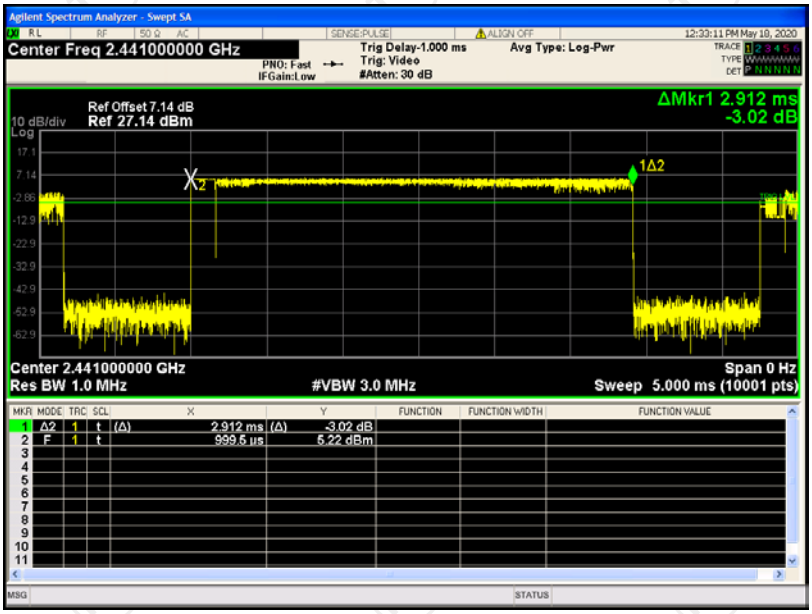
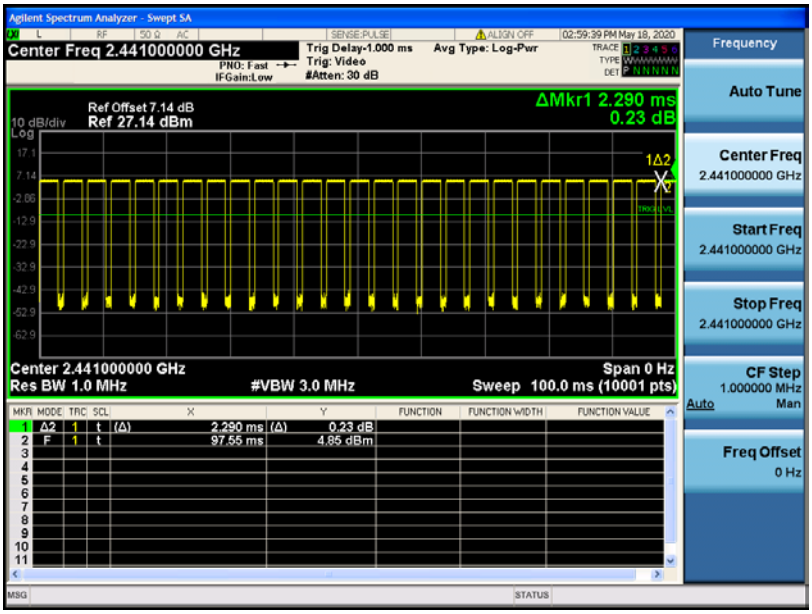
6.11.3. Test Data

Duty cycle correction factor for average measurement

3DH5 on time (One Pulse) Plot on Channel 39



3DH5 on time (Count Pulses) Plot on Channel 39



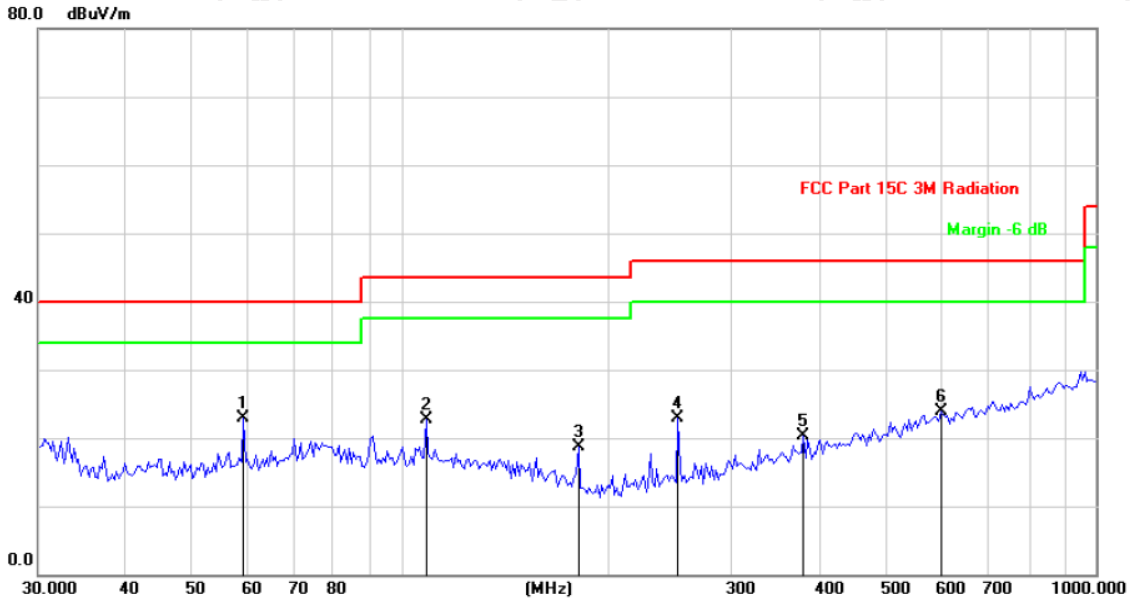
Note:

1. *Worst case Duty cycle = on time/100 milliseconds = (2.912*26+2.290)/100= 0.7800*
2. *Worst case Duty cycle correction factor = 20*log (Duty cycle) = -2.16dB*
3. *3DH5 has the highest duty cycle worst case and is reported.*
4. *The average levels were calculated from the peak level corrected with duty cycle correction factor (-2.16dB) derived from 20log (dwell time/100ms). This correction is only for signals that hop with the fundamental signal, such as band-edge and harmonic. Other spurious signals that are independent of the hopping signal would not use this correction.*

Please refer to following diagram for individual

Below 1GHz

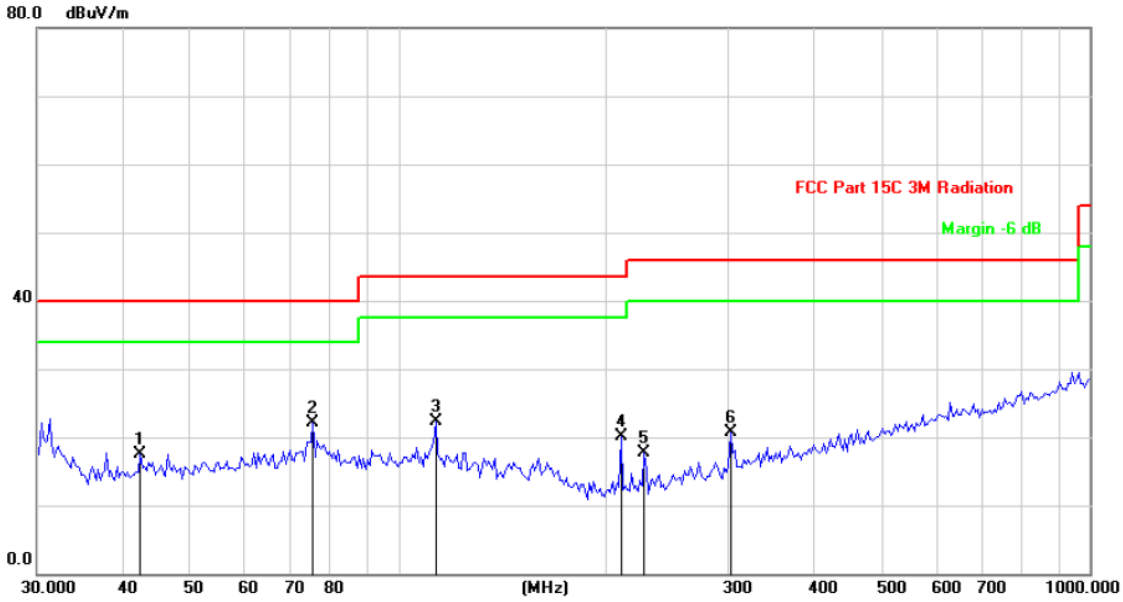
Horizontal:



Site
Limit: FCC Part 15C 3M Radiation
Polarization: *Horizontal*
Power: DC 3.7V
Temperature: 25
Humidity: 55 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1	*	59.3133	35.24	-12.34	22.90	40.00	-17.10	peak
2		108.5455	31.97	-9.31	22.66	43.50	-20.84	peak
3		180.0304	33.68	-14.98	18.70	43.50	-24.80	peak
4		250.4859	35.11	-12.29	22.82	46.00	-23.18	peak
5		379.1780	28.85	-8.46	20.39	46.00	-25.61	peak
6		598.7067	27.97	-4.07	23.90	46.00	-22.10	peak

Vertical:



Site

Limit: FCC Part 15C 3M Radiation

Polarization: *Vertical*

Power: DC 3.7V

Temperature: 25

Humidity: 55 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		42.3314	28.49	-10.92	17.57	40.00	-22.43	peak
2	*	75.3208	38.57	-16.54	22.03	40.00	-17.97	peak
3		113.2200	32.55	-10.27	22.28	43.50	-21.22	peak
4		210.1294	33.80	-13.61	20.19	43.50	-23.31	peak
5		227.0164	30.80	-13.05	17.75	46.00	-28.25	peak
6		302.8193	31.03	-10.39	20.64	46.00	-25.36	peak

Note: *1.The low frequency, which started from 9KHz~30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.*

2. Measurements were conducted in all three channels (high, middle, low) and three modulation (GFSK, Pi/4 DQPSK, 8DPSK) and the worst case Mode (Highest channel and 8DPSK) was submitted only.

3. Freq. = Emission frequency in MHz

Measurement (dBμV/m) = Reading level (dBμV) + Corr. Factor (dB)

Correction Factor= Antenna Factor + Cable loss – Pre-amplifier

Limit (dBμV/m) = Limit stated in standard

Over (dB) = Measurement (dBμV/m) – Limits (dBμV/m)

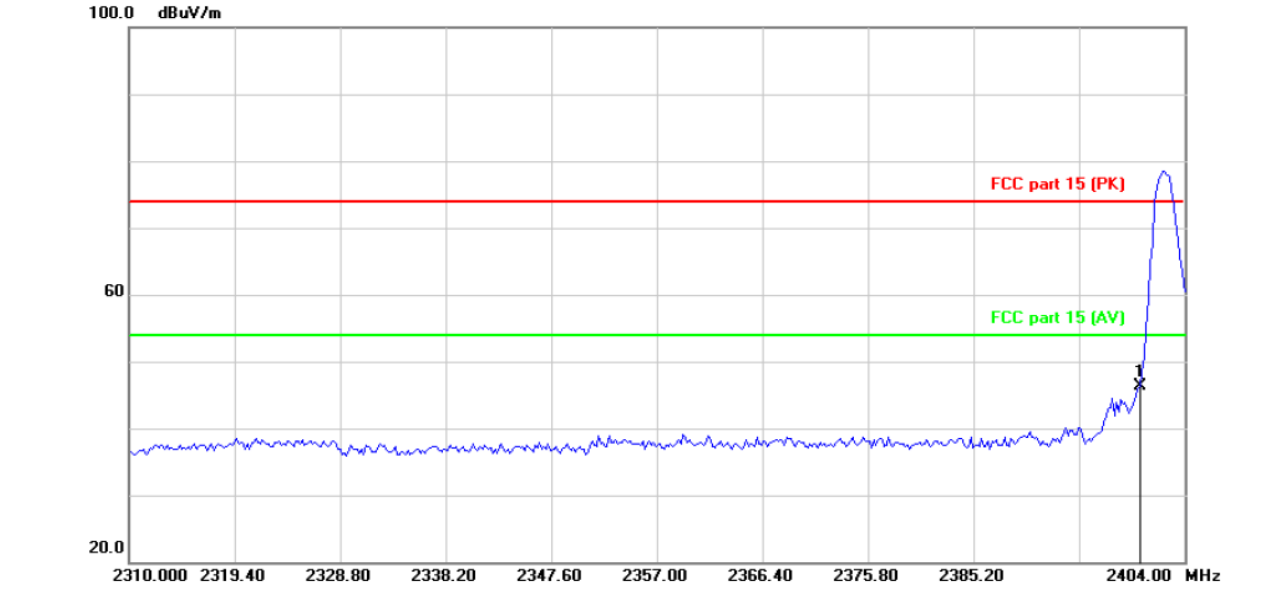
Any value more than 10dB below limit have not been specifically reported.

** is meaning the worst frequency has been tested in the test frequency range.*

Test Result of Radiated Spurious at Band edges

Lowest channel 2402:

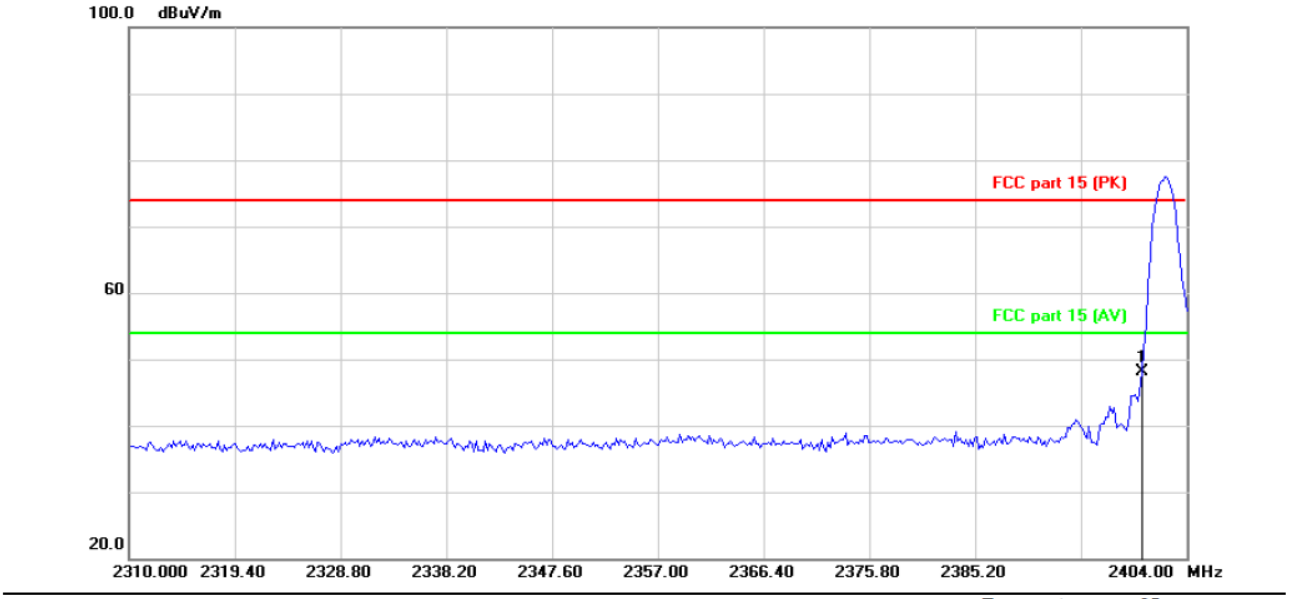
Horizontal:



Site | Polarization: *Horizontal* | Temperature: 25

Limit: FCC part 15 (PK) | Power: DC 3.7V | Humidity: 55 %

Vertical:



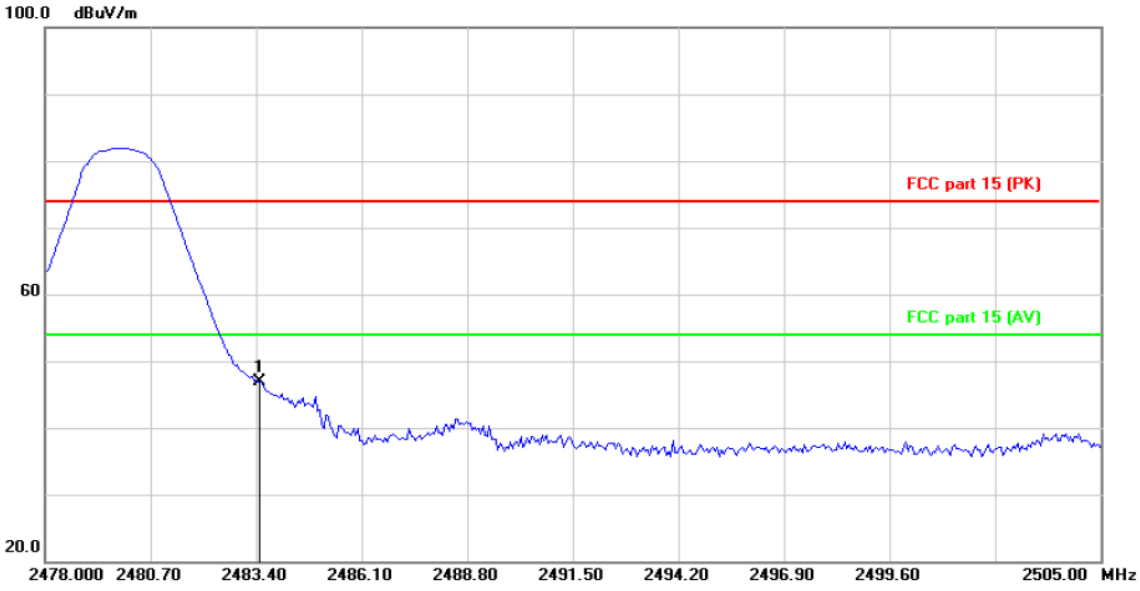
Site | Polarization: *Vertical* | Temperature: 25

Limit: FCC part 15 (PK) | Power: DC 3.7V | Humidity: 55 %

Frequency (MHz)	Ant. Pol. H/V	Peak (dBµV/m)	Duty cycle factor (dB/m)	AV (dBµV/m)	Peak limit (dBµV/m)	AV limit (dBµV/m)	PK Margin (dB)	AVG Margin (dB)
2400	H	46.30	-2.16	44.14	74	54	-27.70	-9.86
2400	V	48.19	-2.16	46.03	74	54	-25.81	-7.97

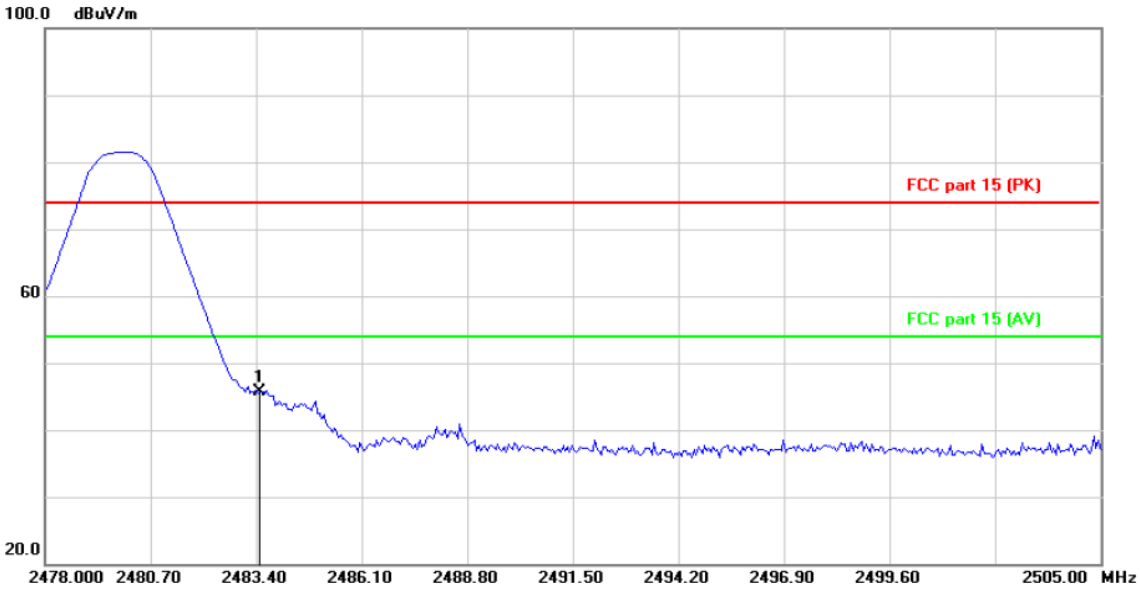
Highest channel 2480:

Horizontal:



Site
Polarization: *Horizontal*
Temperature: 25
Limit: FCC part 15 (PK)
Power: DC 3.7V
Humidity: 55 %

Vertical:



Site
Polarization: *Vertical*
Temperature: 25
Limit: FCC part 15 (PK)
Power: DC 3.7V
Humidity: 55 %

Frequency (MHz)	Ant. Pol. H/V	Peak (dBμV/m)	Duty cycle factor (dB/m)	AV (dBμV/m)	Peak limit (dBμV/m)	AV limit (dBμV/m)	PK Margin (dB)	AVG Margin (dB)
2483.5	H	46.85	-2.16	44.69	74	54	-27.15	-9.31
2483.5	V	45.69	-2.16	43.53	74	54	-28.31	-10.47

Note: *Measurements were conducted in all three modulation (GFSK, Pi/4 DQPSK, 8DPSK), and the worst case Mode (8DPSK) was submitted only.*

Above 1GHz

Modulation Type: 8DPSK									
Low channel: 2402 MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBuV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
4804	H	47.42	---	0.66	48.08	---	74	54	-5.92
7206	H	37.80	---	9.5	47.30	---	74	54	-6.70
---	H	---	---	---	---	---	---	---	---
4804	V	42.86	---	0.66	43.52	---	74	54	-10.48
7206	V	37.73	---	9.5	47.23	---	74	54	-6.77
---	V	---	---	---	---	---	---	---	---

Middle channel: 2441 MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
4882	H	45.75	---	0.99	46.74	---	74	54	-7.26
7323	H	39.21	---	9.87	49.08	---	74	54	-4.92
---	H	---	---	---	---	---	---	---	---
4882	V	44.88	---	0.99	45.87	---	74	54	-8.13
7323	V	38.6	---	9.87	48.47	---	74	54	-5.53
---	V	---	---	---	---	----	---	---	---

High channel: 2480 MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
4960	H	45.65	---	1.33	46.98	---	74	54	-7.02
7440	H	36.81	---	10.22	47.03	---	74	54	-6.97
---	H	---	---	---	---	---	---	---	---
4960	V	45.85	---	1.33	47.18	---	74	54	-6.82
7440	V	37.66	---	10.22	47.88	---	74	54	-6.12
---	V	---	---	---	---	---	---	---	---

Note:

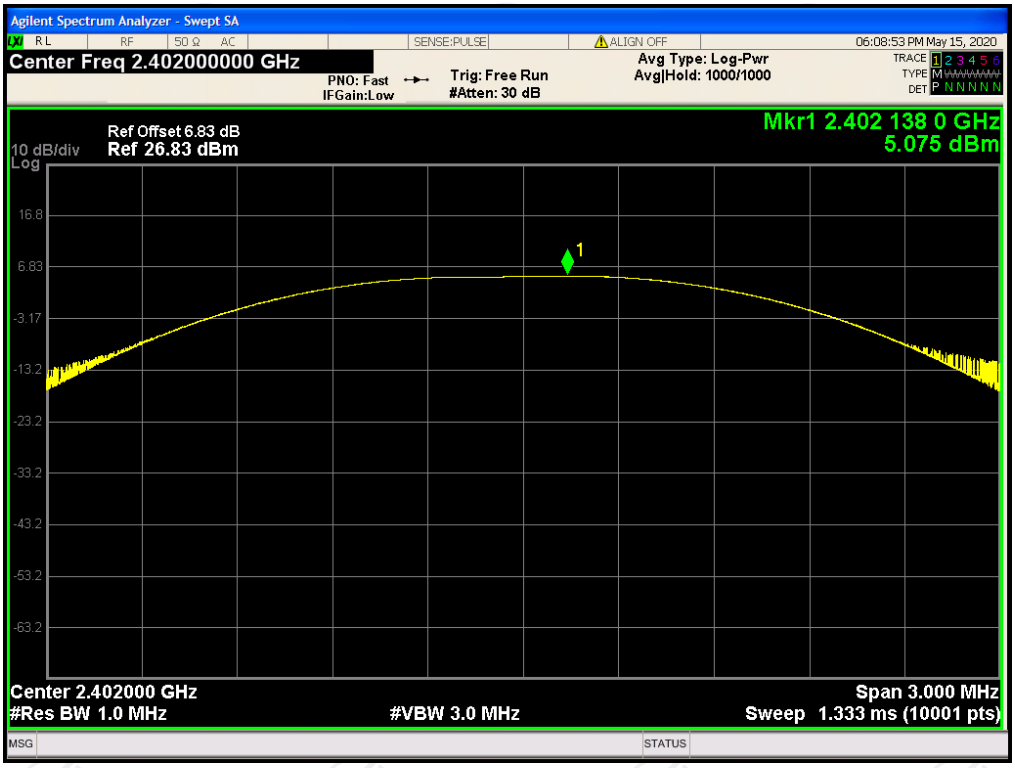
1. *Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier*
2. *Margin (dB) = Emission Level (Peak) (dBμV/m)-Average limit (dBμV/m)*
3. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
4. *Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency.*
5. *Data of measurement shown "---"in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.*
6. *Measurements were conducted in all three modulation (GFSK, Pi/4 DQPSK, 8DPSK), and the worst case Mode (8DPSK) was submitted only.*
7. *All the restriction bands are compliance with the limit of 15.209.*

Appendix A: Test Result of Conducted Test

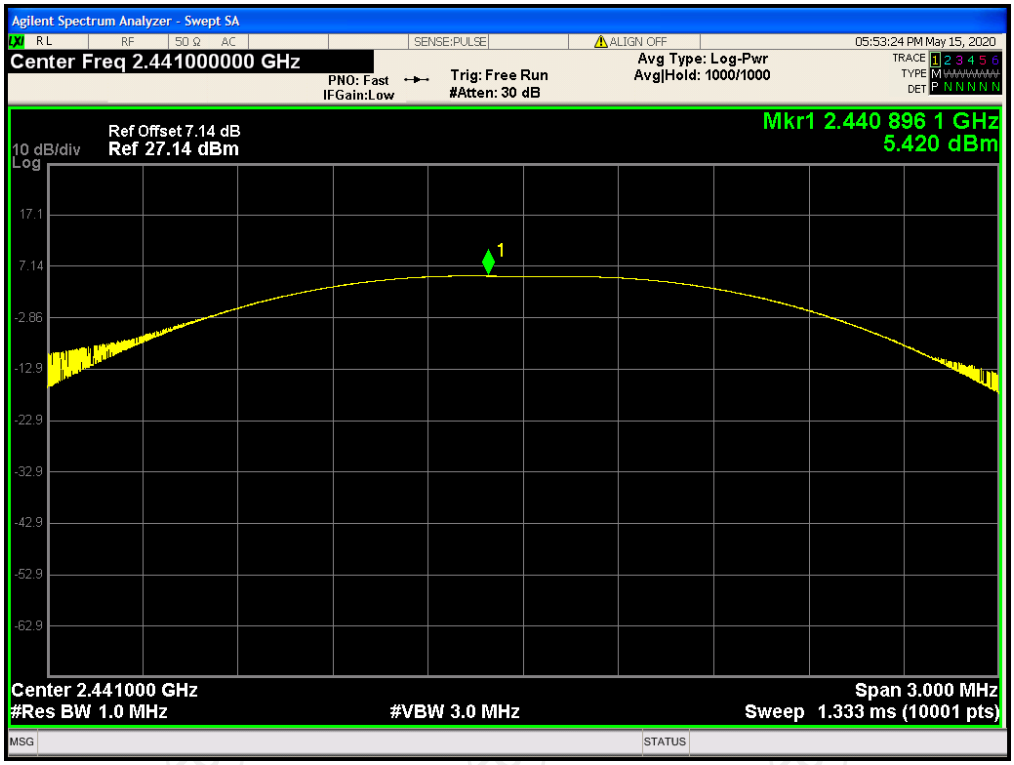
Maximum Conducted Output Power

Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
1-DH1	2402	5.075	21	Pass
1-DH1	2441	5.420	21	Pass
1-DH1	2480	5.741	21	Pass
2-DH1	2402	5.672	21	Pass
2-DH1	2441	5.738	21	Pass
2-DH1	2480	6.205	21	Pass
3-DH1	2402	5.782	21	Pass
3-DH1	2441	6.311	21	Pass
3-DH1	2480	6.653	21	Pass

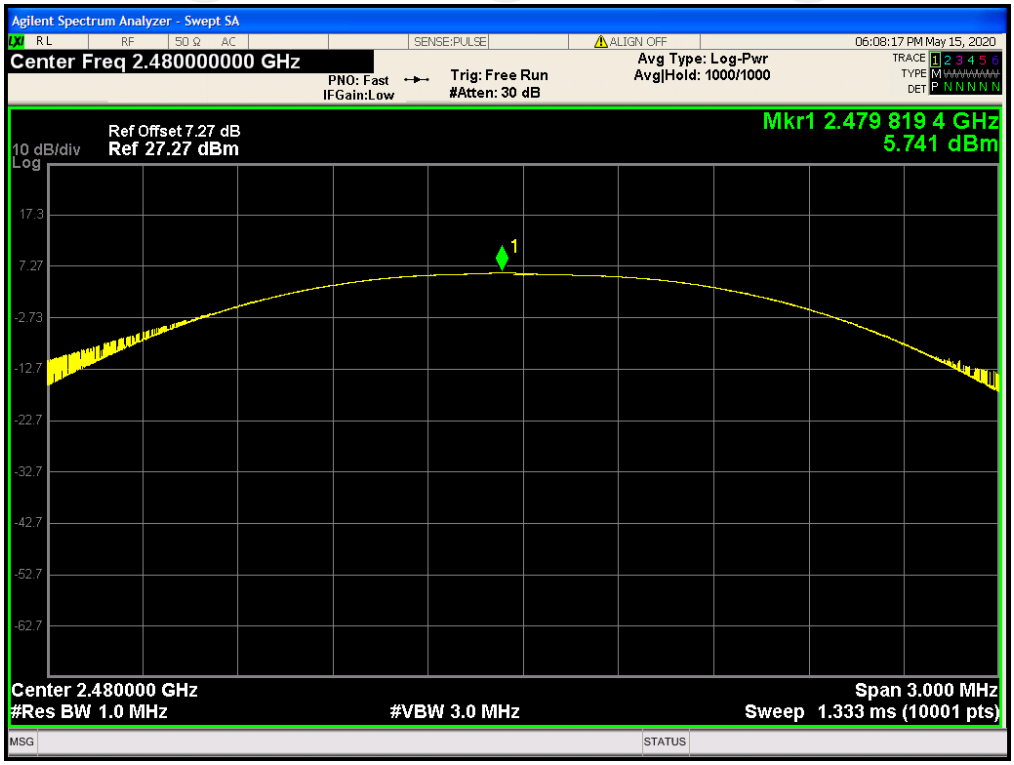
Power NVNT 1-DH1 2402MHz



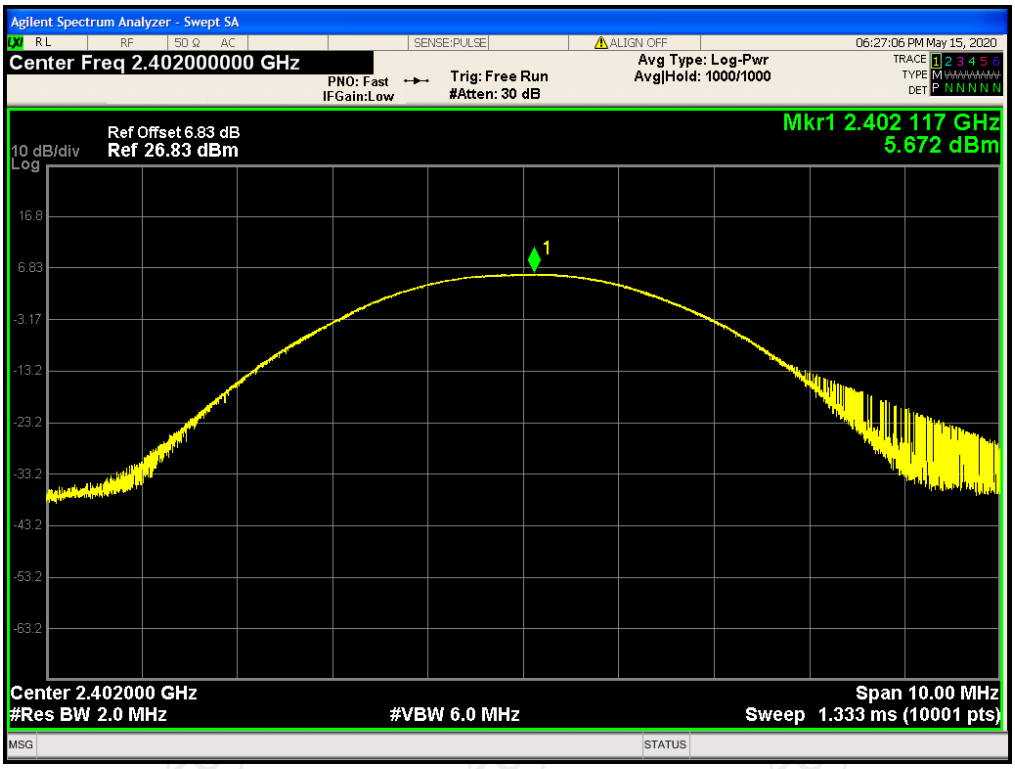
Power NVNT 1-DH1 2441MHz



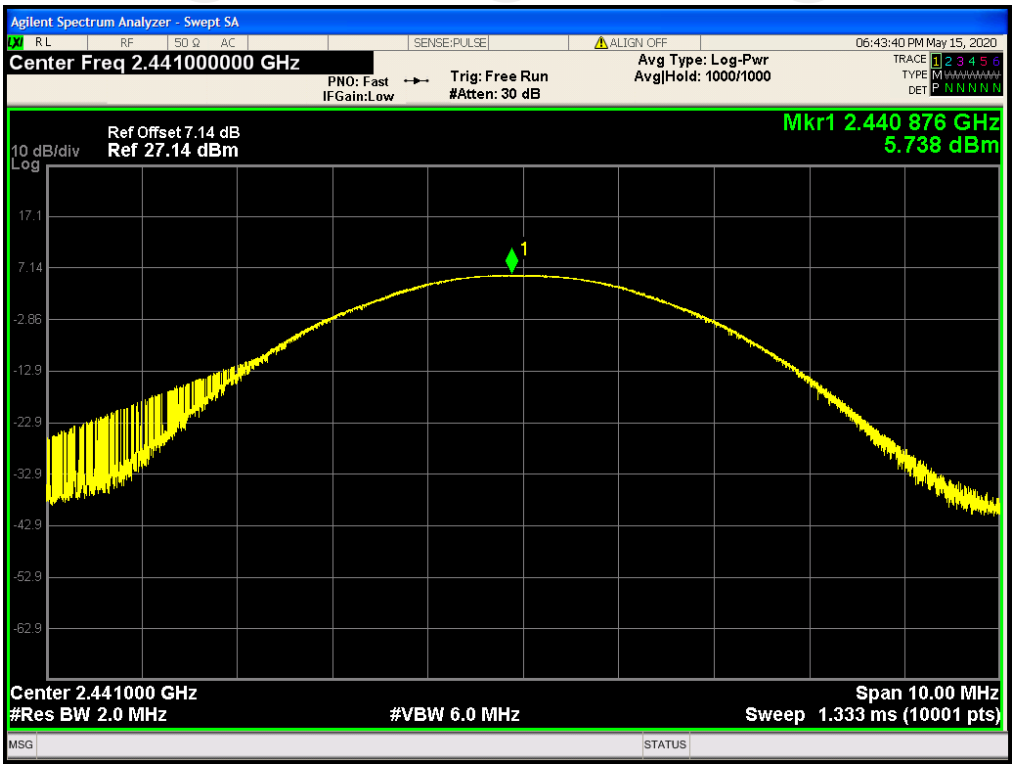
Power NVNT 1-DH1 2480MHz



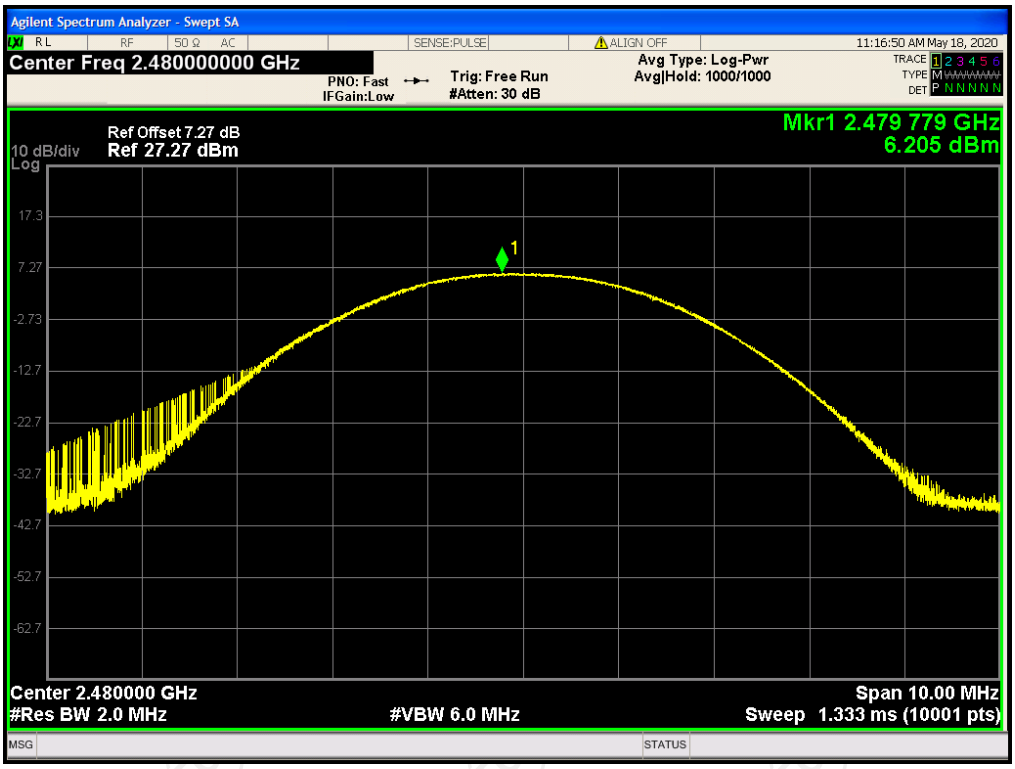
Power NVNT 2-DH1 2402MHz



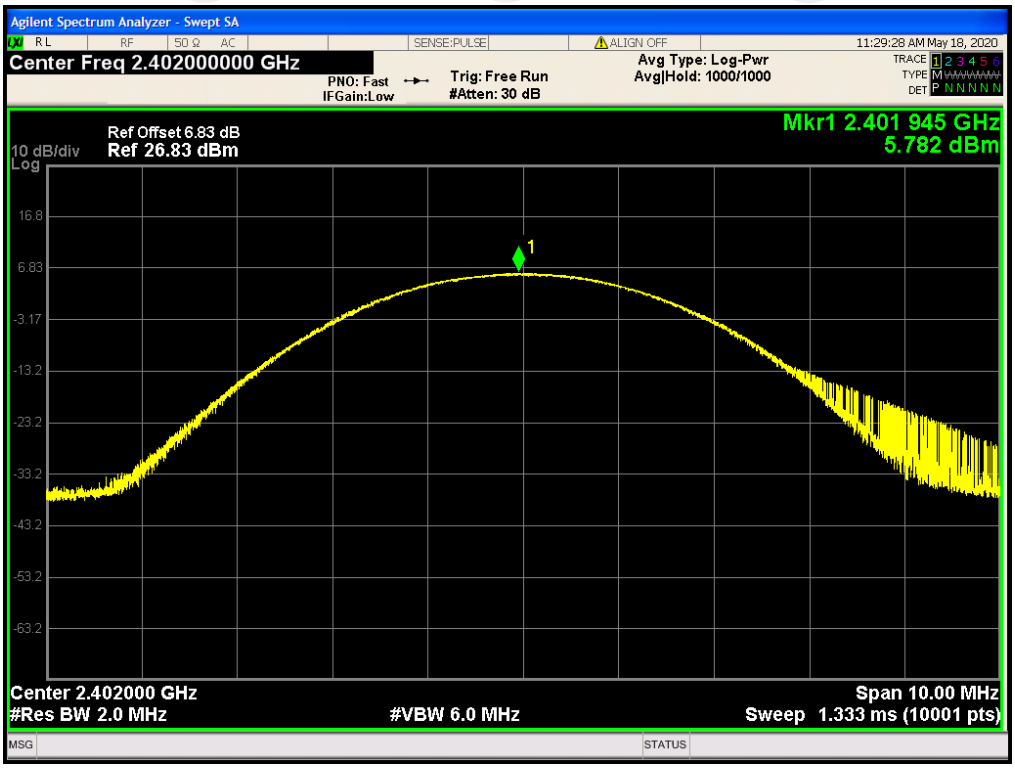
Power NVNT 2-DH1 2441MHz



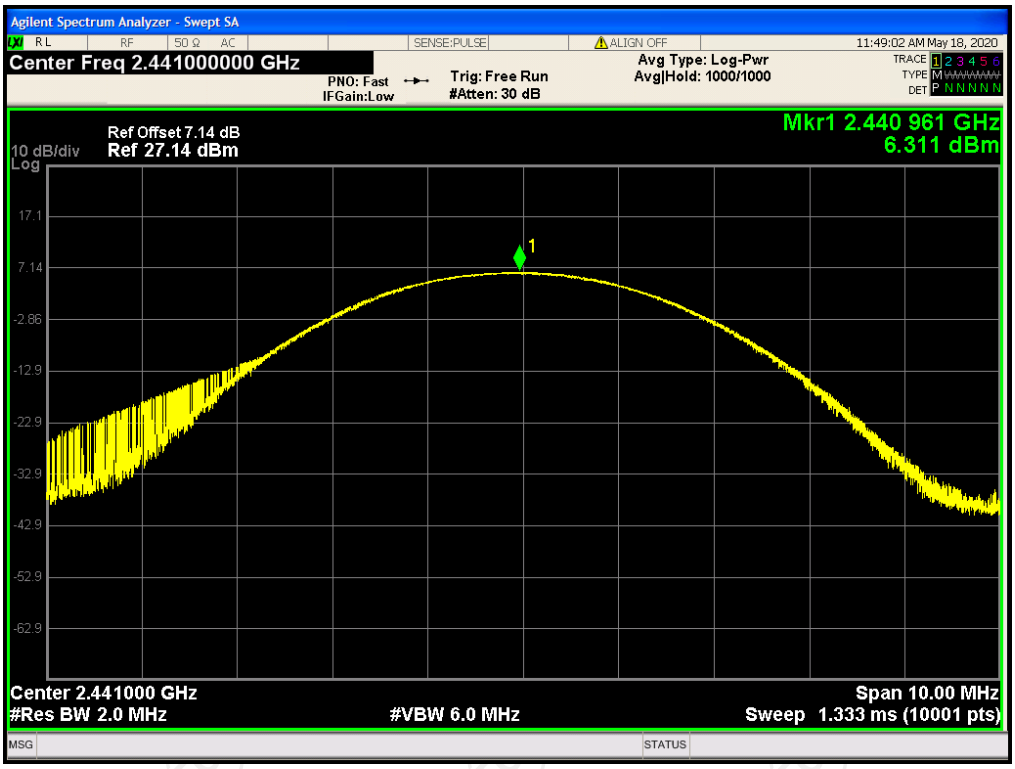
Power NVNT 2-DH1 2480MHz



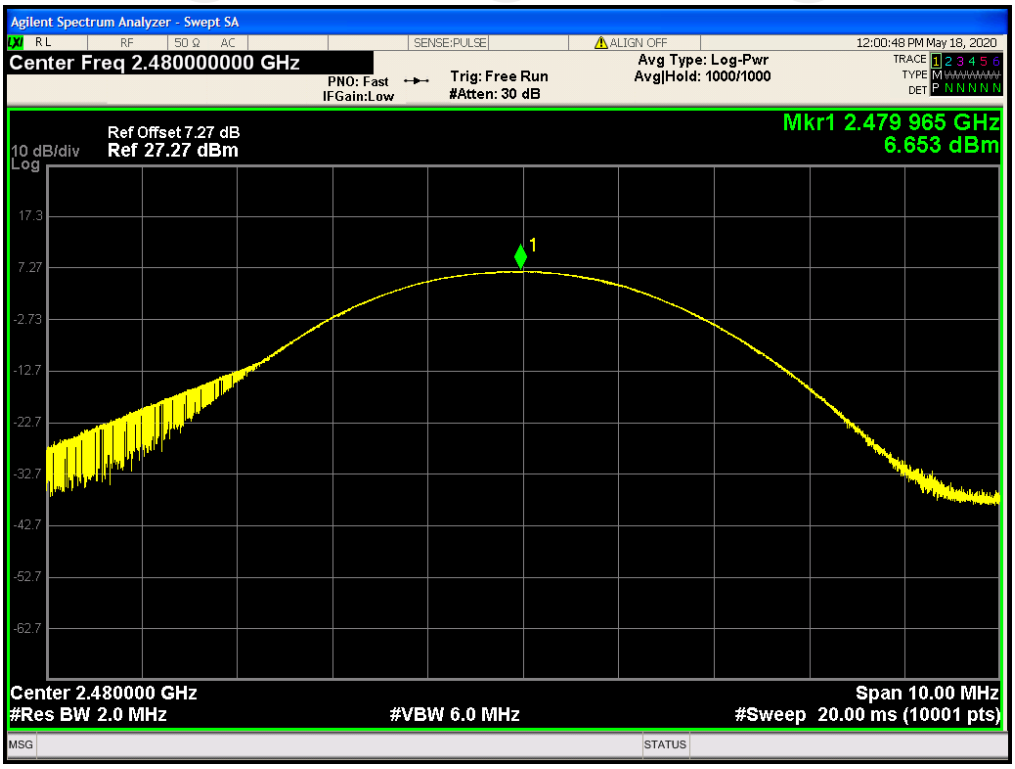
Power NVNT 3-DH1 2402MHz



Power NVNT 3-DH1 2441MHz



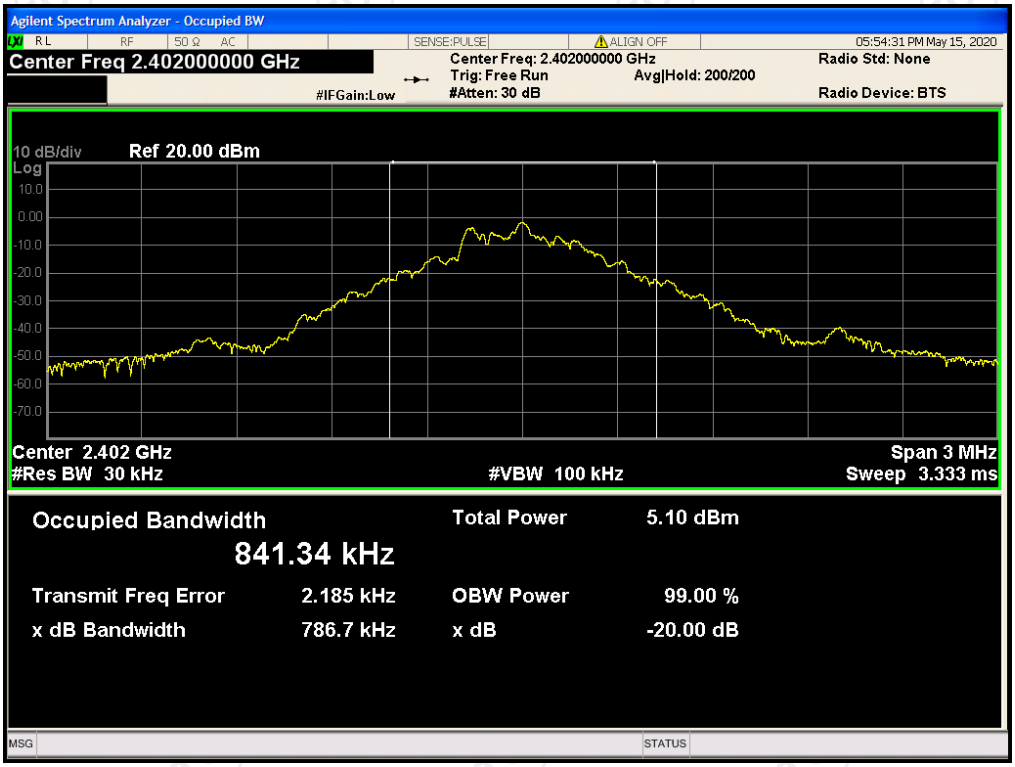
Power NVNT 3-DH1 2480MHz



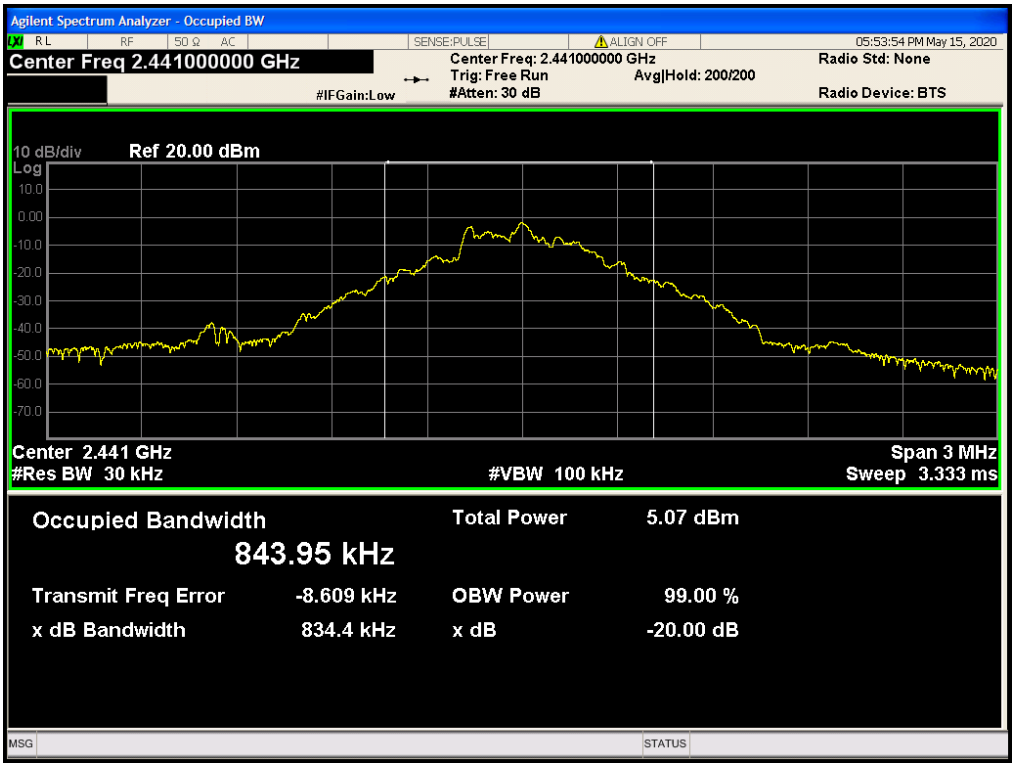
Occupied Channel Bandwidth

Mode	Frequency (MHz)	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
1-DH1	2402	0.7867	0	Pass
1-DH1	2441	0.8344	0	Pass
1-DH1	2480	0.8056	0	Pass
2-DH1	2402	1.2005	0	Pass
2-DH1	2441	1.2212	0	Pass
2-DH1	2480	1.2124	0	Pass
3-DH1	2402	1.1911	0	Pass
3-DH1	2441	1.1939	0	Pass
3-DH1	2480	1.2077	0	Pass

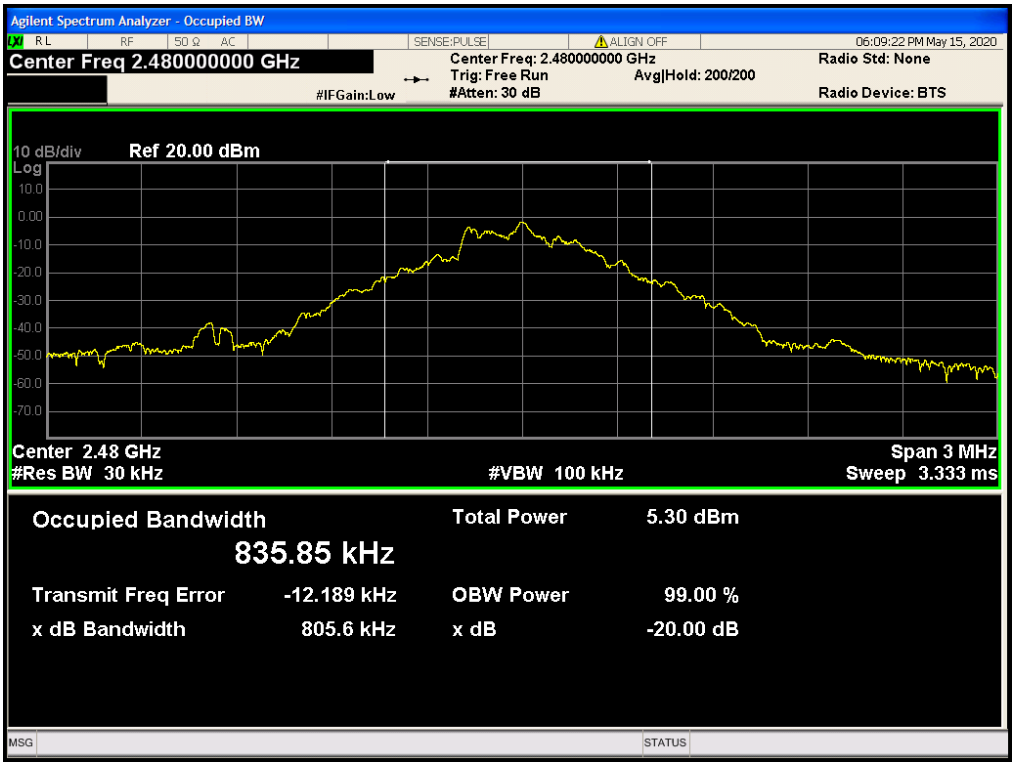
OBW NVNT 1-DH1 2402MHz



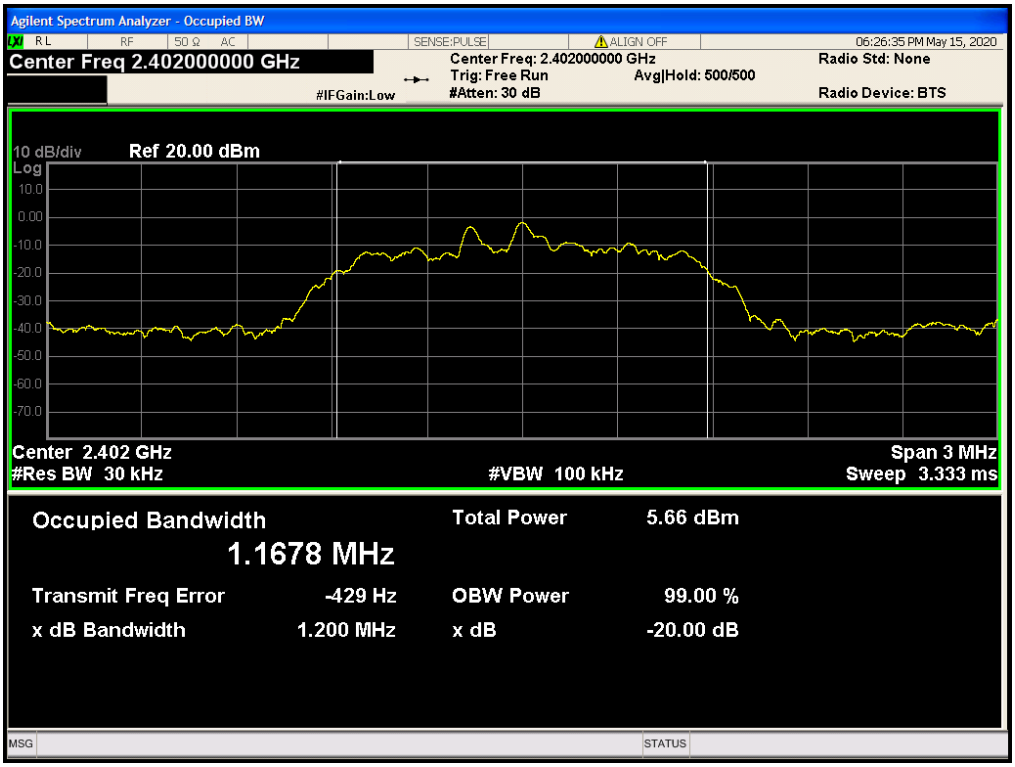
OBW NVNT 1-DH1 2441MHz



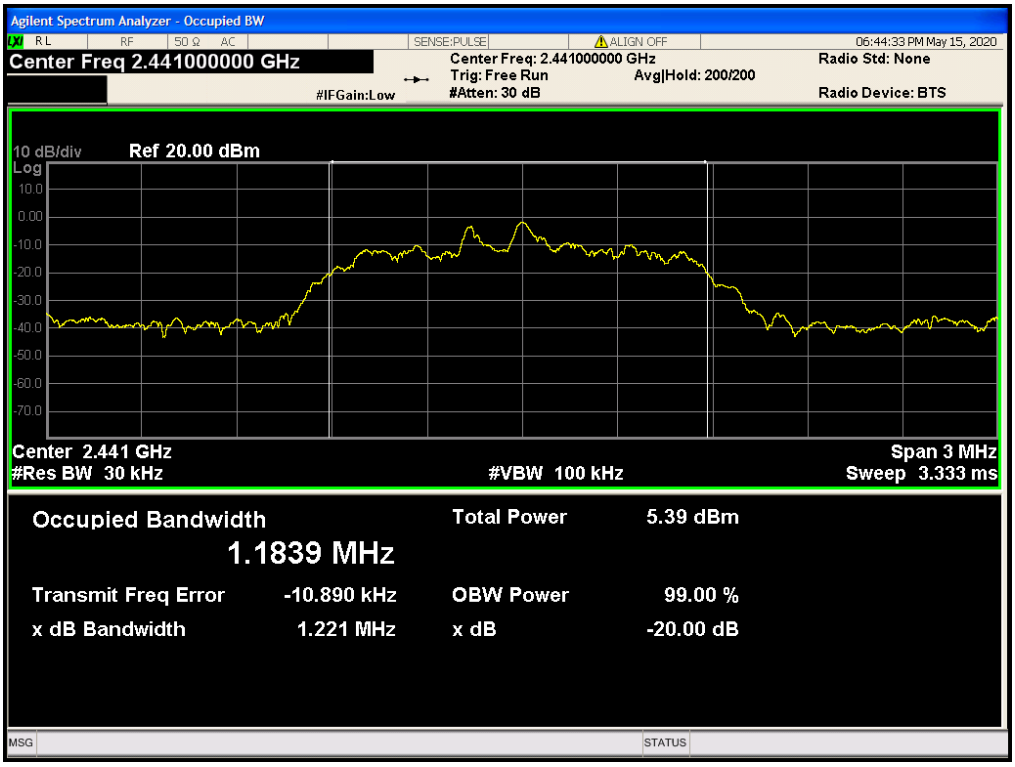
OBW NVNT 1-DH1 2480MHz



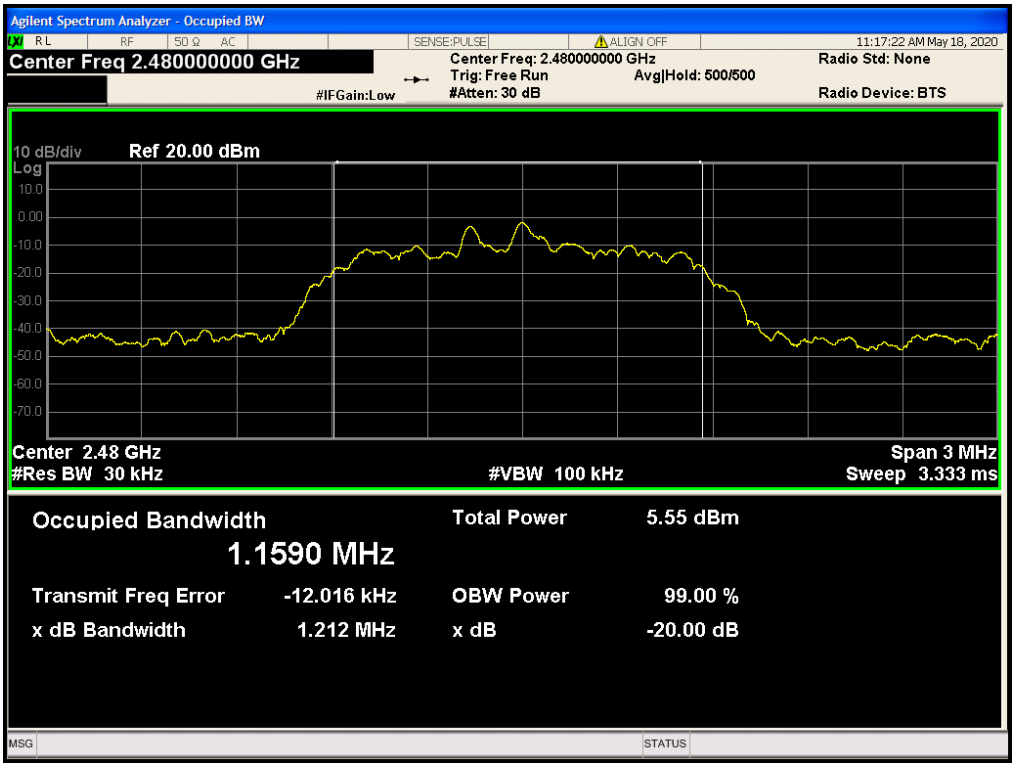
OBW NVNT 2-DH1 2402MHz



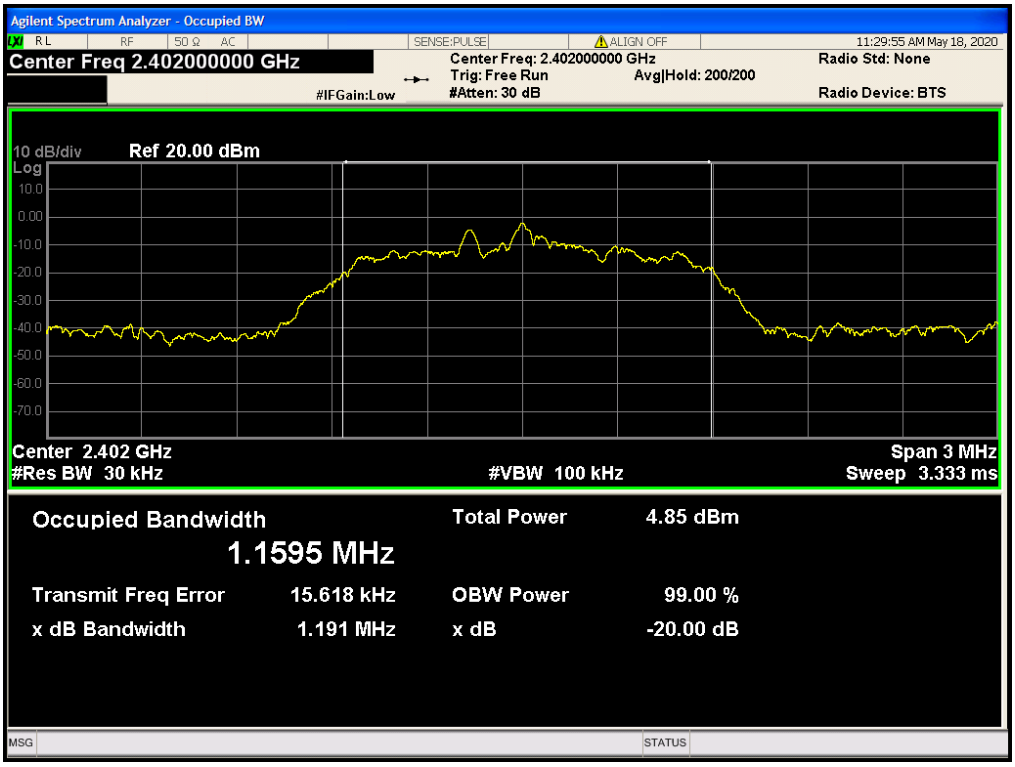
OBW NVNT 2-DH1 2441MHz



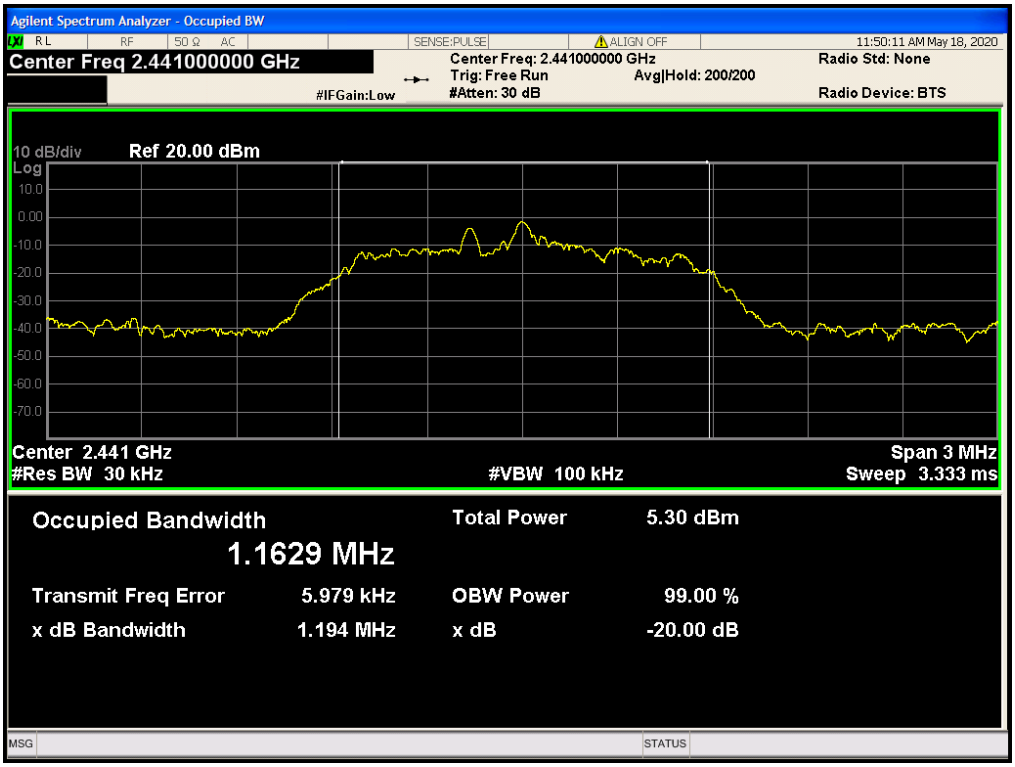
OBW NVNT 2-DH1 2480MHz



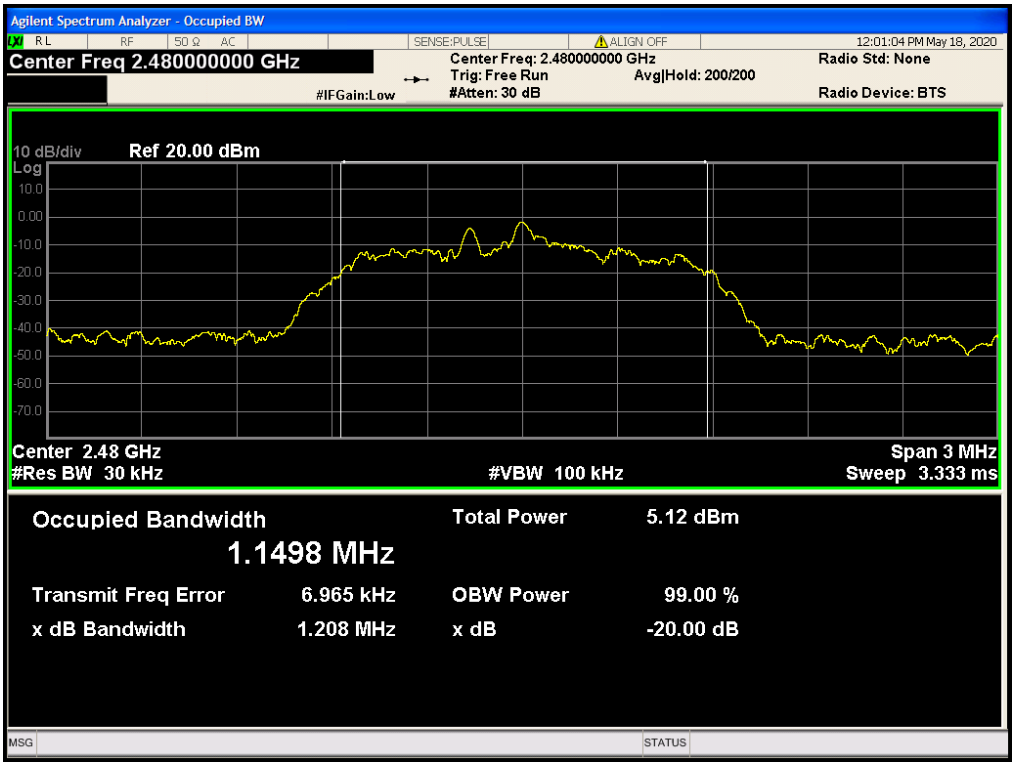
OBW NVNT 3-DH1 2402MHz



OBW NVNT 3-DH1 2441MHz



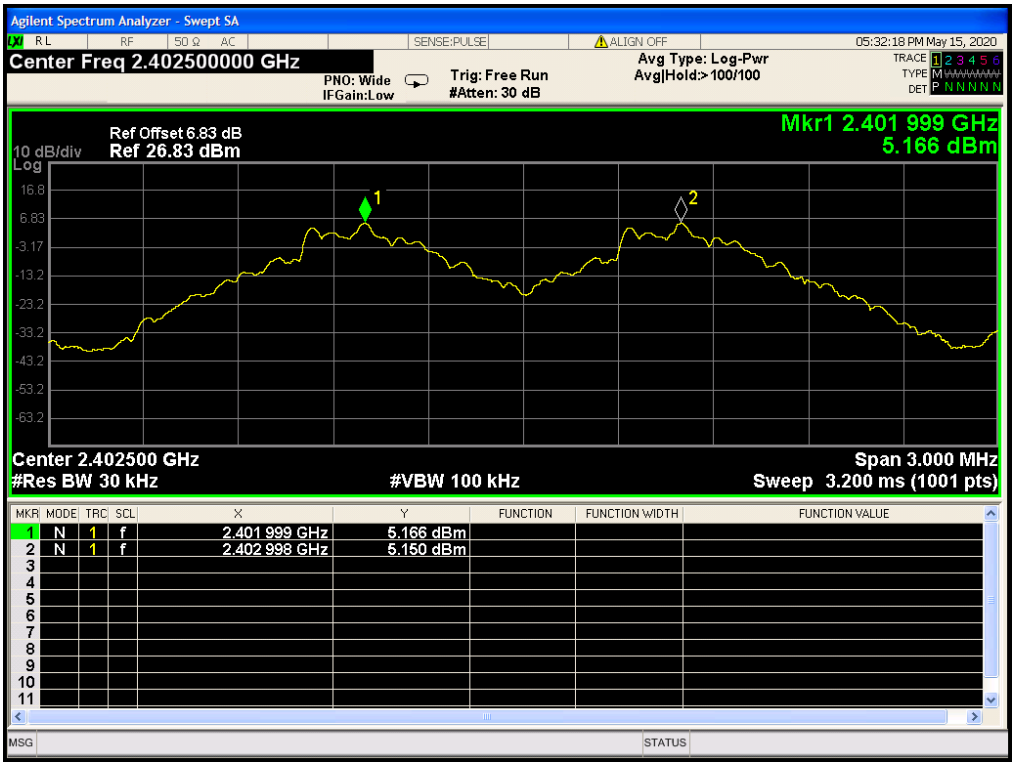
OBW NVNT 3-DH1 2480MHz



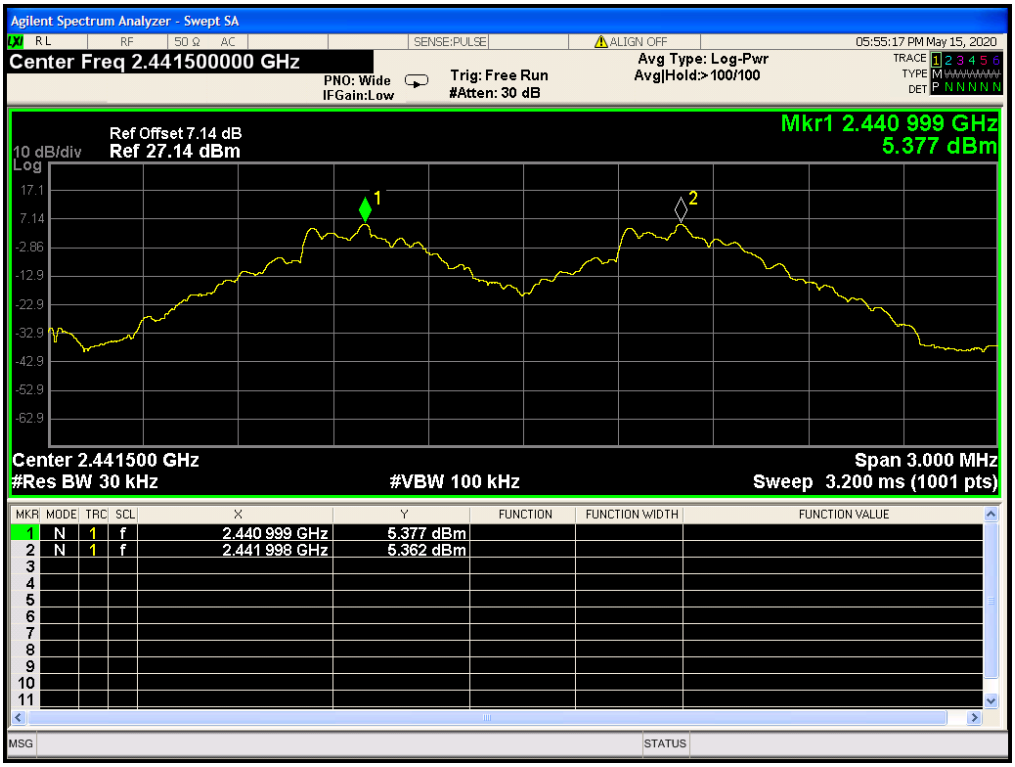
Carrier Frequencies Separation

Mode	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
1-DH1	2401.999	2402.998	0.999	0.772	Pass
1-DH1	2440.999	2441.998	0.999	0.787	Pass
1-DH1	2478.999	2479.998	0.999	0.806	Pass
2-DH1	2401.999	2402.998	0.999	0.800	Pass
2-DH1	2440.999	2441.998	0.999	0.814	Pass
2-DH1	2478.999	2479.998	0.999	0.808	Pass
3-DH1	2402.002	2402.998	0.996	0.794	Pass
3-DH1	2440.996	2441.998	1.002	0.796	Pass
3-DH1	2478.996	2479.998	1.002	0.805	Pass

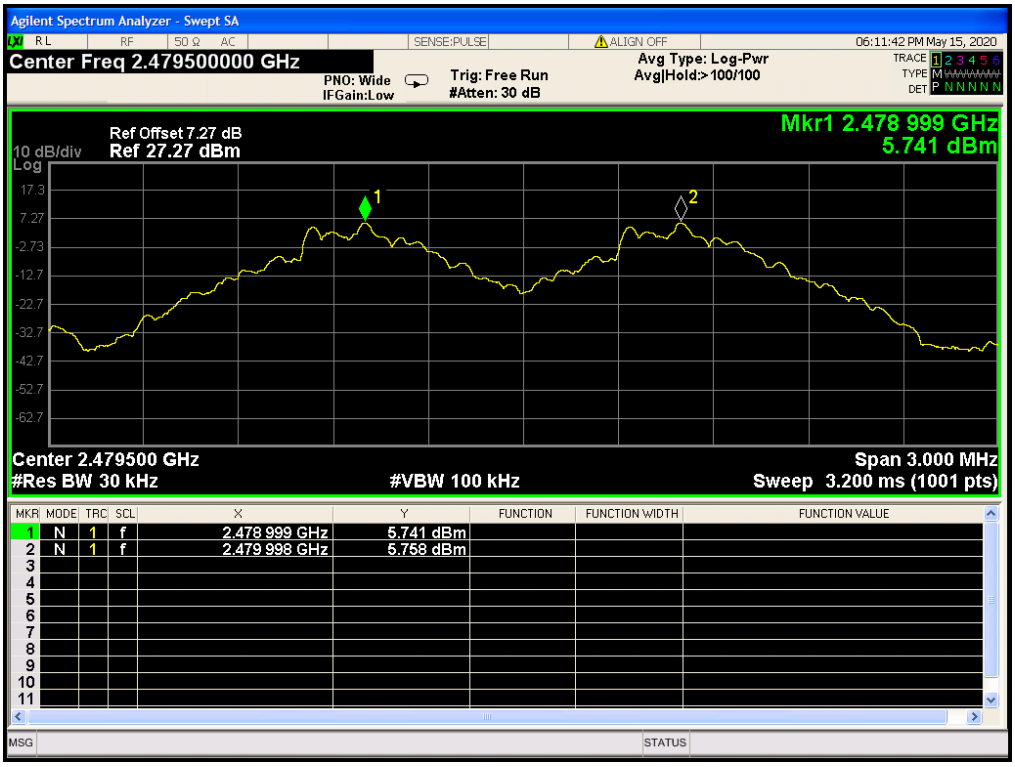
CFS NVNT 1-DH1 2402MHz



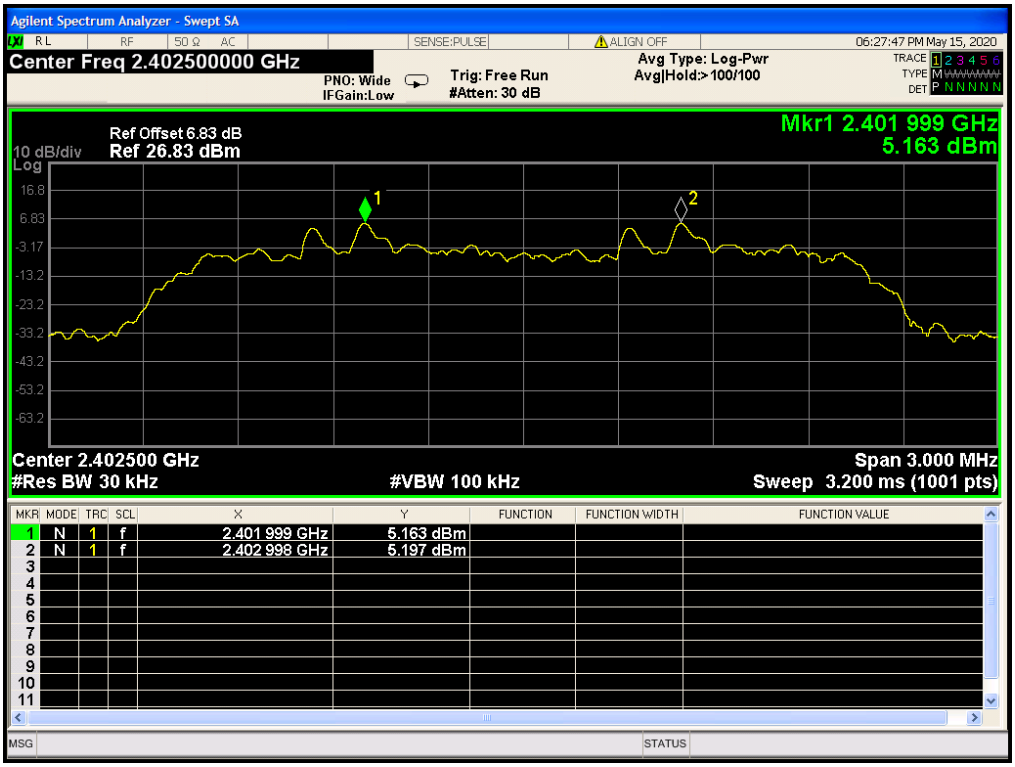
CFS NVNT 1-DH1 2441MHz



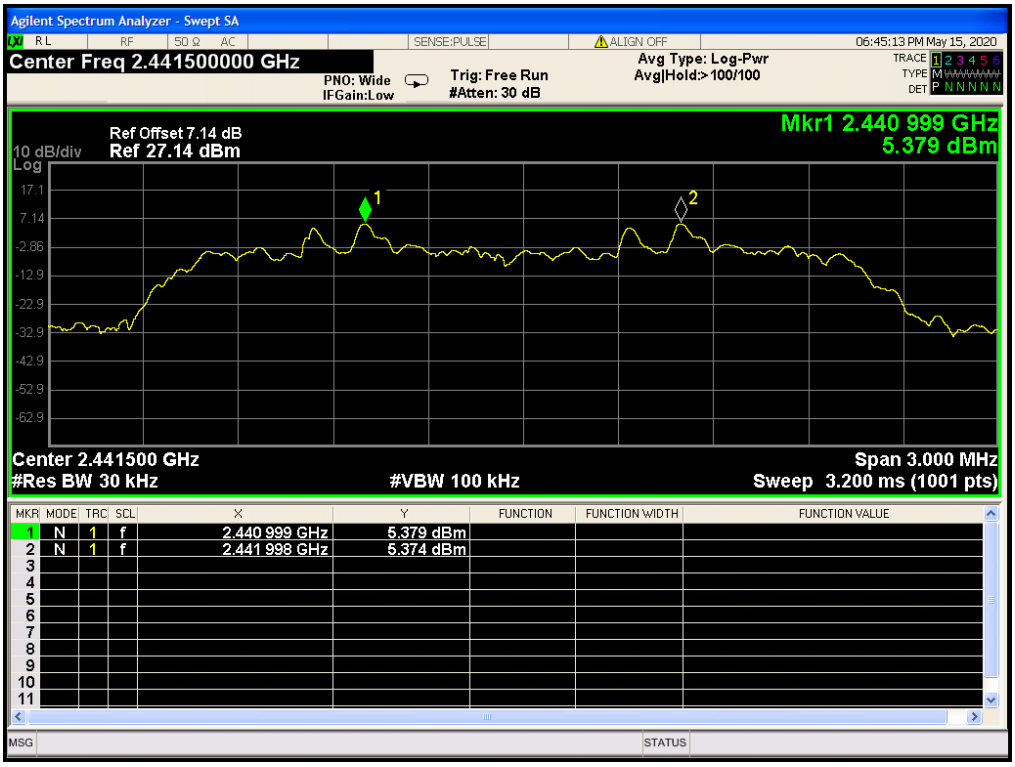
CFS NVNT 1-DH1 2480MHz



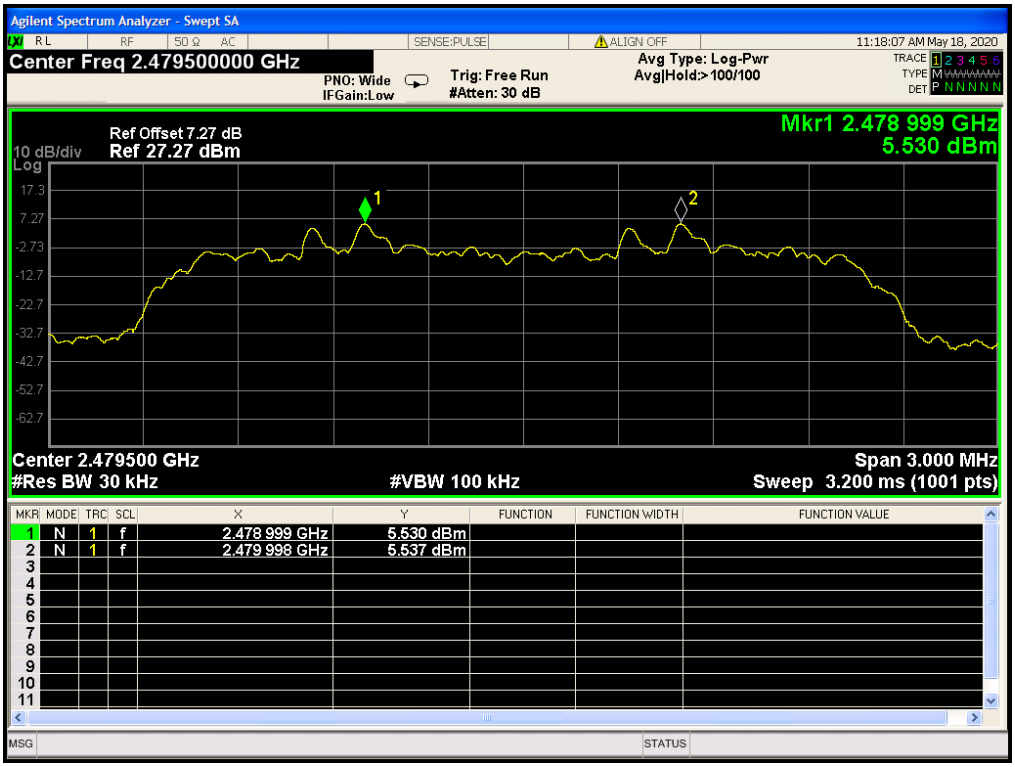
CFS NVNT 2-DH1 2402MHz



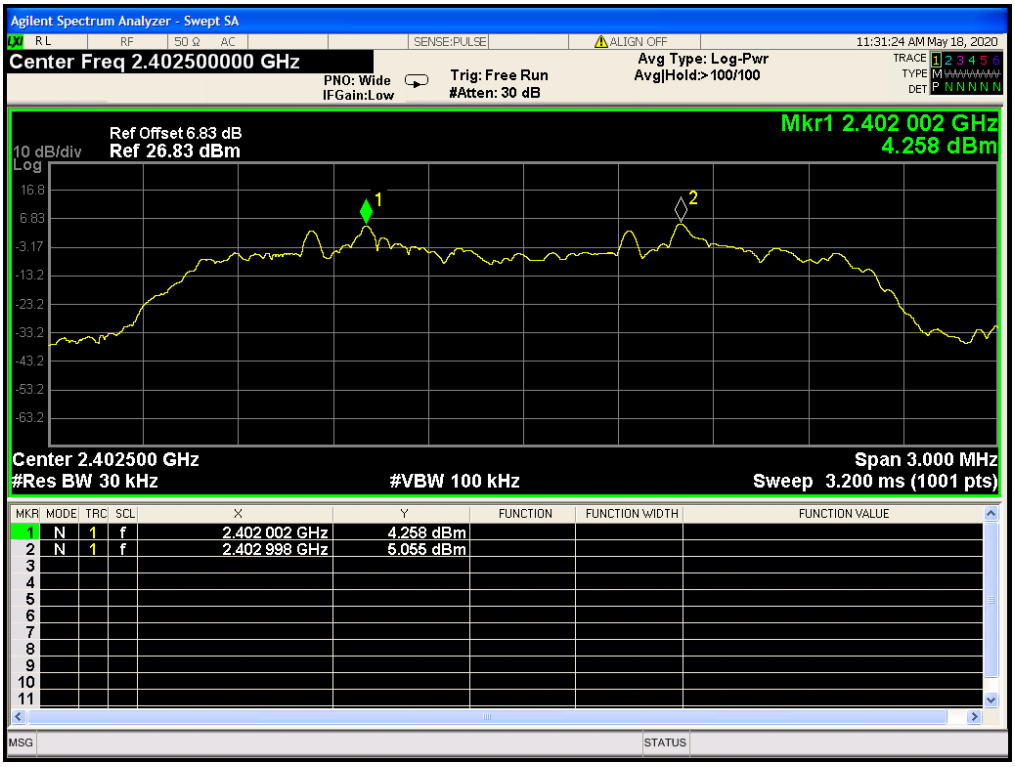
CFS NVNT 2-DH1 2441MHz



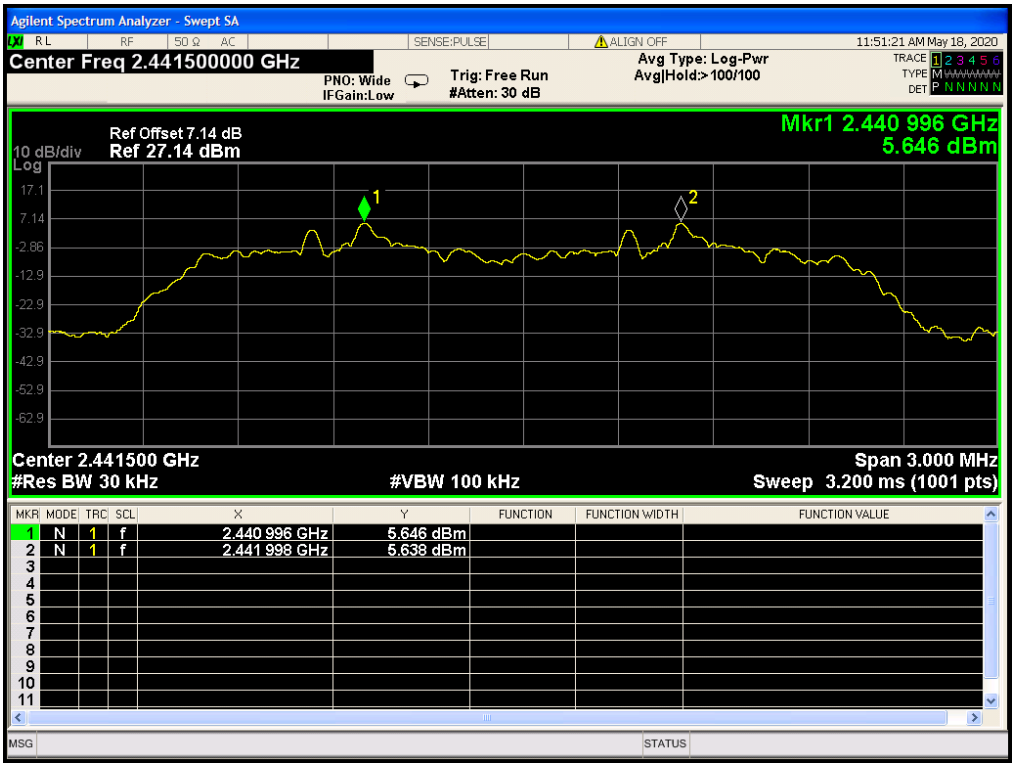
CFS NVNT 2-DH1 2480MHz



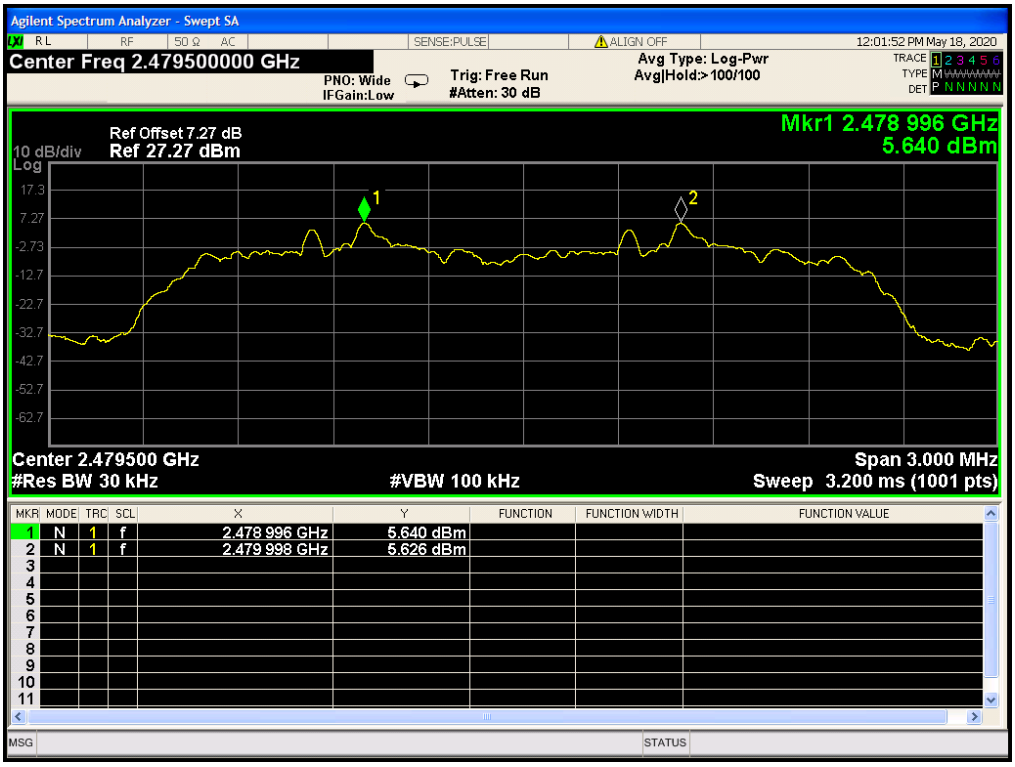
CFS NVNT 3-DH1 2402MHz



CFS NVNT 3-DH1 2441MHz



CFS NVNT 3-DH1 2480MHz

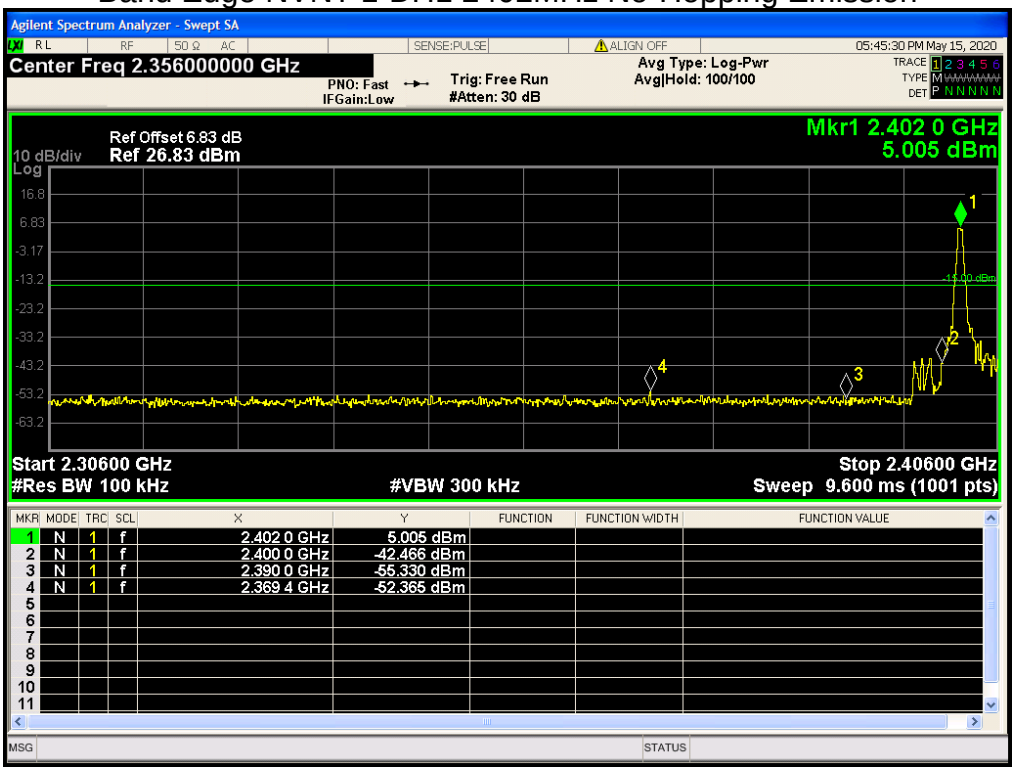


Band Edge

Mode	Frequency (MHz)	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
1-DH1	2402	No-Hopping	-57.36	-20	Pass
1-DH1	2480	No-Hopping	-48.99	-20	Pass
2-DH1	2402	No-Hopping	-57.46	-20	Pass
2-DH1	2480	No-Hopping	-51.95	-20	Pass
3-DH1	2402	No-Hopping	-57.48	-20	Pass
3-DH1	2480	No-Hopping	-49.27	-20	Pass

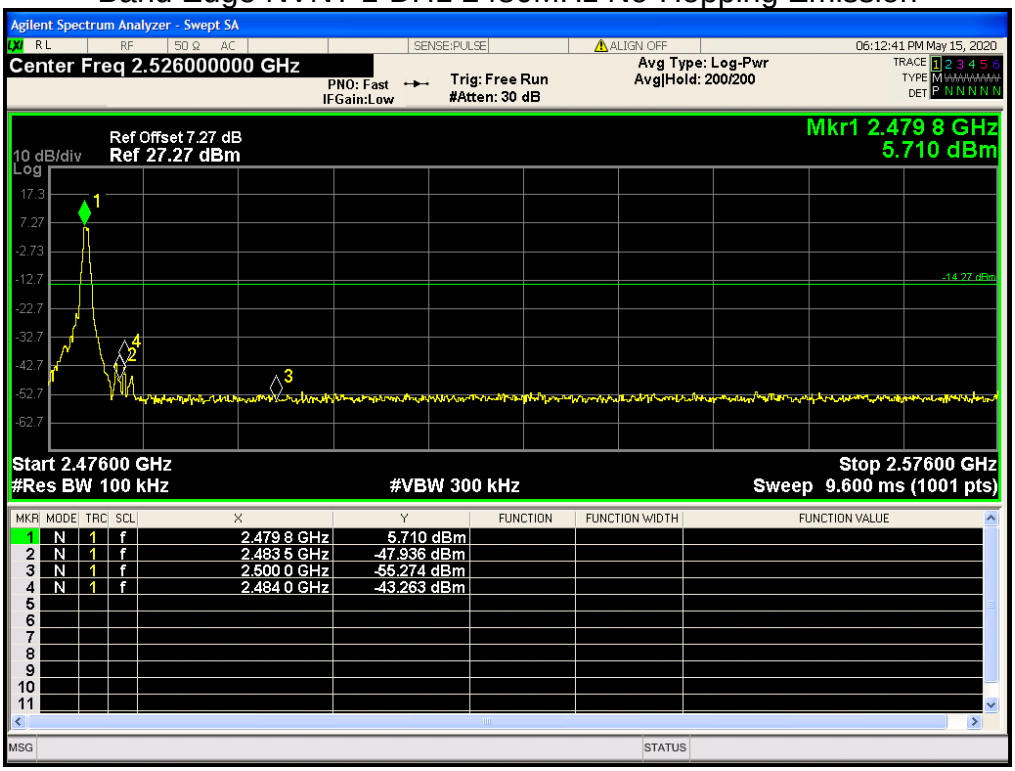
Band Edge NVNT 1-DH1 2402MHz No-Hopping Ref

Band Edge NVNT 1-DH1 2402MHz No-Hopping Emission

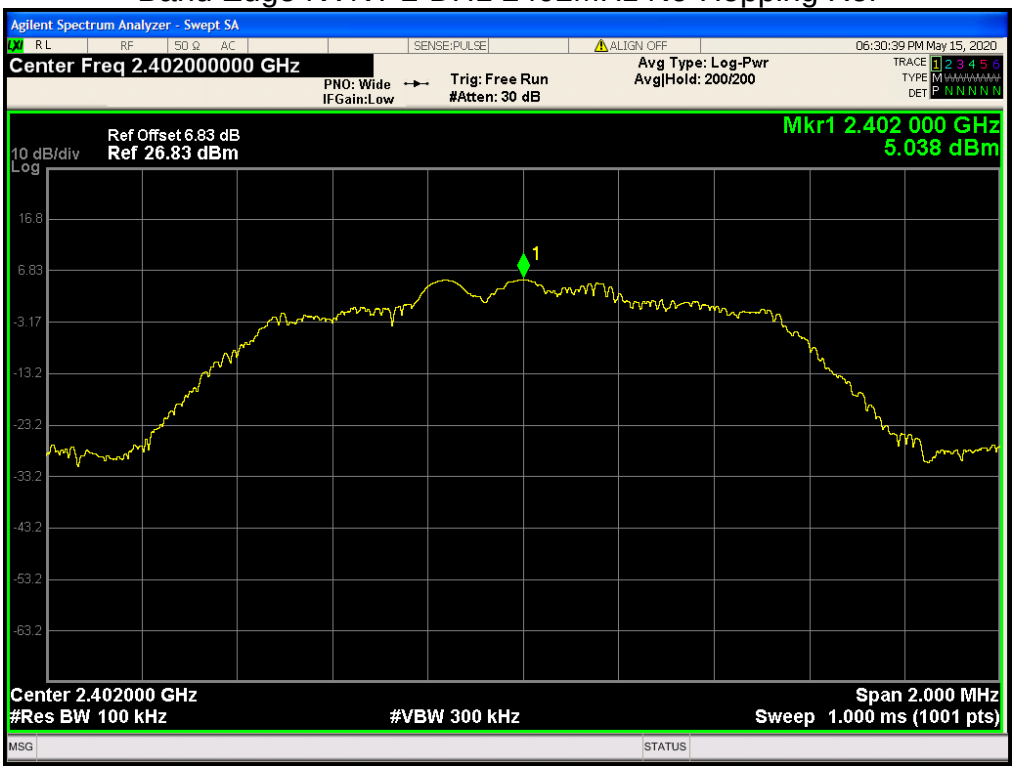


Band Edge NVNT 1-DH1 2480MHz No-Hopping Ref

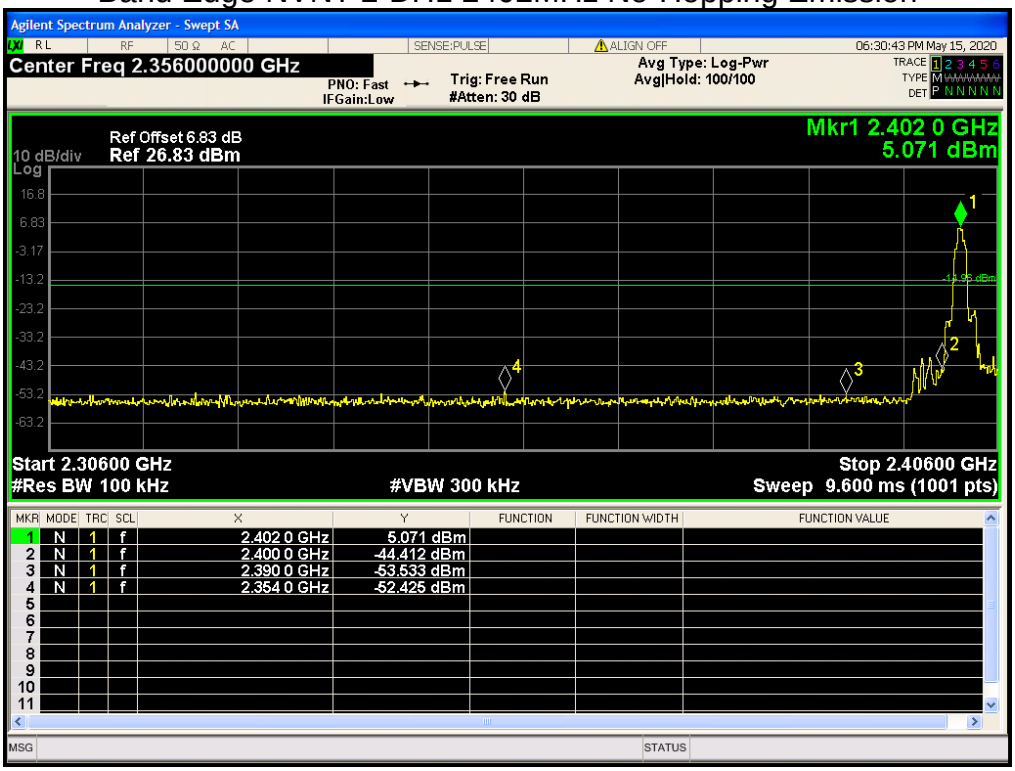
Band Edge NVNT 1-DH1 2480MHz No-Hopping Emission



Band Edge NVNT 2-DH1 2402MHz No-Hopping Ref



Band Edge NVNT 2-DH1 2402MHz No-Hopping Emission



Band Edge NVNT 2-DH1 2480MHz No-Hopping Ref