

RF Test Data for 2.4G WiFi (Conducted Measurements)

General Description of EUT	
Product Name:	smart circuit breaker
Test Model:	SMKG-1KNL-EU-W
Sample ID:	HC-C-202404-0111-01-01-2#
Environmental Conditions	
Temperature:	23.8℃
Relative Humidity:	48%
Test Voltage:	AC 120V
Test Engineer:	ZKN ZHOU
Note: For a more detailed features description, please refer to the report TBR-C-202404-0111-6 The report only show the worst case data.	

Contents

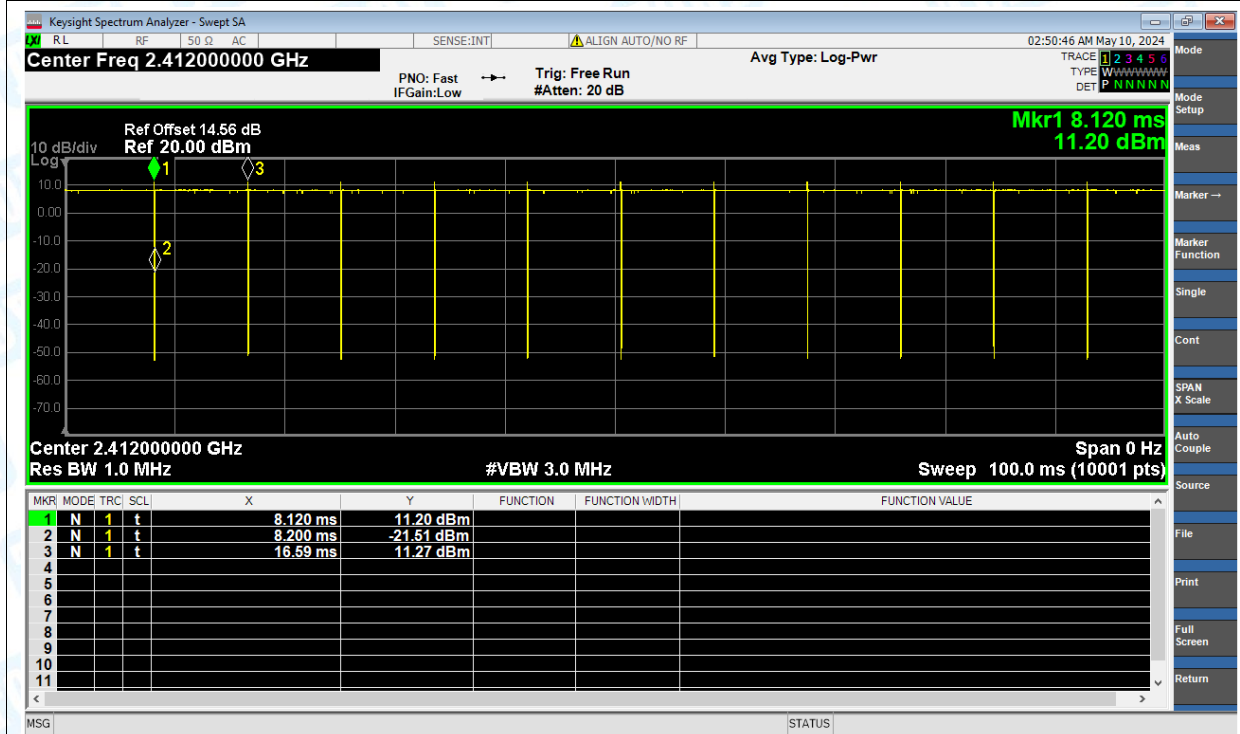
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1. Duty Cycle

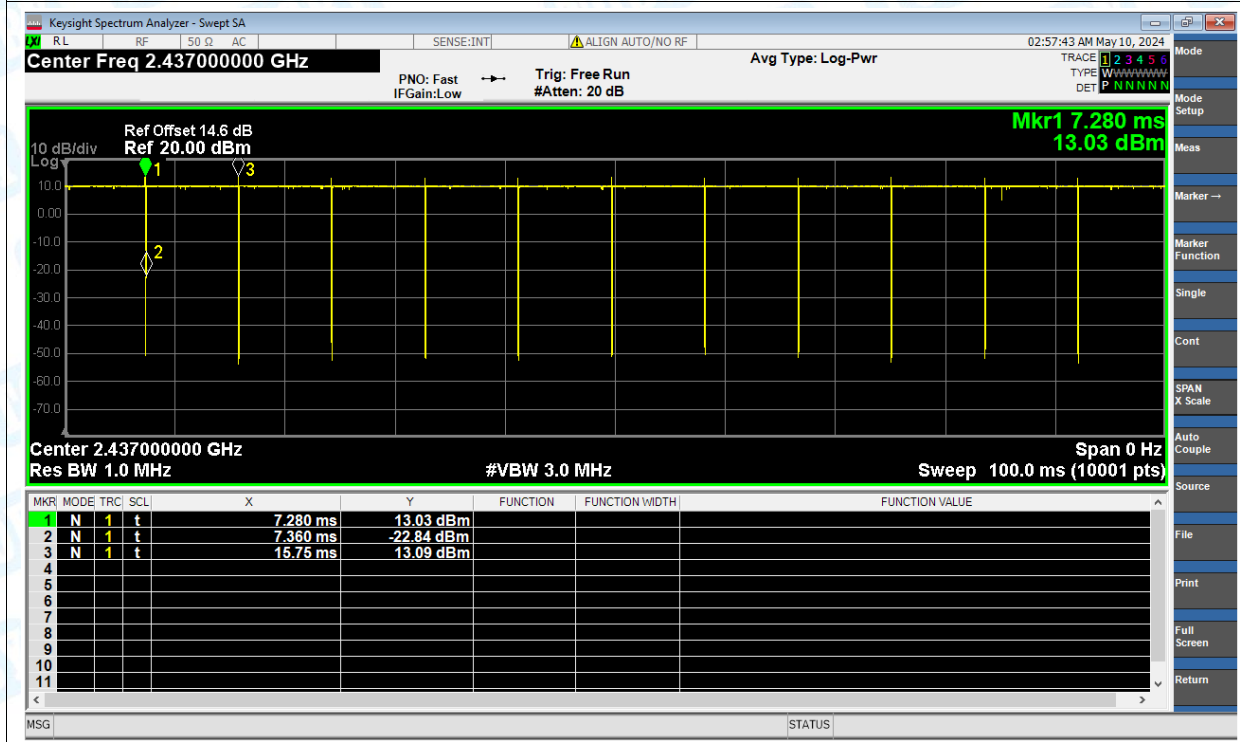
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	b	2412	Ant1	99.06	0.04	0.12
NVNT	b	2437	Ant1	99.06	0.04	0.12
NVNT	b	2462	Ant1	99.06	0.04	0.12
NVNT	g	2412	Ant1	98.87	0.05	0.72
NVNT	g	2437	Ant1	99.01	0.04	0.72
NVNT	g	2462	Ant1	99.01	0.04	0.72
NVNT	n(HT20)	2412	Ant1	98.94	0.05	0.77
NVNT	n(HT20)	2437	Ant1	98.94	0.05	0.77
NVNT	n(HT20)	2462	Ant1	98.94	0.05	0.77
NVNT	n(HT40)	2422	Ant1	99.09	0.04	1.53
NVNT	n(HT40)	2437	Ant1	99.09	0.04	1.53
NVNT	n(HT40)	2452	Ant1	99.09	0.04	1.53

Test Graphs

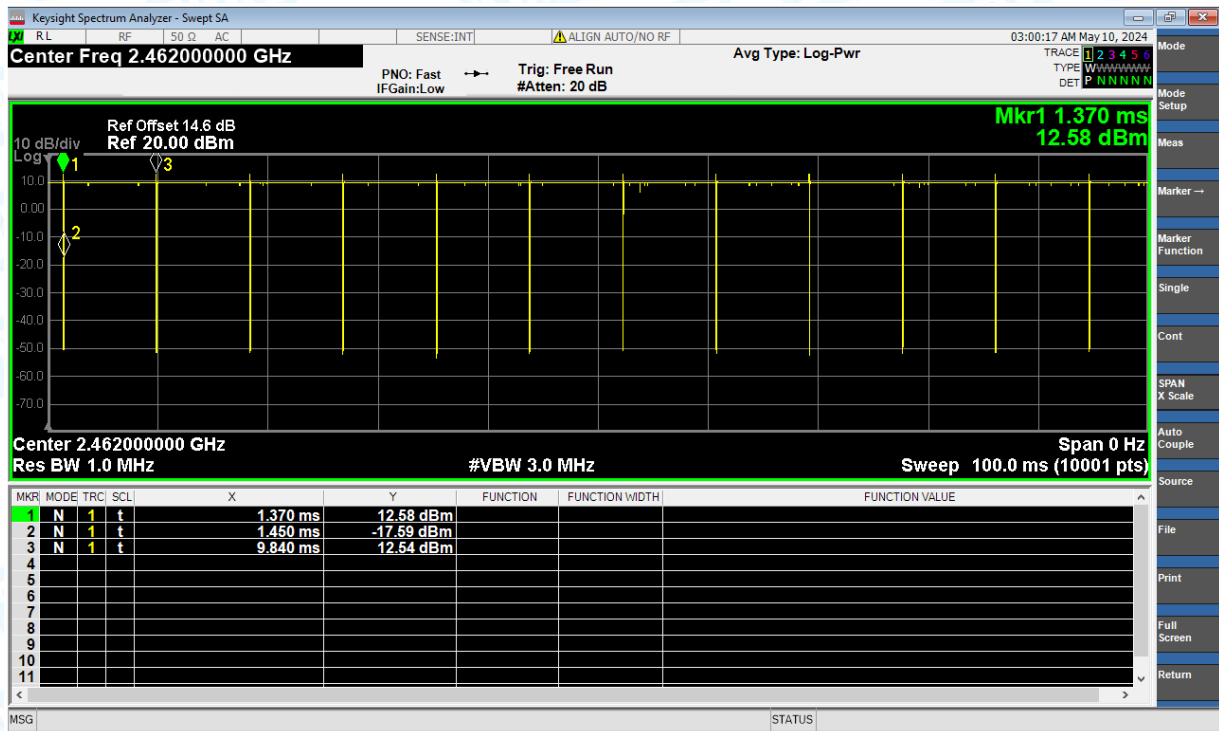
Duty Cycle NVNT b 2412MHz Ant1



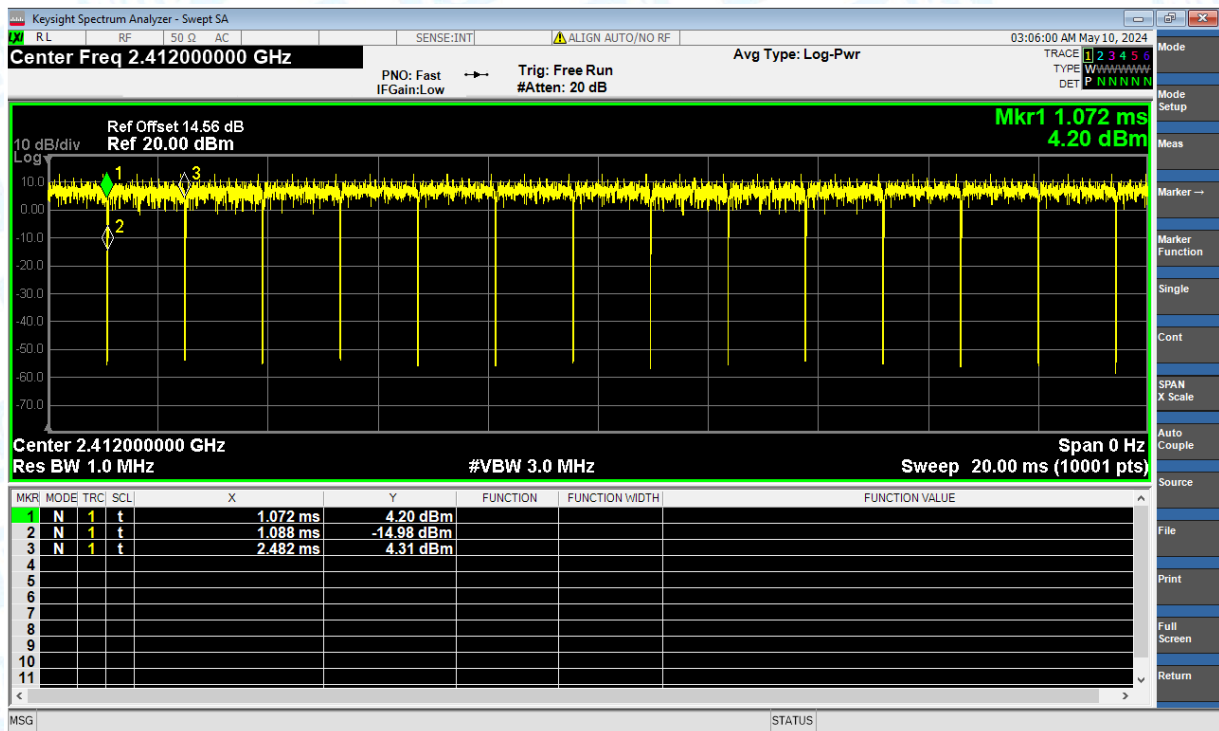
Duty Cycle NVNT b 2437MHz Ant1



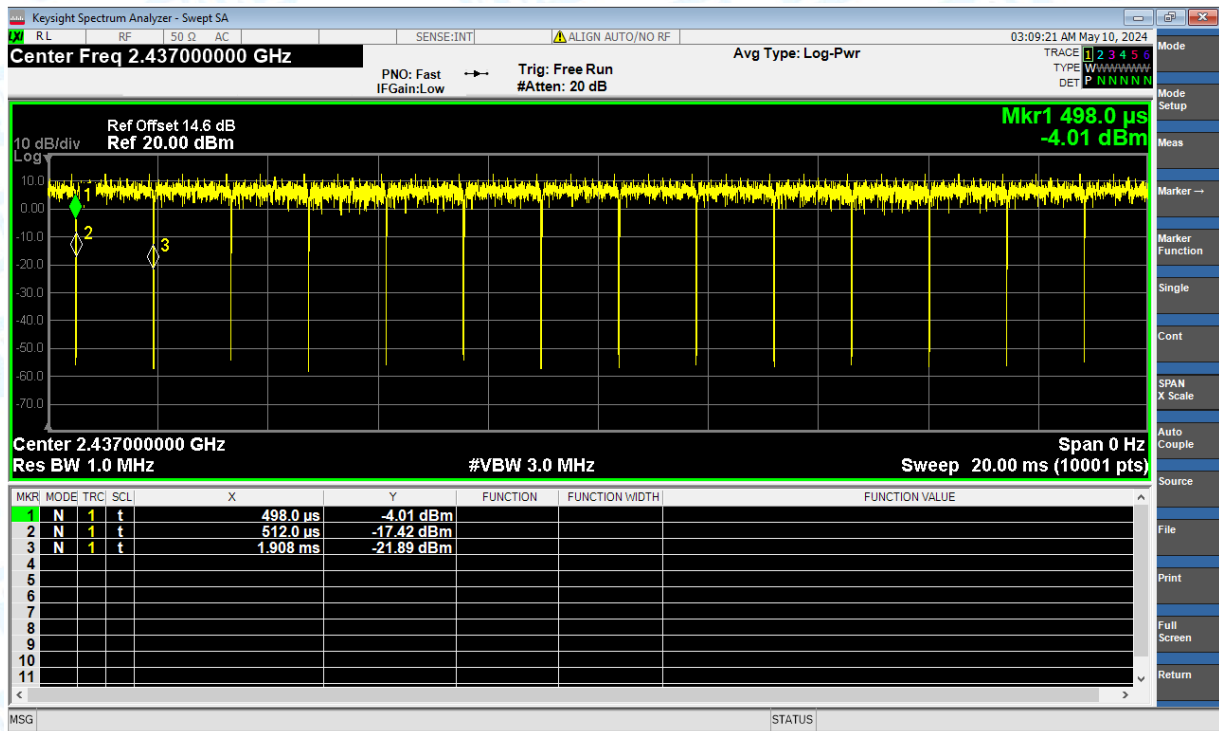
Duty Cycle NVNT b 2462MHz Ant1



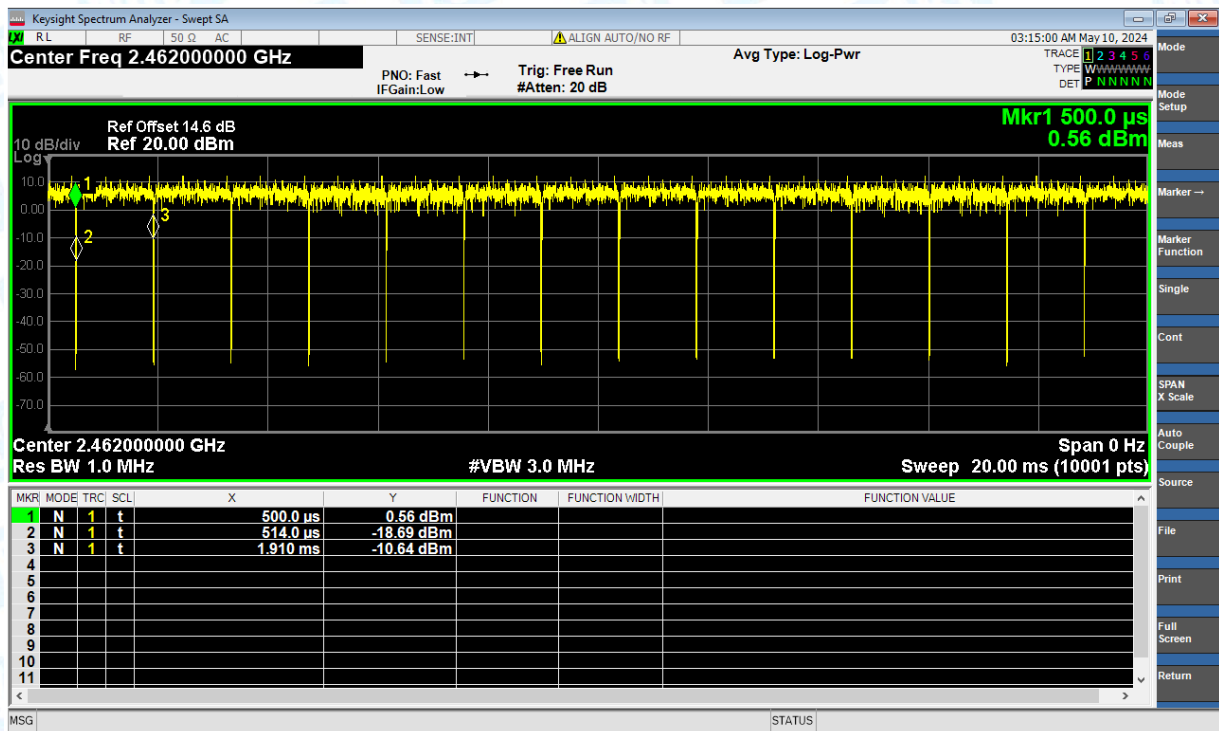
Duty Cycle NVNT g 2412MHz Ant1



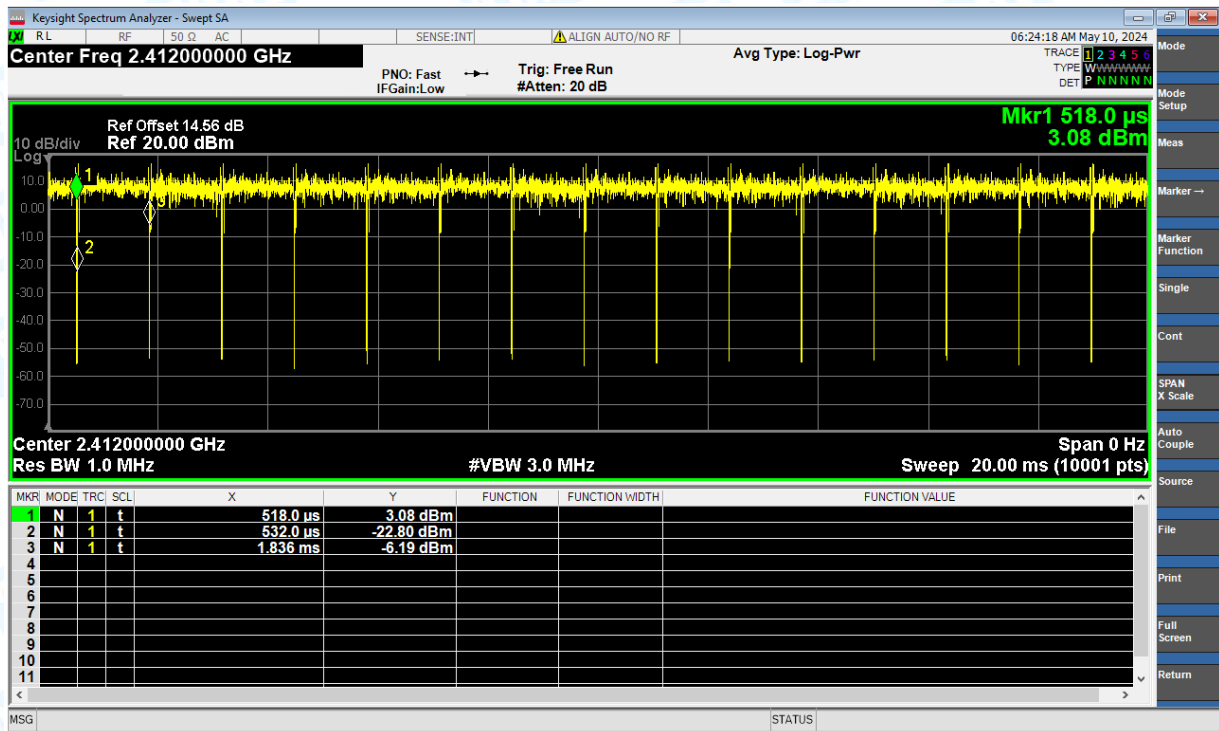
Duty Cycle NVNT g 2437MHz Ant1



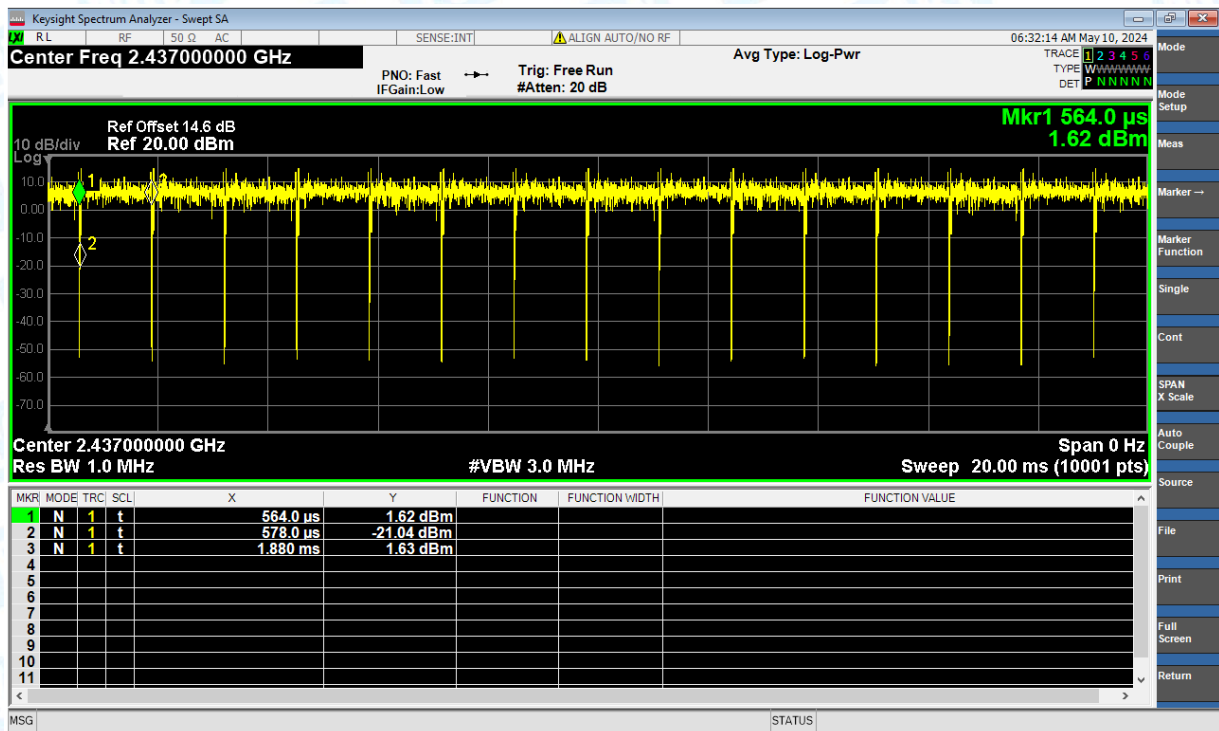
Duty Cycle NVNT g 2462MHz Ant1



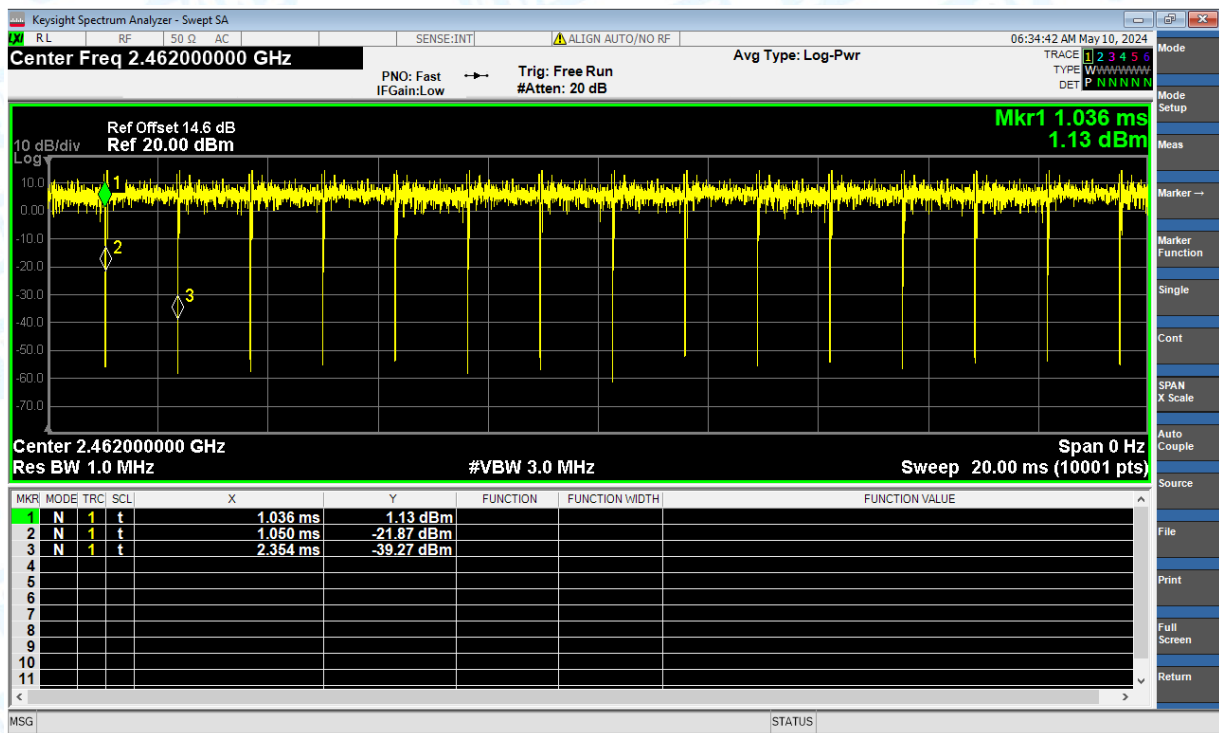
Duty Cycle NVNT n(HT20) 2412MHz Ant1



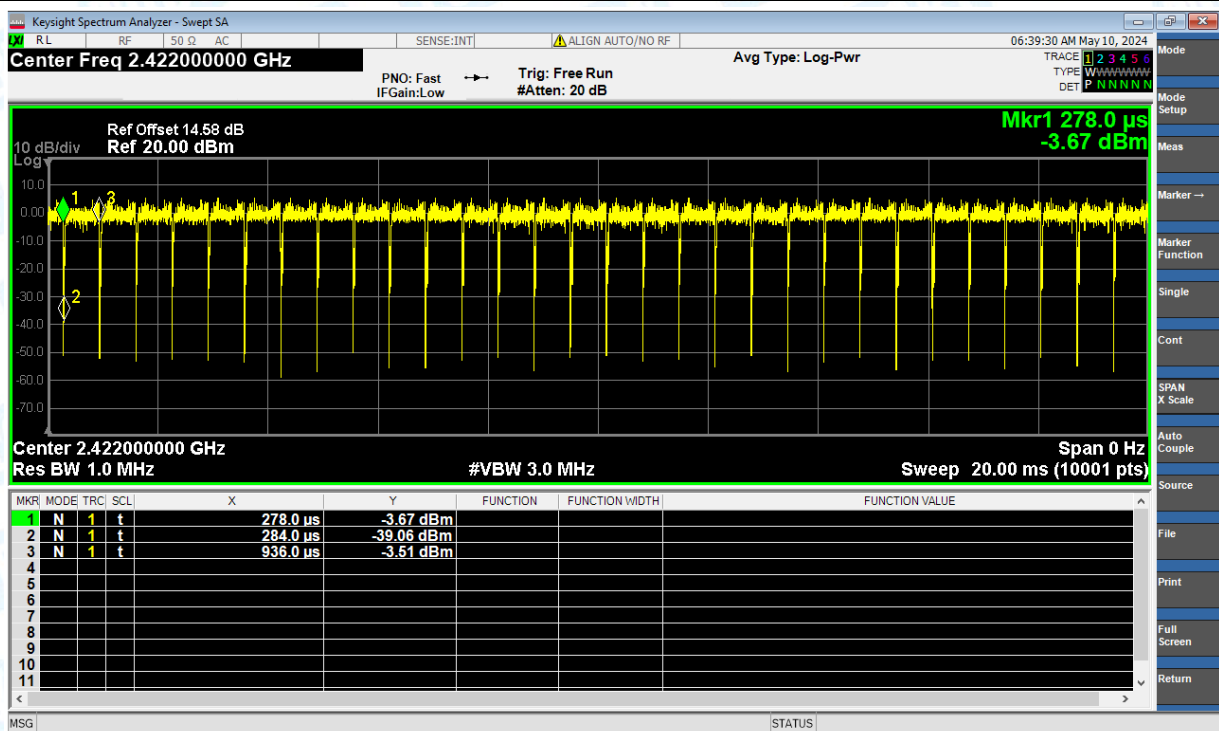
Duty Cycle NVNT n(HT20) 2437MHz Ant1



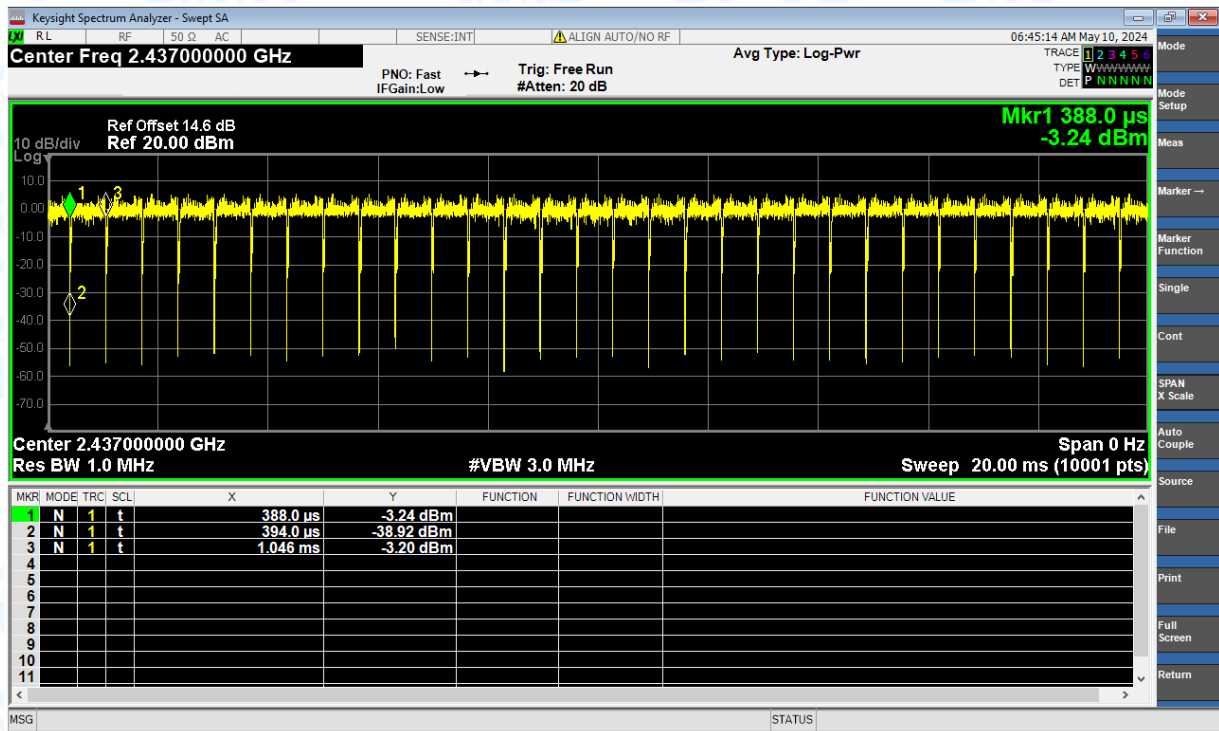
Duty Cycle NVNT n(HT20) 2462MHz Ant1



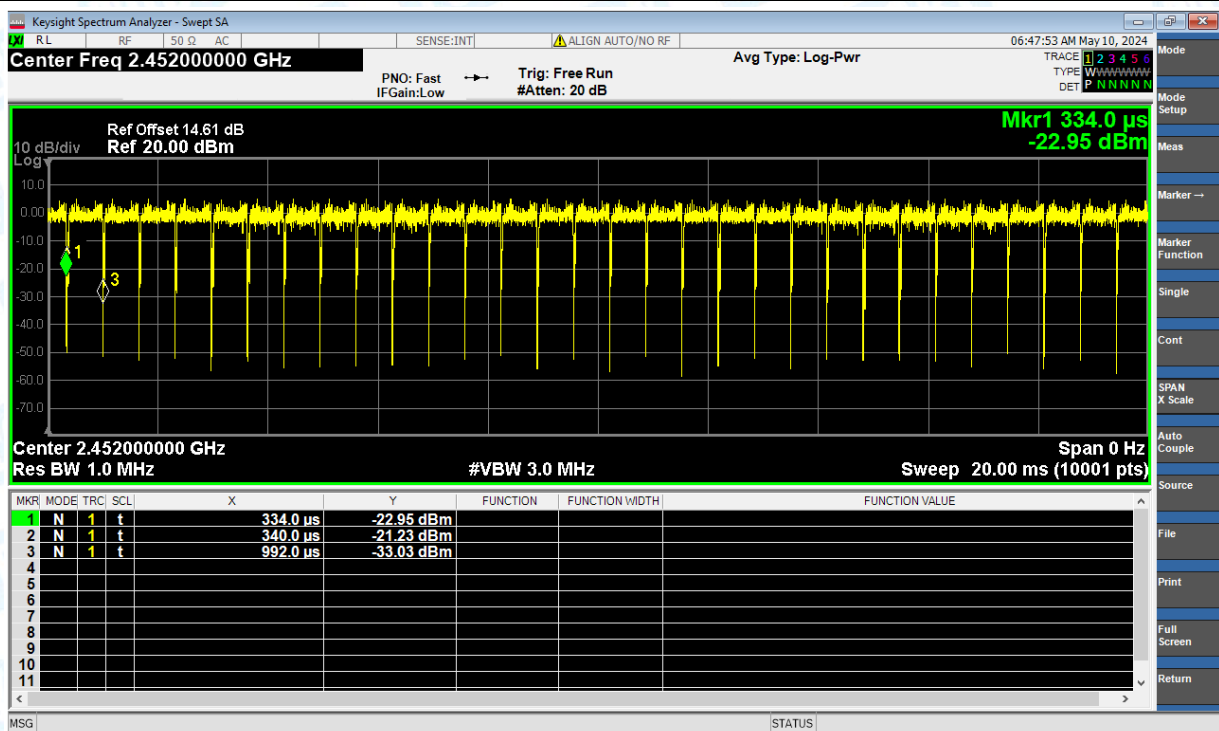
Duty Cycle NVNT n(HT40) 2422MHz Ant1



Duty Cycle NVNT n(HT40) 2437MHz Ant1



Duty Cycle NVNT n(HT40) 2452MHz Ant1



2. Maximum Conducted Output Power

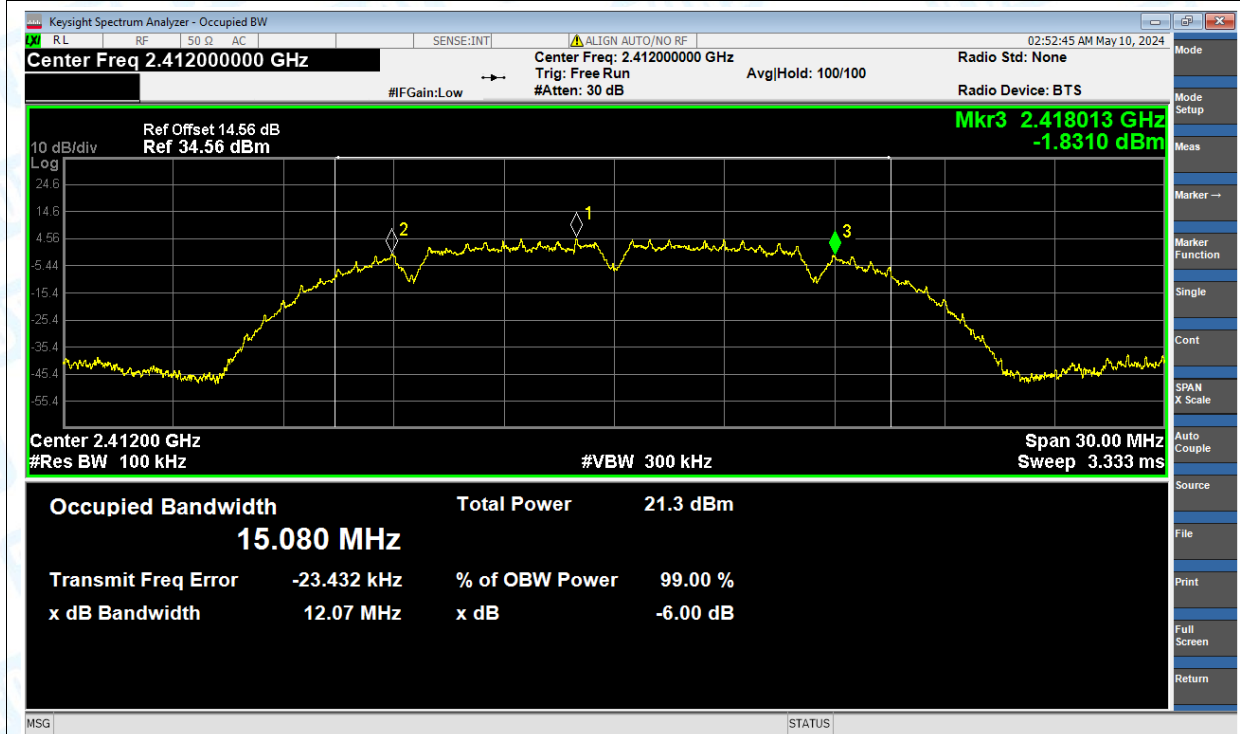
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	Ant1	15.76	30	Pass
NVNT	b	2437	Ant1	15.56	30	Pass
NVNT	b	2462	Ant1	15.06	30	Pass
NVNT	g	2412	Ant1	14.47	30	Pass
NVNT	g	2437	Ant1	14.19	30	Pass
NVNT	g	2462	Ant1	13.65	30	Pass
NVNT	n(HT20)	2412	Ant1	14.27	30	Pass
NVNT	n(HT20)	2437	Ant1	14.00	30	Pass
NVNT	n(HT20)	2462	Ant1	14.08	30	Pass
NVNT	n(HT40)	2422	Ant1	12.02	30	Pass
NVNT	n(HT40)	2437	Ant1	13.23	30	Pass
NVNT	n(HT40)	2452	Ant1	11.90	30	Pass

3. -6dB Bandwidth

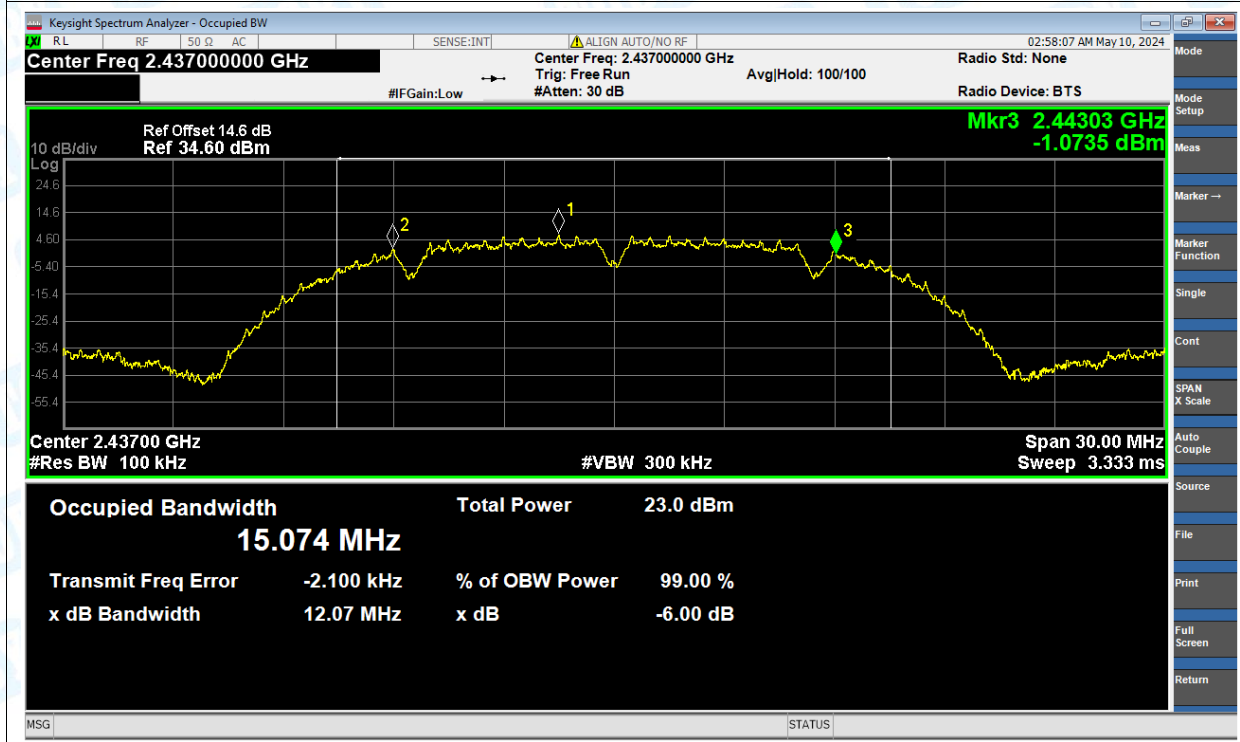
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	b	2412	Ant1	12.07	0.5	Pass
NVNT	b	2437	Ant1	12.07	0.5	Pass
NVNT	b	2462	Ant1	11.10	0.5	Pass
NVNT	g	2412	Ant1	15.35	0.5	Pass
NVNT	g	2437	Ant1	15.11	0.5	Pass
NVNT	g	2462	Ant1	15.29	0.5	Pass
NVNT	n(HT20)	2412	Ant1	15.35	0.5	Pass
NVNT	n(HT20)	2437	Ant1	11.32	0.5	Pass
NVNT	n(HT20)	2462	Ant1	18.07	0.5	Pass
NVNT	n(HT40)	2422	Ant1	34.99	0.5	Pass
NVNT	n(HT40)	2437	Ant1	33.80	0.5	Pass
NVNT	n(HT40)	2452	Ant1	33.82	0.5	Pass

Test Graphs

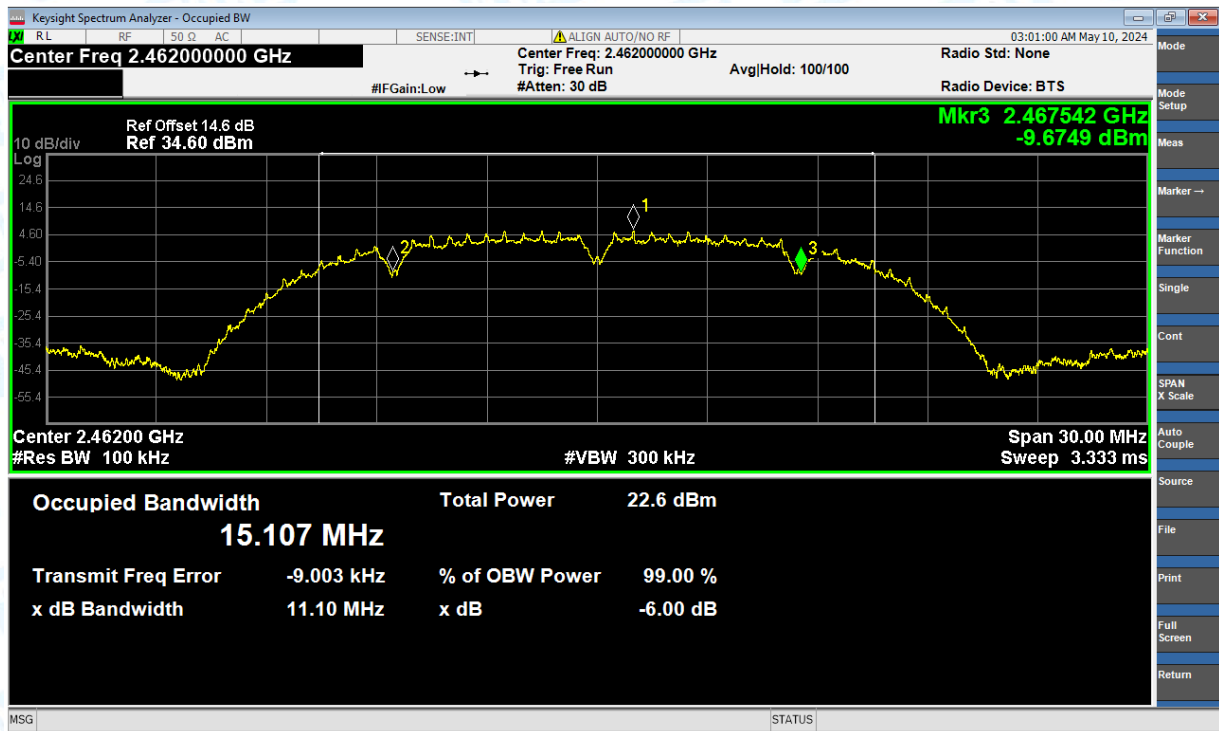
-6dB Bandwidth NVNT b 2412MHz Ant1



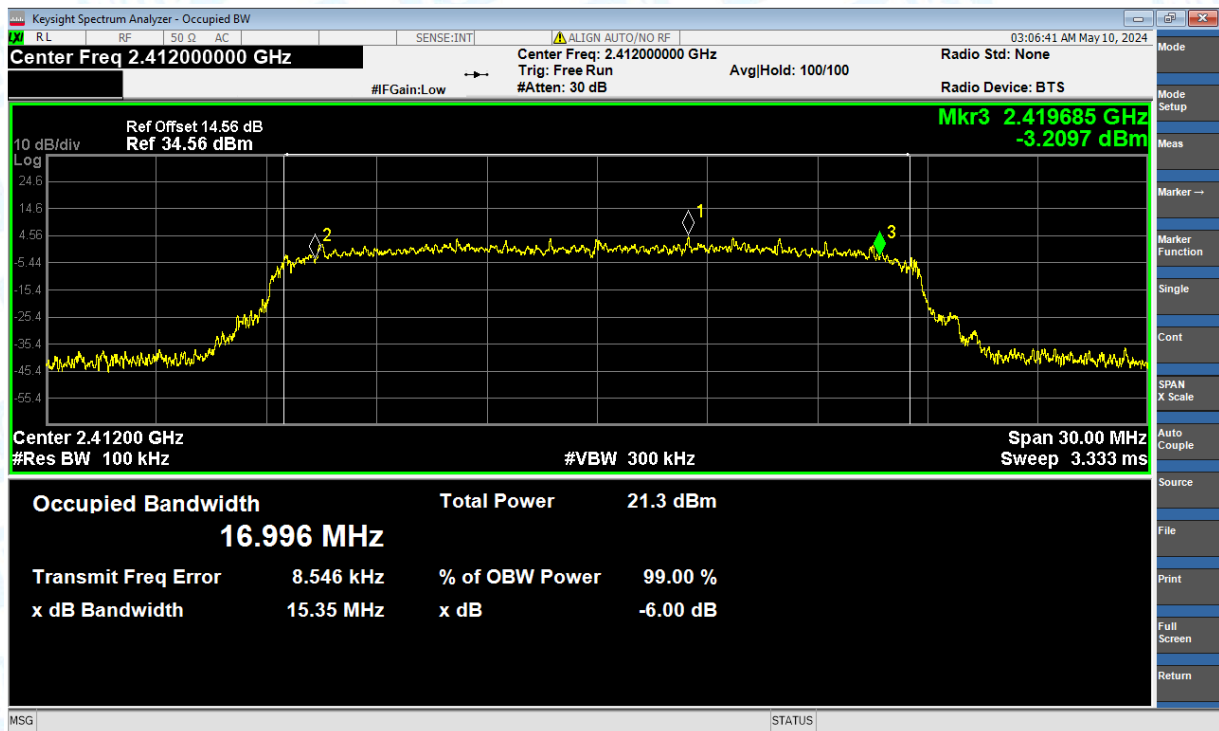
-6dB Bandwidth NVNT b 2437MHz Ant1



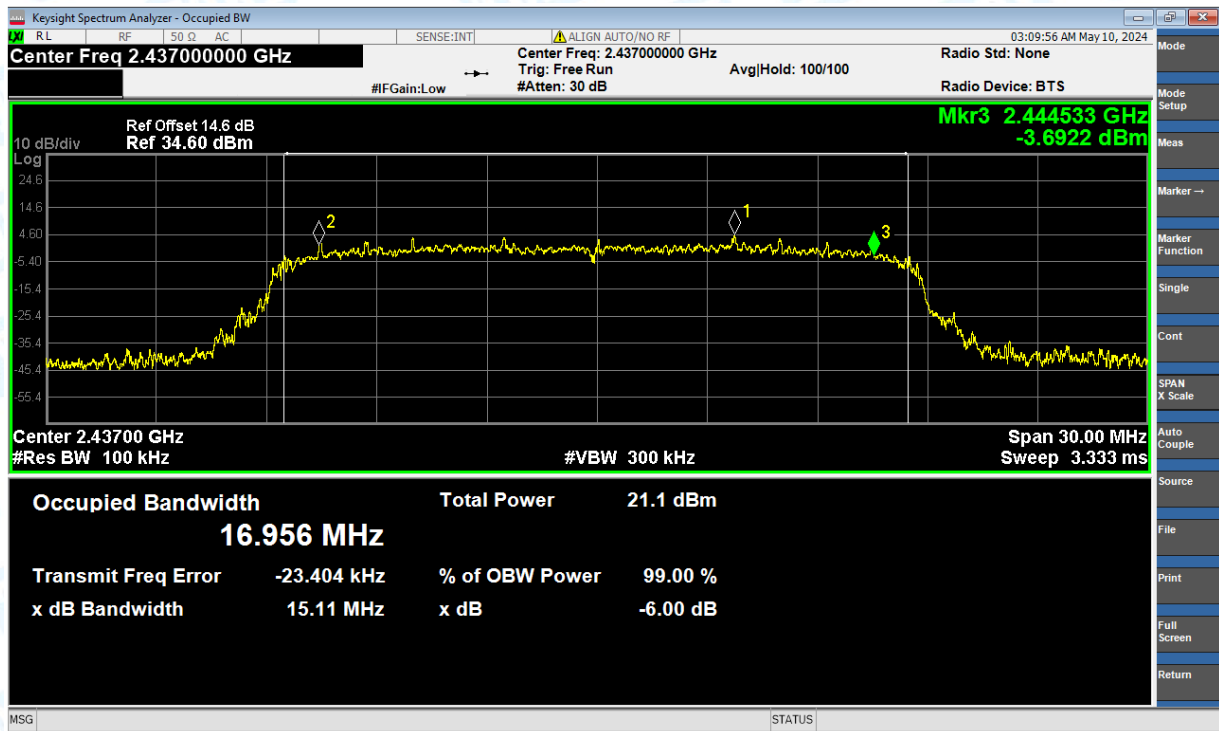
-6dB Bandwidth NVNT b 2462MHz Ant1



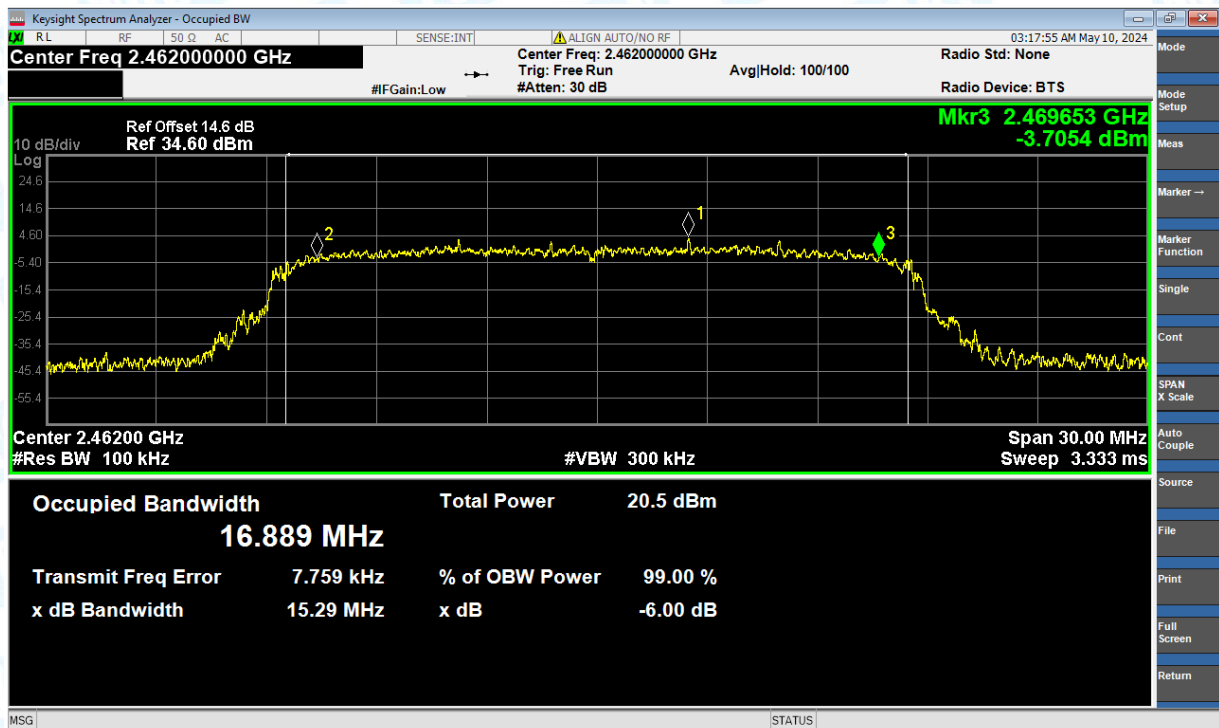
-6dB Bandwidth NVNT g 2412MHz Ant1



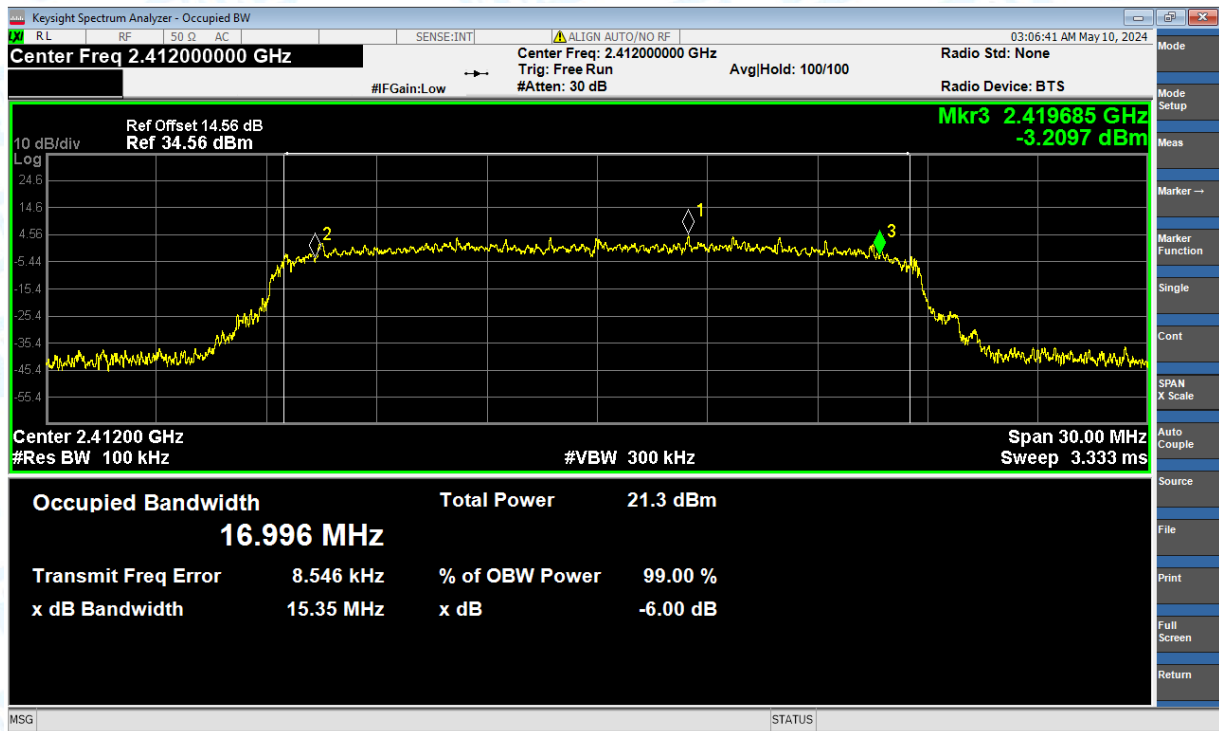
-6dB Bandwidth NVNT g 2437MHz Ant1



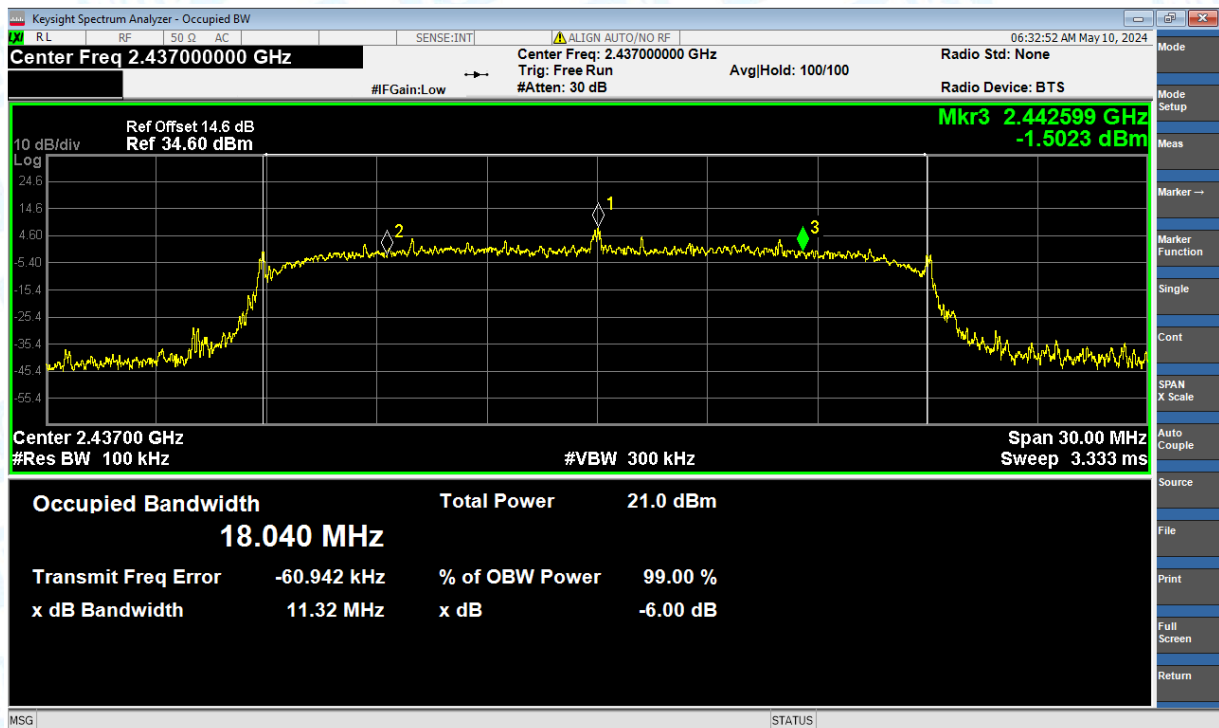
-6dB Bandwidth NVNT g 2462MHz Ant1



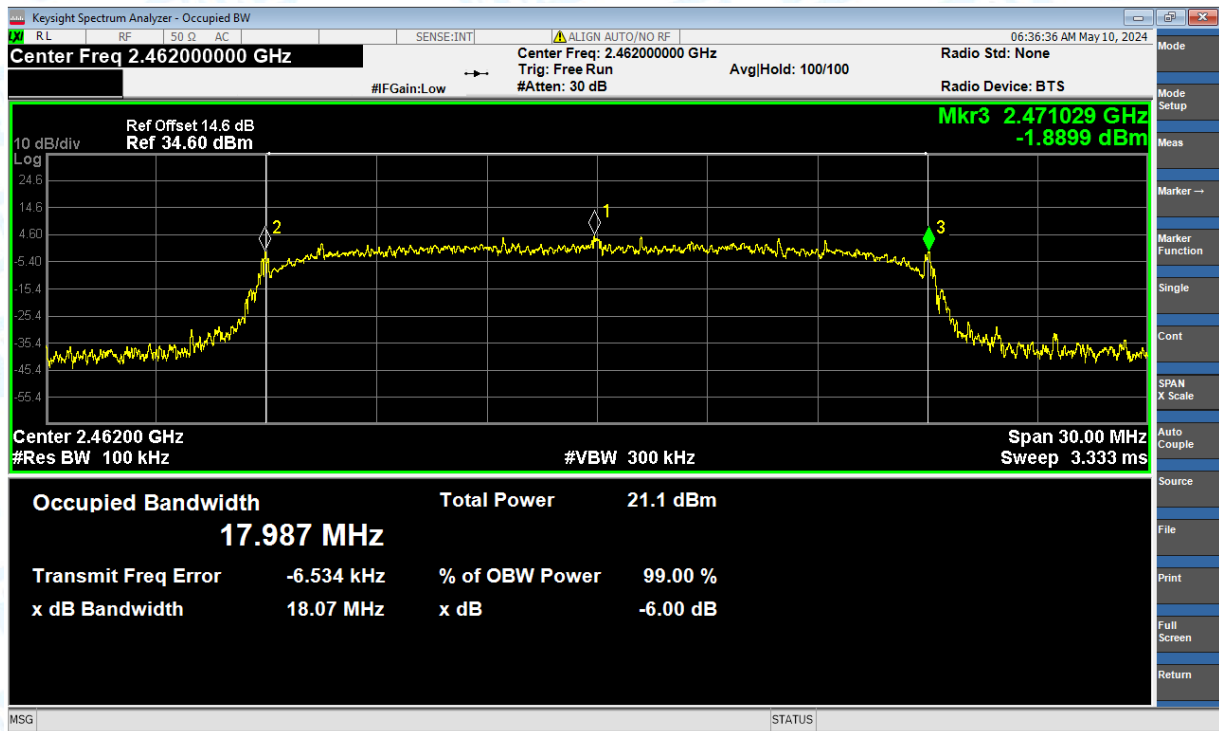
-6dB Bandwidth NVNT n(HT20) 2412MHz Ant1



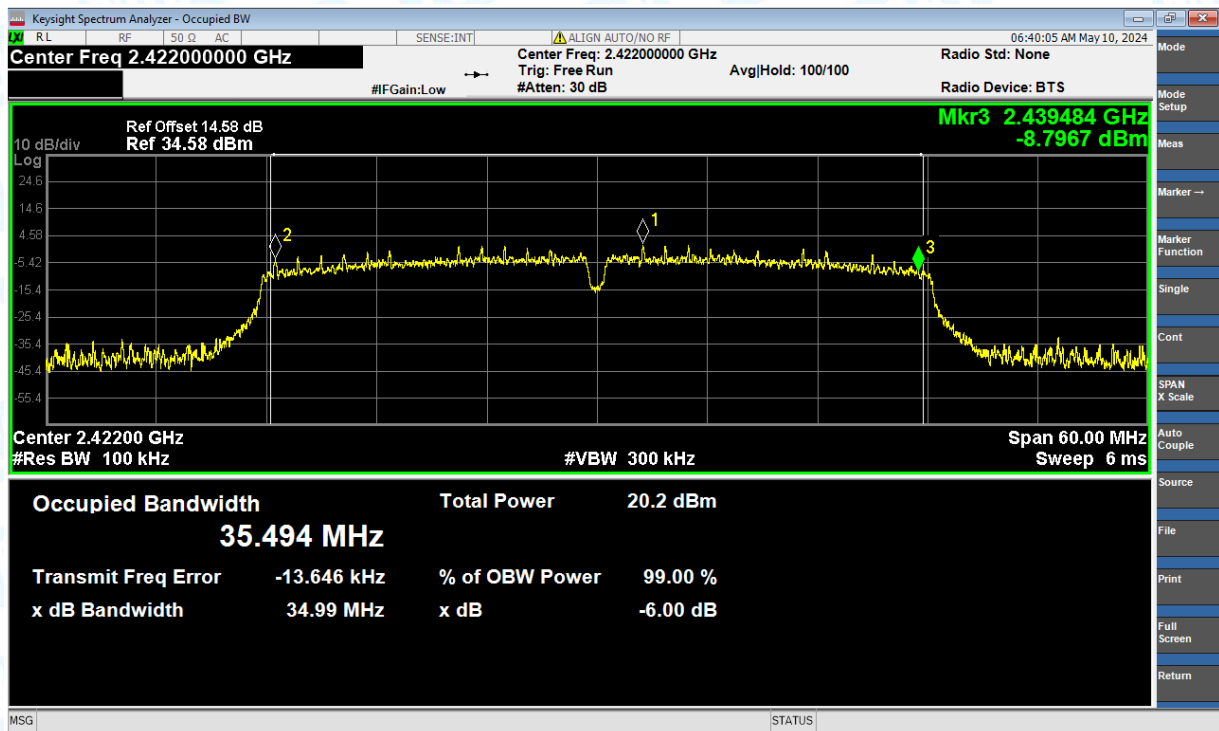
-6dB Bandwidth NVNT n(HT20) 2437MHz Ant1



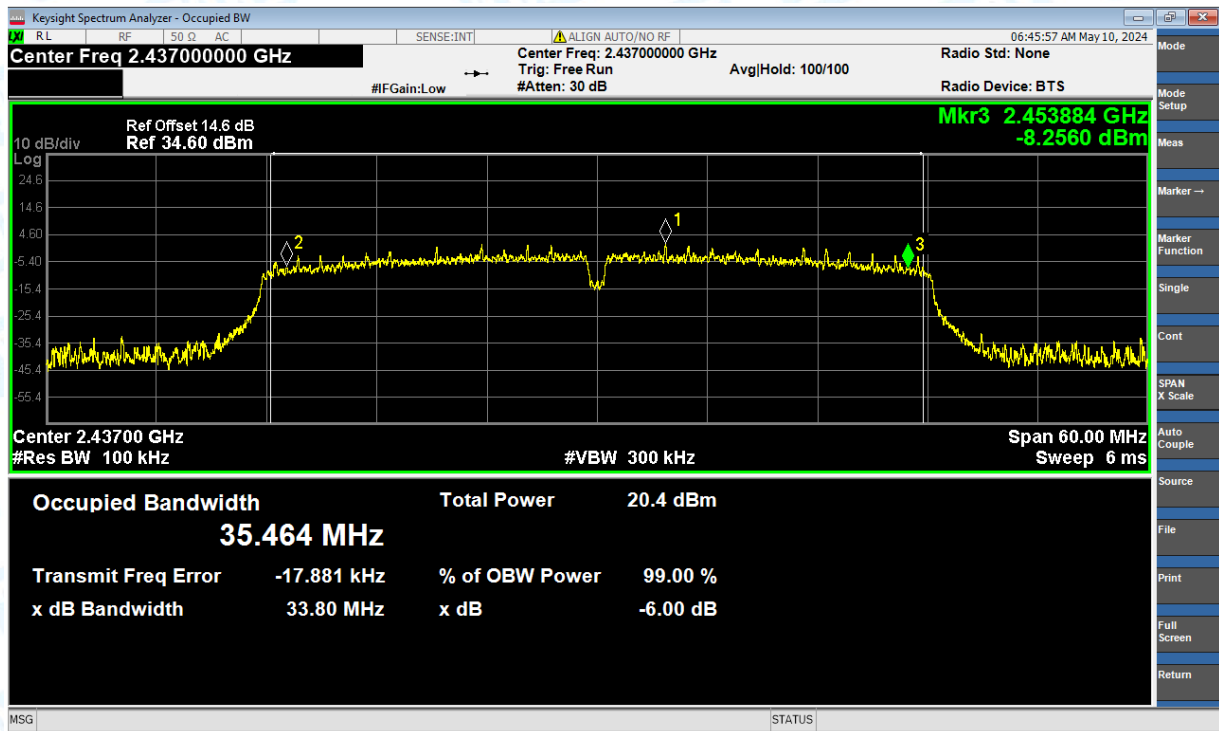
-6dB Bandwidth NVNT n(HT20) 2462MHz Ant1



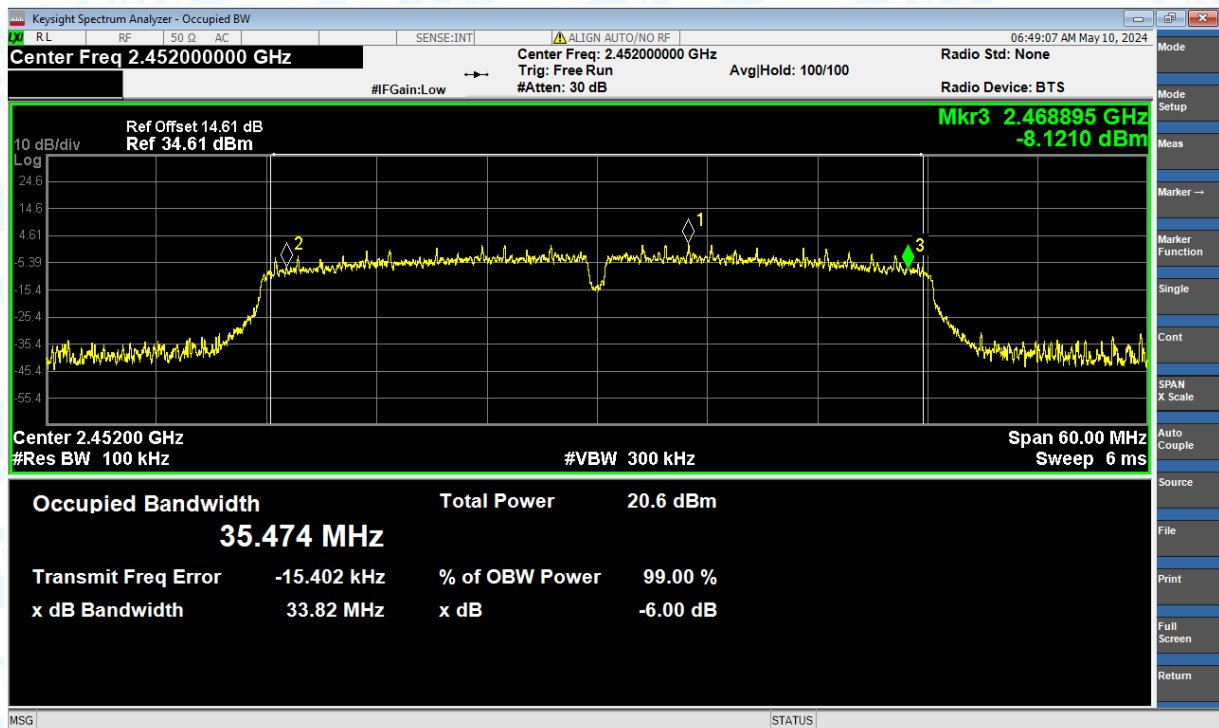
-6dB Bandwidth NVNT n(HT40) 2422MHz Ant1



-6dB Bandwidth NVNT n(HT40) 2437MHz Ant1



-6dB Bandwidth NVNT n(HT40) 2452MHz Ant1

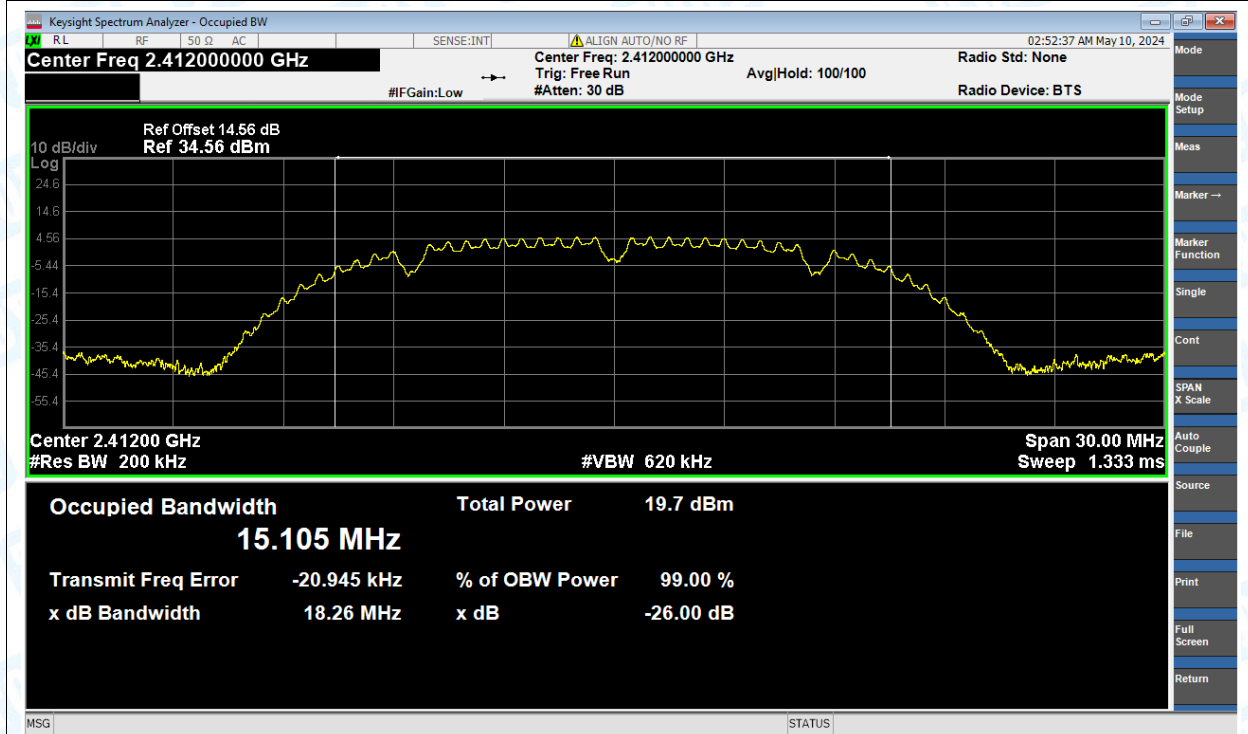


4. Occupied Channel Bandwidth

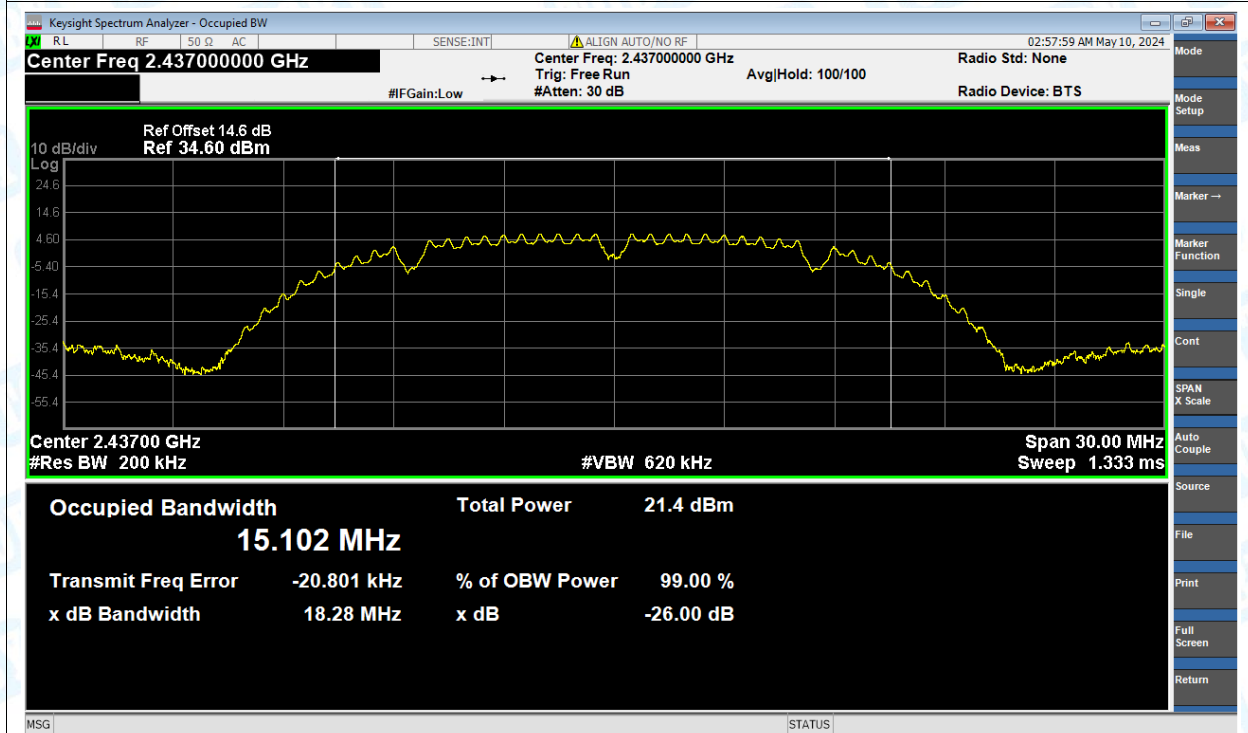
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	b	2412	Ant1	15.105
NVNT	b	2437	Ant1	15.102
NVNT	b	2462	Ant1	15.110
NVNT	g	2412	Ant1	17.083
NVNT	g	2437	Ant1	17.028
NVNT	g	2462	Ant1	16.993
NVNT	n(HT20)	2412	Ant1	17.775
NVNT	n(HT20)	2437	Ant1	17.958
NVNT	n(HT20)	2462	Ant1	18.037
NVNT	n(HT40)	2422	Ant1	35.580
NVNT	n(HT40)	2437	Ant1	35.593
NVNT	n(HT40)	2452	Ant1	35.625

Test Graphs

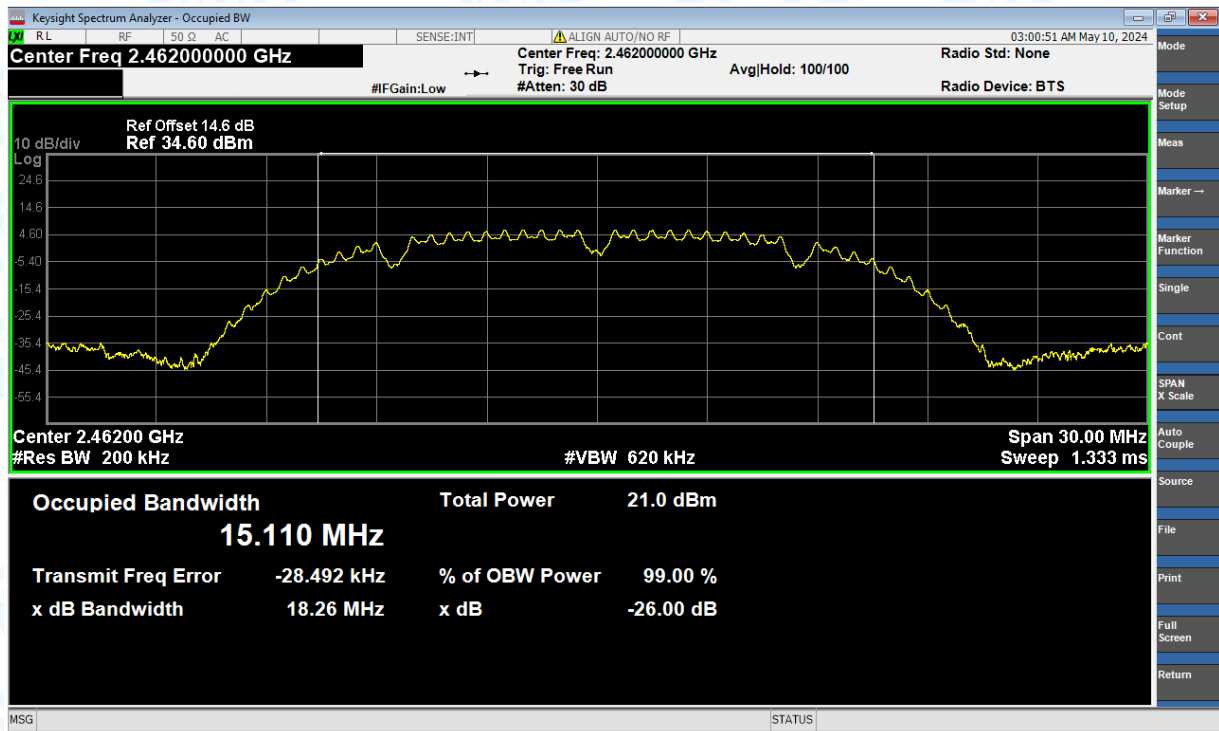
OBW NVNT b 2412MHz Ant1



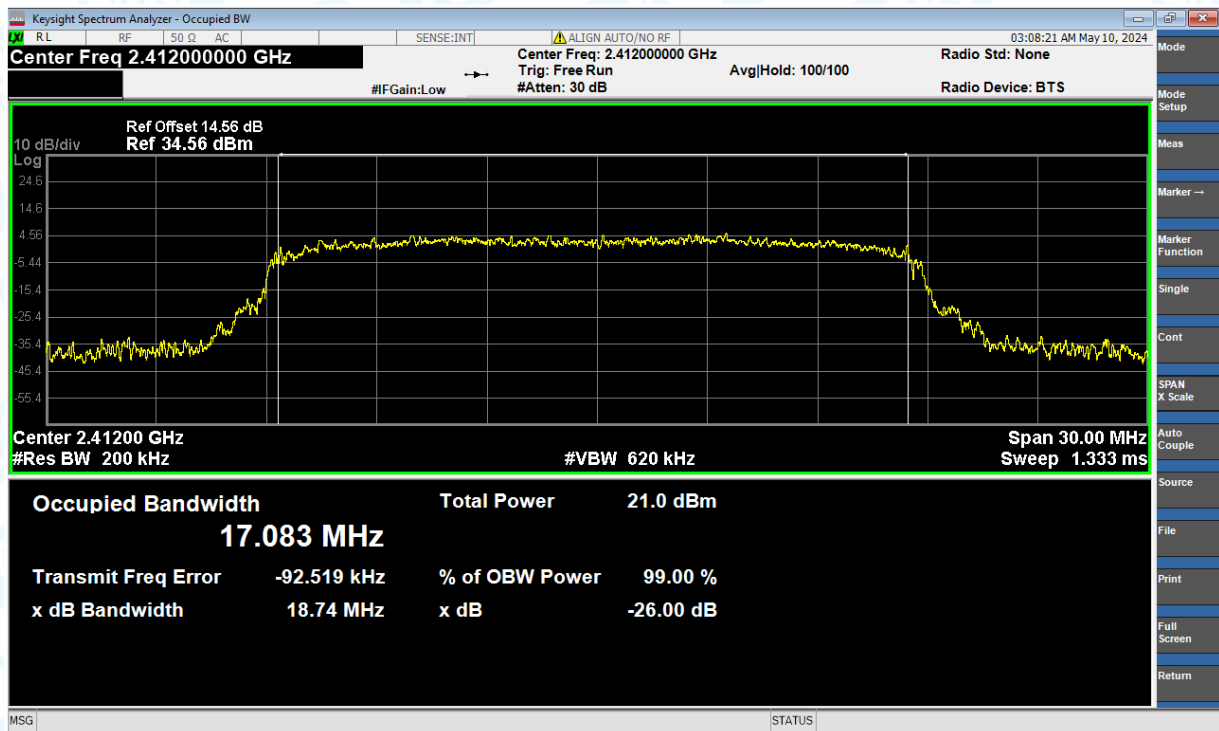
OBW NVNT b 2437MHz Ant1



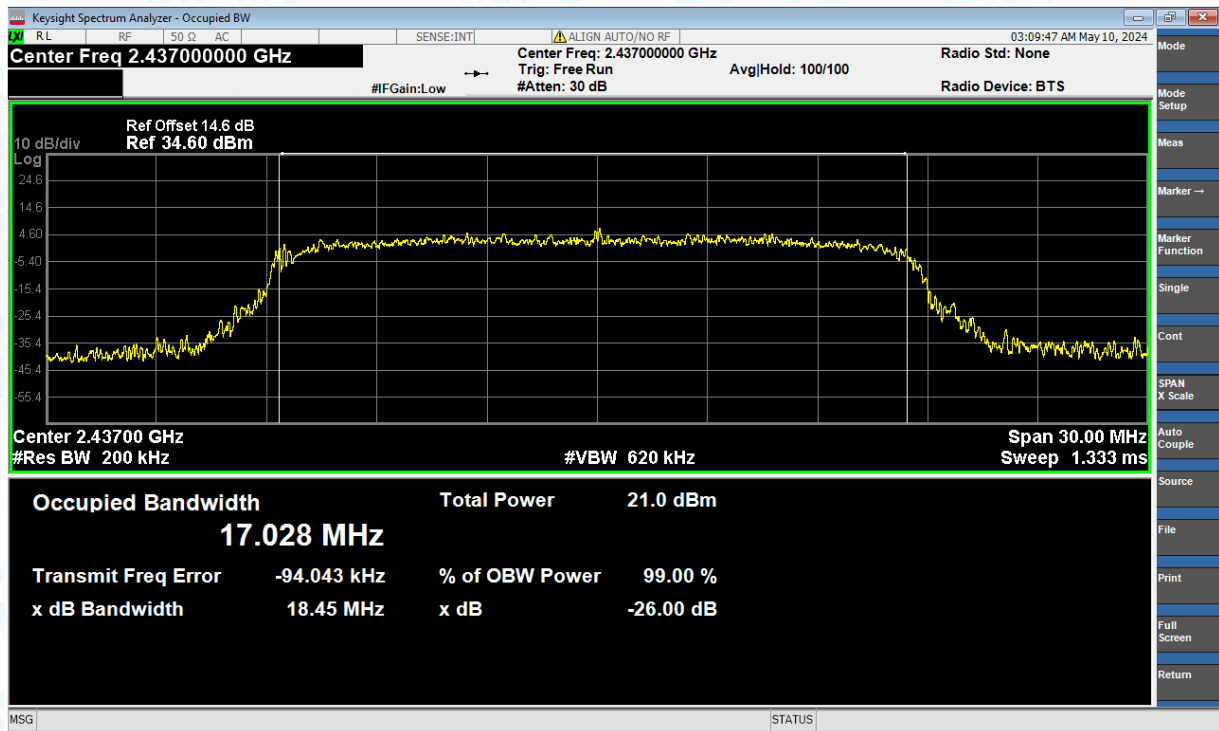
OBW NVNT b 2462MHz Ant1



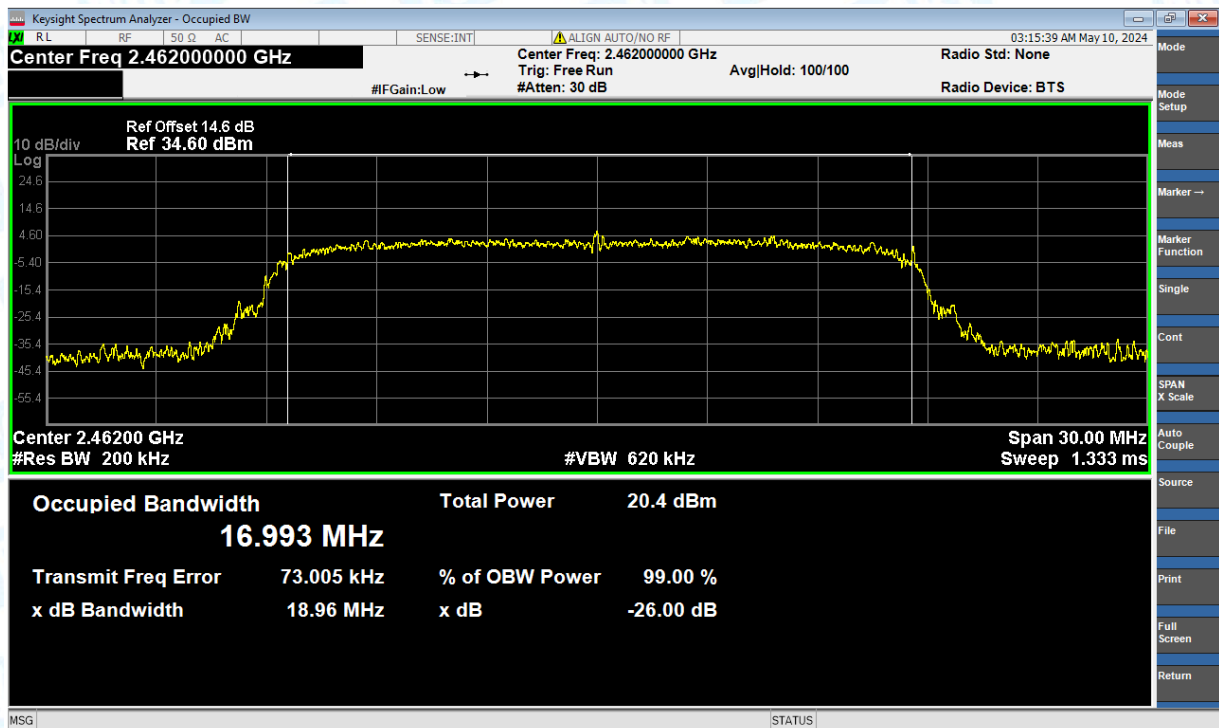
OBW NVNT g 2412MHz Ant1



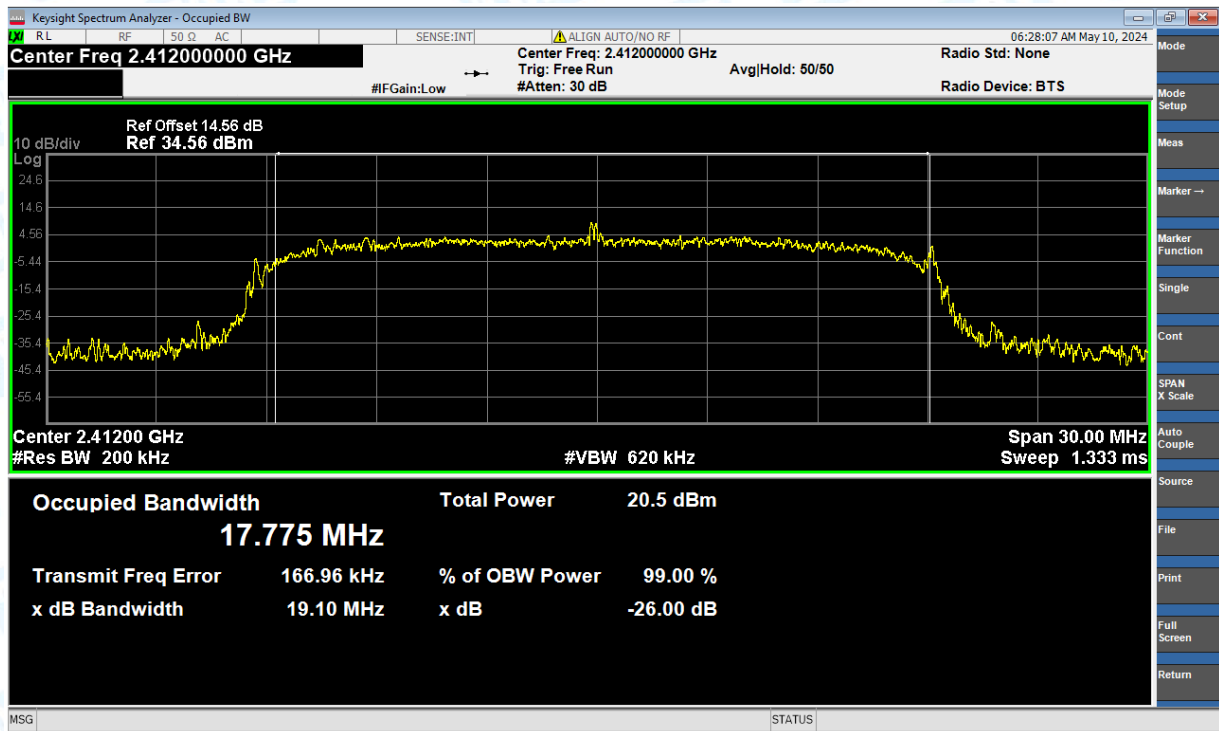
OBW NVNT g 2437MHz Ant1



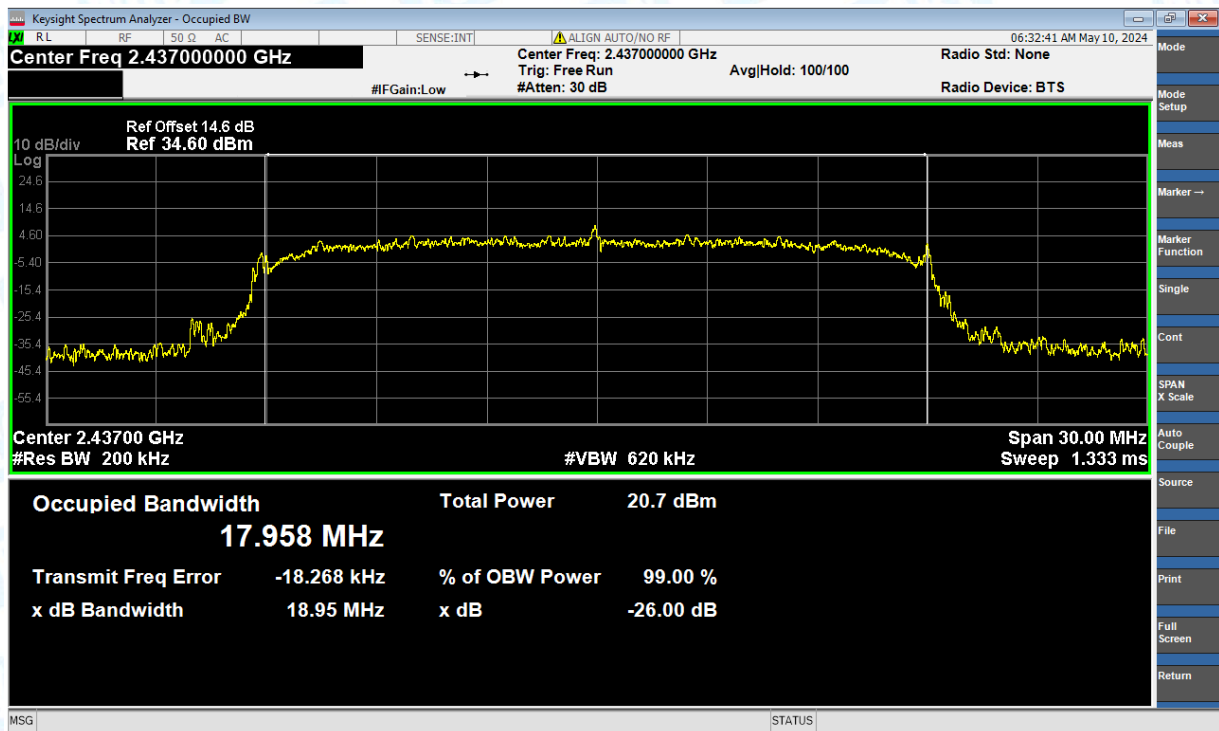
OBW NVNT g 2462MHz Ant1



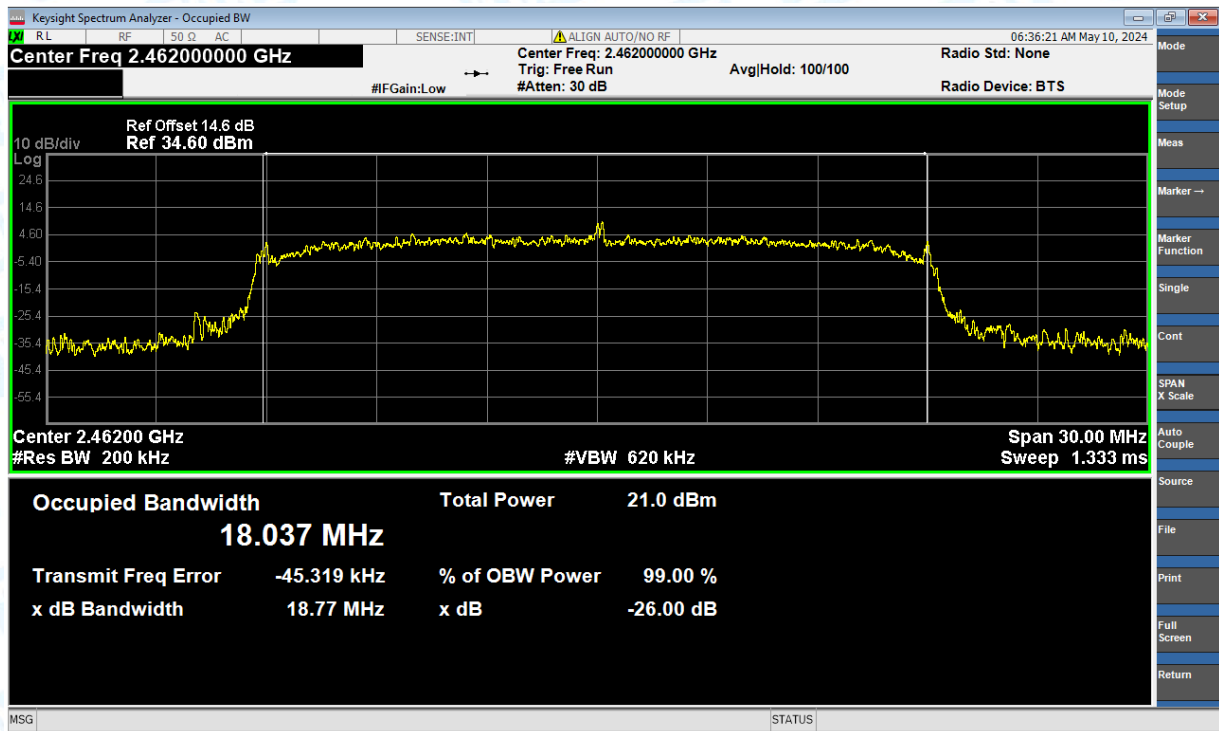
OBW NVNT n(HT20) 2412MHz Ant1



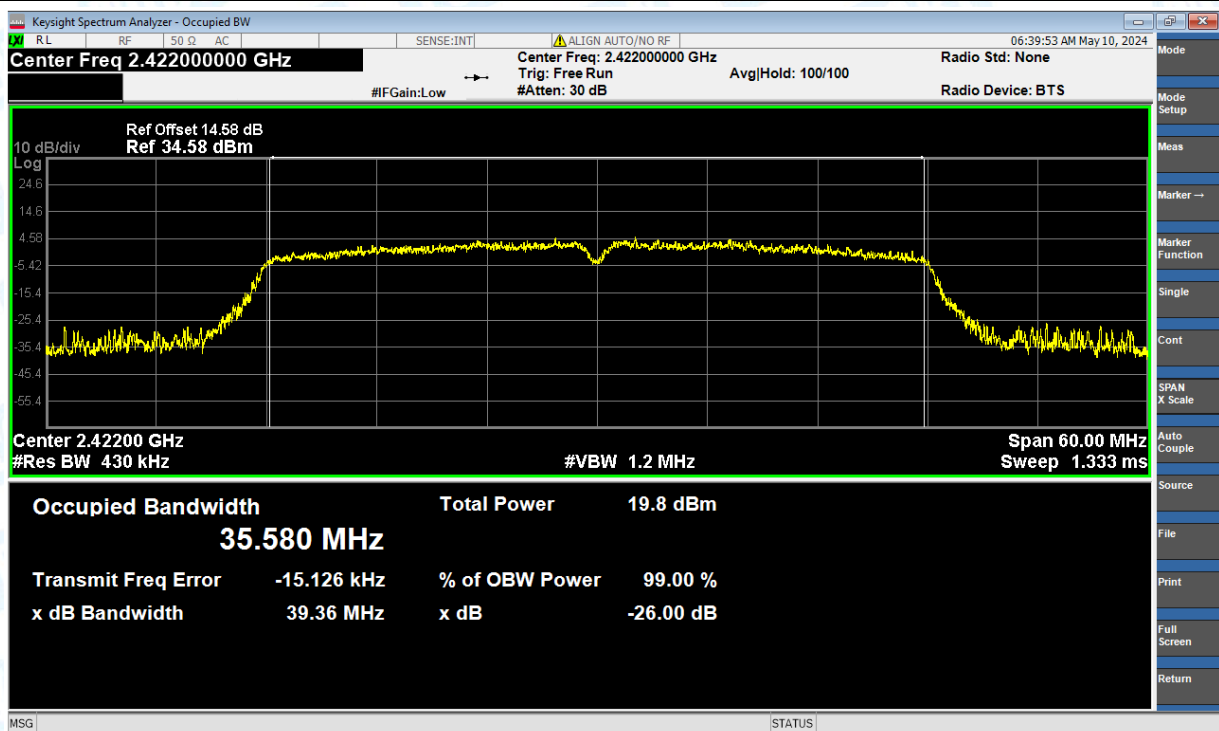
OBW NVNT n(HT20) 2437MHz Ant1



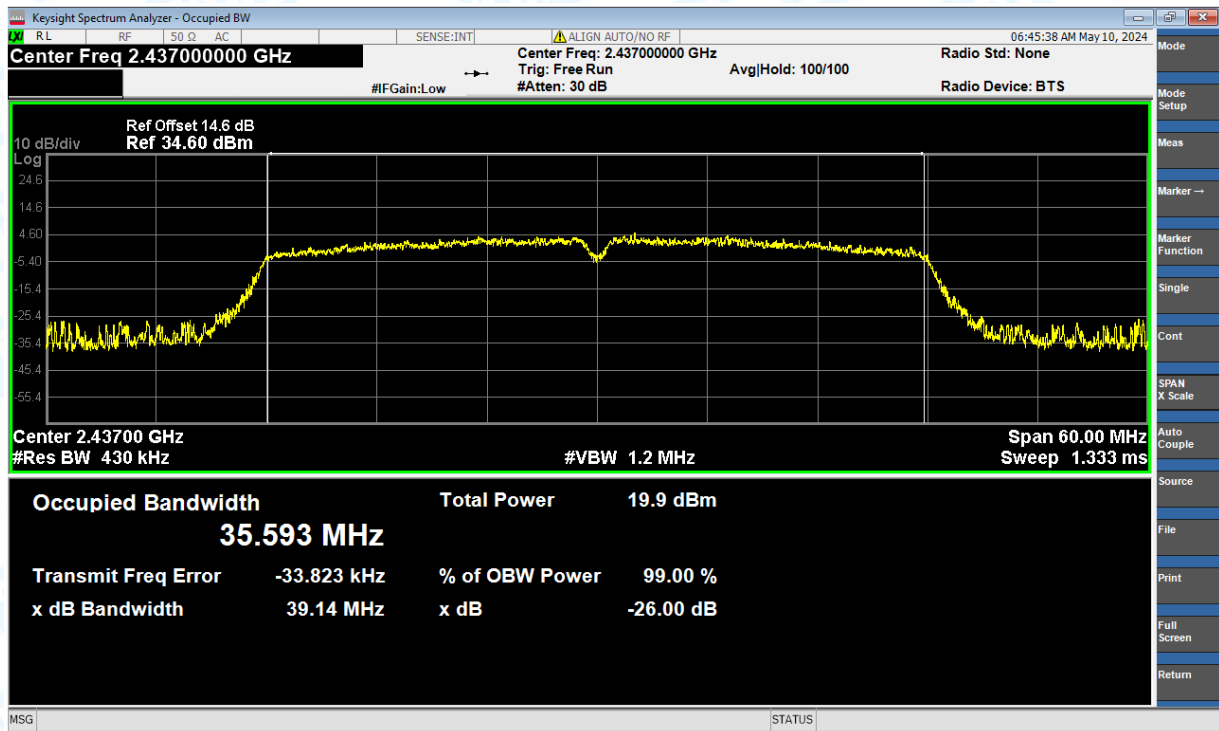
OBW NVNT n(HT20) 2462MHz Ant1



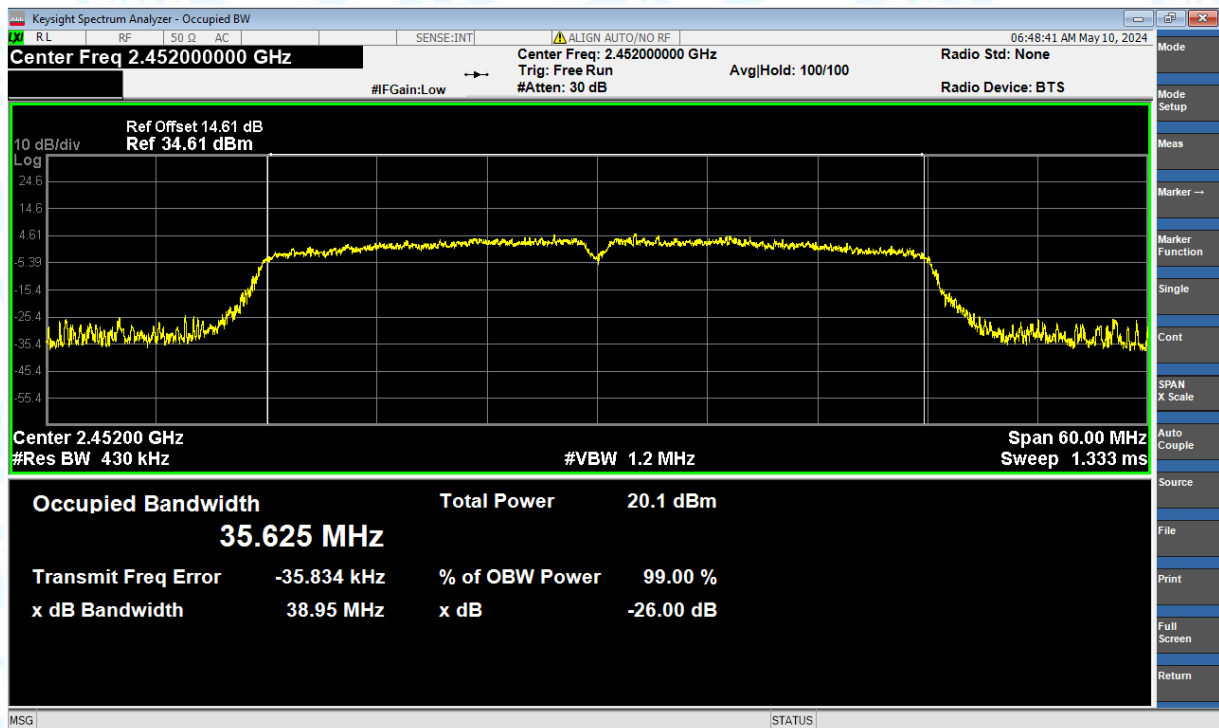
OBW NVNT n(HT40) 2422MHz Ant1



OBW NVNT n(HT40) 2437MHz Ant1



OBW NVNT n(HT40) 2452MHz Ant1

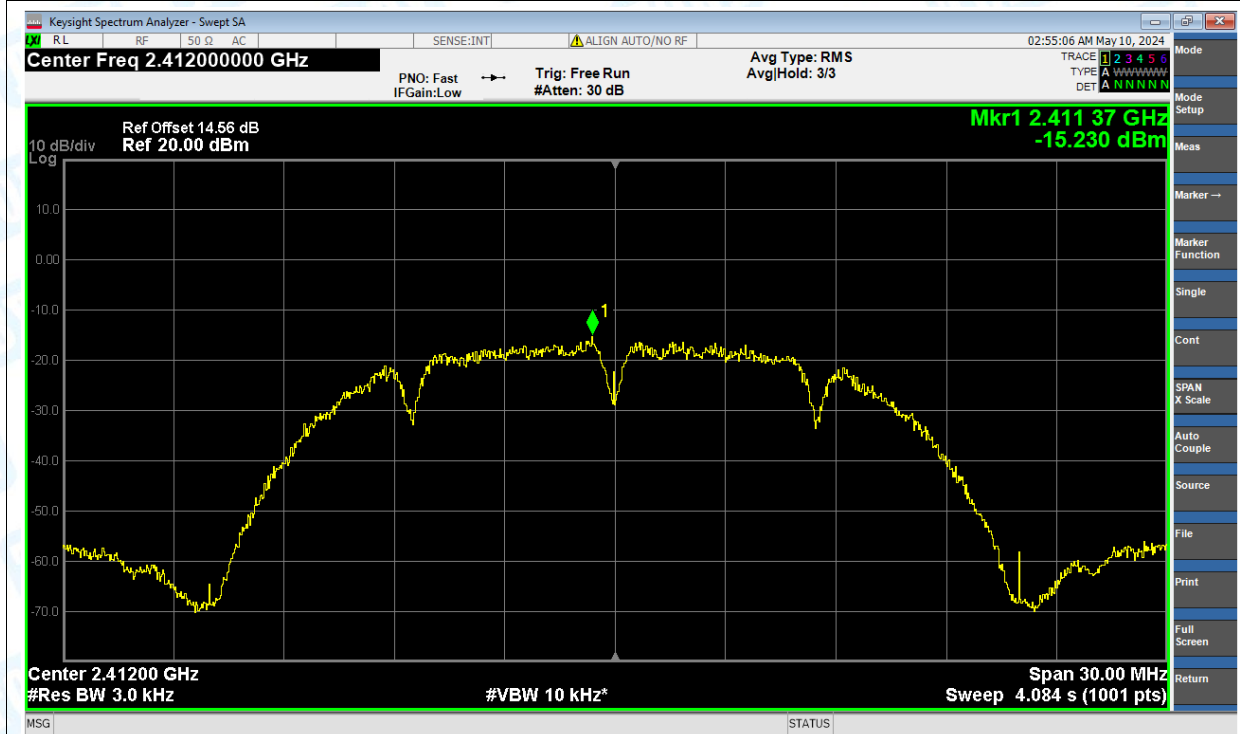


5. Maximum Power Spectral Density Level

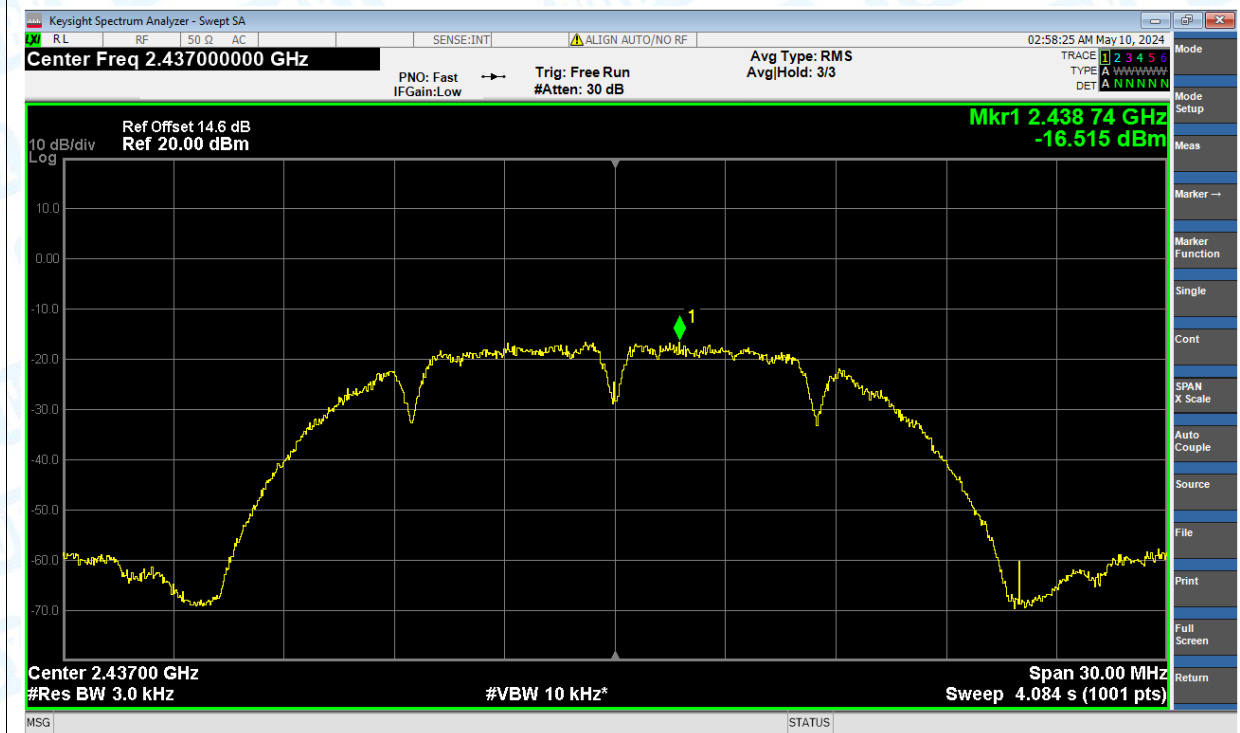
Condition	Mode	Frequency (MHz)	Antenna	Max PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	b	2412	Ant1	-15.230	8	Pass
NVNT	b	2437	Ant1	-16.515	8	Pass
NVNT	b	2462	Ant1	-16.836	8	Pass
NVNT	g	2412	Ant1	-18.060	8	Pass
NVNT	g	2437	Ant1	-18.207	8	Pass
NVNT	g	2462	Ant1	-18.379	8	Pass
NVNT	n(HT20)	2412	Ant1	-17.865	8	Pass
NVNT	n(HT20)	2437	Ant1	-19.066	8	Pass
NVNT	n(HT20)	2462	Ant1	-18.134	8	Pass
NVNT	n(HT40)	2422	Ant1	-23.221	8	Pass
NVNT	n(HT40)	2437	Ant1	-22.036	8	Pass
NVNT	n(HT40)	2452	Ant1	-23.221	8	Pass

Test Graphs

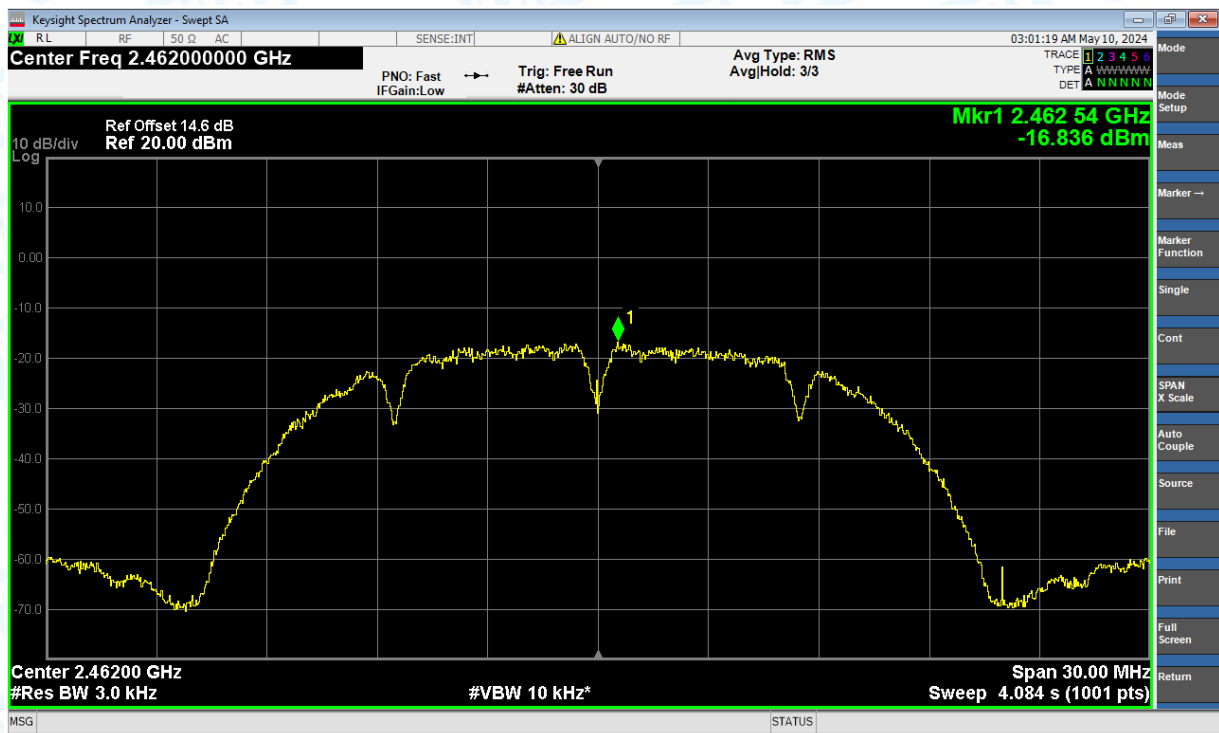
PSD NVNT b 2412MHz Ant1



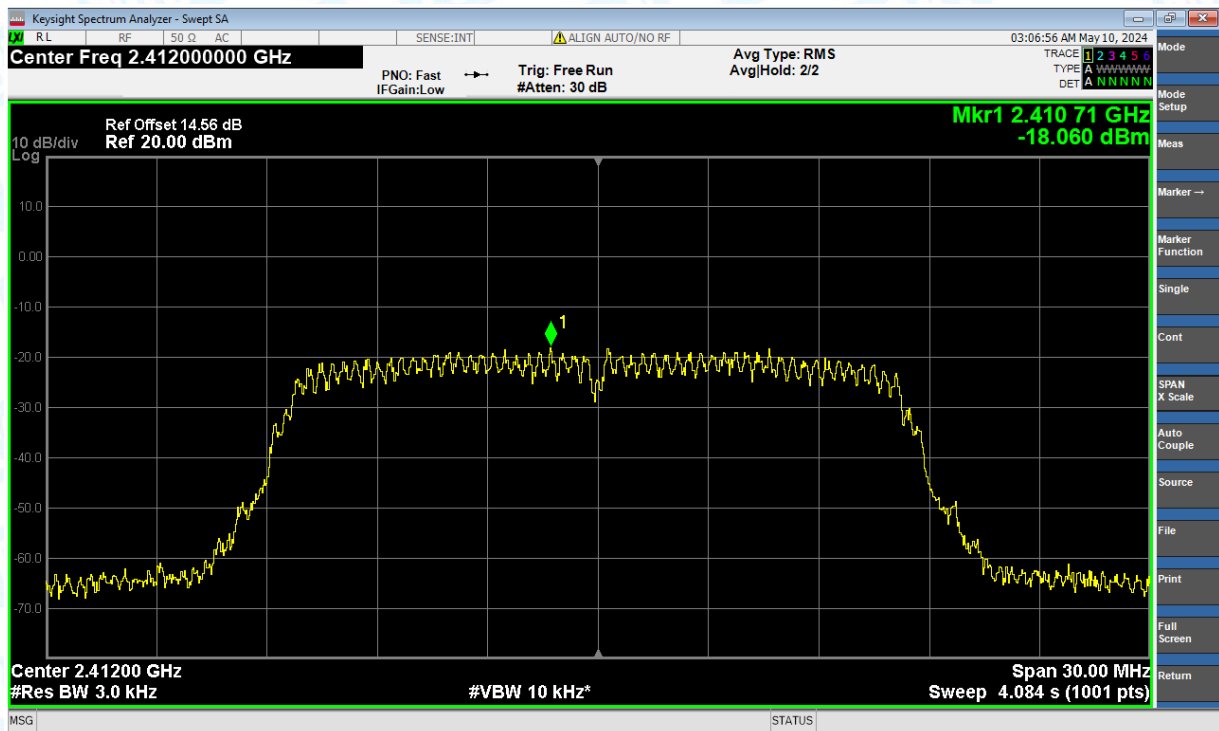
PSD NVNT b 2437MHz Ant1



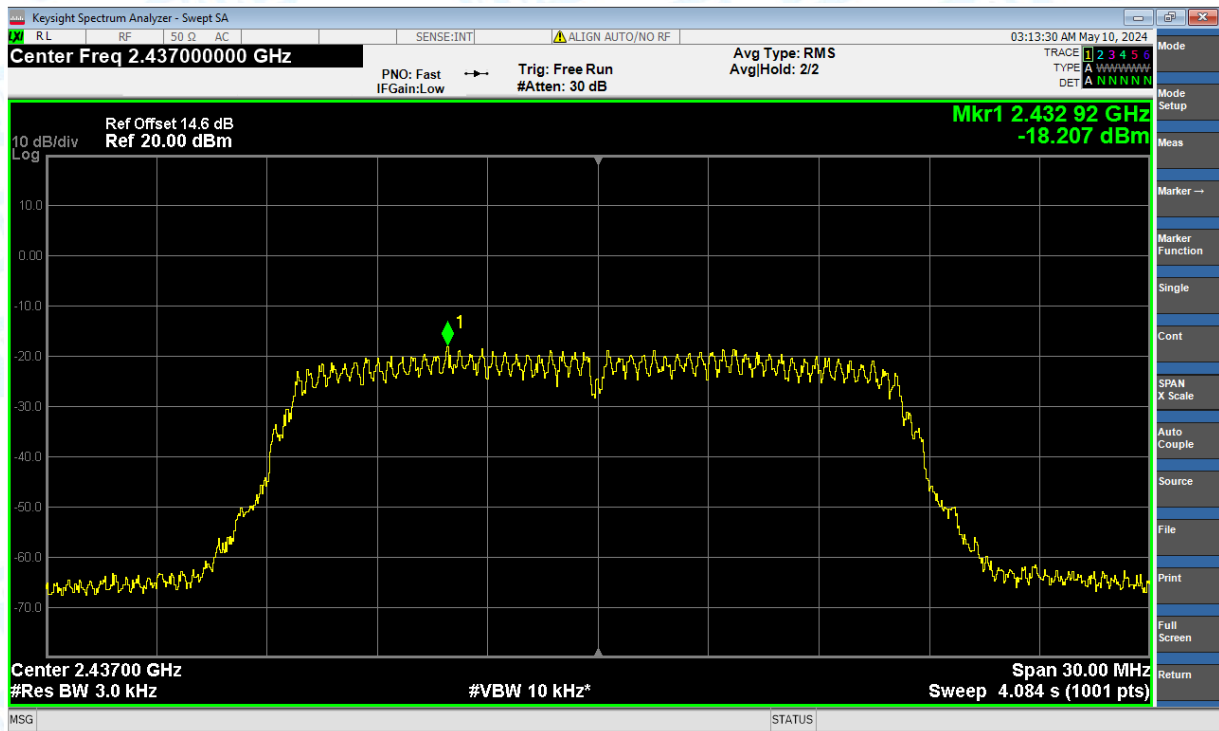
PSD NVNT b 2462MHz Ant1



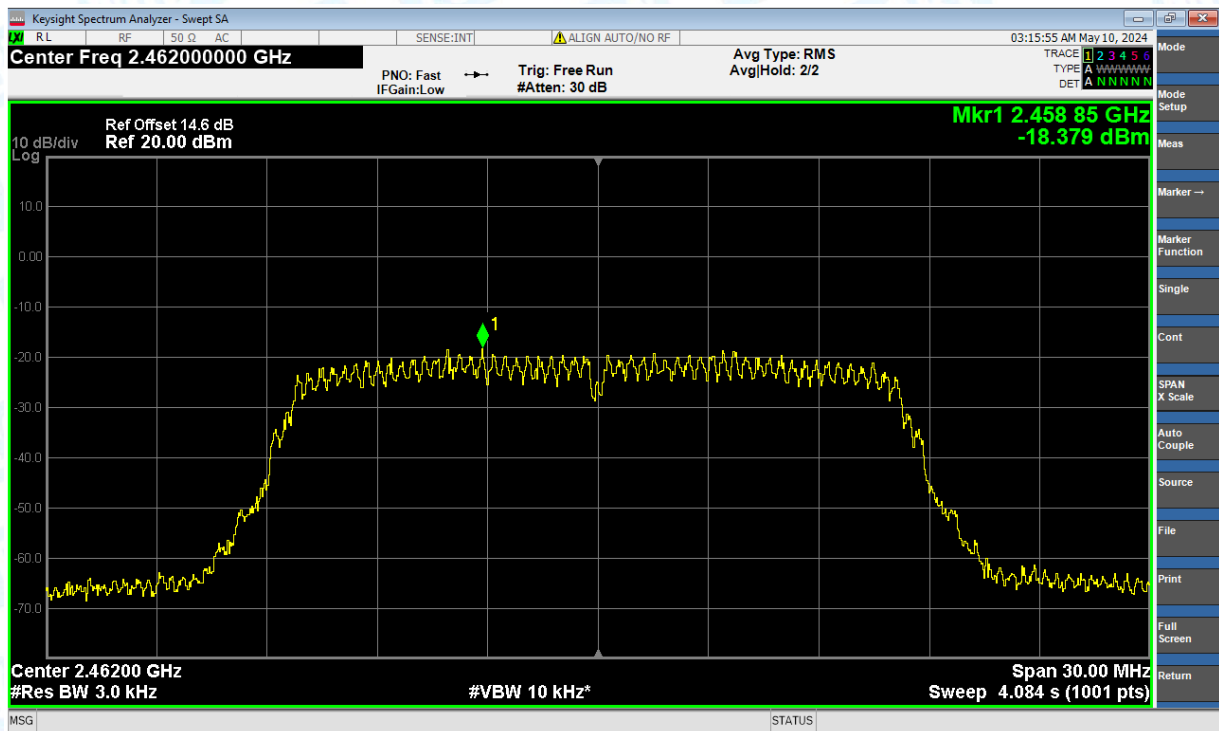
PSD NVNT g 2412MHz Ant1



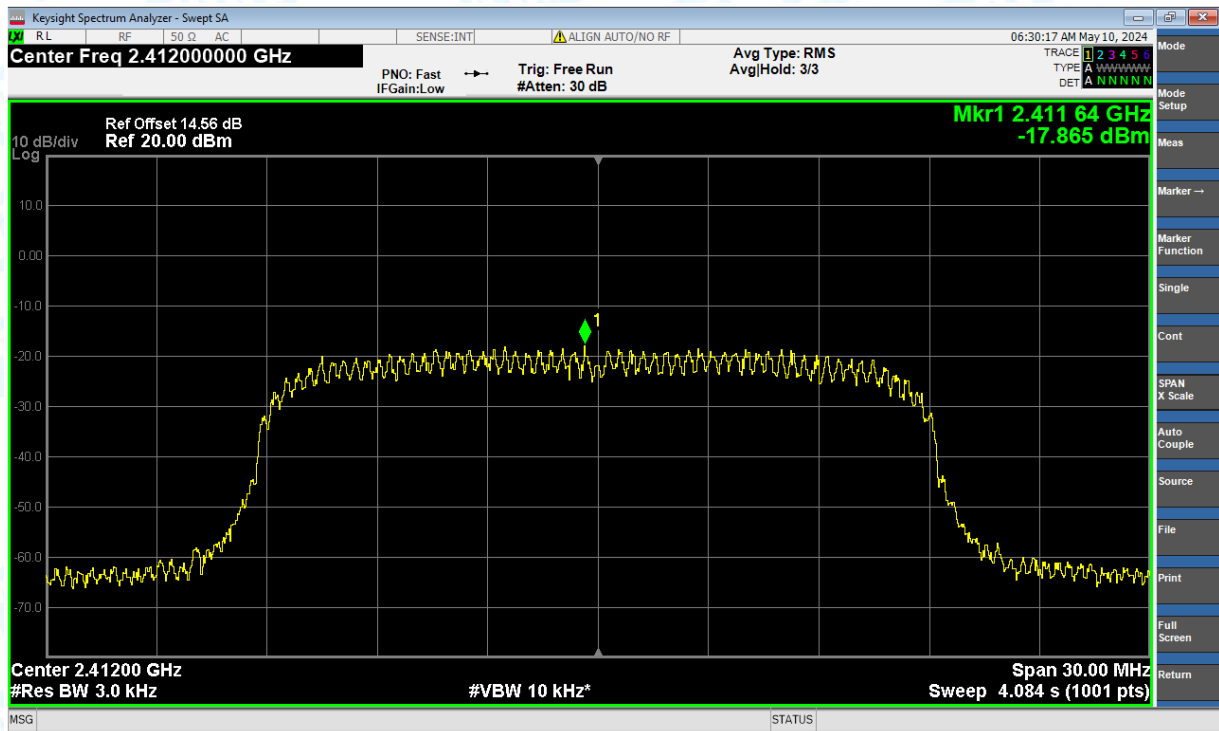
PSD NVNT g 2437MHz Ant1



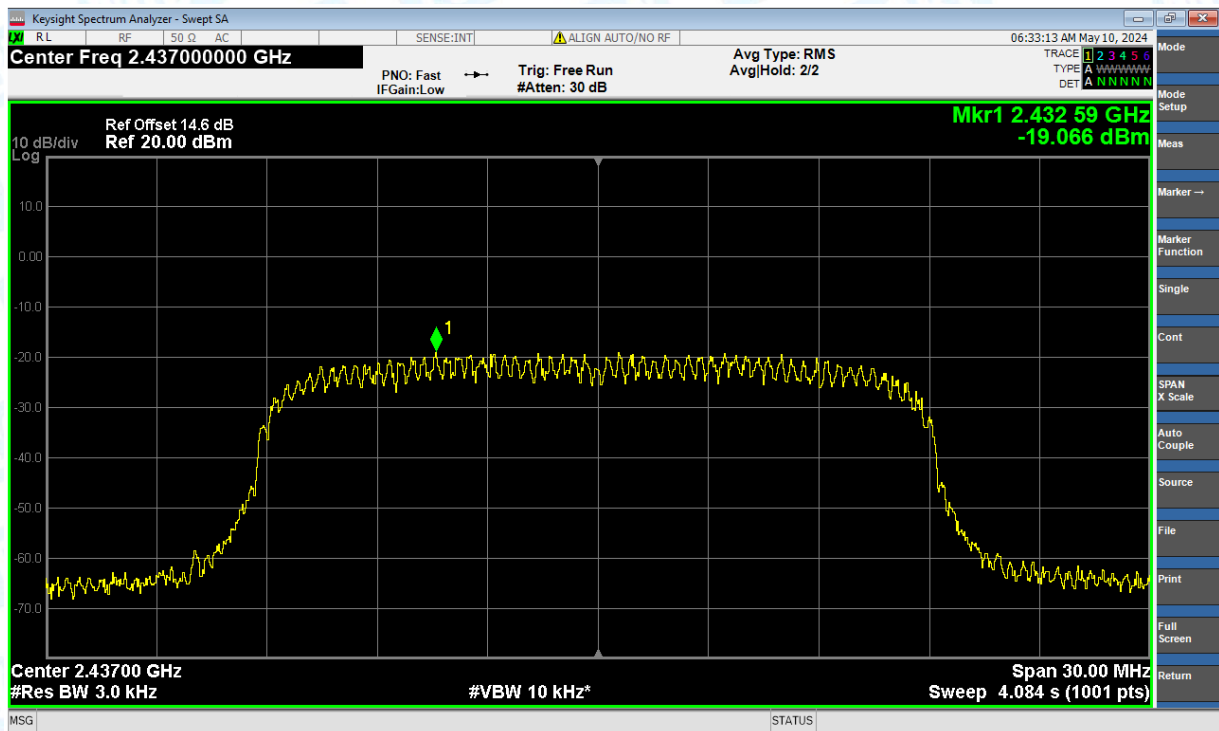
PSD NVNT g 2462MHz Ant1



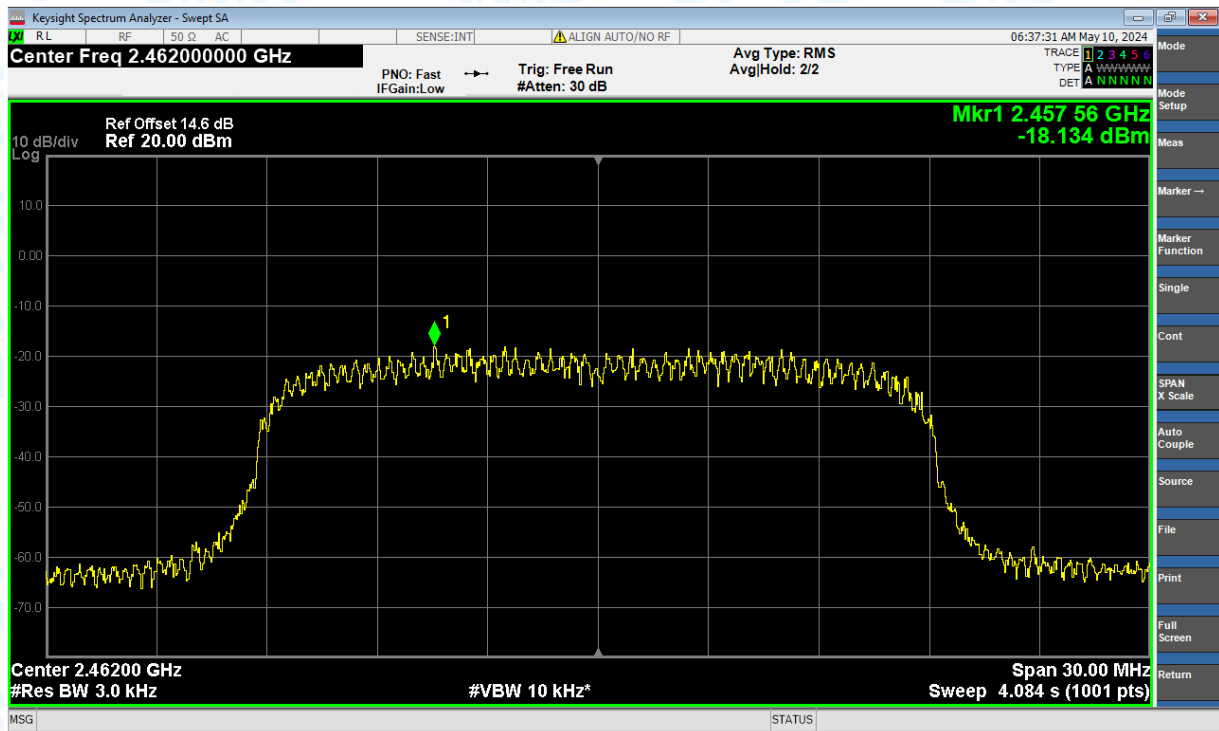
PSD NVNT n(HT20) 2412MHz Ant1



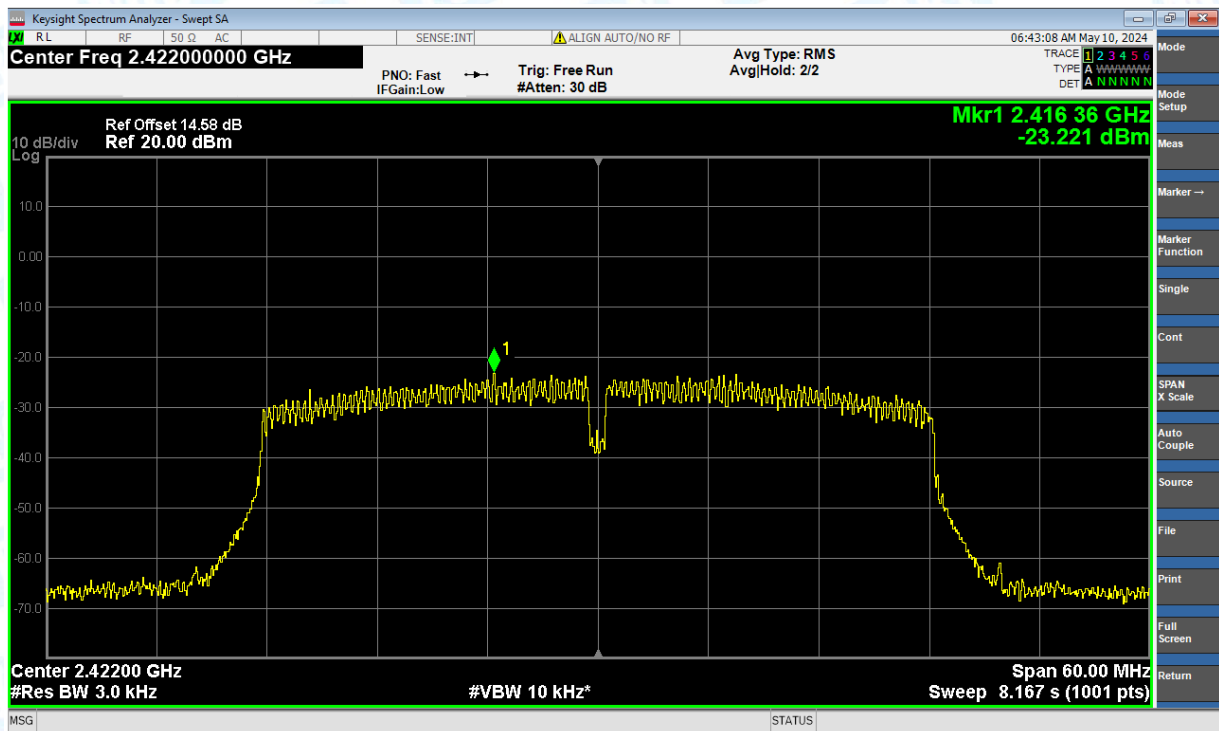
PSD NVNT n(HT20) 2437MHz Ant1



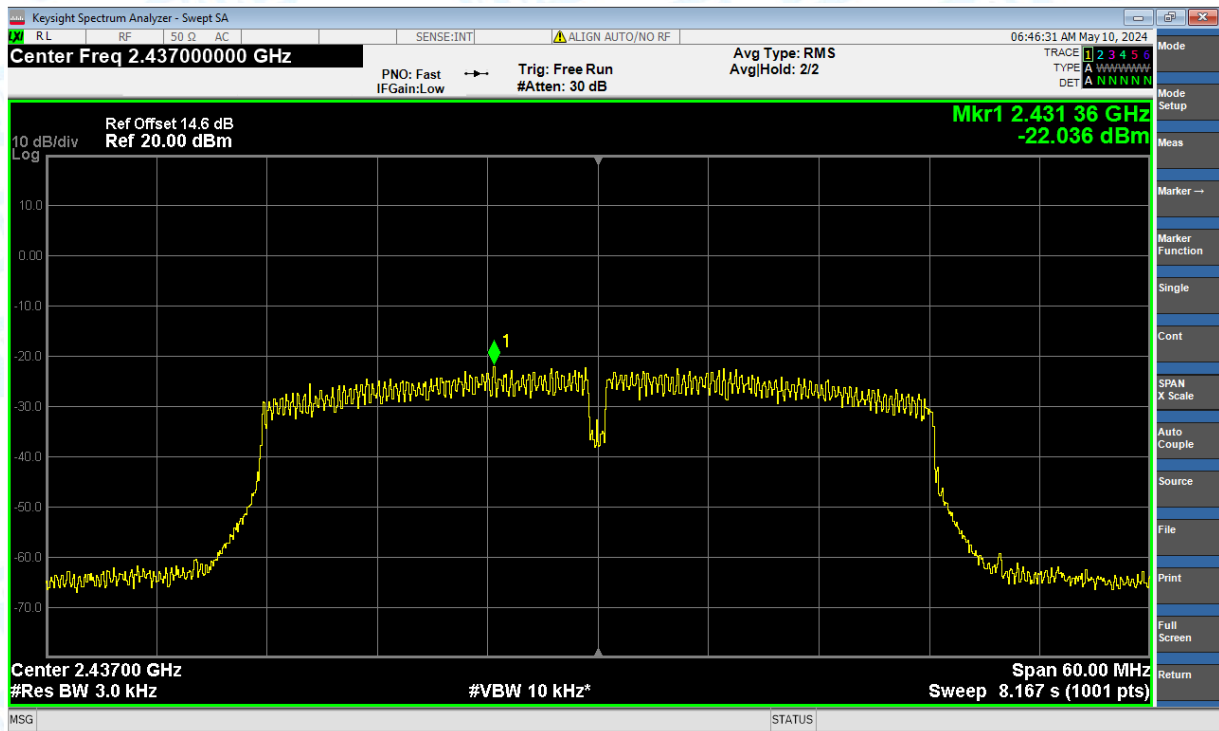
PSD NVNT n(HT20) 2462MHz Ant1



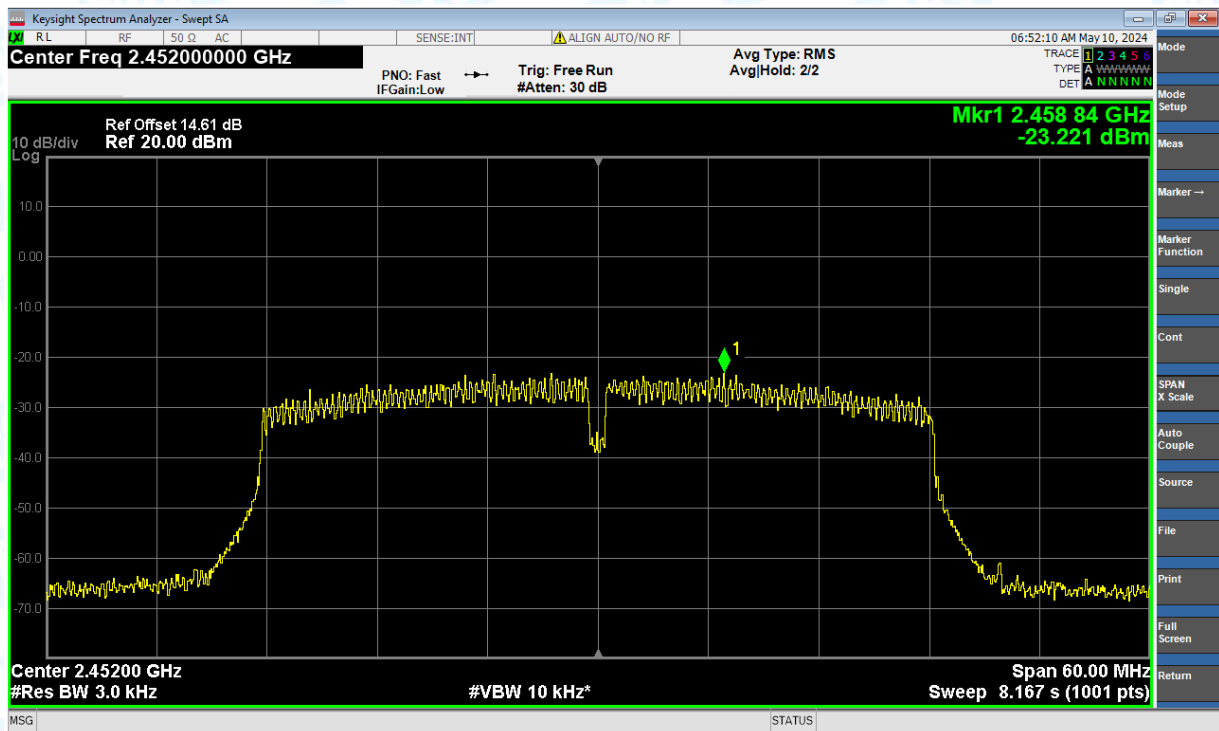
PSD NVNT n(HT40) 2422MHz Ant1



PSD NVNT n(HT40) 2437MHz Ant1



PSD NVNT n(HT40) 2452MHz Ant1

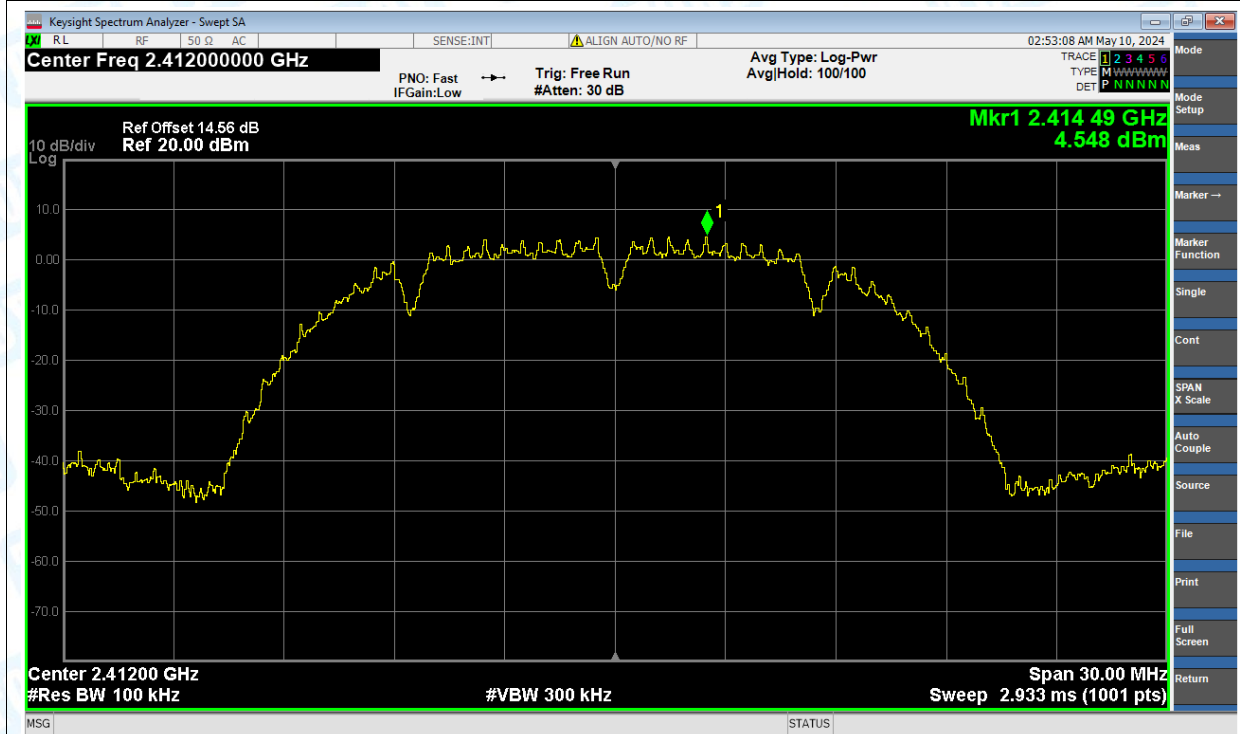


6. Band Edge

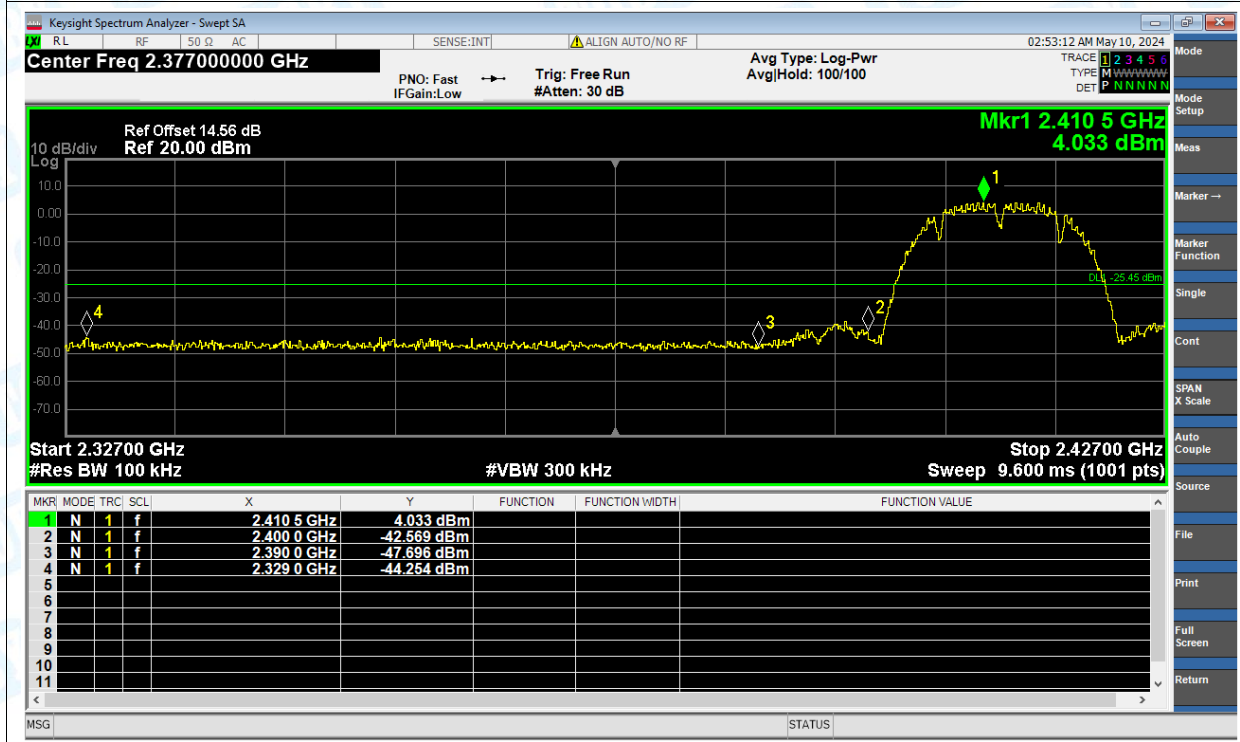
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant1	-48.80	-30	Pass
NVNT	b	2462	Ant1	-49.81	-30	Pass
NVNT	g	2412	Ant1	-46.56	-30	Pass
NVNT	g	2462	Ant1	-46.87	-30	Pass
NVNT	n(HT20)	2412	Ant1	-50.10	-30	Pass
NVNT	n(HT20)	2462	Ant1	-46.75	-30	Pass
NVNT	n(HT40)	2422	Ant1	-37.47	-30	Pass
NVNT	n(HT40)	2452	Ant1	-35.72	-30	Pass

Test Graphs

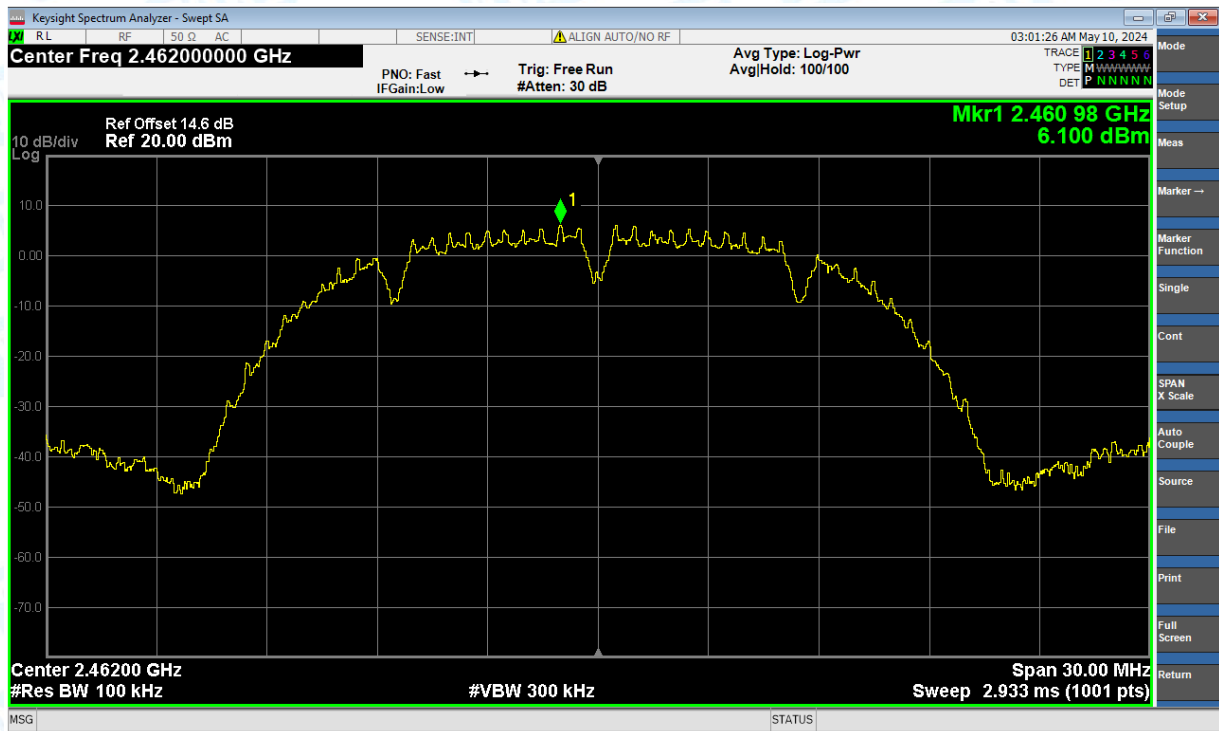
Band Edge NVNT b 2412MHz Ant1 Ref



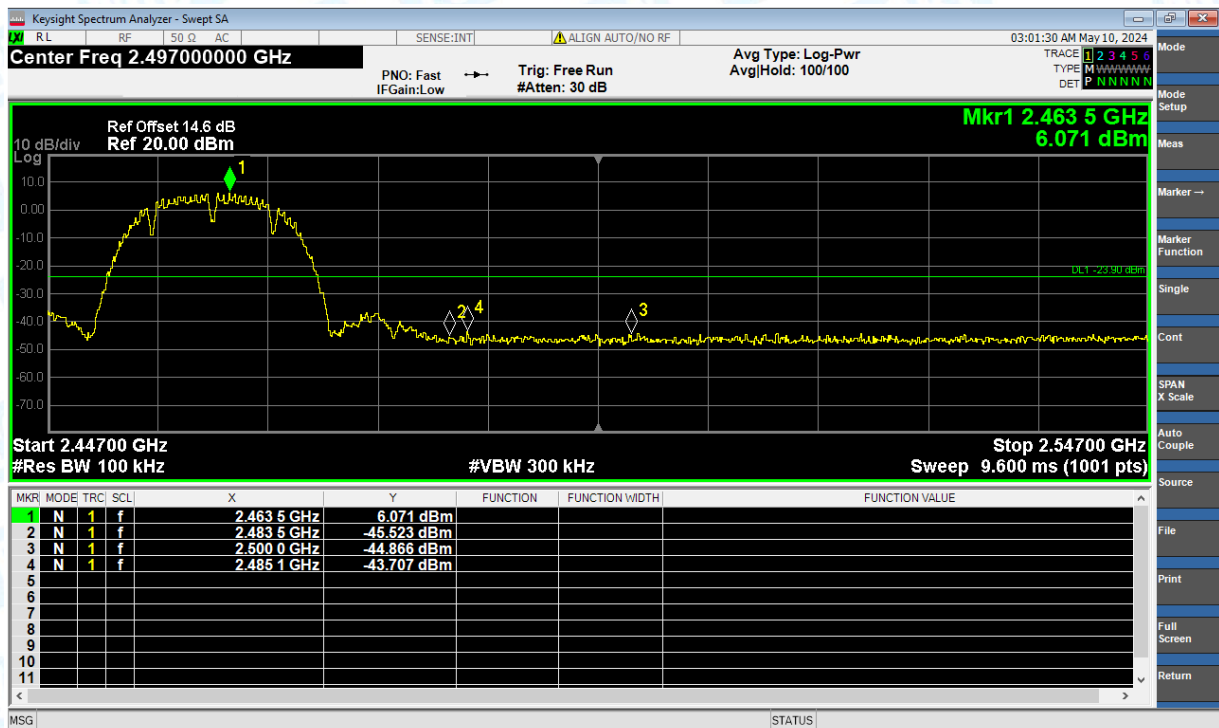
Band Edge NVNT b 2412MHz Ant1 Emission



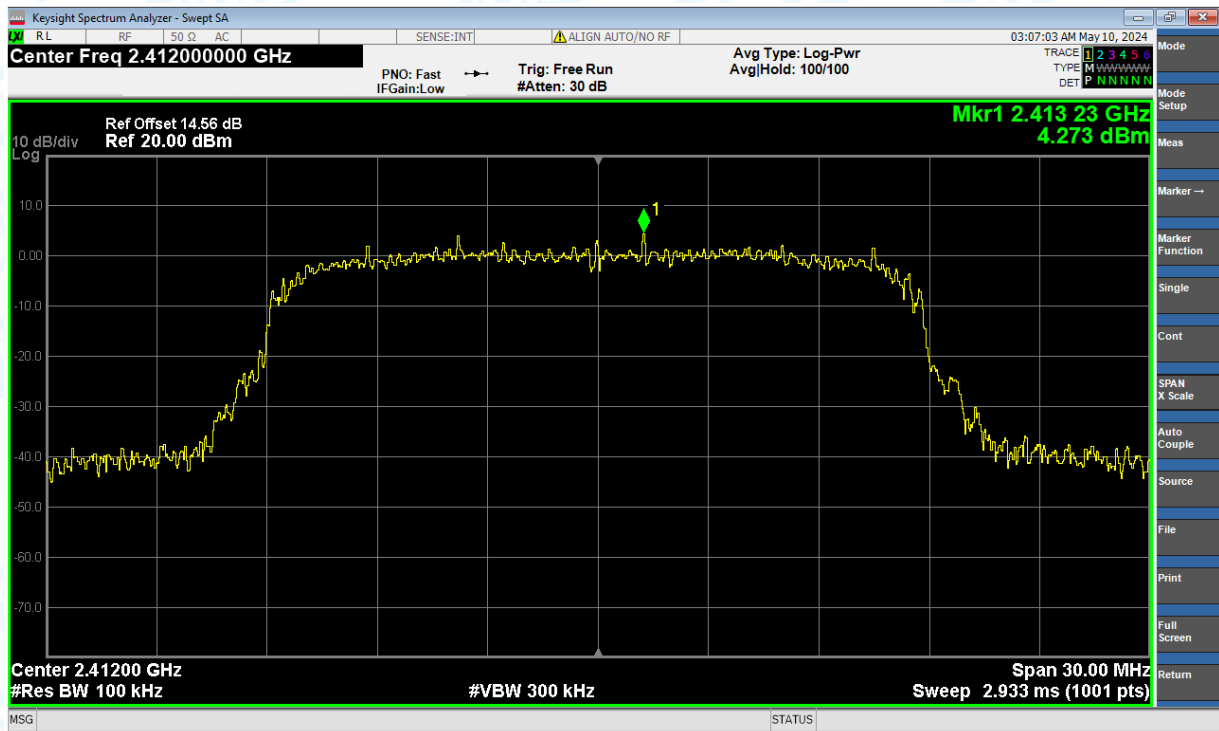
Band Edge NVNT b 2462MHz Ant1 Ref



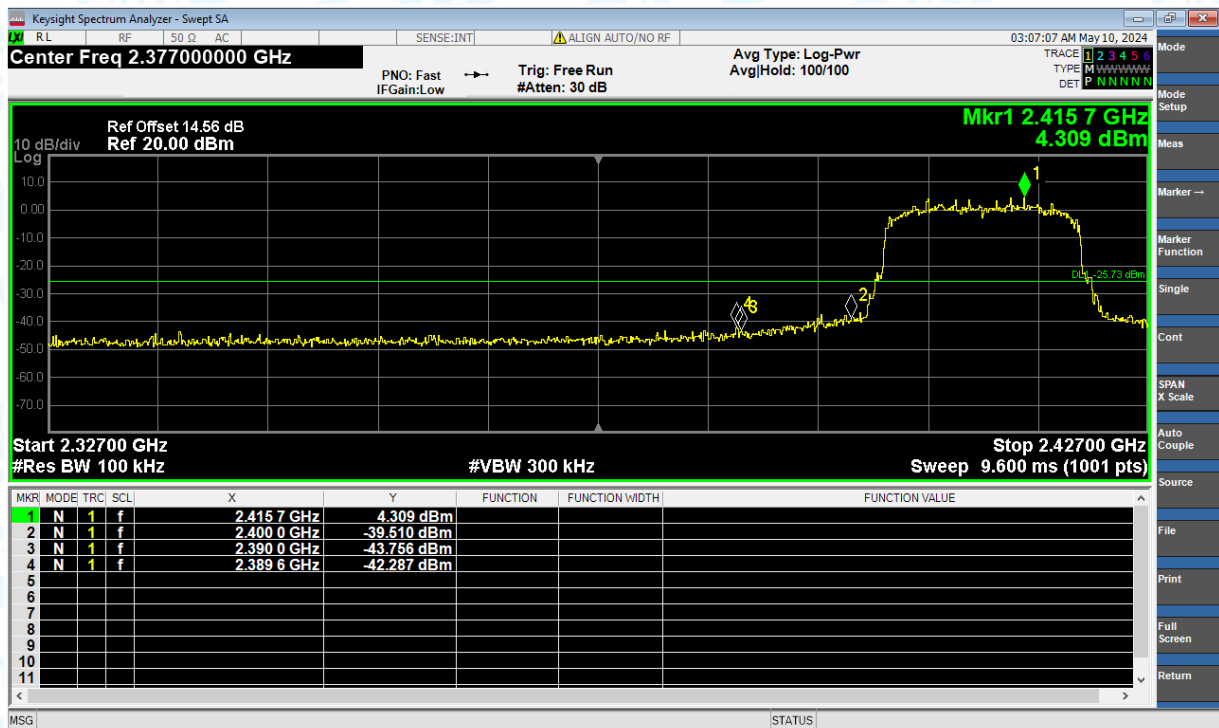
Band Edge NVNT b 2462MHz Ant1 Emission



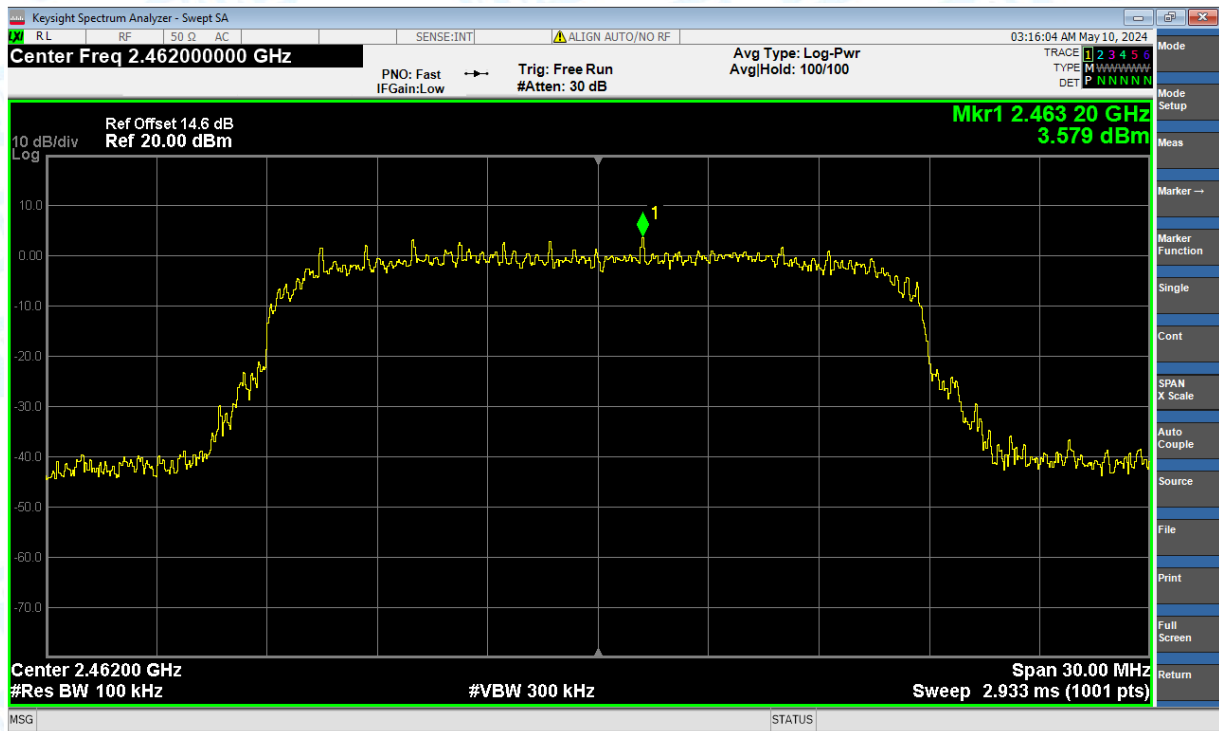
Band Edge NVNT g 2412MHz Ant1 Ref



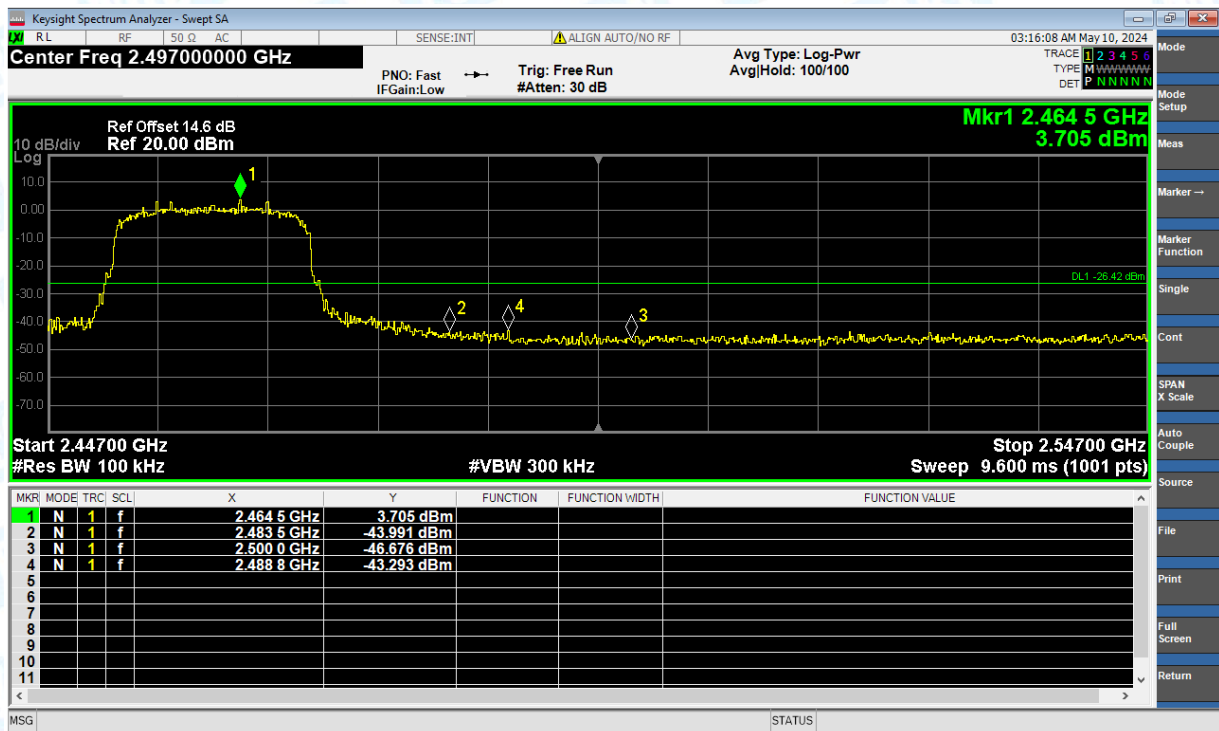
Band Edge NVNT g 2412MHz Ant1 Emission



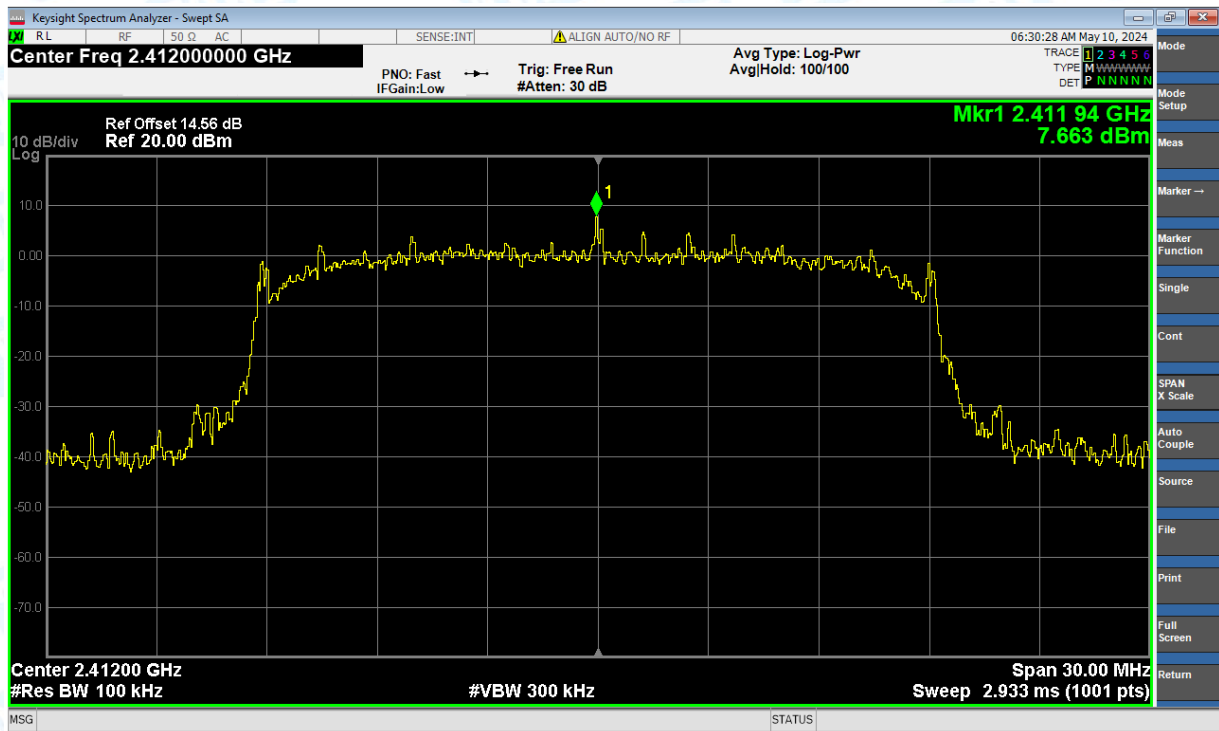
Band Edge NVNT g 2462MHz Ant1 Ref



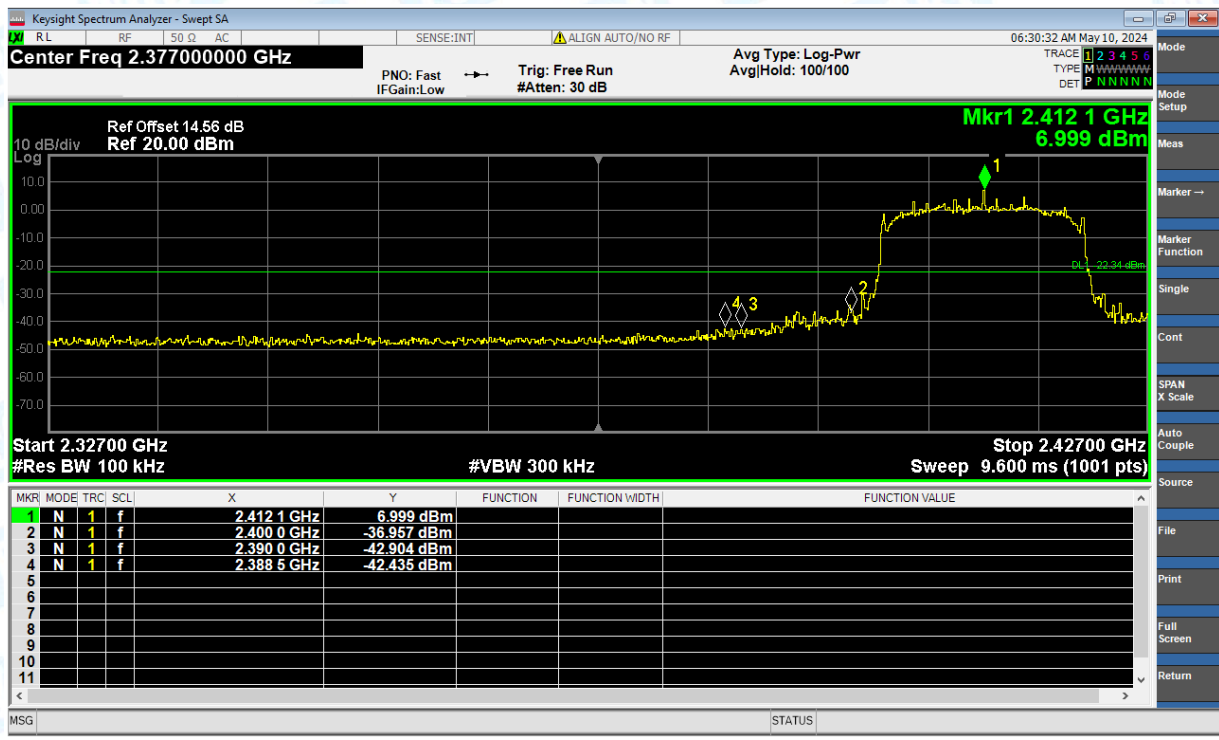
Band Edge NVNT g 2462MHz Ant1 Emission



Band Edge NVNT n(HT20) 2412MHz Ant1 Ref



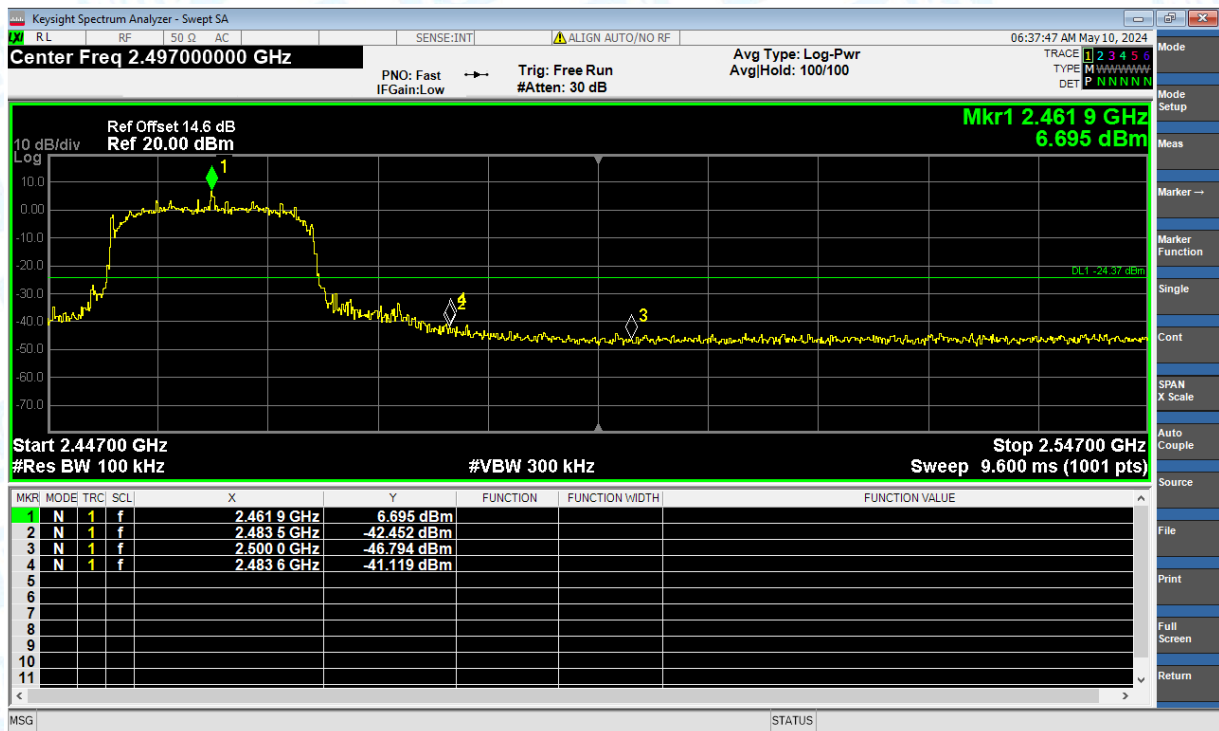
Band Edge NVNT n(HT20) 2412MHz Ant1 Emission



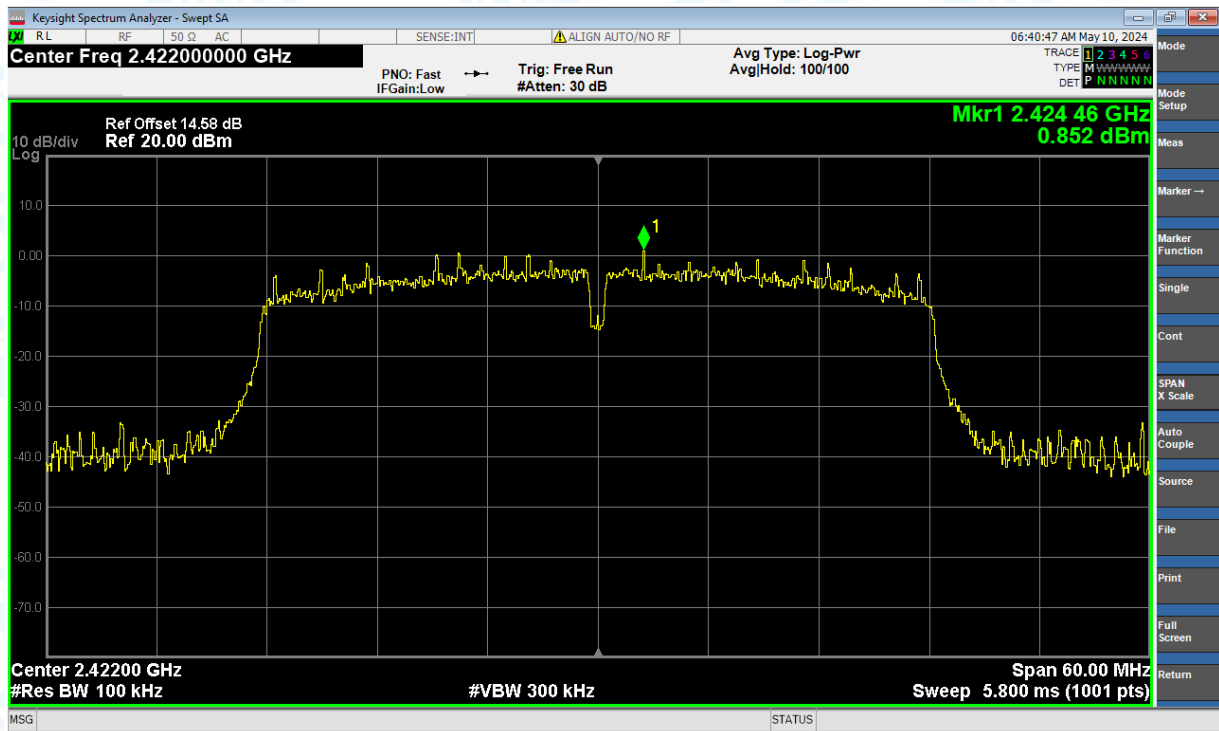
Band Edge NVNT n(HT20) 2462MHz Ant1 Ref



Band Edge NVNT n(HT20) 2462MHz Ant1 Emission



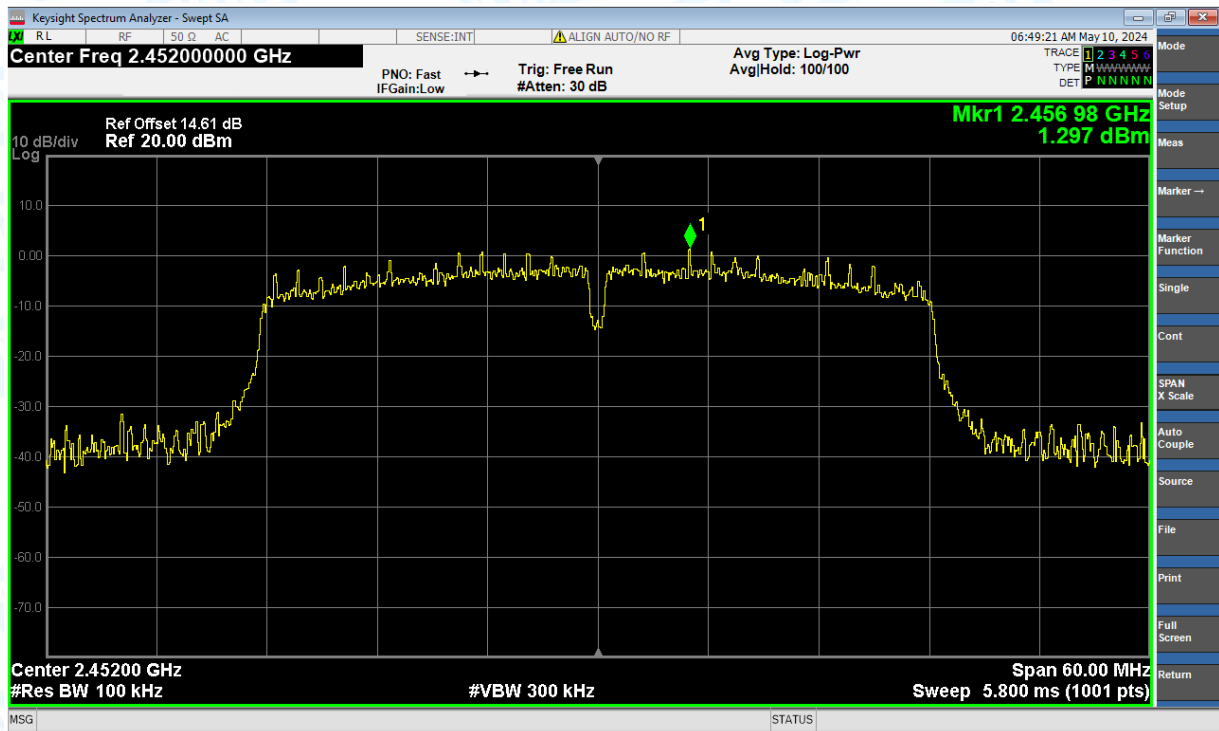
Band Edge NVNT n(HT40) 2422MHz Ant1 Ref



Band Edge NVNT n(HT40) 2422MHz Ant1 Emission



Band Edge NVNT n(HT40) 2452MHz Ant1 Ref



Band Edge NVNT n(HT40) 2452MHz Ant1 Emission

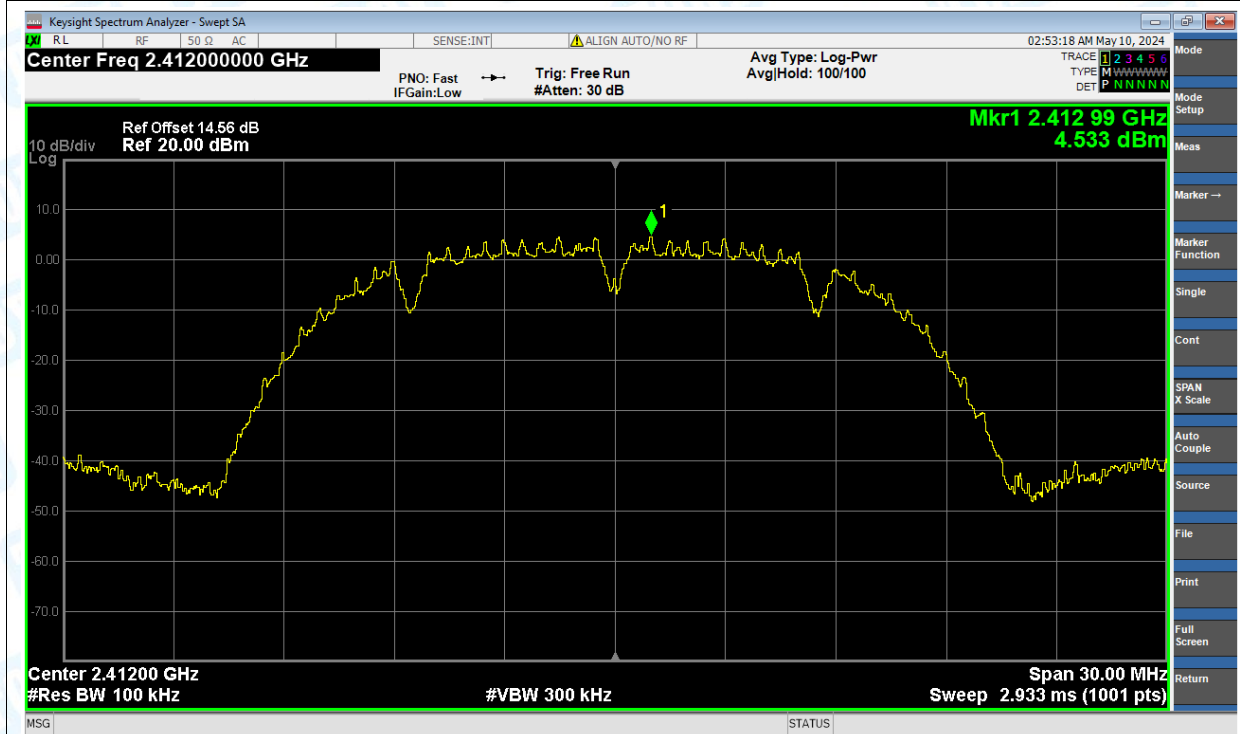


7. Conducted RF Spurious Emission

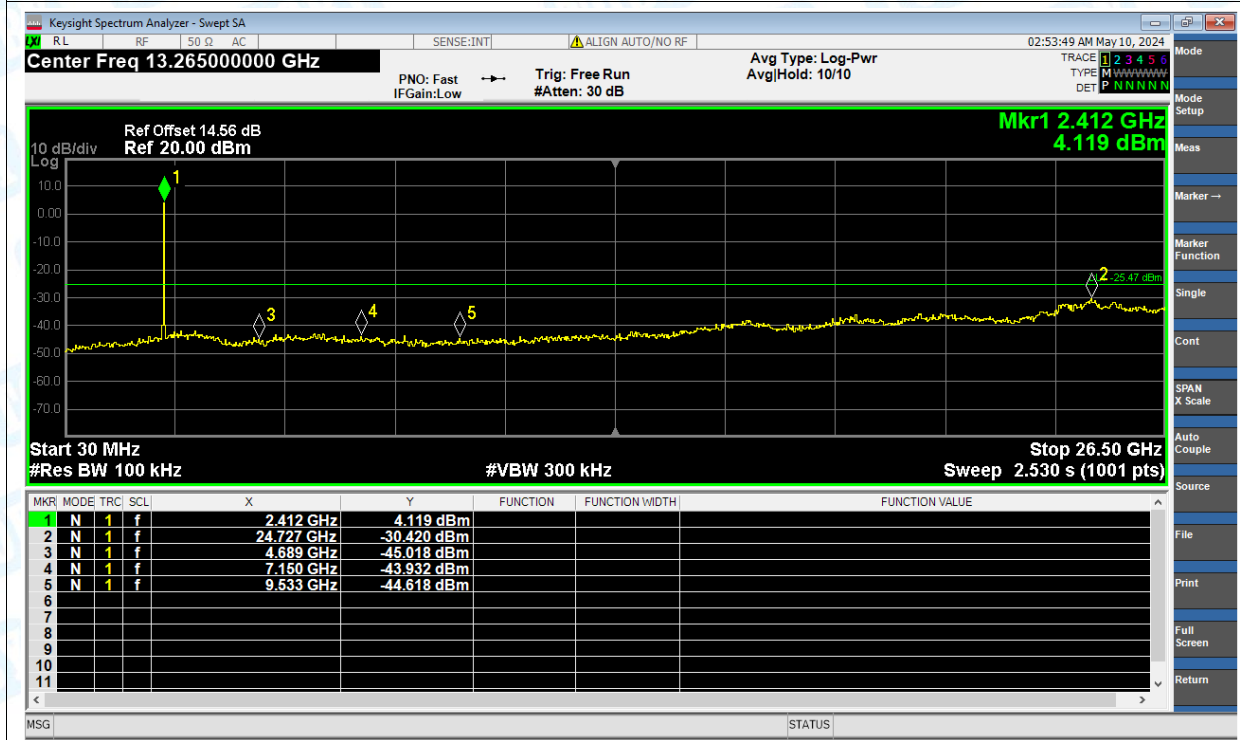
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant1	-34.95	-30	Pass
NVNT	b	2437	Ant1	-35.92	-30	Pass
NVNT	b	2462	Ant1	-35.76	-30	Pass
NVNT	g	2412	Ant1	-34.42	-30	Pass
NVNT	g	2437	Ant1	-33.13	-30	Pass
NVNT	g	2462	Ant1	-36.76	-30	Pass
NVNT	n(HT20)	2412	Ant1	-37.88	-30	Pass
NVNT	n(HT20)	2437	Ant1	-37.30	-30	Pass
NVNT	n(HT20)	2462	Ant1	-35.50	-30	Pass
NVNT	n(HT40)	2422	Ant1	-39.95	-30	Pass
NVNT	n(HT40)	2437	Ant1	-40.53	-30	Pass
NVNT	n(HT40)	2452	Ant1	-40.35	-30	Pass

Test Graphs

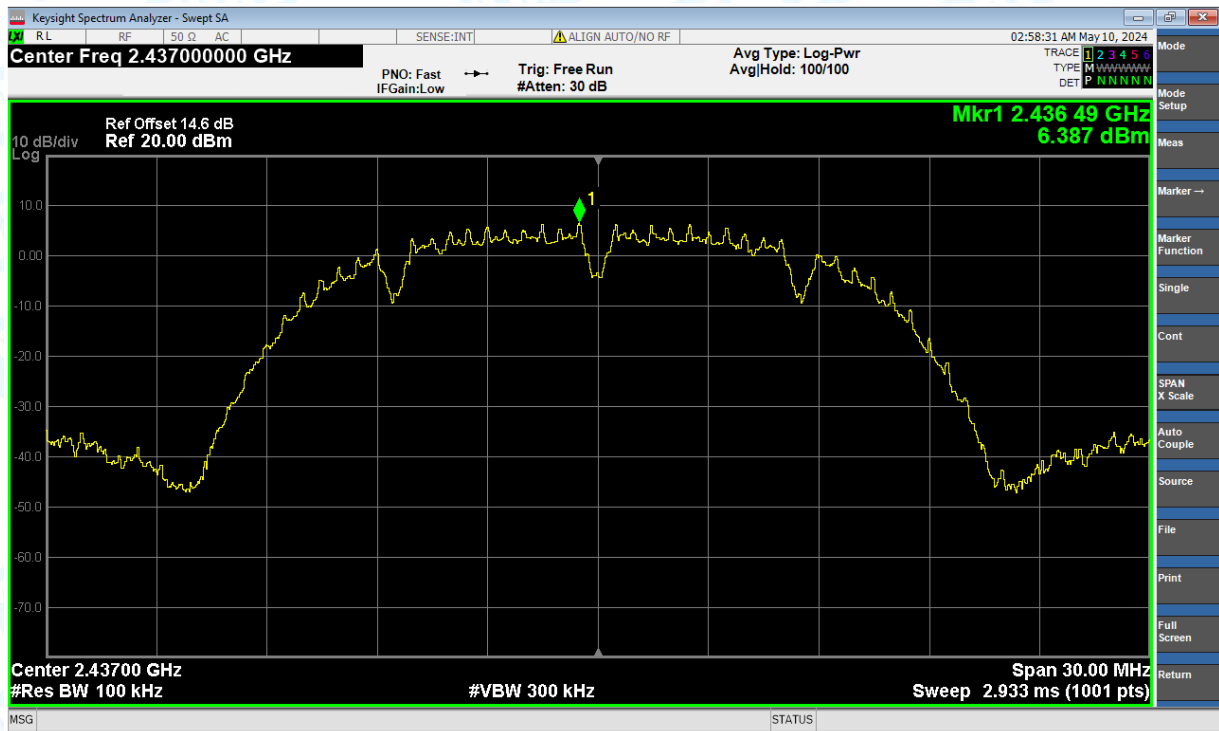
Tx. Spurious NVNT b 2412MHz Ant1 Ref



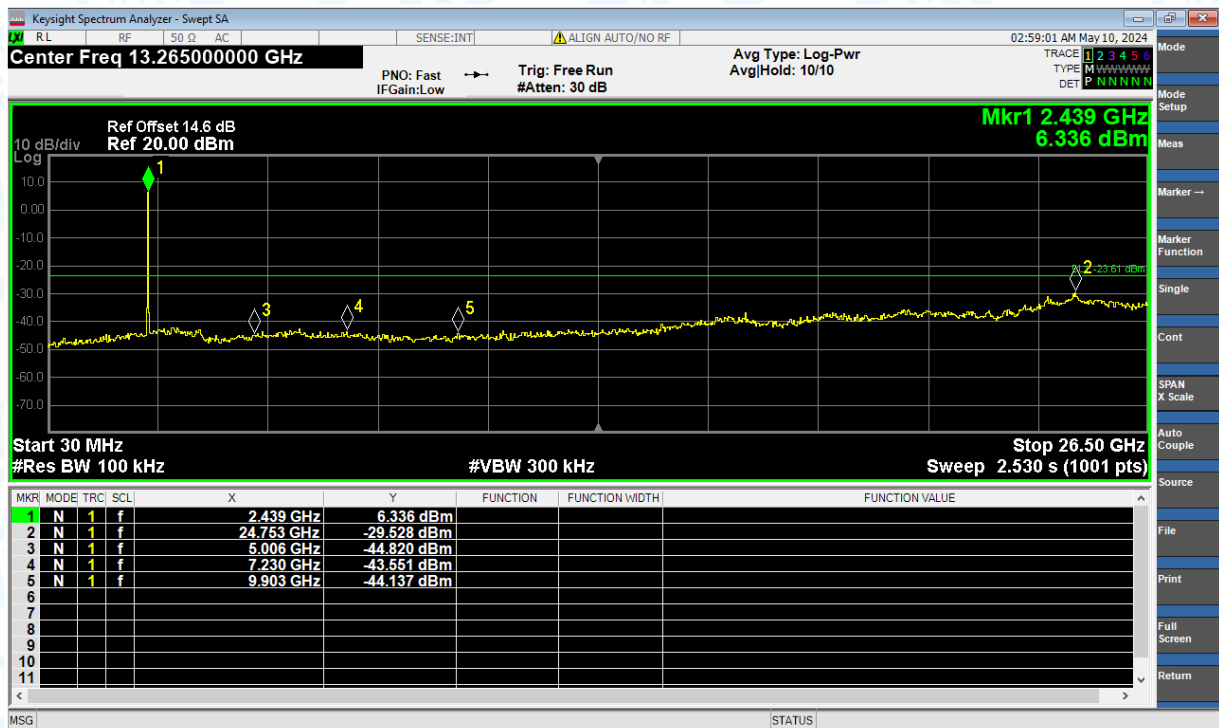
Tx. Spurious NVNT b 2412MHz Ant1 Emission



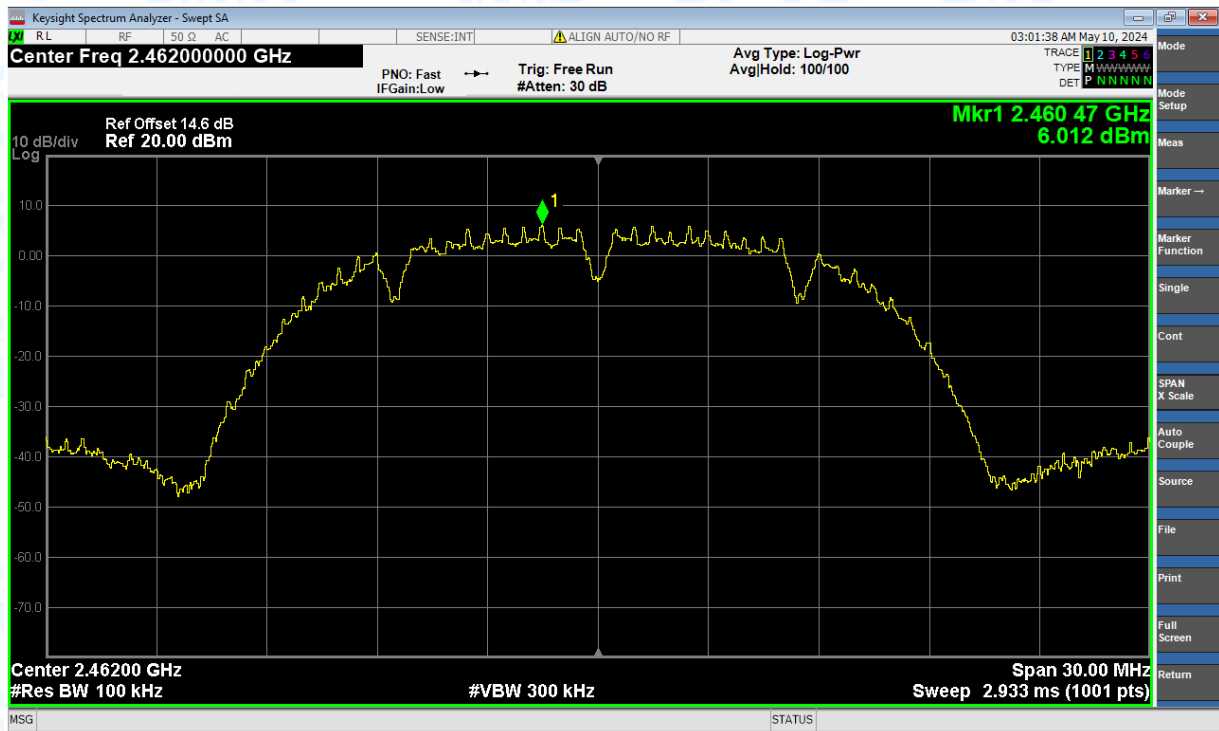
Tx. Spurious NVNT b 2437MHz Ant1 Ref



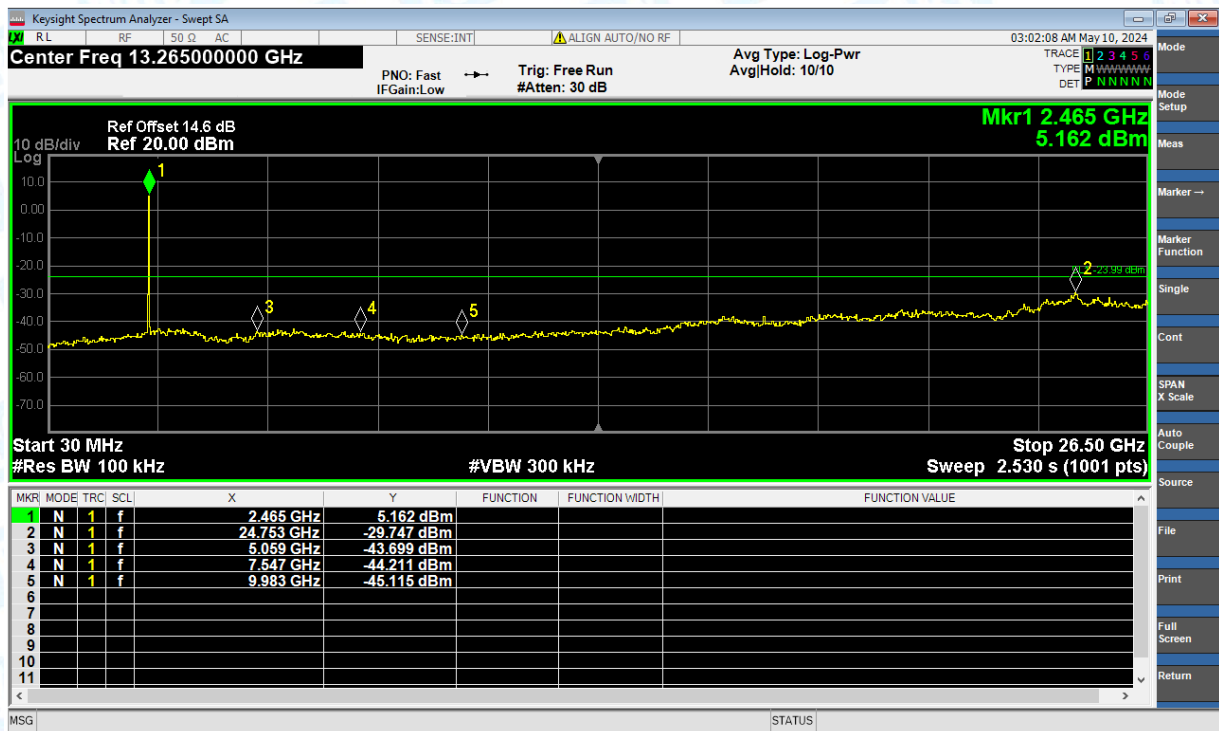
Tx. Spurious NVNT b 2437MHz Ant1 Emission



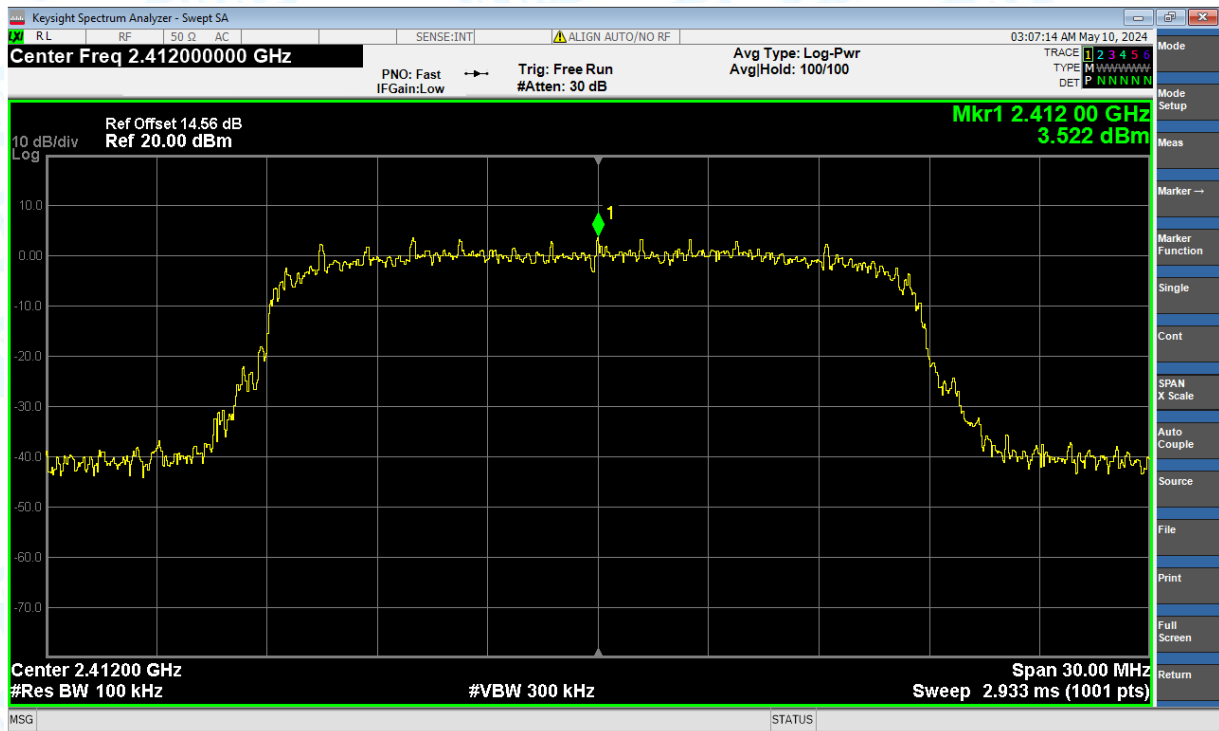
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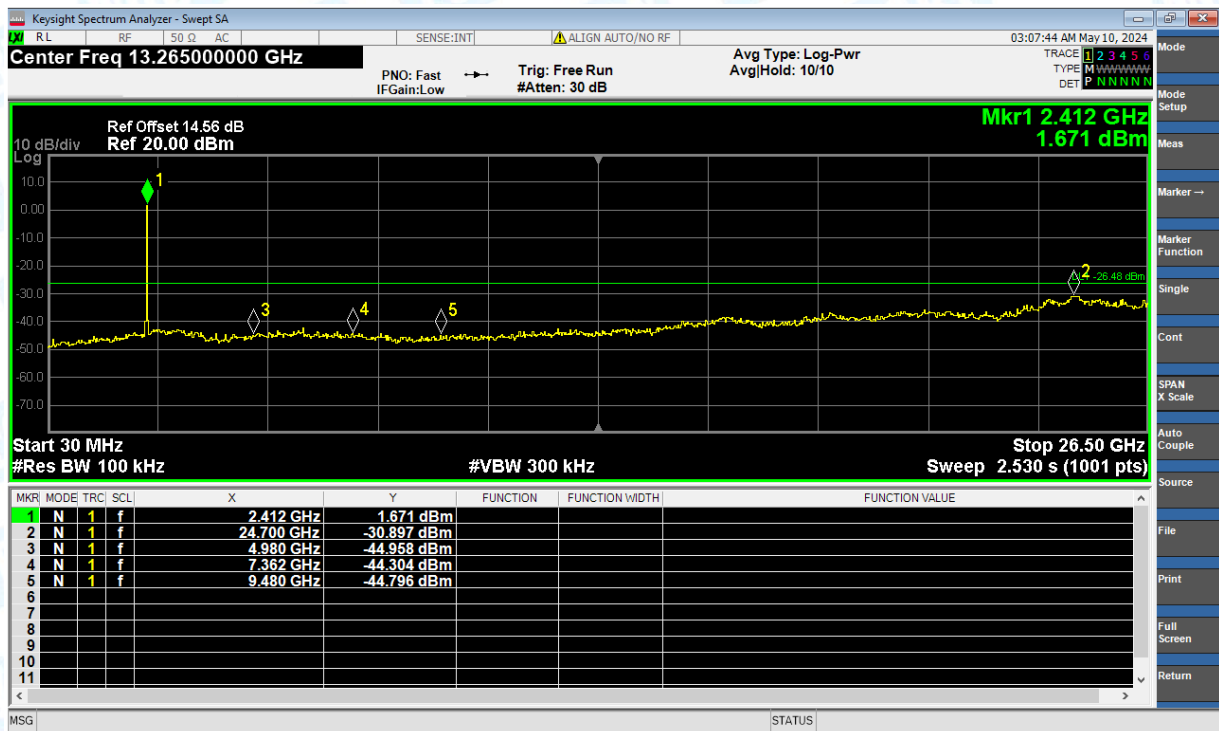
Tx. Spurious NVNT b 2462MHz Ant1 Emission



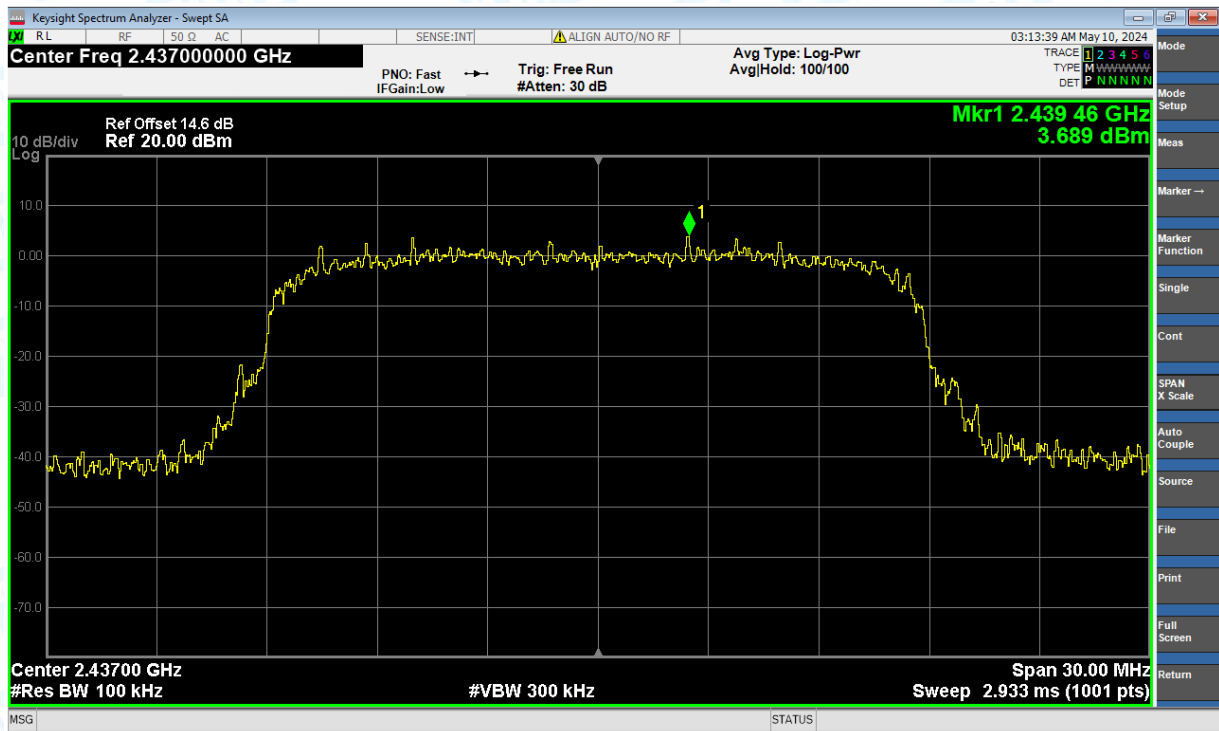
Tx. Spurious NVNT g 2412MHz Ant1 Ref



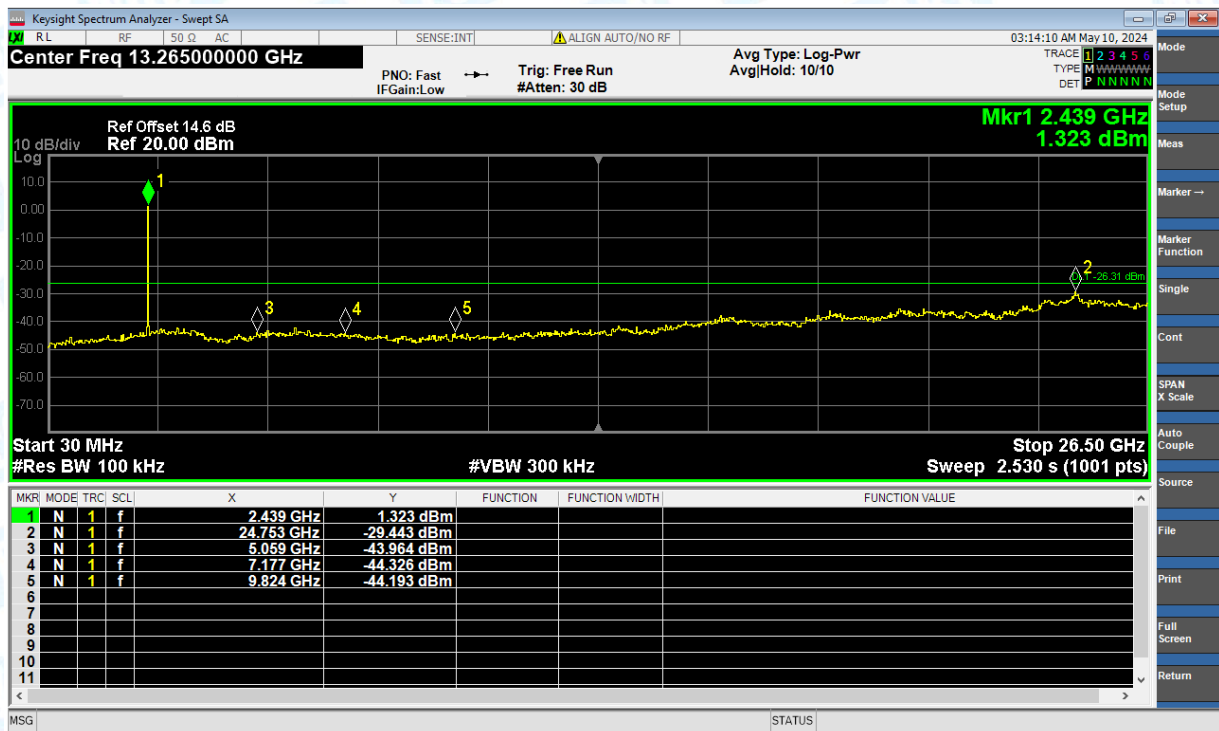
Tx. Spurious NVNT g 2412MHz Ant1 Emission



Tx. Spurious NVNT g 2437MHz Ant1 Ref



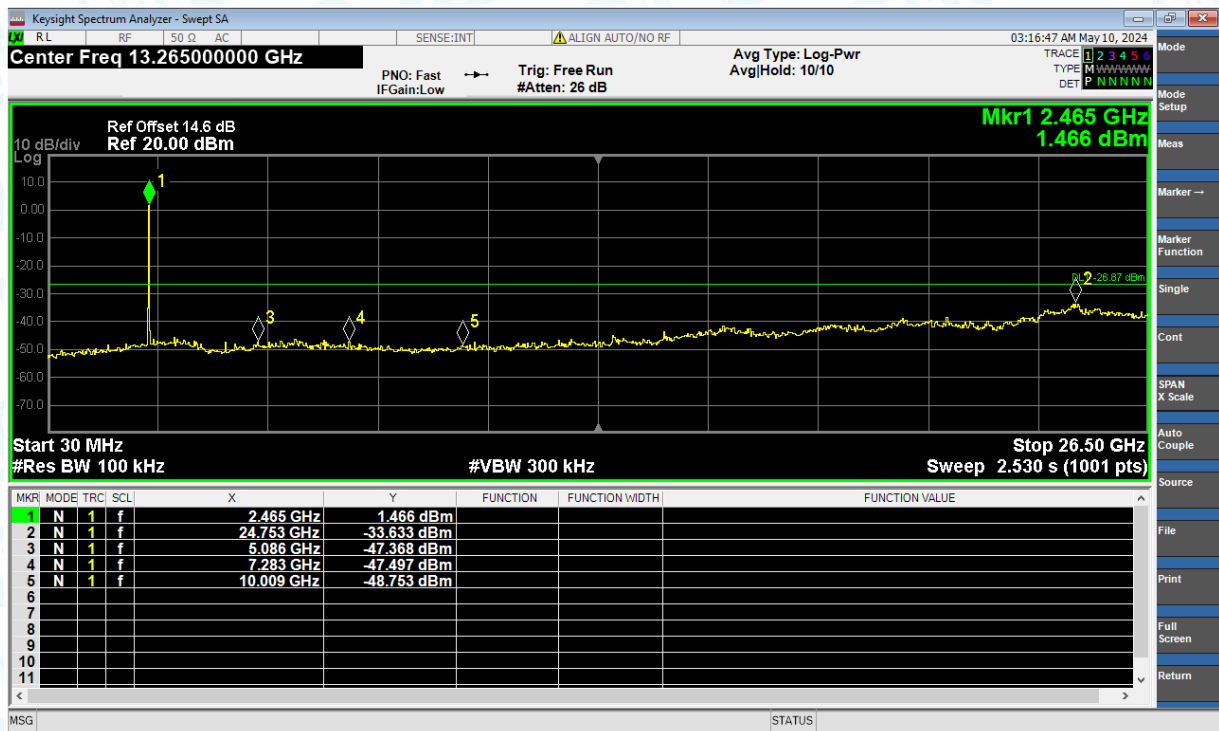
Tx. Spurious NVNT g 2437MHz Ant1 Emission



Tx. Spurious NVNT g 2462MHz Ant1 Ref



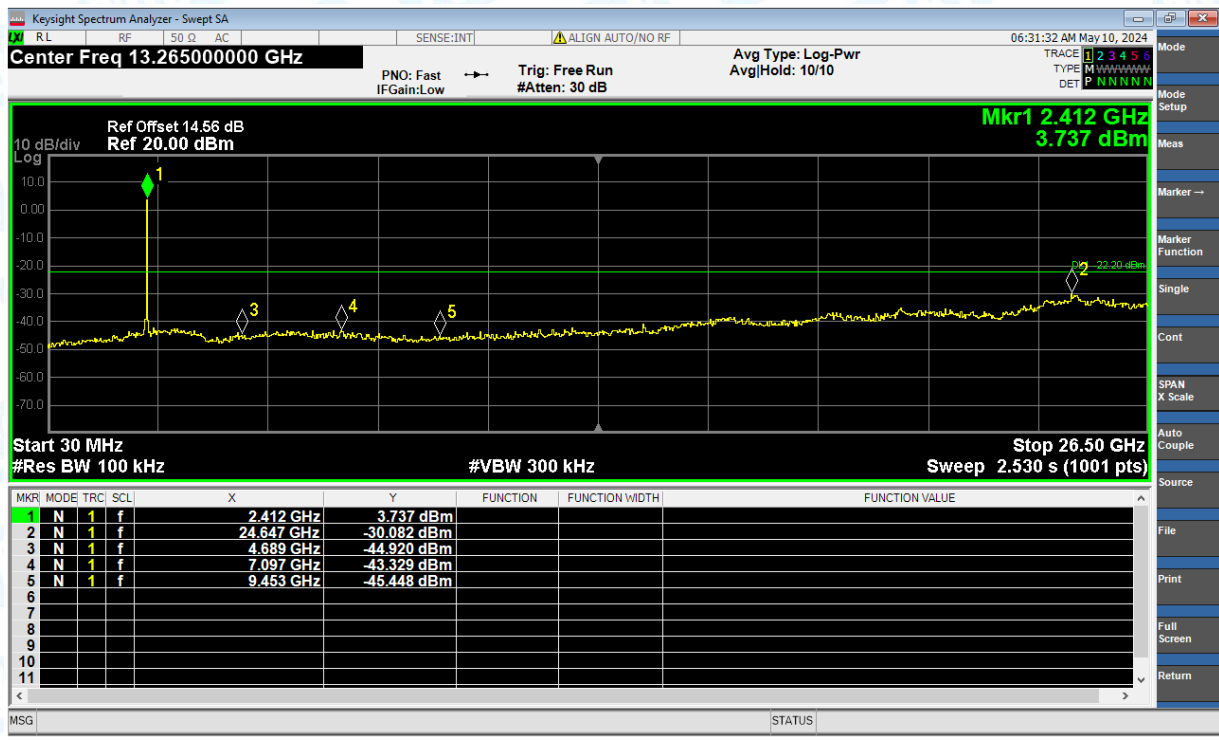
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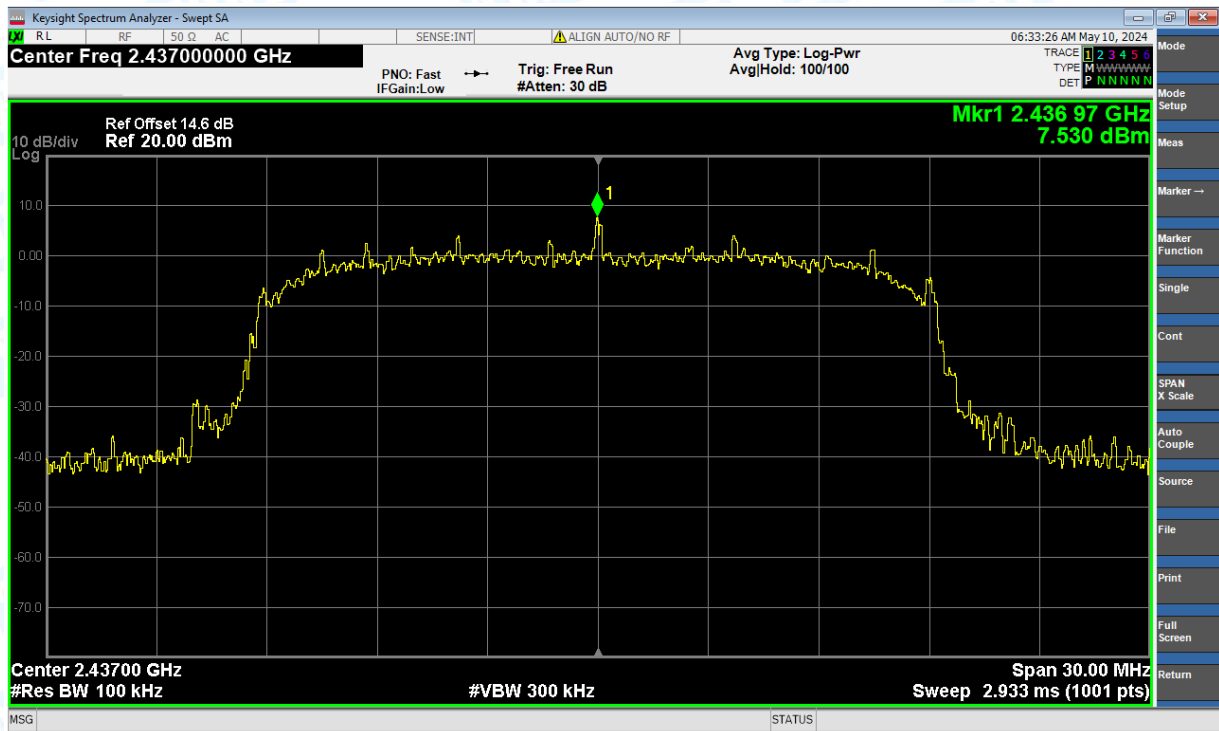
Tx. Spurious NVNT n(HT20) 2412MHz Ant1 Ref



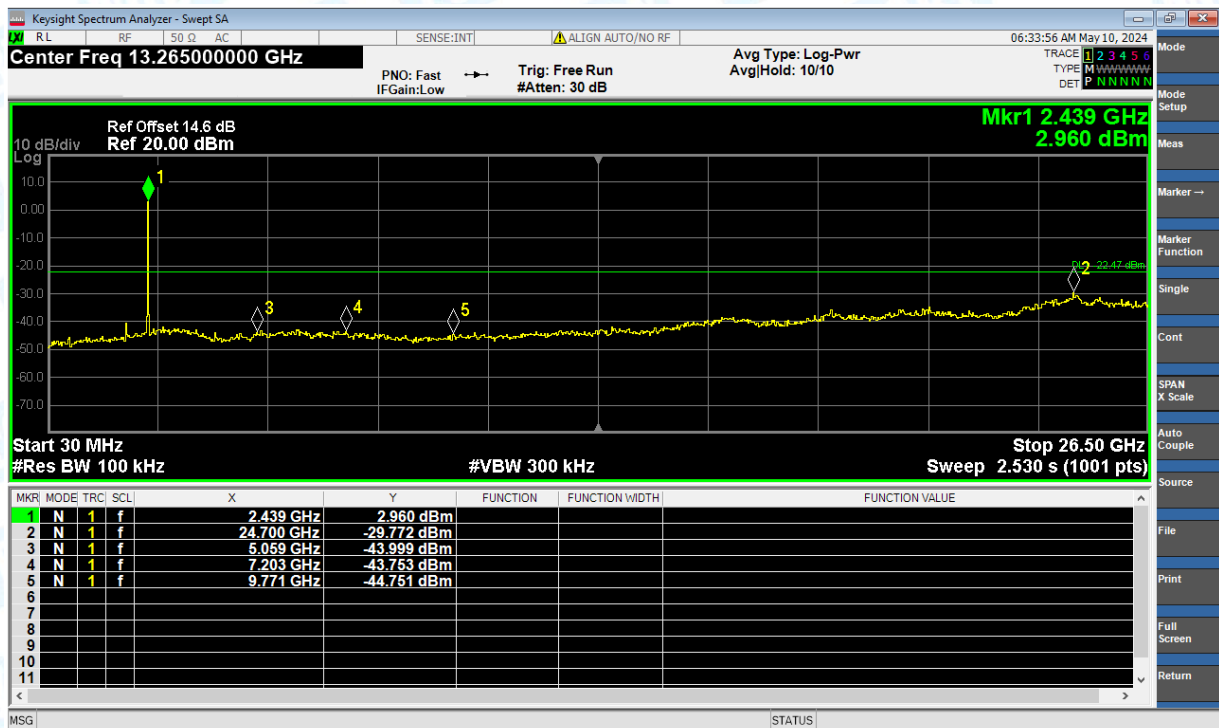
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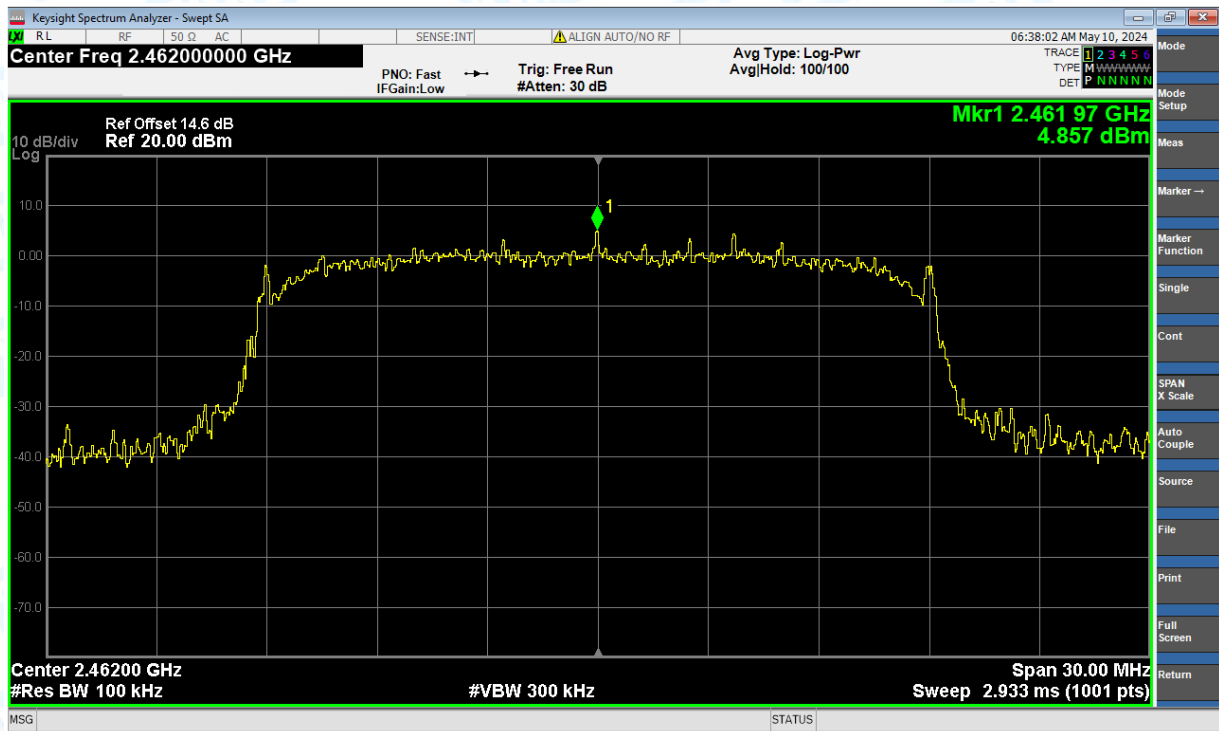
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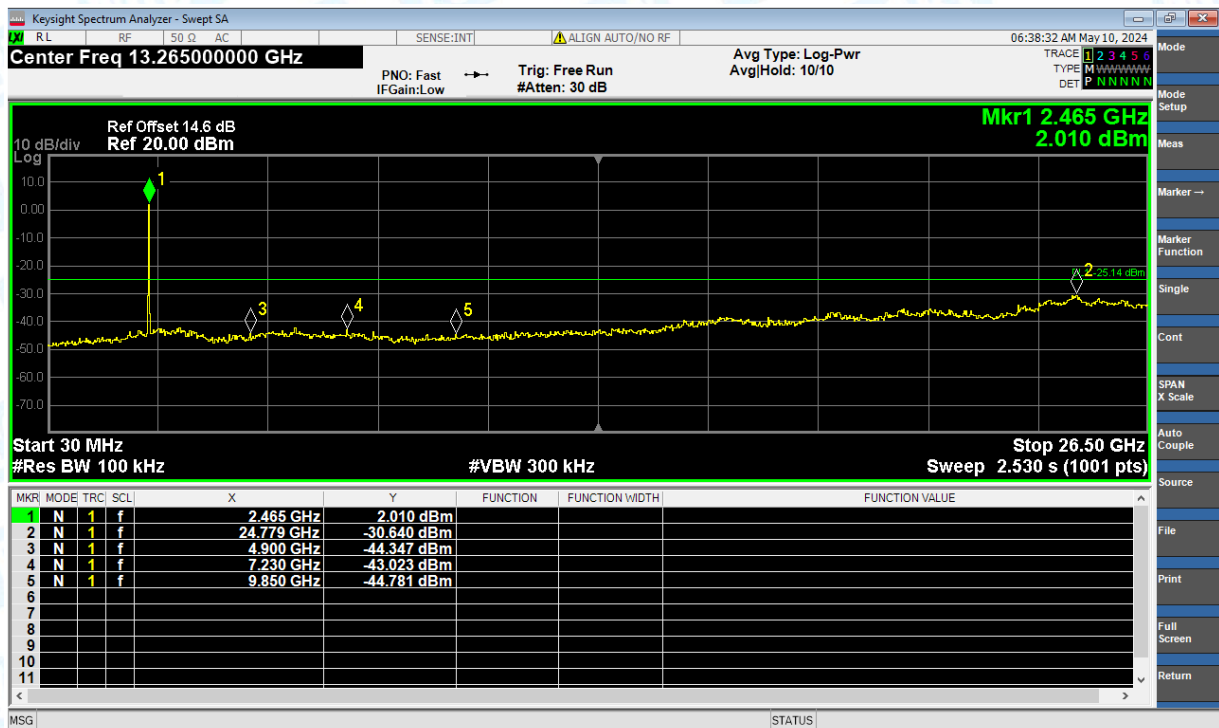
Tx. Spurious NVNT n(HT20) 2437MHz Ant1 Emission



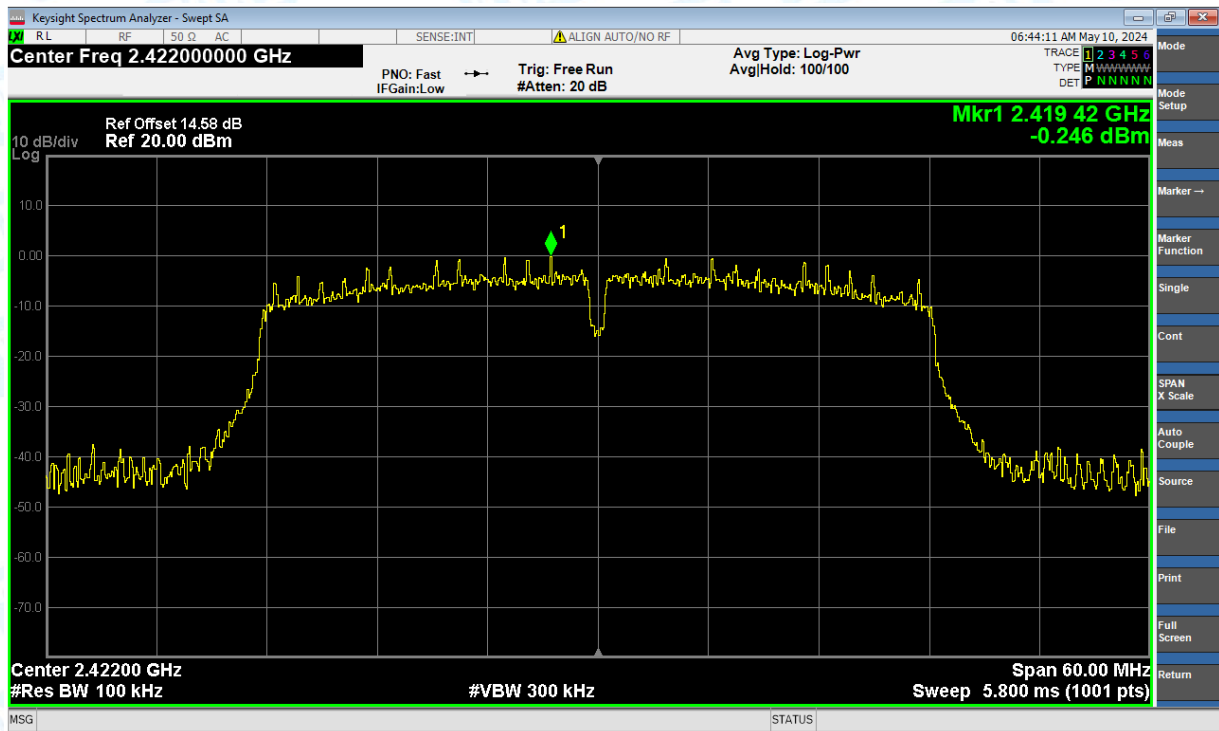
Tx. Spurious NVNT n(HT20) 2462MHz Ant1 Ref



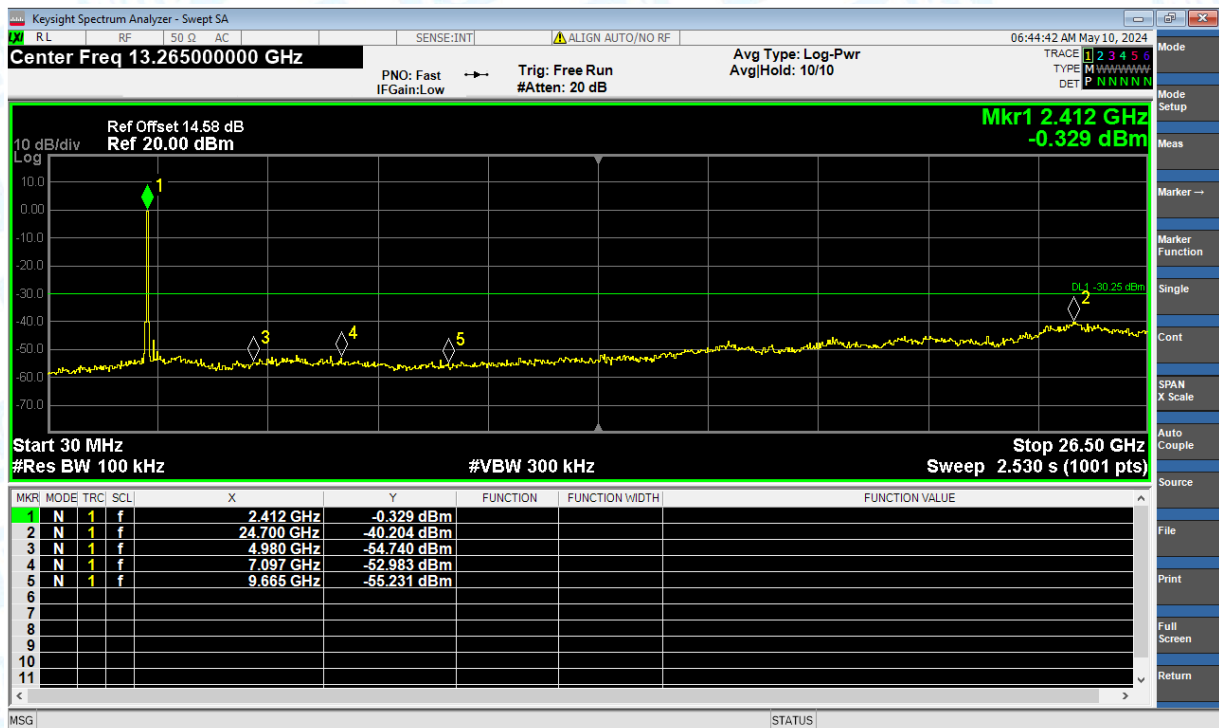
Tx. Spurious NVNT n(HT20) 2462MHz Ant1 Emission



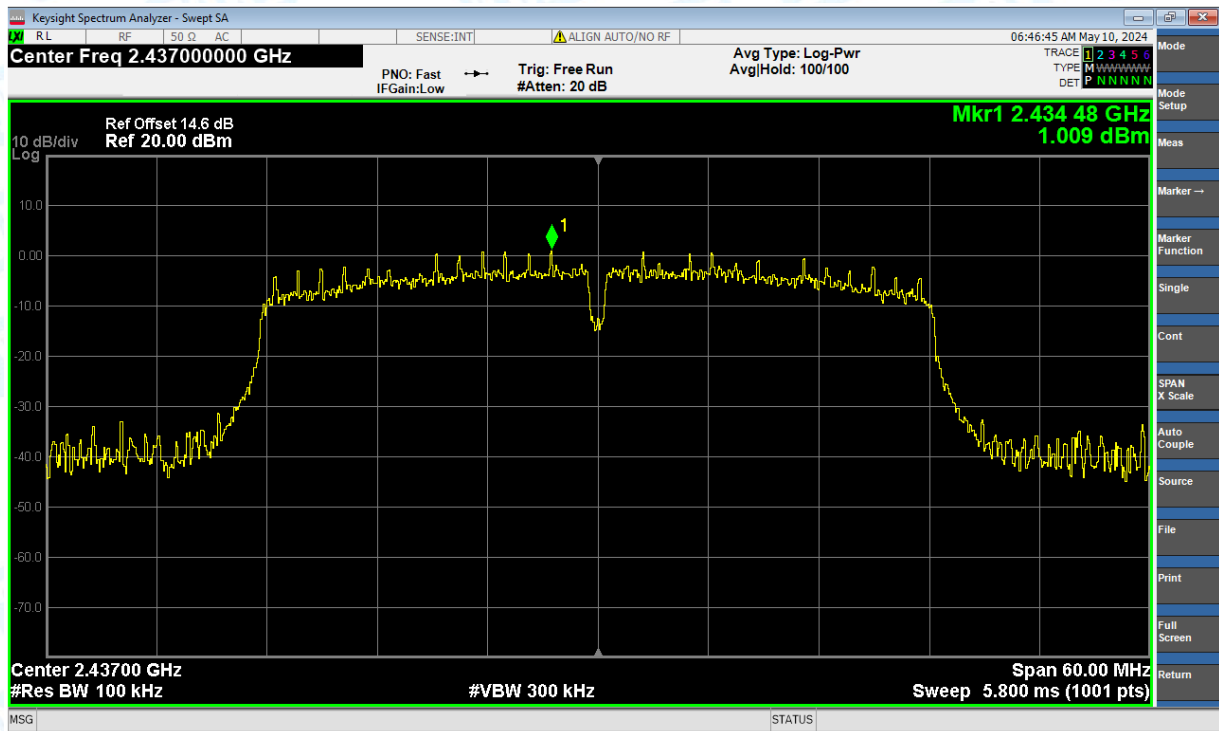
Tx. Spurious NVNT n(HT40) 2422MHz Ant1 Ref



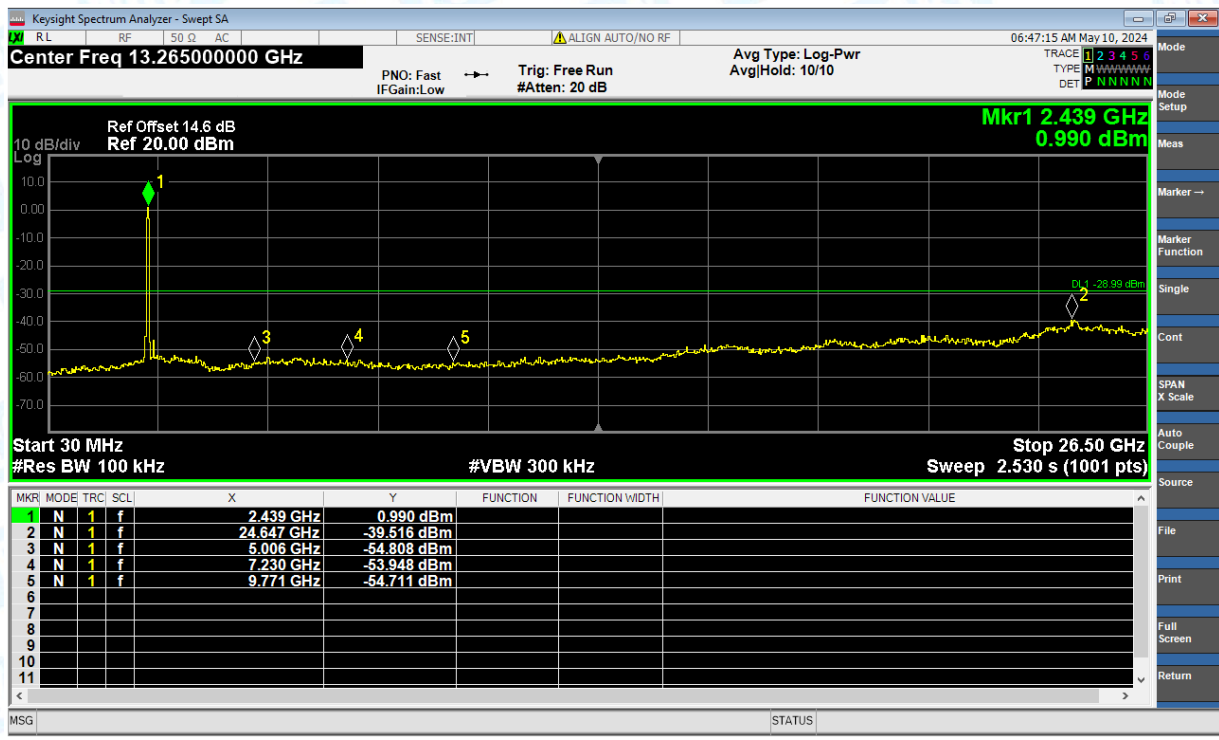
Tx. Spurious NVNT n(HT40) 2422MHz Ant1 Emission



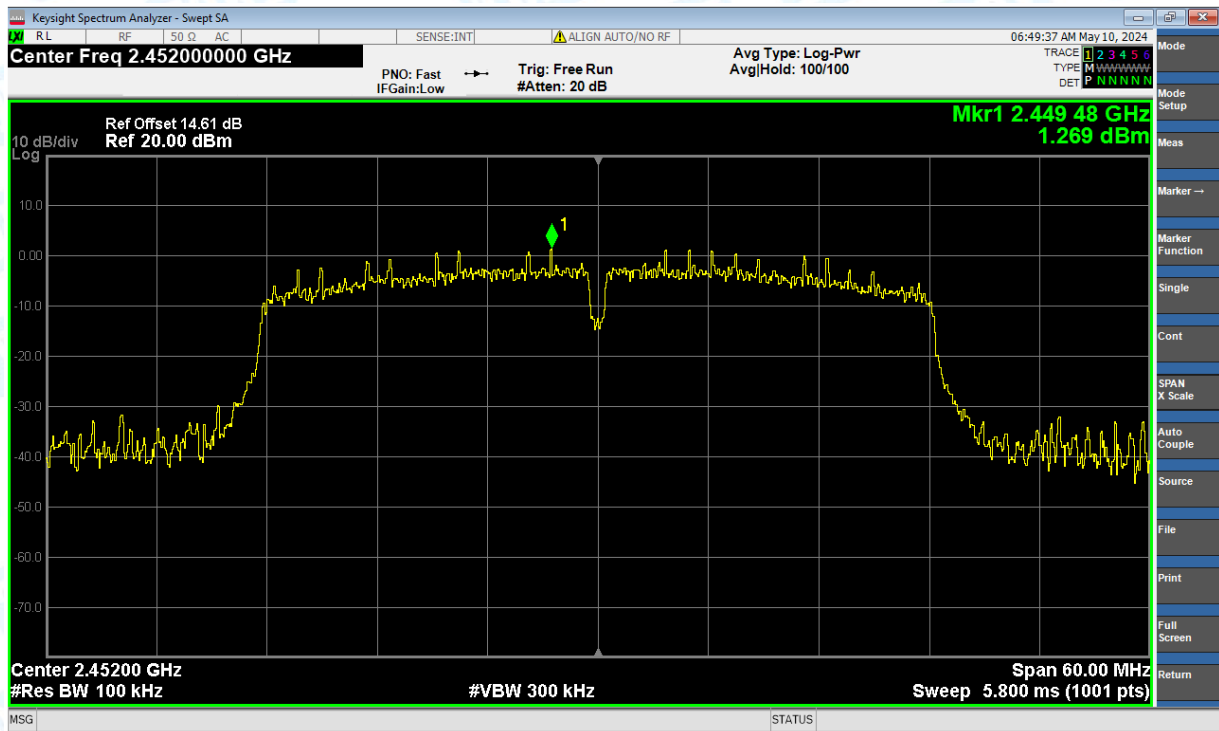
Tx. Spurious NVNT n(HT40) 2437MHz Ant1 Ref



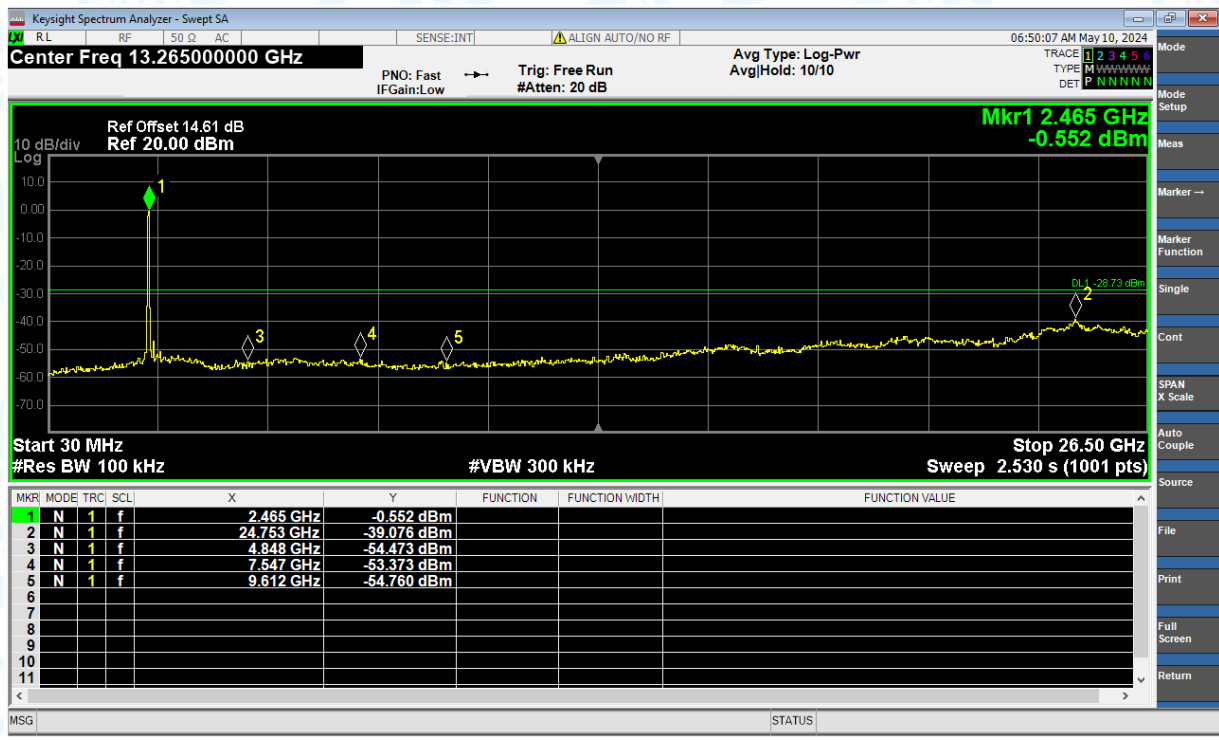
Tx. Spurious NVNT n(HT40) 2437MHz Ant1 Emission



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



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



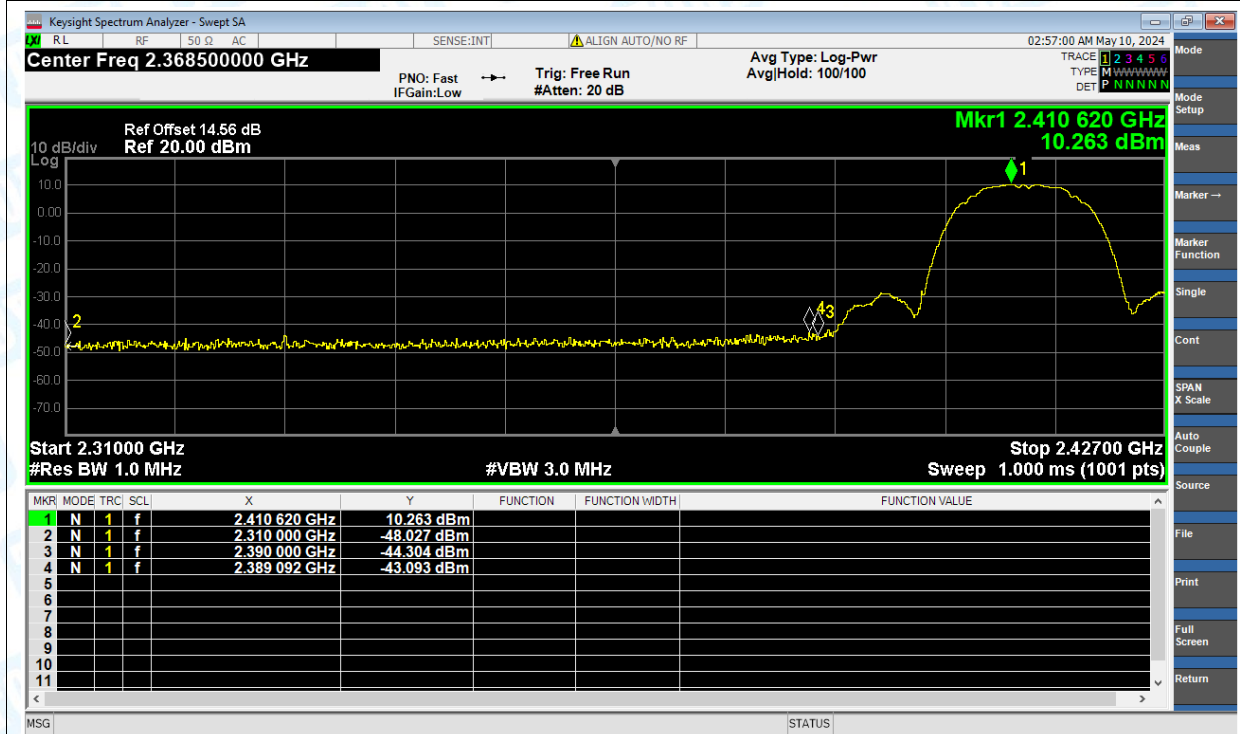
8. Restrict Band

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	-48.03	2	-	49.23	Peak	74	Pass
NVNT	b	2412	Ant1	2310	-57.56	2	0.04	39.74	Average	54	Pass
NVNT	b	2412	Ant1	2389.092	-43.09	2	-	54.17	Peak	74	Pass
NVNT	b	2412	Ant1	2389.56	-51.13	2	0.04	46.17	Average	54	Pass
NVNT	b	2412	Ant1	2390	-44.3	2	-	52.96	Peak	74	Pass
NVNT	b	2412	Ant1	2390	-51.32	2	0.04	45.98	Average	54	Pass
NVNT	b	2462	Ant1	2483.5	-40.67	2	-	56.59	Peak	74	Pass
NVNT	b	2462	Ant1	2483.5	-52.09	2	0.04	45.21	Average	54	Pass
NVNT	b	2462	Ant1	2483.517	-40.67	2	-	56.59	Peak	74	Pass
NVNT	b	2462	Ant1	2483.835	-51.51	2	0.04	45.79	Average	54	Pass
NVNT	b	2462	Ant1	2500	-46.55	2	-	50.71	Peak	74	Pass
NVNT	b	2462	Ant1	2500	-54.42	2	0.04	42.88	Average	54	Pass
NVNT	g	2412	Ant1	2310	-48.93	2	-	48.33	Peak	74	Pass
NVNT	g	2412	Ant1	2310	-55.74	2	0.05	41.57	Average	54	Pass
NVNT	g	2412	Ant1	2389.794	-33.46	2	-	63.8	Peak	74	Pass
NVNT	g	2412	Ant1	2389.443	-46.19	2	0.05	51.12	Average	54	Pass
NVNT	g	2412	Ant1	2390	-37.09	2	-	60.17	Peak	74	Pass
NVNT	g	2412	Ant1	2390	-46.48	2	0.05	50.83	Average	54	Pass
NVNT	g	2462	Ant1	2483.5	-36.27	2	-	60.99	Peak	74	Pass
NVNT	g	2462	Ant1	2483.5	-46.57	2	0.04	50.73	Average	54	Pass
NVNT	g	2462	Ant1	2483.623	-31.95	2	-	65.31	Peak	74	Pass
NVNT	g	2462	Ant1	2483.57	-46.53	2	0.04	50.77	Average	54	Pass
NVNT	g	2462	Ant1	2500	-46.62	2	-	50.64	Peak	74	Pass
NVNT	g	2462	Ant1	2500	-53.63	2	0.04	43.67	Average	54	Pass
NVNT	n(HT20)	2412	Ant1	2310	-45.94	2	-	51.32	Peak	74	Pass
NVNT	n(HT20)	2412	Ant1	2310	-55.57	2	0.05	41.74	Average	54	Pass
NVNT	n(HT20)	2412	Ant1	2389.326	-34.9	2	-	62.36	Peak	74	Pass
NVNT	n(HT20)	2412	Ant1	2389.326	-46.37	2	0.05	50.94	Average	54	Pass
NVNT	n(HT20)	2412	Ant1	2390	-36.77	2	-	60.49	Peak	74	Pass
NVNT	n(HT20)	2412	Ant1	2390	-46.6	2	0.05	50.71	Average	54	Pass
NVNT	n(HT20)	2462	Ant1	2483.5	-35.27	2	-	61.99	Peak	74	Pass
NVNT	n(HT20)	2462	Ant1	2483.5	-44.68	2	0.05	52.63	Average	54	Pass
NVNT	n(HT20)	2462	Ant1	2483.729	-34.17	2	-	63.09	Peak	74	Pass
NVNT	n(HT20)	2462	Ant1	2483.729	-44.54	2	0.05	52.77	Average	54	Pass
NVNT	n(HT20)	2462	Ant1	2500	-44.87	2	-	52.39	Peak	74	Pass
NVNT	n(HT20)	2462	Ant1	2500	-53.48	2	0.05	43.83	Average	54	Pass
NVNT	n(HT40)	2422	Ant1	2310	-47.64	2	-	49.62	Peak	74	Pass
NVNT	n(HT40)	2422	Ant1	2310	-55.03	2	0.04	42.27	Average	54	Pass
NVNT	n(HT40)	2422	Ant1	2389.946	-25.66	2	-	71.6	Peak	74	Pass
NVNT	n(HT40)	2422	Ant1	2387.532	-44.01	2	0.04	53.29	Average	54	Pass
NVNT	n(HT40)	2422	Ant1	2390	-25.66	2	-	71.6	Peak	74	Pass

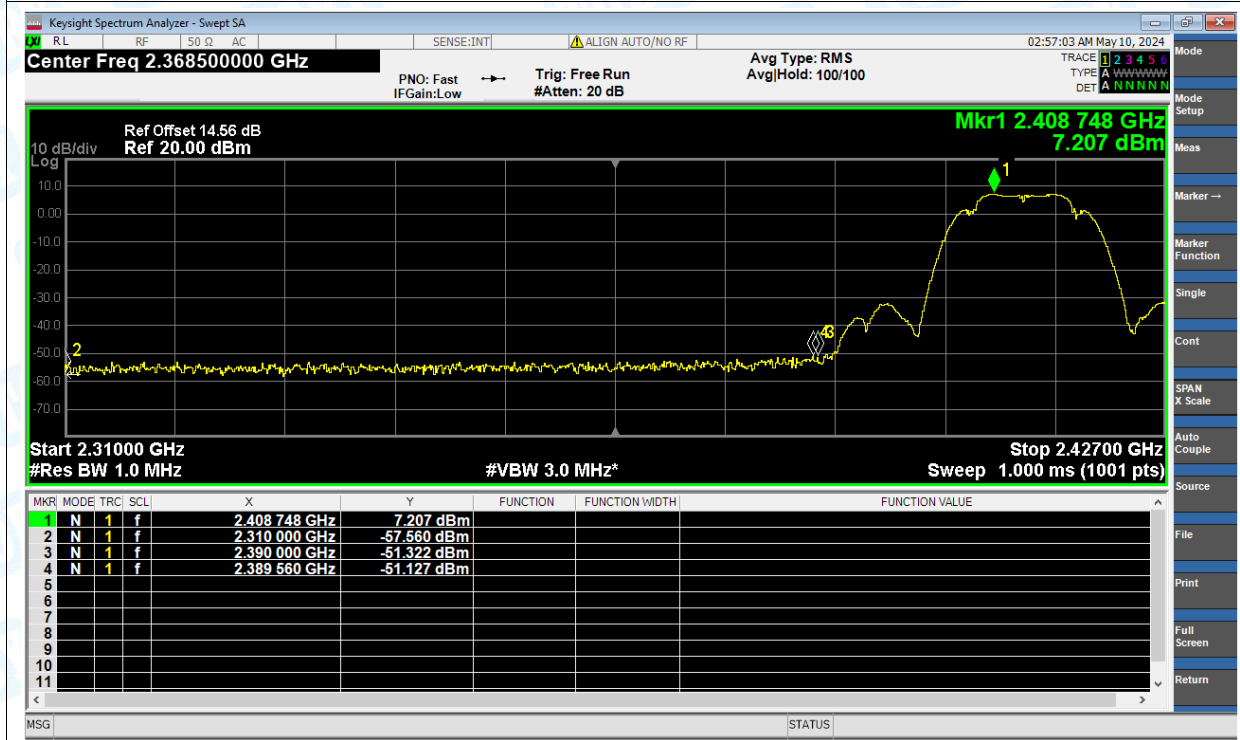
NVNT	n(HT40)	2422	Ant1	2390	-44.7	2	0.04	52.6	Average	54	Pass
NVNT	n(HT40)	2452	Ant1	2483.5	-24.6	2	-	72.66	Peak	74	Pass
NVNT	n(HT40)	2452	Ant1	2483.5	-44.84	2	0.04	52.46	Average	54	Pass
NVNT	n(HT40)	2452	Ant1	2483.932	-25.09	2	-	72.17	Peak	74	Pass
NVNT	n(HT40)	2452	Ant1	2484.712	-43.54	2	0.04	53.76	Average	54	Pass
NVNT	n(HT40)	2452	Ant1	2500	-40.73	2	-	56.53	Peak	74	Pass
NVNT	n(HT40)	2452	Ant1	2500	-51.05	2	0.04	46.25	Average	54	Pass

Test Graphs

Restrict Band NVNT b 2412MHz Ant1 Peak



Restrict Band NVNT b 2412MHz Ant1 Average



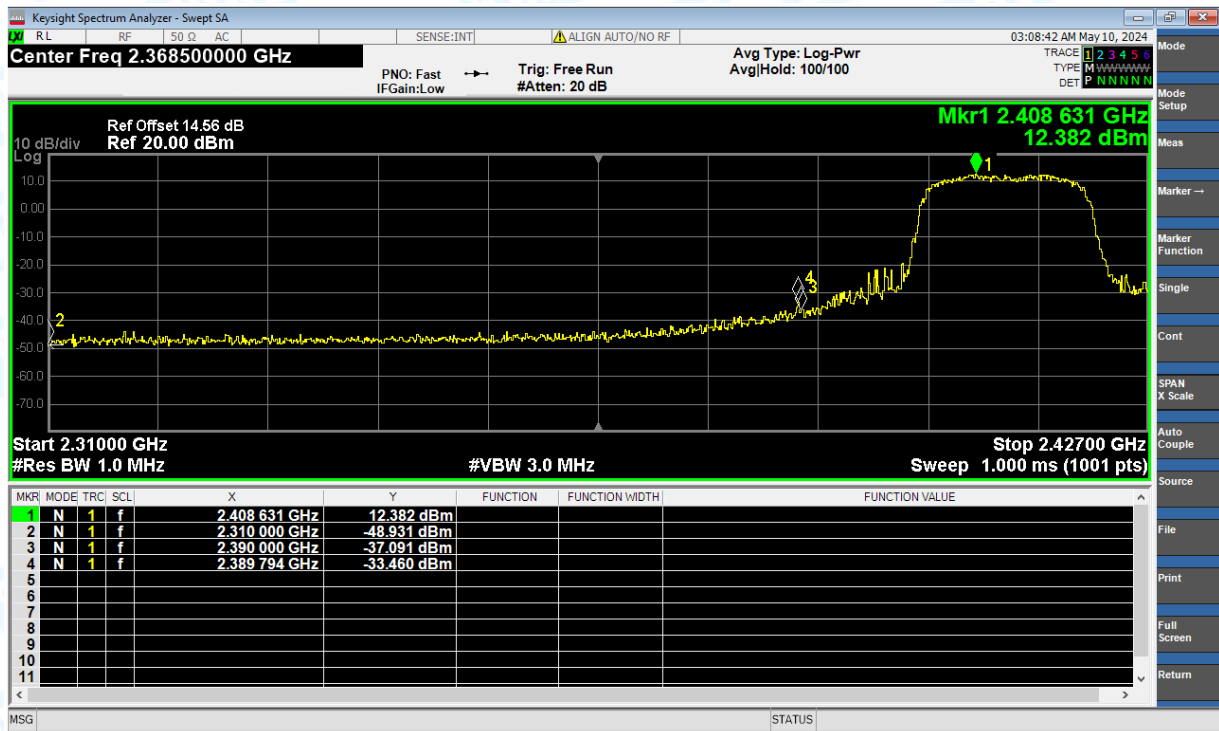
Restrict Band NVNT b 2462MHz Ant1 Peak



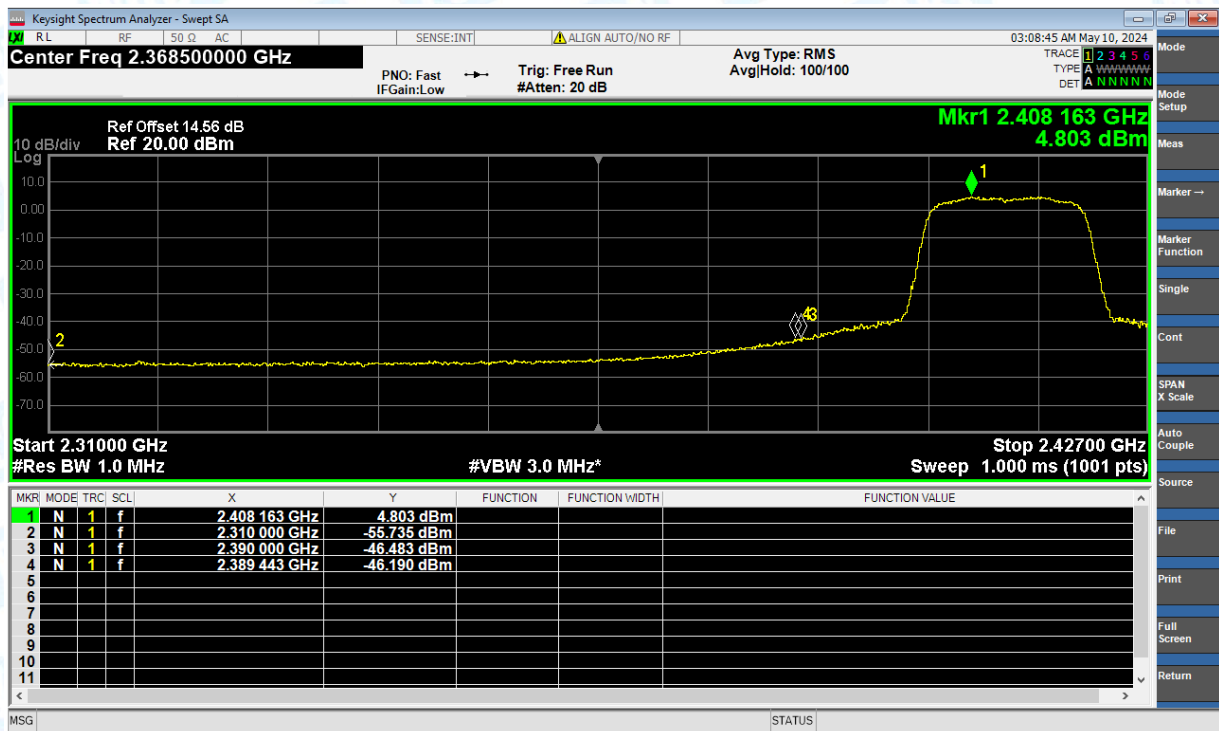
Restrict Band NVNT b 2462MHz Ant1 Average



Restrict Band NVNT g 2412MHz Ant1 Peak



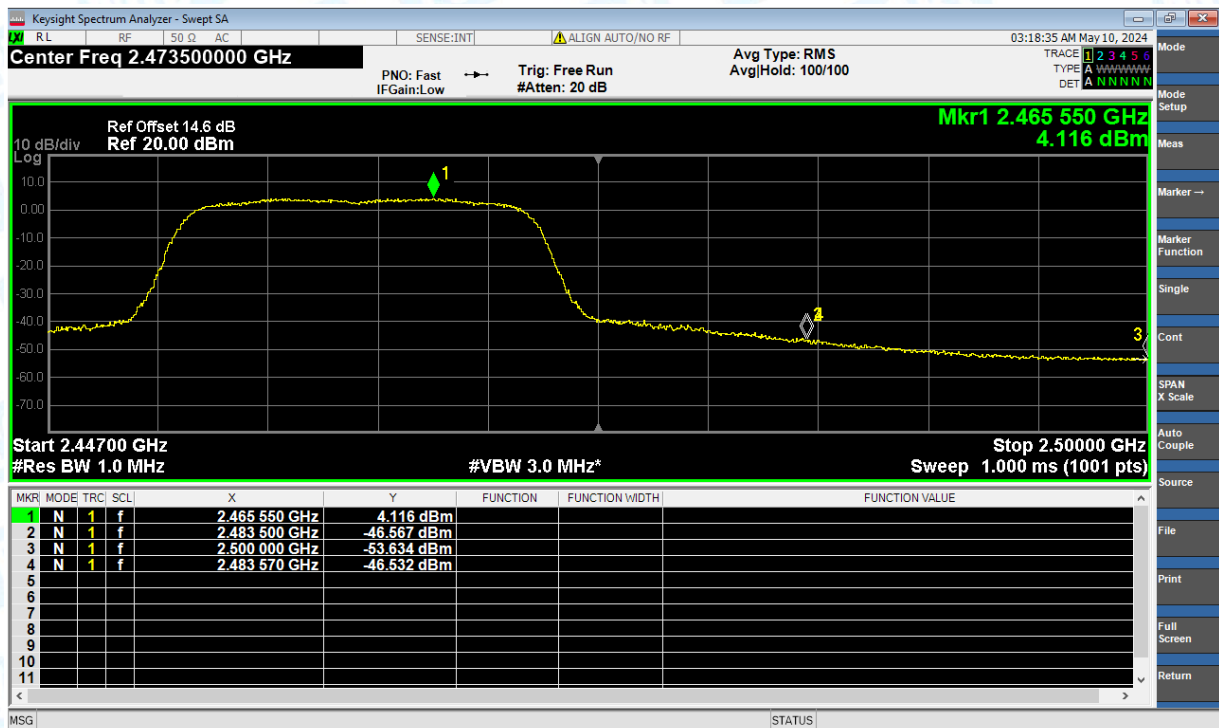
Restrict Band NVNT g 2412MHz Ant1 Average



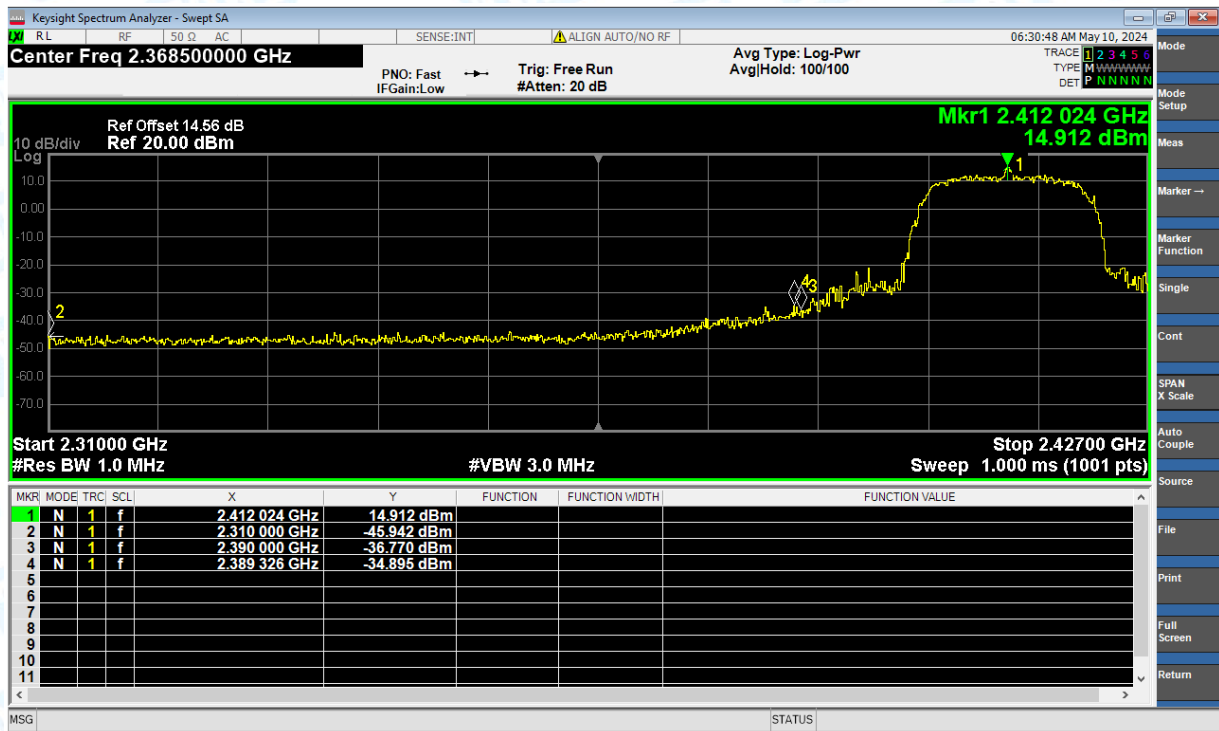
Restrict Band NVNT g 2462MHz Ant1 Peak



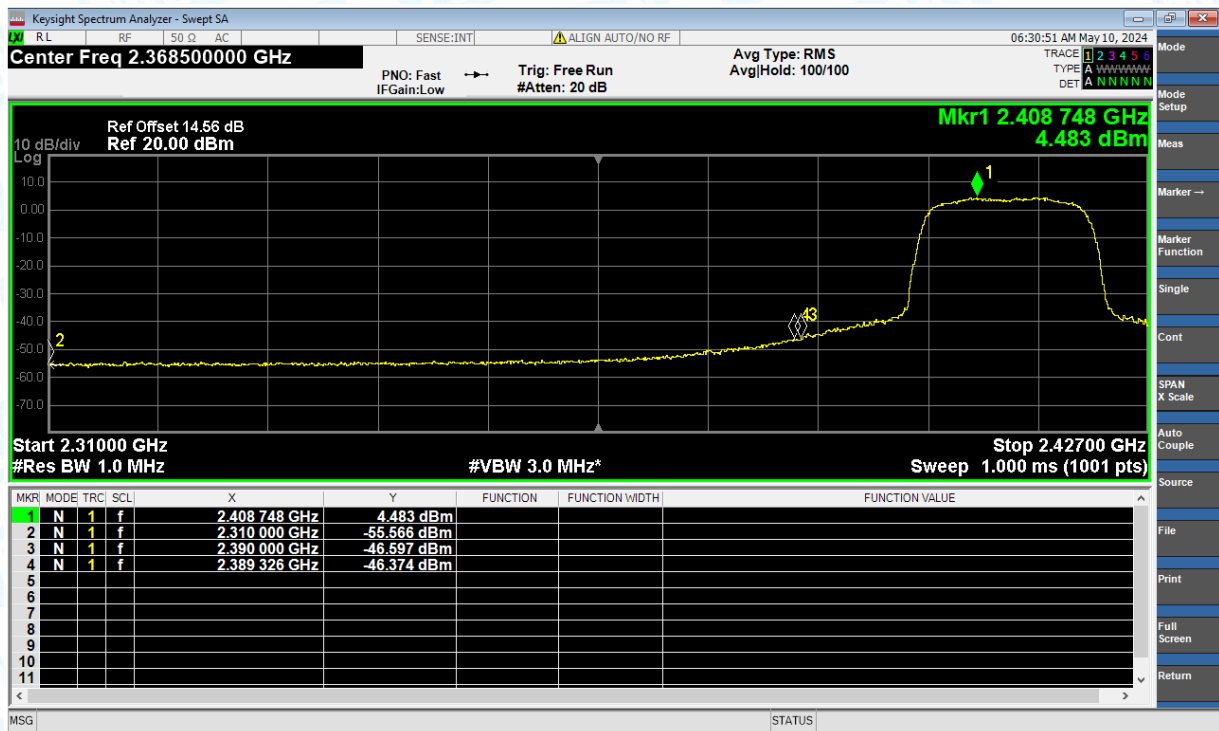
Restrict Band NVNT g 2462MHz Ant1 Average



Restrict Band NVNT n(HT20) 2412MHz Ant1 Peak



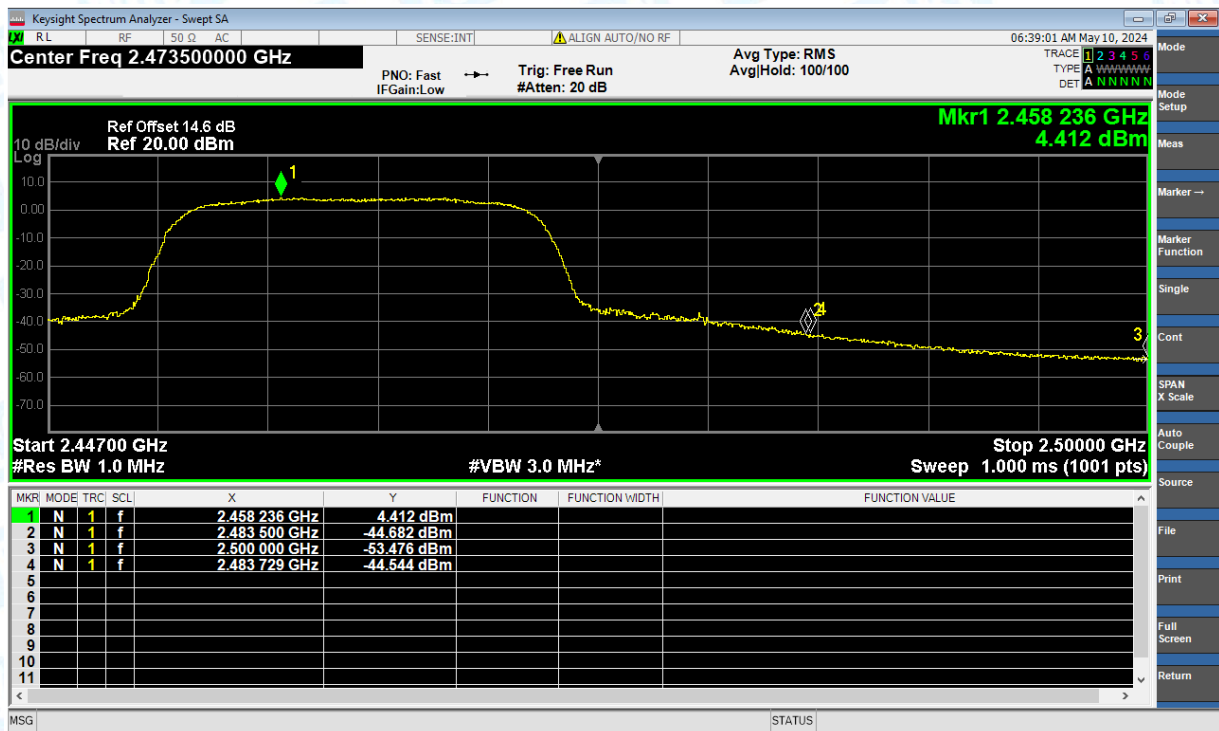
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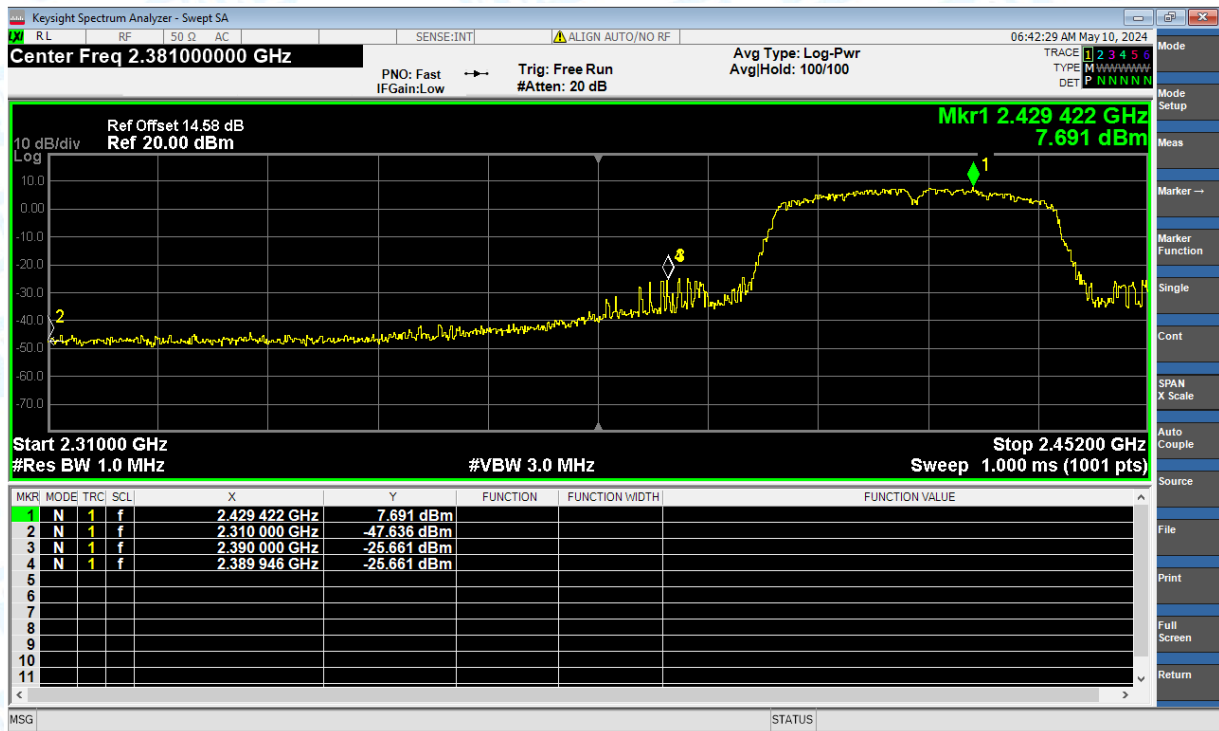
Restrict Band NVNT n(HT20) 2462MHz Ant1 Peak



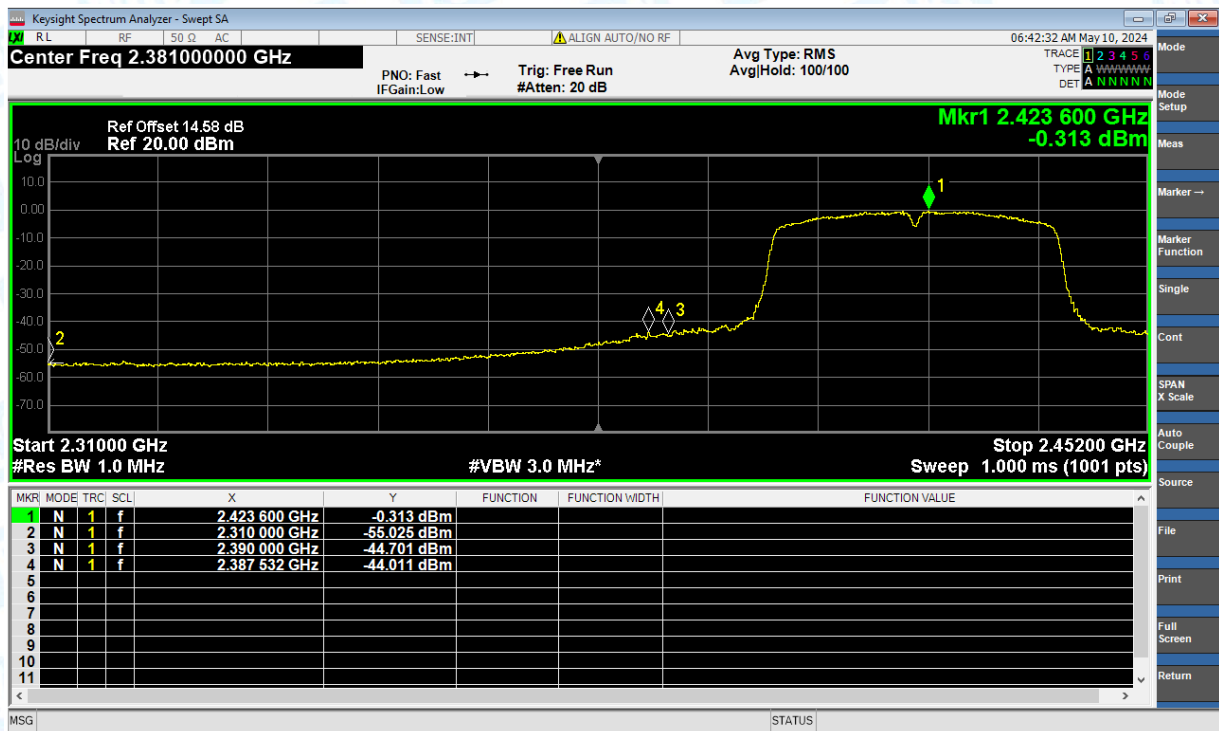
Restrict Band NVNT n(HT20) 2462MHz Ant1 Average



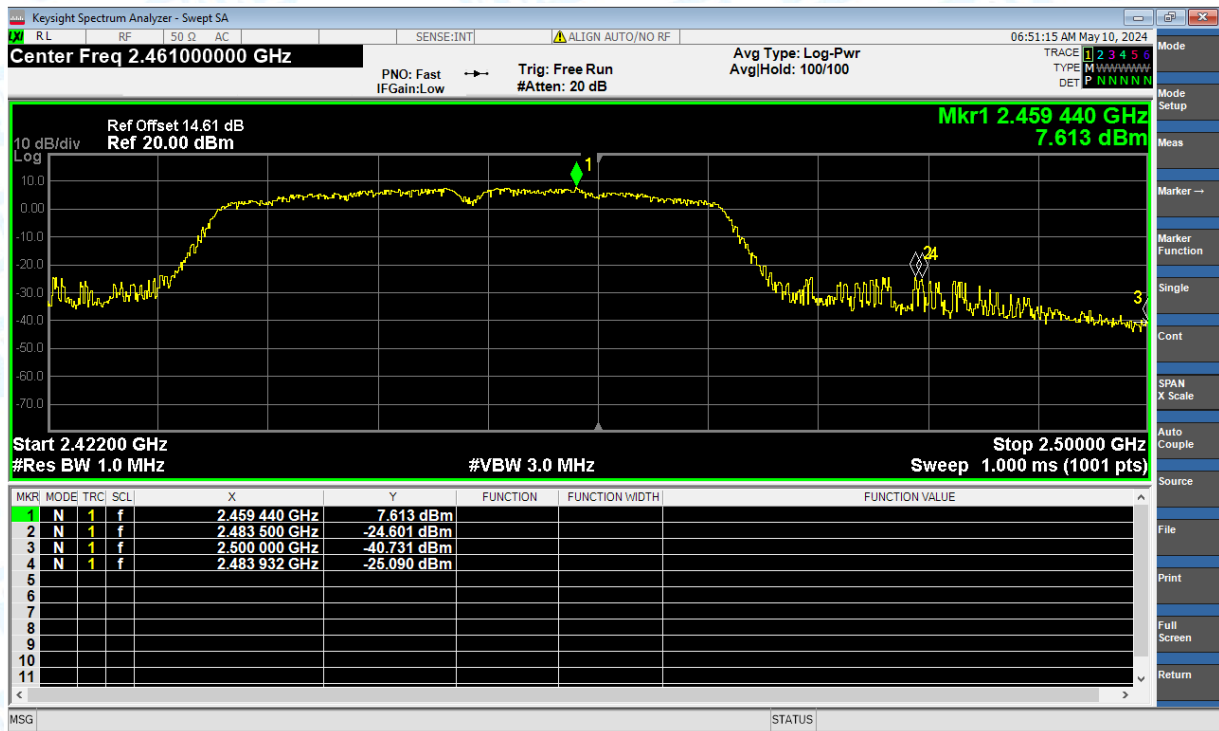
Restrict Band NVNT n(HT40) 2422MHz Ant1 Peak



Restrict Band NVNT n(HT40) 2422MHz Ant1 Average



Restrict Band NVNT n(HT40) 2452MHz Ant1 Peak



Restrict Band NVNT n(HT40) 2452MHz Ant1 Average



-----END OF THE REPORT-----