



RF TEST REPORT

FCC ID:2BG8Q-P348W

Report Number.....: ZKT-240625L7280

Date of Test.....: Jun. 24, 2024 to Jun. 28, 2024

Date of issue.....: Jun. 28, 2024

Total number of pages..... 89

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 Titan International Development Technology Co., Ltd.

Address: 501, Building 1, No. 6 Zhongyuguan Road, Yousong Community, Longhua Street, Longhua District, Shenzhen China

Manufacturer's name: Shenzhen Titan International Development Technology Co., Ltd.

Address: 501, Building 1, No. 6 Zhongyuguan Road, Yousong Community, Longhua Street, Longhua District, Shenzhen 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.....: Laser Engraver

Trademark: /

Model/Type reference.....: P3 48W, P1 S PRO, P1 S PRO 10W, P1 S PRO 20W,
P1 S PRO 33W, P1 10W, P1 20W, P1 33W, P2 10W, P2 20W,
P2 33W, P3, P3 2W, P3 2W IR, P3 2IN1, P3 10W, P3 24W,
P3 33W, P3 48W, P4 2W, P4 10W, P4, P4 2W IR, ,P4 2IN1,
P4 10W, P4 24W, P4 33W, P4 48W, P5, P5 2W, P5 2W IR,
P5 2IN1, P5 10W, P5 24W, P5 33W, P5 48W, P6, P7, P8, P9, P10,
A1, A2, B1, B2, C1, C2, D1, D2, X1, X2, S1, S2, S3

Ratings.....: Input:AC 100-240V, 50/60Hz, 3.3A
Output:DC 24V 8A



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).....:

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

Lake Xie



Table of Contents

	Page
1. VERSION	5
2. SUMMARY OF TEST RESULTS	6
2.1 TEST FACILITY	7
2.2 MEASUREMENT UNCERTAINTY	7
3. GENERAL INFORMATION	8
3.1 GENERAL DESCRIPTION OF EUT	8
3.2 DESCRIPTION OF TEST MODES	9
3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	10
3.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)	10
3.5EQUIPMENTS LIST FOR ALL TEST ITEMS	11
4. EMC EMISSION TEST	13
4.1 CONDUCTED EMISSION MEASUREMENT	13
4.1.1 POWER LINE CONDUCTED EMISSION Limits	13
4.1.2 TEST PROCEDURE	13
4.1.3 DEVIATION FROM TEST STANDARD	13
4.1.4 TEST SETUP	14
4.1.5 EUT OPERATING CONDITIONS	14
4.1.6 TEST RESULT	15
4.2 RADIATED EMISSION MEASUREMENT	17
4.2.1 RADIATED EMISSION LIMITS	17
4.2.2 TEST PROCEDURE	17
4.2.3 DEVIATION FROM TEST STANDARD	18
4.2.4 TEST SETUP	18
4.2.5 EUT OPERATING CONDITIONS	19
4.2.6 TEST RESULTS	19
5.RADIATED BAND EMISSIONMEASUREMENT	30
5.1 TEST REQUIREMENT:	30
5.2 TEST PROCEDURE	30
5.3 DEVIATION FROM TEST STANDARD	30
5.4 TEST SETUP	31
5.5 EUT OPERATING CONDITIONS	31
5.6 TEST RESULT	32
6.POWER SPECTRAL DENSITY TEST	40
6.1 APPLIED PROCEDURES / LIMIT	40
6.2 TEST PROCEDURE	40
6.3 DEVIATION FROM STANDARD	40
6.4 TEST SETUP	40
6.5 EUT OPERATION CONDITIONS	40



6.6 TEST RESULT	41
7. CHANNEL BANDWIDTH& 99% OCCUPY BANDWIDTH	48
7.1 APPLIED PROCEDURES / LIMIT	48
7.2 TEST PROCEDURE	48
7.3 DEVIATION FROM STANDARD	48
7.4 TEST SETUP	48
7.5 EUT OPERATION CONDITIONS	48
7.6 TEST RESULT	49
8. PEAK OUTPUT POWER TEST&EQUIVALENT ISOTROPICALLY RADIATED POWER (E.I.R.P.)	63
8.1 APPLIED PROCEDURES/LIMIT	63
8.2 TEST PROCEDURE	63
8.3 DEVIATION FROM STANDARD	63
8.4 TEST SETUP	63
8.5 EUT OPERATION CONDITIONS	63
8.6 TEST RESULT	64
9. CONDUCTED BAND EDGE AND SPURIOUS EMISSION	65
9.1 APPLICABLE STANDARD	65
9.2 TEST PROCEDURE	65
9.3 DEVIATION FROM STANDARD	65
9.4 TEST SETUP	65
9.5 EUT OPERATION CONDITIONS	65
9.6 TEST RESULTS	66
10. ANTENNA REQUIREMENT	88
11. TEST SETUP PHOTO	89
12. EUT CONSTRUCTIONAL DETAILS	89



1. VERSION

ReportNo.	Version	Description	Approved
ZKT-240625L7280	Rev.01	Initial issue of report	Jun. 28, 2024



2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C KDB 558074 D01, KDB 662911 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)	Conducted Spurious Emission	PASS	
FCC part 15.205/15.209	Spurious Emission	PASS	

NOTE:

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



2.1 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 expanded 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°C



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Applicant:	Shenzhen Titan International Development Technology Co., Ltd.
Address of applicant:	501, Building 1, No. 6 Zhongyuguan Road, Yousong Community, Longhua Street, Longhua District, Shenzhen China
Manufacturer:	Shenzhen Titan International Development Technology Co., Ltd.
Address of manufacturer:	501, Building 1, No. 6 Zhongyuguan Road, Yousong Community, Longhua Street, Longhua District, Shenzhen China
Product Name:	Laser Engraver
HVIN/Hardware version:	P3 48W, P1 S PRO, P1 S PRO 10W, P1 S PRO 20W, P1 S PRO 33W, P1 10W, P1 20W, P1 33W, P2 10W, P2 20W, P2 33W, P3, P3 2W, P3 2W IR, P3 2IN1, P3 10W, P3 24W, P3 33W, P3 48W, P4 2W, P4 10W, P4, P4 2W IR, P4 2IN1, P4 10W, P4 24W, P4 33W, P4 48W, P5, P5 2W, P5 2W IR, P5 2IN1, P5 10W, P5 24W, P5 33W, P5 48W, P6, P7, P8, P9, P10, A1, A2, B1, B2, C1, C2, D1, D2, X1, X2, S1, S2, S3 Test model:P3 48W
Model Different.:	They have the same motherboard, power board and RF board, which are the same in all respects, Only the model name, the output power of the laser light source part varies according to different market demands.
Serial No.:	N/A
FVIN/Software version:	V1.0
Sample(s) Status:	Engineer sample
Channel numbers:	802.11b/802.11g /802.11n(HT20):11 802.11n(HT40):7
Channel separation:	5MHz
Modulation technology:	802.11b: Direct Sequence Spread Spectrum(DSSS) 802.11g/802.11n(H20)/802.11n(HT40) Orthogonal Frequency Division Multiplexing(OFDM)
Antenna Type:	FPCB antenna
Antenna gain:	WIFI :3dBi
Power supply:	Input:AC 100-240V, 50/60Hz, 3.3A Output:DC 24V 8A
Note:	

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

Channel	Frequency	Chann el	Frequency	Chann el	Frequency	Chann el	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz



3	2422MHz	6	2437MHz	9	2452MHz	
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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	/

Operation Frequency each of channel for n(HT40)							
Chann el	Frequency	Chann el	Frequency	Chann el	Frequency	Chann el	Frequency
		4	2427MHz	7	2442MHz		
		5	2432MHz	8	2447MHz		
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)	802.11n(HT40)
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 dutycycle >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)	802.11n(HT40)
Data rate	1Mbps	6Mbps	MSC0	MSC0

Test Software	TROLINIK
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Power level setup	<13dBm
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3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emission

AC Line EUT

Radiated Emission

AC Line EUT

Conducted Spurious

AC Line EUT

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 emissions& Radio 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	\	\



Conduction Test equipment

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

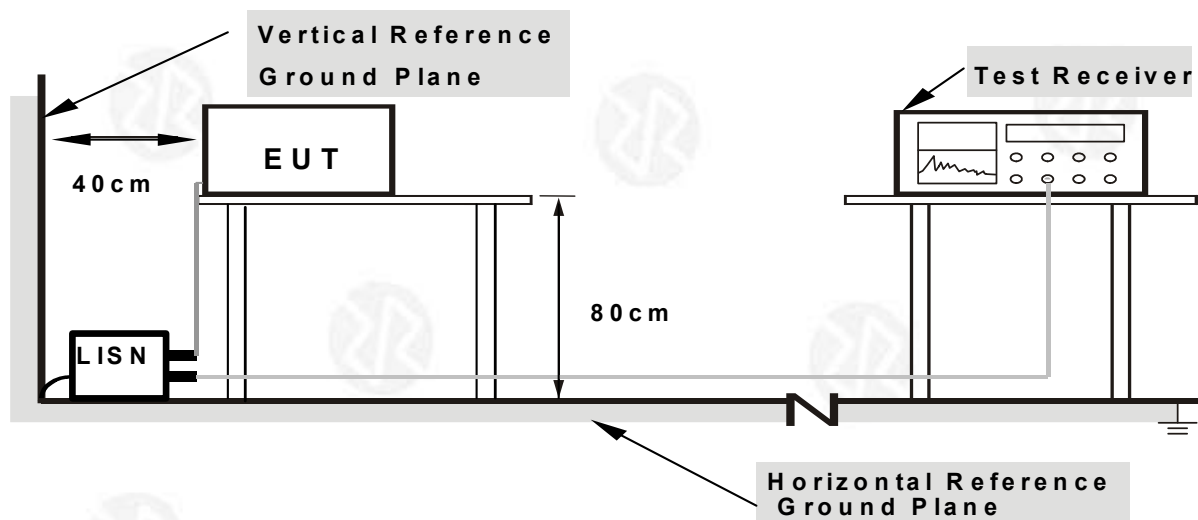
- The EUT was placed 0.1 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- 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

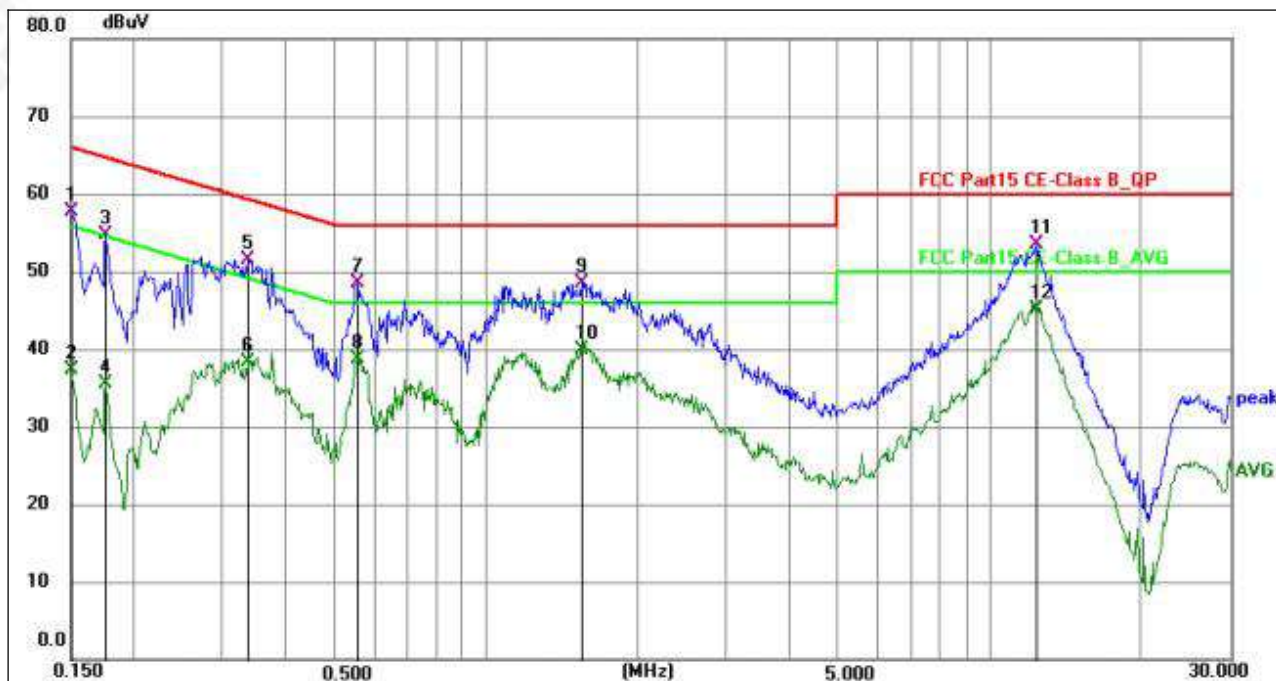
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

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



4.1.6 TEST RESULT

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



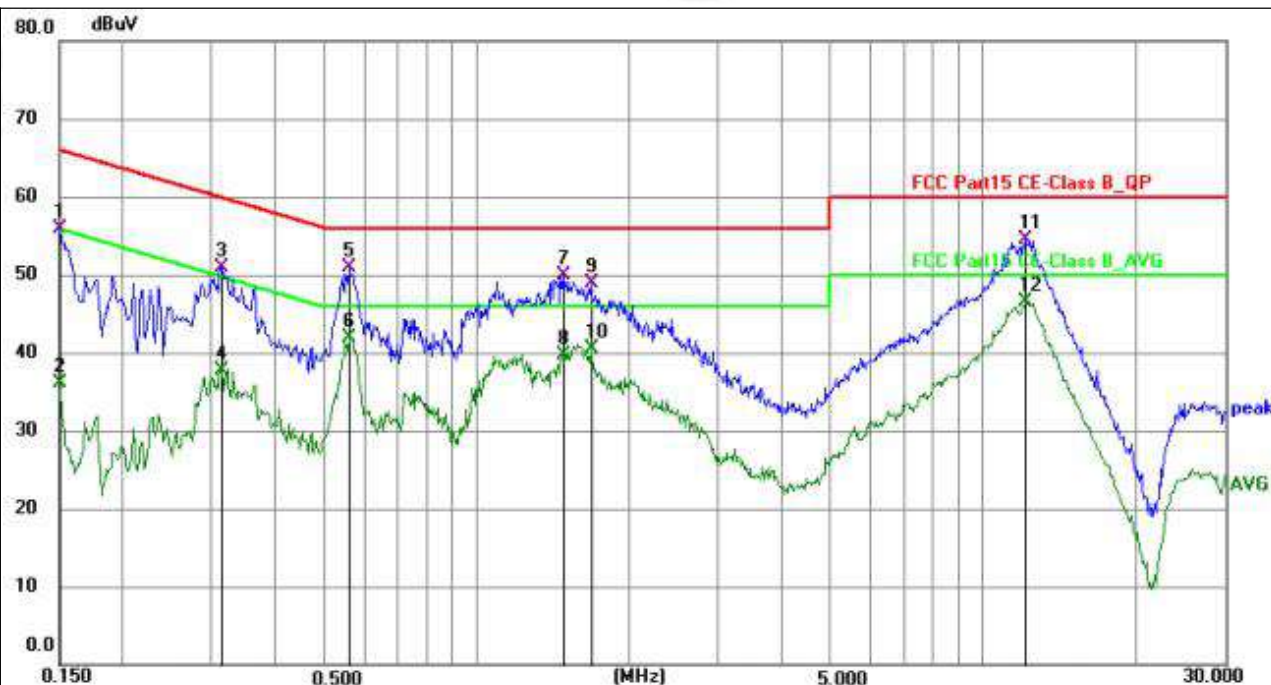
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1500	48.29	9.51	57.80	66.00	-8.20	QP	P	
2	0.1500	27.87	9.51	37.38	56.00	-18.62	AVG	P	
3	0.1758	45.13	9.61	54.74	64.68	-9.94	QP	P	
4	0.1758	25.99	9.61	35.60	54.68	-19.08	AVG	P	
5	0.3372	41.77	9.66	51.43	59.27	-7.84	QP	P	
6	0.3372	28.74	9.66	38.40	49.27	-10.87	AVG	P	
7	0.5550	38.85	9.65	48.50	56.00	-7.50	QP	P	
8	0.5550	29.14	9.65	38.79	46.00	-7.21	AVG	P	
9	1.5447	38.92	9.63	48.55	56.00	-7.45	QP	P	
10	1.5447	30.35	9.63	39.98	46.00	-6.02	AVG	P	
11	12.4305	43.70	9.77	53.47	60.00	-6.53	QP	P	
12 *	12.4305	35.25	9.77	45.02	50.00	-4.98	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



Temperature :	26°C	Relative Humidity:	54%
Pressure :	101kPa	Phase :	N
Test Voltage :	AC 120V/60Hz	Test Mode	802.11b 2412MHz TX



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1507	46.34	9.51	55.85	65.96	-10.11	QP	P	
2	0.1507	26.62	9.51	36.13	55.96	-19.83	AVG	P	
3	0.3119	41.31	9.67	50.98	59.92	-8.94	QP	P	
4	0.3119	28.08	9.67	37.75	49.92	-12.17	AVG	P	
5	0.5594	41.17	9.65	50.82	56.00	-5.18	QP	P	
6	0.5594	32.26	9.65	41.91	46.00	-4.09	AVG	P	
7	1.4862	40.22	9.62	49.84	56.00	-6.16	QP	P	
8	1.4862	30.02	9.62	39.64	46.00	-6.36	AVG	P	
9	1.6845	39.24	9.66	48.90	56.00	-7.10	QP	P	
10	1.6845	30.78	9.66	40.44	46.00	-5.56	AVG	P	
11	12.1020	44.71	9.77	54.48	60.00	-5.52	QP	P	
12 *	12.1020	36.66	9.77	46.43	50.00	-3.57	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:

- a. 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.
- b. 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:

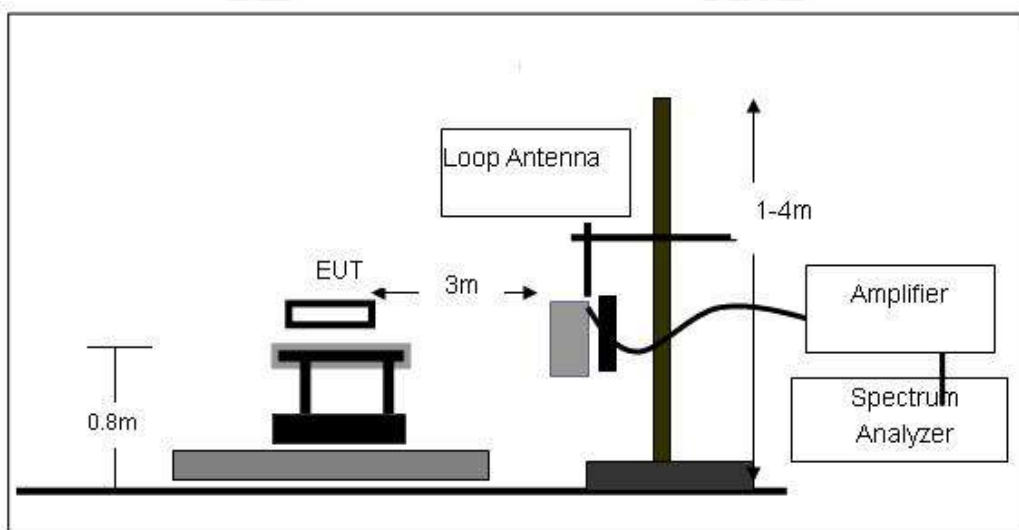
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

4.2.3 DEVIATION FROM TEST STANDARD

No deviation

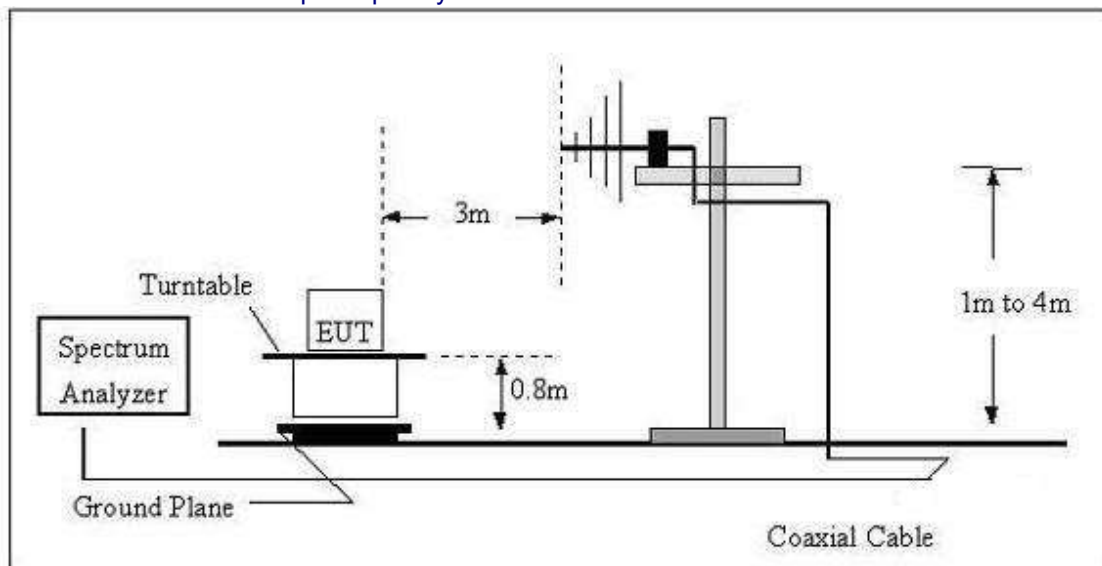
4.2.4 TEST SETUP

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

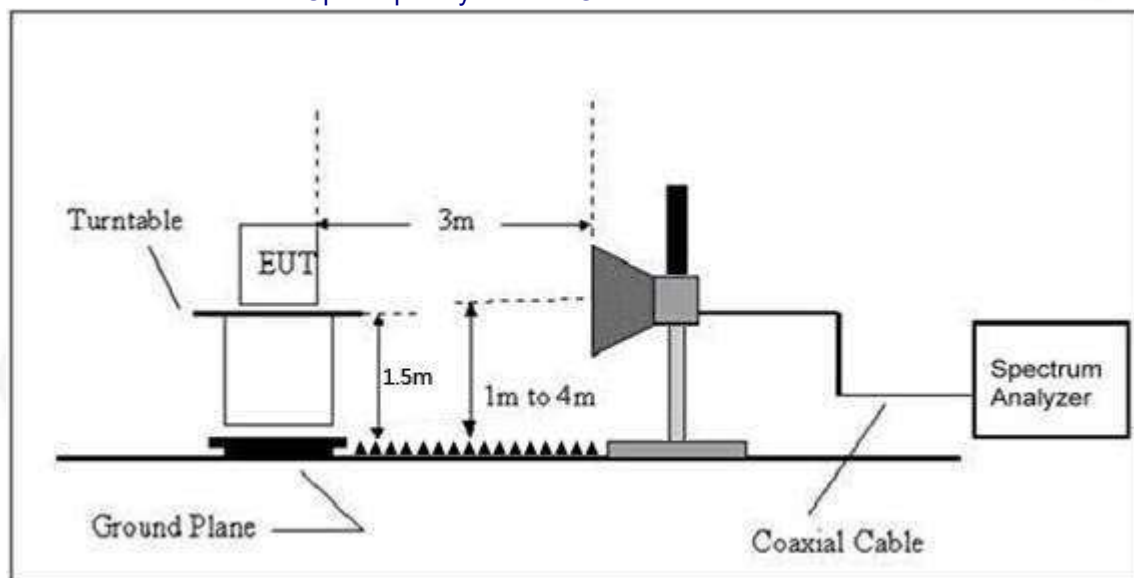




(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(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:	AC 120V/60Hz	Test Mode	802.11b 2412MHz TX



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 !	36.0007	51.98	-16.29	35.69	40.00	-4.31	QP
2 *	56.9911	53.61	-17.14	36.47	40.00	-3.53	QP
3	113.3161	54.42	-18.72	35.70	43.50	-7.80	QP
4	135.5061	53.34	-17.18	36.16	43.50	-7.34	QP
5	229.2930	54.44	-18.74	35.70	46.00	-10.30	QP
6 !	327.8872	56.13	-15.32	40.81	46.00	-5.19	QP



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



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	55.6092	53.49	-17.03	36.46	40.00	-3.54	QP
2 !	64.8863	53.39	-17.71	35.68	40.00	-4.32	QP
3	91.8161	55.64	-20.15	35.49	43.50	-8.01	QP
4	129.0142	52.19	-17.69	34.50	43.50	-9.00	QP
5	201.3930	54.49	-19.07	35.42	43.50	-8.08	QP
6	226.0994	55.42	-18.91	36.51	46.00	-9.49	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 802.11b and AC 120V mode



1GHz~25GHz

802.11b ANT 1

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	53.15	30.55	5.77	24.66	53.03	74.00	-20.97	Pk
V	4824.00	43.02	30.55	5.77	24.66	42.90	54.00	-11.10	AV
V	7236.00	54.86	30.33	6.32	24.55	55.40	74.00	-18.60	Pk
V	7236.00	43.07	30.33	6.32	24.55	43.61	54.00	-10.39	AV
V	9648.00	52.43	30.85	7.45	24.69	53.72	74.00	-20.28	Pk
V	9648.00	43.06	30.85	7.45	24.69	44.35	54.00	-9.65	AV
V	12060.00	52.46	31.02	8.99	25.57	56.00	74.00	-18.00	Pk
V	12060.00	43.33	31.02	8.99	25.57	46.87	54.00	-7.13	AV
H	4824.00	52.19	30.55	5.77	24.66	52.07	74.00	-21.93	Pk
H	4824.00	43.30	30.55	5.77	24.66	43.18	54.00	-10.82	AV
H	7236.00	51.52	30.33	6.32	24.55	52.06	74.00	-21.94	Pk
H	7236.00	43.85	30.33	6.32	24.55	44.39	54.00	-9.61	AV
H	9648.00	54.49	30.85	7.45	24.69	55.78	74.00	-18.22	Pk
H	9648.00	43.39	30.85	7.45	24.69	44.68	54.00	-9.32	AV
H	12060.00	54.44	31.02	8.99	25.57	57.98	74.00	-16.02	Pk
H	12060.00	43.81	31.02	8.99	25.57	47.35	54.00	-6.65	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	54.86	30.55	5.77	24.66	54.74	74.00	-19.26	Pk
V	4874.00	43.44	30.55	5.77	24.66	43.32	54.00	-10.68	AV
V	7311.00	54.97	30.33	6.32	24.55	55.51	74.00	-18.49	Pk
V	7311.00	43.65	30.33	6.32	24.55	44.19	54.00	-9.81	AV
V	9748.00	51.79	30.85	7.45	24.69	53.08	74.00	-20.92	Pk
V	9748.00	43.36	30.85	7.45	24.69	44.65	54.00	-9.35	AV
V	12185.00	52.32	31.02	8.99	25.57	55.86	74.00	-18.14	Pk
V	12185.00	43.73	31.02	8.99	25.57	47.27	54.00	-6.73	AV
H	4874.00	51.25	30.55	5.77	24.66	51.13	74.00	-22.87	Pk
H	4874.00	43.71	30.55	5.77	24.66	43.59	54.00	-10.41	AV
H	7311.00	50.46	30.33	6.32	24.55	51.00	74.00	-23.00	Pk
H	7311.00	43.46	30.33	6.32	24.55	44.00	54.00	-10.00	AV
H	9748.00	50.70	30.85	7.45	24.69	51.99	74.00	-22.01	Pk
H	9748.00	43.14	30.85	7.45	24.69	44.43	54.00	-9.57	AV
H	12185.00	51.20	31.02	8.99	25.57	54.74	74.00	-19.26	Pk
H	12185.00	43.94	31.02	8.99	25.57	47.48	54.00	-6.52	AV



Page 25 of 63

Polar (H/V)	Frequency	Meter Reading	Pre-ampli fier	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	50.68	30.55	5.77	24.66	50.56	74.00	-23.44	Pk
V	4924.00	43.85	30.55	5.77	24.66	43.73	54.00	-10.27	AV
V	7386.00	54.27	30.33	6.32	24.55	54.81	74.00	-19.19	Pk
V	7386.00	44.00	30.33	6.32	24.55	44.54	54.00	-9.46	AV
V	9848.00	52.96	30.85	7.45	24.69	54.25	74.00	-19.75	Pk
V	9848.00	43.24	30.85	7.45	24.69	44.53	54.00	-9.47	AV
V	12310.00	53.30	31.02	8.99	25.57	56.84	74.00	-17.16	Pk
V	12310.00	43.26	31.02	8.99	25.57	46.80	54.00	-7.20	AV
H	4924.00	53.72	30.55	5.77	24.66	53.60	74.00	-20.40	Pk
H	4924.00	43.69	30.55	5.77	24.66	43.57	54.00	-10.43	AV
H	7386.00	52.48	30.33	6.32	24.55	53.02	74.00	-20.98	Pk
H	7386.00	43.69	30.33	6.32	24.55	44.23	54.00	-9.77	AV
H	9848.00	53.14	30.85	7.45	24.69	54.43	74.00	-19.57	Pk
H	9848.00	43.75	30.85	7.45	24.69	45.04	54.00	-8.96	AV
H	12310.00	53.79	31.02	8.99	25.57	57.33	74.00	-16.67	Pk
H	12310.00	43.67	31.02	8.99	25.57	47.21	54.00	-6.79	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 1

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	51.44	30.55	5.77	24.66	51.32	74.00	-22.68	Pk
V	4824.00	43.73	30.55	5.77	24.66	43.61	54.00	-10.39	AV
V	7236.00	52.80	30.33	6.32	24.55	53.34	74.00	-20.66	Pk
V	7236.00	43.29	30.33	6.32	24.55	43.83	54.00	-10.17	AV
V	9648.00	50.91	30.85	7.45	24.69	52.20	74.00	-21.80	Pk
V	9648.00	43.66	30.85	7.45	24.69	44.95	54.00	-9.05	AV
V	12060.00	52.42	31.02	8.99	25.57	55.96	74.00	-18.04	Pk
V	12060.00	43.12	31.02	8.99	25.57	46.66	54.00	-7.34	AV
H	4824.00	52.97	30.55	5.77	24.66	52.85	74.00	-21.15	Pk
H	4824.00	43.83	30.55	5.77	24.66	43.71	54.00	-10.29	AV
H	7236.00	52.16	30.33	6.32	24.55	52.70	74.00	-21.30	Pk
H	7236.00	43.89	30.33	6.32	24.55	44.43	54.00	-9.57	AV
H	9648.00	50.48	30.85	7.45	24.69	51.77	74.00	-22.23	Pk
H	9648.00	43.54	30.85	7.45	24.69	44.83	54.00	-9.17	AV
H	12060.00	53.15	31.02	8.99	25.57	56.69	74.00	-17.31	Pk
H	12060.00	43.73	31.02	8.99	25.57	47.27	54.00	-6.73	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	52.99	30.55	5.77	24.66	52.87	74.00	-21.13	Pk
V	4874.00	43.44	30.55	5.77	24.66	43.32	54.00	-10.68	AV
V	7311.00	50.71	30.33	6.32	24.55	51.25	74.00	-22.75	Pk
V	7311.00	43.58	30.33	6.32	24.55	44.12	54.00	-9.88	AV
V	9748.00	53.74	30.85	7.45	24.69	55.03	74.00	-18.97	Pk
V	9748.00	43.55	30.85	7.45	24.69	44.84	54.00	-9.16	AV
V	12185.00	52.15	31.02	8.99	25.57	55.69	74.00	-18.31	Pk
V	12185.00	43.08	31.02	8.99	25.57	46.62	54.00	-7.38	AV
H	4874.00	53.24	30.55	5.77	24.66	53.12	74.00	-20.88	Pk
H	4874.00	43.88	30.55	5.77	24.66	43.76	54.00	-10.24	AV
H	7311.00	50.18	30.33	6.32	24.55	50.72	74.00	-23.28	Pk
H	7311.00	43.54	30.33	6.32	24.55	44.08	54.00	-9.92	AV
H	9748.00	52.31	30.85	7.45	24.69	53.60	74.00	-20.40	Pk
H	9748.00	43.68	30.85	7.45	24.69	44.97	54.00	-9.03	AV
H	12185.00	51.30	31.02	8.99	25.57	54.84	74.00	-19.16	Pk
H	12185.00	43.90	31.02	8.99	25.57	47.44	54.00	-6.56	AV



Page 20 of 60

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	53.86	30.55	5.77	24.66	53.74	74.00	-20.26	Pk
V	4924.00	43.02	30.55	5.77	24.66	42.90	54.00	-11.10	AV
V	7386.00	54.53	30.33	6.32	24.55	55.07	74.00	-18.93	Pk
V	7386.00	43.86	30.33	6.32	24.55	44.40	54.00	-9.60	AV
V	9848.00	54.07	30.85	7.45	24.69	55.36	74.00	-18.64	Pk
V	9848.00	43.99	30.85	7.45	24.69	45.28	54.00	-8.72	AV
V	12310.00	53.83	31.02	8.99	25.57	57.37	74.00	-16.63	Pk
V	12310.00	43.27	31.02	8.99	25.57	46.81	54.00	-7.19	AV
H	4924.00	51.67	30.55	5.77	24.66	51.55	74.00	-22.45	Pk
H	4924.00	43.61	30.55	5.77	24.66	43.49	54.00	-10.51	AV
H	7386.00	50.15	30.33	6.32	24.55	50.69	74.00	-23.31	Pk
H	7386.00	43.22	30.33	6.32	24.55	43.76	54.00	-10.24	AV
H	9848.00	52.91	30.85	7.45	24.69	54.20	74.00	-19.80	Pk
H	9848.00	43.98	30.85	7.45	24.69	45.27	54.00	-8.73	AV
H	12310.00	50.46	31.02	8.99	25.57	54.00	74.00	-20.00	Pk
H	12310.00	43.00	31.02	8.99	25.57	46.54	54.00	-7.46	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	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	51.02	30.55	5.77	24.66	50.90	74.00	-23.10	Pk
V	4924.00	43.20	30.55	5.77	24.66	43.08	54.00	-10.92	AV
V	7386.00	51.75	30.33	6.32	24.55	52.29	74.00	-21.71	Pk
V	7386.00	43.40	30.33	6.32	24.55	43.94	54.00	-10.06	AV
V	9848.00	53.82	30.85	7.45	24.69	55.11	74.00	-18.89	Pk
V	9848.00	43.36	30.85	7.45	24.69	44.65	54.00	-9.35	AV
V	12310.00	53.54	31.02	8.99	25.57	57.08	74.00	-16.92	Pk
V	12310.00	43.24	31.02	8.99	25.57	46.78	54.00	-7.22	AV
H	4924.00	50.82	30.55	5.77	24.66	50.70	74.00	-23.30	Pk
H	4924.00	43.84	30.55	5.77	24.66	43.72	54.00	-10.28	AV
H	7386.00	54.40	30.33	6.32	24.55	54.94	74.00	-19.06	Pk
H	7386.00	43.10	30.33	6.32	24.55	43.64	54.00	-10.36	AV
H	9848.00	52.46	30.85	7.45	24.69	53.75	74.00	-20.25	Pk
H	9848.00	43.42	30.85	7.45	24.69	44.71	54.00	-9.29	AV
H	12310.00	53.68	31.02	8.99	25.57	57.22	74.00	-16.78	Pk
H	12310.00	43.38	31.02	8.99	25.57	46.92	54.00	-7.08	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	52.23	30.55	5.77	24.66	52.11	74.00	-21.89	Pk
V	4874.00	43.05	30.55	5.77	24.66	42.93	54.00	-11.07	AV
V	7311.00	52.80	30.33	6.32	24.55	53.34	74.00	-20.66	Pk
V	7311.00	43.73	30.33	6.32	24.55	44.27	54.00	-9.73	AV
V	9748.00	54.58	30.85	7.45	24.69	55.87	74.00	-18.13	Pk
V	9748.00	43.10	30.85	7.45	24.69	44.39	54.00	-9.61	AV
V	12185.00	54.79	31.02	8.99	25.57	58.33	74.00	-15.67	Pk
V	12185.00	43.79	31.02	8.99	25.57	47.33	54.00	-6.67	AV
H	4874.00	53.20	30.55	5.77	24.66	53.08	74.00	-20.92	Pk
H	4874.00	43.60	30.55	5.77	24.66	43.48	54.00	-10.52	AV
H	7311.00	50.61	30.33	6.32	24.55	51.15	74.00	-22.85	Pk
H	7311.00	44.00	30.33	6.32	24.55	44.54	54.00	-9.46	AV
H	9748.00	52.33	30.85	7.45	24.69	53.62	74.00	-20.38	Pk
H	9748.00	43.26	30.85	7.45	24.69	44.55	54.00	-9.45	AV
H	12185.00	51.73	31.02	8.99	25.57	55.27	74.00	-18.73	Pk
H	12185.00	43.27	31.02	8.99	25.57	46.81	54.00	-7.19	AV



Page 27 of 63

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	53.34	30.55	5.77	24.66	53.22	74.00	-20.78	Pk
V	4924.00	43.26	30.55	5.77	24.66	43.14	54.00	-10.86	AV
V	7386.00	51.59	30.33	6.32	24.55	52.13	74.00	-21.87	Pk
V	7386.00	43.65	30.33	6.32	24.55	44.19	54.00	-9.81	AV
V	9848.00	51.29	30.85	7.45	24.69	52.58	74.00	-21.42	Pk
V	9848.00	43.86	30.85	7.45	24.69	45.15	54.00	-8.85	AV
V	12310.00	54.25	31.02	8.99	25.57	57.79	74.00	-16.21	Pk
V	12310.00	43.18	31.02	8.99	25.57	46.72	54.00	-7.28	AV
H	4924.00	54.33	30.55	5.77	24.66	54.21	74.00	-19.79	Pk
H	4924.00	43.64	30.55	5.77	24.66	43.52	54.00	-10.48	AV
H	7386.00	52.82	30.33	6.32	24.55	53.36	74.00	-20.64	Pk
H	7386.00	43.79	30.33	6.32	24.55	44.33	54.00	-9.67	AV
H	9848.00	50.01	30.85	7.45	24.69	51.30	74.00	-22.70	Pk
H	9848.00	43.82	30.85	7.45	24.69	45.11	54.00	-8.89	AV
H	12310.00	54.65	31.02	8.99	25.57	58.19	74.00	-15.81	Pk
H	12310.00	43.82	31.02	8.99	25.57	47.36	54.00	-6.64	AV



802.11n40

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	50.78	30.55	5.77	24.66	50.66	74.00	-23.34	Pk
V	4924.00	43.67	30.55	5.77	24.66	43.55	54.00	-10.45	AV
V	7386.00	50.64	30.33	6.32	24.55	51.18	74.00	-22.82	Pk
V	7386.00	43.35	30.33	6.32	24.55	43.89	54.00	-10.11	AV
V	9848.00	52.05	30.85	7.45	24.69	53.34	74.00	-20.66	Pk
V	9848.00	43.35	30.85	7.45	24.69	44.64	54.00	-9.36	AV
V	12310.00	52.02	31.02	8.99	25.57	55.56	74.00	-18.44	Pk
V	12310.00	43.45	31.02	8.99	25.57	46.99	54.00	-7.01	AV
H	4924.00	52.40	30.55	5.77	24.66	52.28	74.00	-21.72	Pk
H	4924.00	43.81	30.55	5.77	24.66	43.69	54.00	-10.31	AV
H	7386.00	52.67	30.33	6.32	24.55	53.21	74.00	-20.79	Pk
H	7386.00	43.14	30.33	6.32	24.55	43.68	54.00	-10.32	AV
H	9848.00	54.13	30.85	7.45	24.69	55.42	74.00	-18.58	Pk
H	9848.00	43.33	30.85	7.45	24.69	44.62	54.00	-9.38	AV
H	12310.00	51.40	31.02	8.99	25.57	54.94	74.00	-19.06	Pk
H	12310.00	43.34	31.02	8.99	25.57	46.88	54.00	-7.12	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	51.37	30.55	5.77	24.66	52.23	74.00	-21.77	Pk
V	4874.00	43.02	30.55	5.77	24.66	43.48	54.00	-10.52	AV
V	7311.00	53.42	30.33	6.32	24.55	54.16	74.00	-19.84	Pk
V	7311.00	43.46	30.33	6.32	24.55	43.66	54.00	-10.34	AV
V	9748.00	54.59	30.85	7.45	24.69	53.63	74.00	-20.37	Pk
V	9748.00	43.87	30.85	7.45	24.69	44.52	54.00	-9.48	AV
V	12185.00	50.18	31.02	8.99	25.57	56.82	74.00	-17.18	Pk
V	12185.00	43.30	31.02	8.99	25.57	47.86	54.00	-6.14	AV
H	4874.00	50.67	30.55	5.77	24.66	53.14	74.00	-20.86	Pk
H	4874.00	43.66	30.55	5.77	24.66	43.13	54.00	-10.87	AV
H	7311.00	51.80	30.33	6.32	24.55	52.82	74.00	-21.18	Pk
H	7311.00	43.68	30.33	6.32	24.55	43.19	54.00	-10.81	AV
H	9748.00	52.06	30.85	7.45	24.69	54.46	74.00	-19.54	Pk
H	9748.00	43.52	30.85	7.45	24.69	44.82	54.00	-9.18	AV
H	12185.00	51.89	31.02	8.99	25.57	54.88	74.00	-19.12	Pk
H	12185.00	43.28	31.02	8.99	25.57	45.75	54.00	-8.25	AV



Page 25 of 63

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	53.13	30.55	5.77	24.66	52.23	74.00	-21.77	Pk
V	4924.00	43.32	30.55	5.77	24.66	43.48	54.00	-10.52	AV
V	7386.00	52.45	30.33	6.32	24.55	54.16	74.00	-19.84	Pk
V	7386.00	43.82	30.33	6.32	24.55	43.66	54.00	-10.34	AV
V	9848.00	53.64	30.85	7.45	24.69	53.63	74.00	-20.37	Pk
V	9848.00	43.49	30.85	7.45	24.69	44.52	54.00	-9.48	AV
V	12310.00	51.92	31.02	8.99	25.57	56.82	74.00	-17.18	Pk
V	12310.00	44.00	31.02	8.99	25.57	47.86	54.00	-6.14	AV
H	4924.00	52.62	30.55	5.77	24.66	53.14	74.00	-20.86	Pk
H	4924.00	43.94	30.55	5.77	24.66	43.13	54.00	-10.87	AV
H	7386.00	50.08	30.33	6.32	24.55	52.82	74.00	-21.18	Pk
H	7386.00	43.69	30.33	6.32	24.55	43.19	54.00	-10.81	AV
H	9848.00	51.01	30.85	7.45	24.69	54.46	74.00	-19.54	Pk
H	9848.00	43.86	30.85	7.45	24.69	44.82	54.00	-9.18	AV
H	12310.00	53.61	31.02	8.99	25.57	54.88	74.00	-19.12	Pk
H	12310.00	43.58	31.02	8.99	25.57	45.75	54.00	-8.25	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 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:

- 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.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.
- 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.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 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.
- 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

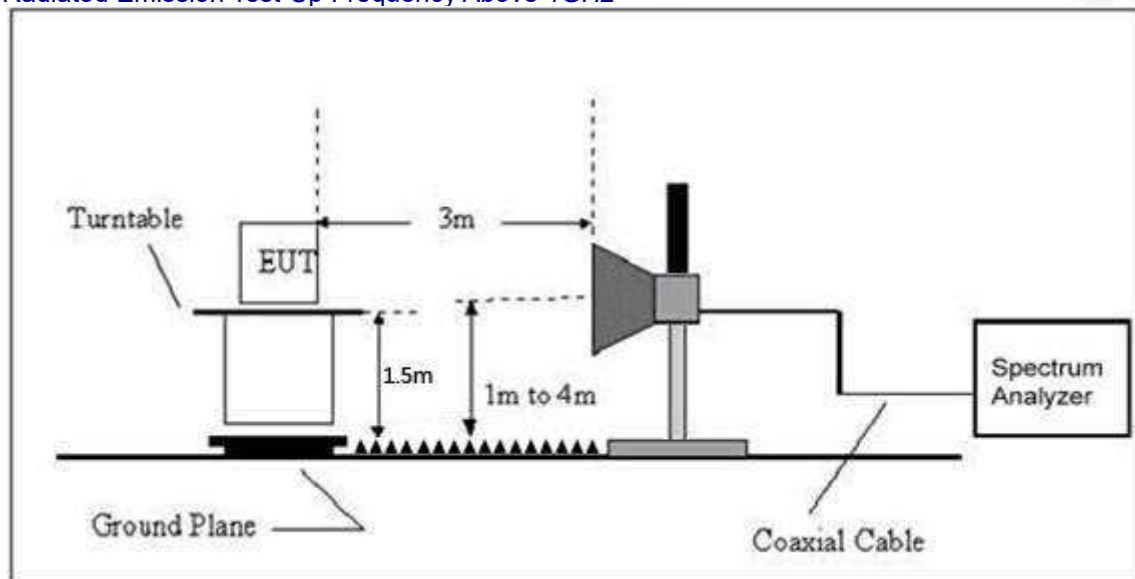
5.3 DEVIATION FROM TEST STANDARD

No deviation



5.4 TEST SETUP

Radiated Emission Test-Up Frequency Above 1GHz



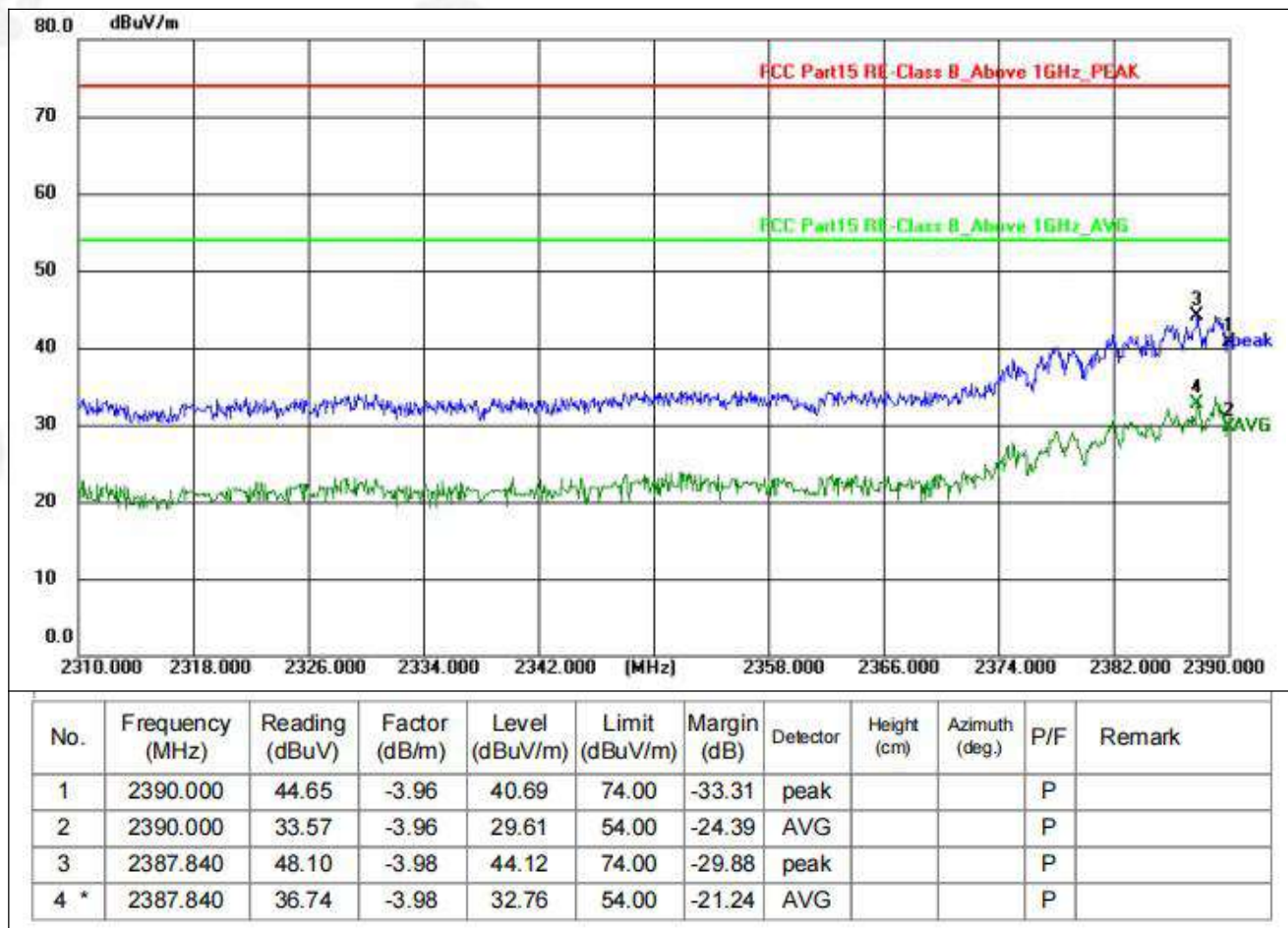
5.5 EUT OPERATING CONDITIONS

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.



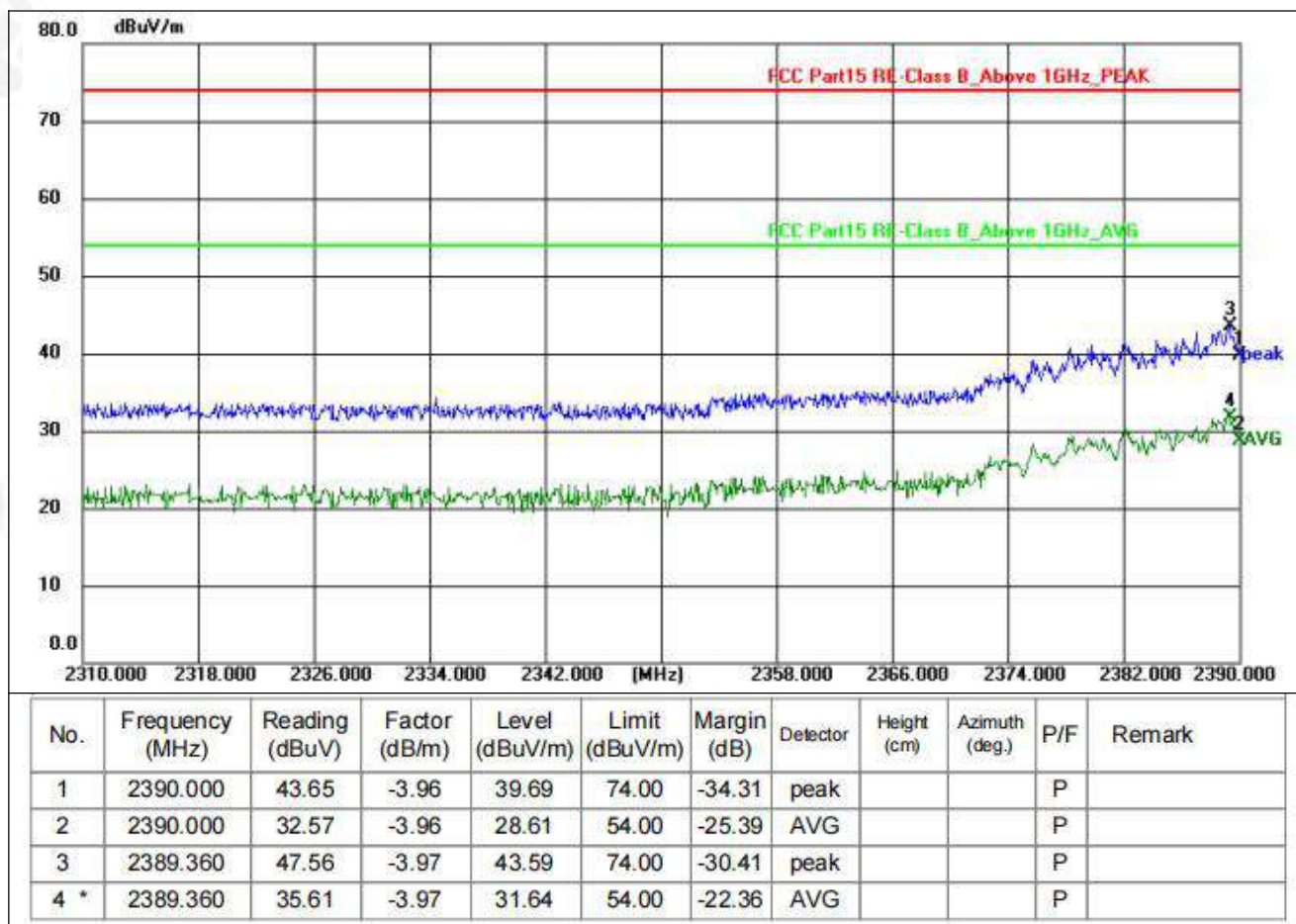
5.6 TEST RESULT

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



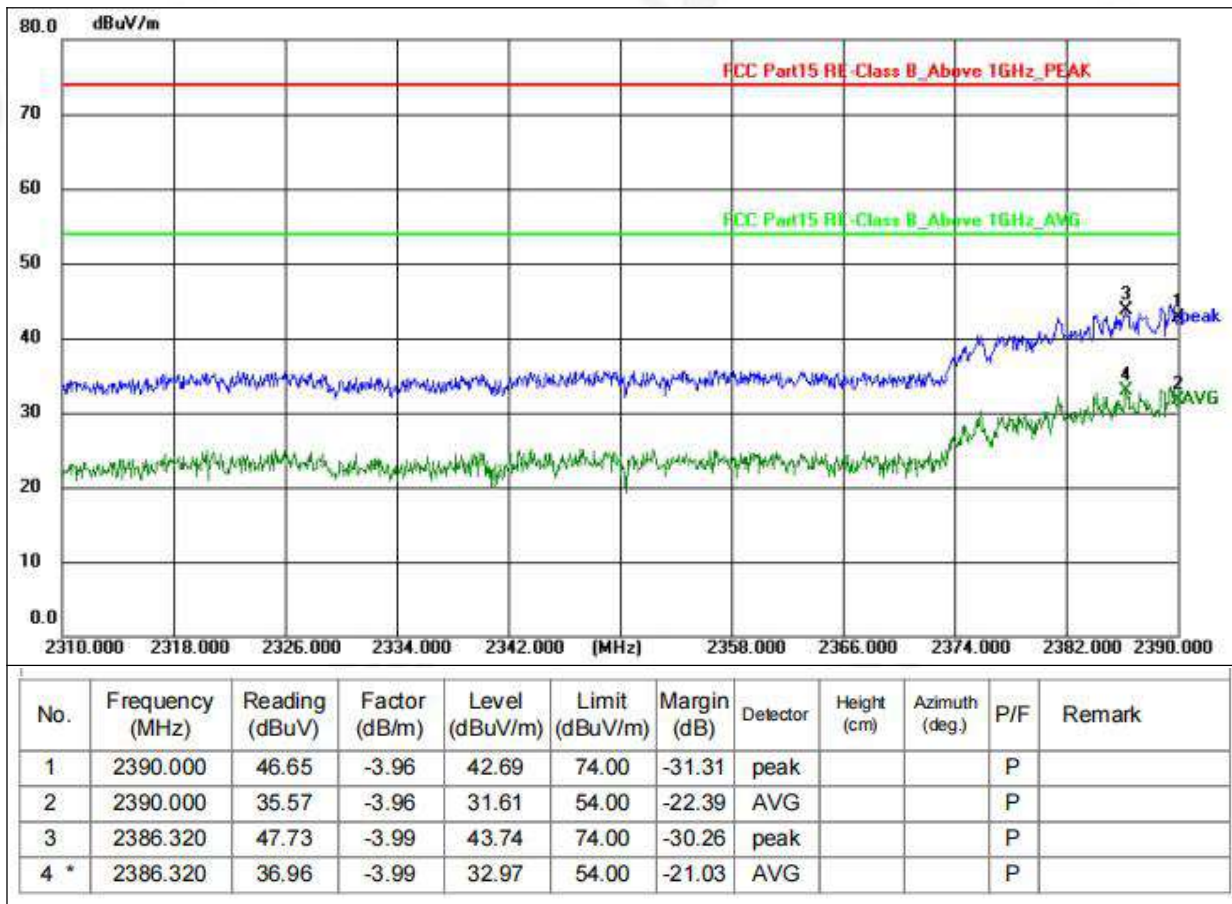


Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz	Test Mode	802.11b 2412MHz TX



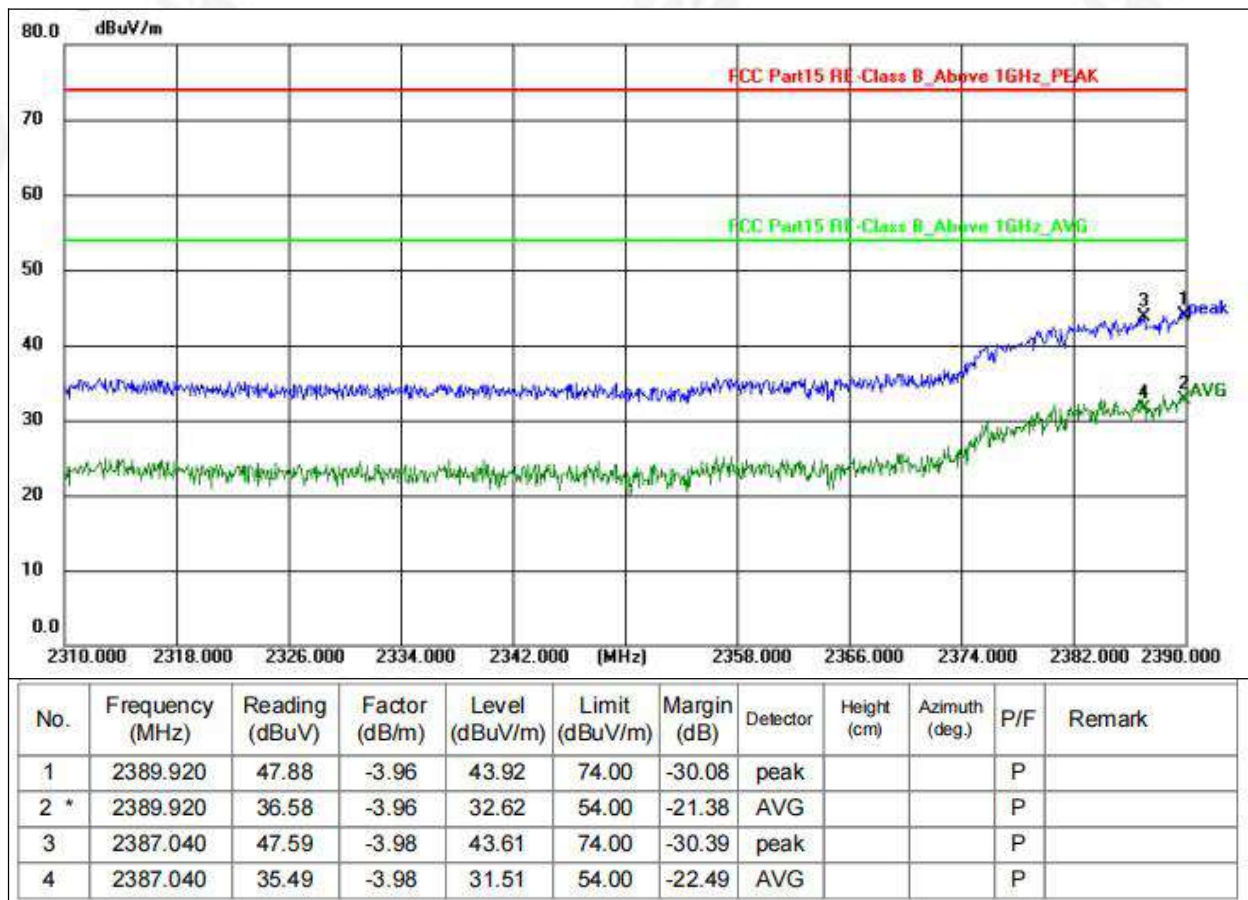


Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz	Test Mode	802.11n40 2422MHz TX



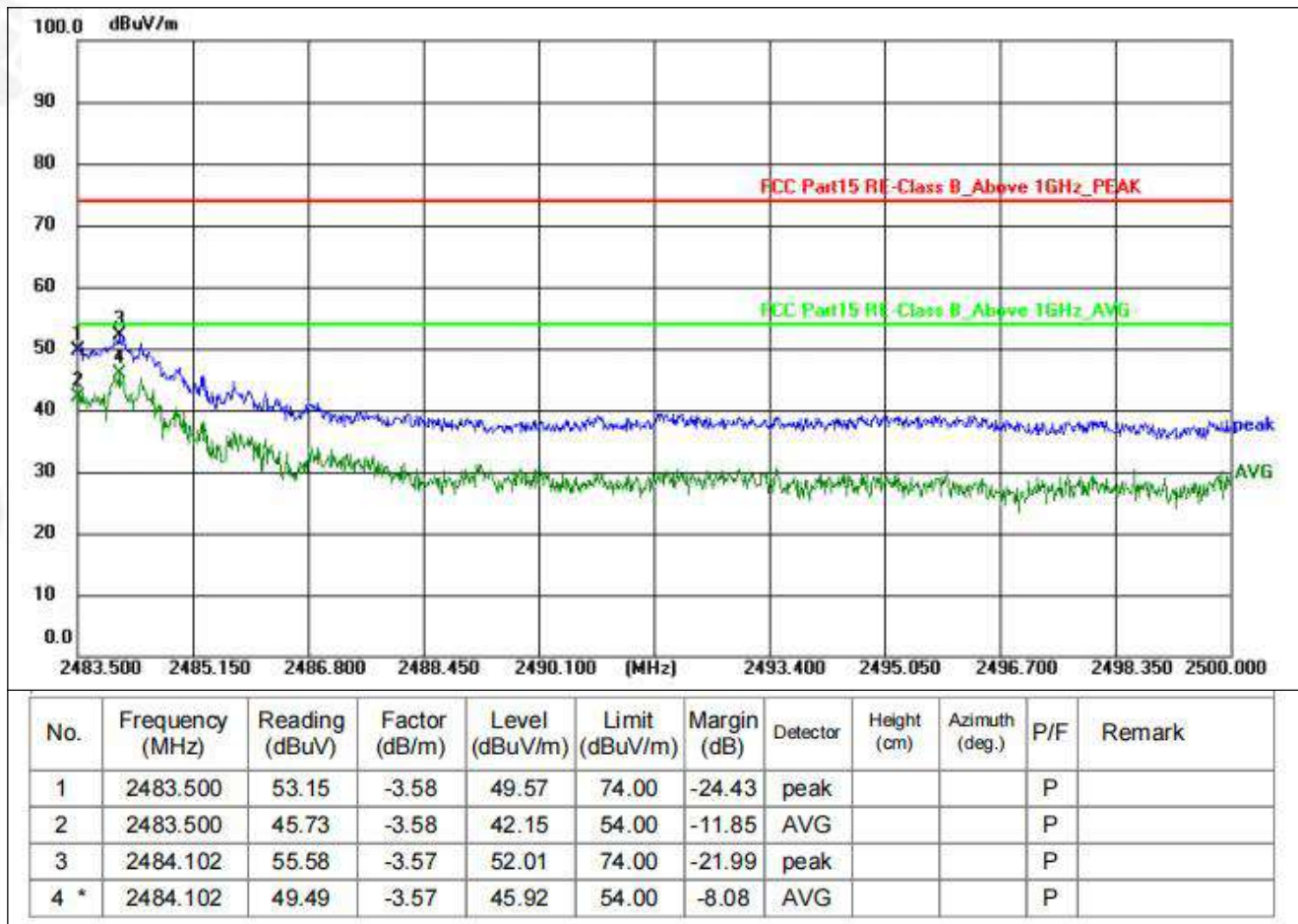


Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz	Test Mode	802.11n40 2422MHz TX



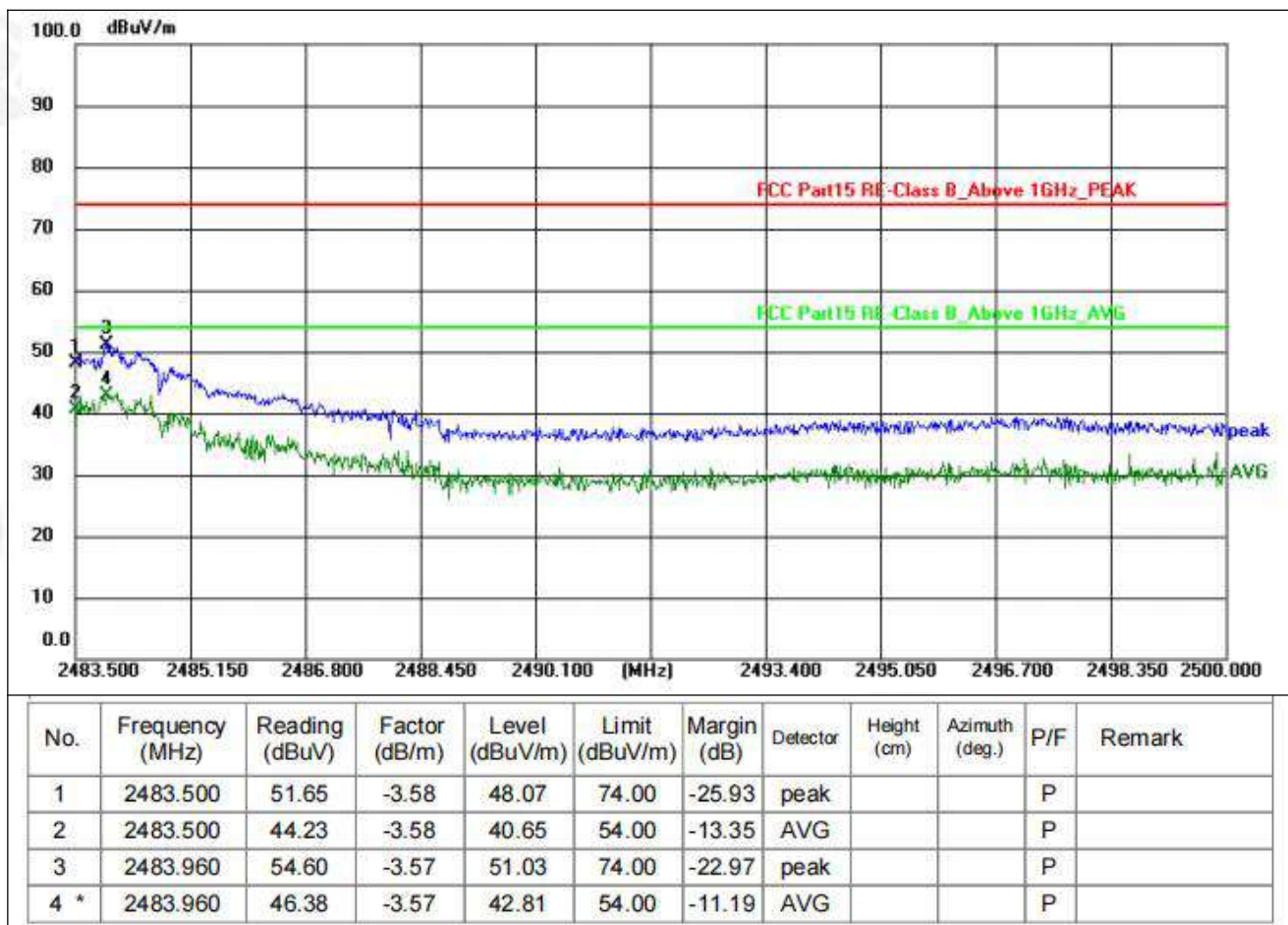


Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz	Test Mode	802.11b 2412MHz TX



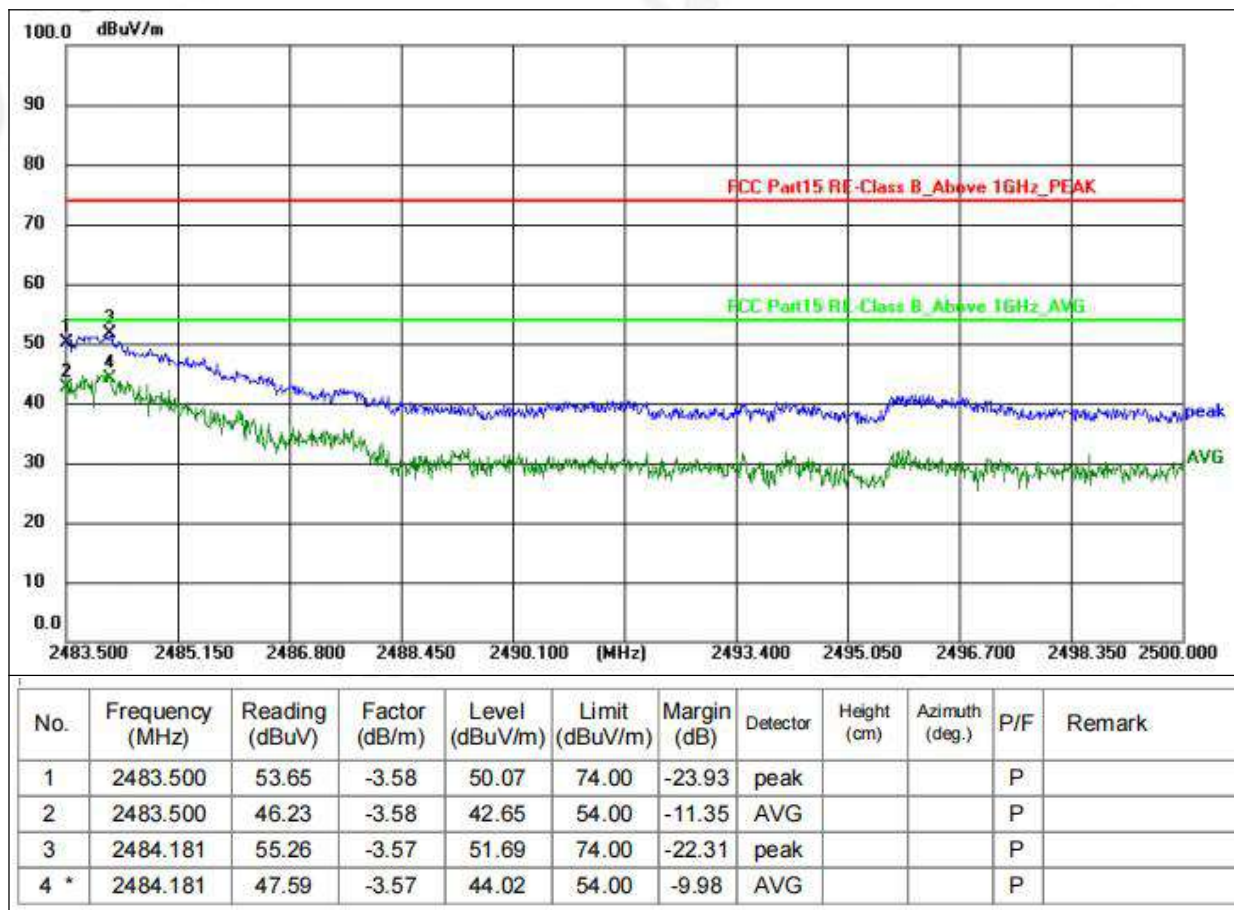


Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz	Test Mode	802.11b 2412MHz TX



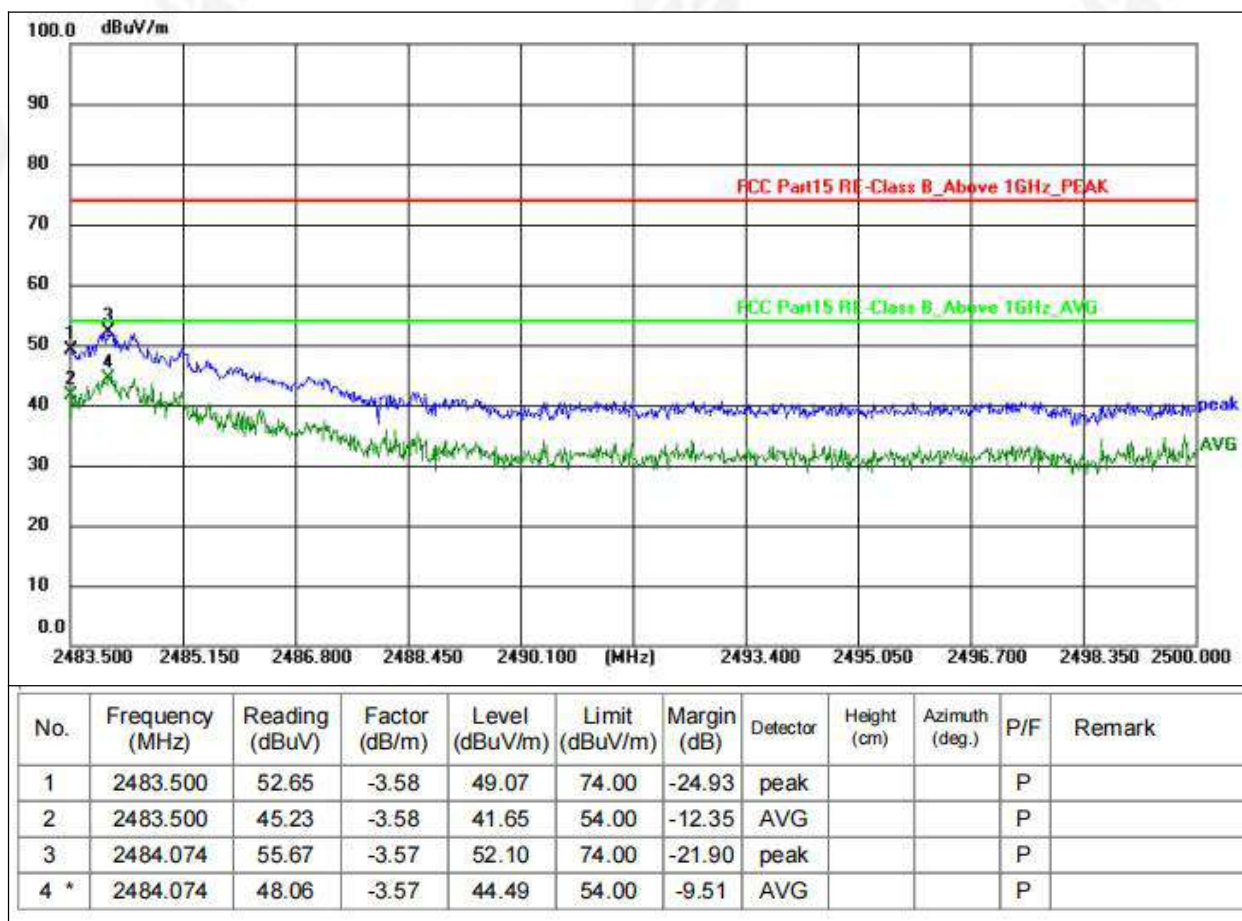


Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz	Test Mode	802.11n40 2422MHz TX





Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz	Test Mode	802.11n40 2422MHz TX



Remarks:

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 802.11b mode
- Note:The 802.11b/g ANT1/ 2 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(SISO)	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

Mode	Frequency (MHz)	Conducted PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
b	2412	-22.19	8	Pass
b	2437	-22.74	8	Pass
b	2462	-22.61	8	Pass
g	2412	-20.64	8	Pass
g	24377	-19.23	8	Pass
g	2462	-19.27	8	Pass
n20	2412	-18.59	8	Pass
n20	2437	-17.83	8	Pass
n20	2462	-18.29	8	Pass
n40	2422	-20.84	8	Pass
n40	2437	-22.11	8	Pass
n40	2452	-21.52	8	Pass



PSD NVNT b 2412MHz Ant1



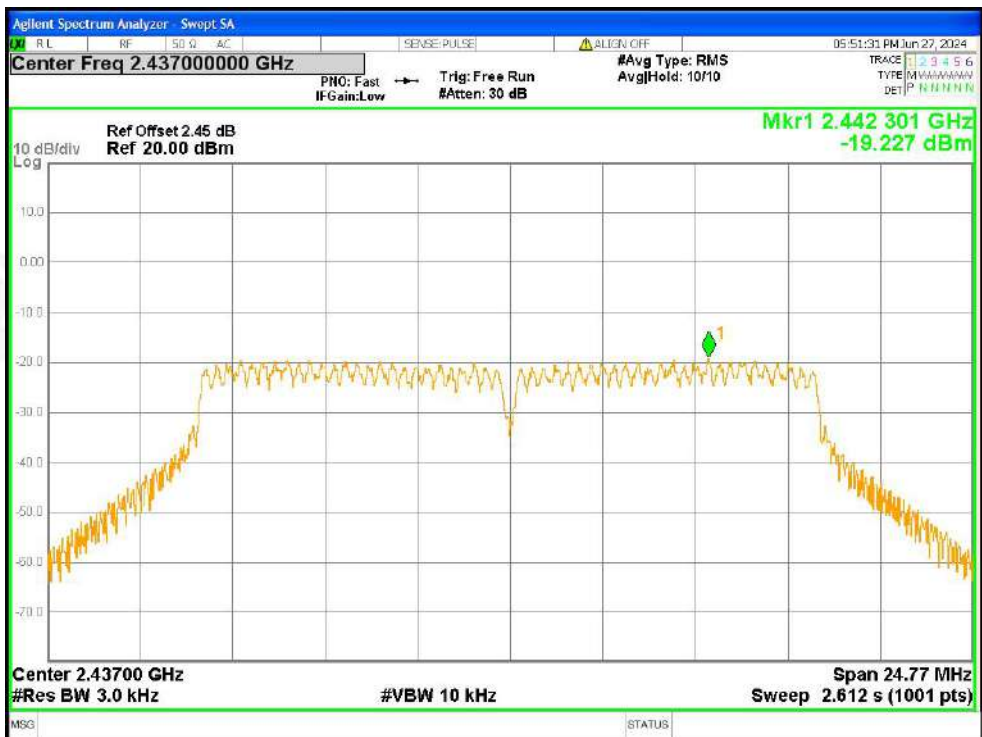
PSD NVNT b 2437MHz Ant1



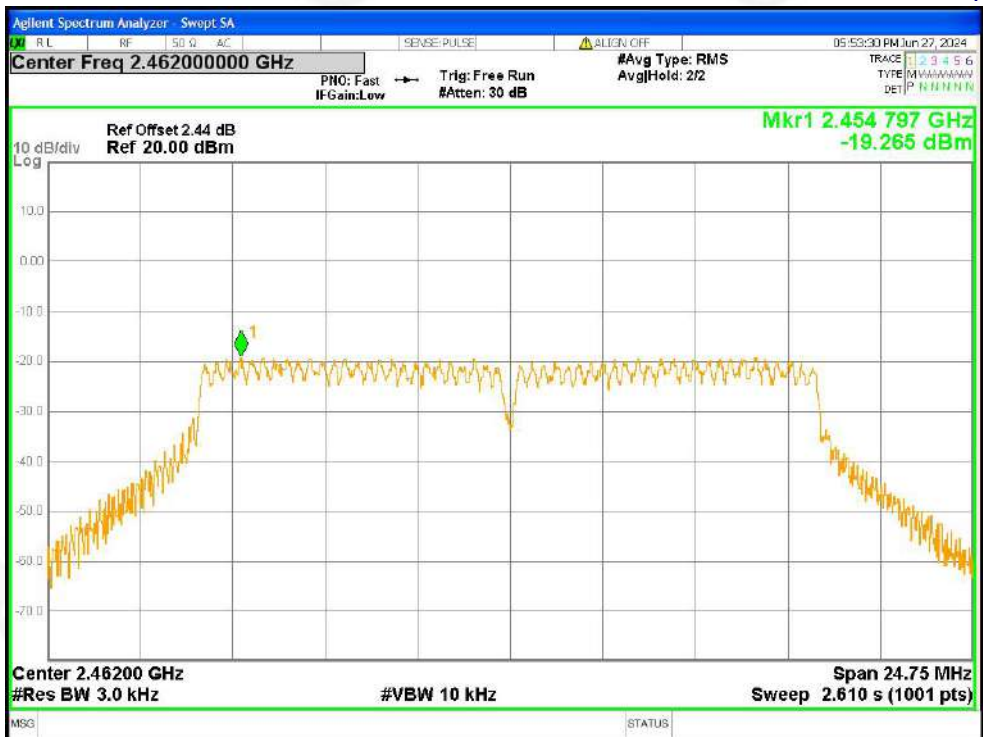
PSD NVNT b 2462MHz Ant1



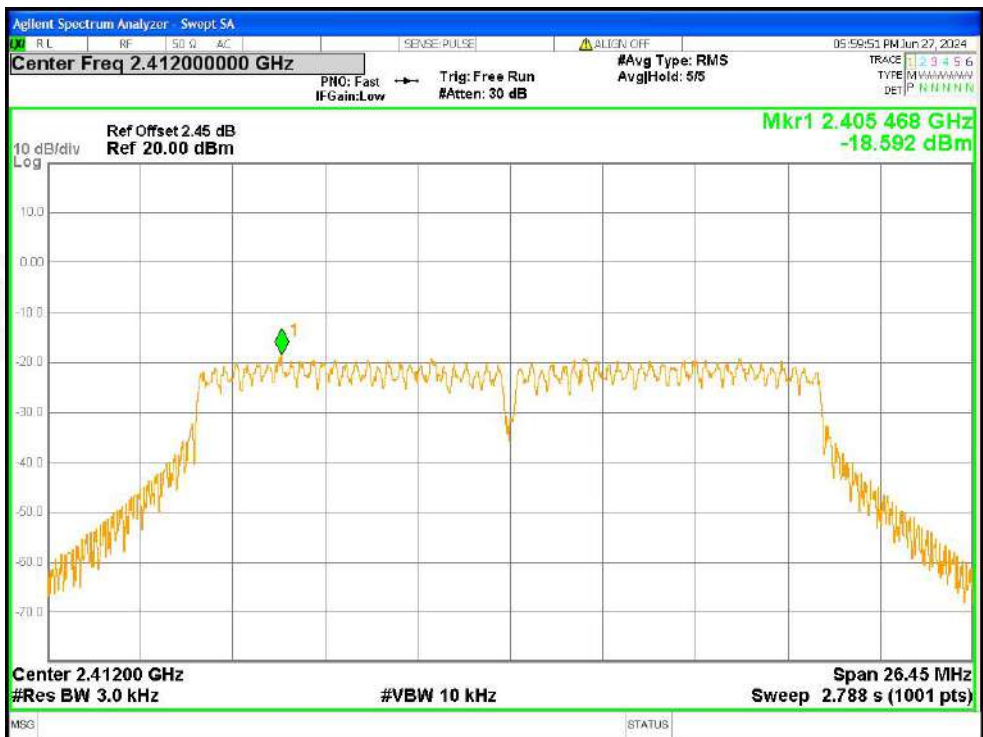
PSD NVNT g 2412MHz Ant1



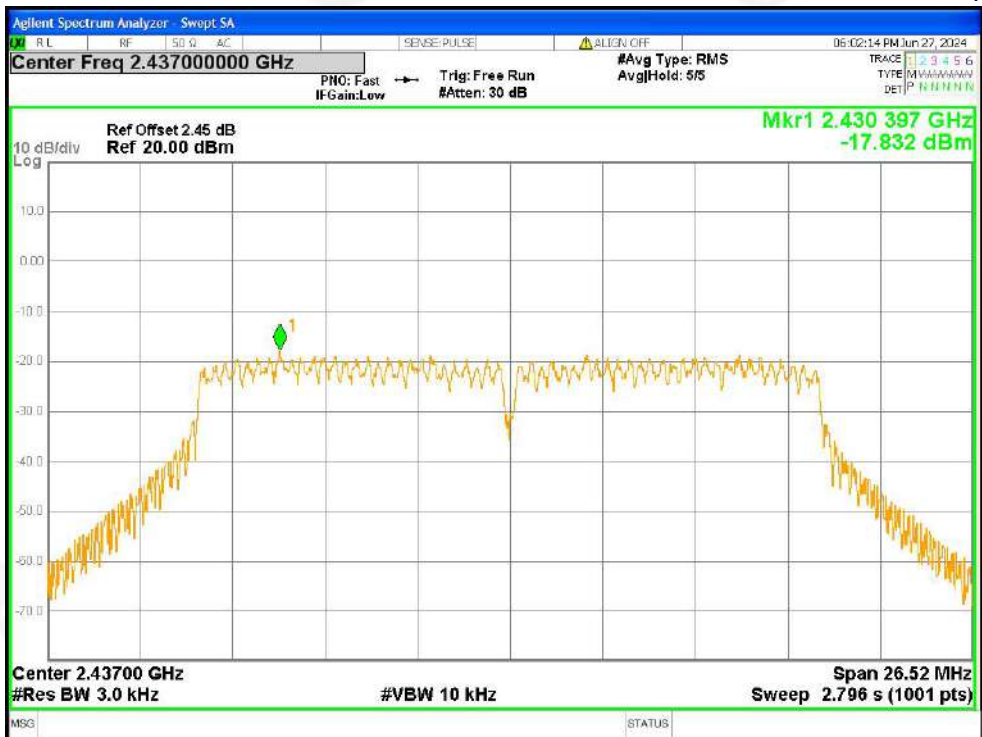
PSD NVNT g 2437MHz Ant1



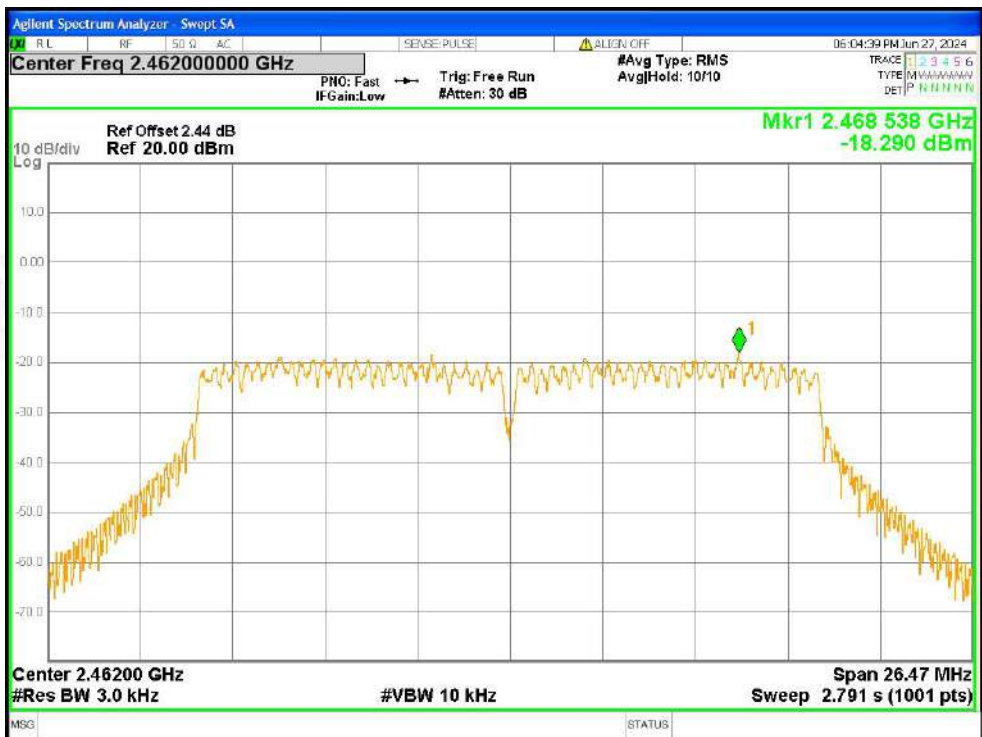
PSD NVNT g 2462MHz Ant1



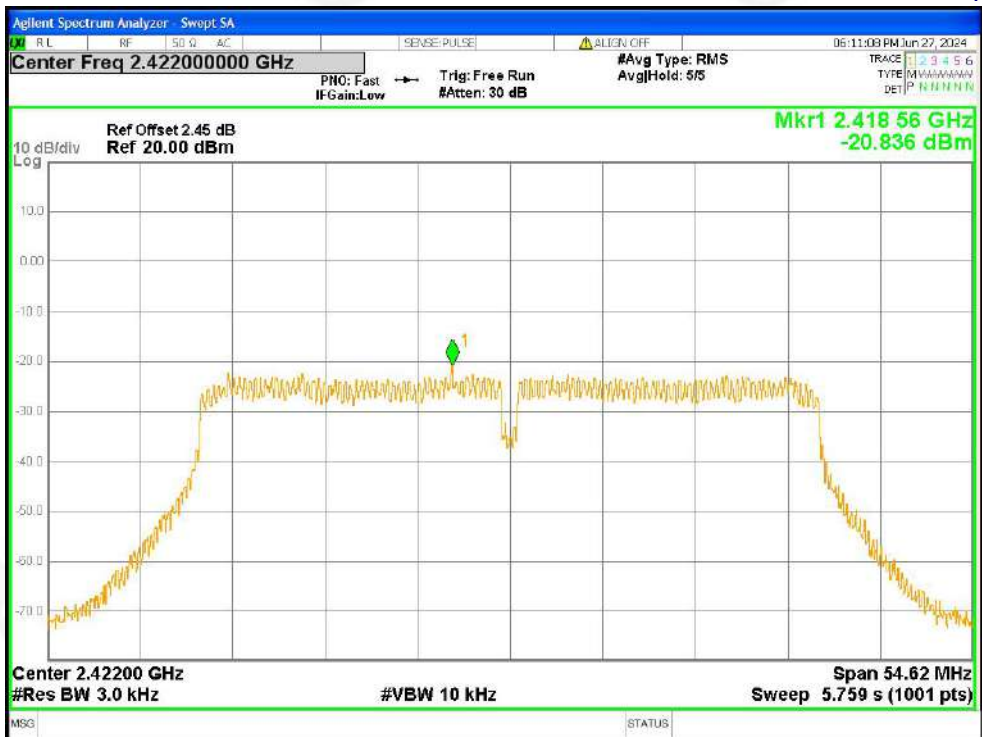
PSD NVNT n20 2412MHz Ant1



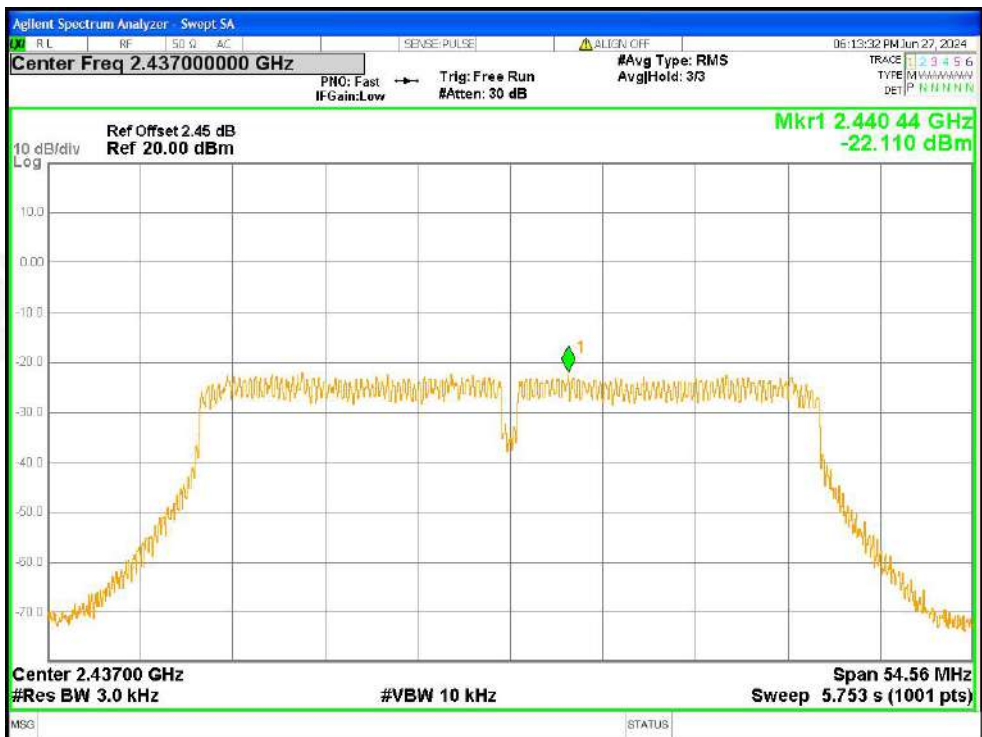
PSD NVNT n20 2437MHz Ant1



PSD NVNT n20 2462MHz Ant1



PSD NVNT n40 2422MHz Ant1



PSD NVNT n40 2437MHz Ant1



PSD NVNT n40 2452MHz Ant1



7. CHANNEL BANDWIDTH& 99% OCCUPY 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

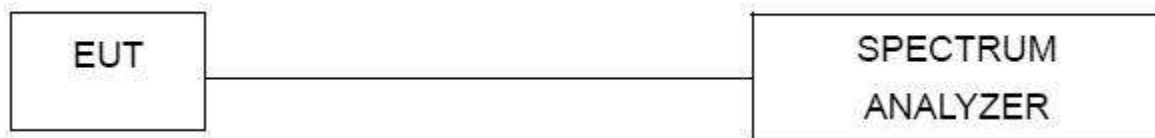
7.2 TEST PROCEDURE

1. Set RBW = 100 kHz For -6db OBW, Set RBW = 200 kHz For 99%OBW
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.

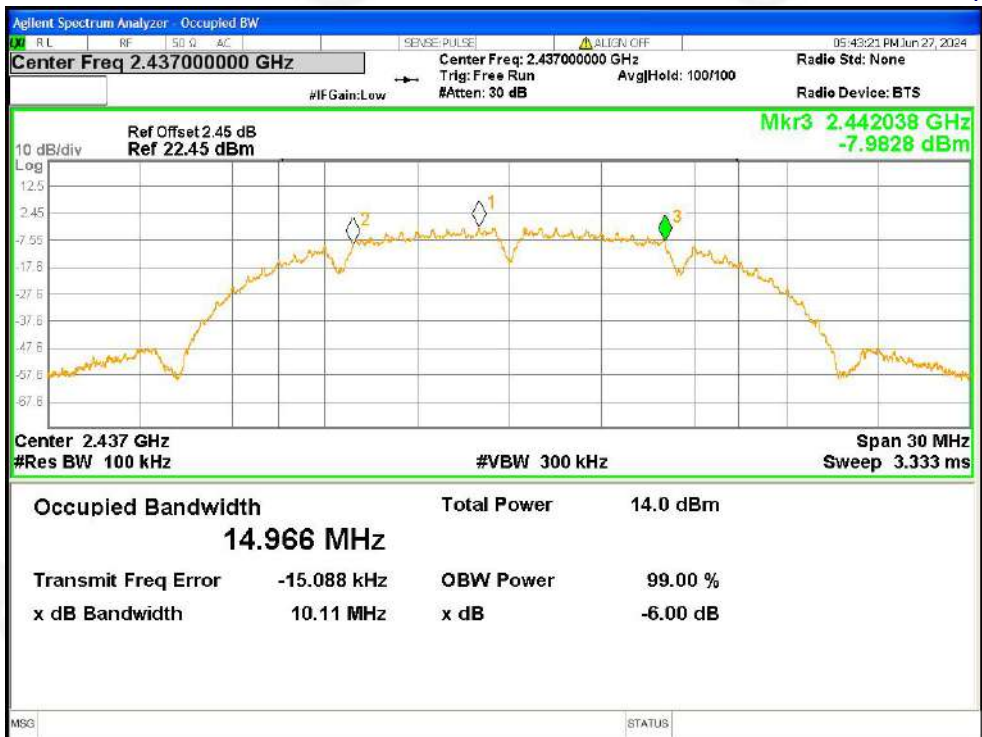


7.6 TEST RESULT

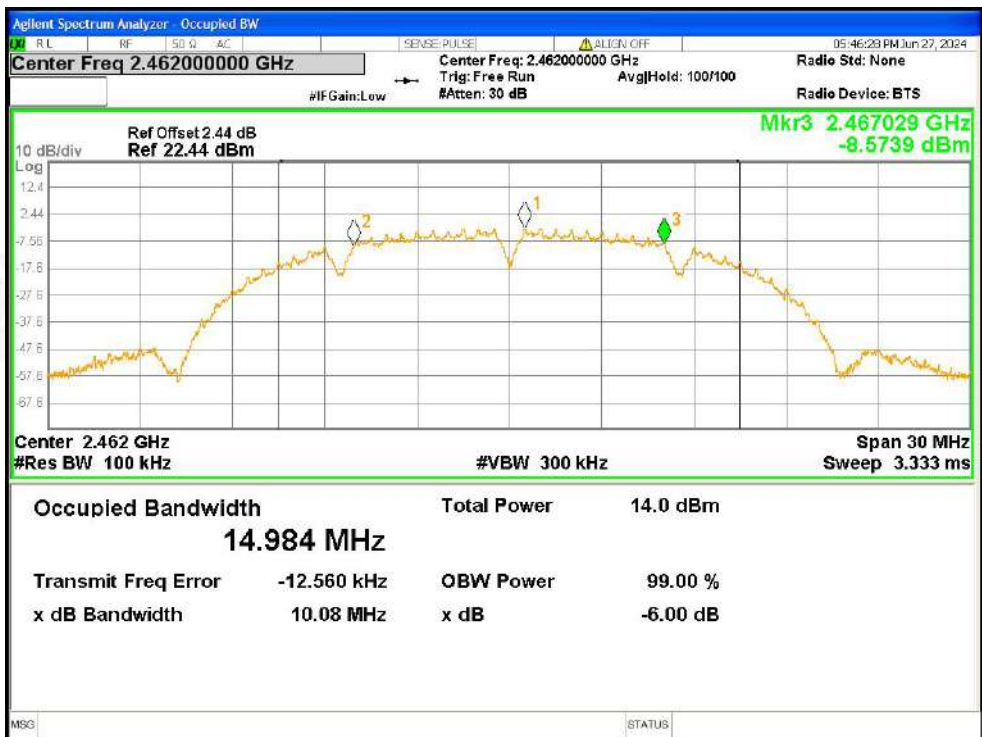
Mode	Frequency (MHz)	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
b	2412	10.094	0.5	Pass
b	2437	10.107	0.5	Pass
b	2462	10.084	0.5	Pass
g	2412	16.494	0.5	Pass
g	2437	16.515	0.5	Pass
g	2462	16.502	0.5	Pass
n20	2412	17.63	0.5	Pass
n20	2437	17.68	0.5	Pass
n20	2462	17.647	0.5	Pass
n40	2422	36.413	0.5	Pass
n40	2437	36.375	0.5	Pass
n40	2452	36.363	0.5	Pass



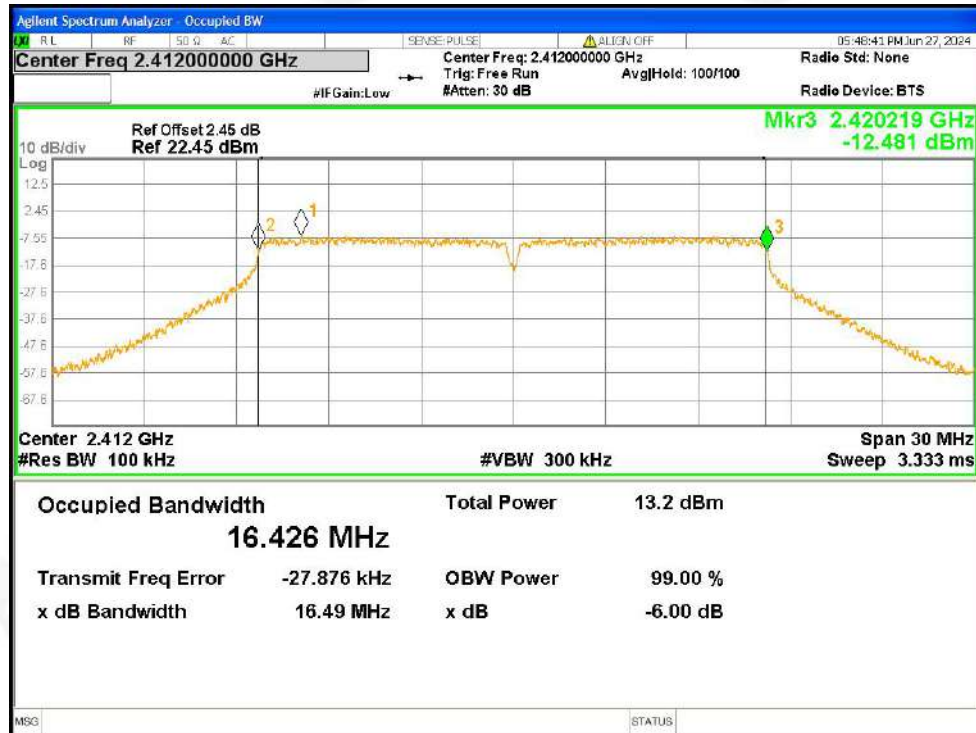
-6dB Bandwidth NVNT b 2412MHz Ant1



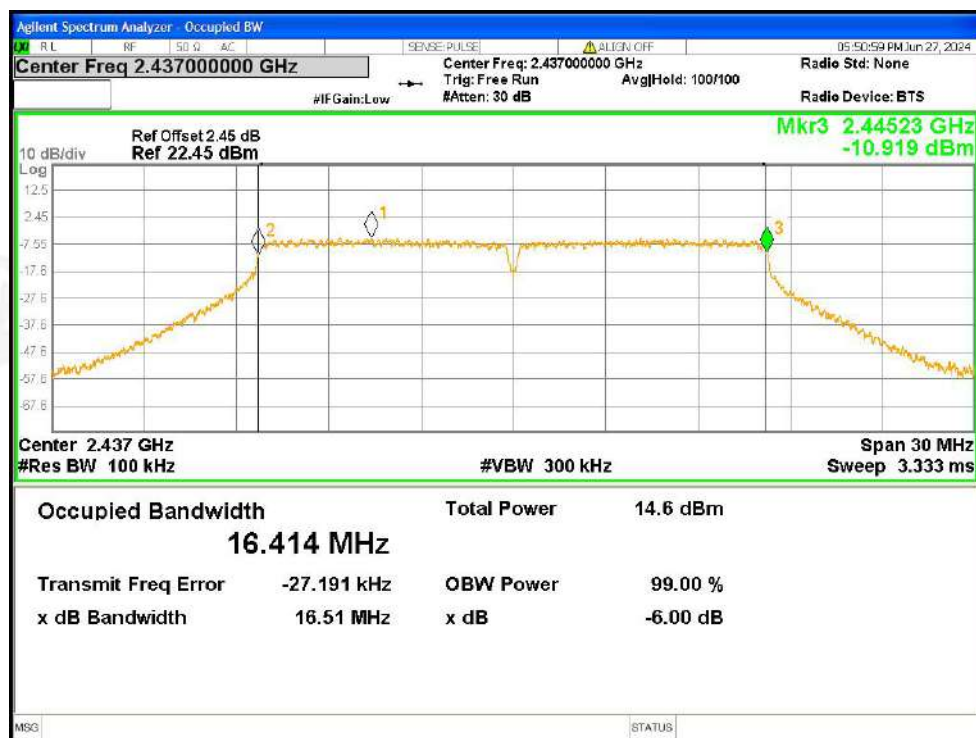
-6dB Bandwidth NVNT b 2437MHz Ant1



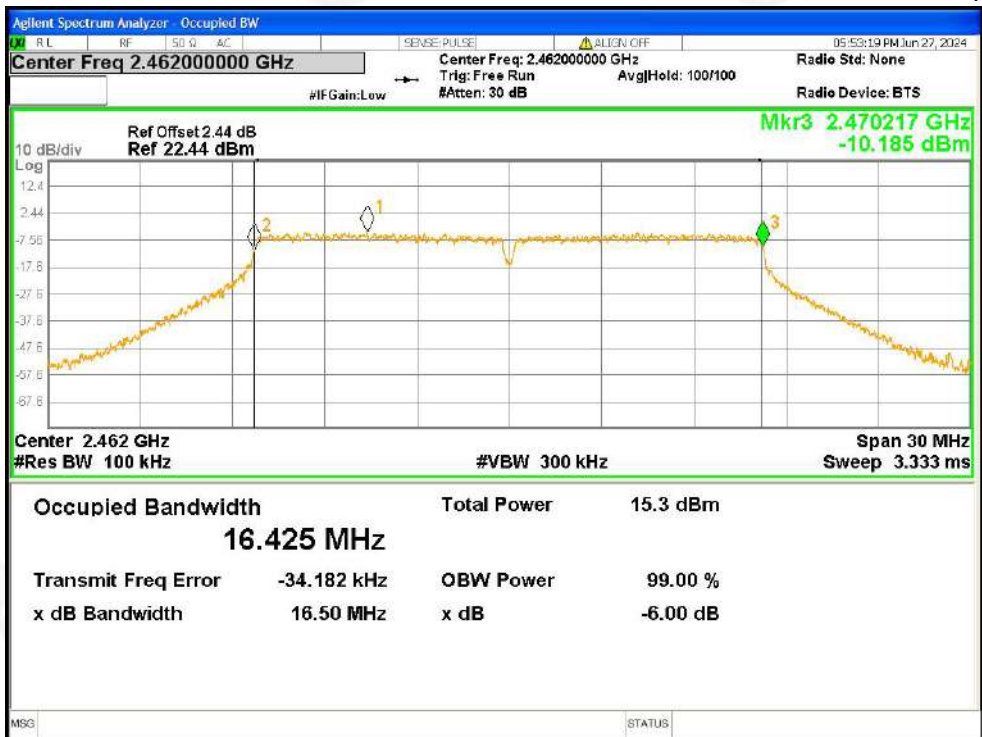
-6dB Bandwidth NVNT b 2462MHz Ant1



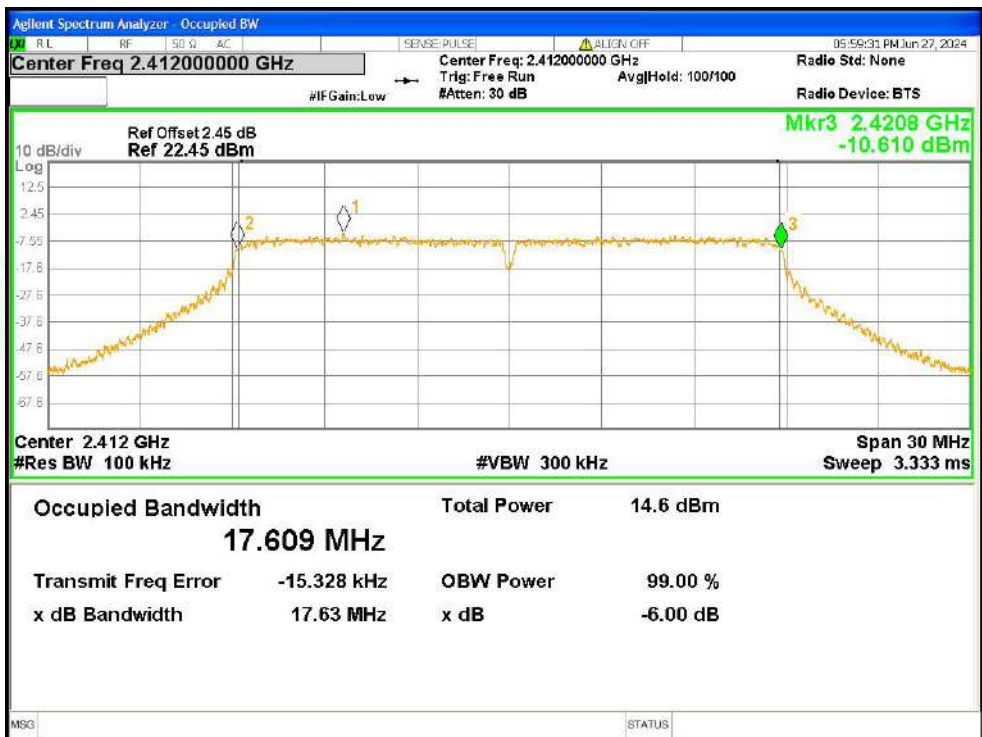
-6dB Bandwidth NVNT g 2412MHz Ant1



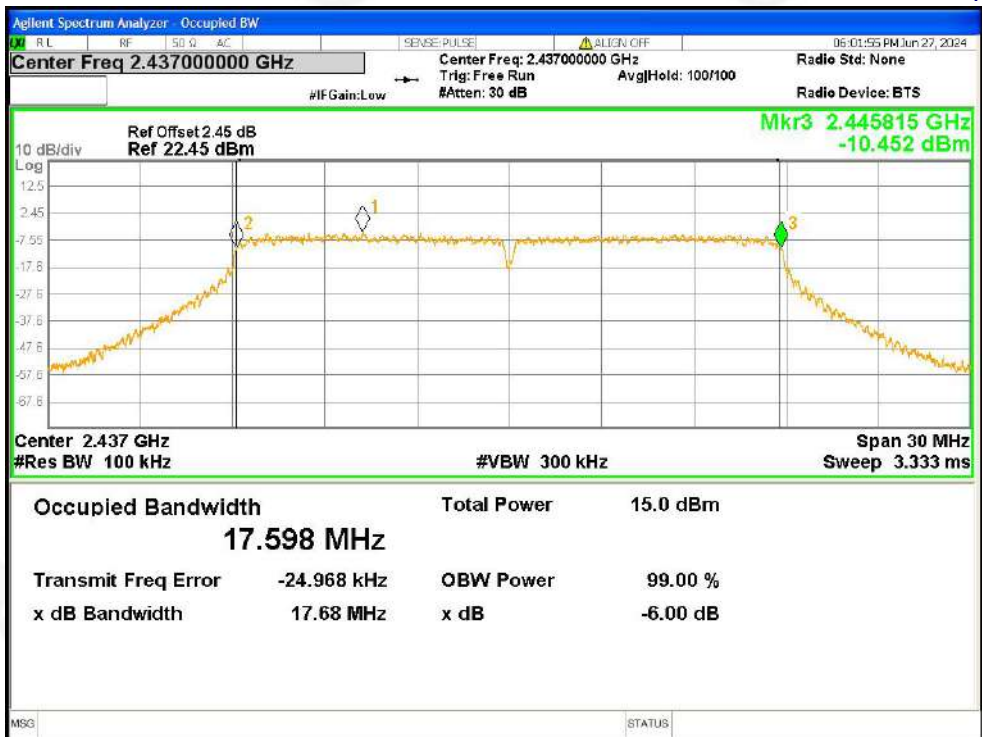
-6dB Bandwidth NVNT g 2437MHz Ant1



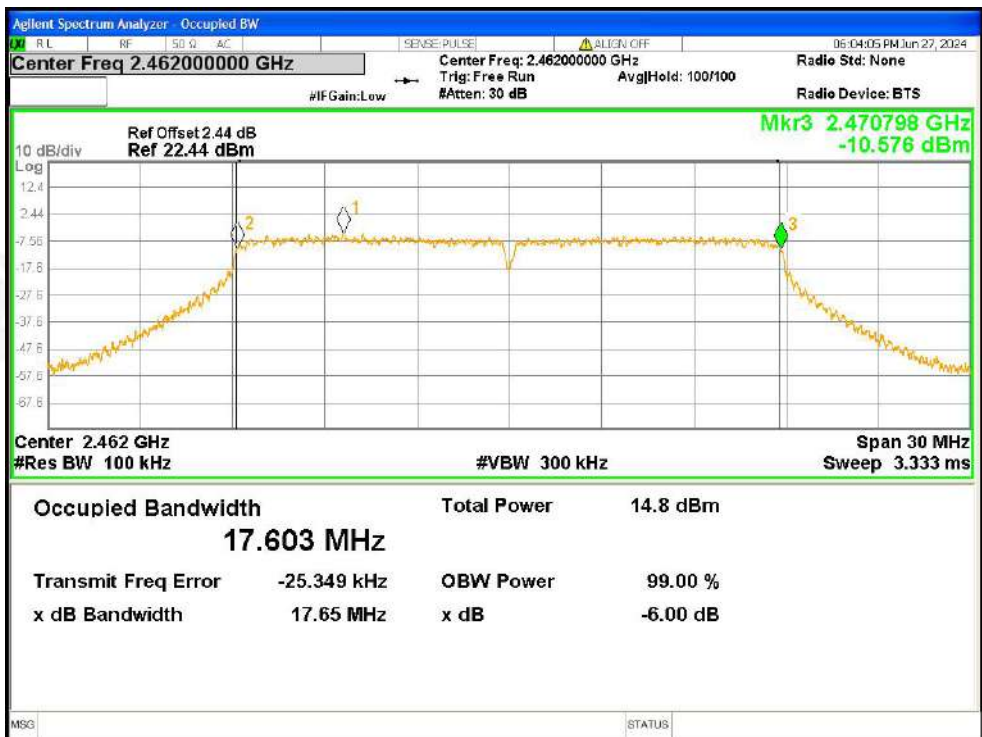
-6dB Bandwidth NVNT g 2462MHz Ant1



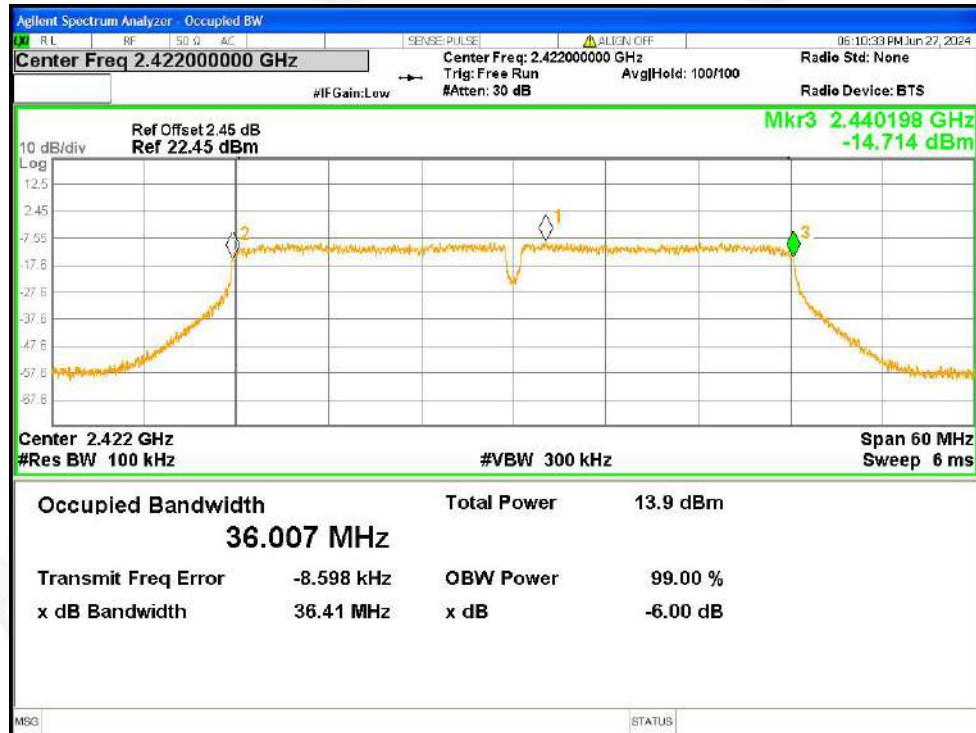
-6dB Bandwidth NVNT n20 2412MHz Ant1



-6dB Bandwidth NVNT n20 2437MHz Ant1



-6dB Bandwidth NVNT n20 2462MHz Ant1



-6dB Bandwidth NVNT n40 2422MHz Ant1



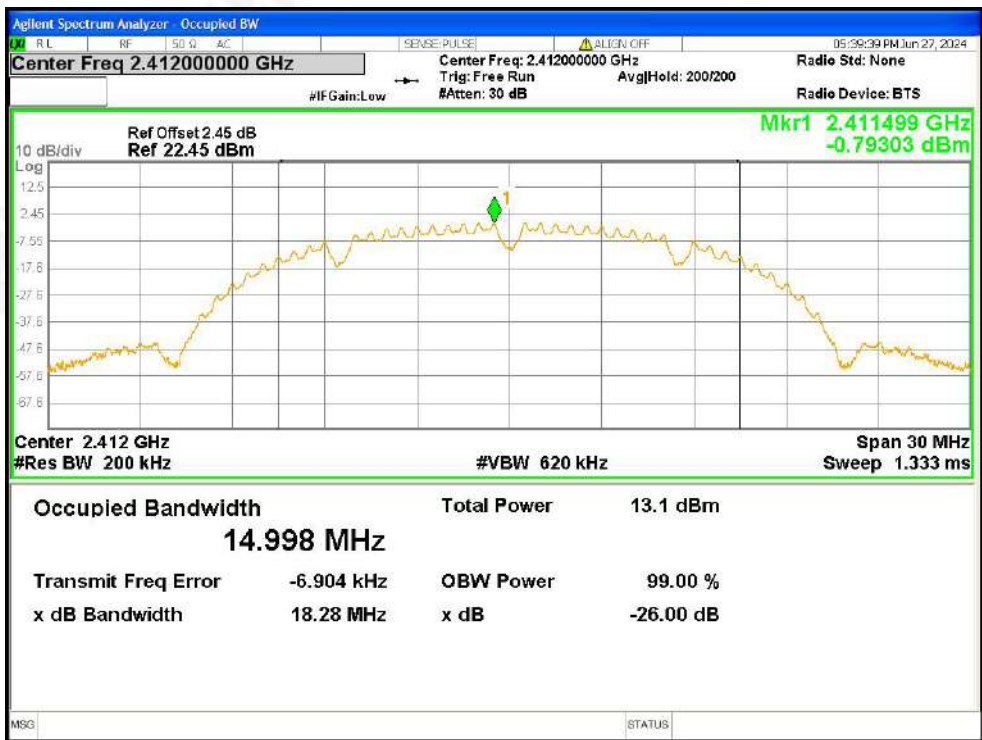
-6dB Bandwidth NVNT n40 2437MHz Ant1



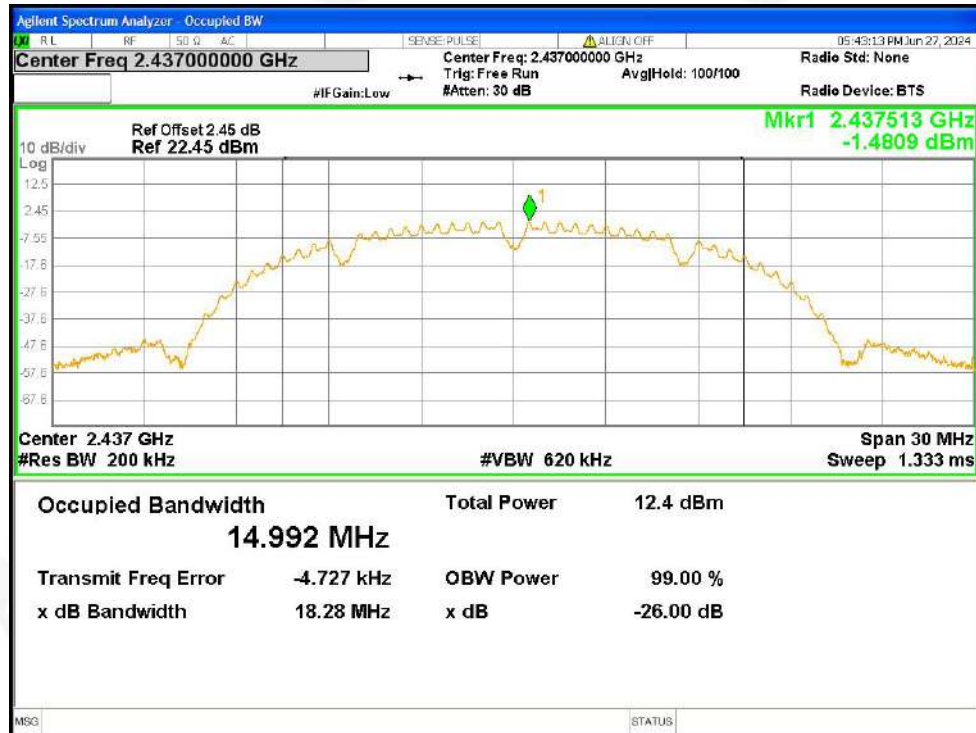
-6dB Bandwidth NVNT n40 2452MHz Ant1



Mode	Frequency (MHz)	99% OBW (MHz)	Verdict
b	2412	14.998	Pass
b	2437	14.992	Pass
b	2462	14.989	Pass
g	2412	16.513	Pass
g	2437	16.456	Pass
g	2462	16.509	Pass
n20	2412	17.661	Pass
n20	2437	17.66	Pass
n20	2462	17.641	Pass
n40	2422	36.137	Pass
n40	2437	36.107	Pass
n40	2452	36.143	Pass



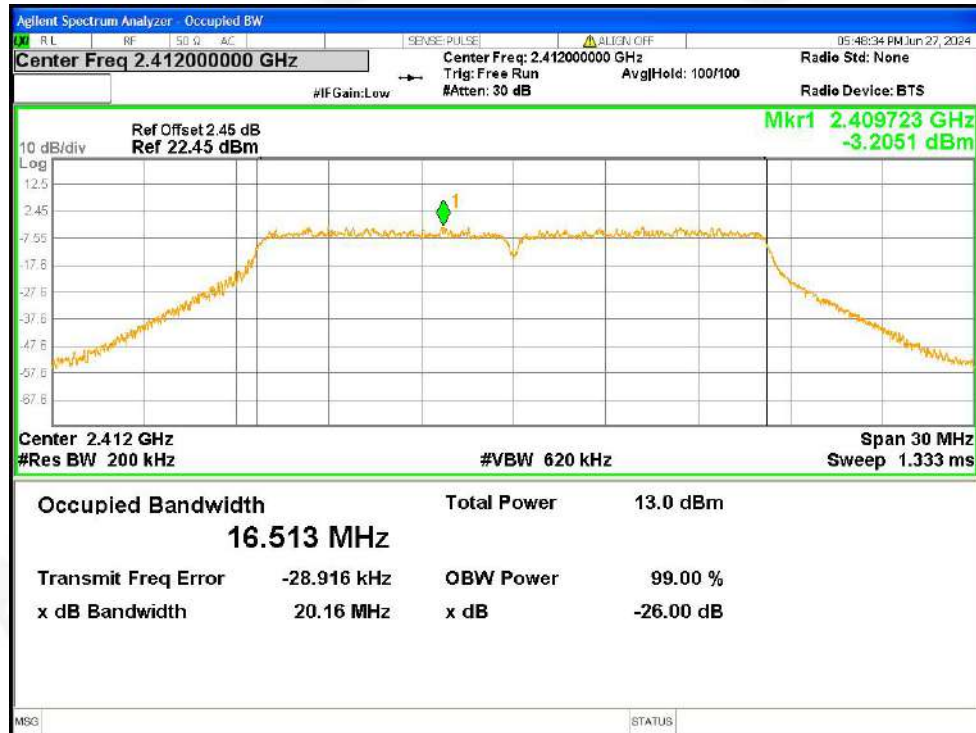
OBW NVNT b 2412MHz Ant1



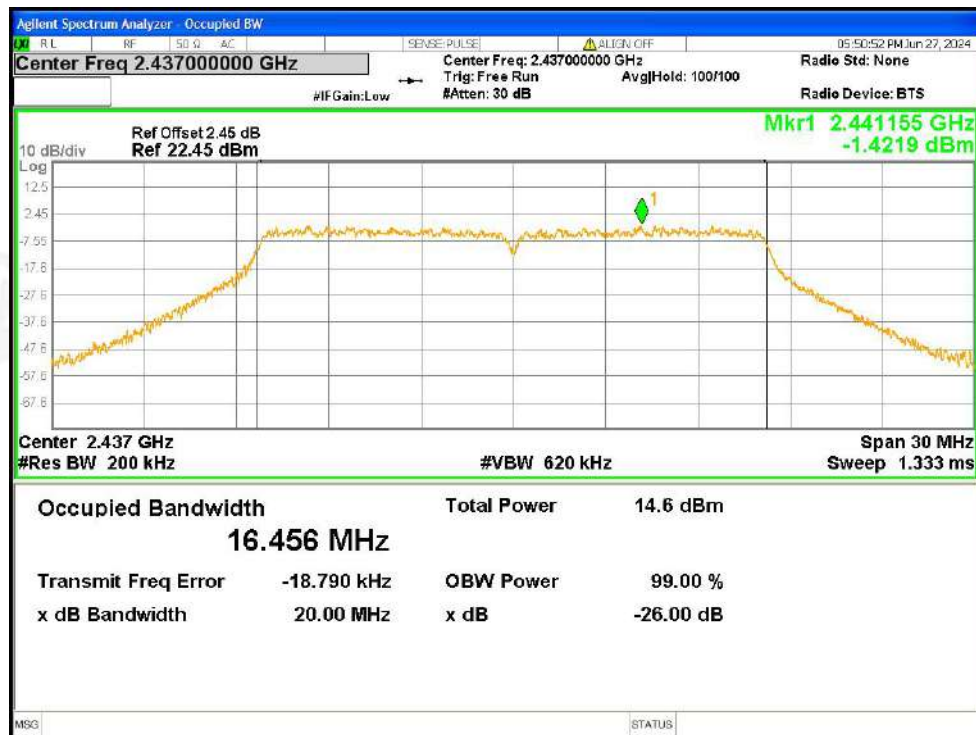
OBW NVNT b 2437MHz Ant1



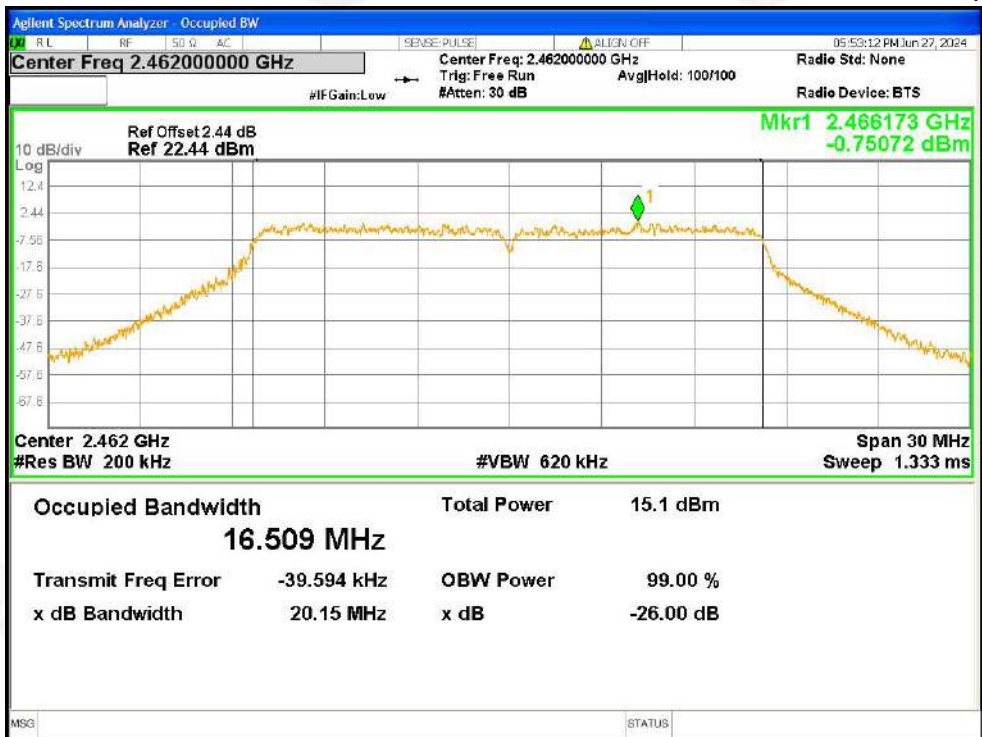
OBW NVNT b 2462MHz Ant1



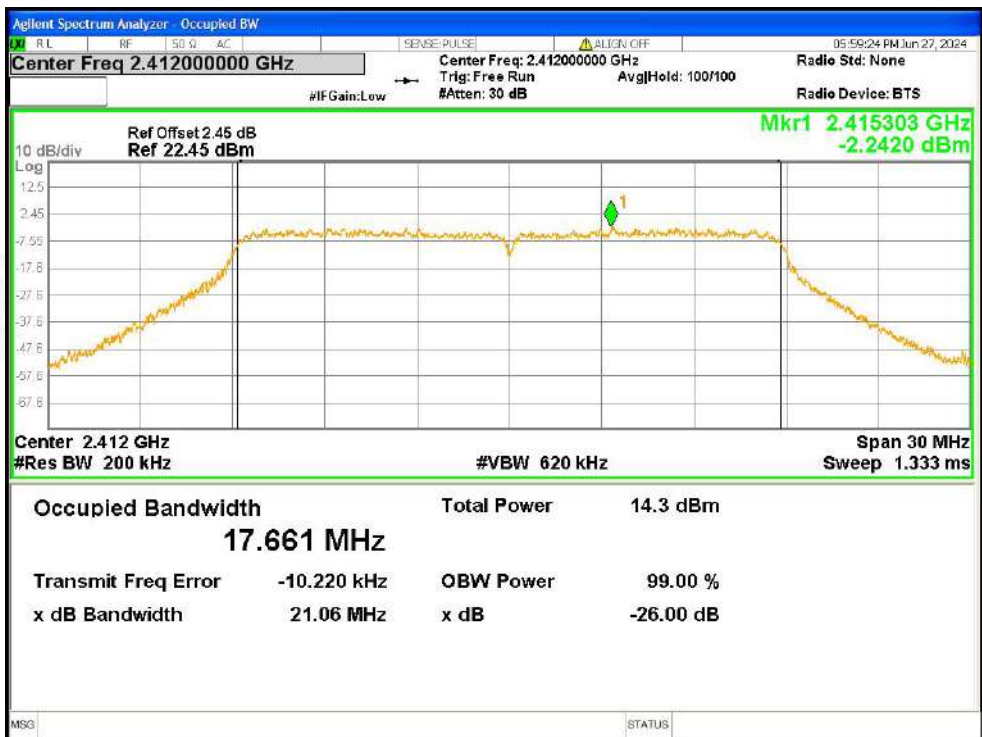
OBW NVNT g 2412MHz Ant1



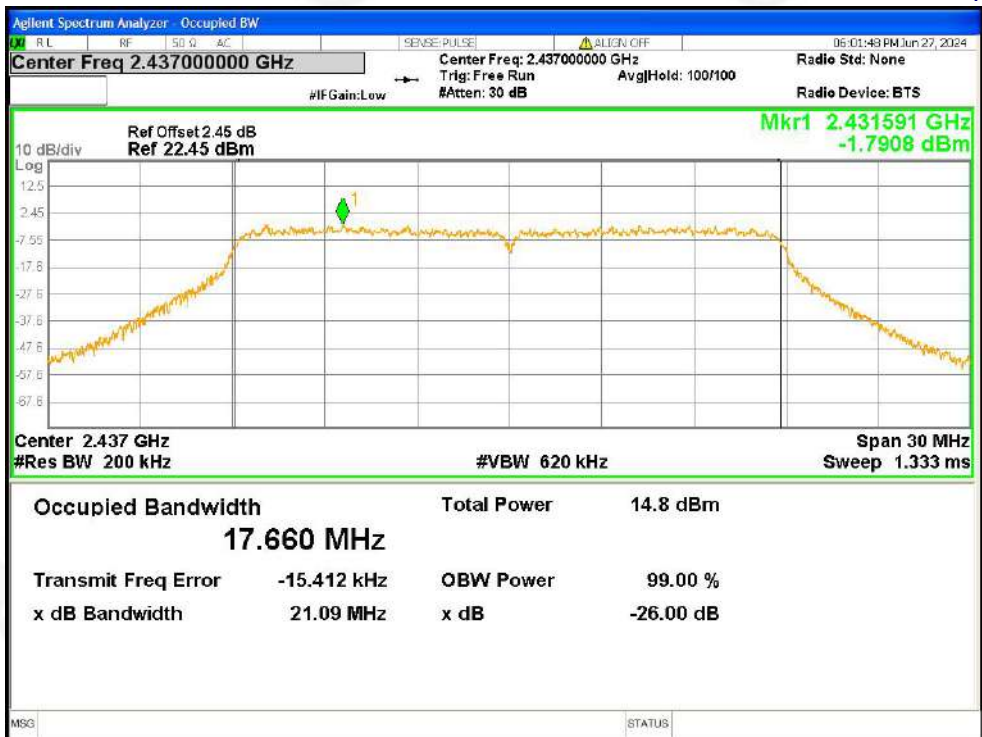
OBW NVNT g 2437MHz Ant1



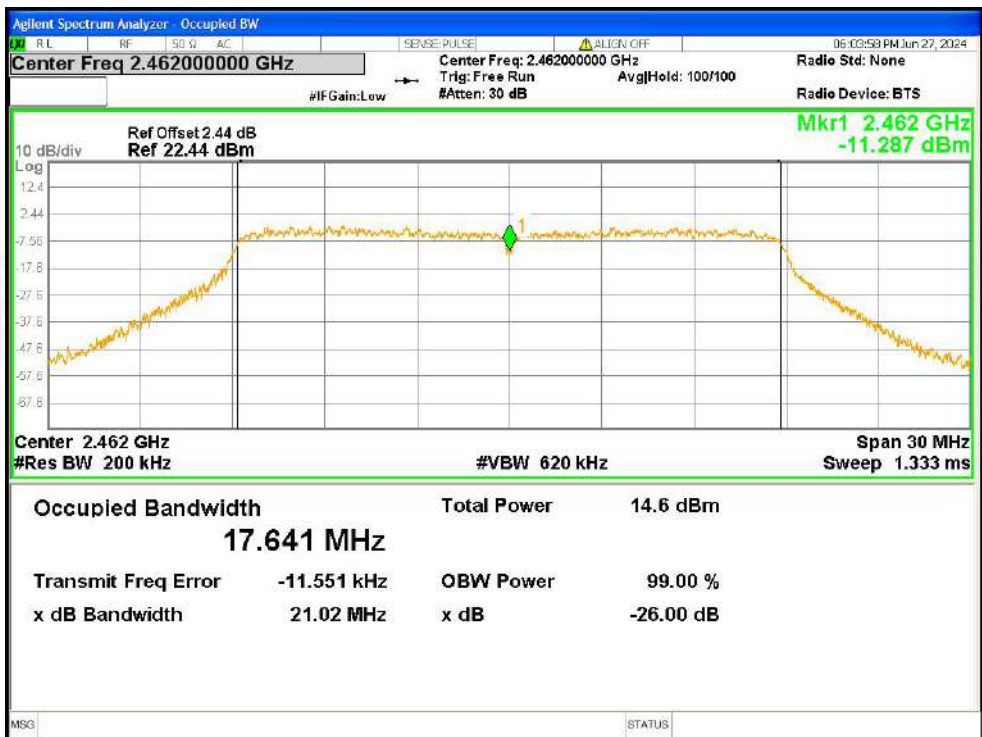
OBW NVNT g 2462MHz Ant1



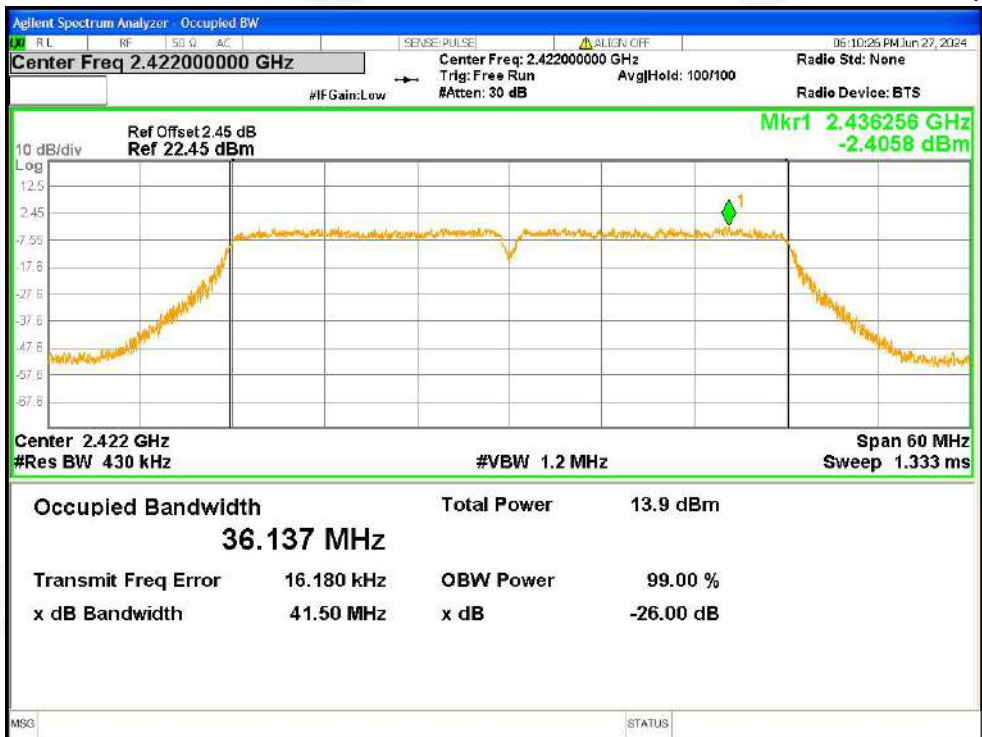
OBW NVNT n20 2412MHz Ant1



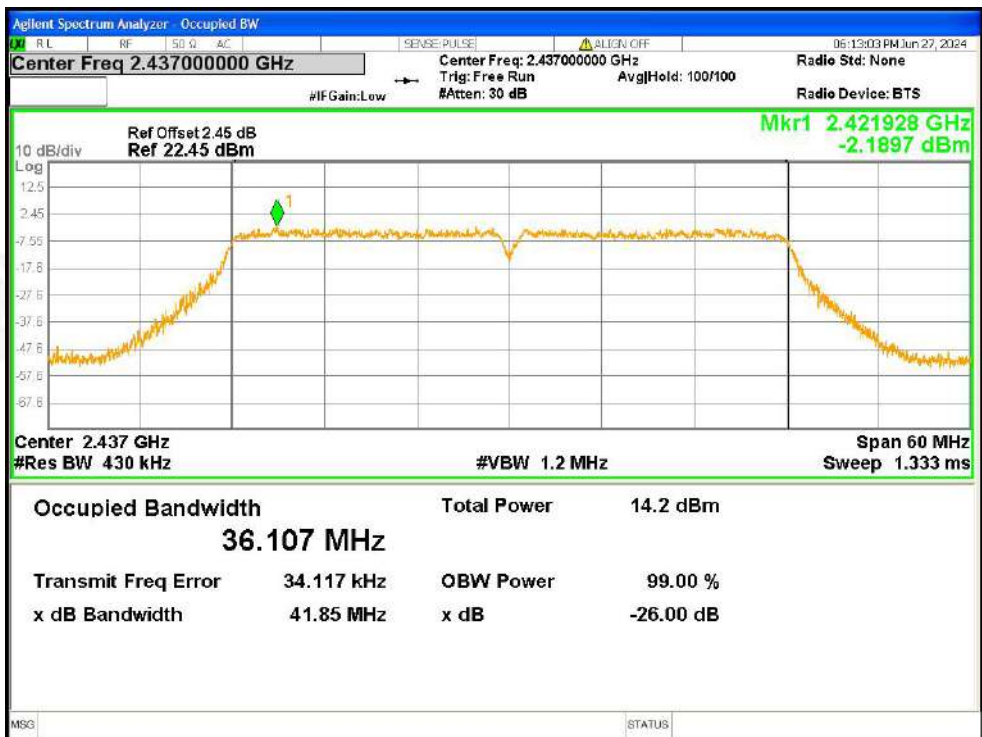
OBW NVNT n20 2437MHz Ant1



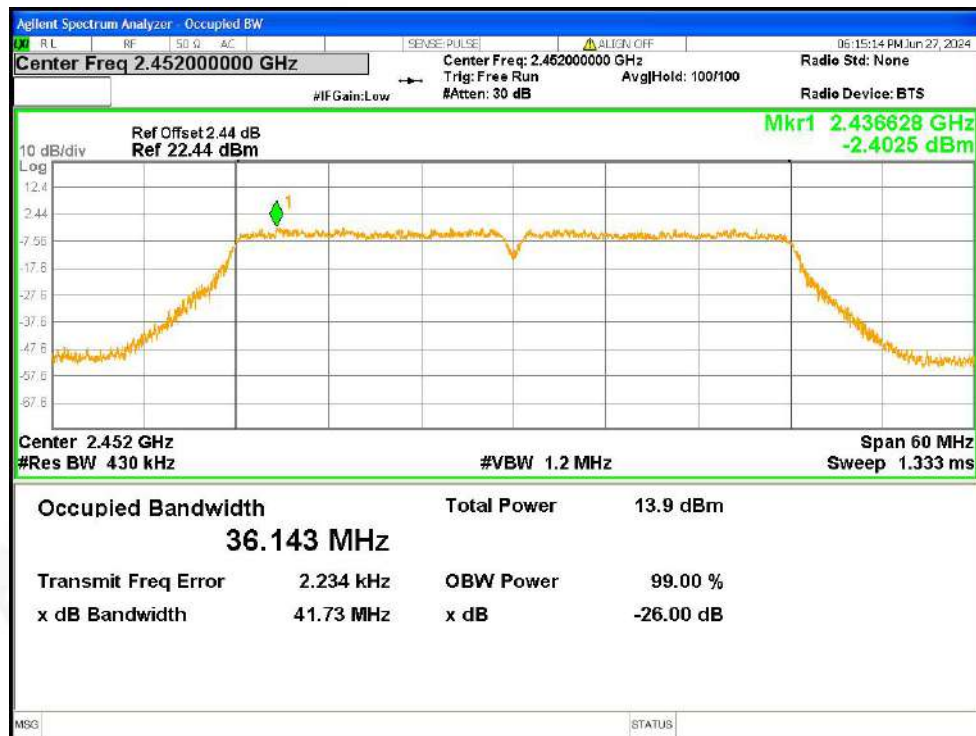
OBW NVNT n20 2462MHz Ant1



OBW NVNT n40 2422MHz Ant1



OBW NVNT n40 2437MHz Ant1



OBW NVNT n40 2452MHz Ant1



8. PEAK OUTPUT POWER TEST & EQUIVALENT ISOTROPICALLY RADIATED POWER (E.I.R.P.)

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	KDB558074 D0115.247 Meas Guidance v05r02

8.1 APPLIED PROCEDURES/LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
RSS-247 Section 5.4(d)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS
RSS-247 Section 5.4(d)	equivalent isotropically radiated power	4watt	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

Mode	Frequency (MHz)	Conducted Power (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Verdict
b	2412	10.75	13.75	36	Pass
b	2437	10.06	13.06	36	Pass
b	2462	10.05	13.05	36	Pass
g	2412	10.27	13.27	36	Pass
g	2437	11.83	14.83	36	Pass
g	2462	12.53	15.53	36	Pass
n20	2412	11.98	14.98	36	Pass
n20	2437	12.26	15.26	36	Pass
n20	2462	11.96	14.96	36	Pass
n40	2422	11.32	14.32	36	Pass
n40	2437	11.41	14.41	36	Pass
n40	2452	11.21	14.21	36	Pass

Note: EIRP = Conducted power + Antenna Gain or Direction Gain
Antenna Gain:3dBi



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.

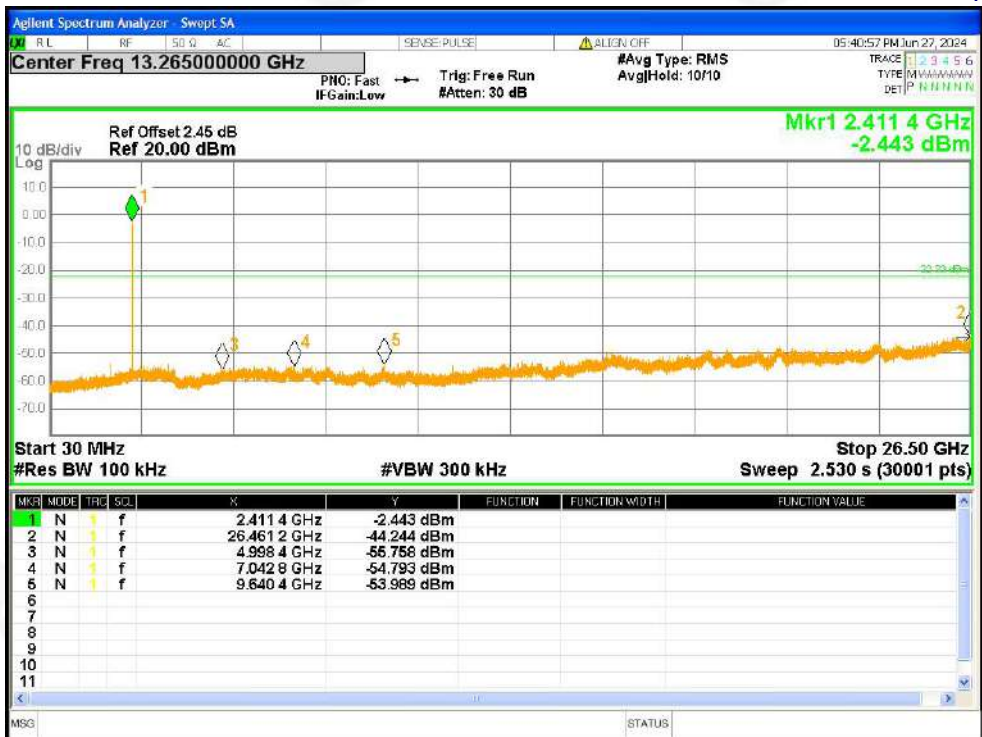


9.6 TEST RESULTS

Mode	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
b	2412	-41.91	-20	Pass
b	2437	-39.69	-20	Pass
b	2462	-41.15	-20	Pass
g	2412	-34.83	-20	Pass
g	2437	-38.38	-20	Pass
g	2462	-38.48	-20	Pass
n20	2412	-37.03	-20	Pass
n20	2437	-39.47	-20	Pass
n20	2462	-38	-20	Pass
n40	2422	-34.94	-20	Pass
n40	2437	-35.1	-20	Pass
n40	2452	-34.8	-20	Pass



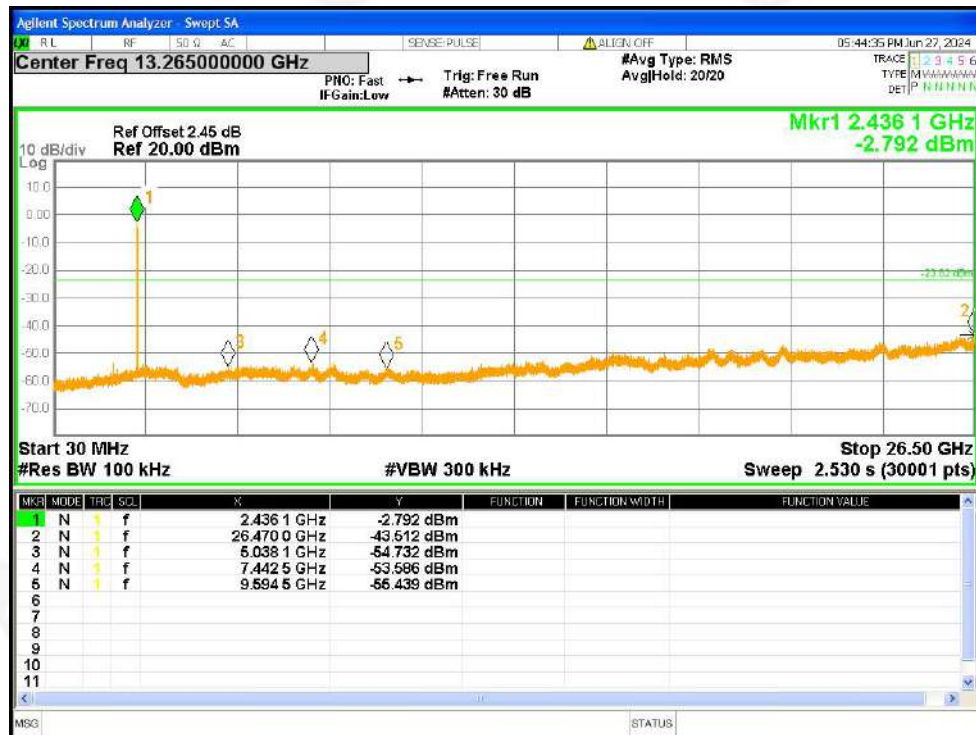
Tx. Spurious NVNT b 2412MHz Ant1 Ref



Tx. Spurious NVNT b 2412MHz Ant1 Emission



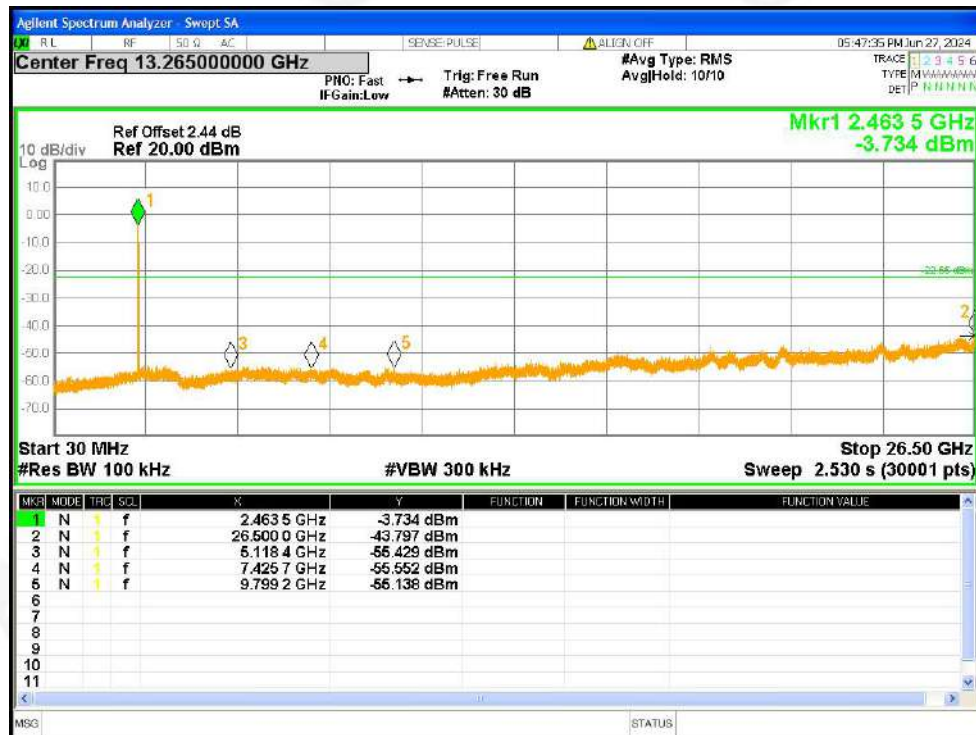
Tx. Spurious NVNT b 2437MHz Ant1 Ref



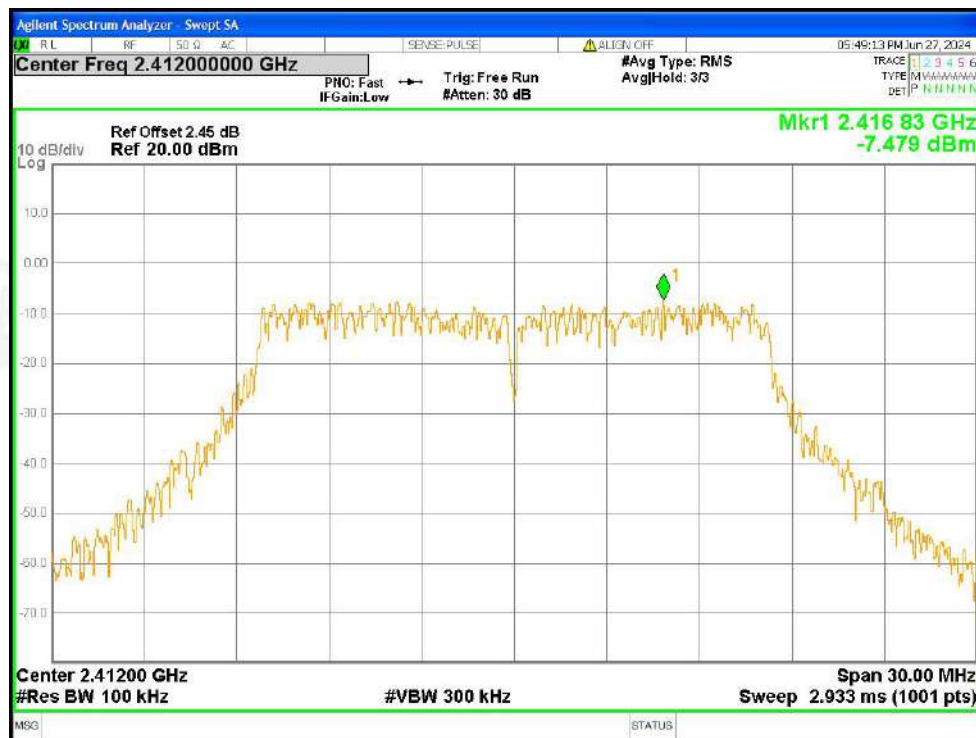
Tx. Spurious NVNT b 2437MHz Ant1 Emission



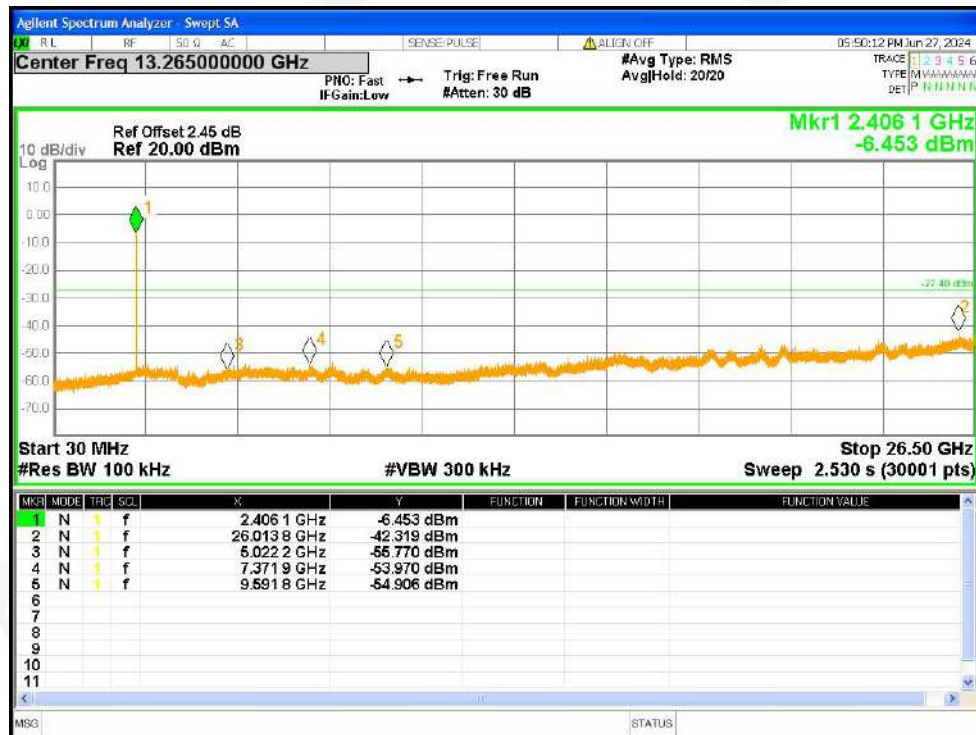
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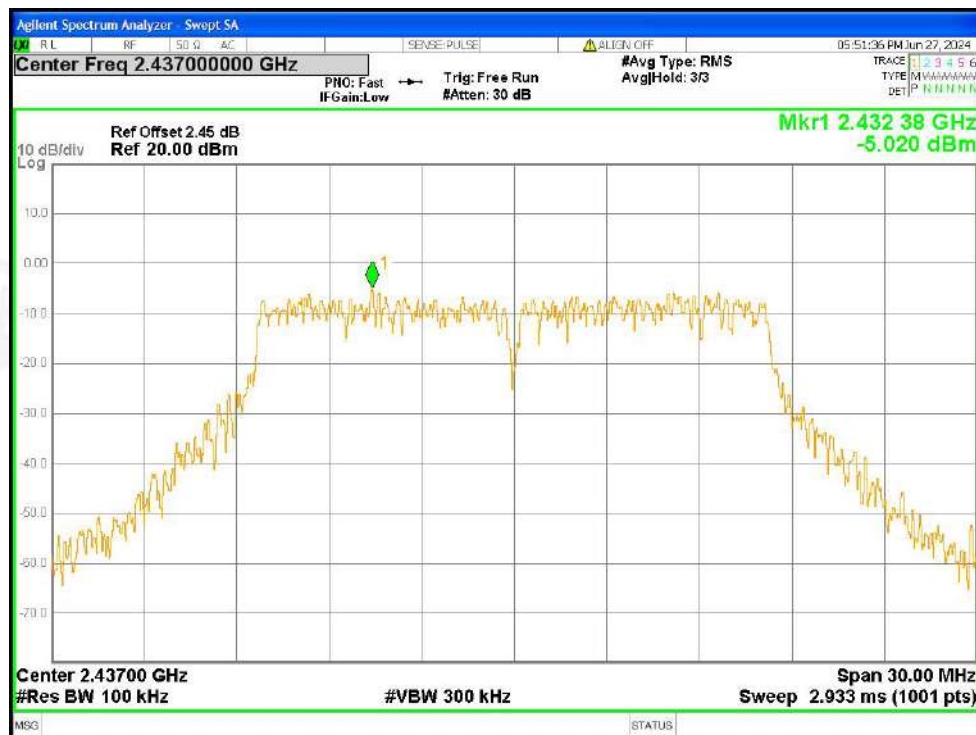
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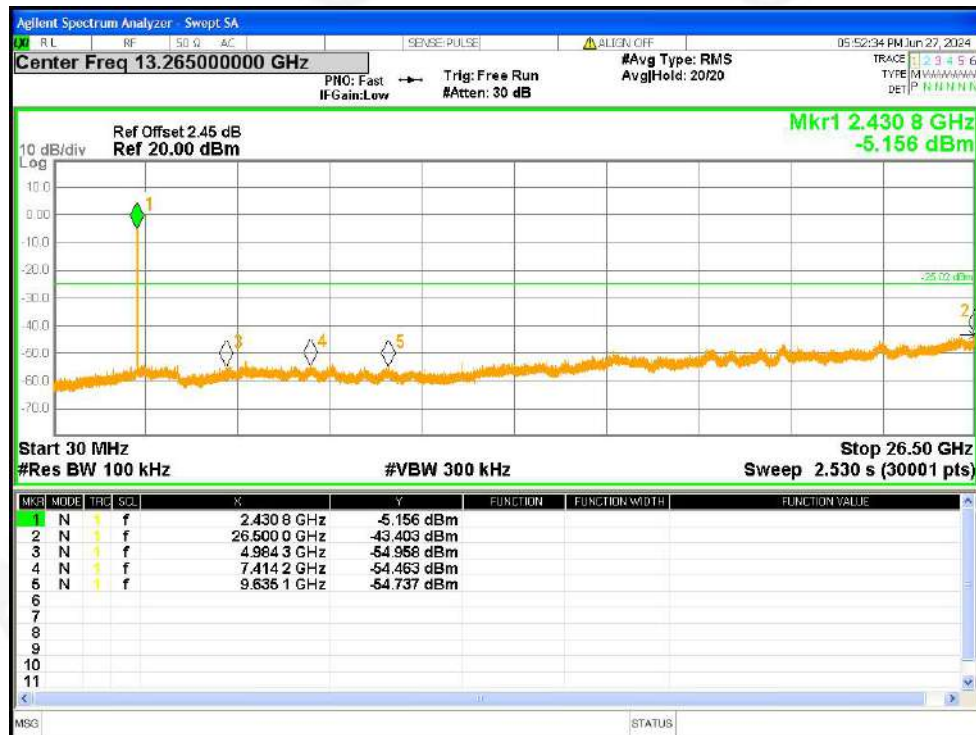
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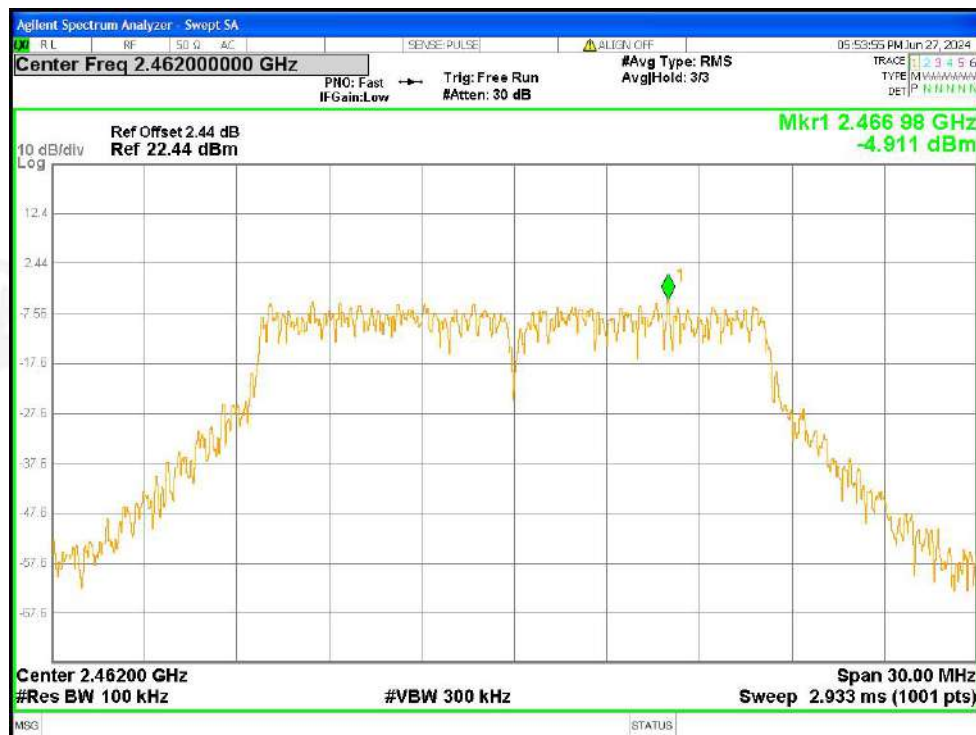
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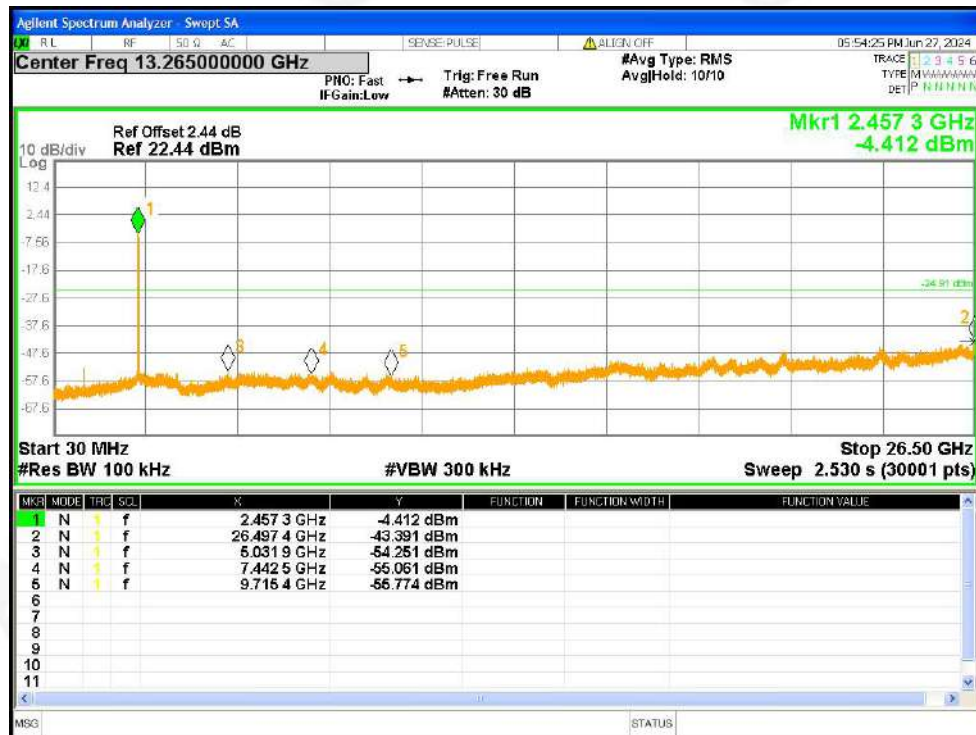
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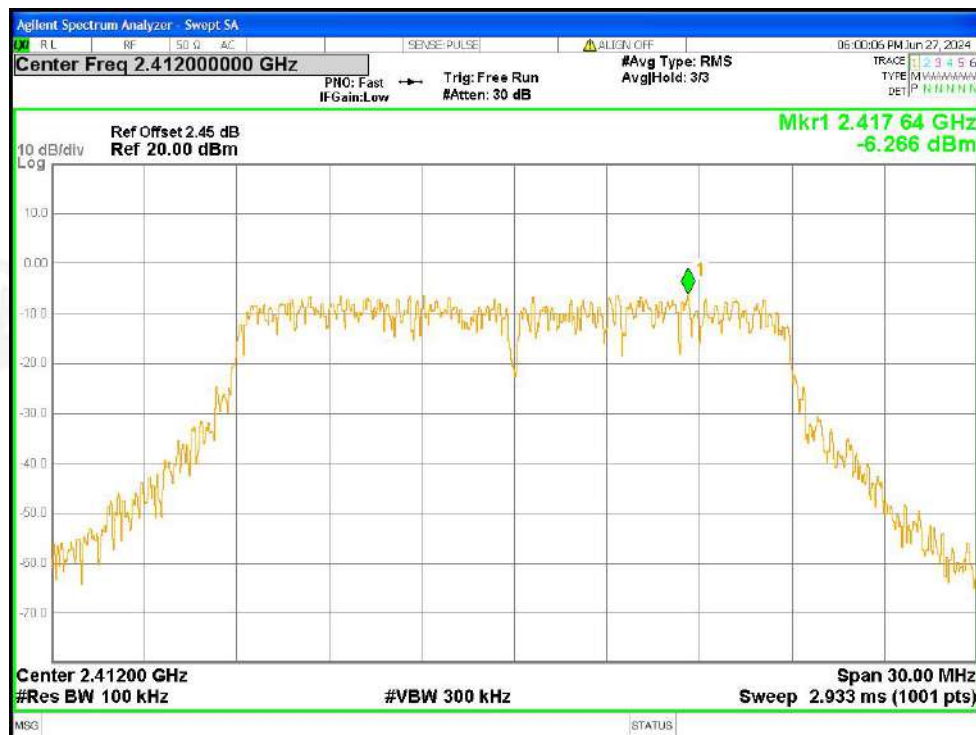
Tx. Spurious NVNT g 2437MHz Ant1 Emission



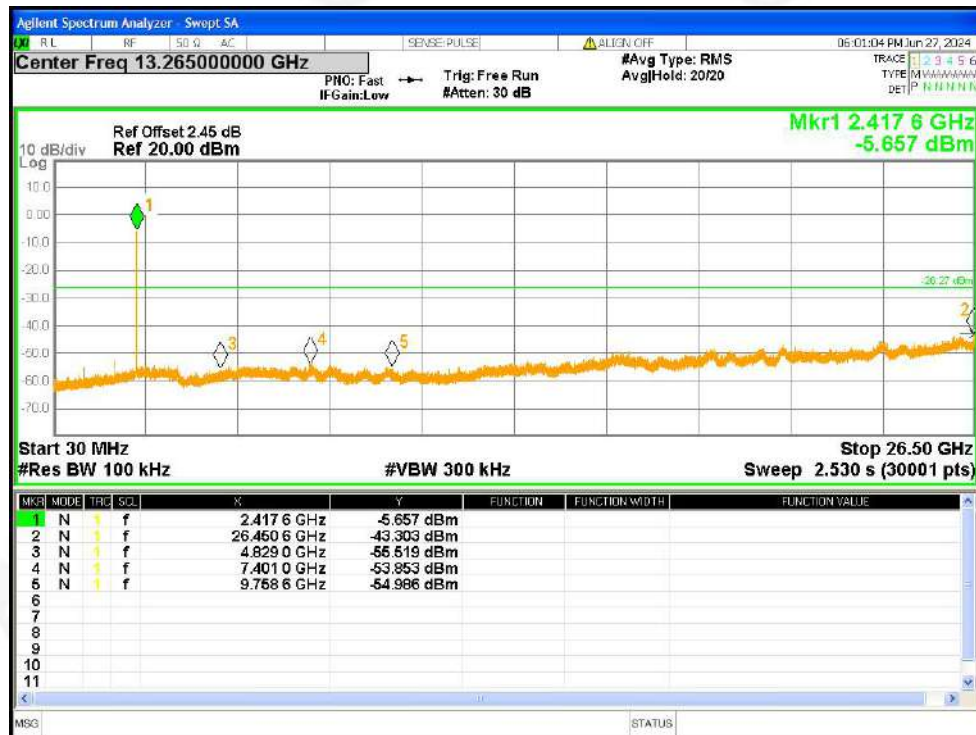
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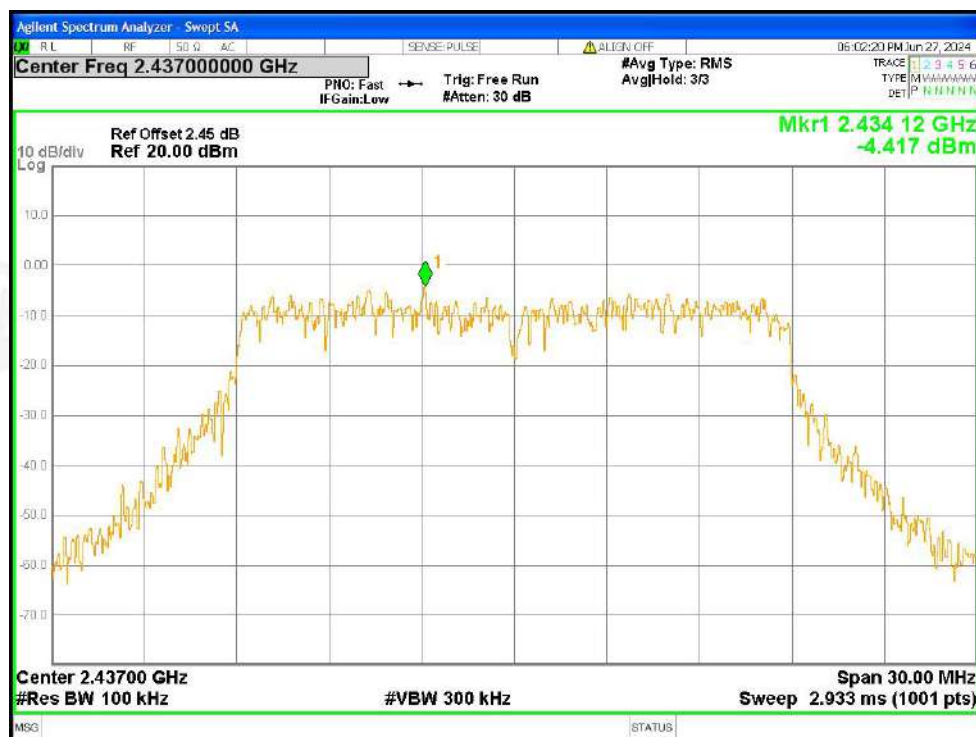
Tx. Spurious NVNT g 2462MHz Ant1 Emission



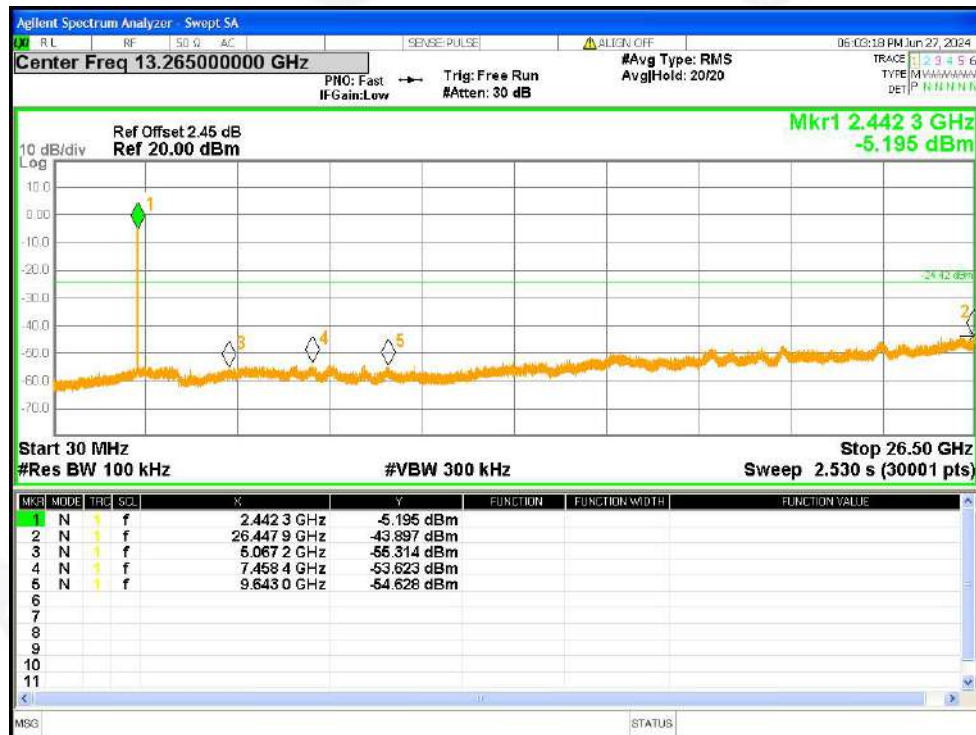
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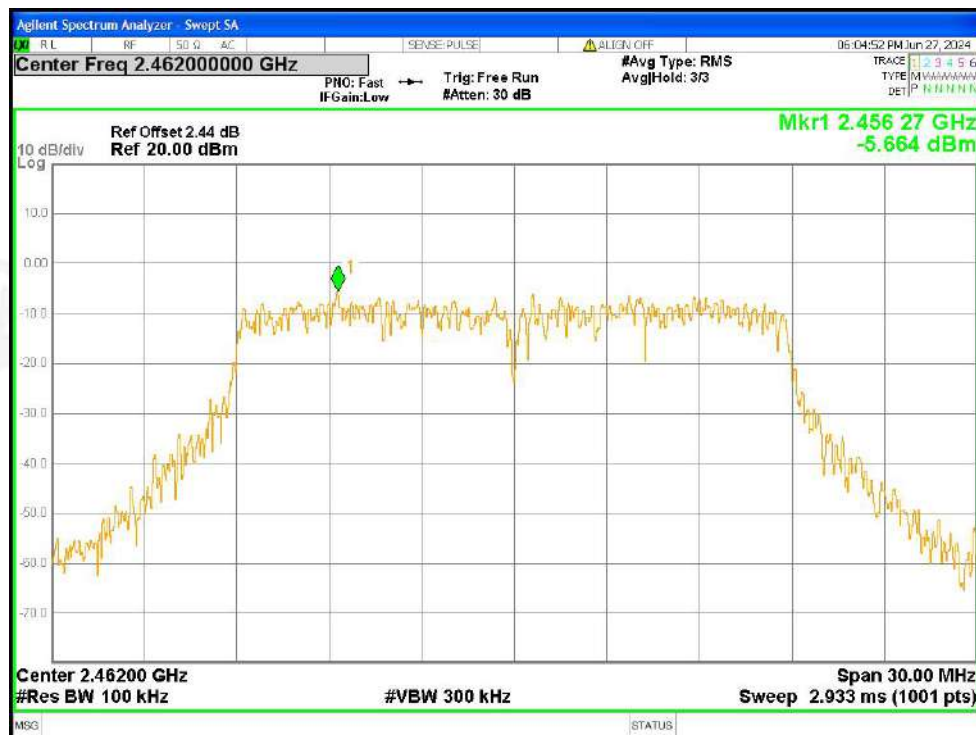
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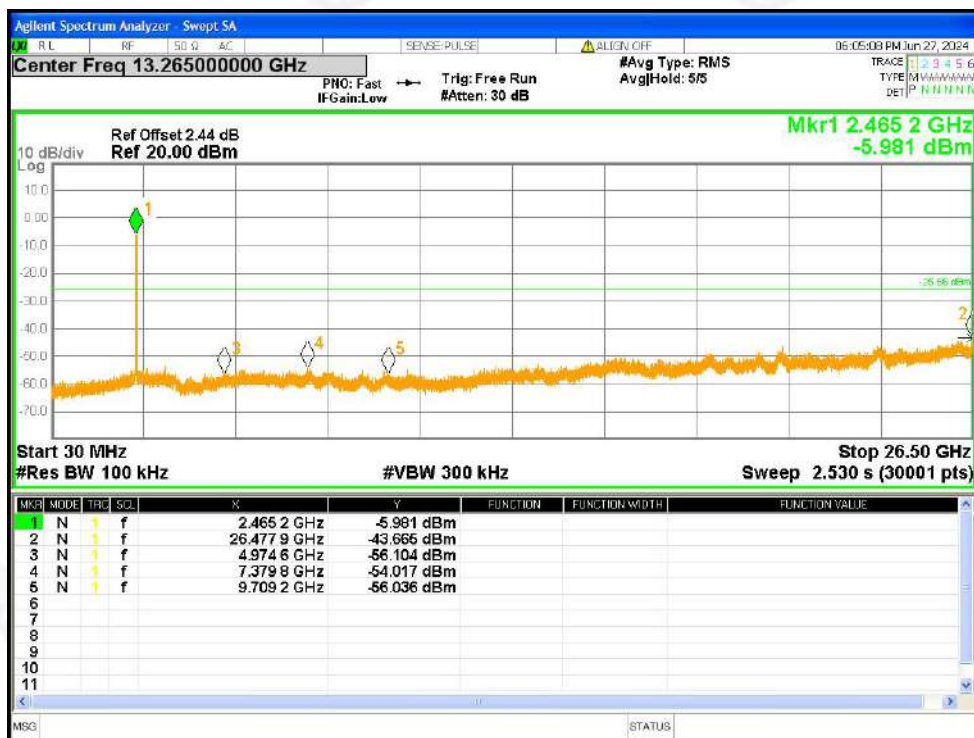
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Tx. Spurious NVNT n20 2437MHz Ant1 Emission



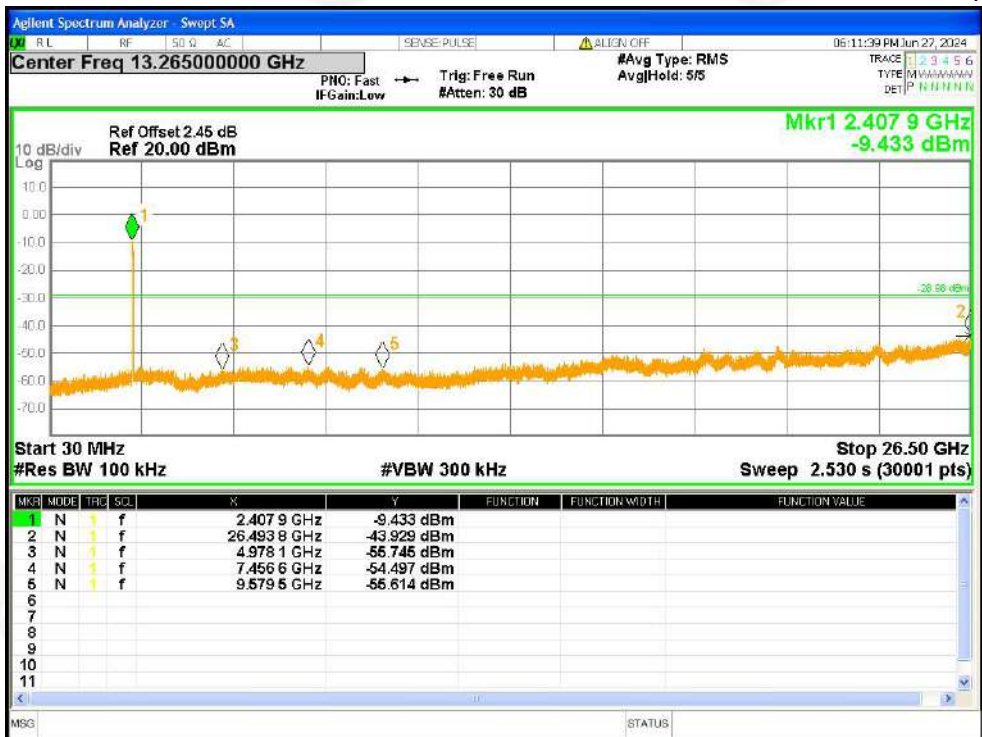
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Tx. Spurious NVNT n20 2462MHz Ant1 Emission



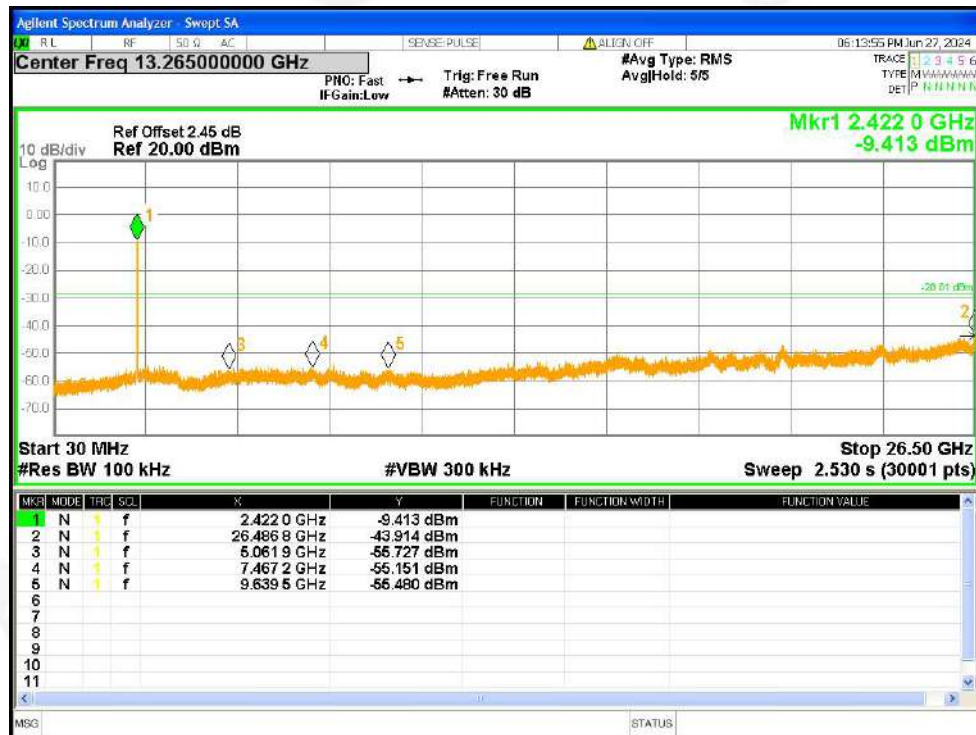
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Tx. Spurious NVNT n40 2422MHz Ant1 Emission



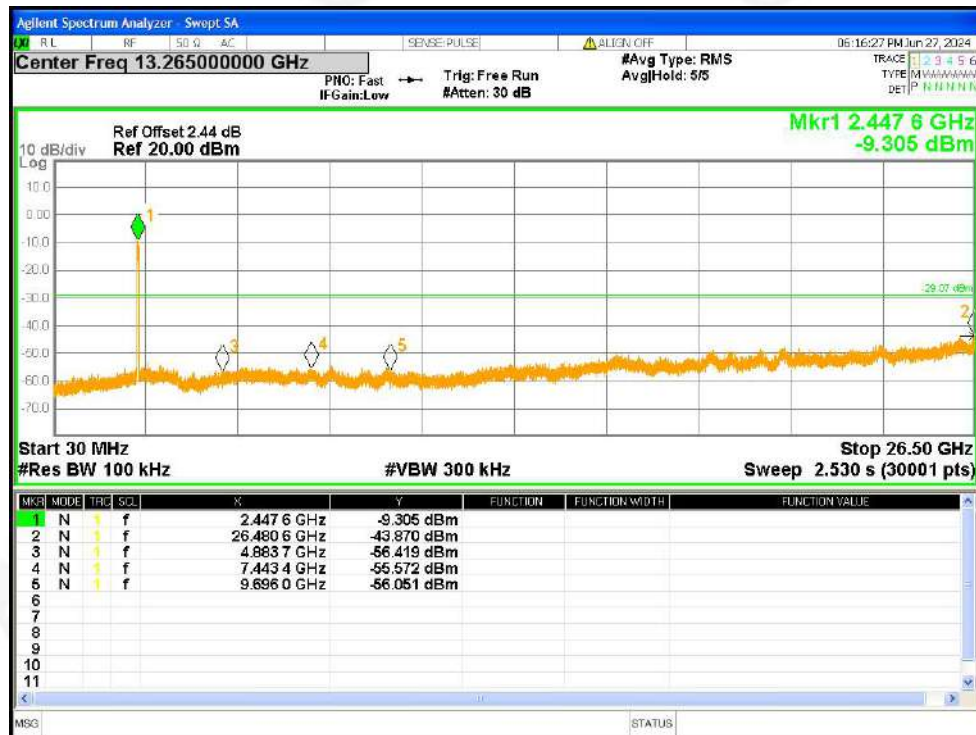
Tx. Spurious NVNT n40 2437MHz Ant1 Ref



Tx. Spurious NVNT n40 2437MHz Ant1 Emission



Tx. Spurious NVNT n40 2452MHz Ant1 Ref



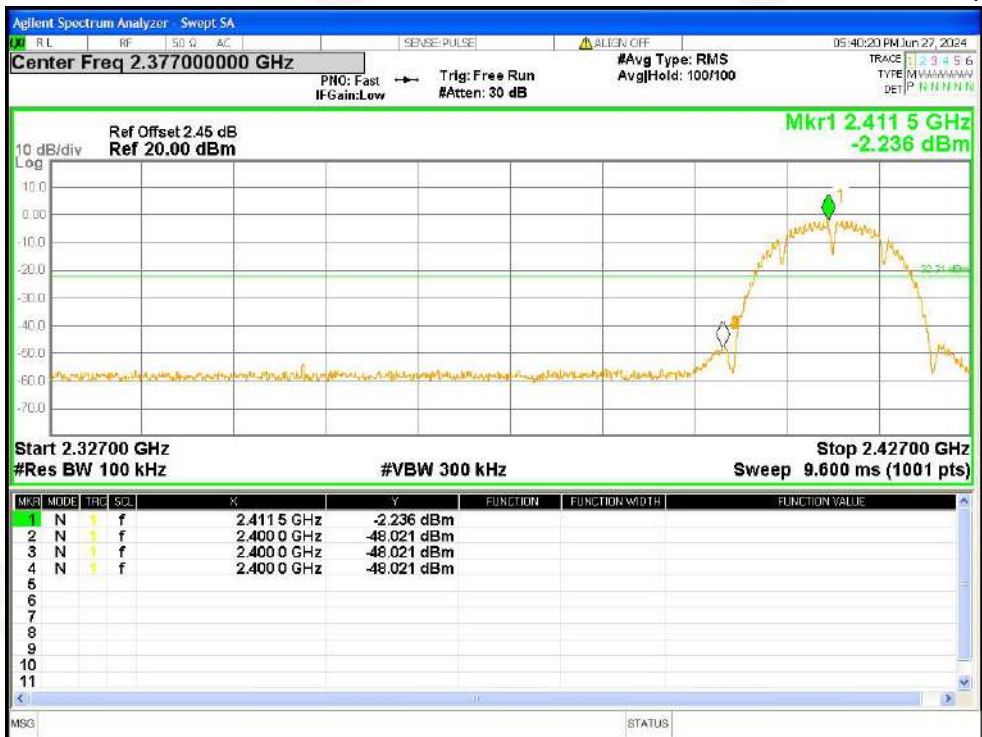
Tx. Spurious NVNT n40 2452MHz Ant1 Emission



Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
b	2412	Ant1	-45.81	-20	Pass
b	2462	Ant1	-53.23	-20	Pass
g	2412	Ant1	-37.73	-20	Pass
g	2462	Ant1	-49.92	-20	Pass
n20	2412	Ant1	-36.43	-20	Pass
n20	2462	Ant1	-50.89	-20	Pass
n40	2422	Ant1	-34.68	-20	Pass
n40	2452	Ant1	-45.39	-20	Pass



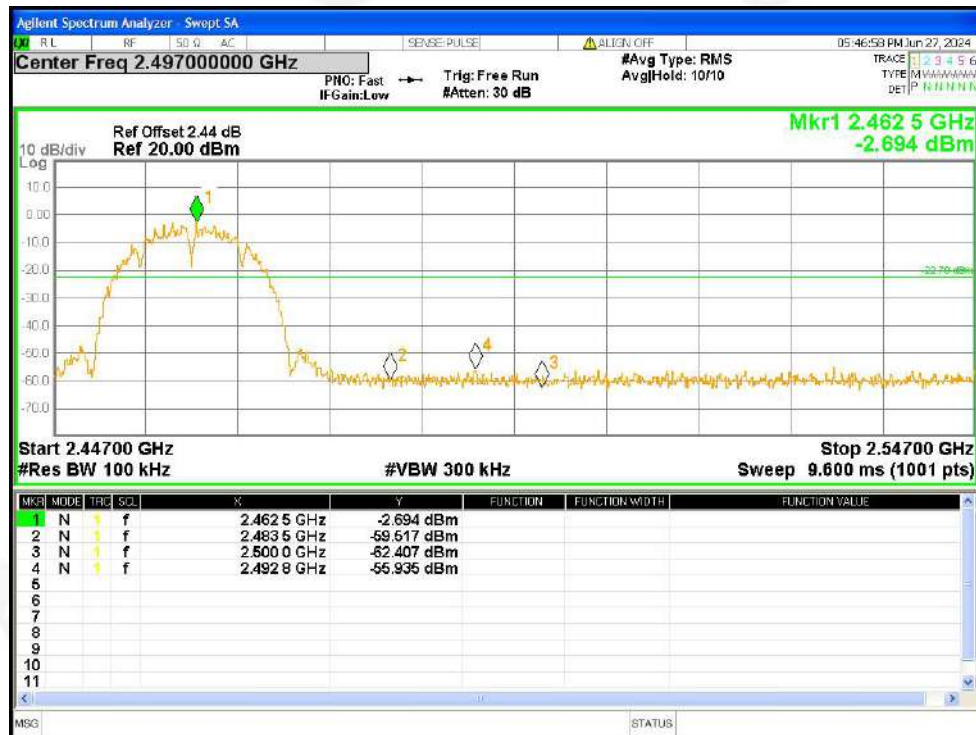
Band Edge NVNT b 2412MHz Ant1 Ref



Band Edge NVNT b 2412MHz Ant1 Emission



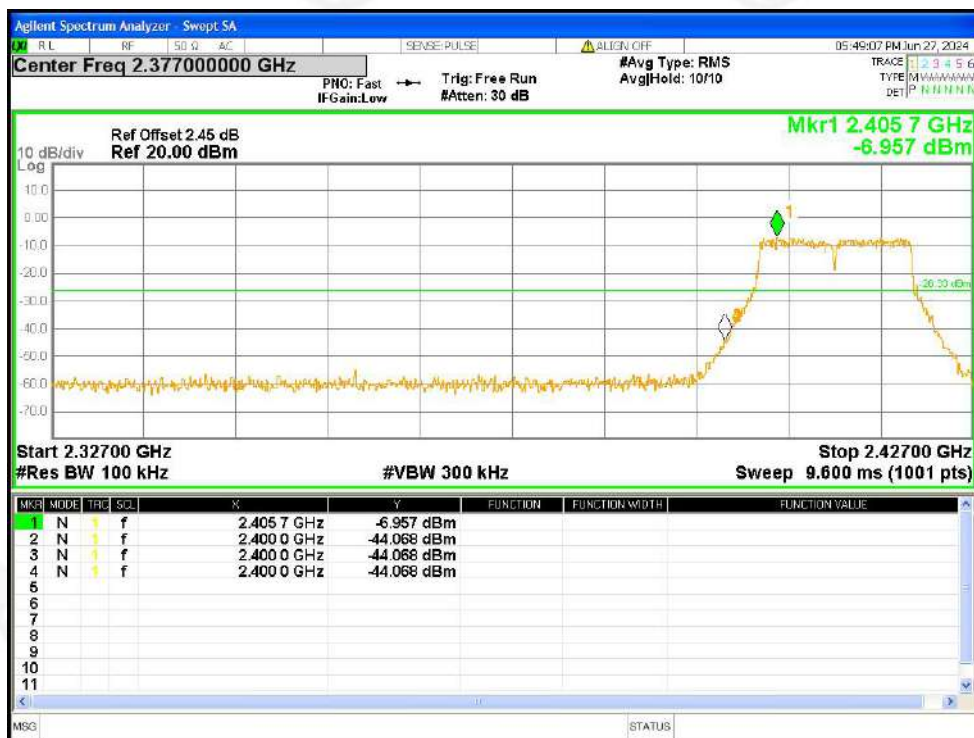
Band Edge NVNT b 2462MHz Ant1 Ref



Band Edge NVNT b 2462MHz Ant1 Emission



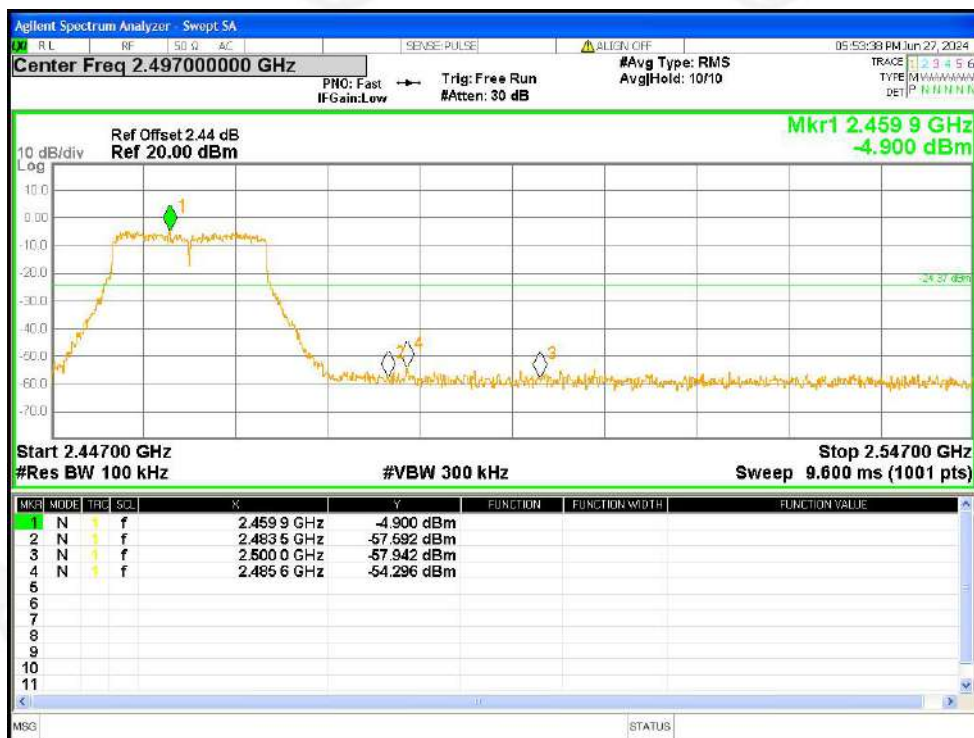
Band Edge NVNT g 2412MHz Ant1 Ref



Band Edge NVNT g 2412MHz Ant1 Emission



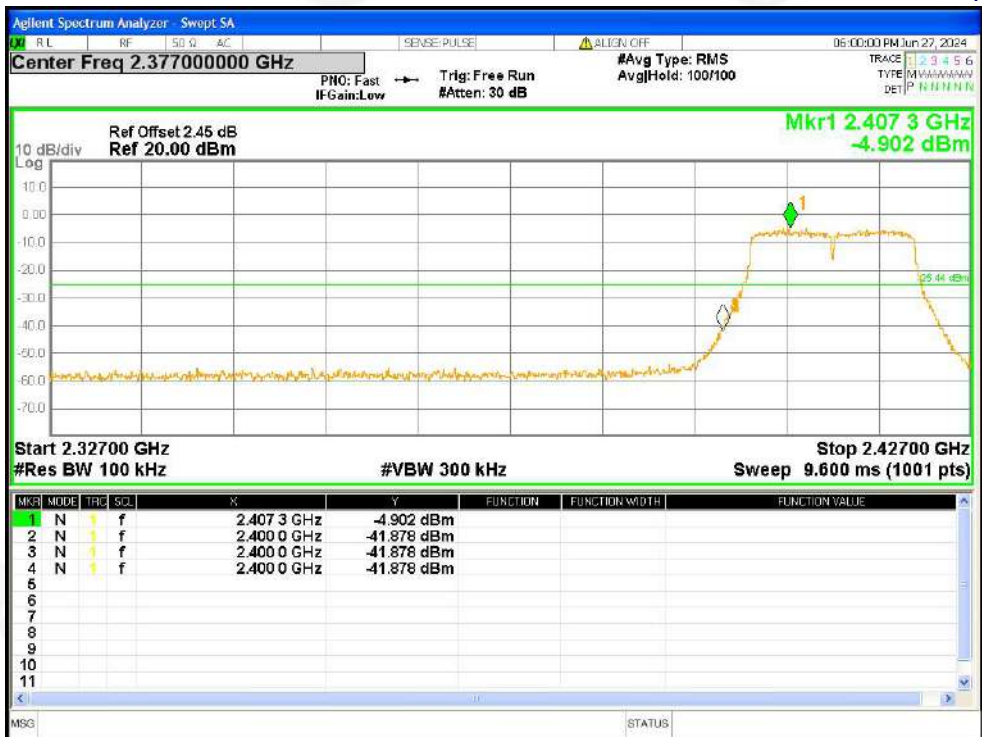
Band Edge NVNT g 2462MHz Ant1 Ref



Band Edge NVNT g 2462MHz Ant1 Emission



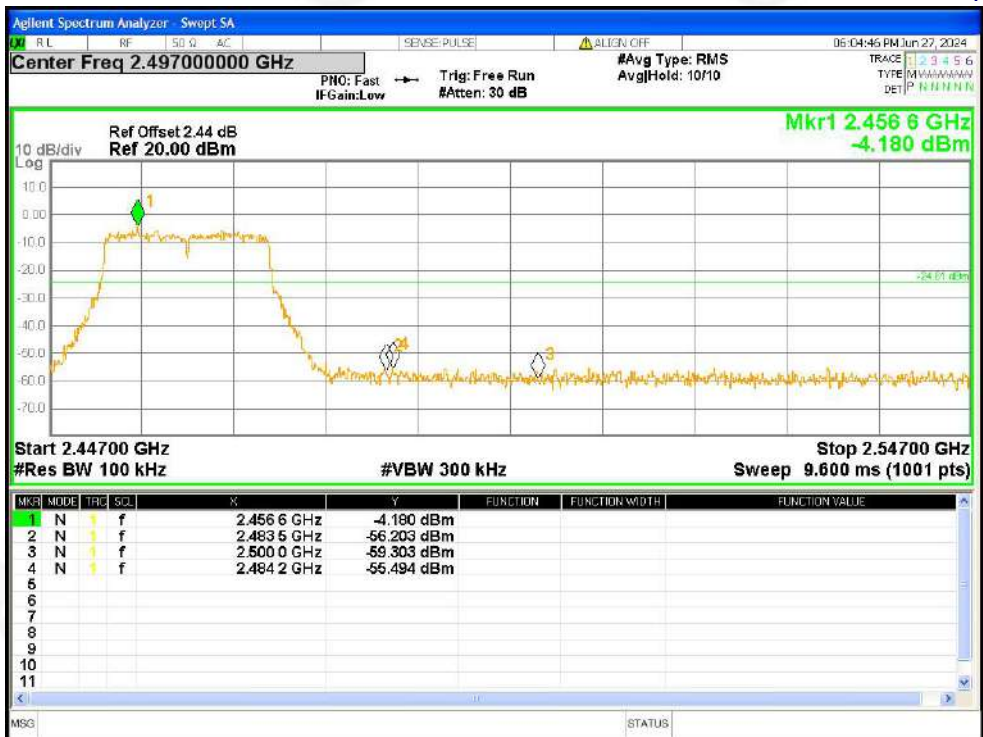
Band Edge NVNT n20 2412MHz Ant1 Ref



Band Edge NVNT n20 2412MHz Ant1 Emission



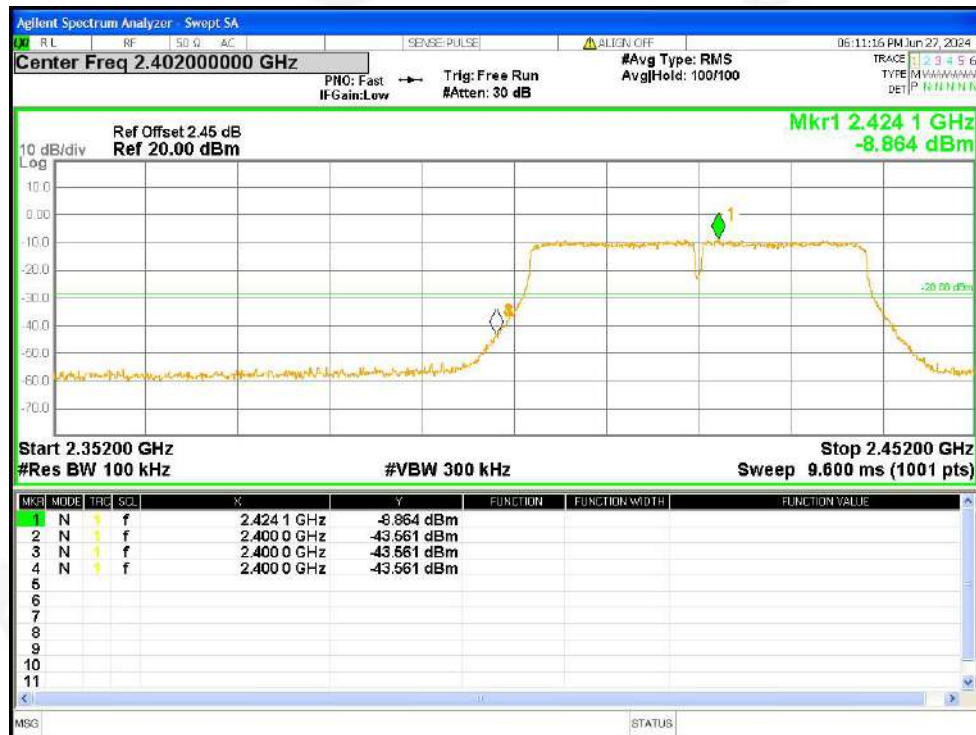
Band Edge NVNT n20 2462MHz Ant1 Ref



Band Edge NVNT n20 2462MHz Ant1 Emission



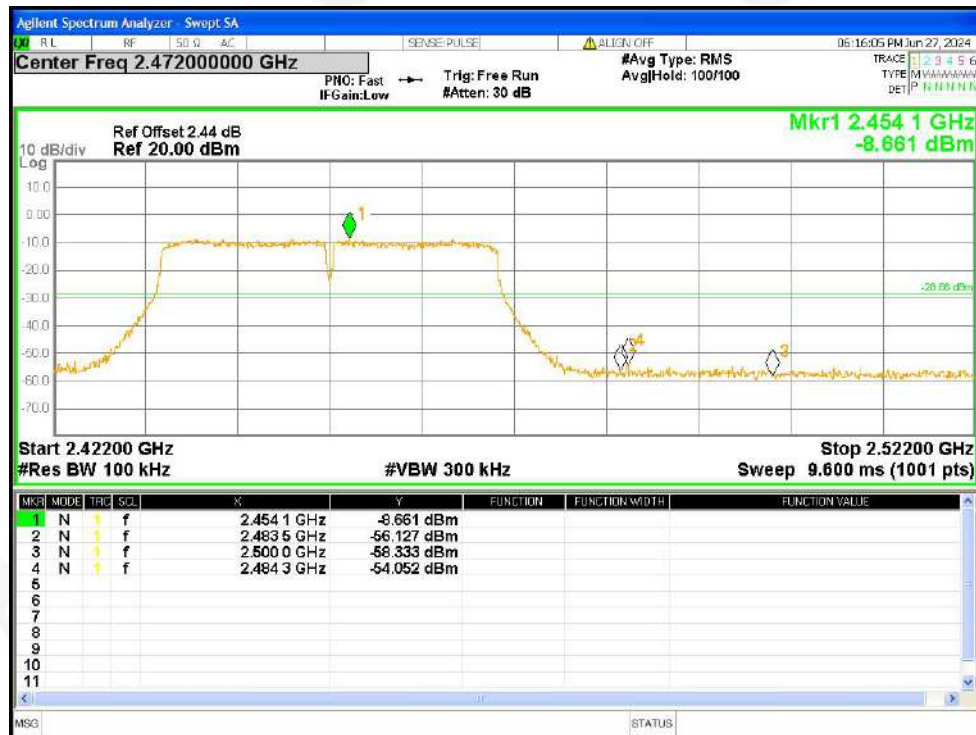
Band Edge NVNT n40 2422MHz Ant1 Ref



Band Edge NVNT n40 2422MHz Ant1 Emission



Band Edge NVNT n40 2452MHz Ant1 Ref



Band Edge NVNT n40 2452MHz 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:	
There are FPCB antennas for WIFI 2.4G, the best case gain for the antenna is 3dBii. 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 *****