



Appendix B

RF Test Data for 2.4GWIFI (Conducted Measurement)

Product Name: Smart Bird Feeder

Test Model: P33

Environmental Conditions

Temperature:	23.8 ° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Jerry Chu
Supervised by:	Nick Peng



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B.1 -6dB Bandwidth

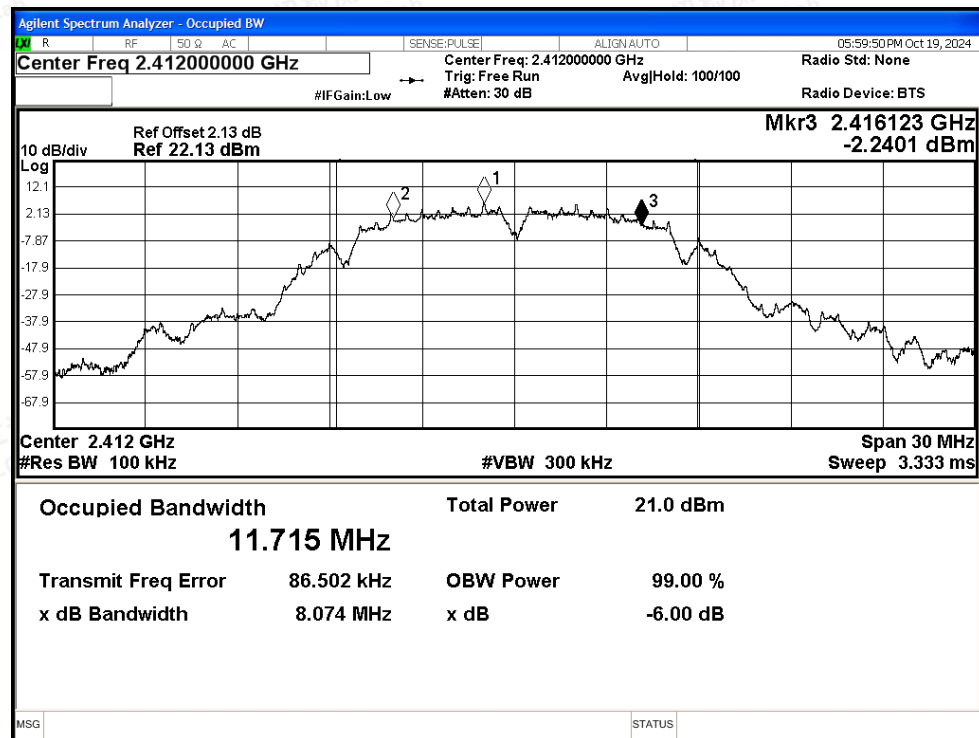
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	b	2412	Ant2	8.074	≥ 0.5	Pass
NVNT	b	2437	Ant2	8.543	≥ 0.5	Pass
NVNT	b	2462	Ant2	8.116	≥ 0.5	Pass
NVNT	g	2412	Ant2	16.11	≥ 0.5	Pass
NVNT	g	2437	Ant2	16.314	≥ 0.5	Pass
NVNT	g	2462	Ant2	16.325	≥ 0.5	Pass
NVNT	n20	2412	Ant2	17.308	≥ 0.5	Pass
NVNT	n20	2437	Ant2	16.984	≥ 0.5	Pass
NVNT	n20	2462	Ant2	17.133	≥ 0.5	Pass



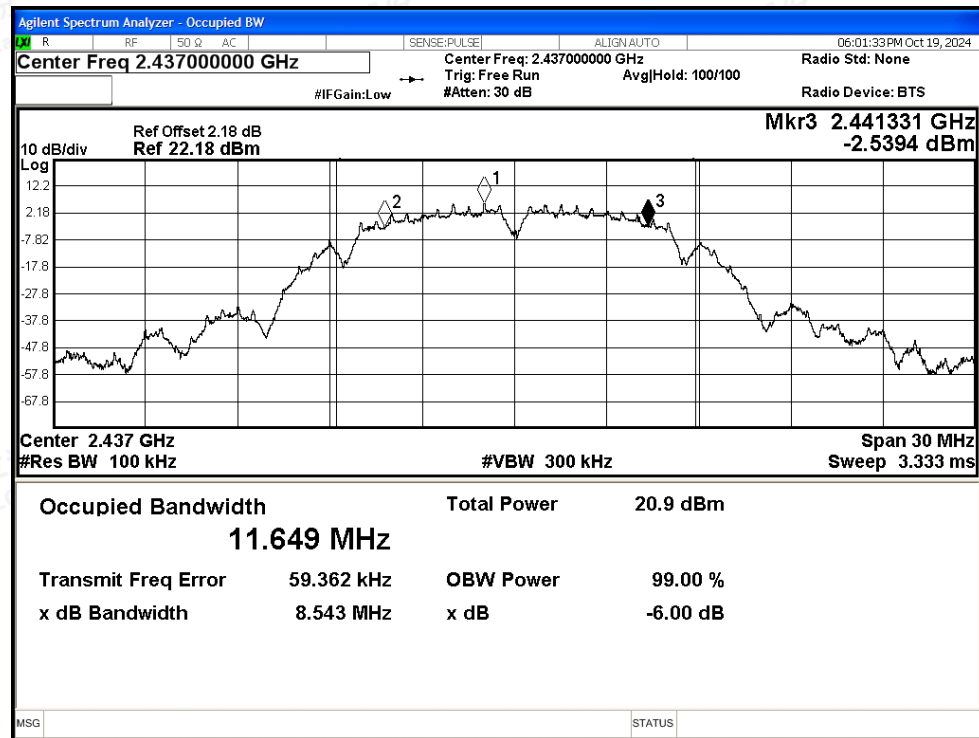


Test Graphs

-6dB Bandwidth NVNT b 2412MHz Ant2



-6dB Bandwidth NVNT b 2437MHz Ant2



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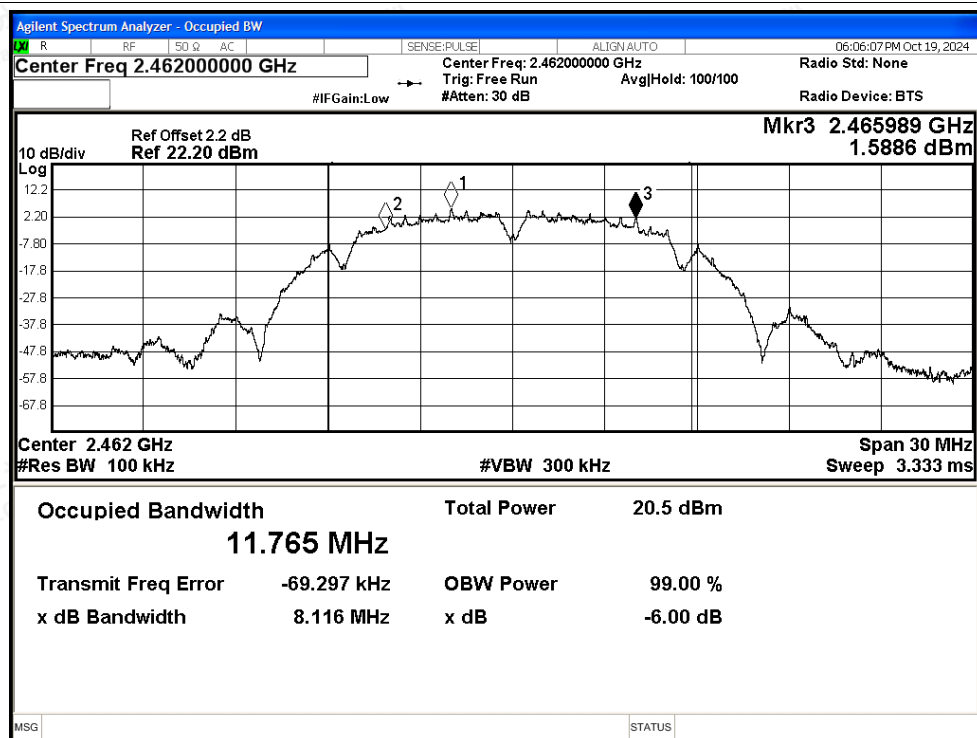
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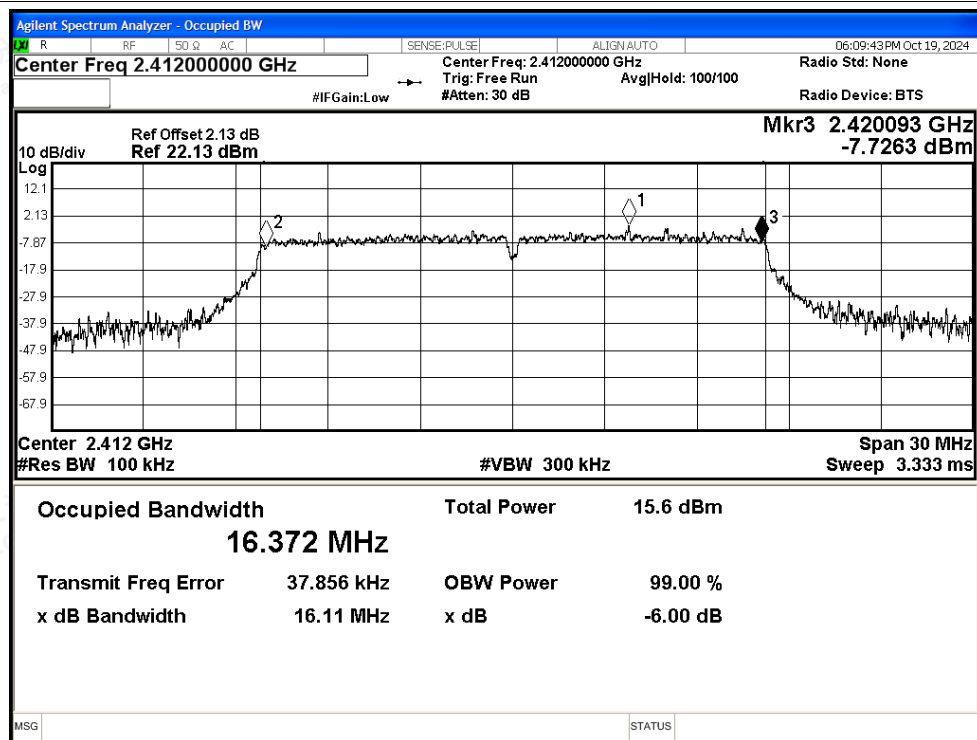
Scan code to check authenticity



-6dB Bandwidth NVNT b 2462MHz Ant2

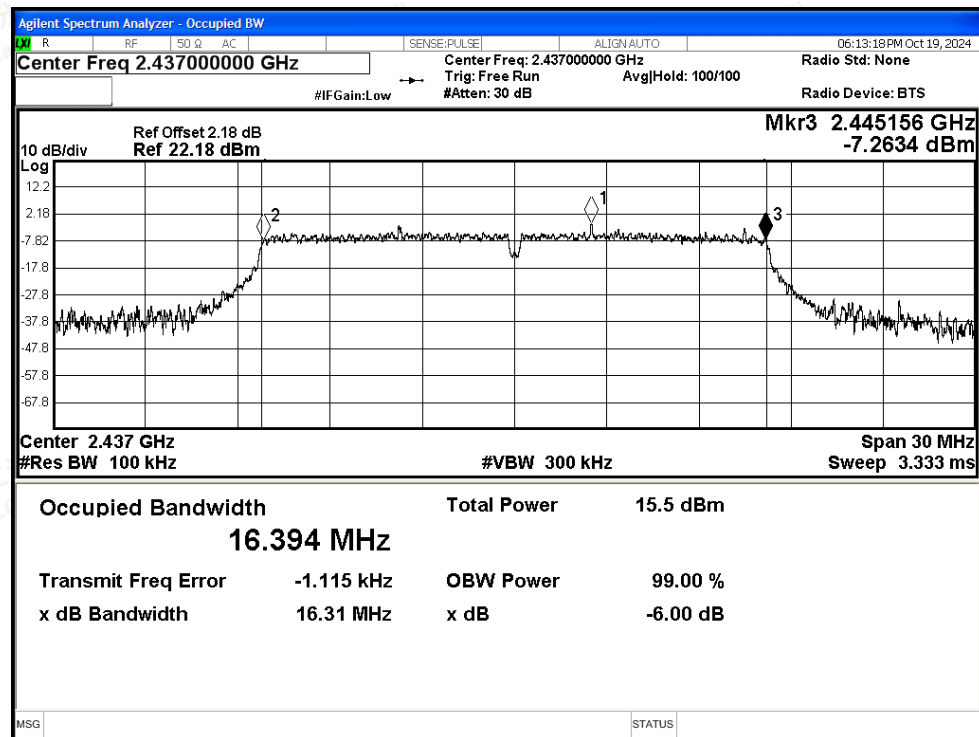


-6dB Bandwidth NVNT g 2412MHz Ant2

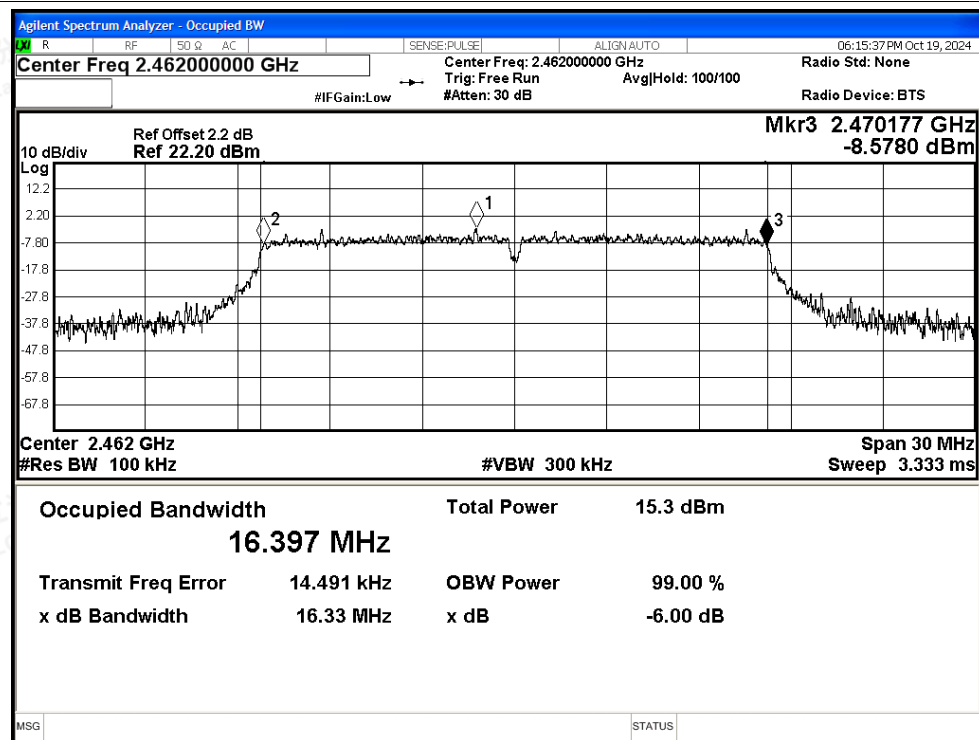




-6dB Bandwidth NVNT g 2437MHz Ant2

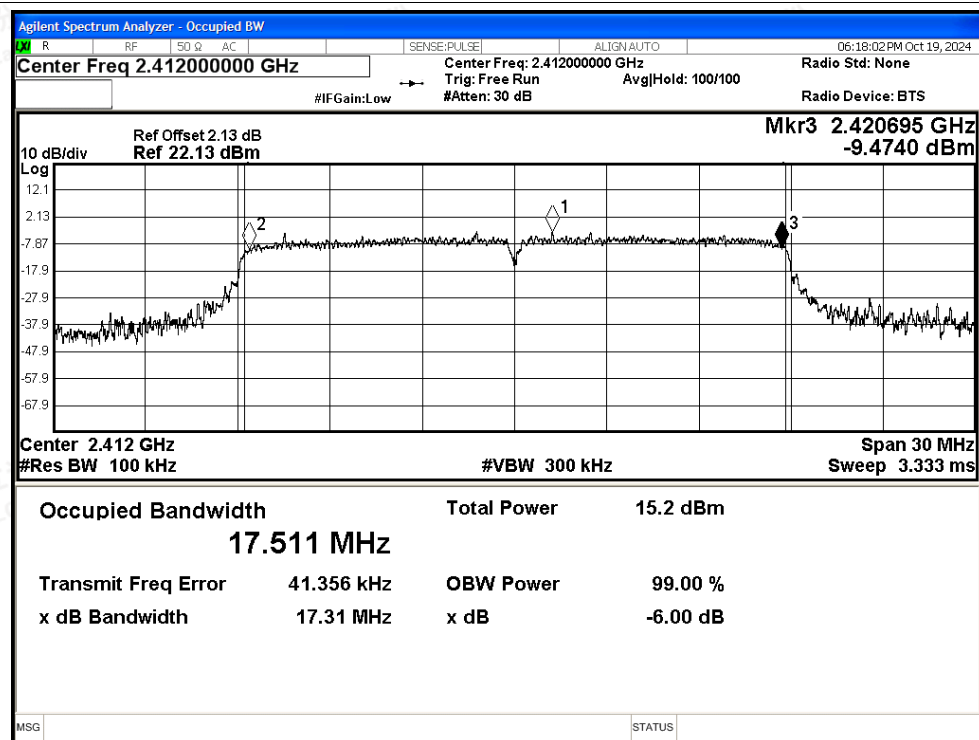


-6dB Bandwidth NVNT g 2462MHz Ant2

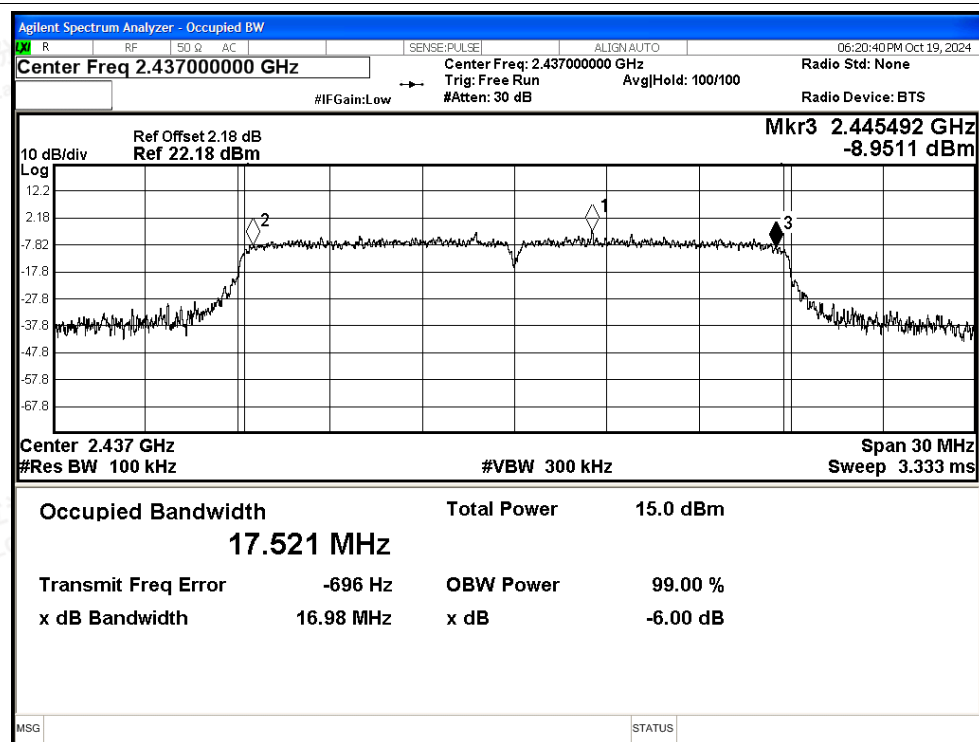


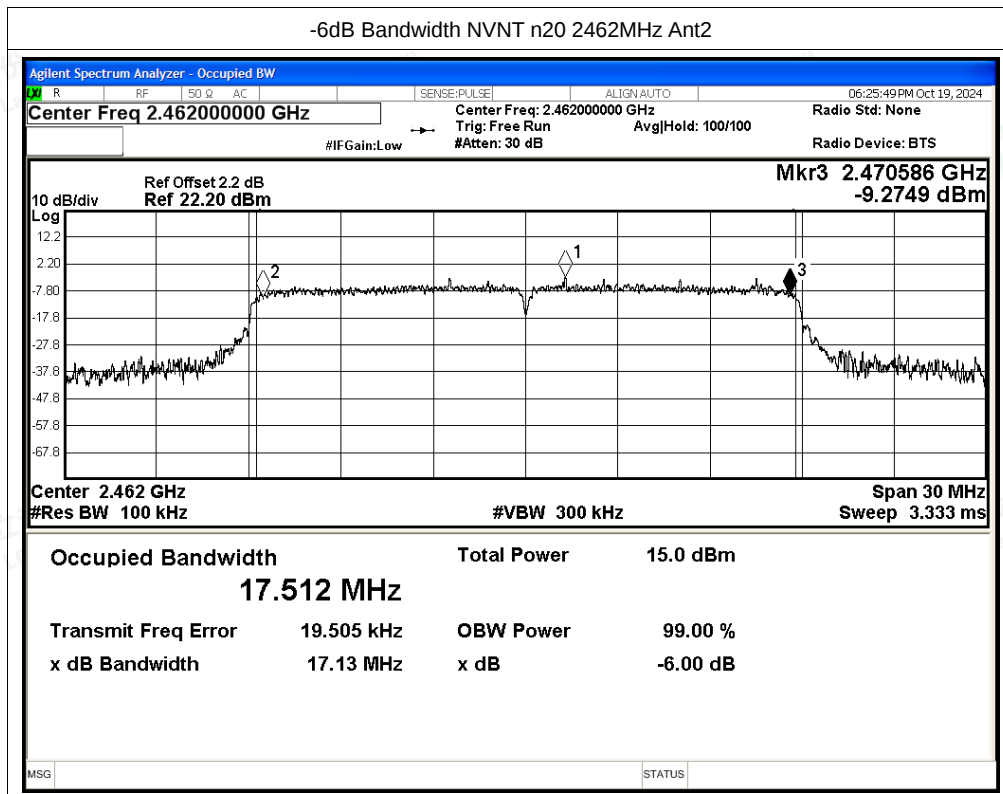


-6dB Bandwidth NVNT n20 2412MHz Ant2



-6dB Bandwidth NVNT n20 2437MHz Ant2







B.2 Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	Ant2	15.98	0	15.98	30	Pass
NVNT	b	2437	Ant2	15.91	0	15.91	30	Pass
NVNT	b	2462	Ant2	15.55	0	15.55	30	Pass
NVNT	g	2412	Ant2	14.36	0	14.36	30	Pass
NVNT	g	2437	Ant2	14.25	0	14.25	30	Pass
NVNT	g	2462	Ant2	14.05	0	14.05	30	Pass
NVNT	n20	2412	Ant2	13.86	0	13.86	30	Pass
NVNT	n20	2437	Ant2	13.64	0	13.64	30	Pass
NVNT	n20	2462	Ant2	13.56	0	13.56	30	Pass



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B.3 Maximum Power Spectral Density Level

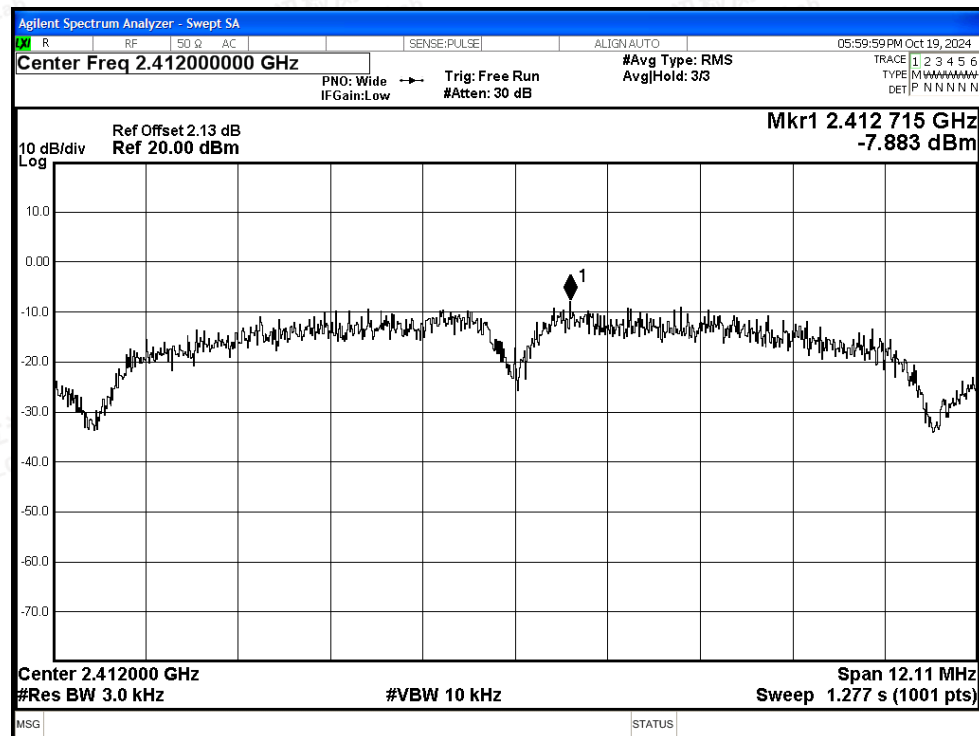
Condition	Mode	Frequency (MHz)	Antenna	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	b	2412	Ant2	-7.88	8	Pass
NVNT	b	2437	Ant2	-8.44	8	Pass
NVNT	b	2462	Ant2	-6.37	8	Pass
NVNT	g	2412	Ant2	-16.18	8	Pass
NVNT	g	2437	Ant2	-16.48	8	Pass
NVNT	g	2462	Ant2	-16.44	8	Pass
NVNT	n20	2412	Ant2	-17.19	8	Pass
NVNT	n20	2437	Ant2	-16.55	8	Pass
NVNT	n20	2462	Ant2	-16.60	8	Pass



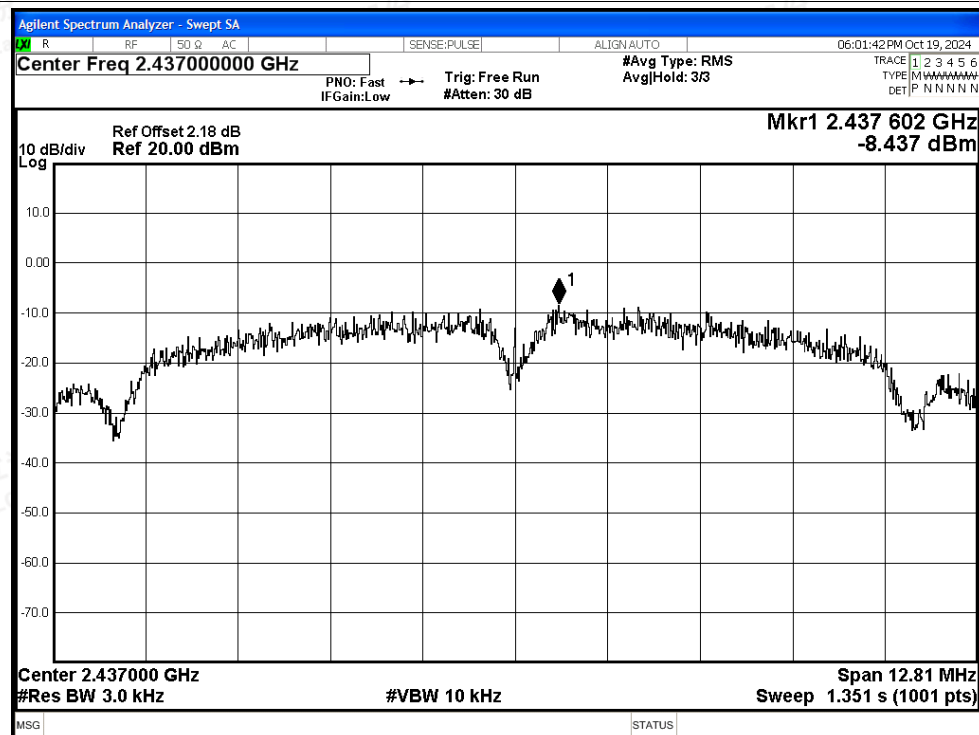


Test Graphs

PSD NVNT b 2412MHz Ant2

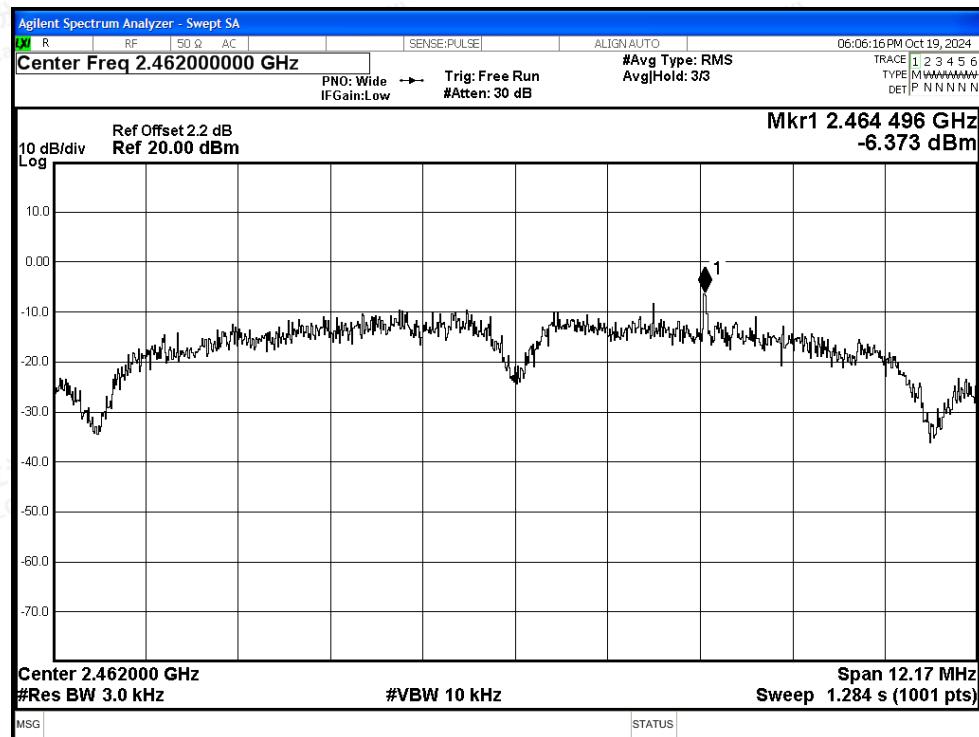


PSD NVNT b 2437MHz Ant2

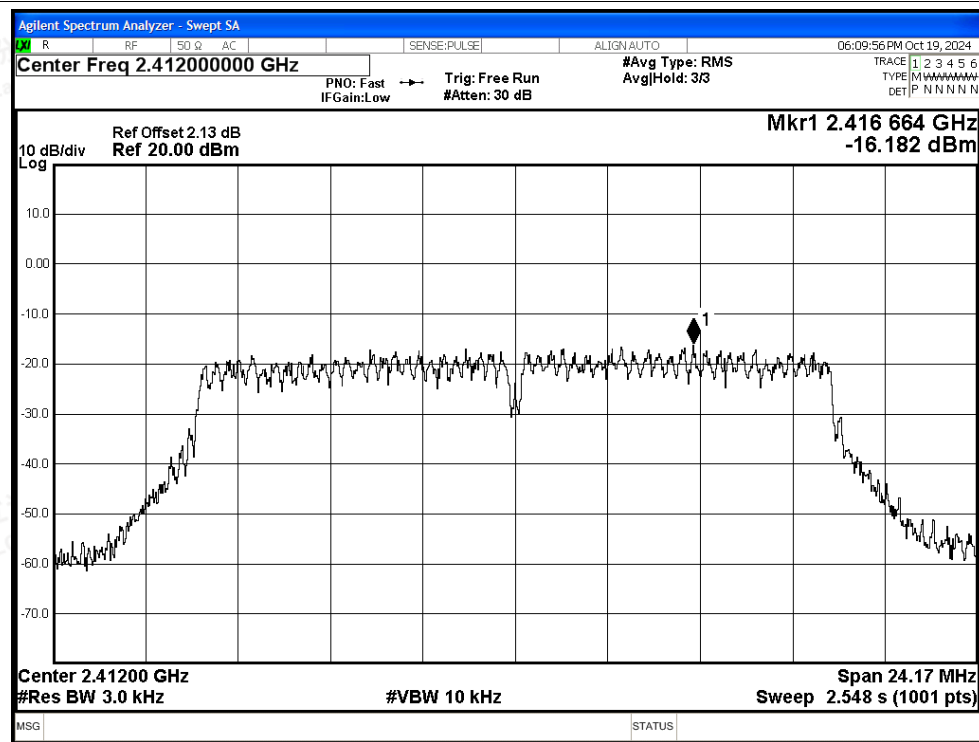




PSD NVNT b 2462MHz Ant2

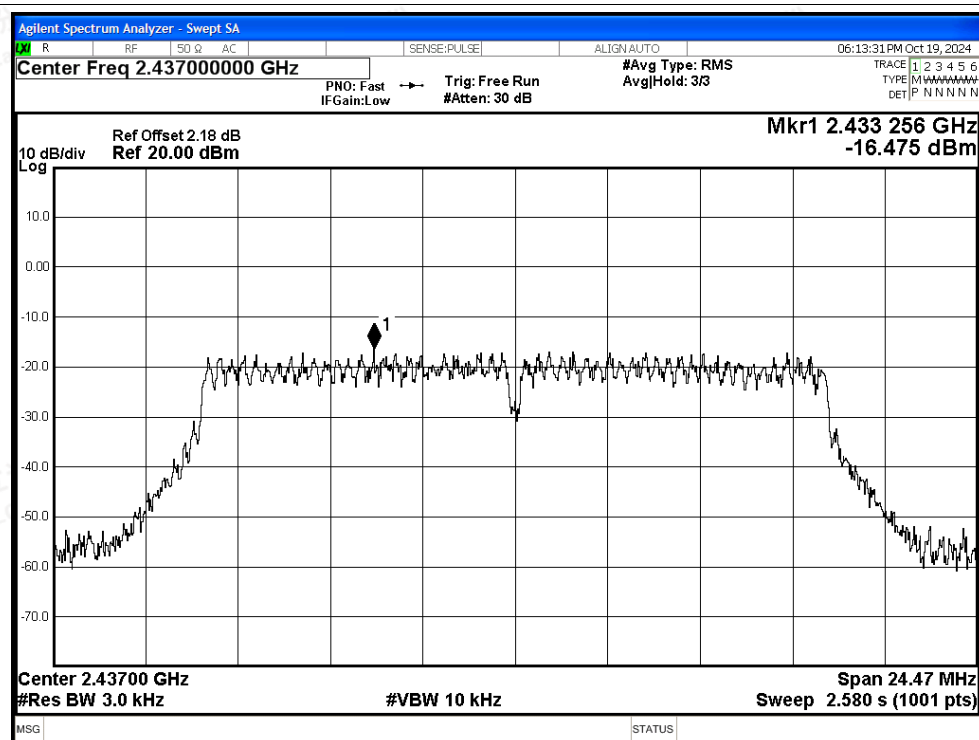


PSD NVNT g 2412MHz Ant2

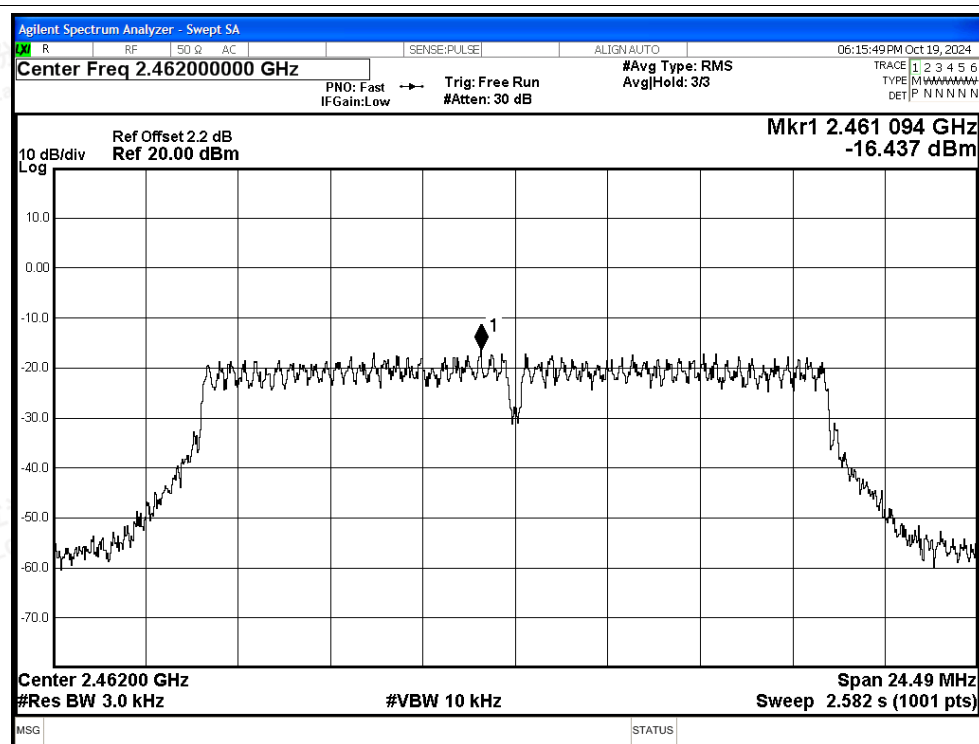


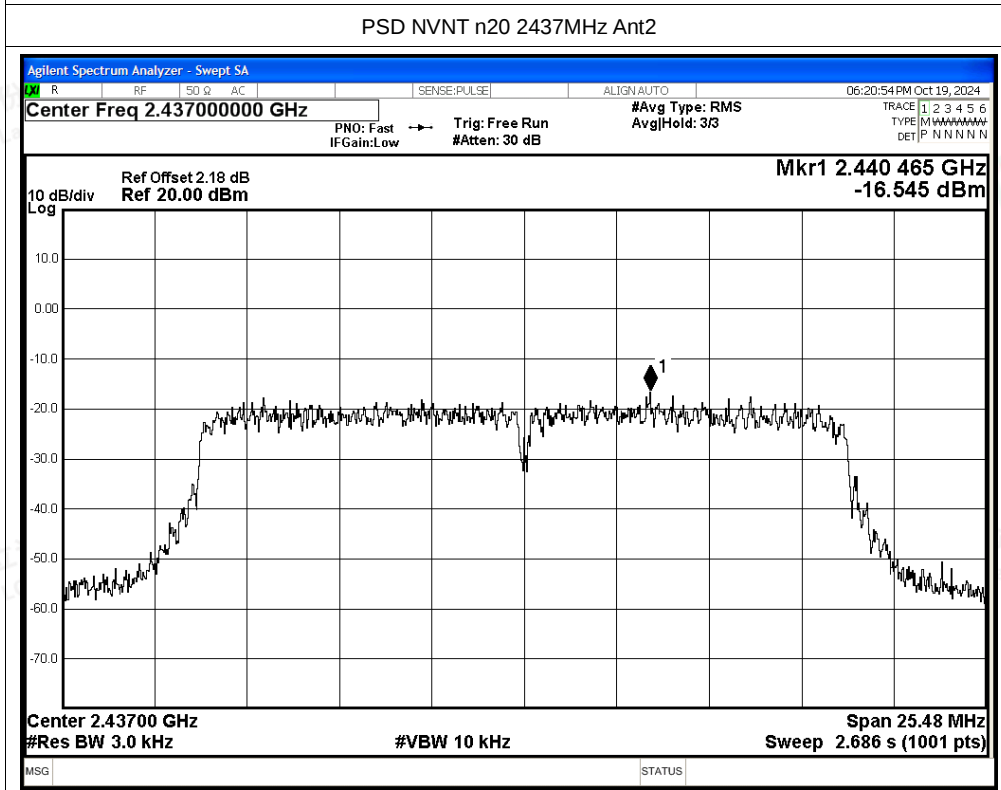
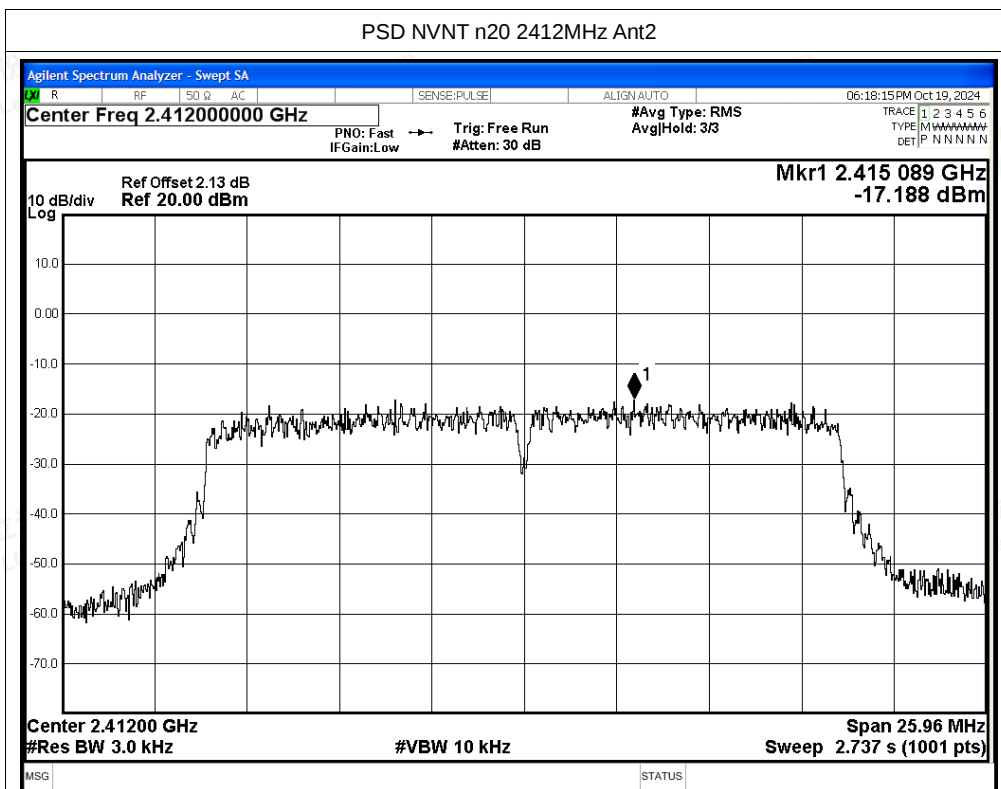


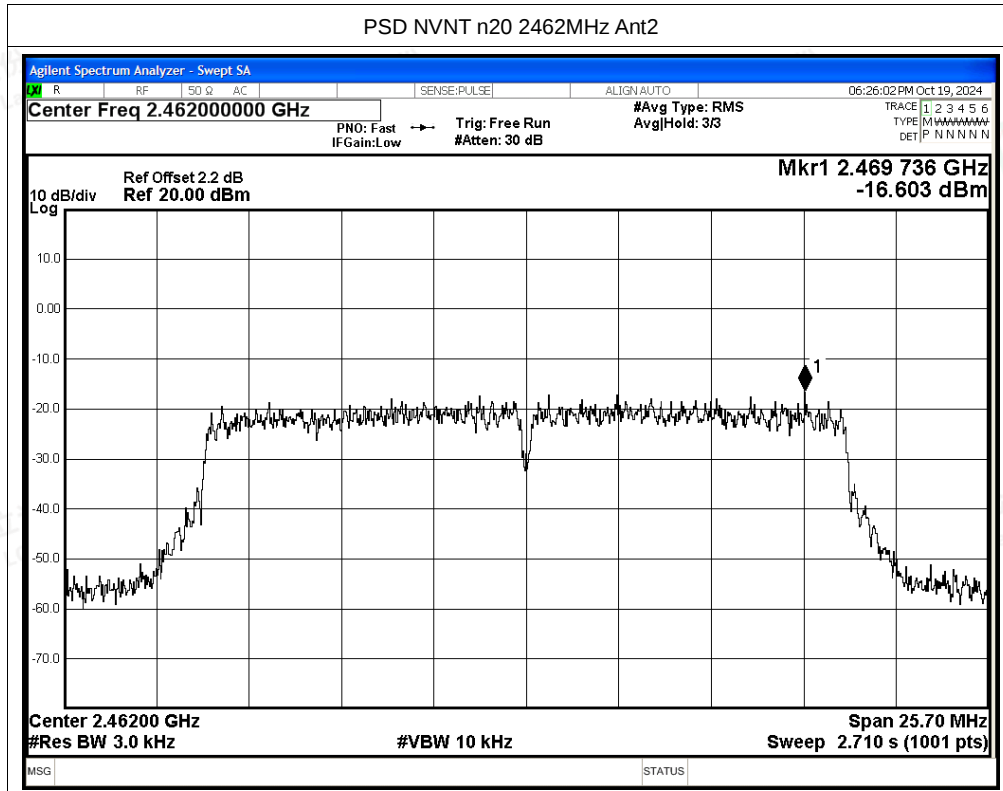
PSD NVNT g 2437MHz Ant2



PSD NVNT g 2462MHz Ant2









B.4 Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant2	-46.14	-20	Pass
NVNT	b	2462	Ant2	-59.46	-20	Pass
NVNT	g	2412	Ant2	-32.71	-20	Pass
NVNT	g	2462	Ant2	-41.1	-20	Pass
NVNT	n20	2412	Ant2	-30.3	-20	Pass
NVNT	n20	2462	Ant2	-41.14	-20	Pass

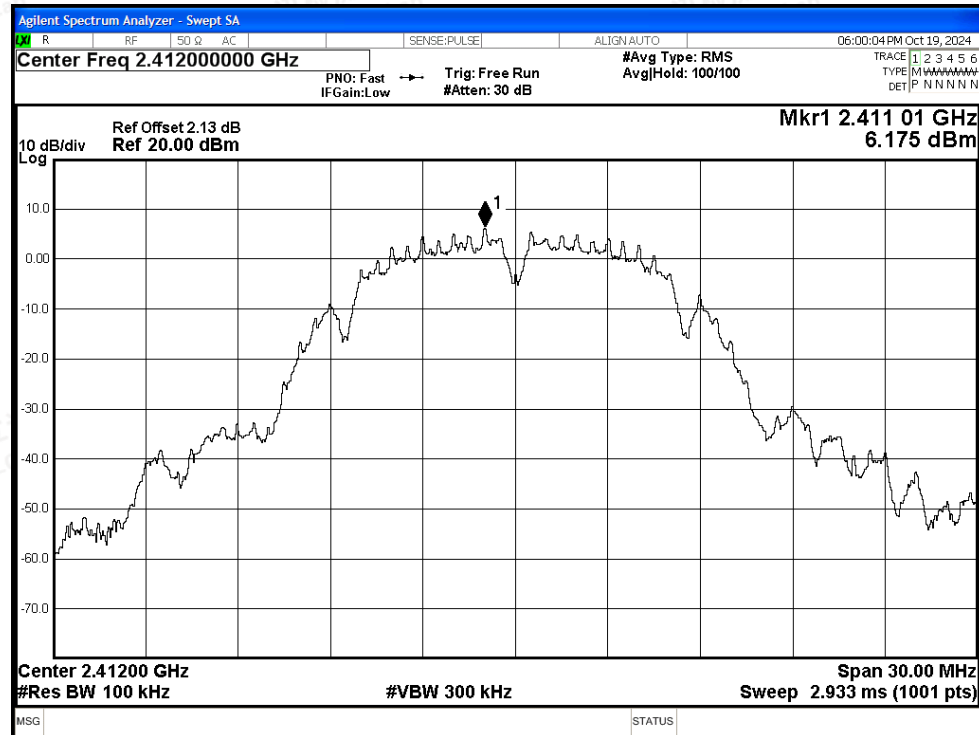


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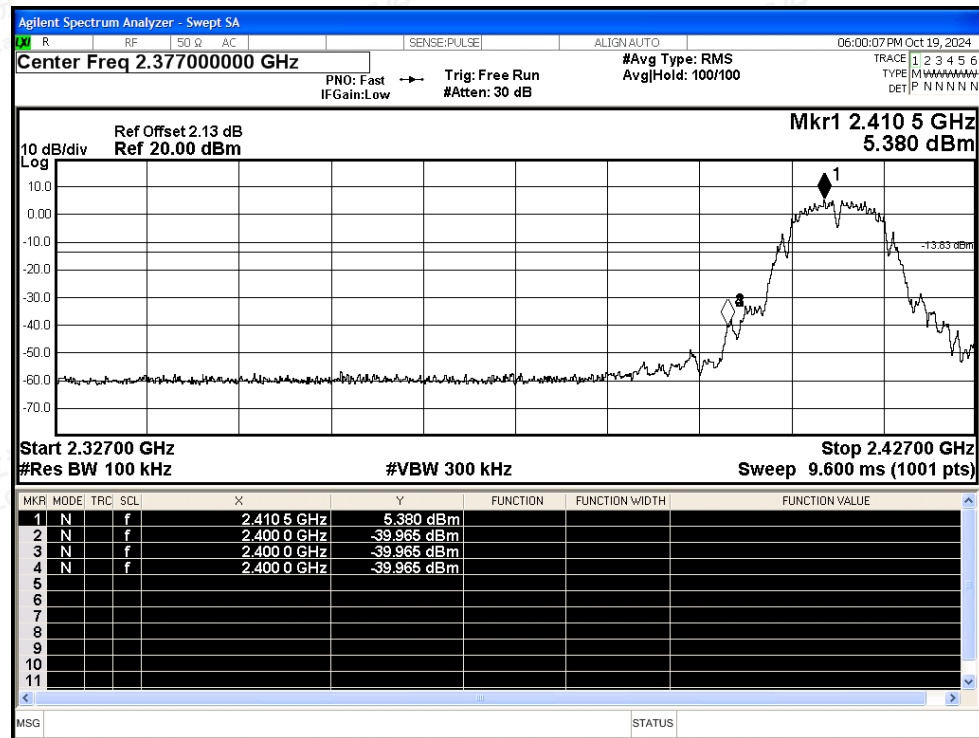


Test Graphs

Band Edge NVNT b 2412MHz Ant2 Ref



Band Edge NVNT b 2412MHz Ant2 Emission



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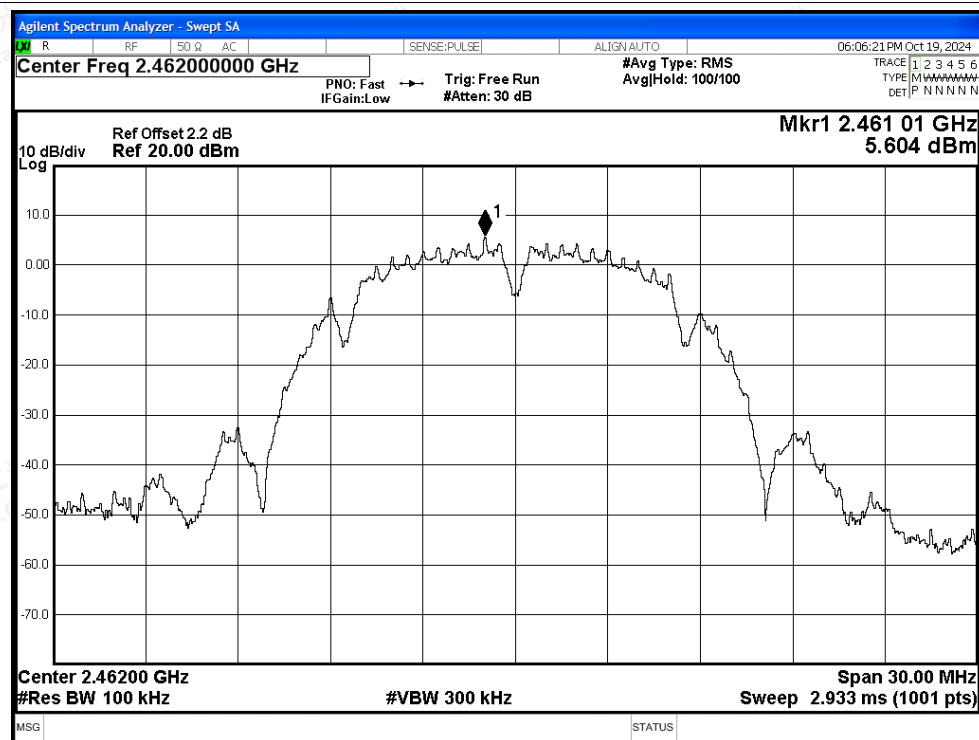
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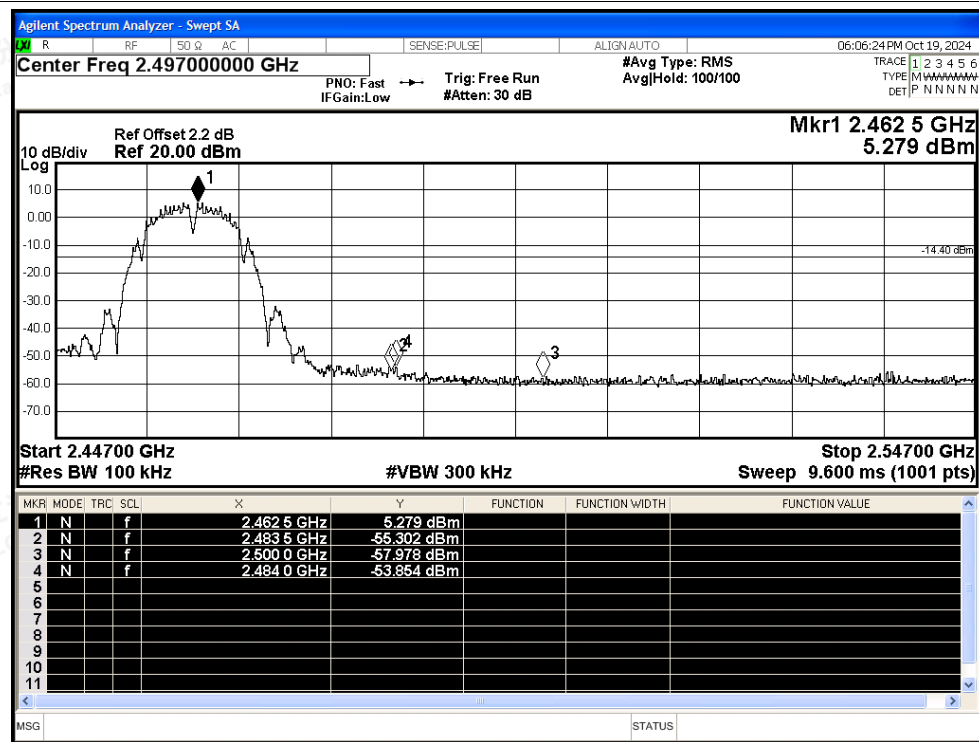
Scan code to check authenticity



Band Edge NVNT b 2462MHz Ant2 Ref



Band Edge NVNT b 2462MHz Ant2 Emission



Shenzhen LCS Compliance Testing Laboratory Ltd.

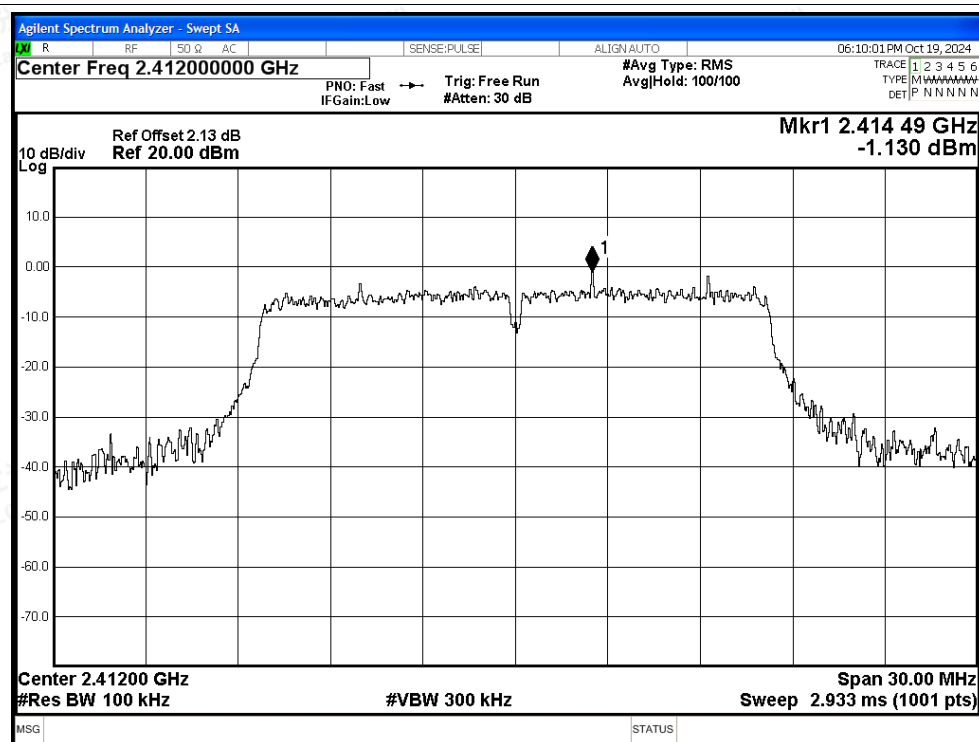
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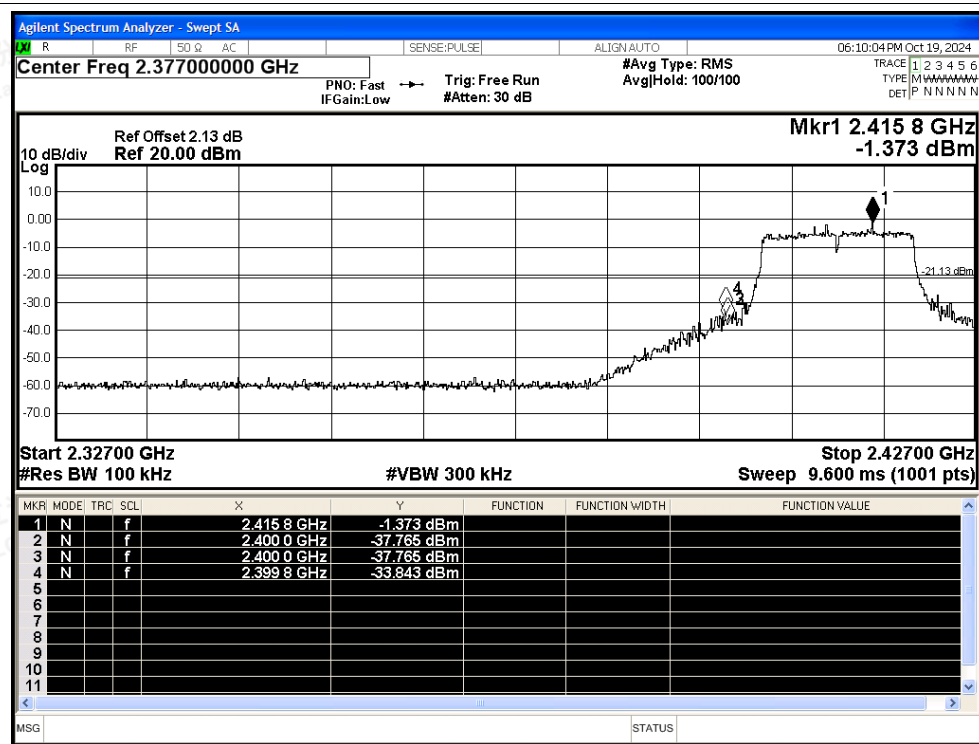
Scan code to check authenticity



Band Edge NVNT g 2412MHz Ant2 Ref



Band Edge NVNT g 2412MHz Ant2 Emission



Shenzhen LCS Compliance Testing Laboratory Ltd.

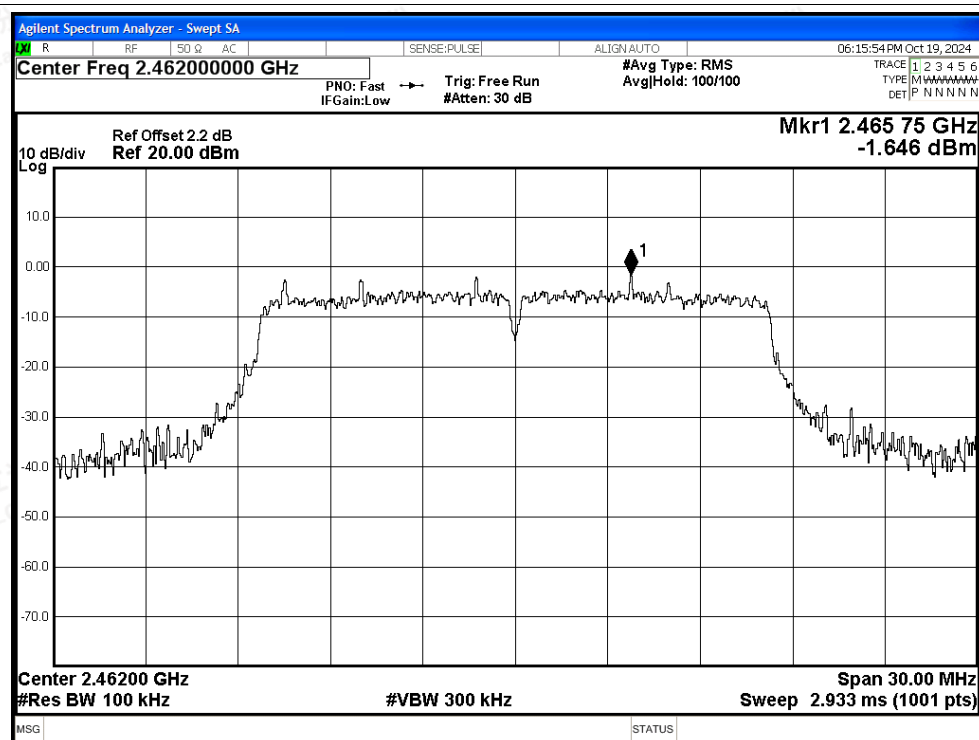
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

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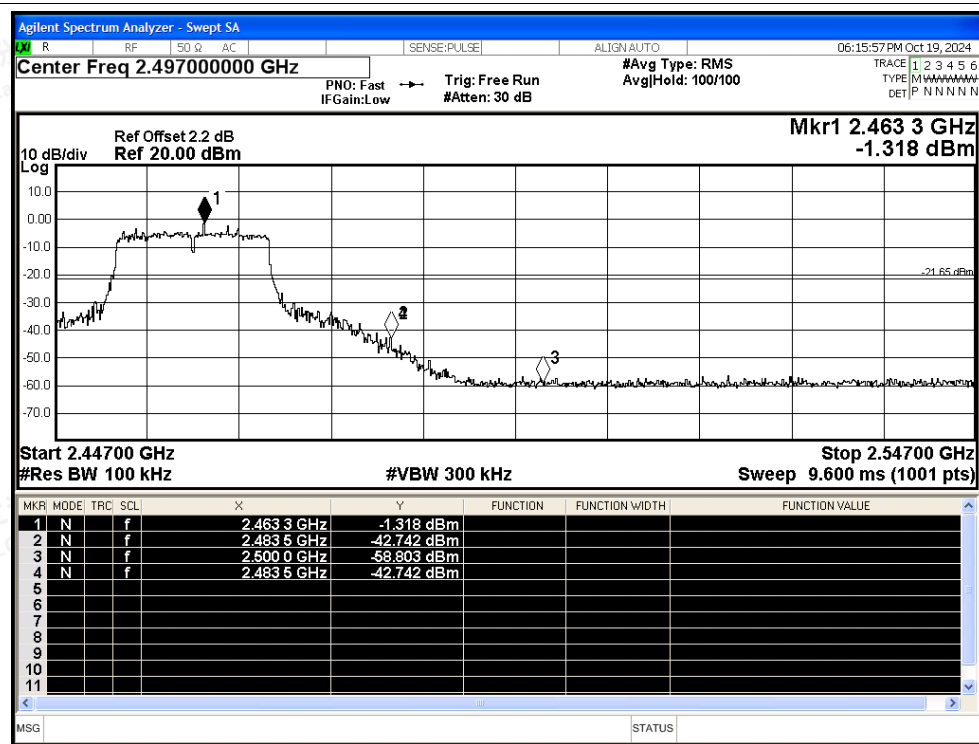
Scan code to check authenticity



Band Edge NVNT g 2462MHz Ant2 Ref

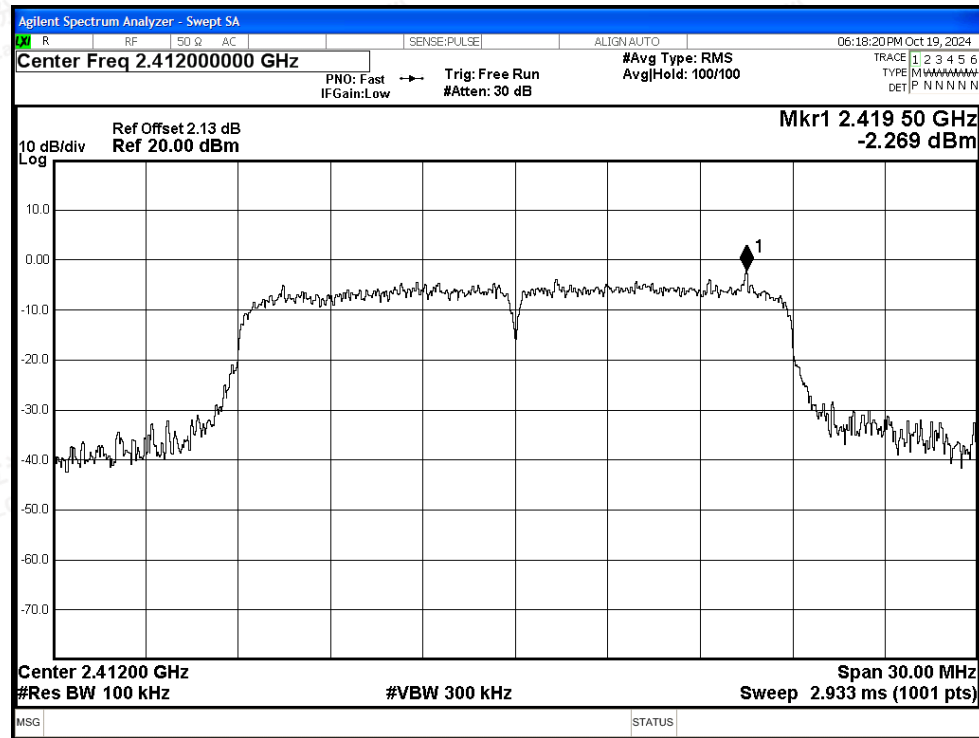


Band Edge NVNT g 2462MHz Ant2 Emission

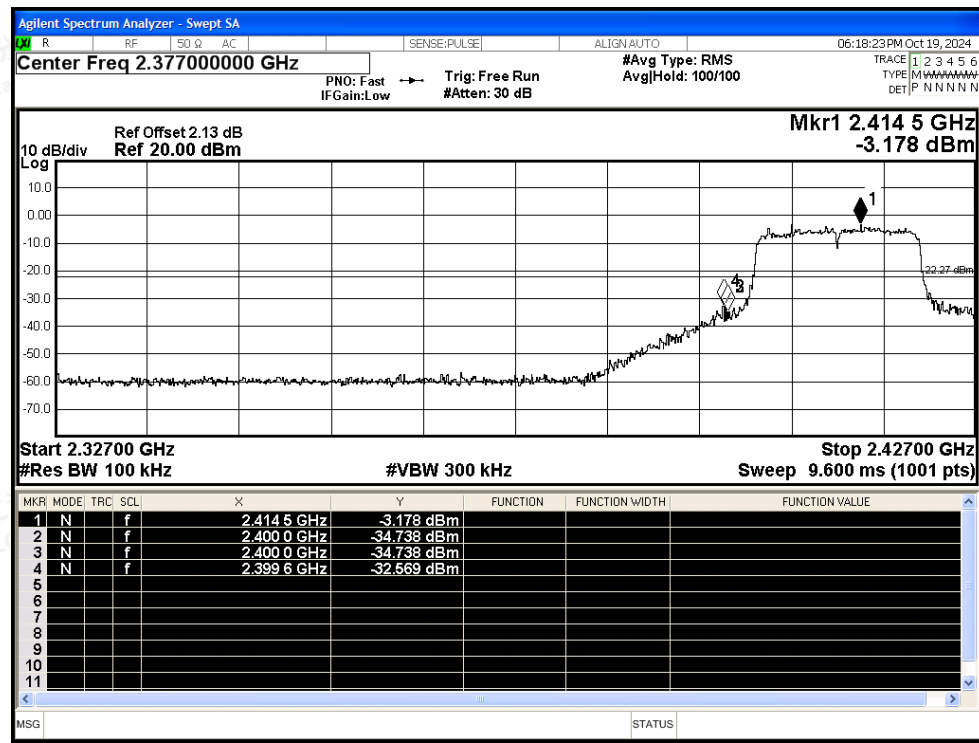




Band Edge NVNT n20 2412MHz Ant2 Ref



Band Edge NVNT n20 2412MHz Ant2 Emission



Shenzhen LCS Compliance Testing Laboratory Ltd.

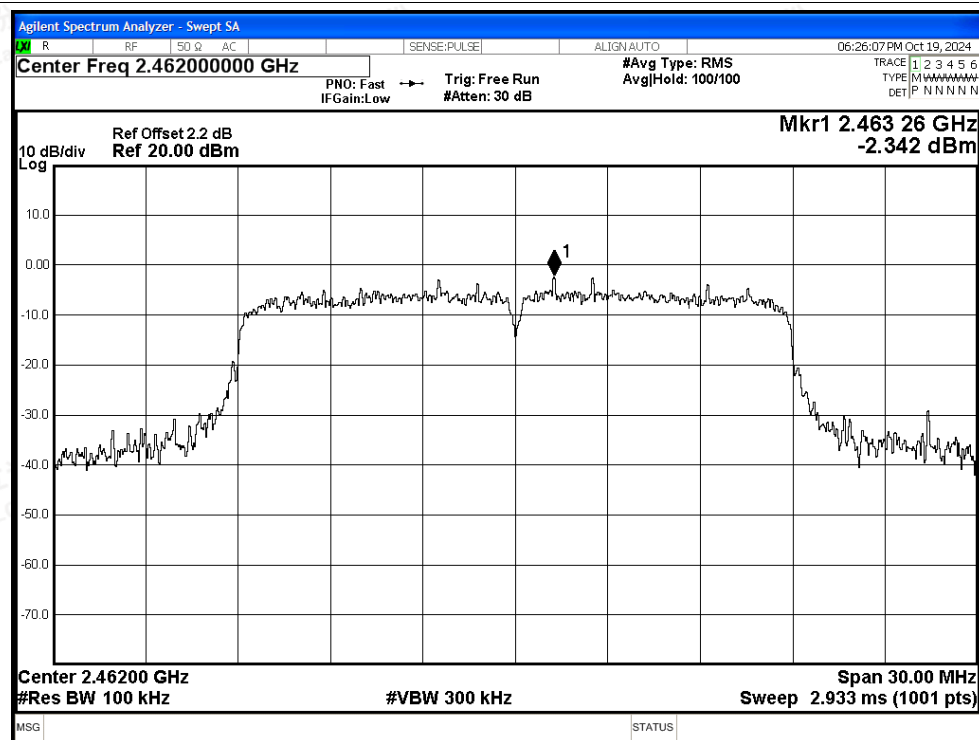
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

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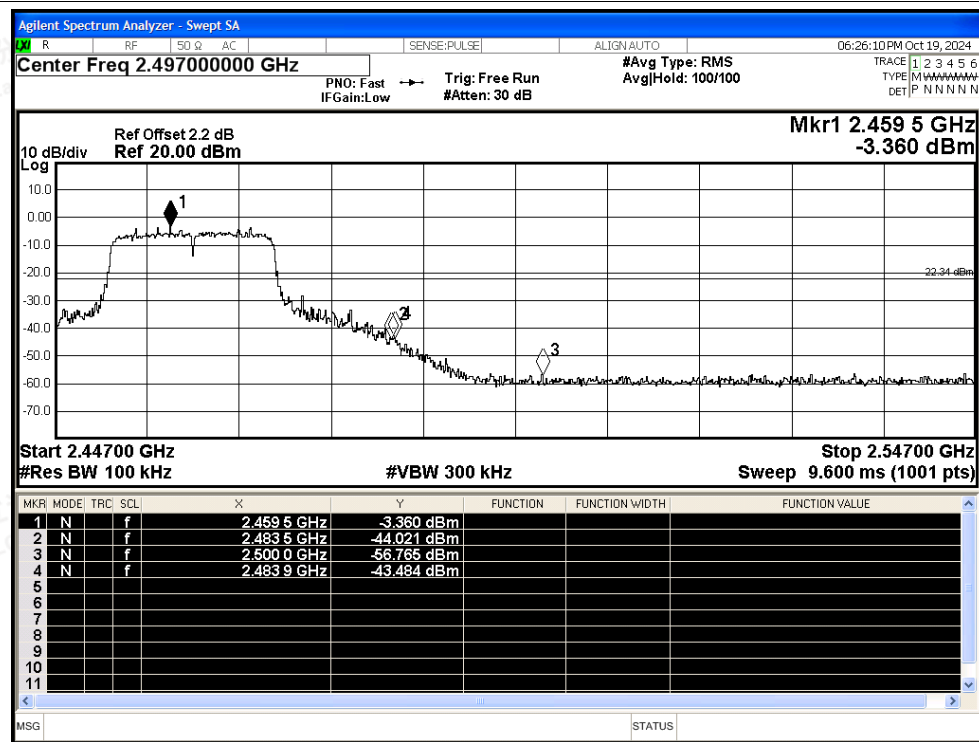
Scan code to check authenticity



Band Edge NVNT n20 2462MHz Ant2 Ref



Band Edge NVNT n20 2462MHz Ant2 Emission



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B.5 Conducted RF Spurious Emission

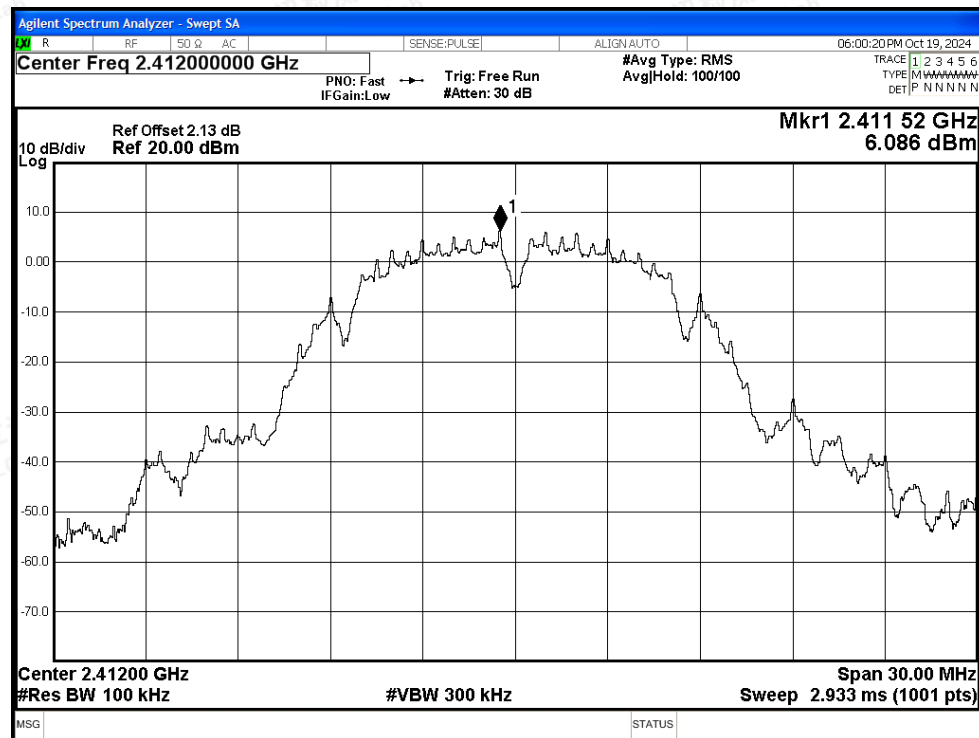
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant2	-52.93	-20	Pass
NVNT	b	2437	Ant2	-50.34	-20	Pass
NVNT	b	2462	Ant2	-51.15	-20	Pass
NVNT	g	2412	Ant2	-44.84	-20	Pass
NVNT	g	2437	Ant2	-44.18	-20	Pass
NVNT	g	2462	Ant2	-44.01	-20	Pass
NVNT	n20	2412	Ant2	-44.02	-20	Pass
NVNT	n20	2437	Ant2	-42.61	-20	Pass
NVNT	n20	2462	Ant2	-43.43	-20	Pass



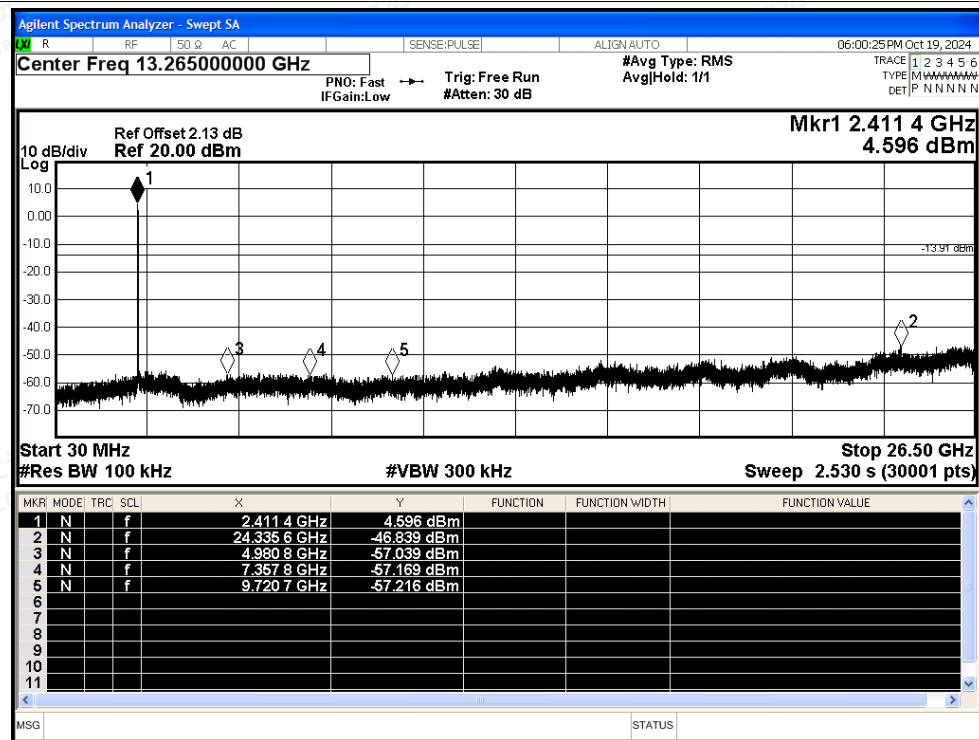


Test Graphs

Tx. Spurious NVNT b 2412MHz Ant2 Ref



Tx. Spurious NVNT b 2412MHz Ant2 Emission



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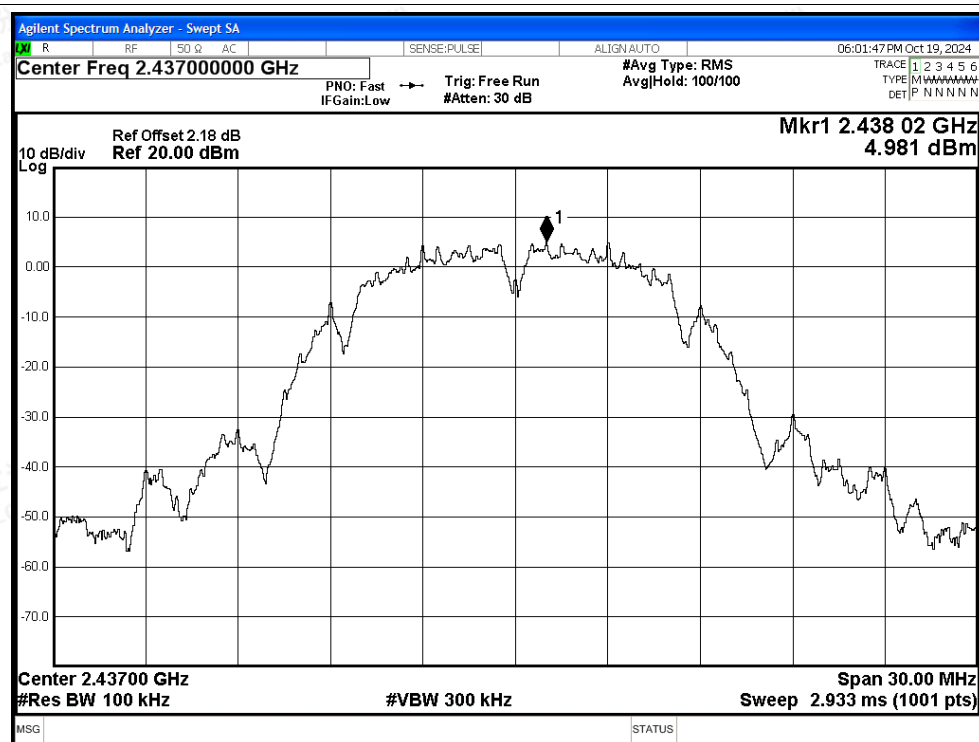
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

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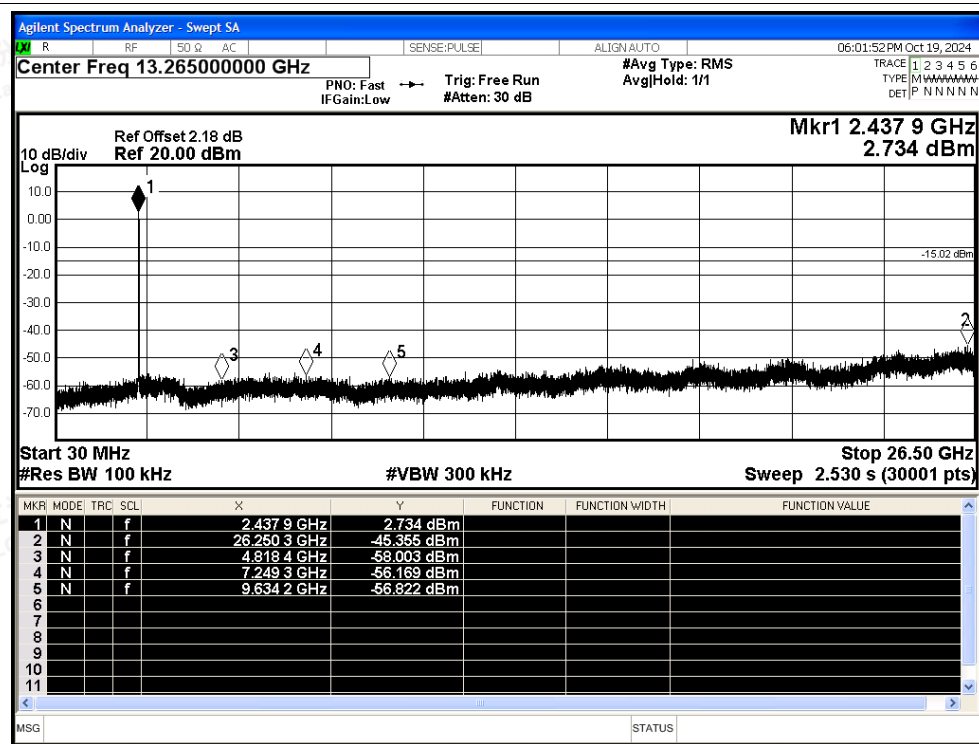
Scan code to check authenticity



Tx. Spurious NVNT b 2437MHz Ant2 Ref

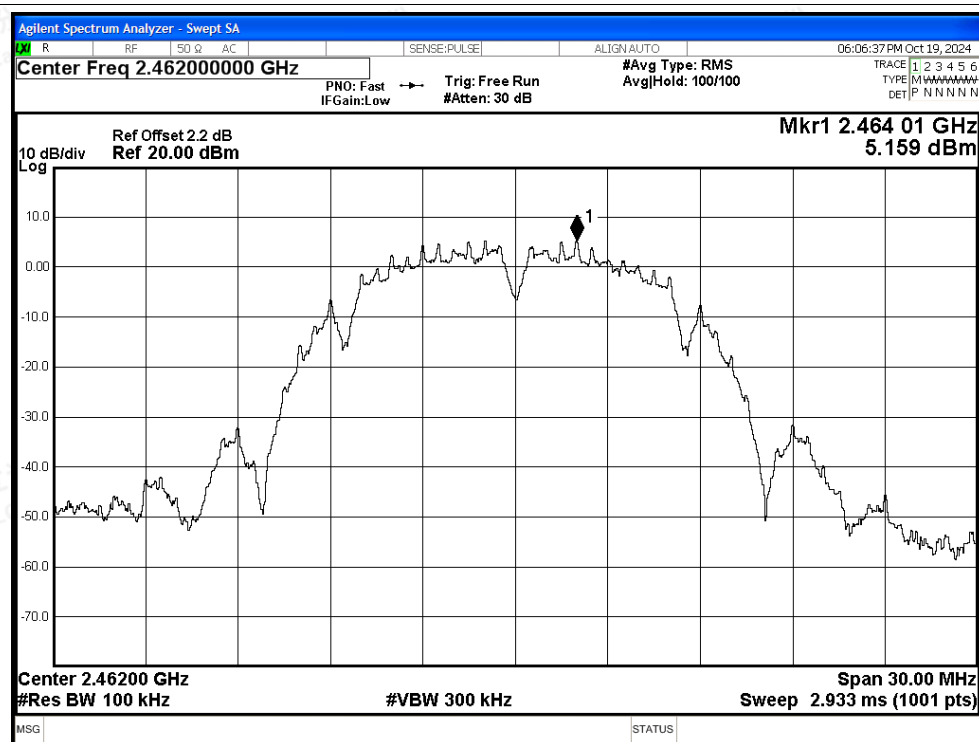


Tx. Spurious NVNT b 2437MHz Ant2 Emission

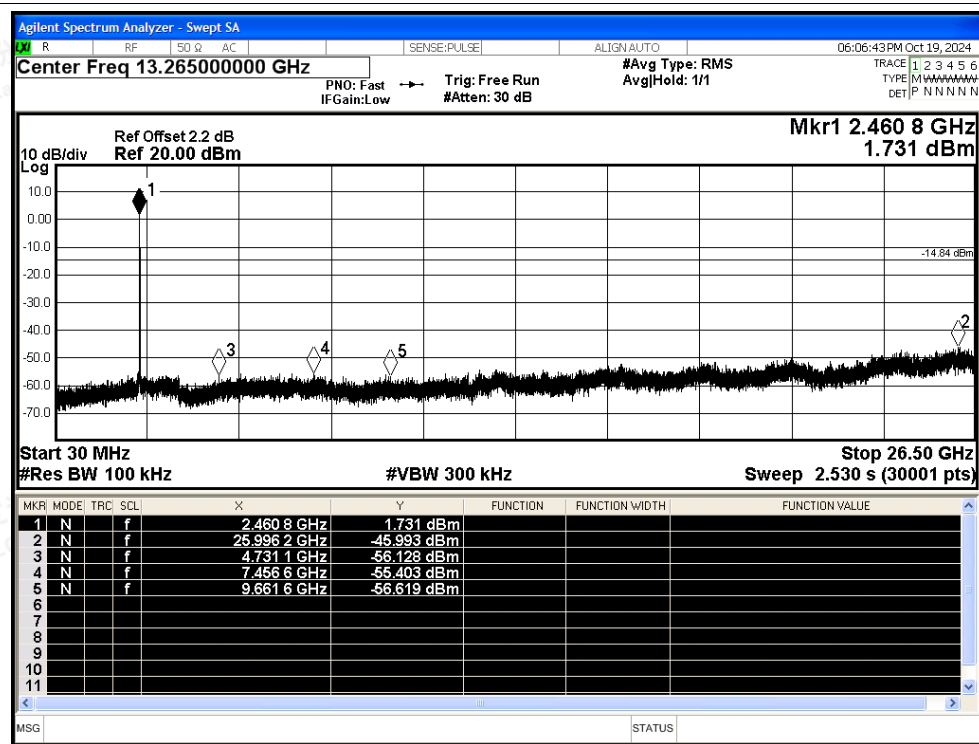




Tx. Spurious NVNT b 2462MHz Ant2 Ref

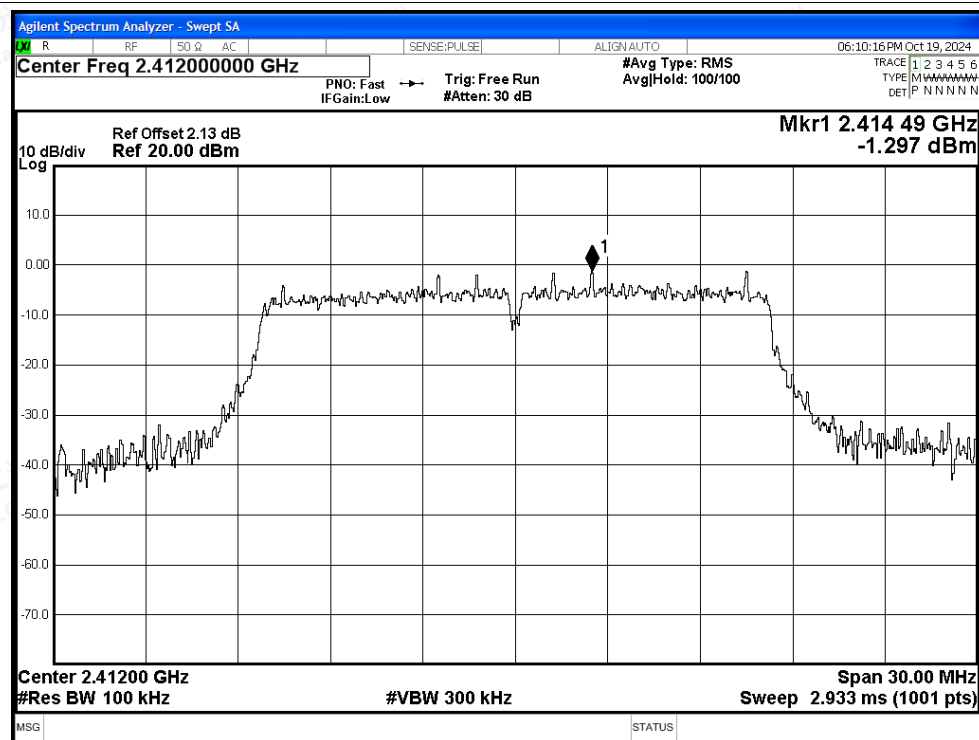


Tx. Spurious NVNT b 2462MHz Ant2 Emission

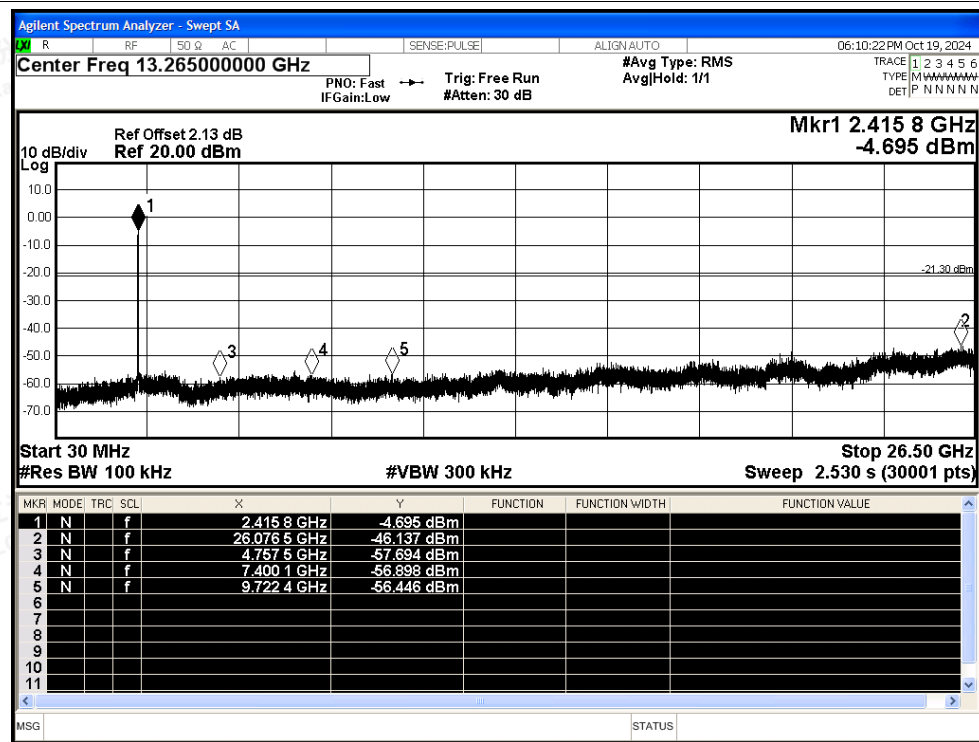




Tx. Spurious NVNT g 2412MHz Ant2 Ref

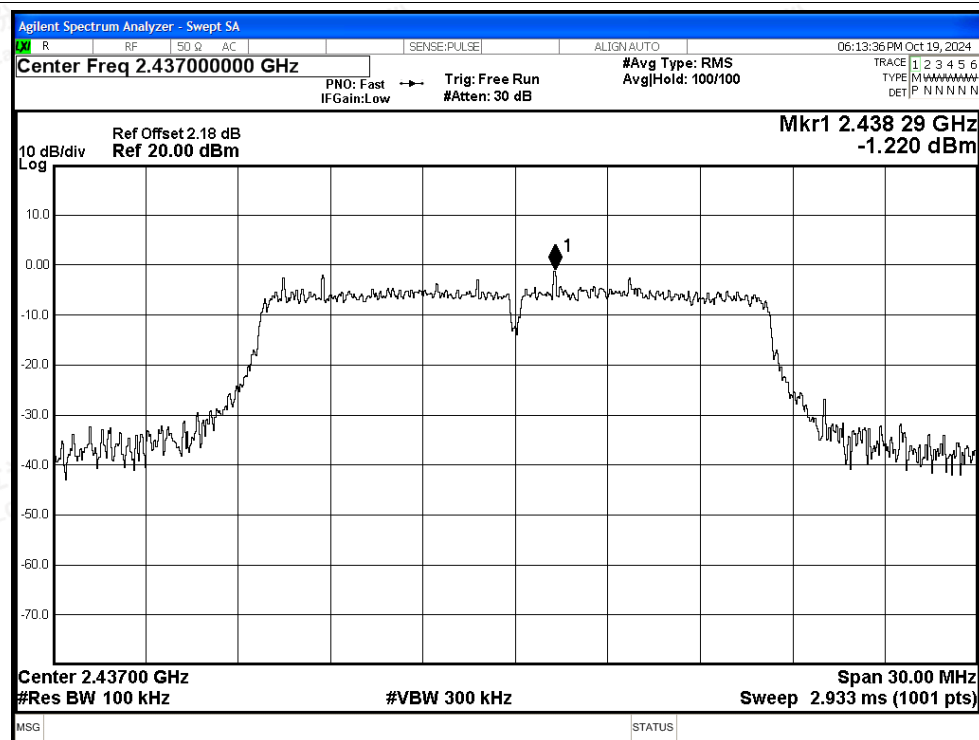


Tx. Spurious NVNT g 2412MHz Ant2 Emission

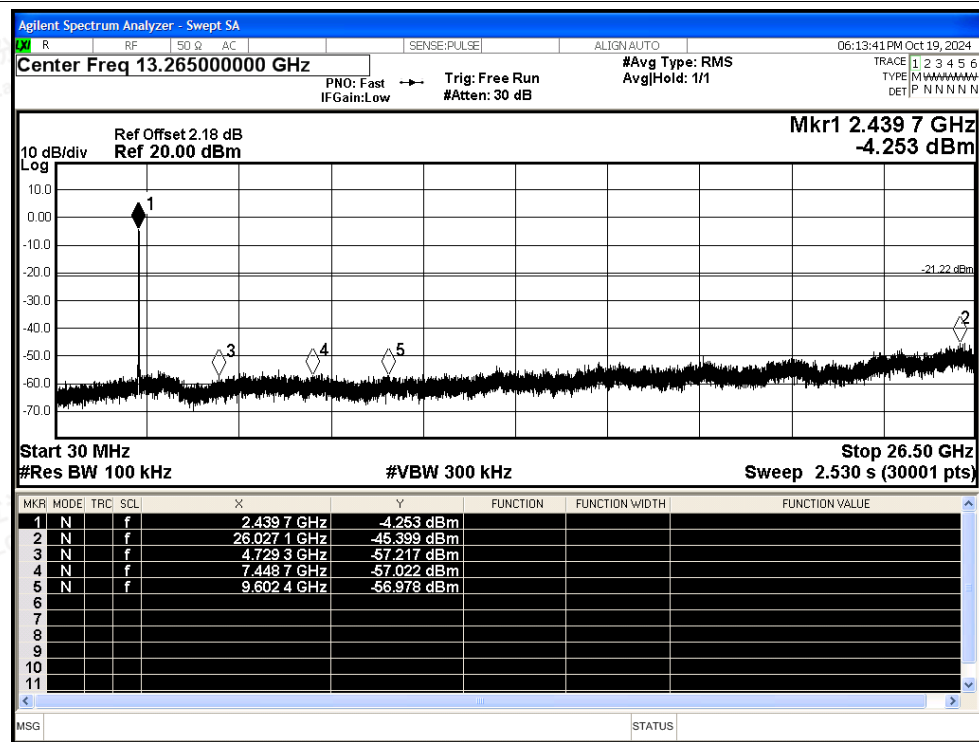




Tx. Spurious NVNT g 2437MHz Ant2 Ref



Tx. Spurious NVNT g 2437MHz Ant2 Emission



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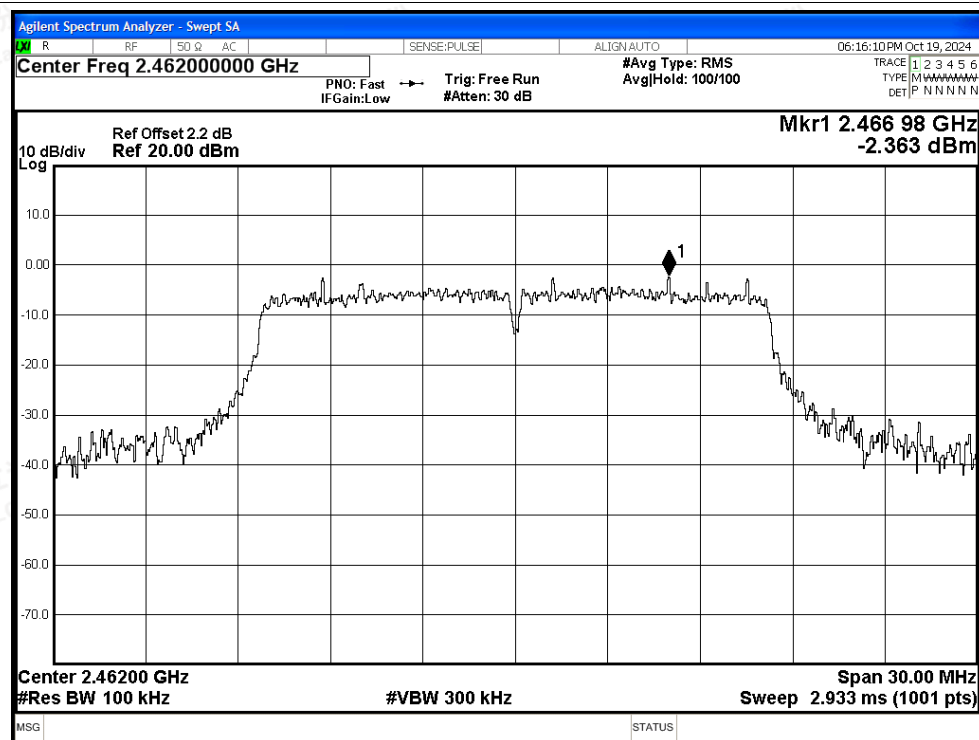
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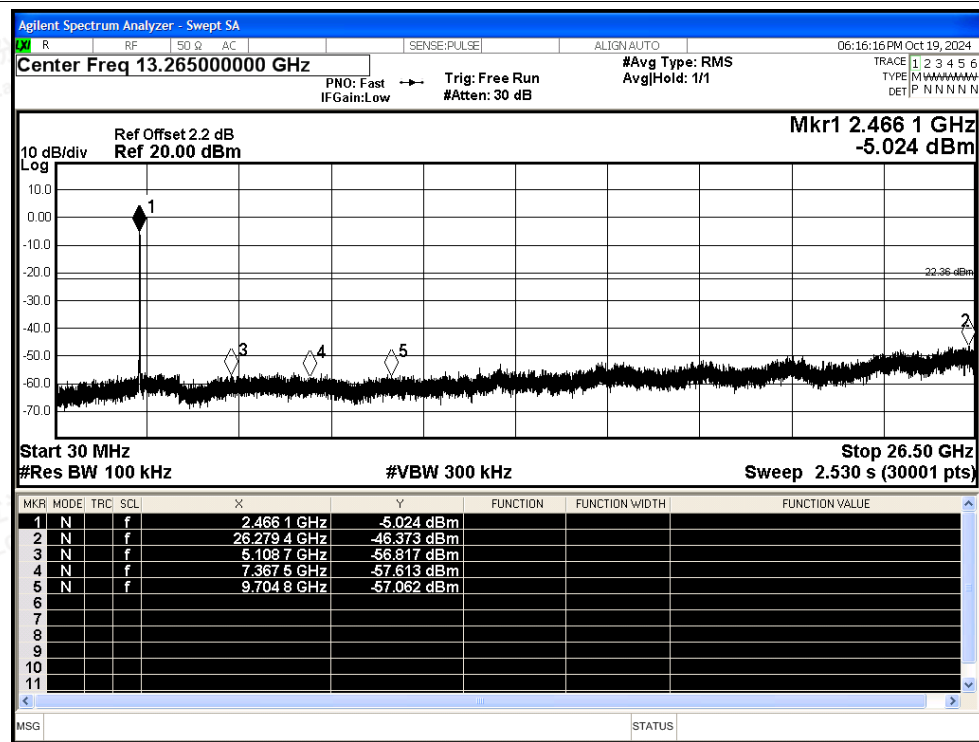
Scan code to check authenticity



Tx. Spurious NVNT g 2462MHz Ant2 Ref

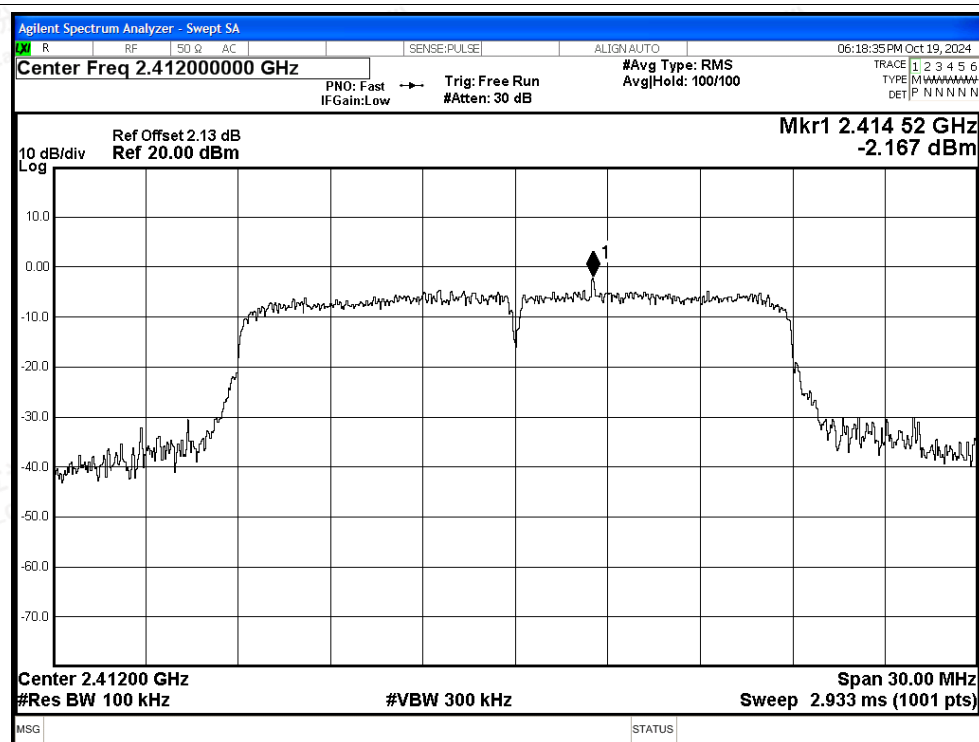


Tx. Spurious NVNT g 2462MHz Ant2 Emission

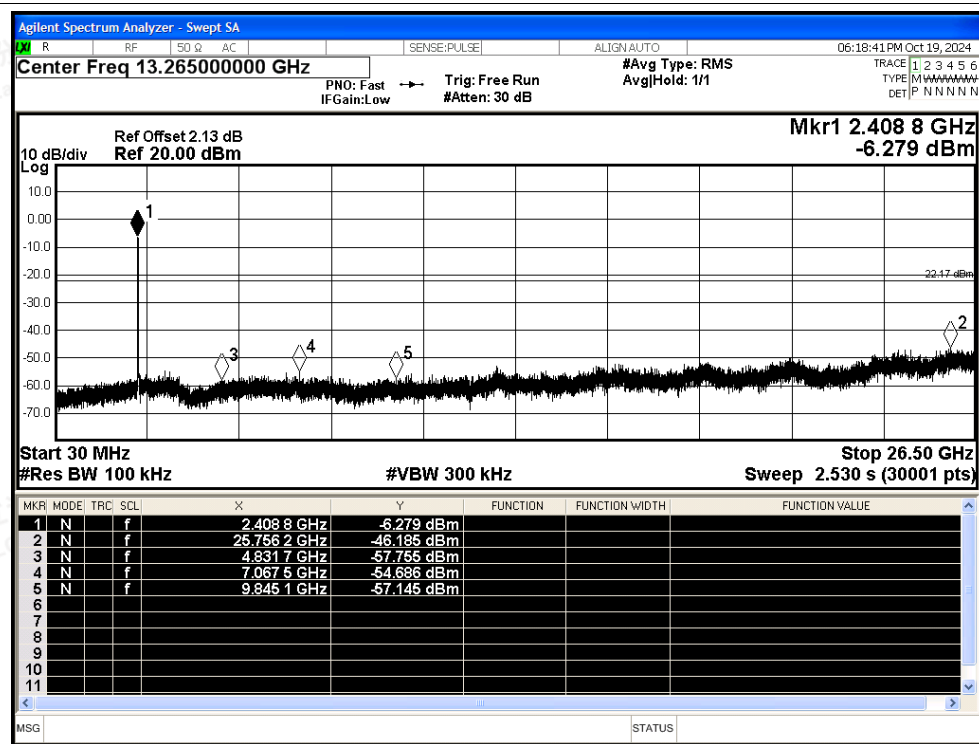




Tx. Spurious NVNT n20 2412MHz Ant2 Ref



Tx. Spurious NVNT n20 2412MHz Ant2 Emission



Shenzhen LCS Compliance Testing Laboratory Ltd.

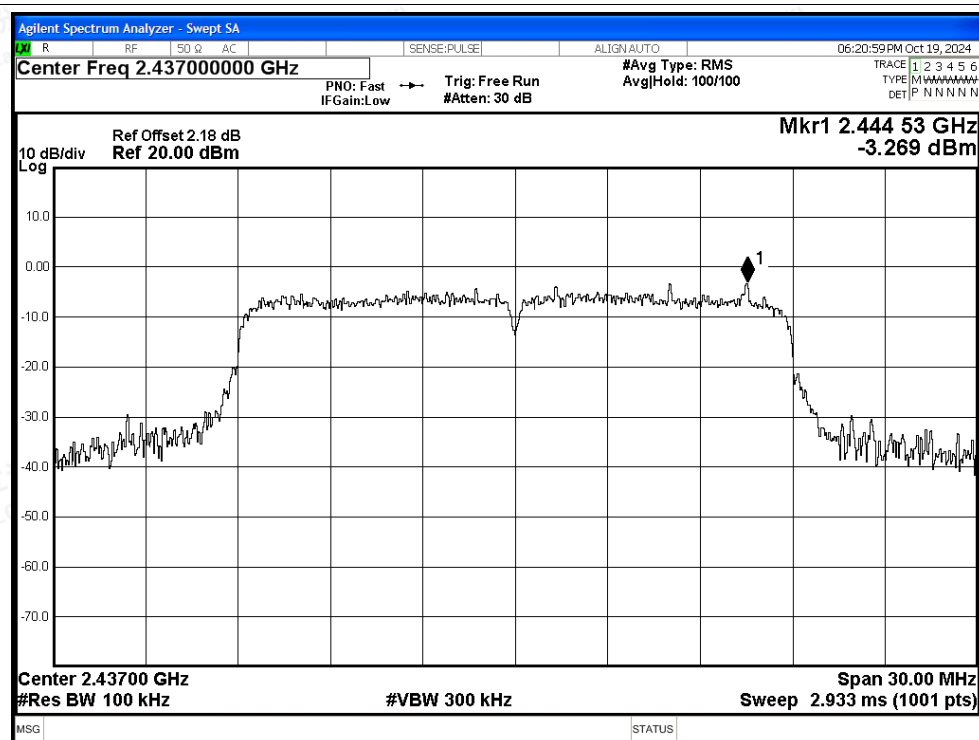
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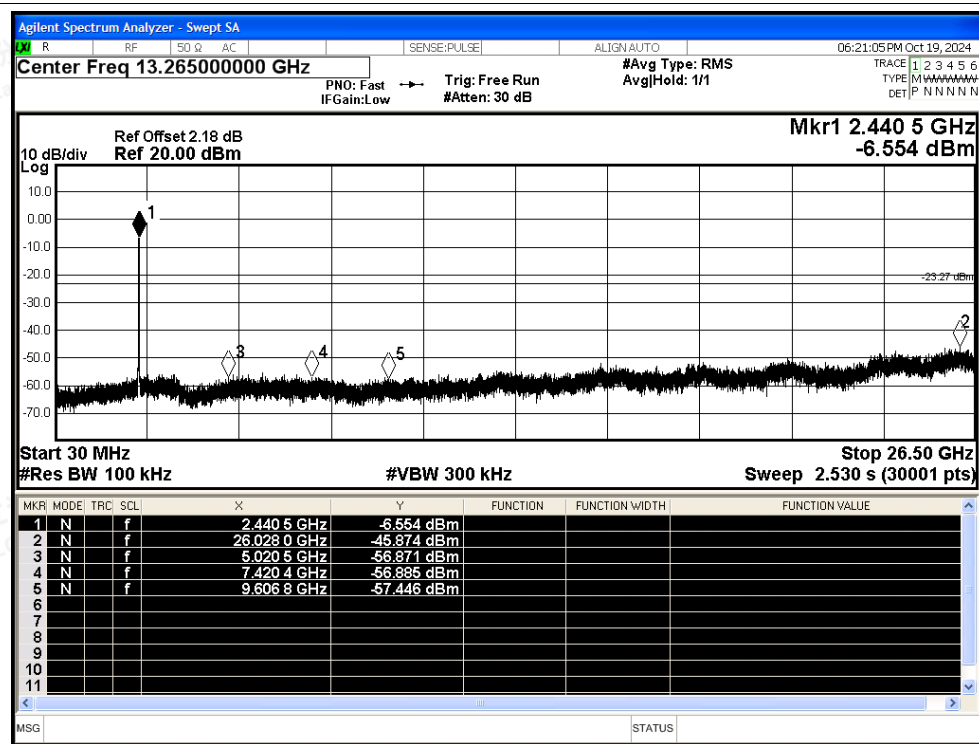
Scan code to check authenticity



Tx. Spurious NVNT n20 2437MHz Ant2 Ref

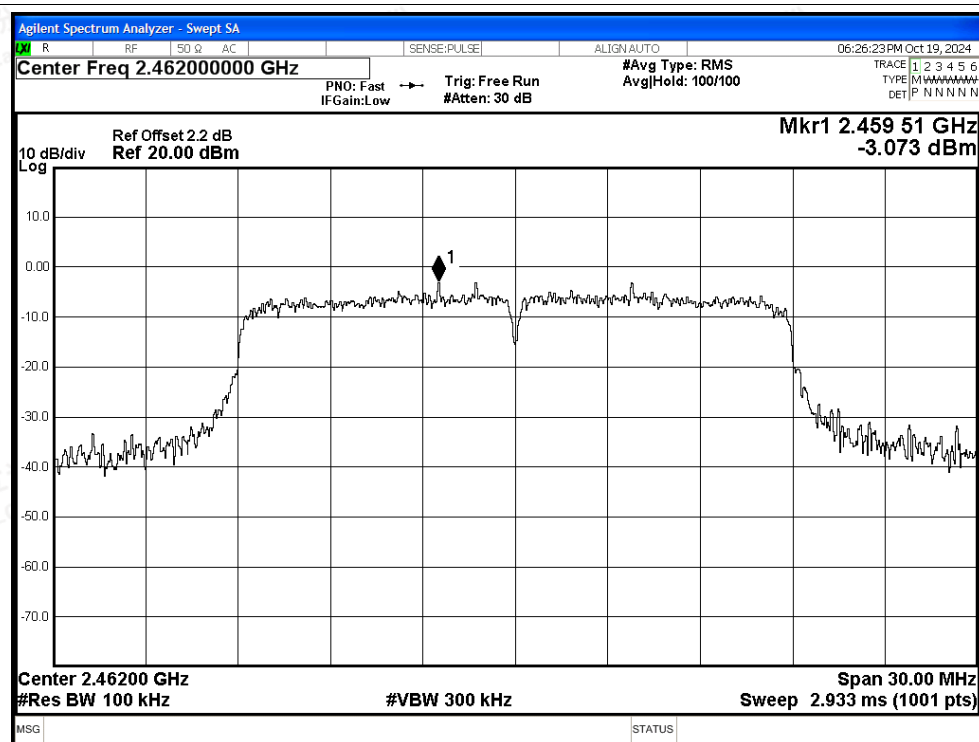


Tx. Spurious NVNT n20 2437MHz Ant2 Emission

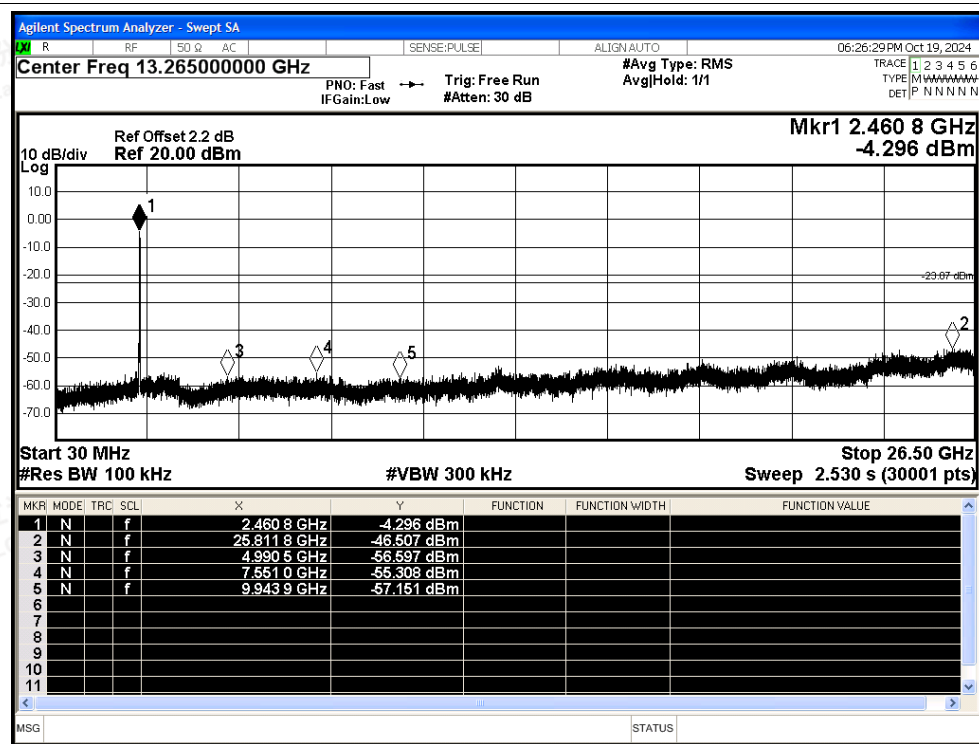




Tx. Spurious NVNT n20 2462MHz Ant2 Ref



Tx. Spurious NVNT n20 2462MHz Ant2 Emission



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B.6 Duty Cycle

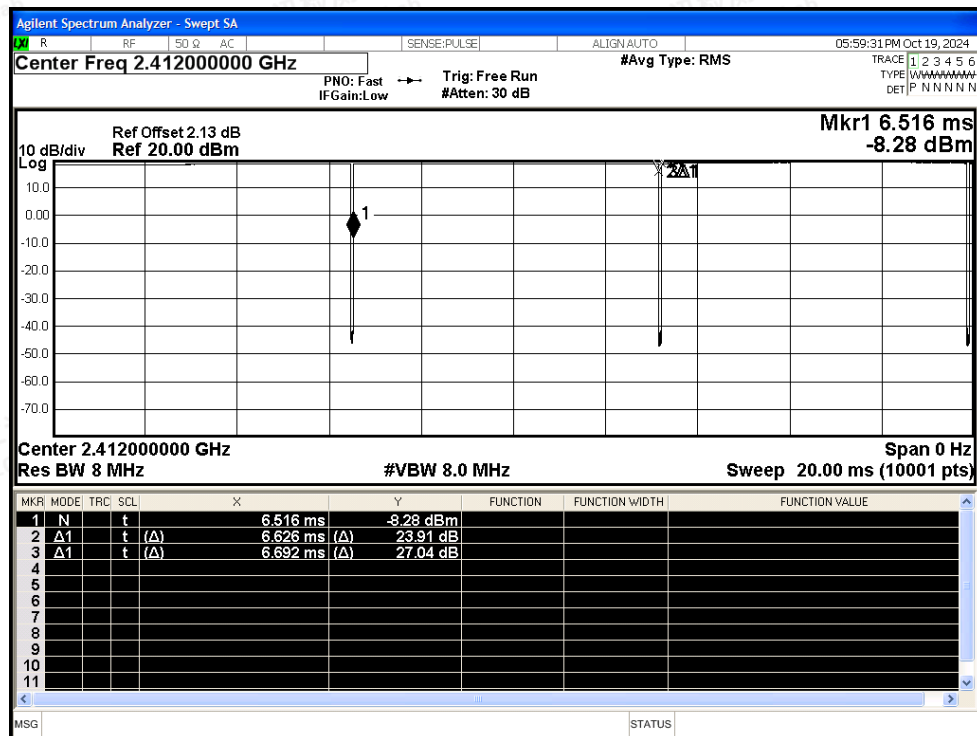
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	b	2412	Ant2	99.01	0	0.15
NVNT	b	2437	Ant2	99.16	0	0.15
NVNT	b	2462	Ant2	99.13	0	0.15
NVNT	g	2412	Ant2	97.75	0.1	0.37
NVNT	g	2437	Ant2	88.98	0.51	0.37
NVNT	g	2462	Ant2	97.75	0.1	0.37
NVNT	n20	2412	Ant2	97.25	0.12	0.44
NVNT	n20	2437	Ant2	97.25	0.12	0.44
NVNT	n20	2462	Ant2	97.25	0.12	0.44



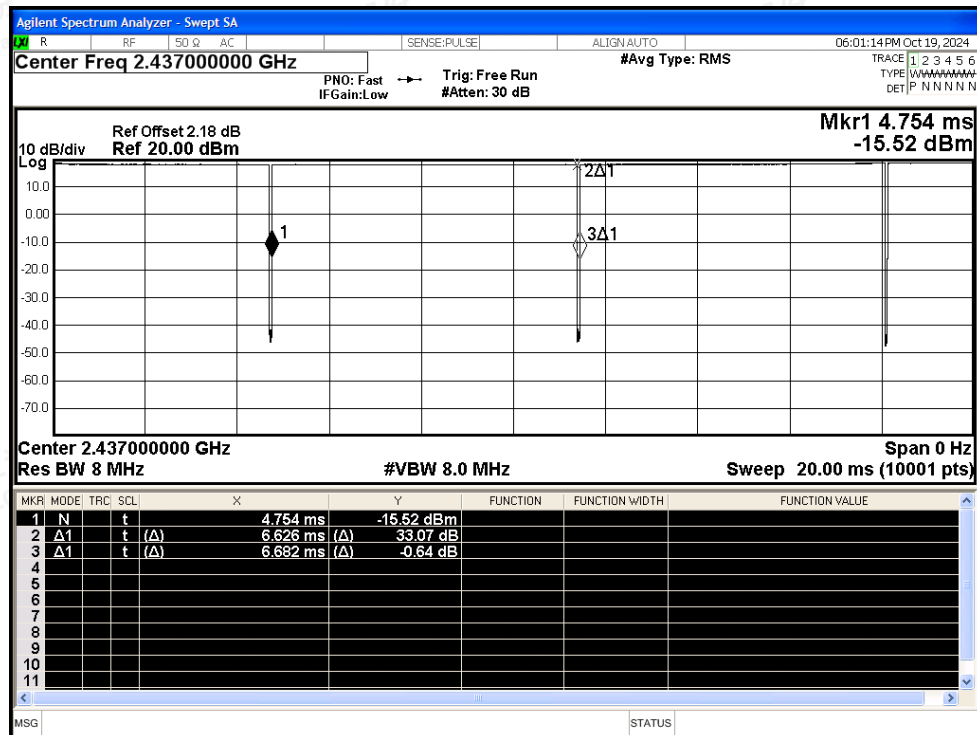


Test Graphs

Duty Cycle NVNT b 2412MHz Ant2

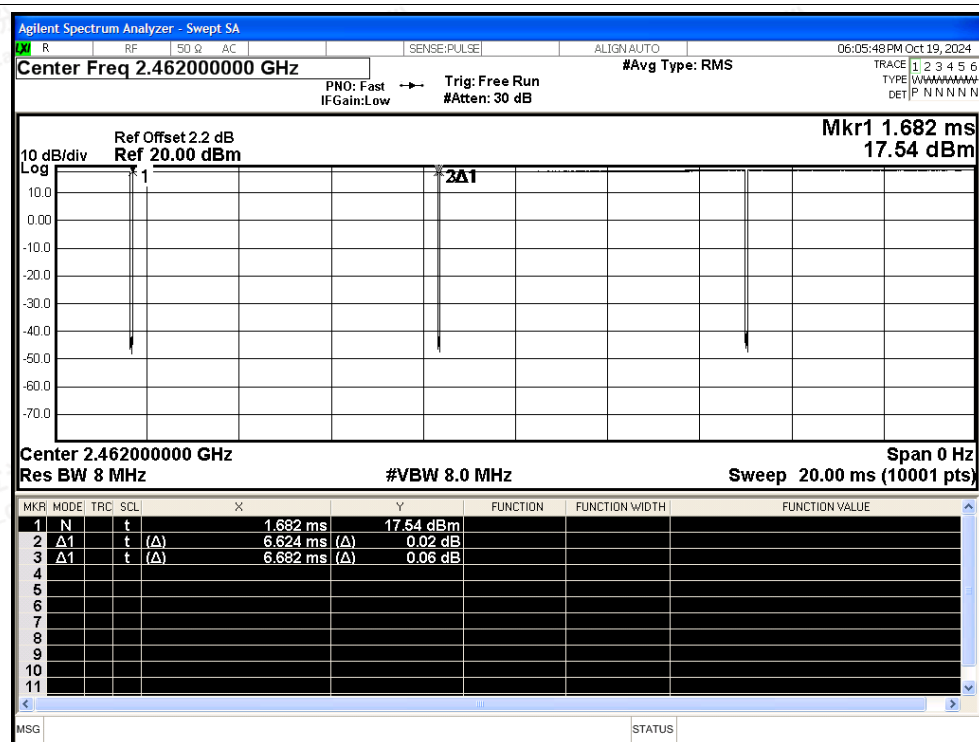


Duty Cycle NVNT b 2437MHz Ant2

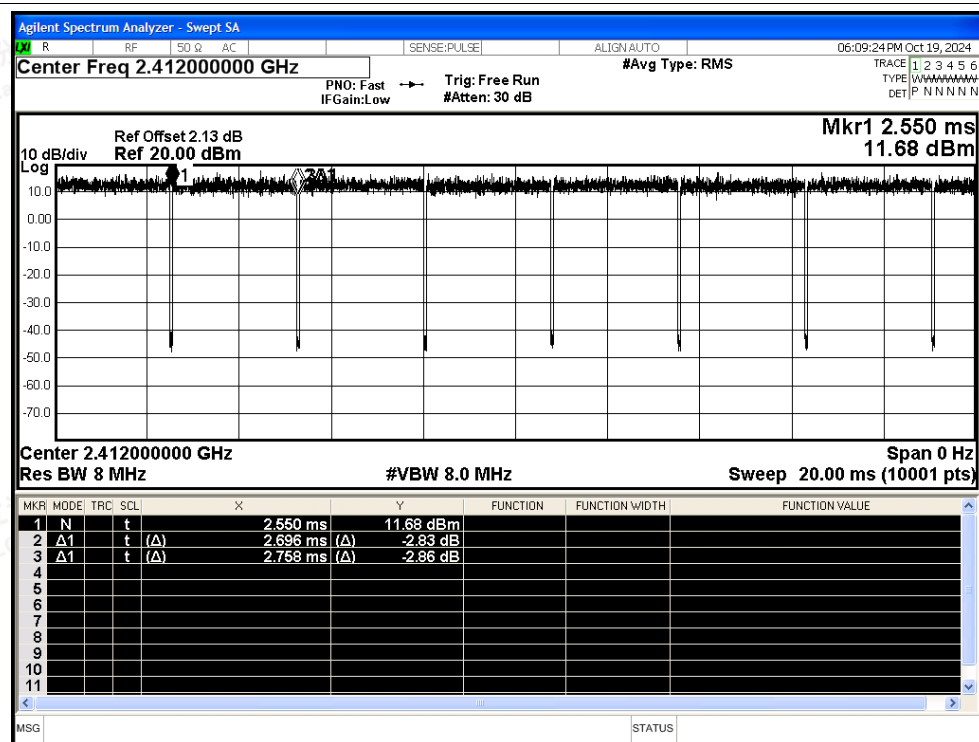




Duty Cycle NVNT b 2462MHz Ant2



Duty Cycle NVNT g 2412MHz Ant2



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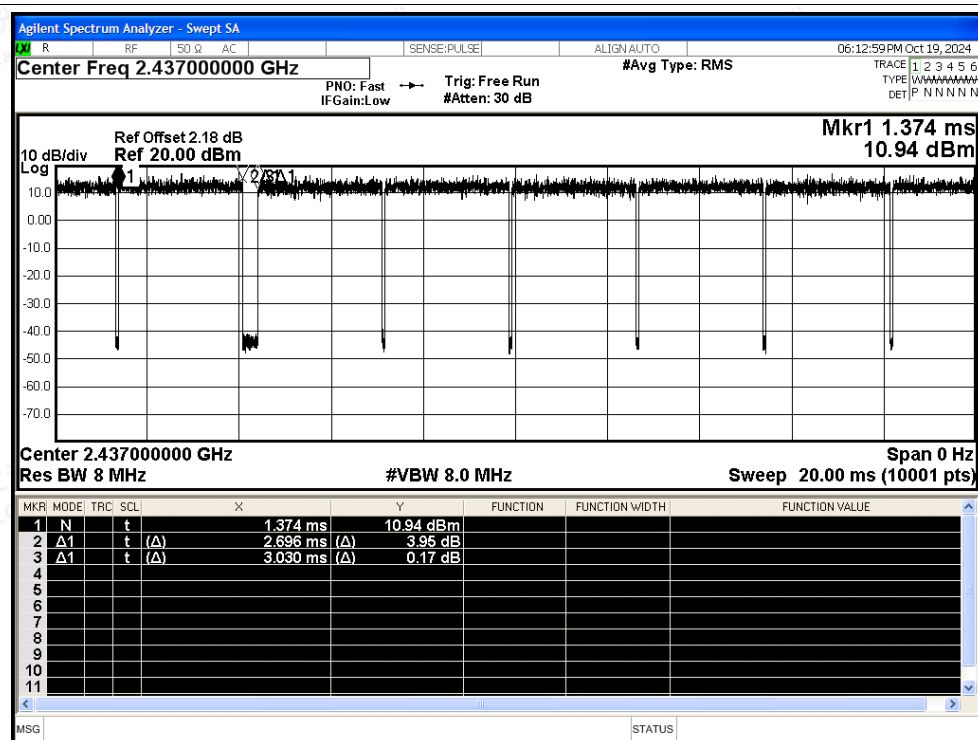
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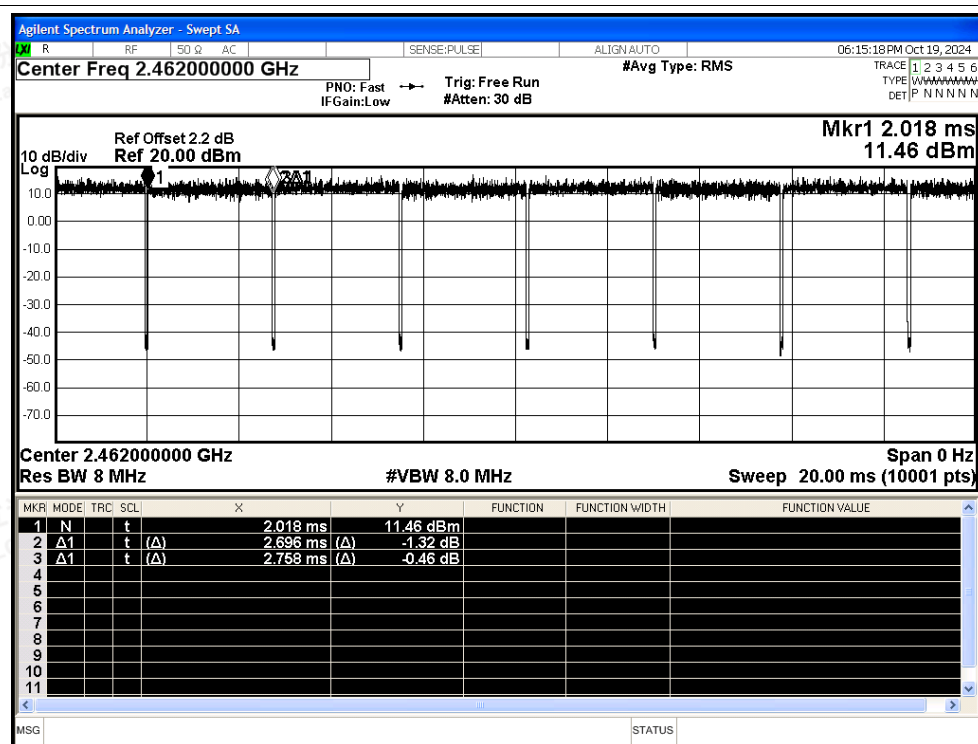
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Duty Cycle NVNT g 2437MHz Ant2



Duty Cycle NVNT g 2462MHz Ant2



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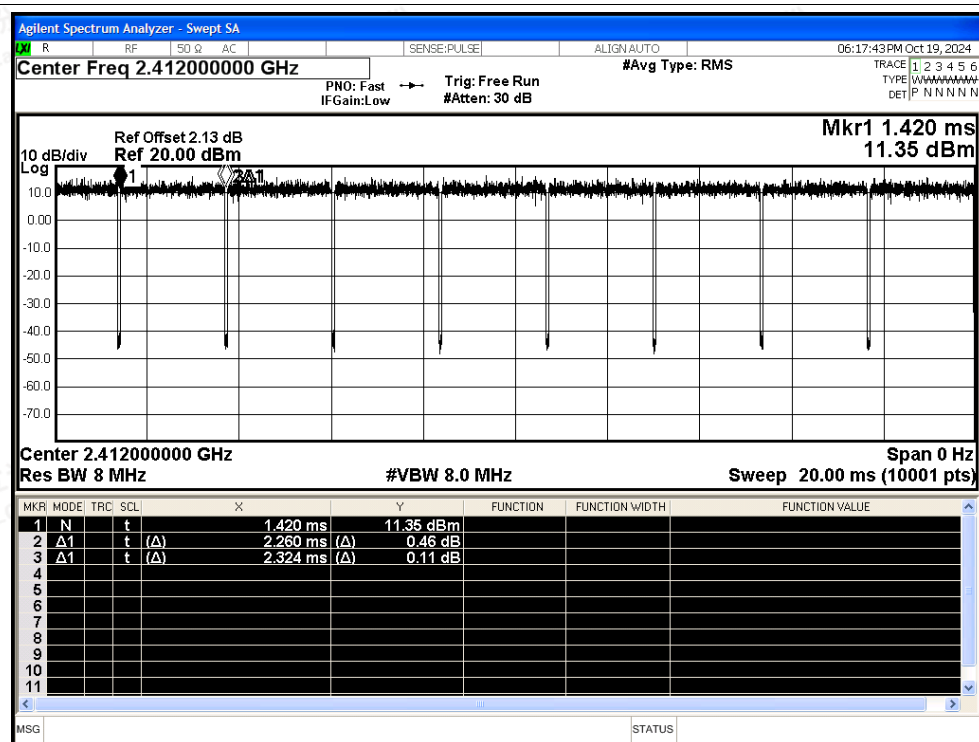
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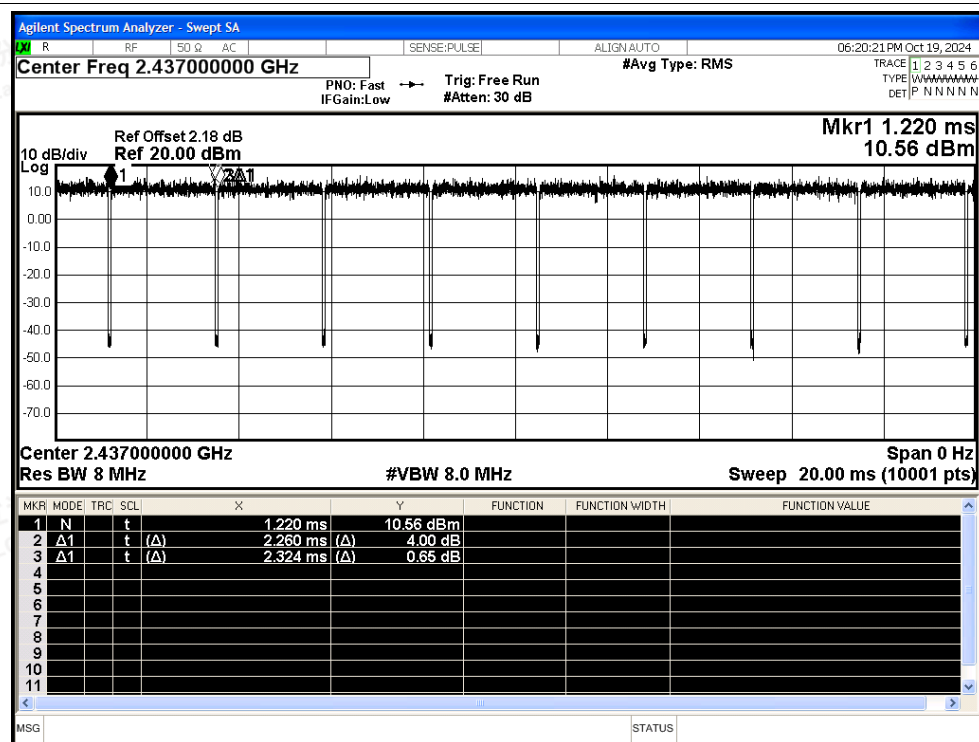
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Duty Cycle NVNT n20 2412MHz Ant2



Duty Cycle NVNT n20 2437MHz Ant2

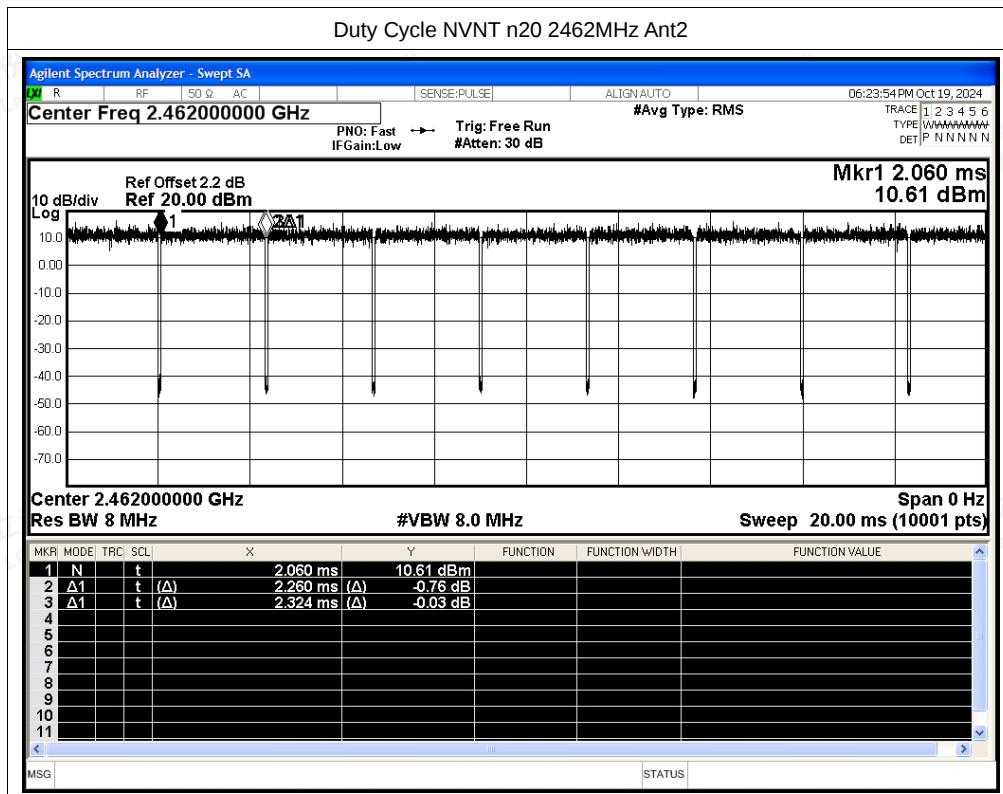


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B.7 Restrict Band

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	Ant2	2310	-51.28	2.82	-	46.8	Peak	74	Pass
NVNT	b	2412	Ant2	2310	-58.3	2.82	0	39.78	Average	54	Pass
NVNT	b	2412	Ant2	2389.092	-46.43	2.82	-	51.65	Peak	74	Pass
NVNT	b	2412	Ant2	2389.911	-55.86	2.82	0	42.22	Average	54	Pass
NVNT	b	2412	Ant2	2390	-48.56	2.82	-	49.52	Peak	74	Pass
NVNT	b	2412	Ant2	2390	-55.72	2.82	0	42.36	Average	54	Pass
NVNT	b	2462	Ant2	2483.5	-46.6	2.82	-	51.48	Peak	74	Pass
NVNT	b	2462	Ant2	2483.5	-55.1	2.82	0	42.98	Average	54	Pass
NVNT	b	2462	Ant2	2483.676	-44.49	2.82	-	53.59	Peak	74	Pass
NVNT	b	2462	Ant2	2484.047	-53.49	2.82	0	44.59	Average	54	Pass
NVNT	b	2462	Ant2	2500	-48.68	2.82	-	49.4	Peak	74	Pass
NVNT	b	2462	Ant2	2500	-57.11	2.82	0	40.97	Average	54	Pass
NVNT	g	2412	Ant2	2310	-51.16	2.82	-	46.92	Peak	74	Pass
NVNT	g	2412	Ant2	2310	-58.52	2.82	0.1	39.66	Average	54	Pass
NVNT	g	2412	Ant2	2389.677	-34.77	2.82	-	63.31	Peak	74	Pass
NVNT	g	2412	Ant2	2388.858	-53.11	2.82	0.1	45.07	Average	54	Pass
NVNT	g	2412	Ant2	2390	-35.69	2.82	-	62.39	Peak	74	Pass
NVNT	g	2412	Ant2	2390	-52.81	2.82	0.1	45.37	Average	54	Pass
NVNT	g	2462	Ant2	2483.5	-40.37	2.82	-	57.71	Peak	74	Pass
NVNT	g	2462	Ant2	2483.5	-52.72	2.82	0.1	45.46	Average	54	Pass
NVNT	g	2462	Ant2	2484.259	-37.47	2.82	-	60.61	Peak	74	Pass
NVNT	g	2462	Ant2	2483.517	-52.72	2.82	0.1	45.46	Average	54	Pass
NVNT	g	2462	Ant2	2500	-50.76	2.82	-	47.32	Peak	74	Pass
NVNT	g	2462	Ant2	2500	-57.98	2.82	0.1	40.2	Average	54	Pass
NVNT	n20	2412	Ant2	2310	-49.33	2.82	-	48.75	Peak	74	Pass
NVNT	n20	2412	Ant2	2310	-58.87	2.82	0.12	39.33	Average	54	Pass
NVNT	n20	2412	Ant2	2389.911	-38.85	2.82	-	59.23	Peak	74	Pass
NVNT	n20	2412	Ant2	2389.911	-53.28	2.82	0.12	44.92	Average	54	Pass
NVNT	n20	2412	Ant2	2390	-39.86	2.82	-	58.22	Peak	74	Pass
NVNT	n20	2412	Ant2	2390	-52.96	2.82	0.12	45.24	Average	54	Pass
NVNT	n20	2462	Ant2	2483.5	-41.56	2.82	-	56.52	Peak	74	Pass
NVNT	n20	2462	Ant2	2483.5	-52.2	2.82	0.12	46	Average	54	Pass
NVNT	n20	2462	Ant2	2483.623	-35.69	2.82	-	62.39	Peak	74	Pass
NVNT	n20	2462	Ant2	2483.517	-52.2	2.82	0.12	46	Average	54	Pass
NVNT	n20	2462	Ant2	2500	-49.32	2.82	-	48.76	Peak	74	Pass
NVNT	n20	2462	Ant2	2500	-58.22	2.82	0.12	39.98	Average	54	Pass



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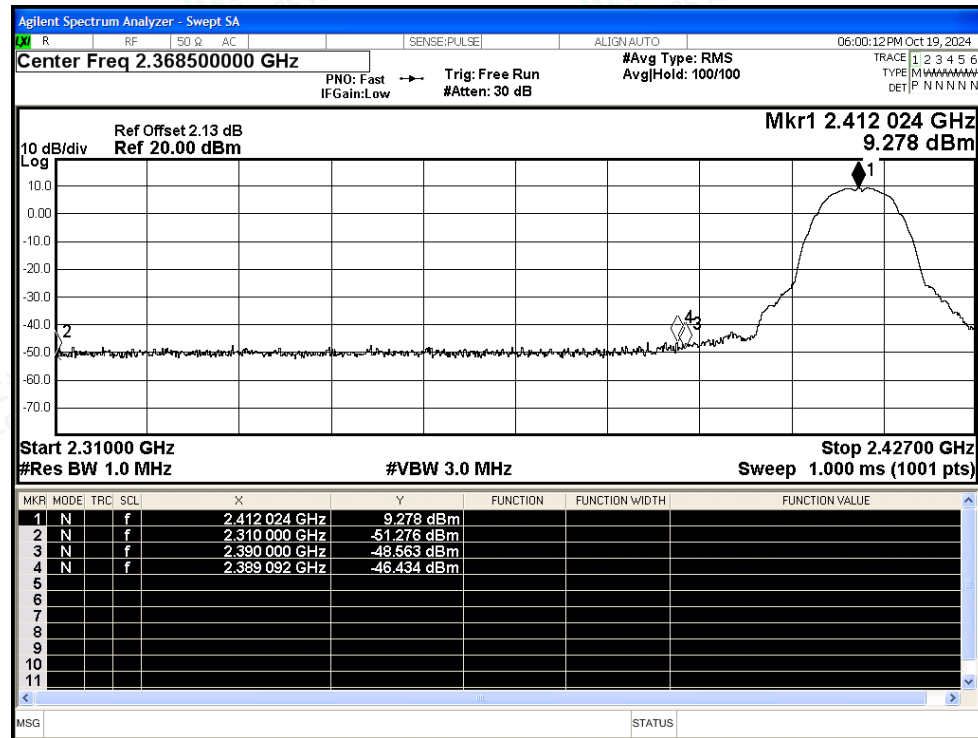
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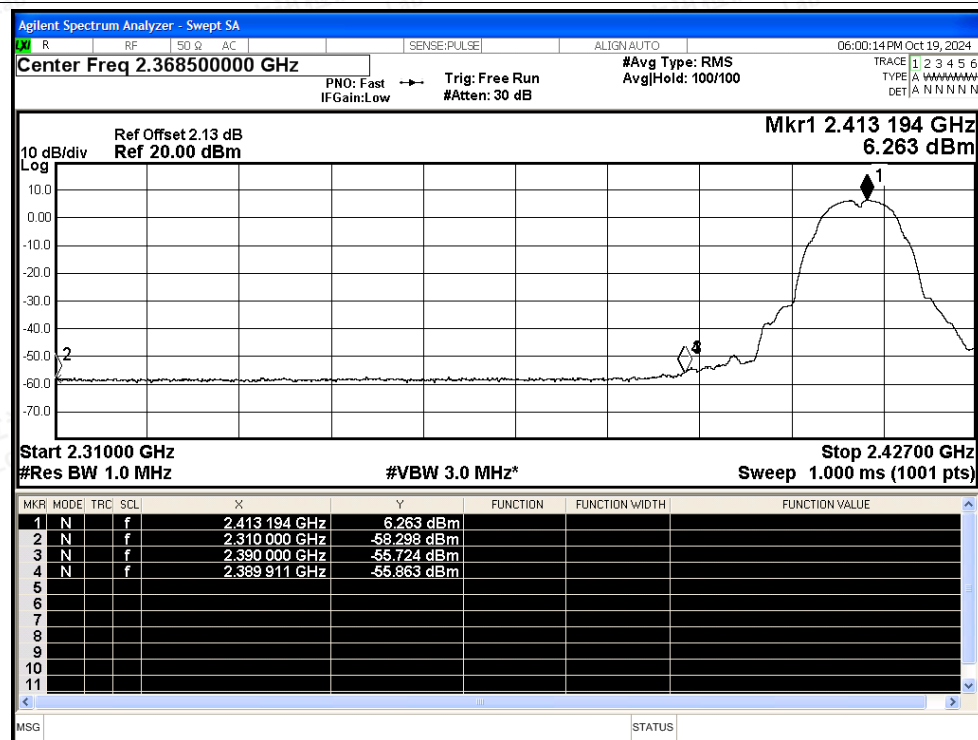


Test Graphs

Restrict Band NVNT b 2412MHz Ant2 Peak

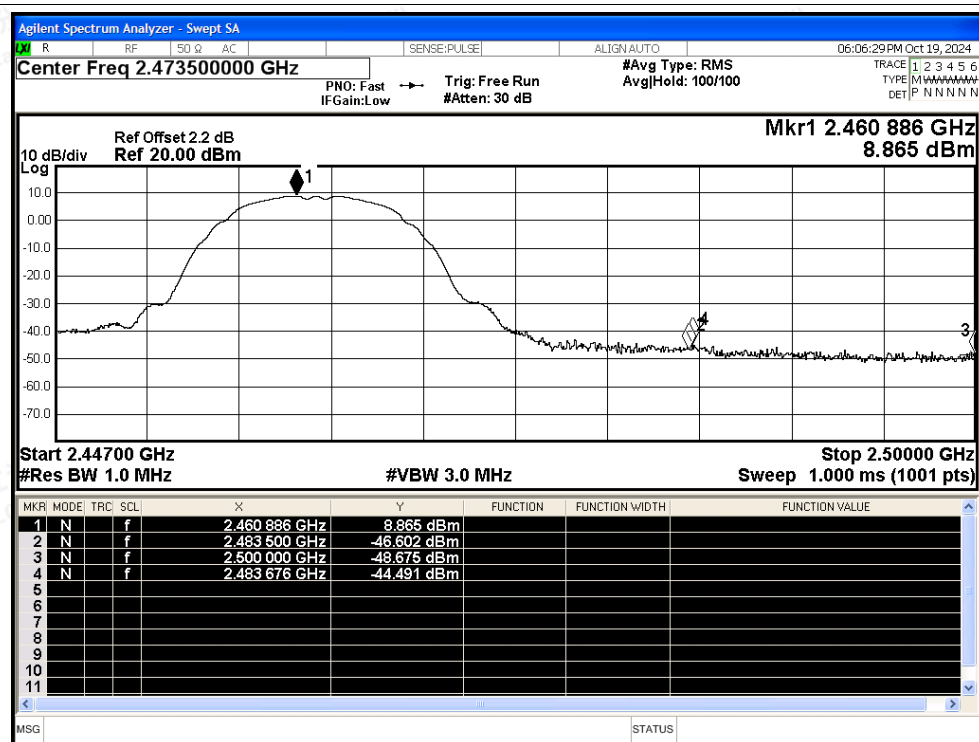


Restrict Band NVNT b 2412MHz Ant2 Average

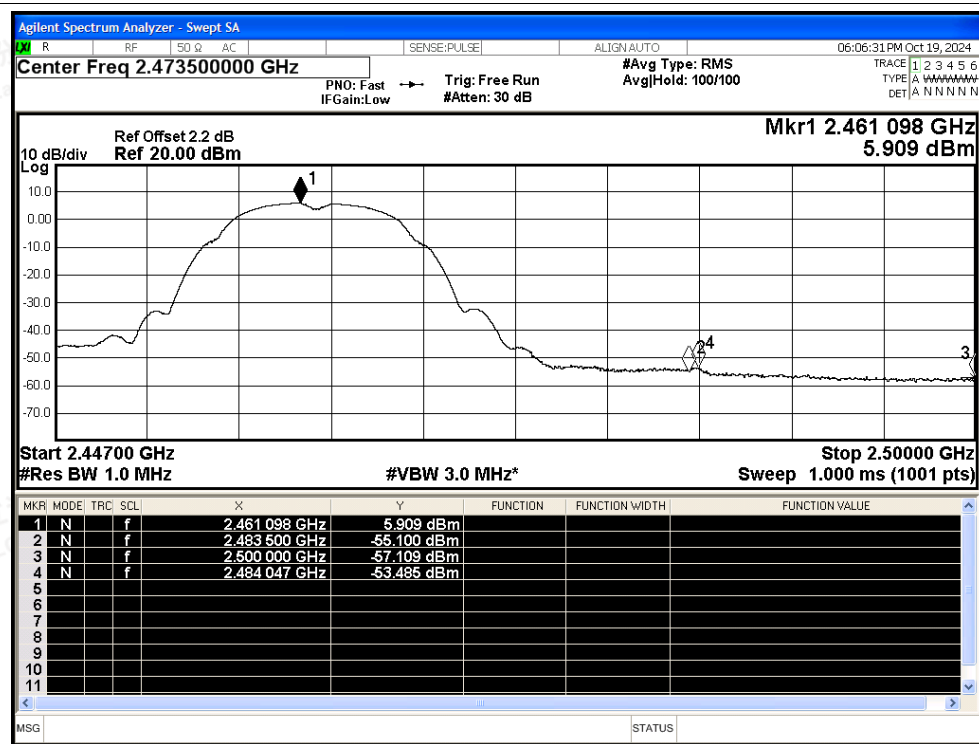




Restrict Band NVNT b 2462MHz Ant2 Peak

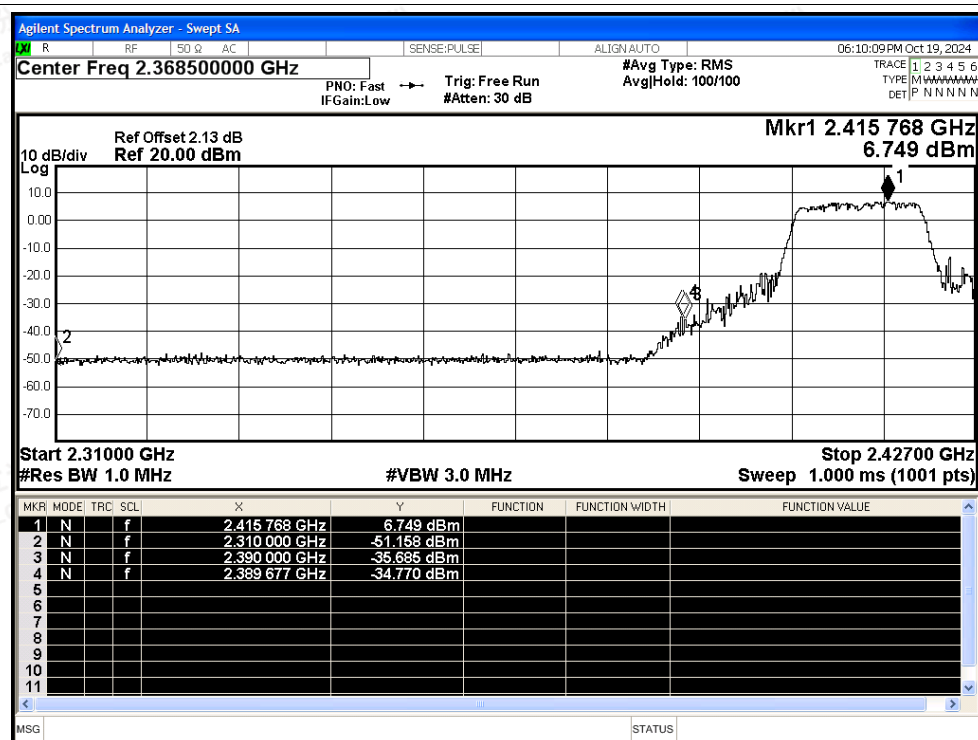


Restrict Band NVNT b 2462MHz Ant2 Average

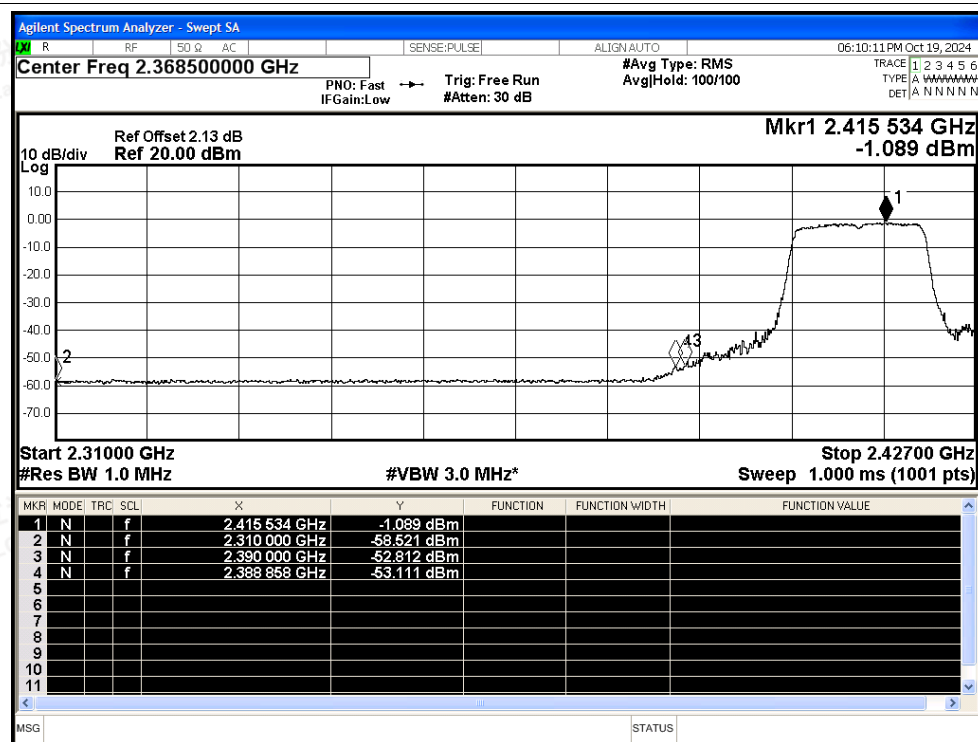




Restrict Band NVNT g 2412MHz Ant2 Peak



Restrict Band NVNT g 2412MHz Ant2 Average



Shenzhen LCS Compliance Testing Laboratory Ltd.

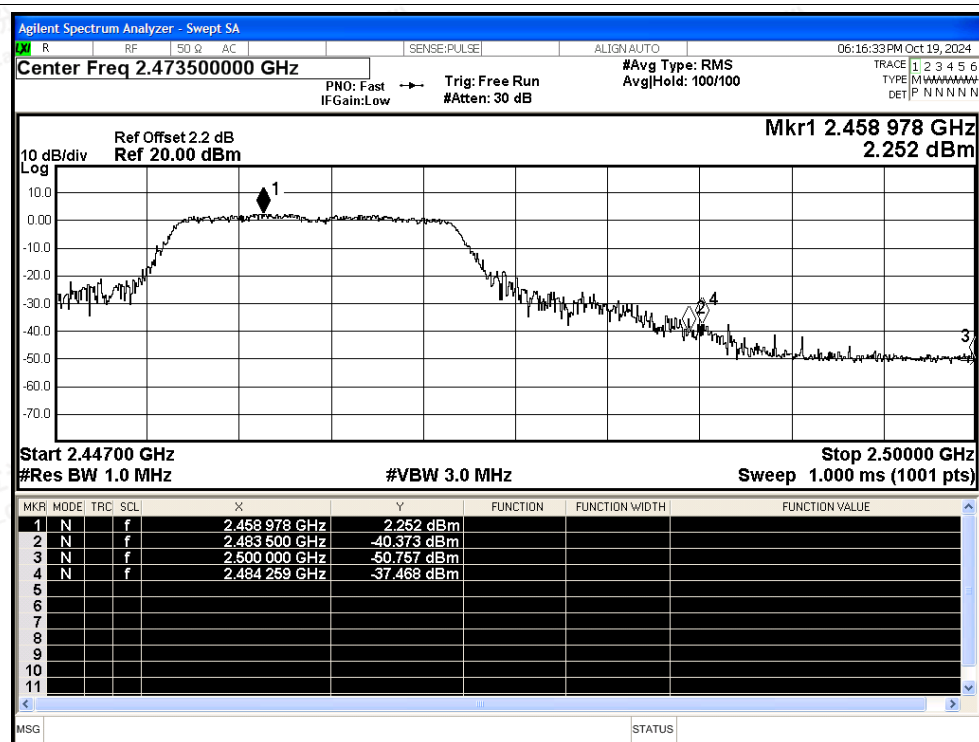
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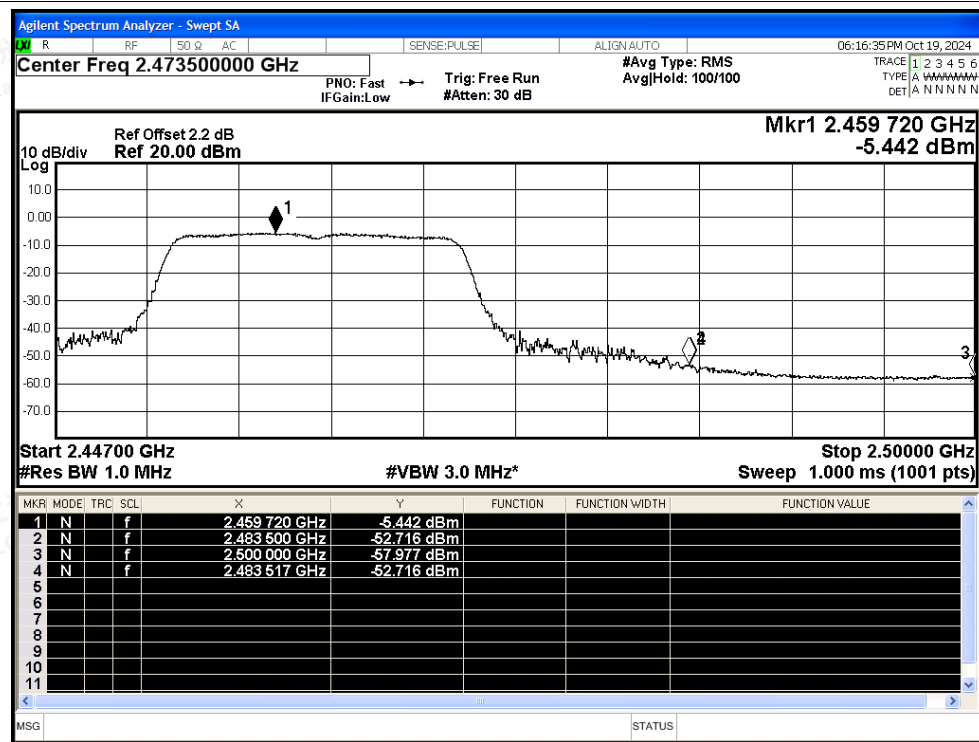
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Restrict Band NVNT g 2462MHz Ant2 Peak

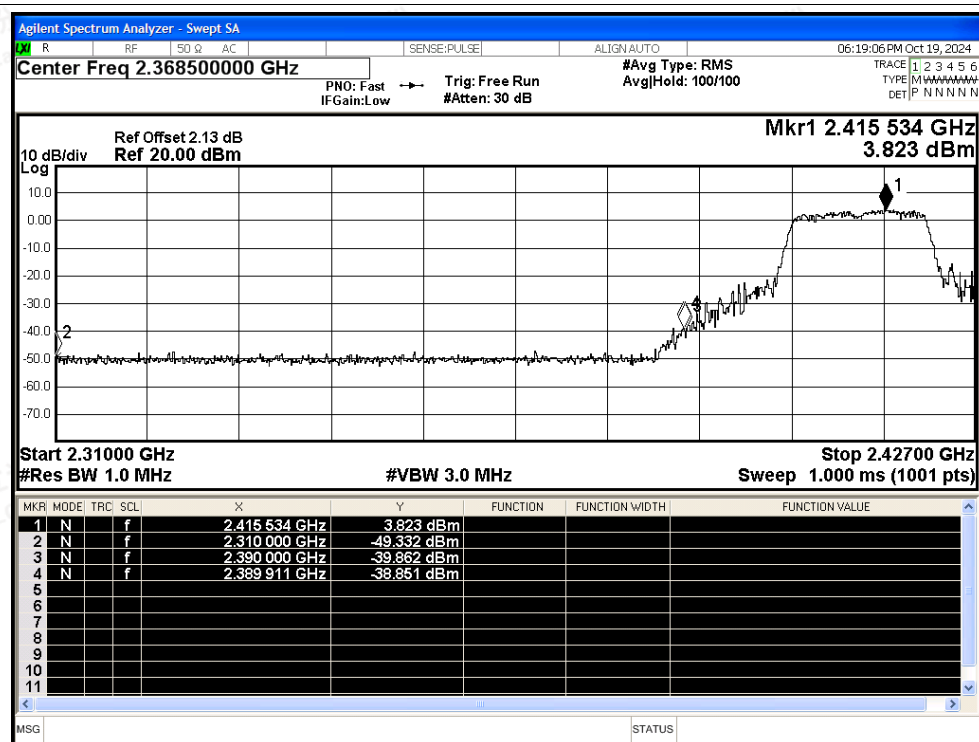


Restrict Band NVNT g 2462MHz Ant2 Average

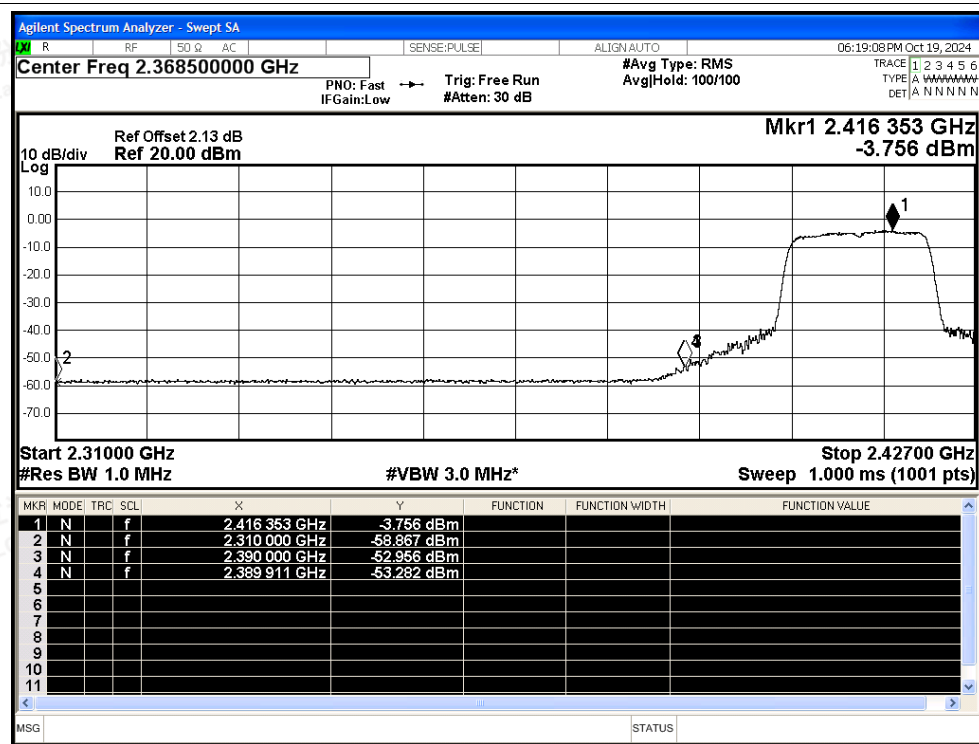




Restrict Band NVNT n20 2412MHz Ant2 Peak

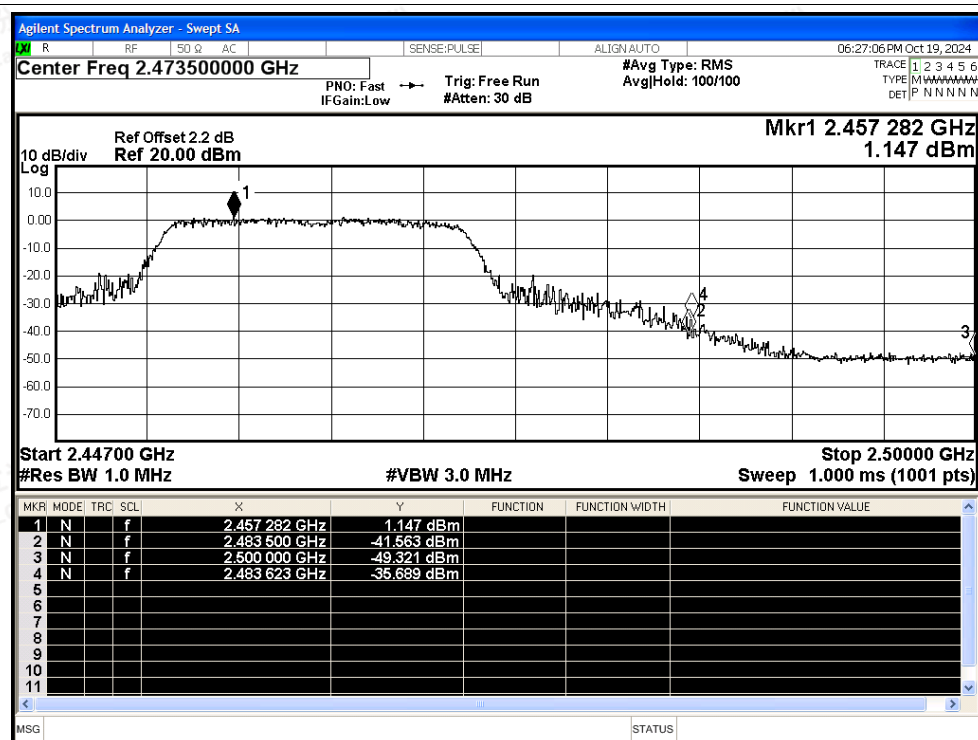


Restrict Band NVNT n20 2412MHz Ant2 Average

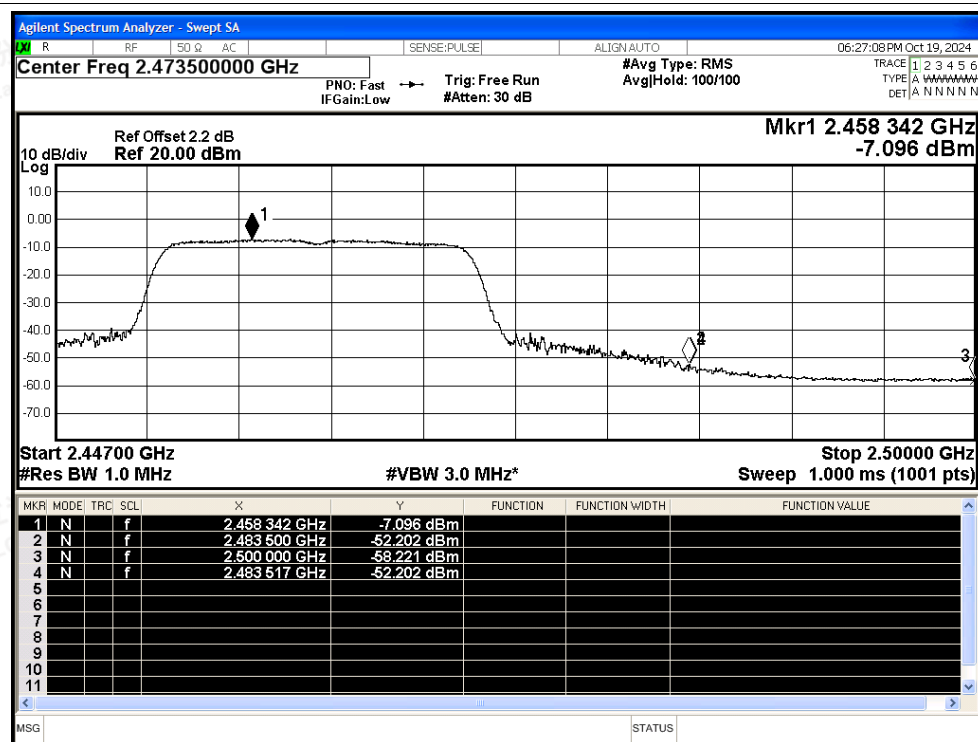




Restrict Band NVNT n20 2462MHz Ant2 Peak



Restrict Band NVNT n20 2462MHz Ant2 Average



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