

Appendix C

RF Test Data for 2.4GWIFI (Conducted Measurement)

Product Name: HCND-V4

Test Model: HCND-V4

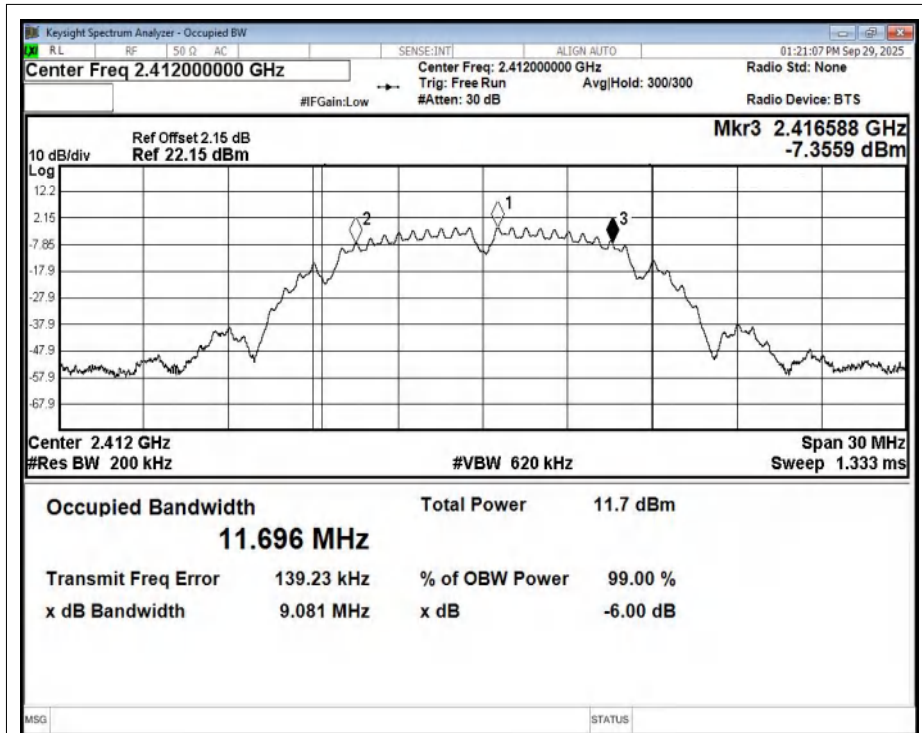
Environmental Conditions

Temperature:	23.2°C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Suichao Lai
Supervised by:	Yan Chen

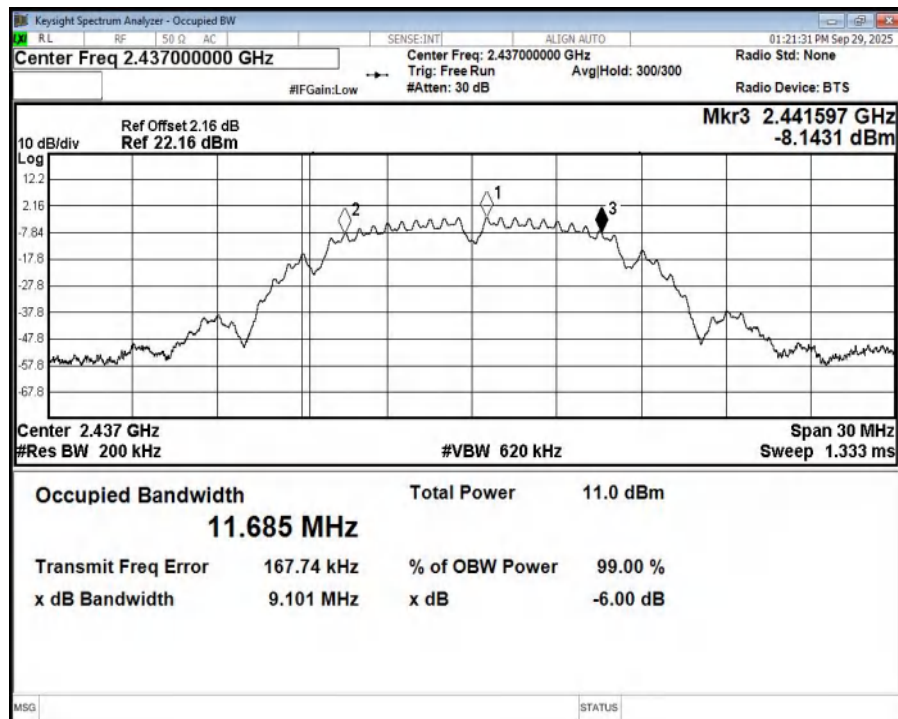
C.1 -6dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	b	2412	Ant1	9.081	≥ 0.5	Pass
NVNT	b	2437	Ant1	9.101	≥ 0.5	Pass
NVNT	b	2462	Ant1	9.109	≥ 0.5	Pass
NVNT	g	2412	Ant1	16.34	≥ 0.5	Pass
NVNT	g	2437	Ant1	16.39	≥ 0.5	Pass
NVNT	g	2462	Ant1	16.37	≥ 0.5	Pass
NVNT	n20	2412	Ant1	17.42	≥ 0.5	Pass
NVNT	n20	2437	Ant1	17.35	≥ 0.5	Pass
NVNT	n20	2462	Ant1	17.4	≥ 0.5	Pass

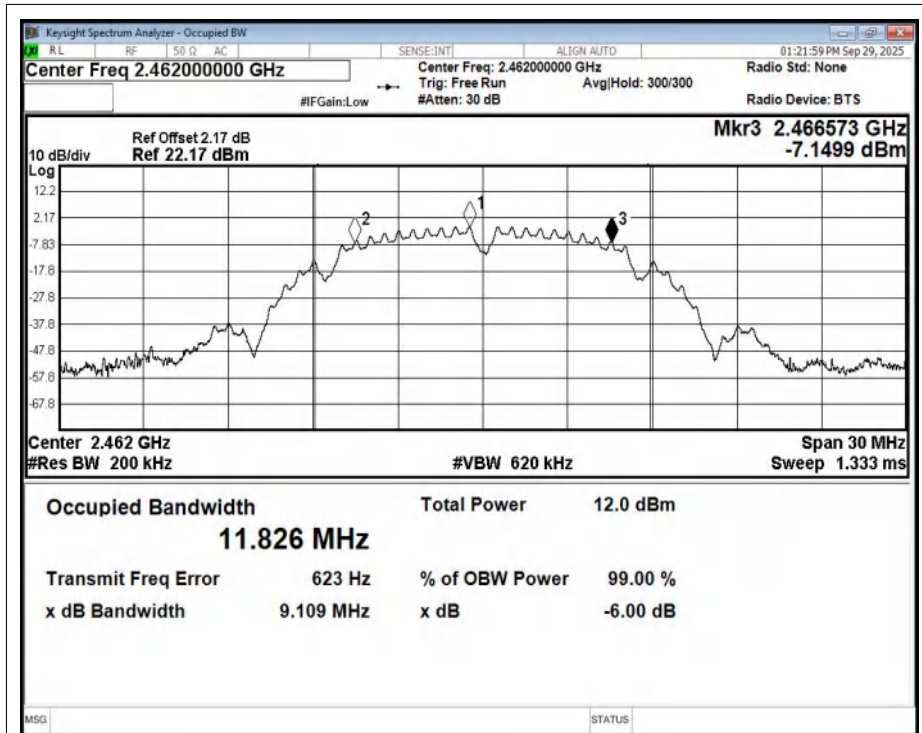
Note :offset=System attenuation +cabel loss



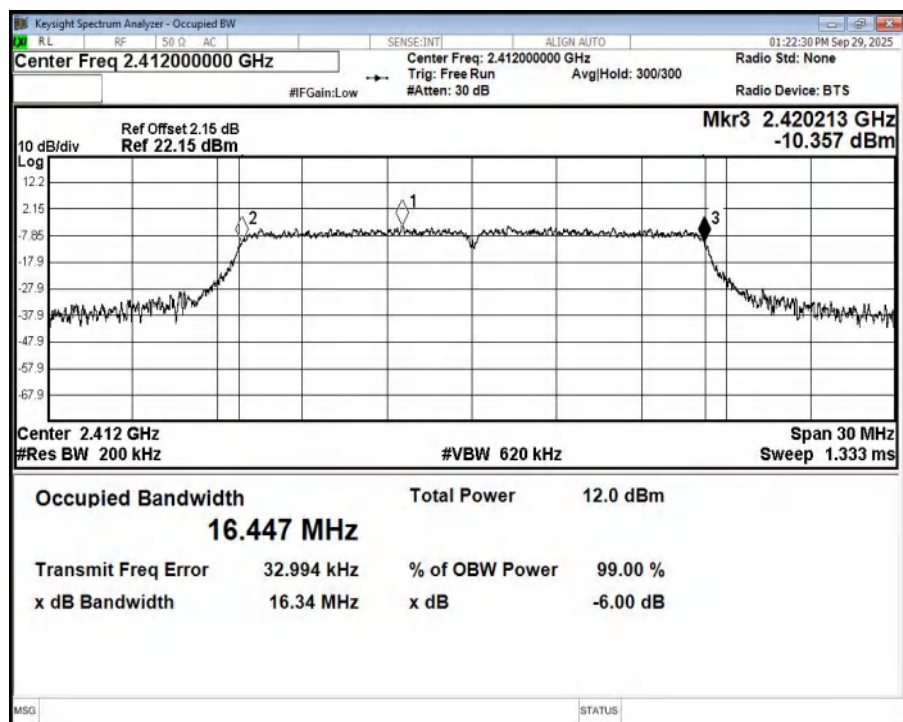
-6dB Bandwidth NVNT b 2412MHz Ant1



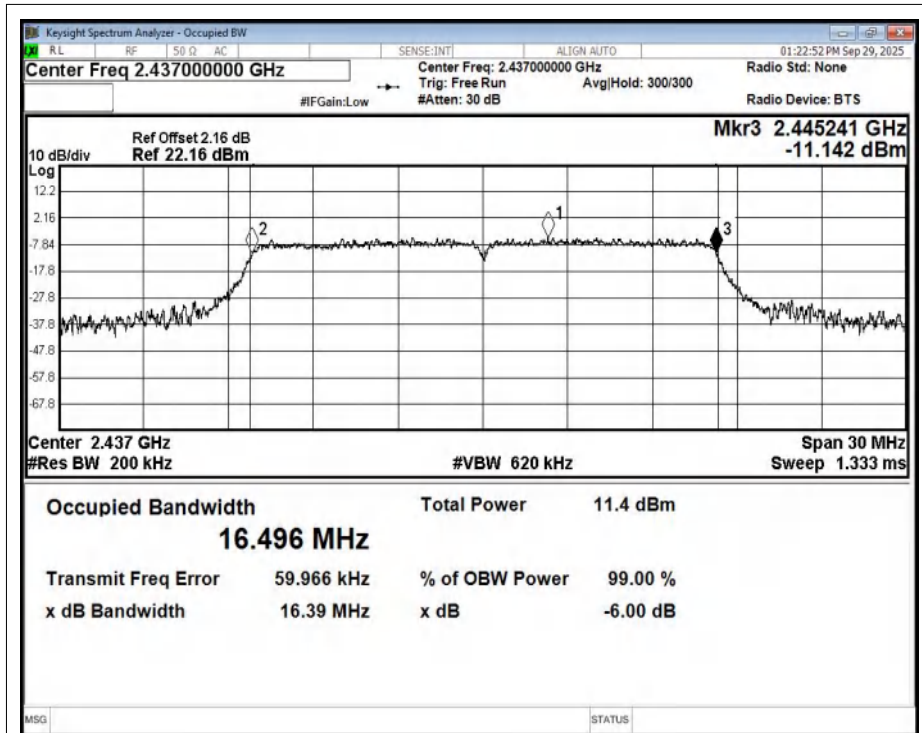
-6dB Bandwidth NVNT b 2437MHz Ant1



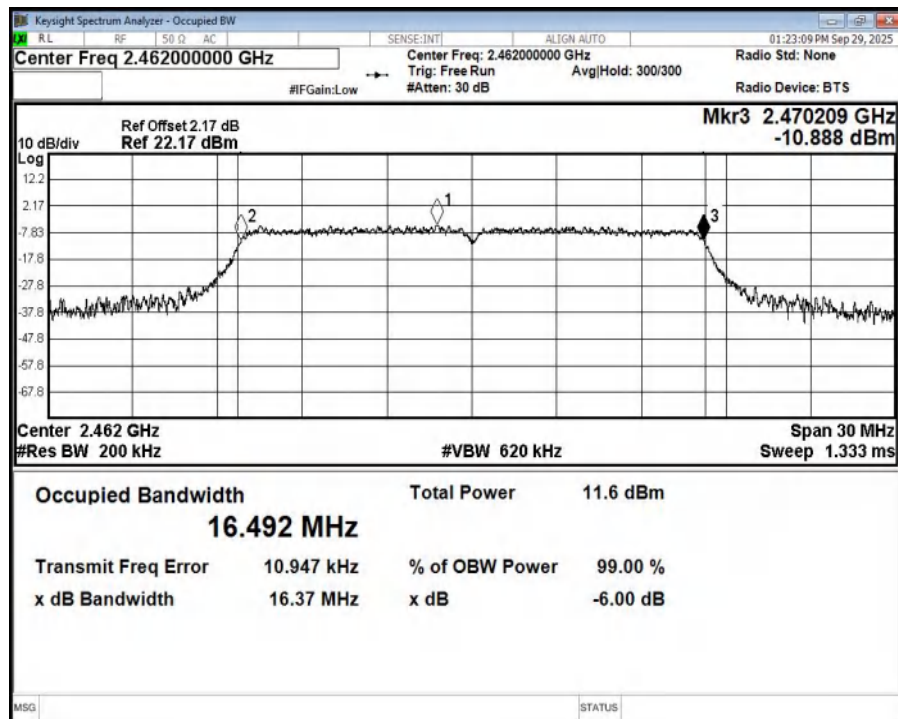
-6dB Bandwidth NVNT b 2462MHz Ant1



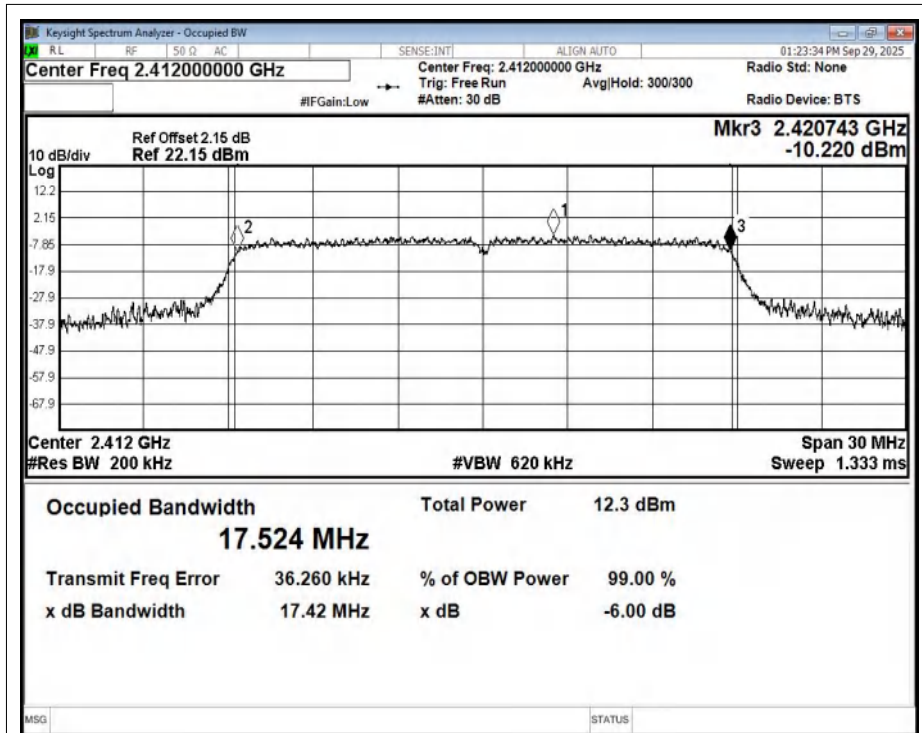
-6dB Bandwidth NVNT g 2412MHz Ant1



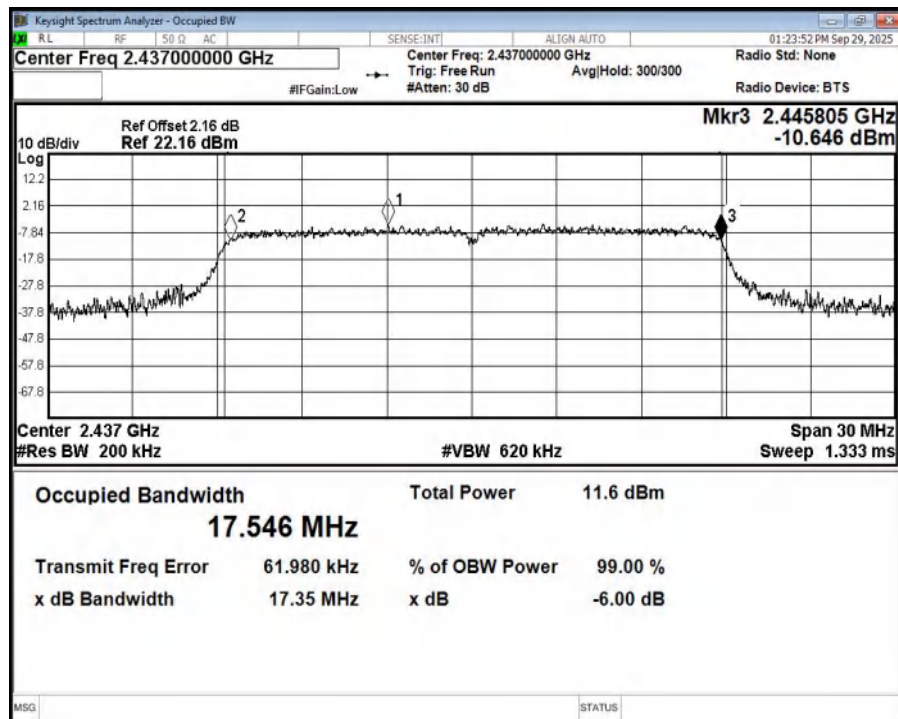
-6dB Bandwidth NVNT g 2437MHz Ant1



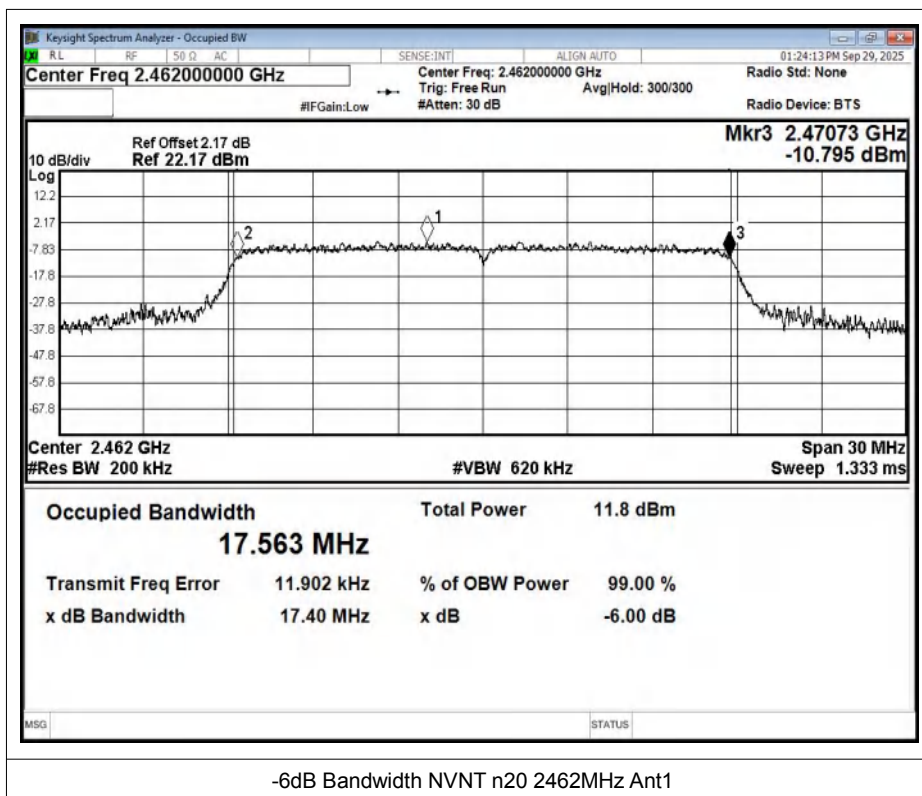
-6dB Bandwidth NVNT g 2462MHz Ant1



-6dB Bandwidth NVNT n20 2412MHz Ant1



-6dB Bandwidth NVNT n20 2437MHz Ant1



C.2 Maximum Average Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	duty cycle factor	Total Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	Ant1	14.30	0	14.3	30	Pass
NVNT	b	2437	Ant1	13.91	0	13.91	30	Pass
NVNT	b	2462	Ant1	13.97	0	13.97	30	Pass
NVNT	g	2412	Ant1	13.64	0.1	13.74	30	Pass
NVNT	g	2437	Ant1	14.18	0.1	14.28	30	Pass
NVNT	g	2462	Ant1	14.37	0.1	14.47	30	Pass
NVNT	n20	2412	Ant1	14.24	0.12	14.36	30	Pass
NVNT	n20	2437	Ant1	14.75	0.12	14.87	30	Pass
NVNT	n20	2462	Ant1	14.88	0.12	15	30	Pass

Note :offset=System attenuation +cabal loss

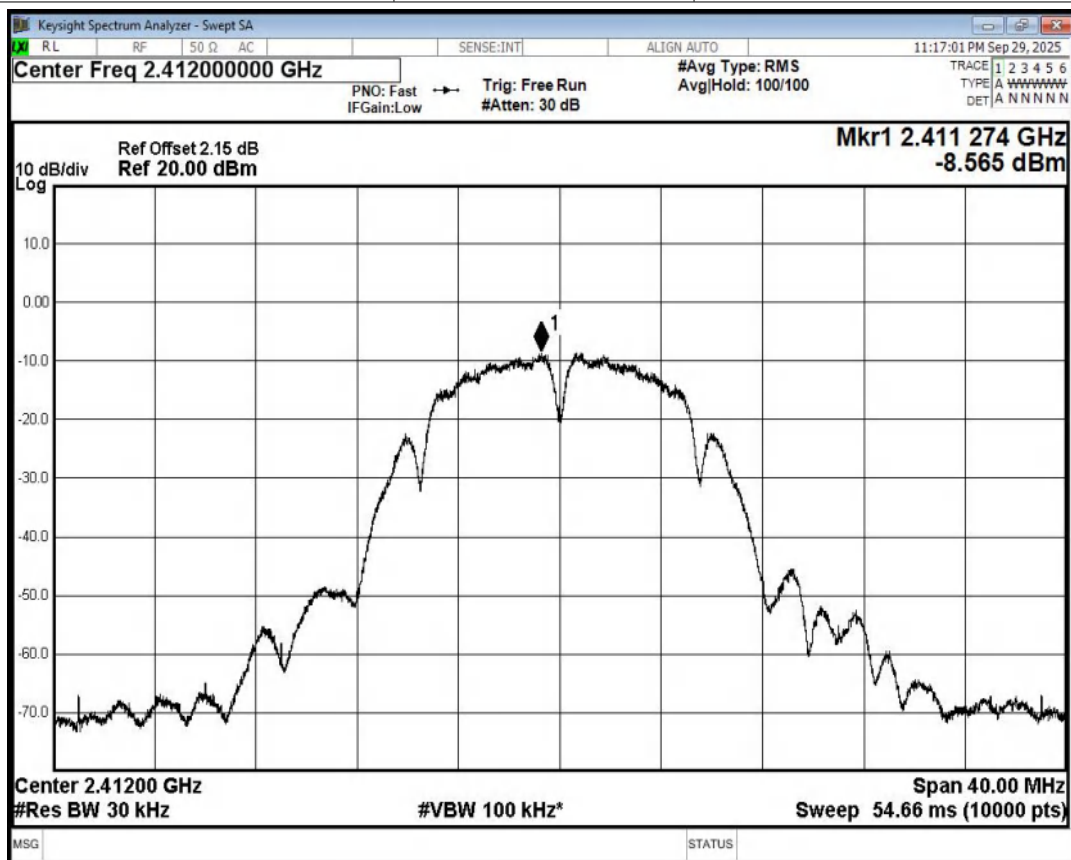
C.3 Maximum Power Spectral Density Level

Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/30kHz)	Duty Factor (dB)	Total Conducted PSD (dBm/30kHz)	Limit (dBm/30kHz)	Verdict
NVNT	b	2412	Ant1	-8.57	0	-8.57	18	Pass
NVNT	b	2437	Ant1	-9.69	0	-9.69	18	Pass
NVNT	b	2462	Ant1	-9.68	0	-9.68	18	Pass
NVNT	g	2412	Ant1	-11.65	0.1	-11.55	18	Pass
NVNT	g	2437	Ant1	-12.79	0.1	-12.69	18	Pass
NVNT	g	2462	Ant1	-12.68	0.1	-12.58	18	Pass
NVNT	n20	2412	Ant1	-17.69	0.12	-17.57	18	Pass
NVNT	n20	2437	Ant1	-18.46	0.12	-18.34	18	Pass
NVNT	n20	2462	Ant1	-18.35	0.12	-18.23	18	Pass

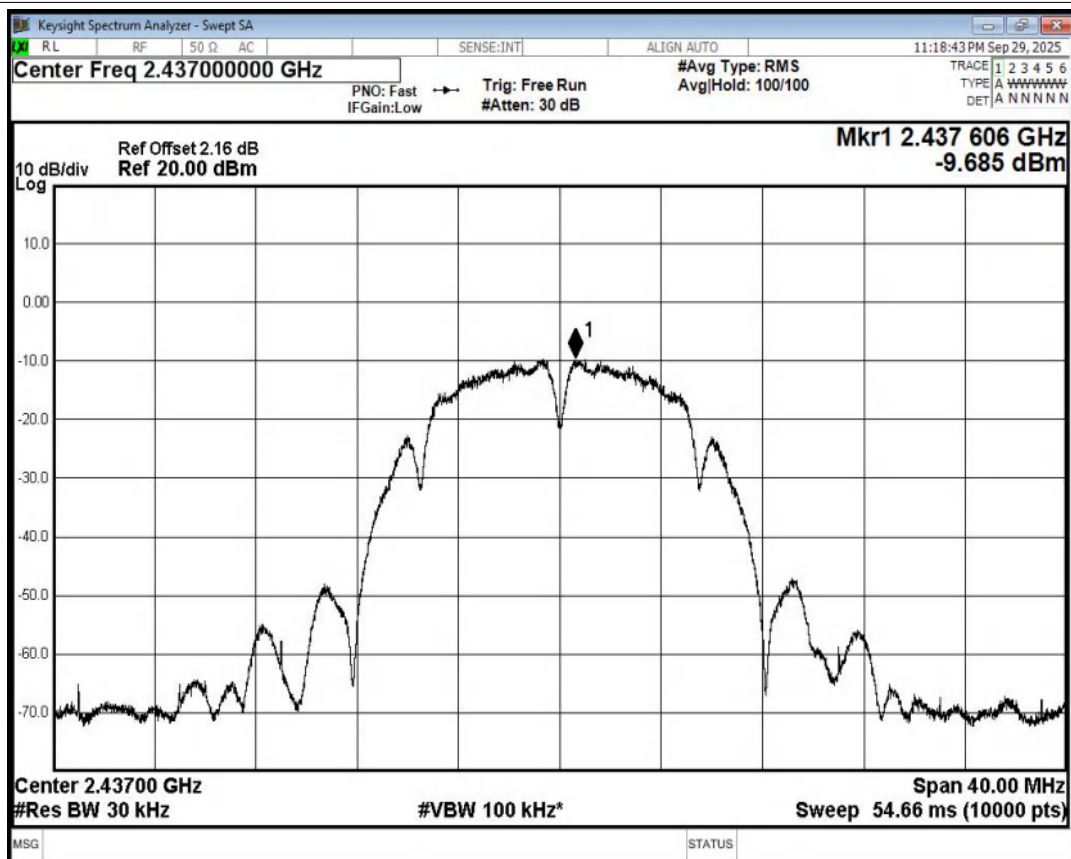
Note :offset=System attenuation +cabal loss

Test Graphs

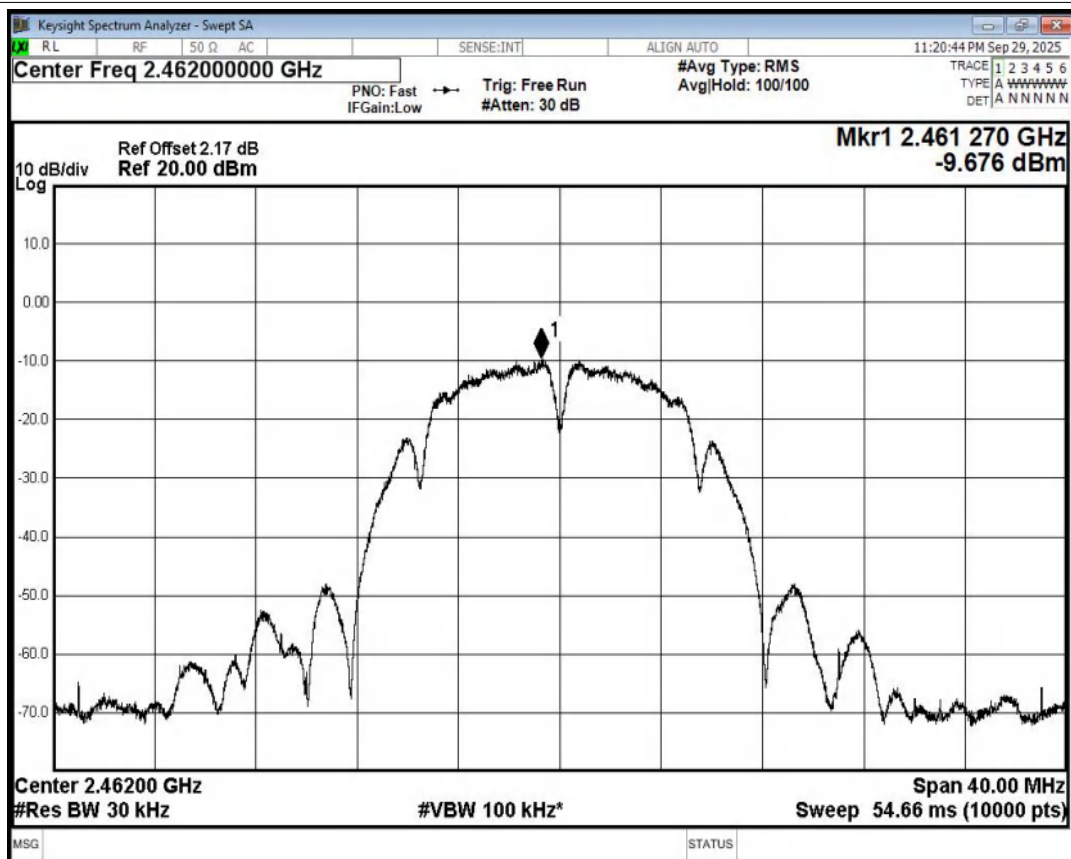
PSD NVNT b 2412MHz Ant1



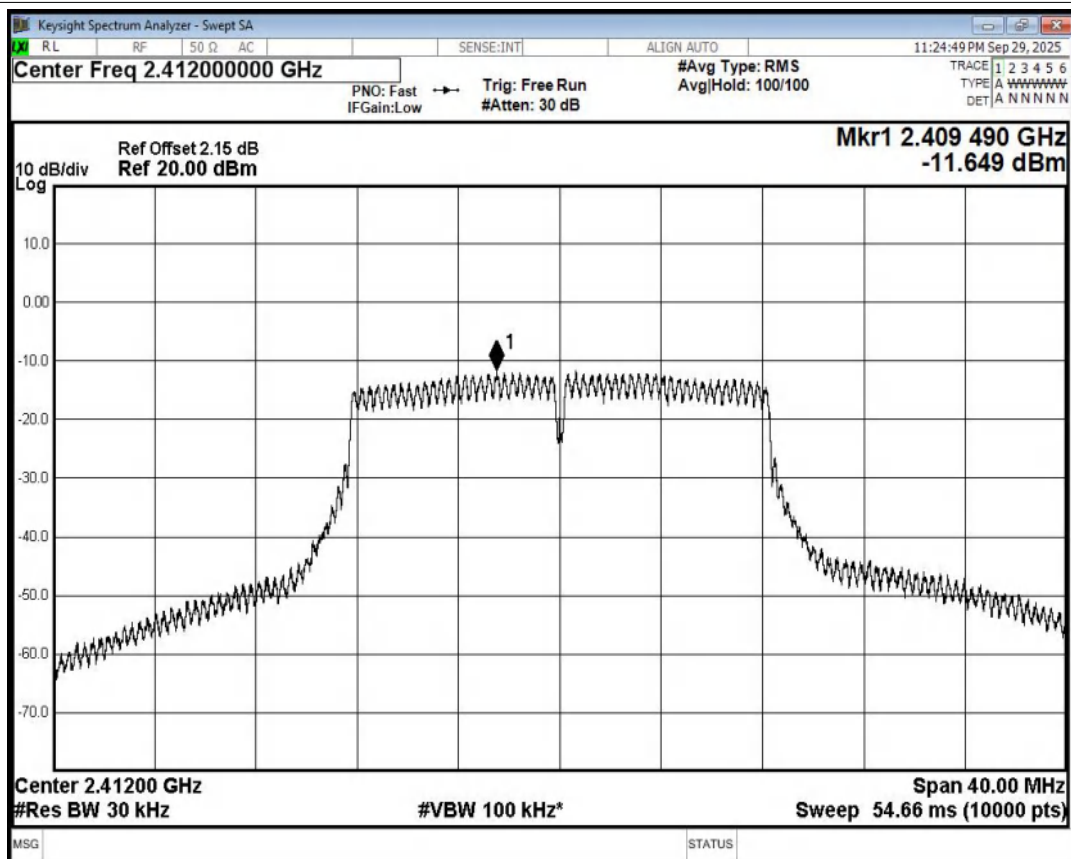
PSD NVNT b 2412MHz Ant1



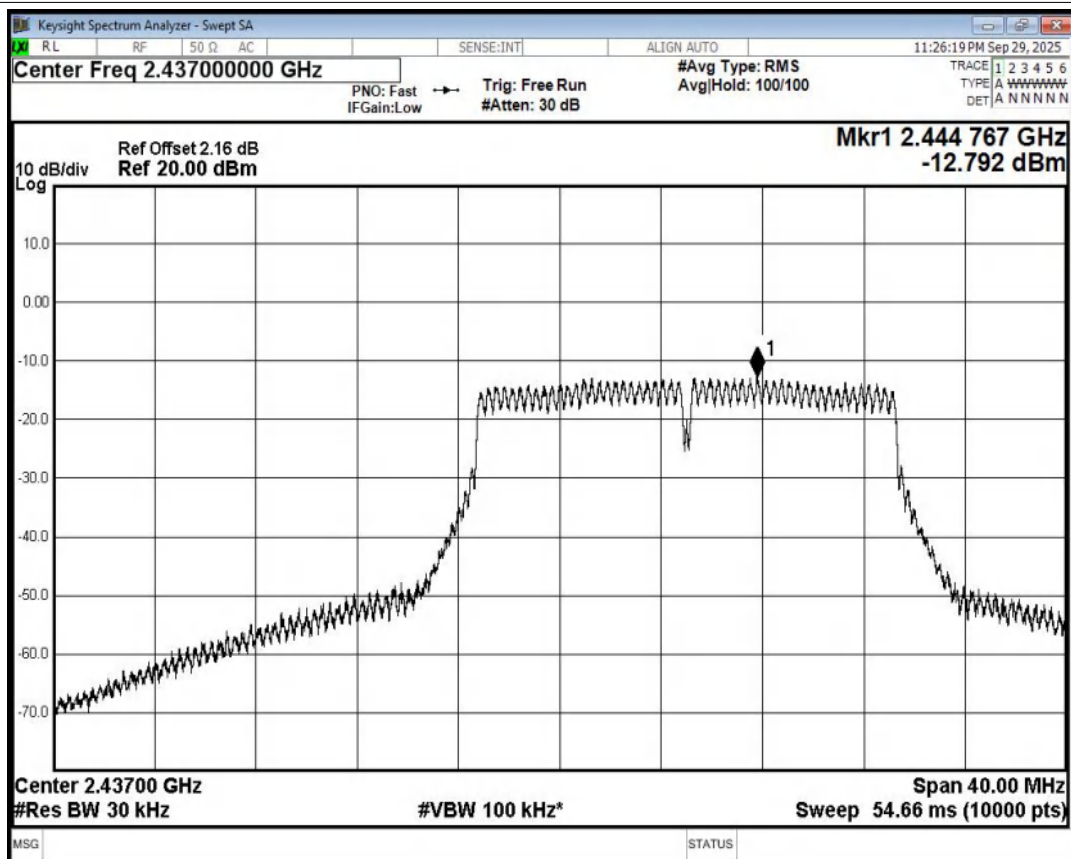
PSD NVNT b 2437MHz Ant1



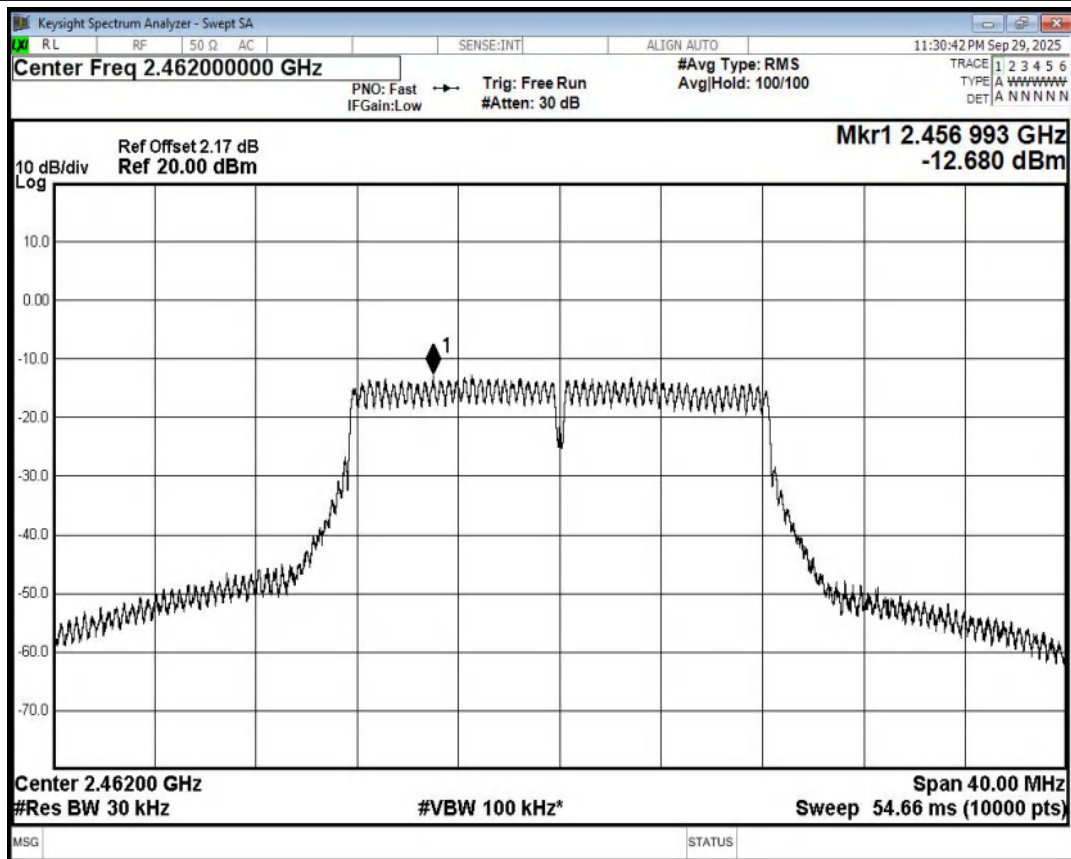
PSD NVNT b 2462MHz Ant1



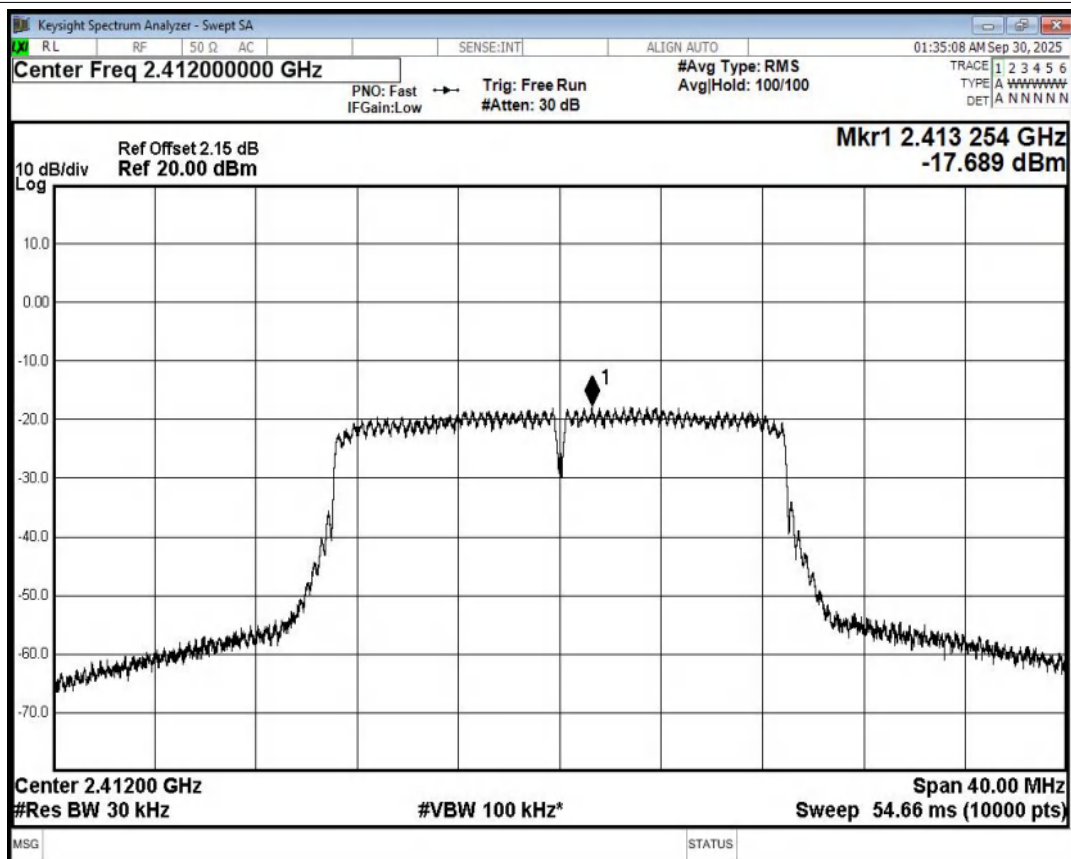
PSD NVNT g 2412MHz Ant1



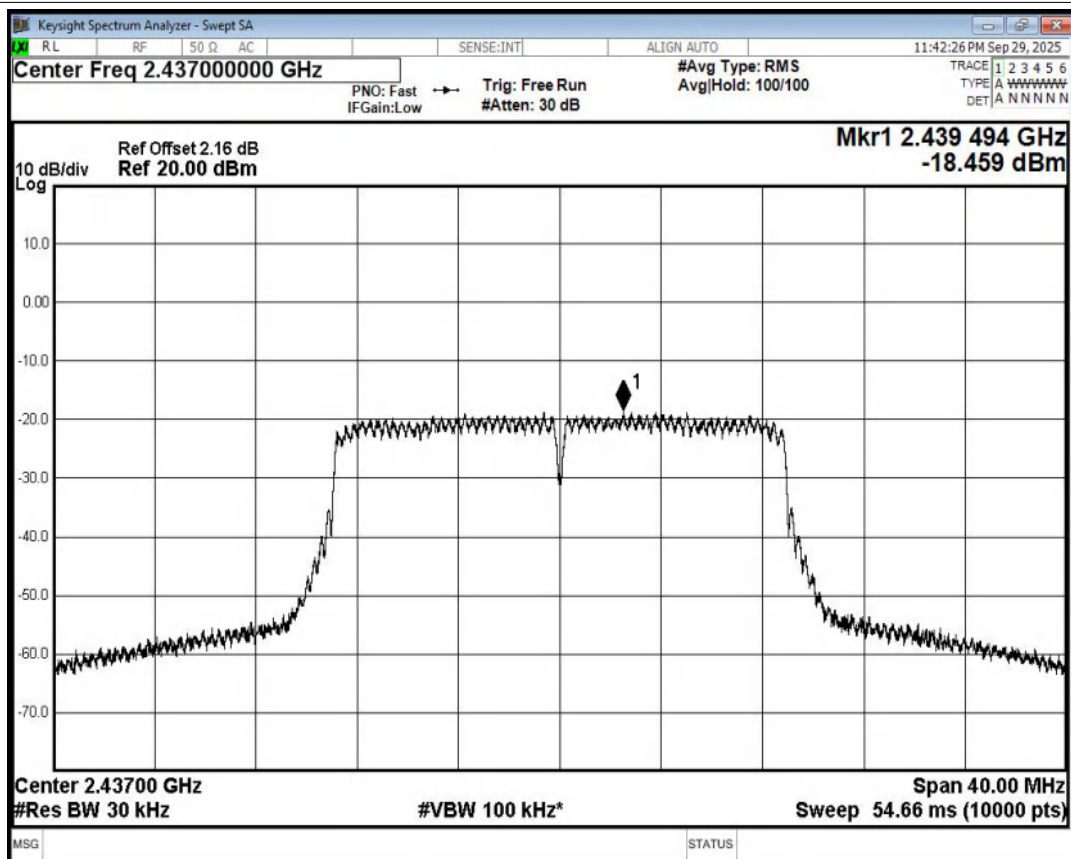
PSD NVNT g 2437MHz Ant1

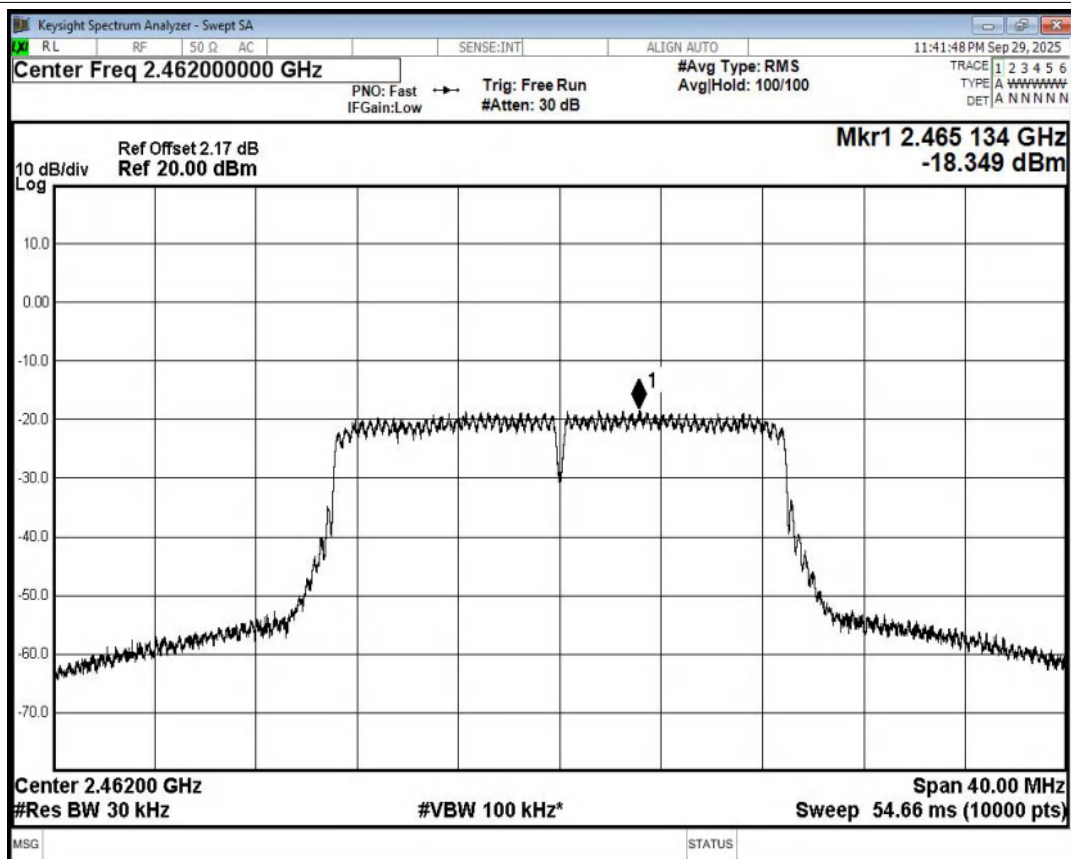


PSD NVNT g 2462MHz Ant1



PSD NVNT n20 2412MHz Ant1





PSD NVNT n20 2462MHz Ant1

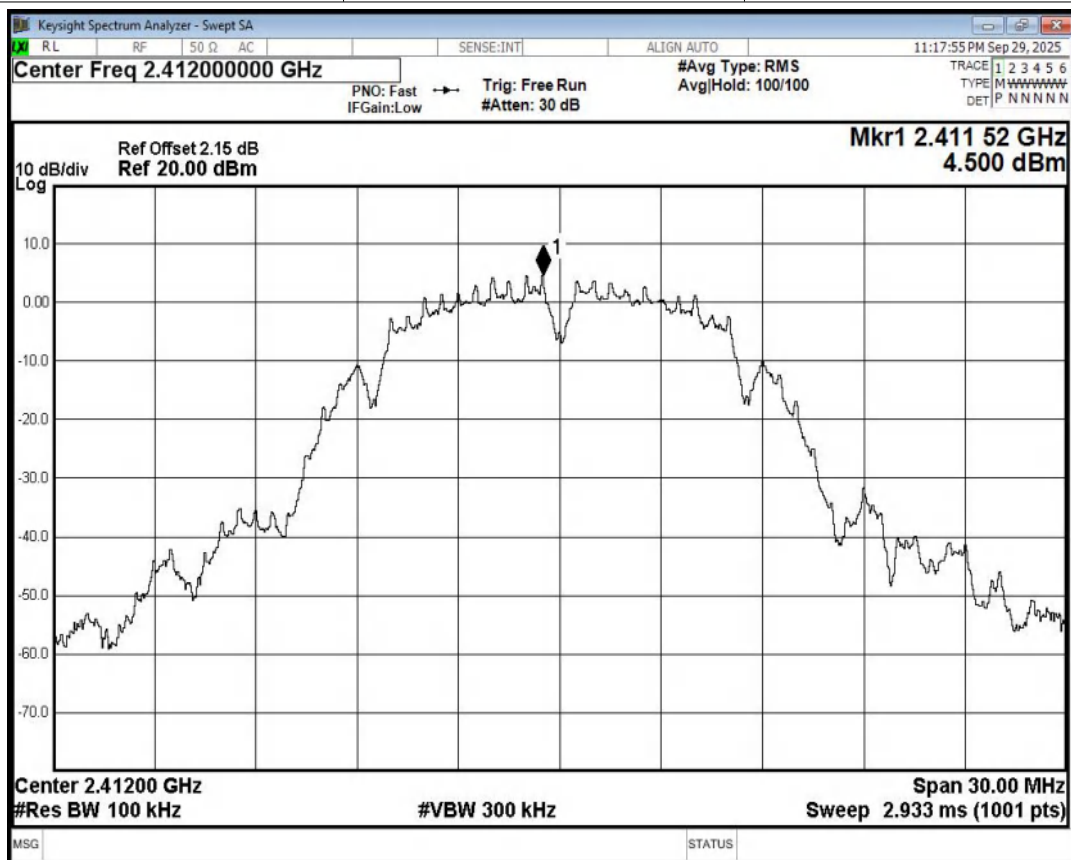
C.4 Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant1	-49.47	-30	Pass
NVNT	b	2462	Ant1	-57.72	-30	Pass
NVNT	g	2412	Ant1	-32.79	-30	Pass
NVNT	g	2462	Ant1	-41.45	-30	Pass
NVNT	n20	2412	Ant1	-32.87	-30	Pass
NVNT	n20	2462	Ant1	-38.42	-30	Pass

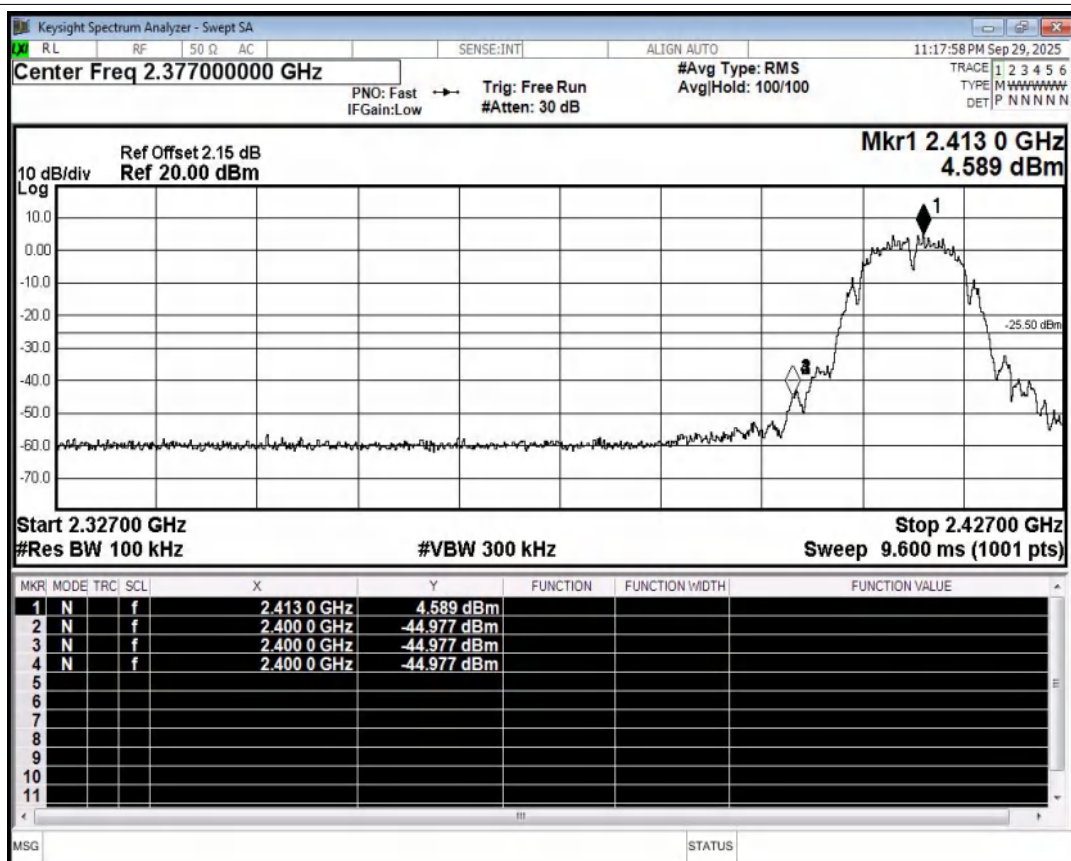
Note :offset=System attenuation +cabal loss

Test Graphs

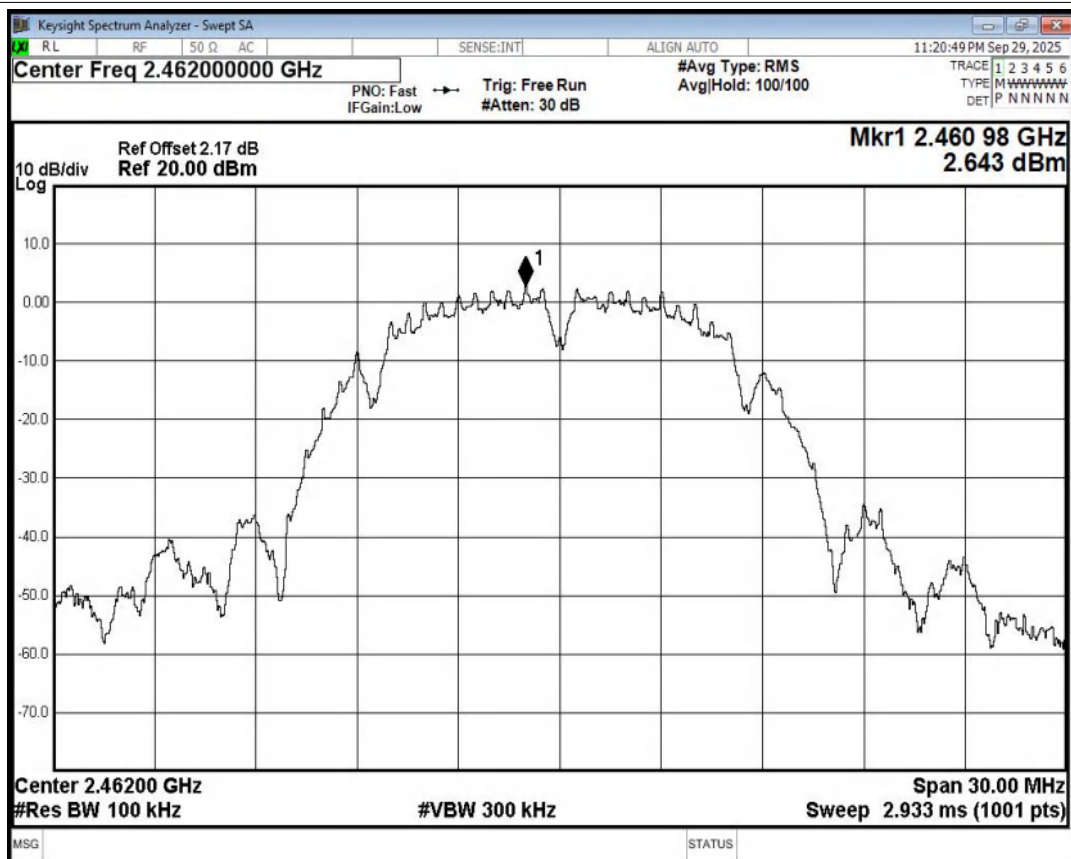
Band Edge NVNT b 2412MHz Ant1 Ref



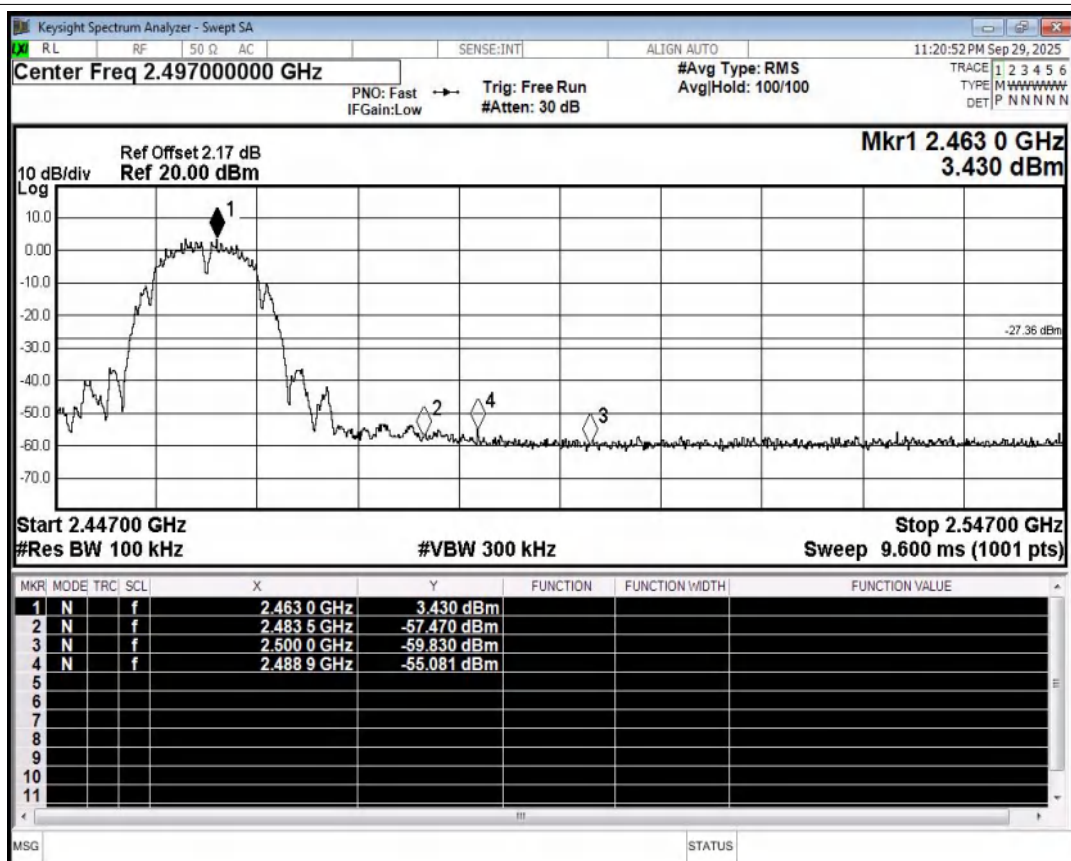
Band Edge NVNT b 2412MHz Ant1 Ref



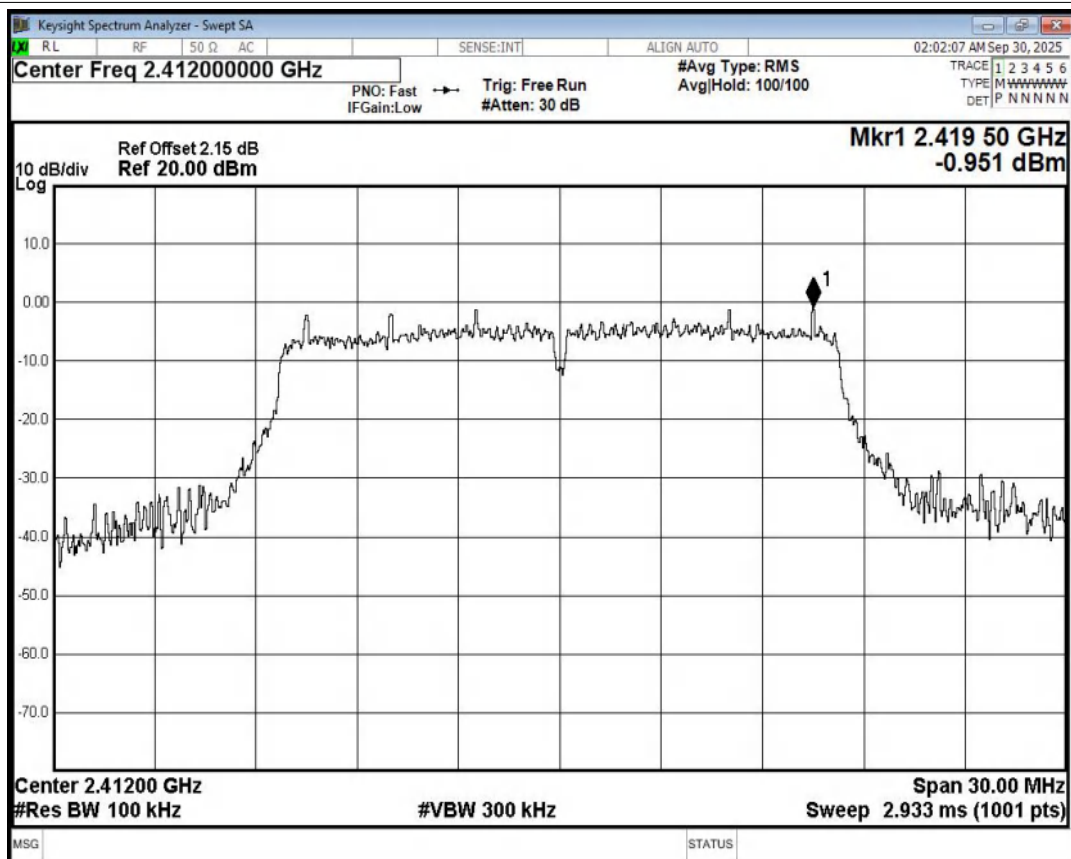
Band Edge NVNT b 2412MHz Ant1 Emission



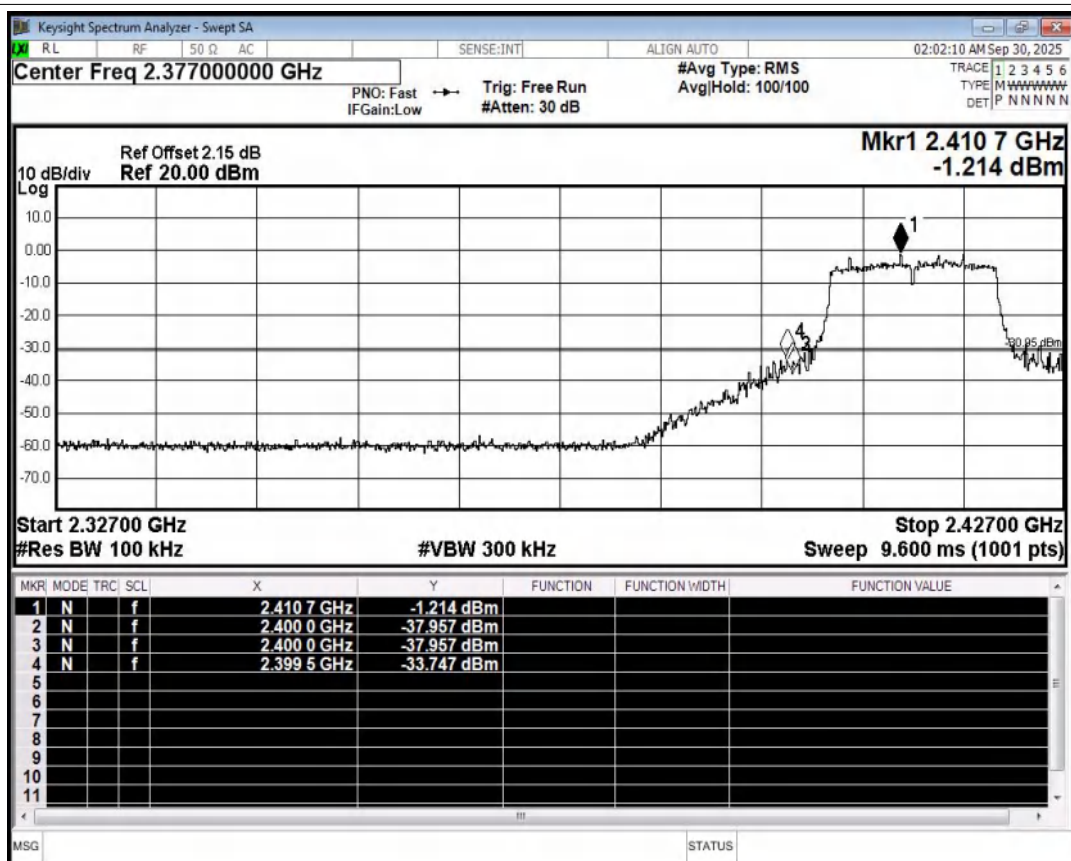
Band Edge NVNT b 2462MHz Ant1 Ref



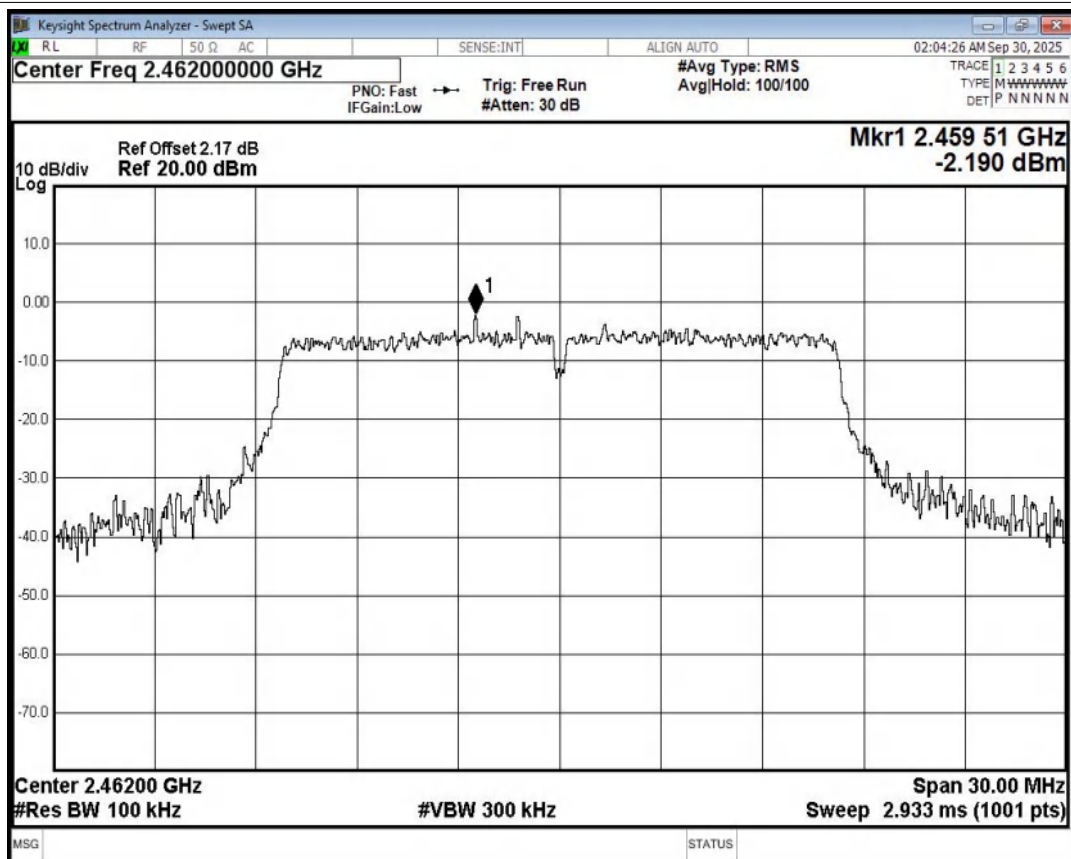
Band Edge NVNT b 2462MHz Ant1 Emission



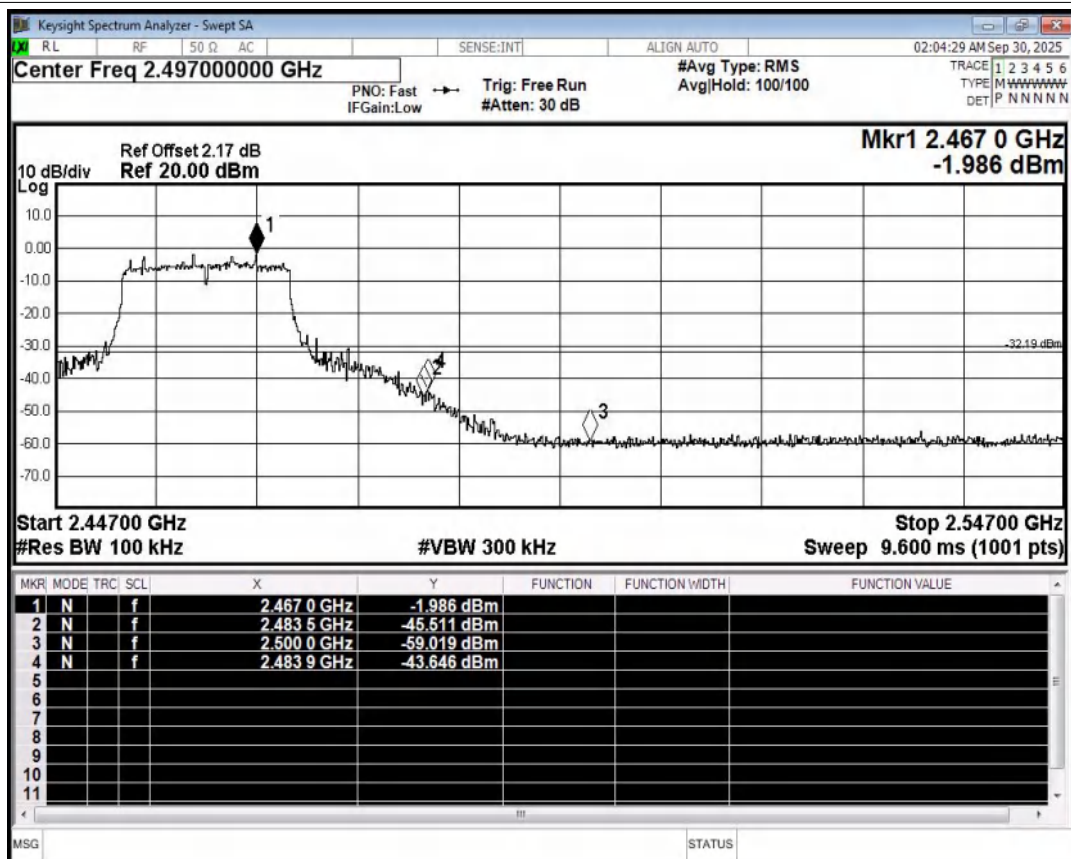
Band Edge NVNT g 2412MHz Ant1 Ref



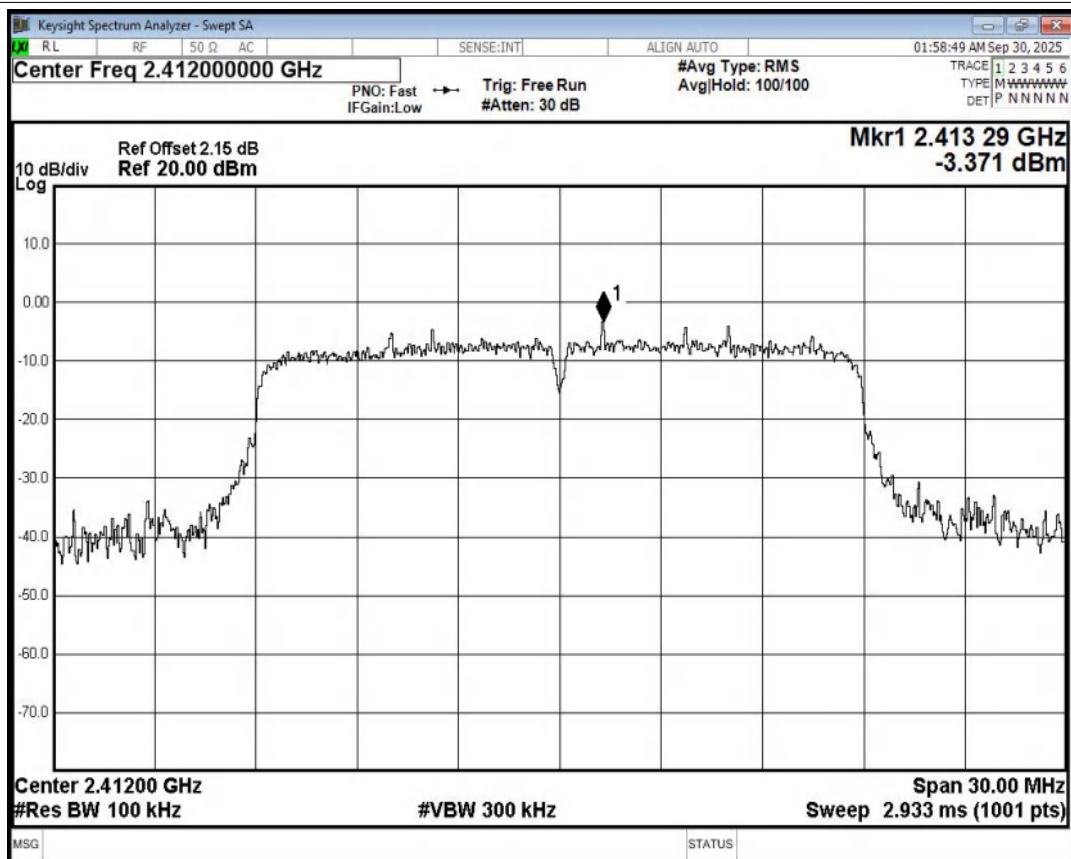
Band Edge NVNT g 2412MHz Ant1 Emission



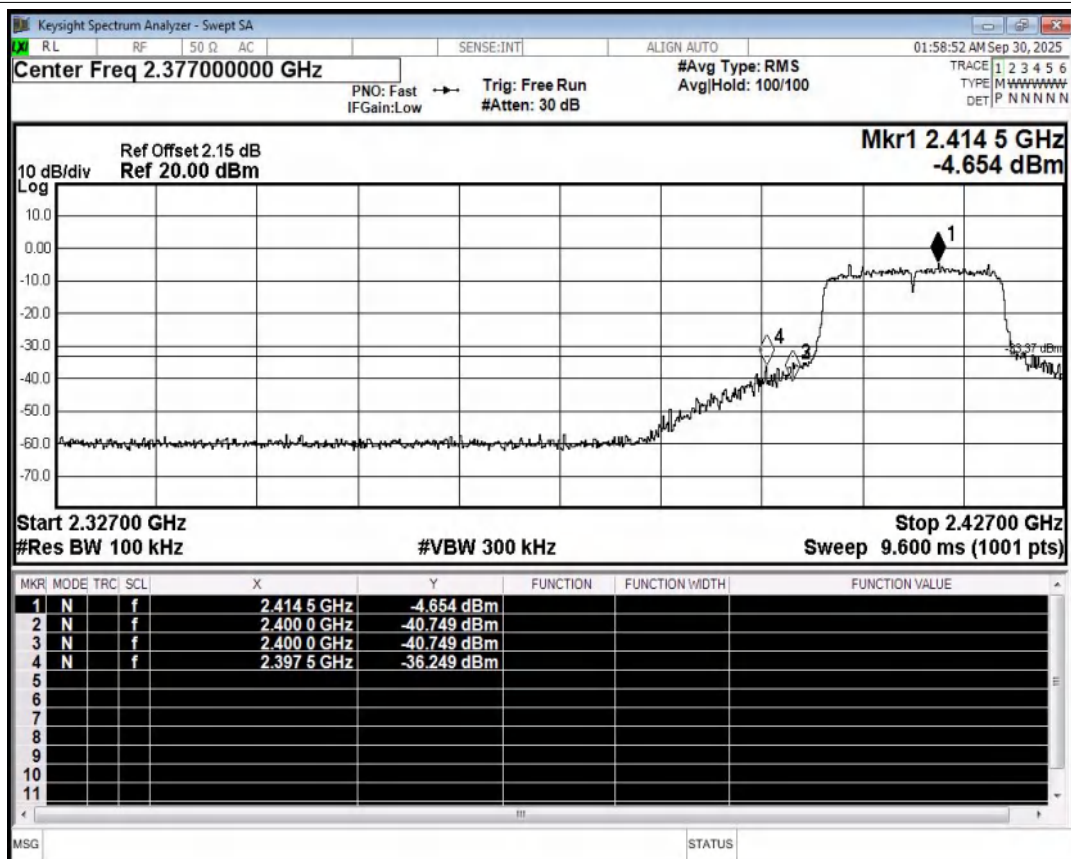
Band Edge NVNT g 2462MHz Ant1 Ref



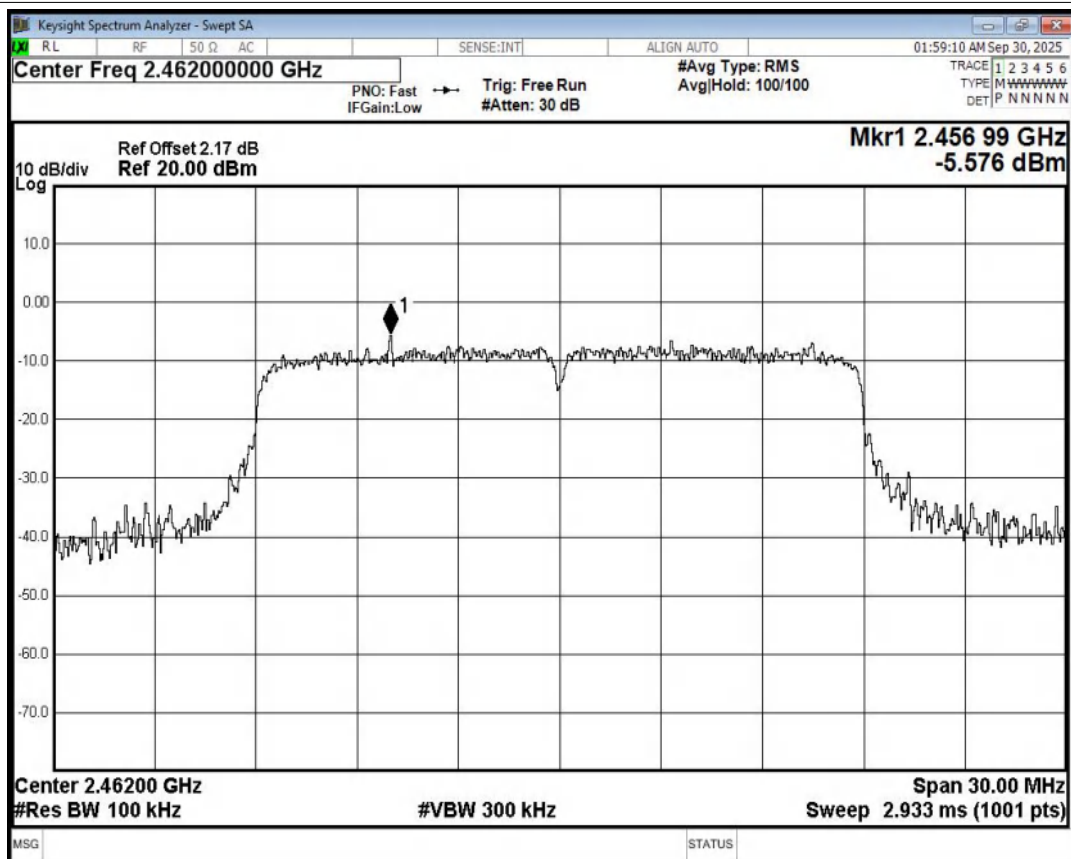
Band Edge NVNT g 2462MHz Ant1 Emission



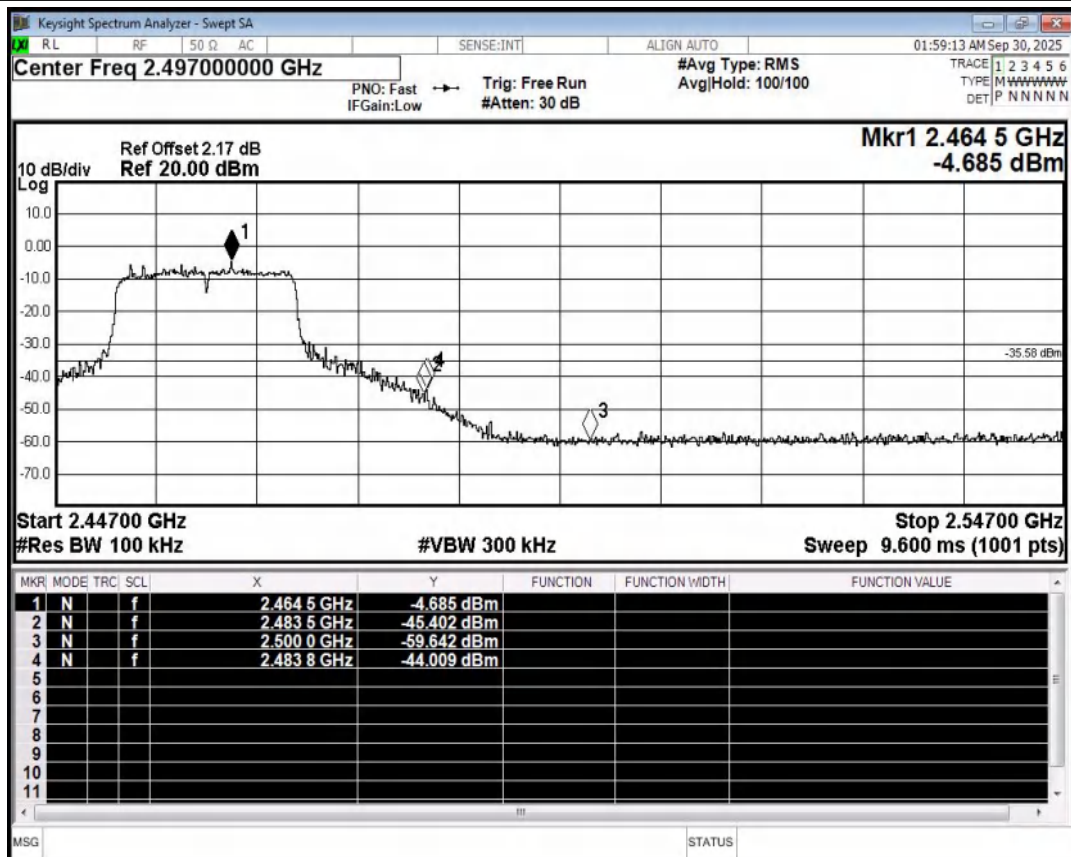
Band Edge NVNT n20 2412MHz Ant1 Ref



Band Edge NVNT n20 2412MHz Ant1 Emission



Band Edge NVNT n20 2462MHz Ant1 Ref

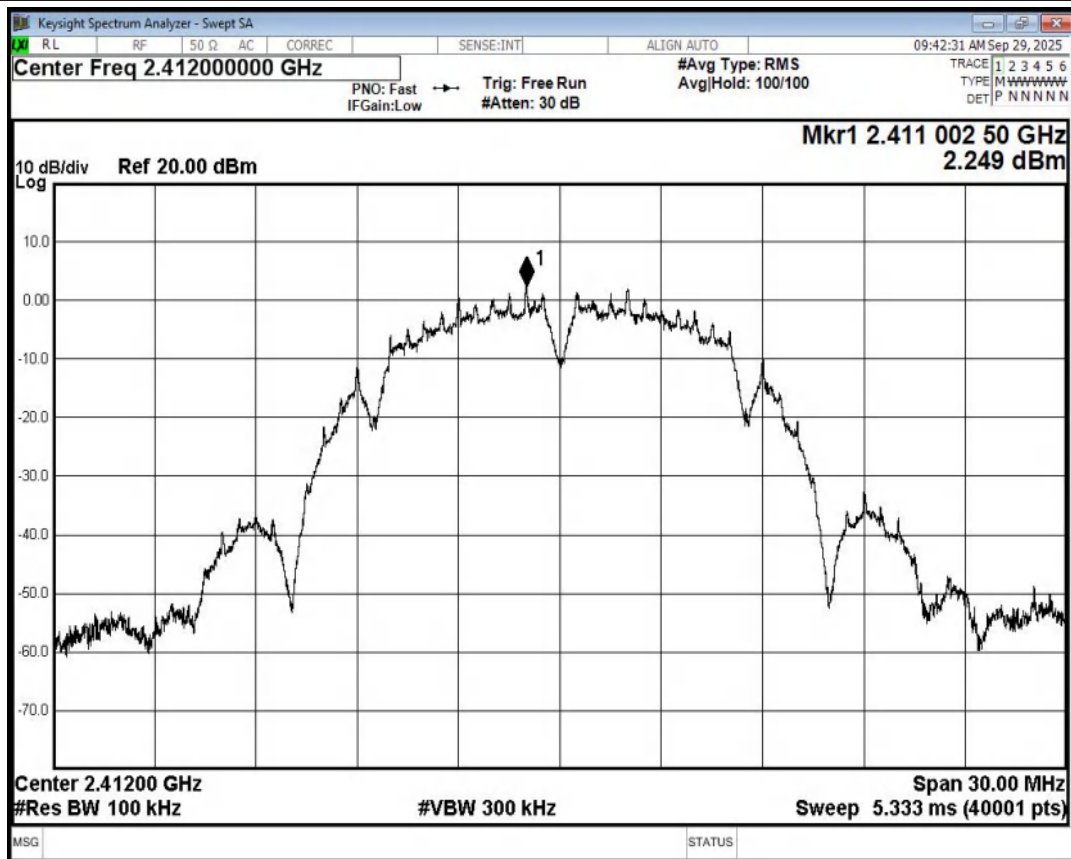


Band Edge NVNT n20 2462MHz Ant1 Emission

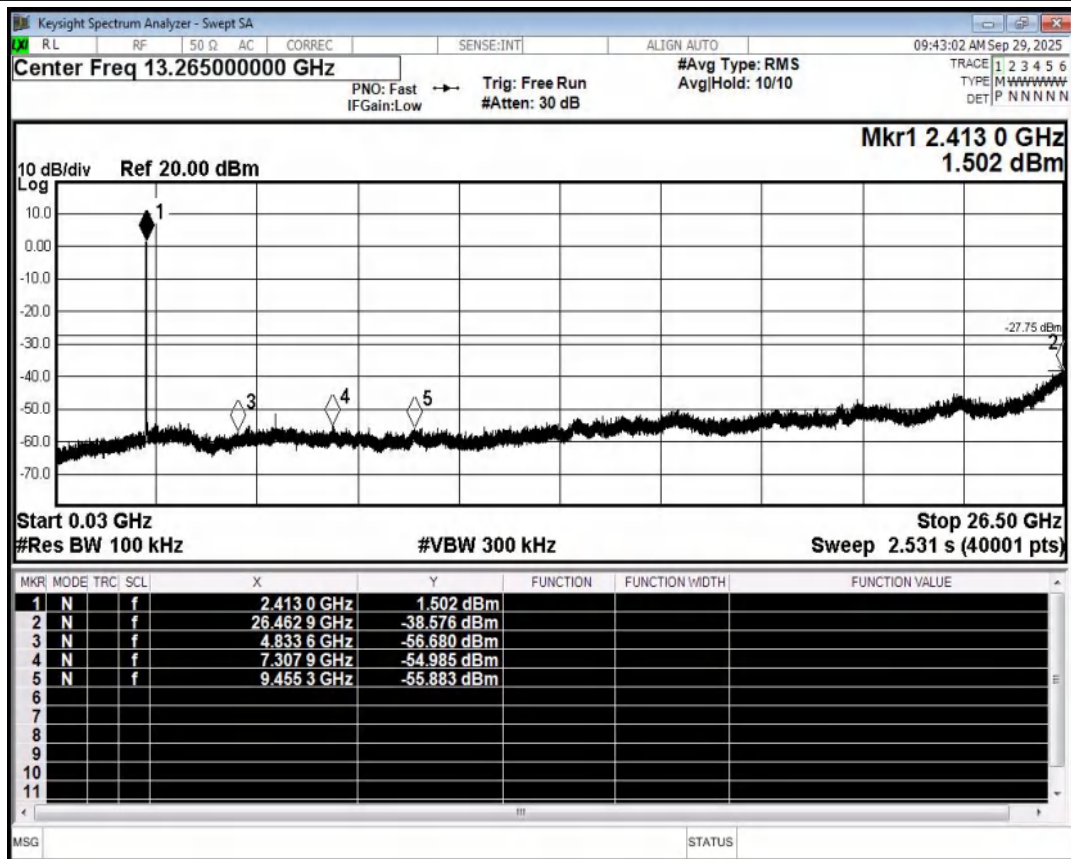
C.5 Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant1	-40.82	-30	Pass
NVNT	b	2437	Ant1	-38.92	-30	Pass
NVNT	b	2462	Ant1	-38.74	-30	Pass
NVNT	g	2412	Ant1	-36.52	-30	Pass
NVNT	g	2437	Ant1	-35.88	-30	Pass
NVNT	g	2462	Ant1	-35.45	-30	Pass
NVNT	n20	2412	Ant1	-36.2	-30	Pass
NVNT	n20	2437	Ant1	-35.36	-30	Pass
NVNT	n20	2462	Ant1	-35.96	-30	Pass

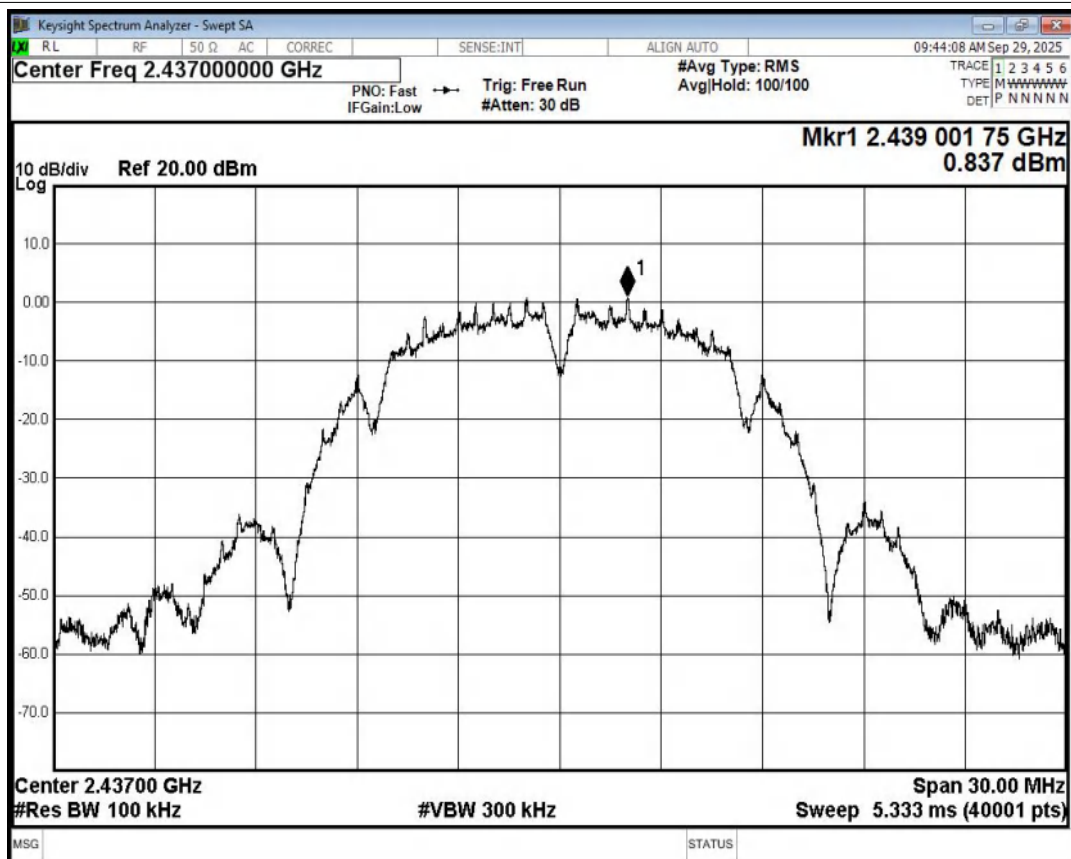
Note :Regarding the spurious emissions from 30MHz to 26.5GHz, the cable lose have been set in the CORREC' of the Spectrum Analyzer during the test.



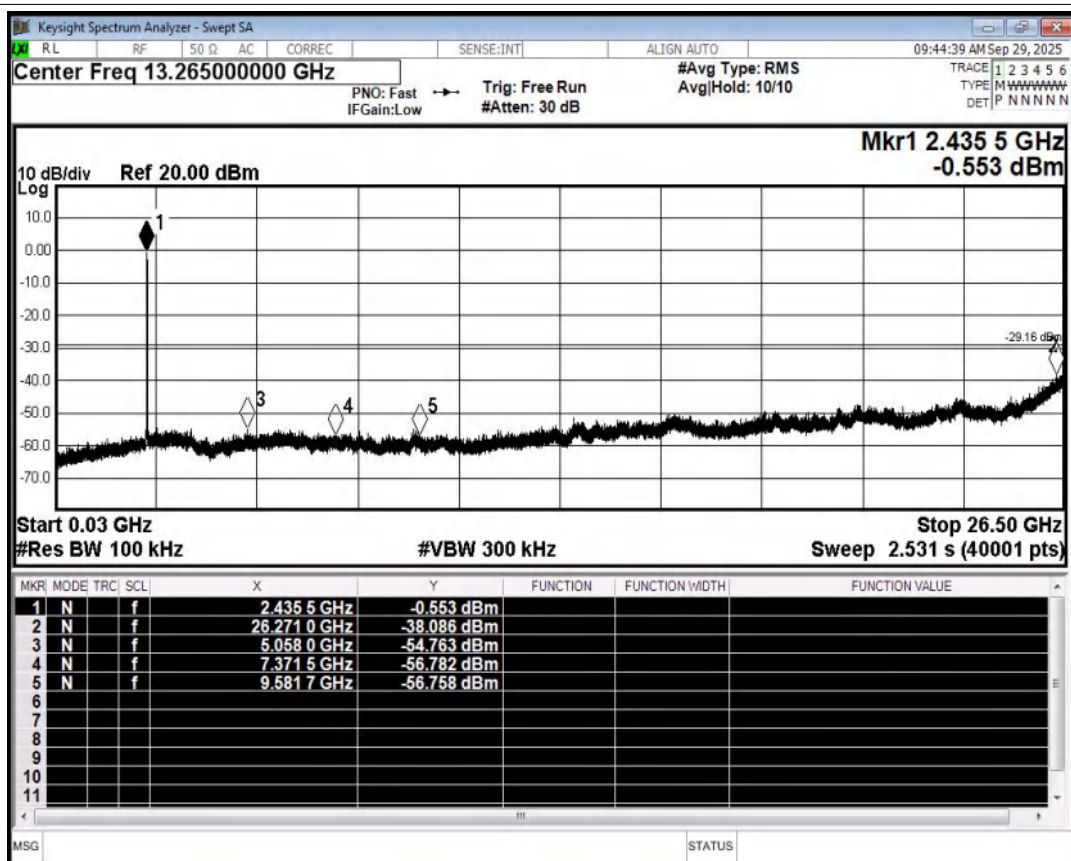
Tx. Spurious NVNT b 2412MHz Ant1 Ref



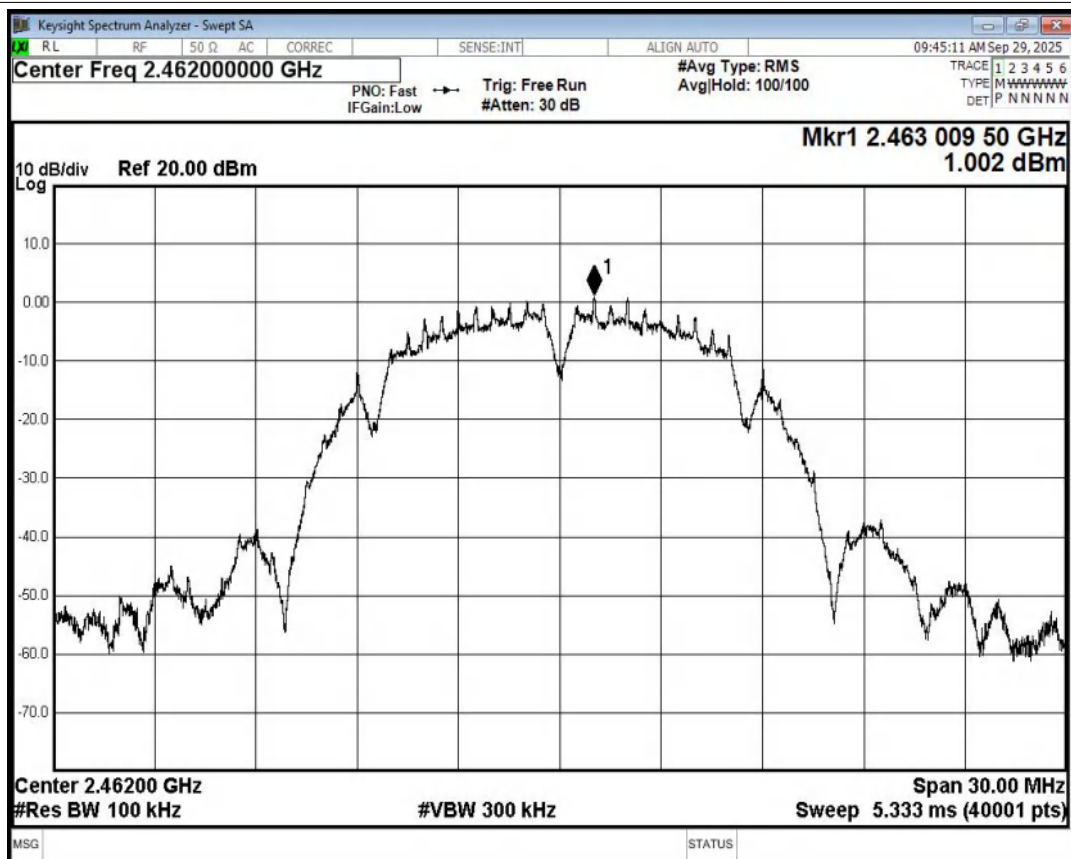
Tx. Spurious NVNT b 2412MHz Ant1 Emission



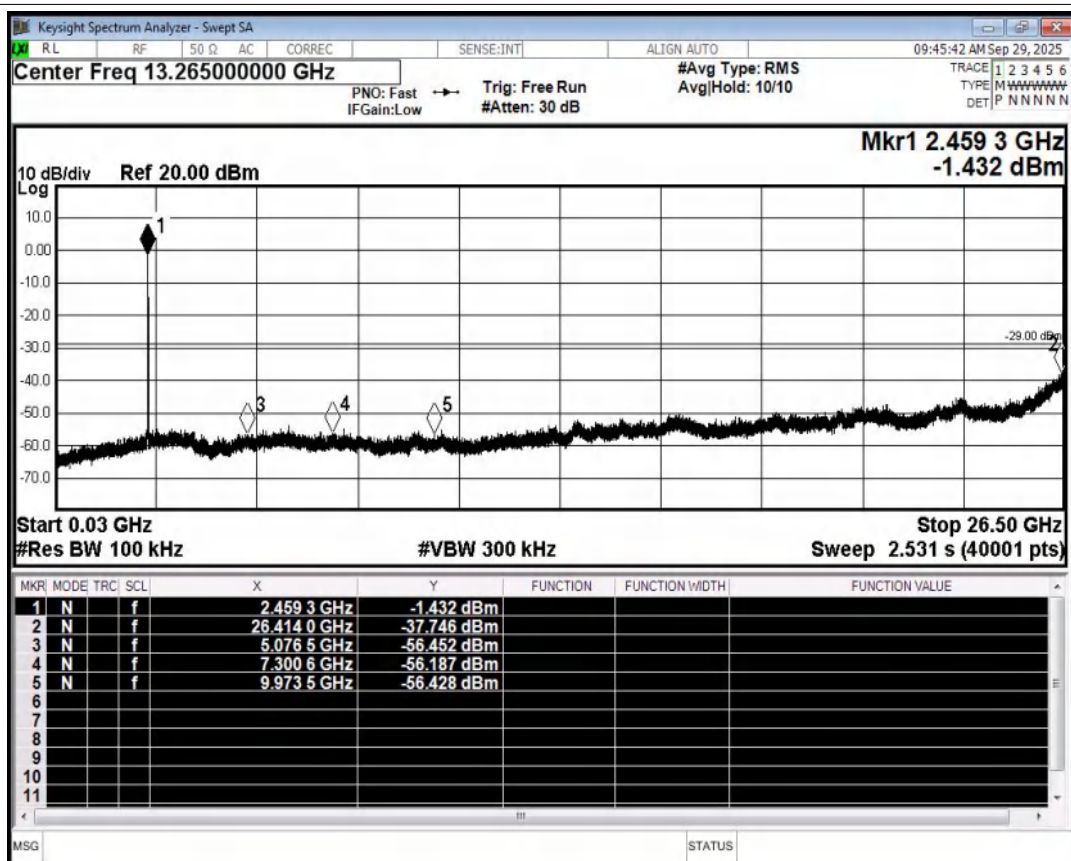
Tx. Spurious NVNT b 2437MHz Ant1 Ref



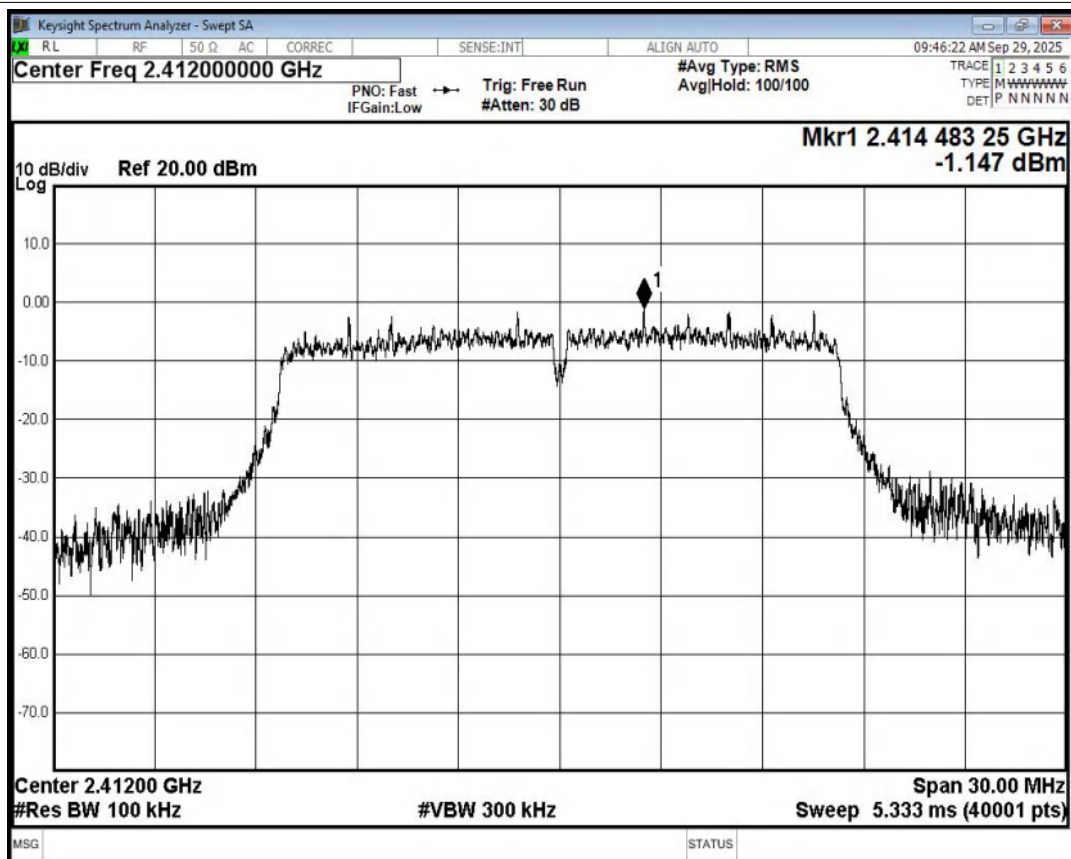
Tx. Spurious NVNT b 2437MHz Ant1 Emission



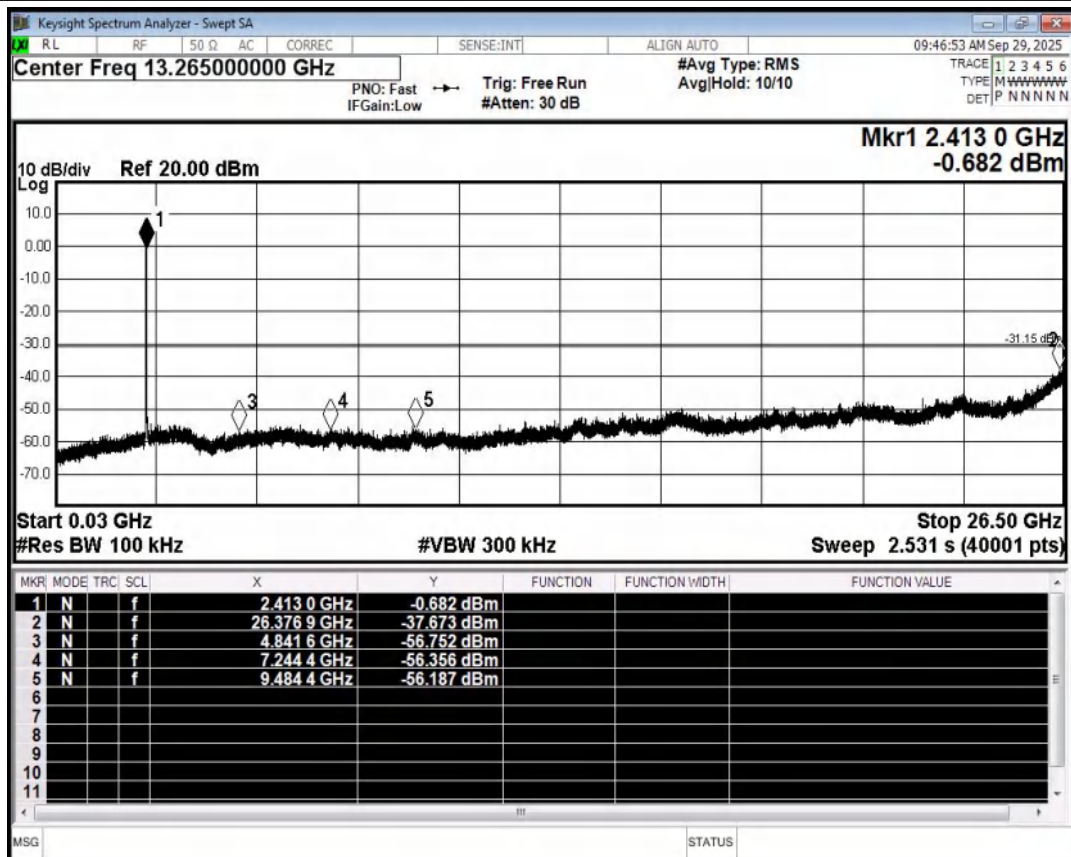
Tx. Spurious NVNT b 2462MHz Ant1 Ref



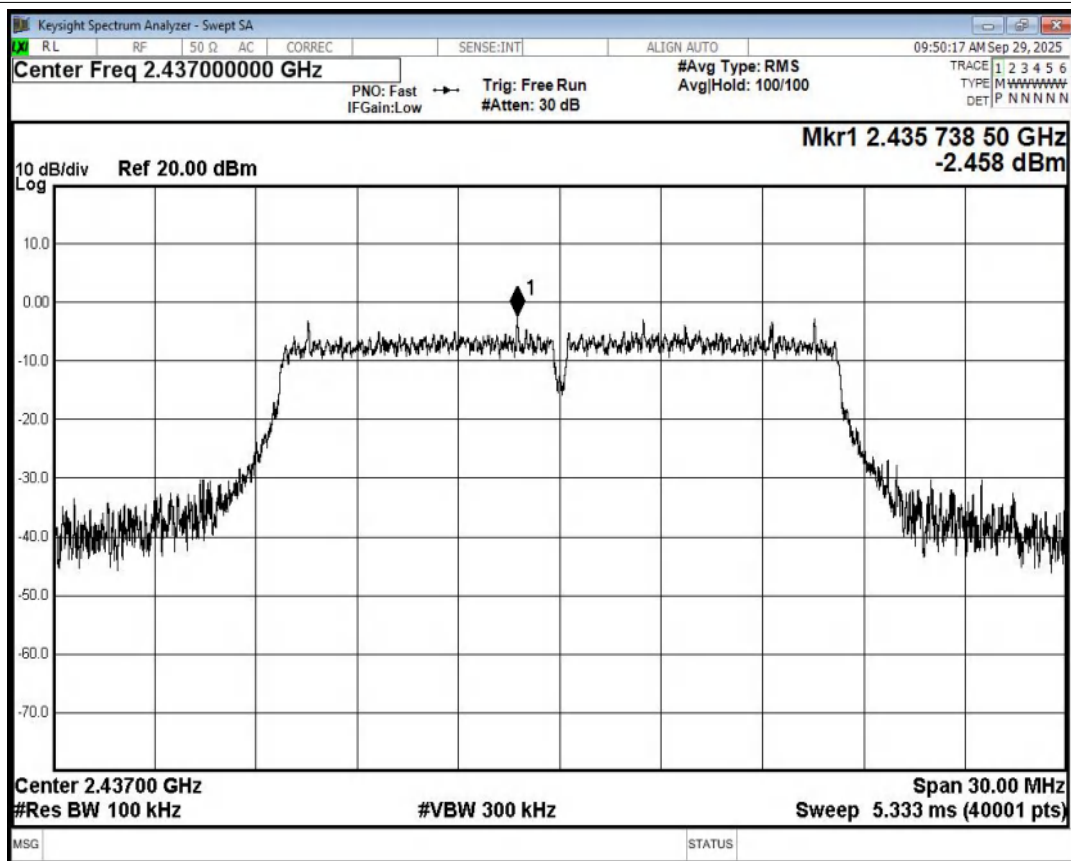
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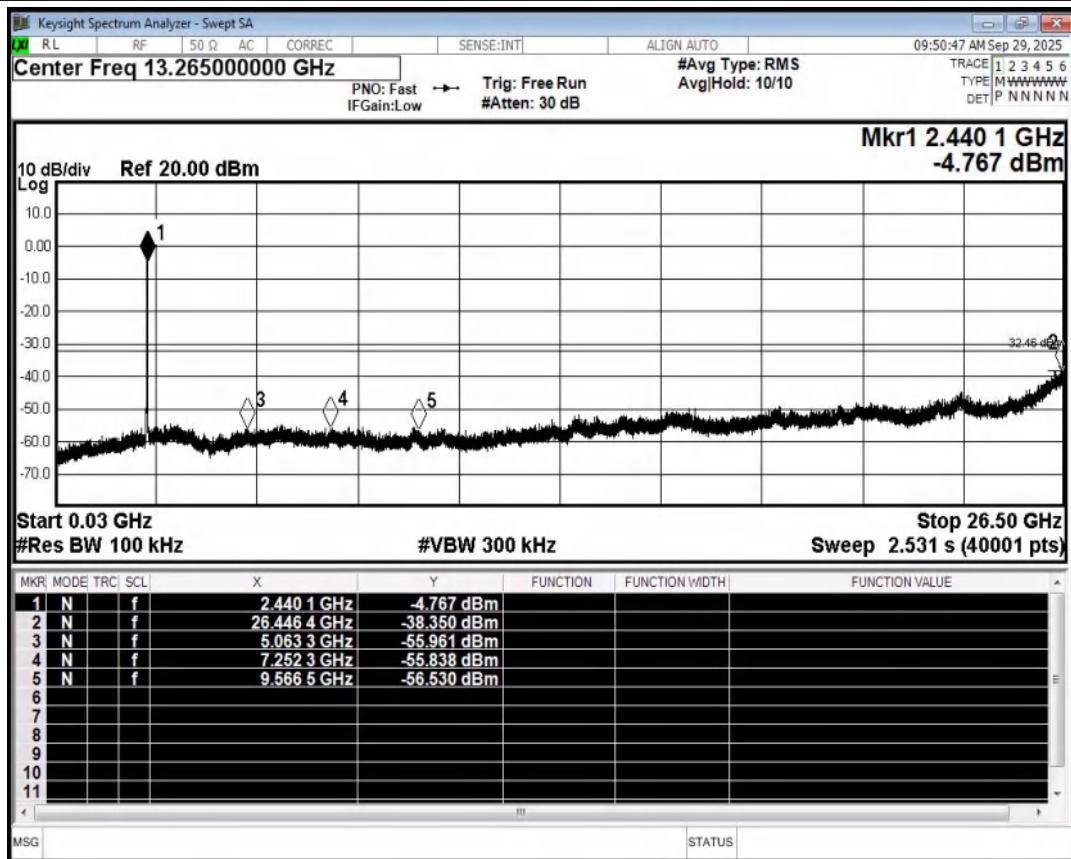
Tx. Spurious NVNT g 2412MHz Ant1 Ref



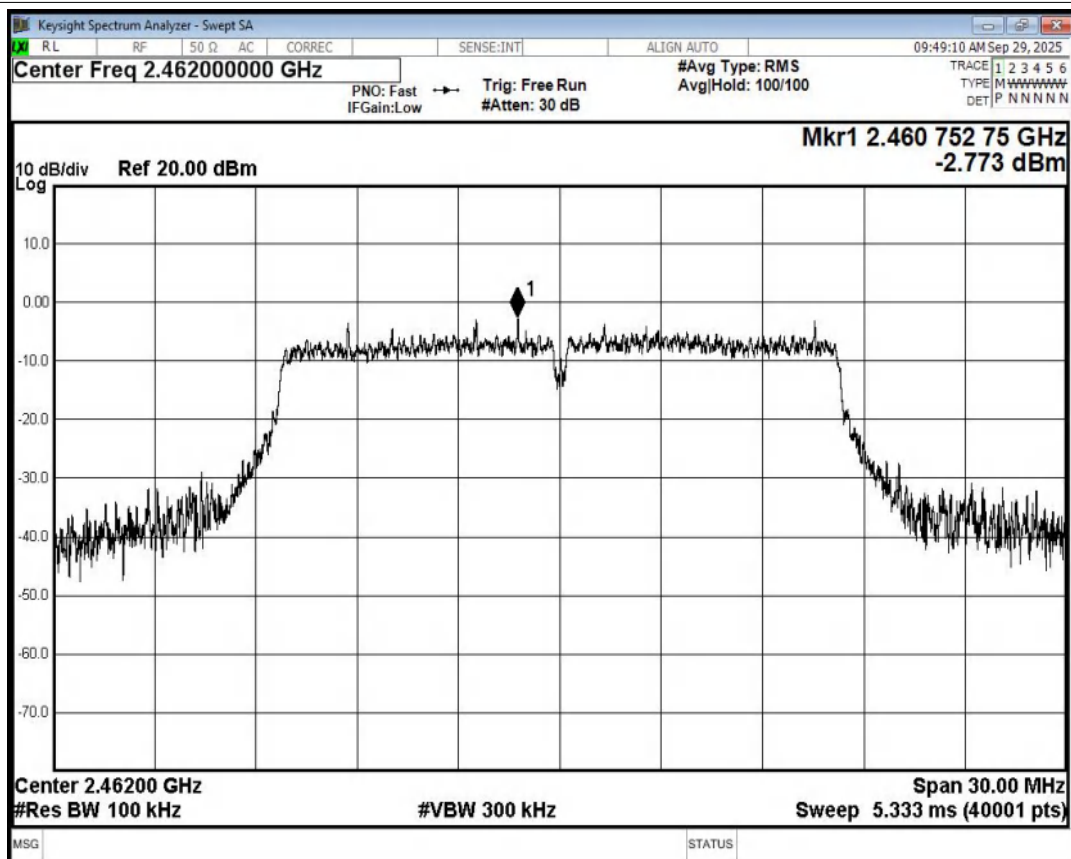
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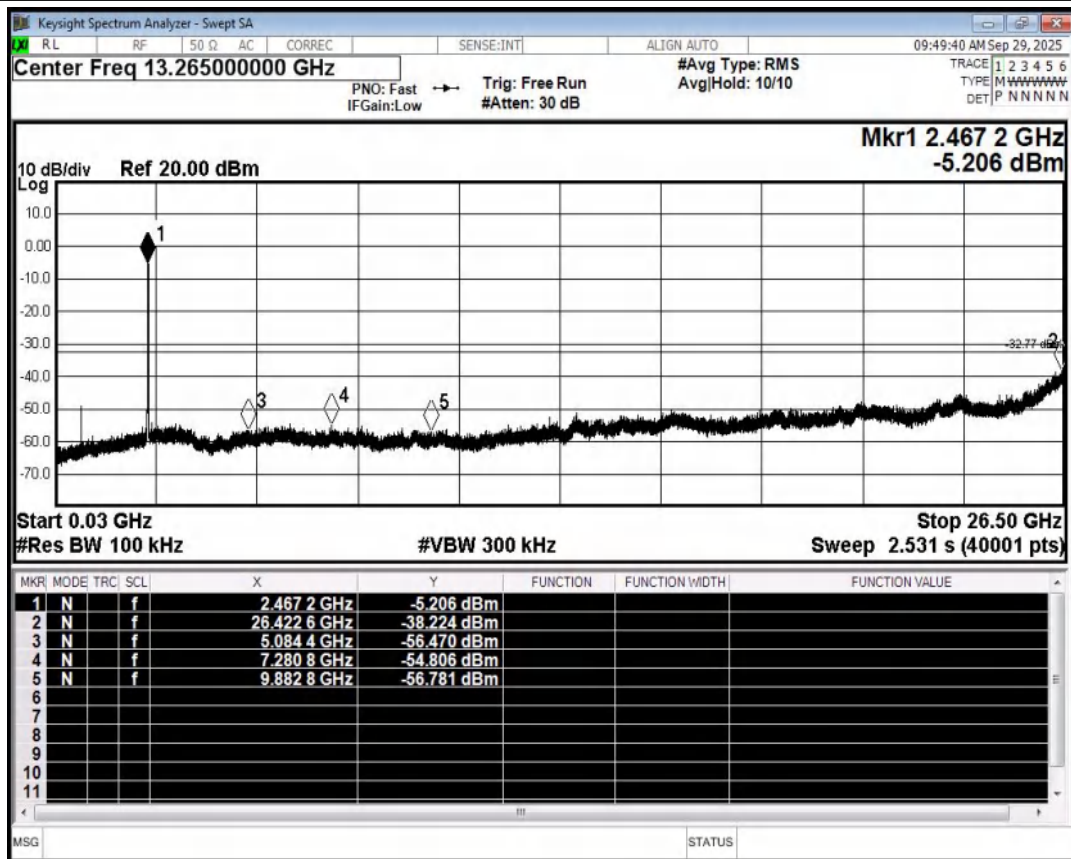
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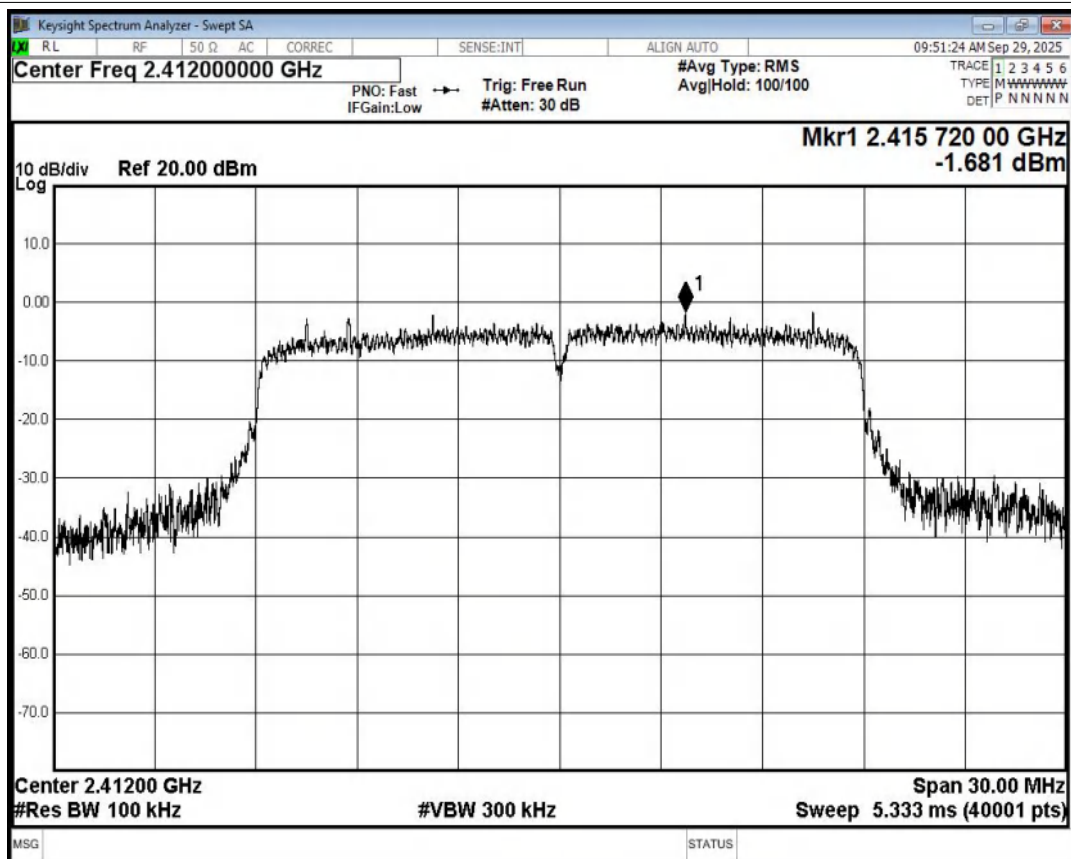
Tx. Spurious NVNT g 2437MHz Ant1 Emission



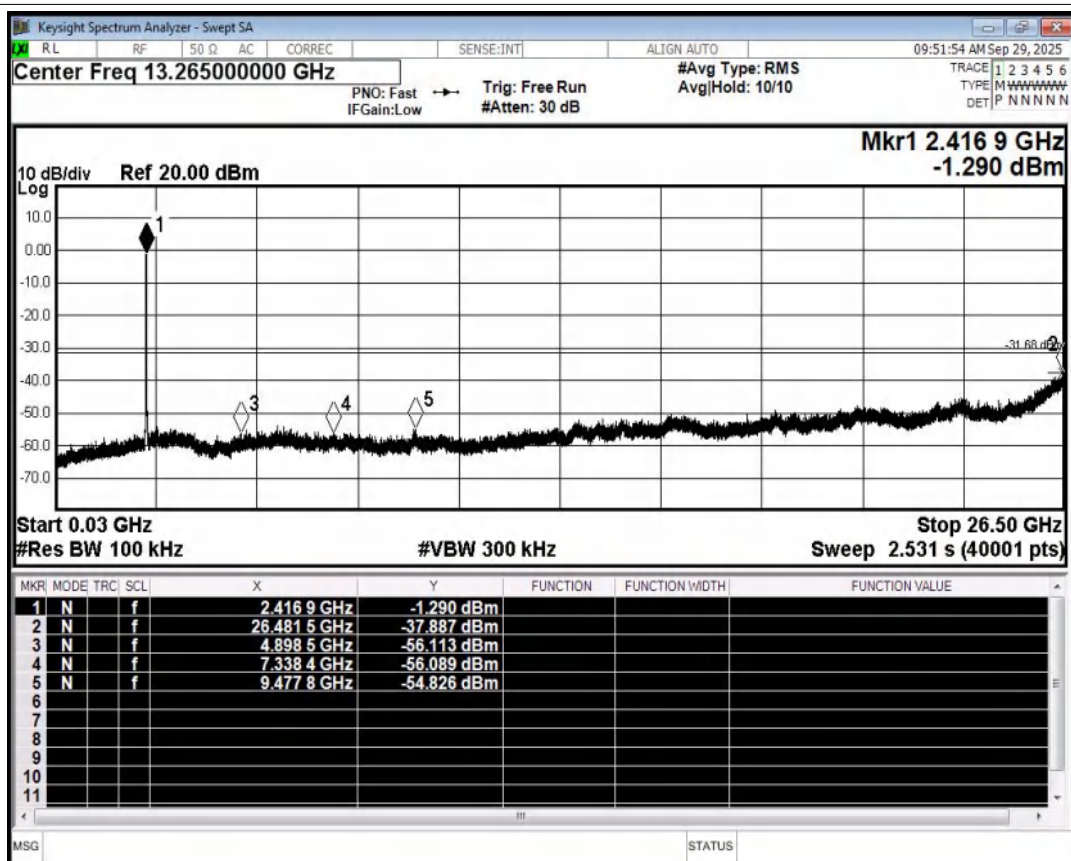
Tx. Spurious NVNT g 2462MHz Ant1 Ref



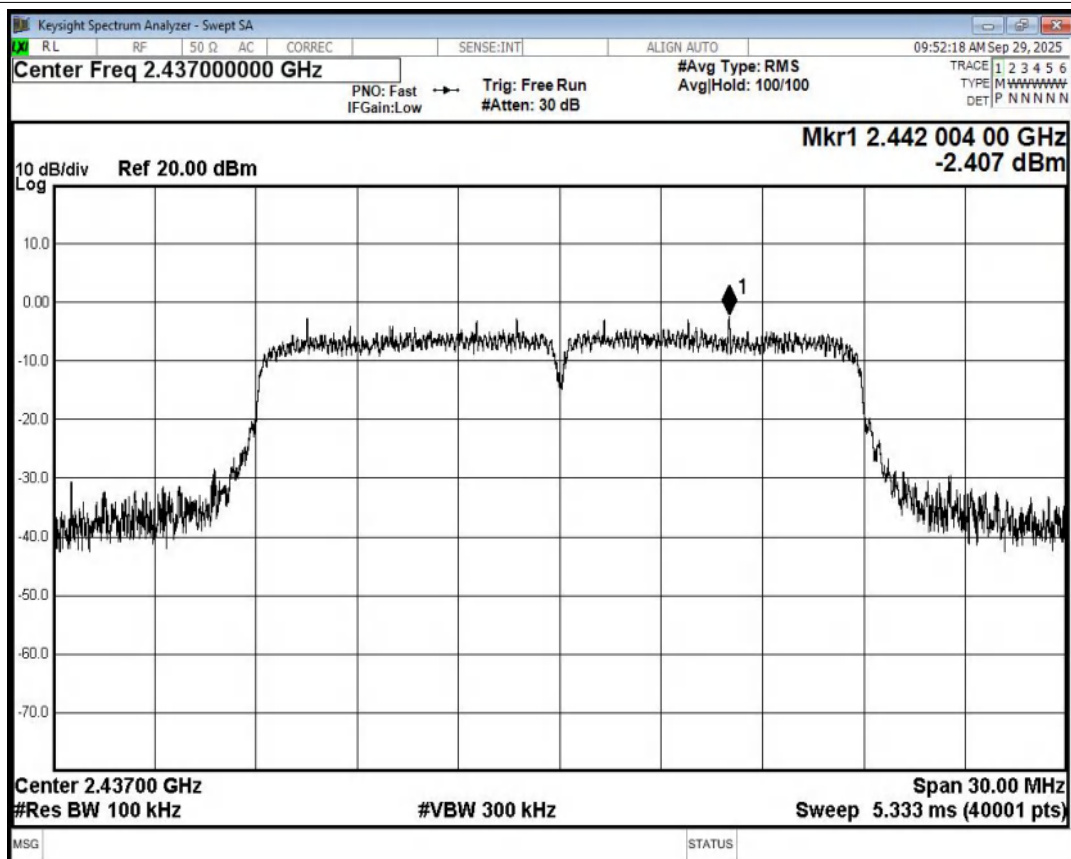
Tx. Spurious NVNT g 2462MHz Ant1 Emission



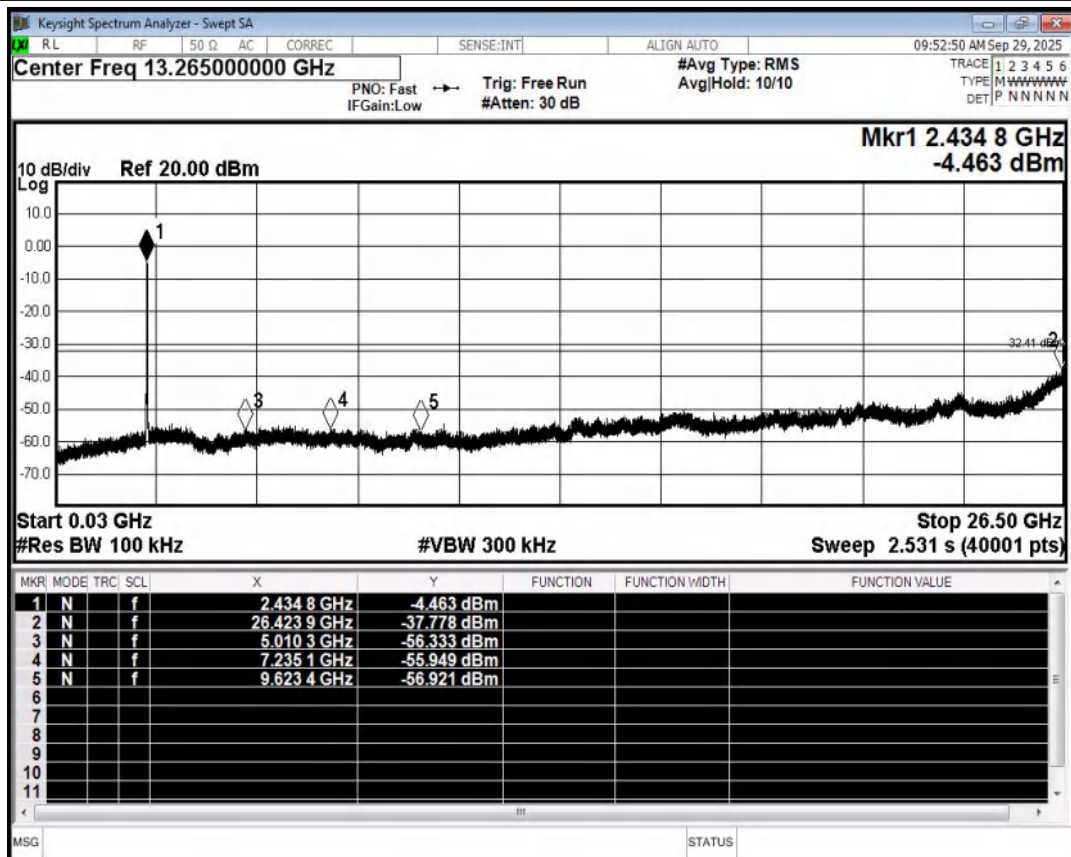
Tx. Spurious NVNT n20 2412MHz Ant1 Ref



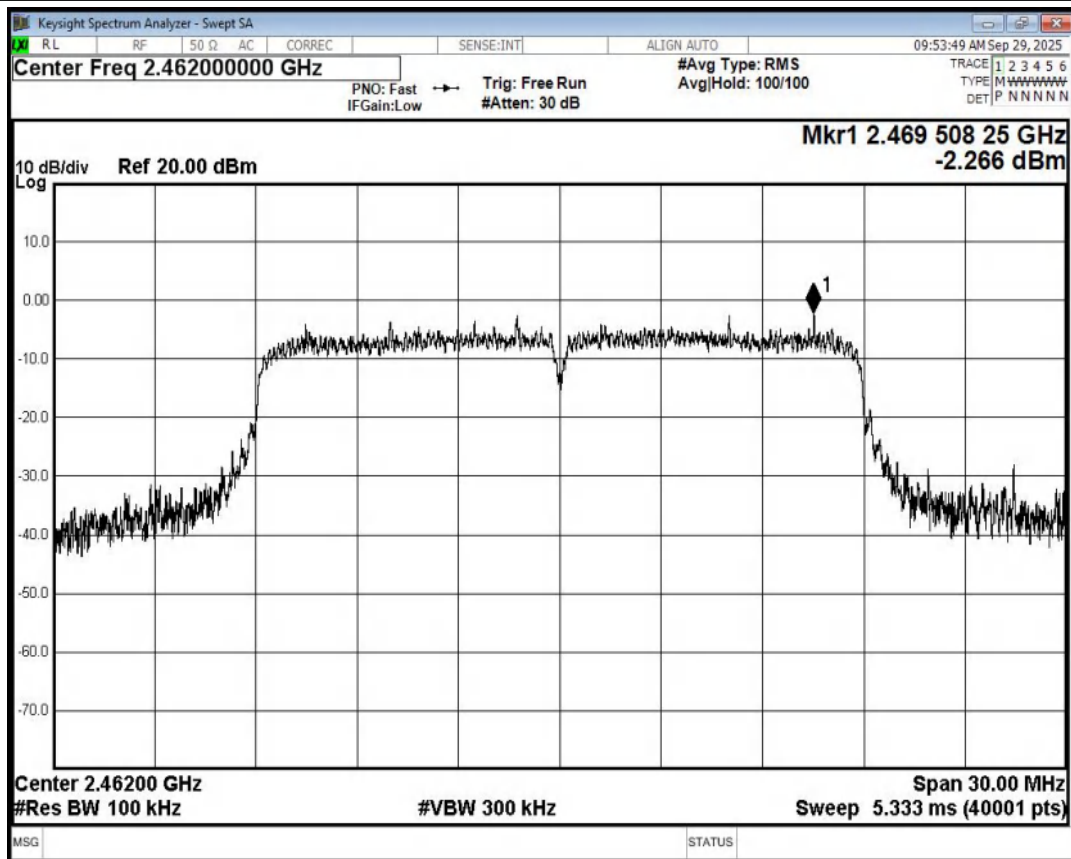
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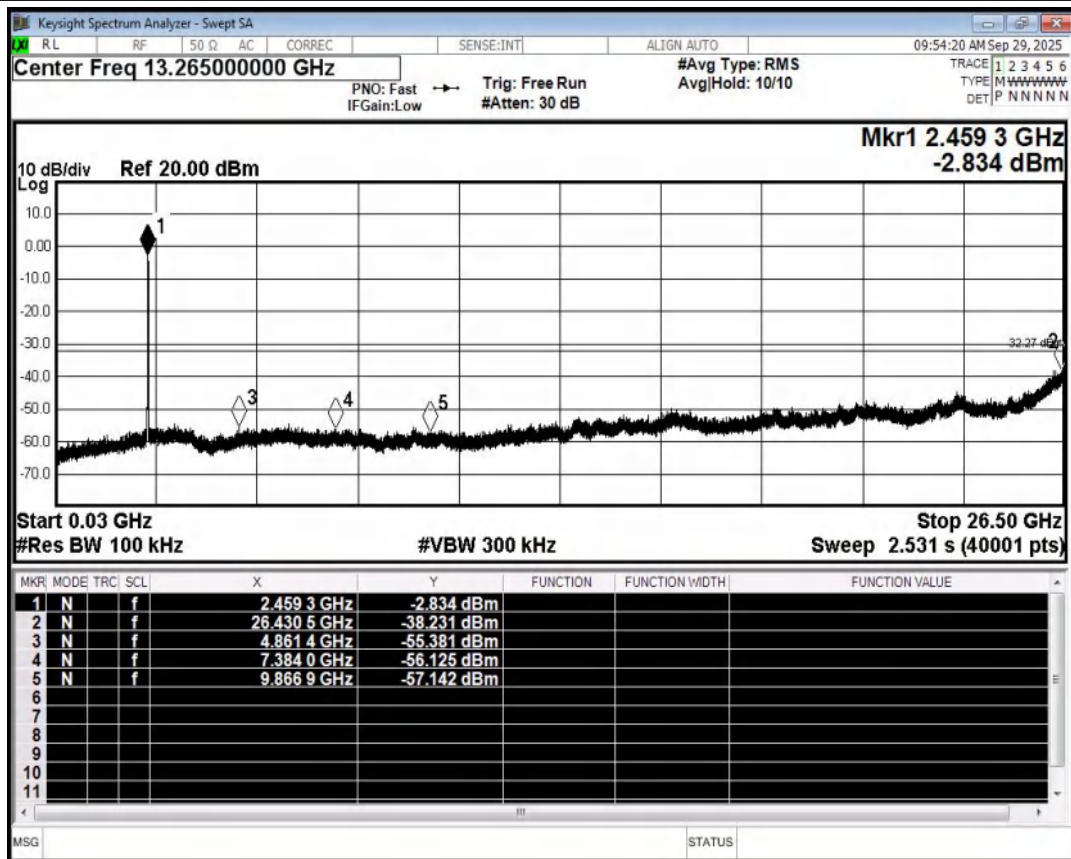
Tx. Spurious NVNT n20 2437MHz Ant1 Ref



Tx. Spurious NVNT n20 2437MHz Ant1 Emission



Tx. Spurious NVNT n20 2462MHz Ant1 Ref



Tx. Spurious NVNT n20 2462MHz Ant1 Emission

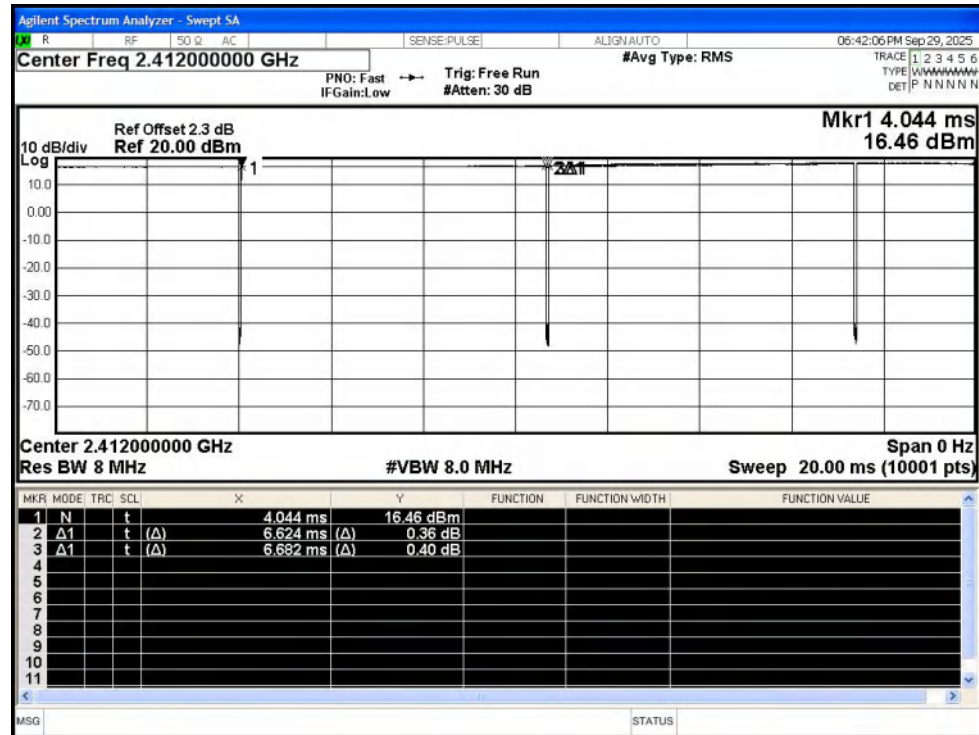
C.6 Duty Cycle

Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	b	2412	Ant1	99.13	0	0.15
NVNT	b	2437	Ant1	99.16	0	0.15
NVNT	b	2462	Ant1	99.16	0	0.15
NVNT	g	2412	Ant1	97.75	0.1	0.37
NVNT	g	2437	Ant1	97.75	0.1	0.37
NVNT	g	2462	Ant1	97.75	0.1	0.37
NVNT	n20	2412	Ant1	97.33	0.12	0.44
NVNT	n20	2437	Ant1	97.33	0.12	0.44
NVNT	n20	2462	Ant1	97.25	0.12	0.44

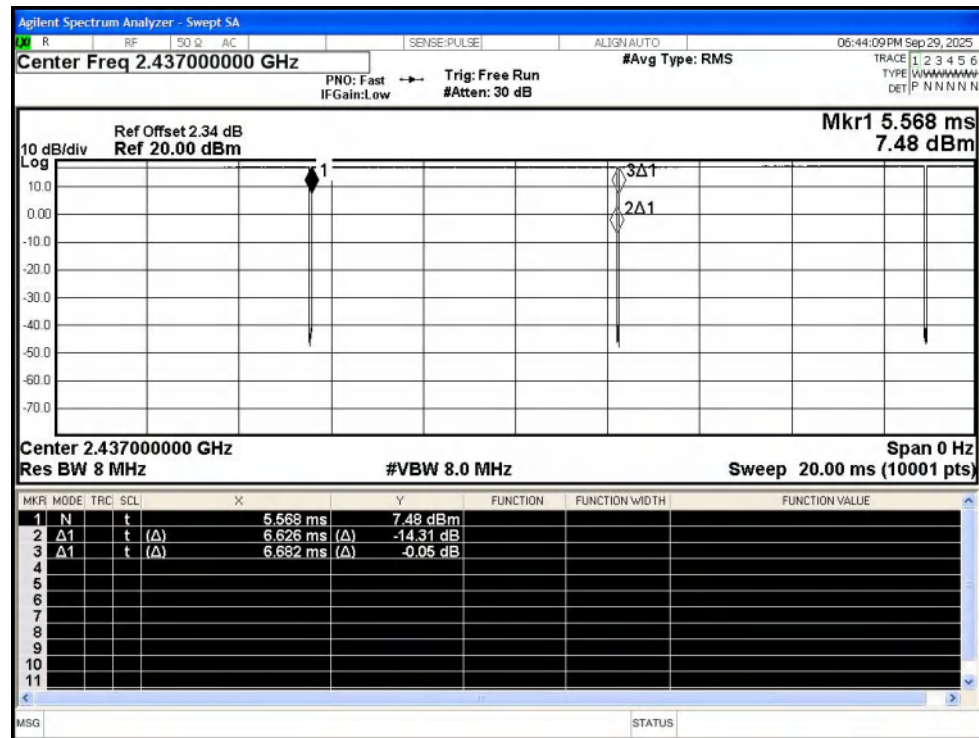
Note :offset=System attenuation +cabel loss

Test Graphs

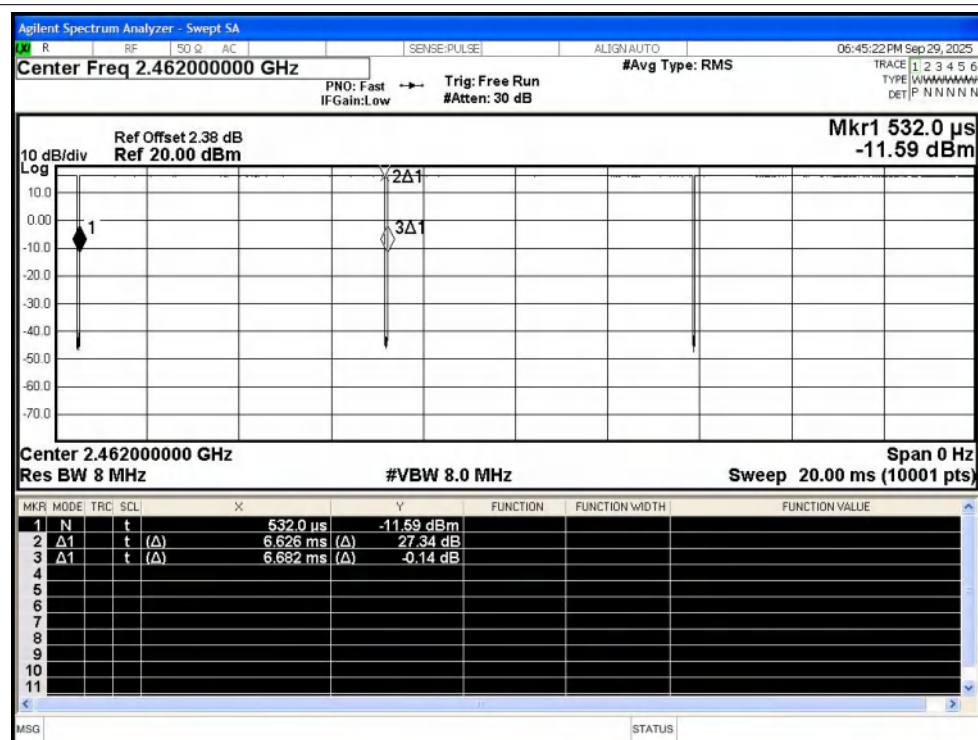
Duty Cycle NVNT b 2412MHz Ant1



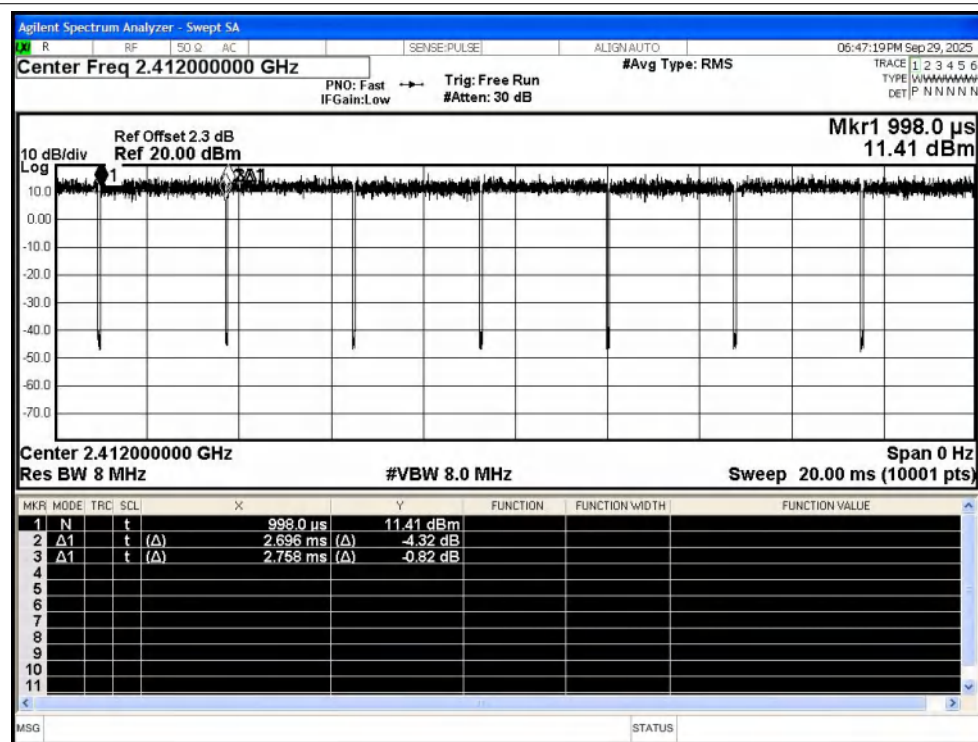
Duty Cycle NVNT b 2437MHz Ant1



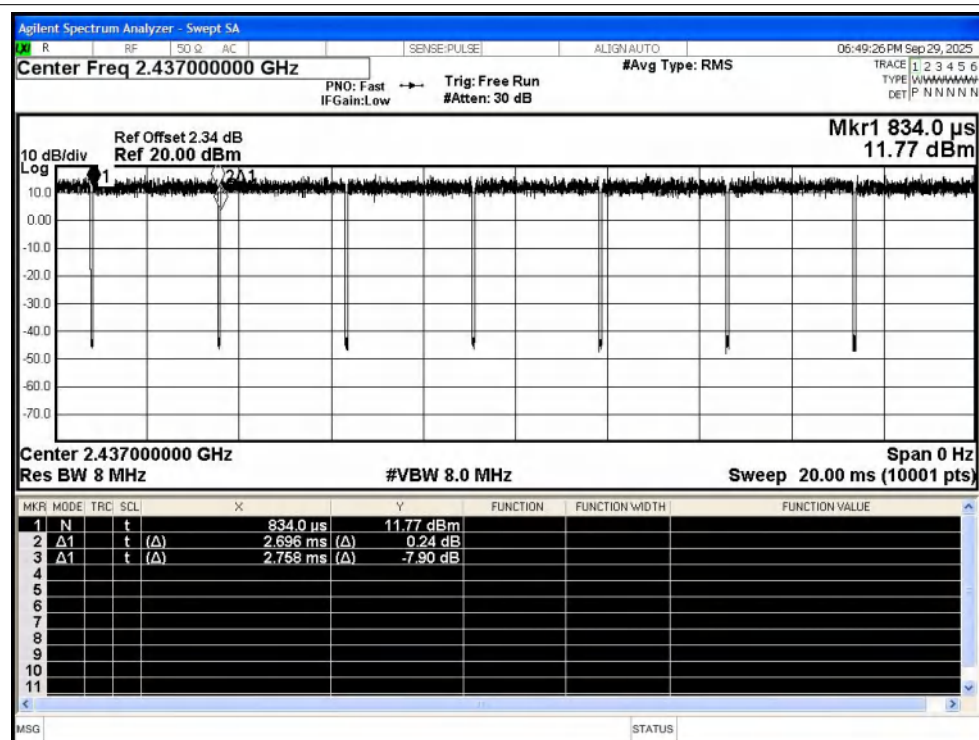
Duty Cycle NVNT b 2462MHz Ant1



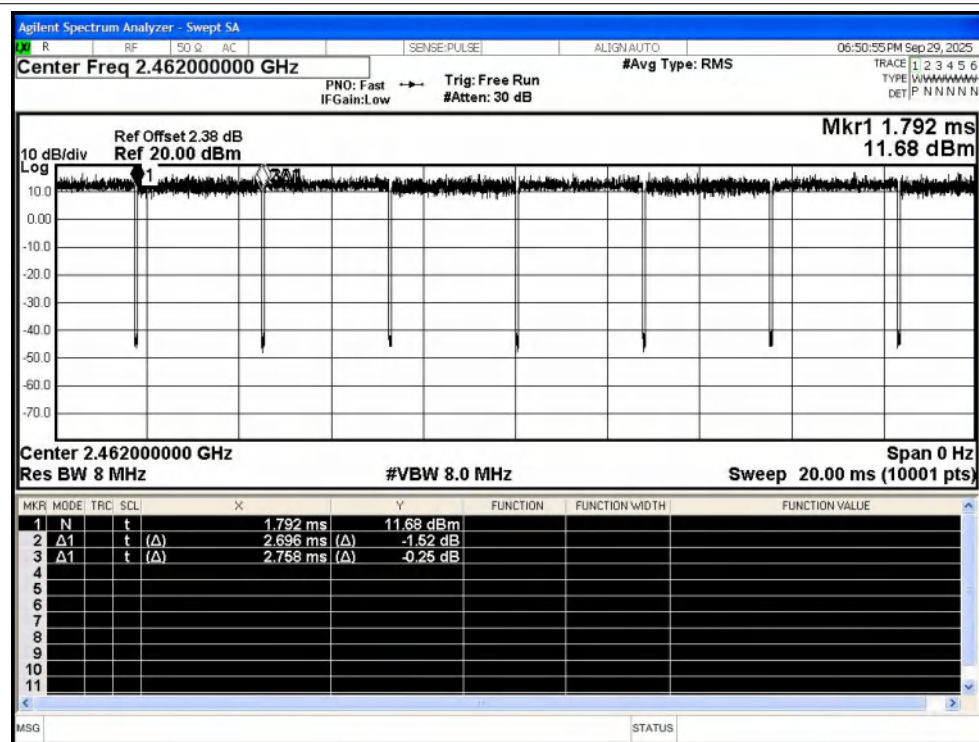
Duty Cycle NVNT g 2412MHz Ant1



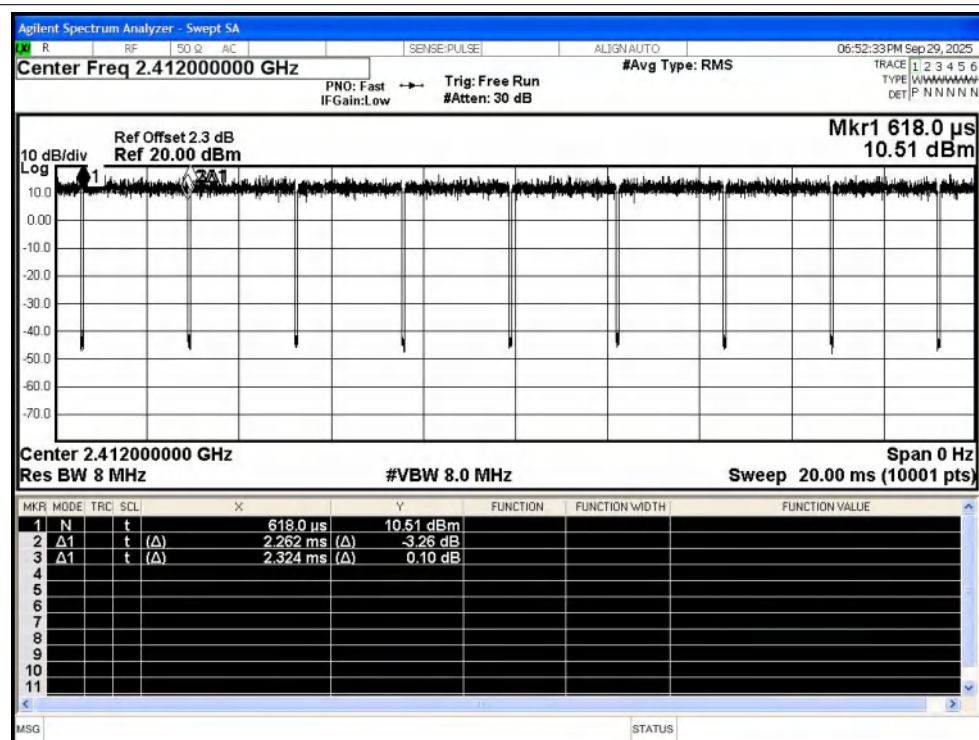
Duty Cycle NVNT g 2437MHz Ant1



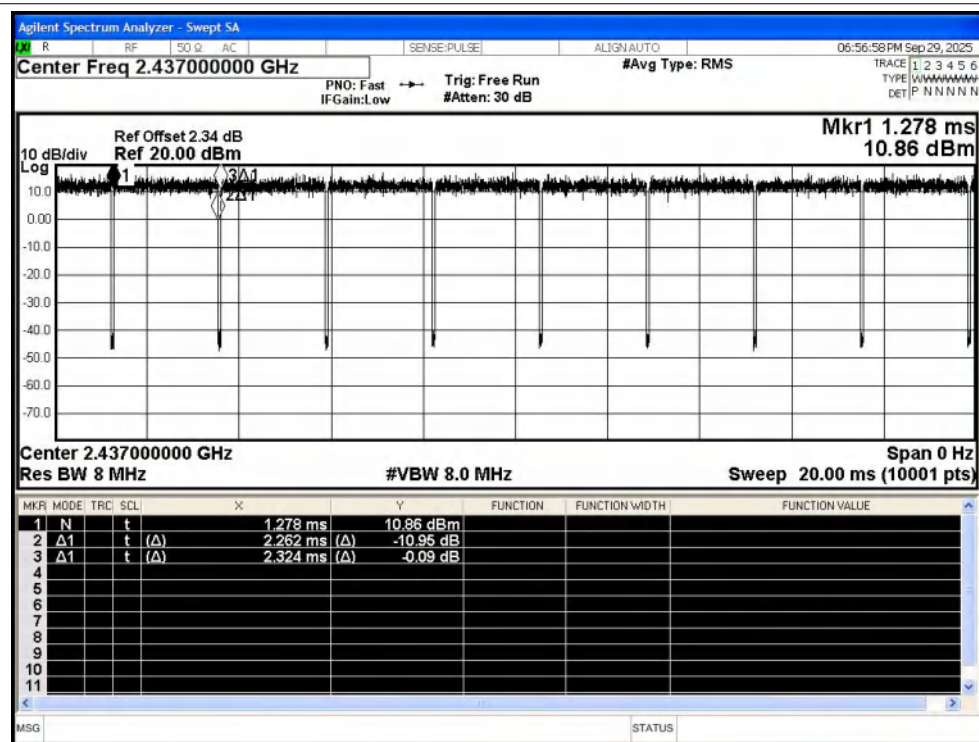
Duty Cycle NVNT g 2462MHz Ant1

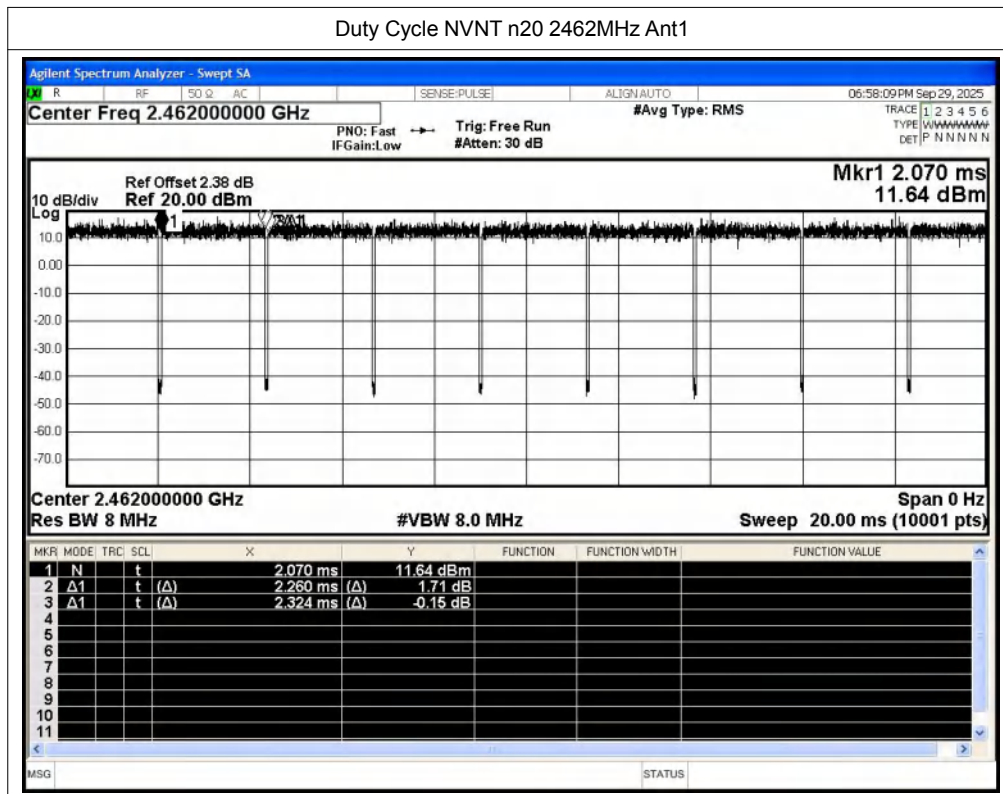


Duty Cycle NVNT n20 2412MHz Ant1



Duty Cycle NVNT n20 2437MHz Ant1





C.7 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	-49.72	3.32	-	48.86	Peak	74	Pass
NVNT	b	2412	Ant1	2310	-58.49	3.32	0	40.09	Average	54	Pass
NVNT	b	2412	Ant1	2389.794	-43.12	3.32	-	55.46	Peak	74	Pass
NVNT	b	2412	Ant1	2389.56	-55.48	3.32	0	43.10	Average	54	Pass
NVNT	b	2412	Ant1	2390	-46.68	3.32	-	51.90	Peak	74	Pass
NVNT	b	2412	Ant1	2390	-56.63	3.32	0	41.95	Average	54	Pass
NVNT	b	2462	Ant1	2483.5	-36.29	3.32	-	62.29	Peak	74	Pass
NVNT	b	2462	Ant1	2483.5	-56.02	3.32	0	42.56	Average	54	Pass
NVNT	b	2462	Ant1	2483.517	-36.29	3.32	-	62.29	Peak	74	Pass
NVNT	b	2462	Ant1	2484.789	-54.19	3.32	0	44.39	Average	54	Pass
NVNT	b	2462	Ant1	2500	-50.03	3.32	-	48.55	Peak	74	Pass
NVNT	b	2462	Ant1	2500	-57.46	3.32	0	41.12	Average	54	Pass
NVNT	g	2412	Ant1	2310	-49.88	3.32	-	48.70	Peak	74	Pass
NVNT	g	2412	Ant1	2310	-58.75	3.32	0.1	39.93	Average	54	Pass
NVNT	g	2412	Ant1	2389.209	-35.38	3.32	-	63.20	Peak	74	Pass
NVNT	g	2412	Ant1	2389.443	-53.41	3.32	0.1	45.27	Average	54	Pass
NVNT	g	2412	Ant1	2390	-41.33	3.32	-	57.25	Peak	74	Pass
NVNT	g	2412	Ant1	2390	-52.9	3.32	0.1	45.78	Average	54	Pass
NVNT	g	2462	Ant1	2483.5	-38.41	3.32	-	60.17	Peak	74	Pass
NVNT	g	2462	Ant1	2483.5	-57.12	3.32	0.1	41.56	Average	54	Pass
NVNT	g	2462	Ant1	2483.517	-38.41	3.32	-	60.17	Peak	74	Pass
NVNT	g	2462	Ant1	2483.941	-55.86	3.32	0.1	42.82	Average	54	Pass
NVNT	g	2462	Ant1	2500	-49.42	3.32	-	49.16	Peak	74	Pass
NVNT	g	2462	Ant1	2500	-57.5	3.32	0.1	41.18	Average	54	Pass
NVNT	n20	2412	Ant1	2310	-50.68	3.32	-	47.90	Peak	74	Pass
NVNT	n20	2412	Ant1	2310	-58.33	3.32	0.12	40.37	Average	54	Pass
NVNT	n20	2412	Ant1	2389.911	-45.32	3.32	-	53.26	Peak	74	Pass
NVNT	n20	2412	Ant1	2389.911	-56.45	3.32	0.12	42.25	Average	54	Pass
NVNT	n20	2412	Ant1	2390	-44.36	3.32	-	54.22	Peak	74	Pass
NVNT	n20	2412	Ant1	2390	-55.68	3.32	0.12	43.02	Average	54	Pass
NVNT	n20	2462	Ant1	2483.5	-41.8	3.32	-	56.78	Peak	74	Pass
NVNT	n20	2462	Ant1	2483.5	-56.43	3.32	0.12	42.27	Average	54	Pass
NVNT	n20	2462	Ant1	2483.676	-40.6	3.32	-	57.98	Peak	74	Pass
NVNT	n20	2462	Ant1	2484.1	-54.77	3.32	0.12	43.93	Average	54	Pass
NVNT	n20	2462	Ant1	2500	-51.12	3.32	-	47.46	Peak	74	Pass
NVNT	n20	2462	Ant1	2500	-58.17	3.32	0.12	40.53	Average	54	Pass

Note :offset=System attenuation +cabal loss

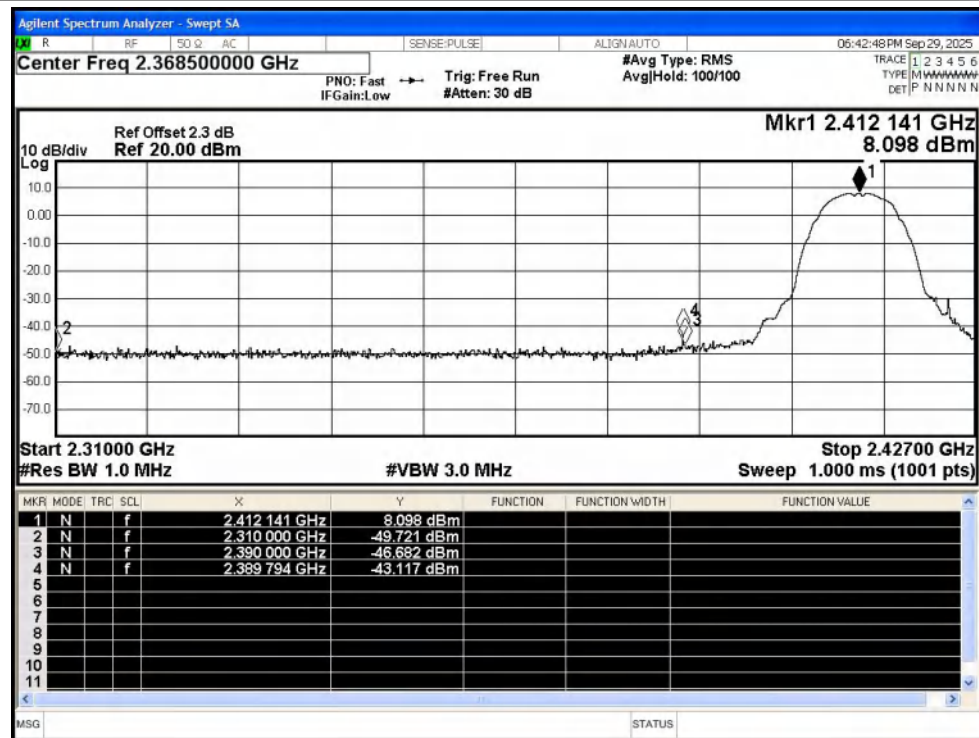
Guangzhou LCS Compliance Testing Laboratory Ltd.

Add: No.44-1, Qianfeng North Road, Shiqi, Panyu District, Guangzhou, Guangdong, China

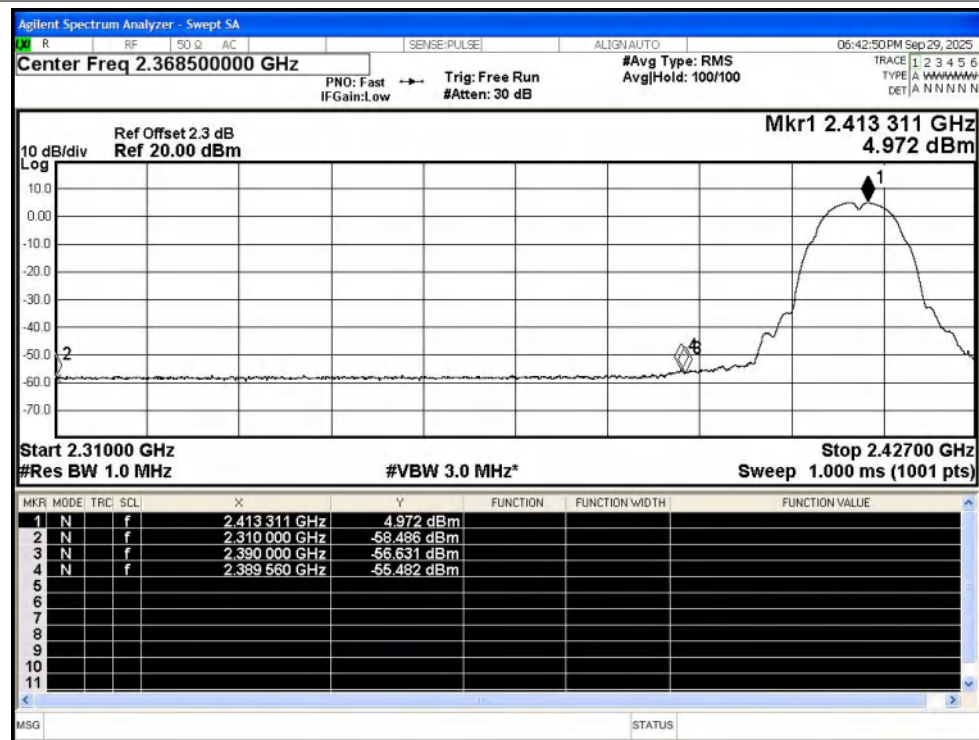
Tel: +(86) 020-39166689 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

Test Graphs

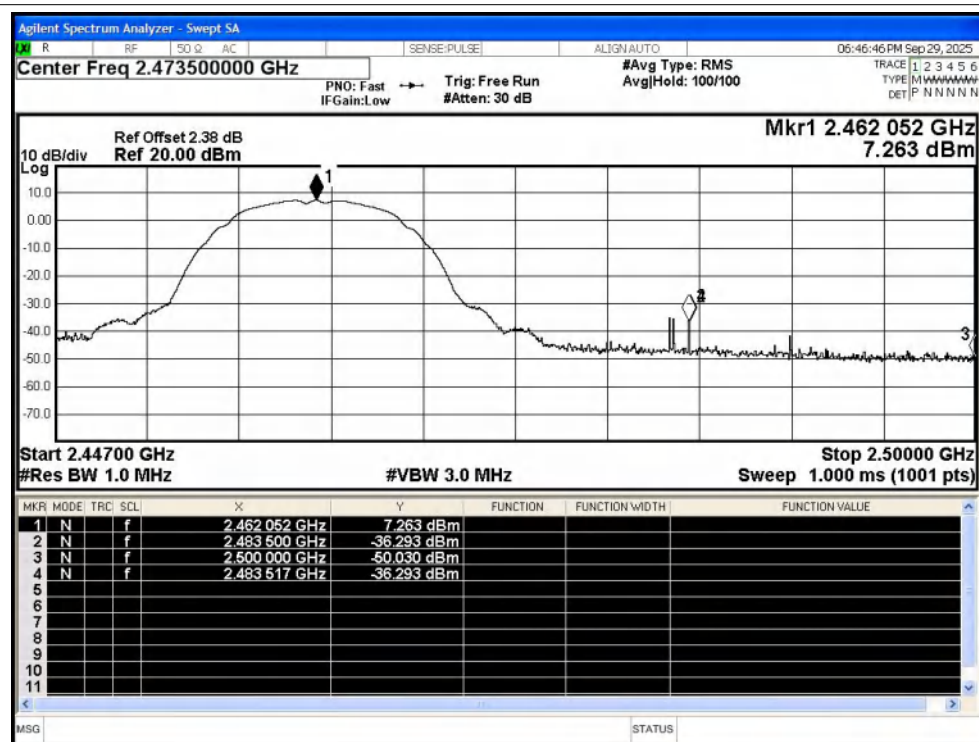
Restrict Band NVNT b 2412MHz Ant1 Peak



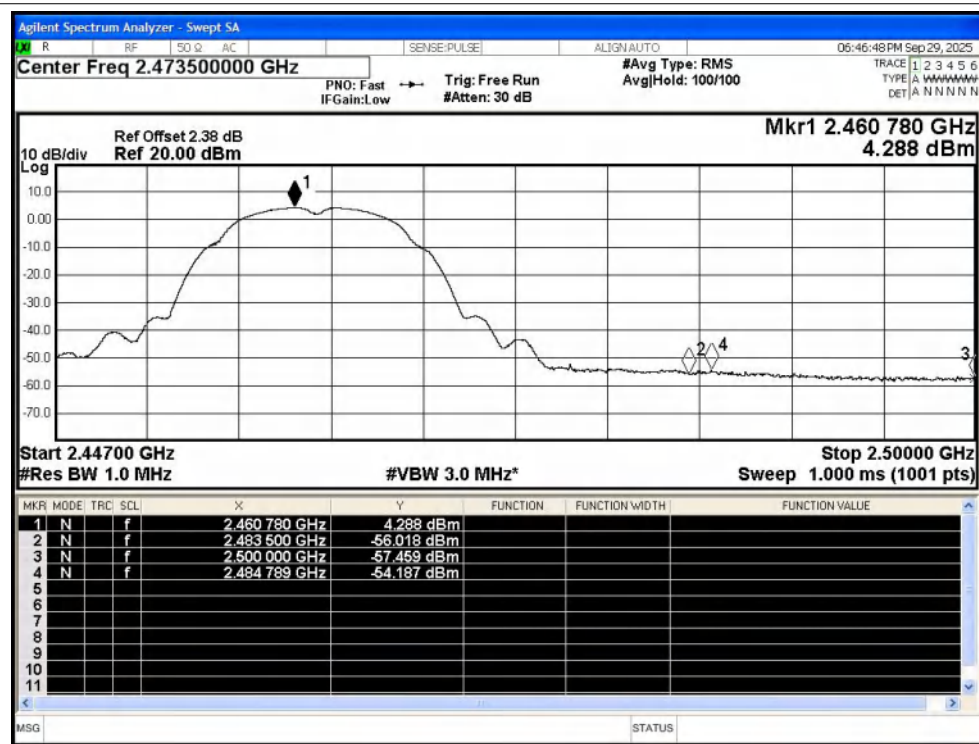
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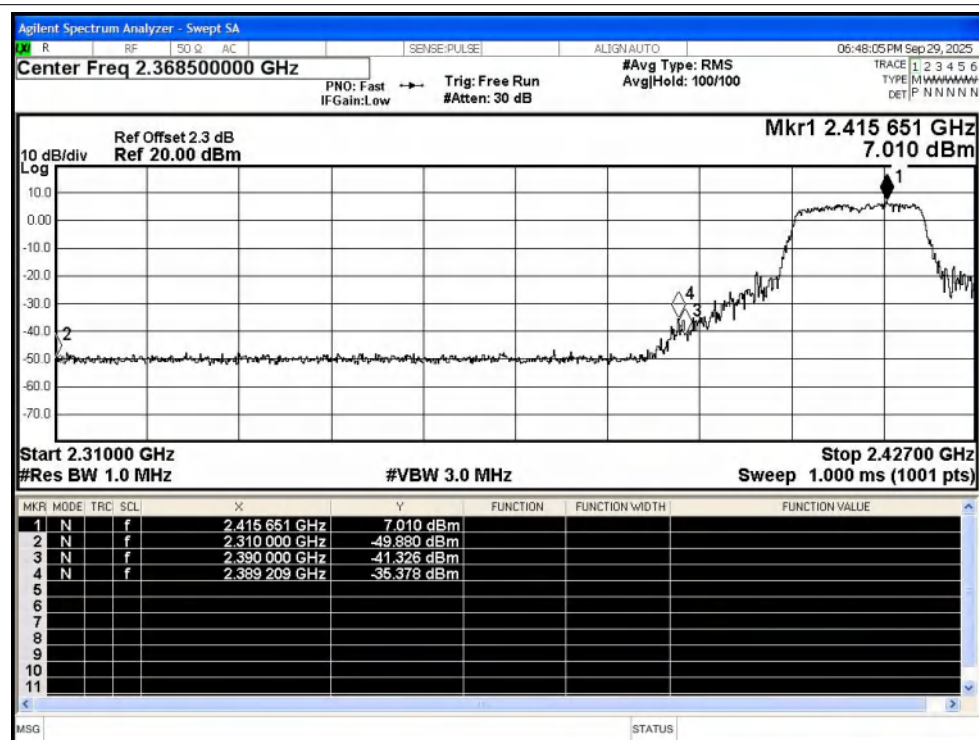
Restrict Band NVNT b 2462MHz Ant1 Peak



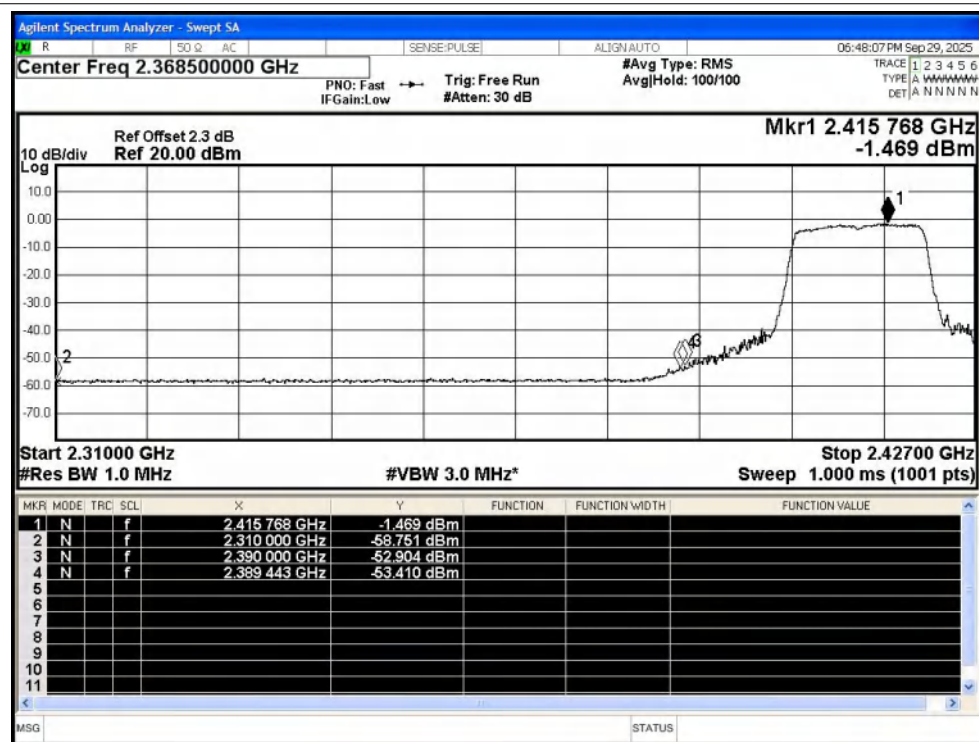
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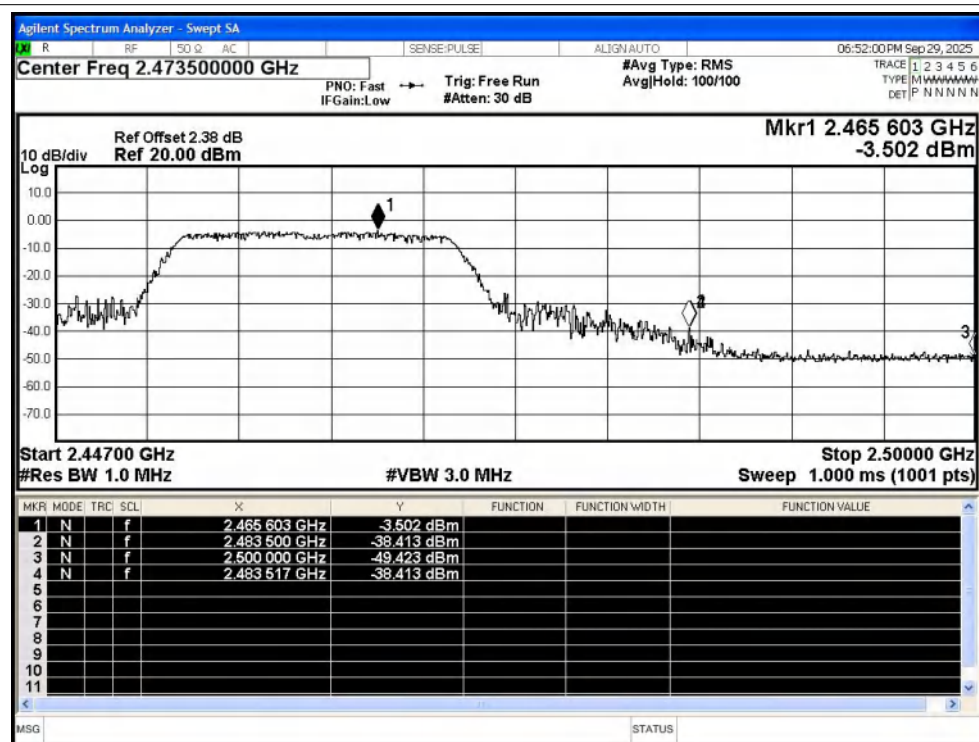
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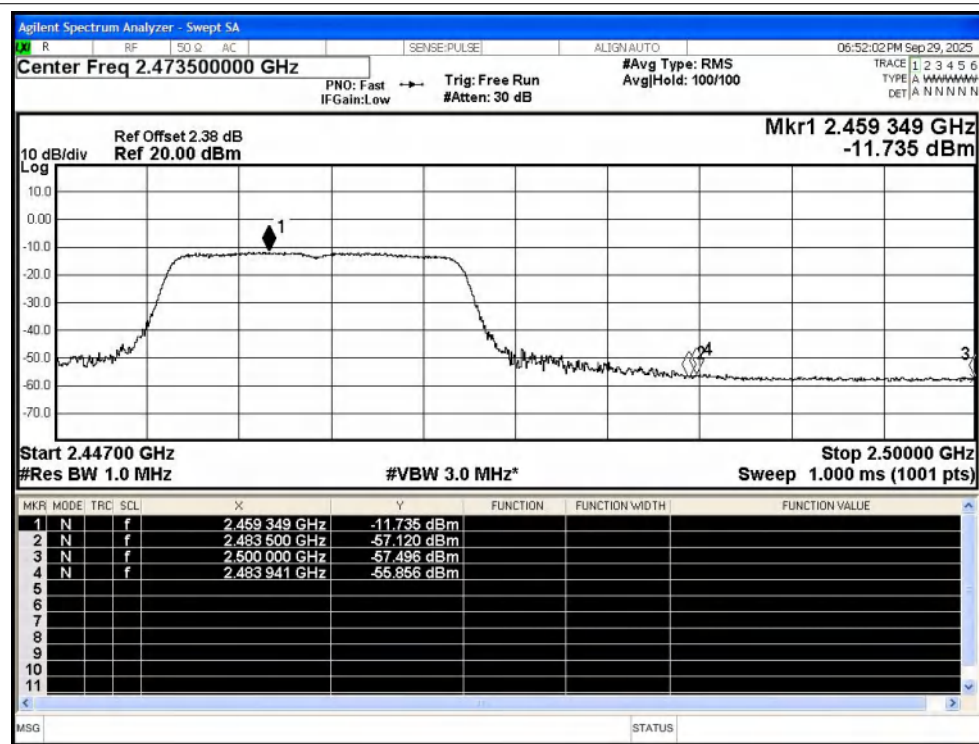
Restrict Band NVNT g 2412MHz Ant1 Average



Restrict Band NVNT g 2462MHz Ant1 Peak



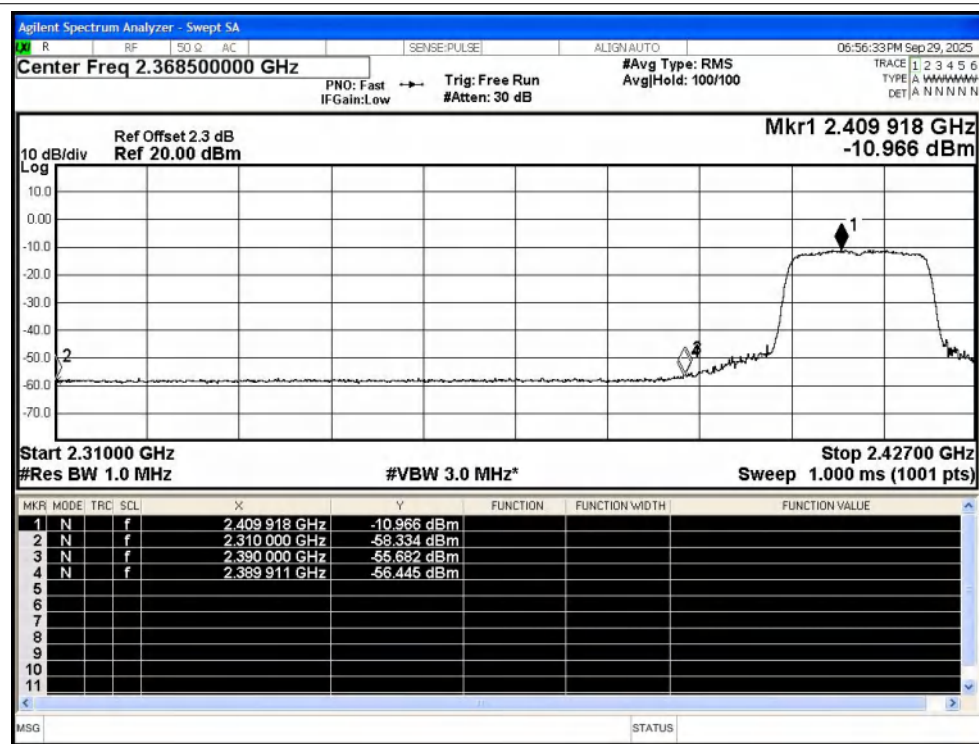
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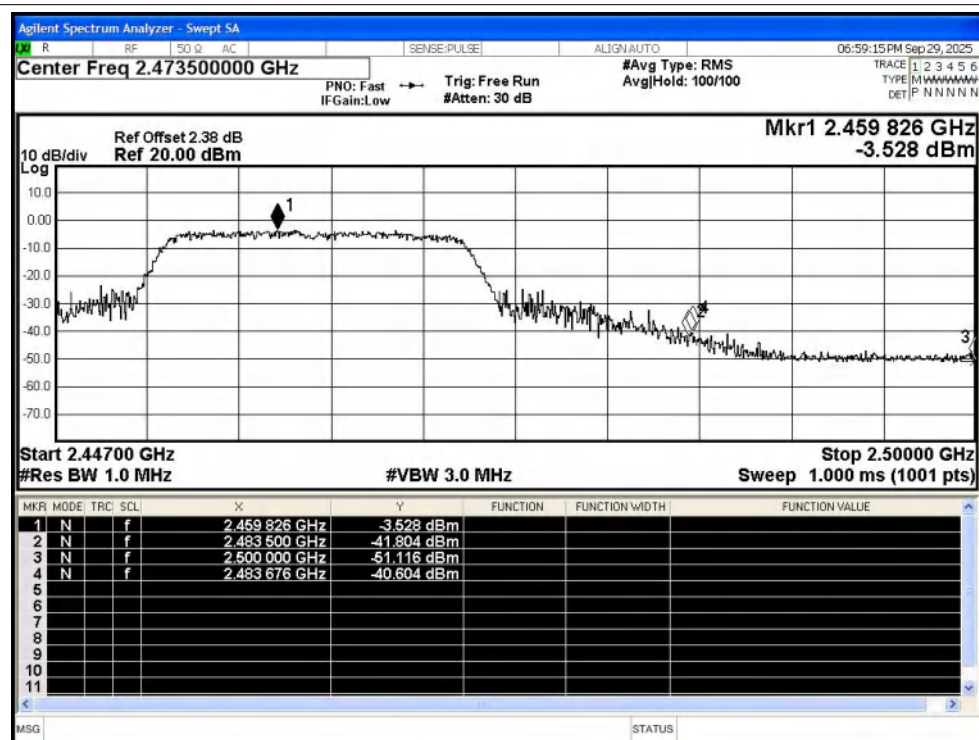
Restrict Band NVNT n20 2412MHz Ant1 Peak



Restrict Band NVNT n20 2412MHz Ant1 Average



Restrict Band NVNT n20 2462MHz Ant1 Peak



Restrict Band NVNT n20 2462MHz Ant1 Average

