ACCREDITED
CERT#4344.01

TEST REPORT

Applicant:	Acer Incorporated
Address:	8F, 88, Sec.1 Xintai 5th Rd. Xizhi, New Taipei City 221, Taiwan
Equipment Type:	Tablet PC
Model Name:	A25009
Brand Name:	acer
Marketing Name:	Iconia V11, V11-21M
FCC ID:	HLZA25009
ISED Number:	1754F-A25009
Test Standard:	47 CFR Part 15 Subpart C RSS-Gen Issue 5 RSS-247 Issue 3 (refer to section 3.1)
Sample Arrival Date:	May 23, 2025
Test Date:	May 31, 2025 - Jun. 10, 2025
Date of Issue:	Jul. 14, 2025

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

Tested by: Julie Zhu **Checked by:** Ye Hongji **Approved by:** Sunny Zou (Technical Director)

Revision History

Version	Issue Date	Revisions
Rev. 01	Jul. 14, 2025	Initial Issue

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1 GENERAL INFORMATION

1.1 Test Laboratory

Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100

1.2 Test Location

Name	Shenzhen BALUN Technology Co., Ltd.
Location	☑ Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	☐ 1/F, Building B, Ganghongji High-tech Intelligent Industrial Park, No. 1008, Songbai Road, Yangguang Community, Xili Sub-district, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196. The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 11524A.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Acer Incorporated
Address	8F, 88, Sec.1 Xintai 5th Rd. Xizhi, New Taipei City 221, Taiwan

2.2 Manufacturer Information

Manufacturer	Acer Incorporated
Address	8F, 88, Sec.1 Xintai 5th Rd. Xizhi, New Taipei City 221, Taiwan

2.3 General Description for Equipment under Test (EUT)

EUT Name	Tablet PC
Model Name Under Test	A25009
Series Model Name	N/A
Description of Model name differentiation	N/A
Marketing Name	Iconia V11, V11-21M
Serial Number	N8LJTWW001522005A19H00
Hardware Version	M112TC
Software Version	Android 15
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.4 Technical Information

Network and Wireless connectivity	Bluetooth (BR+EDR+BLE) WIFI 802.11a, 802.11b, 802.11g, 802.11n, 802.11ac and 802.11ax GPS, GLONASS

The requirement for the following technical information of the EUT was tested in this report:

Frequency Range	802.11b/g/n/ax(20 MHz): 2.412 GHz - 2.462 GHz f_c = 2412 MHz + (N-1)*5 MHz, where - f_c = “Operating Frequency” in MHz, - N = “Channel Number” with the range from 1 to 11. 802.11n/ax(40 MHz): 2.422 GHz - 2.452 GHz f_c = 2412 MHz + (N-1)*5 MHz, where - f_c = “Operating Frequency” in MHz, - N = “Channel Number” with the range from 3 to 9.
Modulation Technology	DSSS, OFDM, OFDMA
Product Type	☐ Mobile ☒ Portable ☐ Fix Location
Antenna System (eg., MIMO, Smart Antenna)	N/A
Categorization as Correlated or Completely Uncorrelated	N/A
Antenna Type	PIFA Antenna
Antenna Gain	0.38 dBi
About the Product	Only the WIFI 802.11b, 802.11g, 802.11n (HT20/40) and 802.11ax (HE20/40) was tested in this report.

802.11ax RU configuration table					
Mode	Full RU (SU)	RU_26	RU_52	RU_106	RU_242
802.11ax20	√	--	--	--	--
802.11ax40	√	--	--	--	--

Modulation technology	Modulation Type	Transfer Rate (Mbps)(Single RF path)
DSSS (802.11b)	DBPSK	1
	DQPSK	2
	CCK	5.5/11
OFDM (802.11g)	BPSK	6/9
	QPSK	12/18
	16QAM	24/36
	64QAM	48/54
OFDM (802.11n-20 MHz)	BPSK	6.5/7.2
	QPSK	13/19.5/14.4/21.7
	16QAM	26/39/28.9/43.3
	64QAM	52/58.5/65/57.8/65/72.2
OFDM (802.11n-40 MHz)	BPSK	13.5/15
	QPSK	27/40.5/30/45
	16QAM	54/81/60/90
	64QAM	108/121.5/135/120/150
OFDMA (802.11ax-20 MHz)	BPSK	4
	QPSK	16/24/17/26
	16QAM	33/49/34/52
	64QAM	65/73/81/69/77/86
	256QAM	98/108/103/115
	1024QAM	122/135/129/143
OFDMA (802.11ax-40 MHz)	BPSK	8/9
	QPSK	33/49/34/52
	16QAM	65/98/69/103
	64QAM	130/146/163/138/155/172
	256QAM	195/217/207/229
	1024QAM	244/271/258/287

Note: Preliminary tests were performed in different data rate in above table to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Data Rate	Channel	
Output Power	11b/11g/11n20/11n40/ 11ax20/11ax40	1/6/6.5/13.5/ 4/8 Mbps	1/6/11	3/6/9
Occupied Bandwidth	11b/11g/11n20/11n40/ 11ax20/11ax40	1/6/6.5/13.5/ 4/8 Mbps	1/6/11	3/6/9
Conducted Spurious Emission	11b/11g/11n20/11n40/ 11ax20/11ax40	1/6/6.5/13.5/ 4/8 Mbps	1/6/11	3/6/9
Conducted Emission	11b/11g/11n20/11n40/ 11ax20/11ax40	1/6/6.5/13.5/ 4/8 Mbps	1/6/11	3/6/9
Radiated Spurious Emission	11b/11g/11n20/11n40/ 11ax20/11ax40	1/6/6.5/13.5/ 4/8 Mbps	1/6/11	3/6/9
Band Edge	11b/11g/11n20/11n40/ 11ax20/11ax40	1/6/6.5/13.5/ 4/8 Mbps	1/6/11	3/6/9
Power spectral density (PSD)	11b/11g/11n20/11n40/ 11ax20/11ax40	1/6/6.5/13.5/ 4/8 Mbps	1/6/11	3/6/9

Note: The above EUT information in section 2.4 was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 15, Subpart C	Intentional radiators of radio frequency equipment
2	RSS-Gen Issue 5	General Requirements for Compliance of Radio Apparatus
3	RSS-247 Issue 3	Digital Transmission Systems (DTSs), Frequency Hopping Systems(FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices
4	ANSI C63.10-2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
5☆	KDB Publication 558074 D01v05r02	GUIDANCE FOR COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES OPERATING UNDER SECTION 15.247 OF THE FCC RULES

3.2 Test Verdict

No.	Description	FCC PART No.	ISED Part No.	Test Result	Verdict
1	Antenna Requirement	15.203	RSS-247, 5.4 (f)	N/A	Pass[Note 1]
2	Output Power	15.247 (b)	RSS-247, 5.4 (d)	ANNEX A.1	Pass
3	Occupied Bandwidth	15.247 (a)	RSS-GEN, 6.7; RSS-247, 5.2 (a)	ANNEX A.2	Pass
4	Conducted Spurious Emission	15.247 (d)	RSS-247, 5.5	ANNEX A.3	Pass
5	Band Edge(Authorized-band band-edge)	15.247 (d)	RSS-GEN, 8.9; RSS-247, 5.5	ANNEX A.4	Pass
6	Conducted Emission	15.207	RSS-GEN, 8.8	ANNEX A.5	Pass
7	Radiated Spurious Emission	15.209; 15.247 (d)	RSS-247, 5.5	ANNEX A.6	Pass
8	Band Edge(Restricted-band band-edge)	15.209; 15.247 (d)	RSS-247, 5.5	ANNEX A.7	Pass
9	Power spectral density (PSD)	15.247 (e)	RSS-247, 5.2 (b)	ANNEX A.8	Pass
10	Receiver Spurious Emissions	N/A	RSS-Gen, 7.3	N/A	N/A [Note 2]

Note [1]: The EUT has a permanently and irreplaceable attached antenna, which complies with the requirement FCC 15.203.

Note [2]: Only radio communication receivers operating in stand-alone mode within the band 30-960 MHz, as well as scanner receivers, are subject to Industry Canada requirements, so this test is not applicable.

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

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

Relative Humidity	50% to 63%	
Atmospheric Pressure	100 kPa to 102 kPa	
Temperature	NT (Normal Temperature)	+16.8℃ to +24.6℃
Working Voltage of the EUT	NV (Normal Voltage)	3.80V

4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	KEYSIGHT	N9020A	MY46471071	2024.07.04	2025.07.03
Spectrum Analyzer	ROHDE&SCHWARZ	FSV-40	101544	2024.12.16	2025.12.15
Power Sensor	KEYSIGHT	U2063XA	MY58000247	2024.07.04	2025.07.03
Spectrum Analyzer	KEYSIGHT	N9020A	MY50531259	2024.08.01	2025.07.31
Test Antenna-Horn	SCHWARZBECK	BBHA 9120D	02460	2024.05.16	2027.05.15
Test Antenna-Horn	A-INFO	LB-180400KF	J211060273	2024.06.15	2027.06.14
Anechoic Chamber	RAINFORD	9m*6m*6m	140	2024.07.28	2027.07.27
Amplifier	COM-MV	LSCX_LNA1-12G-01	7210214	2024.08.01	2025.07.31
Amplifier	COM-MV	XKu_LNA7-18G-01	7210209	2024.08.01	2025.07.31
Amplifier	COM-MV	KA LNA18 40G-01	18050001	2024.12.05	2025.12.04
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2024.08.01	2025.07.31
Test Antenna-Bi-Log	SCHWARZBECK	VULB 9168	9168-01162	2023.08.04	2026.08.03
Test Antenna-Loop	SCHWARZBECK	FMZB 1519	1519-037	2024.01.23	2027.01.22
Amplifier	COM-MV	ZT30-1000M	B2018054558	2024.11.28	2025.11.27
Anechoic Chamber	EMC Electronic Co., Ltd	20.10*11.60*7.35m	130	2024.07.13	2027.07.12
EMI Receiver	KEYSIGHT	N9010B	MY57110309	2024.08.01	2025.07.31
LISN	SCHWARZBECK	NSLK 8127	8127-687	2025.04.29	2026.04.28
Shielded Enclosure	YiHeng Electronic Co., Ltd	3.5m*3.1m*2.8m	112	2025.02.14	2028.02.13

4.3 Test Software List

Description	Manufacturer	Software Version	Serial No.	Applicable test Setup
BL410R	BALUN	V2.1.1.488	N/A	The section 4.5.1
BL410E	BALUN	V22.930	N/A	The section 4.5.2&4.5.3&4.5.4&4.5.5

4.4 Measurement Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT 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.

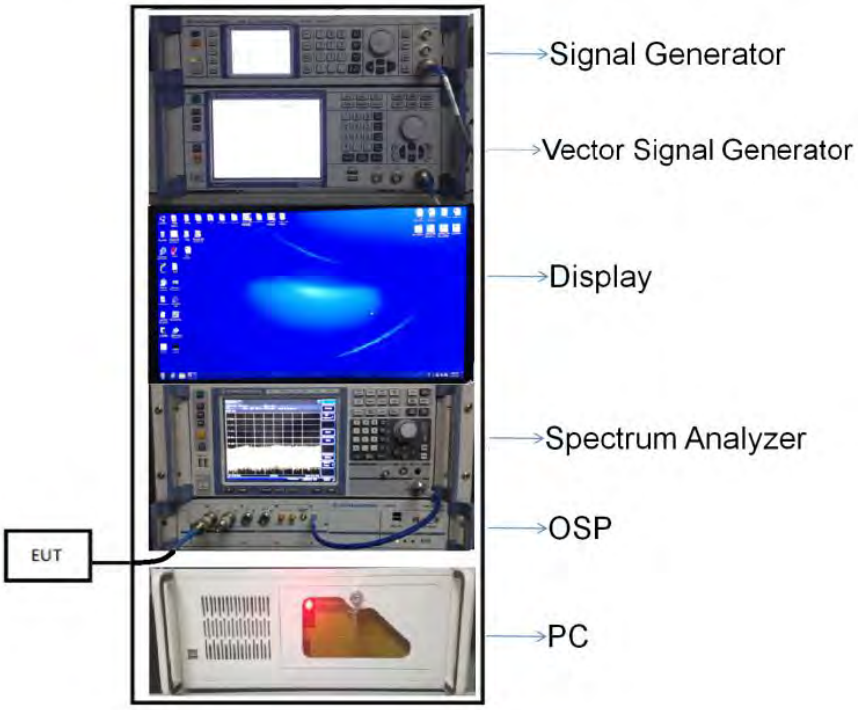
Parameters	Uncertainty
Occupied Channel Bandwidth	2.8%
RF output power, conducted	1.28 dB
Power Spectral Density, conducted	1.30 dB
Unwanted Emissions, conducted	1.84 dB
All emissions, radiated	5.36 dB
Temperature	0.8℃
Humidity	4%

4.5 Description of Test Setup

4.5.1 For Antenna Port Test

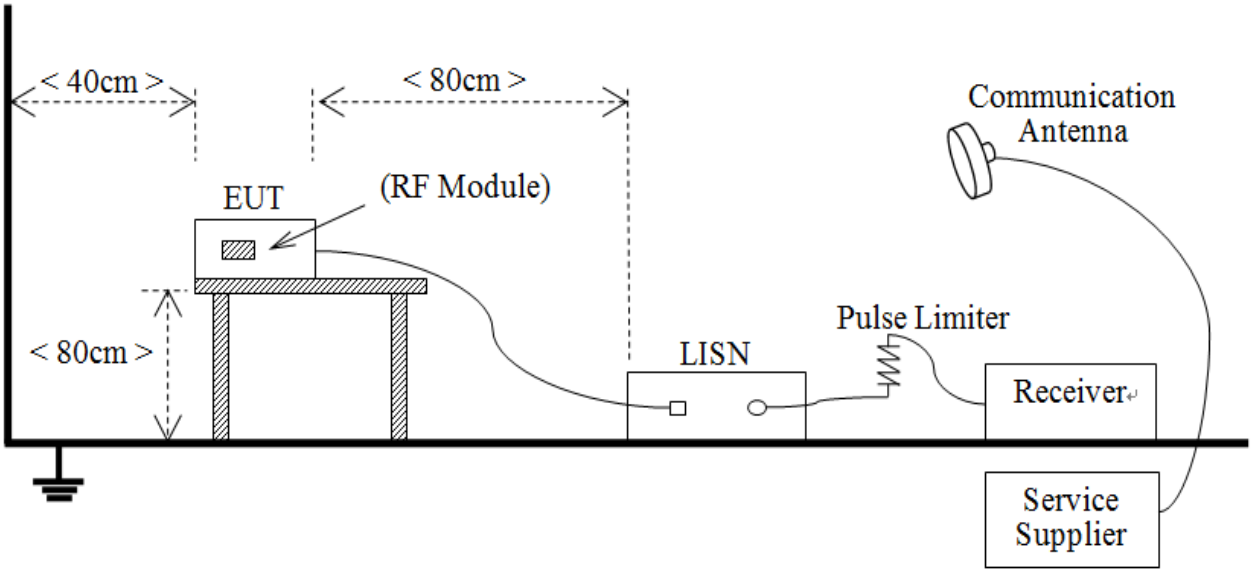
Conducted value (dBm) = Measurement value (dBm) + cable loss (dB)

For example: the measurement value is 10 dBm and the cable 0.5dBm used, then the final result of EUT:
Conducted value (dBm) = 10 dBm + 0.5 dB = 10.5 dBm



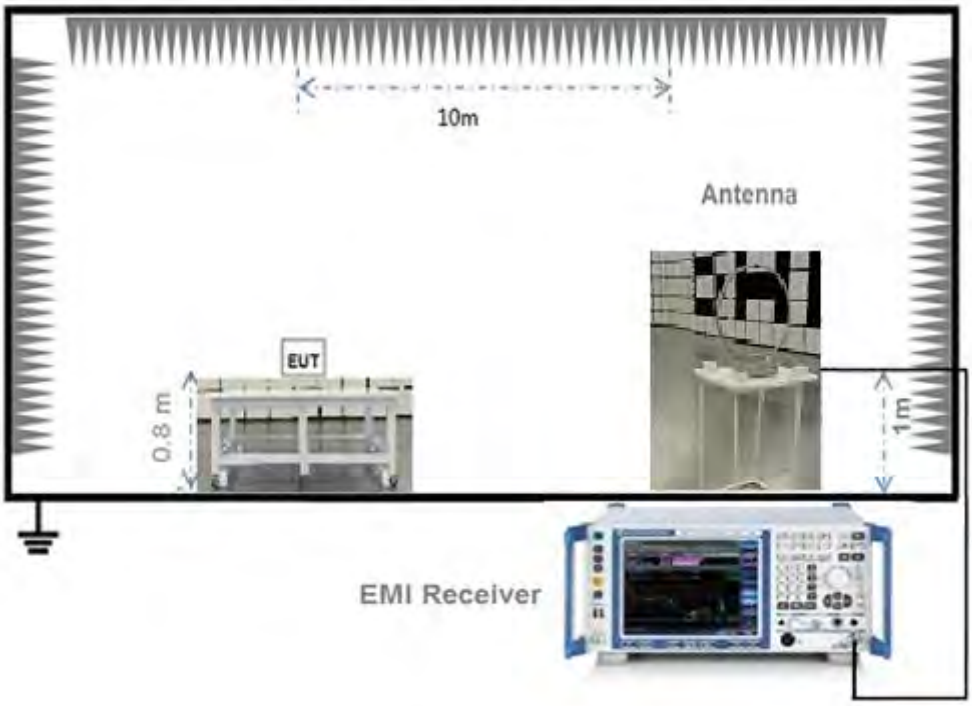
(Diagram 1)

4.5.2 For AC Power Supply Port Test



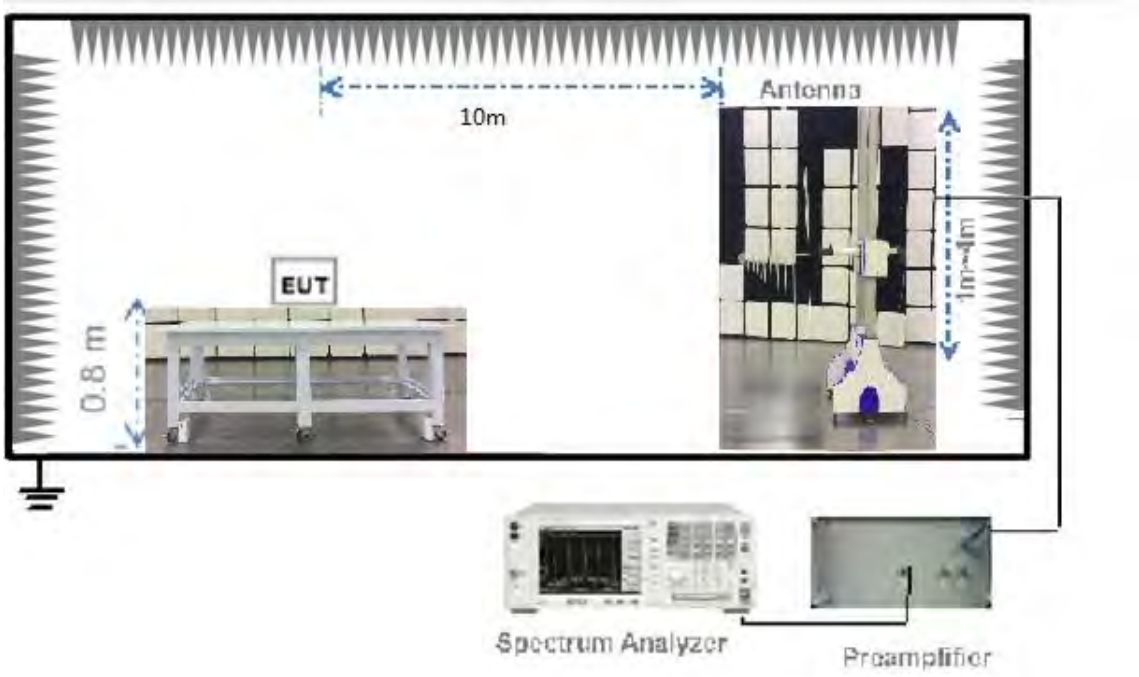
(Diagram 2)

4.5.3 For Radiated Test (Below 30 MHz)



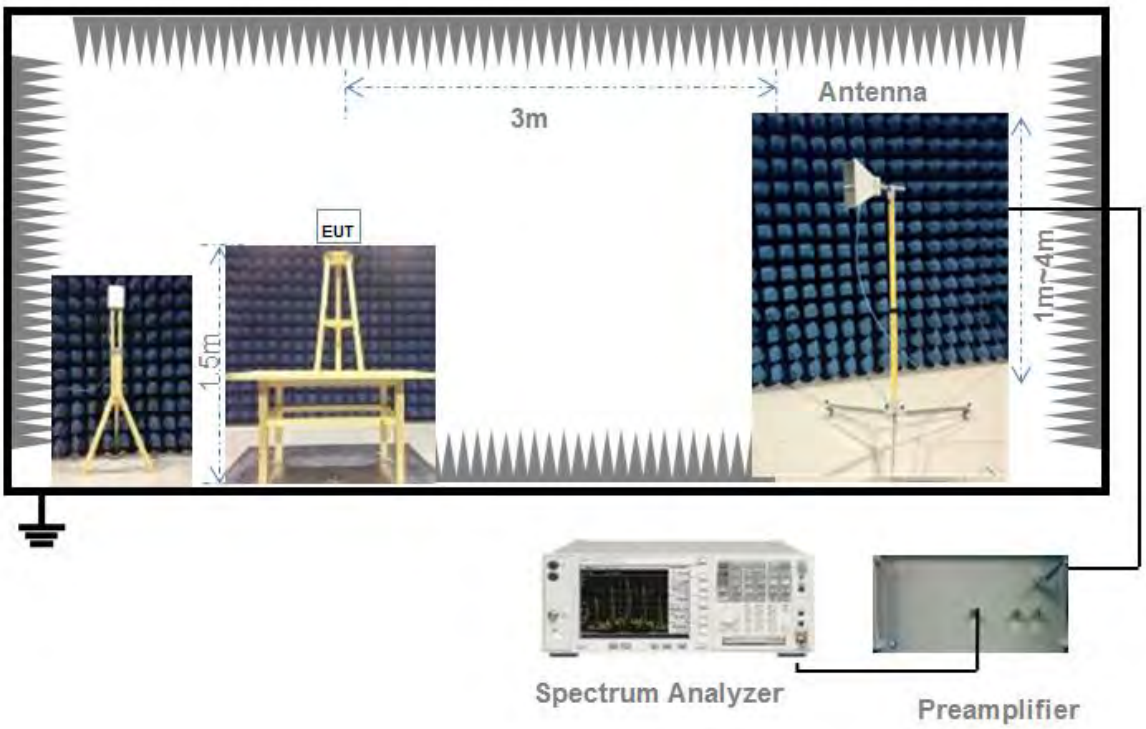
(Diagram 3)

4.5.4 For Radiated Test (30 MHz-1 GHz)



(Diagram 4)

4.5.5 For Radiated Test (Above 1 GHz)



(Diagram 5)

4.6 Measurement Results Explanation Example

4.6.1 For conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.
The spectrum analyzer offset is derived from RF cable loss and attenuator factor.
Offset = RF cable loss + attenuator factor.

4.6.2 For radiated band edges and spurious emission test:

$$E = EIRP - 20\log D + 104.8$$

where:

E = electric field strength in dBμV/m,

EIRP = equivalent isotropic radiated power in dBm

D = specified measurement distance in meters.

EIRP= Measure Conducted output power Value (dBm) + Maximum transmit antenna gain (dBi) + the appropriate maximum ground reflection factor (dB)

5 TEST ITEMS

5.1 Antenna Requirements

5.1.1 Relevant Standards

FCC §15.203; RSS-247, 5.4 (f)
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 shall be considered sufficient to comply with the provisions of this section. 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

If directional gain of transmitting antennas is greater than 6 dBi, the power shall be reduced by the same level in dB comparing to gain minus 6 dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. 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 FCC rule.

5.1.2 Antenna Anti-Replacement Construction

The Antenna Anti-Replacement as following method:

Protected Method	Description
The antenna is embedded in the product.	An embedded-in antenna design is used.

Reference Documents	Item
Photo	Please refer to the EUT Photo documents.

5.1.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

5.2 Output Power

5.2.1 Test Limit

FCC § 15.247(b); RSS-247, 5.4 (d)

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements.

5.2.2 Test Setup

See section 4.5.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.2.3 Test Procedure

Maximum peak conducted output power

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

The EUT shall be transmitted at its maximum power control level.

EIRP= Maximum peak conducted output power +Antenna Gain.

Maximum conducted (average) output power (Reporting Only)

a) As an alternative to spectrum analyzer or EMI receiver measurements, measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied.

1) The EUT is configured to transmit continuously, or to transmit with a constant duty factor.

2) At all times when the EUT is transmitting, it shall be transmitting at its maximum power control level.

3) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.

b) If the transmitter does not transmit continuously, measure the duty cycle (x) of the transmitter output signal.

c) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.

d) Adjust the measurement in dBm by adding 10log (1/x), where x is the duty cycle.

Measurements of duty cycle

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.

Set the center frequency of the instrument to the center frequency of the transmission.

Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value.

Set VBW ≥ RBW. Set detector = peak or average.

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 duty cycle shall not be used if T ≤ 16.7 microseconds.)

5.2.4 Test Result

Please refer to ANNEX A.1.

5.3 Occupied Bandwidth

5.3.1 Limit

FCC §15.247(a); RSS-GEN, 6.7; RSS-247, 5.2 (a)

Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW. The 6 dB bandwidth must be greater than 500 kHz.

5.3.2 Test Setup

See section 4.5.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.3.3 Test Procedure

Use the following spectrum analyzer settings:

Set RBW = 100 kHz.

Set the video bandwidth (VBW) ⩾ 3 RBW.

Detector = Peak.

Trace mode = max hold.

Sweep = auto couple.

Allow the trace to stabilize.

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.

5.3.4 Test Result

Please refer to ANNEX A.2.

5.4 Conducted Spurious Emission

5.4.1 Limit

FCC §15.247(d); RSS-247, 5.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

5.4.2 Test Setup

See section 4.5.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.4.3 Test Procedure

The DTS rules specify that in any 100 kHz bandwidth outside of the authorized frequency band, the power shall be attenuated according to the following conditions:

a) If the maximum peak conducted output power procedure was used to demonstrate compliance as described in 9.1, then the peak output power measured 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 (i.e., 20 dBc).

b) If maximum conducted (average) output power was used to demonstrate compliance as described in 9.2, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 30 dBc).

c) In either case, attenuation to levels below the 15.209 general radiated emissions limits is not required.

The following procedures shall be used to demonstrate compliance to these limits. Note that these procedures can be used in either an antenna-port conducted or radiated test set-up. Radiated tests must conform to the test site requirements and utilize maximization procedures defined herein.

<u>Reference level measurement</u>

Establish a reference level by using the following procedure:

Set instrument center frequency to DTS channel center frequency.

Set the span to ⩾ 1.5 times the DTS bandwidth.

Set the RBW = 100 kHz.

Set the VBW ⩾ 3 x RBW.

Detector = peak.

Sweep time = auto couple.

Trace mode = max hold.

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum PSD level.

Emission level measurement

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.

Set the RBW = 100 kHz.

Set the VBW ⩾ 3 x RBW.

Detector = peak.

Sweep time = auto couple.

Trace mode = max hold.

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) are attenuated by at least the minimum requirements specified in 11.1 a) or 11.1 b). Report the three highest emissions relative to the limit.

5.4.4 Test Result

Please refer to ANNEX A.3.

5.5 Band Edge (Authorized-band band-edge)

5.5.1 Limit

FCC §15.247(d); RSS-GEN, 8.9, RSS-247, 5.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

5.5.2 Test Setup

See section 4.5.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.5.3 Test Procedure

The following procedures may be used to determine the peak or average field strength or power of an unwanted emission that is within 2 MHz of the authorized band edge. If a peak detector is utilized, use the procedure described in 13.2.1. Use the procedure described in 13.2.2 when using an average detector and the EUT can be configured to transmit continuously (i.e., duty cycle ⩾ 98%). Use the procedure described in 13.2.3 when using an average detector and the EUT cannot be configured to transmit continuously but the duty cycle is constant (i.e., duty cycle variations are less than ± 2 percent). Use the procedure described in 13.2.4 when using an average detector for those cases where the EUT cannot be configured to transmit continuously and the duty cycle is not constant (duty cycle variations equal or exceed 2 percent).

When using a peak detector to measure unwanted emissions at or near the band edge (within 2 MHz of the authorized band), the following integration procedure can be used.

Set instrument center frequency to the frequency of the emission to be measured (must be within 2 MHz of the authorized band edge).

Set span to 2 MHz

RBW = 100 kHz.

VBW ⩾ 3 x RBW.

Detector = peak.

Sweep time = auto.

Trace mode = max hold.

Allow sweep to continue until the trace stabilizes (required measurement time may increase for low duty cycle applications)

Compute the power by integrating the spectrum over 1 MHz using the analyzer's band power measurement function with band limits set equal to the emission frequency (femission) ± 0.5 MHz. If the instrument does not have a band power function, then sum the amplitude levels (in power units) at 100 kHz intervals extending across the 1 MHz spectrum defined by femission ± 0.5 MHz.

Standard method(The 99% OBW of the fundamental emission is without 2 MHz of the authorized band):

Span: Wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products that fall outside of the authorized band of operation.

Reference level: As required to keep the signal from exceeding the maximum instrument input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.

Attenuation: Auto (at least 10 dB preferred).

Sweep time: Coupled.

Resolution bandwidth: 100 kHz.

Video bandwidth: 300 kHz.

Detector: Peak.

Trace: Max hold.

5.5.4 Test Result

Please refer to ANNEX A.4.

5.6 Conducted Emission

5.6.1 Limit

FCC §15.207; RSS-GEN, 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 within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dBμV)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
0.50 - 30	60	50

5.6.2 Test Setup

See section 4.5.2 for test setup description for the AC power supply port. The photo of test setup please refer to ANNEX B.

5.6.3 Test Procedure

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.
Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. A device rated for 50/60 Hz operation need not be tested at both frequencies provided the radiated and line conducted emissions are the same at both frequencies.

5.6.4 Test Result

Please refer to ANNEX A.5.

5.7 Radiated Spurious Emission

5.7.1 Limit

FCC §15.209&15.247(d); RSS-247, 5.5

Radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

Note:

1. For Above 1000 MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.
2. For above 1000 MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK).

5.7.2 Test Setup

See section 4.5.3 to 4.5.5 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.7.3 Test Procedure

Since the emission limits are specified in terms of radiated field strength levels, measurements performed to demonstrate compliance have traditionally relied on a radiated test configuration. Radiated measurements remain the principal method for demonstrating compliance to the specified limits; however antenna-port conducted measurements are also now acceptable to demonstrate compliance (see below for details). When radiated measurements are utilized, test site requirements and procedures for maximizing and measuring radiated emissions that are described in ANSI C63.10 shall be followed.

Antenna-port conducted measurements may also be used as an alternative to radiated measurements for demonstrating compliance in the restricted frequency bands. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test for cabinet/case spurious emissions is required.

General Procedure for conducted measurements in restricted bands

a) Measure the conducted output power (in dBm) using the detector specified (see guidance regarding measurement procedures for determining quasi-peak, peak, and average conducted output power, respectively).

b) Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP level (see guidance on determining the applicable antenna gain)

c) Add the appropriate maximum ground reflection factor to the EIRP level (6 dB for frequencies ≤ 30 MHz, 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive and 0 dB for frequencies > 1000 MHz).

d) For devices with multiple antenna-ports, measure the power of each individual chain and sum the EIRP of all chains in linear terms (e.g., Watts, mW).

e) Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:

$E = EIRP – 20\log D + 104.8$

where:

E = electric field strength in dBμV/m,

EIRP = equivalent isotropic radiated power in dBm

D = specified measurement distance in meters.

f) Compare the resultant electric field strength level to the applicable limit.

g) Perform radiated spurious emission test.

Quasi-Peak measurement procedure

The specifications for measurements using the CISPR quasi-peak detector can be found in Publication 16 of the International Special Committee on Radio Frequency Interference (CISPR) of the International Electrotechnical Commission.

As an alternative to CISPR quasi-peak measurement, compliance can be demonstrated to the applicable emission limits using a peak detector.

Peak power measurement procedure

Peak emission levels are measured by setting the instrument as follows:

a) RBW = as specified in Table 1.

b) VBW ≥ 3 x RBW.

c) Detector = Peak.

d) Sweep time = auto.

e) Trace mode = max hold.

f) Allow sweeps to continue until the trace stabilizes. (Note that the required measurement time may be

longer for low duty cycle applications).

Table 1—RBW as a function of frequency

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

If the peak-detected amplitude can be shown to comply with the average limit, then it is not necessary to perform a separate average measurement.

Trace averaging across on and off times of the EUT transmissions followed by duty cycle correction

If continuous transmission of the EUT (i.e., duty cycle ≥ 98 percent) cannot be achieved and the duty cycle is constant (i.e., duty cycle variations are less than ± 2 percent), then the following procedure shall be used:

a) The EUT shall be configured to operate at the maximum achievable duty cycle.

b) Measure the duty cycle, x, of the transmitter output signal as described in section 6.0.

c) RBW = 1 MHz (unless otherwise specified).

d) VBW ≥ 3 x RBW.

e) Detector = RMS, if span/(# of points in sweep) ≤ (RBW/2). Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.

f) Averaging type = power (i.e., RMS).

1) As an alternative, the detector and averaging type may be set for linear voltage averaging.

2) Some instruments require linear display mode in order to use linear voltage averaging. Log or dB averaging shall not be used.

g) Sweep time = auto.

h) Perform a trace average of at least 100 traces.

i) A 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 percent duty cycle. The correction factor is computed as follows:

1) If power averaging (RMS) mode was used in step f), then the applicable correction factor is 10 log(1/x), where x is the duty cycle.

2) If linear voltage averaging mode was used in step f), then the applicable correction factor is 20 log(1/x), where x is the duty cycle.

3) If a specific emission is demonstrated to be continuous (≥ 98 percent duty cycle) rather than turning on and off with the transmit cycle, then no duty cycle correction is required for that emission.

NOTE: Reduction of the measured emission amplitude levels to account for operational duty factor is not permitted. Compliance is based on emission levels occurring during transmission - not on an average across on and off times of the transmitter.

Determining the applicable transmit antenna gain

A conducted power measurement will determine the maximum output power associated with a restricted band emission; however, in order to determine the associated EIRP level, the gain of the transmitting antenna (in dBi) must be added to the measured output power (in dBm).

Since the out-of-band characteristics of the EUT transmit antenna will often be unknown, the use of a conservative antenna gain value is necessary. Thus, when determining the EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2 dBi, whichever is greater. However, for devices that operate in multiple frequency bands while using the same transmit antenna, the highest gain of the antenna within the operating band nearest in frequency to the restricted band emission being measured may be used in lieu of the overall highest gain when the emission is at a frequency that is within 20 percent of the nearest band edge frequency, but in no case shall a value less than 2 dBi be used.

See KDB 662911 for guidance on calculating the additional array gain term when determining the effective antenna gain for a EUT with multiple outputs occupying the same or overlapping frequency ranges in the same band.

Radiated spurious emission test

An additional consideration when performing conducted measurements of restricted band emissions is that unwanted emissions radiating from the EUT cabinet, control circuits, power leads, or intermediate circuit elements will likely go undetected in a conducted measurement configuration. To address this concern, a radiated test shall be performed to ensure that emissions emanating from the EUT cabinet (rather than the antenna port) also comply with the applicable limits.

For these cabinet radiated spurious emission measurements the EUT transmit antenna may be replaced with a termination matching the nominal impedance of the antenna. Procedures for performing radiated measurements are specified in ANSI C63.10. All detected emissions shall comply with the applicable limits.

The measurement frequency range is from 30 MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.

The power of the EUT transmitting frequency should be ignored.

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold

5.7.4 Test Result

Please refer to ANNEX A.6.

5.8 Band Edge (Restricted-band band-edge)

5.8.1 Limit

FCC §15.209&15.247(d); RSS-247, 5.5

Radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

5.8.2 Test Setup

See section 4.5.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.8.3 Test Procedure

The measurement frequency range is from 9 kHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.

The power of the EUT transmitting frequency should be ignored.

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold

For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported, Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

For transmitters operating above 1 GHz repeat the measurement with an average detector.

5.8.4 Test Result

Please refer to ANNEX A.7.

5.9 Power Spectral density (PSD)

5.9.1 Limit

FCC §15.247(e); RSS-247, 5.2 (b)

The same method of determining the conducted output power shall be used to determine the power spectral density. If a peak output power is measured, then a peak power spectral density measurement is required. If an average output power is measured, then an average power spectral density measurement should be used.

5.9.2 Test Setup

See section 4.5.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.9.3 Test Procedure

Set analyzer center frequency to DTS channel center frequency.

Set the span to 1.5 times the DTS bandwidth.

Set the RBW to: 3 kHz ⩽ RBW ⩽ 100 kHz.

Set the VBW ⩾ 3 RBW.

Detector = peak.

Sweep time = auto couple.

Trace mode = max hold.

Allow trace to fully stabilize.

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.

5.9.4 Test Result

Please refer to ANNEX A.8.

ANNEX A TEST RESULT

A.1 Output Power

Duty Cycle

Test Mode	On Time (ms)	On+Off time (ms)	Duty Cycle	Duty Factor
802.11b	8.3680	8.4130	99.47%	0.02
802.11g	1.3880	1.4260	97.34%	0.12
802.11n-20 MHz	1.2970	1.3350	97.15%	0.13
802.11n-40 MHz	0.6455	0.6823	94.61%	0.24
802.11ax-20 MHz	1.0110	1.1020	91.74%	0.37
802.11ax-40 MHz	0.5269	1.0990	47.94%	3.19

Peak Power Test Data

802.11b Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	21.47	140.28	30	1000	Pass
Middle	21.39	137.72			Pass
High	21.34	136.14			Pass

802.11g Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	23.26	211.84	30	1000	Pass
Middle	22.67	184.93			Pass
High	22.58	181.13			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	22.19	165.58	30	1000	Pass
Middle	22.47	176.60			Pass
High	21.08	128.23			Pass

802.11n-40 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	21.36	136.77	30	1000	Pass
Middle	22.90	194.98			Pass
High	21.46	139.96			Pass

802.11ax-20 MHz(SU) Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	24.22	264.24	30	1000	Pass
Middle	24.29	268.53			Pass
High	22.82	191.43			Pass

802.11ax-40 MHz(SU) Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	22.80	190.55	30	1000	Pass
Middle	23.96	248.89			Pass
High	22.83	191.87			Pass

Average Power Test Data

802.11b Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	18.54	71.45	30	1000	Pass
Middle	18.44	69.82			Pass
High	18.43	69.66			Pass

802.11g Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	16.86	48.53	30	1000	Pass
Middle	18.84	76.56			Pass
High	16.76	47.42			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	16.44	44.06	30	1000	Pass
Middle	18.73	74.64			Pass
High	15.34	34.20			Pass

802.11n-40 MHz Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	15.41	34.75	30	1000	Pass
Middle	19.02	79.80			Pass
High	15.50	35.48			Pass

802.11ax-20 MHz(SU) Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	16.62	45.92	30	1000	Pass
Middle	18.56	71.78			Pass
High	15.37	34.43			Pass

802.11ax-40 MHz(SU) Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	15.67	36.90	30	1000	Pass
Middle	16.19	41.59			Pass
High	15.65	36.73			Pass

E.I.R.P Test Data (For ISED)

802.11b Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	21.85	153.11	36	4	Pass
Middle	21.77	150.31			Pass
High	21.72	148.59			Pass

802.11g Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	23.64	231.21	36	4	Pass
Middle	23.05	201.84			Pass
High	22.96	197.70			Pass

802.11n-20 MHz Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	22.57	180.72	36	4	Pass
Middle	22.85	192.75			Pass
High	21.46	139.96			Pass

802.11n-40 MHz Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	21.74	149.28	36	4	Pass
Middle	23.28	212.81			Pass
High	21.84	152.76			Pass

802.11ax-20 MHz(SU) Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	24.60	288.40	36	4	Pass
Middle	24.67	293.09			Pass
High	23.20	208.93			Pass

802.11ax-40 MHz(SU) Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	23.18	207.97	36	4	Pass
Middle	24.34	271.64			Pass
High	23.21	209.41			Pass

A.2 Occupied Bandwidth

Test Data

802.11b Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	8.200000	12.715000	≥500
Middle	8.200000	12.678000	≥500
High	8.200000	12.664000	≥500

802.11g Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	15.400000	17.558000	≥500
Middle	15.400000	17.458000	≥500
High	15.400000	17.334000	≥500

802.11n-20MHz Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	15.300000	18.577000	≥500
Middle	15.400000	18.469000	≥500
High	15.300000	18.441000	≥500

802.11n-40MHz Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	35.200000	36.781000	≥500
Middle	35.200000	36.801000	≥500
High	35.300000	36.577000	≥500

802.11ax-20 MHz(SU) Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	17.900000	18.951000	≥500
Middle	16.100000	19.014000	≥500
High	16.000000	19.018000	≥500

802.11ax-40 MHz(SU) Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	35.500000	37.878000	≥500
Middle	35.500000	37.780000	≥500
High	35.200000	37.787000	≥500

Test Plots

6 dB Bandwidth

802.11b LOW CHANNEL

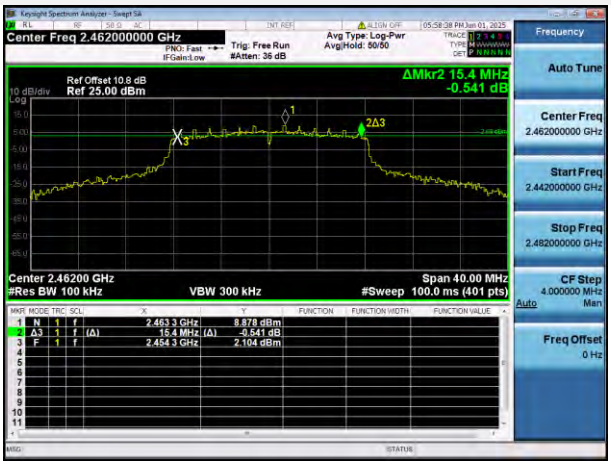
802.11b MIDDLE CHANNEL

802.11b HIGH CHANNEL

802.11g LOW CHANNEL

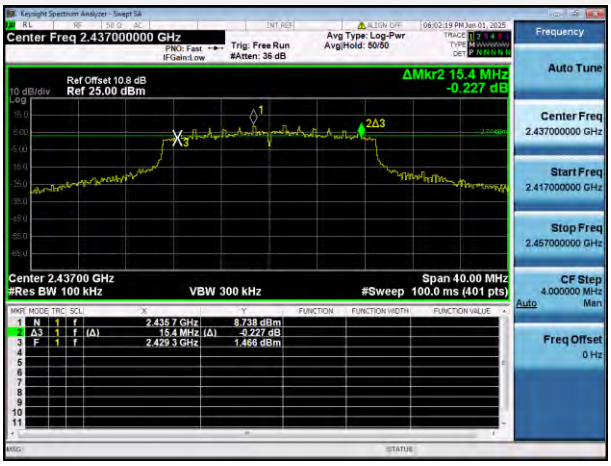
802.11g MIDDLE CHANNEL

802.11g HIGH CHANNEL



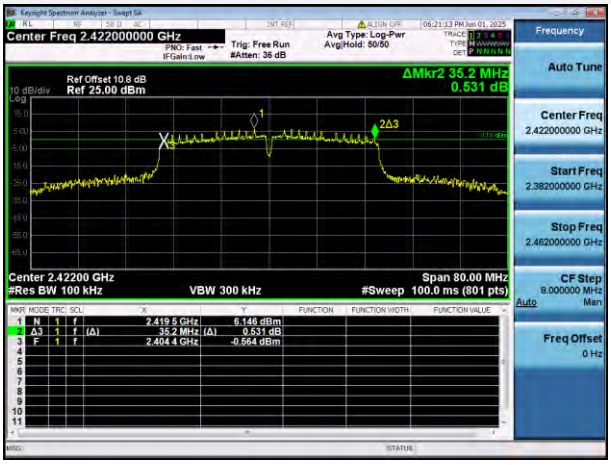
802.11n-20 MHz LOW CHANNEL

802.11n-20 MHz MIDDLE CHANNEL

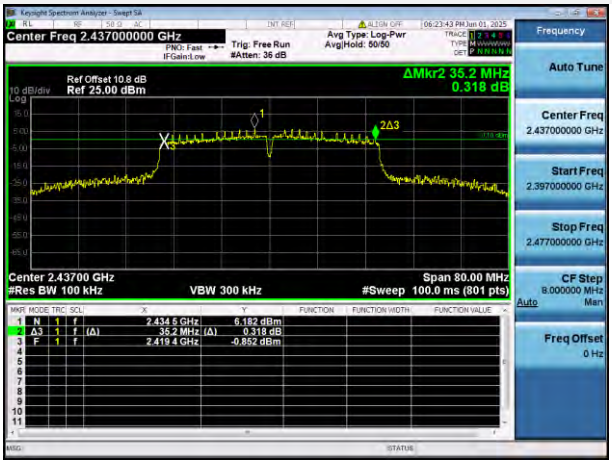


802.11n-20 MHz HIGH CHANNEL

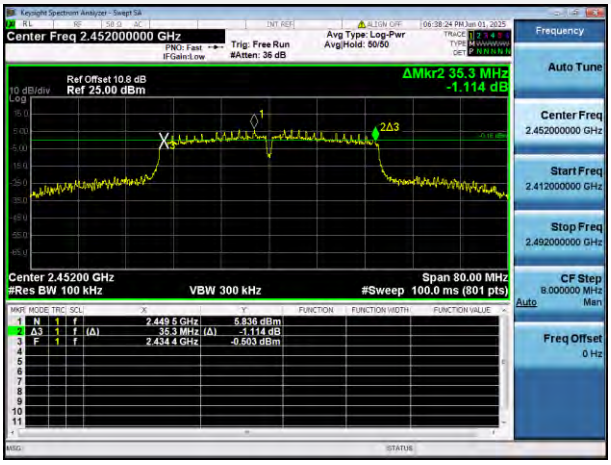
802.11n-40 MHz LOW CHANNEL



802.11n-40 MHz MIDDLE CHANNEL

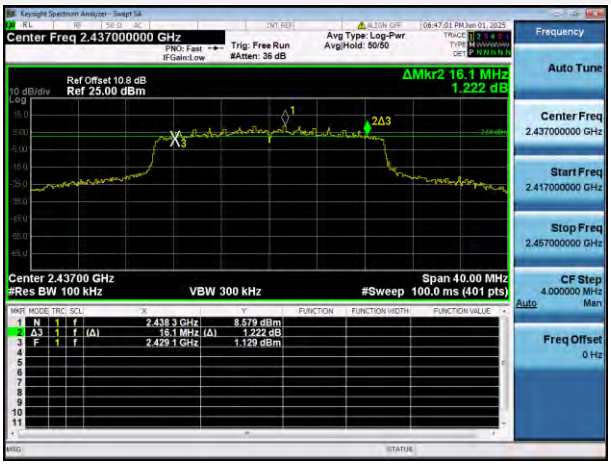


802.11n-40 MHz HIGH CHANNEL



802.11ax-20 MHz(SU) LOW CHANNEL

802.11ax-20 MHz(SU) MIDDLE CHANNEL



802.11ax-20 MHz(SU) HIGH CHANNEL

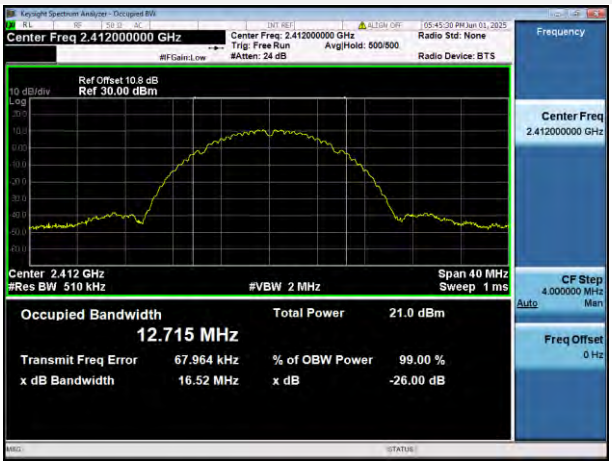
802.11ax-40 MHz(SU) LOW CHANNEL

802.11ax-40 MHz(SU) MIDDLE CHANNEL

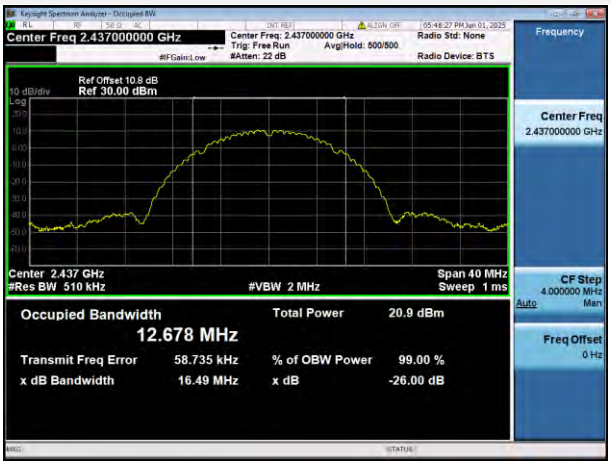
802.11ax-40 MHz(SU) HIGH CHANNEL

99% Bandwidth

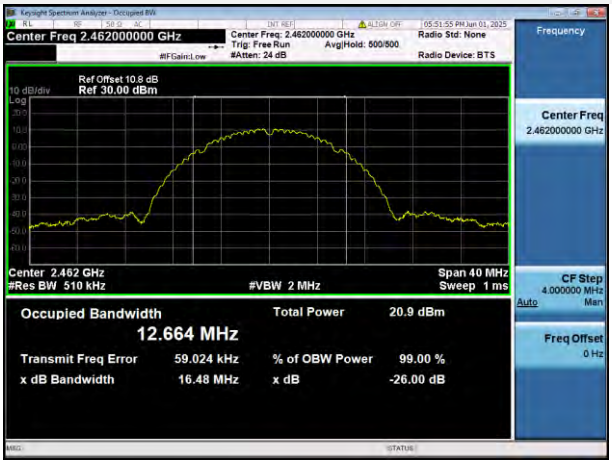
802.11b LOW CHANNEL



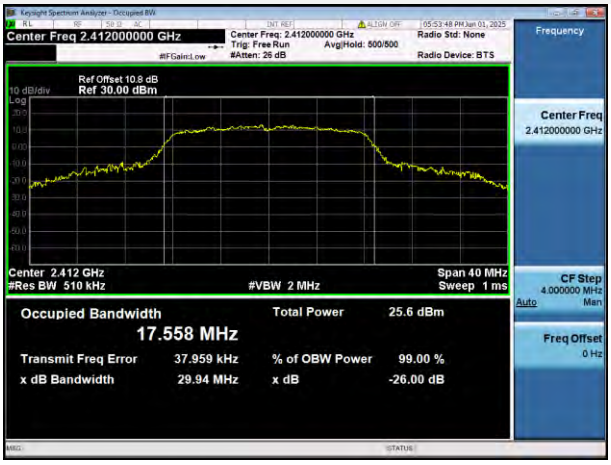
802.11b MIDDLE CHANNEL



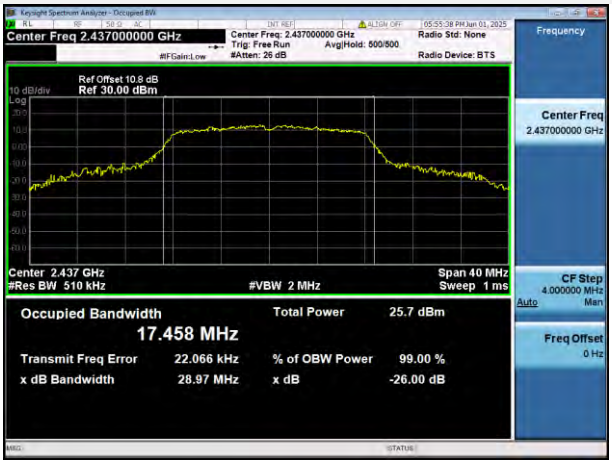
802.11b HIGH CHANNEL



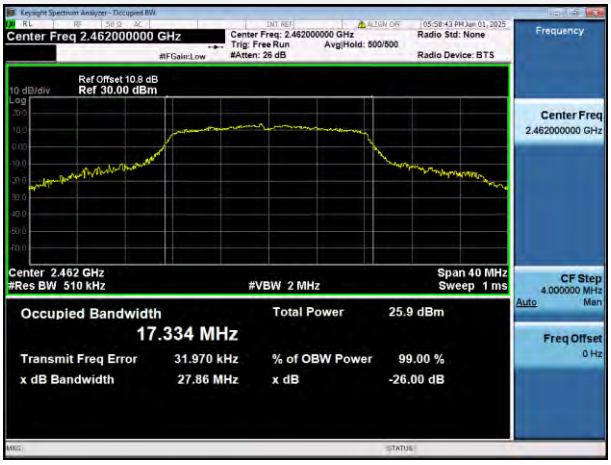
802.11g LOW CHANNEL



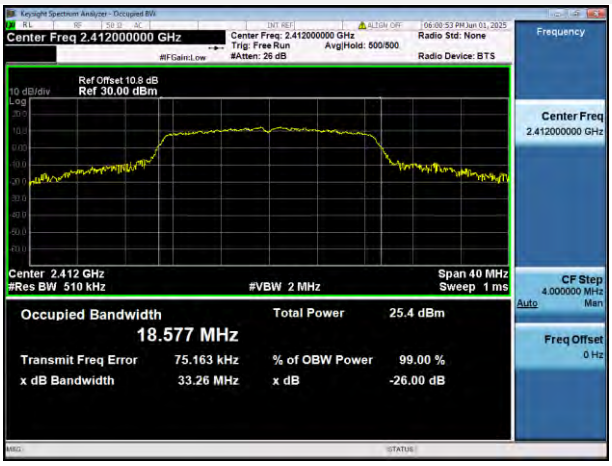
802.11g MIDDLE CHANNEL



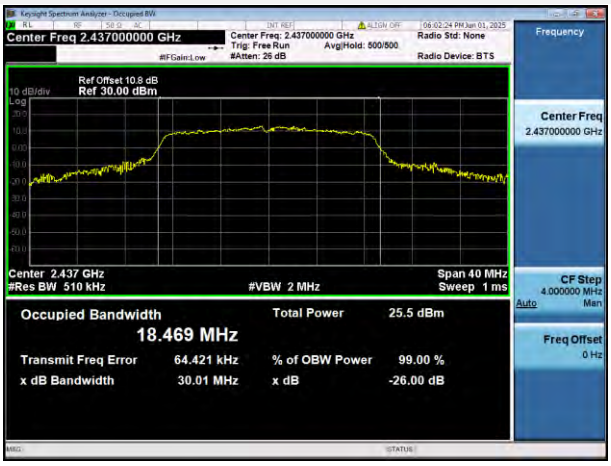
802.11g HIGH CHANNEL



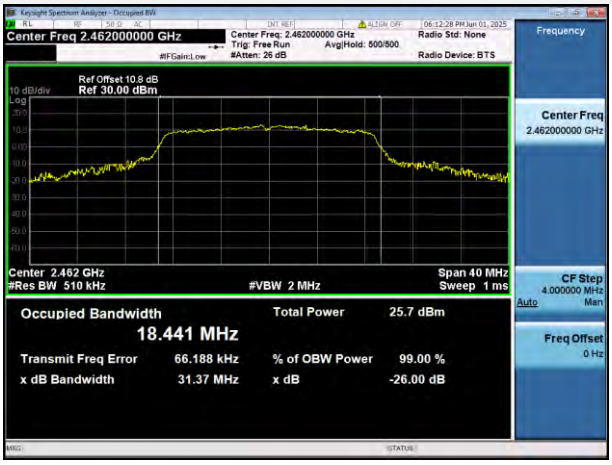
802.11n-20 MHz LOW CHANNEL



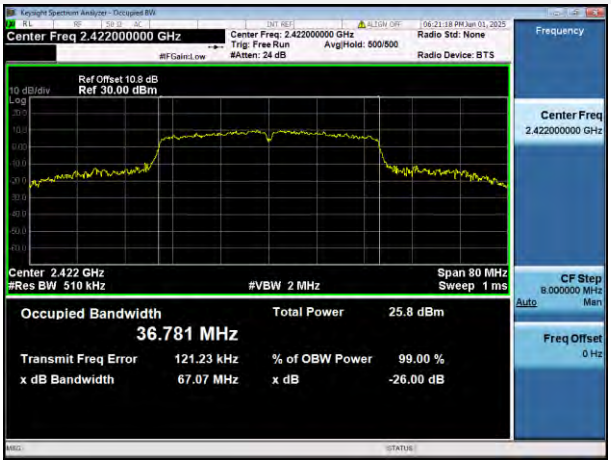
802.11n-20 MHz MIDDLE CHANNEL



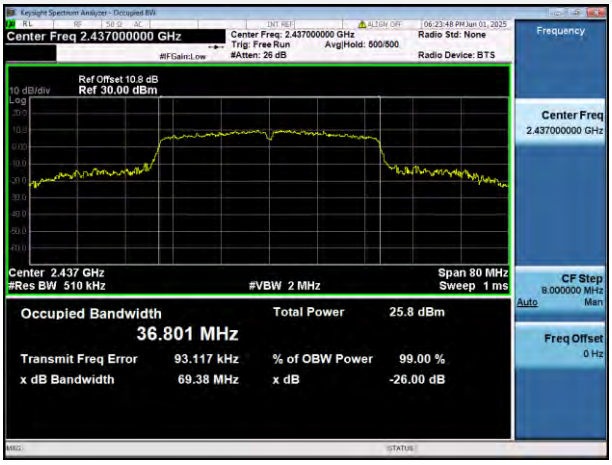
802.11n-20 MHz HIGH CHANNEL



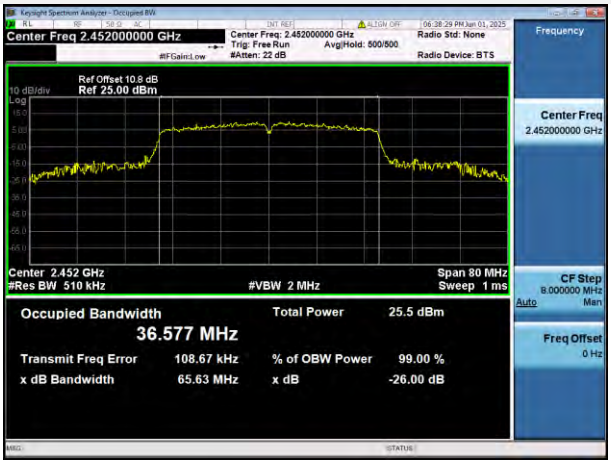
802.11n-40 MHz LOW CHANNEL



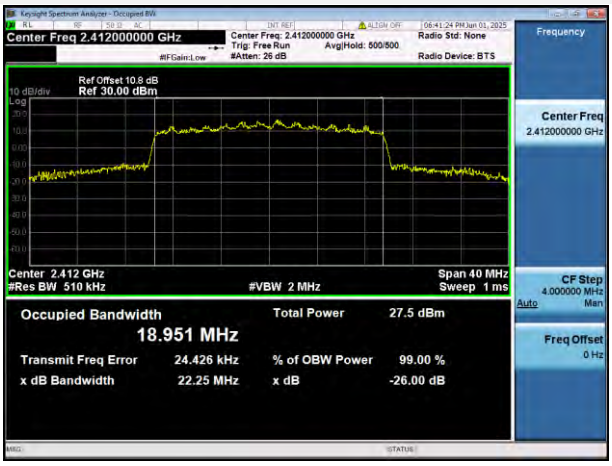
802.11n-40 MHz MIDDLE CHANNEL



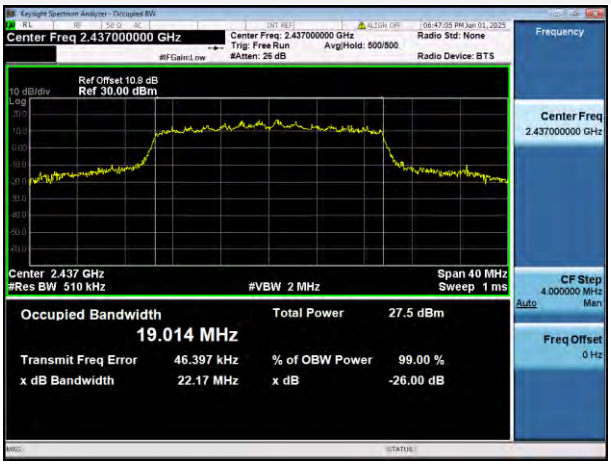
802.11n-40 MHz HIGH CHANNEL



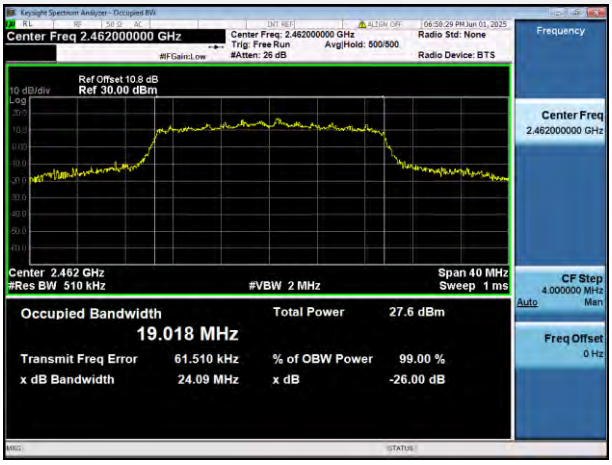
802.11ax-20 MHz(SU) LOW CHANNEL



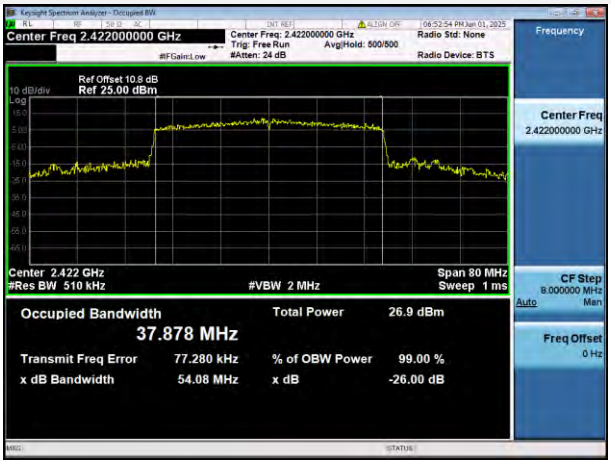
802.11ax-20 MHz(SU) MIDDLE CHANNEL



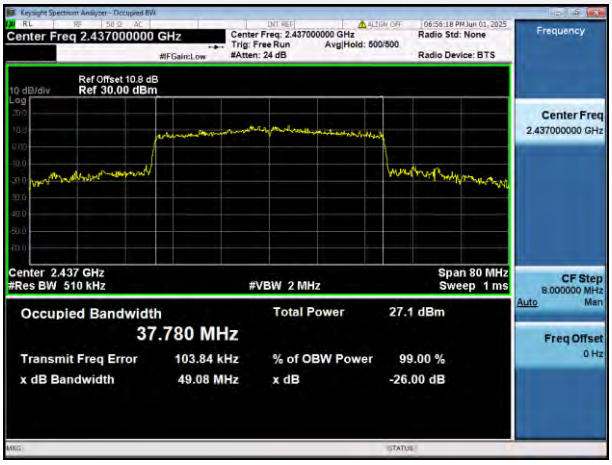
802.11ax-20 MHz(SU) HIGH CHANNEL



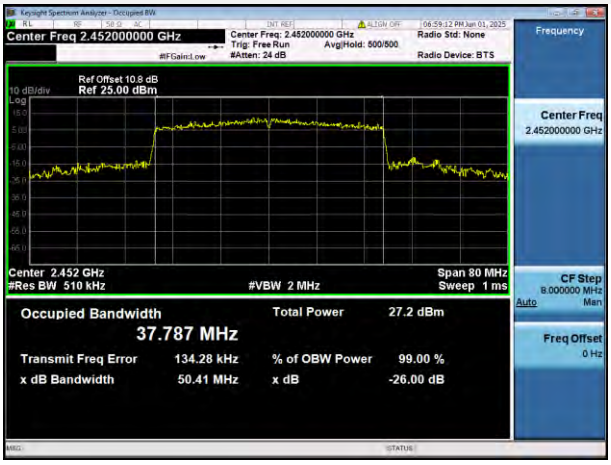
802.11ax-40 MHz(SU) LOW CHANNEL



802.11ax-40 MHz(SU) MIDDLE CHANNEL



802.11ax-40 MHz(SU) HIGH CHANNEL



A.3 Conducted Spurious Emissions

Test Data

802.11b Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-38.29	9.51	-10.49	Pass
Middle	-38.28	9.47	-10.53	Pass
High	-34.48	9.79	-10.21	Pass

802.11g Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-38.04	7.91	-12.09	Pass
Middle	-37.89	9.41	-10.59	Pass
High	-38.96	7.17	-12.83	Pass

802.11n-20MHz Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-38.11	6.91	-13.09	Pass
Middle	-37.83	8.30	-11.70	Pass
High	-37.28	6.20	-13.80	Pass

802.11n-40MHz Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-39.11	2.64	-17.36	Pass
Middle	-38.28	6.28	-13.72	Pass
High	-39.08	2.86	-17.14	Pass

802.11ax-20 MHz(SU) Mode:

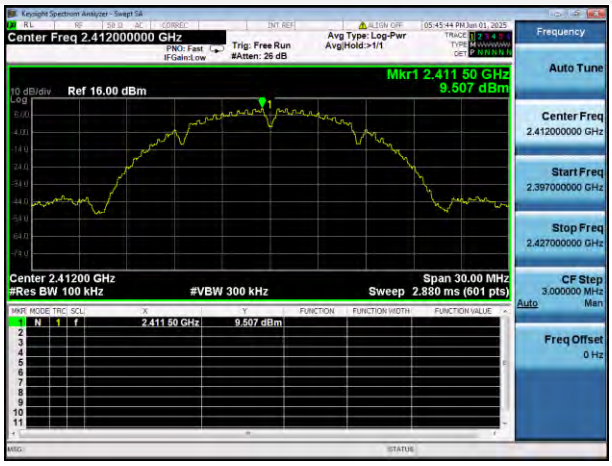
Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-38.59	6.90	-13.10	Pass
Middle	-38.24	9.28	-10.72	Pass
High	-38.06	5.87	-14.13	Pass

802.11ax-40 MHz(SU) Mode:

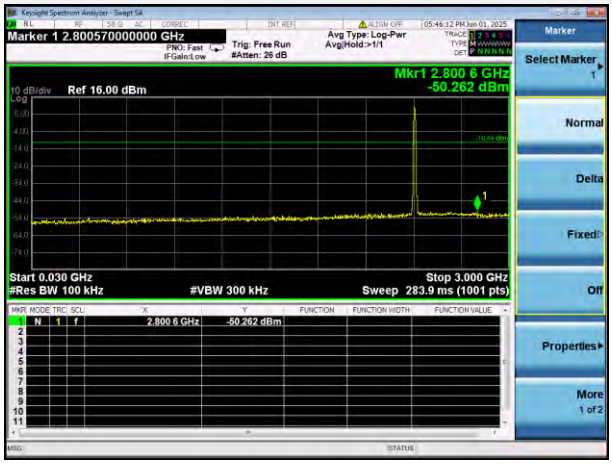
Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-43.47	2.78	-17.22	Pass
Middle	-39.94	6.29	-13.71	Pass
High	-39.49	2.81	-17.19	Pass

Test Plots

802.11b LOW CHANNEL CARRIER LEVEL



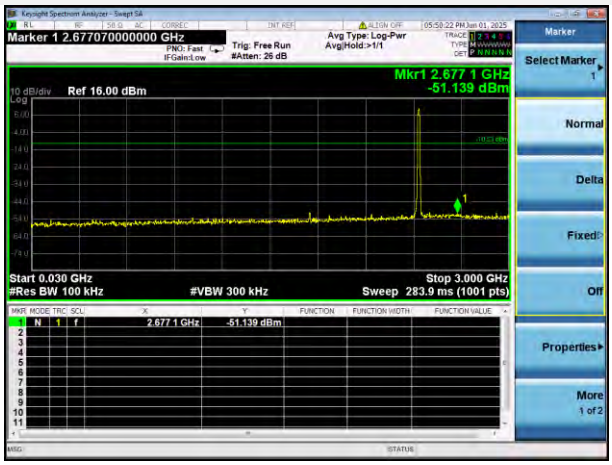
802.11b LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



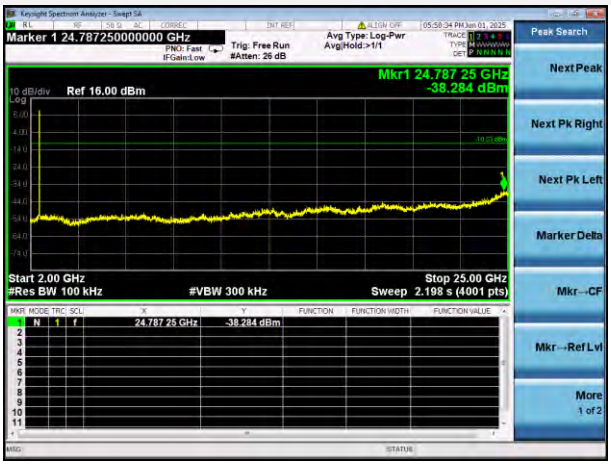
802.11b LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

802.11b MIDDLE CHANNEL CARRIER LEVEL

802.11b MIDDLE CHANNEL, SPURIOUS
30 MHz ~ 3 GHz

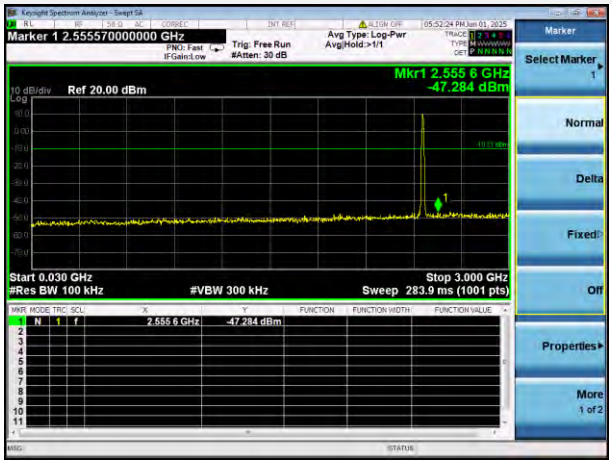


802.11b MIDDLE CHANNEL, SPURIOUS
2 GHz ~ 25 GHz



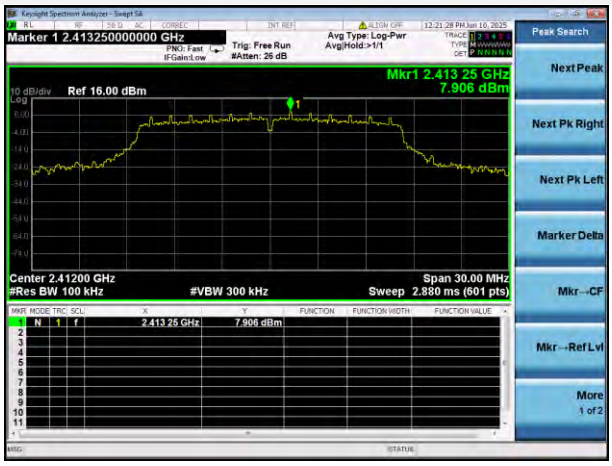
802.11b HIGH CHANNEL CARRIER LEVEL

802.11b HIGH CHANNEL, SPURIOUS
30 MHz ~ 3 GHz

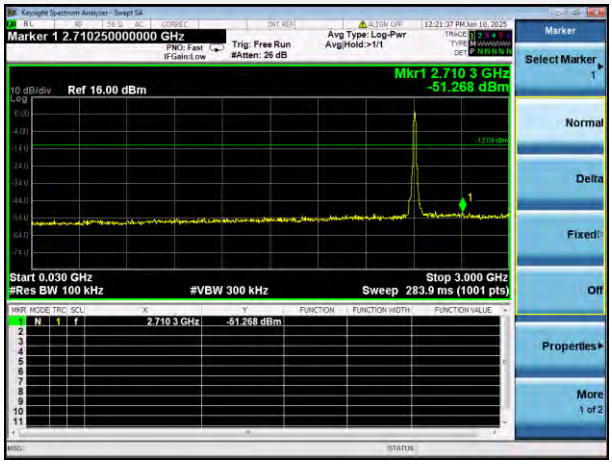


802.11b HIGH CHANNEL, SPURIOUS
2 GHz ~ 25 GHz

802.11g LOW CHANNEL CARRIER LEVEL

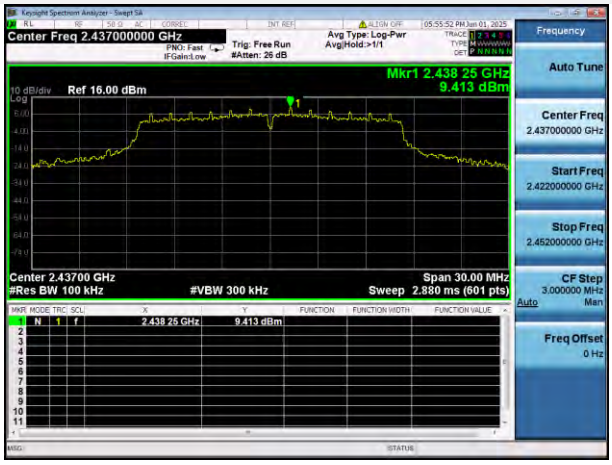


802.11g LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

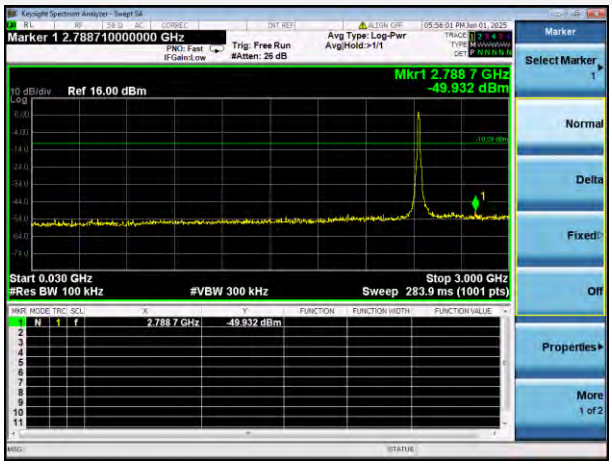


802.11g LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

802.11g MIDDLE CHANNEL CARRIER LEVEL

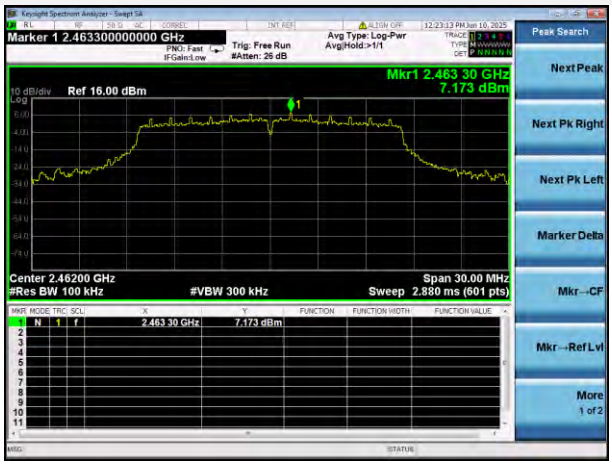


802.11g MIDDLE CHANNEL, SPURIOUS
30 MHz ~ 3 GHz

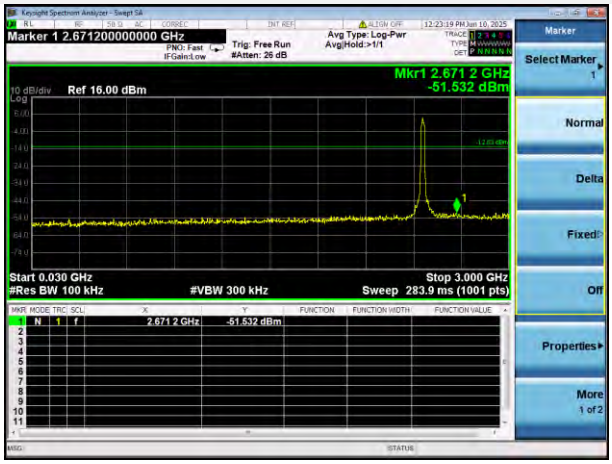


802.11g MIDDLE CHANNEL, SPURIOUS
2 GHz ~ 25 GHz

802.11g HIGH CHANNEL CARRIER LEVEL

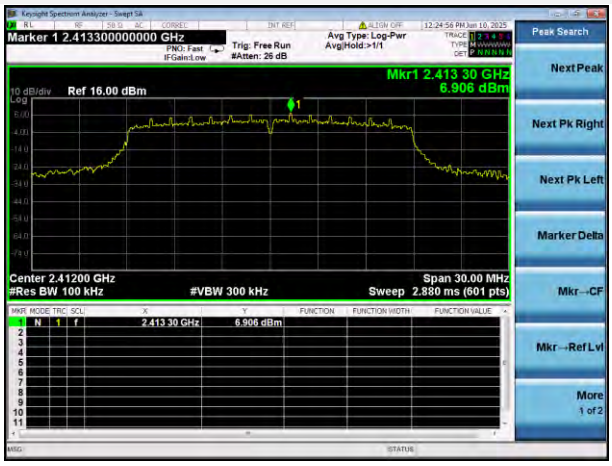


802.11g HIGH CHANNEL, SPURIOUS
30 MHz ~ 3 GHz

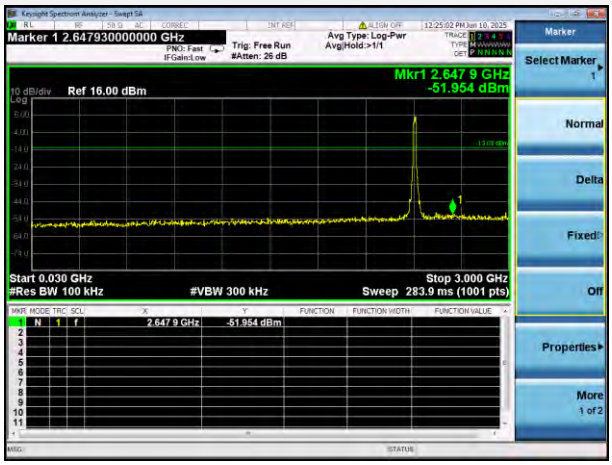


802.11g HIGH CHANNEL, SPURIOUS
2 GHz ~ 25 GHz

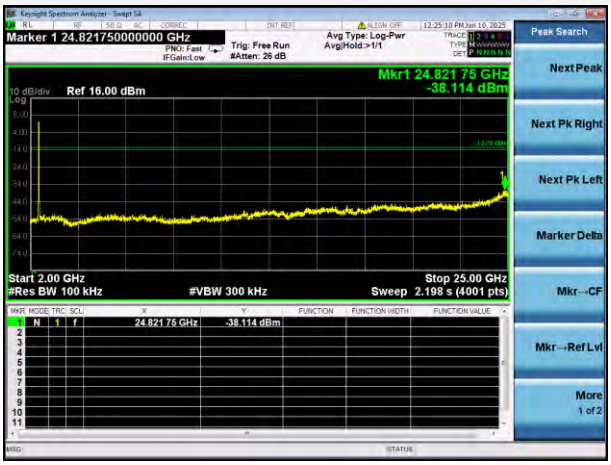
802.11n-20 MHz LOW CHANNEL CARRIER LEVEL



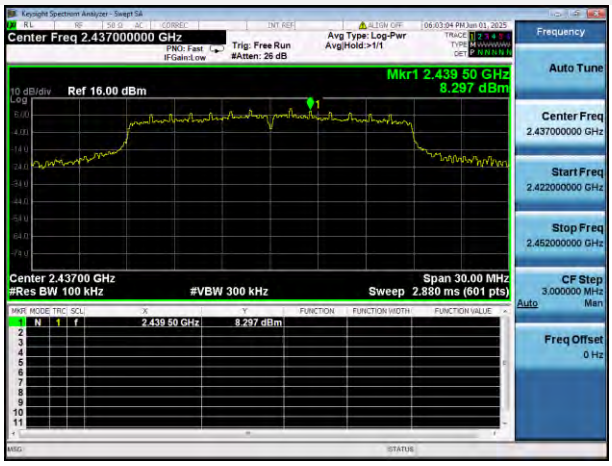
802.11n-20 MHz LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



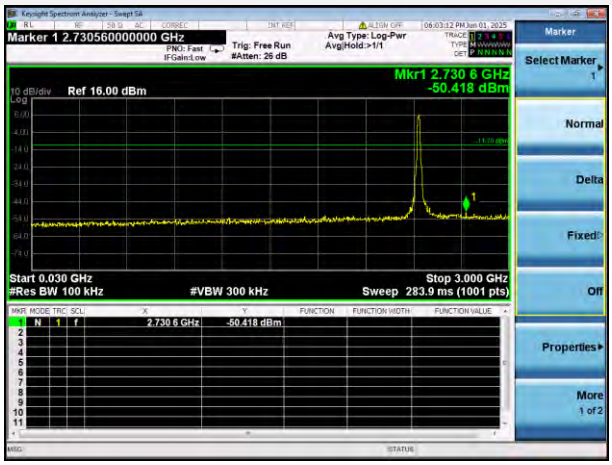
802.11n-20 MHz LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



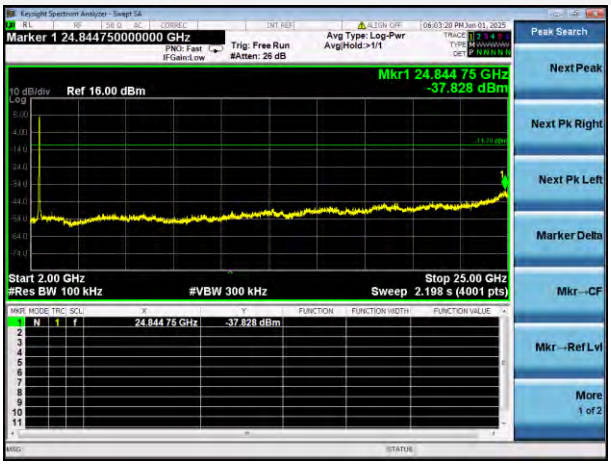
802.11n-20 MHz MIDDLE CHANNEL CARRIER LEVEL



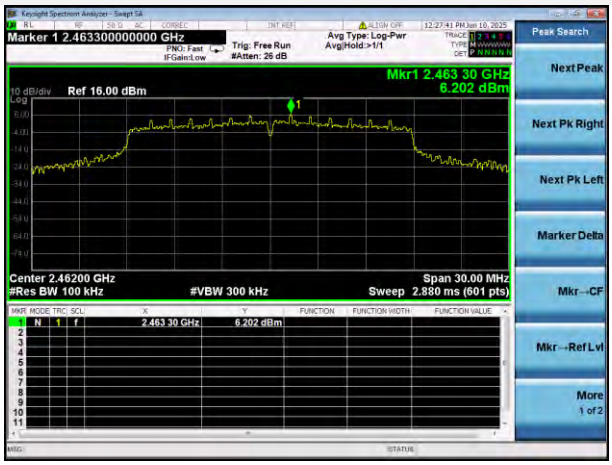
802.11n-20 MHz MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



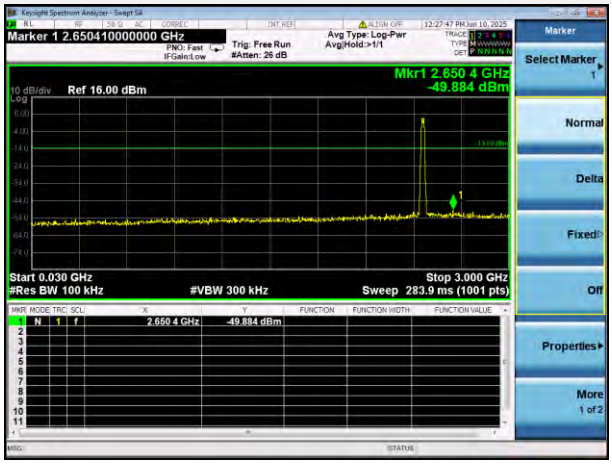
802.11n-20 MHz MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



802.11n-20 MHz HIGH CHANNEL CARRIER LEVEL



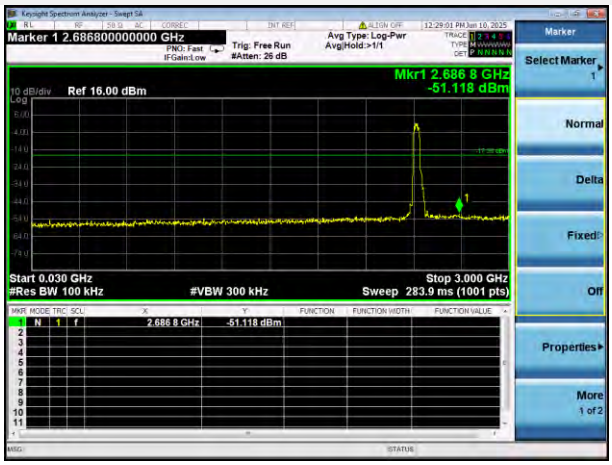
802.11n-20 MHz HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



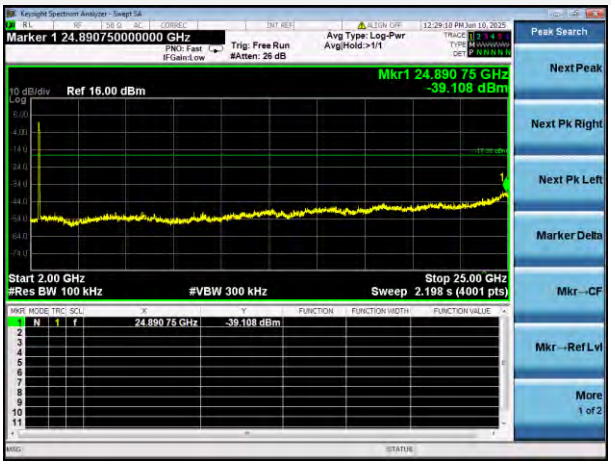
802.11n-20 MHz HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

802.11n-40 MHz LOW CHANNEL CARRIER LEVEL

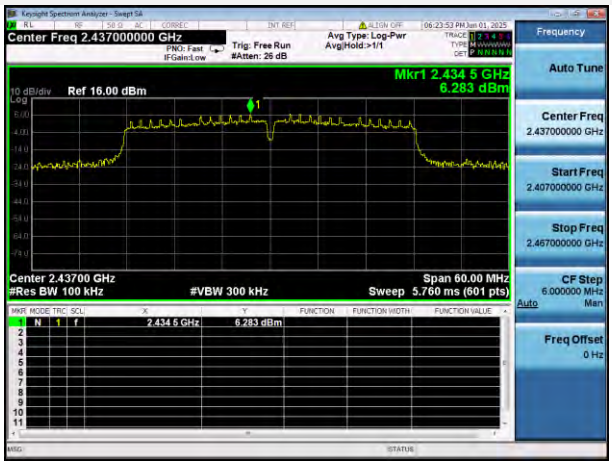
802.11n-40 MHz LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



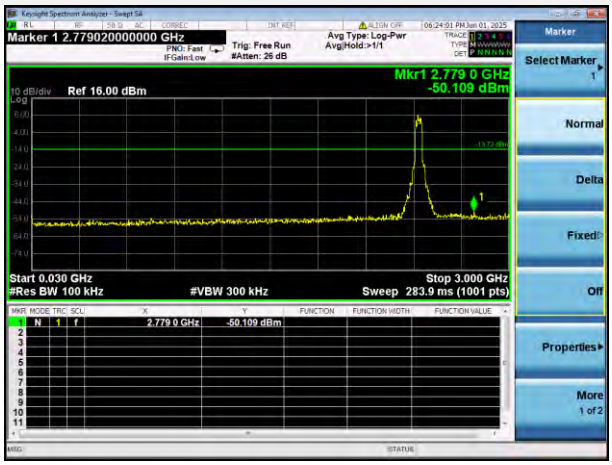
802.11n-40 MHz LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



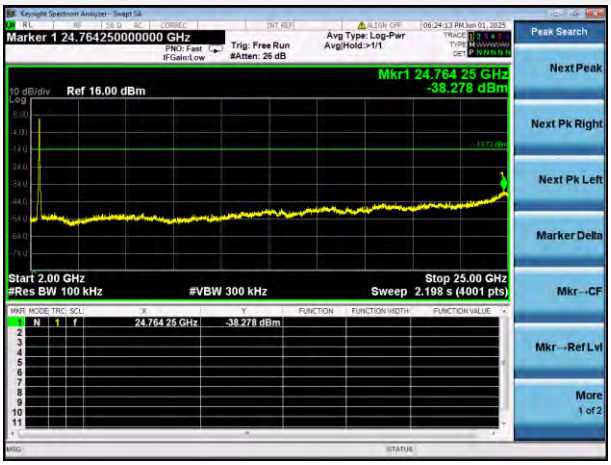
802.11n-40 MHz MIDDLE CHANNEL CARRIER LEVEL



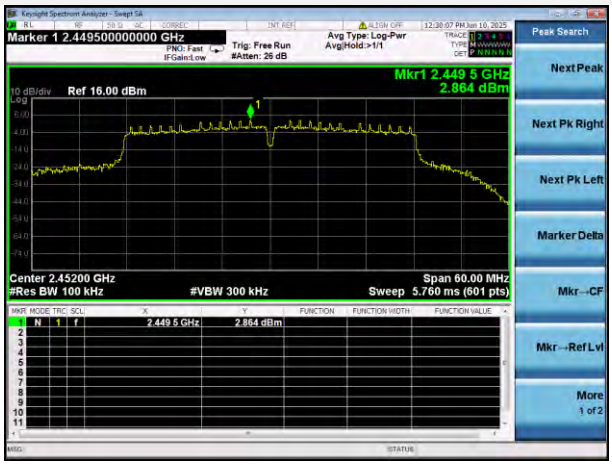
802.11n-40 MHz MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



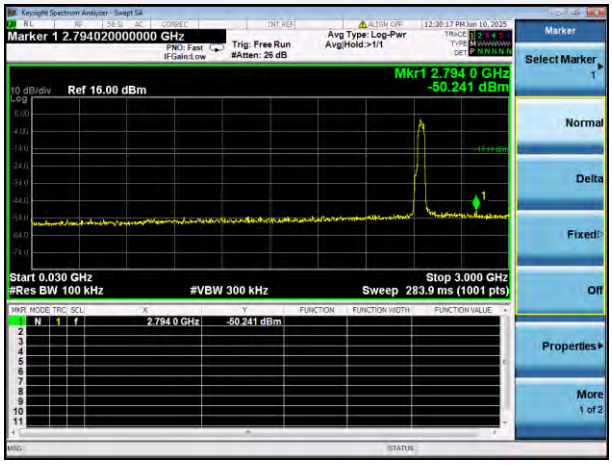
802.11n-40 MHz MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



802.11n-40 MHz HIGH CHANNEL CARRIER LEVEL

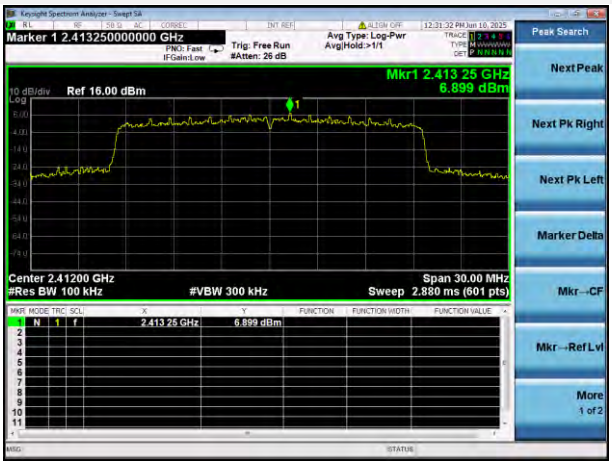


802.11n-40 MHz HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

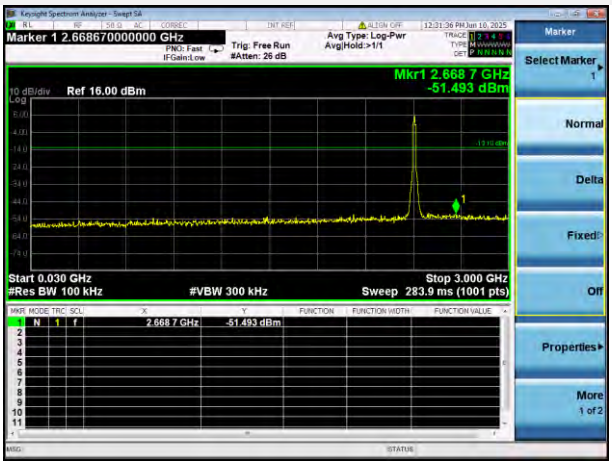


802.11n-40 MHz HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

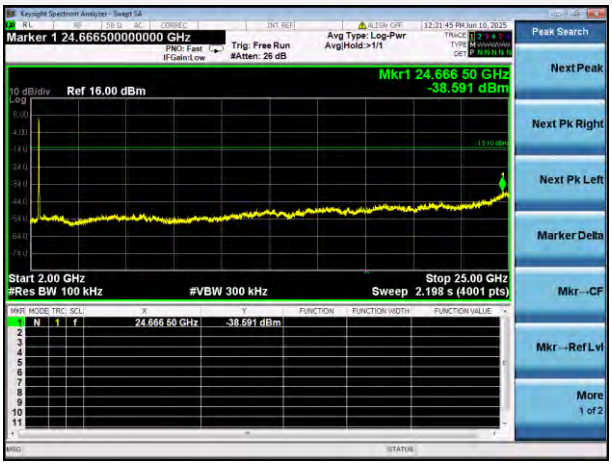
802.11ax-20 MHz(SU) LOW CHANNEL CARRIER LEVEL



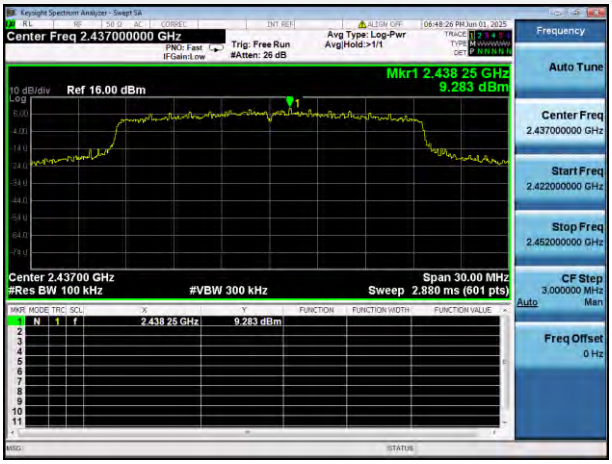
802.11ax-20 MHz(SU) LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



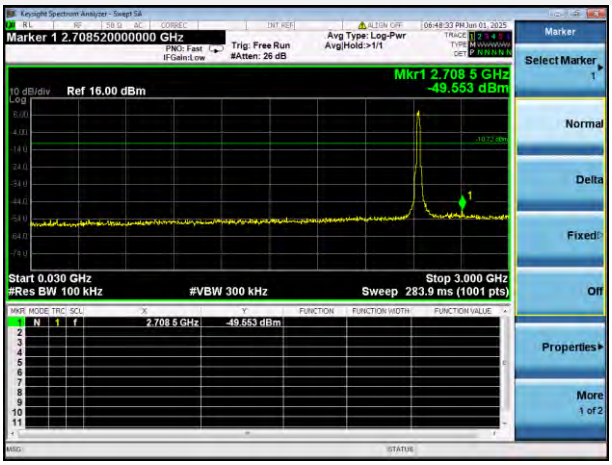
802.11ax-20 MHz(SU) LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



802.11ax-20 MHz(SU) MIDDLE CHANNEL CARRIER LEVEL

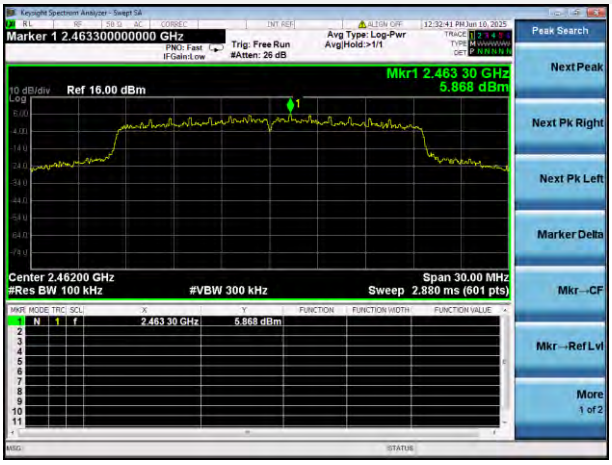


802.11ax-20 MHz(SU) MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

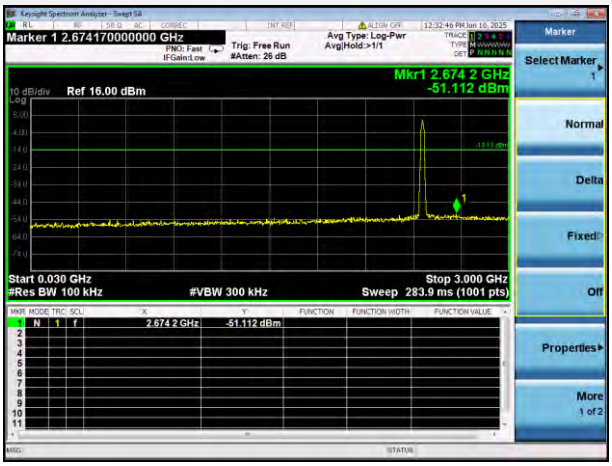


802.11ax-20 MHz(SU) MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

802.11ax-20 MHz(SU) HIGH CHANNEL CARRIER LEVEL

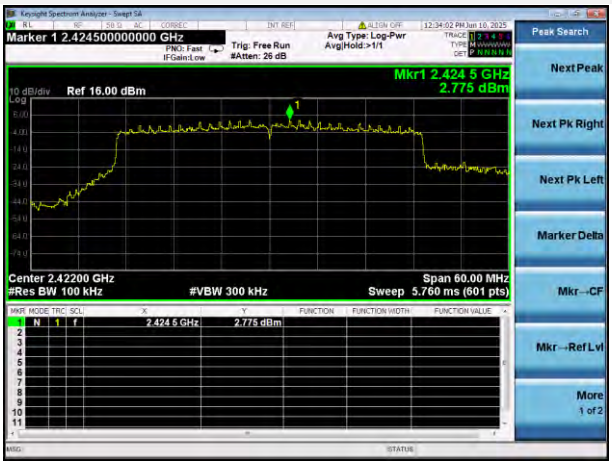


802.11ax-20 MHz(SU) HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz

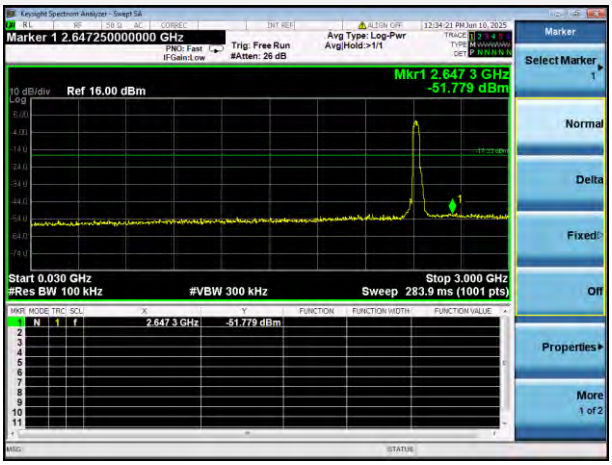


802.11ax-20 MHz(SU) HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

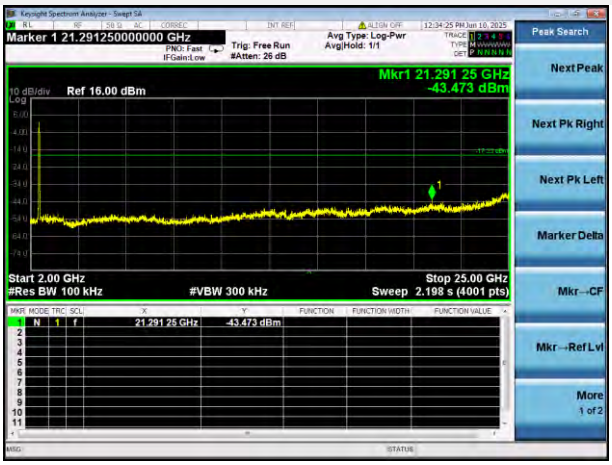
802.11ax-40 MHz(SU) LOW CHANNEL CARRIER LEVEL



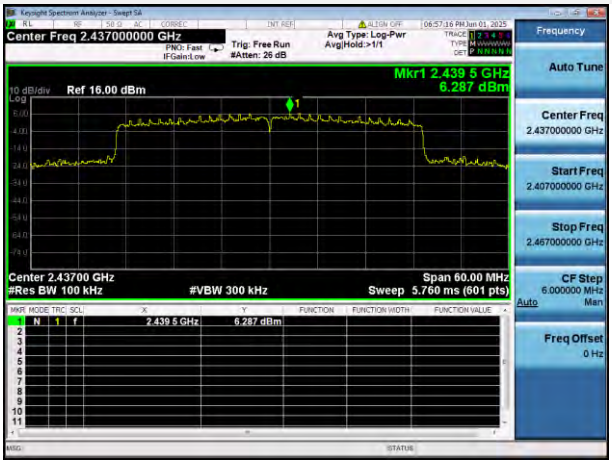
802.11ax-40 MHz(SU) LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



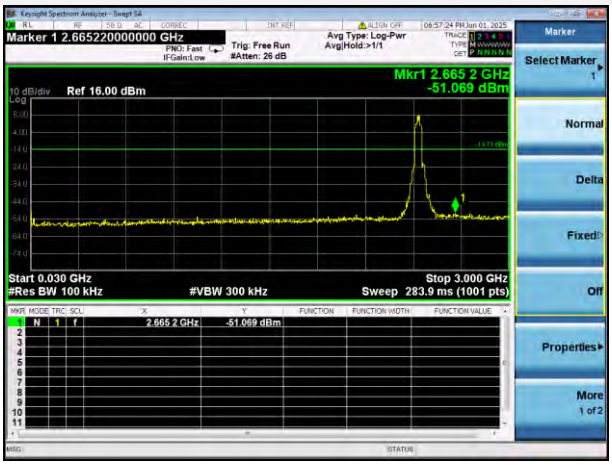
802.11ax-40 MHz(SU) LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



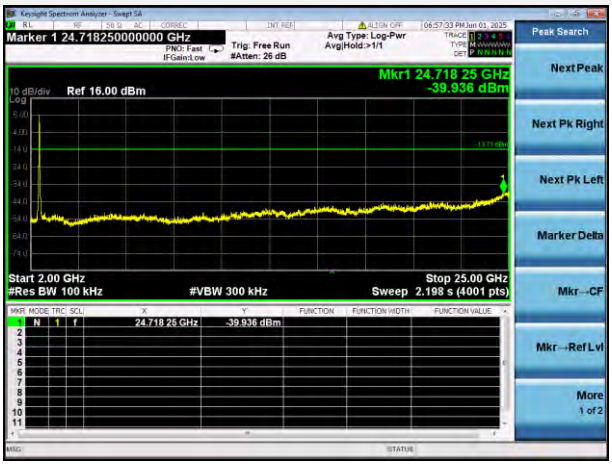
802.11ax-40 MHz(SU) MIDDLE CHANNEL CARRIER LEVEL



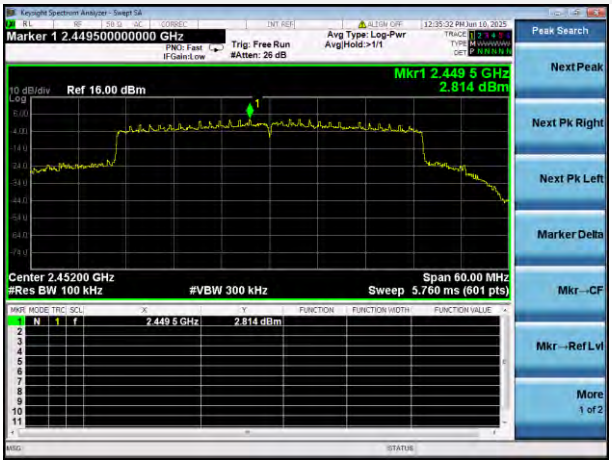
802.11ax-40 MHz(SU) MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



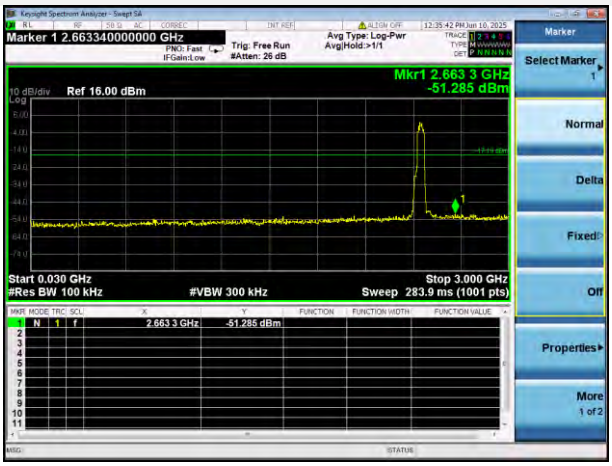
802.11ax-40 MHz(SU) MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



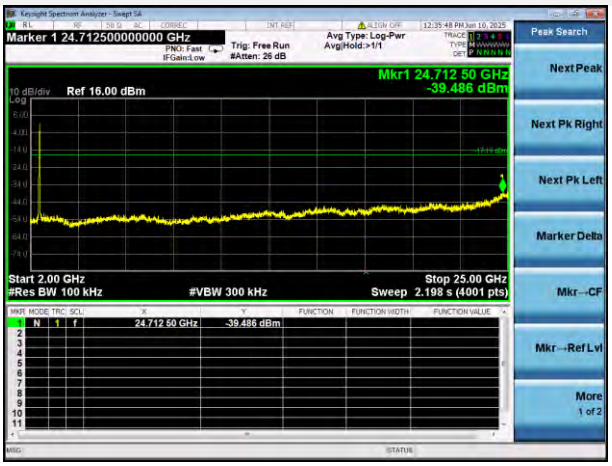
802.11ax-40 MHz(SU) HIGH CHANNEL CARRIER LEVEL



802.11ax-40 MHz(SU) HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



802.11ax-40 MHz(SU) HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



A.4 Band Edge (Authorized-band band-edge)

Note: The 99% OBW of the fundamental emission is without 2 MHz of the authorized band.

Test Data

802.11b Mode:

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-40.89	9.51	-10.49	Pass
High Channel	-46.96	9.79	-10.21	Pass

802.11g Mode:

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-21.48	7.91	-12.09	Pass
High Channel	-38.60	7.17	-12.83	Pass

802.11n-20 MHz Mode:

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-26.66	6.91	-13.09	Pass
High Channel	-48.93	6.20	-13.80	Pass

802.11n-40 MHz Mode:

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-32.76	2.64	-17.36	Pass
High Channel	-45.17	2.86	-17.14	Pass

802.11ax-20 MHz(SU) Mode:

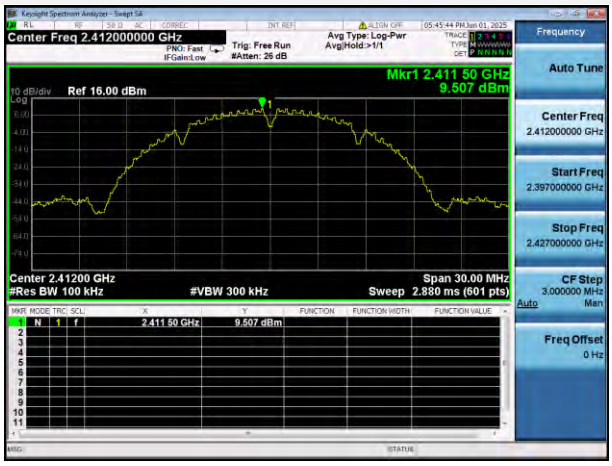
Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-26.30	6.90	-13.10	Pass
High Channel	-49.62	5.87	-14.13	Pass

802.11ax-40 MHz(SU) Mode:

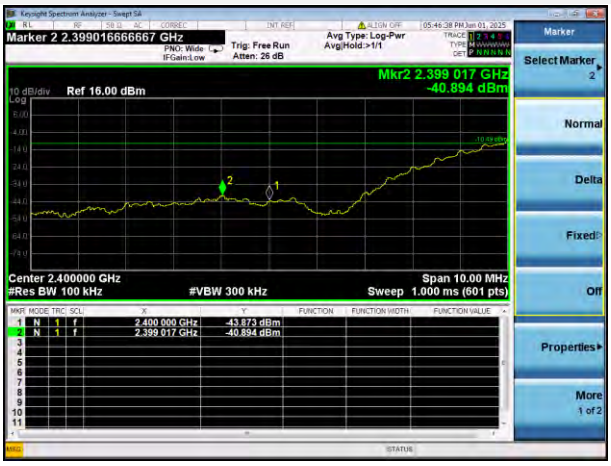
Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-31.50	2.78	-17.22	Pass
High Channel	-45.44	2.81	-17.19	Pass

Test Plots

802.11b LOW CHANNEL, CARRIER LEVEL

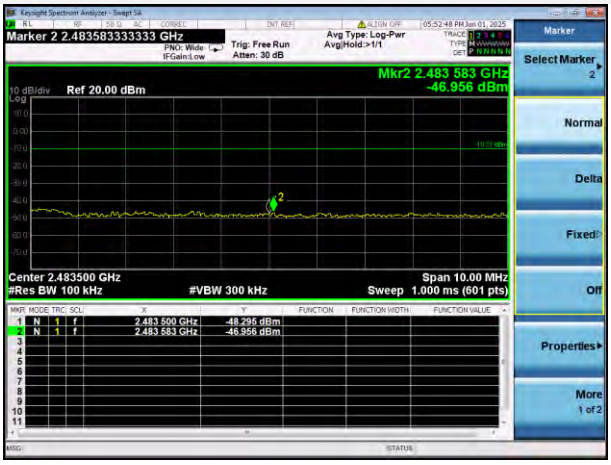


802.11b LOW CHANNEL, BAND EDGE



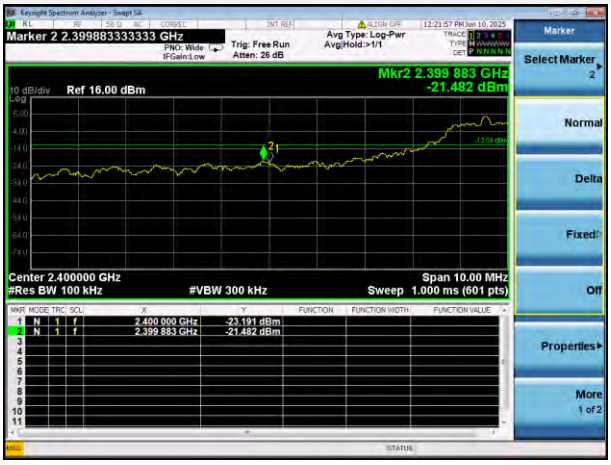
802.11b HIGH CHANNEL, CARRIER LEVEL

802.11b HIGH CHANNEL, BAND EDGE

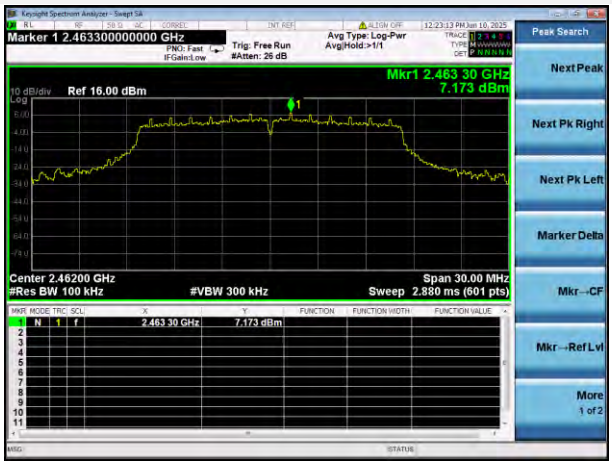


802.11g LOW CHANNEL, CARRIER LEVEL

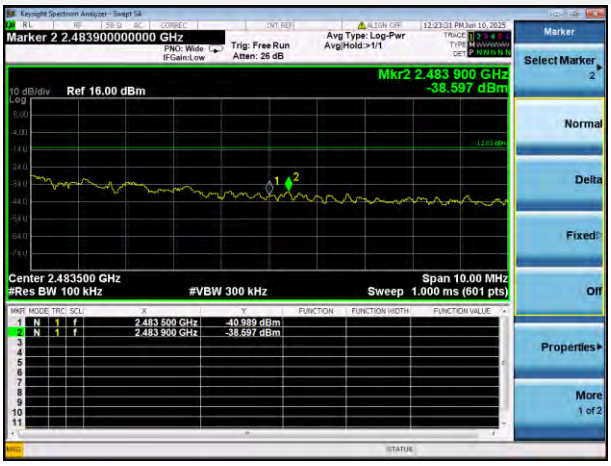
802.11g LOW CHANNEL, BAND EDGE



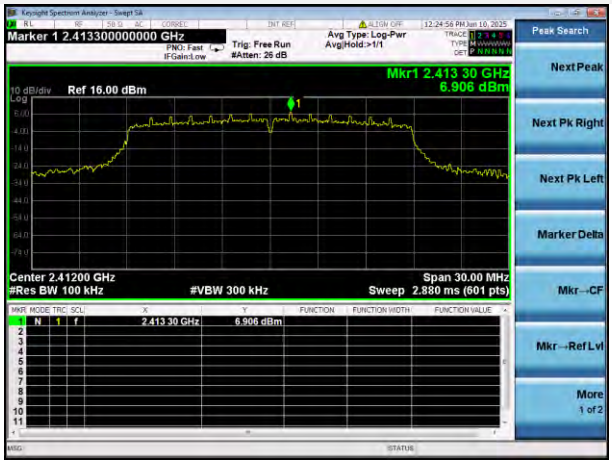
802.11g HIGH CHANNEL, CARRIER LEVEL



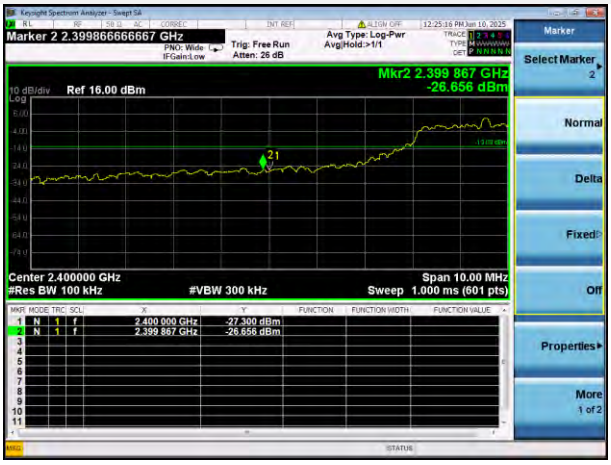
802.11g HIGH CHANNEL, BAND EDGE



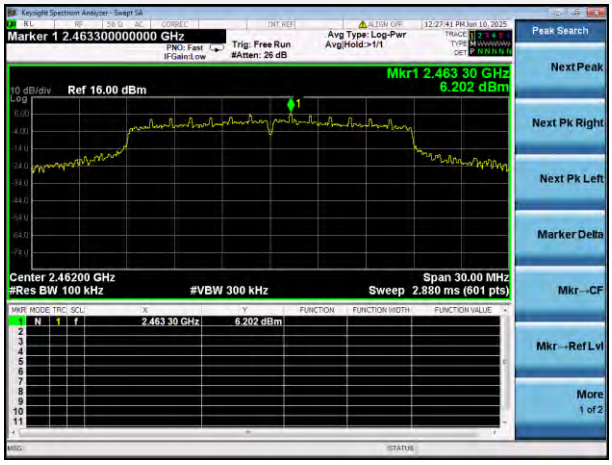
802.11n-20 MHz LOW CHANNEL, CARRIER LEVEL



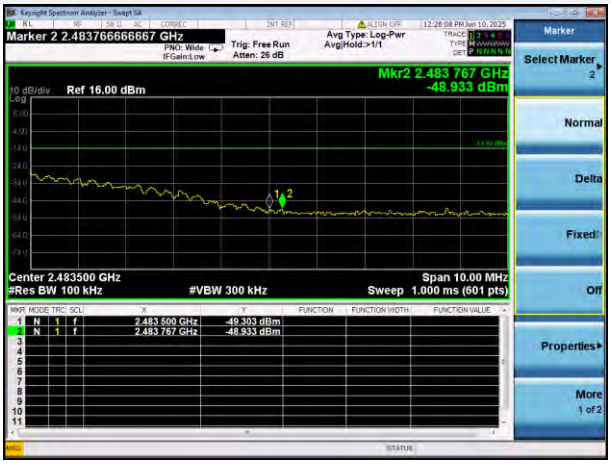
802.11n-20 MHz LOW CHANNEL, BAND EDGE



802.11n-20 MHz HIGH CHANNEL, CARRIER LEVEL

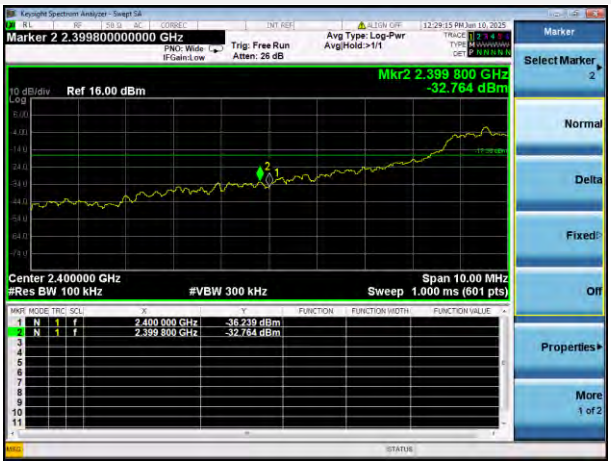


802.11n-20 MHz HIGH CHANNEL, BAND EDGE

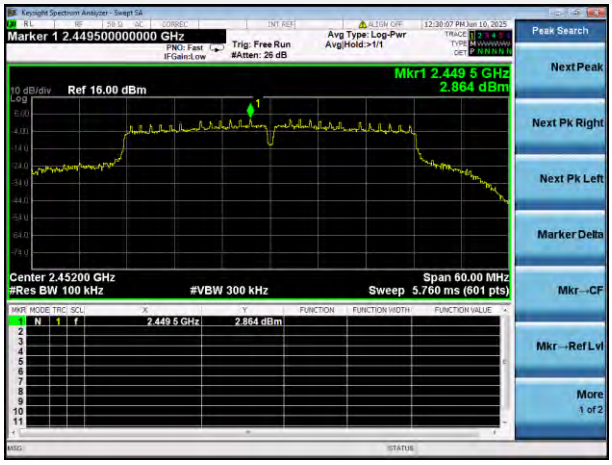


802.11n-40 MHz LOW CHANNEL, CARRIER LEVEL

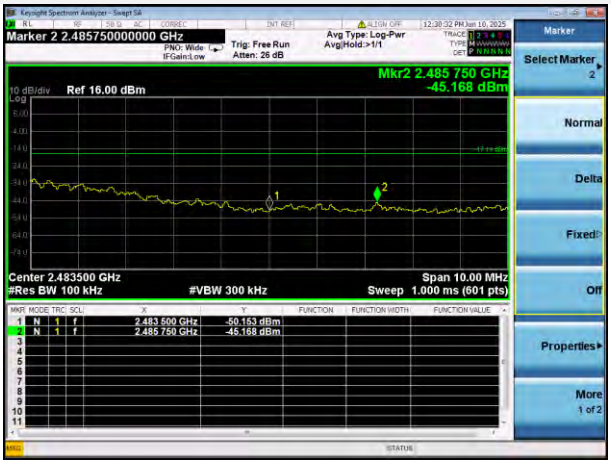
802.11n-40 MHz LOW CHANNEL, BAND EDGE



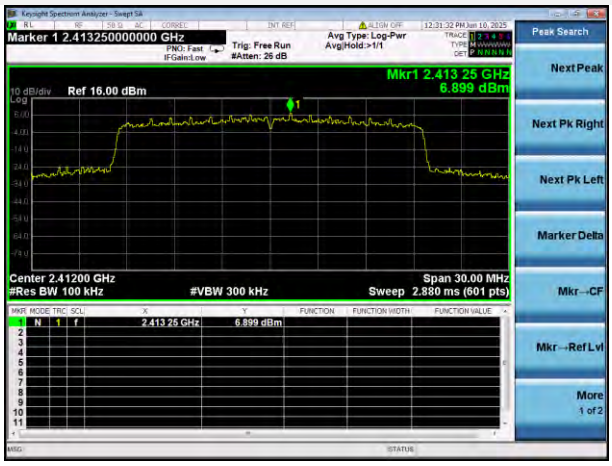
802.11n-40 MHz HIGH CHANNEL, CARRIER LEVEL



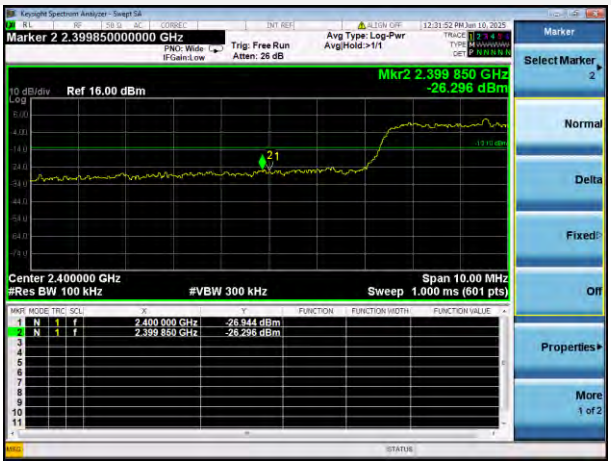
802.11n-40 MHz HIGH CHANNEL, BAND EDGE



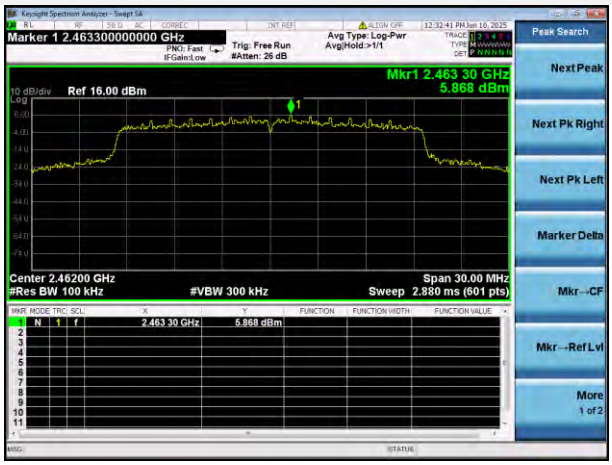
802.11ax-20 MHz(SU) LOW CHANNEL, CARRIER LEVEL



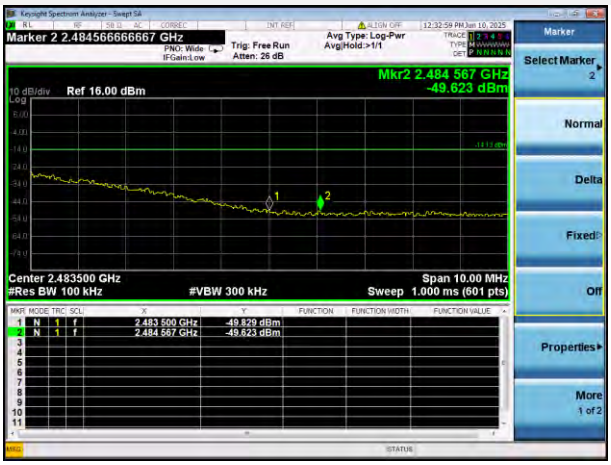
802.11ax-20 MHz(SU) LOW CHANNEL, BAND EDGE



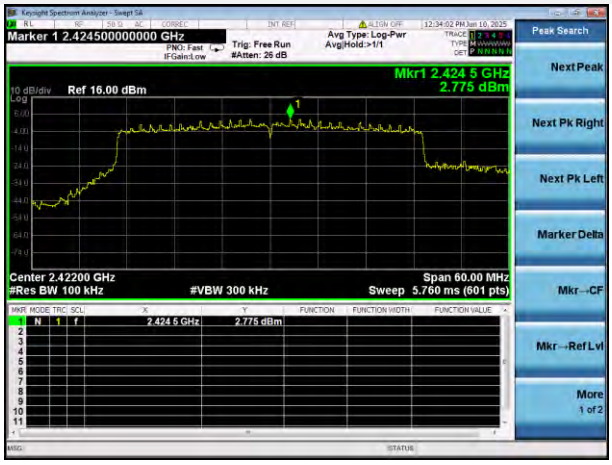
802.11ax-20 MHz(SU) HIGH CHANNEL, CARRIER LEVEL



802.11ax-20 MHz(SU) HIGH CHANNEL, BAND EDGE

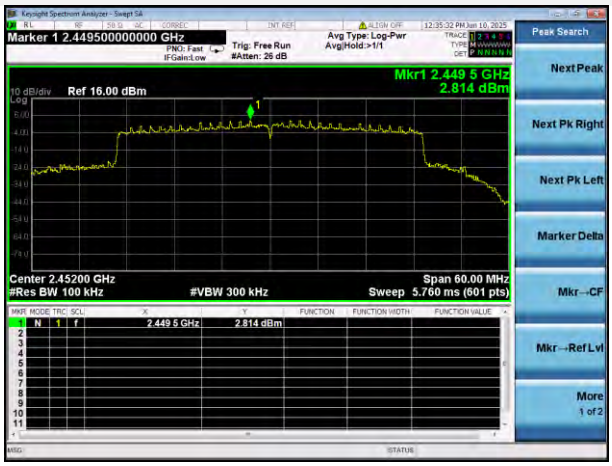


802.11ax-40 MHz(SU) LOW CHANNEL, CARRIER LEVEL

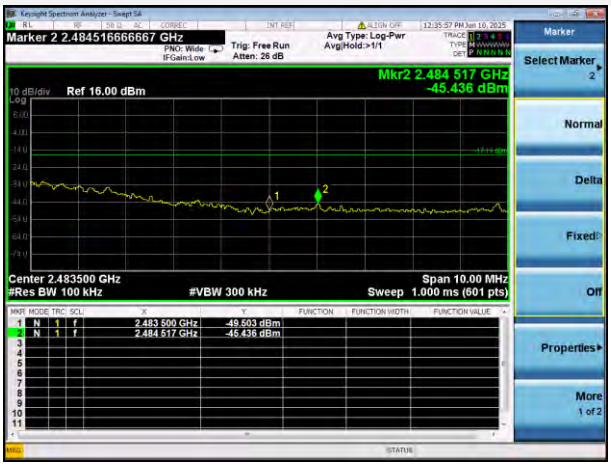


802.11ax-40 MHz(SU) LOW CHANNEL, BAND EDGE

802.11ax-40 MHz(SU) HIGH CHANNEL, CARRIER LEVEL



802.11ax-40 MHz(SU) HIGH CHANNEL, BAND EDGE



A.5 Conducted Emissions

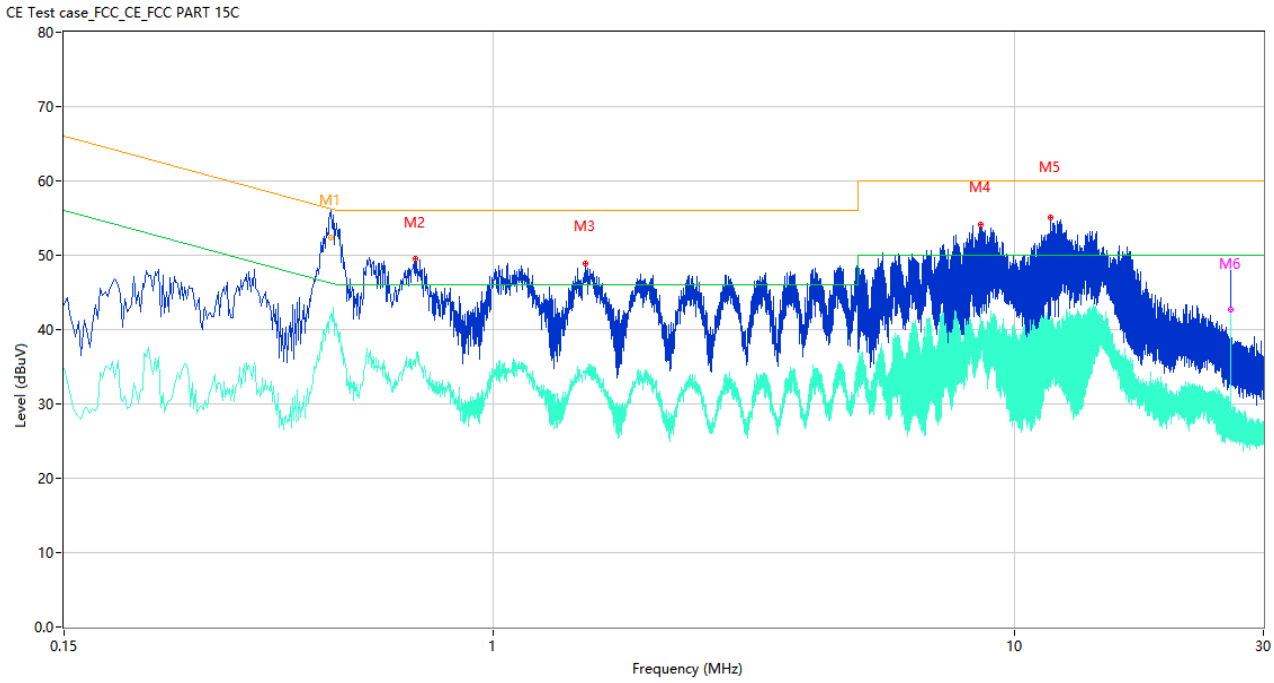
Note [1]: The EUT is working in the Normal link mode. All modes have been tested and normal link mode is worst.

Note [2]: Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 60 Hz and 240 VAC, 50 Hz) for which the device is capable of operation. So, The configuration 120 VAC, 60 Hz and 240 VAC, 50 Hz were tested respectively, but only the worst configuration (120 VAC, 60 Hz) shown here.

Note [3]: Results (dBuV) = Original reading level of Spectrum Analyzer (dBuV) + Factor (dB)

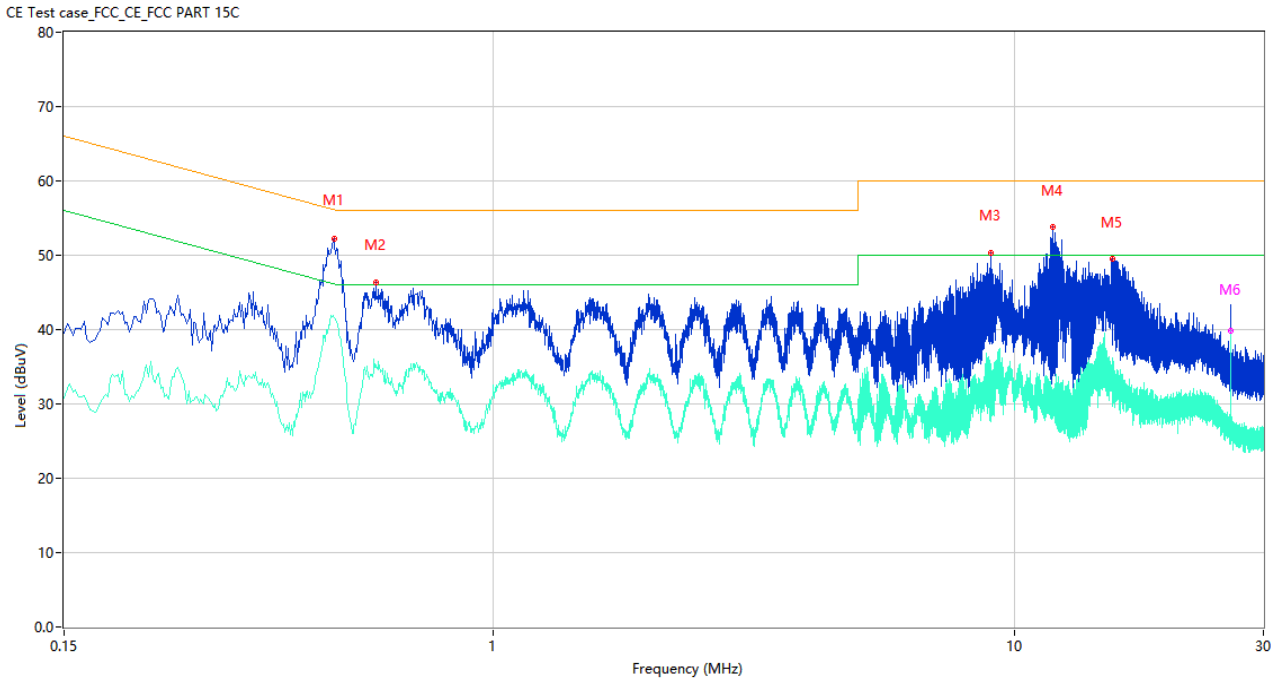
Test Data and Plots

PHASE L



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.488	56.27	10.05	56.20	-0.07	Peak	L	N/A
1*	0.488	52.44	10.05	56.20	3.76	QP	L	Pass
1**	0.488	42.29	10.05	46.20	3.91	AV	L	Pass
2	0.710	49.46	10.61	56.00	6.54	Peak	L	Pass
2**	0.710	35.16	10.61	46.00	10.84	AV	L	Pass
3	1.498	48.90	10.33	56.00	7.10	Peak	L	Pass
3**	1.498	34.01	10.33	46.00	11.99	AV	L	Pass
4	8.598	54.16	10.56	60.00	5.84	Peak	L	Pass
4**	8.598	40.45	10.56	50.00	9.55	AV	L	Pass
5	11.728	55.05	10.33	60.00	4.95	Peak	L	Pass
5**	11.728	39.77	10.33	50.00	10.23	AV	L	Pass
6	25.998	47.89	10.91	60.00	12.11	Peak	L	Pass
6**	25.998	42.71	10.91	50.00	7.29	AV	L	Pass

PHASE N



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.494	52.21	10.05	56.10	3.89	Peak	N	Pass
1**	0.494	41.65	10.05	46.10	4.45	AV	N	Pass
2	0.594	46.39	10.21	56.00	9.61	Peak	N	Pass
2**	0.594	35.23	10.21	46.00	10.77	AV	N	Pass
3	9.016	50.33	10.56	60.00	9.67	Peak	N	Pass
3**	9.016	31.63	10.56	50.00	18.37	AV	N	Pass
4	11.822	53.74	10.44	60.00	6.26	Peak	N	Pass
4**	11.822	31.87	10.44	50.00	18.13	AV	N	Pass
5	15.366	49.46	10.90	60.00	10.54	Peak	N	Pass
5**	15.366	36.15	10.90	50.00	13.85	AV	N	Pass
6	25.998	43.28	10.91	60.00	16.72	Peak	N	Pass
6**	25.998	39.86	10.91	50.00	10.14	AV	N	Pass

A.6 Radiated Emission

Note [1]: The symbol of "--" in the table which means not application.

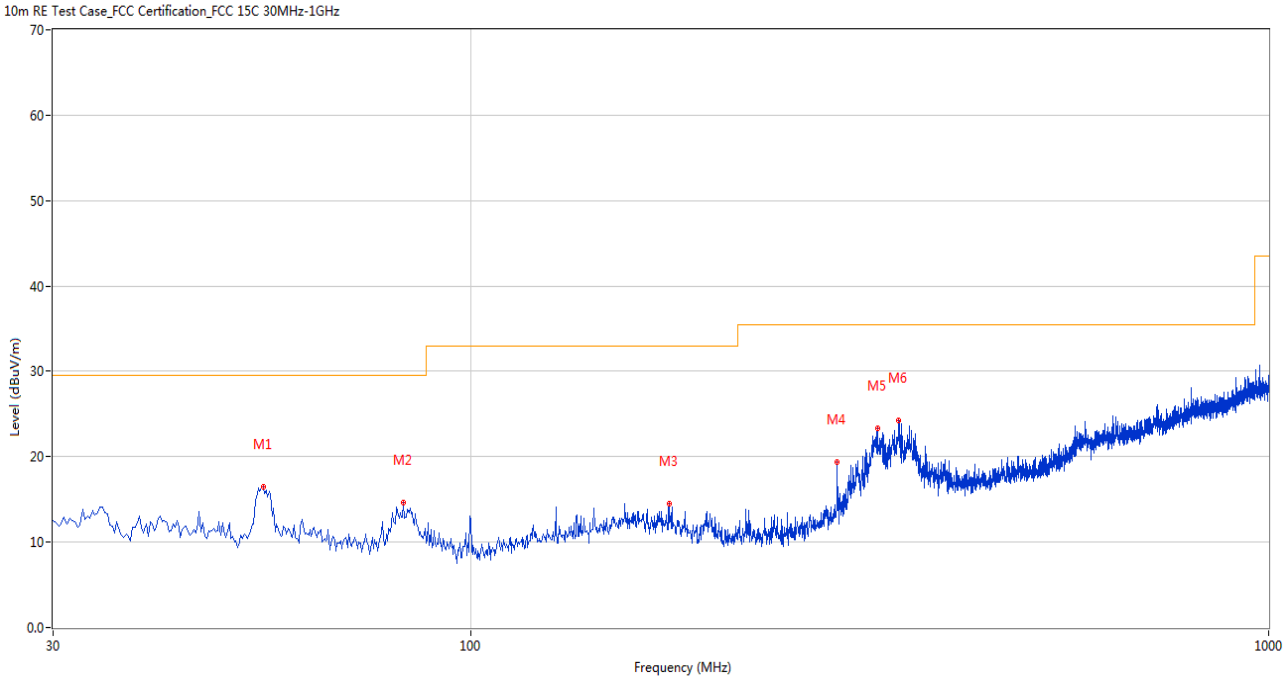
Note [2]: For the test data above 1 GHz，According the ANSI C63.10-2013, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Note [3]: The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

Note [4]: The EUT is working in the Normal link mode below 1 GHz. All modes have been tested and normal link mode is worst.

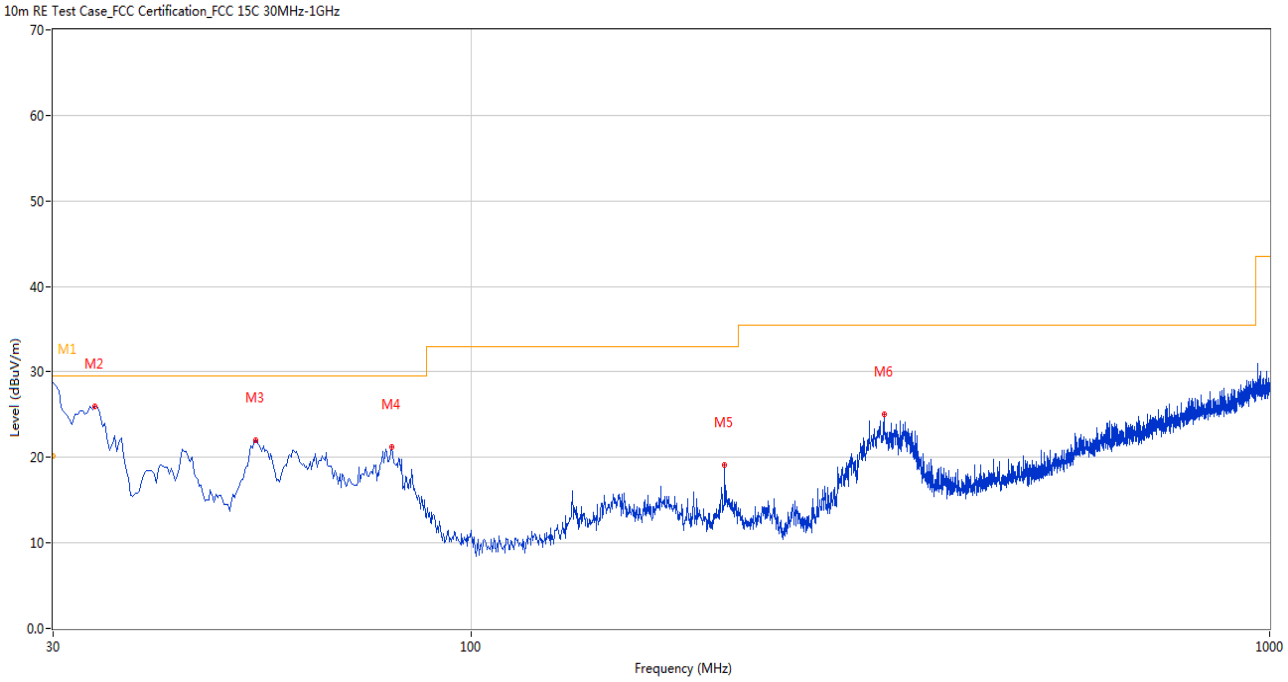
Test Data and Plots

30 MHz to 1 GHz, ANT H



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	54.971	16.48	-27.15	29.5	13.02	Peak	205.00	200	Horizontal	Pass
2	82.367	14.59	-30.19	29.5	14.91	Peak	20.00	200	Horizontal	Pass
3	177.403	14.50	-27.61	33.0	18.50	Peak	340.00	200	Horizontal	Pass
4	287.956	19.36	-25.91	35.5	16.14	Peak	350.00	200	Horizontal	Pass
5	323.594	23.31	-25.19	35.5	12.19	Peak	286.00	200	Horizontal	Pass
6	344.201	24.28	-24.34	35.5	11.22	Peak	286.00	200	Horizontal	Pass

30 MHz to 1 GHz, ANT V



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	30.000	28.75	-26.83	29.5	0.75	Peak	90.00	100	Vertical	N/A
1*	30.000	20.17	-26.83	29.5	9.33	QP	90.00	100	Vertical	Pass
2	33.879	25.96	-26.96	29.5	3.54	Peak	210.00	100	Vertical	Pass
3	53.759	21.97	-27.06	29.5	7.53	Peak	360.00	200	Vertical	Pass
4	79.700	21.25	-30.00	29.5	8.25	Peak	360.00	200	Vertical	Pass
5	207.951	19.08	-29.38	33.0	13.92	Peak	10.00	100	Vertical	Pass
6	328.928	25.01	-24.83	35.5	10.49	Peak	188.00	100	Vertical	Pass

Note [1]: The marked spikes near 2400 MHz with circle should be ignored because they are Fundamental signal.

Note [2]: The spurious above 18G is noise only, do not show on the report.

1 GHz to 18 GHz, ANT H 802.11b Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1331.364	41.98	74.0	32.02	Peak	139.00	300	Horizontal	Pass
1**	1331.364	38.20	54.0	15.80	AV	139.00	300	Horizontal	Pass
2	2996.330	51.64	74.0	22.36	Peak	191.00	200	Horizontal	Pass
2**	2996.330	41.48	54.0	12.52	AV	191.00	200	Horizontal	Pass
3	4931.865	54.63	74.0	19.37	Peak	345.00	200	Horizontal	Pass
3**	4931.865	43.98	54.0	10.02	AV	345.00	200	Horizontal	Pass
4	6810.288	53.49	74.0	20.51	Peak	35.00	100	Horizontal	Pass
4**	6810.288	47.40	54.0	6.60	AV	35.00	100	Horizontal	Pass
5	13412.635	53.75	74.0	20.25	Peak	184.00	100	Horizontal	Pass
5**	13412.635	46.22	54.0	7.78	AV	184.00	100	Horizontal	Pass
6	17428.390	55.72	74.0	18.28	Peak	224.00	400	Horizontal	Pass
6**	17428.390	46.71	54.0	7.29	AV	224.00	400	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11b Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1329.346	44.31	74.0	29.69	Peak	133.00	100	Vertical	Pass
1**	1329.346	37.14	54.0	16.86	AV	133.00	100	Vertical	Pass
2	2980.380	52.57	74.0	21.43	Peak	223.00	300	Vertical	Pass
2**	2980.380	41.46	54.0	12.54	AV	223.00	300	Vertical	Pass
3	4850.490	50.40	74.0	23.60	Peak	194.00	200	Vertical	Pass
3**	4850.490	39.85	54.0	14.15	AV	194.00	200	Vertical	Pass
4	6610.862	54.20	74.0	19.80	Peak	166.00	300	Vertical	Pass
4**	6610.862	46.31	54.0	7.69	AV	166.00	300	Vertical	Pass
5	13431.548	53.10	74.0	20.90	Peak	59.00	200	Vertical	Pass
5**	13431.548	49.38	54.0	4.62	AV	59.00	200	Vertical	Pass
6	17419.533	59.43	74.0	14.57	Peak	298.00	400	Vertical	Pass
6**	17419.533	46.41	54.0	7.59	AV	298.00	400	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11b Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1329.397	46.19	74.0	27.81	Peak	121.00	400	Horizontal	Pass
1**	1329.397	36.79	54.0	17.21	AV	121.00	400	Horizontal	Pass
2	2996.372	51.73	74.0	22.27	Peak	207.00	200	Horizontal	Pass
2**	2996.372	42.83	54.0	11.17	AV	207.00	200	Horizontal	Pass
3	4934.303	50.03	74.0	23.97	Peak	114.00	200	Horizontal	Pass
3**	4934.303	39.76	54.0	14.24	AV	114.00	200	Horizontal	Pass
4	6808.881	56.87	74.0	17.13	Peak	332.00	400	Horizontal	Pass
4**	6808.881	43.39	54.0	10.61	AV	332.00	400	Horizontal	Pass
5	13408.997	53.76	74.0	20.24	Peak	169.00	300	Horizontal	Pass
5**	13408.997	48.82	54.0	5.18	AV	169.00	300	Horizontal	Pass
6	17428.767	56.08	74.0	17.92	Peak	142.00	100	Horizontal	Pass
6**	17428.767	50.10	54.0	3.90	AV	142.00	100	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11b Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1335.316	44.20	74.0	29.80	Peak	341.00	300	Vertical	Pass
1**	1335.316	37.48	54.0	16.52	AV	341.00	300	Vertical	Pass
2	2980.474	53.31	74.0	20.69	Peak	124.00	100	Vertical	Pass
2**	2980.474	42.81	54.0	11.19	AV	124.00	100	Vertical	Pass
3	4856.179	50.72	74.0	23.28	Peak	329.00	200	Vertical	Pass
3**	4856.179	38.04	54.0	15.96	AV	329.00	200	Vertical	Pass
4	6603.483	55.15	74.0	18.85	Peak	199.00	200	Vertical	Pass
4**	6603.483	43.18	54.0	10.82	AV	199.00	200	Vertical	Pass
5	13432.028	56.95	74.0	17.05	Peak	70.00	100	Vertical	Pass
5**	13432.028	47.95	54.0	6.05	AV	70.00	100	Vertical	Pass
6	17414.945	54.61	74.0	19.39	Peak	335.00	200	Vertical	Pass
6**	17414.945	44.72	54.0	9.28	AV	335.00	200	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11b High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1326.622	42.32	74.0	31.68	Peak	32.00	200	Horizontal	Pass
1**	1326.622	38.41	54.0	15.59	AV	32.00	200	Horizontal	Pass
2	2993.618	48.08	74.0	25.92	Peak	155.00	300	Horizontal	Pass
2**	2993.618	42.00	54.0	12.00	AV	155.00	300	Horizontal	Pass
3	4937.331	52.06	74.0	21.94	Peak	111.00	200	Horizontal	Pass
3**	4937.331	41.48	54.0	12.52	AV	111.00	200	Horizontal	Pass
4	6807.564	55.42	74.0	18.58	Peak	106.00	300	Horizontal	Pass
4**	6807.564	44.57	54.0	9.43	AV	106.00	300	Horizontal	Pass
5	13409.345	56.97	74.0	17.03	Peak	333.00	300	Horizontal	Pass
5**	13409.345	48.35	54.0	5.65	AV	333.00	300	Horizontal	Pass
6	17427.131	54.12	74.0	19.88	Peak	250.00	200	Horizontal	Pass
6**	17427.131	49.65	54.0	4.35	AV	250.00	200	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11b High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1329.882	46.99	74.0	27.01	Peak	76.00	400	Vertical	Pass
1**	1329.882	39.50	54.0	14.50	AV	76.00	400	Vertical	Pass
2	2982.615	48.27	74.0	25.73	Peak	282.00	100	Vertical	Pass
2**	2982.615	42.18	54.0	11.82	AV	282.00	100	Vertical	Pass
3	4855.337	49.31	74.0	24.69	Peak	147.00	200	Vertical	Pass
3**	4855.337	39.56	54.0	14.44	AV	147.00	200	Vertical	Pass
4	6610.089	52.37	74.0	21.63	Peak	112.00	400	Vertical	Pass
4**	6610.089	47.08	54.0	6.92	AV	112.00	400	Vertical	Pass
5	13437.144	58.14	74.0	15.86	Peak	257.00	400	Vertical	Pass
5**	13437.144	48.31	54.0	5.69	AV	257.00	400	Vertical	Pass
6	17419.533	54.45	74.0	19.55	Peak	308.00	200	Vertical	Pass
6**	17419.533	48.16	54.0	5.84	AV	308.00	200	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11g Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1327.612	45.08	74.0	28.92	Peak	34.00	200	Horizontal	Pass
1**	1327.612	34.41	54.0	19.59	AV	34.00	200	Horizontal	Pass
2	2999.749	47.62	74.0	26.38	Peak	217.00	400	Horizontal	Pass
2**	2999.749	38.98	54.0	15.02	AV	217.00	400	Horizontal	Pass
3	4932.904	54.62	74.0	19.38	Peak	245.00	200	Horizontal	Pass
3**	4932.904	39.09	54.0	14.91	AV	245.00	200	Horizontal	Pass
4	6806.206	56.77	74.0	17.23	Peak	243.00	300	Horizontal	Pass
4**	6806.206	47.00	54.0	7.00	AV	243.00	300	Horizontal	Pass
5	13412.658	58.06	74.0	15.94	Peak	190.00	200	Horizontal	Pass
5**	13412.658	49.19	54.0	4.81	AV	190.00	200	Horizontal	Pass
6	17427.236	55.34	74.0	18.66	Peak	244.00	100	Horizontal	Pass
6**	17427.236	49.71	54.0	4.29	AV	244.00	100	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11g Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1335.541	42.41	74.0	31.59	Peak	77.00	400	Vertical	Pass
1**	1335.541	36.03	54.0	17.97	AV	77.00	400	Vertical	Pass
2	2978.656	52.78	74.0	21.22	Peak	247.00	400	Vertical	Pass
2**	2978.656	41.91	54.0	12.09	AV	247.00	400	Vertical	Pass
3	4856.479	48.57	74.0	25.43	Peak	237.00	200	Vertical	Pass
3**	4856.479	40.05	54.0	13.95	AV	237.00	200	Vertical	Pass
4	6604.942	54.97	74.0	19.03	Peak	69.00	300	Vertical	Pass
4**	6604.942	45.33	54.0	8.67	AV	69.00	300	Vertical	Pass
5	13437.074	52.59	74.0	21.41	Peak	299.00	100	Vertical	Pass
5**	13437.074	46.27	54.0	7.73	AV	299.00	100	Vertical	Pass
6	17416.322	58.03	74.0	15.97	Peak	2.00	400	Vertical	Pass
6**	17416.322	46.79	54.0	7.21	AV	2.00	400	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11g Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1328.598	43.53	74.0	30.47	Peak	34.00	400	Horizontal	Pass
1**	1328.598	36.10	54.0	17.90	AV	34.00	400	Horizontal	Pass
2	2994.797	51.06	74.0	22.94	Peak	301.00	100	Horizontal	Pass
2**	2994.797	40.38	54.0	13.62	AV	301.00	100	Horizontal	Pass
3	4931.684	51.61	74.0	22.39	Peak	260.00	200	Horizontal	Pass
3**	4931.684	40.00	54.0	14.00	AV	260.00	200	Horizontal	Pass
4	6810.062	56.94	74.0	17.06	Peak	32.00	300	Horizontal	Pass
4**	6810.062	41.98	54.0	12.02	AV	32.00	300	Horizontal	Pass
5	13413.189	56.63	74.0	17.37	Peak	338.00	400	Horizontal	Pass
5**	13413.189	43.91	54.0	10.09	AV	338.00	400	Horizontal	Pass
6	17426.729	55.33	74.0	18.67	Peak	319.00	200	Horizontal	Pass
6**	17426.729	49.84	54.0	4.16	AV	319.00	200	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11g Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1333.488	43.00	74.0	31.00	Peak	131.00	300	Vertical	Pass
1**	1333.488	35.76	54.0	18.24	AV	131.00	300	Vertical	Pass
2	2984.054	50.98	74.0	23.02	Peak	129.00	200	Vertical	Pass
2**	2984.054	41.28	54.0	12.72	AV	129.00	200	Vertical	Pass
3	4853.404	47.59	74.0	26.41	Peak	51.00	200	Vertical	Pass
3**	4853.404	43.14	54.0	10.86	AV	51.00	200	Vertical	Pass
4	6603.472	53.31	74.0	20.69	Peak	149.00	400	Vertical	Pass
4**	6603.472	45.44	54.0	8.56	AV	149.00	400	Vertical	Pass
5	13432.844	58.13	74.0	15.87	Peak	94.00	200	Vertical	Pass
5**	13432.844	49.01	54.0	4.99	AV	94.00	200	Vertical	Pass
6	17419.458	56.33	74.0	17.67	Peak	320.00	100	Vertical	Pass
6**	17419.458	45.86	54.0	8.14	AV	320.00	100	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11g High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1329.464	42.34	74.0	31.66	Peak	266.00	200	Horizontal	Pass
1**	1329.464	36.97	54.0	17.03	AV	266.00	200	Horizontal	Pass
2	2998.415	53.02	74.0	20.98	Peak	74.00	200	Horizontal	Pass
2**	2998.415	42.33	54.0	11.67	AV	74.00	200	Horizontal	Pass
3	4936.352	50.98	74.0	23.02	Peak	257.00	200	Horizontal	Pass
3**	4936.352	42.53	54.0	11.47	AV	257.00	200	Horizontal	Pass
4	6809.876	53.54	74.0	20.46	Peak	127.00	100	Horizontal	Pass
4**	6809.876	45.94	54.0	8.06	AV	127.00	100	Horizontal	Pass
5	13412.393	56.98	74.0	17.02	Peak	194.00	200	Horizontal	Pass
5**	13412.393	46.13	54.0	7.87	AV	194.00	200	Horizontal	Pass
6	17430.005	55.16	74.0	18.84	Peak	275.00	200	Horizontal	Pass
6**	17430.005	48.57	54.0	5.43	AV	275.00	200	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11g High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1332.954	43.11	74.0	30.89	Peak	217.00	300	Vertical	Pass
1**	1332.954	39.77	54.0	14.23	AV	217.00	300	Vertical	Pass
2	2978.250	48.58	74.0	25.42	Peak	286.00	400	Vertical	Pass
2**	2978.250	40.56	54.0	13.44	AV	286.00	400	Vertical	Pass
3	4856.875	47.50	74.0	26.50	Peak	328.00	200	Vertical	Pass
3**	4856.875	37.93	54.0	16.07	AV	328.00	200	Vertical	Pass
4	6608.390	53.88	74.0	20.12	Peak	22.00	200	Vertical	Pass
4**	6608.390	47.42	54.0	6.58	AV	22.00	200	Vertical	Pass
5	13432.628	54.32	74.0	19.68	Peak	333.00	100	Vertical	Pass
5**	13432.628	43.72	54.0	10.28	AV	333.00	100	Vertical	Pass
6	17415.967	54.98	74.0	19.02	Peak	1.00	300	Vertical	Pass
6**	17415.967	44.57	54.0	9.43	AV	1.00	300	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11n20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1333.423	45.08	74.0	28.92	Peak	239.00	400	Horizontal	Pass
1**	1333.423	34.99	54.0	19.01	AV	239.00	400	Horizontal	Pass
2	2993.900	50.34	74.0	23.66	Peak	116.00	400	Horizontal	Pass
2**	2993.900	43.73	54.0	10.27	AV	116.00	400	Horizontal	Pass
3	4935.436	50.73	74.0	23.27	Peak	203.00	200	Horizontal	Pass
3**	4935.436	44.32	54.0	9.68	AV	203.00	200	Horizontal	Pass
4	6807.721	57.42	74.0	16.58	Peak	231.00	400	Horizontal	Pass
4**	6807.721	44.39	54.0	9.61	AV	231.00	400	Horizontal	Pass
5	13407.690	52.91	74.0	21.09	Peak	333.00	400	Horizontal	Pass
5**	13407.690	46.97	54.0	7.03	AV	333.00	400	Horizontal	Pass
6	17422.820	53.16	74.0	20.84	Peak	195.00	100	Horizontal	Pass
6**	17422.820	44.78	54.0	9.22	AV	195.00	100	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11n20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1328.930	42.79	74.0	31.21	Peak	208.00	200	Vertical	Pass
1**	1328.930	37.62	54.0	16.38	AV	208.00	200	Vertical	Pass
2	2981.888	47.43	74.0	26.57	Peak	273.00	400	Vertical	Pass
2**	2981.888	43.57	54.0	10.43	AV	273.00	400	Vertical	Pass
3	4856.813	51.71	74.0	22.29	Peak	16.00	200	Vertical	Pass
3**	4856.813	42.14	54.0	11.86	AV	16.00	200	Vertical	Pass
4	6605.125	57.08	74.0	16.92	Peak	309.00	200	Vertical	Pass
4**	6605.125	44.52	54.0	9.48	AV	309.00	200	Vertical	Pass
5	13436.632	53.90	74.0	20.10	Peak	250.00	400	Vertical	Pass
5**	13436.632	48.18	54.0	5.82	AV	250.00	400	Vertical	Pass
6	17417.889	57.72	74.0	16.28	Peak	227.00	200	Vertical	Pass
6**	17417.889	48.46	54.0	5.54	AV	227.00	200	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11n20 Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1333.053	41.85	74.0	32.15	Peak	135.00	200	Horizontal	Pass
1**	1333.053	39.05	54.0	14.95	AV	135.00	200	Horizontal	Pass
2	3000.542	47.67	74.0	26.33	Peak	314.00	300	Horizontal	Pass
2**	3000.542	40.96	54.0	13.04	AV	314.00	300	Horizontal	Pass
3	4933.019	54.47	74.0	19.53	Peak	108.00	200	Horizontal	Pass
3**	4933.019	43.43	54.0	10.57	AV	108.00	200	Horizontal	Pass
4	6804.170	52.00	74.0	22.00	Peak	92.00	100	Horizontal	Pass
4**	6804.170	46.67	54.0	7.33	AV	92.00	100	Horizontal	Pass
5	13413.280	53.50	74.0	20.50	Peak	350.00	200	Horizontal	Pass
5**	13413.280	47.60	54.0	6.40	AV	350.00	200	Horizontal	Pass
6	17425.541	53.30	74.0	20.70	Peak	335.00	200	Horizontal	Pass
6**	17425.541	44.51	54.0	9.49	AV	335.00	200	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11n20 Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1335.535	47.50	74.0	26.50	Peak	161.00	300	Vertical	Pass
1**	1335.535	36.24	54.0	17.76	AV	161.00	300	Vertical	Pass
2	2982.404	53.25	74.0	20.75	Peak	304.00	200	Vertical	Pass
2**	2982.404	39.39	54.0	14.61	AV	304.00	200	Vertical	Pass
3	4851.293	47.05	74.0	26.95	Peak	339.00	200	Vertical	Pass
3**	4851.293	39.75	54.0	14.25	AV	339.00	200	Vertical	Pass
4	6609.432	55.03	74.0	18.97	Peak	306.00	100	Vertical	Pass
4**	6609.432	42.78	54.0	11.22	AV	306.00	100	Vertical	Pass
5	13434.501	53.12	74.0	20.88	Peak	329.00	300	Vertical	Pass
5**	13434.501	43.69	54.0	10.31	AV	329.00	300	Vertical	Pass
6	17420.161	55.81	74.0	18.19	Peak	93.00	100	Vertical	Pass
6**	17420.161	46.22	54.0	7.78	AV	93.00	100	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11n20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1327.774	45.75	74.0	28.25	Peak	355.00	100	Horizontal	Pass
1**	1327.774	39.77	54.0	14.23	AV	355.00	100	Horizontal	Pass
2	2995.972	49.85	74.0	24.15	Peak	176.00	200	Horizontal	Pass
2**	2995.972	39.29	54.0	14.71	AV	176.00	200	Horizontal	Pass
3	4930.565	53.06	74.0	20.94	Peak	239.00	200	Horizontal	Pass
3**	4930.565	43.85	54.0	10.15	AV	239.00	200	Horizontal	Pass
4	6804.733	54.01	74.0	19.99	Peak	31.00	200	Horizontal	Pass
4**	6804.733	45.43	54.0	8.57	AV	31.00	200	Horizontal	Pass
5	13410.254	55.15	74.0	18.85	Peak	327.00	100	Horizontal	Pass
5**	13410.254	43.63	54.0	10.37	AV	327.00	100	Horizontal	Pass
6	17422.874	55.00	74.0	19.00	Peak	105.00	100	Horizontal	Pass
6**	17422.874	49.57	54.0	4.43	AV	105.00	100	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11n20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1329.825	44.11	74.0	29.89	Peak	128.00	100	Vertical	Pass
1**	1329.825	37.81	54.0	16.19	AV	128.00	100	Vertical	Pass
2	2985.068	50.63	74.0	23.37	Peak	163.00	300	Vertical	Pass
2**	2985.068	40.31	54.0	13.69	AV	163.00	300	Vertical	Pass
3	4857.460	48.79	74.0	25.21	Peak	118.00	200	Vertical	Pass
3**	4857.460	39.07	54.0	14.93	AV	118.00	200	Vertical	Pass
4	6606.675	52.89	74.0	21.11	Peak	125.00	100	Vertical	Pass
4**	6606.675	44.21	54.0	9.79	AV	125.00	100	Vertical	Pass
5	13435.871	57.81	74.0	16.19	Peak	142.00	200	Vertical	Pass
5**	13435.871	49.27	54.0	4.73	AV	142.00	200	Vertical	Pass
6	17418.402	57.09	74.0	16.91	Peak	296.00	100	Vertical	Pass
6**	17418.402	46.90	54.0	7.10	AV	296.00	100	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11n40 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1331.398	46.66	74.0	27.34	Peak	214.00	100	Horizontal	Pass
1**	1331.398	36.55	54.0	17.45	AV	214.00	100	Horizontal	Pass
2	2999.583	50.97	74.0	23.03	Peak	182.00	400	Horizontal	Pass
2**	2999.583	42.16	54.0	11.84	AV	182.00	400	Horizontal	Pass
3	4935.206	54.48	74.0	19.52	Peak	142.00	200	Horizontal	Pass
3**	4935.206	41.90	54.0	12.10	AV	142.00	200	Horizontal	Pass
4	6809.085	54.56	74.0	19.44	Peak	298.00	300	Horizontal	Pass
4**	6809.085	42.26	54.0	11.74	AV	298.00	300	Horizontal	Pass
5	13413.084	57.51	74.0	16.49	Peak	319.00	100	Horizontal	Pass
5**	13413.084	45.51	54.0	8.49	AV	319.00	100	Horizontal	Pass
6	17424.643	58.44	74.0	15.56	Peak	261.00	400	Horizontal	Pass
6**	17424.643	47.55	54.0	6.45	AV	261.00	400	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11n40 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1334.905	47.48	74.0	26.52	Peak	193.00	100	Vertical	Pass
1**	1334.905	38.94	54.0	15.06	AV	193.00	100	Vertical	Pass
2	2985.833	52.75	74.0	21.25	Peak	86.00	300	Vertical	Pass
2**	2985.833	40.09	54.0	13.91	AV	86.00	300	Vertical	Pass
3	4853.420	48.30	74.0	25.70	Peak	200.00	200	Vertical	Pass
3**	4853.420	41.31	54.0	12.69	AV	200.00	200	Vertical	Pass
4	6603.547	51.88	74.0	22.12	Peak	46.00	200	Vertical	Pass
4**	6603.547	42.15	54.0	11.85	AV	46.00	200	Vertical	Pass
5	13433.569	56.06	74.0	17.94	Peak	311.00	300	Vertical	Pass
5**	13433.569	44.73	54.0	9.27	AV	311.00	300	Vertical	Pass
6	17418.905	54.20	74.0	19.80	Peak	126.00	200	Vertical	Pass
6**	17418.905	44.77	54.0	9.23	AV	126.00	200	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11n40 Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1330.871	44.46	74.0	29.54	Peak	177.00	100	Horizontal	Pass
1**	1330.871	37.60	54.0	16.40	AV	177.00	100	Horizontal	Pass
2	2994.285	50.92	74.0	23.08	Peak	0.00	100	Horizontal	Pass
2**	2994.285	42.36	54.0	11.64	AV	0.00	100	Horizontal	Pass
3	4936.433	50.65	74.0	23.35	Peak	54.00	200	Horizontal	Pass
3**	4936.433	43.94	54.0	10.06	AV	54.00	200	Horizontal	Pass
4	6803.517	53.83	74.0	20.17	Peak	307.00	300	Horizontal	Pass
4**	6803.517	47.60	54.0	6.40	AV	307.00	300	Horizontal	Pass
5	13410.112	54.24	74.0	19.76	Peak	4.00	400	Horizontal	Pass
5**	13410.112	45.91	54.0	8.09	AV	4.00	400	Horizontal	Pass
6	17429.746	58.49	74.0	15.51	Peak	142.00	200	Horizontal	Pass
6**	17429.746	47.45	54.0	6.55	AV	142.00	200	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11n40 Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1334.878	47.97	74.0	26.03	Peak	220.00	400	Vertical	Pass
1**	1334.878	34.91	54.0	19.09	AV	220.00	400	Vertical	Pass
2	2984.116	48.09	74.0	25.91	Peak	99.00	100	Vertical	Pass
2**	2984.116	40.29	54.0	13.71	AV	99.00	100	Vertical	Pass
3	4857.242	48.98	74.0	25.02	Peak	101.00	200	Vertical	Pass
3**	4857.242	39.65	54.0	14.35	AV	101.00	200	Vertical	Pass
4	6610.860	51.72	74.0	22.28	Peak	36.00	300	Vertical	Pass
4**	6610.860	42.08	54.0	11.92	AV	36.00	300	Vertical	Pass
5	13435.381	55.30	74.0	18.70	Peak	191.00	300	Vertical	Pass
5**	13435.381	47.00	54.0	7.00	AV	191.00	300	Vertical	Pass
6	17416.408	59.22	74.0	14.78	Peak	149.00	400	Vertical	Pass
6**	17416.408	46.82	54.0	7.18	AV	149.00	400	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11n40 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1328.989	42.83	74.0	31.17	Peak	111.00	400	Horizontal	Pass
1**	1328.989	36.85	54.0	17.15	AV	111.00	400	Horizontal	Pass
2	2995.718	52.45	74.0	21.55	Peak	207.00	400	Horizontal	Pass
2**	2995.718	42.70	54.0	11.30	AV	207.00	400	Horizontal	Pass
3	4934.159	51.63	74.0	22.37	Peak	316.00	200	Horizontal	Pass
3**	4934.159	41.52	54.0	12.48	AV	316.00	200	Horizontal	Pass
4	6806.575	56.85	74.0	17.15	Peak	13.00	100	Horizontal	Pass
4**	6806.575	46.18	54.0	7.82	AV	13.00	100	Horizontal	Pass
5	13410.487	57.11	74.0	16.89	Peak	163.00	300	Horizontal	Pass
5**	13410.487	46.44	54.0	7.56	AV	163.00	300	Horizontal	Pass
6	17426.954	58.36	74.0	15.64	Peak	157.00	300	Horizontal	Pass
6**	17426.954	44.47	54.0	9.53	AV	157.00	300	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11n40 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1329.717	43.71	74.0	30.29	Peak	307.00	100	Vertical	Pass
1**	1329.717	38.29	54.0	15.71	AV	307.00	100	Vertical	Pass
2	2978.616	50.07	74.0	23.93	Peak	307.00	200	Vertical	Pass
2**	2978.616	43.76	54.0	10.24	AV	307.00	200	Vertical	Pass
3	4854.242	51.98	74.0	22.02	Peak	223.00	200	Vertical	Pass
3**	4854.242	38.79	54.0	15.21	AV	223.00	200	Vertical	Pass
4	6605.454	51.55	74.0	22.45	Peak	170.00	300	Vertical	Pass
4**	6605.454	42.74	54.0	11.26	AV	170.00	300	Vertical	Pass
5	13434.356	56.50	74.0	17.50	Peak	123.00	100	Vertical	Pass
5**	13434.356	46.49	54.0	7.51	AV	123.00	100	Vertical	Pass
6	17414.138	59.45	74.0	14.55	Peak	153.00	300	Vertical	Pass
6**	17414.138	45.69	54.0	8.31	AV	153.00	300	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11ax20(SU) Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1329.713	45.15	74.0	28.85	Peak	65.00	200	Horizontal	Pass
1**	1329.713	38.04	54.0	15.96	AV	65.00	200	Horizontal	Pass
2	2994.480	49.95	74.0	24.05	Peak	288.00	100	Horizontal	Pass
2**	2994.480	40.43	54.0	13.57	AV	288.00	100	Horizontal	Pass
3	4938.288	53.82	74.0	20.18	Peak	222.00	200	Horizontal	Pass
3**	4938.288	44.22	54.0	9.78	AV	222.00	200	Horizontal	Pass
4	6808.381	55.98	74.0	18.02	Peak	267.00	300	Horizontal	Pass
4**	6808.381	42.26	54.0	11.74	AV	267.00	300	Horizontal	Pass
5	13411.623	53.07	74.0	20.93	Peak	21.00	300	Horizontal	Pass
5**	13411.623	45.50	54.0	8.50	AV	21.00	300	Horizontal	Pass
6	17424.711	58.90	74.0	15.10	Peak	59.00	100	Horizontal	Pass
6**	17424.711	48.53	54.0	5.47	AV	59.00	100	Horizontal	Pass

1 GHz to 18 GHz, ANT V802.11ax20(SU) Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1335.485	45.13	74.0	28.87	Peak	117.00	200	Vertical	Pass
1**	1335.485	35.34	54.0	18.66	AV	117.00	200	Vertical	Pass
2	2982.585	51.83	74.0	22.17	Peak	207.00	200	Vertical	Pass
2**	2982.585	39.40	54.0	14.60	AV	207.00	200	Vertical	Pass
3	4851.987	47.72	74.0	26.28	Peak	208.00	200	Vertical	Pass
3**	4851.987	42.48	54.0	11.52	AV	208.00	200	Vertical	Pass
4	6605.236	52.59	74.0	21.41	Peak	154.00	400	Vertical	Pass
4**	6605.236	44.87	54.0	9.13	AV	154.00	400	Vertical	Pass
5	13438.390	53.79	74.0	20.21	Peak	190.00	200	Vertical	Pass
5**	13438.390	45.57	54.0	8.43	AV	190.00	200	Vertical	Pass
6	17418.983	60.12	74.0	13.88	Peak	133.00	300	Vertical	Pass
6**	17418.983	49.63	54.0	4.37	AV	133.00	300	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11ax20(SU) Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1333.118	45.81	74.0	28.19	Peak	128.00	400	Horizontal	Pass
1**	1333.118	38.32	54.0	15.68	AV	128.00	400	Horizontal	Pass
2	2994.105	47.26	74.0	26.74	Peak	183.00	400	Horizontal	Pass
2**	2994.105	40.65	54.0	13.35	AV	183.00	400	Horizontal	Pass
3	4931.200	51.59	74.0	22.41	Peak	329.00	200	Horizontal	Pass
3**	4931.200	40.21	54.0	13.79	AV	329.00	200	Horizontal	Pass
4	6803.096	52.65	74.0	21.35	Peak	75.00	100	Horizontal	Pass
4**	6803.096	42.02	54.0	11.98	AV	75.00	100	Horizontal	Pass
5	13407.920	54.88	74.0	19.12	Peak	207.00	200	Horizontal	Pass
5**	13407.920	45.18	54.0	8.82	AV	207.00	200	Horizontal	Pass
6	17428.019	57.23	74.0	16.77	Peak	270.00	100	Horizontal	Pass
6**	17428.019	47.59	54.0	6.41	AV	270.00	100	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11ax20(SU) Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1330.634	47.72	74.0	26.28	Peak	343.00	300	Vertical	Pass
1**	1330.634	39.29	54.0	14.71	AV	343.00	300	Vertical	Pass
2	2983.527	52.41	74.0	21.59	Peak	45.00	200	Vertical	Pass
2**	2983.527	40.01	54.0	13.99	AV	45.00	200	Vertical	Pass
3	4851.936	51.71	74.0	22.29	Peak	134.00	200	Vertical	Pass
3**	4851.936	43.23	54.0	10.77	AV	134.00	200	Vertical	Pass
4	6609.369	52.49	74.0	21.51	Peak	41.00	300	Vertical	Pass
4**	6609.369	45.18	54.0	8.82	AV	41.00	300	Vertical	Pass
5	13434.817	54.78	74.0	19.22	Peak	357.00	400	Vertical	Pass
5**	13434.817	47.26	54.0	6.74	AV	357.00	400	Vertical	Pass
6	17420.218	59.07	74.0	14.93	Peak	340.00	200	Vertical	Pass
6**	17420.218	49.90	54.0	4.10	AV	340.00	200	Vertical	Pass

1 GHz to 18 GHz, ANT H802.11ax20(SU) High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1327.656	47.39	74.0	26.61	Peak	282.00	200	Horizontal	Pass
1**	1327.656	36.01	54.0	17.99	AV	282.00	200	Horizontal	Pass
2	2999.247	50.38	74.0	23.62	Peak	8.00	400	Horizontal	Pass
2**	2999.247	40.52	54.0	13.48	AV	8.00	400	Horizontal	Pass
3	4937.937	53.77	74.0	20.23	Peak	292.00	200	Horizontal	Pass
3**	4937.937	40.19	54.0	13.81	AV	292.00	200	Horizontal	Pass
4	6804.010	55.64	74.0	18.36	Peak	127.00	100	Horizontal	Pass
4**	6804.010	43.40	54.0	10.60	AV	127.00	100	Horizontal	Pass
5	13415.062	56.56	74.0	17.44	Peak	54.00	400	Horizontal	Pass
5**	13415.062	46.50	54.0	7.50	AV	54.00	400	Horizontal	Pass
6	17430.137	54.18	74.0	19.82	Peak	355.00	400	Horizontal	Pass
6**	17430.137	44.82	54.0	9.18	AV	355.00	400	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11ax20(SU) High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1329.610	47.72	74.0	26.28	Peak	8.00	300	Vertical	Pass
1**	1329.610	35.46	54.0	18.54	AV	8.00	300	Vertical	Pass
2	2982.487	52.38	74.0	21.62	Peak	36.00	400	Vertical	Pass
2**	2982.487	41.59	54.0	12.41	AV	36.00	400	Vertical	Pass
3	4852.427	51.58	74.0	22.42	Peak	52.00	200	Vertical	Pass
3**	4852.427	40.33	54.0	13.67	AV	52.00	200	Vertical	Pass
4	6607.672	54.05	74.0	19.95	Peak	283.00	200	Vertical	Pass
4**	6607.672	44.42	54.0	9.58	AV	283.00	200	Vertical	Pass
5	13436.073	55.70	74.0	18.30	Peak	163.00	400	Vertical	Pass
5**	13436.073	44.09	54.0	9.91	AV	163.00	400	Vertical	Pass
6	17413.947	59.41	74.0	14.59	Peak	35.00	300	Vertical	Pass
6**	17413.947	47.21	54.0	6.79	AV	35.00	300	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11ax40(SU) Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1332.572	45.98	74.0	28.02	Peak	309.00	300	Horizontal	Pass
1**	1332.572	33.83	54.0	20.17	AV	309.00	300	Horizontal	Pass
2	2993.087	51.63	74.0	22.37	Peak	22.00	100	Horizontal	Pass
2**	2993.087	39.04	54.0	14.96	AV	22.00	100	Horizontal	Pass
3	4930.682	52.73	74.0	21.27	Peak	238.00	200	Horizontal	Pass
3**	4930.682	41.54	54.0	12.46	AV	238.00	200	Horizontal	Pass
4	6806.576	51.76	74.0	22.24	Peak	90.00	200	Horizontal	Pass
4**	6806.576	43.37	54.0	10.63	AV	90.00	200	Horizontal	Pass
5	13407.570	57.88	74.0	16.12	Peak	63.00	200	Horizontal	Pass
5**	13407.570	48.80	54.0	5.20	AV	63.00	200	Horizontal	Pass
6	17423.431	57.93	74.0	16.07	Peak	185.00	400	Horizontal	Pass
6**	17423.431	49.93	54.0	4.07	AV	185.00	400	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11ax40(SU) Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1332.830	46.94	74.0	27.06	Peak	278.00	100	Vertical	Pass
1**	1332.830	37.14	54.0	16.86	AV	278.00	100	Vertical	Pass
2	2979.402	51.88	74.0	22.12	Peak	289.00	400	Vertical	Pass
2**	2979.402	40.18	54.0	13.82	AV	289.00	400	Vertical	Pass
3	4858.208	49.94	74.0	24.06	Peak	291.00	200	Vertical	Pass
3**	4858.208	41.68	54.0	12.32	AV	291.00	200	Vertical	Pass
4	6610.966	57.13	74.0	16.87	Peak	132.00	300	Vertical	Pass
4**	6610.966	44.70	54.0	9.30	AV	132.00	300	Vertical	Pass
5	13437.838	55.45	74.0	18.55	Peak	83.00	300	Vertical	Pass
5**	13437.838	45.56	54.0	8.44	AV	83.00	300	Vertical	Pass
6	17419.943	55.22	74.0	18.78	Peak	26.00	100	Vertical	Pass
6**	17419.943	44.55	54.0	9.45	AV	26.00	100	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11ax40(SU) Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1333.375	44.14	74.0	29.86	Peak	336.00	400	Horizontal	Pass
1**	1333.375	39.69	54.0	14.31	AV	336.00	400	Horizontal	Pass
2	2993.116	50.14	74.0	23.86	Peak	330.00	300	Horizontal	Pass
2**	2993.116	43.05	54.0	10.95	AV	330.00	300	Horizontal	Pass
3	4930.975	52.16	74.0	21.84	Peak	253.00	200	Horizontal	Pass
3**	4930.975	39.26	54.0	14.74	AV	253.00	200	Horizontal	Pass
4	6808.292	55.25	74.0	18.75	Peak	5.00	100	Horizontal	Pass
4**	6808.292	46.31	54.0	7.69	AV	5.00	100	Horizontal	Pass
5	13408.200	58.47	74.0	15.53	Peak	265.00	100	Horizontal	Pass
5**	13408.200	44.53	54.0	9.47	AV	265.00	100	Horizontal	Pass
6	17427.727	55.52	74.0	18.48	Peak	260.00	200	Horizontal	Pass
6**	17427.727	48.36	54.0	5.64	AV	260.00	200	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11ax40(SU) Middle Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1332.800	44.65	74.0	29.35	Peak	217.00	400	Vertical	Pass
1**	1332.800	40.67	54.0	13.33	AV	217.00	400	Vertical	Pass
2	2983.002	47.45	74.0	26.55	Peak	105.00	400	Vertical	Pass
2**	2983.002	43.29	54.0	10.71	AV	105.00	400	Vertical	Pass
3	4851.034	50.05	74.0	23.95	Peak	325.00	200	Vertical	Pass
3**	4851.034	37.91	54.0	16.09	AV	325.00	200	Vertical	Pass
4	6604.106	54.14	74.0	19.86	Peak	73.00	300	Vertical	Pass
4**	6604.106	46.37	54.0	7.63	AV	73.00	300	Vertical	Pass
5	13435.175	54.94	74.0	19.06	Peak	139.00	100	Vertical	Pass
5**	13435.175	49.05	54.0	4.95	AV	139.00	100	Vertical	Pass
6	17418.774	57.98	74.0	16.02	Peak	92.00	400	Vertical	Pass
6**	17418.774	49.56	54.0	4.44	AV	92.00	400	Vertical	Pass

1 GHz to 18 GHz, ANT H 802.11ax40(SU) High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1328.415	42.37	74.0	31.63	Peak	78.00	400	Horizontal	Pass
1**	1328.415	39.11	54.0	14.89	AV	78.00	400	Horizontal	Pass
2	2998.013	50.50	74.0	23.50	Peak	204.00	200	Horizontal	Pass
2**	2998.013	43.83	54.0	10.17	AV	204.00	200	Horizontal	Pass
3	4934.401	54.13	74.0	19.87	Peak	313.00	200	Horizontal	Pass
3**	4934.401	41.20	54.0	12.80	AV	313.00	200	Horizontal	Pass
4	6809.819	52.36	74.0	21.64	Peak	342.00	400	Horizontal	Pass
4**	6809.819	45.92	54.0	8.08	AV	342.00	400	Horizontal	Pass
5	13409.469	58.43	74.0	15.57	Peak	95.00	300	Horizontal	Pass
5**	13409.469	43.99	54.0	10.01	AV	95.00	300	Horizontal	Pass
6	17427.295	54.64	74.0	19.36	Peak	116.00	100	Horizontal	Pass
6**	17427.295	46.73	54.0	7.27	AV	116.00	100	Horizontal	Pass

1 GHz to 18 GHz, ANT V 802.11ax40(SU) High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1330.500	43.88	74.0	30.12	Peak	99.00	400	Vertical	Pass
1**	1330.500	34.87	54.0	19.13	AV	99.00	400	Vertical	Pass
2	2981.268	47.85	74.0	26.15	Peak	224.00	400	Vertical	Pass
2**	2981.268	42.71	54.0	11.29	AV	224.00	400	Vertical	Pass
3	4857.305	48.15	74.0	25.85	Peak	335.00	200	Vertical	Pass
3**	4857.305	37.92	54.0	16.08	AV	335.00	200	Vertical	Pass
4	6607.960	55.68	74.0	18.32	Peak	293.00	400	Vertical	Pass
4**	6607.960	46.01	54.0	7.99	AV	293.00	400	Vertical	Pass
5	13433.777	57.78	74.0	16.22	Peak	329.00	400	Vertical	Pass
5**	13433.777	47.92	54.0	6.08	AV	329.00	400	Vertical	Pass
6	17414.898	59.57	74.0	14.43	Peak	153.00	400	Vertical	Pass
6**	17414.898	45.86	54.0	8.14	AV	153.00	400	Vertical	Pass

A.7 Band Edge (Restricted-band band-edge)

Note [1]: The lowest and highest channels are tested to verify the band edge emissions. Please refer to the following the plots for emissions values.

Note [2]: The test data all are tested in the vertical and horizontal antenna which the trace is max hold. So these plots have shown the worst case.

Note [3]: According the ANSI C63.10-2013, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Test Data

802.11b LOW CHANNEL

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2353.000	55.34	74.0	18.66	Peak	251.00	200	Horizontal	Pass
1**	2353.000	43.40	54.0	10.60	AV	251.00	200	Horizontal	Pass
2	2389.833	53.27	74.0	20.73	Peak	202.00	100	Horizontal	Pass
2**	2389.833	42.91	54.0	11.09	AV	202.00	100	Horizontal	Pass

802.11b HIGH CHANNEL

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2483.500	54.25	74.0	19.75	Peak	0.00	150	Horizontal	Pass
1**	2483.500	43.52	54.0	10.48	AV	0.00	150	Horizontal	Pass
2	2493.500	55.36	74.0	18.64	Peak	222.00	200	Horizontal	Pass
2**	2493.500	43.50	54.0	10.50	AV	222.00	200	Horizontal	Pass

802.11g LOW CHANNEL

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2388.667	66.40	74.0	7.60	Peak	264.00	150	Horizontal	Pass
1**	2388.667	49.67	54.0	4.33	AV	264.00	150	Horizontal	Pass
2	2389.833	65.60	74.0	8.40	Peak	247.00	200	Horizontal	Pass
2**	2389.833	50.46	54.0	3.54	AV	247.00	200	Horizontal	Pass

802.11g HIGH CHANNEL

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2483.550	66.63	74.0	7.37	Peak	247.00	100	Horizontal	Pass
1**	2483.550	50.13	54.0	N	AV	247.00	100	Horizontal	Pass
2	2484.000	65.96	74.0	8.04	Peak	259.00	200	Horizontal	Pass
2**	2484.000	49.19	54.0	4.81	AV	259.00	200	Horizontal	Pass

802.11n20 LOW CHANNEL

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2389.667	68.15	74.0	5.85	Peak	187.00	150	Horizontal	Pass
1**	2389.667	48.73	54.0	5.27	AV	187.00	150	Horizontal	Pass
2	2389.833	68.72	74.0	5.28	Peak	231.00	100	Horizontal	Pass
2**	2389.833	49.06	54.0	4.94	AV	231.00	100	Horizontal	Pass

802.11n20 HIGH CHANNEL

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2483.550	55.76	74.0	18.24	Peak	155.00	100	Horizontal	Pass
1**	2483.550	44.70	54.0	9.30	AV	155.00	100	Horizontal	Pass
2	2499.300	55.73	74.0	18.27	Peak	13.00	100	Horizontal	Pass
2**	2499.300	43.43	54.0	10.57	AV	13.00	100	Horizontal	Pass

802.11n40 LOW CHANNEL

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2321.833	55.21	74.0	18.79	Peak	40.00	100	Horizontal	Pass
1**	2321.833	43.13	54.0	10.87	AV	40.00	100	Horizontal	Pass
2	2389.833	53.95	74.0	20.05	Peak	160.00	200	Horizontal	Pass
2**	2389.833	44.01	54.0	9.99	AV	160.00	200	Horizontal	Pass

802.11n40 HIGH CHANNEL

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2483.550	55.74	74.0	18.26	Peak	37.00	200	Horizontal	Pass
1**	2483.550	45.77	54.0	8.23	AV	37.00	200	Horizontal	Pass
2	2490.150	58.14	74.0	15.86	Peak	172.00	150	Horizontal	Pass
2**	2490.150	45.86	54.0	8.14	AV	172.00	150	Horizontal	Pass

802.11ax20(SU) LOW CHANNEL

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2387.667	70.48	74.0	3.52	Peak	158.00	150	Horizontal	Pass
1**	2387.667	47.83	54.0	6.17	AV	158.00	150	Horizontal	Pass
2	2389.833	65.72	74.0	8.28	Peak	237.00	100	Horizontal	Pass
2**	2389.833	49.06	54.0	4.94	AV	237.00	100	Horizontal	Pass

802.11ax20(SU) HIGH CHANNEL

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2483.550	58.33	74.0	15.67	Peak	50.00	100	Horizontal	Pass
1**	2483.550	44.86	54.0	9.14	AV	50.00	100	Horizontal	Pass
2	2483.800	55.97	74.0	18.03	Peak	123.00	200	Horizontal	Pass
2**	2483.800	44.44	54.0	9.56	AV	123.00	200	Horizontal	Pass

802.11ax40(SU) LOW CHANNEL

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2383.833	55.74	74.0	18.26	Peak	185.00	150	Horizontal	Pass
1**	2383.833	44.16	54.0	9.84	AV	185.00	150	Horizontal	Pass
2	2389.833	53.75	74.0	20.25	Peak	184.00	150	Horizontal	Pass
2**	2389.833	43.74	54.0	10.26	AV	184.00	150	Horizontal	Pass

802.11ax40(SU) HIGH CHANNEL

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2483.500	56.01	74.0	17.99	Peak	148.00	100	Horizontal	Pass
1**	2483.500	46.12	54.0	7.88	AV	148.00	100	Horizontal	Pass
2	2488.950	59.51	74.0	14.49	Peak	148.00	100	Horizontal	Pass
2**	2488.950	46.58	54.0	7.42	AV	148.00	100	Horizontal	Pass

A.8 Power Spectral Density (PSD)

Test Data

802.11b Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-7.18	8
Middle	-6.50	8
High	-6.34	8

802.11g Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-8.65	8
Middle	-6.76	8
High	-9.66	8

802.11n-20 MHz Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-8.30	8
Middle	-6.77	8
High	-10.45	8

802.11n-40 MHz Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-12.07	8
Middle	-10.47	8
High	-14.03	8

802.11ax-20 MHz(SU) Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-9.54	8
Middle	-8.61	8
High	-11.13	8

802.11ax-40 MHz(SU) Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-12.23	8
Middle	-10.47	8
High	-12.99	8

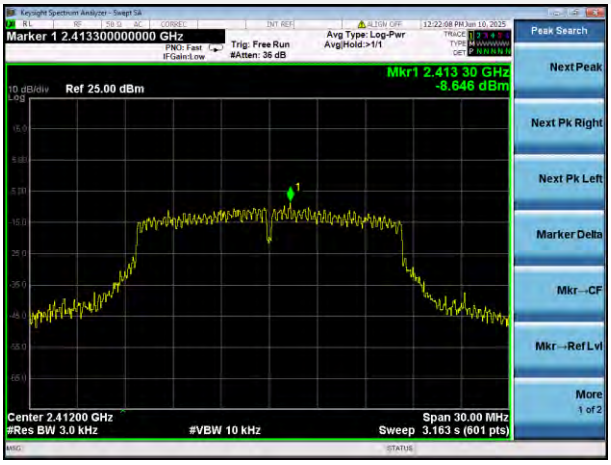
Test Plots

802.11b LOW CHANNEL

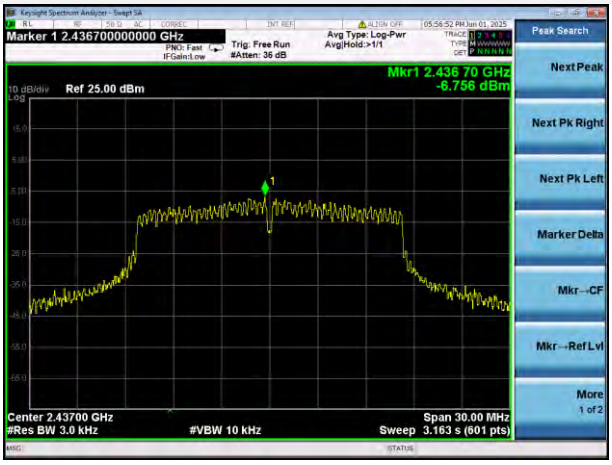
802.11b MIDDLE CHANNEL

802.11b HIGH CHANNEL

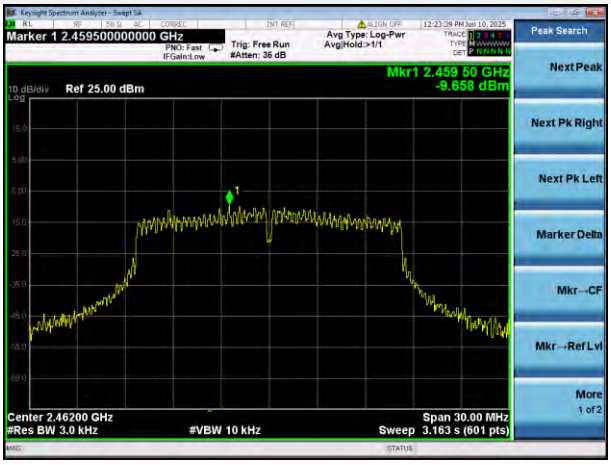
802.11g LOW CHANNEL



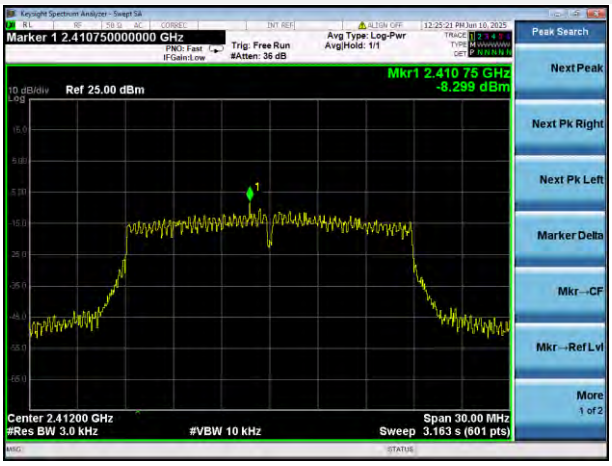
802.11g MIDDLE CHANNEL



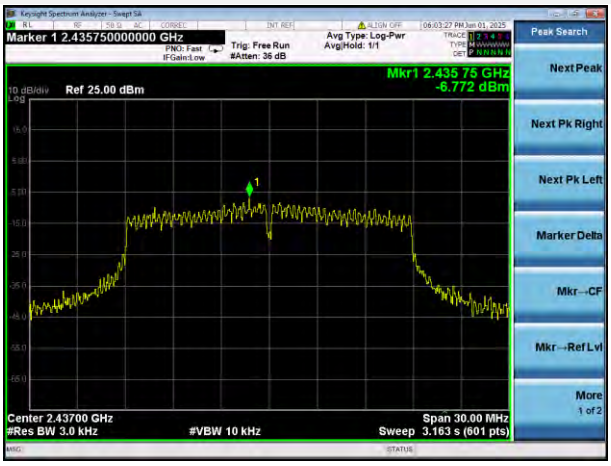
802.11g HIGH CHANNEL



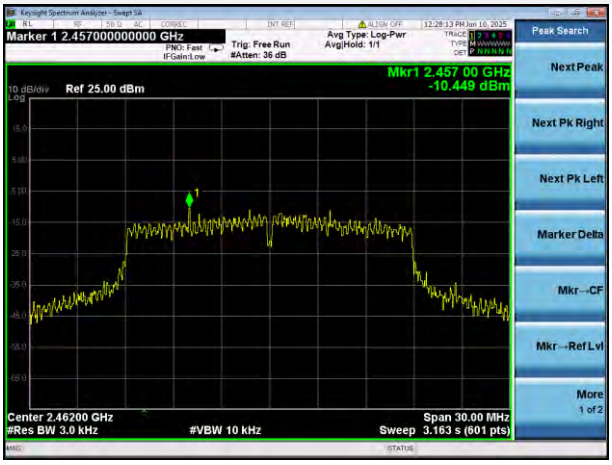
802.11n-20 MHz LOW CHANNEL



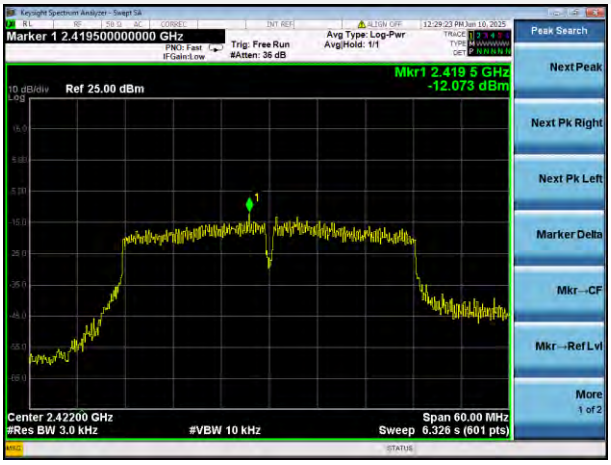
802.11n-20 MHz MIDDLE CHANNEL



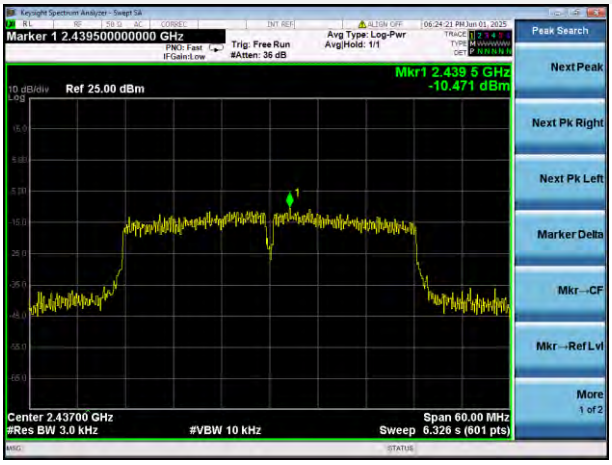
802.11n-20 MHz HIGH CHANNEL



802.11n-40 MHz LOW CHANNEL



802.11n-40 MHz MIDDLE CHANNEL



802.11n-40 MHz HIGH CHANNEL

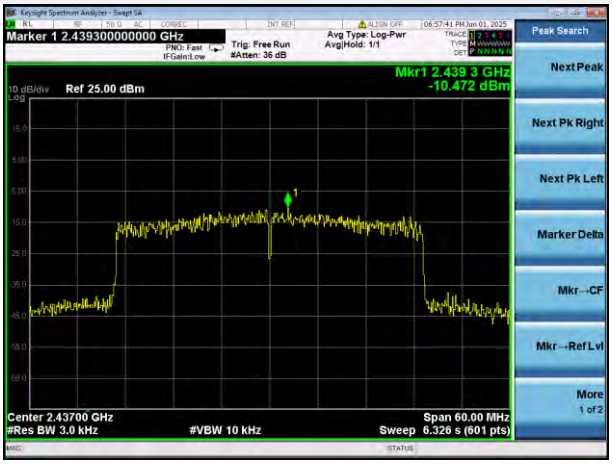
802.11ax-20 MHz(SU) LOW CHANNEL

802.11ax-20 MHz(SU) MIDDLE CHANNEL

802.11ax-20 MHz(SU) HIGH CHANNEL

802.11ax-40 MHz(SU) LOW CHANNEL

802.11ax-40 MHz(SU) MIDDLE CHANNEL



802.11ax-40 MHz(SU) HIGH CHANNEL

ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SZ2551034-AR.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ2551034-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SZ2551034-AI.PDF”.

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