Shenzhen Huaxin Information Technology Service Co., Ltd

101, R & D Building, No.3 guansheng 4th Road, Luhu Community, Guanhu Street, Longhua District, Shenzhen, Guangdong, China

Tel: +86-755-21018313 Http: //www.tecovo.net

TEST REPORT

Report No. ·····:	**HX250801R004**
FCC ID·····:	**2BQVP-ZPHD-0320**
Applicant·····:	**Dongguan Zhiping Interactive Technology Co., LTD**
Address·····:	Room 301, Building 5, No.30, Lianxing Road, Wulian Village, Fenggang Town, Dongguan City, Guangdong Province, China
Manufacturer·····:	Dongguan Zhiping Interactive Technology Co., LTD
Address·····:	Room 301, Building 5, No.30, Lianxing Road, Wulian Village, Fenggang Town, Dongguan City, Guangdong Province, China
Product Name·····:	**Mobile smart screen**
Trade Mark·····:	/
Model/Type reference·····:	ZPHD-0320
Listed Model(s) ·····:	/
Standard·····:	**FCC CFR Title 47 Part 15 Subpart C Section 15.247**
Date of receipt of test sample…:	Jul. 10, 2025
Date of testing……..:	Jul. 11, 2025 ~ Aug. 04, 2025
Date of issue……...:	Aug. 05, 2025
Result……:	**PASS**

Compiled by: (Printed name + signature)	Terry Su	Terry Su
Approved by: (Printed name + signature)	Michael Wu	Michael wu

SHENZHEN HUAXIN INFORMATION TECHNOLOGY SERVICE CO., LTD H X

Testing Laboratory Name……:	**Shenzhen Huaxin Information Technology Service Co., Ltd**
Address……:	101, R & D Building, No.3 guansheng 4th Road, Luhu Community, Guanhu Street, Longhua District, Shenzhen, Guangdong, China

Table of Contents Page

1. TEST SUMMARY

1.1. Test Standards

The tests were performed according to following standards:

FCC Rules Part 15.247: Operation within the bands of 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz.
RSS 247 Issue 3: Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices.
ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.

1.2. Report version

Revised No.	Date of issue	Description
01	Aug. 05, 2025	Original

1.3. Test Description

FCC Part 15 Subpart C (15.247) / RSS 247 Issue 3				
Test Item	Standard Section		Result	Test Engineer
	FCC	IC		
Antenna Requirement	15.203& 15.247(b)(4)	/	Pass	Sain Liao
Conducted Emission	15.207	RSS-Gen 8.8	Pass	Ann Lu
Radiated Emissions Restricted Band and Radiated Spurious Emissions	15.205&15.209& 15.247(d)	RSS 247 5.5	Pass	Sain Liao
Conducted Band Edge and Spurious Emissions	15.247(d)	RSS 247 5.5	Pass	Sain Liao
6dB Bandwidth	15.247(a)(2)	RSS 247 5.2 (a)	Pass	Sain Liao
Conducted Max Output Power	15.247(b)(3)	RSS 247 5.4 (d)	Pass	Sain Liao
Power Spectral Density	15.247(e)	RSS 247 5.2 (b)	Pass	Sain Liao
Transmitter Radiated Spurious	15.209&15.247(d)	RSS 247 5.5& RSS-Gen 8.9	Pass	Sain Liao

Note: The measurement uncertainty is not included in the test result.

1.4. Test Facility

Shenzhen Huaxin Information Technology Service Co., Ltd

Add: 101, R & D Building, No.3 guansheng 4th Road, Luhu Community, Guanhu Street, Longhua District, Shenzhen, Guangdong, China

Laboratory accreditation

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

A2LA-Lab Cert. No.: 6855.01

Shenzhen Huaxin Information Technology Service Co., Ltd EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

Industry Canada (Company Number: 31786, CAB Identifier: CN0147)

Shenzhen Huaxin Information Technology Service Co., Ltd EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 31786.

FCC (Registration No.: 932271, Designation Number CN1344)

Shenzhen Huaxin Information Technology Service Co., Ltd EMC Laboratory has been registered and fully described in a report filed with the (FCC)Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration NO.: 932271.

1.5. Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the Shenzhen Huaxin Information Technology Service Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Below is the best measurement capability for Shenzhen Huaxin Information Technology Service Co., Ltd

Test Items	Measurement Uncertainty	Notes
DTS Bandwidth	±3.70%	(1)
Maximum Conducted Output Power	±0.60dB	(1)
Maximum Power Spectral Density Level	±0.46dB	(1)
Band-edge Compliance	±4.40dB	(1)
Conducted Spurious Emissions	±1.40dB	(1)
Conducted Emissions 9kHz~30MHz	±3.10dB	(1)
Radiated Emissions 9kHz~30MHz	±3.62dB	(1)
Radiated Emissions 30~1000MHz	±4.63dB	(1)
Radiated Emissions 1~18GHz	±4.40dB	(1)
Radiated Emissions 18~40GHz	±4.40dB	(1)

Note (1): This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

1.6. Environmental conditions

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

Temperature:	21°C ~ 27°C
Relative Humidity:	40% ~ 60%
Air Pressure:	101kPa

2. GENERAL INFORMATION

2.1. Client Information

Applicant:	Dongguan Zhiping Interactive Technology Co., LTD
Address:	Room 301, Building 5, No.30, Lianxing Road, Wulian Village, Fenggang Town, Dongguan City, Guangdong Province, China
Manufacturer:	Dongguan Zhiping Interactive Technology Co., LTD
Address:	Room 301, Building 5, No.30, Lianxing Road, Wulian Village, Fenggang Town, Dongguan City, Guangdong Province, China

2.2. General Description of EUT

Product Name:	Mobile smart screen
Trade Mark:	/
Model/Type reference:	ZPHD-0320
Listed Model(s):	/
Power supply:	12V⎓6A from AC/DC Adapter 14.8Vdc from 12000mAh Lithium Battery
Adapter Model:	J652-1206000UX Input: 100-240V~ 50/60Hz 1.7A Output: 12V⎓6A
Hardware version:	/
Software version:	/
WIFI Specification	
Modulation:	802.11b: DSSS(CCK, DQPSK, DBPSK) 802.11g/ n: OFDM(BPSK, QPSK, 16QAM, 64QAM)
Operation frequency:	802.11b/ g/ n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz
Channel number:	802.11b/ g/ n(HT20): 11channels 802.11n(HT40): 7channels
Channel separation:	5MHz
Antenna type:	FPC Antenna
Antenna gain:	3.54dBi Max

2.3. Accessory Equipment information

Equipment Information			
Name	Model	S/N	Manufacturer
/	/	/	/
Cable Information			
Name	Shielded Type	Ferrite Core	Length
DC In Cable	Without	Without	1.5M
Test Software Information			
Name	Versions	/	/
Engineering mode	/	/	/

2.4. Operation state

Operation Frequency List: The EUT has been tested under typical operating condition. The Applicant provides communication tools software to control the EUT for staying in continuous transmitting and receiving mode for testing, Only Full RU supported in 802. 11ax mode.

Operation Frequency List:

Channel	Frequency (MHz)
01	2412
02	2417
03	2422
04	2427
05	2432
06	2437
07	2442
08	2447
09	2452
10	2457
11	2462

Note: CH 01~CH 11 for 802.11b/g/n(HT20), CH 03~CH 09 for 802.11n(HT40).

Data Rated

Preliminary tests were performed in different data rate, and found which the below bit rate is worst case mode, so only show data which it is a worst case mode.

Mode	Data rate (worst mode)
802.11b	1Mbps
802.11g	6Mbps
802.11n(HT20)/ (HT40)	HT-MCS0

Test mode

For RF test items:
The engineering test program was provided and enabled to make EUT continuous transmit.
For AC power line conducted emissions:
The EUT was set to connect with the WLAN AP under large package sizes transmission.
For Radiated spurious emissions test item:
The engineering test program was provided and enabled to make EUT continuous transmit. The EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data Recorded in the report.

2.5. Measurement Instruments List

RF Test System - SRD					
Item	Test Equipment	Manufacturer	Model No.	Versions/ Serial No.	Calibrated until
1	Spectrum Analyzer	Agilent	N9020A	MY51280803	Apr. 08, 2026
2	Wideband Radio Communication Tester	R&S	CMW500	157763	Apr. 08, 2026
3	MXG Vector Signal Generator	Agilent	N5182A	101795	Apr. 08, 2026
4	EXG Analog Signal Generator	Agilent	N5181A	MY47421151	Apr. 08, 2026
5	RF Sensor Unit	Techy	TR1029-2	20220428P009	Apr. 08, 2026
6	High and low temperature test chamber	Asprey	LX-225L	2020091401	Apr. 08, 2026
7	SRD Test Software	TACHOY	RTS	V1.0.0	/
8	2G/3G/4G Test Software	TST	TST-PASS	V2.0	/

Radiated emission					
Item	Test Equipment	Manufacturer	Model No.	Versions/ Serial No.	Calibrated until
1	EMI spectrum receiver	R&S	ESR7	102543	Apr. 08, 2026
2	9*6*6 anechoic chamber	Mao Rui	9*6*6	/	Apr. 08, 2026
3	Spectrum analyzer	R&S	FSV40-N	101795	Apr. 09, 2026
4	Preamplifier	Agilent	8449B	3008A00551	Apr. 09, 2026
5	Preamplifier	HP	8447D	1616A02061	Apr. 08, 2026
6	Horn Antenna	A. H. System, Inc	SAS-571	915	Apr. 18, 2026
7	Trilog-Broadband Antenna	SCHWARZBECK	VULB 9168	01318	Apr. 18, 2026
8	6dB Fixed Attenuator	SKET	AP_DC01G-2W-N-6dB	SK2021012803	Apr. 08, 2026
9	Test Software	SKET	EMC-I	V1.4.0.1	/
10	Wideband Radio Communication Tester	R&S	CMW500	157763	Apr. 08, 2026

Conducted emission					
Item	Test Equipment	Manufacturer	Model No.	Versions/ Serial No.	Calibrated until
1	LISN	R&S	ENV216	101291	Apr. 09, 2026
2	LISN	R&S	ESH3-Z5	894981/024	Apr. 09, 2026
3	EMI Test Receiver	R&S	ESR7	102543	Apr. 08, 2026
5	Test Software	SKET	EMC-I	V1.4.0.1	/
6	Wideband Radio Communication Tester	R&S	CMW500	157763	Apr. 08, 2026

Note: 1. The Cal. Interval was one year.
2. The cable loss has calculated in test result which connection between each test instruments.

3.TEST ITEM AND RESULTS

3.1. Conducted Emission

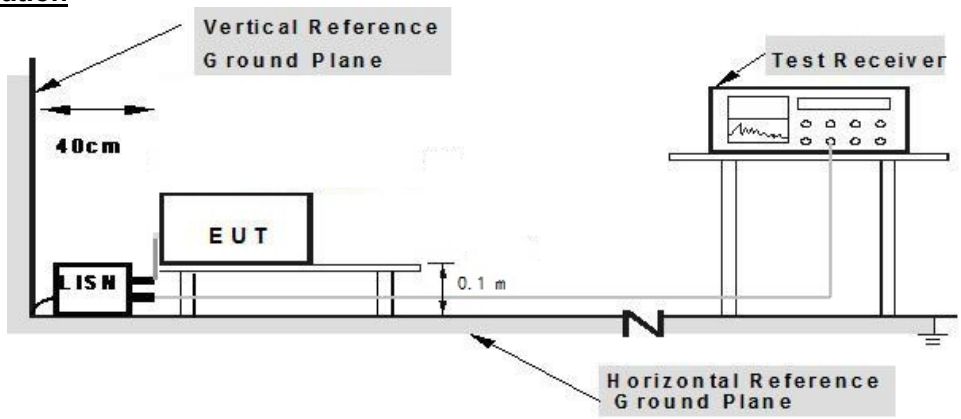
Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.207/ RSS - Gen 8.8:

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

Test Configuration



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

Test Procedure

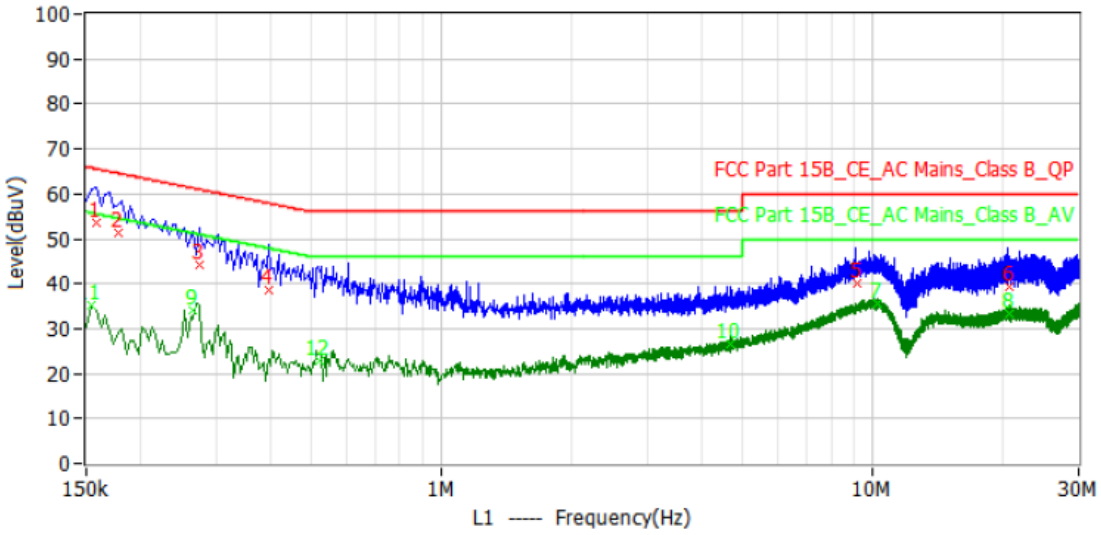
1. The EUT was setup according to ANSI C63.10:2013 requirements.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
4. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
5. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
6. Conducted Emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
7. During the above scans, the emissions were maximized by cable manipulation.

Test Mode:

Please refer to the clause 2.4.

Test Results

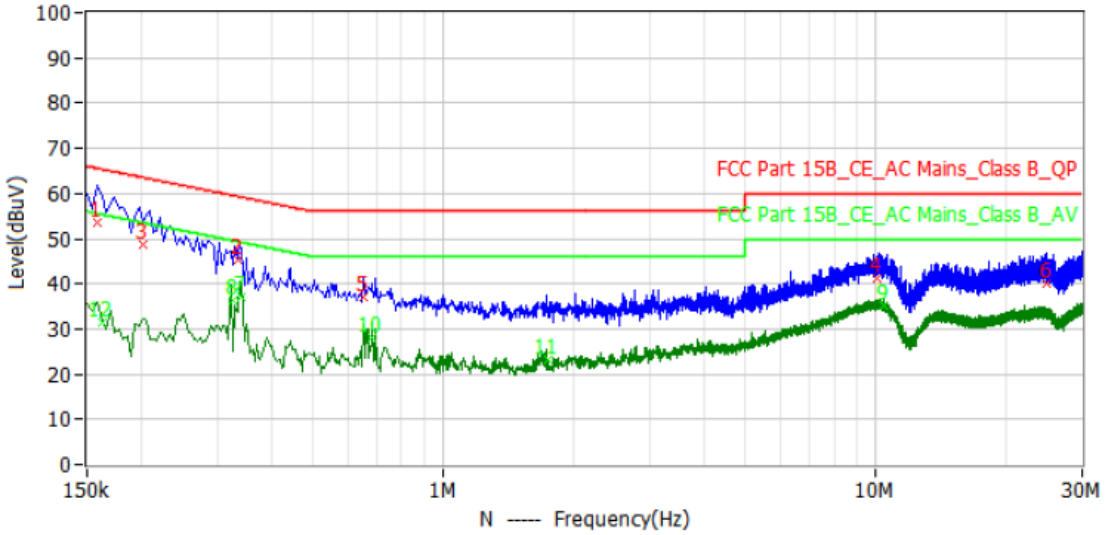
Test Voltage:	AC 120V/60Hz
Test Mode:	802.11b Mode 2412MHz
Terminal:	Line



No.	Frequency	Reading dBuV	Factor dB	Level dBuV	Limit dBuV	Delta dB	Detector	Polar
1	158.000kHz	43.32	10.40	53.72	65.57	-11.85	QP	L1
2	178.000kHz	41.01	10.40	51.41	64.58	-13.16	QP	L1
3	274.000kHz	33.68	10.60	44.28	61.00	-16.71	QP	L1
4	398.000kHz	27.81	10.80	38.61	57.90	-19.29	QP	L1
5	9.182MHz	27.14	13.10	40.24	60.00	-19.76	QP	L1
6	20.646MHz	25.88	13.60	39.48	60.00	-20.52	QP	L1
7	10.206MHz	22.44	13.30	35.74	50.00	-14.26	AV	L1
8	20.738MHz	19.71	13.60	33.31	50.00	-16.69	AV	L1
9	266.000kHz	23.47	10.50	33.97	51.24	-17.27	AV	L1
10	4.670MHz	13.87	12.80	26.67	46.00	-19.33	AV	L1
11	154.000kHz	24.67	10.40	35.07	55.78	-20.71	AV	L1
12	522.000kHz	12.15	10.80	22.95	46.00	-23.05	AV	L1

Emission Level= Read Level+ Correct Factor

Test Voltage:	AC 120V/60Hz
Test Mode:	802.11b Mode 2412MHz
Terminal:	Neutral



No.	Frequency	Reading dBuV	Factor dB	Level dBuV	Limit dBuV	Delta dB	Detector	Polar
1	158.000kHz	43.14	10.60	53.74	65.57	-11.83	QP	N
2	334.000kHz	34.73	10.60	45.33	59.35	-14.02	QP	N
3	202.000kHz	38.17	10.60	48.77	63.53	-14.75	QP	N
4	10.042MHz	27.70	13.50	41.20	60.00	-18.80	QP	N
5	654.000kHz	26.04	11.10	37.14	56.00	-18.86	QP	N
6	24.730MHz	26.37	13.80	40.17	60.00	-19.83	QP	N
7	342.000kHz	26.46	10.60	37.06	49.15	-12.10	AV	N
8	326.000kHz	25.66	10.60	36.26	49.55	-13.30	AV	N
9	10.390MHz	21.59	13.50	35.09	50.00	-14.91	AV	N
10	682.000kHz	16.78	11.20	27.98	46.00	-18.02	AV	N
11	1.742MHz	10.62	12.70	23.32	46.00	-22.68	AV	N
12	162.000kHz	20.74	10.60	31.34	55.36	-24.02	AV	N

Emission Level= Read Level+ Correct Factor

3.2. Radiated Emission

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.209/ RSS – Gen 8.9:

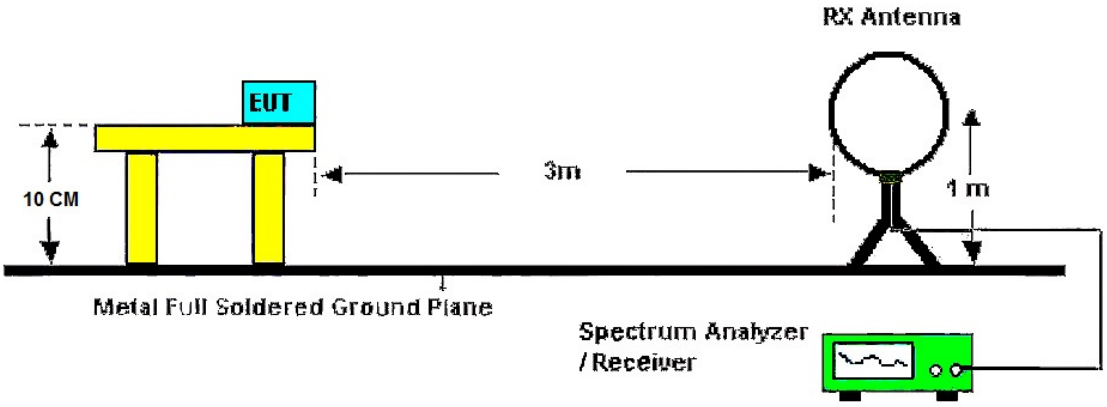
Frequency	Limit (dBuV/m @3m)	Value
30 MHz ~ 88 MHz	40.00	Quasi-peak
88 MHz ~ 216 MHz	43.50	Quasi-peak
216 MHz ~ 960 MHz	46.00	Quasi-peak
960 MHz ~ 1 GHz	54.00	Quasi-peak
Above 1 GHz	54.00	Average
	74.00	Peak

Note:

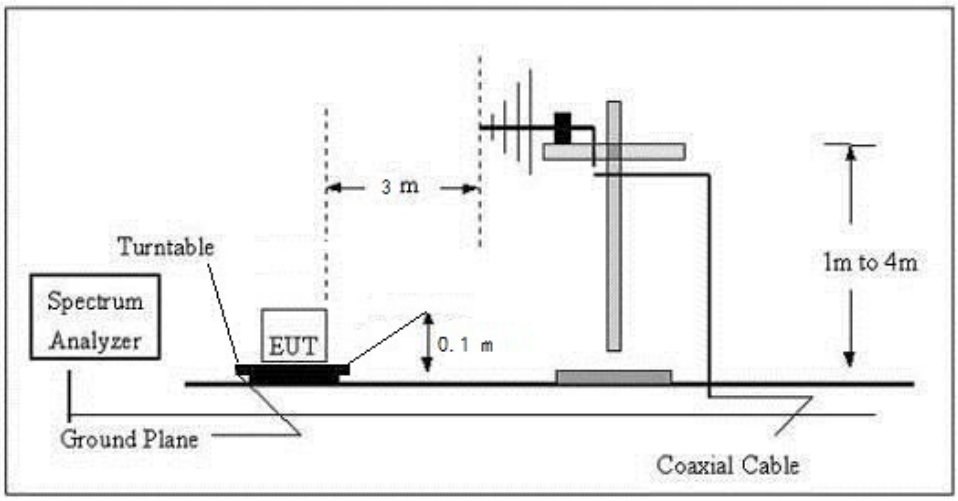
(1) The tighter limit applies at the band edges.

(2) Emission Level (dBuV/m)=20log Emission Level (uV/m).

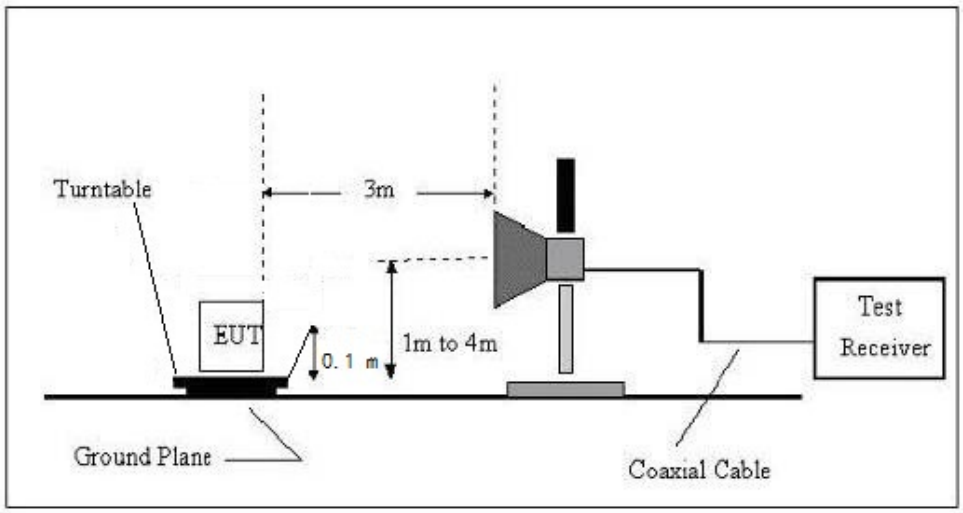
Test Configuration



Below 30MHz Test Setup



Below 1000MHz Test Setup



Above 1GHz Test Setup

Test Procedure

1. The EUT was setup and tested according to ANSI C63.10:2013
2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Use the following spectrum analyzer settings

(1) Span shall wide enough to fully capture the emission being measured
(2) Below 30 MHz:
9kHz – 150kHz, RBW=200Hz, VBW≥RBW, Sweep=auto, Detector function=peak, Trace=max hold;
150kHz – 30MHz, RBW=9kHz, VBW≥RBW, Sweep=auto, Detector function=peak, Trace=max hold; If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
(3) 30 MHz - 1 GHz:
RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold;
If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
(4) From 1 GHz to 10th harmonic:
RBW=1MHz, VBW=3MHz Peak detector for Peak value.
RBW=1MHz, VBW≥1/T Peak detector for Average value.
Note 1: For the 1/T& Duty Cycle please refer to clause 3.8 Duty Cycle.

Test Mode

Please refer to the clause 2.4.

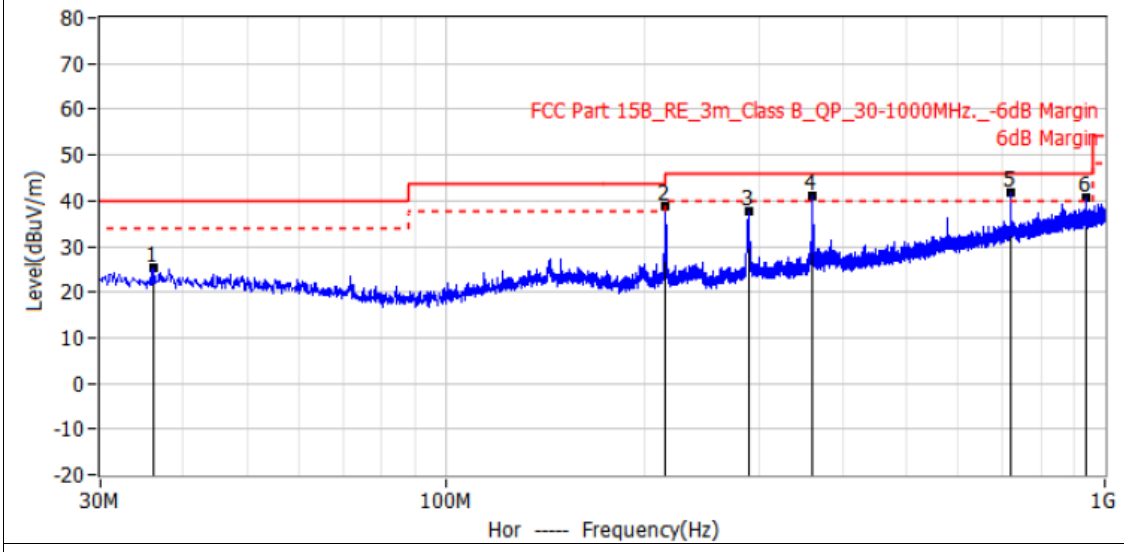
Test Result

9 KHz~30 MHz

From 9 KHz to 30 MHz: Conclusion: PASS
Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

30MHz-1GHz

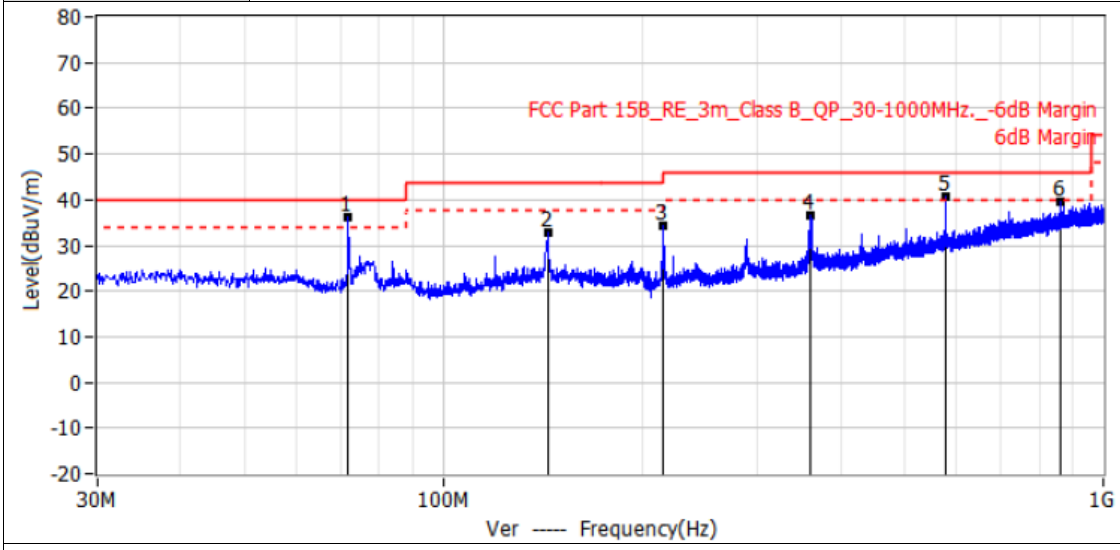
Ant. Pol.	Horizontal
Test Mode:	802.11b Mode 2412MHz
Remark:	Only worse case is reported



No.	Frequency	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Delta dB	Detector	Polar	Height cm	Angle deg
1*	36.184MHz	10.0	15.2	25.2	40.0	-14.8	QP	Hor	100.0	328.0
2*	215.876MHz	25.5	13.3	38.8	43.5	-4.7	QP	Hor	100.0	318.0
3*	287.899MHz	22.0	15.6	37.6	46.0	-8.4	QP	Hor	100.0	323.0
4*	359.921MHz	23.6	17.4	41.0	46.0	-5.0	QP	Hor	100.0	323.0
5*	719.791MHz	17.1	24.6	41.7	46.0	-4.3	QP	Hor	100.0	343.0
6*	935.738MHz	13.4	27.2	40.6	46.0	-5.4	QP	Hor	100.0	318.0

Remarks:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

Ant. Pol.	Vertical
Test Mode:	802.11b Mode 2412MHz
Remark:	Only worse case is reported



No.	Frequency	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Delta dB	Detector	Polar	Height cm	Angle deg
1*	71.953MHz	23.8	12.5	36.3	40.0	-3.7	QP	Ver	100.0	0.0
2*	144.096MHz	16.7	16.0	32.7	43.5	-10.8	QP	Ver	100.0	0.0
3*	215.876MHz	20.9	13.3	34.2	43.5	-9.3	QP	Ver	100.0	207.0
4*	359.921MHz	19.2	17.4	36.6	46.0	-9.4	QP	Ver	100.0	30.0
5*	575.868MHz	18.5	22.1	40.6	46.0	-5.4	QP	Ver	100.0	0.0
6*	863.715MHz	12.9	26.5	39.4	46.0	-6.6	QP	Ver	100.0	36.0

Remarks:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

Adobe 1GHz

Remark: Pre-scan all modulation and all bandwidth mode, and found the 802.11b mode which were the worst case, So only show the test data for worst case.

802.11b Mode 2412MHz							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Polarization	Detector
4824	49.58	3.8	53.38	74	-20.62	Horizontal	Peak
4824	44.15	3.8	47.95	74	-26.05	Vertical	Peak
4824	39.15	3.8	42.95	54	-11.05	Horizontal	Average
4824	34.21	3.8	38.01	54	-15.99	Vertical	Average
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value 3.No report for the emission which more than 10 dB below the prescribed limit							

802.11b Mode 2437MHz							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Polarization	Detector
4874	48.59	4.0	52.59	74	-21.41	Horizontal	Peak
4874	44.62	4.0	48.62	74	-25.38	Vertical	Peak
4874	38.66	4.0	42.66	54	-11.34	Horizontal	Average
4874	33.15	4.0	37.15	54	-16.85	Vertical	Average
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value 3.No report for the emission which more than 10 dB below the prescribed limit							

802.11b Mode 2462MHz							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Polarization	Detector
4924	49.64	4.1	53.74	74	-20.26	Horizontal	Peak
4924	45.25	4.1	49.35	74	-24.65	Vertical	Peak
4924	39.15	4.1	43.25	54	-10.75	Horizontal	Average
4924	34.11	4.1	38.21	54	-15.79	Vertical	Average
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value 3.No report for the emission which more than 10 dB below the prescribed limit							

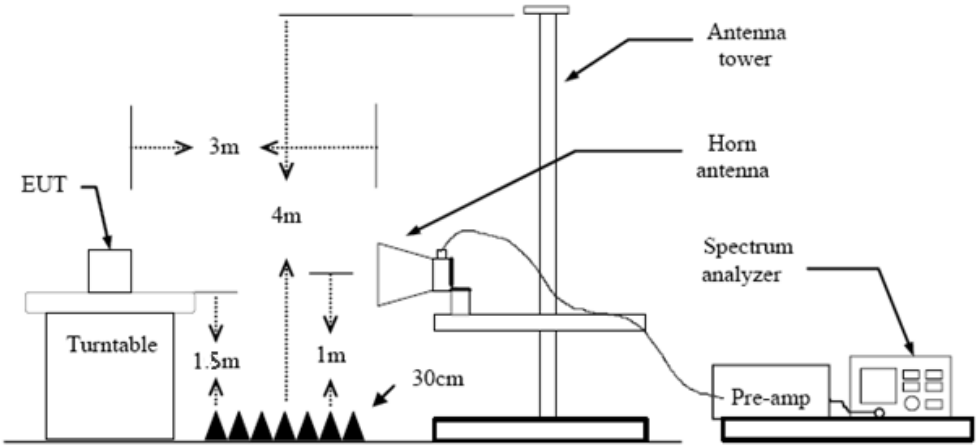
3.3. Radiated Emissions Restricted Band

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d)/ RSS 247 5.5:

Restricted Frequency Band (MHz)	(dBuV/m)(at 3m)	
	Peak	Average
2310 ~2390	74	54
2483.5 ~2500	74	54

Test Configuration



Test Procedure

1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
5. The receiver set as follow:
   RBW=1MHz, VBW=3MHz Peak detector for Peak value.
   RBW=1MHz, VBW see note 1 with Peak Detector for Average Value.

   Note 1: For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements. For the Duty Cycle please refer to clause 3.8 Duty Cycle.

Test Mode

Please refer to the clause 2.4.

Test Results

Remark: Pre-scan all modulation mode, and found the 802.11b mode which were the worst case, So only show the test data for worst case.

802.11b Mode 2412MHz							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Polarization	Detector
2310	49.62	-3.4	46.22	74	-27.78	Horizontal	Peak
2310	44.26	-3.4	40.86	74	-33.14	Vertical	Peak
2390	52.16	-3.1	49.06	74	-24.94	Horizontal	Peak
2390	47.15	-3.1	44.05	74	-29.95	Vertical	Peak
2310	44.15	-3.4	40.75	54	-13.25	Horizontal	Average
2310	40.26	-3.4	36.86	54	-17.14	Vertical	Average
2390	50.26	-3.1	47.16	54	-6.84	Horizontal	Average
2390	46.26	-3.1	43.16	54	-10.84	Vertical	Average
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value							

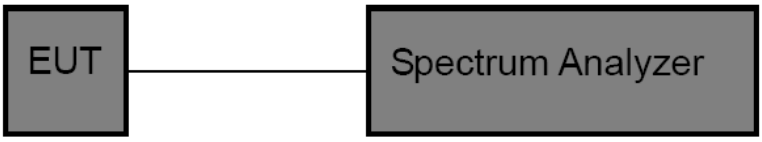
802.11b Mode 2462MHz							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Polarization	Detector
2310	51.26	-2.8	48.46	74	-25.54	Horizontal	Peak
2310	46.26	-2.8	43.46	74	-30.54	Vertical	Peak
2390	49.21	-2.7	46.51	74	-27.49	Horizontal	Peak
2390	44.26	-2.7	41.56	74	-32.44	Vertical	Peak
2310	49.25	-2.8	46.45	54	-7.55	Horizontal	Average
2310	44.26	-2.8	41.46	54	-12.54	Vertical	Average
2390	44.26	-2.7	41.56	54	-12.44	Horizontal	Average
2390	40.15	-2.7	37.45	54	-16.55	Vertical	Average
Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value							

3.4. Band edge and Spurious Emissions (Conducted)

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d):In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 30 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.

Test Configuration



Test Procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously
3. Use the following spectrum analyzer settings:
   RBW = 100 kHz, VBW ≥ RBW, scan up through 10th harmonic.
   Sweep = auto, Detector function = peak, Trace = max hold
4. Measure and record the results in the test report.

Test Mode

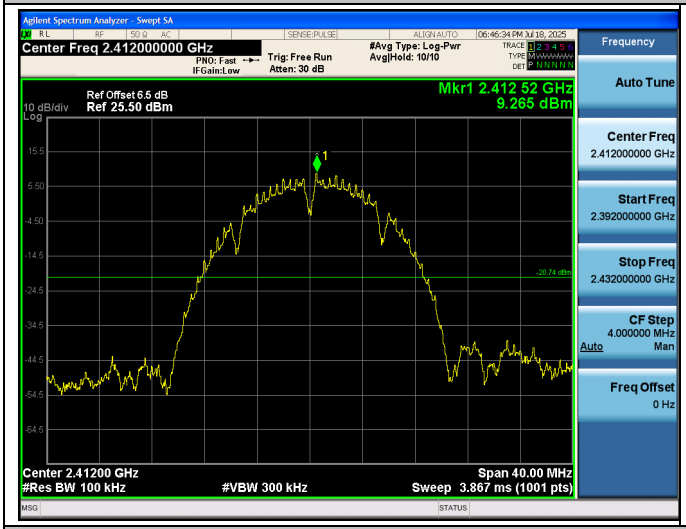
Please refer to the clause 2.4.

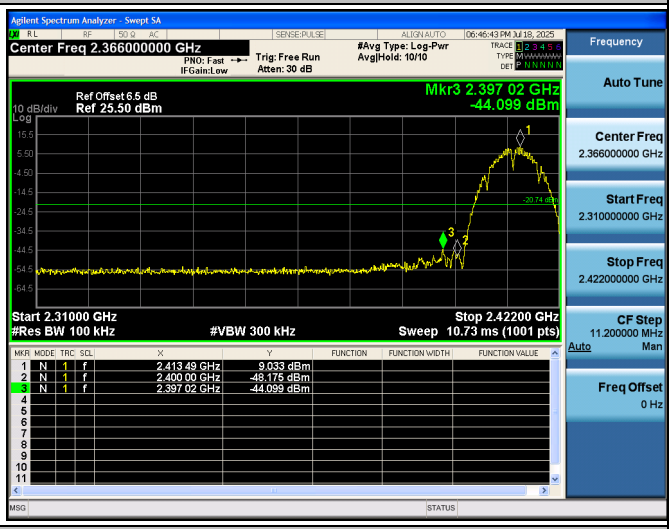
Test Results

(1) Band edge Conducted Test

Test Mode	Test Frequency	Ref Level[dBm]	Result[dBm]	Limit[dBm]	Verdict
802.11b	2412	9.265	-44.099	-20.735	PASS
	2462	9.243	-44.568	-20.757	PASS
802.11g	2412	5.665	-32.915	-24.335	PASS
	2462	5.278	-41.611	-24.722	PASS
802.11n(HT20)	2412	4.753	-33.409	-25.247	PASS
	2462	5.169	-39.025	-24.831	PASS
802.11n(HT40)	2422	2.297	-39.391	-27.703	PASS
	2452	1.608	-34.577	-28.392	PASS

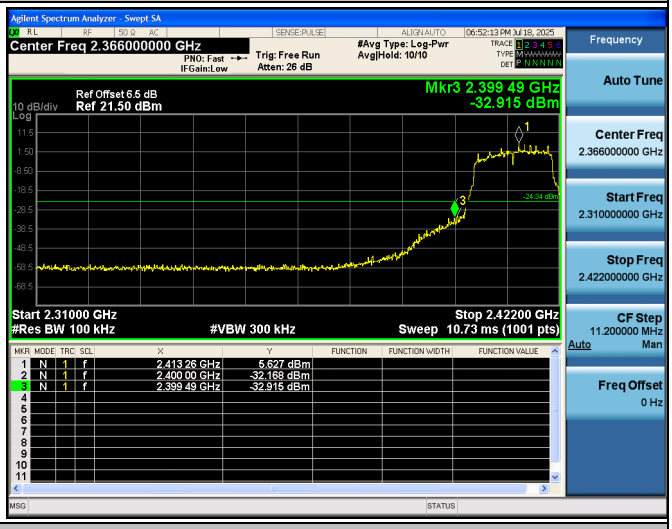
802.11b_2412





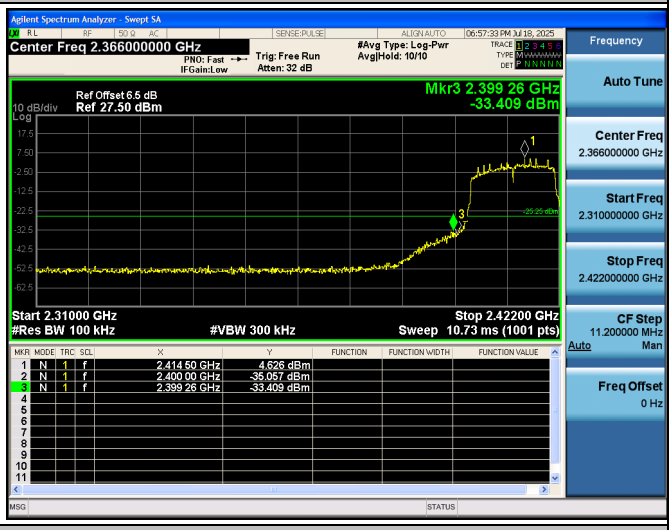
802.11b_2462

802.11g_2412



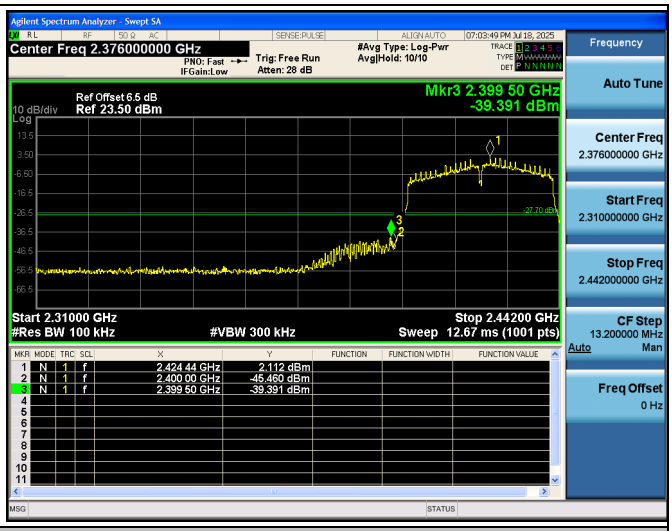
802.11g_2462

802.11n(HT20)_2412

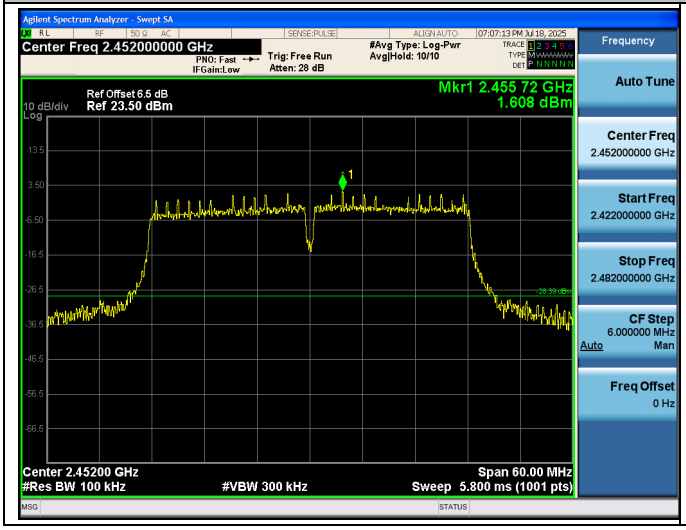


802.11n(HT20)_2462

802.11n(HT40)_2422



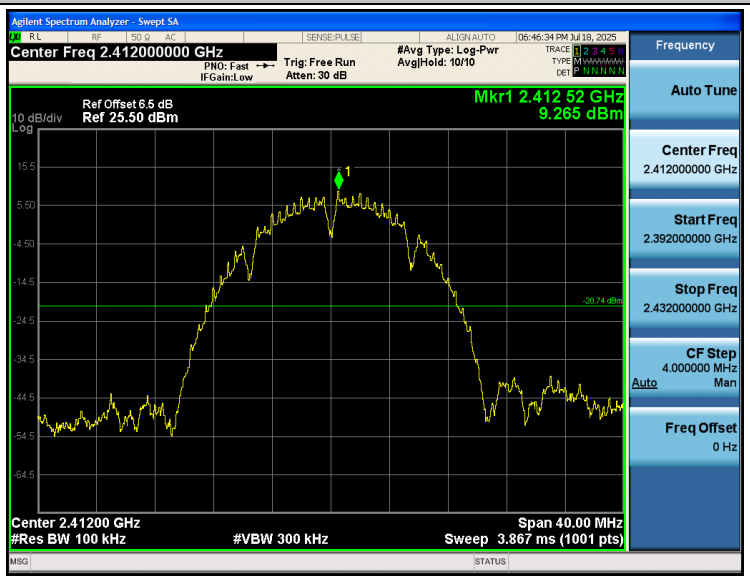
802.11n(HT40)_2452



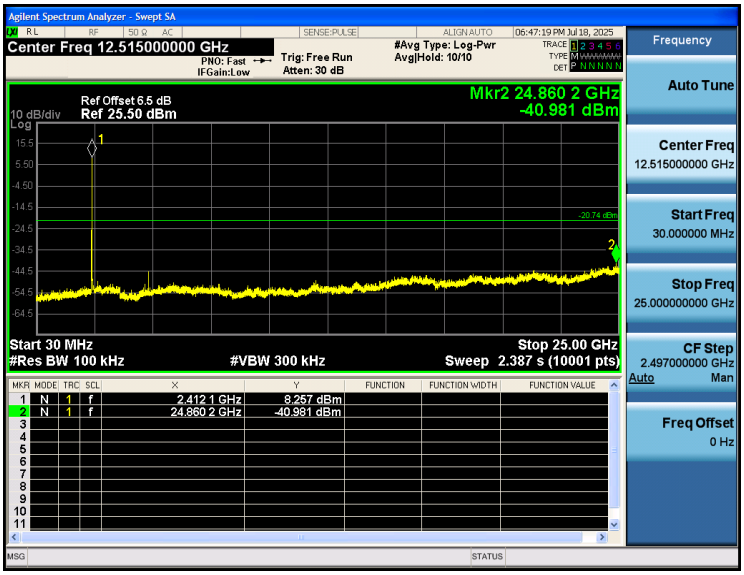
(2) Conducted Spurious Emissions Test

Test Mode	Frequency [MHz]	Ref Level [dBm]	Spurious level[dBm]	Limit[dBm]	Verdict
802.11b	2412	9.265	-40.981	-20.735	PASS
	2437	9.929	-42.168	-20.071	PASS
	2462	9.243	-34.670	-20.757	PASS
802.11g	2412	5.665	-44.966	-24.335	PASS
	2437	5.706	-39.530	-24.294	PASS
	2462	5.278	-43.676	-24.722	PASS
802.11n(HT20)	2412	4.753	-39.770	-25.247	PASS
	2437	5.483	-39.044	-24.517	PASS
	2462	5.169	-44.503	-24.831	PASS
802.11n(HT40)	2422	2.297	-42.007	-27.703	PASS
	2437	1.110	-49.343	-28.890	PASS
	2452	1.608	-41.648	-28.392	PASS

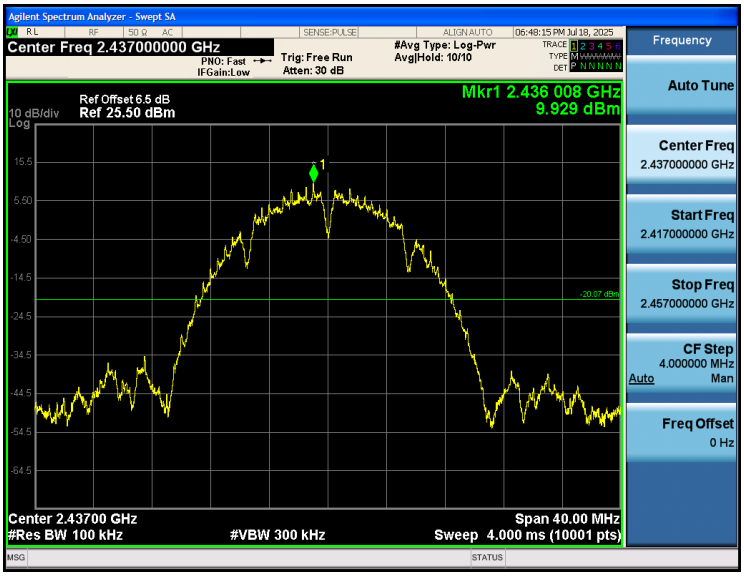
802.11b_2412_0~Reference



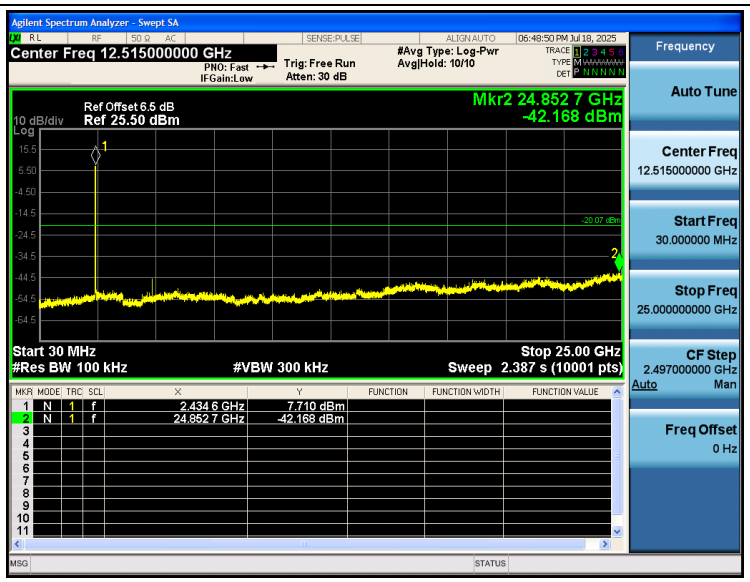
802.11b_2412_30~25000



802.11b_2437_0~Reference

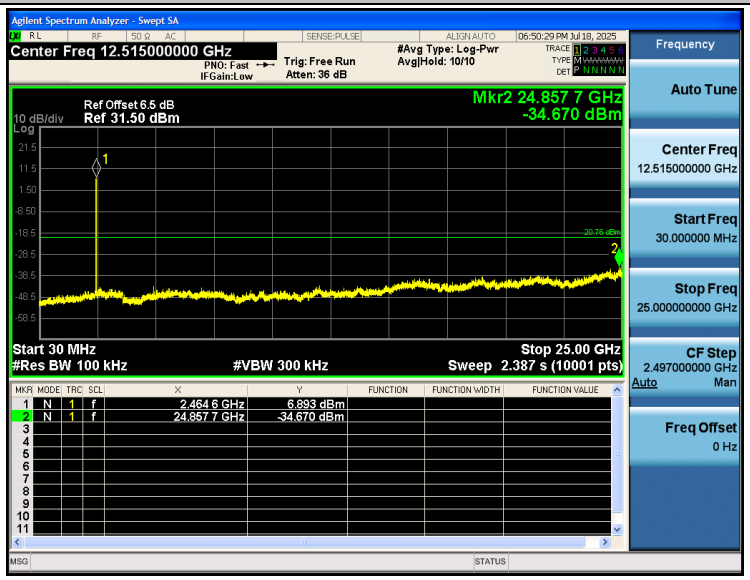


802.11b_2437_30~25000



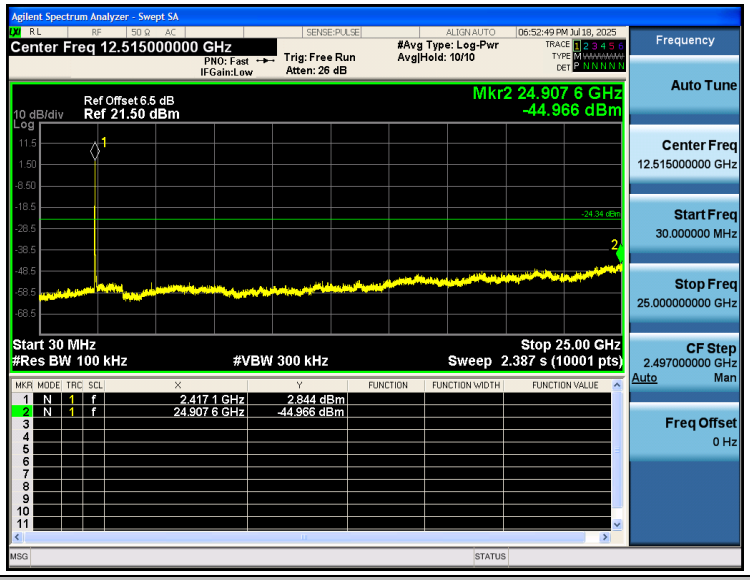
802.11b_2462_0~Reference

802.11b_2462_30~25000

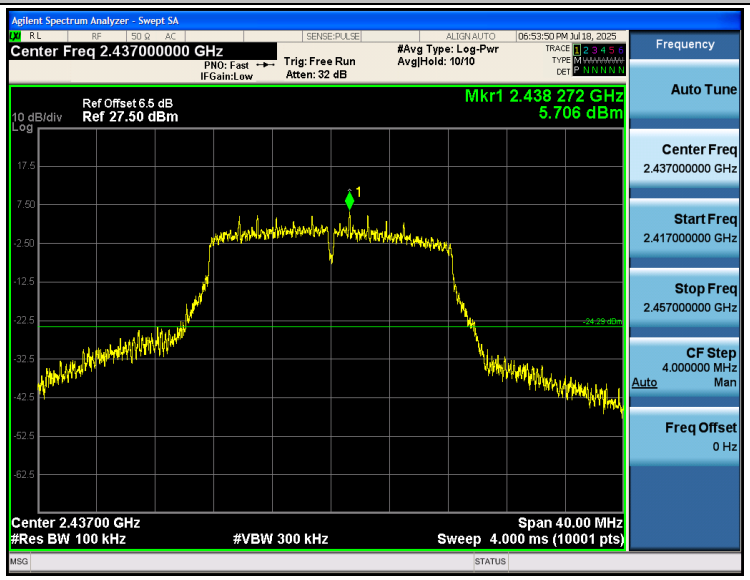


802.11g_2412_0~Reference

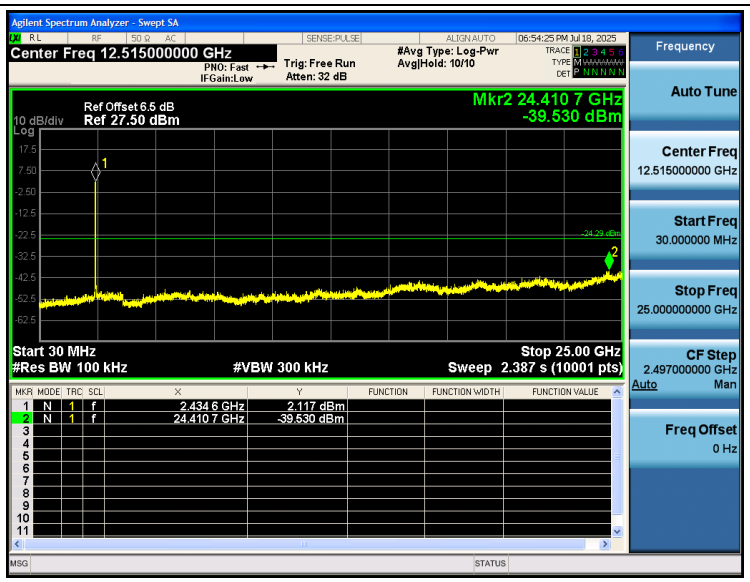
802.11g_2412_30~25000



802.11g_2437_0~Reference

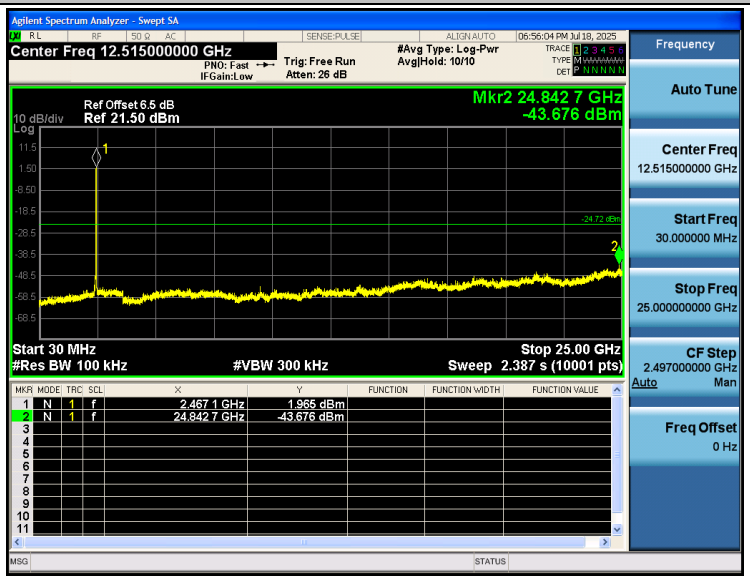


802.11g_2437_30~25000



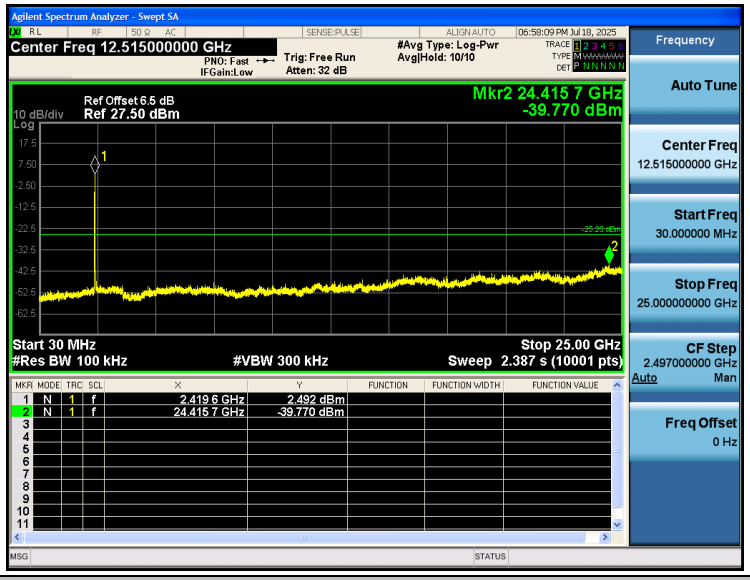
802.11g_2462_0~Reference

802.11g_2462_30~25000



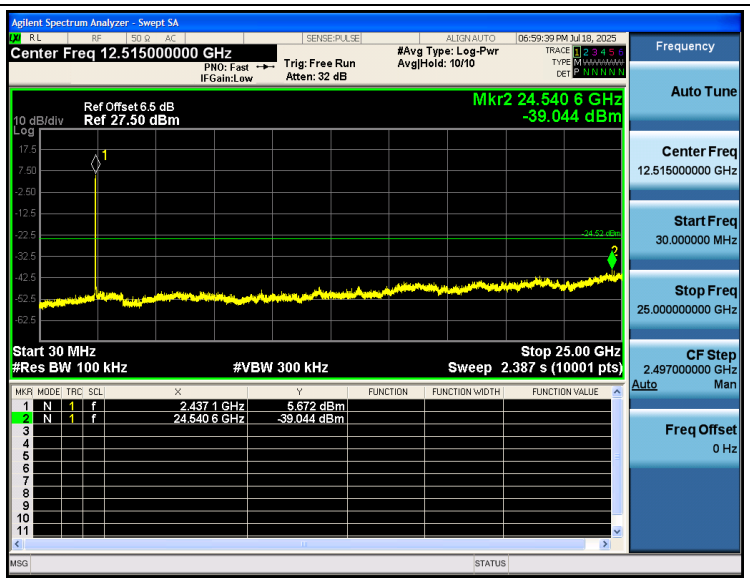
802.11n(HT20)_2412_0~Reference

802.11n(HT20)_2412_30~25000



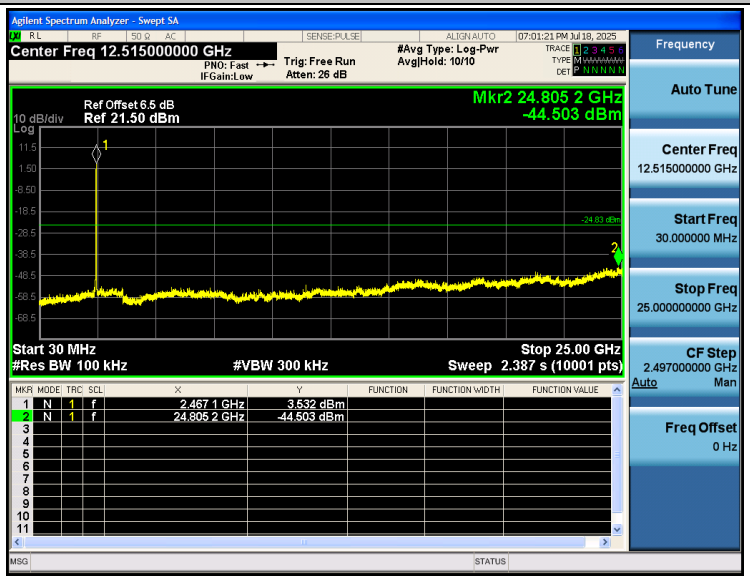
802.11n(HT20)_2437_0~Reference

802.11n(HT20)_2437_30~25000



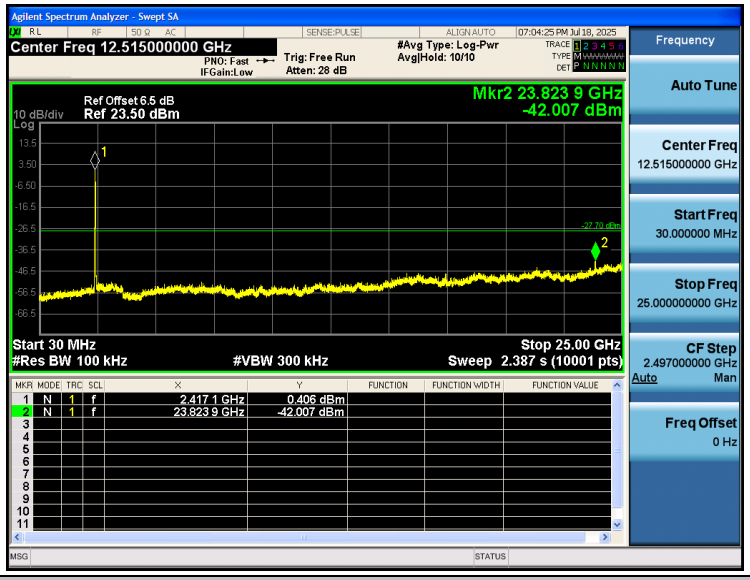
802.11n(HT20)_2462_0~Reference

802.11n(HT20)_2462_30~25000

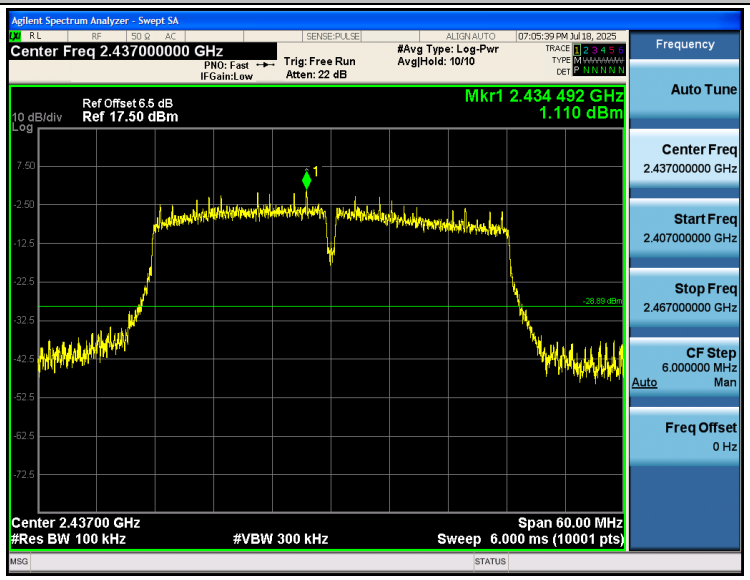


802.11n(HT40)_2422_0~Reference

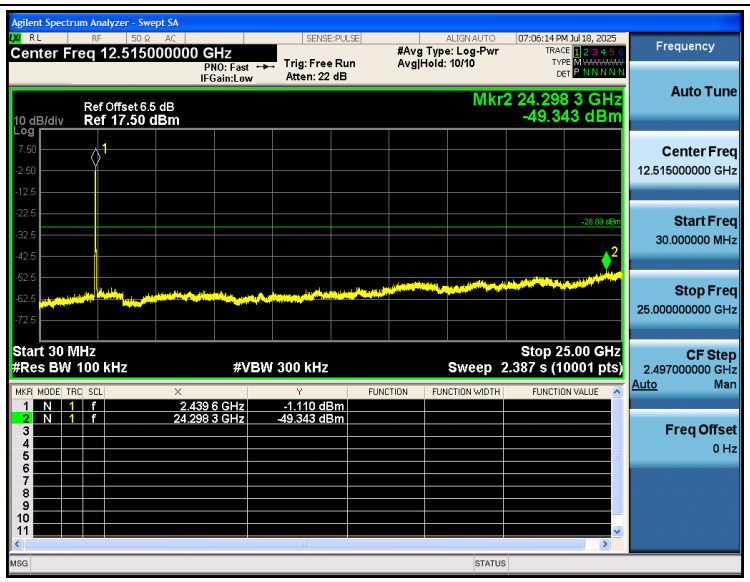
802.11n(HT40)_2422_30~25000



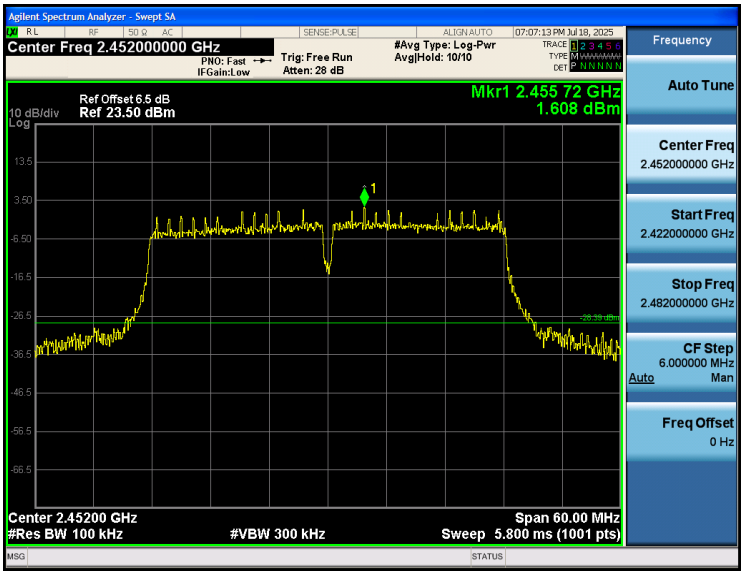
802.11n(HT40)_2437_0~Reference



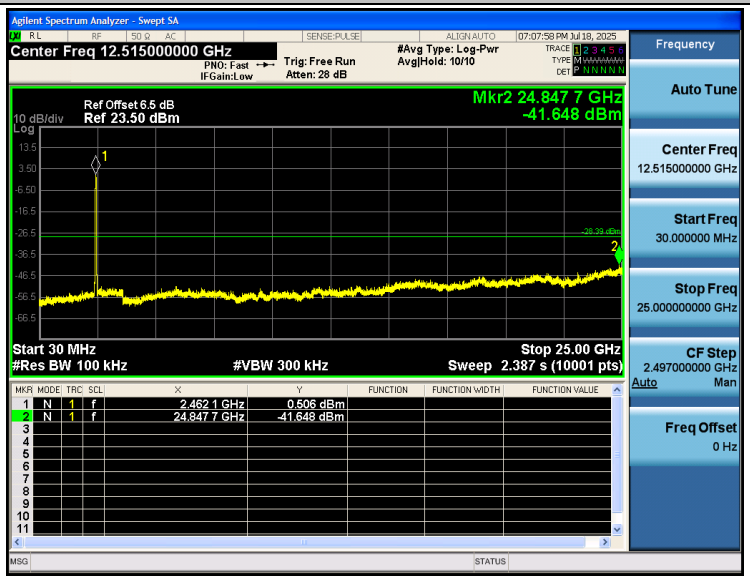
802.11n(HT40)_2437_30~25000



802.11n(HT40)_2452_0~Reference



802.11n(HT40)_2452_30~25000



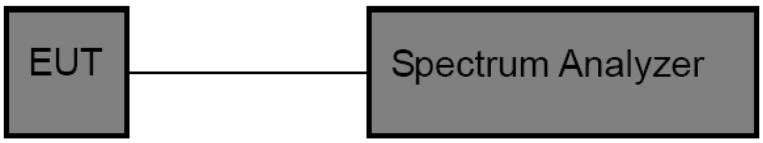
3.5. DTS Bandwidth

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(2)/ RSS-247 5.2 a:

Test Item	Limit	Frequency Range(MHz)
DTS Bandwidth	>=500 KHz (6dB bandwidth)	2400~2483.5

Test Configuration



Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. DTS Spectrum Setting:
   (1) Set RBW = 100 kHz.
   (2) Set the video bandwidth (VBW) ≥ 3 RBW.
   (3) Detector = Peak.
   (4) Trace mode = Max hold.
   (5) Sweep = Auto couple.
   OCB Spectrum Setting:
   (1) Set RBW = 1% ~ 5% occupied bandwidth.
   (2) Set the video bandwidth (VBW) ≥ 3 RBW.
   (3) Detector = Peak.
   (4) Trace mode = Max hold.
   (5) Sweep = Auto couple.

NOTE: The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

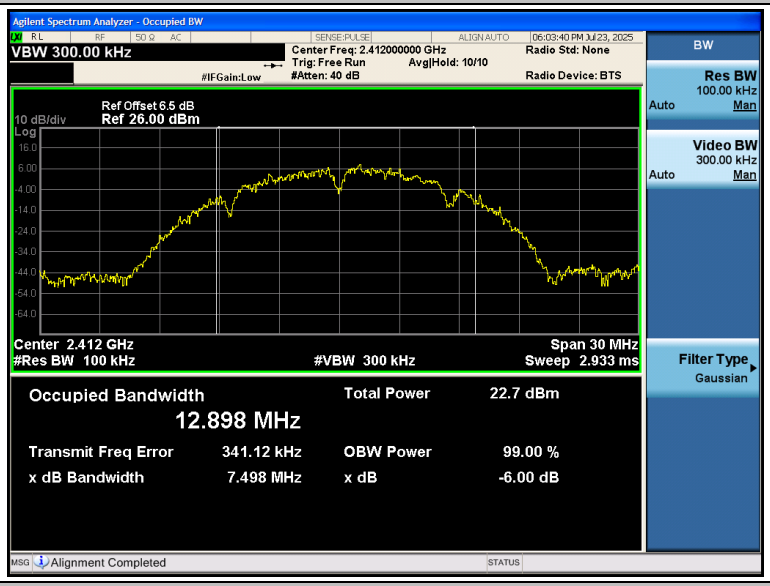
Test Mode

Please refer to the clause 2.4.

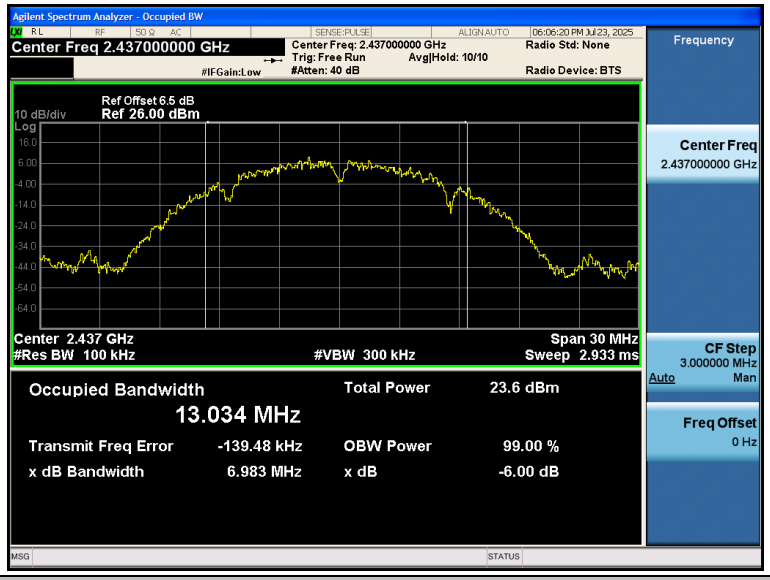
Test Results

Test Mode	Frequency [MHz]	DTS BW [MHz]	Limit [MHz]	Verdict
802.11b	2412	7.498	>=0.5	PASS
	2437	6.983	>=0.5	PASS
	2462	7.090	>=0.5	PASS
802.11g	2412	11.920	>=0.5	PASS
	2437	16.290	>=0.5	PASS
	2462	16.380	>=0.5	PASS
802.11n(HT20)	2412	15.180	>=0.5	PASS
	2437	15.730	>=0.5	PASS
	2462	17.720	>=0.5	PASS
802.11n(HT40)	2422	31.320	>=0.5	PASS
	2437	23.890	>=0.5	PASS
	2452	32.550	>=0.5	PASS

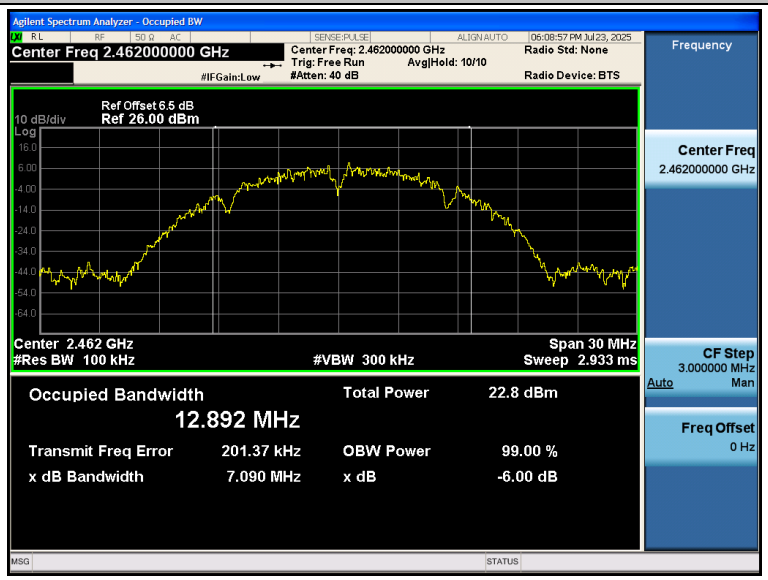
802.11b_2412



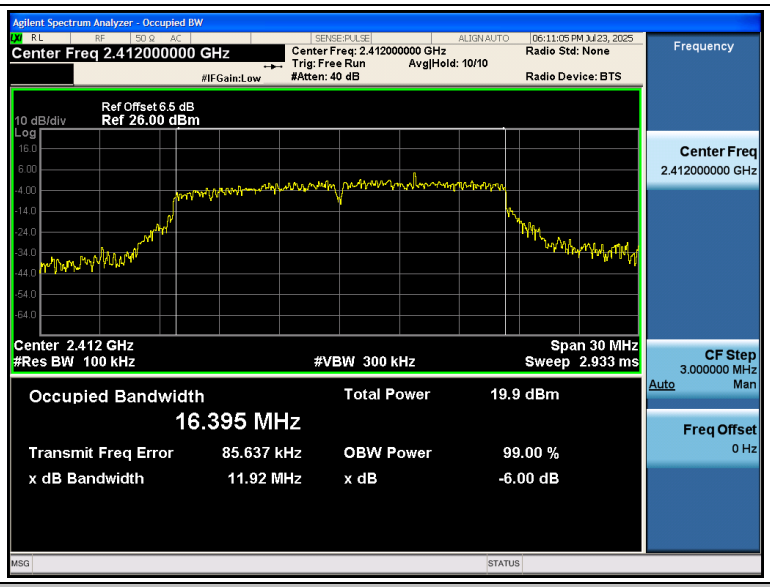
802.11b_2437



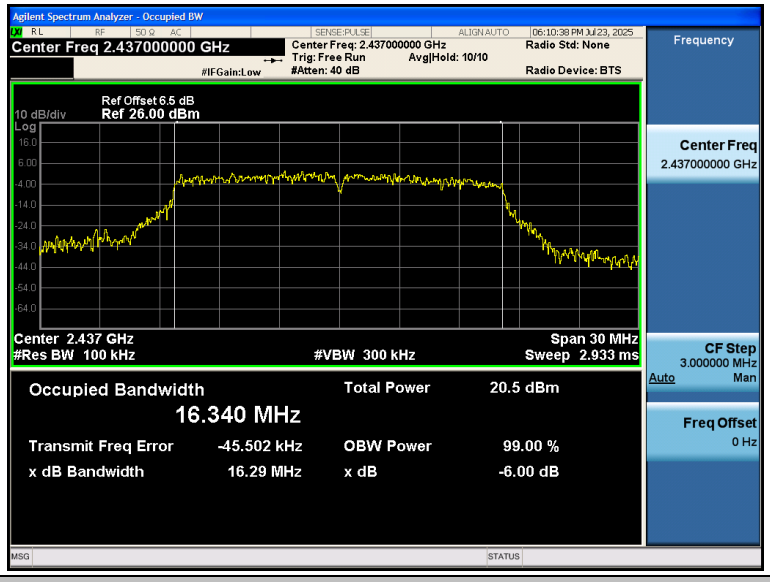
802.11b_2462



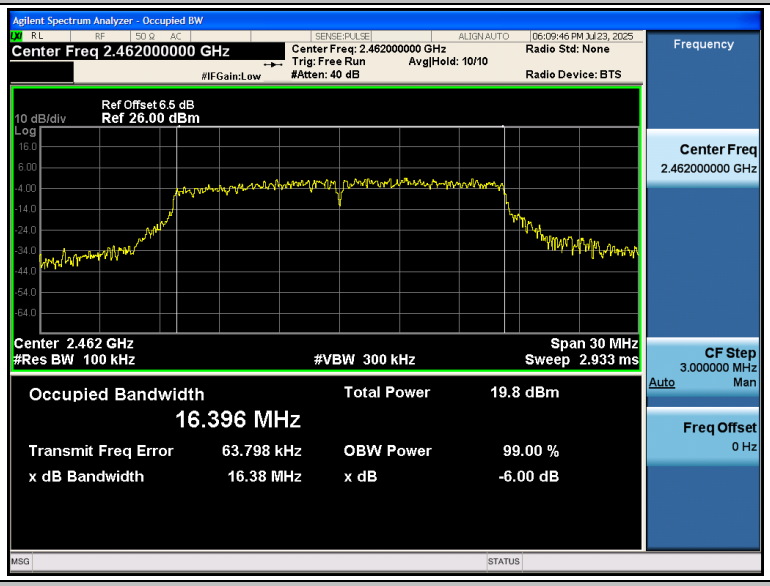
802.11g_2412



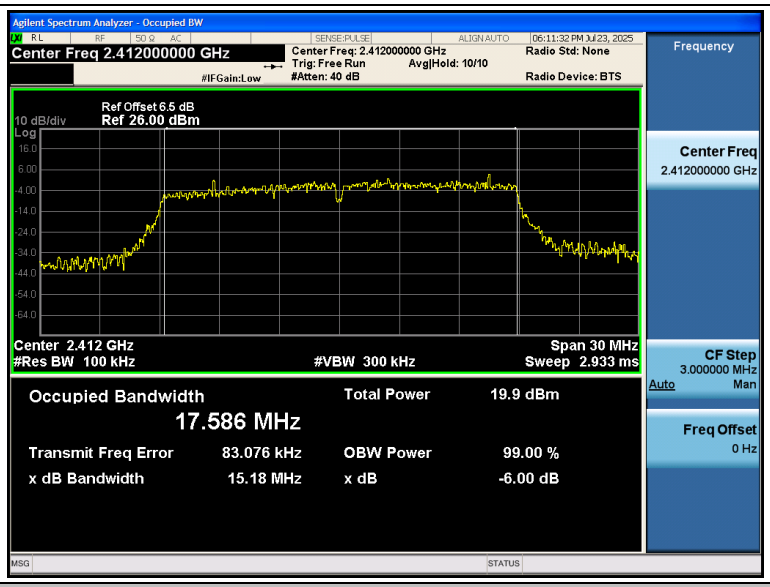
802.11g_2437



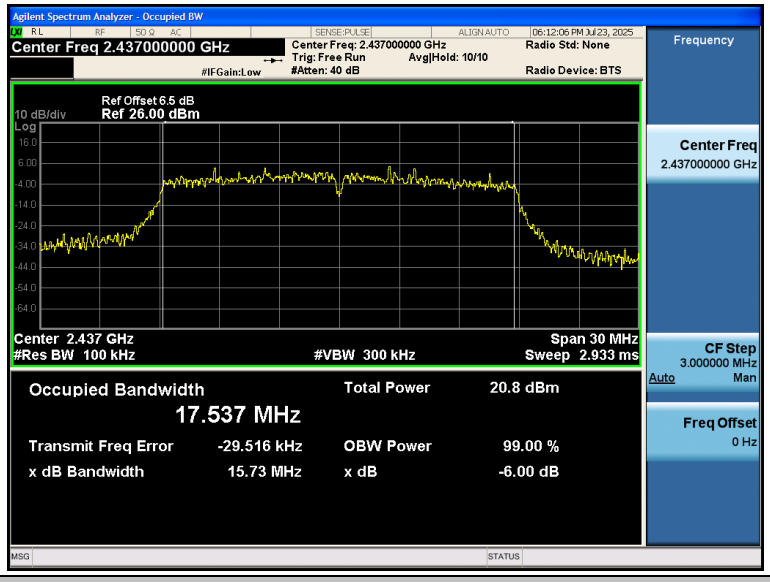
802.11g_2462



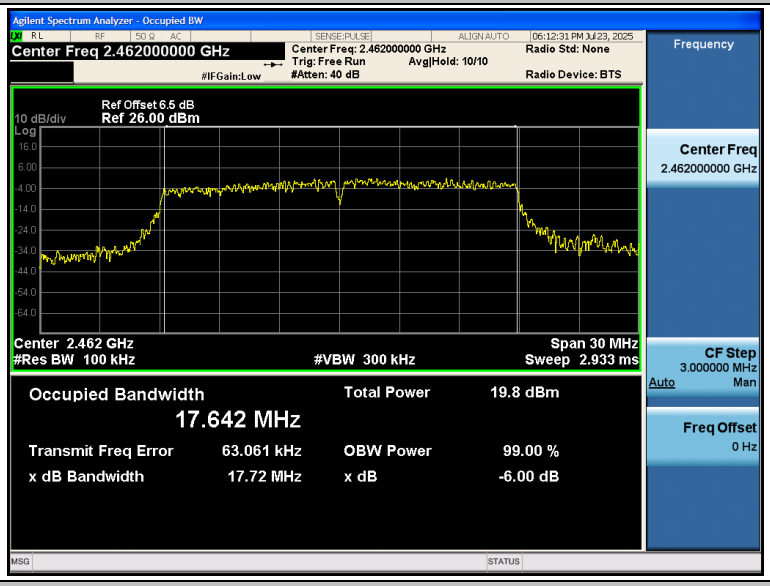
802.11n(HT20)_2412



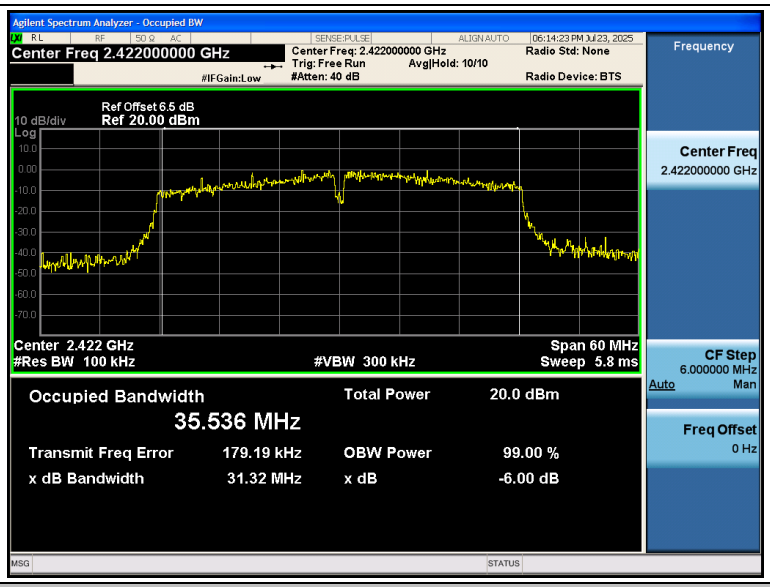
802.11n(HT20)_2437



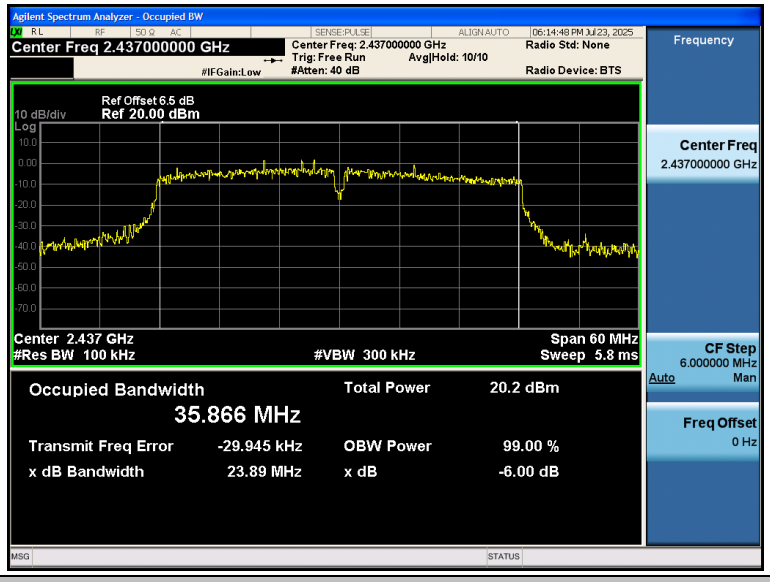
802.11n(HT20)_2462



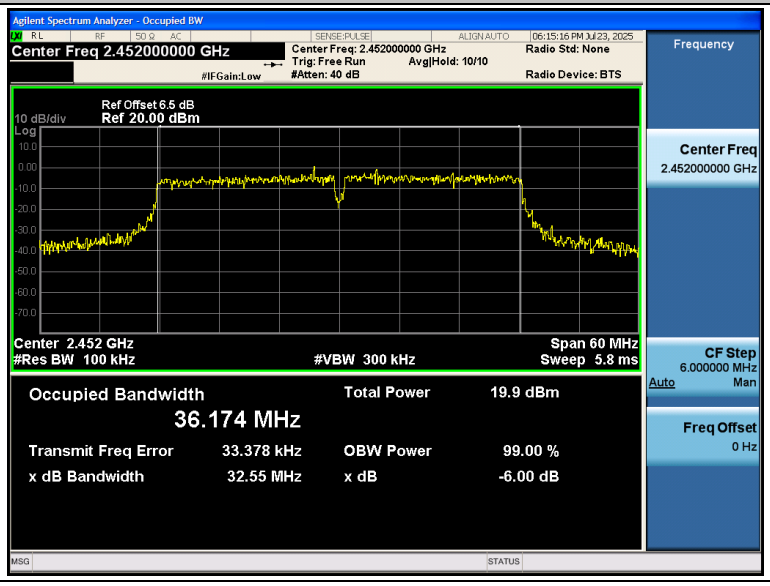
802.11n(HT40)_2422



802.11n(HT40)_2437



802.11n(HT40)_2452



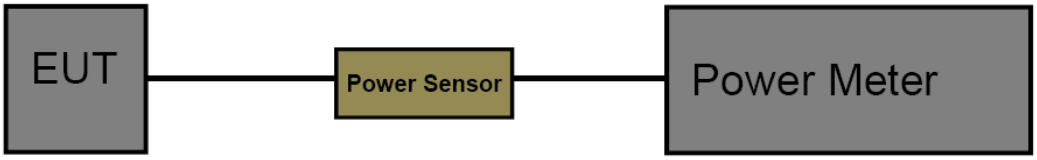
3.6. Maximum Conducted Output Power

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (b)(3)/ RSS-247 5.4:

Section	Test Item	Limit	Frequency Range(MHz)
CFR 47 FCC 15.247(b)(3)	Maximum conducted output power	1 Watt or 30dBm	2400~2483.5
ISED RSS-247 5.4 d	EIRP	4 Watt or 36dBm	2400~2483.5

Test Configuration



Test Procedure

1. The maximum conducted output power may be measured using a broadband RF power meter.
2. Power measurements were performed only when the EUT was transmitting at its AVG power control level using a broadband power meter with a pulse sensor.
3. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.
4. Record the measurement data.

Test Mode

Please refer to the clause 2.4.

Test Result

Test Mode	Frequency [MHz]	Result AVG [dBm]	Limit [MHz]	Verdict
802.11b	2412	17.18	<=30	PASS
	2437	**17.94**	<=30	PASS
	2462	17.42	<=30	PASS
802.11g	2412	14.97	<=30	PASS
	2437	15.99	<=30	PASS
	2462	15.05	<=30	PASS
802.11n(HT20)	2412	15.03	<=30	PASS
	2437	15.75	<=30	PASS
	2462	14.96	<=30	PASS
802.11n(HT40)	2422	13.24	<=30	PASS
	2437	13.24	<=30	PASS
	2452	14.56	<=30	PASS

Note: Test results increased RF cable loss by 1dB.

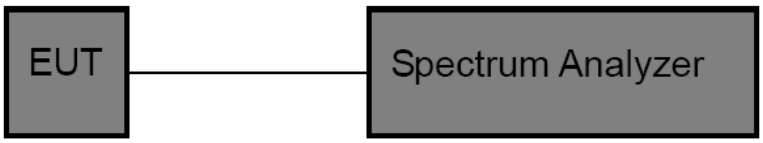
3.7. Power Spectral Density

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (e)/ RSS-247 5.2 b:

Test Item	Limit	Frequency Range(MHz)
Power Spectral Density	8dBm(in any 3 kHz)	2400~2483.5

Test Configuration



Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 DTS Meas Guidance v05r02.
3. Spectrum Setting:

Set analyzer center frequency to DTS channel center frequency.
Set the span to 1.5 times the DTS bandwidth.
Set the RBW to: 3 kHz
Set the VBW to: 10 kHz
Detector: AVG
Sweep time: Auto
Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

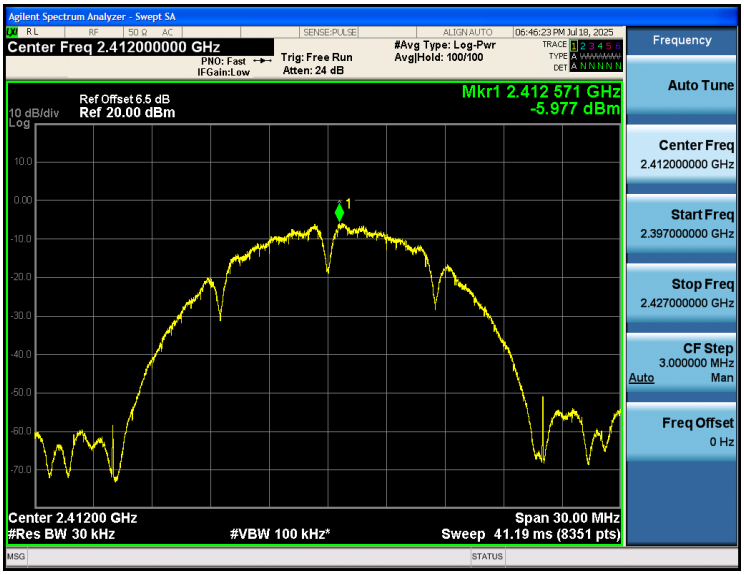
Test Mode

Please refer to the clause 2.4.

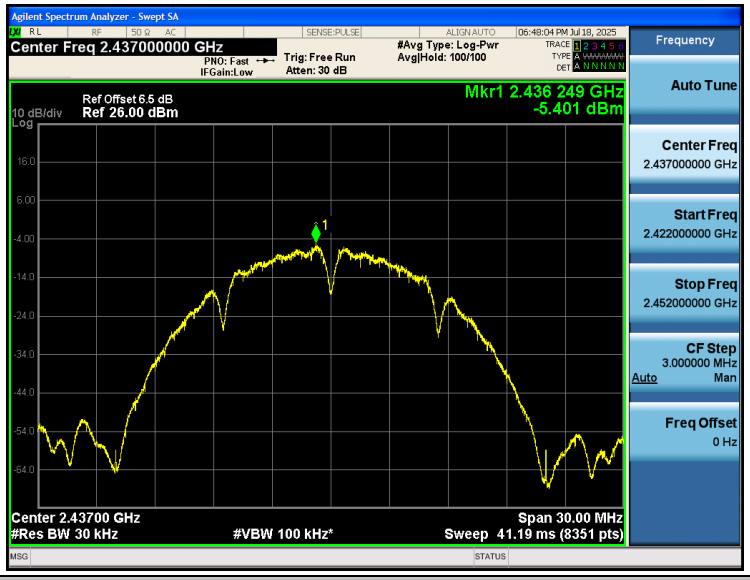
Test Result

Test Mode	Frequency [MHz]	SA_PSD (dBm/30kHz)	Duty factor(dB)	RB factor(dB)	PSD (dBm/3kHz)	Limit [dBm/3kHz]	Verdict
802.11b	2412	-5.98	0.02	-10.00	-15.96	<=8	PASS
	2437	-5.40	0.00	-10.00	-15.40	<=8	PASS
	2462	-5.81	0.02	-10.00	-15.79	<=8	PASS
802.11g	2412	-10.38	0.12	-10.00	-20.26	<=8	PASS
	2437	-9.65	0.18	-10.00	-19.47	<=8	PASS
	2462	-10.70	0.12	-10.00	-20.58	<=8	PASS
802.11n(HT20)	2412	-10.99	0.20	-10.00	-20.79	<=8	PASS
	2437	-9.69	0.13	-10.00	-19.56	<=8	PASS
	2462	-11.11	0.10	-10.00	-21.01	<=8	PASS
802.11n(HT40)	2422	-14.33	0.26	-10.00	-24.07	<=8	PASS
	2437	-15.74	0.26	-10.00	-25.48	<=8	PASS
	2452	-14.98	0.26	-10.00	-24.72	<=8	PASS

802.11b_2412



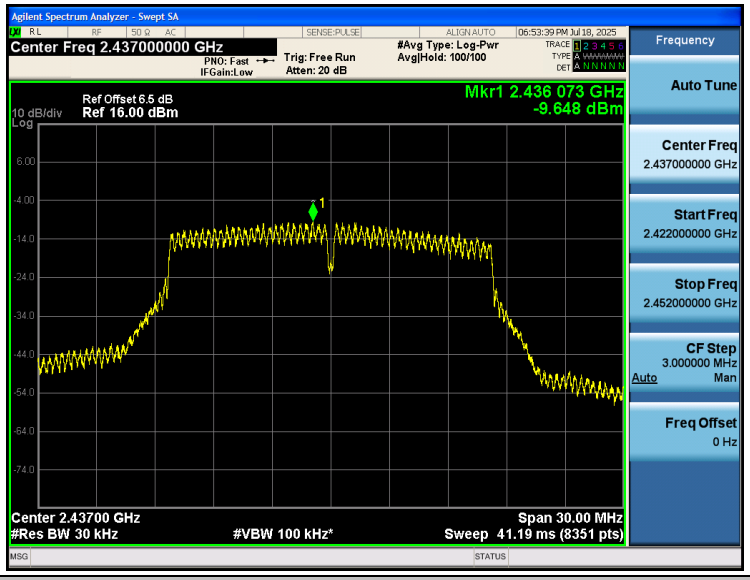
802.11b_2437



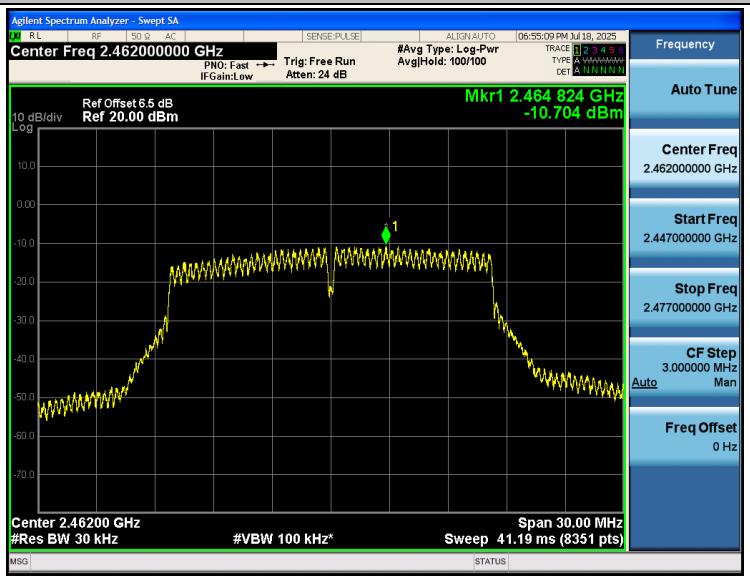
802.11b_2462

802.11g_2412

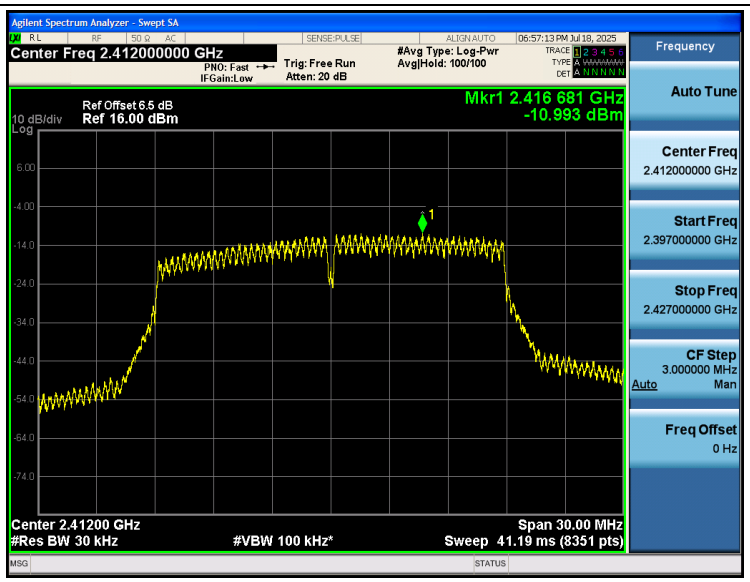
802.11g_2437



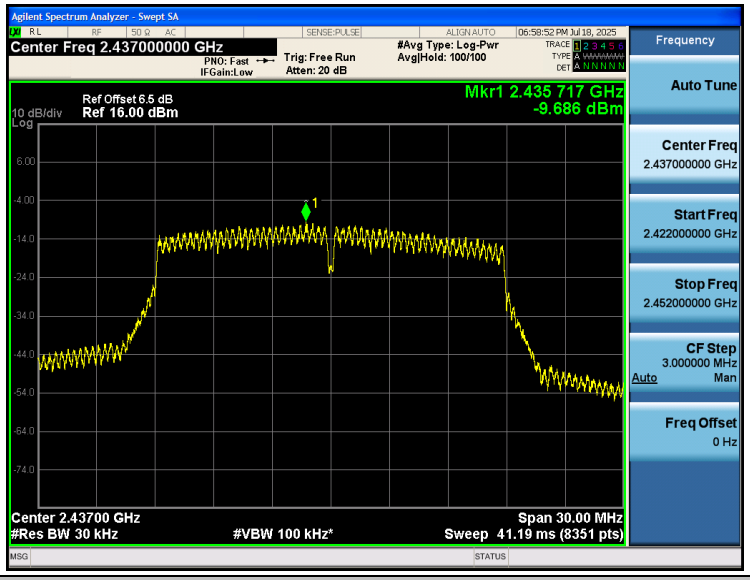
802.11g_2462



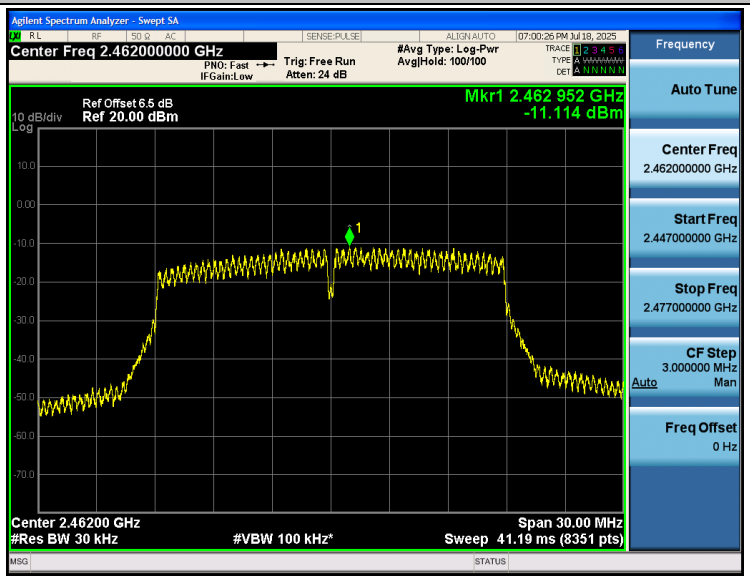
802.11n(HT20)_2412



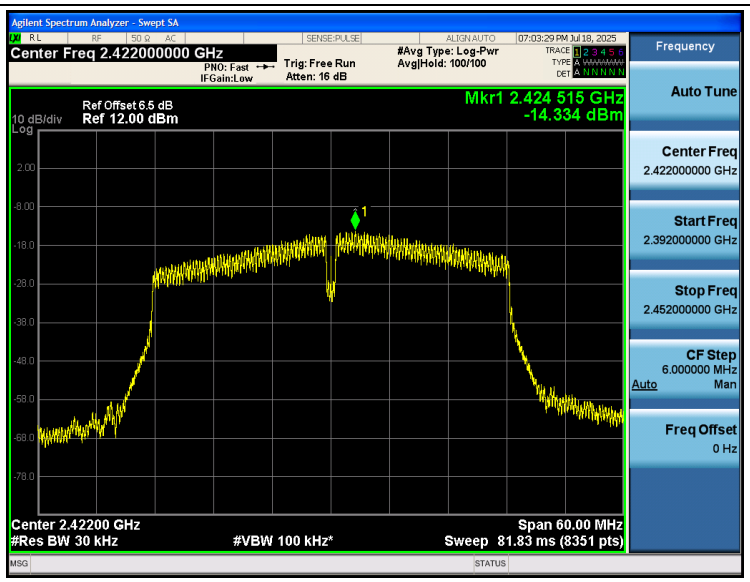
802.11n(HT20)_2437



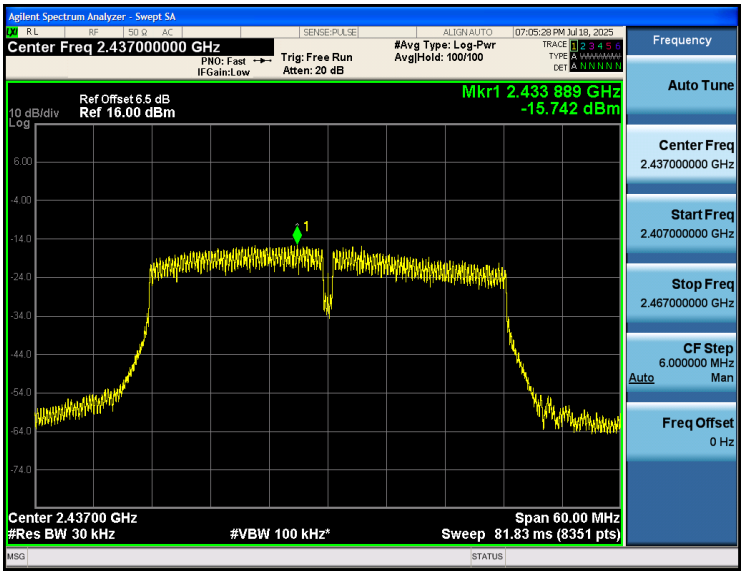
802.11n(HT20)_2462



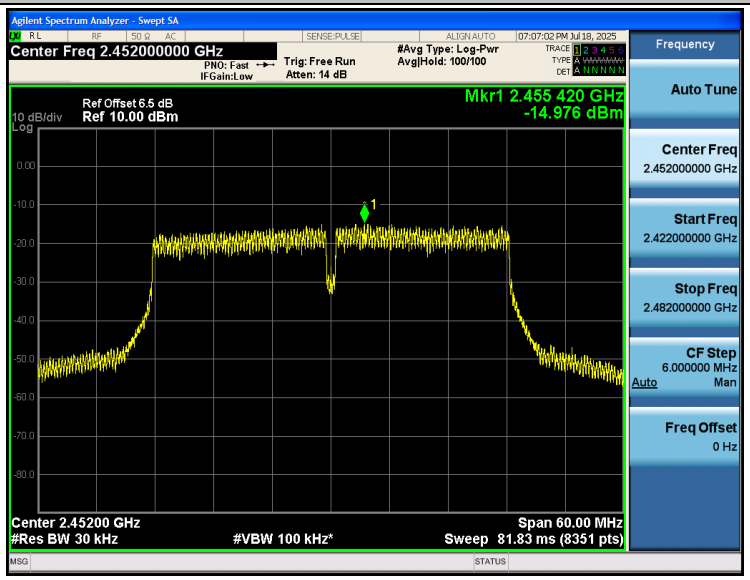
802.11n(HT40)_2422



802.11n(HT40)_2437



802.11n(HT40)_2452

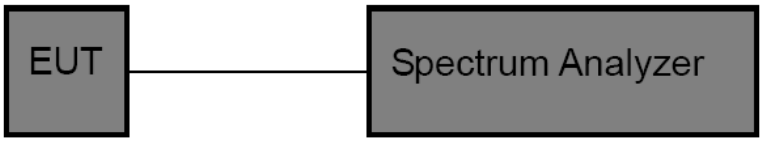


3.8. Duty Cycle

Limit

None, for report purposes only.

Test Configuration



Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 DTS Meas Guidance v05r02.
3. Spectrum Setting:

Set analyzer center frequency to DTS channel center frequency.
Set the span to 0Hz
Set the RBW to 8MHz
Set the VBW to 8MHz
Detector: peak
Sweep time: auto
Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

Test Mode

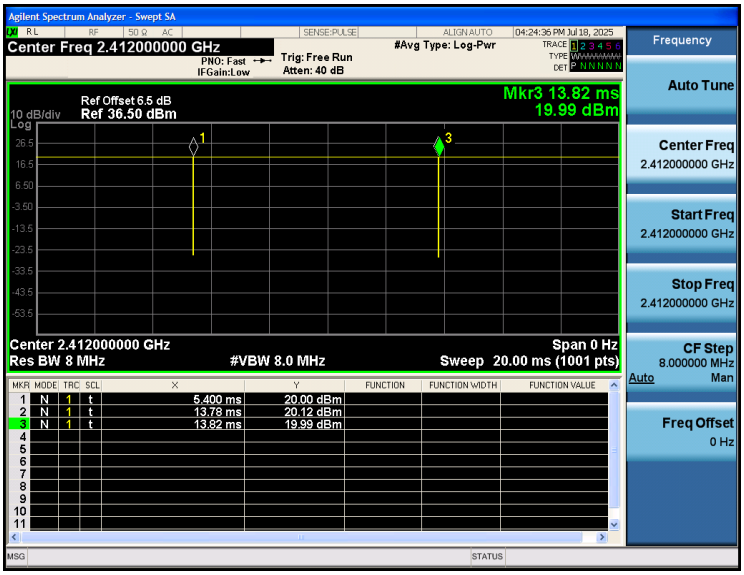
Please refer to the clause 2.4.

Test Result

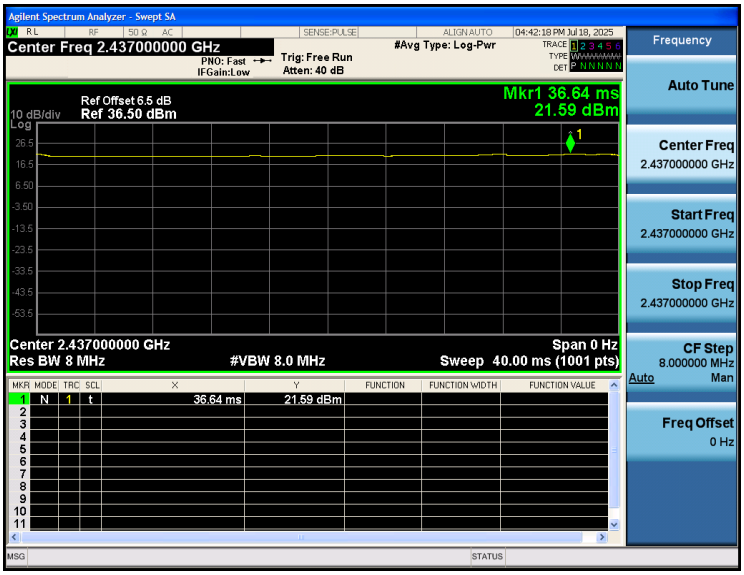
Test Mode	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Duty Cycle Factor	1/T Minimum VBW (kHz)	Final setting For VBW (kHz)
802.11b	2412	8.38	8.42	99.52	0.02	0.12	1
	2437	8.38	8.38	100.00	0.00	0.12	1
	2462	8.38	8.42	99.52	0.02	0.12	1
802.11g	2412	1.40	1.44	97.22	0.12	0.71	1
	2437	1.38	1.44	95.83	0.18	0.72	1
	2462	1.40	1.44	97.22	0.12	0.71	1
802.11n(HT20)	2412	1.30	1.36	95.59	0.20	0.77	1
	2437	1.30	1.34	97.01	0.13	0.77	1
	2462	1.30	1.33	97.74	0.10	0.77	1
802.11n(HT40)	2422	0.64	0.68	94.12	0.26	1.56	2
	2437	0.64	0.68	94.12	0.26	1.56	2
	2452	0.64	0.68	94.12	0.26	1.56	2

Note: Duty Cycle Factor = 10*Log10(1/ Duty Cycle)

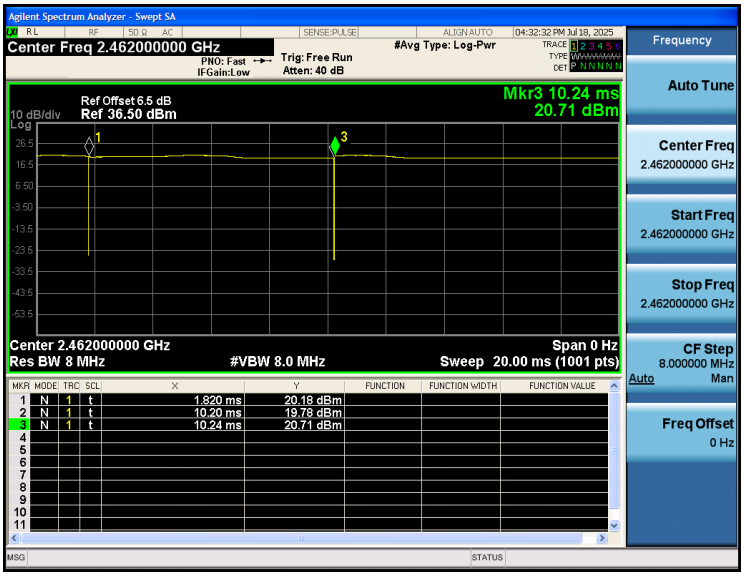
802.11b_2412



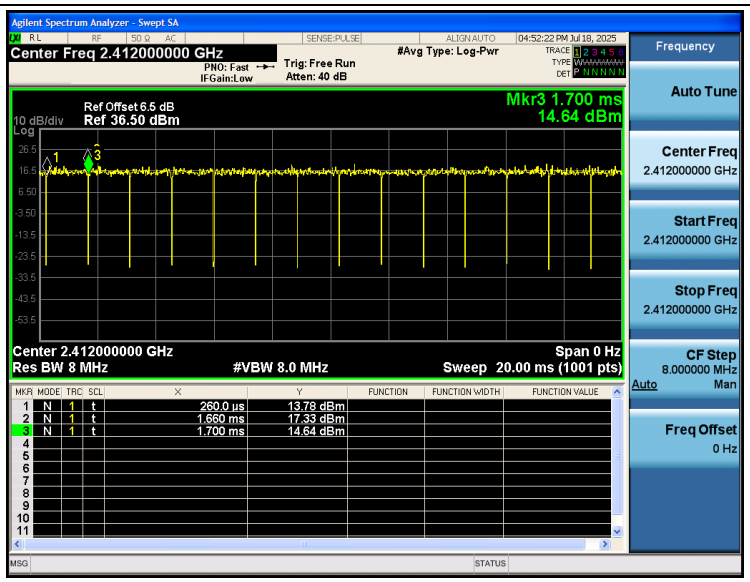
802.11b_2437



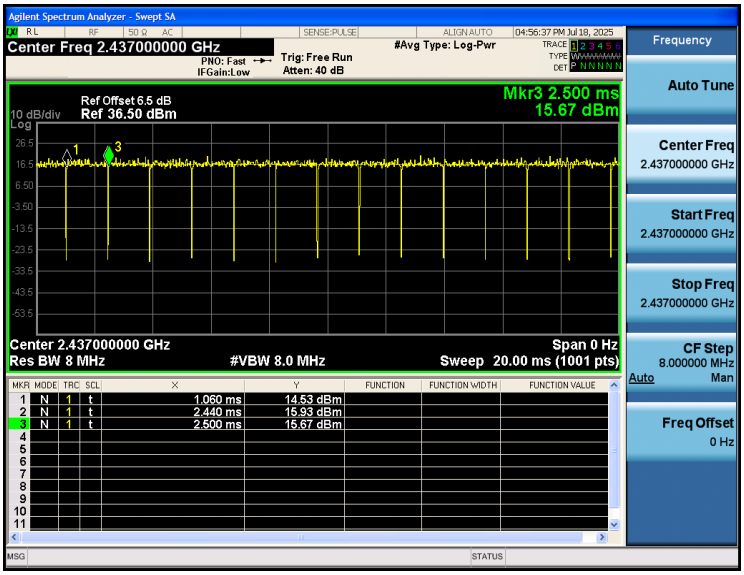
802.11b_2462



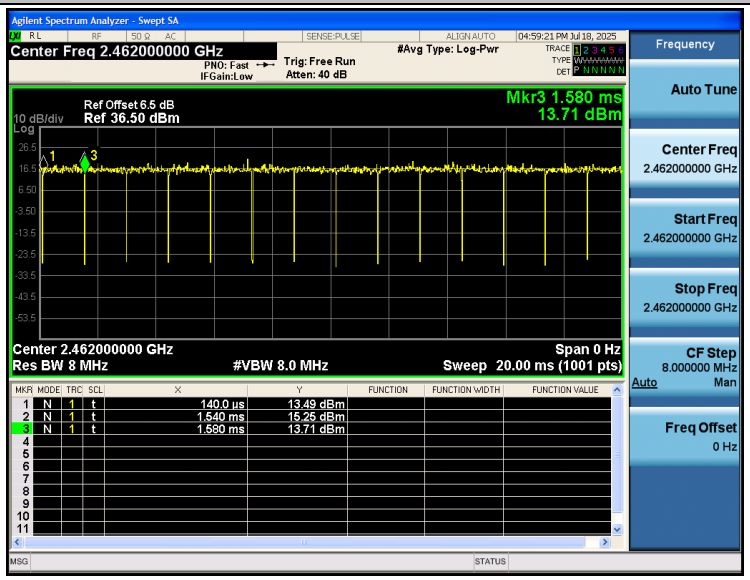
802.11g_2412



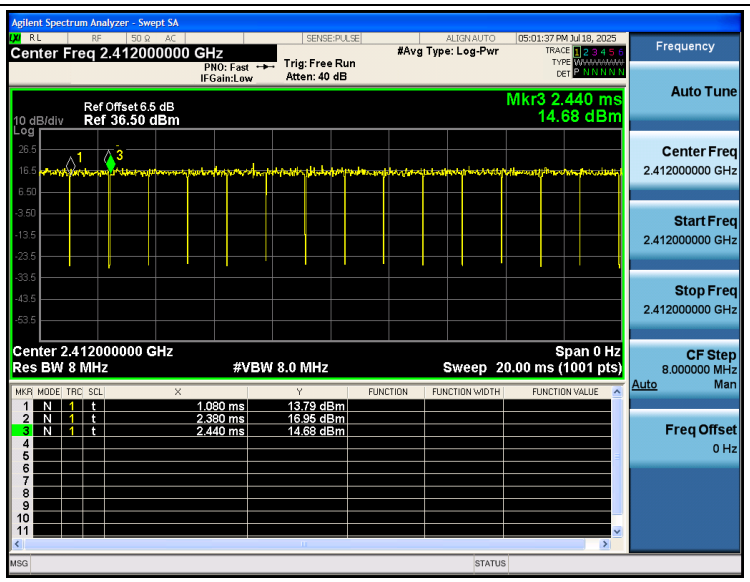
802.11g_2437



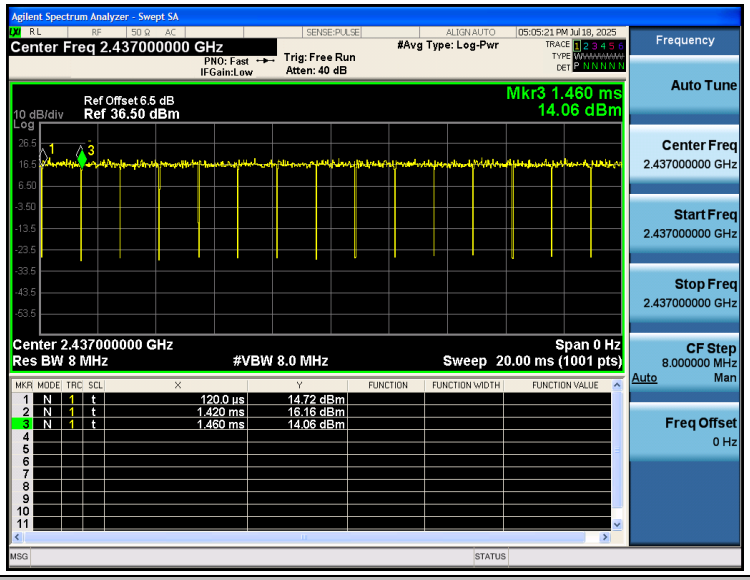
802.11g_2462



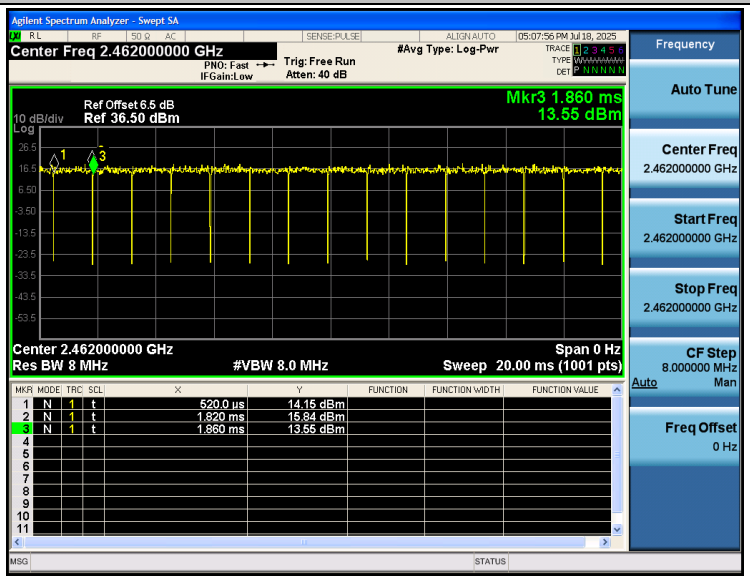
802.11n(HT20)_2412



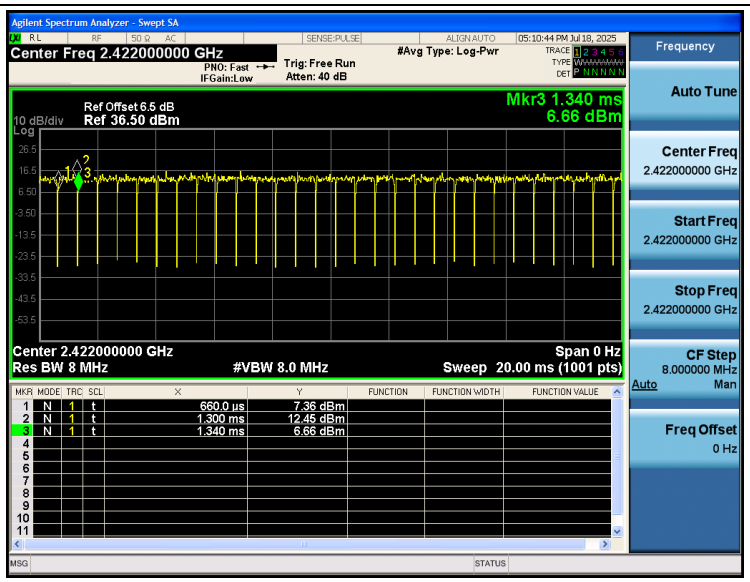
802.11n(HT20)_2437



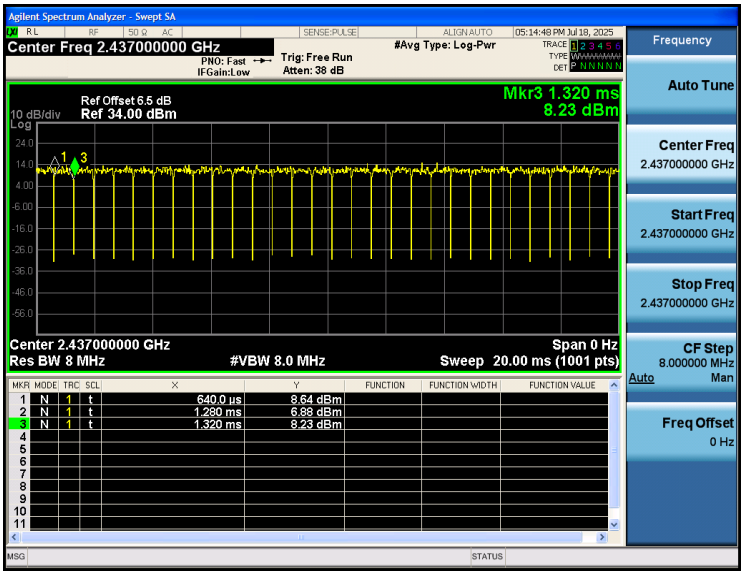
802.11n(HT20)_2462



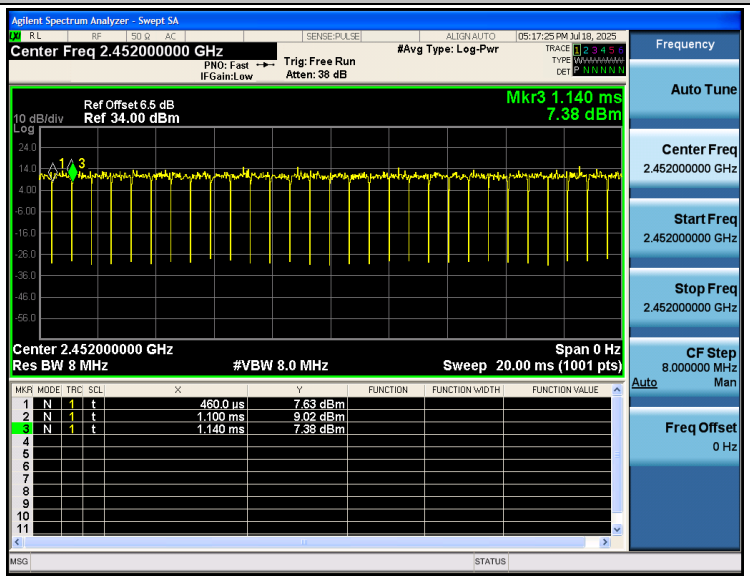
802.11n(HT40)_2422



802.11n(HT40)_2437



802.11n(HT40)_2452



3.9. Antenna requirement

Requirement

FCC CFR Title 47 Part 15 Subpart C 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. The use of a permanently attached antenna or of 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.
FCC CFR Title 47 Part 15 Subpart C Section 15.247(c) (1)(i):
(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.

Test Result

The directional gain of the antenna less than 6dBi, please refer to the EUT internal photographs antenna photo.

************************THE END*************************