RF TEST REPORT

FCC / ISED

APPLICANT
Owl Labs Inc.

MODEL NAME
MTW405

FCC ID
2ALXJ-MTW405

ISED ID
22676-MTW405

REPORT NUMBER
HA240429-OWL-001-R14

TEST REPORT

Date of Issue
June 5, 2024

Test Site
Hyundai C-Tech, Inc. dba HCT America, Inc.
1726 Ringwood Ave, San Jose, CA 95131, USA

Applicant	Owl Labs Inc.
Applicant Address	33-1/2 Union Square Somerville, MA 02143 U.S.A.
FCC ID	2ALXJ-MTW405
ISED ID	22676-MTW405
Model Name	MTW405
EUT Type	360-Degree Video Conferencing Platform
Modulation Type	OFDMA
FCC Classification	Digital Transmission System (DTS)
FCC Rule Part(s)	Part 15.247
ISED Rule Part(s)	RSS-247 Issue 3 (August 2023) RSS-Gen Issue 5 Amd 2 (February 2021)
Test Procedure	ANSI C63.10-2013, KDB 558074 D01 v05r02, KDB 662911 D01

The device bearing the trade name and model specified above, has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures required. The results of testing in this report apply only to the product which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Hyundai C-Tech, Inc. dba HCT America, Inc. certifies that no party to application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C 862

Tested By

John Park

Test Engineer

Reviewed By

Yongsoo Park

Technical Manager

REVISION HISTORY

The revision history for this document is shown in table.

TEST REPORT NO.	DATE	DESCRIPTION
HA240429-OWL-001-R14	June 5, 2024	Initial Issue

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1. GENERAL INFORMATION

EUT DESCRIPTION

Model	MTW405
Product Name	Meeting Owl 4+
Serial Number	Conducted : M4FC1324001C Radiated :M4FV13240003
Power Supply	20 V d.c. (USB type C - External adaptor)
RF Specification	WIFI 2.4 GHz : 802.11b/g/ n(HT20, HT40)/ ac(VHT20, VHT40)/ ax(HE20, HE40) WIFI 5 GHz : 802.11a/n(HT20/40)/ ac(VHT20/40/80)/ ax(HE20, HE40, HE80) Bluetooth 5.0 LE (1M / BR / EDR)
Transmitter Chain	WIFI 2.4 GHz / 5 GHz : 2x2 MIMO Bluetooth LE / Bluetooth BR/EDR : SISO
Operating Environment	Indoor
Operating Temperature	5 °C ~ +30 °C

RF SPECIFICATION SUBJECT TO THE REPORT

RF Specification	IEEE 802.11ax (HE20, HE40)	
Transmitter Chain	2 x 2 MIMO	
Frequency Range	20 MHz BW : 2412 MHz – 2462 MHz 40 MHz BW : 2422 MHz – 2452 MHz	
Max. RF Output Power	17.92 dBm (61.89 mW)	
Modulation Type	OFDMA	
Number of Channels	20 MHz BW : 11 Channels 40 MHz BW : 7 Channels	
Antenna Specification [1)]	ANT1	Antenna Type : PCB Antenna Antenna Model : CU23001-1 Antenna Brand: antenova Peak Gain : 2.9 dBi
	ANT2	Antenna Type : PCB Antenna Antenna Model : CU23002-1 Antenna Brand: antenova Peak Gain : 2.9 dBi
Firmware Version [2)]	6.4.21.22	
Hardware Version [2)]	OWL-900-00027 Rev 5	
Date(s) of Tests	May 12, 2024 ~ June 5, 2024	

Note(s) :
1. Antenna information is based on the document provided.
2. Firmware and Hardware Versions are provided by the client.

ANTENNA CONFIGURATION

The device employs 2x2 MIMO technologies with possible configurations below.

Frequency	Configuration	SDM	Beamforming	CDD
		ANT1 + ANT2	ANT1 + ANT2	ANT1 + ANT2
2.4 GHz	802.11b	-	-	O
	802.11g	-	-	O
	802.11n	O	-	O
	802.11ac	O	O	O
	802.11ax	O	O	O
5 GHz	802.11a	-	-	O
	802.11n	O	-	O
	802.11ac	O	O	O
	802.11ax	O	O	O

The equipment under test supports Cyclic Diversity mode.
CDD mode was picked as worst case for testing even though the device support both CDD and SDM, Beamforming.

ANTENNA DIRECTIONAL GAIN

Antenna Type	Type	RF Technology	Frequency	Gain (Ant 1)	Gain (Ant 2)
PCB	Dipole	802.11b/g/n	2.4 GHz	2.90 dBi	2.90 dBi
PCB	Dipole	802.11a/n/ac	5 GHz	3.80 dBi	3.20 dBi

Directional Gain (2.4 GHz : Uncorrelated) = 10 log[($10^{(2.90/10)}$+$10^{(2.90/10)}$) / 2] = 2.90 dBi
Directional Gain (5 GHz : Uncorrelated) = 10 log[($10^{(3.80/10)}$+$10^{(3.20/10)}$) / 2] = 3.51 dBi

Directional Gain (2.4 GHz : Correlated) = 10 log[($10^{(2.90/20)}$+$10^{(2.90/20)}$)^2 / 2] = 5.91 dBi
Directional Gain (5 GHz : Correlated) = 10 log[($10^{(3.80/20)}$+$10^{(3.20/20)}$)^2 / 2] = 6.52 dBi

Beamforming Directional Gain (2.4 GHz) = 2.90 dBi + 10 log(2) = 5.91 dBi
Beamforming Directional Gain (5 GHz) = 3.51 dBi + 10 log(2) = 6.52 dBi

OPERATING FREQUENCY CHANNELS

Frequency (MHz)	Channel	802.11b	802.11g	802.11n HT20	802.11ax HE20
2412	1	O	O	O	O
2417	2	O	O	O	O
2422	3	O	O	O	O
2427	4	O	O	O	O
2432	5	O	O	O	O
2437	6	O	O	O	O
2442	7	O	O	O	O
2447	8	O	O	O	O
2452	9	O	O	O	O
2457	10	O	O	O	O
2462	11	O	O	O	O

Frequency (MHz)	Channel	802.11n HT40	802.11ax HE40
2422	3	O	O
2427	4	O	O
2432	5	O	O
2437	6	O	O
2442	7	O	O
2447	8	O	O
2452	9	O	O

SUMMARY OF TARGET POWER TABLE

U-NII 2 Band		Target Power / Chain
Mode	Tone	
802.11ax HE20	SU	15 dBm ± 2 dB
	242T	15 dBm ± 2 dB
	106T	12 dBm ± 2 dB
	52T	9 dBm ± 2 dB
	26T	6 dBm ± 2 dB
802.11ax HE40	SU	12 dBm ± 2 dB
	484T	12 dBm ± 2 dB
	242T	12 dBm ± 2 dB
	106T	12 dBm ± 2 dB
	52T	9 dBm ± 2 dB
	26T	6 dBm ± 2 dB

2. METHODOLOGY

FCC KDB 558074 D01 DTS Measurement Guidance v05r02 dated April 2nd, 2019 entitled “Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) and the measurement procedure described in ANSI C63.10(Version : 2013) ‘the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices’.

EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

EUT EXERCISE

The EUT was operated in engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of Section 15.207, 15.209 and 15.247 under the FCC Rule Part 15 Subpart C and the Section 2.1091 under the FCC Rule Part 2 / the RSS-GEN issue 5 amd 2, RSS-247 issue 3.

GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2 of ANSI C63.10. (Version :2013) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane below 1GHz. Above 1GHz with 1.5m using absorbers between the EUT and receive antenna. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. Also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emission, the relative positions of this hand-held transmitter (EUT) were rotated through three orthogonal axes according to the requirements in Section 8 of ANSI C63.10. (Version: 2013)

DESCRIPTION OF TEST MODES

The EUT has been tested at 5 GHz WLAN test mode. Qualcomm Radio Control Tool was used to control the channels, power level setting at continuous TX and normal RX mode.

3. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment’s, which is traceable to recognized national standards. Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2017).

4. FACILITIES AND ACCREDITATIONS

FACILITIES

The SAC (Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at 1726 Ringwood Avenue, San Jose, California 95131, USA.
The site is constructed in conformance with the requirements of ANSI C63.4. (Version :2014) and CISPR Publication 22.

CABID : 25729

EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

5. ANTENNA REQUIREMENTS

According to FCC 47 CFR §15.203:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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 shall be considered sufficient to comply with the provisions of this section."

(1) The antenna of this E.U.T is permanently attached and there is no provision for connection to an external antenna.
(2) The E.U.T Complies with the requirement of §15.203

According to RSS-Gen Issue 5 Amd 2 (Section 6.8) :

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).

When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer.

The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.

6. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013.

All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95 % level of confidence. The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty
Output Power, Conducted	± 0.54 dB
Frequency Tolerance	± 16.78 kHz
Occupied Bandwidth	± 120.66 kHz
Unwanted Emissions, Conducted	± 0.54 dB
Radiated Emissions (below 1 GHz)	± 5.70 dB
Radiated Emissions (Above 1 GHz)	± 5.25 dB

7. DESCRIPTION OF TESTS

7.1. DUTY CYCLE

TEST SETUP

TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer.
Zero-span measurement method was used, 6 (b) in KDB 558074 D01 v05r02.

The largest available value of RBW is 8 MHz and VBW is 50 MHz.
The zero-span method of measuring duty cycle shall not be used if T ≤ 6.25 microseconds. (50/6.25 = 8)
The zero-span method was used because all measured T data are > 6.25 microseconds and both RBW and VBW are > 50/*T*.

- RBW = 8 MHz (the largest available value)
- VBW = 8 MHz (≥ RBW)
- SPAN = 0 Hz
- Detector = Peak
- Number of points in sweep > 100
- Trace mode = Clear write
- Measure T_{total} and T_{on}
- Calculate Duty Cycle = T_{on}/ T_{total} and Duty Cycle Factor = 10*log(1/Duty Cycle)

7.2. 6 dB BANDWIDTH / 99 % OCCUPIED BANDWIDTH

LIMIT

§15.247(a)(2) / RSS-247(Issue 3) Section 5.2(a)
The bandwidth at 6 dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the receive antenna while the EUT is operating in transmission mode at the appropriate frequencies.

The minimum permissible 6 dB bandwidth is 500 kHz.

TEST SETUP

TEST PROCEDURE

Section 8.2 in KDB 558074 D01 v05r02, Subclause 11.8 in ANSI 63.10-2013

The transmitter output is connected to the Spectrum Analyzer.
The Spectrum Analyzer setting :

- RBW = 100 kHz
- VBW ≥ 3 x RBW
- Detector = Peak
- Trace mode = max hold
- Sweep = auto couple
- Allow the trace to stabilize
- Use X dB bandwidth measurement function from the spectrum analyzer by setting X dB to 6 dB

TEST PROCEDURE (99% Bandwidth) for ISED

The transmitter output is connected to the spectrum analyzer.

- RBW = 1% ~ 5% of the occupied bandwidth
- VBW ≒ 3 x RBW
- Detector = Peak
- Trace mode = max hold
- Sweep = auto couple
- Allow the trace to stabilize

Note(s) :
We tested OBW using the automatic bandwidth measurement capability of a spectrum analyzer.

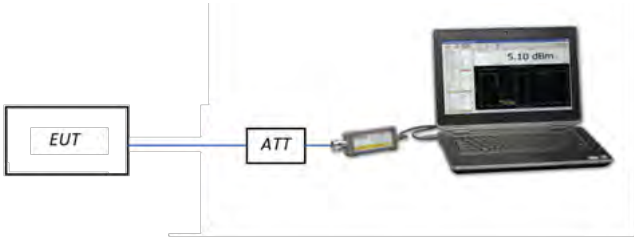
7.3. OUTPUT POWER

LIMIT

§15.247(b)(3)
The maximum permissible conducted output power is 1 Watt.

RSS-247(Issue 3) Section 5.4(d)
For DTSs employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1 W. The e.i.r.p. shall not exceed 4 W.

TEST SETUP



TEST PROCEDURE (Power Meter)

Refer to the section 8.3.2.3 in KDB 558074 D01 v05r02 (ANSI C63.10, 11.9.2.3)
The transmitter output is connected to the Average Power meter

- Measure the duty cycle.
- Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.

Add 10log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times

7.4. POWER SPECTRAL DENSITY

LIMIT

§15.247(e) / RSS-247(Issue 3) Section 5.2 (b)
The transmitter power density average over 1-second interval shall not be greater than 8dBm in any 3kHz BW.

TEST SETUP

TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer.
We tested according to Procedure 8.4 in KDB 558074 D01 v05r02, Procedure 11.10 in ANSI 63.10-2013.

The spectrum analyzer is set to :

- Set analyzer center frequency to DTS channel center frequency.
- Set span to at least 1.5 times the OBW.
- RBW = 3 kHz ≤ RBW ≤ 100 kHz.
- VBW ≥ 3 x RBW.
- Sweep = auto couple
- Detector = power averaging (rms) or sample detector (when rms not available).
- Ensure that the number of measurement points in the sweep ≥ [2 ×span / RBW].
- Employ trace averaging (rms) mode over a minimum of 100 traces
- Use the peak marker function to determine the maximum amplitude level.
- Use the peak marker function to determine the maximum amplitude level within the RBW. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
- if then duty factor shall be added to adjust the result if the duty cycle is less than 98%

7.5. CONDUCTED BAND EDGE (OUT OF BAND EMISSIONS) / CONDUCTED SPURIOUS EMISSIONS

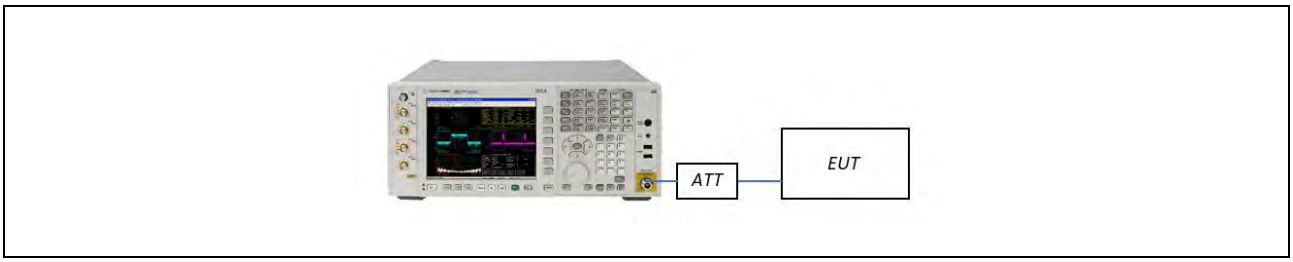
LIMIT

§15.247(d) / RSS-247(Issue 3) Section 5.5

The maximum conducted (peak) output power was used to demonstrate compliance, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz.

If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required shall be 30 dB instead of 20 dB.

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer.
(Procedure 8.5 in KDB 558074 D01 v05r02, Procedure 11.11 in ANSI 63.10-2013)

- RBW = 100 kHz
- VBW ≥ 3 x RBW
- Set span to encompass the spectrum to be examined.
- Detector = Peak
- Trace Mode = max hold
- Sweep time = auto couple
- Ensure that the number of measurement points ≥ 2*Span/RBW
- Allow trace to fully stabilize.
- Use peak marker function to determine the maximum amplitude level.

Measurements are made over the 30 MHz to 25 GHz range with the transmitter set to the lowest, middle, and highest channels.

7.6. RADIATED EMISSIONS

RADIATION EMISSION LIMIT

FCC : 47 CFR § 15.209		
Frequency (MHz)	**Field Strength (uV/m)**	**Measurement Distance (m)**
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

ISED : RSS-GEN Section 8.9		
Frequency (MHz)	**Field Strength (uV/m)**	**Measurement Distance (m)**
0.009 – 0.490	6.37/F(kHz)	300
0.490 – 1.705	63.7/F(kHz)	30
1.705 – 30	0.08	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

RECEIVER RADIATED EMISSION LIMIT

ISED : RSS-GEN Section 7.3		
Frequency (MHz)	**Field Strength (uV/m)**	**Measurement Distance (m)**
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

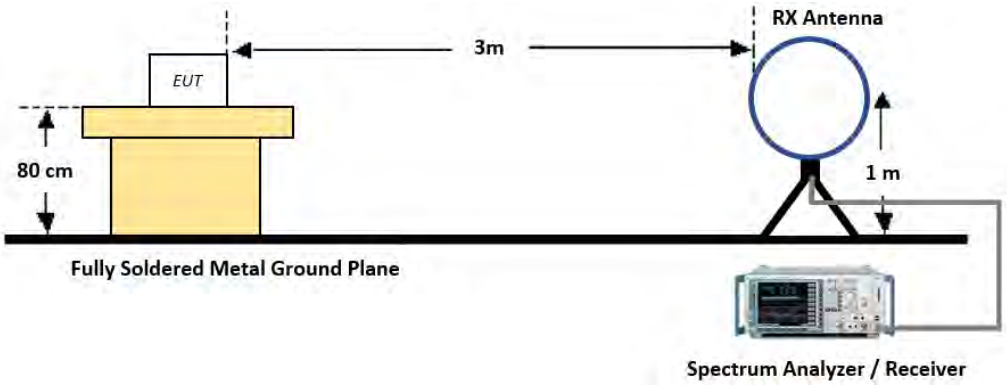
RESTRICTED BANDS OF OPERATION

FCC : 47 CFR § 15.205(a)				
Frequency (MHz)	**Frequency (MHz)**	**Frequency (MHz)**	**Frequency (MHz)**	**Frequency (MHz)**
0.090 – 0.110	12.29 - 12.293	149.9 - 150.05	1660.0 - 1710.0	8025 - 8500
0.495 - 0.505	12.51975 - 12.52025	156.52475 - 156.52525	1718.8 - 1722.2	9000 - 9200
2.1735 - 2.1905	12.57675 - 12.57725	156.7 - 156.9	2200.0 - 2300.0	9300 - 9500
4.125 - 4.128	13.36 - 13.41	162.0125 - 167.17	2310.0 - 2390.0	10600 - 12700
4.17725 - 4.17775	16.42 - 16.423	167.72 - 173.2	2483.5 - 2500.0	13250 - 13400
4.20725 - 4.20775	16.69475 - 16.69525	240.0 - 285.0	2690.0 - 2900.0	14470 - 14500
6.215 - 6.218	16.80425 - 16.80475	322.0 - 335.4	3260.0 - 3267.0	15350 - 16200
6.26775 - 6.26825	25.5 - 25.67	399.9 - 410.0	3332.0 - 3339.0	17700 - 21400
6.31175 - 6.31225	37.5 - 38.25	608.0 - 614.0	3345.8 - 3358.0	22010 - 23120
8.291 - 8.294	73 - 74.6	960.0 - 1240.0	3600.0 - 4400.0	23600 - 24000
8.362 - 8.366	74.8 - 75.2	1300.0 - 1427.0	4500.0 - 5150.0	31200 - 31800
8.37625 - 8.38675	108 - 121.94	1435.0 - 1626.5	5350.0 - 5460.0	36430 - 36500
8.41425 - 8.41475	123 - 138	1645.5 - 1646.5	7250.0 - 7750.0	Above 38600

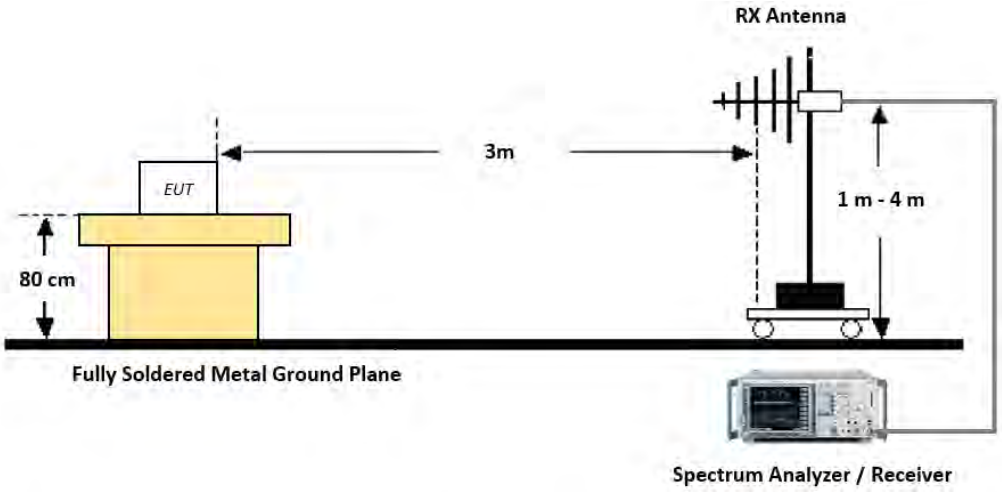
ISED : RSS-GEN Section 8.10				
Frequency (MHz)	**Frequency (MHz)**	**Frequency (MHz)**	**Frequency (MHz)**	**Frequency (MHz)**
0.090 - 0.110	8.37625 - 8.38675	108 – 138	1660 - 1710	8025 - 8500
0.495 - 0.505	8.41425 - 8.41475	149.9 - 150.05	1718.8 - 1722.2	9000 - 9200
2.1735 - 2.1905	12.29 - 12.293	156.52475 - 156.52525	2200 - 2300	9300 - 9500
3.020 - 3.026	12.51975 - 12.52025	156.7 - 156.9	2310 - 2390	10600 - 12700
4.125 - 4.128	12.57675 - 12.57725	162.0125 - 167.17	2483.5 - 2500	13250 - 13400
4.17725 - 4.17775	13.36 - 13.41	167.72 - 173.2	2655 - 2900	14470 - 14500
4.20725 - 4.20775	16.42 - 16.423	240 - 285	3260 - 3267	15350 - 16200
5.677 - 5.683	16.69475 - 16.69525	322 - 335.4	3332 - 3339	17700 - 21400
6.215 - 6.218	16.80425 - 16.80475	399.9 - 410	3345.8 - 3358	22010 - 23120
6.26775 - 6.26825	25.5 - 25.67	608 - 614	3500 - 4400	23600 - 24000
6.31175 - 6.31225	37.5 - 38.25	960 - 1427	4500 - 5150	31200 - 31800
8.291 - 8.294	73 - 74.6	1435 - 1626.5	5350 - 5460	36430 - 36500
8.362 - 8.366	74.8 - 75.2	1645.5 - 1646.5	7250 - 7750	Above 38600

TEST SETUP

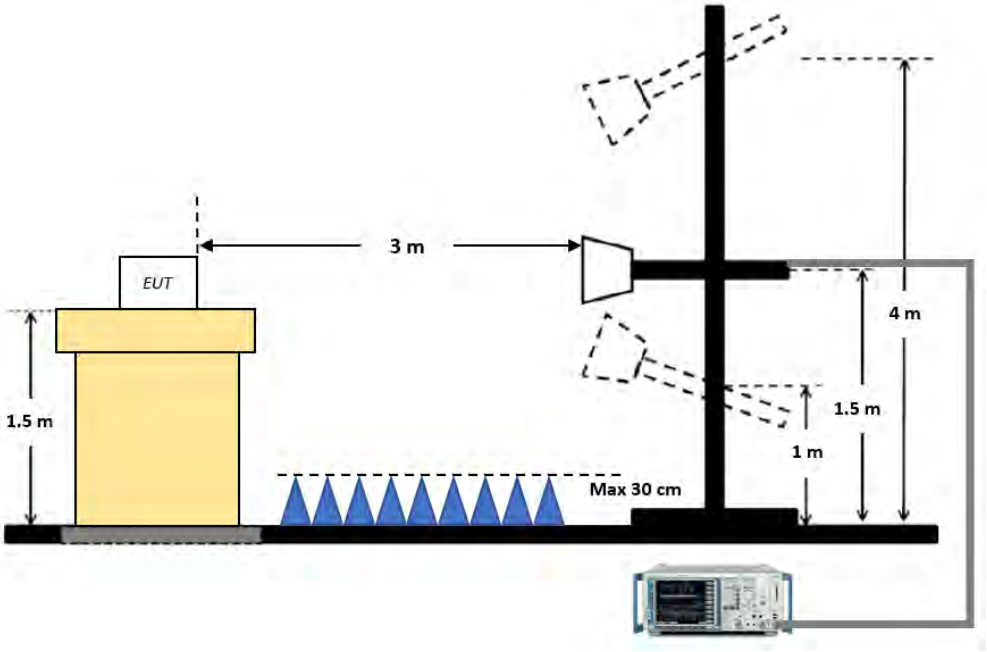
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



TEST PROCEDURE OF RADIATED SPURIOUS EMISSION (BELOW 30 MHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The loop antenna was placed at a location 3m from the EUT
3. The EUT is placed on a turntable, which is 0.8m above ground plane.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. Distance Correction Factor (0.009 MHz – 0.490 MHz) = 40*log(3 m/300 m) = - 80 dB
   Measurement Distance: 3 m
7. Distance Correction Factor (0.490 MHz – 30 MHz) = 40*log(3 m/30 m) = - 40 dB
   Measurement Distance: 3 m
8. Spectrum Setting

   - Frequency Range = 9 kHz ~ 30 MHz
   - Detector = Peak
   - Trace = Max hold
   - RBW = 9 kHz
   - VBW ≥ 3*RBW

9. Total = Reading Value + Antenna Factor (A.F) + Cable Loss (C.L)
10. There is a comparison data both open-field test site and alternative test site – semi-Anechoic chamber according to 414788 D01. And the results are properly calibrated.

TEST PROCEDURE OF RADIATED SPURIOUS EMISSION (30 MHz – 1 GHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The EUT is placed on a turntable, which is 0.8 m above ground plane.
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
5. Spectrum Setting

   (1) Measurement Type (Peak):
   - Measured Frequency Range: 30 MHz – 1 GHz
   - Detector = Peak
   - Trace = Max hold
   - RBW = 100 kHz
   - VBW ≥ 3*RBW

   (2) Measurement Type(Quasi-peak):
   - Measured Frequency Range: 30 MHz – 1 GHz
   - Detector = Quasi-Peak
   - RBW = 120 kHz

6. Total = Reading Value + Antenna Factor (A.F) + Cable Loss (C.L)

TEST PROCEDURE OF RADIATED SPURIOUS EMISSION (ABOVE 1 GHz)

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4. EUT is set 3 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. The unit was tested with its standard battery.
8. Spectrum Setting

(1) Measurement Type(Peak):
- Measured Frequency Range : 1 GHz – 25 GHz
- Detector = Peak
- Trace = Max hold
- RBW = 1 MHz
- VBW ≥ 3*RBW

(2) Measurement Type(Average): Duty cycle ≥ 98%
- Measured Frequency Range : 1 GHz – 25 GHz
- Detector = RMS
- Averaging type = power (*i.e.*, RMS)
- RBW = 1 MHz
- VBW ≥ 3*RBW
- Sweep time = auto.
- Trace mode = average (at least 100 traces).

(3) Measurement Type(Average): Duty cycle < 98%, duty cycle variations are less than ±2%
- Measured Frequency Range : 1 GHz – 25 GHz
- Detector = RMS
- Averaging type = power (*i.e.*, RMS)
- RBW = 1 MHz
- VBW ≥ 3*RBW
- Sweep time = auto.
- Trace mode = average (at least 100 traces).
- Correction factor shall be added to the measurement results prior to comparing to the emission limit to compute the emission level that would have been measured had the test been performed at 100 % duty cycle.
- Duty Cycle Factor (dB) : Please refer to the please refer to section 9.1.

10. Measurement value only up to 6 maximum emissions noted or would be lesser if no specific emissions from the EUT are recorded (i.e.: margin > 20 dB from the applicable limit) and considered that is already beyond the background noise floor.

11. Sample Calculation

(1) Total (Peak) = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(G)
(2) Total (Average, Duty ≥ 98%) = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(G)
(3) Total (Average, Duty < 98%) = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(G) + Duty Cycle Factor

TEST PROCEDURE OF RADIATED RESTRICTED BAND EDGE

1. Radiated test is performed with hopping off (if there is any)
2. The EUT is placed on a turntable, which is 1.5 m above ground plane.
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
5. EUT is set 3 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. The unit was tested with its standard battery.
8. Spectrum Setting

   (1) Measurement Type(Peak):
   - Detector = Peak
   - Trace = Max hold
   - RBW = 1 MHz
   - VBW ≥ 3*RBW

   (2) Measurement Type(Average): Duty cycle ≥ 98%,
   - Measured Frequency Range : 2310 MHz – 2390 MHz / 2483.5 MHz – 2500 MHz
   - Detector = RMS
   - Averaging type = power (*i.e.*, RMS)
   - RBW = 1 MHz
   - VBW ≥ 3*RBW
   - Sweep time = auto.
   - Trace mode = average (at least 100 traces).

   (3) Measurement Type(Average): Duty cycle < 98%, duty cycle variations are less than ±2%
   - Measured Frequency Range : 2310 MHz – 2390 MHz / 2483.5 MHz – 2500 MHz
   - Detector = RMS
   - Averaging type = power (*i.e.*, RMS)
   - RBW = 1 MHz
   - VBW ≥ 3*RBW
   - Sweep time = auto.
   - Trace mode = average (at least 100 traces).
   - Correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 % duty cycle.
   - Duty Cycle Factor (dB) : Please refer to the please refer to section 9.1.

9. Measurement value only up to 6 maximum emissions noted or would be lesser if no specific emissions from the EUT are recorded (i.e.: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

10. Sample Calculation

    (1) Total (Peak) = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L)
    (2) Total (Average, Duty ≥ 98%) = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(G)
    (3) Total (Average, Duty < 98%) = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(G) + Duty Cycle Factor

7.7. AC POWER LINE CONDUCTED EMISSIONS

LIMIT

47 CFR § 15.207, RSS-GEN Section 8.8
For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN).

Frequency Range (MHz)	Limits (dBµV)	
	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

*Decreases with the logarithm of the frequency.

Compliance with this provision shall be based on the measurement of the radio frequency.
voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

TEST SETUP

See test photographs attached in Annex A for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors : Quasi Peak and Average Detector.

According to FCC KDB 174176 D01 Line Conducted FAQ v01r01 :

Devices Operating Above 30 MHz

For a device with a permanent or detachable antenna operating above 30 MHz, measurements must be performed with the antenna connected as specified in clause 6.2 of ANSI C63.10-2013.

Devices Operating Below 30 MHz

For a device with a permanent or detachable antenna operating at or below 30 MHz, the FCC will accept measurements performed with a suitable dummy load in lieu of the antenna under the following conditions:
(1) Perform the AC power-line conducted tests with the antenna connected to determine compliance with Section 15.207 limits outside the transmitter's fundamental emission band;
(2) Retest with a dummy load in lieu of the antenna to determine compliance with Section 15.207 limits within the transmitter's fundamental emission band. For a detachable antenna, remove the antenna and connect a suitable dummy load to the antenna connector. For a permanent antenna, remove the antenna and terminate the RF output with a dummy load or network which simulates the antenna in the fundamental frequency band. All measurements must be performed as specified in clause 6.2 of ANSI C63.10-2013.

Sample Calculation

Quasi-peak(Final Result) = Reading Value + Correction Factor

8. SUMMARY OF TEST RESULTS

Test Description	FCC Part Section(s)	ISED Part Section(s)	Test Limit	Test Condition	Test Result
6 dB Bandwidth	§15.247(a)(2)	RSS-247, 5.2(a)	≥ 500 kHz	Conducted	PASS
Occupied Bandwidth	-	RSS-GEN, 6.7	-		PASS
Conducted Maximum Peak Output Power	§15.247(b)(3)	RSS-247, 5.4(d)	≤ 1 W		PASS
Maximum e.i.r.p.	-	RSS-247, 5.4(d)	≤ 4 W e.i.r.p.		PASS
Power Spectral Density	§15.247(e)	RSS-247, 5.2(b)	≤ 8 dBm / 3 kHz		PASS
Band Edge (Out of Band missions)	§15.247(d)	RSS-247, 5.5	≥ 30 dBc		PASS
AC Power line Conducted Emissions	§15.207	RSS-GEN, 8.8	cf. Section 7.7		PASS (1)
Radiated Spurious Emissions	§15.247(d) §15.209	RSS-GEN, 8.9	cf. Section 7.6	Radiated	PASS
Radiated Restricted Band Edge	§15.247(d) §15.205(a)	RSS-GEN, 8.10	cf. Section 7.6		PASS
Receiver Spurious Emissions	-	RSS-GEN, 7.3	cf. Section 7.6		PASS

Note :
1. Evaluated on original certification.

WORST CASE CONFIGURATION

WORST CASE CONFIGURATION

1. EUT Axis

- All X, Y, and Z positions for horizontal / vertical antenna polarization were investigated to find the worst-case position.
- X position was selected for the final evaluation.

2. Operations with all the data rates available were investigated for each different channel BW mode. Lowest datarate was selected as the worst case.

3. Radiated test was performed at the worst case 2 x TX CDD mode
- The target power of SISO mode per chain is the same as the target power of MIMO mode per chain.

4. Worst-case test mode
- All the RU tone for each bandwidth were investigated, and the modes below were reported as the worst-case conditions.

U-NII 2 Band		Tone	RU Offset
Test	Mode		
All Conducted Tests	802.11ax HE20	SU	-
		106T	53, 54
		52T	37, 38, 40
		26T	0, 4, 8
	802.11ax HE40	SU	-
		242T	61, 62
		106T	53, 54, 56
Radiated Emission Tests	802.11ax HE20	SU	-
		106T	53, 54
		26T	0, 4, 8
	802.11ax HE40	SU	-
		242T	61, 62

WORST CASE DATA RATE

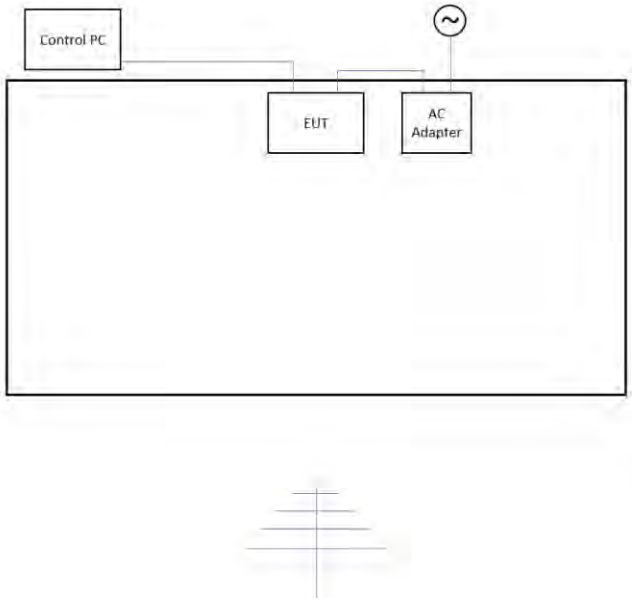
Mode	Worst Case Data Rate
802.11ax HE20	MCS0
802.11ax HE40	MCS0

CHANNEL UNDER TEST

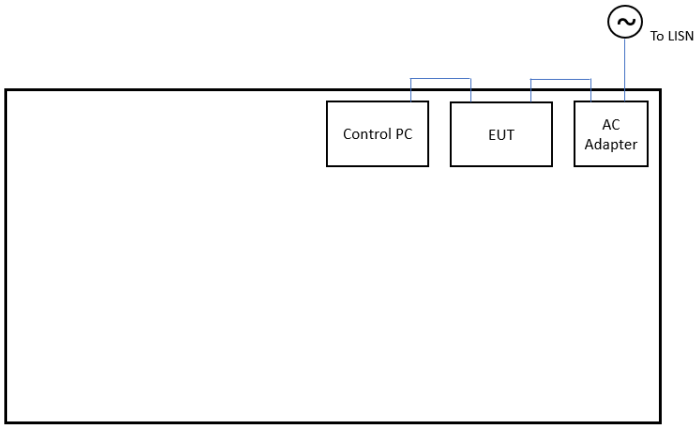
Mode	Low Channel (MHz)	Mid Channel (MHz)	High Channel (MHz)
802.11ax HE20	2412	2437	2462
802.11ax HE40	2412	2437	2462

TEST CONFIGURATION

Radiated Emission



Conducted Emission



LIST OF SUPPORT EQUIPMENT

Equipment Type	Model No.	Serial No.	Manufacturer	Qty	Note
Power Supply	PA-1650-58	165058LT33803287PEA01	LITEON	1	Input : 100-240 V a.c., 50-60 Hz, 1.6 A Output : 20 V d.c., 3.25 A
Laptop	14-dq1038wrn	5CD04524LL	HP	1	For EUT control

9. TEST RESULT

9.1. DUTY CYCLE

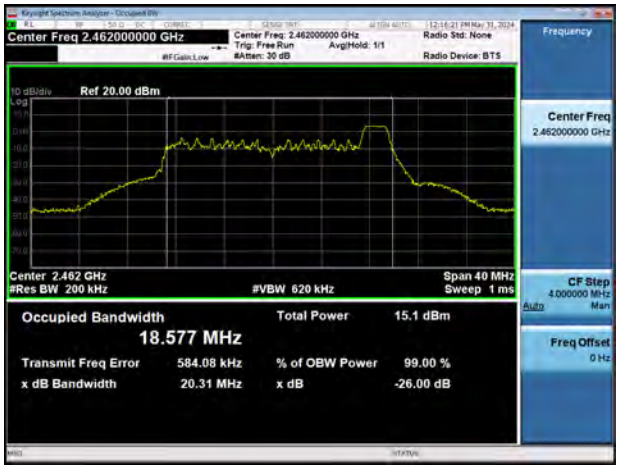
Duty cycle is 100 % continuous.

9.2. 6 dB BANDWIDTH / 99% BANDWIDTH MEASUREMENT

2.4 GHz WLAN				99% Bandwidth (MHz)		6 dB Bandwidth (MHz		
Mode / Tone	Frequency (MHz)	Channel	Offset	Chain 0	Chain 1	Chain 0	Chain 1	Limit
802.11ax HE20 / SU	2412	1	-	18.853	18.871	18.684	18.704	≥ 0.5
	2437	6	-	18.908	18.864	18.877	18.543	≥ 0.5
	2462	11	-	18.913	18.888	18.755	18.601	≥ 0.5
802.11ax HE20 / 106T	2412	1	53	18.214	18.209	17.134	17.677	≥ 0.5
			54	18.303	18.165	17.175	17.346	≥ 0.5
	2437	6	53	18.304	18.215	17.135	18.084	≥ 0.5
			54	18.227	18.192	17.155	17.353	≥ 0.5
	2462	11	53	18.227	18.148	17.141	17.135	≥ 0.5
			54	18.366	18.230	18.355	17.389	≥ 0.5
802.11ax HE20 / 52T	2412	1	37	18.294	18.282	17.106	17.684	≥ 0.5
			38	17.243	17.229	15.119	15.123	≥ 0.5
			40	18.228	18.209	17.091	17.079	≥ 0.5
	2437	6	37	18.348	18.286	17.113	17.688	≥ 0.5
			38	17.288	17.245	15.084	15.111	≥ 0.5
			40	18.221	18.201	15.837	17.032	≥ 0.5
	2462	11	37	18.260	18.222	17.096	17.062	≥ 0.5
			38	17.286	17.258	15.110	15.129	≥ 0.5
			40	18.325	18.296	17.050	17.102	≥ 0.5
802.11ax HE20 / 26T	2412	1	0	18.265	18.295	2.100	2.075	≥ 0.5
			4	17.205	17.051	2.690	2.692	≥ 0.5
			8	18.521	18.385	2.141	2.105	≥ 0.5
	2437	6	0	18.344	18.298	2.078	2.072	≥ 0.5
			4	17.232	17.098	2.681	6.342	≥ 0.5
			8	18.429	18.414	2.126	4.546	≥ 0.5
	2462	11	0	18.218	18.175	2.084	2.069	≥ 0.5
			4	17.243	17.112	7.619	2.687	≥ 0.5
			8	18.577	18.481	17.043	15.835	≥ 0.5

2.4 GHz WLAN				99% Bandwidth (MHz)		6 dB Bandwidth (MHz)		
Mode / Tone	Frequency (MHz)	Channel	Offset	Chain 0	Chain 1	Chain 0	Chain 1	Limit
802.11ax HE40 / SU	2422	3	-	37.664	37.594	37.784	37.367	≥ 0.5
	2437	6	-	37.539	37.584	36.222	36.379	≥ 0.5
	2452	9	-	37.527	37.571	36.188	36.845	≥ 0.5
802.11ax HE40 / 242T	2422	3	61	37.394	37.304	36.733	36.700	≥ 0.5
			62	37.311	37.221	36.714	36.704	≥ 0.5
	2437	6	61	37.285	37.313	36.703	36.736	≥ 0.5
			62	37.156	37.199	36.686	36.695	≥ 0.5
	2452	9	61	36.920	37.099	36.712	36.712	≥ 0.5
			62	37.382	37.297	36.686	36.671	≥ 0.5
802.11ax HE40 / 106T	2422	3	53	37.419	37.346	36.577	36.531	≥ 0.5
			54	36.272	35.927	35.119	33.876	≥ 0.5
			56	37.298	37.290	8.306	24.075	≥ 0.5
	2437	6	53	37.362	37.287	36.586	36.540	≥ 0.5
			54	35.958	35.947	33.858	35.076	≥ 0.5
			56	37.144	37.335	26.563	34.071	≥ 0.5
	2452	9	53	37.058	37.121	16.530	34.035	≥ 0.5
			54	35.730	35.873	20.095	32.508	≥ 0.5
			56	37.509	37.453	36.584	36.545	≥ 0.5

▣ TEST PLOTS

99% Bandwidth	
802.11ax HE20 SU (CH 11 : 2462 MHz)	**802.11ax HE20 106T (Offset : 54) (CH 11 : 2462 MHz)**
	
802.11ax HE20 52T (Offset : 37) (CH 6 : 2437 MHz)	**802.11ax HE20 26T (Offset : 8) (CH 11 : 2462 MHz)**
	

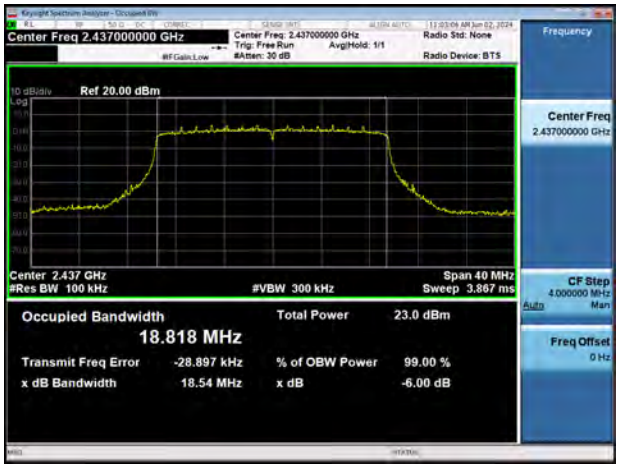
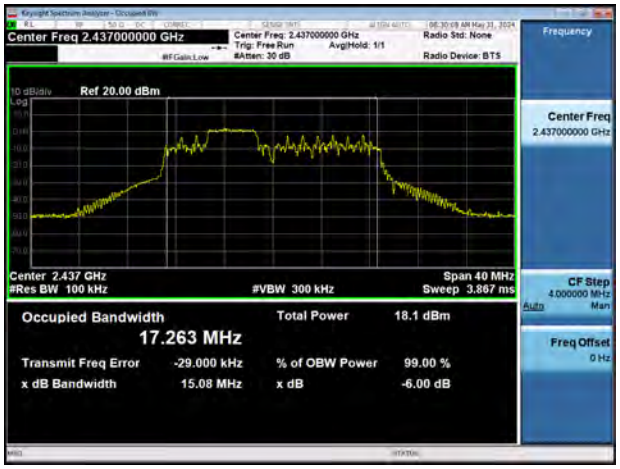
Note :
The worst plots are reported for each tone and bandwidth

▣ TEST PLOTS

99% Bandwidth	
802.11ax HE40 SU (CH 3 : 2422 MHz)	**802.11ax HE40 242T (Offset : 61) (CH 3 : 2422 MHz)**
	
802.11ax HE40 106T (Offset : 56) (CH 9 : 2452 MHz)	
	

Note :
The worst plots are reported for each tone and bandwidth

▣ TEST PLOTS

6 dB Bandwidth	
802.11ax HE20 SU (CH 6 : 2437 MHz)	**802.11ax HE20 106T (Offset : 53) (CH 1 : 2412 MHz)**
	
802.11ax HE20 52T (Offset : 38) (CH 6 : 2437 MHz)	**802.11ax HE20 26T (Offset : 0) (CH 11 : 2462 MHz)**
	

Note :
The worst plots are reported for each tone and bandwidth

▣ TEST PLOTS

6 dB Bandwidth	
802.11ax HE40 SU (CH 9 : 2452 MHz)	**802.11ax HE40 242T (Offset : 62) (CH 9 : 2452 MHz)**
	
802.11ax HE40 106T (Offset : 56) (CH 3 : 2422 MHz)	
	

Note :
The worst plots are reported for each tone and bandwidth

9.3. OUTPUT POWER

2.4 GHz WLAN				Test Result				Limit (dBm)
Mode / Tone	Frequency (MHz)	Channel	Offset	Measured Power (dBm)		Duty Factor (dB)	Total Power (dBm)	
				Chain 0	Chain 1		All Chain	
802.11ax HE20 / SU	2412	1	-	14.17	14.43	-	17.31	30
	2437	6	-	14.91	14.90	-	17.92	30
	2462	11	-	14.72	14.52	-	17.63	30
802.11ax HE20 / 106T	2412	1	53	12.53	12.61	-	15.58	30
			54	12.25	12.84	-	15.57	30
	2437	6	53	12.15	12.22	-	15.19	30
			54	12.58	12.47	-	15.54	30
	2462	11	53	12.75	12.54	-	15.66	30
			54	11.91	11.74	-	14.84	30
802.11ax HE20 / 52T	2412	1	37	9.05	8.94	-	12.01	30
			38	9.67	9.42	-	12.56	30
			40	8.89	8.98	-	11.95	30
	2437	6	37	8.82	8.57	-	11.70	30
			38	9.47	9.08	-	12.29	30
			40	9.35	8.75	-	12.07	30
	2462	11	37	9.35	8.98	-	12.18	30
			38	9.42	9.22	-	12.33	30
			40	8.31	8.11	-	11.22	30
802.11ax HE20 / 26T	2412	1	0	5.53	5.55	-	8.55	30
			4	6.38	6.82	-	9.62	30
			8	5.61	6.06	-	8.85	30
	2437	6	0	5.05	5.32	-	8.20	30
			4	6.26	6.25	-	9.26	30
			8	5.84	5.69	-	8.78	30
	2462	11	0	6.15	5.65	-	8.92	30
			4	6.02	6.31	-	9.17	30
			8	5.08	4.79	-	7.95	30

Note(s) :

1. Duty factor is not applied since the duty cycle is 100 %.

2.4 GHz WLAN				Test Result				Limit (dBm)
Mode / Tone	Frequency (MHz)	Channel	Offset	Measured Power (dBm)		Duty Factor (dB)	Total Power (dBm)	
				Chain 0	Chain 1		All Chain	
802.11ax HE40 / SU	2422	3	-	12.15	12.26	-	15.22	30
	2437	6	-	11.74	11.98	-	14.87	30
	2452	9	-	11.96	11.85	-	14.92	30
802.11ax HE40 / 242T	2422	3	61	12.15	12.23	-	15.20	30
			62	12.65	12.45	-	15.56	30
	2437	6	61	11.73	12.04	-	14.90	30
			62	12.31	12.27	-	15.30	30
	2452	9	61	12.60	12.22	-	15.42	30
			62	11.54	11.65	-	14.61	30
802.11ax HE40 / 106T	2422	3	53	12.58	12.63	-	15.61	30
			54	12.78	13.24	-	16.03	30
			56	13.18	12.88	-	16.04	30
	2437	6	53	11.68	12.23	-	14.97	30
			54	12.77	12.93	-	15.86	30
			56	12.48	12.60	-	15.55	30
	2452	9	53	12.72	12.38	-	15.56	30
			54	13.41	13.07	-	16.25	30
			56	11.41	11.63	-	14.53	30

Note(s) :

1. Duty factor is not applied since the duty cycle is 100 %.

9.4. POWER SPECTRAL DENSITY

2.4 GHz WLAN				Test Result				Limit (dBm/3kHz)
Mode / Tone	Frequency (MHz)	Channel	Offset	Measured PSD (dBm/3kHz)		Duty Factor (dB)	Total PSD (dBm/3kHz)	
				Chain 0	Chain 1		All Chain	
802.11ax HE20 / SU	2412	1	-	-6.88	-6.84	-	-3.85	8
	2437	6	-	-6.05	-6.05	-	-3.04	8
	2462	11	-	-6.58	-6.52	-	-3.54	8
802.11ax HE20 / 106T	2412	1	53	-5.42	-5.21	-	-2.30	8
			54	-5.73	-5.04	-	-2.36	8
	2437	6	53	-5.72	-5.34	-	-2.51	8
			54	-5.29	-5.29	-	-2.28	8
	2462	11	53	-4.79	-5.27	-	-2.02	8
			54	-6.16	-6.00	-	-3.07	8
802.11ax HE20 / 52T	2412	1	37	-5.80	-5.80	-	-2.79	8
			38	-5.65	-5.80	-	-2.72	8
			40	-5.66	-5.60	-	-2.62	8
	2437	6	37	-6.04	-6.24	-	-3.13	8
			38	-5.81	-6.01	-	-2.90	8
			40	-5.45	-5.79	-	-2.60	8
	2462	11	37	-5.41	-5.58	-	-2.48	8
			38	-5.54	-5.99	-	-2.75	8
			40	-6.62	-6.67	-	-3.63	8
802.11ax HE20 / 26T	2412	1	0	-5.87	-6.02	-	-2.93	8
			4	-5.87	-5.42	-	-2.63	8
			8	-6.04	-5.65	-	-2.83	8
	2437	6	0	-6.54	-5.93	-	-3.21	8
			4	-5.99	-6.01	-	-2.99	8
			8	-5.58	-5.79	-	-2.67	8
	2462	11	0	-5.45	-5.54	-	-2.49	8
			4	-6.53	-5.81	-	-3.15	8
			8	-6.43	-6.88	-	-3.64	8

Note(s) :

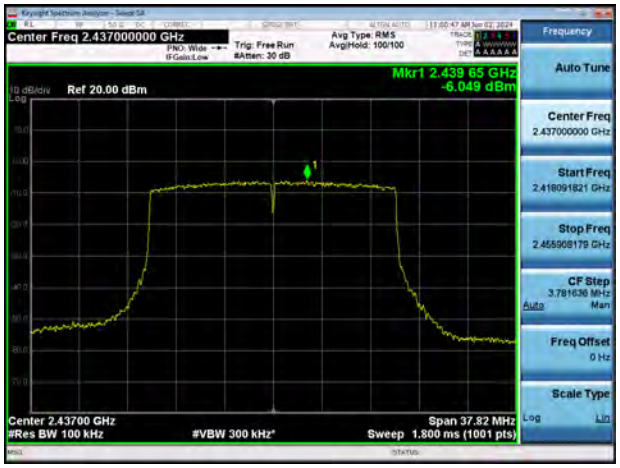
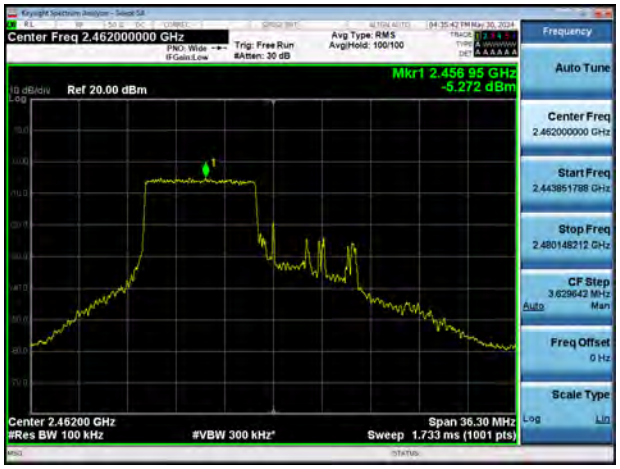
1. Duty factor is not applied since the duty cycle is 100 %.

2.4 GHz WLAN				Test Result				Limit (dBm/3kHz)
Mode / Tone	Frequency (MHz)	Channel	Offset	Measured PSD (dBm/3kHz)		Duty Factor (dB)	Total PSD (dBm/3kHz)	
				Chain 0	Chain 1		All Chain	
802.11ax HE40 / SU	2422	3	-	-12.06	-12.00	-	-9.02	8
	2437	6	-	-12.25	-12.05	-	-9.14	8
	2452	9	-	-11.89	-12.19	-	-9.03	8
802.11ax HE40 / 242T	2422	3	61	-9.49	-9.17	-	-6.32	8
			62	-8.84	-9.15	-	-5.98	8
	2437	6	61	-9.79	-9.38	-	-6.57	8
			62	-9.16	-9.07	-	-6.10	8
	2452	9	61	-8.93	-9.14	-	-6.03	8
			62	-9.57	-9.75	-	-6.65	8
802.11ax HE40 / 106T	2422	3	53	-5.43	-5.44	-	-2.43	8
			54	-5.58	-5.20	-	-2.38	8
			56	-4.75	-5.13	-	-1.93	8
	2437	6	53	-6.21	-5.58	-	-2.87	8
			54	-5.42	-5.17	-	-2.28	8
			56	-4.92	-5.24	-	-2.07	8
	2452	9	53	-5.11	-5.35	-	-2.22	8
			54	-4.48	-5.23	-	-1.83	8
			56	-6.58	-5.92	-	-3.23	8

Note(s) :

1. Duty factor is not applied since the duty cycle is 100 %.

▣ TEST PLOTS

Power Spectral Density	
802.11ax HE20 SU (CH6 : 2437 MHz) Chain 0	**802.11ax HE20 SU (CH6 : 2437 MHz) Chain 1**
	
802.11ax HE20 106T (Offset : 53) (CH11 : 2462 MHz) Chain 0	**802.11ax HE20 106T (Offset : 53) (CH11 : 2462 MHz) Chain 1**
	

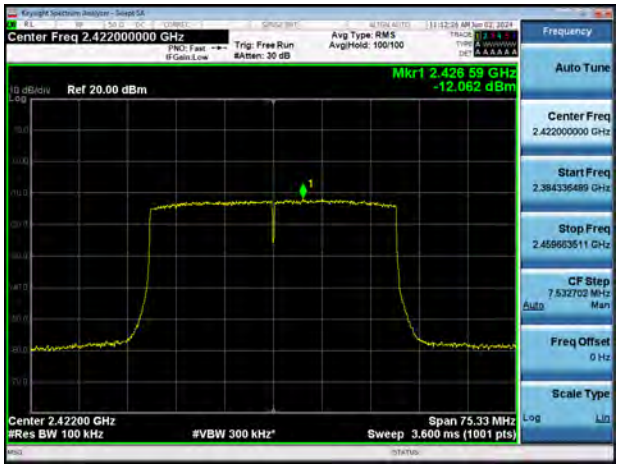
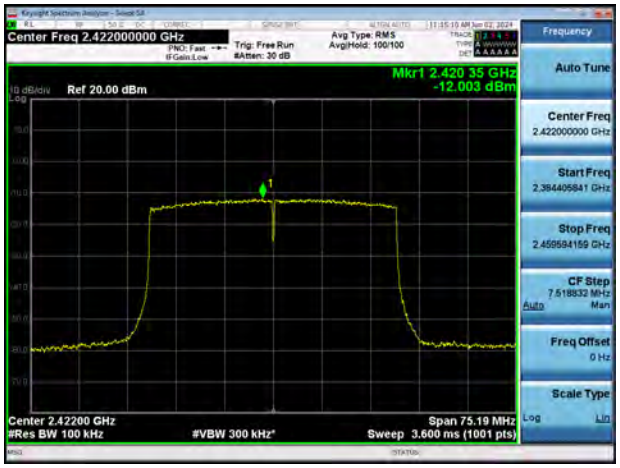
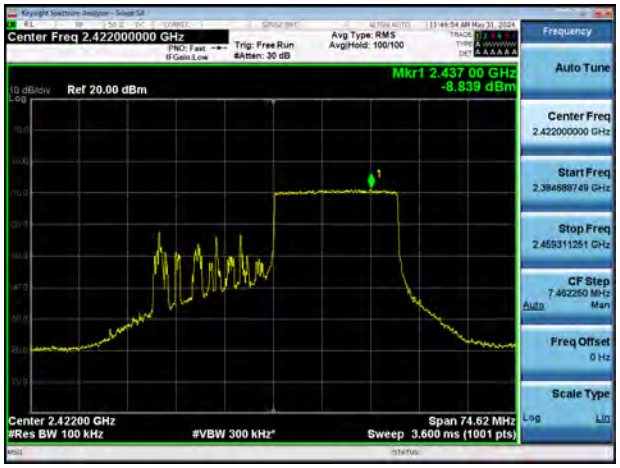
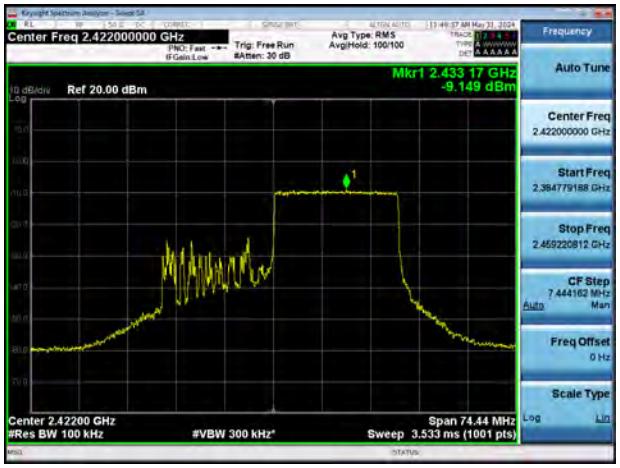
Note :
The worst plots are reported for each tone and bandwidth

▣ TEST PLOTS

Power Spectral Density	
802.11ax HE20 52T (Offset : 37) (CH11 : 2462 MHz) Chain 0	**802.11ax HE20 52T (Offset : 37) (CH11 : 2462 MHz) Chain 1**
	
802.11ax HE20 26T (Offset : 0) (CH1 : 2412 MHz) Chain 0	**802.11ax HE20 26T (Offset : 0) (CH1 : 2412 MHz) Chain 1**
	

Note :
The worst plots are reported for each tone and bandwidth

▣ TEST PLOTS

Power Spectral Density	
802.11ax HE40 SU (CH3 : 2422 MHz) Chain 0	**802.11ax HE40 SU (CH3 : 2422 MHz) Chain 1**
	
802.11ax HE40 242T (Offset : 62) (CH3 : 2422 MHz) Chain 0	**802.11ax HE40 242T (Offset : 62) (CH3 : 2422 MHz) Chain 1**
	
802.11ax HE40 106T (Offset : 54) (CH9 : 2452 MHz) Chain 0	**802.11ax HE40 106T (Offset : 54) (CH9 : 2452 MHz) Chain 1**
	

Note :
The worst plots are reported for each tone and bandwidth

9.5. CONDUCTED BAND EDGE & SPURIOUS EMISSIONS

Out of Band Emissions at the Band Edge

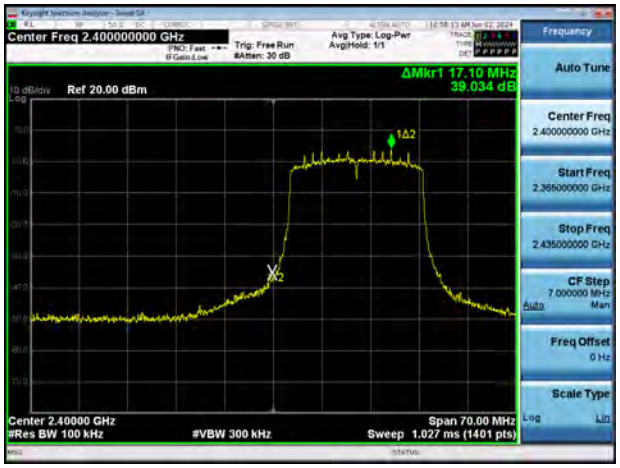
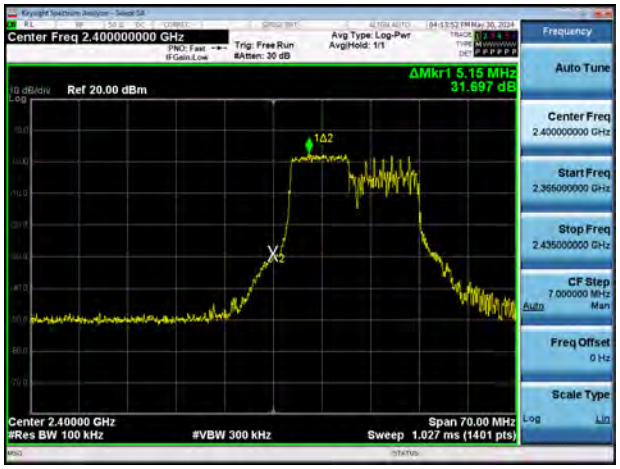
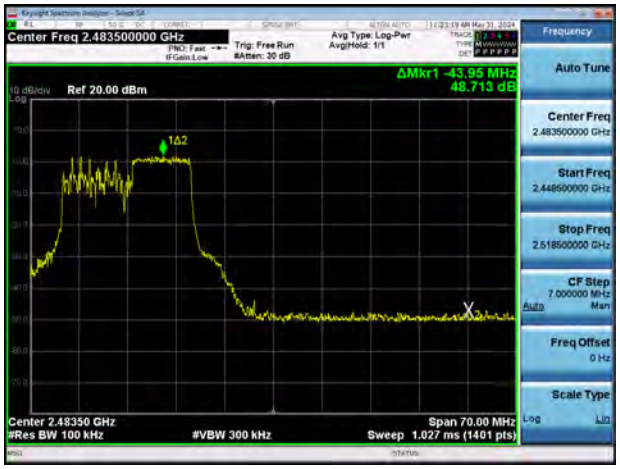
2.4 GHz WLAN				Test Result		Limit (dBc)
Mode / Tone	Frequency (MHz)	Channel	Offset	Measured Level (dBc)		
				Chain 0	Chain 1	
802.11ax HE20 / SU	2412	1	-	41.42	39.03	≥ 30
	2462	11	-	51.11	50.17	≥ 30
802.11ax HE20 / 106T	2412	1	53	32.29	31.70	≥ 30
			54	34.30	36.54	≥ 30
	2462	11	53	50.46	49.68	≥ 30
			54	48.71	49.45	≥ 30
802.11ax HE20 / 52T	2412	1	37	34.73	34.92	≥ 30
			38	36.45	34.41	≥ 30
			40	36.97	36.71	≥ 30
	2462	11	37	48.21	48.72	≥ 30
			38	48.53	48.97	≥ 30
			40	48.77	47.56	≥ 30
802.11ax HE20 / 26T	2412	1	0	37.49	37.34	≥ 30
			4	40.29	43.09	≥ 30
			8	38.01	40.08	≥ 30
	2462	11	0	50.03	49.27	≥ 30
			4	48.24	49.25	≥ 30
			8	47.61	46.97	≥ 30
802.11ax HE40 / SU	2422	3	-	43.83	42.96	≥ 30
	2452	9	-	45.46	45.65	≥ 30
802.11ax HE40 / 242T	2422	3	61	32.85	32.96	≥ 30
			62	34.03	37.38	≥ 30
	2452	9	61	45.28	46.22	≥ 30
			62	44.93	46.09	≥ 30
802.11ax HE40 / 106T	2422	3	53	36.09	35.31	≥ 30
			54	38.54	38.97	≥ 30
			56	40.31	37.85	≥ 30
	2452	9	53	50.11	50.90	≥ 30
			54	49.45	49.30	≥ 30
			56	49.30	49.46	≥ 30

Conducted Spurious Emissions

2.4 GHz WLAN				Test Result		Limit (dBc)
Mode / Tone	Frequency (MHz)	Channel	Offset	Measured Level (dBc)		
				Chain 0	Chain 1	
802.11ax HE20 / SU	2412	1	-	46.17	47.32	≥ 30
	2437	3	-	47.99	46.84	≥ 30
	2462	11	-	47.12	47.43	≥ 30
802.11ax HE20 / 106T	2412	1	53	47.00	46.34	≥ 30
			54	45.67	46.66	≥ 30
	2437	3	53	46.09	45.08	≥ 30
			54	46.36	45.62	≥ 30
	2462	11	53	46.72	45.60	≥ 30
			54	45.86	44.95	≥ 30
802.11ax HE20 / 52T	2412	1	37	46.02	44.41	≥ 30
			38	45.53	44.26	≥ 30
			40	45.62	44.18	≥ 30
	2437	3	37	44.99	44.69	≥ 30
			38	45.13	44.74	≥ 30
			40	46.43	45.27	≥ 30
	2462	11	37	45.24	45.54	≥ 30
			38	45.69	45.17	≥ 30
			40	44.67	44.89	≥ 30
802.11ax HE20 / 26T	2412	1	0	45.07	46.35	≥ 30
			4	45.12	46.07	≥ 30
			8	44.68	45.78	≥ 30
	2437	3	0	44.96	45.18	≥ 30
			4	45.57	44.78	≥ 30
			8	45.62	44.29	≥ 30
	2462	11	0	46.33	44.89	≥ 30
			4	44.48	45.19	≥ 30
			8	44.48	44.20	≥ 30

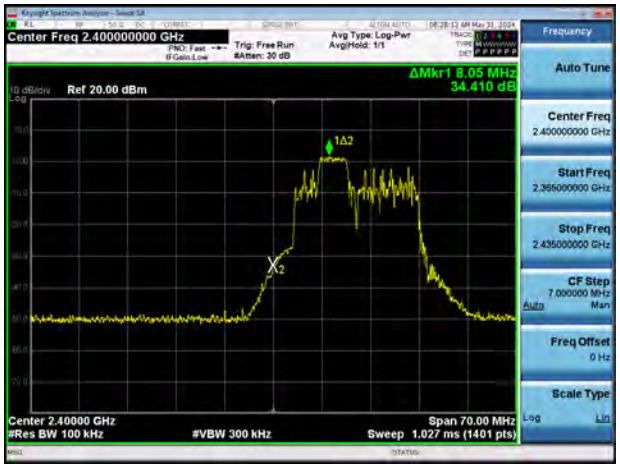
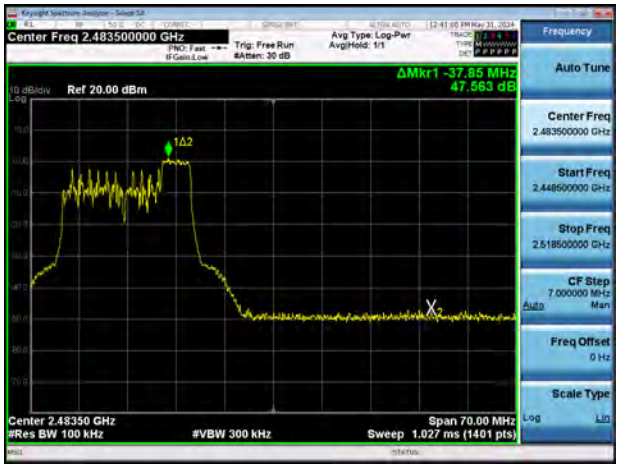
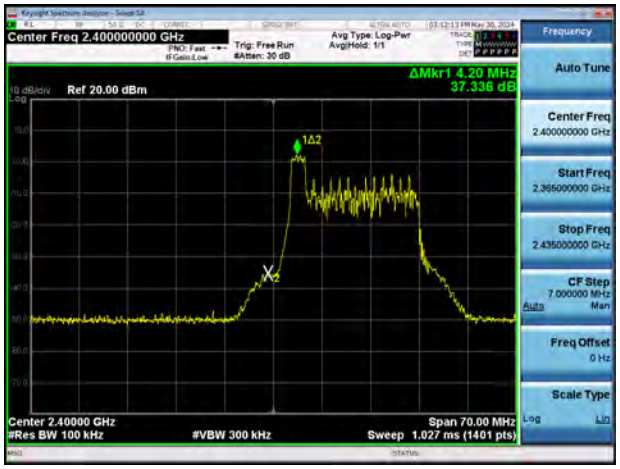
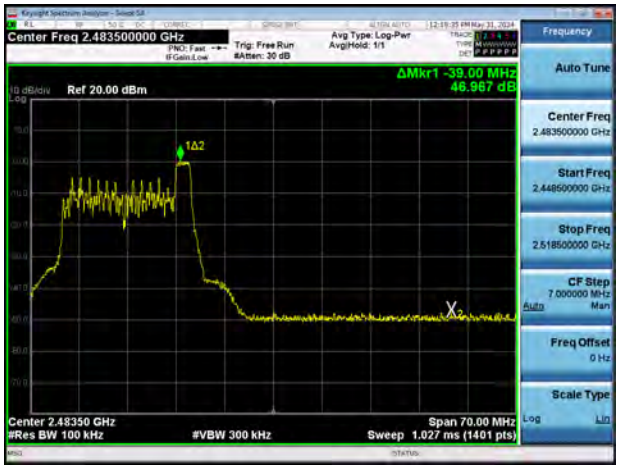
2.4 GHz WLAN				Test Result		Limit (dBc)
Mode / Tone	Frequency (MHz)	Channel	Offset	Measured Level (dBc)		
				Chain 0	Chain 1	
802.11ax HE40 / SU	2422	3	-	42.00	42.72	≥ 30
	2437	3	-	42.40	41.97	≥ 30
	2452	9	-	42.30	42.17	≥ 30
802.11ax HE40 / 242T	2422	3	61	43.21	42.94	≥ 30
			62	43.95	41.83	≥ 30
	2437	3	61	42.77	42.91	≥ 30
			62	43.11	43.38	≥ 30
	2452	9	61	44.27	43.44	≥ 30
			62	42.87	42.49	≥ 30
802.11ax HE40 / 106T	2422	3	53	48.24	47.78	≥ 30
			54	46.14	46.44	≥ 30
			56	46.71	47.07	≥ 30
	2437	3	53	46.06	47.01	≥ 30
			54	45.93	46.67	≥ 30
			56	46.18	46.15	≥ 30
	2452	9	53	45.98	46.82	≥ 30
			54	46.39	45.20	≥ 30
			56	46.01	45.62	≥ 30

▣ TEST PLOTS

Out of Band Emission at the Band Edge	
802.11ax HE20 SU (CH1 : 2412 MHz) Chain 1	**802.11ax HE20 SU (CH11 : 2462 MHz) Chain 1**
	
802.11ax HE20 106T (Offset : 53) (CH1 : 2412 MHz) Chain 1	**802.11ax HE20 106T (Offset : 54) (CH11 : 2462 MHz) Chain 0**
	

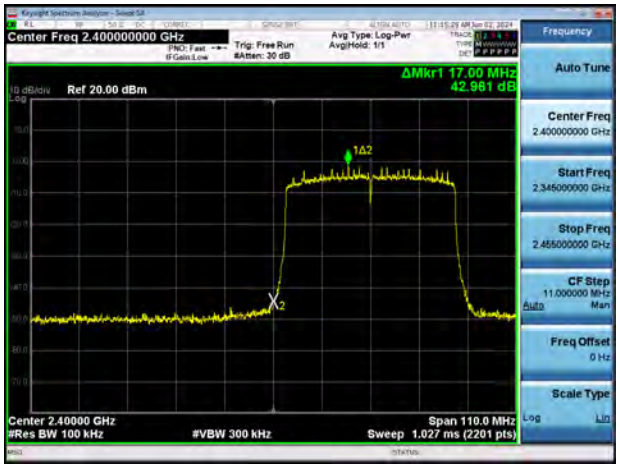
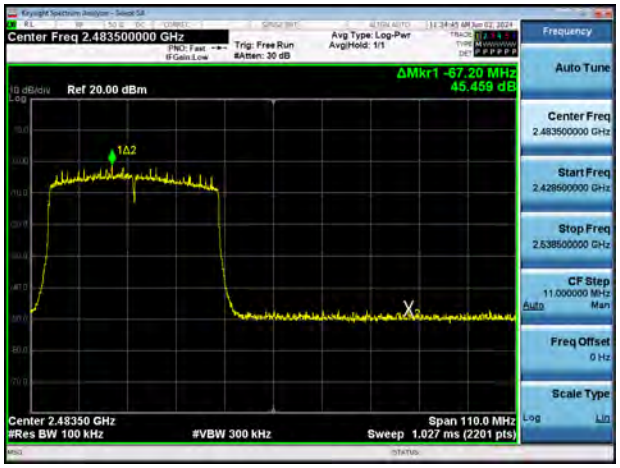
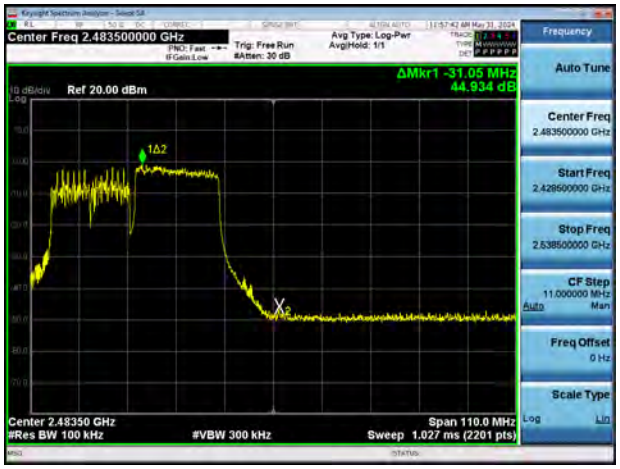
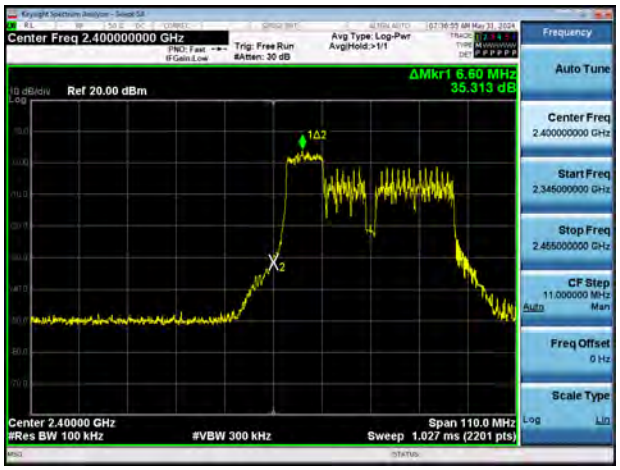
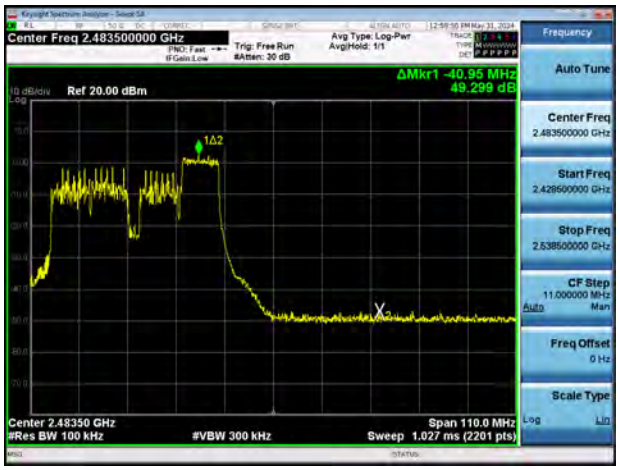
Note(s) :
The plots included in this report are only at the worst-case channel and RB location.

▣ TEST PLOTS

Out of Band Emission at the Band Edge	
802.11ax HE20 52T (Offset : 38) (CH1 : 2412 MHz) Chain 1	802.11ax HE20 52T (Offset : 40) (CH11 : 2462 MHz) Chain 1
	
802.11ax HE20 26T (Offset : 0) (CH1 : 2412 MHz) Chain 1	802.11ax HE20 26T (Offset : 8) (CH11 : 2462 MHz) Chain 1
	

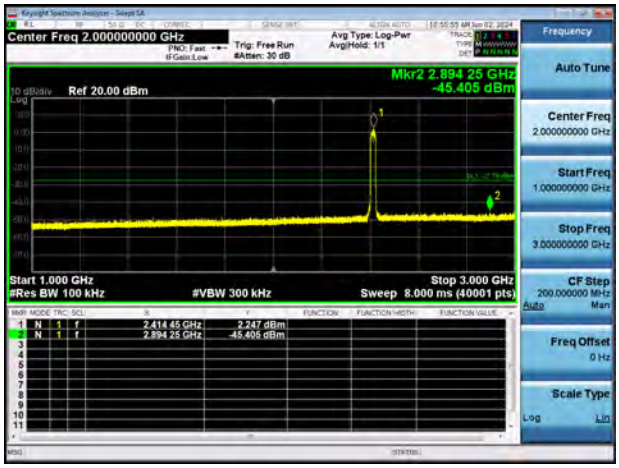
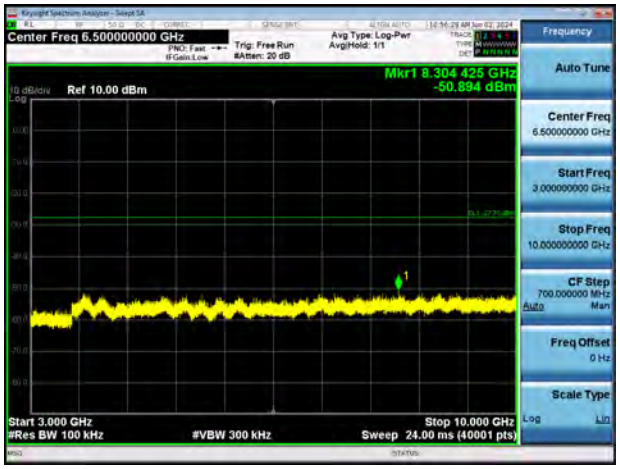
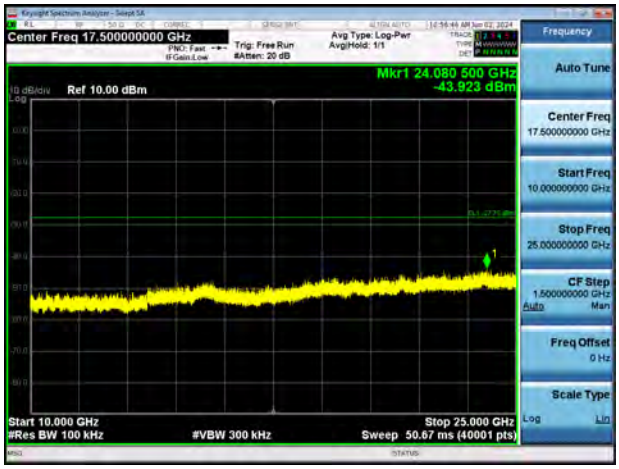
Note(s) :
The plots included in this report are only at the worst-case channel and RB location.

▣ TEST PLOTS

Out of Band Emission at the Band Edge	
802.11ax HE40 SU (CH3 : 2422 MHz) Chain 1	**802.11ax HE40 SU (CH9 : 2452 MHz) Chain 0**
	
802.11ax HE40 242T (Offset : 61) (CH3 : 2422 MHz) Chain 0	**802.11ax HE40 242T (Offset : 62) (CH9 : 2452 MHz) Chain 0**
	
802.11ax HE40 106T (Offset : 53) (CH3 : 2422 MHz) Chain 1	**802.11ax HE40 106T (Offset : 56) (CH9 : 2452 MHz) Chain 0**
	

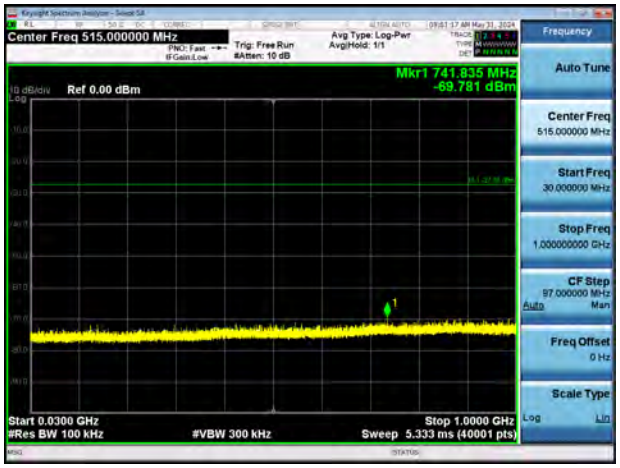
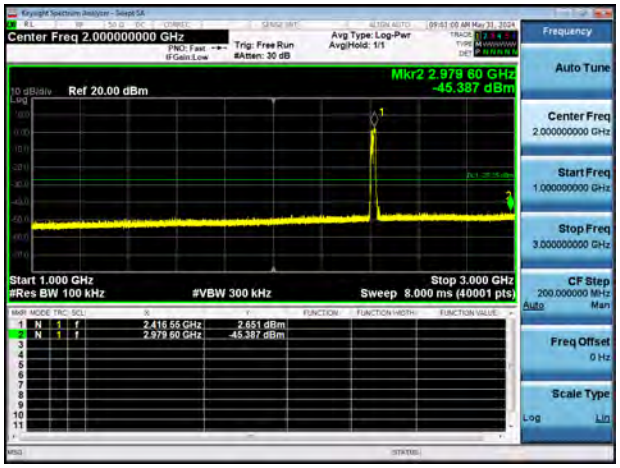
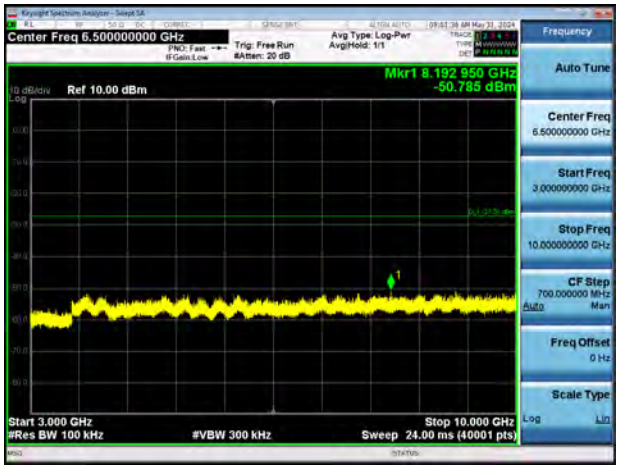
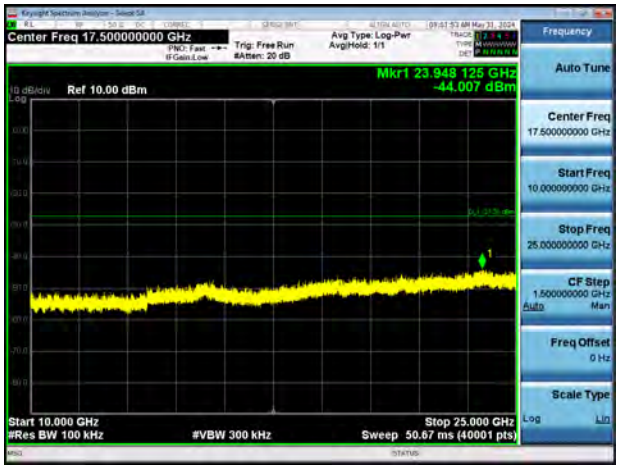
Note(s) :
The plots included in this report are only at the worst-case channel and RB location.

▣ TEST PLOTS

Spurious Emission 802.11ax HE20 SU (CH1 : 2412 MHz) : Chain 0	
30 MHz – 1 GHz	**1 GHz – 3 GHz**
	
3 GHz – 10 GHz	**10 GHz – 25 GHz**
	

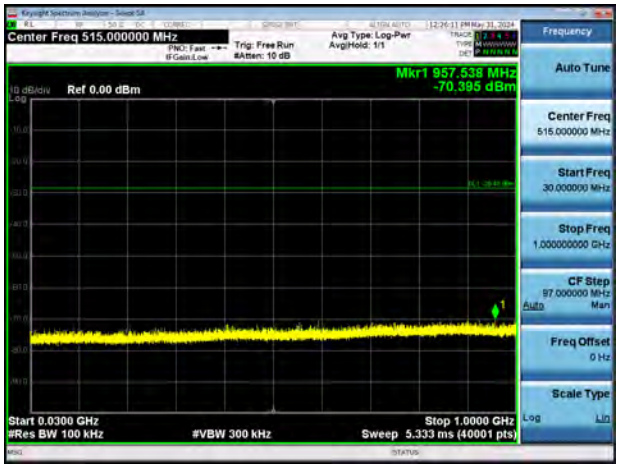
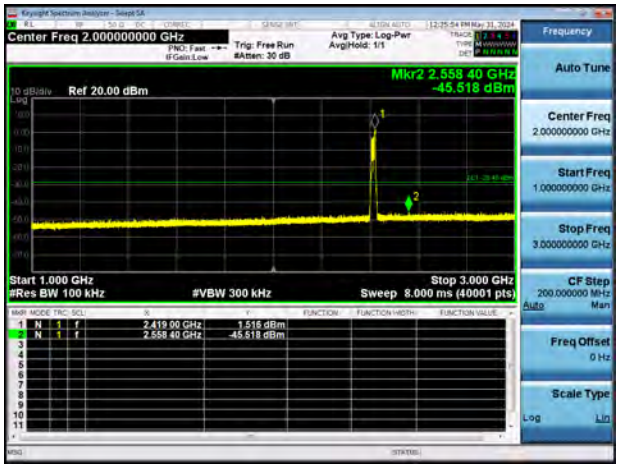
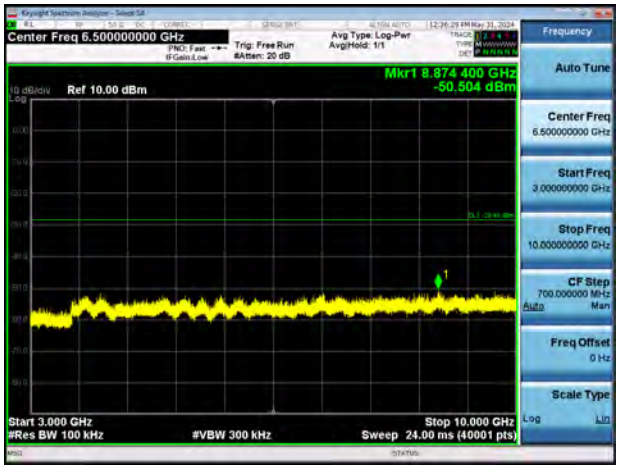
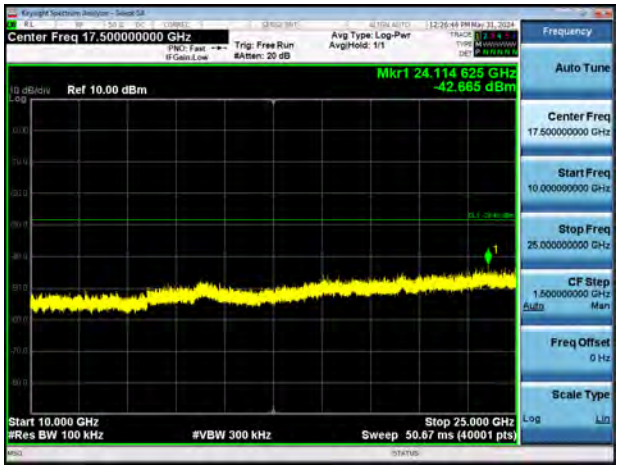
Note(s) :
The plots included in this report are only at the worst-case channel and RB location.

▣ TEST PLOTS

Spurious Emission 802.11ax HE20 106T (Offset : 54) (CH11 : 2462 MHz) : Chain 1	
30 MHz – 1 GHz	**1 GHz – 3 GHz**
	
3 GHz – 10 GHz	**10 GHz – 25 GHz**
	

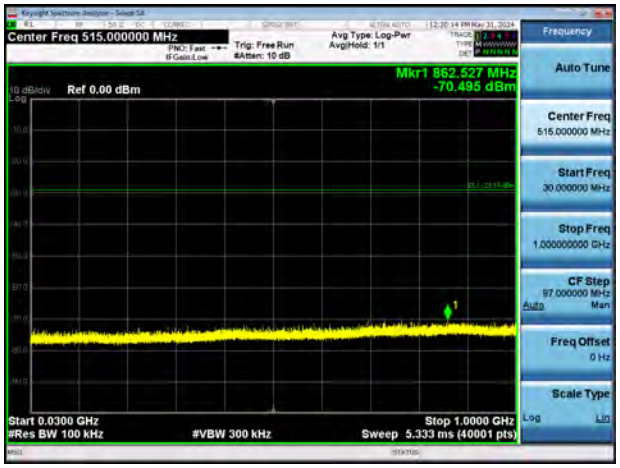
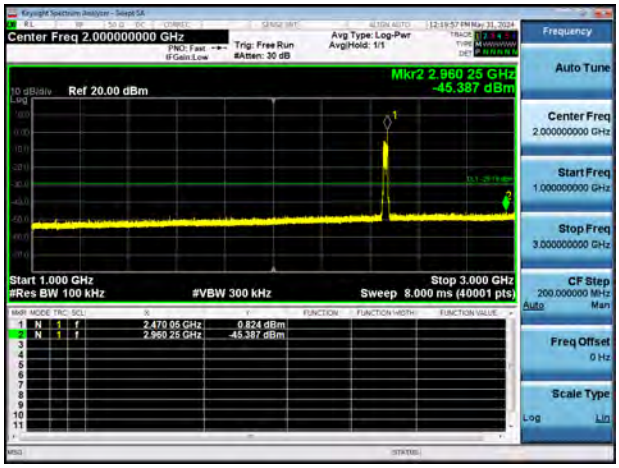
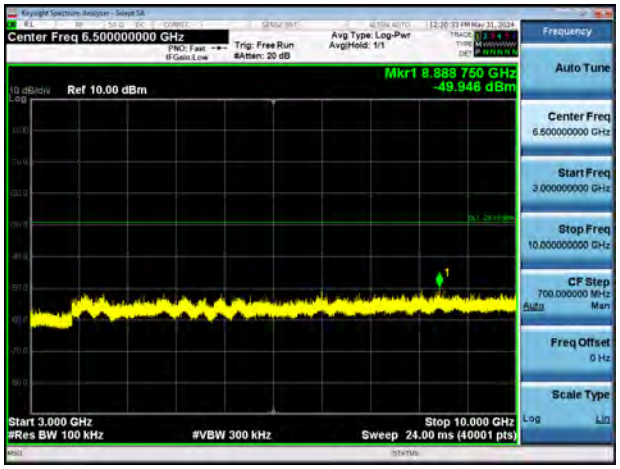
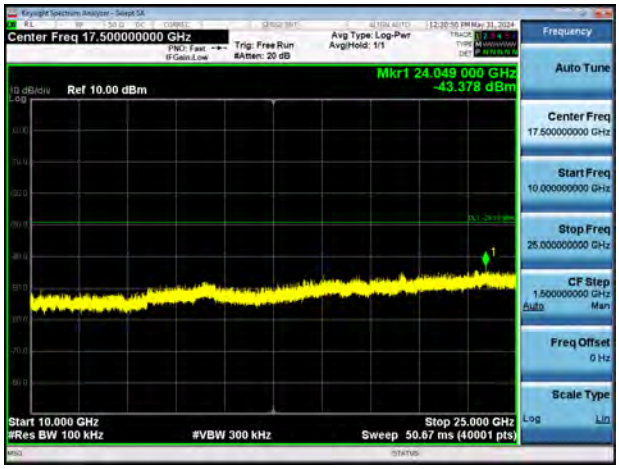
Note(s) :
The plots included in this report are only at the worst-case channel and RB location.

▣ TEST PLOTS

Spurious Emission 802.11ax HE20 52T (Offset : 40) (CH1 : 2412 MHz) : Chain 1	
30 MHz – 1 GHz	**1 GHz – 3 GHz**
	
3 GHz – 10 GHz	**10 GHz – 25 GHz**
	

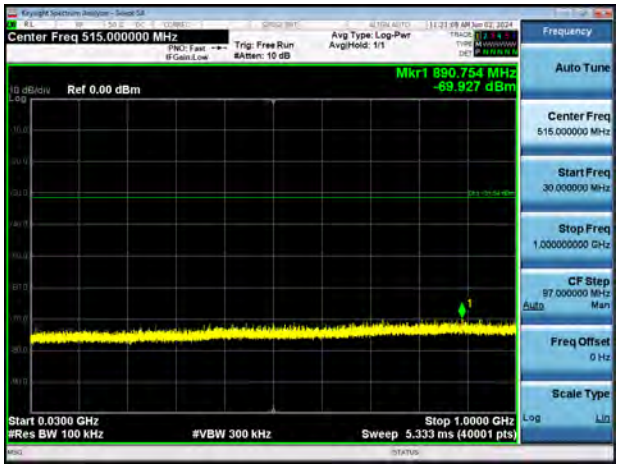
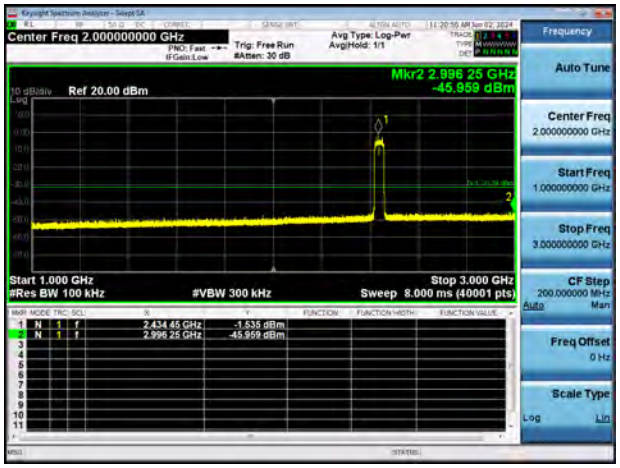
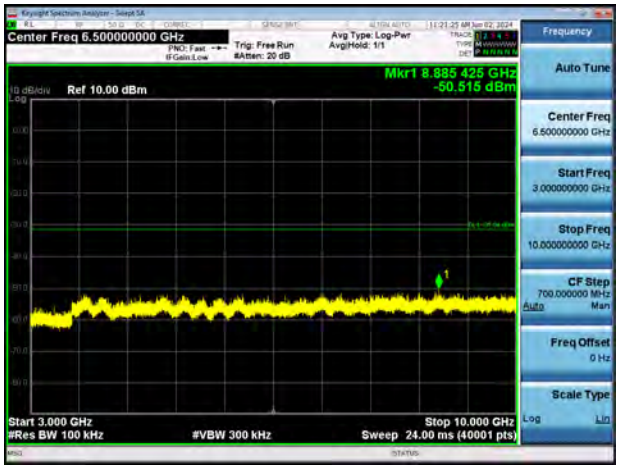
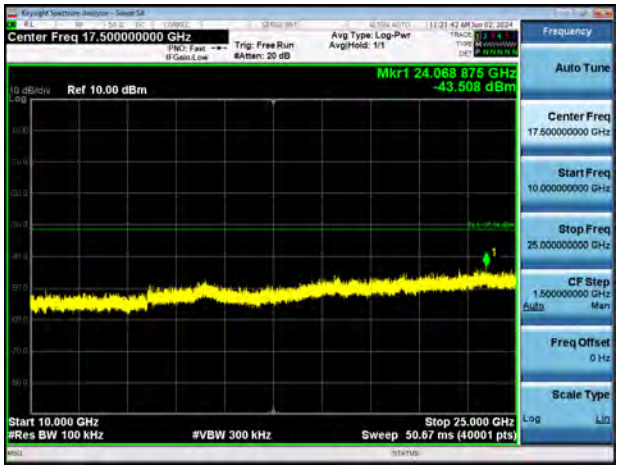
Note(s) :
The plots included in this report are only at the worst-case channel and RB location.

▣ TEST PLOTS

Spurious Emission 802.11ax HE20 26T (Offset : 8) (CH11 : 2462 MHz) : Chain 1	
30 MHz – 1 GHz	**1 GHz – 3 GHz**
	
3 GHz – 10 GHz	**10 GHz – 25 GHz**
	

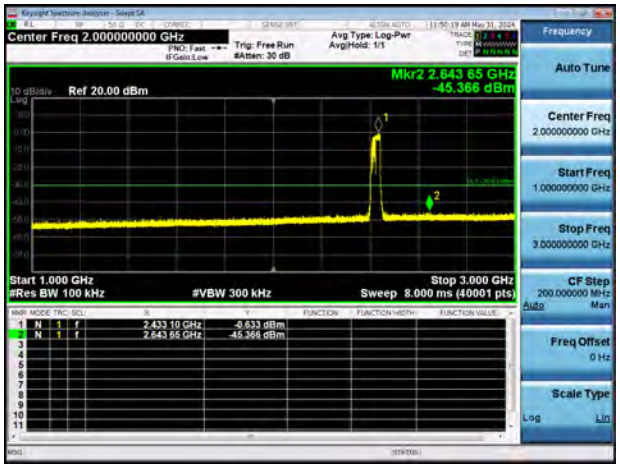
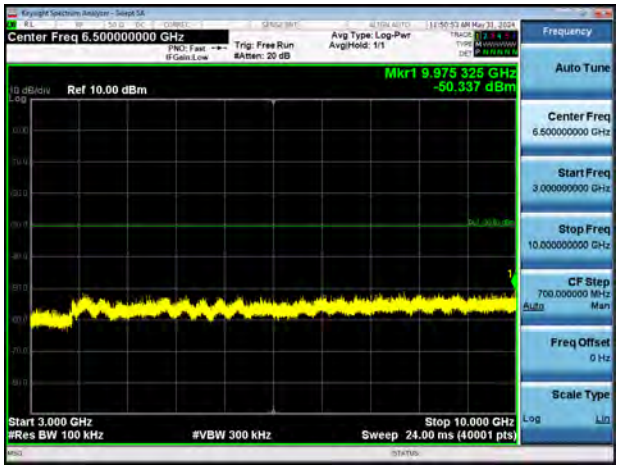
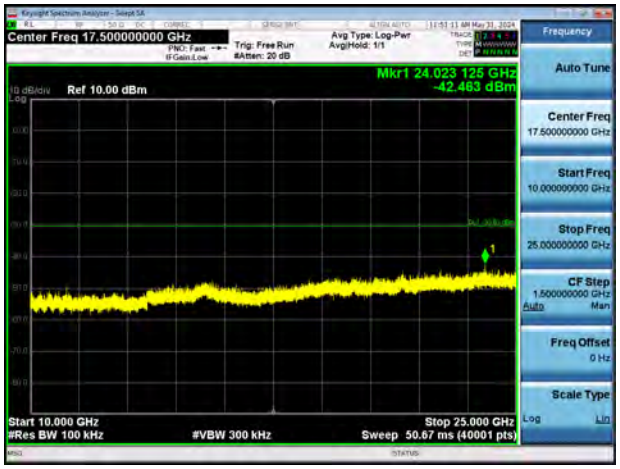
Note(s) :
The plots included in this report are only at the worst-case channel and RB location.

▣ TEST PLOTS

Spurious Emission 802.11ax HE40 SU (CH6 : 2437 MHz) : Chain 1	
30 MHz – 1 GHz	**1 GHz – 3 GHz**
	
3 GHz – 10 GHz	**10 GHz – 25 GHz**
	

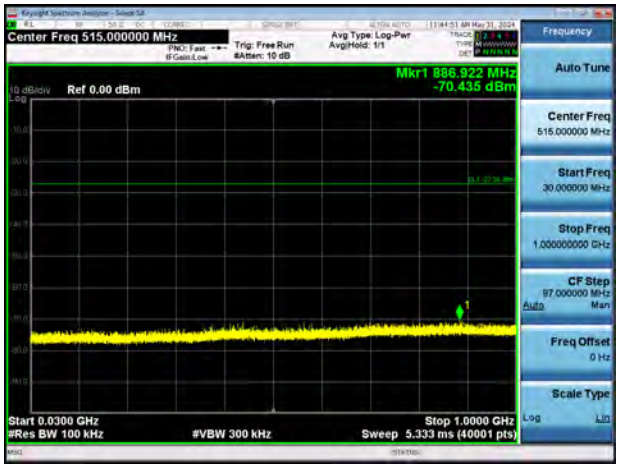
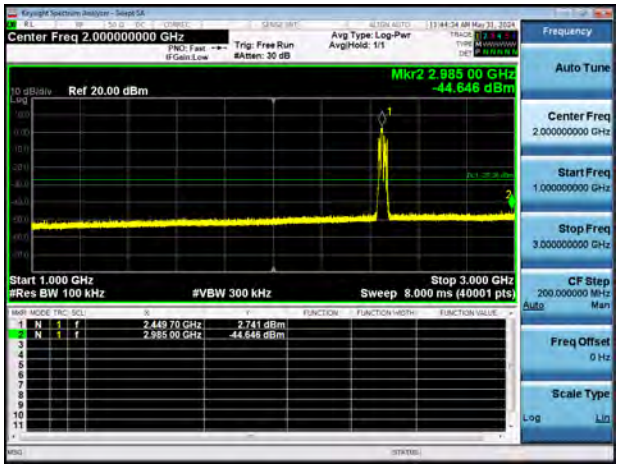
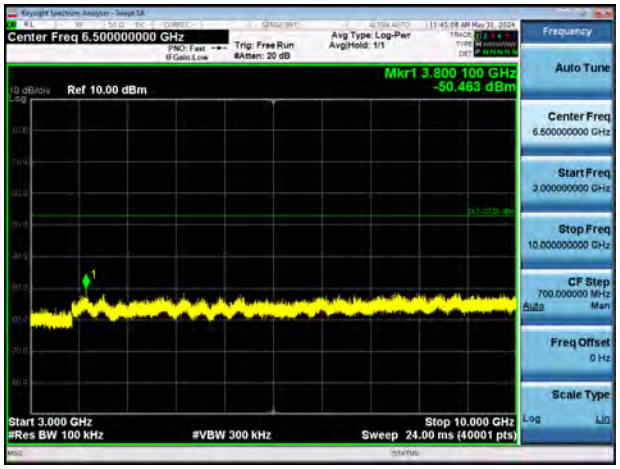
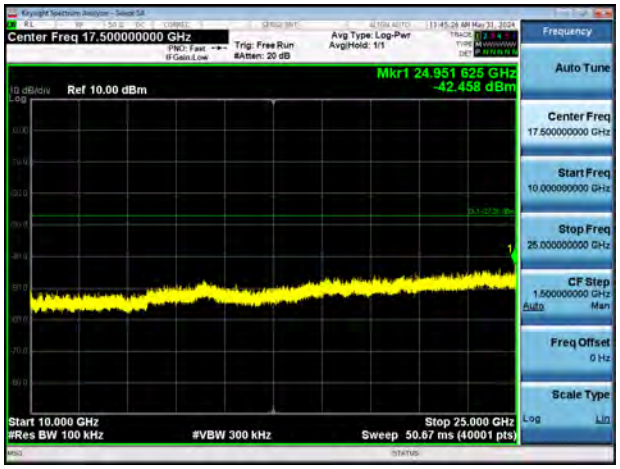
Note(s) :
The plots included in this report are only at the worst-case channel and RB location.

▣ TEST PLOTS

Spurious Emission 802.11ax HE40 242T (Offset : 62) (CH3 : 2422 MHz) : Chain 1	
30 MHz – 1 GHz	**1 GHz – 3 GHz**
	
3 GHz – 10 GHz	**10 GHz – 25 GHz**
	

Note(s) :
The plots included in this report are only at the worst-case channel and RB location.

▣ TEST PLOTS

Spurious Emission 802.11ax HE40 106T (Offset : 54) (CH9 : 2452 MHz) : Chain 1	
30 MHz – 1 GHz	**1 GHz – 3 GHz**
	
3 GHz – 10 GHz	**10 GHz – 25 GHz**
	

Note(s) :
The plots included in this report are only at the worst-case channel and RB location.

9.6. RADIATED SPURIOUS EMISSIONS

Frequency Range : Below 1 GHz

Test Mode 802.11ax HE20 (SU) : TX mode

Operating Frequency 2412 MHz (CH 1)

Frequency (MHz)	Polarization	Reading (dBuV)	Corr. [1] (dB)	Total (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Measurement Type
No major peaks found							

Test Mode 802.11ax HE20 (SU) : TX mode

Operating Frequency 2442 MHz (CH 7)

Frequency (MHz)	Polarization	Reading (dBuV)	Corr. [1] (dB)	Total (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Measurement Type
No major peaks found							

Test Mode 802.11ax HE20 (SU) : TX mode

Operating Frequency 2462 MHz (CH 11)

Frequency (MHz)	Polarization	Reading (dBuV)	Corr. [1] (dB)	Total (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Measurement Type
No major peaks found							

Note(s) :

1. Correction Factor: Antenna Factor + Cable loss + Preamplifier Gain

Frequency Range : Above 1 GHz

Test Mode 802.11ax HE20 (SU) : TX mode
Operating Frequency 2412 MHz (CH 1)

Frequency (MHz)	Polarization	Reading (dBuV)		Factor (dB)		Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
		AV	PK	Corr.[1)]	Duty	AV	PK	AV	PK	AV	PK
No major peaks found											

Test Mode 802.11ax HE20 (SU) : TX mode
Operating Frequency 2442 MHz (CH 7)

Frequency (MHz)	Polarization	Reading (dBuV)		Factor (dB)		Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
		AV	PK	Corr.[1)]	Duty	AV	PK	AV	PK	AV	PK
No major peaks found											

Test Mode 802.11ax HE20 (SU) : TX mode
Operating Frequency 2462 MHz (CH 11)

Frequency (MHz)	Polarization	Reading (dBuV)		Factor (dB)		Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
		AV	PK	Corr.[1)]	Duty	AV	PK	AV	PK	AV	PK
No major peaks found											

Note(s) :
1. Correction Factor: Antenna Factor + Cable loss + Preamplifier Gain
2. AV Level = Measured Power(dBm) + Correction Factor(dB) + Duty Cycle Factor(dB).

Test Mode 802.11ax HE20 (26T Offset : 8) : TX mode

Operating Frequency 2412 MHz (CH 1)

Frequency (MHz)	Polarization	Reading (dBuV)		Factor (dB)		Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
		AV	PK	Corr.[1)]	Duty	AV	PK	AV	PK	AV	PK
No major peaks found											

Test Mode 802.11ax HE20 (26T Offset : 8) : TX mode

Operating Frequency 2442 MHz (CH 7)

Frequency (MHz)	Polarization	Reading (dBuV)		Factor (dB)		Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
		AV	PK	Corr.[1)]	Duty	AV	PK	AV	PK	AV	PK
No major peaks found											

Test Mode 802.11ax HE20 (26T Offset : 8) : TX mode

Operating Frequency 2462 MHz (CH 11)

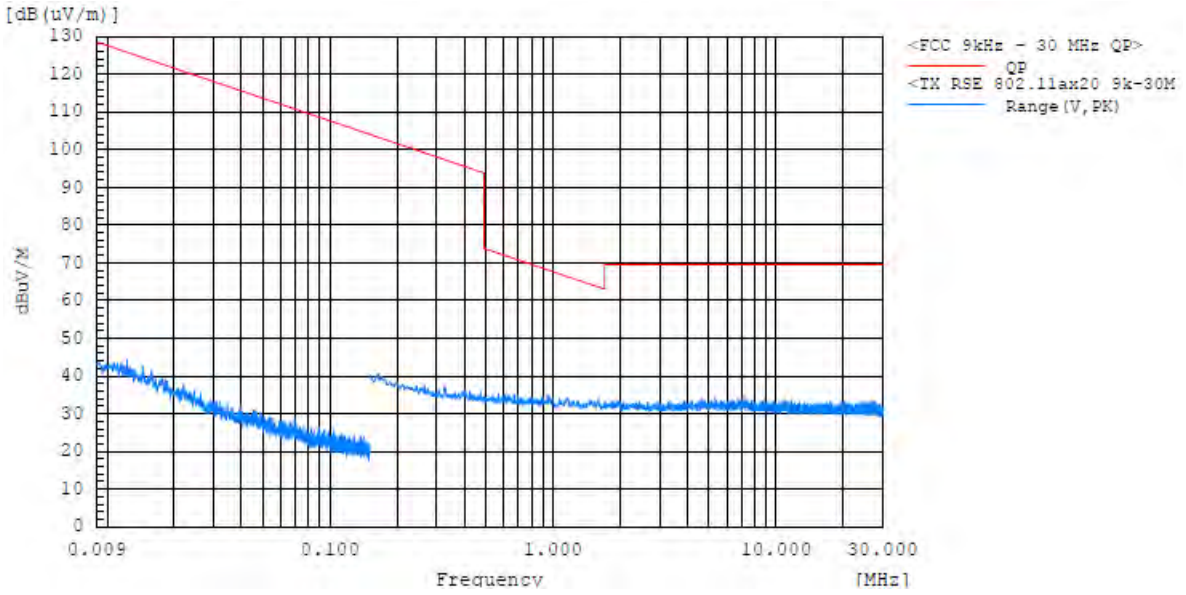
Frequency (MHz)	Polarization	Reading (dBuV)		Factor (dB)		Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
		AV	PK	Corr.[1)]	Duty	AV	PK	AV	PK	AV	PK
No major peaks found											

Note(s) :

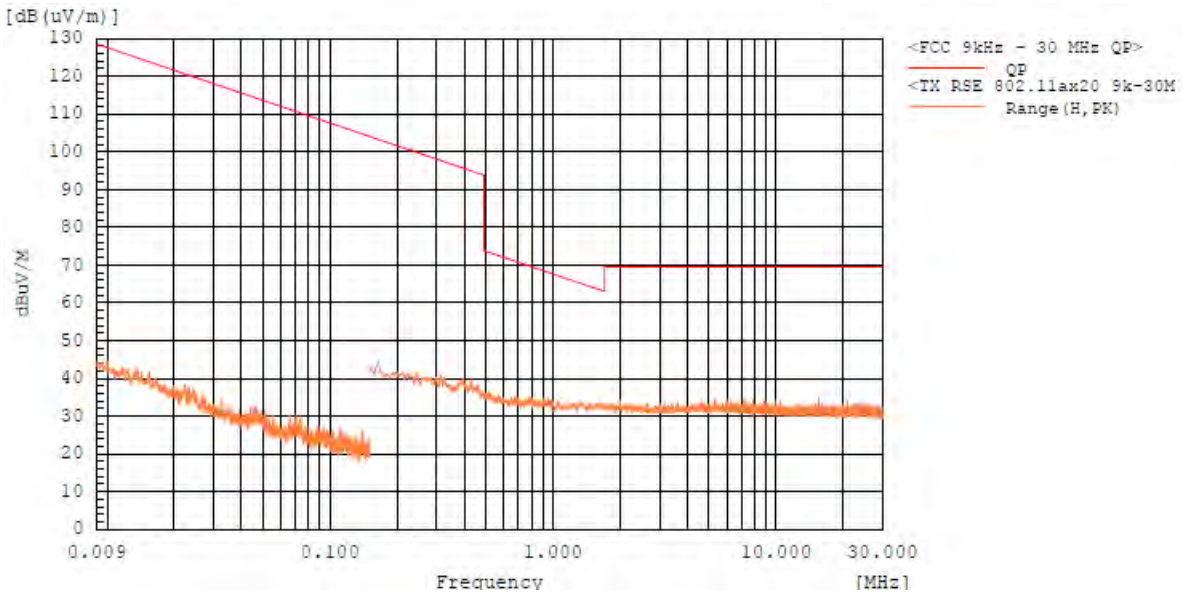
1. Correction Factor: Antenna Factor + Cable loss + Preamplifier Gain
2. AV Level = Measured Power(dBm) + Correction Factor(dB) + Duty Cycle Factor(dB).

▣ TEST PLOTS

Radiated Spurious Emission 9 kHz – 30 MHz (Antenna Position 90°) : 802.11ax HE20 SU (CH 1)



Radiated Spurious Emission 9 kHz – 30 MHz (Antenna Position 180°) : 802.11ax HE20 SU (CH 1)



Note:

1. There were no major peaks and representative plots are included in this report
2. The plots include all used factor values for cables, antenna, preamplifier, etc.

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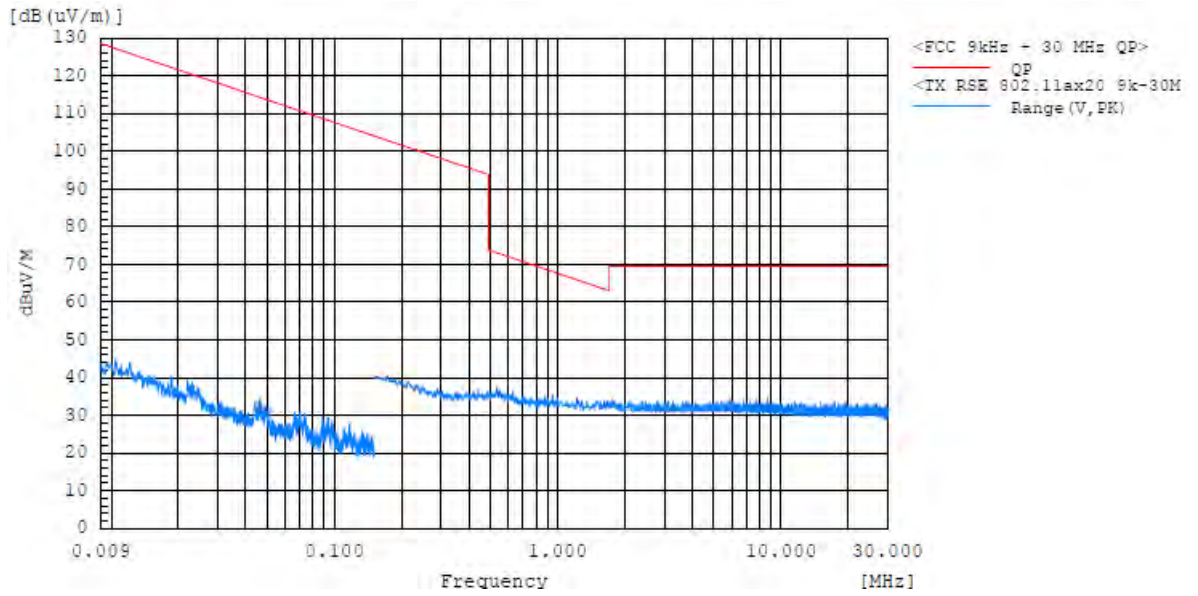
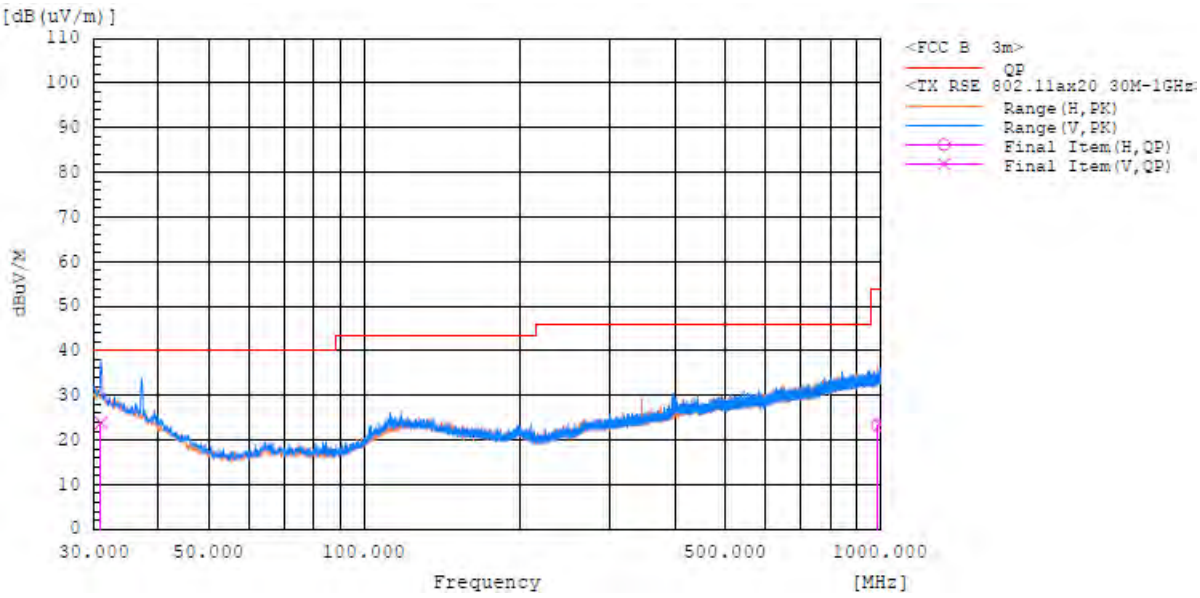
▣ TEST PLOTS

Radiated Spurious Emission 9 kHz – 30 MHz (Antenna Position Bent over) : 802.11ax HE20 SU (CH 1)



Radiated Spurious Emission 30 MHz – 1 GHz : 802.11ax HE20 SU (CH 1)

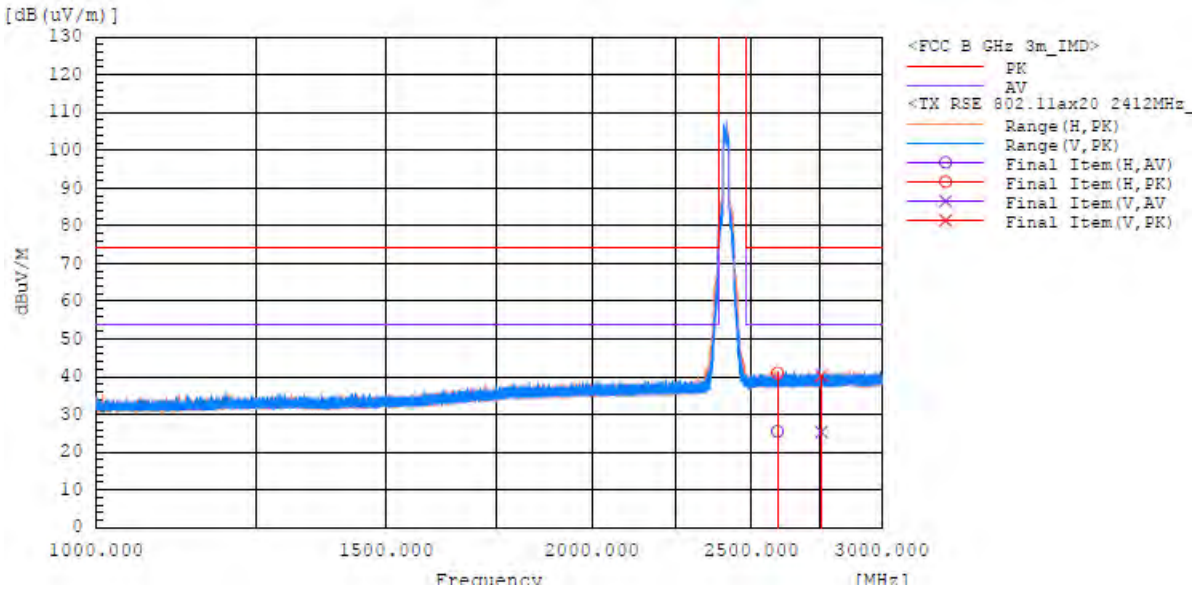


Note:

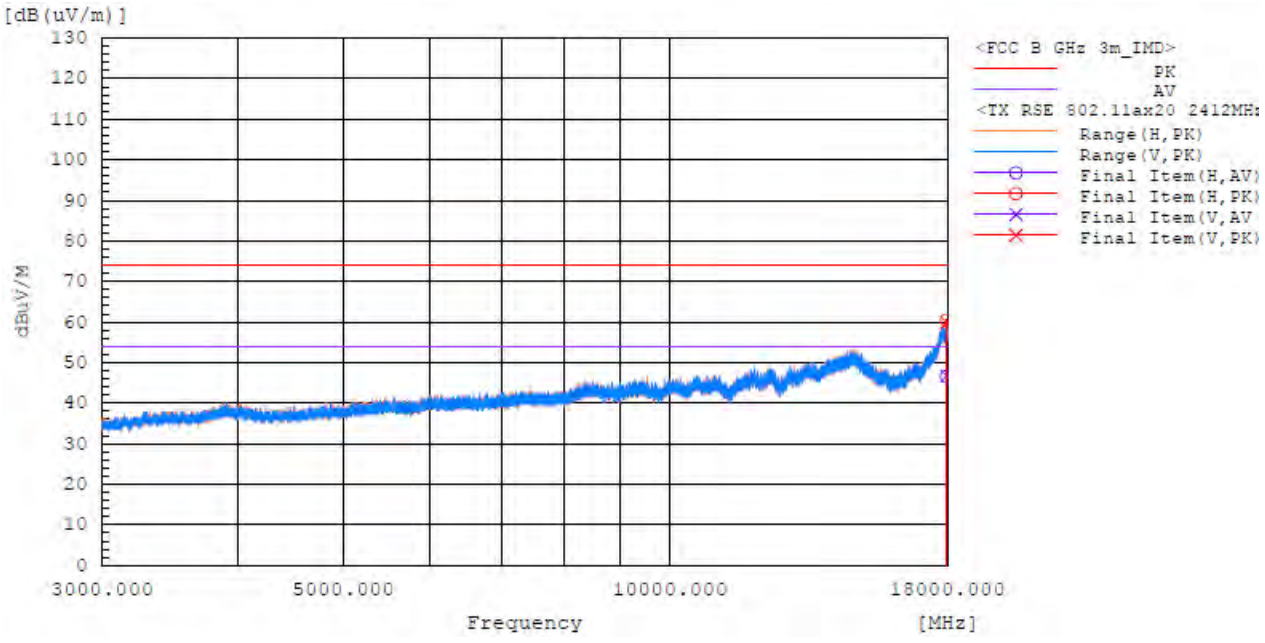
1. There were no major peaks and representative plots are included in this report
2. The plots include all used factor values for cables, antenna, preamplifier, etc.

▣ TEST PLOTS

Radiated Spurious Emission 1 GHz – 3 GHz : 802.11ax HE20 SU (CH 1)



Radiated Spurious Emission 3 GHz – 18 GHz : 802.11ax HE20 SU (CH 1)

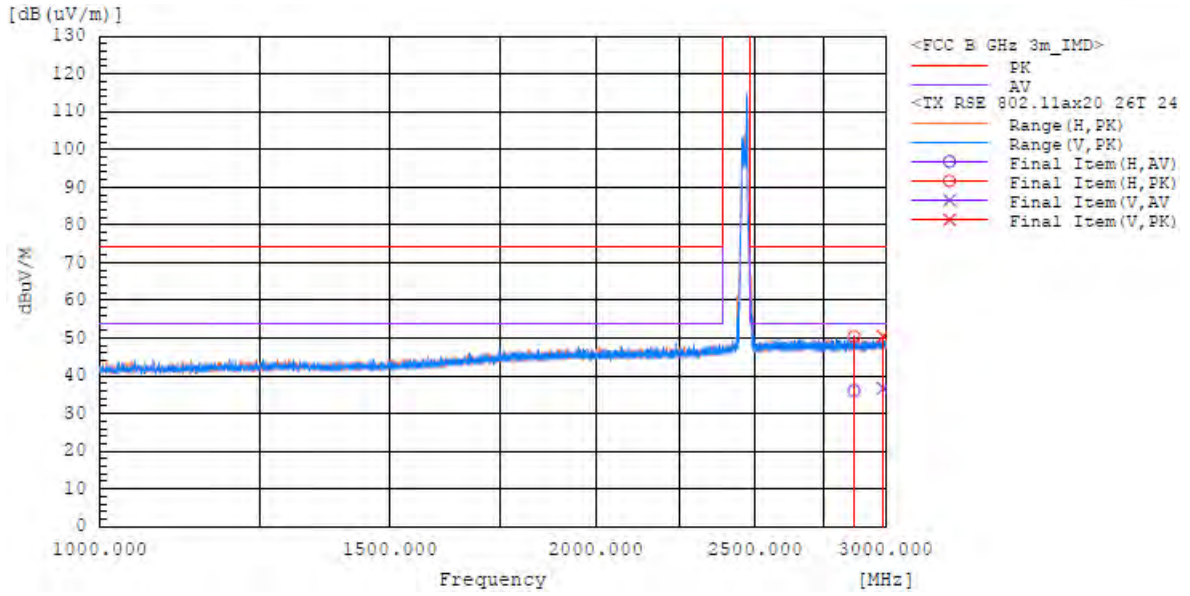


Note:

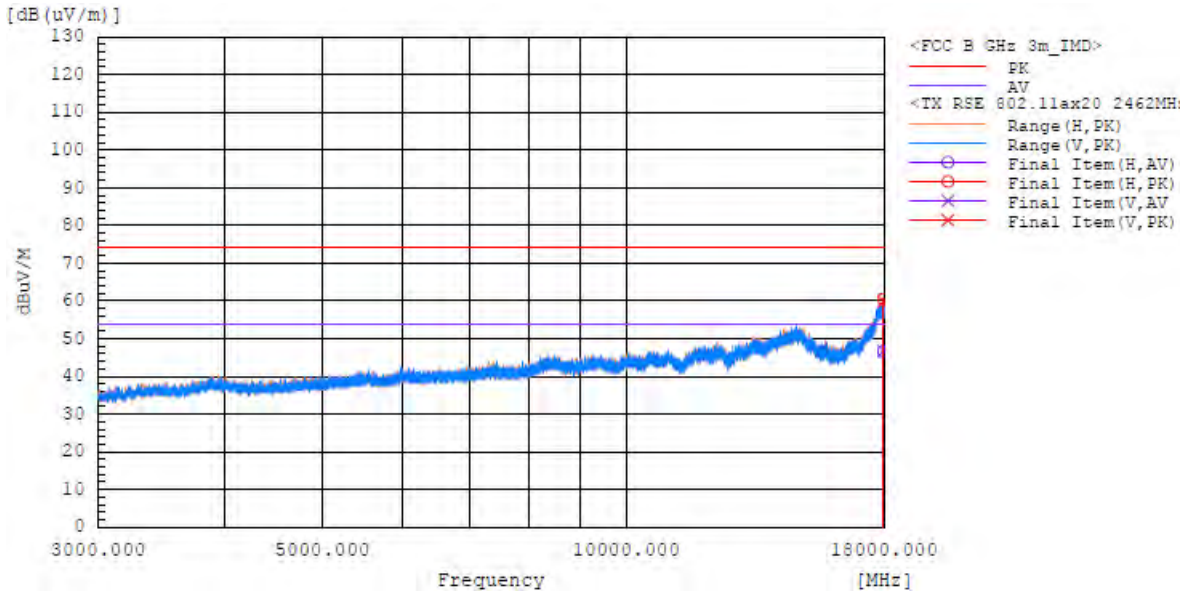
1. There were no major peaks and representative plots are included in this report
2. The plots include all used factor values for cables, antenna, preamplifier, etc.

▣ TEST PLOTS

Radiated Spurious Emission 1 GHz – 3 GHz : 802.11ax HE20 26T (Offset : 8) (CH 1)



Radiated Spurious Emission 3 GHz – 18 GHz : 802.11ax HE20 26T (Offset : 8) (CH 1)

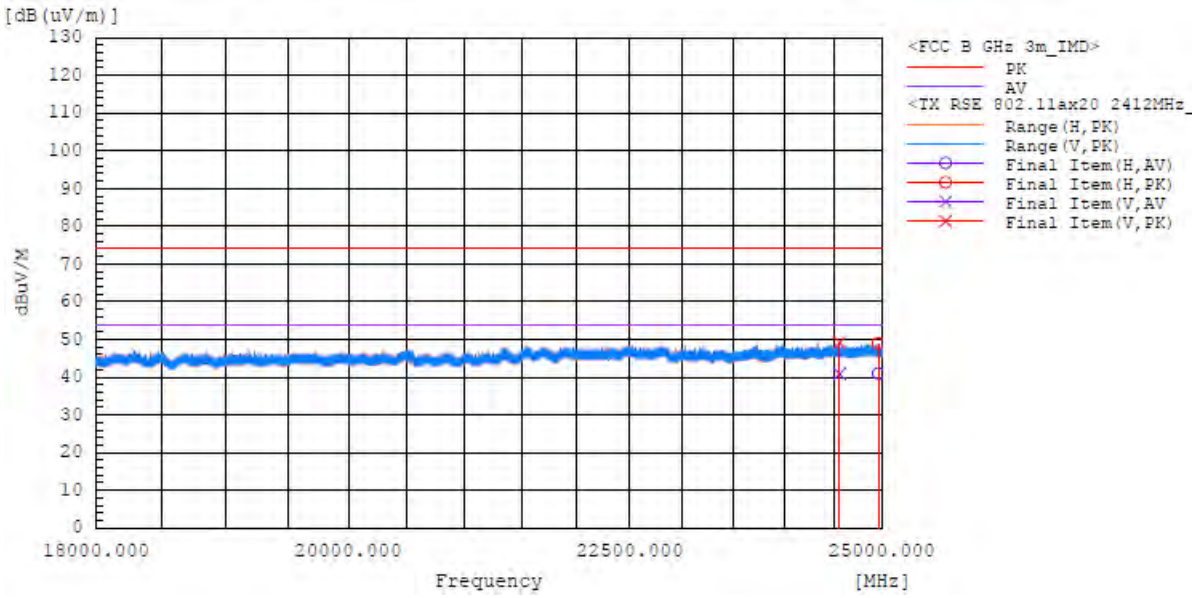


Note:

1. There were no major peaks and representative plots are included in this report
2. The plots include all used factor values for cables, antenna, preamplifier, etc.

▣ TEST PLOTS

Radiated Spurious Emission 18 GHz – 25 GHz : 802.11ax HE20 SU (CH 1)



Note:

1. There were no major peaks and representative plots are included in this report
2. The plots include all used factor values for cables, antenna, preamplifier, etc.

9.7. RADIATED RESTRICTED BAND EDGES

Test Mode 802.11ax HE20 (SU) : TX mode

Operating Frequency 2412 MHz (CH 1)

Frequency (MHz)	Polarization	Reading (dBuV)		Factor (dB)		Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
		AV	PK	Corr.[1)]	Duty	AV	PK	AV	PK	AV	PK
2389.405	H	47.2	64.1	4.0	-	51.2	68.1	54	74	2.8	5.9
2389.928	V	45.2	61.7	4.0	-	49.2	65.7	54	74	4.8	8.3

Test Mode 802.11ax HE20 (SU) : TX mode

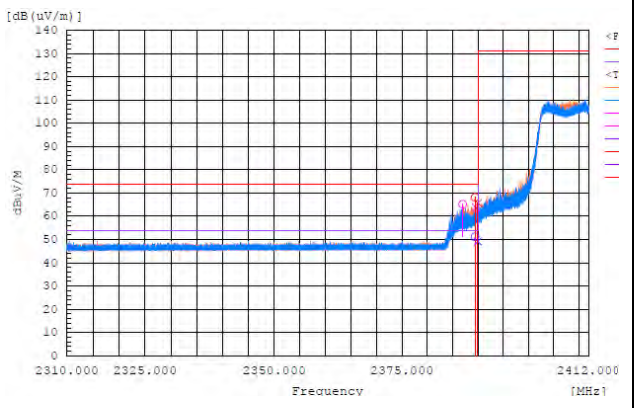
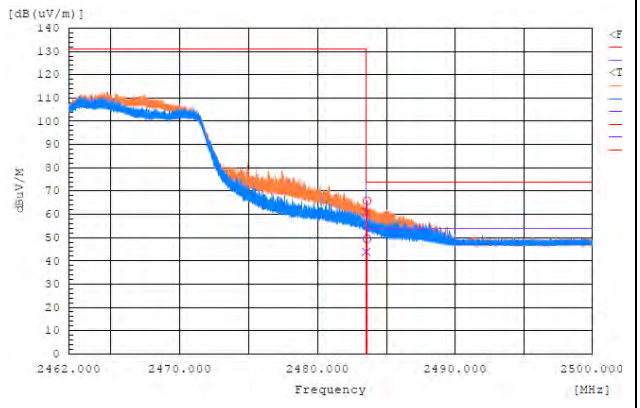
Operating Frequency 2462 MHz (CH 11)

Frequency (MHz)	Polarization	Reading (dBuV)		Factor (dB)		Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
		AV	PK	Corr.[1)]	Duty	AV	PK	AV	PK	AV	PK
2483.515	V	39.1	56.2	4.8	-	43.9	61.0	54	74	10.1	13.0
2483.578	H	44.7	61.0	4.8	-	49.5	65.8	54	74	4.5	8.2

Note(s) :

1. Correction Factor: Antenna Factor + Cable loss + Preamplifier Gain
2. AV Level = Measured Power(dBm) + Correction Factor(dB) + Duty Cycle Factor(dB).
3. Duty factor is not applied since the duty cycle is 100 %.

▣ TEST PLOTS

802.11ax HE20 SU (CH 1)	802.11ax HE20 SU (CH 11)
	

Test Mode 802.11ax HE20 (106T Offset : 53) : TX mode

Operating Frequency 2412 MHz (CH 1)

Frequency (MHz)	Polarization	Reading (dBuV)		Factor (dB)		Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
		AV	PK	Corr.[1)]	Duty	AV	PK	AV	PK	AV	PK
2389.668	H	8.2	23.3	31.0	-	39.2	54.3	54	74	14.8	19.7
2389.864	V	7.6	23.7	31.0	-	38.6	54.7	54	74	15.4	19.3

Test Mode 802.11ax HE20 (106T Offset : 54) : TX mode

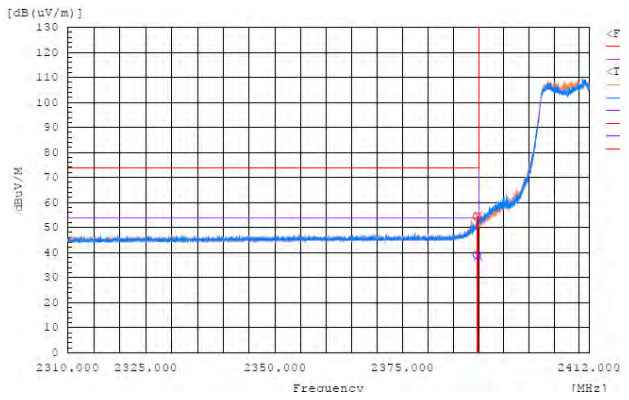
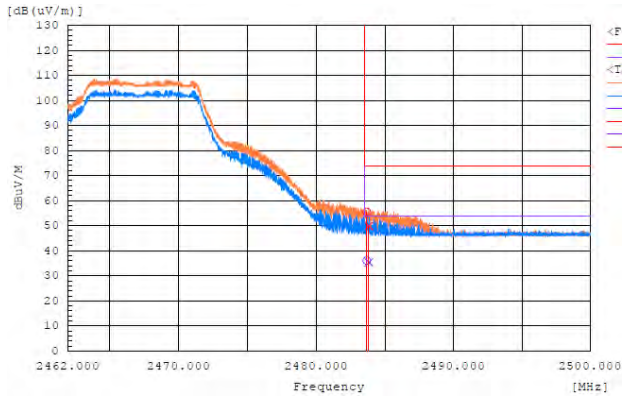
Operating Frequency 2462 MHz (CH 11)

Frequency (MHz)	Polarization	Reading (dBuV)		Factor (dB)		Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
		AV	PK	Corr.[1)]	Duty	AV	PK	AV	PK	AV	PK
2483.675	H	4.4	23.8	31.7	-	36.1	55.5	54	74	17.9	18.5
2483.822	V	3.7	18.2	31.7	-	35.4	49.9	54	74	18.6	24.1

Note(s) :

1. Correction Factor: Antenna Factor + Cable loss + Preamplifier Gain
2. AV Level = Measured Power(dBm) + Correction Factor(dB) + Duty Cycle Factor(dB).
3. Duty factor is not applied since the duty cycle is 100 %.

▣ TEST PLOTS

802.11ax HE20 (106T Offset : 53) (CH 1)	802.11ax HE20 (106T Offset : 54) (CH 11)
	

Test Mode	802.11ax HE40 SU : TX mode
Operating Frequency	2422 MHz (CH 3)

Frequency (MHz)	Polarization	Reading (dBuV)		Factor (dB)		Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
		AV	PK	Corr.[1)]	Duty	AV	PK	AV	PK	AV	PK
2388.938	H	46.9	63.5	4.0	-	50.9	67.5	54	74	3.1	6.5
2389.945	V	42.3	59.3	4.0	-	46.3	63.3	54	74	7.7	10.7

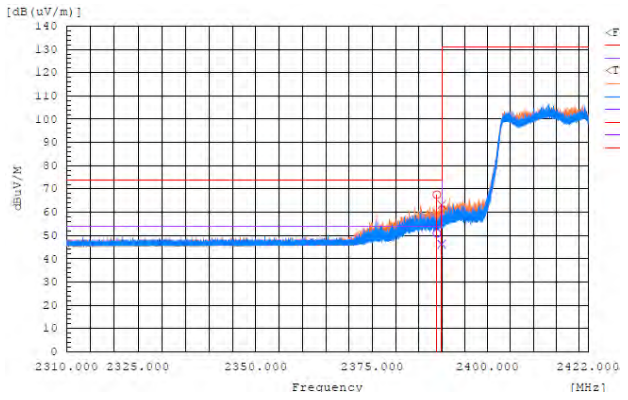
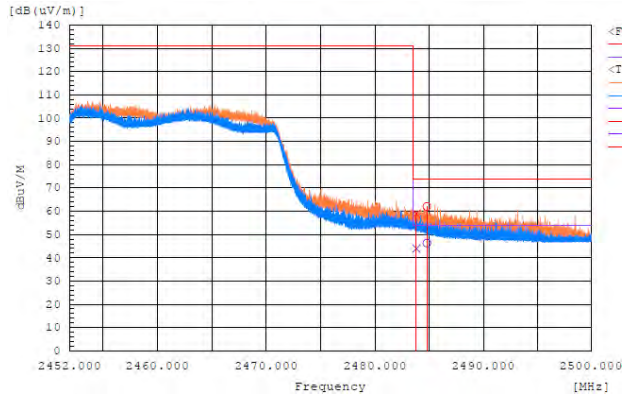
Test Mode	802.11ax HE40 SU : TX mode
Operating Frequency	2452 MHz (CH 9)

Frequency (MHz)	Polarization	Reading (dBuV)		Factor (dB)		Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
		AV	PK	Corr.[1)]	Duty	AV	PK	AV	PK	AV	PK
2484.783	H	41.5	57.3	4.8	-	46.3	62.1	54	74	7.7	11.9
2483.807	V	39.2	54.2	4.8	-	44.0	59.0	54	74	10.0	15.0

Note(s) :

1. Correction Factor: Antenna Factor + Cable loss + Preamplifier Gain
2. AV Level = Measured Power(dBm) + Correction Factor(dB) + Duty Cycle Factor(dB).
3. Duty factor is not applied since the duty cycle is 100 %.

▣ TEST PLOTS

802.11ax HE40 SU (CH 3)	802.11ax HE40 SU (CH 9)
	

Test Mode 802.11ax HE40 242T (Offset : 61) : TX mode

Operating Frequency 2422 MHz (CH 3)

Frequency (MHz)	Polarization	Reading (dBuV)		Factor (dB)		Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
		AV	PK	Corr.[1)]	Duty	AV	PK	AV	PK	AV	PK
2389.353	V	8.4	22.0	31.0	-	39.4	53.0	54	74	14.6	21.0
2389.813	H	8.6	22.0	31.0	-	39.6	53.0	54	74	14.4	21.0

Test Mode 802.11ax HE40 242T (Offset : 62) : TX mode

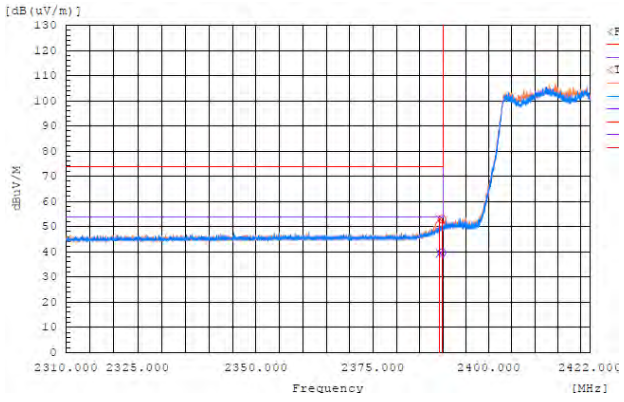
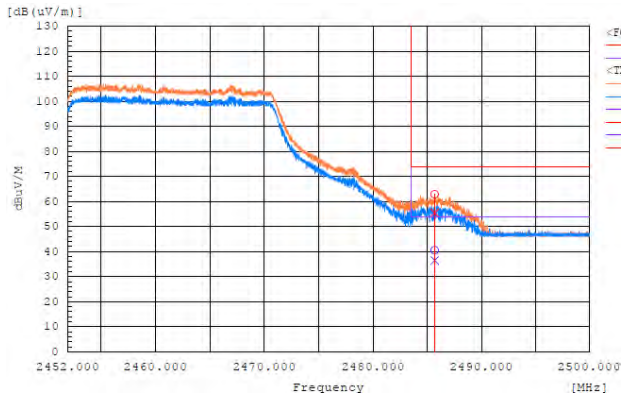
Operating Frequency 2452 MHz (CH 9)

Frequency (MHz)	Polarization	Reading (dBuV)		Factor (dB)		Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
		AV	PK	Corr.[1)]	Duty	AV	PK	AV	PK	AV	PK
2485.663	V	4.8	23.8	31.7	-	36.5	55.5	54	74	17.5	18.5
2485.666	H	8.9	31.2	31.7	-	40.6	62.9	54	74	13.4	11.1

Note(s) :

1. Correction Factor: Antenna Factor + Cable loss + Preamplifier Gain
2. AV Level = Measured Power(dBm) + Correction Factor(dB) + Duty Cycle Factor(dB).
3. Duty factor is not applied since the duty cycle is 100 %.

▣ TEST PLOTS

802.11ax HE40 (242T Offset : 61) (CH 3)	802.11ax HE40 (242T Offset : 62) (CH 9)
	

9.8. RECEIVER SPURIOUS EMISSION

Frequency Range : Below 1 GHz

Test Mode 802.11ax HE20 SU : RX mode

Operating Frequency 2412 MHz (CH 1)

Frequency (MHz)	Polarization	Reading (dBuV)	Corr. [1] (dB)	Total (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Measurement Type
No major peaks found							

Frequency Range : Above 1 GHz

Test Mode 802.11ax HE20 SU : RX mode

Operating Frequency 2462 MHz (CH 11)

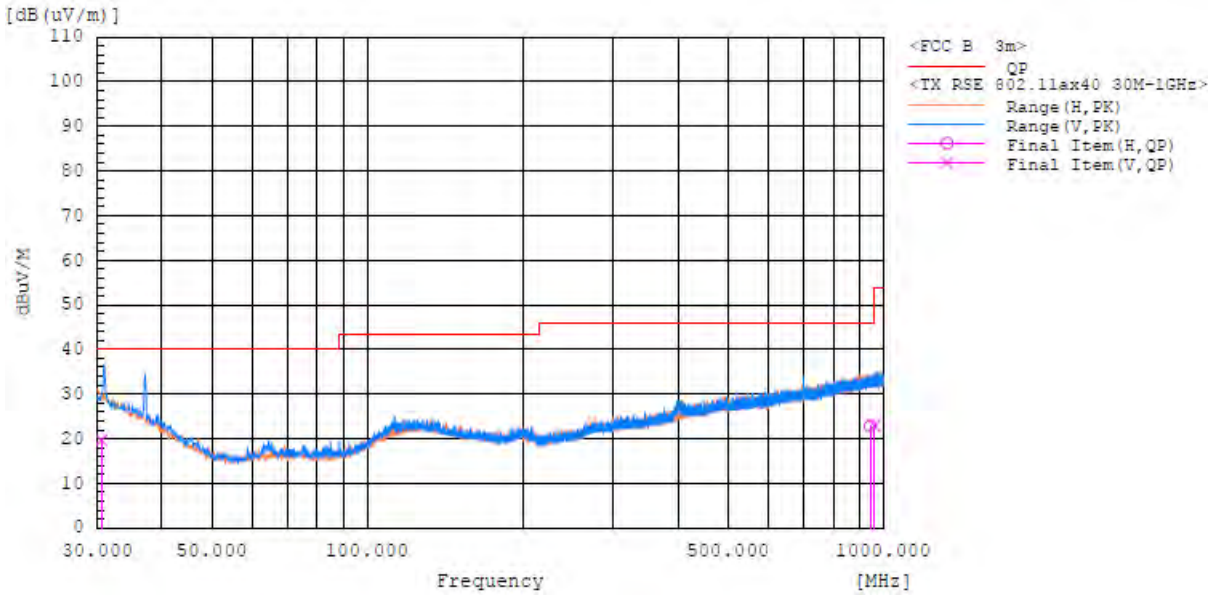
Frequency (MHz)	Polarization	Reading (dBuV)	Corr. [1] (dB)	Total (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Measurement Type
No major peaks found							

Note(s) :

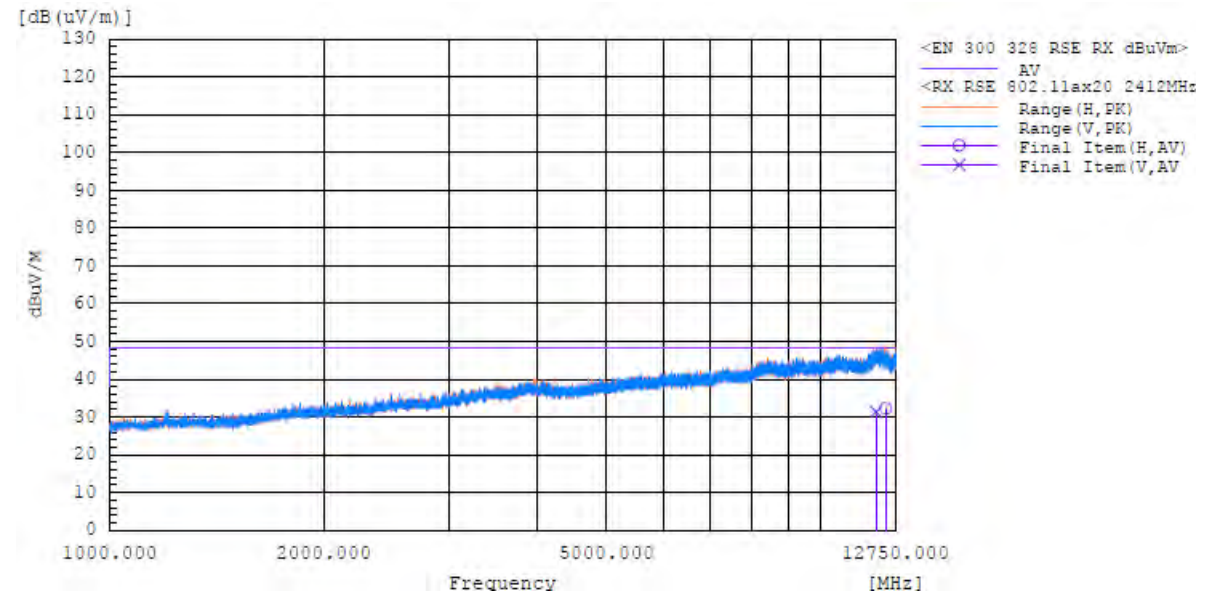
1. Correction Factor: Antenna Factor + Cable loss + Preamplifier Gain

▣ TEST PLOTS

Receiver Spurious Emission below 1 GHz



Receiver Spurious Emission above 1 GHz



Note:

1. There were no major peaks and representative plots are included in this report
2. The plots include all used factor values for cables, antenna, preamplifier, etc.

10. LIST OF TEST EQUIPMENT

No.	Instrument	Model No.	Calibration Due (mm/dd/yy)	Manufacture	Serial No.
☒	Signal Analyzer (20 Hz ~ 40.0 GHz)	ESU40	12/01/2024	Rohde & Schwarz	100529
☒	Signal Analyzer (1 Hz ~ 40.0 GHz)	ESW44	10/24/2024	Rohde & Schwarz	102015
☒	Signal Analyzer (3 Hz ~ 50 GHz)	N9030A	06/30/2024	Keysight	MY53311083
☐	Attenuator (20 dB, DC ~ 26.5 GHz)	8493C 20 dB	02/16/2025	KEYSIGHT	89401
☒	Attenuator (10 dB, DC ~ 26.5 GHz)	8493C 10 dB	09/05/2024	KEYSIGHT	89576
☒	Open Switch with Power Sensor	OSP150	04/01/2025	Rohde & Schwarz	100872
☒	Loop Antenna (0.009 ~ 30 MHz)	HLA 6121	09/12/2025	TESEQ	43964
☒	BI-LOG Antenna (30 MHz ~ 6 GHz)	JB6	03/06/2025	Sunol	A060916
☒	LNA (30 MHz ~ 1GHz)	PAM-103	05/03/2025	Com-Power	18020254
☒	Horn Antenna (1 GHz ~ 18 GHz)	DRH-118	01/03/2025	Sunol	A061616
☒	LNA (1 GHz ~ 18 GHz)	PAM-118A	03/13/2025	Com-Power	18040074
☒	Horn Antenna (18 GHz ~ 40 GHz)	DRH-1840	01/20/2025	Sunol	17121
☒	LNA (18 GHz ~ 40 GHz)	CBL18405045-01	01/05/2025	CERNEX, Inc.	27973
☒	High Pass Filter	WHK10-2520-3000-18000-40EF	11/20/2024	Wainwright	9
☒	EMI Test Receiver	ESR3	12/14/2024	Rohde & Schwarz	102363
☒	LISN	ENV216	10/23/2024	Rohde & Schwarz	101550

Note:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date

APPENDIX A. TEST SETUP PHOTOS

The setup photos are provided as a separate document.

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APPENDIX B. PHOTOGRAPHS OF EUT

B.1. EXTERNAL PHOTOS

The external photos are provided as a separate document.

B.2. INTERNAL PHOTOS

The internal photos are provided as a separate document.

END OF TEST REPORT

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