FCC TEST REPORT
FCC ID:2AVZ4-BUTTER-BOT

Report Number.....:	**ZKT-25122631233E-1**
Date of Test.....	Mar. 12, 2026 - Mar. 20, 2026
Date of issue.....:	Mar. 20, 2026
Total number of pages.....	74
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 .....:	**CircuitMess d.o.o.**
Address .....:	Maksimilijana Vrhovca 11, 47000 Karlovac, Croatia
Manufacturer's name .....:	**CircuitMess d.o.o.**
Address .....:	Maksimilijana Vrhovca 11, 47000 Karlovac, Croatia
Test specification:	
Standard.....:	FCC CFR Title 47 Part 15 Subpart C Section 15.247 ANSI C63.10-2020+Cor 1-2023
Test procedure.....:	/
Non-standard test method .....:	N/A
Test Report Form No.....:	TRF-EL-110_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.....:	**BUTTER BOT**
Trademark .....:	N/A
Model/Type reference.....:	CM-BUTTER-BOT
Ratings.....:	Input: 5V⎓0.5A Battery: 3.7V, 1000mAh, 3.7Wh

,

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)..... :	Jim Liu
Reviewer (name + signature)..... :	Jackson Fang
Approved (name + signature)..... :	Lake Xie

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1. VERSION

Report No.	Version	Description	Approved
ZKT-25122631233E-1	Rev.01	Initial issue of report	Mar. 20, 2026

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C			
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)	6dB Occupied Bandwidth	PASS	
FCC part 15.247 (e)	Power Spectral Density	PASS	
FCC part 15.247(d)	Conducted Unwanted emissions and Band Edge	PASS	
FCC part 15.205/15.209	Spurious Emission	PASS	
ANSI C63.10-2020+Cor 1-2023	Duty cycle	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

2.1 TEST FACILITY

Test lab: 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

FCC Test Firm Registration Number: 927491
Designation Number: CN1431
IC Registered No.: 27033
CAB identifier: CN0110

2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ± 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 camber Radiated spurious emission(9KHz-30MHz)	U=4.5dB
2	3m camber 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℃
13	Duty Cycle	U=1.3dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Product Name:	BUTTER BOT
Model No.:	CM-BUTTER-BOT
Model Different.:	N/A
Serial No.:	N/A
Hardware Version:	H1.0
Software Version:	S1.0
Sample(s) Status:	Engineer sample
Channel numbers:	802.11b/g/n (20M): 11CH 802.11n (40M): 7CH
Channel separation:	5MHz
Modulation technology:	802.11b: Direct Sequence Spread Spectrum(DSSS) 802.11g/n: Orthogonal Frequency Division Multiplexing(OFDM)
Data Rate	802.11b: 1/2/5.5/11Mbit/s 802.11g: 6/9/12/24/18/36/48/54Mbit/s 802.11n: MCS0-MCS7
Antenna Type:	Chip ANT
Antenna gain:	2.12dBi
Power supply:	Input: 5V⎓0.5A Battery: 3.7V, 1000mAh, 3.7Wh

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/g/n (20M)	802.11n(40M)
Lowest channel	2412MHz	2422MHz
Middle channel	2437MHz	2437MHz
Highest channel	2462MHz	2452MHz

3.2 DESCRIPTION OF TEST MODES

Transmitting mode	Keep the EUT in continuously transmitting mode
Remark: During the test, 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. For battery operated equipment, the equipment tests shall be performed using a new battery.	

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:

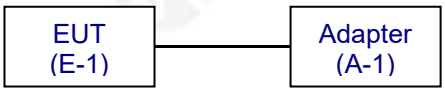
Pre-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

Mode	802.11b	802.11g	802.11n	
Data rate	1Mbps	6Mbps	MCS0(HT0)	

Test Software	EspRFTestTool
Power level setup	0dbm

3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emission



Radiated Emission

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	Brand	Model/Type No.	Series No.	Note
E-1	BUTTER BOT	N/A	CM-BUTTER-BOT	N/A	EUT
A-1	Adapter	GREEN	X569	N/A	Auxiliary

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) EUT is tested with new battery.

3.5EQUIPMENTS LIST FOR ALL TEST ITEMS

Conduction 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	Sep. 23, 2025	Sep. 22, 2026
2	LISN	CYBERTEK	EM5040A	E1850400149	N/A	Sep. 19, 2025	Sep. 18, 2026
3	Test Cable	N/A	C-01	N/A	N/A	May. 22, 2025	May. 21, 2026
4	EMI Test Receiver	R&S	ESCI3	101393	4.42 SP3	Oct. 24, 2025	Oct. 23, 2026
5	EMC Software	Frad	EZ-EMC	Ver.EMC-CON 3A1.1	N/A	\	\

Radiation Emissions & Radiation Spurious Emissions Test

Item	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	N9020A	MY55370835	A.17.05	Sep. 20, 2025	Sep. 19, 2026
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Sep. 20, 2025	Sep. 19, 2026
3	EMI Test Receiver (9kHz-7GHz)	R&S	ESCI7	100969	4.32	Oct. 24, 2025	Oct. 23, 2026
4	Bilog Antenna (30MHz-1500MHz)	Schwarzbeck	VULB9168	00877	N/A	Sep. 20, 2025	Sep. 19, 2026
5	Horn Antenna (1GHz-18GHz)	Agilent	AH-118	071145	N/A	Sep. 20, 2025	Sep. 19, 2026
6	Horn Antenna (15GHz-40GHz)	A.H.System	SAS-574	588	N/A	Sep. 30, 2025	Sep. 29, 2026
7	Loop Antenna	TESEQ	HLA6121	58357	N/A	Sep. 20, 2025	Sep. 19, 2026
8	Amplifier (30-1000MHz)	EM Electronics	EM330 Amplifier	60747	N/A	Sep. 19, 2025	Sep. 18, 2026
9	Amplifier (1GHz-26.5GHz)	HuiPu	8449B	3008A00315	N/A	Sep. 19, 2025	Sep. 18, 2026
10	Amplifier (500MHz-40GHz)	QuanJuDa	DLE-161	097	N/A	Oct. 24, 2025	Oct. 23, 2026
11	Test Cable	N/A	R-01	N/A	N/A	May. 25, 2025	May. 24, 2026
12	Test Cable	N/A	R-02	N/A	N/A	May. 25, 2025	May. 24, 2026
13	Test Cable	N/A	R-03	N/A	N/A	May. 25, 2025	May. 24, 2026
14	D.C. Power Supply	LongWei	TPR-6405D	N/A	N/A	\	\
15	EMC Software	Frad	EZ-EMC	Ver.EMC-CO N 3A1.1	N/A	\	\
16	Turntable	MF	MF-7802BS	N/A	N/A	\	\
17	Antenna tower	MF	MF-7802BS	N/A	N/A	\	\

RF Conducted Test

Item	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	N9020A	MY55370835	A.17.05	Sep. 20, 2025	Sep. 19, 2026
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Sep. 20, 2025	Sep. 19, 2026
3	Test Cable	N/A	RF-01	N/A	N/A	May. 25, 2025	May. 24, 2026
4	Test Cable	N/A	RF-02	N/A	N/A	May. 25, 2025	May. 24, 2026
5	Test Cable	N/A	RF-03	N/A	N/A	May. 25, 2025	May. 24, 2026
6	ESG Signal Generator	Agilent	E4421B	N/A	B.03.84	Sep. 19, 2025	Sep. 18, 2026
7	Signal Generator	Agilent	N5182A	N/A	A.01.87	Sep. 20, 2025	Sep. 19, 2026
8	Magnetic Field Probe Tester	Narda	ELT-400	0-0344/M-1752	N/A	Sep. 25, 2025	Sep. 24, 2026
9	SHIELD BOX	TESCOM	TC-5970C	5970C015553	N/A	Dec. 18, 2025	Dec. 17, 2026
10	Wideband Radio Communication Test	R&S	CMW500	106504	V 3.7.22	Sep. 28, 2025	Sep. 27, 2026
11	MWRF Power Meter Test system	MW	MW100-RFCB	N/A	N/A	Sep. 19, 2025	Sep. 18, 2026
12	D.C. Power Supply	LongWei	TPR-6405 D	N/A	N/A	\	\
13	RF Software	MW	MTS8310	V2.0.0.0	N/A	\	\

4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10-2020+Cor 1-2023
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.

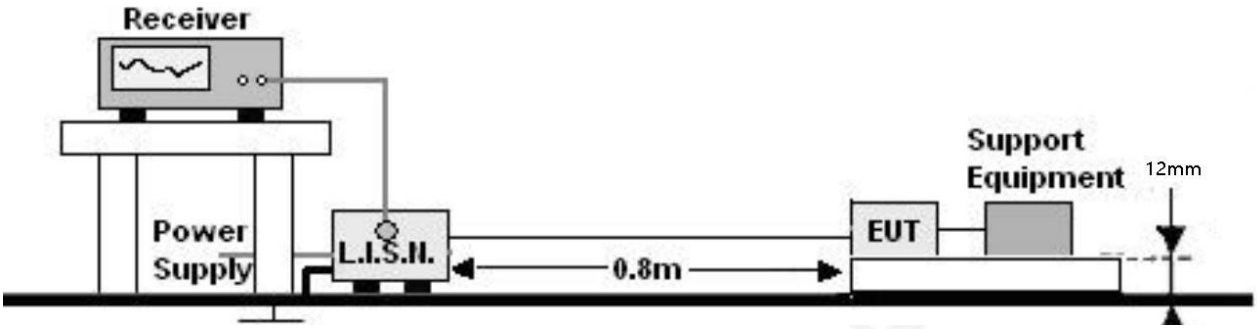
4.1.2 TEST PROCEDURE

a. The EUT was placed 0.8 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.
b. 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.
c. 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.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. 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

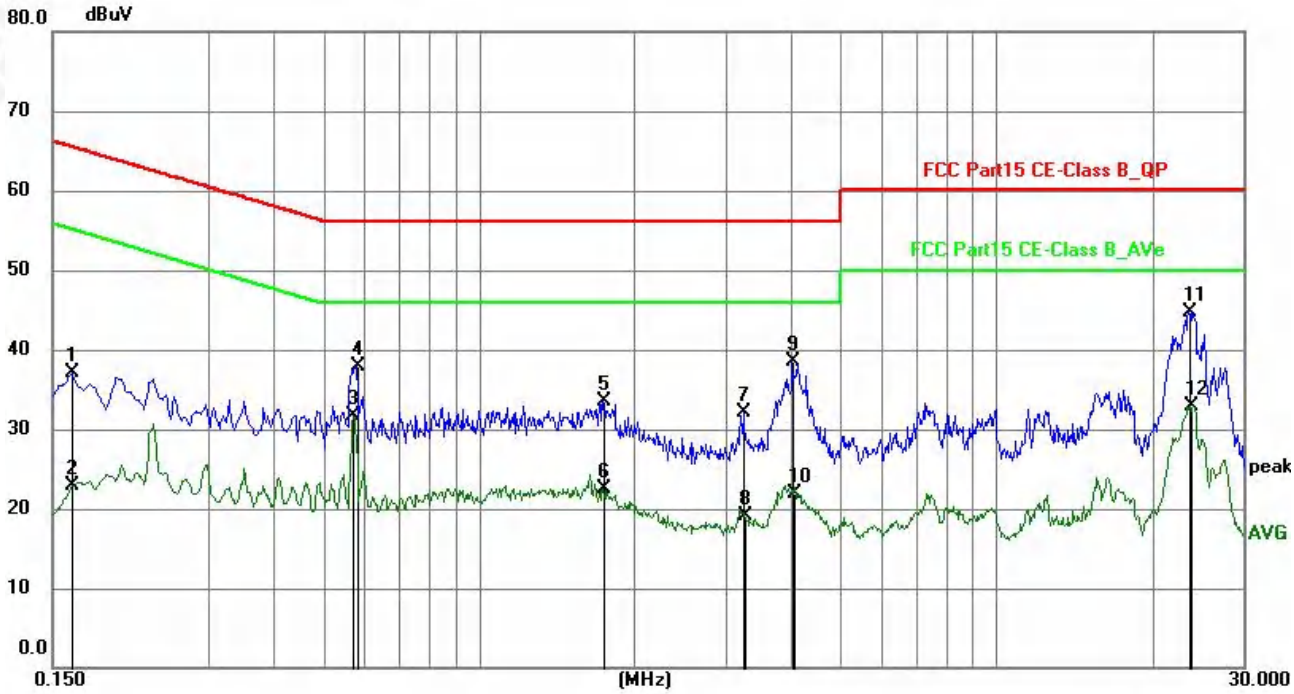


4.1.5 EUT OPERATING CONDITIONS

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.

4.1.6 TEST RESULT

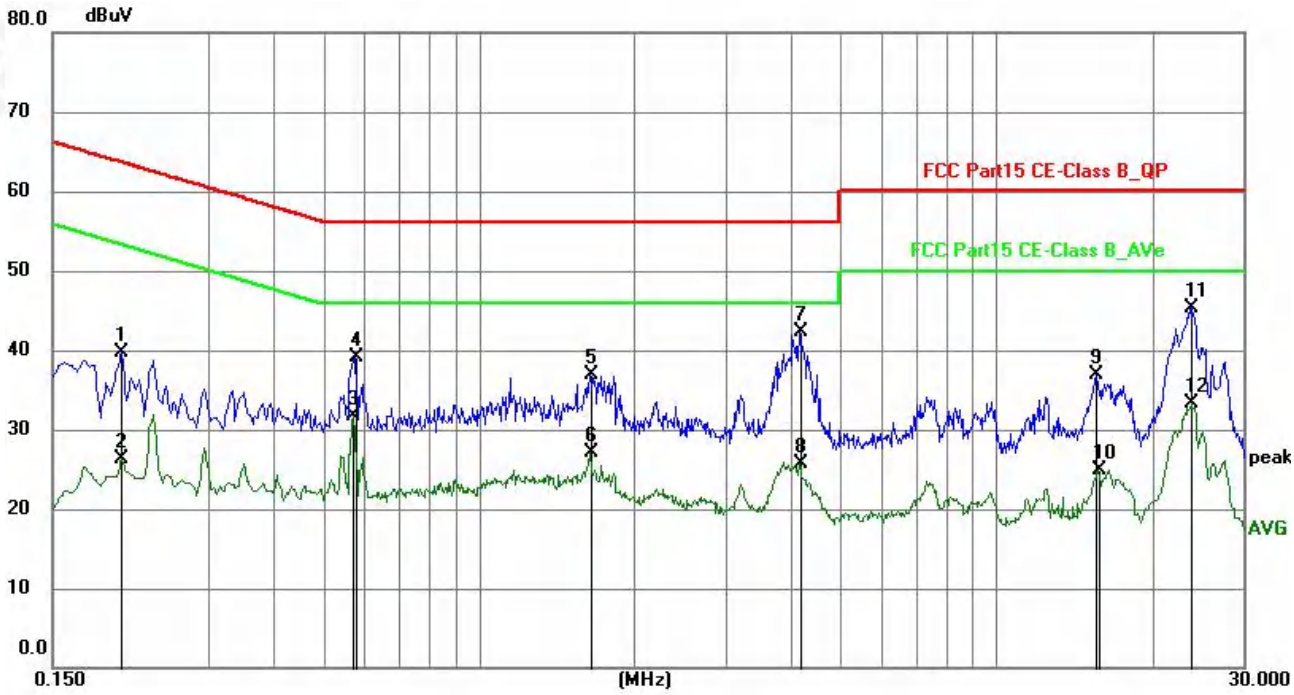
Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	L
Test Voltage:	AC 120V/60Hz	Test Mode:	TX 802.11n20 - 2412MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1635	17.48	19.66	37.14	65.28	-28.14	QP	P	
2	0.1640	3.22	19.66	22.88	55.26	-32.38	AVG	P	
3	0.5726	12.00	19.63	31.63	46.00	-14.37	AVG	P	
4	0.5816	18.22	19.63	37.85	56.00	-18.15	QP	P	
5	1.7381	13.89	19.67	33.56	56.00	-22.44	QP	P	
6	1.7381	2.76	19.67	22.43	46.00	-23.57	AVG	P	
7	3.2458	12.36	19.70	32.06	56.00	-23.94	QP	P	
8	3.2595	-0.52	19.70	19.18	46.00	-26.82	AVG	P	
9	4.0289	18.78	19.71	38.49	56.00	-17.51	QP	P	
10	4.0693	2.17	19.71	21.88	46.00	-24.12	AVG	P	
11	23.6310	24.94	19.78	44.72	60.00	-15.28	QP	P	
12	23.6892	13.15	19.78	32.93	50.00	-17.07	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. Final Level = Reading level + Correct Factor.
4. Correct Factor = Lisn factor+ Cable loss factor + limiter factor.
5. Margin = Measurement Level-Limit.
6. The test data shows only the worst case TX 802.11n20 - 2412MHz.

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	N
Test Voltage:	AC 120V/60Hz	Test Mode:	TX 802.11n20 - 2412MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2038	20.11	19.64	39.75	63.45	-23.70	QP	P	
2	0.2038	6.73	19.64	26.37	53.45	-27.08	AVG	P	
3	0.5726	12.15	19.63	31.78	46.00	-14.22	AVG	P	
4	0.5774	19.57	19.62	39.19	56.00	-16.81	QP	P	
5	1.6391	17.17	19.66	36.83	56.00	-19.17	QP	P	
6	1.6391	7.53	19.66	27.19	46.00	-18.81	AVG	P	
7	4.1595	22.56	19.69	42.25	56.00	-13.75	QP	P	
8	4.1595	6.00	19.69	25.69	46.00	-20.31	AVG	P	
9	15.5983	17.18	19.75	36.93	60.00	-23.07	QP	P	
10	15.7469	5.08	19.75	24.83	50.00	-25.17	AVG	P	
11	23.7525	25.57	19.75	45.32	60.00	-14.68	QP	P	
12	23.8736	13.46	19.75	33.21	50.00	-16.79	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. Final Level = Reading level + Correct Factor.
4. Correct Factor = Lisn factor+ Cable loss factor + limiter factor.
5. Margin = Measurement Level-Limit.
6. The test data shows only the worst case TX 802.11n20 - 2412MHz.

4.2 RADIATED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.209
Test Method:	ANSI C63.10-2020+Cor 1-2023
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:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoiccamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of avariable-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 1meter) 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 10dBmargin 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 between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form 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:

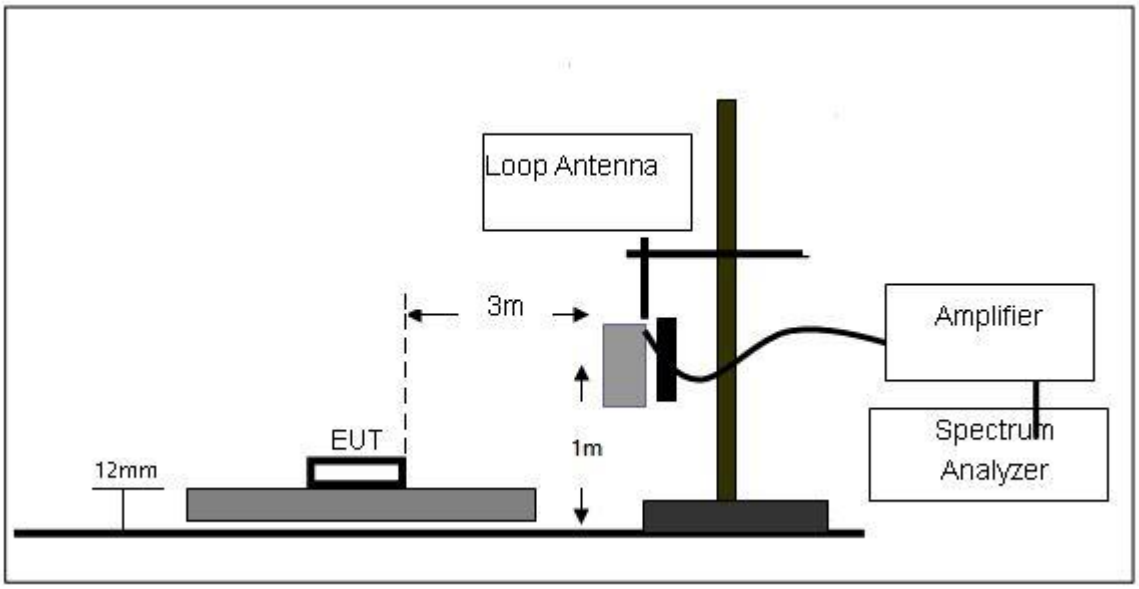
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

4.2.3 DEVIATION FROM TEST STANDARD

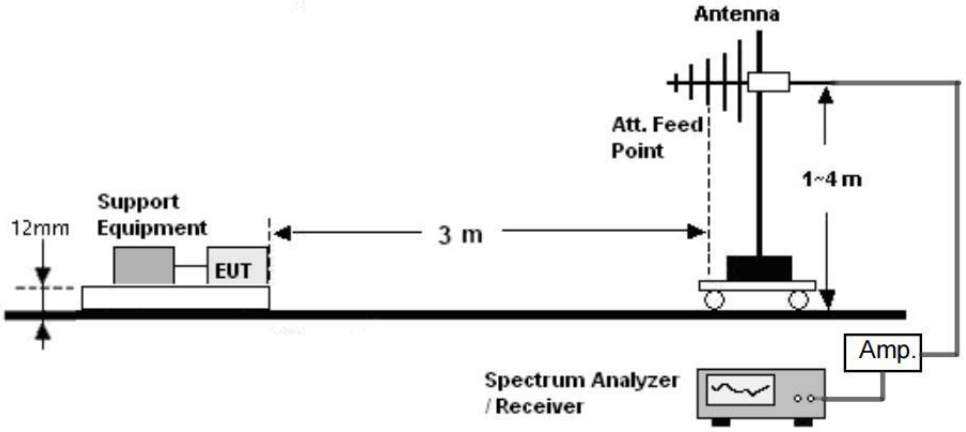
No deviation

4.2.4 TEST SETUP

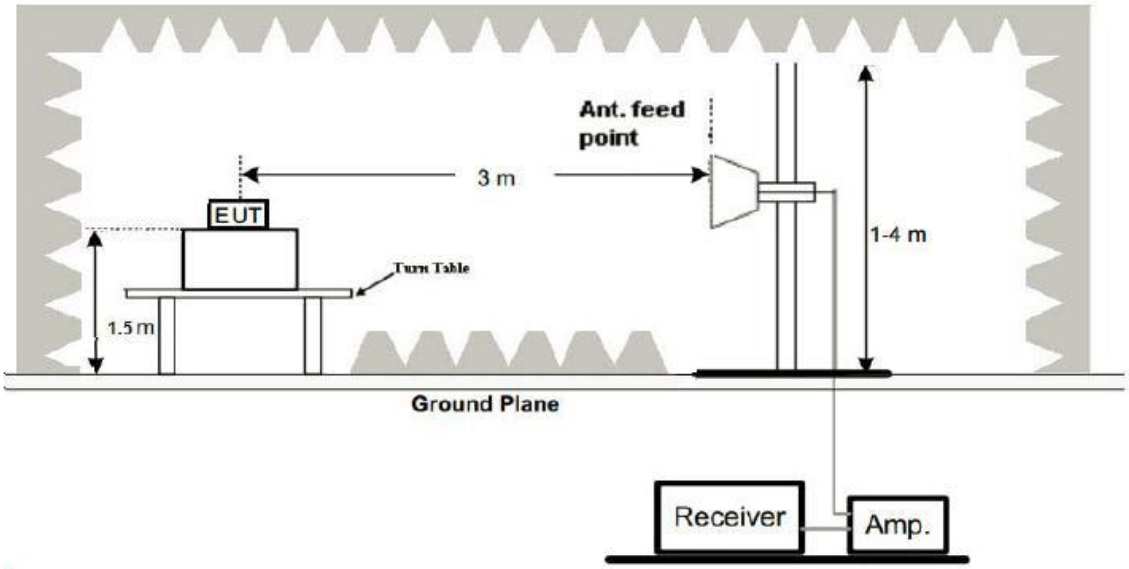
（A）Radiated Emission Test-Up Frequency Below 30MHz



（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 4.2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

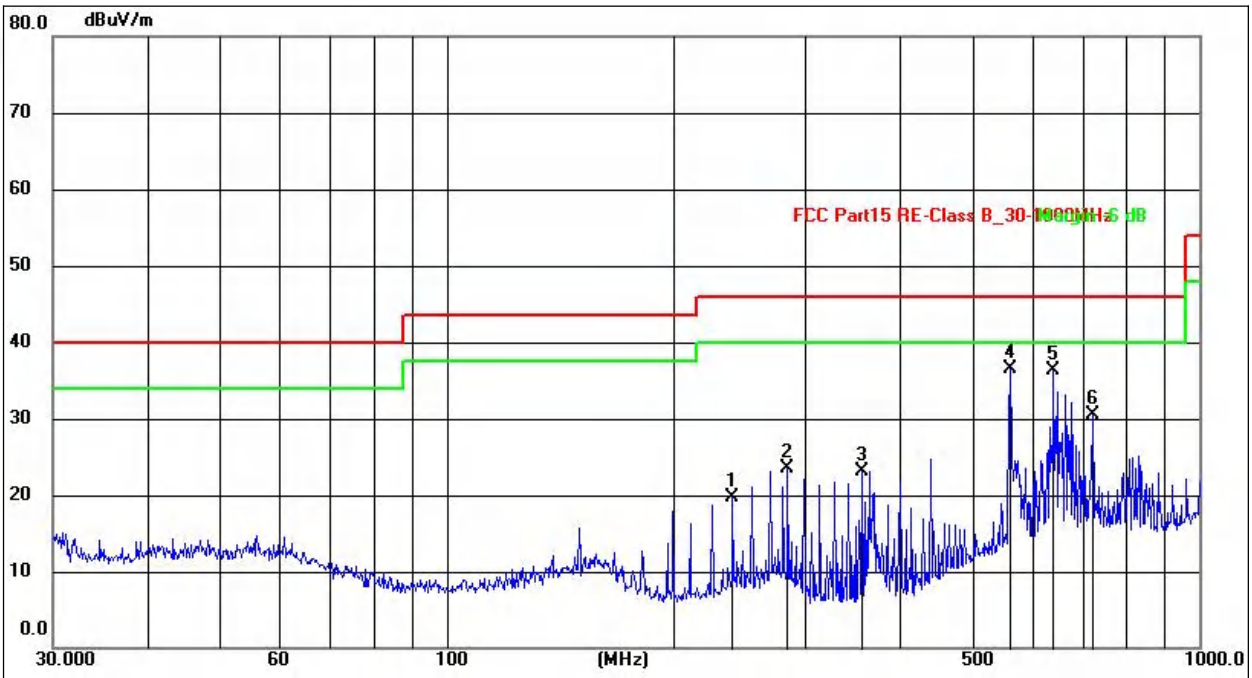
4.2.6 TEST RESULTS

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

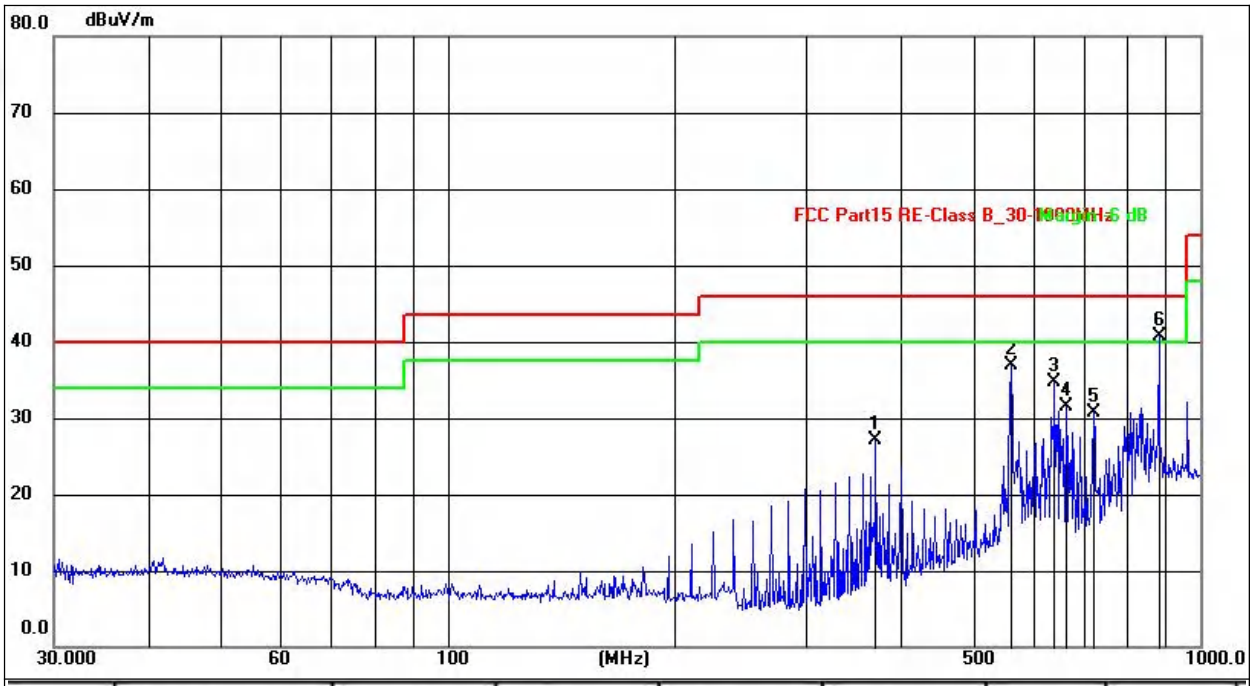
Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 3.7V	Test Mode :	TX 802.11n20 - 2412MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	239.9873	39.61	-20.00	19.61	46.00	-26.39	QP
2	283.9791	42.67	-19.21	23.46	46.00	-22.54	QP
3	356.6757	44.64	-21.46	23.18	46.00	-22.82	QP
4	560.6928	51.70	-15.21	36.49	46.00	-9.51	QP
5	640.6109	49.83	-13.52	36.31	46.00	-9.69	QP
6	721.7258	43.16	-12.59	30.57	46.00	-15.43	QP

Remarks:
1. An initial pre-scan was performed on the peak detector.
2. Quasi - Peak measurement were performed at the frequencies with maximized peak emission.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Final Level = Reading level + Correct Factor.
5. Correct Factor = Antenna factor+ Cable loss factor - Amplifier factor.
6. Margin = Measurement Level-Limit.
7. The test data shows only the worst case TX 802.11n20 - 2412MHz.

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	DC 3.7V	Test Mode :	TX 802.11n20 - 2412MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	370.7022	47.85	-20.74	27.11	46.00	-18.89	QP
2	560.6928	51.53	-14.55	36.98	46.00	-9.02	QP
3	640.6109	47.95	-13.28	34.67	46.00	-11.33	QP
4	663.4728	44.80	-13.33	31.47	46.00	-14.53	QP
5	721.7258	43.31	-12.60	30.71	46.00	-15.29	QP
6	881.4067	48.43	-7.63	40.80	46.00	-5.20	QP

Remarks:
1. An initial pre-scan was performed on the peak detector.
2. Quasi - Peak measurement were performed at the frequencies with maximized peak emission.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Final Level = Reading level + Correct Factor.
5. Correct Factor = Antenna factor+ Cable loss factor - Amplifier factor.
6. Margin = Measurement Level-Limit.
7. The test data shows only the worst case TX 802.11n20 - 2412MHz.

1GHz~25GHz

802.11b

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel:2412MHz									
V	4824.00	54.96	30.55	5.77	24.66	54.84	74.00	-19.16	PK
V	4824.00	43.17	30.55	5.77	24.66	43.05	54.00	-10.95	AV
V	7236.00	53.85	30.33	6.32	24.55	54.39	74.00	-19.61	PK
V	7236.00	43.77	30.33	6.32	24.55	44.31	54.00	-9.69	AV
V	9648.00	51.12	30.85	7.45	24.69	52.41	74.00	-21.59	PK
V	9648.00	43.91	30.85	7.45	24.69	45.20	54.00	-8.80	AV
V	12060.00	51.34	31.02	8.99	25.57	54.88	74.00	-19.12	PK
V	12060.00	43.24	31.02	8.99	25.57	46.78	54.00	-7.22	AV
H	4824.00	54.77	30.55	5.77	24.66	54.65	74.00	-19.35	PK
H	4824.00	43.15	30.55	5.77	24.66	43.03	54.00	-10.97	AV
H	7236.00	50.55	30.33	6.32	24.55	51.09	74.00	-22.91	PK
H	7236.00	43.22	30.33	6.32	24.55	43.76	54.00	-10.24	AV
H	9648.00	53.05	30.85	7.45	24.69	54.34	74.00	-19.66	PK
H	9648.00	43.17	30.85	7.45	24.69	44.46	54.00	-9.54	AV
H	12060.00	54.38	31.02	8.99	25.57	57.92	74.00	-16.08	PK
H	12060.00	43.31	31.02	8.99	25.57	46.85	54.00	-7.15	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Middle Channel:2437MHz									
V	4874.00	53.38	30.55	5.77	24.66	53.26	74.00	-20.74	PK
V	4874.00	43.98	30.55	5.77	24.66	43.86	54.00	-10.14	AV
V	7311.00	51.87	30.33	6.32	24.55	52.41	74.00	-21.59	PK
V	7311.00	43.40	30.33	6.32	24.55	43.94	54.00	-10.06	AV
V	9748.00	53.08	30.85	7.45	24.69	54.37	74.00	-19.63	PK
V	9748.00	43.01	30.85	7.45	24.69	44.30	54.00	-9.70	AV
V	12185.00	50.00	31.02	8.99	25.57	53.54	74.00	-20.46	PK
V	12185.00	43.99	31.02	8.99	25.57	47.53	54.00	-6.47	AV
H	4874.00	53.19	30.55	5.77	24.66	53.07	74.00	-20.93	PK
H	4874.00	43.23	30.55	5.77	24.66	43.11	54.00	-10.89	AV
H	7311.00	50.29	30.33	6.32	24.55	50.83	74.00	-23.17	PK
H	7311.00	43.62	30.33	6.32	24.55	44.16	54.00	-9.84	AV
H	9748.00	50.39	30.85	7.45	24.69	51.68	74.00	-22.32	PK
H	9748.00	43.37	30.85	7.45	24.69	44.66	54.00	-9.34	AV
H	12185.00	54.08	31.02	8.99	25.57	57.62	74.00	-16.38	PK
H	12185.00	43.62	31.02	8.99	25.57	47.16	54.00	-6.84	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
High Channel:2462MHz									
V	4924.00	51.76	30.55	5.77	24.66	51.64	74.00	-22.36	PK
V	4924.00	43.89	30.55	5.77	24.66	43.77	54.00	-10.23	AV
V	7386.00	50.84	30.33	6.32	24.55	51.38	74.00	-22.62	PK
V	7386.00	43.35	30.33	6.32	24.55	43.89	54.00	-10.11	AV
V	9848.00	50.50	30.85	7.45	24.69	51.79	74.00	-22.21	PK
V	9848.00	43.84	30.85	7.45	24.69	45.13	54.00	-8.87	AV
V	12310.00	54.85	31.02	8.99	25.57	58.39	74.00	-15.61	PK
V	12310.00	43.58	31.02	8.99	25.57	47.12	54.00	-6.88	AV
H	4924.00	52.48	30.55	5.77	24.66	52.36	74.00	-21.64	PK
H	4924.00	43.19	30.55	5.77	24.66	43.07	54.00	-10.93	AV
H	7386.00	54.34	30.33	6.32	24.55	54.88	74.00	-19.12	PK
H	7386.00	43.21	30.33	6.32	24.55	43.75	54.00	-10.25	AV
H	9848.00	53.98	30.85	7.45	24.69	55.27	74.00	-18.73	PK
H	9848.00	43.28	30.85	7.45	24.69	44.57	54.00	-9.43	AV
H	12310.00	54.55	31.02	8.99	25.57	58.09	74.00	-15.91	PK
H	12310.00	43.03	31.02	8.99	25.57	46.57	54.00	-7.43	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

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel:2412MHz									
V	4824.00	50.75	30.55	5.77	24.66	50.63	74.00	-23.37	PK
V	4824.00	43.74	30.55	5.77	24.66	43.62	54.00	-10.38	AV
V	7236.00	54.57	30.33	6.32	24.55	55.11	74.00	-18.89	PK
V	7236.00	43.90	30.33	6.32	24.55	44.44	54.00	-9.56	AV
V	9648.00	51.50	30.85	7.45	24.69	52.79	74.00	-21.21	PK
V	9648.00	43.89	30.85	7.45	24.69	45.18	54.00	-8.82	AV
V	12060.00	51.14	31.02	8.99	25.57	54.68	74.00	-19.32	PK
V	12060.00	43.77	31.02	8.99	25.57	47.31	54.00	-6.69	AV
H	4824.00	54.13	30.55	5.77	24.66	54.01	74.00	-19.99	PK
H	4824.00	43.38	30.55	5.77	24.66	43.26	54.00	-10.74	AV
H	7236.00	51.03	30.33	6.32	24.55	51.57	74.00	-22.43	PK
H	7236.00	43.67	30.33	6.32	24.55	44.21	54.00	-9.79	AV
H	9648.00	51.87	30.85	7.45	24.69	53.16	74.00	-20.84	PK
H	9648.00	43.89	30.85	7.45	24.69	45.18	54.00	-8.82	AV
H	12060.00	50.28	31.02	8.99	25.57	53.82	74.00	-20.18	PK
H	12060.00	43.55	31.02	8.99	25.57	47.09	54.00	-6.91	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Middle Channel:2437MHz									
V	4874.00	54.80	30.55	5.77	24.66	54.68	74.00	-19.32	PK
V	4874.00	43.20	30.55	5.77	24.66	43.08	54.00	-10.92	AV
V	7311.00	51.41	30.33	6.32	24.55	51.95	74.00	-22.05	PK
V	7311.00	43.16	30.33	6.32	24.55	43.70	54.00	-10.30	AV
V	9748.00	53.95	30.85	7.45	24.69	55.24	74.00	-18.76	PK
V	9748.00	43.05	30.85	7.45	24.69	44.34	54.00	-9.66	AV
V	12185.00	54.97	31.02	8.99	25.57	58.51	74.00	-15.49	PK
V	12185.00	43.99	31.02	8.99	25.57	47.53	54.00	-6.47	AV
H	4874.00	51.02	30.55	5.77	24.66	50.90	74.00	-23.10	PK
H	4874.00	43.27	30.55	5.77	24.66	43.15	54.00	-10.85	AV
H	7311.00	53.01	30.33	6.32	24.55	53.55	74.00	-20.45	PK
H	7311.00	43.59	30.33	6.32	24.55	44.13	54.00	-9.87	AV
H	9748.00	50.21	30.85	7.45	24.69	51.50	74.00	-22.50	PK
H	9748.00	43.31	30.85	7.45	24.69	44.60	54.00	-9.40	AV
H	12185.00	52.65	31.02	8.99	25.57	56.19	74.00	-17.81	PK
H	12185.00	43.89	31.02	8.99	25.57	47.43	54.00	-6.57	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
High Channel:2462MHz									
V	4924.00	53.04	30.55	5.77	24.66	52.92	74.00	-21.08	PK
V	4924.00	43.92	30.55	5.77	24.66	43.80	54.00	-10.20	AV
V	7386.00	52.07	30.33	6.32	24.55	52.61	74.00	-21.39	PK
V	7386.00	43.39	30.33	6.32	24.55	43.93	54.00	-10.07	AV
V	9848.00	51.98	30.85	7.45	24.69	53.27	74.00	-20.73	PK
V	9848.00	43.22	30.85	7.45	24.69	44.51	54.00	-9.49	AV
V	12310.00	51.30	31.02	8.99	25.57	54.84	74.00	-19.16	PK
V	12310.00	43.88	31.02	8.99	25.57	47.42	54.00	-6.58	AV
H	4924.00	51.68	30.55	5.77	24.66	51.56	74.00	-22.44	PK
H	4924.00	43.28	30.55	5.77	24.66	43.16	54.00	-10.84	AV
H	7386.00	51.50	30.33	6.32	24.55	52.04	74.00	-21.96	PK
H	7386.00	43.43	30.33	6.32	24.55	43.97	54.00	-10.03	AV
H	9848.00	52.25	30.85	7.45	24.69	53.54	74.00	-20.46	PK
H	9848.00	43.02	30.85	7.45	24.69	44.31	54.00	-9.69	AV
H	12310.00	54.67	31.02	8.99	25.57	58.21	74.00	-15.79	PK
H	12310.00	43.56	31.02	8.99	25.57	47.10	54.00	-6.90	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

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel:2412MHz									
V	4824.00	51.79	30.55	5.77	24.66	51.67	74.00	-22.33	PK
V	4824.00	43.73	30.55	5.77	24.66	43.61	54.00	-10.39	AV
V	7236.00	50.18	30.33	6.32	24.55	50.72	74.00	-23.28	PK
V	7236.00	43.97	30.33	6.32	24.55	44.51	54.00	-9.49	AV
V	9648.00	54.26	30.85	7.45	24.69	55.55	74.00	-18.45	PK
V	9648.00	43.03	30.85	7.45	24.69	44.32	54.00	-9.68	AV
V	12060.00	52.59	31.02	8.99	25.57	56.13	74.00	-17.87	PK
V	12060.00	43.55	31.02	8.99	25.57	47.09	54.00	-6.91	AV
H	4824.00	53.14	30.55	5.77	24.66	53.02	74.00	-20.98	PK
H	4824.00	43.65	30.55	5.77	24.66	43.53	54.00	-10.47	AV
H	7236.00	54.47	30.33	6.32	24.55	55.01	74.00	-18.99	PK
H	7236.00	43.87	30.33	6.32	24.55	44.41	54.00	-9.59	AV
H	9648.00	54.13	30.85	7.45	24.69	55.42	74.00	-18.58	PK
H	9648.00	43.10	30.85	7.45	24.69	44.39	54.00	-9.61	AV
H	12060.00	51.38	31.02	8.99	25.57	54.92	74.00	-19.08	PK
H	12060.00	43.95	31.02	8.99	25.57	47.49	54.00	-6.51	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Middle Channel:2437MHz									
V	4874.00	51.36	30.55	5.77	24.66	51.24	74.00	-22.76	PK
V	4874.00	43.03	30.55	5.77	24.66	42.91	54.00	-11.09	AV
V	7311.00	52.50	30.33	6.32	24.55	53.04	74.00	-20.96	PK
V	7311.00	43.63	30.33	6.32	24.55	44.17	54.00	-9.83	AV
V	9748.00	53.22	30.85	7.45	24.69	54.51	74.00	-19.49	PK
V	9748.00	43.26	30.85	7.45	24.69	44.55	54.00	-9.45	AV
V	12185.00	54.72	31.02	8.99	25.57	58.26	74.00	-15.74	PK
V	12185.00	43.00	31.02	8.99	25.57	46.54	54.00	-7.46	AV
H	4874.00	54.34	30.55	5.77	24.66	54.22	74.00	-19.78	PK
H	4874.00	43.13	30.55	5.77	24.66	43.01	54.00	-10.99	AV
H	7311.00	53.64	30.33	6.32	24.55	54.18	74.00	-19.82	PK
H	7311.00	43.09	30.33	6.32	24.55	43.63	54.00	-10.37	AV
H	9748.00	54.45	30.85	7.45	24.69	55.74	74.00	-18.26	PK
H	9748.00	43.57	30.85	7.45	24.69	44.86	54.00	-9.14	AV
H	12185.00	52.66	31.02	8.99	25.57	56.20	74.00	-17.80	PK
H	12185.00	43.84	31.02	8.99	25.57	47.38	54.00	-6.62	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
High Channel:2462MHz									
V	4924.00	53.83	30.55	5.77	24.66	53.71	74.00	-20.29	PK
V	4924.00	43.58	30.55	5.77	24.66	43.46	54.00	-10.54	AV
V	7386.00	53.74	30.33	6.32	24.55	54.28	74.00	-19.72	PK
V	7386.00	43.01	30.33	6.32	24.55	43.55	54.00	-10.45	AV
V	9848.00	51.10	30.85	7.45	24.69	52.39	74.00	-21.61	PK
V	9848.00	43.72	30.85	7.45	24.69	45.01	54.00	-8.99	AV
V	12310.00	53.70	31.02	8.99	25.57	57.24	74.00	-16.76	PK
V	12310.00	43.58	31.02	8.99	25.57	47.12	54.00	-6.88	AV
H	4924.00	50.55	30.55	5.77	24.66	50.43	74.00	-23.57	PK
H	4924.00	43.11	30.55	5.77	24.66	42.99	54.00	-11.01	AV
H	7386.00	52.49	30.33	6.32	24.55	53.03	74.00	-20.97	PK
H	7386.00	43.03	30.33	6.32	24.55	43.57	54.00	-10.43	AV
H	9848.00	50.26	30.85	7.45	24.69	51.55	74.00	-22.45	PK
H	9848.00	43.82	30.85	7.45	24.69	45.11	54.00	-8.89	AV
H	12310.00	54.06	31.02	8.99	25.57	57.60	74.00	-16.40	PK
H	12310.00	43.83	31.02	8.99	25.57	47.37	54.00	-6.63	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.

802.11n40

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel:2422MHz									
V	4844.00	50.67	30.55	5.77	24.66	50.55	74.00	-23.45	PK
V	4844.00	43.91	30.55	5.77	24.66	43.79	54.00	-10.21	AV
V	7266.00	52.10	30.33	6.32	24.55	52.64	74.00	-21.36	PK
V	7266.00	43.99	30.33	6.32	24.55	44.53	54.00	-9.47	AV
V	9688.00	54.70	30.85	7.45	24.69	55.99	74.00	-18.01	PK
V	9688.00	43.90	30.85	7.45	24.69	45.19	54.00	-8.81	AV
V	12110.00	50.39	31.02	8.99	25.57	53.93	74.00	-20.07	PK
V	12110.00	43.36	31.02	8.99	25.57	46.90	54.00	-7.10	AV
H	4844.00	50.60	30.55	5.77	24.66	50.48	74.00	-23.52	PK
H	4844.00	43.44	30.55	5.77	24.66	43.32	54.00	-10.68	AV
H	7266.00	51.66	30.33	6.32	24.55	52.20	74.00	-21.80	PK
H	7266.00	43.65	30.33	6.32	24.55	44.19	54.00	-9.81	AV
H	9688.00	50.32	30.85	7.45	24.69	51.61	74.00	-22.39	PK
H	9688.00	43.86	30.85	7.45	24.69	45.15	54.00	-8.85	AV
H	12110.00	52.77	31.02	8.99	25.57	56.31	74.00	-17.69	PK
H	12110.00	43.02	31.02	8.99	25.57	46.56	54.00	-7.44	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Middle Channel:2437MHz									
V	4874.00	51.07	30.55	5.77	24.66	50.95	74.00	-23.05	PK
V	4874.00	43.28	30.55	5.77	24.66	43.16	54.00	-10.84	AV
V	7311.00	51.65	30.33	6.32	24.55	52.19	74.00	-21.81	PK
V	7311.00	43.43	30.33	6.32	24.55	43.97	54.00	-10.03	AV
V	9748.00	54.72	30.85	7.45	24.69	56.01	74.00	-17.99	PK
V	9748.00	43.95	30.85	7.45	24.69	45.24	54.00	-8.76	AV
V	12185.00	51.98	31.02	8.99	25.57	55.52	74.00	-18.48	PK
V	12185.00	43.45	31.02	8.99	25.57	46.99	54.00	-7.01	AV
H	4874.00	51.67	30.55	5.77	24.66	51.55	74.00	-22.45	PK
H	4874.00	43.62	30.55	5.77	24.66	43.50	54.00	-10.50	AV
H	7311.00	50.55	30.33	6.32	24.55	51.09	74.00	-22.91	PK
H	7311.00	43.98	30.33	6.32	24.55	44.52	54.00	-9.48	AV
H	9748.00	54.77	30.85	7.45	24.69	56.06	74.00	-17.94	PK
H	9748.00	43.48	30.85	7.45	24.69	44.77	54.00	-9.23	AV
H	12185.00	53.27	31.02	8.99	25.57	56.81	74.00	-17.19	PK
H	12185.00	43.31	31.02	8.99	25.57	46.85	54.00	-7.15	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
High Channel:2452MHz									
V	4904.00	51.90	30.55	5.77	24.66	51.78	74.00	-22.22	PK
V	4904.00	43.50	30.55	5.77	24.66	43.38	54.00	-10.62	AV
V	7356.00	52.24	30.33	6.32	24.55	52.78	74.00	-21.22	PK
V	7356.00	43.97	30.33	6.32	24.55	44.51	54.00	-9.49	AV
V	9808.00	53.36	30.85	7.45	24.69	54.65	74.00	-19.35	PK
V	9808.00	43.38	30.85	7.45	24.69	44.67	54.00	-9.33	AV
V	12260.00	50.95	31.02	8.99	25.57	54.49	74.00	-19.51	PK
V	12260.00	43.82	31.02	8.99	25.57	47.36	54.00	-6.64	AV
H	4904.00	51.58	30.55	5.77	24.66	51.46	74.00	-22.54	PK
H	4904.00	43.36	30.55	5.77	24.66	43.24	54.00	-10.76	AV
H	7356.00	50.40	30.33	6.32	24.55	50.94	74.00	-23.06	PK
H	7356.00	43.47	30.33	6.32	24.55	44.01	54.00	-9.99	AV
H	9808.00	53.72	30.85	7.45	24.69	55.01	74.00	-18.99	PK
H	9808.00	43.40	30.85	7.45	24.69	44.69	54.00	-9.31	AV
H	12260.00	51.81	31.02	8.99	25.57	55.35	74.00	-18.65	PK
H	12260.00	43.31	31.02	8.99	25.57	46.85	54.00	-7.15	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.

5. RADIATED BAND EMISSIONMEASUREMENT

5.1 TEST REQUIREMENT

Test Requirement:	FCC Part15 C Section 15.209 and 15.205
Test Method:	ANSI C63.10-2020+Cor 1-2023
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 1GHz	Peak	1MHz	3MHz	Peak
	Average	1MHz	3MHz	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:

a. 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.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a 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 and the rota 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 10dBmargin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

g. Test the EUT in the lowest channel, the Highest channel

Note:

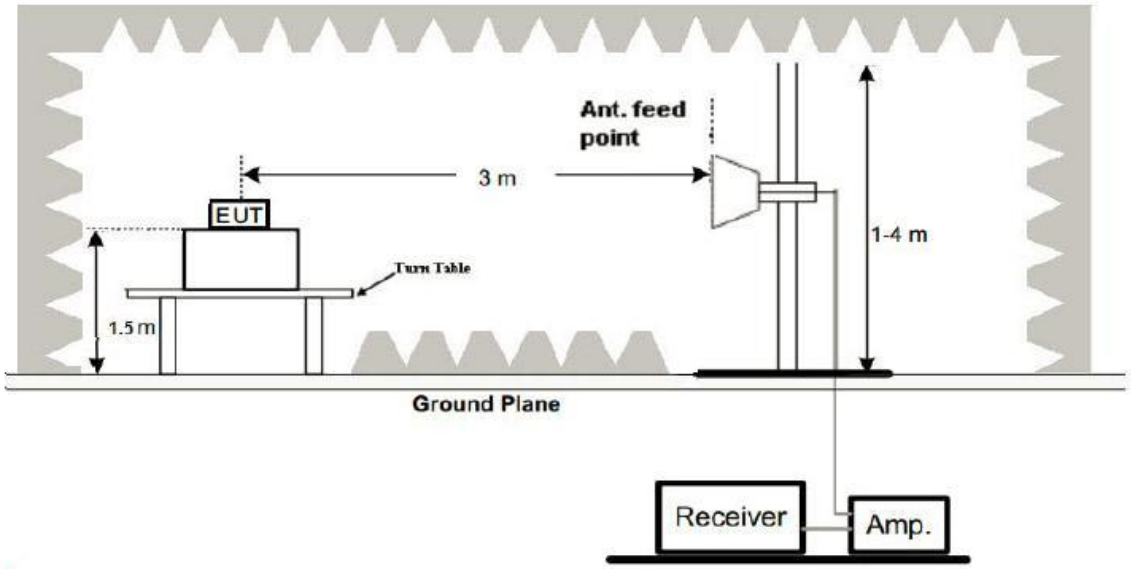
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

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 5.5 Unless otherwise a special operating condition is specified in the follows during the testing.

5.6 TEST RESULT

	Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type	Result
802.11b	LowChannel 2412MHz										
	H	2310.00	53.14	30.22	4.85	23.98	51.75	74.00	-22.25	PK	PASS
	H	2310.00	44.11	30.22	4.85	23.98	42.72	54.00	-11.28	AV	PASS
	H	2390.00	53.10	30.22	4.85	23.98	51.71	74.00	-22.29	PK	PASS
	H	2390.00	44.05	30.22	4.85	23.98	42.66	54.00	-11.34	AV	PASS
	V	2310.00	54.72	30.22	4.85	23.98	53.33	74.00	-20.67	PK	PASS
	V	2310.00	44.97	30.22	4.85	23.98	43.58	54.00	-10.42	AV	PASS
	V	2390.00	54.42	30.22	4.85	23.98	53.03	74.00	-20.97	PK	PASS
	V	2390.00	44.60	30.22	4.85	23.98	43.21	54.00	-10.79	AV	PASS
	HighChannel 2462MHz										
	H	2483.50	54.65	30.22	4.85	23.98	53.26	74.00	-20.74	PK	PASS
	H	2483.50	44.42	30.22	4.85	23.98	43.03	54.00	-10.97	AV	PASS
	H	2500.00	53.31	30.22	4.85	23.98	51.92	74.00	-22.08	PK	PASS
	H	2500.00	44.22	30.22	4.85	23.98	42.83	54.00	-11.17	AV	PASS
	V	2483.50	53.33	30.22	4.85	23.98	51.94	74.00	-22.06	PK	PASS
	V	2483.50	44.06	30.22	4.85	23.98	42.67	54.00	-11.33	AV	PASS
	V	2500.00	53.50	30.22	4.85	23.98	52.11	74.00	-21.89	PK	PASS
	V	2500.00	44.20	30.22	4.85	23.98	42.81	54.00	-11.19	AV	PASS
802.11g	LowChannel 2412MHz										
	H	2310.00	54.05	30.22	4.85	23.98	52.66	74.00	-21.34	PK	PASS
	H	2310.00	44.43	30.22	4.85	23.98	43.04	54.00	-10.96	AV	PASS
	H	2390.00	54.68	30.22	4.85	23.98	53.29	74.00	-20.71	PK	PASS
	H	2390.00	44.28	30.22	4.85	23.98	42.89	54.00	-11.11	AV	PASS
	V	2310.00	53.53	30.22	4.85	23.98	52.14	74.00	-21.86	PK	PASS
	V	2310.00	44.87	30.22	4.85	23.98	43.48	54.00	-10.52	AV	PASS
	V	2390.00	53.66	30.22	4.85	23.98	52.27	74.00	-21.73	PK	PASS
	V	2390.00	44.85	30.22	4.85	23.98	43.46	54.00	-10.54	AV	PASS
	High Channel 2462MHz										
	H	2483.50	54.70	30.22	4.85	23.98	53.31	74.00	-20.69	PK	PASS
	H	2483.50	44.38	30.22	4.85	23.98	42.99	54.00	-11.01	AV	PASS
	H	2500.00	54.81	30.22	4.85	23.98	53.42	74.00	-20.58	PK	PASS
	H	2500.00	44.99	30.22	4.85	23.98	43.60	54.00	-10.40	AV	PASS
	V	2483.50	54.80	30.22	4.85	23.98	53.41	74.00	-20.59	PK	PASS
	V	2483.50	44.57	30.22	4.85	23.98	43.18	54.00	-10.82	AV	PASS
	V	2500.00	54.80	30.22	4.85	23.98	53.41	74.00	-20.59	PK	PASS
	V	2500.00	44.06	30.22	4.85	23.98	42.67	54.00	-11.33	AV	PASS

Remark:

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

	Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type	Result
802.11 n20	LowChannel 2412MHz										
	H	2310.00	53.87	30.22	4.85	23.98	52.48	74.00	-21.52	PK	PASS
	H	2310.00	44.73	30.22	4.85	23.98	43.34	54.00	-10.66	AV	PASS
	H	2390.00	53.07	30.22	4.85	23.98	51.68	74.00	-22.32	PK	PASS
	H	2390.00	44.06	30.22	4.85	23.98	42.67	54.00	-11.33	AV	PASS
	V	2310.00	53.55	30.22	4.85	23.98	52.16	74.00	-21.84	PK	PASS
	V	2310.00	44.09	30.22	4.85	23.98	42.70	54.00	-11.30	AV	PASS
	V	2390.00	53.76	30.22	4.85	23.98	52.37	74.00	-21.63	PK	PASS
	V	2390.00	44.96	30.22	4.85	23.98	43.57	54.00	-10.43	AV	PASS
	HighChannel 2462MHz										
	H	2483.50	54.97	30.22	4.85	23.98	53.58	74.00	-20.42	PK	PASS
	H	2483.50	44.11	30.22	4.85	23.98	42.72	54.00	-11.28	AV	PASS
	H	2500.00	54.89	30.22	4.85	23.98	53.50	74.00	-20.50	PK	PASS
	H	2500.00	44.73	30.22	4.85	23.98	43.34	54.00	-10.66	AV	PASS
	V	2483.50	54.92	30.22	4.85	23.98	53.53	74.00	-20.47	PK	PASS
	V	2483.50	44.04	30.22	4.85	23.98	42.65	54.00	-11.35	AV	PASS
	V	2500.00	54.78	30.22	4.85	23.98	53.39	74.00	-20.61	PK	PASS
	V	2500.00	44.74	30.22	4.85	23.98	43.35	54.00	-10.65	AV	PASS
802.11 n40	LowChannel 2422MHz										
	H	2310.00	53.43	30.22	4.85	23.98	52.04	74.00	-21.96	PK	PASS
	H	2310.00	44.39	30.22	4.85	23.98	43.00	54.00	-11.00	AV	PASS
	H	2390.00	54.04	30.22	4.85	23.98	52.65	74.00	-21.35	PK	PASS
	H	2390.00	44.42	30.22	4.85	23.98	43.03	54.00	-10.97	AV	PASS
	V	2310.00	53.19	30.22	4.85	23.98	51.80	74.00	-22.20	PK	PASS
	V	2310.00	44.66	30.22	4.85	23.98	43.27	54.00	-10.73	AV	PASS
	V	2390.00	54.48	30.22	4.85	23.98	53.09	74.00	-20.91	PK	PASS
	V	2390.00	44.07	30.22	4.85	23.98	42.68	54.00	-11.32	AV	PASS
	High Channel 2452MHz										
	H	2483.50	54.38	30.22	4.85	23.98	52.99	74.00	-21.01	PK	PASS
	H	2483.50	44.53	30.22	4.85	23.98	43.14	54.00	-10.86	AV	PASS
	H	2500.00	53.07	30.22	4.85	23.98	51.68	74.00	-22.32	PK	PASS
	H	2500.00	44.01	30.22	4.85	23.98	42.62	54.00	-11.38	AV	PASS
	V	2483.50	54.63	30.22	4.85	23.98	53.24	74.00	-20.76	PK	PASS
	V	2483.50	44.02	30.22	4.85	23.98	42.63	54.00	-11.37	AV	PASS
	V	2500.00	53.15	30.22	4.85	23.98	51.76	74.00	-22.24	PK	PASS
	V	2500.00	44.74	30.22	4.85	23.98	43.35	54.00	-10.65	AV	PASS

Remark:

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

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

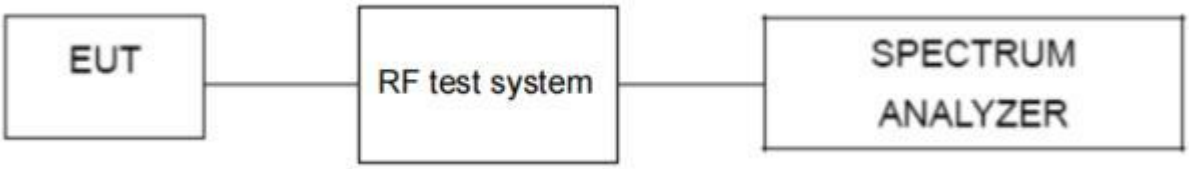
6.2 TEST PROCEDURE

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 kHz ≤ RBW ≤ 100 kHz.
4. Set the VBW ≥ 3 x 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 6.4 Unless otherwise a special operating condition is specified in the follows during the testing.

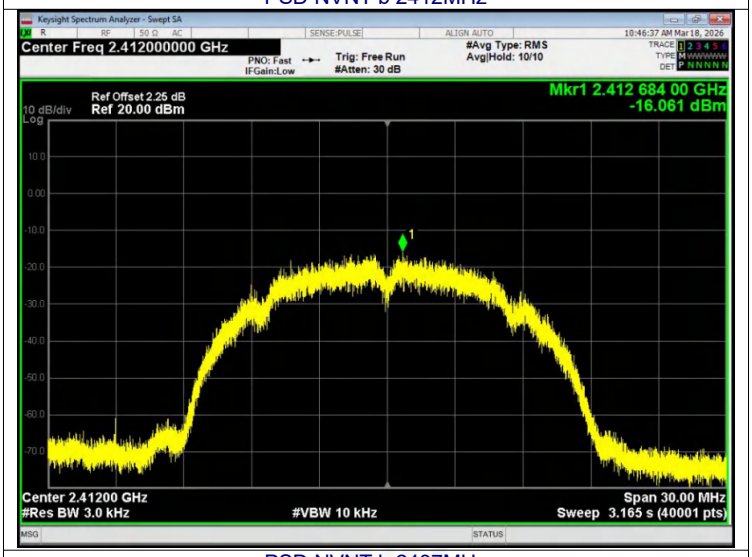
6.6 TEST RESULT

Temperature :	26℃	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 3.7V

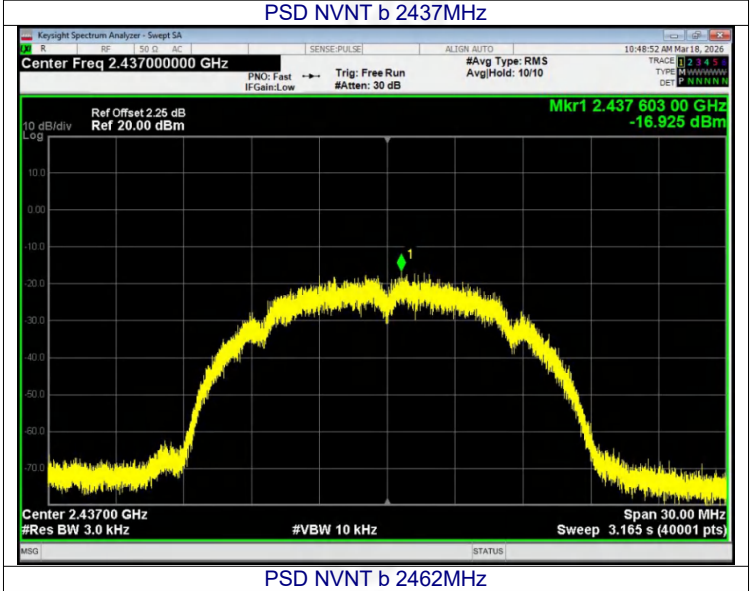
Test Mode	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
802.11b	2412	-16.061	8	PASS
	2437	-16.925	8	PASS
	2462	-17.298	8	PASS
802.11g	2412	-18.84	8	PASS
	2437	-19.391	8	PASS
	2462	-19.918	8	PASS
802.11n20	2412	-19.168	8	PASS
	2437	-19.904	8	PASS
	2462	-19.744	8	PASS
802.11n40	2422	-22.467	8	PASS
	2437	-22.561	8	PASS
	2452	-22.173	8	PASS

Test Graphs

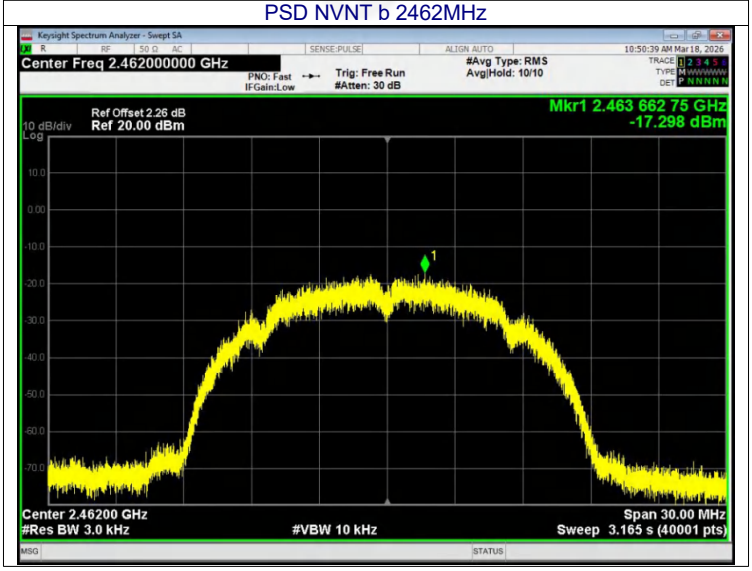
PSD NVNT b 2412MHz



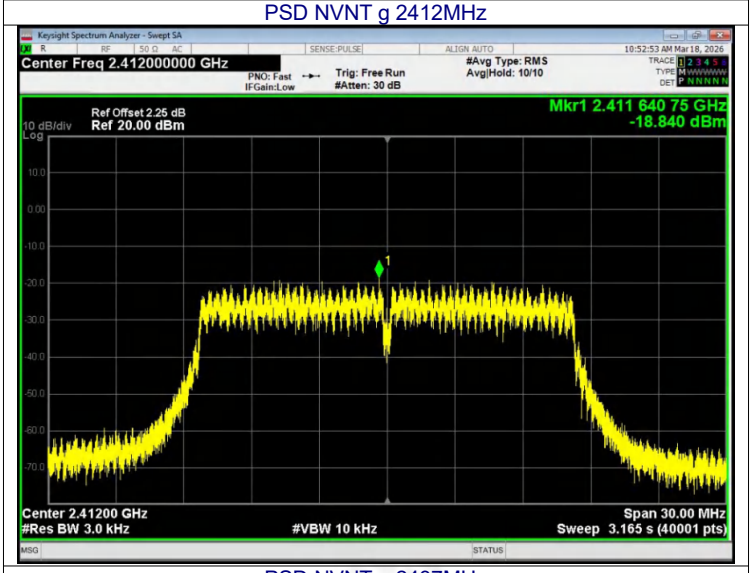
PSD NVNT b 2437MHz



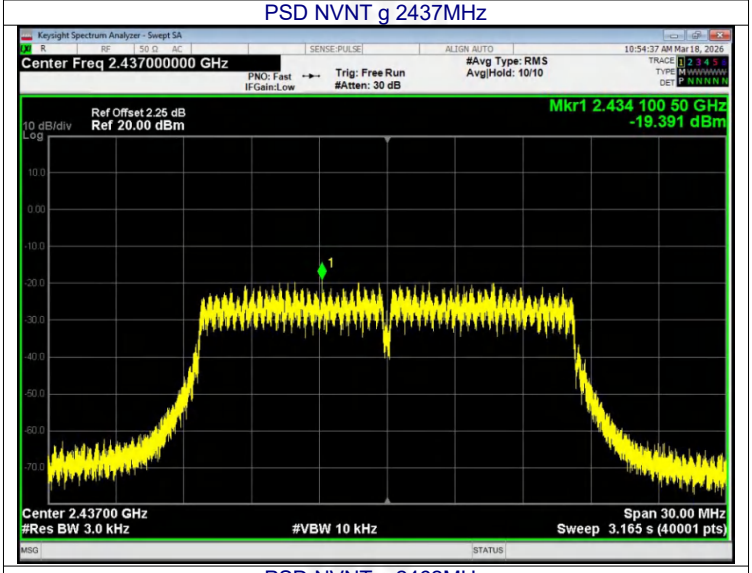
PSD NVNT b 2462MHz



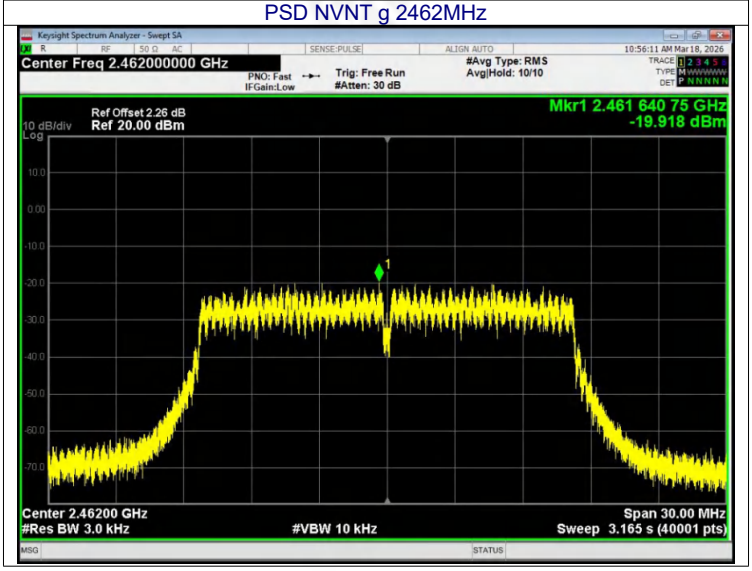
PSD NVNT g 2412MHz



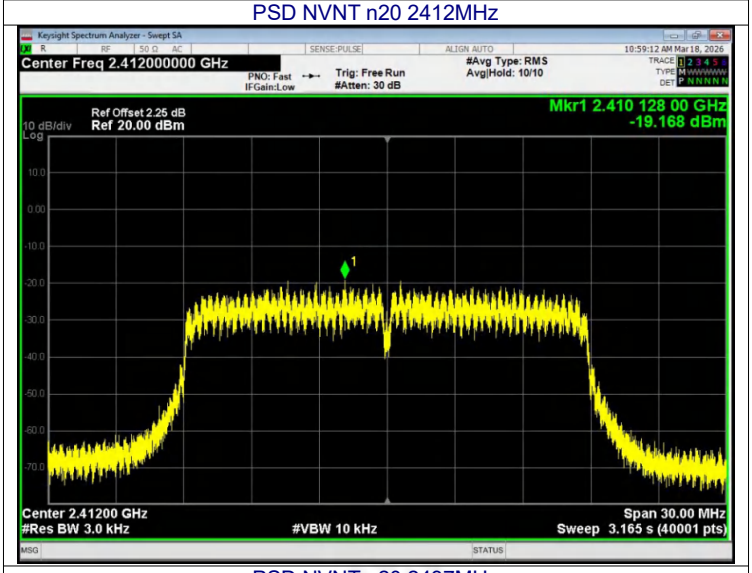
PSD NVNT g 2437MHz



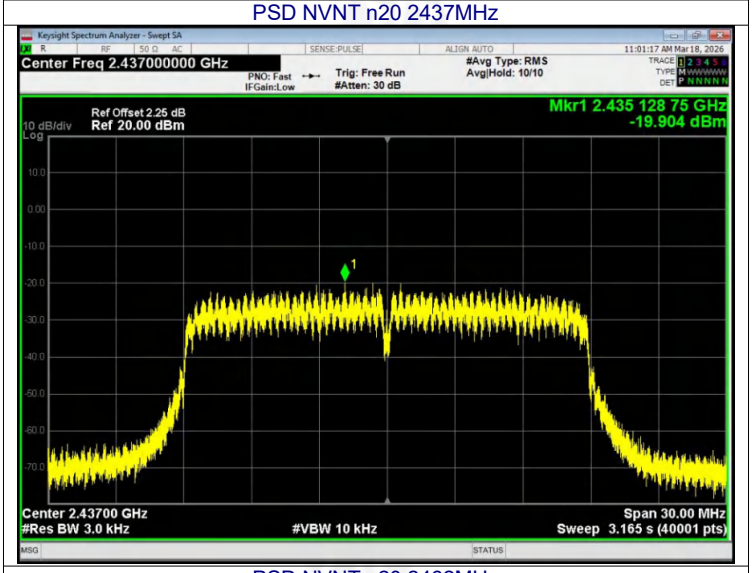
PSD NVNT g 2462MHz



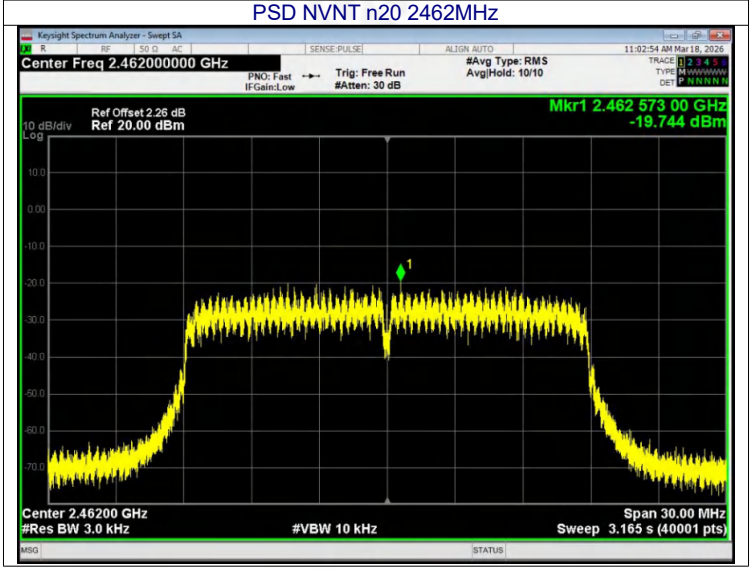
PSD NVNT n20 2412MHz



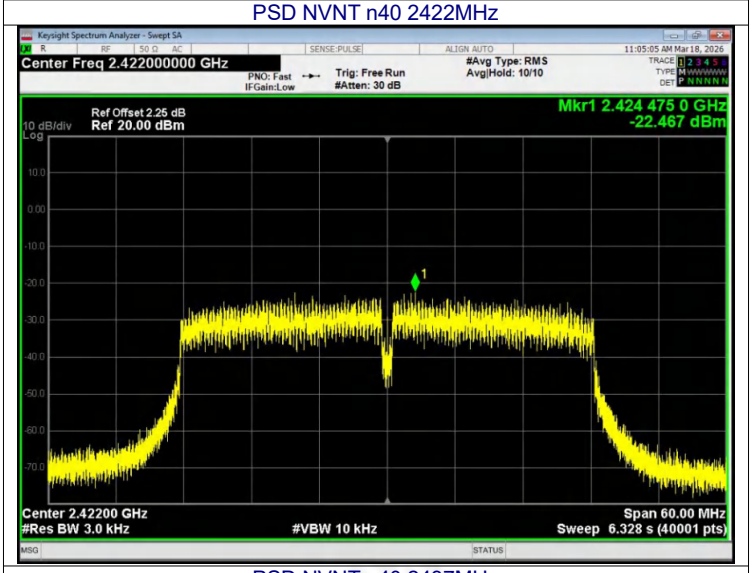
PSD NVNT n20 2437MHz



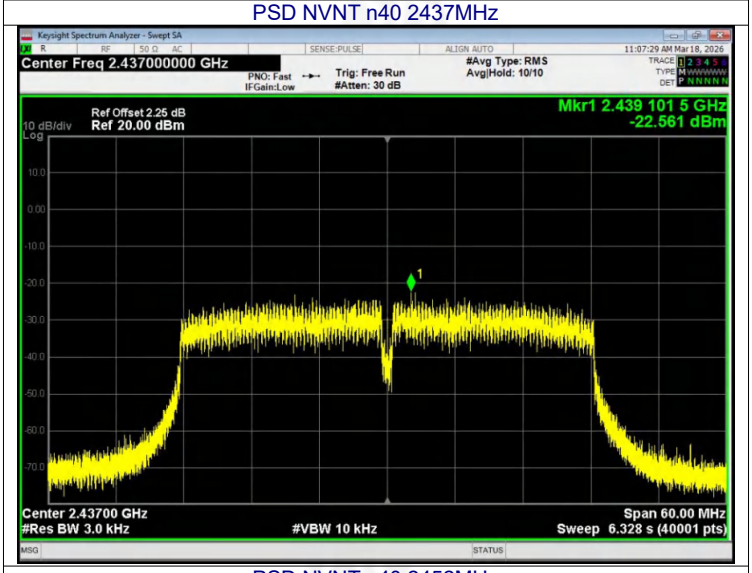
PSD NVNT n20 2462MHz



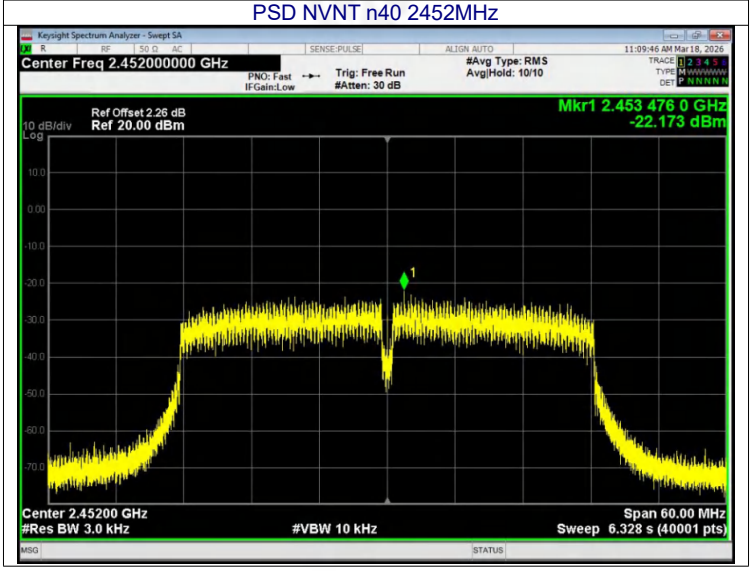
PSD NVNT n40 2422MHz



PSD NVNT n40 2437MHz



PSD NVNT n40 2452MHz



7. 6DB OCCUPIED 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	>= 500KHz (6dB Occupied Bandwidth)	2400-2483.5	PASS

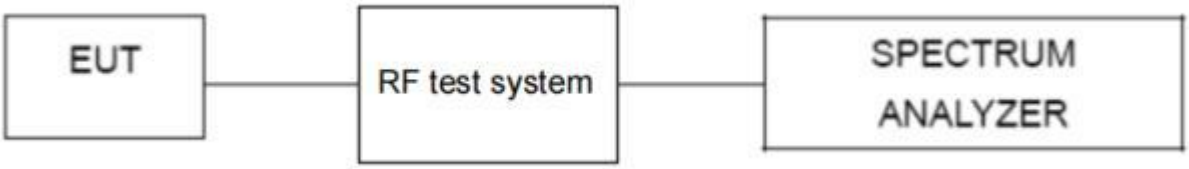
7.2 TEST PROCEDURE

1. Set RBW = 100kHz.
2. Set the video bandwidth (VBW) ≥ 3 xRBW.
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 7.4 Unless otherwise a special operating condition is specified in the follows during the testing.

7.6 TEST RESULT

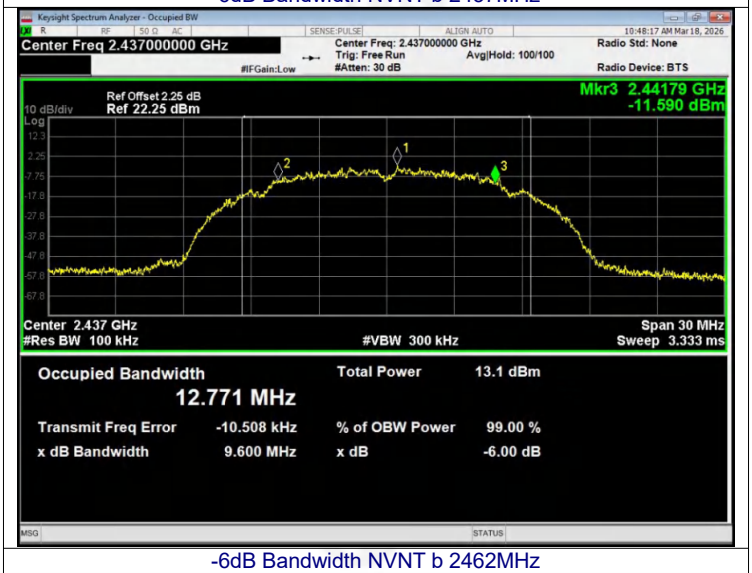
Temperature :	26℃	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 3.7V
Test Mode :	TX		

Test Mode	Test Channel (MHz)	6dB Occupied Bandwidth (MHz)	Limit (kHz)	Result
802.11b	2412	8.481	>500	Pass
	2437	9.6		
	2462	9.108		
802.11g	2412	16.307	>500	Pass
	2437	16.3		
	2462	16.297		
802.11n20	2412	16.358	>500	Pass
	2437	16.031		
	2462	16.324		
802.11n40	2422	33.549	>500	Pass
	2437	33.23		
	2452	35.058		

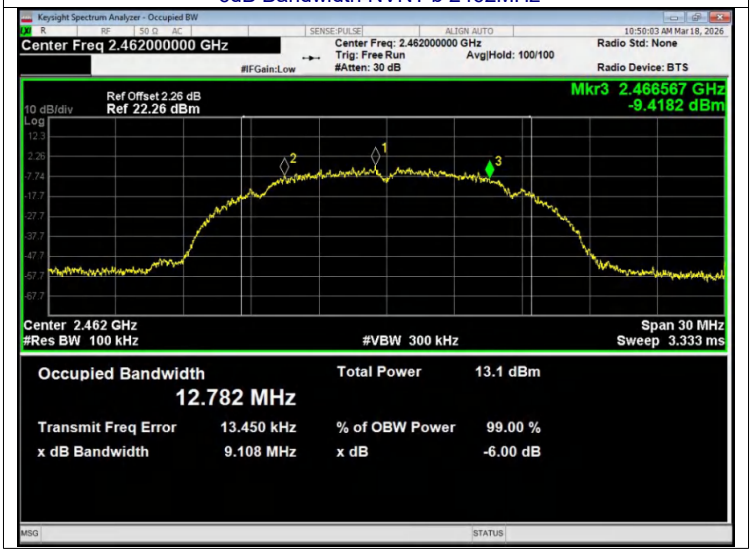
Test Graphs

-6dB Bandwidth NVNT b 2412MHz

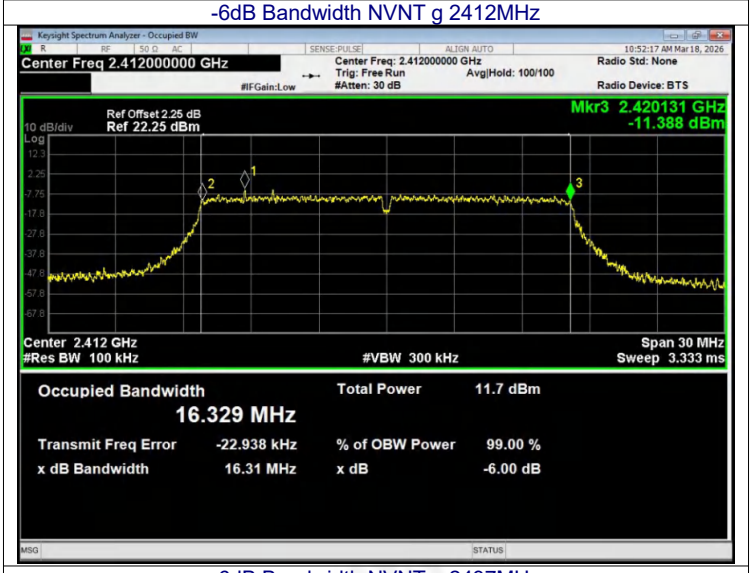
-6dB Bandwidth NVNT b 2437MHz



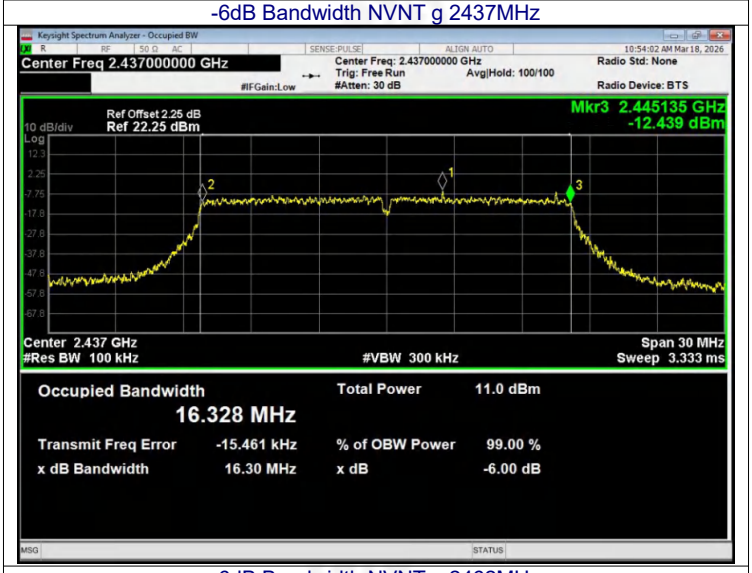
-6dB Bandwidth NVNT b 2462MHz



-6dB Bandwidth NVNT g 2412MHz

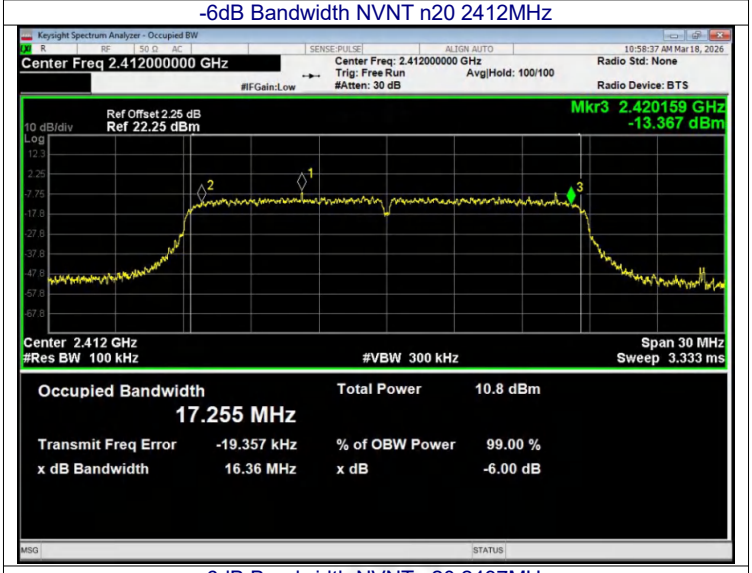


-6dB Bandwidth NVNT g 2437MHz

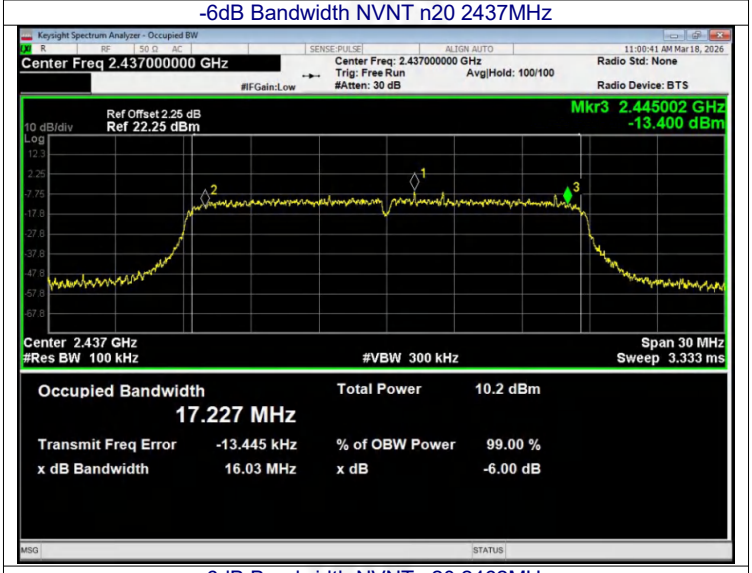


-6dB Bandwidth NVNT g 2462MHz

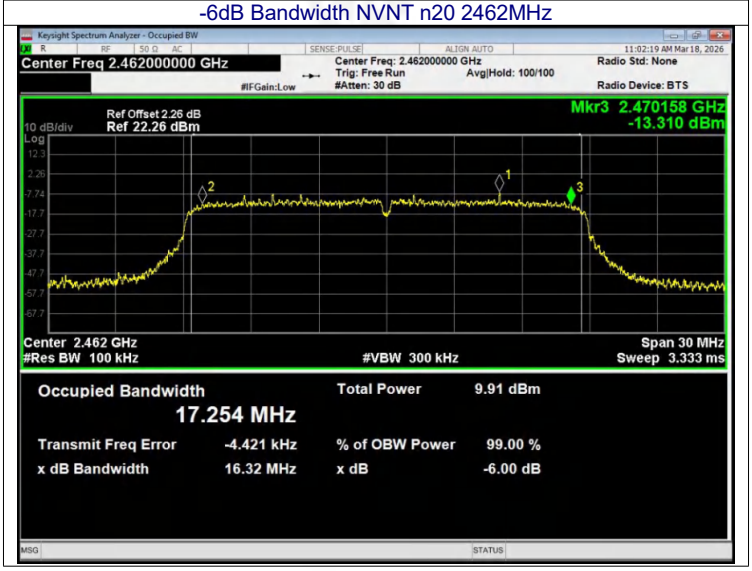
-6dB Bandwidth NVNT n20 2412MHz



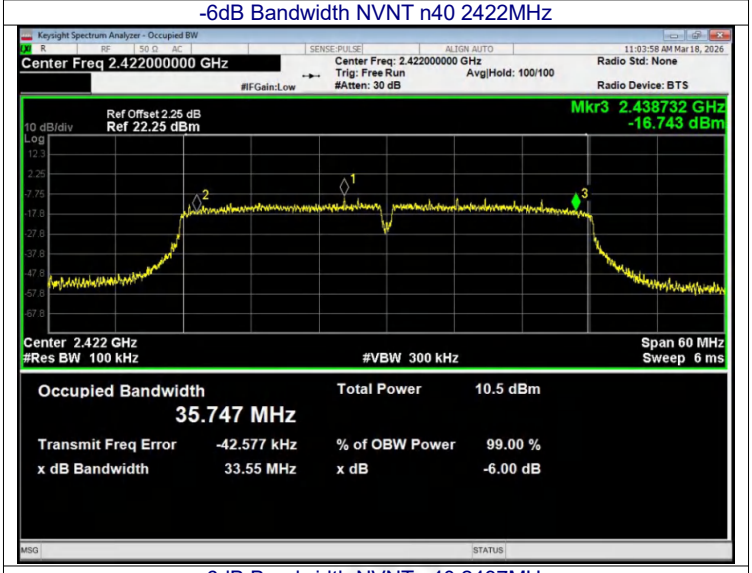
-6dB Bandwidth NVNT n20 2437MHz



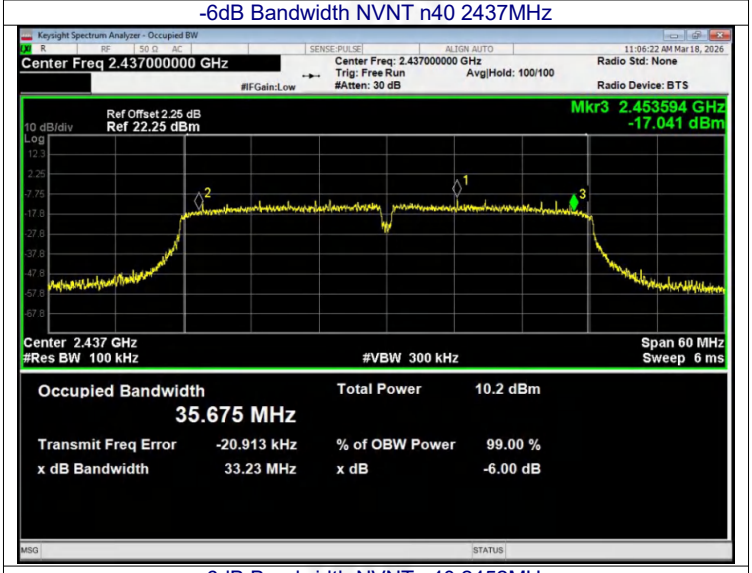
-6dB Bandwidth NVNT n20 2462MHz



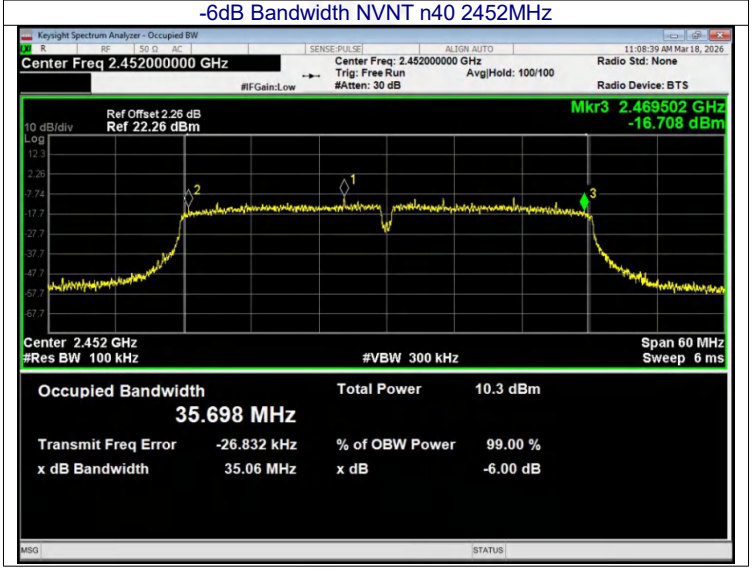
-6dB Bandwidth NVNT n40 2422MHz



-6dB Bandwidth NVNT n40 2437MHz



-6dB Bandwidth NVNT n40 2452MHz



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

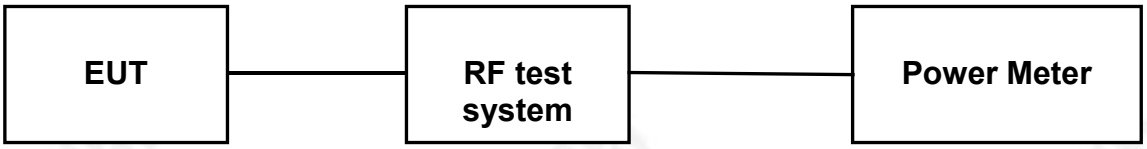
8.2 TEST PROCEDURE

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 8.4 Unless otherwise a special operating condition is specified in the follows during the testing.

8.6 TEST RESULT

Temperature：	26℃	Relative Humidity：	54%
Pressure：	101kPa	Test Voltage ：	DC 3.7V

Test Mode	Test Channel (MHz)	Peak Output Power (dBm)	Limit (dBm)	Result
802.11b	2412	5.302	30.00	Pass
	2437	5.403		
	2462	5.128		
802.11g	2412	6.179	30.00	Pass
	2437	6.473		
	2462	6.734		
802.11n20	2412	5.95	30.00	Pass
	2437	6.43		
	2462	6.625		
802.11n40	2422	6.353	30.00	Pass
	2437	6.992		
	2452	5.577		

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 in 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

A. Reference level measurement, establish a reference level by using the following procedure:

a) Set instrument center frequency to DTS channel center frequency.

b) Set the span to ≥ 1.5 times the DTS bandwidth.

c) Set the RBW = 100 kHz.

d) Set the VBW = [3 × RBW].

e) Detector = peak.

f) Sweep time = auto couple.

g) Trace mode = max hold.

h) Allow trace to fully stabilize.

i) Use the peak marker function to determine the maximum PSD level.

Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

B. Emission level measurement, establish an emission level by using the following procedure:

a) Set the center frequency and span to encompass frequency range to be measured.

b) Set the RBW = 100 kHz.

c) Set the VBW = [3 × RBW].

d) Detector = peak.

e) Sweep time = auto couple.

f) Trace mode = max hold.

g) Allow trace to fully stabilize.

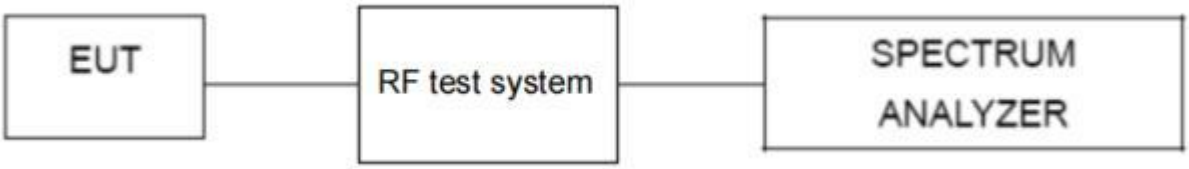
h) Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.

9.3 DEVIATION FROM STANDARD

No deviation.

9.4 TEST SETUP



9.5 EUT OPERATION CONDITIONS

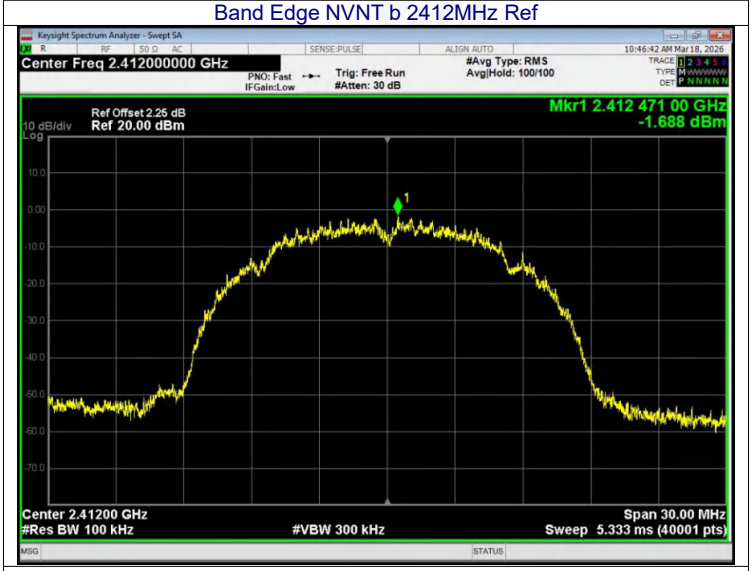
The EUT tested system was configured as the statements of 9.4 Unless otherwise a special operating condition is specified in the follows during the testing.

9.6 TEST RESULTS

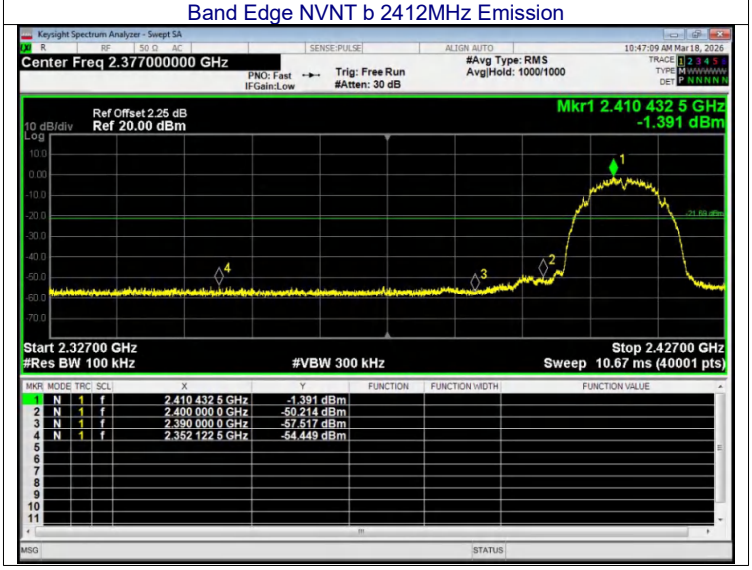
Test plot as follows:

Test Graphs

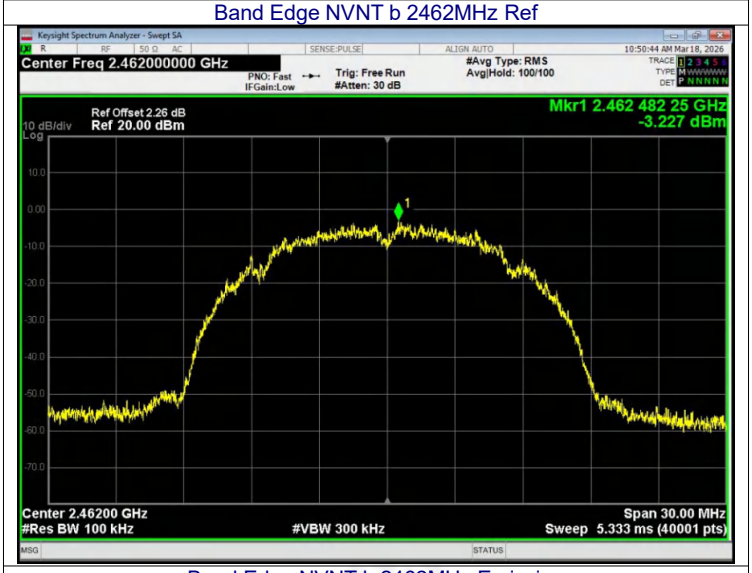
Band Edge NVNT b 2412MHz Ref



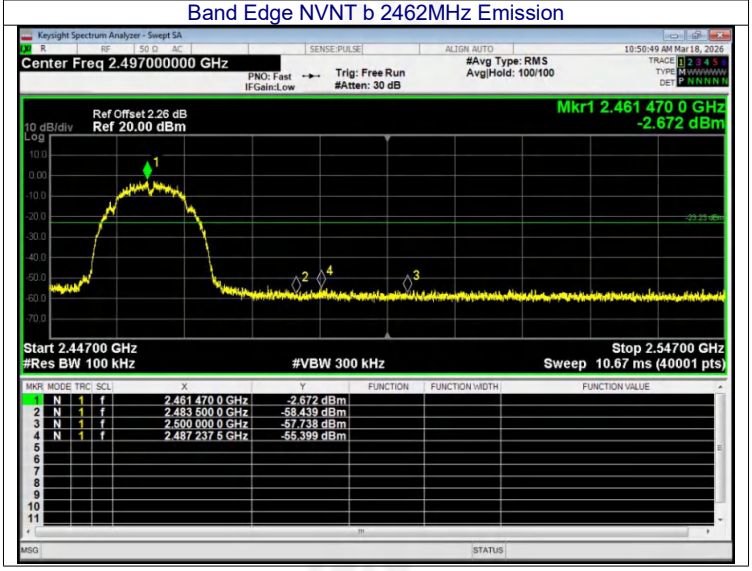
Band Edge NVNT b 2412MHz Emission



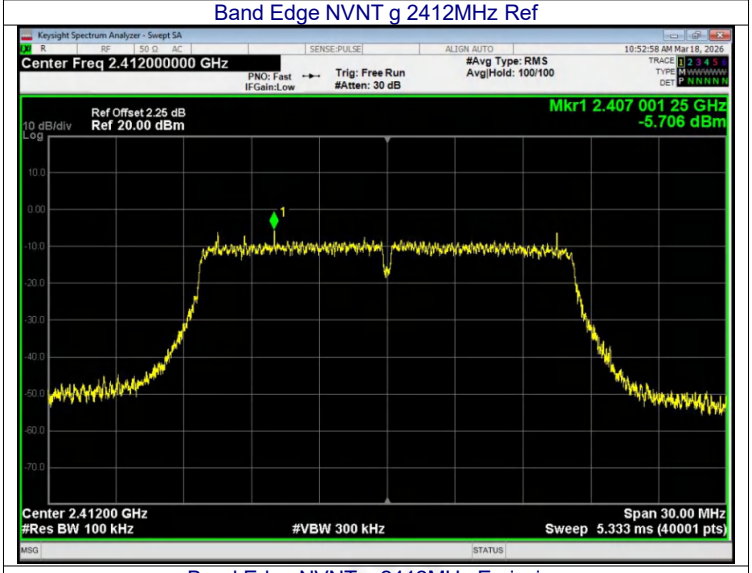
Band Edge NVNT b 2462MHz Ref



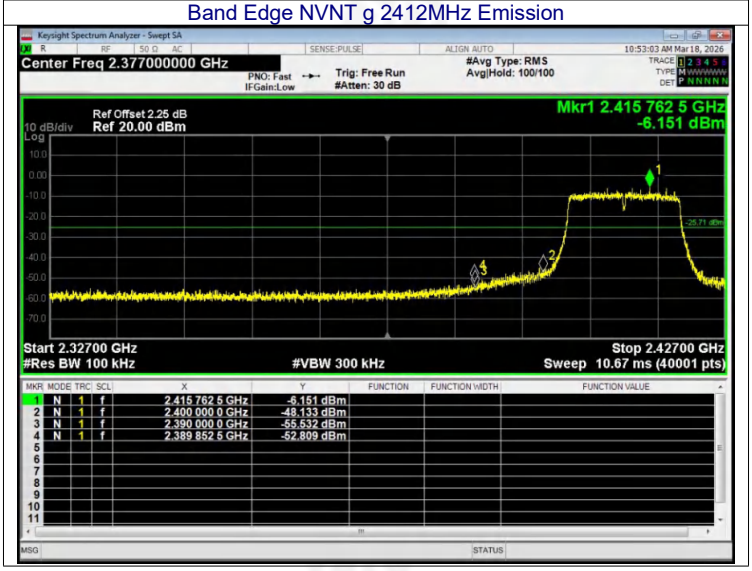
Band Edge NVNT b 2462MHz Emission



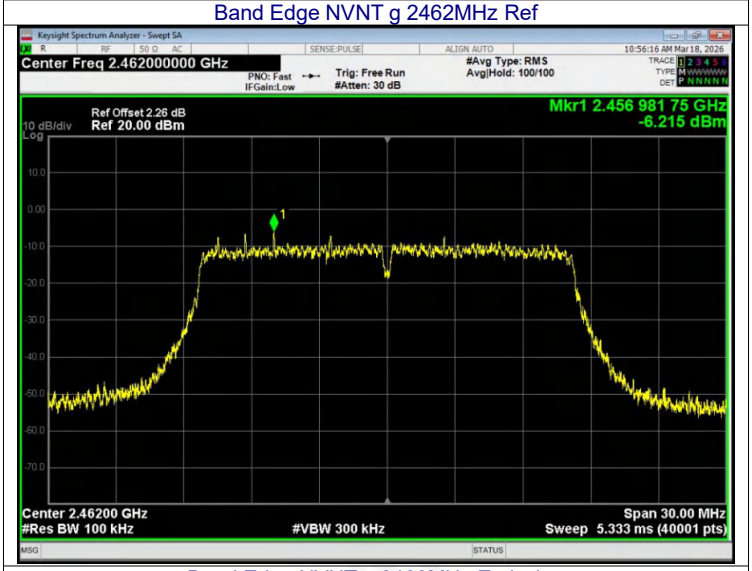
Band Edge NVNT g 2412MHz Ref



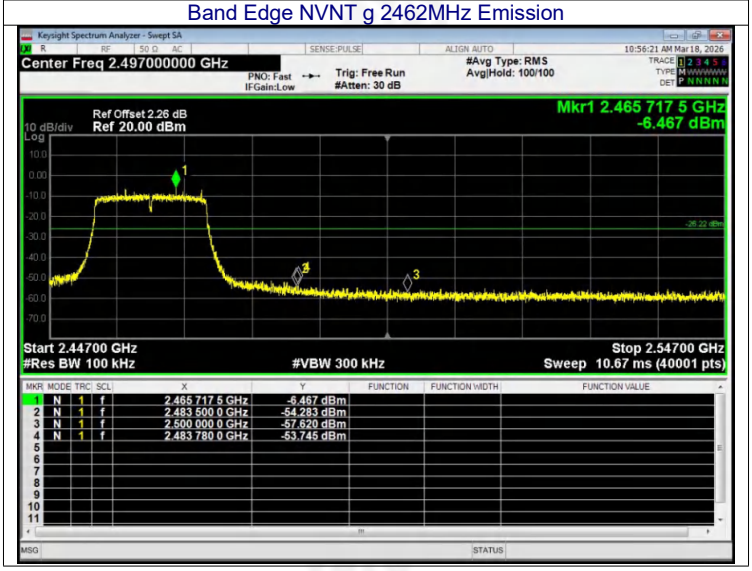
Band Edge NVNT g 2412MHz Emission



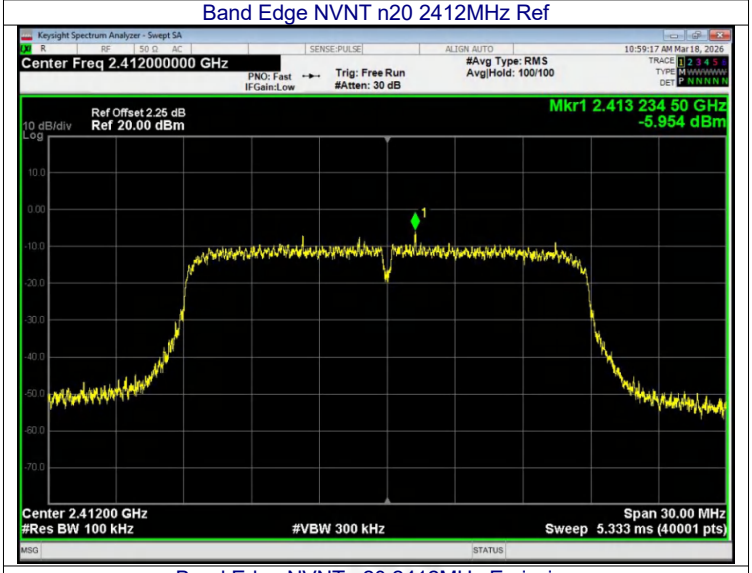
Band Edge NVNT g 2462MHz Ref



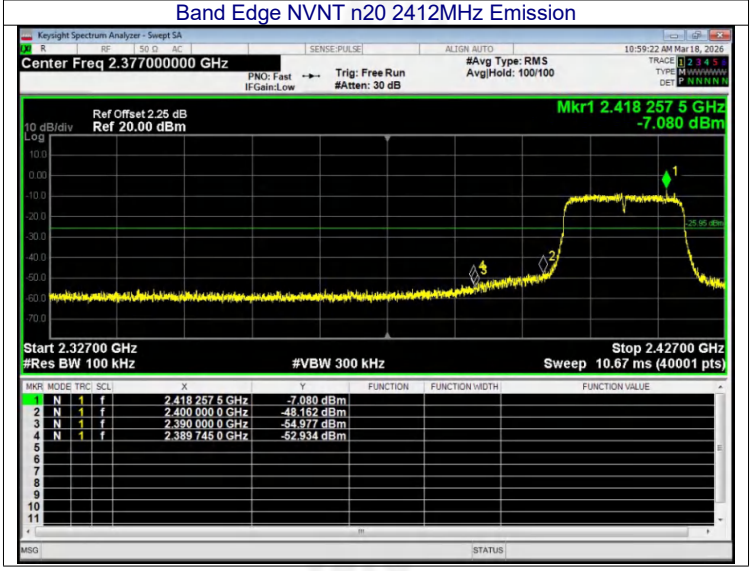
Band Edge NVNT g 2462MHz Emission



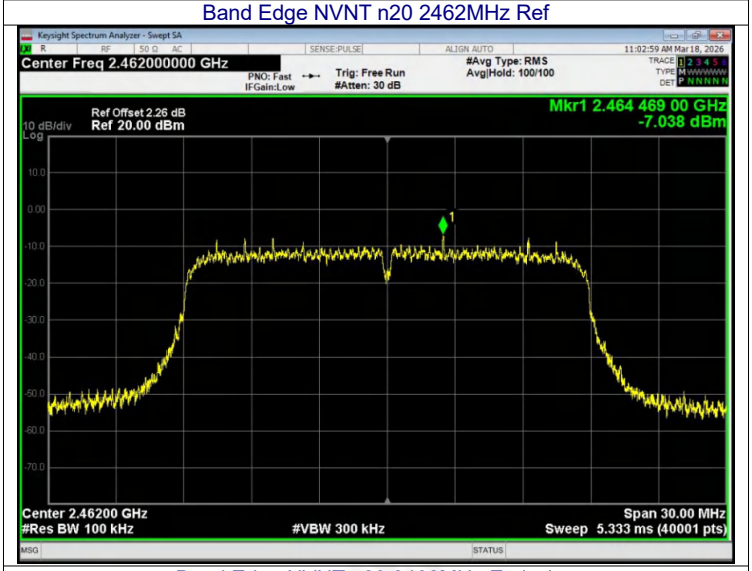
Band Edge NVNT n20 2412MHz Ref



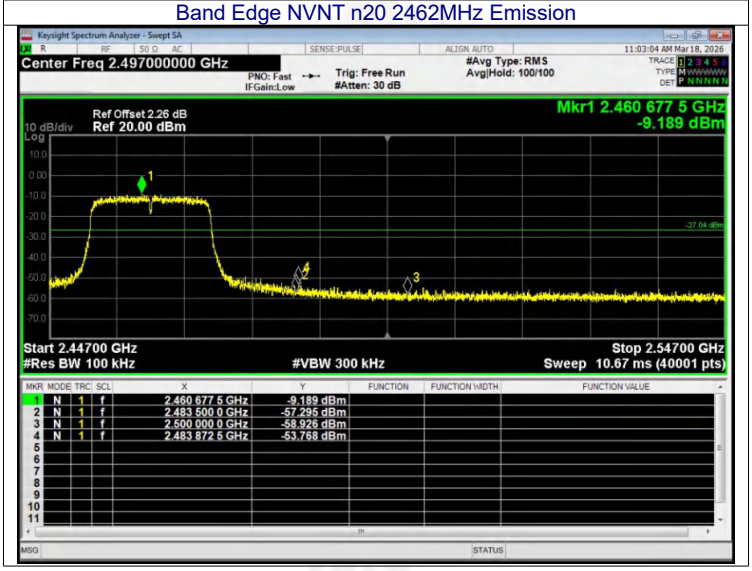
Band Edge NVNT n20 2412MHz Emission



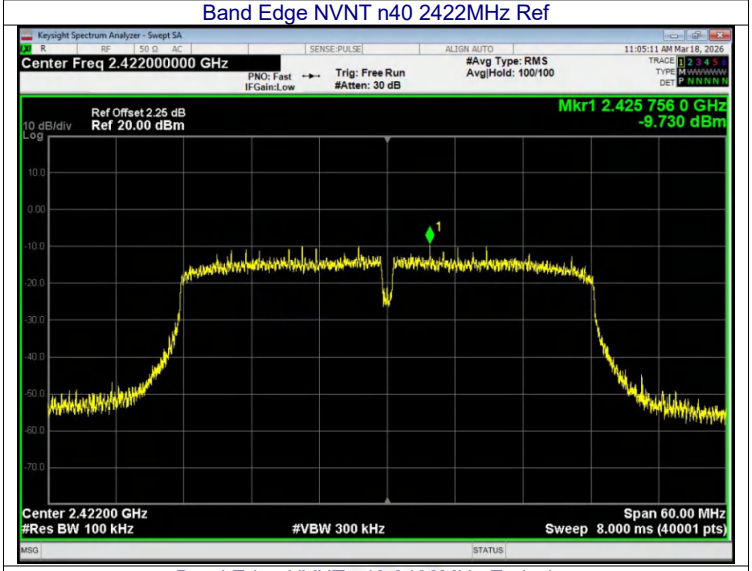
Band Edge NVNT n20 2462MHz Ref



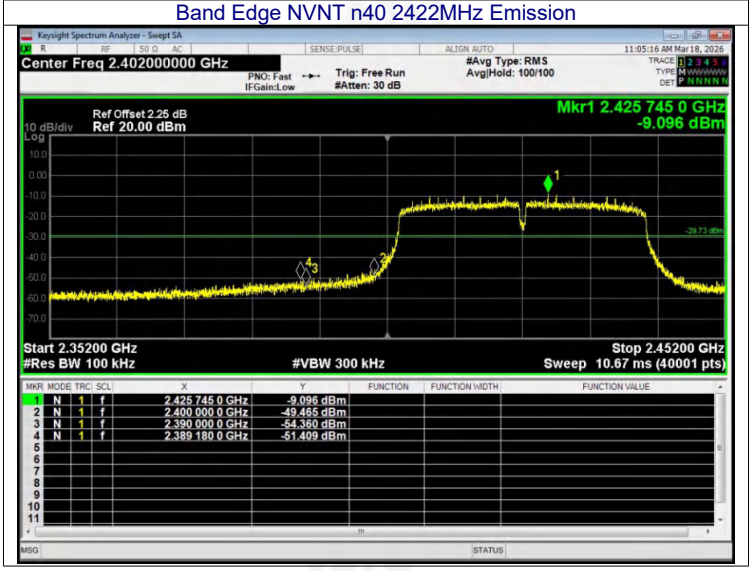
Band Edge NVNT n20 2462MHz Emission



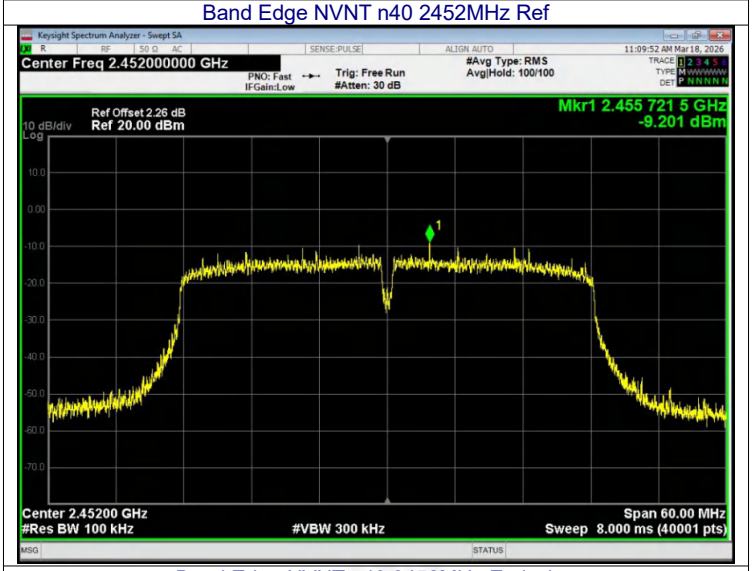
Band Edge NVNT n40 2422MHz Ref



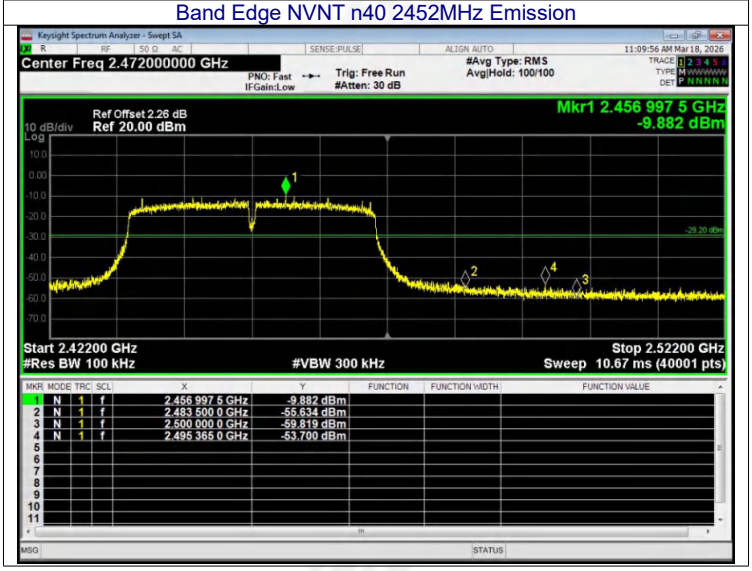
Band Edge NVNT n40 2422MHz Emission



Band Edge NVNT n40 2452MHz Ref



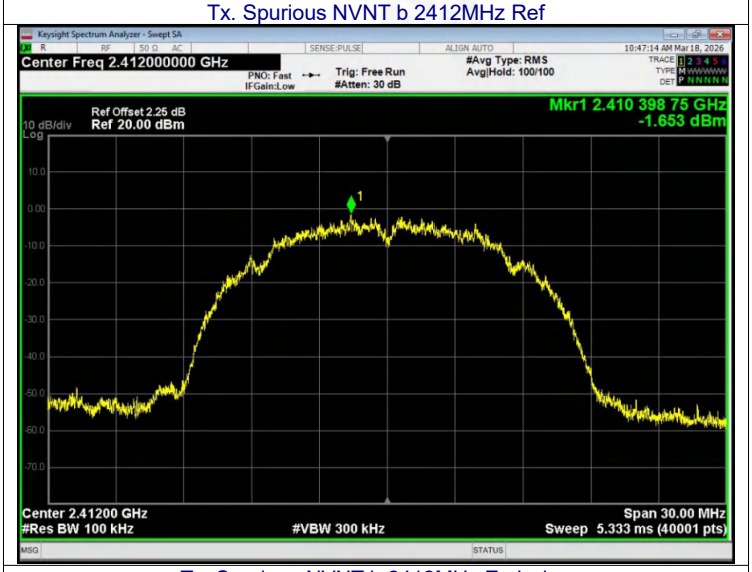
Band Edge NVNT n40 2452MHz Emission



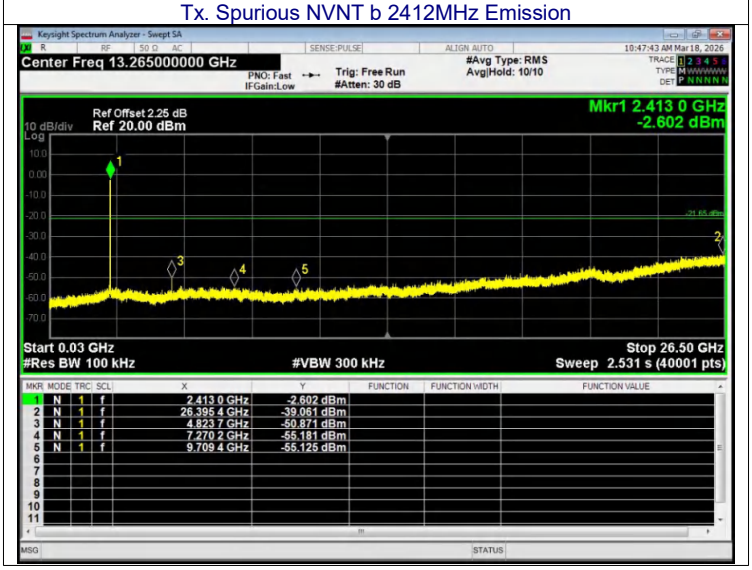
Test plot as follows:

Test Graphs

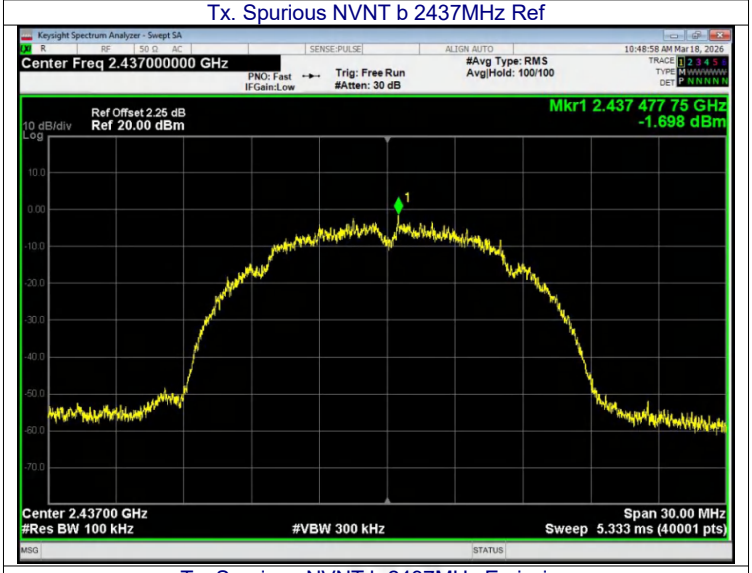
Tx. Spurious NVNT b 2412MHz Ref



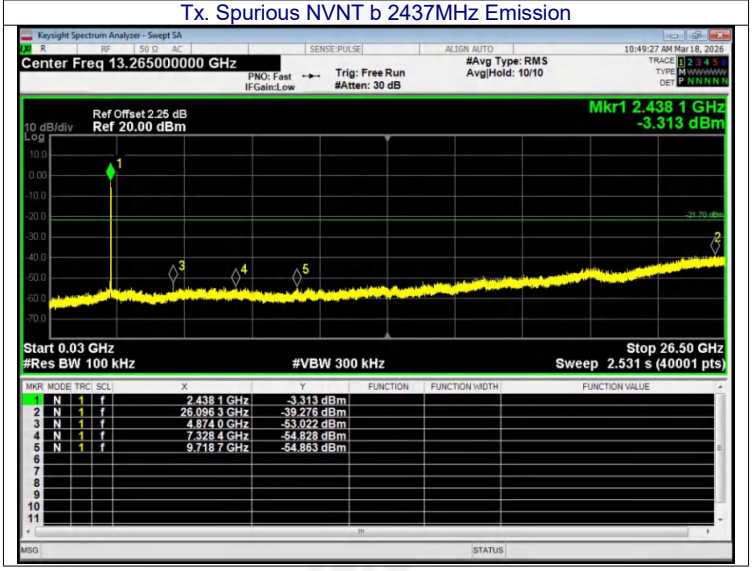
Tx. Spurious NVNT b 2412MHz Emission



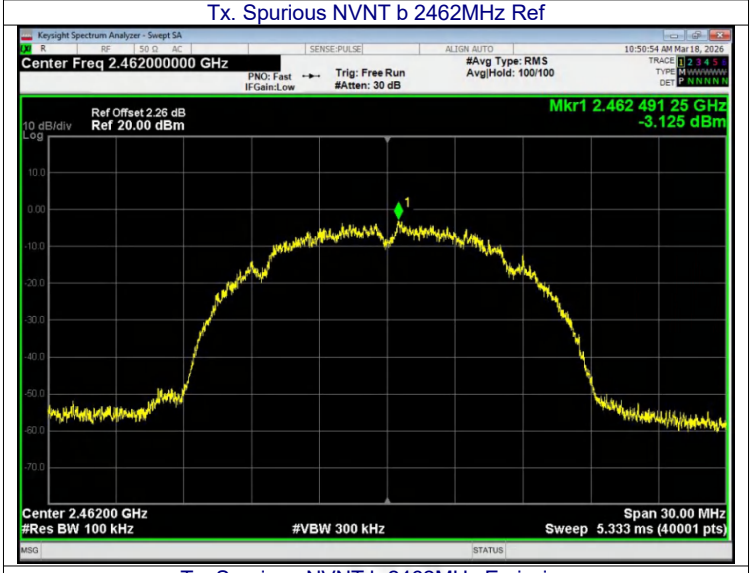
Tx. Spurious NVNT b 2437MHz Ref



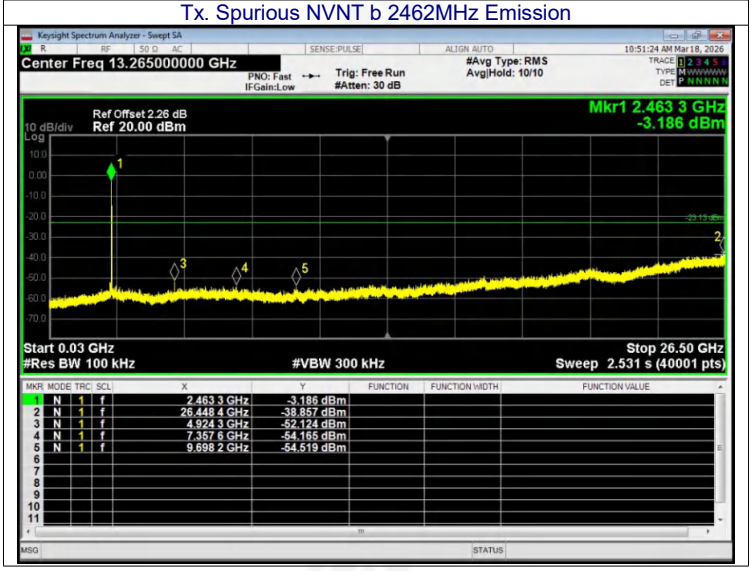
Tx. Spurious NVNT b 2437MHz Emission



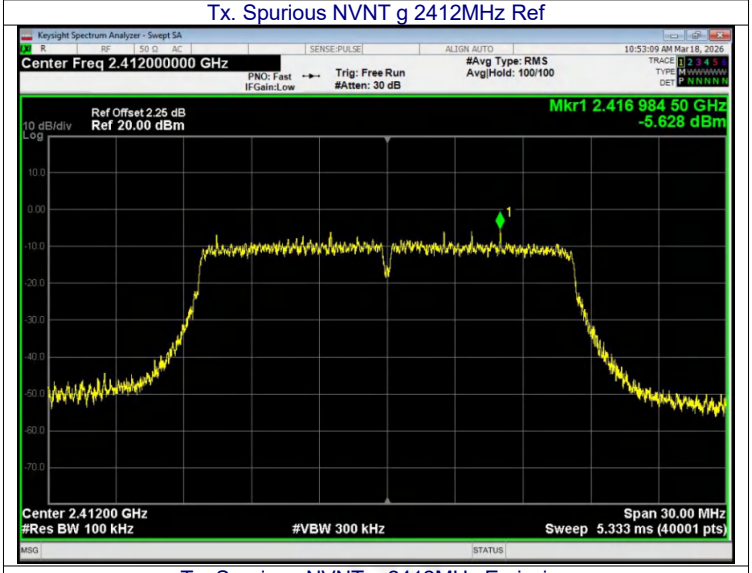
Tx. Spurious NVNT b 2462MHz Ref



Tx. Spurious NVNT b 2462MHz Emission



Tx. Spurious NVNT g 2412MHz Ref



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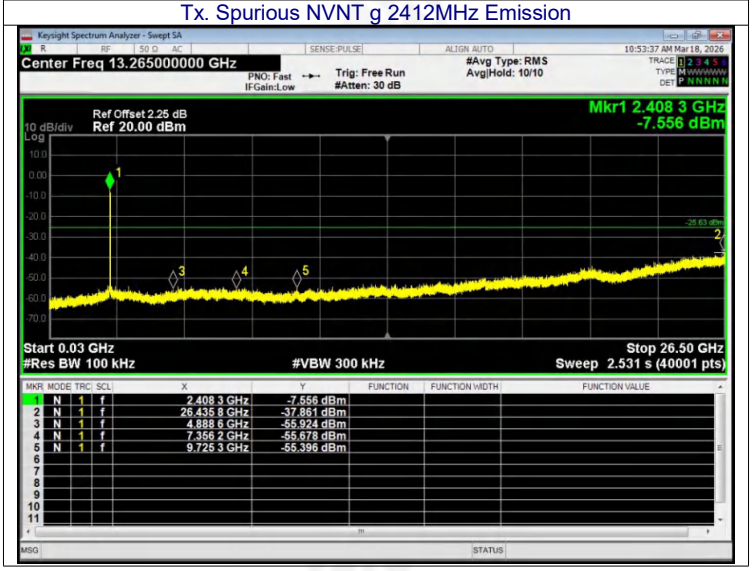

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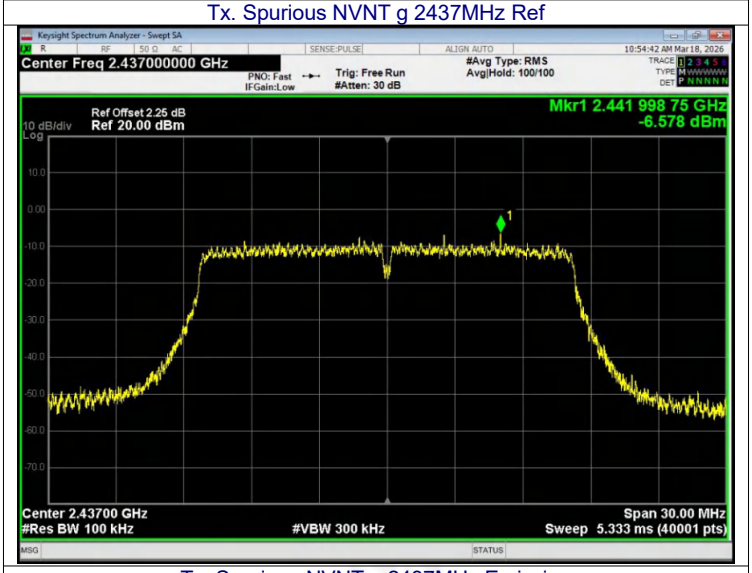

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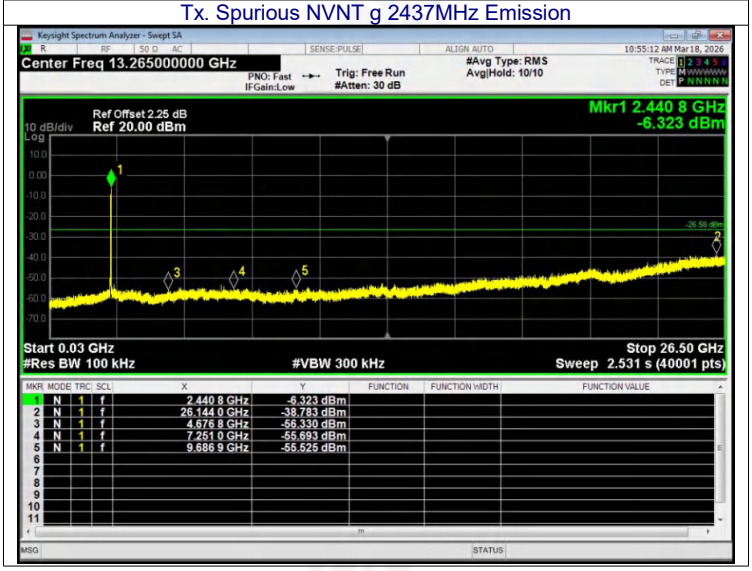

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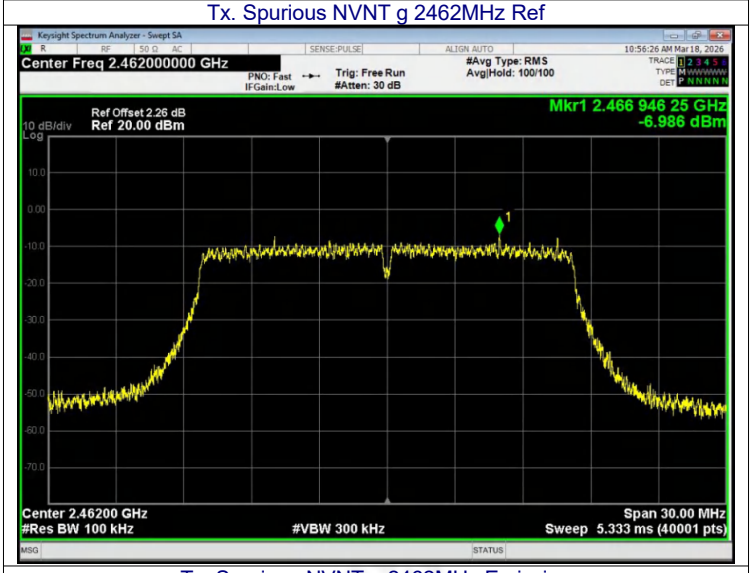

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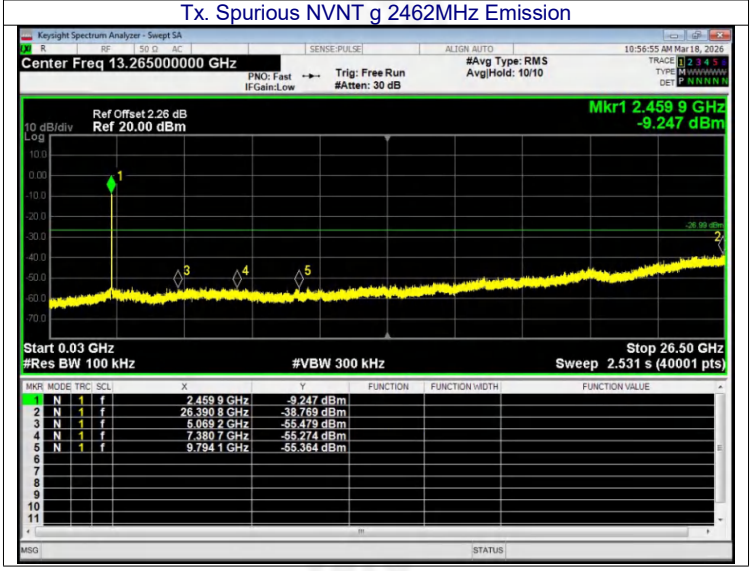

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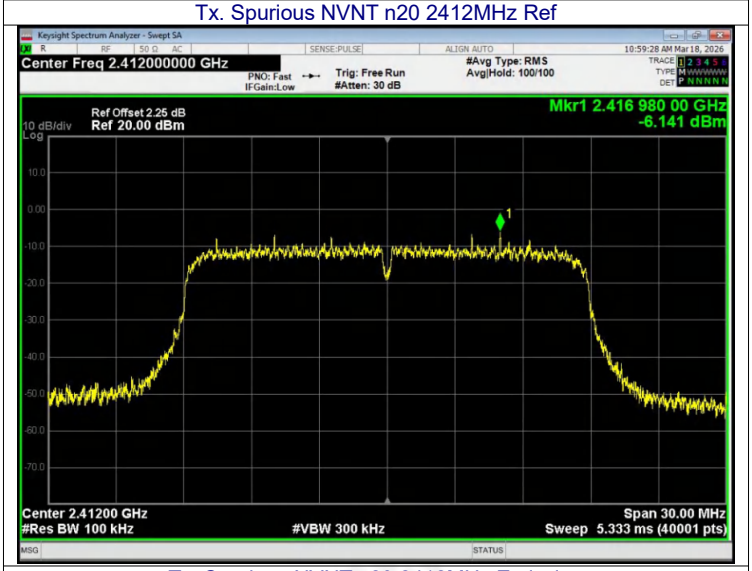

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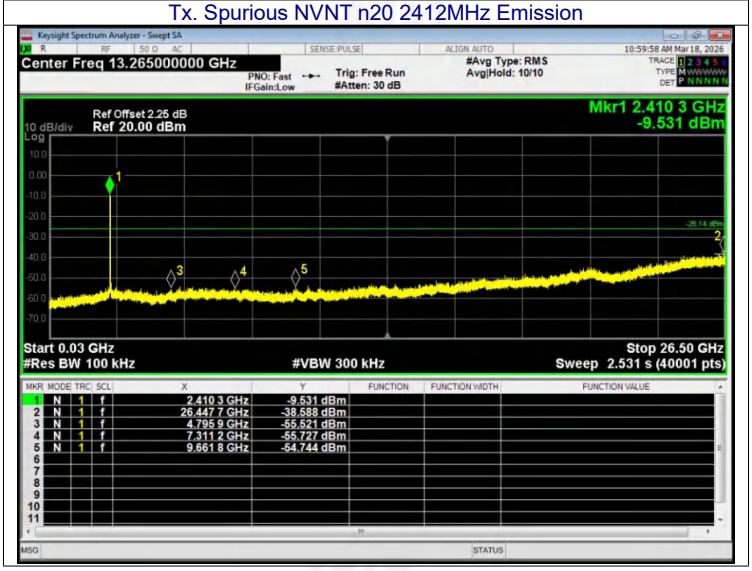

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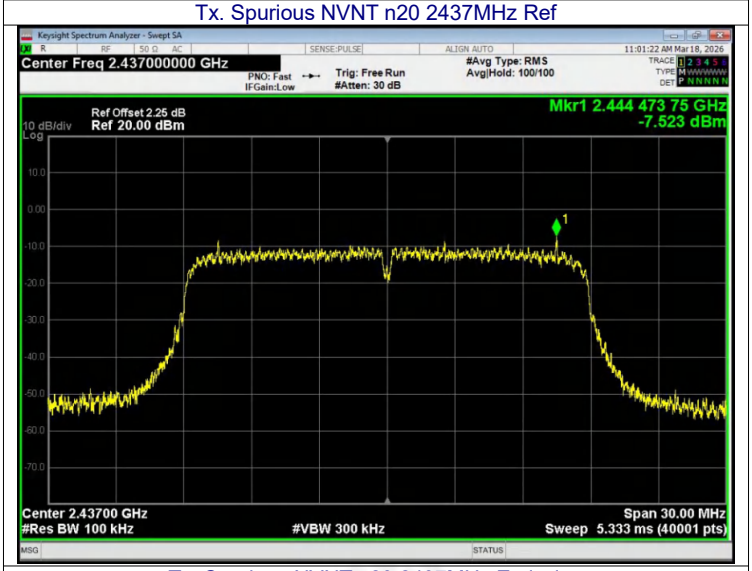

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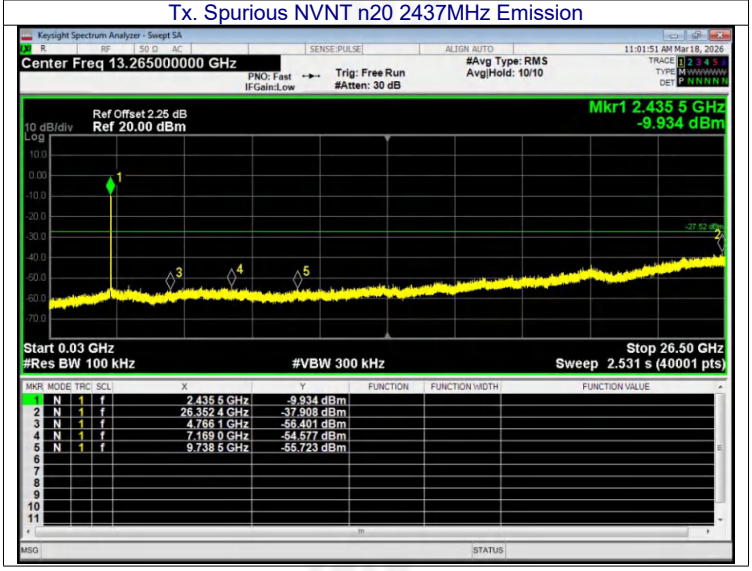

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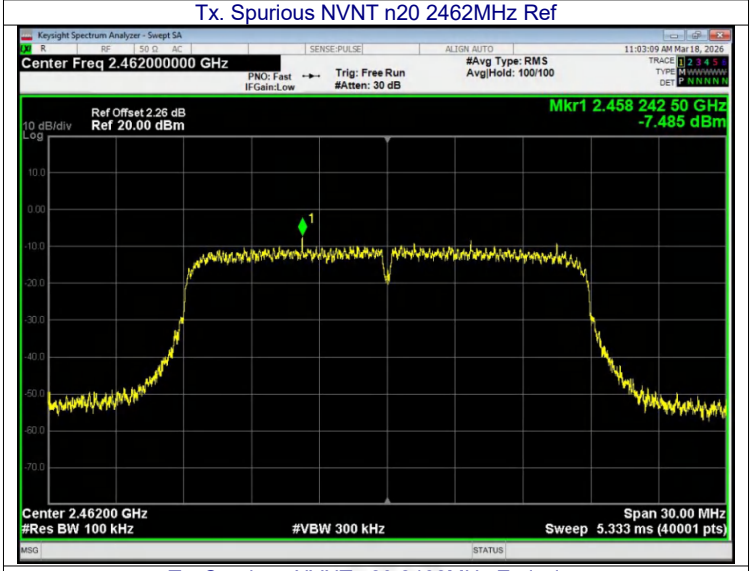

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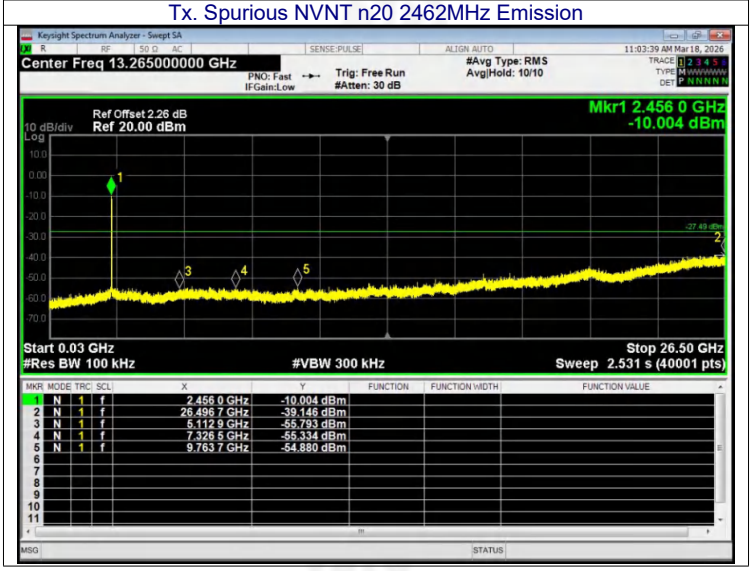

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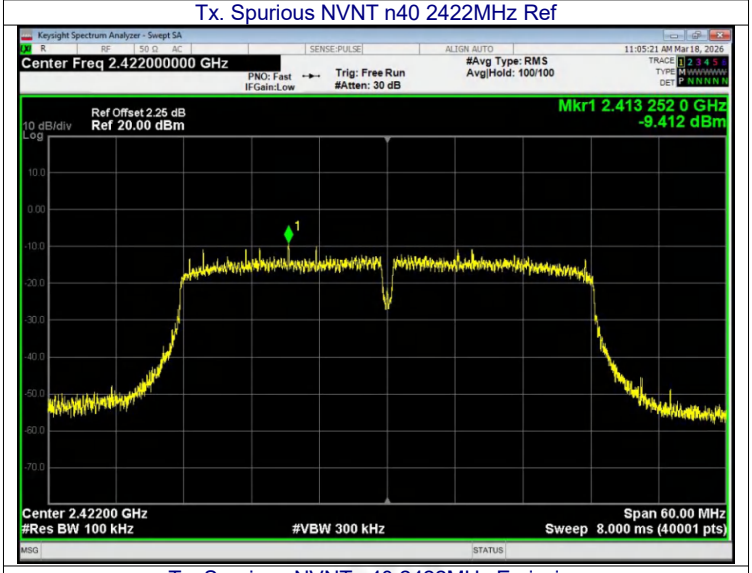
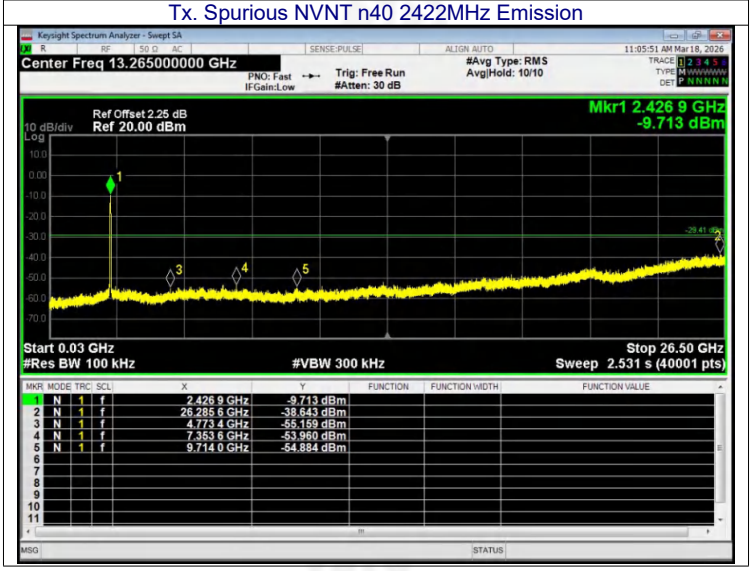
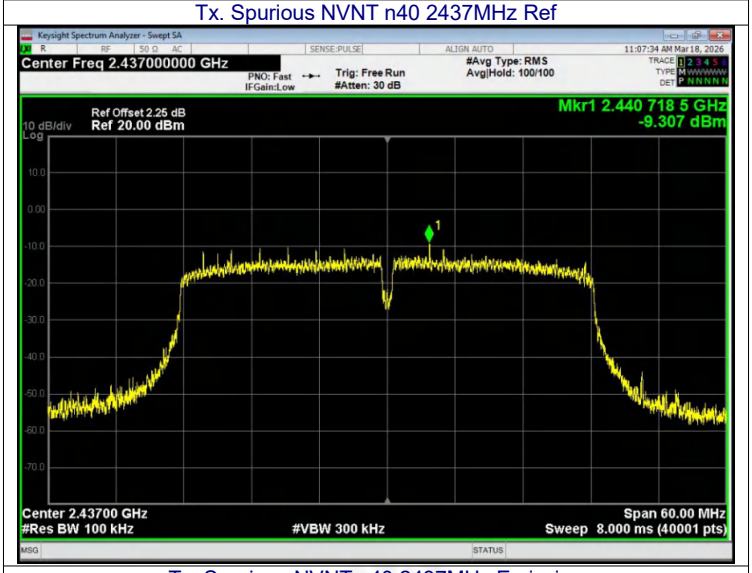


Tx. Spurious NVNT n40 2422MHz Emission



Tx. Spurious NVNT n40 2437MHz Ref



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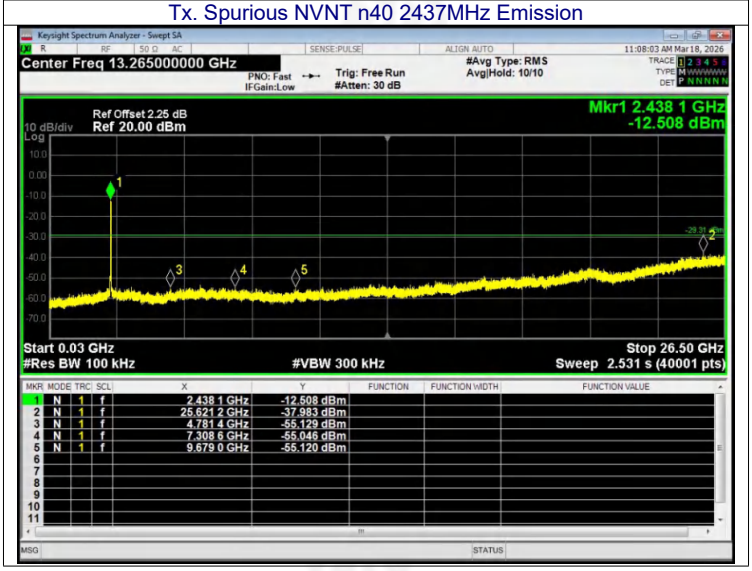
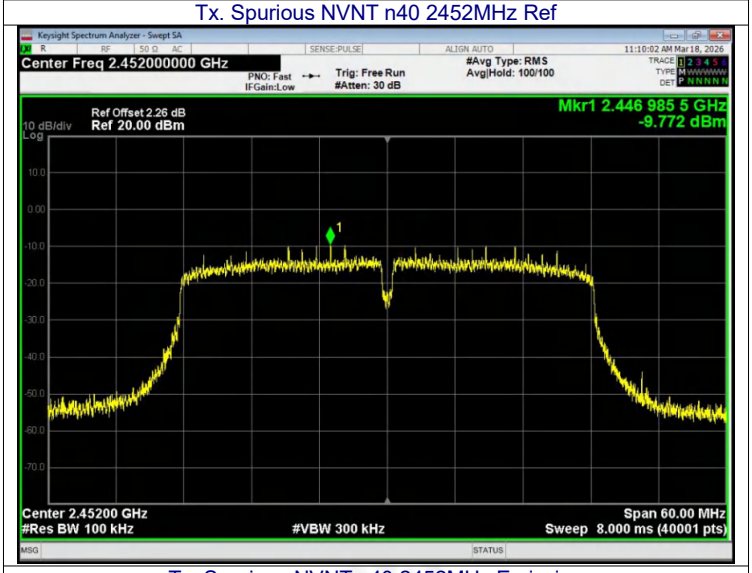


Tx. Spurious NVNT n40 2452MHz Ref



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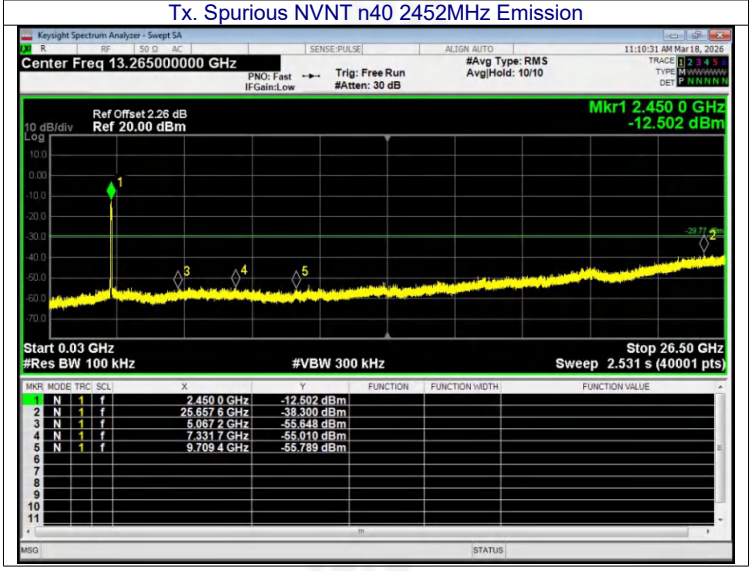


10. DUTY CYCLE

Test Method:	ANSI C63.10-2020+Cor 1-2023

10.1 APPLIED PROCEDURES / LIMIT

Measurements of duty cycle and transmission duration shall be performed using one of the following techniques:

a) A diode detector and an oscilloscope that together have a sufficiently short response time to permit accurate measurements of the ON and OFF times of the transmitted signal.

b) The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the ON and OFF times of the transmitted signal:

1) Set the center frequency of the instrument to the center frequency of the transmission.

2) Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value.

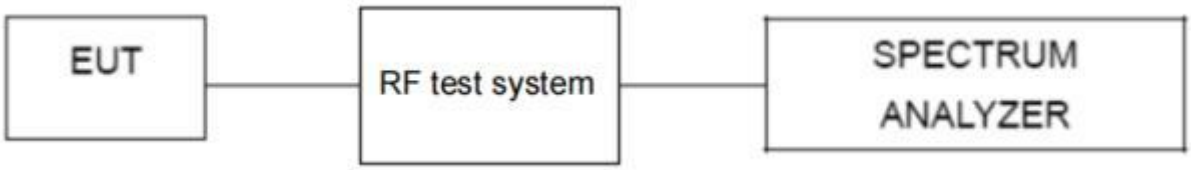
3) Set VBW ≥ RBW. Set detector = peak or average.

4) The zero-span measurement method shall not be used unless both RBW and VBW are > 50/*T* and the number of sweep points across duration *T* exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring the duty cycle shall not be used if $T \leq 16.7$ µs.)

10.2 DEVIATION FROM STANDARD

No deviation.

10.3 TEST SETUP



10.4 TEST RESULTS

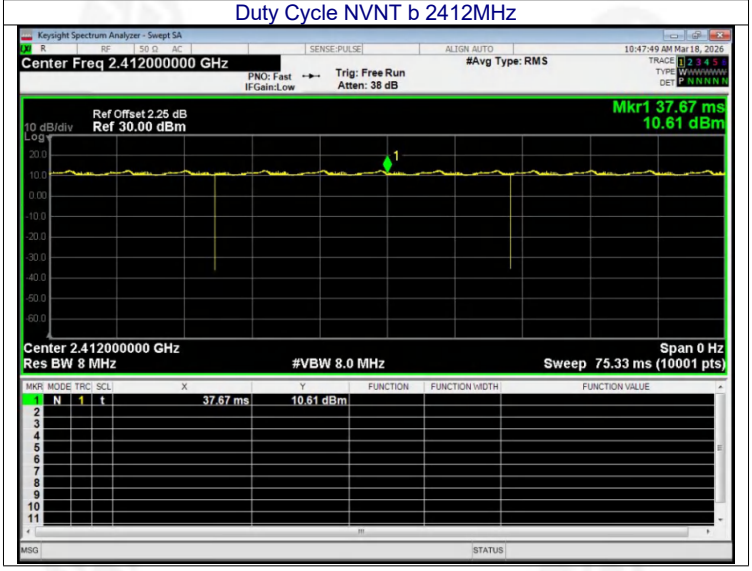
Temperature :	26℃	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 3.7V

Test Mode	Test Frequency (MHz)	Duty Cycle (%)	Factor (dB)	Result
802.11b	2412	99.94	0	Pass
802.11g	2412	99.19	0	Pass
802.11n20	2412	99.41	0	Pass
802.11n40	2422	99.2	0	Pass

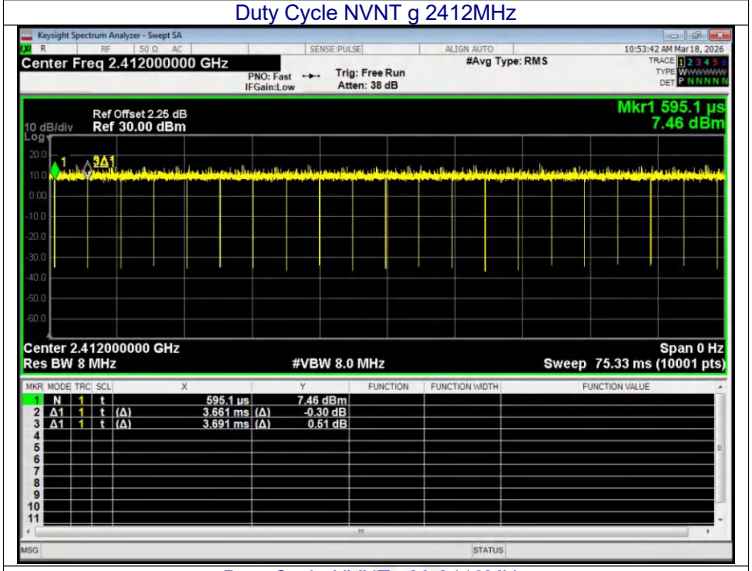
Note: All channel have been tested, and the report only reflects the worst case data.
Duty Cycle = Ton / Total * 100%;
Duty Cycle Correction Factor = 10log (1/Duty Cycle).

Test Graphs

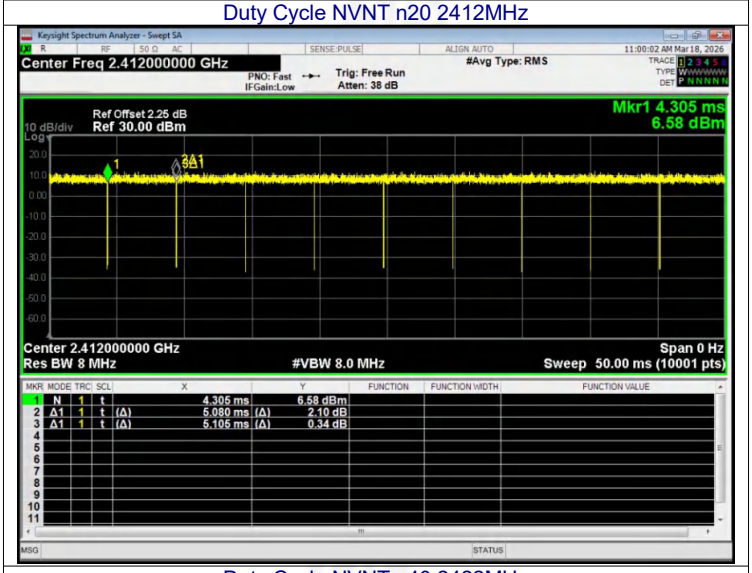
Duty Cycle NVNT b 2412MHz



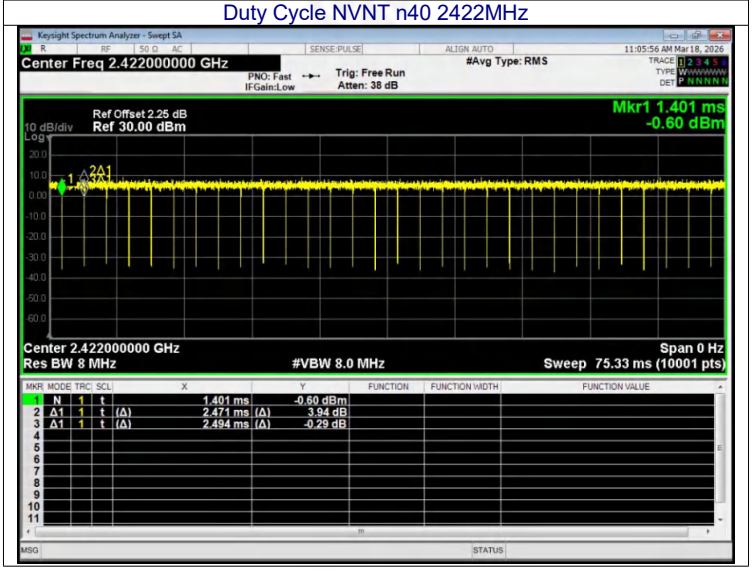
Duty Cycle NVNT g 2412MHz



Duty Cycle NVNT n20 2412MHz



Duty Cycle NVNT n40 2422MHz



11. 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 antenna is Chip Antenna, the best case gain of the antenna is 2.12dBi, reference to the appendix II for details.	

12. TEST SETUP PHOTO

Reference to the appendix I for details.

13. EUT CONSTRUCTIONAL DETAILS

Reference to the appendix II for details.

※※※※※ END OF REPORT ※※※※※