RF Test Data for 2.4G WiFi (Conducted Measurements)

General Description of EUT	
Product Name:	smart bird feeder
Test Model:	CM-P2U
Sample ID:	HC-C-202409-0282-02-01-2#
Environmental Conditions	
Temperature:	23.8℃
Relative Humidity:	48%
Test Voltage:	DC 3.65V
Test Engineer:	Rick. chen
Note: For a more detailed features description, please refer to the report TBR-C-202409-0282-2 The report only show the worst case data.	

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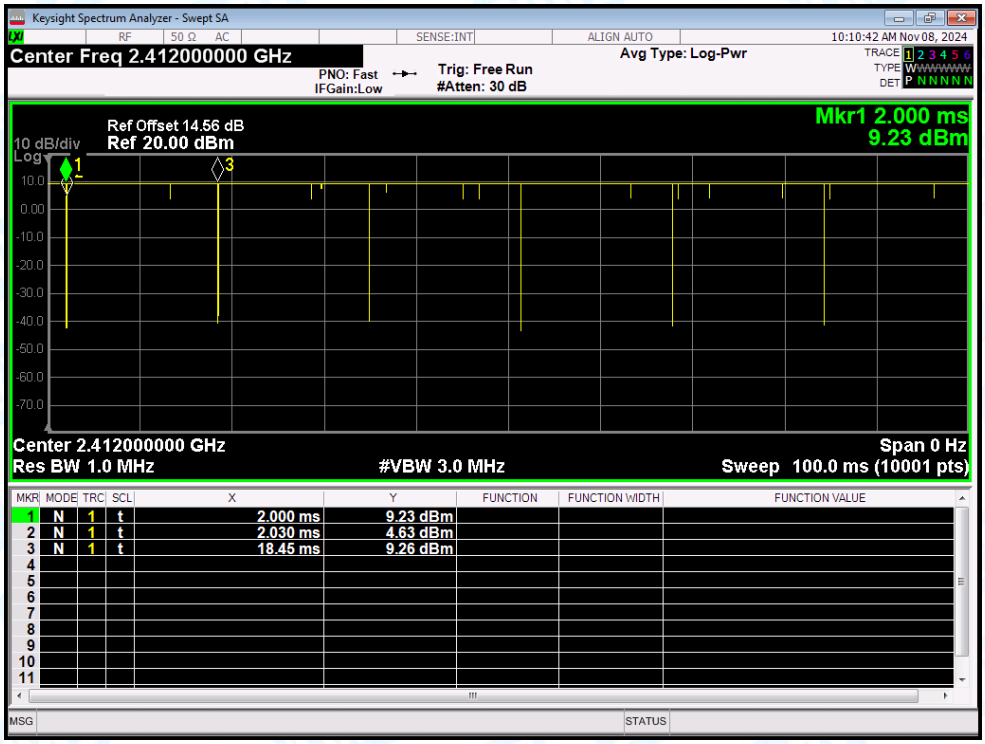
1. Duty Cycle

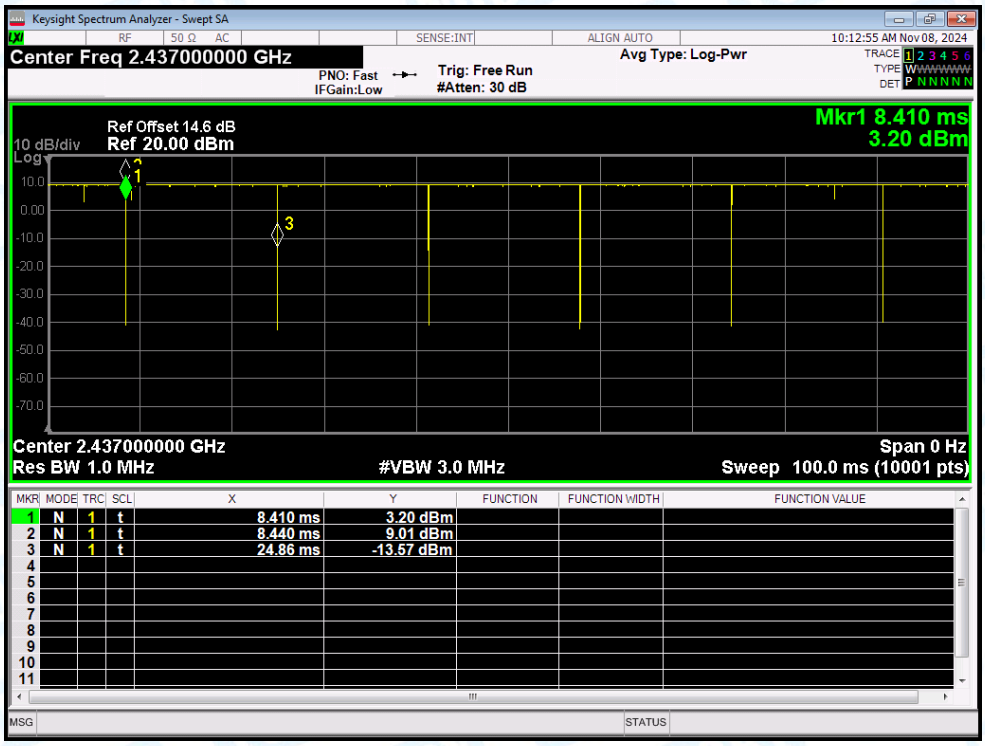
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	b	2412	Ant1	99.82	0.01	0.06
NVNT	b	2437	Ant1	99.82	0.01	0.06
NVNT	b	2462	Ant1	99.82	0.01	0.06
NVNT	g	2412	Ant1	98.91	0.05	0.37
NVNT	g	2437	Ant1	98.91	0.05	0.37
NVNT	g	2462	Ant1	98.91	0.05	0.37
NVNT	n(HT20)	2412	Ant1	98.45	0.07	0.39
NVNT	n(HT20)	2437	Ant1	98.45	0.07	0.39
NVNT	n(HT20)	2462	Ant1	98.83	0.05	0.39

Test Graphs

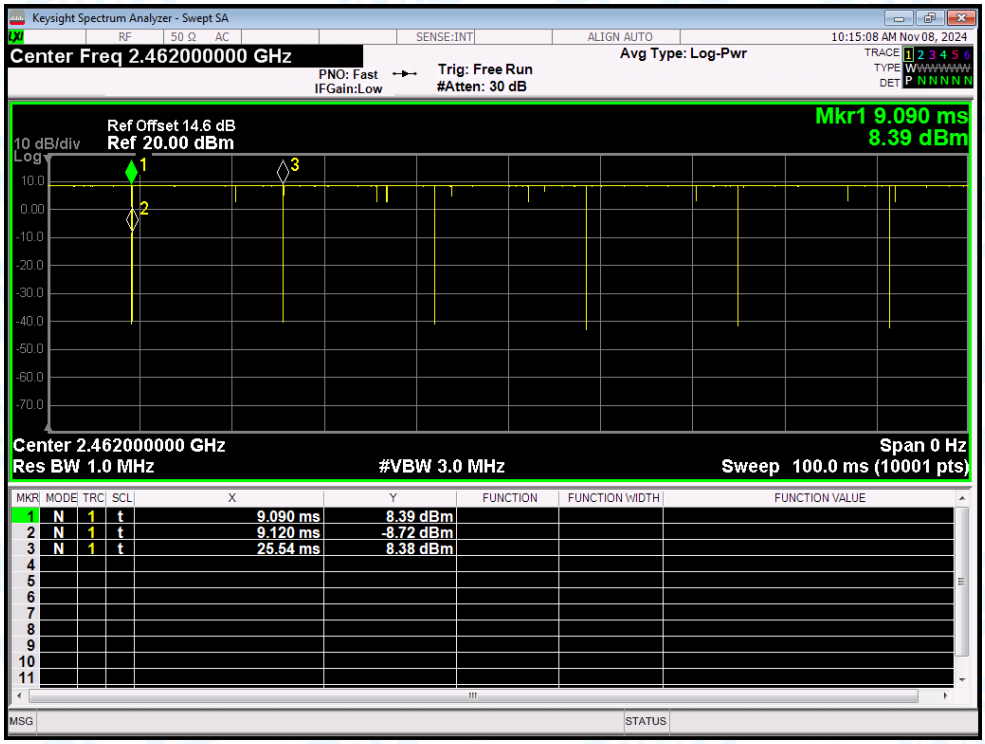
Duty Cycle NVNT b 2412MHz Ant1



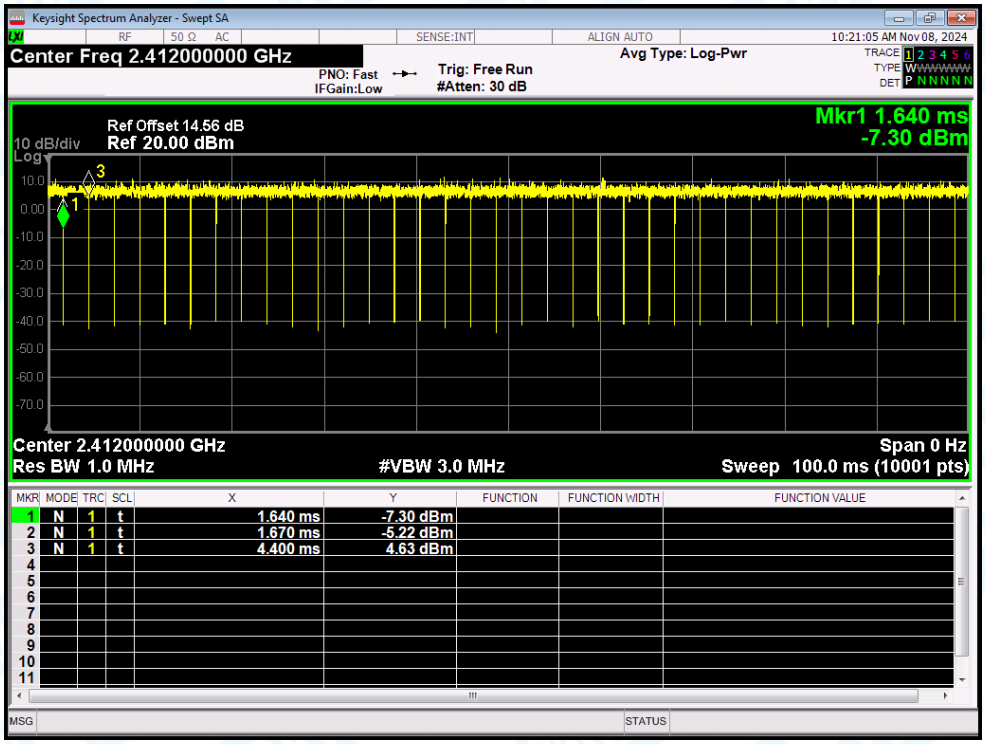
Duty Cycle NVNT b 2437MHz Ant1



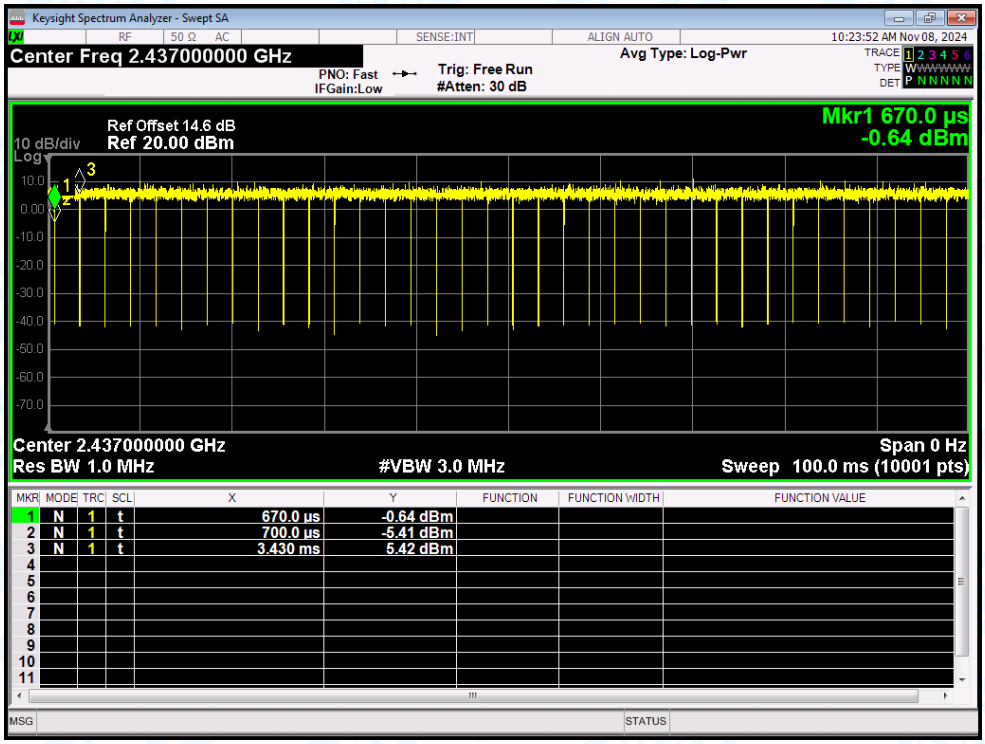
Duty Cycle NVNT b 2462MHz Ant1



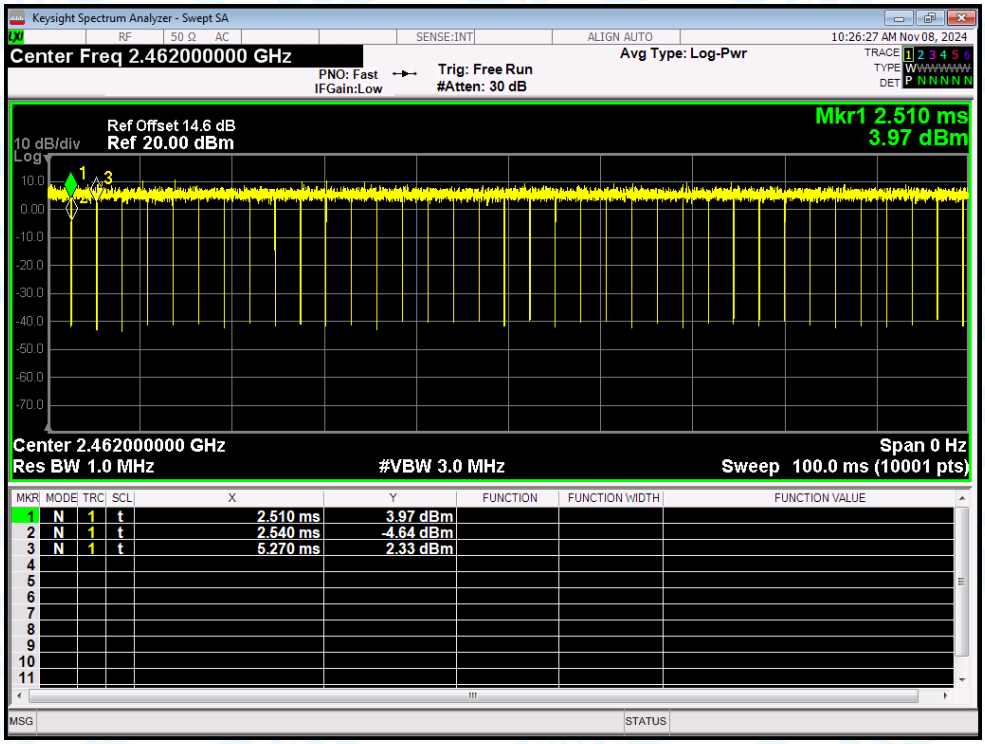
Duty Cycle NVNT g 2412MHz Ant1



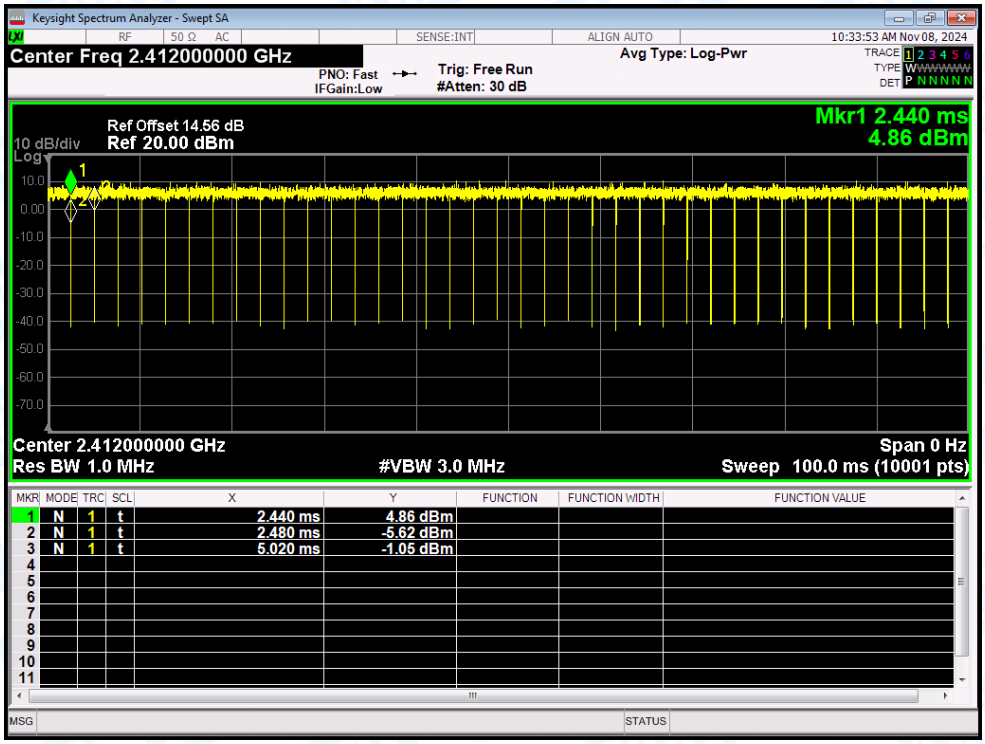
Duty Cycle NVNT g 2437MHz Ant1



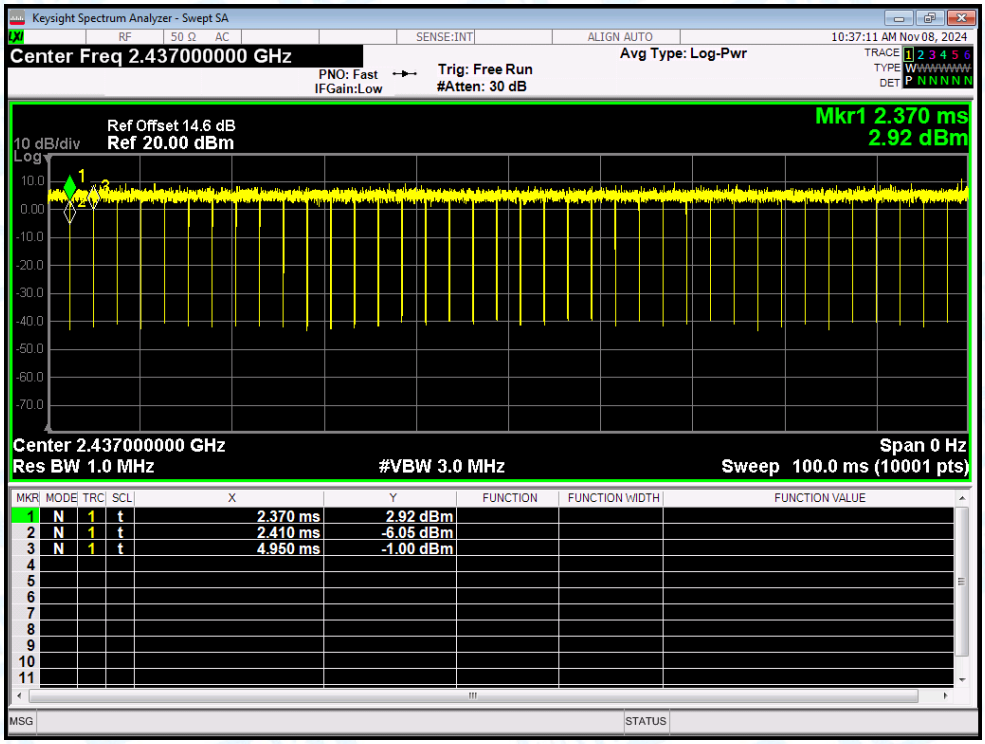
Duty Cycle NVNT g 2462MHz Ant1



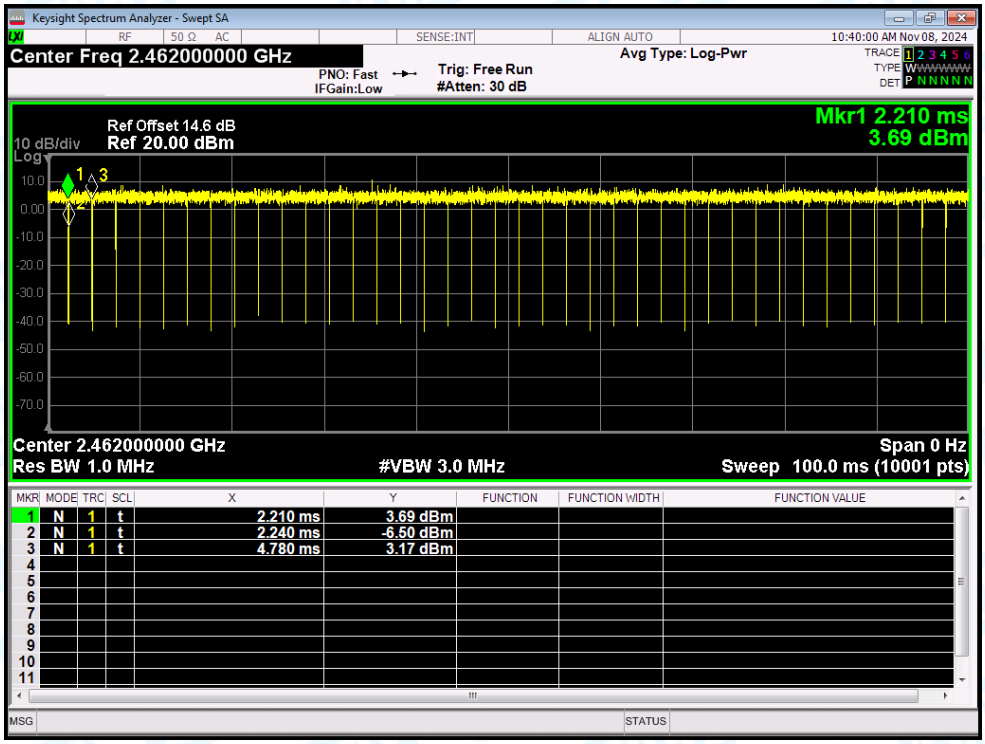
Duty Cycle NVNT n(HT20) 2412MHz Ant1



Duty Cycle NVNT n(HT20) 2437MHz Ant1



Duty Cycle NVNT n(HT20) 2462MHz Ant1



2. Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	Ant1	15.23	30	Pass
NVNT	b	2437	Ant1	14.74	30	Pass
NVNT	b	2462	Ant1	14.19	30	Pass
NVNT	g	2412	Ant1	13.77	30	Pass
NVNT	g	2437	Ant1	12.76	30	Pass
NVNT	g	2462	Ant1	12.42	30	Pass
NVNT	n(HT20)	2412	Ant1	13.36	30	Pass
NVNT	n(HT20)	2437	Ant1	12.91	30	Pass
NVNT	n(HT20)	2462	Ant1	12.35	30	Pass

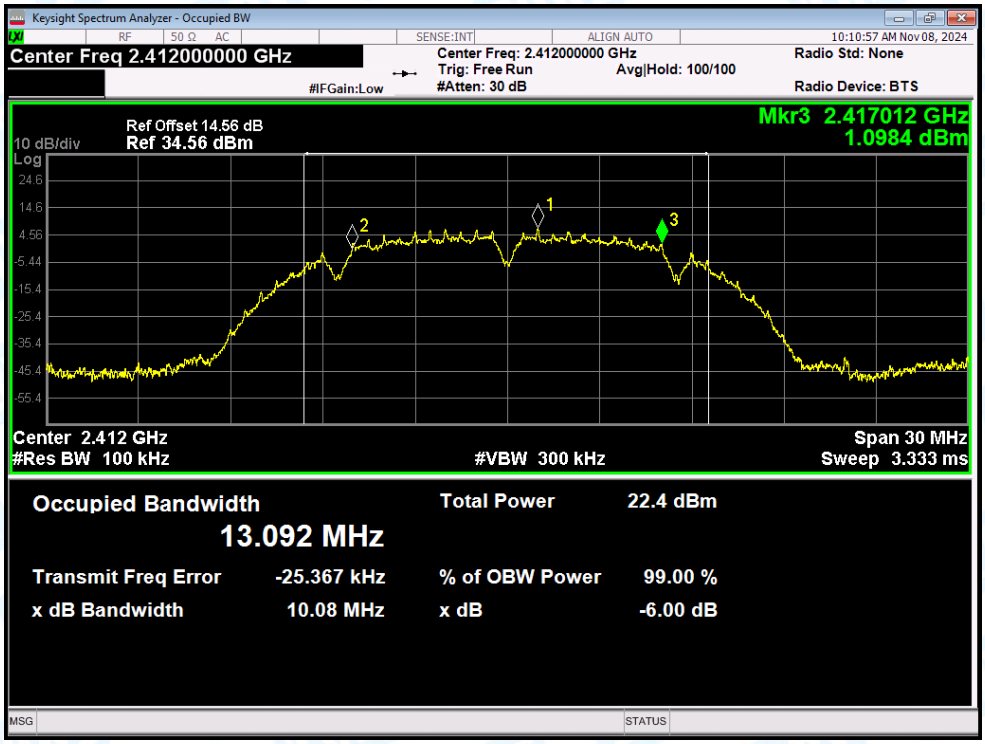
Note：The Duty Cycle Factor is compensated in the graph.

3. -6dB Bandwidth

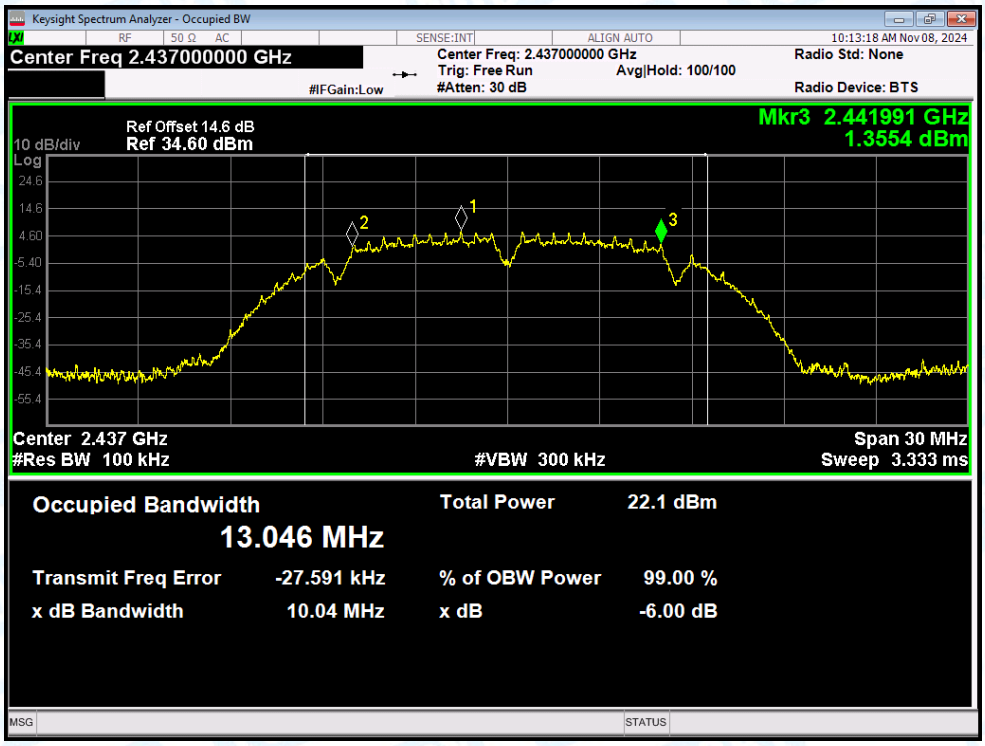
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	b	2412	Ant1	10.08	0.5	Pass
NVNT	b	2437	Ant1	10.04	0.5	Pass
NVNT	b	2462	Ant1	9.99	0.5	Pass
NVNT	g	2412	Ant1	16.38	0.5	Pass
NVNT	g	2437	Ant1	16.38	0.5	Pass
NVNT	g	2462	Ant1	16.37	0.5	Pass
NVNT	n(HT20)	2412	Ant1	17.59	0.5	Pass
NVNT	n(HT20)	2437	Ant1	17.6	0.5	Pass
NVNT	n(HT20)	2462	Ant1	17.6	0.5	Pass

Test Graphs

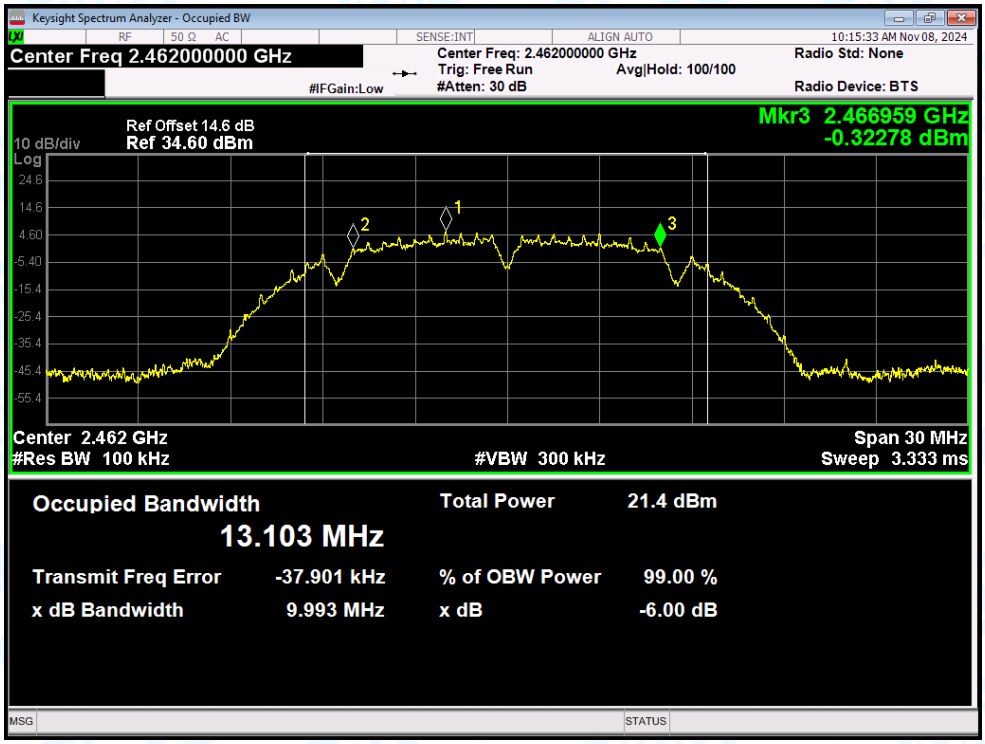
-6dB Bandwidth NVNT b 2412MHz Ant1



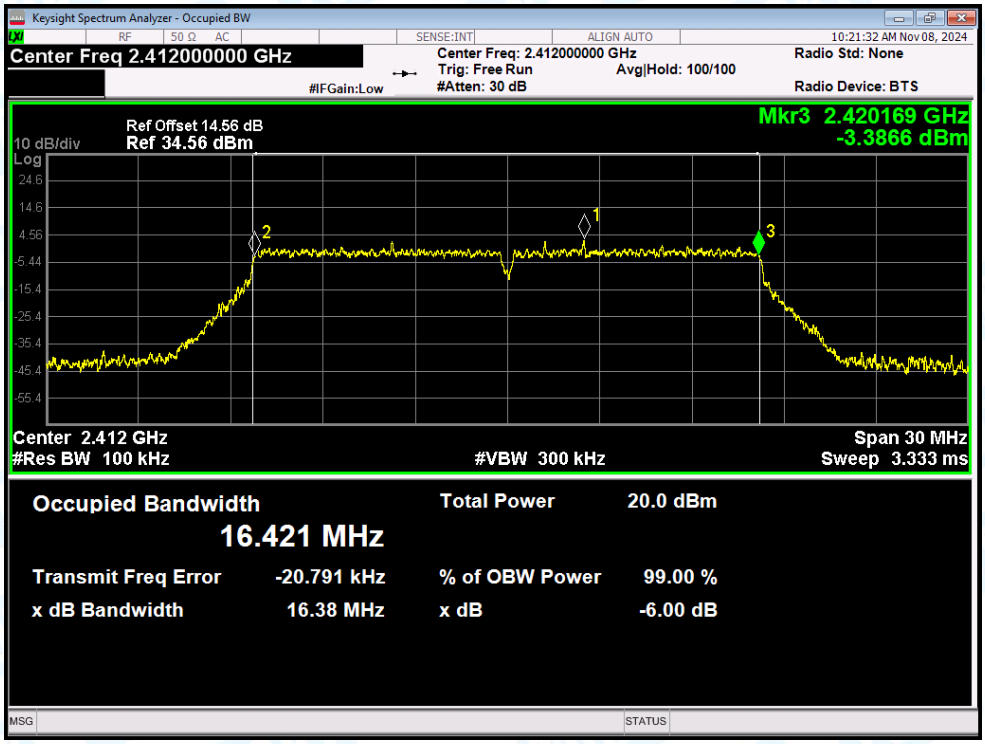
-6dB Bandwidth NVNT b 2437MHz Ant1



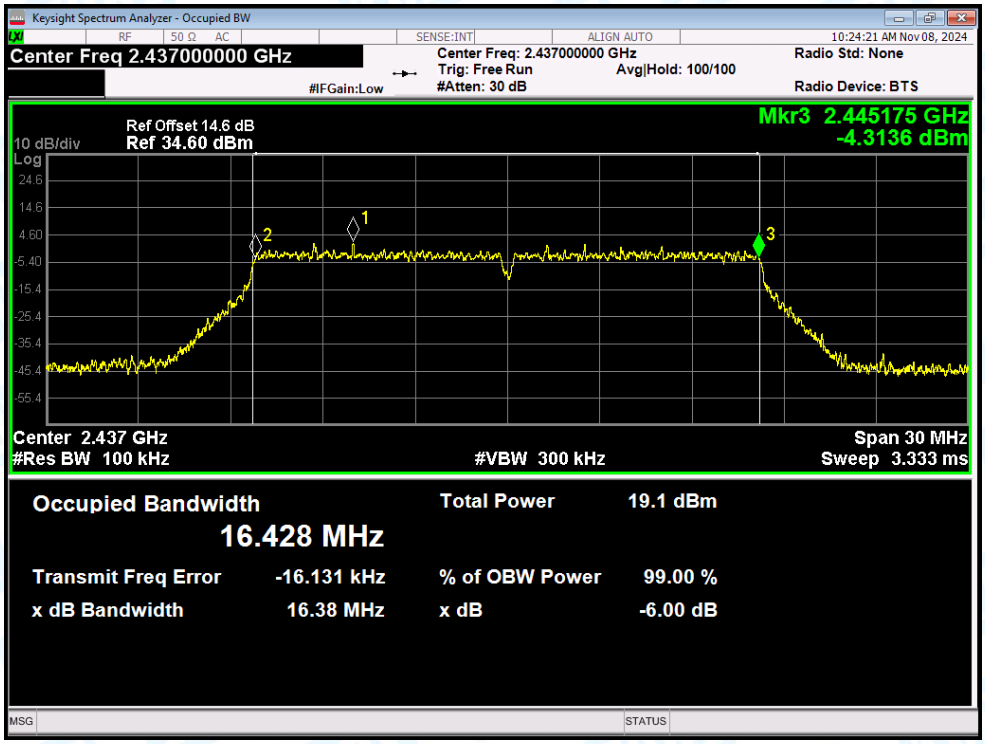
-6dB Bandwidth NVNT b 2462MHz Ant1



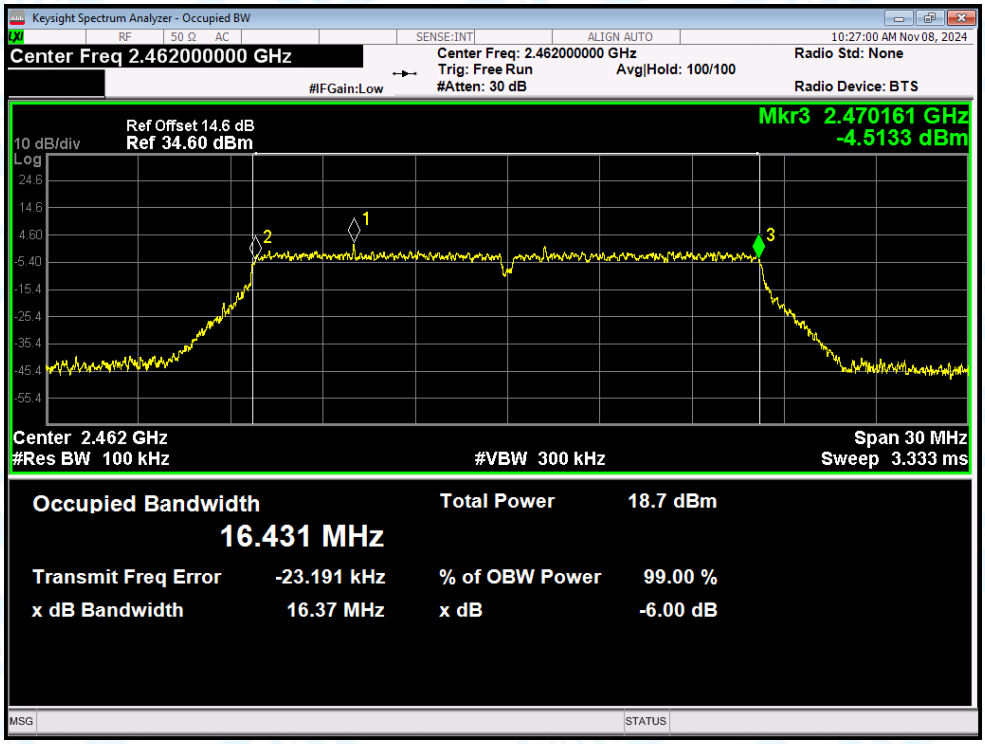
-6dB Bandwidth NVNT g 2412MHz Ant1



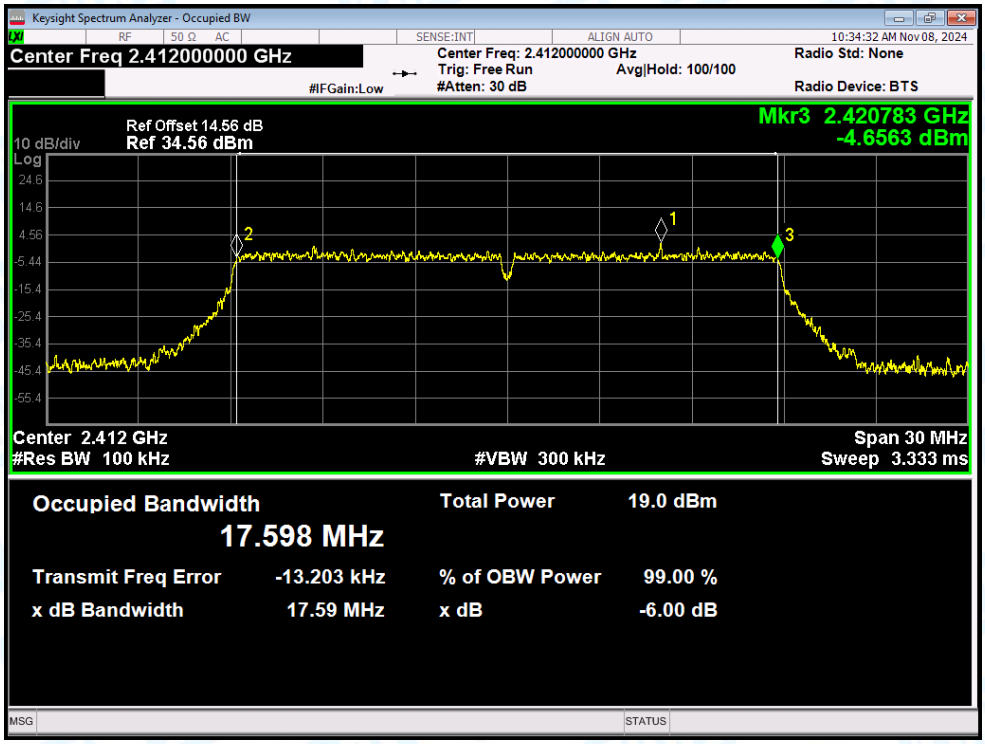
-6dB Bandwidth NVNT g 2437MHz Ant1



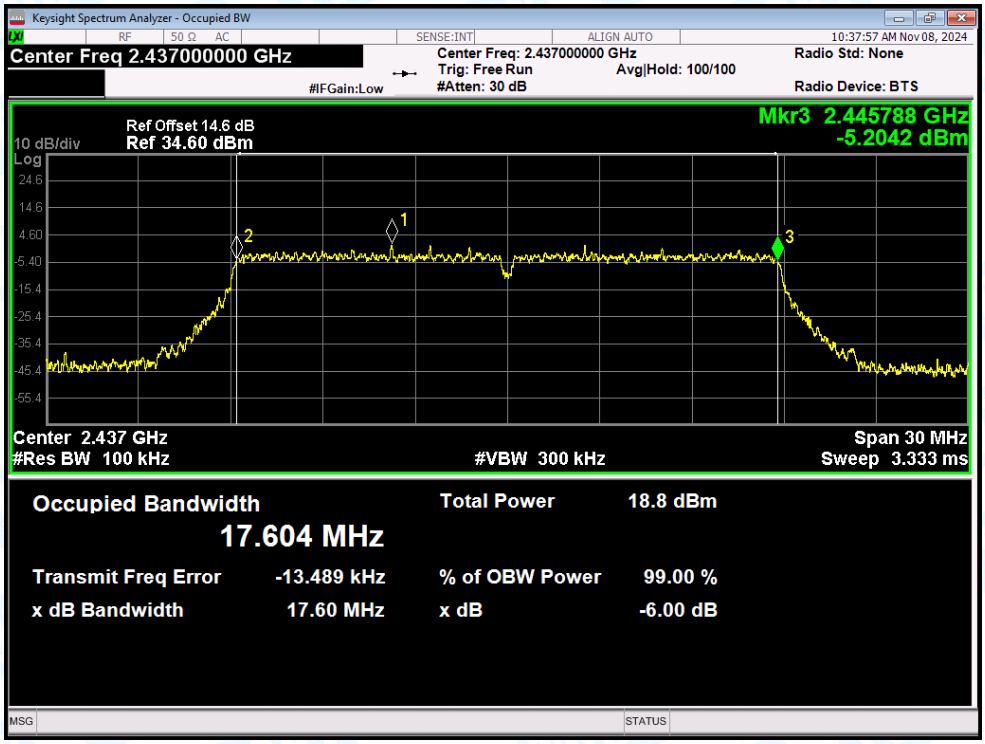
-6dB Bandwidth NVNT g 2462MHz Ant1



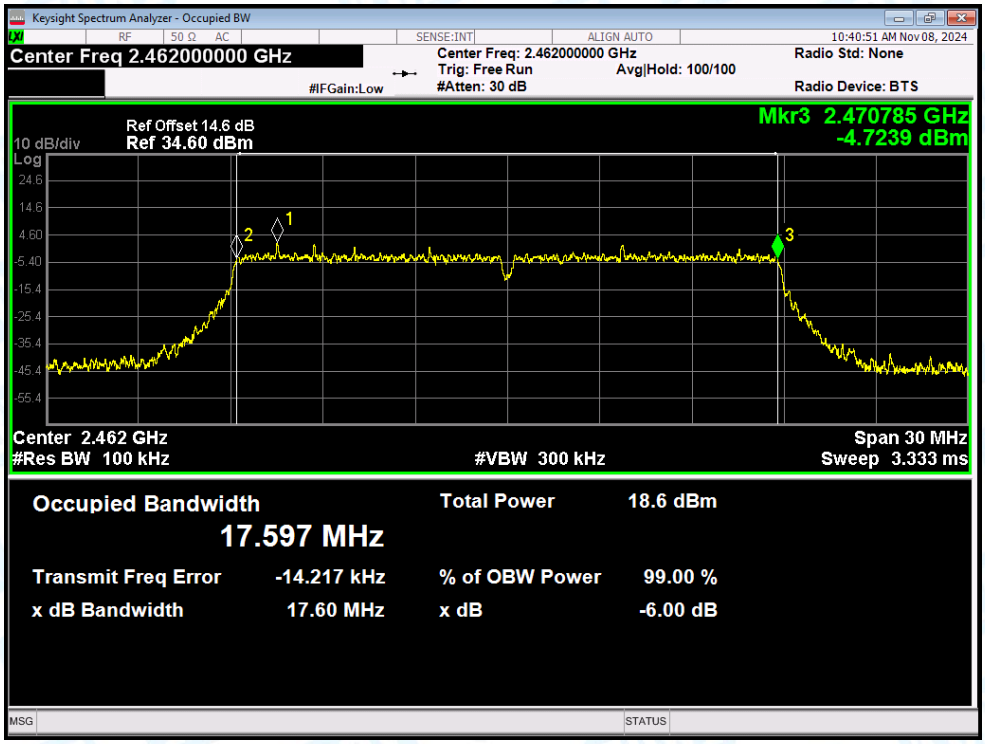
-6dB Bandwidth NVNT n(HT20) 2412MHz Ant1



-6dB Bandwidth NVNT n(HT20) 2437MHz Ant1



-6dB Bandwidth NVNT n(HT20) 2462MHz Ant1

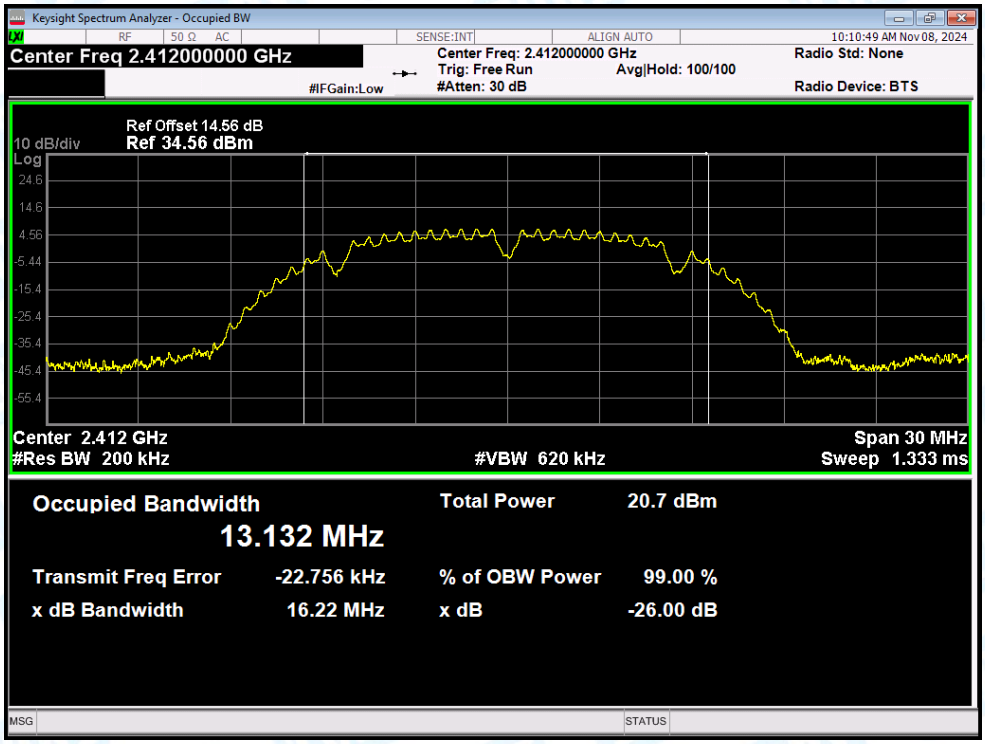


4. Occupied Channel Bandwidth

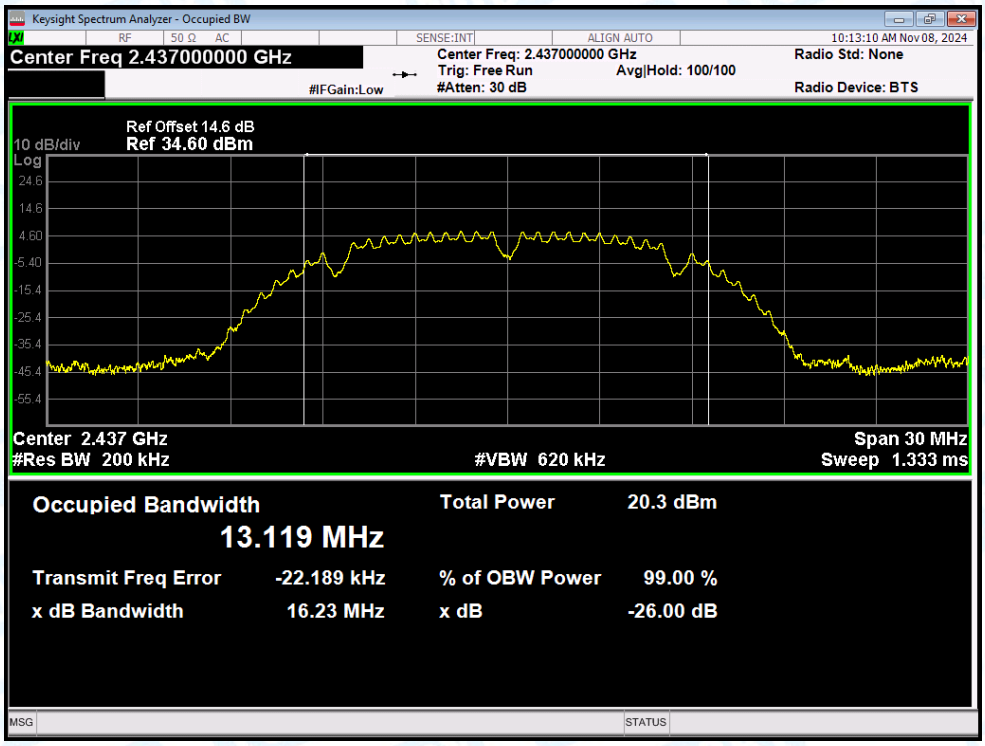
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	b	2412	Ant1	13.132
NVNT	b	2437	Ant1	13.119
NVNT	b	2462	Ant1	13.111
NVNT	g	2412	Ant1	16.478
NVNT	g	2437	Ant1	16.507
NVNT	g	2462	Ant1	16.503
NVNT	n(HT20)	2412	Ant1	17.623
NVNT	n(HT20)	2437	Ant1	17.619
NVNT	n(HT20)	2462	Ant1	17.614

Test Graphs

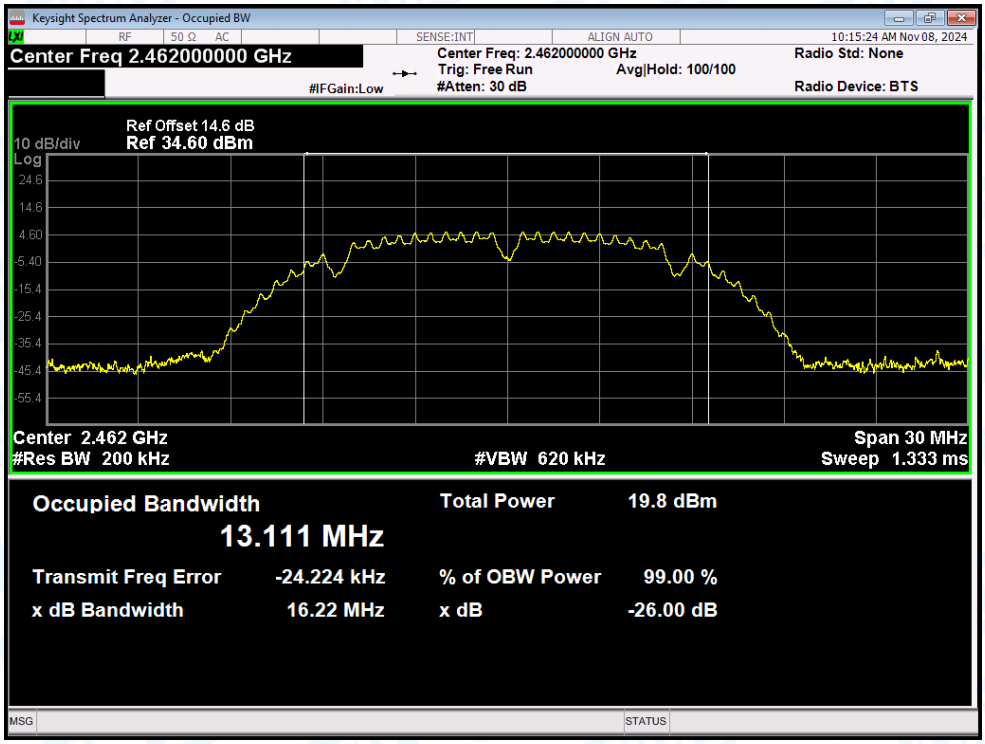
OBW NVNT b 2412MHz Ant1



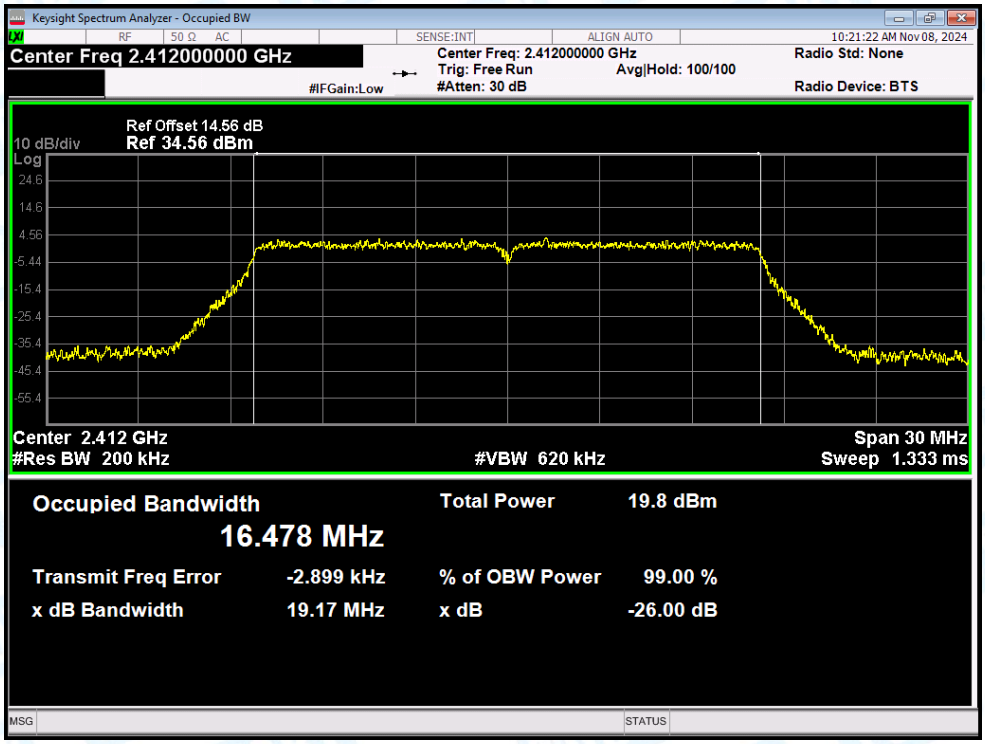
OBW NVNT b 2437MHz Ant1



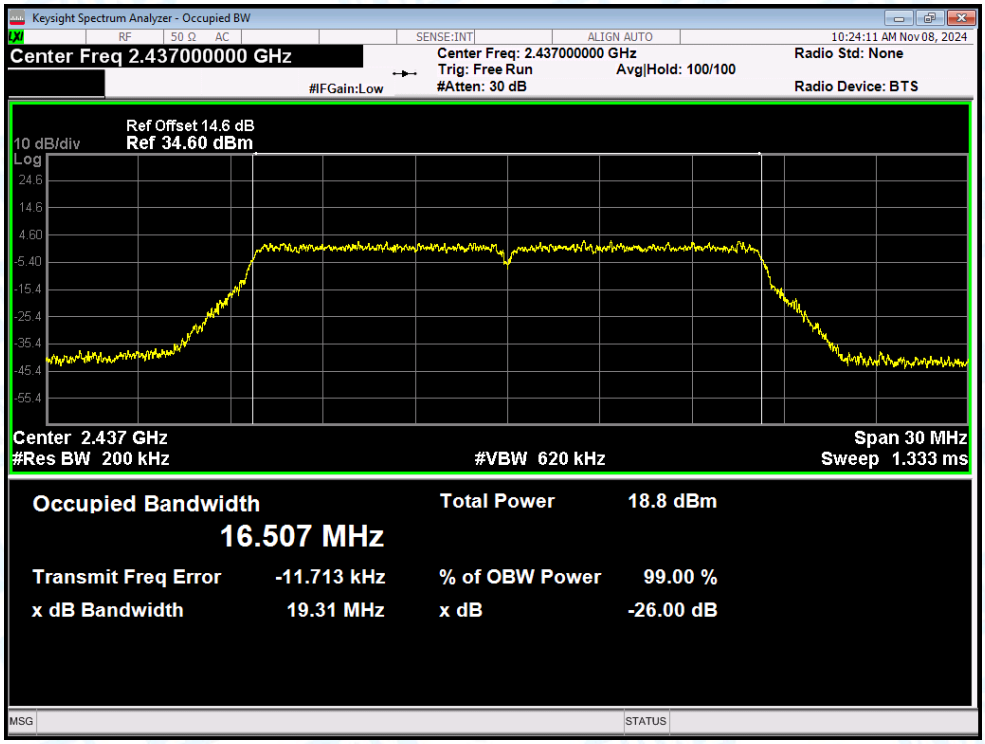
OBW NVNT b 2462MHz Ant1



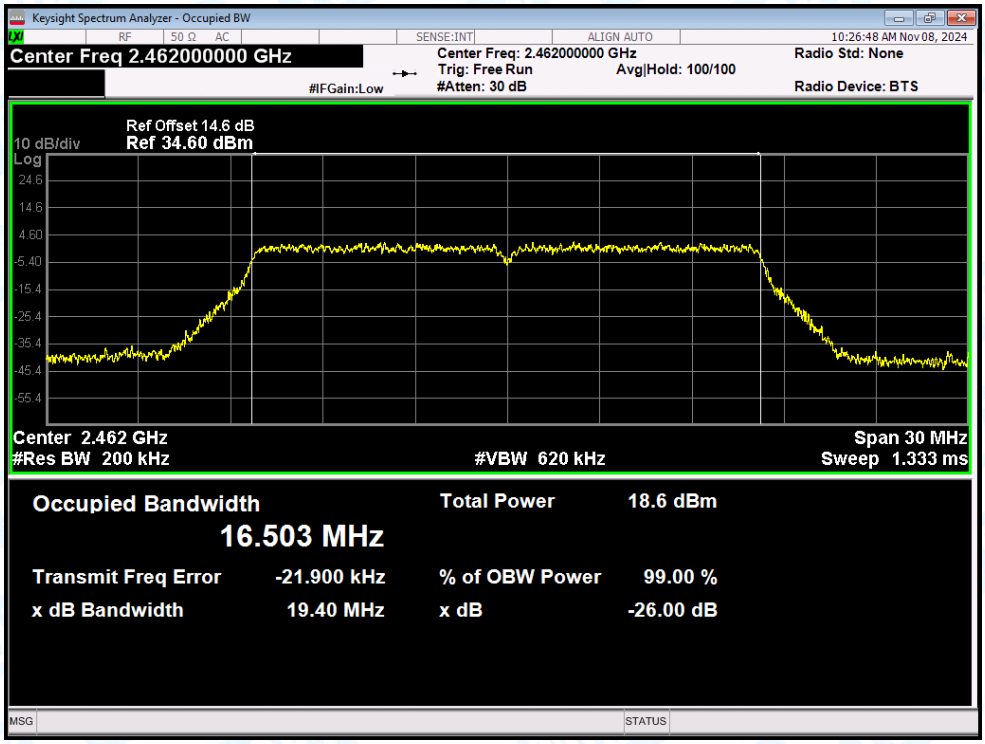
OBW NVNT g 2412MHz Ant1



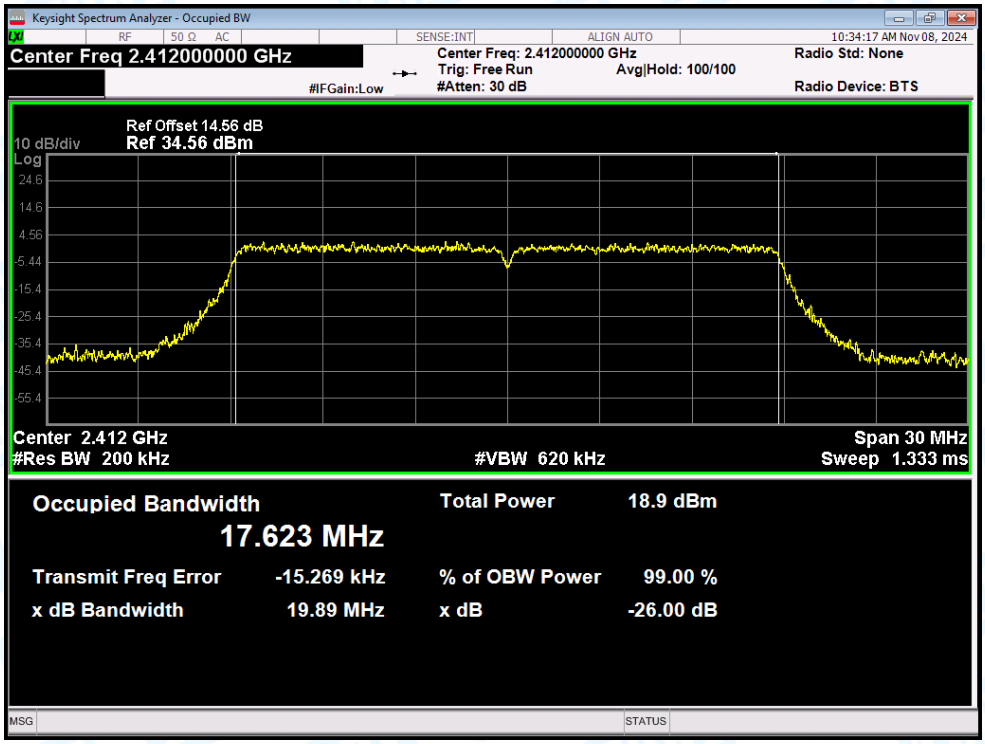
OBW NVNT g 2437MHz Ant1



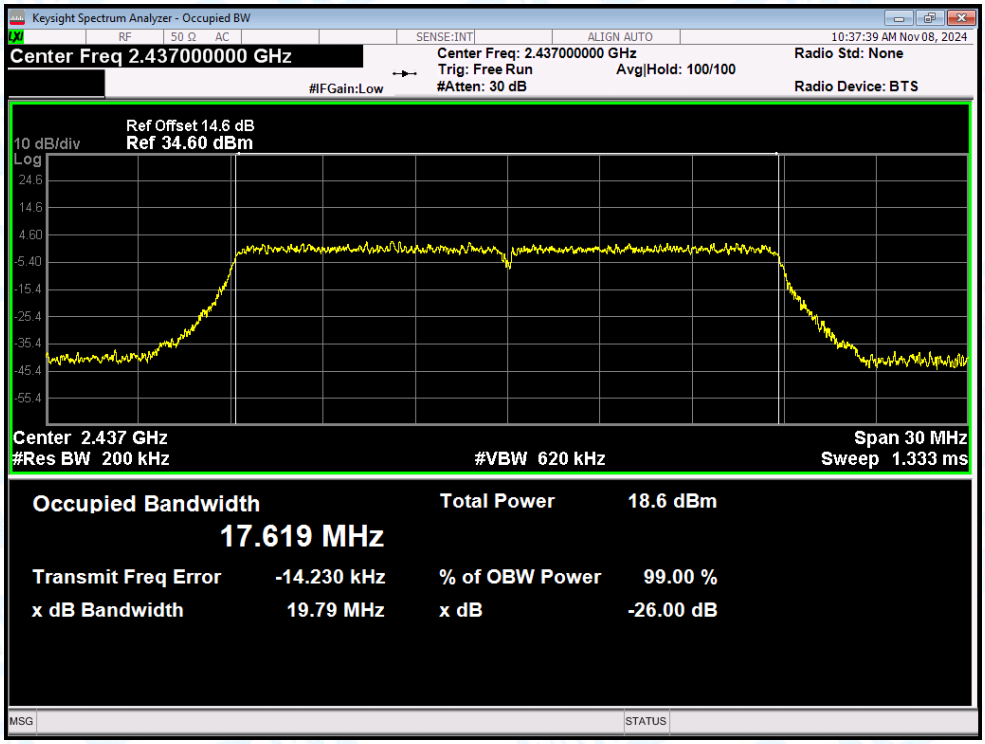
OBW NVNT g 2462MHz Ant1



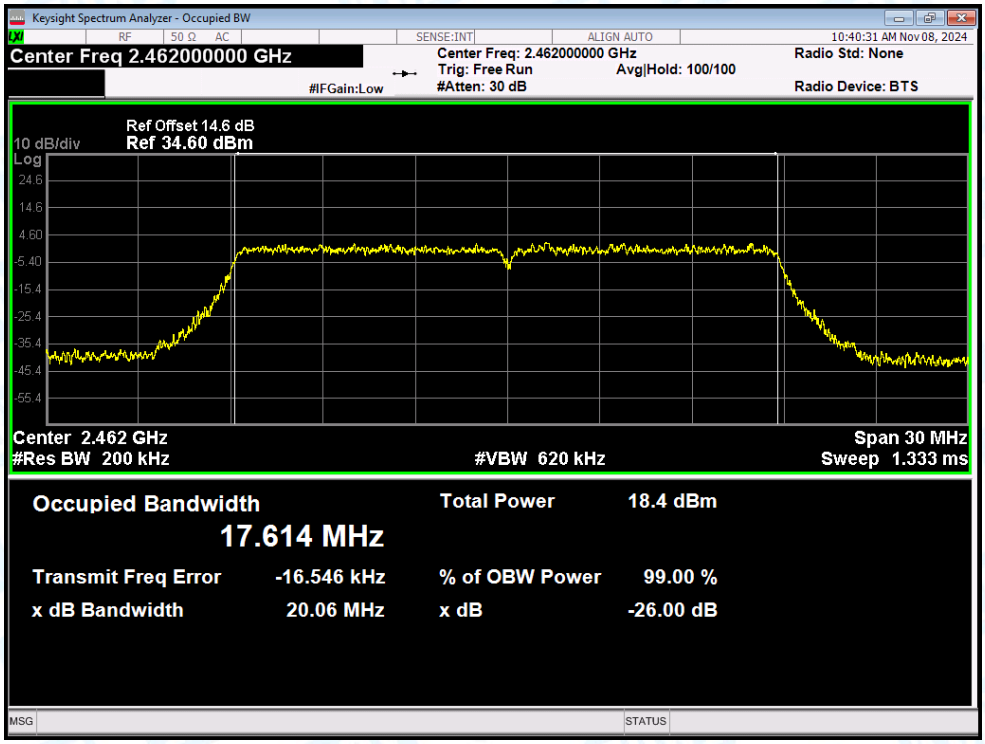
OBW NVNT n(HT20) 2412MHz Ant1



OBW NVNT n(HT20) 2437MHz Ant1



OBW NVNT n(HT20) 2462MHz Ant1



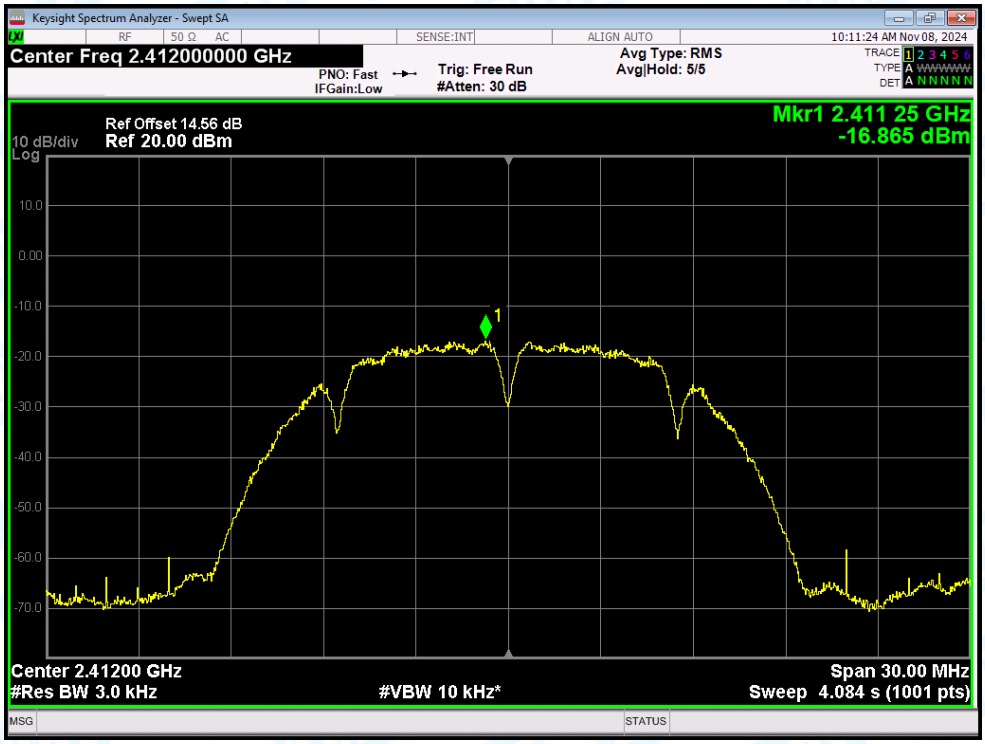
5. Maximum Power Spectral Density Level

Condition	Mode	Frequency (MHz)	Antenna	Max PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	b	2412	Ant1	-16.865	8	Pass
NVNT	b	2437	Ant1	-17.181	8	Pass
NVNT	b	2462	Ant1	-17.859	8	Pass
NVNT	g	2412	Ant1	-20.243	8	Pass
NVNT	g	2437	Ant1	-21.521	8	Pass
NVNT	g	2462	Ant1	-21.153	8	Pass
NVNT	n(HT20)	2412	Ant1	-21.479	8	Pass
NVNT	n(HT20)	2437	Ant1	-22.051	8	Pass
NVNT	n(HT20)	2462	Ant1	-21.968	8	Pass

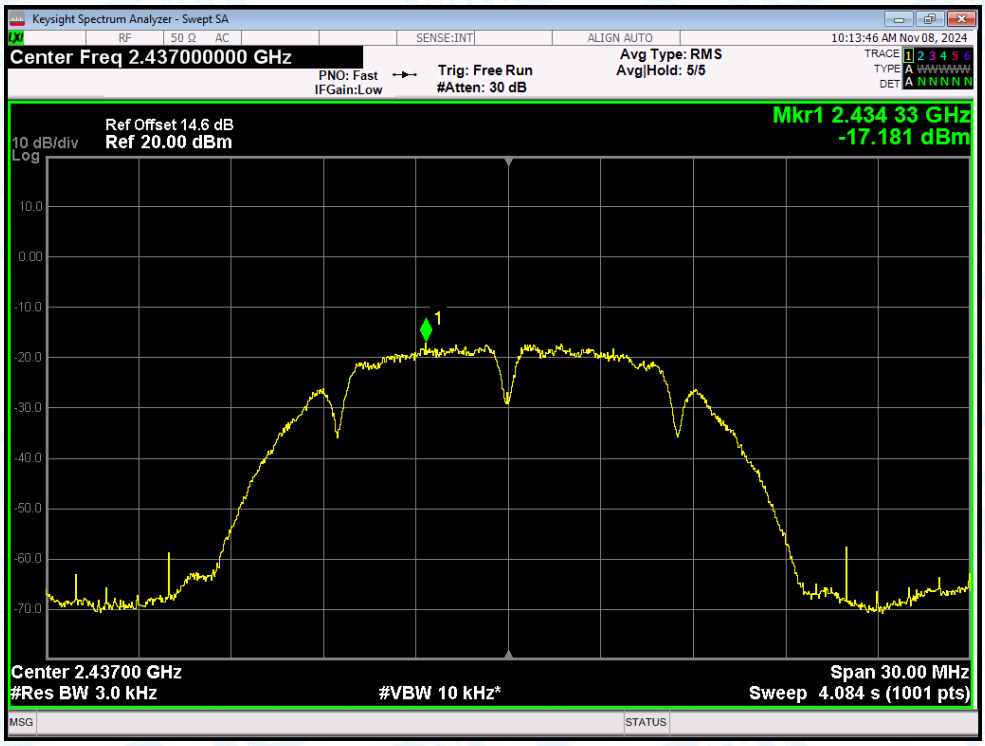
Note：The Duty Cycle Factor is compensated in the graph.

Test Graphs

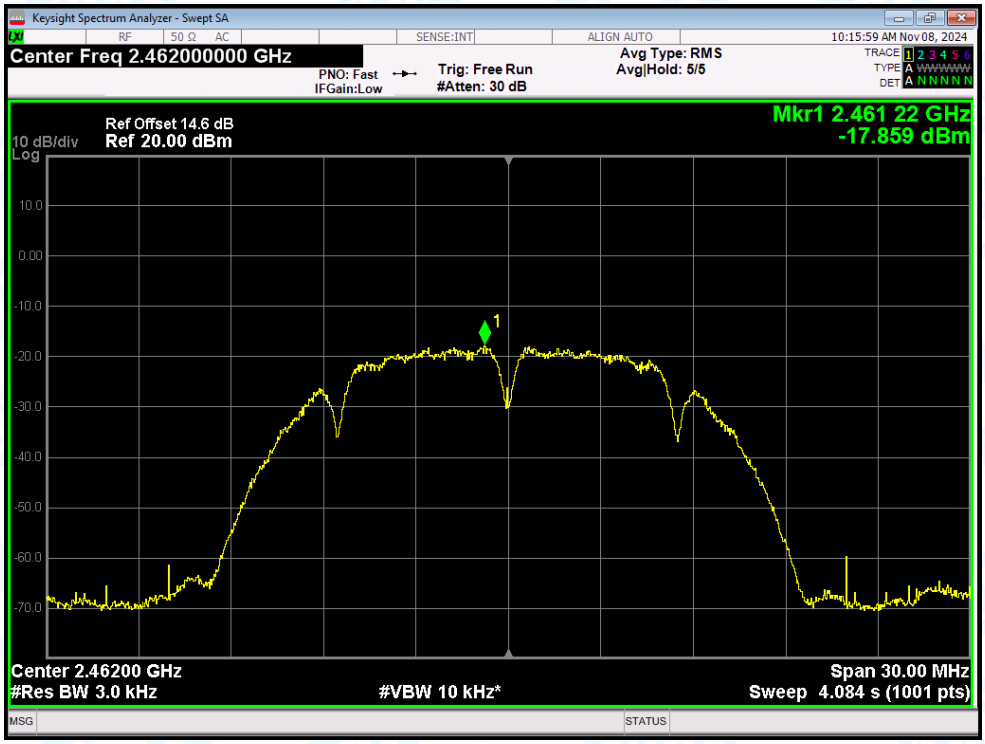
PSD NVNT b 2412MHz Ant1



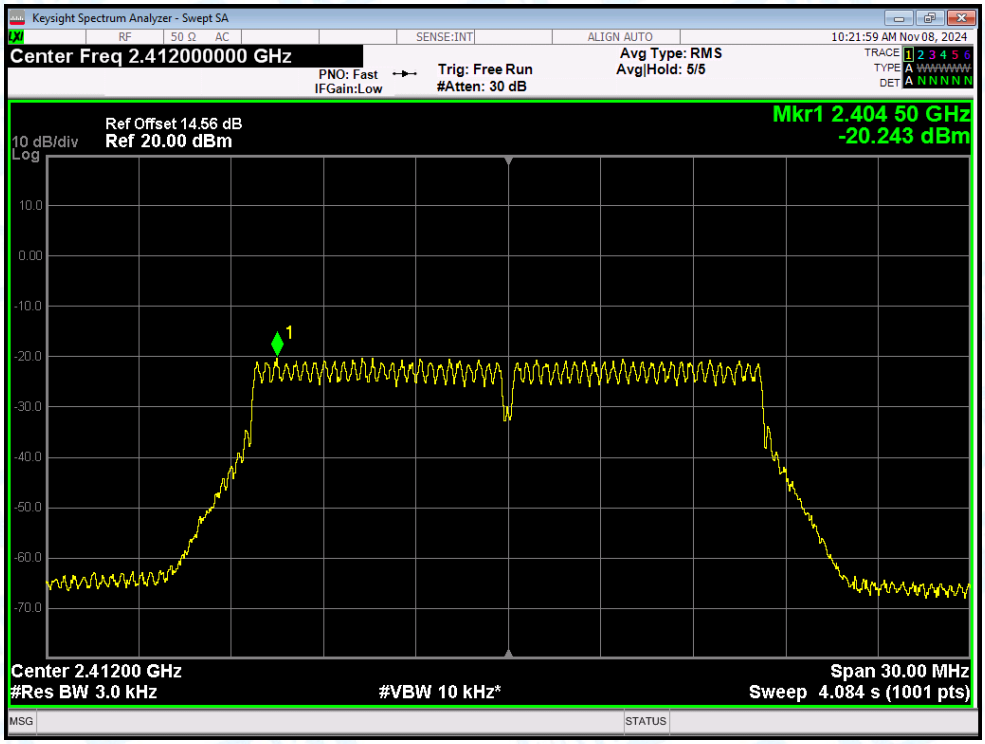
PSD NVNT b 2437MHz Ant1



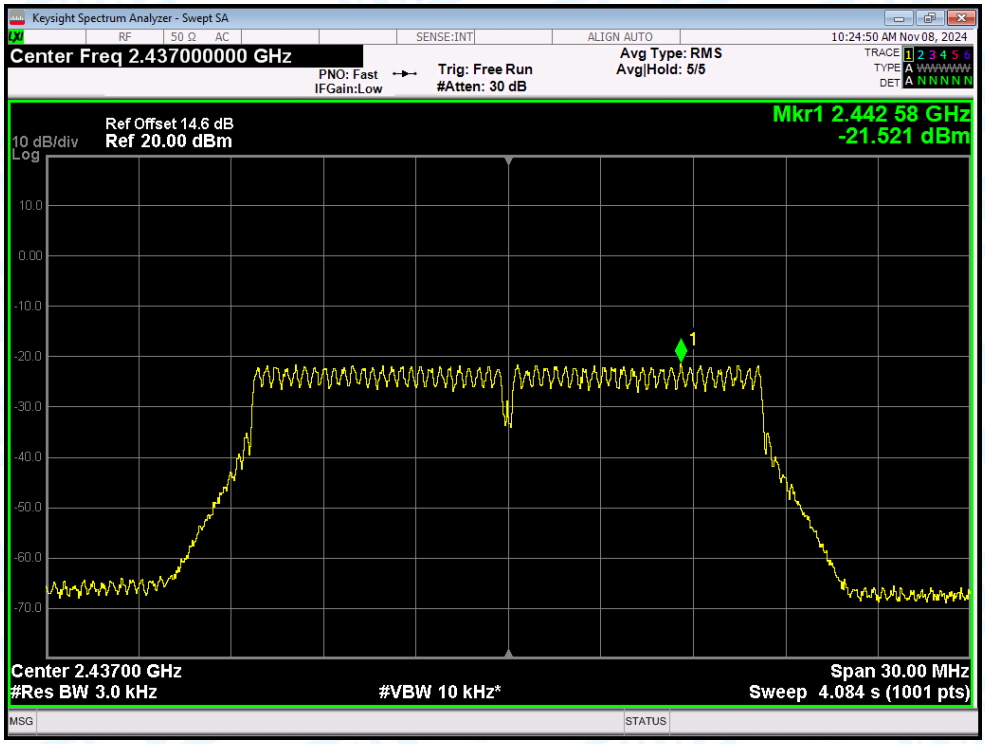
PSD NVNT b 2462MHz Ant1



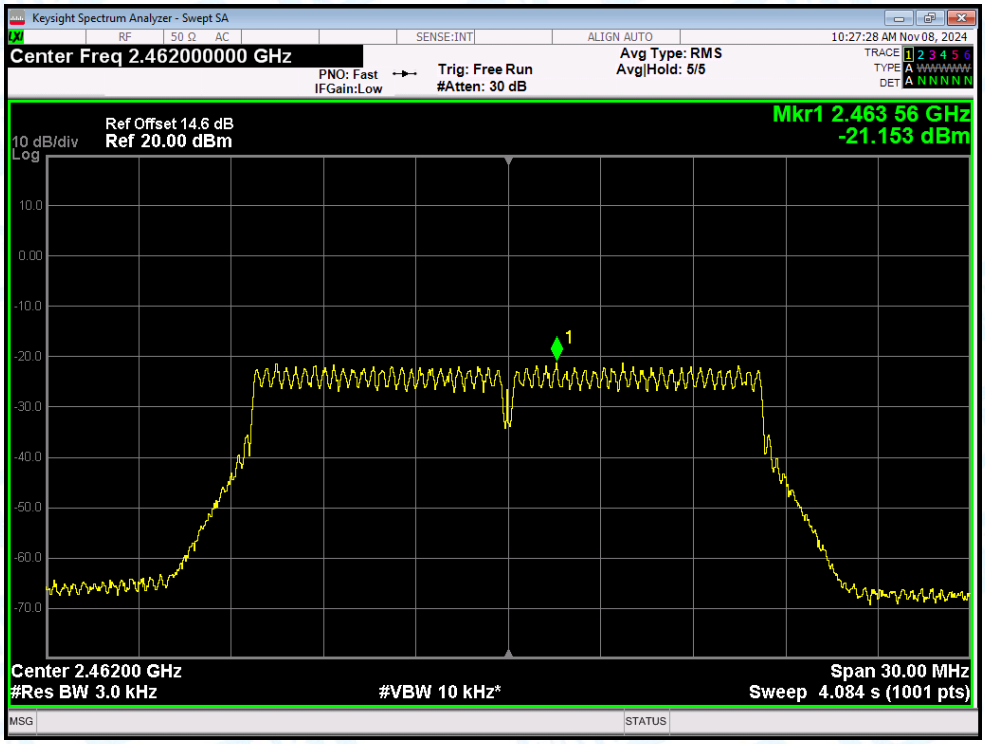
PSD NVNT g 2412MHz Ant1



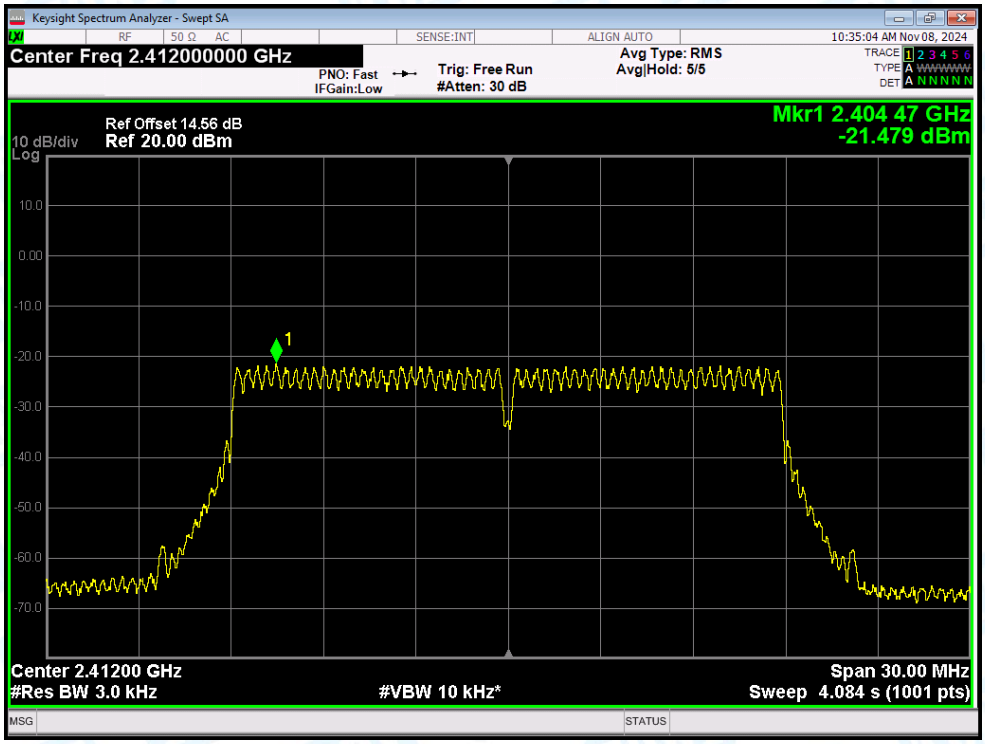
PSD NVNT g 2437MHz Ant1



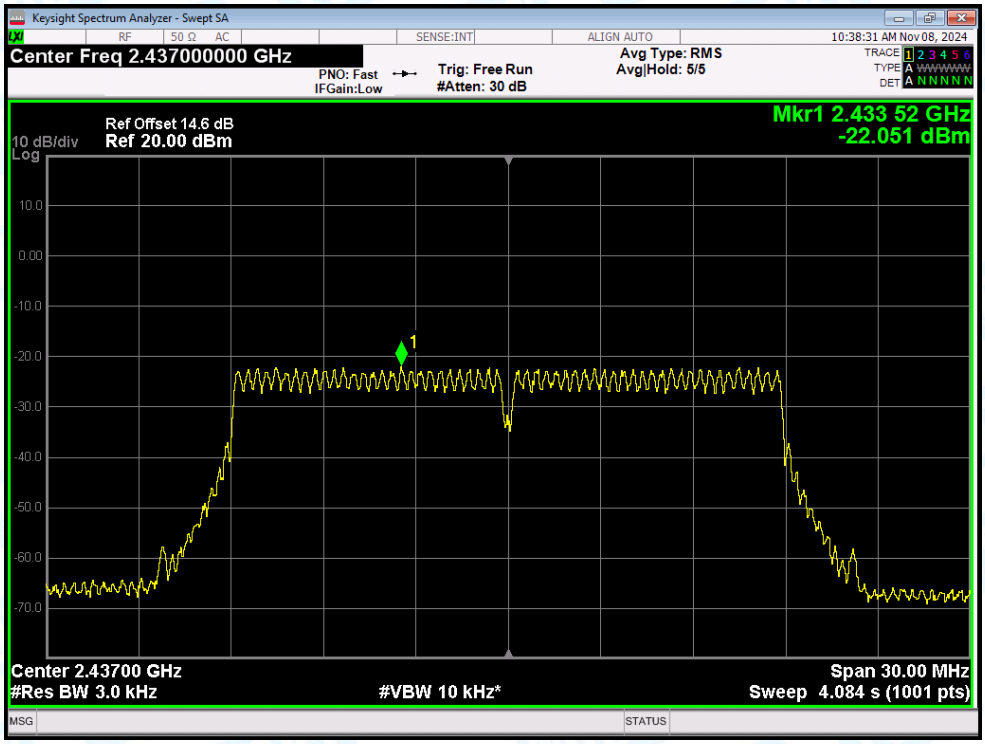
PSD NVNT g 2462MHz Ant1



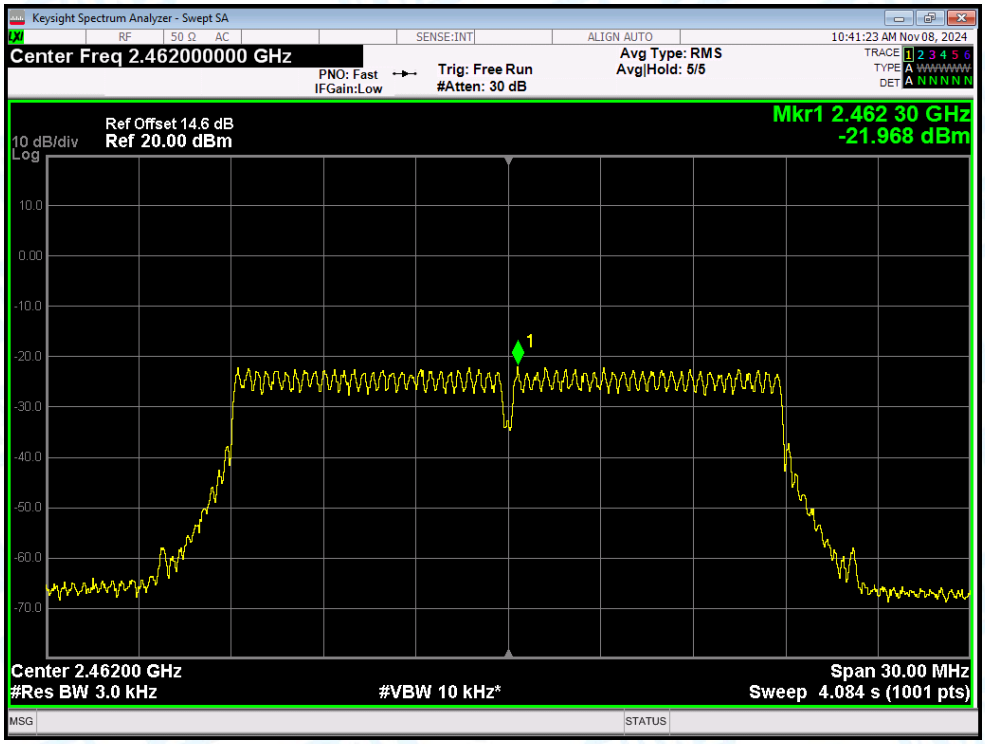
PSD NVNT n(HT20) 2412MHz Ant1



PSD NVNT n(HT20) 2437MHz Ant1



PSD NVNT n(HT20) 2462MHz Ant1

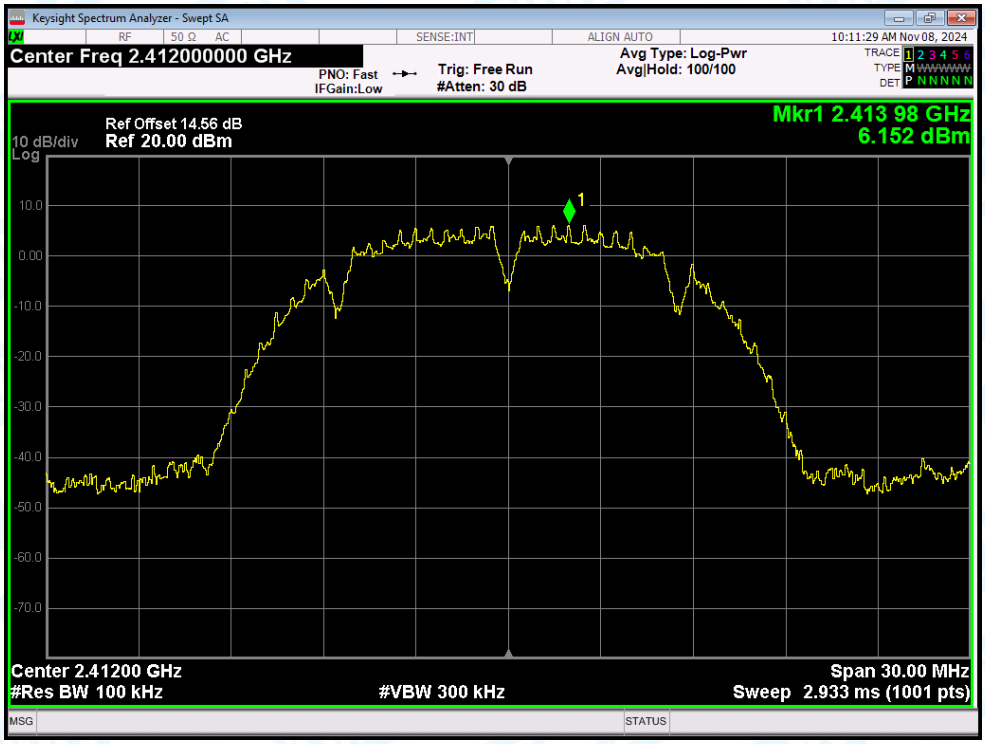


6. Band Edge

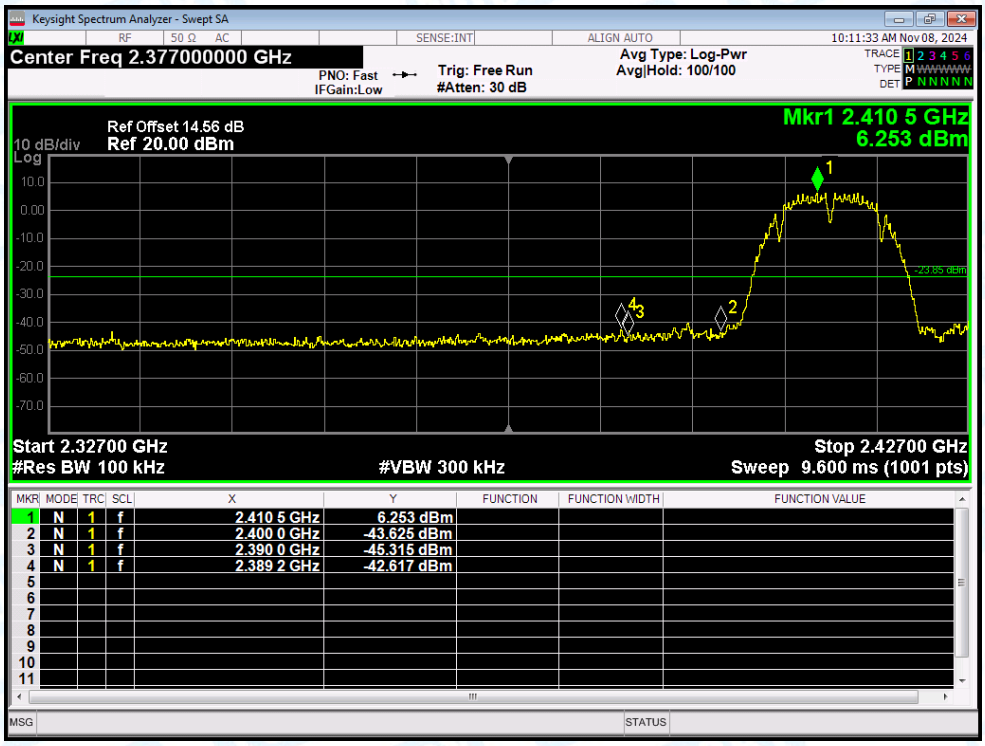
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant1	-48.77	-30	Pass
NVNT	b	2462	Ant1	-49.49	-30	Pass
NVNT	g	2412	Ant1	-44.99	-30	Pass
NVNT	g	2462	Ant1	-45.45	-30	Pass
NVNT	n(HT20)	2412	Ant1	-44.8	-30	Pass
NVNT	n(HT20)	2462	Ant1	-45.24	-30	Pass

Test Graphs

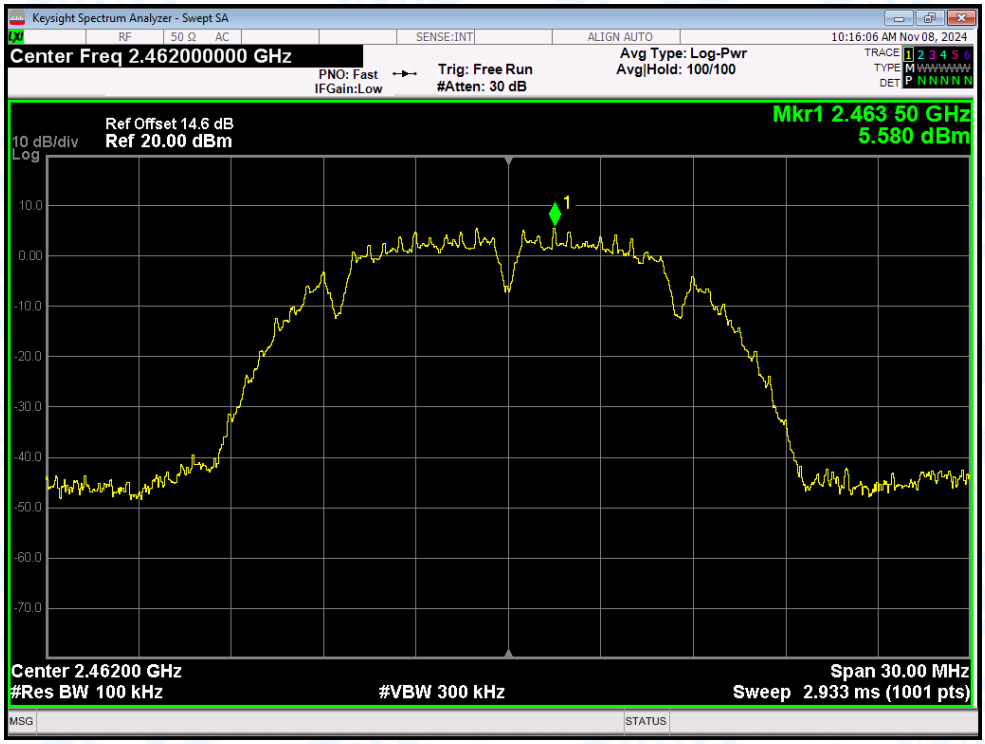
Band Edge NVNT b 2412MHz Ant1 Ref



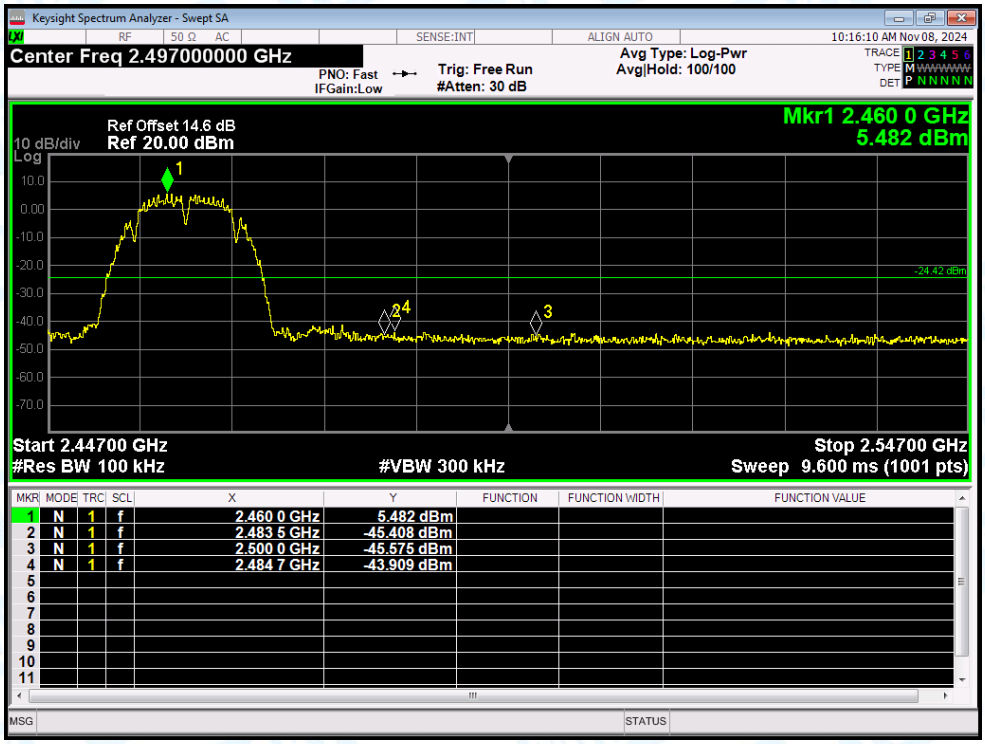
Band Edge NVNT b 2412MHz Ant1 Emission



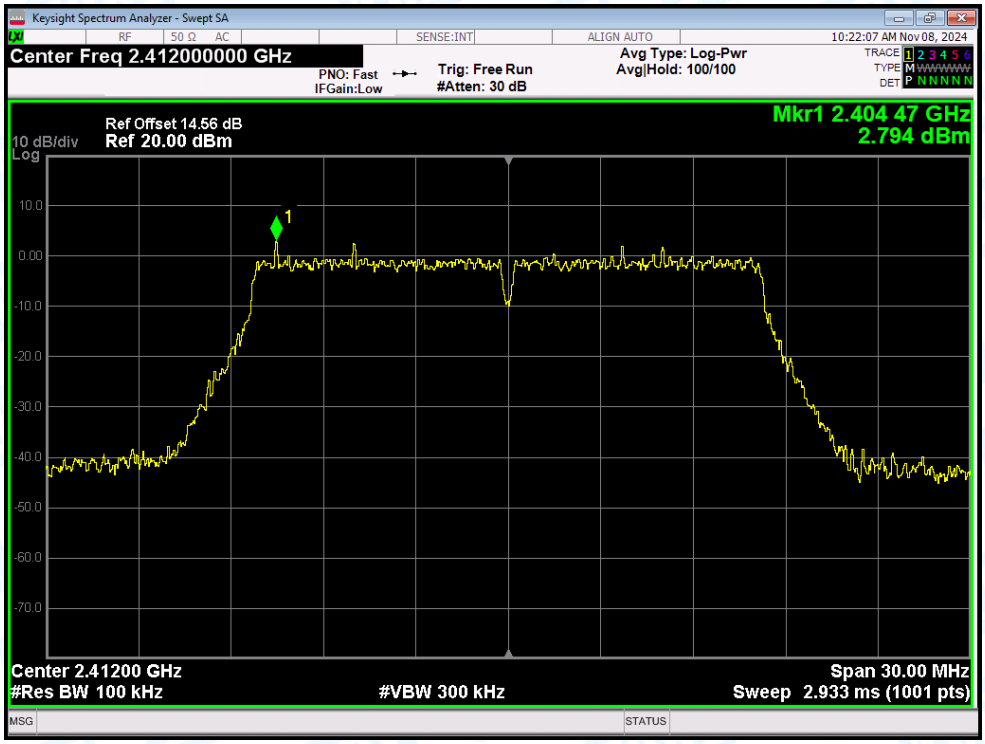
Band Edge NVNT b 2462MHz Ant1 Ref



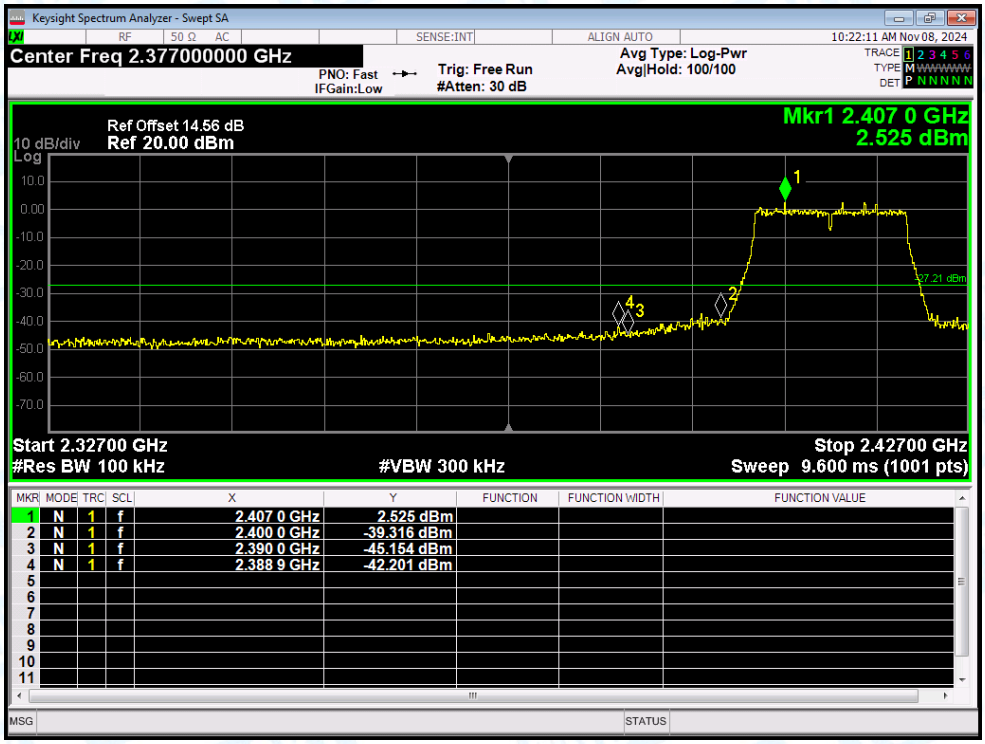
Band Edge NVNT b 2462MHz Ant1 Emission



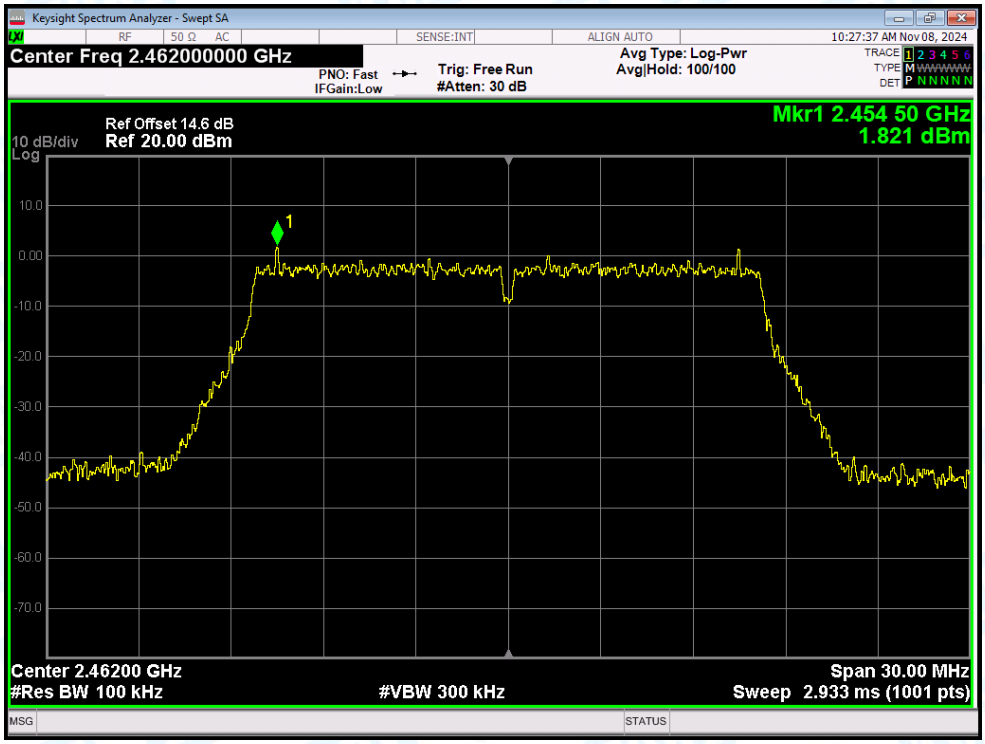
Band Edge NVNT g 2412MHz Ant1 Ref



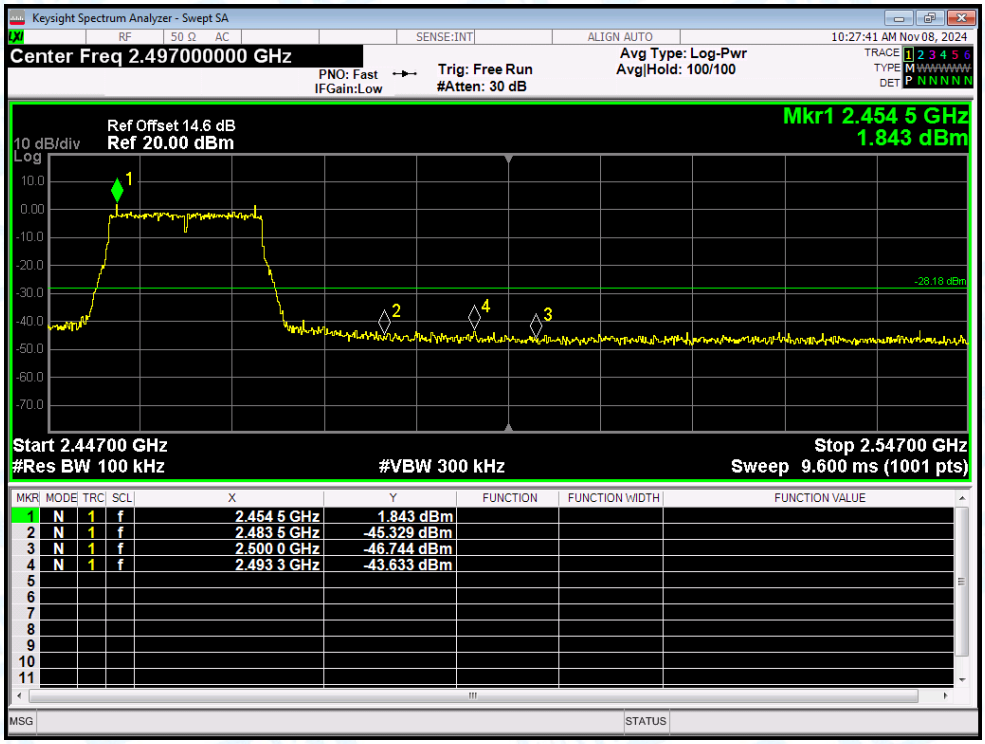
Band Edge NVNT g 2412MHz Ant1 Emission



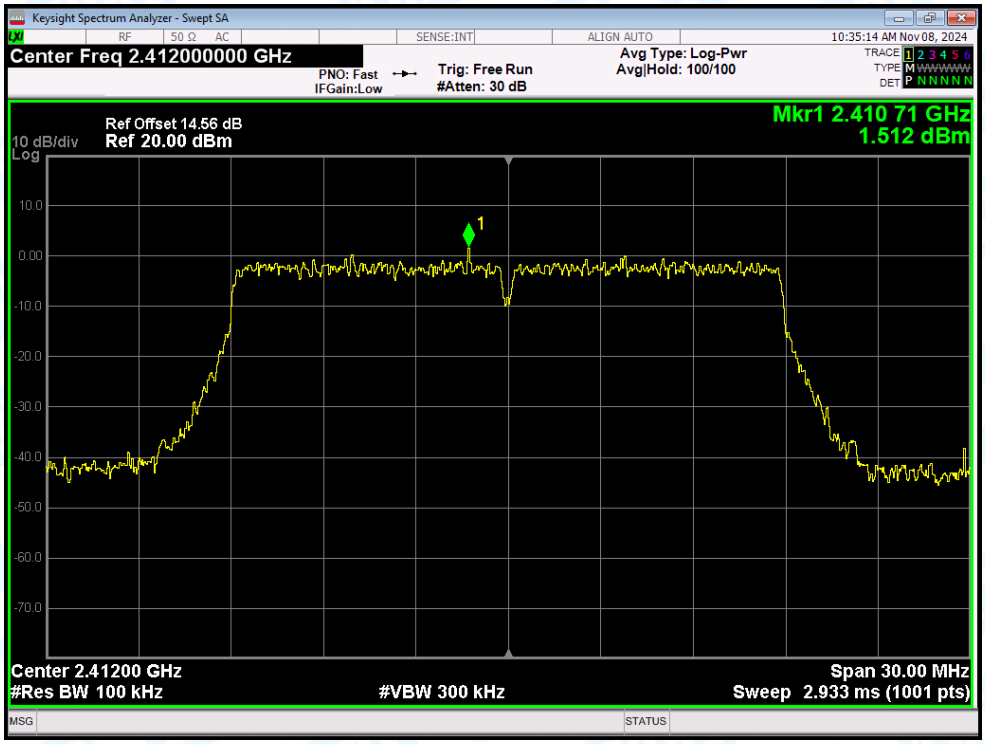
Band Edge NVNT g 2462MHz Ant1 Ref



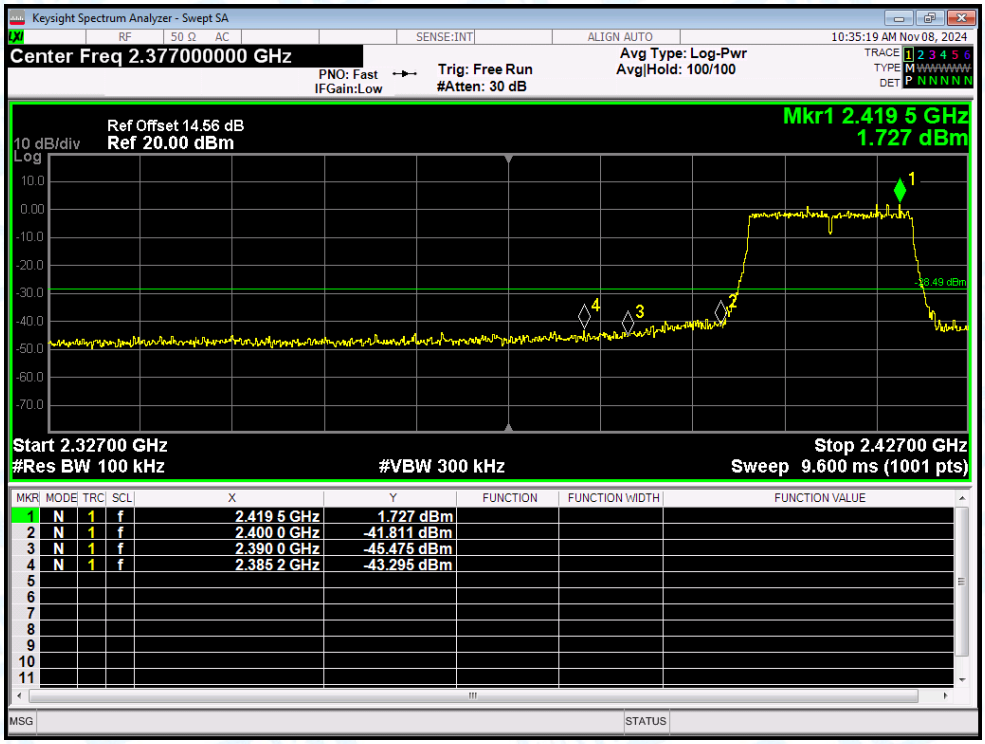
Band Edge NVNT g 2462MHz Ant1 Emission



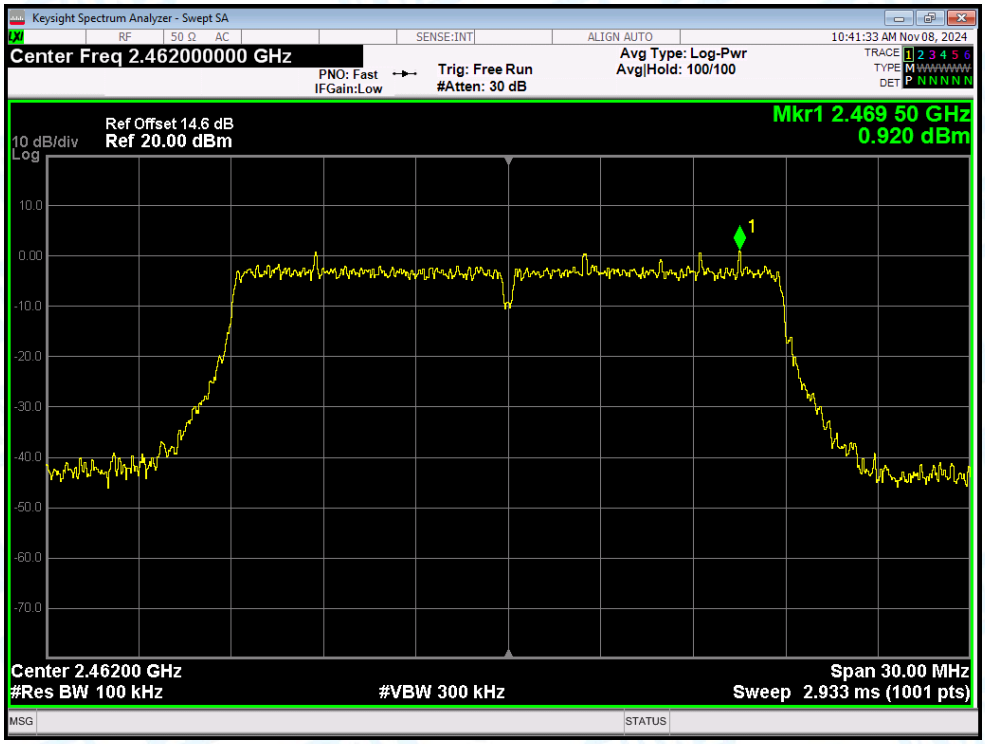
Band Edge NVNT n(HT20) 2412MHz Ant1 Ref



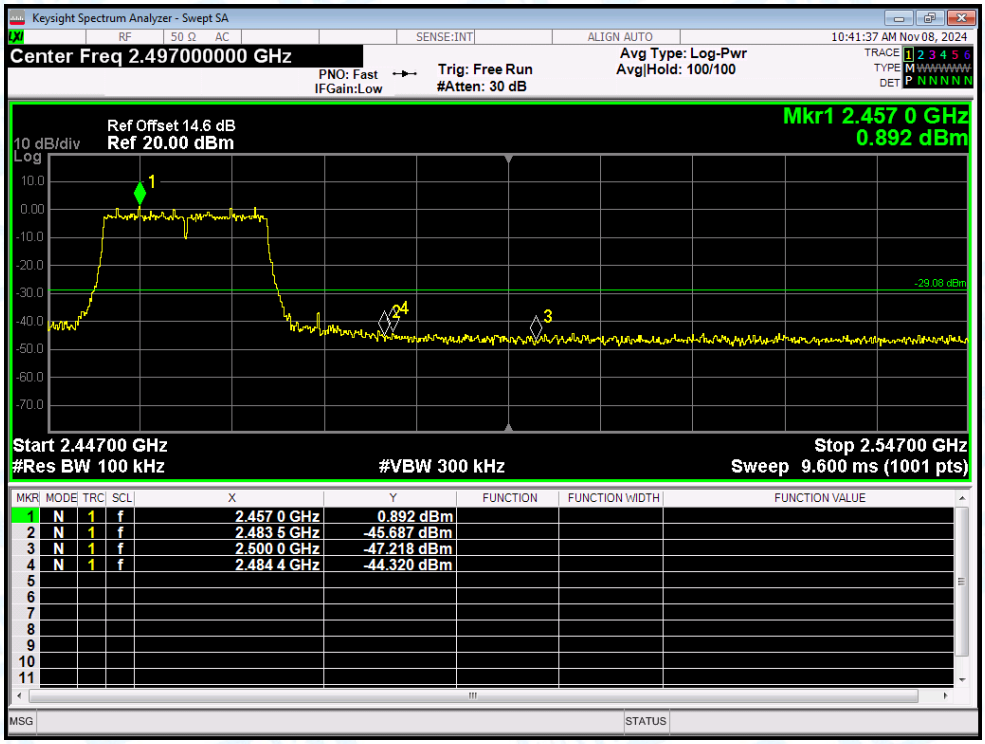
Band Edge NVNT n(HT20) 2412MHz Ant1 Emission



Band Edge NVNT n(HT20) 2462MHz Ant1 Ref



Band Edge NVNT n(HT20) 2462MHz Ant1 Emission

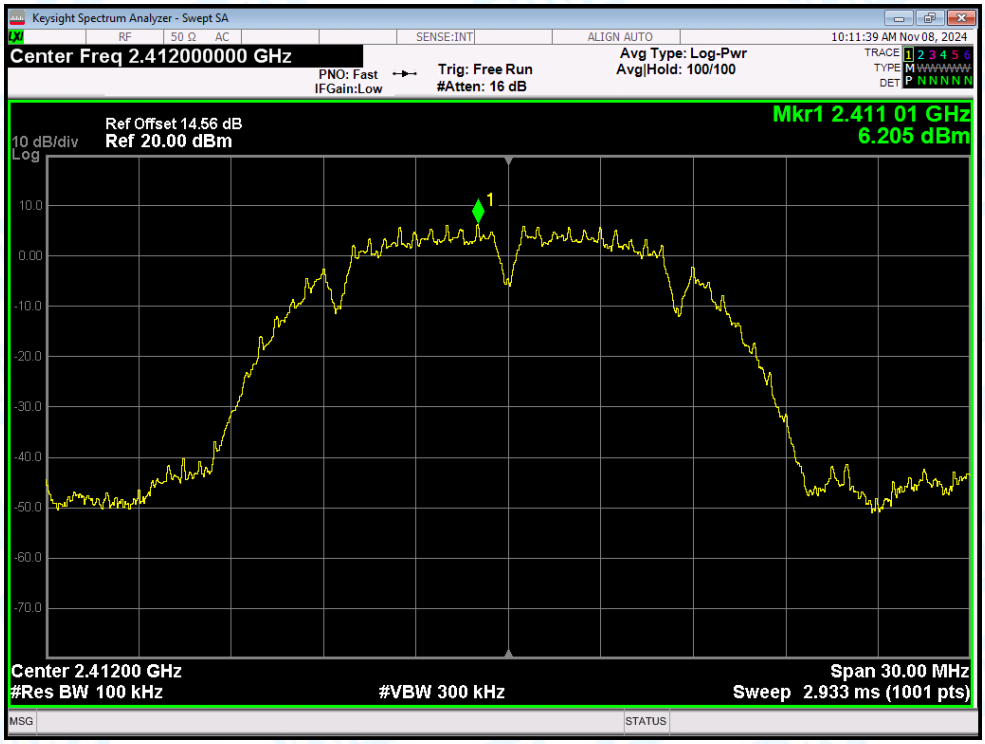


7. Conducted RF Spurious Emission

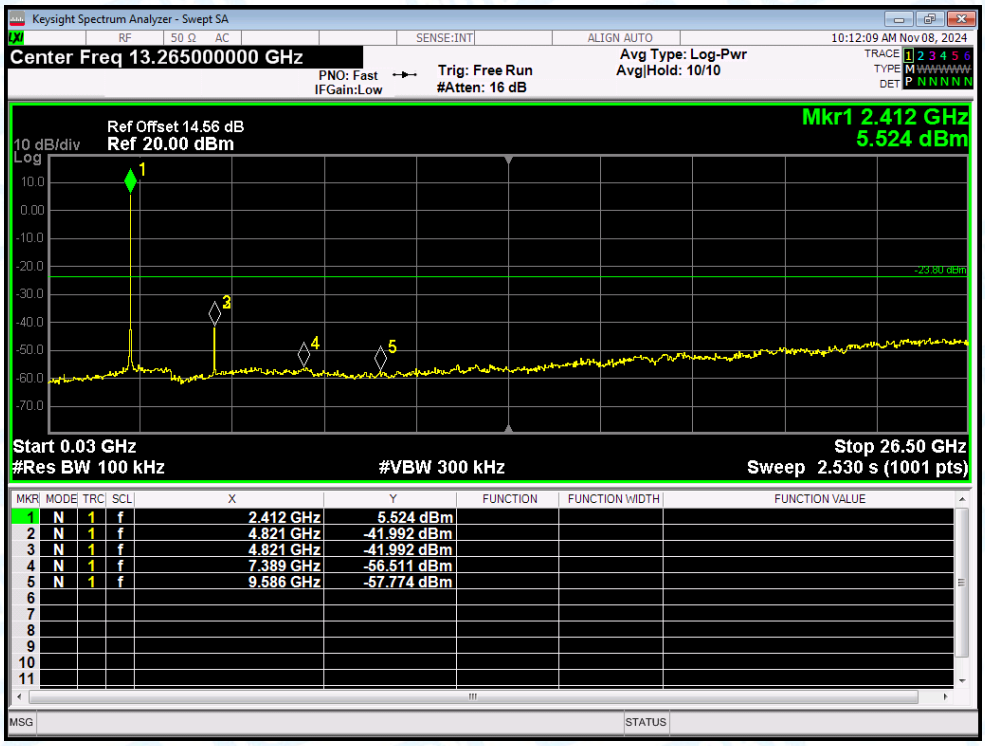
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant1	-48.2	-30	Pass
NVNT	b	2437	Ant1	-49.74	-30	Pass
NVNT	b	2462	Ant1	-50.37	-30	Pass
NVNT	g	2412	Ant1	-47.39	-30	Pass
NVNT	g	2437	Ant1	-46.98	-30	Pass
NVNT	g	2462	Ant1	-45.8	-30	Pass
NVNT	n(HT20)	2412	Ant1	-47.22	-30	Pass
NVNT	n(HT20)	2437	Ant1	-46.61	-30	Pass
NVNT	n(HT20)	2462	Ant1	-47.15	-30	Pass

Test Graphs

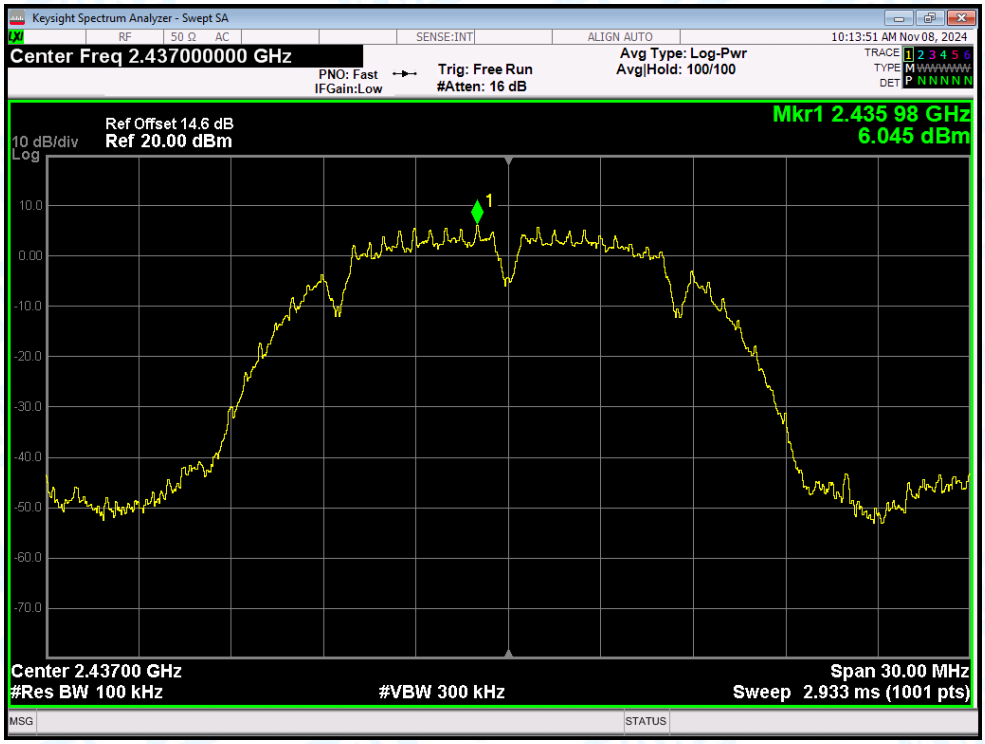
Tx. Spurious NVNT b 2412MHz Ant1 Ref



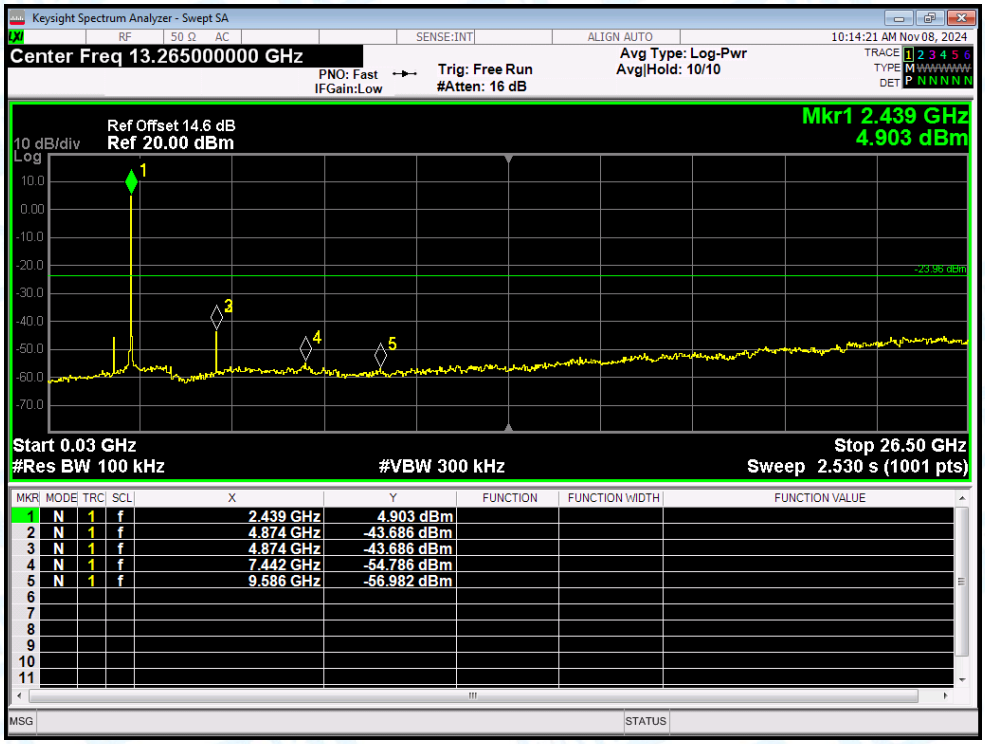
Tx. Spurious NVNT b 2412MHz Ant1 Emission



Tx. Spurious NVNT b 2437MHz Ant1 Ref

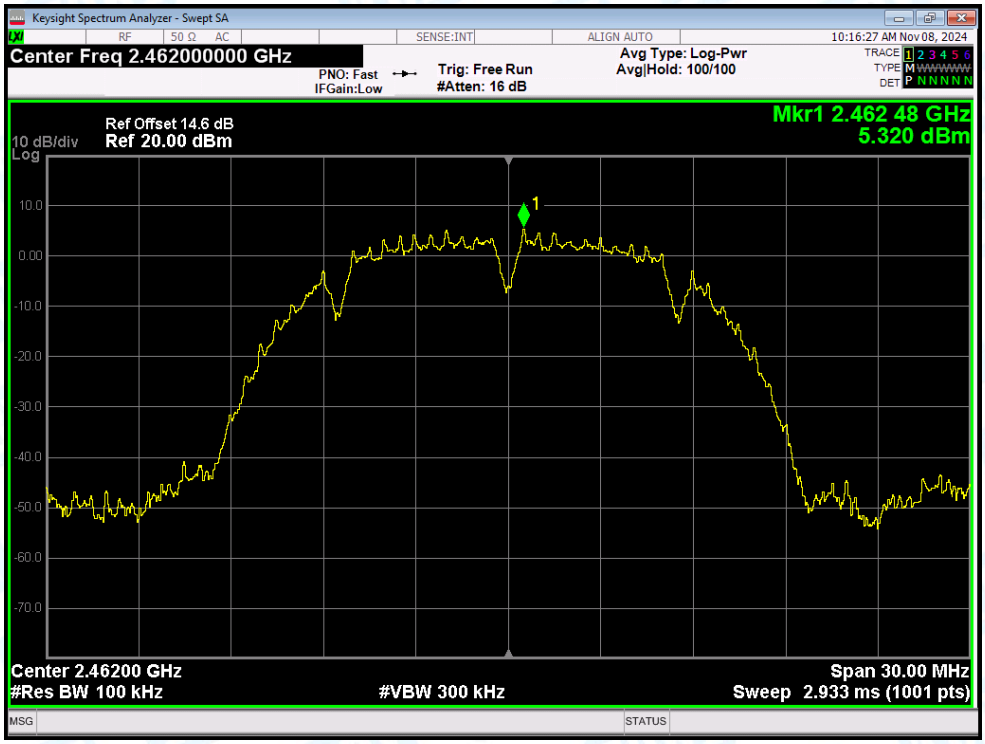


Tx. Spurious NVNT b 2437MHz Ant1 Emission

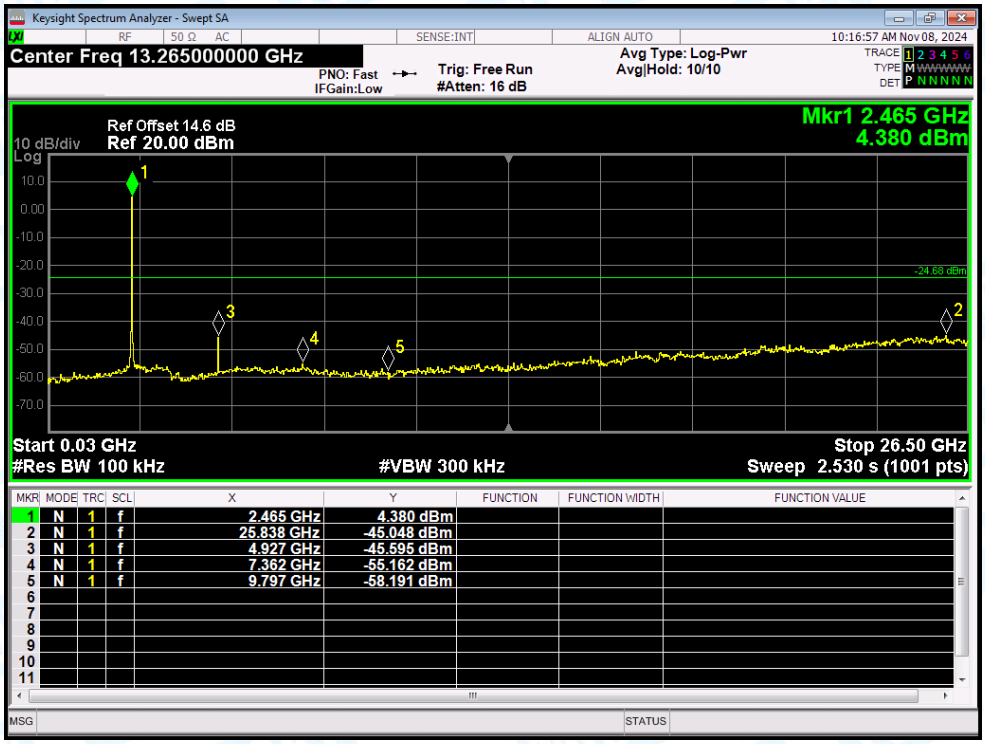


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.439 GHz	4.903 dBm			
2	N	1	f	4.874 GHz	-43.686 dBm			
3	N	1	f	4.874 GHz	-43.686 dBm			
4	N	1	f	7.442 GHz	-54.786 dBm			
5	N	1	f	9.586 GHz	-56.982 dBm			
6								
7								
8								
9								
10								
11								

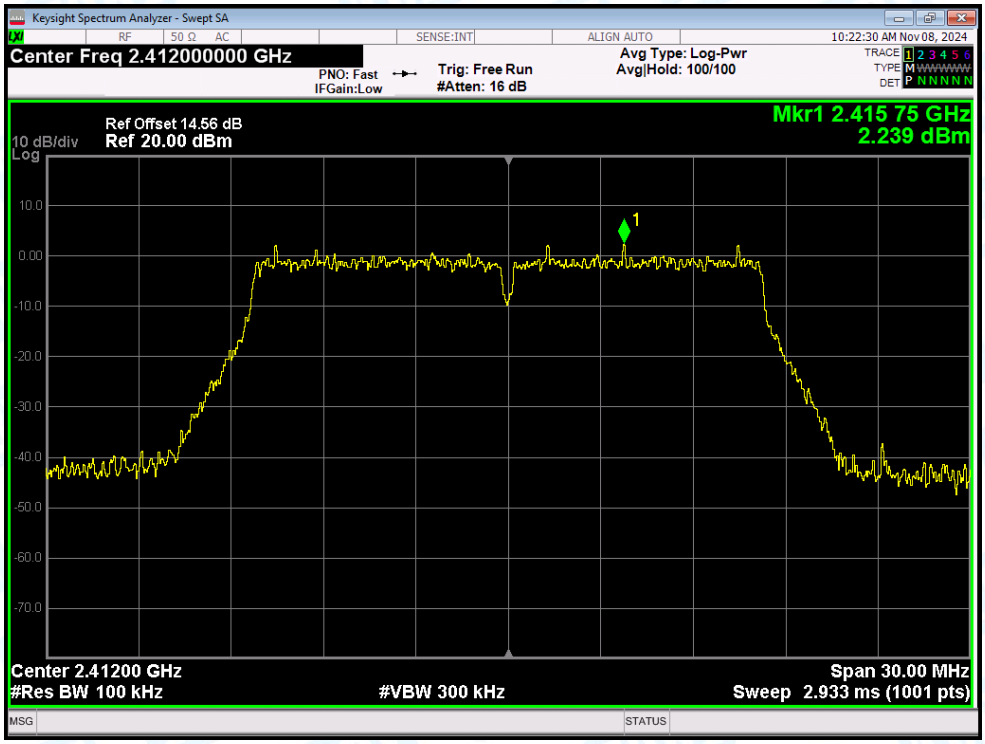
Tx. Spurious NVNT b 2462MHz Ant1 Ref



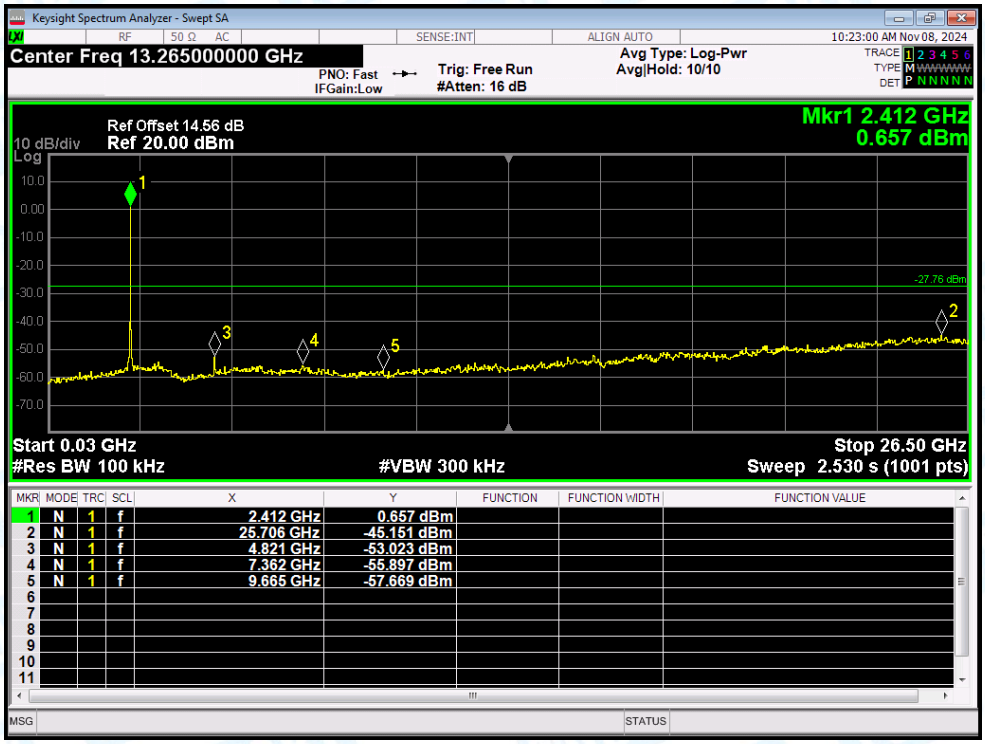
Tx. Spurious NVNT b 2462MHz Ant1 Emission



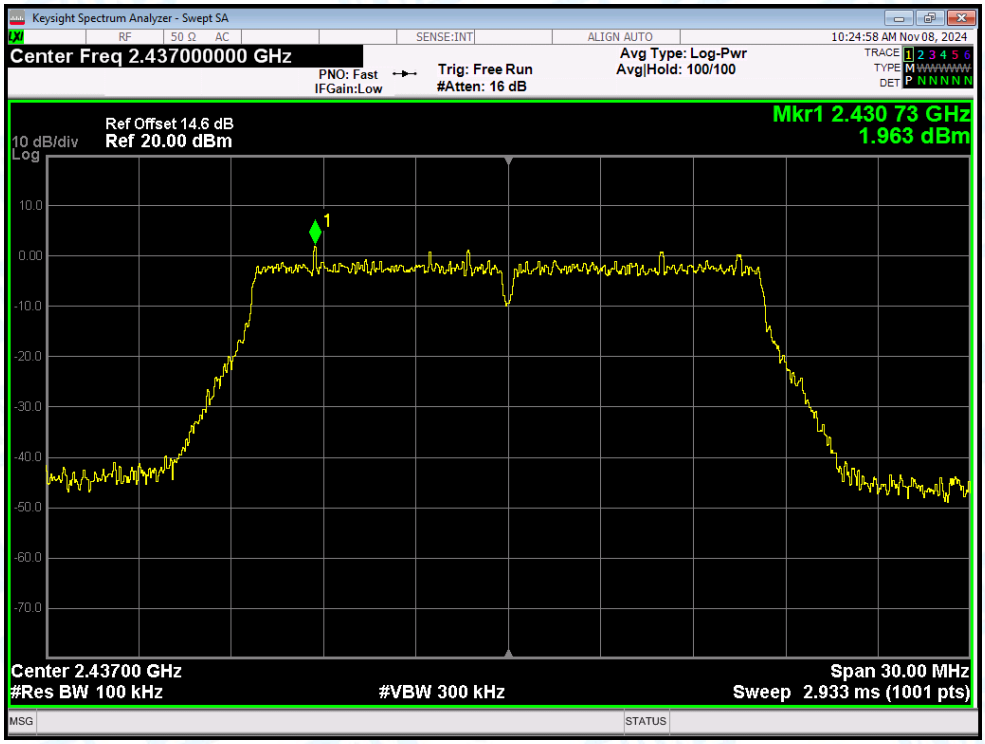
Tx. Spurious NVNT g 2412MHz Ant1 Ref



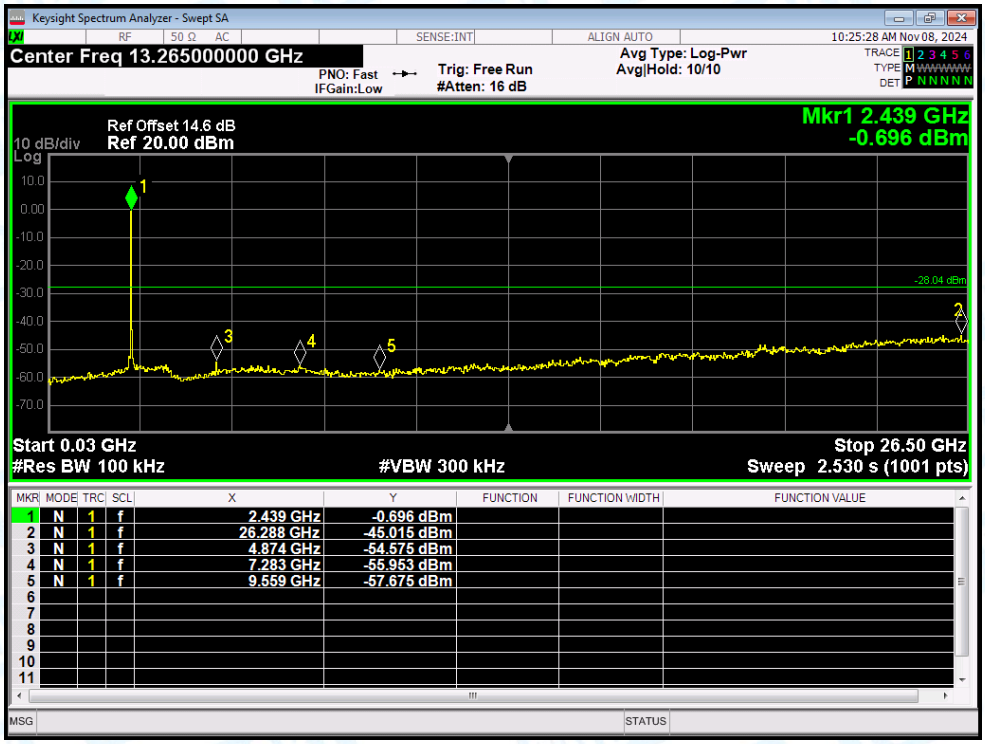
Tx. Spurious NVNT g 2412MHz Ant1 Emission



Tx. Spurious NVNT g 2437MHz Ant1 Ref

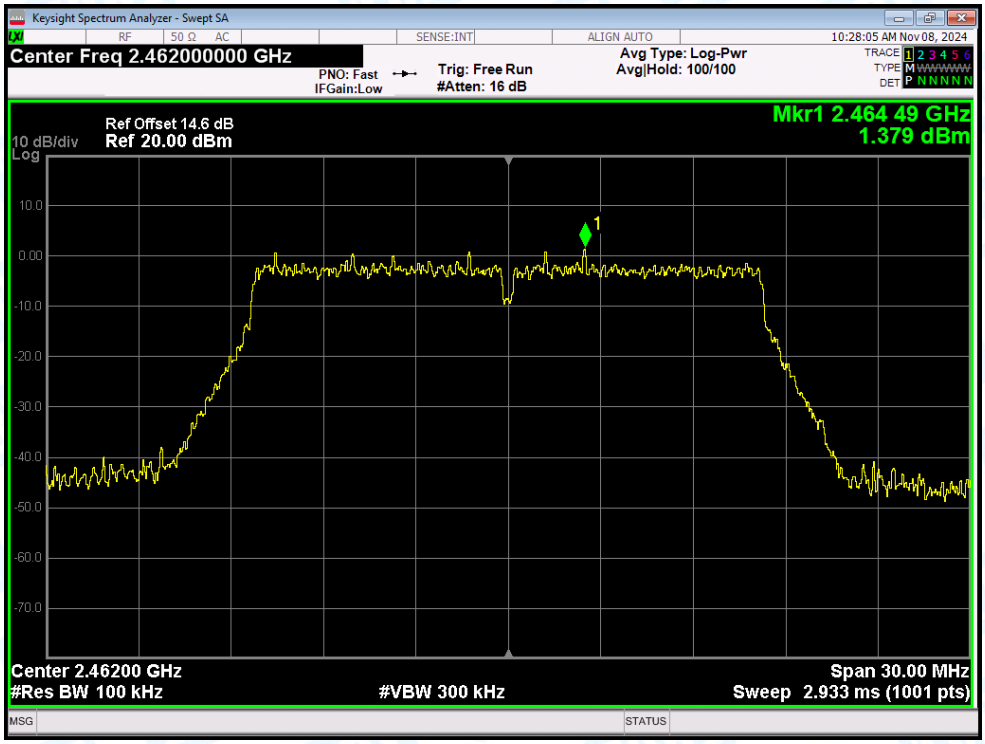


Tx. Spurious NVNT g 2437MHz Ant1 Emission

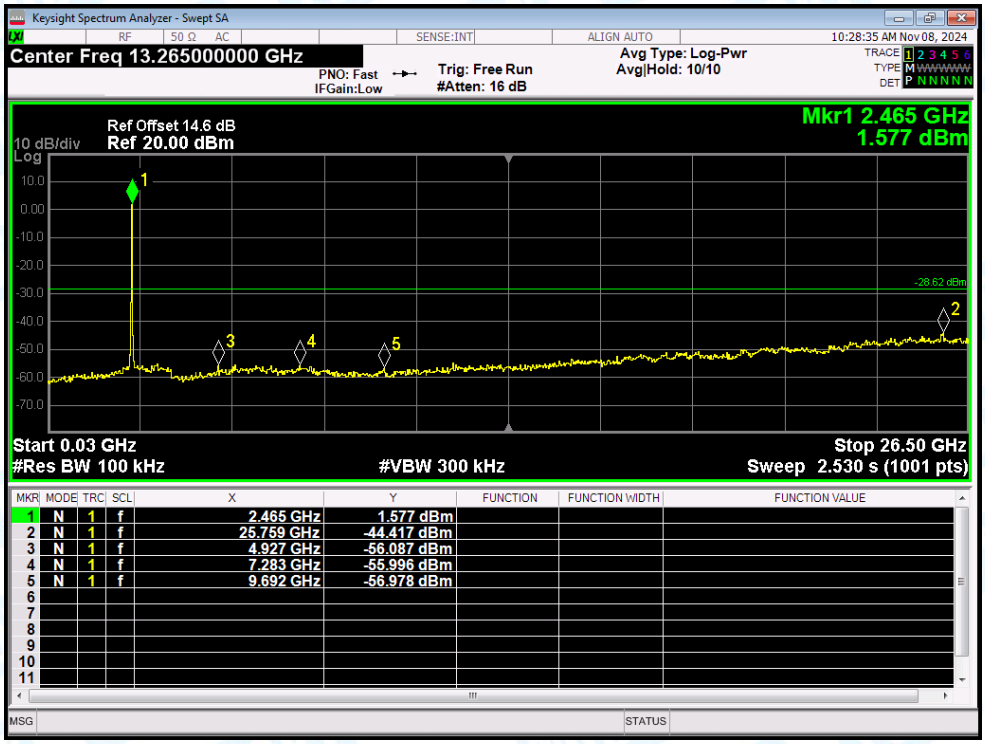


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.439 GHz	-0.696 dBm			
2	N	1	f	26.288 GHz	-45.015 dBm			
3	N	1	f	4.874 GHz	-54.575 dBm			
4	N	1	f	7.283 GHz	-55.953 dBm			
5	N	1	f	9.559 GHz	-57.675 dBm			
6								
7								
8								
9								
10								
11								

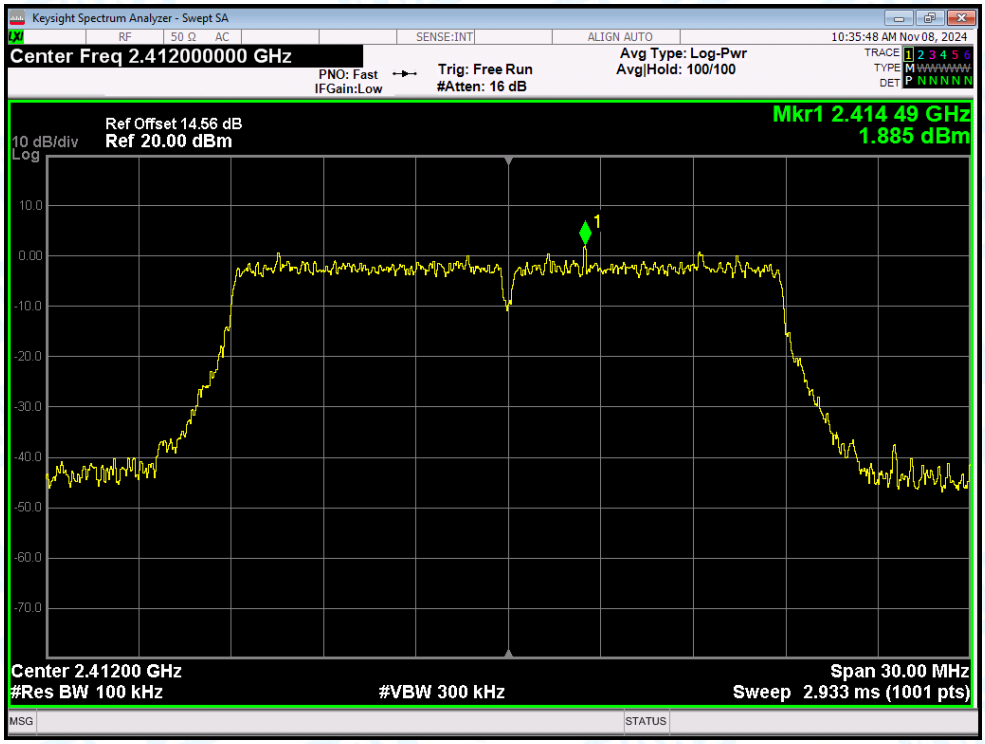
Tx. Spurious NVNT g 2462MHz Ant1 Ref



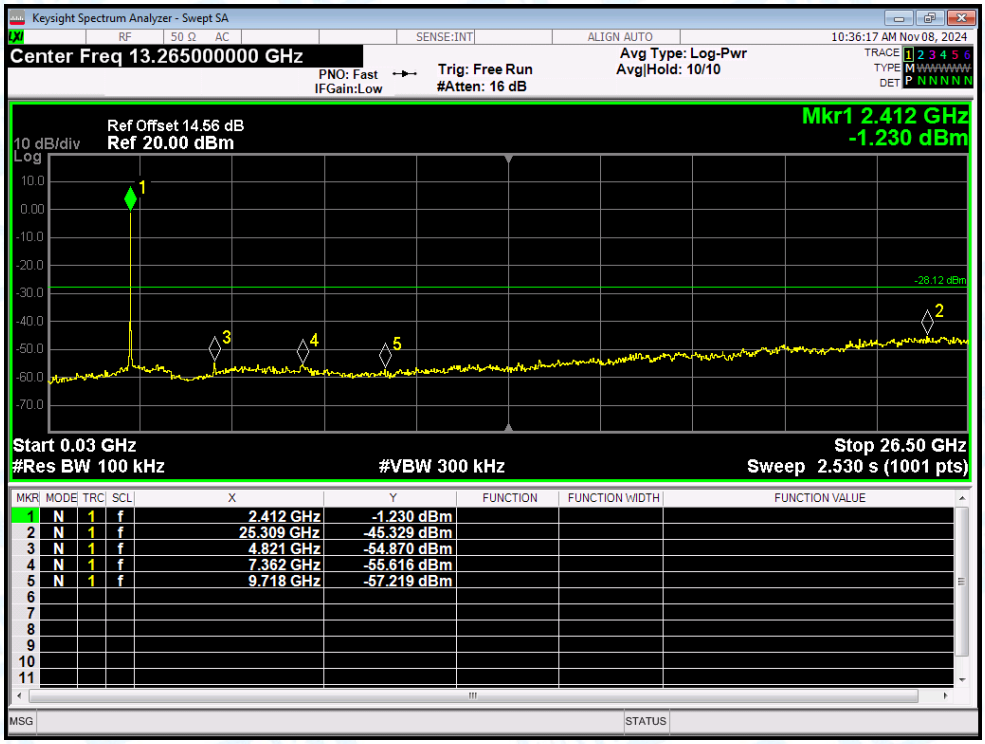
Tx. Spurious NVNT g 2462MHz Ant1 Emission



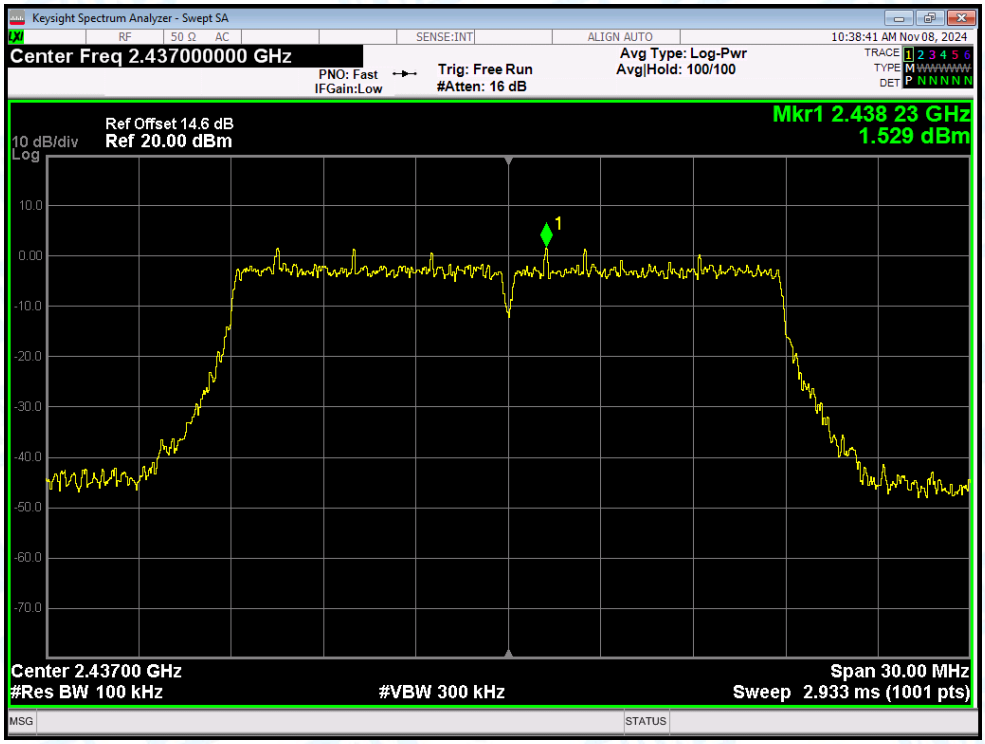
Tx. Spurious NVNT n(HT20) 2412MHz Ant1 Ref



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



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



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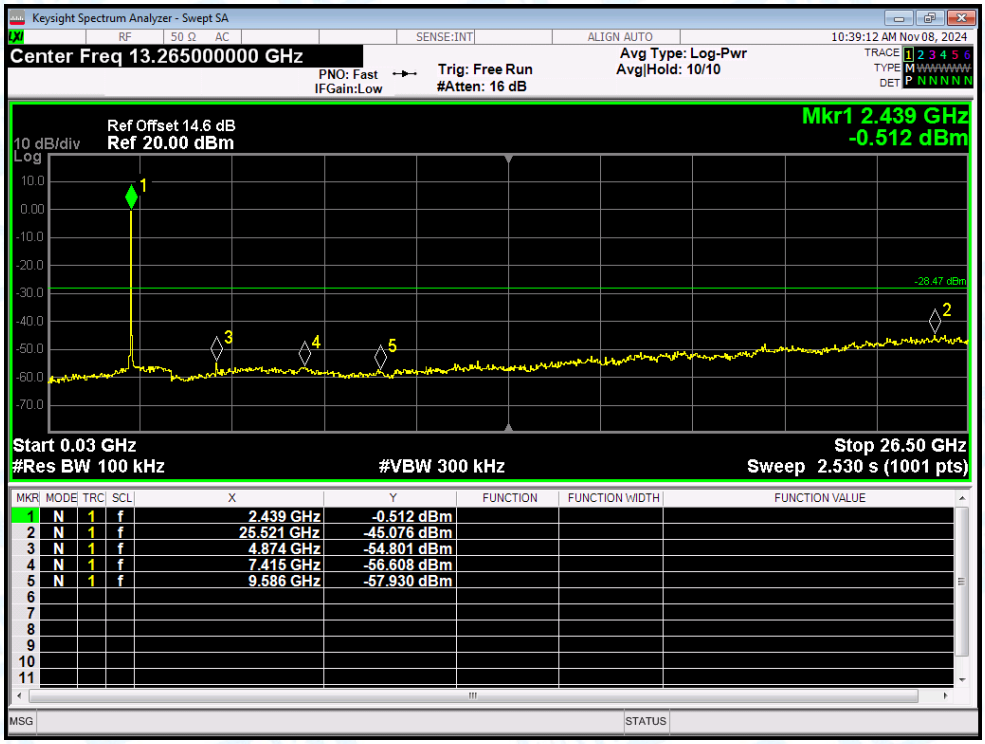

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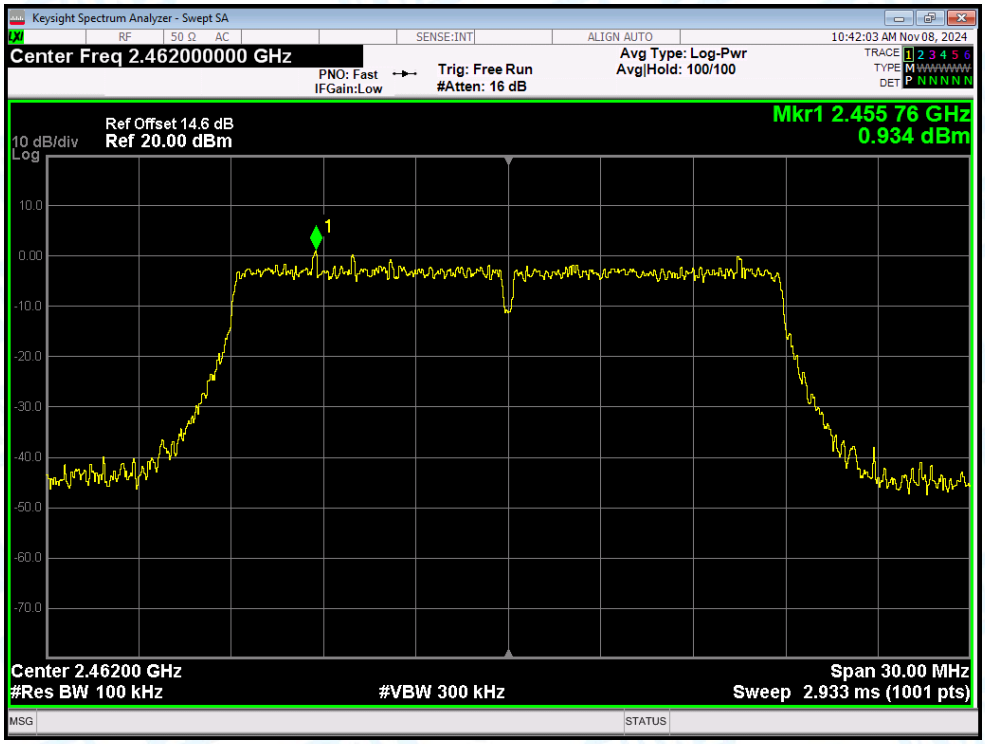
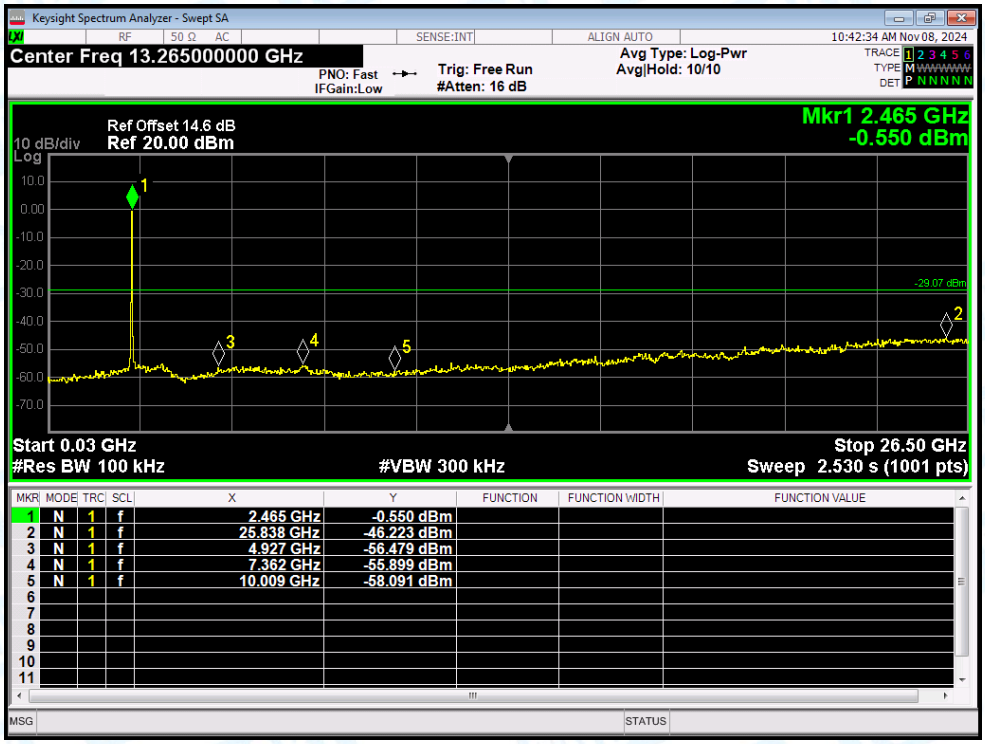


Tx. Spurious NVNT n(HT20) 2462MHz Ant1 Emission



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.465 GHz	-0.550 dBm			
2	N	1	f	25.838 GHz	-46.223 dBm			
3	N	1	f	4.927 GHz	-56.479 dBm			
4	N	1	f	7.362 GHz	-55.899 dBm			
5	N	1	f	10.009 GHz	-58.091 dBm			
6								
7								
8								
9								
10								
11								

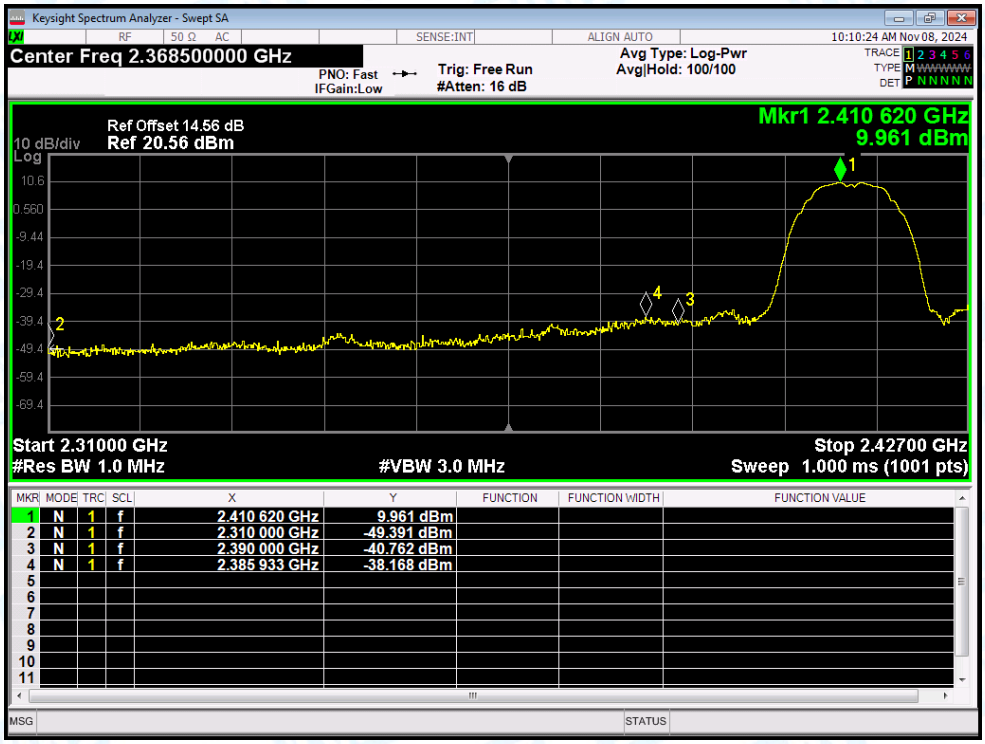
8. Restrict Band

Condition	Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	b	2412	Ant1	2310	-49.39	3.31	-	49.18	Peak	74	Pass
NVNT	b	2412	Ant1	2310	-58.22	3.31	0.01	40.36	Average	54	Pass
NVNT	b	2412	Ant1	2385.933	-38.17	3.31	-	60.4	Peak	74	Pass
NVNT	b	2412	Ant1	2385.348	-46.63	3.31	0.01	51.95	Average	54	Pass
NVNT	b	2412	Ant1	2390	-40.76	3.31	-	57.81	Peak	74	Pass
NVNT	b	2412	Ant1	2390	-47.95	3.31	0.01	50.63	Average	54	Pass
NVNT	b	2462	Ant1	2483.5	-41.39	3.31	-	57.18	Peak	74	Pass
NVNT	b	2462	Ant1	2483.5	-49.22	3.31	0.01	49.36	Average	54	Pass
NVNT	b	2462	Ant1	2483.782	-39.06	3.31	-	59.51	Peak	74	Pass
NVNT	b	2462	Ant1	2484.1	-47.7	3.31	0.01	50.88	Average	54	Pass
NVNT	b	2462	Ant1	2500	-44.89	3.31	-	53.68	Peak	74	Pass
NVNT	b	2462	Ant1	2500	-52.05	3.31	0.01	46.53	Average	54	Pass
NVNT	g	2412	Ant1	2310	-51.58	3.31	-	46.99	Peak	74	Pass
NVNT	g	2412	Ant1	2310	-58.25	3.31	0.05	40.37	Average	54	Pass
NVNT	g	2412	Ant1	2389.911	-35.75	3.31	-	62.82	Peak	74	Pass
NVNT	g	2412	Ant1	2389.794	-45.7	3.31	0.05	52.92	Average	54	Pass
NVNT	g	2412	Ant1	2390	-36.42	3.31	-	62.15	Peak	74	Pass
NVNT	g	2412	Ant1	2390	-46.16	3.31	0.05	52.46	Average	54	Pass
NVNT	g	2462	Ant1	2483.5	-40.79	3.31	-	57.78	Peak	74	Pass
NVNT	g	2462	Ant1	2483.5	-48.74	3.31	0.05	49.88	Average	54	Pass
NVNT	g	2462	Ant1	2485.796	-38.19	3.31	-	60.38	Peak	74	Pass
NVNT	g	2462	Ant1	2484.312	-48.67	3.31	0.05	49.95	Average	54	Pass
NVNT	g	2462	Ant1	2500	-45.68	3.31	-	52.89	Peak	74	Pass
NVNT	g	2462	Ant1	2500	-54.34	3.31	0.05	44.28	Average	54	Pass
NVNT	n(HT20)	2412	Ant1	2310	-48.46	3.31	-	50.11	Peak	74	Pass
NVNT	n(HT20)	2412	Ant1	2310	-58.69	3.31	0.07	39.95	Average	54	Pass
NVNT	n(HT20)	2412	Ant1	2389.443	-36.02	3.31	-	62.55	Peak	74	Pass
NVNT	n(HT20)	2412	Ant1	2389.677	-45.75	3.31	0.07	52.89	Average	54	Pass
NVNT	n(HT20)	2412	Ant1	2390	-38.36	3.31	-	60.21	Peak	74	Pass
NVNT	n(HT20)	2412	Ant1	2390	-45.78	3.31	0.07	52.86	Average	54	Pass
NVNT	n(HT20)	2462	Ant1	2483.5	-37.73	3.31	-	60.84	Peak	74	Pass
NVNT	n(HT20)	2462	Ant1	2483.5	-48.9	3.31	0.05	49.72	Average	54	Pass
NVNT	n(HT20)	2462	Ant1	2485.531	-33.65	3.31	-	64.92	Peak	74	Pass
NVNT	n(HT20)	2462	Ant1	2483.835	-48.06	3.31	0.05	50.56	Average	54	Pass
NVNT	n(HT20)	2462	Ant1	2500	-45.46	3.31	-	53.11	Peak	74	Pass
NVNT	n(HT20)	2462	Ant1	2500	-54.56	3.31	0.05	44.06	Average	54	Pass

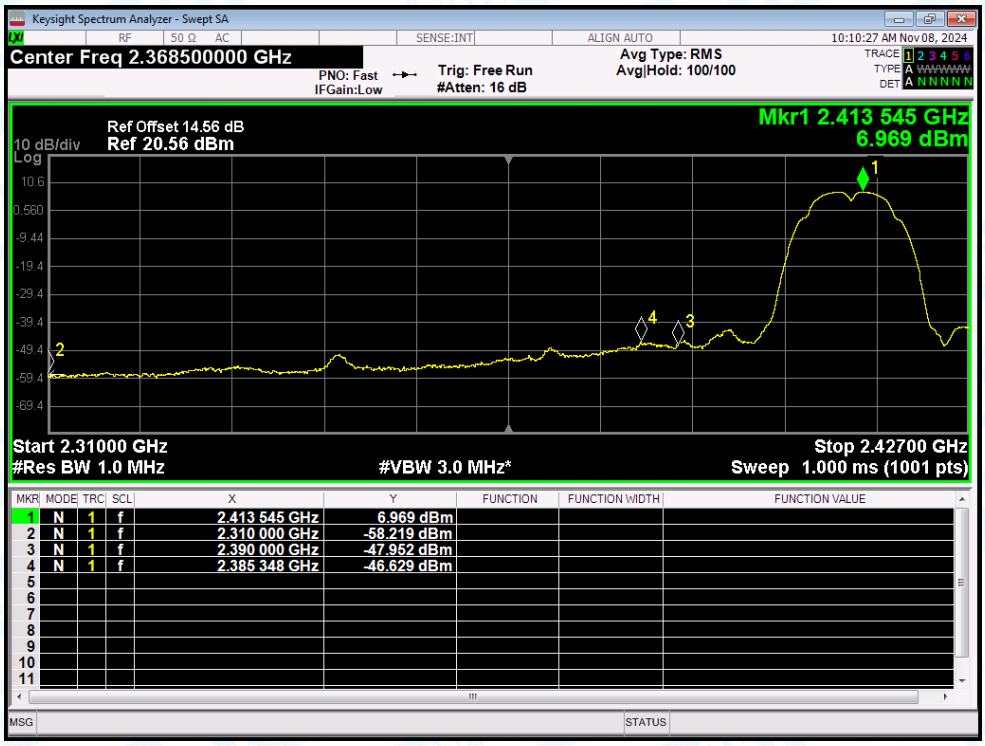
Note：The Duty Cycle Factor is compensated in the graph.

Test Graphs

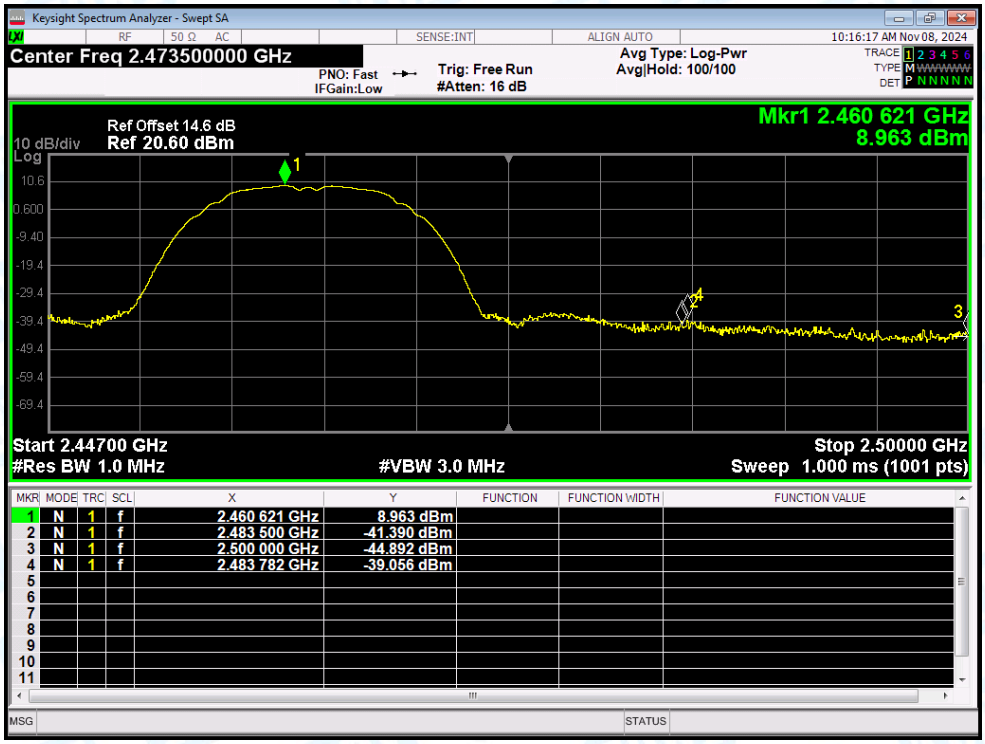
Restrict Band NVNT b 2412MHz Ant1 Peak



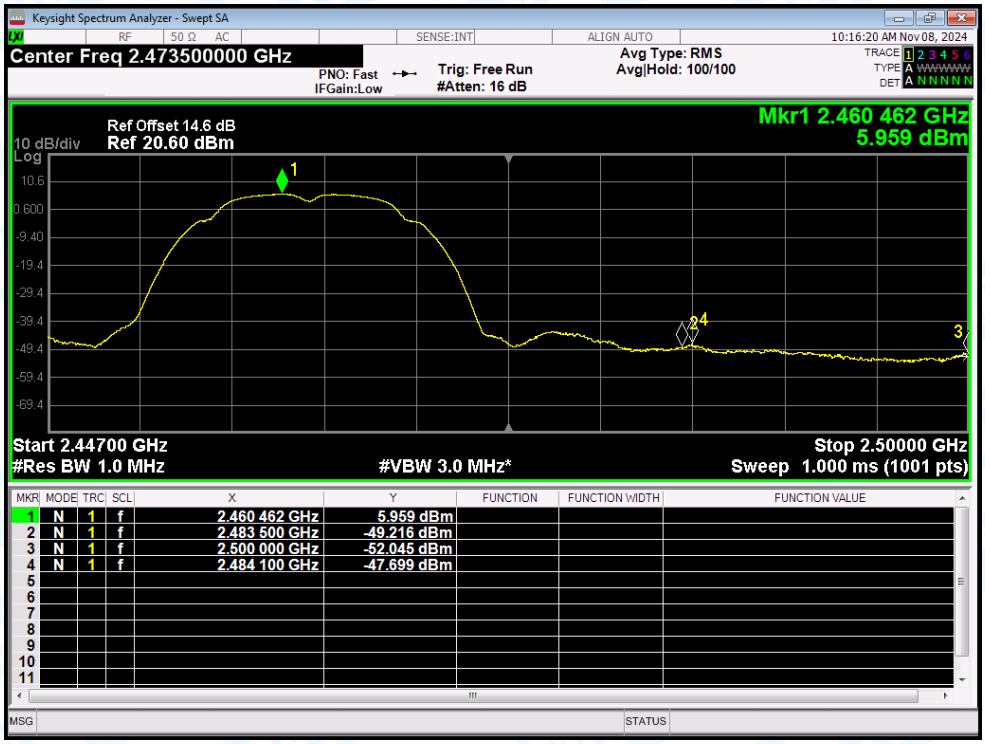
Restrict Band NVNT b 2412MHz Ant1 Average



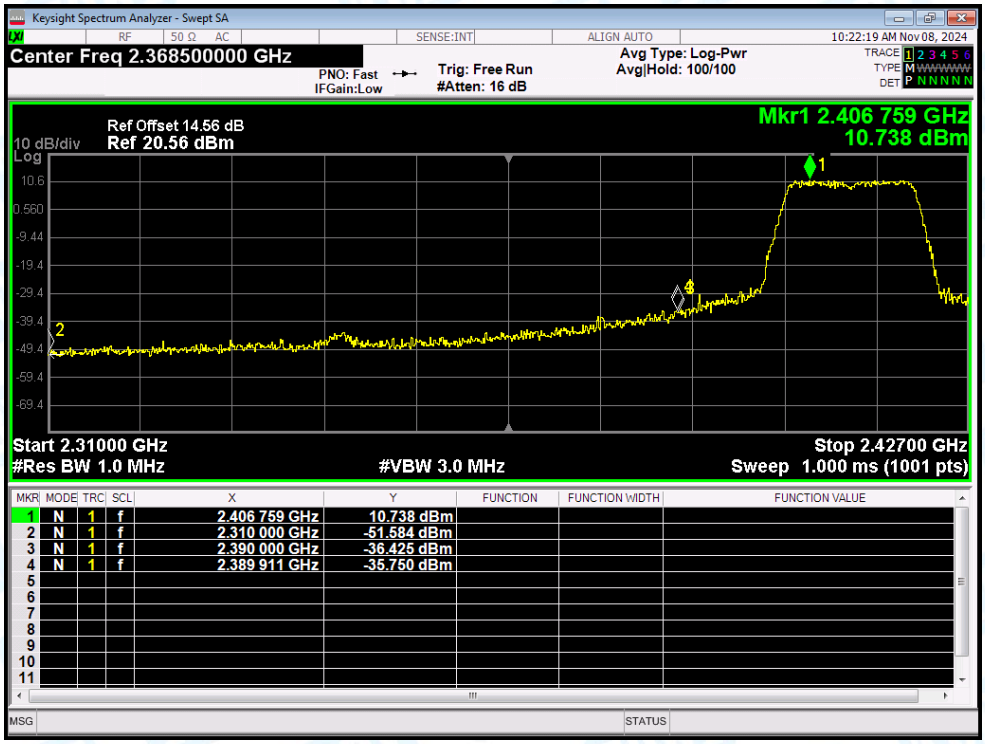
Restrict Band NVNT b 2462MHz Ant1 Peak



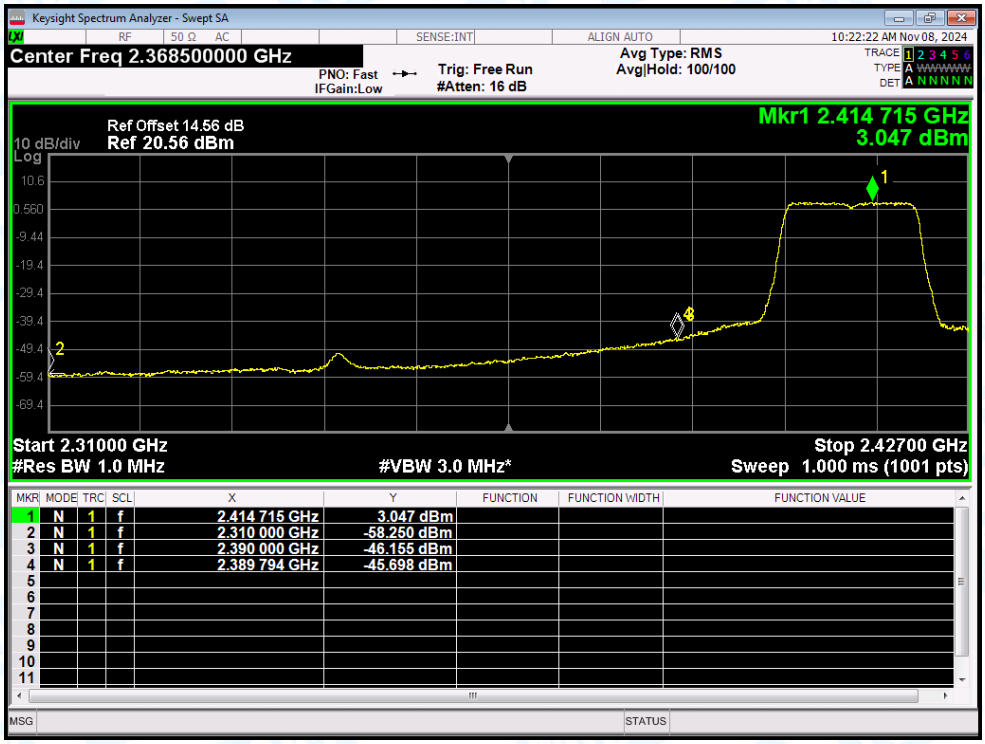
Restrict Band NVNT b 2462MHz Ant1 Average



Restrict Band NVNT g 2412MHz Ant1 Peak

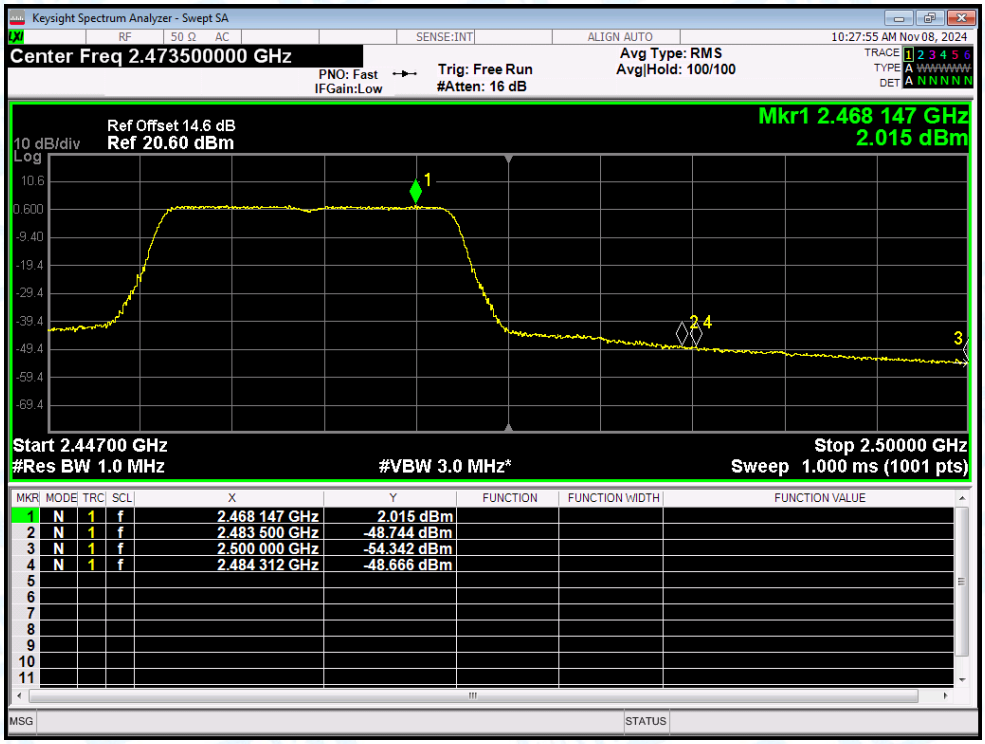


Restrict Band NVNT g 2412MHz Ant1 Average

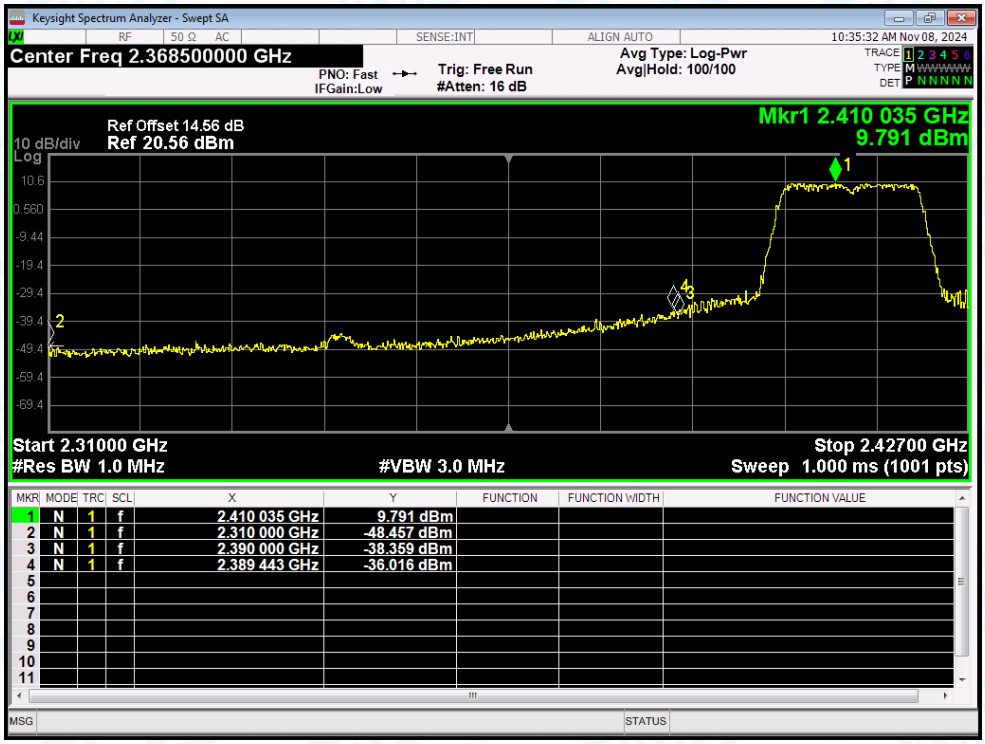


Restrict Band NVNT g 2462MHz Ant1 Peak

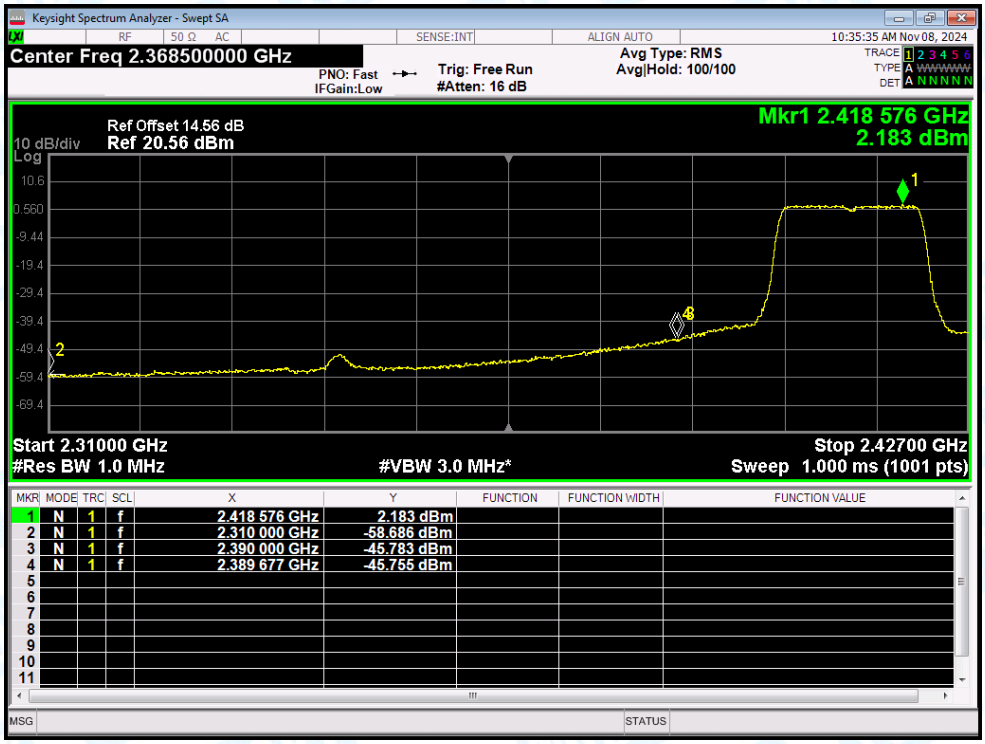
Restrict Band NVNT g 2462MHz Ant1 Average



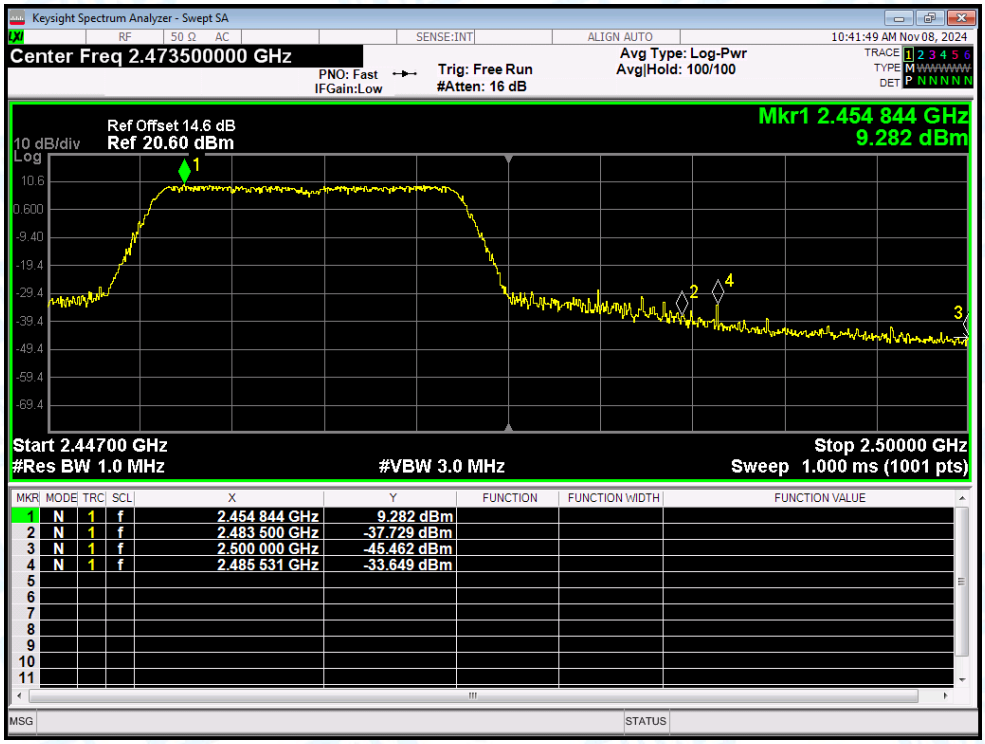
Restrict Band NVNT n(HT20) 2412MHz Ant1 Peak



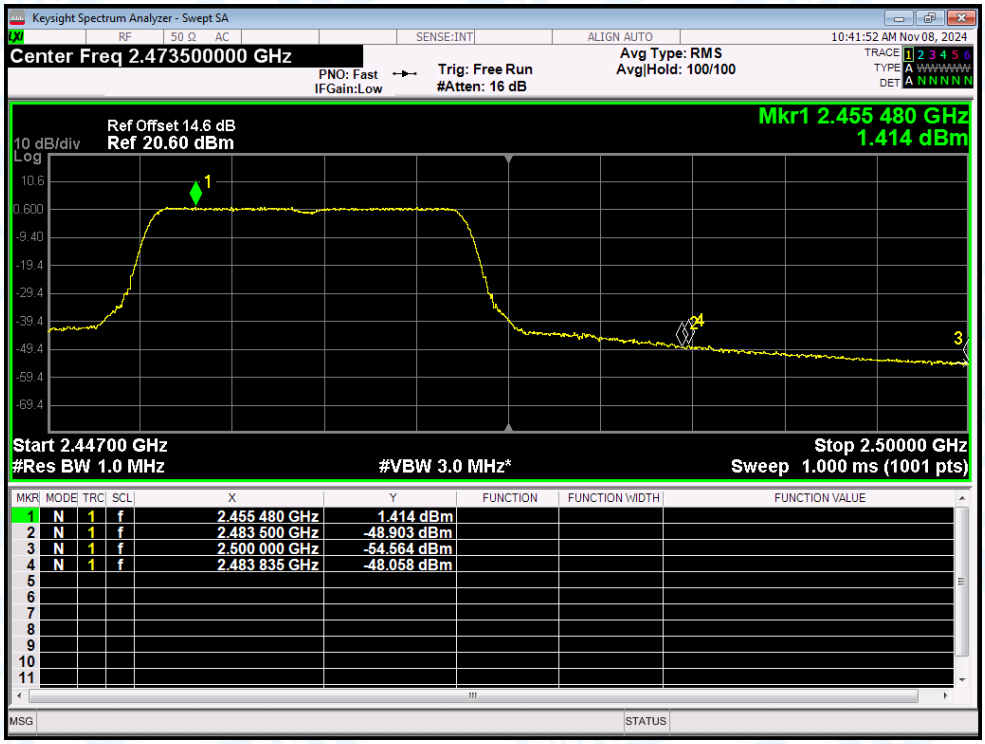
Restrict Band NVNT n(HT20) 2412MHz Ant1 Average



Restrict Band NVNT n(HT20) 2462MHz Ant1 Peak



Restrict Band NVNT n(HT20) 2462MHz Ant1 Average



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