FCC RADIO TEST REPORT

FCC ID: 2BBAWPFD-002

Sample : Automatic Pet Feeder

Trade Mark : N/A

Main Model : PFD-002 PRO

Additional Model : PTM-701

Report No.: UNIA23051709ER-62

Prepared for

Shenzhenbenfendianzishangwuyouxiangongsi
MinZhi JieDao ZhangKengSheQu XiangNanSiQu 25 Dong 703 Shenzhen Shi LongHua Qu, Shenzhen, China

Prepared by

Shenzhen United Testing Technology Co., Ltd.
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TEST RESULT CERTIFICATION

Applicant	:	Shenzhenbenfendianzishangwuyouxiangongsi
Address	:	MinZhi JieDao ZhangKengSheQu XiangNanSiQu 25 Dong 703 Shenzhen Shi LongHua Qu, Shenzhen, China
Manufacturer	:	Shenzhen Ipetmon Creative Technology Co., Ltd.
Address	:	5th Floor, Building B, Honghengtai High-tech Park, Shangcun, Gongming Street, Guangming District, Shenzhen

Product description

Product	:	Automatic Pet Feeder
Trade Mark	:	N/A
Model Name	:	PFD-002 PRO, PTM-701
Test Methods	:	FCC Rules and Regulations Part 15 Subpart C Section 15.247 ANSI C63.10: 2013

This device described above has been tested by Shenzhen ZKT Technology Co., Ltd., 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. This report shall not be reproduced except in full, without the written approval of UNI, this document may be altered or revised by Shenzhen United Testing Technology Co., Ltd., personnel only, and shall be noted in the revision of the document.

Date of Test	:	
Date (s) of performance of tests	:	May 17, 2023 ~ May 31, 2023
Date of Issue	:	May 31, 2023
Test Result	:	Pass

Prepared by: Jason Ye

Jason Ye/Supervisor

Reviewer: Kelly Cheng

Kelly Cheng/Supervisor

Approved & Authorized Signer: Liuze

Liuze/Manager

Table of Contents Page

Table of Contents Page

1 TEST SUMMARY

1.1 TEST PROCEDURES AND RESULTS

Item	FCC Rules	Description Of Test	Result
1	FCC Part 15.207	Conducted Emission	Pass
2	FCC Part 15.209(a)	Radiated Emission	Pass
3	FCC Part 15.247(a)(2)	Occupied Bandwidth	Pass
4	FCC Part 15.247(e)	Power Spectral Density	Pass
5	FCC Part 15.247(b)	Peak Output Power	Pass
6	FCC Part 15.247(d)	Out Of Band Emissions	Pass
7	FCC Part 15.247(d)	Conducted Spurious Emission	Pass
8	FCC Part 15.203	Antenna Requirement	Pass

Note:

"N/A" denotes test is not applicable in this Test Report.

1.2 TEST FACILITY

Test Firm : 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

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.The testing quality system of our laboratory meets with ISO/IEC-17025 requirements. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

Designation Number: CN1299
The EMC Laboratory has been accredited by A2LA, and in compliance with ISO/IEC 17025:2017 General Requirements for testing Laboratories.

FCC Registration Number: 692225
The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission.

IC Registration Number: 27033

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada.

1.3 MEASUREMENT UNCERTAINTY

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

A. Conducted Measurement:

Test Site	Method	Measurement Frequency Range	U, (dB)
UNI	ANSI	9kHz ~ 150kHz	2.96
		150kHz ~ 30MHz	2.44

B. Radiated Measurement:

Test Site	Method	Measurement Frequency Range	U, (dB)
UNI	ANSI	9kHz ~ 30MHz	2.50
		30MHz ~ 1000MHz	4.80
		1000MHz ~ 18000MHz	4.13

C. RF Conducted Method:

Item	Measurement Uncertainty
Uncertainty of total RF power, conducted	U_c = ±0.8 dB
Uncertainty of RF power density, conducted	U_c = ±2.6 dB
Uncertainty of spurious emissions, conducted	U_c = ±2 %
Uncertainty of Occupied Channel Bandwidth	U_c = ±2 %

1.4 ENVIRONMENTAL CONDITIONS

During the measurement the environmental conditions were within the listed ranges:

	NORMAL CONDITIONS	EXTREME CONDITIONS
Temperature range (℃)	15 - 35	-20 - 50
Relative humidty range	20 % - 75 %	20 % - 75 %
Pressure range (kPa)	86 - 106	86 - 106
Note: The Extreme Temperature and Extreme Voltages declared by the manufacturer.		

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product:	Automatic Pet Feeder
Trade Mark:	N/A
Main Model:	PFD-002 PRO
Additional Model:	PTM-701
Model Difference:	All model's the function, software and electric circuit are the same, only with a product color and model named different. Test sample model: PFD-002 PRO.
Operation Frequency:	802.11b/g/n20:2412~2462MHz 802.11n40: 2422~2452MHz
Number of Channels:	802.11b/g/n20: 11CH 802.11n40: 7CH
Maximum Peak Conducted Output Power:	15.80 dBm
Modulation Type:	CCK, OFDM, DBPSK, DAPSK
Antenna Type:	PCB Antenna
Antenna Gain:	1.95dBi
Battery:	N/A
Adapter:	Model: QL010-0501000UU Input: 100-240V~, 50/60Hz, 0.45A Output: DC 5.0V, 1.0A
Power Source:	DC 5V from adapter or DC 6.0V from battery

2.2 CARRIER FREQUENCY OF CHANNELS

Channel List for 802.11b/g/n(HT20)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

Channel List for 802.11n(40MHz)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
03	2422	05	2432	07	2442	09	2452
04	2427	06	2437	08	2447		

2.3 TEST MODE

The EUT was programmed to be in continuously transmitting mode.

Channel List for 802.11b/g/n((HT20)		
Test Channel	EUT Channel	Test Frequency (MHz)
Low	CH01	2412
Middle	CH06	2437
High	CH11	2462

Channel List for 802.11n(40MHz)		
Test Channel	EUT Channel	Test Frequency (MHz)
Low	CH03	2422
Middle	CH06	2437
High	CH09	2452

2.4 DESCRIPTION OF THE TEST MODES

During the measurement the environmental conditions were within the listed ranges:

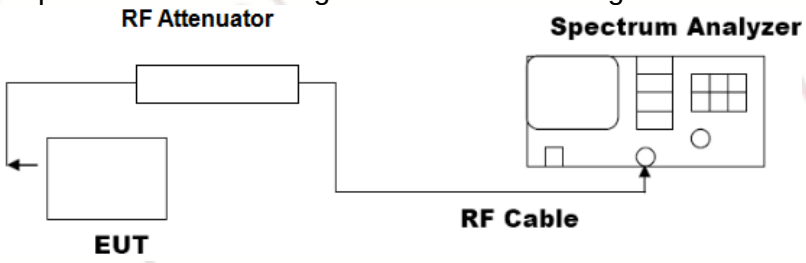
Voltage	Normal Voltage	DC 5V
	High Voltage	DC 5.5V
	Low Voltage	DC 4.5V
Other	Normal Temperature	24°C
	Relative Humidity	55 %
	Air Pressure	989 hPa

Note: All modes were test at Normal Voltage, High Voltage, and Low Voltage, only the worst results of Normal Voltage was reported in the test report.

2.5 TEST SETUP

Operation of EUT during Radiation testing:

Operation of EUT during RF Conducted testing:



2.6 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

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	Model No.	Cable Length(cm)	Remark
1	Automatic Pet Feeder	PFD-002 PRO	1.5m	EUT

Note:

1. The support equipment was authorized by Declaration of Confirmation.
2. All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

2.7 MEASUREMENT INSTRUMENTS LIST

Item	Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
Conduction Emissions Measurement					
1	Conducted Emission Test Software	EZ-EMC	Ver.CCS-3A1-CE	N/A	N/A
2	AMN	Schwarzbeck	NNLK8121	8121370	2023.09.22
3	AAN	TESEQ	T8-Cat6	38888	2023.09.22
4	Pulse Limiter	CYBRTEK	EM5010	E115010056	2024.05.30
5	EMI Test Receiver	Rohde&Schwarz	ESCI	101210	2023.09.22
Radiated Emissions Measurement					
1	Radiated Emission Test Software	EZ-EMC	Ver.CCS-03A1	N/A	N/A
2	Horn Antenna	Sunol	DRH-118	A101415	2023.09.27
3	Broadband Hybrid Antenna	Sunol	JB1	A090215	2024.02.26
4	PREAMP	HP	8449B	3008A00160	2023.09.22
5	PREAMP	HP	8447D	2944A07999	2024.05.30
6	EMI TEST RECEIVER	Rohde&Schwarz	ESR3	101891	2023.09.22
7	VECTOR Signal Generator	Rohde&Schwarz	SMU200A	101521	2023.09.22
8	Signal Generator	Agilent	E4421B	MY4335105	2023.09.22
9	MXA Signal Analyzer	Agilent	N9020A	MY50510140	2023.09.22
10	MXA Signal Analyzer	Keysight	N9020A	MY51110104	2023.09.22
11	RF Power sensor	DARE	RPR3006W	15I00041SNO88	2024.05.30
12	RF Power sensor	DARE	RPR3006W	15I00041SNO89	2024.05.30
13	RF power divider	Anritsu	K241B	992289	2023.09.22
14	Wideband radio communication tester	Rohde&Schwarz	CMW500	154987	2023.09.22
15	Active Loop Antenna	Com-Power	AL-130R	10160009	2024.05.30
16	Broadband Hybrid Antennas	Schwarzbeck	VULB9163	VULB9163#958	2023.09.22
17	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1680	2024.05.30
18	Horn Antenna	A-INFOMW	LB-180400-KF	J211060660	2023.09.27
19	Microwave Broadband Preamplifier	Schwarzbeck	BBV 9721	100472	2023.09.22
20	Signal Generator	Agilent	N5183A	MY47420153	2023.09.22
21	Spctrum Analyzer	Rohde&Schwarz	FSP 40	100501	2023.09.22
22	Power Meter	KEYSIGHT	N1911A	MY50520168	2023.09.22
23	Frequency Meter	VICTOR	VC2000	997406086	2023.09.22
24	DC Power Source	HYELEC	HY5020E	055161818	2023.09.22

3 CONDUCTED EMISSION

3.1 TEST LIMIT

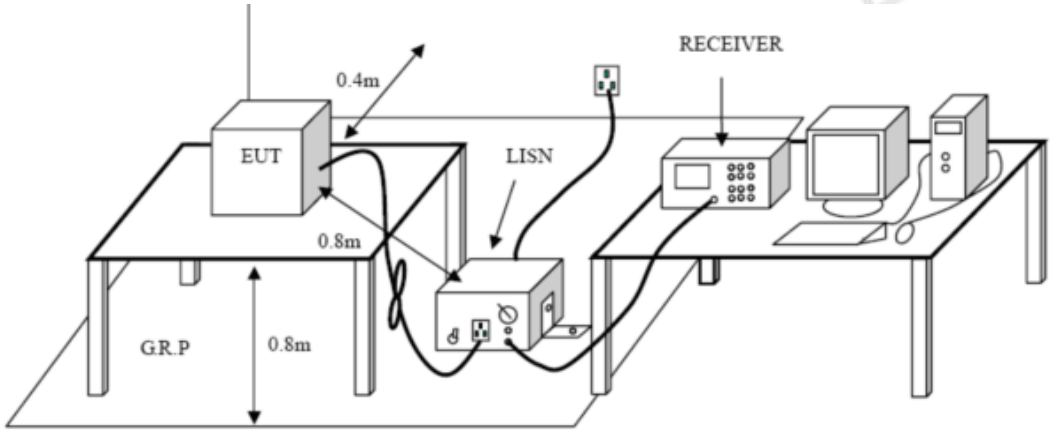
For unintentional device, according to § 15.207(a) Line Conducted Emission Limits is as following

Frequency (MHz)	Maximum RF Line Voltage (dB□ V)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15~0.50	79	66	66~56*	56~46*
0.50~5.00	73	60	56	46
5.00~30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency.

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

3.2 TEST SETUP



3.3 TEST PROCEDURE

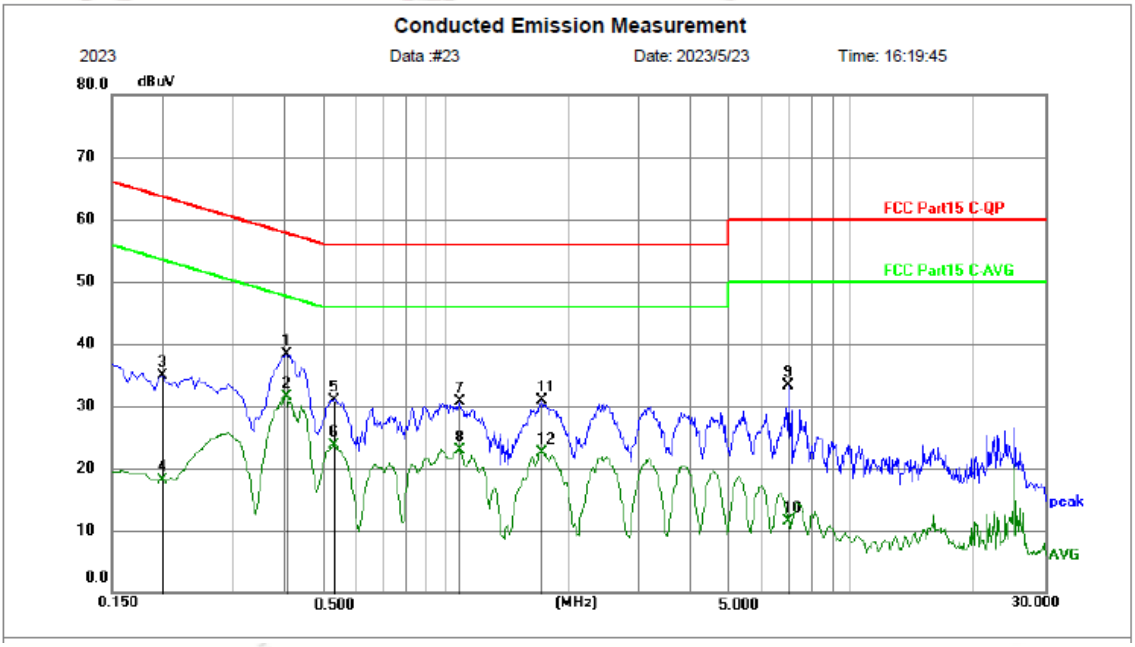
1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is placed on a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10: 2013.
2. Support equipment, if needed, was placed as per ANSI C63.10: 2013.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10: 2013.
4. If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC120V/60Hzpower through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.

3.4 TEST RESULT

PASS

Remark:
1. All modes were tested at AC 120V and 240V, only the worst result of AC 120V was reported.
2. All modes were test at Low, Middle, and High channel, only the worst result of 802.11b Low Channel was reported.

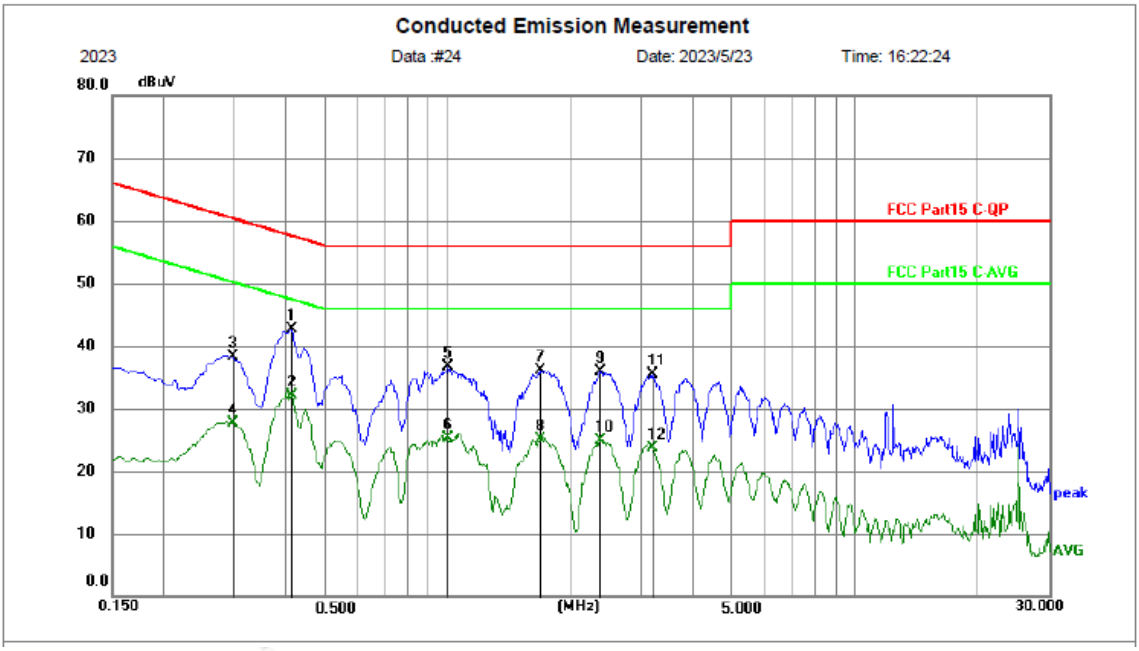
Temperature:	24℃	Relative Humidity:	48%
Test Date:	May 23, 2023	Pressure:	1010hPa
Test Voltage:	AC 120V, 60Hz	Phase:	Line
Test Mode:	Transmitting mode of 802.11b 2412MHz		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.4020	28.76	9.64	38.40	57.81	-19.41	peak	P	
2 *	0.4020	21.87	9.64	31.51	47.81	-16.30	AVG	P	
3	0.1995	25.13	9.71	34.84	63.63	-28.79	peak	P	
4	0.1995	8.34	9.71	18.05	53.63	-35.58	AVG	P	
5	0.5280	21.37	9.63	31.00	56.00	-25.00	peak	P	
6	0.5280	14.15	9.63	23.78	46.00	-22.22	AVG	P	
7	1.0814	21.20	9.54	30.74	56.00	-25.26	peak	P	
8	1.0814	13.44	9.54	22.98	46.00	-23.02	AVG	P	
9	6.9989	23.71	9.53	33.24	60.00	-26.76	peak	P	
10	6.9989	2.01	9.53	11.54	50.00	-38.46	AVG	P	
11	1.7295	21.17	9.67	30.84	56.00	-25.16	peak	P	
12	1.7295	12.92	9.67	22.59	46.00	-23.41	AVG	P	

Remark: Factor = Insertion Loss + Cable Loss, Result = Reading + Factor, Margin = Result – Limit.

Temperature:	24℃	Relative Humidity:	48%
Test Date:	May 23, 2023	Pressure:	1010hPa
Test Voltage:	AC 120V, 60Hz	Phase:	Neutral
Test Mode:	Transmitting mode of 802.11b 2412MHz		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1 *	0.4109	33.02	9.64	42.66	57.63	-14.97	peak	P	
2	0.4109	22.39	9.64	32.03	47.63	-15.60	AVG	P	
3	0.2939	28.58	9.68	38.26	60.41	-22.15	peak	P	
4	0.2939	18.06	9.68	27.74	50.41	-22.67	AVG	P	
5	1.0004	27.22	9.52	36.74	56.00	-19.26	peak	P	
6	1.0004	15.69	9.52	25.21	46.00	-20.79	AVG	P	
7	1.6890	26.47	9.66	36.13	56.00	-19.87	peak	P	
8	1.6890	15.49	9.66	25.15	46.00	-20.85	AVG	P	
9	2.3774	26.27	9.68	35.95	56.00	-20.05	peak	P	
10	2.3774	15.22	9.68	24.90	46.00	-21.10	AVG	P	
11	3.1920	25.89	9.61	35.50	56.00	-20.50	peak	P	
12	3.1920	14.03	9.61	23.64	46.00	-22.36	AVG	P	

Remark: Factor = Insertion Loss + Cable Loss, Result = Reading + Factor, Margin = Result – Limit.

4 RADIATED EMISSION

4.1 TEST LIMIT

For unintentional device, according to §15.209(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
0.009MHz-0.490MHz	2400/F (kHz)	-	Quasi-peak	300
0.490MHz-1.705MHz	24000/F (kHz)	-	Quasi-peak	30
1.705MHz-30MHz	30	-	Quasi-peak	30
30MHz-88MHz	100	40.0	Quasi-peak	3
88MHz-216MHz	150	43.5	Quasi-peak	3
216MHz-960MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3
Above 1GHz	500	54.0	Average	3
		74.0	Peak	3

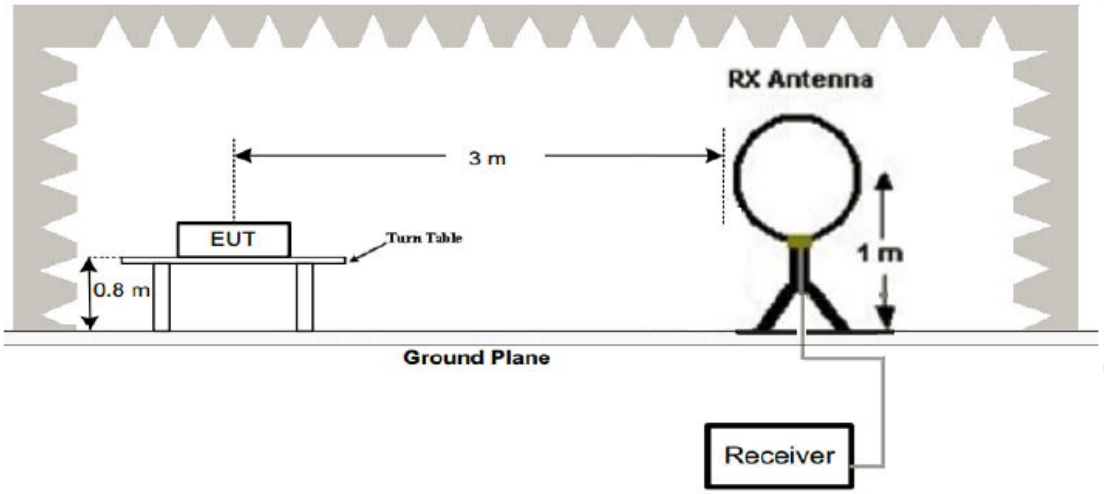
Limit calculation and transfer to 3m distance as showed in the following table:

Frequency (MHz)	**Limit (dBuV/m)**	**Distance (m)**
0.009-0.490	20log(2400/F(KHz))+40log(300/3)	3
0.490-1.705	20log(24000/F(KHz))+40log(30/3)	3
1.705-30.0	69.5	3
30-88	40.0	3
88-216	43.5	3
216-960	46.0	3
Above 960	54.0	3

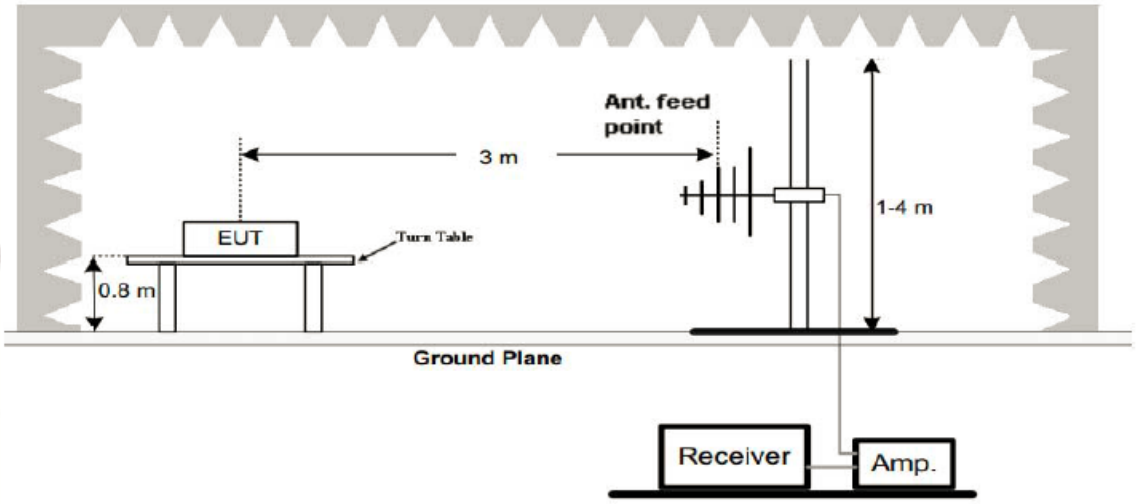
For intentional device, according to §15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

4.2 TEST SETUP

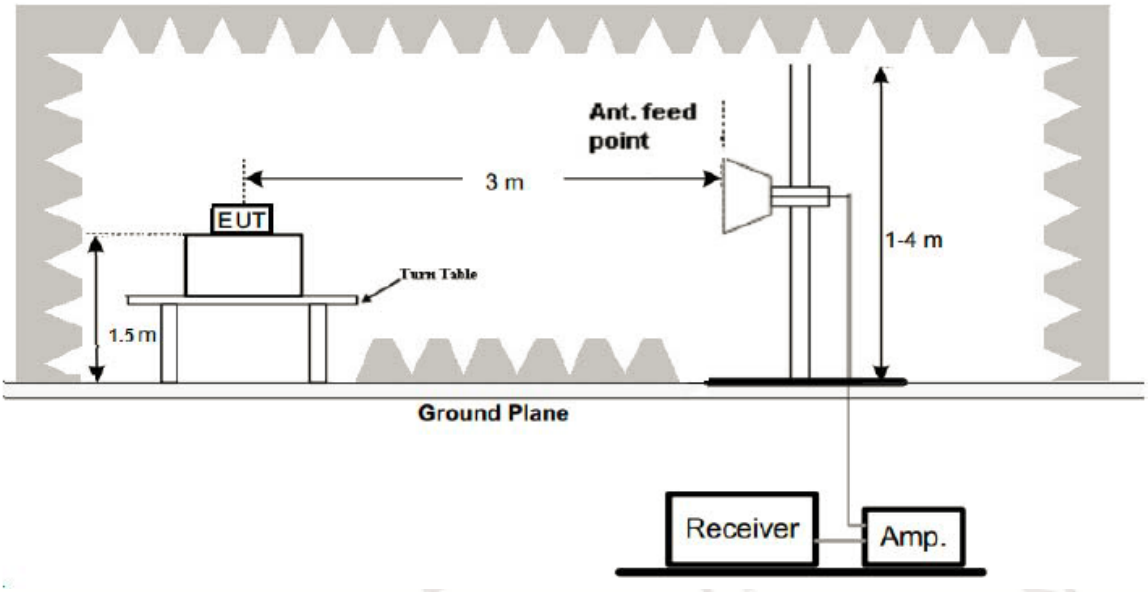
1. Radiated Emission Test-Up Frequency Below 30MHz



2. Radiated Emission Test-Up Frequency 30MHz~1GHz



3. Radiated Emission Test-Up Frequency Above 1GHz



4.3 TEST PROCEDURE

1. Below 1GHz measurement the EUT is placed on turntable which is 0.8m above ground plane. And above 1GHz measurement EUT was placed on low permittivity and low tangent turn table which is 1.5m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The test frequency range from 9kHz to25GHz per FCC PART 15.33(a).

Note: For battery operated equipment, the equipment tests shall be performed using a new battery.

4.4 TEST RESULT

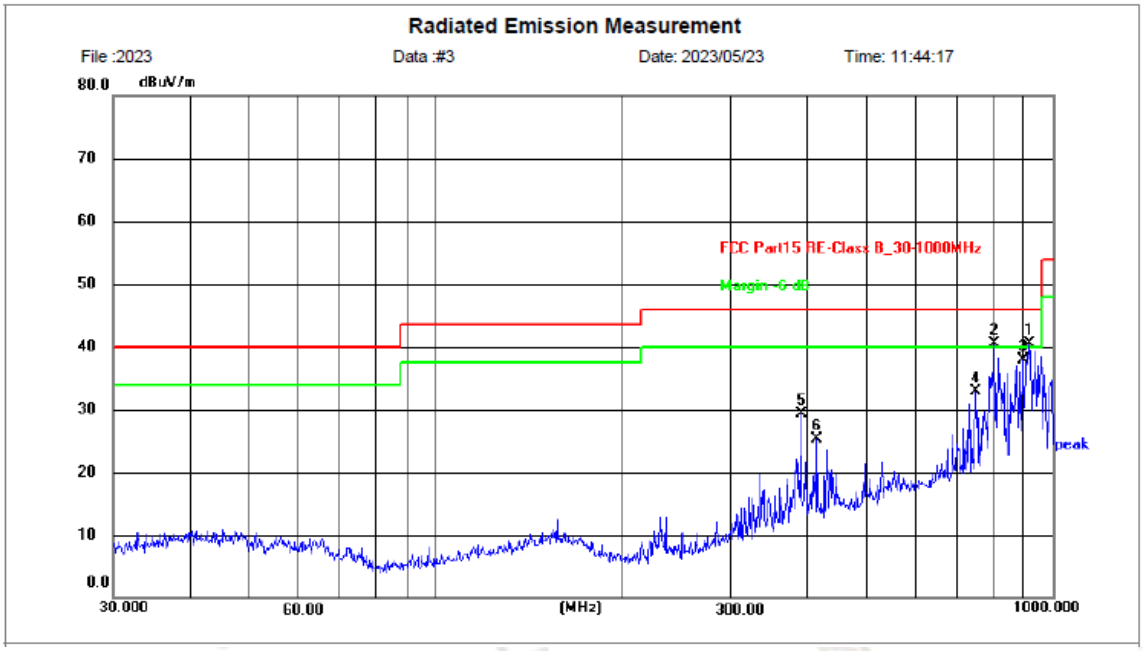
PASS

Remark:

1. All modes were test at Low, Middle, and High channel, only the worst result of 802.11b Low Channel was reported for below 1GHz test.
2. By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that “X axis” position was the worst, and test data recorded in this report.

Below 1GHz Test Results:

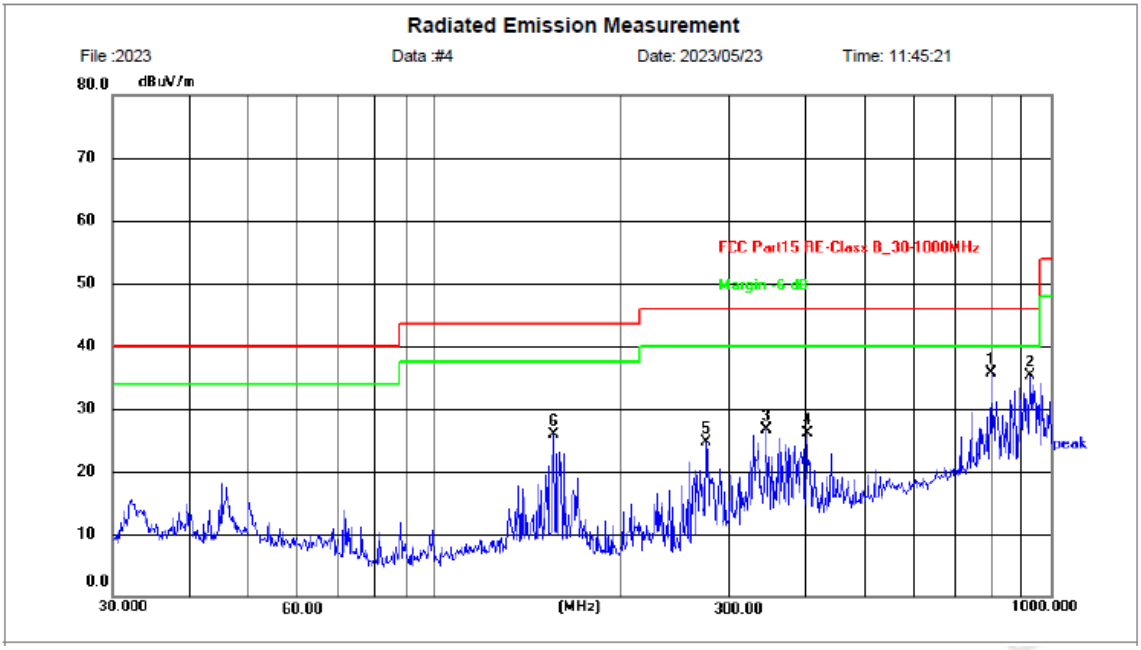
Temperature:	24℃	Relative Humidity:	48%
Test Date:	May 23, 2023	Pressure:	1010hPa
Test Voltage:	AC 120V, 60Hz	Phase:	Horizontal
Test Mode:	Transmitting mode of 802.11b 2412MHz		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 *	916.0687	43.77	-3.29	40.48	46.00	-5.52	peak	100	360	P	
2 !	804.6028	44.84	-4.40	40.44	46.00	-5.56	peak	100	360	P	
3	893.8567	41.58	-3.69	37.89	46.00	-8.11	peak	100	360	P	
4	750.1083	38.69	-5.85	32.84	46.00	-13.16	peak	100	360	P	
5	390.7226	42.94	-13.55	29.39	46.00	-16.61	peak	100	360	P	
6	414.7223	38.20	-12.81	25.39	46.00	-20.61	peak	100	360	P	

Remark: Absolute Level= Reading Level+ Factor, Margin= Absolute Level – Limit
Factor=Ant. Factor + Cable Loss – Pre-amplifier

Temperature:	24℃	Relative Humidity:	48%
Test Date:	May 23, 2023	Pressure:	1010hPa
Test Voltage:	AC 120V, 60Hz	Phase:	Vertical
Test Mode:	Transmitting mode of 802.11b 2412MHz		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 *	801.7863	40.02	-4.40	35.62	46.00	-10.38	peak	100	1	P	
2	925.7563	38.32	-3.10	35.22	46.00	-10.78	peak	100	1	P	
3	345.5952	41.76	-15.12	26.64	46.00	-19.36	peak	100	1	P	
4	401.8385	39.25	-13.16	26.09	46.00	-19.91	peak	100	1	P	
5	275.1570	41.72	-17.02	24.70	46.00	-21.30	peak	100	1	P	
6	155.9101	41.85	-15.88	25.97	43.50	-17.53	peak	100	1	P	

Remark: Absolute Level= Reading Level+ Factor, Margin= Absolute Level – Limit
Factor=Ant. Factor + Cable Loss – Pre-amplifier

Remark:
1. Radiated emission test from 9KHz to 10th harmonic of fundamental was verified, emission from 9kHz to 30MHz are more than 20dB below the limit, so it was not recorded in this report.
2. * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
3. The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120kHz, 1MHz for measuring above 1GHz, below 30MHz was 10kHz.

Above 1 GHz Test Results:

CH01 of 802.11b Mode (2412MHz):

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4824	58.57	-3.64	54.93	74	-19.07	PK
4824	50.3	-3.64	46.66	54	-7.34	AV
7236	56.23	-0.95	55.28	74	-18.72	PK
7236	45.9	-0.95	44.95	54	-9.05	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4824	58.87	-3.64	55.23	74	-18.77	PK
4824	48.09	-3.64	44.45	54	-9.55	AV
7236	56.28	-0.95	55.33	74	-18.67	PK
7236	45.91	-0.95	44.96	54	-9.04	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

CH06 of 802.11b Mode (2437MHz):

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4874	59.24	-3.51	55.73	74	-18.27	PK
4874	48.3	-3.51	44.79	54	-9.21	AV
7311	55.93	-0.82	55.11	74	-18.89	PK
7311	45.97	-0.82	45.15	54	-8.85	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4874	59.18	-3.51	55.67	74	-18.33	PK
4874	47.8	-3.51	44.29	54	-9.71	AV
7311	56.04	-0.82	55.22	74	-18.78	PK
7311	45.57	-0.82	44.75	54	-9.25	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

CH11 of 802.11b Mode (2462MHz):

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4924	58.87	-3.43	55.44	74	-18.56	PK
4924	48.48	-3.43	45.05	54	-8.95	AV
7386	55.67	-0.75	54.92	74	-19.08	PK
7386	45.79	-0.75	45.04	54	-8.96	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4924	64.13	-3.43	60.7	74	-13.3	PK
4924	47.87	-3.43	44.44	54	-9.56	AV
7386	56.49	-0.75	55.74	74	-18.26	PK
7386	45.17	-0.75	44.42	54	-9.58	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

CH01 of 802.11g Mode (2412MHz):

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4824	59.18	-3.64	55.54	74	-18.46	PK
4824	47.77	-3.64	44.13	54	-9.87	AV
7236	55.2	-0.95	54.25	74	-19.75	PK
7236	45.59	-0.95	44.64	54	-9.36	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4824	58.77	-3.64	55.13	74	-18.87	PK
4824	47.93	-3.64	44.29	54	-9.71	AV
7236	55.58	-0.95	54.63	74	-19.37	PK
7236	45	-0.95	44.05	54	-9.95	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

CH06 of 802.11g Mode (2437MHz):

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4874	59.24	-3.51	55.73	74	-18.27	PK
4874	47.89	-3.51	44.38	54	-9.62	AV
7311	55.01	-0.82	54.19	74	-19.81	PK
7311	44.87	-0.82	44.05	54	-9.95	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4874	58.95	-3.51	55.44	74	-18.56	PK
4874	48.59	-3.51	45.08	54	-8.92	AV
7311	55	-0.82	54.18	74	-19.82	PK
7311	45.33	-0.82	44.51	54	-9.49	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

CH11 of 802.11g Mode (2462MHz):

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4924	58.94	-3.43	55.51	74	-18.49	PK
4924	48.49	-3.43	45.06	54	-8.94	AV
7386	54.9	-0.75	54.15	74	-19.85	PK
7386	45.01	-0.75	44.26	54	-9.74	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4924	59.33	-3.43	55.9	74	-18.1	PK
4924	48.39	-3.43	44.96	54	-9.04	AV
7386	55.25	-0.75	54.5	74	-19.5	PK
7386	45.3	-0.75	44.55	54	-9.45	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

CH01 of 802.11n/HT20 Mode (2412MHz):

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4824	59.03	-3.64	55.39	74	-18.61	PK
4824	48.58	-3.64	44.94	54	-9.06	AV
7236	55.02	-0.95	54.07	74	-19.93	PK
7236	45.35	-0.95	44.4	54	-9.6	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4824	59.21	-3.64	55.57	74	-18.43	PK
4824	48.33	-3.64	44.69	54	-9.31	AV
7236	55.08	-0.95	54.13	74	-19.87	PK
7236	45.64	-0.95	44.69	54	-9.31	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

CH06 of 802.11n/HT20 Mode (2437MHz):

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4874	58.97	-3.51	55.46	74	-18.54	PK
4874	48.54	-3.51	45.03	54	-8.97	AV
7311	55.87	-0.82	55.05	74	-18.95	PK
7311	44.98	-0.82	44.16	54	-9.84	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4874	59.3	-3.51	55.79	74	-18.21	PK
4874	47.91	-3.51	44.4	54	-9.6	AV
7311	55.13	-0.82	54.31	74	-19.69	PK
7311	45.04	-0.82	44.22	54	-9.78	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

CH11of 802.11n/HT20 Mode (2462MHz):

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4924	57.9	-3.43	54.47	74	-19.53	PK
4924	48.03	-3.43	44.6	54	-9.4	AV
7386	54.68	-0.75	53.93	74	-20.07	PK
7386	45.59	-0.75	44.84	54	-9.16	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4924	58.71	-3.43	55.28	74	-18.72	PK
4924	48.14	-3.43	44.71	54	-9.29	AV
7386	55.61	-0.75	54.86	74	-19.14	PK
7386	45.22	-0.75	44.47	54	-9.53	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

CH03 of 802.11n/H40 Mode (2422MHz):

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4844	58.04	-3.63	54.41	74	-19.59	PK
4844	48.3	-3.63	44.67	54	-9.33	AV
7266	55.19	-0.94	54.25	74	-19.75	PK
7266	44.02	-0.94	43.08	54	-10.92	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4844	60.24	-3.63	56.61	74	-17.39	PK
4844	48.98	-3.63	45.35	54	-8.65	AV
7266	54.4	-0.94	53.46	74	-20.54	PK
7266	41.83	-0.94	40.89	54	-13.11	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

CH06 of 802.11n/H40 Mode (2437MHz):

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4874	57.91	-3.51	54.4	74	-19.6	PK
4874	48.13	-3.51	44.62	54	-9.38	AV
7311	54.72	-0.82	53.9	74	-20.1	PK
7311	45.24	-0.82	44.42	54	-9.58	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4874	58.78	-3.51	55.27	74	-18.73	PK
4874	47.22	-3.51	43.71	54	-10.29	AV
7311	54.98	-0.82	54.16	74	-19.84	PK
7311	45.13	-0.82	44.31	54	-9.69	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

CH09 of 802.11n/H40 Mode (2452MHz):

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4904	58.87	-3.43	55.44	74	-18.56	PK
4904	47.94	-3.43	44.51	54	-9.49	AV
7356	55.3	-0.75	54.55	74	-19.45	PK
7356	45.03	-0.75	44.28	54	-9.72	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4904	58.2	-3.43	54.77	74	-19.23	PK
4904	48.34	-3.43	44.91	54	-9.09	AV
7356	55.62	-0.75	54.87	74	-19.13	PK
7356	44.14	-0.75	43.39	54	-10.61	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Remark:
1. Measuring frequencies from 1GHz to the 25GHz.
2. “F” denotes fundamental frequency; “H” denotes spurious frequency. “E” denotes band edge frequency.
3. * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
4. The emissions are attenuated more than 20dB below the permissible limits are not recorded in the report.
5. The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120kHz, 1 MHz for measuring above 1GHz, below 30MHz was 10kHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
6. When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20dBuV/m(PK Value) <54dBuV/m(AV Limit), the Average Detected not need to completed.
7. All modes of operation were investigated and the worst-case emissions are reported.

Operation Mode: CH01 of 802.11b Mode (2412MHz)

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2310	56.08	-5.81	50.27	74	-23.73	PK
2310	/	-5.81	/	54	/	AV
2390	64.49	-5.84	58.65	74	-15.35	PK
2390	47.01	-5.84	41.17	54	-12.83	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2310	56.13	-5.81	50.32	74	-23.68	PK
2310	/	-5.81	/	54	/	AV
2390	64.1	-5.84	58.26	74	-15.74	PK
2390	45.91	-5.84	40.07	54	-13.93	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Operation Mode: CH11 of 802.11b Mode (2462MHz)

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	55.81	-5.65	50.16	74	-23.84	PK
2483.5	/	-5.65	/	54	/	AV
2500	56.13	-5.72	50.41	74	-23.59	PK
2500	/	-5.72	/	54	/	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	56.24	-5.65	50.59	74	-23.41	PK
2483.5	/	-5.65	/	54	/	AV
2500	56.3	-5.72	50.58	74	-23.42	PK
2500	/	-5.72	/	54	/	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Operation Mode: CH01 of 802.11g Mode (2412MHz)

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2310	56.34	-5.81	50.53	74	-23.47	PK
2310	/	-5.81	/	54	/	AV
2390	63.88	-5.84	58.04	74	-15.96	PK
2390	46.03	-5.84	40.19	54	-13.81	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2310	55.91	-5.81	50.1	74	-23.9	PK
2310	/	-5.81	/	54	/	AV
2390	63.99	-5.84	58.15	74	-15.85	PK
2390	46.3	-5.84	40.46	54	-13.54	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Operation Mode: CH11 of 802.11g Mode (2462MHz)

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	56.23	-5.65	50.58	74	-23.42	PK
2483.5	/	-5.65	/	54	/	AV
2500	56.28	-5.72	50.56	74	-23.44	PK
2500	/	-5.72	/	54	/	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	55.91	-5.65	50.26	74	-23.74	PK
2483.5	/	-5.65	/	54	/	AV
2500	56.08	-5.72	50.36	74	-23.64	PK
2500	/	-5.72	/	54	/	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Operation Mode: CH01 of 802.11n/HT20 Mode (2412MHz)

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2310	56.02	-5.81	50.21	74	-23.79	PK
2310	/	-5.81	/	54	/	AV
2390	64.57	-5.84	58.73	74	-15.27	PK
2390	45.91	-5.84	40.07	54	-13.93	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2310	56.13	-5.81	50.32	74	-23.68	PK
2310	/	-5.81	/	54	/	AV
2390	64.2	-5.84	58.36	74	-15.64	PK
2390	45.94	-5.84	40.1	54	-13.9	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Operation Mode: CH11 of 802.11n/HT20 Mode (2462MHz)

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	56.03	-5.65	50.38	74	-23.62	PK
2483.5	/	-5.65	/	54	/	AV
2500	56.35	-5.72	50.63	74	-23.37	PK
2500	/	-5.72	/	54	/	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	56.02	-5.65	50.37	74	-23.63	PK
2483.5	/	-5.65	/	54	/	AV
2500	56.58	-5.72	50.86	74	-23.14	PK
2500	/	-5.72	/	54	/	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

CH03 of 802.11n/H40 Mode (2422MHz)

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2310	55.8	-5.81	49.99	74	-24.01	PK
2310	/	-5.81	/	54	/	AV
2390	64.13	-5.84	58.29	74	-15.71	PK
2390	46.04	-5.84	40.2	54	-13.8	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2310	56.18	-5.81	50.37	74	-23.63	PK
2310	/	-5.81	/	54	/	AV
2390	63.9	-5.84	58.06	74	-15.94	PK
2390	46.03	-5.84	40.19	54	-13.81	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

CH09 of 802.11n/H40 Mode (2452MHz)

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	56.02	-5.65	50.37	74	-23.63	PK
2483.5	/	-5.65	/	54	/	AV
2500	56.07	-5.72	50.35	74	-23.65	PK
2500	/	-5.72	/	54	/	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	55.23	-5.65	49.58	74	-24.42	PK
2483.5	/	-5.65	/	54	/	AV
2500	55.28	-5.72	49.56	74	-24.44	PK
2500	/	-5.72	/	54	/	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit						

5 OCCUPIED BANDWIDTH

5.1 TEST LIMIT

FCC Part15(15.247), Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	>= 500KHz (6dB bandwidth)	2400-2483.5	PASS

5.2 TEST PROCEDURE

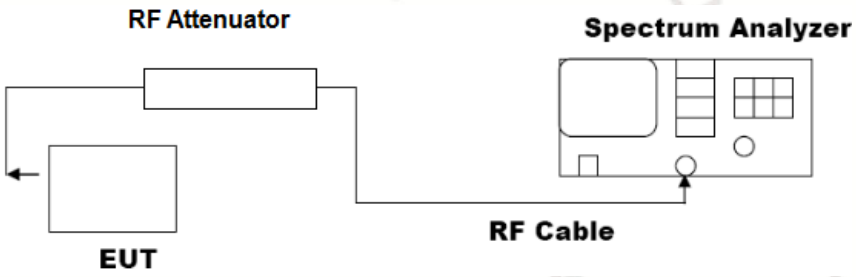
5.2.1 -6dB BANDWIDTH MEASUREMENT PROCEDURE

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 KHz, VBW≥3×RBW.
4. Set SPA Trace 1 Max hold, then View.

5.2.2 99% OCCUPIED BANDWIDTH

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set Span = approximately 1.5 to 5 times the OBW, centered on a nominal channel
   The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW; Sweep = auto; Detector function = peak
4. Set SPA Trace 1 Max hold, then View.

5.3 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



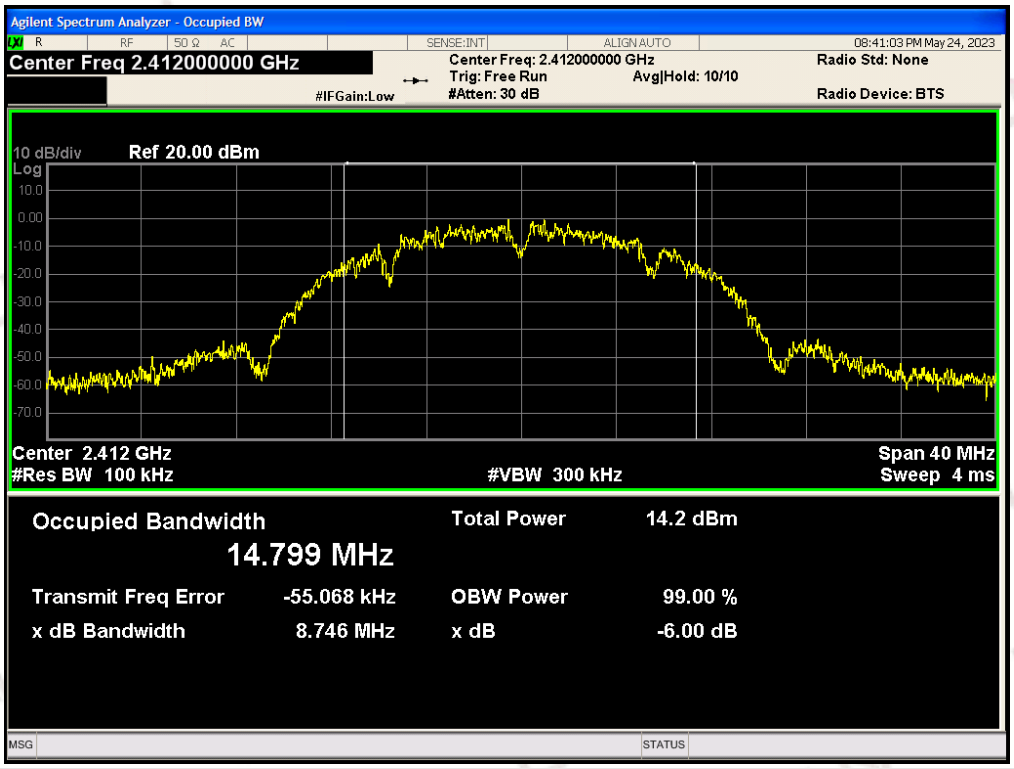
5.4 MEASUREMENT EQUIPMENT USED

The same as described in section 2.7.

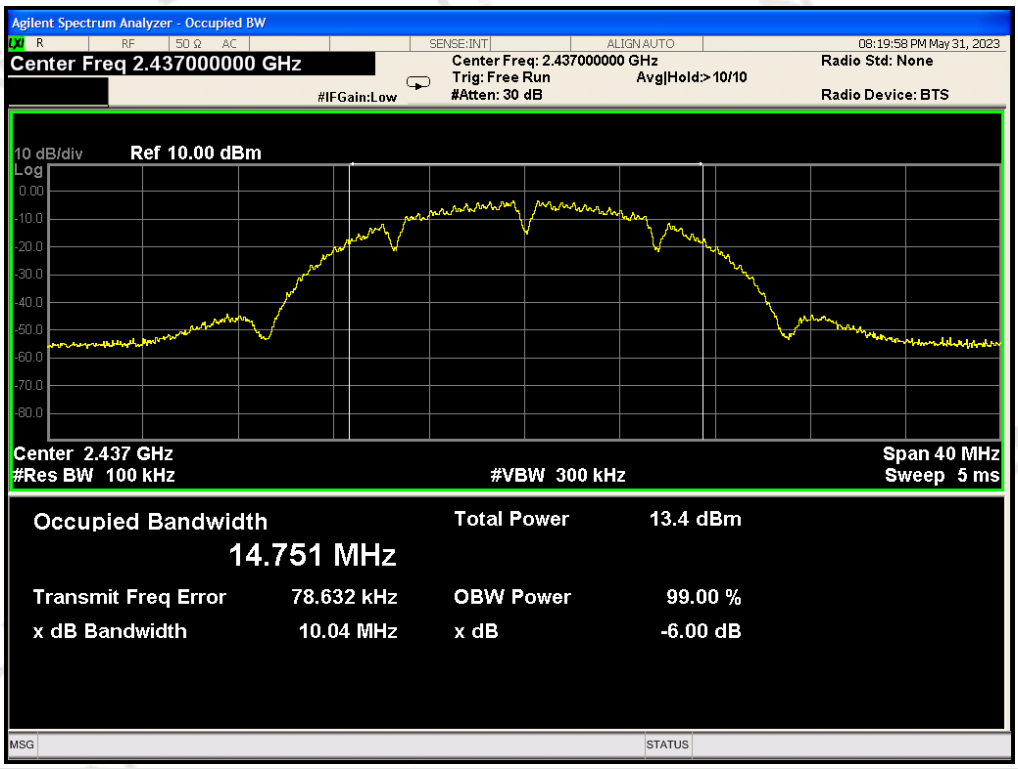
5.5 TEST RESULT

PASS

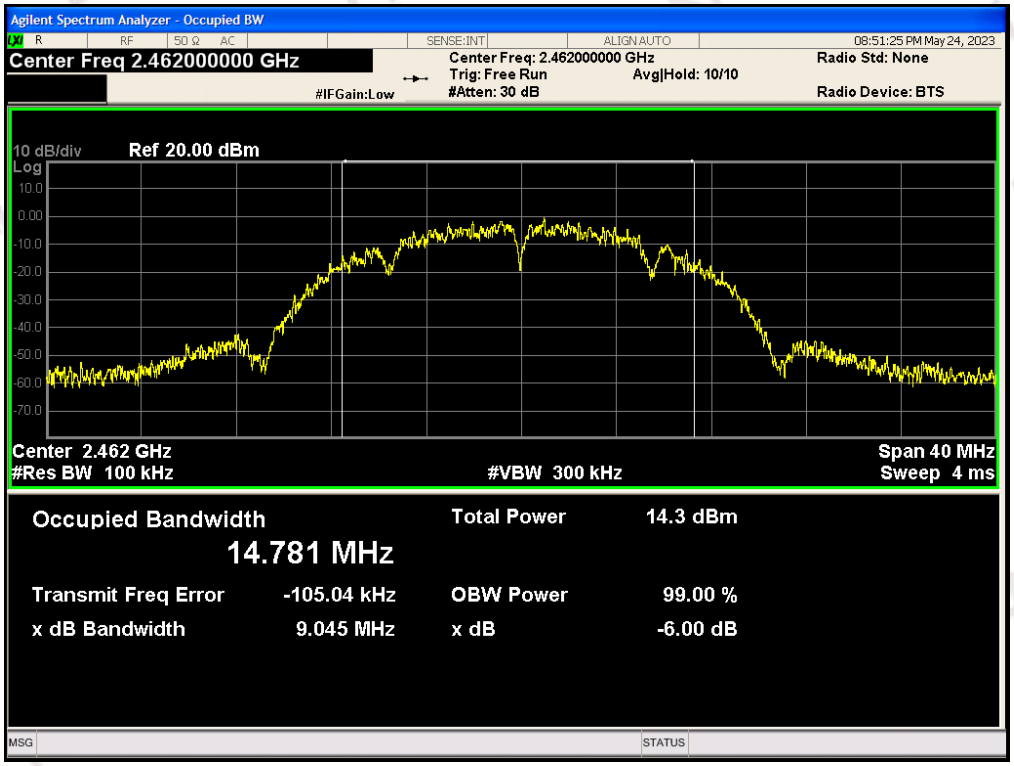
TX 802.11b Mode			
Frequency (MHz)	6dB Bandwidth (MHz)	Channel Separation (kHz)	Result
2412	8.75	>=500	PASS
2437	10.04	>=500	PASS
2462	9.06	>=500	PASS



CH01: 2412MHz

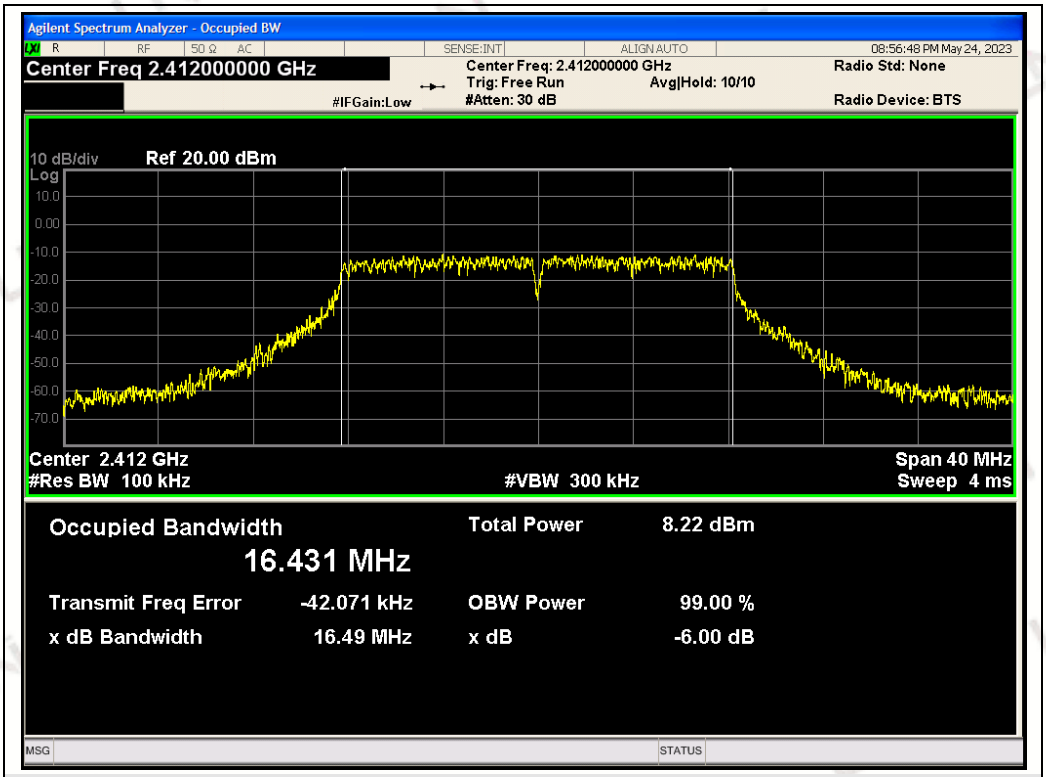


CH06: 2437MHz

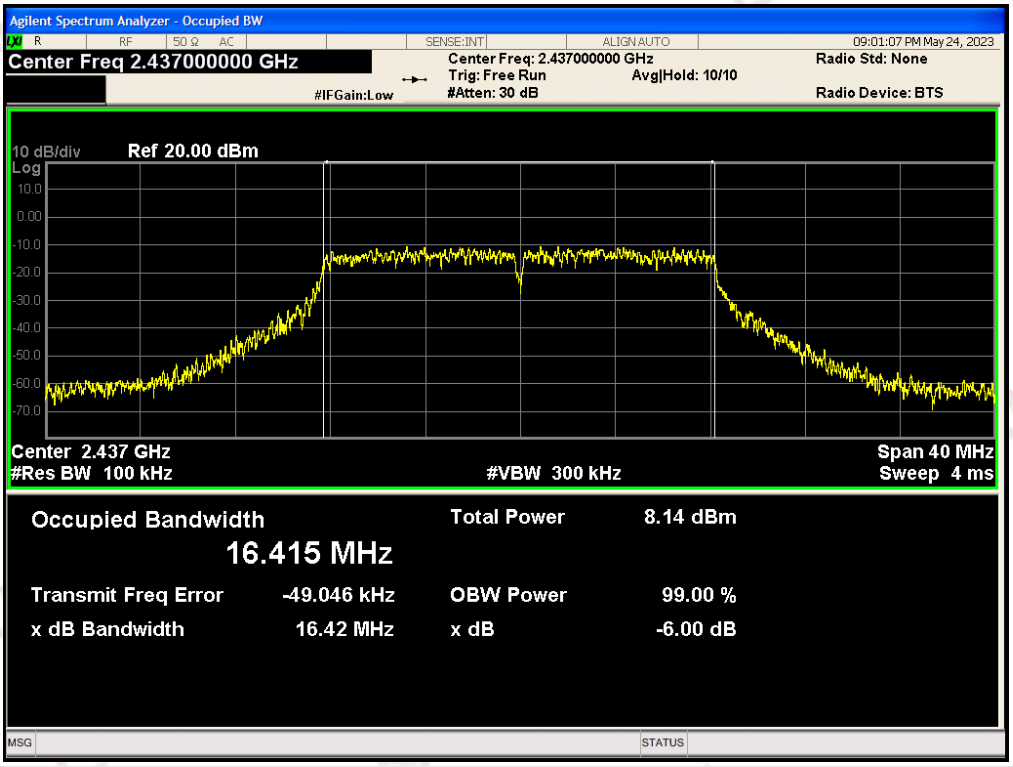


CH11: 2462MHz

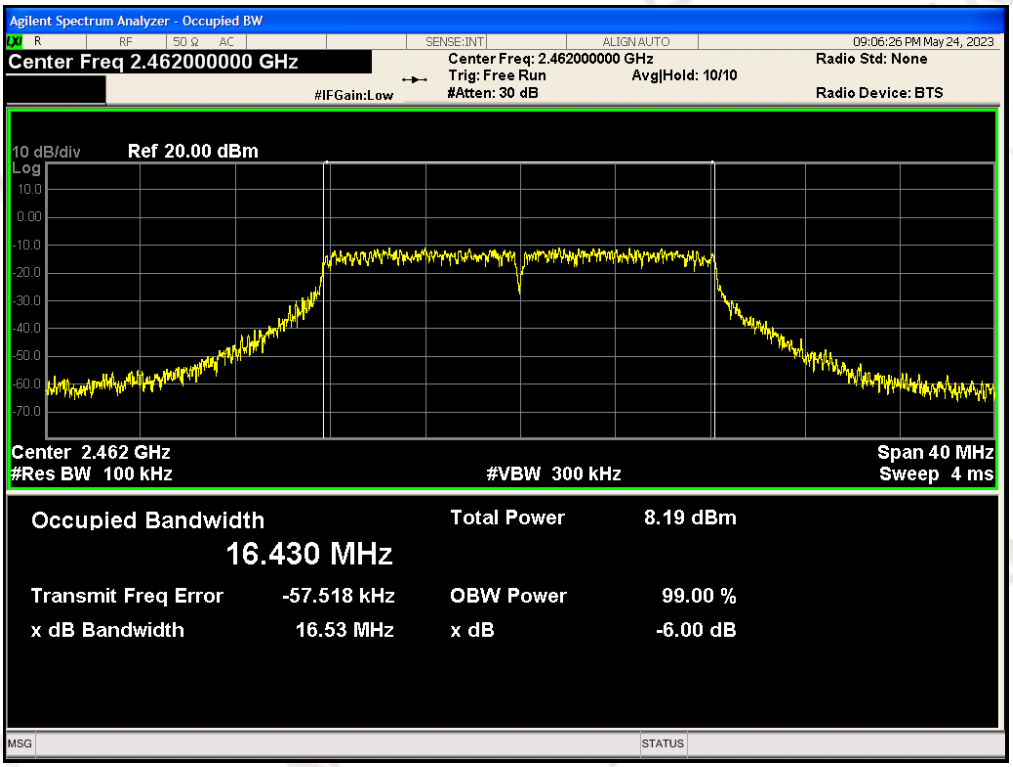
TX 802.11g Mode			
Frequency (MHz)	6dB Bandwidth (MHz)	Channel Separation (kHz)	Result
2412	16.49	>=500	PASS
2437	16.42	>=500	PASS
2462	16.53	>=500	PASS



CH01: 2412MHz

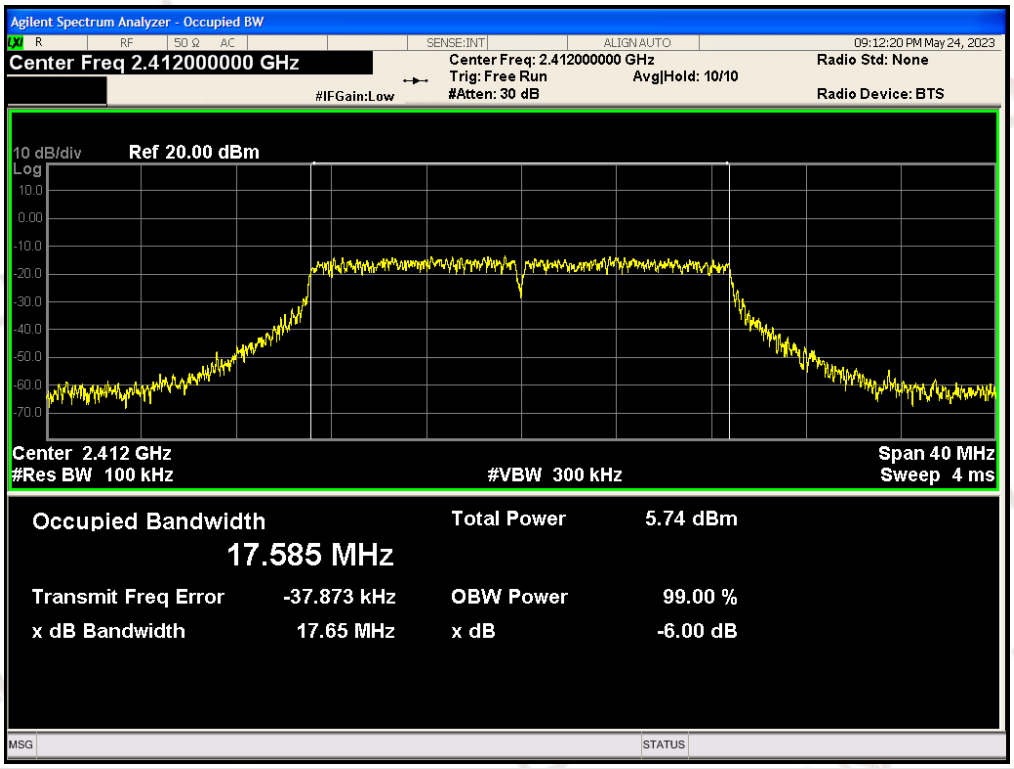


CH06: 2437MHz

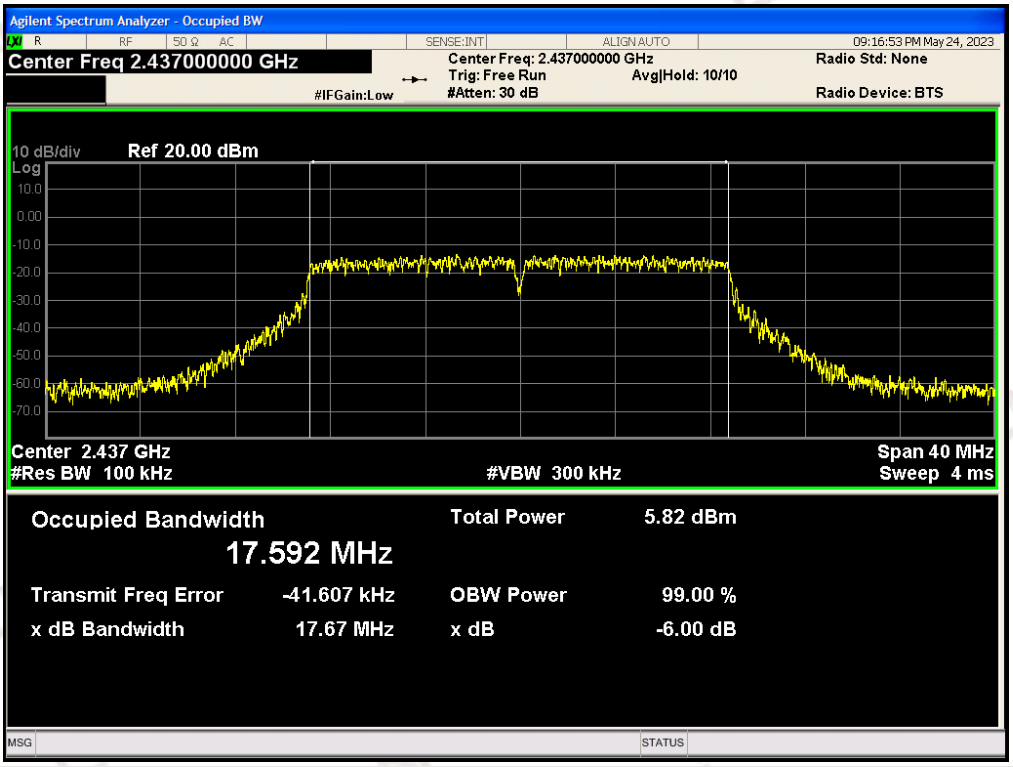


CH11: 2462MHz

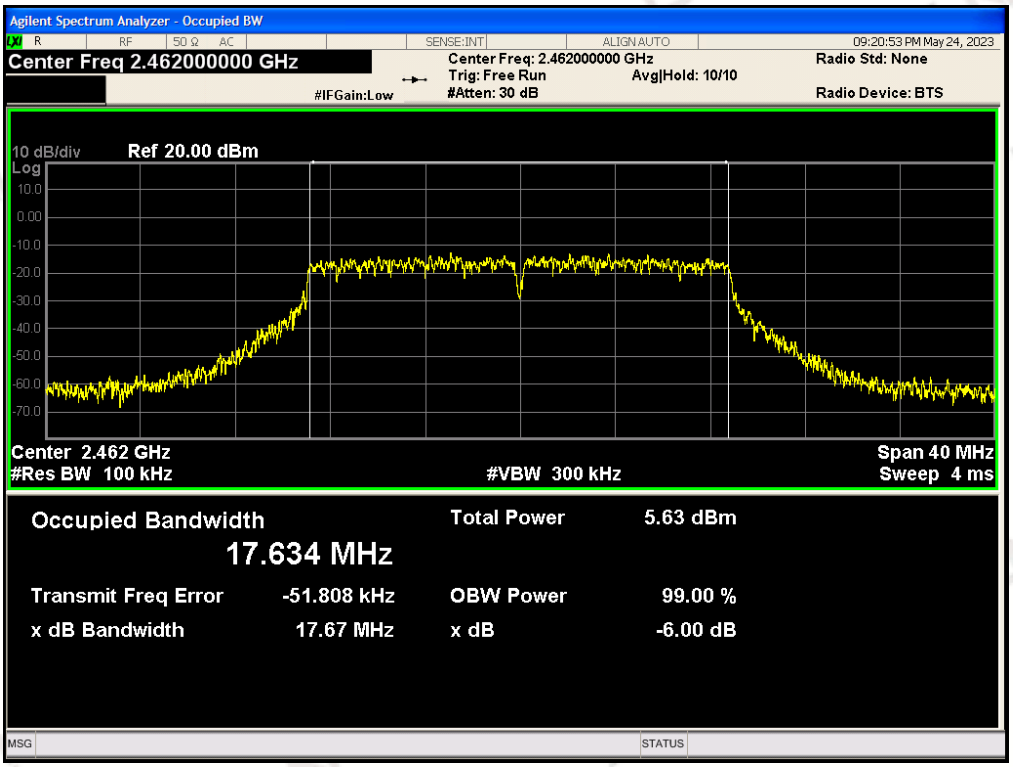
TX 802.11n/HT20 Mode			
Frequency (MHz)	6dB Bandwidth (MHz)	Channel Separation (kHz)	Result
2412	17.65	>=500	PASS
2437	17.67	>=500	PASS
2462	17.67	>=500	PASS



CH01: 2412MHz

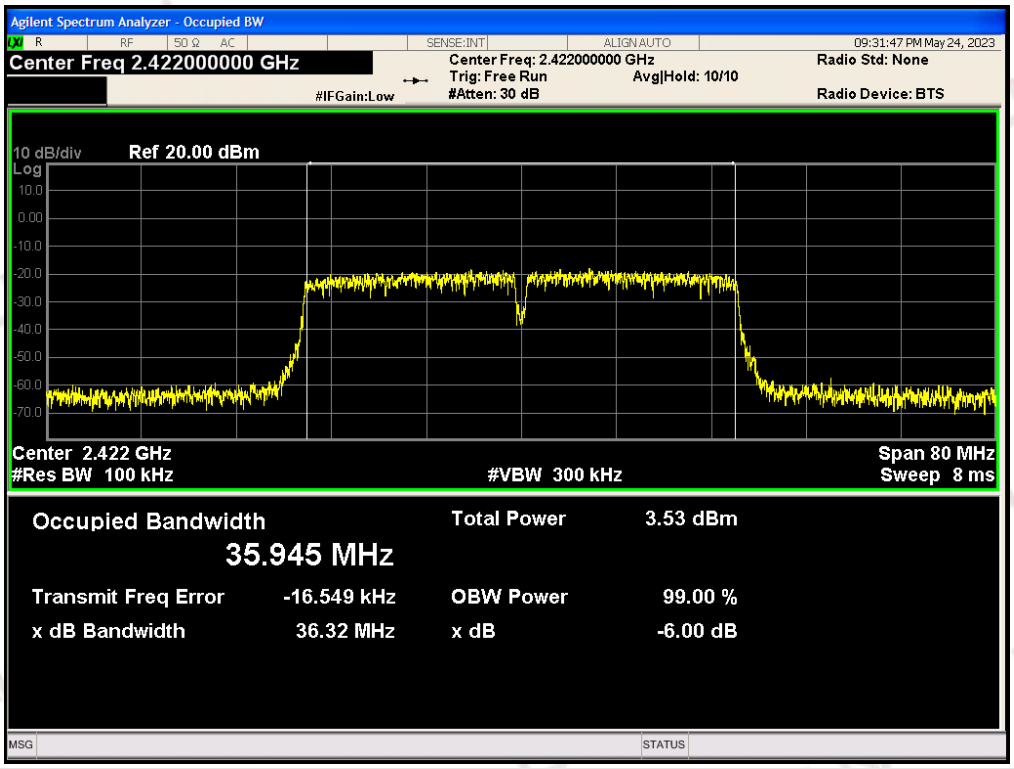


CH06: 2437MHz

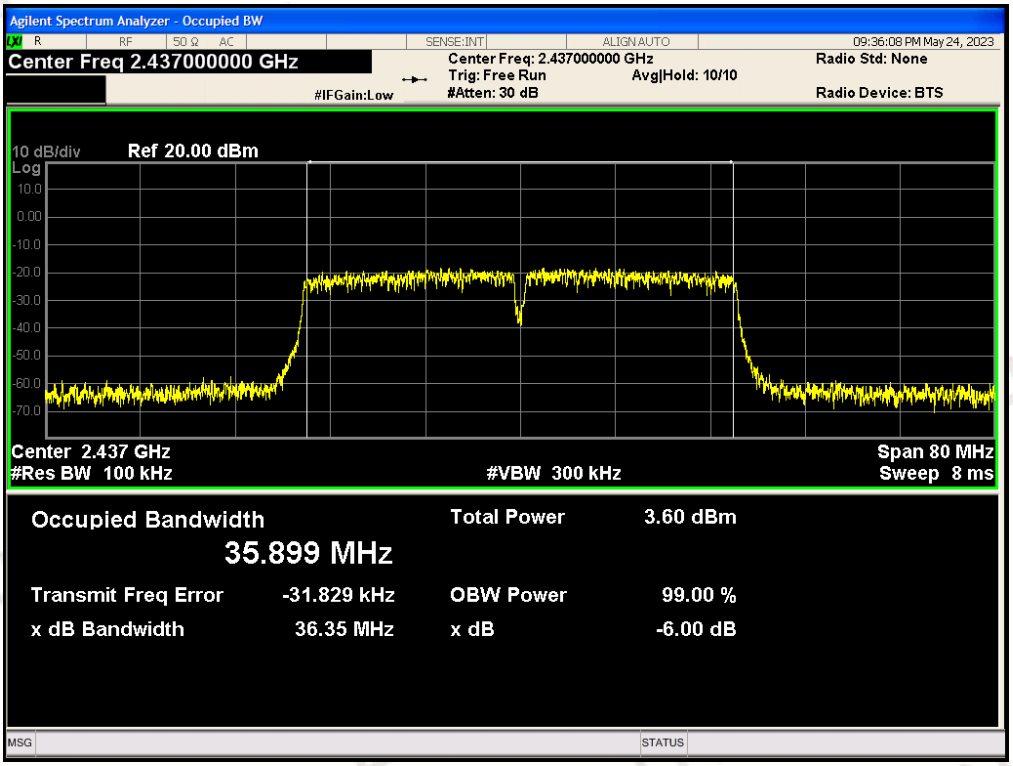


CH11: 2462MHz

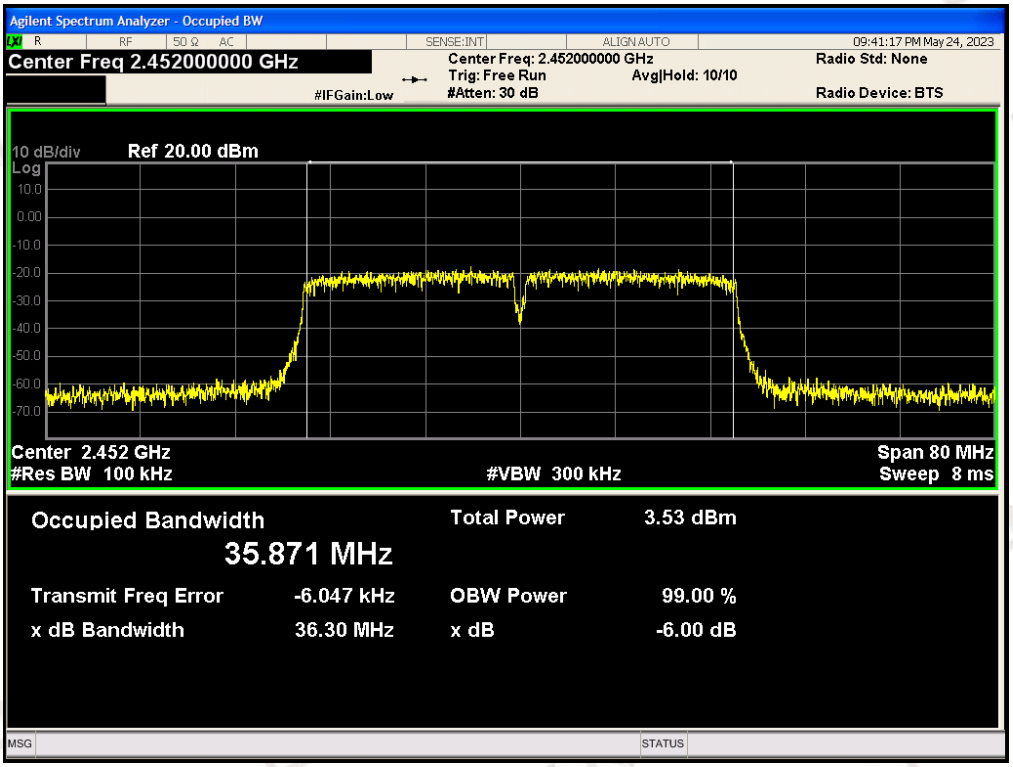
TX 802.11n/HT40 Mode			
Frequency (MHz)	6dB Bandwidth (MHz)	Channel Separation (kHz)	Result
2422	36.32	>=500	PASS
2437	36.35	>=500	PASS
2452	36.30	>=500	PASS



CH03: 2422MHz



CH06: 2437MHz



CH09: 2452MHz

6 POWER SPECTRAL DENSITY

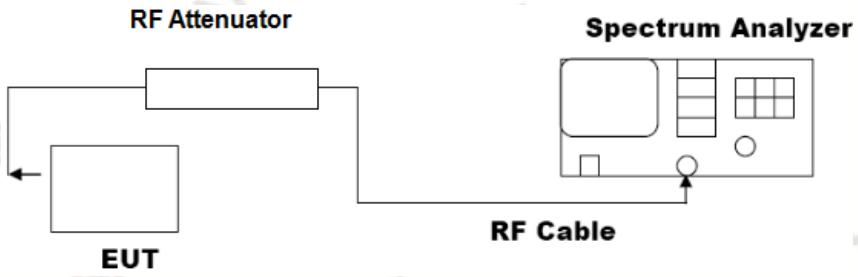
6.1 TEST LIMIT

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

6.2 TEST PROCEDURE

(1) Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
(2)Set the EUT Work on the top, the middle and the bottom operation frequency individually.
(3)Set SPA Trace 1 Max hold, then View.
Note: The method of AVGPSD-1 in the ANSI C63.10 (2013) item 11.10 was used in this testing.

6.3 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



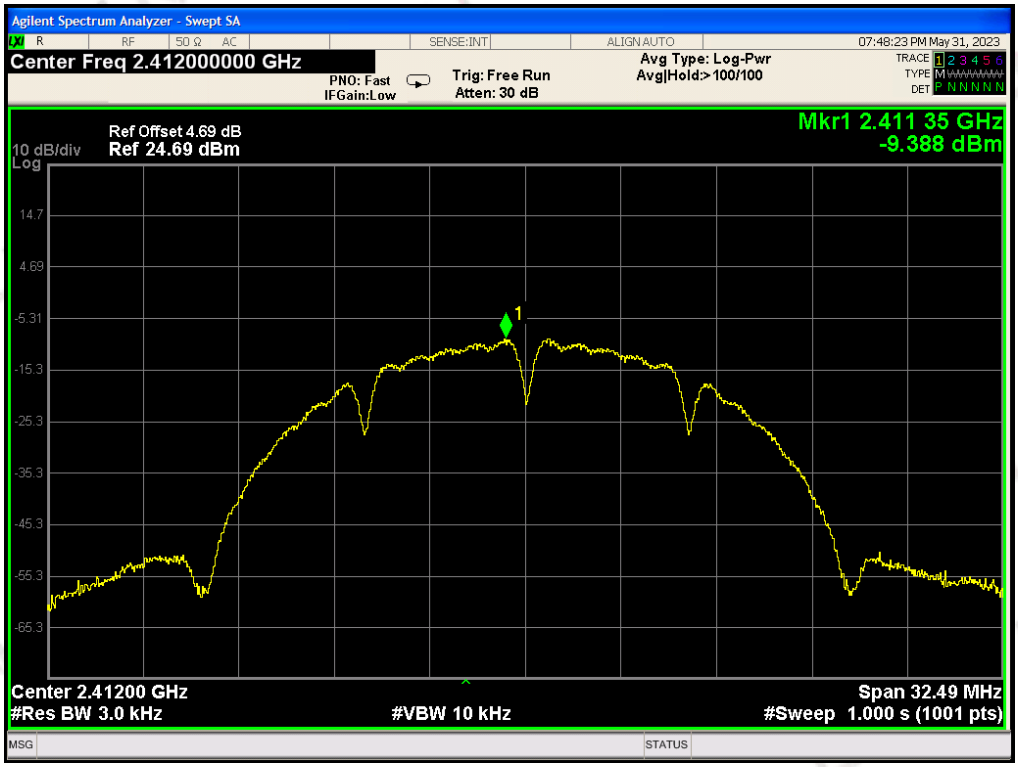
6.4 EQUIPMENT USED

The same as described in section 2.7.

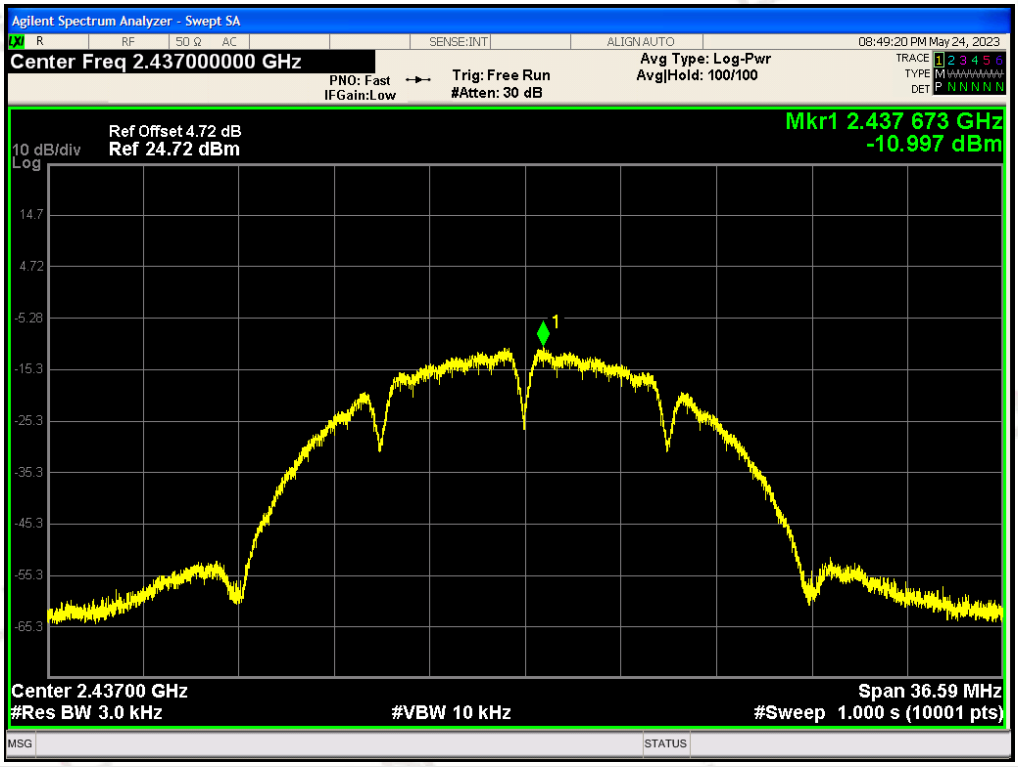
6.5 TEST RESULT

PASS

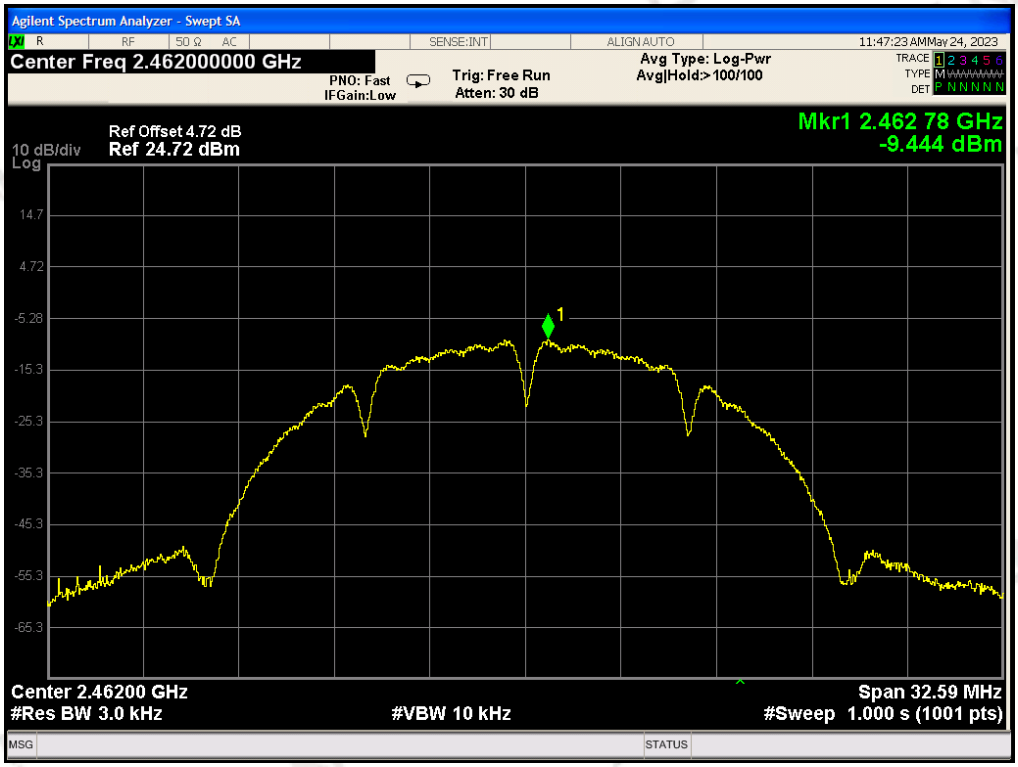
TX 802.11b Mode			
Frequency (MHz)	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-9.388	8	PASS
2437	-10.997	8	PASS
2462	-9.444	8	PASS



CH01: 2412MHz

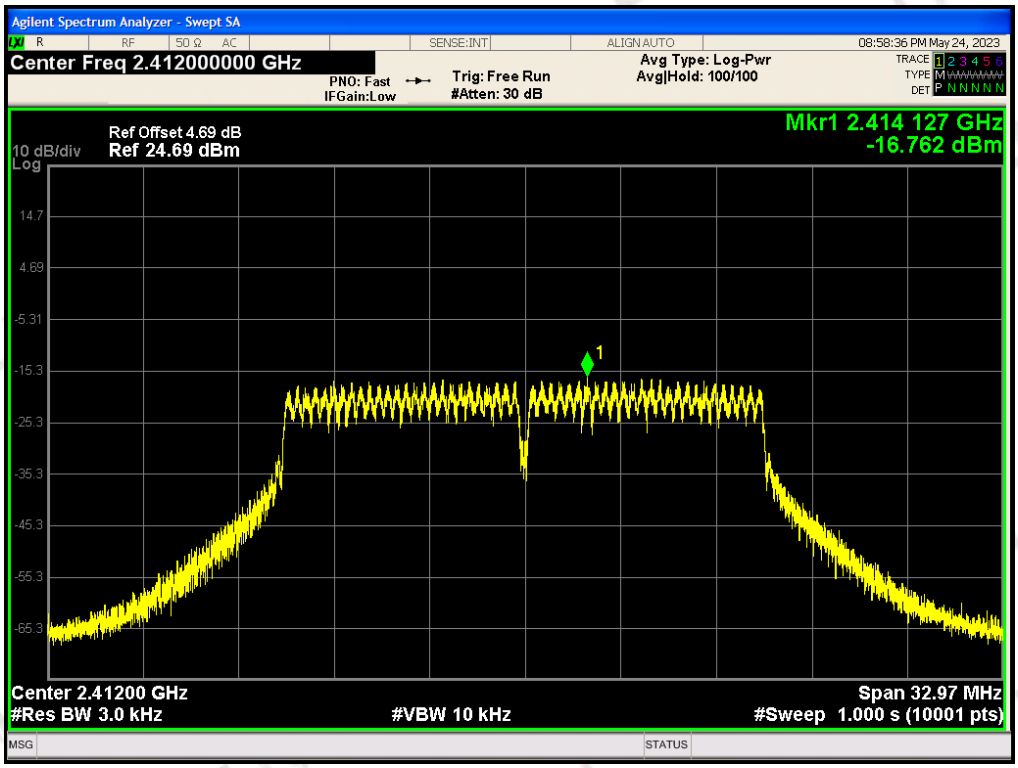


CH06: 2437MHz

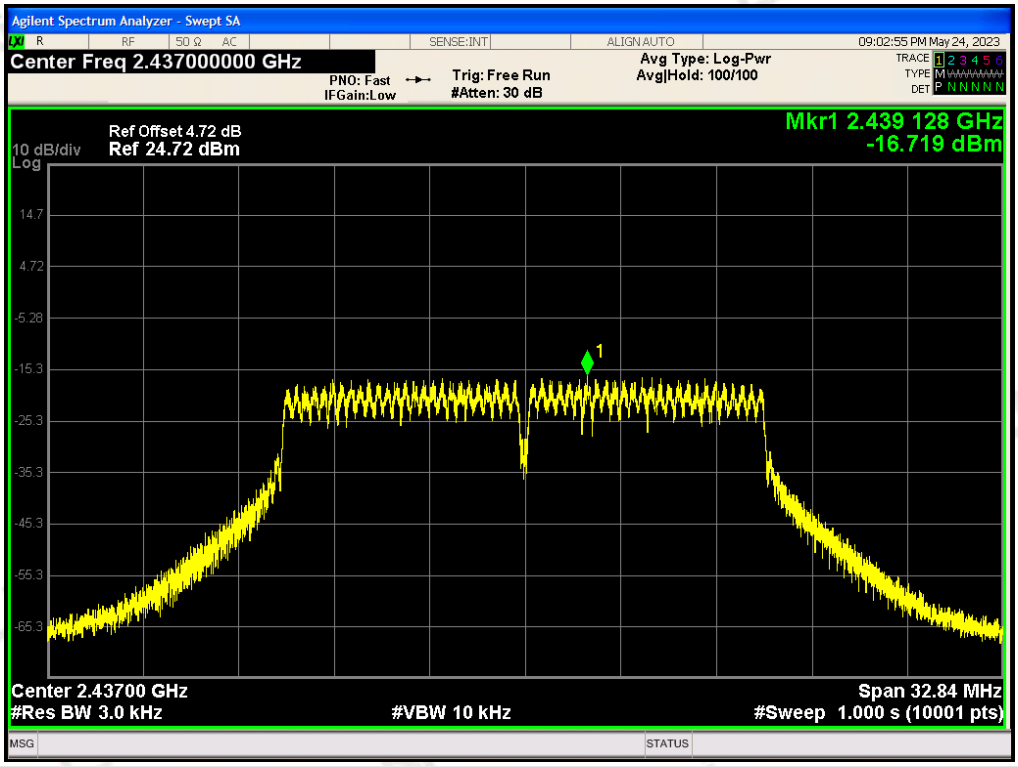


CH11: 2462MHz

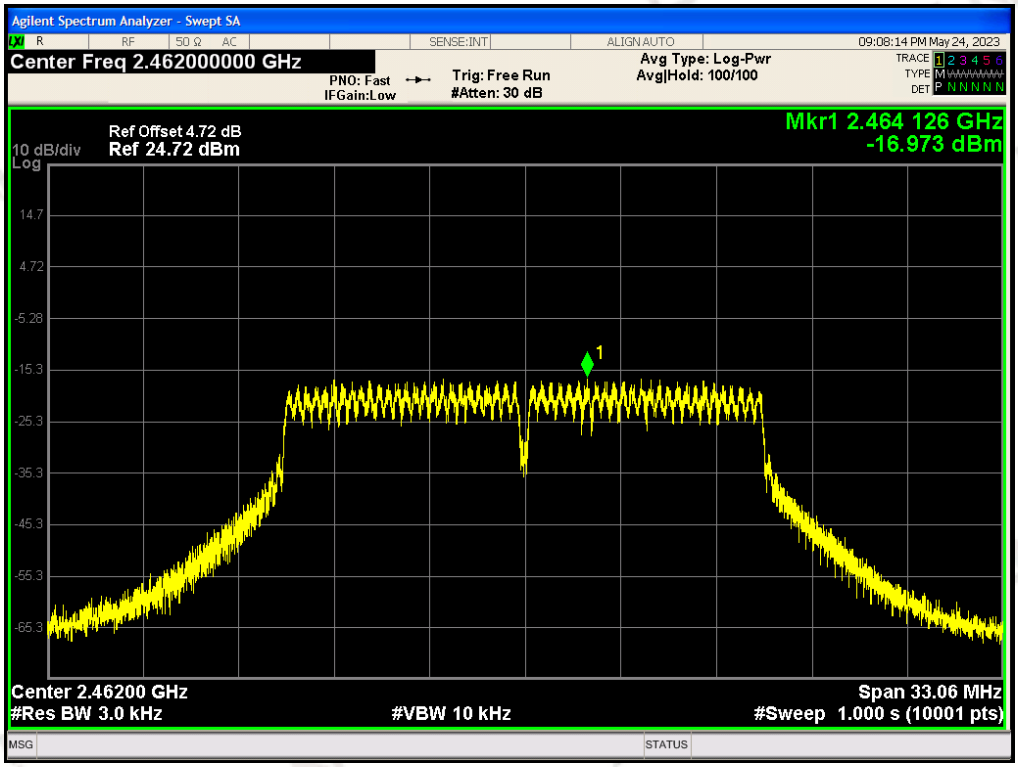
TX 802.11g Mode			
Frequency (MHz)	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-16.762	8	PASS
2437	-16.719	8	PASS
2462	-16.973	8	PASS



CH01: 2412MHz

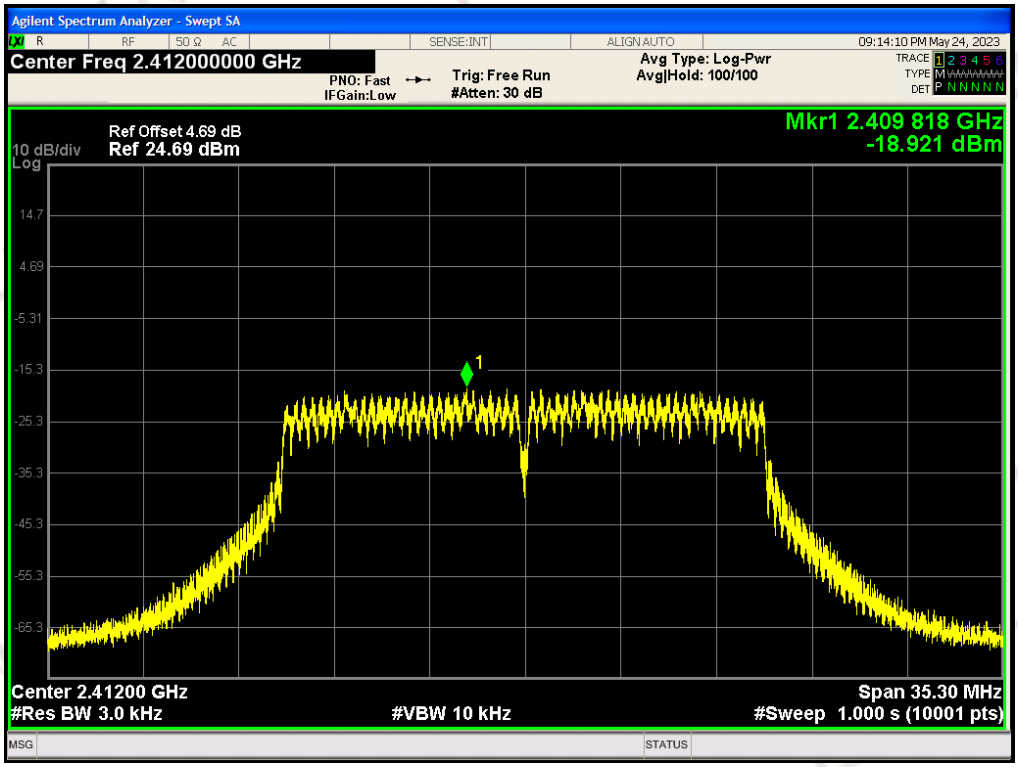


CH06: 2437MHz

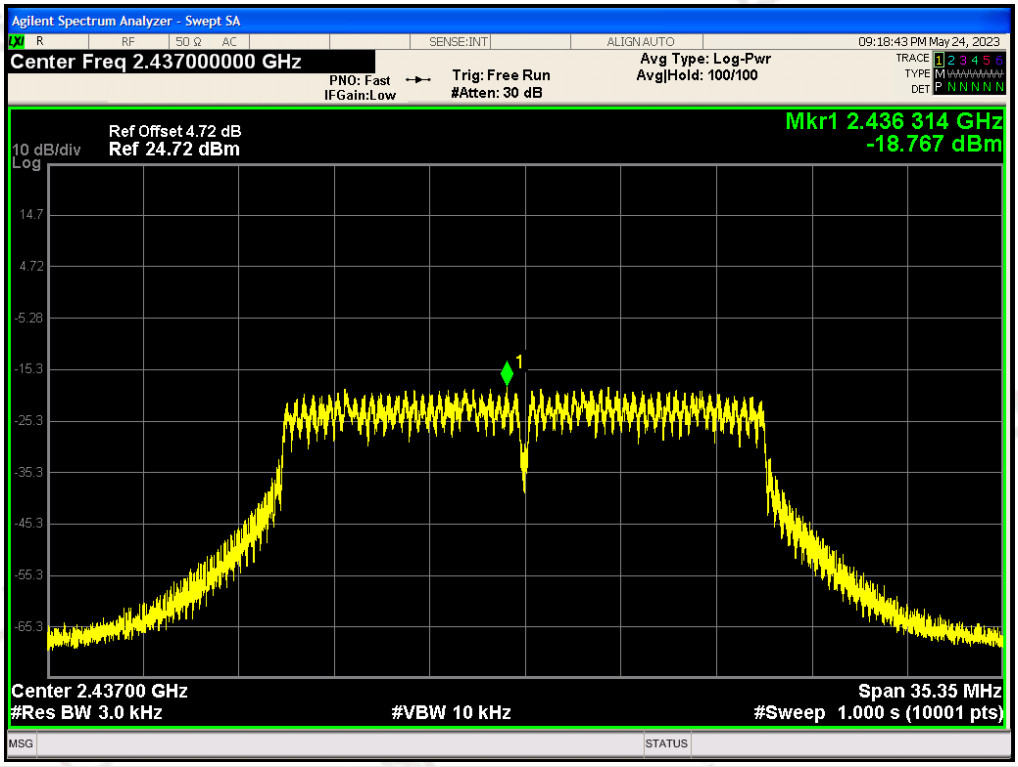


CH11: 2462MHz

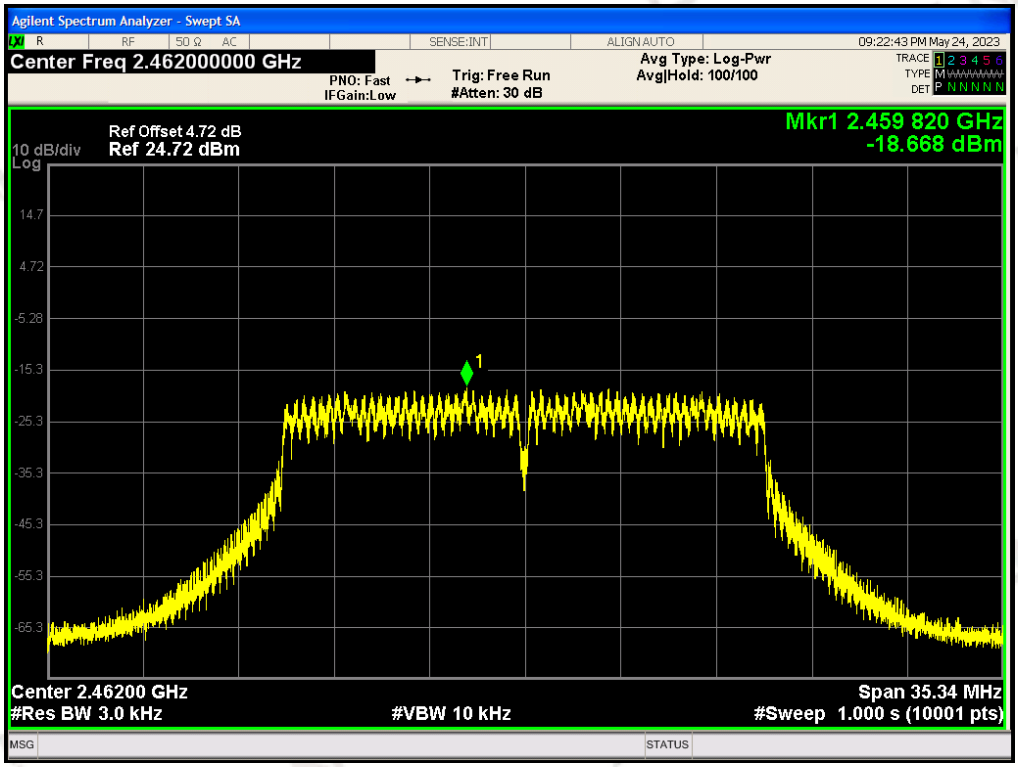
TX 802.11n/HT20 Mode			
Frequency (MHz)	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-18.921	8	PASS
2437	-18.767	8	PASS
2462	-18.668	8	PASS



CH01: 2412MHz

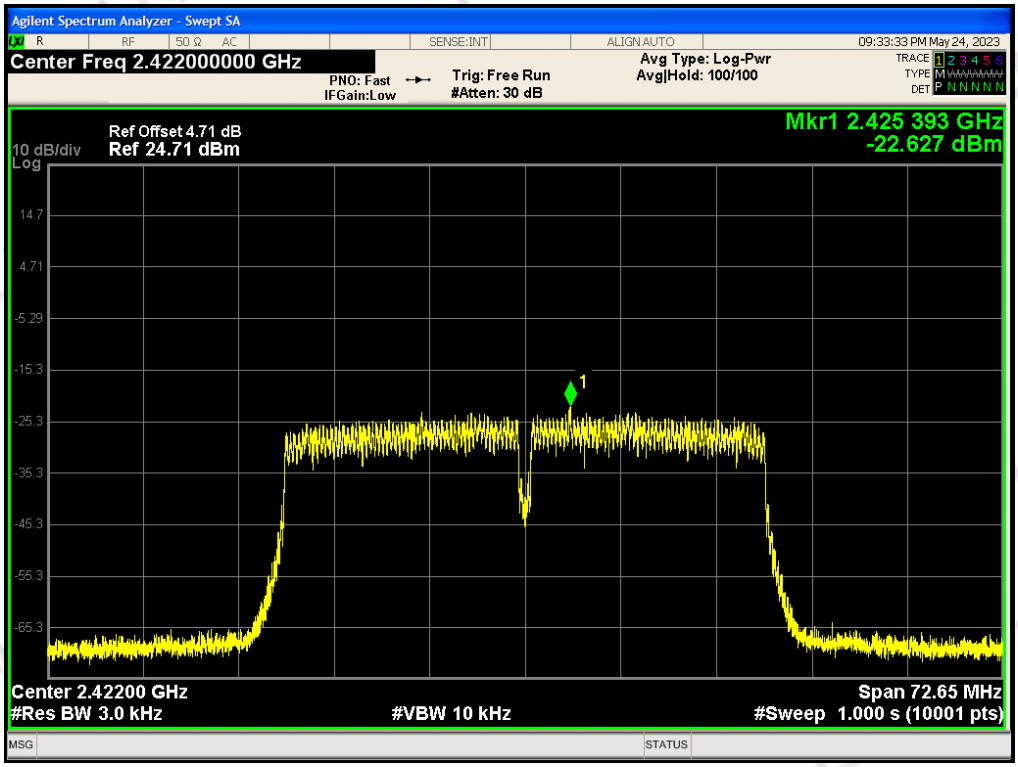


CH06: 2437MHz

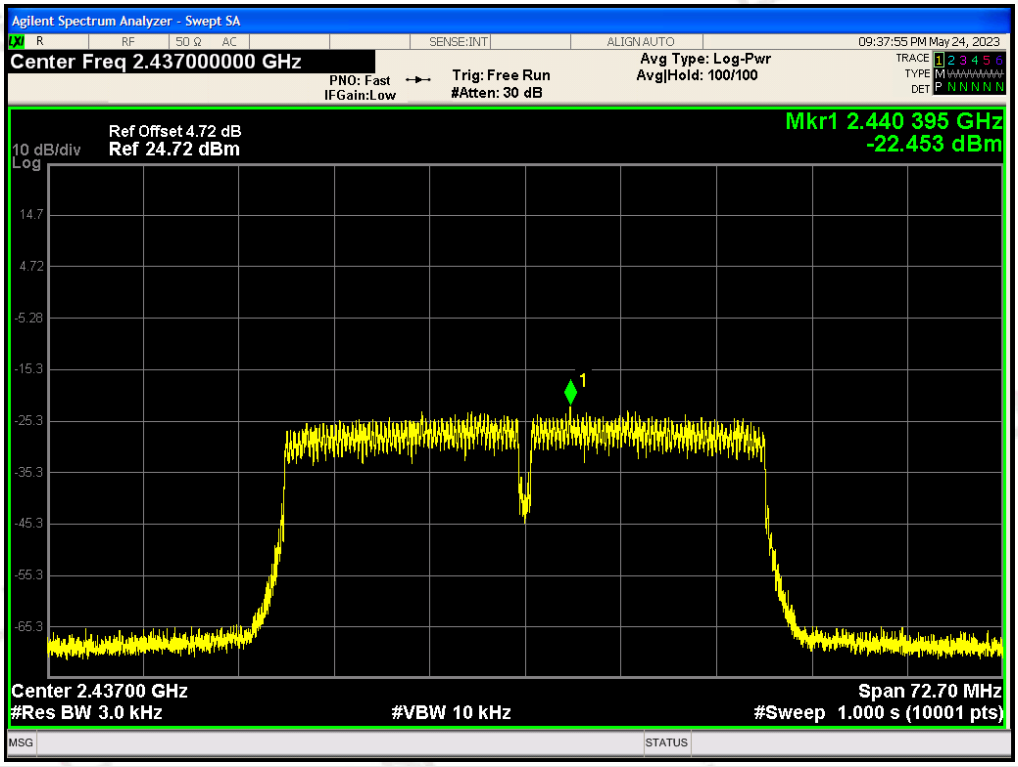


CH11: 2462MHz

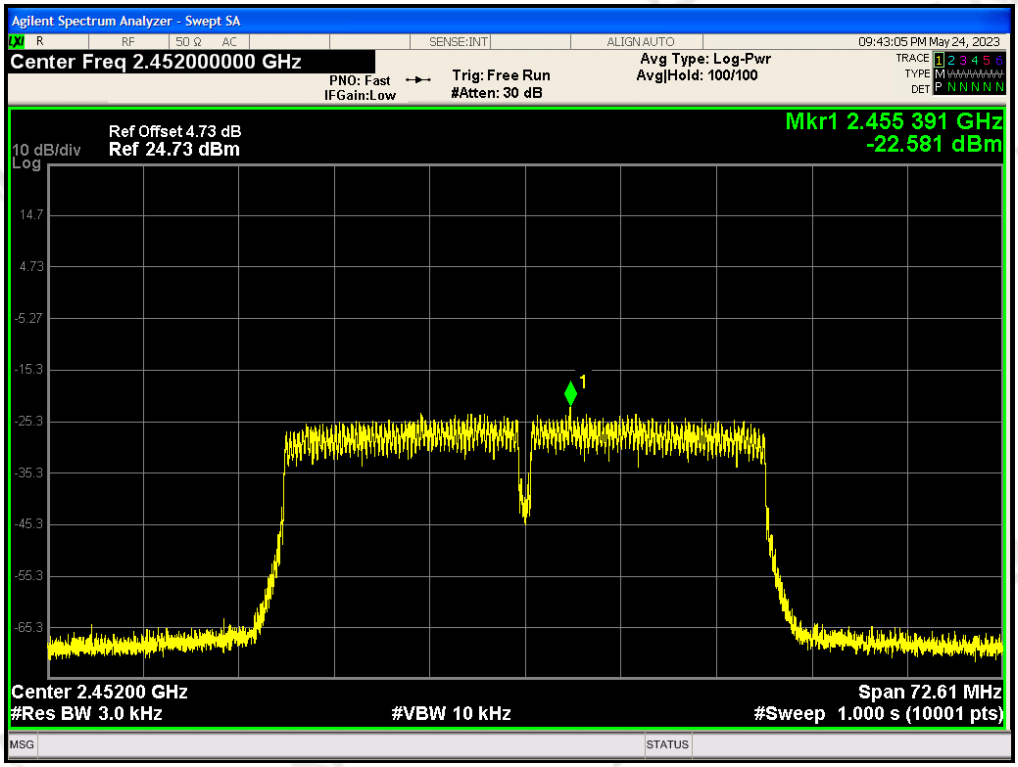
TX 802.11n/HT40 Mode			
Frequency (MHz)	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2422	-22.627	8	PASS
2437	-22.453	8	PASS
2452	-22.581	8	PASS



CH03: 2422MHz



CH06: 2437MHz



CH09: 2452MHz

7 PEAK OUTPUT POWER

7.1 TEST 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

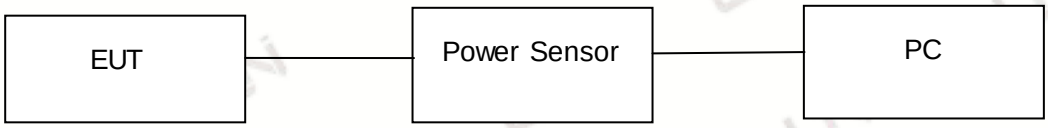
7.2 TEST PROCEDURE

For average power test:

1. Connect EUT RF output port to power sensor through an RF attenuator.
2. Connect the power sensor to the PC.
3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
4. Record the maximum power from the software.

Note：The EUT was tested according to ANSI C63.10 (2013) for compliance to FCC 47CFR 15.247 requirements.

7.3 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



7.4 EQUIPMENT USED

The same as described in section 2.7.

7.5 TEST RESULT

PASS

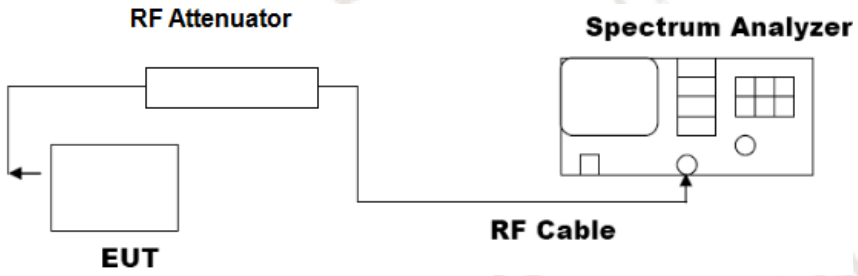
Test Mode	Frequency (MHz)	Maximum Peak Conducted Output Power(dBm)	Limit (dBm)
802.11b	2412	15.80	30
	2437	15.71	30
	2462	15.65	30
802.11g	2412	13.27	30
	2437	13.32	30
	2462	13.15	30
802.11n/HT20	2412	11.02	30
	2437	11.12	30
	2462	10.96	30
802.11n/HT40	2422	9.36	30
	2437	9.27	30
	2452	9.11	30

8 OUT OF BAND EMISSIONS

8.1 TEST LIMIT

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

8.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



8.3 TEST PROCEDURE

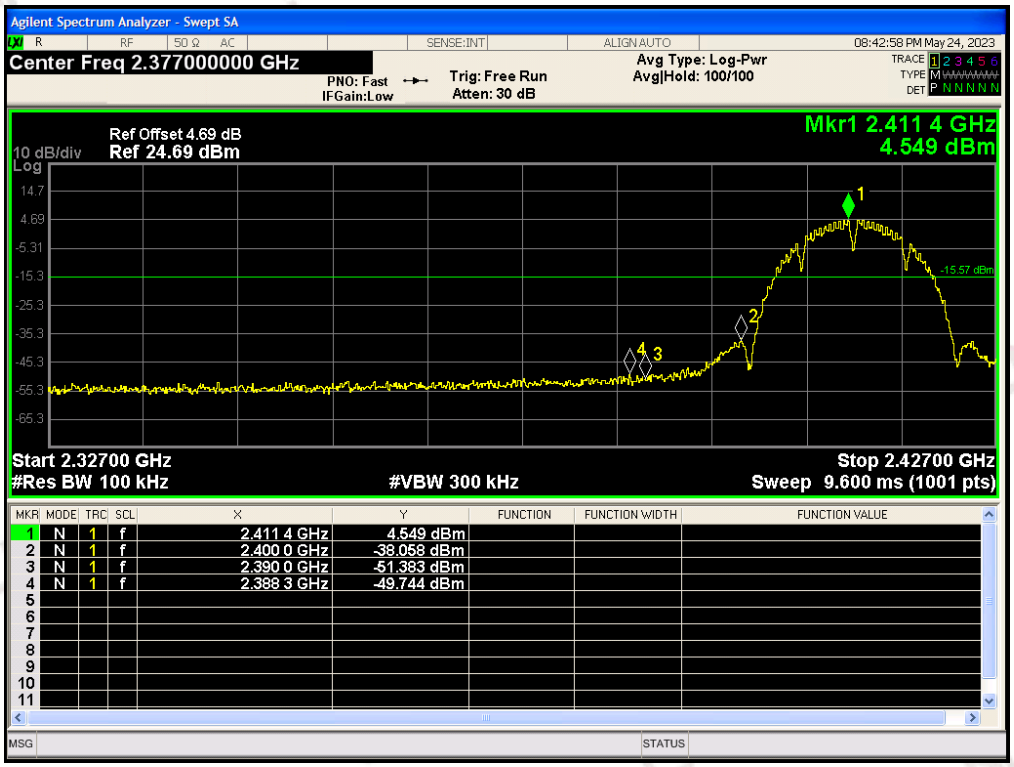
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as TX operation and connect directly to the spectrum analyzer.
3. Based on FCC Part15 C Section 15.247: RBW=100kHz, VBW=300kHz.
4. Set detected by the spectrum analyzer with peak detector.

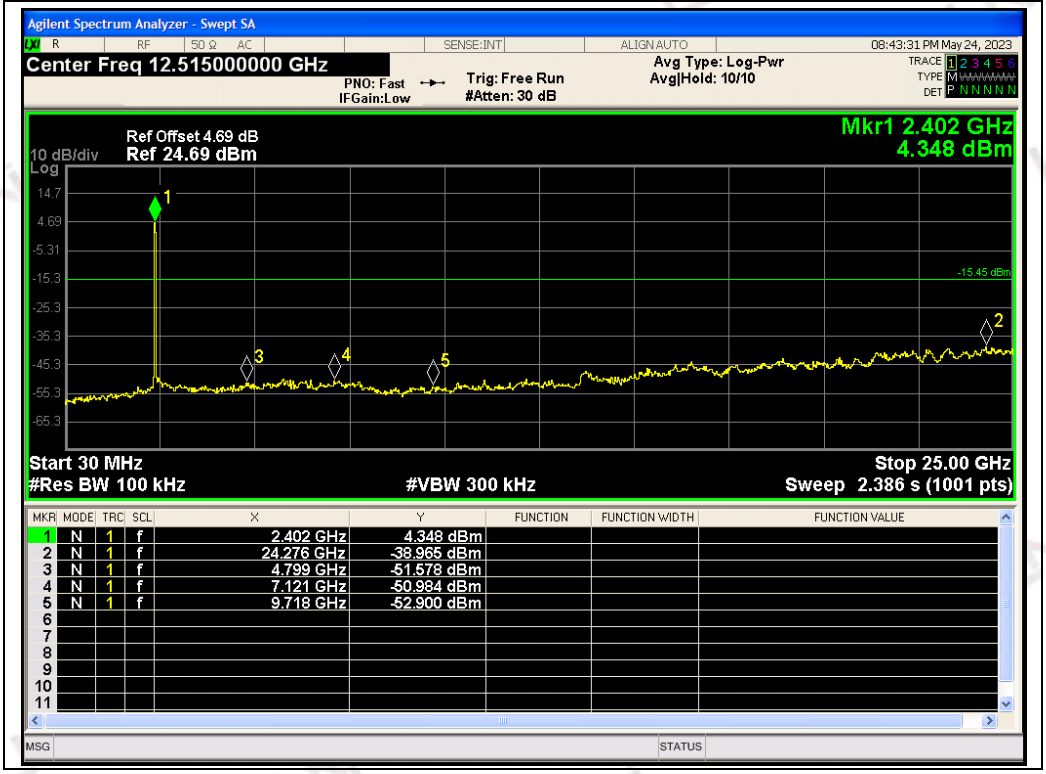
8.4 MEASUREMENT EQUIPMENT USED

The same as described in section 2.7.

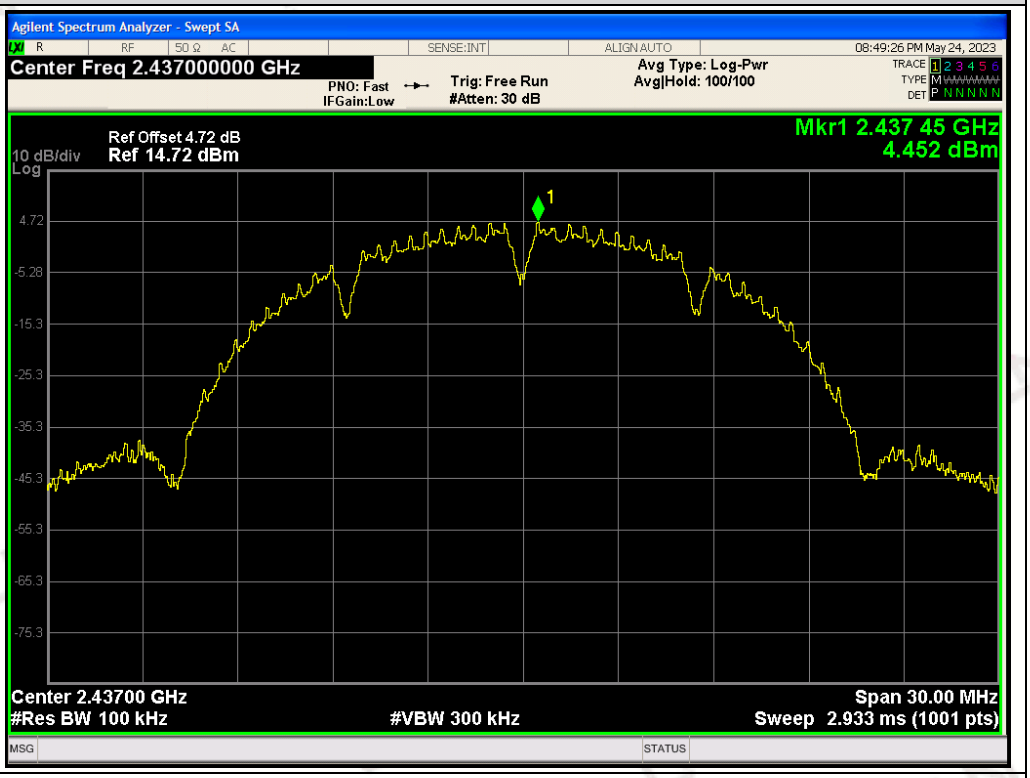
8.5 TEST RESULT

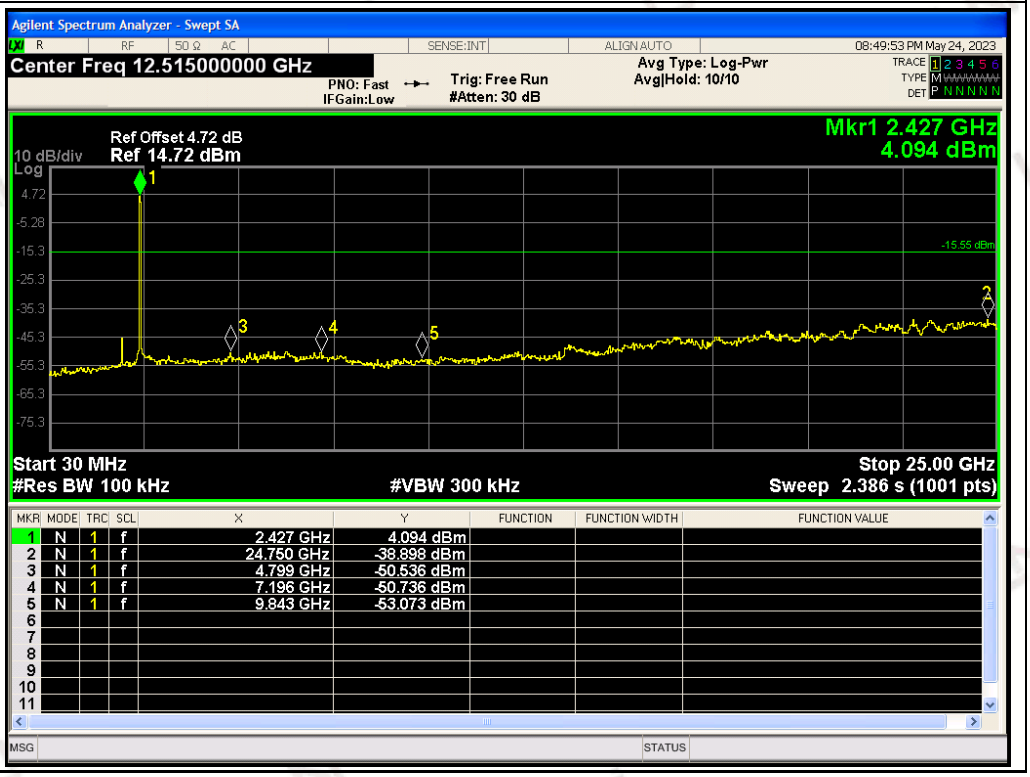
TX 802.11b Mode: CH01: 2412MHz





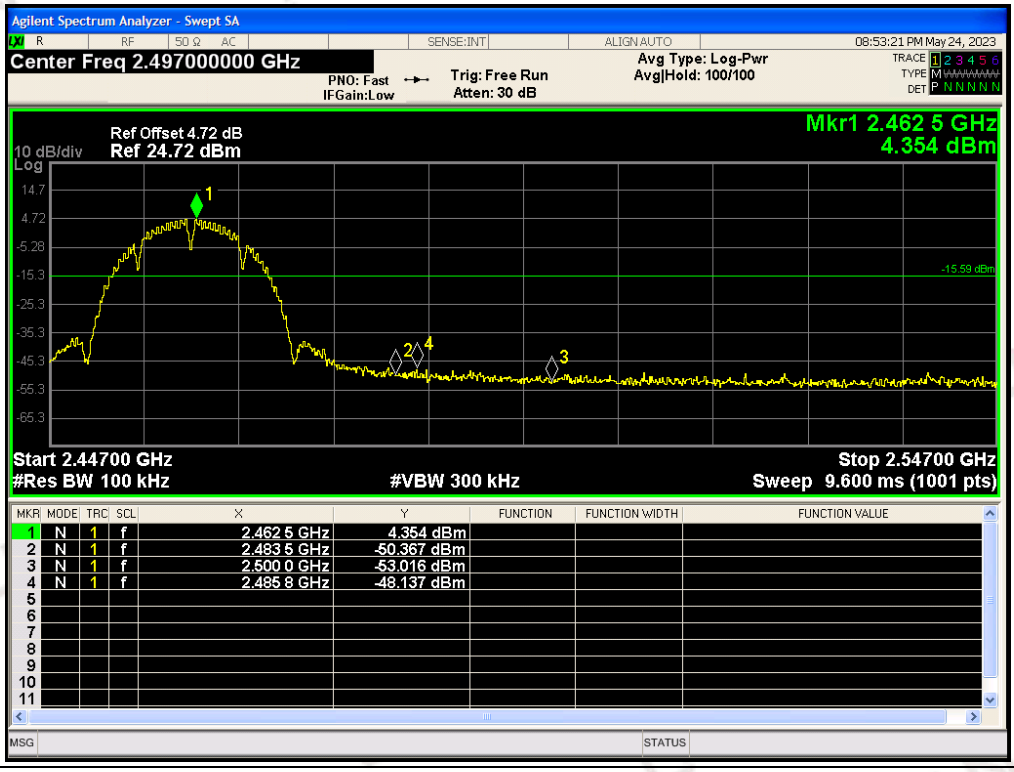
TX 802.11b Mode: CH06: 2437MHz

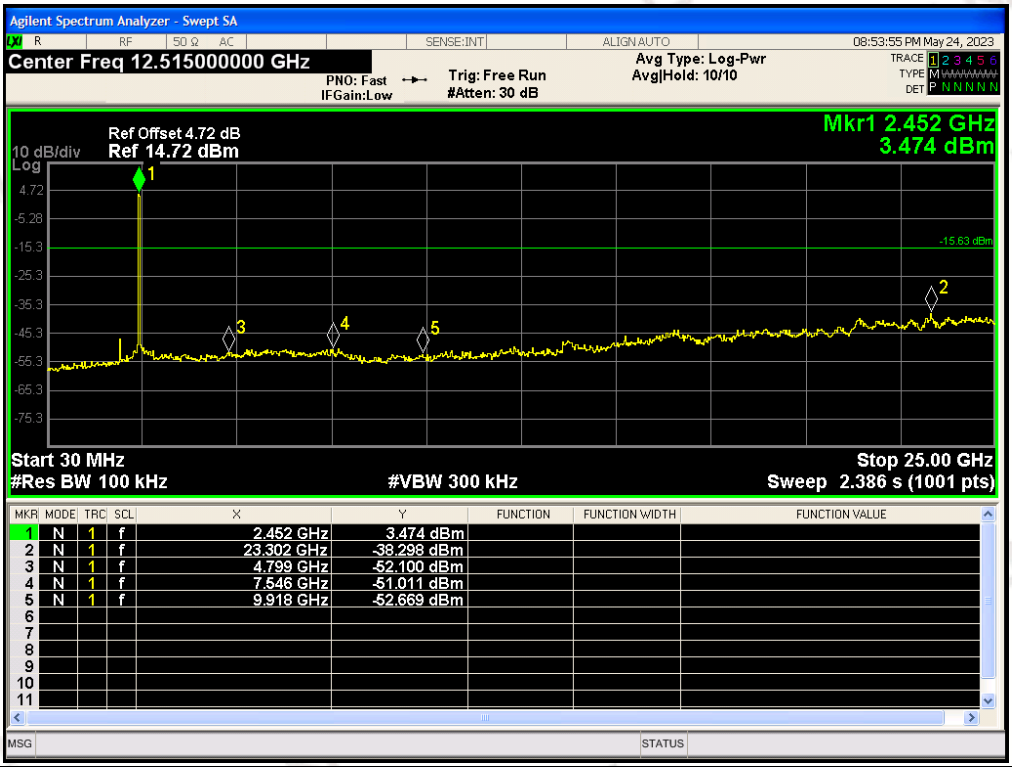




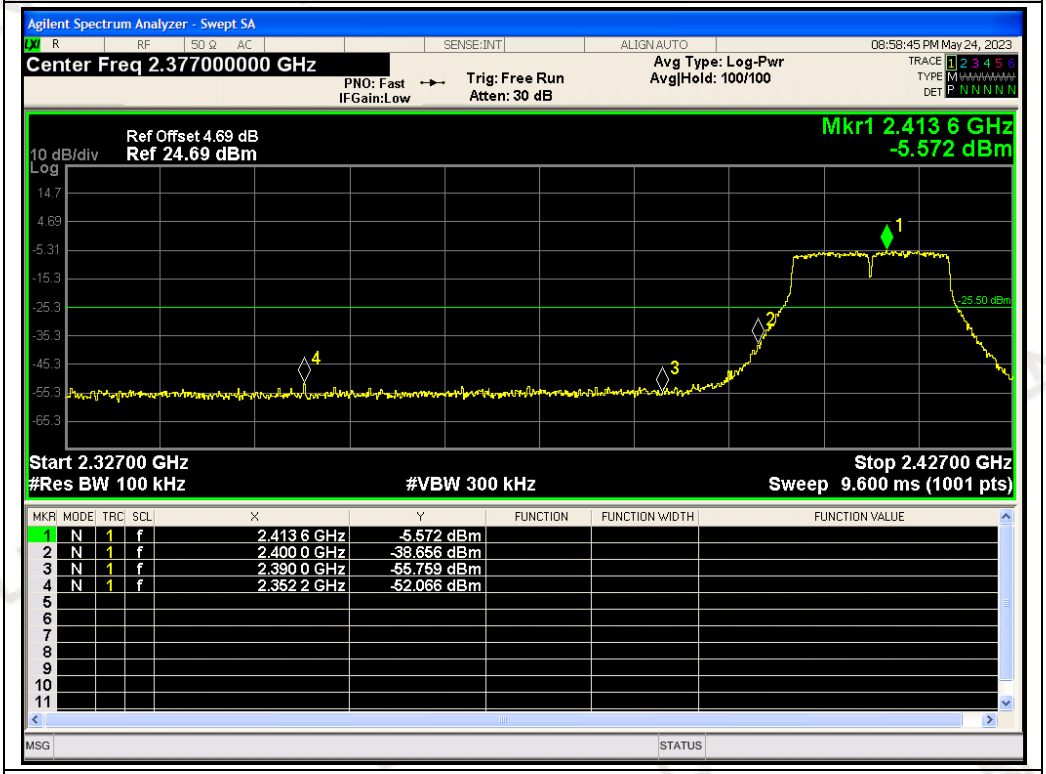
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.427 GHz	4.094 dBm			
2	N	1	f	24.750 GHz	-38.898 dBm			
3	N	1	f	4.799 GHz	-50.536 dBm			
4	N	1	f	7.196 GHz	-50.736 dBm			
5	N	1	f	9.843 GHz	-53.073 dBm			
6								
7								
8								
9								
10								
11								

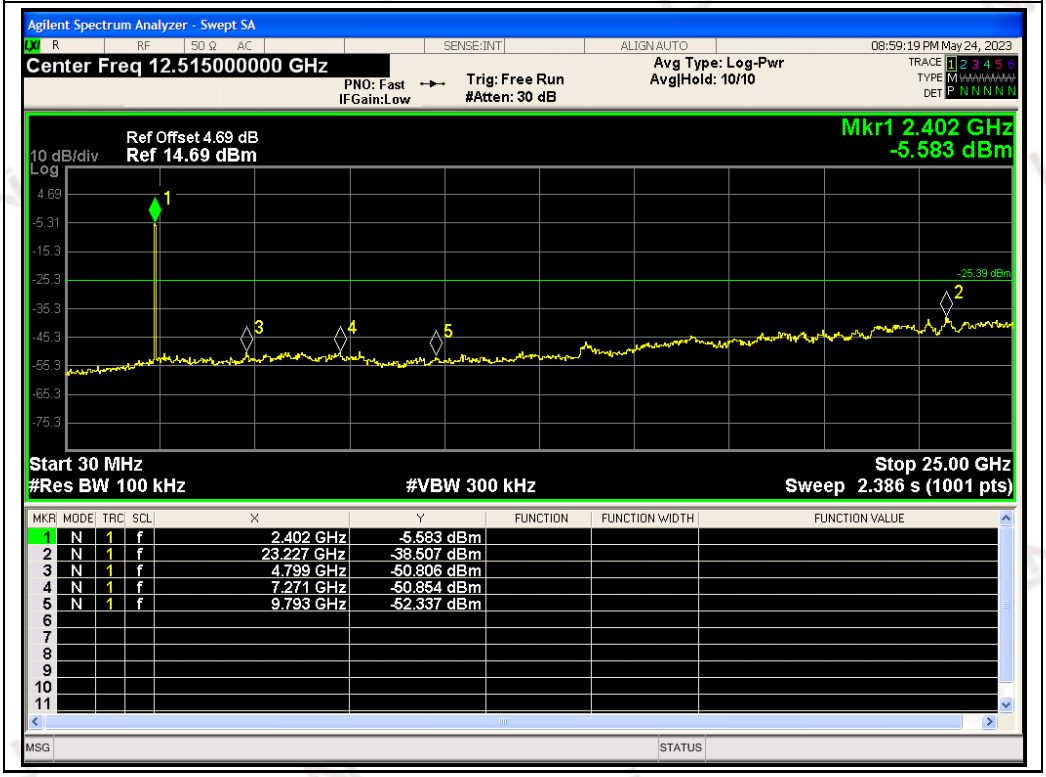
TX 802.11b Mode: CH11: 2462MHz



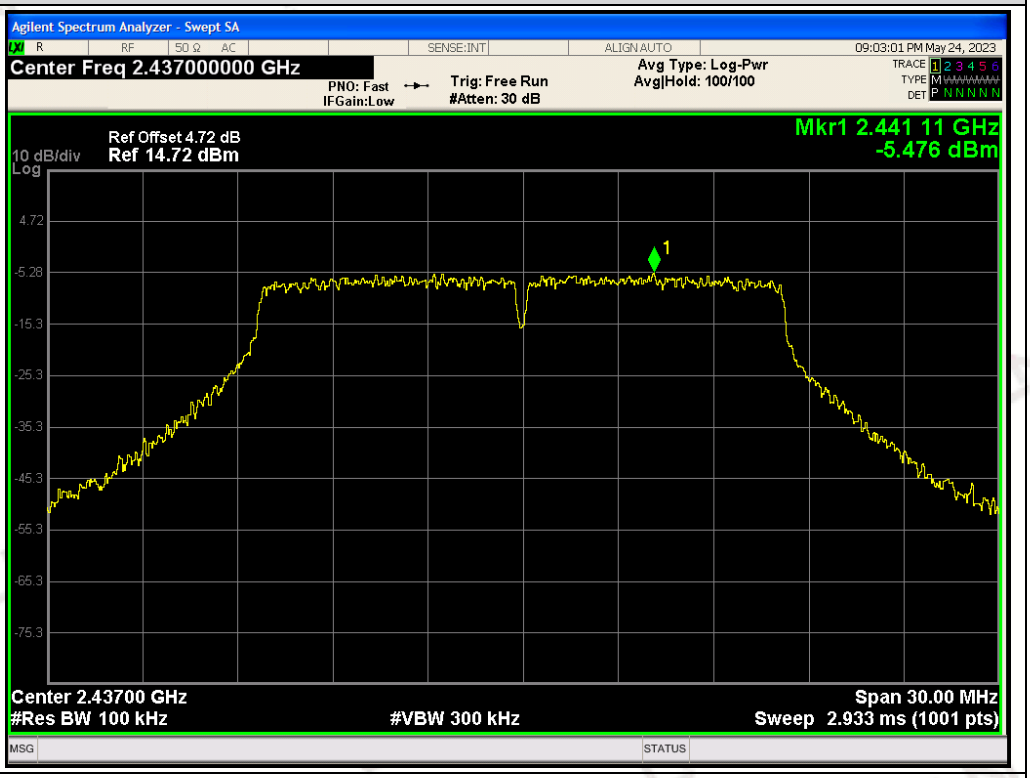


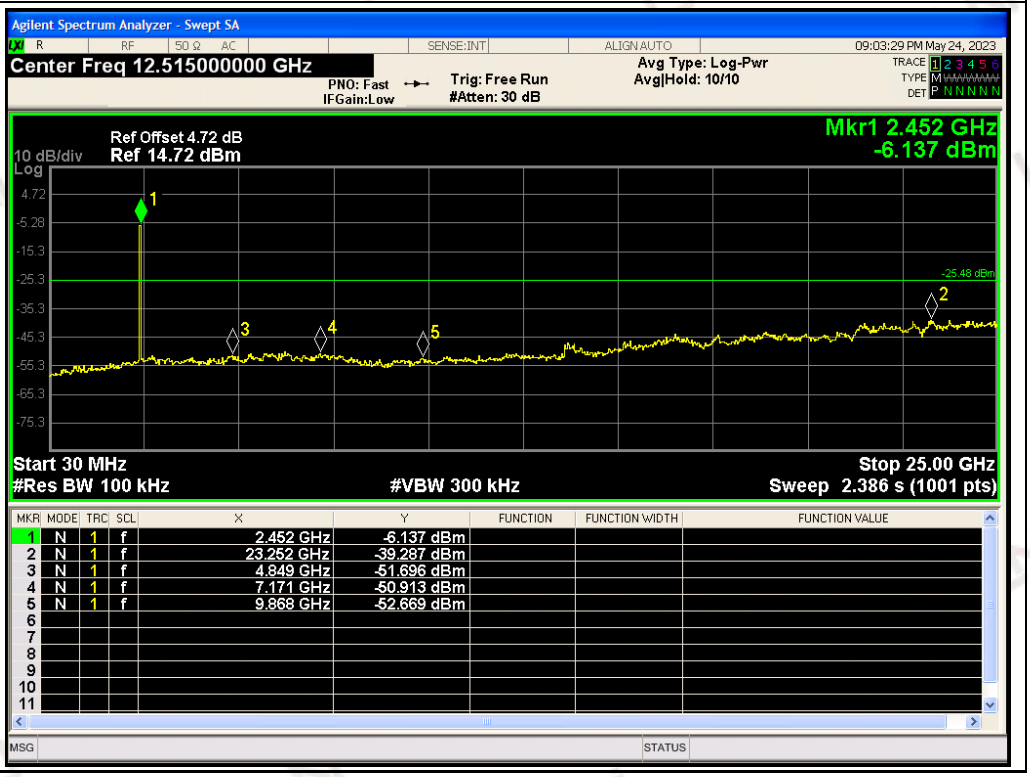
TX 802.11g Mode: CH01: 2412MHz





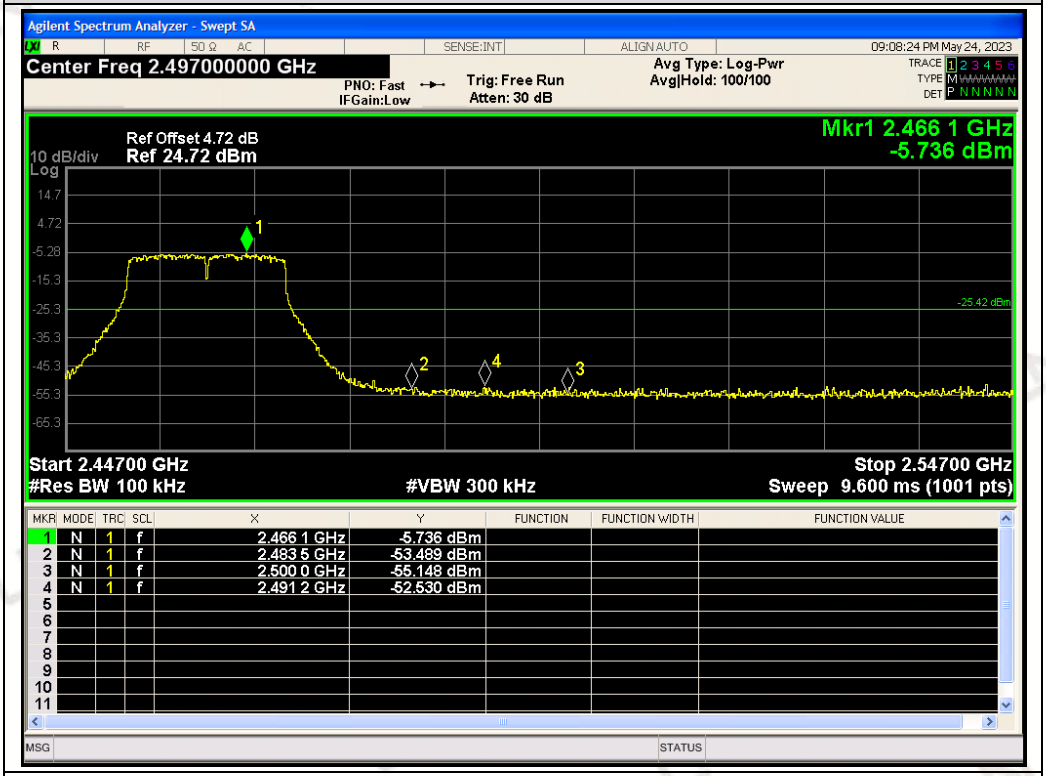
TX 802.11g Mode: CH06: 2437MHz

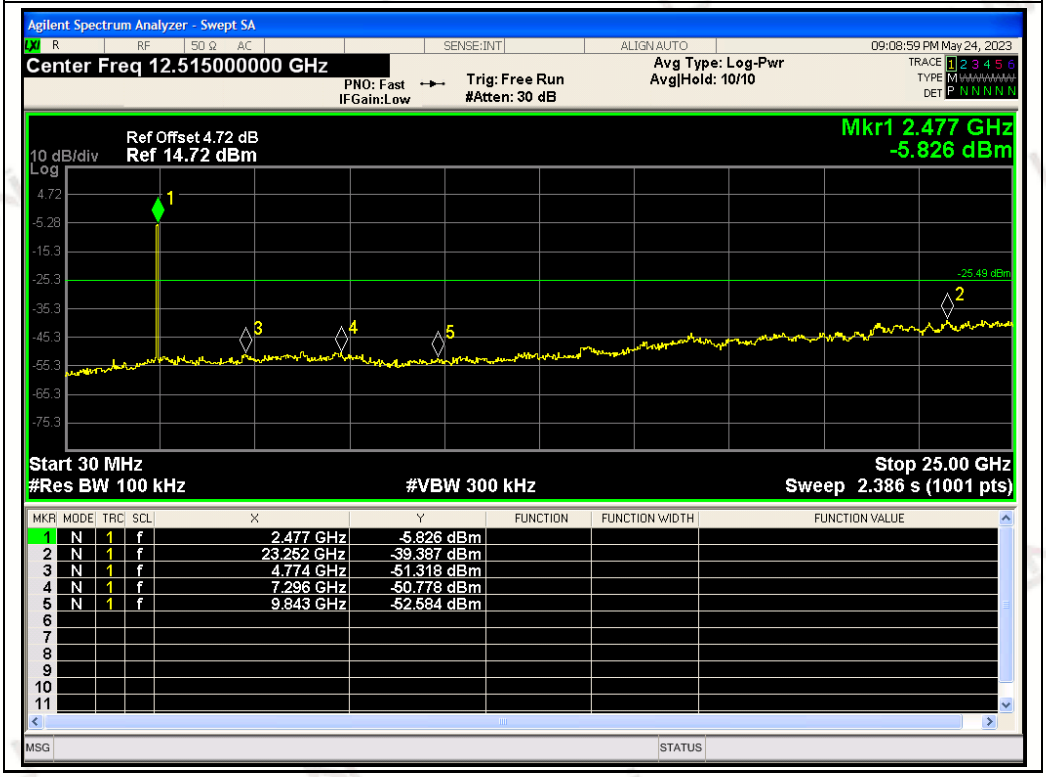




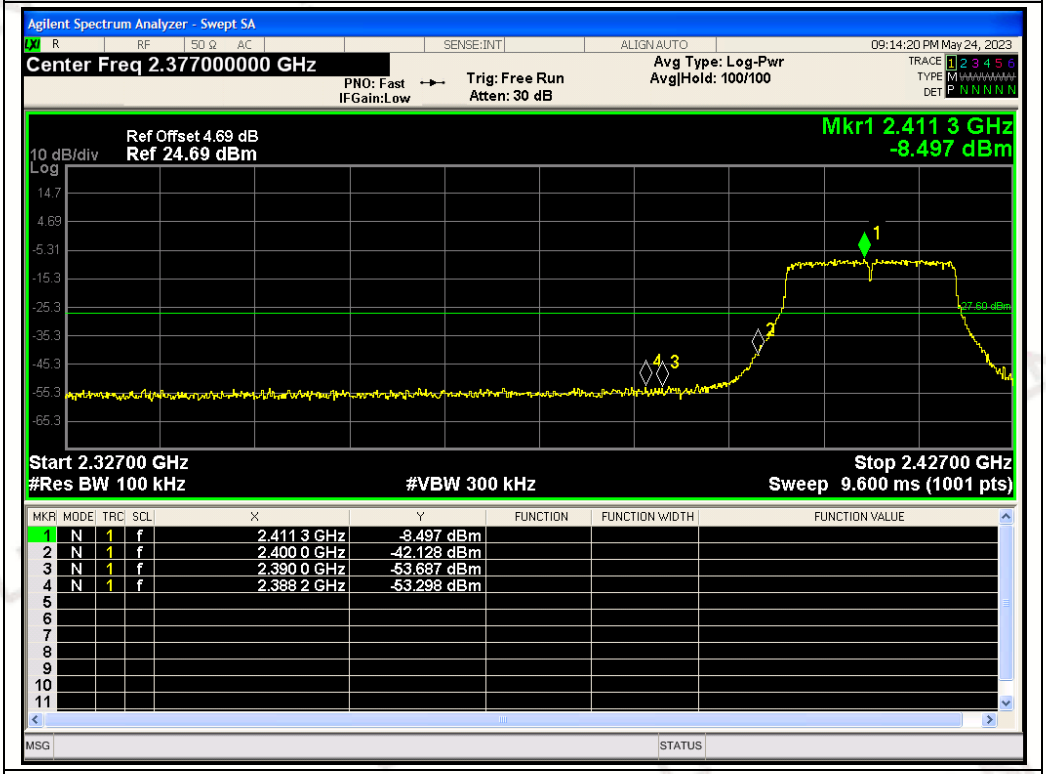
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.452 GHz	-6.137 dBm			
2	N	1	f	23.252 GHz	-39.287 dBm			
3	N	1	f	4.849 GHz	-51.696 dBm			
4	N	1	f	7.171 GHz	-50.913 dBm			
5	N	1	f	9.868 GHz	-52.669 dBm			

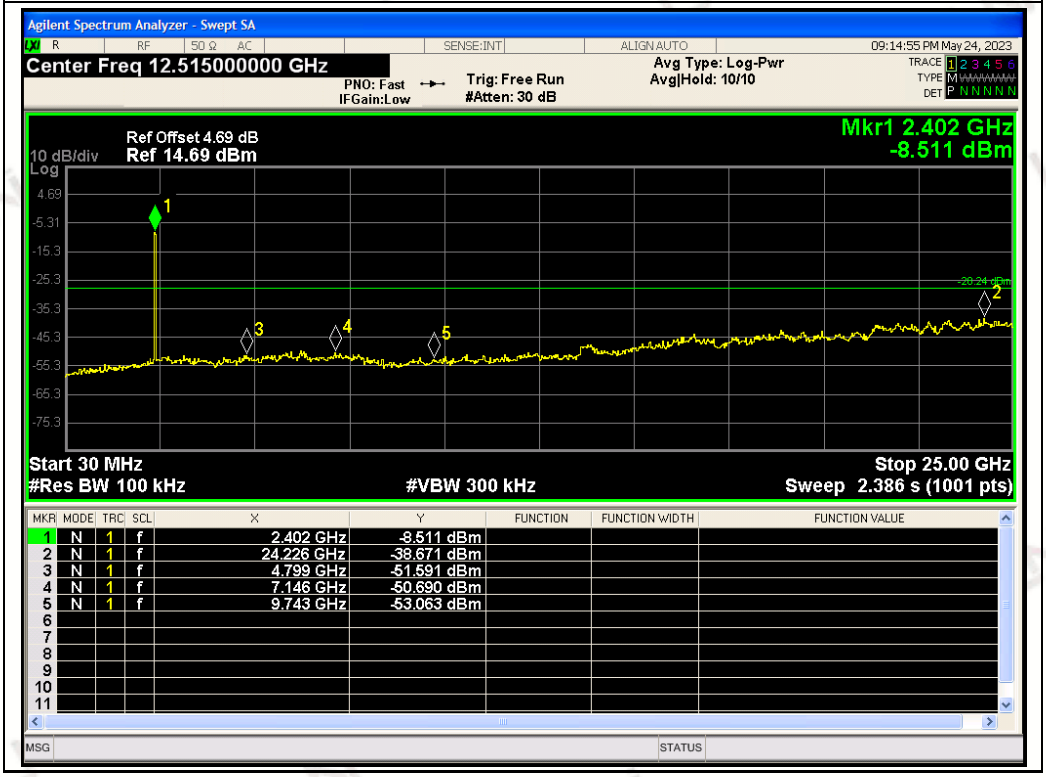
TX 802.11g Mode: CH11: 2462MHz



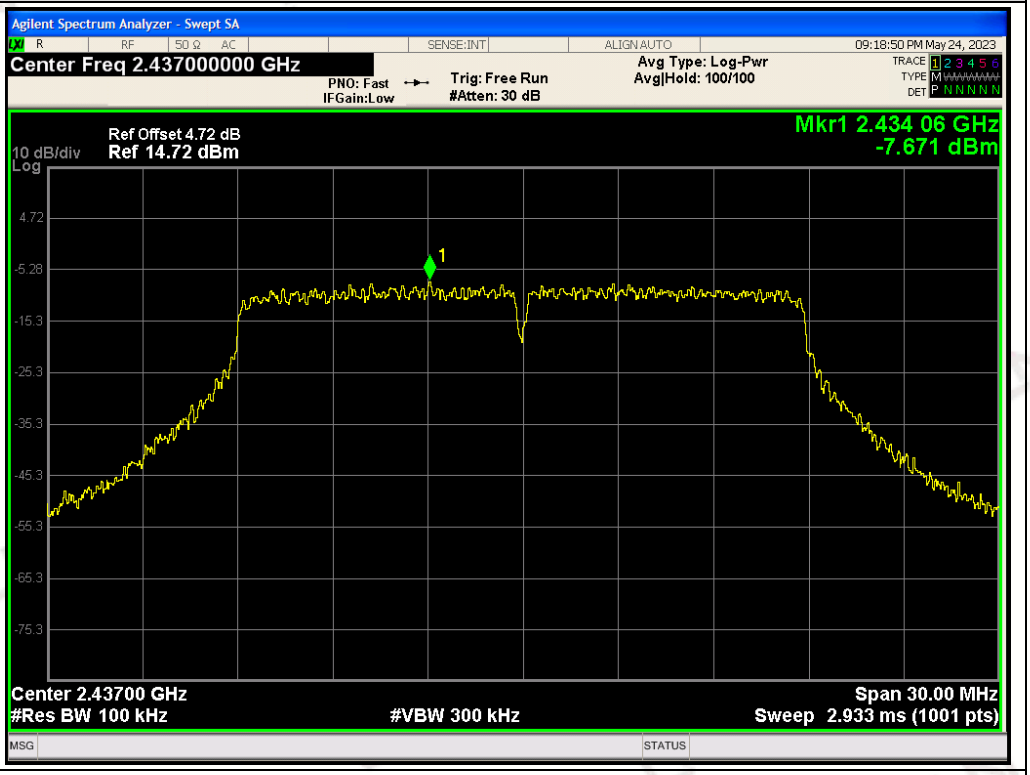


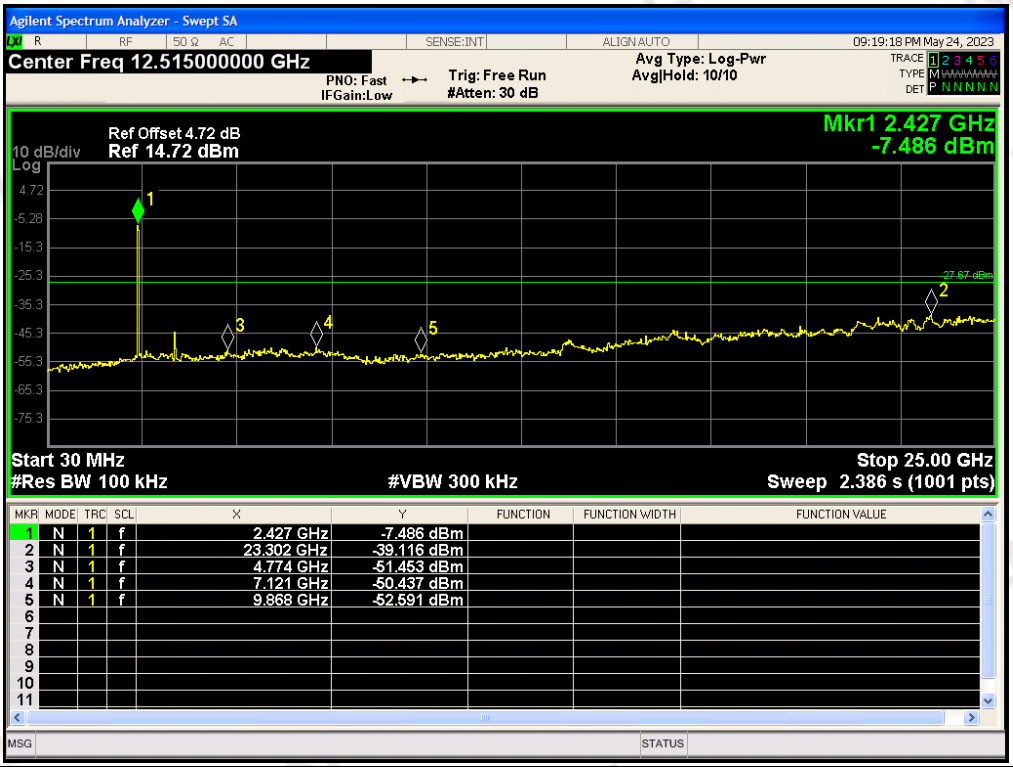
TX 802.11n/HT20 Mode: CH01: 2412MHz





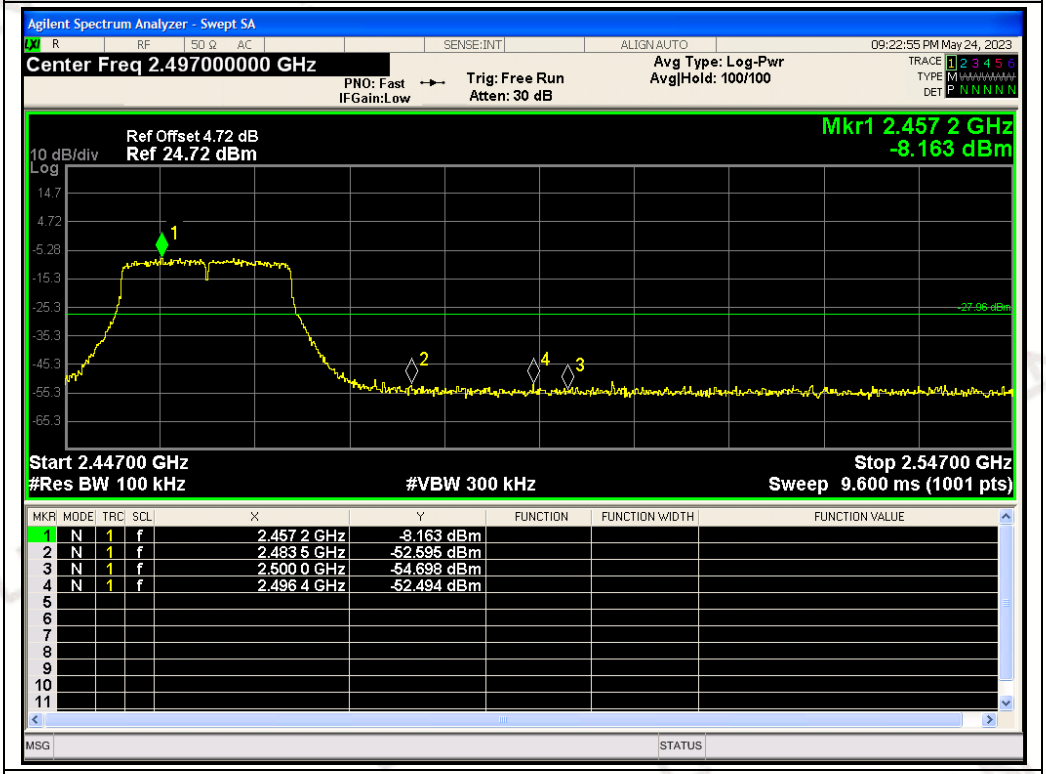
TX 802.11n/HT20 Mode: CH06: 2437MHz

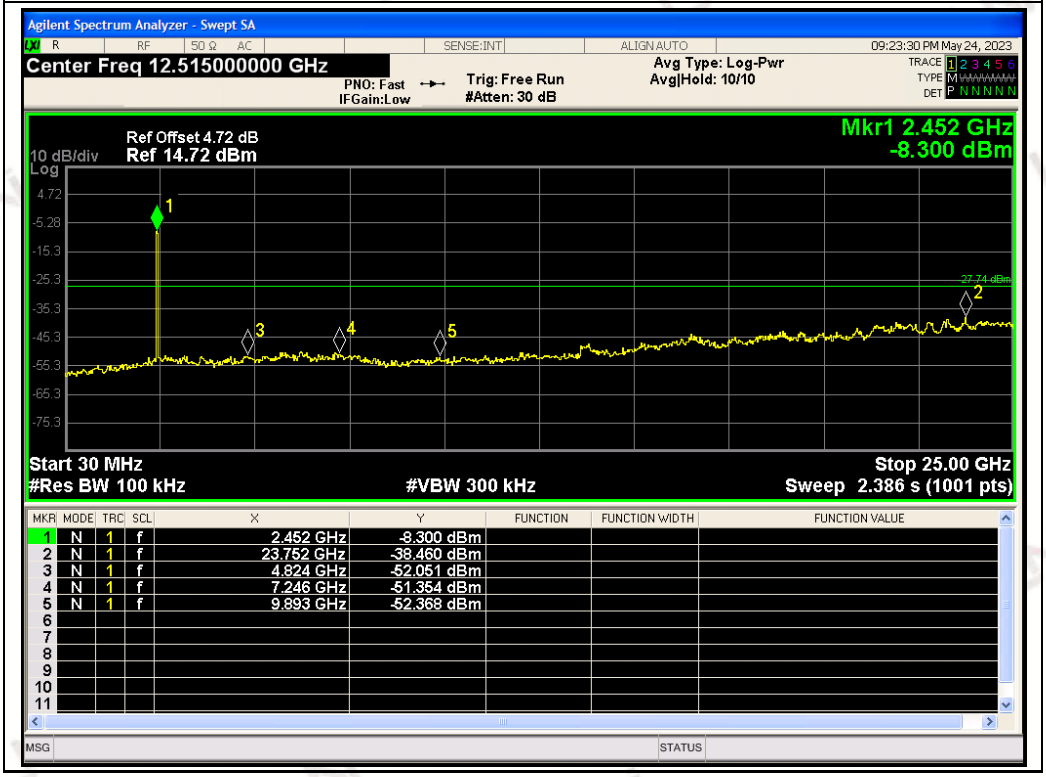




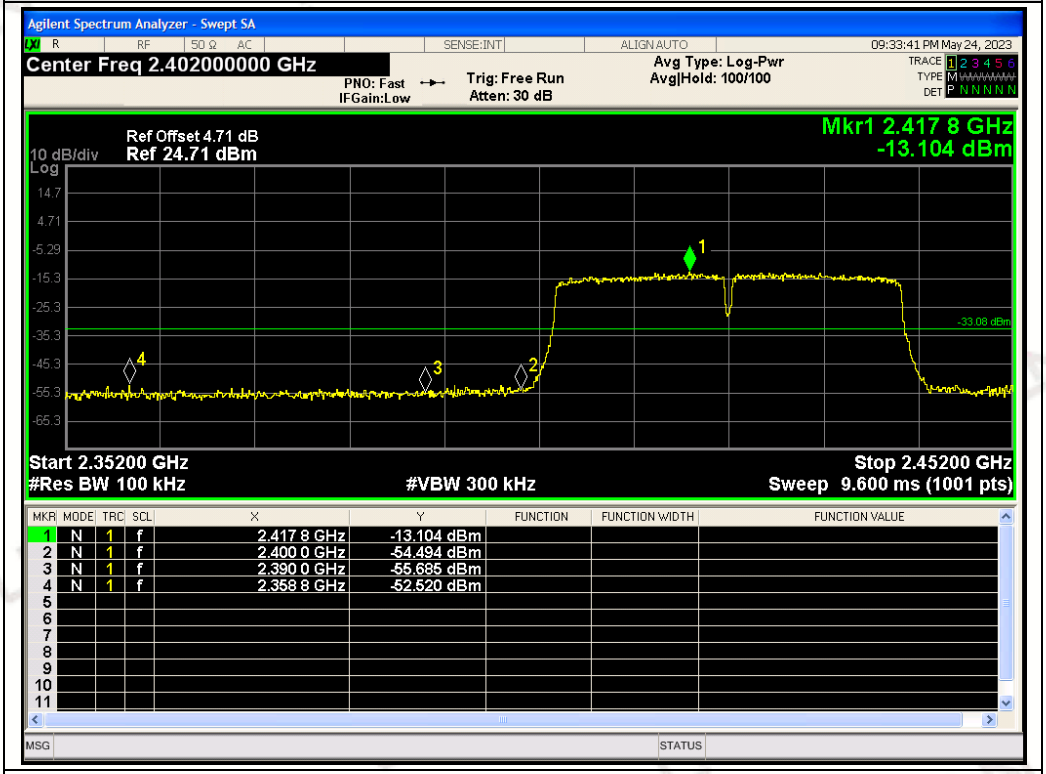
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.427 GHz	-7.486 dBm			
2	N	1	f	23.302 GHz	-39.116 dBm			
3	N	1	f	4.774 GHz	-51.453 dBm			
4	N	1	f	7.121 GHz	-50.437 dBm			
5	N	1	f	9.868 GHz	-52.591 dBm			

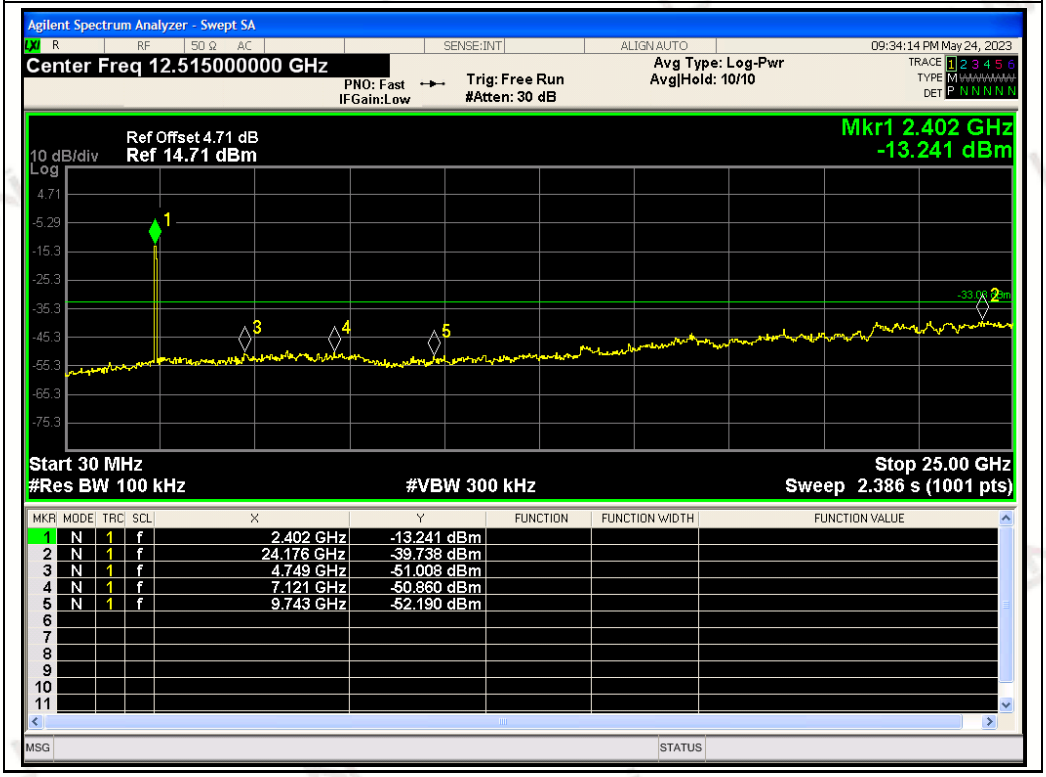
TX 802.11n/HT20 Mode: CH11: 2462MHz



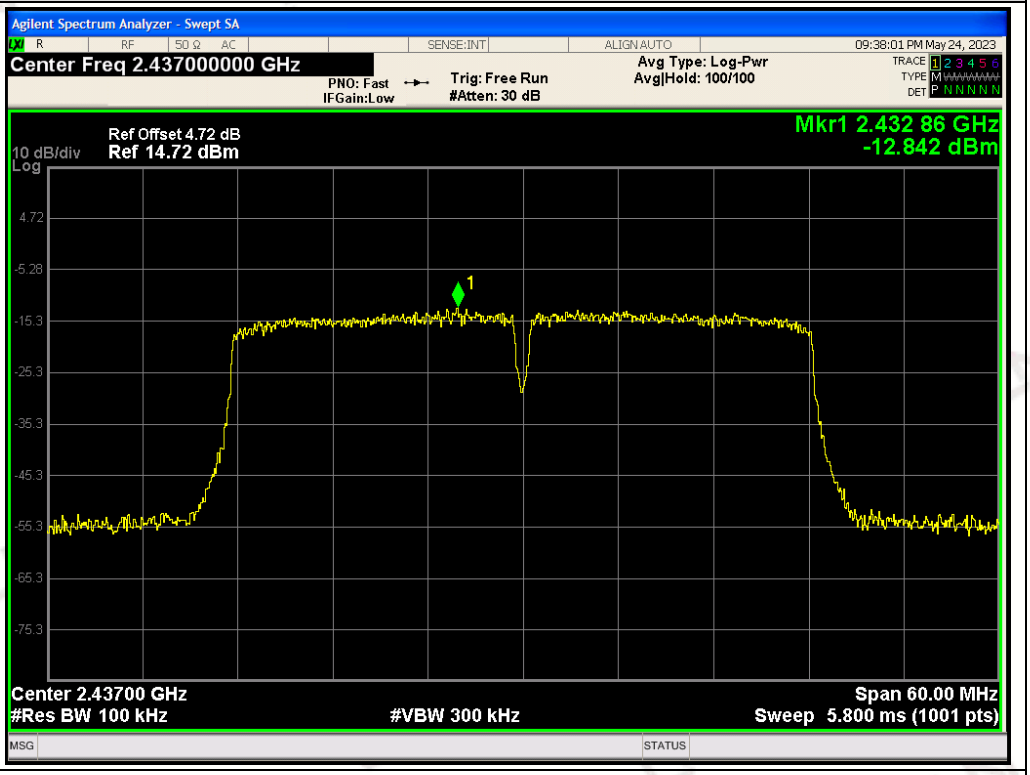


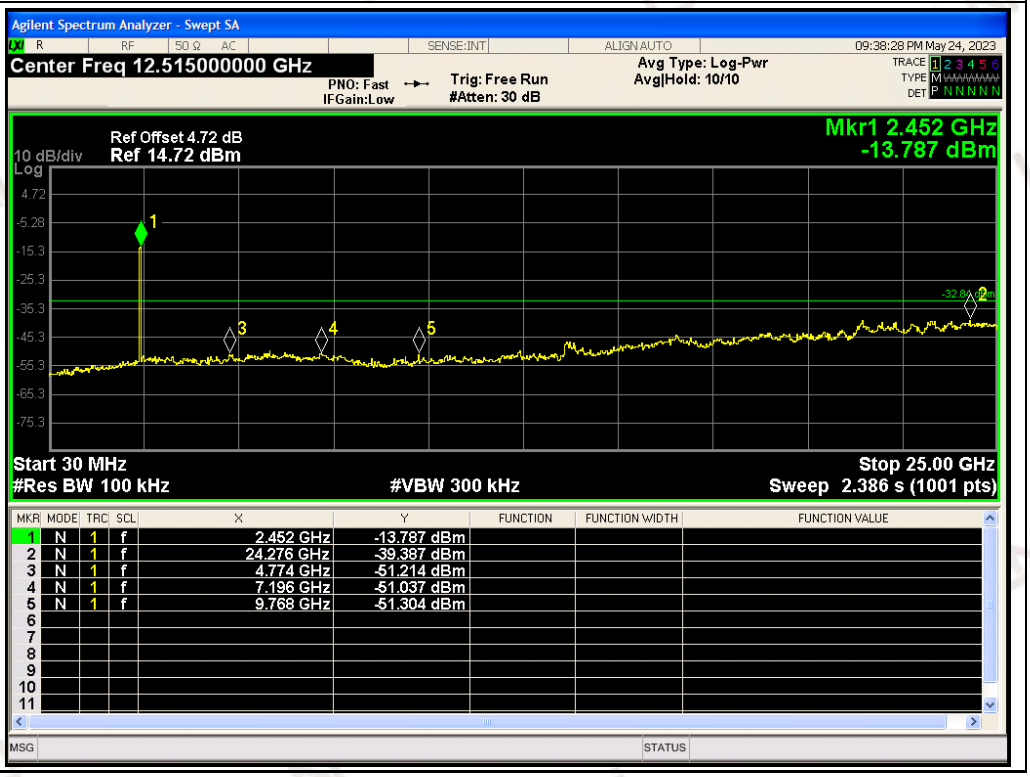
TX 802.11n/HT40 Mode: CH03: 2422MHz



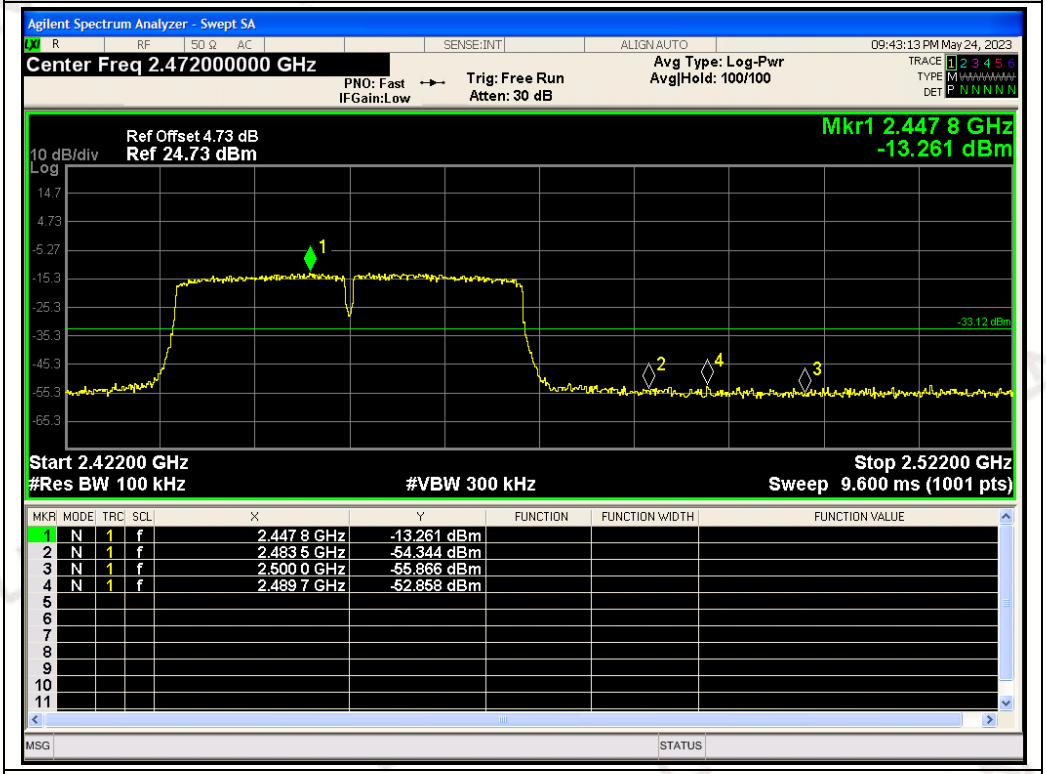


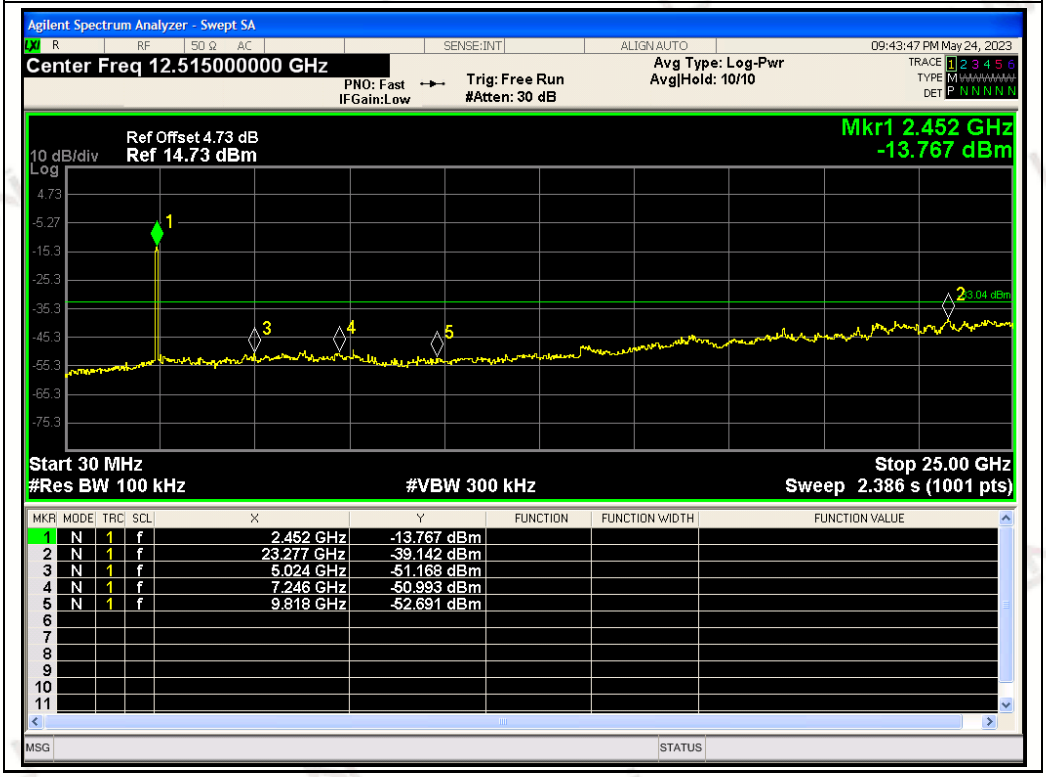
TX 802.11n/HT40 Mode: CH06: 2437MHz





TX 802.11n/HT40 Mode: CH09: 2452MHz



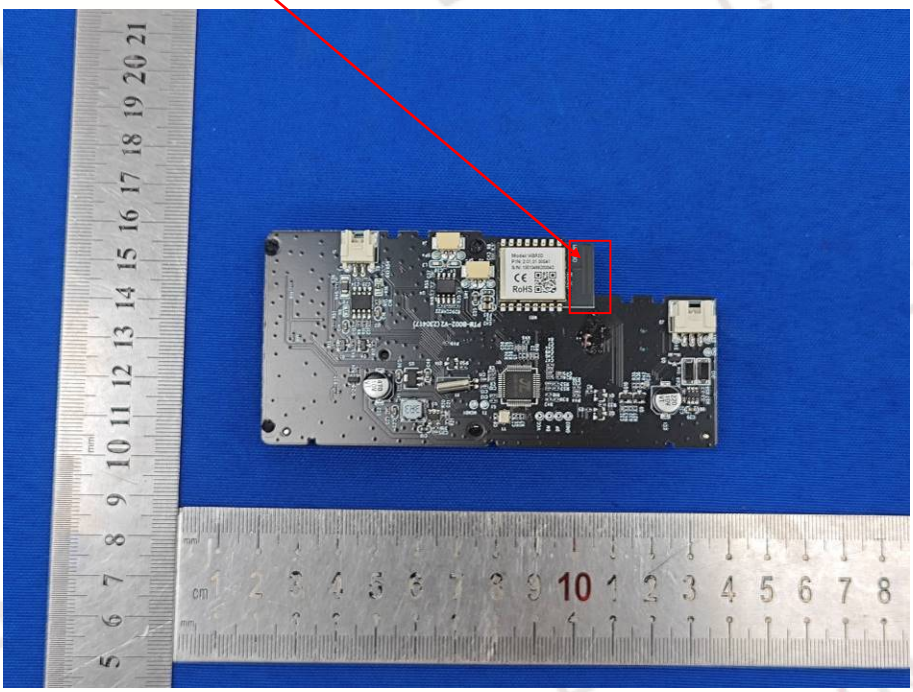


9 ANTENNA REQUIREMENT

Standard Applicable:
For intentional device, according to FCC 47 CFR Section 15.203, 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.

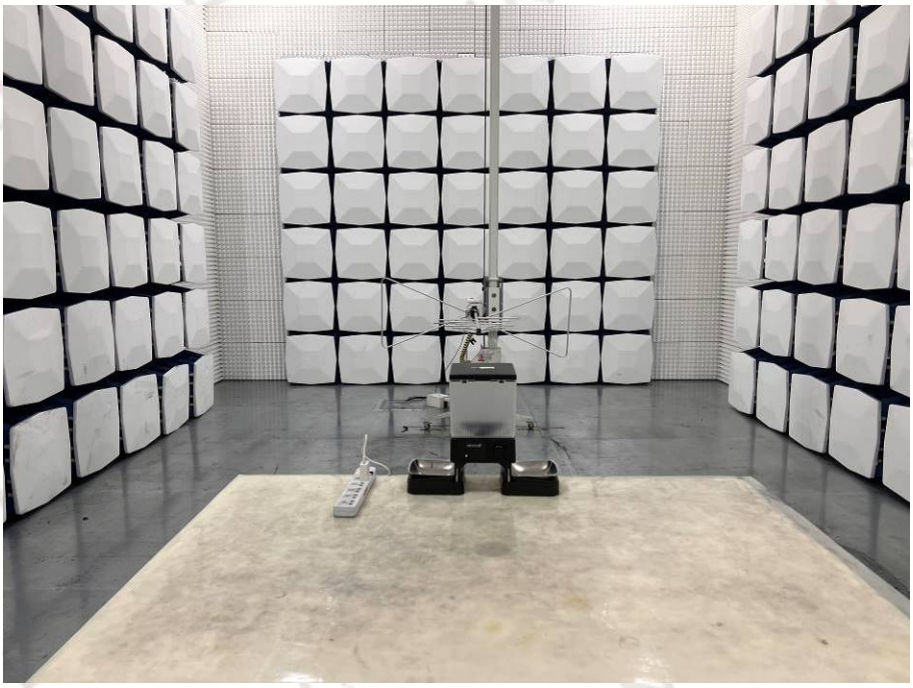
Antenna Connected Construction
The antenna used in this product is a PCB Antenna.

ANTENNA:

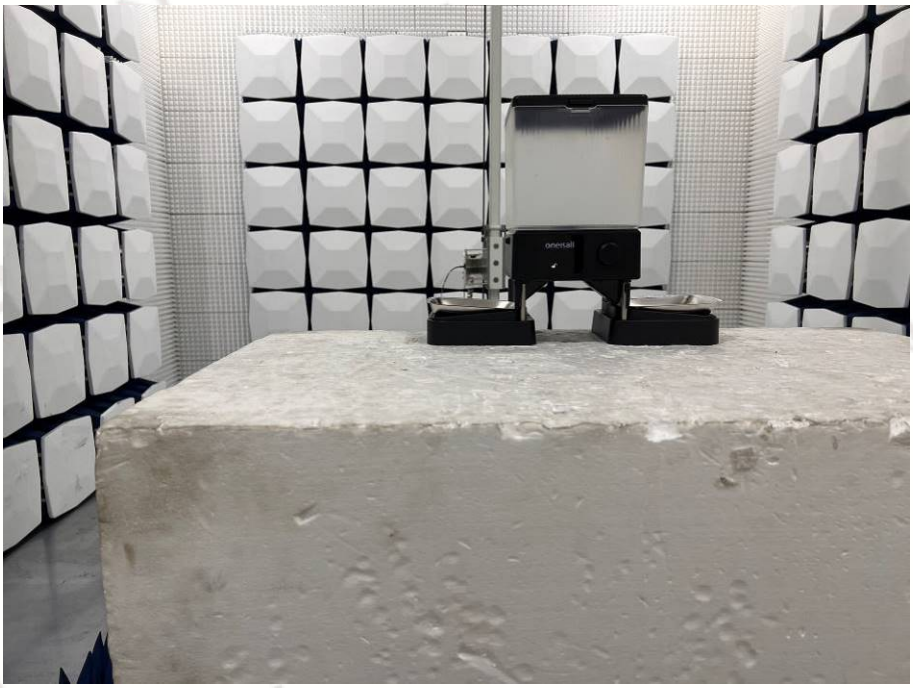


10 PHOTO OF TEST

RADIATED EMISSION

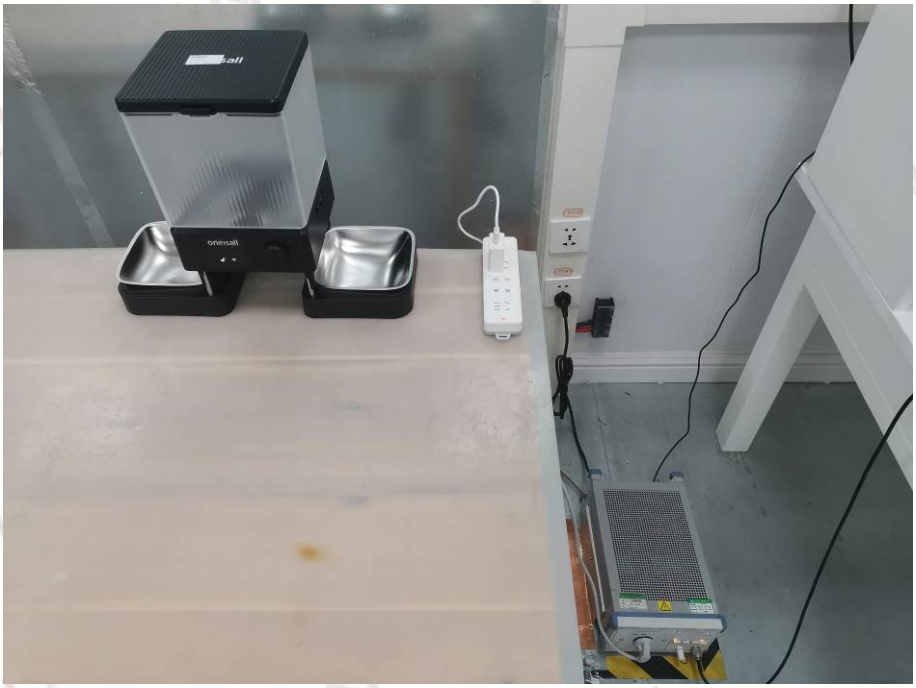


30MHz-1000MHz

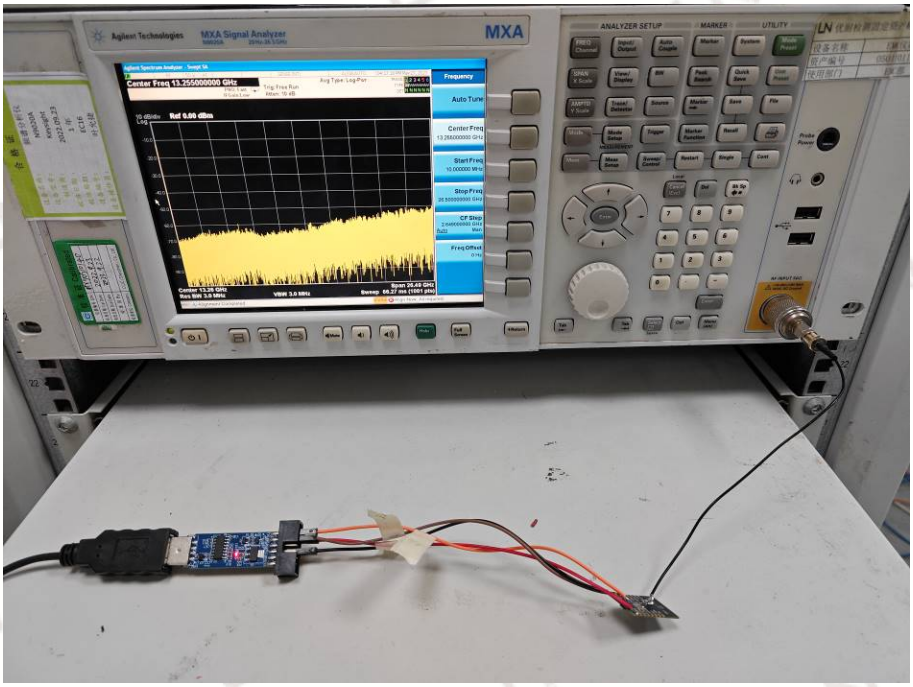


Above 1GHz

CONDUCTED EMISSION



RF CONDUCTED



End of Report