



TEST REPORT

FCC ID: 2AJMN-A669L

Product: Mobile Phone

Model No.: A669L

Trade Mark: itel

Report No.: WSCT-A2LA-R&E240300016A-Wi-Fi

Issued Date: 17 May 2024

Issued for:

ITEL MOBILE LIMITED

FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL CENTRE 19-25 SHAN MEI
STREET FOTAN NT HONGKONG

Issued By:

World Standardization Certification & Testing Group(Shenzhen) Co.,Ltd.

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Note: The results contained in this report pertain only to the tested sample. This report shall not be reproduced, except in full, without written approval of World Standardization Certification & Testing Group(Shenzhen) Co., Ltd. This report must not be used by the client to claim product certification, approval, or any agency of the U.S. Government.





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Report No.: WSCT-A2LA-R&E240300016A-Wi-Fi

1. Test Certification

Product: Mobile Phone

Model No.: A669L

Additional Model: itel

Applicant: **ITEL MOBILE LIMITED**
FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL CENTRE 19-25 SHAN
MEI STREET FOTAN NT HONGKONG

Manufacturer: **ITEL MOBILE LIMITED**
FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL CENTRE 19-25 SHAN
MEI STREET FOTAN NT HONGKONG

Date of receipt: 20 March 2024

Date of Test: 21 March 2024 to 16 May 2024

Applicable Standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247

The above equipment has been tested by World Standardization Certification & Testing Group (Shenzhen) Co., Ltd. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By: Wang Xiang
(Wang Xiang)

Checked By: Qin Shuiquan
(Qin Shuiquan)

Approved By: Liu Fuxin
(Liu Fuxin)

Date: 17 May 2024





2. Test Result Summary

Requirement	CFR 47 Section	Result
Antenna requirement	§15.203/§15.247 (c)	PASS
AC Power Line Conducted Emission	§15.207	PASS
Maximum conducted output power	§15.247 (b)(3) §2.1046	PASS
6dB Emission Bandwidth	§15.247 (a)(2) §2.1049	PASS
Power Spectral Density	§15.247 (e)	PASS
Band Edge	§15.247(d) §2.1051, §2.1057	PASS
Spurious Emission	§15.205/§15.209 §2.1053, §2.1057	PASS

Note:

1. PASS: Test item meets the requirement.
2. Fail: Test item does not meet the requirement.
3. N/A: Test case does not apply to the test object.
4. The test result judgment is decided by the limit of test standard.



3. EUT Description

Product:	Mobile Phone
Model No.:	A669L
Trade Mark:	itel
Software version:	A669L-SQ375ABDE-UGo-OP-240327V114DevT
Hardware version:	V1.1
Operation Frequency:	2412MHz~2462MHz (802.11b/g/n(HT20)
Channel Separation:	5MHz
Modulation type:	DSSS (DBPSK, DQPSK, CCK) for IEEE 802.11b OFDM(BPSK,QPSK,16QAM) for IEEE 802.11g/n
Antenna Type:	Integral Antenna
Antenna Gain	-0.17dBi
Operating Voltage:	Adapter: U100ISB Input: 100-240V~50/60Hz 0.3A Output: 5.0V---2.0A 15.0W Rechargeable Li-ion Polymer Battery Model: BL-38CI Rated Voltage: 3.85V Rated Capacity: 3850mAh/14.82Wh Typical Capacity: 4000mAh/15.40Wh Limited Charge Voltage: 4.4V
Remark:	N/A.

Note: 1. N/A stands for no applicable.

2. Antenna gain provided by the customer.



Operation Frequency each of channel For 802.11b/g/n(HT20)

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

802.11b/g/n (HT20)

Channel	Frequency
The lowest channel	2412MHz
The middle channel	2437MHz
The Highest channel	2462MHz



4. Genera Information

4.1. Test environment and mode

Operating Environment:

Temperature:	25.0 °C
Humidity:	56 % RH
Atmospheric Pressure:	1010 mbar

Test Mode:

Engineering mode:	Keep the EUT in continuous transmitting by select channel and modulations(The value of duty cycle is 98.46%)
-------------------	--

The sample was placed (0.8m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages. For the full battery state and The output power to the maximum state.

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Per-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

Mode
802.11b
802.11g
802.11n(H20)

Final Test Mode:

Operation mode:	Keep the EUT in continuous transmitting with modulation
-----------------	---

1. For WIFI function, the engineering test program was provided and enabled to make EUT continuous transmit/receive. 2. According to ANSI C63.10 standards, the test results are both the "worst case" and "worst setup" 1Mbps for 802.11b, 6Mbps for 802.11g, 6.5Mbps for 802.11n(H20). Duty cycle setting during the transmission is 98.5% with maximum power setting for all modulations.



4.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
Adapter	U100ISB	/	/	itel

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
3. For conducted measurements (Output Power, 6dB Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.



5. Facilities and Accreditations

5.1. Facilities

All measurement facilities used to collect the measurement data are located at **Building A-B, Baoshi Science & Technology Park, Baoshi Road, Bao'an District, Shenzhen, Guangdong, China of the World Standardization Certification & Testing Group(Shenzhen) CO., LTD**

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

5.2. ACCREDITATIONS

CNAS - Registration Number: L3732

China National Accreditation Service for Conformity Assessment, The test firm Registration Number: L3732

FCC - Designation Number: CN1303

World Standardization Certification & Testing Group(Shenzhen) CO., LTD. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Designation Number: CN1303.

A2LA - Certificate Number: 5768.01

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number: 5768.01



5.3.Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission Test	$\pm 3.2\text{dB}$
2	RF power, conducted	$\pm 2.4\%$
3	Spurious emissions, conducted	$\pm 0.21\text{dB}$
4	All emissions, radiated(<1GHz)	$\pm 4.7\text{dB}$
5	All emissions, radiated(>1GHz)	$\pm 4.7\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2.0\%$
8	Receiver Spurious Emissions	$\pm 2.5\%$
9	Transmitter Unwanted Emissions in the Spurious Domain	$\pm 2.5\%$
10	Transmitter Unwanted Emission in the out-of Band	$\pm 1.3\%$
11	Occupied Channel Bandwidth	$\pm 2.4\%$



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5.4.MEASUREMENT INSTRUMENTS

NAME OF EQUIPMENT	MANUFACTURER	MODEL	SERIAL NUMBER	Calibration Date	Calibration Due.
Test software	--	EZ-EMC	CON-03A	-	-
Test software	--	MTS8310	-	-	-
EMI Test Receiver	R&S	ESCI	100005	2023-11-05	2024-11-04
LISN	AFJ	LS16	16010222119	2023-11-05	2024-11-04
LISN(EUT)	Mestec	AN3016	04/10040	2023-11-05	2024-11-04
Universal Radio Communication Tester	R&S	CMU 200	1100.0008.02	2023-11-05	2024-11-04
Coaxial cable	Megalon	LMR400	N/A	2023-11-05	2024-11-04
GPIB cable	Megalon	GPIB	N/A	2023-11-05	2024-11-04
Spectrum Analyzer	R&S	FSU	100114	2023-11-05	2024-11-04
Pre Amplifier	H.P.	HP8447E	2945A02715	2023-11-05	2024-11-04
Pre-Amplifier	CDSI	PAP-1G18-38	--	2023-11-05	2024-11-04
Bi-log Antenna	SCHWARZBECK	VULB9168	01488	2023-07-29	2024-07-28
9*6*6 Anechoic	--	--	--	2023-11-05	2024-11-04
Horn Antenna	COMPLIANCE ENGINEERING	CE18000	--	2023-11-05	2024-11-04
Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-631	2023-11-05	2024-11-04
Cable	TIME MICROWAVE	LMR-400	N-TYPE04	2023-11-05	2024-11-04
System-Controller	CCS	N/A	N/A	N.C.R	N.C.R
Turn Table	CCS	N/A	N/A	N.C.R	N.C.R
Antenna Tower	CCS	N/A	N/A	N.C.R	N.C.R
RF cable	Murata	MXHQ87WA3000	-	2023-11-05	2024-11-04
Loop Antenna	EMCO	6502	00042960	2023-11-05	2024-11-04
Horn Antenna	SCHWARZBECK	BBHA 9170	1123	2023-11-05	2024-11-04
Power meter	Anritsu	ML2487A	6K00003613	2023-11-05	2024-11-04
Power sensor	Anritsu	MX248XD	--	2023-11-05	2024-11-04
Spectrum Analyzer	Keysight	N9010B	MY60241089	2023-11-05	2024-11-04



6. Test Results and Measurement Data

6.1. Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
<p>15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</p> <p>15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.</p>	
E.U.T Antenna:	
<p>The Wi-Fi antenna is a Integral Antenna. it meets the standards, and the best case gain of the antenna is -0.17dBi.</p>	



6.2. Conducted Emission

6.2.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.207														
Test Method:	ANSI C63.10:2014														
Frequency Range:	150 kHz to 30 MHz														
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto														
Limits:	<table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBuV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>5-30</td><td>60</td><td>50</td></tr></table>	Frequency range (MHz)	Limit (dBuV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dBuV)														
	Quasi-peak	Average													
0.15-0.5	66 to 56*	56 to 46*													
0.5-5	56	46													
5-30	60	50													
Test Setup:	<div><p>Reference Plane</p><p>40cm 80cm</p><p>E.U.T. AC power LISN Filter AC power EMI Receiver</p><p>Test table/Insulation plane</p><p>Remark E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p></div>														
Test Mode:	Charging + transmitting with modulation														
Test Procedure:	<div><div>1. The E.U.T is connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.</div><div>2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).</div><div>3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2014 on conducted measurement.</div></div>														
Test Result:	PASS														



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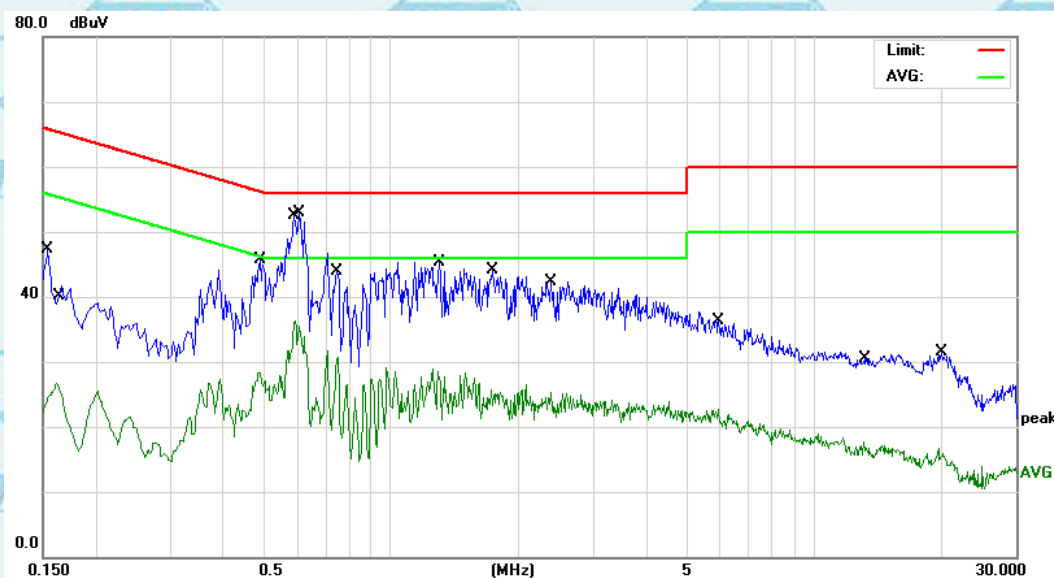
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6.2.2. Test data

Please refer to following diagram for individual

Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1539	36.83	10.45	47.28	65.78	-18.50	QP
2		0.1620	16.28	10.45	26.73	55.36	-28.63	AVG
3		0.4900	35.14	10.52	45.66	56.17	-10.51	QP
4		0.5940	25.76	10.53	36.29	46.00	-9.71	AVG
5	*	0.6060	42.43	10.53	52.96	56.00	-3.04	QP
6		0.7500	20.20	10.53	30.73	46.00	-15.27	AVG
7		1.2980	34.73	10.60	45.33	56.00	-10.67	QP
8		1.7380	33.46	10.67	44.13	56.00	-11.87	QP
9		2.3900	14.65	10.71	25.36	46.00	-20.64	AVG
10		5.9420	11.98	10.76	22.74	50.00	-27.26	AVG
11		13.0659	6.59	11.06	17.65	50.00	-32.35	AVG
12		20.0340	20.45	11.05	31.50	60.00	-28.50	QP

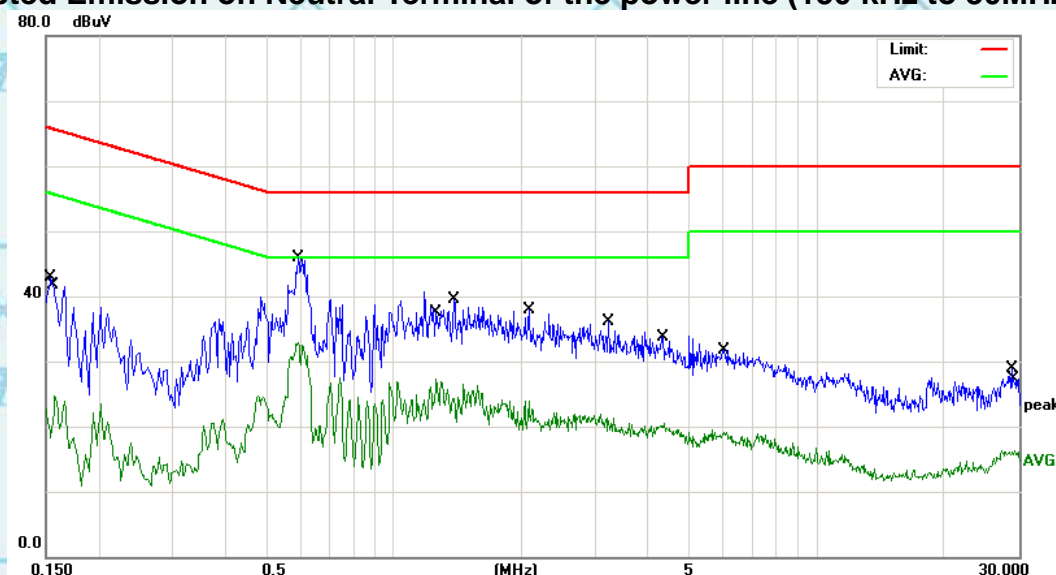


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Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)



No.	Mk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measure- ment dBμV	Limit dBμV	Over dB	Detector
1		0.1539	32.41	10.45	42.86	65.78	-22.92	QP
2		0.1580	14.24	10.45	24.69	55.56	-30.87	AVG
3	*	0.5940	35.43	10.53	45.96	56.00	-10.04	QP
4		0.5940	22.27	10.53	32.80	46.00	-13.20	AVG
5		1.2579	16.73	10.59	27.32	46.00	-18.68	AVG
6		1.3860	28.94	10.61	39.55	56.00	-16.45	QP
7		2.0820	13.11	10.71	23.82	46.00	-22.18	AVG
8		3.2180	25.45	10.72	36.17	56.00	-19.83	QP
9		4.3460	9.78	10.73	20.51	46.00	-25.49	AVG
10		6.0340	20.99	10.76	31.75	60.00	-28.25	QP
11		28.8620	17.74	11.19	28.93	60.00	-31.07	QP
12		29.2820	5.18	11.20	16.38	50.00	-33.62	AVG

Note1:

Freq. = Emission frequency in MHz

Reading level (dBμV) = Receiver reading

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

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

Limit (dBμV) = Limit stated in standard

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

Q.P. = Quasi-Peak AVG = average

* is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.



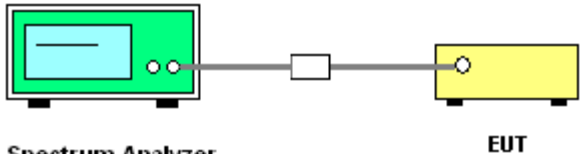
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6.2.3. Maximum conducted output power

6.2.4. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	KDB 558074
Limit:	30dBm
Test Setup:	 <p style="text-align: center;">Spectrum Analyzer EUT</p>
Test Mode:	Transmitting mode with modulation
Test Procedure:	<ol style="list-style-type: none"> 1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 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. Measure the conducted output power and record the results in the test report.
Test Result:	PASS





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6.2.5. Test Data

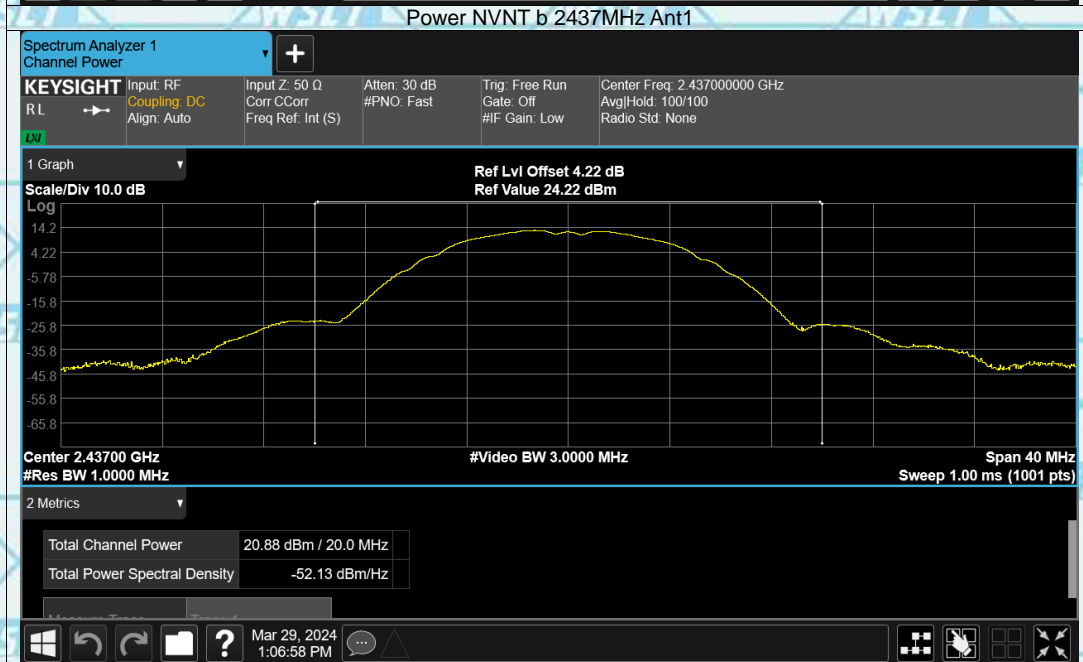
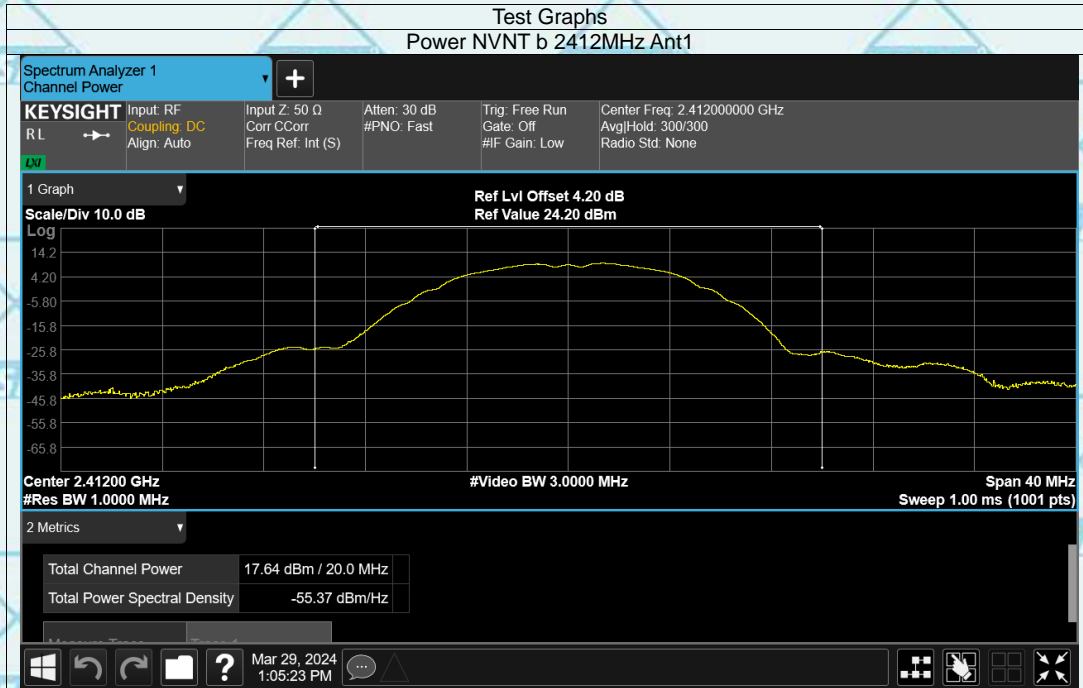
Mode	Frequency (MHz)	Maximum conducted output power (dBm)	Limit (dBm)	Verdict
b	2412	17.64	30	Pass
b	2437	20.88	30	Pass
b	2462	18.11	30	Pass
g	2412	20.66	30	Pass
g	2437	23.63	30	Pass
g	2462	21.09	30	Pass
n20	2412	19.33	30	Pass
n20	2437	22.27	30	Pass
n20	2462	19.8	30	Pass



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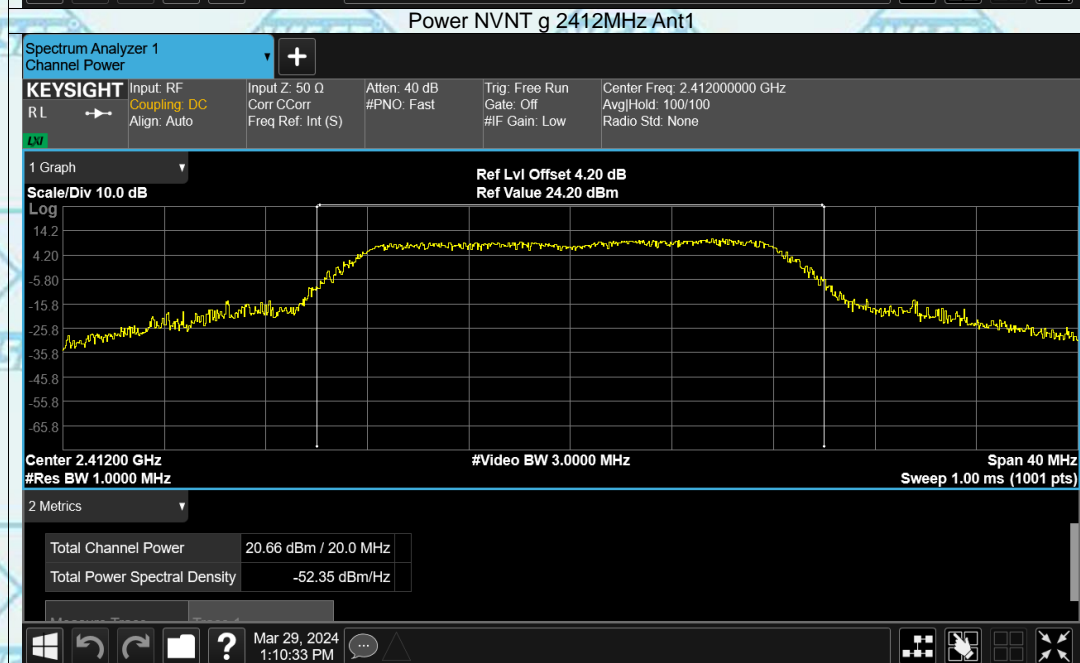
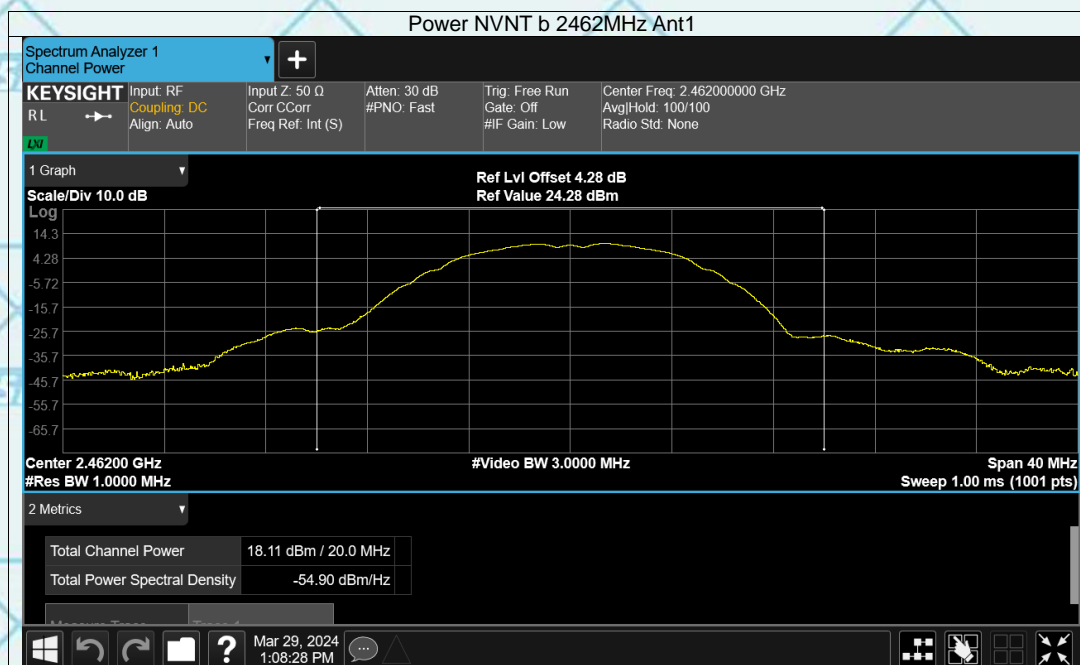




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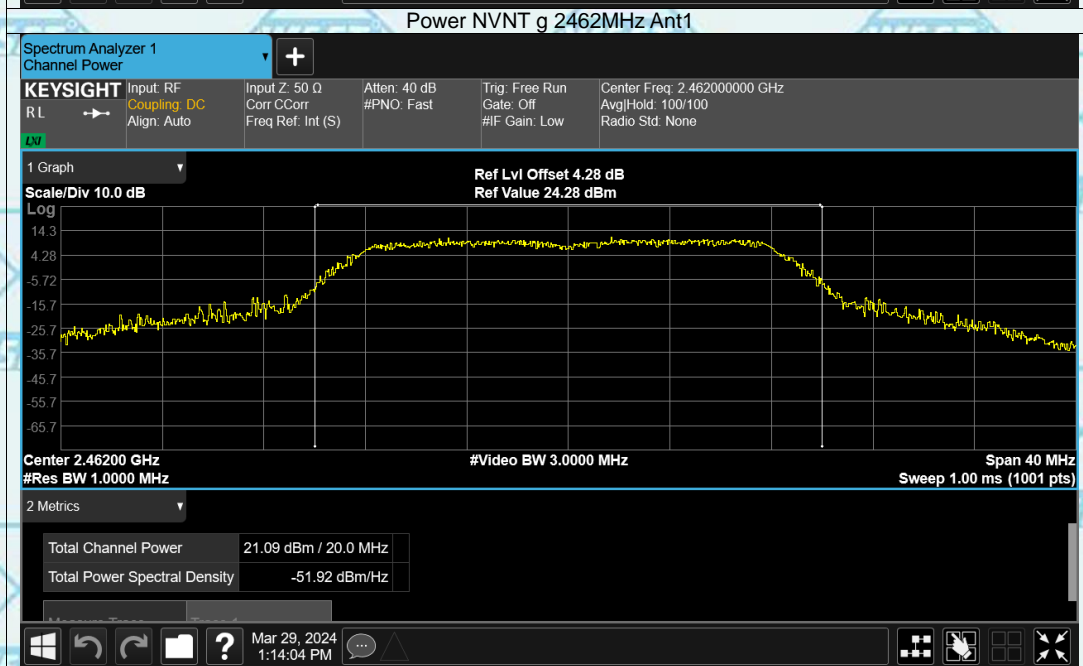
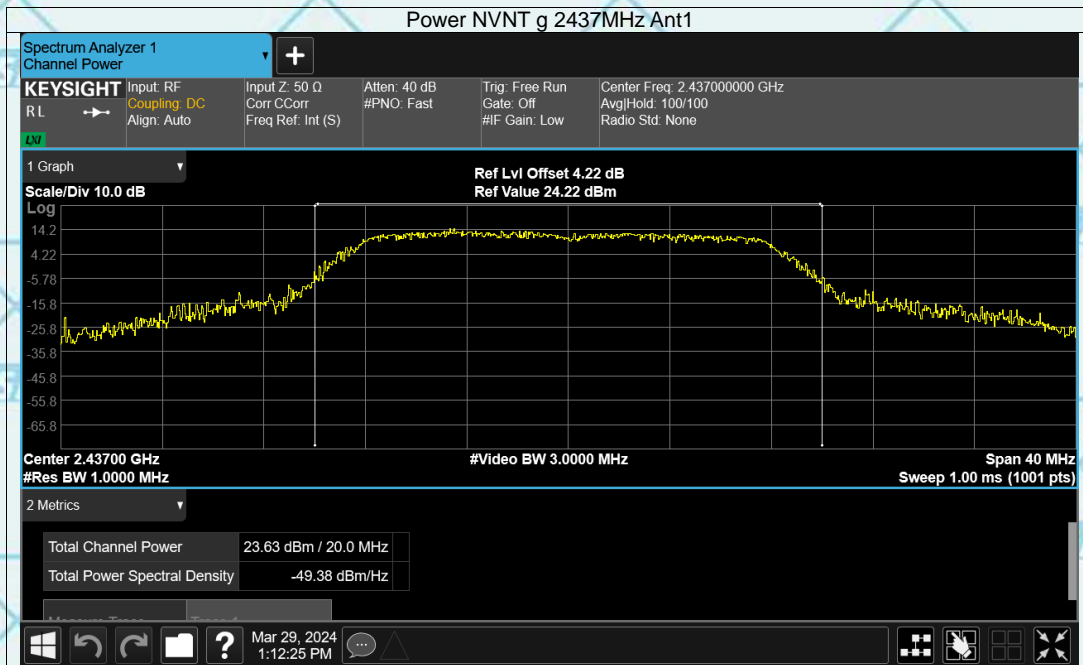
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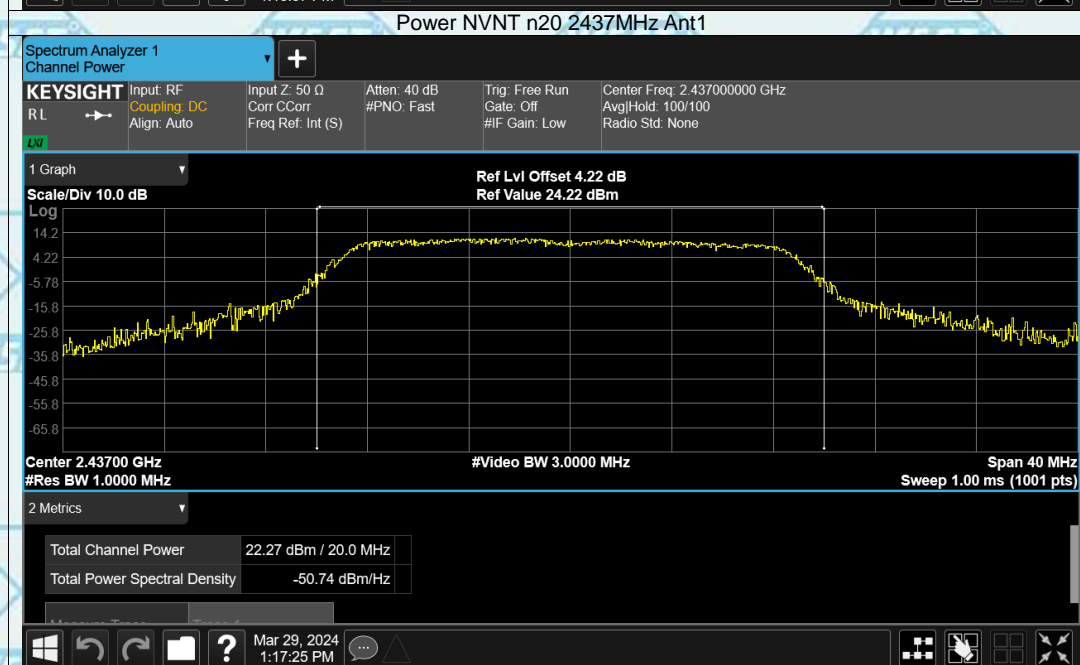
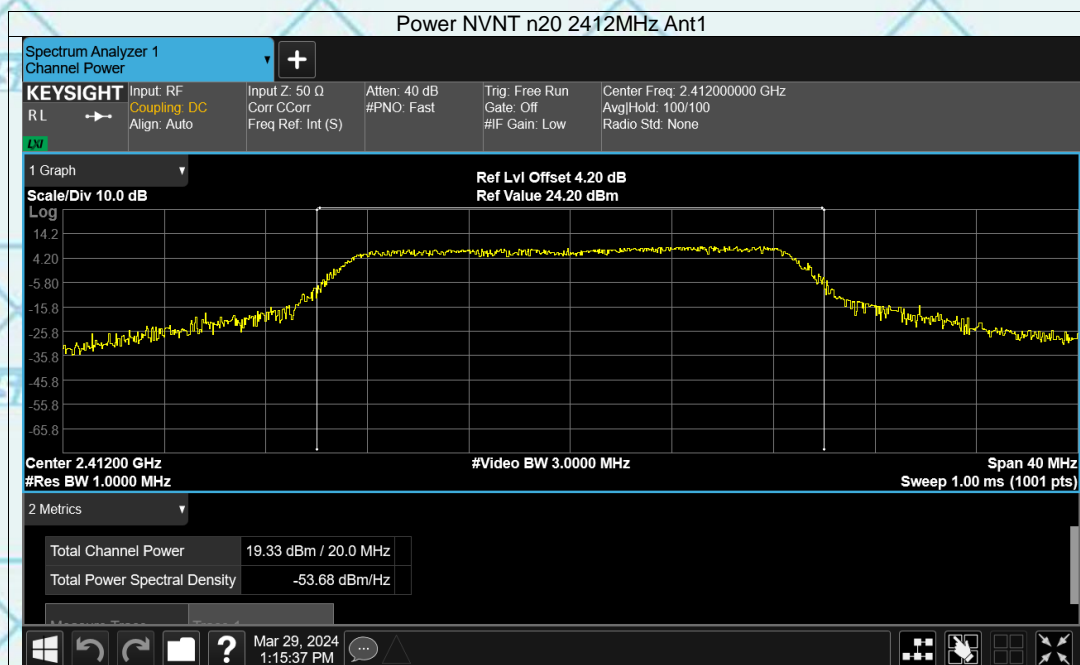
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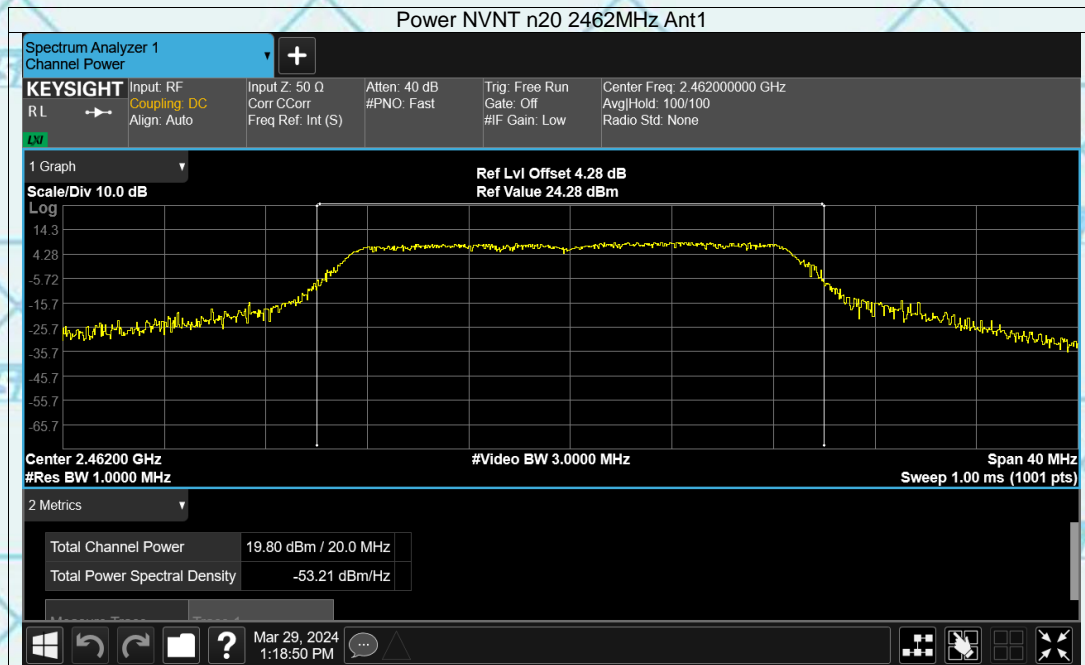
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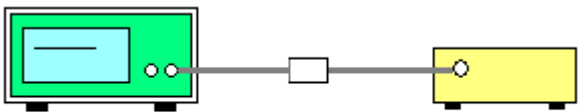
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6.3. Emission Bandwidth

6.3.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	KDB 558074
Limit:	>500kHz
Test Setup:	 <p>Spectrum Analyzer EUT</p>
Test Mode:	Transmitting mode with modulation
Test Procedure:	<ol style="list-style-type: none"> 1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v04. 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6dB bandwidth must be greater than 500 kHz. 4. Measure and record the results in the test report.
Test Result:	PASS



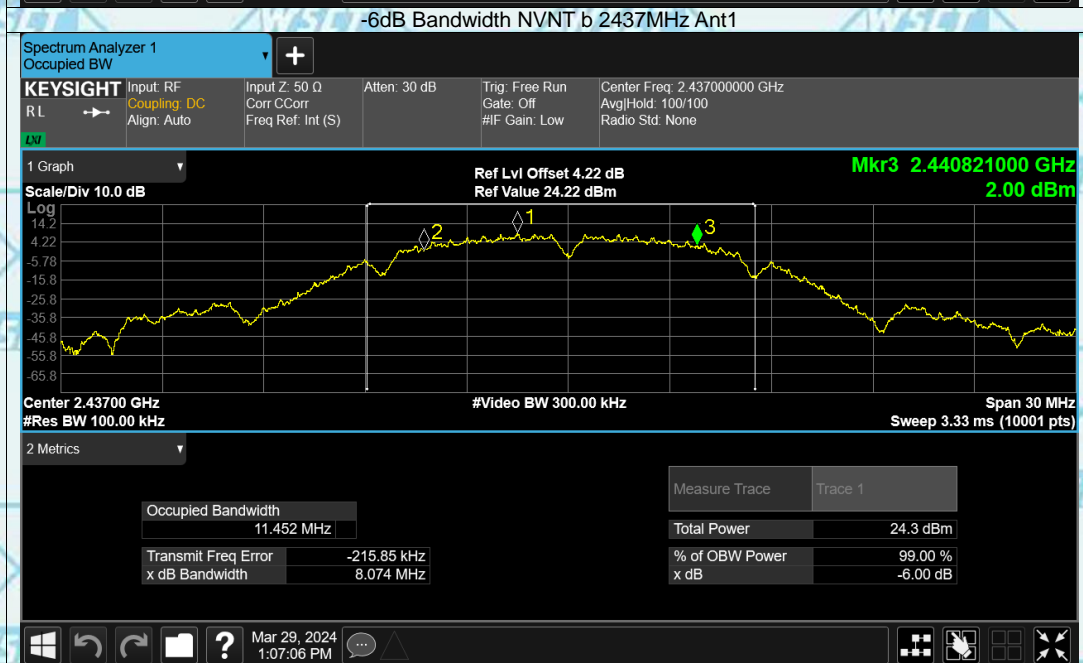
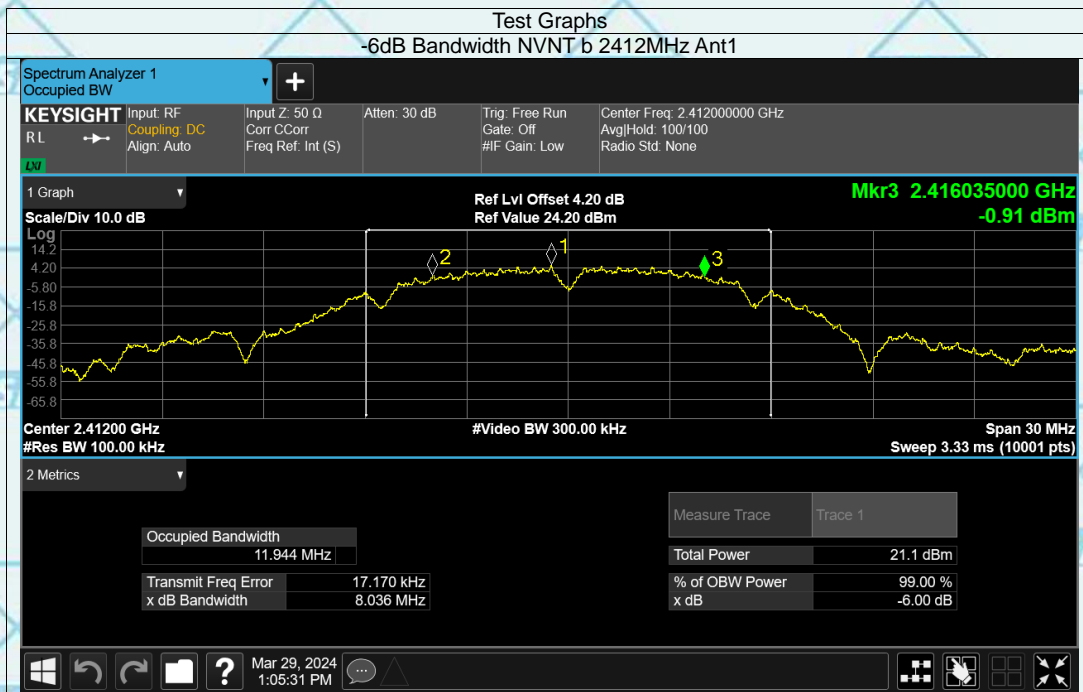
6.3.2. Test data(worst)

Mode	Frequency (MHz)	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
b	2412	8.036	0.5	Pass
b	2437	8.074	0.5	Pass
b	2462	8.043	0.5	Pass
g	2412	16.18	0.5	Pass
g	2437	15.73	0.5	Pass
g	2462	16.15	0.5	Pass
n20	2412	17.29	0.5	Pass
n20	2437	16.10	0.5	Pass
n20	2462	17.22	0.5	Pass



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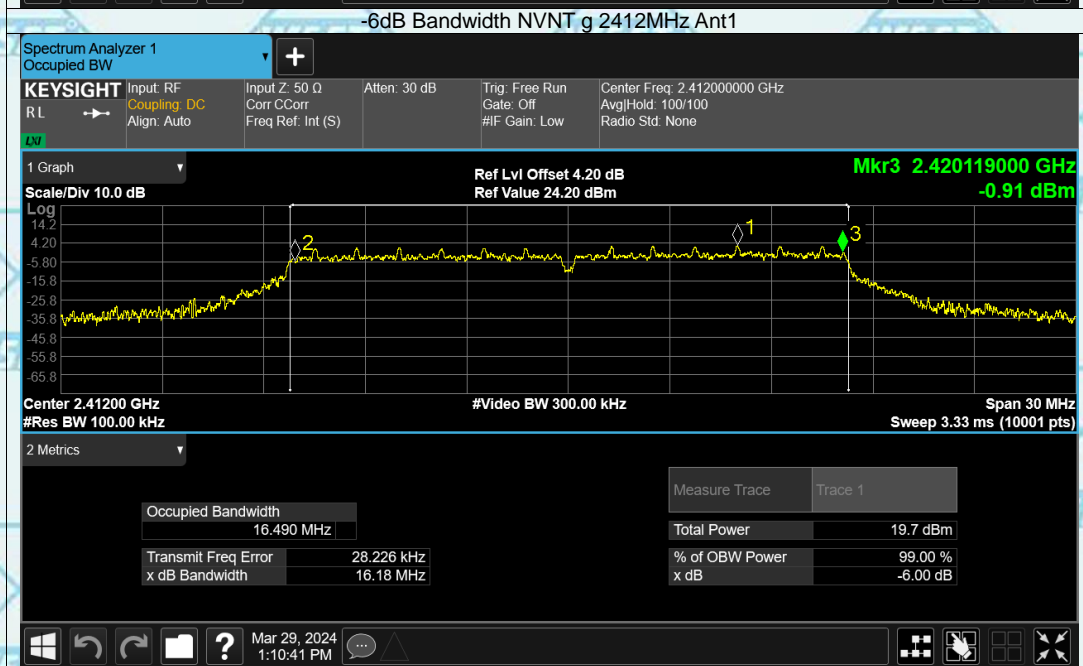
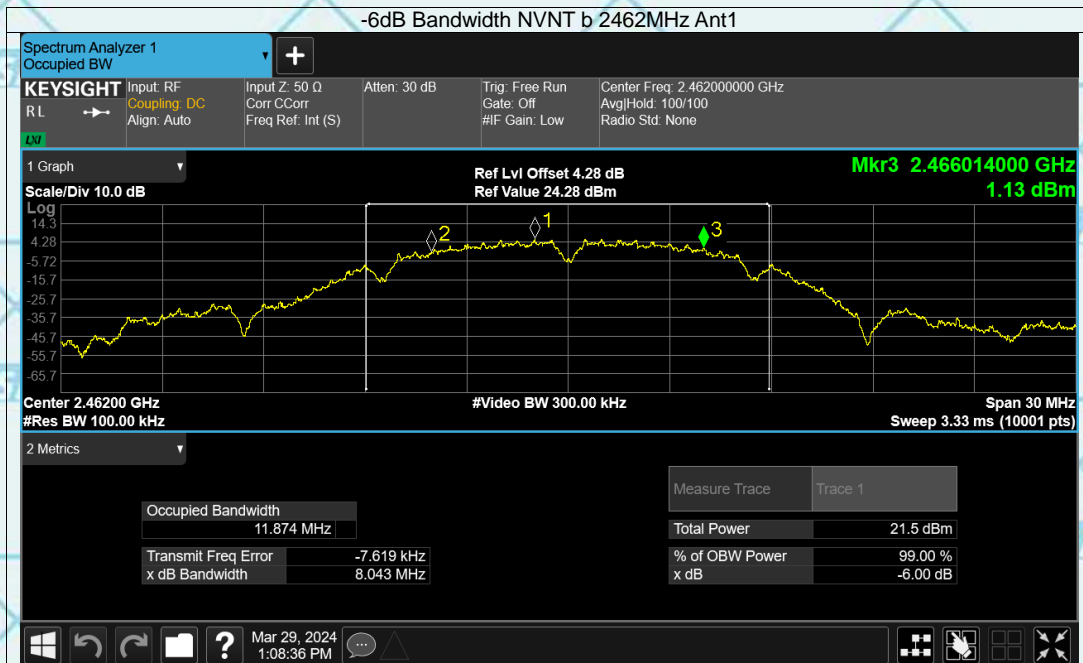
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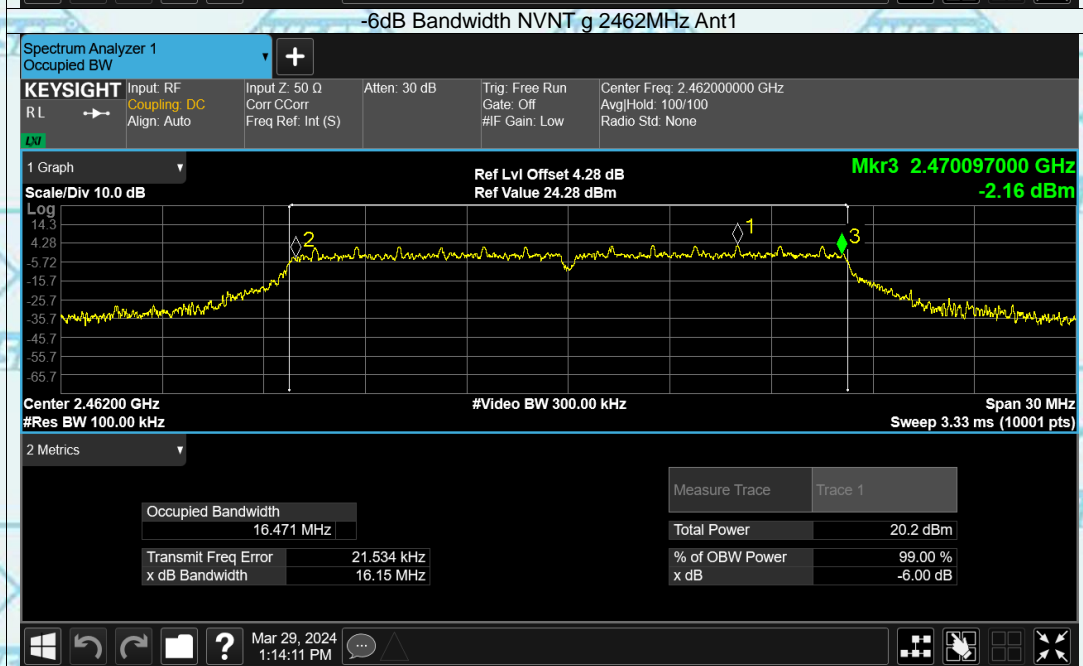
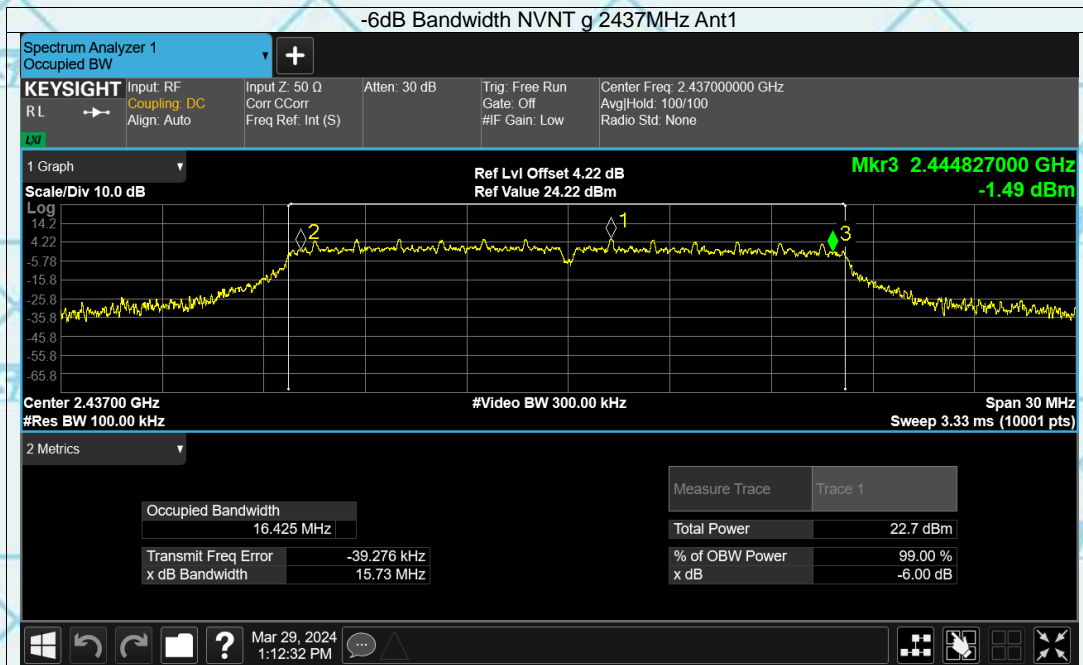
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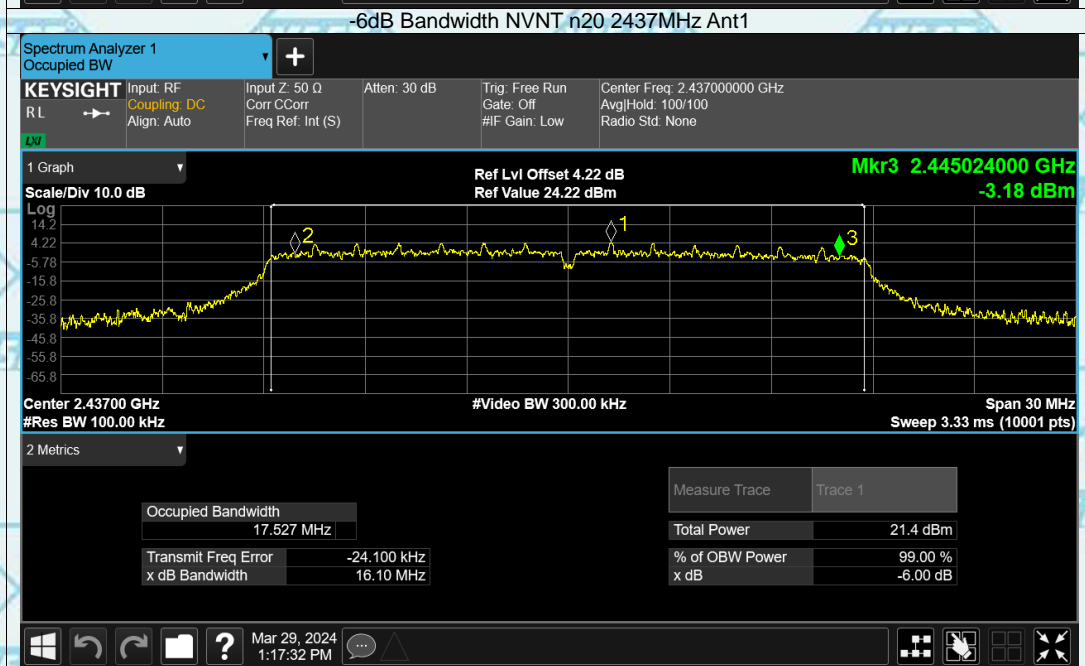
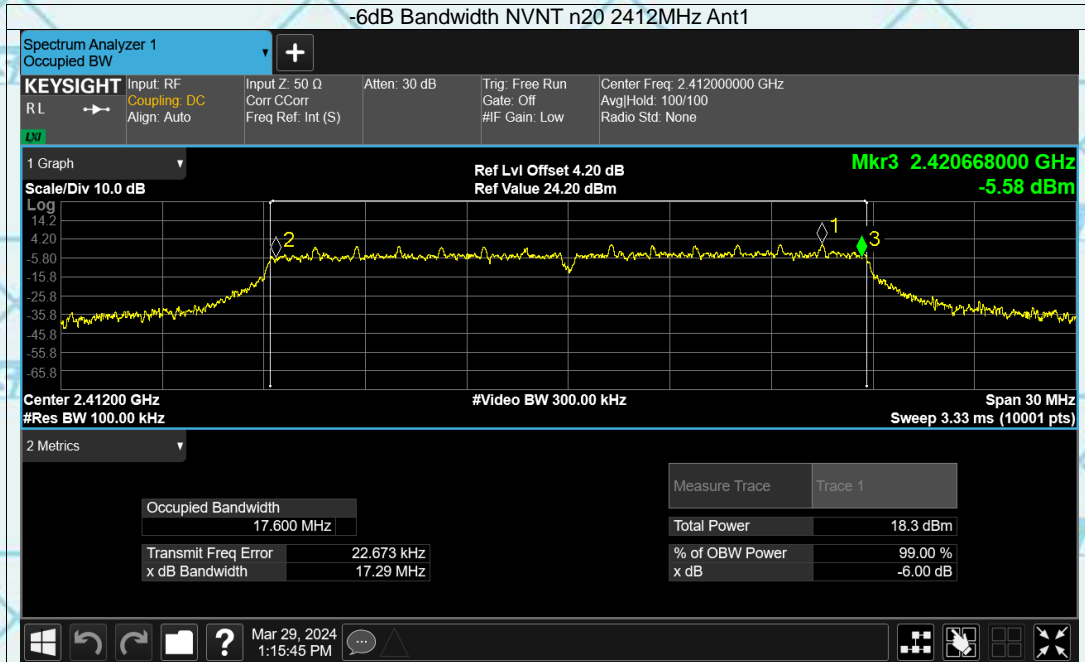




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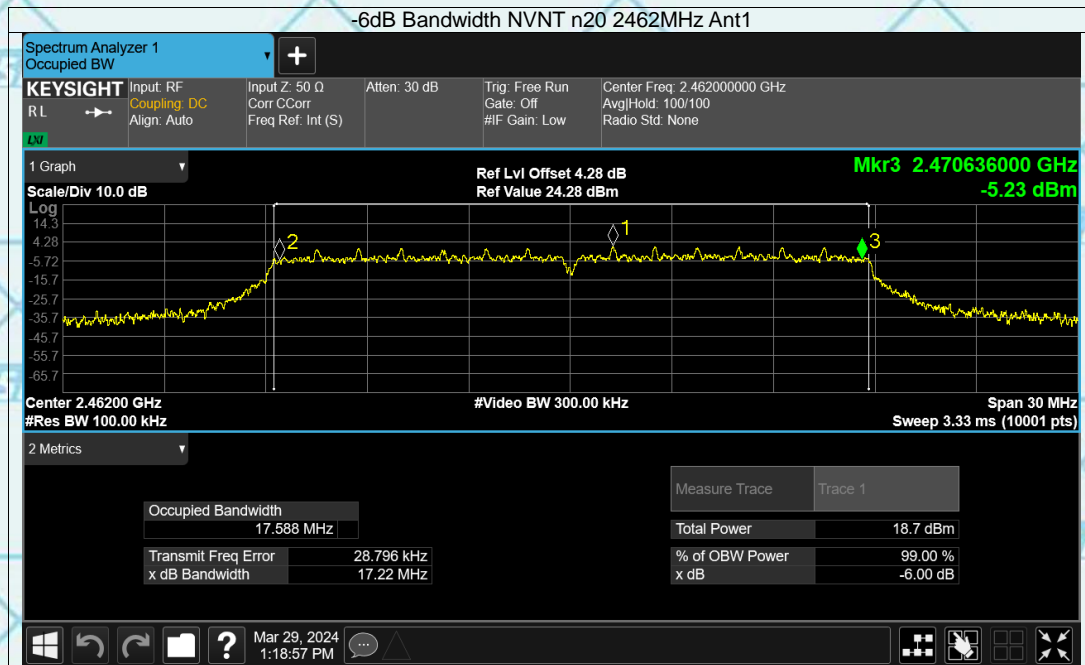
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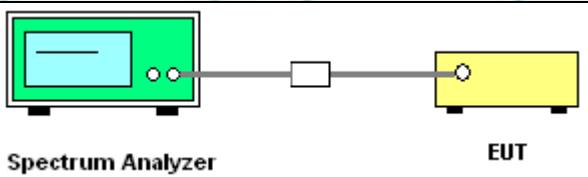
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6.4. Power Spectral Density

6.4.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	KDB 558074
Limit:	The average power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.
Test Setup:	 <p style="text-align: center;">Spectrum Analyzer EUT</p>
Test Mode:	Transmitting mode with modulation
Test Procedure:	<ol style="list-style-type: none"> 1. The testing follows Measurement Procedure 10.3 Method AVGPDS of 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. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW): $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$. Video bandwidth VBW $\geq 3 \times \text{RBW}$. Set the span to at least 1.5 times the OBW. 5. Detector = RMS, Sweep time = auto couple. 6. Employ trace averaging (RMS) mode over a minimum of 100 traces. Use the peak marker function to determine the maximum power level. 6. Measure and record the results in the test report.
Test Result:	PASS



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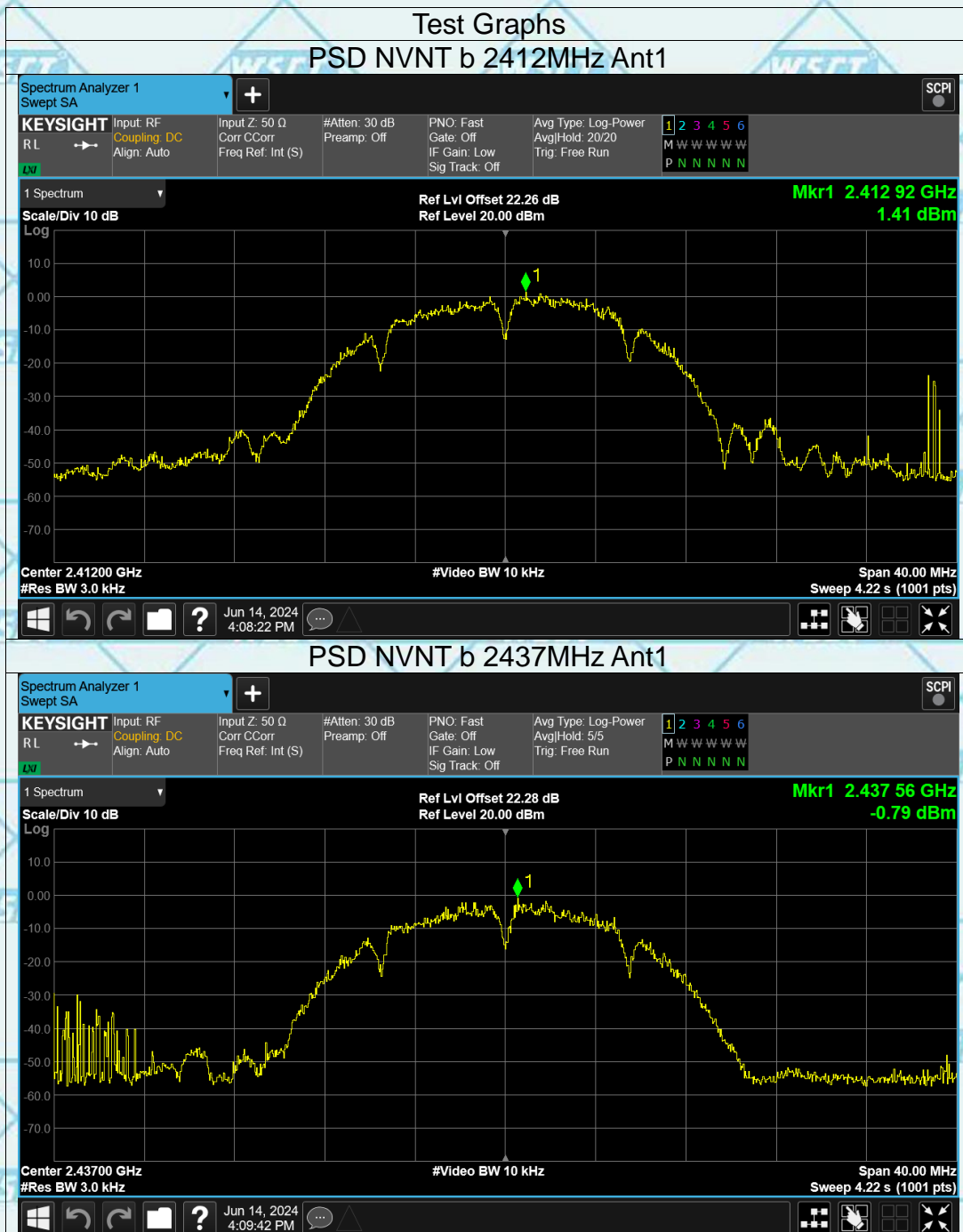
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www.wsct-cert.com**6.4.2. Test data(worst)**

Mode	Frequency (MHz)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
b	2412	1.41	8	Pass
b	2437	-0.79	8	Pass
b	2462	3.19	8	Pass
g	2412	0.07	8	Pass
g	2437	-0.89	8	Pass
g	2462	0.41	8	Pass
n20	2412	-2.07	8	Pass
n20	2437	-1.54	8	Pass
n20	2462	0.2	8	Pass



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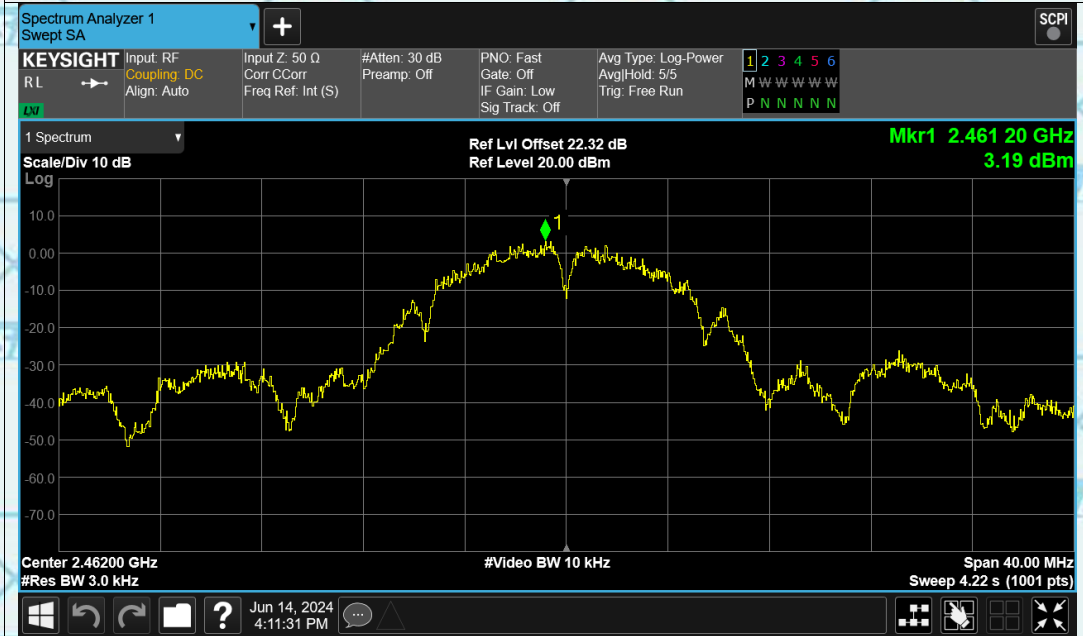


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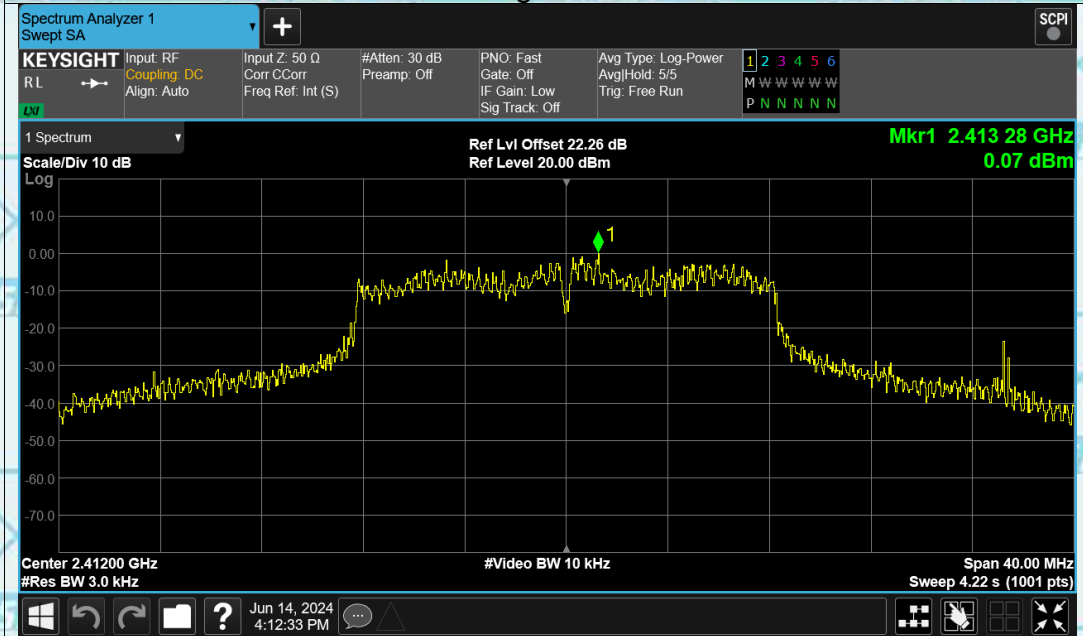
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PSD NVNT b 2462MHz Ant1



PSD NVNT g 2412MHz Ant1



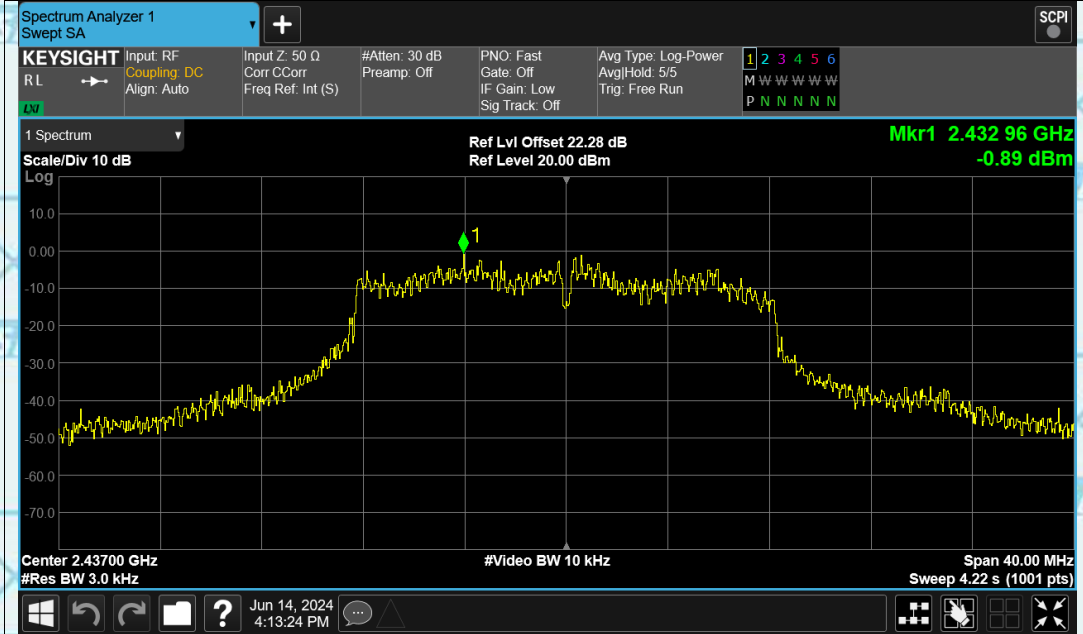


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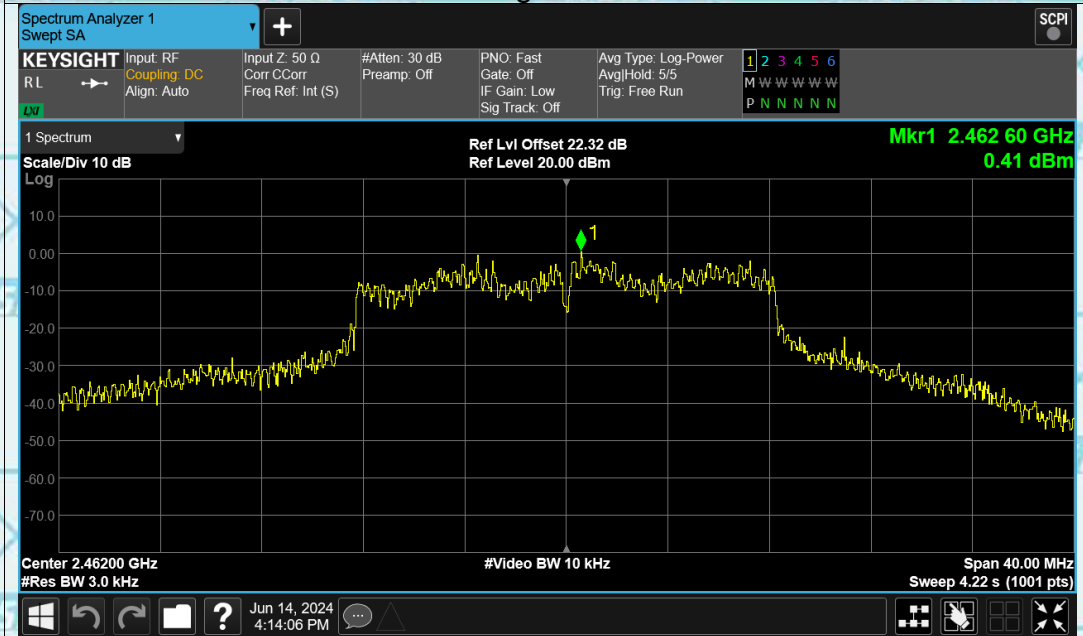
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PSD NVNT g 2437MHz Ant1



PSD NVNT g 2462MHz Ant1



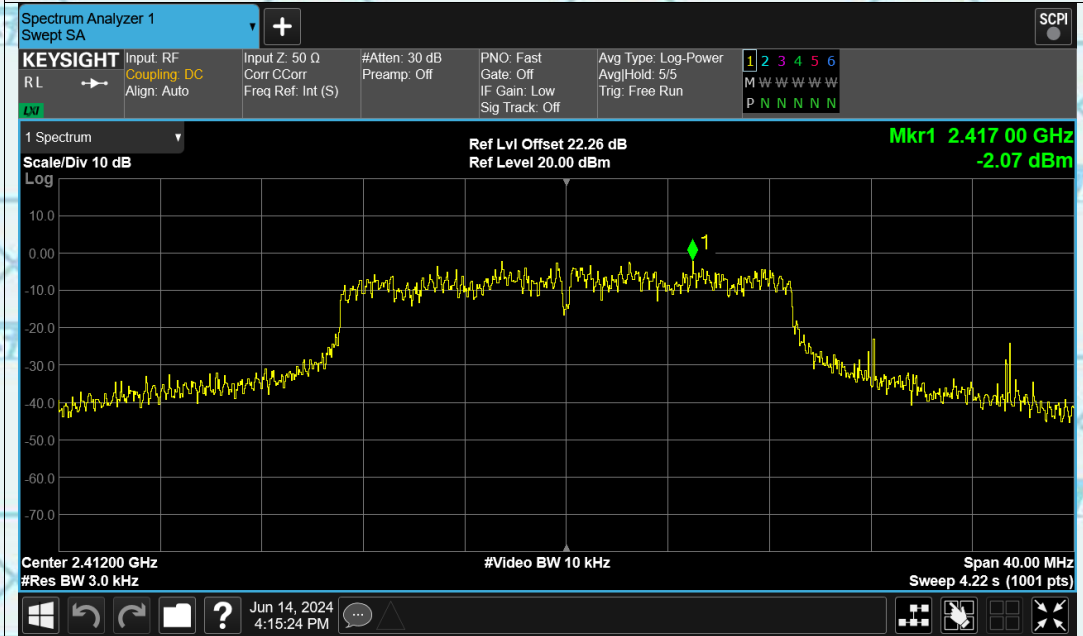


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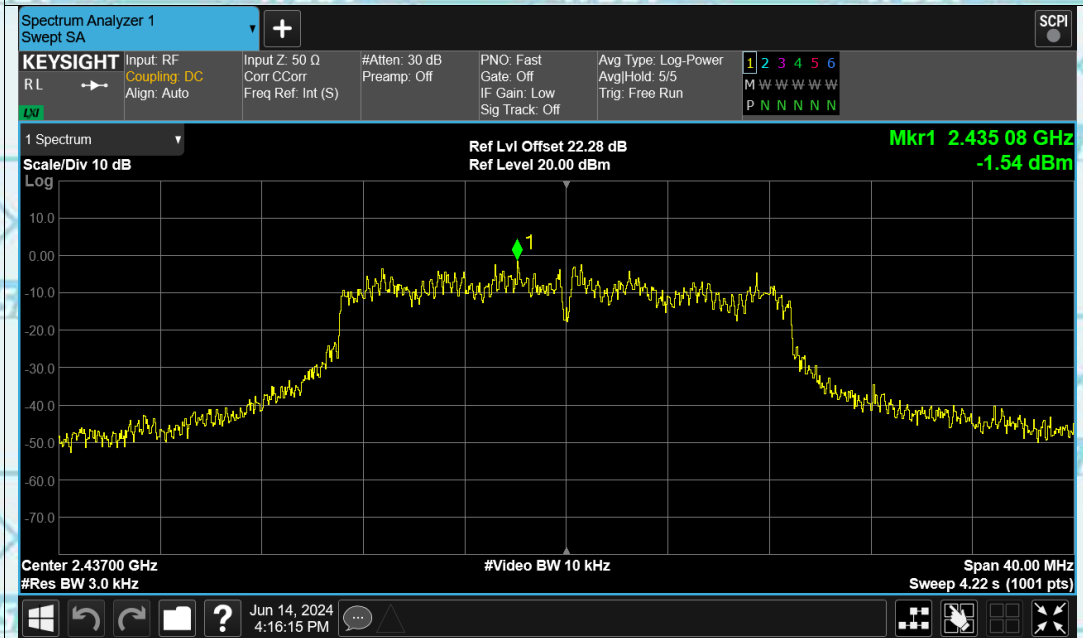
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PSD NVNT n20 2412MHz Ant1



PSD NVNT n20 2437MHz Ant1

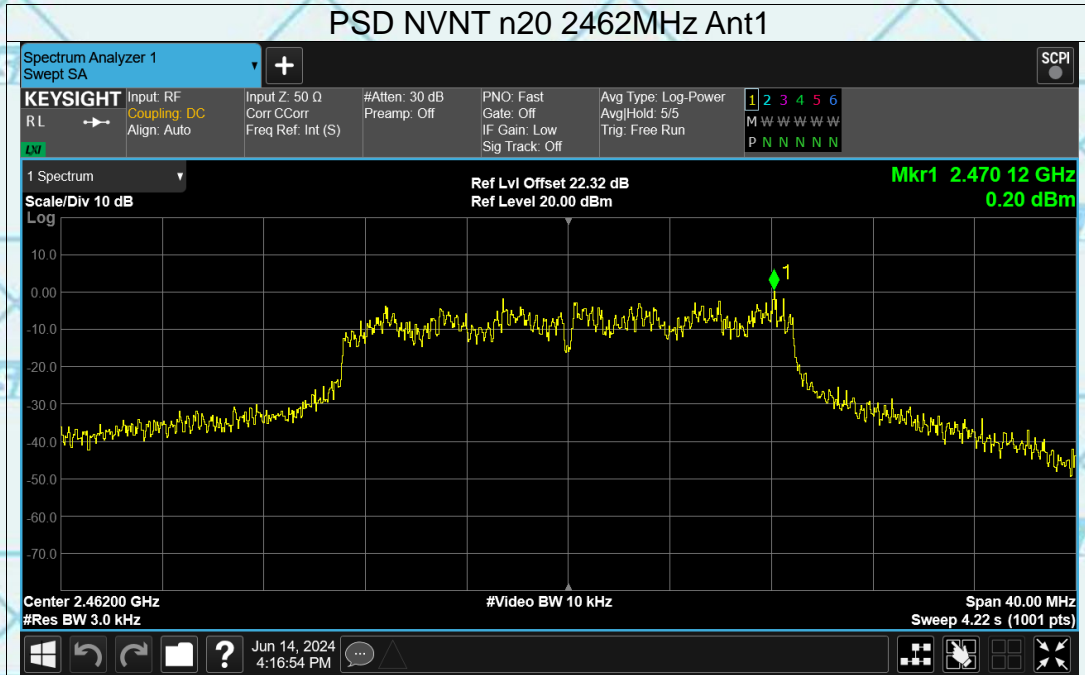




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6.5. Conducted Band Edge and Spurious Emission Measurement

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:	 <p style="text-align: center;">Spectrum Analyzer EUT</p>
Test Mode:	Transmitting mode with modulation
Test Procedure:	<ol style="list-style-type: none"> 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



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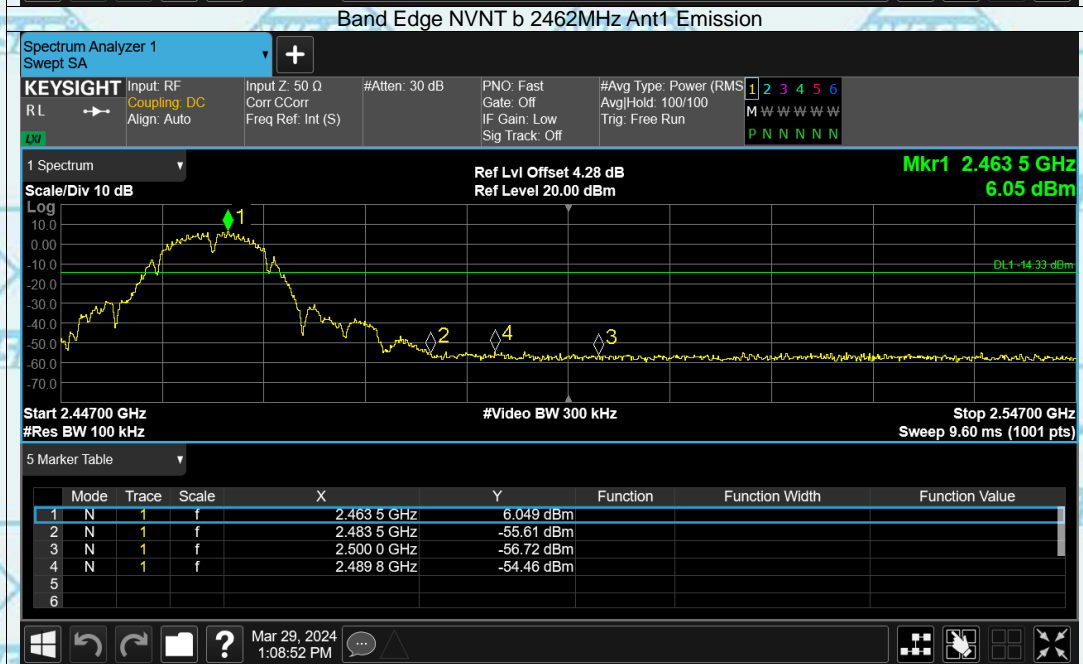
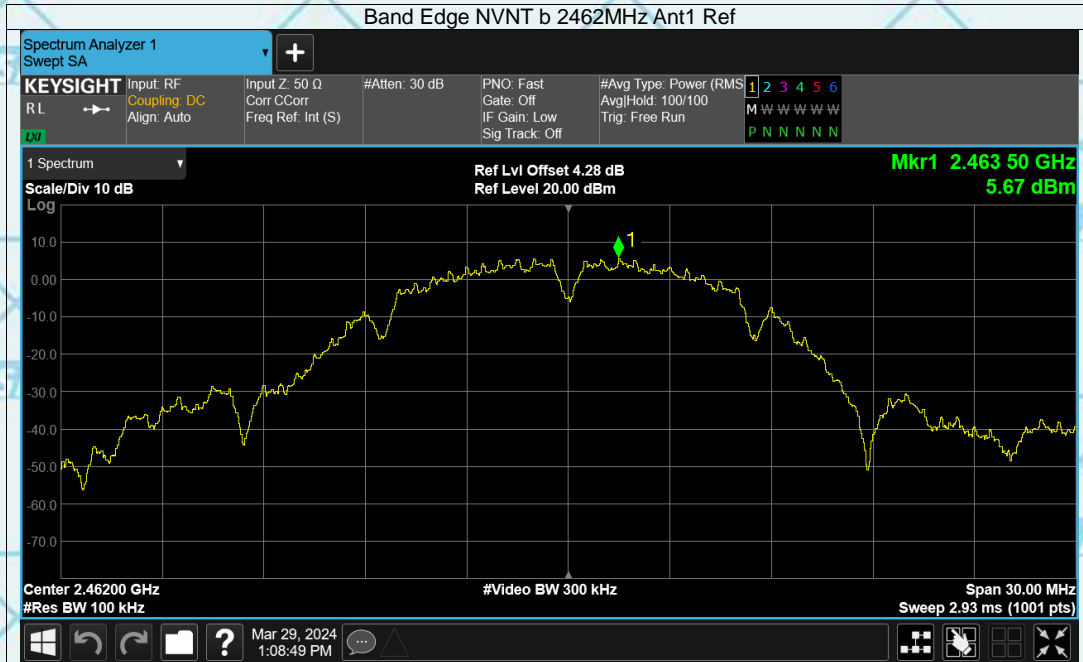
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Band Edge



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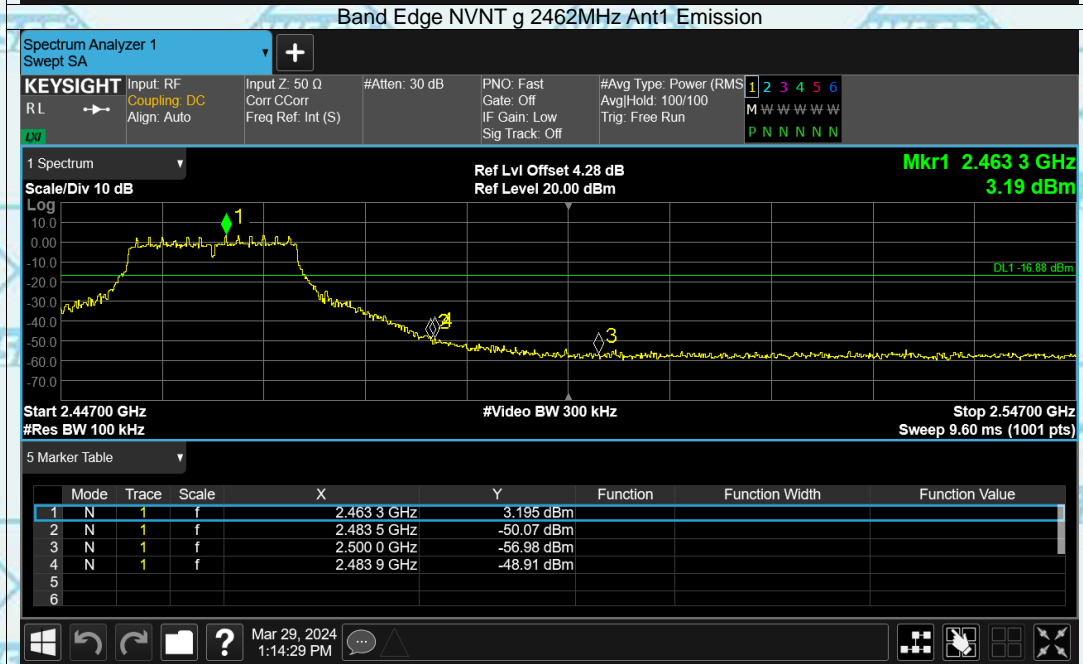
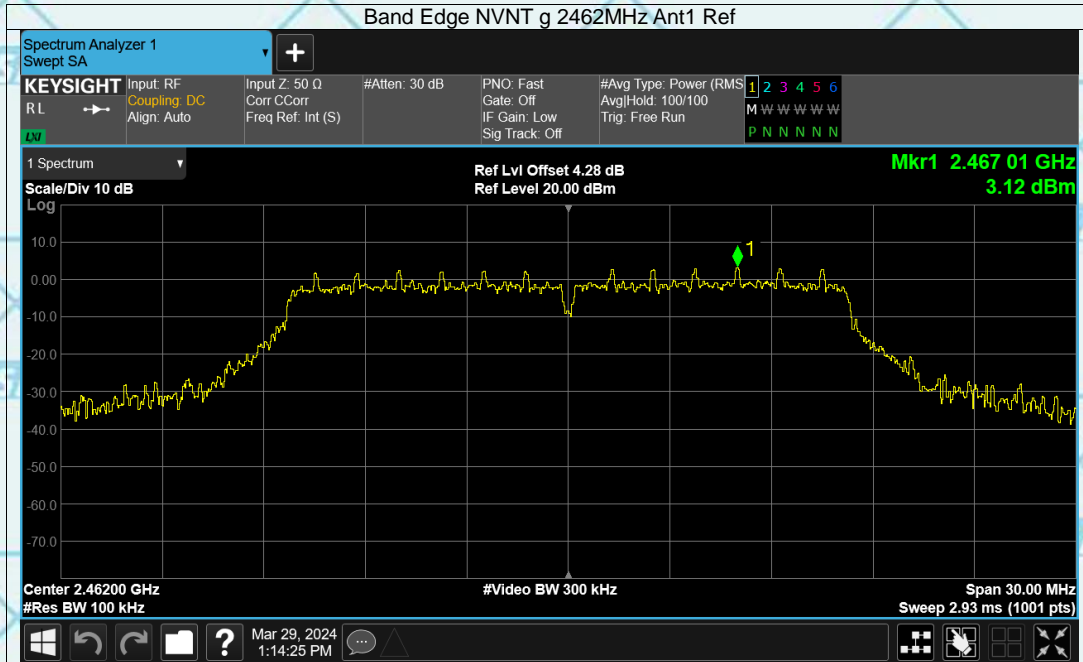
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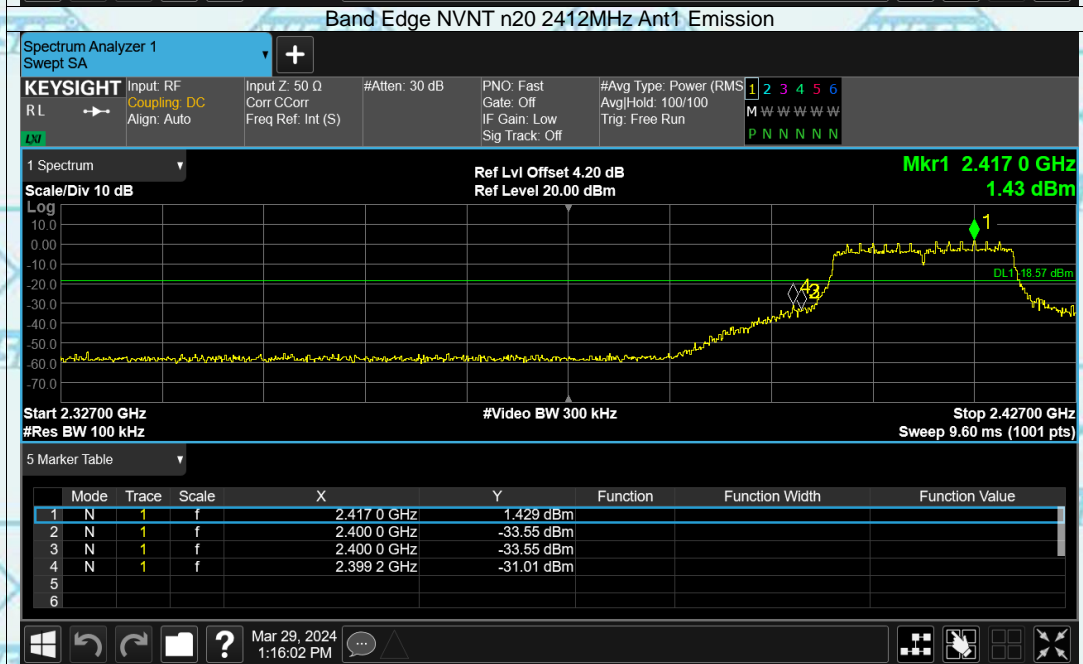
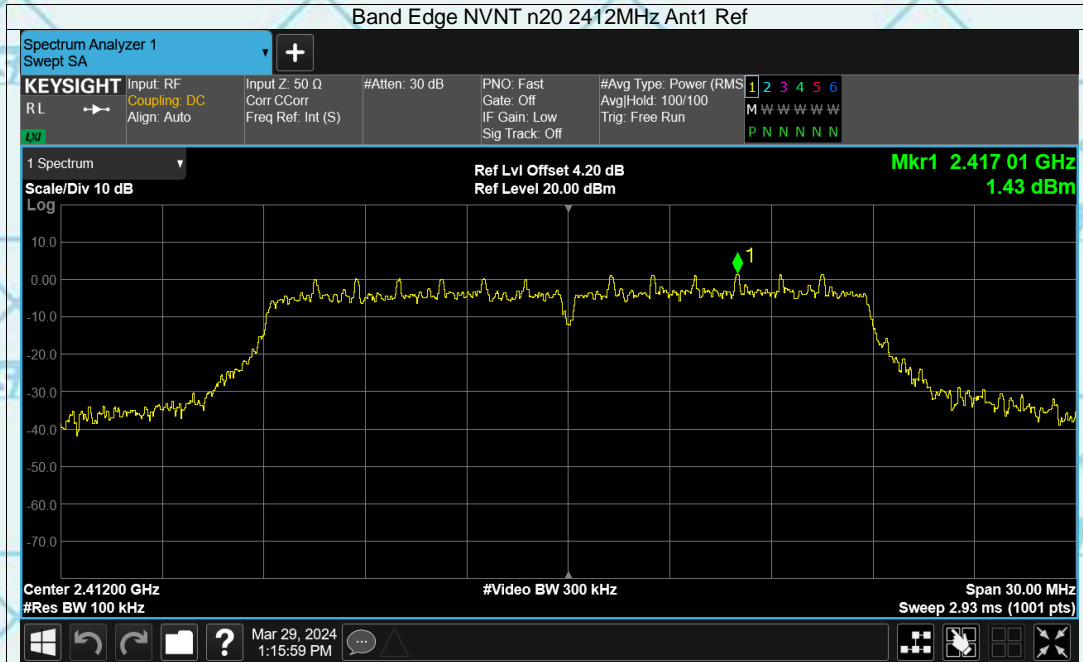




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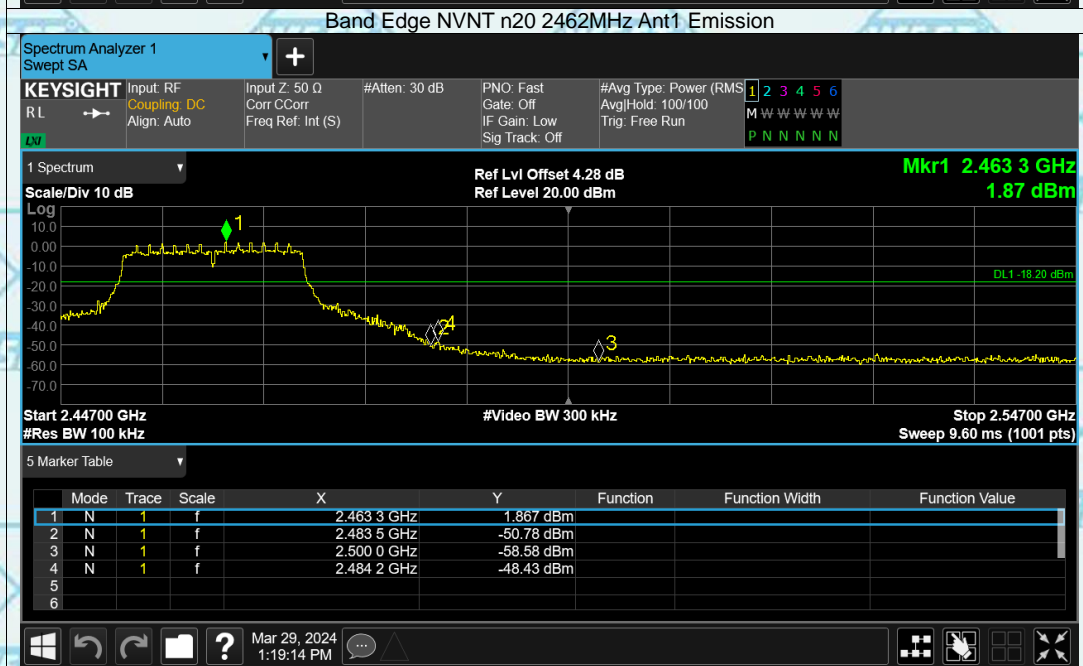
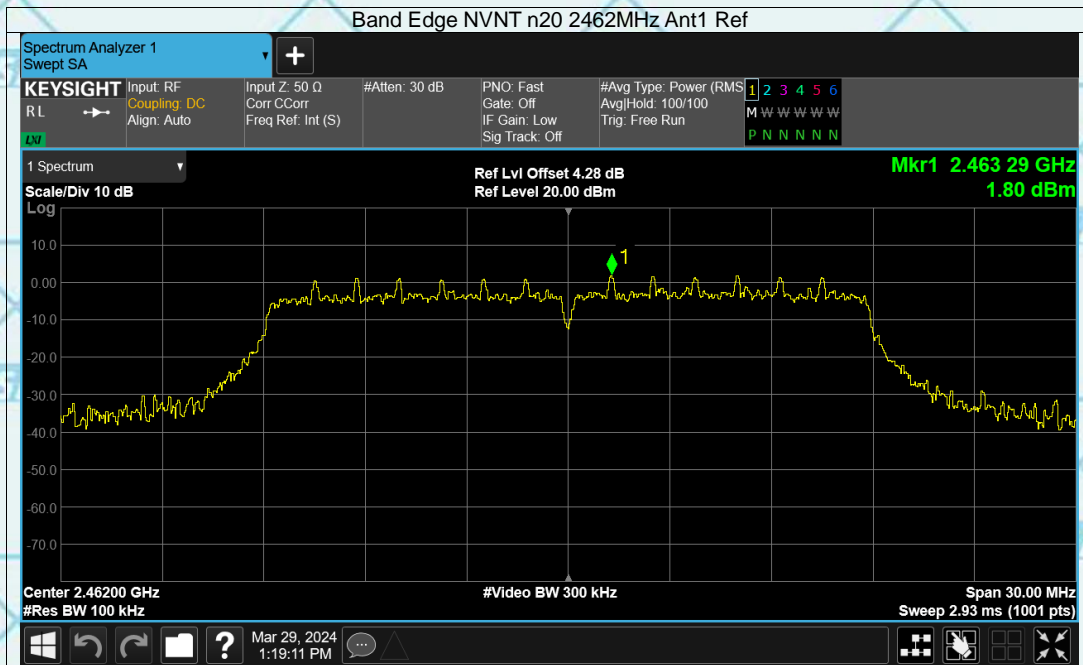
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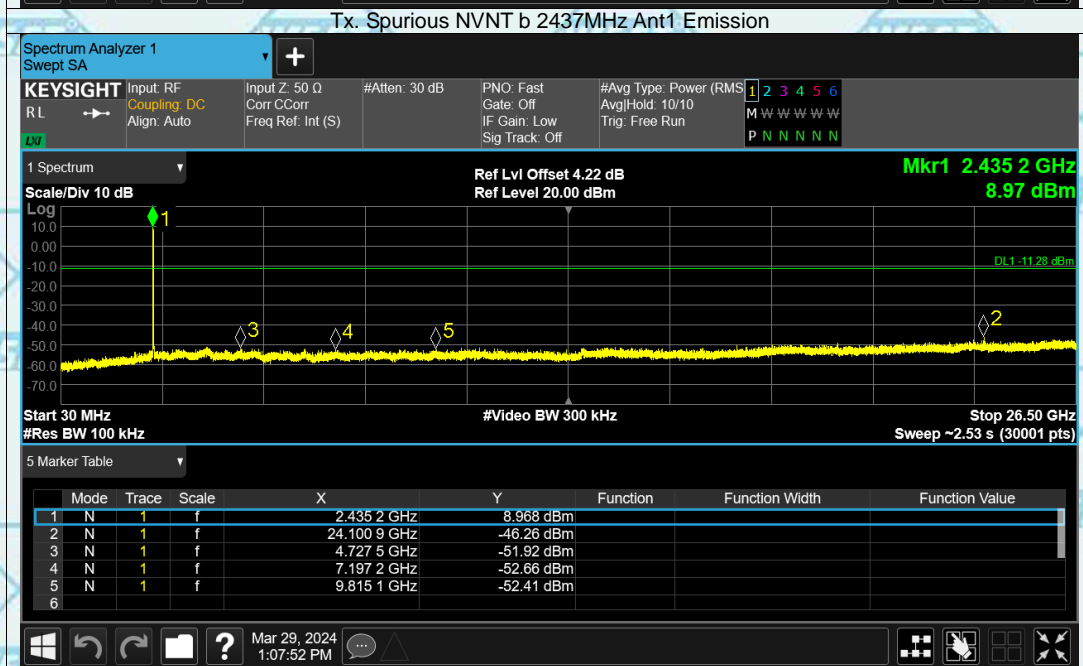
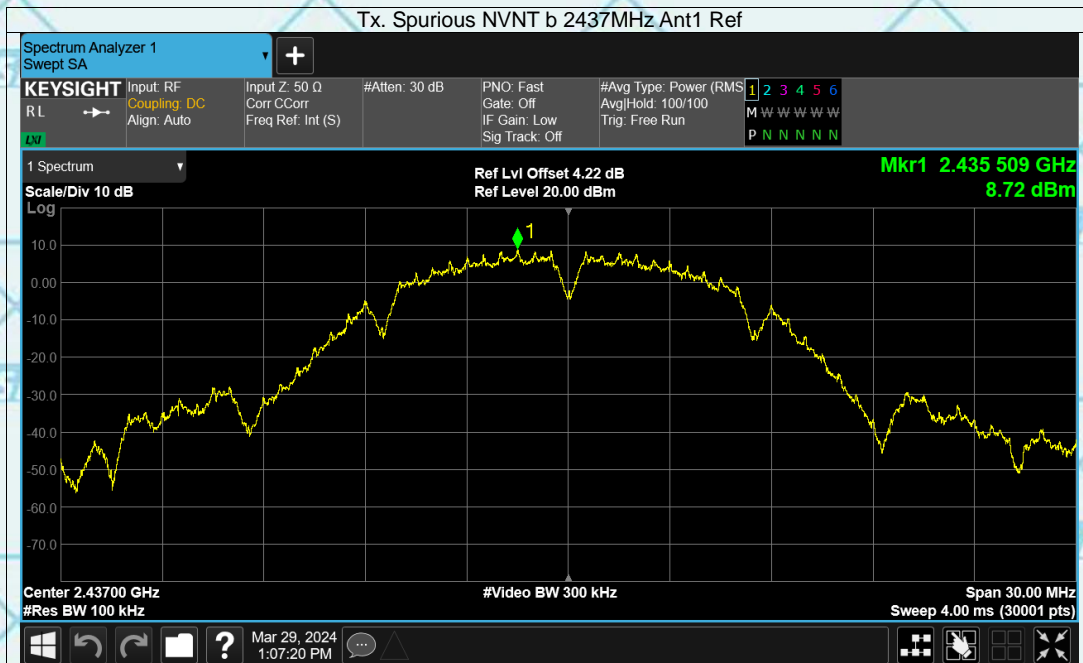
Conducted RF Spurious Emission





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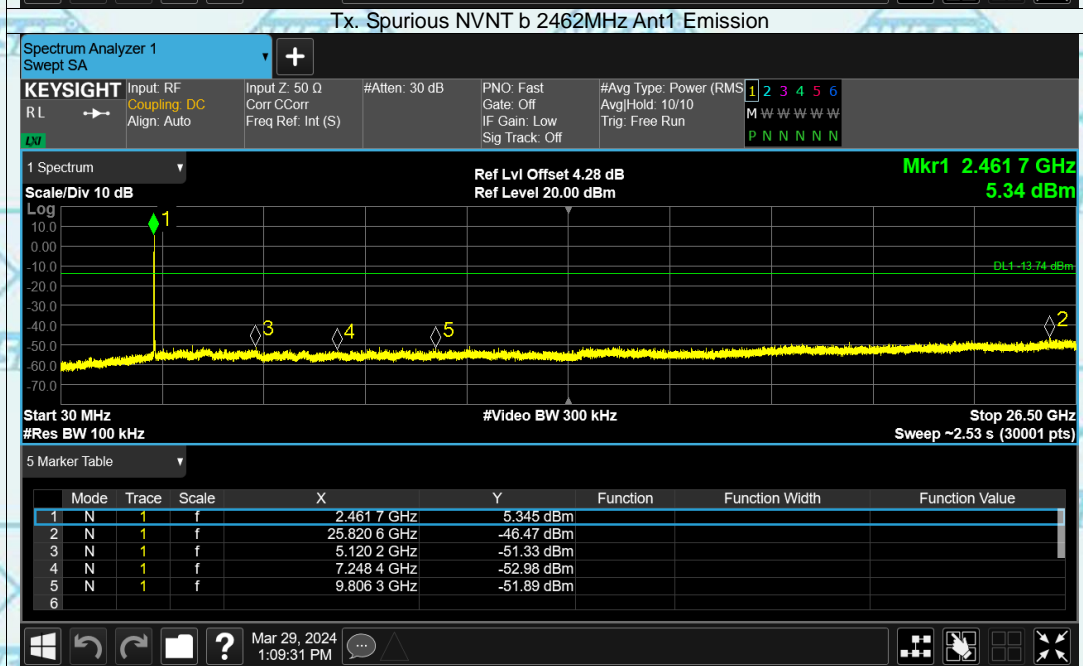
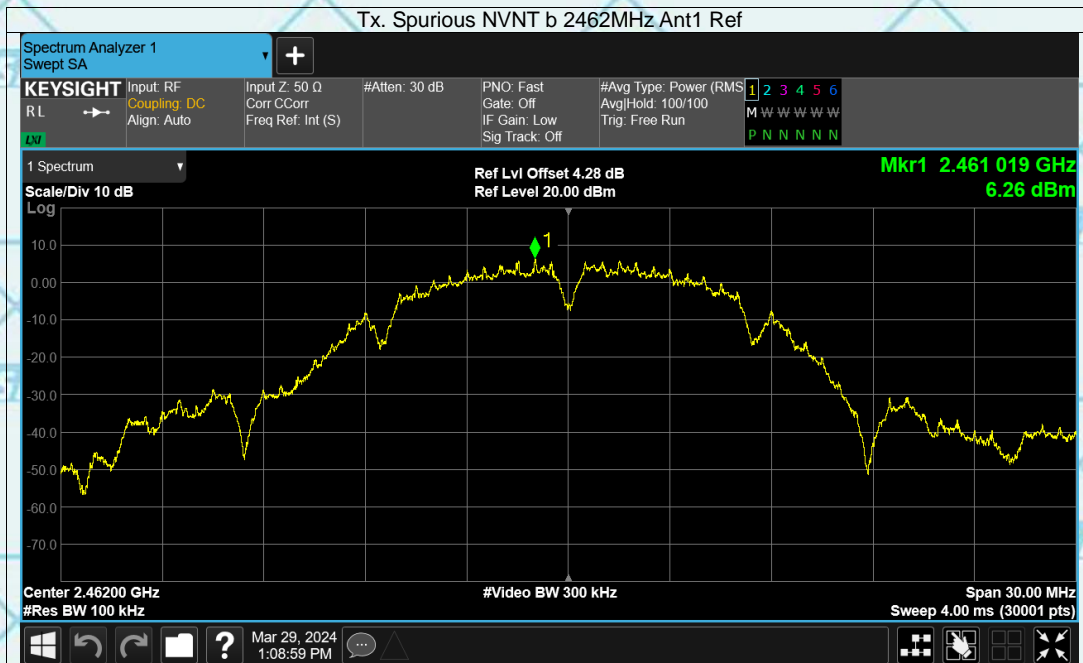
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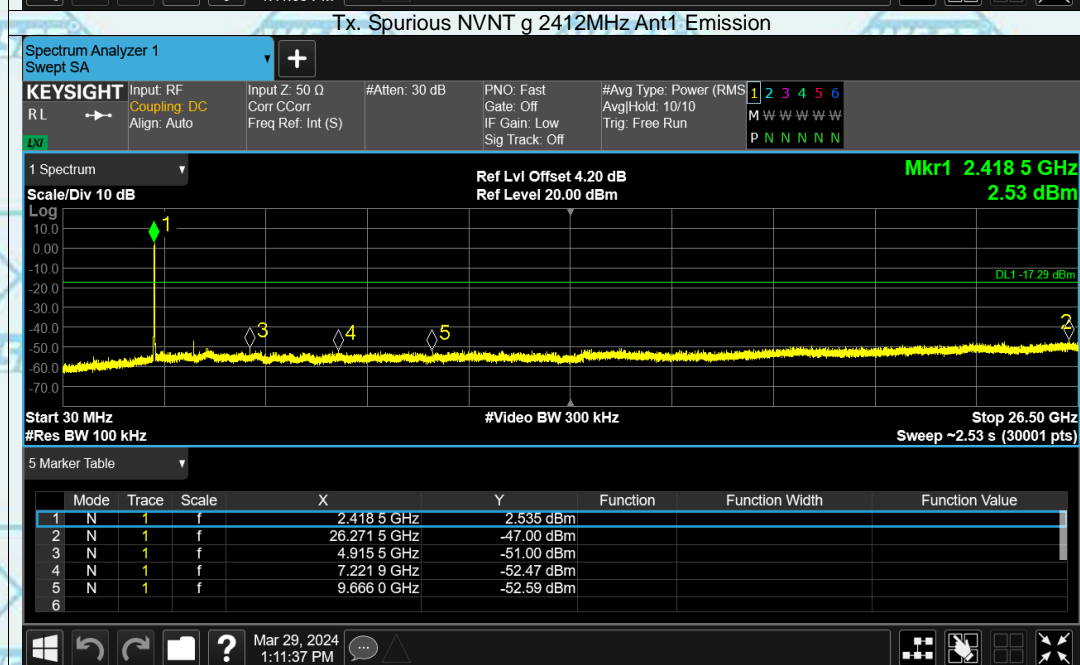
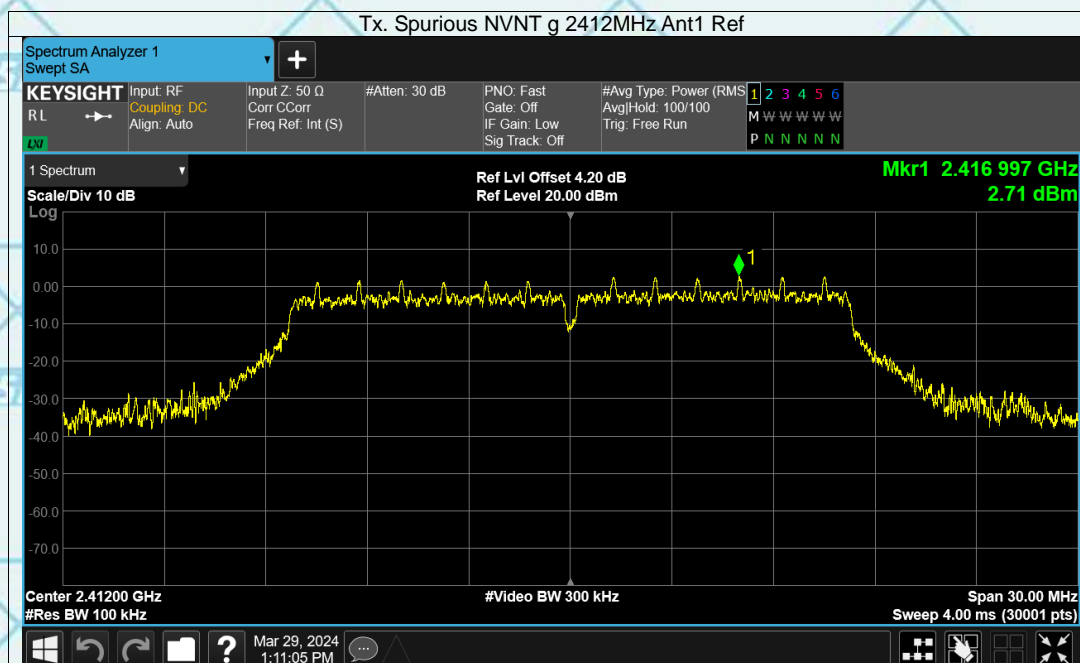
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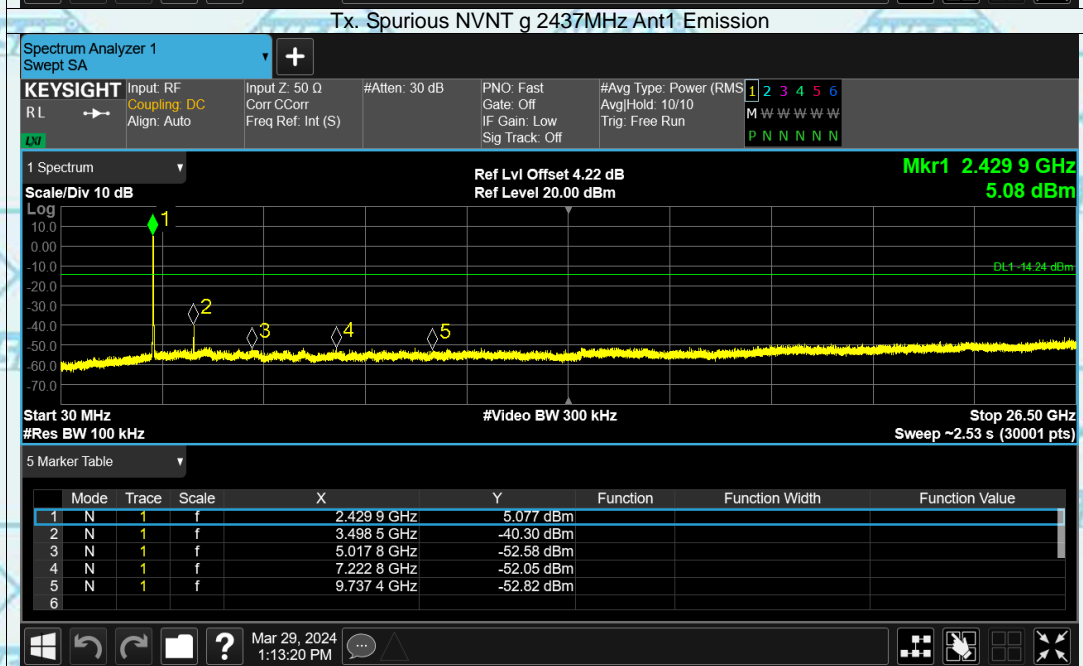
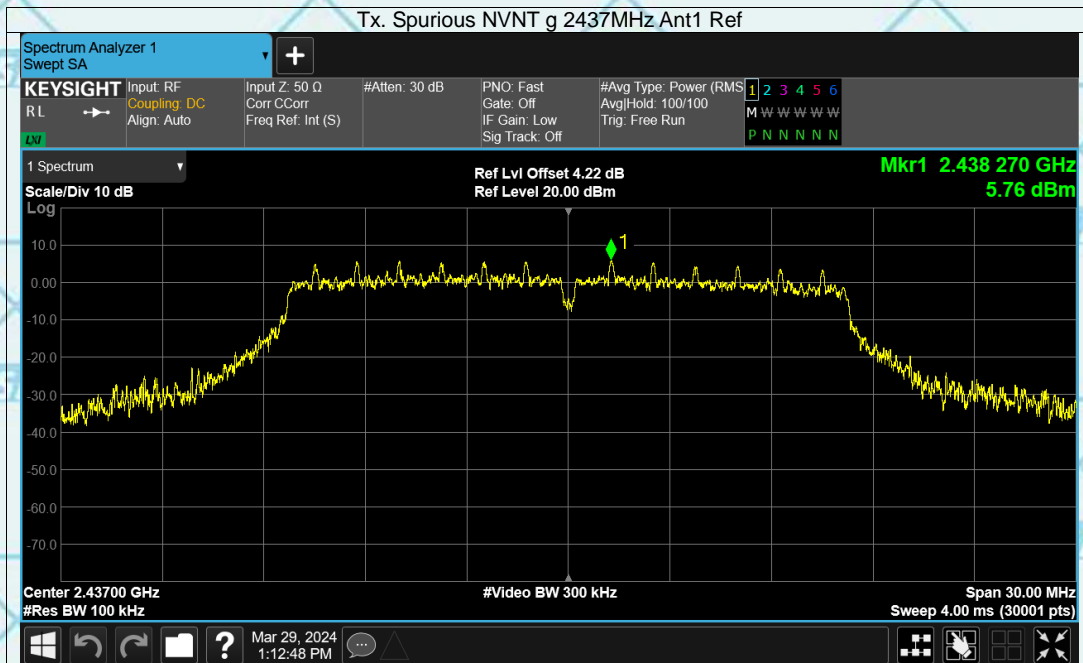
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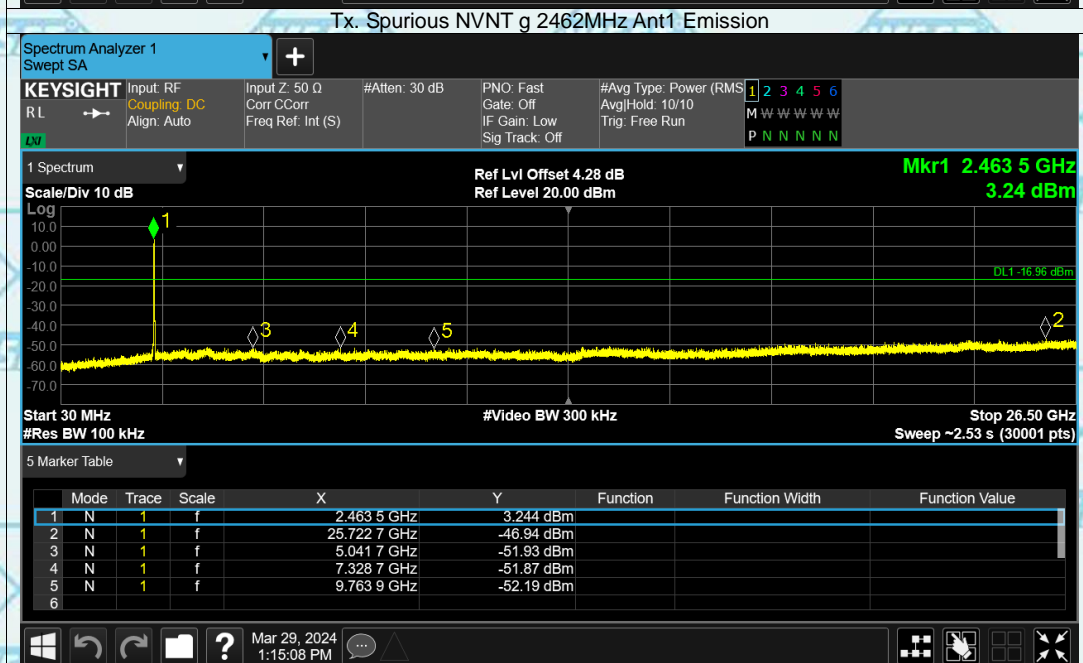
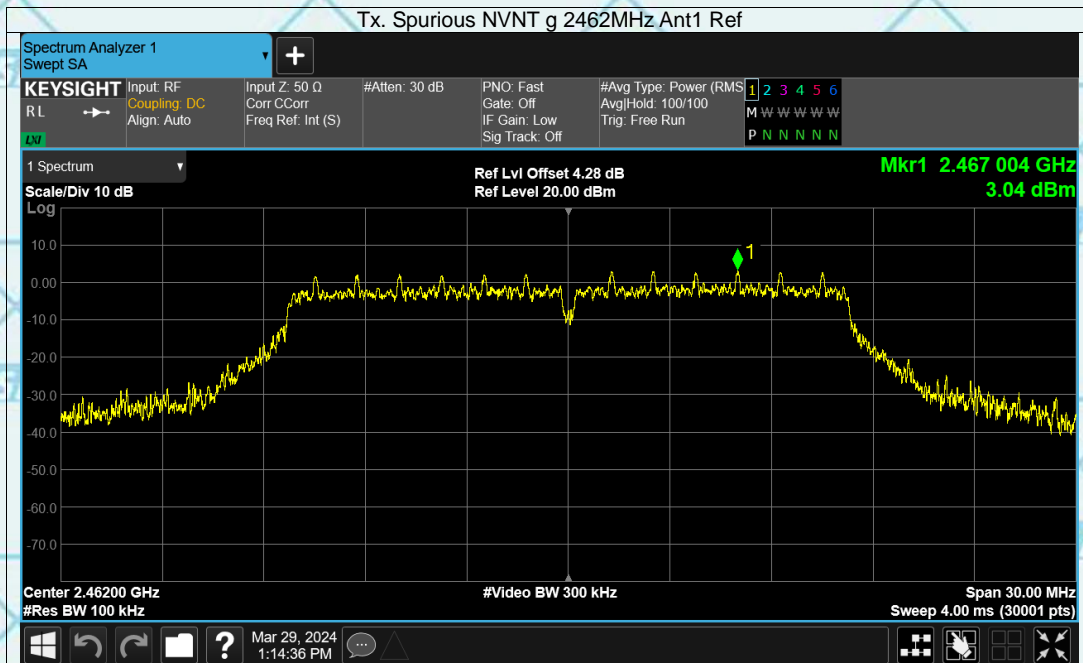
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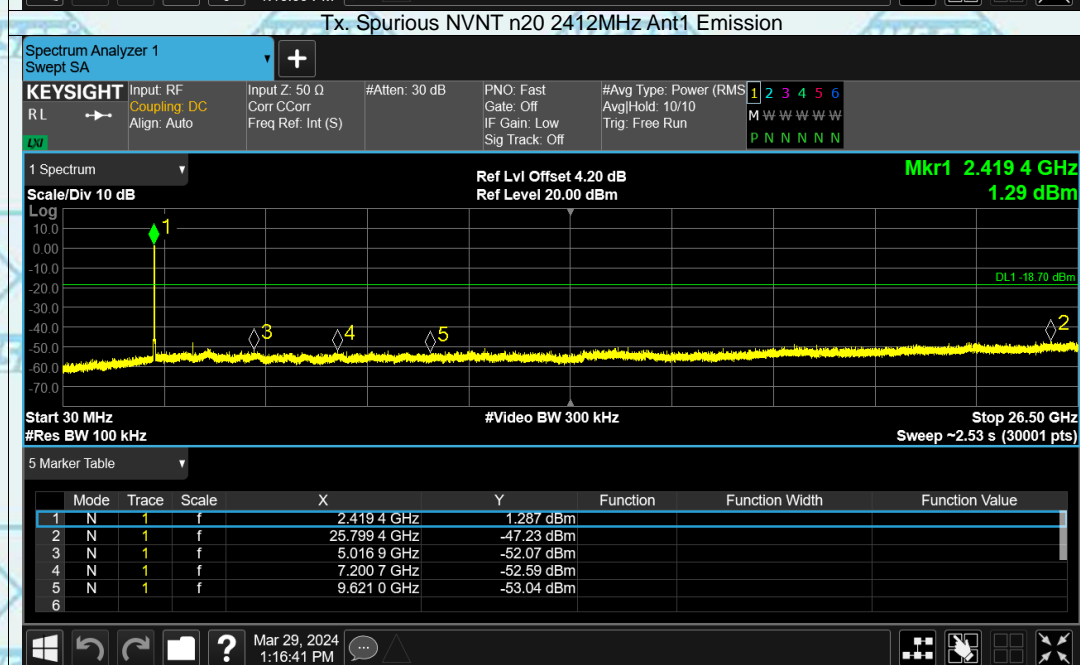
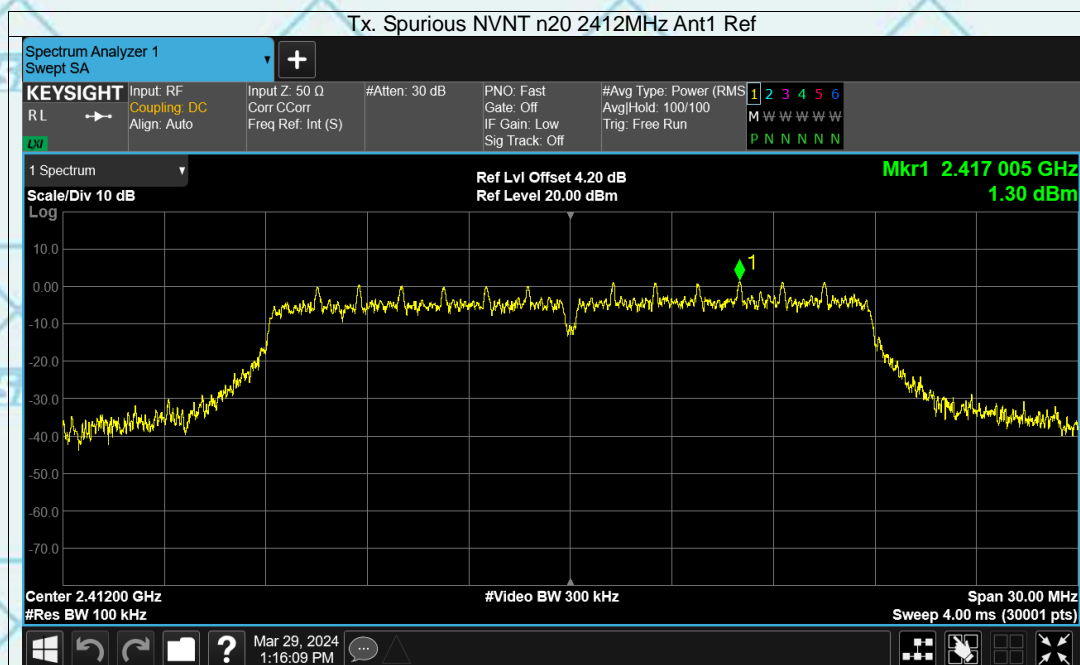
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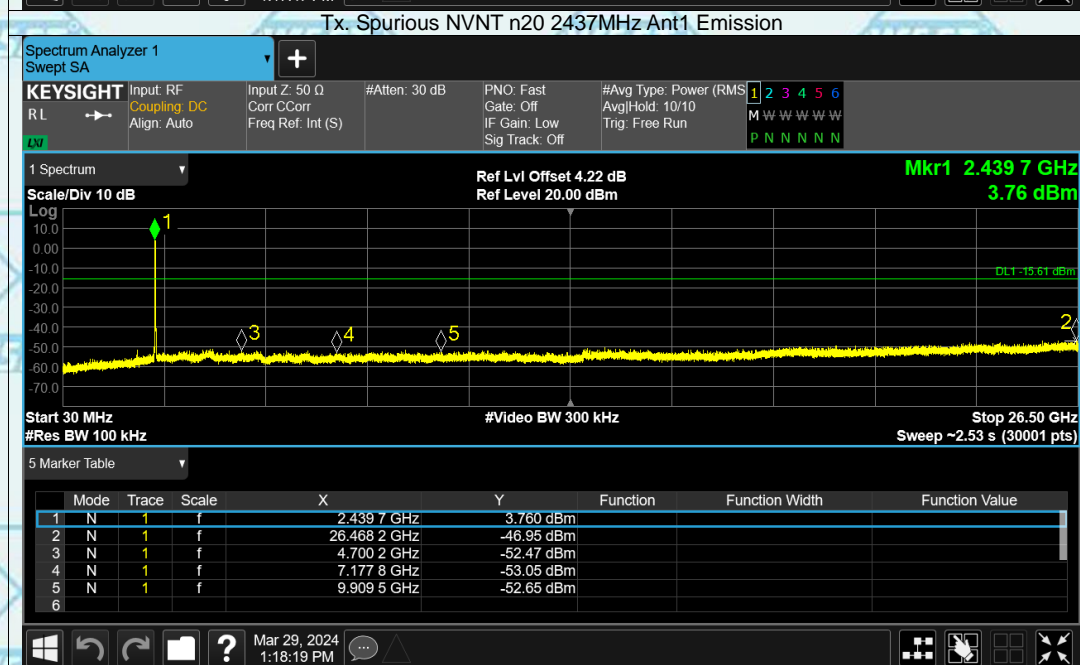
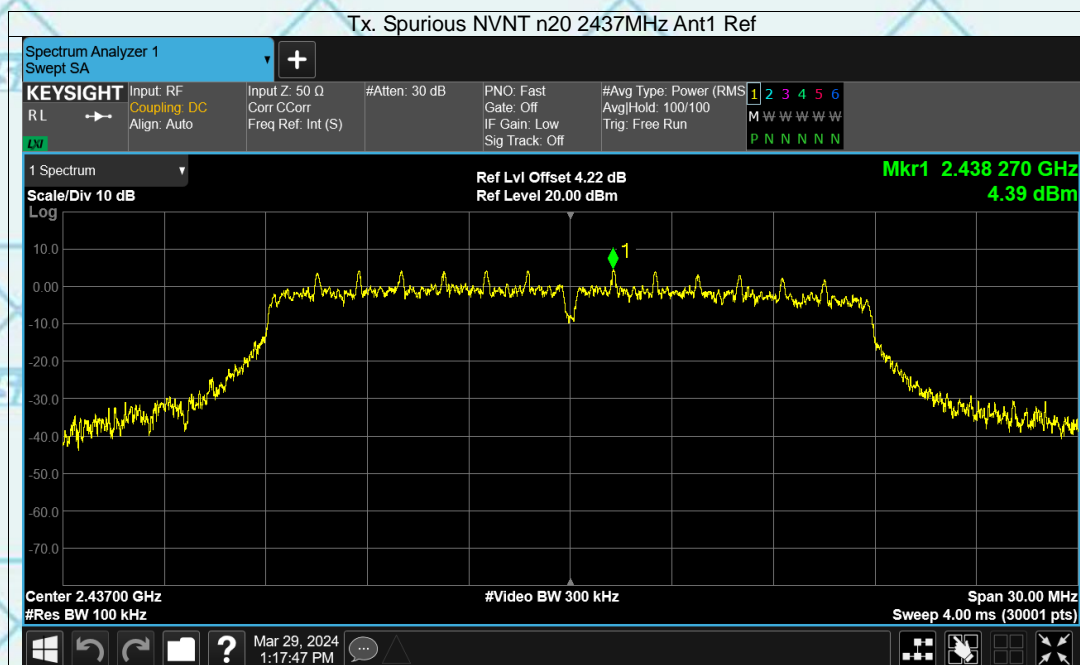
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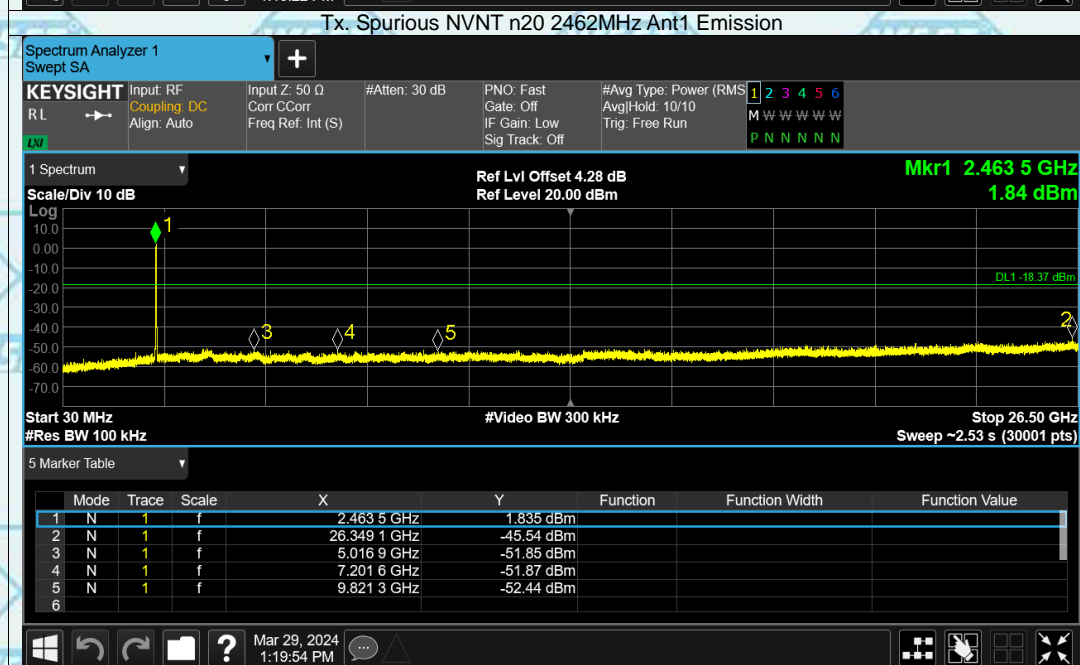
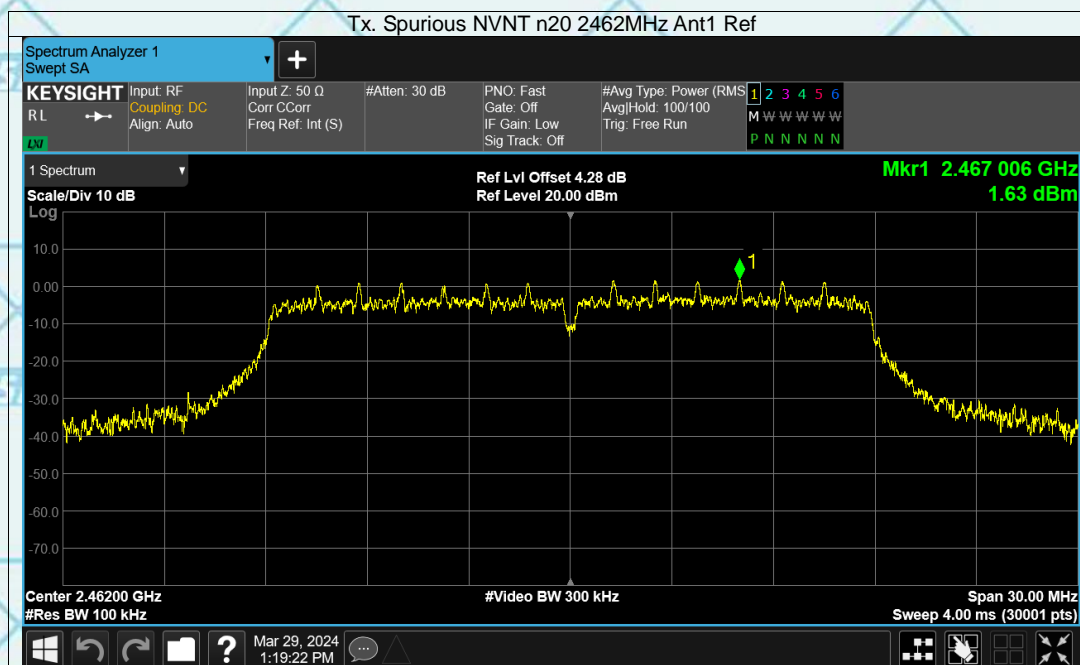
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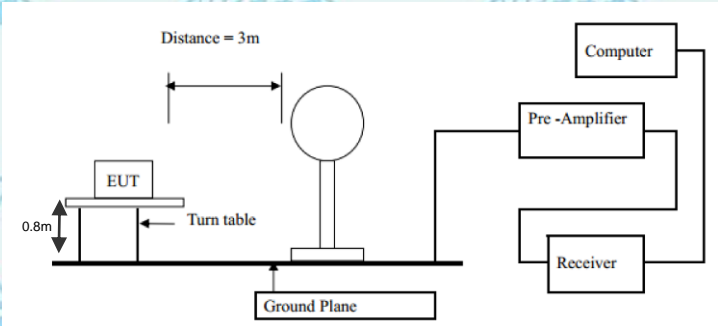
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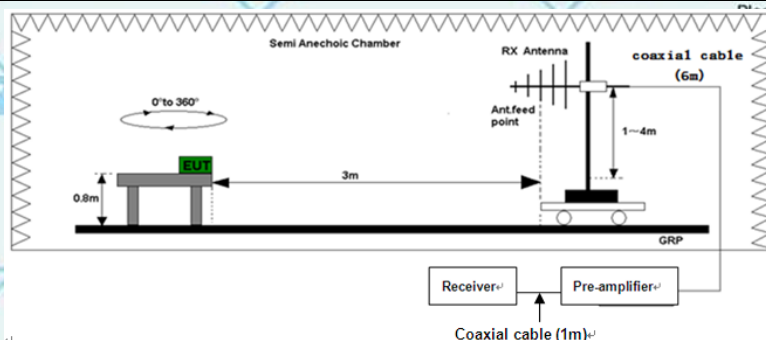
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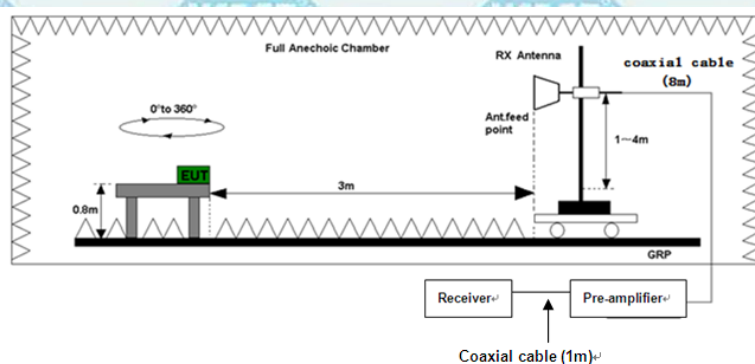
6.6. Radiated Spurious Emission Measurement

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	Remark
	9kHz- 150kHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value
	150kHz- 30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
Peak		1MHz	10Hz	Average Value	
Limit:	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
	88-216		150		3
	216-960		200		3
	Above 960		500		3
	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 1 GHz

**Test Procedure:**

- 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.



	<p>3. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level</p> <p>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.</p> <p>5. Use the following spectrum analyzer settings:</p> <p>(1) Span shall wide enough to fully capture the emission being measured;</p> <p>(2) Set RBW=100 kHz for $f < 1$ GHz; VBW \geq RBW; Sweep = auto; Detector function = peak; Trace = max hold;</p> <p>(3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.</p> <p>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.</p>
Test results:	PASS



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6.6.2. Test Data(worst)

Please refer to following diagram for individual
Below 1GHz

Horizontal:



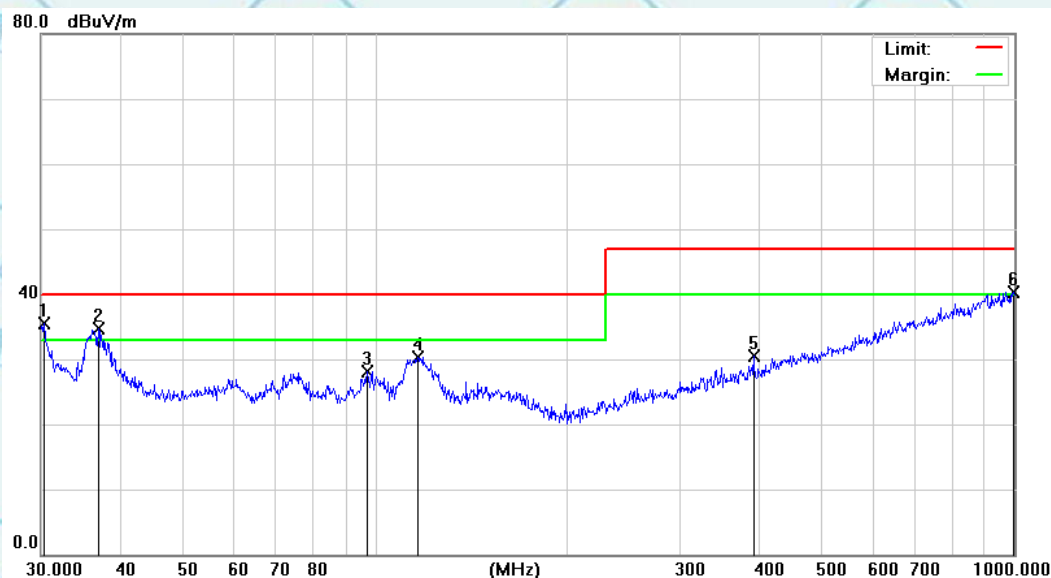
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	30.1054	35.89	-1.73	34.16	40.00	-5.84	QP
2		36.0007	29.78	-1.12	28.66	40.00	-11.34	QP
3		96.0986	34.25	-4.30	29.95	40.00	-10.05	QP
4		119.4361	30.39	-2.17	28.22	40.00	-11.78	QP
5		647.3856	26.17	8.87	35.04	47.00	-11.96	QP
6	!	996.4996	25.80	14.44	40.24	47.00	-6.76	QP



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No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	30.3173	37.22	-1.72	35.50	40.00	-4.50	QP
2	!	36.8953	35.62	-0.97	34.65	40.00	-5.35	QP
3		97.1148	32.39	-4.21	28.18	40.00	-11.82	QP
4		116.5401	32.71	-2.47	30.24	40.00	-9.76	QP
5		390.7226	27.93	2.49	30.42	47.00	-16.58	QP
6	!	996.4996	25.84	14.44	40.28	47.00	-6.72	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)





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Above 1GHz

20MHz(802.11b/g/n)

Freq. (MHz)	Low channel: 2412MHz						
	Ant.Pol	Emission Level(dBuV)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
4824	V	57.41	39.82	74	54	-16.59	-14.18
7236	V	55.79	39.48	74	54	-18.21	-14.52
4824	H	63.71	40.08	74	54	-10.29	-13.92
7236	H	63.04	47.04	74	54	-10.96	-6.96

Freq. (MHz)	Middle channel: 2437MHz						
	Ant.Pol	Emission Level(dBuV)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
4874	V	55.05	40.47	74	54	-18.95	-13.53
7311	V	62.12	39.49	74	54	-11.88	-14.51
4874	H	57.31	39.57	74	54	-16.69	-14.43
7311	H	62.34	46.34	74	54	-11.66	-7.66

Freq. (MHz)	High channel: 2462MHz						
	Ant.Pol	Emission Level(dBuV)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
4924	V	63.92	39.62	74	54	-10.08	-14.38
7386	V	62.94	40.47	74	54	-11.06	-13.53
4924	H	61.52	40.46	74	54	-12.48	-13.54
7386	H	60.74	44.74	74	54	-13.26	-9.26

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.





Report No.: WSCT-A2LA-R&E240300016A-Wi-Fi

Certificate #5768.01

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

Restricted Bands Requirements

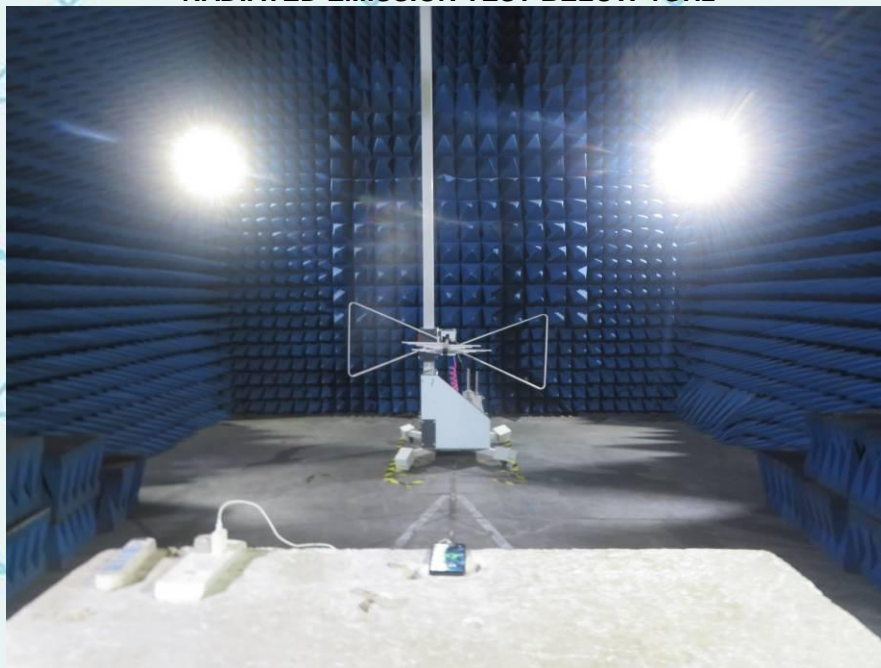
Test result for 802.11b Mode (the worst case)

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	61.47	-8.76	52.71	74	21.29	H	PK
2390	54.35	-8.76	45.59	54	8.41	H	AV
2390	63.67	-8.73	54.94	74	19.06	V	PK
2390	55.03	-8.73	46.30	54	7.70	V	AV
High Channel							
2483.5	64.81	-8.76	56.05	74	17.95	H	PK
2483.5	53.76	-8.76	45.00	54	9.00	H	AV
2483.5	60.34	-8.73	51.61	74	22.39	V	PK
2483.5	56.31	-8.73	47.58	54	6.42	V	AV

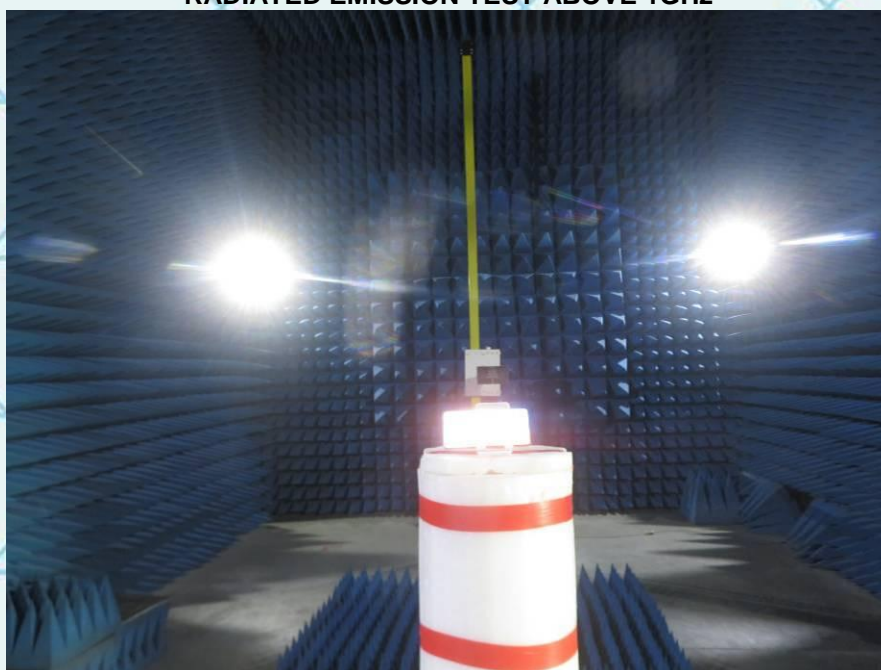


7. Test Setup Photographs

RADIATED EMISSION TEST BELOW 1GHz



RADIATED EMISSION TEST ABOVE 1GHz





RF test photo



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