



FCC TEST REPORT

FCC ID:2BM48-DT69

Report Number. : **ZKT-241127L16785E-1**

Date of Test : Nov. 27, 2024 to Dec. 18, 2024

Date of issue..... : Dec. 19, 2024

Total number of pages 66

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 Wellwin Technology CO., Limited

Address : RM1109, Fukang Technology Building, Yousong Road No.107, Longhua District, Shenzhen,China

Manufacturer's name : Shenzhen Wellwin Technology CO., Limited

Address : RM1109, Fukang Technology Building, Yousong Road No.107, 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-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..... : Digital Night Vision

Trademark : N/A

Model/Type reference..... : DT69

Ratings : DC 5V by adapter or DC 3.7V by battery



Testing procedure and testing location:

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

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

Tested by (name + signature) **Jim Liu**

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Jackson Fang

Approved (name + signature) **Lake Xie**

Lake Xie



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1. VERSION

Report No.	Version	Description	Approved
ZKT-241127L16785E-1	Rev.01	Initial issue of report	Dec. 10, 2024



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)	Channel Bandwidth& 99% OCB	PASS	
FCC part 15.247 (e)	Power Spectral Density	PASS	
FCC part 15.247(d)	Band Edge	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
CAB identifier: CN0110

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=1.8KHz
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

Product Name:	Digital Night Vision
Model No.:	DT69
Model Different.:	N/A
Serial No.:	N/A
Sample ID	ZKT-241127L16785
Sample(s) Status:	Engineer sample
Channel numbers:	802.11b/802.11g /802.11n(HT20):11 802.11n40: 7CH
Modulation Type:	CCK, OFDM, DBPSK, DAPSK
Antenna Type and Antenna gain:	Antenna Type: FPC Antenna Antenna gain: 2.32dBi
Worst Case:	2.4G WIFI 802.11b 2462MHz
Power supply:	DC 5V by adapter or DC 3.7V by battery



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

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
3	2422	5	2432	7	2442	9	2452
4	2427	6	2437	8	2447		

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

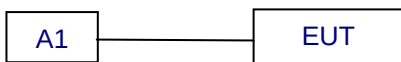
Transmitting mode	Keep the EUT in continuously transmitting mode
Remark: During the test, the duty cycle >98%, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's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

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:				
Pre-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.				
Mode	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)
Data rate	1Mbps	6Mbps	6.5Mbps	13Mbps

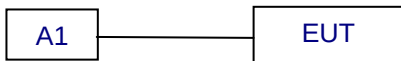
Test Software	Tera Term Tool
Power level setup	0dBm

3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

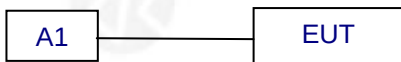
Conducted Emission



Radiated Emission



Conducted Spurious



3.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

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

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Digital Night Vision	N/A	DT69	N/A	EUT
A-1	ADAPTER	N/A	N/A	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.



3.5EQUIPMENTS LIST FOR ALL TEST ITEMS

Equipment List:

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. 30, 2024	Sep. 29, 2025
2	LISN	CYBERTEK	EM5040A	E1850400149	N/A	Sep. 30, 2024	Sep. 29, 2025
3	Test Cable	N/A	C-01	N/A	N/A	Sep. 30, 2024	Sep. 29, 2025
4	EMI Test Receiver	R&S	ESCI3	101393	4.42 SP3	Sep. 29, 2024	Sep. 28, 2025
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. 29, 2024	Sep. 28, 2025
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Sep. 30, 2024	Sep. 29, 2025
3	EMI Test Receiver (9kHz-7GHz)	R&S	ESCI7	100969	4.32	Sep. 29, 2024	Sep. 28, 2025
4	Bilog Antenna (30MHz-1500MHz)	Schwarzbeck	VULB9168	00877	N/A	Sep. 30, 2024	Sep. 29, 2025
5	Horn Antenna (1GHz-18GHz)	Agilent	AH-118	071145	N/A	Sep. 30, 2024	Sep. 29, 2025
6	Horn Antenna (15GHz-40GHz)	A.H.System	SAS-574	588	N/A	Sep. 30, 2024	Sep. 29, 2025
7	Loop Antenna	TESEQ	HLA6121	58357	N/A	Oct. 11, 2024	Oct. 10, 2025
8	Amplifier (30-1000MHz)	EM Electronics	EM330 Amplifier	60747	N/A	Sep. 29, 2024	Sep. 28, 2025
9	Amplifier (1GHz-26.5GHz)	HuiPu	8449B	3008A00315	N/A	Sep. 29, 2024	Sep. 28, 2025
10	Amplifier (500MHz-40GHz)	QuanJuDa	DLE-161	097	N/A	Sep. 30, 2024	Sep. 29, 2025
11	Test Cable	N/A	R-01	N/A	N/A	Sep. 30, 2024	Sep. 29, 2025
12	Test Cable	N/A	R-02	N/A	N/A	Sep. 30, 2024	Sep. 29, 2025
13	Test Cable	N/A	R-03	N/A	N/A	Sep. 30, 2024	Sep. 29, 2025
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. 29, 2024	Sep. 28, 2025
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Sep. 30, 2024	Sep. 29, 2025
3	Test Cable	N/A	RF-01	N/A	N/A	Sep. 30, 2024	Sep. 29, 2025
4	Test Cable	N/A	RF-02	N/A	N/A	Sep. 30, 2024	Sep. 29, 2025
5	Test Cable	N/A	RF-03	N/A	N/A	Sep. 30, 2024	Sep. 29, 2025
6	ESG Signal Generator	Agilent	E4421B	N/A	B.03.84	Sep. 29, 2024	Sep. 28, 2025
7	Signal Generator	Agilent	N5182A	N/A	A.01.87	Sep. 29, 2024	Sep. 28, 2025
8	Magnetic Field Probe Tester	Narda	ELT-400	0-0344	N/A	Nov. 16, 2024	Nov. 15, 2025
9	Van der Hoofden measuring head	Schwarzbeck Mess-elektronik	VDHH 9502	9502-039	N/A	Sep. 30, 2024	Sep. 29, 2025
10	Wideband Radio Communication Test	R&S	CMW500	106504	V 3.7.22	Sep. 30, 2024	Sep. 29, 2025
11	MWRF Power Meter Test system	MW	MW100-RF CB	N/A	N/A	Sep. 29, 2024	Sep. 28, 2025
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 C63.10:2013
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

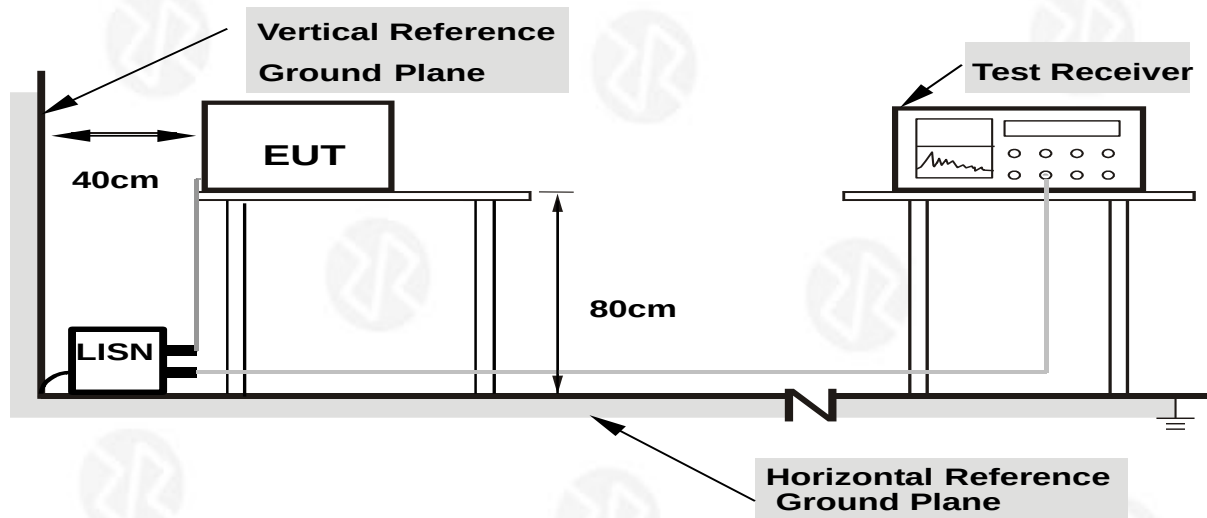
- The EUT was placed 0.1 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.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

4.1.5 EUT OPERATING CONDITIONS

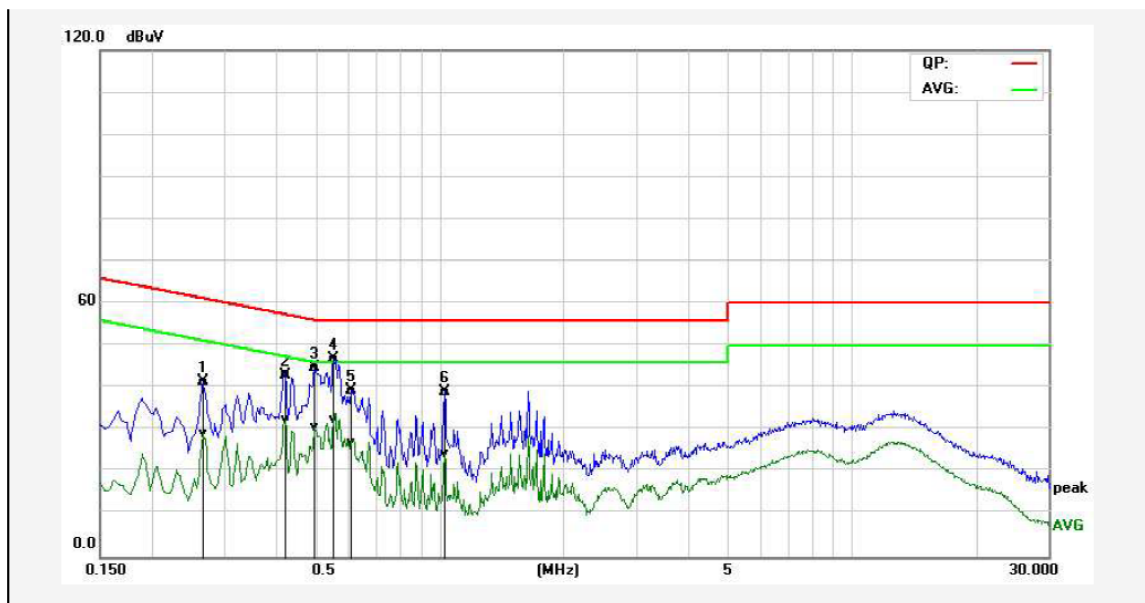
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

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

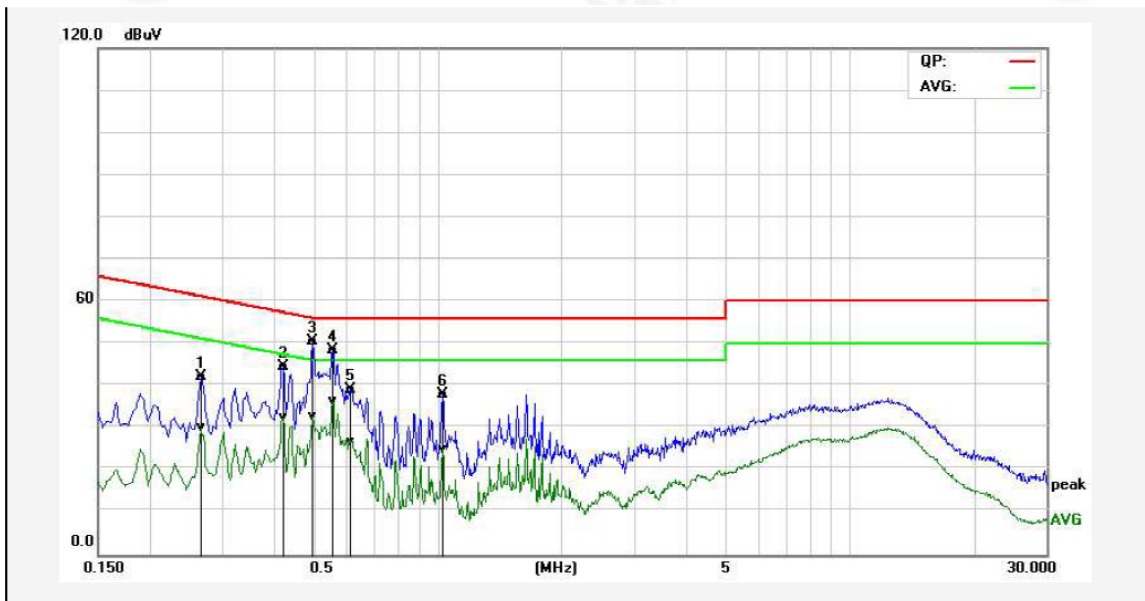
Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	L
Test Voltage:	AC 120V/60Hz		



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1P	0.2660	31.32	19.01	10.15	41.47	29.16	61.24	51.24	-19.77	-22.08	Pass
2P	0.4220	33.10	22.45	10.10	43.20	32.55	57.41	47.41	-14.21	-14.86	Pass
3P	0.4980	34.89	20.64	10.08	44.97	30.72	56.03	46.03	-11.06	-15.31	Pass
4*	0.5540	36.94	22.47	10.08	47.02	32.55	56.00	46.00	-8.98	-13.45	Pass
5P	0.6100	29.47	17.18	10.07	39.54	27.25	56.00	46.00	-16.46	-18.75	Pass
6P	1.0300	28.96	14.32	10.13	39.09	24.45	56.00	46.00	-16.91	-21.55	Pass



Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	N
Test Voltage:	AC 120V/60Hz		



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1P	0.2660	31.98	19.91	10.15	42.13	30.06	61.24	51.24	-19.11	-21.18	Pass
2P	0.4220	34.44	22.59	10.10	44.54	32.69	57.41	47.41	-12.87	-14.72	Pass
3*	0.4980	40.42	22.86	10.08	50.50	32.94	56.03	46.03	-5.53	-13.09	Pass
4P	0.5580	38.41	26.26	10.08	48.49	36.34	56.00	46.00	-7.51	-9.66	Pass
5P	0.6140	29.02	16.84	10.07	39.09	26.91	56.00	46.00	-16.91	-19.09	Pass
6P	1.0300	27.81	14.91	10.13	37.94	25.04	56.00	46.00	-18.06	-20.96	Pass



4.2 RADIATED EMISSION MEASUREMENT

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

4.2.1 RADIATED EMISSION LIMITS

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

LIMITS OF RADIATED EMISSION MEASUREMENT

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

Notes:

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



4.2.2 TEST PROCEDURE

Below 1GHz test procedure as below:

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

Above 1GHz test procedure as below:

- 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).
- Test the EUT in the lowest channel ,the middle channel ,the Highest channel

Note:

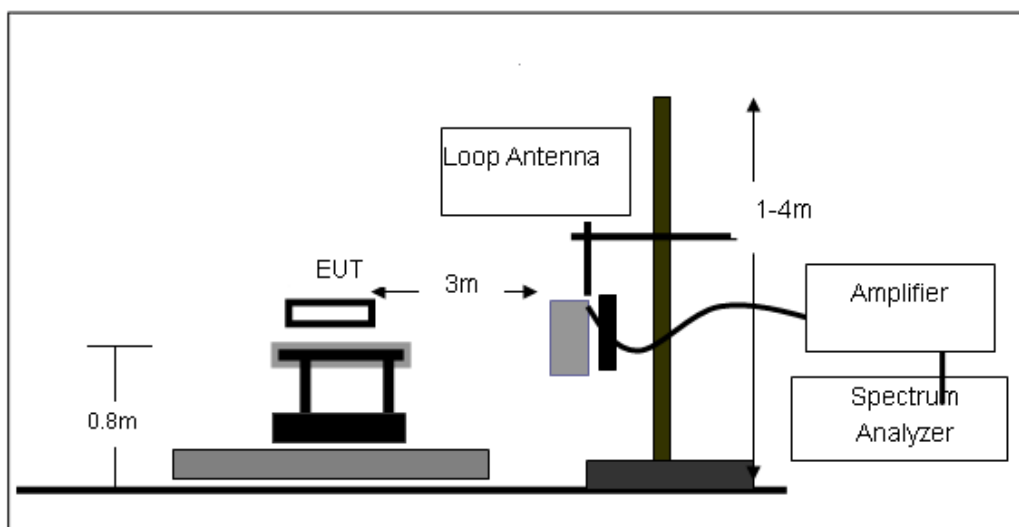
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

4.2.3 DEVIATION FROM TEST STANDARD

No deviation

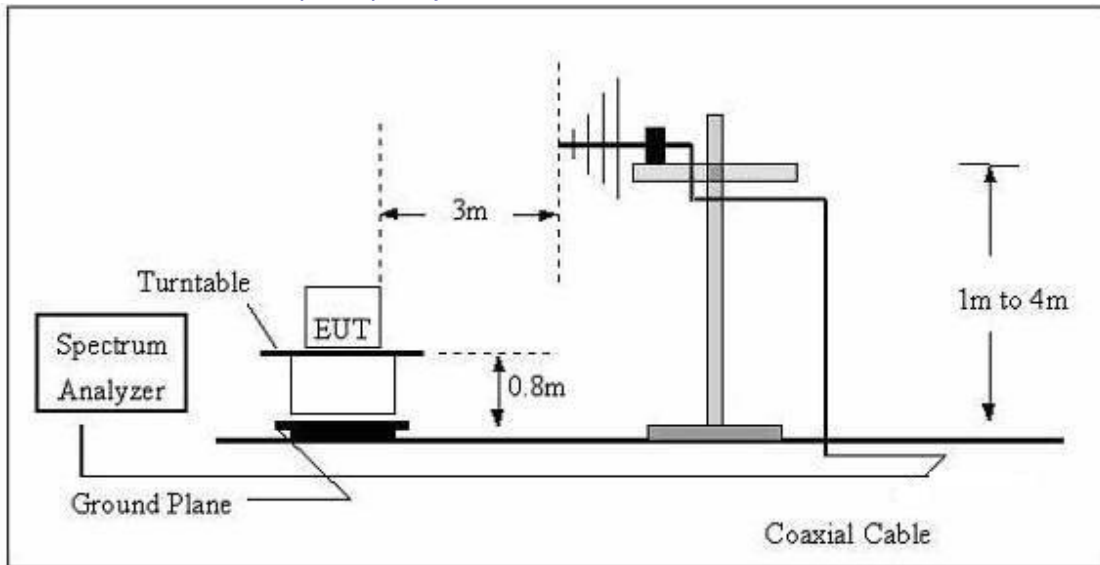
4.2.4 TEST SETUP

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

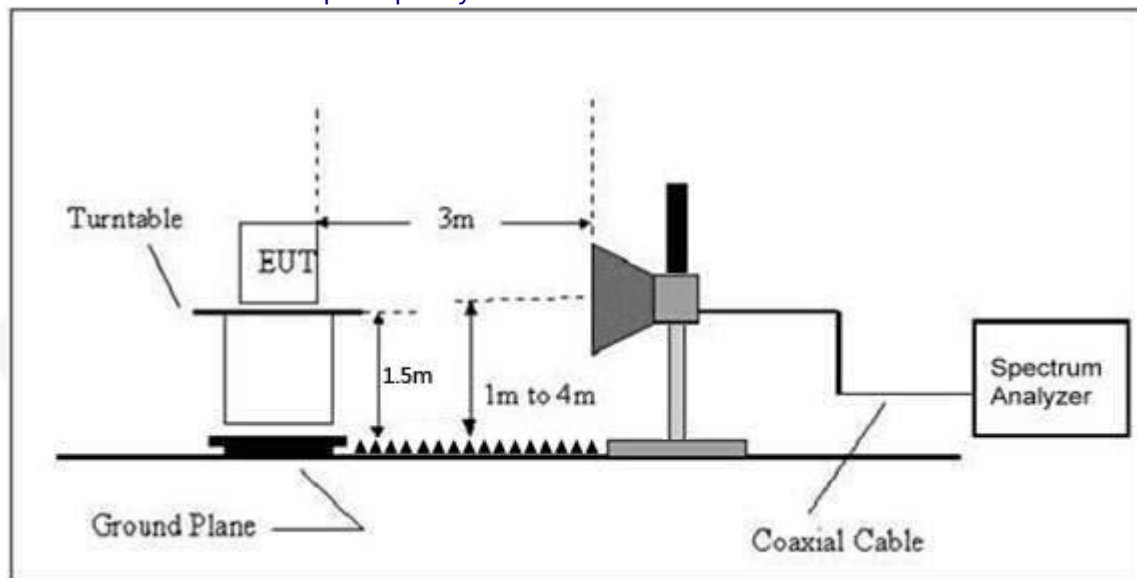




(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(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

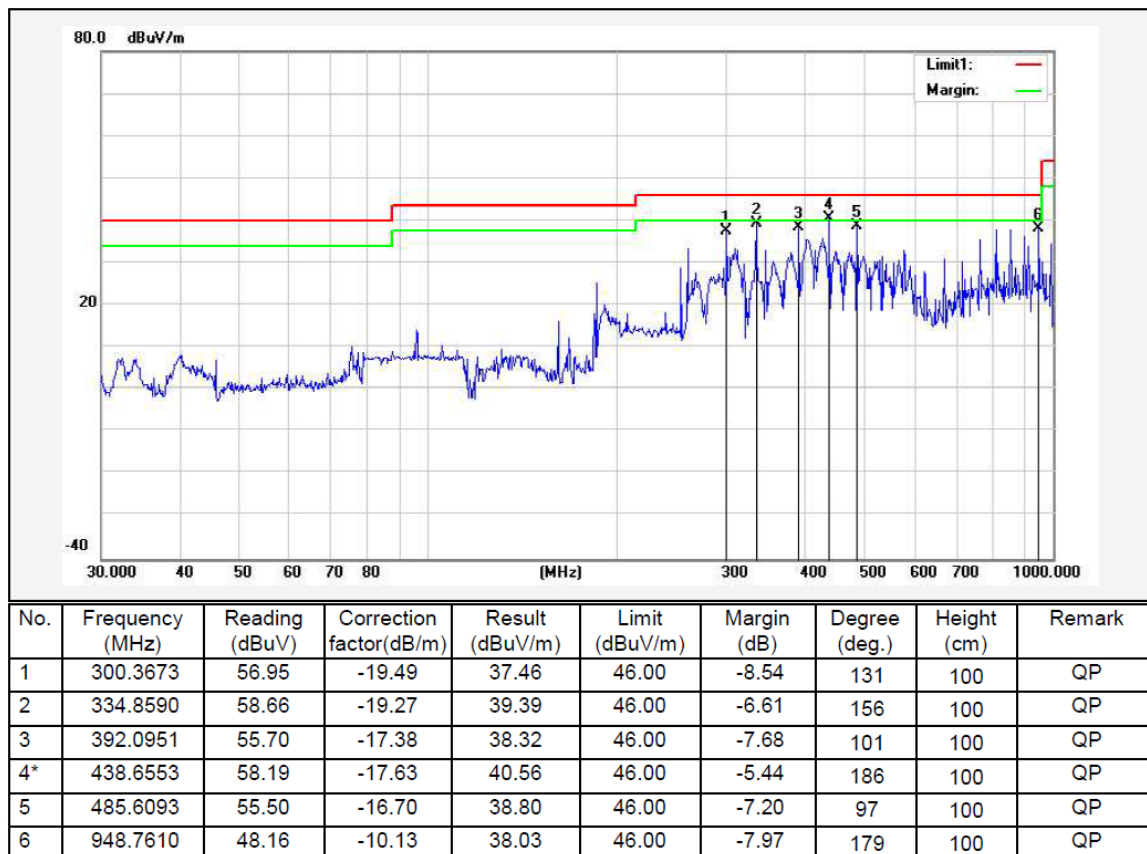
Between 9KHz – 30MHz

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.



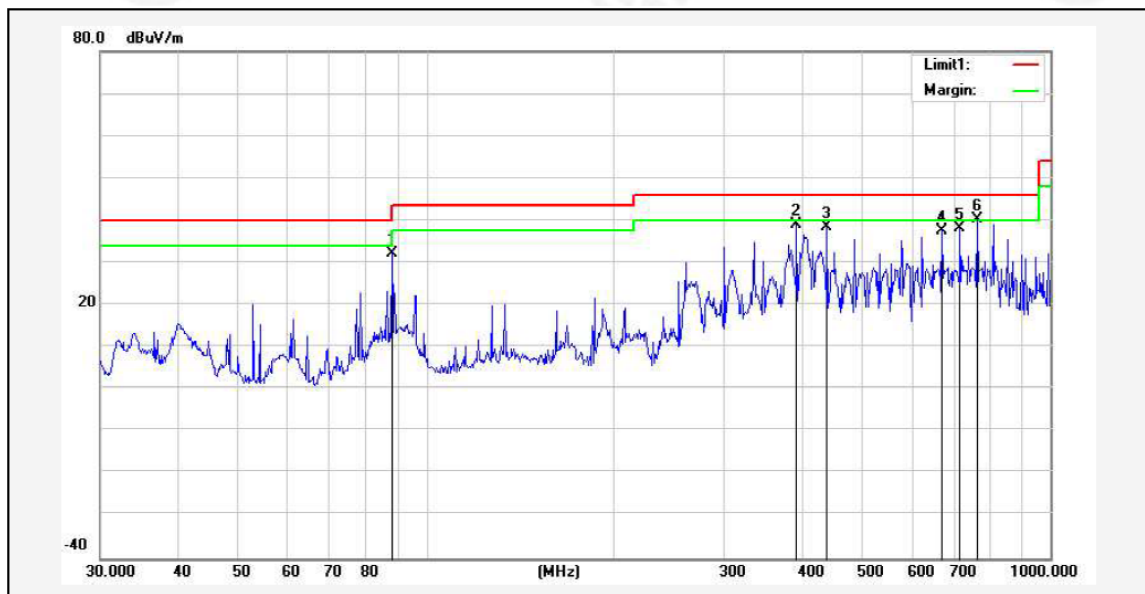
Between 30MHz – 1GHz

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz		





Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz		



No.	Frequency (MHz)	Reading (dBUV)	Correction factor(dB/m)	Result (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Degree (deg.)	Height (cm)	Remark
1	88.0328	58.04	-25.76	32.28	43.50	-11.22	116	100	QP
2	392.0951	56.57	-17.38	39.19	46.00	-6.81	127	100	QP
3	438.6553	56.01	-17.63	38.38	46.00	-7.62	158	100	QP
4	670.4892	51.33	-13.91	37.42	46.00	-8.58	144	100	QP
5	716.6820	51.79	-13.57	38.22	46.00	-7.78	199	100	QP
6*	763.3757	53.10	-12.83	40.27	46.00	-5.73	134	100	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 2462MHz.



1GHz~25GHz

802.11b

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	54.76	30.55	5.77	24.66	54.64	74.00	-19.36	PK
V	4824.00	43.70	30.55	5.77	24.66	43.58	54.00	-10.42	AV
V	7236.00	54.50	30.33	6.32	24.55	55.04	74.00	-18.96	PK
V	7236.00	43.36	30.33	6.32	24.55	43.90	54.00	-10.10	AV
V	9648.00	52.26	30.85	7.45	24.69	53.55	74.00	-20.45	PK
V	9648.00	43.35	30.85	7.45	24.69	44.64	54.00	-9.36	AV
V	12060.00	52.78	31.02	8.99	25.57	56.32	74.00	-17.68	PK
V	12060.00	43.38	31.02	8.99	25.57	46.92	54.00	-7.08	AV
H	4824.00	51.49	30.55	5.77	24.66	51.37	74.00	-22.63	PK
H	4824.00	43.13	30.55	5.77	24.66	43.01	54.00	-10.99	AV
H	7236.00	54.54	30.33	6.32	24.55	55.08	74.00	-18.92	PK
H	7236.00	43.37	30.33	6.32	24.55	43.91	54.00	-10.09	AV
H	9648.00	52.83	30.85	7.45	24.69	54.12	74.00	-19.88	PK
H	9648.00	43.93	30.85	7.45	24.69	45.22	54.00	-8.78	AV
H	12060.00	54.74	31.02	8.99	25.57	58.28	74.00	-15.72	PK
H	12060.00	43.33	31.02	8.99	25.57	46.87	54.00	-7.13	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	51.96	30.55	5.77	24.66	51.84	74.00	-22.16	PK
V	4874.00	43.33	30.55	5.77	24.66	43.21	54.00	-10.79	AV
V	7311.00	52.67	30.33	6.32	24.55	53.21	74.00	-20.79	PK
V	7311.00	43.54	30.33	6.32	24.55	44.08	54.00	-9.92	AV
V	9748.00	54.31	30.85	7.45	24.69	55.60	74.00	-18.40	PK
V	9748.00	43.90	30.85	7.45	24.69	45.19	54.00	-8.81	AV
V	12185.00	54.44	31.02	8.99	25.57	57.98	74.00	-16.02	PK
V	12185.00	43.20	31.02	8.99	25.57	46.74	54.00	-7.26	AV
H	4874.00	51.74	30.55	5.77	24.66	51.62	74.00	-22.38	PK
H	4874.00	43.97	30.55	5.77	24.66	43.85	54.00	-10.15	AV
H	7311.00	50.43	30.33	6.32	24.55	50.97	74.00	-23.03	PK
H	7311.00	43.85	30.33	6.32	24.55	44.39	54.00	-9.61	AV
H	9748.00	53.23	30.85	7.45	24.69	54.52	74.00	-19.48	PK
H	9748.00	43.16	30.85	7.45	24.69	44.45	54.00	-9.55	AV
H	12185.00	53.45	31.02	8.99	25.57	56.99	74.00	-17.01	PK
H	12185.00	43.40	31.02	8.99	25.57	46.94	54.00	-7.06	AV



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	53.85	30.55	5.77	24.66	53.73	74.00	-20.27	PK
V	4924.00	43.51	30.55	5.77	24.66	43.39	54.00	-10.61	AV
V	7386.00	55.05	30.33	6.32	24.55	55.59	74.00	-18.41	PK
V	7386.00	43.62	30.33	6.32	24.55	44.16	54.00	-9.84	AV
V	9848.00	51.69	30.85	7.45	24.69	52.98	74.00	-21.02	PK
V	9848.00	43.43	30.85	7.45	24.69	44.72	54.00	-9.28	AV
V	12310.00	53.40	31.02	8.99	25.57	56.94	74.00	-17.06	PK
V	12310.00	43.44	31.02	8.99	25.57	46.98	54.00	-7.02	AV
H	4924.00	54.21	30.55	5.77	24.66	54.09	74.00	-19.91	PK
H	4924.00	43.52	30.55	5.77	24.66	43.40	54.00	-10.60	AV
H	7386.00	51.65	30.33	6.32	24.55	52.19	74.00	-21.81	PK
H	7386.00	43.52	30.33	6.32	24.55	44.06	54.00	-9.94	AV
H	9848.00	50.74	30.85	7.45	24.69	52.03	74.00	-21.97	PK
H	9848.00	43.96	30.85	7.45	24.69	45.25	54.00	-8.75	AV
H	12310.00	53.05	31.02	8.99	25.57	56.59	74.00	-17.41	PK
H	12310.00	43.62	31.02	8.99	25.57	47.16	54.00	-6.84	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.
4. The test data shows only the worst case 802.11b 2462MHz.



802.11g

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	53.67	30.55	5.77	24.66	53.55	74.00	-20.45	PK
V	4824.00	43.71	30.55	5.77	24.66	43.59	54.00	-10.41	AV
V	7236.00	54.43	30.33	6.32	24.55	54.97	74.00	-19.03	PK
V	7236.00	43.25	30.33	6.32	24.55	43.79	54.00	-10.21	AV
V	9648.00	52.57	30.85	7.45	24.69	53.86	74.00	-20.14	PK
V	9648.00	43.48	30.85	7.45	24.69	44.77	54.00	-9.23	AV
V	12060.00	52.67	31.02	8.99	25.57	56.21	74.00	-17.79	PK
V	12060.00	43.24	31.02	8.99	25.57	46.78	54.00	-7.22	AV
H	4824.00	51.34	30.55	5.77	24.66	51.22	74.00	-22.78	PK
H	4824.00	43.15	30.55	5.77	24.66	43.03	54.00	-10.97	AV
H	7236.00	53.96	30.33	6.32	24.55	54.50	74.00	-19.50	PK
H	7236.00	42.23	30.33	6.32	24.55	42.77	54.00	-11.23	AV
H	9648.00	52.69	30.85	7.45	24.69	53.98	74.00	-20.02	PK
H	9648.00	43.76	30.85	7.45	24.69	45.05	54.00	-8.95	AV
H	12060.00	54.61	31.02	8.99	25.57	58.15	74.00	-15.85	PK
H	12060.00	43.53	31.02	8.99	25.57	47.07	54.00	-6.93	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	52.88	30.55	5.77	24.66	52.76	74.00	-21.24	PK
V	4874.00	43.81	30.55	5.77	24.66	43.69	54.00	-10.31	AV
V	7311.00	53.36	30.33	6.32	24.55	53.90	74.00	-20.10	PK
V	7311.00	43.79	30.33	6.32	24.55	44.33	54.00	-9.67	AV
V	9748.00	54.30	30.85	7.45	24.69	55.59	74.00	-18.41	PK
V	9748.00	43.87	30.85	7.45	24.69	45.16	54.00	-8.84	AV
V	12185.00	54.48	31.02	8.99	25.57	58.02	74.00	-15.98	PK
V	12185.00	43.32	31.02	8.99	25.57	46.86	54.00	-7.14	AV
H	4874.00	50.90	30.55	5.77	24.66	50.78	74.00	-23.22	PK
H	4874.00	44.06	30.55	5.77	24.66	43.94	54.00	-10.06	AV
H	7311.00	50.70	30.33	6.32	24.55	51.24	74.00	-22.76	PK
H	7311.00	43.78	30.33	6.32	24.55	44.32	54.00	-9.68	AV
H	9748.00	53.39	30.85	7.45	24.69	54.68	74.00	-19.32	PK
H	9748.00	43.85	30.85	7.45	24.69	45.14	54.00	-8.86	AV
H	12185.00	53.55	31.02	8.99	25.57	57.09	74.00	-16.91	PK
H	12185.00	43.56	31.02	8.99	25.57	47.10	54.00	-6.90	AV



Polar (H/V)	Frequency	Meter Reading	Pre-ampl ifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/ m)	(dB)	
High Channel:2462MHz									
V	4924.00	52.75	30.55	5.77	24.66	52.63	74.00	-21.37	PK
V	4924.00	43.44	30.55	5.77	24.66	43.32	54.00	-10.68	AV
V	7386.00	54.81	30.33	6.32	24.55	55.35	74.00	-18.65	PK
V	7386.00	43.68	30.33	6.32	24.55	44.22	54.00	-9.78	AV
V	9848.00	52.71	30.85	7.45	24.69	54.00	74.00	-20.00	PK
V	9848.00	43.30	30.85	7.45	24.69	44.59	54.00	-9.41	AV
V	12310.00	53.32	31.02	8.99	25.57	56.86	74.00	-17.14	PK
V	12310.00	43.53	31.02	8.99	25.57	47.07	54.00	-6.93	AV
H	4924.00	54.42	30.55	5.77	24.66	54.30	74.00	-19.70	PK
H	4924.00	43.69	30.55	5.77	24.66	43.57	54.00	-10.43	AV
H	7386.00	51.62	30.33	6.32	24.55	52.16	74.00	-21.84	PK
H	7386.00	44.01	30.33	6.32	24.55	44.55	54.00	-9.45	AV
H	9848.00	50.93	30.85	7.45	24.69	52.22	74.00	-21.78	PK
H	9848.00	42.61	30.85	7.45	24.69	43.90	54.00	-10.10	AV
H	12310.00	52.92	31.02	8.99	25.57	56.46	74.00	-17.54	PK
H	12310.00	43.53	31.02	8.99	25.57	47.07	54.00	-6.93	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
4. The test data shows only the worst case 802.11b 2462MHz.



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	4824.00	53.21	30.55	5.77	24.66	53.09	74.00	-20.91	PK
V	4824.00	43.83	30.55	5.77	24.66	43.71	54.00	-10.29	AV
V	7236.00	53.27	30.33	6.32	24.55	53.81	74.00	-20.19	PK
V	7236.00	43.66	30.33	6.32	24.55	44.20	54.00	-9.80	AV
V	9648.00	52.43	30.85	7.45	24.69	53.72	74.00	-20.28	PK
V	9648.00	43.31	30.85	7.45	24.69	44.60	54.00	-9.40	AV
V	12060.00	52.64	31.02	8.99	25.57	56.18	74.00	-17.82	PK
V	12060.00	43.20	31.02	8.99	25.57	46.74	54.00	-7.26	AV
H	4824.00	51.79	30.55	5.77	24.66	51.67	74.00	-22.33	PK
H	4824.00	43.26	30.55	5.77	24.66	43.14	54.00	-10.86	AV
H	7236.00	53.89	30.33	6.32	24.55	54.43	74.00	-19.57	PK
H	7236.00	42.36	30.33	6.32	24.55	42.90	54.00	-11.10	AV
H	9648.00	52.92	30.85	7.45	24.69	54.21	74.00	-19.79	PK
H	9648.00	43.78	30.85	7.45	24.69	45.07	54.00	-8.93	AV
H	12060.00	54.60	31.02	8.99	25.57	58.14	74.00	-15.86	PK
H	12060.00	43.42	31.02	8.99	25.57	46.96	54.00	-7.04	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	52.75	30.55	5.77	24.66	52.63	74.00	-21.37	PK
V	4874.00	43.61	30.55	5.77	24.66	43.49	54.00	-10.51	AV
V	7311.00	53.44	30.33	6.32	24.55	53.98	74.00	-20.02	PK
V	7311.00	43.40	30.33	6.32	24.55	43.94	54.00	-10.06	AV
V	9748.00	54.22	30.85	7.45	24.69	55.51	74.00	-18.49	PK
V	9748.00	43.65	30.85	7.45	24.69	44.94	54.00	-9.06	AV
V	12185.00	54.85	31.02	8.99	25.57	58.39	74.00	-15.61	PK
V	12185.00	43.32	31.02	8.99	25.57	46.86	54.00	-7.14	AV
H	4874.00	50.43	30.55	5.77	24.66	50.31	74.00	-23.69	PK
H	4874.00	43.56	30.55	5.77	24.66	43.44	54.00	-10.56	AV
H	7311.00	50.76	30.33	6.32	24.55	51.30	74.00	-22.70	PK
H	7311.00	43.90	30.33	6.32	24.55	44.44	54.00	-9.56	AV
H	9748.00	53.34	30.85	7.45	24.69	54.63	74.00	-19.37	PK
H	9748.00	43.54	30.85	7.45	24.69	44.83	54.00	-9.17	AV
H	12185.00	53.18	31.02	8.99	25.57	56.72	74.00	-17.28	PK
H	12185.00	43.35	31.02	8.99	25.57	46.89	54.00	-7.11	AV



Polar (H/V)	Frequency	Meter Reading	Pre-ampl ifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/ m)	(dB)	
High Channel:2462MHz									
V	4924.00	52.87	30.55	5.77	24.66	52.75	74.00	-21.25	PK
V	4924.00	43.05	30.55	5.77	24.66	42.93	54.00	-11.07	AV
V	7386.00	54.61	30.33	6.32	24.55	55.15	74.00	-18.85	PK
V	7386.00	43.29	30.33	6.32	24.55	43.83	54.00	-10.17	AV
V	9848.00	52.72	30.85	7.45	24.69	54.01	74.00	-19.99	PK
V	9848.00	43.44	30.85	7.45	24.69	44.73	54.00	-9.27	AV
V	12310.00	53.18	31.02	8.99	25.57	56.72	74.00	-17.28	PK
V	12310.00	43.38	31.02	8.99	25.57	46.92	54.00	-7.08	AV
H	4924.00	54.23	30.55	5.77	24.66	54.11	74.00	-19.89	PK
H	4924.00	43.55	30.55	5.77	24.66	43.43	54.00	-10.57	AV
H	7386.00	51.46	30.33	6.32	24.55	52.00	74.00	-22.00	PK
H	7386.00	43.89	30.33	6.32	24.55	44.43	54.00	-9.57	AV
H	9848.00	50.75	30.85	7.45	24.69	52.04	74.00	-21.96	PK
H	9848.00	42.37	30.85	7.45	24.69	43.66	54.00	-10.34	AV
H	12310.00	52.78	31.02	8.99	25.57	56.32	74.00	-17.68	PK
H	12310.00	43.51	31.02	8.99	25.57	47.05	54.00	-6.95	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.
4. The test data shows only the worst case 802.11b 2462MHz.



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:2422MHz									
V	4844.00	54.62	30.55	5.77	24.66	54.50	74.00	-19.50	PK
V	4844.00	43.69	30.55	5.77	24.66	43.57	54.00	-10.43	AV
V	7266.00	51.09	30.33	6.32	24.55	51.63	74.00	-22.37	PK
V	7266.00	43.78	30.33	6.32	24.55	44.32	54.00	-9.68	AV
V	9688.00	52.38	30.85	7.45	24.69	53.67	74.00	-20.33	PK
V	9688.00	42.76	30.85	7.45	24.69	44.05	54.00	-9.95	AV
V	12110.00	52.56	31.02	8.99	25.57	56.10	74.00	-17.90	PK
V	12110.00	43.19	31.02	8.99	25.57	46.73	54.00	-7.27	AV
H	4844.00	52.30	30.55	5.77	24.66	52.18	74.00	-21.82	PK
H	4844.00	43.28	30.55	5.77	24.66	43.16	54.00	-10.84	AV
H	7266.00	53.67	30.33	6.32	24.55	54.21	74.00	-19.79	PK
H	7266.00	41.93	30.33	6.32	24.55	42.47	54.00	-11.53	AV
H	9688.00	52.55	30.85	7.45	24.69	53.84	74.00	-20.16	PK
H	9688.00	43.58	30.85	7.45	24.69	44.87	54.00	-9.13	AV
H	12110.00	54.76	31.02	8.99	25.57	58.30	74.00	-15.70	PK
H	12110.00	43.36	31.02	8.99	25.57	46.90	54.00	-7.10	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	54.57	30.55	5.77	24.66	54.45	74.00	-19.55	PK
V	4874.00	43.36	30.55	5.77	24.66	43.24	54.00	-10.76	AV
V	7311.00	53.16	30.33	6.32	24.55	53.70	74.00	-20.30	PK
V	7311.00	43.57	30.33	6.32	24.55	44.11	54.00	-9.89	AV
V	9748.00	53.90	30.85	7.45	24.69	55.19	74.00	-18.81	PK
V	9748.00	43.78	30.85	7.45	24.69	45.07	54.00	-8.93	AV
V	12185.00	52.68	31.02	8.99	25.57	56.22	74.00	-17.78	PK
V	12185.00	43.39	31.02	8.99	25.57	46.93	54.00	-7.07	AV
H	4874.00	50.58	30.55	5.77	24.66	50.46	74.00	-23.54	PK
H	4874.00	43.65	30.55	5.77	24.66	43.53	54.00	-10.47	AV
H	7311.00	51.95	30.33	6.32	24.55	52.49	74.00	-21.51	PK
H	7311.00	43.09	30.33	6.32	24.55	43.63	54.00	-10.37	AV
H	9748.00	53.36	30.85	7.45	24.69	54.65	74.00	-19.35	PK
H	9748.00	43.80	30.85	7.45	24.69	45.09	54.00	-8.91	AV
H	12185.00	53.33	31.02	8.99	25.57	56.87	74.00	-17.13	PK
H	12185.00	43.48	31.02	8.99	25.57	47.02	54.00	-6.98	AV



Polar (H/V)	Frequency	Meter Reading	Pre-ampl ifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detect or Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/ m)	(dB)	
High Channel:2452MHz									
V	4904.00	52.93	30.55	5.77	24.66	52.81	74.00	-21.19	PK
V	4904.00	43.38	30.55	5.77	24.66	43.26	54.00	-10.74	AV
V	7356.00	55.01	30.33	6.32	24.55	55.55	74.00	-18.45	PK
V	7356.00	43.28	30.33	6.32	24.55	43.82	54.00	-10.18	AV
V	9808.00	52.45	30.85	7.45	24.69	53.74	74.00	-20.26	PK
V	9808.00	42.43	30.85	7.45	24.69	43.72	54.00	-10.28	AV
V	12260.00	52.74	31.02	8.99	25.57	56.28	74.00	-17.72	PK
V	12260.00	43.31	31.02	8.99	25.57	46.85	54.00	-7.15	AV
H	4904.00	54.70	30.55	5.77	24.66	54.58	74.00	-19.42	PK
H	4904.00	43.22	30.55	5.77	24.66	43.10	54.00	-10.90	AV
H	7356.00	51.11	30.33	6.32	24.55	51.65	74.00	-22.35	PK
H	7356.00	43.27	30.33	6.32	24.55	43.81	54.00	-10.19	AV
H	9808.00	51.53	30.85	7.45	24.69	52.82	74.00	-21.18	PK
H	9808.00	42.88	30.85	7.45	24.69	44.17	54.00	-9.83	AV
H	12260.00	52.64	31.02	8.99	25.57	56.18	74.00	-17.82	PK
H	12260.00	43.28	31.02	8.99	25.57	46.82	54.00	-7.18	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.
4. The test data shows only the worst case 802.11b 2462MHz.



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	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:

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

Note:

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

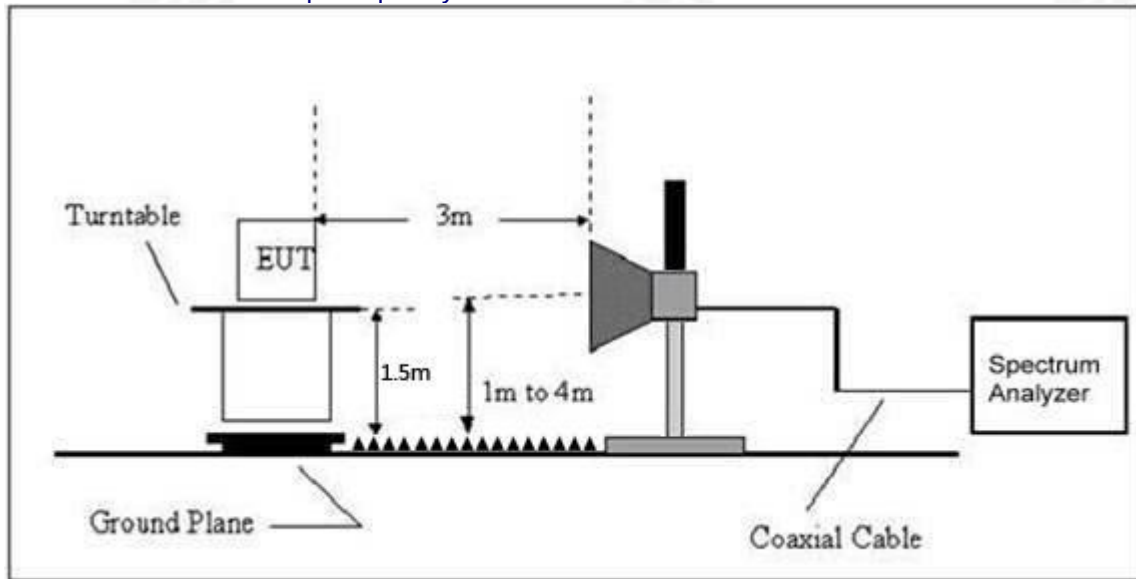
5.3 DEVIATION FROM TEST STANDARD

No deviation



5.4 TEST SETUP

Radiated Emission Test-Up Frequency Above 1GHz



5.5 EUT OPERATING CONDITIONS

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



5.6 TEST RESULT

	Polar (H/V)	Frequenc y (MHz)	Meter Reading (dBuV)	Pre- amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV /m)	Detec tor Type	Result
802.11b	Low Channel 2412MHz									
	H	2390.00	54.05	30.22	4.85	23.98	52.66	74.00	PK	PASS
	H	2390.00	44.6	30.22	4.85	23.98	43.21	54.00	AV	PASS
	H	2400.00	54.64	30.22	4.85	23.98	53.25	74.00	PK	PASS
	H	2400.00	44.03	30.22	4.85	23.98	42.64	54.00	AV	PASS
	V	2390.00	54.28	30.22	4.85	23.98	52.89	74.00	PK	PASS
	V	2390.00	44.25	30.22	4.85	23.98	42.86	54.00	AV	PASS
	V	2400.00	53.02	30.22	4.85	23.98	51.63	74.00	PK	PASS
	V	2400.00	44.16	30.22	4.85	23.98	42.77	54.00	AV	PASS
	High Channel 2462MHz									
	H	2483.50	54.94	30.22	4.85	23.98	53.55	74.00	PK	PASS
	H	2483.50	44.13	30.22	4.85	23.98	42.74	54.00	AV	PASS
	H	2500.00	54.08	30.22	4.85	23.98	52.69	74.00	PK	PASS
	H	2500.00	44.15	30.22	4.85	23.98	42.76	54.00	AV	PASS
	V	2483.50	53.36	30.22	4.85	23.98	51.97	74.00	PK	PASS
	V	2483.50	44.54	30.22	4.85	23.98	43.15	54.00	AV	PASS
	V	2500.00	54.99	30.22	4.85	23.98	53.6	74.00	PK	PASS
	V	2500.00	44.42	30.22	4.85	23.98	43.03	54.00	AV	PASS
802.11g	Low Channel 2412MHz									
	H	2390.00	53.62	30.22	4.85	23.98	52.23	74.00	PK	PASS
	H	2390.00	44.55	30.22	4.85	23.98	43.16	54.00	AV	PASS
	H	2400.00	54.24	30.22	4.85	23.98	52.85	74.00	PK	PASS
	H	2400.00	44.87	30.22	4.85	23.98	43.48	54.00	AV	PASS
	V	2390.00	53.43	30.22	4.85	23.98	52.04	74.00	PK	PASS
	V	2390.00	44.66	30.22	4.85	23.98	43.27	54.00	AV	PASS
	V	2400.00	54.22	30.22	4.85	23.98	52.83	74.00	PK	PASS
	V	2400.00	44.84	30.22	4.85	23.98	43.45	54.00	AV	PASS
	High Channel 2462MHz									
	H	2483.50	53.68	30.22	4.85	23.98	52.29	74.00	PK	PASS
	H	2483.50	44.44	30.22	4.85	23.98	43.05	54.00	AV	PASS
	H	2500.00	53.86	30.22	4.85	23.98	52.47	74.00	PK	PASS
	H	2500.00	44.45	30.22	4.85	23.98	43.06	54.00	AV	PASS
	V	2483.50	54.33	30.22	4.85	23.98	52.94	74.00	PK	PASS
	V	2483.50	44.07	30.22	4.85	23.98	42.68	54.00	AV	PASS
	V	2500.00	53.37	30.22	4.85	23.98	51.98	74.00	PK	PASS
	V	2500.00	44.55	30.22	4.85	23.98	43.16	54.00	AV	PASS
Remark:										
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limi										



802.11n20	Low Channel 2412MHz									
	H	2390.00	53.52	30.22	4.85	23.98	52.13	74.00	PK	PASS
	H	2390.00	44.96	30.22	4.85	23.98	43.57	54.00	AV	PASS
	H	2400.00	54.38	30.22	4.85	23.98	52.99	74.00	PK	PASS
	H	2400.00	44.44	30.22	4.85	23.98	43.05	54.00	AV	PASS
	V	2390.00	54.18	30.22	4.85	23.98	52.79	74.00	PK	PASS
	V	2390.00	44.96	30.22	4.85	23.98	43.57	54.00	AV	PASS
	V	2400.00	54.69	30.22	4.85	23.98	53.3	74.00	PK	PASS
	V	2400.00	44.05	30.22	4.85	23.98	42.66	54.00	AV	PASS
	High Channel 2462MHz									
	H	2483.50	53.12	30.22	4.85	23.98	51.73	74.00	PK	PASS
	H	2483.50	44.64	30.22	4.85	23.98	43.25	54.00	AV	PASS
	H	2500.00	53.47	30.22	4.85	23.98	52.08	74.00	PK	PASS
	H	2500.00	44.54	30.22	4.85	23.98	43.15	54.00	AV	PASS
	V	2483.50	53.28	30.22	4.85	23.98	51.89	74.00	PK	PASS
	V	2483.50	44.59	30.22	4.85	23.98	43.2	54.00	AV	PASS
	V	2500.00	53.55	30.22	4.85	23.98	52.16	74.00	PK	PASS
	V	2500.00	44.02	30.22	4.85	23.98	42.63	54.00	AV	PASS
802.11n40	Low Channel 2422MHz									
	H	2390.00	53.55	30.22	4.85	23.98	52.16	74.00	PK	PASS
	H	2390.00	44.97	30.22	4.85	23.98	43.58	54.00	AV	PASS
	H	2400.00	54.31	30.22	4.85	23.98	52.92	74.00	PK	PASS
	H	2400.00	44.46	30.22	4.85	23.98	43.07	54.00	AV	PASS
	V	2390.00	54.18	30.22	4.85	23.98	52.79	74.00	PK	PASS
	V	2390.00	44.97	30.22	4.85	23.98	43.58	54.00	AV	PASS
	V	2400.00	54.65	30.22	4.85	23.98	53.26	74.00	PK	PASS
	V	2400.00	44.02	30.22	4.85	23.98	42.63	54.00	AV	PASS
	High Channel 2452MHz									
	H	2483.50	53.15	30.22	4.85	23.98	51.76	74.00	PK	PASS
	H	2483.50	44.64	30.22	4.85	23.98	43.25	54.00	AV	PASS
	H	2500.00	53.44	30.22	4.85	23.98	52.05	74.00	PK	PASS
	H	2500.00	44.59	30.22	4.85	23.98	43.2	54.00	AV	PASS
	V	2483.50	53.22	30.22	4.85	23.98	51.83	74.00	PK	PASS
	V	2483.50	44.57	30.22	4.85	23.98	43.18	54.00	AV	PASS
	V	2500.00	53.56	30.22	4.85	23.98	52.17	74.00	PK	PASS
	V	2500.00	44.09	30.22	4.85	23.98	42.7	54.00	AV	PASS
Remark:										
1. 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:	ANSI C63.10:2013 and KDB558074 D01DTS Meas Guidancev05r02

6.1 APPLIED PROCEDURES / LIMIT

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

6.2 TEST PROCEDURE

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

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATION CONDITIONS

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



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

TX CH01

Agilent Spectrum Analyzer - Swept SA

[X] R	RF	50 Q	AC	SENSE:INT	ALIGN: AUTO	01:52:38 PM Dec 12, 2024
-------	----	------	----	-----------	-------------	--------------------------

Center Freq 2.41200000 GHz PNO: Fast → Trig: Free Run Avg Type: Log-Pwr
IFGain: Low #Atten: 30 dB AvgHld: 20/20

TRACE 1 2 3 4 5 6
TYPE M
DET P

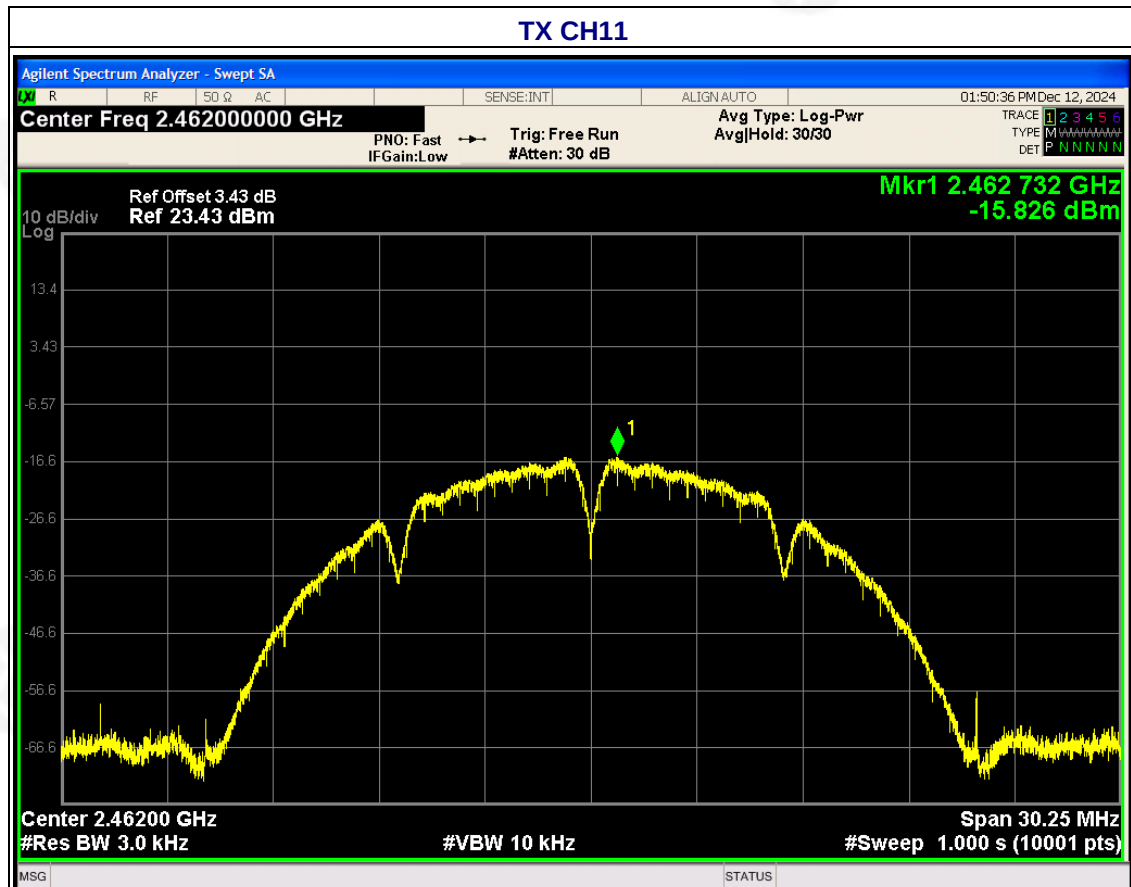
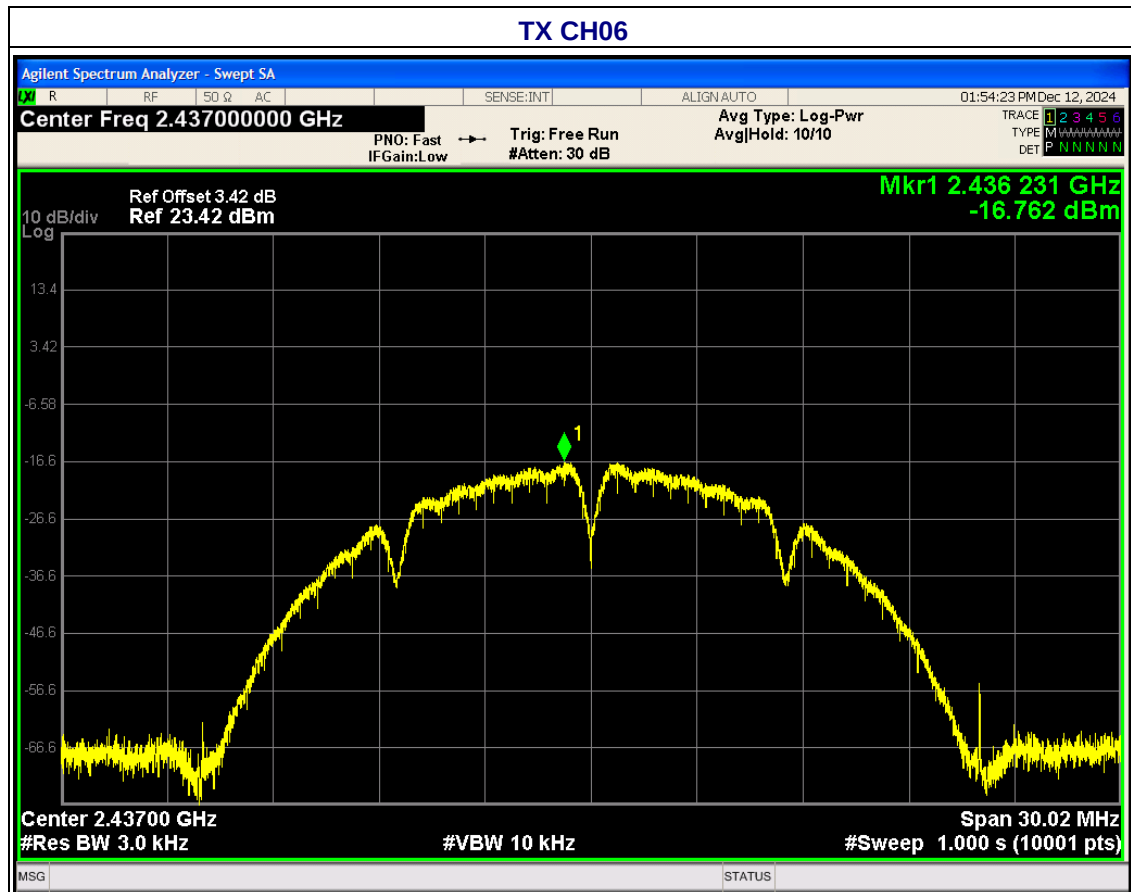
Ref Offset 3.39 dB
Ref 23.39 dBm

Mkr1 2.412 731 GHz
-17.300 dBm

10 dB/div
Log

Center 2.41200 GHz Span 30.21 MHz
#Res BW 3.0 kHz #VBW 10 kHz
#Sweep 1.000 s (10001 pts)

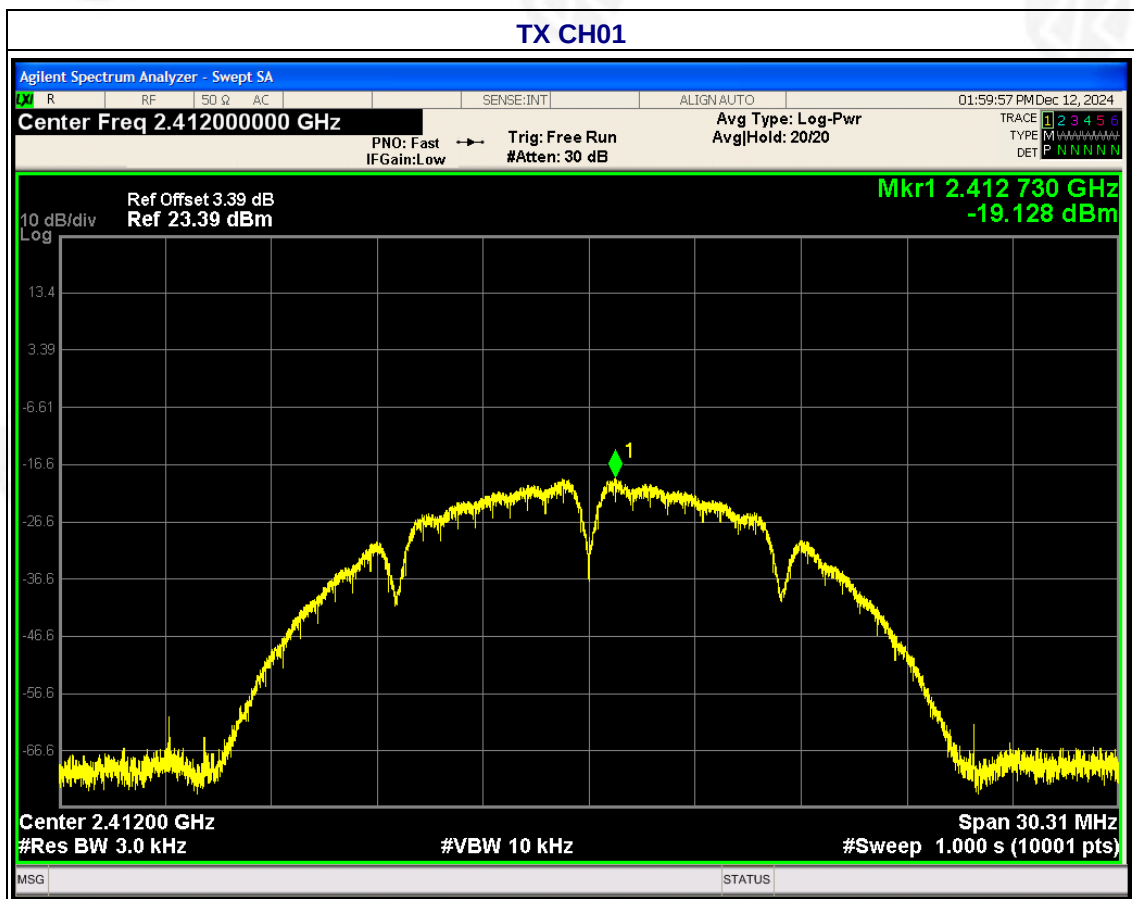
MSG STATUS

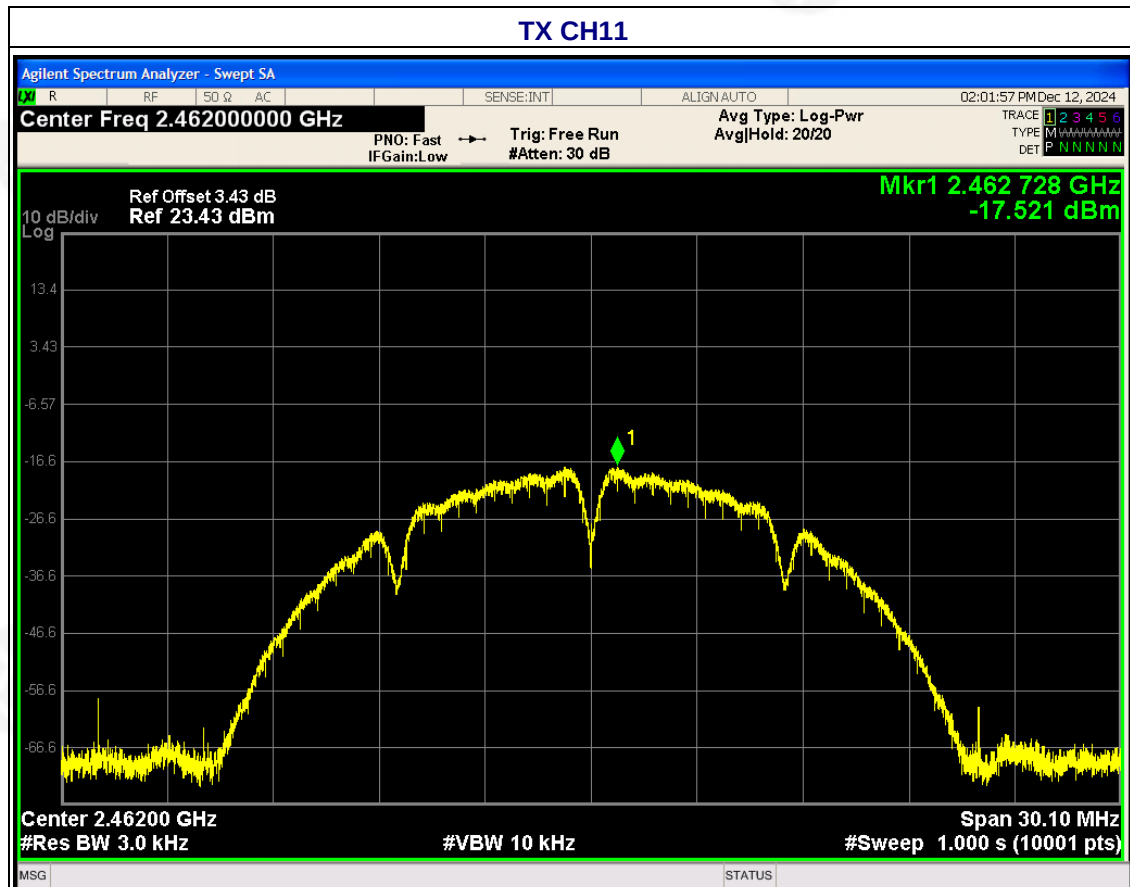
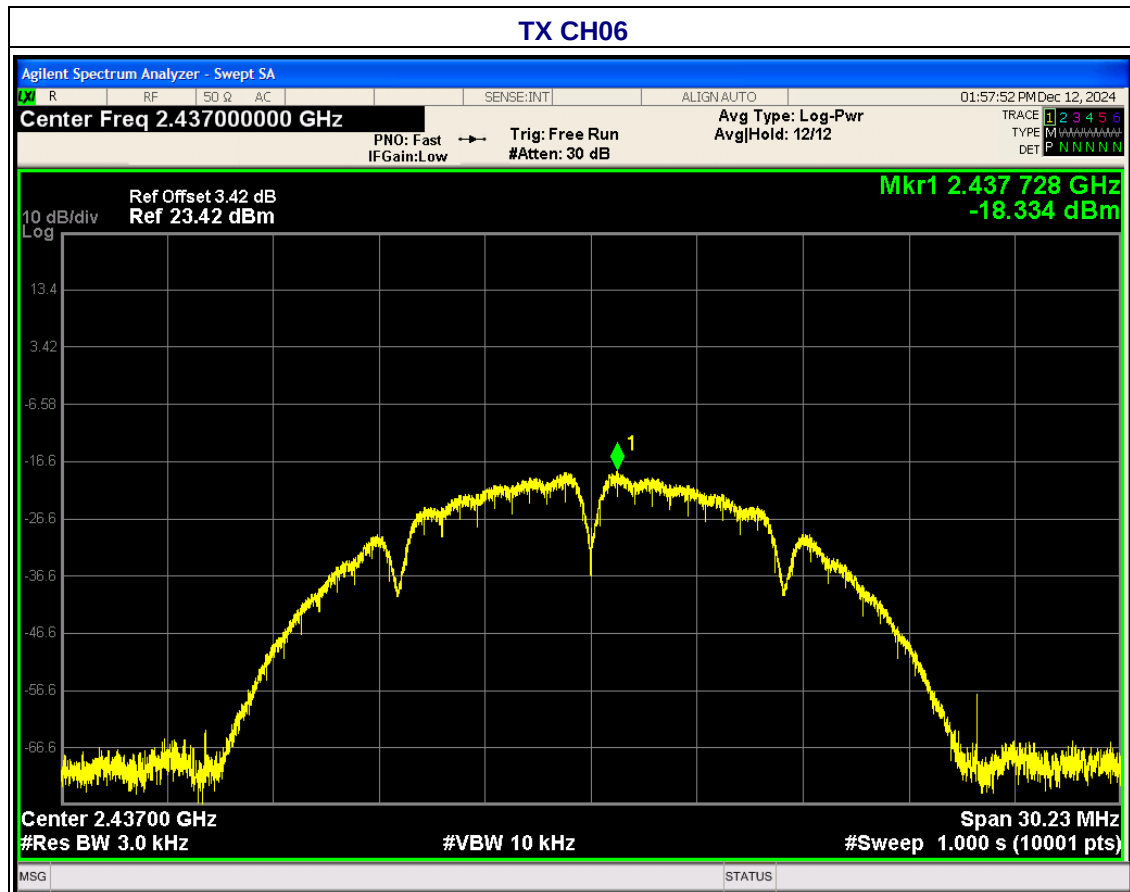




Temperature :	26℃	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX g Mode		

Frequency	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412 MHz	-19.128	8	PASS
2437 MHz	-18.334	8	PASS
2462 MHz	-17.521	8	PASS

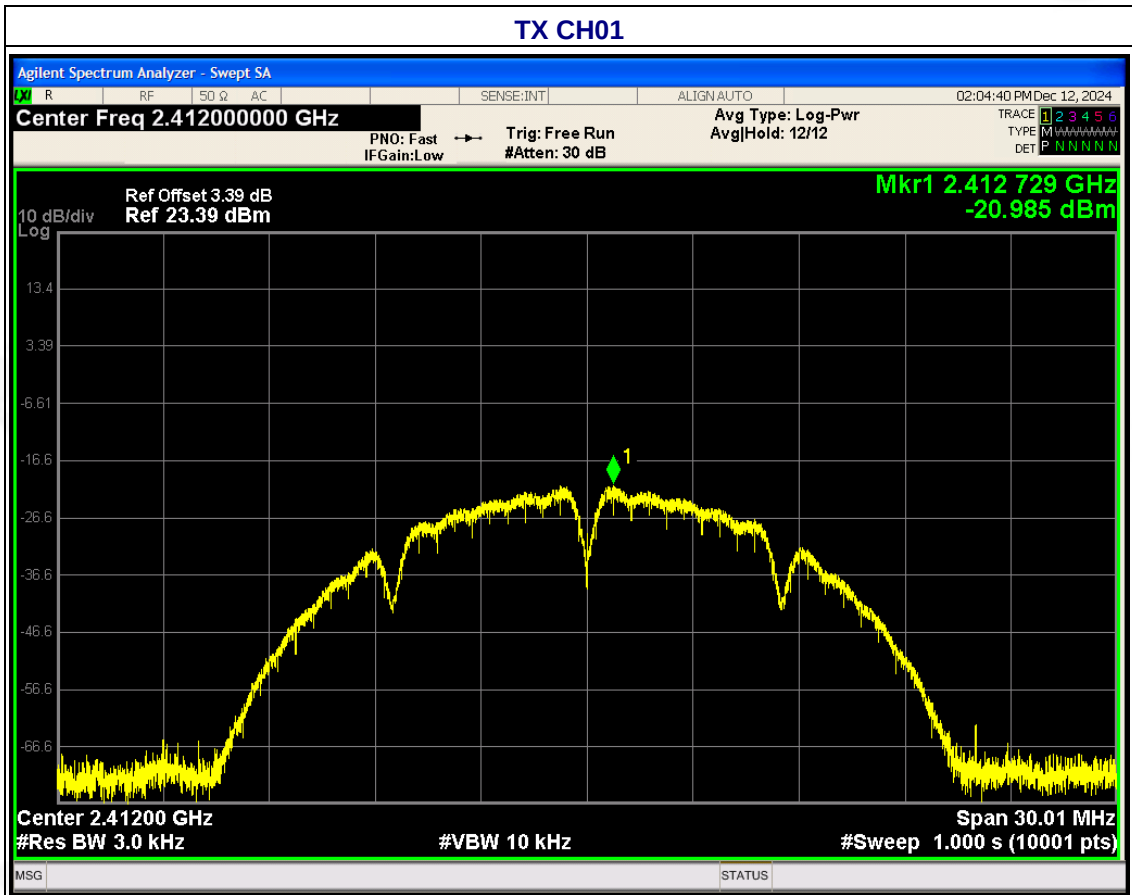


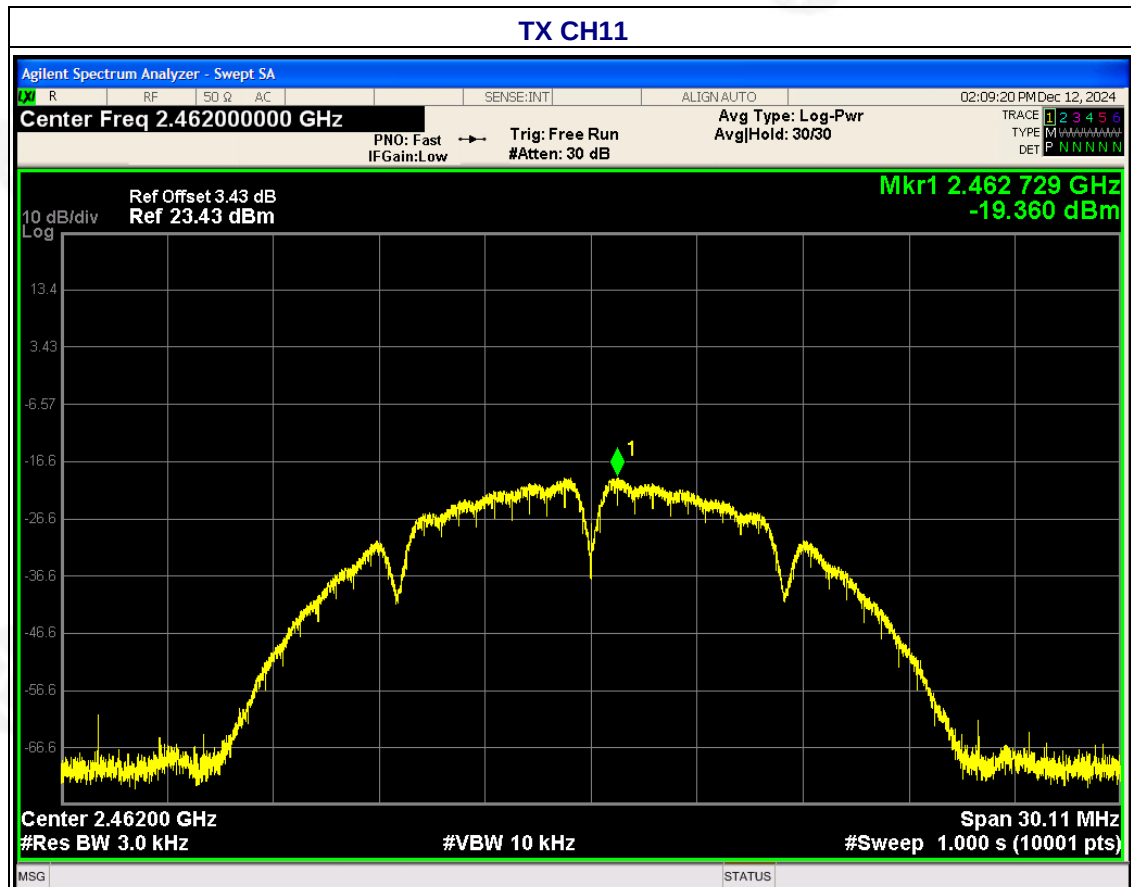
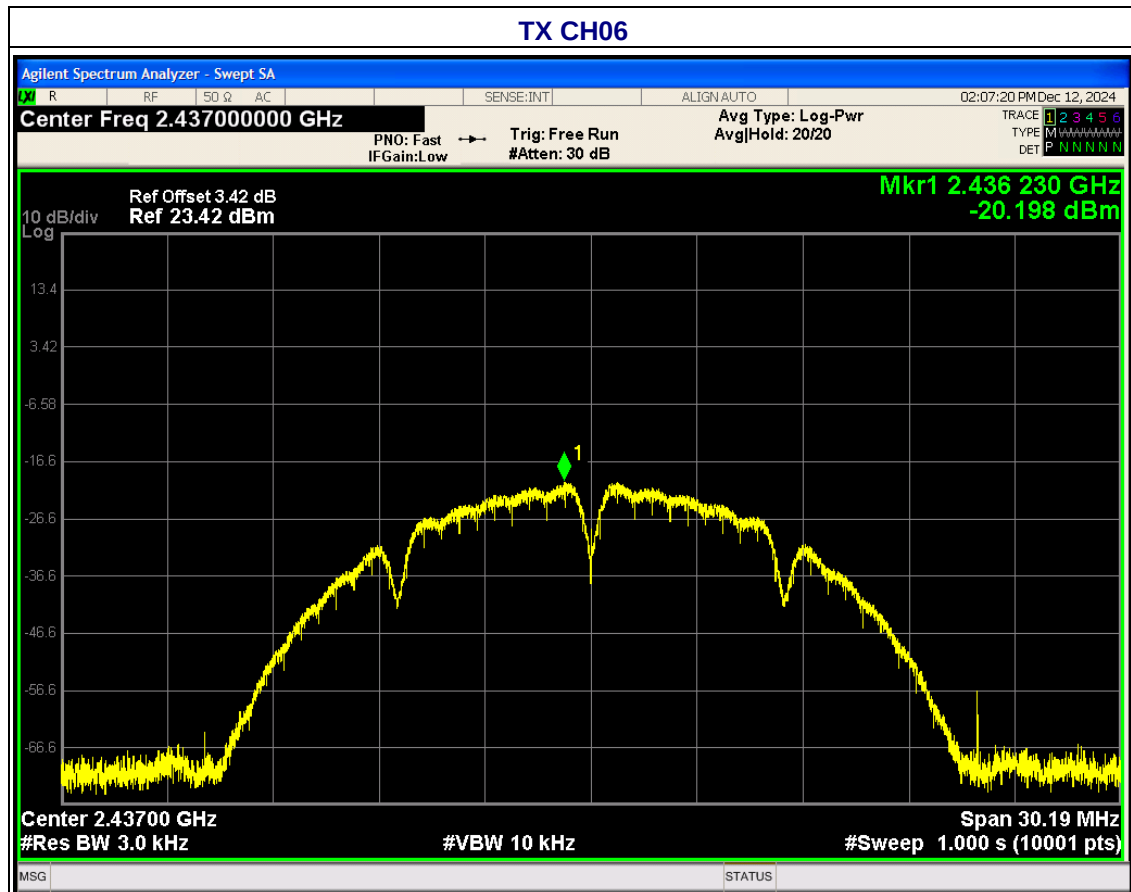




Temperature :	26℃	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX n Mode(20M)		

Frequency	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412 MHz	-20.985	8	PASS
2437 MHz	-20.198	8	PASS
2462 MHz	-19.360	8	PASS

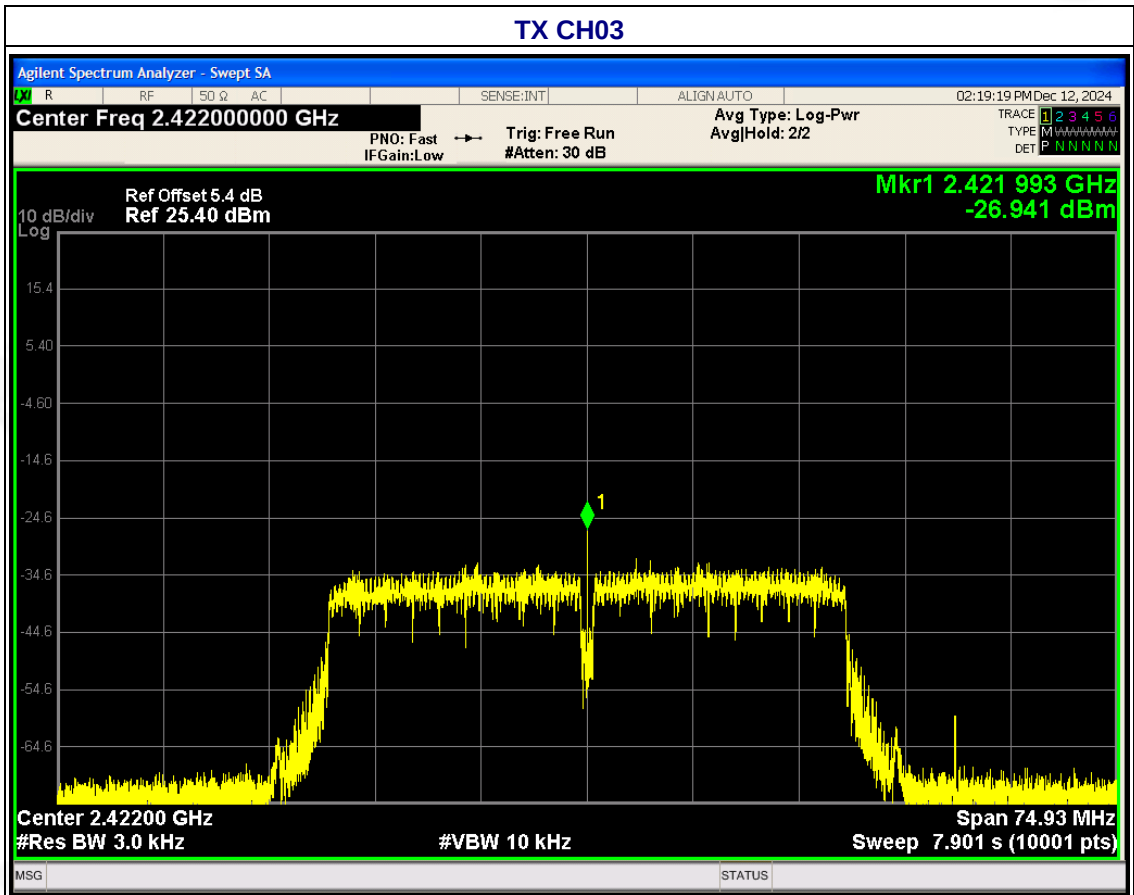


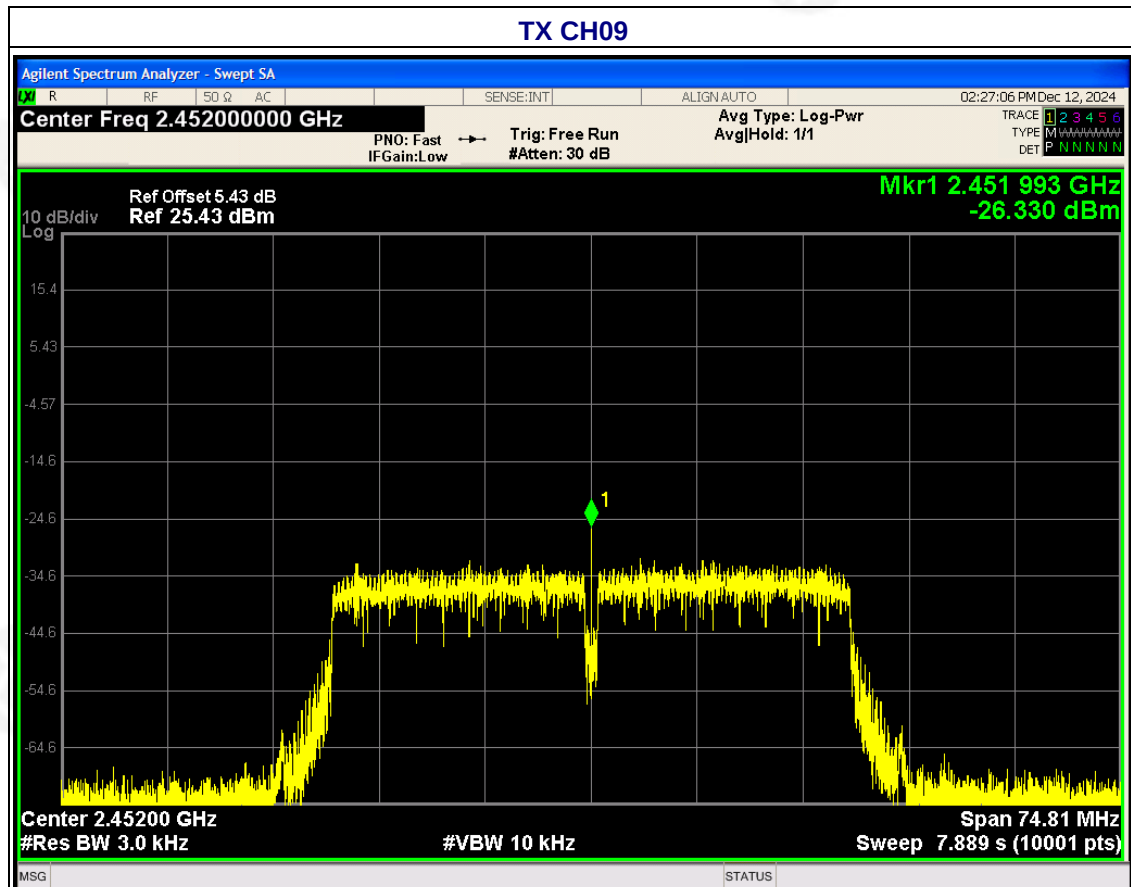
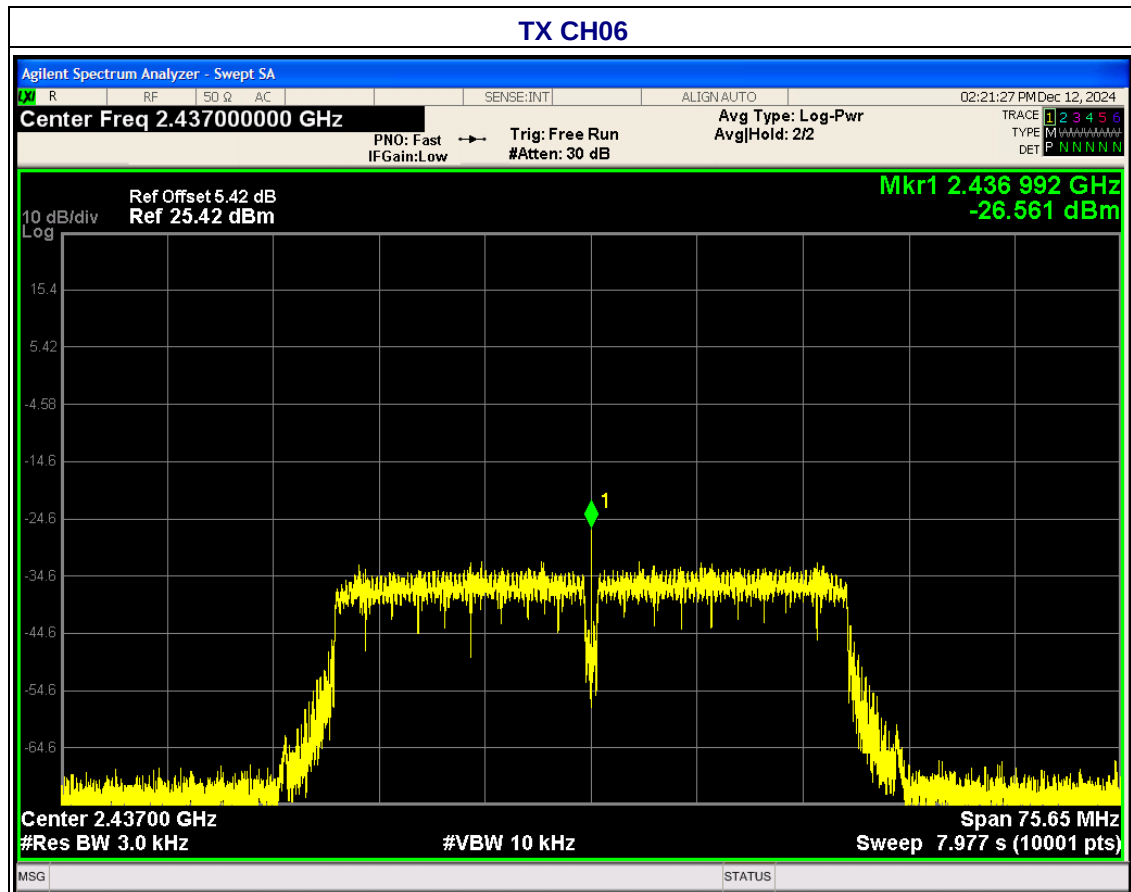




Temperature :	26℃	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX n Mode(40M)		

Frequency	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2422 MHz	-26.941	8	PASS
2437 MHz	-26.561	8	PASS
2452 MHz	-26.330	8	PASS







7. CHANNEL BANDWIDTH& 99% OCCUPY BANDWIDTH

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	ANSI C63.10:2013 and KDB558074 D01DTS Meas Guidancev05r02

7.1 APPLIED PROCEDURES / LIMIT

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

7.2 TEST PROCEDURE

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

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

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



7.6 TEST RESULT

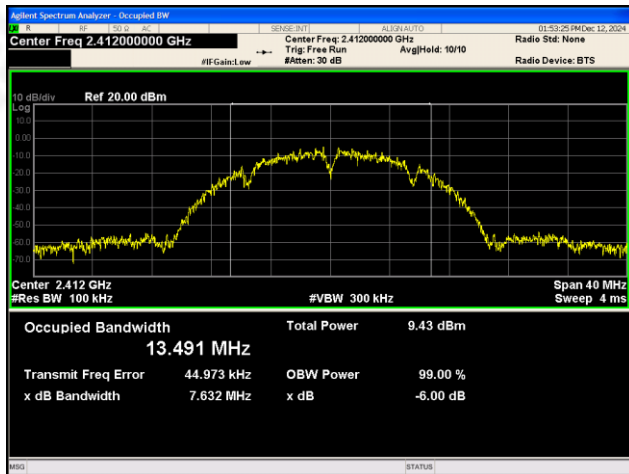
Temperature :	26℃	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX b Mode		

Test CH	-6dB Occupy Bandwidth (MHz)					Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)	Limit(KHz)	
Lowest	7.632	9.069	7.870	36.37	>500	Pass
Middle	8.518	7.111	8.090	36.43		
Highest	8.099	7.531	9.004	36.32		

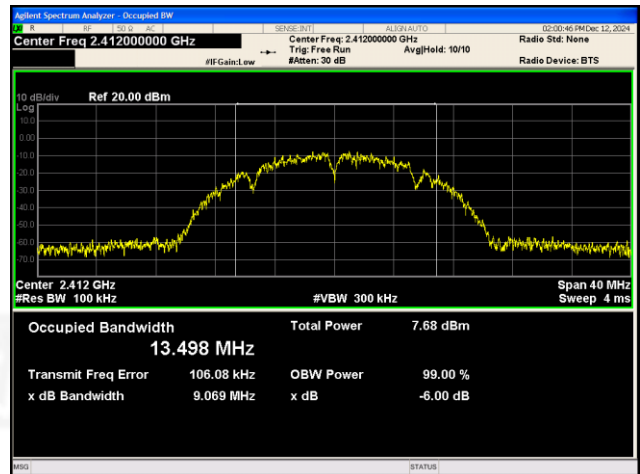


Test plot as follows:

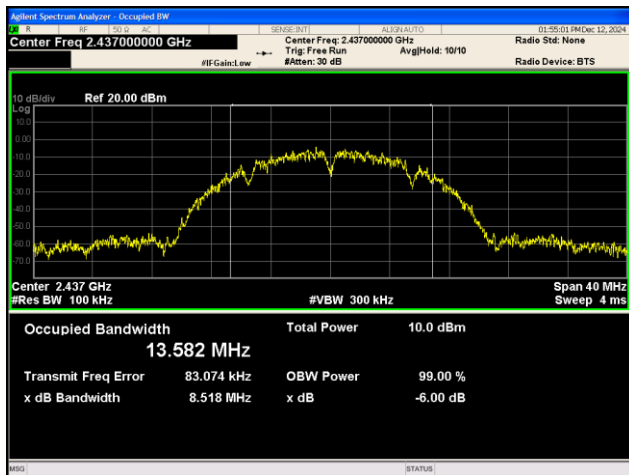
802.11b
Lowest channel



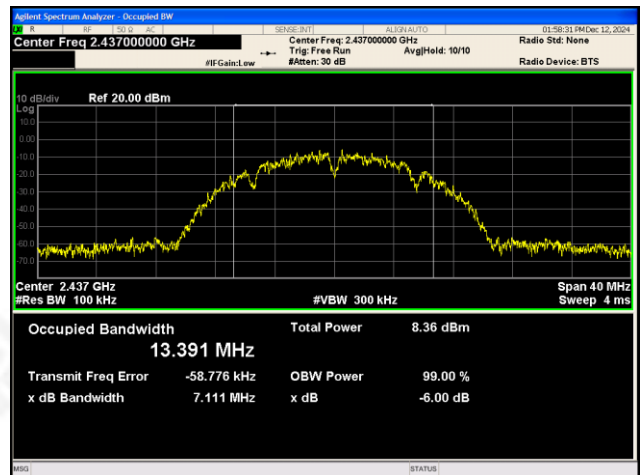
802.11g
Lowest channel



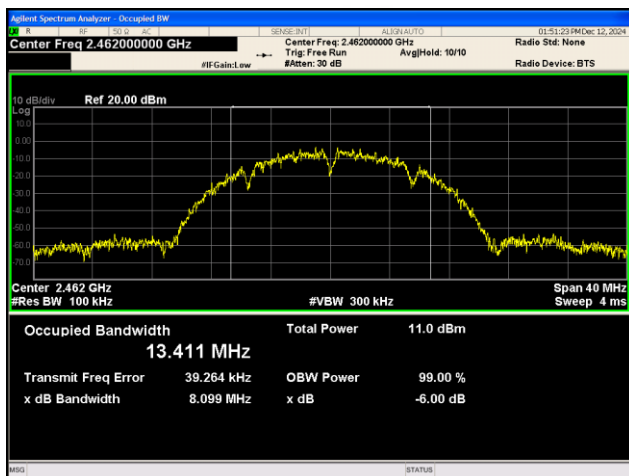
Middle channel



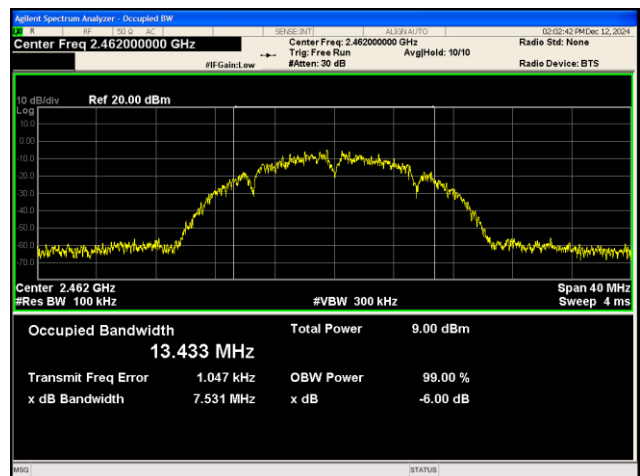
Middle channel



Highest channel

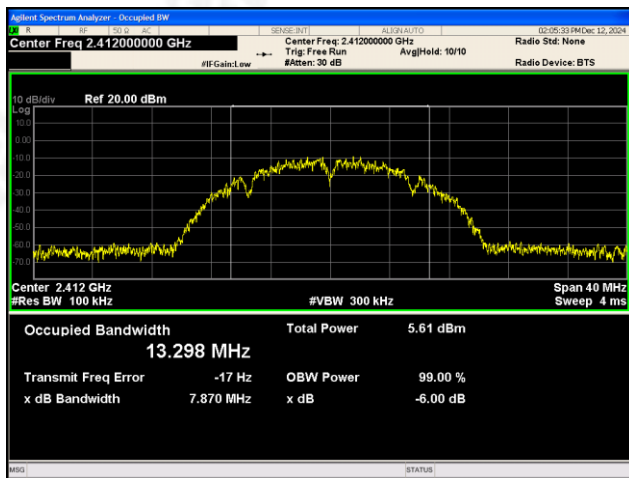


Highest channel

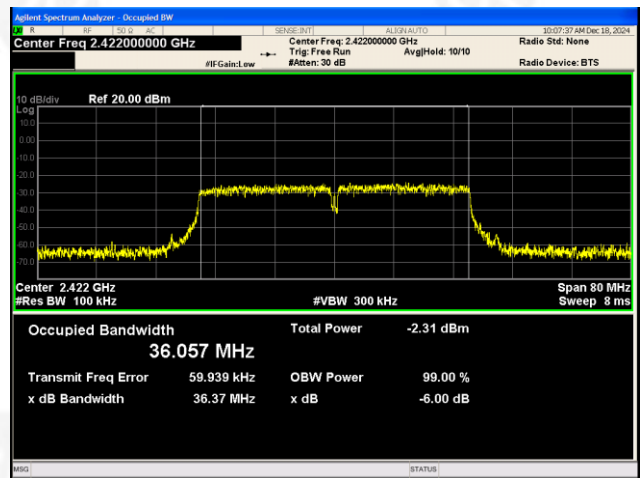




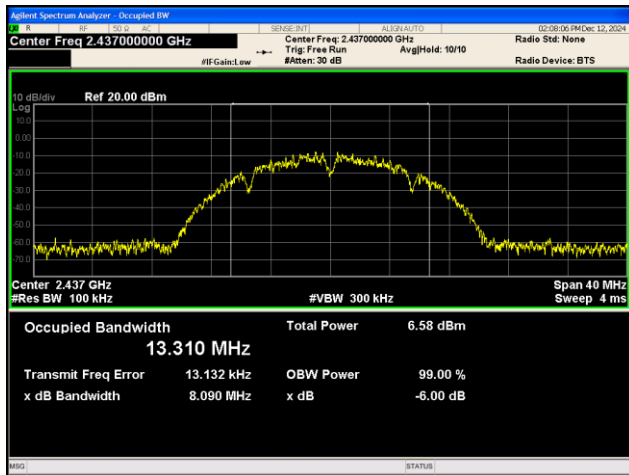
802.11n20
Lowest channel



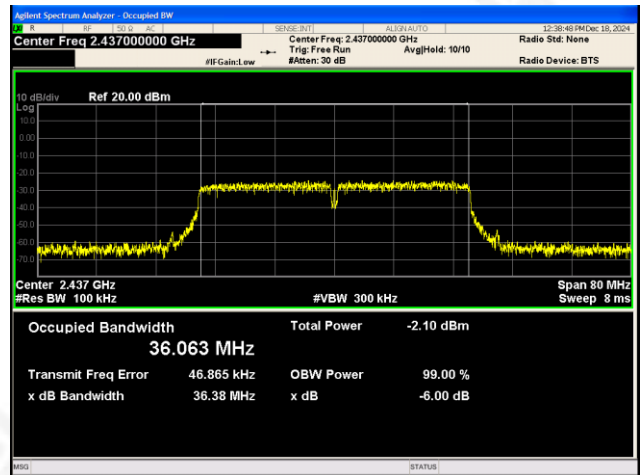
802.11n40
Lowest channel



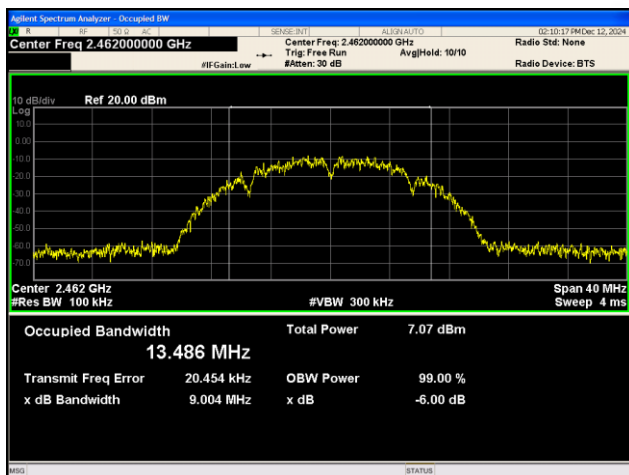
Middle channel



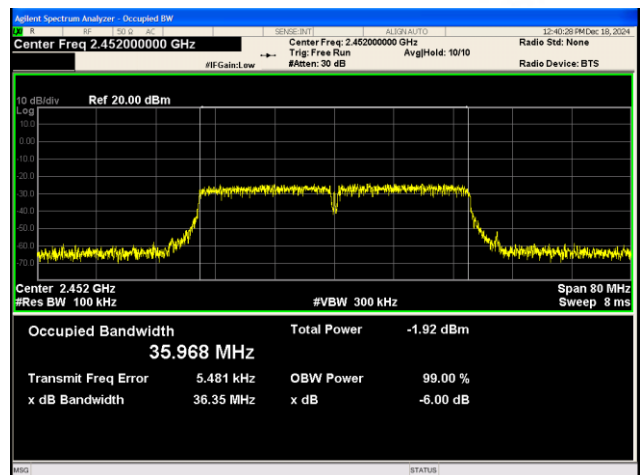
Middle channel



Highest channel



Highest channel





8. PEAK OUTPUT POWER TEST

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	ANSI C63.10:2013 and KDB558074 D01DTS Meas Guidancev05r02

8.1 APPLIED PROCEDURES/LIMIT

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

8.2 TEST PROCEDURE

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

8.3 DEVIATION FROM STANDARD

No deviation.

8.4 TEST SETUP



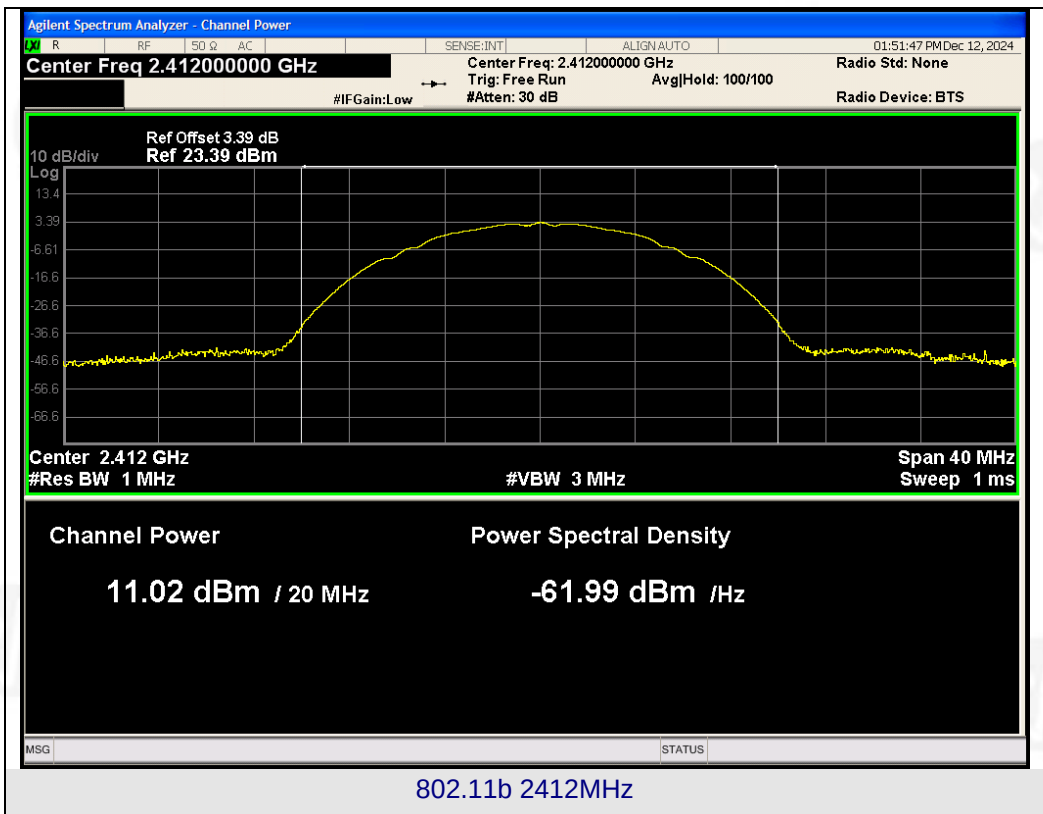
8.5 EUT OPERATION CONDITIONS

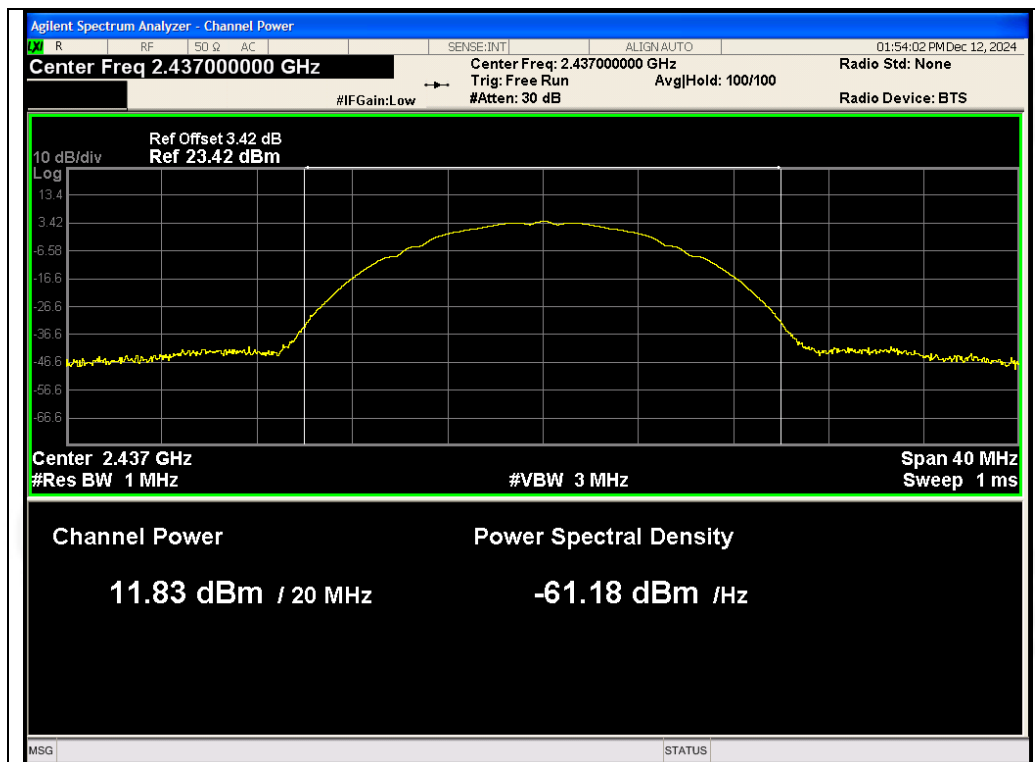
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.



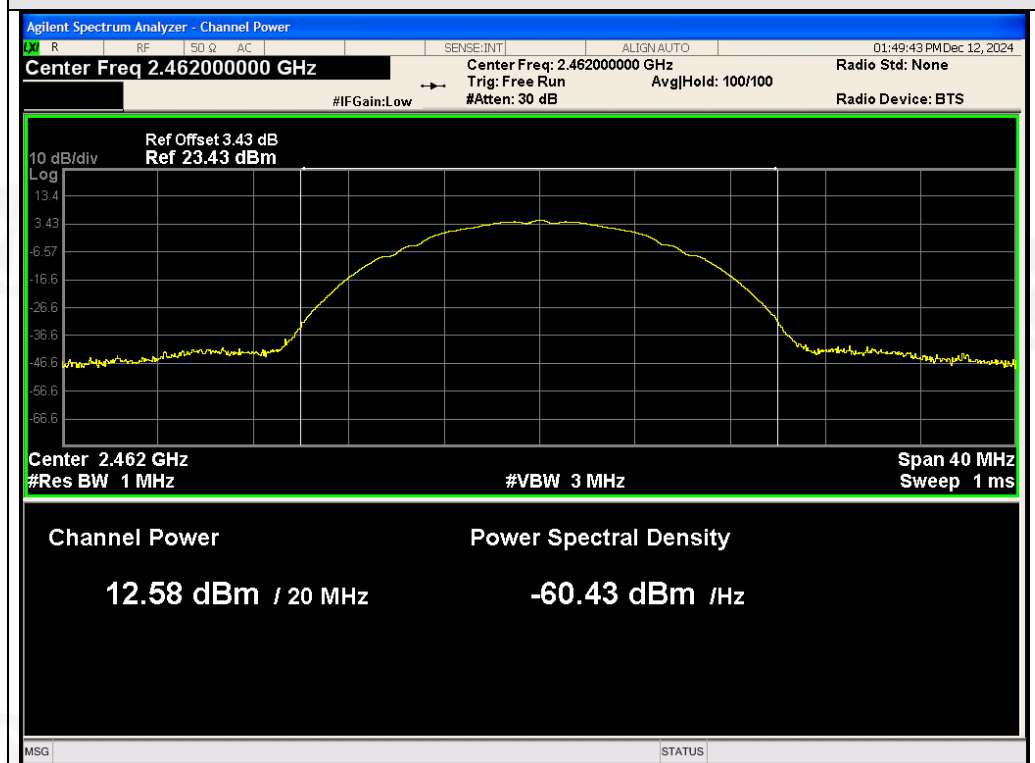
8.6 TEST RESULT

802.11b Mode		
Frequency (MHz)	Average Conducted Output Power(dBm)	Limit (dBm)
2412	11.02	30
2437	11.83	30
2462	12.58	30





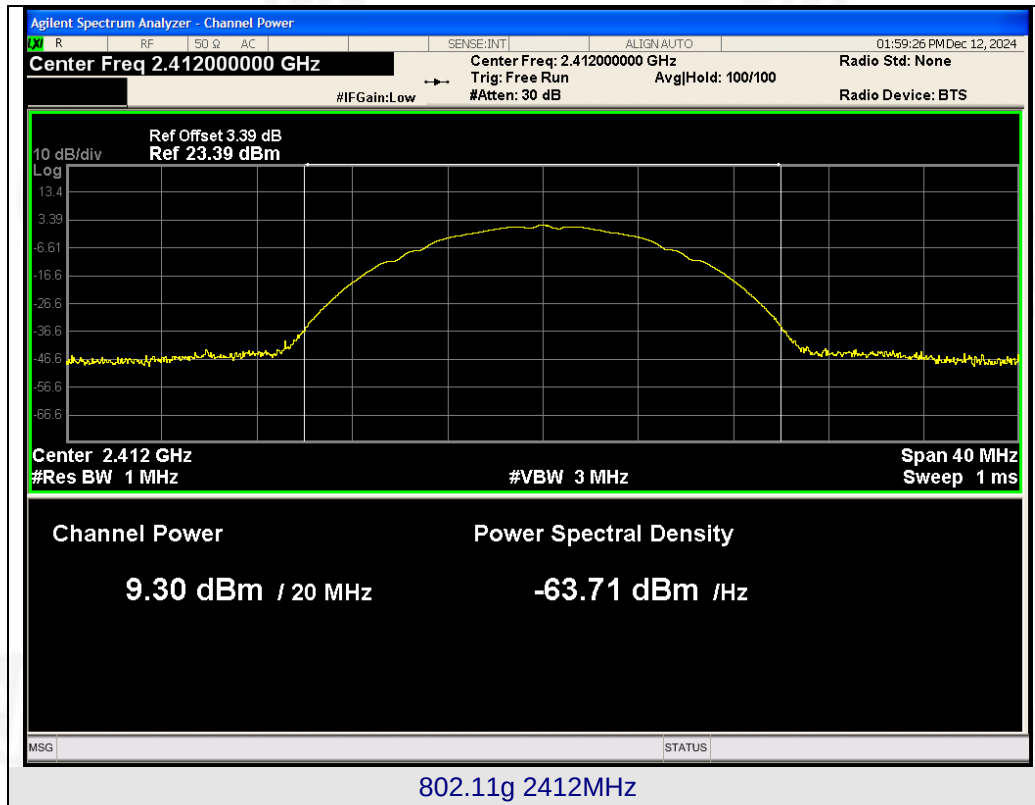
802.11b 2437MHz

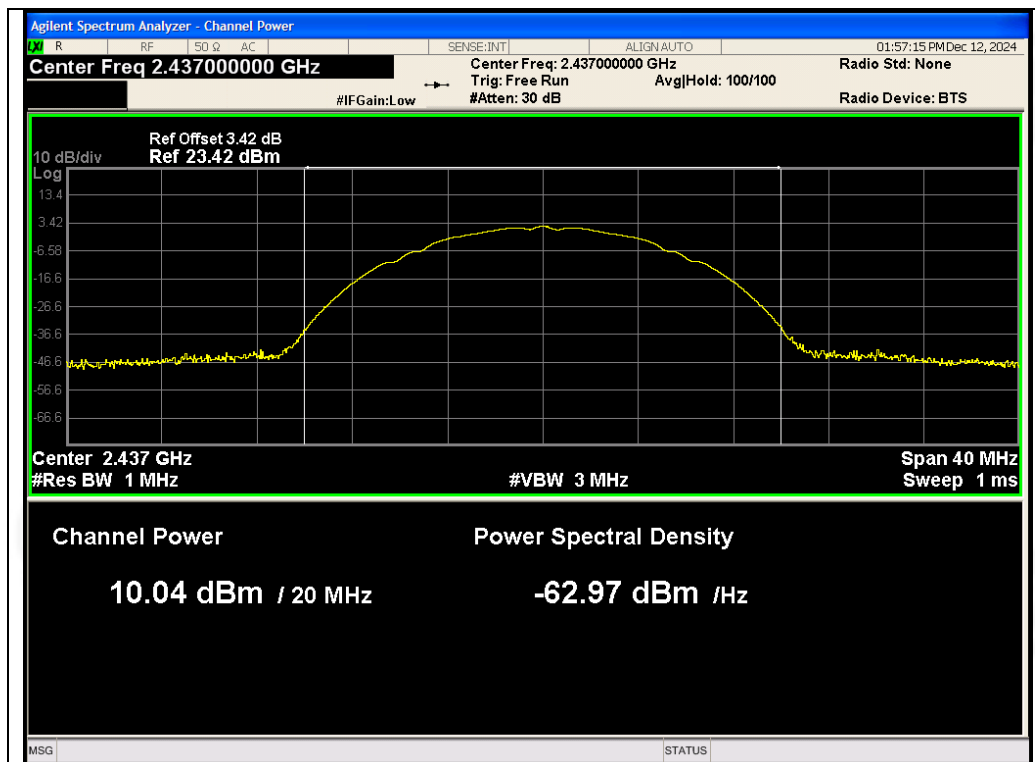


802.11b 2462MHz

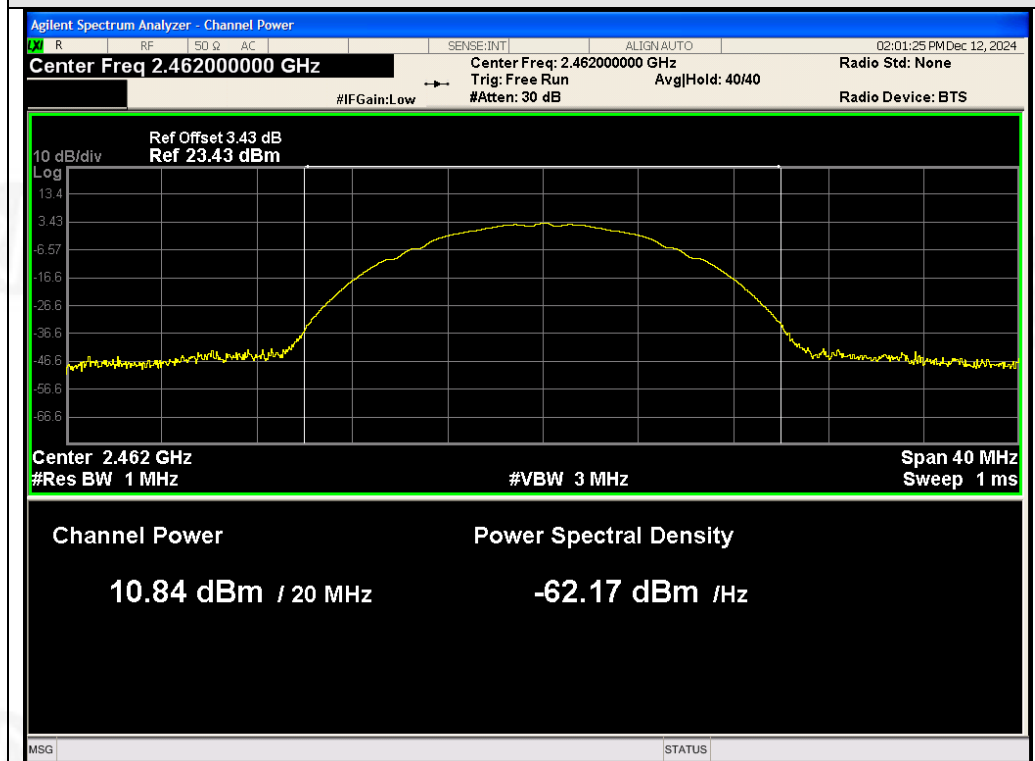


802.11g Mode		
Frequency (MHz)	Average Conducted Output Power(dBm)	Limit (dBm)
2412	9.30	30
2437	10.04	30
2462	10.84	30





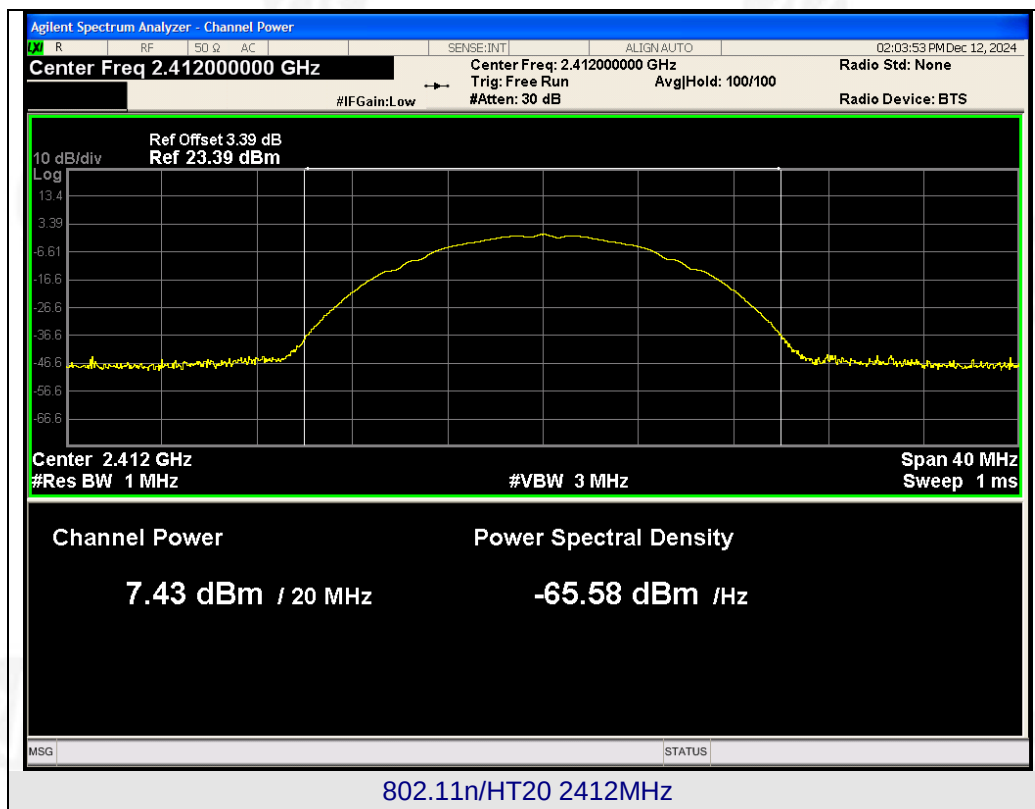
802.11g 2437MHz

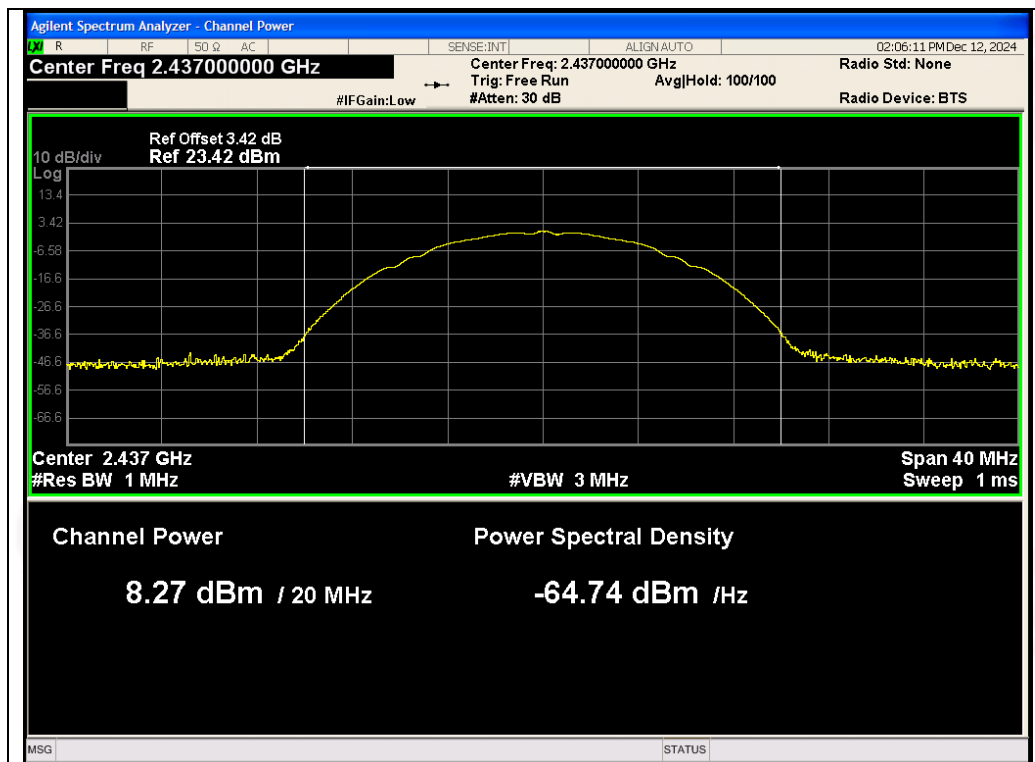


802.11g 2462MHz

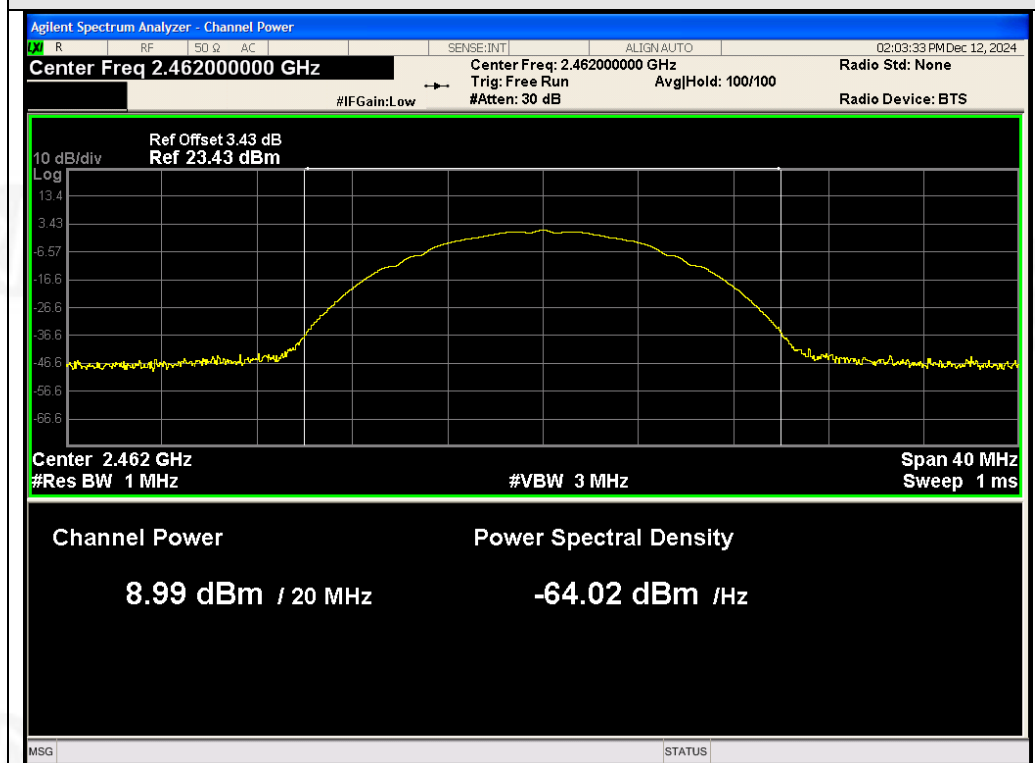


802.11n/HT20 Mode		
Frequency (MHz)	Average Conducted Output Power(dBm)	Limit (dBm)
2412	7.43	30
2437	8.27	30
2462	8.99	30





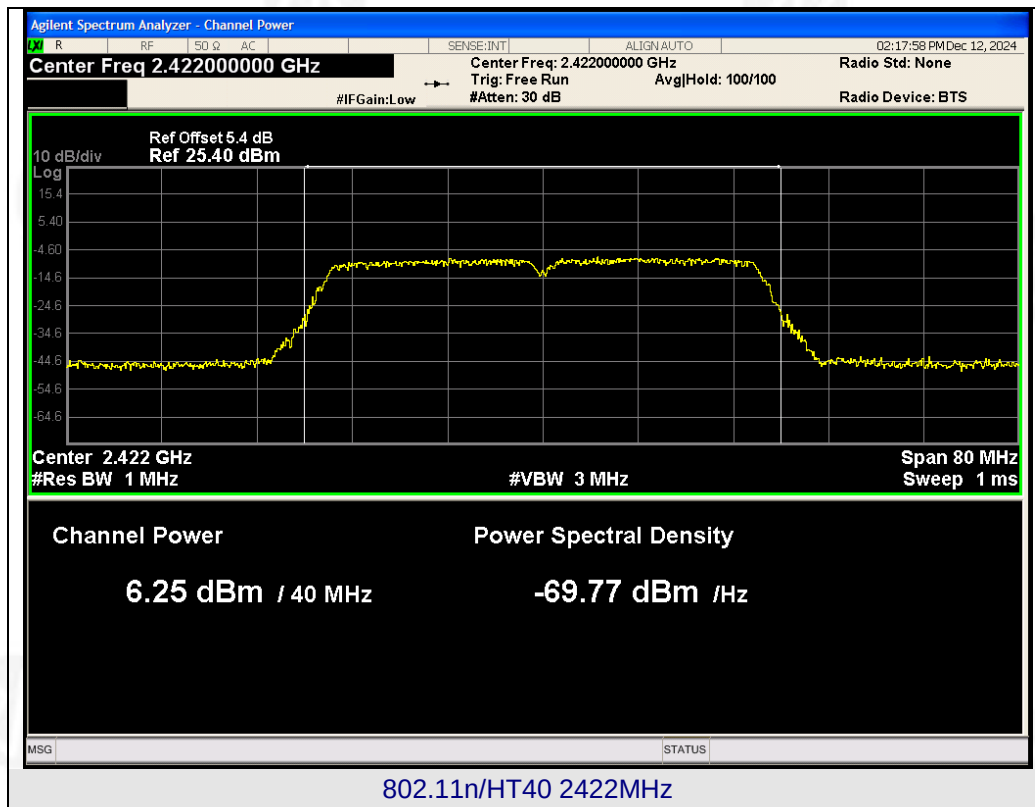
802.11n/HT20 2437MHz

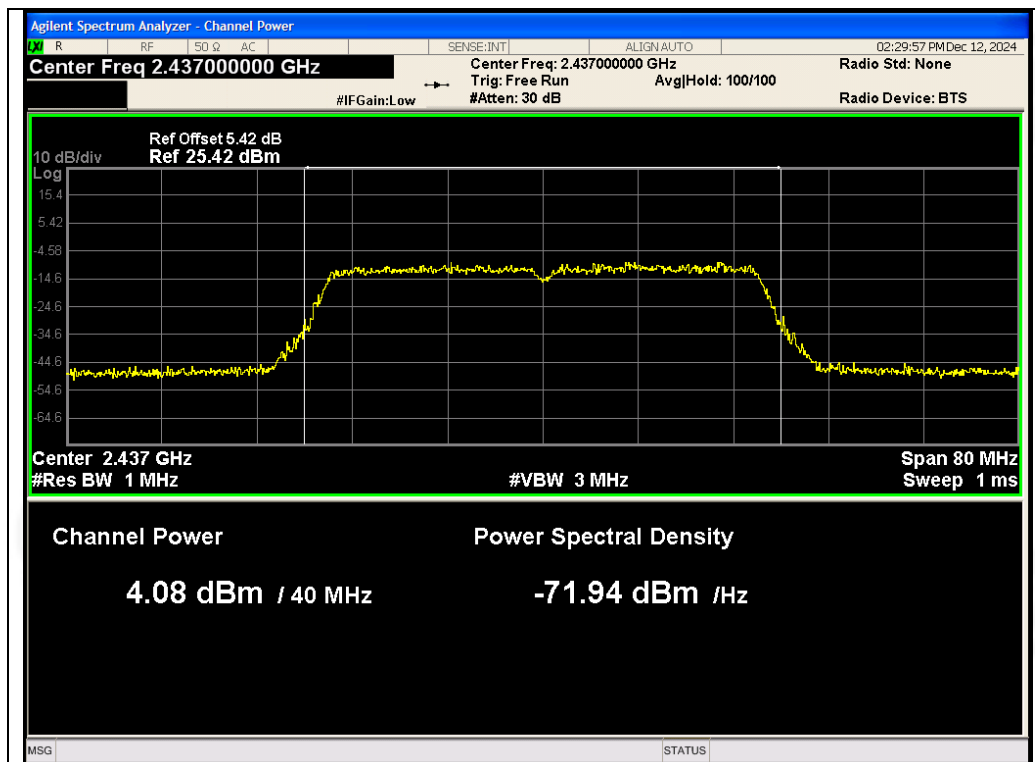


802.11n/HT20 2462MHz

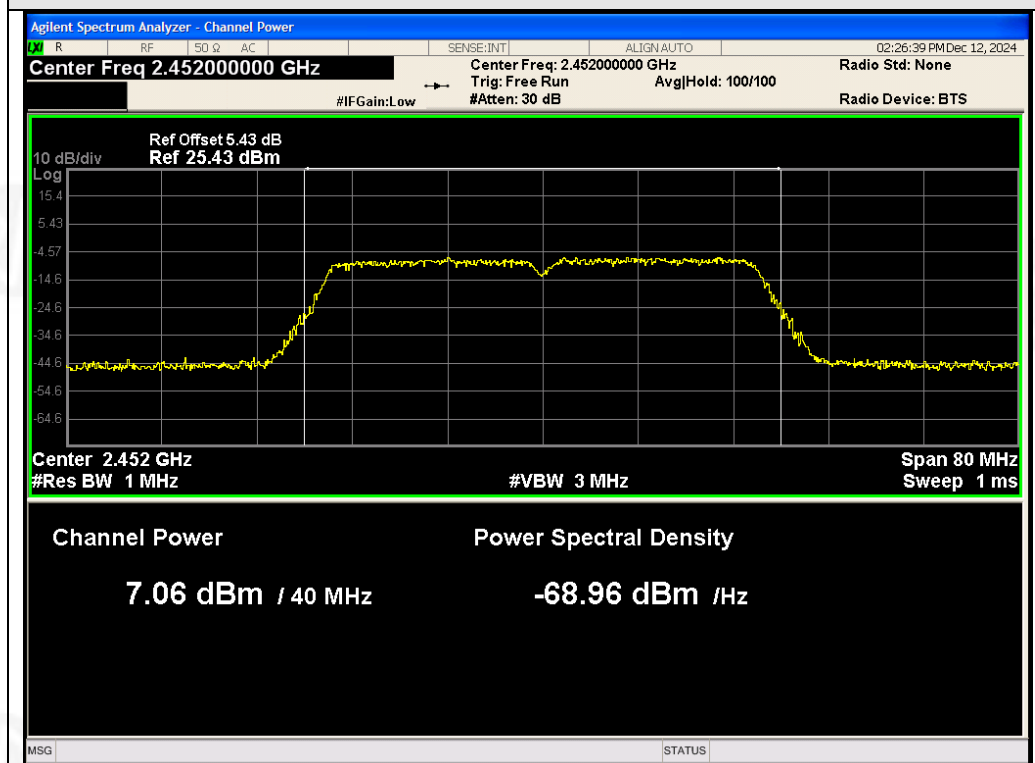


802.11n/HT40 Mode		
Frequency (MHz)	Average Conducted Output Power(dBm)	Limit (dBm)
2422	6.25	30
2437	4.08	30
2452	7.06	30





802.11n/HT40 2437MHz

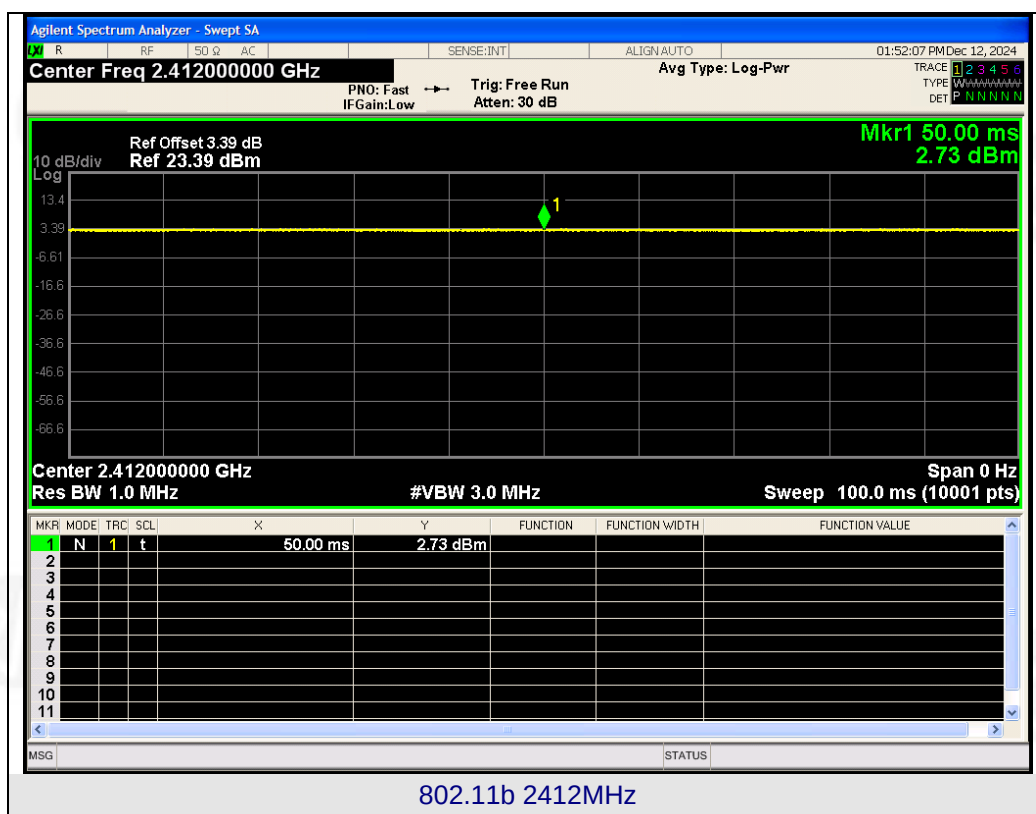


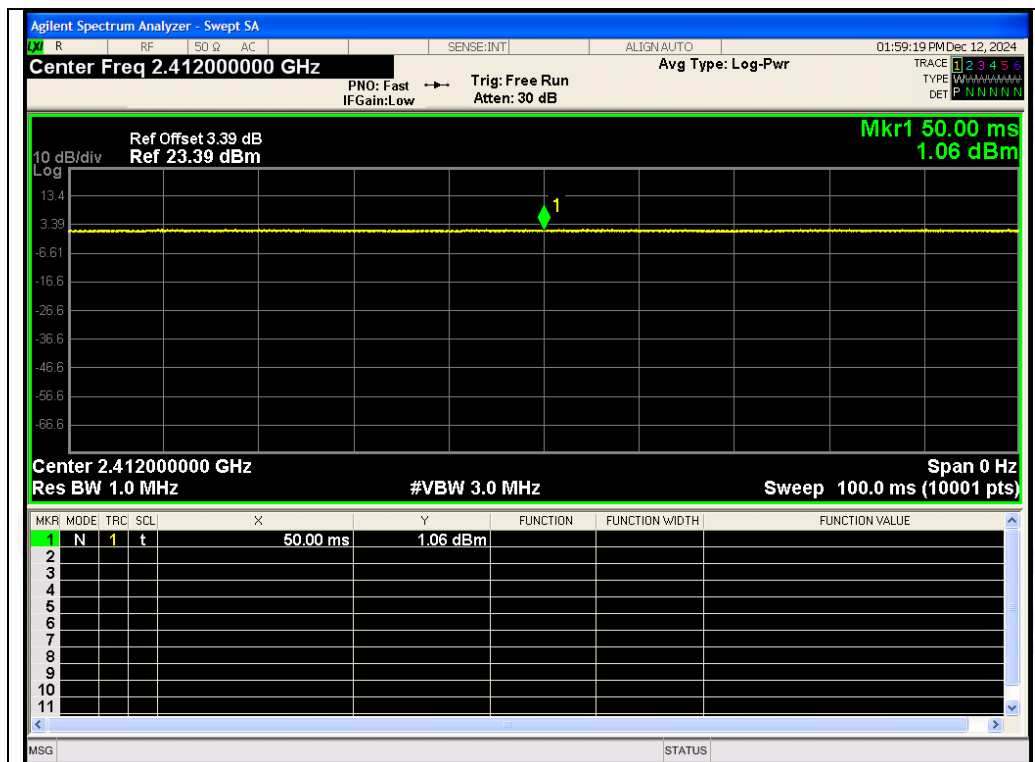
802.11n/HT40 2452MHz



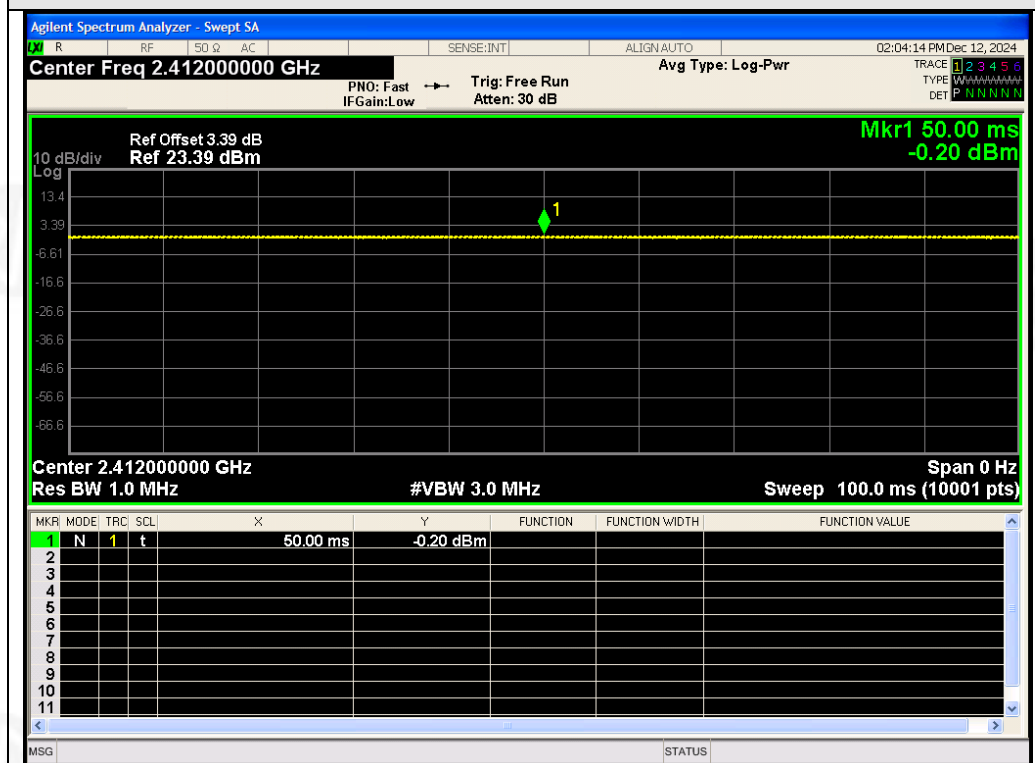
Test Mode	Frequency (MHz)	Duty Cycle (%)	Duty cycle factor (dB)
802.11b	2412	100	0
802.11g	2412	100	0
802.11n/HT20	2412	100	0
802.11n/HT40	2422	100	0

Note: Duty cycle factor (dB)= 20log (Ton / (Ton + Toff)) (dB)

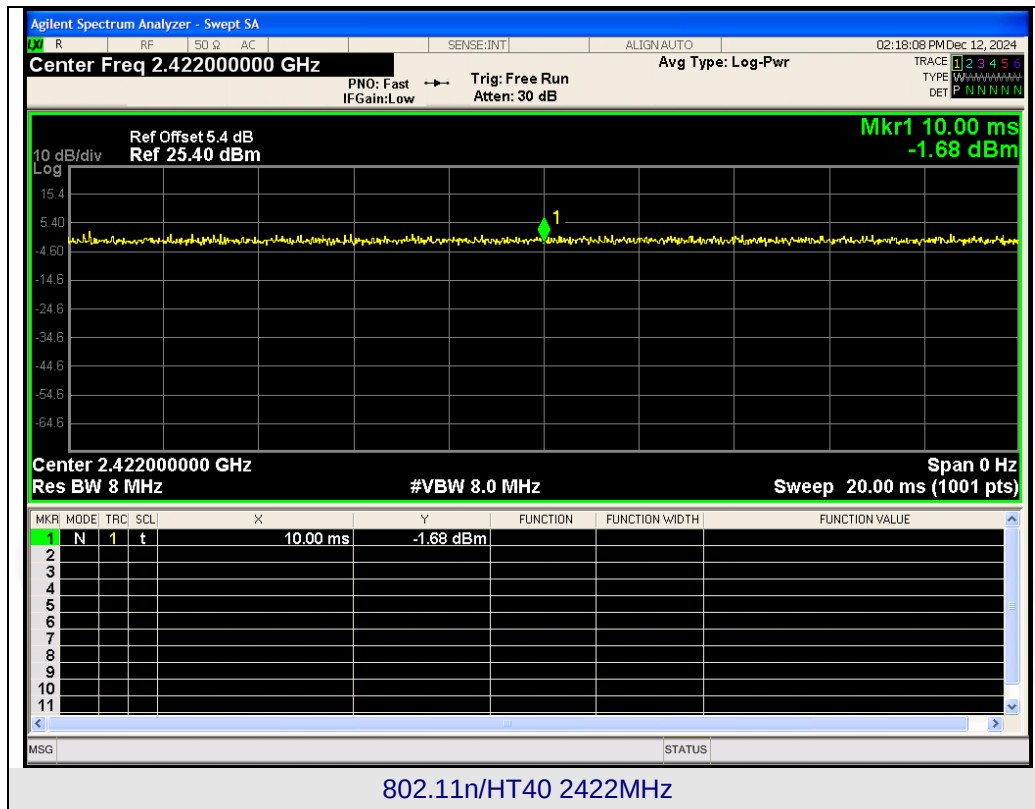




802.11g 2412MHz



802.11n/HT20 2412MHz





9. CONDUCTED BAND EDGE AND SPURIOUS EMISSION

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.10:2013 and KDB558074 D01DTS 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

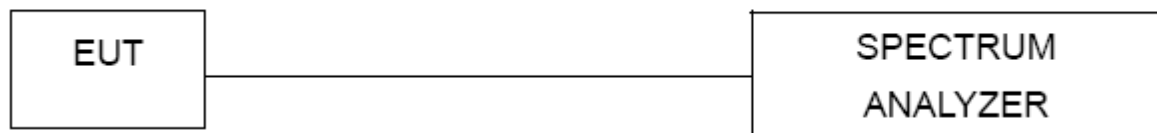
Using the following spectrum analyzer setting:

- 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

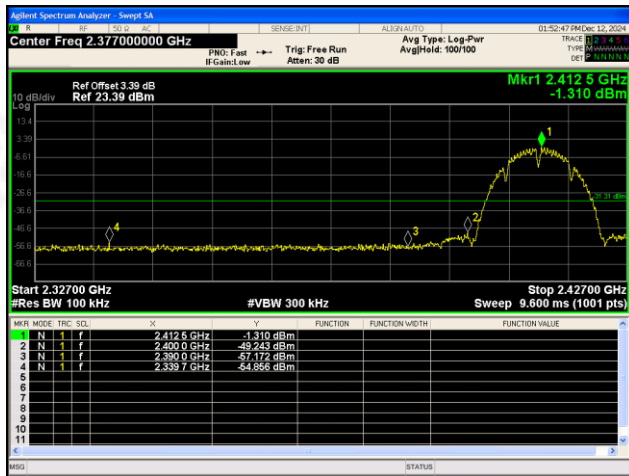
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

9.6 TEST RESULTS

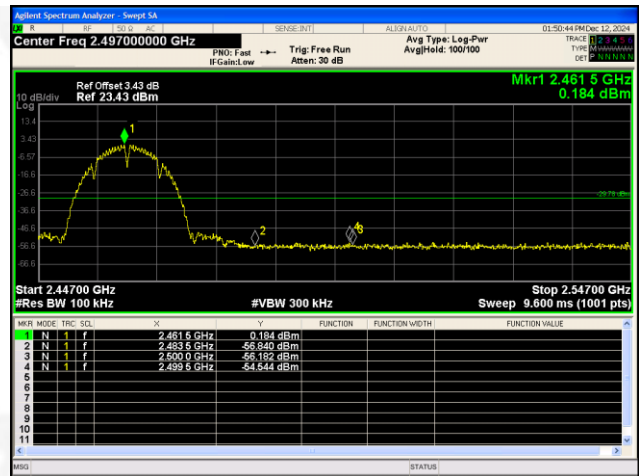


Test plot as follows:

Test mode: 802.11b

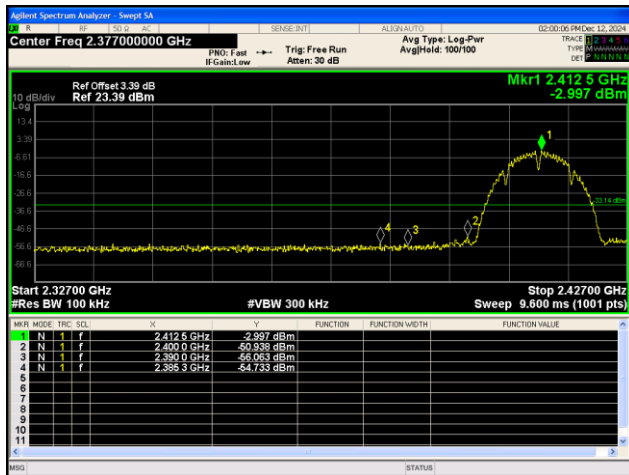


Lowest channel

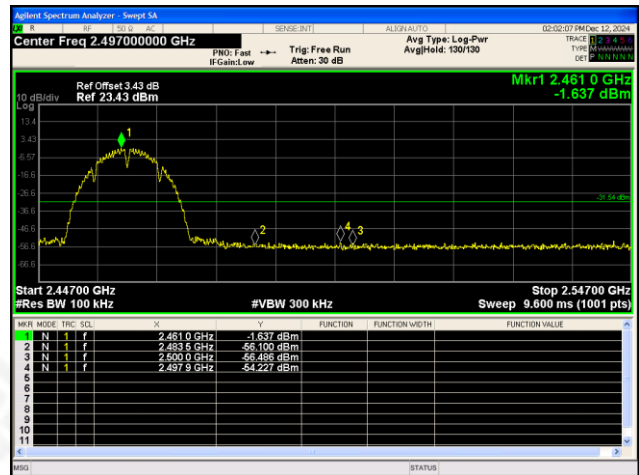


Highest channel

Test mode: 802.11g



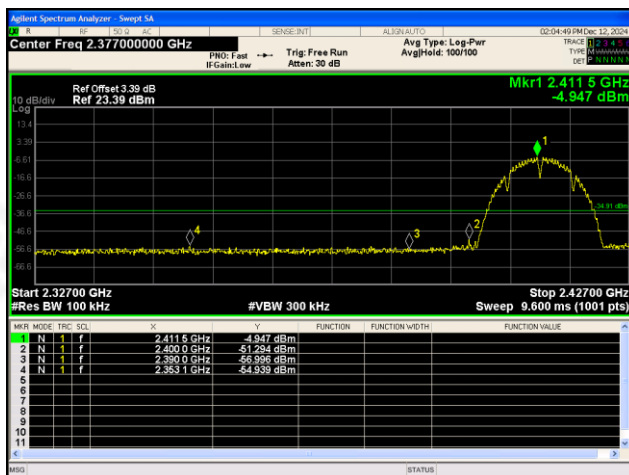
Lowest channel



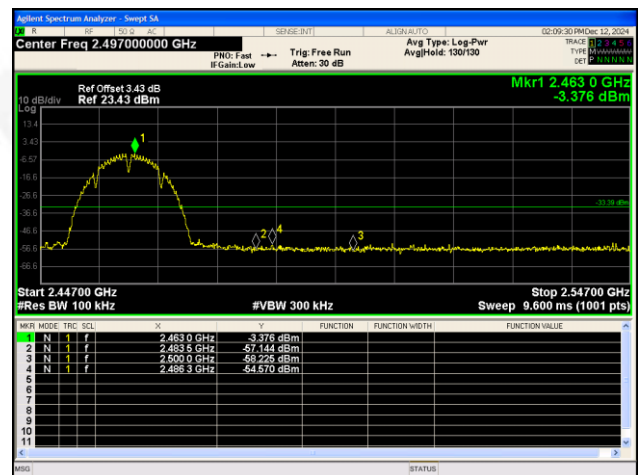
Highest channel



Test mode: 802.11n20

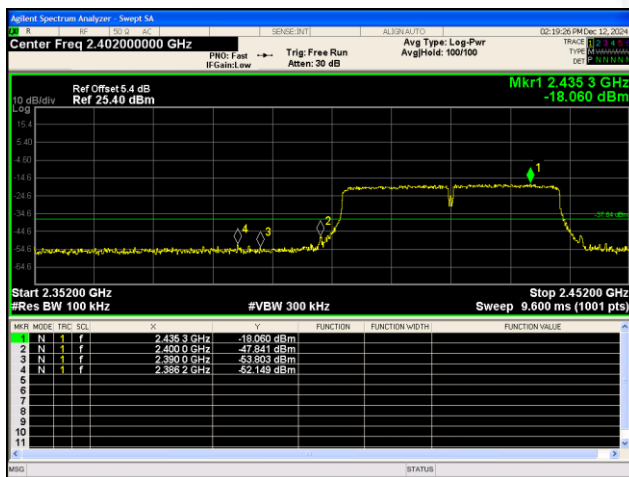


Lowest channel

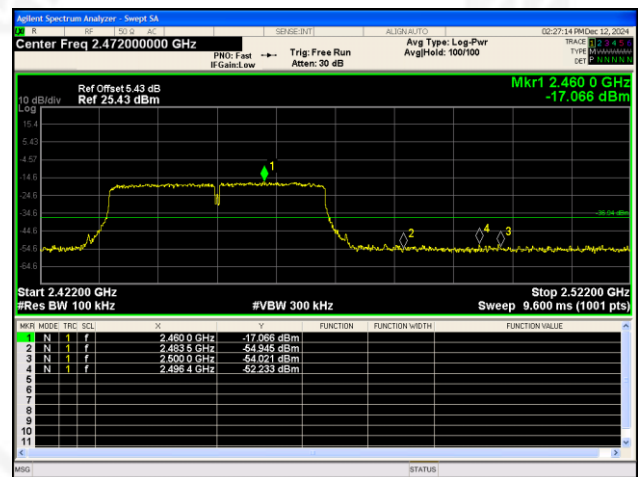


Highest channel

Test mode: 802.11n40



Lowest channel



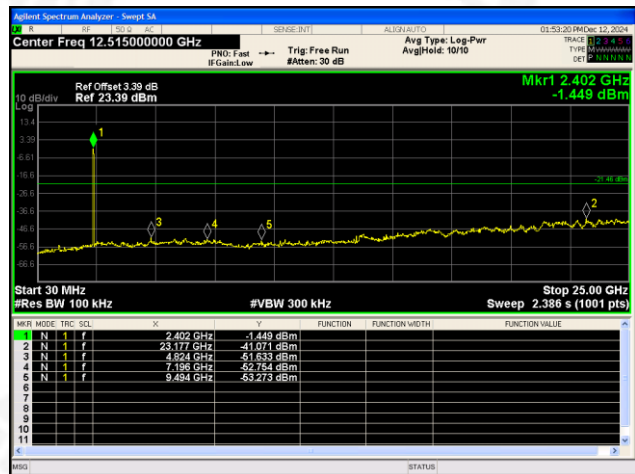
Highest channel



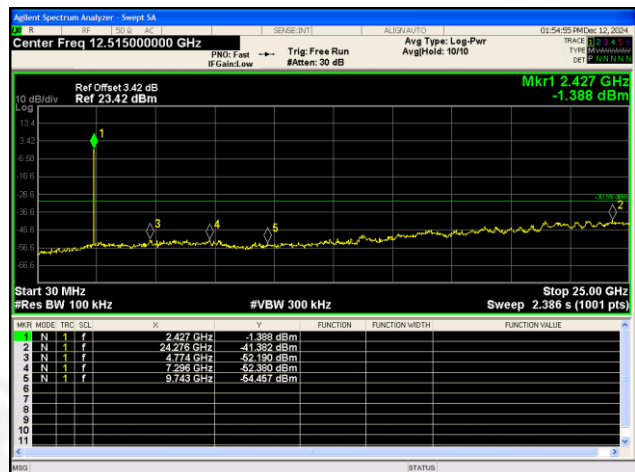
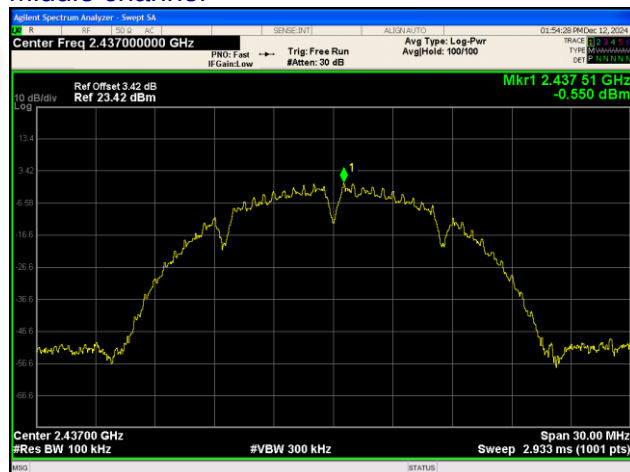
Test plot as follows:

802.11b

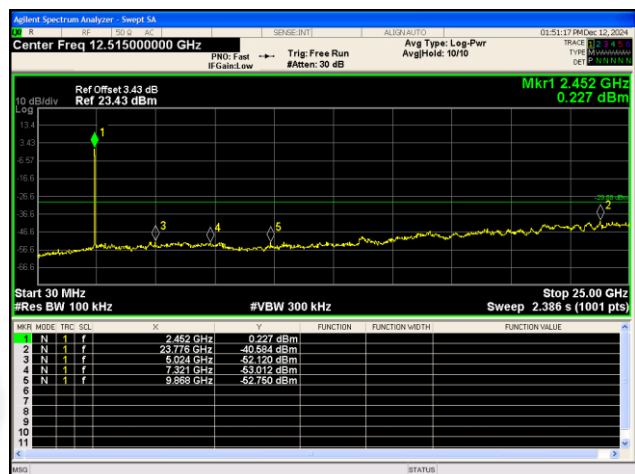
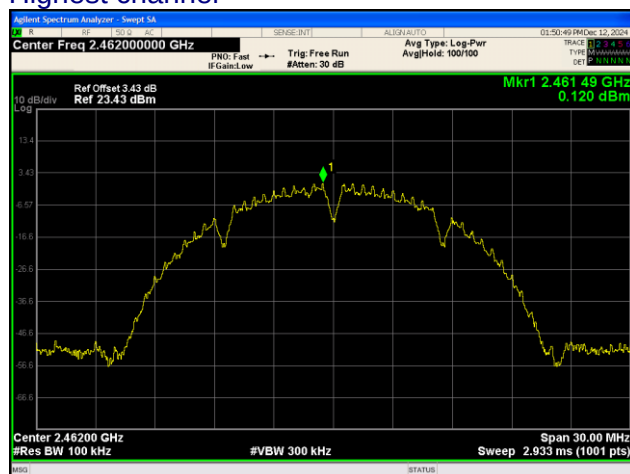
Lowest channel



Middle channel



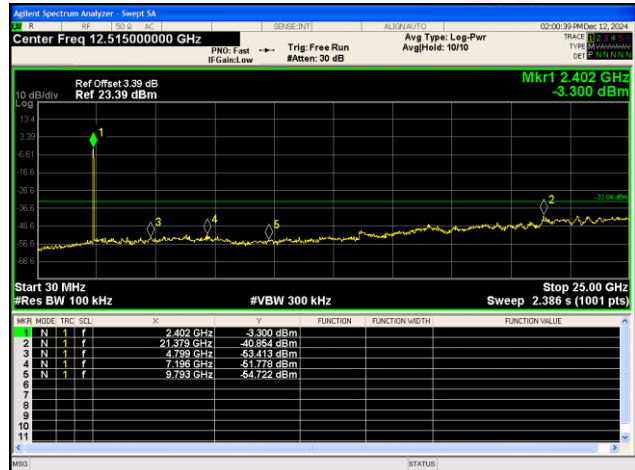
Highest channel



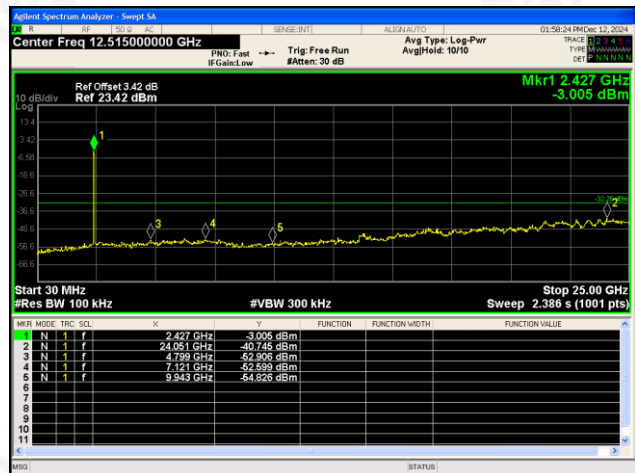
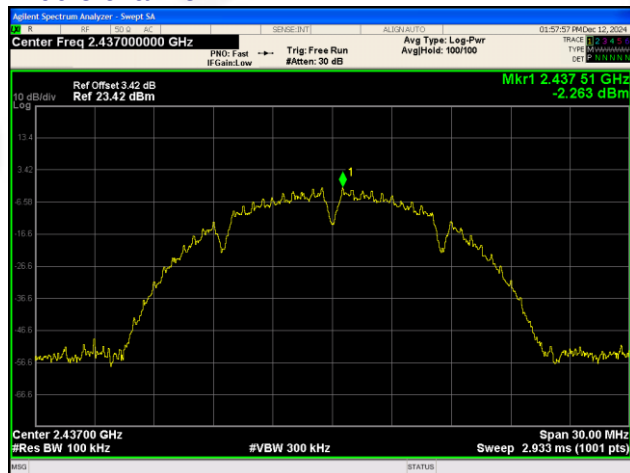


802.11g

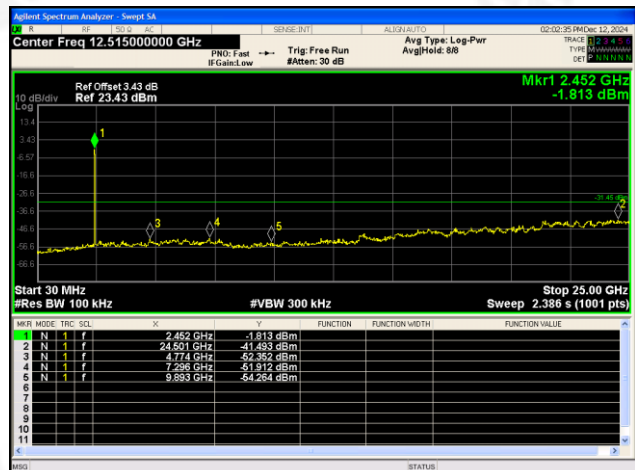
Lowest channel



Middle channel



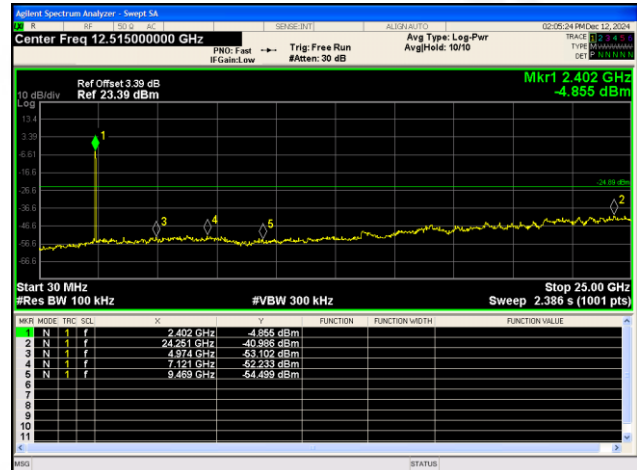
Highest channel



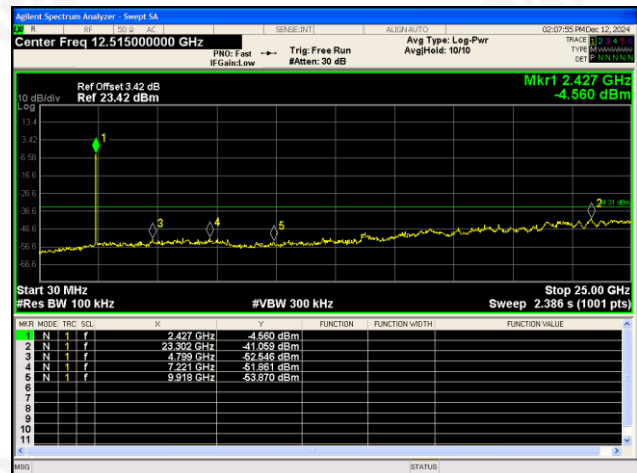
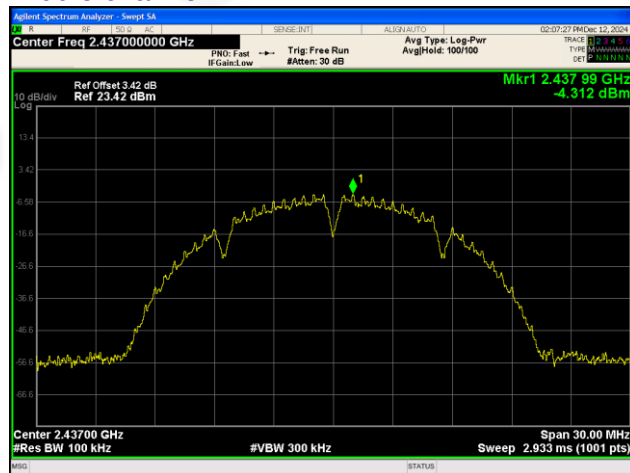


802.11n(HT20)

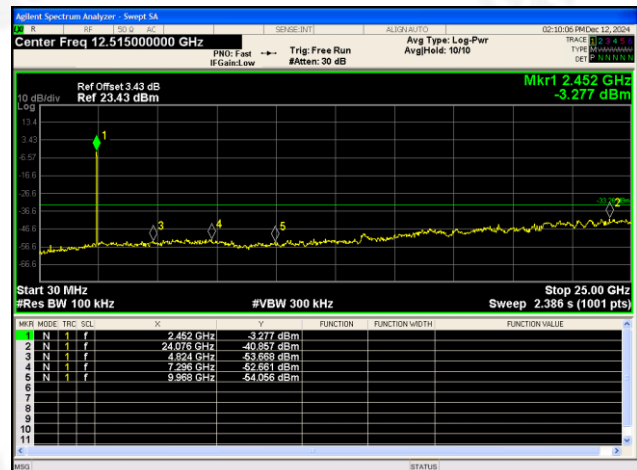
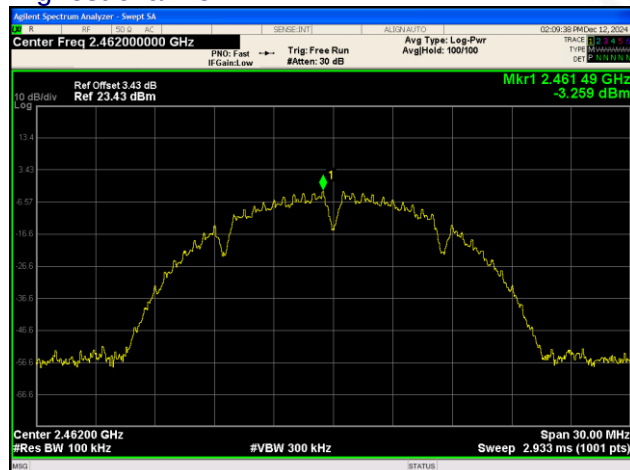
Lowest channel



Middle channel



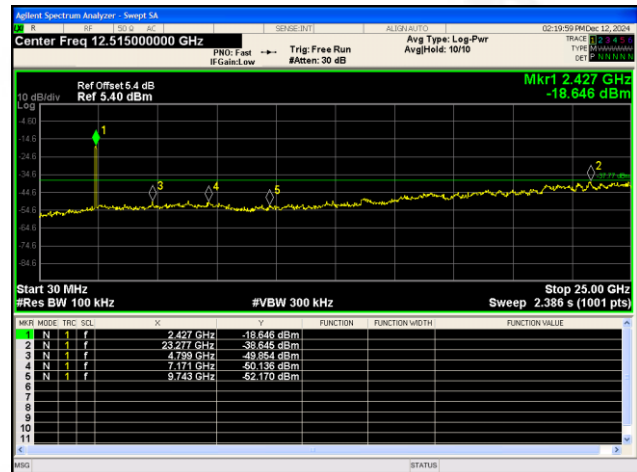
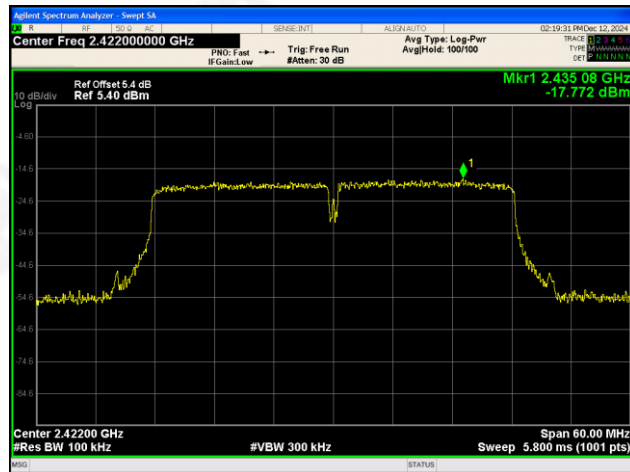
Highest channel



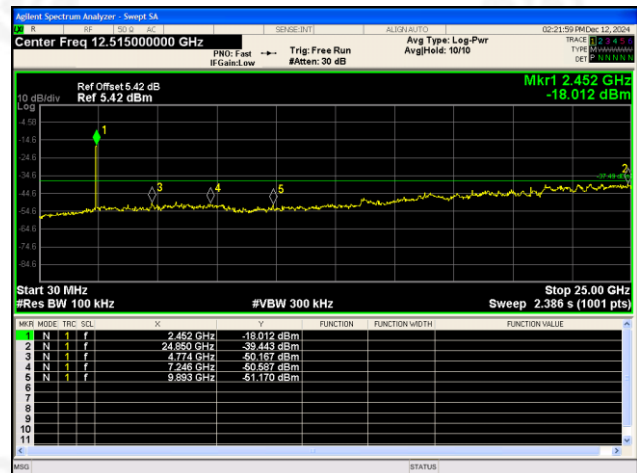
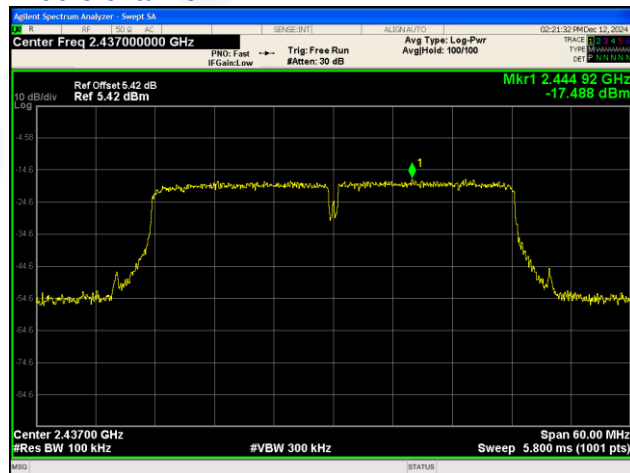


802.11n(HT40)

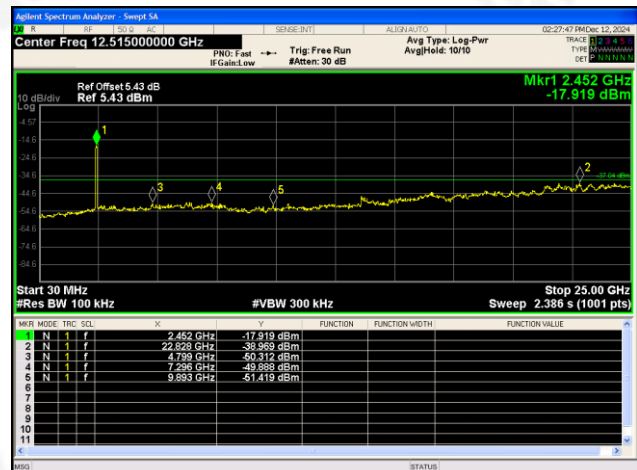
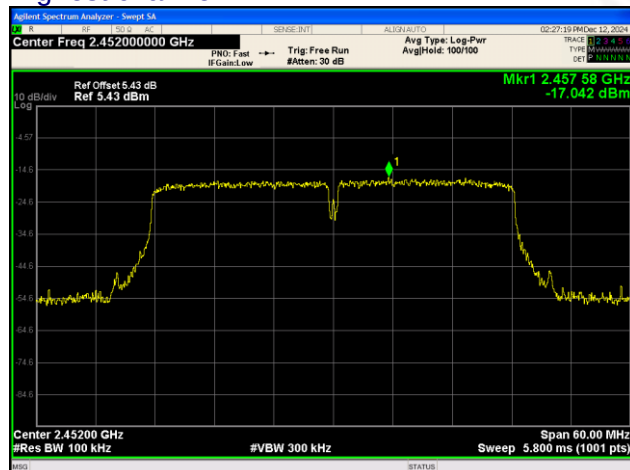
Lowest channel



Middle channel



Highest channel





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. A transmitter can only be sold or operated with antennas with which it was approved.	
EUT Antenna:	
The antenna is FPC Antenna, the best case gain of the antenna is 2.32dBi, 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 *****