



## DATA REFERENCE REPORT

### FCC PART 15.247 / ISSED RSS-247 WLAN 802.11b/g/n/ax(SU)

**Applicant Name:**

Apple Inc.  
One Apple Park Way  
Cupertino, CA 95014  
United States

**Date of Testing:**

12/12/2020 - 3/19/2021

**Test Site/Location:**

PCTEST Lab. Morgan Hill, CA, USA

**Test Report Serial No.:**

1C2101020003-10.BCG

**FCC ID:**

**BCGA2459**

**IC:**

**579C-A2459**

**APPLICANT:**

**Apple Inc.**

**Reference Model/HVIN:**

A2301

**Variant Model/HVIN:**

A2459, A2460

**EUT Type:**

Tablet Device

**Frequency Range:**

2412 – 2472MHz

**FCC Classification:**

Digital Transmission System (DTS)

**FCC Rule Part(s):**

Part 15 Subpart C (15.247)

**ISED Specification:**


RSS-247 Issue 2

**Test Procedure(s):**

ANSI C63.10-2013, KDB 558074 D01 v05r02,  
KDB 662911 D01 v02r01

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013 and KDB 558074 D01 v05r02. Test results reported herein relate only to the item(s) tested.

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

Randy Ortanez  
President



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<b>Test Report S/N:</b> 1C2101020003-10.BCG	<b>Test Dates:</b> 12/12/2020 - 3/19/2021	<b>EUT Type:</b> Tablet Device	Page 1 of 86

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## 1.0 INTRODUCTION

### 1.1 Scope

Per manufacturer declaration, there are two tablet device models, A2301 and A2459(A2460), with high degree of similarity, reference model FCC ID: BCGA2301 / IC: 579C-A2301 and variant model **FCC ID: BCGA2459 / IC: 579C-A2459**. The reference model supports mmWave operations, while the variant model has the mmWave components/antennas removed. Both models share the same material, form factor, circuit design, and components, including antennas and their locations. The reference and variant models use the same power tables and have same tune-up tolerances.

Per FCC/ISED approved Data Referencing Test Plan, testing was done fully on the reference model FCC ID: BCGA2301 / IC: 579C-A2301, while radiated spot-check verification has been performed on variant model **FCC ID: BCGA2459 / IC: 579C-A2459**. Additionally, due to Antenna 4a location being close to the depopulated mmWave components, full radiated testing has been done for all supported technologies on Antenna 4a. Spot-check measurements were conducted, all measurements were investigated and found to be within acceptable tolerance.

Equipment Class	Reference Model FCC ID & IC	Reference Report	Report Title
DTS	BCGA2301 579C-A2301	1C2101020002-09.BCG	RF WLAN Test Report

**Table 1-1. Reference Model Details**

Spot-check verification measurements are not applicable to this test report for variant model **FCC ID: BCGA2459/ IC: 579C-A2459**.

Reference model FCC ID: BCGA2301 / IC: 579C-A2301 test report has been included in Appendix A.

### 1.2 PCTEST Test Location

These measurement tests were conducted at the PCTEST facility located at 18855 Adams Court, Morgan Hill, CA 95037. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014 and KDB 414788 D01 v01r01.

### 1.3 Test Facility / Accreditations

**Measurements were performed at PCTEST located in Morgan Hill, CA 95037, U.S.A.**

- PCTEST is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.02 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISED Standards (RSS).
- PCTEST facility is a registered (22831) test laboratory with the site description on file with ISED.

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## 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Apple Tablet Device FCC ID: BCGA2459 / IC: 579C-A2459**. The test data contained in this report pertains only to the emissions due to the EUT's WLAN (DTS) transmitter.

**Test Device Serial No.:** QJ59J42G1X, TM6JQGGX3H

### 2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, 5G NR (FR1), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII, Bluetooth (1x, EDR, LE1M, LE2M, HDR4, HDR8), WPT

This device supports BT Beamforming

Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
1	2412	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	11	2462
5	2432	12	2467
6	2437	13*	2472
7	2442		

**Table 2-1. 802.11b/g/n/ax Frequency/ Channel Operations**

\*Channel 13 is disabled for DTS 802.11ax HE20.

**Note:** The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, and detector = peak per the guidance of Section 6.0 b) of KDB 558074 D01 v05r02 and ANSI C63.10-2013. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

Measured Duty Cycles				
802.11 Mode/Band		Duty Cycle [%]		
		Antenna 4a	Antenna 2a	CDD
2.4GHz	b	98.7	98.6	-
	g (Low Data Rate)	98.8	98.9	98.8
	g (Mid Data Rate)	96.7	96.6	96.6
	g (High Data Rate)	92.5	92.2	92.1
	n (Low Data Rate)	98.6	98.7	97.3
	n (Mid Data Rate)	96.0	95.5	92.2
	n (High Data Rate)	91.4	91.4	87.2
	11ax - SU (Low Data Rate)	95.7	98.4	98.5
	11ax - SU (Mid Data Rate)	94.5	94.3	94.6
	11ax - SU (High Data Rate)	91.9	92.1	91.8

**Table 2-2. Measured Duty Cycles**

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The device employs CDD technology. Below are the possible configurations.

WiFi Configurations		SISO		SDM		CDD	
		Antenna 4a	Antenna 2a	Antenna 4a	Antenna 2a	Antenna 4a	Antenna 2a
2.4GHz	11b	✓	✓	✗	✗	✗	✗
	11g	✓	✓	✓	✓	✓	✓
	11n	✓	✓	✓	✓	✓	✓
	11ax	✓	✓	✓	✓	✓	✓

**Table 2-3. Wi-Fi Configurations**

✓ = Support ; ✗ = NOT Support

**SISO** = Single Input Single Output

**SDM** = Spatial Diversity Multiplexing – CDD function

**CDD** = Cyclic Delay Diversity - 2Tx Function

Data Rates Supported: 1Mbps, 2Mbps, 5.5Mbps, 11Mbps (b)  
6Mbps, 9Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps, 54Mbps (g)  
6.5/7.2Mbps, 13/14.4Mbps, 19.5/21.7Mbps, 26/28.9Mbps, 39/43.3Mbps,  
52/57.8Mbps, 58.5/65Mbps, 65/72.2Mbps (n)  
13/14.4Mbps, 26/28.9Mbps, 39/43.3Mbps, 52/57.8Mbps, 78/86.7Mbps,  
104/115.6Mbps, 117/130Mbps, 130/144.4Mbps (CDD n)  
8/8.6Mbps, 16/17.2Mbps, 24/25.8Mbps, 33/34.4Mbps, 49/51.6Mbps,  
65/68.8Mbps, 73/77.4Mbps, 81/86.0Mbps, 98/103.2Mbps, 108/114.7Mbps (11ax)  
16/17.2Mbps, 32/34.4Mbps, 48/51.6Mbps, 66/68.8Mbps, 98/103.2Mbps,  
130/137.6Mbps, 146/154.8Mbps, 162/172Mbps, 196/206.4Mbps, 216/229.4Mbps  
(CDD 11ax)

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This device supports simultaneous transmission operations, which allows for multiple transmitters to transmit simultaneously on the same antenna. The table below shows all configurations possible.

Antenna	Simultaneous Tx Config	WLAN	Bluetooth	GSM / WCDMA	LTE / FR1 NR			UNII
		802.11 b/g/n/ax	BDR, EDR, HDR4/8, LE1M/2M	Mid Band	Mid Band	High Band	Ultra High Band	802.11 a/n/ac/ax
2a	Config 1	✓	✗	✗	✗	✗	✓	✗
2a	Config 2	✗	✓	✗	✗	✗	✓	✗
4a	Config 3	✓	✗	✗	✗	✗	✓	✗
4a	Config 4	✗	✓	✗	✗	✗	✓	✗
4b	Config 5	✗	✗	✓	✗	✗	✗	✓
4b	Config 6	✗	✗	✗	✓	✗	✗	✓
4b	Config 7	✗	✗	✗	✗	✓	✗	✓

**Table 2-4. Simultaneous Transmission Configurations**

✓ = Support; ✗ = Not Support

## 2.3 Antenna Description

Following antenna gains provided by manufacturer were used for testing.

Frequency [GHz]	Antenna Gain (dBi)	
	Antenna 4a	Antenna 2a
2.4	1.5	2.5

**Table 2-5. Highest Antenna Gain**

## 2.4 Test Support Equipment

1	Apple MacBook Pro	Model: A2141	S/N: C02DV7VKMD6T
	w/AC/DC Adapter	Model: A2166	S/N: N/A
2	Apple USB-C Cable	Model: Chimp	S/N: 420A57
3	USB-C Cable	Model: A146	S/N: N/A
	w/ AC Adapter	Model: A2305	S/N: N/A
4	Apple Pencil	Model: N/A	S/N: GQXYGSXBJKM9
5	DC Power Supply	Model: KPS3010D	S/N: N/A

**Table 2-6. Test Support Equipment List**

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## 2.5 Test Configuration

The EUT was tested per the guidance of ANSI C63.10-2013 and KDB 558074 D01 v05r02. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions. See Sections 3.2 for radiated emissions test setups.

There are two vendors of the WiFi/Bluetooth radio modules, variant 1 and variant 2. Both radio modules have the same mechanical outline, same on-board antenna matching circuit, identical antenna structure, and are built and tested to conform to the same specifications and to operate within the same tolerances. The worst case configuration was found between the two variants. The EUT was also investigated with and without charger.

For emissions from 1GHz – 18GHz, low, mid, and high channels were tested with highest power and worst case configuration. The emissions below 1GHz and above 18GHz were tested with the highest transmitting power and the worst case channel.

The EUT was manipulated through three orthogonal planes of X-orientation (flatbed), Y-orientation (landscape), and Z-orientation (portrait) during the testing. Only the worst case emissions were reported in this test report.

For AC line conducted and radiated test below 1GHz, following configuration were investigated and EUT powered by AC/DC was the worst case.

- EUT powered by AC/DC adaptor via USB-C cable with wire charger
- EUT powered by host PC via USB-C cable with wire charger

802.11n CDD mode test data provided in this report covers 802.11n SDM.

802.11ax-SU HE20 2TX CDD mode test data provided in this report covers 802.11ax-SU HE20 2TX SDM.

The data rates have been classified into three different groups; low data rate, middle data rate, and high data rate. All three groups of data rate have been investigated and only the worst case data rate per group is reported. The worst case data rate for each group per mode are as follows:

- 802.11b:
  - 11Mbps
- 802.11g:
  - Low Data Rate: 6Mbps
  - Mid Data Rate: 18Mbps
  - High Data Rate: 54Mbps
- 802.11n:
  - Low Data Rate: MCS0/MCS8 (SISO/CDD)
  - Mid Data Rate: MCS3/MCS11 (SISO/CDD)
  - High Data Rate: MCS7/MCS15 (SISO/CDD)
- 802.11ax(SU):
  - Low Data Rate: MCS0
  - Mid Data Rate: MCS3
  - High Data Rate: MCS5

Per FCC/ISED Approved Data Referencing Test Plan, Antenna 4a radiated testing measurements have been conducted and reported.

For 802.11ax-RU test results, see separate WLAN (OFDMA) report, 1C2101020003-11.BCG

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## 2.6 Software and Firmware

The test was conducted with firmware version 18E20700y installed on the EUT.

## 2.7 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

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## 3.0 DESCRIPTION OF TESTS

### 3.1 Evaluation Procedure

The measurement procedures described in the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices (ANSI C63.10-2013) and the guidance provided in KDB 558074 D01 v05r02 were used in the measurement of the EUT.

Deviation from measurement procedure.....None

### 3.2 Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1GHz. An 80cm tall test table made of Styrodur is placed on top of the turn table. For measurements above 1GHz, an additional Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

Per KDB 414788, radiated emission test sites other than open-field test sites (e.g., shielded anechoic chambers), may be employed for emission measurements below 30MHz if characterized so that the measurements correspond to those obtained at an open-field test site. To determine test site equivalency, a reference sample transmitting at 149kHz was measured on an open field test site (asphalt with no ground plane) and then measured in the 3m semi-anechoic chamber. A calibrated 60cm loop antenna was rotated about its vertical axis while the reference device was rotated through the X, Y and Z axis in order to capture the worst case level. A maximum deviation of 2.77dB at 149kHz was measured when comparing the 3 meter semi-anechoic chamber to the open field site.

For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33 depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up was placed on top of the 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, mode of operation, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions.

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### 3.3 Environmental Conditions

The temperature is controlled within range of 15°C to 35°C. The relative humidity is controlled within range of 10% to 75%. The atmospheric pressure is monitored within the range 86-106kPa (860-1060mbar).

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## 4.0 ANTENNA REQUIREMENTS

### Excerpt from §15.203 of the FCC Rules/Regulations:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

- The antenna(s) of the EUT are **permanently attached**.
- There are no provisions for connection to an external antenna.

### Conclusion:

The EUT complies with the requirement of §15.203.

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## 5.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.23-2012. All measurement uncertainty values are shown with a coverage factor of  $k = 2$  to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the  $U_{\text{CISPR}}$  measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Contribution	Expanded Uncertainty ( $\pm$ dB)
Radiated Disturbance (<30MHz)	4.06
Radiated Disturbance (30MHz - 1GHz)	4.30
Radiated Disturbance (1 - 18GHz)	4.78
Radiated Disturbance (>18GHz)	4.79

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## 6.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent Technologies	N9030A	PXA Signal Analyzer (3Hz - 26.5 GHz)	7/24/2020	Annual	7/24/2021	MY49430244
Anritsu	ML2496A	Power Meter	4/9/2020	Annual	4/9/2021	2002005
Anritsu	MA2411B	Pulse Power Sensor	11/10/2020	Annual	11/10/2021	1726261
Anritsu	MA2411B	Pulse Power Sensor	12/9/2020	Annual	12/9/2021	1726262
ATM	180-442A-KF	20dB Nominal Gain Horn Antenna	8/11/2020	Annual	8/11/2021	T058701-01
Rohde & Schwarz	TS-PR8	Pre-Amplifier (30MHz - 8GHz)	12/3/2020	Annual	12/3/2021	102328
ETS-Lindgren	3142E	BiConiLog Antenna (30MHz - 6GHz)	9/15/2020	Annual	9/15/2021	208204
ETS-Lindgren	3117	Double Ridged Guide Antenna (1-18 GHz)	4/21/2020	Annual	4/21/2021	205956
Rohde & Schwarz	ESW26	EMI Test Receiver	6/1/2020	Annual	6/1/2021	101299
Rohde & Schwarz	ESW44	EMI Test Receiver	8/7/2020	Annual	8/7/2021	101668
Rohde & Schwarz	TS-PR1840	Pre-Amplifier (18GHz - 40GHz)	4/3/2020	Annual	4/3/2021	100052
Rohde & Schwarz	TC-TA18	Cross Polarized Vivaldi Antenna (400MHz-18GHz)	10/2/2020	Annual	10/2/2021	101063
Rohde & Schwarz	HFH2-Z2	Loop Antenna	3/12/2020	Annual	3/12/2021	100546
Rohde & Schwarz	TS-PR18	Pre-Amplifier (1GHz - 18GHz)	12/3/2020	Annual	12/3/2021	101648
Rohde & Schwarz	ENV216	Two-Line V-Network (LISN)	12/7/2020	Annual	12/7/2021	101364

**Table 6-1. Test Equipment List**

### Note:

For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.

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## 7.0 TEST RESULTS (ANTENNA 4a)

### 7.1 Summary

Company Name: Apple Inc.  
FCC ID: BCGA2459  
IC: 579C-A2459  
FCC Classification: Digital Transmission System (DTS)

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.205 15.209	RSS-Gen [8.9]	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209 (RSS-Gen [8.9])	RADIATED	PASS	Sections 7.2

**Table 7-1. Summary of Test Results**

#### Notes:

1. All modes of operation were investigated. The test results shown in the following sections represent the worst case emissions.
2. For radiated band edge, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST "Chamber Automation," Version 1.3.1.
3. Radiated test results in following sections has been conducted on Antenna 4a, per FCC/ISED Approved Data Referencing Test Plan.
4. Below 1GHz and Above 18GHz Radiated Spurious Emissions have been investigated and no significant emissions were found.

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## 7.2 Radiated Spurious Emissions – Above 1GHz

§15.205 §15.209 §15.247(d); RSS-Gen [8.9]

### Test Overview and Limit

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at maximum power and at the appropriate frequencies. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

***All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR and Table 7 of RSS-Gen (8.10) must not exceed the limits shown in Table 7-2 per Section 15.209 and RSS-Gen (8.9).***

Frequency	Field Strength [μV/m]	Measured Distance [Meters]
Above 960.0 MHz	500	3

**Table 7-2. Radiated Limits**

### Test Procedures Used

ANSI C63.10-2013 – Section 6.6.4.3

KDB 558074 D01 v05r02 – Section 8.6, 8.7

### Test Settings

#### Average Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = power average (RMS)
5. Number of measurement points = 1001 (Number of points must be  $\geq 2 \times \text{span/RBW}$ )
6. Sweep time = auto
7. Trace (RMS) averaging was performed over at least 100 traces

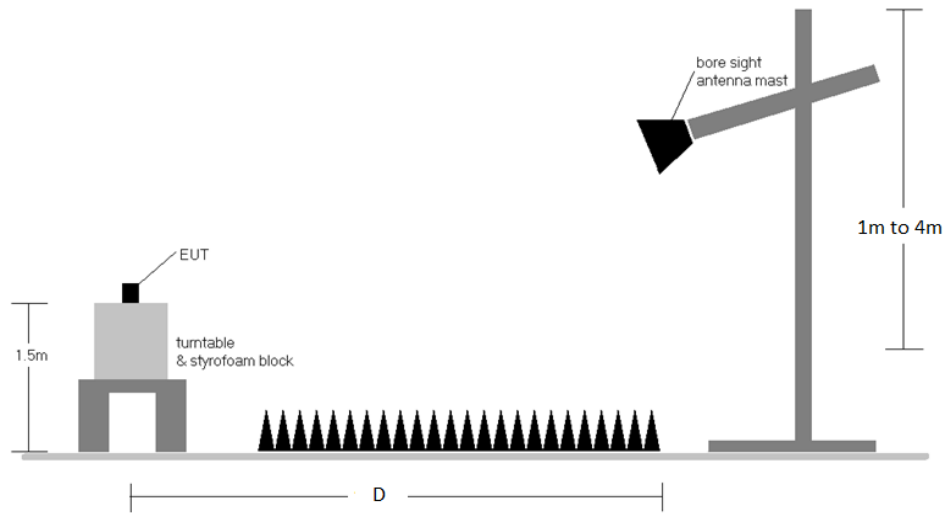
#### Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

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## Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



**Figure 7-1. Radiated Test Setup >1GHz**

## Test Notes

1. The optional test procedures for antenna port conducted measurements of unwanted emissions per the guidance of KDB 558074 D01 v05r02 were not used to evaluate this device for compliance to radiated limits. All radiated spurious emissions levels were measured in a radiated test setup.
2. All emissions lying in restricted bands specified in §15.205 and Section 8.10 of RSS-Gen are below the limit shown in Table 7-2.
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. This unit was tested with its standard battery.
5. The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHz. Above 1 GHz, average and peak measurements were taken using linearly polarized horn antennas.
6. D is the measurement test distance and emissions 1-18GHz were measured at a 3 meters test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
7. The "-" shown in the following RSE tables are used to denote a noise floor measurement.
8. The unit was tested with all possible modes and only the highest emission is reported.

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## Sample Calculations

### Determining Spurious Emissions Levels

- Field Strength Level  $[\text{dB}\mu\text{V}/\text{m}] = \text{Analyzer Level} [\text{dBm}] + 107 + \text{AFCL} [\text{dB}/\text{m}]$
- $\text{AFCL} [\text{dB}/\text{m}] = \text{Antenna Factor} [\text{dB}/\text{m}] + \text{Cable Loss} [\text{dB}] - \text{Preamplifier Gain} [\text{dB}]$
- $\text{Margin} [\text{dB}] = \text{Field Strength Level} [\text{dB}\mu\text{V}/\text{m}] - \text{Limit} [\text{dB}\mu\text{V}/\text{m}]$

### Radiated Band Edge Measurement Offset

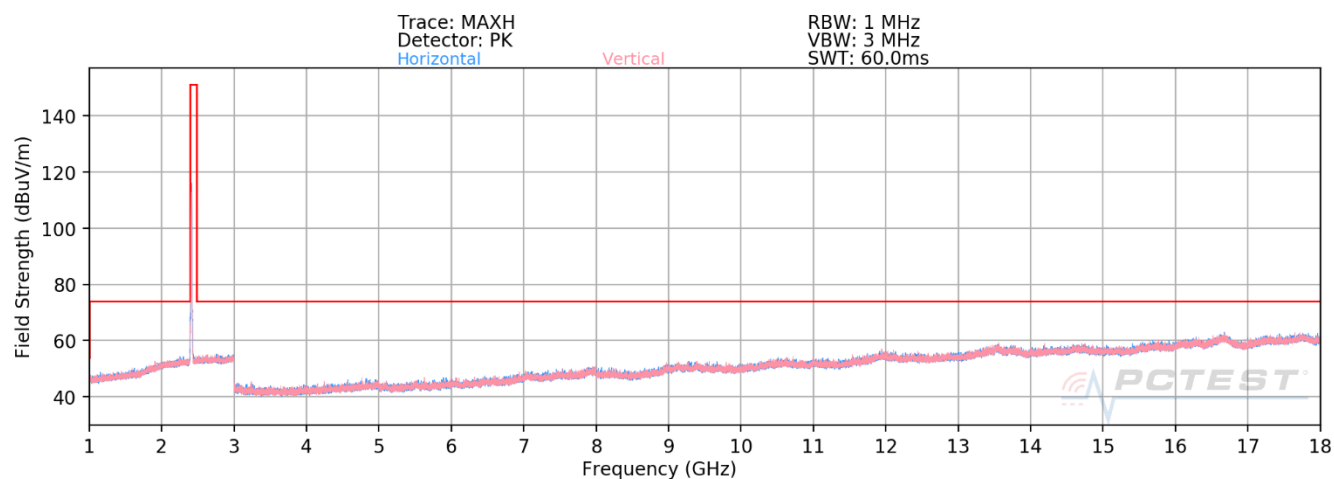
- The amplitude offset shown in the radiated restricted band edge plots in sections 7.2.1 and 7.2.2 were calculated using the formula:  

$$\text{Offset (dB)} = (\text{Antenna Factor} + \text{Cable Loss} + \text{Attenuator}) - \text{Preamplifier Gain}$$

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## Antenna 4a Radiated Spurious Emission Measurements (1 – 18GHz)

§15.205 §15.209 §15.247(d); RSS-Gen [8.9]



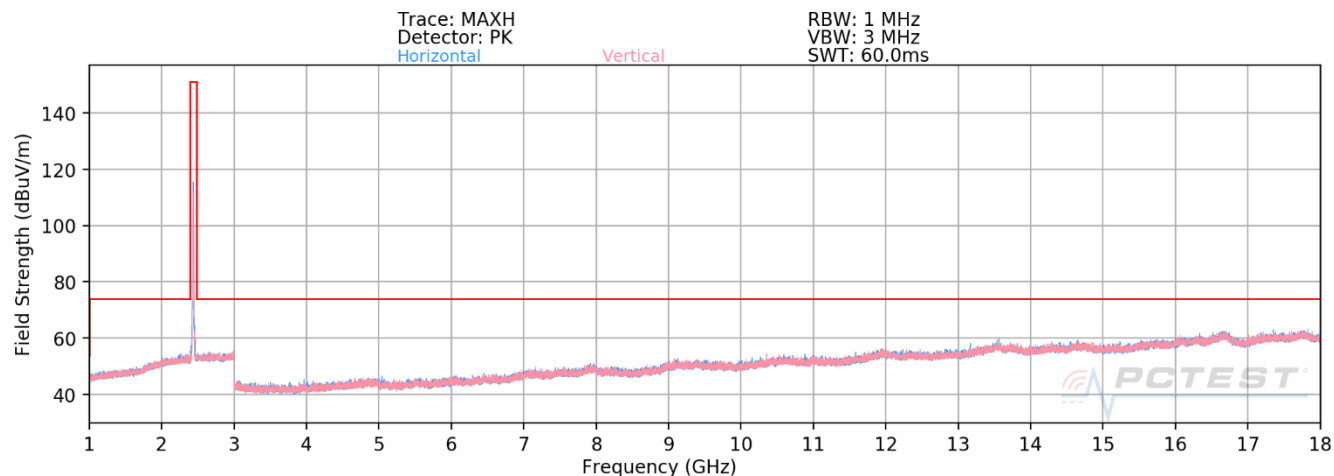
**Plot 7-1. Radiated Spurious Emissions above 1GHz Antenna 4a (802.11b – Ch. 1)**

Mode:	802.11b
Data Rate:	11Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	2412MHz
Channel:	01

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBuV/m]	Limit [dBuV/m]	Margin [dB]
4824.00	Avg	H	121	153	-78.32	9.33	38.01	53.98	-15.97
4824.00	Peak	H	121	153	-67.54	9.33	48.79	73.98	-25.19
12060.00	Avg	H	-	-	-84.57	21.36	43.79	53.98	-10.18
12060.00	Peak	H	-	-	-72.89	21.36	55.47	73.98	-18.50

**Table 7-3. Radiated Measurements Antenna 4a**

FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
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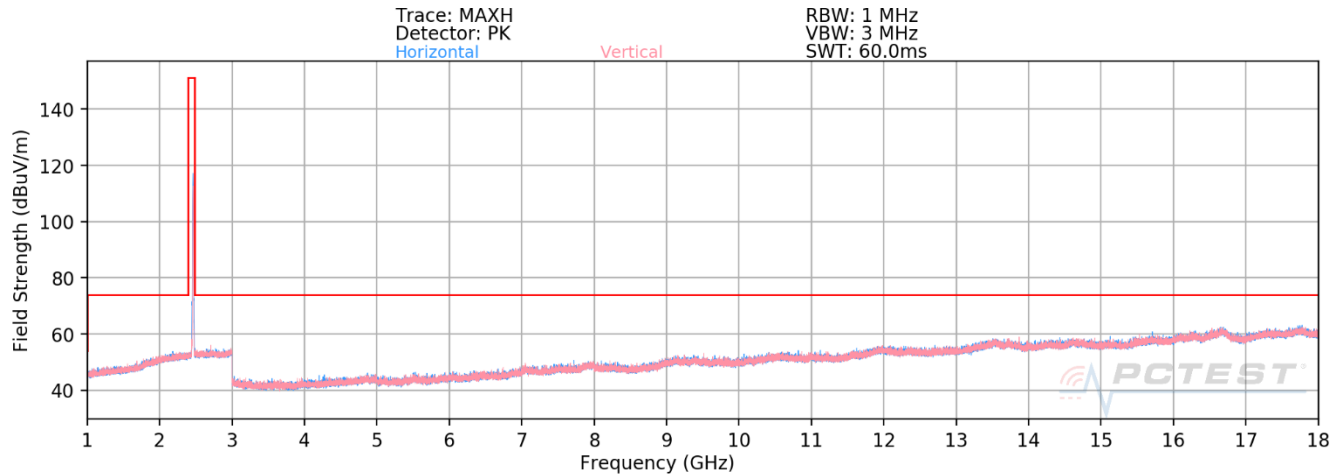
**Plot 7-2. Radiated Spurious Emissions above 1GHz Antenna 4a (802.11b – Ch. 6)**

Mode: 802.11b  
Data Rate: 11Mbps  
Distance of Measurements: 3 Meters  
Operating Frequency: 2437MHz  
Channel: 06

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
4874.00	Avg	H	-	-	-82.33	9.40	34.07	53.98	-19.91
4874.00	Peak	H	-	-	-70.43	9.40	45.97	73.98	-28.01
7311.00	Avg	H	-	-	-83.94	13.95	37.01	53.98	-16.97
7311.00	Peak	H	-	-	-72.38	13.95	48.57	73.98	-25.41
12185.00	Avg	H	-	-	-84.63	21.11	43.48	53.98	-10.50
12185.00	Peak	H	-	-	-73.51	21.11	54.60	73.98	-19.38

**Table 7-4. Radiated Measurements Antenna 4a**

FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 19 of 86



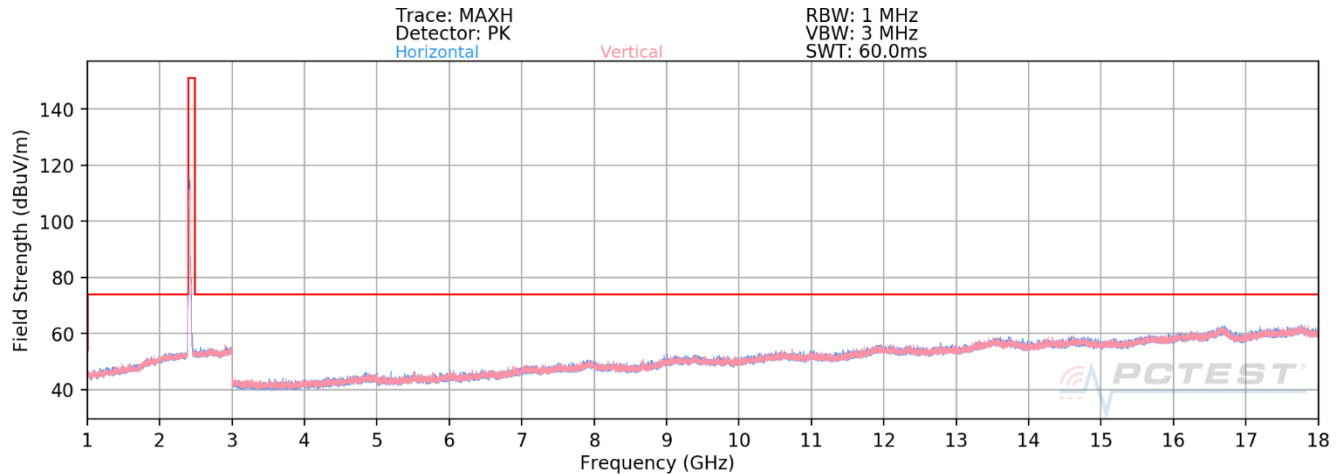
**Plot 7-3. Radiated Spurious Emissions above 1GHz Antenna 4a (802.11b – Ch. 11)**

Mode: 802.11b  
Data Rate: 11Mbps  
Distance of Measurements: 3 Meters  
Operating Frequency: 2462MHz  
Channel: 11

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
4924.00	Avg	H	-	-	-82.22	9.15	33.93	53.98	-20.05
4924.00	Peak	H	-	-	-70.79	9.15	45.36	73.98	-28.62
7386.00	Avg	H	-	-	-84.31	14.06	36.75	53.98	-17.23
7386.00	Peak	H	-	-	-72.85	14.06	48.21	73.98	-25.77
12310.00	Avg	H	-	-	-85.59	21.66	43.07	53.98	-10.91
12310.00	Peak	H	-	-	-74.30	21.66	54.36	73.98	-19.62

**Table 7-5. Radiated Measurements Antenna 4a**

FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 20 of 86



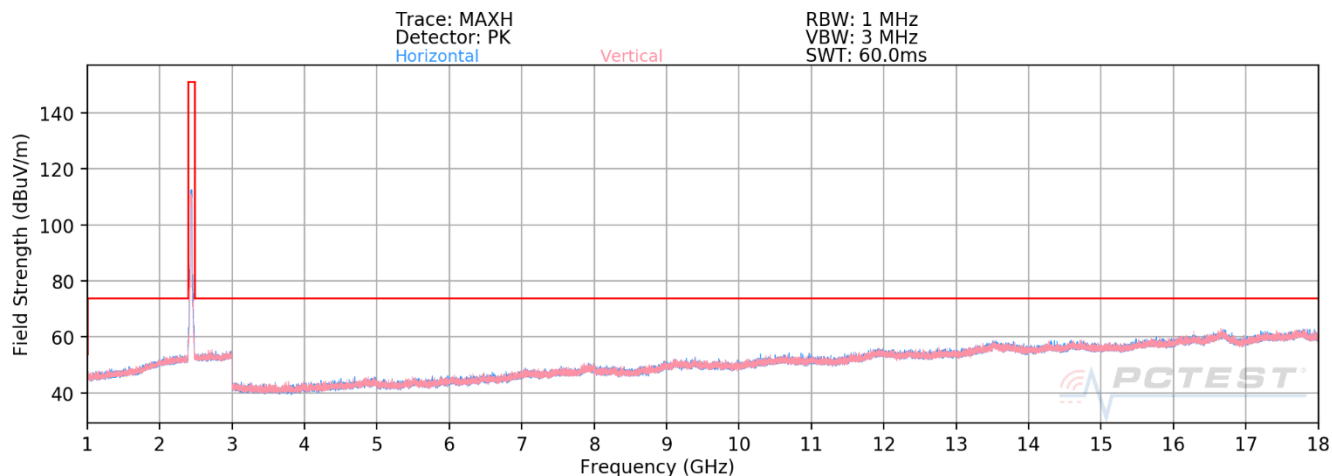
**Plot 7-4. Radiated Spurious Emissions above 1GHz Antenna 4a (802.11ax (SU) – Ch. 1)**

Mode: 802.11ax (SU)  
Data Rate: MCS0  
Distance of Measurements: 3 Meters  
Operating Frequency: 2412MHz  
Channel: 01

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
4824.00	Avg	H	130	159	-80.88	9.33	35.45	53.98	-18.53
4824.00	Peak	H	130	159	-68.13	9.33	48.20	73.98	-25.78
12060.00	Avg	H	-	-	-84.52	21.36	43.84	53.98	-10.13
12060.00	Peak	H	-	-	-73.33	21.36	55.03	73.98	-18.94

**Table 7-6. Radiated Measurements Antenna 4a**

FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 21 of 86



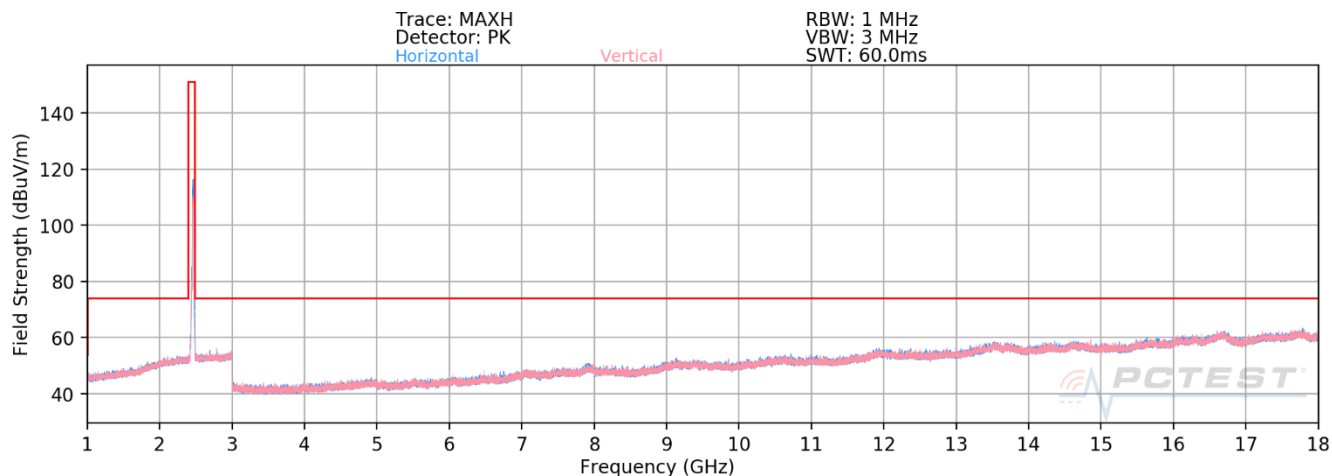
**Plot 7-5. Radiated Spurious Emissions above 1GHz Antenna 4a (802.11ax (SU) – Ch. 6)**

Mode: 802.11ax (SU)  
Data Rate: MCS0  
Distance of Measurements: 3 Meters  
Operating Frequency: 2437MHz  
Channel: 06

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
4874.00	Avg	H	-	-	-82.56	9.40	33.84	53.98	-20.14
4874.00	Peak	H	-	-	-71.11	9.40	45.29	73.98	-28.69
7311.00	Avg	H	-	-	-84.23	13.95	36.72	53.98	-17.26
7311.00	Peak	H	-	-	-72.38	13.95	48.57	73.98	-25.41
12185.00	Avg	H	-	-	-84.77	21.11	43.34	53.98	-10.64
12185.00	Peak	H	-	-	-72.88	21.11	55.23	73.98	-18.75

**Table 7-7. Radiated Measurements Antenna 4a**

FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 22 of 86



**Plot 7-6. Radiated Spurious Emissions above 1GHz Antenna 4a (802.11ax (SU) – Ch. 11)**

Mode: 802.11ax (SU)  
Data Rate: MCS0  
Distance of Measurements: 3 Meters  
Operating Frequency: 2462MHz  
Channel: 11

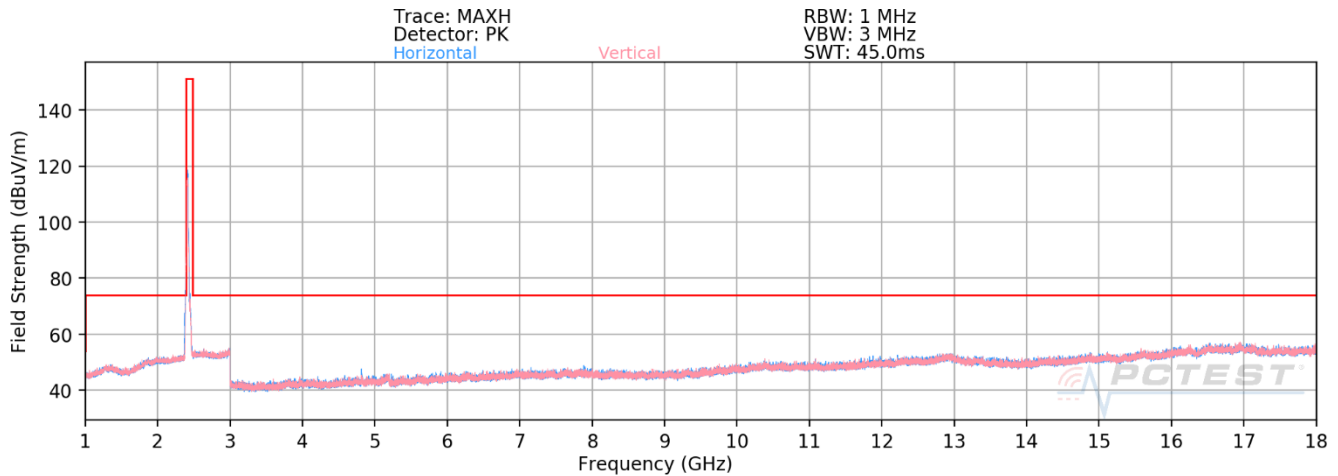
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
4924.00	Avg	H	-	-	-82.70	9.15	33.45	53.98	-20.53
4924.00	Peak	H	-	-	-70.77	9.15	45.38	73.98	-28.60
7386.00	Avg	H	-	-	-84.60	14.06	36.46	53.98	-17.52
7386.00	Peak	H	-	-	-73.42	14.06	47.64	73.98	-26.34
12310.00	Avg	H	-	-	-85.87	21.66	42.79	53.98	-11.19
12310.00	Peak	H	-	-	-74.68	21.66	53.98	73.98	-20.00

**Table 7-8. Radiated Measurements Antenna 4a**

FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 23 of 86

## CDD Radiated Spurious Emission Measurements (1 – 18GHz)

§15.247(d) §15.205 & §15.209; RSS-Gen [8.9]



**Plot 7-7. Radiated Spurious Emissions above 1GHz CDD (802.11n – Ch. 1)**

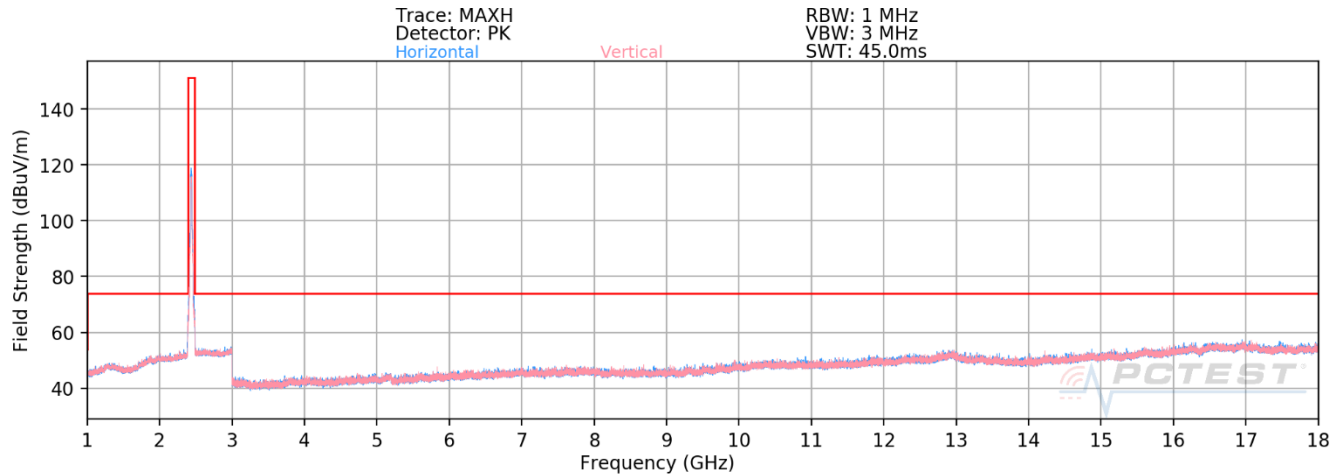
Mode: 802.11n  
Data Rate: MCS8  
Distance of Measurements: 3 Meters  
Operating Frequency: 2412MHz  
Channel: 01

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
4824.00	Avg	H	105	155	-75.66	7.54	38.88	53.98	-15.10
4824.00	Peak	H	105	155	-63.47	7.54	51.07	73.98	-22.91
12060.00	Avg	-	-	-	-85.59	17.07	38.48	53.98	-15.50
12060.00	Peak	-	-	-	-75.30	17.07	48.77	73.98	-25.21

**Table 7-9. Radiated Measurements CDD**

FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	<b>DATA REFERENCE REPORT</b> (CERTIFICATION)	Approved by: Quality Manager
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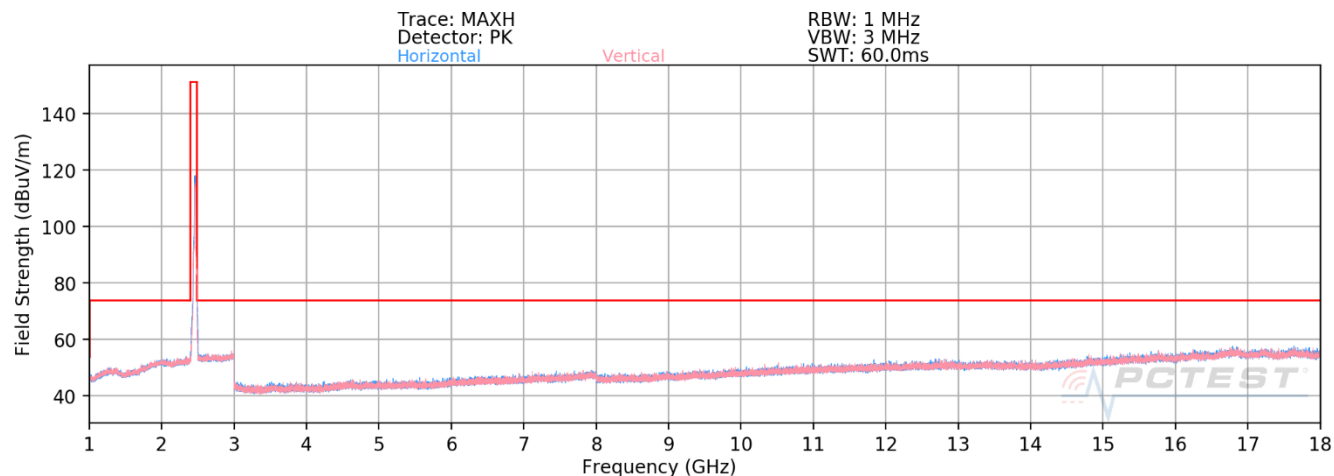
**Plot 7-8. Radiated Spurious Emissions above 1GHz CDD (802.11n – Ch. 6)**

Mode: 802.11n  
Data Rate: MCS8  
Distance of Measurements: 3 Meters  
Operating Frequency: 2437MHz  
Channel: 06

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBuV/m]	Limit [dBuV/m]	Margin [dB]
4874.00	Avg	H	-	-	-82.19	7.75	32.56	53.98	-21.41
4874.00	Peak	H	-	-	-71.88	7.75	42.87	73.98	-31.10
7311.00	Avg	-	-	-	-83.11	10.84	34.73	53.98	-19.25
7311.00	Peak	-	-	-	-72.78	10.84	45.06	73.98	-28.92
12185.00	Avg	-	-	-	-85.52	16.90	38.38	53.98	-15.60
12185.00	Peak	-	-	-	-75.03	16.90	48.87	73.98	-25.11

**Table 7-10. Radiated Measurements CDD**

FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	<b>DATA REFERENCE REPORT (CERTIFICATION)</b>	<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1C2101020003-10.BCG	<b>Test Dates:</b> 12/12/2020 - 3/19/2021	<b>EUT Type:</b> Tablet Device	Page 25 of 86



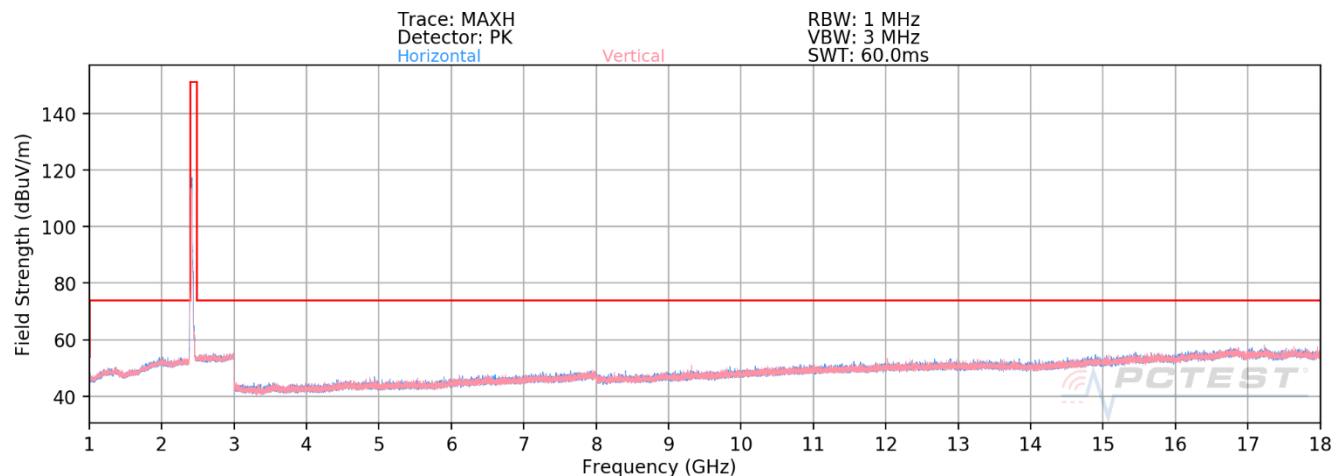
**Plot 7-9. Radiated Spurious Emissions above 1GHz CDD (802.11n – Ch. 11)**

Mode: 802.11n  
Data Rate: MCS8  
Distance of Measurements: 3 Meters  
Operating Frequency: 2462MHz  
Channel: 11

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBuV/m]	Limit [dBuV/m]	Margin [dB]
4924.00	Avg	H	-	-	-79.47	5.97	33.50	53.98	-20.48
4924.00	Peak	H	-	-	-70.50	5.97	42.47	73.98	-31.51
7386.00	Avg	-	-	-	-80.02	8.50	35.48	53.98	-18.50
7386.00	Peak	-	-	-	-70.23	8.50	45.27	73.98	-28.71
12310.00	Avg	-	-	-	-83.46	15.71	39.25	53.98	-14.73
12310.00	Peak	-	-	-	-73.70	15.71	49.01	73.98	-24.97

**Table 7-11. Radiated Measurements CDD**

FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 26 of 86



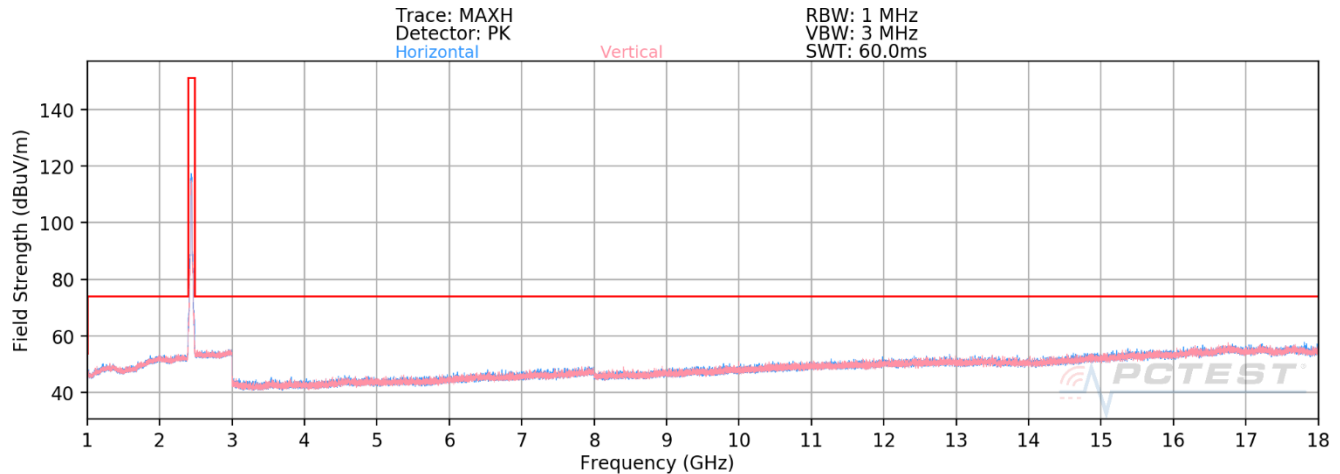
**Plot 7-10. Radiated Spurious Emissions above 1GHz CDD (802.11ax (SU) – Ch. 1)**

Mode: 802.11ax (SU)  
Data Rate: MCS0  
Distance of Measurements: 3 Meters  
Operating Frequency: 2412MHz  
Channel: 01

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
4824.00	Avg	H	-	-	-78.44	5.93	34.49	53.98	-19.49
4824.00	Peak	H	-	-	-67.25	5.93	45.68	73.98	-28.30
12060.00	Avg	H	-	-	-82.43	15.48	40.05	53.98	-13.93
12060.00	Peak	H	-	-	-71.16	15.48	51.32	73.98	-22.66

**Table 7-12. Radiated Measurements CDD**

FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 27 of 86



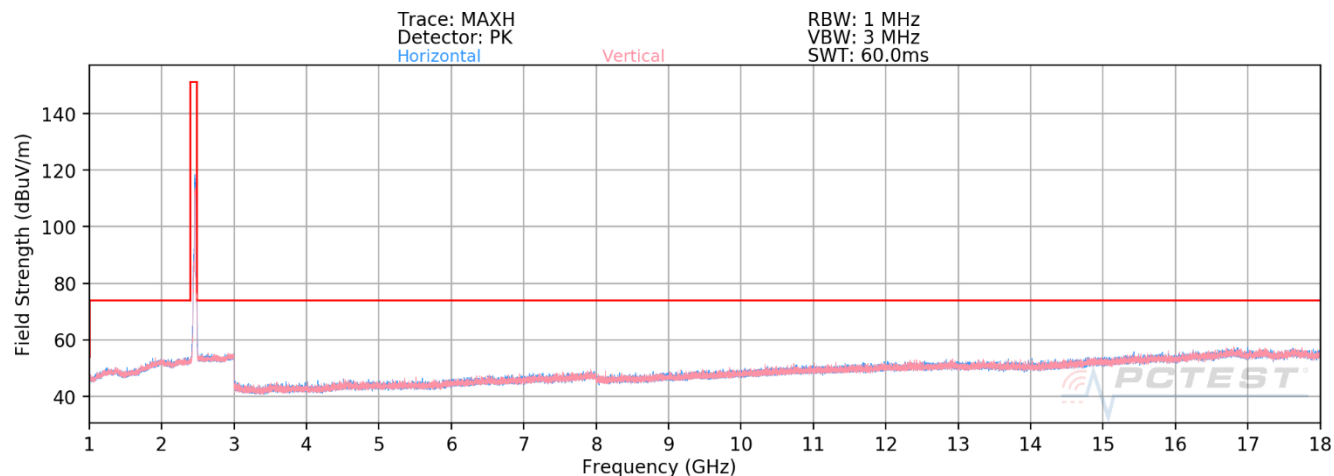
**Plot 7-11. Radiated Spurious Emissions above 1GHz CDD (802.11ax (SU) – Ch. 6)**

Mode: 802.11ax (SU)  
Data Rate: MCS0  
Distance of Measurements: 3 Meters  
Operating Frequency: 2437MHz  
Channel: 06

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
4874.00	Avg	H	-	-	-78.62	6.24	34.62	53.98	-19.36
4874.00	Peak	H	-	-	-66.85	6.24	46.39	73.98	-27.59
7311.00	Avg	H	-	-	-79.34	8.73	36.39	53.98	-17.59
7311.00	Peak	H	-	-	-67.85	8.73	47.88	73.98	-26.10
12185.00	Avg	H	-	-	-81.65	15.17	40.52	53.98	-13.46
12185.00	Peak	H	-	-	-70.44	15.17	51.73	73.98	-22.25

**Table 7-13. Radiated Measurements CDD**

FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	<b>DATA REFERENCE REPORT (CERTIFICATION)</b>	<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1C2101020003-10.BCG	<b>Test Dates:</b> 12/12/2020 - 3/19/2021	<b>EUT Type:</b> Tablet Device	Page 28 of 86



**Plot 7-12. Radiated Spurious Emissions above 1GHz CDD (802.11ax (SU) – Ch. 11)**

Mode: 802.11ax (SU)  
Data Rate: MCS0  
Distance of Measurements: 3 Meters  
Operating Frequency: 2462MHz  
Channel: 11

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
4924.00	Avg	H	-	-	-79.62	5.97	33.35	53.98	-20.63
4924.00	Peak	H	-	-	-69.21	5.97	43.76	73.98	-30.22
7386.00	Avg	H	-	-	-80.19	8.50	35.31	53.98	-18.67
7386.00	Peak	H	-	-	-69.87	8.50	45.63	73.98	-28.35
12310.00	Avg	H	-	-	-83.58	15.71	39.13	53.98	-14.85
12310.00	Peak	H	-	-	-72.75	15.71	49.96	73.98	-24.02

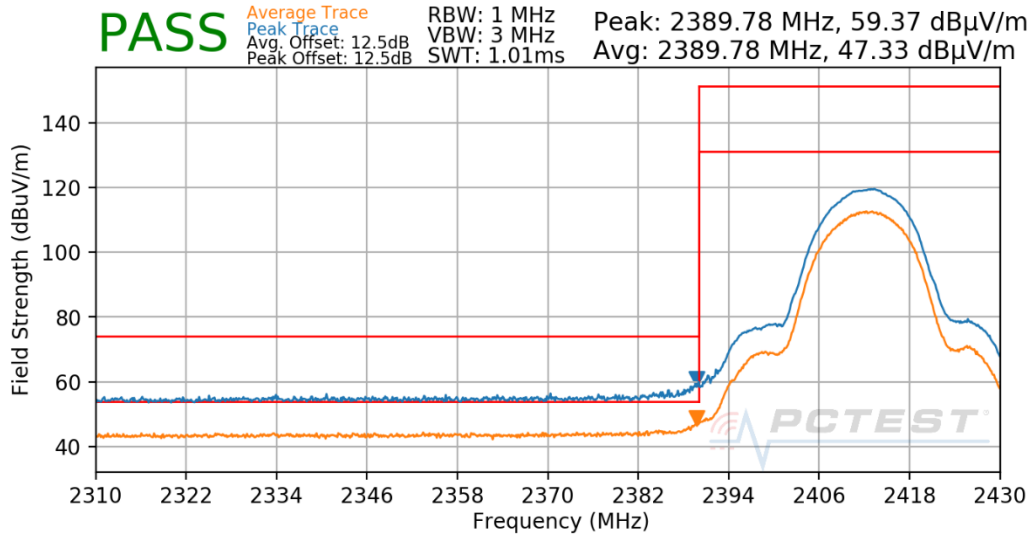
**Table 7-14. Radiated Measurements CDD**

FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 29 of 86

## 7.2.1 Antenna 4a Radiated Restricted Band Edge Measurements

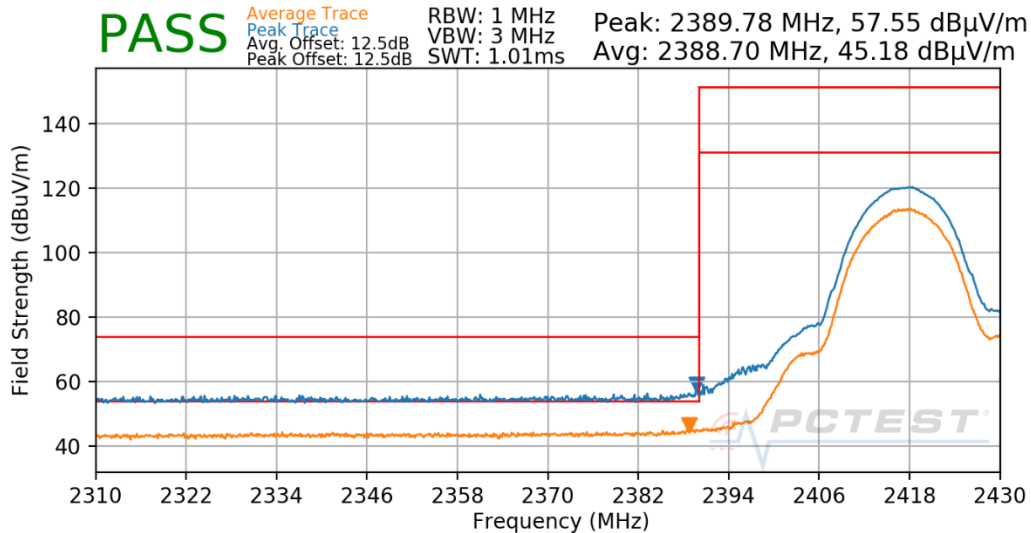
§15.205 §15.209; RSS-Gen [8.9]

Mode: 802.11b  
Data Rate: 11Mbps  
Distance of Measurements: 3 Meters  
Operating Frequency: 2412MHz  
Channel: 1



Plot 7-13. Radiated Restricted Lower Band Edge Measurement Antenna 4a

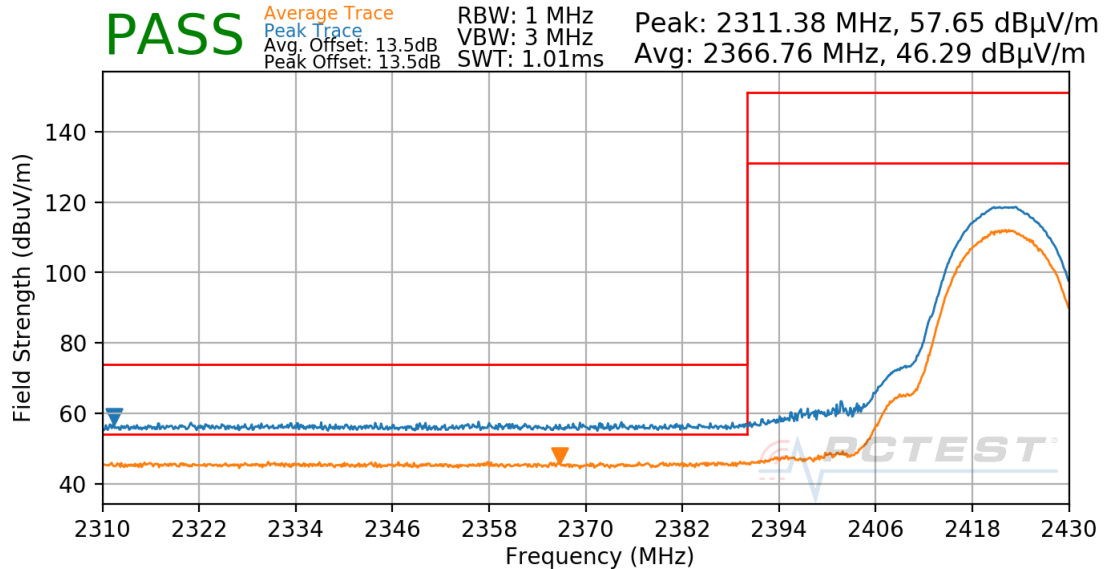
Mode: 802.11b  
Data Rate: 11Mbps  
Distance of Measurements: 3 Meters  
Operating Frequency: 2417MHz  
Channel: 2



Plot 7-14. Radiated Restricted Lower Band Edge Measurement Antenna 4a

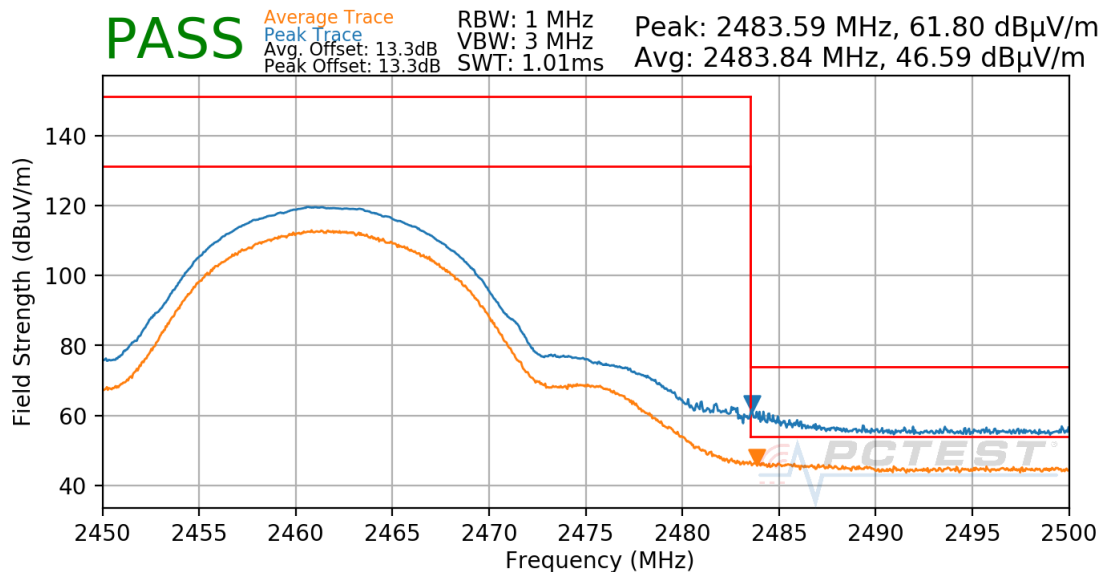
FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 30 of 86

Mode: 802.11b  
Data Rate: 11Mbps  
Distance of Measurements: 3 Meters  
Operating Frequency: 2422MHz  
Channel: 3



**Plot 7-15. Radiated Restricted Lower Band Edge Measurement Antenna 4a**

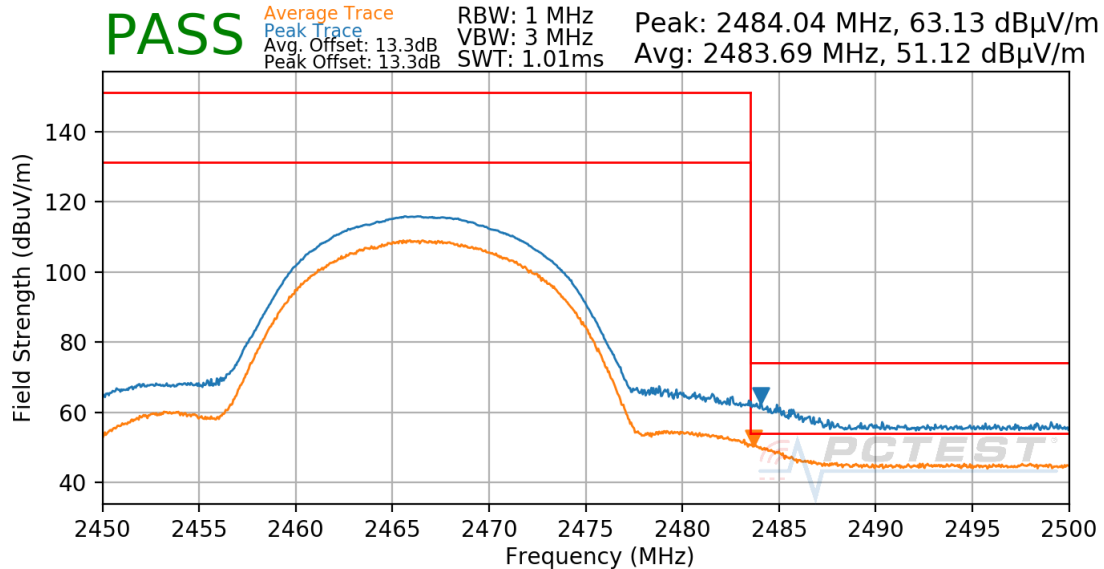
Mode: 802.11b  
Data Rate: 11Mbps  
Distance of Measurements: 3 Meters  
Operating Frequency: 2462MHz  
Channel: 11



**Plot 7-16. Radiated Restricted Upper Band Edge Measurement Antenna 4a**

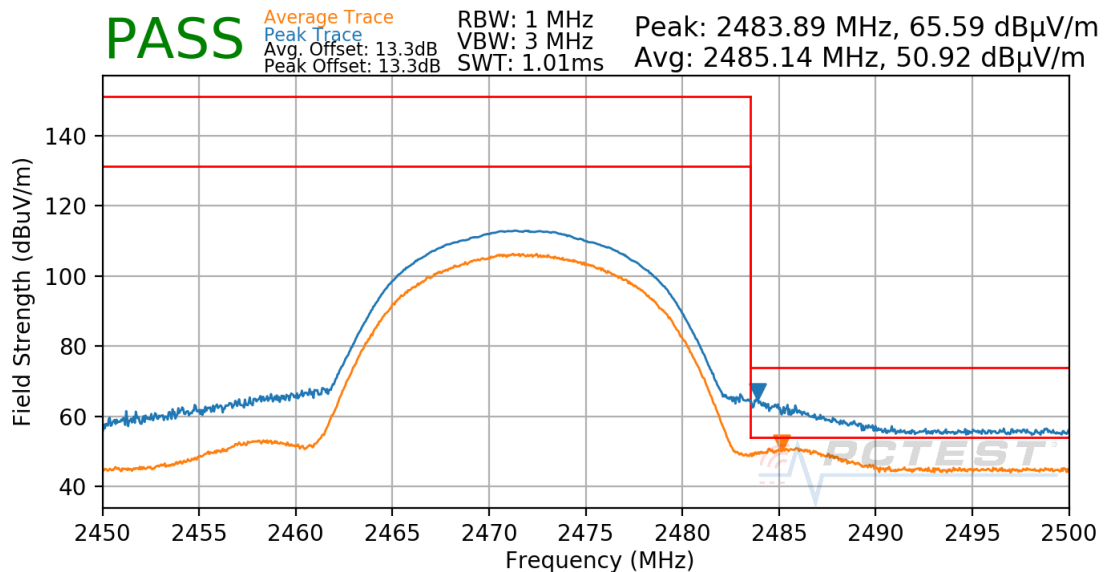
FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 31 of 86

Mode: 802.11b  
Data Rate: 11Mbps  
Distance of Measurements: 3 Meters  
Operating Frequency: 2467MHz  
Channel: 12



**Plot 7-17. Radiated Restricted Upper Band Edge Measurement Antenna 4a**

Mode: 802.11b  
Data Rate: 11Mbps  
Distance of Measurements: 3 Meters  
Operating Frequency: 2472MHz  
Channel: 13

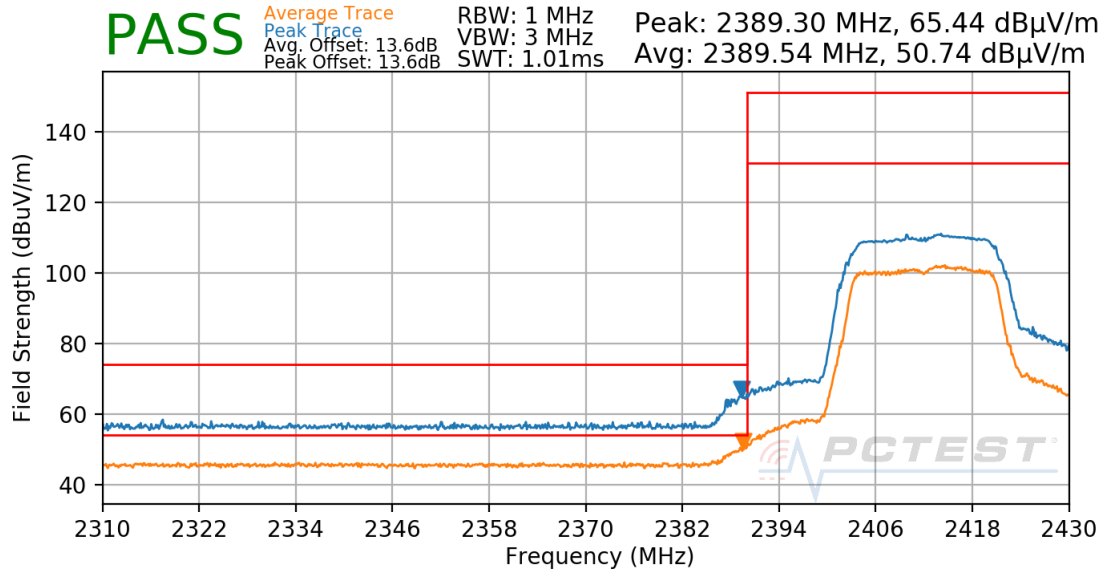


**Plot 7-18. Radiated Restricted Upper Band Edge Measurement Antenna 4a**

FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 32 of 86

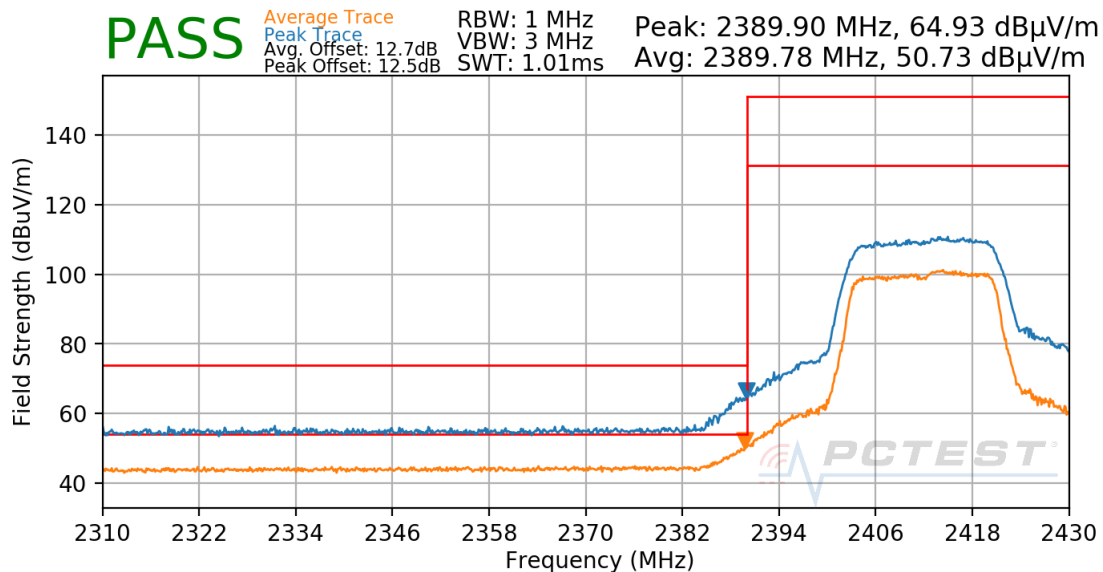


Mode: 802.11n  
Data Rate: MCS0  
Distance of Measurements: 3 Meters  
Operating Frequency: 2412MHz  
Channel: 1



**Plot 7-19. Radiated Restricted Lower Band Edge Measurement Antenna 4a**

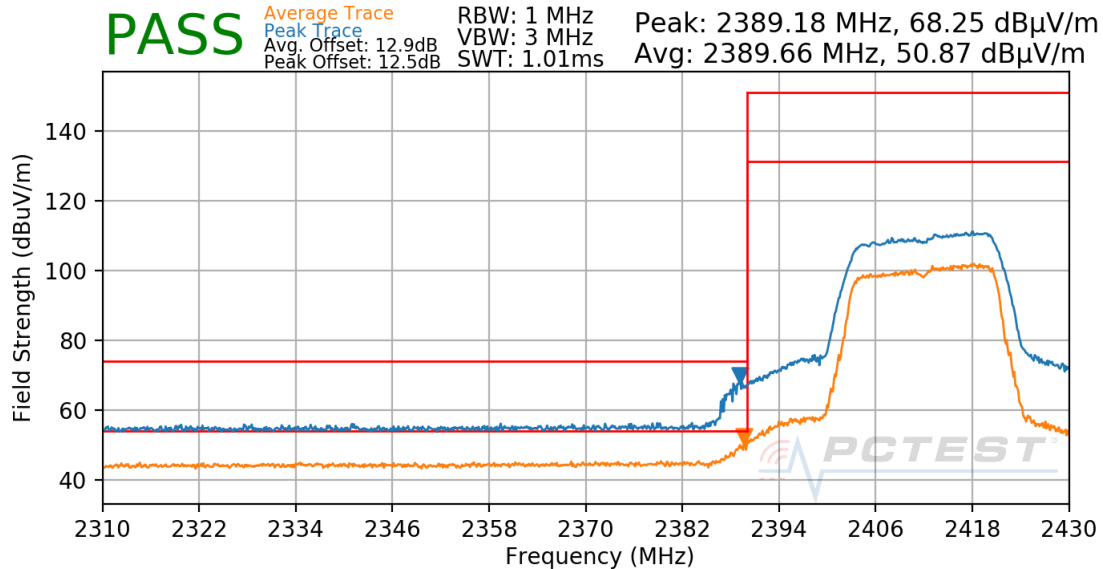
Mode: 802.11n  
Data Rate: MCS3  
Distance of Measurements: 3 Meters  
Operating Frequency: 2412MHz  
Channel: 1



**Plot 7-20. Radiated Restricted Lower Band Edge Measurement Antenna 4a**

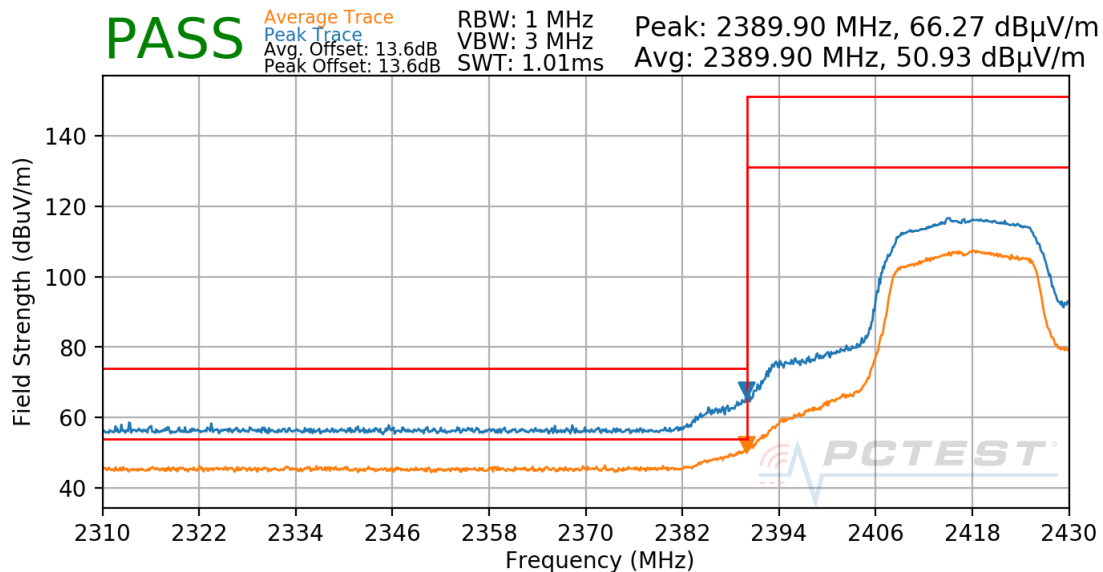
FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 33 of 86

Mode: 802.11n  
Data Rate: MCS7  
Distance of Measurements: 3 Meters  
Operating Frequency: 2412MHz  
Channel: 1



**Plot 7-21. Radiated Restricted Lower Band Edge Measurement Antenna 4a**

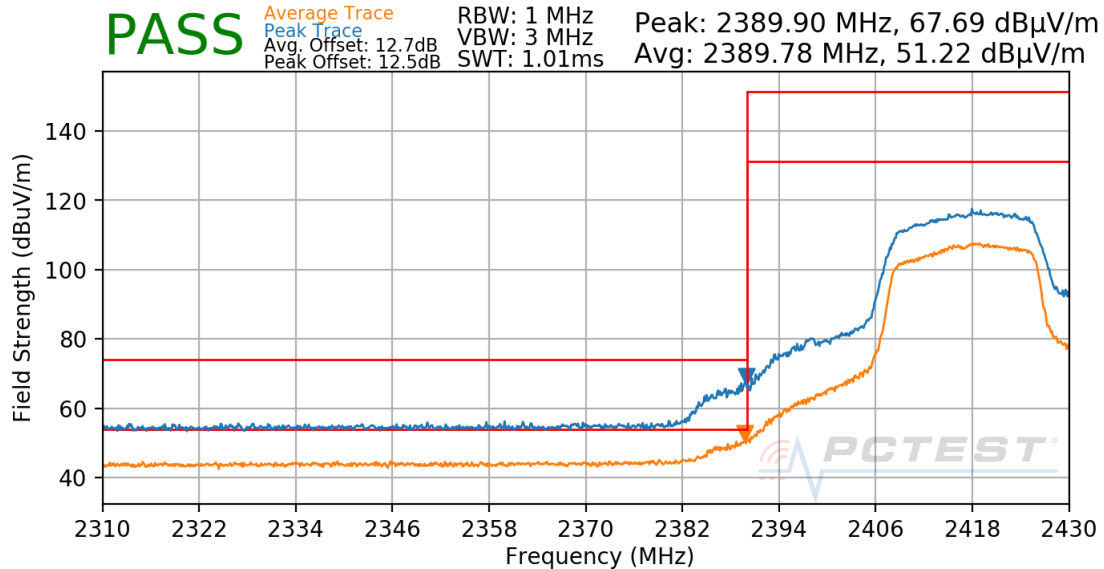
Mode: 802.11n  
Data Rate: MCS0  
Distance of Measurements: 3 Meters  
Operating Frequency: 2417MHz  
Channel: 2



**Plot 7-22. Radiated Restricted Lower Band Edge Measurement Antenna 4a**

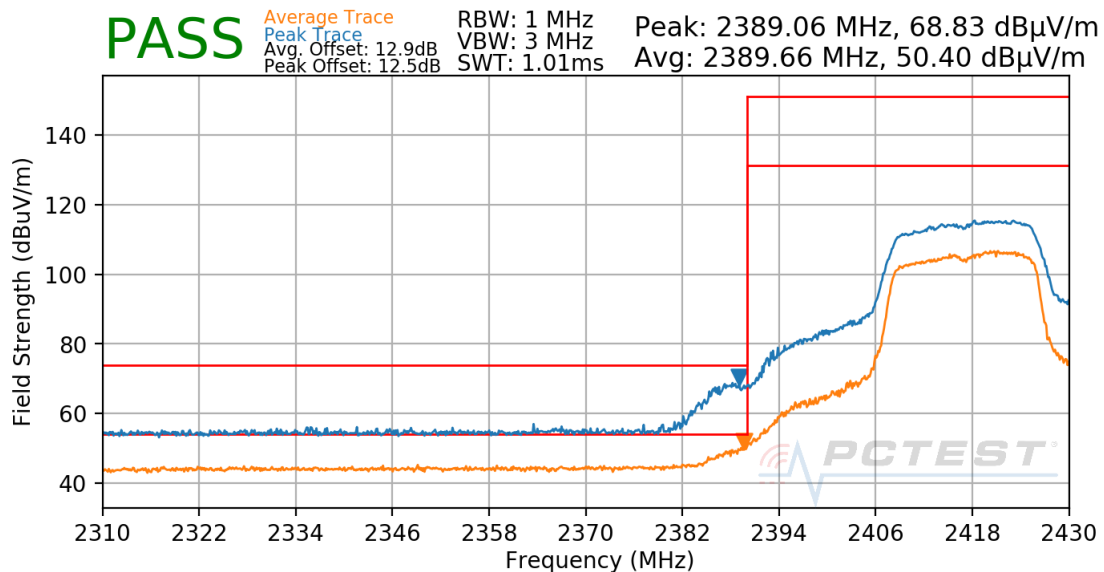
FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 34 of 86

Mode: 802.11n  
Data Rate: MCS3  
Distance of Measurements: 3 Meters  
Operating Frequency: 2417MHz  
Channel: 2



**Plot 7-23. Radiated Restricted Lower Band Edge Measurement Antenna 4a**

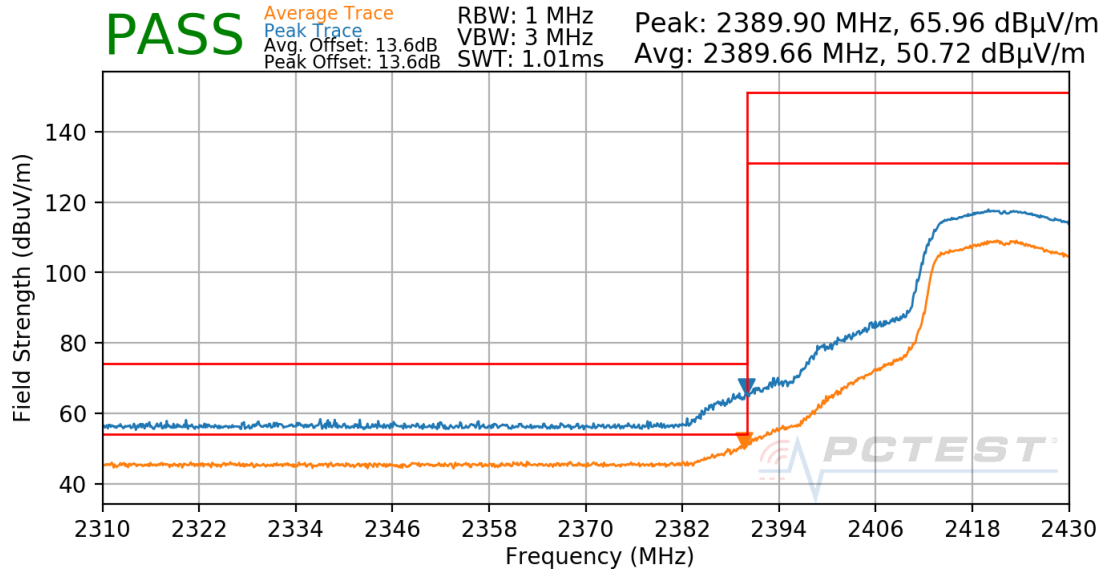
Mode: 802.11n  
Data Rate: MCS7  
Distance of Measurements: 3 Meters  
Operating Frequency: 2417MHz  
Channel: 2



**Plot 7-24. Radiated Restricted Lower Band Edge Measurement Antenna 4a**

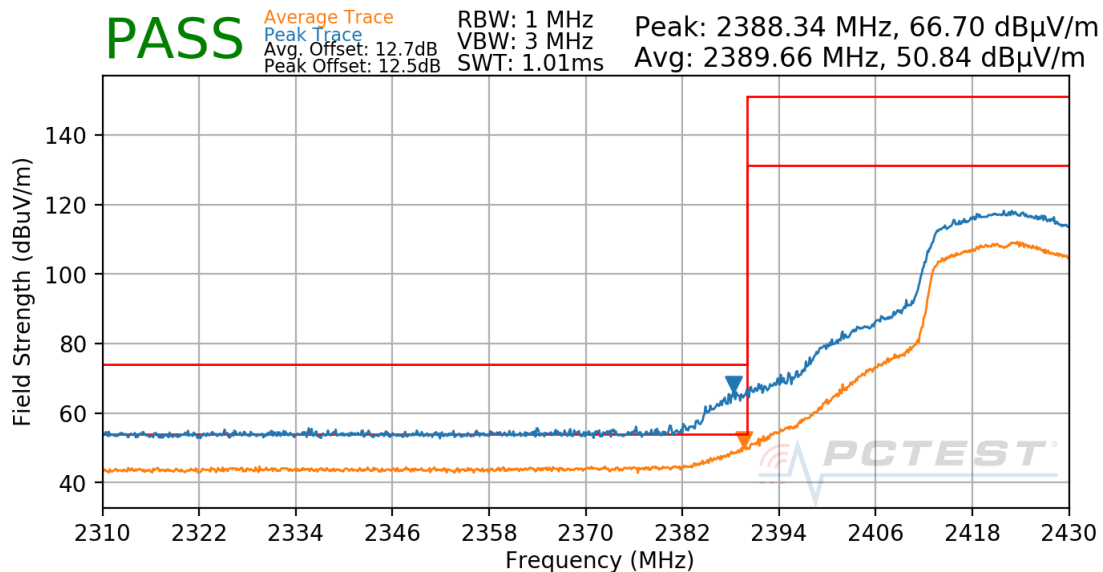
FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 35 of 86

Mode: 802.11n  
Data Rate: MCS0  
Distance of Measurements: 3 Meters  
Operating Frequency: 2422MHz  
Channel: 3



**Plot 7-25. Radiated Restricted Lower Band Edge Measurement Antenna 4a**

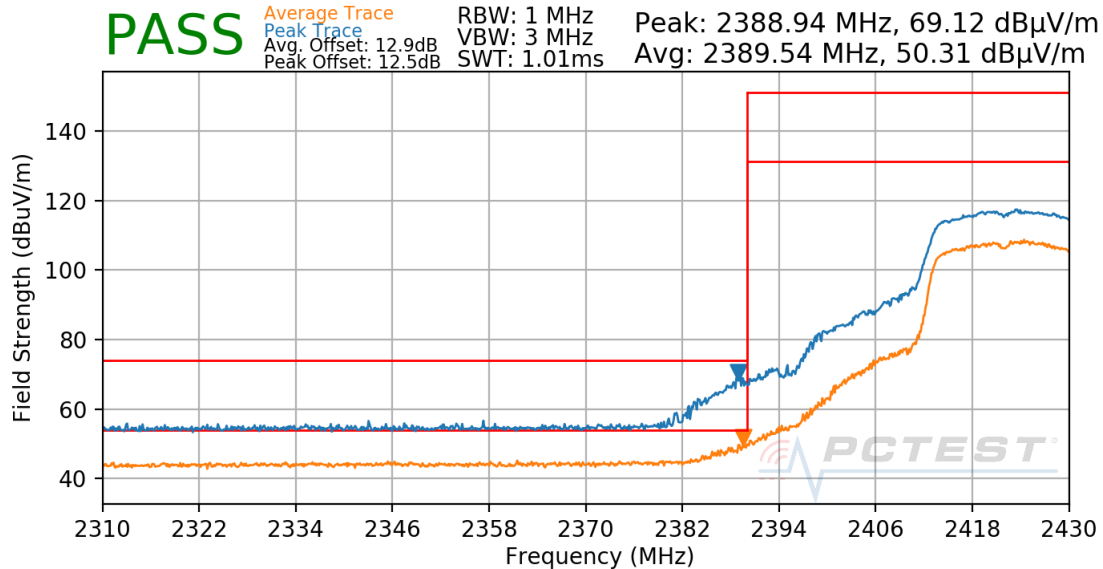
Mode: 802.11n  
Data Rate: MCS3  
Distance of Measurements: 3 Meters  
Operating Frequency: 2422MHz  
Channel: 3



**Plot 7-26. Radiated Restricted Lower Band Edge Measurement Antenna 4a**

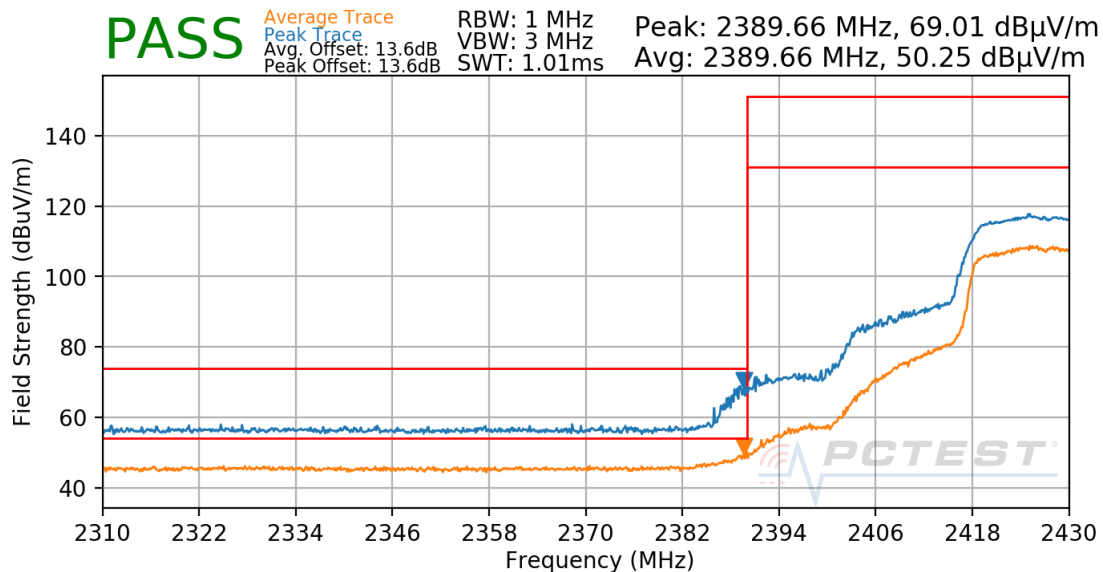
FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 36 of 86

Mode: 802.11n  
Data Rate: MCS7  
Distance of Measurements: 3 Meters  
Operating Frequency: 2422MHz  
Channel: 3



**Plot 7-27. Radiated Restricted Lower Band Edge Measurement Antenna 4a**

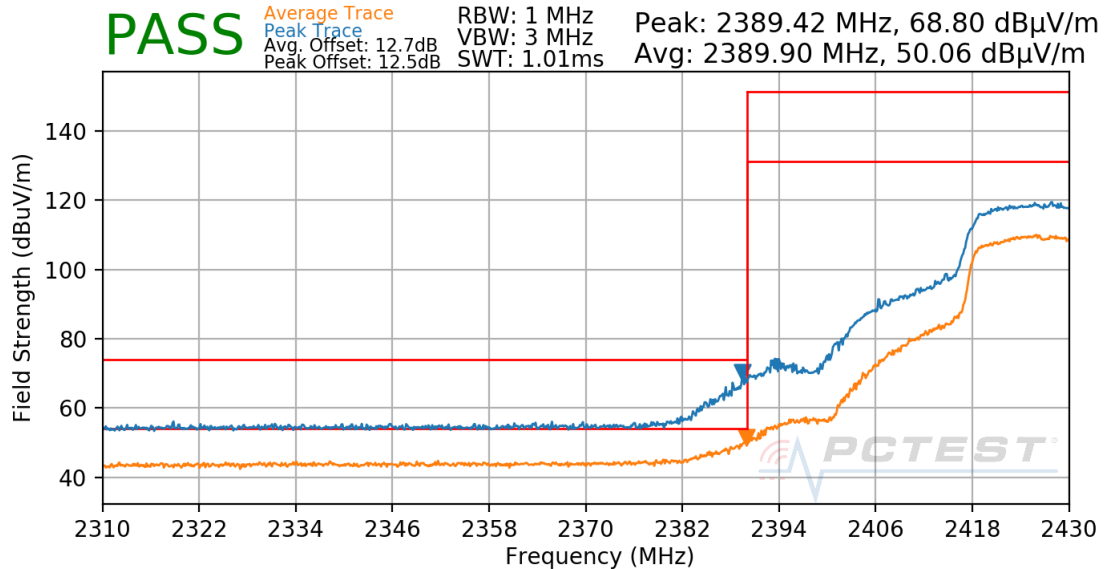
Mode: 802.11n  
Data Rate: MCS0  
Distance of Measurements: 3 Meters  
Operating Frequency: 2427MHz  
Channel: 4



**Plot 7-28. Radiated Restricted Lower Band Edge Measurement Antenna 4a**

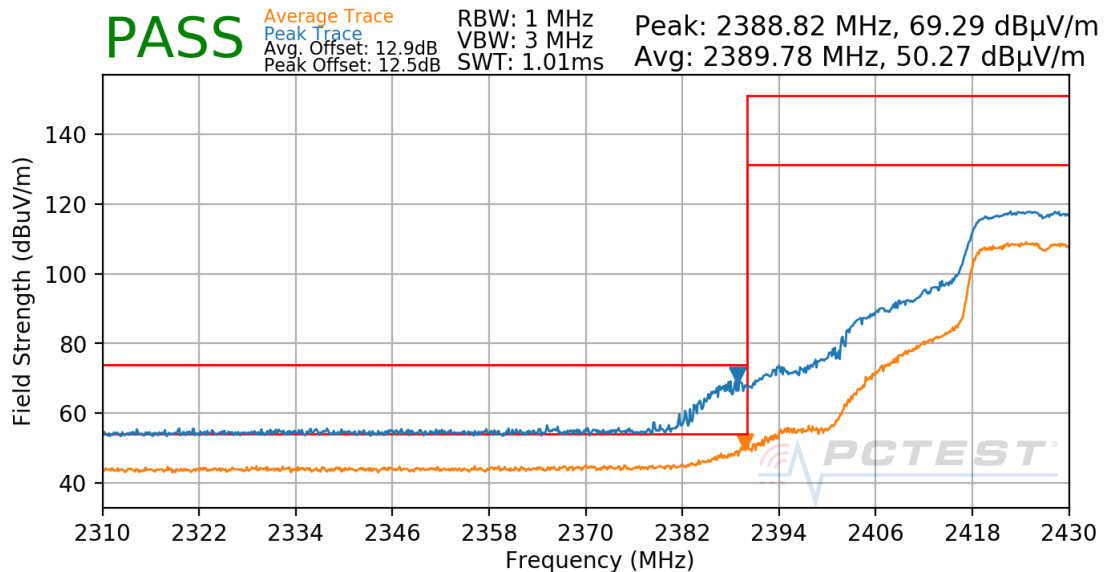
FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 37 of 86

Mode: 802.11n  
Data Rate: MCS3  
Distance of Measurements: 3 Meters  
Operating Frequency: 2427MHz  
Channel: 4



**Plot 7-29. Radiated Restricted Lower Band Edge Measurement Antenna 4a**

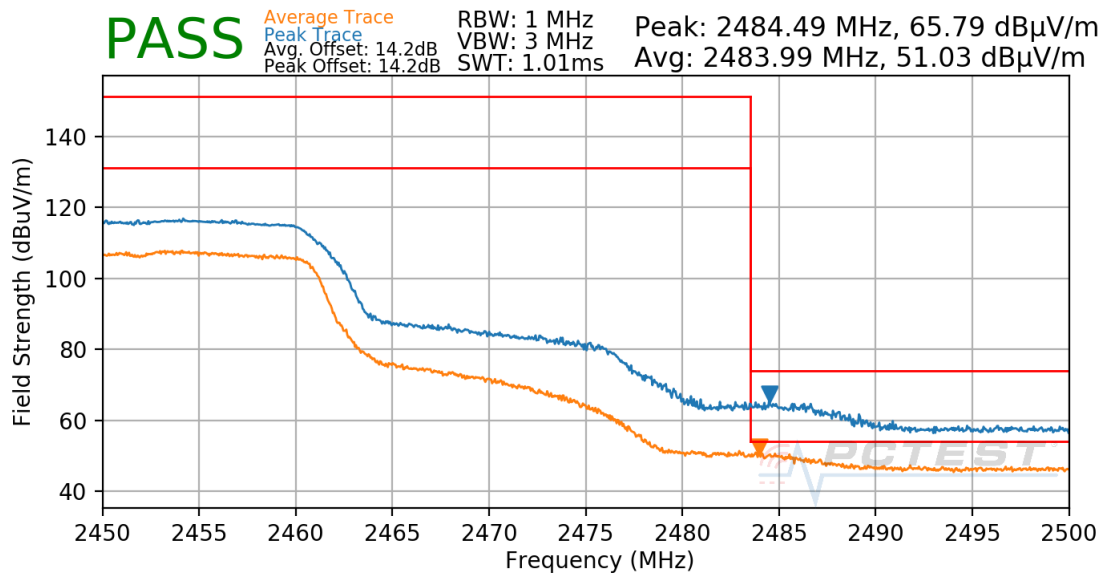
Mode: 802.11n  
Data Rate: MCS7  
Distance of Measurements: 3 Meters  
Operating Frequency: 2427MHz  
Channel: 4



**Plot 7-30. Radiated Restricted Lower Band Edge Measurement Antenna 4a**

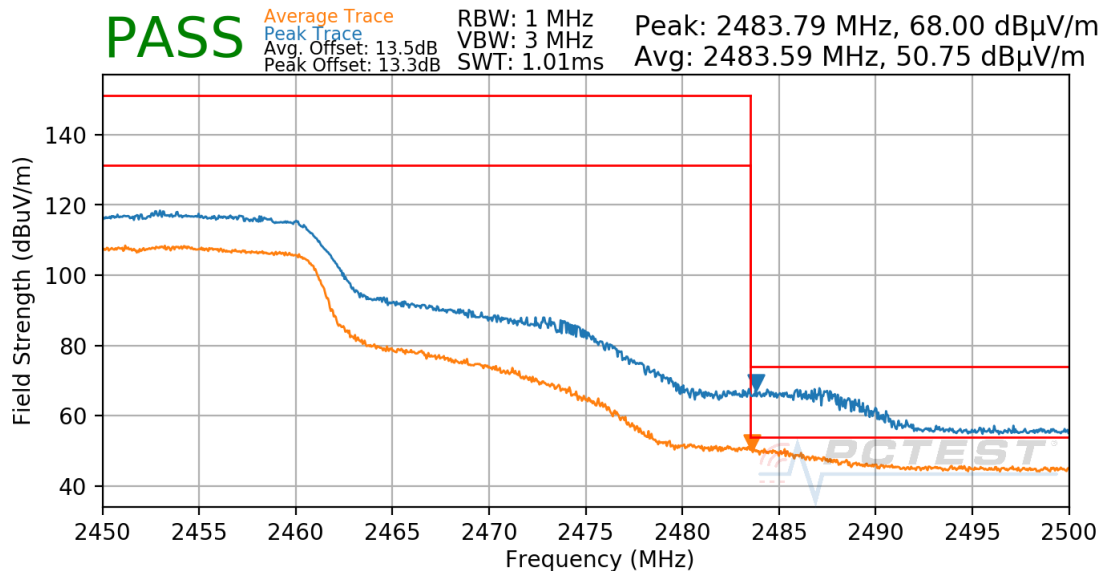
FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 38 of 86

Mode: 802.11n  
Data Rate: MCS0  
Distance of Measurements: 3 Meters  
Operating Frequency: 2452MHz  
Channel: 9



**Plot 7-31. Radiated Restricted Upper Band Edge Measurement Antenna 4a**

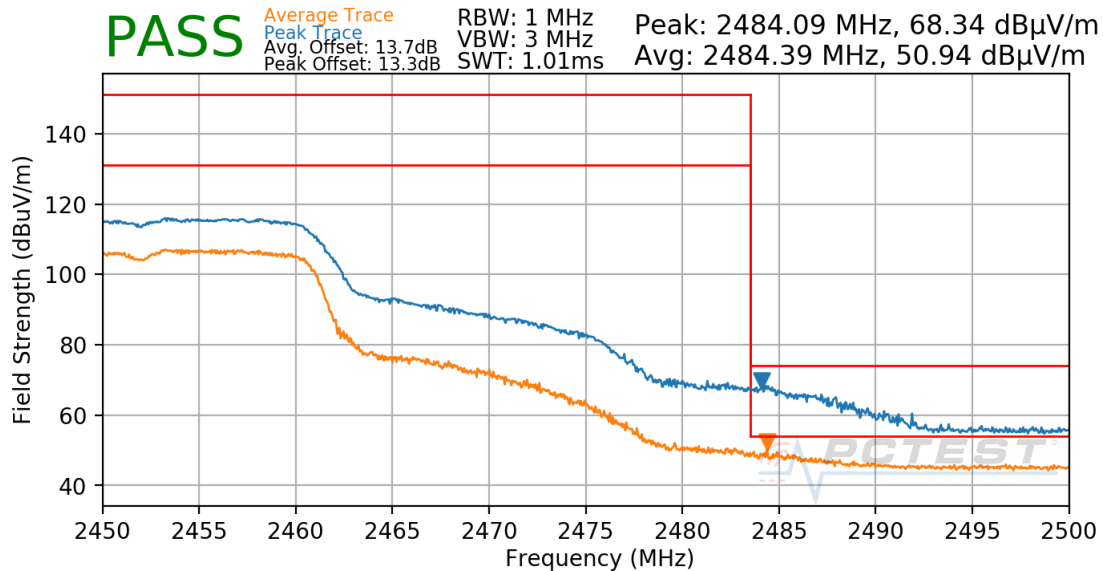
Mode: 802.11n  
Data Rate: MCS3  
Distance of Measurements: 3 Meters  
Operating Frequency: 2452MHz  
Channel: 9



**Plot 7-32. Radiated Restricted Upper Band Edge Measurement Antenna 4a**

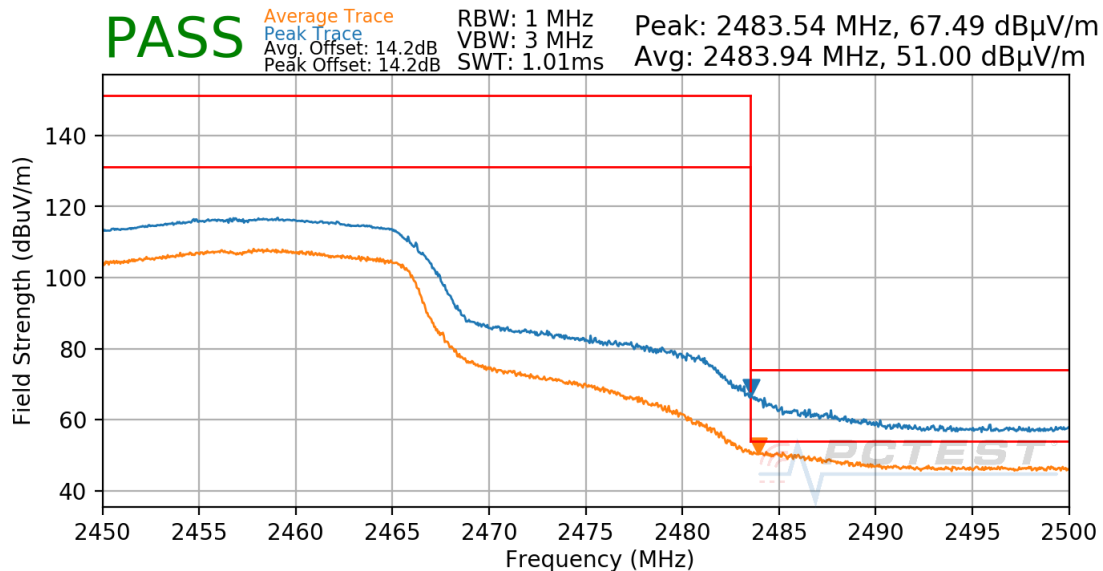
FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 39 of 86

Mode: 802.11n  
Data Rate: MCS7  
Distance of Measurements: 3 Meters  
Operating Frequency: 2452MHz  
Channel: 9



**Plot 7-33. Radiated Restricted Upper Band Edge Measurement Antenna 4a**

Mode: 802.11n  
Data Rate: MCS0  
Distance of Measurements: 3 Meters  
Operating Frequency: 2457MHz  
Channel: 10

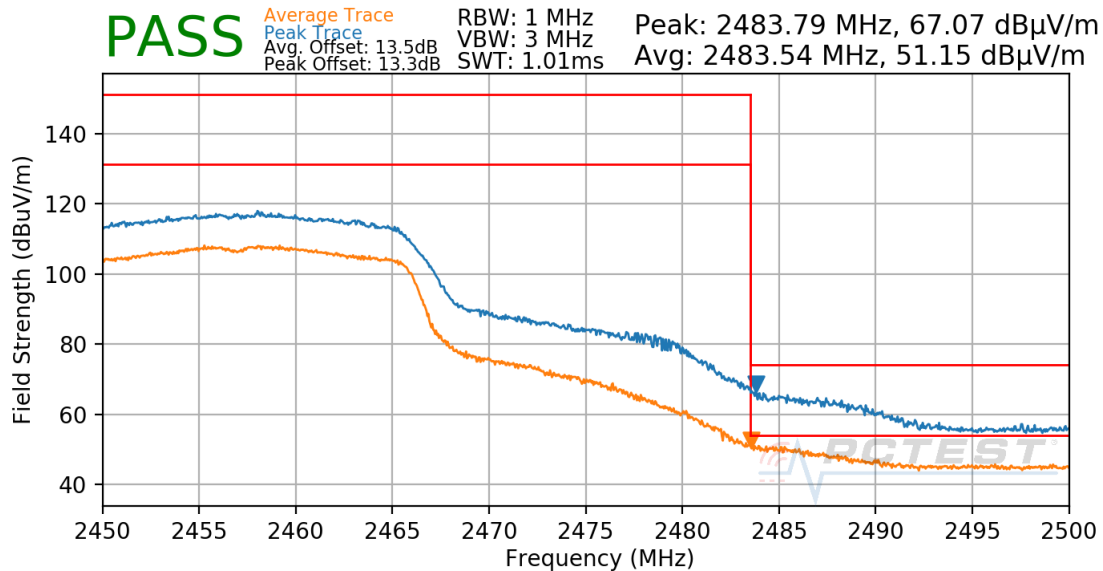


**Plot 7-34. Radiated Restricted Upper Band Edge Measurement Antenna 4a**

FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 40 of 86

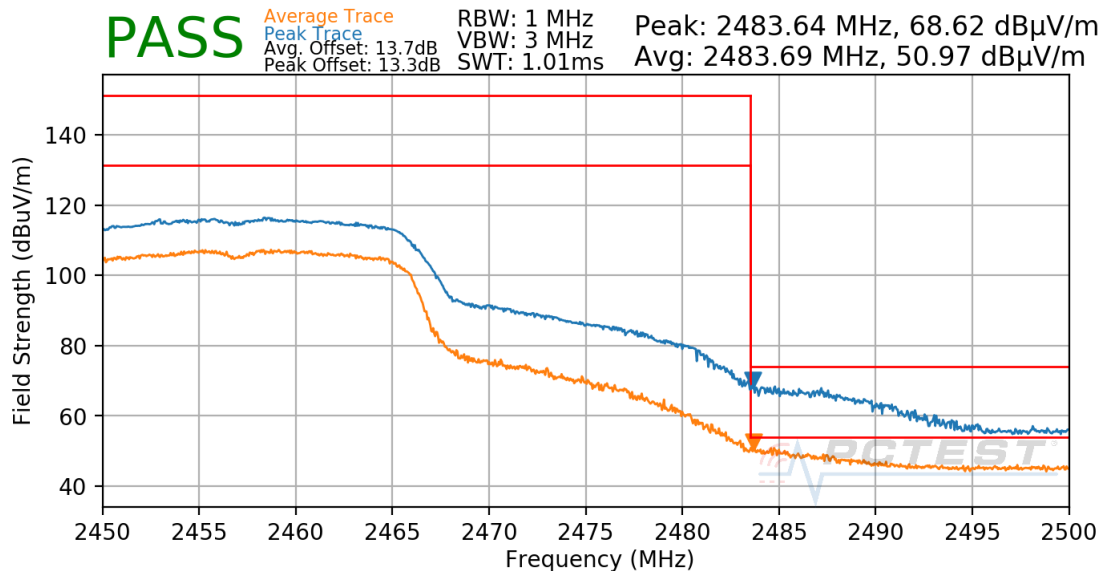


Mode: 802.11n  
Data Rate: MCS3  
Distance of Measurements: 3 Meters  
Operating Frequency: 2457MHz  
Channel: 10



**Plot 7-35. Radiated Restricted Upper Band Edge Measurement Antenna 4a**

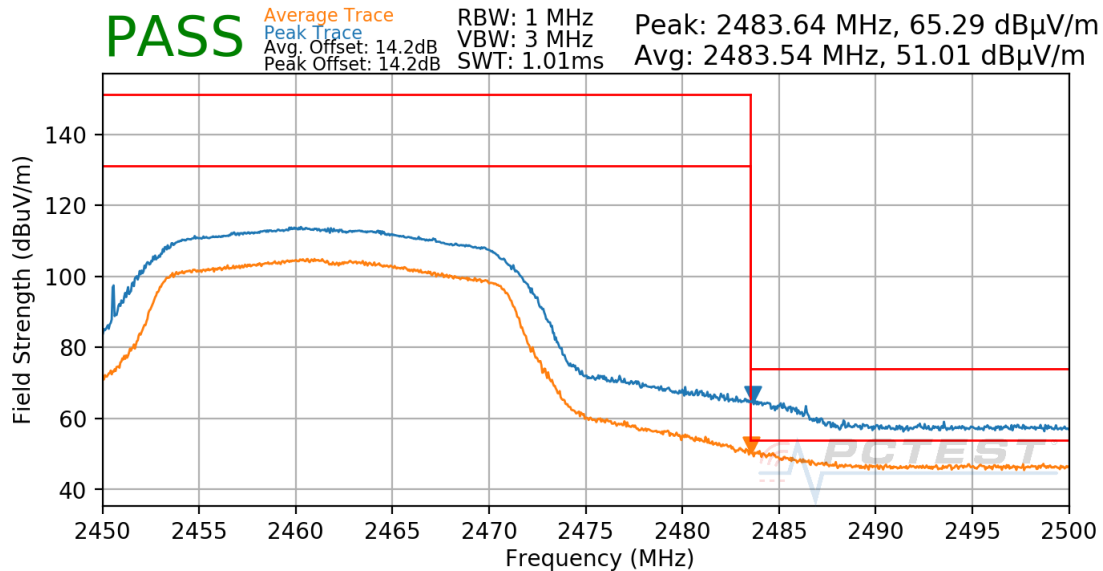
Mode: 802.11n  
Data Rate: MCS7  
Distance of Measurements: 3 Meters  
Operating Frequency: 2457MHz  
Channel: 10



**Plot 7-36. Radiated Restricted Upper Band Edge Measurement Antenna 4a**

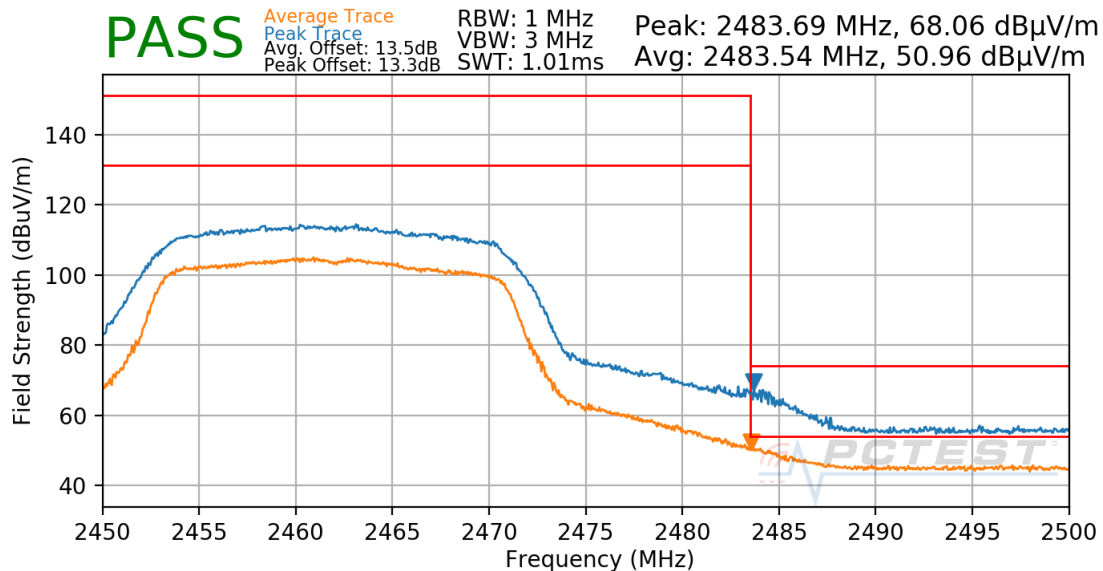
FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 41 of 86

Mode: 802.11n  
Data Rate: MCS0  
Distance of Measurements: 3 Meters  
Operating Frequency: 2462MHz  
Channel: 11



**Plot 7-37. Radiated Restricted Upper Band Edge Measurement Antenna 4a**

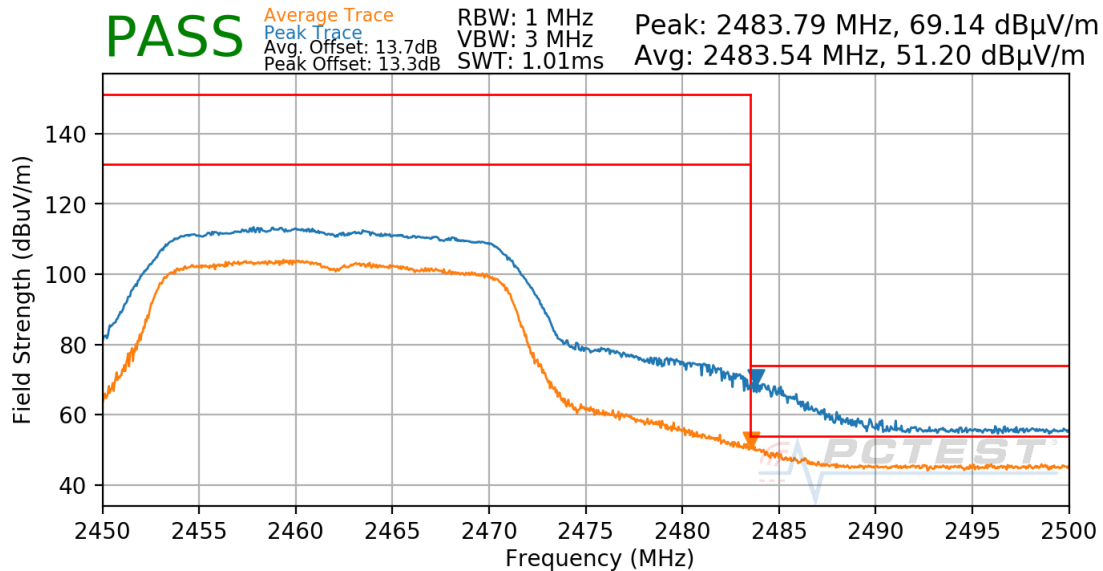
Mode: 802.11n  
Data Rate: MCS3  
Distance of Measurements: 3 Meters  
Operating Frequency: 2462MHz  
Channel: 11



**Plot 7-38. Radiated Restricted Upper Band Edge Measurement Antenna 4a**

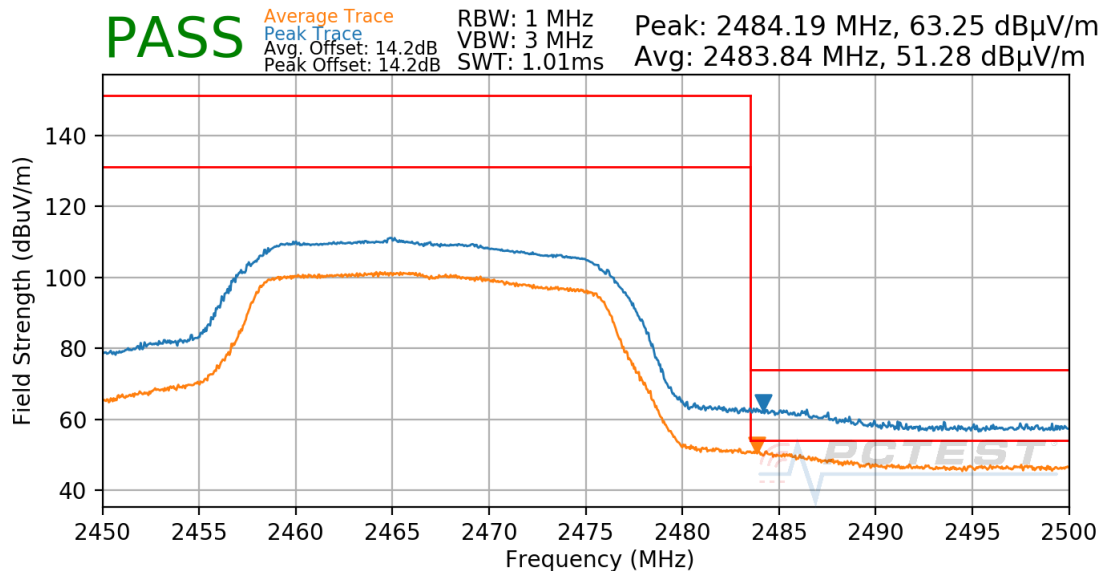
FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 42 of 86

Mode: 802.11n  
Data Rate: MCS7  
Distance of Measurements: 3 Meters  
Operating Frequency: 2462MHz  
Channel: 11



**Plot 7-39. Radiated Restricted Upper Band Edge Measurement Antenna 4a**

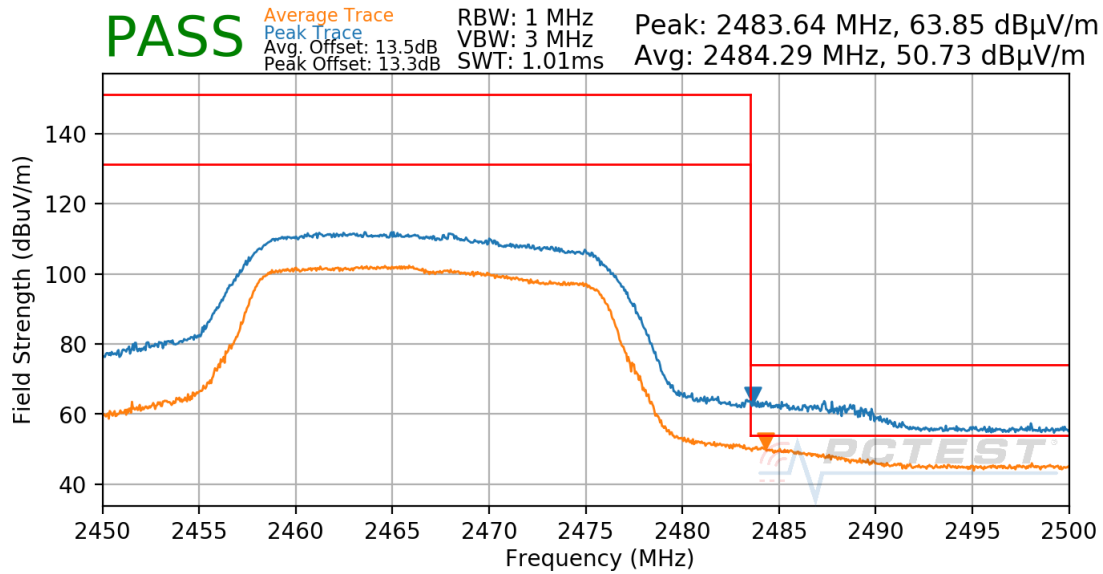
Mode: 802.11n  
Data Rate: MCS0  
Distance of Measurements: 3 Meters  
Operating Frequency: 2467MHz  
Channel: 12



**Plot 7-40. Radiated Restricted Upper Band Edge Measurement Antenna 4a**

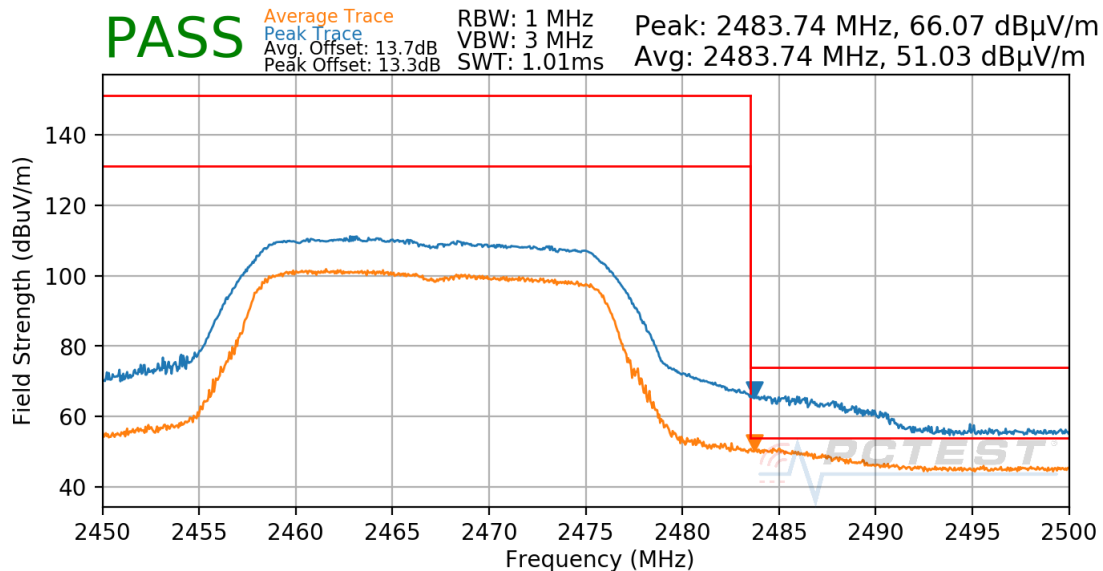
FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 43 of 86

Mode: 802.11n  
Data Rate: MCS3  
Distance of Measurements: 3 Meters  
Operating Frequency: 2467MHz  
Channel: 12



**Plot 7-41. Radiated Restricted Upper Band Edge Measurement Antenna 4a**

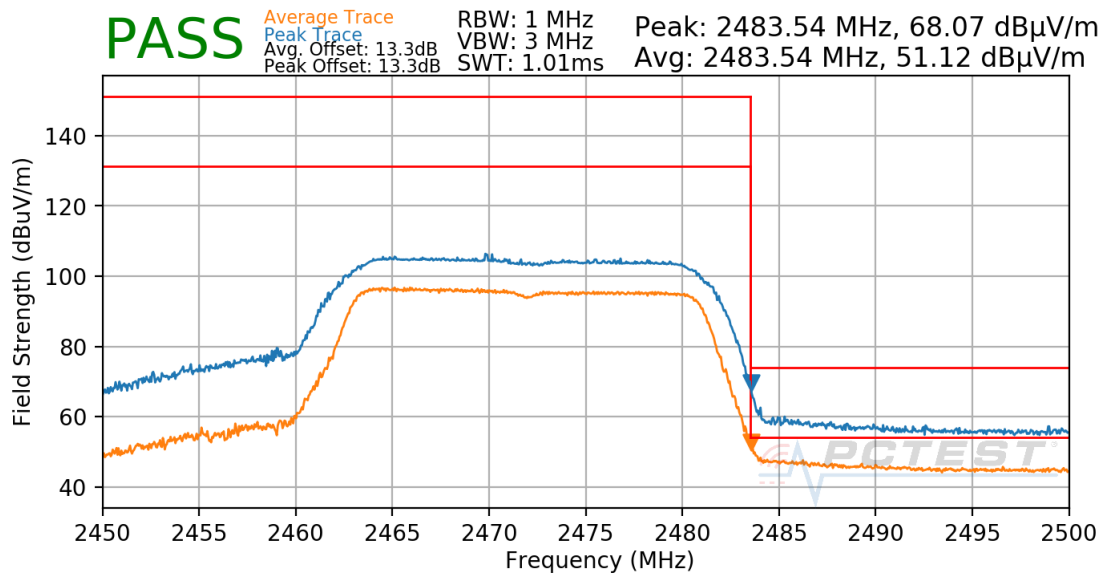
Mode: 802.11n  
Data Rate: MCS7  
Distance of Measurements: 3 Meters  
Operating Frequency: 2467MHz  
Channel: 12



**Plot 7-42. Radiated Restricted Upper Band Edge Measurement Antenna 4a**

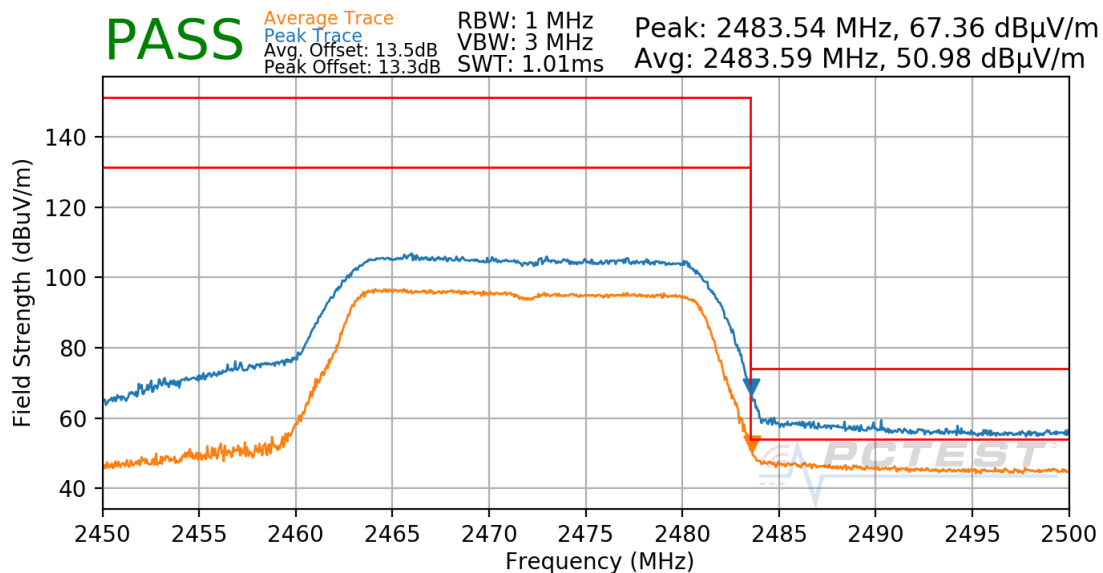
FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 44 of 86

Mode: 802.11n  
Data Rate: MCS0  
Distance of Measurements: 3 Meters  
Operating Frequency: 2472MHz  
Channel: 13



**Plot 7-43. Radiated Restricted Upper Band Edge Measurement Antenna 4a**

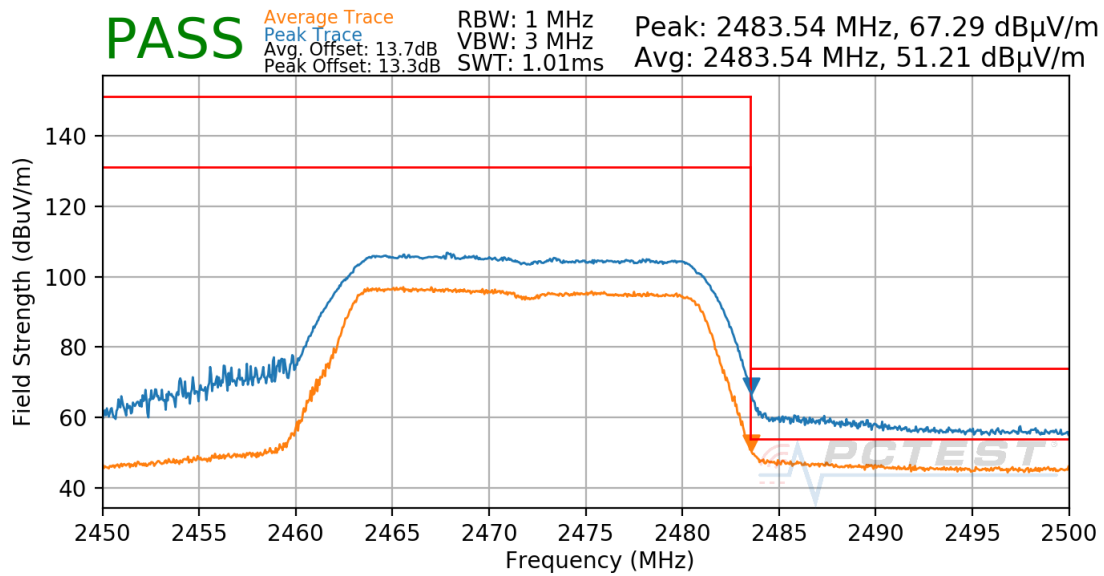
Mode: 802.11n  
Data Rate: MCS3  
Distance of Measurements: 3 Meters  
Operating Frequency: 2472MHz  
Channel: 13



**Plot 7-44. Radiated Restricted Upper Band Edge Measurement Antenna 4a**

FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 45 of 86

Mode: 802.11n  
Data Rate: MCS7  
Distance of Measurements: 3 Meters  
Operating Frequency: 2472MHz  
Channel: 13



**Plot 7-45. Radiated Restricted Upper Band Edge Measurement Antenna 4a**

FCC ID: BCGA2459 IC: 579C-A2459	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020003-10.BCG	Test Dates: 12/12/2020 - 3/19/2021	EUT Type: Tablet Device	Page 46 of 86