

# TEST REPORT

**Applicant:** E&S International Enterprises, Inc.  
**Address:** 7801 Hayvenhurst Avenue, Van Nuys, California  
91406 USA  
**Equipment Type:** Laptop  
**Model Name:** GWNN11554-TI (refer to section 2.3)  
**Brand Name:** GATEWAY  
**FCC ID:** 2AYPE-GWNN11554  
**Test Standard:** 47 CFR Part 15 Subpart C  
(refer to section 3.1)  
**Sample Arrival Date:** May 26, 2025  
**Test Date:** May 31, 2025 - Jun. 14, 2025  
**Date of Issue:** Jun. 30, 2025

**ISSUED BY:**

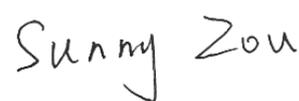
Shenzhen BALUN Technology Co., Ltd.

**Tested by:** Yang Wenxuan

**Checked by:** Ye Hongji

**Approved by:** Sunny Zou

(Technical Director)



<b>Revision History</b>		
Version	Issue Date	Revisions
<u>Rev. 01</u>	<u>Jun. 30, 2025</u>	<u>Initial Issue</u>

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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	<input checked="" type="checkbox"/> Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	<input type="checkbox"/> 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.

## 2 PRODUCT INFORMATION

### 2.1 Applicant Information

Applicant	E&S International Enterprises, Inc.
Address	7801 Hayvenhurst Avenue, Van Nuys, California 91406, United States

### 2.2 Manufacturer Information

Manufacturer	Shenzhen Yuko Technology Co., Ltd.
Address	6th, A9 Bldg, Tianrui Industrial Park, Fuyuan 1st Rd, Fuyong, Boanan, Shenzhen

### 2.3 General Description for Equipment under Test (EUT)

EUT Name	Laptop
Model Name Under Test	GWNN11554-TI
Series Model Name	GWNN11554, N1572
Description of Model name differentiation	All models are same with electrical parameters and internal circuit structure, but only differ in model name. (this information provided by the applicant)
Hardware Version	IDN356_441B_V1.0
Software Version	23H2
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

## 2.4 Technical Information

Network and Wireless connectivity	Bluetooth (BR+EDR+BLE) WIFI 802.11a, 802.11b, 802.11g, 802.11n and 802.11ac
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The requirement for the following technical information of the EUT was tested in this report:

Frequency Range	802.11b/g/n(20 MHz): 2.412 GHz - 2.462 GHz $f_c = 2412 \text{ MHz} + (N-1)*5 \text{ MHz}$ , where - $f_c$ = "Operating Frequency" in MHz, - N = "Channel Number" with the range from 1 to 13. 802.11n(40 MHz): 2.422 GHz - 2.452 GHz $f_c = 2412 \text{ MHz} + (N-1)*5 \text{ MHz}$ , where - $f_c$ = "Operating Frequency" in MHz, - N = "Channel Number" with the range from 3 to 11.	
Modulation Type	DSSS, OFDM	
Product Type	<input type="checkbox"/> Mobile <input checked="" type="checkbox"/> Portable <input type="checkbox"/> Fix Location	
Antenna System (eg., MIMO, Smart Antenna)	N/A	
Categorization as Correlated or Completely Uncorrelated	N/A	
Antenna Type	Main Antenna Aux. Antenna	FPC Antenna
Antenna Gain	Main Antenna Aux. Antenna	2.36 dBi 1.87 dBi
About the Product	Only the WIFI 802.11b, 802.11g and 802.11n (HT20/40) was tested in this report.	

Mode	Antenna	
	Main Antenna	Aux. Antenna
802.11b	√	√
802.11g	√	√
802.11n20	√	√
802.11n40	√	√

Note: All the configurations were tested, but only the worst data was shown in this report.

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

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	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Occupied Bandwidth	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Conducted Spurious Emission	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Conducted Emission	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Radiated Spurious Emission	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Band Edge	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	1/6/11	3/6/9
Power spectral density (PSD)	11b/11g/11n20/11n40	1/6/6.5/13.5 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	KDB Publication 662911 D01v02r01	Emissions Testing of Transmitters with Multiple Outputs in the Same Band (e.g., MIMO, Smart Antenna, etc)
3	ANSI C63.10-2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
4	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.	Test Result	Verdict
1	Antenna Requirement	15.203	N/A	Pass <sup>Note</sup>
2	Output Power	15.247 (b)	ANNEX A.1	Pass
3	Occupied Bandwidth	15.247 (a)	ANNEX A.2	Pass
4	Conducted Spurious Emission	15.247 (d)	ANNEX A.3	Pass
5	Band Edge(Authorized-band band-edge)	15.247 (d)	ANNEX A.4	Pass
6	Conducted Emission	15.207	ANNEX A.5	Pass
7	Radiated Spurious Emission	15.209; 15.247 (d)	ANNEX A.6	Pass
8	Band Edge(Restricted-band band-edge)	15.209; 15.247 (d)	ANNEX A.7	Pass
9	Power spectral density (PSD)	15.247 (e)	ANNEX A.8	Pass

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

## 4 GENERAL TEST CONFIGURATIONS

### 4.1 Test Environments

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

Relative Humidity	47% to 62%	
Atmospheric Pressure	100 kPa to 102 kPa	
Temperature	NT (Normal Temperature)	+21.1°C to +24.8°C
Working Voltage of the EUT	NV (Normal Voltage)	11.55 V

### 4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	KEYSIGHT	N9020A	MY56060183	2024.08.01	2025.07.31
Power Sensor	KEYSIGHT	U2063XA	MY58000247	2024.07.04	2025.07.03
Spectrum Analyzer	KEYSIGHT	N9020A	MY50531259	2024.08.01	2025.07.31
Signaling Unit	ROHDE&SCHWARZ	CMW500	171150	2024.05.22	2025.05.21
				2025.04.28	2026.04.27
Test Antenna-Horn	SCHWARZBECK	BBHA 9120D	02460	2024.05.16	2027.05.15
Test Antenna-Horn	A-INFO	LB-180400KF	J211060273	2024.06.15	2027.06.14
Anechoic Chamber	RAINFORD	9m*6m*6m	140	2024.07.28	2027.07.27
Amplifier	COM-MV	LSCX_LNA1-12G-01	7210214	2024.08.01	2025.07.31
Amplifier	COM-MV	XKu_LNA7-18G-01	7210209	2024.08.01	2025.07.31
Amplifier	COM-MV	KA LNA18 40G-01	18050001	2024.12.05	2025.12.04
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2024.08.01	2025.07.31
Test Antenna-Bi-Log	SCHWARZBECK	VULB 9168	9168-01162	2023.08.04	2026.08.03
Test Antenna-Loop	SCHWARZBECK	FMZB 1519	1519-037	2024.01.23	2027.01.22
Amplifier	COM-MV	ZT30-1000M	B2018054558	2024.11.28	2025.11.27
Anechoic Chamber	EMC Electronic Co., Ltd	20.10*11.60*7.35m	130	2024.07.13	2027.07.12
EMI Receiver	KEYSIGHT	N9010B	MY57110309	2024.08.01	2025.07.31
LISN	SCHWARZBECK	NSLK 8127	8127-687	2024.05.09	2025.05.08
				2025.04.29	2026.04.28
Shielded Enclosure	YiHeng Electronic Co., Ltd	3.5m*3.1m*2.8m	112	2025.02.14	2028.02.13

### 4.3 Test Software List

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

### 4.4 Measurement Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.

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

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

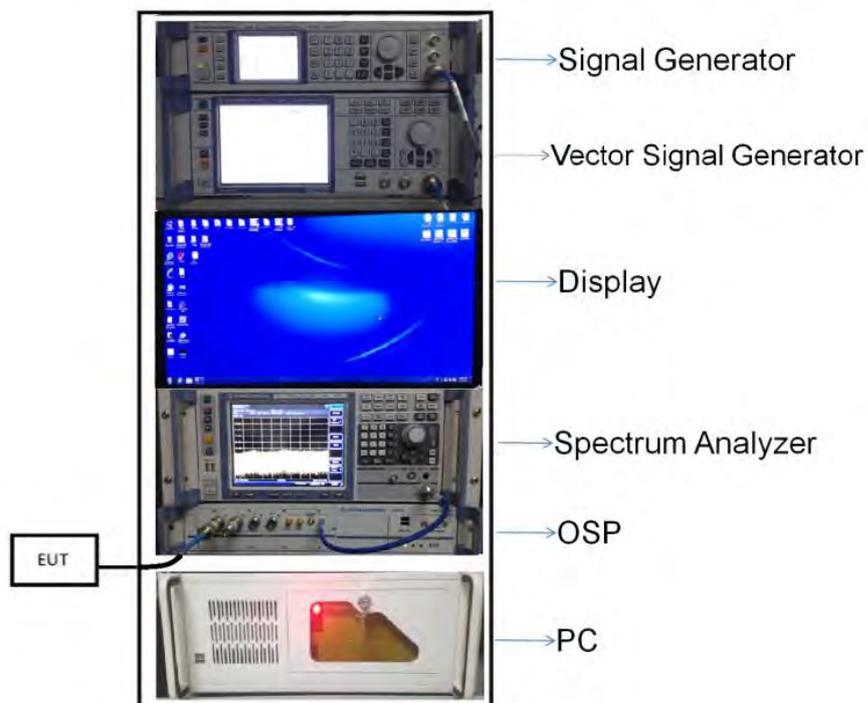
### 4.5 Description of Test Setup

#### 4.5.1 For Antenna Port Test

$$\text{Conducted value (dBm)} = \text{Measurement value (dBm)} + \text{cable loss (dB)}$$

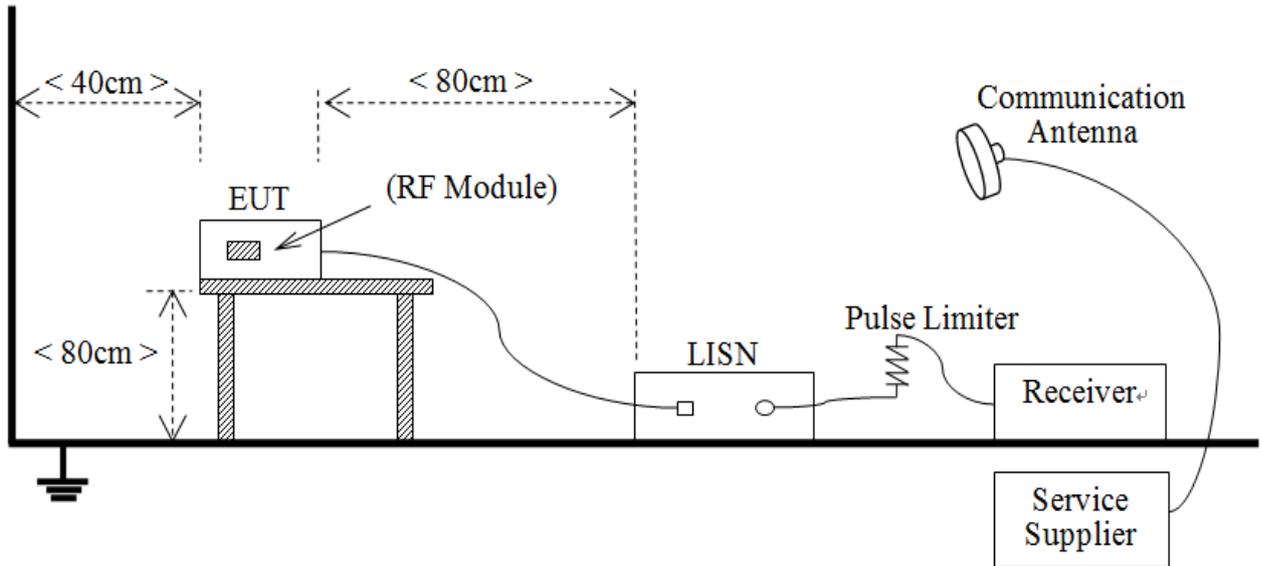
For example: the measurement value is 10 dBm and the cable 0.5dBm used, then the final result of EUT:

$$\text{Conducted value (dBm)} = 10 \text{ dBm} + 0.5 \text{ dB} = 10.5 \text{ dBm}$$



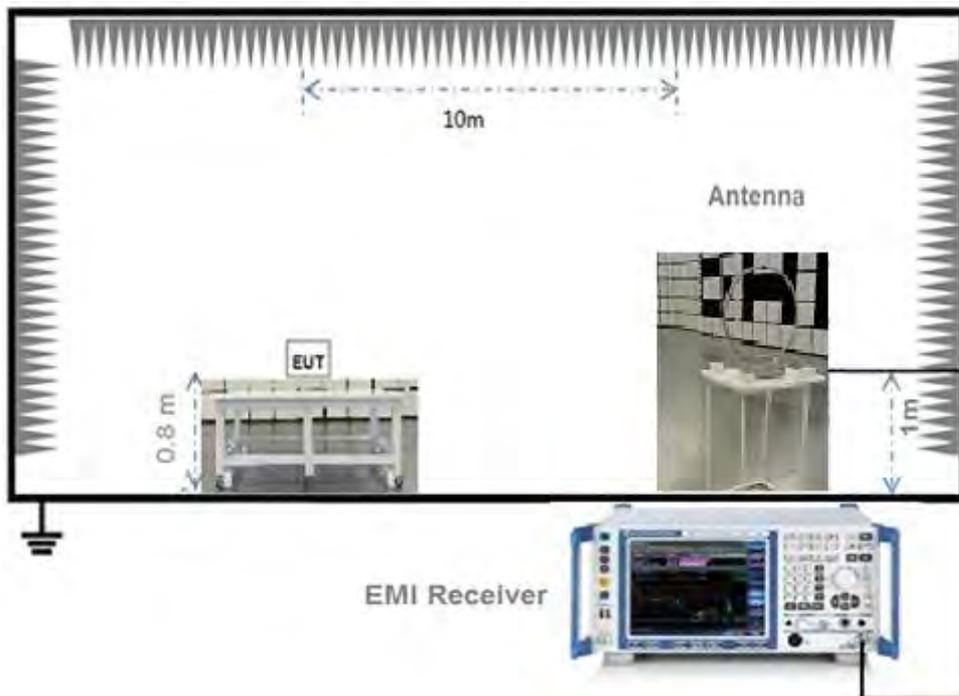
(Diagram 1)

4.5.2 For AC Power Supply Port Test



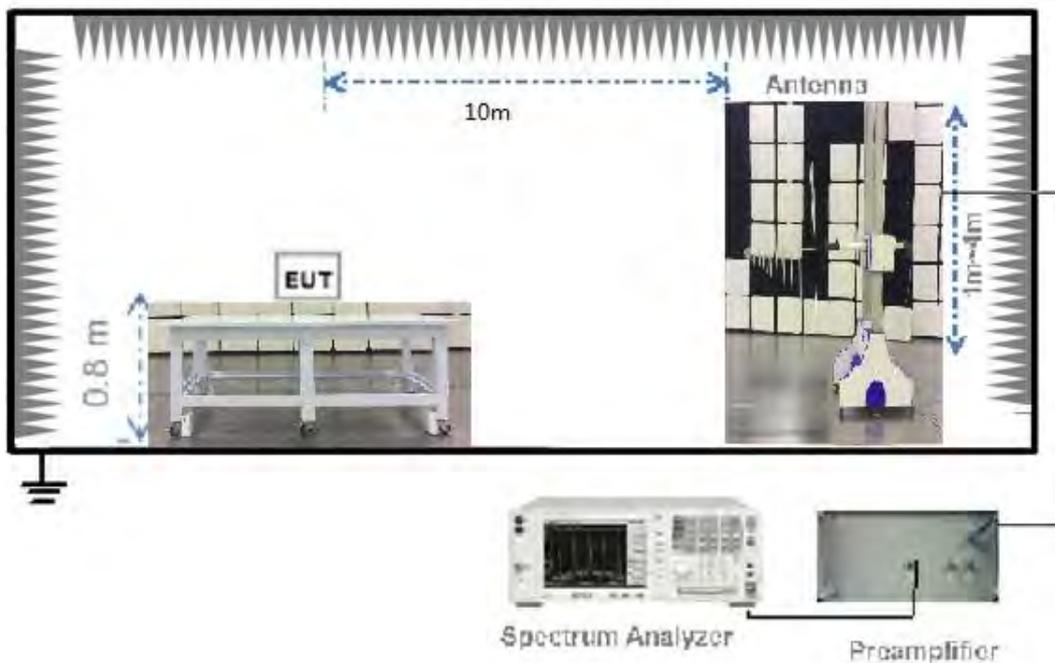
(Diagram 2)

4.5.3 For Radiated Test (Below 30 MHz)



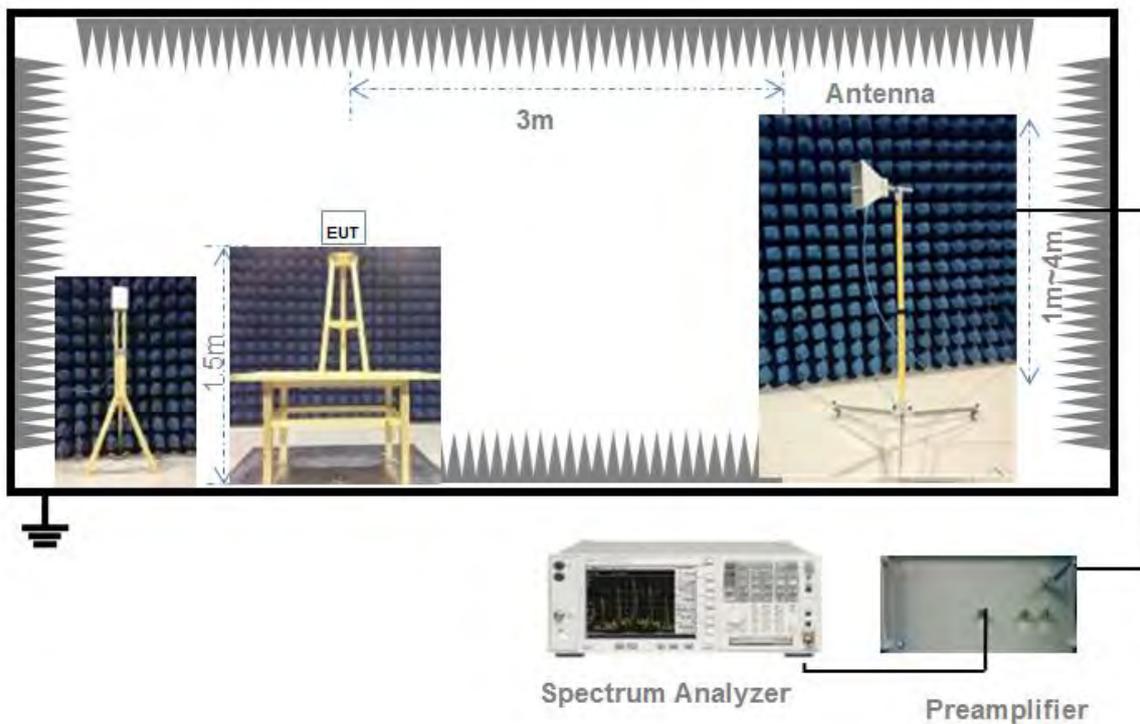
(Diagram 3)

#### 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:

$$E = \text{EIRP} - 20 \log D + 104.8$$

where:

E = electric field strength in dB $\mu$ V/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

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)

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.

#### 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  $10\log(1/x)$ , 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  $RBW \geq OBW$  if possible; otherwise, set RBW to the largest available value.

Set  $VBW \geq RBW$ . 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  $T \leq 16.7$  microseconds.)

### 5.2.4 Test Result

Please refer to ANNEX A.1.

## 5.3 Occupied Bandwidth

### 5.3.1 Limit

FCC §15.247(a)

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)  $\geq$  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)

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  $\geq 1.5$  times the DTS bandwidth.

Set the RBW = 100 kHz.

Set the VBW  $\geq 3 \times$  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  $\geq 3 \times$  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)

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  $\geq 98\%$ ). 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  $\pm 2$  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  $\geq 3 \times$  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)  $\pm 0.5$  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  $\pm 0.5$  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  $[10 \log (\text{OBW}/\text{RBW})]$  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

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 50 $\mu$ H/50 $\Omega$  line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dB $\mu$ V)	
	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)

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 ( $\mu\text{V}/\text{m}$ )	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:

- 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.
- 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  $\leq 30$  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:

$$E = \text{EIRP} - 20\log D + 104.8$$

where:

E = electric field strength in dB $\mu$ V/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  $\geq 3 \times$  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  $\geq$  98 percent) cannot be achieved and the duty cycle is constant (i.e., duty cycle variations are less than  $\pm$  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  $\geq$  3 x RBW.
- e) Detector = RMS, if  $\text{span}/(\# \text{ of points in sweep}) \leq (\text{RBW}/2)$ . 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 ( $\geq$  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  $f \geq 1$  GHz, 100 kHz for  $f < 1$  GHz

VBW  $\geq$  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)

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  $f \geq 1$  GHz, 100 kHz for  $f < 1$  GHz

VBW  $\geq$  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)

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:  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .

Set the VBW  $\geq 3 \text{ RBW}$ .

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	50	50	100.00%	0.00
802.11g	50	50	100.00%	0.00
802.11n-20 MHz	50	50	100.00%	0.00
802.11n-40 MHz	50	50	100.00%	0.00

#### Main Antenna

#### Peak Power Test Data

##### 802.11b Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	19.16	82.41	30	1000	Pass
Middle	19.15	82.22			Pass
High	19.13	81.85			Pass

##### 802.11g Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	23.54	225.94	30	1000	Pass
Middle	23.55	226.46			Pass
High	23.90	245.47			Pass

##### 802.11n-20 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	23.23	210.38	30	1000	Pass
Middle	23.10	204.17			Pass
High	22.73	187.50			Pass

##### 802.11n-40 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	23.38	217.77	30	1000	Pass
Middle	24.61	289.07			Pass
High	21.61	144.88			Pass

### Average Power Test Data

#### 802.11b Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	15.71	37.24	30	1000	Pass
Middle	15.72	37.33			Pass
High	15.79	37.93			Pass

#### 802.11g Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	15.59	36.22	30	1000	Pass
Middle	15.64	36.64			Pass
High	15.82	38.19			Pass

#### 802.11n-20 MHz Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	15.36	34.36	30	1000	Pass
Middle	15.22	33.27			Pass
High	14.80	30.20			Pass

#### 802.11n-40 MHz Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	15.53	35.73	30	1000	Pass
Middle	16.77	47.53			Pass
High	13.76	23.77			Pass

Aux. AntennaPeak Power Test Data

## 802.11b Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	19.44	87.90	30	1000	Pass
Middle	19.46	88.31			Pass
High	19.04	80.17			Pass

## 802.11g Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	23.44	220.80	30	1000	Pass
Middle	23.84	242.10			Pass
High	23.33	215.28			Pass

## 802.11n-20 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	23.43	220.29	30	1000	Pass
Middle	23.43	220.29			Pass
High	22.35	171.79			Pass

## 802.11n-40 MHz Mode:

Channel	Measured Output Peak Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	22.85	192.75	30	1000	Pass
Middle	24.90	309.03			Pass
High	21.25	133.35			Pass

### Average Power Test Data

#### 802.11b Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	15.99	39.72	30	1000	Pass
Middle	15.97	39.54			Pass
High	15.68	36.98			Pass

#### 802.11g Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	15.51	35.56	30	1000	Pass
Middle	15.89	38.82			Pass
High	15.41	34.75			Pass

#### 802.11n-20 MHz Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	15.53	35.73	30	1000	Pass
Middle	15.52	35.65			Pass
High	14.48	28.05			Pass

#### 802.11n-40 MHz Mode:

Channel	Measured Output Average Power		Limit		Verdict
	dBm	mW	dBm	mW	
Low	14.99	31.55	30	1000	Pass
Middle	17.07	50.93			Pass
High	13.38	21.78			Pass

## A.2 Occupied Bandwidth

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

### Aux. Antenna

#### Test Data

802.11b Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	10.150000	15.070000	≥500
Middle	10.150000	15.058000	≥500
High	10.150000	15.062000	≥500

802.11g Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	16.450000	17.313000	≥500
Middle	16.450000	17.334000	≥500
High	16.450000	17.321000	≥500

802.11n-20 MHz Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	17.150000	18.234000	≥500
Middle	16.750000	18.211000	≥500
High	17.150000	18.234000	≥500

802.11n-40 MHz Mode:

Channel	6 dB Bandwidth (MHz)	99% Bandwidth (MHz)	6 dB Bandwidth Limits (kHz)
Low	35.500000	36.565000	≥500
Middle	35.550000	36.622203	≥500
High	35.550000	36.629000	≥500

Test Plots

6 dB Bandwidth

802.11b LOW CHANNEL



802.11b MIDDLE CHANNEL



802.11b HIGH CHANNEL



802.11g LOW CHANNEL



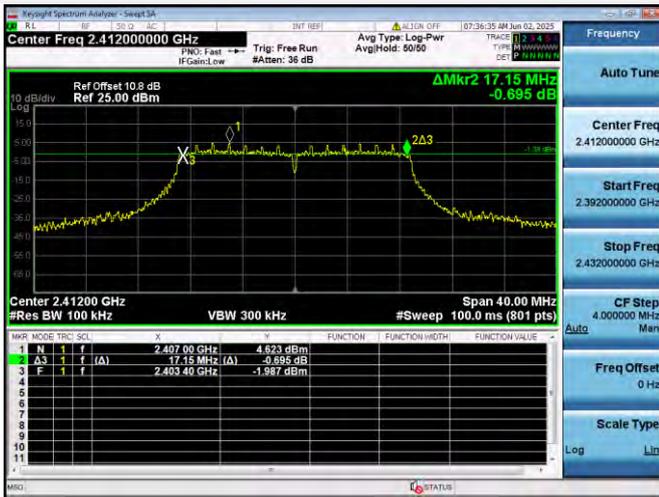
802.11g MIDDLE CHANNEL



802.11g HIGH CHANNEL



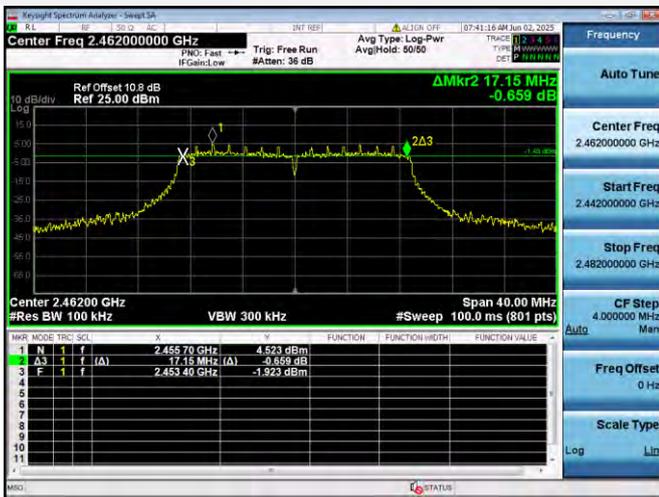
802.11n-20 MHz LOW CHANNEL



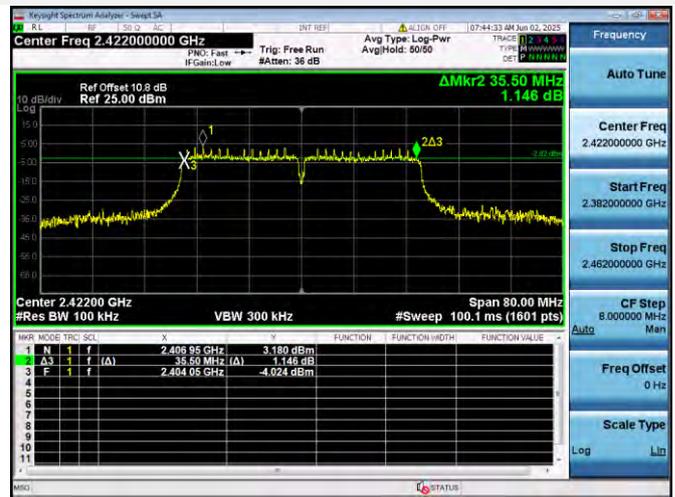
802.11n-20 MHz MIDDLE CHANNEL



802.11n-20 MHz HIGH CHANNEL



802.11n-40 MHz LOW CHANNEL



802.11n-40 MHz MIDDLE CHANNEL



802.11n-40 MHz HIGH CHANNEL



99% Bandwidth

802.11b LOW CHANNEL



802.11b MIDDLE CHANNEL



802.11b HIGH CHANNEL



802.11g LOW CHANNEL



802.11g MIDDLE CHANNEL



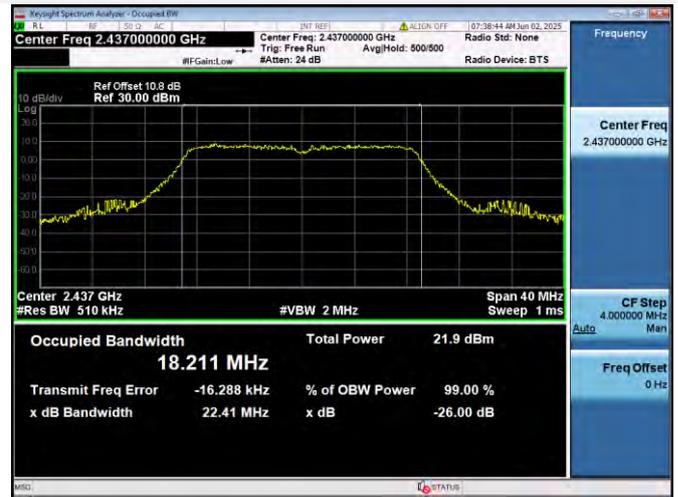
802.11g HIGH CHANNEL



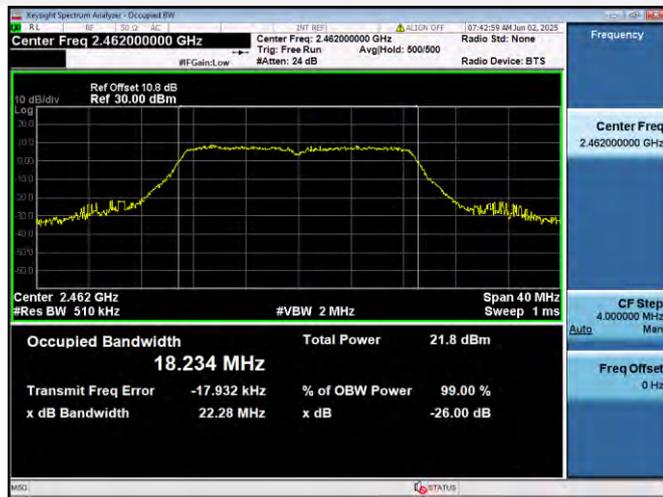
### 802.11n-20 MHz LOW CHANNEL



### 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



### A.3 Conducted Spurious Emissions

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

#### Aux. Antenna

#### Test Data

802.11b Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-38.22	6.11	-13.89	Pass
Middle	-37.25	6.40	-13.60	Pass
High	-40.95	6.10	-13.90	Pass

802.11g Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-38.01	5.19	-14.81	Pass
Middle	-38.72	5.26	-14.74	Pass
High	-38.43	5.06	-14.94	Pass

802.11n-20 MHz Mode:

Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-37.68	4.97	-15.03	Pass
Middle	-40.09	4.70	-15.30	Pass
High	-38.31	-4.54	-24.54	Pass

802.11n-40 MHz Mode:

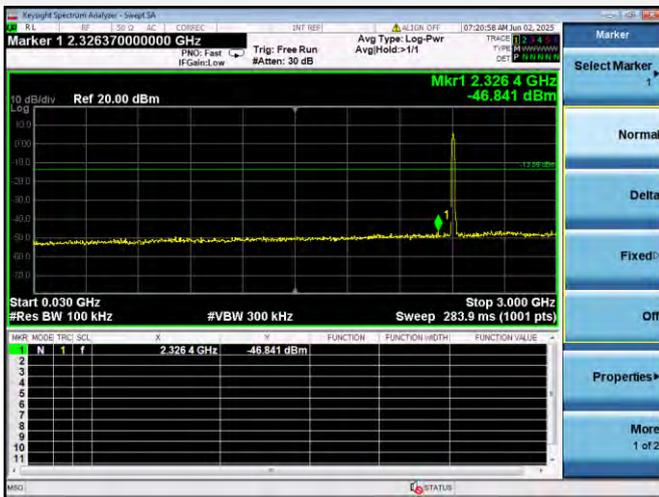
Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-37.83	3.12	-16.88	Pass
Middle	-40.50	3.36	-16.64	Pass
High	-40.91	3.27	-16.73	Pass

Test Plots

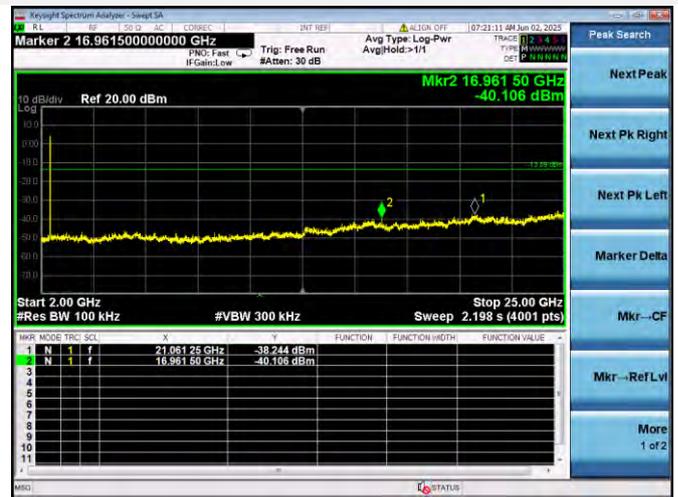
802.11b LOW CHANNEL CARRIER LEVEL



802.11b LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



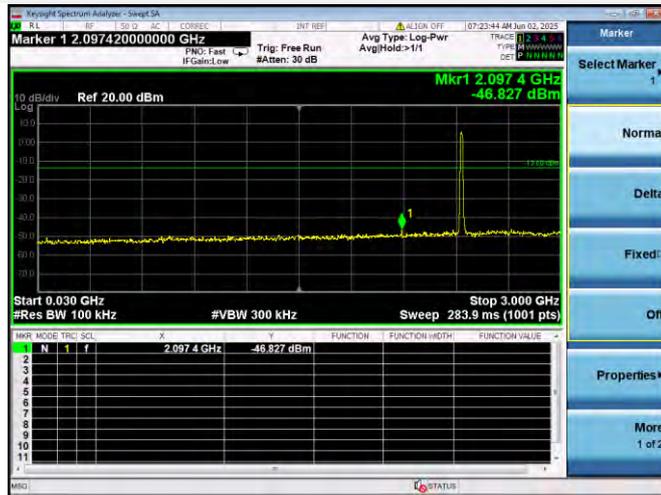
802.11b LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



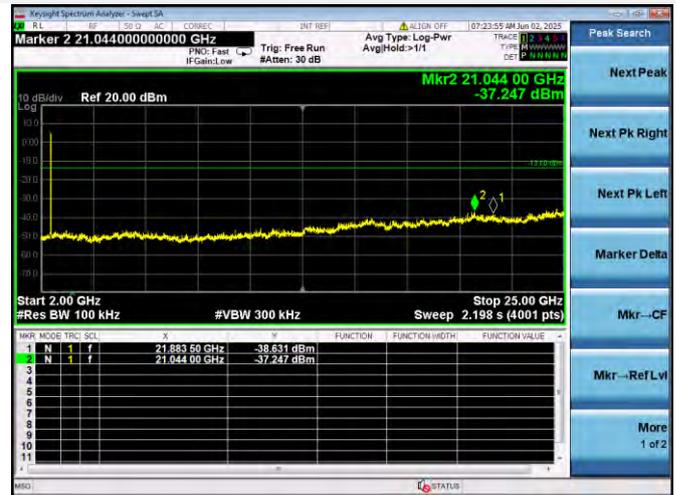
802.11b MIDDLE CHANNEL CARRIER LEVEL



802.11b MIDDLE CHANNEL, SPURIOUS  
30 MHz ~ 3 GHz



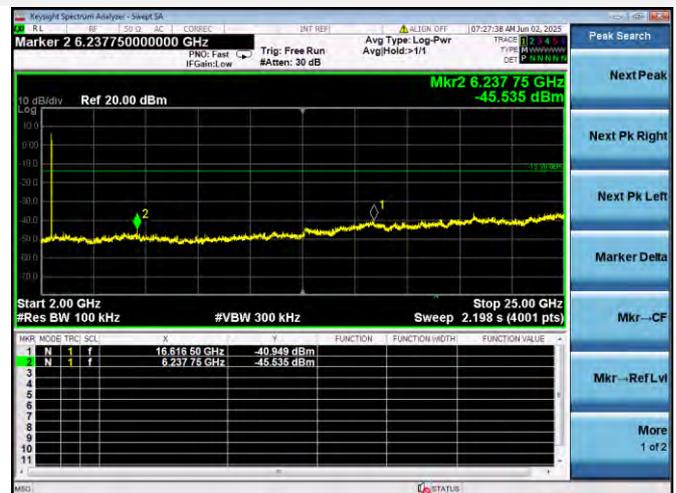
802.11b MIDDLE CHANNEL, SPURIOUS  
2 GHz ~ 25 GHz



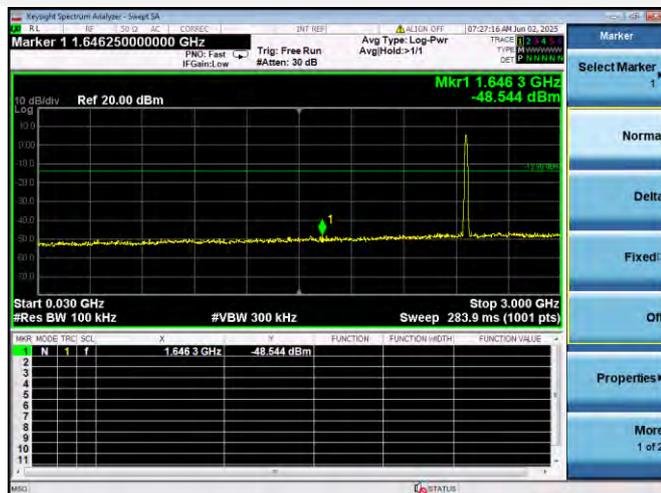
802.11b HIGH CHANNEL CARRIER LEVEL



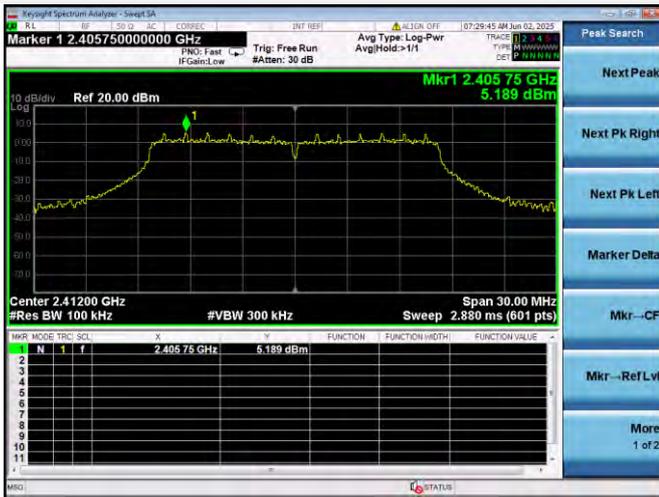
802.11b HIGH CHANNEL, SPURIOUS  
2 GHz ~ 25 GHz



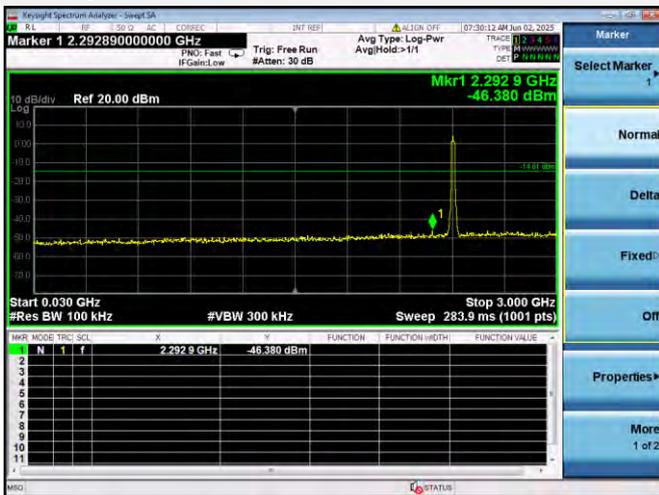
802.11b HIGH CHANNEL, SPURIOUS  
30 MHz ~ 3 GHz



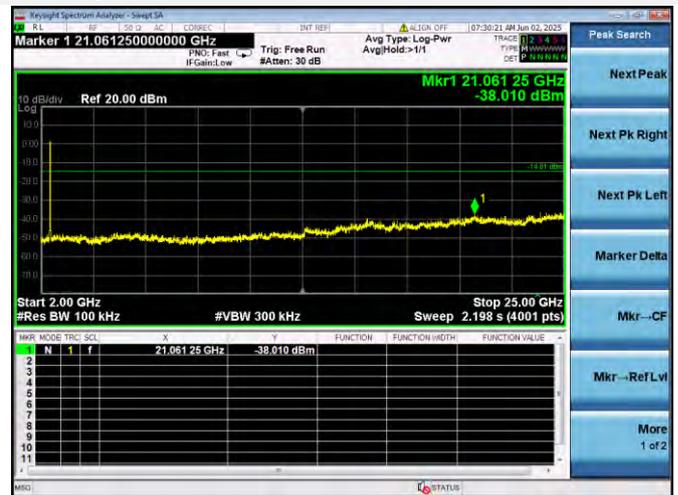
### 802.11g LOW CHANNEL CARRIER LEVEL



### 802.11g LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



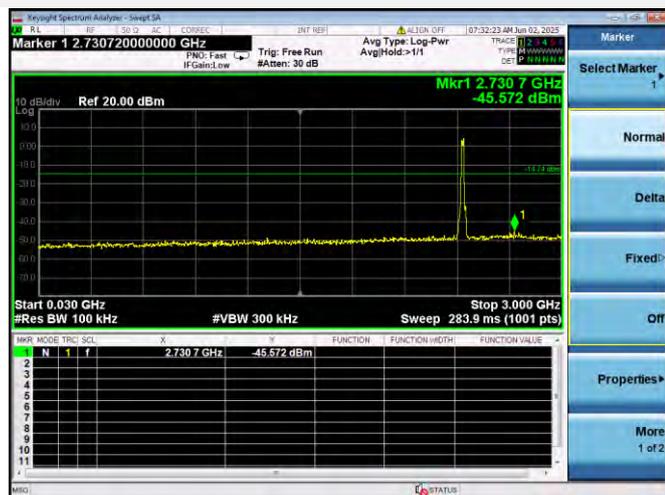
### 802.11g LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



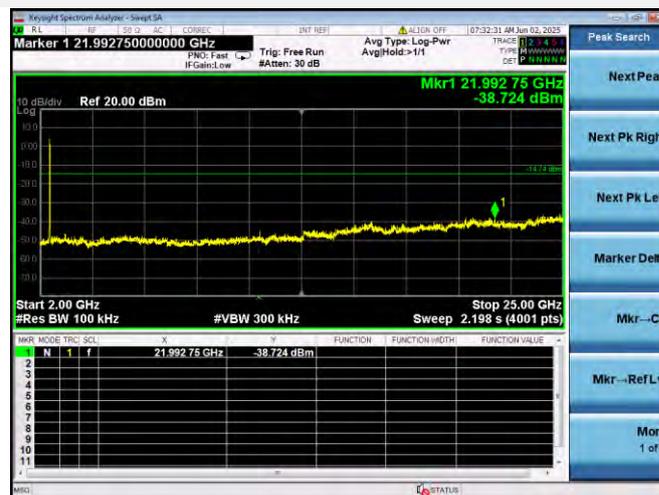
### 802.11g MIDDLE CHANNEL CARRIER LEVEL



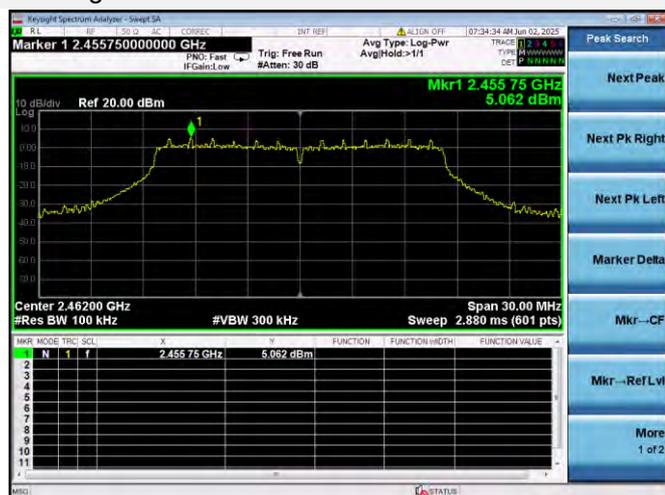
802.11g MIDDLE CHANNEL, SPURIOUS  
30 MHz ~ 3 GHz



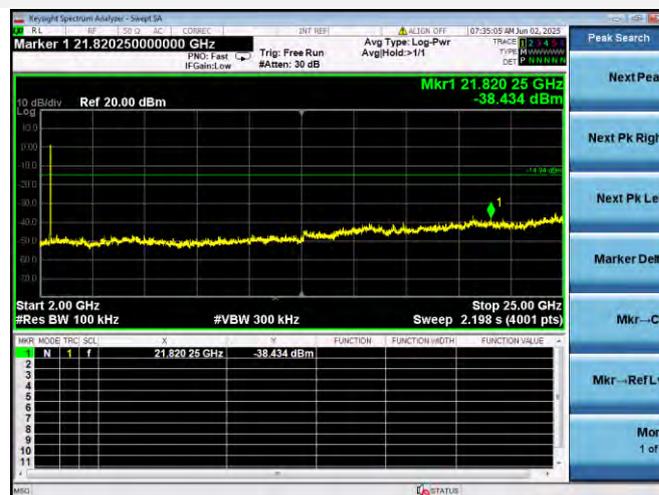
802.11g MIDDLE CHANNEL, SPURIOUS  
2 GHz ~ 25 GHz



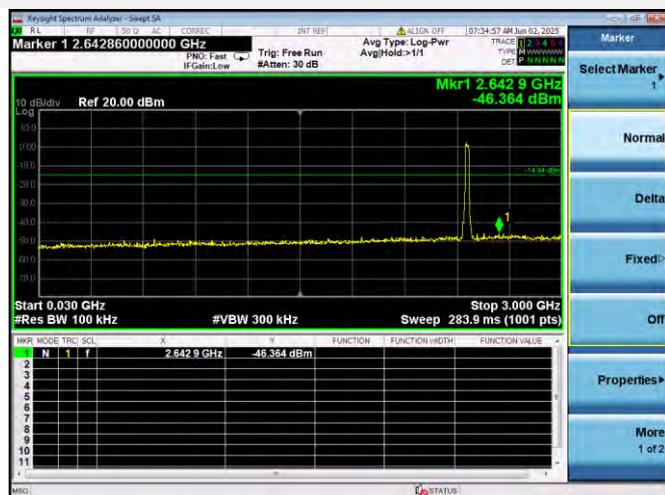
802.11g HIGH CHANNEL CARRIER LEVEL



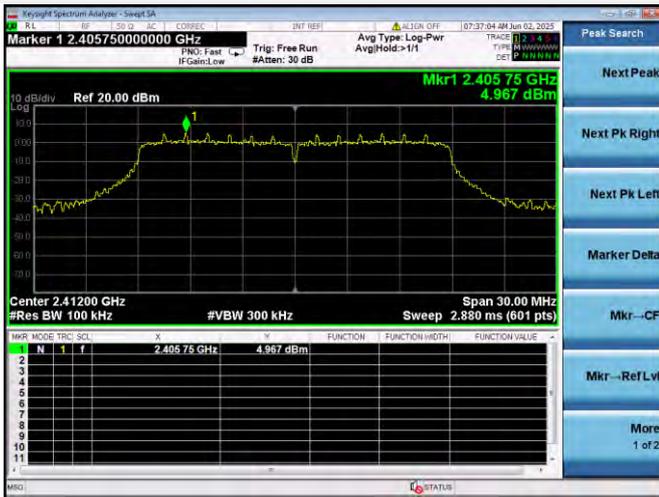
802.11g HIGH CHANNEL, SPURIOUS  
2 GHz ~ 25 GHz



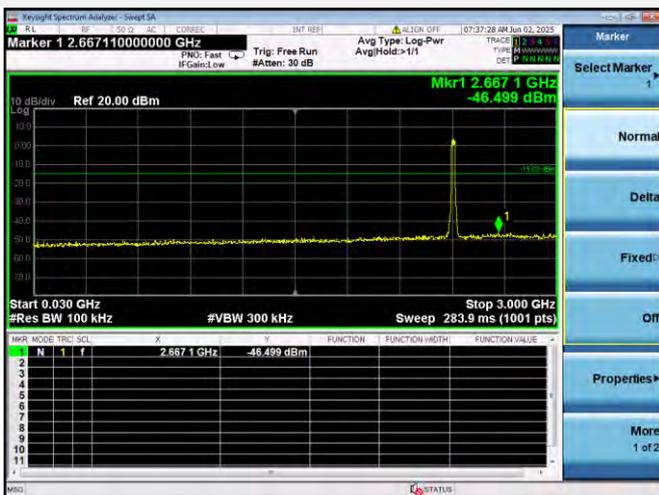
802.11g HIGH CHANNEL, SPURIOUS  
30 MHz ~ 3 GHz



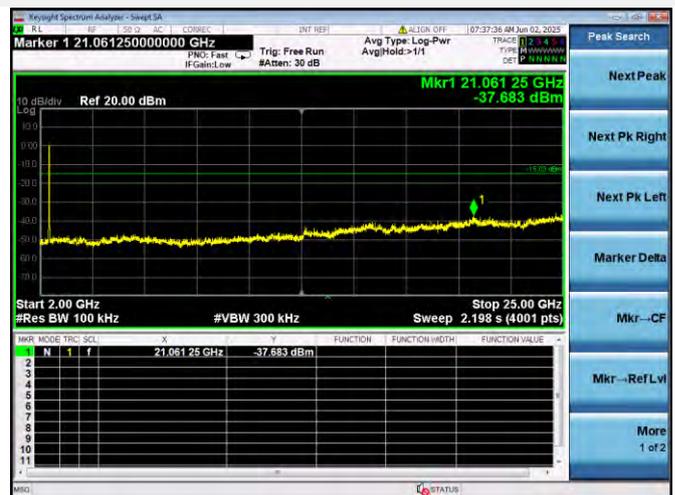
### 802.11n-20 MHz LOW CHANNEL CARRIER LEVEL



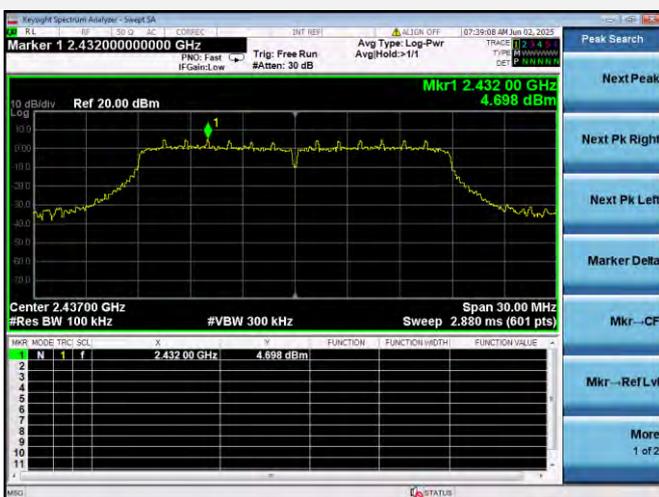
### 802.11n-20 MHz LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



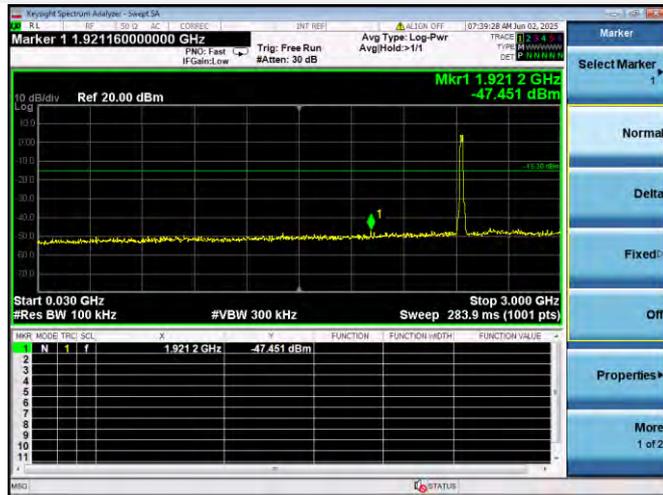
### 802.11n-20 MHz LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



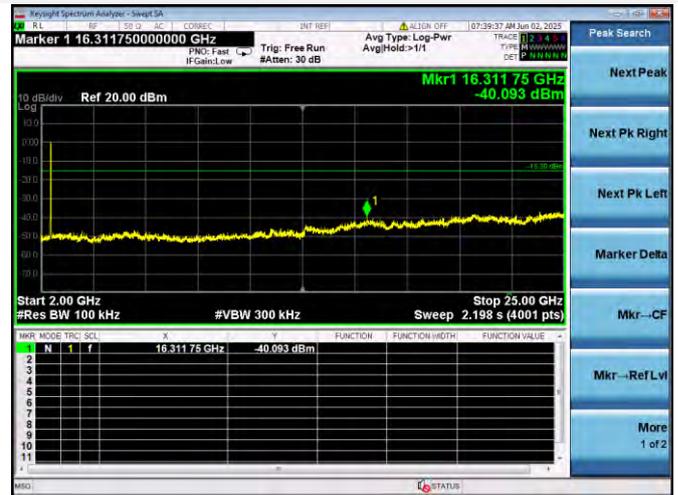
### 802.11n-20 MHz MIDDLE CHANNEL CARRIER LEVEL



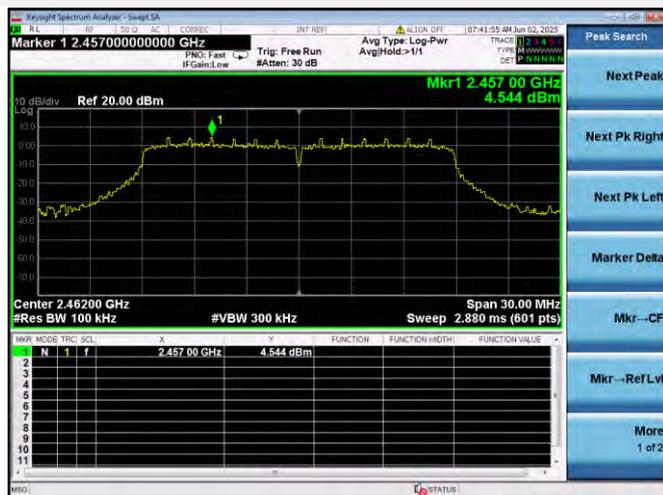
802.11n-20 MHz MIDDLE CHANNEL, SPURIOUS  
30 MHz ~ 3 GHz



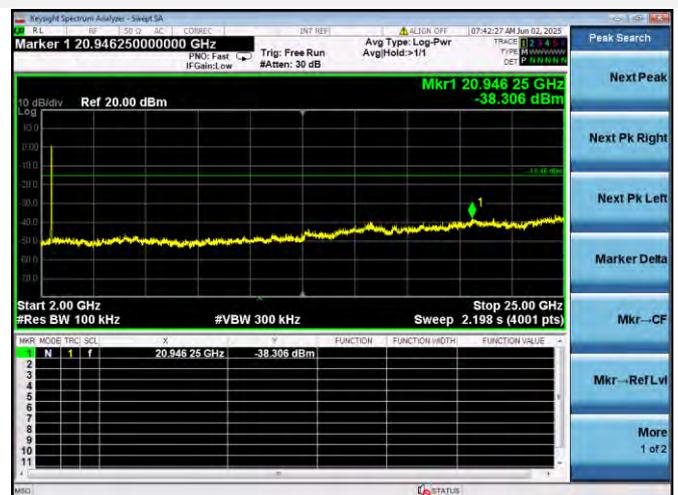
802.11n-20 MHz MIDDLE CHANNEL, SPURIOUS  
2 GHz ~ 25 GHz



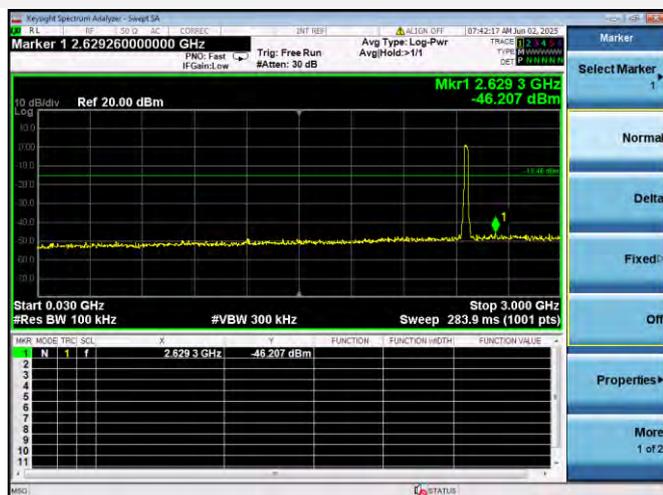
802.11n-20 MHz HIGH CHANNEL CARRIER LEVEL



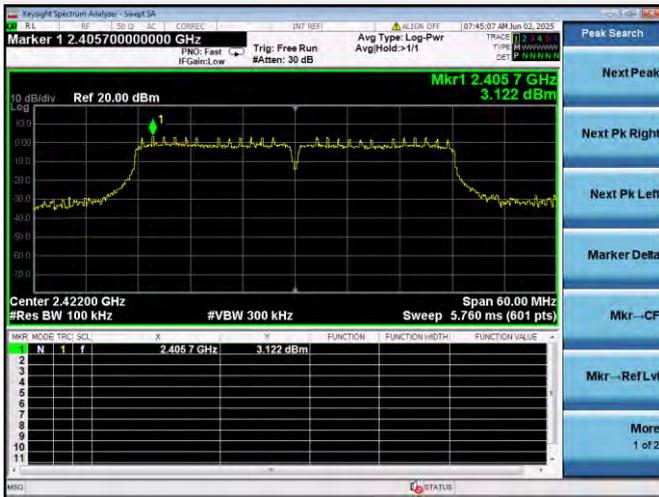
802.11n-20 MHz HIGH CHANNEL, SPURIOUS  
2 GHz ~ 25 GHz



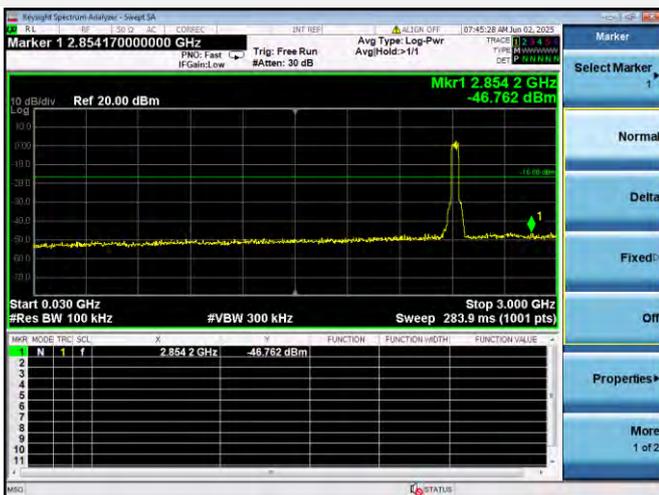
802.11n-20 MHz HIGH CHANNEL, SPURIOUS  
30 MHz ~ 3 GHz



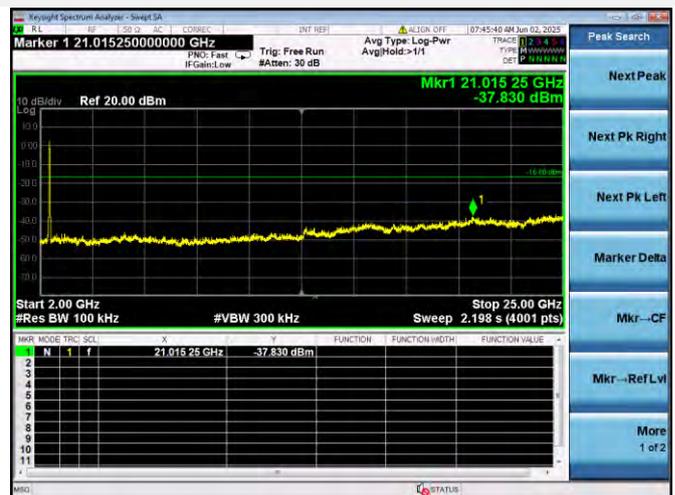
### 802.11n-40 MHz LOW CHANNEL CARRIER LEVEL



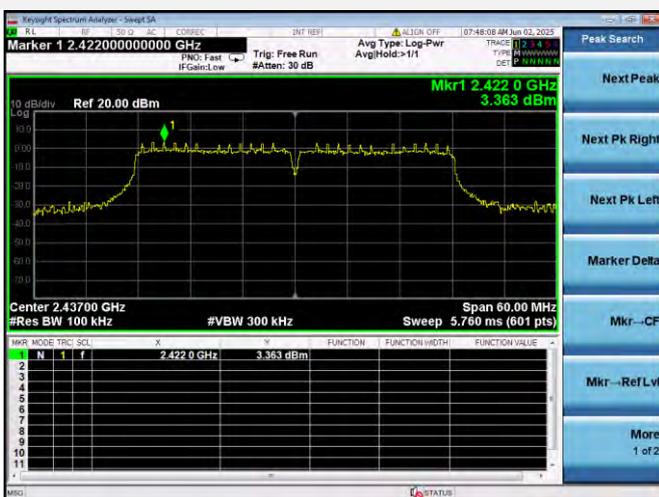
### 802.11n-40 MHz LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



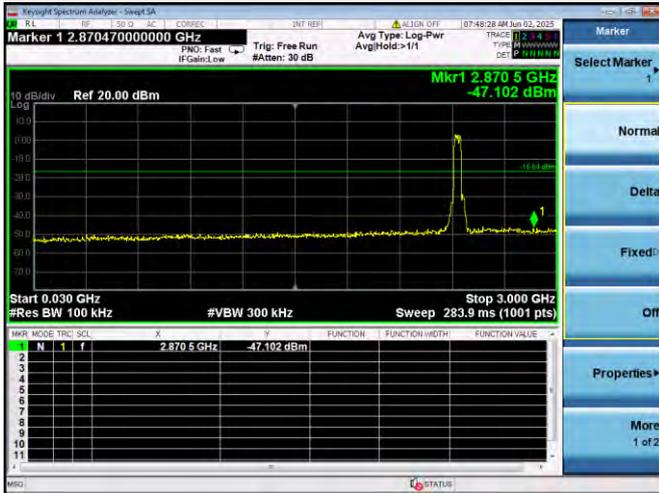
### 802.11n-40 MHz LOW CHANNEL, SPURIOUS 2 GHz ~ 25 GHz



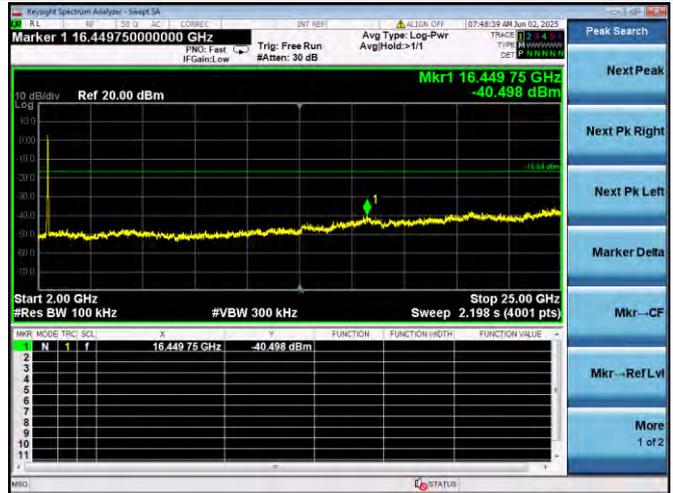
### 802.11n-40 MHz MIDDLE CHANNEL CARRIER LEVEL



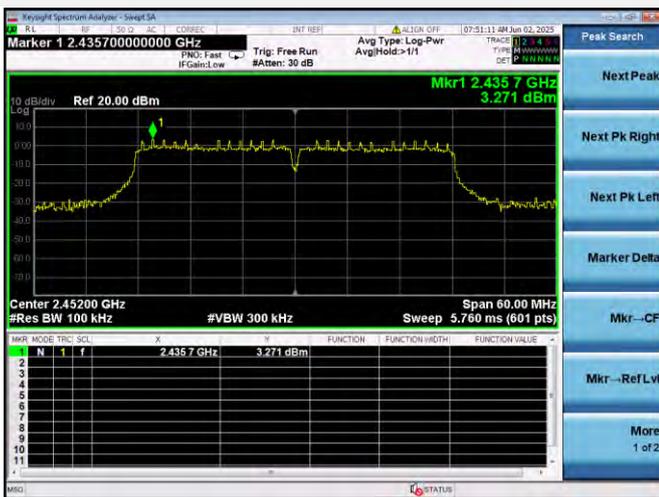
802.11n-40 MHz MIDDLE CHANNEL, SPURIOUS  
30 MHz ~ 3 GHz



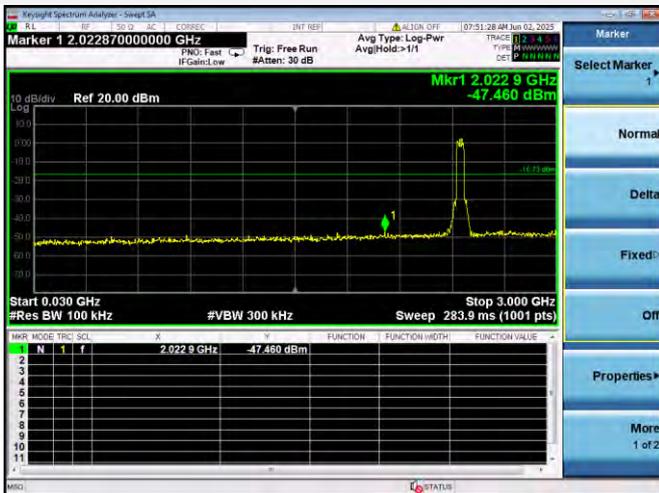
802.11n-40 MHz MIDDLE CHANNEL, SPURIOUS  
2 GHz ~ 25 GHz



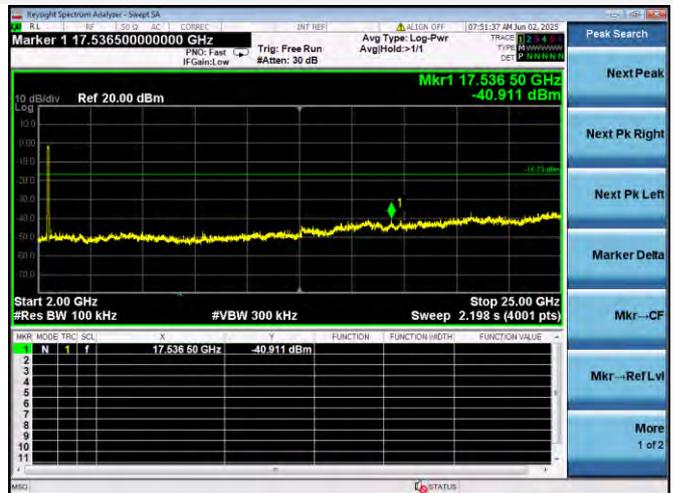
802.11n-40 MHz HIGH CHANNEL CARRIER LEVEL



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



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



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

Note <sup>1</sup>: The 99% OBW of the fundamental emission is without 2 MHz of the authorized band.

Note <sup>2</sup>: All antenna were pre tested, but only the worst case has been reported in this report.

### Aux. Antenna

#### Test Data

802.11b Mode:

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-35.77	6.11	-13.89	Pass
High Channel	-46.72	6.10	-13.90	Pass

802.11g Mode:

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-30.57	5.19	-14.81	Pass
High Channel	-41.39	5.06	-14.94	Pass

802.11n-20 MHz Mode:

Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-30.56	4.97	-15.03	Pass
High Channel	-41.66	-4.54	-24.54	Pass

802.11n-40 MHz Mode:

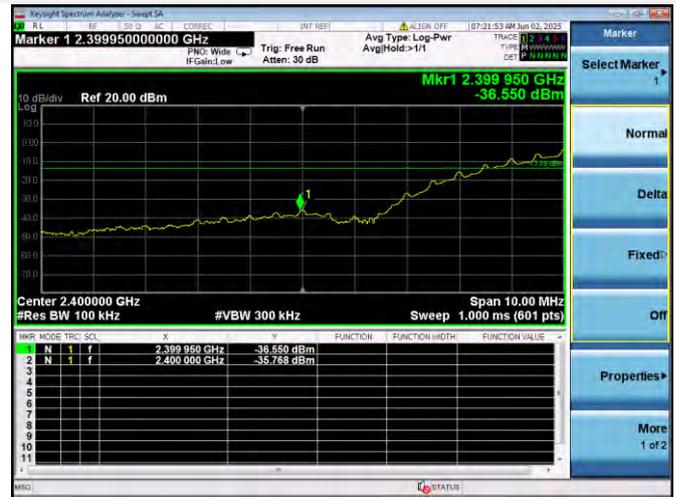
Channel	Measured Max. Band Edge Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low Channel	-34.19	3.12	-16.88	Pass
High Channel	-39.50	3.27	-16.73	Pass

Test Plots

802.11b LOW CHANNEL, CARRIER LEVEL



802.11b LOW CHANNEL, BAND EDGE



802.11b HIGH CHANNEL, CARRIER LEVEL



802.11b HIGH CHANNEL, BAND EDGE



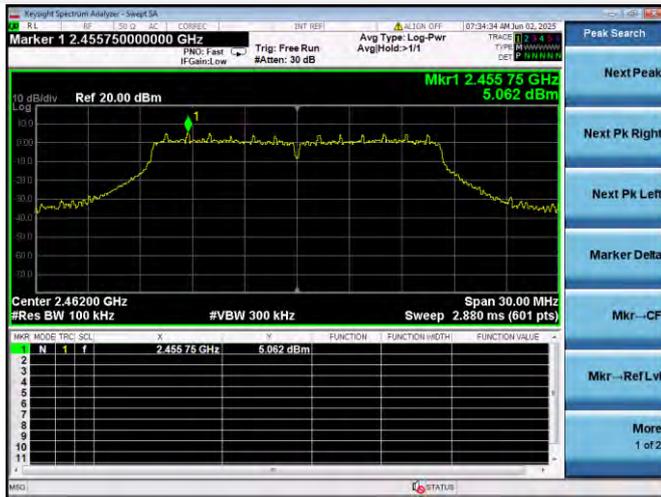
802.11g LOW CHANNEL, CARRIER LEVEL



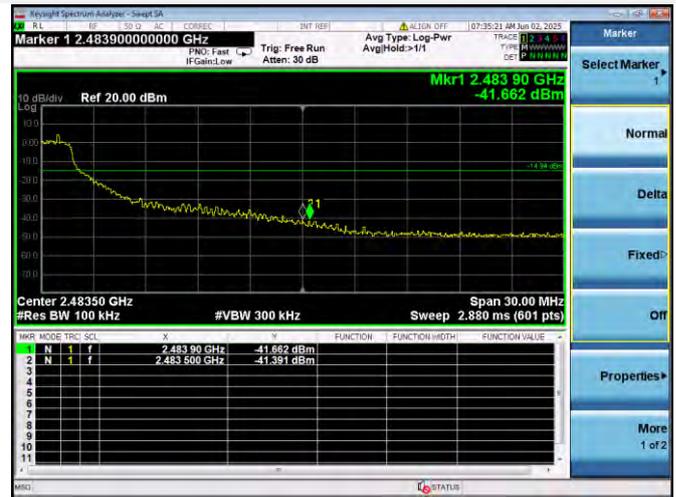
802.11g LOW CHANNEL, BAND EDGE



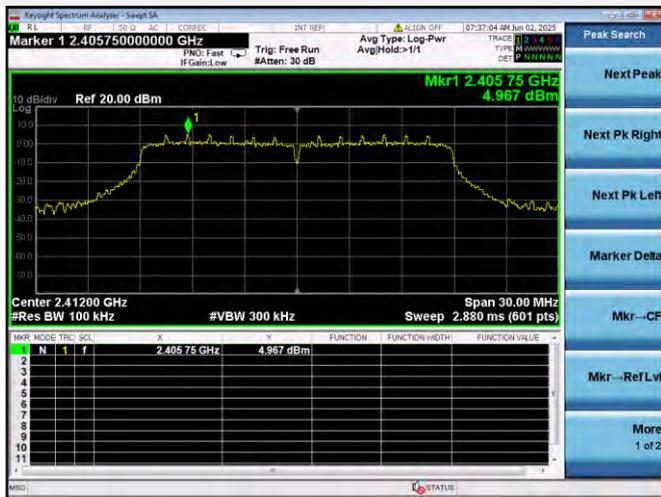
802.11g HIGH CHANNEL, CARRIER LEVEL



802.11g HIGH CHANNEL, BAND EDGE



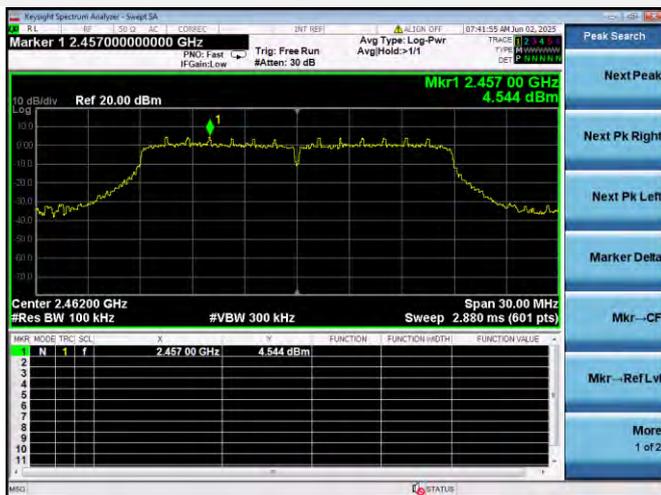
802.11n-20 MHz LOW CHANNEL, CARRIER LEVEL



802.11n-20 MHz LOW CHANNEL, BAND EDGE



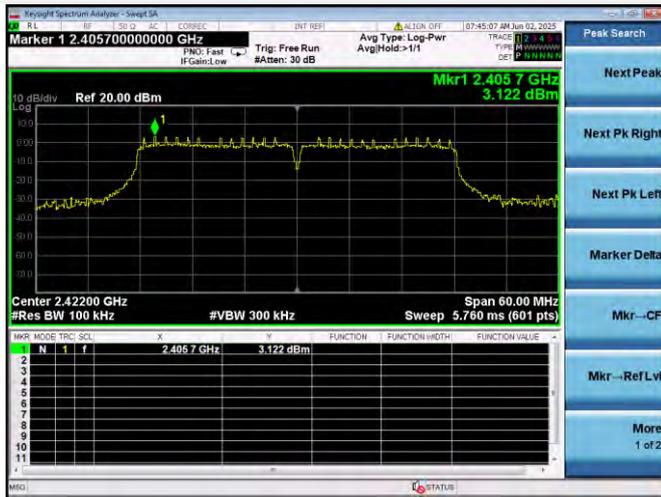
802.11n-20 MHz HIGH CHANNEL, CARRIER LEVEL



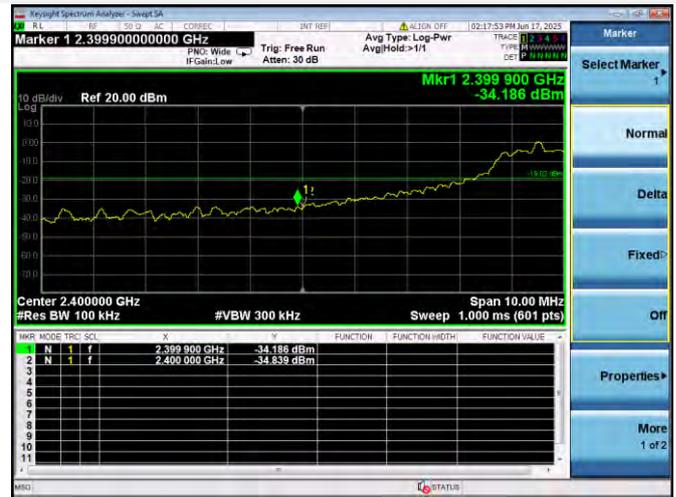
802.11n-20 MHz HIGH CHANNEL, BAND EDGE



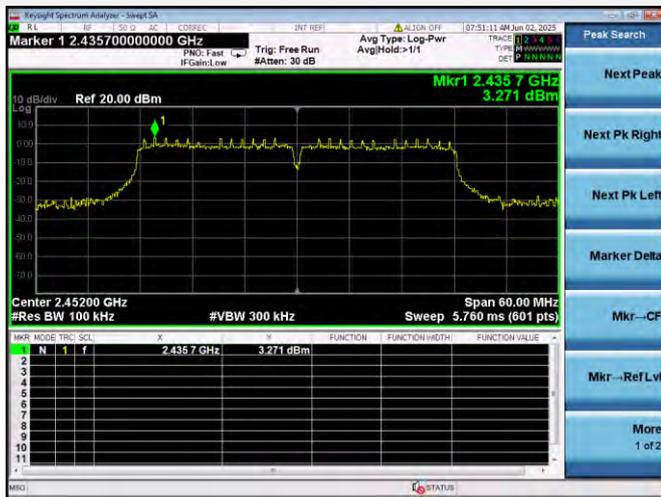
802.11n-40 MHz LOW CHANNEL, CARRIER LEVEL



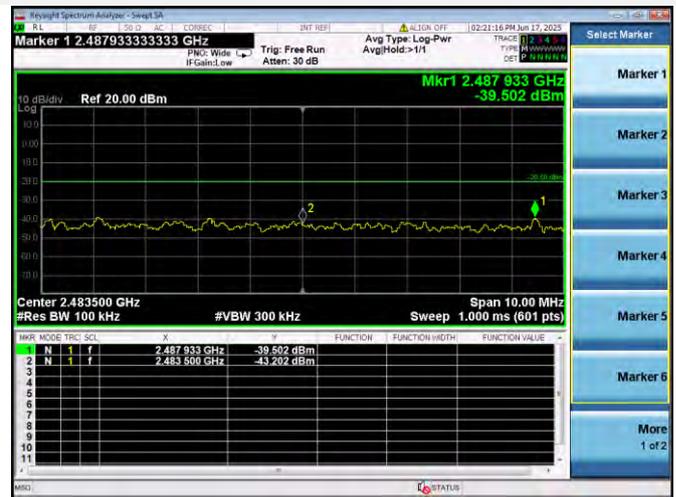
802.11n-40 MHz LOW CHANNEL, BAND EDGE



802.11n-40 MHz HIGH CHANNEL, CARRIER LEVEL



802.11n-40 MHz HIGH CHANNEL, BAND EDGE



## A.5 Conducted Emissions

Note<sup>1</sup>: The EUT is working in the Normal link mode. All modes have been tested and normal link mode is worst.

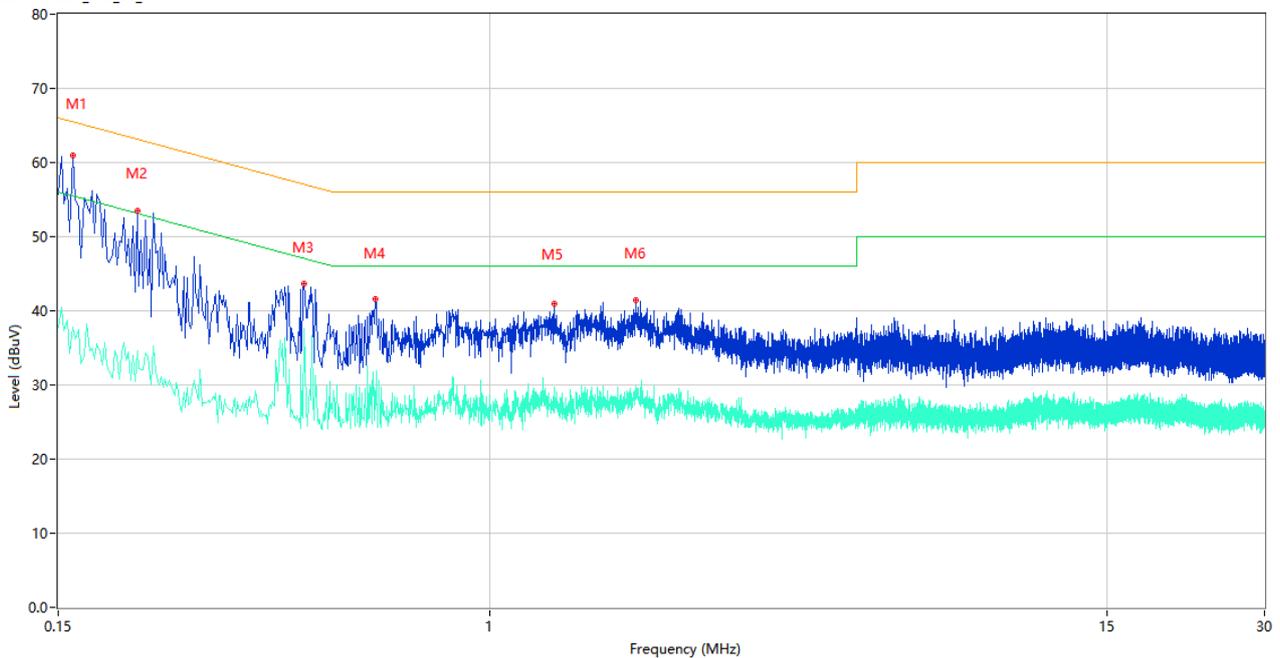
Note<sup>2</sup>: Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 60 Hz and 240 VAC, 50 Hz) for which the device is capable of operation. So, The configuration 120 VAC, 60 Hz and 240 VAC, 50 Hz were tested respectively, but only the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

Note<sup>3</sup>: Results (dBuV) = Original reading level of Spectrum Analyzer (dBuV) + Factor (dB)

### Test Data and Plots

#### PHASE L

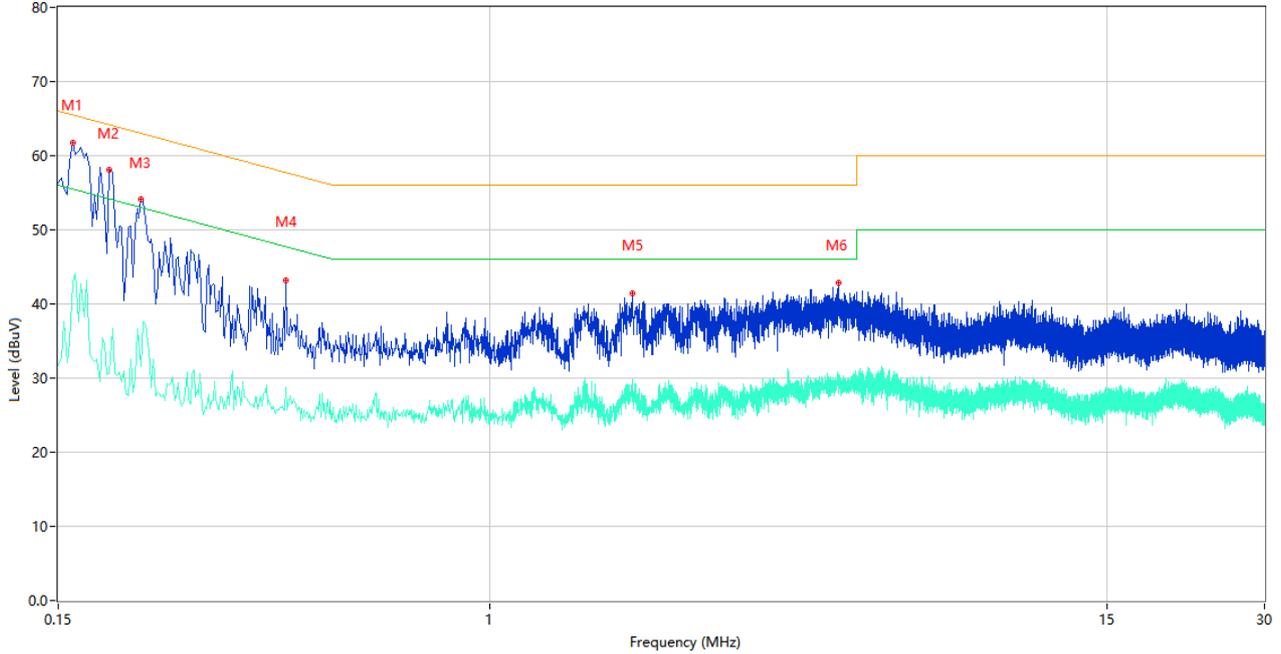
CE Test case\_FCC\_CE\_FCC PART 15C



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.160	60.95	9.85	65.46	4.51	Peak	L	Pass
1**	0.160	37.82	9.85	55.46	17.64	AV	L	Pass
2	0.212	53.57	9.84	63.13	9.56	Peak	L	Pass
2**	0.212	34.56	9.84	53.13	18.57	AV	L	Pass
3	0.442	43.59	10.17	57.02	13.43	Peak	L	Pass
3**	0.442	37.65	10.17	47.02	9.37	AV	L	Pass
4	0.604	41.54	10.22	56.00	14.46	Peak	L	Pass
4**	0.604	26.60	10.22	46.00	19.40	AV	L	Pass
5	1.328	40.91	10.28	56.00	15.09	Peak	L	Pass
5**	1.328	29.62	10.28	46.00	16.38	AV	L	Pass
6	1.892	41.38	10.73	56.00	14.62	Peak	L	Pass
6**	1.892	28.44	10.73	46.00	17.56	AV	L	Pass

PHASE N

CE Test case\_FCC\_CE\_FCC PART 15C



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.160	61.78	9.85	65.46	3.68	Peak	N	Pass
1**	0.160	42.89	9.85	55.46	12.57	AV	N	Pass
2	0.188	58.17	9.84	64.12	5.95	Peak	N	Pass
2**	0.188	30.66	9.84	54.12	23.46	AV	N	Pass
3	0.216	54.12	9.84	62.97	8.85	Peak	N	Pass
3**	0.216	31.66	9.84	52.97	21.31	AV	N	Pass
4	0.408	43.23	10.53	57.69	14.46	Peak	N	Pass
4**	0.408	28.70	10.53	47.69	18.99	AV	N	Pass
5	1.866	41.42	10.38	56.00	14.58	Peak	N	Pass
5**	1.866	29.85	10.38	46.00	16.15	AV	N	Pass
6	4.610	42.82	10.53	56.00	13.18	Peak	N	Pass
6**	4.610	30.20	10.53	46.00	15.80	AV	N	Pass

## A.6 Radiated Emission

Note <sup>1</sup>: The symbol of "--" in the table which means not application.

Note <sup>2</sup>: 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.

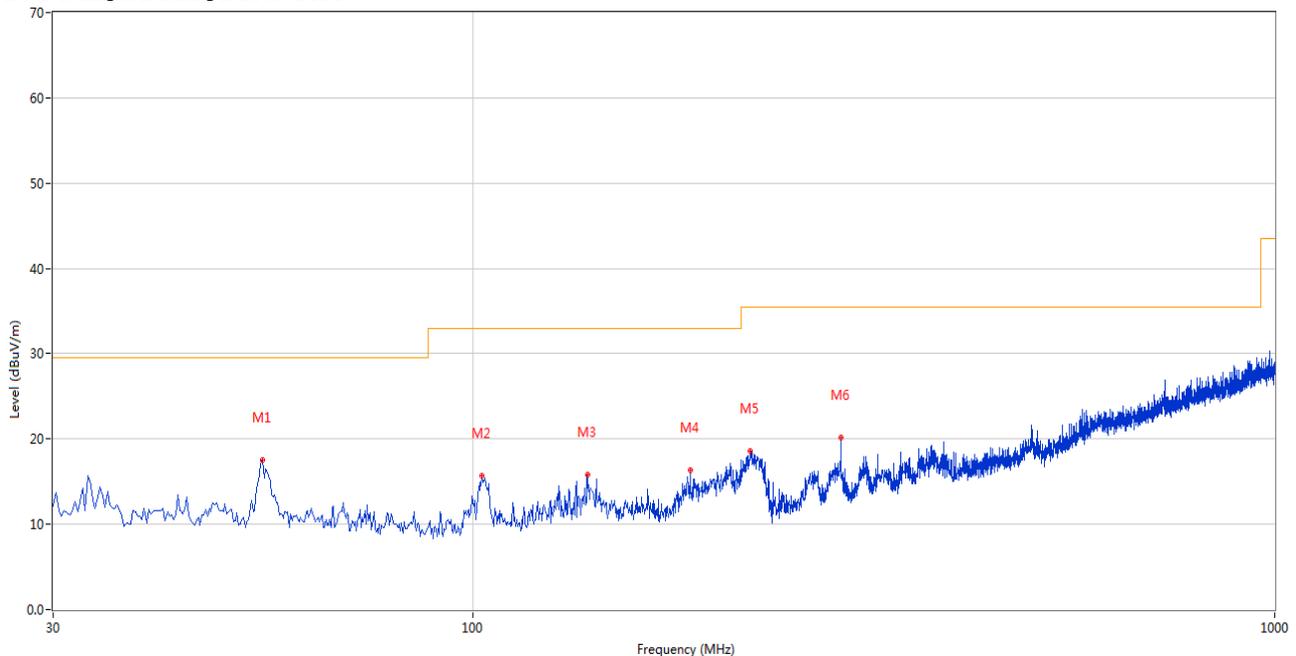
Note <sup>3</sup>: The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

Note <sup>4</sup>: 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

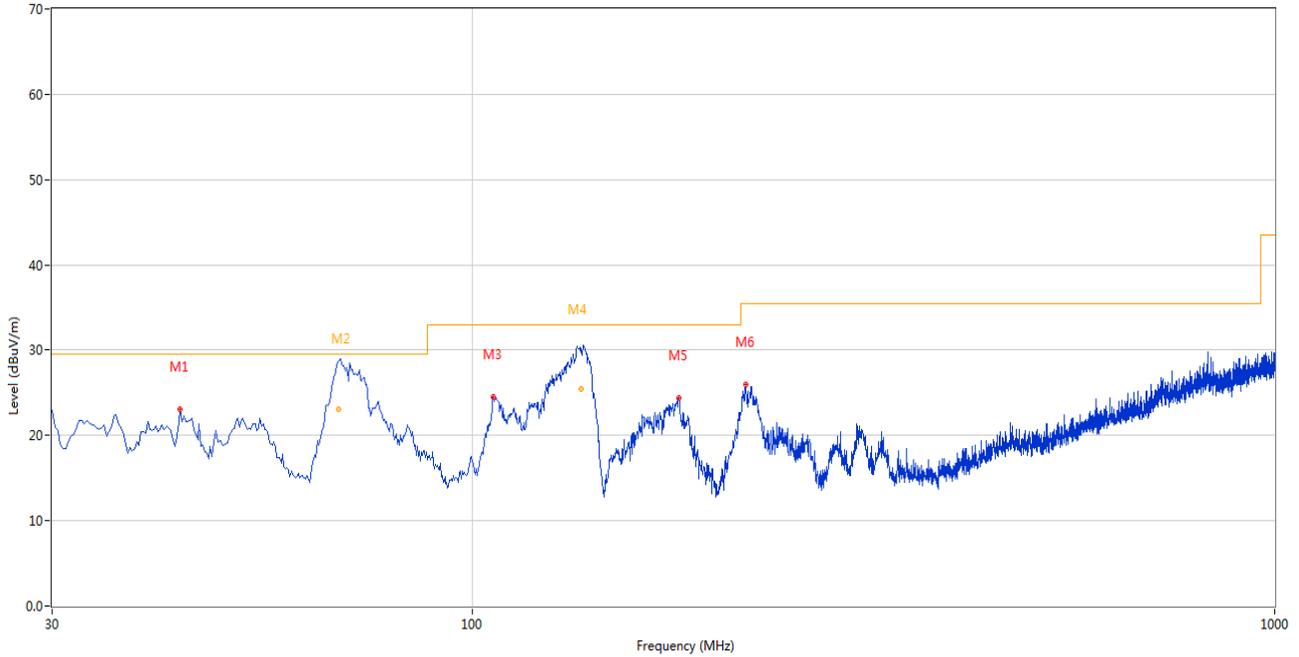
10m RE Test Case\_FCC Certification\_FCC 15C 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	54.729	17.59	-27.13	29.5	11.91	Peak	96.00	200	Horizontal	Pass
2	102.732	15.66	-29.76	33.0	17.34	Peak	193.00	200	Horizontal	Pass
3	139.098	15.81	-26.86	33.0	17.19	Peak	270.00	100	Horizontal	Pass
4	186.858	16.34	-28.36	33.0	16.66	Peak	25.00	200	Horizontal	Pass
5	222.012	18.61	-29.15	35.5	16.89	Peak	215.00	200	Horizontal	Pass
6	287.956	20.16	-25.91	35.5	15.34	Peak	0.00	200	Horizontal	Pass

30 MHz to 1 GHz, ANT V

10m RE Test Case\_FCC Certification\_FCC 15C 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	43.334	23.14	-26.94	29.5	6.36	Peak	182.00	200	Vertical	Pass
2	68.167	26.10	-28.84	29.5	3.40	Peak	286.00	145	Vertical	N/A
2*	68.167	23.04	-28.84	29.5	6.46	QP	286.00	145	Vertical	Pass
3	106.368	24.56	-29.33	33.0	8.44	Peak	243.00	100	Vertical	Pass
4	136.954	28.42	-26.91	33.0	4.58	Peak	275.00	111	Vertical	N/A
4*	136.954	25.46	-26.91	33.0	7.54	QP	275.00	111	Vertical	Pass
5	181.040	24.40	-27.62	33.0	8.60	Peak	237.00	100	Vertical	Pass
6	219.588	25.93	-29.26	35.5	9.57	Peak	107.00	100	Vertical	Pass

Note<sup>1</sup>: The marked spikes near 2400 MHz with circle should be ignored because they are Fundamental signal.

Note<sup>2</sup>: The spurious above 18G is noise only, do not show on the report.

Note<sup>3</sup>: All antenna were pre tested, but only the worst case has been reported in this report.

### Aux. Antenna

#### Test Data

##### 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	1328.706	41.97	74.0	32.03	Peak	200.00	300	Horizontal	Pass
1**	1328.706	35.68	54.0	18.32	AV	200.00	300	Horizontal	Pass
2	2995.611	51.64	74.0	22.36	Peak	39.00	200	Horizontal	Pass
2**	2995.611	41.56	54.0	12.44	AV	39.00	200	Horizontal	Pass
3	4933.893	52.94	74.0	21.06	Peak	204.00	200	Horizontal	Pass
3**	4933.893	42.54	54.0	11.46	AV	204.00	200	Horizontal	Pass
4	6810.055	52.75	74.0	21.25	Peak	295.00	300	Horizontal	Pass
4**	6810.055	45.84	54.0	8.16	AV	295.00	300	Horizontal	Pass
5	13411.726	56.03	74.0	17.97	Peak	206.00	300	Horizontal	Pass
5**	13411.726	44.17	54.0	9.83	AV	206.00	300	Horizontal	Pass
6	17423.926	55.77	74.0	18.23	Peak	337.00	100	Horizontal	Pass
6**	17423.926	45.50	54.0	8.50	AV	337.00	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	1332.658	45.08	74.0	28.92	Peak	302.00	300	Vertical	Pass
1**	1332.658	36.34	54.0	17.66	AV	302.00	300	Vertical	Pass
2	2979.571	49.42	74.0	24.58	Peak	345.00	400	Vertical	Pass
2**	2979.571	39.66	54.0	14.34	AV	345.00	400	Vertical	Pass
3	4852.291	50.11	74.0	23.89	Peak	38.00	200	Vertical	Pass
3**	4852.291	41.14	54.0	12.86	AV	38.00	200	Vertical	Pass
4	6608.902	53.41	74.0	20.59	Peak	342.00	100	Vertical	Pass
4**	6608.902	42.59	54.0	11.41	AV	342.00	100	Vertical	Pass
5	13438.204	52.86	74.0	21.14	Peak	120.00	100	Vertical	Pass
5**	13438.204	44.02	54.0	9.98	AV	120.00	100	Vertical	Pass
6	17415.451	59.88	74.0	14.12	Peak	112.00	200	Vertical	Pass
6**	17415.451	49.29	54.0	4.71	AV	112.00	200	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	1330.948	45.29	74.0	28.71	Peak	290.00	300	Horizontal	Pass
1**	1330.948	37.74	54.0	16.26	AV	290.00	300	Horizontal	Pass
2	2994.157	49.83	74.0	24.17	Peak	50.00	300	Horizontal	Pass
2**	2994.157	40.23	54.0	13.77	AV	50.00	300	Horizontal	Pass
3	4931.682	50.65	74.0	23.35	Peak	34.00	200	Horizontal	Pass
3**	4931.682	39.24	54.0	14.76	AV	34.00	200	Horizontal	Pass
4	6807.918	53.63	74.0	20.37	Peak	287.00	200	Horizontal	Pass
4**	6807.918	46.19	54.0	7.81	AV	287.00	200	Horizontal	Pass
5	13409.828	57.16	74.0	16.84	Peak	185.00	200	Horizontal	Pass
5**	13409.828	44.10	54.0	9.90	AV	185.00	200	Horizontal	Pass
6	17428.462	57.72	74.0	16.28	Peak	0.00	300	Horizontal	Pass
6**	17428.462	50.02	54.0	3.98	AV	0.00	300	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	1331.311	43.38	74.0	30.62	Peak	248.00	100	Vertical	Pass
1**	1331.311	39.27	54.0	14.73	AV	248.00	100	Vertical	Pass
2	2985.461	50.74	74.0	23.26	Peak	130.00	400	Vertical	Pass
2**	2985.461	40.81	54.0	13.19	AV	130.00	400	Vertical	Pass
3	4851.045	48.24	74.0	25.76	Peak	112.00	200	Vertical	Pass
3**	4851.045	37.87	54.0	16.13	AV	112.00	200	Vertical	Pass
4	6609.376	57.02	74.0	16.98	Peak	242.00	400	Vertical	Pass
4**	6609.376	47.92	54.0	6.08	AV	242.00	400	Vertical	Pass
5	13436.257	55.33	74.0	18.67	Peak	277.00	100	Vertical	Pass
5**	13436.257	49.11	54.0	4.89	AV	277.00	100	Vertical	Pass
6	17415.198	59.44	74.0	14.56	Peak	152.00	100	Vertical	Pass
6**	17415.198	48.79	54.0	5.21	AV	152.00	100	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	1332.465	42.89	74.0	31.11	Peak	119.00	400	Horizontal	Pass
1**	1332.465	34.37	54.0	19.63	AV	119.00	400	Horizontal	Pass
2	2997.155	49.16	74.0	24.84	Peak	136.00	100	Horizontal	Pass
2**	2997.155	41.72	54.0	12.28	AV	136.00	100	Horizontal	Pass
3	4938.283	49.66	74.0	24.34	Peak	11.00	200	Horizontal	Pass
3**	4938.283	41.71	54.0	12.29	AV	11.00	200	Horizontal	Pass
4	6810.440	57.18	74.0	16.82	Peak	187.00	200	Horizontal	Pass
4**	6810.440	47.34	54.0	6.66	AV	187.00	200	Horizontal	Pass
5	13409.103	53.92	74.0	20.08	Peak	140.00	300	Horizontal	Pass
5**	13409.103	46.62	54.0	7.38	AV	140.00	300	Horizontal	Pass
6	17426.575	54.16	74.0	19.84	Peak	31.00	100	Horizontal	Pass
6**	17426.575	45.75	54.0	8.25	AV	31.00	100	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	1334.488	44.60	74.0	29.40	Peak	127.00	100	Vertical	Pass
1**	1334.488	35.79	54.0	18.21	AV	127.00	100	Vertical	Pass
2	2983.180	50.27	74.0	23.73	Peak	317.00	400	Vertical	Pass
2**	2983.180	42.87	54.0	11.13	AV	317.00	400	Vertical	Pass
3	4855.210	47.84	74.0	26.16	Peak	243.00	200	Vertical	Pass
3**	4855.210	42.33	54.0	11.67	AV	243.00	200	Vertical	Pass
4	6606.612	55.14	74.0	18.86	Peak	200.00	300	Vertical	Pass
4**	6606.612	47.84	54.0	6.16	AV	200.00	300	Vertical	Pass
5	13435.384	53.99	74.0	20.01	Peak	281.00	100	Vertical	Pass
5**	13435.384	47.05	54.0	6.95	AV	281.00	100	Vertical	Pass
6	17419.836	54.24	74.0	19.76	Peak	263.00	200	Vertical	Pass
6**	17419.836	49.24	54.0	4.76	AV	263.00	200	Vertical	Pass

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

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1327.070	47.16	74.0	26.84	Peak	71.00	100	Horizontal	Pass
1**	1327.070	38.97	54.0	15.03	AV	71.00	100	Horizontal	Pass
2	2993.462	50.56	74.0	23.44	Peak	316.00	300	Horizontal	Pass
2**	2993.462	44.22	54.0	9.78	AV	316.00	300	Horizontal	Pass
3	4934.980	51.47	74.0	22.53	Peak	106.00	200	Horizontal	Pass
3**	4934.980	41.88	54.0	12.12	AV	106.00	200	Horizontal	Pass
4	6808.321	52.64	74.0	21.36	Peak	249.00	100	Horizontal	Pass
4**	6808.321	46.70	54.0	7.30	AV	249.00	100	Horizontal	Pass
5	13413.253	57.52	74.0	16.48	Peak	243.00	100	Horizontal	Pass
5**	13413.253	44.25	54.0	9.75	AV	243.00	100	Horizontal	Pass
6	17426.140	54.91	74.0	19.09	Peak	15.00	300	Horizontal	Pass
6**	17426.140	47.68	54.0	6.32	AV	15.00	300	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	1333.471	44.30	74.0	29.70	Peak	292.00	300	Vertical	Pass
1**	1333.471	39.07	54.0	14.93	AV	292.00	300	Vertical	Pass
2	2979.453	52.51	74.0	21.49	Peak	82.00	200	Vertical	Pass
2**	2979.453	44.13	54.0	9.87	AV	82.00	200	Vertical	Pass
3	4852.279	52.29	74.0	21.71	Peak	340.00	200	Vertical	Pass
3**	4852.279	42.63	54.0	11.37	AV	340.00	200	Vertical	Pass
4	6605.112	54.16	74.0	19.84	Peak	64.00	200	Vertical	Pass
4**	6605.112	42.70	54.0	11.30	AV	64.00	200	Vertical	Pass
5	13434.638	55.73	74.0	18.27	Peak	329.00	300	Vertical	Pass
5**	13434.638	49.23	54.0	4.77	AV	329.00	300	Vertical	Pass
6	17415.622	59.93	74.0	14.07	Peak	239.00	300	Vertical	Pass
6**	17415.622	47.08	54.0	6.92	AV	239.00	300	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	1329.714	45.43	74.0	28.57	Peak	120.00	400	Horizontal	Pass
1**	1329.714	39.51	54.0	14.49	AV	120.00	400	Horizontal	Pass
2	2997.686	47.65	74.0	26.35	Peak	250.00	100	Horizontal	Pass
2**	2997.686	42.38	54.0	11.62	AV	250.00	100	Horizontal	Pass
3	4932.225	54.02	74.0	19.98	Peak	339.00	200	Horizontal	Pass
3**	4932.225	43.40	54.0	10.60	AV	339.00	200	Horizontal	Pass
4	6805.086	51.54	74.0	22.46	Peak	306.00	300	Horizontal	Pass
4**	6805.086	46.67	54.0	7.33	AV	306.00	300	Horizontal	Pass
5	13411.831	57.39	74.0	16.61	Peak	223.00	200	Horizontal	Pass
5**	13411.831	46.86	54.0	7.14	AV	223.00	200	Horizontal	Pass
6	17422.980	57.94	74.0	16.06	Peak	31.00	100	Horizontal	Pass
6**	17422.980	45.66	54.0	8.34	AV	31.00	100	Horizontal	Pass

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

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1333.600	46.95	74.0	27.05	Peak	221.00	400	Vertical	Pass
1**	1333.600	36.35	54.0	17.65	AV	221.00	400	Vertical	Pass
2	2985.862	48.18	74.0	25.82	Peak	95.00	100	Vertical	Pass
2**	2985.862	38.78	54.0	15.22	AV	95.00	100	Vertical	Pass
3	4857.502	51.49	74.0	22.51	Peak	221.00	200	Vertical	Pass
3**	4857.502	41.10	54.0	12.90	AV	221.00	200	Vertical	Pass
4	6605.192	52.81	74.0	21.19	Peak	191.00	400	Vertical	Pass
4**	6605.192	46.39	54.0	7.61	AV	191.00	400	Vertical	Pass
5	13435.992	57.75	74.0	16.25	Peak	299.00	300	Vertical	Pass
5**	13435.992	44.36	54.0	9.64	AV	299.00	300	Vertical	Pass
6	17413.578	55.24	74.0	18.76	Peak	39.00	300	Vertical	Pass
6**	17413.578	47.45	54.0	6.55	AV	39.00	300	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	1327.360	46.52	74.0	27.48	Peak	108.00	400	Horizontal	Pass
1**	1327.360	36.35	54.0	17.65	AV	108.00	400	Horizontal	Pass
2	2997.391	49.57	74.0	24.43	Peak	22.00	200	Horizontal	Pass
2**	2997.391	42.71	54.0	11.29	AV	22.00	200	Horizontal	Pass
3	4935.833	52.29	74.0	21.71	Peak	146.00	200	Horizontal	Pass
3**	4935.833	43.41	54.0	10.59	AV	146.00	200	Horizontal	Pass
4	6805.755	56.51	74.0	17.49	Peak	35.00	200	Horizontal	Pass
4**	6805.755	44.12	54.0	9.88	AV	35.00	200	Horizontal	Pass
5	13407.697	53.08	74.0	20.92	Peak	64.00	100	Horizontal	Pass
5**	13407.697	44.93	54.0	9.07	AV	64.00	100	Horizontal	Pass
6	17427.863	54.03	74.0	19.97	Peak	273.00	100	Horizontal	Pass
6**	17427.863	46.85	54.0	7.15	AV	273.00	100	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	1334.794	47.05	74.0	26.95	Peak	208.00	200	Vertical	Pass
1**	1334.794	37.72	54.0	16.28	AV	208.00	200	Vertical	Pass
2	2982.087	50.31	74.0	23.69	Peak	27.00	400	Vertical	Pass
2**	2982.087	43.78	54.0	10.22	AV	27.00	400	Vertical	Pass
3	4857.248	51.37	74.0	22.63	Peak	152.00	200	Vertical	Pass
3**	4857.248	43.50	54.0	10.50	AV	152.00	200	Vertical	Pass
4	6608.089	57.20	74.0	16.80	Peak	11.00	200	Vertical	Pass
4**	6608.089	43.53	54.0	10.47	AV	11.00	200	Vertical	Pass
5	13437.348	57.31	74.0	16.69	Peak	155.00	200	Vertical	Pass
5**	13437.348	45.28	54.0	8.72	AV	155.00	200	Vertical	Pass
6	17415.631	55.00	74.0	19.00	Peak	90.00	200	Vertical	Pass
6**	17415.631	45.44	54.0	8.56	AV	90.00	200	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	1327.747	42.01	74.0	31.99	Peak	255.00	200	Horizontal	Pass
1**	1327.747	38.41	54.0	15.59	AV	255.00	200	Horizontal	Pass
2	2996.697	48.99	74.0	25.01	Peak	154.00	200	Horizontal	Pass
2**	2996.697	38.99	54.0	15.01	AV	154.00	200	Horizontal	Pass
3	4933.918	51.53	74.0	22.47	Peak	359.00	200	Horizontal	Pass
3**	4933.918	43.77	54.0	10.23	AV	359.00	200	Horizontal	Pass
4	6803.859	56.26	74.0	17.74	Peak	62.00	100	Horizontal	Pass
4**	6803.859	42.25	54.0	11.75	AV	62.00	100	Horizontal	Pass
5	13413.340	57.78	74.0	16.22	Peak	346.00	300	Horizontal	Pass
5**	13413.340	44.25	54.0	9.75	AV	346.00	300	Horizontal	Pass
6	17428.323	58.52	74.0	15.48	Peak	335.00	100	Horizontal	Pass
6**	17428.323	50.31	54.0	3.69	AV	335.00	100	Horizontal	Pass

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

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1331.389	46.01	74.0	27.99	Peak	272.00	100	Vertical	Pass
1**	1331.389	37.26	54.0	16.74	AV	272.00	100	Vertical	Pass
2	2981.282	47.95	74.0	26.05	Peak	291.00	100	Vertical	Pass
2**	2981.282	44.21	54.0	9.79	AV	291.00	100	Vertical	Pass
3	4851.126	46.64	74.0	27.36	Peak	18.00	200	Vertical	Pass
3**	4851.126	40.74	54.0	13.26	AV	18.00	200	Vertical	Pass
4	6605.483	55.73	74.0	18.27	Peak	68.00	100	Vertical	Pass
4**	6605.483	45.94	54.0	8.06	AV	68.00	100	Vertical	Pass
5	13433.470	57.72	74.0	16.28	Peak	227.00	400	Vertical	Pass
5**	13433.470	49.01	54.0	4.99	AV	227.00	400	Vertical	Pass
6	17417.580	59.22	74.0	14.78	Peak	111.00	300	Vertical	Pass
6**	17417.580	49.50	54.0	4.50	AV	111.00	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	1328.510	41.71	74.0	32.29	Peak	208.00	200	Horizontal	Pass
1**	1328.510	38.95	54.0	15.05	AV	208.00	200	Horizontal	Pass
2	3000.307	52.94	74.0	21.06	Peak	30.00	400	Horizontal	Pass
2**	3000.307	41.76	54.0	12.24	AV	30.00	400	Horizontal	Pass
3	4936.990	50.98	74.0	23.02	Peak	360.00	200	Horizontal	Pass
3**	4936.990	44.52	54.0	9.48	AV	360.00	200	Horizontal	Pass
4	6807.099	54.14	74.0	19.86	Peak	1.00	200	Horizontal	Pass
4**	6807.099	42.93	54.0	11.07	AV	1.00	200	Horizontal	Pass
5	13413.316	52.71	74.0	21.29	Peak	167.00	400	Horizontal	Pass
5**	13413.316	45.31	54.0	8.69	AV	167.00	400	Horizontal	Pass
6	17423.819	55.33	74.0	18.67	Peak	221.00	300	Horizontal	Pass
6**	17423.819	46.03	54.0	7.97	AV	221.00	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	1331.940	46.67	74.0	27.33	Peak	261.00	200	Vertical	Pass
1**	1331.940	34.99	54.0	19.01	AV	261.00	200	Vertical	Pass
2	2984.982	52.70	74.0	21.30	Peak	169.00	300	Vertical	Pass
2**	2984.982	39.38	54.0	14.62	AV	169.00	300	Vertical	Pass
3	4850.582	52.43	74.0	21.57	Peak	344.00	200	Vertical	Pass
3**	4850.582	41.04	54.0	12.96	AV	344.00	200	Vertical	Pass
4	6605.391	55.51	74.0	18.49	Peak	0.00	400	Vertical	Pass
4**	6605.391	47.92	54.0	6.08	AV	0.00	400	Vertical	Pass
5	13436.287	53.48	74.0	20.52	Peak	85.00	200	Vertical	Pass
5**	13436.287	48.65	54.0	5.35	AV	85.00	200	Vertical	Pass
6	17417.308	56.58	74.0	17.42	Peak	267.00	100	Vertical	Pass
6**	17417.308	45.47	54.0	8.53	AV	267.00	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	1330.872	46.61	74.0	27.39	Peak	360.00	100	Horizontal	Pass
1**	1330.872	35.41	54.0	18.59	AV	360.00	100	Horizontal	Pass
2	2996.041	49.58	74.0	24.42	Peak	280.00	100	Horizontal	Pass
2**	2996.041	38.45	54.0	15.55	AV	280.00	100	Horizontal	Pass
3	4934.417	51.90	74.0	22.10	Peak	344.00	200	Horizontal	Pass
3**	4934.417	38.84	54.0	15.16	AV	344.00	200	Horizontal	Pass
4	6806.514	51.92	74.0	22.08	Peak	24.00	200	Horizontal	Pass
4**	6806.514	44.92	54.0	9.08	AV	24.00	200	Horizontal	Pass
5	13413.676	57.26	74.0	16.74	Peak	116.00	100	Horizontal	Pass
5**	13413.676	47.12	54.0	6.88	AV	116.00	100	Horizontal	Pass
6	17422.479	56.66	74.0	17.34	Peak	133.00	400	Horizontal	Pass
6**	17422.479	47.28	54.0	6.72	AV	133.00	400	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	1335.836	47.72	74.0	26.28	Peak	68.00	200	Vertical	Pass
1**	1335.836	35.53	54.0	18.47	AV	68.00	200	Vertical	Pass
2	2981.295	48.47	74.0	25.53	Peak	163.00	300	Vertical	Pass
2**	2981.295	41.42	54.0	12.58	AV	163.00	300	Vertical	Pass
3	4852.273	51.89	74.0	22.11	Peak	242.00	200	Vertical	Pass
3**	4852.273	42.93	54.0	11.07	AV	242.00	200	Vertical	Pass
4	6607.745	57.24	74.0	16.76	Peak	130.00	400	Vertical	Pass
4**	6607.745	46.89	54.0	7.11	AV	130.00	400	Vertical	Pass
5	13437.847	58.23	74.0	15.77	Peak	181.00	100	Vertical	Pass
5**	13437.847	44.42	54.0	9.58	AV	181.00	100	Vertical	Pass
6	17413.362	54.43	74.0	19.57	Peak	334.00	300	Vertical	Pass
6**	17413.362	45.59	54.0	8.41	AV	334.00	300	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	1329.355	43.21	74.0	30.79	Peak	57.00	200	Horizontal	Pass
1**	1329.355	38.78	54.0	15.22	AV	57.00	200	Horizontal	Pass
2	2993.049	48.29	74.0	25.71	Peak	138.00	400	Horizontal	Pass
2**	2993.049	41.65	54.0	12.35	AV	138.00	400	Horizontal	Pass
3	4936.185	51.74	74.0	22.26	Peak	195.00	200	Horizontal	Pass
3**	4936.185	44.41	54.0	9.59	AV	195.00	200	Horizontal	Pass
4	6808.093	55.66	74.0	18.34	Peak	322.00	200	Horizontal	Pass
4**	6808.093	41.76	54.0	12.24	AV	322.00	200	Horizontal	Pass
5	13414.623	57.27	74.0	16.73	Peak	255.00	200	Horizontal	Pass
5**	13414.623	45.61	54.0	8.39	AV	255.00	200	Horizontal	Pass
6	17425.532	55.47	74.0	18.53	Peak	115.00	200	Horizontal	Pass
6**	17425.532	50.46	54.0	3.54	AV	115.00	200	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	1333.785	44.14	74.0	29.86	Peak	78.00	400	Vertical	Pass
1**	1333.785	39.78	54.0	14.22	AV	78.00	400	Vertical	Pass
2	2982.481	48.59	74.0	25.41	Peak	352.00	400	Vertical	Pass
2**	2982.481	44.37	54.0	9.63	AV	352.00	400	Vertical	Pass
3	4854.238	51.28	74.0	22.72	Peak	159.00	200	Vertical	Pass
3**	4854.238	42.52	54.0	11.48	AV	159.00	200	Vertical	Pass
4	6610.309	55.04	74.0	18.96	Peak	53.00	100	Vertical	Pass
4**	6610.309	43.79	54.0	10.21	AV	53.00	100	Vertical	Pass
5	13435.449	57.62	74.0	16.38	Peak	105.00	400	Vertical	Pass
5**	13435.449	44.04	54.0	9.96	AV	105.00	400	Vertical	Pass
6	17420.518	54.77	74.0	19.23	Peak	263.00	400	Vertical	Pass
6**	17420.518	48.34	54.0	5.66	AV	263.00	400	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	1325.727	46.05	74.0	27.95	Peak	24.00	400	Horizontal	Pass
1**	1325.727	37.96	54.0	16.04	AV	24.00	400	Horizontal	Pass
2	2995.769	48.60	74.0	25.40	Peak	161.00	200	Horizontal	Pass
2**	2995.769	43.43	54.0	10.57	AV	161.00	200	Horizontal	Pass
3	4930.846	49.05	74.0	24.95	Peak	306.00	200	Horizontal	Pass
3**	4930.846	40.13	54.0	13.87	AV	306.00	200	Horizontal	Pass
4	6803.743	57.32	74.0	16.68	Peak	325.00	300	Horizontal	Pass
4**	6803.743	44.65	54.0	9.35	AV	325.00	300	Horizontal	Pass
5	13410.125	52.72	74.0	21.28	Peak	130.00	200	Horizontal	Pass
5**	13410.125	44.23	54.0	9.77	AV	130.00	200	Horizontal	Pass
6	17426.928	57.01	74.0	16.99	Peak	226.00	300	Horizontal	Pass
6**	17426.928	44.91	54.0	9.09	AV	226.00	300	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	1335.271	47.38	74.0	26.62	Peak	75.00	200	Vertical	Pass
1**	1335.271	39.17	54.0	14.83	AV	75.00	200	Vertical	Pass
2	2981.015	53.26	74.0	20.74	Peak	162.00	100	Vertical	Pass
2**	2981.015	40.66	54.0	13.34	AV	162.00	100	Vertical	Pass
3	4852.054	50.91	74.0	23.09	Peak	252.00	200	Vertical	Pass
3**	4852.054	42.07	54.0	11.93	AV	252.00	200	Vertical	Pass
4	6603.947	52.84	74.0	21.16	Peak	289.00	100	Vertical	Pass
4**	6603.947	43.72	54.0	10.28	AV	289.00	100	Vertical	Pass
5	13438.464	52.89	74.0	21.11	Peak	169.00	200	Vertical	Pass
5**	13438.464	47.67	54.0	6.33	AV	169.00	200	Vertical	Pass
6	17413.032	59.70	74.0	14.30	Peak	242.00	200	Vertical	Pass
6**	17413.032	47.27	54.0	6.73	AV	242.00	200	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	1332.221	46.33	74.0	27.67	Peak	341.00	100	Horizontal	Pass
1**	1332.221	39.19	54.0	14.81	AV	341.00	100	Horizontal	Pass
2	2995.123	49.17	74.0	24.83	Peak	4.00	400	Horizontal	Pass
2**	2995.123	42.02	54.0	11.98	AV	4.00	400	Horizontal	Pass
3	4936.646	51.70	74.0	22.30	Peak	99.00	200	Horizontal	Pass
3**	4936.646	42.50	54.0	11.50	AV	99.00	200	Horizontal	Pass
4	6808.151	55.67	74.0	18.33	Peak	125.00	300	Horizontal	Pass
4**	6808.151	46.83	54.0	7.17	AV	125.00	300	Horizontal	Pass
5	13409.517	56.76	74.0	17.24	Peak	11.00	300	Horizontal	Pass
5**	13409.517	46.50	54.0	7.50	AV	11.00	300	Horizontal	Pass
6	17424.237	58.42	74.0	15.58	Peak	340.00	100	Horizontal	Pass
6**	17424.237	49.94	54.0	4.06	AV	340.00	100	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	1334.156	45.12	74.0	28.88	Peak	197.00	300	Vertical	Pass
1**	1334.156	38.06	54.0	15.94	AV	197.00	300	Vertical	Pass
2	2982.892	47.50	74.0	26.50	Peak	316.00	300	Vertical	Pass
2**	2982.892	41.83	54.0	12.17	AV	316.00	300	Vertical	Pass
3	4856.681	49.69	74.0	24.31	Peak	67.00	200	Vertical	Pass
3**	4856.681	37.73	54.0	16.27	AV	67.00	200	Vertical	Pass
4	6605.224	52.90	74.0	21.10	Peak	323.00	100	Vertical	Pass
4**	6605.224	47.67	54.0	6.33	AV	323.00	100	Vertical	Pass
5	13433.586	53.42	74.0	20.58	Peak	216.00	300	Vertical	Pass
5**	13433.586	47.16	54.0	6.84	AV	216.00	300	Vertical	Pass
6	17416.846	54.40	74.0	19.60	Peak	160.00	200	Vertical	Pass
6**	17416.846	49.38	54.0	4.62	AV	160.00	200	Vertical	Pass

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

Note <sup>1</sup>: The lowest and highest channels are tested to verify the band edge emissions. Please refer to the following the plots for emissions values.

Note <sup>2</sup>: 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 <sup>3</sup>: 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 <sup>4</sup>: All antenna were pre tested, but only the worst case has been reported in this report.

### Aux. Antenna

#### Test Data

##### 802.11b LOW CHANNEL

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2329.333	56.24	74.0	17.76	Peak	121.00	150	Horizontal	Pass
1**	2329.333	44.51	54.0	9.49	AV	121.00	150	Horizontal	Pass
2	2389.833	54.37	74.0	19.63	Peak	264.00	100	Horizontal	Pass
2**	2389.833	44.08	54.0	9.92	AV	264.00	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	2483.550	54.71	74.0	19.29	Peak	142.00	200	Horizontal	Pass
1**	2483.550	44.90	54.0	9.10	AV	142.00	200	Horizontal	Pass
2	2487.500	55.82	74.0	18.18	Peak	116.00	150	Horizontal	Pass
2**	2487.500	45.39	54.0	8.61	AV	116.00	150	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	2389.667	65.11	74.0	8.89	Peak	117.00	200	Horizontal	Pass
1**	2389.667	49.65	54.0	4.35	AV	117.00	200	Horizontal	Pass
2	2389.833	63.90	74.0	10.10	Peak	113.00	150	Horizontal	Pass
2**	2389.833	50.21	54.0	3.79	AV	113.00	150	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	64.16	74.0	9.84	Peak	115.00	200	Horizontal	Pass
1**	2483.500	50.82	54.0	3.18N	AV	115.00	200	Horizontal	Pass
2	2483.900	63.63	74.0	10.37	Peak	121.00	200	Horizontal	Pass
2**	2483.900	49.82	54.0	4.18	AV	121.00	200	Horizontal	Pass

## 802.11n20 LOW CHANNEL

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2389.333	67.23	74.0	6.77	Peak	115.00	150	Horizontal	Pass
1**	2389.333	50.04	54.0	3.96	AV	115.00	150	Horizontal	Pass
2	2389.833	68.81	74.0	5.19	Peak	120.00	150	Horizontal	Pass
2**	2389.833	50.70	54.0	3.30	AV	120.00	150	Horizontal	Pass

## 802.11n20 HIGH CHANNEL

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2483.550	63.90	74.0	10.10	Peak	113.00	150	Horizontal	Pass
1**	2483.550	50.09	54.0	3.91	AV	113.00	150	Horizontal	Pass
2	2484.100	63.29	74.0	10.71	Peak	118.00	100	Horizontal	Pass
2**	2484.100	49.56	54.0	4.44	AV	118.00	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	2388.167	65.06	74.0	8.94	Peak	112.00	200	Horizontal	Pass
1**	2388.167	50.09	54.0	3.91	AV	112.00	200	Horizontal	Pass
2	2389.833	62.36	74.0	11.64	Peak	119.00	200	Horizontal	Pass
2**	2389.833	50.63	54.0	3.37	AV	119.00	200	Horizontal	Pass

## 802.11n40 HIGH CHANNEL

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2483.500	61.24	74.0	12.76	Peak	117.00	200	Horizontal	Pass
1**	2483.500	50.35	54.0	3.65	AV	117.00	200	Horizontal	Pass
2	2487.250	63.39	74.0	10.61	Peak	115.00	100	Horizontal	Pass
2**	2487.250	49.59	54.0	4.41	AV	115.00	100	Horizontal	Pass

## A.8 Power Spectral Density (PSD)

### Test Data

#### Main Antenna

##### 802.11b Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-8.161	8
Middle	-8.998	8
High	-8.895	8

##### 802.11g Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-9.581	8
Middle	-9.788	8
High	-9.344	8

##### 802.11n-20 MHz Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-10.587	8
Middle	-10.874	8
High	-11.539	8

##### 802.11n-40 MHz Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-13.119	8
Middle	-11.939	8
High	-15.568	8

Aux. Antenna

## 802.11b Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-8.115	8
Middle	-7.489	8
High	-8.307	8

## 802.11g Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-10.103	8
Middle	-9.114	8
High	-10.392	8

## 802.11n-20 MHz Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-10.424	8
Middle	-10.359	8
High	-12.641	8

## 802.11n-40 MHz Mode:

Channel	Spectral power density (dBm/3kHz)	Limit (dBm/3kHz)
Low	-14.788	8
Middle	-13.101	8
High	-16.592	8

Test Plots

Main Antenna

802.11b LOW CHANNEL



802.11b MIDDLE CHANNEL



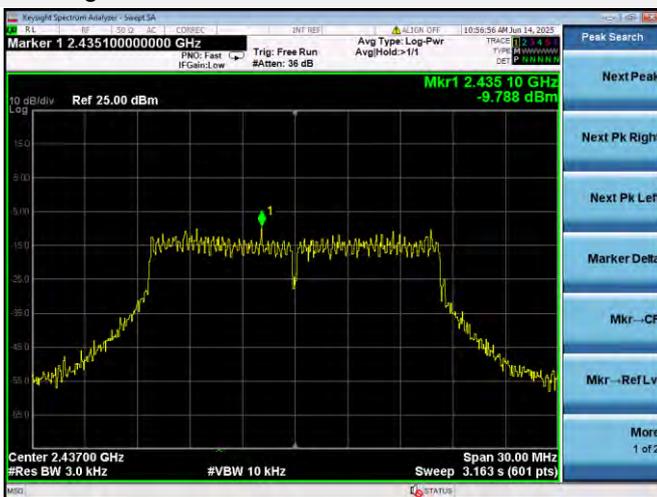
802.11b HIGH CHANNEL



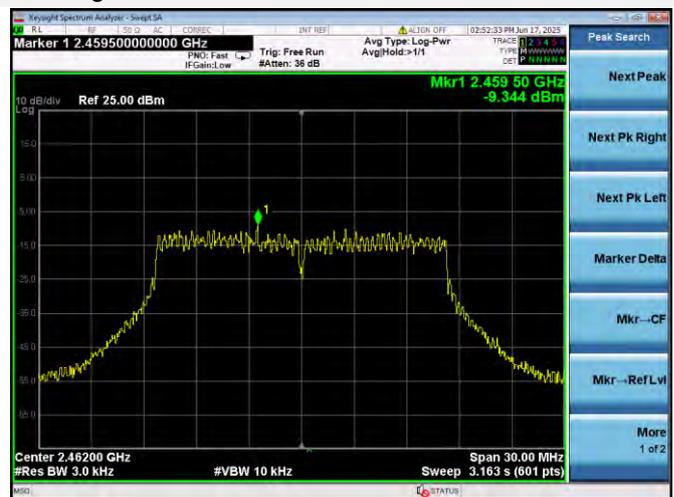
802.11g LOW CHANNEL



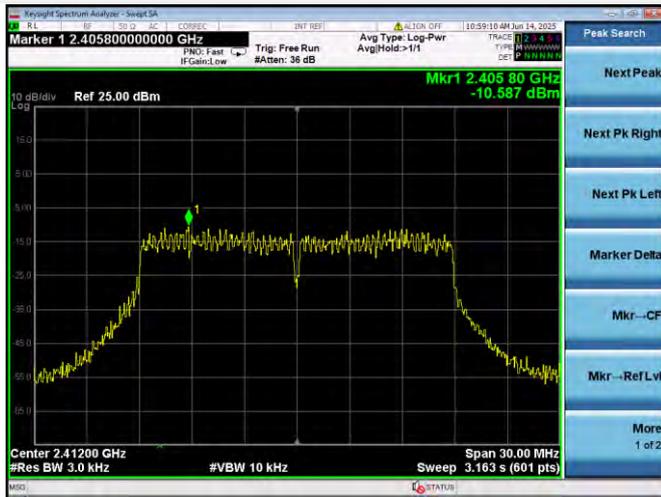
802.11g MIDDLE CHANNEL



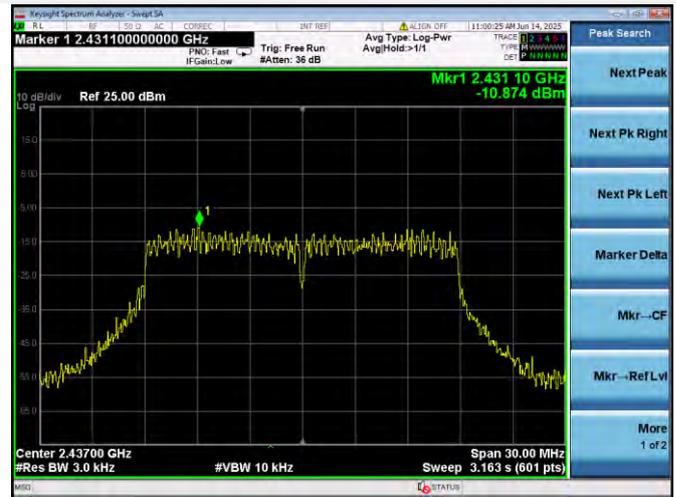
802.11g HIGH CHANNEL



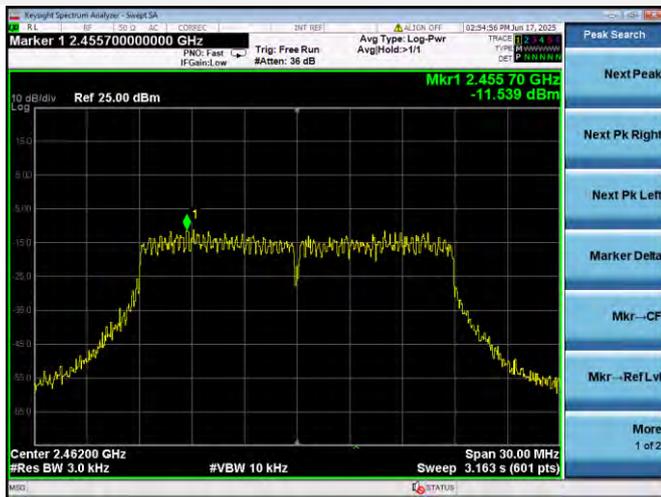
802.11n-20 MHz LOW CHANNEL



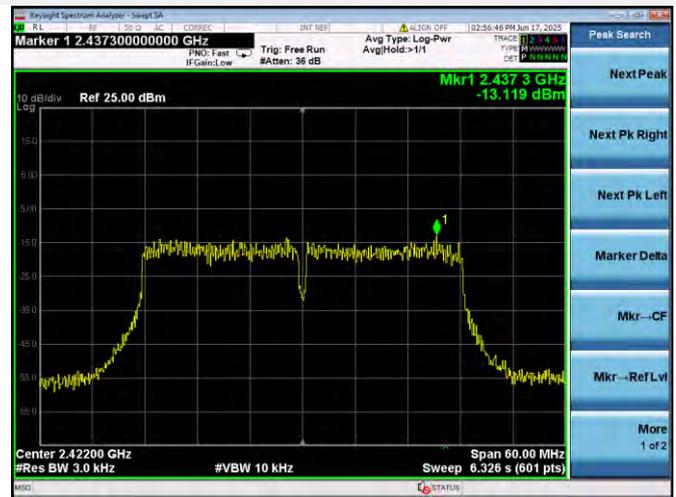
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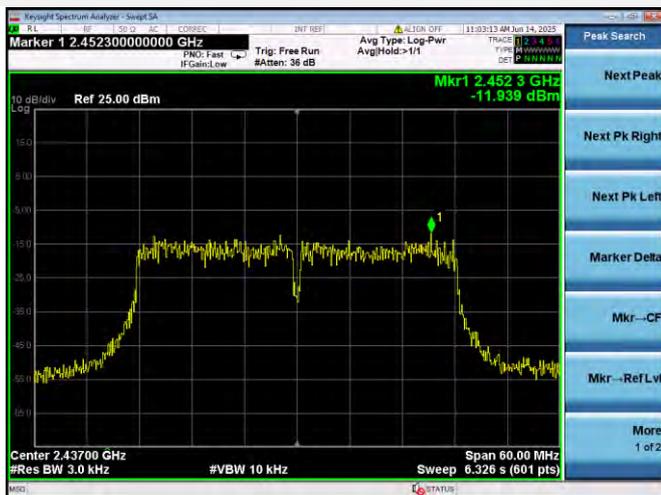
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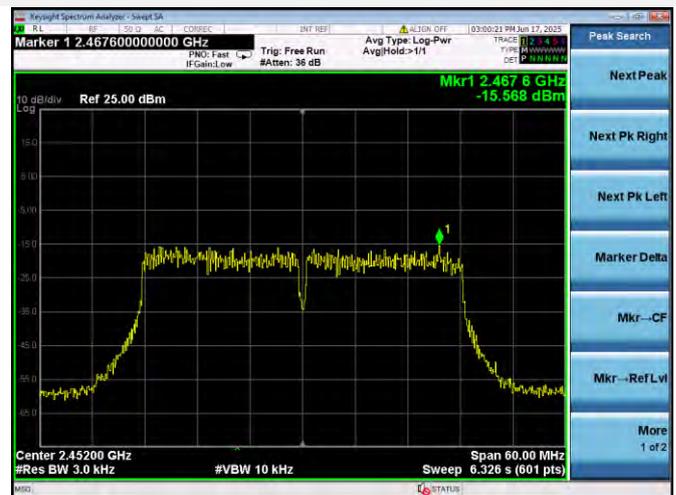
802.11n-40 MHz LOW CHANNEL



802.11n-40 MHz MIDDLE CHANNEL



802.11n-40 MHz HIGH CHANNEL

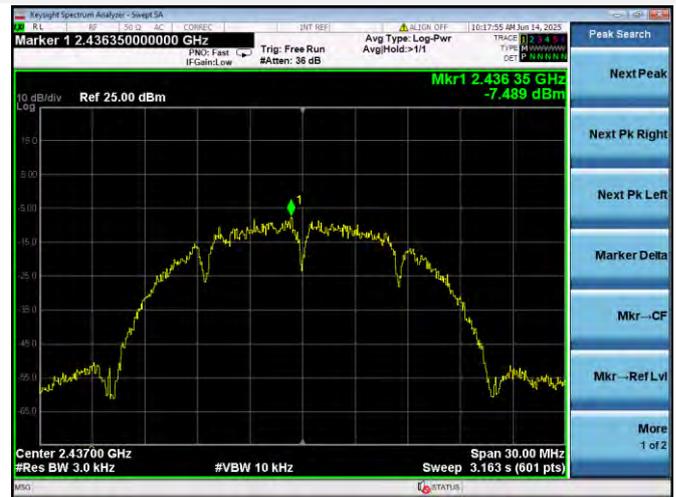


Aux. Antenna

802.11b LOW CHANNEL



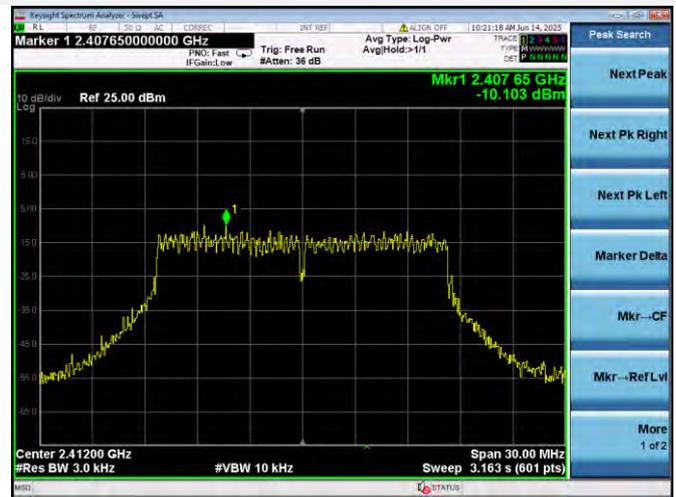
802.11b MIDDLE CHANNEL



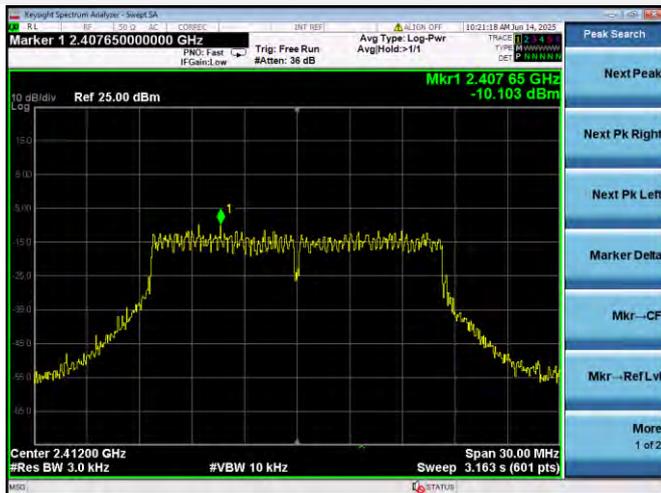
802.11b HIGH CHANNEL



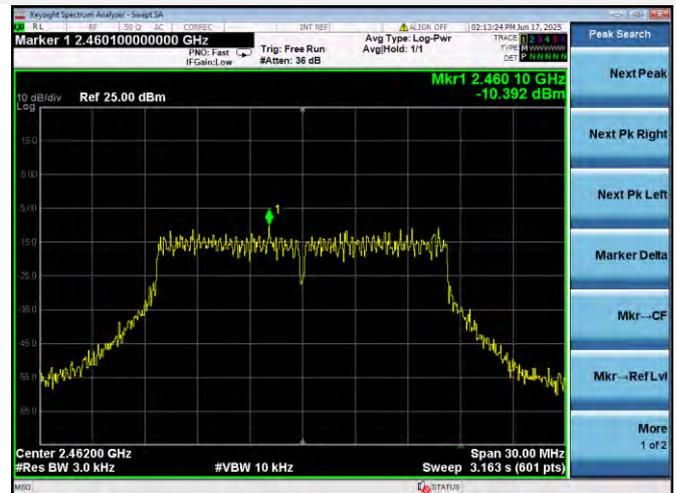
802.11g LOW CHANNEL



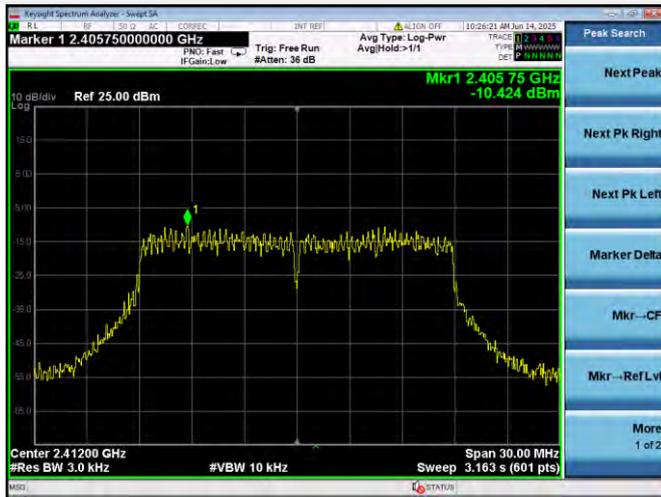
802.11g MIDDLE CHANNEL



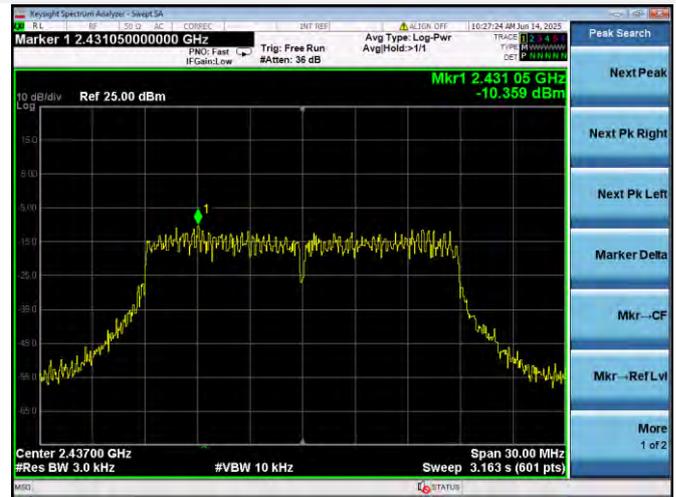
802.11g HIGH CHANNEL



802.11n-20 MHz LOW CHANNEL



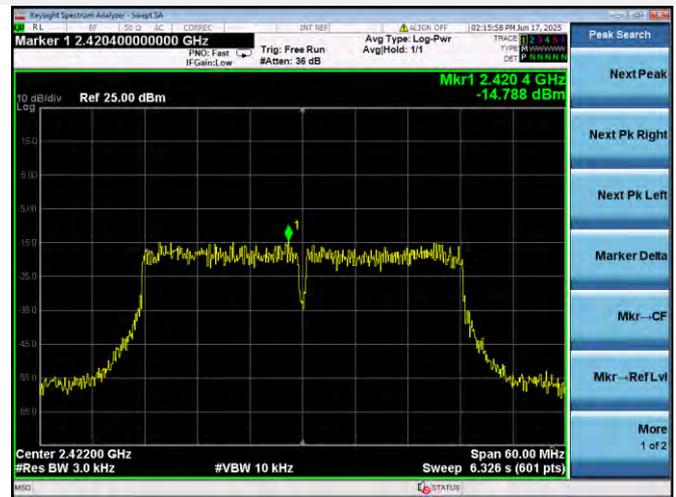
802.11n-20 MHz MIDDLE CHANNEL



802.11n-20 MHz HIGH CHANNEL



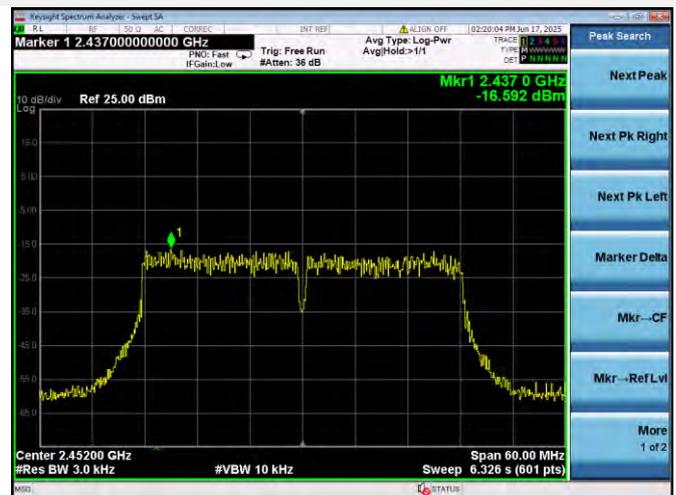
802.11n-40 MHz LOW CHANNEL



802.11n-40 MHz MIDDLE CHANNEL



802.11n-40 MHz HIGH CHANNEL



## **ANNEX B TEST SETUP PHOTOS**

Please refer the document “BL-SZ2551081-AR.PDF”.

## **ANNEX C EUT EXTERNAL PHOTOS**

Please refer the document “BL-SZ2551081-AW.PDF”.

## **ANNEX D EUT INTERNAL PHOTOS**

Please refer the document “BL-SZ2551081-AI.PDF”.

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