TEST REPORT

Applicant:	Shenzhen ELECQ Technology Co. Ltd
Address:	7th Floor, Building 9, Changyuan Xincai, Gaoxin Middle 1st Road, Nanshan, Shenzhen, Guangdong, China
Equipment Type:	Elecq Home UL50 J1772
Model Name:	AU105 (refer to section 2.3)
Brand Name:	ELECQ
FCC ID:	2BKKM-EHAU101
ISED Number:	32968-EHAU101
Test Standard:	47 CFR Part 15 Subpart C RSS-Gen Issue 5 RSS-247 Issue 3 (refer to section 3.1)
Sample Arrival Date:	Sep. 20, 2024
Test Date:	Oct. 08, 2024 - Oct. 17, 2024
Date of Issue:	Oct. 29, 2024

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

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(Technical Director)

Revision History

Version	Issue Date	Revisions
Rev. 01	Oct. 29, 2024	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	Shenzhen ELECQ Technology Co. Ltd
Address	7th Floor, Building 9, Changyuan Xincai, Gaoxin Middle 1st Road, Nanshan, Shenzhen, Guangdong, China

2.2 Manufacturer Information

Manufacturer	Shenzhen ELECQ Technology Co. Ltd
Address	7th Floor, Building 9, Changyuan Xincai, Gaoxin Middle 1st Road, Nanshan, Shenzhen, Guangdong, China

2.3 General Description for Equipment under Test (EUT)

<table>
<tr><td>EUT Name</td><td>Elecq Home UL50 J1772</td></tr>
<tr><td>Model Name Under Test</td><td>AU105</td></tr>
<tr><td>Series Model Name</td><td>AU101, AU102, AU106</td></tr>
<tr><td>Description of Model name differentiation</td><td>All models are same with electrical parameters and internal circuit structure, but only differ as below:
<table>
<tr><th>Product Name</th><th>Model</th><th>Max Current</th><th>Max Power</th><th>Plug</th><th>Output Charging Cable</th></tr>
<tr><td>Elecq Home UL40 NEMA14-50 J1772</td><td>AU101</td><td rowspan="2">40A</td><td rowspan="2">9.6kW</td><td rowspan="2">NEMA14 -50 plug</td><td>Type1 7.5m</td></tr>
<tr><td>Elecq Home UL40 NEMA14-50 NACS</td><td>AU102</td><td>NACS 7.5m</td></tr>
<tr><td>Elecq Home UL50 J1772</td><td>AU105</td><td rowspan="2">50A</td><td rowspan="2">12kW</td><td rowspan="2">Not support</td><td>Type1 7.5m</td></tr>
<tr><td>Elecq Home UL50 NACS</td><td>AU106</td><td>NACS 7.5m</td></tr>
</table>
(this information provided by the applicant)</td></tr>
<tr><td>Serial Number</td><td>AU101A8G000189</td></tr>
<tr><td>Hardware Version</td><td>N/A</td></tr>
<tr><td>Software Version</td><td>N/A</td></tr>
<tr><td>Dimensions (Approx.)</td><td>N/A</td></tr>
<tr><td>Weight (Approx.)</td><td>N/A</td></tr>
</table>

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 Wi-SUN, NFC

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(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 Type		DSSS, OFDM, OFDMA
Product Type		☒ Mobile ☐ Portable ☐ Fix Location
Antenna System (eg., MIMO, Smart Antenna)		Cyclic Delay Diversity (CDD) for 802.11b/g Multi Input Multi Output (MIMO) for 802.11n/ax
Categorization as Correlated or Completely Uncorrelated		Categorization as Correlated for 802.11b/g Categorization as Uncorrelated for 802.11n/ax
Antenna Type	Antenna 1	Shrapnel Antenna
	Antenna 2	
Antenna Gain	Antenna 1	4.5 dBi
	Antenna 2	
Total directional gain	For power spectral density (PSD) measurements	Correlated: 7.51 dBi Formulas: Directional gain = *GANT* + 10 log(*NANT*) dBi Uncorrelated: 4.5 dBi Formulas: Directional gain = *GANT*
	For power measurements	Correlated: 7.51 dBi Formulas: Directional gain = *GANT* + 10 log(*NANT*) dBi Uncorrelated: 4.5 dBi Formulas: Directional gain = *GANT*
	For Conducted Out-of-Band and Spurious Measuremen	Correlated: 7.51 dBi Formulas: Directional gain = *GANT* + 10 log(*NANT*) dBi Uncorrelated: 4.5 dBi

	ts	Formulas: Directional gain = *GANT*
About the Product		Only the WIFI 802.11b, 802.11g, 802.11n (HT20/40) and 802.11ax (HE20) was tested in this report.

Mode	Antenna		
	Antenna 1	Antenna 2	MIMO
802.11b	√	√	√
802.11g	√	√	√
802.11n20	√	√	√
802.11n40	√	√	√
802.11ax20	√	√	√
Note: All the configurations were tested, but only the worst data was shown in this report.			

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

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

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	1/6/6.5/13.5/4 Mbps	1/6/11	3/6/9
Occupied Bandwidth	11b/11g/11n20/11n40/11ax20	1/6/6.5/13.5/4 Mbps	1/6/11	3/6/9
Conducted Spurious Emission	11b/11g/11n20/11n40/11ax20	1/6/6.5/13.5/4 Mbps	1/6/11	3/6/9
Conducted Emission	11b/11g/11n20/11n40/11ax20	1/6/6.5/13.5/4 Mbps	1/6/11	3/6/9
Radiated Spurious Emission	11b/11g/11n20/11n40/11ax20	1/6/6.5/13.5/4 Mbps	1/6/11	3/6/9
Band Edge	11b/11g/11n20/11n40/11ax20	1/6/6.5/13.5/4 Mbps	1/6/11	3/6/9
Power spectral density (PSD)	11b/11g/11n20/11n40/11ax20	1/6/6.5/13.5/4 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	KDB Publication 662911 D01v02r01	Emissions Testing of Transmitters with Multiple Outputs in the Same Band (e.g., MIMO, Smart Antenna, etc)
5	ANSI C63.10-2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
6	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	45% to 56%	
Atmospheric Pressure	100 kPa to 102 kPa	
Temperature	NT (Normal Temperature)	+23.8℃ to +26.1℃
Working Voltage of the EUT	NV (Normal Voltage)	240 V

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
Signaling Unit	ROHDE&SCHWARZ	CMW500	171150	2024.05.22	2025.05.21
Power Sensor	KEYSIGHT	U2063XA	MY58000251	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
EMI Receiver	KEYSIGHT	N9038A	MY53220118	2024.08.01	2025.07.31
Test Antenna-Bi-Log	SCHWARZBECK	VULB 9163	9163-624	2024.07.06	2027.07.05
Test Antenna-Loop	SCHWARZBECK	FMZB 1519	1519-037	2024.01.23	2025.01.22
Amplifier	COM-MV	ZT30-1000M	B2017119082	2023.12.05	2024.12.04
Anechoic Chamber	RAINFORD	9m*6m*6m	101	2023.03.04	2026.03.03
EMI Receiver	KEYSIGHT	N9010B	MY57110309	2024.08.01	2025.07.31
LISN	SCHWARZBECK	NSLK 8127	8127-687	2024.05.09	2025.05.08
Shielded Enclosure	YiHeng Electronic Co., Ltd	3.5m*3.1m*2.8m	112	2022.02.19	2025.02.18

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.

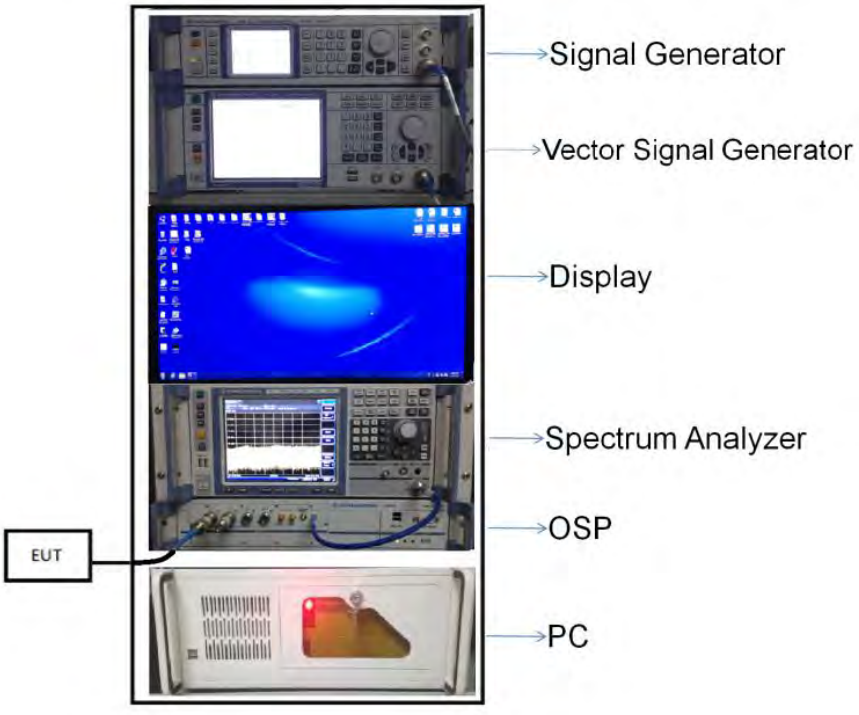
Parameters	Uncertainty
Occupied Channel Bandwidth	2.8%
RF output power, conducted	1.28 dB
Power Spectral Density, conducted	1.30 dB
Unwanted Emissions, conducted	1.84 dB
All emissions, radiated	5.36 dB
Temperature	0.8℃
Humidity	4%

4.5 Description of Test Setup

4.5.1 For Antenna Port Test

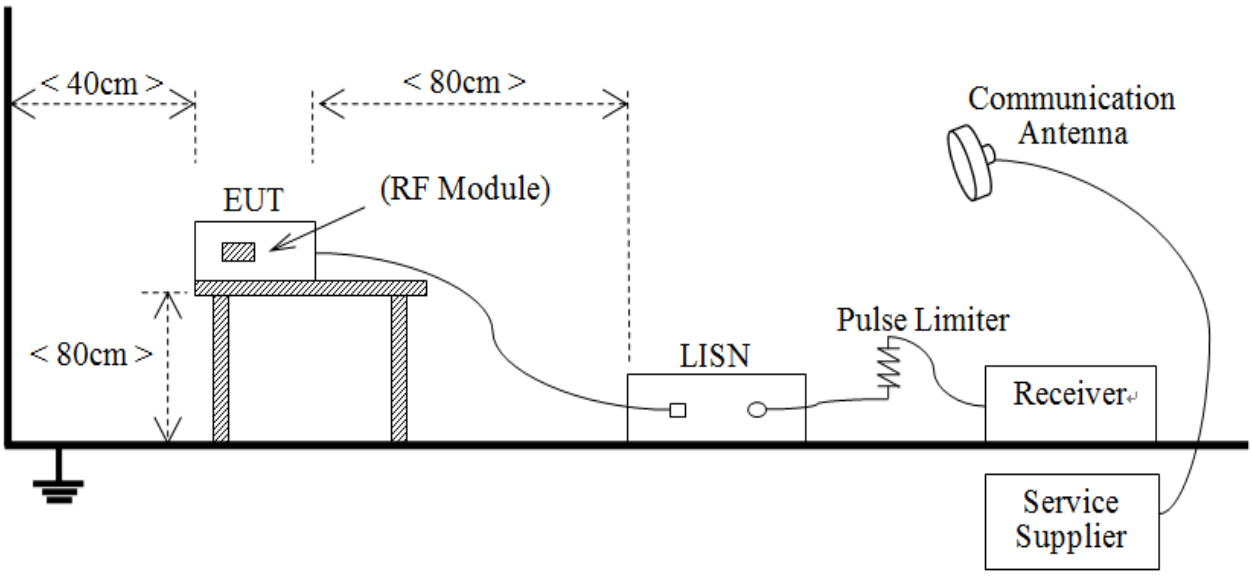
Conducted value (dBm) = Measurement value (dBm) + cable loss (dB)

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



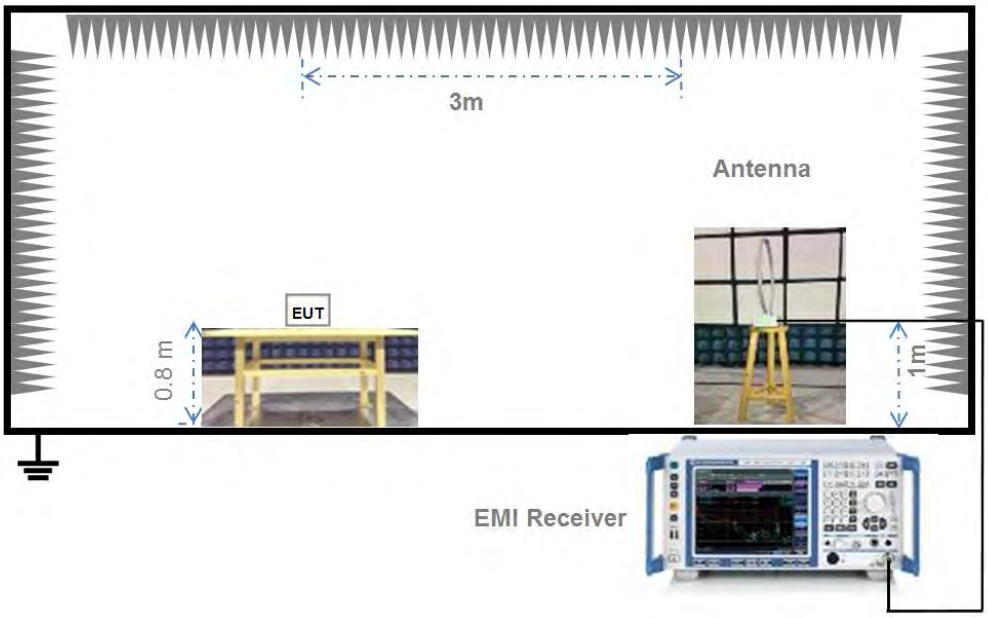
(Diagram 1)

4.5.2 For AC Power Supply Port Test



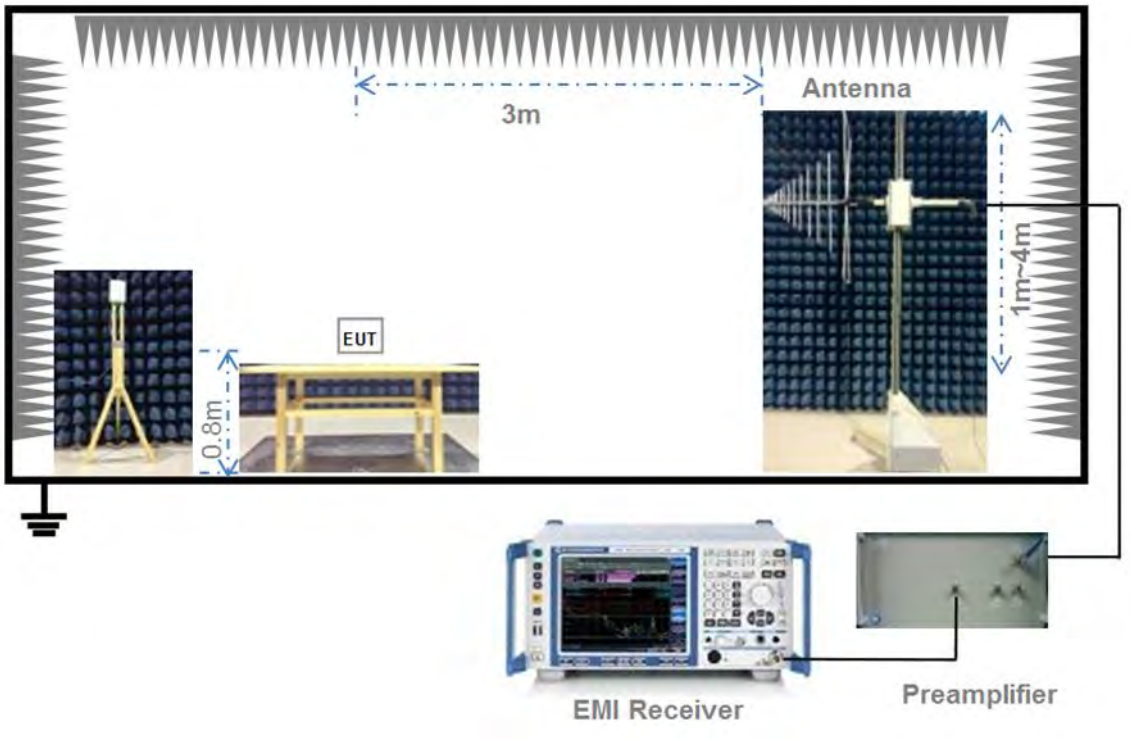
(Diagram 2)

4.5.3 For Radiated Test (Below 30 MHz)



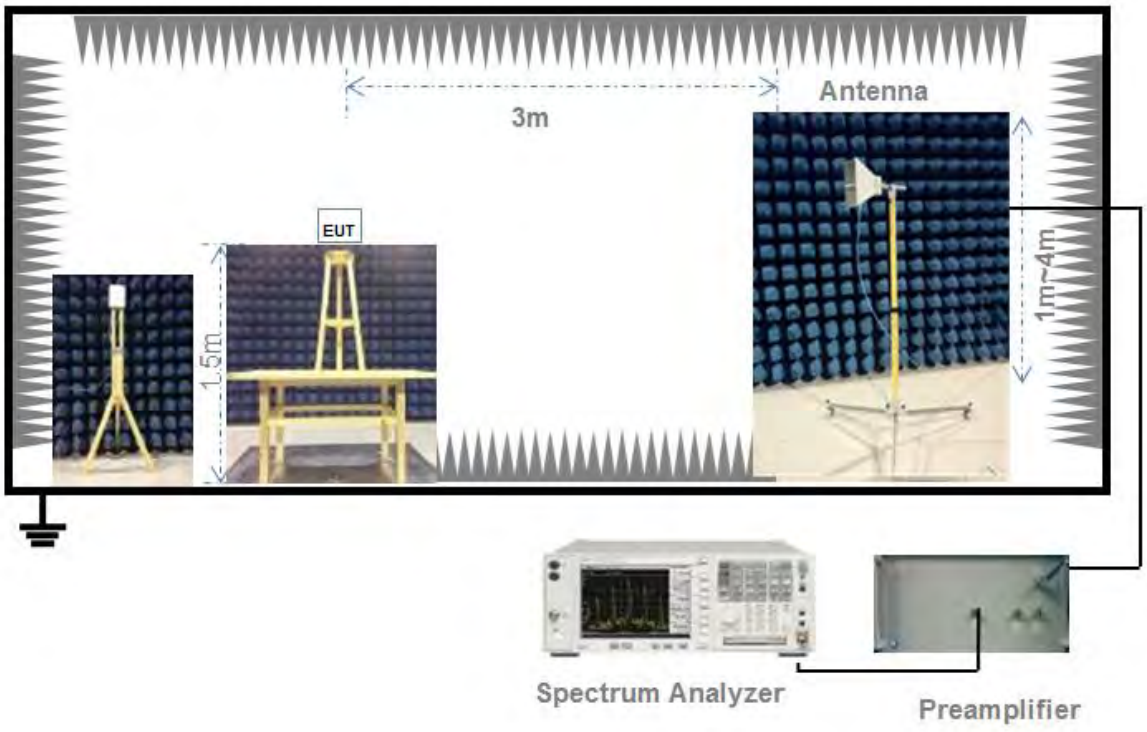
(Diagram 3)

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 – 20log 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) $\geqslant$ 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.

Reference level measurement

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 $\geqslant$ 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 $\geqslant$ 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 $\leqslant$ RBW $\leqslant$ 100 kHz.

Set the VBW $\geqslant$ 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	8.596	8.755	98.18%	0.08
802.11g	0.118	0.279	42.11%	3.76
802.11n-20 MHz	0.166	0.267	61.99%	2.08
802.11n-40 MHz	0.098	0.200	49.05%	3.09
802.11ax-20 MHz	0.165	0.317	52.05%	2.84

Peak Power Test Data

SISO-Antenna 1

802.11b Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	18.99	79.25	30	1000	Pass
Middle	19.02	79.80			Pass
High	18.95	78.52			Pass

802.11g Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	20.38	109.14	30	1000	Pass
Middle	20.98	125.31			Pass
High	21.04	127.06			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	20.45	110.92	30	1000	Pass
Middle	20.86	121.90			Pass
High	21.07	127.94			Pass

802.11n-40 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	21.06	127.64	30	1000	Pass
Middle	21.00	125.89			Pass
High	21.17	130.92			Pass

802.11ax-20 MHz(SU) Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	21.22	132.43	30	1000	Pass
Middle	20.96	124.74			Pass
High	20.91	123.31			Pass

SISO-Antenna 2

802.11b Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	19.19	82.99	30	1000	Pass
Middle	19.12	81.66			Pass
High	19.15	82.22			Pass

802.11g Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	20.48	111.69	30	1000	Pass
Middle	20.68	116.95			Pass
High	21.04	127.06			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	20.25	105.93	30	1000	Pass
Middle	20.66	116.41			Pass
High	20.77	119.40			Pass

802.11n-40 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	21.06	127.64	30	1000	Pass
Middle	20.70	117.49			Pass
High	21.17	130.92			Pass

802.11ax-20 MHz(SU) Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	21.32	135.52	30	1000	Pass
Middle	20.76	119.12			Pass
High	21.01	126.18			Pass

MIMO-Antenna 1

802.11b Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	15.99	39.72	28.49	706.32	Pass
Middle	16.02	39.99			Pass
High	15.95	39.36			Pass

802.11g Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	17.38	54.70	28.49	706.32	Pass
Middle	17.98	62.81			Pass
High	18.04	63.68			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	17.45	55.59	30	1000	Pass
Middle	17.86	61.09			Pass
High	18.07	64.12			Pass

802.11n-40 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	18.06	63.97	30	1000	Pass
Middle	18.00	63.10			Pass
High	18.17	65.61			Pass

802.11ax-20 MHz(SU) Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	18.22	66.37	30	1000	Pass
Middle	17.96	62.52			Pass
High	17.91	61.80			Pass

MIMO-Antenna 2

802.11b Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	16.19	41.59	28.49	706.32	Pass
Middle	15.62	36.48			Pass
High	16.15	41.21			Pass

802.11g Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	17.48	55.98	28.49	706.32	Pass
Middle	18.08	64.27			Pass
High	18.24	66.68			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	17.05	50.70	30	1000	Pass
Middle	17.76	59.70			Pass
High	18.07	64.12			Pass

802.11n-40 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	18.16	65.46	30	1000	Pass
Middle	18.00	63.10			Pass
High	18.27	67.14			Pass

802.11ax-20 MHz(SU) Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	18.32	67.92	30	1000	Pass
Middle	17.96	62.52			Pass
High	17.71	59.02			Pass

MIMO

802.11b Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	19.10	81.31	28.49	706.32	Pass
Middle	18.83	76.47			Pass
High	19.06	80.56			Pass

802.11g Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	20.44	110.68	28.49	706.32	Pass
Middle	21.04	127.07			Pass
High	21.15	130.36			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	20.26	106.29	30	1000	Pass
Middle	20.82	120.80			Pass
High	21.08	128.24			Pass

802.11n-40 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	21.12	129.44	30	1000	Pass
Middle	21.01	126.19			Pass
High	21.23	132.76			Pass

802.11ax-20 MHz(SU) Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	21.28	134.29	30	1000	Pass
Middle	20.97	125.03			Pass
High	20.82	120.82			Pass

Average Power Test Data

SISO-Antenna 1

802.11b Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	15.98	39.63	30	1000	Pass
Middle	15.86	38.55			Pass
High	15.92	39.08			Pass

802.11g Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	14.11	25.76	30	1000	Pass
Middle	14.89	30.83			Pass
High	14.87	30.69			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	14.03	25.29	30	1000	Pass
Middle	14.62	28.97			Pass
High	14.80	30.20			Pass

802.11n-40 MHz Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	14.52	28.31	30	1000	Pass
Middle	14.48	28.05			Pass
High	14.61	28.91			Pass

802.11ax-20 MHz(SU) Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	14.86	30.62	30	1000	Pass
Middle	14.61	28.91			Pass
High	14.50	28.18			Pass

SISO-Antenna 2

802.11b Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	15.88	38.73	30	1000	Pass
Middle	15.46	35.16			Pass
High	15.52	35.65			Pass

802.11g Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	13.71	23.50	30	1000	Pass
Middle	14.79	30.13			Pass
High	14.87	30.69			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	13.73	23.60	30	1000	Pass
Middle	14.82	30.34			Pass
High	14.90	30.90			Pass

802.11n-40 MHz Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	14.32	27.04	30	1000	Pass
Middle	14.28	26.79			Pass
High	14.41	27.61			Pass

802.11ax-20 MHz(SU) Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	15.06	32.06	30	1000	Pass
Middle	14.71	29.58			Pass
High	14.60	28.84			Pass

MIMO-Antenna 1

802.11b Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	13.08	20.32	28.49	706.32	Pass
Middle	13.06	20.23			Pass
High	13.02	20.04			Pass

802.11g Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	11.11	12.91	28.49	706.32	Pass
Middle	11.59	14.42			Pass
High	12.07	16.11			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	11.23	13.27	30	1000	Pass
Middle	11.52	14.19			Pass
High	11.92	15.56			Pass

802.11n-40 MHz Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	11.22	13.24	30	1000	Pass
Middle	11.68	14.72			Pass
High	11.21	13.21			Pass

802.11ax-20 MHz(SU) Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	11.66	14.66	30	1000	Pass
Middle	11.81	15.17			Pass
High	11.23	13.27			Pass

MIMO-Antenna 2

802.11b Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	13.08	20.32	28.49	706.32	Pass
Middle	13.06	20.23			Pass
High	12.42	17.46			Pass

802.11g Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	10.81	12.05	28.49	706.32	Pass
Middle	11.39	13.77			Pass
High	11.47	14.03			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	11.03	12.68	30	1000	Pass
Middle	10.92	12.36			Pass
High	11.16	13.06			Pass

802.11n-40 MHz Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	11.92	15.56	30	1000	Pass
Middle	11.28	13.43			Pass
High	11.71	14.83			Pass

802.11ax-20 MHz(SU) Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	12.16	16.44	30	1000	Pass
Middle	11.61	14.49			Pass
High	11.52	14.19			Pass

MIMO

802.11b Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	16.09	40.65	28.49	706.32	Pass
Middle	16.07	40.46			Pass
High	15.74	37.50			Pass

802.11g Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	13.97	24.96	28.49	706.32	Pass
Middle	14.50	28.19			Pass
High	14.79	30.13			Pass

802.11n-20 MHz Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	14.14	25.95	30	1000	Pass
Middle	14.24	26.55			Pass
High	14.57	28.62			Pass

802.11n-40 MHz Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	14.59	28.80	30	1000	Pass
Middle	14.49	28.15			Pass
High	14.48	28.04			Pass

802.11ax-20 MHz(SU) Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	14.93	31.10	30	1000	Pass
Middle	14.72	29.66			Pass
High	14.39	27.46			Pass

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

SISO-Antenna 1

802.11b Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	23.49	223.36	36	4	Pass
Middle	23.52	224.91			Pass
High	23.45	221.31			Pass

802.11g Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	24.88	307.61	36	4	Pass
Middle	25.48	353.18			Pass
High	25.54	358.10			Pass

802.11n-20 MHz Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	24.95	312.61	36	4	Pass
Middle	25.36	343.56			Pass
High	25.57	360.58			Pass

802.11n-40 MHz Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	25.56	359.75	36	4	Pass
Middle	25.50	354.81			Pass
High	25.67	368.98			Pass

802.11ax-20 MHz(SU) Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	25.72	373.25	36	4	Pass
Middle	25.46	351.56			Pass
High	25.41	347.54			Pass

SISO-Antenna 2

802.11b Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	23.69	233.88	36	4	Pass
Middle	23.62	230.14			Pass
High	23.65	231.74			Pass

802.11g Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	24.98	314.77	36	4	Pass
Middle	25.18	329.61			Pass
High	25.54	358.10			Pass

802.11n-20 MHz Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	24.75	298.54	36	4	Pass
Middle	25.16	328.10			Pass
High	25.27	336.51			Pass

802.11n-40 MHz Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	25.56	359.75	36	4	Pass
Middle	25.20	331.13			Pass
High	25.67	368.98			Pass

802.11ax-20 MHz(SU) Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	25.82	381.94	36	4	Pass
Middle	25.26	335.74			Pass
High	25.51	355.63			Pass

MIMO-Antenna 1

802.11b Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	20.49	111.94	36	4	Pass
Middle	20.52	112.72			Pass
High	20.45	110.92			Pass

802.11g Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	21.88	154.17	36	4	Pass
Middle	22.48	177.01			Pass
High	22.54	179.47			Pass

802.11n-20 MHz Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	21.95	156.68	36	4	Pass
Middle	22.36	172.19			Pass
High	22.57	180.72			Pass

802.11n-40 MHz Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	22.56	180.30	36	4	Pass
Middle	22.50	177.83			Pass
High	22.67	184.93			Pass

802.11ax-20 MHz(SU) Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	22.72	187.07	36	4	Pass
Middle	22.46	176.20			Pass
High	22.41	174.18			Pass

MIMO-Antenna 2

802.11b Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	20.69	117.22	36	4	Pass
Middle	20.12	102.80			Pass
High	20.65	116.14			Pass

802.11g Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	21.98	157.76	36	4	Pass
Middle	22.58	181.13			Pass
High	22.74	187.93			Pass

802.11n-20 MHz Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	21.55	142.89	36	4	Pass
Middle	22.26	168.27			Pass
High	22.57	180.72			Pass

802.11n-40 MHz Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	22.66	184.50	36	4	Pass
Middle	22.50	177.83			Pass
High	22.77	189.23			Pass

802.11ax-20 MHz(SU) Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	22.82	191.43	36	4	Pass
Middle	22.46	176.20			Pass
High	22.21	166.34			Pass

MIMO

802.11b Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	23.60	229.16	36	4	Pass
Middle	23.33	215.52			Pass
High	23.56	227.06			Pass

802.11g Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	24.94	311.93	36	4	Pass
Middle	25.54	358.14			Pass
High	25.65	367.41			Pass

802.11n-20 MHz Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	24.76	299.56	36	4	Pass
Middle	25.32	340.45			Pass
High	25.58	361.43			Pass

802.11n-40 MHz Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	25.62	364.80	36	4	Pass
Middle	25.51	355.66			Pass
High	25.73	374.16			Pass

802.11ax-20 MHz(SU) Mode:

Channel	E.I.R.P		Limit		Verdict
	dBm	mW	dBm	W	
Low	25.78	378.49	36	4	Pass
Middle	25.47	352.40			Pass
High	25.32	340.52			Pass

A.2 Occupied Bandwidth

Note: All antenna were pre tested, but only the worst case has been reported in this report.

Test Data

SISO-Antenna 1

802.11b Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	7.200000	11.513000	⩾500
Middle	8.200000	11.073000	⩾500
High	7.700000	10.863000	⩾500

802.11g Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	16.700000	17.277000	⩾500
Middle	16.600000	17.388000	⩾500
High	16.700000	17.335000	⩾500

802.11n-20MHz Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	17.900000	18.652000	⩾500
Middle	17.900000	18.621000	⩾500
High	17.900000	18.739000	⩾500

802.11n-40MHz Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	36.300000	36.626000	⩾500
Middle	36.500000	36.654000	⩾500
High	36.500000	36.685000	⩾500

802.11ax-20 MHz(SU) Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	17.900000	18.601000	⩾500
Middle	17.900000	18.619000	⩾500
High	17.900000	18.697000	⩾500

Test Plots

SISO-Antenna 1

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

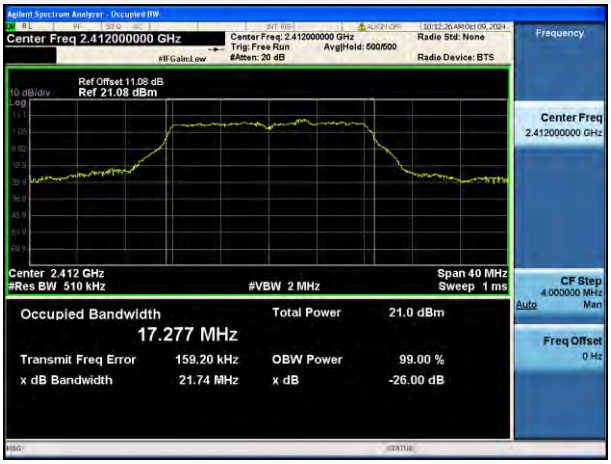
99% Bandwidth

802.11b LOW CHANNEL

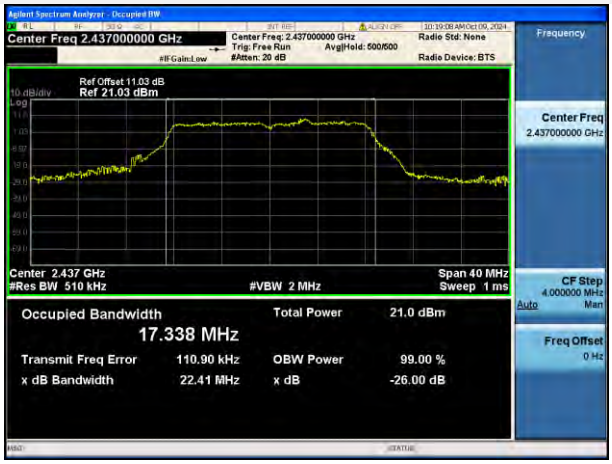
802.11b MIDDLE CHANNEL

802.11b HIGH CHANNEL

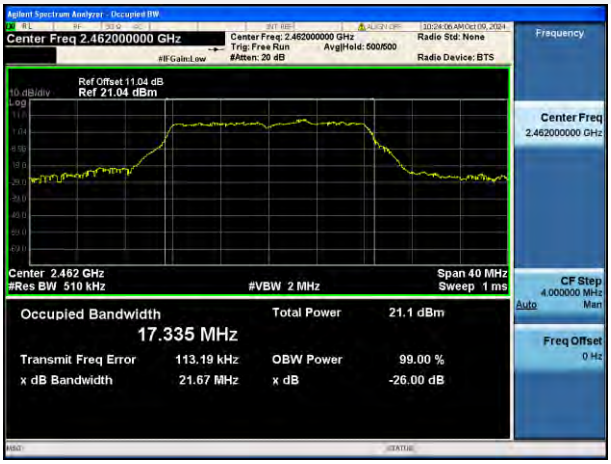
802.11g LOW CHANNEL



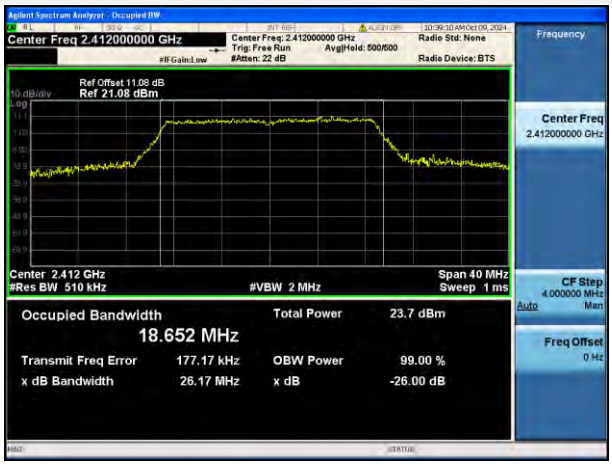
802.11g MIDDLE CHANNEL



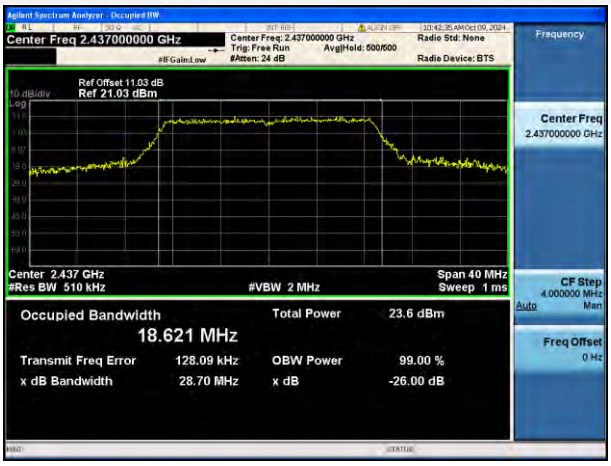
802.11g HIGH CHANNEL



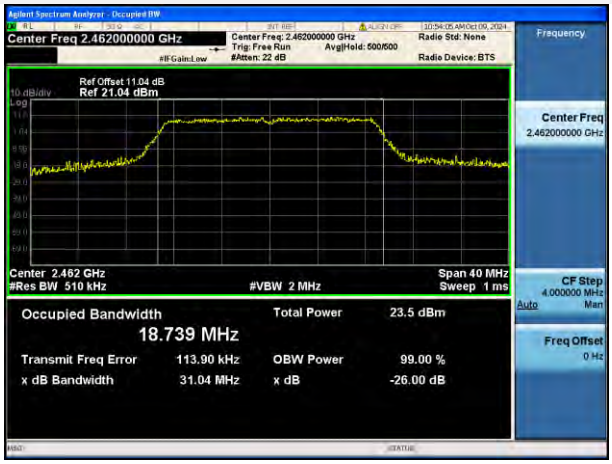
802.11n-20 MHz LOW CHANNEL



802.11n-20 MHz MIDDLE CHANNEL

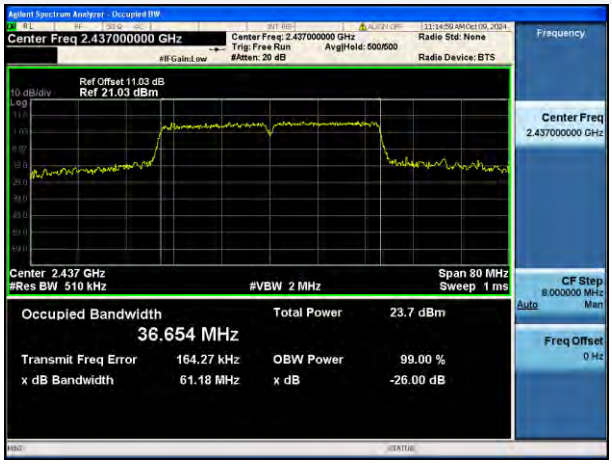


802.11n-20 MHz HIGH CHANNEL

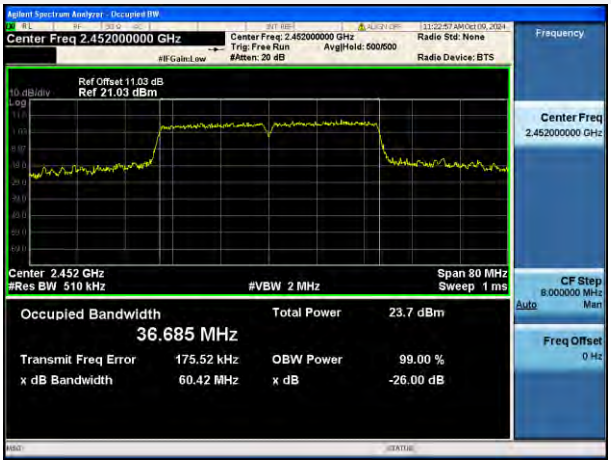


802.11n-40 MHz LOW CHANNEL

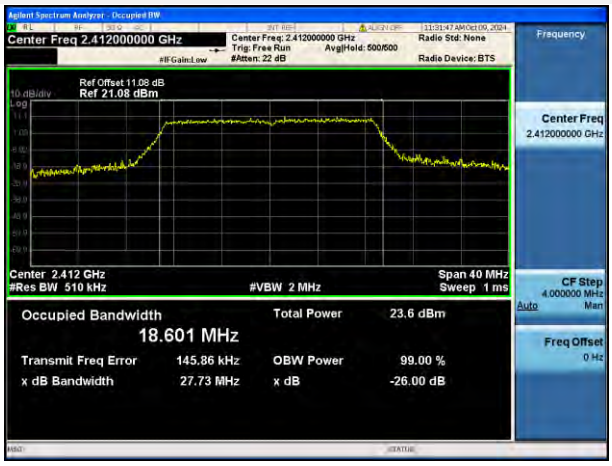
802.11n-40 MHz MIDDLE CHANNEL



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

A.3 Conducted Spurious Emissions

Note: All antenna were pre tested, but only the worst case has been reported in this report.

Test Data

SISO-Antenna 1

802.11b Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-35.68	8.30	-11.71	Pass
Middle	-39.70	8.45	-11.55	Pass
High	-36.25	8.09	-11.91	Pass

802.11g Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-35.58	2.54	-17.46	Pass
Middle	-34.96	3.34	-16.66	Pass
High	-35.84	3.42	-16.58	Pass

802.11n-20MHz Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-38.27	2.57	-17.43	Pass
Middle	-35.84	3.27	-16.73	Pass
High	-35.95	3.58	-16.42	Pass

802.11n-40MHz Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-35.80	0.90	-19.10	Pass
Middle	-35.25	0.69	-19.31	Pass
High	-37.67	0.82	-19.18	Pass

802.11ax-20 MHz(SU) Mode:

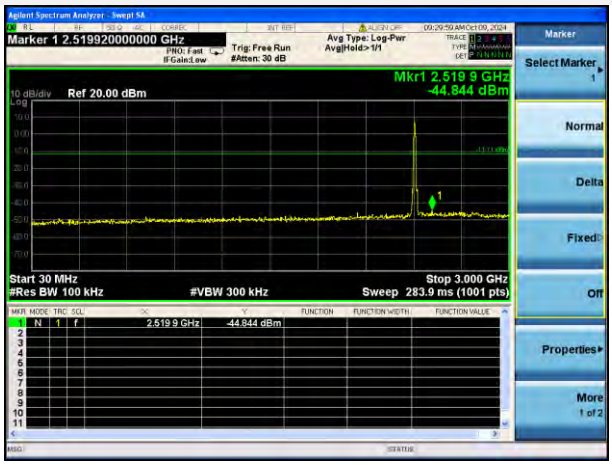
Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-37.13	3.57	-16.43	Pass
Middle	-35.89	3.39	-16.62	Pass
High	-38.59	3.43	-16.58	Pass

Test Plots

SISO-Antenna 1

802.11b LOW CHANNEL CARRIER LEVEL

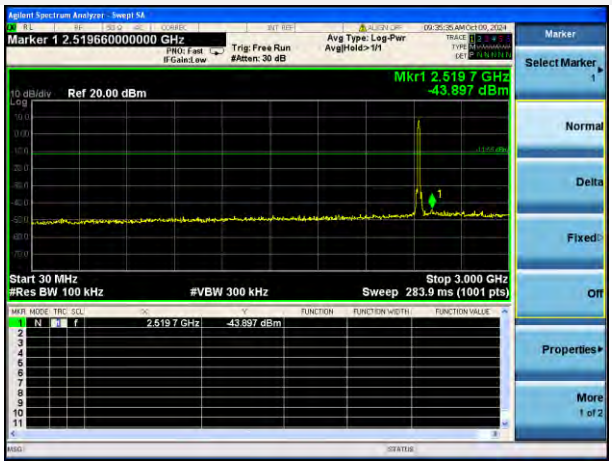
802.11b LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



802.11b LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

802.11b MIDDLE CHANNEL CARRIER LEVEL

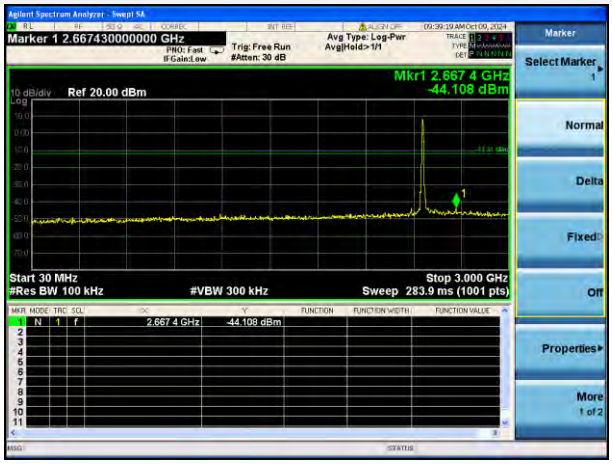
802.11b MIDDLE CHANNEL, SPURIOUS
30 MHz ~ 3 GHz



802.11b MIDDLE CHANNEL, SPURIOUS
2 GHz ~ 25 GHz

802.11b HIGH CHANNEL CARRIER LEVEL

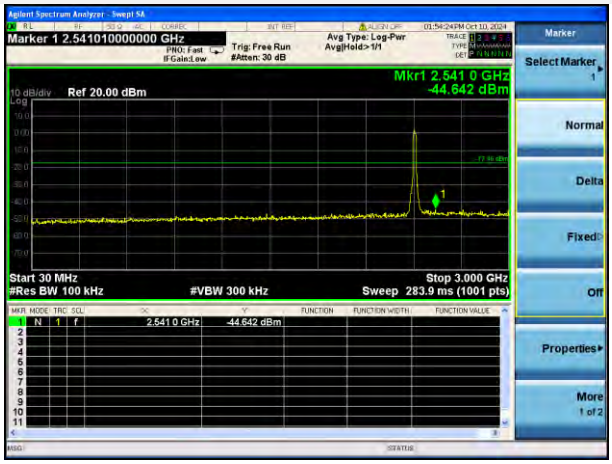
802.11b HIGH CHANNEL, SPURIOUS
30 MHz ~ 3 GHz



802.11b HIGH CHANNEL, SPURIOUS
2 GHz ~ 25 GHz

802.11g LOW CHANNEL CARRIER LEVEL

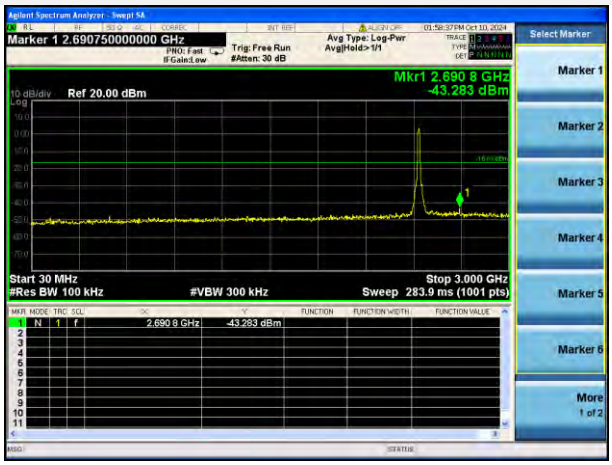
802.11g LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



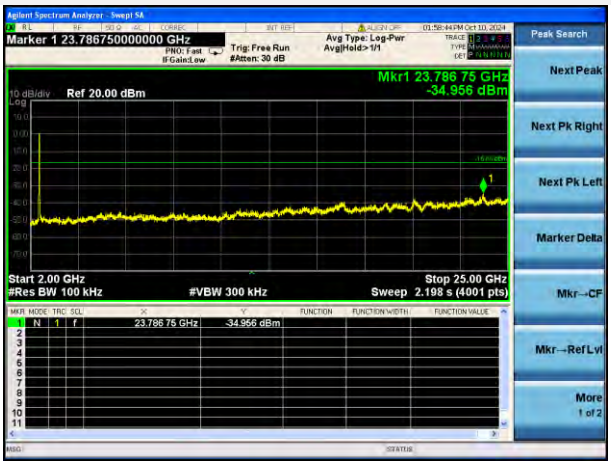
802.11g LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

802.11g MIDDLE CHANNEL CARRIER LEVEL

802.11g MIDDLE CHANNEL, SPURIOUS
30 MHz ~ 3 GHz

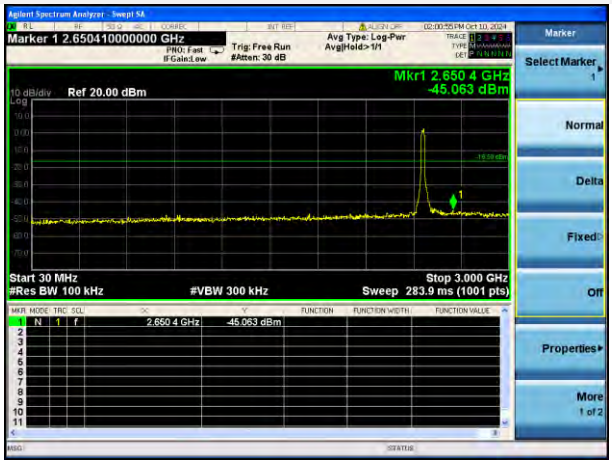


802.11g MIDDLE CHANNEL, SPURIOUS
2 GHz ~ 25 GHz



802.11g HIGH CHANNEL CARRIER LEVEL

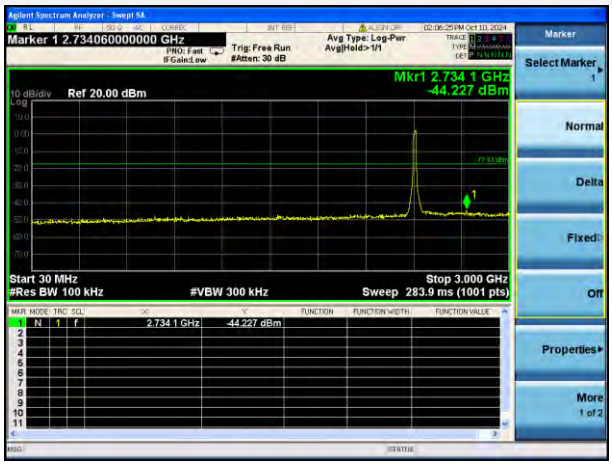
802.11g HIGH CHANNEL, SPURIOUS
30 MHz ~ 3 GHz



802.11g HIGH CHANNEL, SPURIOUS
2 GHz ~ 25 GHz

802.11n-20 MHz LOW CHANNEL CARRIER LEVEL

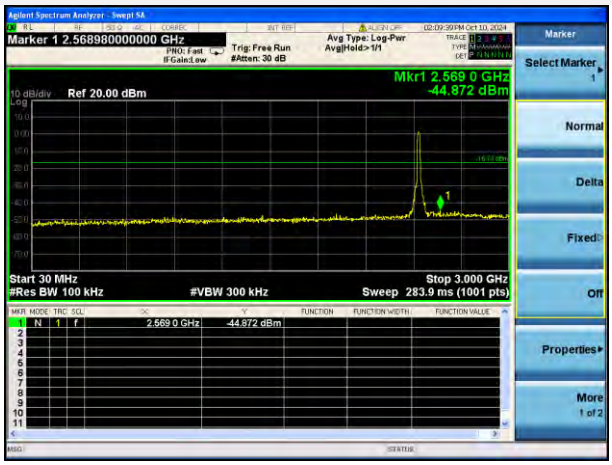
802.11n-20 MHz LOW CHANNEL, SPURIOUS
30 MHz ~ 3 GHz



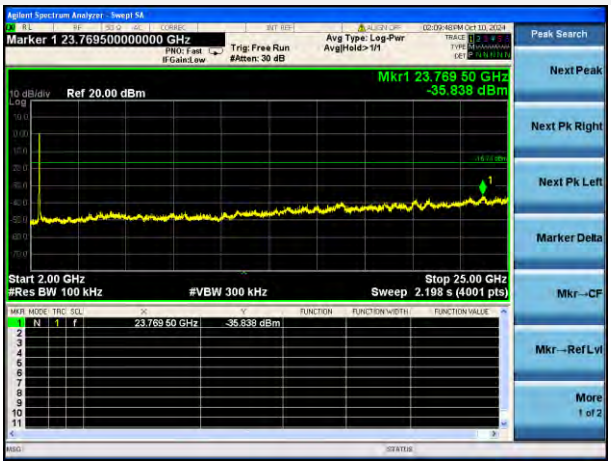
802.11n-20 MHz LOW CHANNEL, SPURIOUS
2 GHz ~ 25 GHz

802.11n-20 MHz MIDDLE CHANNEL CARRIER LEVEL

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

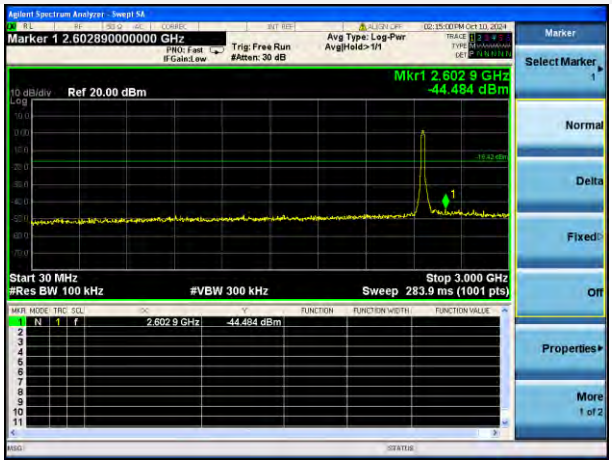


802.11n-20 MHz MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



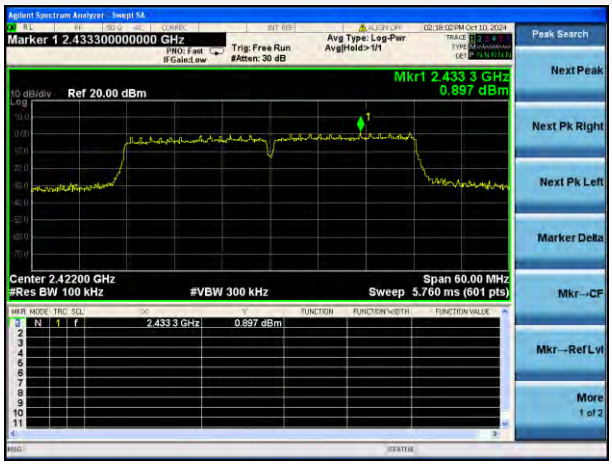
802.11n-20 MHz HIGH CHANNEL CARRIER LEVEL

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

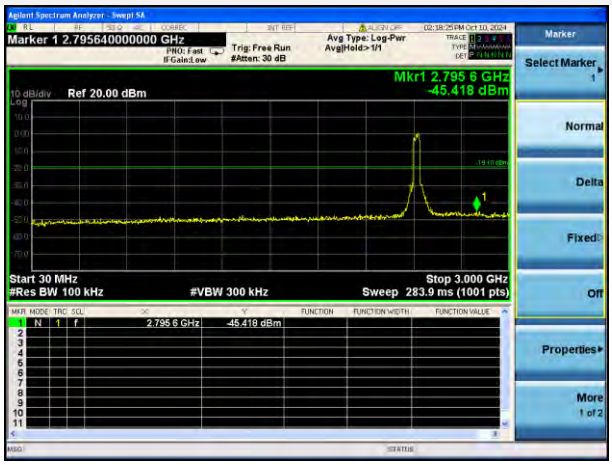


802.11n-20 MHz HIGH CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

802.11n-40 MHz LOW CHANNEL CARRIER LEVEL

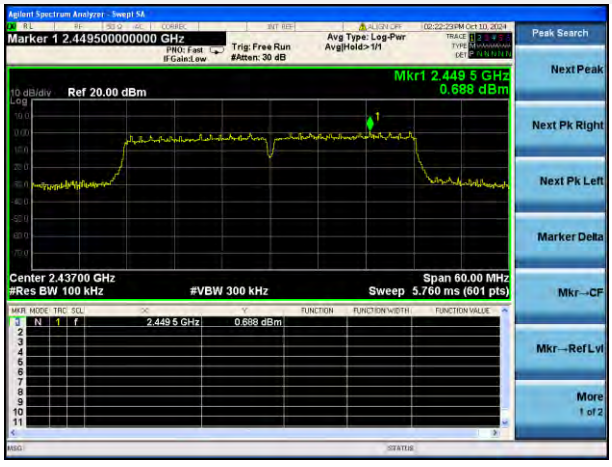


802.11n-40 MHz LOW CHANNEL, SPURIOUS
30 MHz ~ 3 GHz

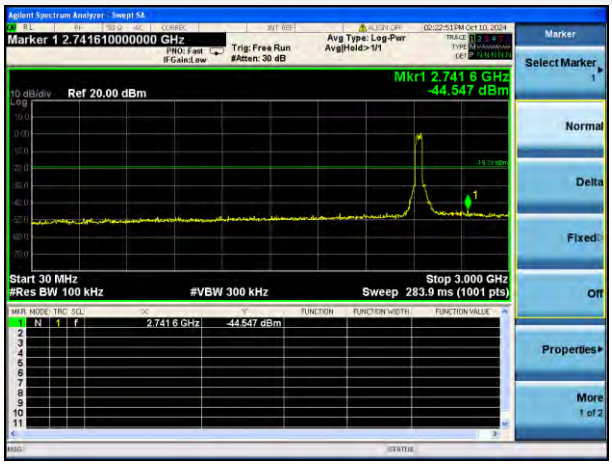


802.11n-40 MHz LOW CHANNEL, SPURIOUS
2 GHz ~ 25 GHz

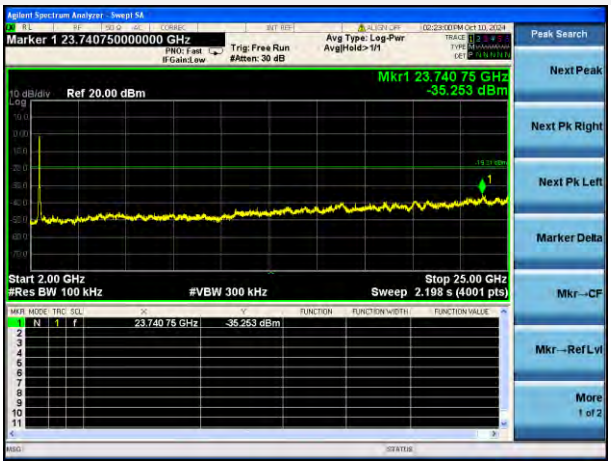
802.11n-40 MHz MIDDLE CHANNEL CARRIER LEVEL



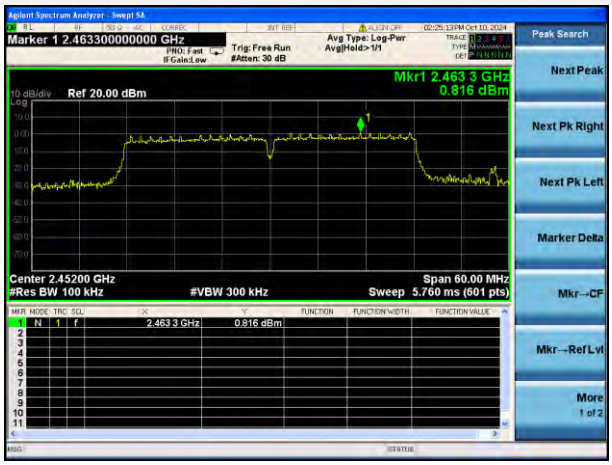
802.11n-40 MHz MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



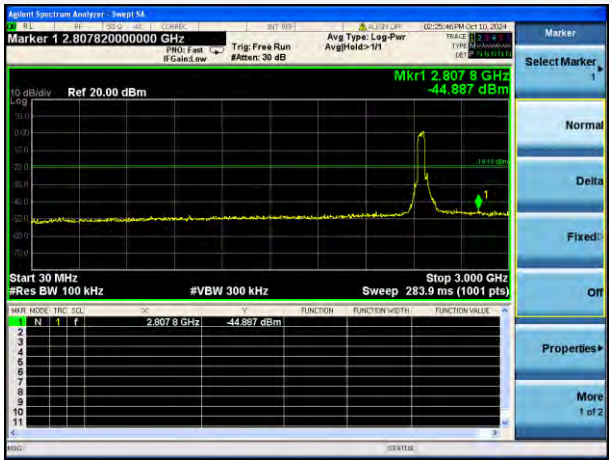
802.11n-40 MHz MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



802.11n-40 MHz HIGH CHANNEL CARRIER LEVEL



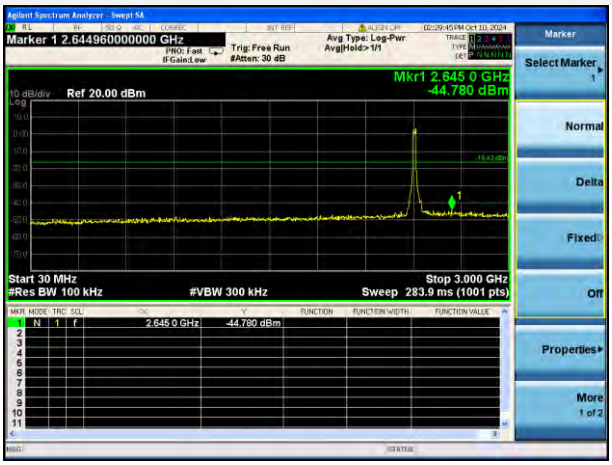
802.11n-40 MHz HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



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

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

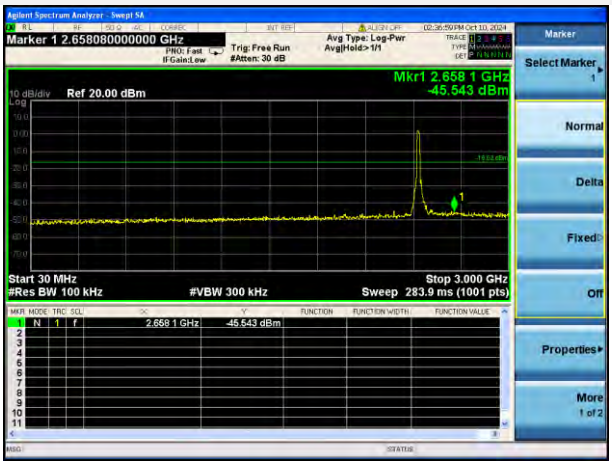
802.11ax-20 MHz(SU) LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



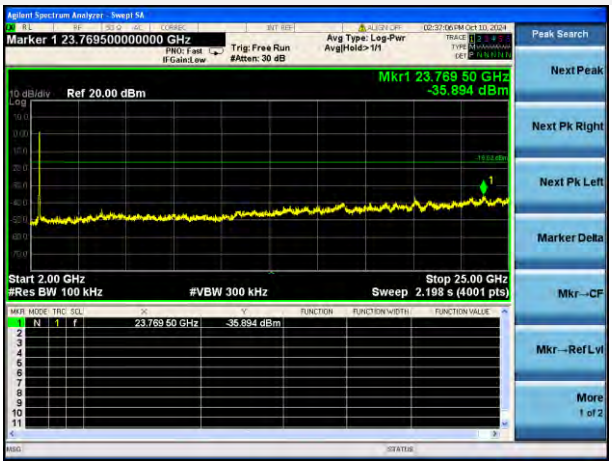
802.11ax-20 MHz(SU) LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz

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

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

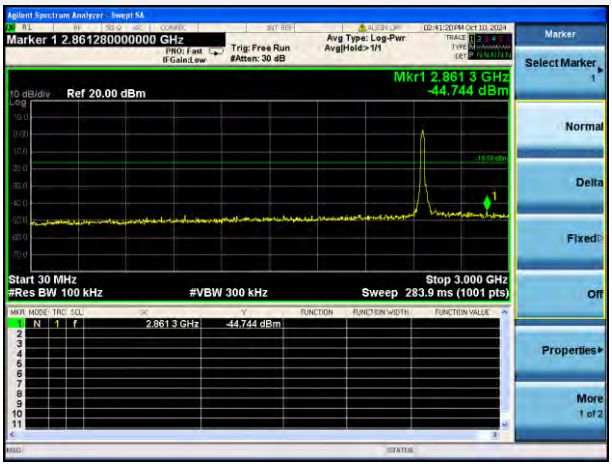


802.11ax-20 MHz(SU) MIDDLE CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



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

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

Note [1]: The 99% OBW of the fundamental emission is without 2 MHz of the authorized band.

Note [2]: All antenna were pre tested, but only the worst case has been reported in this report.

Test Data

SISO-Antenna 1

802.11b Mode：

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-29.00	8.30	-11.71	Pass
High Channel	-42.99	8.09	-11.91	Pass

802.11g Mode：

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-27.76	2.54	-17.46	Pass
High Channel	-29.77	3.42	-16.58	Pass

802.11n-20 MHz Mode:

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-26.47	2.57	-17.43	Pass
High Channel	-28.75	3.58	-16.42	Pass

802.11n-40 MHz Mode:

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-28.32	0.90	-19.10	Pass
High Channel	-24.19	0.82	-19.18	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	-24.89	3.57	-16.43	Pass
High Channel	-28.91	3.43	-16.58	Pass

Test Plots

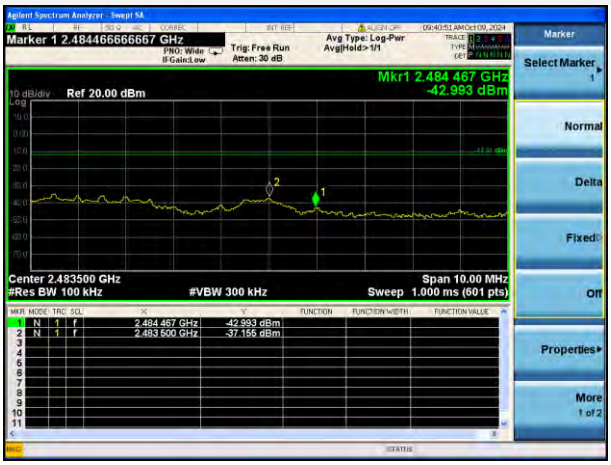
SISO-Antenna 1

802.11b LOW CHANNEL, CARRIER LEVEL

802.11b LOW CHANNEL, BAND EDGE

802.11b HIGH CHANNEL, CARRIER LEVEL

802.11b HIGH CHANNEL, BAND EDGE

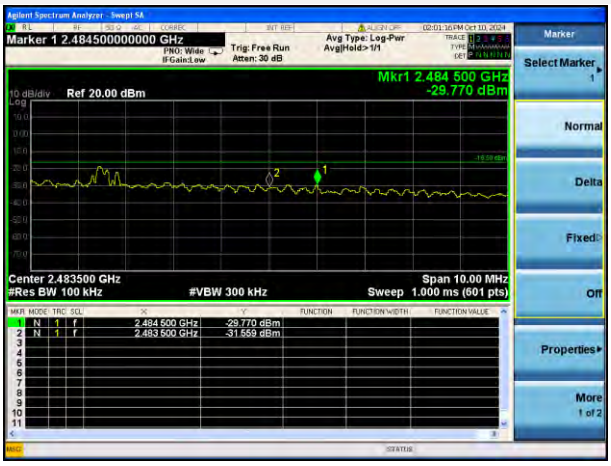


802.11g LOW CHANNEL, CARRIER LEVEL

802.11g LOW CHANNEL, BAND EDGE

802.11g HIGH CHANNEL, CARRIER LEVEL

802.11g HIGH CHANNEL, BAND EDGE

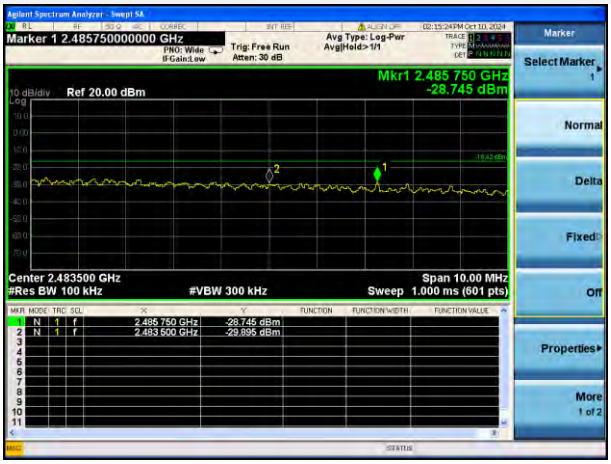


802.11n-20 MHz LOW CHANNEL, CARRIER LEVEL

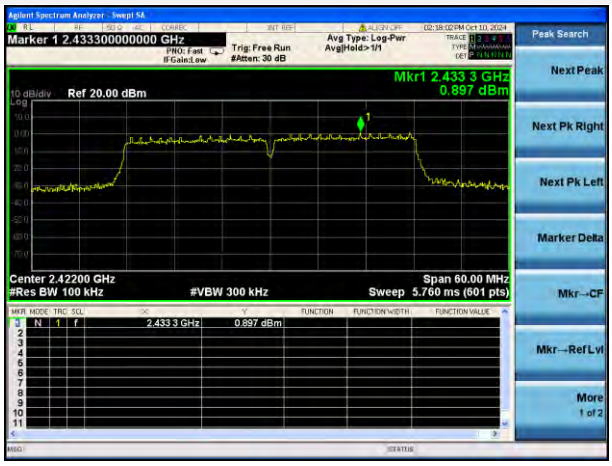
802.11n-20 MHz LOW CHANNEL, BAND EDGE

802.11n-20 MHz HIGH CHANNEL, CARRIER LEVEL

802.11n-20 MHz HIGH CHANNEL, BAND EDGE

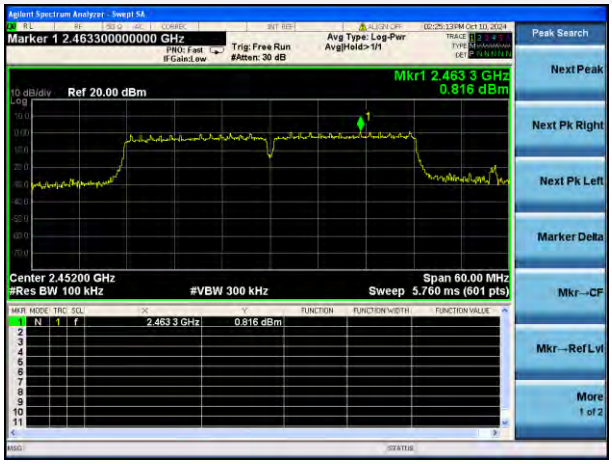


802.11n-40 MHz LOW CHANNEL, CARRIER LEVEL

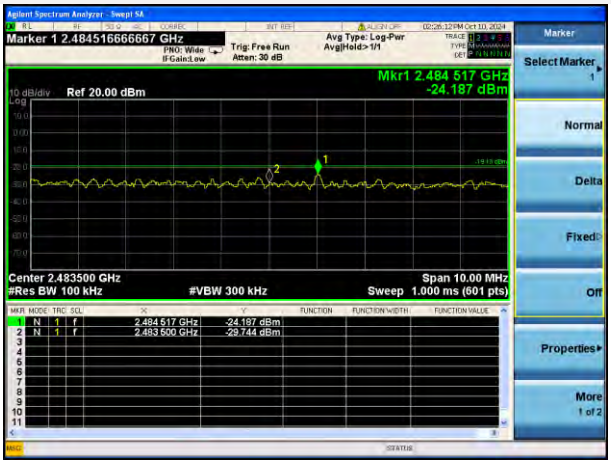


802.11n-40 MHz LOW CHANNEL, BAND EDGE

802.11n-40 MHz HIGH CHANNEL, CARRIER LEVEL



802.11n-40 MHz HIGH CHANNEL, BAND EDGE

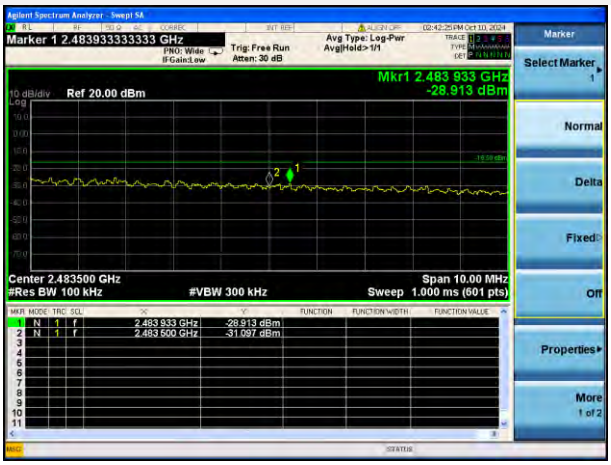


802.11ax-20 MHz(SU) LOW CHANNEL, CARRIER LEVEL

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



A.5 Conducted Emissions

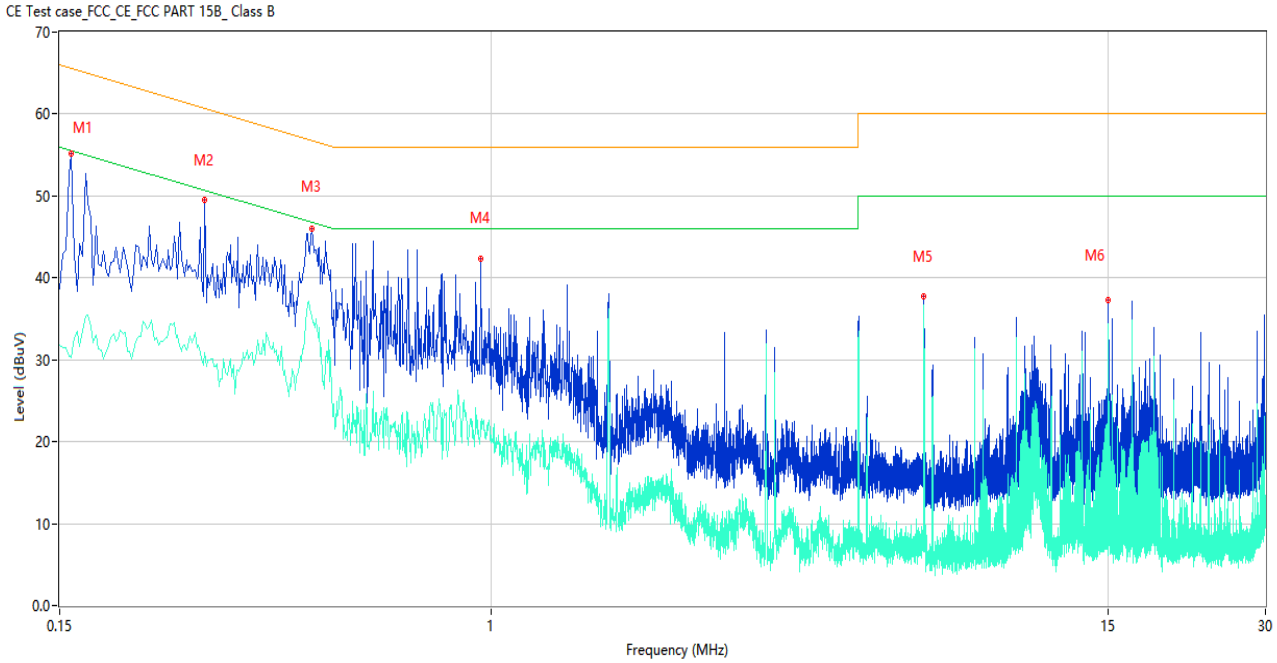
Note [1]: The EUT is working in the Normal link mode. All modes have been tested and normal link mode is worst.

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)

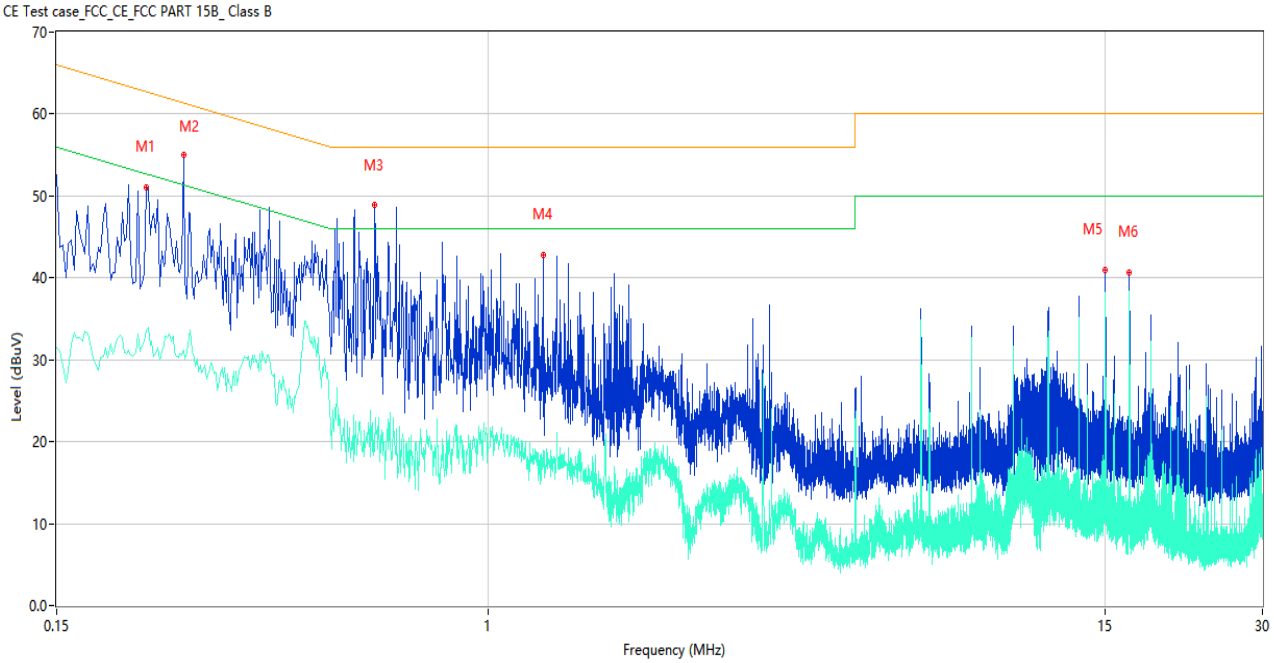
Test Data and Plots

PHASE L1



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.158	55.23	10.02	65.57	10.34	Peak	L1	Pass
1**	0.158	30.29	10.02	55.57	25.28	AV	L1	Pass
2	0.284	49.51	9.95	60.70	11.19	Peak	L1	Pass
2**	0.284	30.94	9.95	50.70	19.76	AV	L1	Pass
3	0.454	45.96	9.99	56.80	10.84	Peak	L1	Pass
3**	0.454	35.53	9.99	46.80	11.27	AV	L1	Pass
4	0.956	42.34	10.04	56.00	13.66	Peak	L1	Pass
4**	0.956	22.30	10.04	46.00	23.70	AV	L1	Pass
5	6.690	37.80	9.97	60.00	22.20	Peak	L1	Pass
5**	6.690	36.71	9.97	50.00	13.29	AV	L1	Pass
6	15.054	37.29	10.18	60.00	22.71	Peak	L1	Pass
6**	15.054	33.95	10.18	50.00	16.05	AV	L1	Pass

PHASE L2



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.222	51.03	9.99	62.74	11.71	Peak	L2	Pass
1**	0.222	33.62	9.99	52.74	19.12	AV	L2	Pass
2	0.262	55.07	9.99	61.37	6.30	Peak	L2	Pass
2**	0.262	31.15	9.99	51.37	20.22	AV	L2	Pass
3	0.606	48.84	10.00	56.00	7.16	Peak	L2	Pass
3**	0.606	19.02	10.00	46.00	26.98	AV	L2	Pass
4	1.272	42.72	10.04	56.00	13.28	Peak	L2	Pass
4**	1.272	18.91	10.04	46.00	27.09	AV	L2	Pass
5	15.052	40.95	10.18	60.00	19.05	Peak	L2	Pass
5**	15.052	38.28	10.18	50.00	11.72	AV	L2	Pass
6	16.726	40.66	10.20	60.00	19.34	Peak	L2	Pass
6**	16.726	38.34	10.20	50.00	11.66	AV	L2	Pass

A.6 Radiated Emission

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

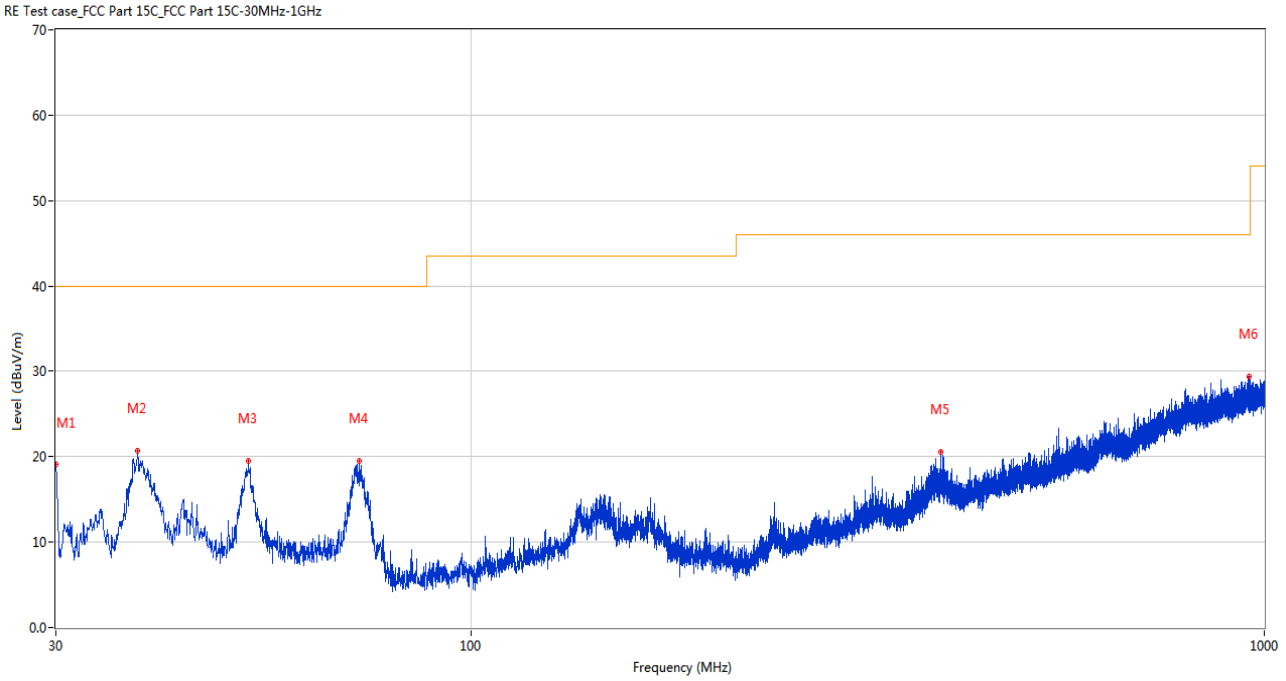
Note [2]: For the test data above 1 GHz，According the ANSI C63.10-2013, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

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.

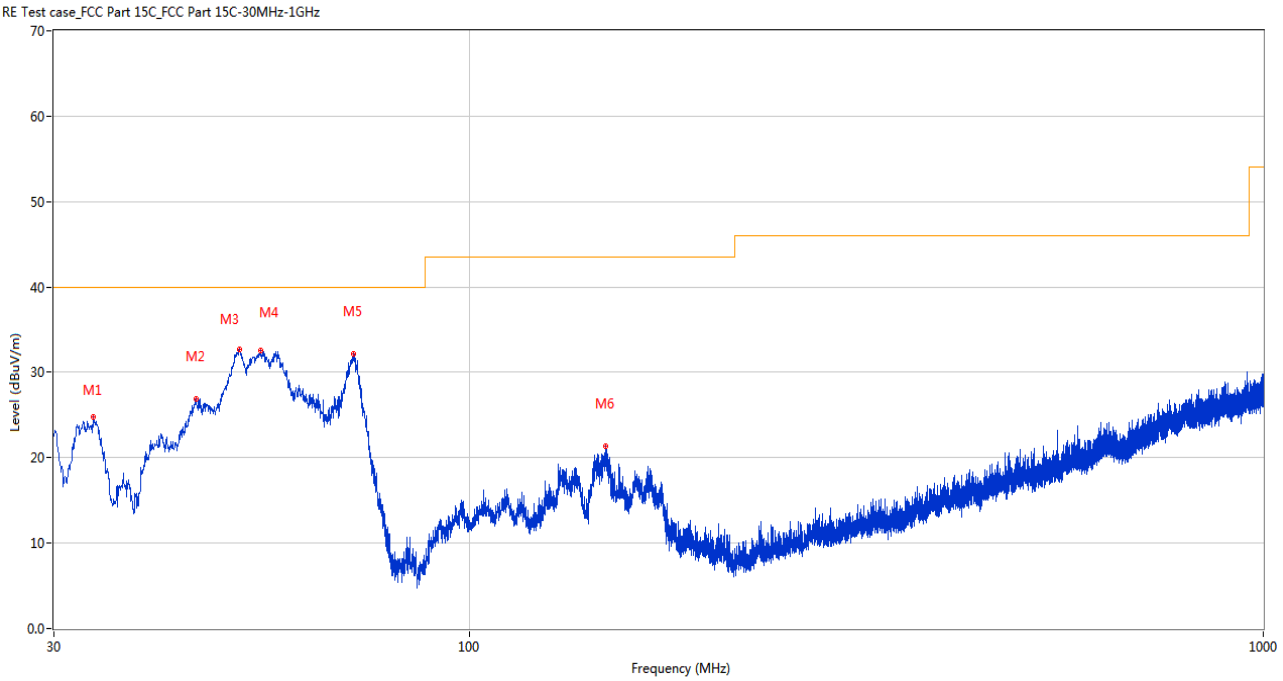
Test Data and Plots

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	30.000	19.11	-27.74	40.0	20.89	Peak	112.00	100	Horizontal	Pass
2	38.051	20.67	-26.78	40.0	19.33	Peak	109.00	200	Horizontal	Pass
3	52.456	19.53	-26.73	40.0	20.47	Peak	179.00	100	Horizontal	Pass
4	72.292	19.53	-29.24	40.0	20.47	Peak	202.00	200	Horizontal	Pass
5	391.422	20.60	-21.96	46.0	25.40	Peak	251.00	100	Horizontal	Pass
6	957.466	29.43	-10.14	46.0	16.57	Peak	206.00	100	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	33.638	24.74	-27.57	40.0	15.26	Peak	88.00	100	Vertical	Pass
2	45.278	26.93	-26.59	40.0	13.07	Peak	156.00	100	Vertical	Pass
3	51.437	32.76	-26.41	40.0	7.24	Peak	0.00	100	Vertical	Pass
4	54.638	32.53	-26.86	40.0	7.47	Peak	318.00	100	Vertical	Pass
5	71.564	32.19	-28.97	40.0	7.81	Peak	279.00	100	Vertical	Pass
6	148.389	21.37	-25.70	43.5	22.13	Peak	96.00	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.

Note [3]: All antenna were pre tested, but only the worst case has been reported in this report.

SISO-Antenna 1

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	1326.541	44.75	74.0	29.25	Peak	89.00	100	Horizontal	Pass
1**	1326.541	35.66	54.0	18.34	AV	89.00	100	Horizontal	Pass
2	2994.182	50.63	74.0	23.37	Peak	345.00	200	Horizontal	Pass
2**	2994.182	38.55	54.0	15.45	AV	345.00	200	Horizontal	Pass
3	4936.169	52.52	74.0	21.48	Peak	248.00	200	Horizontal	Pass
3**	4936.169	39.02	54.0	14.98	AV	248.00	200	Horizontal	Pass
4	6803.927	53.44	74.0	20.56	Peak	227.00	300	Horizontal	Pass
4**	6803.927	44.26	54.0	9.74	AV	227.00	300	Horizontal	Pass
5	13413.785	54.00	74.0	20.00	Peak	253.00	100	Horizontal	Pass
5**	13413.785	44.60	54.0	9.40	AV	253.00	100	Horizontal	Pass
6	17424.031	54.32	74.0	19.68	Peak	23.00	100	Horizontal	Pass
6**	17424.031	49.86	54.0	4.14	AV	23.00	100	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	1334.366	43.97	74.0	30.03	Peak	151.00	100	Vertical	Pass
1**	1334.366	39.15	54.0	14.85	AV	151.00	100	Vertical	Pass
2	2984.104	52.92	74.0	21.08	Peak	360.00	400	Vertical	Pass
2**	2984.104	39.42	54.0	14.58	AV	360.00	400	Vertical	Pass
3	4854.309	51.30	74.0	22.70	Peak	8.00	200	Vertical	Pass
3**	4854.309	40.61	54.0	13.39	AV	8.00	200	Vertical	Pass
4	6609.755	53.42	74.0	20.58	Peak	115.00	200	Vertical	Pass
4**	6609.755	47.75	54.0	6.25	AV	115.00	200	Vertical	Pass
5	13436.230	53.61	74.0	20.39	Peak	90.00	200	Vertical	Pass
5**	13436.230	49.01	54.0	4.99	AV	90.00	200	Vertical	Pass
6	17420.600	59.22	74.0	14.78	Peak	353.00	400	Vertical	Pass
6**	17420.600	46.84	54.0	7.16	AV	353.00	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	1330.155	45.75	74.0	28.25	Peak	237.00	300	Horizontal	Pass
1**	1330.155	37.56	54.0	16.44	AV	237.00	300	Horizontal	Pass
2	2998.398	49.66	74.0	24.34	Peak	116.00	300	Horizontal	Pass
2**	2998.398	38.56	54.0	15.44	AV	116.00	300	Horizontal	Pass
3	4931.177	50.19	74.0	23.81	Peak	152.00	200	Horizontal	Pass
3**	4931.177	44.16	54.0	9.84	AV	152.00	200	Horizontal	Pass
4	6804.423	52.19	74.0	21.81	Peak	294.00	100	Horizontal	Pass
4**	6804.423	43.26	54.0	10.74	AV	294.00	100	Horizontal	Pass
5	13409.023	55.59	74.0	18.41	Peak	2.00	400	Horizontal	Pass
5**	13409.023	43.58	54.0	10.42	AV	2.00	400	Horizontal	Pass
6	17426.084	55.11	74.0	18.89	Peak	352.00	200	Horizontal	Pass
6**	17426.084	50.46	54.0	3.54	AV	352.00	200	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	1333.608	44.24	74.0	29.76	Peak	153.00	400	Vertical	Pass
1**	1333.608	35.99	54.0	18.01	AV	153.00	400	Vertical	Pass
2	2985.978	50.01	74.0	23.99	Peak	201.00	200	Vertical	Pass
2**	2985.978	40.61	54.0	13.39	AV	201.00	200	Vertical	Pass
3	4854.182	50.62	74.0	23.38	Peak	196.00	200	Vertical	Pass
3**	4854.182	41.99	54.0	12.01	AV	196.00	200	Vertical	Pass
4	6604.962	52.59	74.0	21.41	Peak	85.00	100	Vertical	Pass
4**	6604.962	43.30	54.0	10.70	AV	85.00	100	Vertical	Pass
5	13436.442	53.64	74.0	20.36	Peak	85.00	400	Vertical	Pass
5**	13436.442	46.60	54.0	7.40	AV	85.00	400	Vertical	Pass
6	17417.824	55.61	74.0	18.39	Peak	31.00	400	Vertical	Pass
6**	17417.824	48.93	54.0	5.07	AV	31.00	400	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	1326.398	46.16	74.0	27.84	Peak	123.00	300	Horizontal	Pass
1**	1326.398	35.11	54.0	18.89	AV	123.00	300	Horizontal	Pass
2	2997.935	52.89	74.0	21.11	Peak	53.00	200	Horizontal	Pass
2**	2997.935	40.06	54.0	13.94	AV	53.00	200	Horizontal	Pass
3	4930.681	54.30	74.0	19.70	Peak	191.00	200	Horizontal	Pass
3**	4930.681	38.69	54.0	15.31	AV	191.00	200	Horizontal	Pass
4	6803.909	54.30	74.0	19.70	Peak	256.00	100	Horizontal	Pass
4**	6803.909	42.44	54.0	11.56	AV	256.00	100	Horizontal	Pass
5	13409.791	53.46	74.0	20.54	Peak	94.00	300	Horizontal	Pass
5**	13409.791	47.30	54.0	6.70	AV	94.00	300	Horizontal	Pass
6	17428.869	53.88	74.0	20.12	Peak	232.00	200	Horizontal	Pass
6**	17428.869	44.87	54.0	9.13	AV	232.00	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	1330.771	47.85	74.0	26.15	Peak	47.00	300	Vertical	Pass
1**	1330.771	35.95	54.0	18.05	AV	47.00	300	Vertical	Pass
2	2984.298	53.18	74.0	20.82	Peak	116.00	100	Vertical	Pass
2**	2984.298	43.46	54.0	10.54	AV	116.00	100	Vertical	Pass
3	4852.869	47.90	74.0	26.10	Peak	202.00	200	Vertical	Pass
3**	4852.869	38.95	54.0	15.05	AV	202.00	200	Vertical	Pass
4	6605.991	54.89	74.0	19.11	Peak	61.00	200	Vertical	Pass
4**	6605.991	44.70	54.0	9.30	AV	61.00	200	Vertical	Pass
5	13438.562	53.28	74.0	20.72	Peak	73.00	300	Vertical	Pass
5**	13438.562	48.60	54.0	5.40	AV	73.00	300	Vertical	Pass
6	17413.428	58.17	74.0	15.83	Peak	309.00	300	Vertical	Pass
6**	17413.428	45.39	54.0	8.61	AV	309.00	300	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	1332.217	45.39	74.0	28.61	Peak	105.00	200	Horizontal	Pass
1**	1332.217	39.61	54.0	14.39	AV	105.00	200	Horizontal	Pass
2	2995.969	51.20	74.0	22.80	Peak	70.00	300	Horizontal	Pass
2**	2995.969	40.51	54.0	13.49	AV	70.00	300	Horizontal	Pass
3	4931.337	52.13	74.0	21.87	Peak	282.00	200	Horizontal	Pass
3**	4931.337	41.70	54.0	12.30	AV	282.00	200	Horizontal	Pass
4	6808.936	55.33	74.0	18.67	Peak	94.00	300	Horizontal	Pass
4**	6808.936	42.23	54.0	11.77	AV	94.00	300	Horizontal	Pass
5	13407.688	53.26	74.0	20.74	Peak	190.00	300	Horizontal	Pass
5**	13407.688	45.14	54.0	8.86	AV	190.00	300	Horizontal	Pass
6	17422.457	58.94	74.0	15.06	Peak	237.00	400	Horizontal	Pass
6**	17422.457	46.72	54.0	7.28	AV	237.00	400	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	1332.593	47.27	74.0	26.73	Peak	199.00	200	Vertical	Pass
1**	1332.593	39.24	54.0	14.76	AV	199.00	200	Vertical	Pass
2	2982.692	51.38	74.0	22.62	Peak	300.00	400	Vertical	Pass
2**	2982.692	40.71	54.0	13.29	AV	300.00	400	Vertical	Pass
3	4851.383	46.86	74.0	27.14	Peak	355.00	200	Vertical	Pass
3**	4851.383	38.81	54.0	15.19	AV	355.00	200	Vertical	Pass
4	6606.413	56.02	74.0	17.98	Peak	178.00	300	Vertical	Pass
4**	6606.413	45.41	54.0	8.59	AV	178.00	300	Vertical	Pass
5	13433.449	57.87	74.0	16.13	Peak	147.00	200	Vertical	Pass
5**	13433.449	46.03	54.0	7.97	AV	147.00	200	Vertical	Pass
6	17415.774	58.29	74.0	15.71	Peak	181.00	100	Vertical	Pass
6**	17415.774	45.86	54.0	8.14	AV	181.00	100	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	1328.496	44.73	74.0	29.27	Peak	253.00	300	Horizontal	Pass
1**	1328.496	34.45	54.0	19.55	AV	253.00	300	Horizontal	Pass
2	2994.132	50.81	74.0	23.19	Peak	270.00	200	Horizontal	Pass
2**	2994.132	41.22	54.0	12.78	AV	270.00	200	Horizontal	Pass
3	4936.573	51.04	74.0	22.96	Peak	298.00	200	Horizontal	Pass
3**	4936.573	42.01	54.0	11.99	AV	298.00	200	Horizontal	Pass
4	6806.561	56.39	74.0	17.61	Peak	39.00	400	Horizontal	Pass
4**	6806.561	47.51	54.0	6.49	AV	39.00	400	Horizontal	Pass
5	13414.911	54.22	74.0	19.78	Peak	164.00	400	Horizontal	Pass
5**	13414.911	48.90	54.0	5.10	AV	164.00	400	Horizontal	Pass
6	17428.790	56.11	74.0	17.89	Peak	338.00	200	Horizontal	Pass
6**	17428.790	46.86	54.0	7.14	AV	338.00	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	1329.876	42.30	74.0	31.70	Peak	143.00	200	Vertical	Pass
1**	1329.876	35.15	54.0	18.85	AV	143.00	200	Vertical	Pass
2	2982.537	50.28	74.0	23.72	Peak	356.00	200	Vertical	Pass
2**	2982.537	43.41	54.0	10.59	AV	356.00	200	Vertical	Pass
3	4850.335	49.71	74.0	24.29	Peak	170.00	200	Vertical	Pass
3**	4850.335	38.65	54.0	15.35	AV	170.00	200	Vertical	Pass
4	6609.285	54.84	74.0	19.16	Peak	272.00	200	Vertical	Pass
4**	6609.285	42.26	54.0	11.74	AV	272.00	200	Vertical	Pass
5	13434.546	56.62	74.0	17.38	Peak	131.00	200	Vertical	Pass
5**	13434.546	45.35	54.0	8.65	AV	131.00	200	Vertical	Pass
6	17415.678	57.65	74.0	16.35	Peak	180.00	200	Vertical	Pass
6**	17415.678	46.35	54.0	7.65	AV	180.00	200	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	1333.191	42.88	74.0	31.12	Peak	290.00	200	Horizontal	Pass
1**	1333.191	37.40	54.0	16.60	AV	290.00	200	Horizontal	Pass
2	2997.621	50.04	74.0	23.96	Peak	31.00	400	Horizontal	Pass
2**	2997.621	38.84	54.0	15.16	AV	31.00	400	Horizontal	Pass
3	4931.307	49.27	74.0	24.73	Peak	267.00	200	Horizontal	Pass
3**	4931.307	44.28	54.0	9.72	AV	267.00	200	Horizontal	Pass
4	6803.131	55.11	74.0	18.89	Peak	275.00	300	Horizontal	Pass
4**	6803.131	46.25	54.0	7.75	AV	275.00	300	Horizontal	Pass
5	13412.051	58.53	74.0	15.47	Peak	9.00	300	Horizontal	Pass
5**	13412.051	44.46	54.0	9.54	AV	9.00	300	Horizontal	Pass
6	17424.206	57.67	74.0	16.33	Peak	146.00	400	Horizontal	Pass
6**	17424.206	50.25	54.0	3.75	AV	146.00	400	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	1335.618	42.81	74.0	31.19	Peak	199.00	400	Vertical	Pass
1**	1335.618	36.02	54.0	17.98	AV	199.00	400	Vertical	Pass
2	2979.781	51.24	74.0	22.76	Peak	249.00	100	Vertical	Pass
2**	2979.781	44.26	54.0	9.74	AV	249.00	100	Vertical	Pass
3	4852.509	46.91	74.0	27.09	Peak	121.00	200	Vertical	Pass
3**	4852.509	39.14	54.0	14.86	AV	121.00	200	Vertical	Pass
4	6604.915	53.14	74.0	20.86	Peak	172.00	200	Vertical	Pass
4**	6604.915	46.34	54.0	7.66	AV	172.00	200	Vertical	Pass
5	13434.810	52.95	74.0	21.05	Peak	221.00	200	Vertical	Pass
5**	13434.810	44.92	54.0	9.08	AV	221.00	200	Vertical	Pass
6	17414.121	59.64	74.0	14.36	Peak	13.00	300	Vertical	Pass
6**	17414.121	46.00	54.0	8.00	AV	13.00	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	1327.229	45.95	74.0	28.05	Peak	360.00	100	Horizontal	Pass
1**	1327.229	38.89	54.0	15.11	AV	360.00	100	Horizontal	Pass
2	3000.588	52.90	74.0	21.10	Peak	12.00	100	Horizontal	Pass
2**	3000.588	44.39	54.0	9.61	AV	12.00	100	Horizontal	Pass
3	4938.309	51.15	74.0	22.85	Peak	18.00	200	Horizontal	Pass
3**	4938.309	43.52	54.0	10.48	AV	18.00	200	Horizontal	Pass
4	6810.153	54.10	74.0	19.90	Peak	122.00	400	Horizontal	Pass
4**	6810.153	43.81	54.0	10.19	AV	122.00	400	Horizontal	Pass
5	13413.578	56.15	74.0	17.85	Peak	271.00	400	Horizontal	Pass
5**	13413.578	45.07	54.0	8.93	AV	271.00	400	Horizontal	Pass
6	17422.571	54.02	74.0	19.98	Peak	49.00	200	Horizontal	Pass
6**	17422.571	48.55	54.0	5.45	AV	49.00	200	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	1329.241	42.74	74.0	31.26	Peak	83.00	200	Vertical	Pass
1**	1329.241	36.18	54.0	17.82	AV	83.00	200	Vertical	Pass
2	2984.314	52.43	74.0	21.57	Peak	221.00	300	Vertical	Pass
2**	2984.314	41.09	54.0	12.91	AV	221.00	300	Vertical	Pass
3	4853.055	47.69	74.0	26.31	Peak	114.00	200	Vertical	Pass
3**	4853.055	40.19	54.0	13.81	AV	114.00	200	Vertical	Pass
4	6610.104	56.12	74.0	17.88	Peak	50.00	100	Vertical	Pass
4**	6610.104	44.03	54.0	9.97	AV	50.00	100	Vertical	Pass
5	13435.857	55.18	74.0	18.82	Peak	79.00	300	Vertical	Pass
5**	13435.857	45.22	54.0	8.78	AV	79.00	300	Vertical	Pass
6	17417.973	56.36	74.0	17.64	Peak	44.00	300	Vertical	Pass
6**	17417.973	47.27	54.0	6.73	AV	44.00	300	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	1327.570	43.88	74.0	30.12	Peak	103.00	200	Horizontal	Pass
1**	1327.570	36.76	54.0	17.24	AV	103.00	200	Horizontal	Pass
2	2994.050	51.96	74.0	22.04	Peak	84.00	100	Horizontal	Pass
2**	2994.050	42.77	54.0	11.23	AV	84.00	100	Horizontal	Pass
3	4937.818	49.74	74.0	24.26	Peak	95.00	200	Horizontal	Pass
3**	4937.818	39.94	54.0	14.06	AV	95.00	200	Horizontal	Pass
4	6810.038	53.68	74.0	20.32	Peak	170.00	100	Horizontal	Pass
4**	6810.038	46.80	54.0	7.20	AV	170.00	100	Horizontal	Pass
5	13413.539	57.33	74.0	16.67	Peak	88.00	200	Horizontal	Pass
5**	13413.539	46.54	54.0	7.46	AV	88.00	200	Horizontal	Pass
6	17423.833	54.12	74.0	19.88	Peak	25.00	300	Horizontal	Pass
6**	17423.833	45.48	54.0	8.52	AV	25.00	300	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	1335.709	44.68	74.0	29.32	Peak	272.00	100	Vertical	Pass
1**	1335.709	38.12	54.0	15.88	AV	272.00	100	Vertical	Pass
2	2985.691	49.10	74.0	24.90	Peak	323.00	100	Vertical	Pass
2**	2985.691	44.50	54.0	9.50	AV	323.00	100	Vertical	Pass
3	4850.784	52.46	74.0	21.54	Peak	347.00	200	Vertical	Pass
3**	4850.784	40.24	54.0	13.76	AV	347.00	200	Vertical	Pass
4	6606.332	55.27	74.0	18.73	Peak	77.00	200	Vertical	Pass
4**	6606.332	46.99	54.0	7.01	AV	77.00	200	Vertical	Pass
5	13431.082	53.22	74.0	20.78	Peak	21.00	300	Vertical	Pass
5**	13431.082	48.85	54.0	5.15	AV	21.00	300	Vertical	Pass
6	17417.849	59.47	74.0	14.53	Peak	27.00	100	Vertical	Pass
6**	17417.849	49.22	54.0	4.78	AV	27.00	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	1325.842	46.51	74.0	27.49	Peak	27.00	400	Horizontal	Pass
1**	1325.842	38.73	54.0	15.27	AV	27.00	400	Horizontal	Pass
2	2997.365	49.06	74.0	24.94	Peak	66.00	100	Horizontal	Pass
2**	2997.365	39.97	54.0	14.03	AV	66.00	100	Horizontal	Pass
3	4935.733	50.26	74.0	23.74	Peak	222.00	200	Horizontal	Pass
3**	4935.733	42.92	54.0	11.08	AV	222.00	200	Horizontal	Pass
4	6807.430	57.00	74.0	17.00	Peak	88.00	100	Horizontal	Pass
4**	6807.430	42.97	54.0	11.03	AV	88.00	100	Horizontal	Pass
5	13410.967	54.86	74.0	19.14	Peak	40.00	200	Horizontal	Pass
5**	13410.967	49.39	54.0	4.61	AV	40.00	200	Horizontal	Pass
6	17424.640	56.47	74.0	17.53	Peak	27.00	200	Horizontal	Pass
6**	17424.640	48.63	54.0	5.37	AV	27.00	200	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	1335.114	42.27	74.0	31.73	Peak	238.00	400	Vertical	Pass
1**	1335.114	35.45	54.0	18.55	AV	238.00	400	Vertical	Pass
2	2980.469	47.71	74.0	26.29	Peak	118.00	200	Vertical	Pass
2**	2980.469	40.54	54.0	13.46	AV	118.00	200	Vertical	Pass
3	4852.821	46.59	74.0	27.41	Peak	172.00	200	Vertical	Pass
3**	4852.821	39.86	54.0	14.14	AV	172.00	200	Vertical	Pass
4	6610.009	52.87	74.0	21.13	Peak	328.00	400	Vertical	Pass
4**	6610.009	46.76	54.0	7.24	AV	328.00	400	Vertical	Pass
5	13433.106	55.07	74.0	18.93	Peak	76.00	300	Vertical	Pass
5**	13433.106	47.52	54.0	6.48	AV	76.00	300	Vertical	Pass
6	17417.740	55.83	74.0	18.17	Peak	136.00	200	Vertical	Pass
6**	17417.740	47.62	54.0	6.38	AV	136.00	200	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	1328.013	44.48	74.0	29.52	Peak	169.00	100	Horizontal	Pass
1**	1328.013	37.52	54.0	16.48	AV	169.00	100	Horizontal	Pass
2	2993.155	51.12	74.0	22.88	Peak	96.00	100	Horizontal	Pass
2**	2993.155	41.48	54.0	12.52	AV	96.00	100	Horizontal	Pass
3	4930.921	50.83	74.0	23.17	Peak	310.00	200	Horizontal	Pass
3**	4930.921	42.66	54.0	11.34	AV	310.00	200	Horizontal	Pass
4	6809.807	56.98	74.0	17.02	Peak	28.00	200	Horizontal	Pass
4**	6809.807	47.14	54.0	6.86	AV	28.00	200	Horizontal	Pass
5	13407.307	53.73	74.0	20.27	Peak	47.00	100	Horizontal	Pass
5**	13407.307	49.49	54.0	4.51	AV	47.00	100	Horizontal	Pass
6	17427.600	55.95	74.0	18.05	Peak	327.00	100	Horizontal	Pass
6**	17427.600	48.39	54.0	5.61	AV	327.00	100	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	1335.873	45.41	74.0	28.59	Peak	153.00	400	Vertical	Pass
1**	1335.873	40.51	54.0	13.49	AV	153.00	400	Vertical	Pass
2	2983.645	49.63	74.0	24.37	Peak	341.00	200	Vertical	Pass
2**	2983.645	41.78	54.0	12.22	AV	341.00	200	Vertical	Pass
3	4851.414	46.85	74.0	27.15	Peak	199.00	200	Vertical	Pass
3**	4851.414	37.71	54.0	16.29	AV	199.00	200	Vertical	Pass
4	6608.914	54.21	74.0	19.79	Peak	2.00	400	Vertical	Pass
4**	6608.914	47.50	54.0	6.50	AV	2.00	400	Vertical	Pass
5	13434.501	56.63	74.0	17.37	Peak	7.00	300	Vertical	Pass
5**	13434.501	49.37	54.0	4.63	AV	7.00	300	Vertical	Pass
6	17418.920	55.72	74.0	18.28	Peak	244.00	300	Vertical	Pass
6**	17418.920	44.58	54.0	9.42	AV	244.00	300	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	1331.440	45.17	74.0	28.83	Peak	246.00	400	Horizontal	Pass
1**	1331.440	36.65	54.0	17.35	AV	246.00	400	Horizontal	Pass
2	2993.263	49.81	74.0	24.19	Peak	283.00	200	Horizontal	Pass
2**	2993.263	38.75	54.0	15.25	AV	283.00	200	Horizontal	Pass
3	4938.182	51.61	74.0	22.39	Peak	85.00	200	Horizontal	Pass
3**	4938.182	42.10	54.0	11.90	AV	85.00	200	Horizontal	Pass
4	6803.527	56.76	74.0	17.24	Peak	201.00	100	Horizontal	Pass
4**	6803.527	46.18	54.0	7.82	AV	201.00	100	Horizontal	Pass
5	13414.508	57.50	74.0	16.50	Peak	140.00	300	Horizontal	Pass
5**	13414.508	43.54	54.0	10.46	AV	140.00	300	Horizontal	Pass
6	17424.532	56.00	74.0	18.00	Peak	37.00	200	Horizontal	Pass
6**	17424.532	48.95	54.0	5.05	AV	37.00	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	1329.342	43.48	74.0	30.52	Peak	347.00	400	Vertical	Pass
1**	1329.342	38.58	54.0	15.42	AV	347.00	400	Vertical	Pass
2	2983.968	50.92	74.0	23.08	Peak	69.00	300	Vertical	Pass
2**	2983.968	40.90	54.0	13.10	AV	69.00	300	Vertical	Pass
3	4856.971	51.97	74.0	22.03	Peak	261.00	200	Vertical	Pass
3**	4856.971	43.63	54.0	10.37	AV	261.00	200	Vertical	Pass
4	6610.768	54.10	74.0	19.90	Peak	88.00	300	Vertical	Pass
4**	6610.768	43.23	54.0	10.77	AV	88.00	300	Vertical	Pass
5	13437.020	54.10	74.0	19.90	Peak	265.00	400	Vertical	Pass
5**	13437.020	48.22	54.0	5.78	AV	265.00	400	Vertical	Pass
6	17417.622	55.46	74.0	18.54	Peak	208.00	300	Vertical	Pass
6**	17417.622	49.84	54.0	4.16	AV	208.00	300	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	1327.323	43.44	74.0	30.56	Peak	300.00	100	Horizontal	Pass
1**	1327.323	38.17	54.0	15.83	AV	300.00	100	Horizontal	Pass
2	2999.509	49.20	74.0	24.80	Peak	75.00	200	Horizontal	Pass
2**	2999.509	40.59	54.0	13.41	AV	75.00	200	Horizontal	Pass
3	4931.273	49.80	74.0	24.20	Peak	26.00	200	Horizontal	Pass
3**	4931.273	41.31	54.0	12.69	AV	26.00	200	Horizontal	Pass
4	6810.264	53.48	74.0	20.52	Peak	245.00	400	Horizontal	Pass
4**	6810.264	44.90	54.0	9.10	AV	245.00	400	Horizontal	Pass
5	13412.503	57.46	74.0	16.54	Peak	176.00	400	Horizontal	Pass
5**	13412.503	45.05	54.0	8.95	AV	176.00	400	Horizontal	Pass
6	17423.059	53.18	74.0	20.82	Peak	131.00	300	Horizontal	Pass
6**	17423.059	46.83	54.0	7.17	AV	131.00	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	1334.397	45.90	74.0	28.10	Peak	70.00	100	Vertical	Pass
1**	1334.397	40.22	54.0	13.78	AV	70.00	100	Vertical	Pass
2	2982.188	52.27	74.0	21.73	Peak	198.00	300	Vertical	Pass
2**	2982.188	39.11	54.0	14.89	AV	198.00	300	Vertical	Pass
3	4854.008	50.81	74.0	23.19	Peak	128.00	200	Vertical	Pass
3**	4854.008	39.80	54.0	14.20	AV	128.00	200	Vertical	Pass
4	6607.406	56.99	74.0	17.01	Peak	316.00	100	Vertical	Pass
4**	6607.406	42.26	54.0	11.74	AV	316.00	100	Vertical	Pass
5	13438.707	53.64	74.0	20.36	Peak	297.00	300	Vertical	Pass
5**	13438.707	43.87	54.0	10.13	AV	297.00	300	Vertical	Pass
6	17416.216	56.31	74.0	17.69	Peak	46.00	400	Vertical	Pass
6**	17416.216	45.99	54.0	8.01	AV	46.00	400	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	1333.029	46.86	74.0	27.14	Peak	184.00	400	Horizontal	Pass
1**	1333.029	38.37	54.0	15.63	AV	184.00	400	Horizontal	Pass
2	2996.173	52.66	74.0	21.34	Peak	93.00	400	Horizontal	Pass
2**	2996.173	44.01	54.0	9.99	AV	93.00	400	Horizontal	Pass
3	4931.462	49.84	74.0	24.16	Peak	22.00	200	Horizontal	Pass
3**	4931.462	39.70	54.0	14.30	AV	22.00	200	Horizontal	Pass
4	6806.823	53.88	74.0	20.12	Peak	33.00	400	Horizontal	Pass
4**	6806.823	42.74	54.0	11.26	AV	33.00	400	Horizontal	Pass
5	13410.782	54.08	74.0	19.92	Peak	130.00	200	Horizontal	Pass
5**	13410.782	46.23	54.0	7.77	AV	130.00	200	Horizontal	Pass
6	17427.688	57.84	74.0	16.16	Peak	139.00	200	Horizontal	Pass
6**	17427.688	48.77	54.0	5.23	AV	139.00	200	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	1332.800	43.69	74.0	30.31	Peak	225.00	300	Vertical	Pass
1**	1332.800	37.51	54.0	16.49	AV	225.00	300	Vertical	Pass
2	2985.071	48.34	74.0	25.66	Peak	67.00	400	Vertical	Pass
2**	2985.071	41.71	54.0	12.29	AV	67.00	400	Vertical	Pass
3	4856.912	46.74	74.0	27.26	Peak	180.00	200	Vertical	Pass
3**	4856.912	41.87	54.0	12.13	AV	180.00	200	Vertical	Pass
4	6605.024	52.45	74.0	21.55	Peak	80.00	100	Vertical	Pass
4**	6605.024	44.30	54.0	9.70	AV	80.00	100	Vertical	Pass
5	13435.018	55.73	74.0	18.27	Peak	32.00	300	Vertical	Pass
5**	13435.018	47.62	54.0	6.38	AV	32.00	300	Vertical	Pass
6	17420.098	55.46	74.0	18.54	Peak	195.00	200	Vertical	Pass
6**	17420.098	49.88	54.0	4.12	AV	195.00	200	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	1332.894	43.81	74.0	30.19	Peak	193.00	100	Horizontal	Pass
1**	1332.894	38.53	54.0	15.47	AV	193.00	100	Horizontal	Pass
2	2994.245	51.99	74.0	22.01	Peak	177.00	100	Horizontal	Pass
2**	2994.245	43.56	54.0	10.44	AV	177.00	100	Horizontal	Pass
3	4934.807	52.30	74.0	21.70	Peak	47.00	200	Horizontal	Pass
3**	4934.807	40.45	54.0	13.55	AV	47.00	200	Horizontal	Pass
4	6805.806	52.78	74.0	21.22	Peak	121.00	100	Horizontal	Pass
4**	6805.806	45.32	54.0	8.68	AV	121.00	100	Horizontal	Pass
5	13413.262	54.73	74.0	19.27	Peak	295.00	300	Horizontal	Pass
5**	13413.262	48.12	54.0	5.88	AV	295.00	300	Horizontal	Pass
6	17422.911	53.94	74.0	20.06	Peak	318.00	300	Horizontal	Pass
6**	17422.911	46.91	54.0	7.09	AV	318.00	300	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	1331.075	47.34	74.0	26.66	Peak	160.00	300	Vertical	Pass
1**	1331.075	39.01	54.0	14.99	AV	160.00	300	Vertical	Pass
2	2982.540	48.73	74.0	25.27	Peak	323.00	400	Vertical	Pass
2**	2982.540	40.09	54.0	13.91	AV	323.00	400	Vertical	Pass
3	4855.979	47.87	74.0	26.13	Peak	63.00	200	Vertical	Pass
3**	4855.979	38.75	54.0	15.25	AV	63.00	200	Vertical	Pass
4	6604.186	56.29	74.0	17.71	Peak	49.00	300	Vertical	Pass
4**	6604.186	42.94	54.0	11.06	AV	49.00	300	Vertical	Pass
5	13437.775	53.71	74.0	20.29	Peak	65.00	300	Vertical	Pass
5**	13437.775	48.80	54.0	5.20	AV	65.00	300	Vertical	Pass
6	17417.949	55.61	74.0	18.39	Peak	152.00	100	Vertical	Pass
6**	17417.949	47.20	54.0	6.80	AV	152.00	100	Vertical	Pass

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

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1332.203	45.57	74.0	28.43	Peak	198.00	100	Horizontal	Pass
1**	1332.203	34.96	54.0	19.04	AV	198.00	100	Horizontal	Pass
2	2994.738	53.08	74.0	20.92	Peak	274.00	200	Horizontal	Pass
2**	2994.738	38.56	54.0	15.44	AV	274.00	200	Horizontal	Pass
3	4935.157	49.61	74.0	24.39	Peak	115.00	200	Horizontal	Pass
3**	4935.157	39.21	54.0	14.79	AV	115.00	200	Horizontal	Pass
4	6810.825	53.81	74.0	20.19	Peak	204.00	100	Horizontal	Pass
4**	6810.825	44.24	54.0	9.76	AV	204.00	100	Horizontal	Pass
5	13408.458	55.67	74.0	18.33	Peak	100.00	400	Horizontal	Pass
5**	13408.458	43.72	54.0	10.28	AV	100.00	400	Horizontal	Pass
6	17426.944	57.42	74.0	16.58	Peak	279.00	400	Horizontal	Pass
6**	17426.944	49.48	54.0	4.52	AV	279.00	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	1336.608	46.38	74.0	27.62	Peak	134.00	200	Vertical	Pass
1**	1336.608	38.64	54.0	15.36	AV	134.00	200	Vertical	Pass
2	2983.290	50.15	74.0	23.85	Peak	203.00	200	Vertical	Pass
2**	2983.290	43.45	54.0	10.55	AV	203.00	200	Vertical	Pass
3	4851.805	48.83	74.0	25.17	Peak	161.00	200	Vertical	Pass
3**	4851.805	38.68	54.0	15.32	AV	161.00	200	Vertical	Pass
4	6604.038	53.29	74.0	20.71	Peak	159.00	200	Vertical	Pass
4**	6604.038	43.75	54.0	10.25	AV	159.00	200	Vertical	Pass
5	13438.350	55.95	74.0	18.05	Peak	326.00	100	Vertical	Pass
5**	13438.350	47.60	54.0	6.40	AV	326.00	100	Vertical	Pass
6	17418.273	58.73	74.0	15.27	Peak	333.00	300	Vertical	Pass
6**	17418.273	48.69	54.0	5.31	AV	333.00	300	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.

Note [4]: All antenna were pre tested, but only the worst case has been reported in this report.

Test Data

SISO-Antenna 1

802.11b LOW CHANNEL

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2384.131	59.64	74.0	14.36	Peak	23.00	300	Horizontal	Pass
1**	2384.131	48.1	54.0	5.90	AV	23.00	300	Horizontal	Pass
2	2390.000	55.58	74.0	18.42	Peak	330.00	100	Horizontal	Pass
2**	2390.000	46.7	54.0	7.30	AV	330.00	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	57.43	74.0	16.57	Peak	97.00	200	Horizontal	Pass
1**	2483.500	46.59	54.0	7.41	AV	97.00	200	Horizontal	Pass
2	2486.918	56.97	74.0	17.03	Peak	227.00	300	Horizontal	Pass
2**	2486.918	46.31	54.0	7.69	AV	227.00	300	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	2384.042	58.16	74.0	15.84	Peak	157.00	100	Horizontal	Pass
1**	2384.042	51.51	54.0	2.49	AV	157.00	100	Horizontal	Pass
2	2390.000	54.33	74.0	19.67	Peak	92.00	300	Horizontal	Pass
2**	2390.000	44.62	54.0	9.38	AV	92.00	300	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	2483.500	55.89	74.0	18.11	Peak	3.00	300	Horizontal	Pass
1**	2483.500	48.1	54.0	5.90	AV	3.00	300	Horizontal	Pass
2	2487.108	59.81	74.0	14.19	Peak	65.00	100	Horizontal	Pass
2**	2487.108	47.42	54.0	6.58	AV	65.00	100	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	2385.578	56.57	74.0	17.43	Peak	18.00	100	Horizontal	Pass
1**	2385.578	49.59	54.0	4.41	AV	18.00	100	Horizontal	Pass
2	2390.000	54.46	74.0	19.54	Peak	152.00	200	Horizontal	Pass
2**	2390.000	46.54	54.0	7.46	AV	152.00	200	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	2483.500	54.64	74.0	19.36	Peak	227.00	300	Horizontal	Pass
1**	2483.500	47.64	54.0	6.36	AV	227.00	300	Horizontal	Pass
2	2486.202	57.49	74.0	16.51	Peak	332.00	100	Horizontal	Pass
2**	2486.202	49.31	54.0	4.69	AV	332.00	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	2385.959	56.31	74.0	17.69	Peak	224.00	300	Horizontal	Pass
1**	2385.959	49.93	54.0	4.07	AV	224.00	300	Horizontal	Pass
2	2390.000	56.78	74.0	17.22	Peak	6.00	300	Horizontal	Pass
2**	2390.000	45.55	54.0	8.45	AV	6.00	300	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	2483.500	54.57	74.0	19.43	Peak	248.00	300	Horizontal	Pass
1**	2483.500	44.67	54.0	9.33	AV	248.00	300	Horizontal	Pass
2	2487.316	57.51	74.0	16.49	Peak	243.00	300	Horizontal	Pass
2**	2487.316	46.61	54.0	7.39	AV	243.00	300	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	2385.622	59.6	74.0	14.40	Peak	332.00	200	Horizontal	Pass
1**	2385.622	50.88	54.0	3.12	AV	332.00	200	Horizontal	Pass
2	2390.000	55.21	74.0	18.79	Peak	82.00	100	Horizontal	Pass
2**	2390.000	43.93	54.0	10.07	AV	82.00	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	2483.500	55.63	74.0	18.37	Peak	135.00	200	Horizontal	Pass
1**	2483.500	44.55	54.0	9.45	AV	135.00	200	Horizontal	Pass
2	2487.403	56.72	74.0	17.28	Peak	303.00	200	Horizontal	Pass
2**	2487.403	48.83	54.0	5.17	AV	303.00	200	Horizontal	Pass

A.8 Power Spectral Density (PSD)

Note: All antenna were pre tested, but only the worst case has been reported in this report.

Test Data

SISO-Antenna 1

802.11b Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-6.10	6.49
Middle	-5.79	6.49
High	-5.45	6.49

802.11g Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-9.46	6.49
Middle	-9.80	6.49
High	-9.43	6.49

802.11n-20 MHz Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-10.54	8
Middle	-10.66	8
High	-10.18	8

802.11n-40 MHz Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-12.68	8
Middle	-13.15	8
High	-13.53	8

802.11ax-20 MHz(SU) Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-9.79	8
Middle	-9.84	8
High	-10.02	8

Test Plots

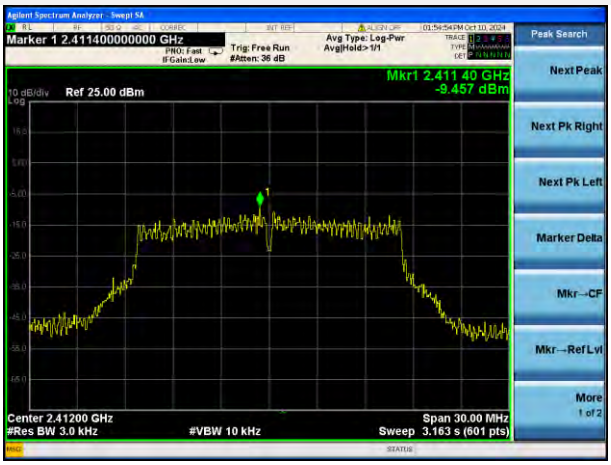
SISO-Antenna 1

802.11b LOW CHANNEL

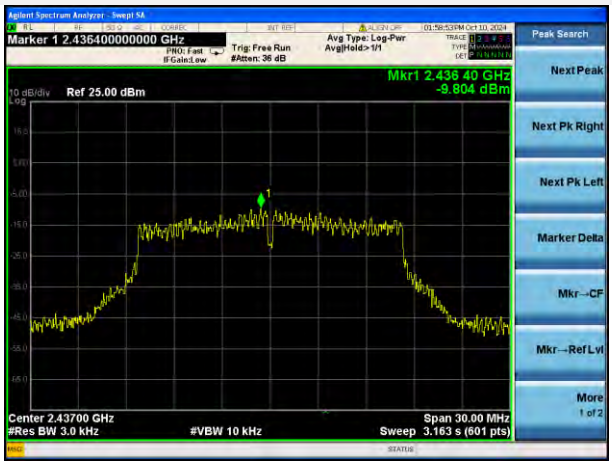
802.11b MIDDLE CHANNEL

802.11b HIGH CHANNEL

802.11g LOW CHANNEL

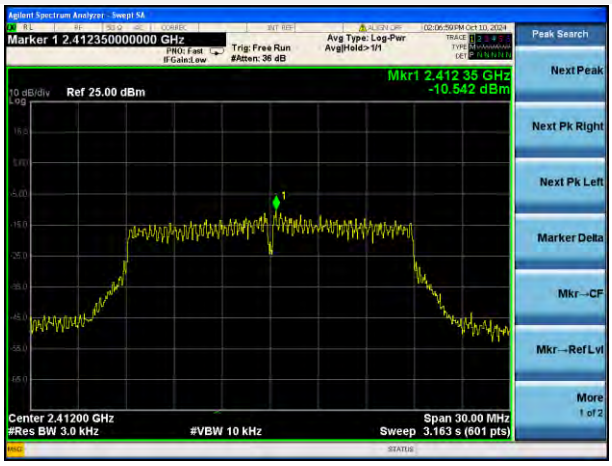


802.11g MIDDLE CHANNEL

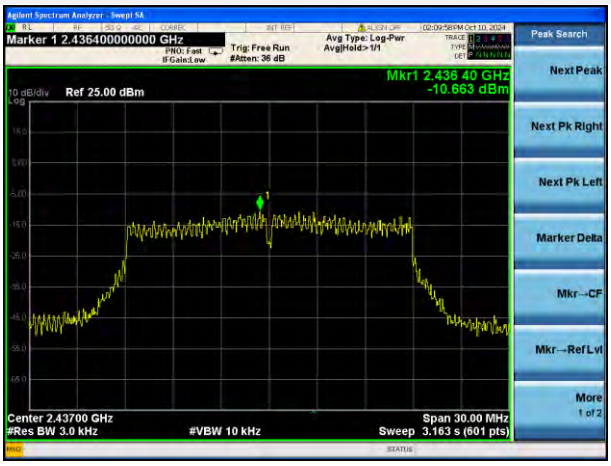


802.11g HIGH CHANNEL

802.11n-20 MHz LOW CHANNEL



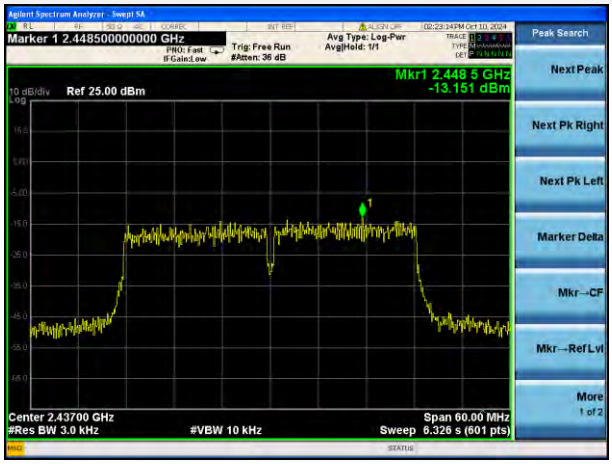
802.11n-20 MHz MIDDLE CHANNEL



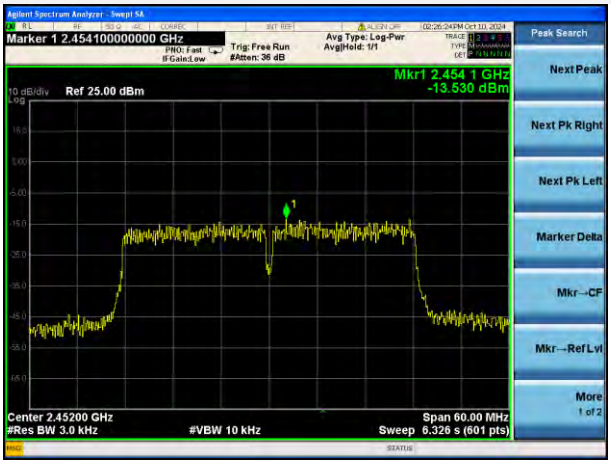
802.11n-20 MHz HIGH CHANNEL

802.11n-40 MHz LOW CHANNEL

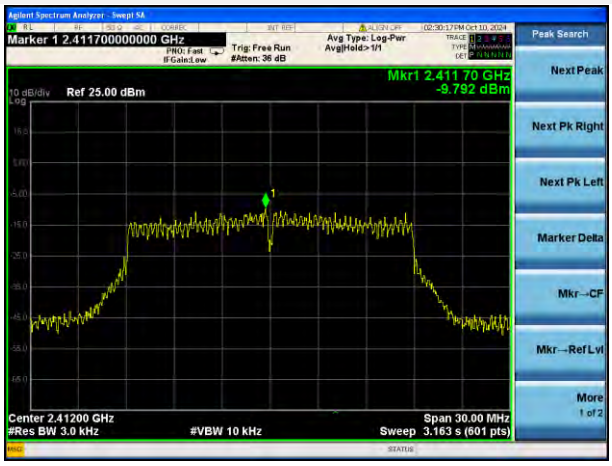
802.11n-40 MHz MIDDLE CHANNEL



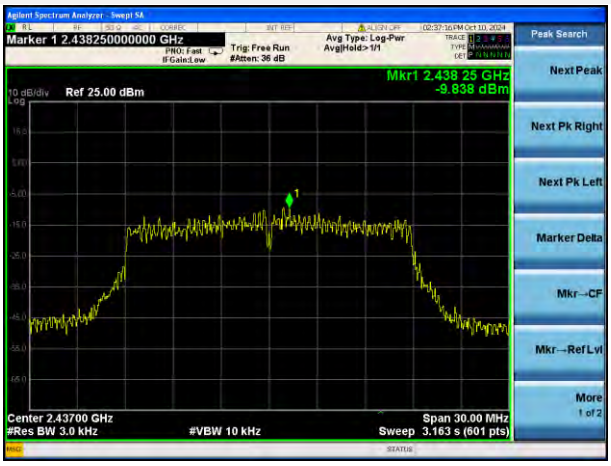
802.11n-40 MHz HIGH CHANNEL



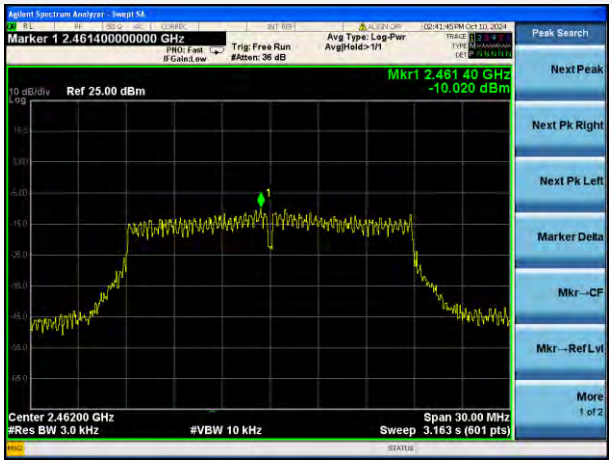
802.11ax-20 MHz(SU) LOW CHANNEL



802.11ax-20 MHz(SU) MIDDLE CHANNEL



802.11ax-20 MHz(SU) HIGH CHANNEL



ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SZ2481098-AR.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ2481098-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SZ2481098-AI.PDF”.

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