

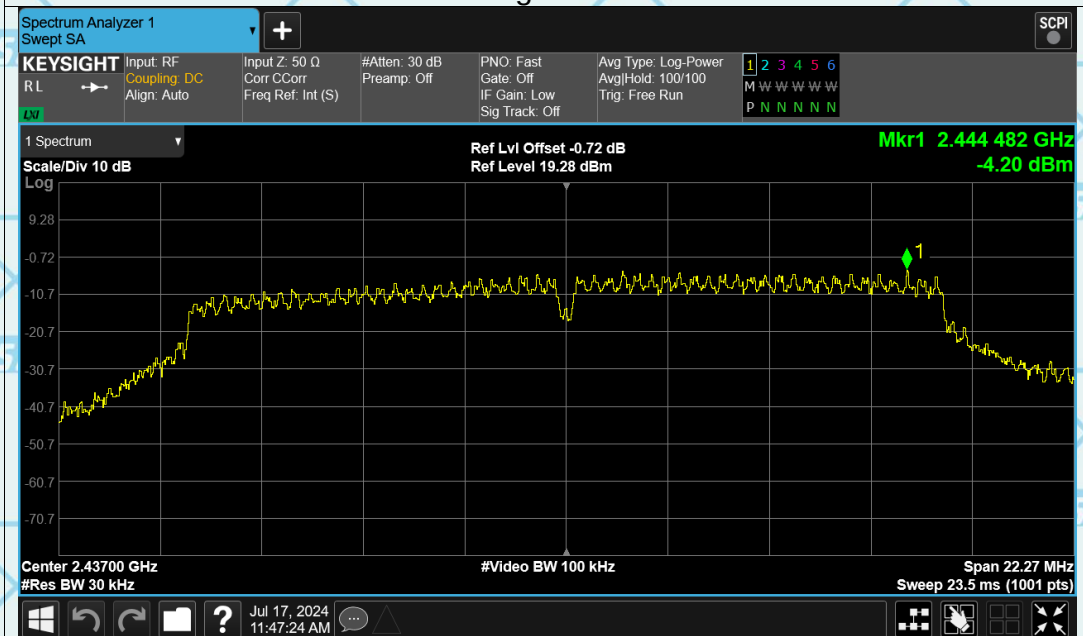


Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

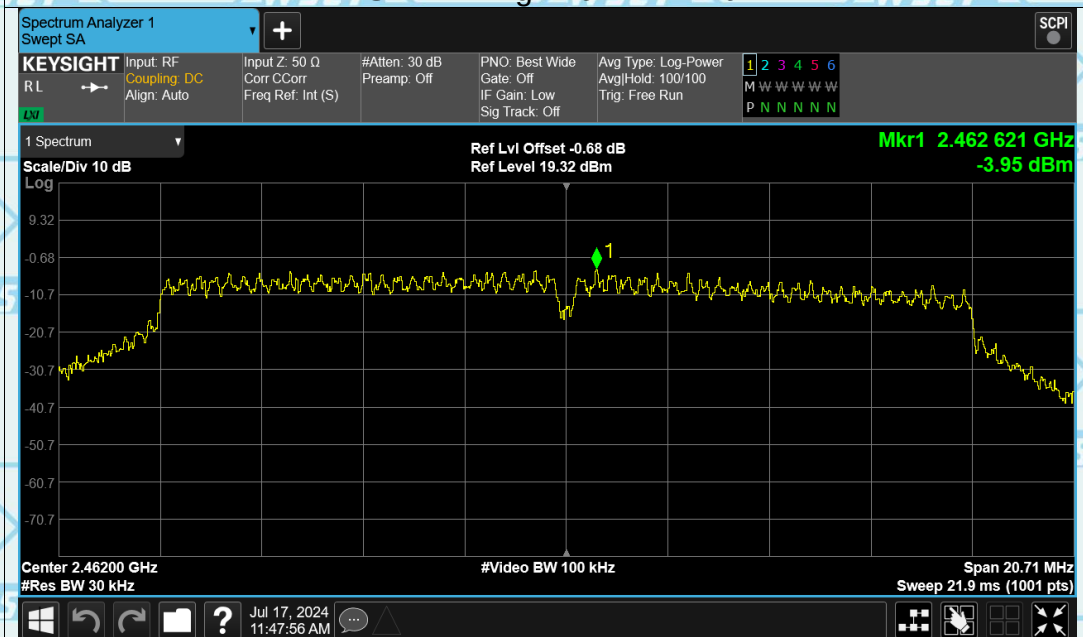
Certificate Number : AT-3951

For Question,
Please Contact with WSCT
www.wsct-cert.com

PSD NVNT g 2437MHz Ant1



PSD NVNT g 2462MHz Ant1



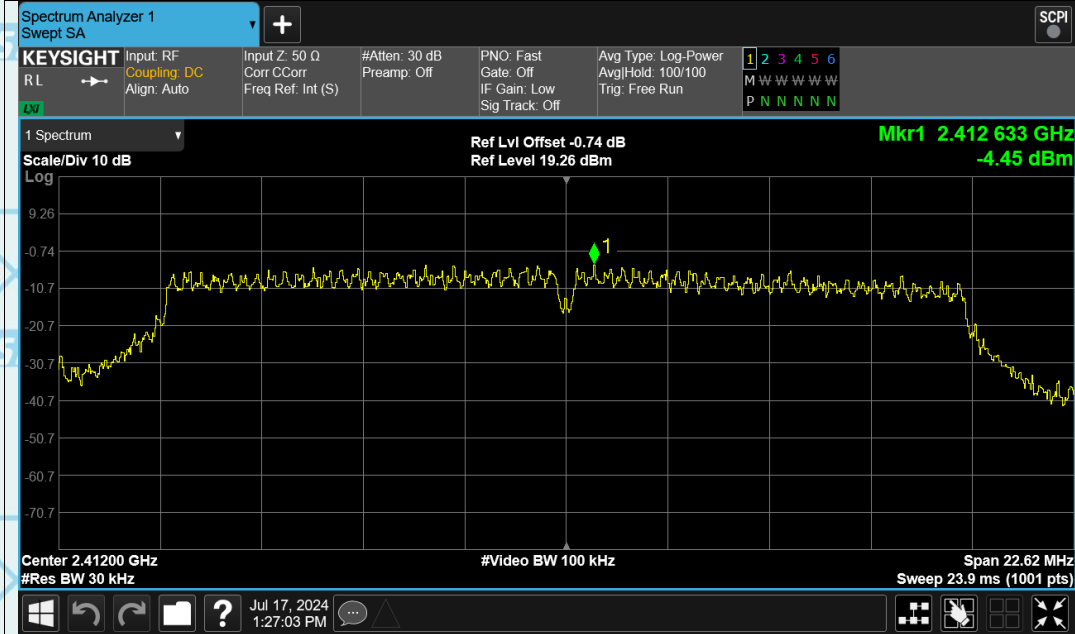


Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

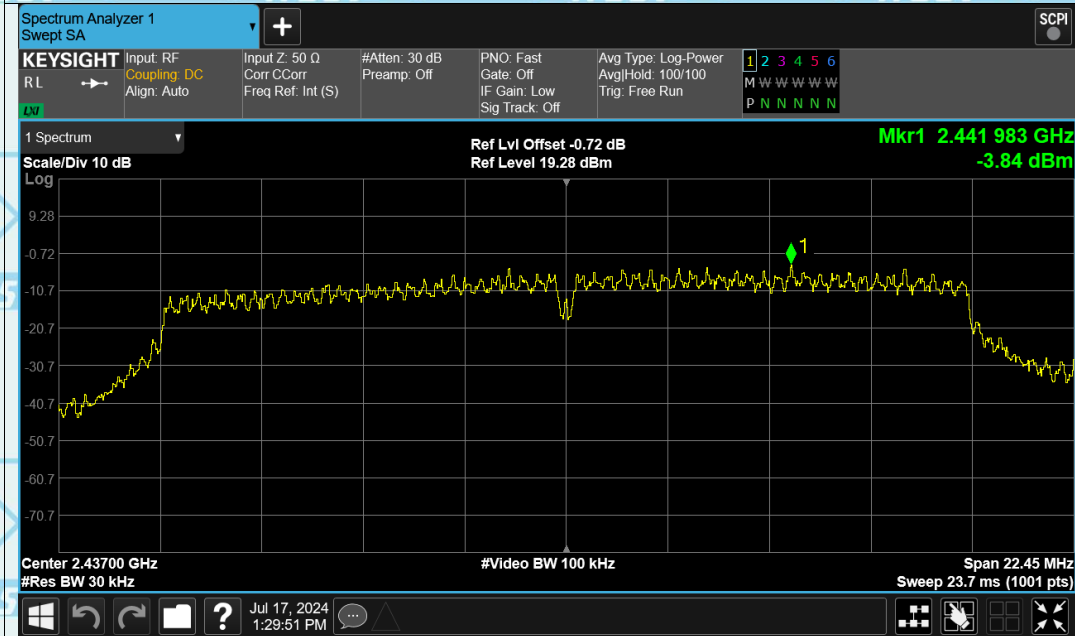
Certificate Number : AT-3951

For Question,
Please Contact with WSCT
www.wsct-cert.com

PSD NVNT n20 2412MHz Ant1



PSD NVNT n20 2437MHz Ant1



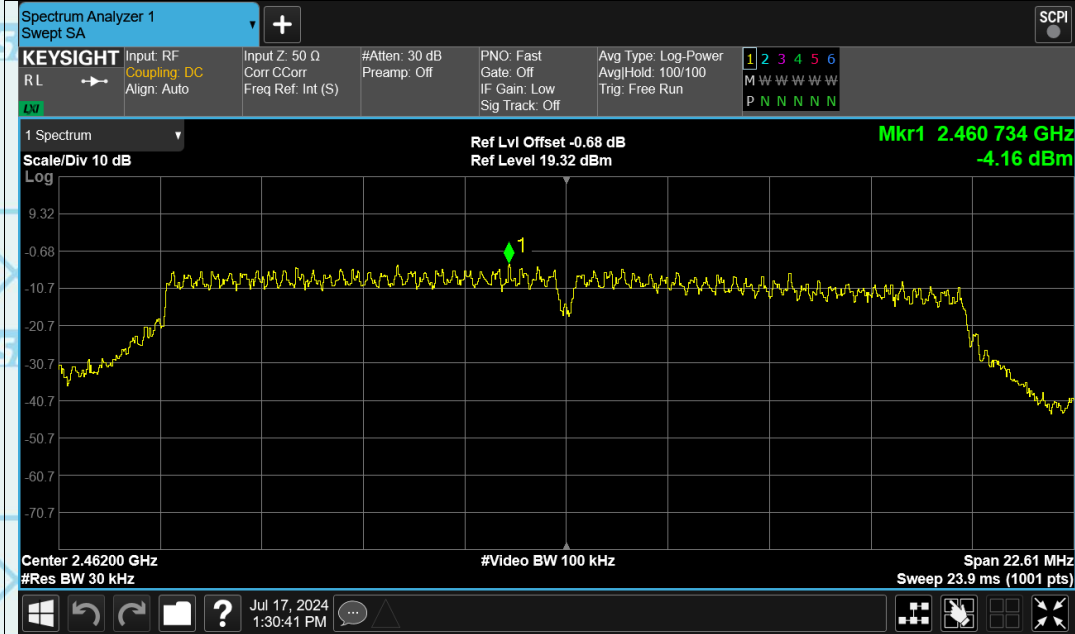


Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

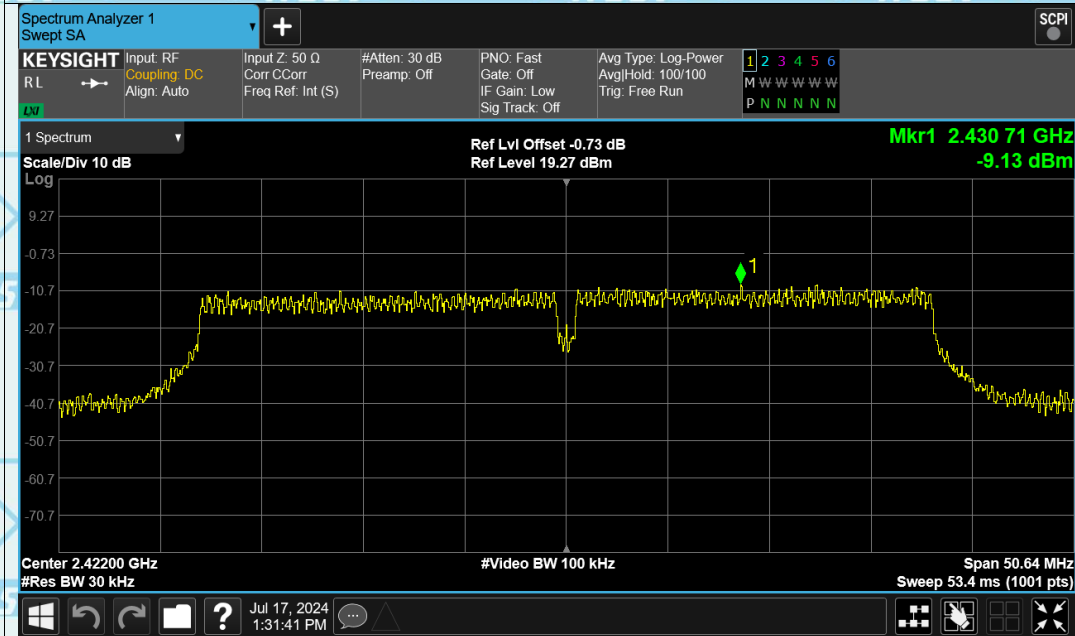
Certificate Number : AT-3951

For Question,
Please Contact with WSCT
www.wsct-cert.com

PSD NVNT n20 2462MHz Ant1



PSD NVNT n40 2422MHz Ant1



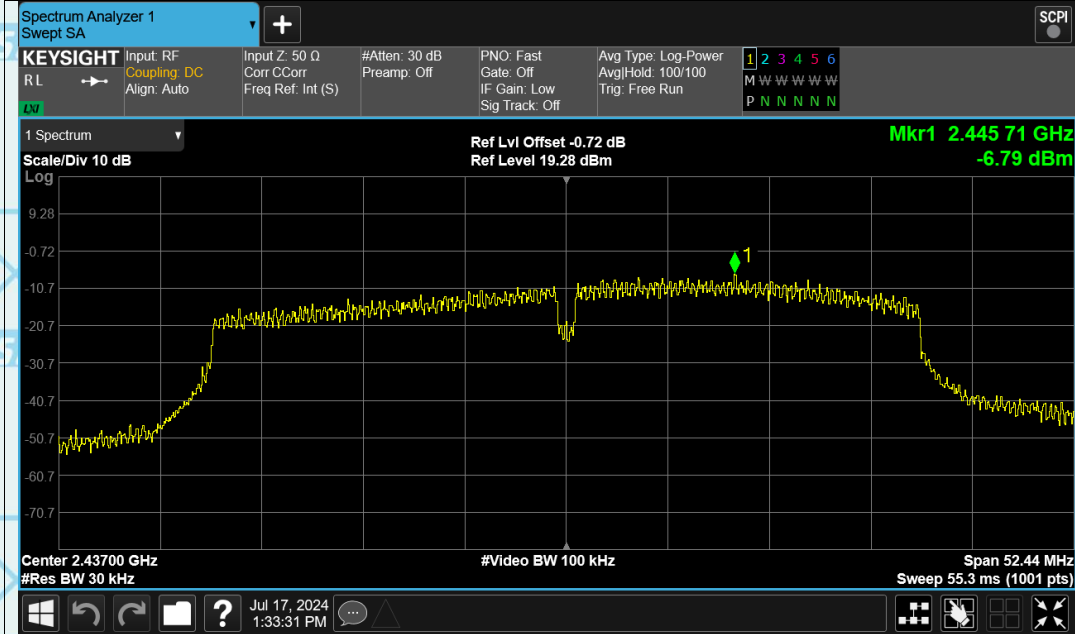


Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

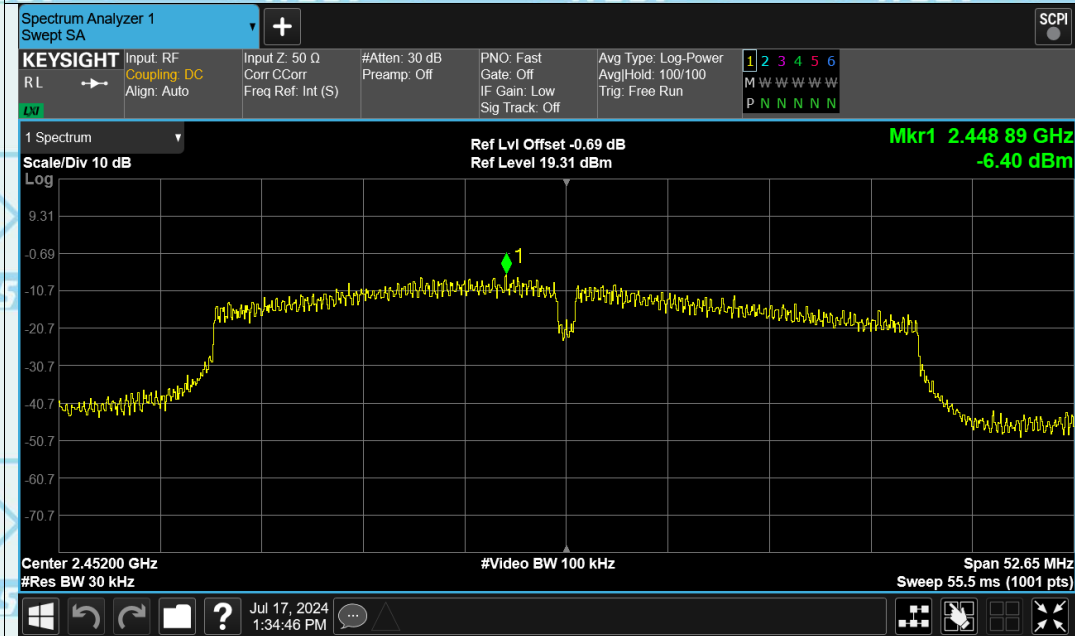
Certificate Number : AT-3951

For Question,
Please Contact with WSCT
www.wsct-cert.com

PSD NVNT n40 2437MHz Ant1



PSD NVNT n40 2452MHz Ant1





6.5. Conducted Band Edge and Spurious Emission Measurement

6.5.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	KDB558074
Limit:	In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).
Test Setup:	 Spectrum Analyzer EUT
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04. 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement. 3. Set to the maximum power setting and enable the EUT transmit continuously. 4. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d). 5. Measure and record the results in the test report. 6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
Test Result:	PASS

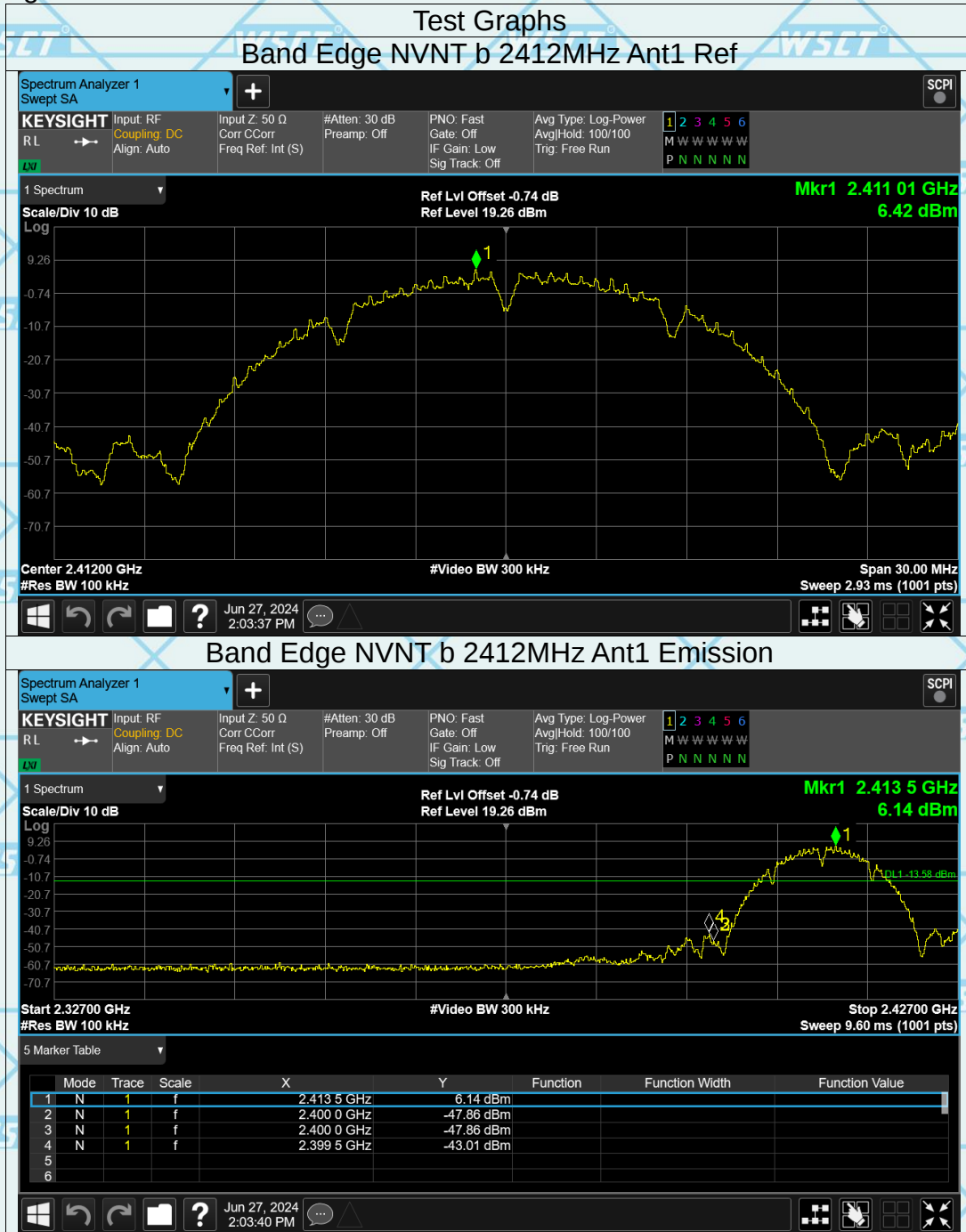


Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

Certificate Number : AT-3951

Test Data Band Edge

For Question,
Please Contact with WSCT
www.wsct-cert.com



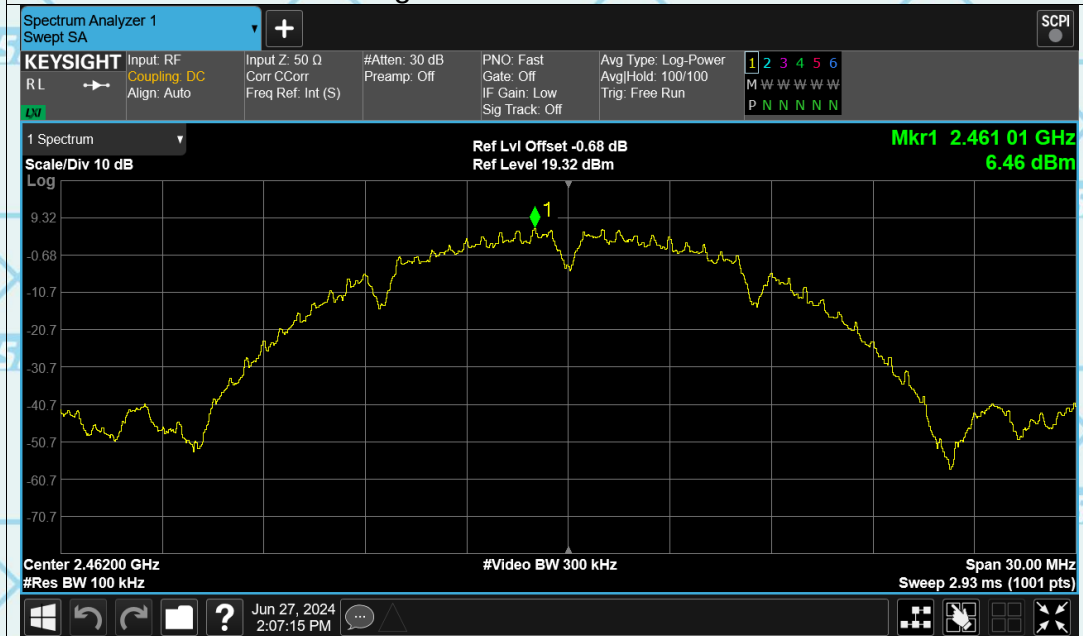


Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

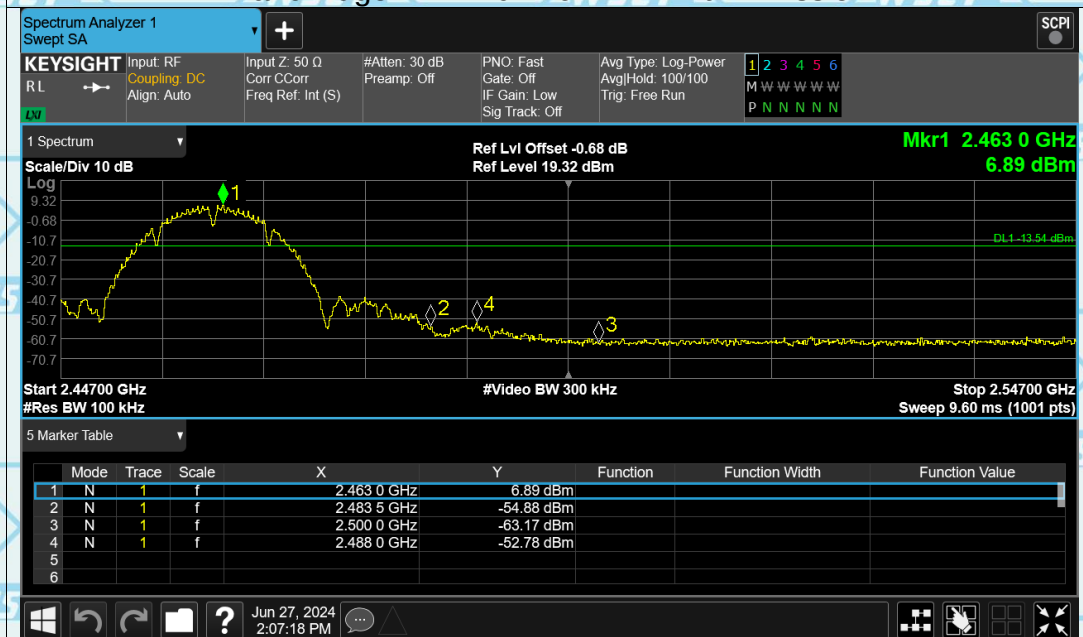
Certificate Number : AT-3951

For Question,
Please Contact with WSCT
www.wsct-cert.com

Band Edge NVNT b 2462MHz Ant1 Ref



Band Edge NVNT b 2462MHz Ant1 Emission



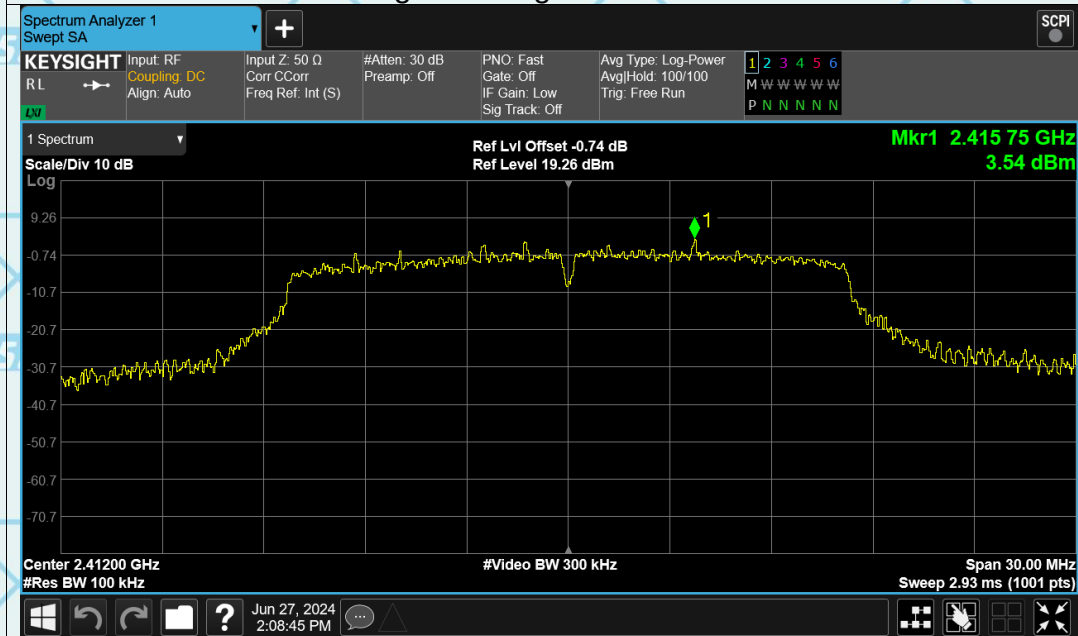


Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

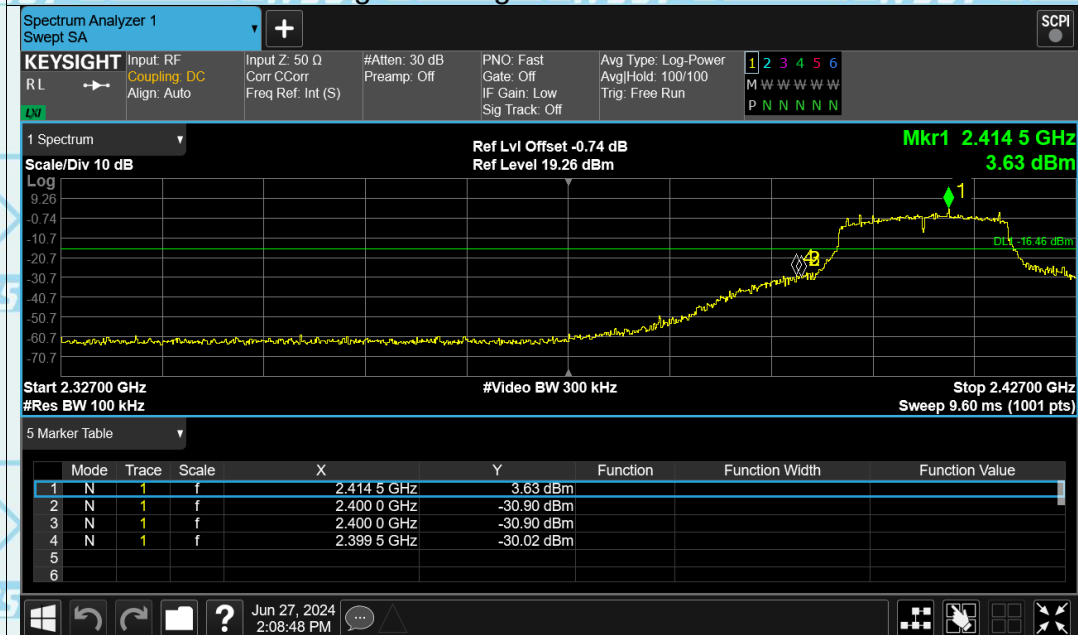
Certificate Number : AT-3951

For Question,
Please Contact with WSCT
www.wsct-cert.com

Band Edge NVNT g 2412MHz Ant1 Ref



Band Edge NVNT g 2412MHz Ant1 Emission



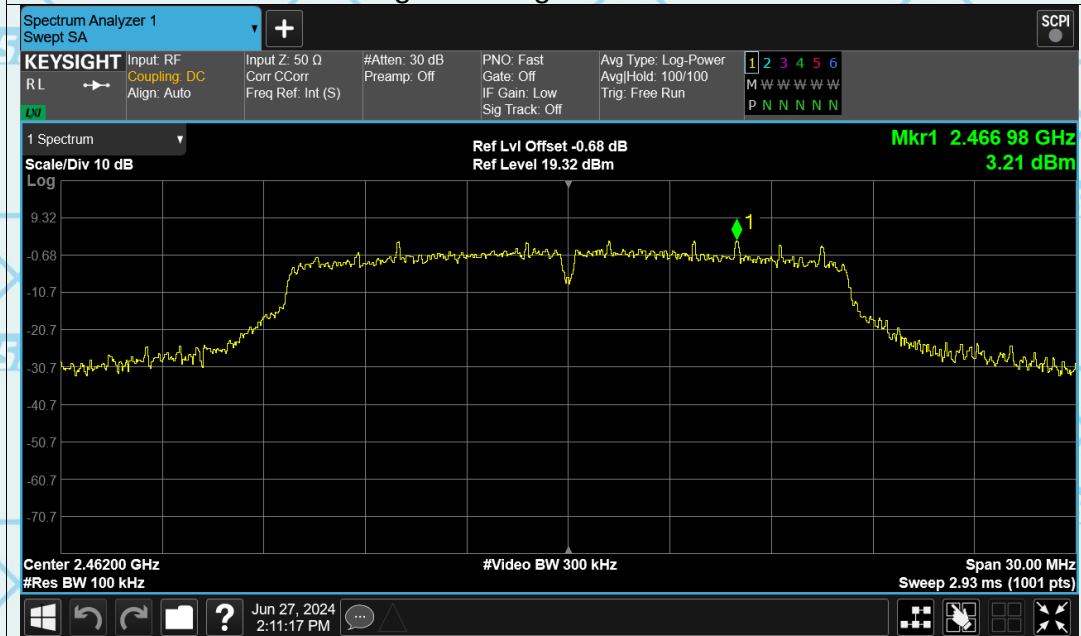


Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

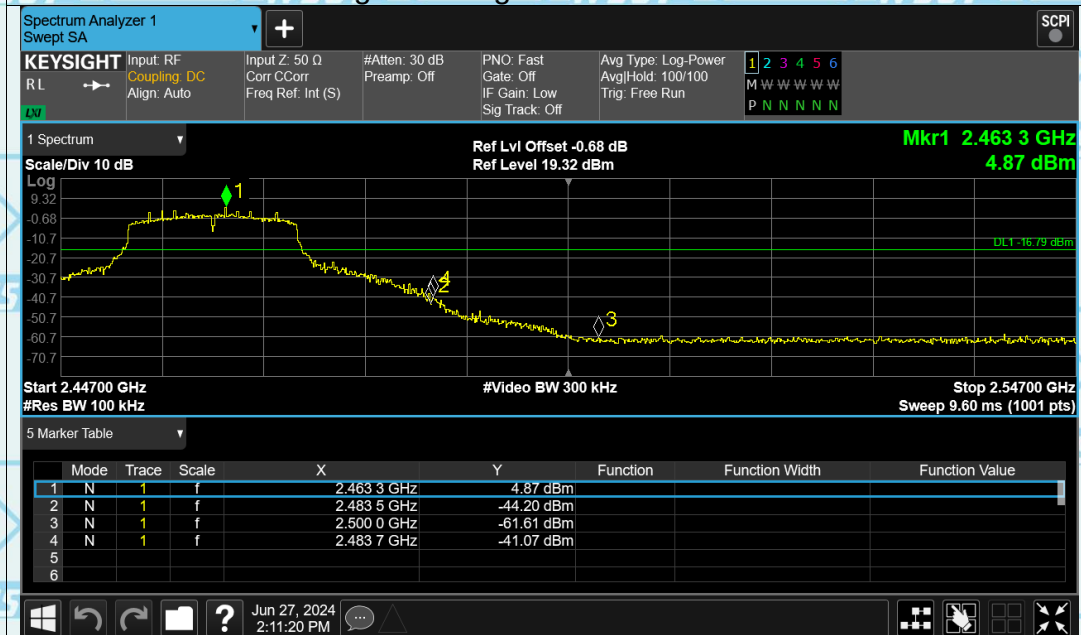
Certificate Number : AT-3951

For Question,
Please Contact with WSCT
www.wsct-cert.com

Band Edge NVNT g 2462MHz Ant1 Ref



Band Edge NVNT g 2462MHz Ant1 Emission



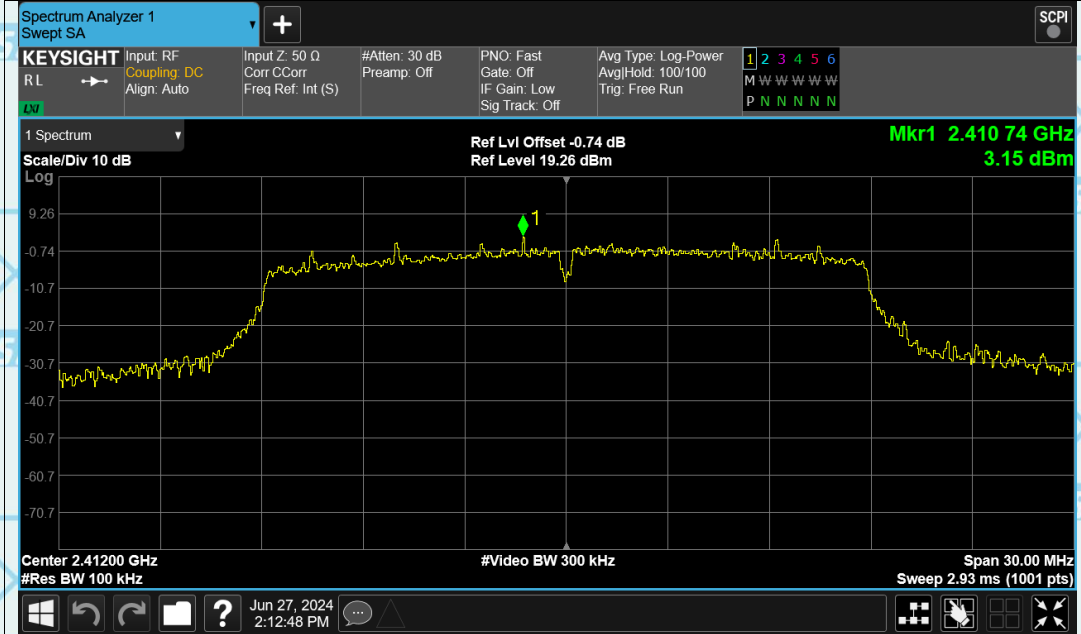


Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

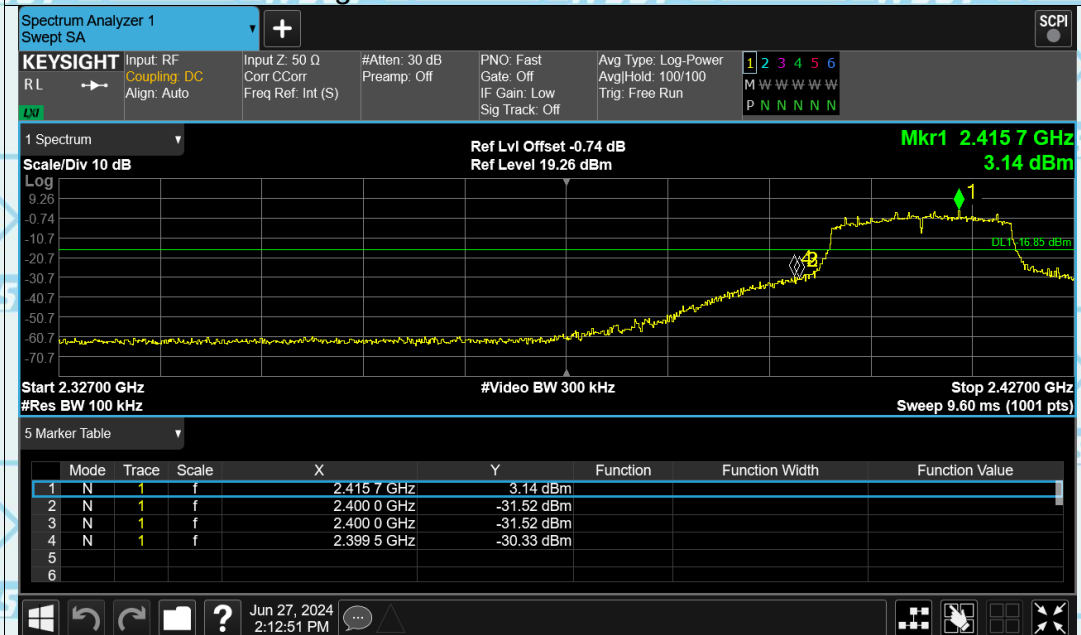
Certificate Number : AT-3951

For Question,
Please Contact with WSCT
www.wsct-cert.com

Band Edge NVNT n20 2412MHz Ant1 Ref



Band Edge NVNT n20 2412MHz Ant1 Emission



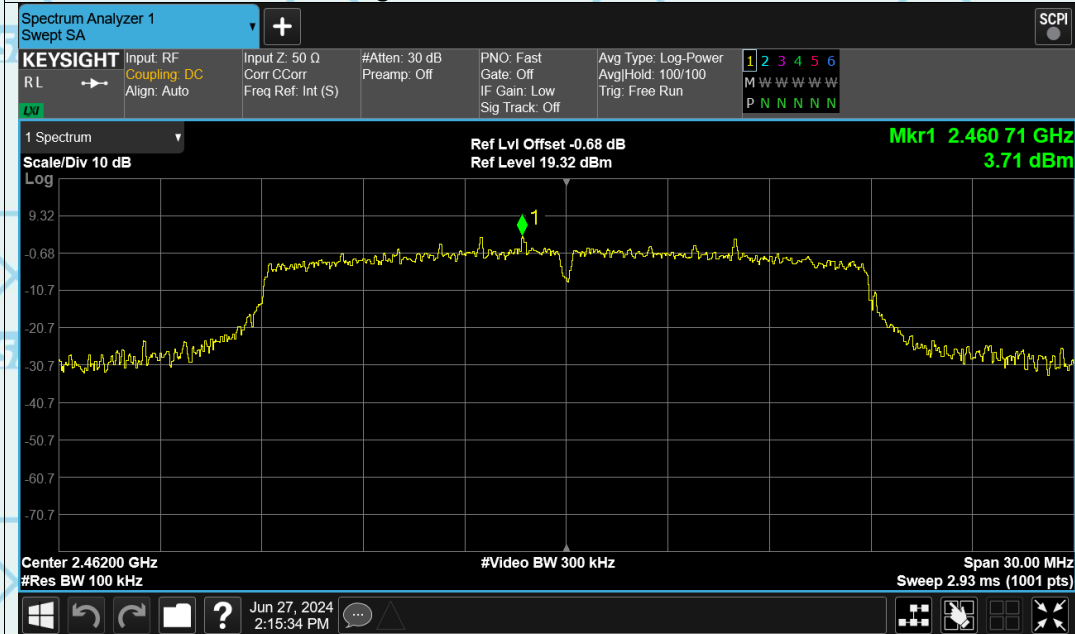


Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

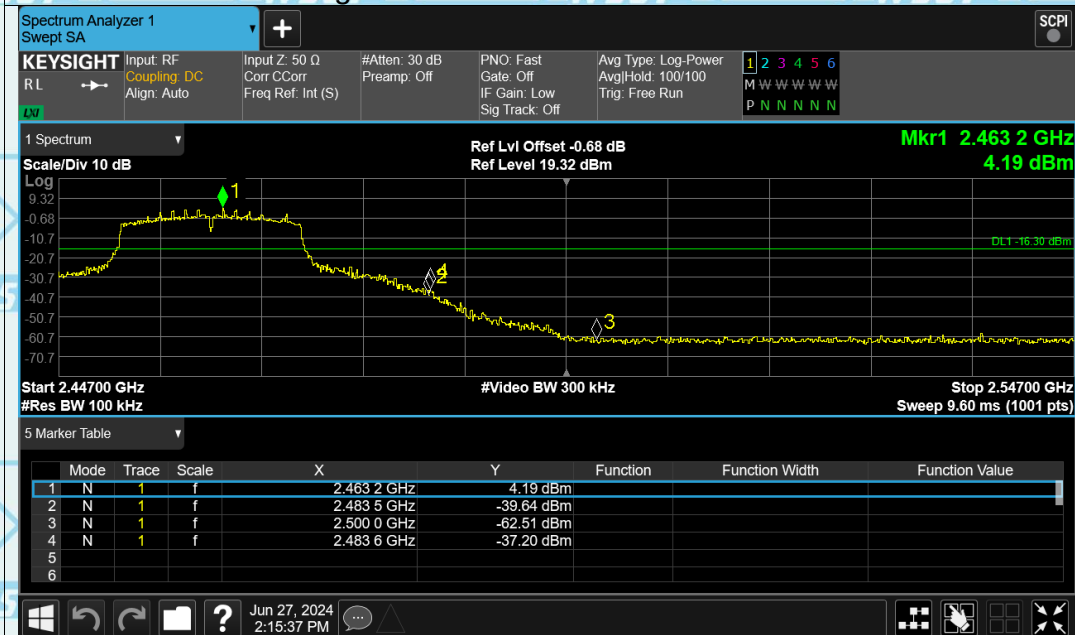
Certificate Number : AT-3951

For Question,
Please Contact with WSCT
www.wsct-cert.com

Band Edge NVNT n20 2462MHz Ant1 Ref



Band Edge NVNT n20 2462MHz Ant1 Emission



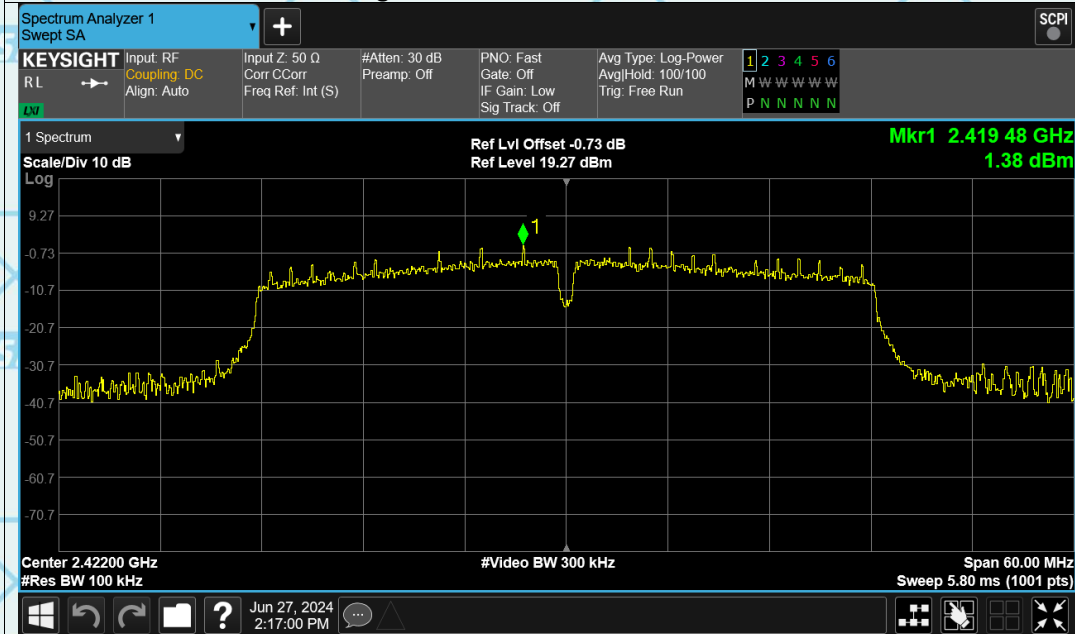


Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

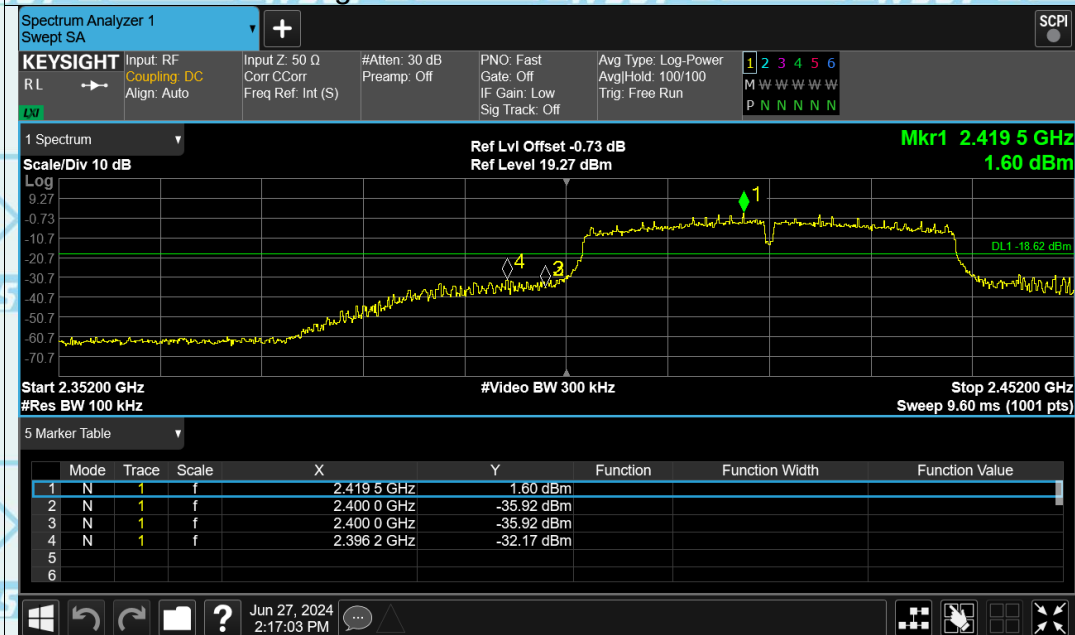
Certificate Number : AT-3951

For Question,
Please Contact with WSCT
www.wsct-cert.com

Band Edge NVNT n40 2422MHz Ant1 Ref



Band Edge NVNT n40 2422MHz Ant1 Emission



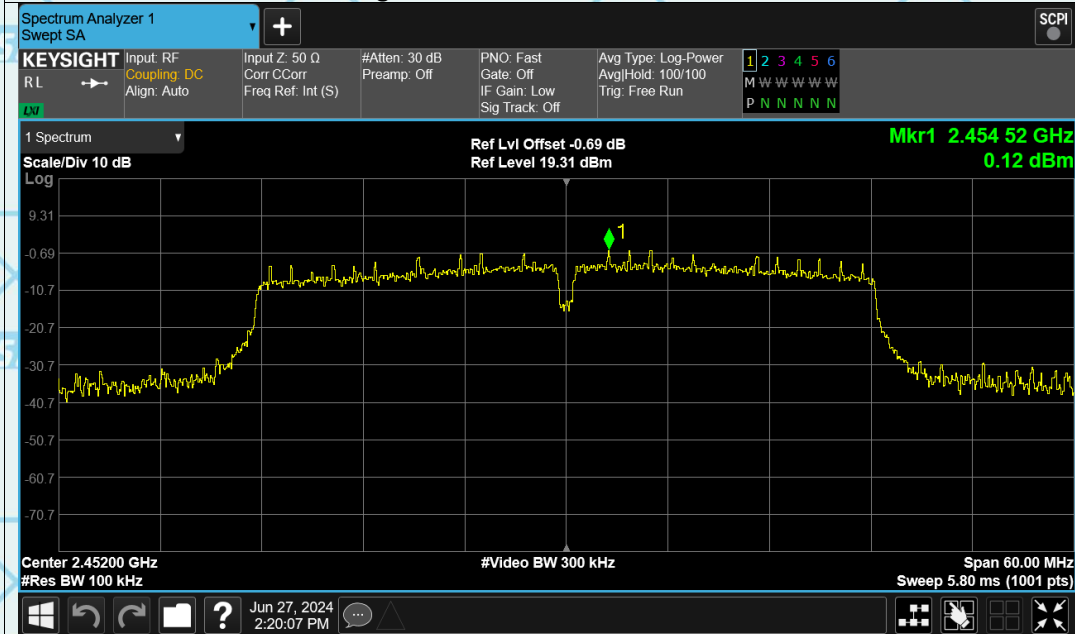


Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

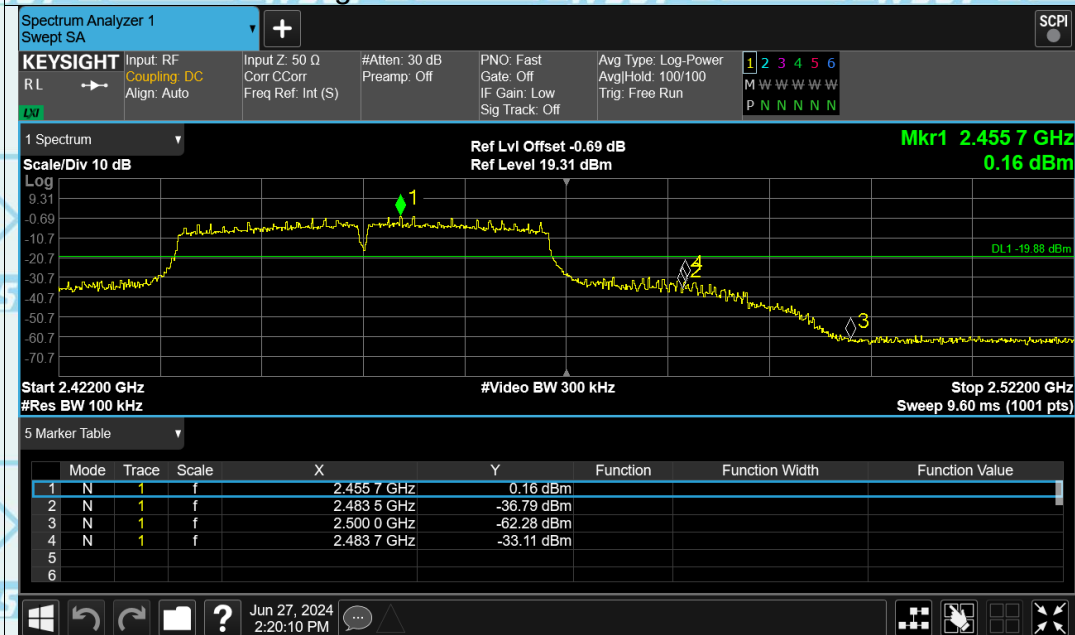
Certificate Number : AT-3951

For Question,
Please Contact with WSCT
www.wsct-cert.com

Band Edge NVNT n40 2452MHz Ant1 Ref



Band Edge NVNT n40 2452MHz Ant1 Emission





Report No.: WSCT-ANAB-R&E240700032A-WI-FI1

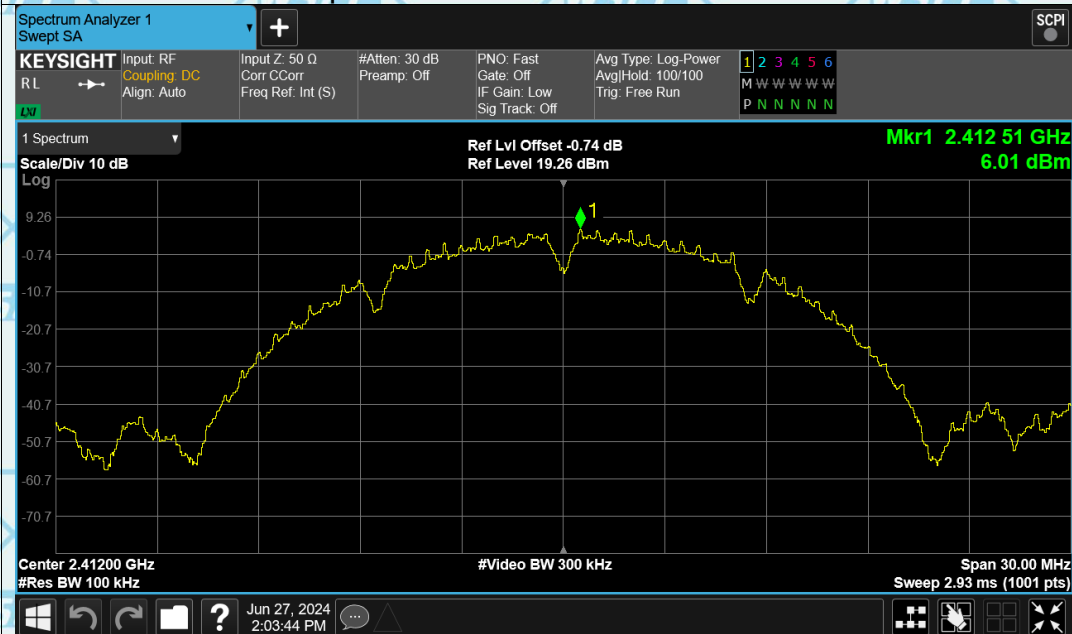
Certificate Number: AT-3951

For Question,
Please Contact with WSCT
www.wsct-cert.com

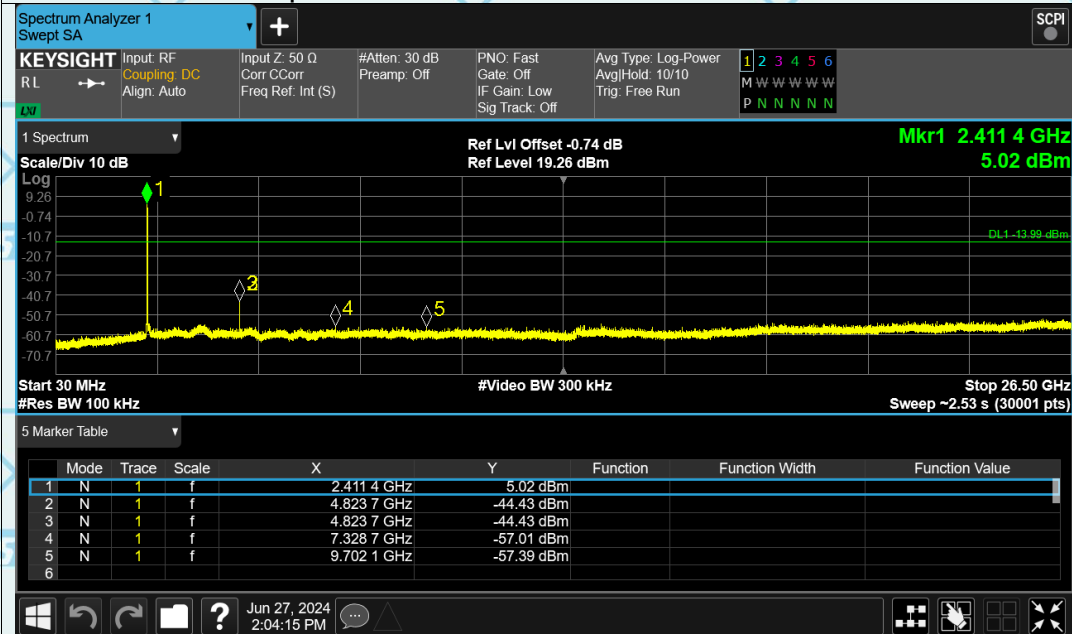
Conducted RF Spurious Emission

Test Graphs

Tx. Spurious NVNT b 2412MHz Ant1 Ref



Tx. Spurious NVNT b 2412MHz Ant1 Emission



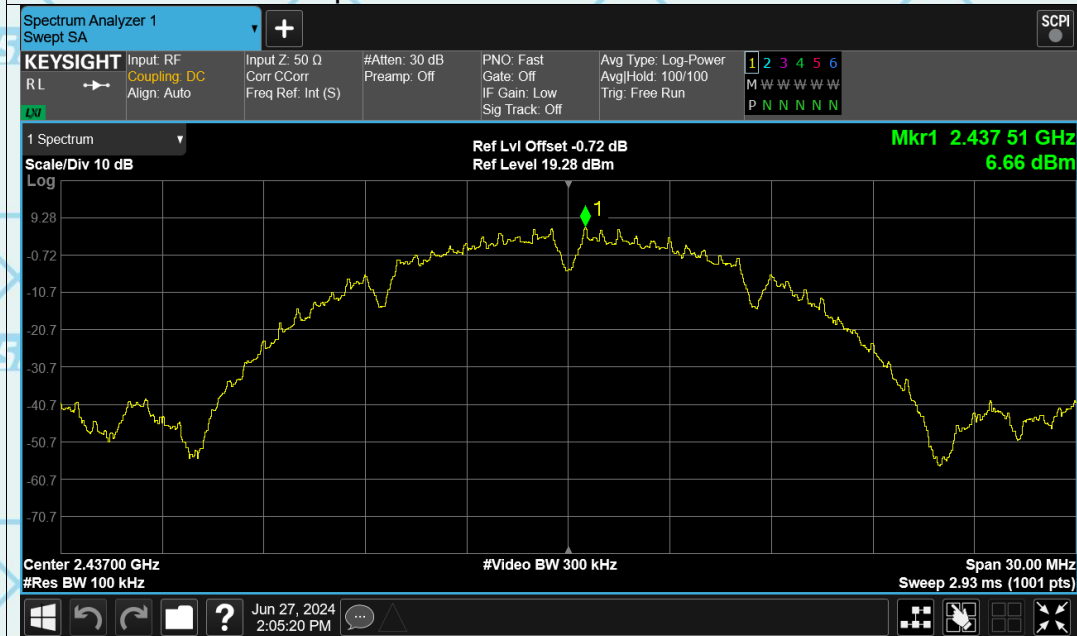


Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

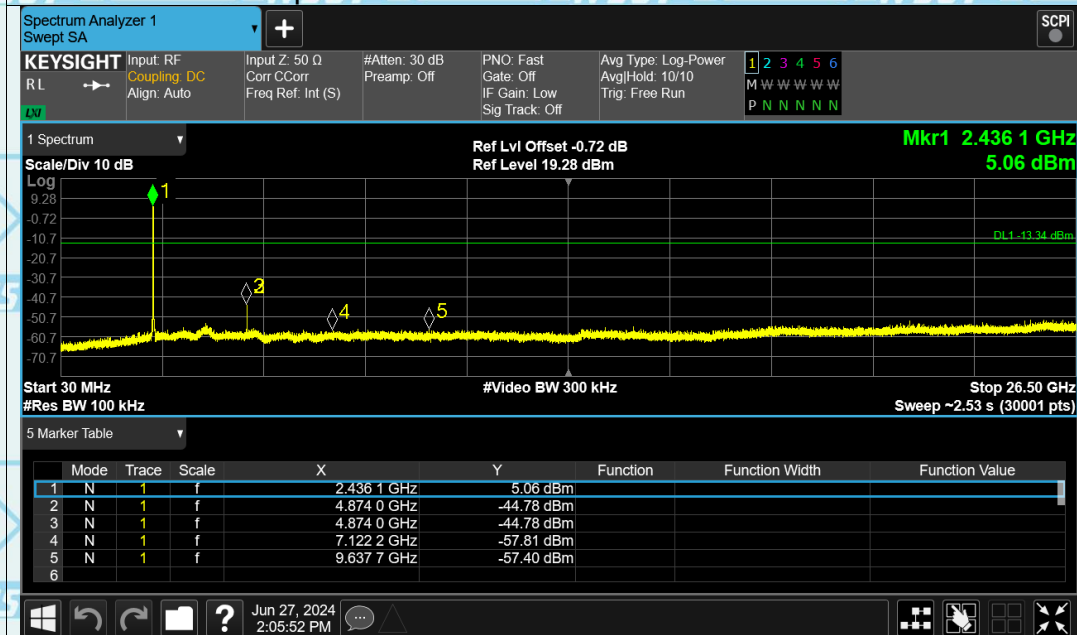
Certificate Number : AT-3951

For Question,
Please Contact with WSCT
www.wsct-cert.com

Tx. Spurious NVNT b 2437MHz Ant1 Ref



Tx. Spurious NVNT b 2437MHz Ant1 Emission



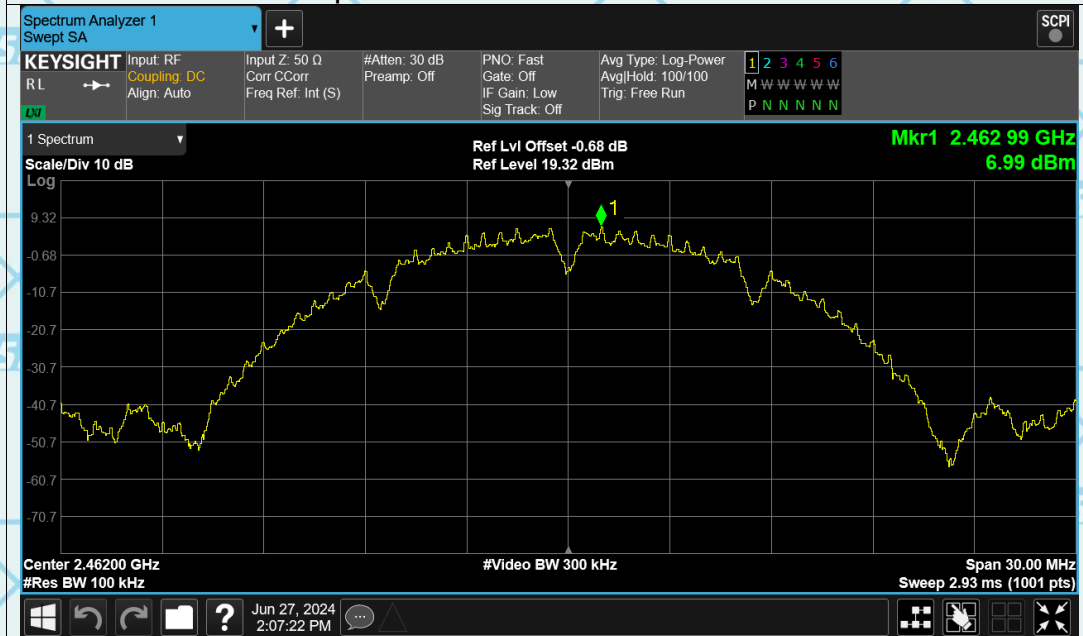


Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

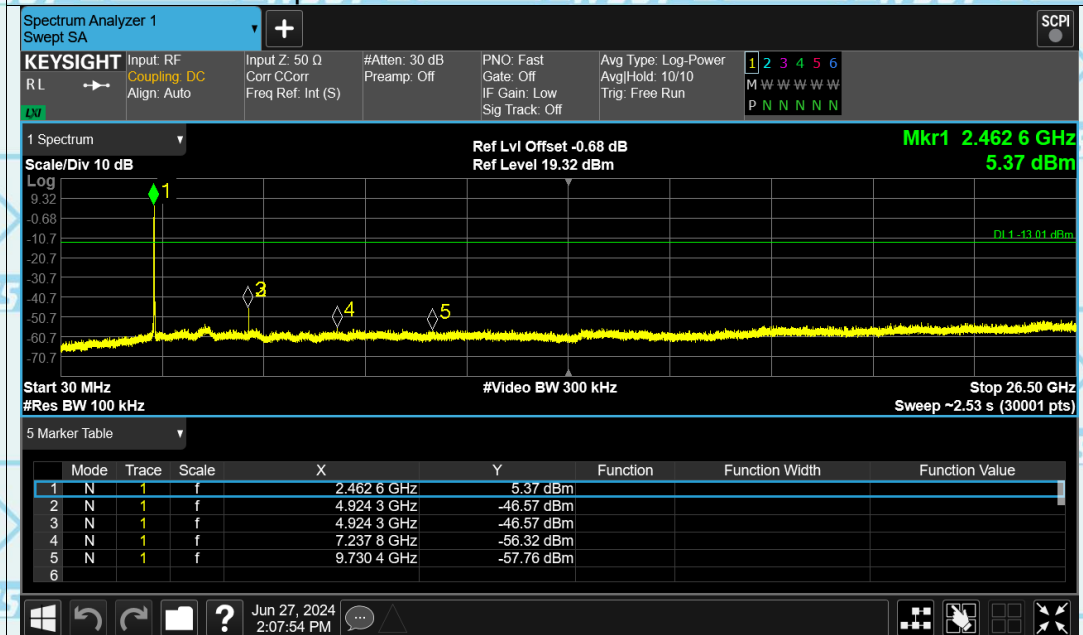
Certificate Number : AT-3951

For Question,
Please Contact with WSCT
www.wsct-cert.com

Tx. Spurious NVNT b 2462MHz Ant1 Ref



Tx. Spurious NVNT b 2462MHz Ant1 Emission



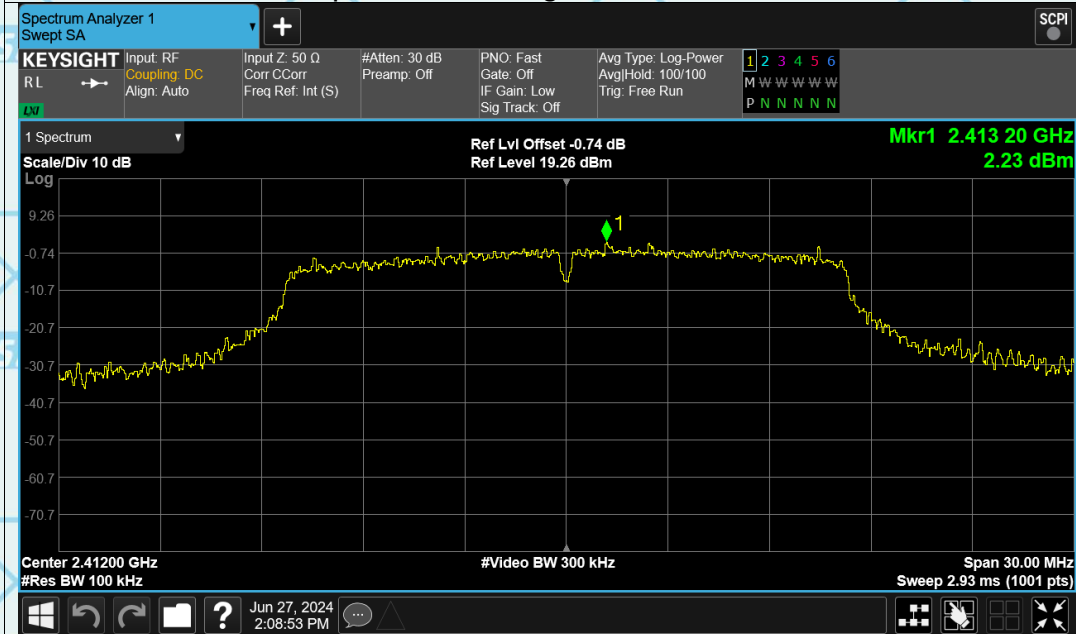


Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

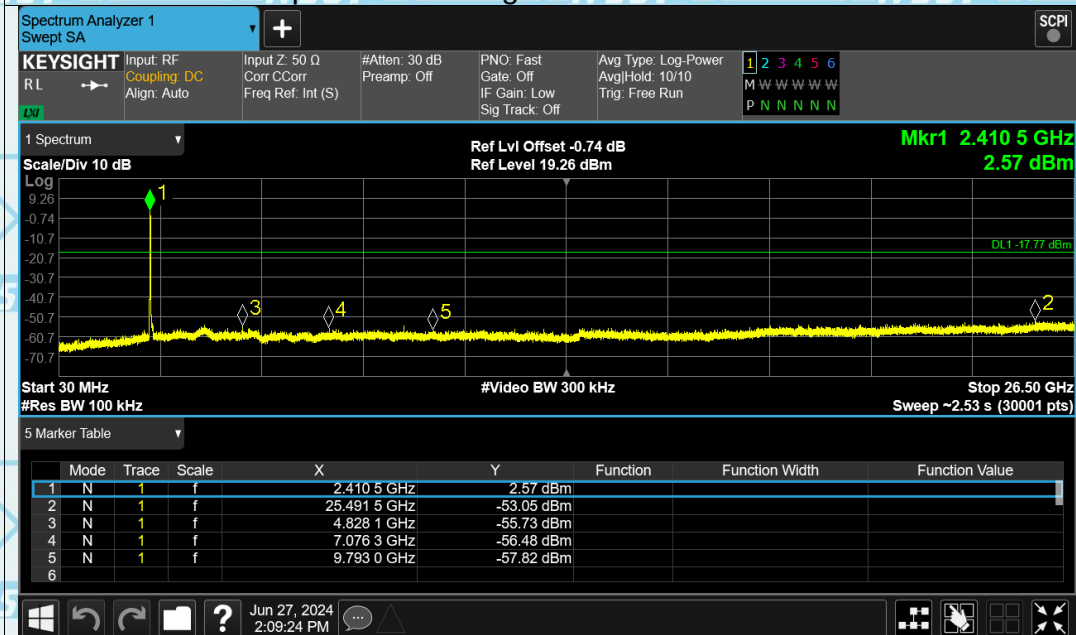
Certificate Number : AT-3951

For Question,
Please Contact with WSCT
www.wsct-cert.com

Tx. Spurious NVNT g 2412MHz Ant1 Ref



Tx. Spurious NVNT g 2412MHz Ant1 Emission



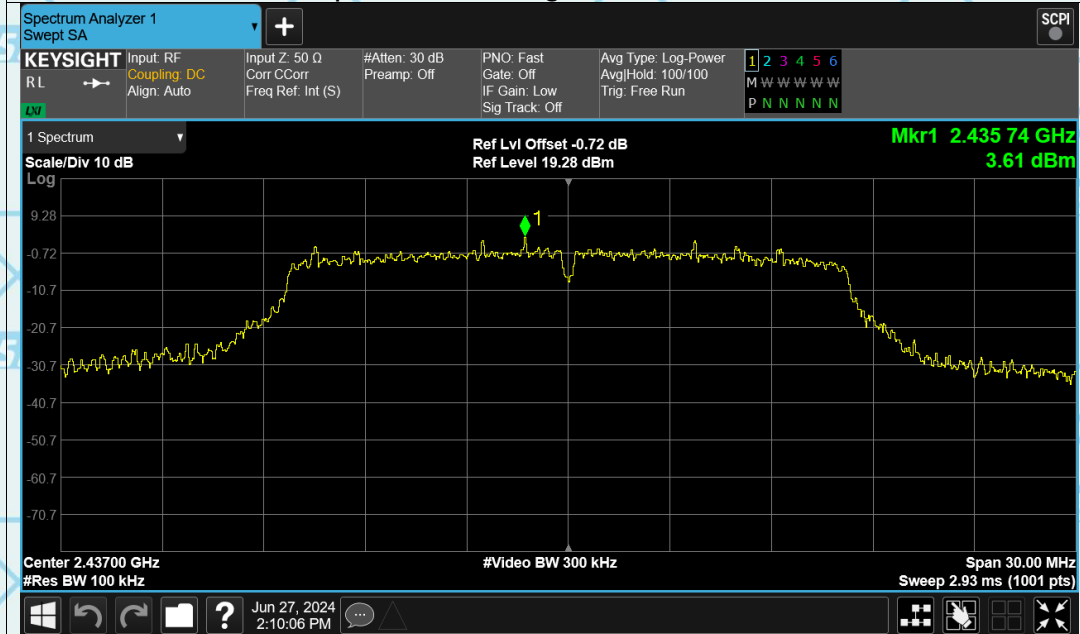


Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

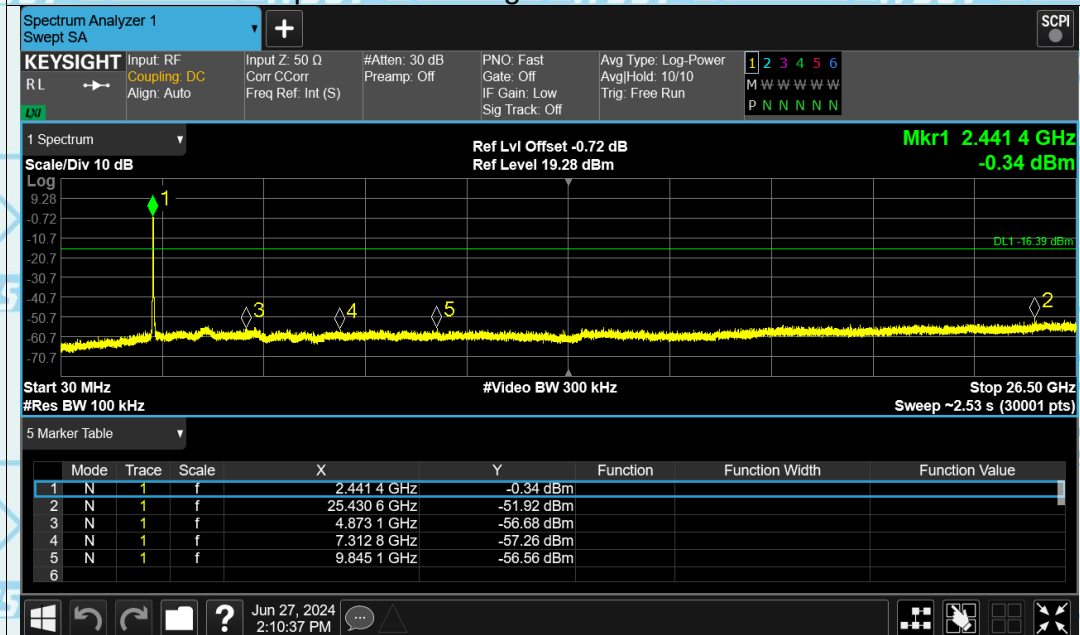
Certificate Number : AT-3951

For Question,
Please Contact with WSCT
www.wsct-cert.com

Tx. Spurious NVNT g 2437MHz Ant1 Ref



Tx. Spurious NVNT g 2437MHz Ant1 Emission



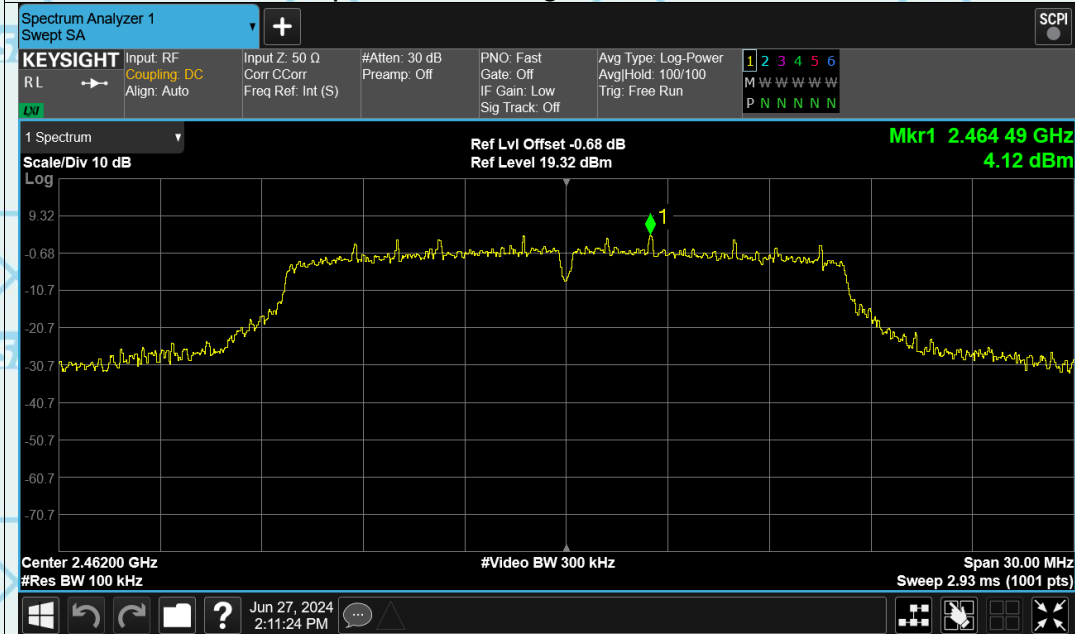


Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

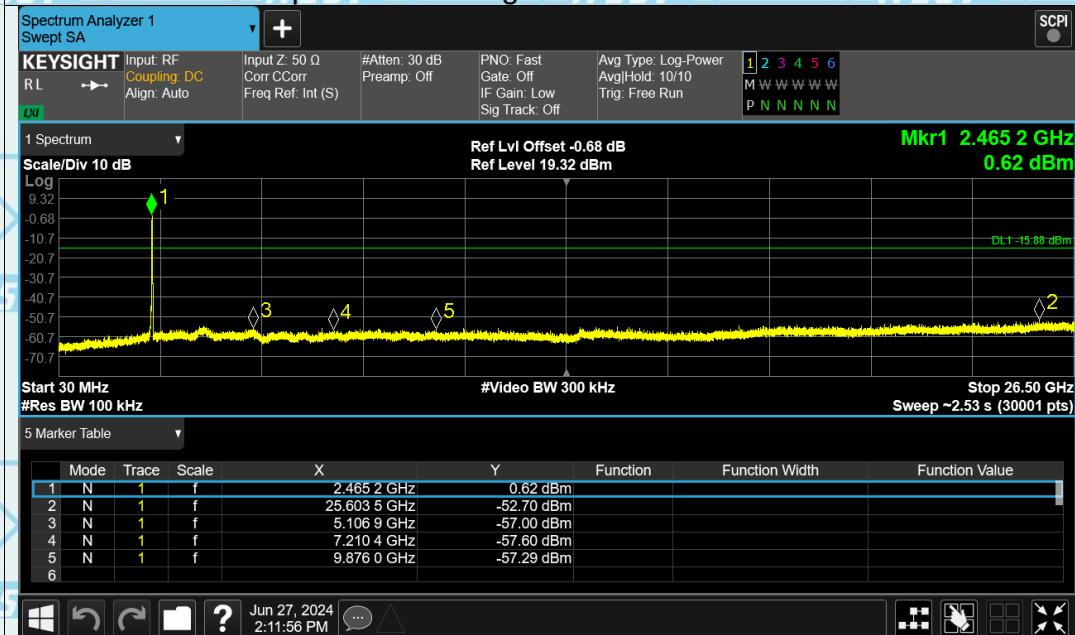
Certificate Number : AT-3951

For Question,
Please Contact with WSCT
www.wsct-cert.com

Tx. Spurious NVNT g 2462MHz Ant1 Ref



Tx. Spurious NVNT g 2462MHz Ant1 Emission



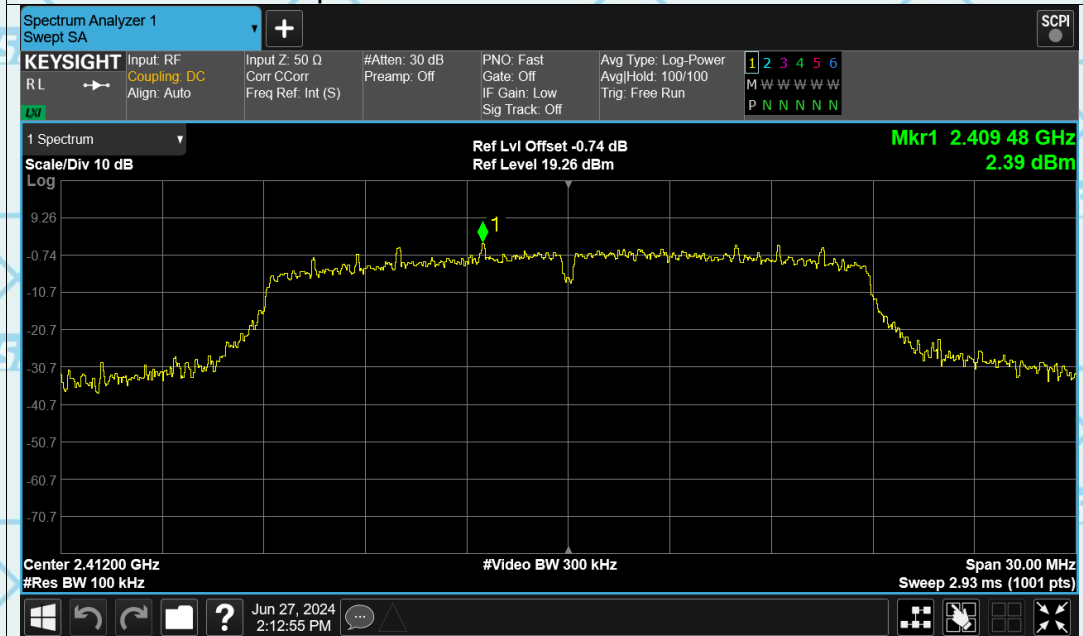


Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

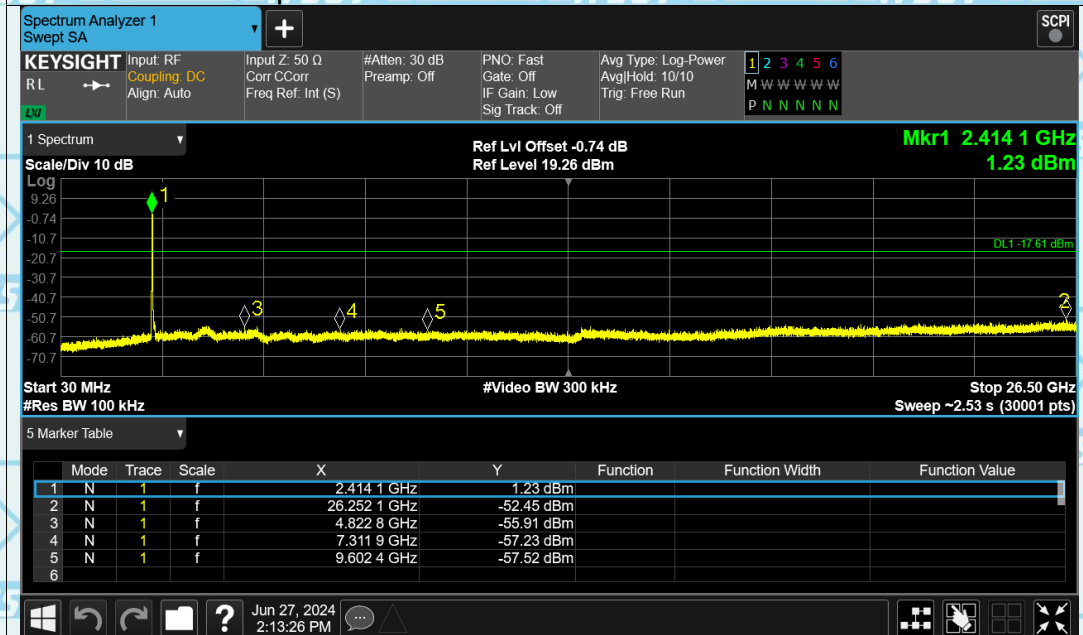
Certificate Number : AT-3951

For Question,
Please Contact with WSCT
www.wsct-cert.com

Tx. Spurious NVNT n20 2412MHz Ant1 Ref



Tx. Spurious NVNT n20 2412MHz Ant1 Emission



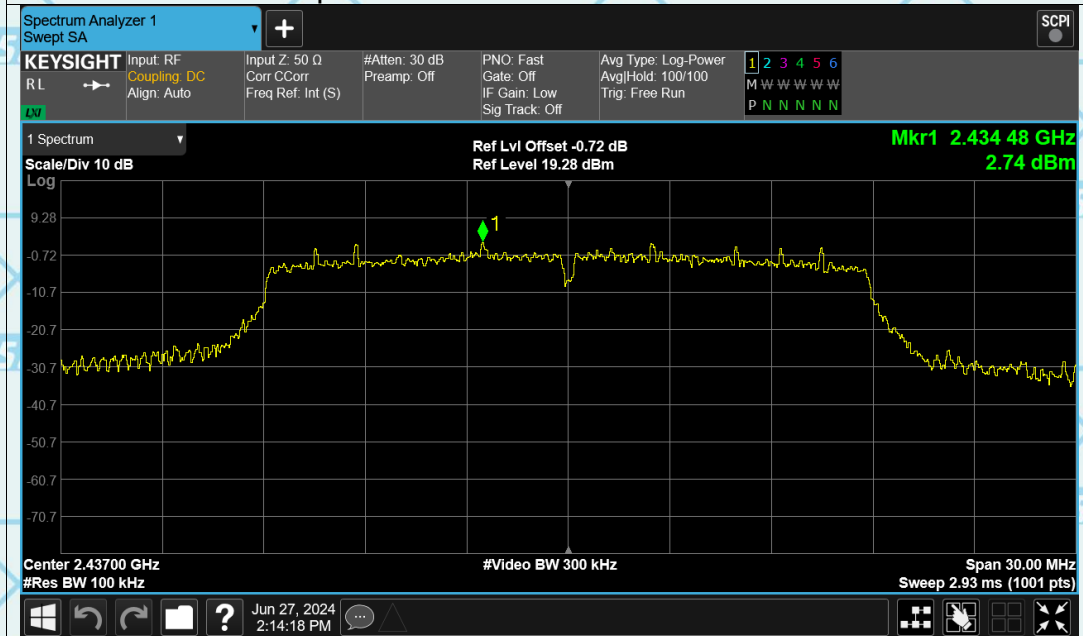


Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

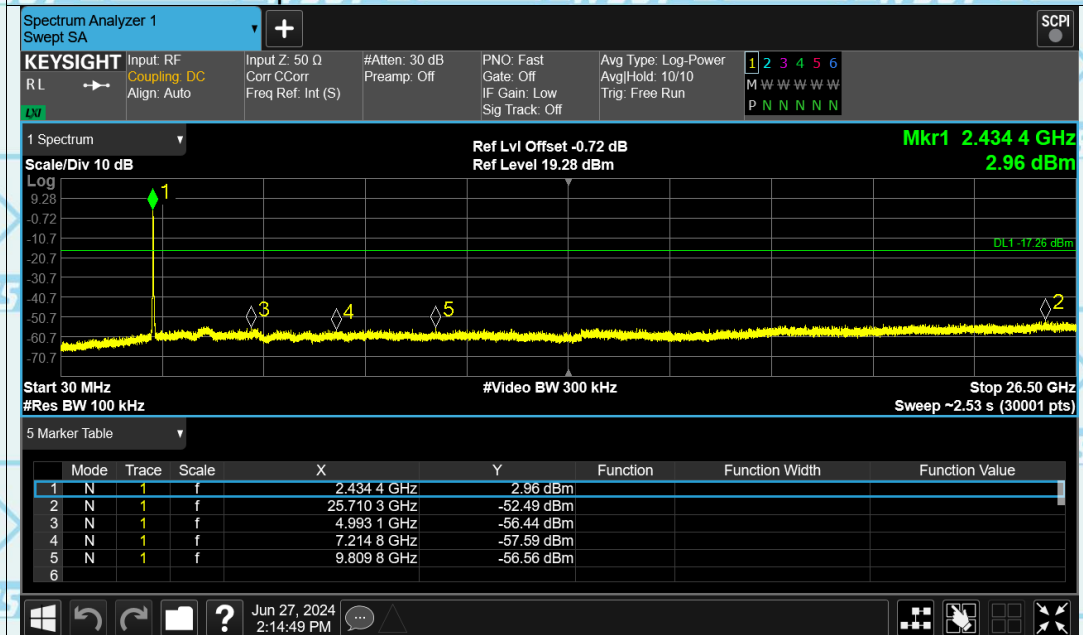
Certificate Number : AT-3951

For Question,
Please Contact with WSCT
www.wsct-cert.com

Tx. Spurious NVNT n20 2437MHz Ant1 Ref



Tx. Spurious NVNT n20 2437MHz Ant1 Emission



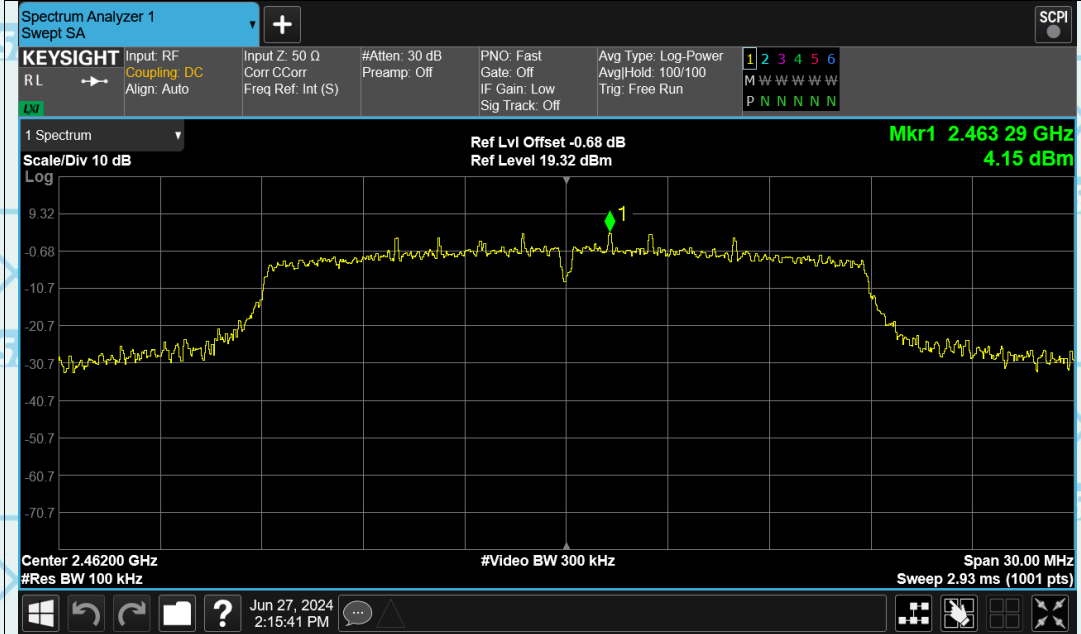


Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

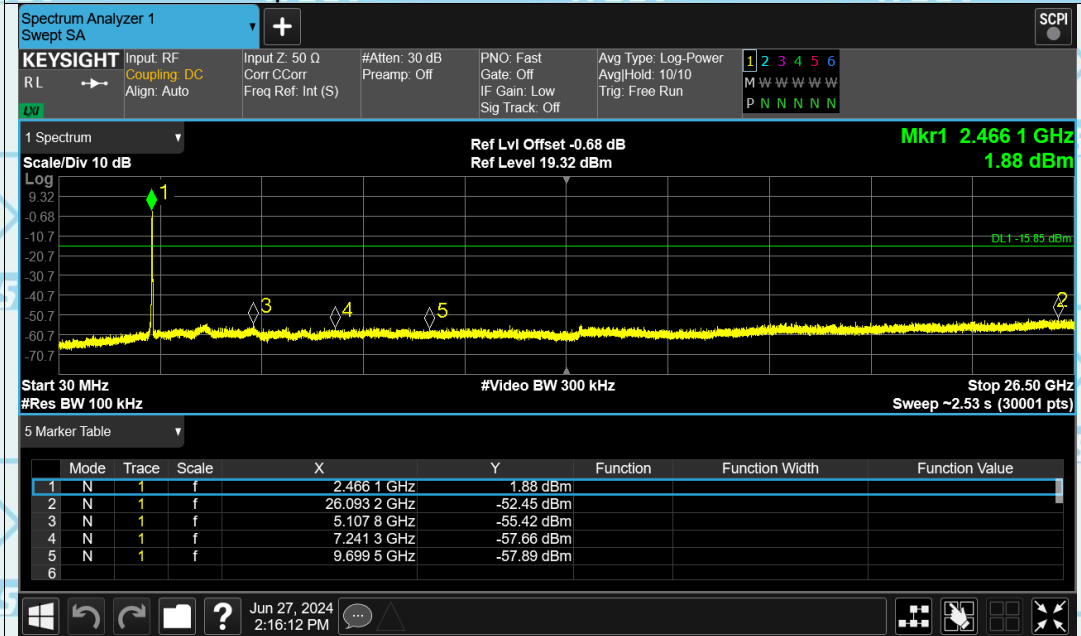
Certificate Number : AT-3951

For Question,
Please Contact with WSCT
www.wsct-cert.com

Tx. Spurious NVNT n20 2462MHz Ant1 Ref



Tx. Spurious NVNT n20 2462MHz Ant1 Emission



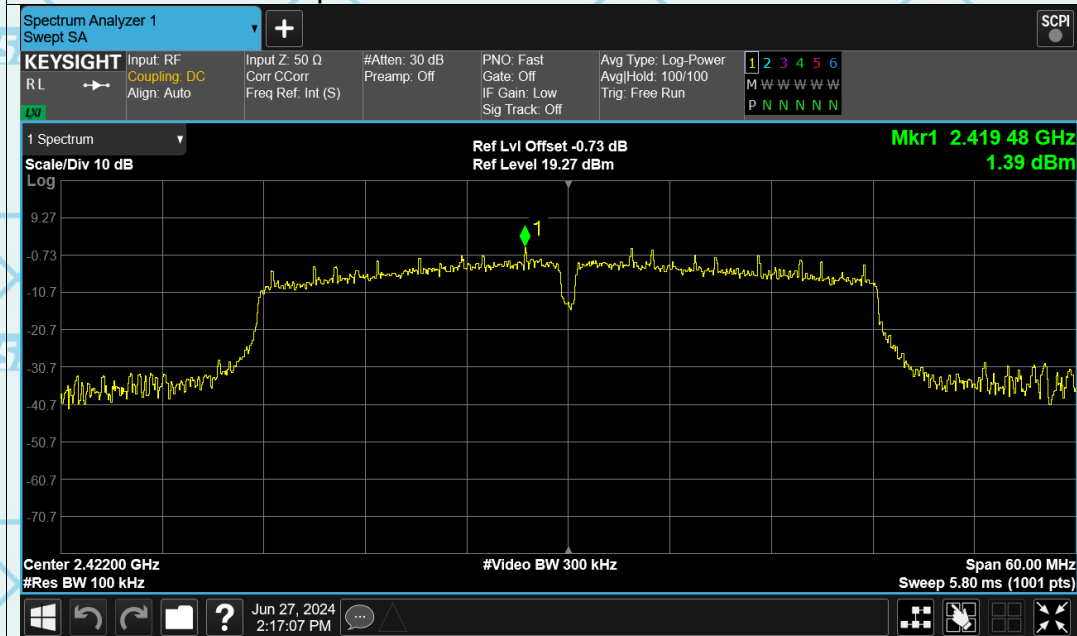


Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

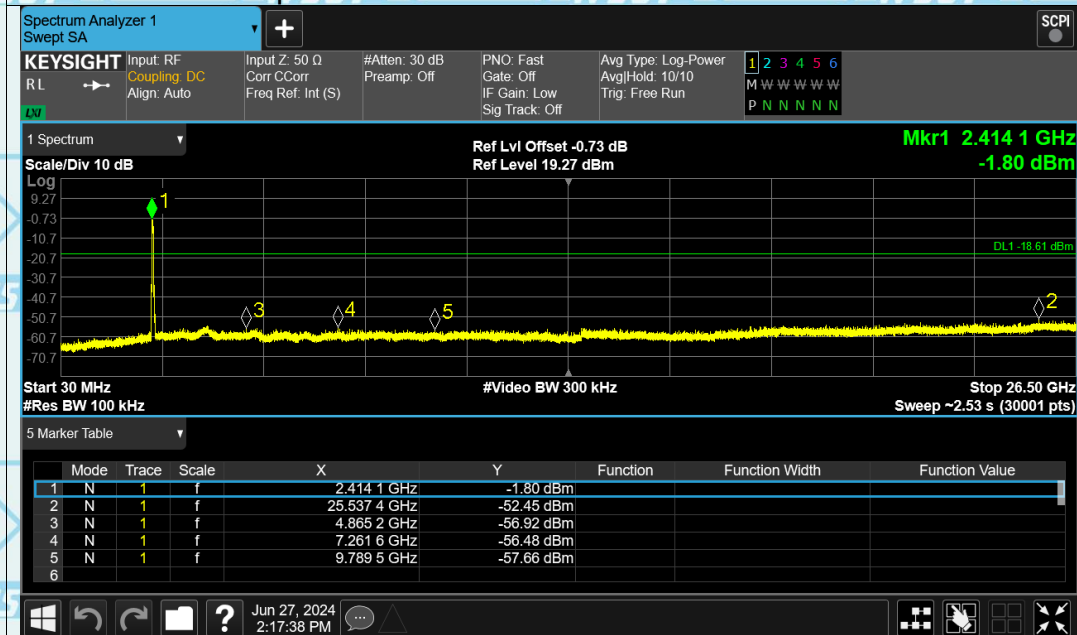
Certificate Number : AT-3951

For Question,
Please Contact with WSCT
www.wsct-cert.com

Tx. Spurious NVNT n40 2422MHz Ant1 Ref



Tx. Spurious NVNT n40 2422MHz Ant1 Emission



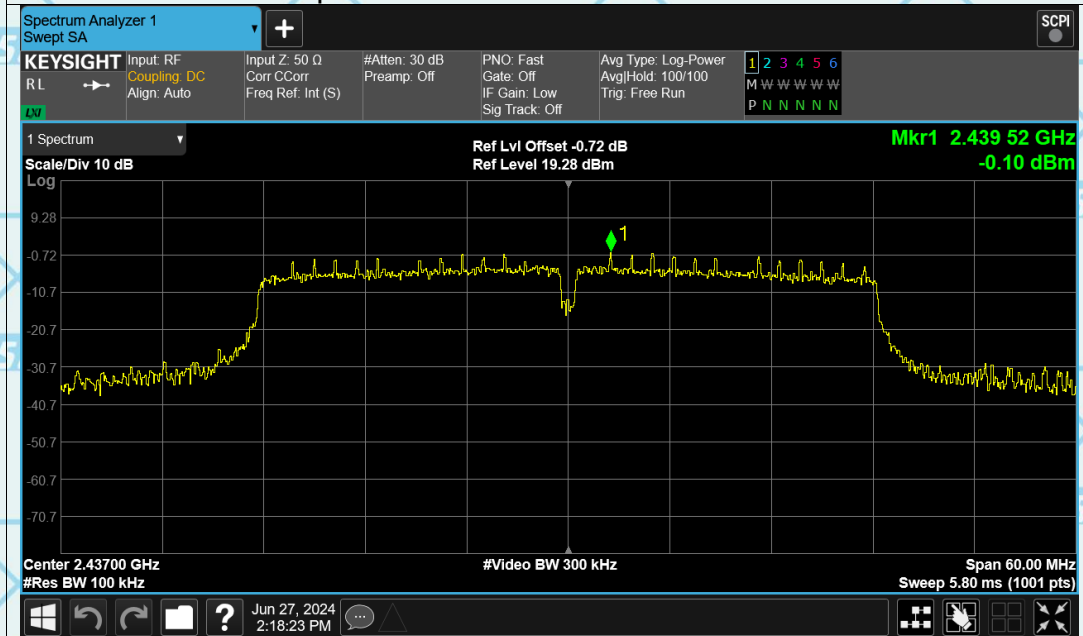


Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

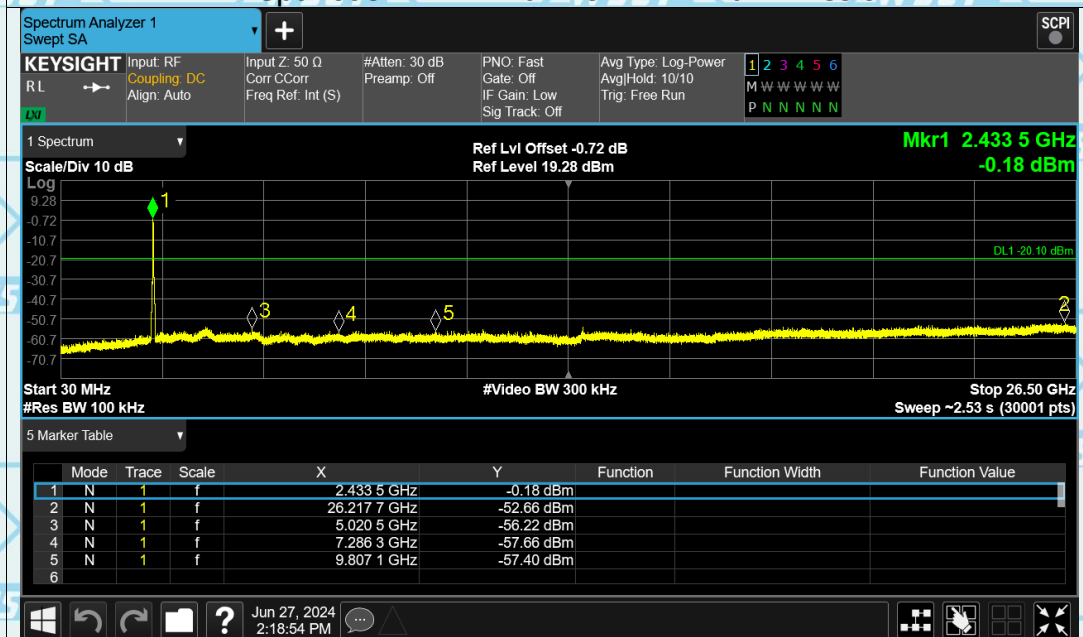
Certificate Number : AT-3951

For Question,
Please Contact with WSCT
www.wsct-cert.com

Tx. Spurious NVNT n40 2437MHz Ant1 Ref



Tx. Spurious NVNT n40 2437MHz Ant1 Emission



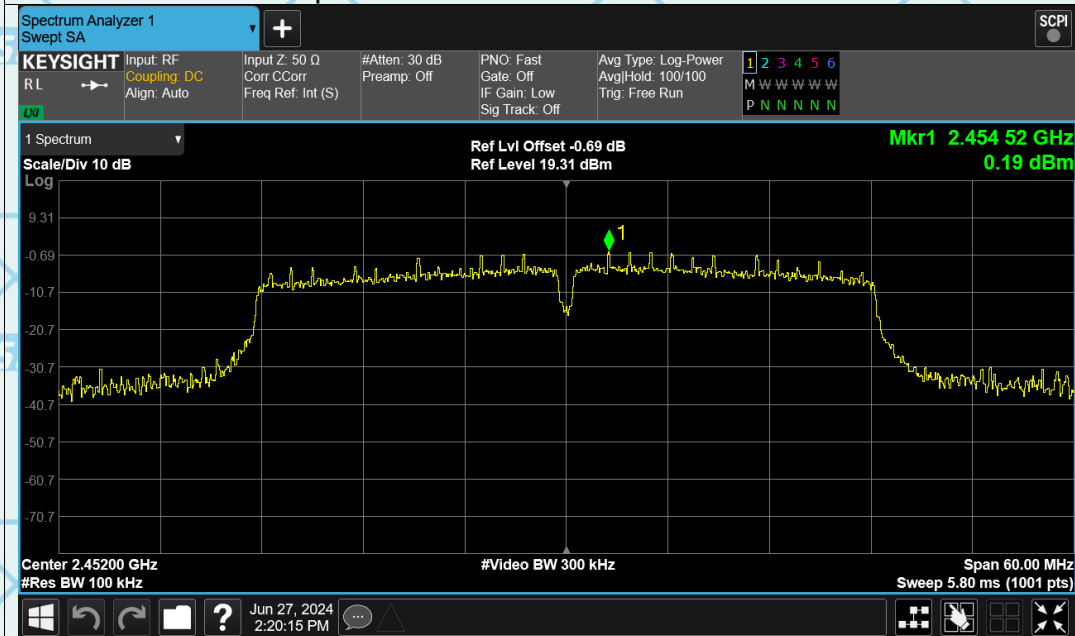


Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

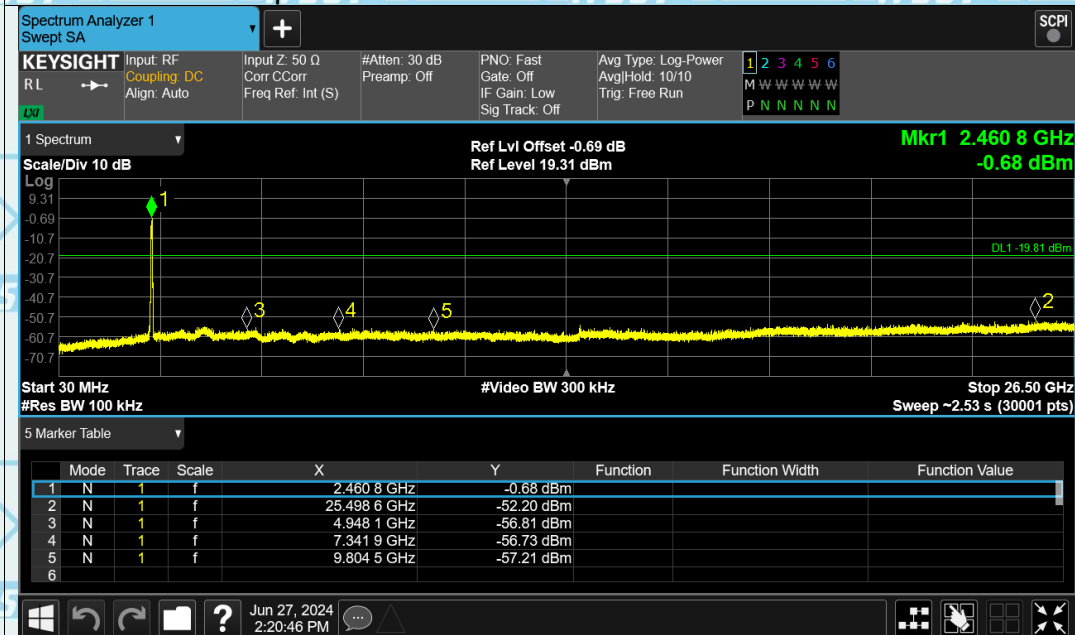
Certificate Number: AT-3951

For Question,
Please Contact with WSCT
www.wsct-cert.com

Tx. Spurious NVNT n40 2452MHz Ant1 Ref



Tx. Spurious NVNT n40 2452MHz Ant1 Emission

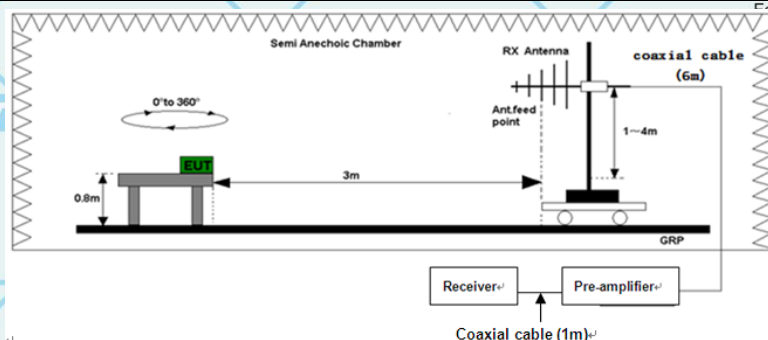




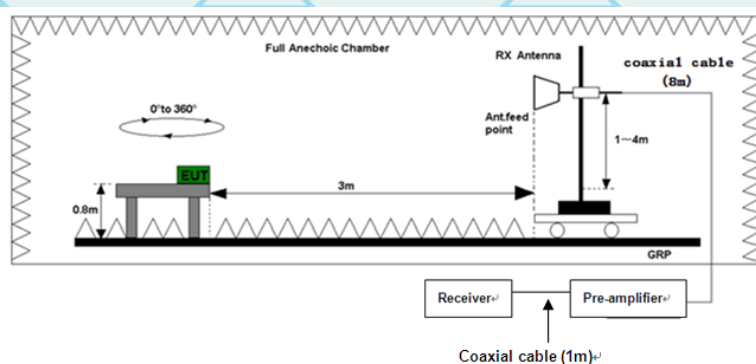
6.6. Radiated Spurious Emission Measurement

6.6.1. Test Specification

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



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 $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold; (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement. For average measurement: VBW = 10 Hz, when duty cycle is no less than 98 percent. VBW $\geq 1/T$, 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.



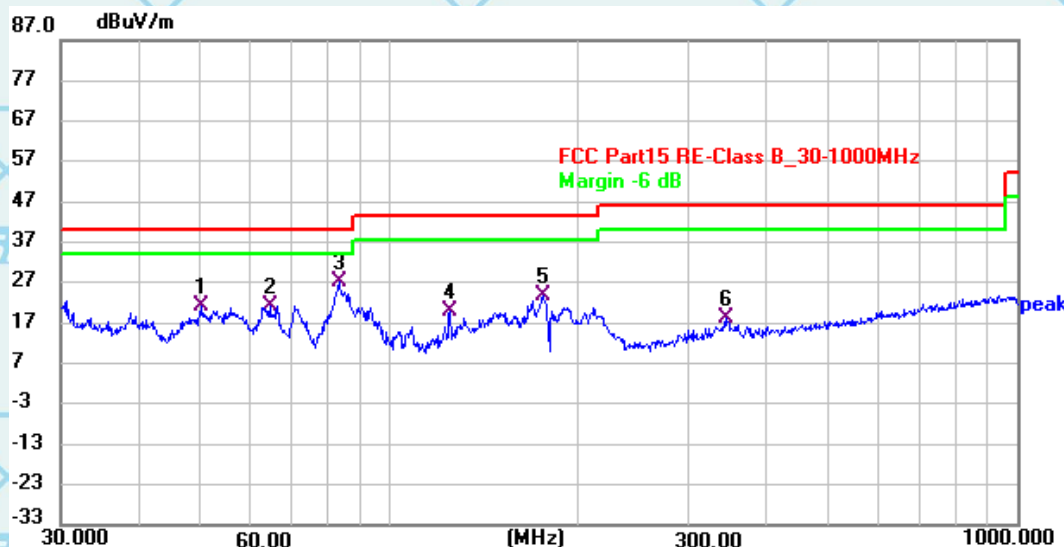
For Question,
Please Contact with WSCT
www.wsct-cert.com

Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

6.6.2. Test Data(worst)

Please refer to following diagram for individual
Below 1GHz

Horizontal:

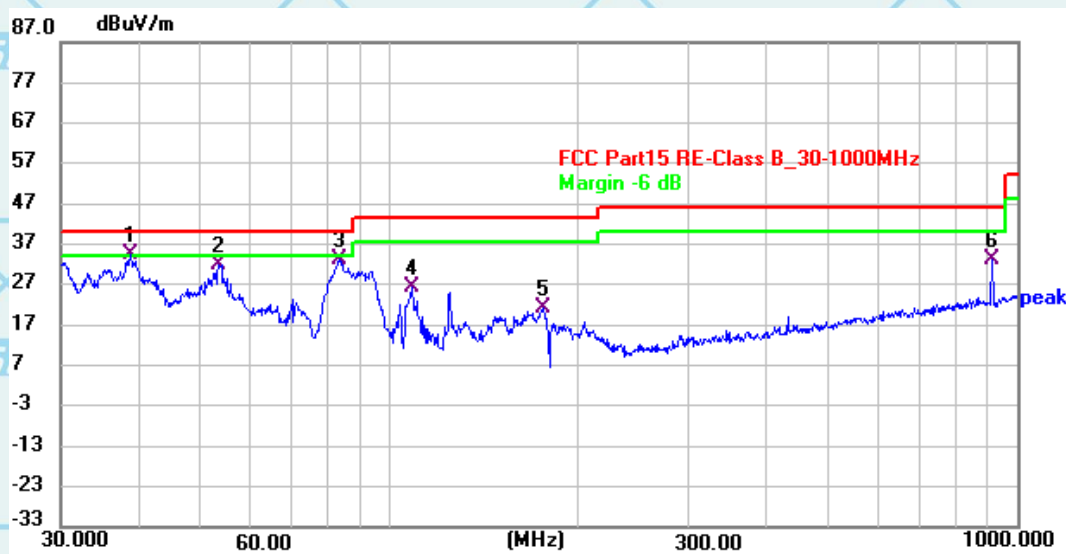


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	50.4310	40.38	-18.97	21.41	40.00	-18.59	QP
2	64.8013	42.50	-21.25	21.25	40.00	-18.75	QP
3 *	83.3759	51.25	-23.95	27.30	40.00	-12.70	QP
4	125.0066	40.99	-20.98	20.01	43.50	-23.49	QP
5	176.0370	45.38	-21.78	23.60	43.50	-19.90	QP
6	343.9329	37.13	-19.05	18.08	46.00	-27.92	QP



Report No.: WSCT-ANAB-R&E240700032A-Wi-Fi1

Vertical:

For Question,
Please Contact with WSCT
www.wsct-cert.com

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	38.9560	53.61	-19.15	34.46	40.00	-5.54	QP
2	53.5522	50.90	-19.11	31.79	40.00	-8.21	QP
3	83.5588	57.05	-23.93	33.12	40.00	-6.88	QP
4	108.8377	49.18	-22.73	26.45	43.50	-17.05	QP
5	175.9598	42.84	-21.76	21.08	43.50	-22.42	QP
6	912.4620	43.07	-9.84	33.23	46.00	-12.77	QP

Note1:

Freq. = Emission frequency in MHz

Reading level (dBuV) = Receiver reading

Corr. Factor (dB) = Antenna factor + Cable loss - Amplifier factor.

Measurement (dBuV) = Reading level (dBuV) + Corr. Factor (dB)

Limit (dBuV) = Limit stated in standard

Margin (dB) = Measurement (dBuV) – Limits (dBuV)



For Question,

Please Contact with WSCT
www.wsct-cert.com

Report No.: WSCT-ANAB-R&E240700032A-WI-FI1

Above 1GHz

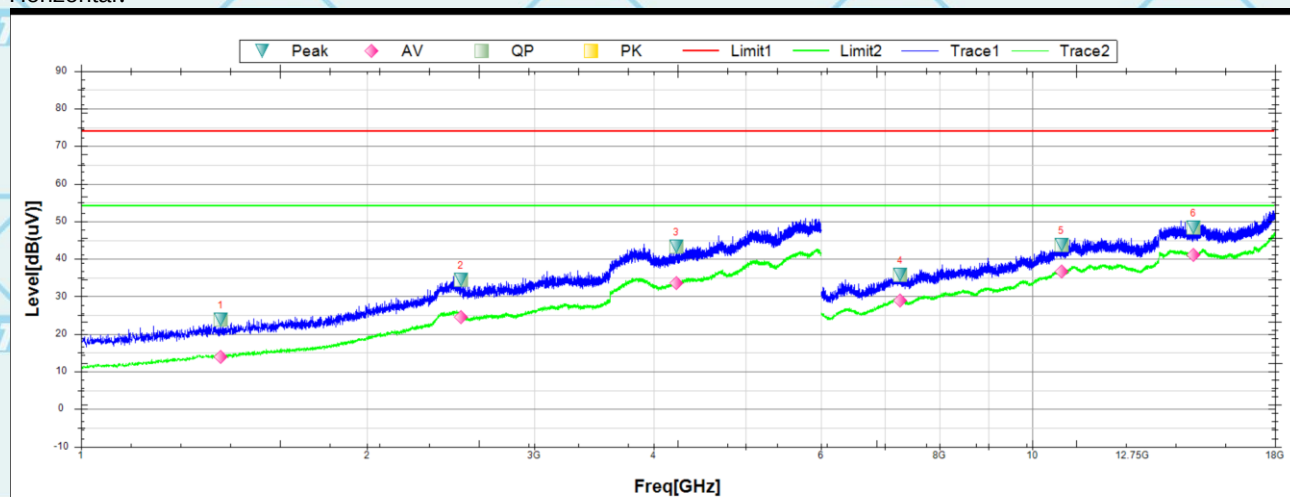
Note 1: The marked spikes near 2400 MHz with circle should be ignored because they are Fundamental signal.

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	1402.5000	23.75	-0.52	24.27	74	-50.25	4.2	Horizontal	PK	Pass
2	2509.3750	34.38	7.01	27.37	74	-39.62	332	Horizontal	PK	Pass
3	4228.1250	43.29	12.88	30.41	74	-30.71	205.3	Horizontal	PK	Pass
4	7269.0000	35.68	35.9	-0.22	74	-38.32	24.5	Horizontal	PK	Pass
5	10734.0000	43.63	39.13	4.5	74	-30.37	323.3	Horizontal	PK	Pass
6	14781.0000	48.42	40.48	7.94	74	-25.58	0.5	Horizontal	PK	Pass

Final Data List

NO.	Freq. [MHz]	Reading [dB(uV)]	Factor [dB]	Level [dB(uV)]	Limit [dB]	Margin [dB]	Deg [°]	Polarity	Trace	Verdict
1	1402.5000	13.84	-0.52	14.36	54	-40.16	4.2	Horizontal	AV	Pass
2	2509.3750	24.56	7.01	17.55	54	-29.44	332	Horizontal	AV	Pass
3	4228.1250	33.63	12.88	20.75	54	-20.37	205.3	Horizontal	AV	Pass
4	7269.0000	28.91	35.9	-6.99	54	-25.09	24.5	Horizontal	AV	Pass
5	10734.0000	36.68	39.13	-2.45	54	-17.32	323.3	Horizontal	AV	Pass
6	14781.0000	41.06	40.48	0.58	54	-12.94	0.5	Horizontal	AV	Pass