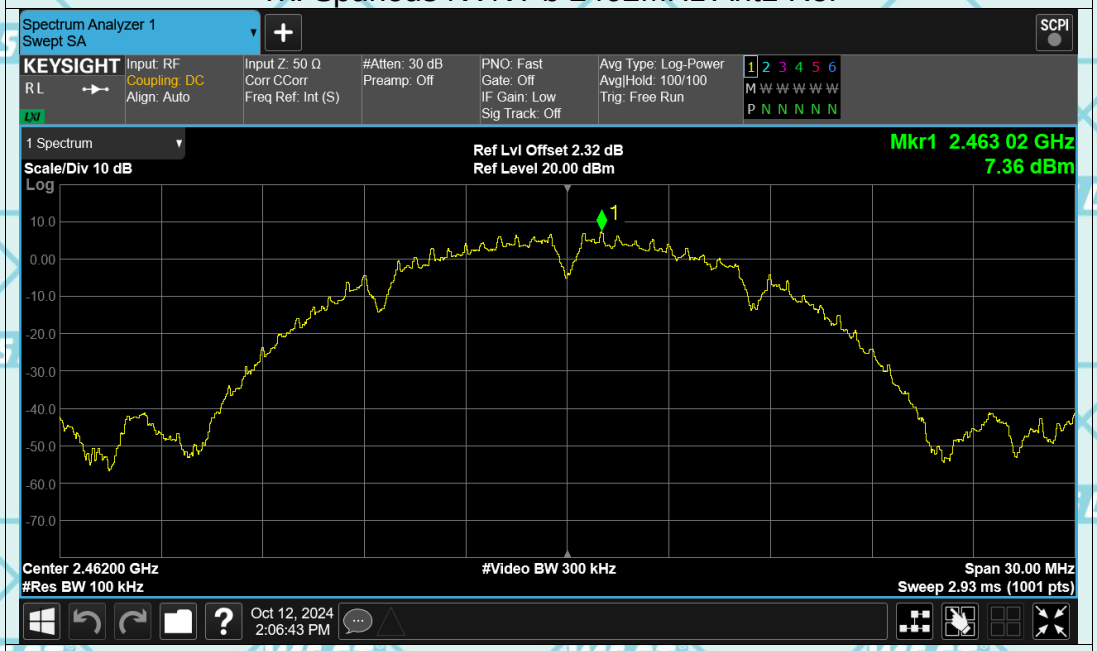
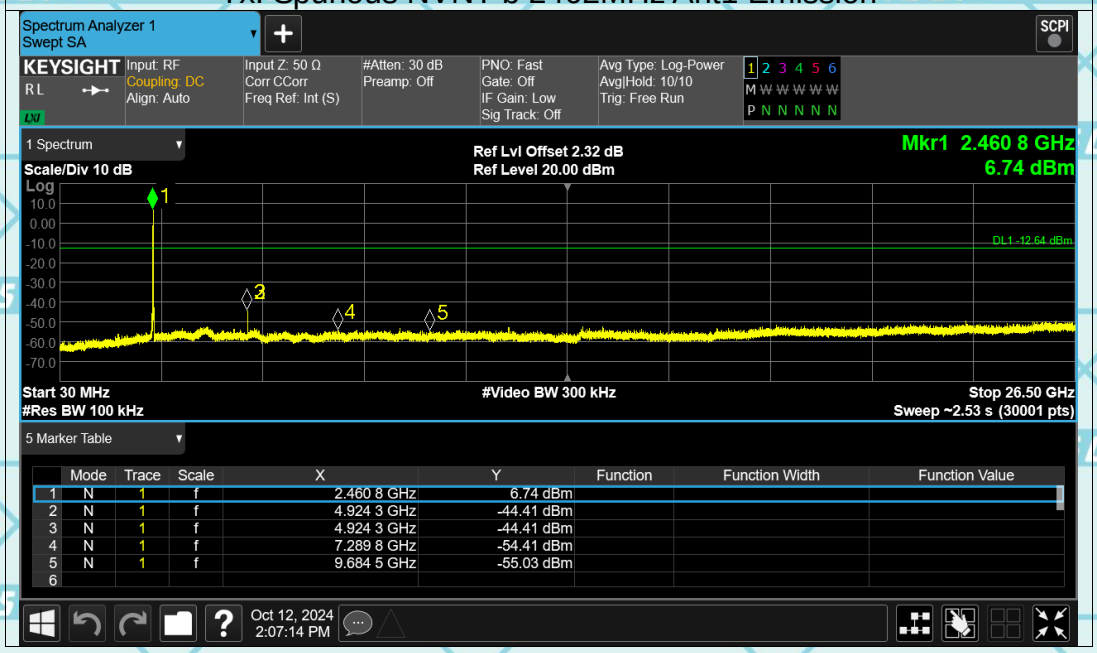
Tx. Spurious NVNT b 2462MHz Ant1 Ref

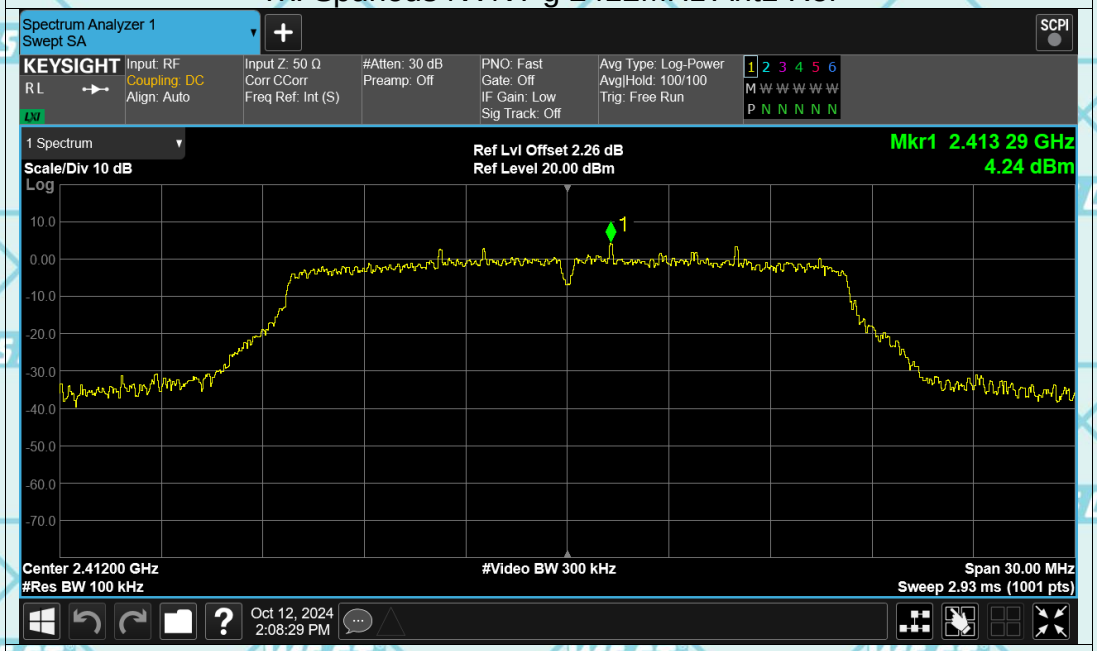


Tx. Spurious NVNT b 2462MHz Ant1 Emission

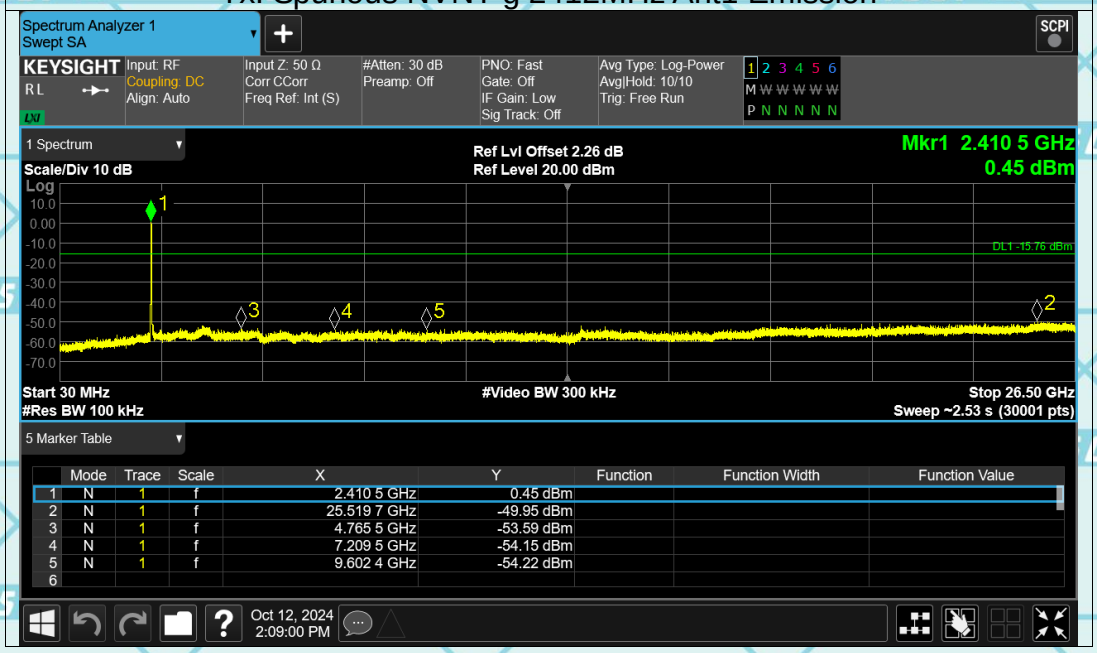


	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	2.460 8 GHz	6.74 dBm			
2	N	1	f	4.924 3 GHz	-44.41 dBm			
3	N	1	f	4.924 3 GHz	-44.41 dBm			
4	N	1	f	7.289 8 GHz	-54.41 dBm			
5	N	1	f	9.684 5 GHz	-55.03 dBm			
6								

Tx. Spurious NVNT g 2412MHz Ant1 Ref

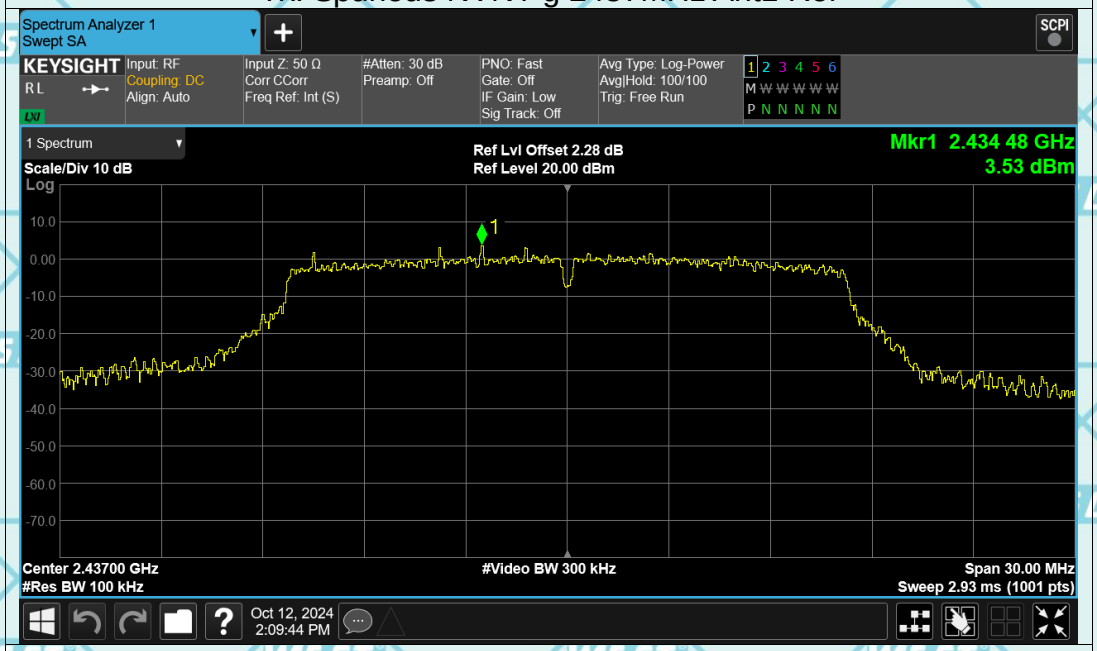


Tx. Spurious NVNT g 2412MHz Ant1 Emission

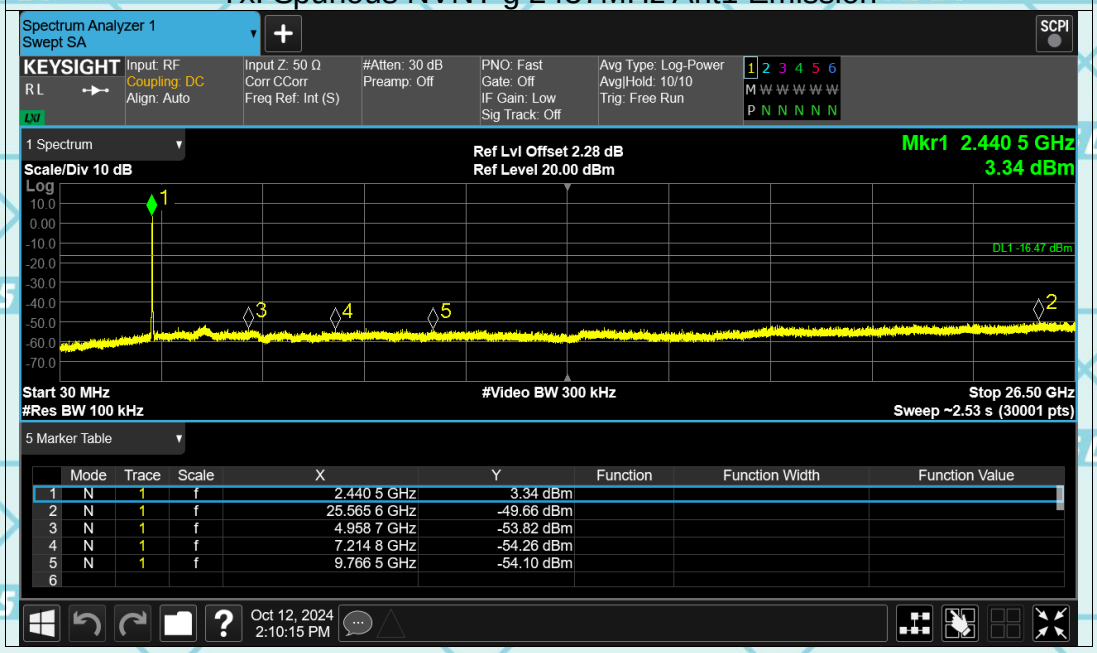


	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	2.410 5 GHz	0.45 dBm			
2	N	1	f	25.519 7 GHz	-49.95 dBm			
3	N	1	f	4.765 5 GHz	-53.59 dBm			
4	N	1	f	7.209 5 GHz	-54.15 dBm			
5	N	1	f	9.602 4 GHz	-54.22 dBm			
6								

Tx. Spurious NVNT g 2437MHz Ant1 Ref

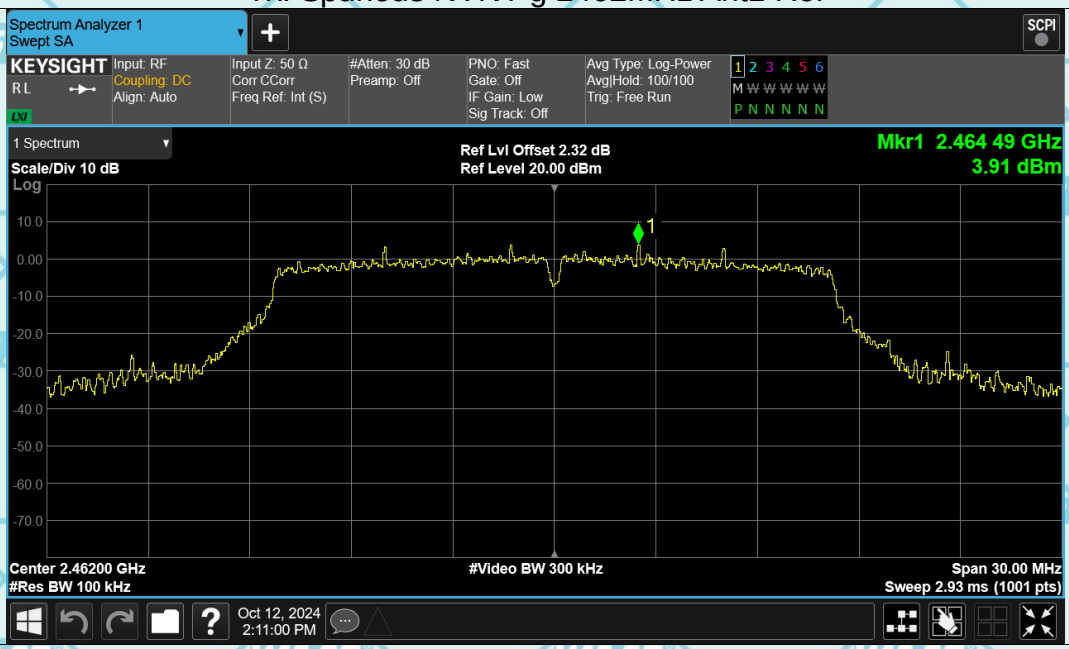


Tx. Spurious NVNT g 2437MHz Ant1 Emission

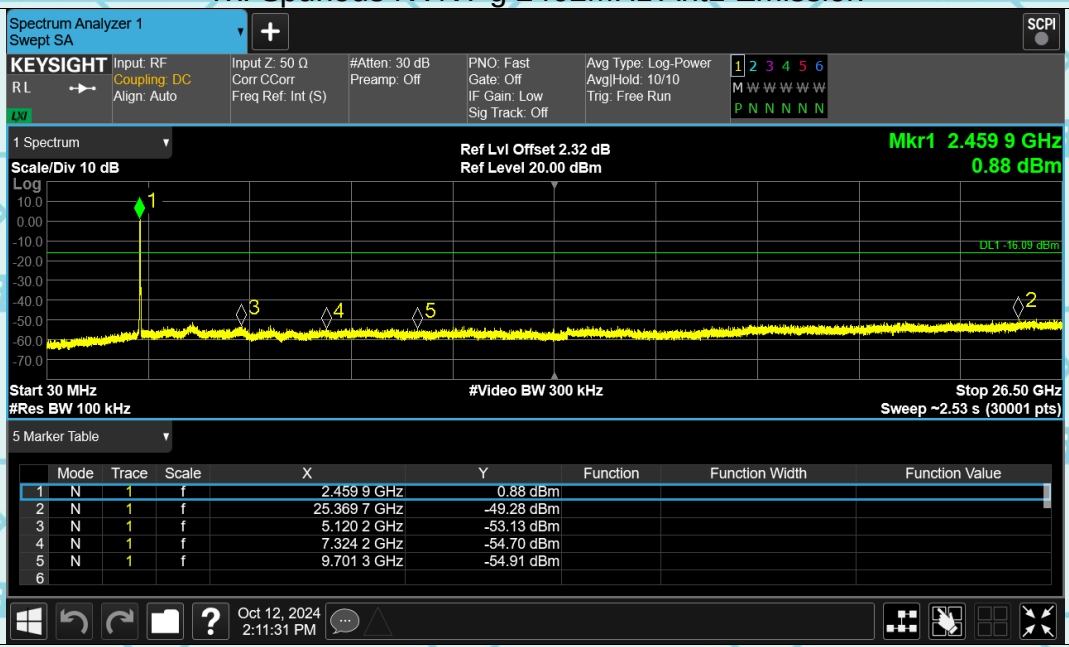


	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	2.440 5 GHz	3.34 dBm			
2	N	1	f	25.565 6 GHz	-49.66 dBm			
3	N	1	f	4.958 7 GHz	-53.82 dBm			
4	N	1	f	7.214 8 GHz	-54.26 dBm			
5	N	1	f	9.766 5 GHz	-54.10 dBm			
6								

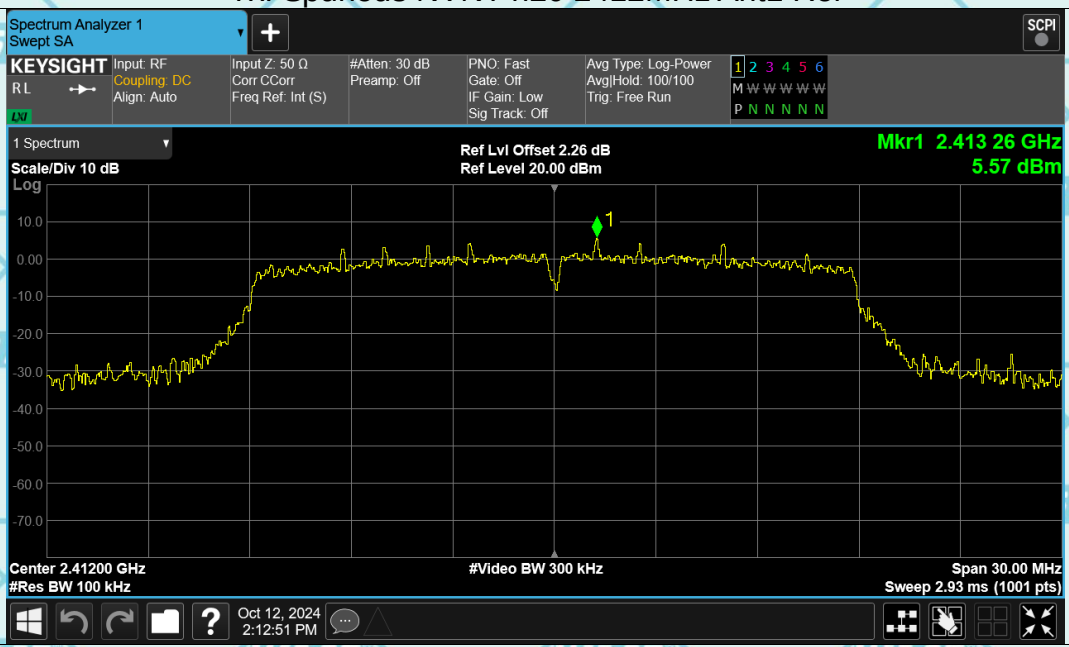
Tx. Spurious NVNT g 2462MHz Ant1 Ref



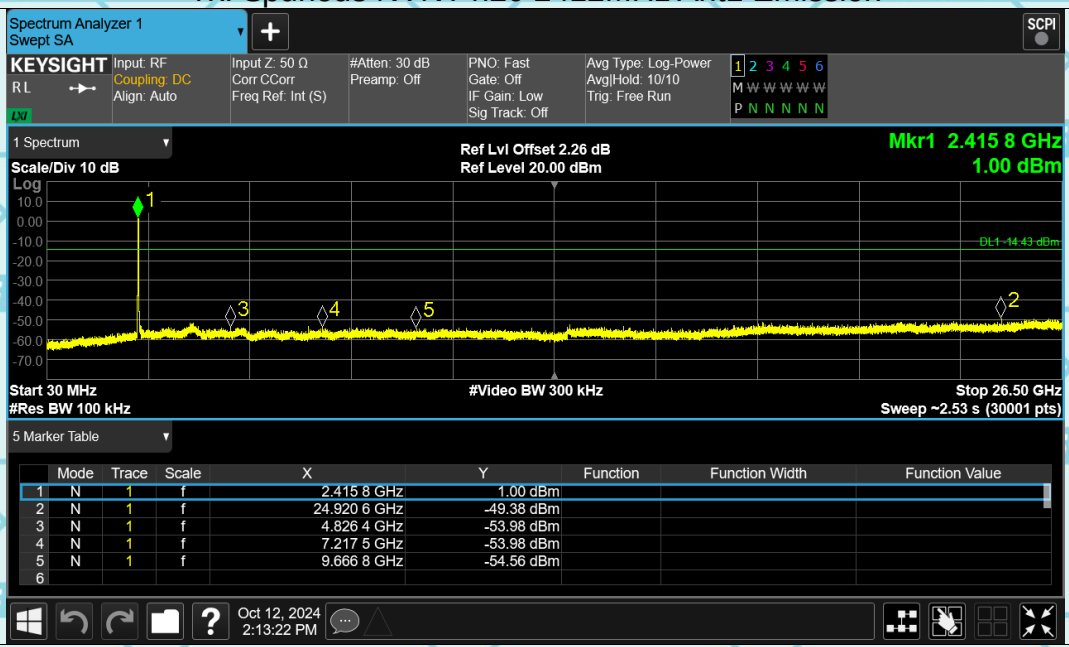
Tx. Spurious NVNT g 2462MHz Ant1 Emission



Tx. Spurious NVNT n20 2412MHz Ant1 Ref

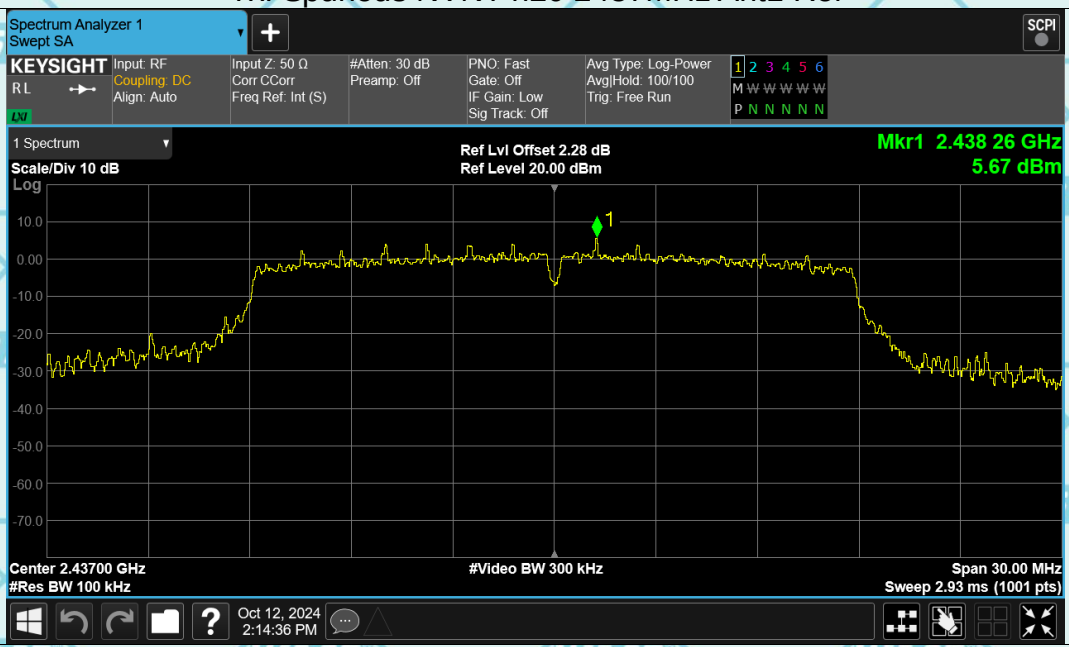


Tx. Spurious NVNT n20 2412MHz Ant1 Emission

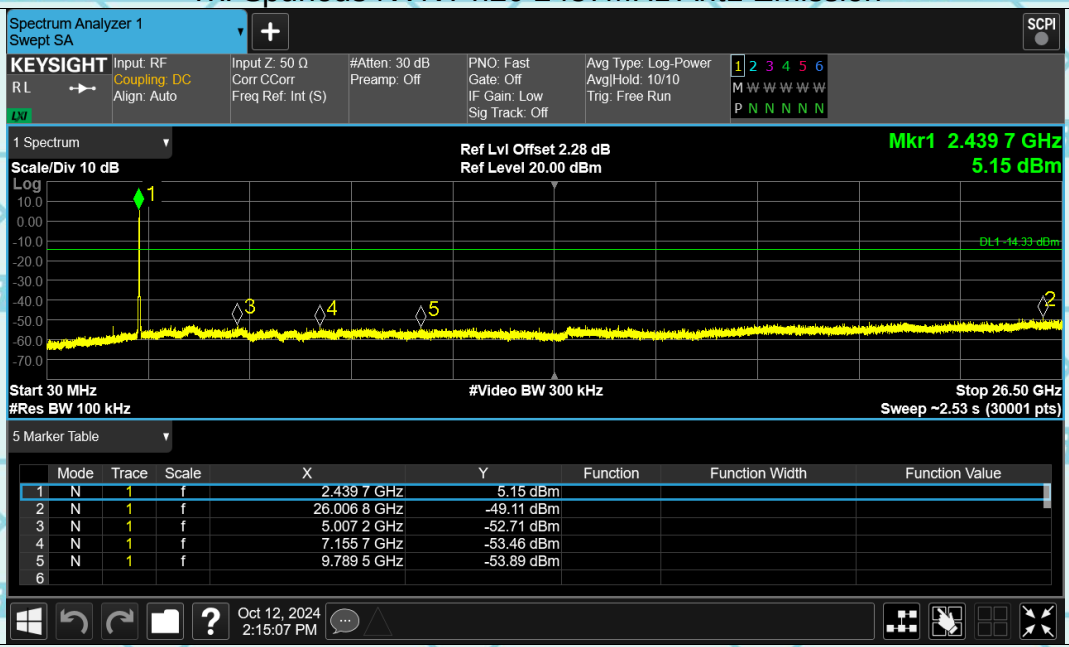


	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	2.415 8 GHz	1.00 dBm			
2	N	1	f	24.920 6 GHz	-49.38 dBm			
3	N	1	f	4.826 4 GHz	-53.98 dBm			
4	N	1	f	7.217 5 GHz	-53.98 dBm			
5	N	1	f	9.666 8 GHz	-54.56 dBm			
6								

Tx. Spurious NVNT n20 2437MHz Ant1 Ref

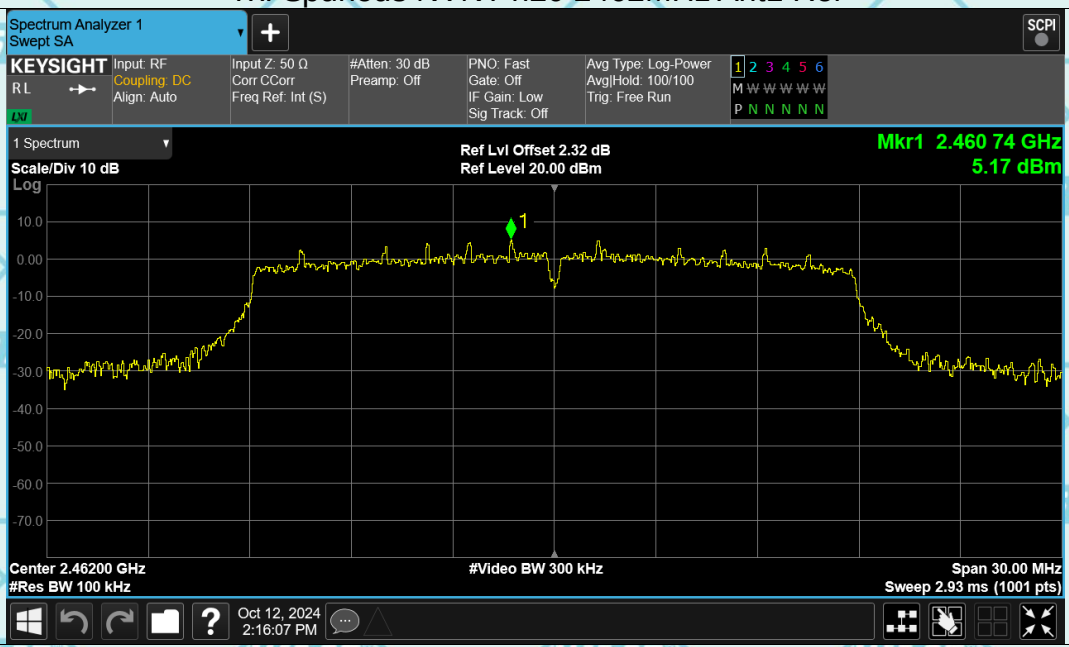


Tx. Spurious NVNT n20 2437MHz Ant1 Emission

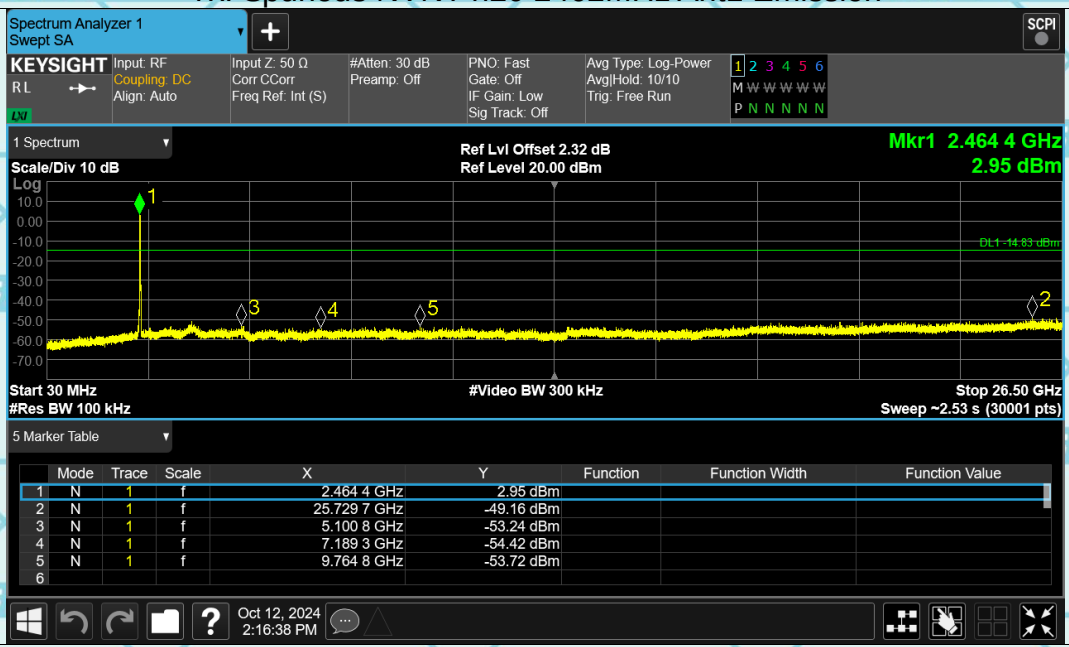


	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	2.439 7 GHz	5.15 dBm			
2	N	1	f	26.006 8 GHz	-49.11 dBm			
3	N	1	f	5.007 2 GHz	-52.71 dBm			
4	N	1	f	7.155 7 GHz	-53.46 dBm			
5	N	1	f	9.789 5 GHz	-53.89 dBm			
6								

Tx. Spurious NVNT n20 2462MHz Ant1 Ref

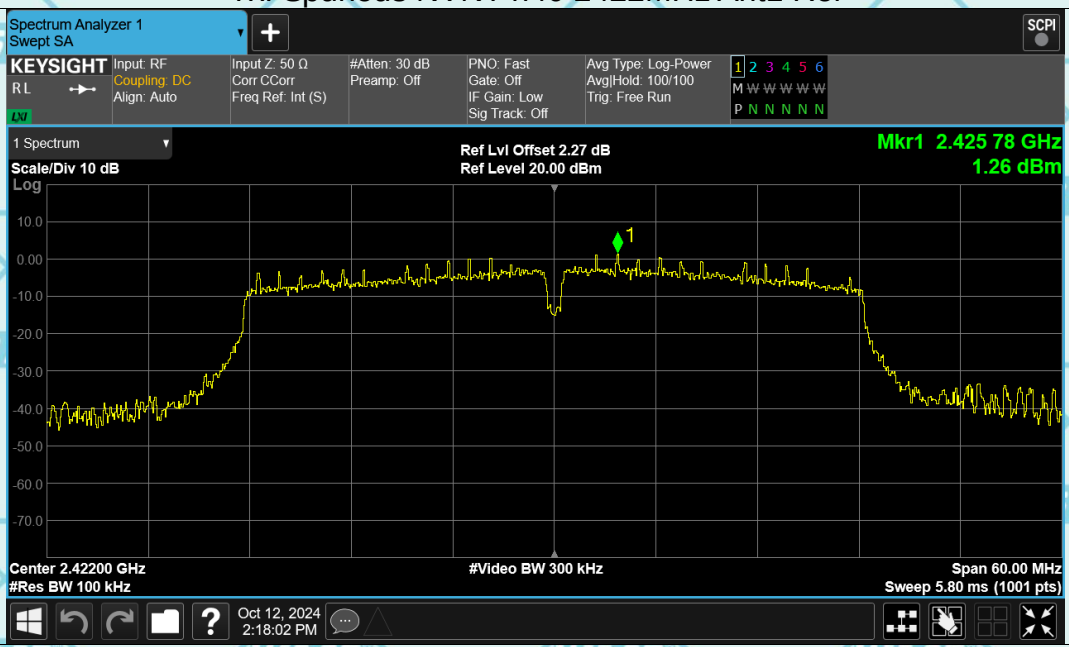


Tx. Spurious NVNT n20 2462MHz Ant1 Emission

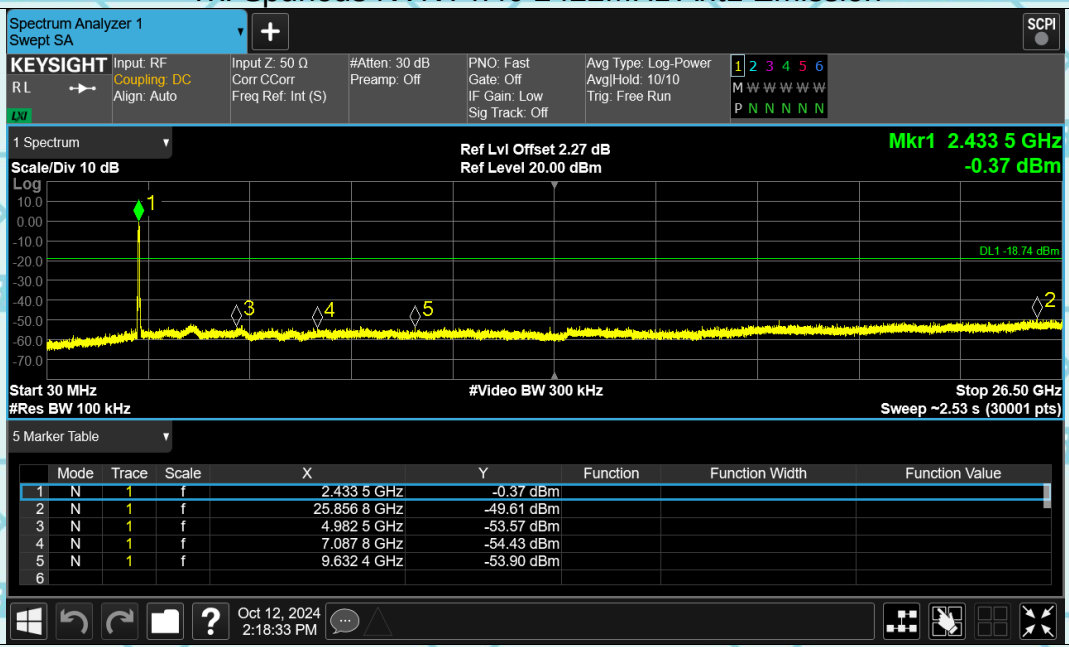


	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	2.464 4 GHz	2.95 dBm			
2	N	1	f	25.729 7 GHz	-49.16 dBm			
3	N	1	f	5.100 8 GHz	-53.24 dBm			
4	N	1	f	7.189 3 GHz	-54.42 dBm			
5	N	1	f	9.764 8 GHz	-53.72 dBm			
6								

Tx. Spurious NVNT n40 2422MHz Ant1 Ref



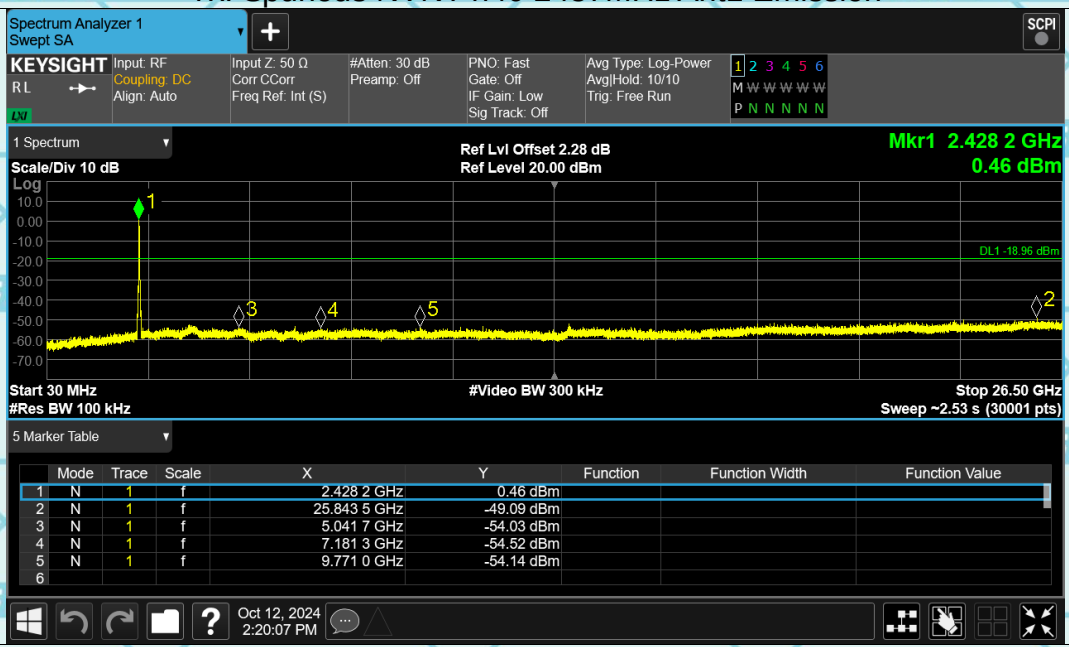
Tx. Spurious NVNT n40 2422MHz Ant1 Emission



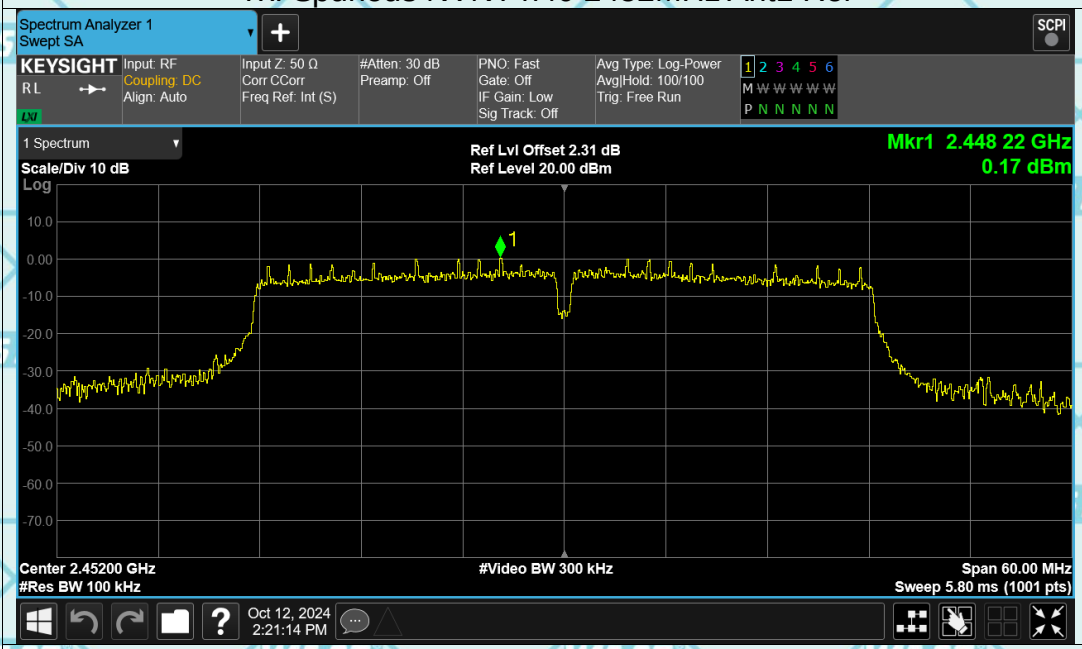
	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	2.433 5 GHz	-0.37 dBm			
2	N	1	f	25.856 8 GHz	-49.61 dBm			
3	N	1	f	4.982 5 GHz	-53.57 dBm			
4	N	1	f	7.087 8 GHz	-54.43 dBm			
5	N	1	f	9.632 4 GHz	-53.90 dBm			
6								

Tx. Spurious NVNT n40 2437MHz Ant1 Ref

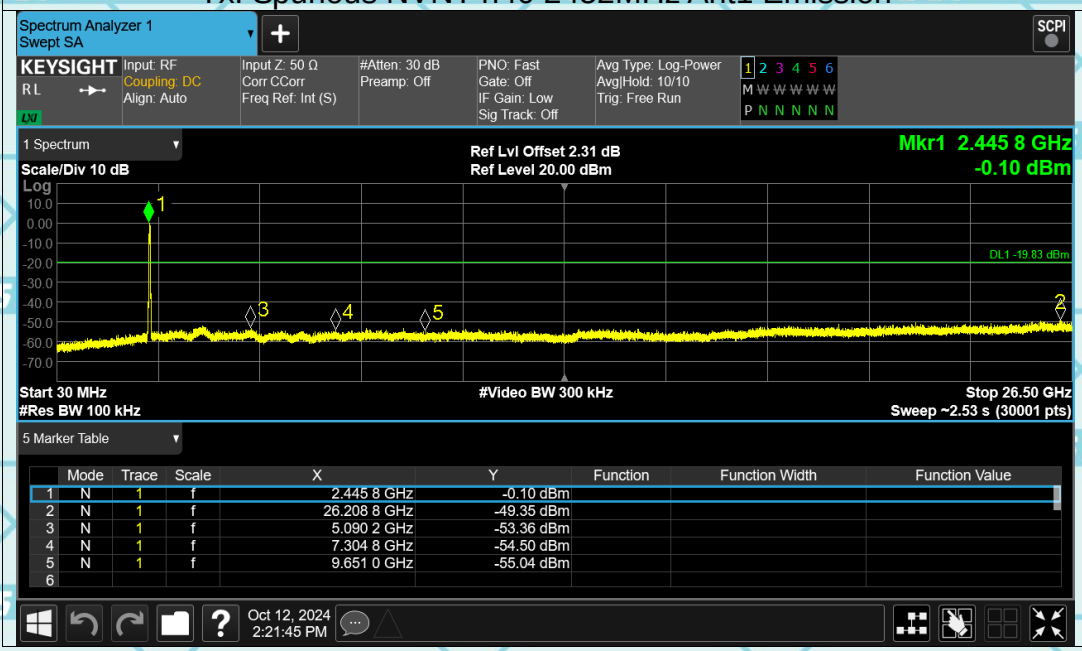
Tx. Spurious NVNT n40 2437MHz Ant1 Emission



Tx. Spurious NVNT n40 2452MHz Ant1 Ref



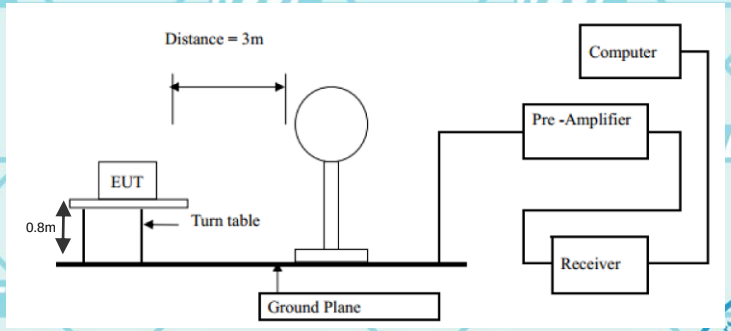
Tx. Spurious NVNT n40 2452MHz Ant1 Emission



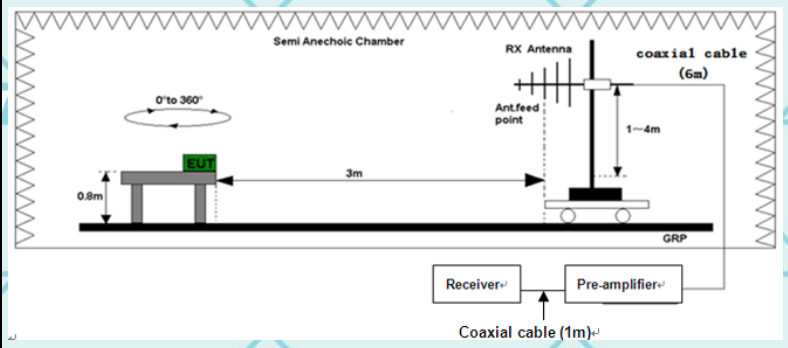
	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	2.445 8 GHz	-0.10 dBm			
2	N	1	f	26.208 8 GHz	-49.35 dBm			
3	N	1	f	5.090 2 GHz	-53.36 dBm			
4	N	1	f	7.304 8 GHz	-54.50 dBm			
5	N	1	f	9.651 0 GHz	-55.04 dBm			
6								

6.6. Radiated Spurious Emission Measurement

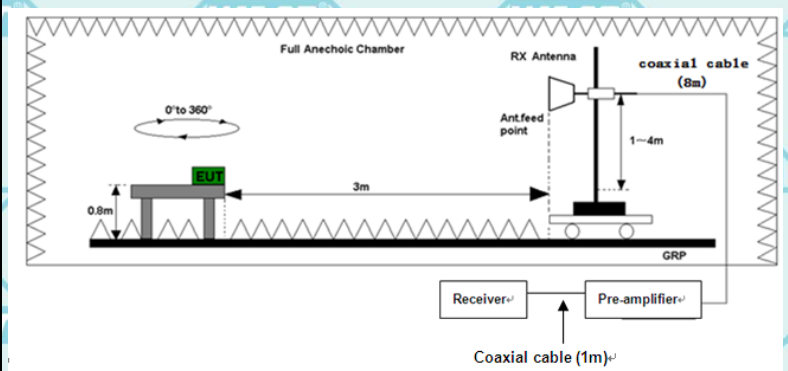
6.6.1. Test Specification

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.209</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10: 2014</td></tr>
<tr><td>Frequency Range:</td><td>9 kHz to 25 GHz</td></tr>
<tr><td>Measurement Distance:</td><td>3 m</td></tr>
<tr><td>Antenna Polarization:</td><td>Horizontal & Vertical</td></tr>
<tr><td>Operation mode:</td><td>Transmitting mode with modulation</td></tr>
<tr><td>Receiver Setup:</td><td>
<table>
<tr><th>Frequency</th><th>Detector</th><th>RBW</th><th>VBW</th><th>Remark</th></tr>
<tr><td>9kHz- 150kHz</td><td>Quasi-peak</td><td>200Hz</td><td>1kHz</td><td>Quasi-peak Value</td></tr>
<tr><td>150kHz-30MHz</td><td>Quasi-peak</td><td>9kHz</td><td>30kHz</td><td>Quasi-peak Value</td></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>100KHz</td><td>300KHz</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr>
<tr><td>Peak</td><td>1MHz</td><td>10Hz</td><td>Average Value</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th>Frequency</th><th>Field Strength (microvolts/meter)</th><th>Measurement Distance (meters)</th></tr>
<tr><td>0.009-0.490</td><td>2400/F(KHz)</td><td>300</td></tr>
<tr><td>0.490-1.705</td><td>24000/F(KHz)</td><td>30</td></tr>
<tr><td>1.705-30</td><td>30</td><td>30</td></tr>
<tr><td>30-88</td><td>100</td><td>3</td></tr>
<tr><td>88-216</td><td>150</td><td>3</td></tr>
<tr><td>216-960</td><td>200</td><td>3</td></tr>
<tr><td>Above 960</td><td>500</td><td>3</td></tr>
</table>
<table>
<tr><th>Frequency</th><th>Field Strength (microvolts/meter)</th><th>Measurement Distance (meters)</th><th>Detector</th></tr>
<tr><td rowspan="2">Above 1GHz</td><td>500</td><td>3</td><td>Average</td></tr>
<tr><td>5000</td><td>3</td><td>Peak</td></tr>
</table>
</td></tr>
<tr><td>Test setup:</td><td>For radiated emissions below 30MHz
 

30MHz to 1GHz</td></tr>
</table>



Above 1GHz



Test Procedure:

1. For the radiated emission test below 1GHz:
The EUT was placed on a turntable with 0.8 meter above ground. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high PASS filter are used for the test in order to get better signal level.
For the radiated emission test above 1GHz:
Place the measurement antenna on a turntable with 1.5 meter above ground, which is away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

	3. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level 4. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported. 5. Use the following spectrum analyzer settings: (1) Span shall wide enough to fully capture the emission being measured; (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥RBW; Sweep = auto; Detector function = peak; Trace = max hold; (3) Set RBW = 1 MHz, VBW= 3MHz for f 1 GHz for peak measurement. For average measurement: VBW = 10 Hz, when duty cycle is no less than 98 percent. VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
Test results:	PASS

Note 1: The symbol of "--" in the table which means not application.

Note 2: For the test data above 1 GHz, According the ANSI C63.10-2013, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

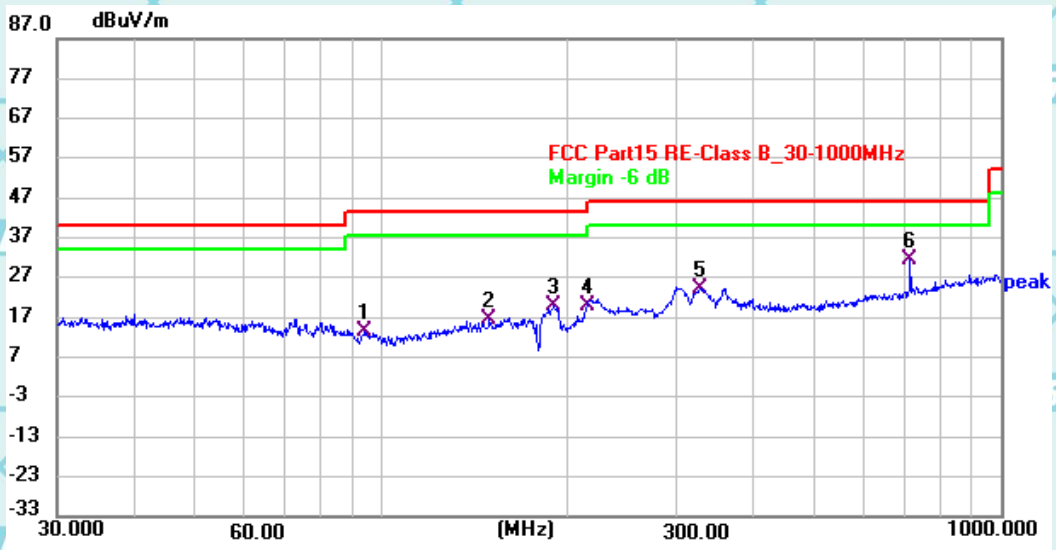
Note 3: The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

Note 4: The EUT is working in the Normal link mode below 1 GHz. All modes have been tested and normal link mode is worst.

6.6.2. Test Data(worst)

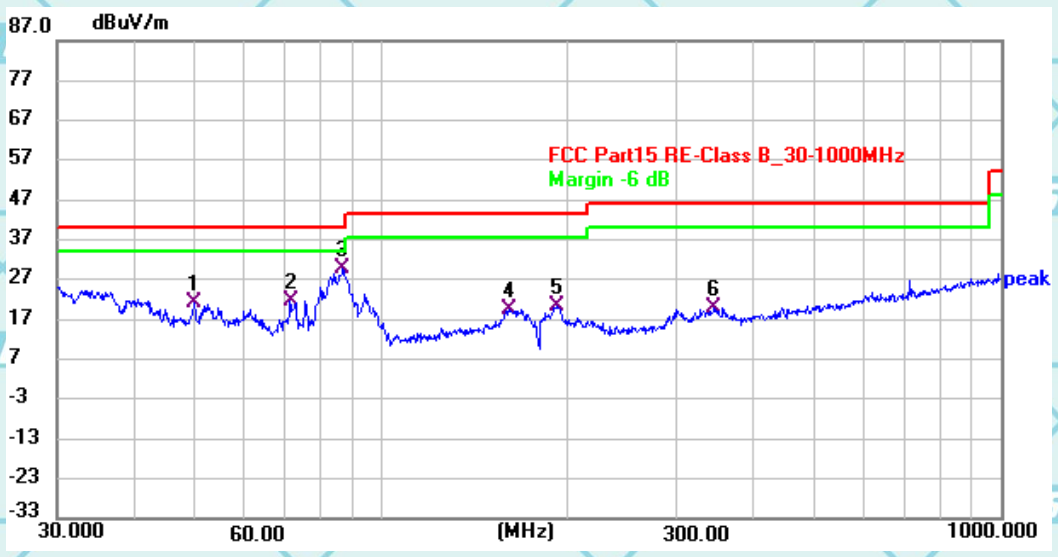
Please refer to following diagram for individual
Below 1GHz

Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	94.3043	37.79	-24.11	13.68	43.50	-29.82	QP
2	149.6824	35.81	-19.50	16.31	43.50	-27.19	QP
3	191.0738	42.78	-23.00	19.78	43.50	-23.72	QP
4	215.9293	44.02	-24.04	19.98	43.50	-23.52	QP
5	327.1695	43.75	-19.36	24.39	46.00	-21.61	QP
6 *	714.1734	43.39	-12.07	31.32	46.00	-14.68	QP

Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	50.0566	40.22	-18.97	21.25	40.00	-18.75	QP
2	71.5806	44.31	-22.49	21.82	40.00	-18.18	QP
3 *	86.9210	53.82	-23.84	29.98	40.00	-10.02	QP
4	161.4034	39.12	-19.73	19.39	43.50	-24.11	QP
5	192.2500	43.42	-23.12	20.30	43.50	-23.20	QP
6	345.4438	39.06	-19.05	20.01	46.00	-25.99	QP

Note1:
Freq. = Emission frequency in MHz
Reading level (dBμV) = Receiver reading
Corr. Factor (dB) = Antenna factor + Cable loss - Amplifier factor.
Measurement (dBμV) = Reading level (dBμV) + Corr. Factor (dB)
Limit (dBμV) = Limit stated in standard
Margin (dB) = Measurement (dBμV) – Limits (dBμV)

Above 1GHz

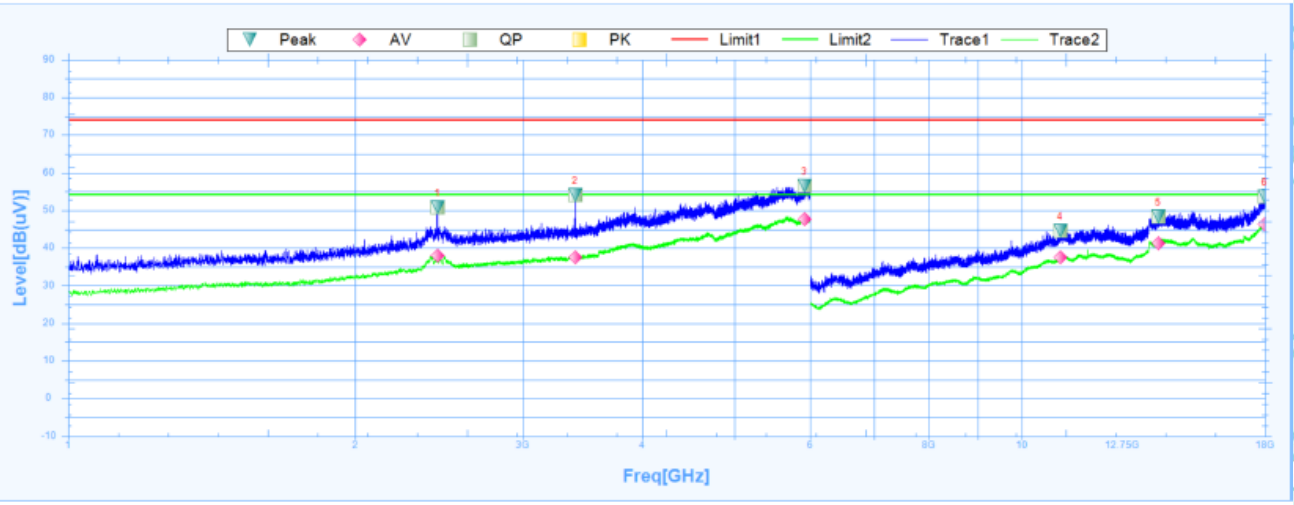
Note 1: The marked spikes near 2400 MHz with circle should be ignored because they are Fundamental signal.

Note 2: The spurious above 18G is noise only, do not show on the report.

Note 3: Report and only recorded the worst-case scenario 802.11b.

1 GHz to 18 GHz, ANT H 802.11b Low Channel

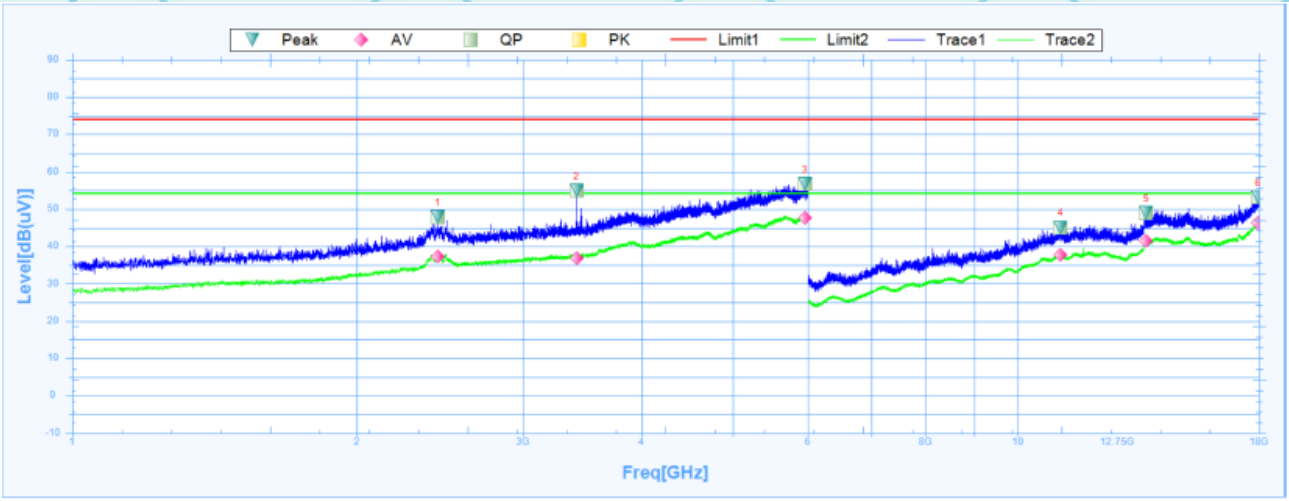
Horizontal:



Susputed Data List

NO.	Freq. [MHz]	Reading [dB(uV)]	Factor [dB]	Level [dB(uV)]	Limit [dB]	Margin [dB]	Deg [°]	Polarity	Trace	Verdict
1	2439.3750	50.73	27.39	23.34	74	-23.27	240.6	Horizontal	PK	Pass
1	2439.3750	37.86	27.39	10.47	54	-16.14	240.6	Horizontal	AV	Pass
2	3401.8750	54.14	28.44	25.7	74	-19.86	359.9	Horizontal	PK	Pass
2	3401.8750	37.57	28.44	9.13	54	-16.43	359.9	Horizontal	AV	Pass
3	5920.6250	56.45	32.67	23.78	74	-17.55	355.6	Horizontal	PK	Pass
3	5920.6250	47.68	32.67	15.01	54	-6.32	355.6	Horizontal	AV	Pass
4	10974.0000	44.62	15.47	29.15	74	-29.38	-0.1	Horizontal	PK	Pass
4	10974.0000	37.52	15.47	22.05	54	-16.48	-0.1	Horizontal	AV	Pass
5	13909.5000	48.32	18.85	29.47	74	-25.68	-0.1	Horizontal	PK	Pass
5	13909.5000	41.35	18.85	22.5	54	-12.65	-0.1	Horizontal	AV	Pass
6	17977.5000	53.61	23.77	29.84	74	-20.39	236.4	Horizontal	PK	Pass
6	17977.5000	46.39	23.77	22.62	54	-7.61	236.4	Horizontal	AV	Pass

Vertical :

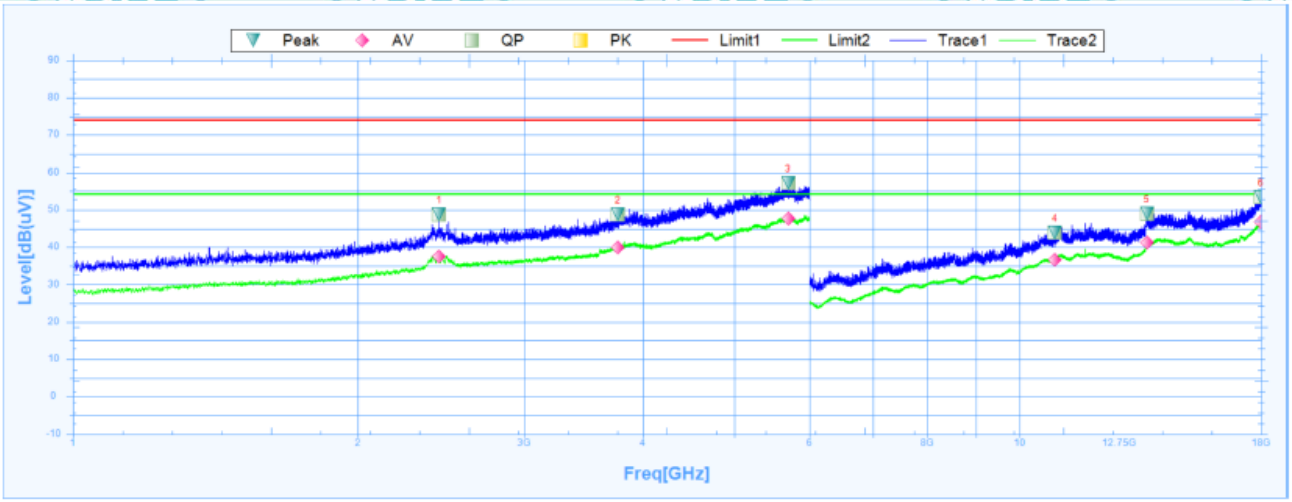


Susputed Data List

NO.	Freq. [MHz]	Reading [dB(uV)]	Factor [dB]	Level [dB(uV)]	Limit [dB]	Margin [dB]	Deg [°]	Polarity	Trace	Verdict
1	2434.3750	47.86	27.38	20.48	74	-26.14	30.4	Vertical	PK	Pass
1	2434.3750	37.19	27.38	9.81	54	-16.81	30.4	Vertical	AV	Pass
2	3415.6250	54.94	28.45	26.49	74	-19.06	360	Vertical	PK	Pass
2	3415.6250	36.9	28.45	8.45	54	-17.1	360	Vertical	AV	Pass
3	5959.3750	56.66	32.74	23.92	74	-17.34	324.4	Vertical	PK	Pass
3	5959.3750	47.65	32.74	14.91	54	-6.35	324.4	Vertical	AV	Pass
4	11103.0000	45.12	15.87	29.25	74	-28.88	164.7	Vertical	PK	Pass
4	11103.0000	37.71	15.87	21.84	54	-16.29	164.7	Vertical	AV	Pass
5	13681.5000	49.04	18.2	30.84	74	-24.96	0	Vertical	PK	Pass
5	13681.5000	41.45	18.2	23.25	54	-12.55	0	Vertical	AV	Pass
6	17961.0000	53.16	23.65	29.51	74	-20.84	183.8	Vertical	PK	Pass
6	17961.0000	46.29	23.65	22.64	54	-7.71	183.8	Vertical	AV	Pass

1 GHz to 18 GHz, ANT H 802.11b Middle Channel

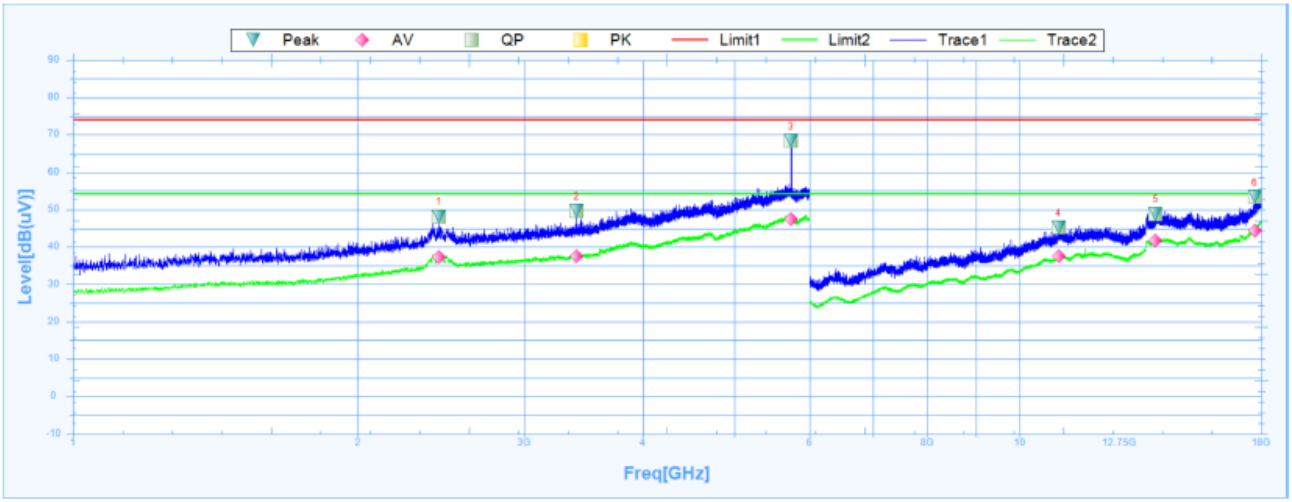
Horizontal:



Susputed Data List

NO.	Freq. [MHz]	Reading [dB(uV)]	Factor [dB]	Level [dB(uV)]	Limit [dB]	Margin [dB]	Deg [°]	Polarity	Trace	Verdict
1	2436.8750	48.73	27.39	21.34	74	-25.27	76.8	Horizontal	PK	Pass
1	2436.8750	37.59	27.39	10.2	54	-16.41	76.8	Horizontal	AV	Pass
2	3765.6250	48.85	29.14	19.71	74	-25.15	161.8	Horizontal	PK	Pass
2	3765.6250	39.93	29.14	10.79	54	-14.07	161.8	Horizontal	AV	Pass
3	5698.7500	57.18	32.32	24.86	74	-16.82	4.6	Horizontal	PK	Pass
3	5698.7500	47.65	32.32	15.33	54	-6.35	4.6	Horizontal	AV	Pass
4	10902.0000	43.86	15.07	28.79	74	-30.14	-0.1	Horizontal	PK	Pass
4	10902.0000	36.53	15.07	21.46	54	-17.47	-0.1	Horizontal	AV	Pass
5	13633.5000	48.89	18.07	30.82	74	-25.11	-0.1	Horizontal	PK	Pass
5	13633.5000	41.36	18.07	23.29	54	-12.64	-0.1	Horizontal	AV	Pass
6	17994.0000	53.49	23.89	29.6	74	-20.51	290.2	Horizontal	PK	Pass
6	17994.0000	46.75	23.89	22.86	54	-7.25	290.2	Horizontal	AV	Pass

Vertical :

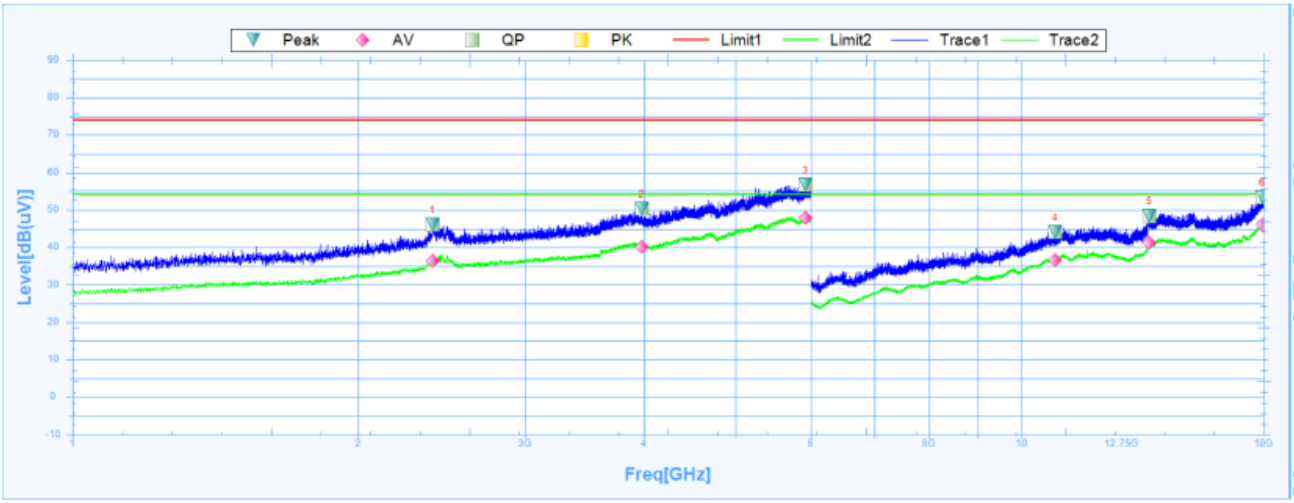


Susputed Data List

NO.	Freq. [MHz]	Reading [dB(uV)]	Factor [dB]	Level [dB(uV)]	Limit [dB]	Margin [dB]	Deg [°]	Polarity	Trace	Verdict
1	2435.6250	48.21	27.38	20.83	74	-25.79	-0.1	Vertical	PK	Pass
1	2435.6250	37.29	27.38	9.91	54	-16.71	-0.1	Vertical	AV	Pass
2	3405.6250	49.69	28.44	21.25	74	-24.31	-0.1	Vertical	PK	Pass
2	3405.6250	37.47	28.44	9.03	54	-16.53	-0.1	Vertical	AV	Pass
3	5736.2500	68.41	32.38	36.03	74	-5.59	146.7	Vertical	PK	Pass
3	5736.2500	47.44	32.38	15.06	54	-6.56	146.7	Vertical	AV	Pass
4	10996.5000	45.3	15.6	29.7	74	-28.7	351.1	Vertical	PK	Pass
4	10996.5000	37.59	15.6	21.99	54	-16.41	351.1	Vertical	AV	Pass
5	13929.0000	48.87	18.92	29.95	74	-25.13	95	Vertical	PK	Pass
5	13929.0000	41.75	18.92	22.83	54	-12.25	95	Vertical	AV	Pass
6	17722.5000	53.41	22.12	31.29	74	-20.59	75.8	Vertical	PK	Pass
6	17722.5000	44.29	22.12	22.17	54	-9.71	75.8	Vertical	AV	Pass

1 GHz to 18 GHz, ANT H 802.11b High Channel

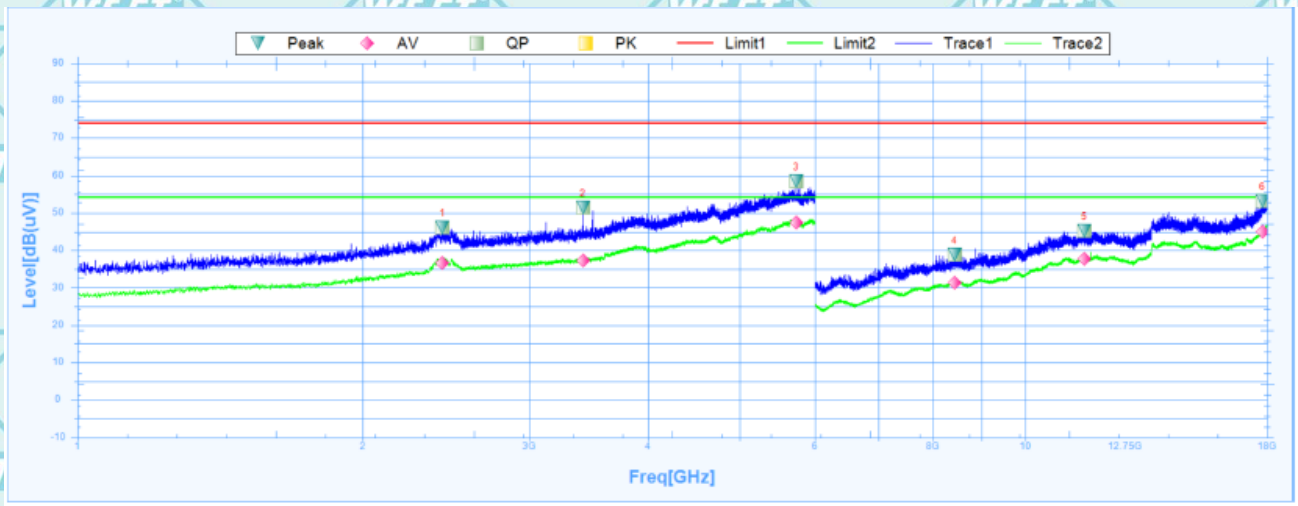
Horizontal:



Susputed Data List

NO.	Freq. [MHz]	Reading [dB(uV)]	Factor [dB]	Level [dB(uV)]	Limit [dB]	Margin [dB]	Deg [°]	Polarity	Trace	Verdict
1	2395.0000	46.06	27.24	18.82	74	-27.94	222.2	Horizontal	PK	Pass
1	2395.0000	36.47	27.24	9.23	54	-17.53	222.2	Horizontal	AV	Pass
2	3978.1250	50.21	29.65	20.56	74	-23.79	0.1	Horizontal	PK	Pass
2	3978.1250	40.21	29.65	10.56	54	-13.79	0.1	Horizontal	AV	Pass
3	5925.6250	56.68	32.68	24	74	-17.32	78.7	Horizontal	PK	Pass
3	5925.6250	47.81	32.68	15.13	54	-6.19	78.7	Horizontal	AV	Pass
4	10855.5000	44.14	14.87	29.27	74	-29.86	222.8	Horizontal	PK	Pass
4	10855.5000	36.58	14.87	21.71	54	-17.42	222.8	Horizontal	AV	Pass
5	13644.0000	48.43	18.09	30.34	74	-25.57	35.1	Horizontal	PK	Pass
5	13644.0000	41.36	18.09	23.27	54	-12.64	35.1	Horizontal	AV	Pass
6	17937.0000	53.34	23.5	29.84	74	-20.66	360	Horizontal	PK	Pass
6	17937.0000	46.21	23.5	22.71	54	-7.79	360	Horizontal	AV	Pass

Vertical :



Susputed Data List

NO.	Freq. [MHz]	Reading [dB(uV)]	Factor [dB]	Level [dB(uV)]	Limit [dB]	Margin [dB]	Deg [°]	Polarity	Trace	Verdict
1	2426.2500	46.06	27.35	18.71	74	-27.94	151.5	Vertical	PK	Pass
1	2426.2500	36.58	27.35	9.23	54	-17.42	151.5	Vertical	AV	Pass
2	3416.2500	51.47	28.45	23.02	74	-22.53	214.9	Vertical	PK	Pass
2	3416.2500	37.31	28.45	8.86	54	-16.69	214.9	Vertical	AV	Pass
3	5735.6250	58.53	32.38	26.15	74	-15.47	271	Vertical	PK	Pass
3	5735.6250	47.46	32.38	15.08	54	-6.54	271	Vertical	AV	Pass
4	8425.5000	38.83	9.12	29.71	74	-35.17	277.8	Vertical	PK	Pass
4	8425.5000	31.22	9.12	22.1	54	-22.78	277.8	Vertical	AV	Pass
5	11548.5000	45.33	16.22	29.11	74	-28.67	303	Vertical	PK	Pass
5	11548.5000	37.8	16.22	21.58	54	-16.2	303	Vertical	AV	Pass
6	17802.0000	53.26	22.63	30.63	74	-20.74	161.9	Vertical	PK	Pass
6	17802.0000	45.08	22.63	22.45	54	-8.92	161.9	Vertical	AV	Pass

Note:
1. All emissions not reported were more than 20dB below the specified limit or in the noise floor.
2. Emission Level= Reading Level+ Probe Factor +Cable Loss.
3. Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

6.6.3. Restricted Bands Requirements

Test result for 802.11b Mode (the worst case)

Frequency	Reading	Correct Factor	Emission Level	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel							
2390	61.80	-8.76	53.04	74	20.96	H	PK
2390	53.73	-8.76	44.97	54	9.03	H	AV
2390	63.73	-8.73	55.00	74	19.00	V	PK
2390	57.11	-8.73	48.38	54	5.62	V	AV
High Channel							
2483.5	64.25	-8.76	55.49	74	18.51	H	PK
2483.5	54.91	-8.76	46.15	54	7.85	H	AV
2483.5	59.66	-8.73	50.93	74	23.07	V	PK
2483.5	57.46	-8.73	48.73	54	5.27	V	AV

Note: Freq. = Emission frequency in MHz
Reading level (dBµV) = Receiver reading
Corr. Factor (dB) = Attenuation factor + Cable loss
Level (dBµV) = Reading level (dBµV) + Corr. Factor (dB)
Limit (dBµV) = Limit stated in standard
Margin (dB) = Level (dBµV) – Limits (dBµV)

7. Test Setup Photographs

Please refer to Annex "Set Up Photos-15C" for test setup photos

*******END OF REPORT*******