TEST REPORT

Product Name:	Mobile Phone
Trade Mark:	ACER
Model No.:	SOSPIRO-A60G
Add. Model No.:	SOSPIRO-A60S
Report Number:	211008003RFC-1
Test Standards:	FCC 47 CFR Part 15.247
FCC ID:	2AZYA-A60
Test Result:	PASS
Date of Issue:	Dec. 03, 2021

Prepared for:

Senwa Global International, S.A. de C.V.
Carretera Mexico-Toluca No. 5324 PB, Colonia El Yaqui Del.
Cuajimalpa de Morelos, C.P. 05320 Ciudad de Mexico

Prepared by:

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	Project Engineer		Project Team Leader
Approved by:	Kevin Liang	Date:	Dec. 03, 2021
	Assistant Manager		

UnionTrust Laboratories UnionTrust *Certified*

Version

Version No.	Date	Description
V1.0	Dec. 03, 2021	Original Report

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1. GENERAL INFORMATION

1.1. CLIENT INFORMATION

Applicant:	Senwa Global International, S.A. de C.V.
Address of Applicant:	Carretera Mexico-Toluca No. 5324 PB, Colonia El Yaqui Del. Cuajimalpa de Morelos, C.P. 05320 Ciudad de Mexico
Manufacturer:	Senwa Mobile China Ltd
Address of Manufacturer:	A611, Languang technology building, No. 27, Gaoxin North 6th Road, songpingshan community, Xili street, Nanshan District, Shenzhen, Guangdong Province

1.2. EUT INFORMATION

1.2.1. General Description of EUT

Product Name:	Mobile Phone
Model No.:	SOSPIRO-A60G
Add. Model No.:	SOSPIRO-A60S (Note 1)
Trade Mark:	ACER
DUT Stage:	Identical Prototype
Power Supply (AC):	100-240 V~50/60 Hz, 0.2 A
Power Supply (DC):	5.0 V/1 A or USB Port
Power Supply (Battery):	3.8 Vdc
Software Version:	Acer_A60_Ver01
Hardware Version:	sp7731e_1h10
Sample Received Date:	October 8, 2021
Sample Tested Date:	October 11, 2021 to October 20, 2021
Note 1: SOSPIRO-A60S is the serial model of SOSPIRO-A60G, there is no any other different for these two models except color. The last letter of model indicated different color, G is for green, S is for silver.	

1.2.2. Description of Accessories

Adapter	
Model No.:	SGCH1000
Input:	100-240 V~50/60 Hz, 0.2 A
Output:	5.0 V/1 A
AC Cable:	N/A
DC Cable:	N/A

Battery	
Model No.:	SGBT3000
Battery Type:	Lithium-ion Rechargeable Battery
Rated Voltage:	3.8 Vdc
Limited Charge Voltage:	4.4 Vdc
Rated Capacity:	3000 mAh

Cable	
Model No.:	N/A
Description:	USB Micro-B Plug Cable
Cable Type:	Unshielded without ferrite
Length:	1 Meter

Earphone	
Model No.:	N/A
Cable Type:	Unshielded without ferrite
Length:	0.9 Meter

1.3. PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

EUT Supports technology of radio frequency	
Frequency Band:	2400 MHz to 2483.5 MHz
Frequency Range:	2412 MHz to 2462 MHz
Support Standards:	IEEE 802.11b, IEEE 802.11g, IEEE 802.11n-HT20
Type of Modulation:	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g/n: OFDM (64-QAM, 16-QAM, QPSK, BPSK)
Data Rate:	IEEE 802.11b: Up to 11 Mbps IEEE 802.11g: Up to 54 Mbps IEEE 802.11n: Up to MCS7
Number of Channels:	IEEE 802.11b/g/n-HT20: 11
Maximum Peak Power:	IEEE 802.11b: 19.03 dBm IEEE 802.11g: 21.29 dBm IEEE 802.11n-HT20: 19.68 dBm
Antenna Type:	PIFA Antenna
Antenna Gain:	1.3 dBi
Normal Test Voltage:	3.8 Vdc
EUT Test software:	Test Mode: *#*#83781#*#*

1.4. GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Mobile Phone according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

FCC 47 CFR Part 15.247

All test items have been performed and recorded as per the above standards

1.5. DESCRIPTION OF SUPPORT UNITS

1) Support Equipment

Description	Manufacturer	Model No.	Serial Number	Supplied by
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2) Support Cable

Cable No.	Description	Connector	Length	Supplied by
1	SMA Cable	SMA	0.3 m	UnionTrust

1.6. TEST LOCATION

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China
Telephone: +86 (0) 755 2823 0888
Fax: +86 (0) 755 2823 0886

1.7. TEST FACILITY

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

Shenzhen UnionTrust Quality and Technology Co., Ltd.

CNAS-Lab Code: L9069
The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturers recommendations, and is traceable under the ISO/IEC 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

A2LA-Lab Certificate No.: 4312.01
Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

ISED Wireless Device Testing Laboratories
CAB identifier: CN0032

FCC Accredited Lab.
Designation Number: CN1194
Test Firm Registration Number: 259480

1.8. DEVIATION FROM STANDARDS

None.

1.9. ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.10. OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

1.11. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Measurement Uncertainty
1	Conducted emission	9 kHz to 150 kHz: ± 3.2 dB (AMN)
2		150 kHz to 30 MHz: ± 2.7 dB (AMN)
3	Radiated emission	9 kHz to 30 MHz: ± 4.7 dB (SAC)
4		30 MHz to 1 GHz: ± 4.6 dB (SAC)
5		1 GHz to 18 GHz: ± 4.4 dB (FAR)
6		18 GHz to 26 GHz: ± 4.6 dB (FAR)
7		26 GHz to 40 GHz: ± 4.6 dB (FAR)
8	Conducted Output Power	± 0.68 dB
9	6dB Bandwidth	± 1.86 %
10	Power Spectral Density	± 0.6 dB
11	Conducted Out of Band Emission	± 2.7 dB
12	Radio Frequency	± 6.5 x 10^{-8}

2. TEST SUMMARY

RF Measurement Requirements					
Test Item	**Test Standard**	**Test Requirement**	**Test Method**	**Limit**	**Result**
AC Power Line Conducted Emission	FCC 47 CFR Part 15.247	FCC Part 15.207	ANSI C63.10-2013, Clause 6.2	FCC Part 15.207	Pass
Conducted Peak Output Power	FCC 47 CFR Part 15.247	FCC Part 15.247 (b)(3)	ANSI C63.10-2013, Clause 11.9.1.3	FCC Part 15.247 (b)(3)	Pass
6dB Bandwidth	FCC 47 CFR Part 15.247	FCC Part 15.247 (a)(2)	ANSI C63.10-2013, Clause 11.8.1	FCC Part 15.247 (a)(2)	Pass
Power Spectral Density	FCC 47 CFR Part 15.247	FCC Part 15.247 (e)	ANSI C63.10-2013, Clause 11.10.2	FCC Part 15.247 (e)	Pass
Conducted Out of Band Emission	FCC 47 CFR Part 15.247	FCC Part 15.247(d)	ANSI C63.10-2013, Clause 11.11	FCC Part 15.247(d)	Pass
Radiated Emissions	FCC 47 CFR Part 15.247	FCC Part 15.205/15.209	ANSI C63.10-2013, Clause 11.11 & Clause 11.12	FCC Part 15.205/15.209	Pass
Band Edge Measurements (Radiated)	FCC 47 CFR Part 15.247	FCC Part 15.205/15.209	ANSI C63.10-2013, Clause 11.13	FCC Part 15.205/15.209	Pass
Duty Cycle	FCC 47 CFR Part 15.247	None; for reporting purposes only.	ANSI C63.10-2013, Clause 11.6	N/A	Pass

RF Evaluation Requirements					
Test Item	**Test Standard**	**Test Requirement**	**Test Method**	**Limit**	**Result**
Antenna Requirement	FCC 47 CFR Part 15.247	FCC Part 15.203/15.247 (b)(4)	N/A	FCC Part 15.203/15.247 (b)(4)	Pass

3. EQUIPMENT LIST

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Test Equipment of AC Power Line Conducted Emission					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal.Date (mm dd, yyyy)**	**Cal.Due Date (mm dd, yyyy)**
LISN Artifical Mains Network	ROHDE & SCHWARZ	ESH2-Z5	860014/024	18-Nov-2020	17-Nov-2021
Receiver	ROHDE & SCHWARZ	ESR7	101181	18-Nov-2020	17-Nov-2021
Pulse Limiter	ROHDE & SCHWARZ	ESH3-Z2	0357.8810.54	18-Nov-2020	17-Nov-2021
Shielding room	ETS-Lindgren	843	Euroshiedpn-CT001270-1246	N/A	N/A
Test Software	Audix	e3	Software Version: 9 20151119i	N/A	N/A

Test Equipment of RF Conducted					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal.Date (mm dd, yyyy)**	**Cal.Due Date (mm dd, yyyy)**
EXA Signal Analyzer	KEYSIGHT	N9010A	MY51440197	22-Apr-2021	21-Apr-2022
USB Wideband Power Sensor	KEYSIGHT	U2021XA	MY55430023	10-Nov-2020	9-Nov-2021

Test Equipment of Radiated Emissions & Band Edge Measurements (Radiated)					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal.Date (mm dd, yyyy)**	**Cal.Due Date (mm dd, yyyy)**
3 m SAC	ETS-Lindgren	3 m	Euroshiedpn-CT001270-1317	22-Jan-2021	21-Jan-2024
Loop Antenna	ETS-Lindgren	6502	00202525	14-Nov-2020	13-Nov-2022
Broadband Antenna	ETS-Lindgren	3142E	00201566	14-Nov-2020	13-Nov-2022
Double-Ridged Waveguide Horn Antenna (Pre-amplifier)	ETS-Lindgren	3117-PA	00201541	30-Apr-2021	29-Apr-2023
Pre-amplifier	ETS-Lindgren	00118385	00201874	10-Nov-2020	9-Nov-2021
Double-Ridged Waveguide Horn Antenna (Pre-amplifier)	ETS-Lindgren	3116C-PA	00202652	14-Nov-2020	13-Nov-2022
Pre-amplifier	ETS-Lindgren	00118384	00202652	17-Nov-2020	16-Nov-2022
Receiver	ROHDE & SCHWARZ	ESIB26	100114	18-Nov-2020	17-Nov-2021
Pre-amplifier	HP	8447F	2805A02960	10-Nov-2020	9-Nov-2021
Band Reject Filter(2400MHz~2500MHz)	Micro-tronics	BRM50702	G248	16-Nov-2020	15-Nov-2021
6dB Attenuator	Talent	RA6A5-N-18	18103001	14-Nov-2020	13-Nov-2022
Test Software	Audix	e3	Software Version: 19815(V9)	N/A	N/A
Multi device Controller	ETS-Lindgren	7006-001	00160105	N/A	N/A

4. TEST CONFIGURATION

4.1. ENVIRONMENTAL CONDITIONS FOR TESTING

4.1.1. Normal or Extreme Test Conditions

Environment Parameter	Selected Values During Tests		
Test Condition	Ambient		
	Temperature (°C)	Voltage	Relative Humidity (%)
TN/VN	+15 to +35	3.8 V	20 to 75
Remark: 1) NV: Normal Voltage; NT: Normal Temperature			

4.1.2. Record of Normal Environment

Test Item	Temperature (°C)	Relative Humidity (%)	Pressure (kPa)	Tested by
AC Power Line Conducted Emission	25	48	101.1	David Zhang
Conducted Peak Output Power	24	60	99.9	Hank Wu
6dB Bandwidth	24	60	99.9	Hank Wu
Power Spectral Density	22	59	99.9	Hank Wu
Conducted Out of Band Emission	24	51	101.8	Hank Wu
Radiated Emissions	24.5	46	100.14	Fire Huo
Band Edge Measurements (Radiated)	24.5	46	100.14	Fire Huo
Duty Cycle	24	51	101.8	Hank Wu

4.2. CHANNEL LIST

4.2.1. All Channel List

Operation Frequency Each of Channel	
IEEE 802.11b, IEEE 802.11g, IEEE 802.11n-HT20	**f = 2407 + 5k MHz, k = 1,…,11**
Note: **f** is the operating frequency (MHz); **k** is the operating channel.	

4.2.2. Test Channel

Wi-Fi				
Mode	Tx/Rx Frequency	Test RF Channel Lists		
		Lowest(L)	Middle(M)	Highest(H)
IEEE 802.11b	2412 MHz to 2462 MHz	Channel 1	Channel 6	Channel 11
		2412 MHz	2437 MHz	2462 MHz
IEEE 802.11g	2412 MHz to 2462 MHz	Channel 1	Channel 6	Channel 11
		2412 MHz	2437 MHz	2462 MHz
IEEE 802.11n-HT20	2412 MHz to 2462 MHz	Channel 1	Channel 6	Channel 11
		2412 MHz	2437 MHz	2462 MHz

4.3. TEST MODES

Mode	Tx Function	Description
IEEE 802.11b IEEE 802.11g IEEE 802.11n-HT20	Tx	1. Keep the EUT in continuously transmitting with modulation test single.

4.4. PRE-SCAN

4.4.1. Worst-case data rates

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and data rate. Following data rate was (were) selected for the final test as listed below.

Mode	Worst-case data rates
IEEE 802.11b	1 Mbps
IEEE 802.11g	6 Mbps
IEEE 802.11n-HT20	MCS0

5. RADIO TECHNICAL REQUIREMENTS SPECIFICATION

5.1. ANTENNA REQUIREMENT

5.1.1. Applicability

FCC Part 15.203/15.247 (b)(4)

5.1.2. Requirements

Antenna Requirement
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. **15.247(b) (4) requirement:** The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.1.3. Description

The EUT Antenna in the interior of the equipment and no consideration of replacement. The gain of the antenna is 1.3 dBi.

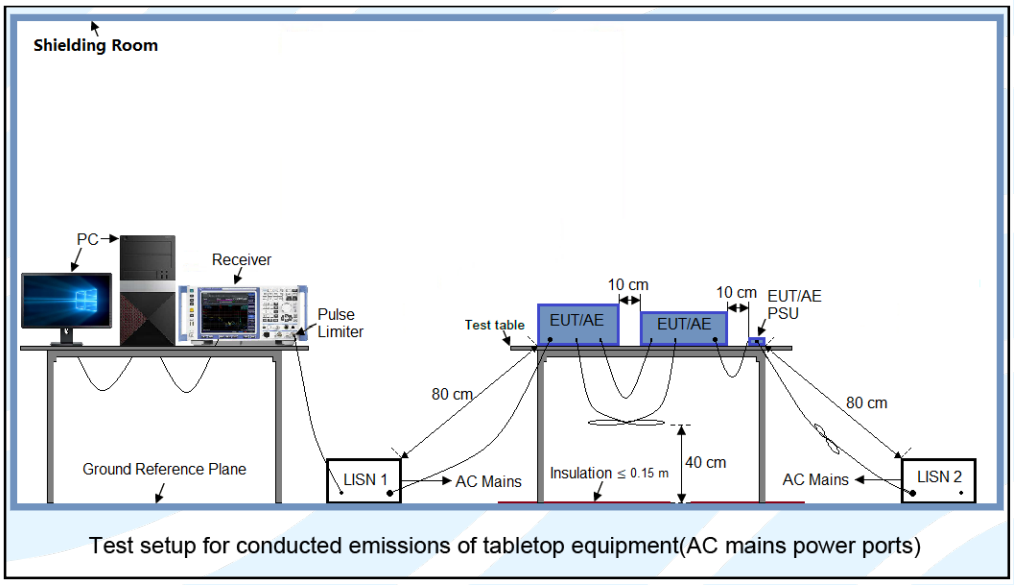
5.2. AC POWER LINE CONDUCTED EMISSION

Test Standard FCC 47 CFR Part 15.247
Test Requirement: FCC Part 15.207
Test Method: ANSI C63.10-2013, Clause 6.2
Limit:

Frequency range (MHz)	Limits (dB(μV))	
	Quasi-peak	Average
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50

Remark:
1. The lower limit shall apply at the transition frequencies.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz.

Test Setup:



Test setup for conducted emissions of tabletop equipment(AC mains power ports)

Test Procedures:

Test frequency range :150kHz-30MHz

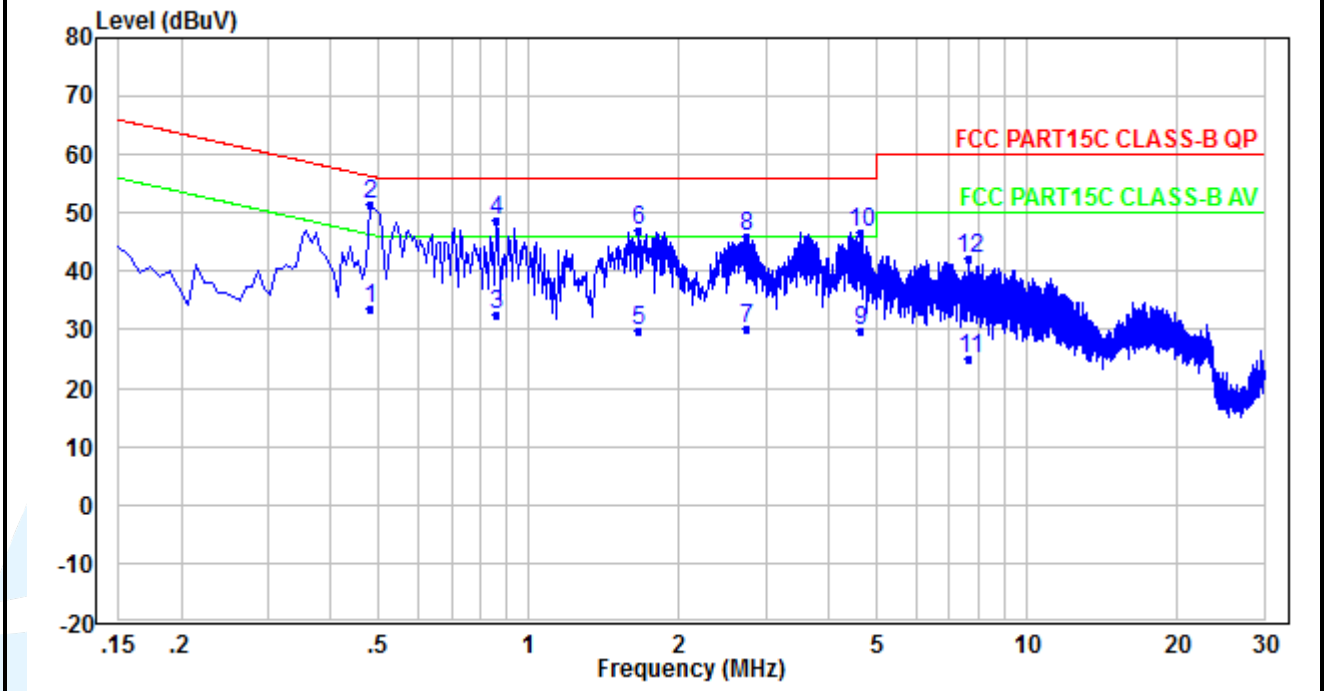
1) The mains terminal disturbance voltage test was conducted in a shielded room.
2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Equipment Used: Refer to section 3 for details.

Test Result: Pass

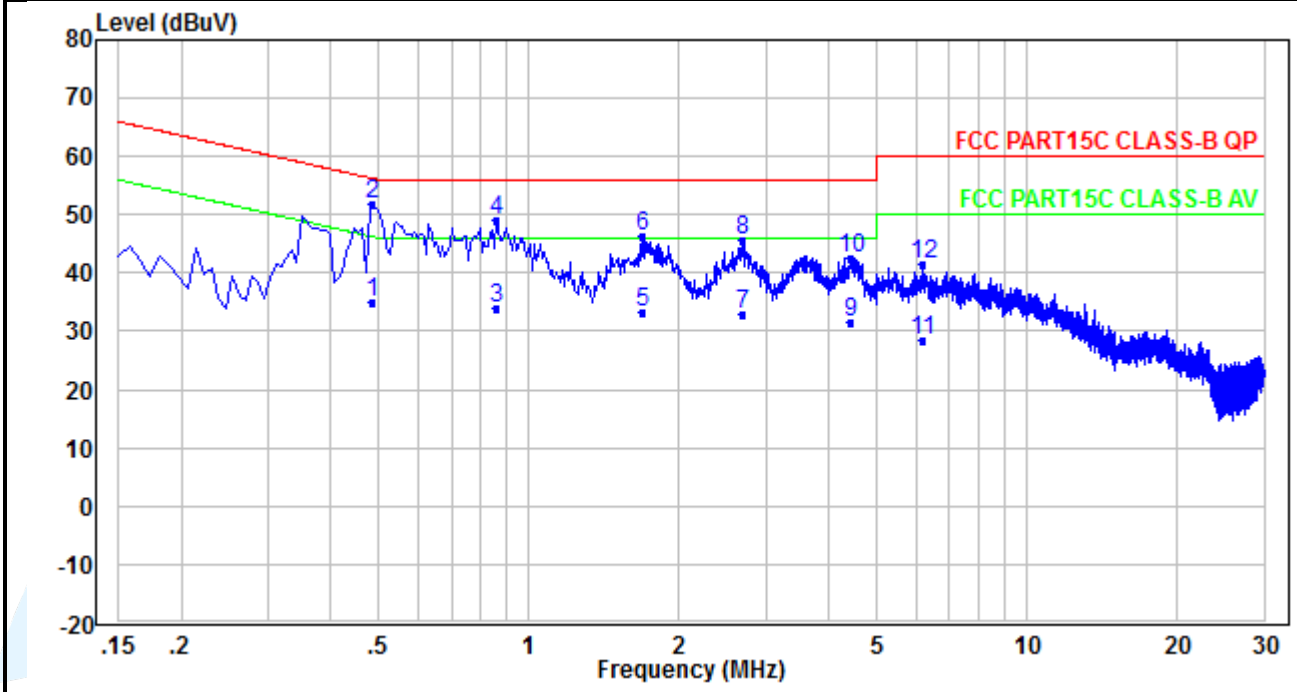
The measurement data as follows:

AC Power Ports: Wi-Fi Link_Line



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.47793	23.7	9.8	33.5	46.4	-12.9	Average
2	0.47793	41.7	9.8	51.5	56.4	-4.9	QP
3	0.86186	22.7	9.9	32.6	46.0	-13.4	Average
4	0.86186	38.7	9.9	48.6	56.0	-7.4	QP
5	1.662	20.0	9.9	29.9	46.0	-16.1	Average
6	1.662	37.0	9.9	46.9	56.0	-9.1	QP
7	2.725	20.1	9.9	30.0	46.0	-16.0	Average
8	2.725	36.1	9.9	46.0	56.0	-10.0	QP
9	4.629	19.5	10.2	29.7	46.0	-16.3	Average
10	4.629	36.5	10.2	46.7	56.0	-9.3	QP
11	7.684	14.8	10.2	25.1	50.0	-24.9	Average
12	7.684	31.8	10.2	42.1	60.0	-17.9	QP

AC Power Ports: Wi-Fi Link_Neutral

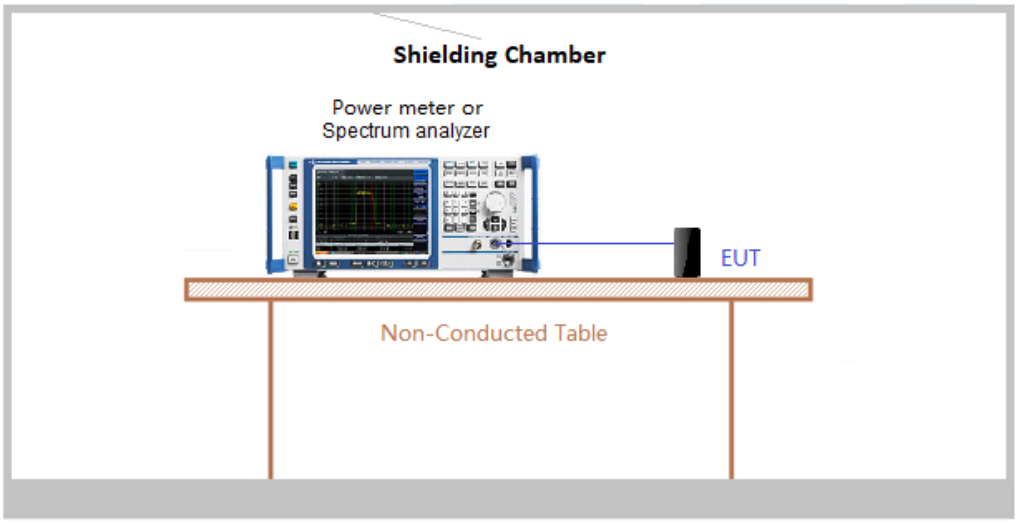


No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.48593	25.0	9.8	34.8	46.2	-11.4	Average
2	0.48593	42.0	9.8	51.8	56.2	-4.4	QP
3	0.86186	24.2	9.8	34.0	46.0	-12.1	Average
4	0.86186	39.2	9.8	49.0	56.0	-7.1	QP
5	1.686	23.3	9.9	33.2	46.0	-12.8	Average
6	1.686	36.3	9.9	46.2	56.0	-9.8	QP
7	2.677	22.8	10.0	32.8	46.0	-13.2	Average
8	2.677	35.8	10.0	45.8	56.0	-10.2	QP
9	4.437	21.6	10.1	31.7	46.0	-14.3	Average
10	4.437	32.6	10.1	42.7	56.0	-13.3	QP
11	6.189	18.3	10.2	28.5	50.0	-21.5	Average
12	6.189	31.3	10.2	41.5	60.0	-18.5	QP

5.3. CONDUCTED PEAK OUTPUT POWER

Test Standard FCC 47 CFR Part 15.247
Test Requirement: FCC Part 15.247 (b)(3)
Test Method: ANSI C63.10-2013, Clause 11.9.1.3
Limit:
For systems using digital modulation in the 2400-2483.5 MHz bands: 1 Watt.

Test Setup:



Test Procedures:

1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter.
2. Measure out each test modes' peak or average output power, record the power level.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Equipment Used: Refer to section 3 for details.
Test Result: Pass

The measurement data as follows:

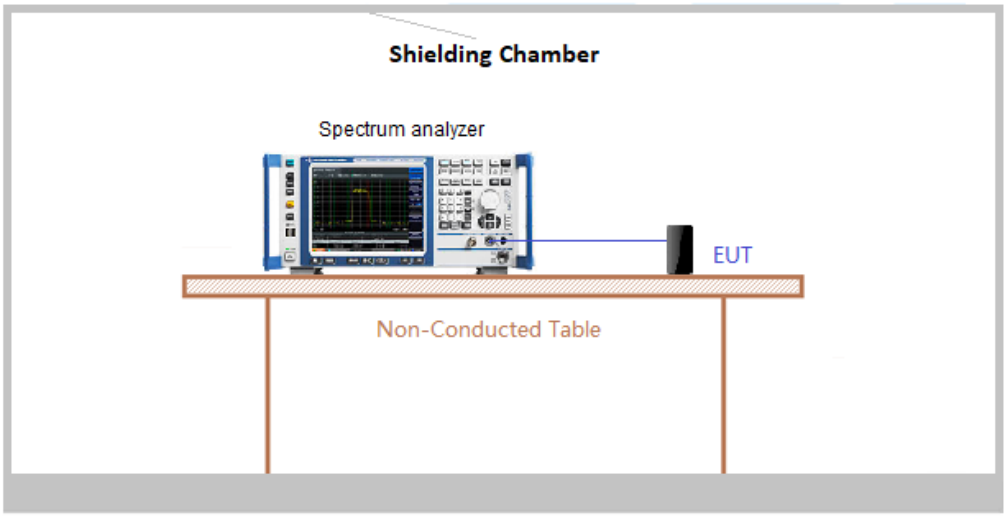
Mode	Channel	Frequency (MHz)	Power Setting	Maximum Conducted Peak Power (dBm)	Limit (dBm)	Results
IEEE 802.11b	1	2412	N/A	18.02	30	Pass
IEEE 802.11b	6	2437	N/A	17.87	30	Pass
IEEE 802.11b	11	2462	N/A	19.03	30	Pass
IEEE 802.11g	1	2412	13	20.08	30	Pass
IEEE 802.11g	6	2437	13	20.97	30	Pass
IEEE 802.11g	11	2462	13	21.29	30	Pass
IEEE 802.11n-HT20	1	2412	12	18.37	30	Pass
IEEE 802.11n-HT20	6	2437	12	18.64	30	Pass
IEEE 802.11n-HT20	11	2462	12	19.68	30	Pass

Mode	Channel	Frequency (MHz)	Power Setting	Maximum Conducted Average Power (dBm)
IEEE 802.11b	1	2412	N/A	14.83
IEEE 802.11b	6	2437	N/A	14.72
IEEE 802.11b	11	2462	N/A	15.65
IEEE 802.11g	1	2412	13	11.13
IEEE 802.11g	6	2437	13	11.15
IEEE 802.11g	11	2462	13	12.04
IEEE 802.11n-HT20	1	2412	12	9.16
IEEE 802.11n-HT20	6	2437	12	9.10
IEEE 802.11n-HT20	11	2462	12	10.06
Note: Average power is for reporting purposes only.				

5.4. 6DB BANDWIDTH

Test Standard FCC 47 CFR Part 15.247
Test Requirement: FCC Part 15.247 (a)(2)
Test Method: ANSI C63.10-2013, Clause 11.8.1
Limit:
For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz

Test Setup:



Test Procedures:

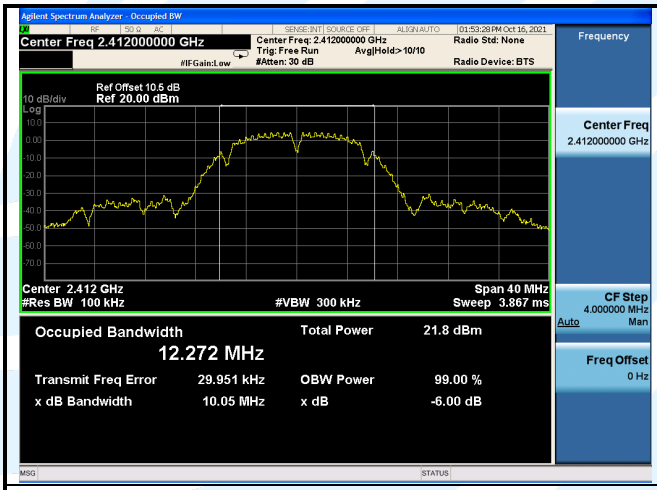
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
Use the following spectrum analyzer settings:
a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 x RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

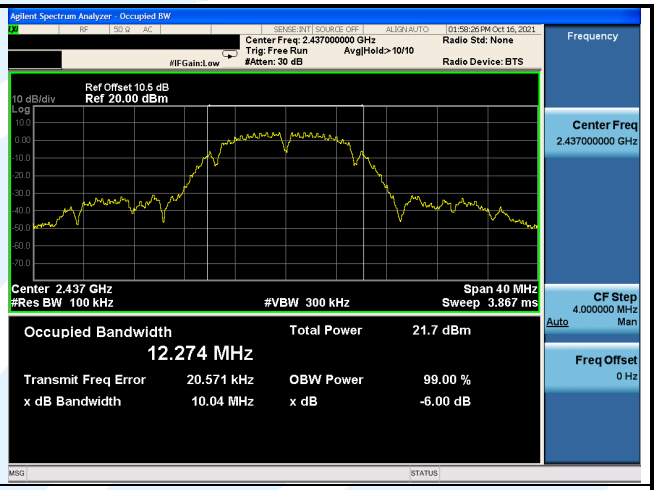
Equipment Used: Refer to section 3 for details.
Test Result: Pass

The measurement data as follows:

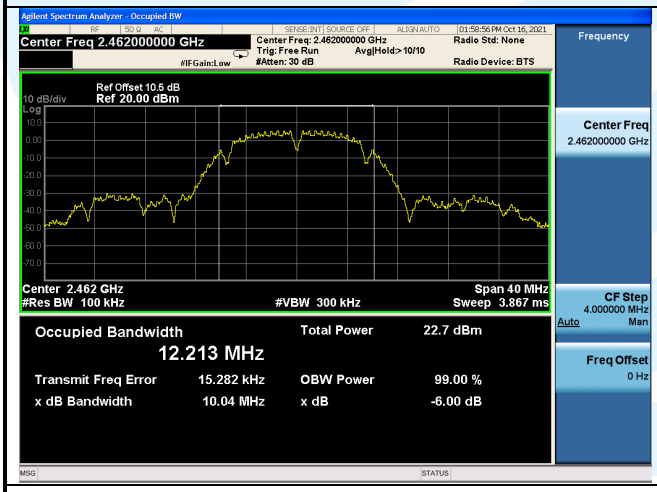
Mode	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limit (kHz)	Results
IEEE 802.11b	1	2412	10.05	12.272	> 500	Pass
IEEE 802.11b	6	2437	10.04	12.274	> 500	Pass
IEEE 802.11b	11	2462	10.04	12.213	> 500	Pass
IEEE 802.11g	1	2412	16.40	16.575	> 500	Pass
IEEE 802.11g	6	2437	16.40	16.576	> 500	Pass
IEEE 802.11g	11	2462	16.38	16.570	> 500	Pass
IEEE 802.11n-HT20	1	2412	17.59	17.653	> 500	Pass
IEEE 802.11n-HT20	6	2437	17.60	17.662	> 500	Pass
IEEE 802.11n-HT20	11	2462	17.58	17.655	> 500	Pass



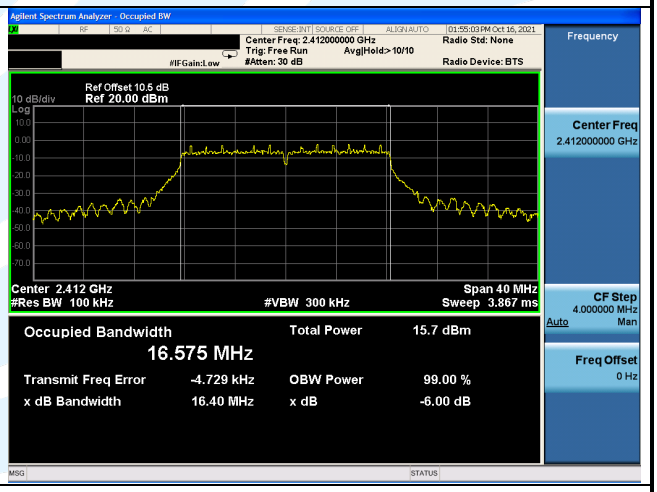
ANT 1: 802.11b CH01



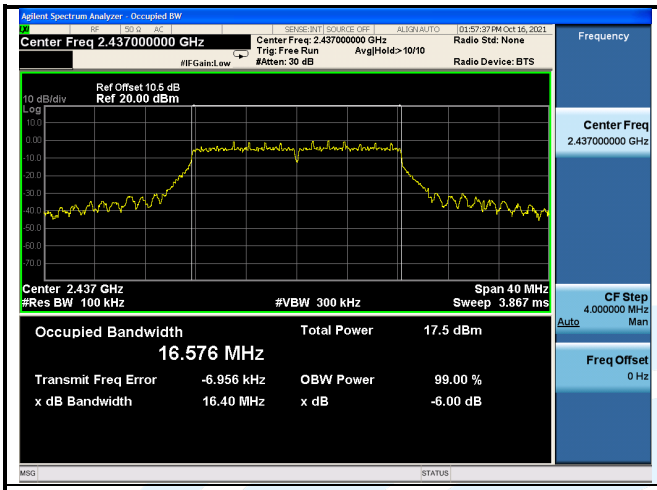
ANT 1: 802.11b CH06



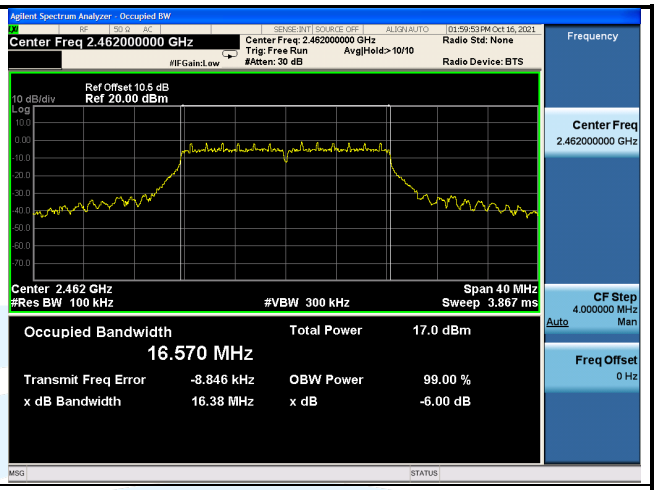
ANT 1: 802.11b CH11



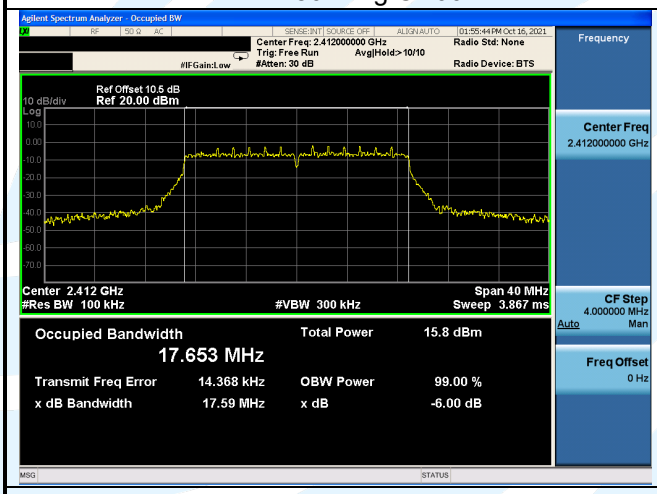
ANT 1: 802.11g CH01



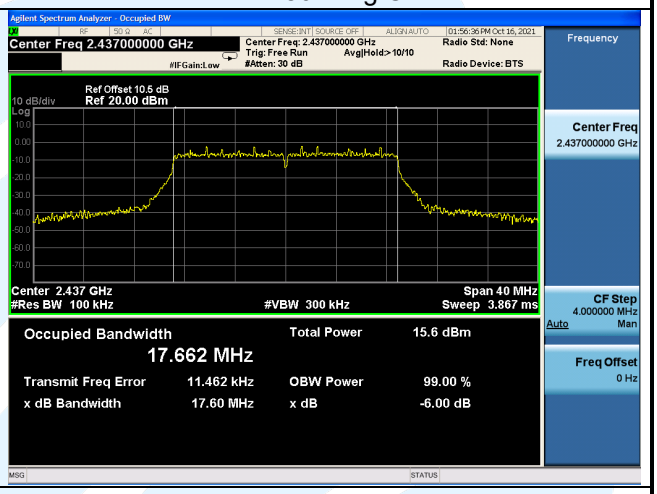
ANT 1: 802.11g CH06



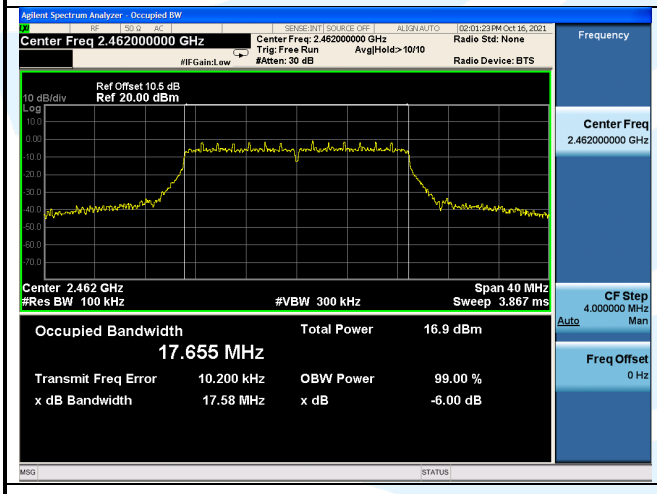
ANT 1: 802.11g CH11



ANT 1: 802.11n20 CH01



ANT 1: 802.11n20 CH06



ANT 1: 802.11n20 CH11

N/A

5.5. POWER SPECTRAL DENSITY

Test Standard FCC 47 CFR Part 15.247

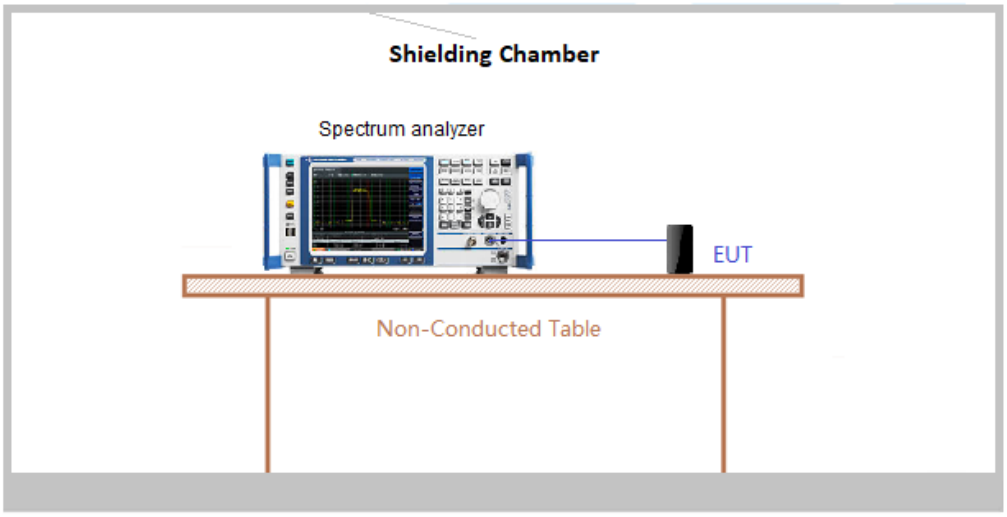
Test Requirement: FCC Part 15.247 (e)

Test Method: ANSI C63.10-2013, Clause 11.10.2

Limit:

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

Test Setup:



Test Procedures:

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

Use the following spectrum analyzer settings:

a) Set analyzer center frequency to DTS channel center frequency.
b) Set the span to 1.5 times the DTS bandwidth.
c) Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
d) Set the VBW ≥ 3 x RBW.
e) Detector = peak.
f) Sweep time = auto couple.
g) Trace mode = max hold.
h) Allow trace to fully stabilize.
i) Use the peak marker function to determine the maximum amplitude level within the RBW.
j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

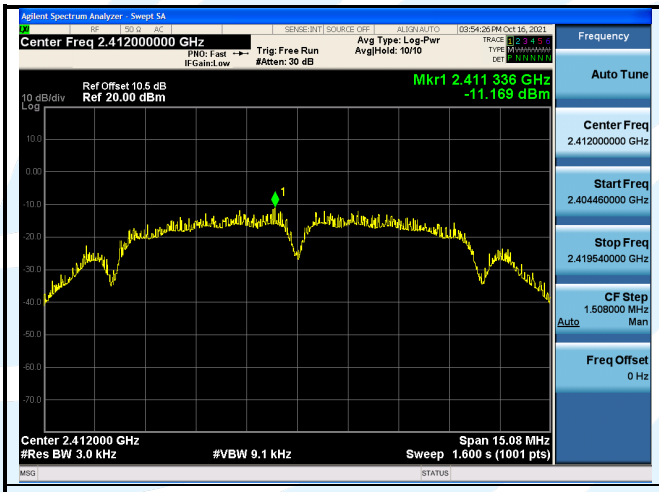
Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Equipment Used: Refer to section 3 for details.

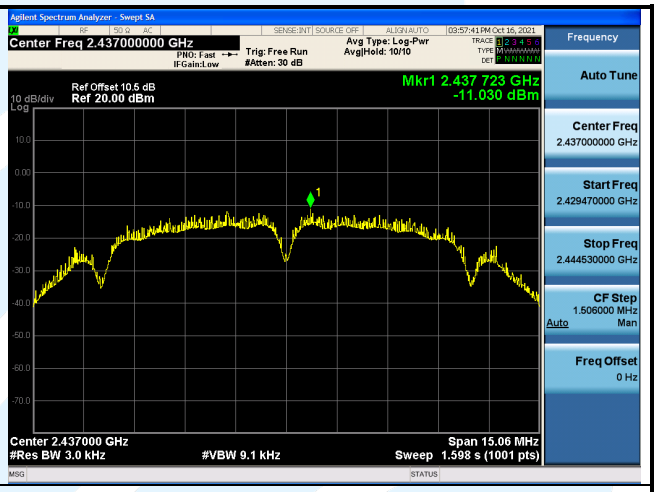
Test Result: Pass

The measurement data as follows:

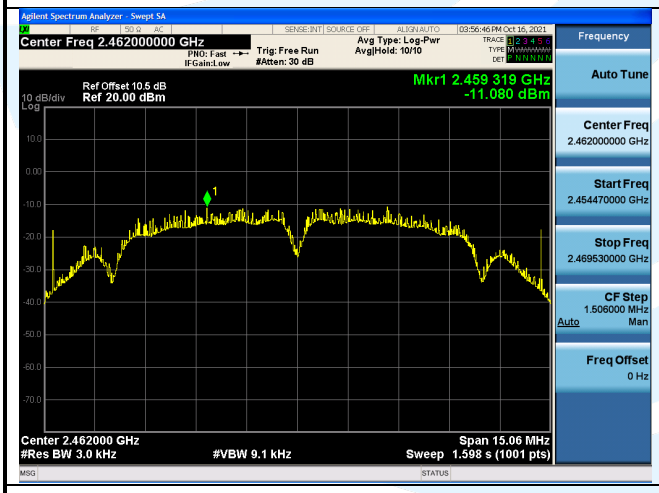
Mode	Channel	Frequency (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Results
IEEE 802.11b	1	2412	-11.169	30	Pass
IEEE 802.11b	6	2437	-11.030	30	Pass
IEEE 802.11b	11	2462	-11.080	30	Pass
IEEE 802.11g	1	2412	-15.942	30	Pass
IEEE 802.11g	6	2437	-16.308	30	Pass
IEEE 802.11g	11	2462	-15.386	30	Pass
IEEE 802.11n-HT20	1	2412	-19.041	30	Pass
IEEE 802.11n-HT20	6	2437	-18.381	30	Pass
IEEE 802.11n-HT20	11	2462	-18.261	30	Pass



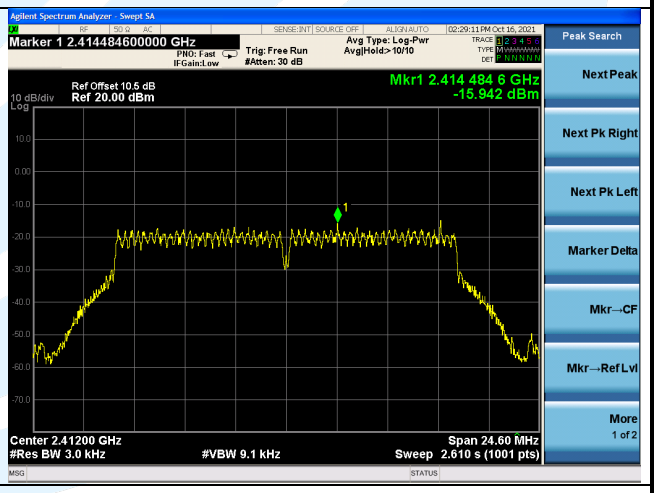
ANT 1: 802.11b CH01



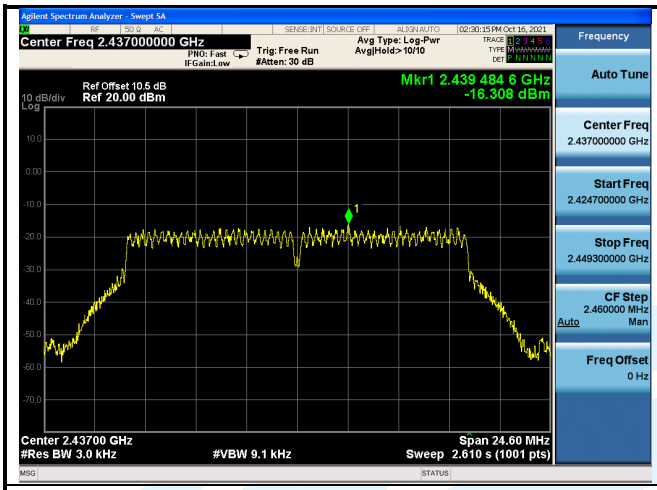
ANT 1: 802.11b CH06



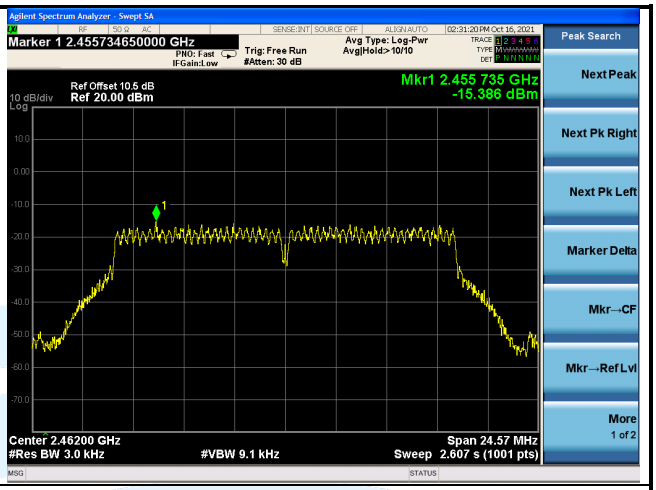
ANT 1: 802.11b CH11



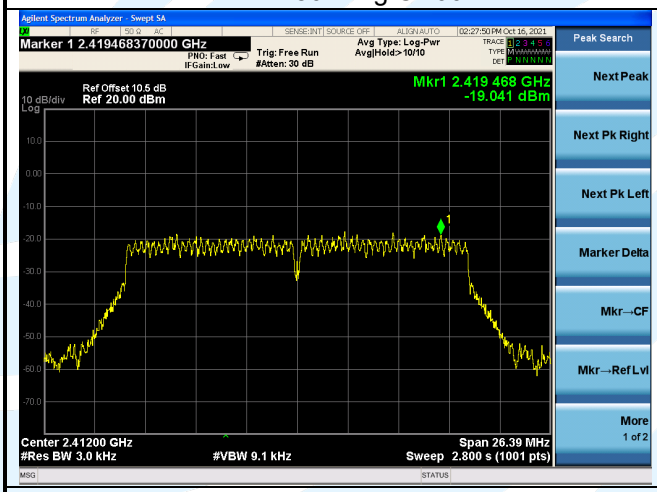
ANT 1: 802.11g CH01



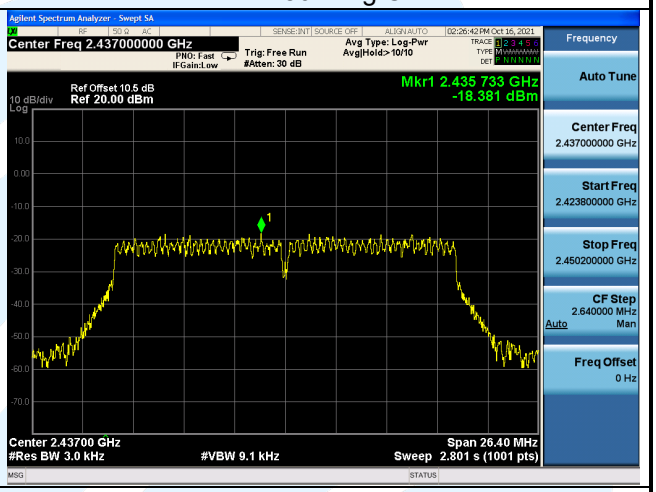
ANT 1: 802.11g CH06



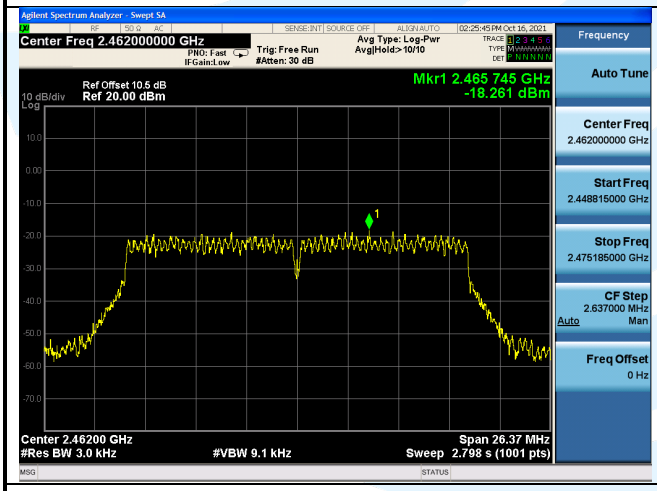
ANT 1: 802.11g CH11



ANT 1: 802.11n20 CH01



ANT 1: 802.11n20 CH06



ANT 1: 802.11n20 CH11

N/A

5.6. CONDUCTED OUT OF BAND EMISSION

Test Standard FCC 47 CFR Part 15.247

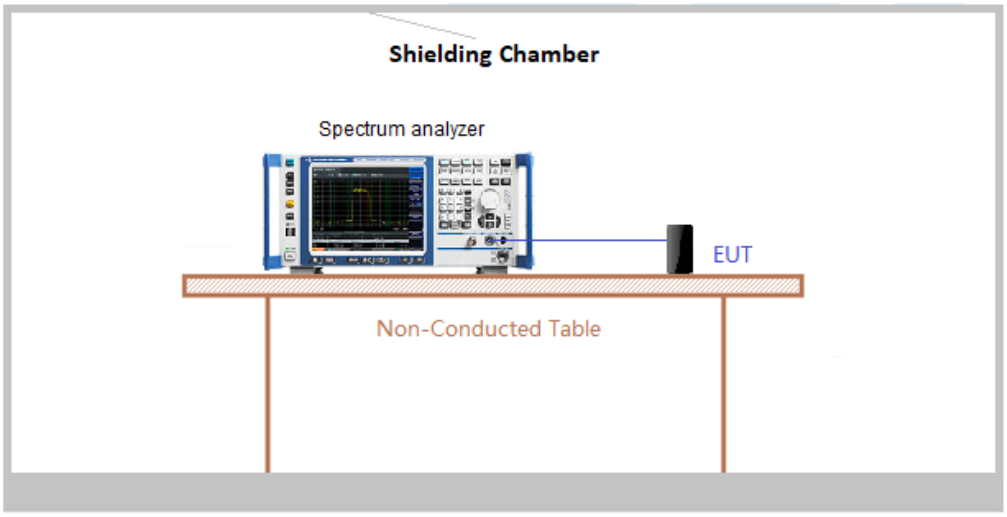
Test Requirement: FCC Part 15.247(d)

Test Method: ANSI C63.10-2013, Clause 11.11

Limit:

In any 100kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

Test Setup:



Test Procedures:

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

Use the following spectrum analyzer settings:

Step 1: Measurement Procedure REF

a) Set instrument center frequency to DTS channel center frequency.
b) Set the span to ≥ 1.5 times the DTS bandwidth.
c) Set the RBW = 100 kHz.
d) Set the VBW ≥ 3 x RBW.
e) Detector = peak.
f) Sweep time = auto couple.
g) Trace mode = max hold.
h) Allow trace to fully stabilize.
i) Use the peak marker function to determine the maximum PSD level.
j) Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

Step 2: Measurement Procedure OOBE

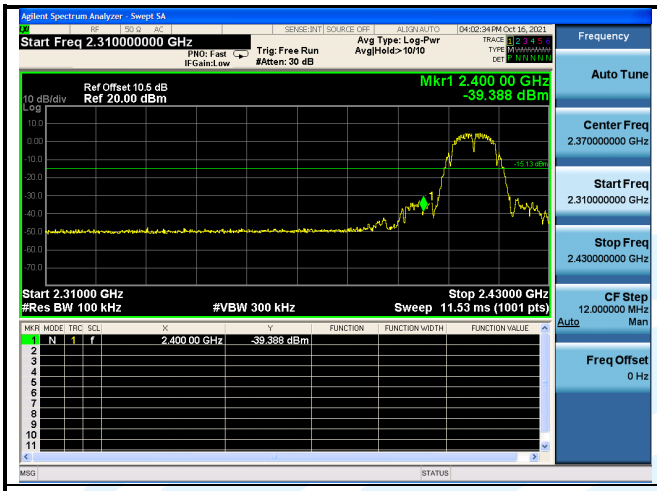
a) Set RBW = 100 kHz.
b) Set VBW ≥ 300 kHz.
c) Detector = peak.
d) Sweep = auto couple.
e) Trace Mode = max hold.
f) Allow trace to fully stabilize.
g) Use the peak marker function to determine the maximum amplitude level.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

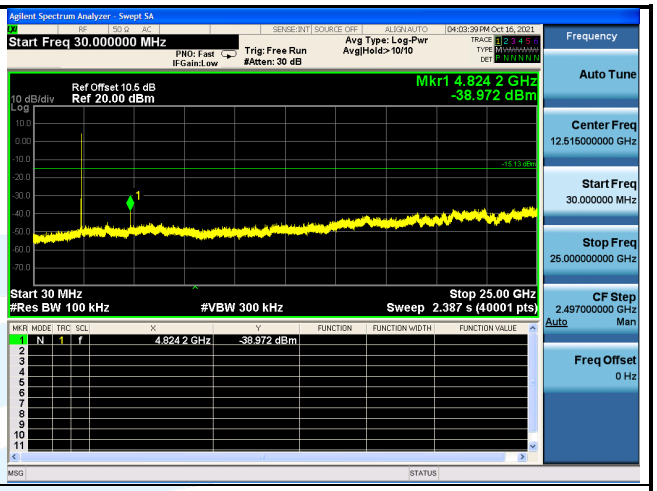
Equipment Used: Refer to section 3 for details.

Test Result: Pass

The measurement data as follows:

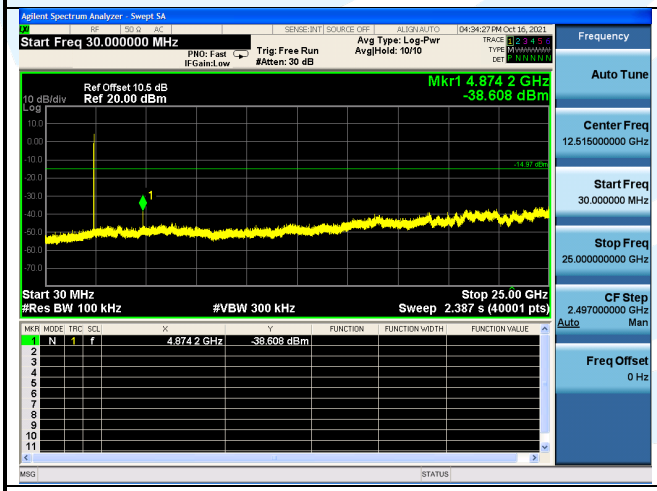


ANT 1: 802.11b CH01 BE



ANT 1: 802.11b CH01 CSE

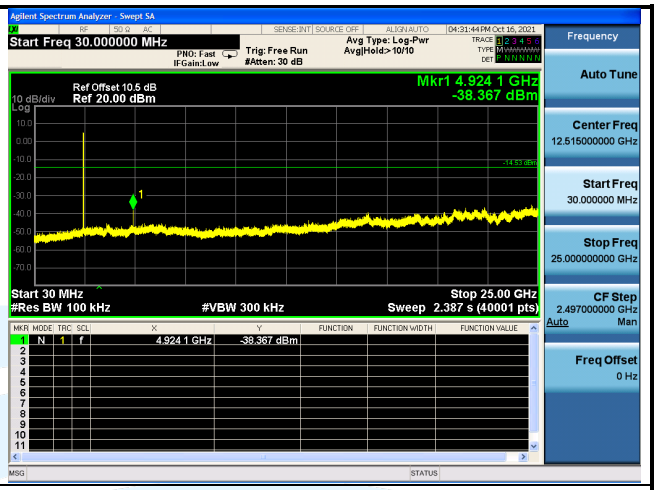
ANT 1: 802.11b CH01 REF



ANT 1: 802.11b CH06 CSE

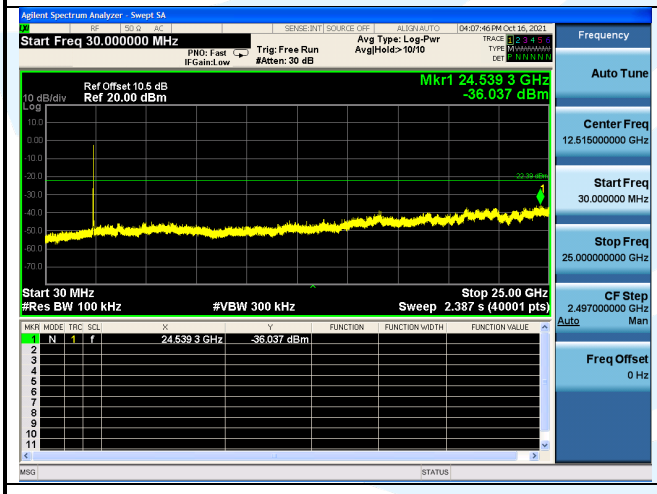
ANT 1: 802.11b CH06 REF

ANT 1: 802.11b CH11 BE



ANT 1: 802.11b CH11 CSE

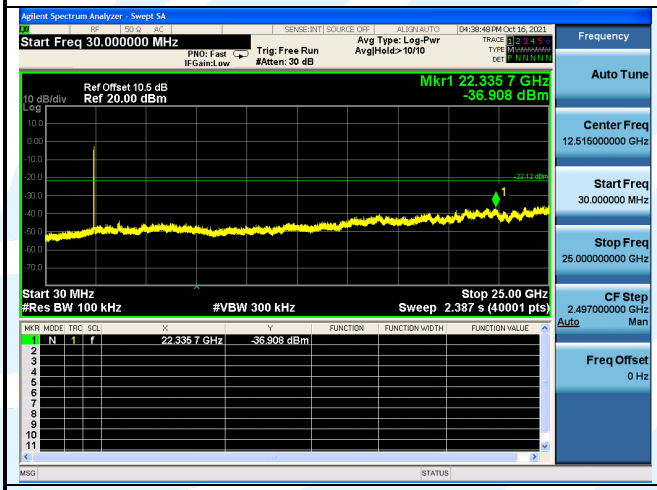
ANT 1: 802.11b CH11 REF



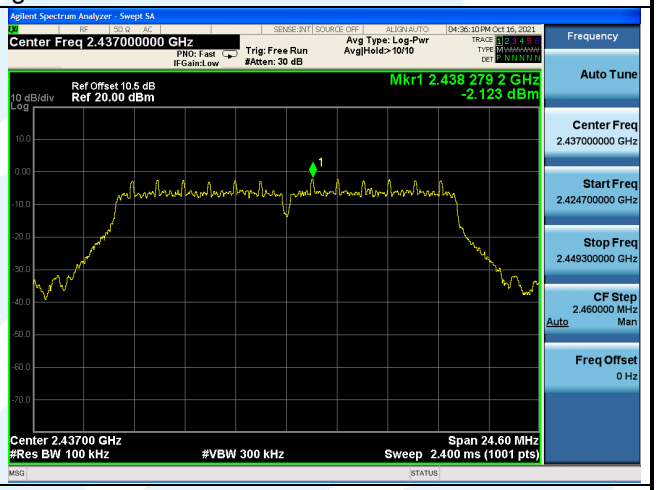
ANT 1: 802.11g CH01 CSE

ANT 1: 802.11g CH01 REF

ANT 1: 802.11g CH01 BE

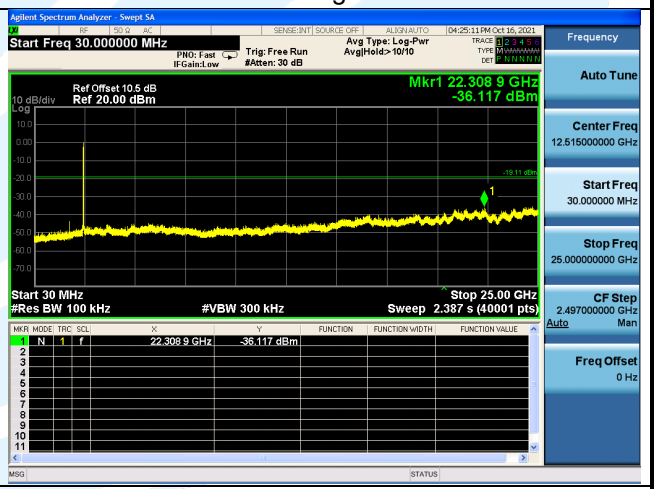


ANT 1: 802.11g CH06 CSE

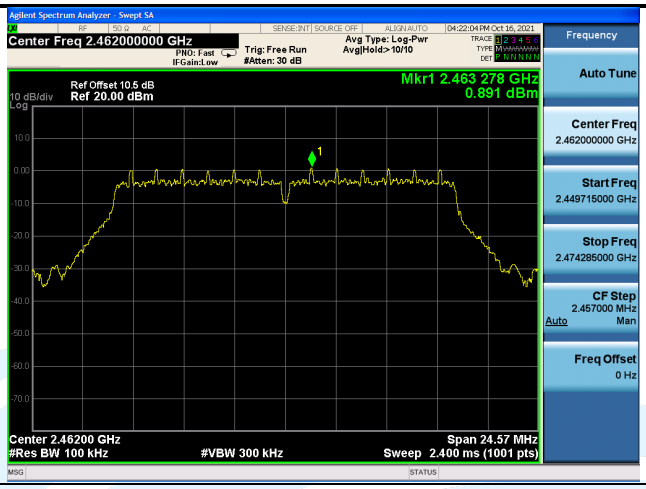


ANT 1: 802.11g CH06 REF

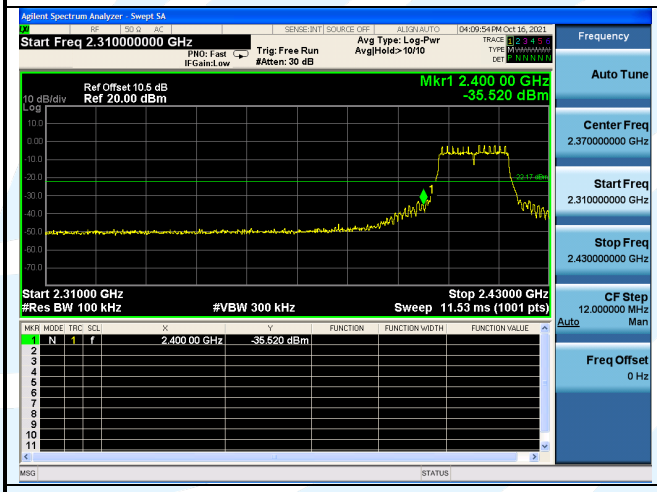
ANT 1: 802.11g CH11 BE



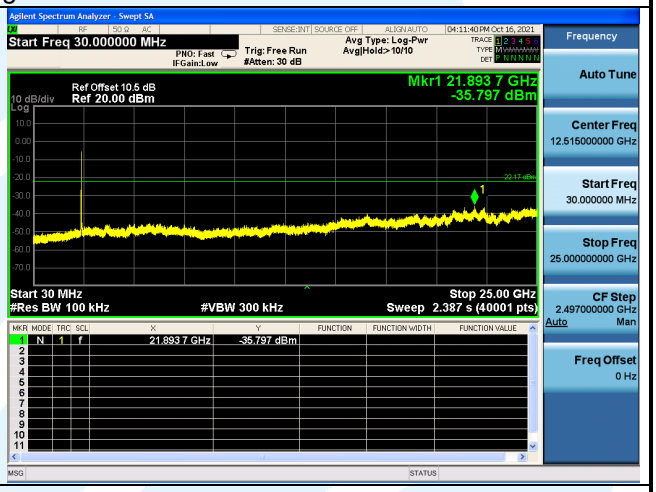
ANT 1: 802.11g CH11 CSE



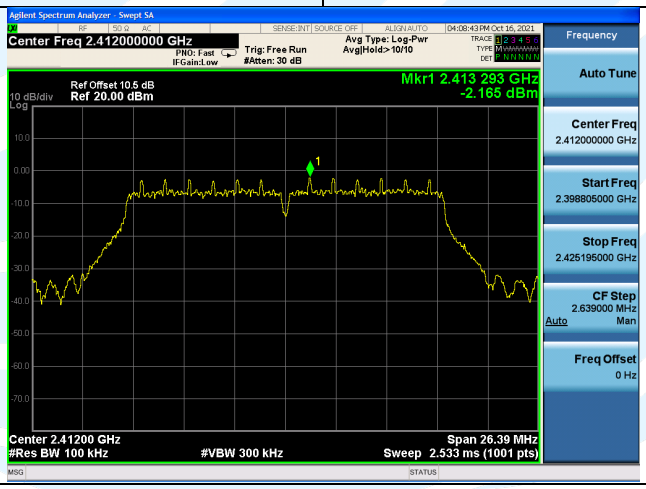
ANT 1: 802.11g CH11 REF



ANT 1: 802.11n CH01 BE

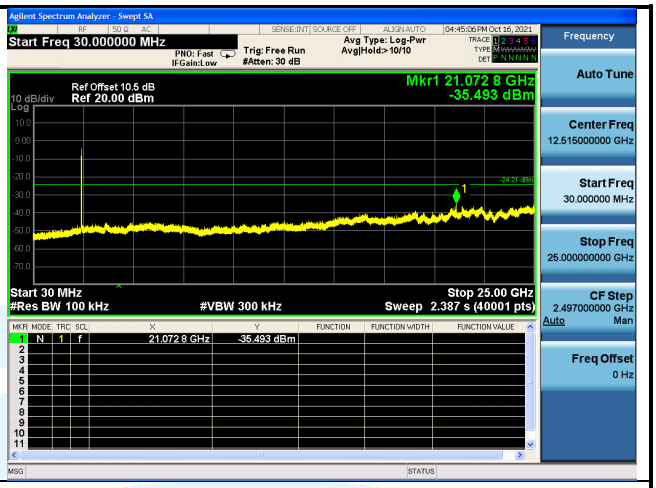


ANT 1: 802.11n CH01 CSE

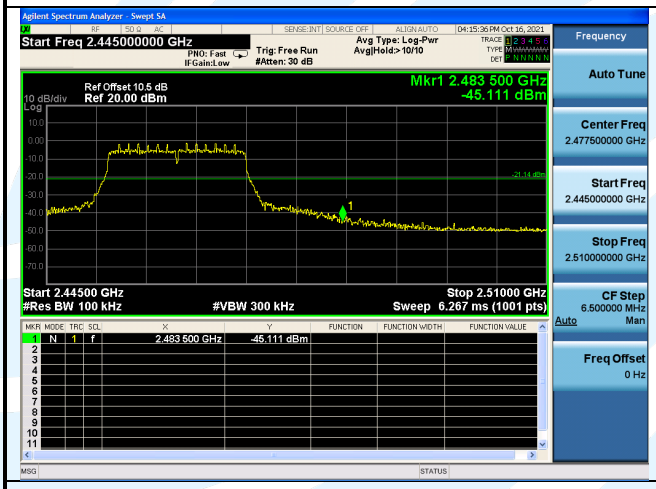


ANT 1: 802.11n CH01 REF

ANT 1: 802.11n CH06 REF

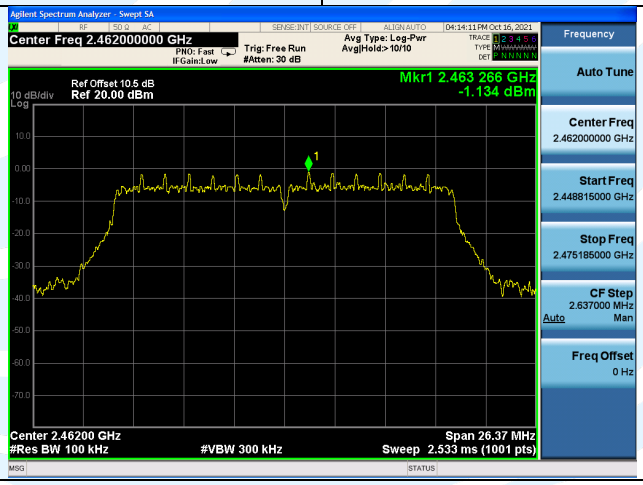


ANT 1: 802.11n CH06 CSE



ANT 1: 802.11n CH11 BE

ANT 1: 802.11n CH11 CSE



ANT 1: 802.11n CH11 REF

5.7. RADIATED EMISSIONS

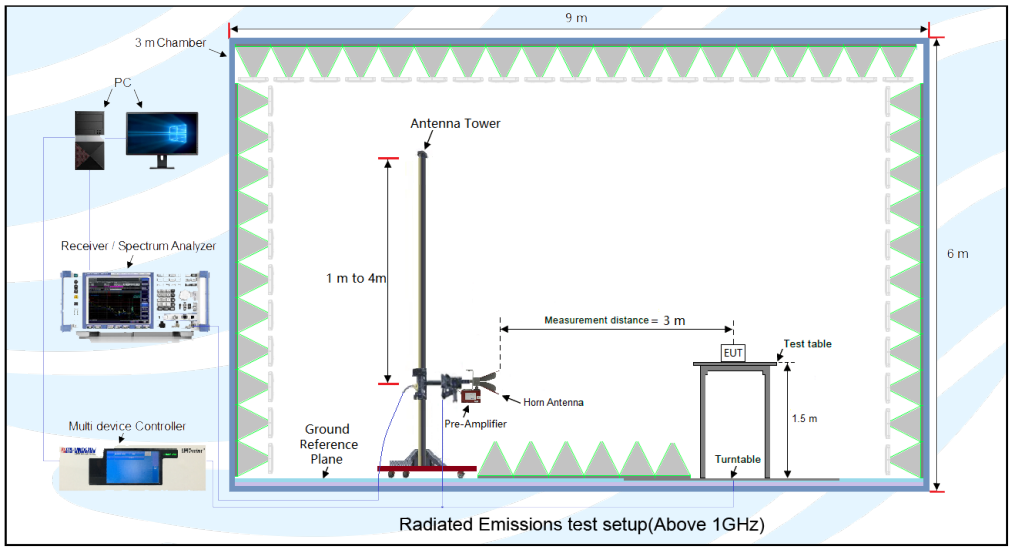
Test Standard FCC 47 CFR Part 15.247
Test Requirement: FCC Part 15.205/15.209
Test Method: ANSI C63.10-2013, Clause 11.11 & Clause 11.12
Limit:

Spurious Emissions

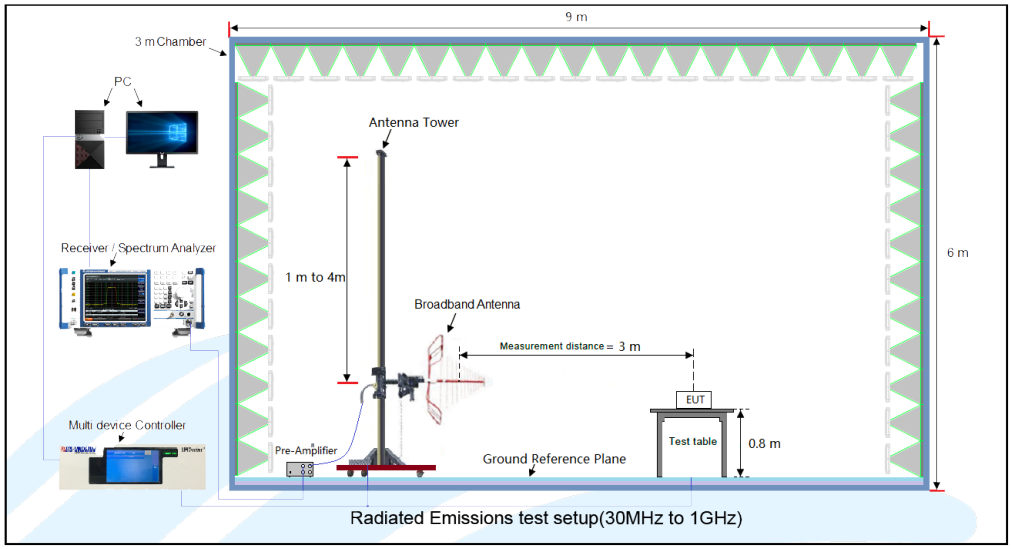
Frequency	Field strength (microvolt/meter)	Limit (dBμV/m)	Detector	Measurement distance (m)
0.009 MHz-0.490 MHz	2400/F(kHz)	--	--	300
0.490 MHz-1.705 MHz	24000/F(kHz)	--	--	30
1.705 MHz-30 MHz	30	--	--	30
30 MHz-88 MHz	100	40.0	Quasi-peak	3
88 MHz-216 MHz	150	43.5	Quasi-peak	3
216 MHz-960 MHz	200	46.0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

Remark:
1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBμV/m) = 20 log Emission level (μV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

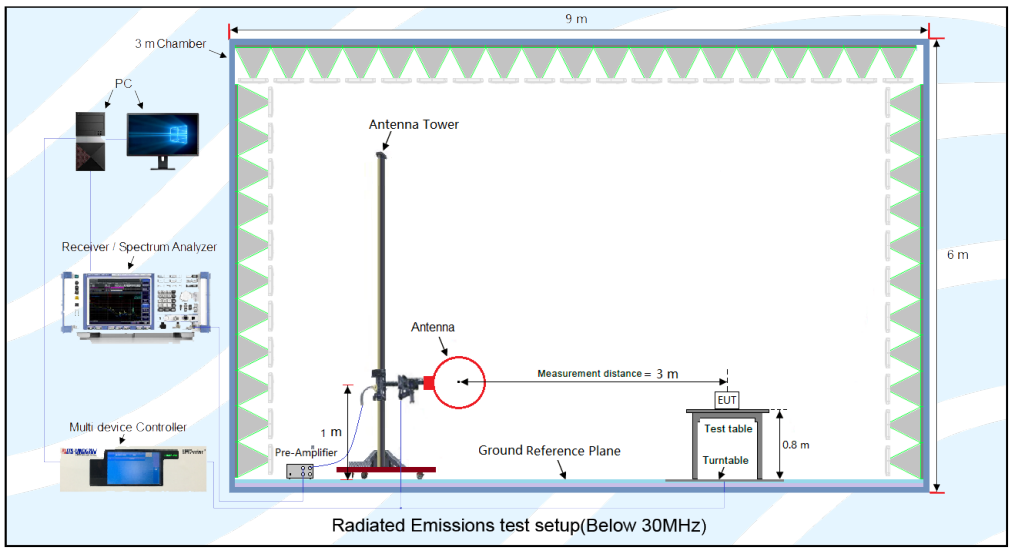
Test Setup:



Radiated Emissions test setup(Above 1GHz)



Radiated Emissions test setup(30MHz to 1GHz)



Radiated Emissions test setup(Below 30MHz)

Test Procedures:

➢ **From 30 MHz to 1GHz test procedure as below:**

1) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3-meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3) The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rota table table was turned from 0 degrees to 360 degrees to find the maximum reading.
5) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6) If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise, the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

➢ **Above 1GHz test procedure as below:**

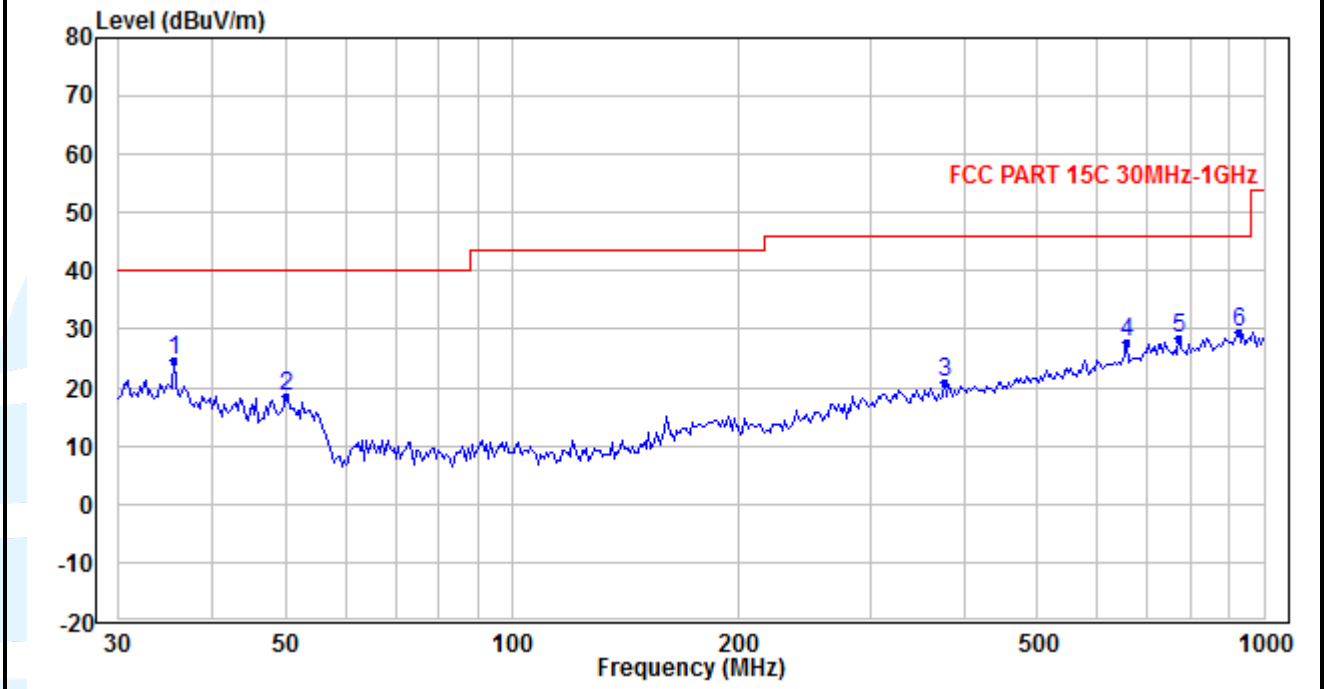
1) Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter (Above 18GHz the distance is 1 meter and table is 1.5

meter).
2) Test the EUT in the lowest channel, middle channel, the Highest channel
3) The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and test the worst-case axis positioning.
4) Repeat above procedures until all frequencies measured was complete.

Equipment Used: Refer to section 3 for details.
Test Result: Pass

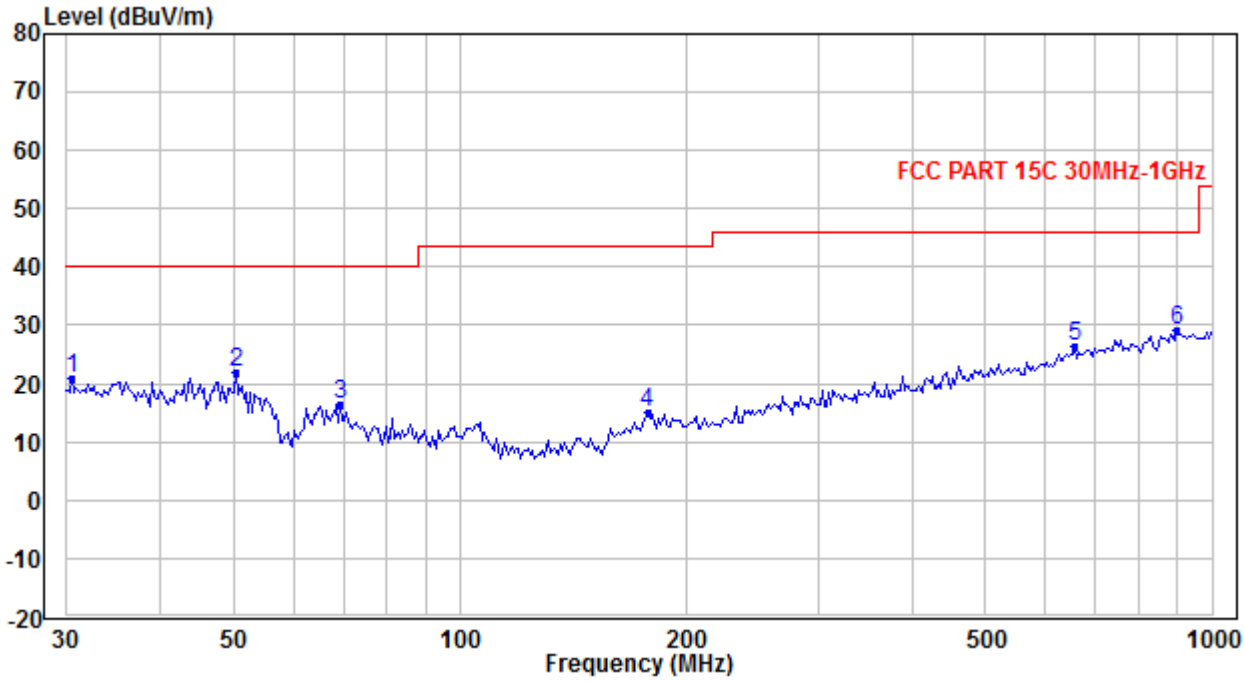
The measurement data as follows:

30-1000MHz: Wi-Fi Link_V



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	35.511	30.0	-5.4	24.7	40.0	-15.3	Peak
2	50.108	33.5	-14.8	18.7	40.0	-21.4	Peak
3	376.523	26.4	-5.4	20.9	46.0	-25.1	Peak
4	655.977	27.4	0.3	27.7	46.0	-18.3	Peak
5	771.047	26.3	2.0	28.3	46.0	-17.7	Peak
6	925.613	25.4	4.2	29.5	46.0	-16.5	Peak

30-1000MHz: Wi-Fi Link_H



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	30.425	25.4	-4.5	21.0	40.0	-19.0	Peak
2	50.461	37.0	-15.0	22.1	40.0	-18.0	Peak
3	69.23	33.7	-17.3	16.4	40.0	-23.6	Peak
4	177.518	25.4	-10.2	15.2	43.5	-28.4	Peak
5	655.977	26.1	0.3	26.5	46.0	-19.5	Peak
6	899.958	24.9	4.2	29.1	46.0	-17.0	Peak

Above 1GHz: 802.11b_2412MHz_H							
No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	4824	43.2	-2.3	40.9	74.0	-33.1	Peak
2	7236	41.8	1.5	43.3	74.0	-30.7	Peak
Above 1GHz: 802.11b_2412MHz_V							
No.	**Frequency (MHz)**	**Reading (dBuV)**	**Correction factor (dBuV)**	**Result (dBuV)**	**Limit (dBuV)**	**Margin (dB)**	**Remark**
1	4824	43.3	-2.3	41.0	74.0	-33.0	Peak
2	7236	41.5	1.5	43.0	74.0	-31.0	Peak
Above 1GHz: 802.11b_2437MHz_H							
No.	**Frequency (MHz)**	**Reading (dBuV)**	**Correction factor (dBuV)**	**Result (dBuV)**	**Limit (dBuV)**	**Margin (dB)**	**Remark**
1	4874	44.9	-2.3	42.6	74.0	-31.4	Peak
2	7311	42.5	1.6	44.1	74.0	-29.9	Peak
Above 1GHz: 802.11b_2437MHz_V							
No.	**Frequency (MHz)**	**Reading (dBuV)**	**Correction factor (dBuV)**	**Result (dBuV)**	**Limit (dBuV)**	**Margin (dB)**	**Remark**
1	4874	42.8	-2.3	40.5	74.0	-33.5	Peak
2	7311	41.9	1.6	43.5	74.0	-30.5	Peak
Above 1GHz: 802.11b_2462MHz_H							
No.	**Frequency (MHz)**	**Reading (dBuV)**	**Correction factor (dBuV)**	**Result (dBuV)**	**Limit (dBuV)**	**Margin (dB)**	**Remark**
1	4924	43.4	-2.3	41.2	74.0	-32.8	Peak
2	7386	41.8	1.7	43.5	74.0	-30.5	Peak
Above 1GHz: 802.11b_2462MHz_V							
No.	**Frequency (MHz)**	**Reading (dBuV)**	**Correction factor (dBuV)**	**Result (dBuV)**	**Limit (dBuV)**	**Margin (dB)**	**Remark**
1	4924	41.0	-2.3	38.7	74.0	-35.3	Peak
2	7386	40.9	1.7	42.6	74.0	-31.4	Peak

Above 1GHz: 802.11g_2412MHz_H							
No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	4824	42.4	-2.3	40.1	74.0	-33.9	Peak
2	7236	42.2	1.5	43.7	74.0	-30.3	Peak
Above 1GHz: 802.11g_2412MHz_V							
No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	4824	42.7	-2.3	40.4	74.0	-33.6	Peak
2	7236	41.2	1.5	42.7	74.0	-31.3	Peak
Above 1GHz: 802.11g_2437MHz_H							
No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	4874	42.9	-2.3	40.7	74.0	-33.4	Peak
2	7311	42.3	1.6	43.9	74.0	-30.1	Peak
Above 1GHz: 802.11g_2437MHz_V							
No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	4874	43.0	-2.3	40.8	74.0	-33.3	Peak
2	7311	41.9	1.6	43.5	74.0	-30.5	Peak
Above 1GHz: 802.11g_2462MHz_H							
No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	4924	41.3	-2.3	39.0	74.0	-35.0	Peak
2	7386	41.2	1.7	42.9	74.0	-31.1	Peak
Above 1GHz: 802.11g_2462MHz_V							
No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	4924	42.0	-2.3	39.8	74.0	-34.2	Peak
2	7386	41.6	1.7	43.3	74.0	-30.7	Peak

Above 1GHz: 802.11n-HT20_2412MHz_H							
No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	4824	43.1	-2.3	40.8	74.0	-33.2	Peak
2	7236	40.3	1.5	41.8	74.0	-32.2	Peak
Above 1GHz: 802.11n-HT20_2412MHz_V							
No.	**Frequency (MHz)**	**Reading (dBuV)**	**Correction factor (dBuV)**	**Result (dBuV)**	**Limit (dBuV)**	**Margin (dB)**	**Remark**
1	4824	43.6	-2.3	41.3	74.0	-32.7	Peak
2	7236	38.3	1.5	39.8	74.0	-34.2	Peak
Above 1GHz: 802.11n-HT20_2437MHz_H							
No.	**Frequency (MHz)**	**Reading (dBuV)**	**Correction factor (dBuV)**	**Result (dBuV)**	**Limit (dBuV)**	**Margin (dB)**	**Remark**
1	4874	43.0	-2.3	40.7	74.0	-33.3	Peak
2	7311	41.7	1.6	43.3	74.0	-30.7	Peak
Above 1GHz: 802.11n-HT20_2437MHz_V							
No.	**Frequency (MHz)**	**Reading (dBuV)**	**Correction factor (dBuV)**	**Result (dBuV)**	**Limit (dBuV)**	**Margin (dB)**	**Remark**
1	4874	43.6	-2.3	41.3	74.0	-32.7	Peak
2	7311	41.9	1.6	43.5	74.0	-30.5	Peak
Above 1GHz: 802.11n-HT20_2462MHz_H							
No.	**Frequency (MHz)**	**Reading (dBuV)**	**Correction factor (dBuV)**	**Result (dBuV)**	**Limit (dBuV)**	**Margin (dB)**	**Remark**
1	4924	41.8	-2.3	39.5	74.0	-34.5	Peak
2	7386	39.3	1.7	41.0	74.0	-33.0	Peak
Above 1GHz: 802.11n-HT20_2462MHz_V							
No.	**Frequency (MHz)**	**Reading (dBuV)**	**Correction factor (dBuV)**	**Result (dBuV)**	**Limit (dBuV)**	**Margin (dB)**	**Remark**
1	4924	41.3	-2.3	39.1	74.0	-34.9	Peak
2	7386	41.5	1.7	43.2	74.0	-30.8	Peak

Remark:

1. Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain, the value was added to Original Receiver Reading by the software automatically.
   Result = Reading + Correct Factor.
   Margin = Result – Limit
2. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the peak measurements were shown in the report.

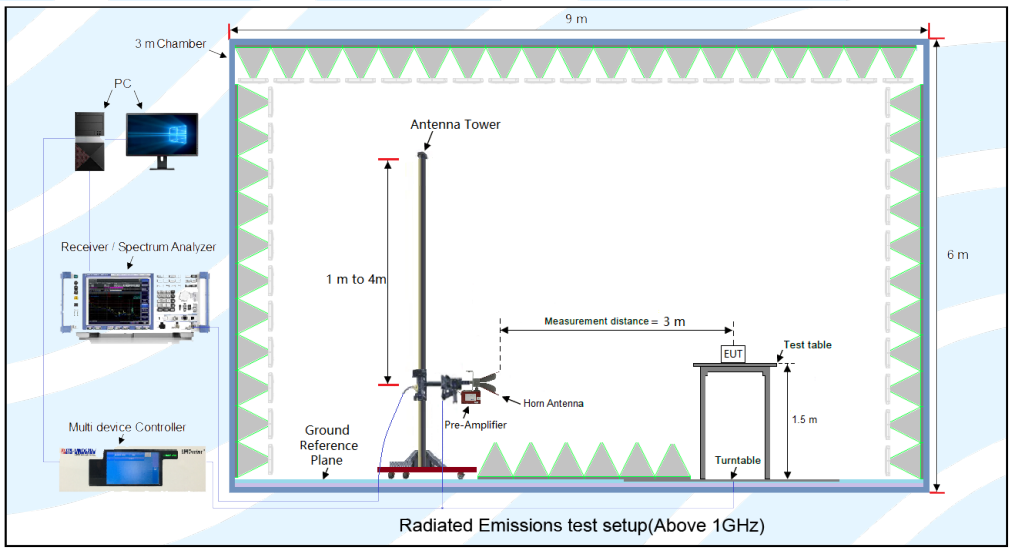
5.8. BAND EDGE MEASUREMENTS (RADIATED)

Test Standard FCC 47 CFR Part 15.247
Test Requirement: FCC Part 15.205/15.209
Test Method: ANSI C63.10-2013, Clause 11.13
Limit:

Radiated emissions which fall in the restricted bands, as defined in section 15.205(a), must also comply with the radiated emission limits specified in section 15.209(a).

Frequency	Limit (dBμV/m @3m)	Remark
30 MHz-88 MHz	40.0	Quasi-peak Value
88 MHz-216 MHz	43.5	Quasi-peak Value
216 MHz-960 MHz	46.0	Quasi-peak Value
960 MHz-1 GHz	54.0	Quasi-peak Value
Above 1 GHz	54.0	Average Value
	74.0	Peak Value

Test Setup:



Radiated Emissions test setup(Above 1GHz)

Test Procedures:

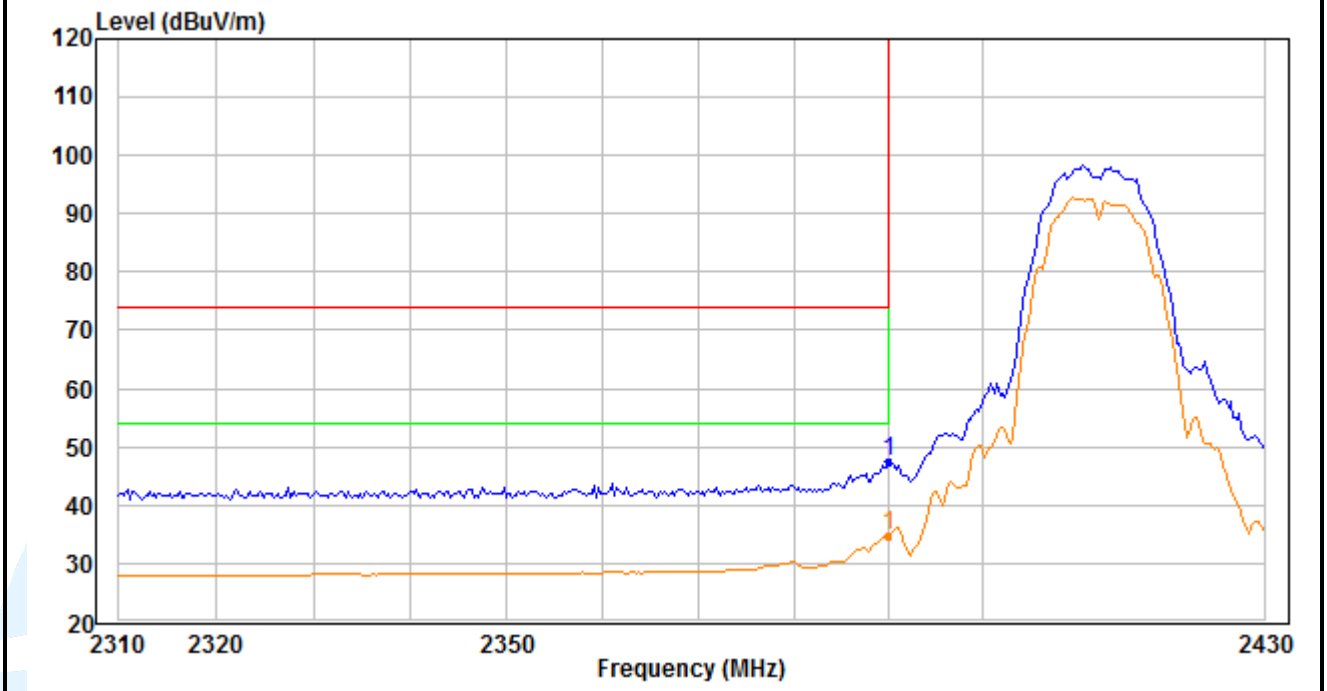
Radiated band edge measurements at 2390 MHz and 2483.5 MHz were made with the unit transmitting in the low end of the channel range and the high end closest to the restricted bands respectively. The emissions were made on the 966 Semi-Chamber. Use (resolution bandwidth (RBW) = 1 MHz, video bandwidth (VBW) = 3 MHz for peak levels and RBW = 1 MHz and VBW = 10 Hz or 1/T for average levels).

1. Use radiated spurious emission test procedure described in clause 5.10. The transmitter output (antenna port) was connected to the test receiver.
2. Set the Peak and Average limit line.
3. Record the fundamental emission and emissions out of the band-edge.
4. Determine band-edge compliance as required.

Equipment Used: Refer to section 3 for details.
Test Result: Pass

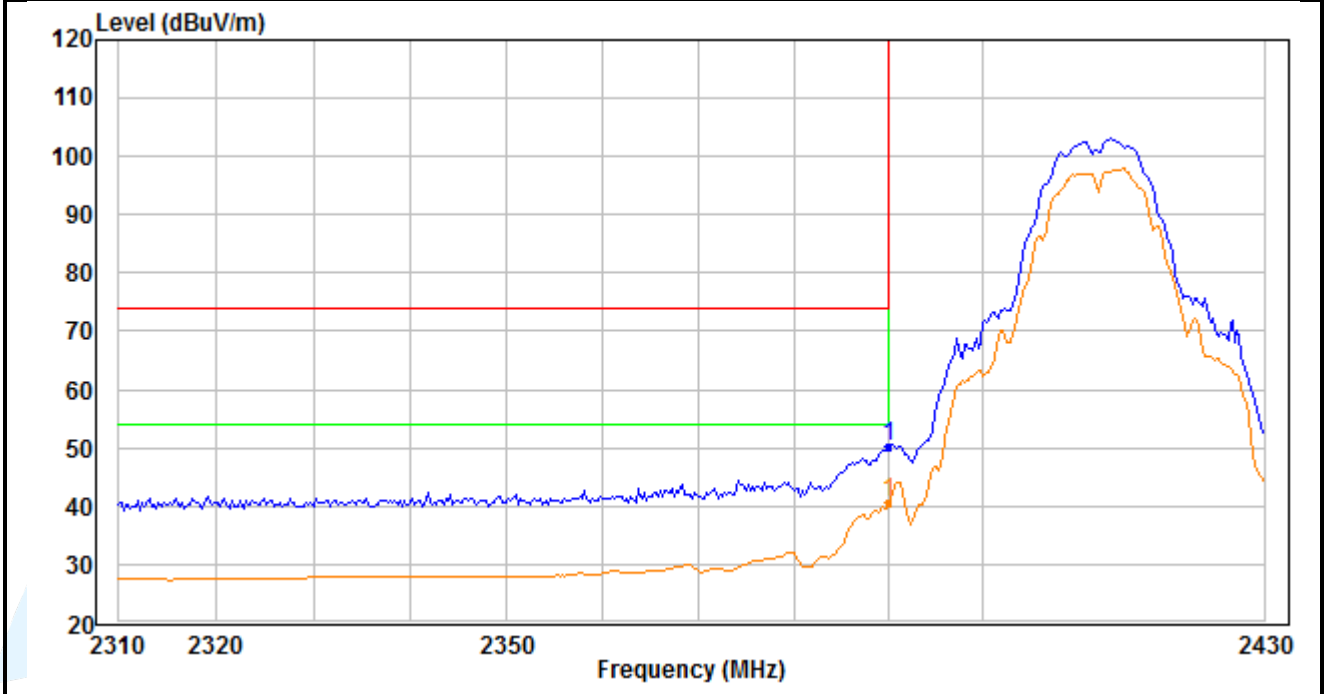
The measurement data as follows:

ANT 1: 802.11b_2412MHz_H



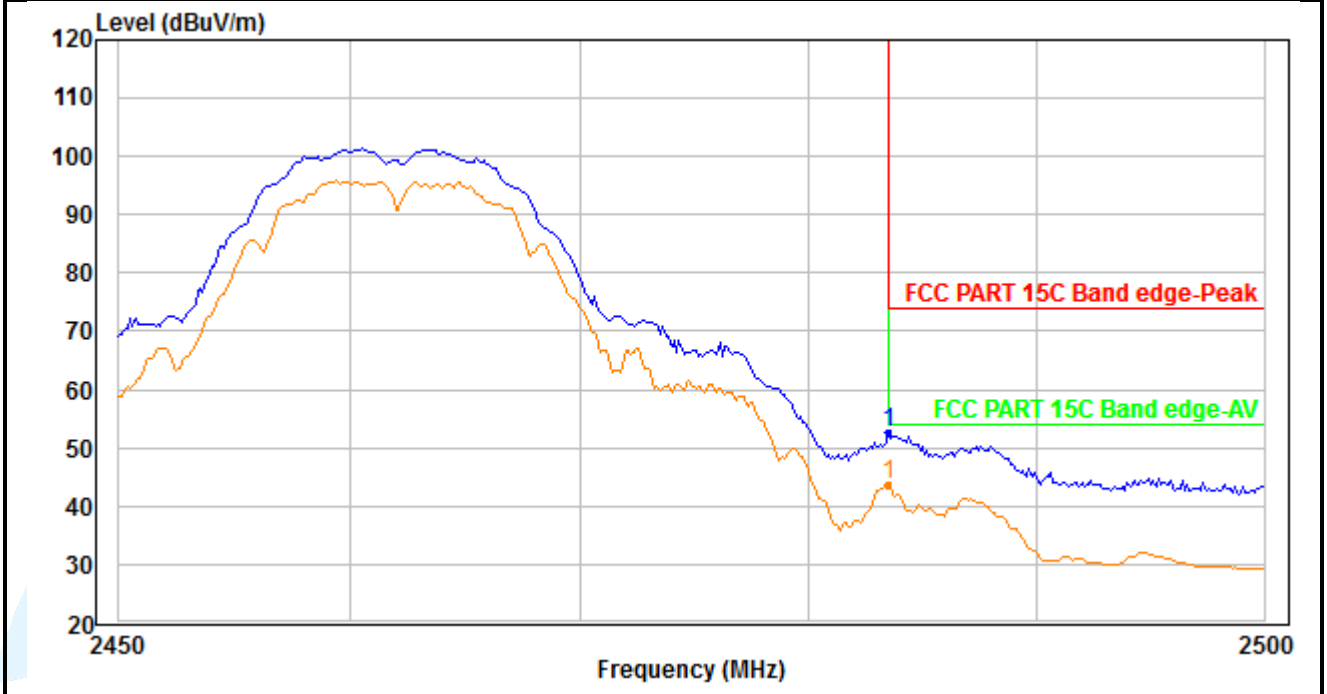
No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	2390	56.0	-8.4	47.6	74.0	-26.4	Peak
1	2390	43.2	-8.4	34.8	54.0	-19.2	Average

ANT 1: 802.11b_2412MHz_V



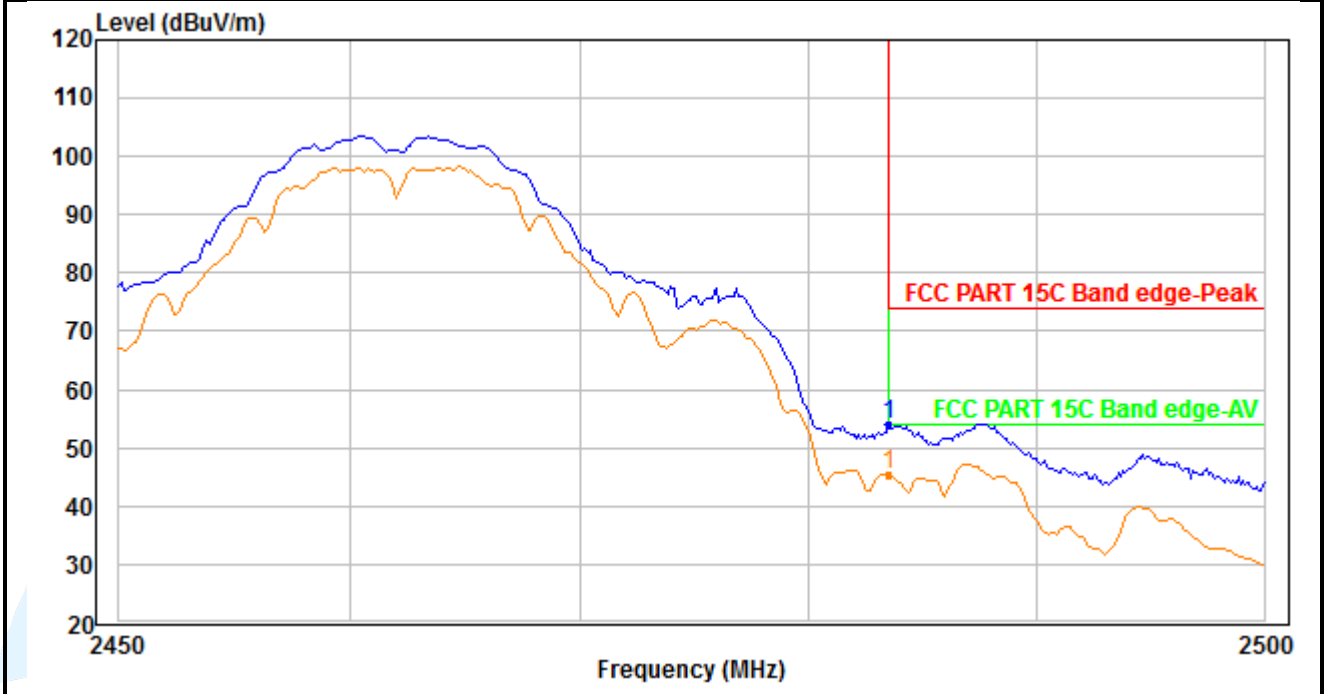
No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	2390	58.7	-8.4	50.2	74.0	-23.8	Peak
1	2390	32.7	-8.4	40.5	54.0	-13.5	Average

ANT 1: 802.11b_2462MHz_H



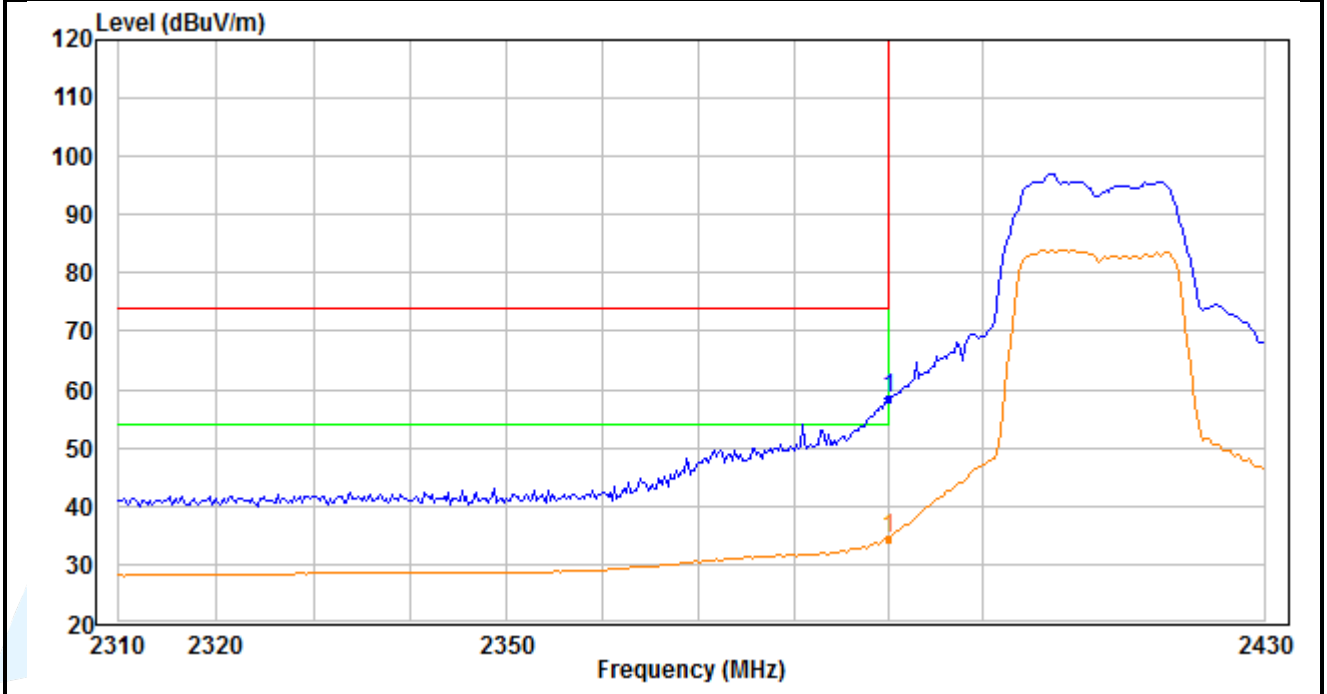
No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	2483.5	60.6	-8.1	52.5	74.0	-21.5	Peak
1	2483.5	51.9	-8.1	43.8	54.0	-10.2	Average

ANT 1: 802.11b_2462MHz_V



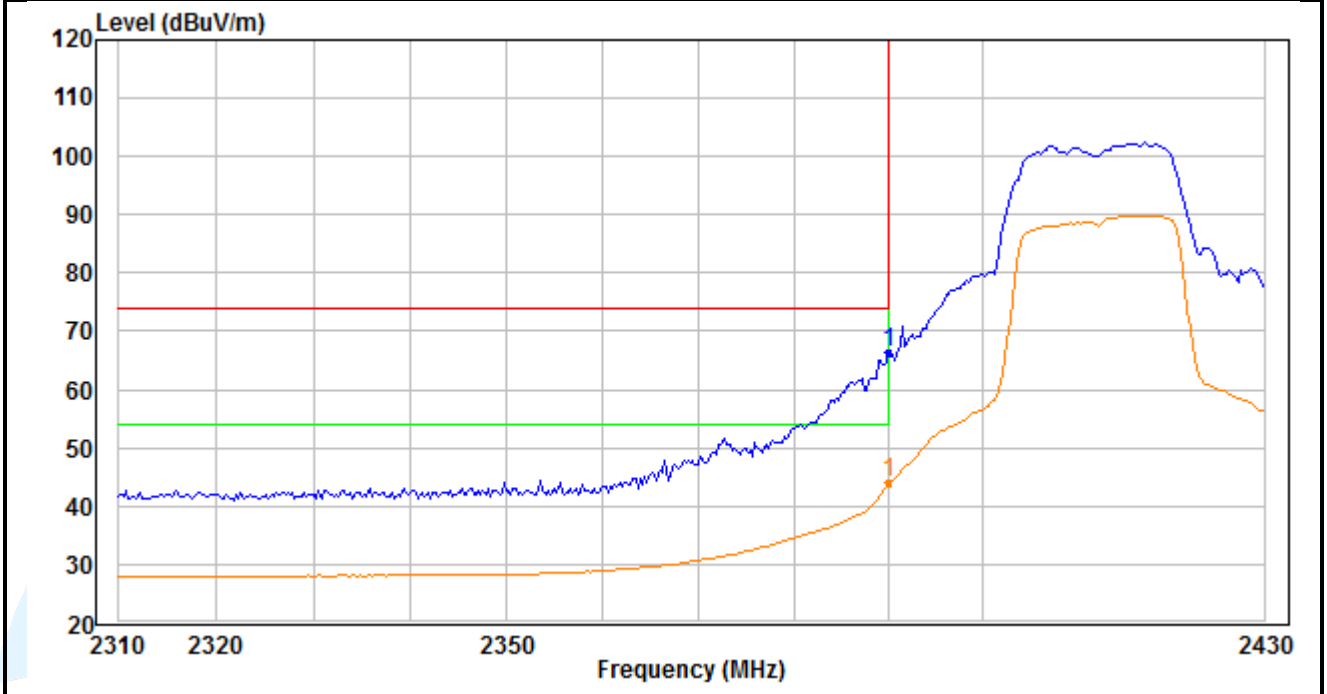
No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	2483.5	62.2	-8.1	54.0	74.0	-20.0	Peak
1	2483.5	53.6	-8.1	45.5	54.0	-8.5	Average

ANT 1: 802.11g_2412MHz_H



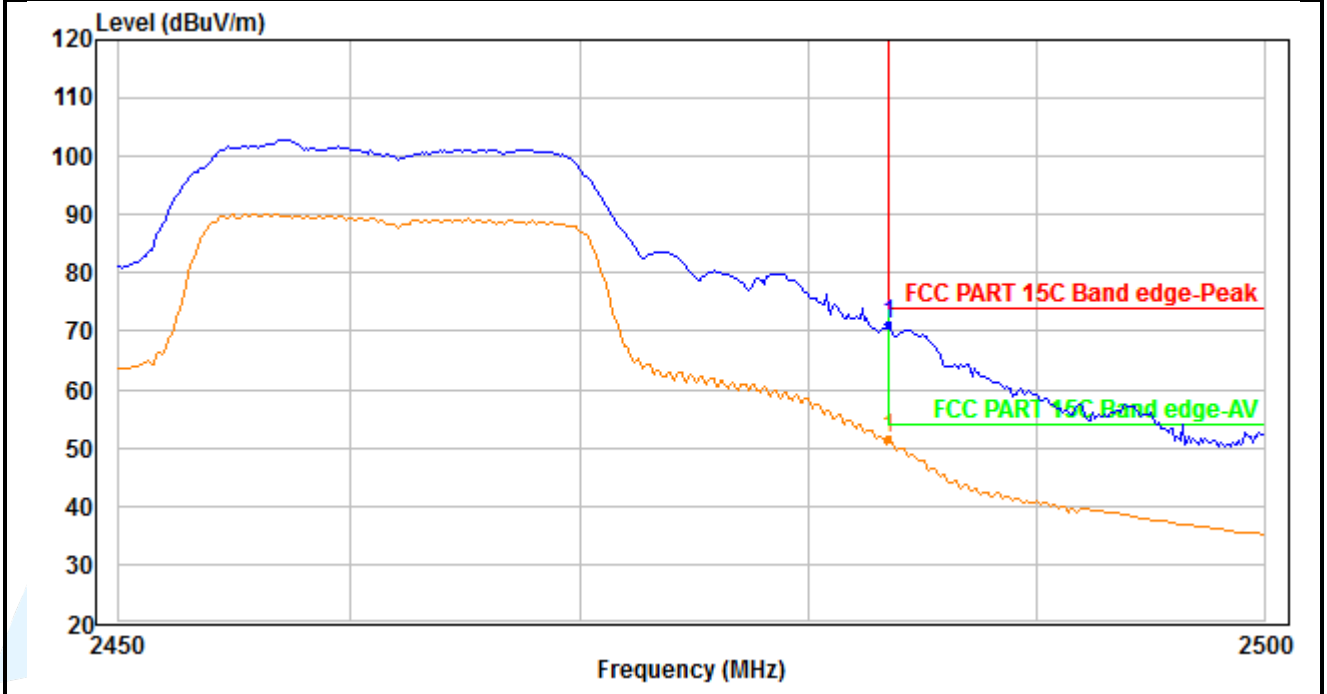
No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	2390	66.9	-8.4	58.5	74.0	-15.6	Peak
1	2390	43.0	-8.4	34.6	54.0	-19.4	Average

ANT 1: 802.11g_2412MHz_V



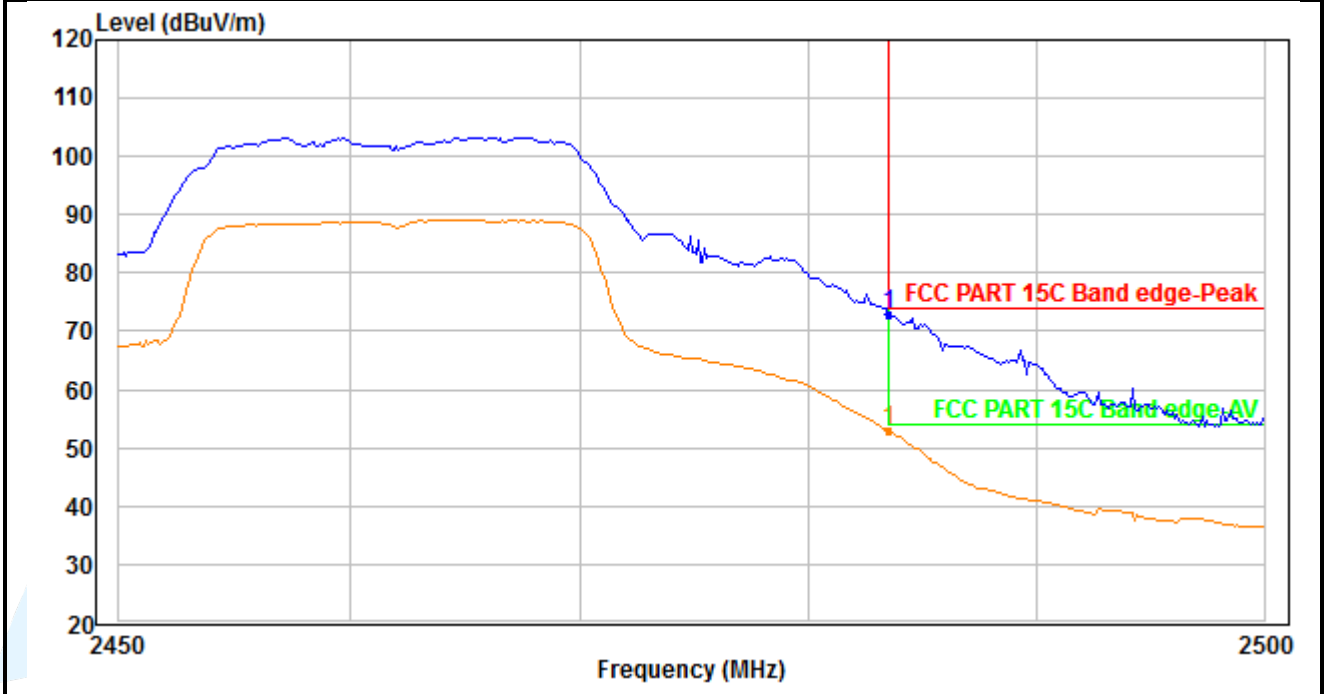
No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	2390	74.9	-8.4	66.4	74.0	-7.6	Peak
1	2390	52.3	-8.4	43.9	54.0	-10.1	Average

ANT 1: 802.11g_2462MHz_H



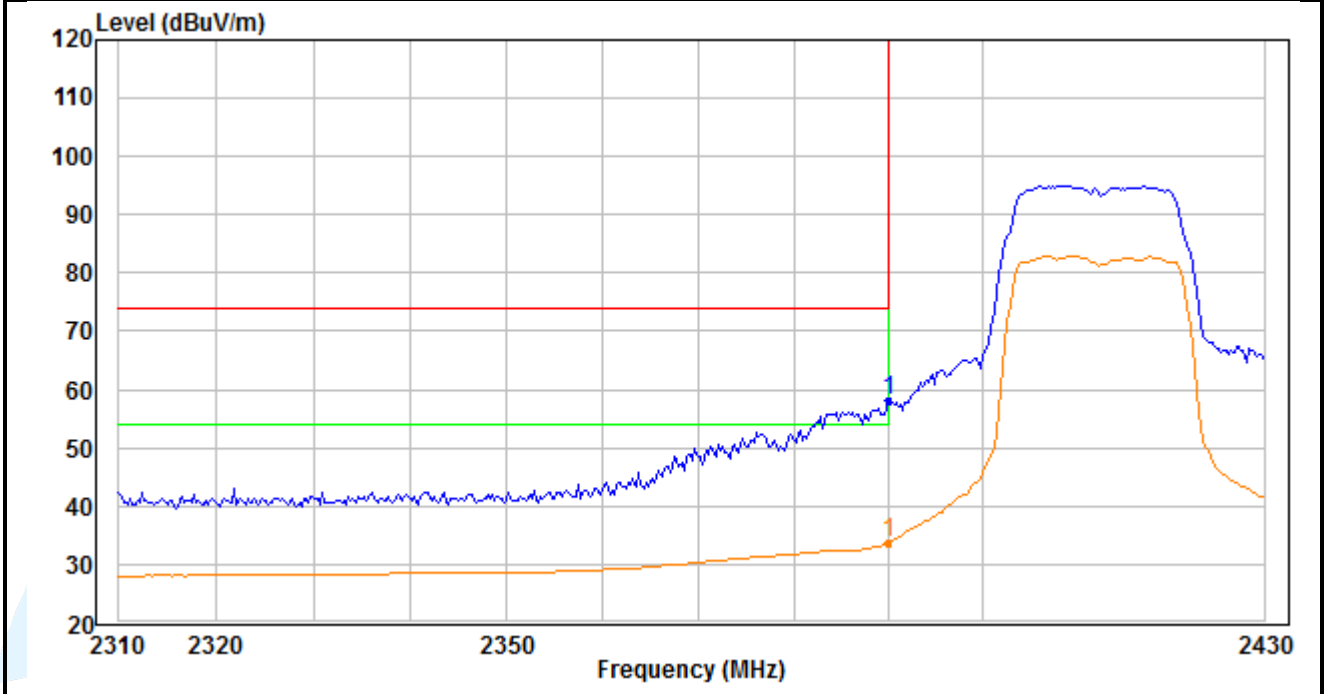
No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	2483.5	79.4	-8.1	71.2	74.0	-2.8	Peak
1	2483.5	59.8	-8.1	51.7	54.0	-2.3	Average

ANT 1: 802.11g_2462MHz_V



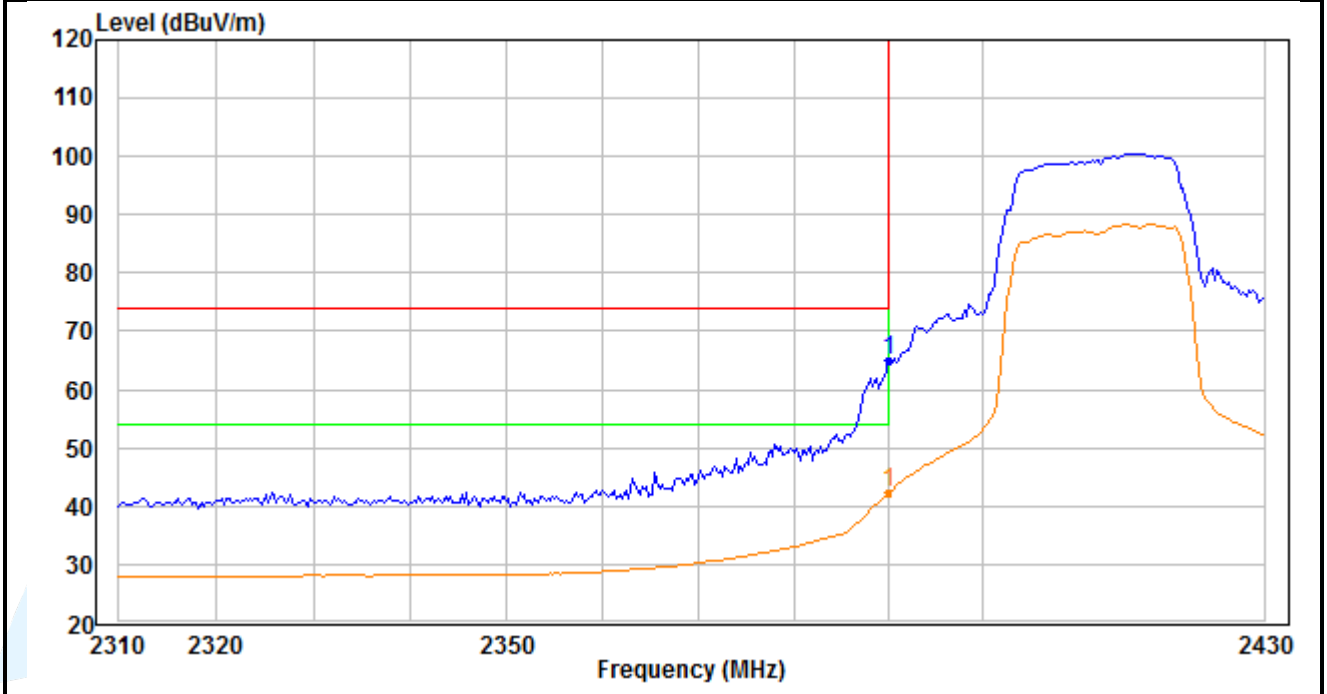
No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	2483.5	81.1	-8.1	73.0	74.0	-1.0	Peak
1	2483.5	61.2	-8.1	53.1	54.0	-0.9	Average

ANT 1: 802.11n-HT20_2412MHz_H



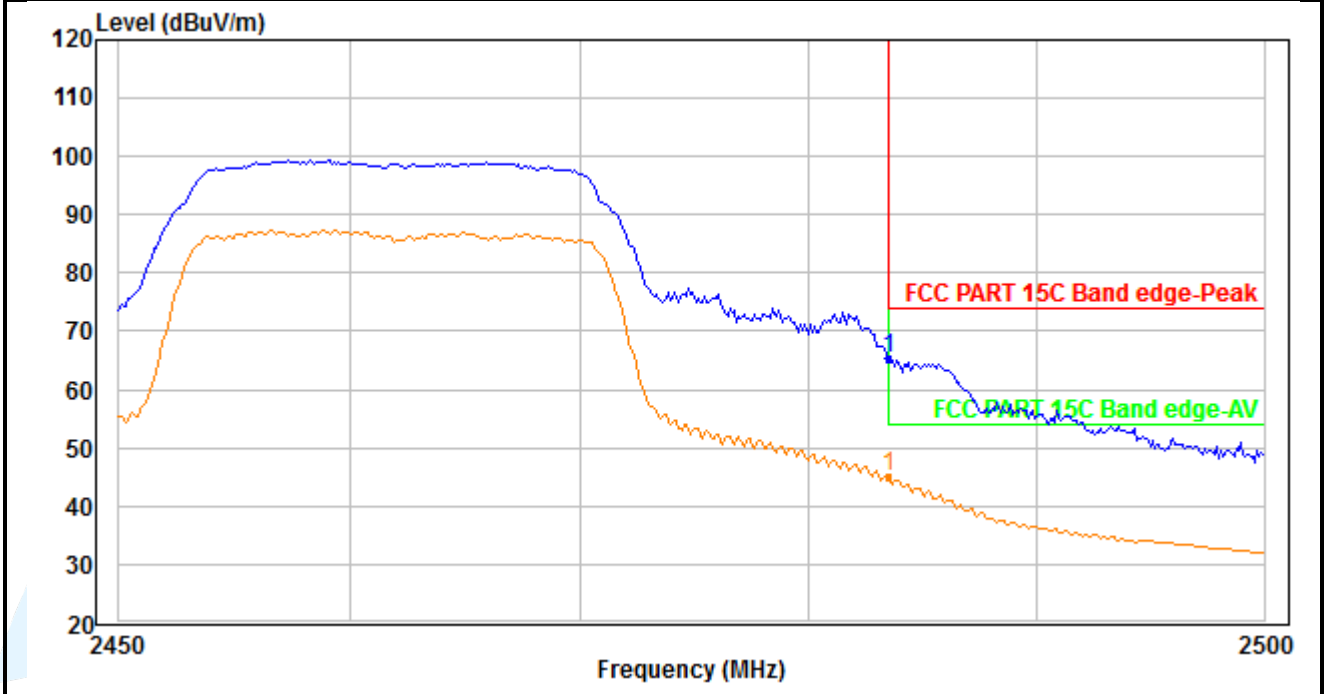
No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	2390	66.5	-8.4	58.0	74.0	-16.0	Peak
1	2390	32.7	-8.4	33.9	54.0	-20.1	Average

ANT 1: 802.11n-HT20_2412MHz_V



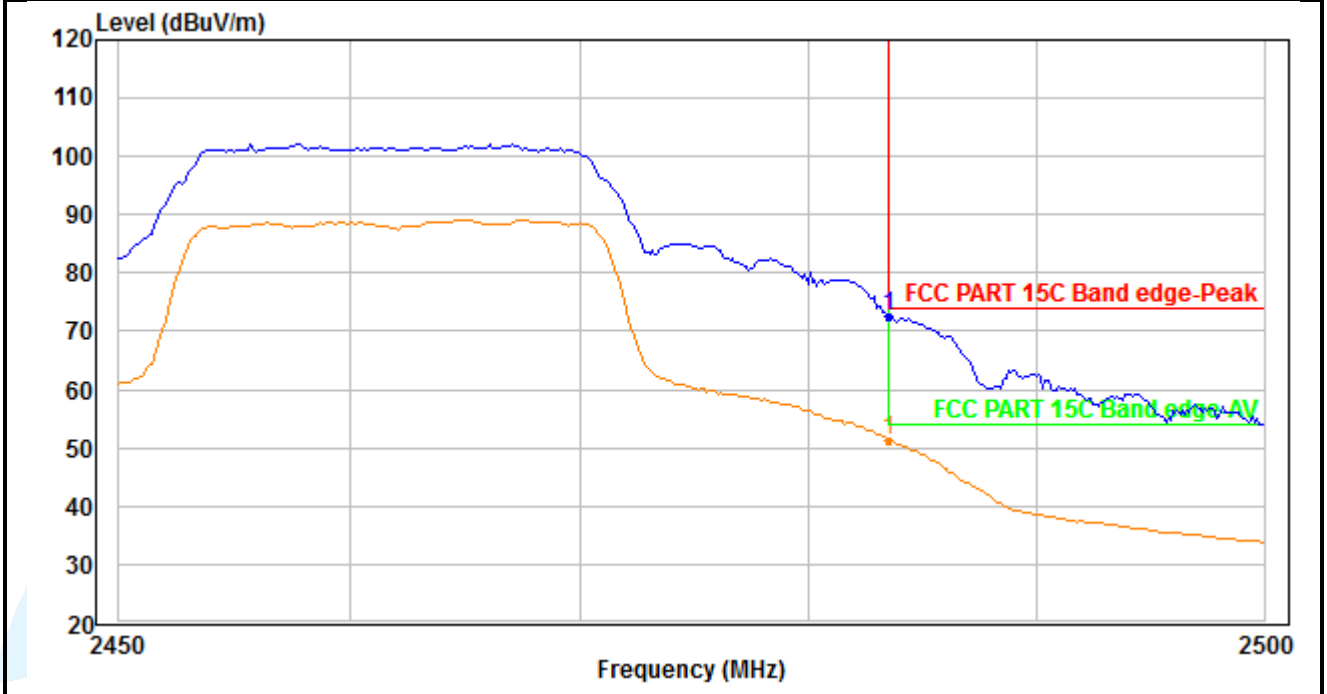
No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	2390	73.6	-8.4	65.1	74.0	-8.9	Peak
1	2390	50.9	-8.4	42.4	54.0	-11.6	Average

ANT 1: 802.11n-HT20_2462MHz_H



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	2483.5	73.6	-8.1	65.5	74.0	-8.5	Peak
1	2483.5	53.3	-8.1	45.2	54.0	-8.8	Average

ANT 1: 802.11n-HT20_2462MHz_V

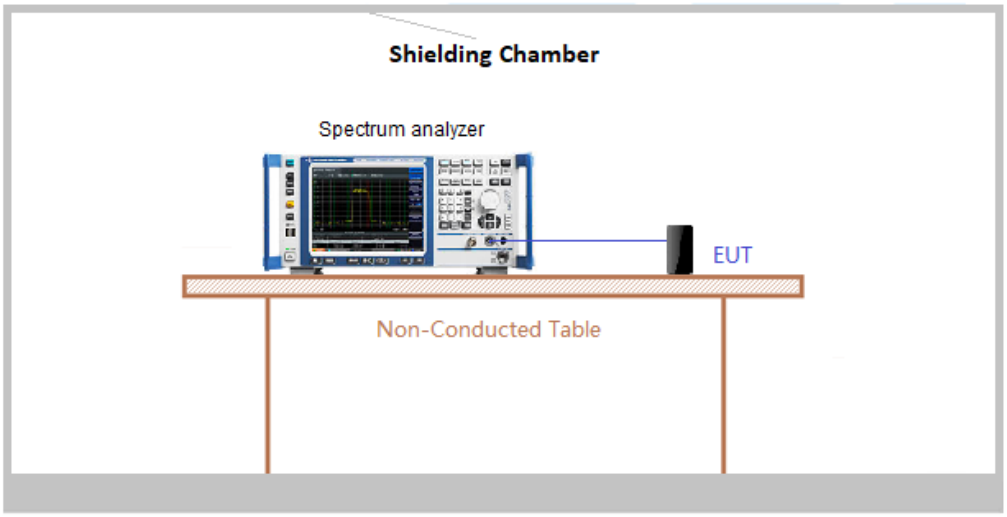


No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dBuV)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	2483.5	80.7	-8.1	72.6	74.0	-1.4	Peak
1	2483.5	59.6	-8.1	51.4	54.0	-2.6	Average

5.9. DUTY CYCLE

Test Standard FCC 47 CFR Part 15.247
Test Requirement: None; for reporting purposes only.
Test Method: ANSI C63.10-2013, Clause 11.6
Limit:
None; for reporting purposes only.

Test Setup:



Test Procedures:

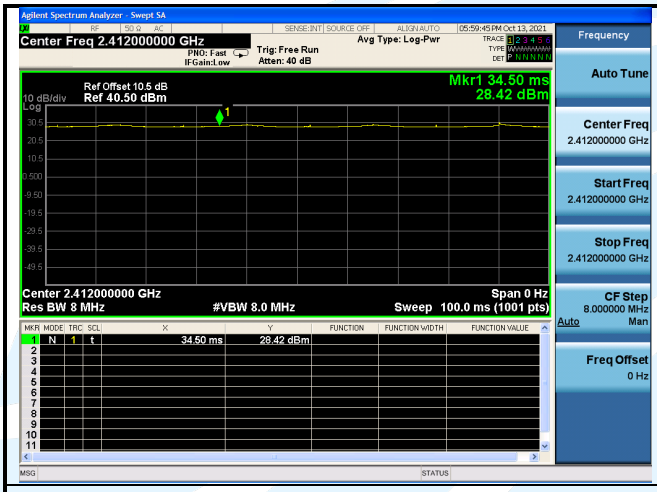
Measurements of duty cycle and transmission duration shall be performed using one of the following techniques:

a) A diode detector and an oscilloscope that together have a sufficiently short response time to permit accurate measurements of the ON and OFF times of the transmitted signal.
b) The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the ON and OFF times of the transmitted signal:
    1) Set the center frequency of the instrument to the center frequency of the transmission.
    2) Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value.
    3) Set VBW ≥ RBW. Set detector = peak or average.
    4) The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring the duty cycle shall not be used if T ≤ 16.7 μs.)

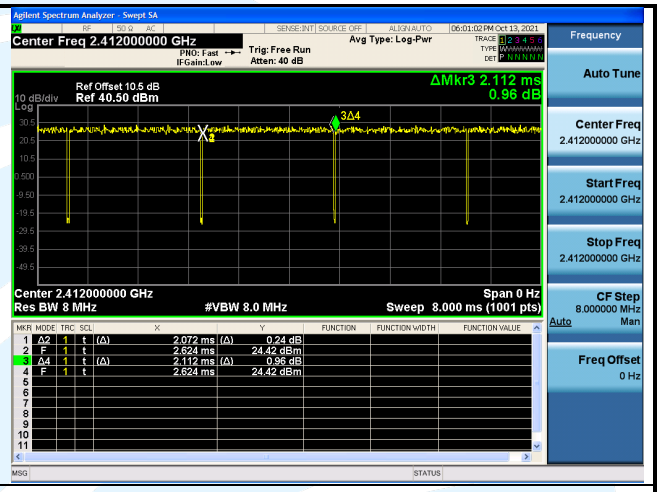
Equipment Used: Refer to section 3 for details.
Test Result: Pass

The measurement data as follows:

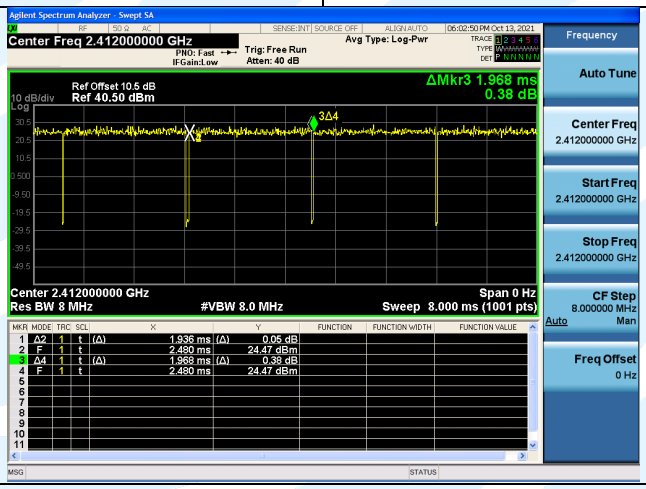
Mode	On Time (ms)	Period (ms)	Duty Cycle (linear)	Duty Cycle (%)	Duty Cycle Factor (dB)	1/ T Minimum VBW (kHz)	Average Factor (dB)
IEEE 802.11b	100	100	1.00	100.00	0.00	0.01	0.00
IEEE 802.11g	2.072	2.112	0.98	98.11	0.00	0.01	-0.17
IEEE 802.11n-HT20	1.936	1.968	0.98	98.37	0.00	0.01	-0.14



ANT 1: 802.11b CH01



ANT 1: 802.11g CH01



ANT 1: 802.11n20 CH01

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

See test photos attached in Appendix 1 for the actual connections between Product and support equipment.

APPENDIX 2 PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal photos.

*** End of Report ***