



FCC TEST REPORT

FCC ID:2A5TQ-R200

Report Number..... : ZKT-240320L2793-1

Date of Test..... Mar.14, 2024 to Mar.22, 2024

Date of issue : Mar.22, 2024

Total number of pages 92

Test Result : PASS

Testing Laboratory..... : Shenzhen ZKT Technology Co., Ltd.

Address : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

Applicant's name : SHENZHEN SAGE IOT TECHNOLOGY CO.,LTD

Address : 4th Floor, Building B, Qiao Hongsheng cultural and creative garden, Xixiang Jiedao, Bao'an District, Shenzhen City, China

Manufacturer's name : Dongguan Jiugao electronic technology Co., LTD

Address : Room 401, Building 2, No. 853, Jie Nan Road, Humen Town, Dongguan City, Guangdong Province, China

Test specification:

Standard : FCC CFR Title 47 Part 15 Subpart C Section 15.247
ANSI C63.10:2013

Test procedure..... : /

Non-standard test method : N/A

Test Report Form No. : TRF-EL-111_V0

Test Report Form(s) Originator : ZKT Testing

Master TRF : Dated: 2020-01-06

This device described above has been tested by ZKT, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Product name..... : Wireless screen projector

Trademark : N/A

Model/Type reference..... : R200, R201, R202, R203, R204, R205, R206, R207, R208, R209.

Ratings..... : 5.0V===2.0A or DC 7.4V from the battery



Testing procedure and testing location:

Testing Laboratory.....: Shenzhen ZKT Technology Co., Ltd.

Address.....: 1/F, No. 101, Building B, No. 6, Tangwei Community
Industrial Avenue, Fuhai Street, Bao'an District,
Shenzhen, China

Tested by (name + signature).....: Alen He

Reviewer (name + signature).....: Joe Liu

Approved (name + signature).....: Lake Xie





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1. VERSION

Report No.	Version	Description	Approved
ZKT-240320L2793-1	Rev.01	Initial issue of report	Mar.22, 2024



2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C KDB 558074 D01				
	Standard Section	Test Item	Result	Remark
	FCC part 15.203/15.247 (c)	Antenna requirement	PASS	
	FCC part 15.207	AC Power Line Conducted Emission	PASS	
	FCC part 15.247 (b)(3)	Conducted Peak Output Power	PASS	
	FCC part 15.247 (a)(2)	Channel Bandwidth&	PASS	
	FCC part 15.247 (e)	Power Spectral Density	PASS	
	FCC part 15.247(d)	Band Edge	PASS	
	FCC part 15.247(d)	ConductedSpurious Emission	PASS	
	FCC part 15.205/15.209	Spurious Emission	PASS	

NOTE:

- (1) " N/A" denotes test is not applicable in this Test Report
- (2) KDB 662911 D01 Multiple Transmitter Output v02r01



2.1 TEST FACILITY

Shenzhen ZKT Technology Co., Ltd.

Add. : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

FCC Test Firm Registration Number: 692225

Designation Number: CN1299

IC Registered No.: 27033

2.2 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	Uncertainty
1	3m chamber Radiated spurious emission(9KHz-30MHz)	U=4.5dB
2	3m chamber Radiated spurious emission(30MHz-1GHz)	U=4.8dB
3	3m chamber Radiated spurious emission(1GHz-6GHz)	U=4.9dB
4	3m chamber Radiated spurious emission(6GHz-40GHz)	U=5.0dB
5	Conducted disturbance	U=3.2dB
6	RF Band Edge	U=1.68dB
7	RF power conducted	U=1.86dB
8	RF conducted Spurious Emission	U=2.2dB
9	RF Occupied Bandwidth	U=1.8dB
10	RF Power Spectral Density	U=1.75dB
11	humidity uncertainty	U=5.3%
12	Temperature uncertainty	U=0.59°C



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Applicant:	SHENZHEN SAGE IOT TECHNOLOGY CO.,LTD
Address of applicant:	4th Floor, Building B, Qiao Hongsheng cultural and creative garden, Xixiang Jiedao, Bao'an District, Shenzhen City, China
Manufacturer:	Dongguan Jiugao electronic technology Co., LTD
Address of manufacturer:	Room 401, Building 2, No. 853, Jie Nan Road, Humen Town, Dongguan City, Guangdong Province, China
Product Name:	Wireless screen projector
Model No.:	R200, R201, R202, R203, R204, R205, R206, R207, R208, R209.
Model Different.:	Only the model names are different. (Main test model: R200)
Serial No.:	N/A
Hardware Version:	V1.0
Software Version:	V1.0
Sample(s) Status:	Engineer sample
Channel numbers:	802.11b/802.11g /802.11n(HT20):11
Channel separation:	5MHz
Modulation technology:	802.11b: Direct Sequence Spread Spectrum(DSSS) 802.11g/802.11n(H20) Orthogonal Frequency Division Multiplexing(OFDM)
Antenna Type:	External detachable antenna
Antenna gain:	ANT 0: 3 dBi ANT 1: 3 dBi
Power supply:	5.0V---2.0A or DC 7.4V from the battery
Adapter:	Input:100-240V~ 50/60Hz 0.6A Output:5.0V---2.0A 10.0W



Operation Frequency each of channel							
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:

Test channel	Frequency (MHz)	
	802.11b/802.11g/802.11n(HT20)	/
Lowest channel	2412MHz	/
Middle channel	2437MHz	/
Highest channel	2462MHz	/

3.2 DESCRIPTION OF TEST MODES

Transmitting mode	Keep the EUT in continuously transmitting mode
Remark: During the test, the duty cycle >98%, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.	

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:				
Pre-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(HT20)	/
Data rate	1Mbps	6Mbps	6.5Mbps	/

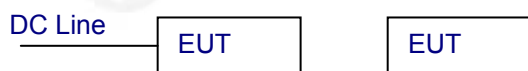
Test Software	TROLINIK
Powerlevelsetup	<13dBm

3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emission



Radiated Emission



Conducted Spurious





3.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

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.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
/	/	/	/	/	/

Item	Shielded Type	Ferrite Core	Length	Note

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.



3.5EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	9020A	MY55370835	A.17.05	Nov. 02, 2023	Nov. 01, 2024
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Nov. 02, 2023	Nov. 01, 2024
3	EMI Test Receiver (9kHz-7GHz)	R&S	ESCI7	100969	4.32	Nov. 02, 2023	Nov. 01, 2024
4	Bilog Antenna (30MHz-1500MHz)	Schwarzbeck	VULB9168	N/A	N/A	Nov. 13, 2023	Nov. 12, 2024
5	Horn Antenna (1GHz-18GHz)	Agilent	AH-118	071145	N/A	Nov. 13, 2023	Nov. 12, 2024
6	Horn Antenna (15GHz-40GHz)	A.H.System	SAS-574	588	N/A	Nov. 13, 2023	Nov. 12, 2024
7	Loop Antenna	TESEQ	HLA6121	58357	N/A	Nov. 16, 2023	Nov. 15, 2024
8	Amplifier (30-1000MHz)	EM Electronics	EM330 Amplifier	60747	N/A	Nov. 02, 2023	Nov. 01, 2024
9	Amplifier (1GHz-26.5GHz)	HuiPu	8449B	3008A00315	N/A	Nov. 02, 2023	Nov. 01, 2024
10	Amplifier (500MHz-40GHz)	QuanJuDa	DLE-161	097	N/A	Nov. 02, 2023	Nov. 01, 2024
11	Test Cable	N/A	R-01	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
12	Test Cable	N/A	R-02	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
13	Test Cable	N/A	R-03	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
14	Test Cable	N/A	RF-01	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
15	Test Cable	N/A	RF-02	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
16	Test Cable	N/A	RF-03	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
17	ESG Signal Generator	Agilent	E4421B	N/A	B.03.84	Nov. 02, 2023	Nov. 01, 2024
18	Signal Generator	Agilent	N5182A	N/A	A.01.87	Nov. 02, 2023	Nov. 01, 2024
19	Magnetic Field Probe Tester	Narda	ELT-400	0-0344	N/A	Nov. 16, 2023	Nov. 15, 2024
20	Wideband Radio Communication Test	R&S	CMW500	106504	V 3.7.22	Nov. 02, 2023	Nov. 01, 2024
21	MWRF Power Meter Test system	MW	MW100-RF CB	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
22	D.C. Power Supply	LongWei	TPR-6405D	N/A	N/A	\	\
23	EMC Software	Frad	EZ-EMC	Ver.EMC-CO N 3A1.1	N/A	\	\
24	RF Software	MW	MTS8310	V2.0.0.0	N/A	\	\
25	Turntable	MF	MF-7802BS	N/A	N/A	\	\
26	Antenna tower	MF	MF-7802BS	N/A	N/A	\	\



Conducted emissions Test

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	LISN	R&S	ENV216	101471	N/A	Nov. 14, 2023	Nov. 13, 2024
2	LISN	CYBERTEK	EM5040A	E1850400149	N/A	Nov. 02, 2023	Nov. 01, 2024
3	Test Cable	N/A	C-01	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
4	Test Cable	N/A	C-02	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
5	Test Cable	N/A	C-03	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
6	EMI Test Receiver	R&S	ESCI3	101393	4.42 SP3	Nov. 02, 2023	Nov. 01, 2024
7	Triple-Loop Antenna	N/A	RF300	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
8	Absorbing Clamp	DZ	ZN23201	15034	N/A	Nov. 07, 2023	Nov. 06, 2024
9	EMC Software	Frad	EZ-EMC	Ver.EMC-CON 3A1.1	N/A	\	\



4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2013
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto

4.1.1 POWER LINE CONDUCTED EMISSION Limits

FREQUENCY (MHz)	Limit (dBuV)		Standard
	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

(1) *Decreases with the logarithm of the frequency.

4.1.2 TEST PROCEDURE

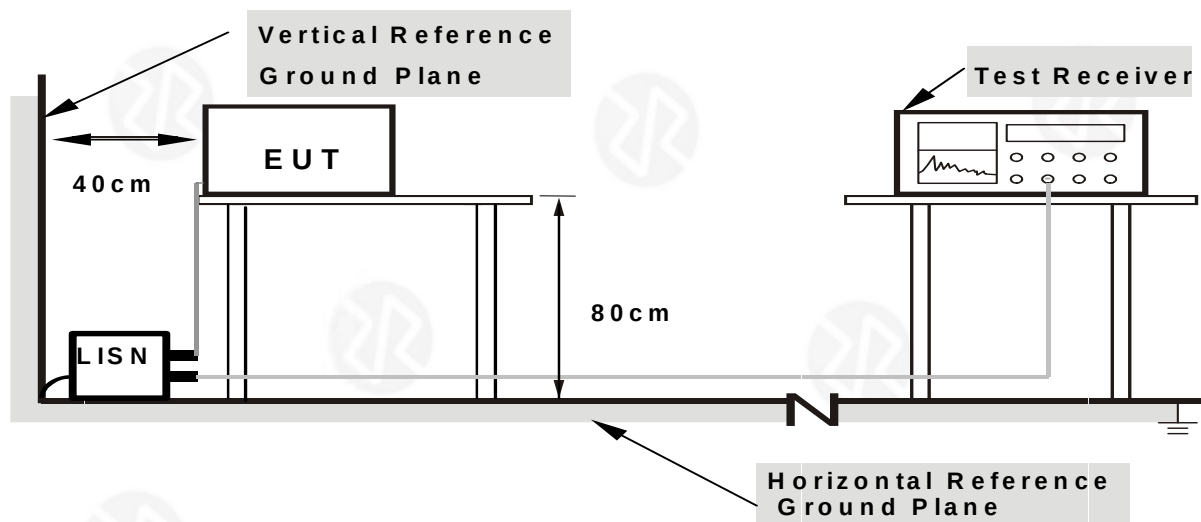
- The EUT was placed 0.1 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.3 DEVIATION FROM TEST STANDARD

No deviation



4.1.4 TEST SETUP



- Note:** 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

4.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

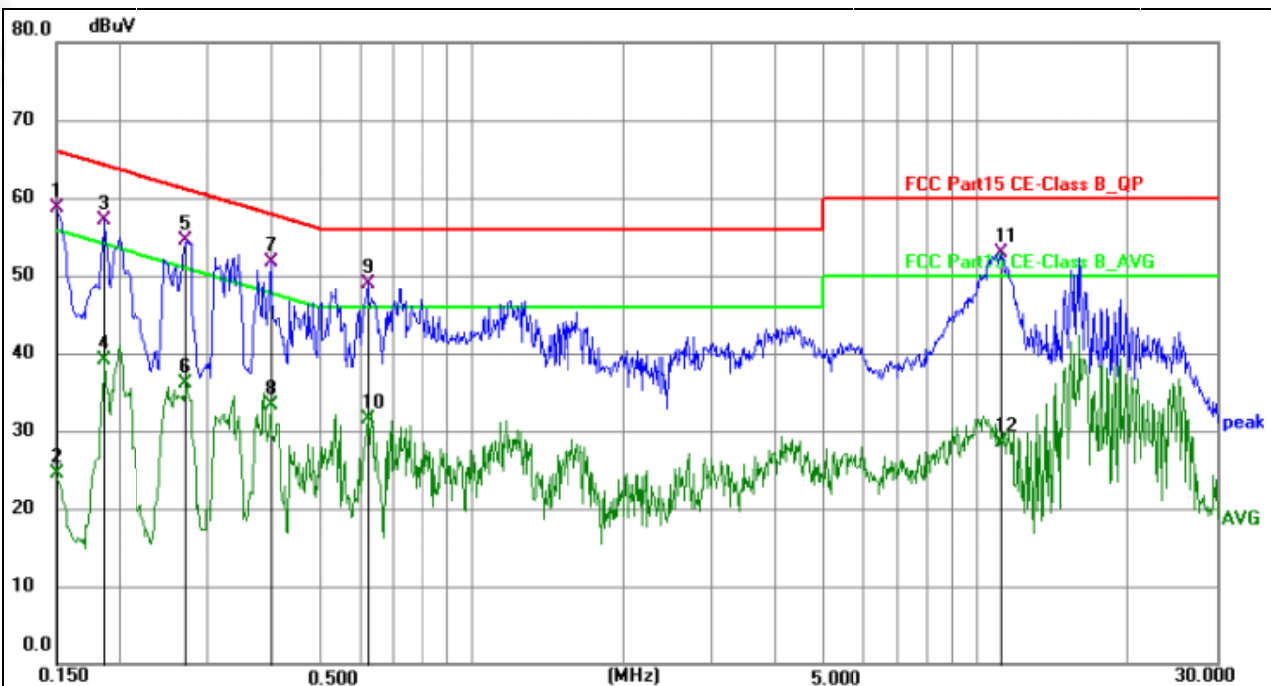
We pretest AC 120V and AC 230V, the worst voltage was AC 120V and the data recording in the report.

4.1.6 TEST RESULTS PASS



4.1.6 Test Result

Temperature :	26℃	Relative Humidity:	54%
Pressure :	101kPa	Phase :	L
Test Voltage :	AC 120V/60Hz		802.11b 2412MHz TX (Worst case ant 0)



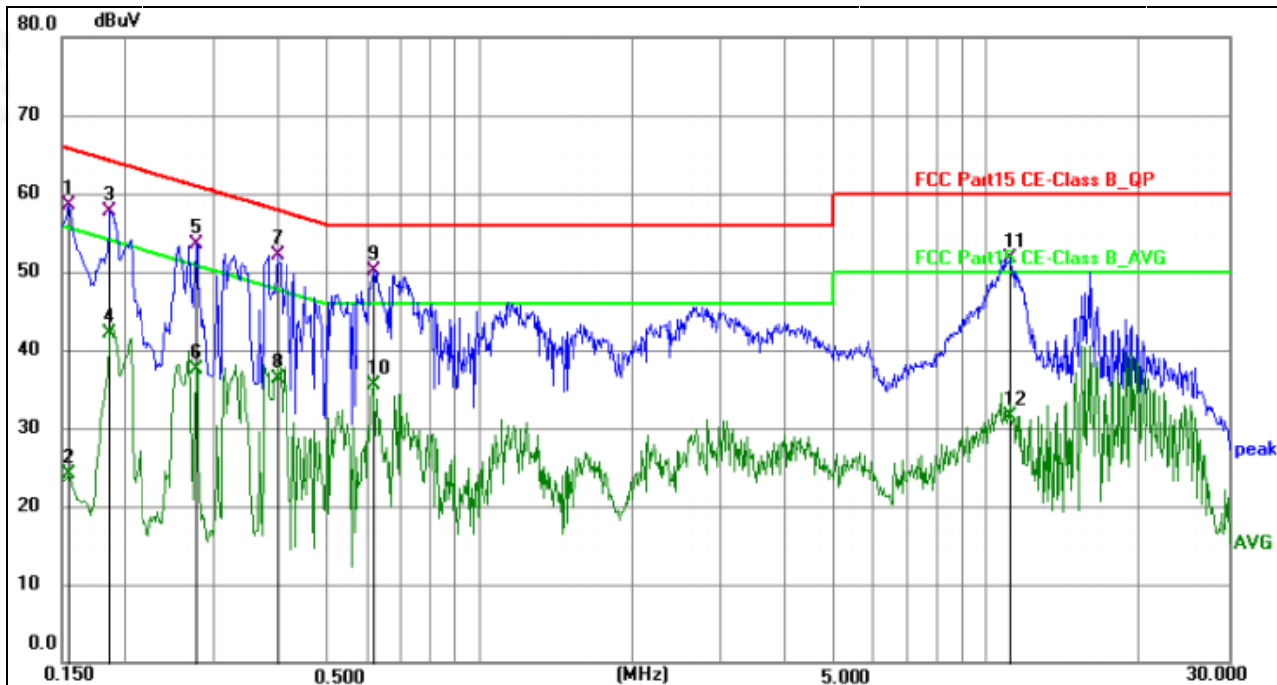
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1500	49.17	9.51	58.68	66.00	-7.32	QP	P	
2	0.1500	14.90	9.51	24.41	56.00	-31.59	AVG	P	
3	0.1859	47.50	9.65	57.15	64.22	-7.07	QP	P	
4	0.1859	29.55	9.65	39.20	54.22	-15.02	AVG	P	
5	0.2714	44.80	9.69	54.49	61.07	-6.58	QP	P	
6	0.2714	26.36	9.69	36.05	51.07	-15.02	AVG	P	
7 *	0.3975	42.05	9.64	51.69	57.91	-6.22	QP	P	
8	0.3975	23.59	9.64	33.23	47.91	-14.68	AVG	P	
9	0.6225	39.30	9.68	48.98	56.00	-7.02	QP	P	
10	0.6225	21.88	9.68	31.56	46.00	-14.44	AVG	P	
11	11.2286	43.20	9.76	52.96	60.00	-7.04	QP	P	
12	11.2286	18.73	9.76	28.49	50.00	-21.51	AVG	P	

Notes:

- 1.An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2.Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3.Mesurement Level = Reading level + Correct Factor



Temperature :	26℃	Relative Humidity:	54%
Pressure :	101kPa	Phase :	N
Test Voltage :	AC 120V/60Hz		802.11b 2412MHz TX (Worst case ant 0)



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1544	49.00	9.53	58.53	65.76	-7.23	QP	P	
2	0.1544	14.49	9.53	24.02	55.76	-31.74	AVG	P	
3	0.1859	48.11	9.65	57.76	64.22	-6.46	QP	P	
4	0.1859	32.37	9.65	42.02	54.22	-12.20	AVG	P	
5	0.2757	43.92	9.68	53.60	60.94	-7.34	QP	P	
6	0.2757	27.80	9.68	37.48	50.94	-13.46	AVG	P	
7 *	0.3975	42.49	9.64	52.13	57.91	-5.78	QP	P	
8	0.3975	26.60	9.64	36.24	47.91	-11.67	AVG	P	
9	0.6179	40.33	9.68	50.01	56.00	-5.99	QP	P	
10	0.6179	25.88	9.68	35.56	46.00	-10.44	AVG	P	
11	11.1795	42.01	9.76	51.77	60.00	-8.23	QP	P	
12	11.1795	21.79	9.76	31.55	50.00	-18.45	AVG	P	

Notes:

- 1.An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2.Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3.Measurement Level = Reading level + Correct Factor



4.2 RADIATED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.209				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	9kHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
	150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average

4.2.1 RADIATED EMISSION LIMITS

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT

FREQUENCY (MHz)	Limit (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

4.2.2 TEST PROCEDURE

Below 1GHz test procedure as below:

- The EUT was placed on the top of a rotating table 0.1 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of variable-height antenna tower.



- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

- g. Different from above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change from table 0.8 meter to 1.5 meter (Above 18GHz the distance is 1 meter and table is 1.5 meter).
- h. Test the EUT in the lowest channel, the middle channel, the Highest channel

Note:

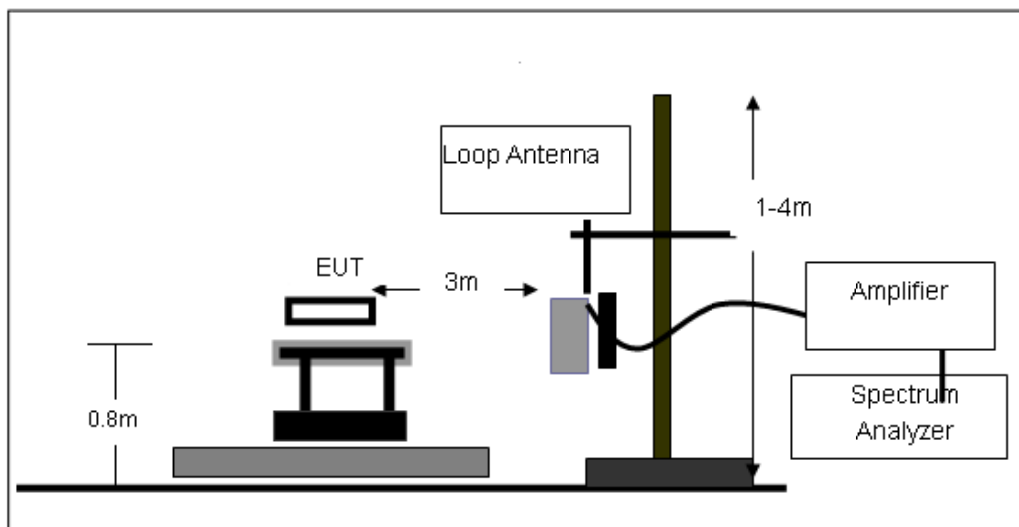
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

4.2.3 DEVIATION FROM TEST STANDARD

No deviation

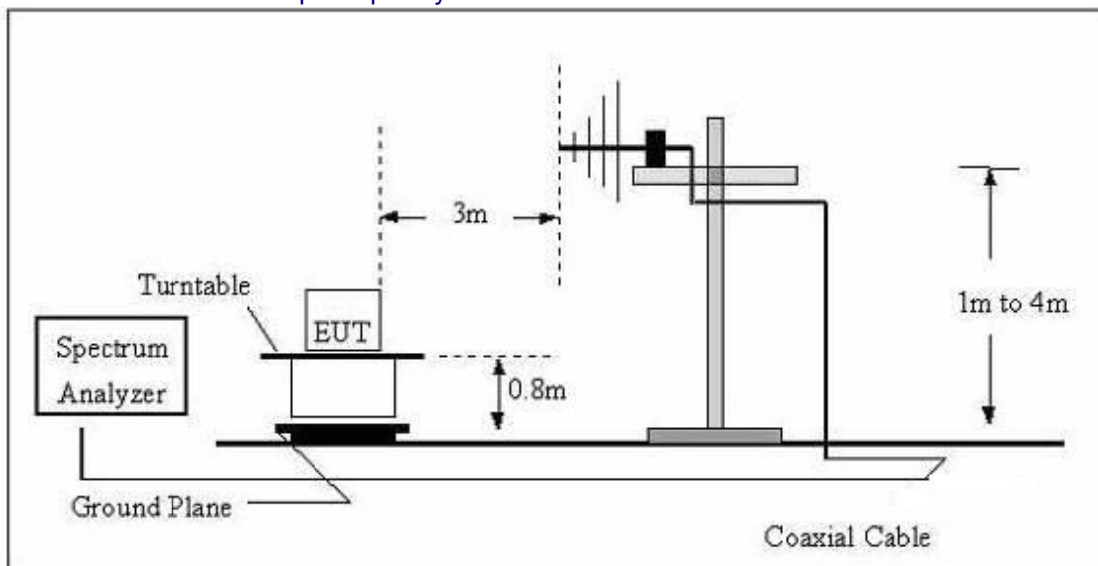
4.2.4 TEST SETUP

(A) Radiated Emission Test-Up Frequency Below 30MHz

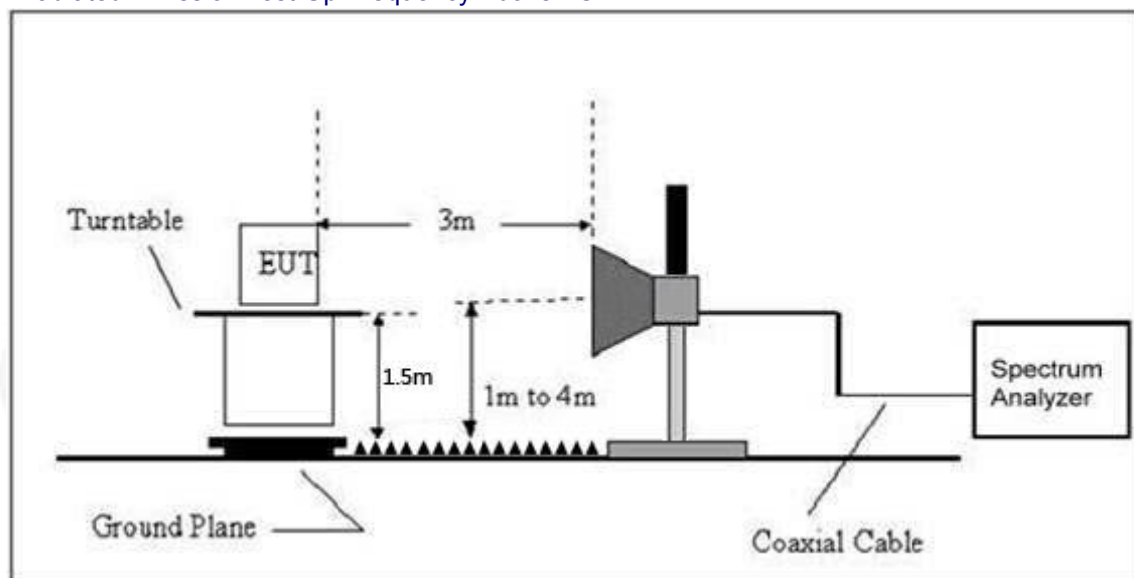




(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



4.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

4.2.6 TEST RESULTS

Between 9KHz – 30MHz

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.



Between 30MHz – 1GHz

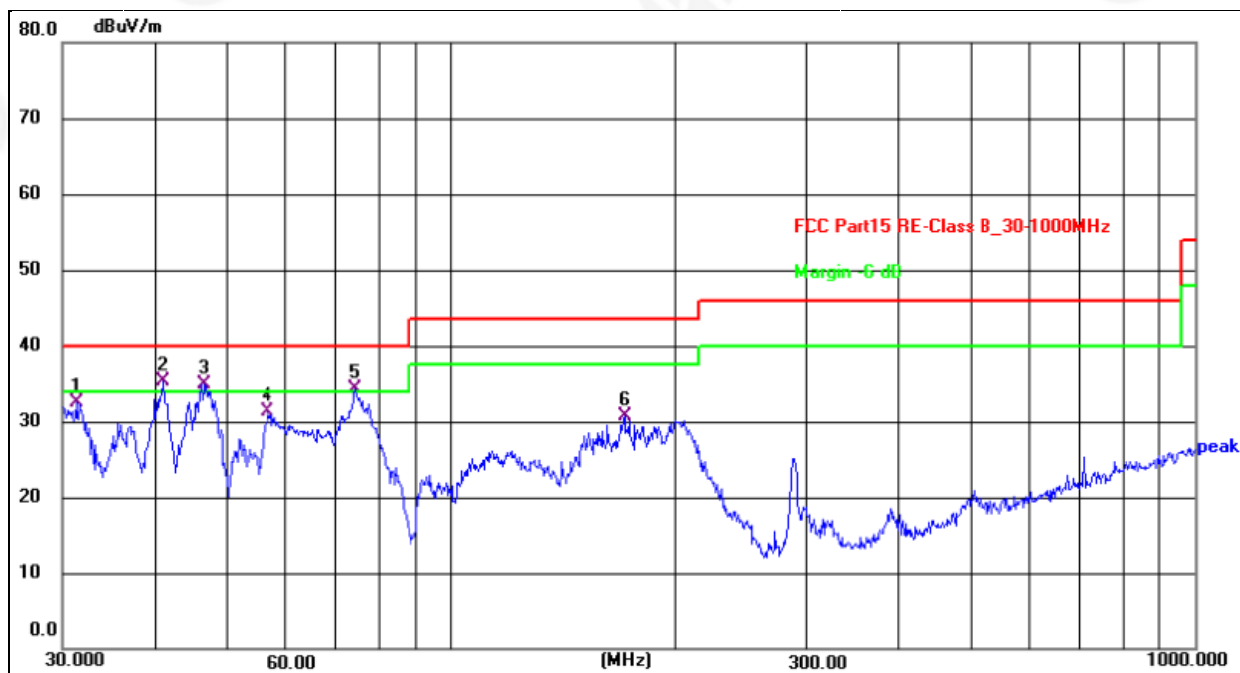
Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 7.4V	Test Mode	802.11b 2412MHz TX (Worst case ant0)



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	37.2854	40.10	-16.10	24.00	40.00	-16.00	QP
2	40.9880	40.15	-15.75	24.40	40.00	-15.60	QP
3	57.1914	35.86	-17.16	18.70	40.00	-21.30	QP
4 *	70.8315	48.19	-19.05	29.14	40.00	-10.86	QP
5	207.8500	46.96	-19.14	27.82	43.50	-15.68	QP
6	331.3546	37.02	-15.28	21.74	46.00	-24.26	QP



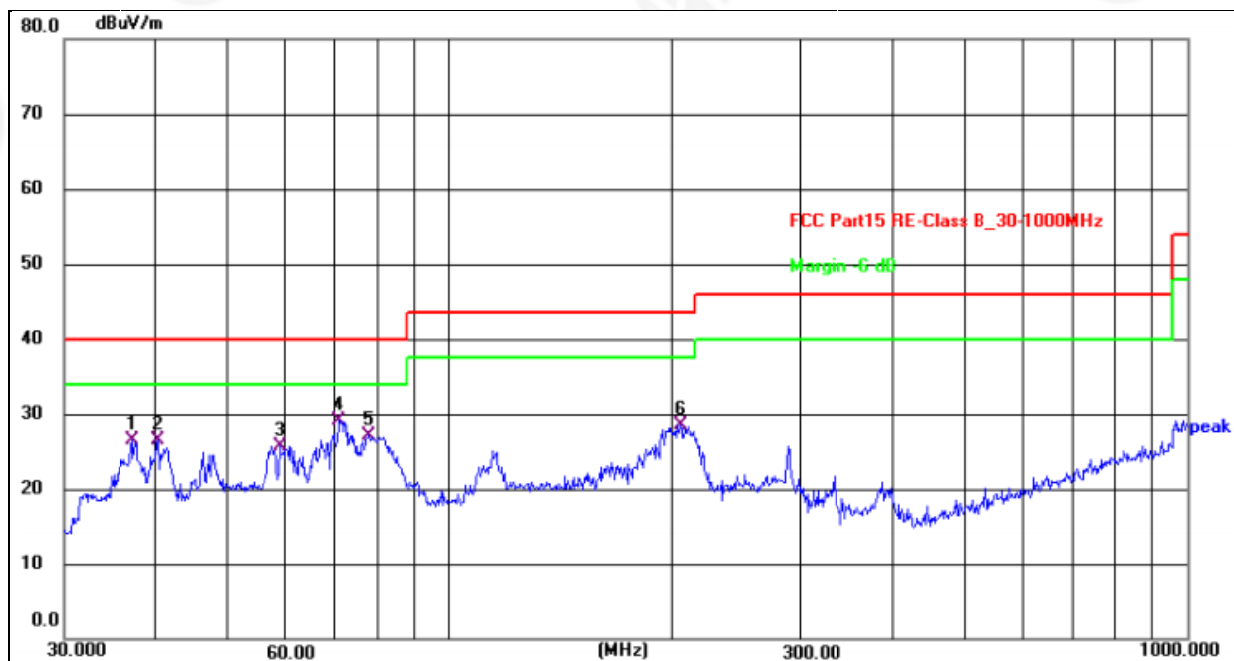
Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	DC 7.4V	Test Mode	802.11b 2412MHz TX (Worst case ant0)



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	31.2892	49.61	-17.20	32.41	40.00	-7.59	QP
2 *	40.9880	51.15	-15.75	35.40	40.00	-4.60	QP
3 !	46.5030	51.15	-16.16	34.99	40.00	-5.01	QP
4	56.5930	48.42	-17.11	31.31	40.00	-8.69	QP
5 !	74.1351	53.67	-19.29	34.38	40.00	-5.62	QP
6	170.7926	47.26	-16.53	30.73	43.50	-12.77	QP



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz	Test Mode	802.11b 2412MHz TX (Worst case ant0)



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	37.0326	42.63	-16.14	26.49	40.00	-13.51	QP
2	40.1463	42.13	-15.70	26.43	40.00	-13.57	QP
3	58.8581	43.04	-17.27	25.77	40.00	-14.23	QP
4 *	70.8923	48.19	-19.05	29.14	40.00	-10.86	QP
5	77.6666	47.34	-20.18	27.16	40.00	-12.84	QP
6	205.3497	47.65	-19.11	28.54	43.50	-14.96	QP



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz	Test Mode	802.11b 2412MHz TX (Worst case ant0)



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	31.2906	48.61	-17.20	31.41	40.00	-8.59	QP
2 *	41.0007	49.15	-15.75	33.40	40.00	-6.60	QP
3	46.5234	48.15	-16.16	31.99	40.00	-8.01	QP
4	56.6290	48.42	-17.11	31.31	40.00	-8.69	QP
5	74.2022	52.67	-19.30	33.37	40.00	-6.63	QP
6	196.8797	51.65	-18.96	32.69	43.50	-10.81	QP

Remarks:

- 1.Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
 - 2.The emission levels of other frequencies are very lower than the limit and not show in test report.
 - 3.The test data shows only the worst case 802.11bmode
- Note:The 802.11b/g ANT0 / 1 is tested, and only the worst mode is reflected in the report



1GHz~25GHz

802.11b ANT 0

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-ampl ifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/ m)	Margin (dB)	Detect or Type
Low Channel:2412MHz									
V	4824.00	52.03	30.55	5.77	24.66	51.91	74.00	-22.09	Pk
V	4824.00	43.30	30.55	5.77	24.66	43.18	54.00	-10.82	AV
V	7236.00	54.91	30.33	6.32	24.55	55.45	74.00	-18.55	Pk
V	7236.00	43.85	30.33	6.32	24.55	44.39	54.00	-9.61	AV
V	9648.00	51.05	30.85	7.45	24.69	52.34	74.00	-21.66	Pk
V	9648.00	43.74	30.85	7.45	24.69	45.03	54.00	-8.97	AV
V	12060.00	51.43	31.02	8.99	25.57	54.97	74.00	-19.03	Pk
V	12060.00	43.57	31.02	8.99	25.57	47.11	54.00	-6.89	AV
H	4824.00	54.36	30.55	5.77	24.66	54.24	74.00	-19.76	Pk
H	4824.00	43.75	30.55	5.77	24.66	43.63	54.00	-10.37	AV
H	7236.00	50.93	30.33	6.32	24.55	51.47	74.00	-22.53	Pk
H	7236.00	43.54	30.33	6.32	24.55	44.08	54.00	-9.92	AV
H	9648.00	52.25	30.85	7.45	24.69	53.54	74.00	-20.46	Pk
H	9648.00	43.26	30.85	7.45	24.69	44.55	54.00	-9.45	AV
H	12060.00	54.90	31.02	8.99	25.57	58.44	74.00	-15.56	Pk
H	12060.00	43.86	31.02	8.99	25.57	47.40	54.00	-6.60	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-ampl ifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/ m)	Margin (dB)	Detect or Type
Middle Channel:2437MHz									
V	4874.00	53.58	30.55	5.77	24.66	53.46	74.00	-20.54	Pk
V	4874.00	43.39	30.55	5.77	24.66	43.27	54.00	-10.73	AV
V	7311.00	52.49	30.33	6.32	24.55	53.03	74.00	-20.97	Pk
V	7311.00	43.42	30.33	6.32	24.55	43.96	54.00	-10.04	AV
V	9748.00	54.76	30.85	7.45	24.69	56.05	74.00	-17.95	Pk
V	9748.00	43.44	30.85	7.45	24.69	44.73	54.00	-9.27	AV
V	12185.00	50.38	31.02	8.99	25.57	53.92	74.00	-20.08	Pk
V	12185.00	43.25	31.02	8.99	25.57	46.79	54.00	-7.21	AV
H	4874.00	53.94	30.55	5.77	24.66	53.82	74.00	-20.18	Pk
H	4874.00	43.64	30.55	5.77	24.66	43.52	54.00	-10.48	AV
H	7311.00	51.28	30.33	6.32	24.55	51.82	74.00	-22.18	Pk
H	7311.00	43.72	30.33	6.32	24.55	44.26	54.00	-9.74	AV
H	9748.00	54.52	30.85	7.45	24.69	55.81	74.00	-18.19	Pk
H	9748.00	43.14	30.85	7.45	24.69	44.43	54.00	-9.57	AV
H	12185.00	54.10	31.02	8.99	25.57	57.64	74.00	-16.36	Pk
H	12185.00	43.05	31.02	8.99	25.57	46.59	54.00	-7.41	AV



Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-ampli fier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/ m)	Margin (dB)	Detect or Type
High Channel:2462MHz									
V	4924.00	53.26	30.55	5.77	24.66	53.14	74.00	-20.86	Pk
V	4924.00	43.55	30.55	5.77	24.66	43.43	54.00	-10.57	AV
V	7386.00	51.82	30.33	6.32	24.55	52.36	74.00	-21.64	Pk
V	7386.00	43.31	30.33	6.32	24.55	43.85	54.00	-10.15	AV
V	9848.00	51.33	30.85	7.45	24.69	52.62	74.00	-21.38	Pk
V	9848.00	43.74	30.85	7.45	24.69	45.03	54.00	-8.97	AV
V	12310.00	53.16	31.02	8.99	25.57	56.70	74.00	-17.30	Pk
V	12310.00	43.42	31.02	8.99	25.57	46.96	54.00	-7.04	AV
H	4924.00	54.78	30.55	5.77	24.66	54.66	74.00	-19.34	Pk
H	4924.00	43.68	30.55	5.77	24.66	43.56	54.00	-10.44	AV
H	7386.00	53.96	30.33	6.32	24.55	54.50	74.00	-19.50	Pk
H	7386.00	43.63	30.33	6.32	24.55	44.17	54.00	-9.83	AV
H	9848.00	54.25	30.85	7.45	24.69	55.54	74.00	-18.46	Pk
H	9848.00	43.67	30.85	7.45	24.69	44.96	54.00	-9.04	AV
H	12310.00	52.30	31.02	8.99	25.57	55.84	74.00	-18.16	Pk
H	12310.00	43.37	31.02	8.99	25.57	46.91	54.00	-7.09	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,

Margin= Emission Level - Limit

2. If peak below the average limit, the average emission was no test.

3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



802.11g ANT 0

Polar (H/V)	Frequency	Meter Reading	Pre-ampl ifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/ m)	(dB)	
Low Channel:2412MHz									
V	4824.00	53.94	30.55	5.77	24.66	53.82	74.00	-20.18	Pk
V	4824.00	43.88	30.55	5.77	24.66	43.76	54.00	-10.24	AV
V	7236.00	53.15	30.33	6.32	24.55	53.69	74.00	-20.31	Pk
V	7236.00	43.99	30.33	6.32	24.55	44.53	54.00	-9.47	AV
V	9648.00	50.54	30.85	7.45	24.69	51.83	74.00	-22.17	Pk
V	9648.00	43.88	30.85	7.45	24.69	45.17	54.00	-8.83	AV
V	12060.00	54.54	31.02	8.99	25.57	58.08	74.00	-15.92	Pk
V	12060.00	43.65	31.02	8.99	25.57	47.19	54.00	-6.81	AV
H	4824.00	53.59	30.55	5.77	24.66	53.47	74.00	-20.53	Pk
H	4824.00	43.74	30.55	5.77	24.66	43.62	54.00	-10.38	AV
H	7236.00	54.83	30.33	6.32	24.55	55.37	74.00	-18.63	Pk
H	7236.00	43.66	30.33	6.32	24.55	44.20	54.00	-9.80	AV
H	9648.00	51.85	30.85	7.45	24.69	53.14	74.00	-20.86	Pk
H	9648.00	43.92	30.85	7.45	24.69	45.21	54.00	-8.79	AV
H	12060.00	51.86	31.02	8.99	25.57	55.40	74.00	-18.60	Pk
H	12060.00	43.08	31.02	8.99	25.57	46.62	54.00	-7.38	AV

Polar (H/V)	Frequency	Meter Reading	Pre-amp lifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/ m)	(dB)	
Middle Channel:2437MHz									
V	4874.00	53.67	30.55	5.77	24.66	53.55	74.00	-20.45	Pk
V	4874.00	43.81	30.55	5.77	24.66	43.69	54.00	-10.31	AV
V	7311.00	51.86	30.33	6.32	24.55	52.40	74.00	-21.60	Pk
V	7311.00	43.09	30.33	6.32	24.55	43.63	54.00	-10.37	AV
V	9748.00	54.16	30.85	7.45	24.69	55.45	74.00	-18.55	Pk
V	9748.00	43.24	30.85	7.45	24.69	44.53	54.00	-9.47	AV
V	12185.00	54.91	31.02	8.99	25.57	58.45	74.00	-15.55	Pk
V	12185.00	43.02	31.02	8.99	25.57	46.56	54.00	-7.44	AV
H	4874.00	53.91	30.55	5.77	24.66	53.79	74.00	-20.21	Pk
H	4874.00	43.28	30.55	5.77	24.66	43.16	54.00	-10.84	AV
H	7311.00	51.95	30.33	6.32	24.55	52.49	74.00	-21.51	Pk
H	7311.00	43.54	30.33	6.32	24.55	44.08	54.00	-9.92	AV
H	9748.00	53.78	30.85	7.45	24.69	55.07	74.00	-18.93	Pk
H	9748.00	43.52	30.85	7.45	24.69	44.81	54.00	-9.19	AV
H	12185.00	52.74	31.02	8.99	25.57	56.28	74.00	-17.72	Pk
H	12185.00	43.47	31.02	8.99	25.57	47.01	54.00	-6.99	AV



Polar (H/V)	Frequency	Meter Reading	Pre-ampl ifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/ m)	(dB)	
High Channel:2462MHz									
V	4924.00	53.77	30.55	5.77	24.66	53.65	74.00	-20.35	Pk
V	4924.00	43.10	30.55	5.77	24.66	42.98	54.00	-11.02	AV
V	7386.00	53.54	30.33	6.32	24.55	54.08	74.00	-19.92	Pk
V	7386.00	43.20	30.33	6.32	24.55	43.74	54.00	-10.26	AV
V	9848.00	55.00	30.85	7.45	24.69	56.29	74.00	-17.71	Pk
V	9848.00	43.94	30.85	7.45	24.69	45.23	54.00	-8.77	AV
V	12310.00	52.90	31.02	8.99	25.57	56.44	74.00	-17.56	Pk
V	12310.00	43.00	31.02	8.99	25.57	46.54	54.00	-7.46	AV
H	4924.00	52.78	30.55	5.77	24.66	52.66	74.00	-21.34	Pk
H	4924.00	43.83	30.55	5.77	24.66	43.71	54.00	-10.29	AV
H	7386.00	51.14	30.33	6.32	24.55	51.68	74.00	-22.32	Pk
H	7386.00	43.97	30.33	6.32	24.55	44.51	54.00	-9.49	AV
H	9848.00	50.92	30.85	7.45	24.69	52.21	74.00	-21.79	Pk
H	9848.00	43.22	30.85	7.45	24.69	44.51	54.00	-9.49	AV
H	12310.00	52.70	31.02	8.99	25.57	56.24	74.00	-17.76	Pk
H	12310.00	43.08	31.02	8.99	25.57	46.62	54.00	-7.38	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



802.11n20 MIMO

Polar (H/V)	Frequency	Meter Reading	Pre-ampl ifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/ m)	(dB)	
Low Channel:2412MHz									
V	4924.00	54.43	30.55	5.77	24.66	54.31	74.00	-19.69	Pk
V	4924.00	43.39	30.55	5.77	24.66	43.27	54.00	-10.73	AV
V	7386.00	53.37	30.33	6.32	24.55	53.91	74.00	-20.09	Pk
V	7386.00	43.29	30.33	6.32	24.55	43.83	54.00	-10.17	AV
V	9848.00	53.65	30.85	7.45	24.69	54.94	74.00	-19.06	Pk
V	9848.00	43.31	30.85	7.45	24.69	44.60	54.00	-9.40	AV
V	12310.00	54.84	31.02	8.99	25.57	58.38	74.00	-15.62	Pk
V	12310.00	43.15	31.02	8.99	25.57	46.69	54.00	-7.31	AV
H	4924.00	50.78	30.55	5.77	24.66	50.66	74.00	-23.34	Pk
H	4924.00	43.43	30.55	5.77	24.66	43.31	54.00	-10.69	AV
H	7386.00	51.19	30.33	6.32	24.55	51.73	74.00	-22.27	Pk
H	7386.00	43.49	30.33	6.32	24.55	44.03	54.00	-9.97	AV
H	9848.00	53.26	30.85	7.45	24.69	54.55	74.00	-19.45	Pk
H	9848.00	43.33	30.85	7.45	24.69	44.62	54.00	-9.38	AV
H	12310.00	54.29	31.02	8.99	25.57	57.83	74.00	-16.17	Pk
H	12310.00	43.86	31.02	8.99	25.57	47.40	54.00	-6.60	AV

Polar (H/V)	Frequency	Meter Reading	Pre-ampl ifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin		Detect or Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/ m)	(dB)		
Middle Channel:2437MHz										
V	4874.00	54.85	30.55	5.77	24.66	54.73	74.00	-19.27		Pk
V	4874.00	43.91	30.55	5.77	24.66	43.79	54.00	-10.21		AV
V	7311.00	53.20	30.33	6.32	24.55	53.74	74.00	-20.26		Pk
V	7311.00	43.52	30.33	6.32	24.55	44.06	54.00	-9.94		AV
V	9748.00	51.30	30.85	7.45	24.69	52.59	74.00	-21.41		Pk
V	9748.00	43.46	30.85	7.45	24.69	44.75	54.00	-9.25		AV
V	12185.00	53.75	31.02	8.99	25.57	57.29	74.00	-16.71		Pk
V	12185.00	43.29	31.02	8.99	25.57	46.83	54.00	-7.17		AV
H	4874.00	53.27	30.55	5.77	24.66	53.15	74.00	-20.85		Pk
H	4874.00	43.69	30.55	5.77	24.66	43.57	54.00	-10.43		AV
H	7311.00	50.29	30.33	6.32	24.55	50.83	74.00	-23.17		Pk
H	7311.00	43.04	30.33	6.32	24.55	43.58	54.00	-10.42		AV
H	9748.00	53.54	30.85	7.45	24.69	54.83	74.00	-19.17		Pk
H	9748.00	43.15	30.85	7.45	24.69	44.44	54.00	-9.56		AV
H	12185.00	50.85	31.02	8.99	25.57	54.39	74.00	-19.61		Pk
H	12185.00	43.93	31.02	8.99	25.57	47.47	54.00	-6.53		AV



Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-ampl ifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/ m)	Margin (dB)	Detect or Type
High Channel:2462MHz									
V	4924.00	50.15	30.55	5.77	24.66	50.03	74.00	-23.97	Pk
V	4924.00	43.33	30.55	5.77	24.66	43.21	54.00	-10.79	AV
V	7386.00	51.60	30.33	6.32	24.55	52.14	74.00	-21.86	Pk
V	7386.00	43.30	30.33	6.32	24.55	43.84	54.00	-10.16	AV
V	9848.00	50.29	30.85	7.45	24.69	51.58	74.00	-22.42	Pk
V	9848.00	43.86	30.85	7.45	24.69	45.15	54.00	-8.85	AV
V	12310.00	53.79	31.02	8.99	25.57	57.33	74.00	-16.67	Pk
V	12310.00	43.06	31.02	8.99	25.57	46.60	54.00	-7.40	AV
H	4924.00	50.36	30.55	5.77	24.66	50.24	74.00	-23.76	Pk
H	4924.00	43.80	30.55	5.77	24.66	43.68	54.00	-10.32	AV
H	7386.00	51.04	30.33	6.32	24.55	51.58	74.00	-22.42	Pk
H	7386.00	43.63	30.33	6.32	24.55	44.17	54.00	-9.83	AV
H	9848.00	54.82	30.85	7.45	24.69	56.11	74.00	-17.89	Pk
H	9848.00	43.13	30.85	7.45	24.69	44.42	54.00	-9.58	AV
H	12310.00	50.16	31.02	8.99	25.57	53.70	74.00	-20.30	Pk
H	12310.00	43.53	31.02	8.99	25.57	47.07	54.00	-6.93	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit

2. If peak below the average limit, the average emission was no test.

3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Note:The 802.11b/g ANT0 / 1 is tested, and only the worst mode is reflected in the report



5. RADIATED BAND EMISSION MEASUREMENT

5.1 TEST REQUIREMENT:

Test Requirement:	FCC Part 15 C Section 15.209 and 15.205				
Test Method:	ANSI C63.10: 2013				
Test Frequency Range:	All of the restrict bands were tested, only the worst band's (2310MHz to 2500MHz) data was showed.				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	Above	Peak	1MHz	3MHz	Peak
	1GHz	Peak	1MHz	10Hz	Average

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m) = 20log Emission level (uV/m).

5.2 TEST PROCEDURE

Above 1GHz test procedure as below:

1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
7. Test the EUT in the lowest channel, the highest channel

Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

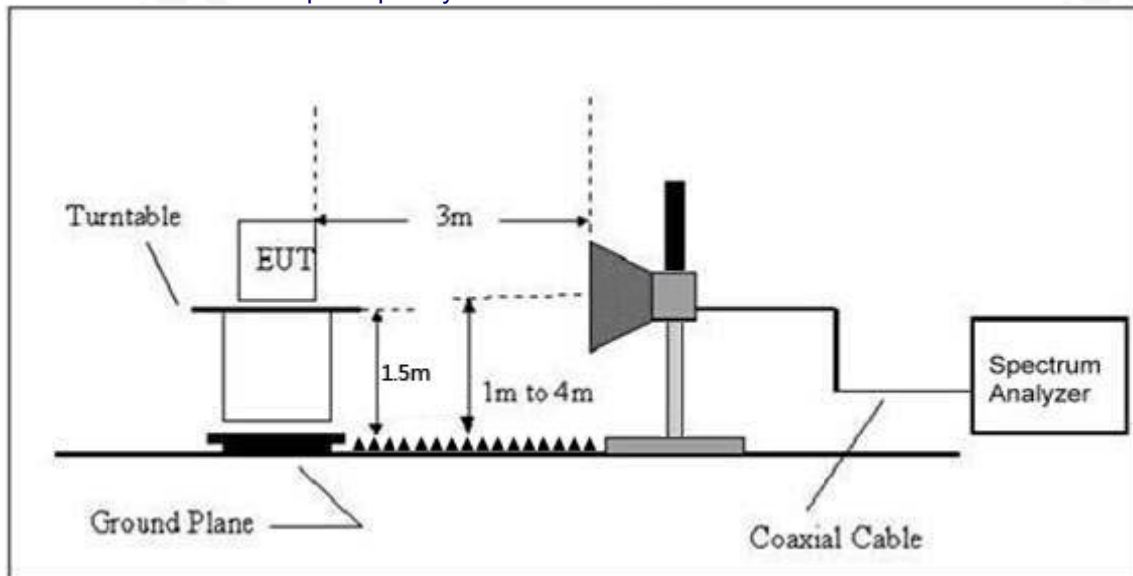
5.3 DEVIATION FROM TEST STANDARD

No deviation



5.4 TEST SETUP

Radiated Emission Test-Up Frequency Above 1GHz



5.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.



5.6 TEST RESULT

	Polar (H/V)	Frequenc y (MHz)	Meter Reading (dBuV)	Pre- amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV /m)	Detec tor Type	Result
802.11b (ANT 0)	LowChannel 2412MHz									
	H	2390.00	52.69	30.22	4.85	23.98	51.30	74.00	Pk	PASS
	H	2390.00	44.50	30.22	4.85	23.98	43.11	54.00	AV	PASS
	H	2400.00	54.53	30.22	4.85	23.98	53.14	74.00	Pk	PASS
	H	2400.00	44.04	30.22	4.85	23.98	42.65	54.00	AV	PASS
	V	2390.00	54.08	30.22	4.85	23.98	52.69	74.00	Pk	PASS
	V	2390.00	44.81	30.22	4.85	23.98	43.42	54.00	AV	PASS
	V	2400.00	53.16	30.22	4.85	23.98	51.77	74.00	Pk	PASS
	V	2400.00	44.32	30.22	4.85	23.98	42.93	54.00	AV	PASS
	HighChannel 2462MHz									
	H	2483.50	54.71	30.22	4.85	23.98	53.32	74.00	Pk	PASS
	H	2483.50	44.79	30.22	4.85	23.98	43.40	54.00	AV	PASS
	H	2500.00	53.57	30.22	4.85	23.98	52.18	74.00	Pk	PASS
	H	2500.00	44.32	30.22	4.85	23.98	42.93	54.00	AV	PASS
	V	2483.50	54.61	30.22	4.85	23.98	53.22	74.00	Pk	PASS
	V	2483.50	44.77	30.22	4.85	23.98	43.38	54.00	AV	PASS
	V	2500.00	53.43	30.22	4.85	23.98	52.04	74.00	Pk	PASS
	V	2500.00	44.15	30.22	4.85	23.98	42.76	54.00	AV	PASS
802.11g (ANT 0)	LowChannel 2412MHz									
	H	2390.00	54.66	30.22	4.85	23.98	53.27	74.00	Pk	PASS
	H	2390.00	44.21	30.22	4.85	23.98	42.82	54.00	AV	PASS
	H	2400.00	54.51	30.22	4.85	23.98	53.12	74.00	Pk	PASS
	H	2400.00	44.72	30.22	4.85	23.98	43.33	54.00	AV	PASS
	V	2390.00	53.71	30.22	4.85	23.98	52.32	74.00	Pk	PASS
	V	2390.00	44.46	30.22	4.85	23.98	43.07	54.00	AV	PASS
	V	2400.00	53.27	30.22	4.85	23.98	51.88	74.00	Pk	PASS
	V	2400.00	44.62	30.22	4.85	23.98	43.23	54.00	AV	PASS
	High Channel 2462MHz									
	H	2483.50	53.17	30.22	4.85	23.98	51.78	74.00	Pk	PASS
	H	2483.50	44.02	30.22	4.85	23.98	42.63	54.00	AV	PASS
	H	2500.00	53.17	30.22	4.85	23.98	51.78	74.00	Pk	PASS
	H	2500.00	44.00	30.22	4.85	23.98	42.61	54.00	AV	PASS
	V	2483.50	54.84	30.22	4.85	23.98	53.45	74.00	Pk	PASS
	V	2483.50	44.25	30.22	4.85	23.98	42.86	54.00	AV	PASS
	V	2500.00	53.09	30.22	4.85	23.98	51.70	74.00	Pk	PASS
	V	2500.00	44.86	30.22	4.85	23.98	43.47	54.00	AV	PASS
802.11n20 (MIMO)	LowChannel 2412MHz									
	H	2390.00	54.40	30.22	4.85	23.98	53.01	74.00	Pk	PASS
	H	2390.00	44.40	30.22	4.85	23.98	43.01	54.00	AV	PASS
	H	2400.00	53.89	30.22	4.85	23.98	52.50	74.00	Pk	PASS
	H	2400.00	44.82	30.22	4.85	23.98	43.43	54.00	AV	PASS
	V	2390.00	53.63	30.22	4.85	23.98	52.24	74.00	Pk	PASS
	V	2390.00	44.98	30.22	4.85	23.98	43.59	54.00	AV	PASS
	V	2400.00	54.32	30.22	4.85	23.98	52.93	74.00	Pk	PASS
	V	2400.00	44.38	30.22	4.85	23.98	42.99	54.00	AV	PASS
	High Channel 2462MHz									
	H	2483.50	53.01	30.22	4.85	23.98	51.62	74.00	Pk	PASS
	H	2483.50	44.45	30.22	4.85	23.98	43.06	54.00	AV	PASS
	H	2500.00	53.63	30.22	4.85	23.98	52.24	74.00	Pk	PASS
	H	2500.00	44.33	30.22	4.85	23.98	42.94	54.00	AV	PASS
	V	2483.50	53.85	30.22	4.85	23.98	52.46	74.00	Pk	PASS
	V	2483.50	44.78	30.22	4.85	23.98	43.39	54.00	AV	PASS
	V	2500.00	54.00	30.22	4.85	23.98	52.61	74.00	Pk	PASS



	V	2500.00	44.46	30.22	4.85	23.98	43.07	54.00	AV	PASS
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Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit

Note: The 802.11b/g ANT0 / 1 is tested, and only the worst mode is reflected in the report



6. POWER SPECTRAL DENSITY TEST

Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	KDB558074 D0115.247 Meas Guidancev05r02

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8dBm/3kHz	2400-2483.5	PASS

6.2 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: $3\text{ kHz} \leq \text{RBW} \leq 100\text{ kHz}$.
4. Set the VBW $\geq 3 \times \text{RBW}$.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.



6.6 TEST RESULT

ANT0

Mode	Frequency (MHz)	Conducted PSD (dBm/3kHz)	Limit (dBm/3kHz) ≤	Verdict
b	2412	-21.74	8	Pass
b	2437	-22.9	8	Pass
b	2462	-22.07	8	Pass
g	2412	-19.2	8	Pass
g	2437	-19.35	8	Pass
g	2462	-19.5	8	Pass
n20	2412	-17.65	8	Pass
n20	2437	-17.13	8	Pass
n20	2462	-17.3	8	Pass

ANT1

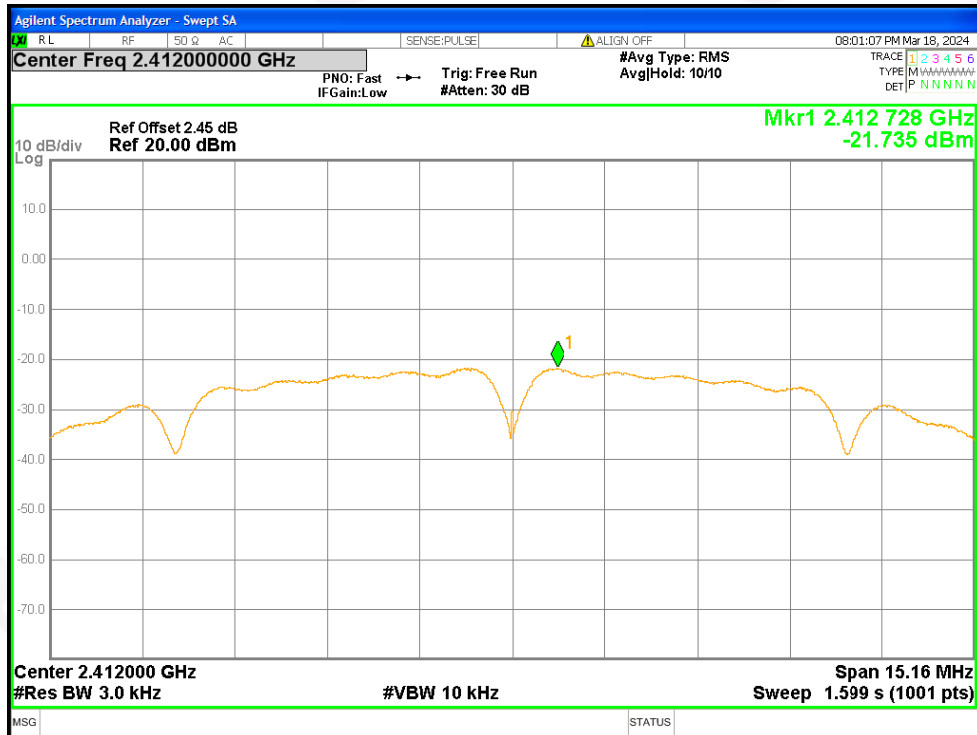
Mode	Frequency (MHz)	Conducted PSD (dBm/3kHz)	Limit (dBm/3kHz) ≤	Verdict
b	2412	-12.06	8	Pass
b	2437	-13.06	8	Pass
b	2462	-13.49	8	Pass
g	2412	-15.22	8	Pass
g	2437	-15.2	8	Pass
g	2462	-16.08	8	Pass
n20	2412	-16.81	8	Pass
n20	2437	-17.45	8	Pass
n20	2462	-16.71	8	Pass

ANT0+ANT1

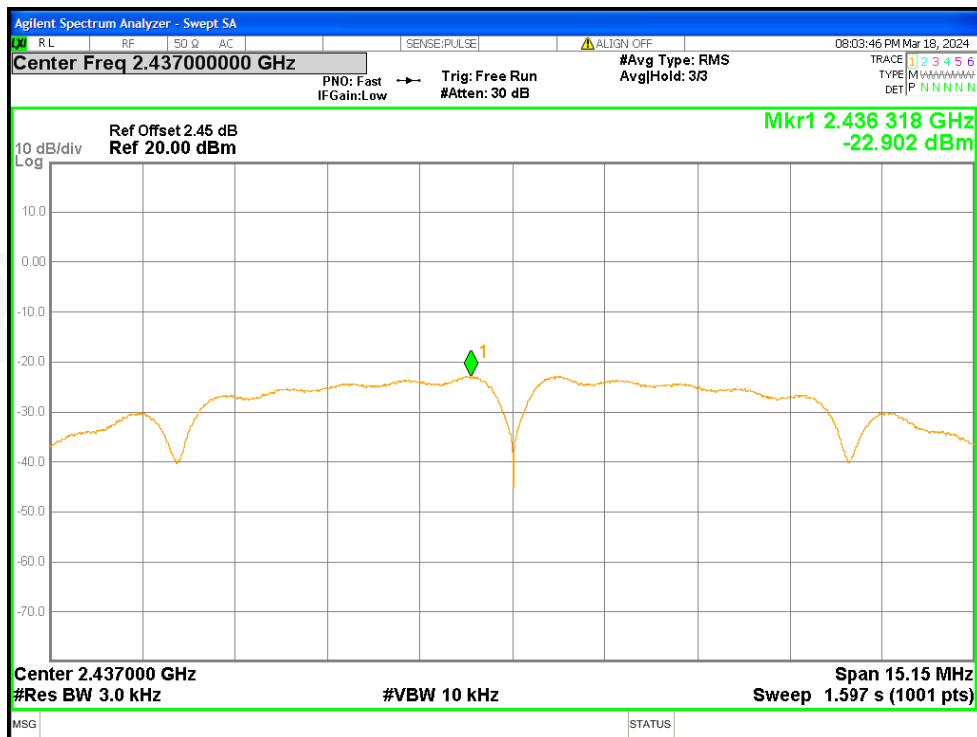
Mode	Frequency (MHz)	Conducted PSD ant 0 (dBm/3kHz)	Conducted PSD ant 1 (dBm/3kHz)	MIMO Conducted PSD (dBm/3kHz)	Limit (dBm/3kHz) ≤	Verdict
n20	2412	-17.65	-16.81	-14.20	8	Pass
n20	2437	-17.13	-17.45	-14.28	8	Pass
n20	2462	-17.3	-16.71	-13.98	8	Pass

EUT supports MIMO mode for 802.11n mode, Direction Gain=antenna gain+10*log(X)=3+3.01=6.01(X is the number of antennas, it is should be 2)

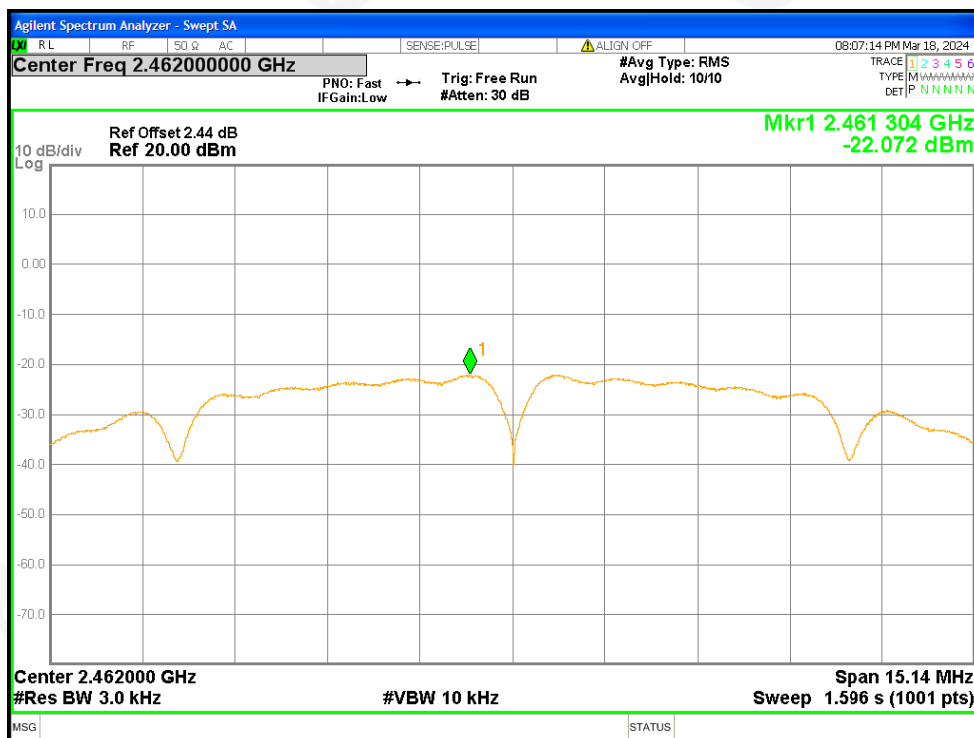
ANT0



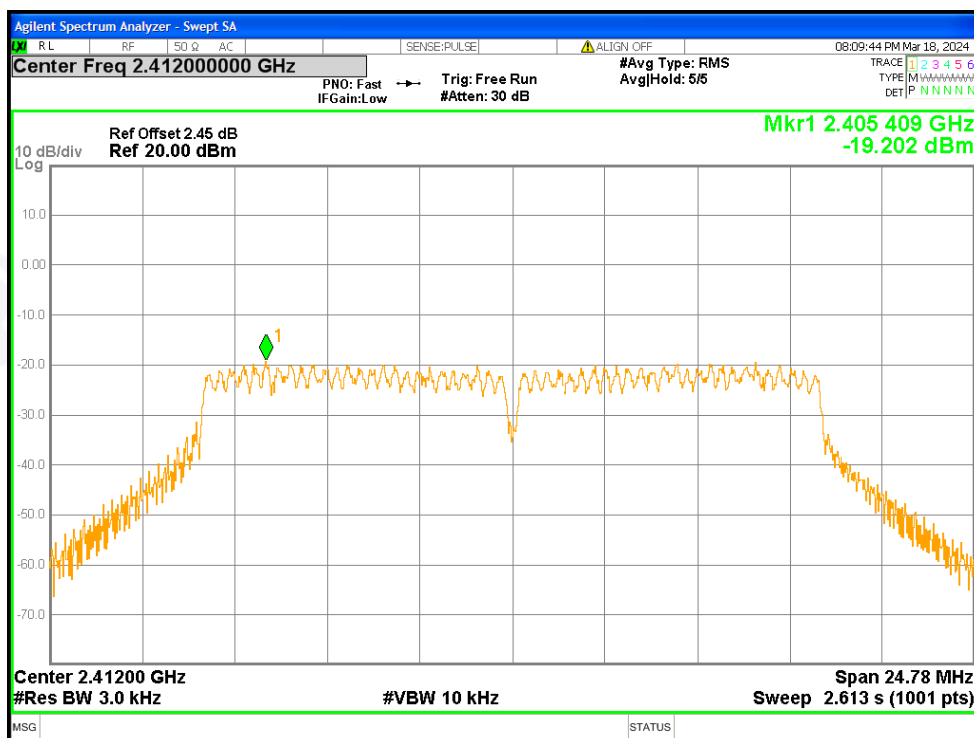
PSD NVNT b 2412MHz Ant0



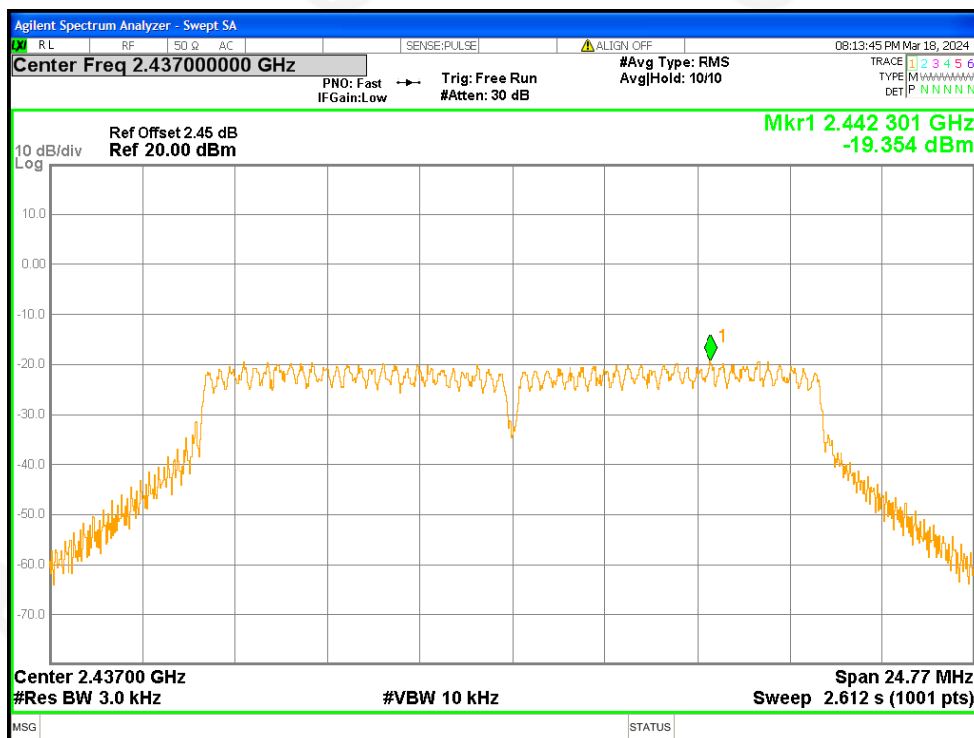
PSD NVNT b 2437MHz Ant0



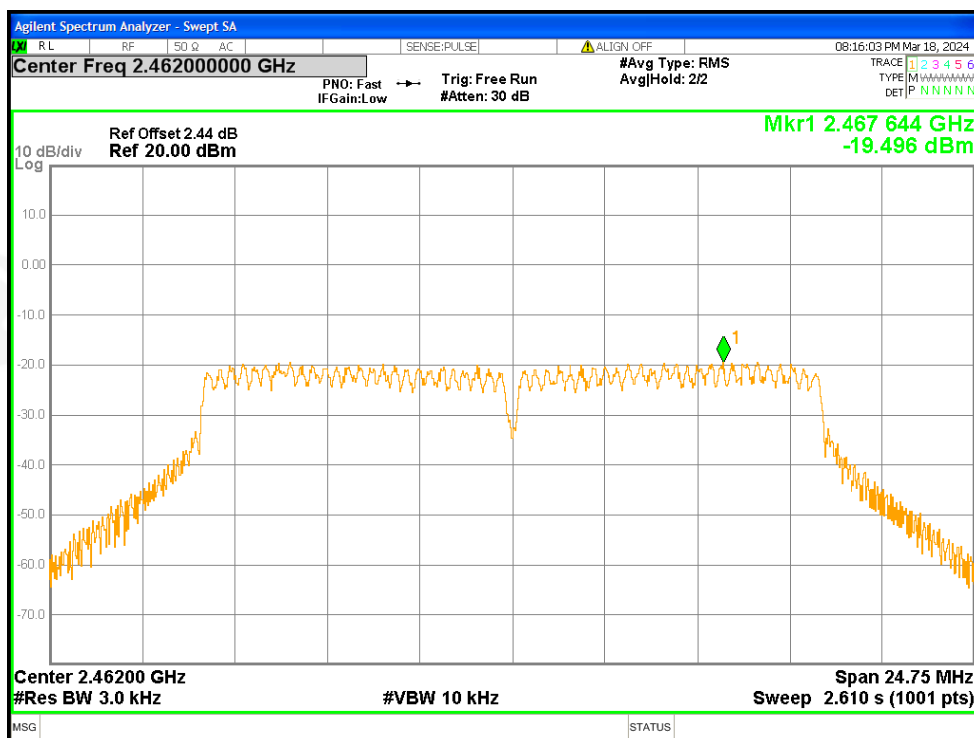
PSD NVNT b 2462MHz Ant0



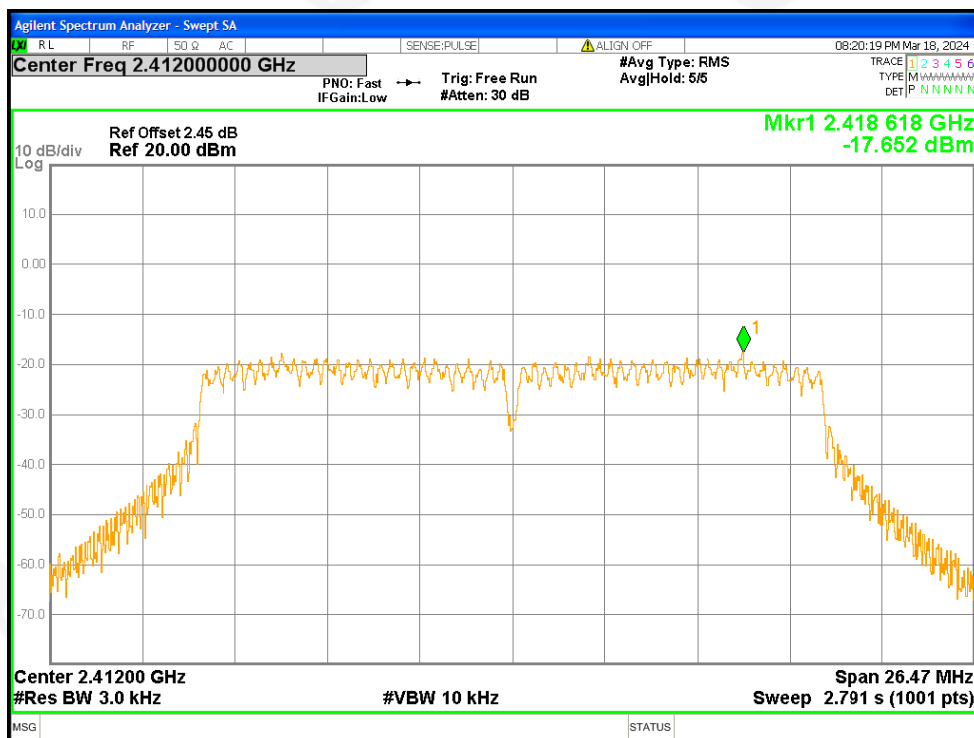
PSD NVNT g 2412MHz Ant0



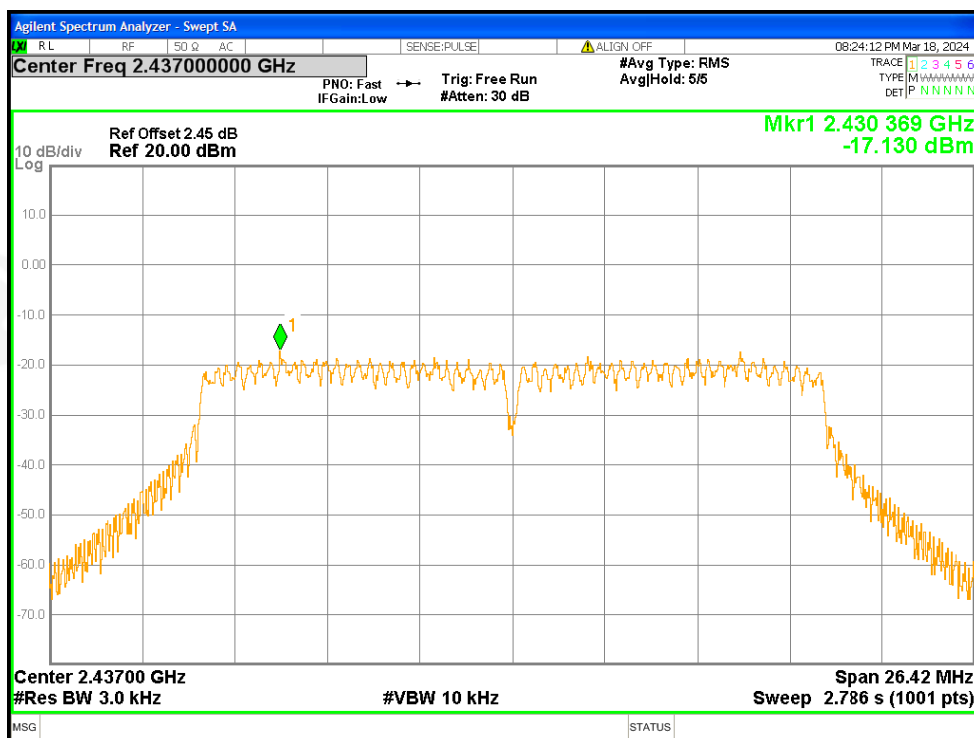
PSD NVNT g 2437MHz Ant0



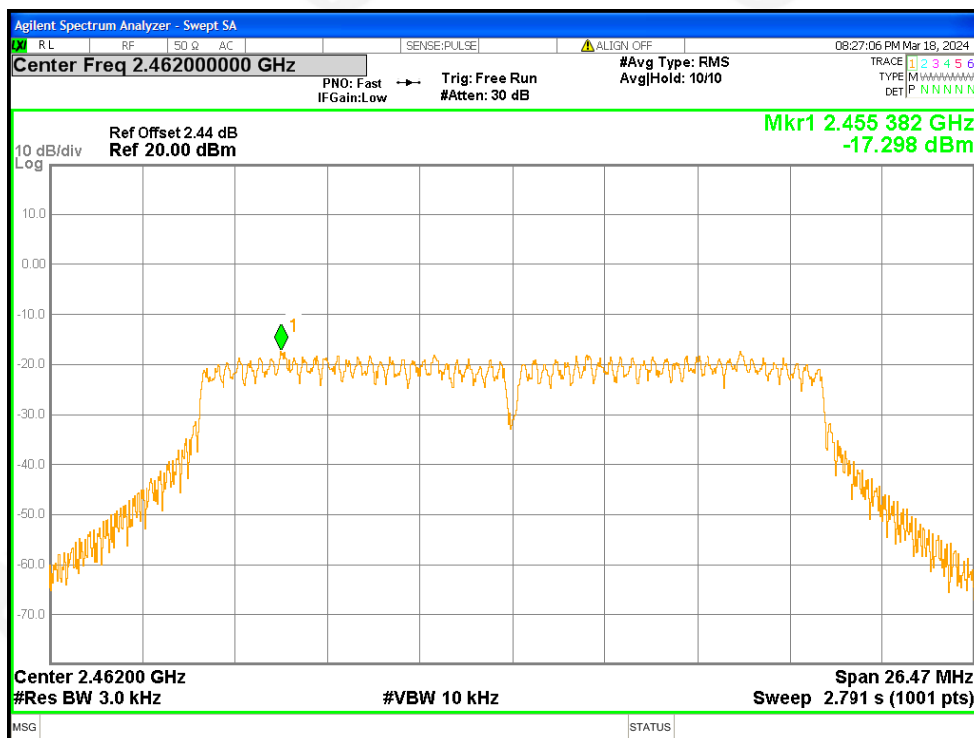
PSD NVNT g 2462MHz Ant0



PSD NVNT n20 2412MHz Ant0

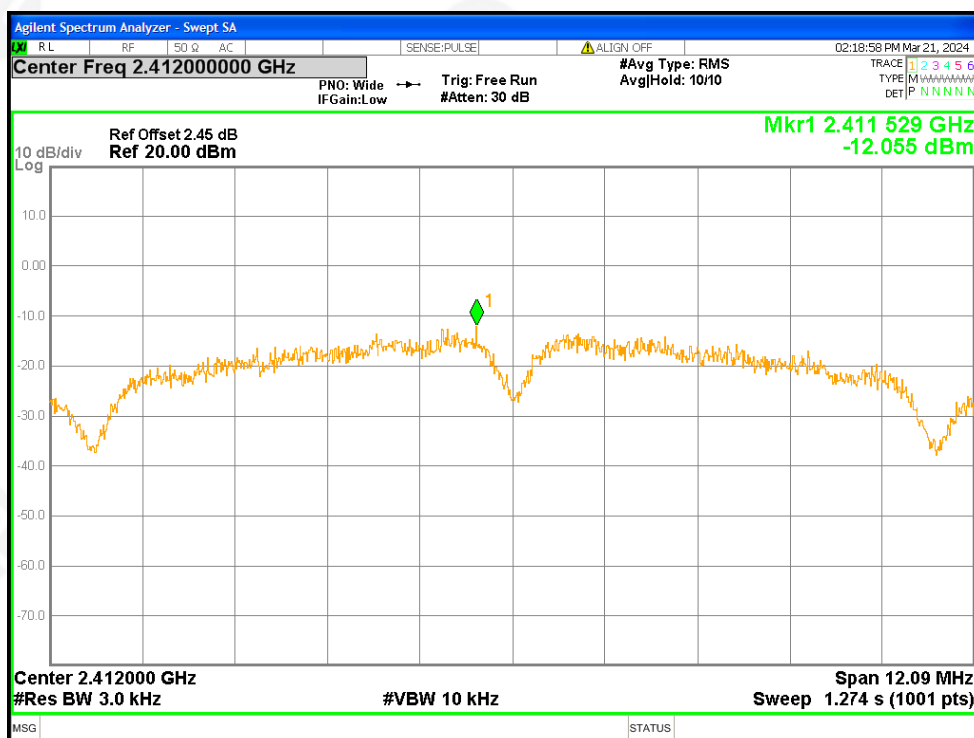


PSD NVNT n20 2437MHz Ant0

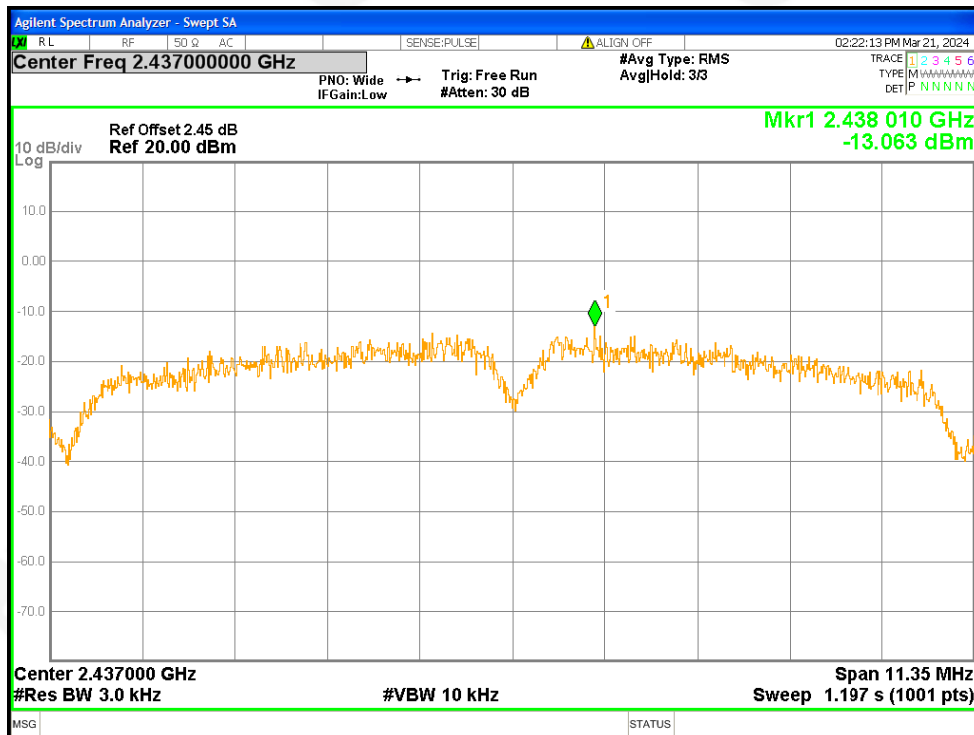


PSD NVNT n20 2462MHz Ant0

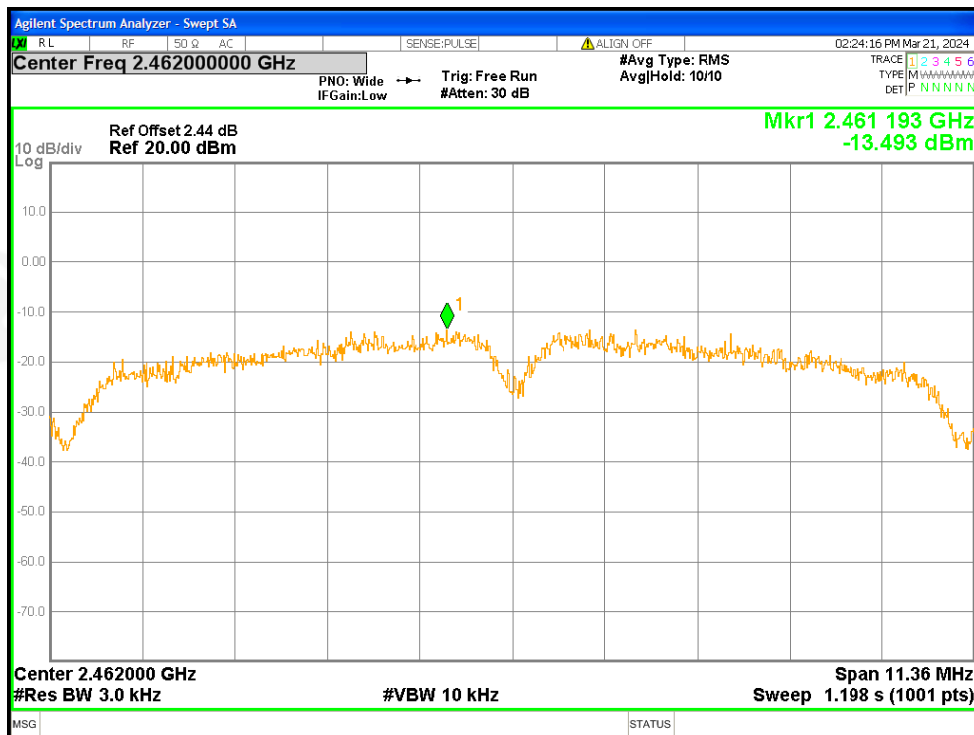
ANT1



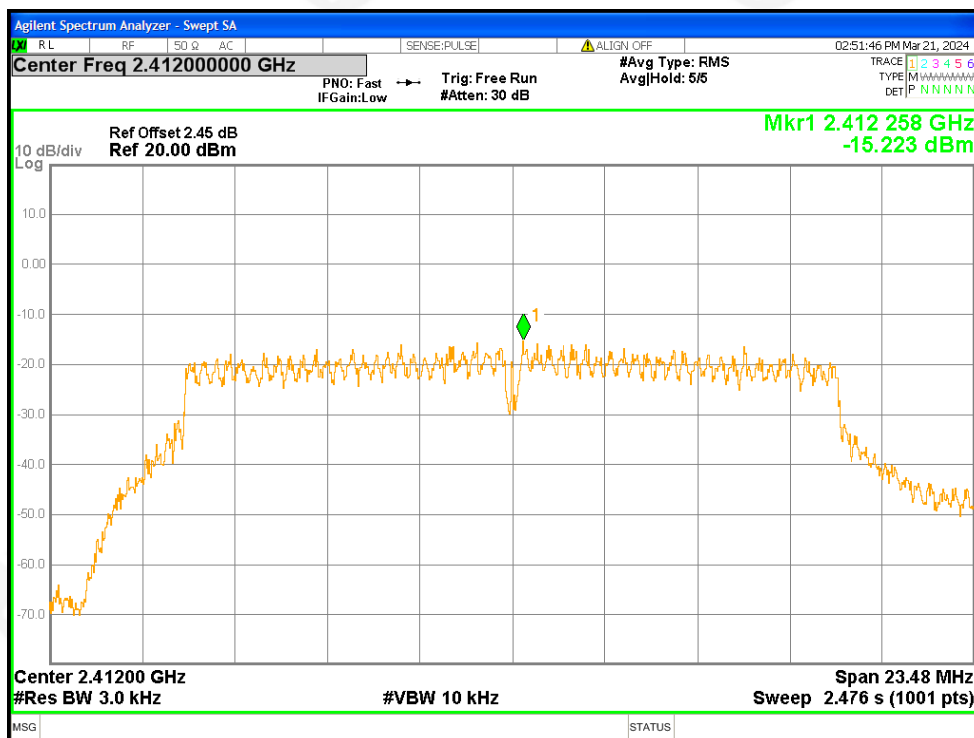
PSD NVNT b 2412MHz Ant1



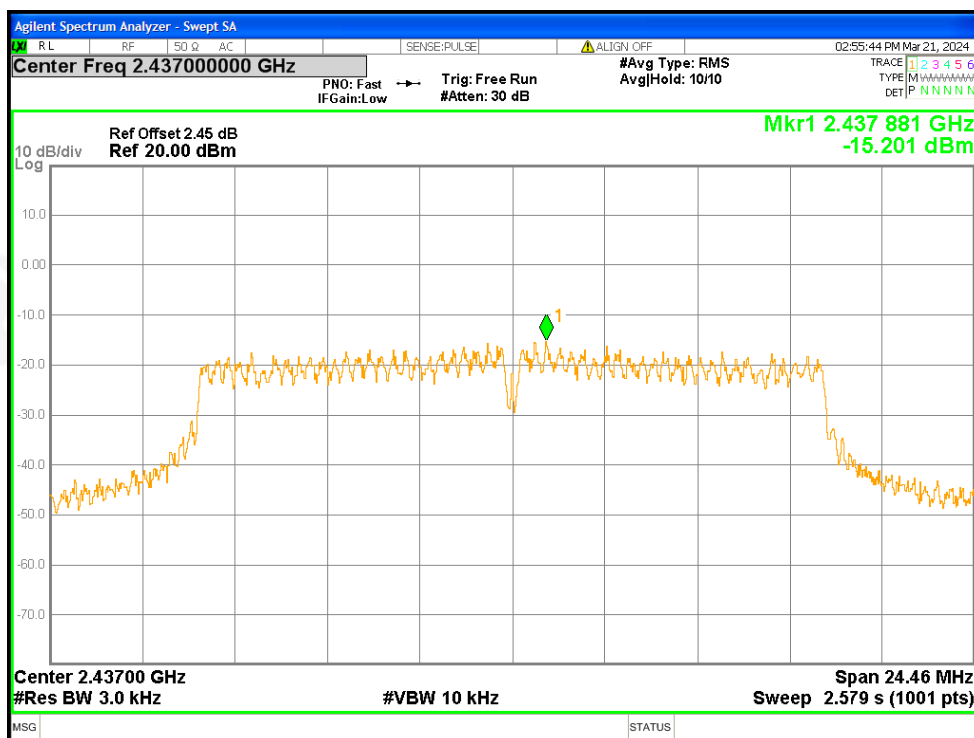
PSD NVNT b 2437MHz Ant1



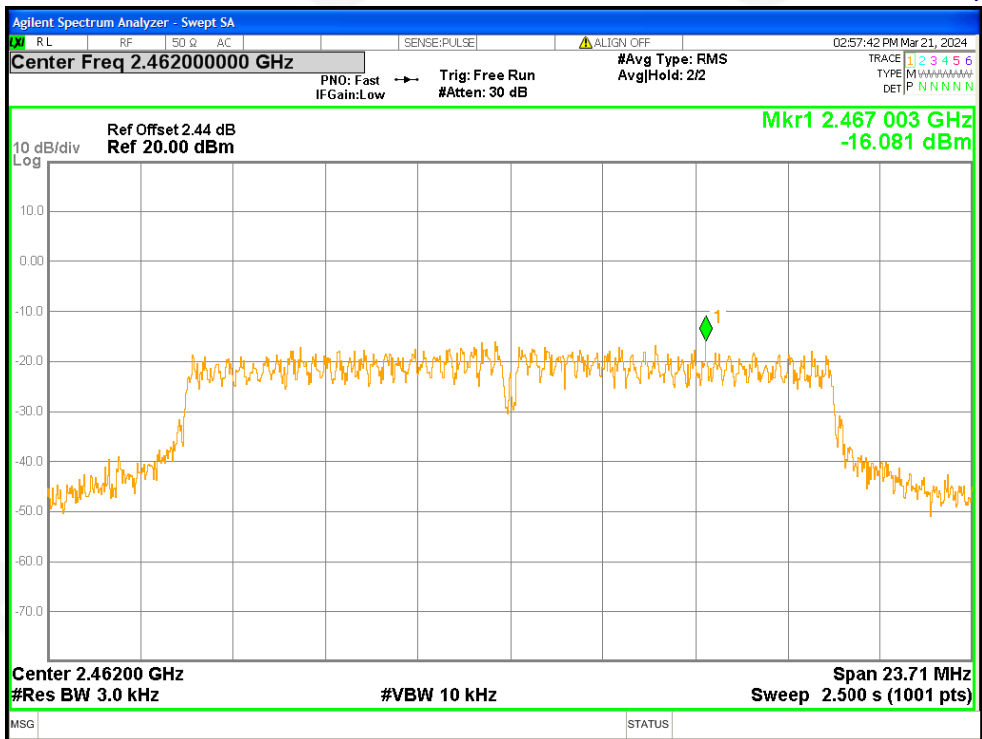
PSD NVNT b 2462MHz Ant1



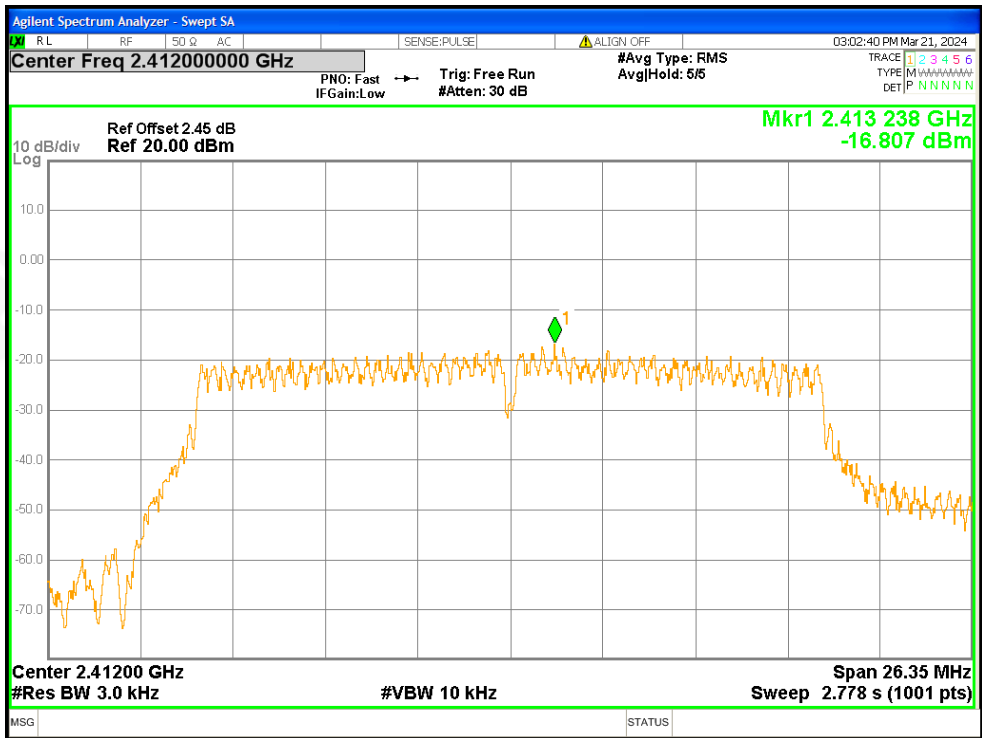
PSD NVNT g 2412MHz Ant1



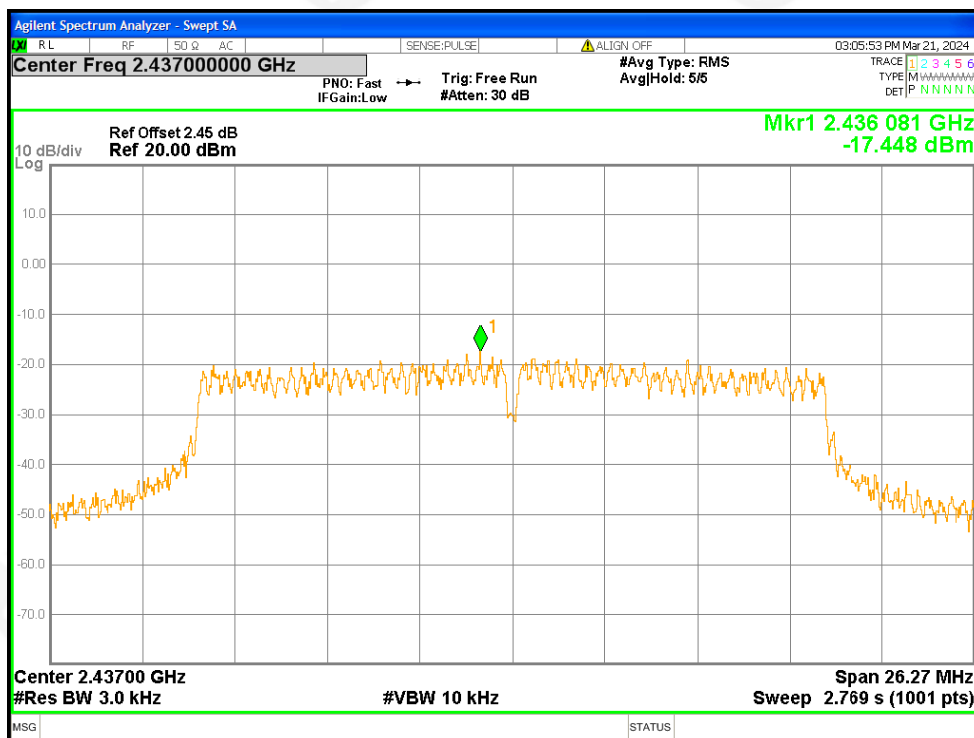
PSD NVNT g 2437MHz Ant1



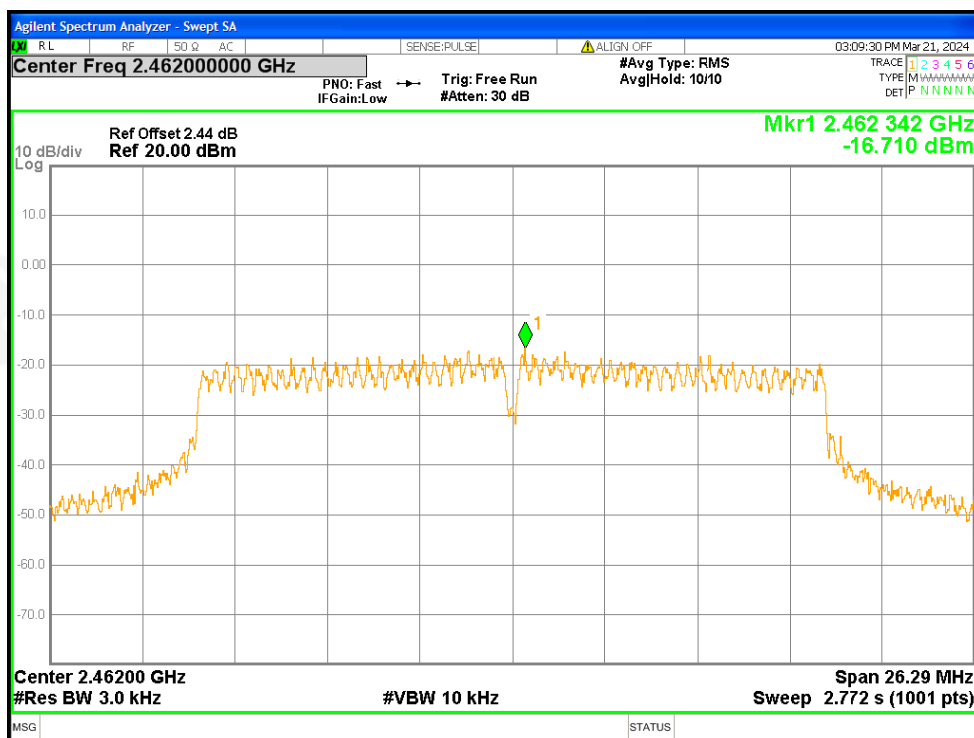
PSD NVNT g 2462MHz Ant1



PSD NVNT n20 2412MHz Ant1



PSD NVNT n20 2437MHz Ant1



PSD NVNT n20 2462MHz Ant1



7. CHANNEL BANDWIDTH&

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	KDB558074 D0115.247 Meas Guidancev05r02

7.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	$\geq 500\text{KHz}$ (6dB bandwidth)	2400-2483.5	PASS

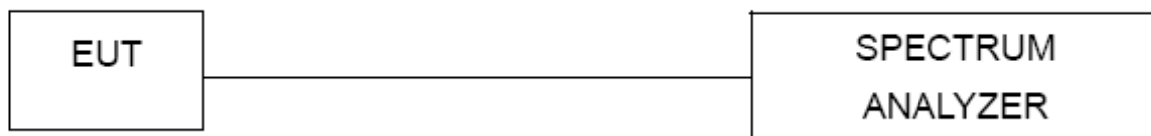
7.2 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times \text{RBW}$.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.



7.6 TEST RESULT

ANT0

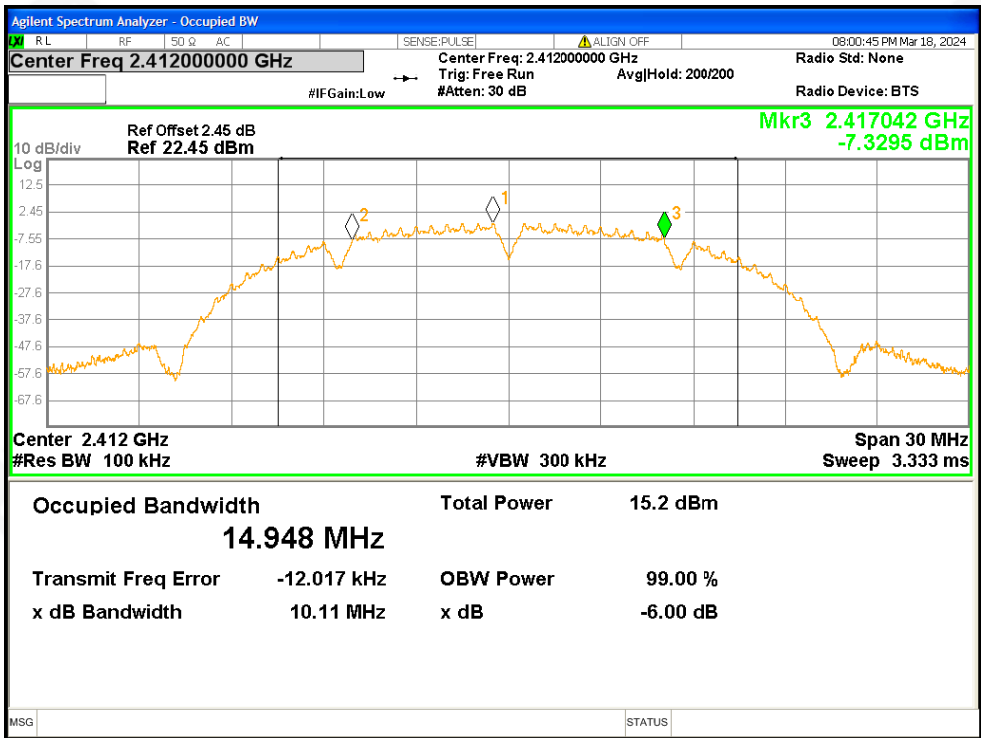
Mode	Frequency (MHz)	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
b	2412	10.108	0.5	Pass
b	2437	10.1	0.5	Pass
b	2462	10.094	0.5	Pass
g	2412	16.518	0.5	Pass
g	2437	16.515	0.5	Pass
g	2462	16.503	0.5	Pass
n20	2412	17.647	0.5	Pass
n20	2437	17.613	0.5	Pass
n20	2462	17.647	0.5	Pass

ANT1

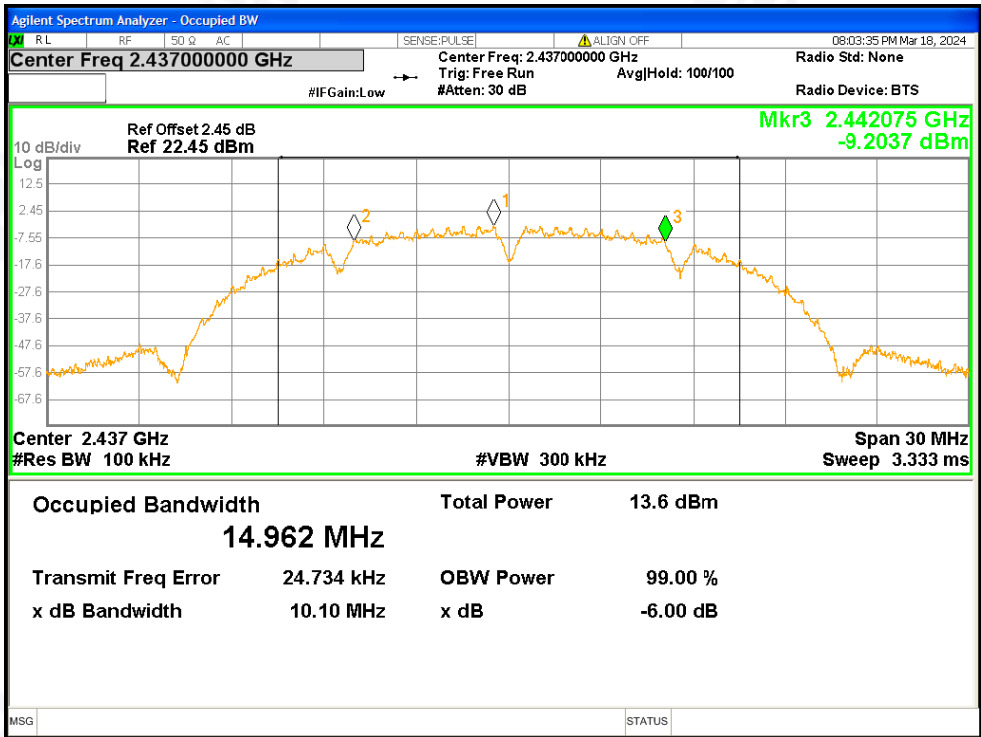
Mode	Frequency (MHz)	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
b	2412	8.057	0.5	Pass
b	2437	7.566	0.5	Pass
b	2462	7.573	0.5	Pass
g	2412	15.654	0.5	Pass
g	2437	16.308	0.5	Pass
g	2462	15.807	0.5	Pass
n20	2412	17.564	0.5	Pass
n20	2437	17.51	0.5	Pass
n20	2462	17.527	0.5	Pass



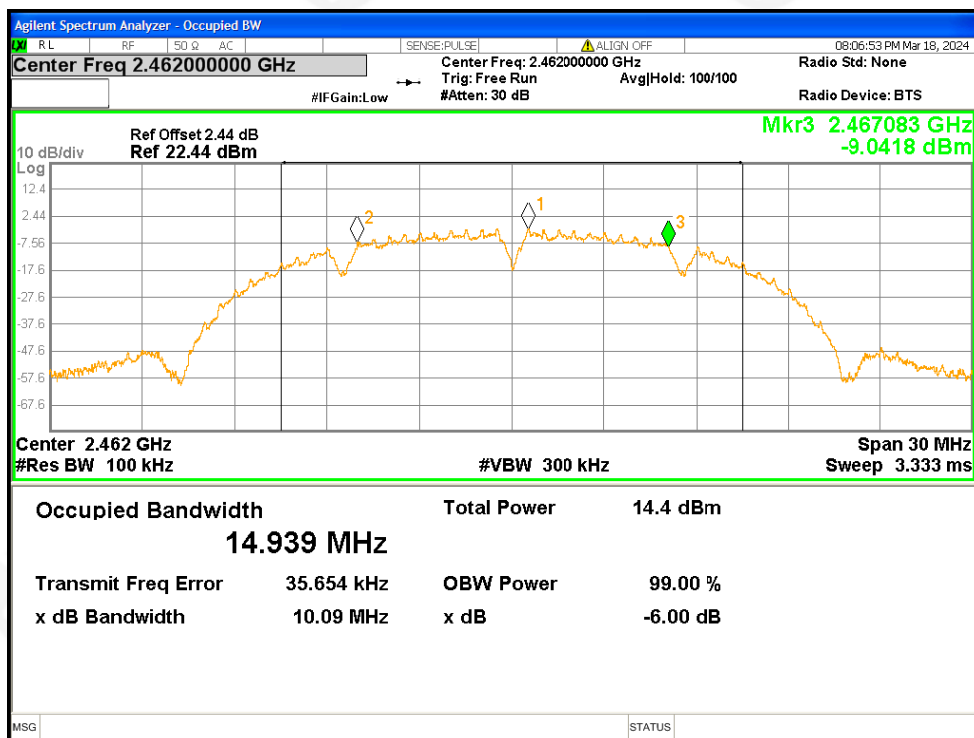
ANT0



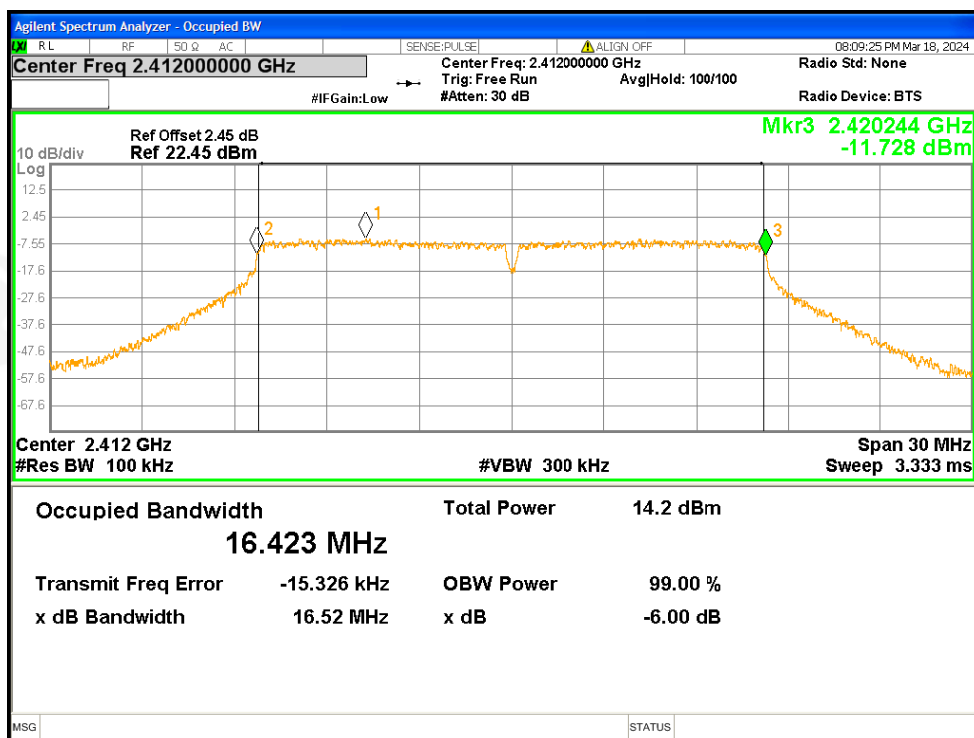
-6dB Bandwidth NVNT b 2412MHz Ant0



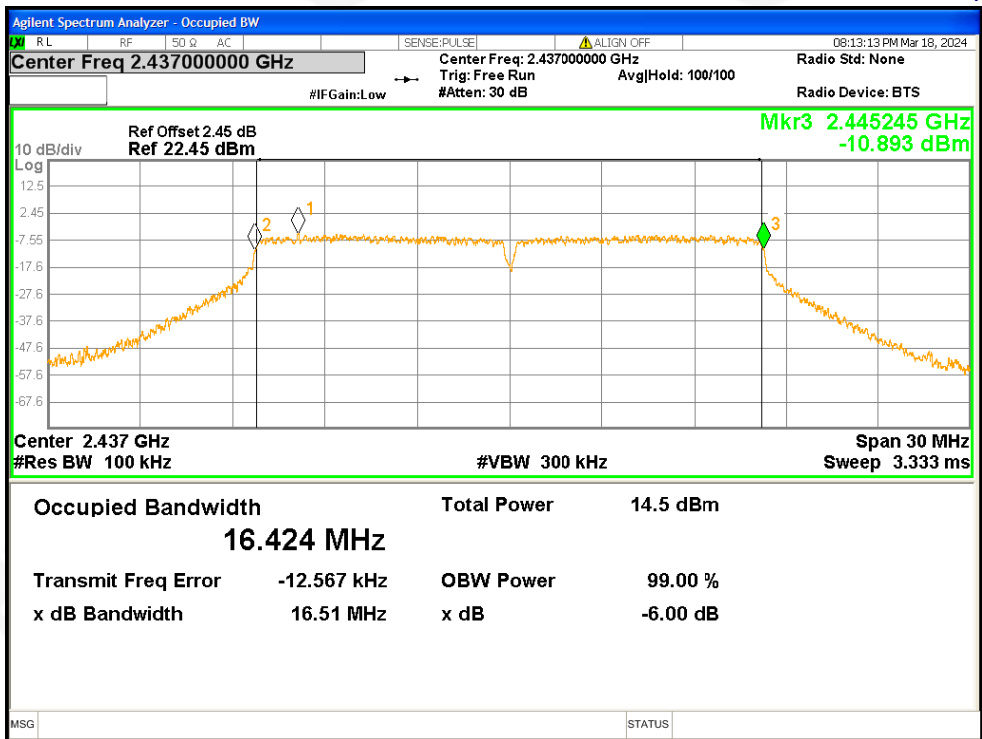
-6dB Bandwidth NVNT b 2437MHz Ant0



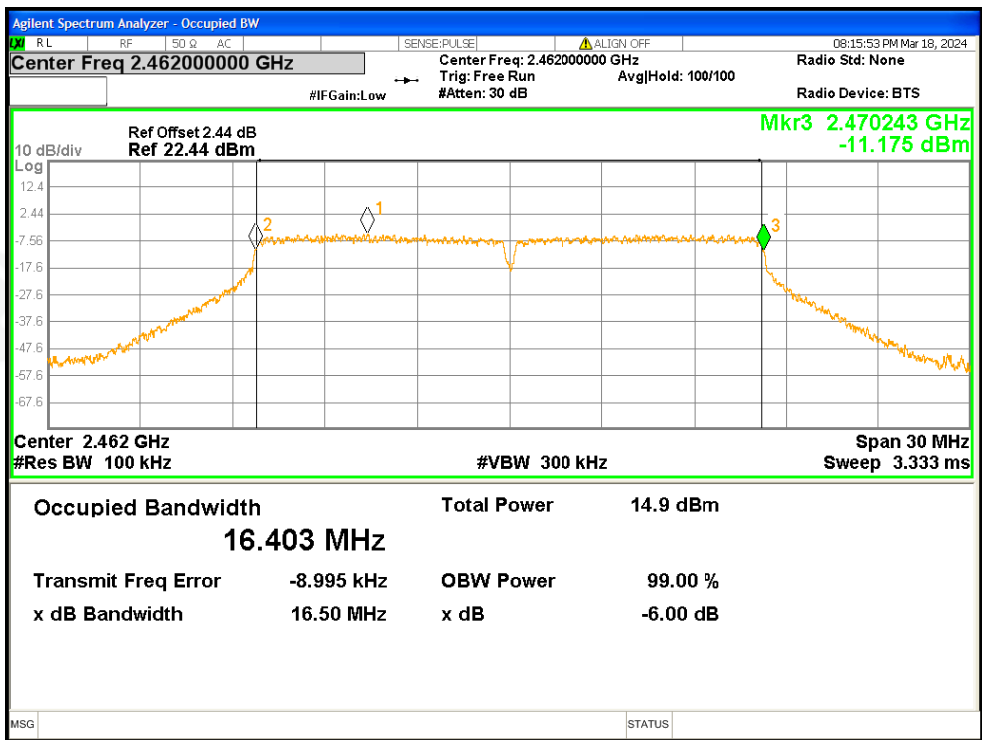
-6dB Bandwidth NVNT b 2462MHz Ant0



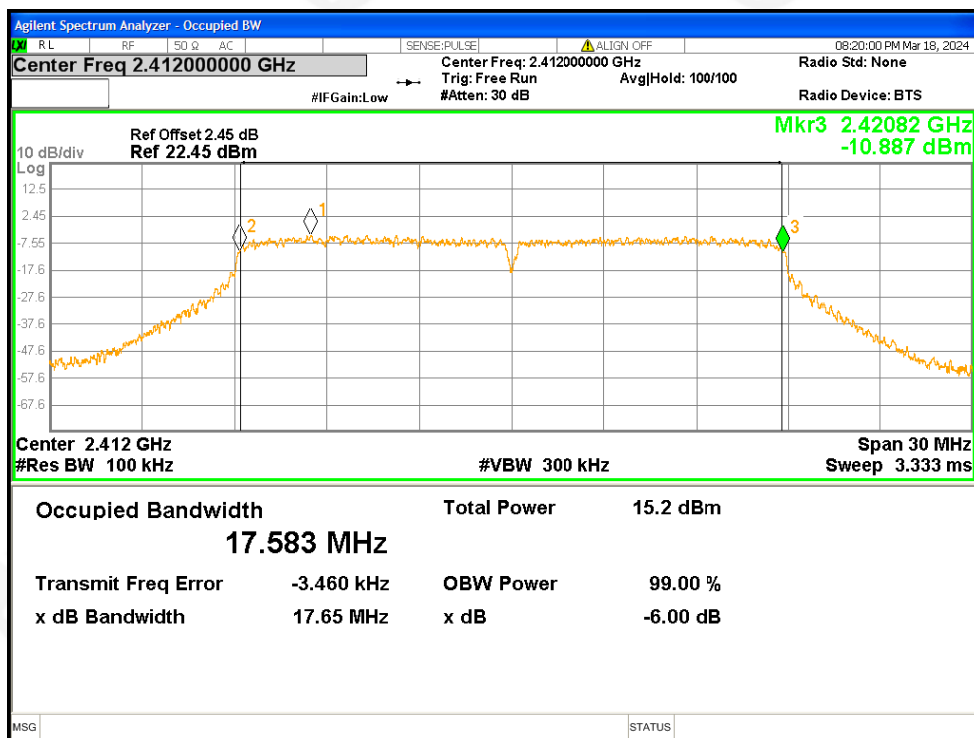
-6dB Bandwidth NVNT g 2412MHz Ant0



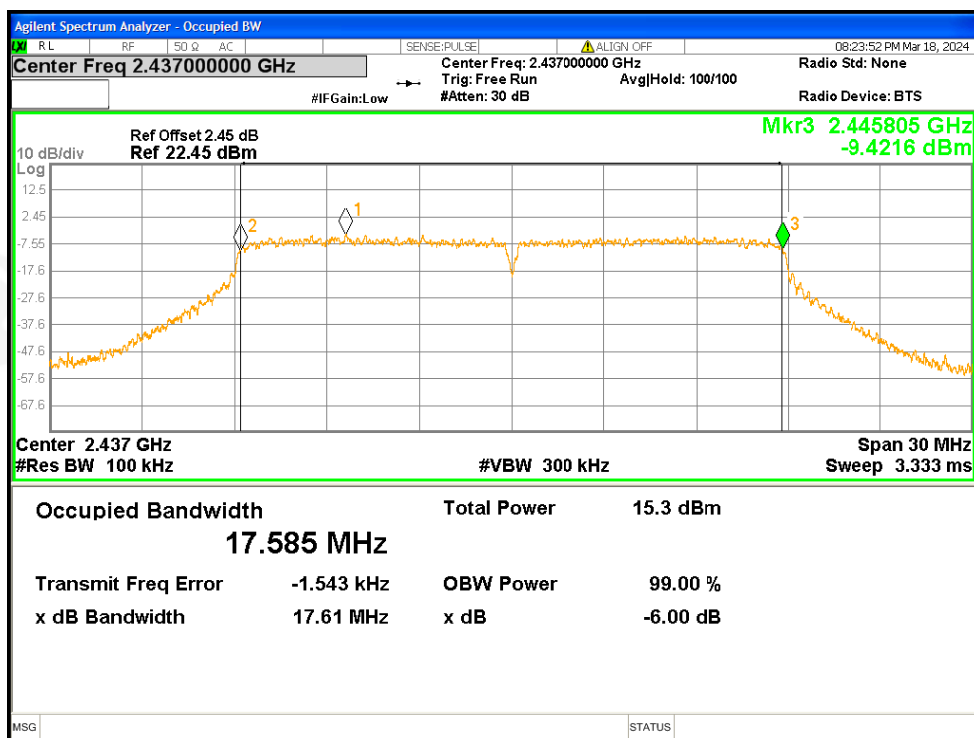
-6dB Bandwidth NVNT g 2437MHz Ant0



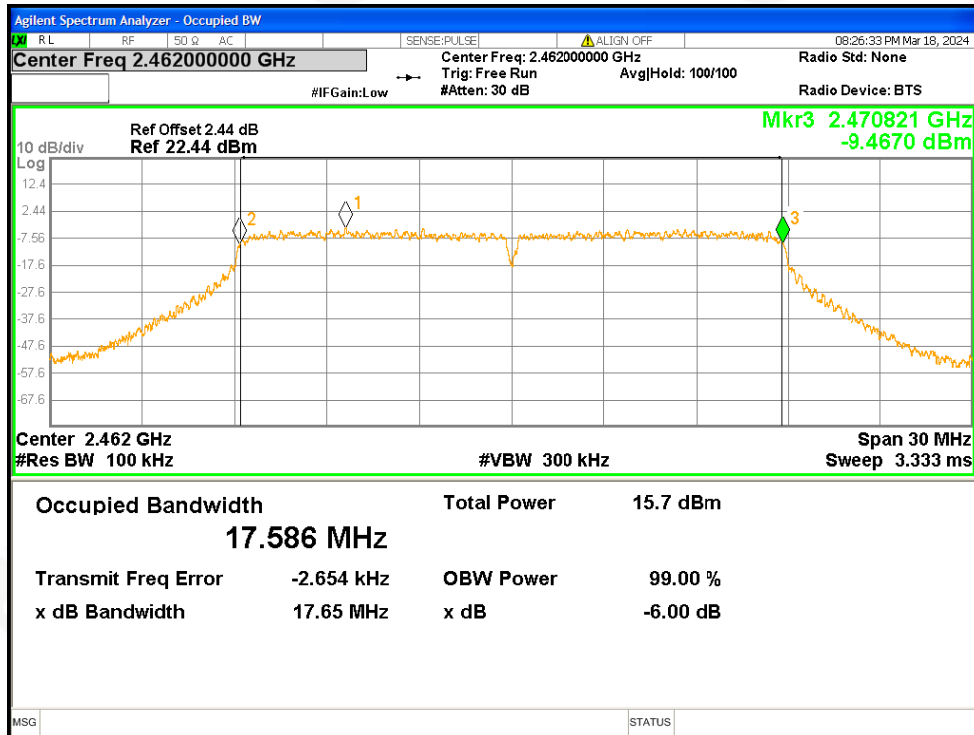
-6dB Bandwidth NVNT g 2462MHz Ant0



-6dB Bandwidth NVNT n20 2412MHz Ant0

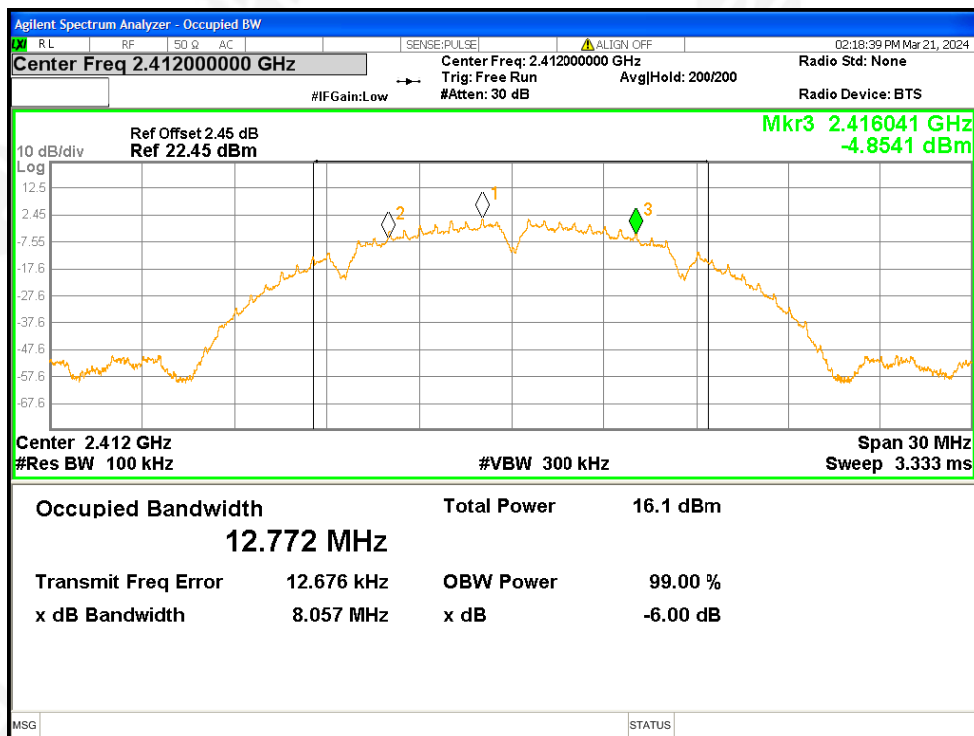


-6dB Bandwidth NVNT n20 2437MHz Ant0

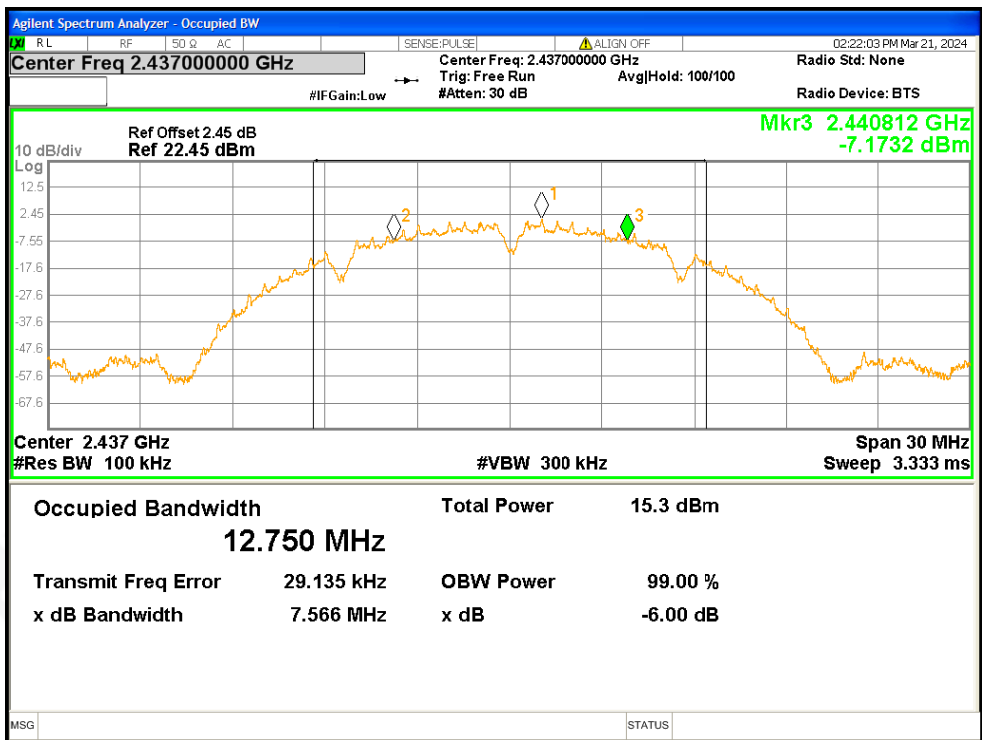


-6dB Bandwidth NVNT n20 2462MHz Ant0

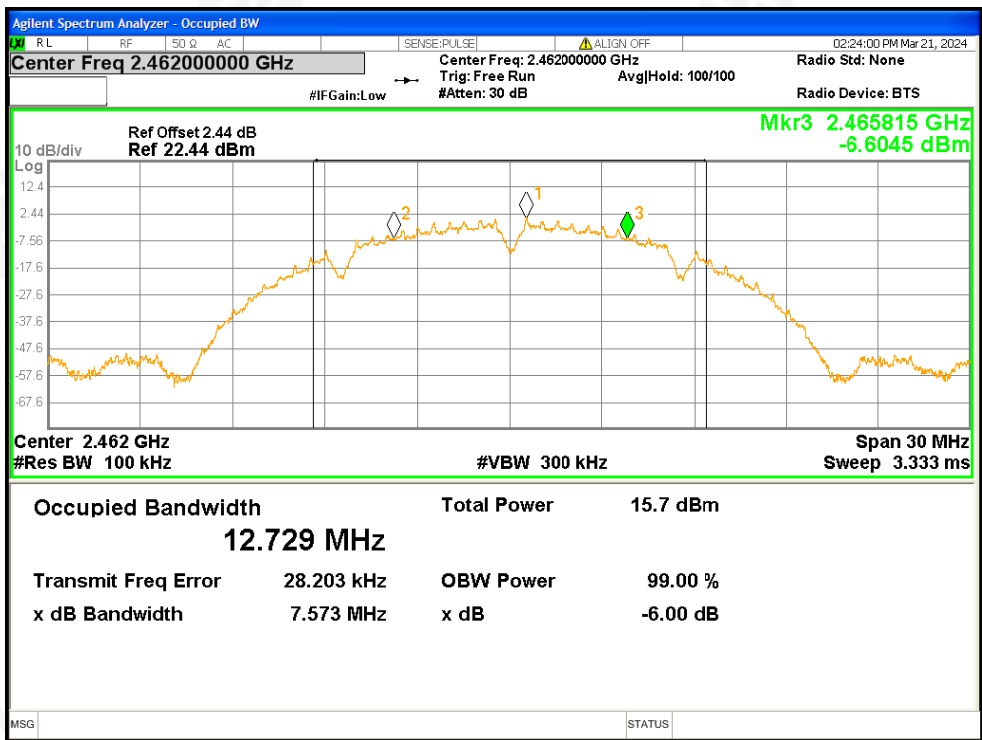
ANT1



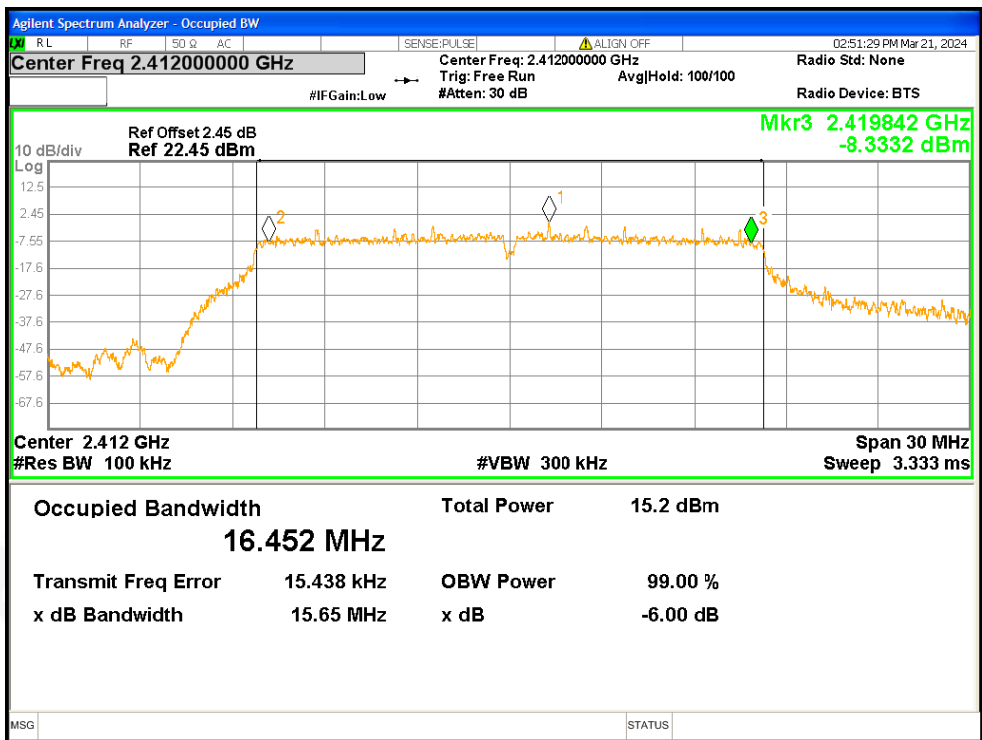
-6dB Bandwidth NVNT b 2412MHz Ant1



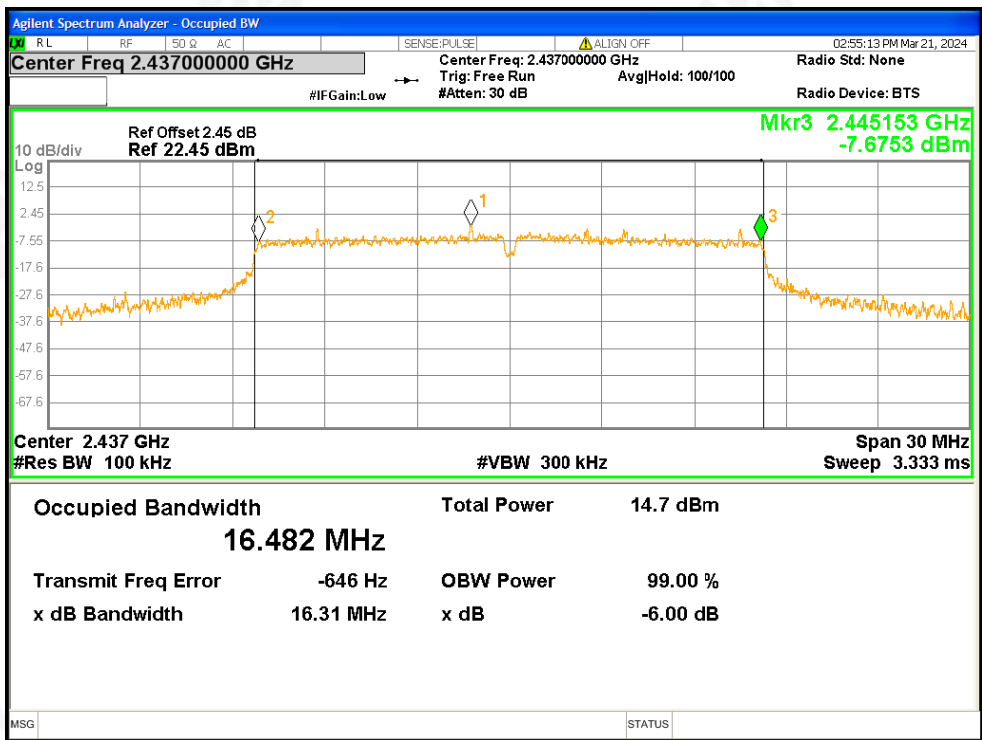
-6dB Bandwidth NVNT b 2437MHz Ant1



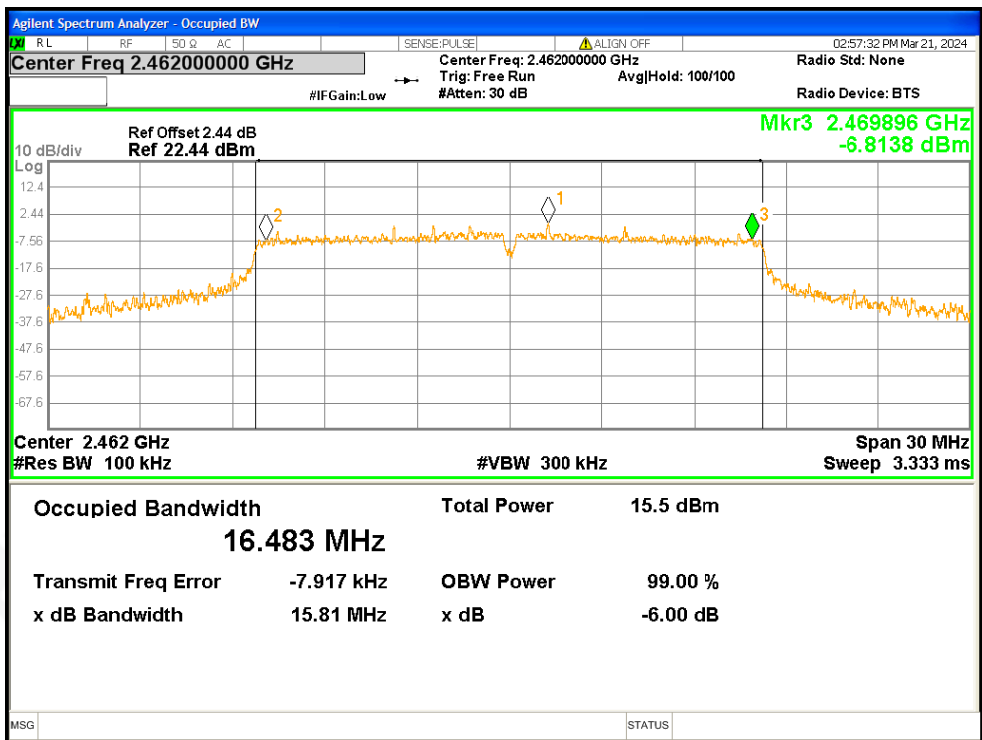
-6dB Bandwidth NVNT b 2462MHz Ant1



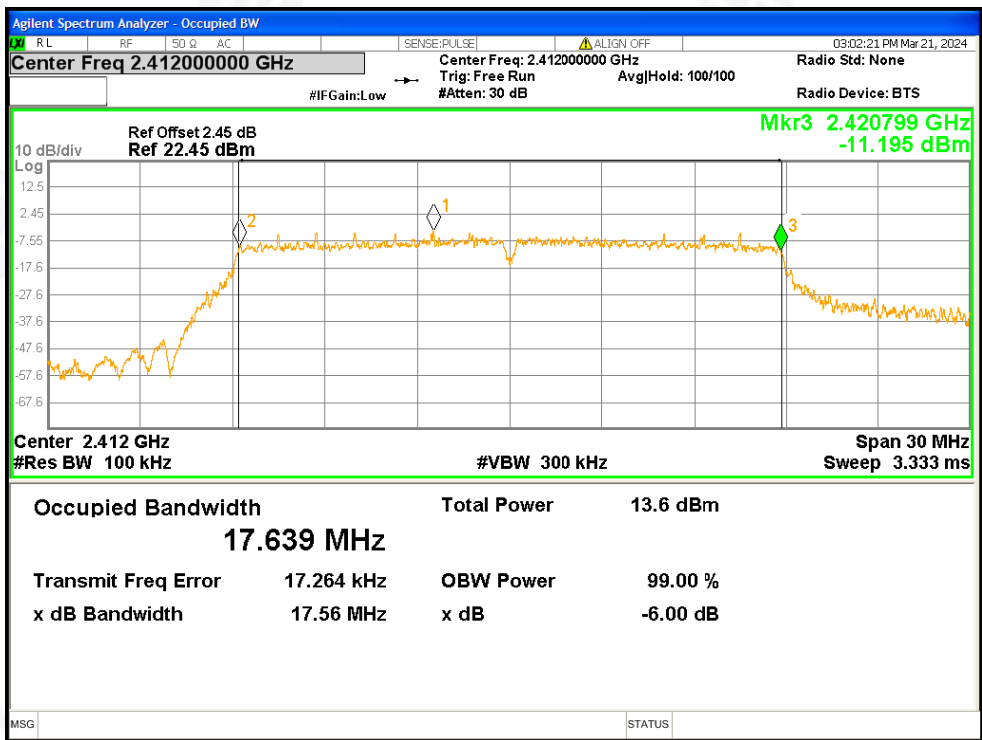
-6dB Bandwidth NVNT g 2412MHz Ant1



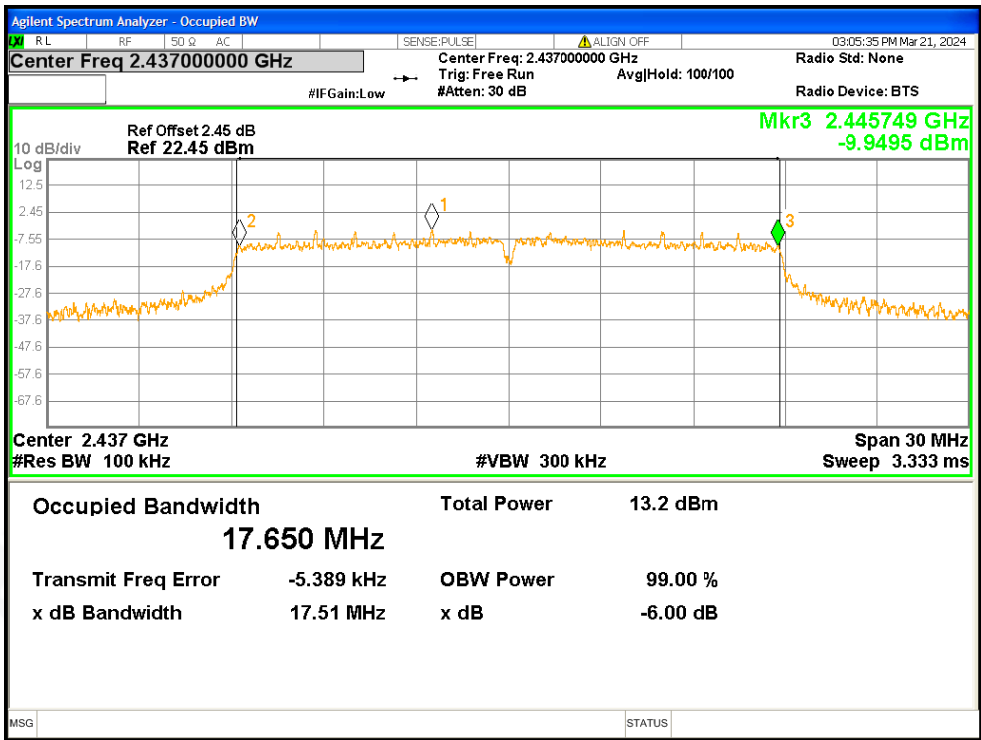
-6dB Bandwidth NVNT g 2437MHz Ant1



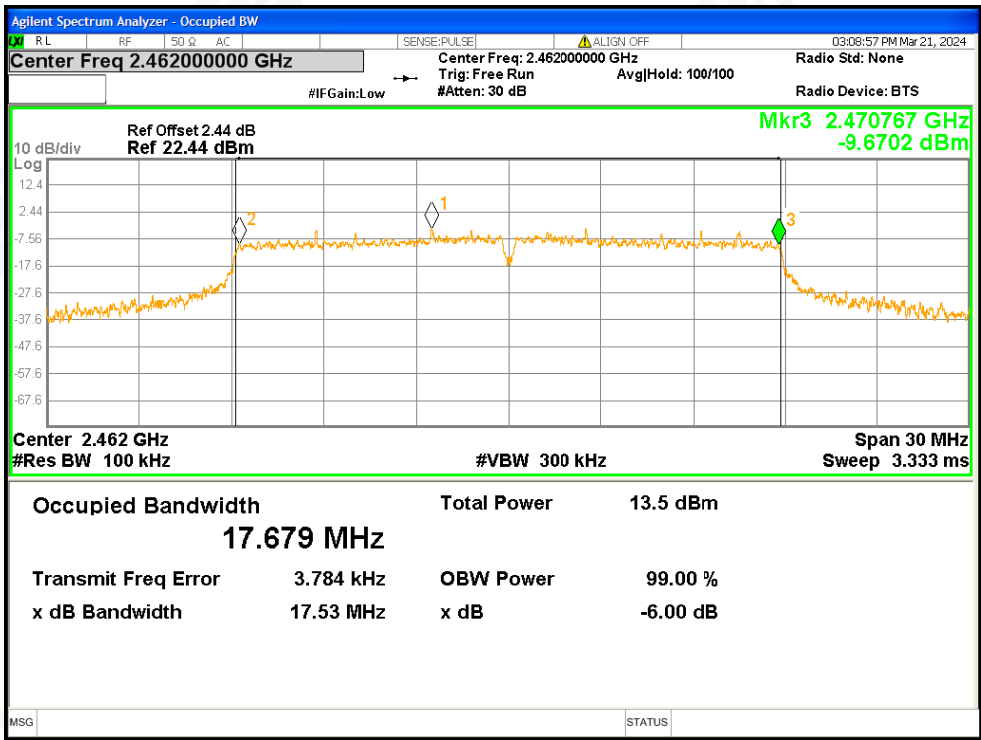
-6dB Bandwidth NVNT g 2462MHz Ant1



-6dB Bandwidth NVNT n20 2412MHz Ant1



-6dB Bandwidth NVNT n20 2437MHz Ant1



-6dB Bandwidth NVNT n20 2462MHz Ant1



8. PEAK OUTPUT POWER TEST

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	KDB558074 D0115.247 Meas Guidancev05r02

8.1 APPLIED PROCEDURES/LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

8.2 TEST PROCEDURE

- a. The EUT was directly connected to the Power meter

8.3 DEVIATION FROM STANDARD

No deviation.

8.4 TEST SETUP



8.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.



8.6 TEST RESULT

ANT0

Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
b	2412	11.58	30	Pass
b	2437	9.78	30	Pass
b	2462	10.55	30	Pass
g	2412	11.47	30	Pass
g	2437	11.79	30	Pass
g	2462	12.14	30	Pass
n20	2412	12.54	30	Pass
n20	2437	12.62	30	Pass
n20	2462	13	30	Pass

ANT1

Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
b	2412	11.8	30	Pass
b	2437	11.28	30	Pass
b	2462	11.65	30	Pass
g	2412	12.04	30	Pass
g	2437	11.57	30	Pass
g	2462	12.42	30	Pass
n20	2412	10.43	30	Pass
n20	2437	9.96	30	Pass
n20	2462	10.35	30	Pass

ANT0+ANT1

Mode	Frequency (MHz)	Conducted Power ant 0 (dBm)	Conducted Power ant 1 (dBm)	MIMO Conducted Power (dBm)	Limit (dBm)	Verdict
n20	2412	12.54	10.43	14.62	30	Pass
n20	2437	12.62	9.96	14.50	30	Pass
n20	2462	13	10.35	14.88	30	Pass



9. CONDUCTED BAND EDGE AND SPURIOUS EMISSION

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	KDB558074 D0115.247 Meas Guidancev05r02

9.1 APPLICABLE STANDARD

in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in§15.205(a), must also comply with the radiated emission limits specified in15.209(a).

9.2 TEST PROCEDURE

Using the following spectrum analyzer setting:

- A) Set the RBW = 100KHz.
- B) Set the VBW = 300KHz.
- C) Sweep time = auto couple.
- D) Detector function = peak.
- E) Trace mode = max hold.
- F) Allow trace to fully stabilize.

9.3 DEVIATION FROM STANDARD

No deviation.

9.4 TEST SETUP



9.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

9.6 TEST RESULTS



ANT0

Mode	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
b	2412	-41.31	-20	Pass
b	2437	-39.53	-20	Pass
b	2462	-41.23	-20	Pass
g	2412	-37.13	-20	Pass
g	2437	-37.47	-20	Pass
g	2462	-38.19	-20	Pass
n20	2412	-35.51	-20	Pass
n20	2437	-36.2	-20	Pass
n20	2462	-37.19	-20	Pass

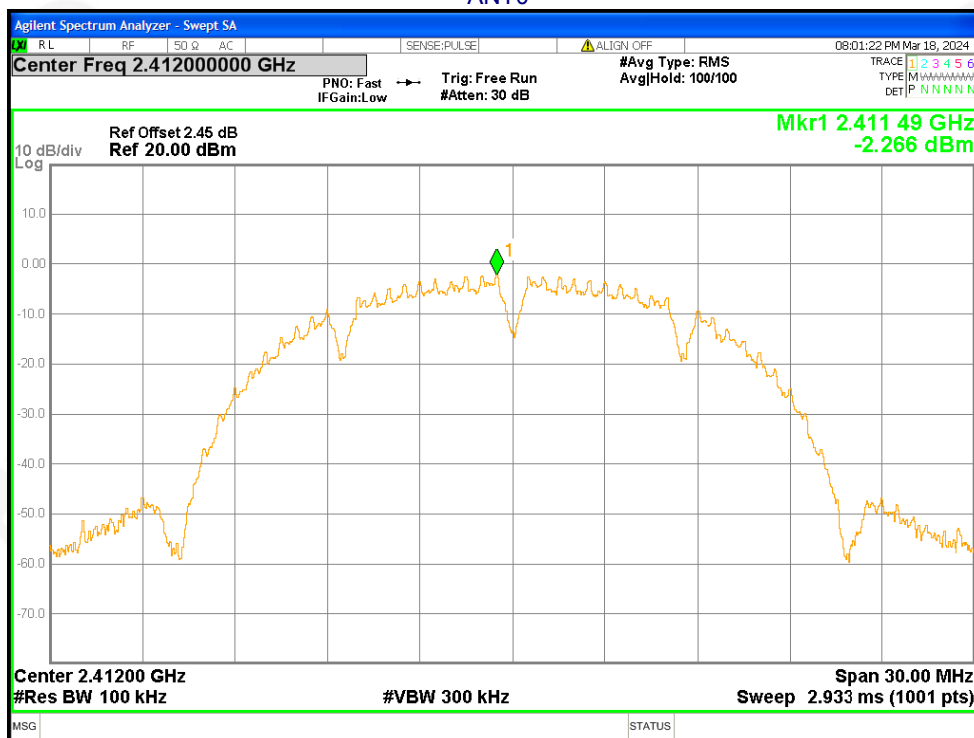
ANT1

Mode	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
b	2412	-45.18	-20	Pass
b	2437	-42.04	-20	Pass
b	2462	-42.54	-20	Pass
g	2412	-38.24	-20	Pass
g	2437	-38.64	-20	Pass
g	2462	-39.82	-20	Pass
n20	2412	-33.6	-20	Pass
n20	2437	-32.63	-20	Pass
n20	2462	-36.64	-20	Pass

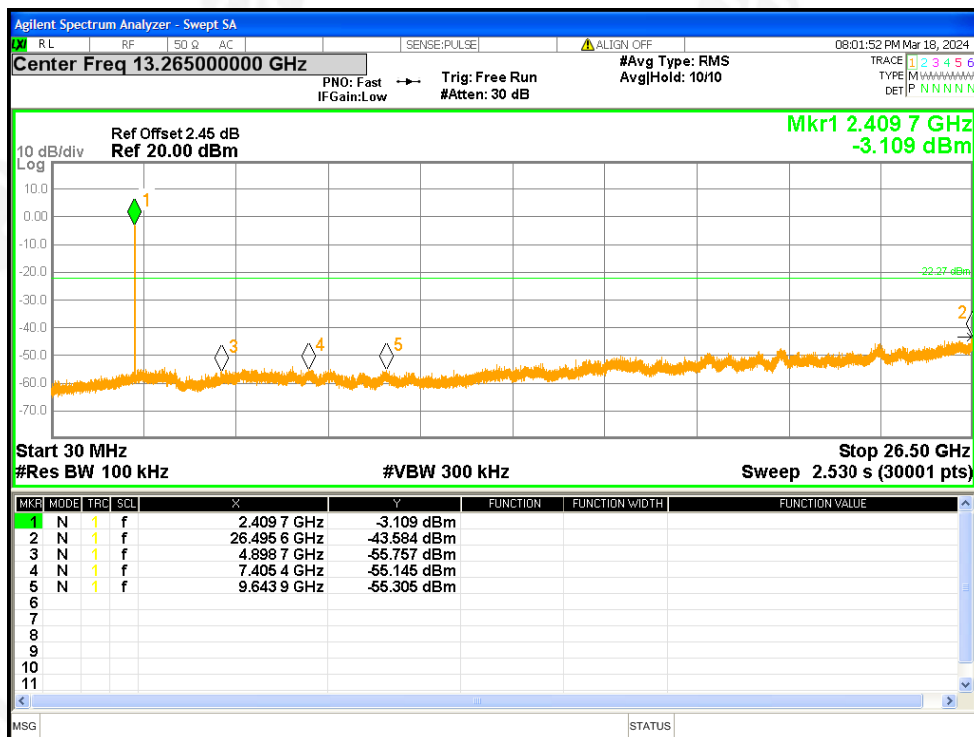
For 802.11n, the antenna factor $10 \cdot \log(2) = 3.01\text{dB}$ is added to the final test table.



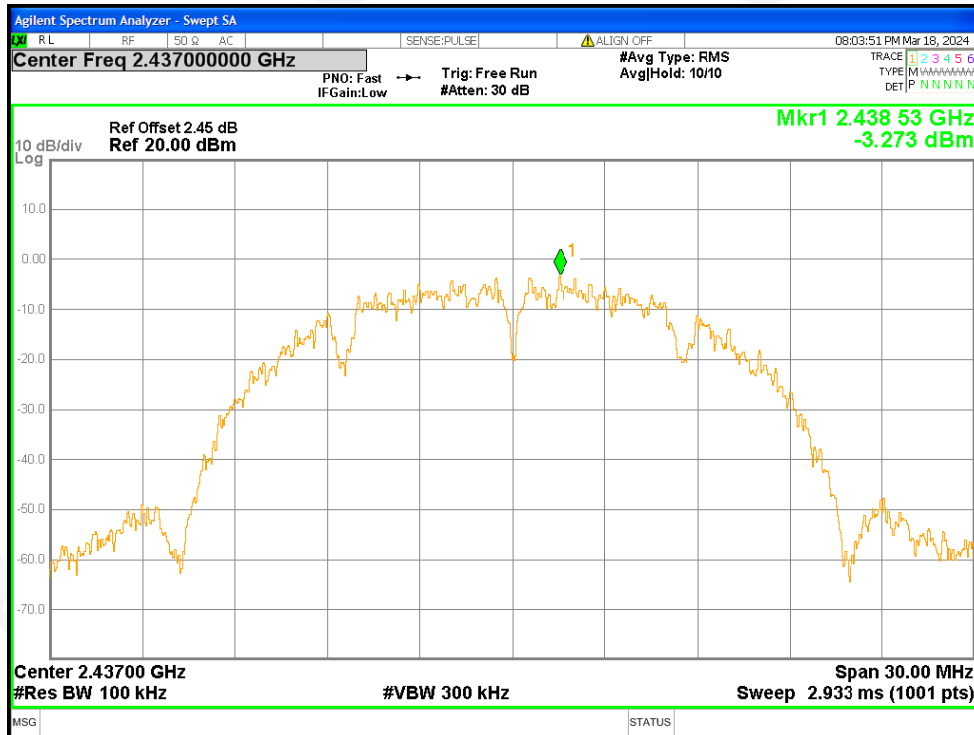
All in the worst-case mode
ANT0



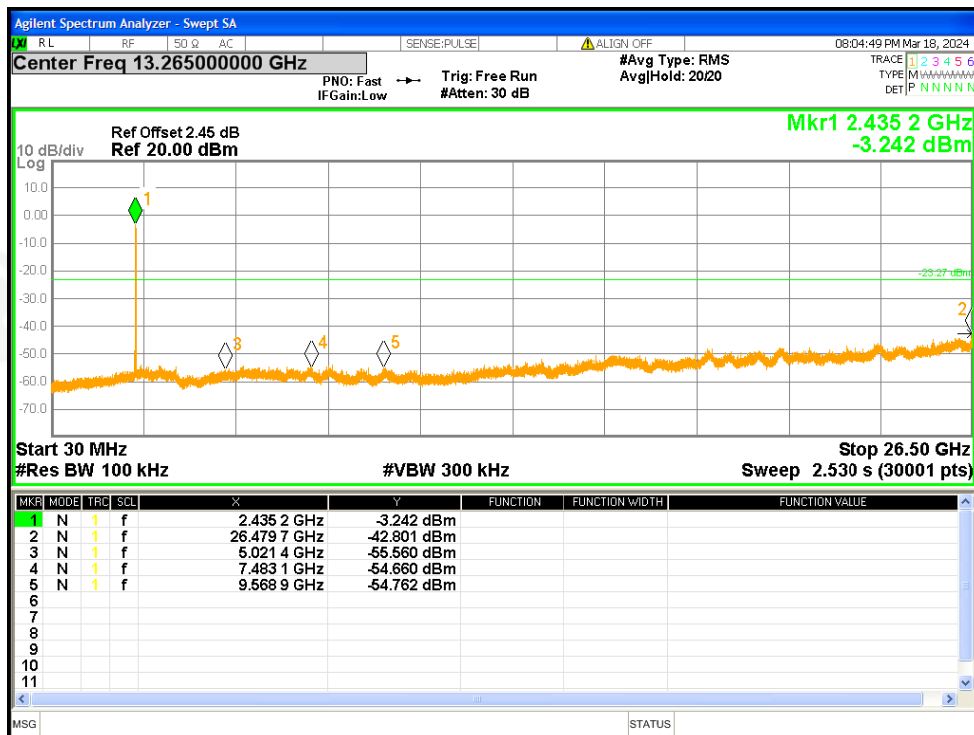
Tx. Spurious NVNT b 2412MHz Ant0 Ref



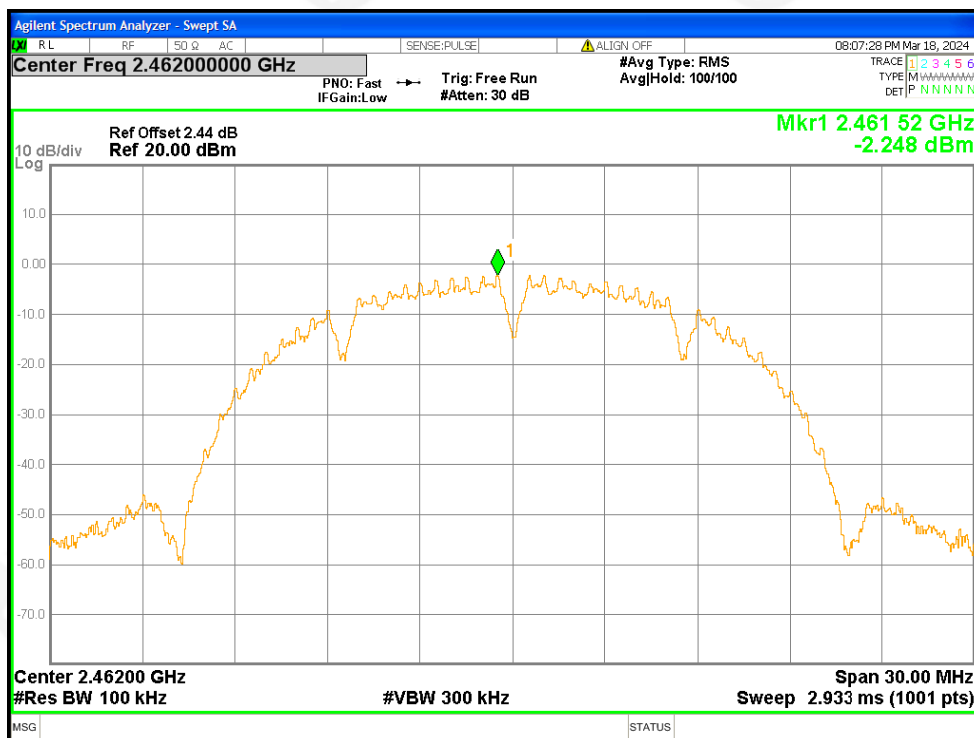
Tx. Spurious NVNT b 2412MHz Ant0 Emission



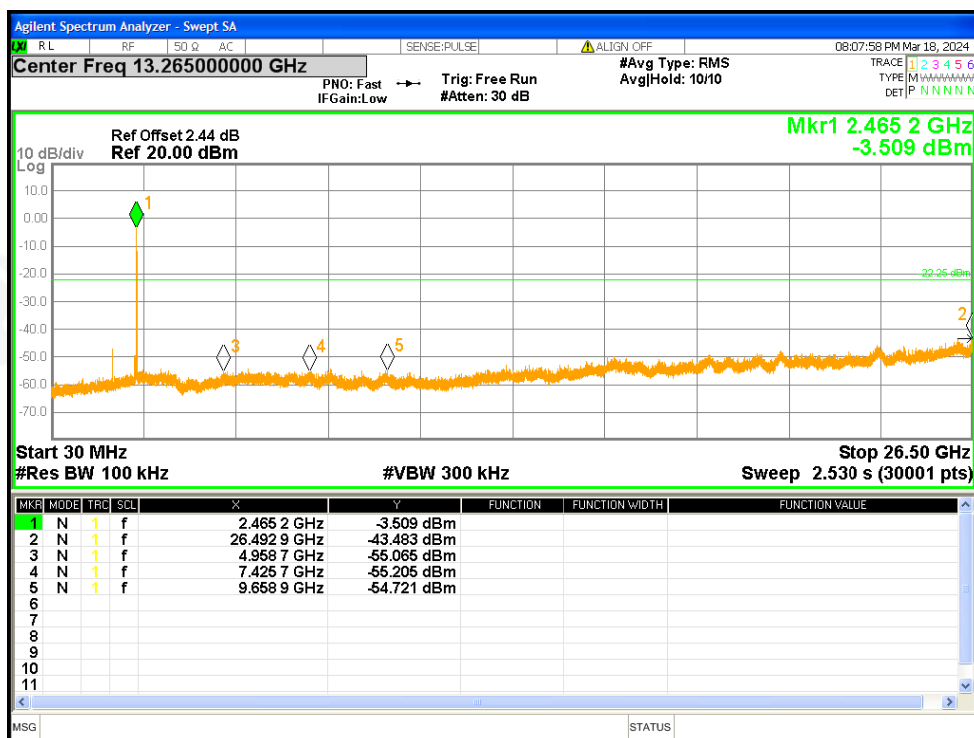
Tx. Spurious NVNT b 2437MHz Ant0 Ref



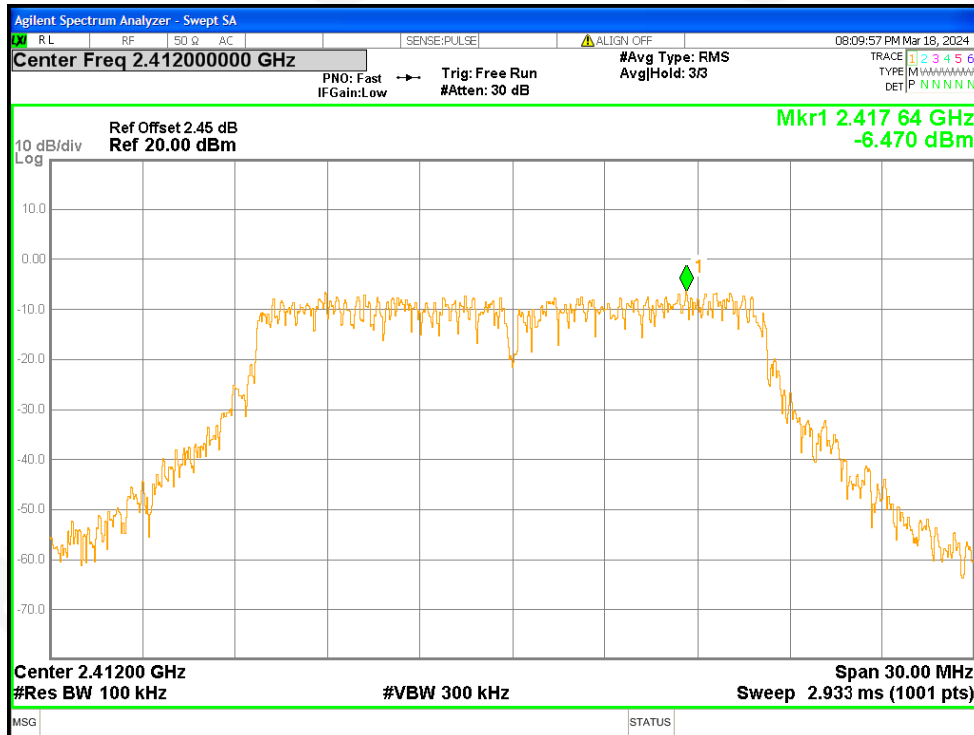
Tx. Spurious NVNT b 2437MHz Ant0 Emission



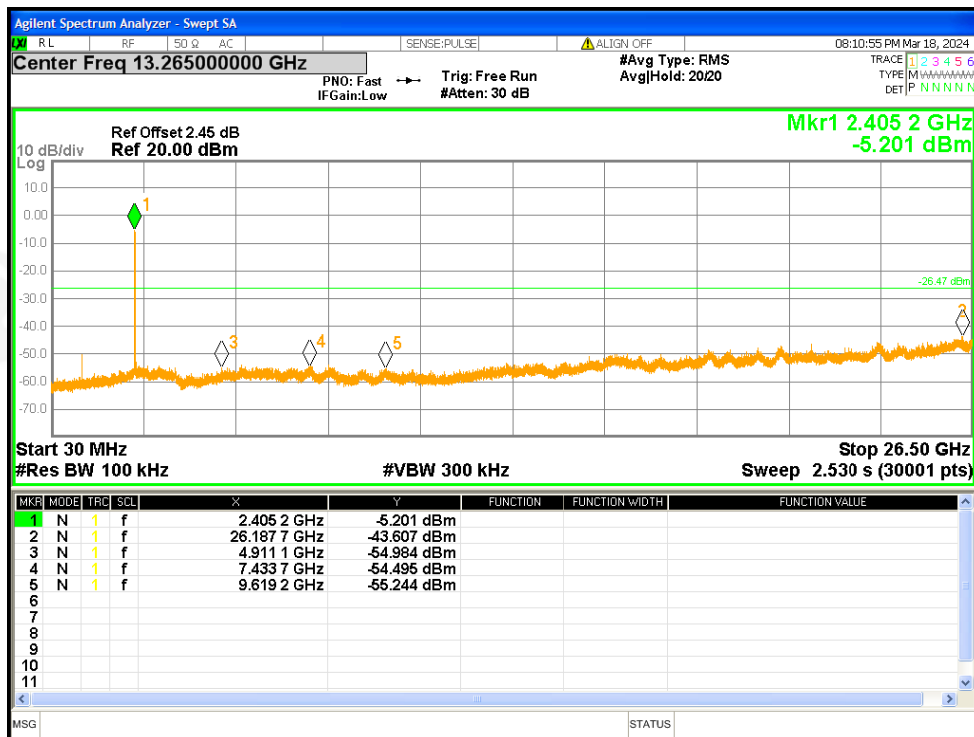
Tx. Spurious NVNT b 2462MHz Ant0 Ref



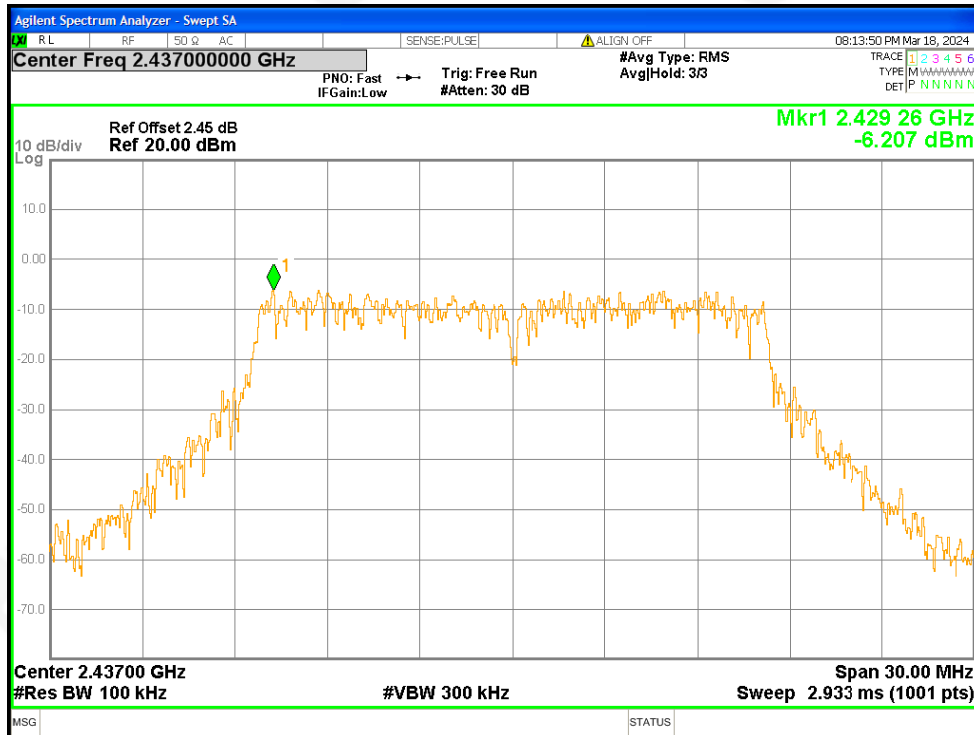
Tx. Spurious NVNT b 2462MHz Ant0 Emission



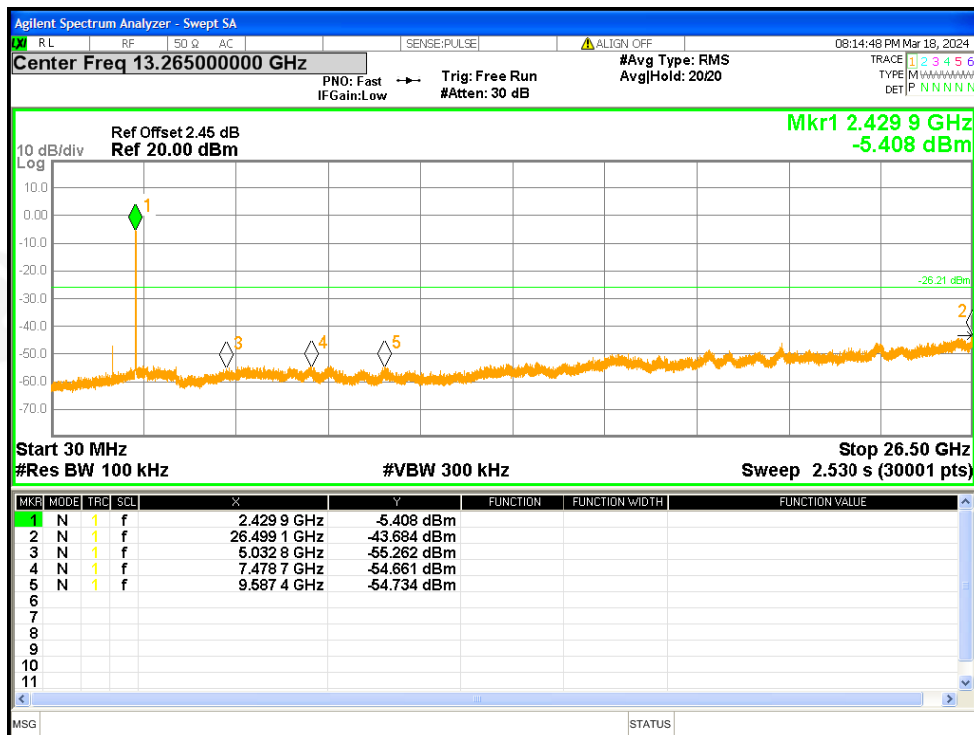
Tx. Spurious NVNT g 2412MHz Ant0 Ref



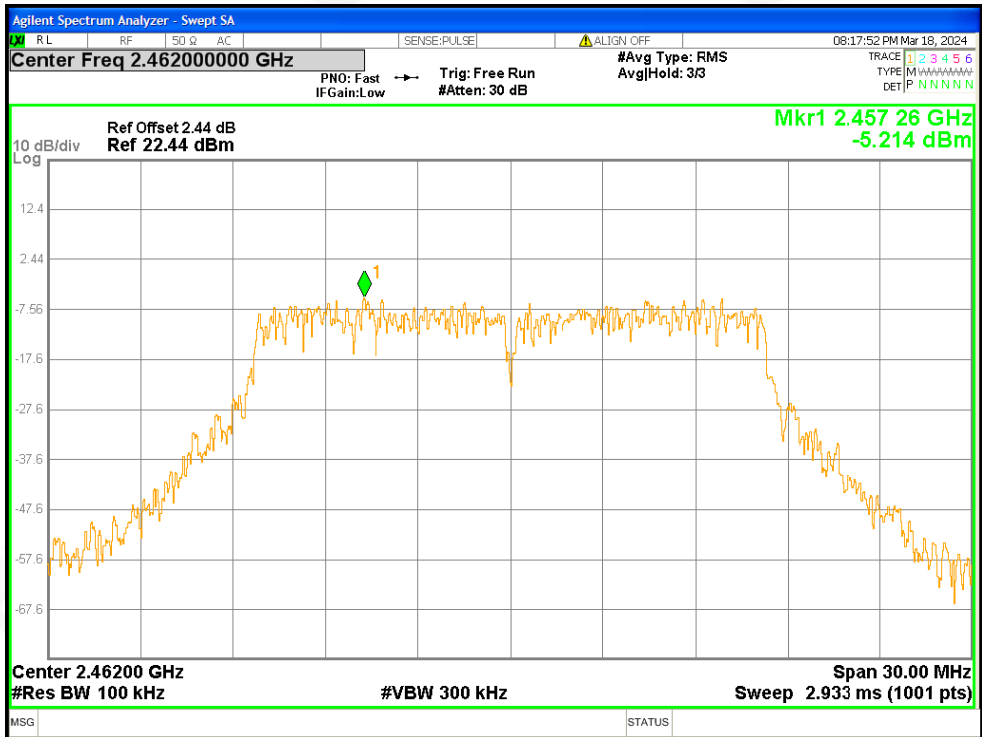
Tx. Spurious NVNT g 2412MHz Ant0 Emission



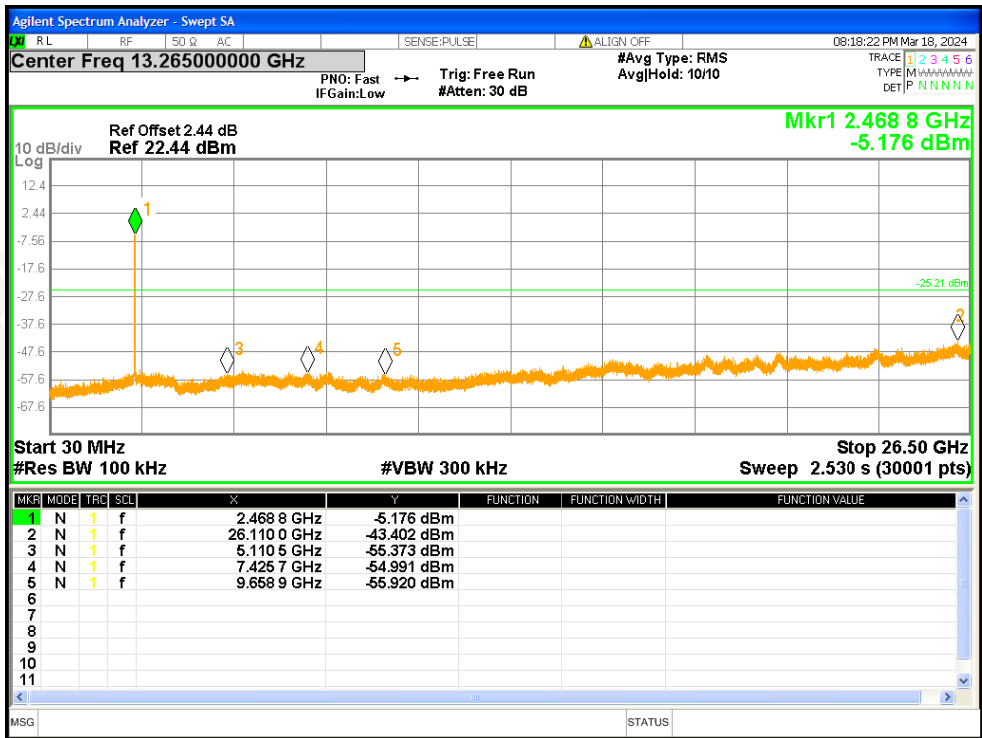
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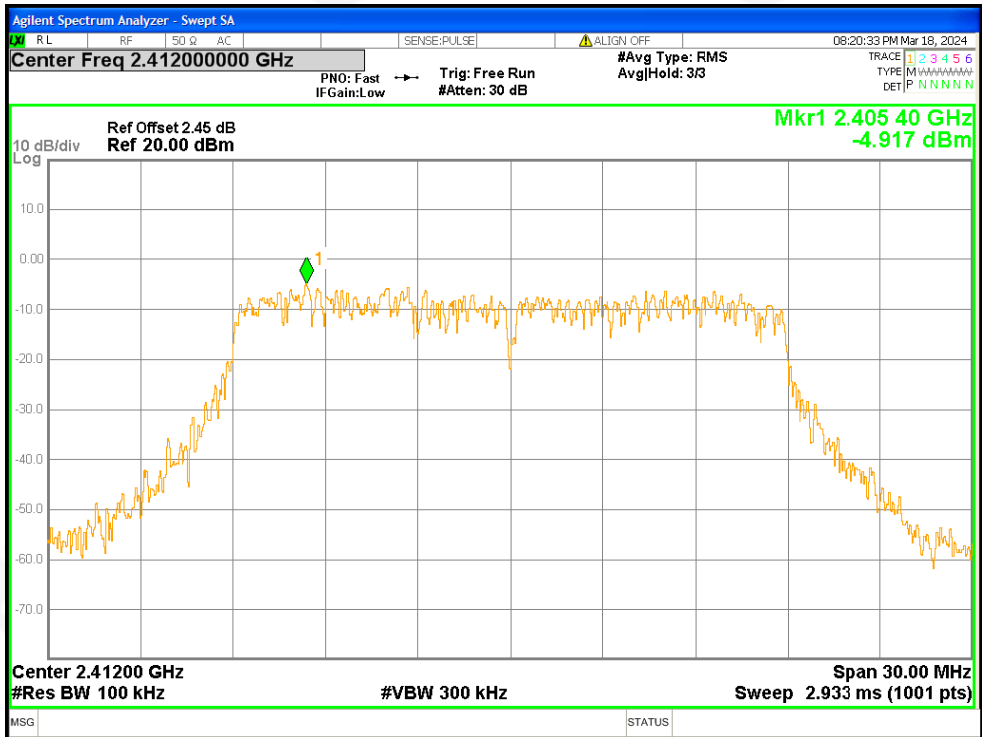
Tx. Spurious NVNT g 2437MHz Ant0 Emission



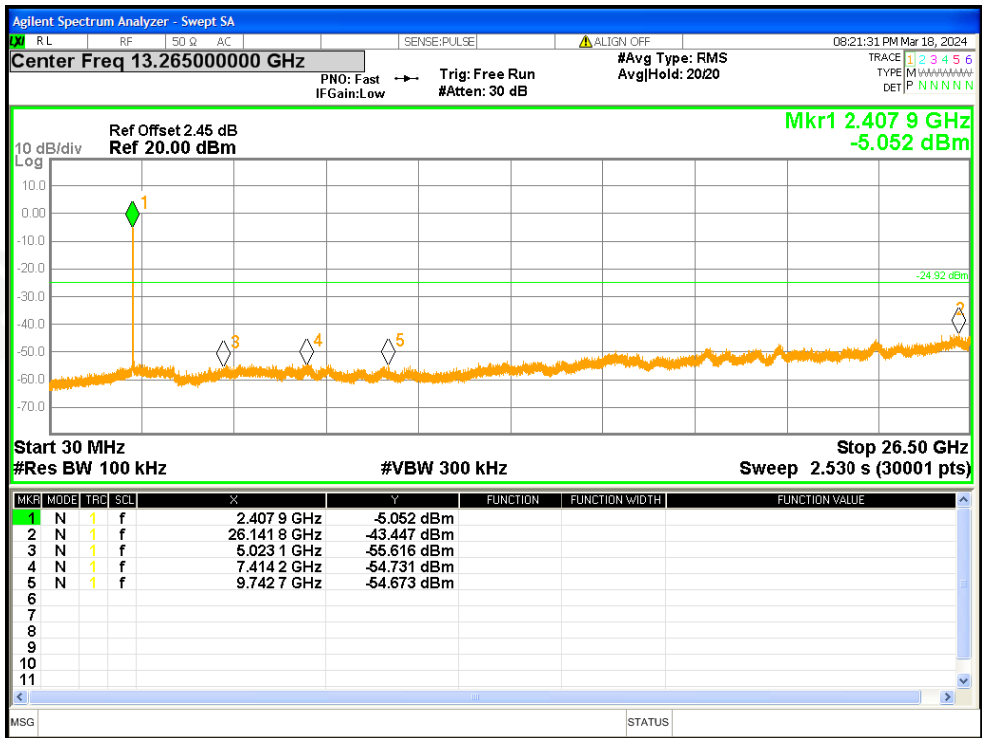
Tx. Spurious NVNT g 2462MHz Ant0 Ref



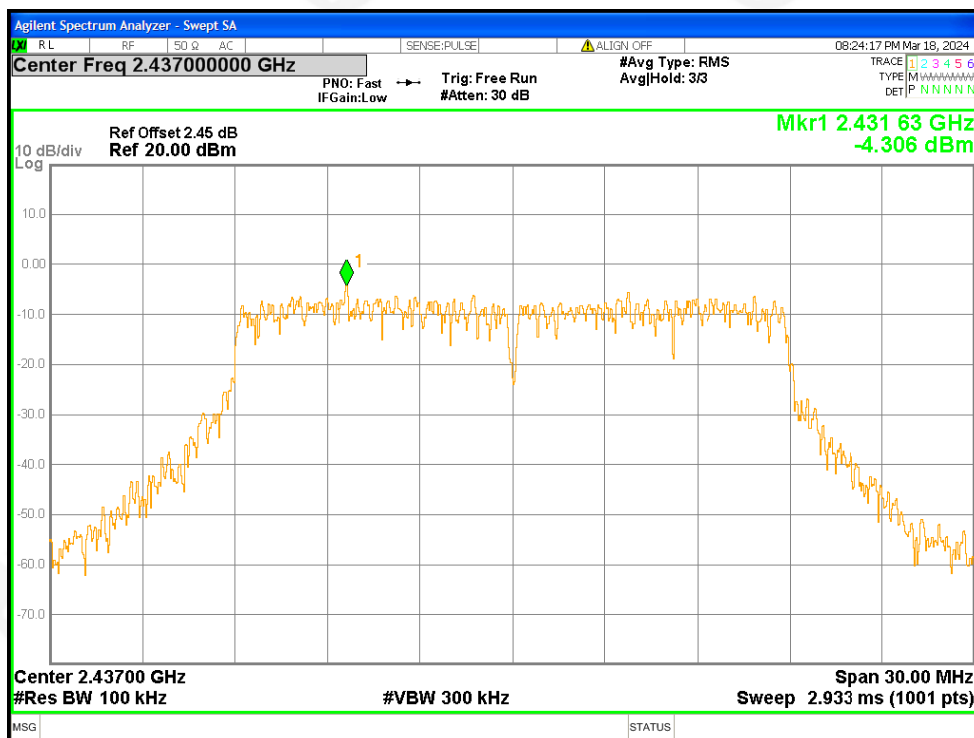
Tx. Spurious NVNT g 2462MHz Ant0 Emission



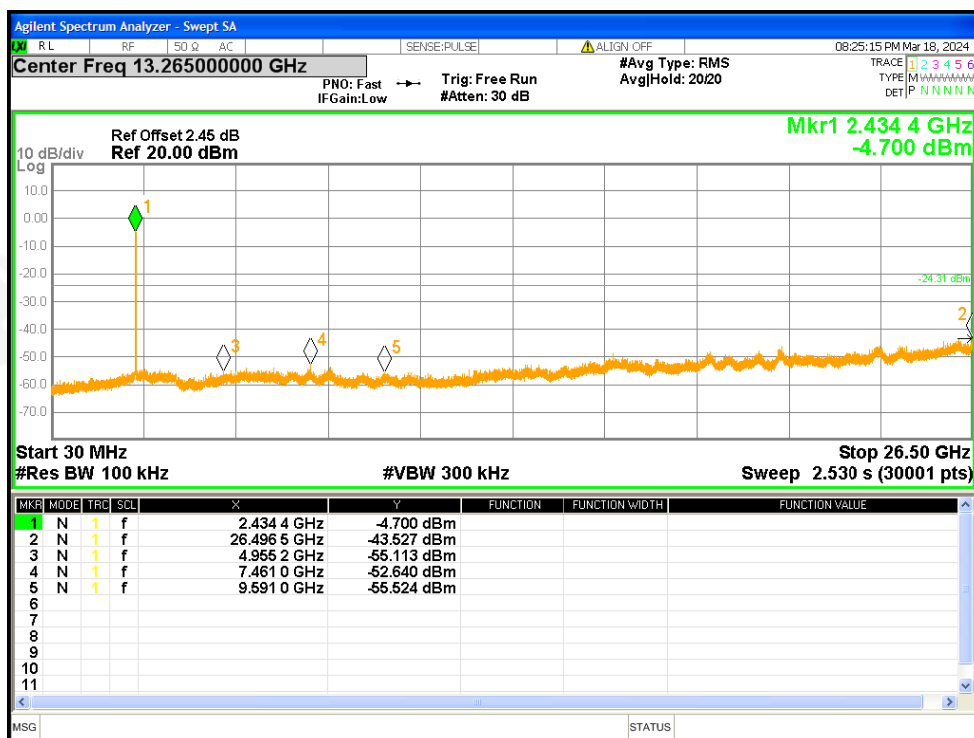
Tx. Spurious NVNT n20 2412MHz Ant0 Ref



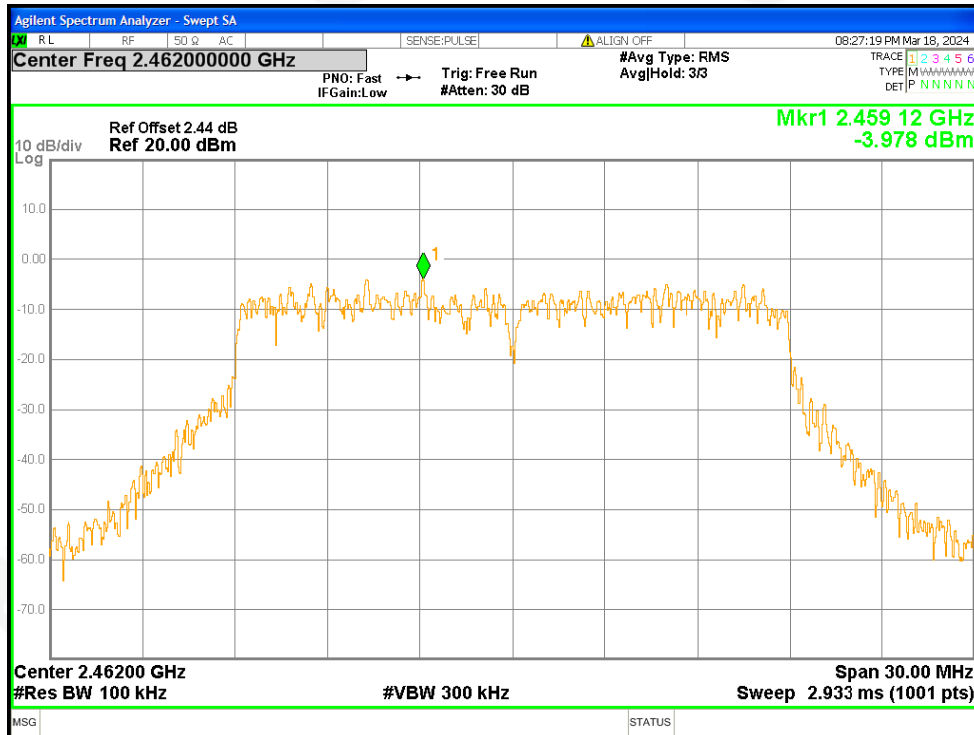
Tx. Spurious NVNT n20 2412MHz Ant0 Emission



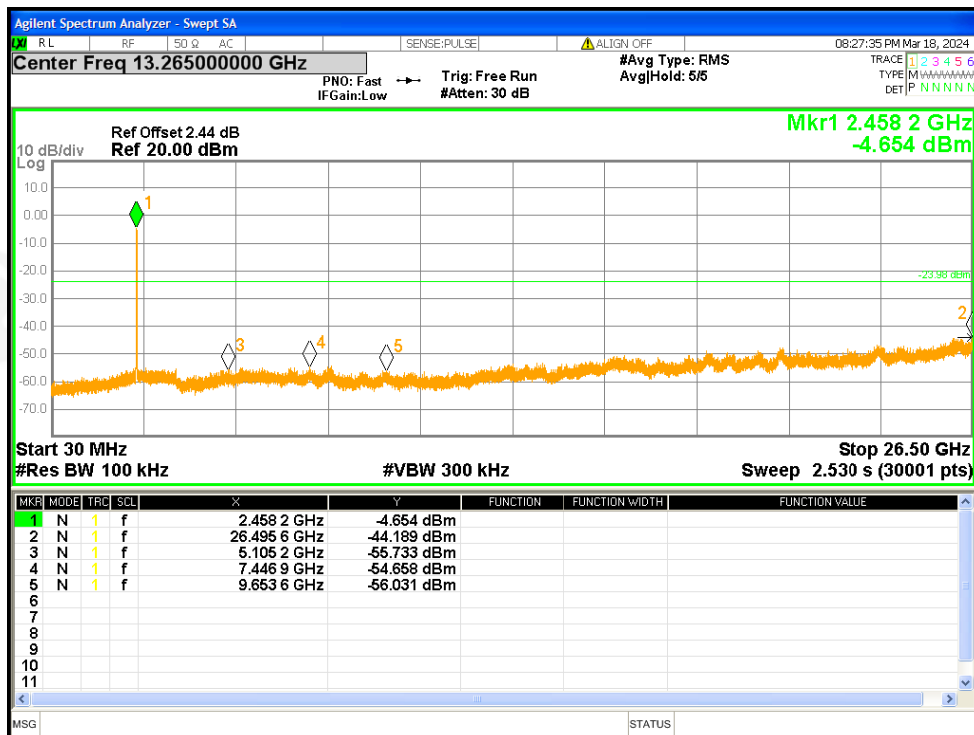
Tx. Spurious NVNT n20 2437MHz Ant0 Ref



Tx. Spurious NVNT n20 2437MHz Ant0 Emission



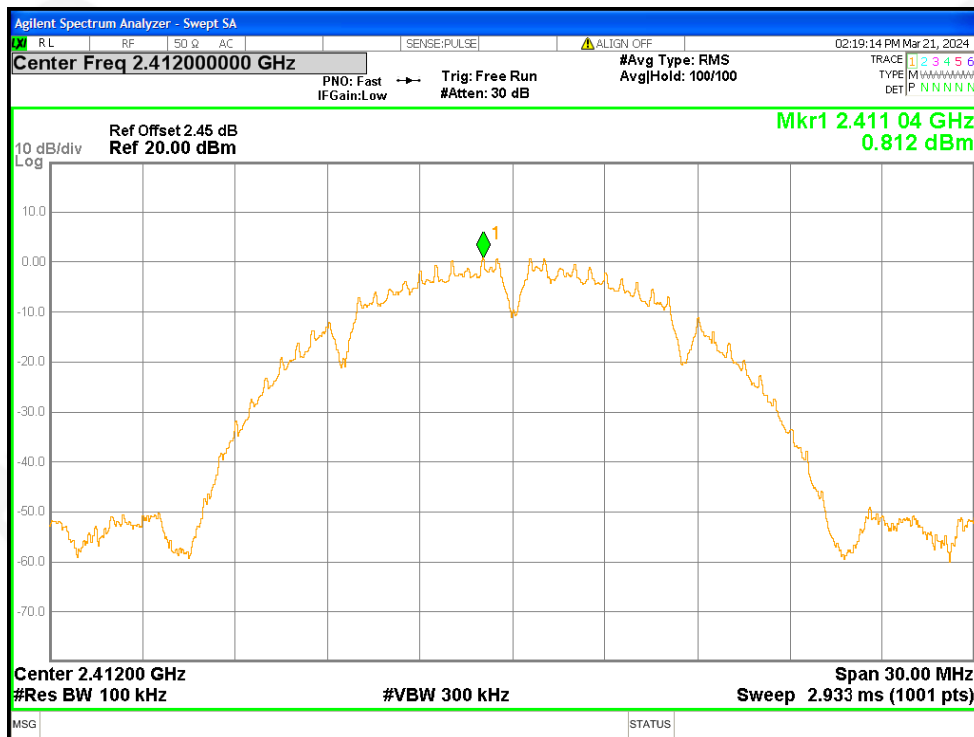
Tx. Spurious NVNT n20 2462MHz Ant0 Ref



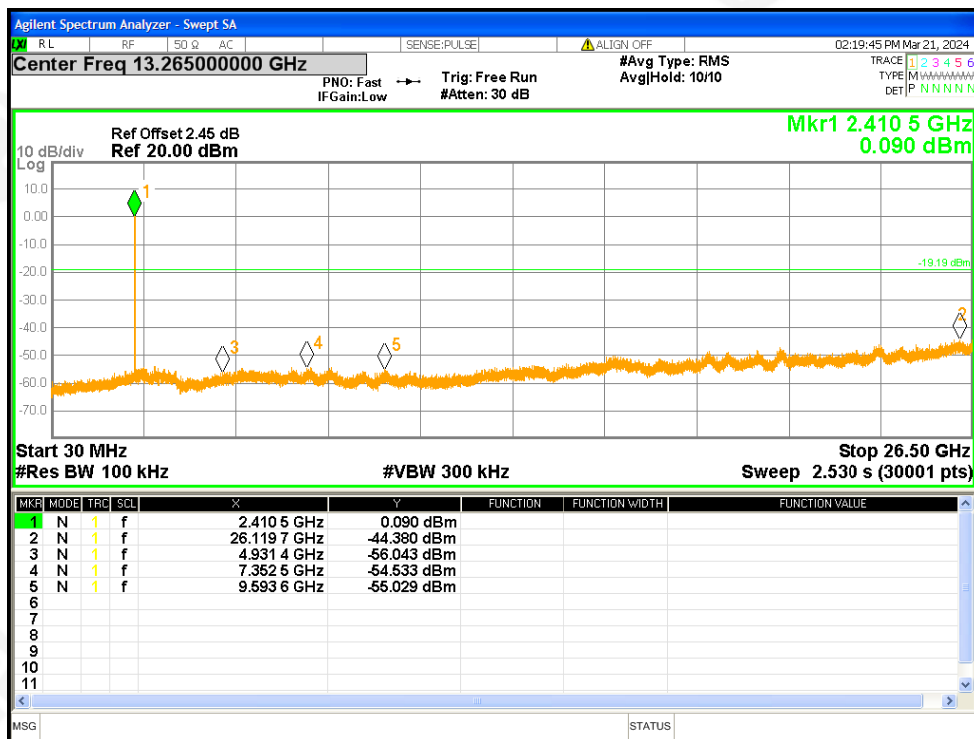
Tx. Spurious NVNT n20 2462MHz Ant0 Emission



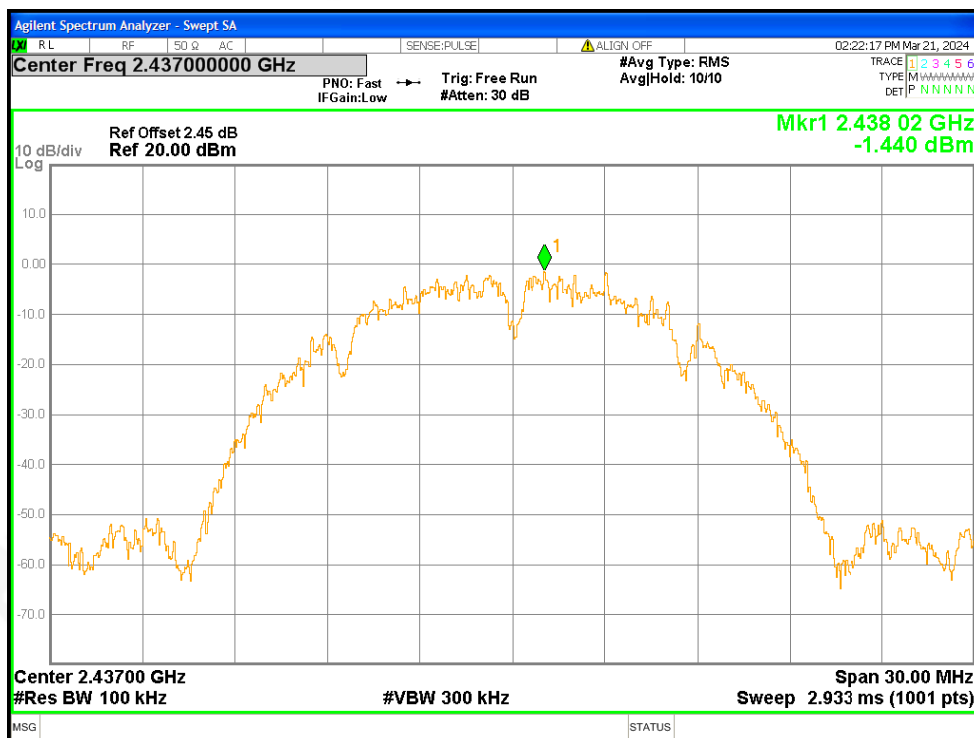
ANT1



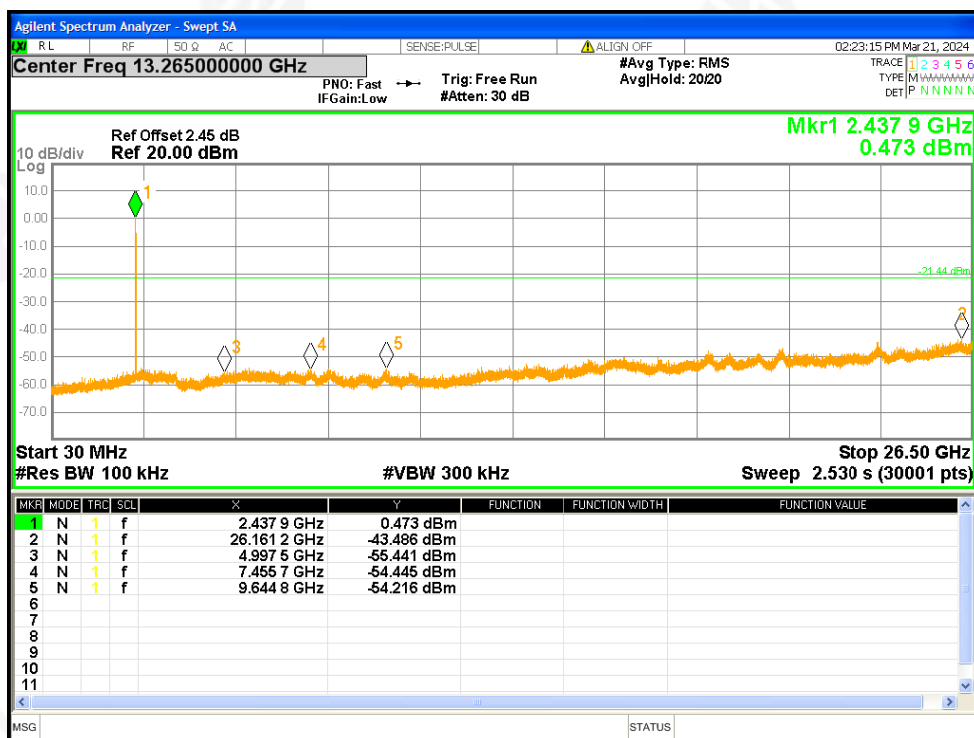
Tx. Spurious NVNT b 2412MHz Ant1 Ref



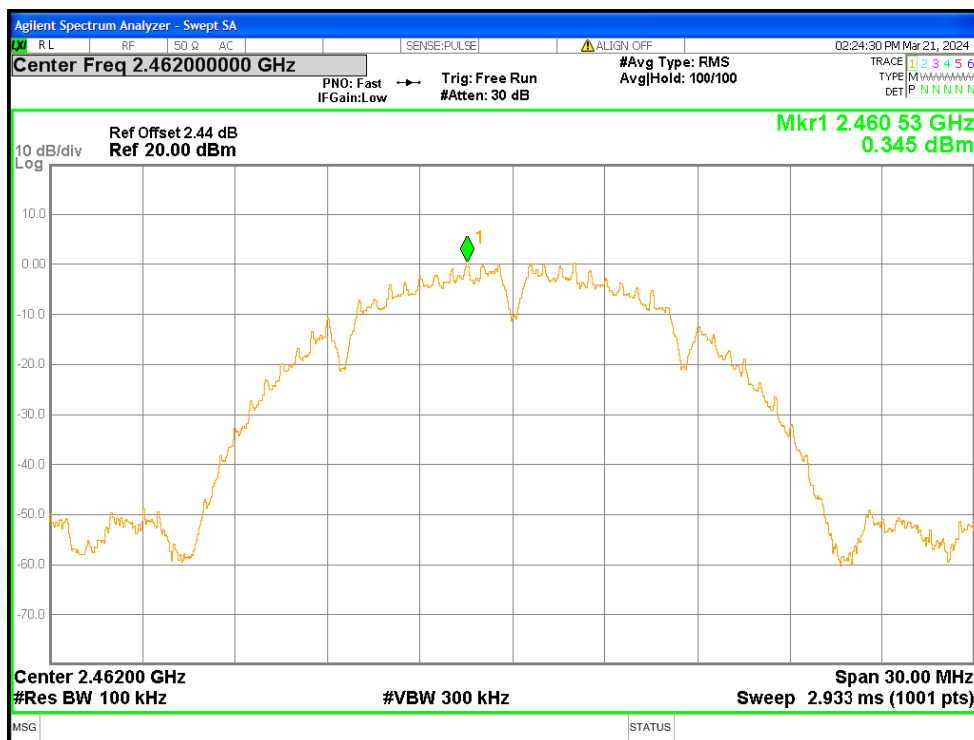
Tx. Spurious NVNT b 2412MHz Ant1 Emission



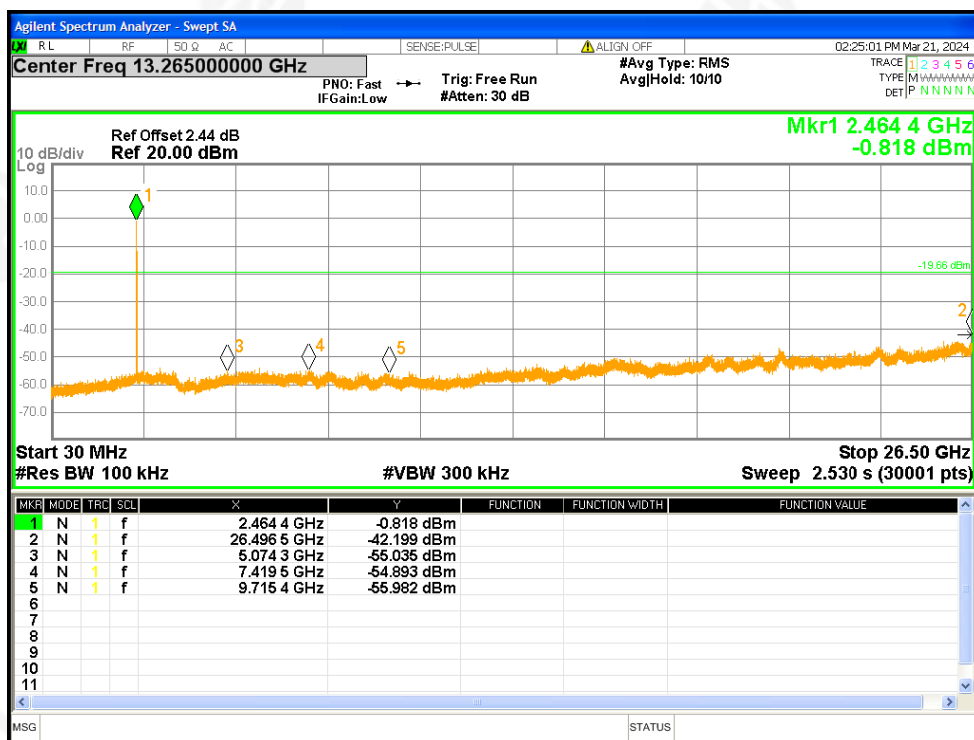
Tx. Spurious NVNT b 2437MHz Ant1 Ref



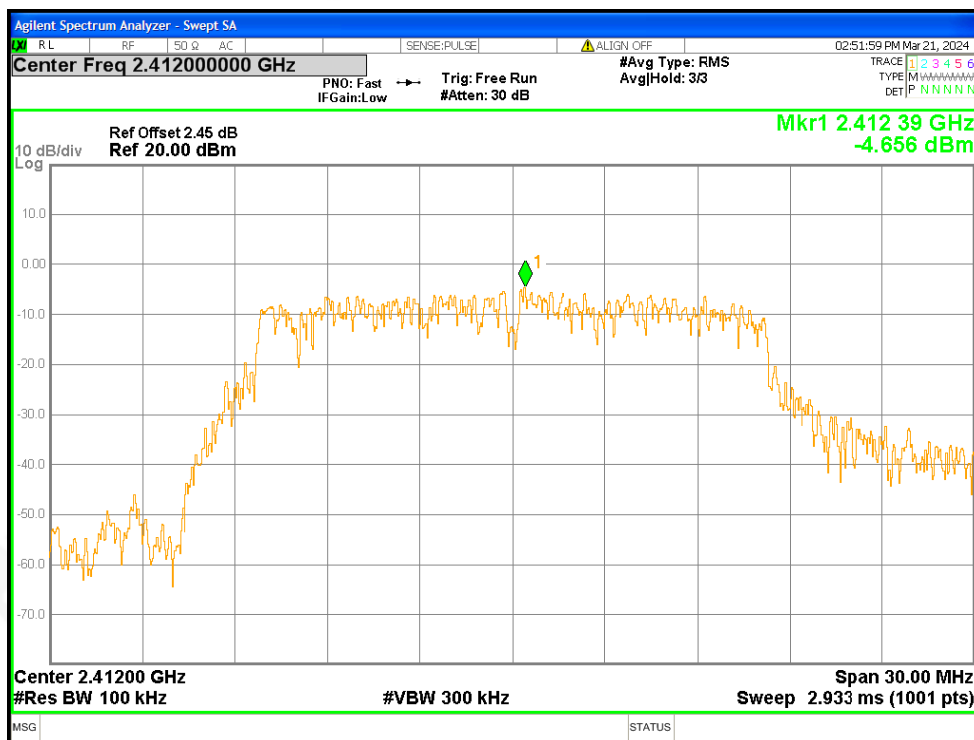
Tx. Spurious NVNT b 2437MHz Ant1 Emission



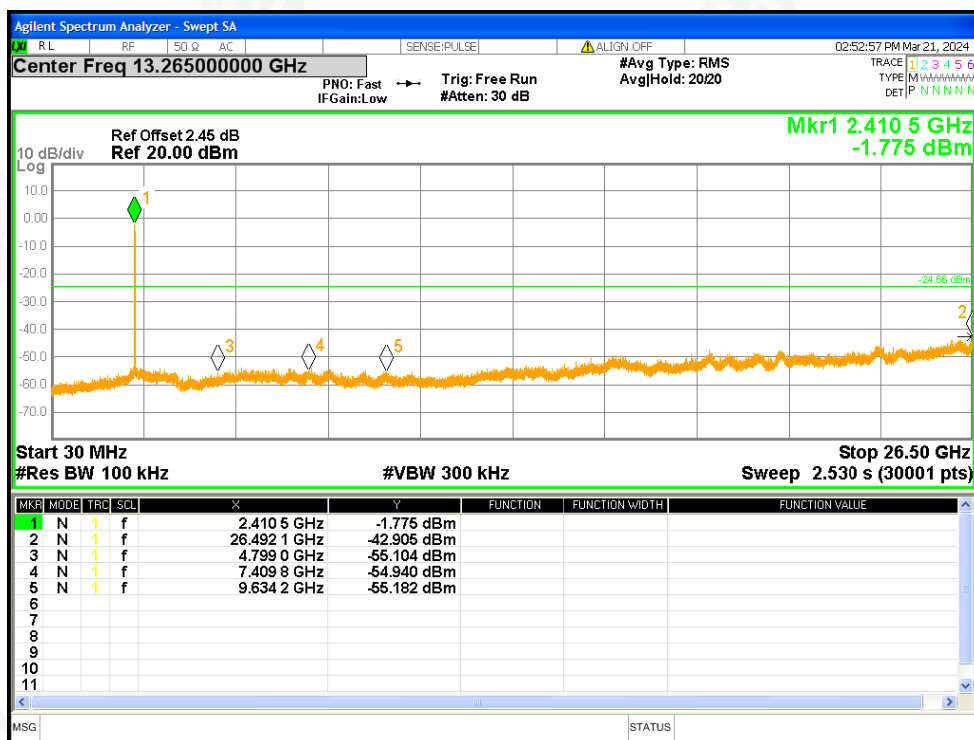
Tx. Spurious NVNT b 2462MHz Ant1 Ref



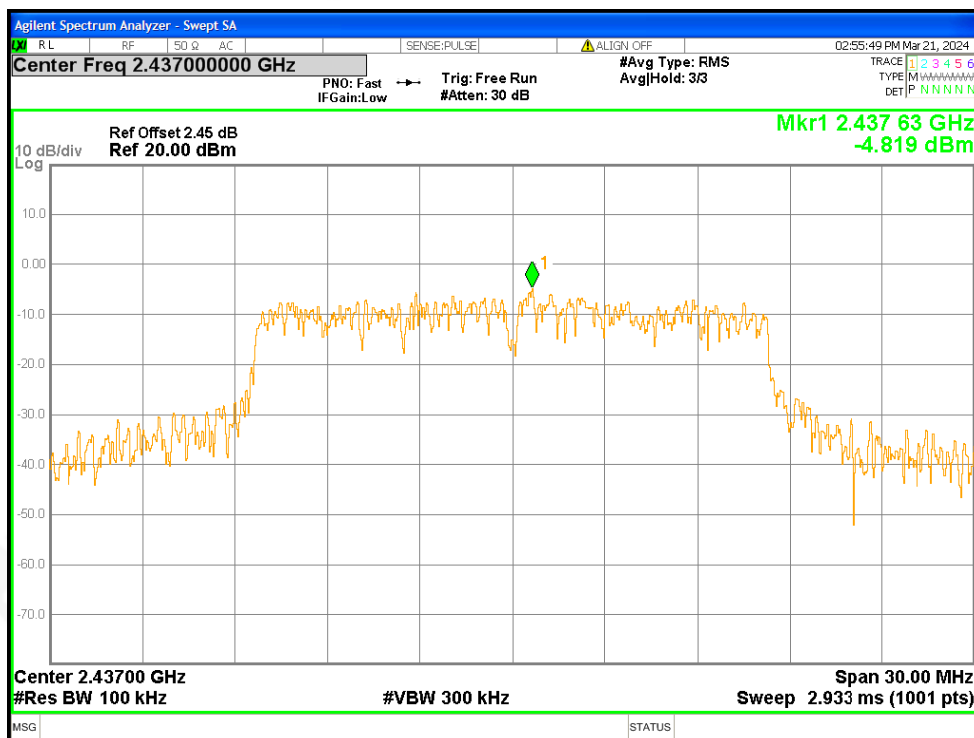
Tx. Spurious NVNT b 2462MHz Ant1 Emission



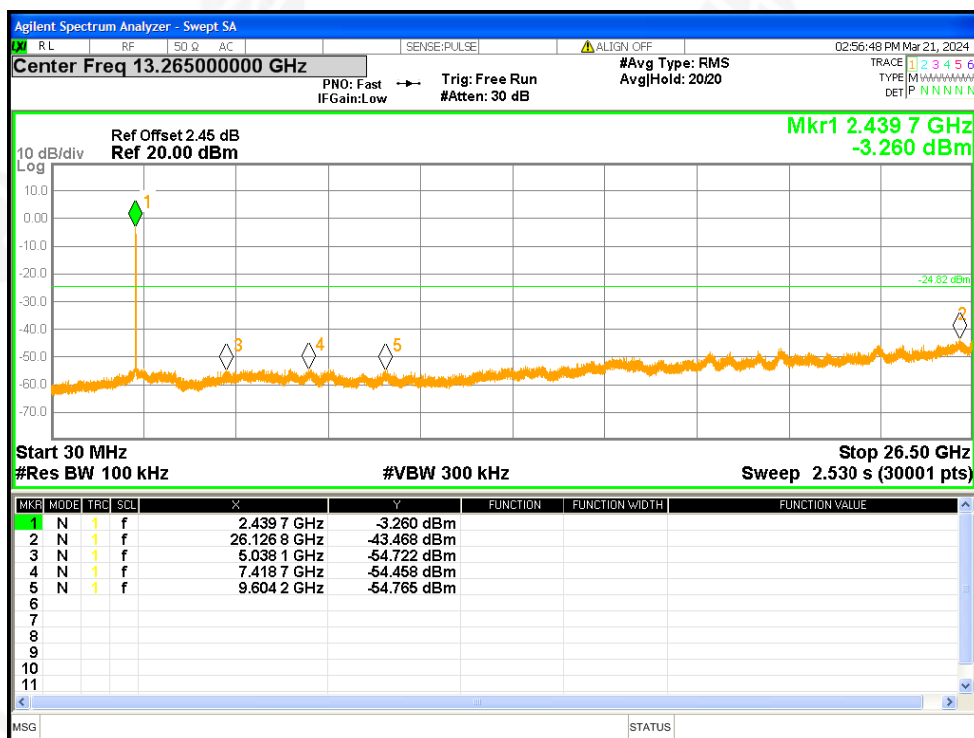
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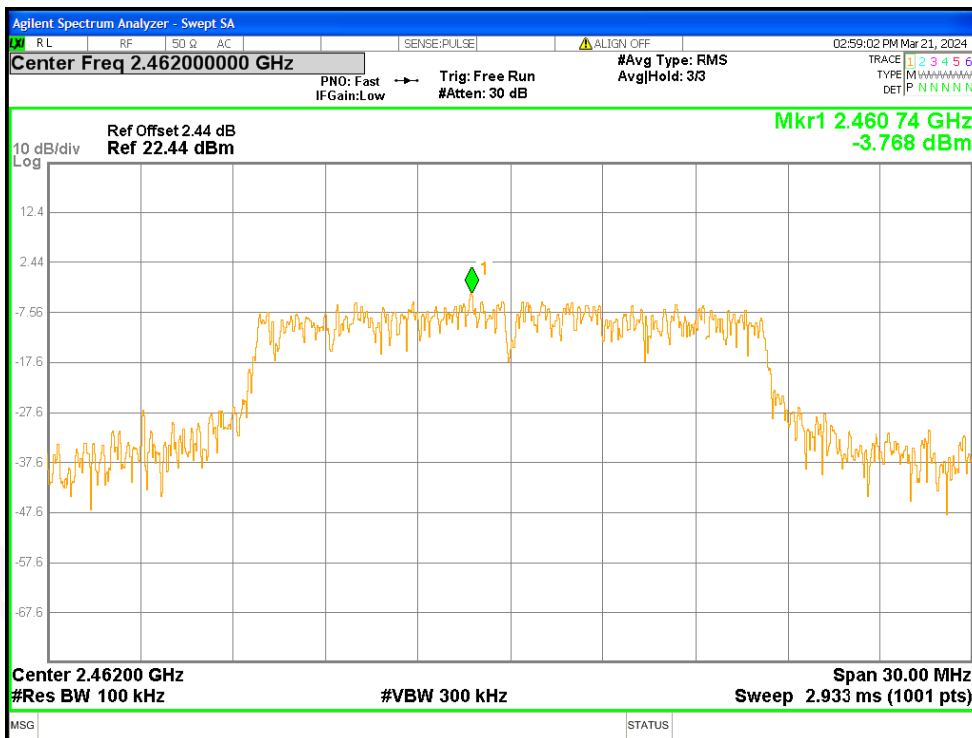
Tx. Spurious NVNT g 2412MHz Ant1 Emission



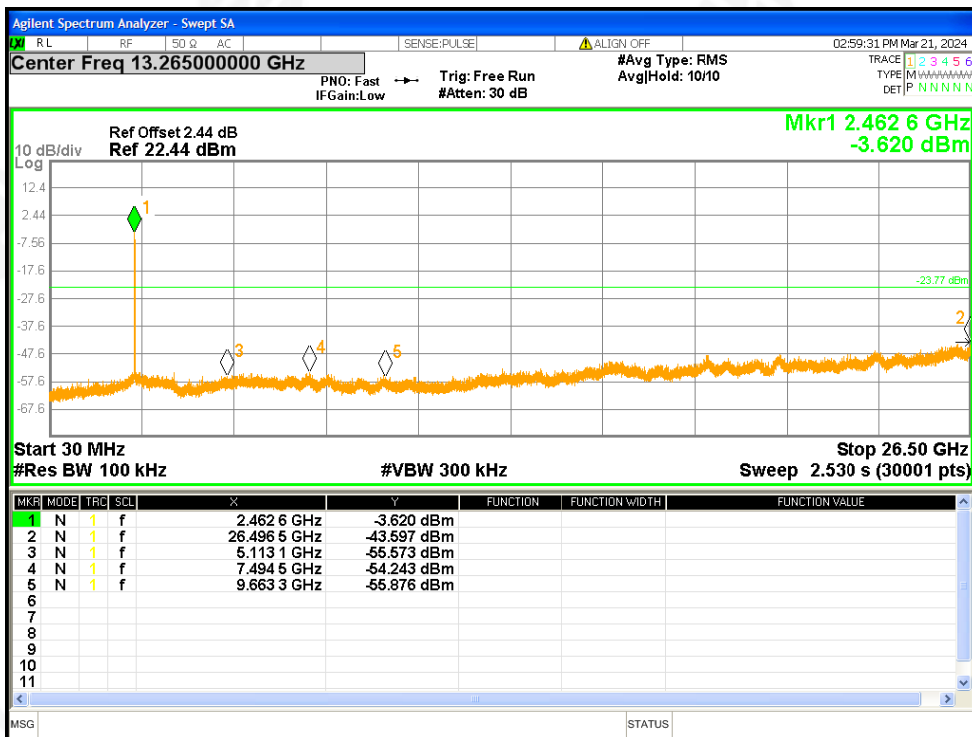
Tx. Spurious NVNT g 2437MHz Ant1 Ref



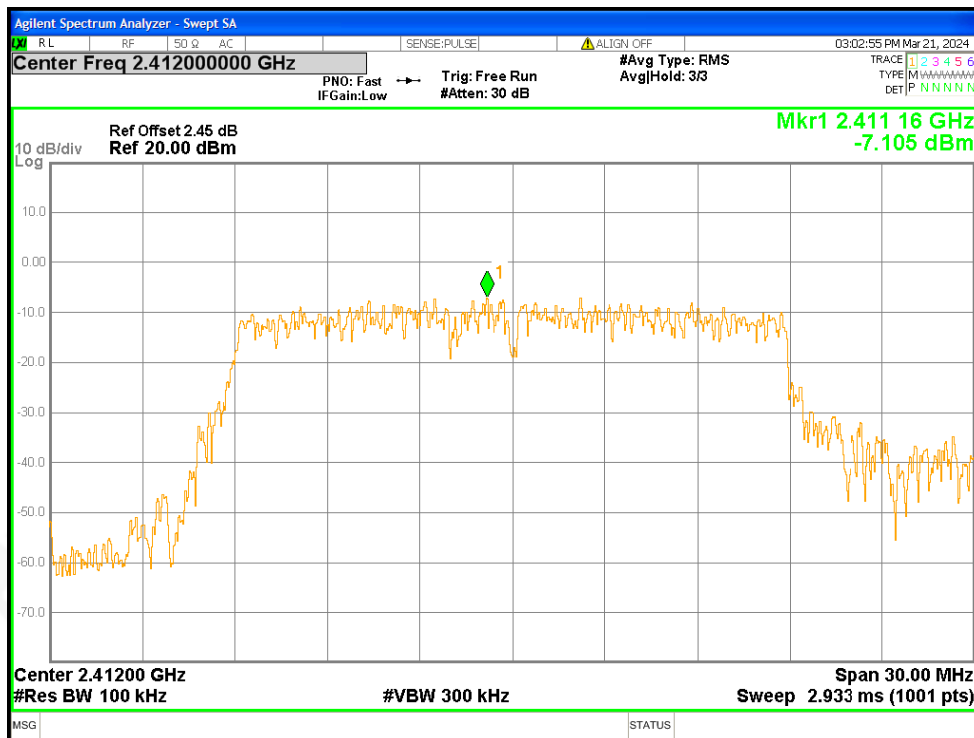
Tx. Spurious NVNT g 2437MHz Ant1 Emission



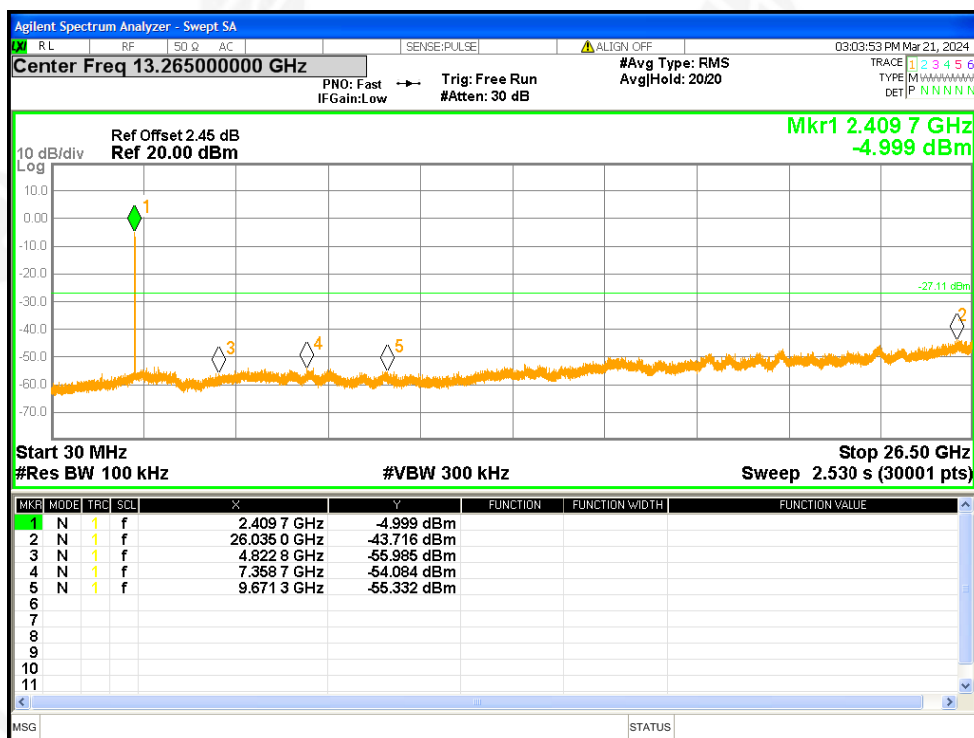
Tx. Spurious NVNT g 2462MHz Ant1 Ref



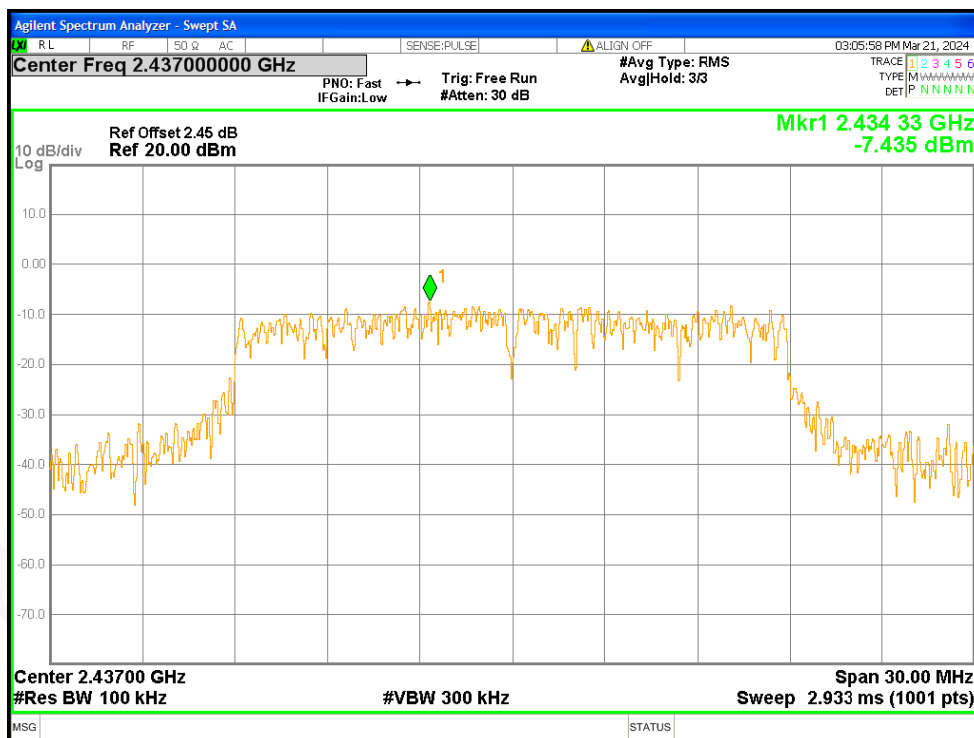
Tx. Spurious NVNT g 2462MHz Ant1 Emission



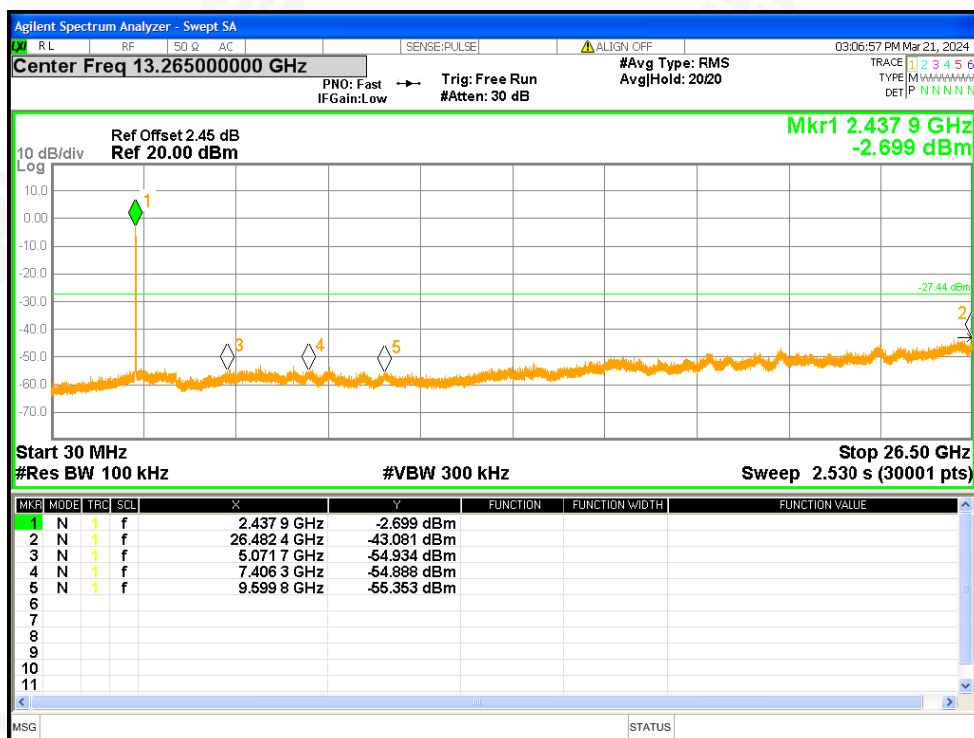
Tx. Spurious NVNT n20 2412MHz Ant1 Ref



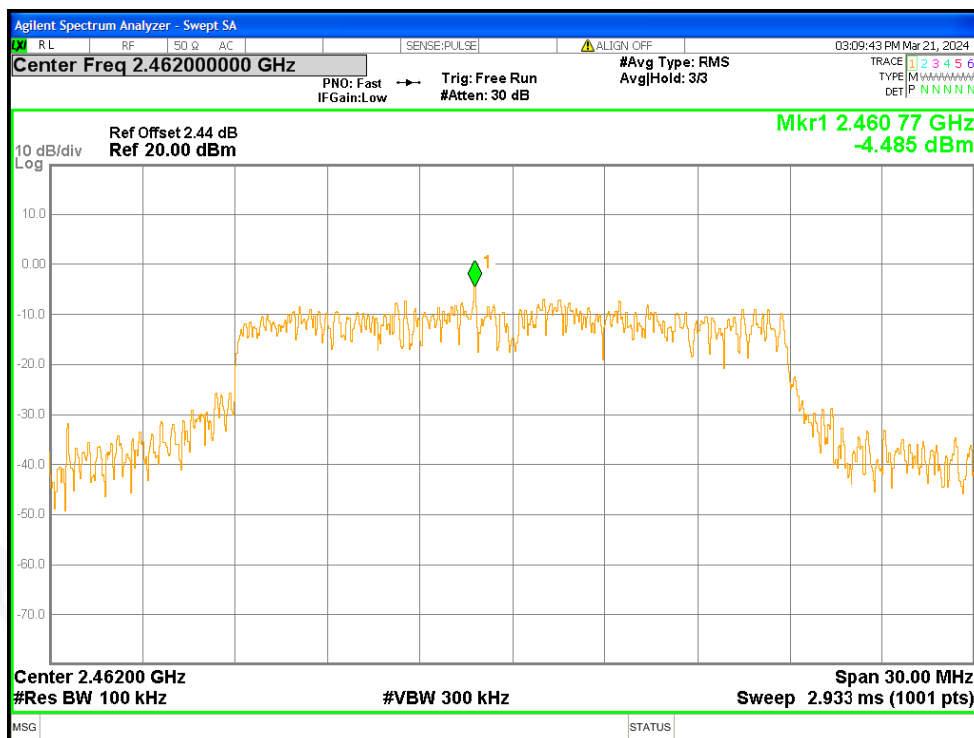
Tx. Spurious NVNT n20 2412MHz Ant1 Emission



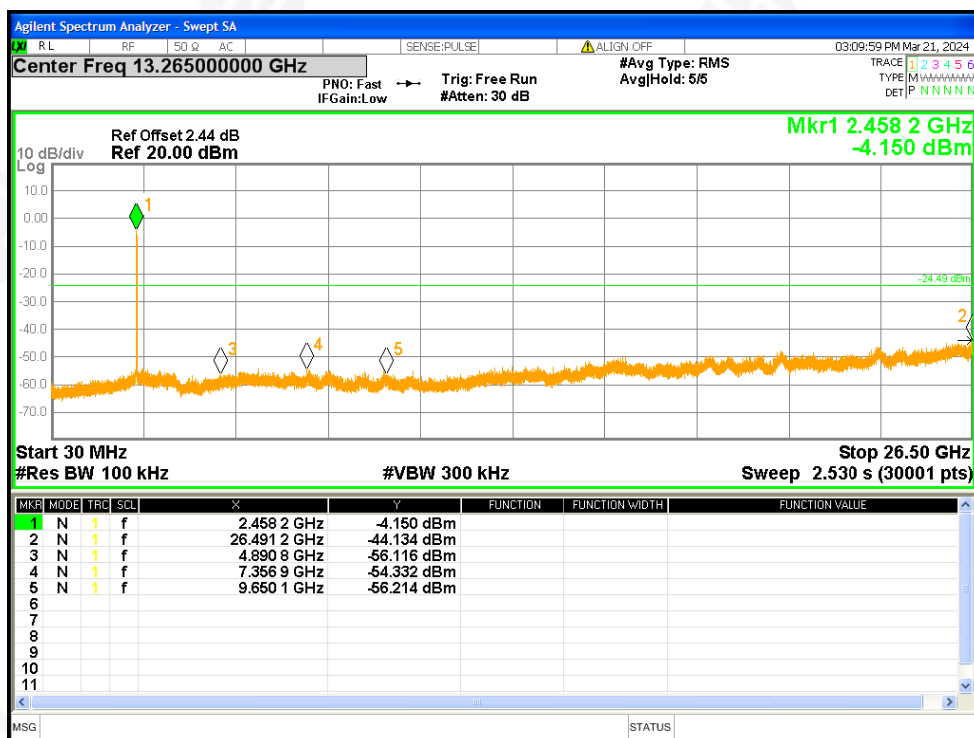
Tx. Spurious NVNT n20 2437MHz Ant1 Ref



Tx. Spurious NVNT n20 2437MHz Ant1 Emission



Tx. Spurious NVNT n20 2462MHz Ant1 Ref



Tx. Spurious NVNT n20 2462MHz Ant1 Emission



ANT0

Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
b	2412	Ant0	-44.55	-20	Pass
b	2462	Ant0	-54.14	-20	Pass
g	2412	Ant0	-37.93	-20	Pass
g	2462	Ant0	-50.3	-20	Pass
n20	2412	Ant0	-34.7	-20	Pass
n20	2462	Ant0	-48.34	-20	Pass

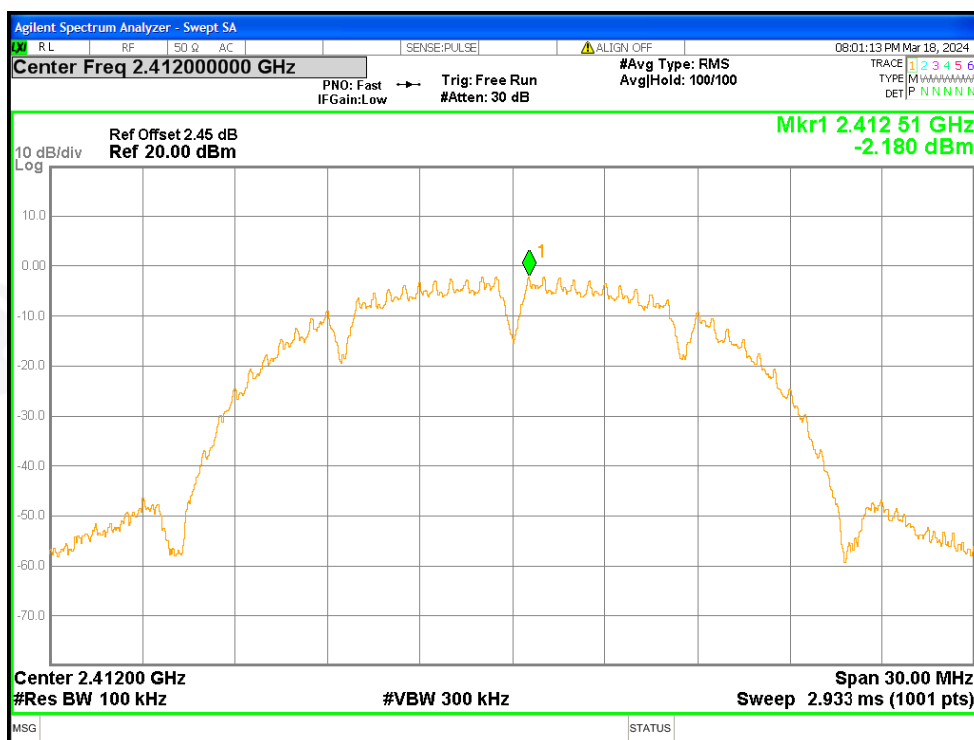
ANT1

Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
b	2412	Ant1	-51.23	-20	Pass
b	2462	Ant1	-57.06	-20	Pass
g	2412	Ant1	-44.82	-20	Pass
g	2462	Ant1	-53.11	-20	Pass
n20	2412	Ant1	-41.8	-20	Pass
n20	2462	Ant1	-48.73	-20	Pass

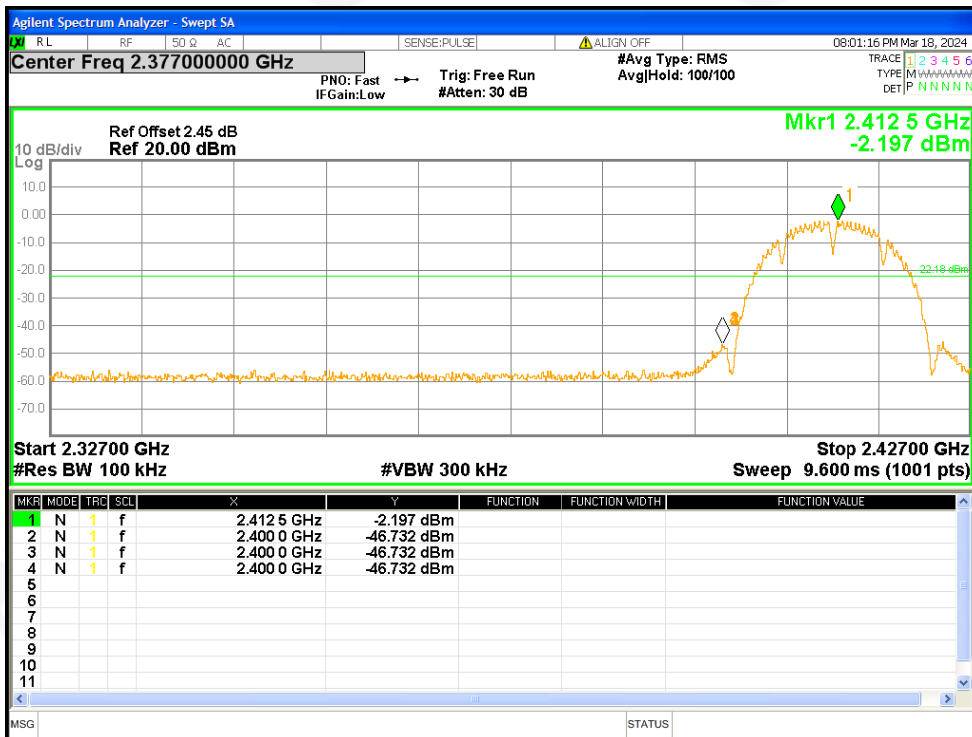
For 802.11n, the antenna factor $10 \cdot \log(2) = 3.01 \text{ dB}$ is added to the final test table.

All in the worst-case mode

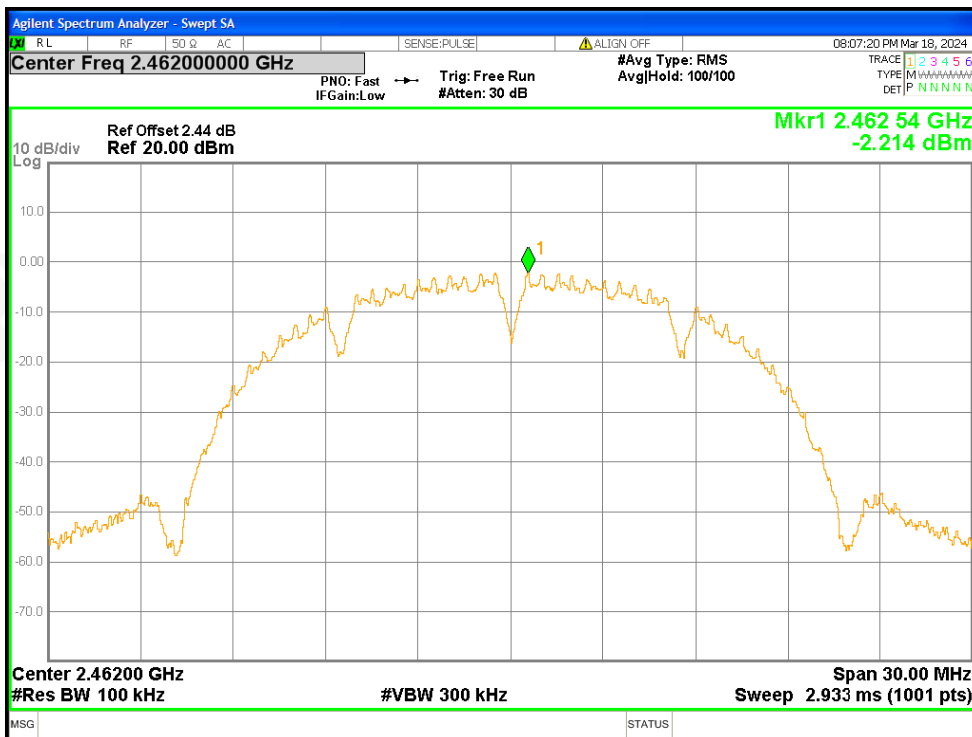
ANT0



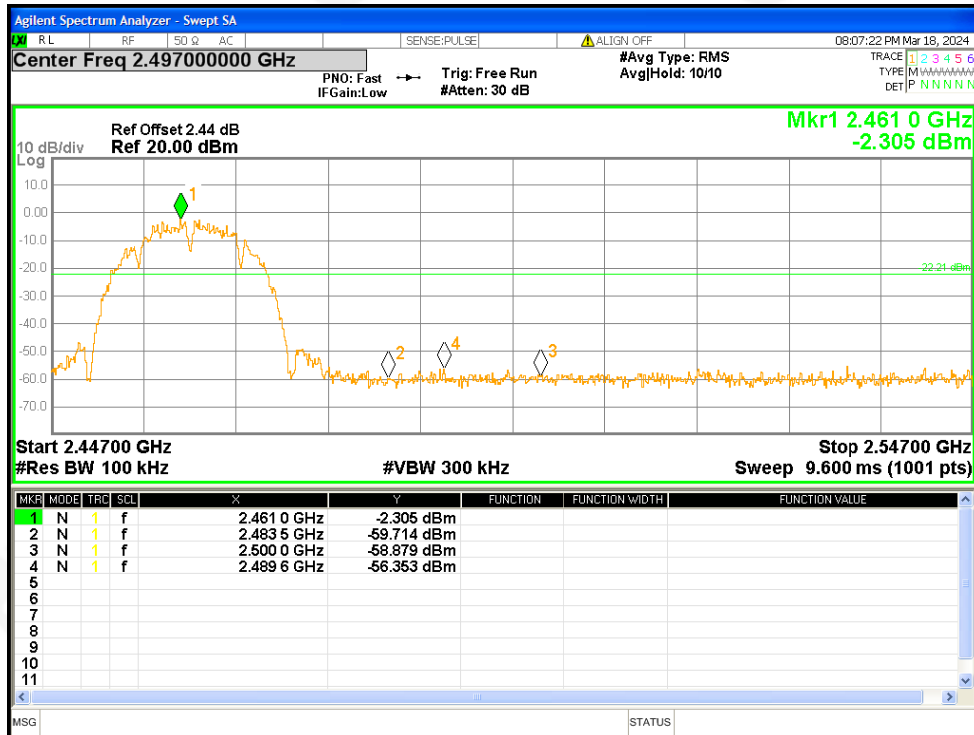
Band Edge NVNT b 2412MHz Ant0 Ref



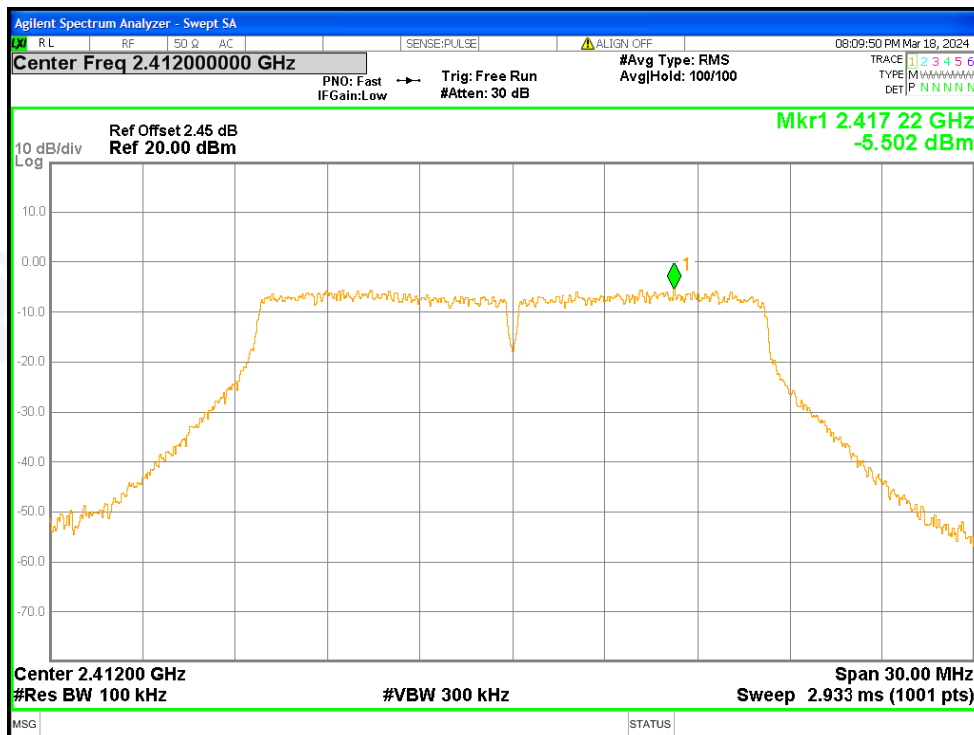
Band Edge NVNT b 2412MHz Ant0 Emission



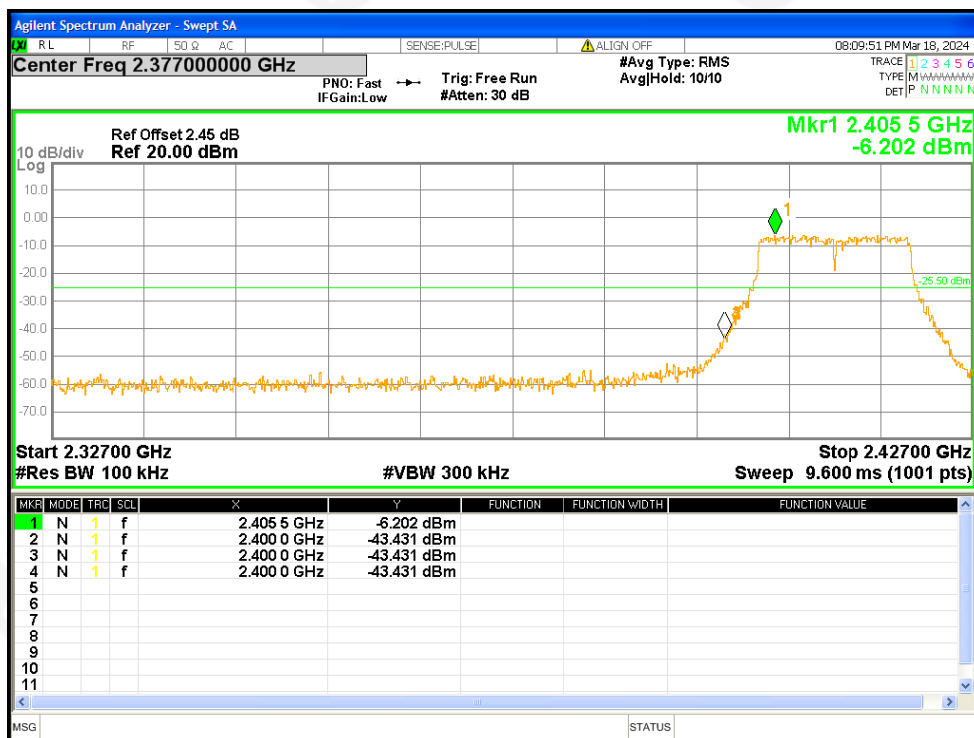
Band Edge NVNT b 2462MHz Ant0 Ref



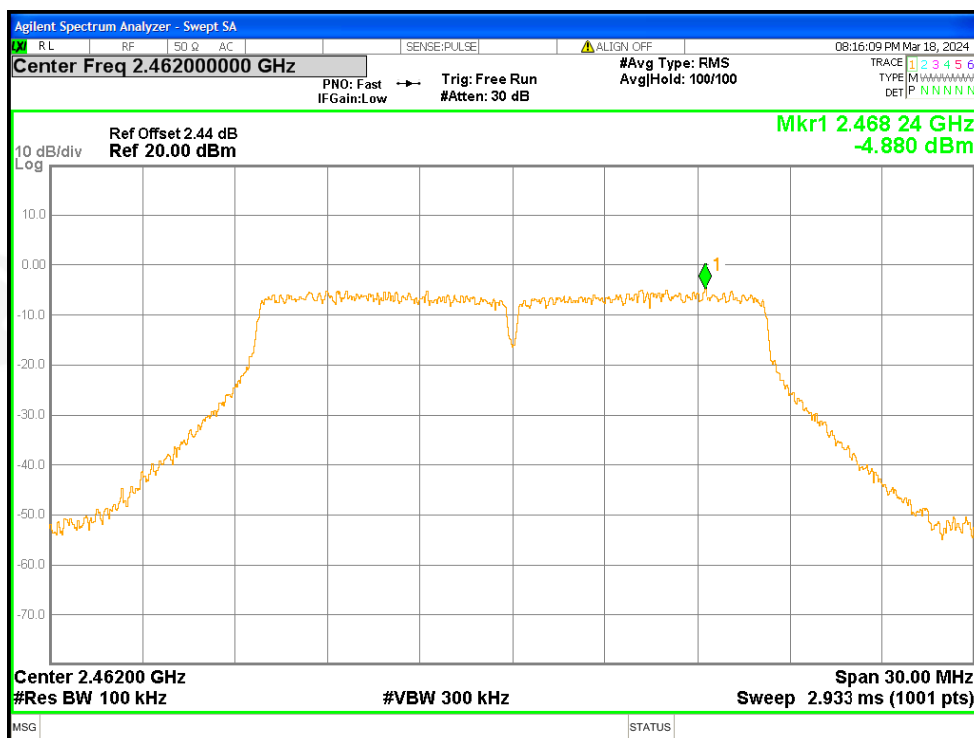
Band Edge NVNT b 2462MHz Ant0 Emission



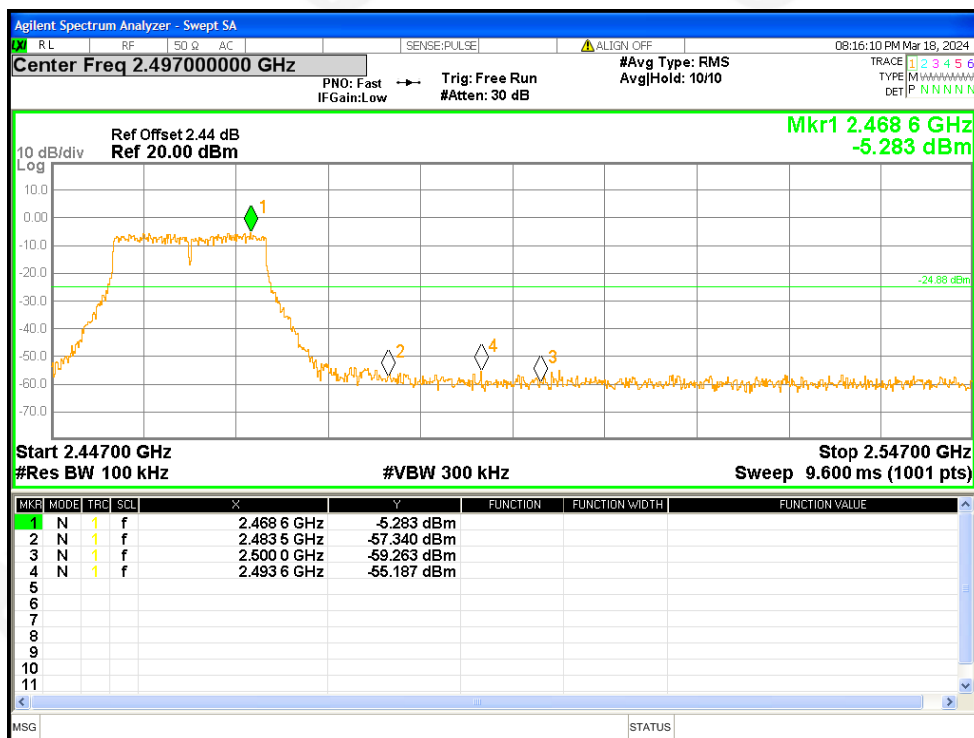
Band Edge NVNT g 2412MHz Ant0 Ref



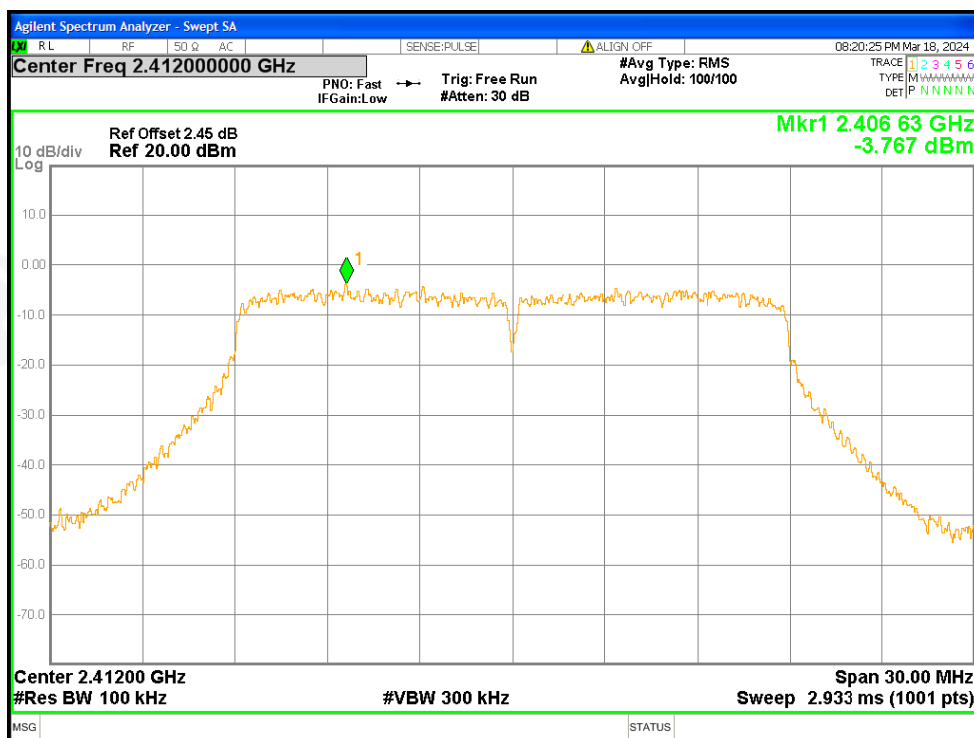
Band Edge NVNT g 2412MHz Ant0 Emission



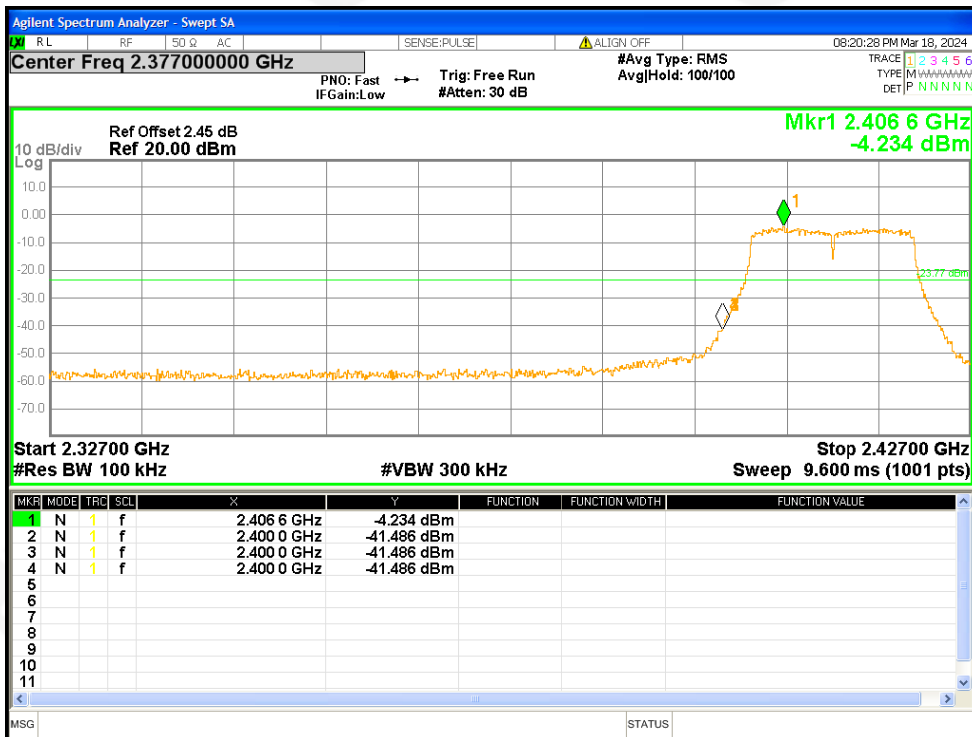
Band Edge NVNT g 2462MHz Ant0 Ref



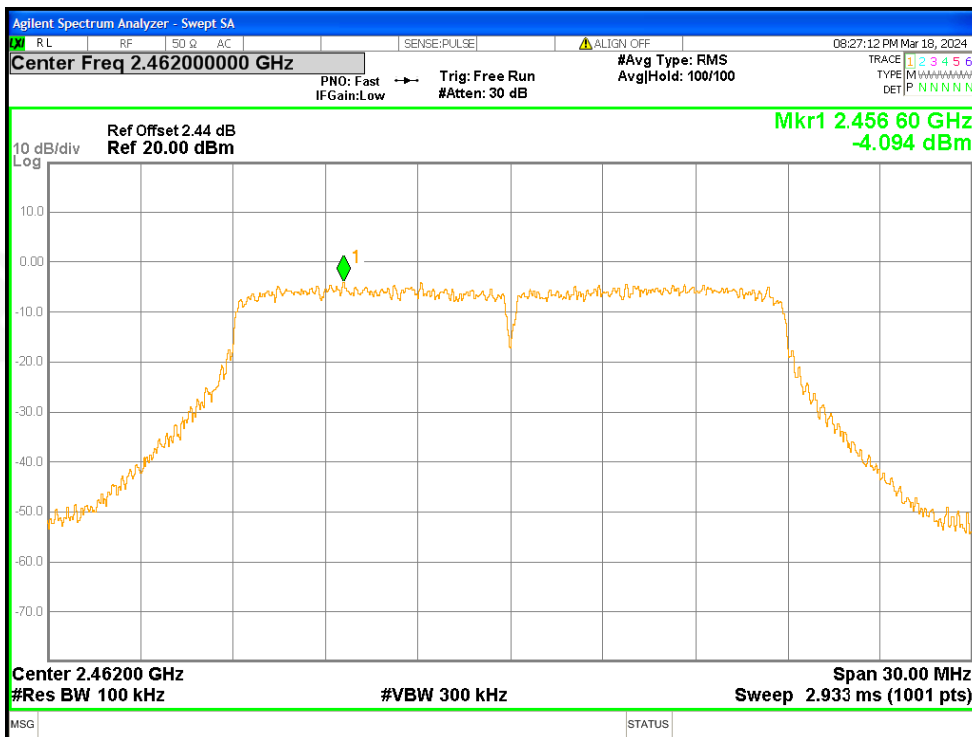
Band Edge NVNT g 2462MHz Ant0 Emission



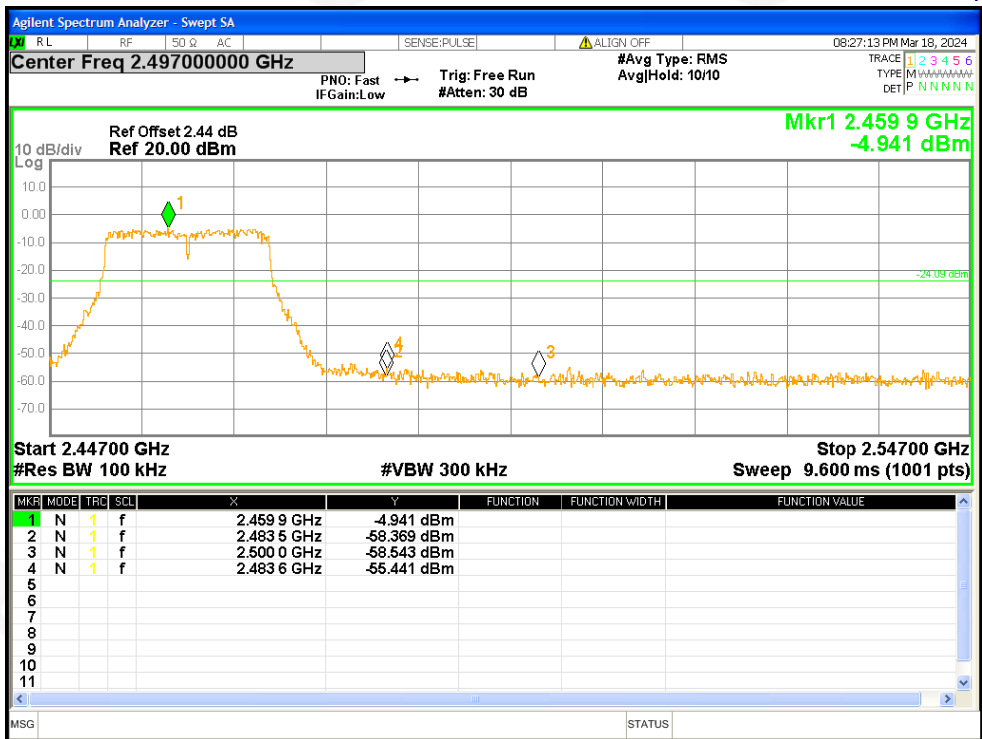
Band Edge NVNT n20 2412MHz Ant0 Ref



Band Edge NVNT n20 2412MHz Ant0 Emission

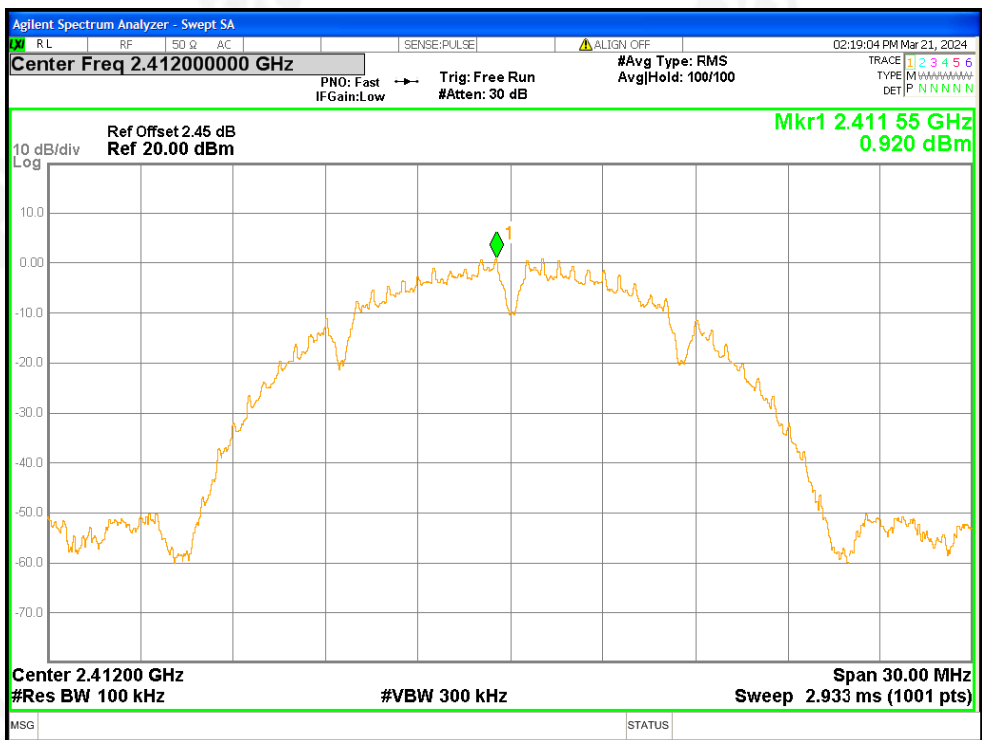


Band Edge NVNT n20 2462MHz Ant0 Ref

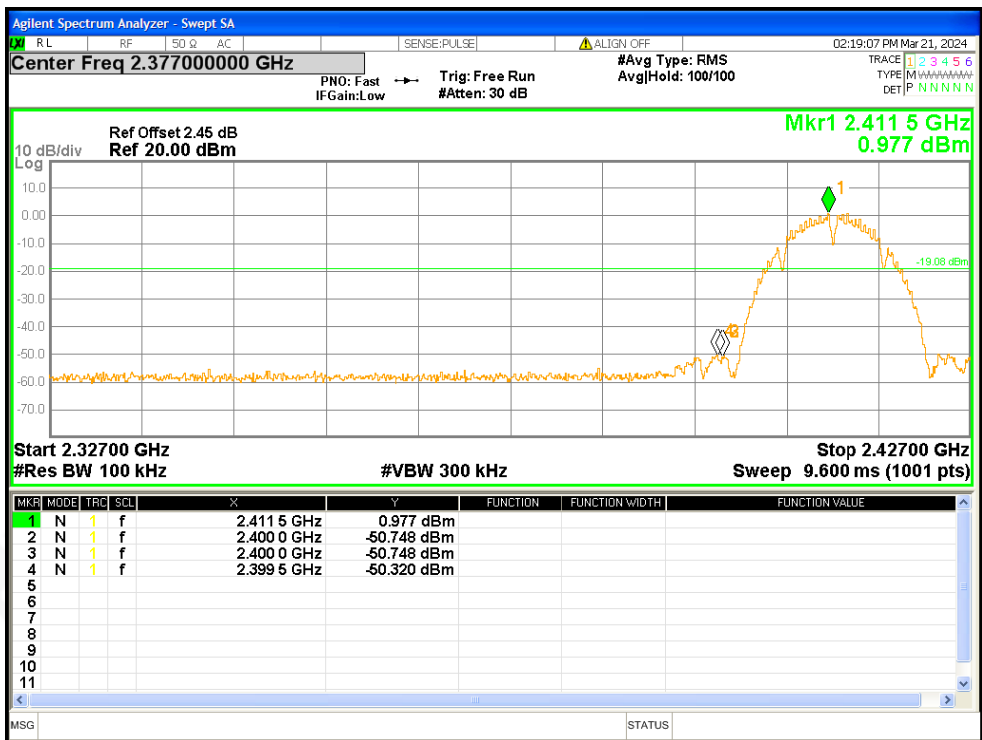


Band Edge NVNT n20 2462MHz Ant0 Emission

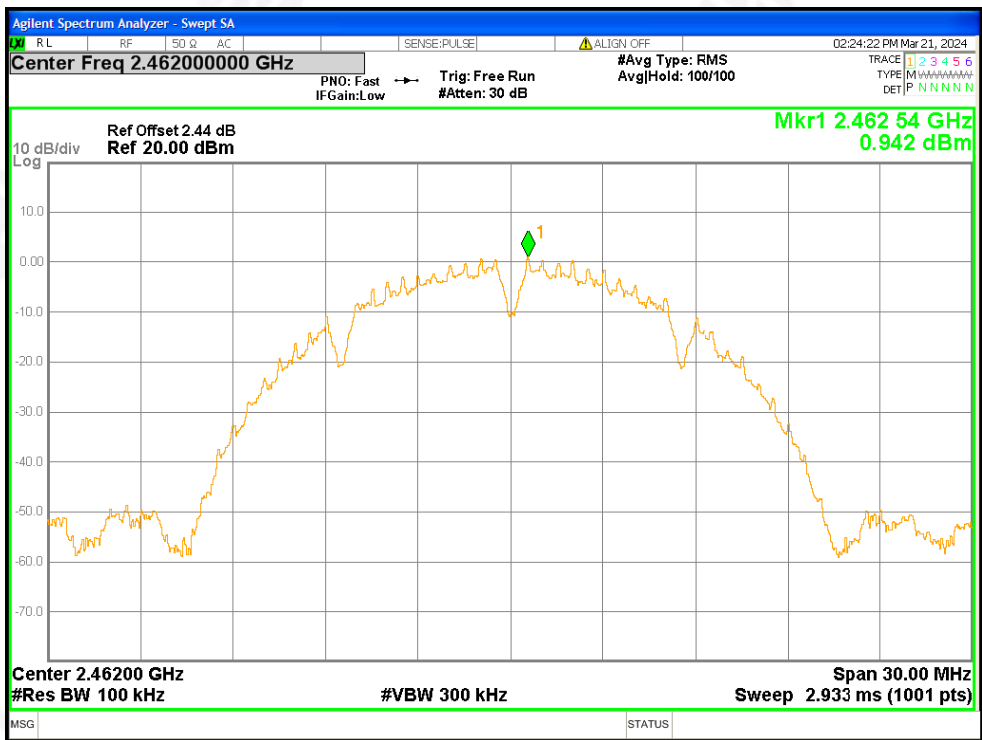
ANT1



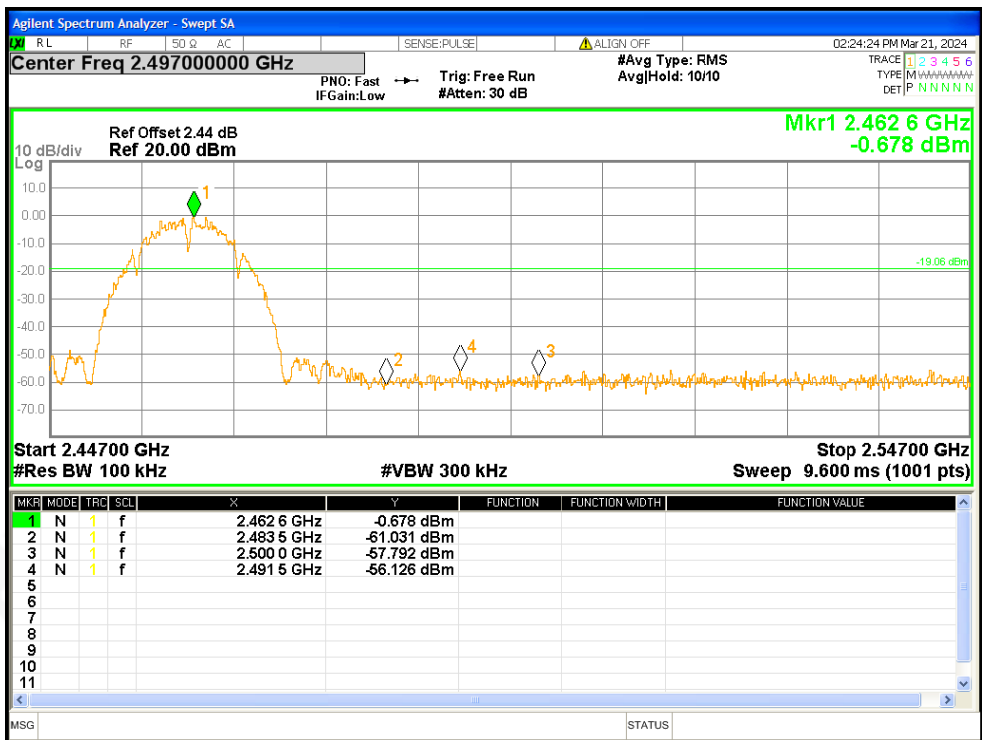
Band Edge NVNT b 2412MHz Ant1 Ref



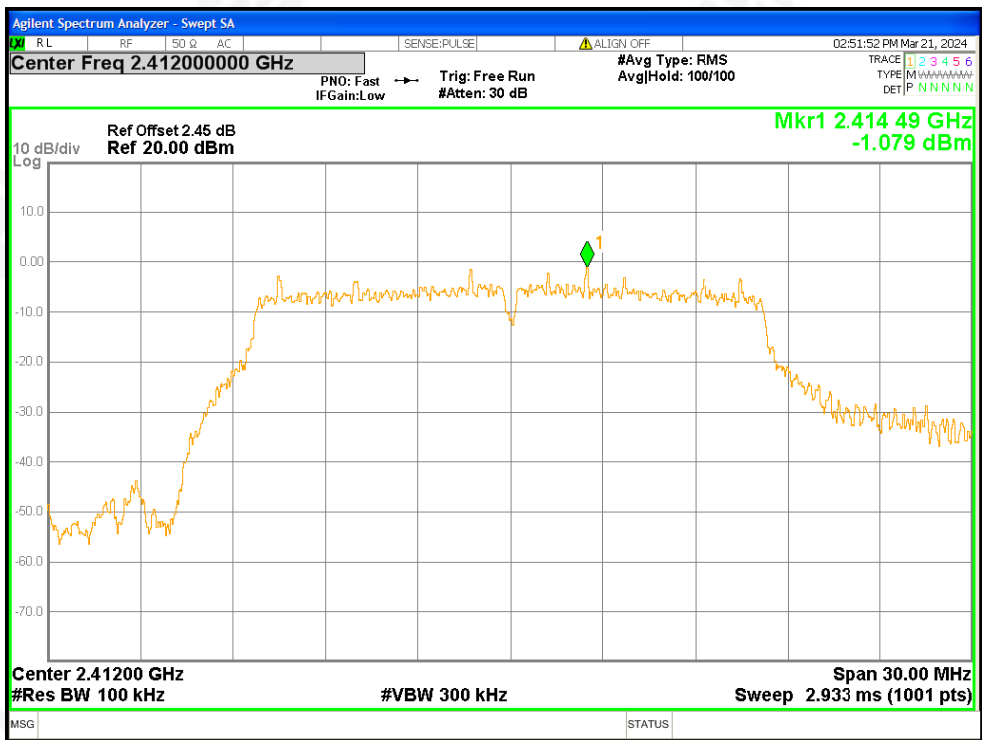
Band Edge NVNT b 2412MHz Ant1 Emission



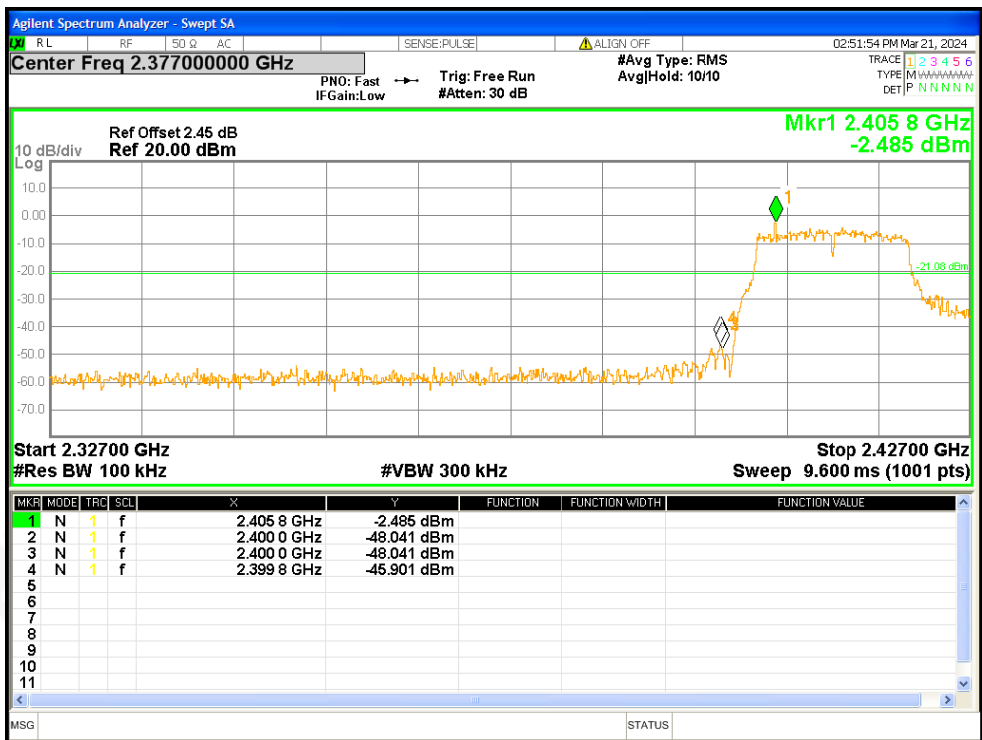
Band Edge NVNT b 2462MHz Ant1 Ref



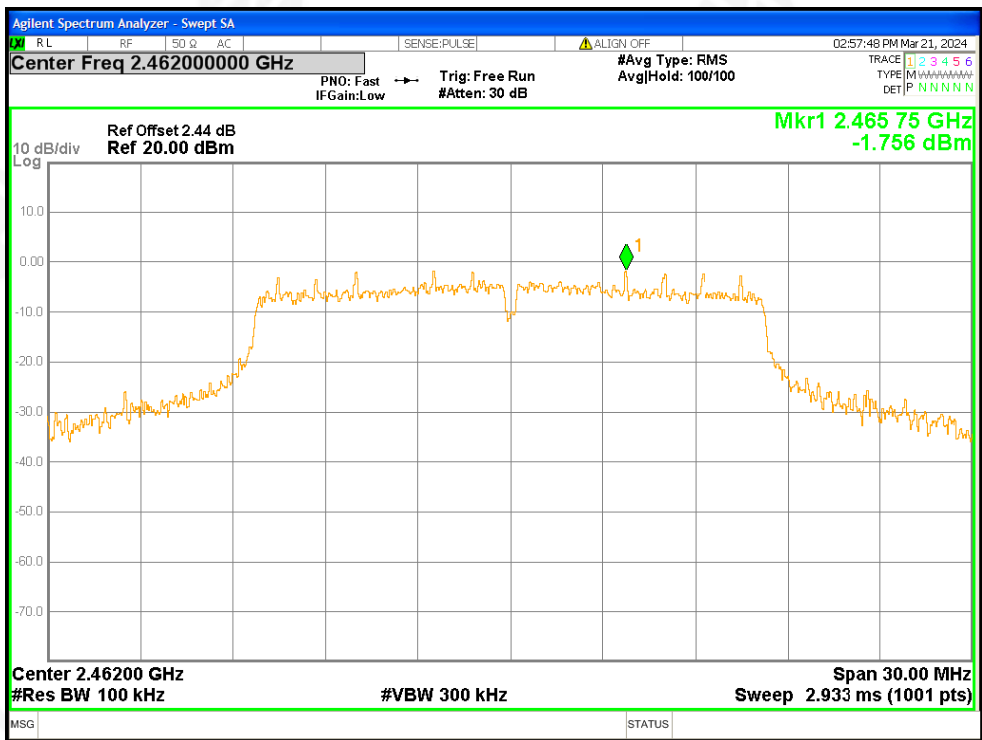
Band Edge NVNT b 2462MHz Ant1 Emission



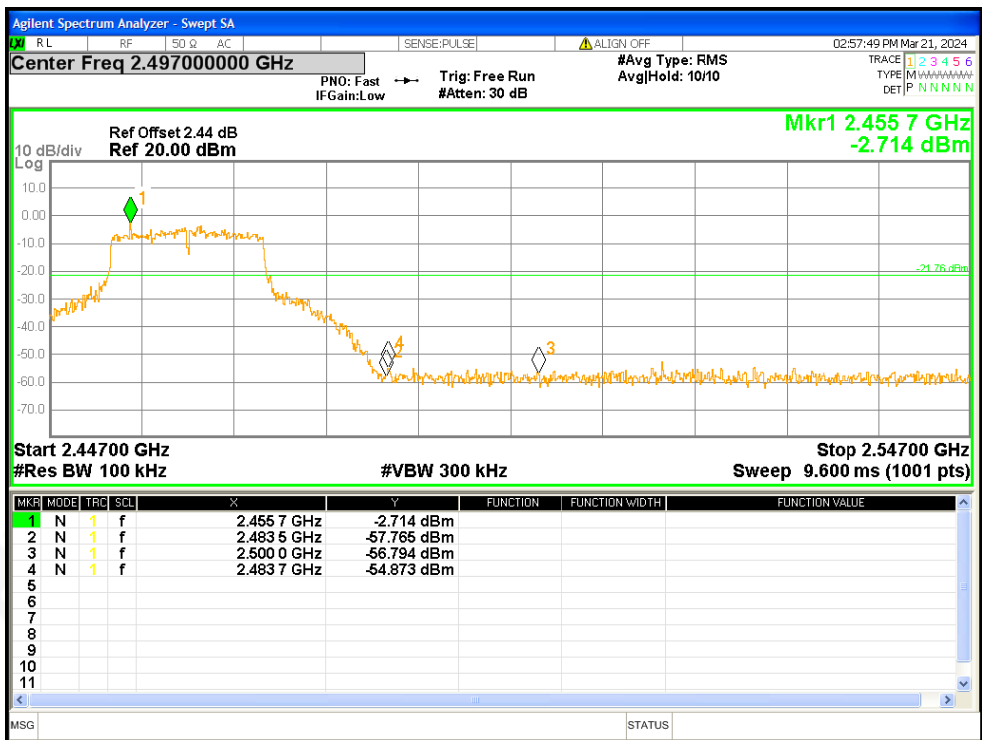
Band Edge NVNT g 2412MHz Ant1 Ref



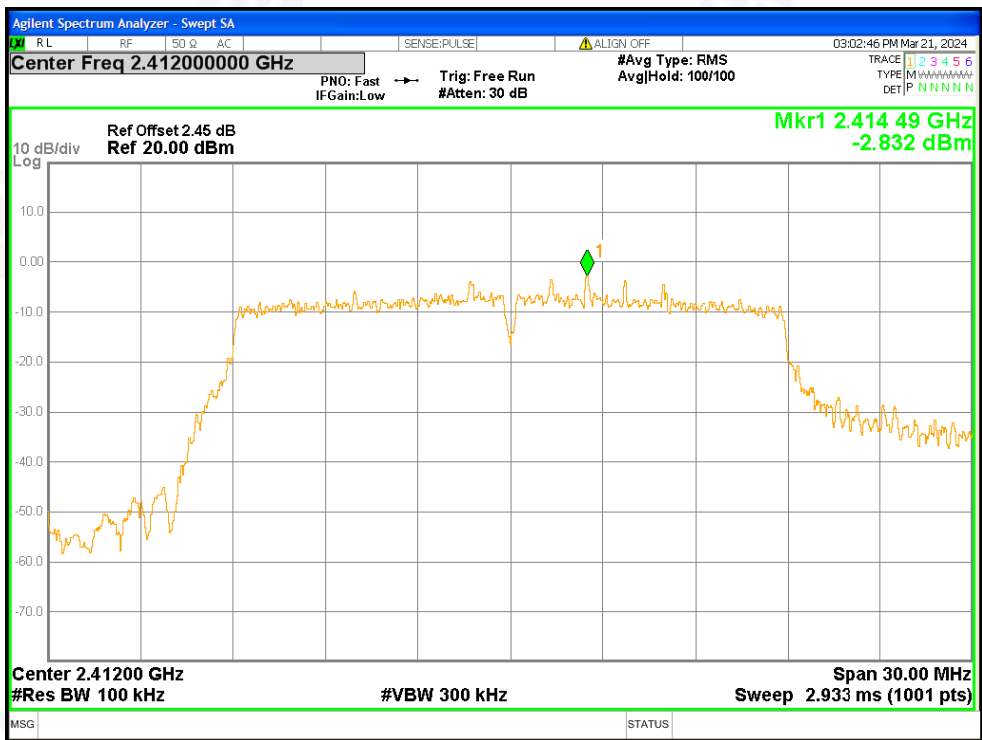
Band Edge NVNT g 2412MHz Ant1 Emission



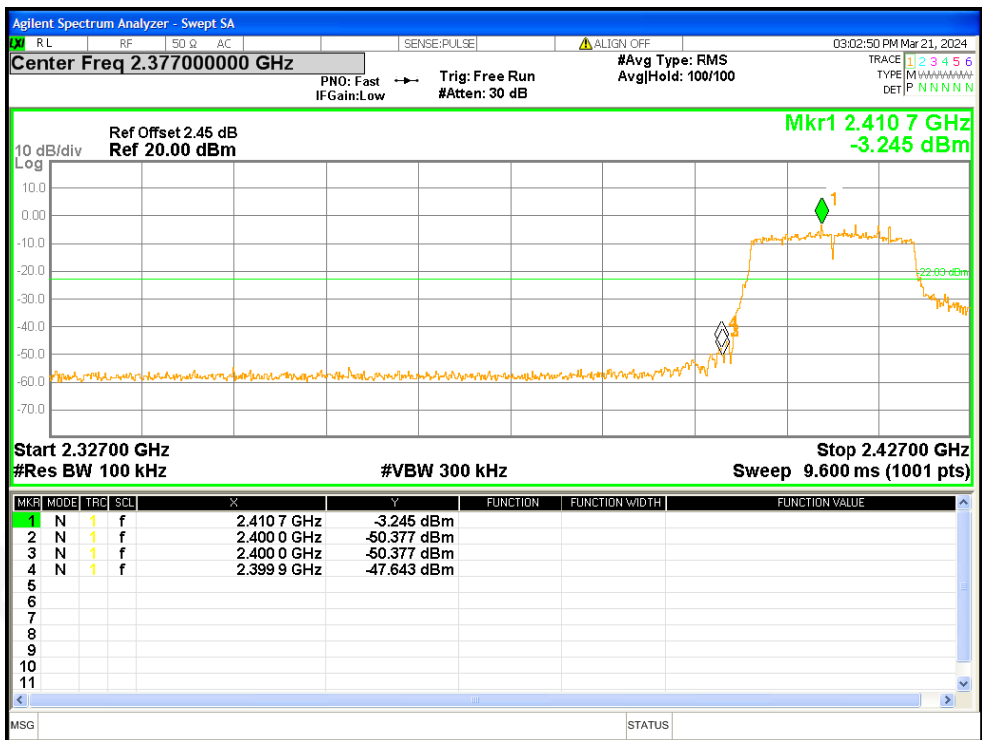
Band Edge NVNT g 2462MHz Ant1 Ref



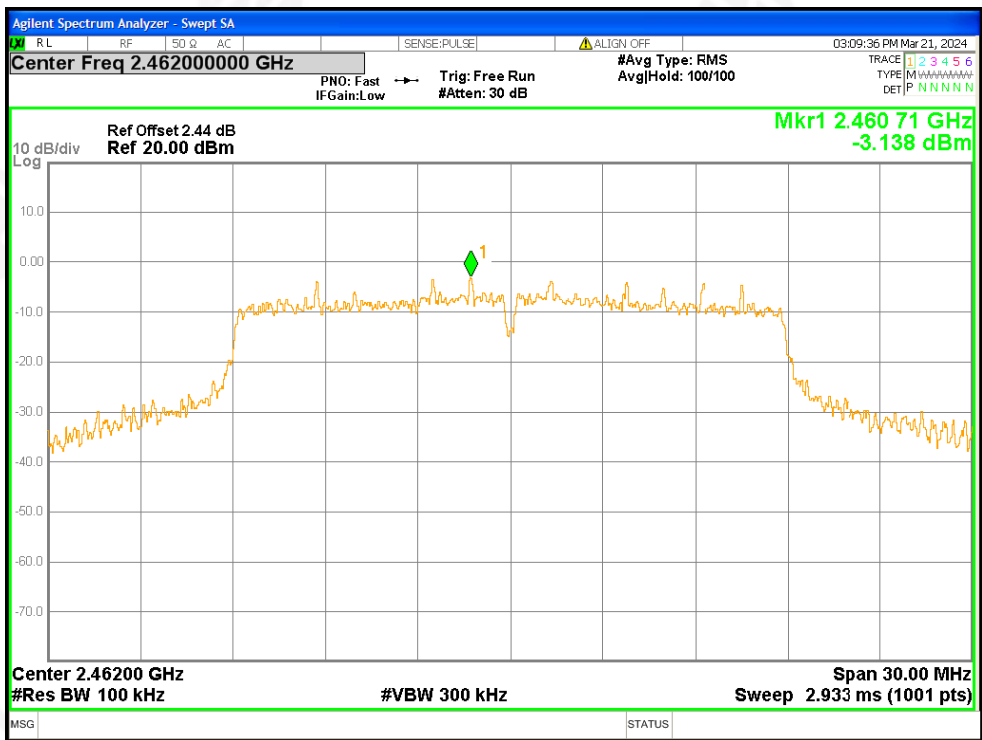
Band Edge NVNT g 2462MHz Ant1 Emission



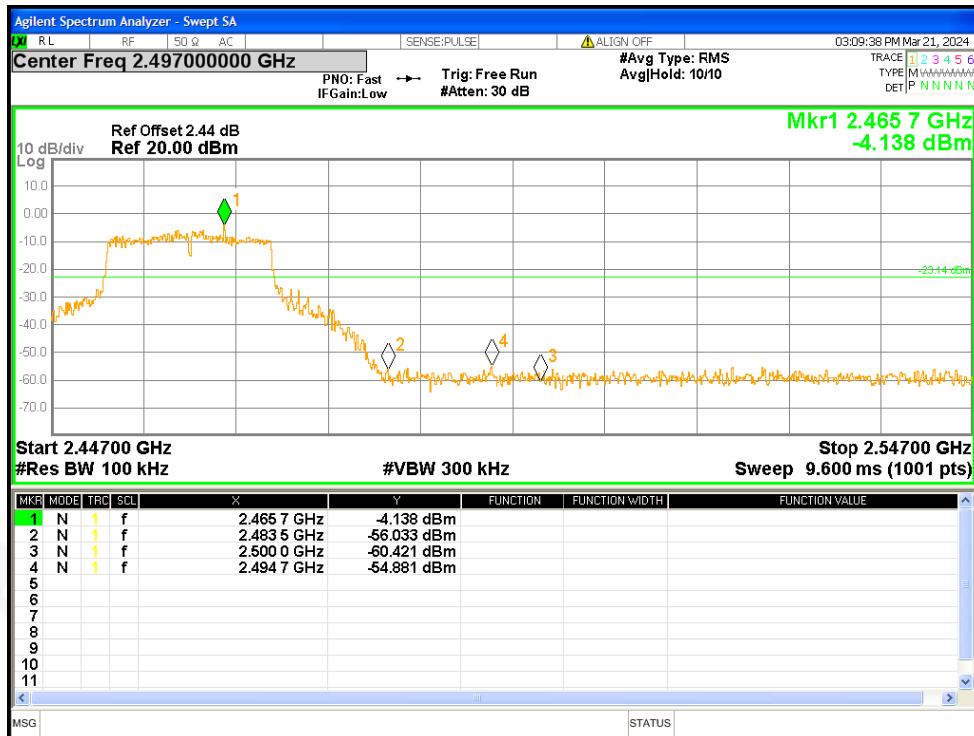
Band Edge NVNT n20 2412MHz Ant1 Ref



Band Edge NVNT n20 2412MHz Ant1 Emission



Band Edge NVNT n20 2462MHz Ant1 Ref



Band Edge NVNT n20 2462MHz Ant1 Emission



10. ANTENNA REQUIREMENT

Standard requirement:	FCC Part15 C Section 15.203 /247(c)	
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.		
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.		
EUT Antenna:		
The WIFI 2.4G antennas are two External detachable non-standard SMA port antennas, the best case gain for the antenna is 3dBi, reference to the appendix II for details		



11. TEST SETUP PHOTO

Reference to the appendix I for details.

12. EUT CONSTRUCTIONAL DETAILS

Reference to the appendix II for details.

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