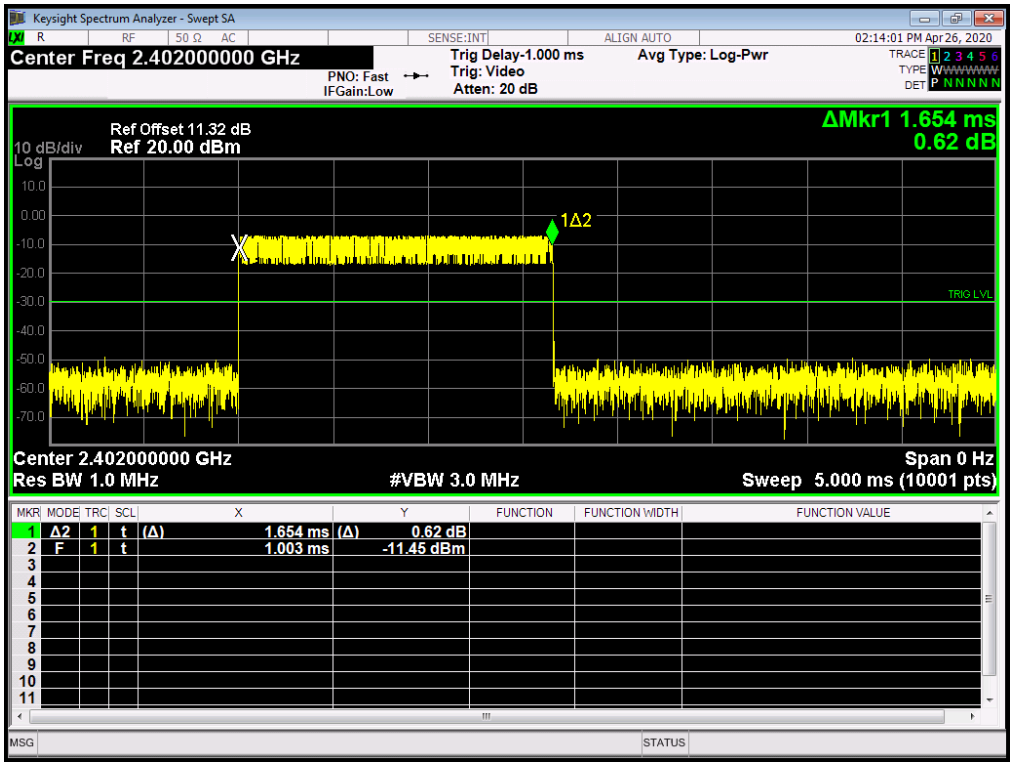


Dwell NVNT 1-DH1 2480MHz

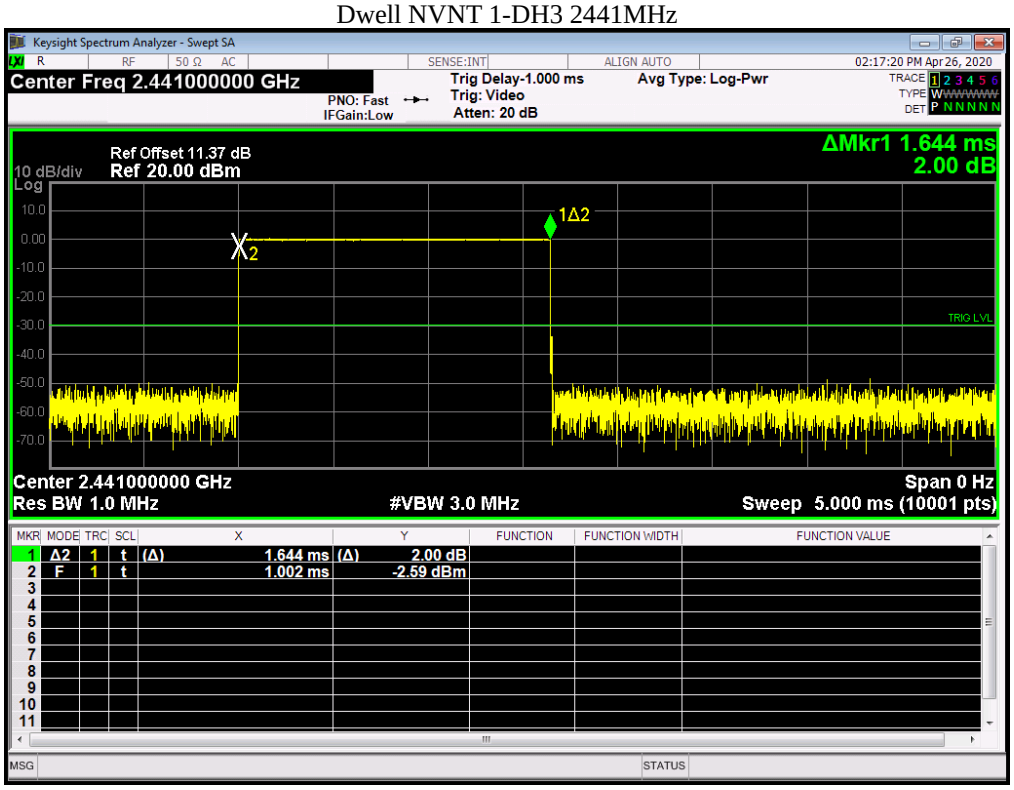


Condition	Mode	Frequency (MHz)	Pulse Time (ms)	Total Dwell Time (ms)	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH3	2402	1.654	264.64	31600	400	Pass
NVNT	1-DH3	2441	1.644	263.04	31600	400	Pass
NVNT	1-DH3	2480	1.643	262.88	31600	400	Pass

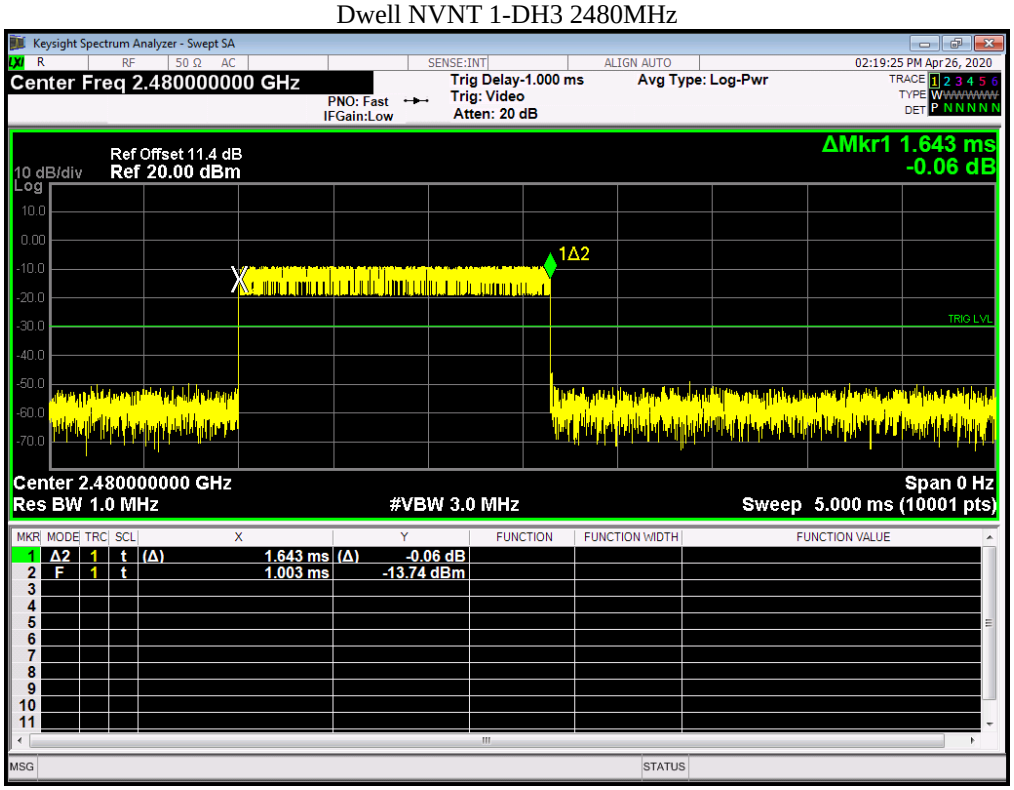
Dwell NVNT 1-DH3 2402MHz



Dwell NVNT 1-DH3 2441MHz

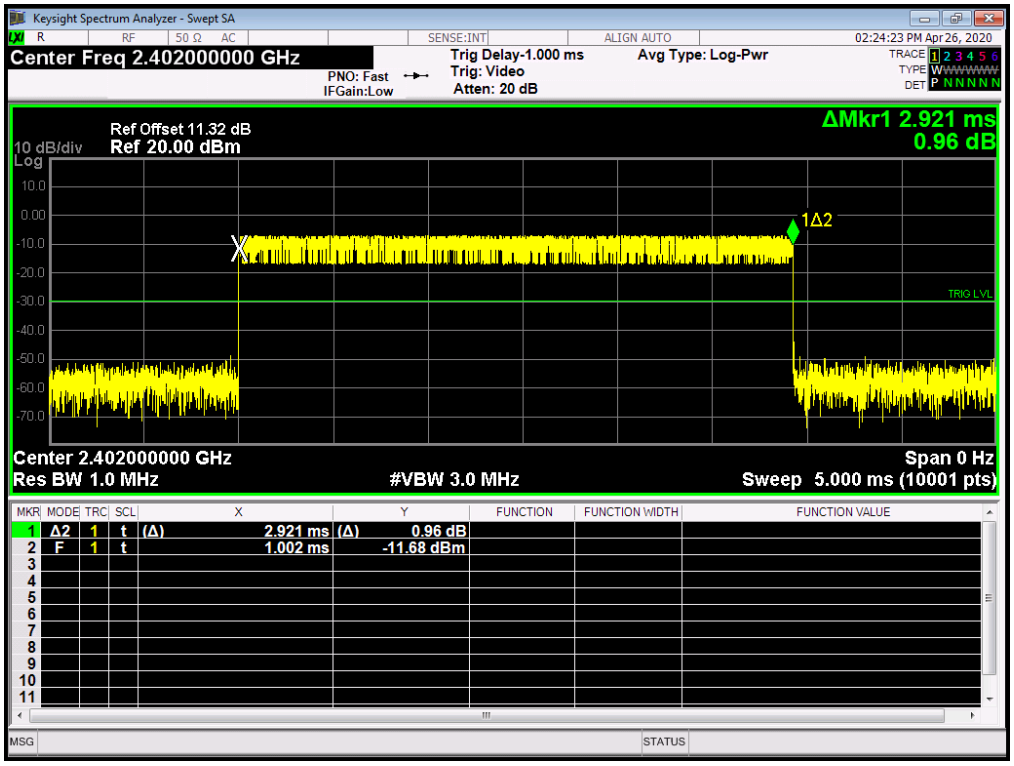


Dwell NVNT 1-DH3 2480MHz

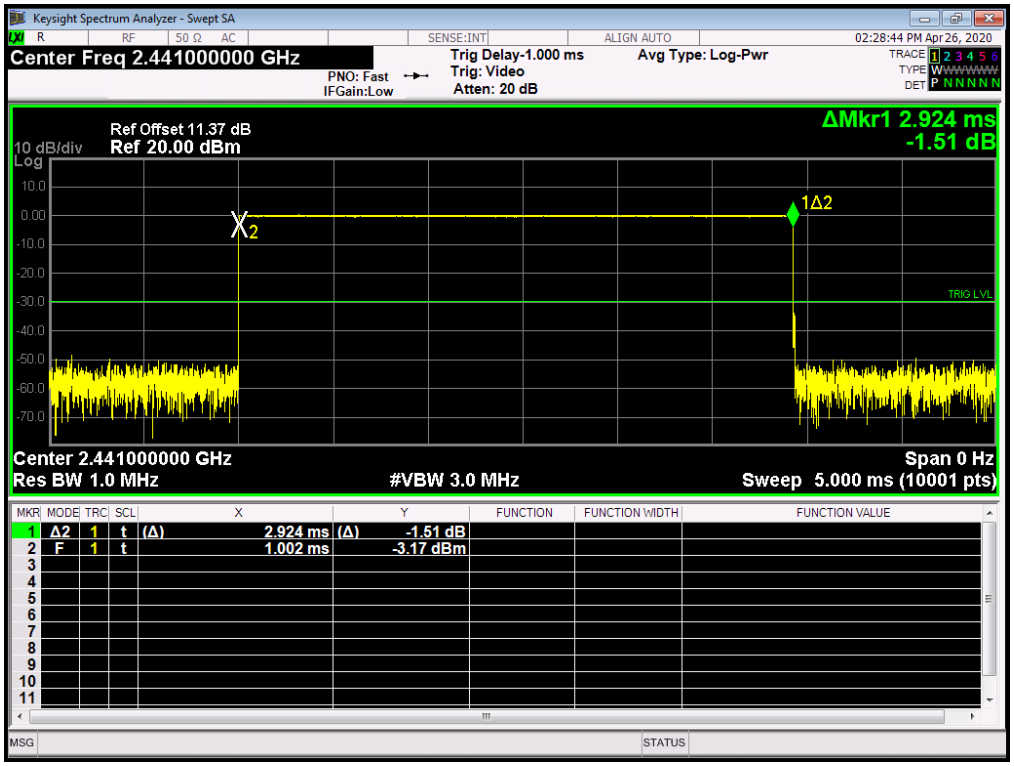


Condition	Mode	Frequency (MHz)	Pulse Time (ms)	Total Dwell Time (ms)	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH5	2402	2.921	311.58	31600	400	Pass
NVNT	1-DH5	2441	2.924	311.90	31600	400	Pass
NVNT	1-DH5	2480	2.923	311.80	31600	400	Pass

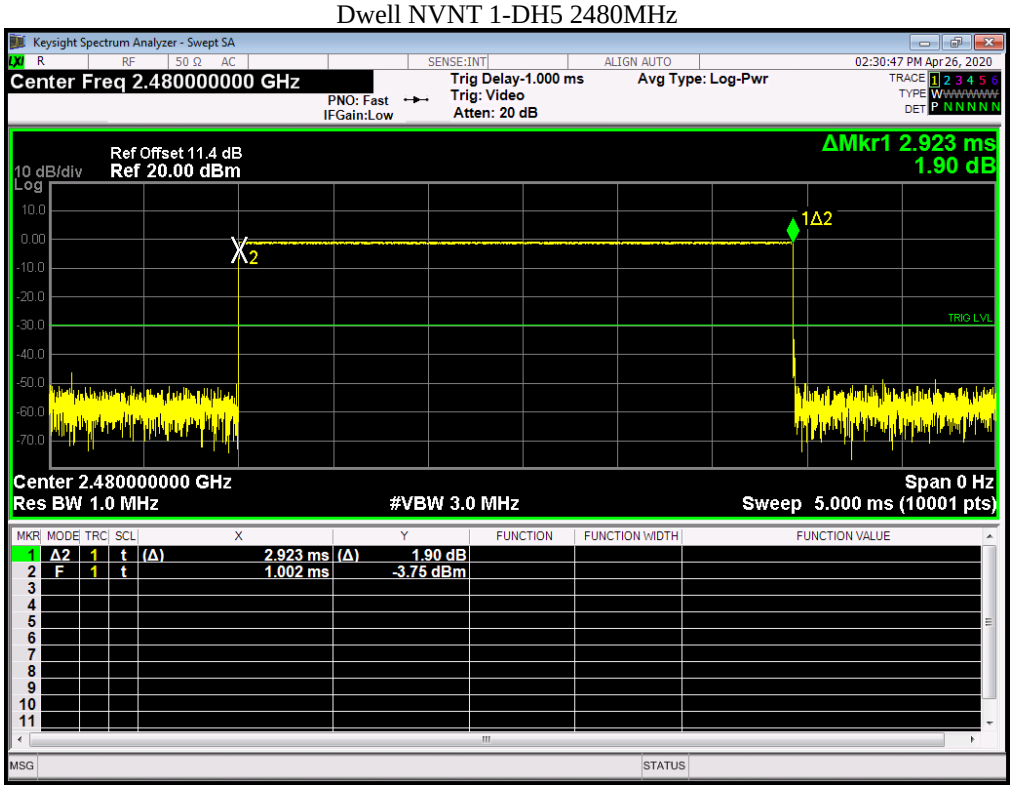
Dwell NVNT 1-DH5 2402MHz



Dwell NVNT 1-DH5 2441MHz

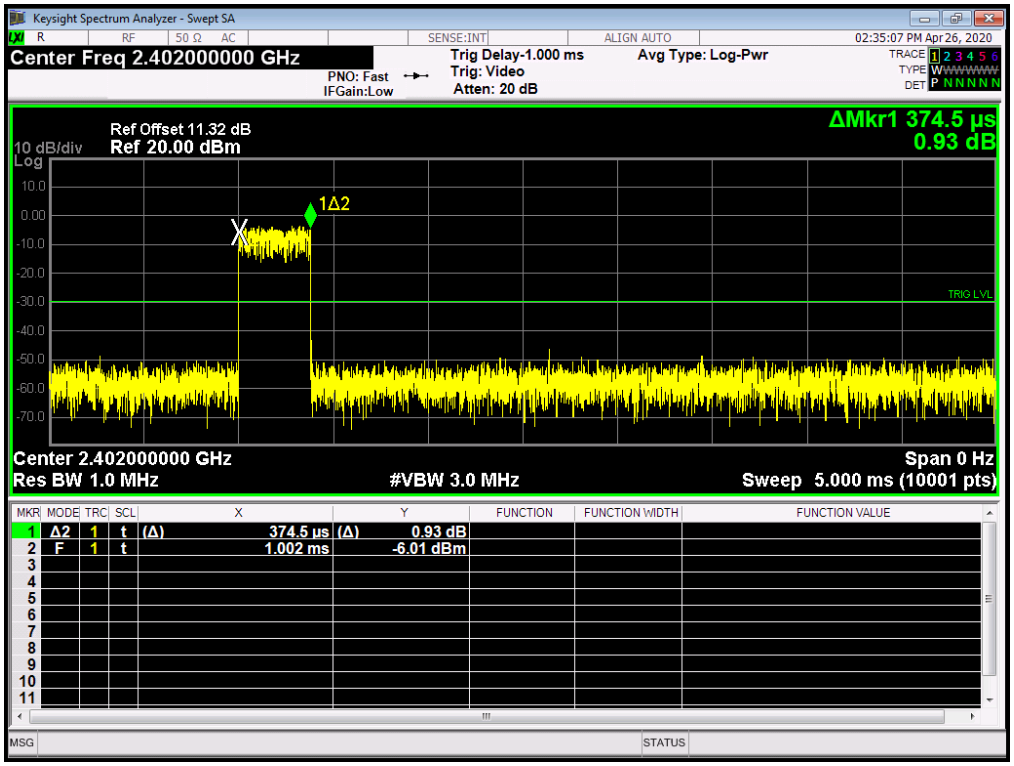


Dwell NVNT 1-DH5 2480MHz

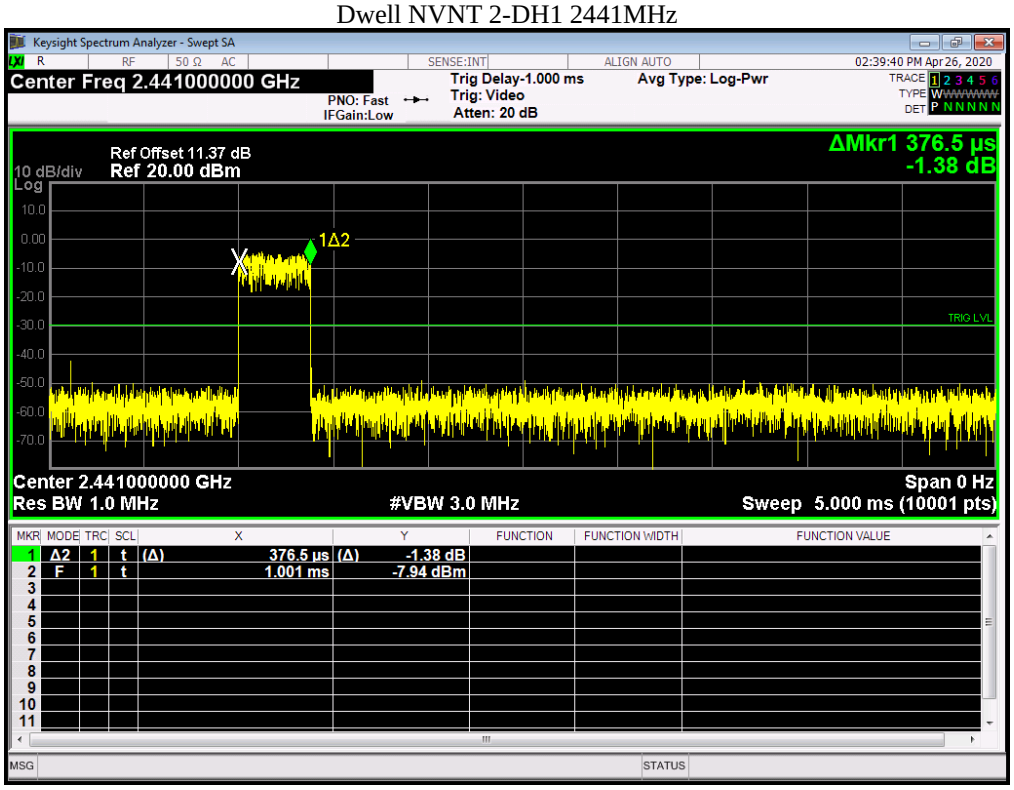


Condition	Mode	Frequency (MHz)	Pulse Time (ms)	Total Dwell Time (ms)	Period Time (ms)	Limit (ms)	Verdict
NVNT	2-DH1	2402	0.3745	119.84	31600	400	Pass
NVNT	2-DH1	2441	0.3765	120.48	31600	400	Pass
NVNT	2-DH1	2480	0.395	126.4	31600	400	Pass

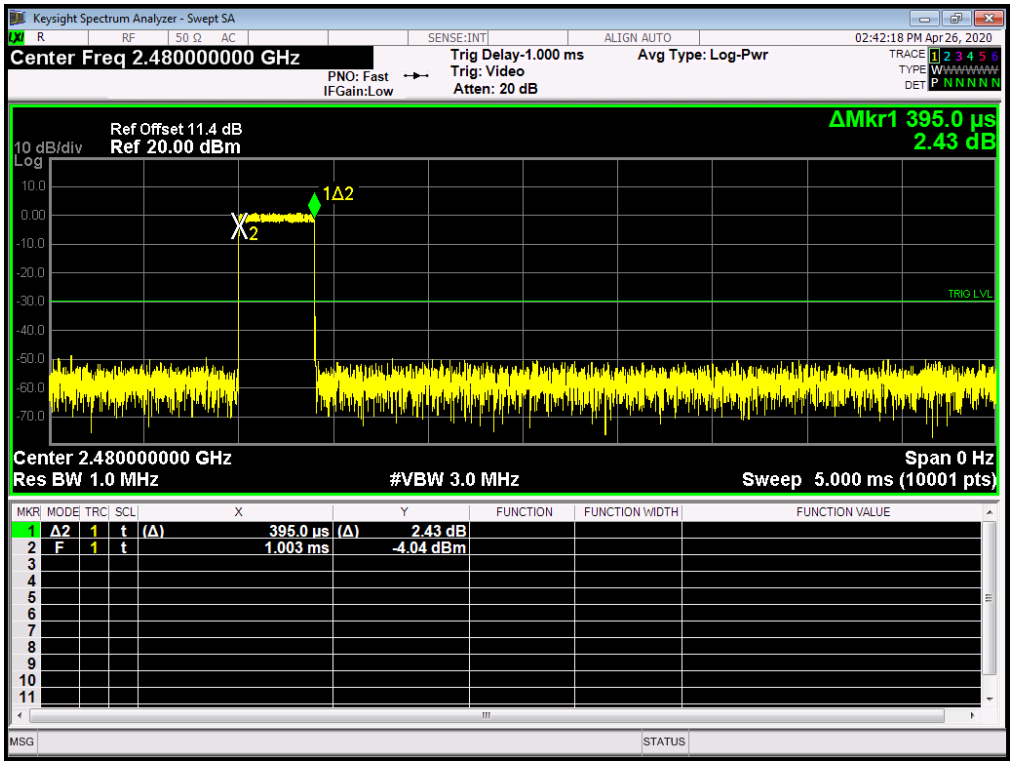
Dwell NVNT 2-DH1 2402MHz



Dwell NVNT 2-DH1 2441MHz

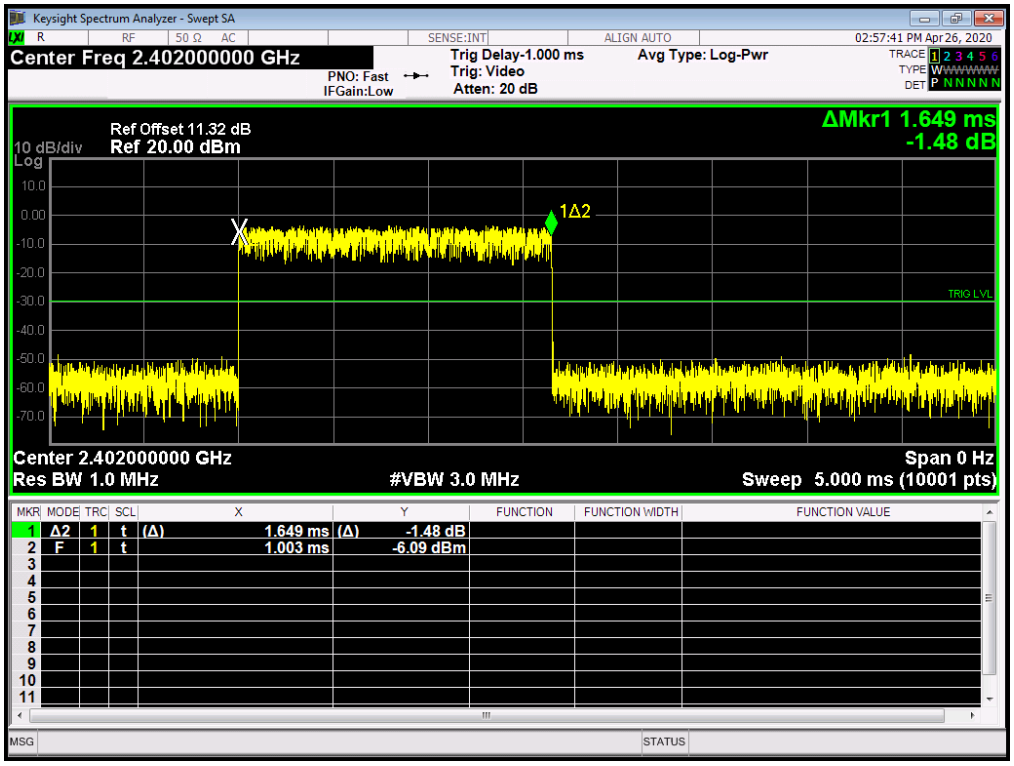


Dwell NVNT 2-DH1 2480MHz

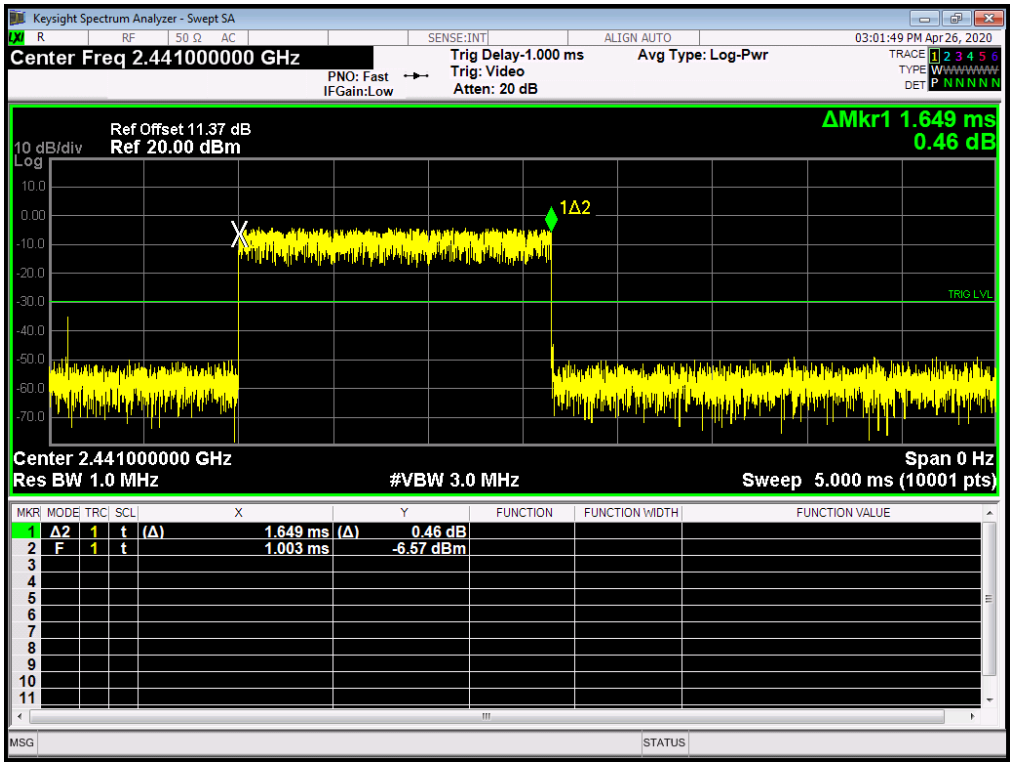


Condition	Mode	Frequency (MHz)	Pulse Time (ms)	Total Dwell Time (ms)	Period Time (ms)	Limit (ms)	Verdict
NVNT	2-DH3	2402	1.649	263.84	31600	400	Pass
NVNT	2-DH3	2441	1.649	263.84	31600	400	Pass
NVNT	2-DH3	2480	1.649	263.84	31600	400	Pass

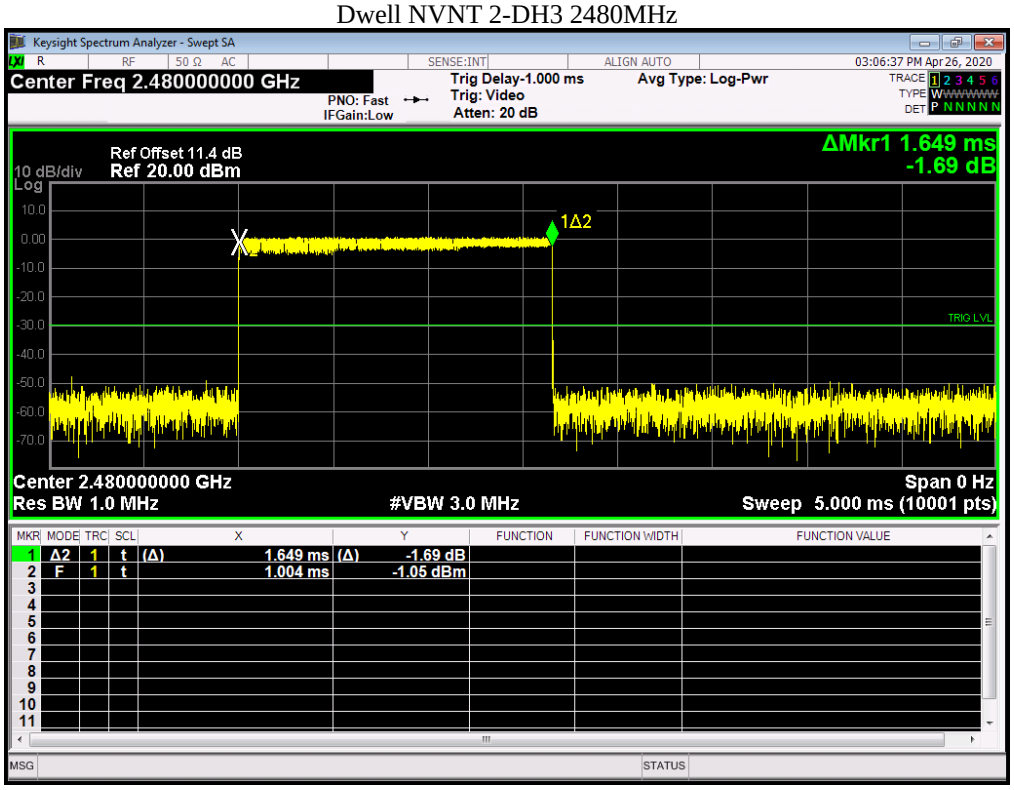
Dwell NVNT 2-DH3 2402MHz



Dwell NVNT 2-DH3 2441MHz

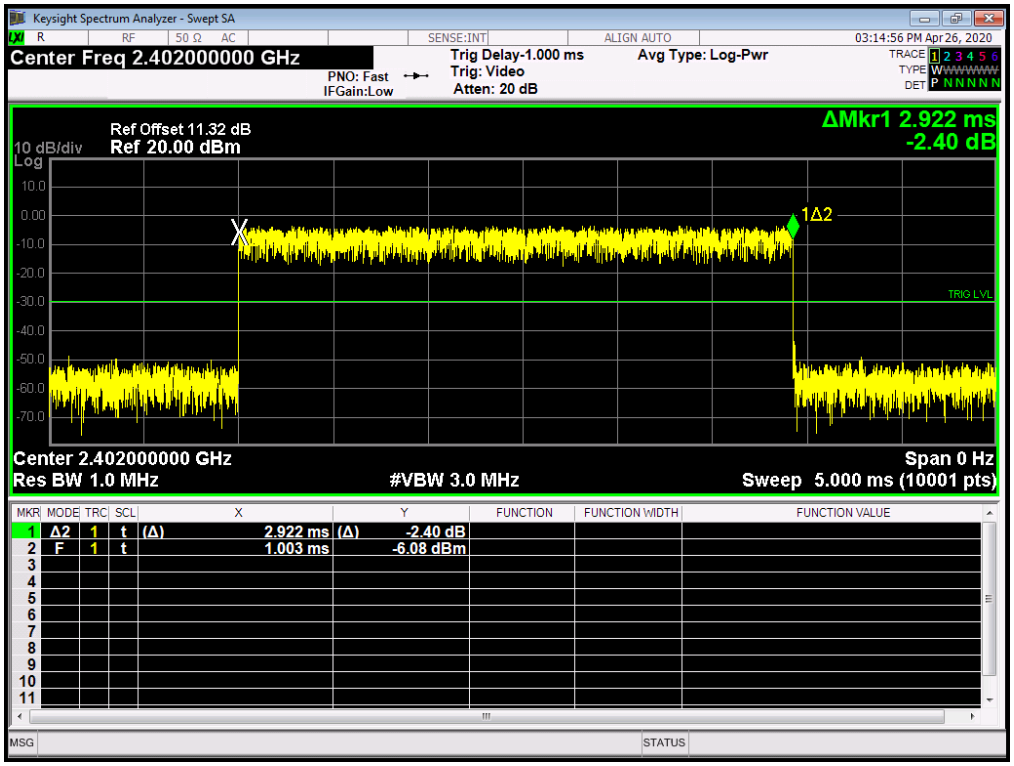


Dwell NVNT 2-DH3 2480MHz

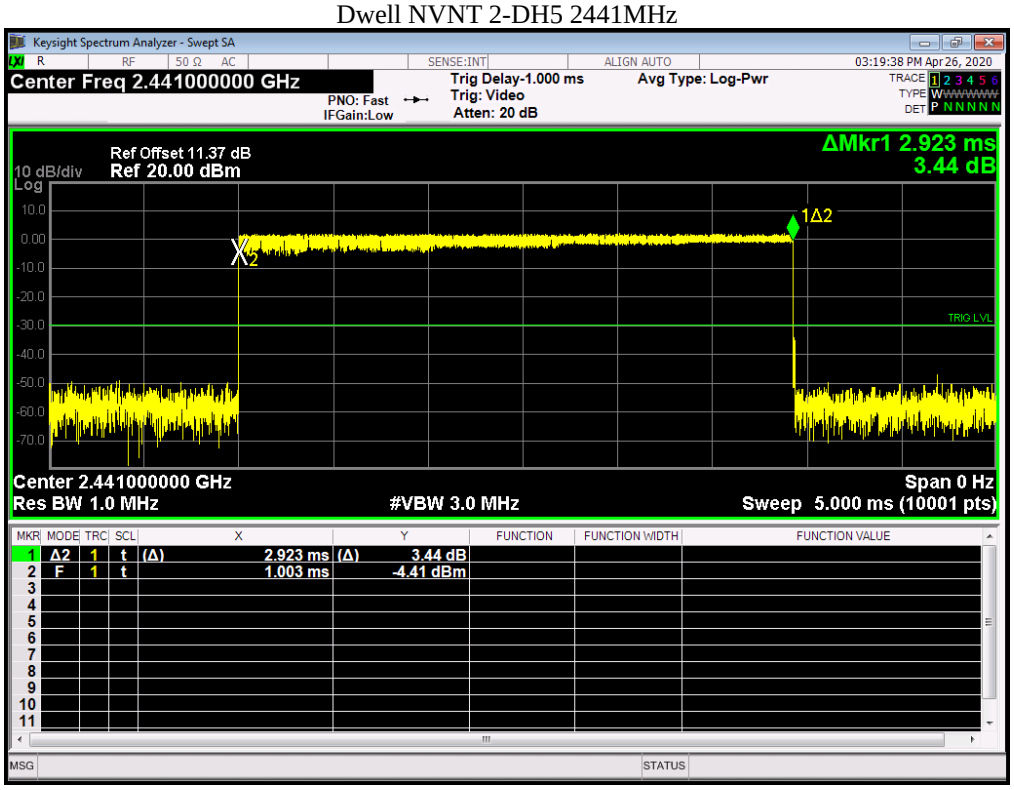


Condition	Mode	Frequency (MHz)	Pulse Time (ms)	Total Dwell Time (ms)	Period Time (ms)	Limit (ms)	Verdict
NVNT	2-DH5	2402	2.922	311.69	31600	400	Pass
NVNT	2-DH5	2441	2.923	311.80	31600	400	Pass
NVNT	2-DH5	2480	2.923	311.80	31600	400	Pass

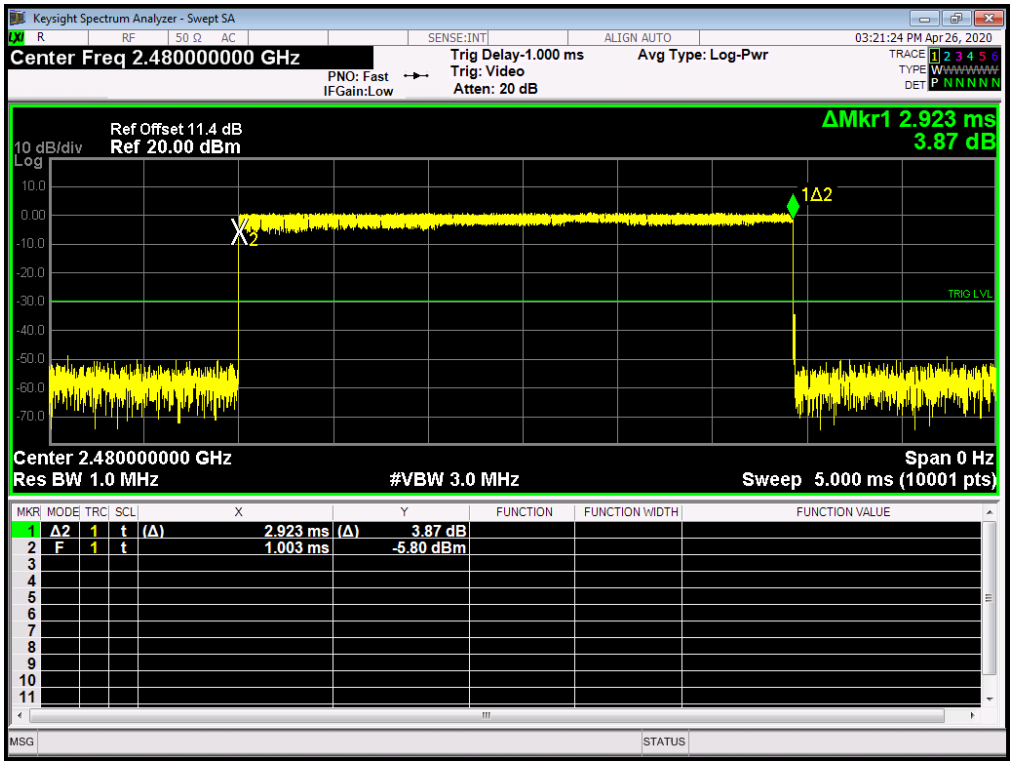
Dwell NVNT 2-DH5 2402MHz



Dwell NVNT 2-DH5 2441MHz

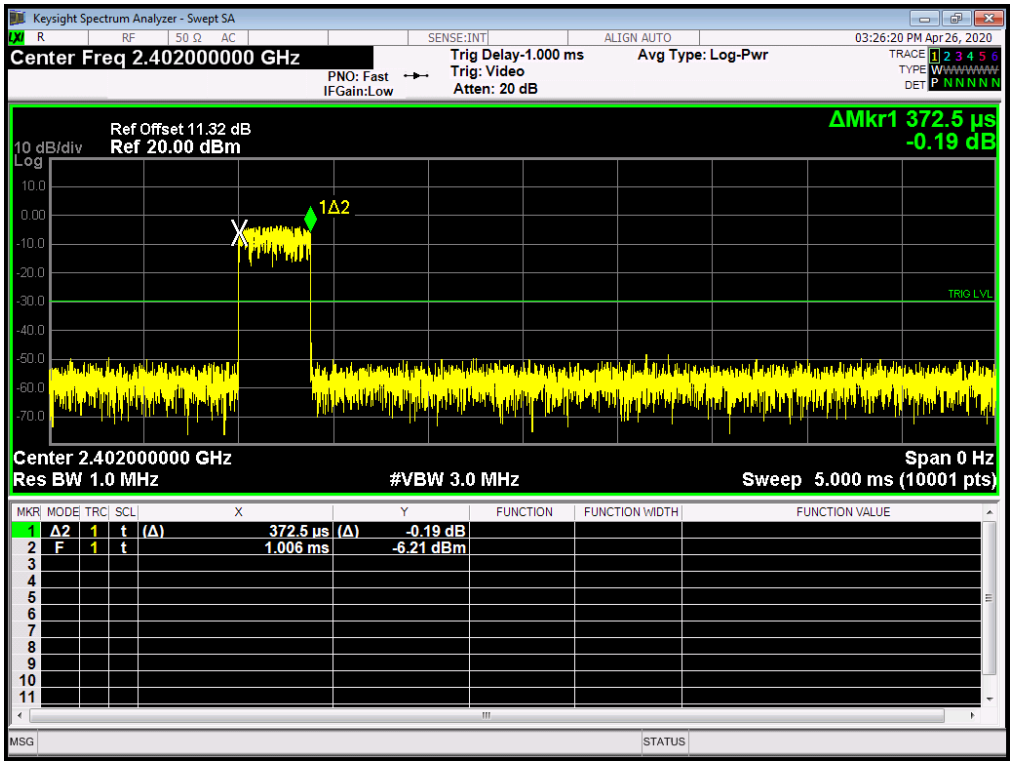


Dwell NVNT 2-DH5 2480MHz

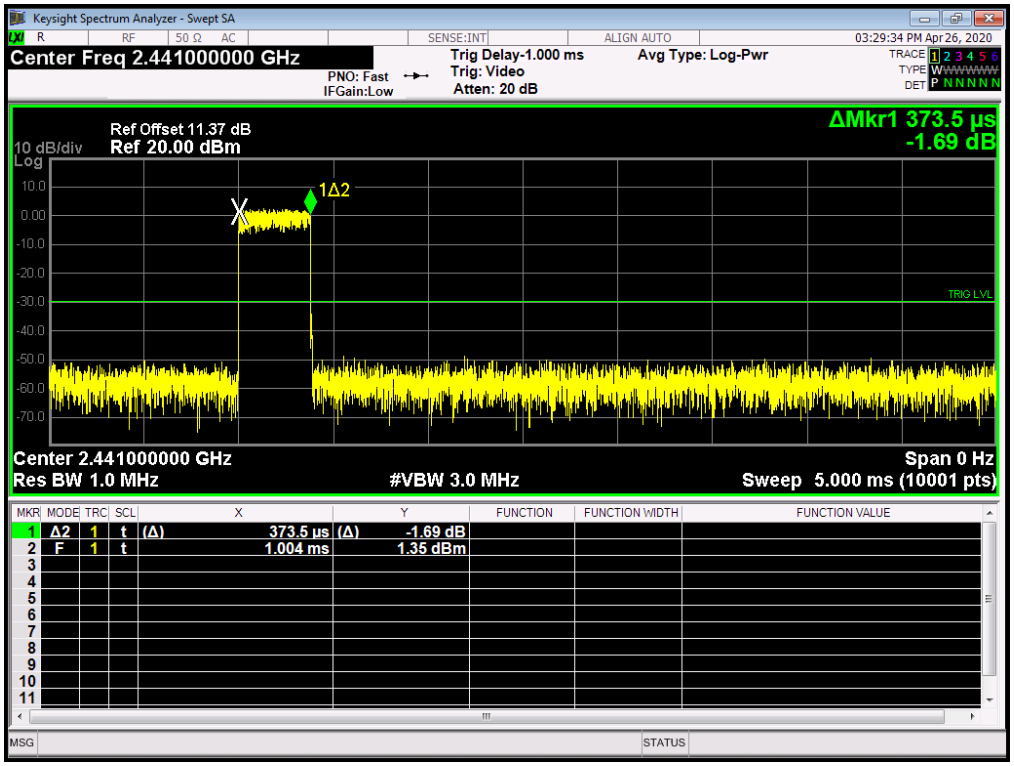


Condition	Mode	Frequency (MHz)	Pulse Time (ms)	Total Dwell Time (ms)	Period Time (ms)	Limit (ms)	Verdict
NVNT	3-DH1	2402	0.3725	119.2	31600	400	Pass
NVNT	3-DH1	2441	0.3735	119.52	31600	400	Pass
NVNT	3-DH1	2480	0.3735	119.52	31600	400	Pass

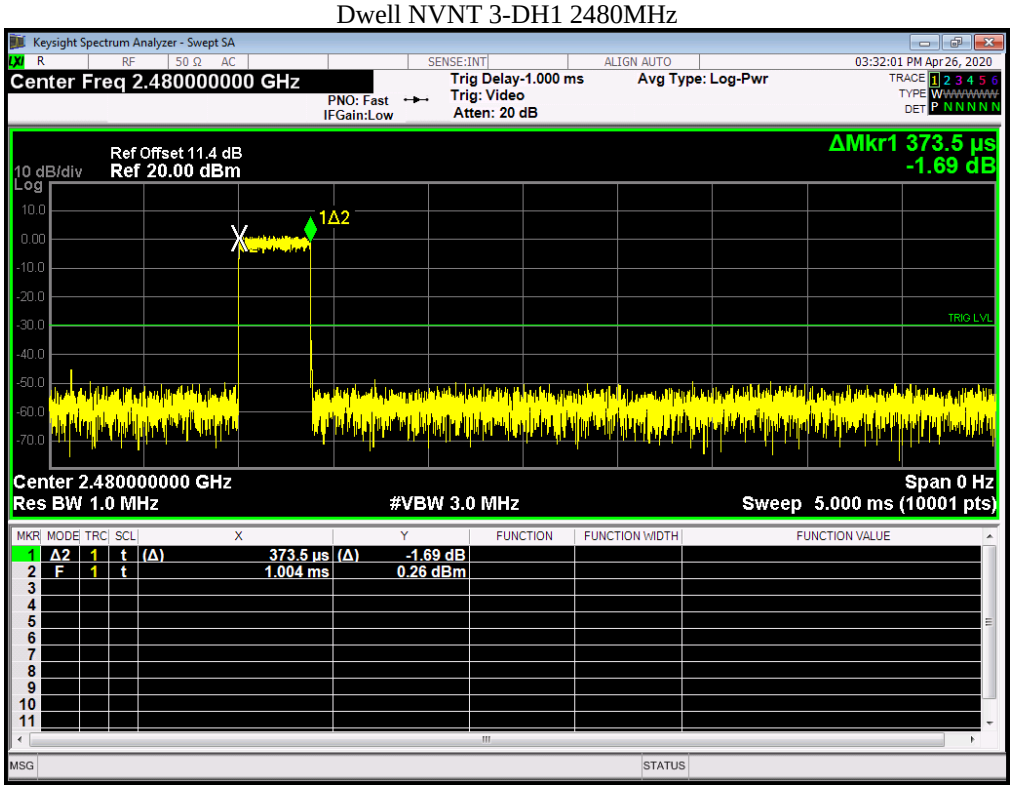
Dwell NVNT 3-DH1 2402MHz



Dwell NVNT 3-DH1 2441MHz

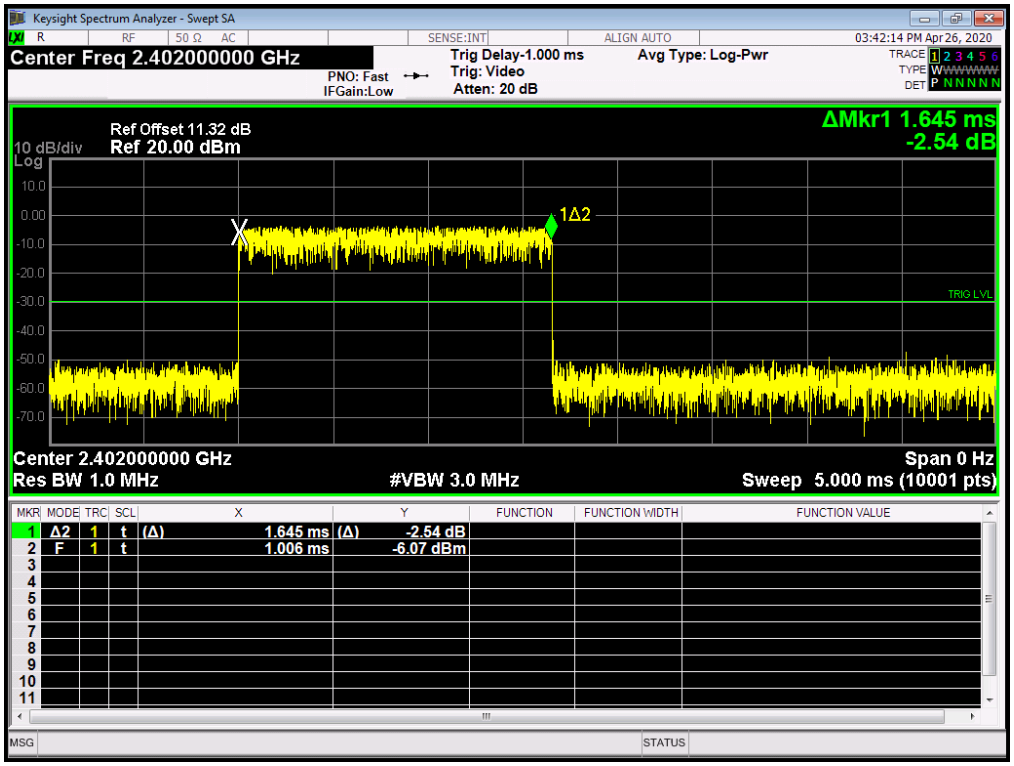


Dwell NVNT 3-DH1 2480MHz

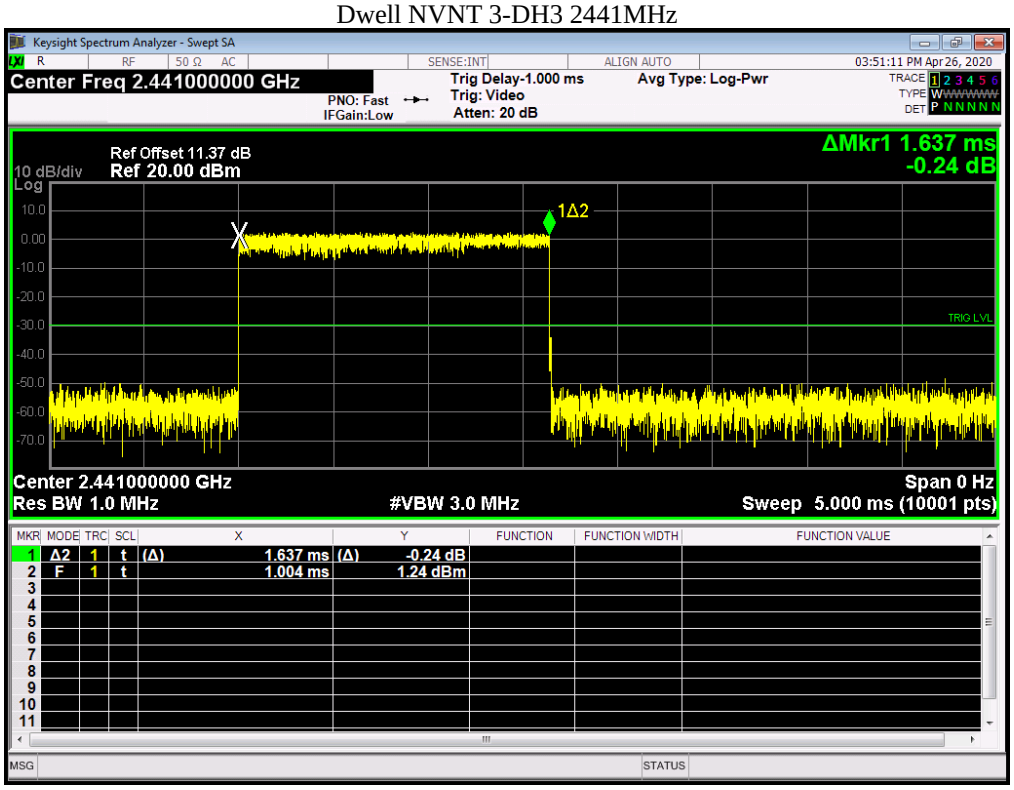


Condition	Mode	Frequency (MHz)	Pulse Time (ms)	Total Dwell Time (ms)	Period Time (ms)	Limit (ms)	Verdict
NVNT	3-DH3	2402	1.645	263.2	31600	400	Pass
NVNT	3-DH3	2441	1.637	261.92	31600	400	Pass
NVNT	3-DH3	2480	1.649	263.84	31600	400	Pass

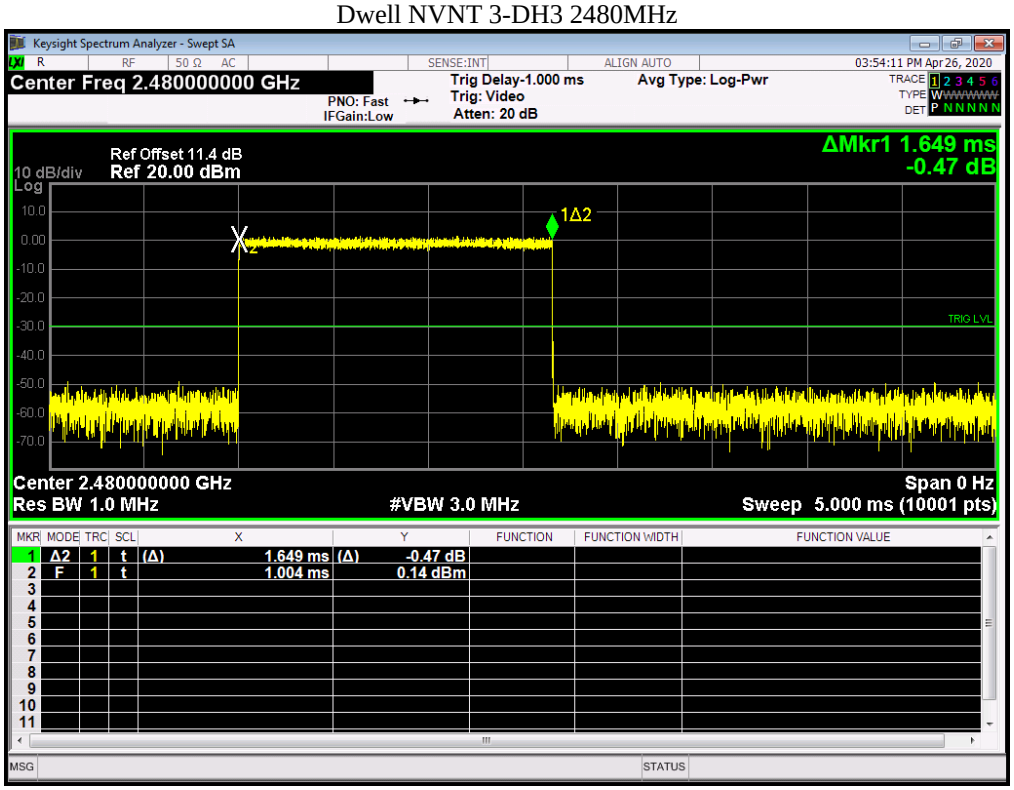
Dwell NVNT 3-DH3 2402MHz



Dwell NVNT 3-DH3 2441MHz

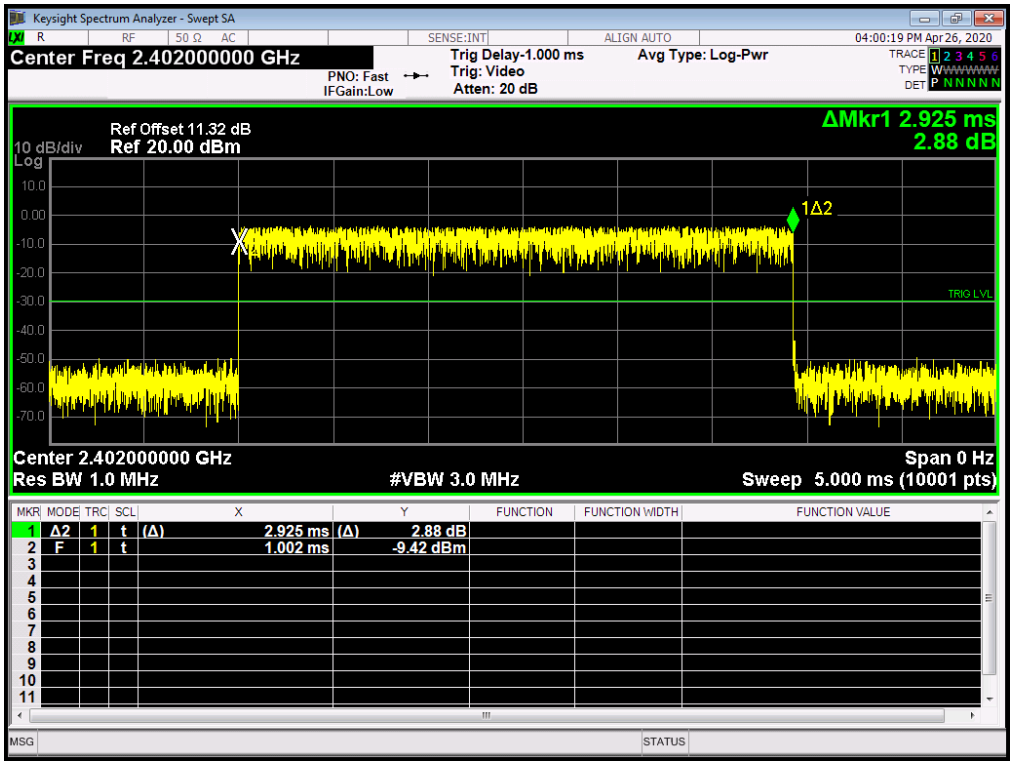


Dwell NVNT 3-DH3 2480MHz

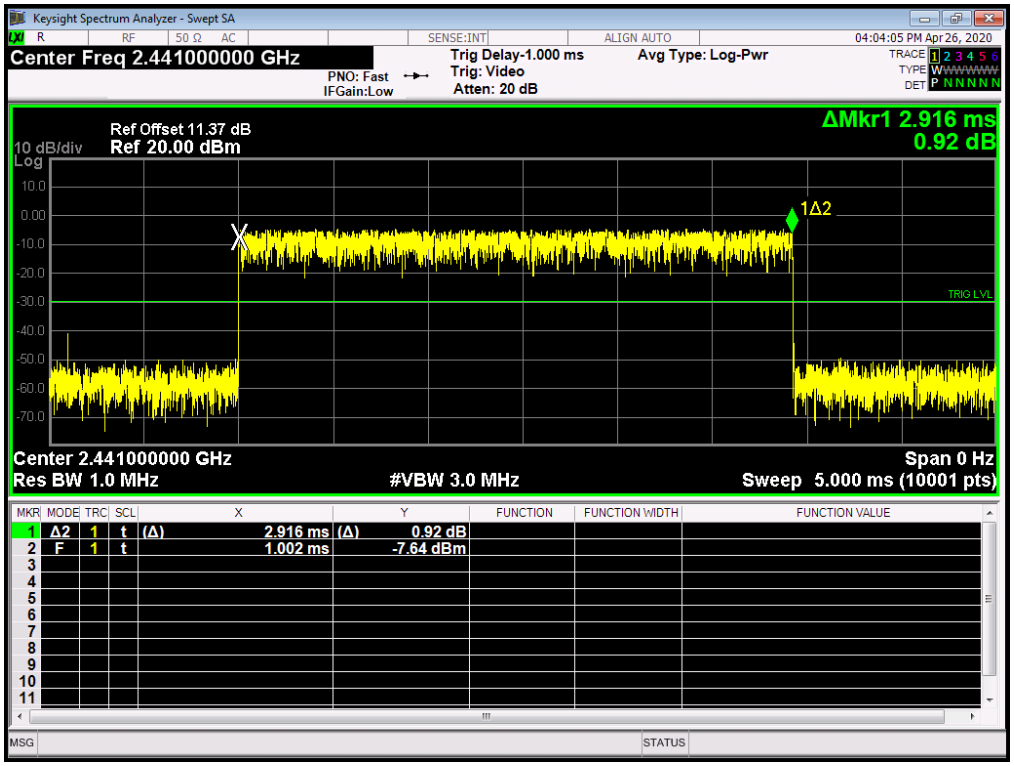


Condition	Mode	Frequency (MHz)	Pulse Time (ms)	Total Dwell Time (ms)	Period Time (ms)	Limit (ms)	Verdict
NVNT	3-DH5	2402	2.925	312.00	31600	400	Pass
NVNT	3-DH5	2441	2.916	311.05	31600	400	Pass
NVNT	3-DH5	2480	2.922	311.70	31600	400	Pass

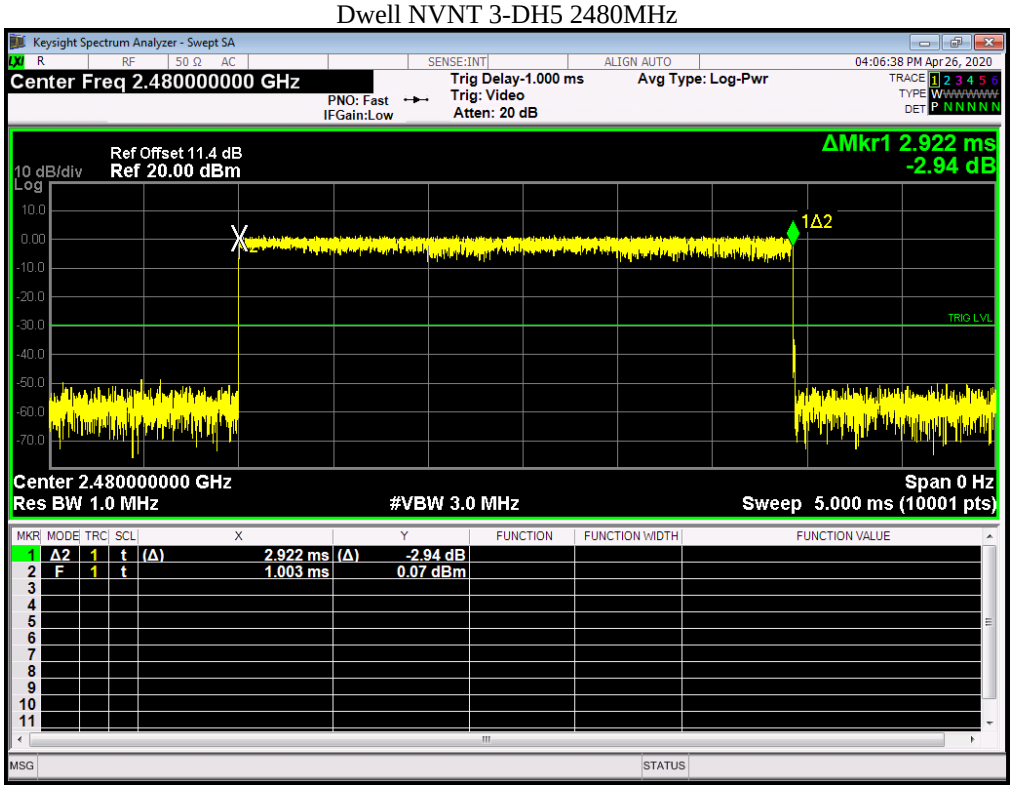
Dwell NVNT 3-DH5 2402MHz



Dwell NVNT 3-DH5 2441MHz



Dwell NVNT 3-DH5 2480MHz



10. Band edge

10.1. Applied procedures / Limit

15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

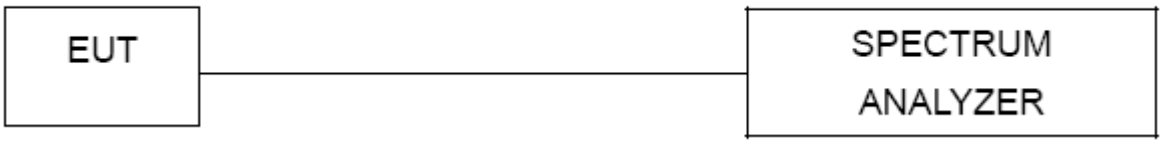
10.2. Test procedure

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
b. Span = wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation, RBW ≥ 1% of the span, VBW ≥ RBW, Sweep = auto,
Detector function = peak, Trace = max hold

10.3. Deviation from standard

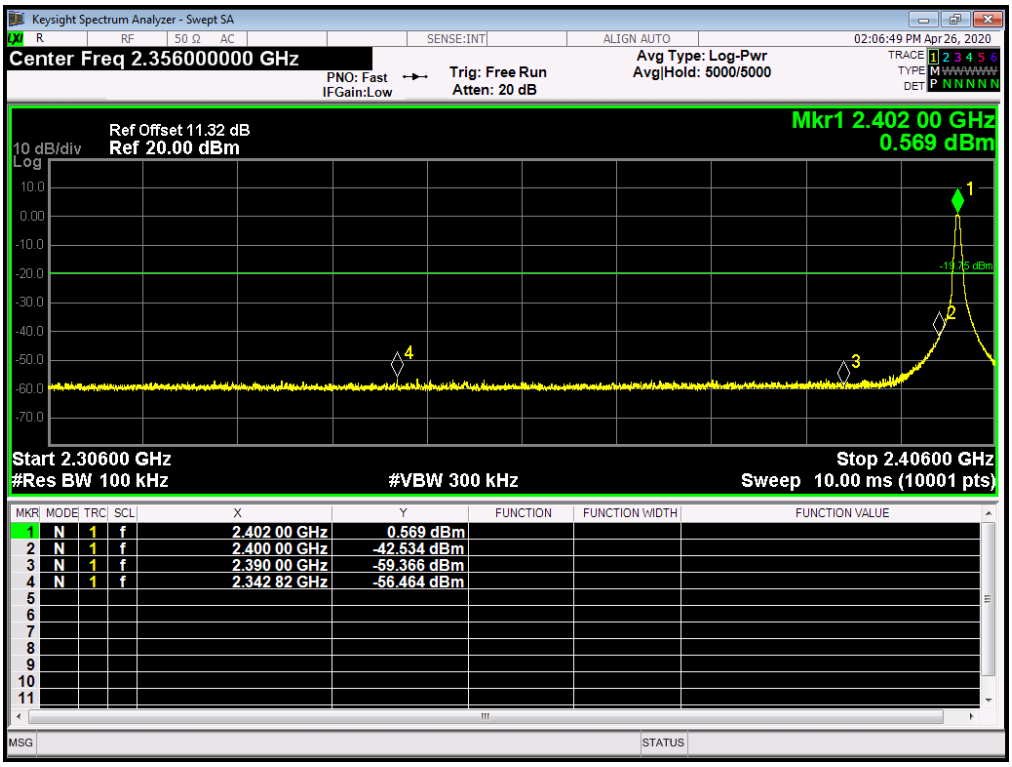
No deviation.

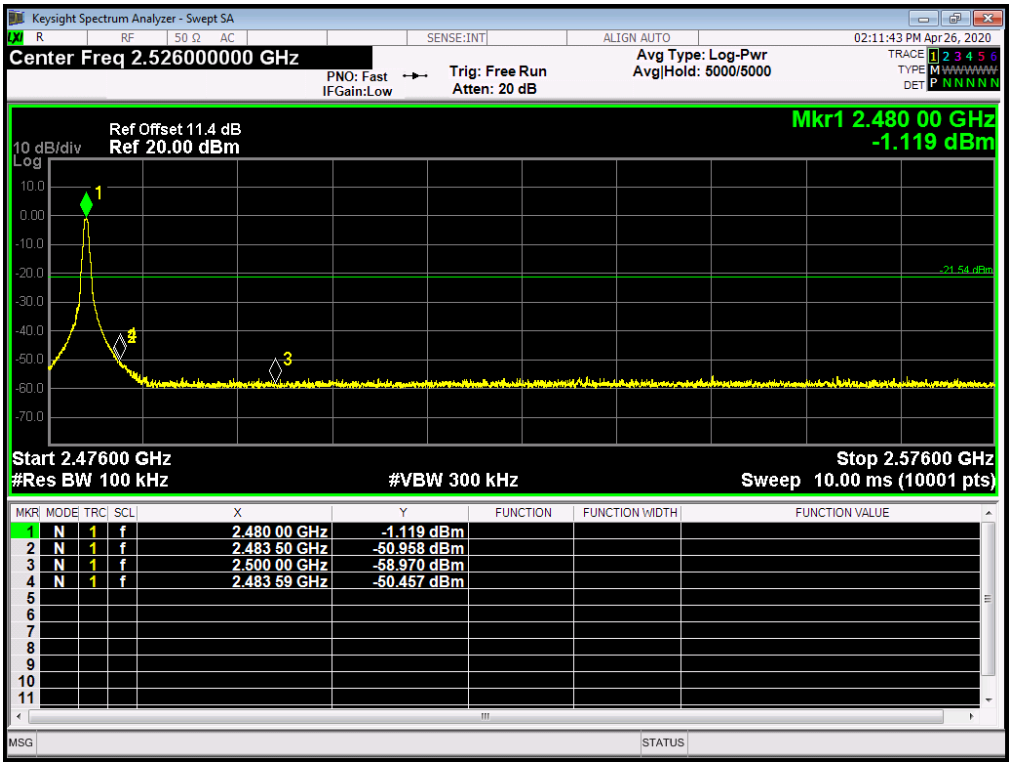
10.4. Test setup



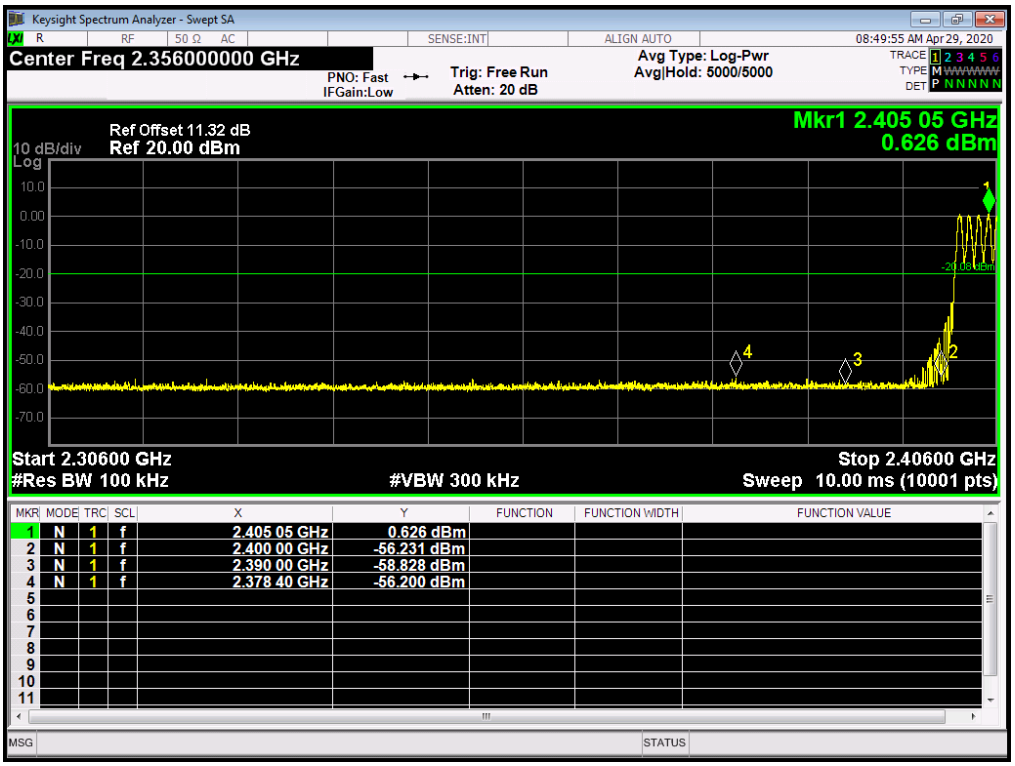
10.5. Test results

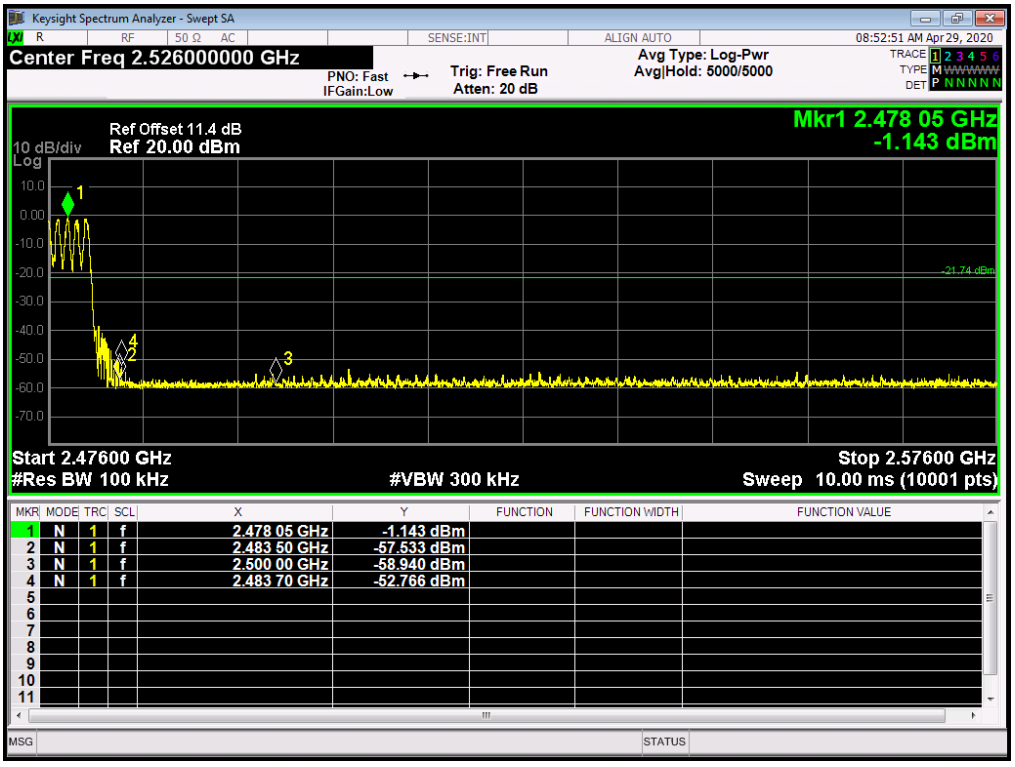
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	GFSK	2402	Ant 1	No-Hopping	-56.709	-20	Pass
NVNT	GFSK	2480	Ant 1	No-Hopping	-48.911	-20	Pass



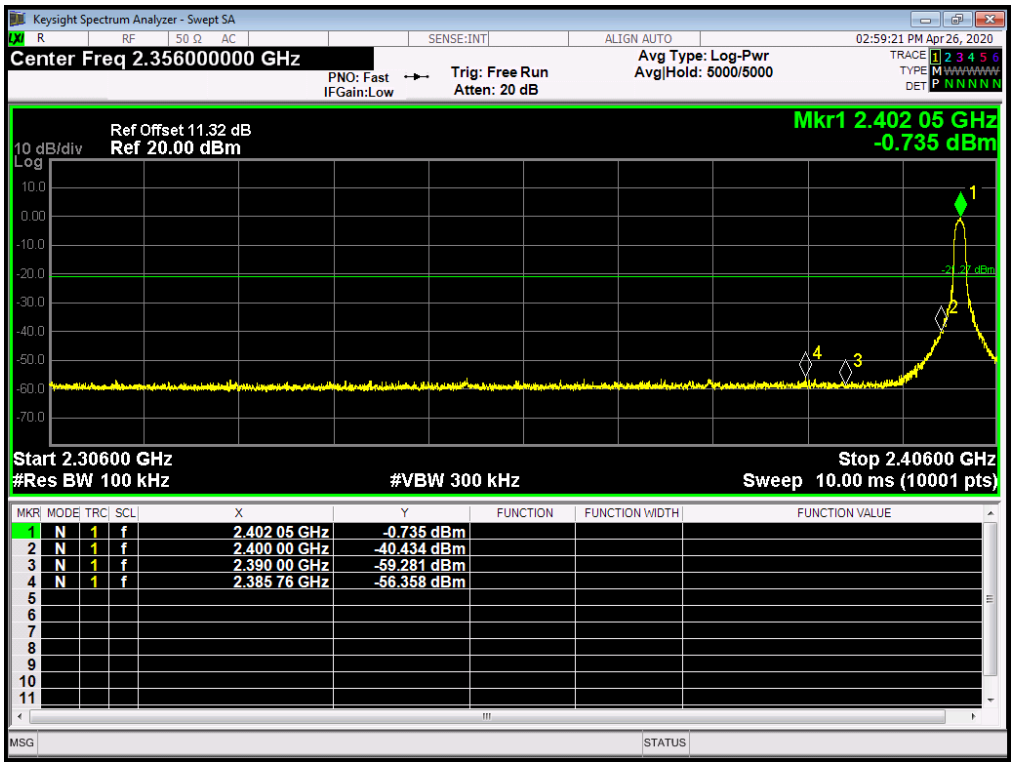


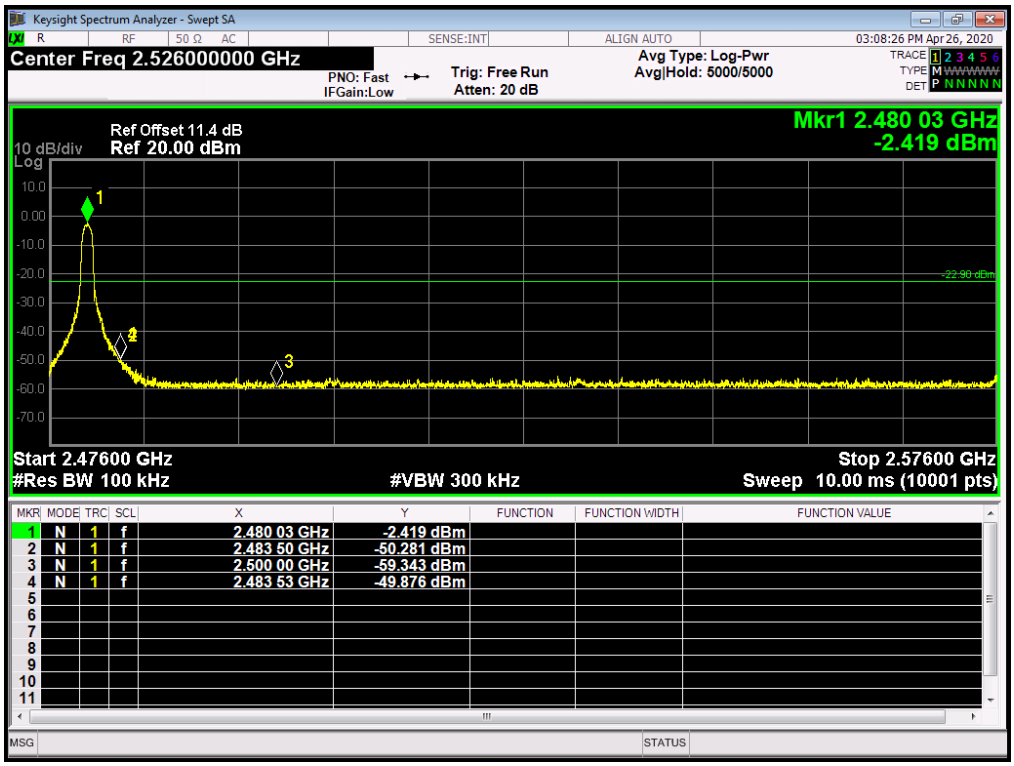
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	GFSK	2402	Ant 1	Hopping	-56.125	-20	Pass
NVNT	GFSK	2480	Ant 1	Hopping	-51.021	-20	Pass



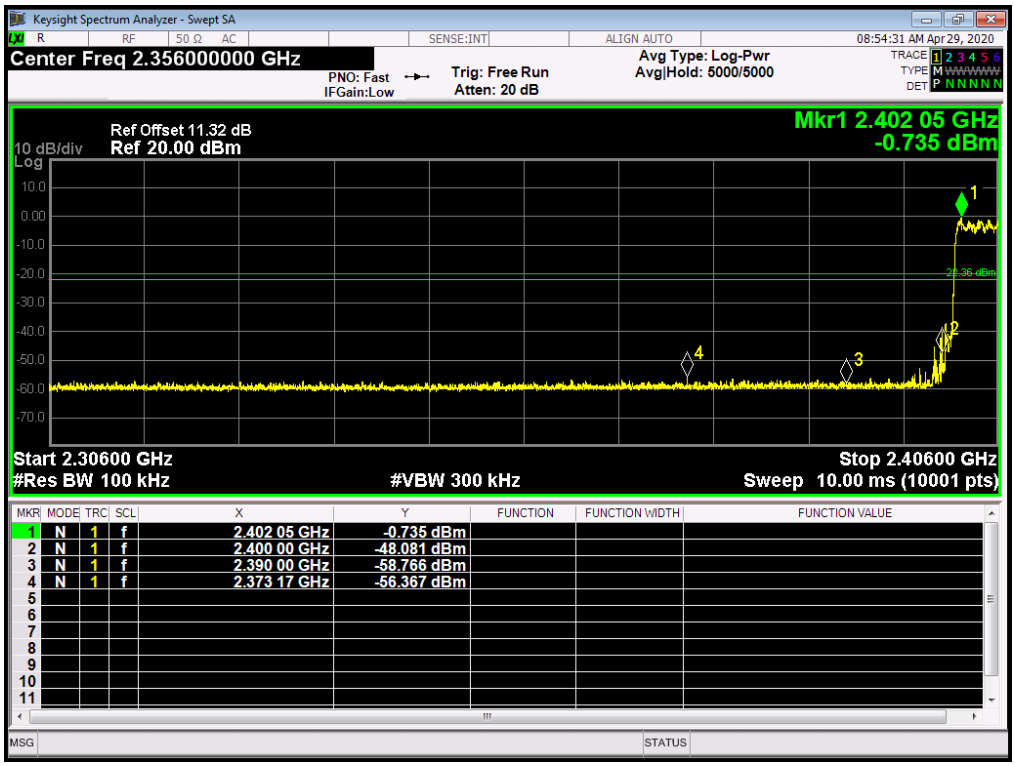


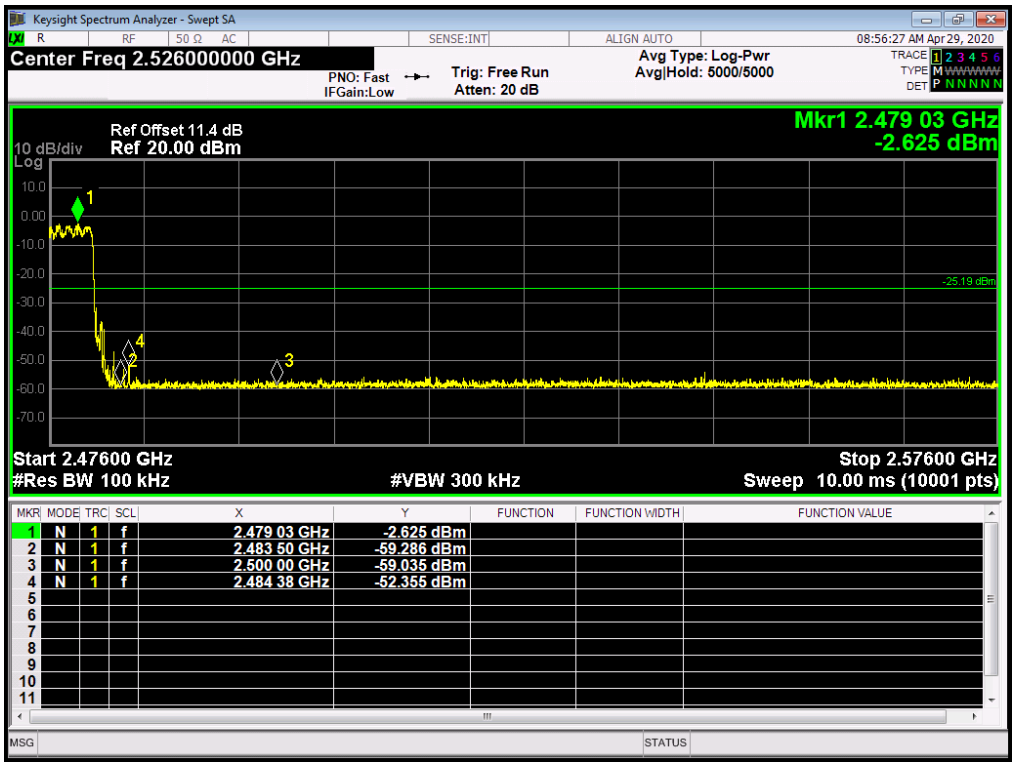
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	π/4-DQPSK	2402	Ant 1	No-Hopping	-55.078	-20	Pass
NVNT	π/4-DQPSK	2480	Ant 1	No-Hopping	-46.973	-20	Pass



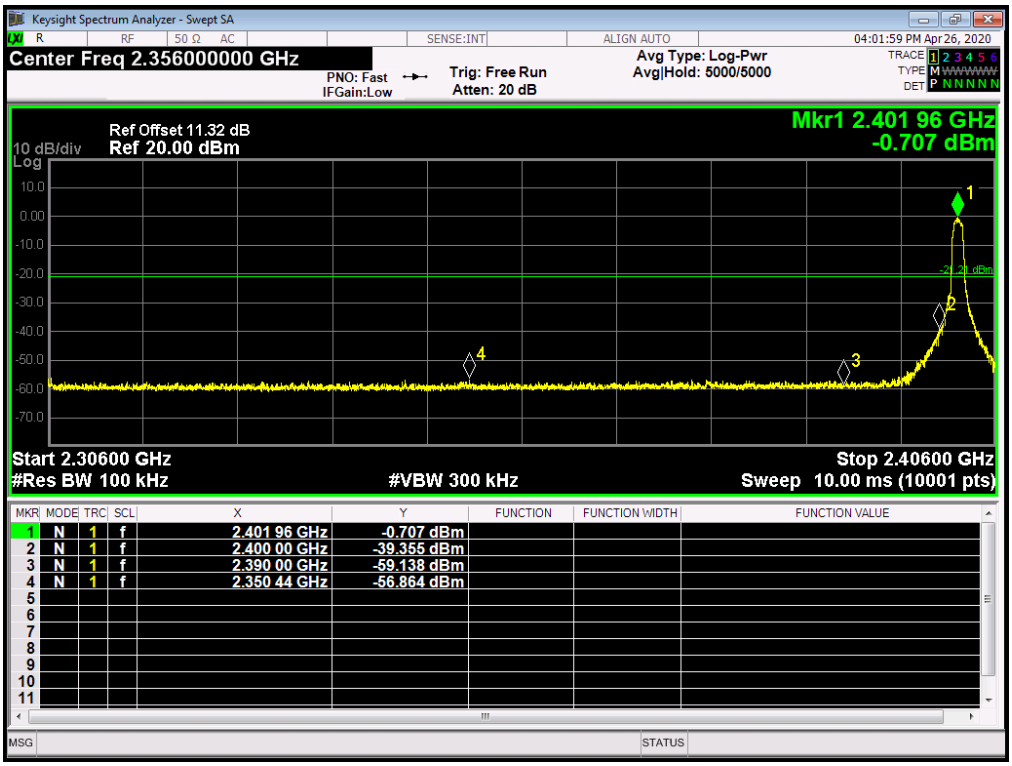


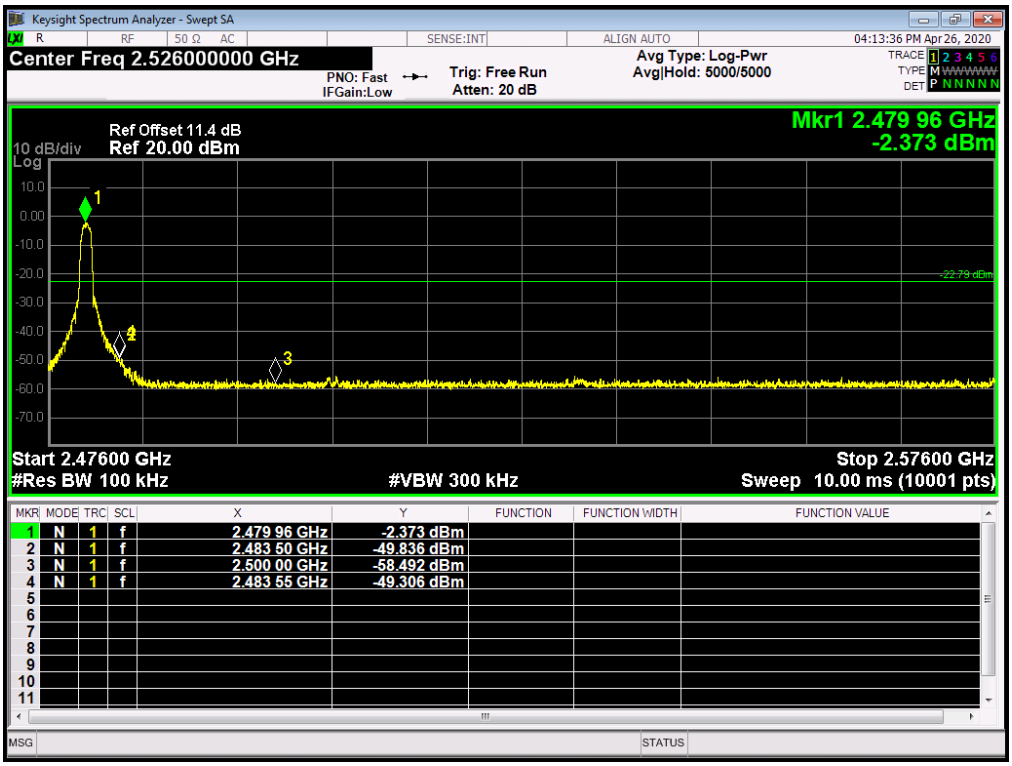
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	π/4-DQPSK	2402	Ant 1	Hopping	-54.00	-20	Pass
NVNT	π/4-DQPSK	2480	Ant 1	Hopping	-47.156	-20	Pass



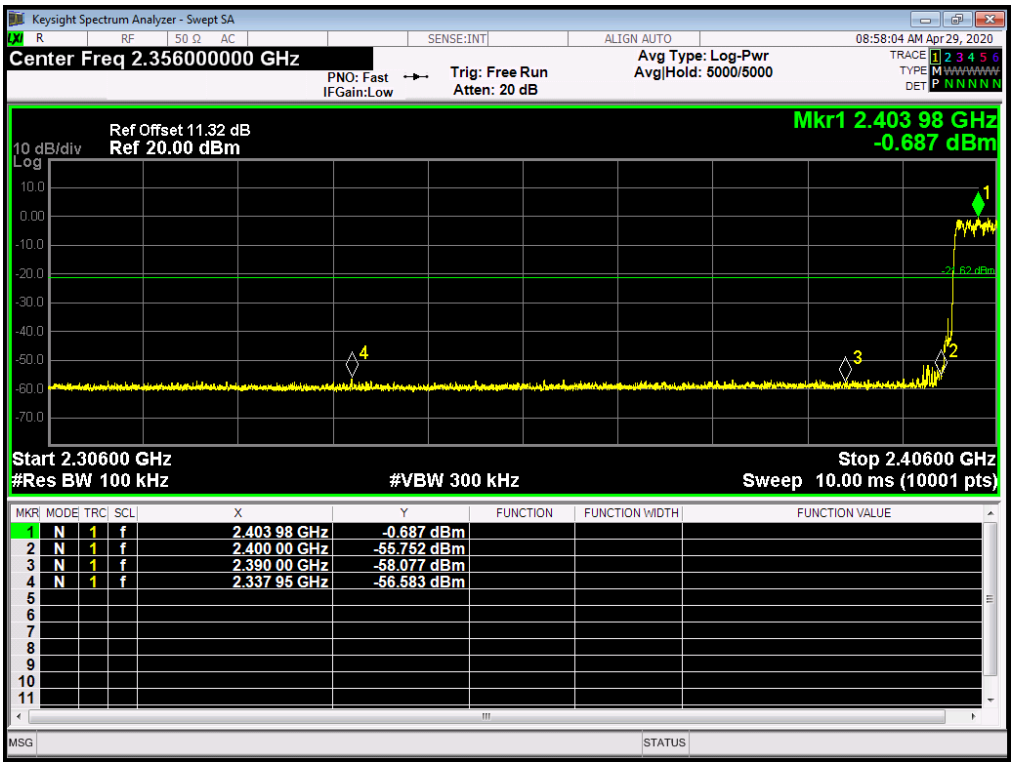


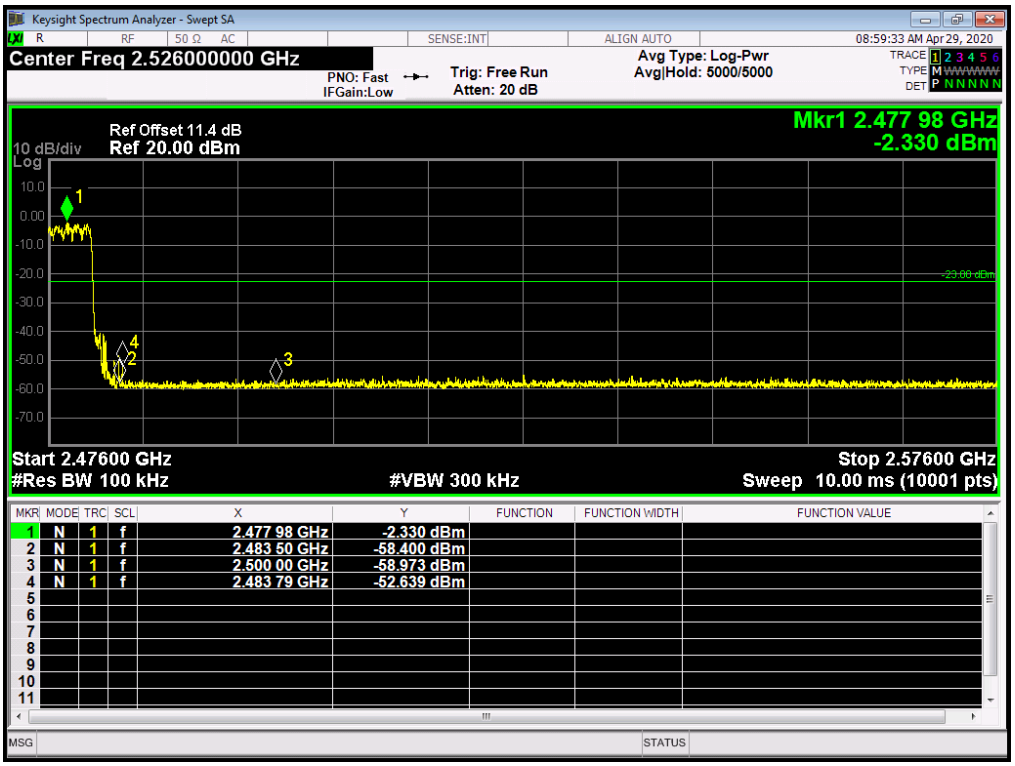
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	8DPSK	2402	Ant 1	No-Hopping	-56.572	-20	Pass
NVNT	8DPSK	2480	Ant 1	No-Hopping	-48.786	-20	Pass





Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	8DPSK	2402	Ant 1	Hopping	-54.963	-20	Pass
NVNT	8DPSK	2480	Ant 1	Hopping	-49.634	-20	Pass





11. Conducted Spurious Emissions

11.1. Applied procedures / Limit

15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

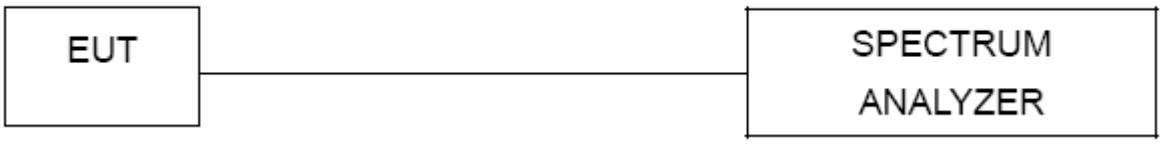
11.2. Test procedure

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
b. Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span. RBW = 100 kHz
VBW ≥ RBW, Sweep = auto, Detector function = peak, Trace = max hold
sweep points ≥ investigated frequency range/RBW.

11.3. Deviation from standard

No deviation.

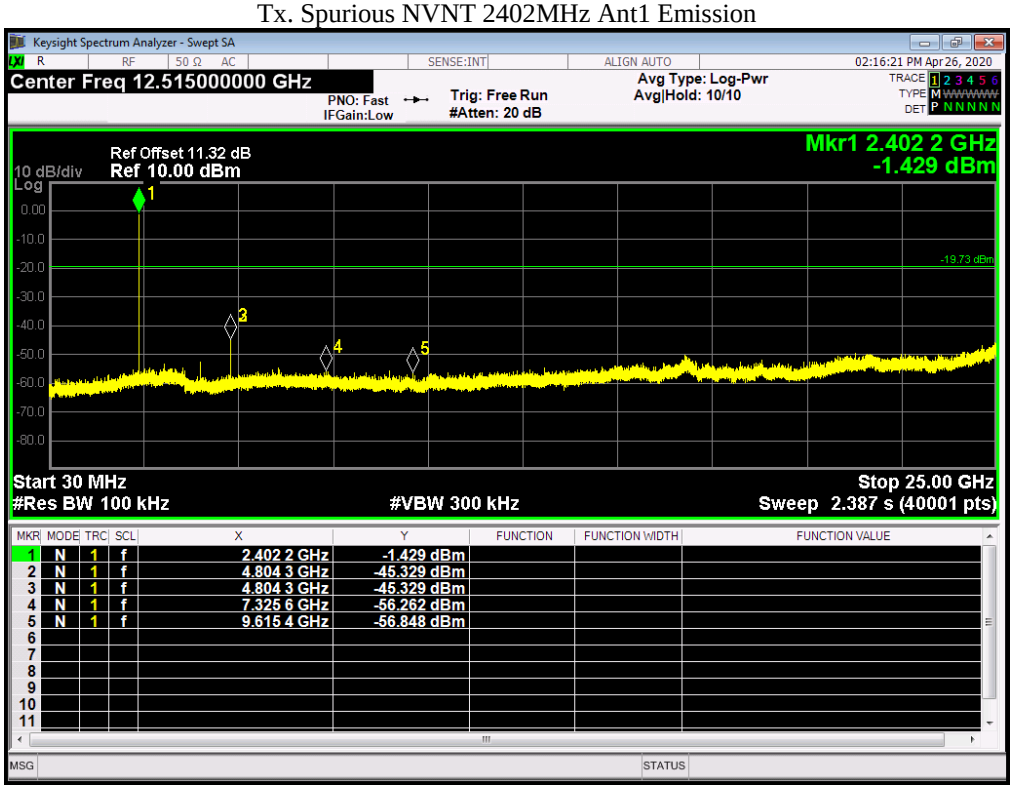
11.4. Test setup



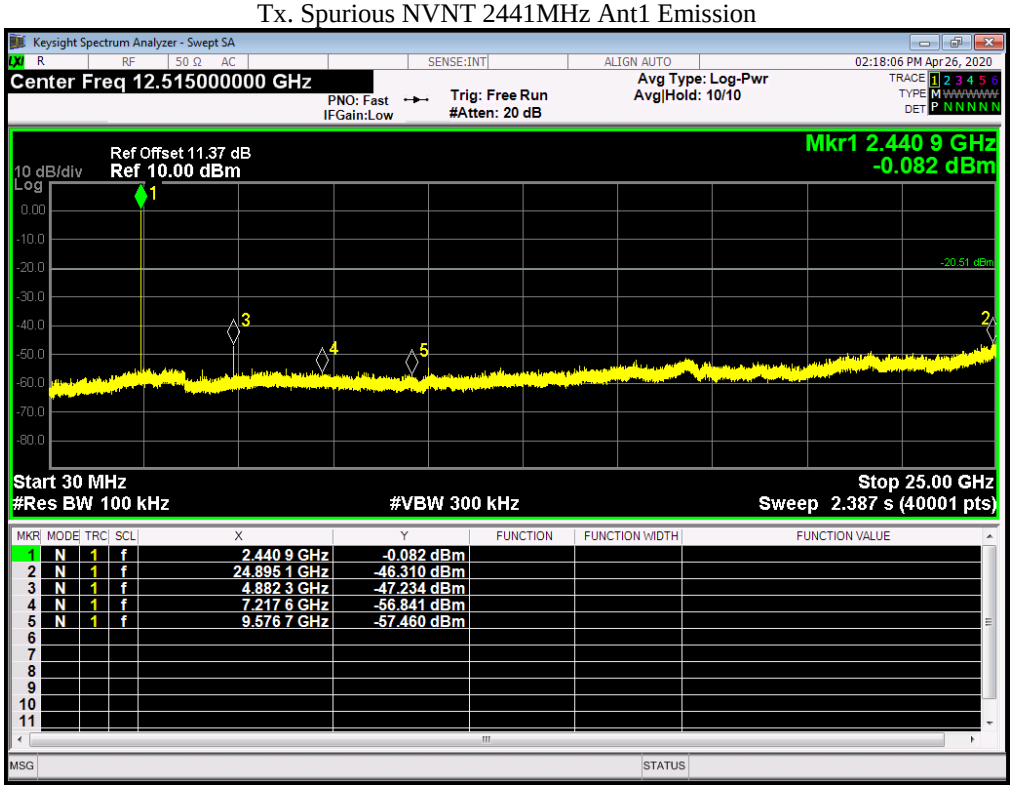
11.5. Test results

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	GFSK	2402	Ant 1	-45.586	-20	Pass
NVNT	GFSK	2441	Ant 1	-45.805	-20	Pass
NVNT	GFSK	2480	Ant 1	-43.994	-20	Pass

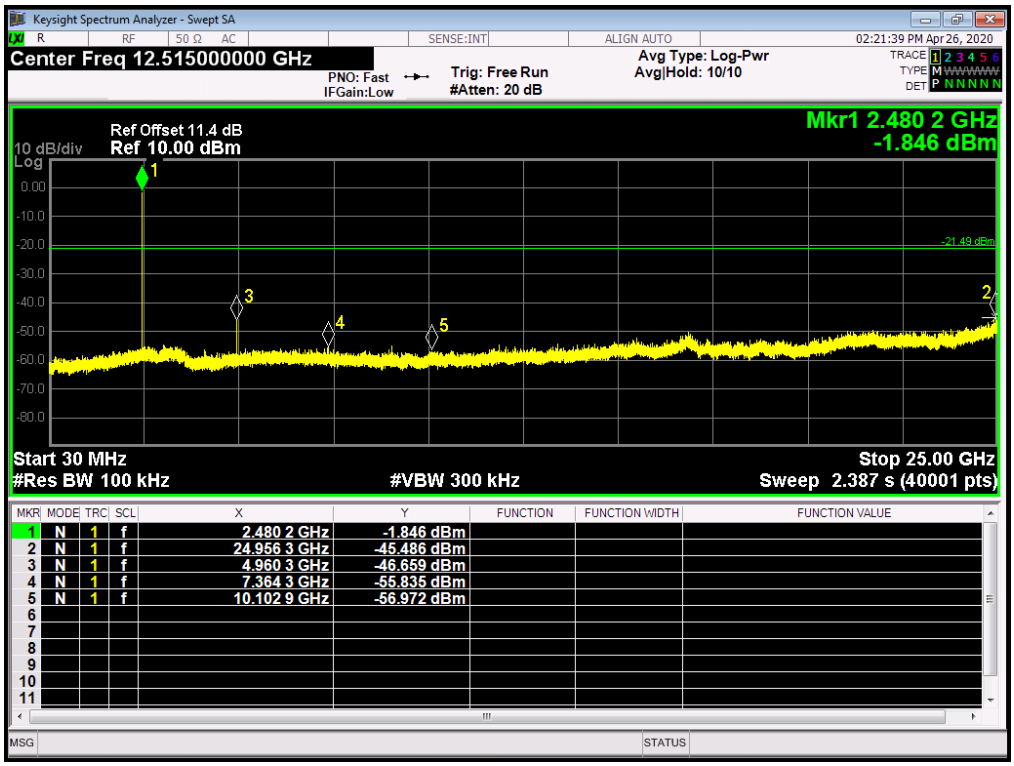
Tx. Spurious NVNT 2402MHz Ant1 Emission



Tx. Spurious NVNT 2441MHz Ant1 Emission

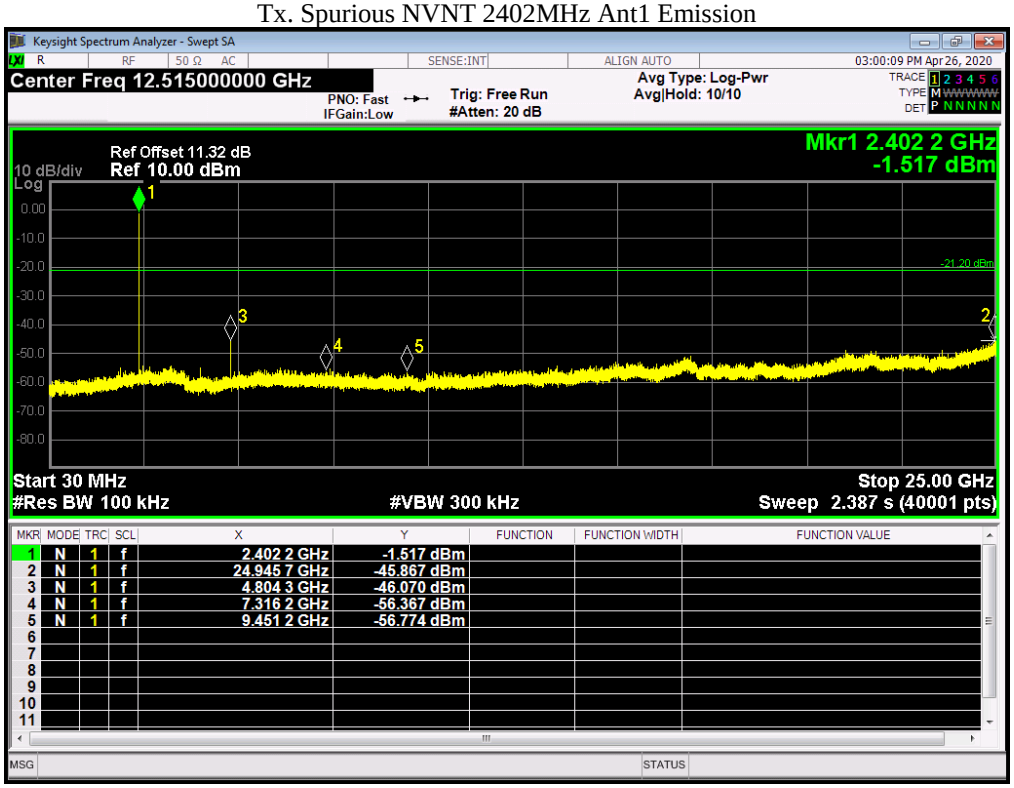


Tx. Spurious NVNT 2480MHz Ant1 Emission

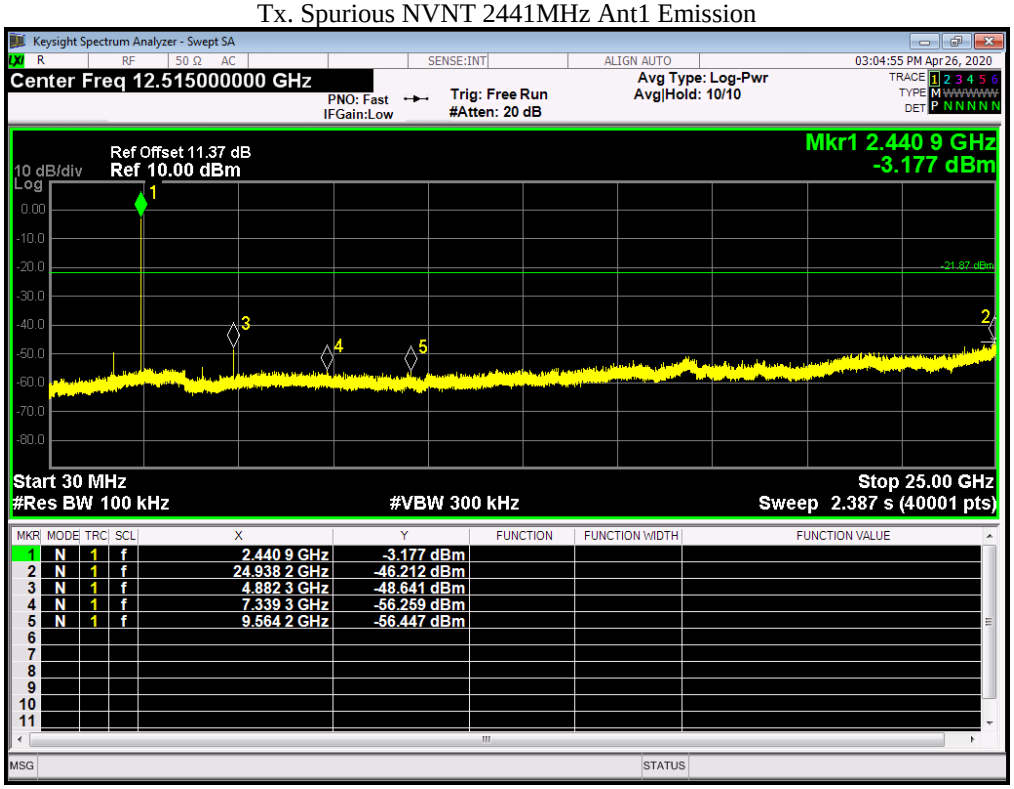


Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	π/4-DQPSK	2402	Ant 1	-44.658	-20	Pass
NVNT	π/4-DQPSK	2441	Ant 1	-44.342	-20	Pass
NVNT	π/4-DQPSK	2480	Ant 1	-43.633	-20	Pass

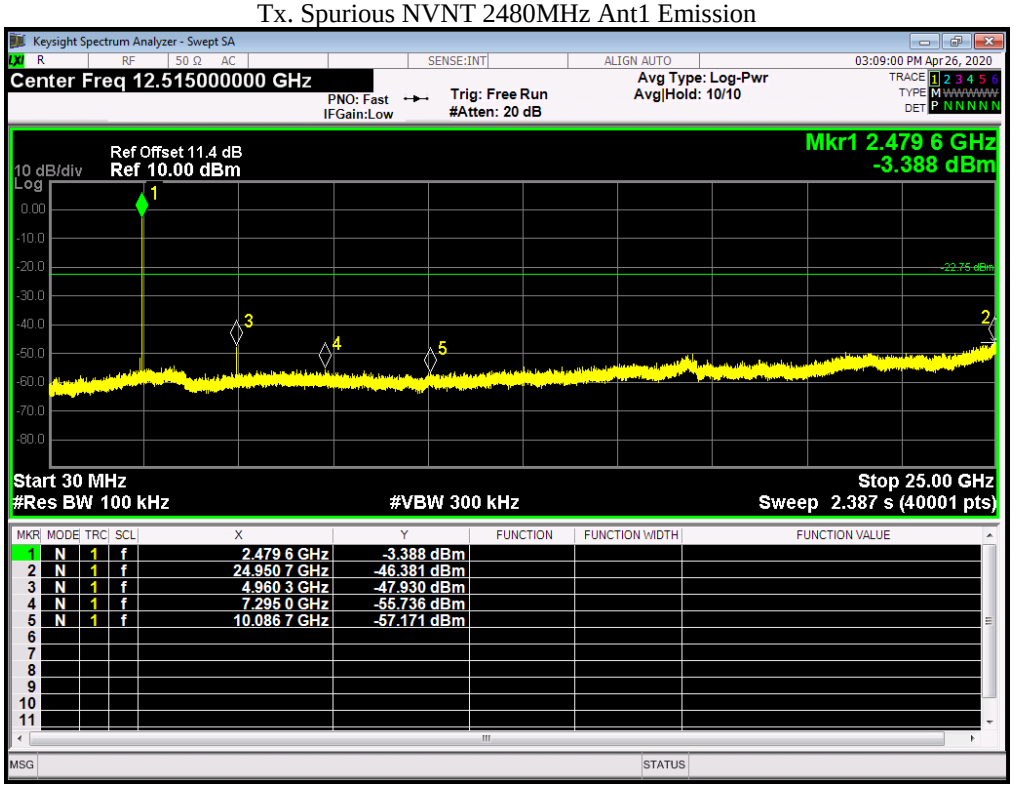
Tx. Spurious NVNT 2402MHz Ant1 Emission



Tx. Spurious NVNT 2441MHz Ant1 Emission

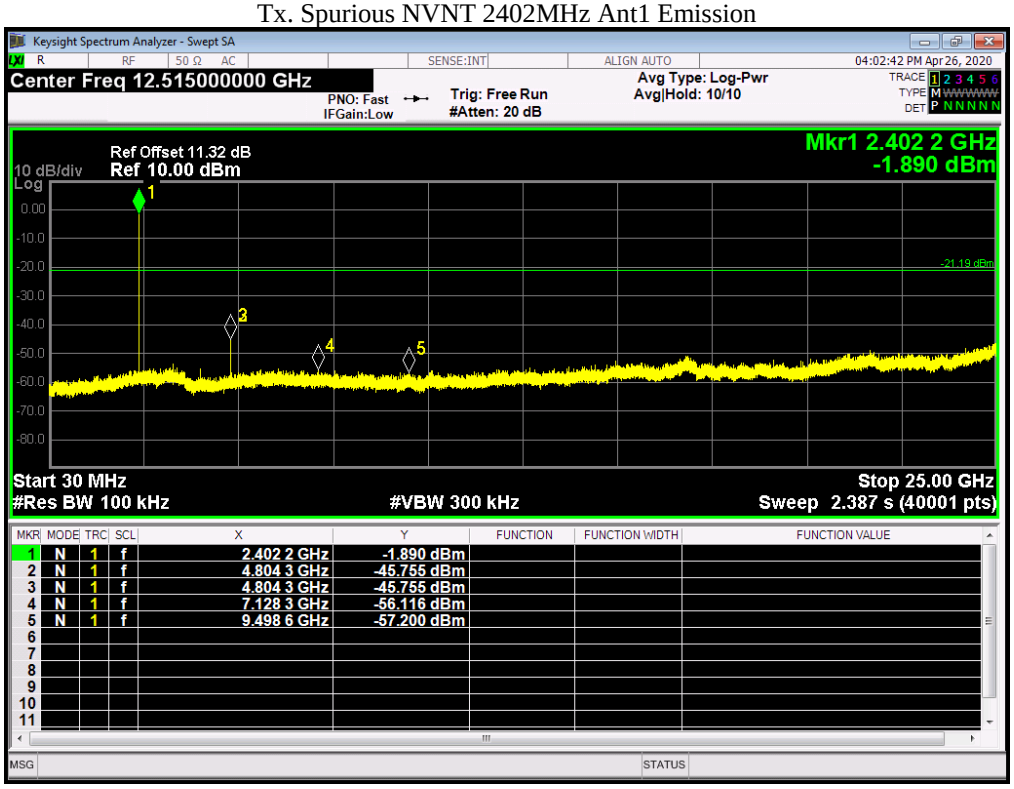


Tx. Spurious NVNT 2480MHz Ant1 Emission

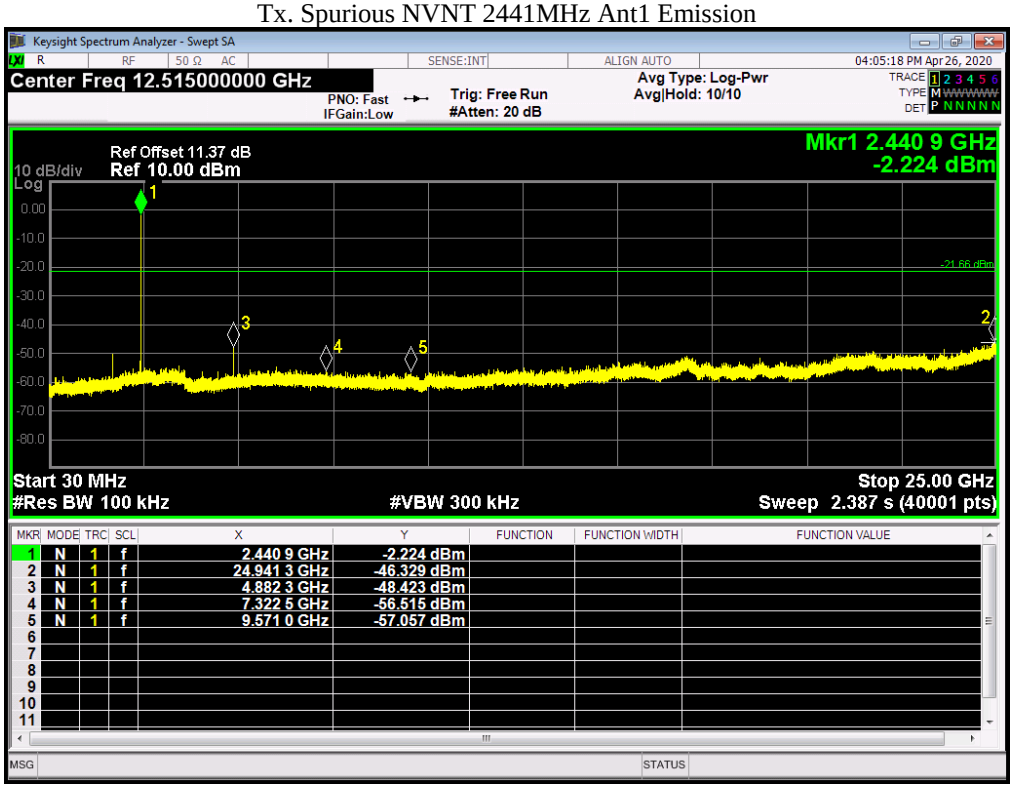


Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	8DPSK	2402	Ant 1	-44.564	-20	Pass
NVNT	8DPSK	2441	Ant 1	-44.657	-20	Pass
NVNT	8DPSK	2480	Ant 1	-42.538	-20	Pass

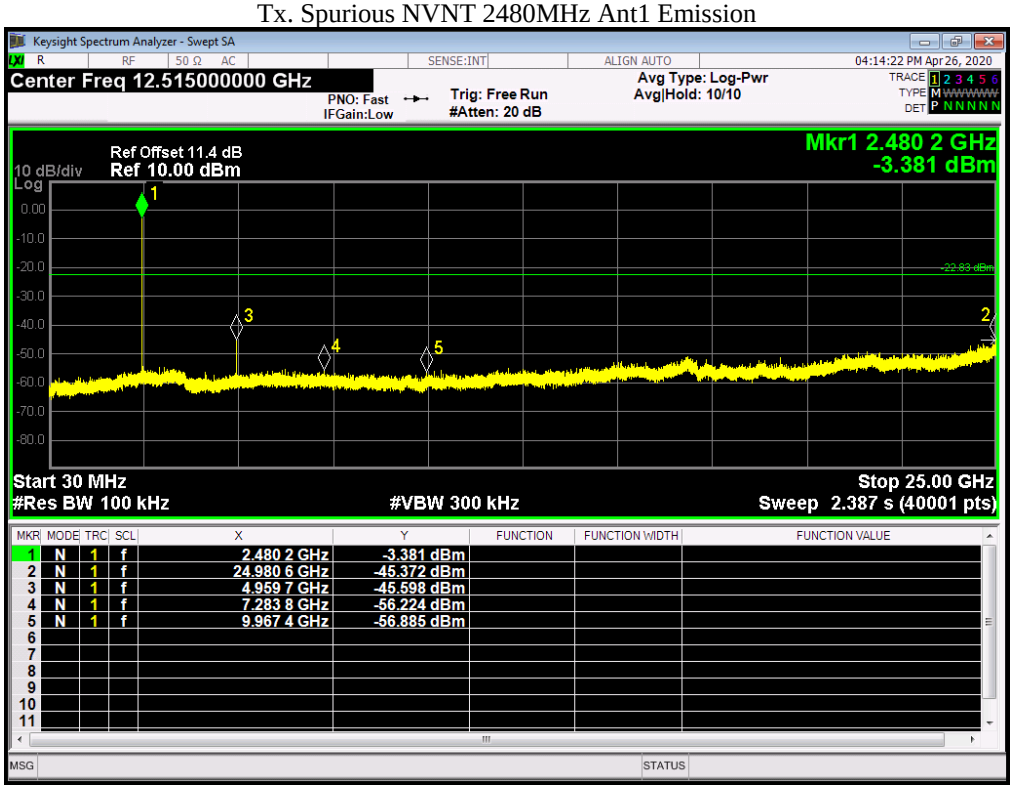
Tx. Spurious NVNT 2402MHz Ant1 Emission



Tx. Spurious NVNT 2441MHz Ant1 Emission



Tx. Spurious NVNT 2480MHz Ant1 Emission



12. Antenna Requirement

12.1. 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 radiatoris reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

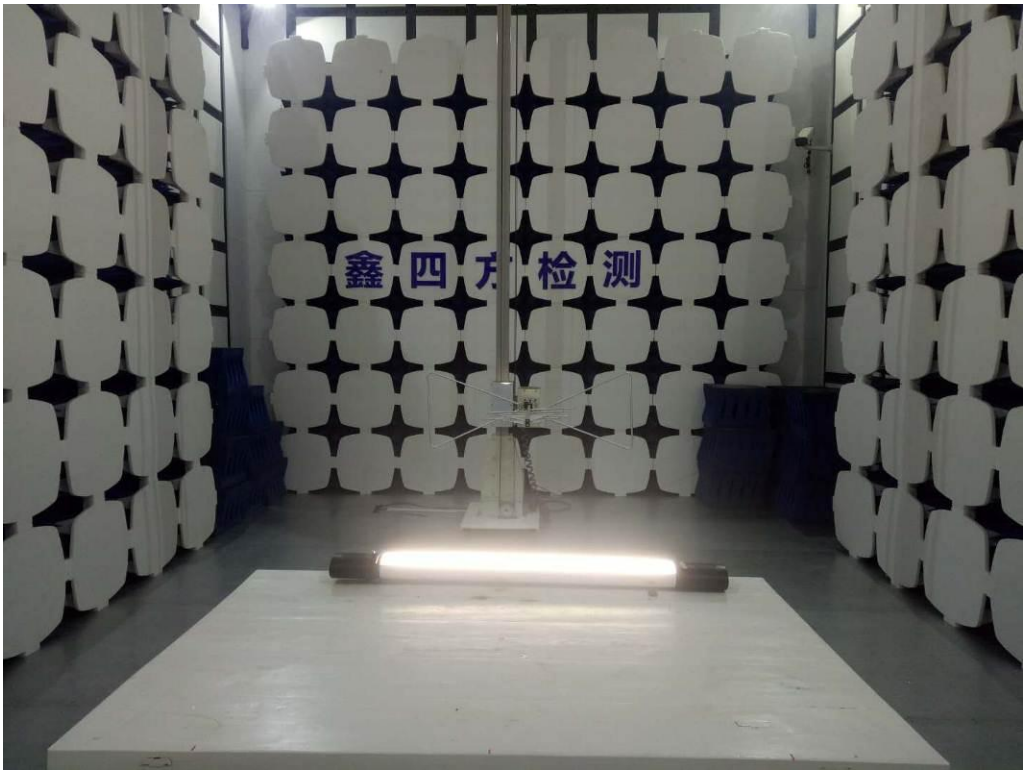
12.2. EUT Antenna

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

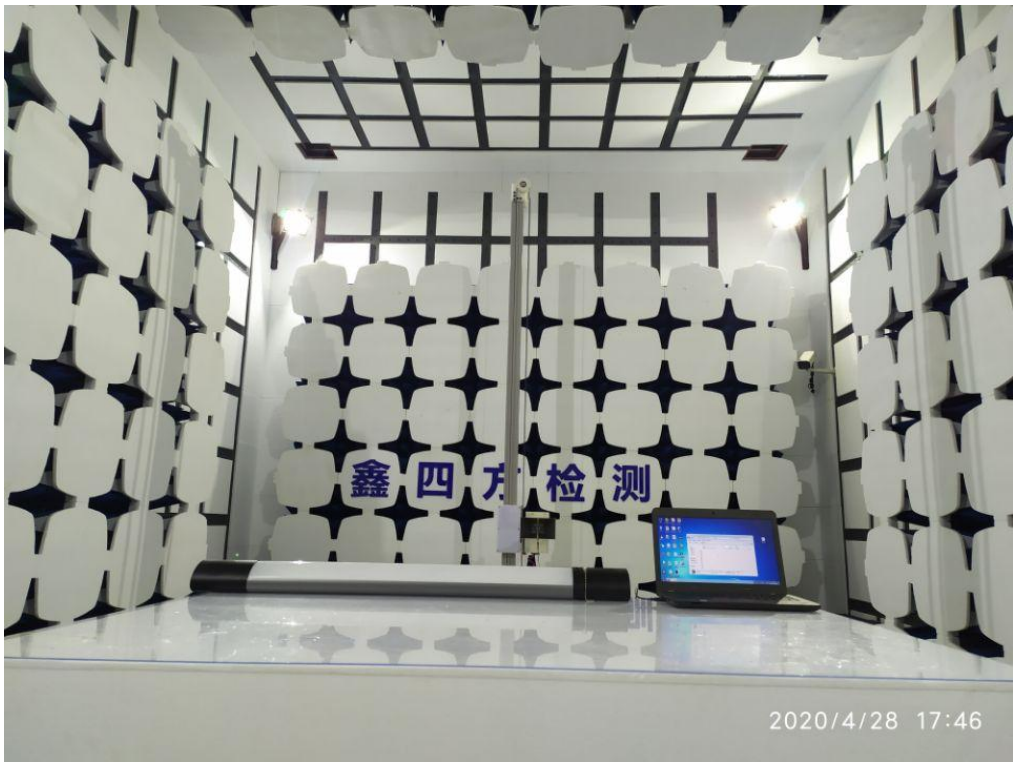
13. Test setup photograph

Photos of power line conducted emission test

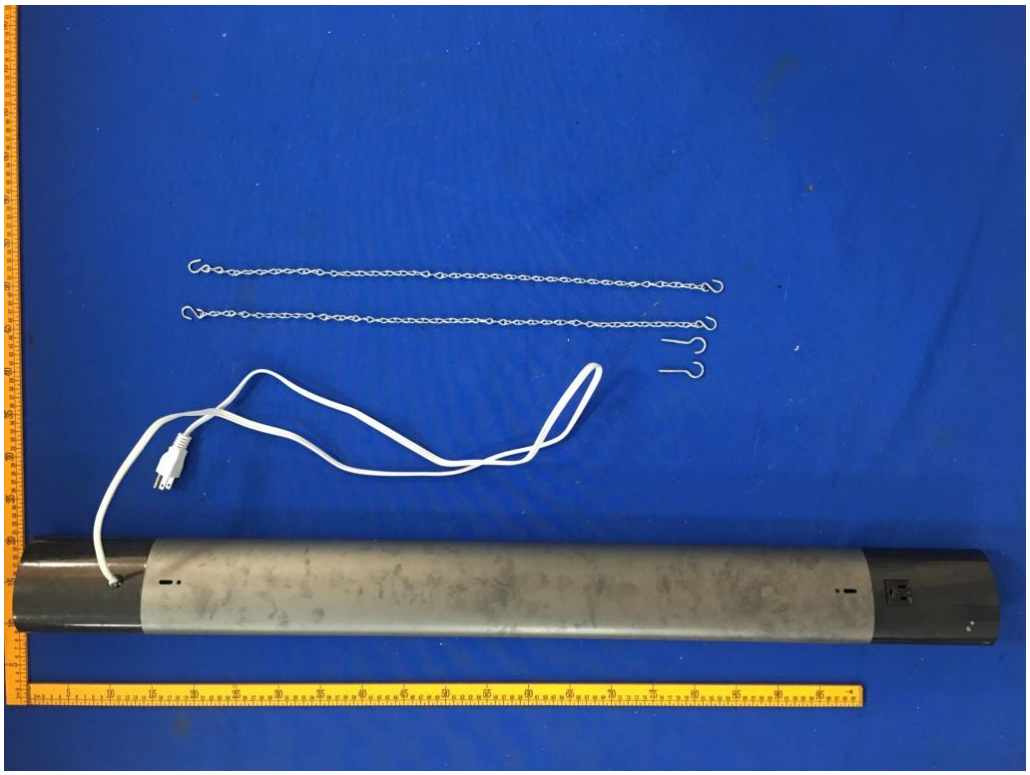
Photos of radiated emission test
30MHz – 1GHz

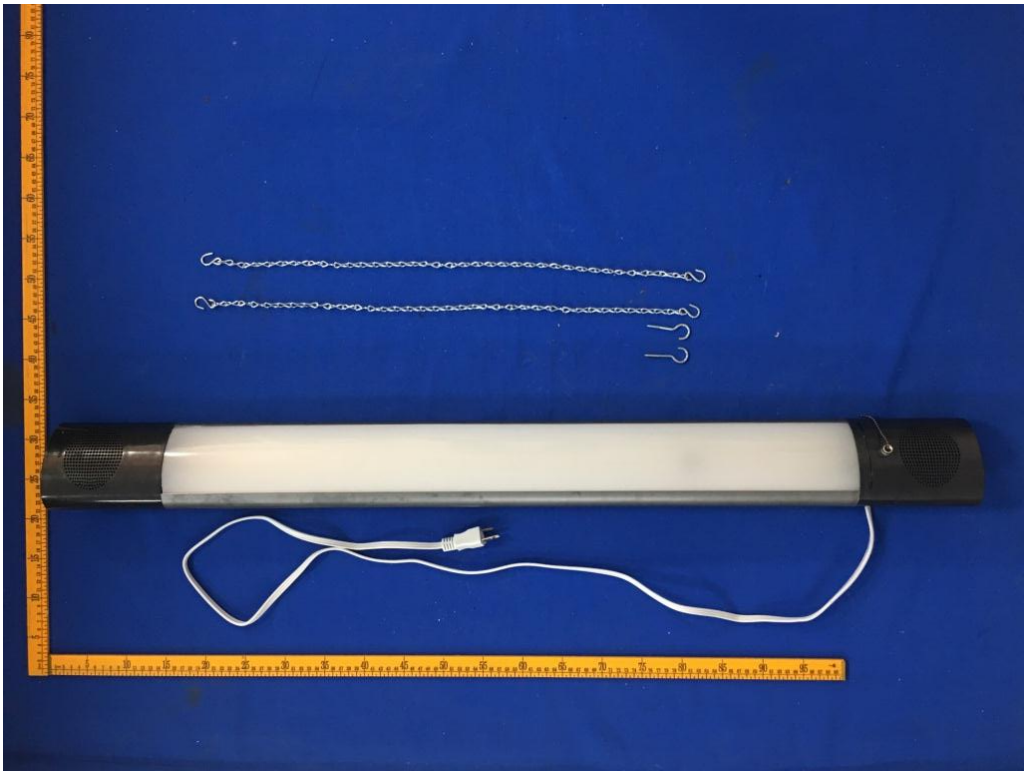


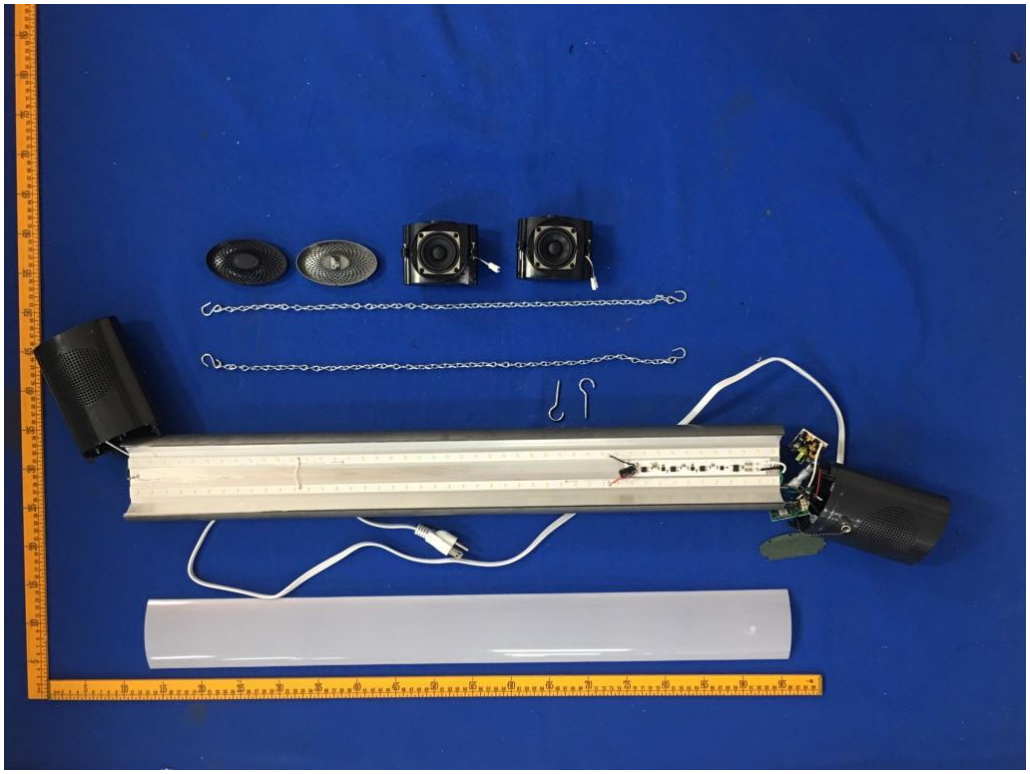
Photos of radiated emission test
Above 1GHz

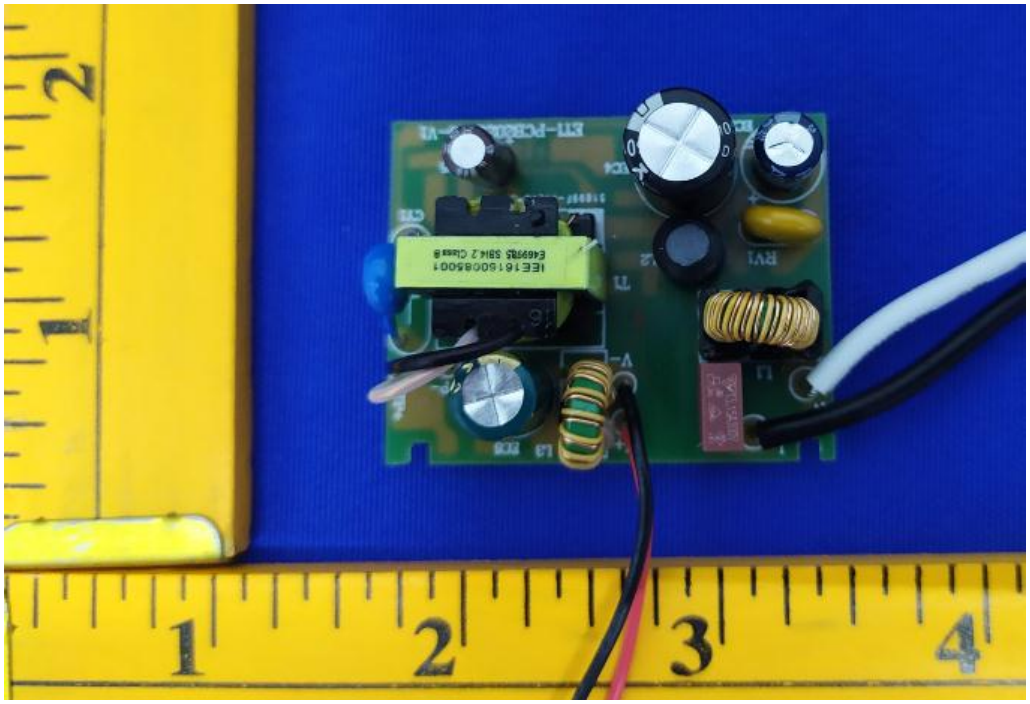


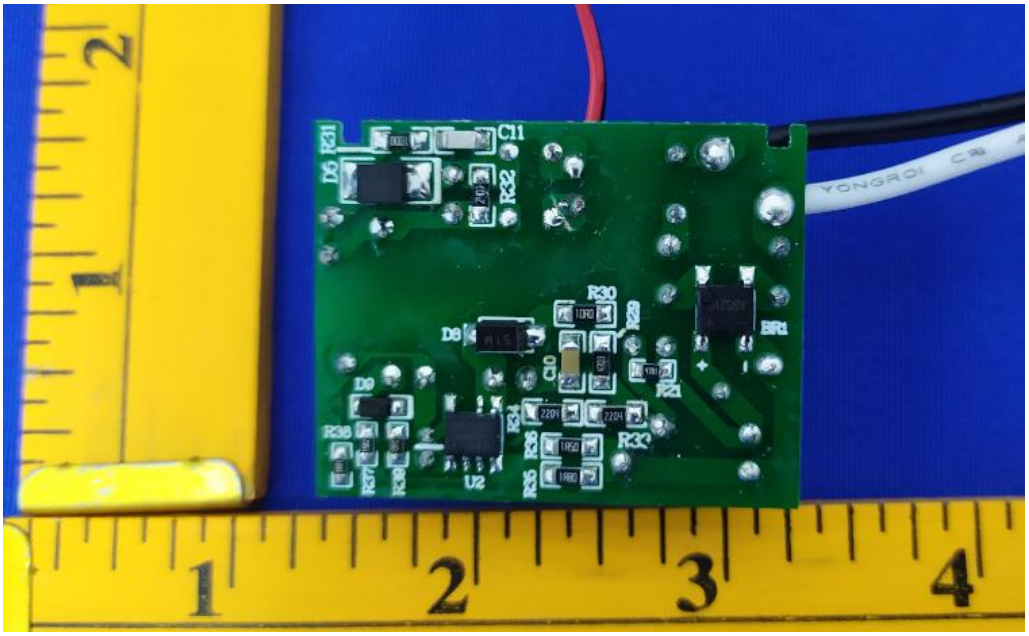
14. Photos of the EUT

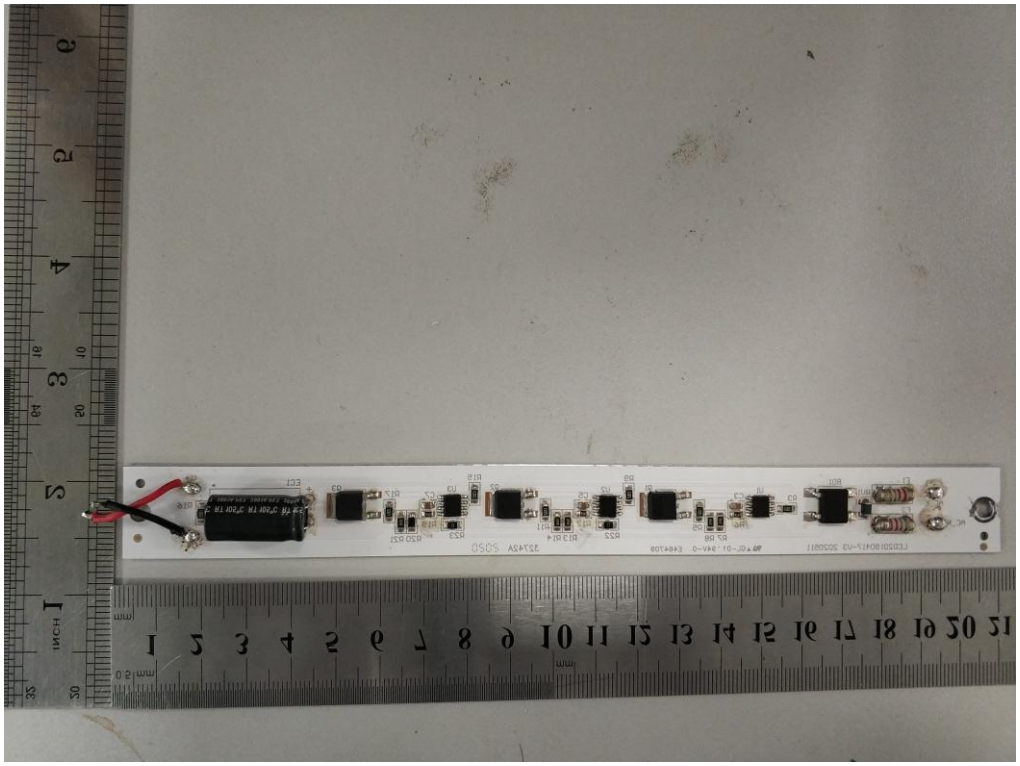


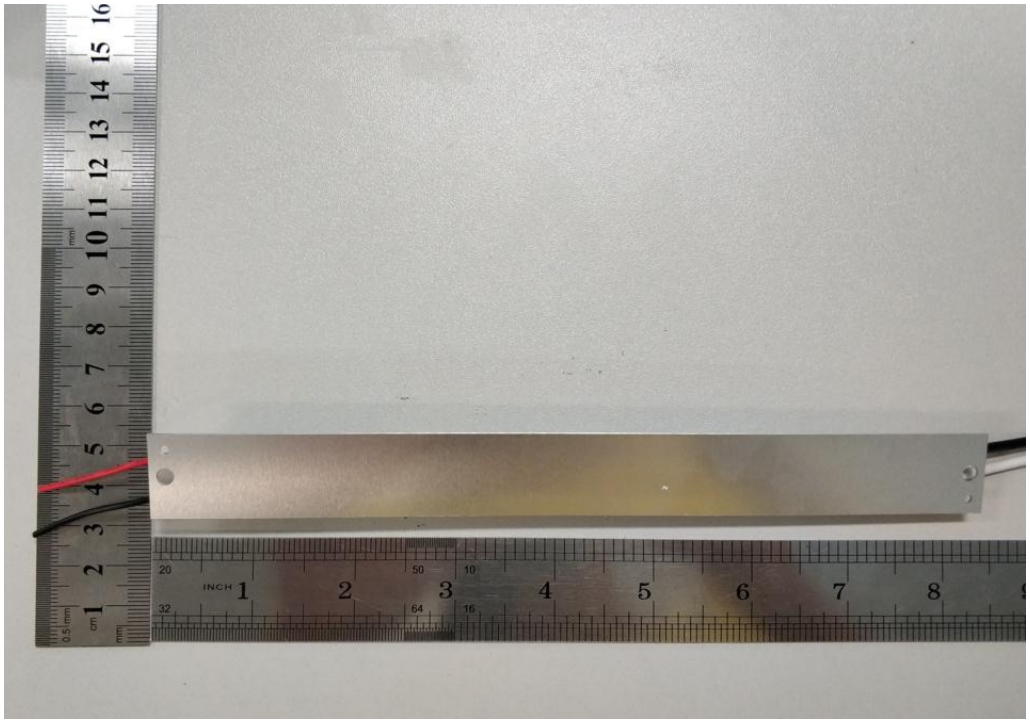


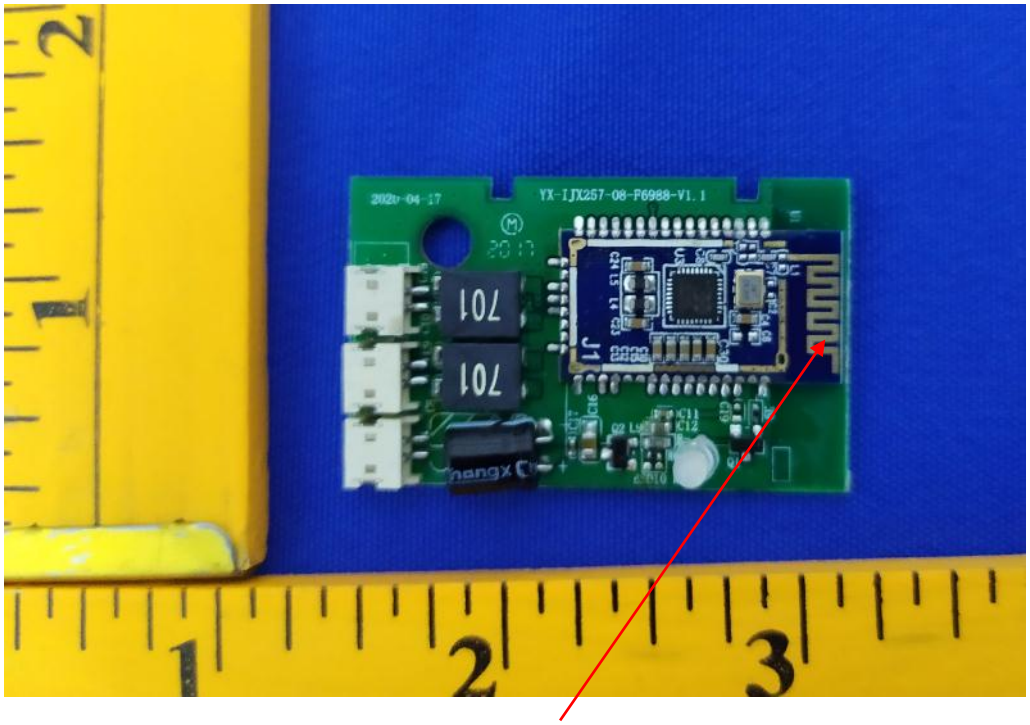




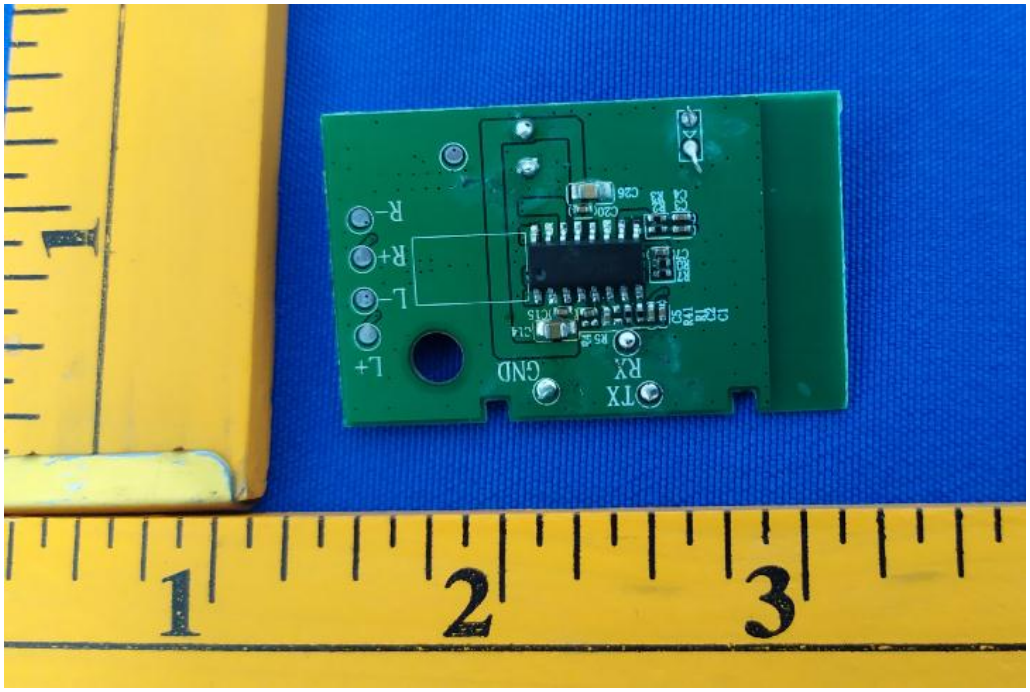

C11
R31
D5
R32
R30
D8
C10
R34
R36
R37
R38
U2
R35
R33
BR1
1
2
3
4







Antenna



--END OF REPORT--