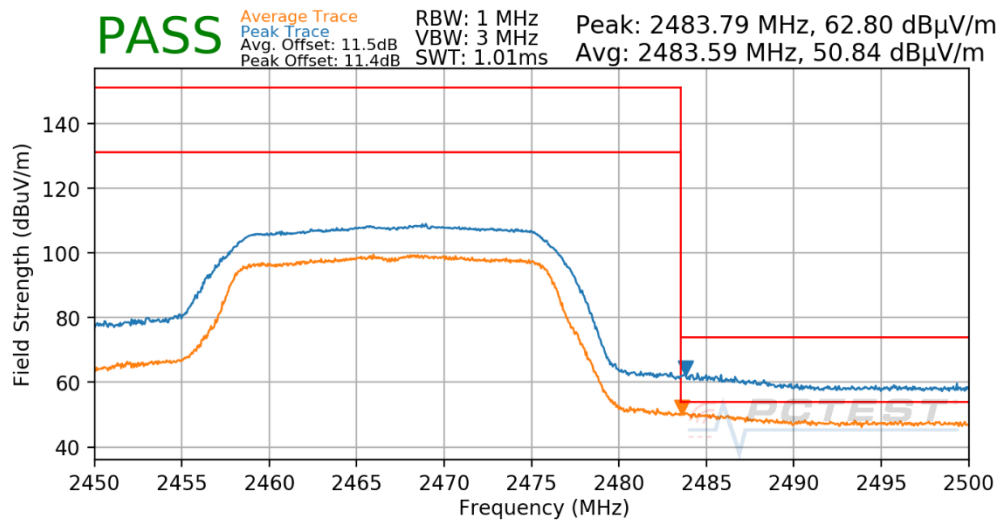
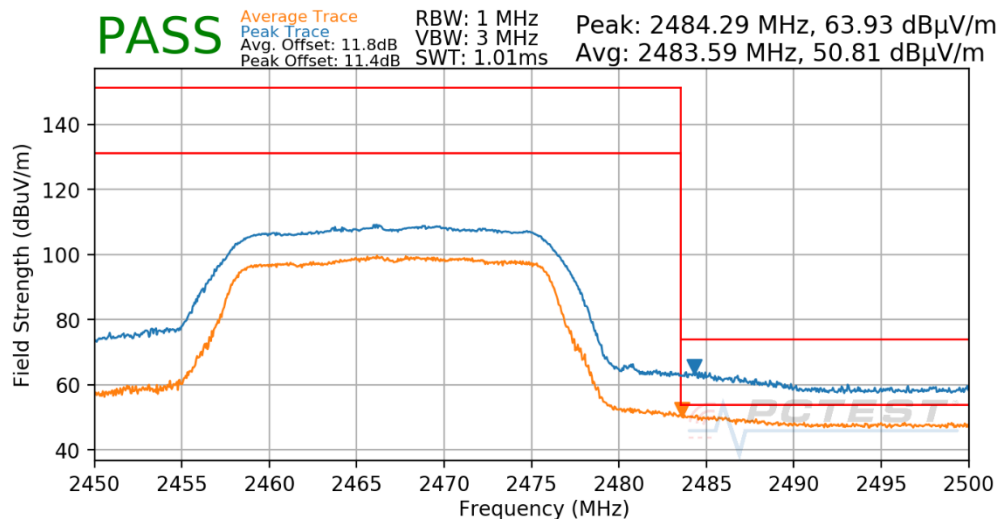


Mode: 802.11n  
Data Rate: MCS8  
Distance of Measurements: 3 Meters  
Operating Frequency: 2467MHz  
Channel: 12



**Plot 7-80. Radiated Restricted Upper Band Edge Measurement CDD**

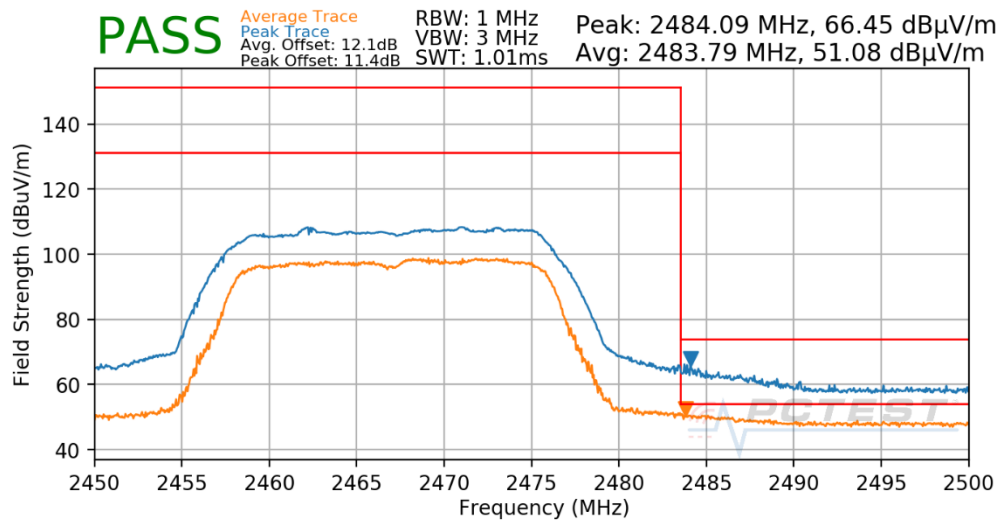
Mode: 802.11n  
Data Rate: MCS11  
Distance of Measurements: 3 Meters  
Operating Frequency: 2467MHz  
Channel: 12



**Plot 7-81. Radiated Restricted Upper Band Edge Measurement CDD**

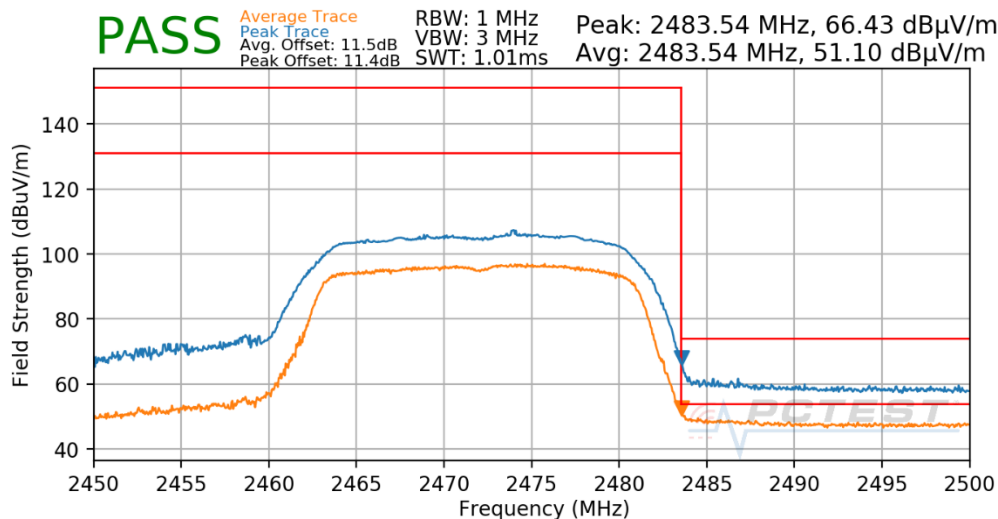
FCC ID: BCGA2461 IC: 579C-A2461	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020006-10.BCG	Test Dates: 12/15/2020-3/18/2021	EUT Type: Tablet Device	Page 64 of 79

Mode: 802.11n  
Data Rate: MCS15  
Distance of Measurements: 3 Meters  
Operating Frequency: 2467MHz  
Channel: 12



**Plot 7-82. Radiated Restricted Upper Band Edge Measurement CDD**

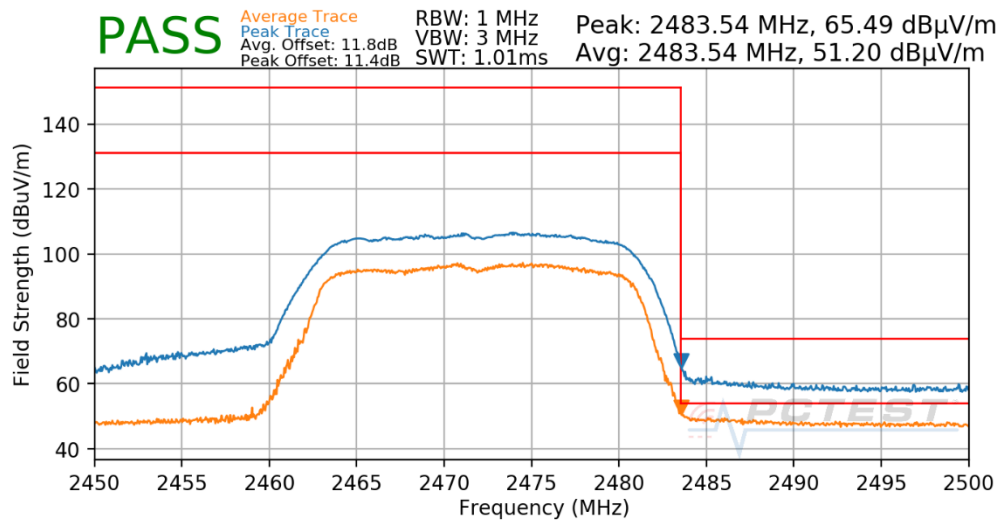
Mode: 802.11n  
Data Rate: MCS8  
Distance of Measurements: 3 Meters  
Operating Frequency: 2472MHz  
Channel: 13



**Plot 7-83. Radiated Restricted Upper Band Edge Measurement CDD**

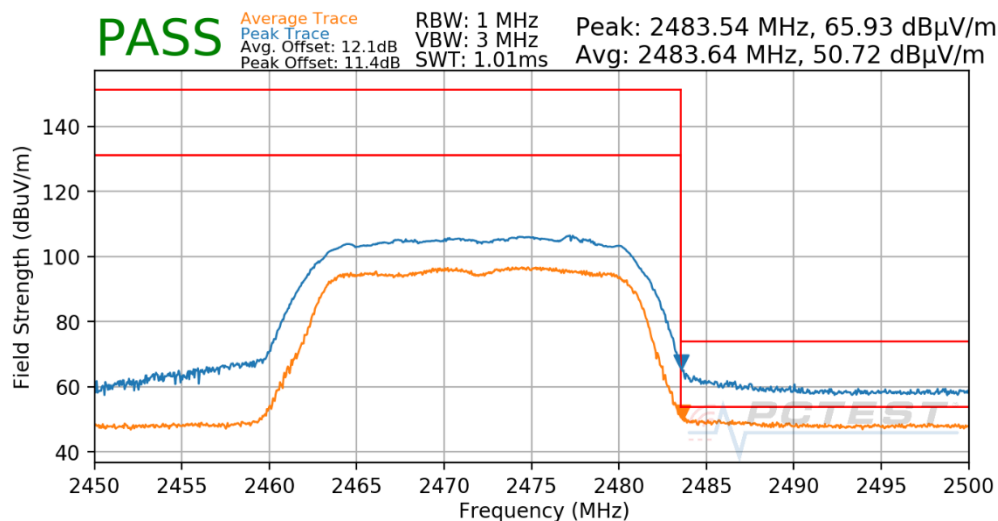
FCC ID: BCGA2461 IC: 579C-A2461	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020006-10.BCG	Test Dates: 12/15/2020-3/18/2021	EUT Type: Tablet Device	Page 65 of 79

Mode: 802.11n  
Data Rate: MCS11  
Distance of Measurements: 3 Meters  
Operating Frequency: 2472MHz  
Channel: 13



**Plot 7-84. Radiated Restricted Upper Band Edge Measurement CDD**

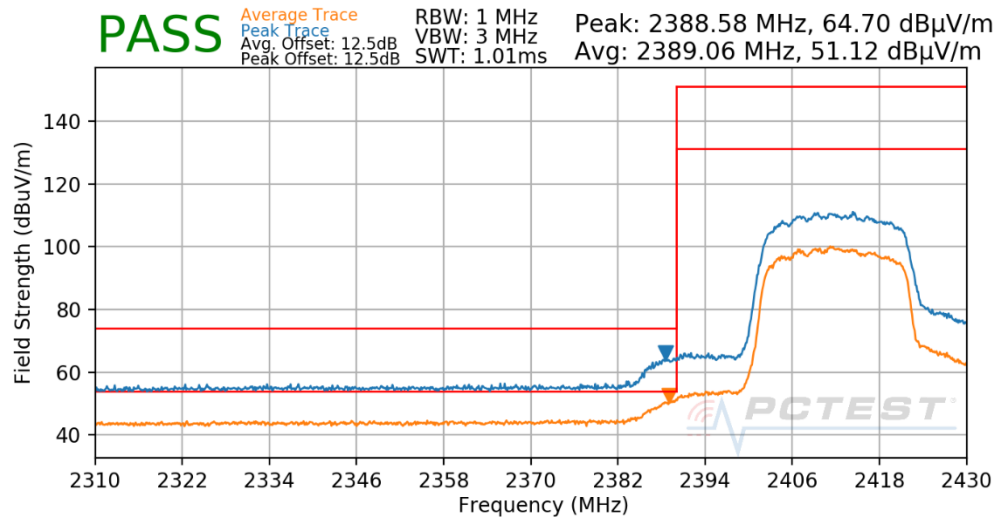
Mode: 802.11n  
Data Rate: MCS15  
Distance of Measurements: 3 Meters  
Operating Frequency: 2472MHz  
Channel: 13



**Plot 7-85. Radiated Restricted Upper Band Edge Measurement CDD**

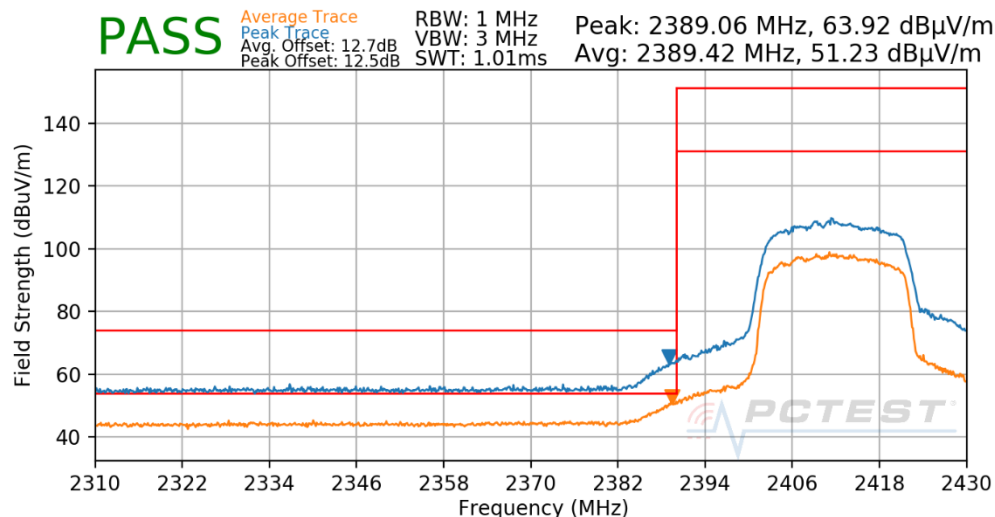
FCC ID: BCGA2461 IC: 579C-A2461	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020006-10.BCG	Test Dates: 12/15/2020-3/18/2021	EUT Type: Tablet Device	Page 66 of 79

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



**Plot 7-86. Radiated Restricted Lower Band Edge Measurement CDD**

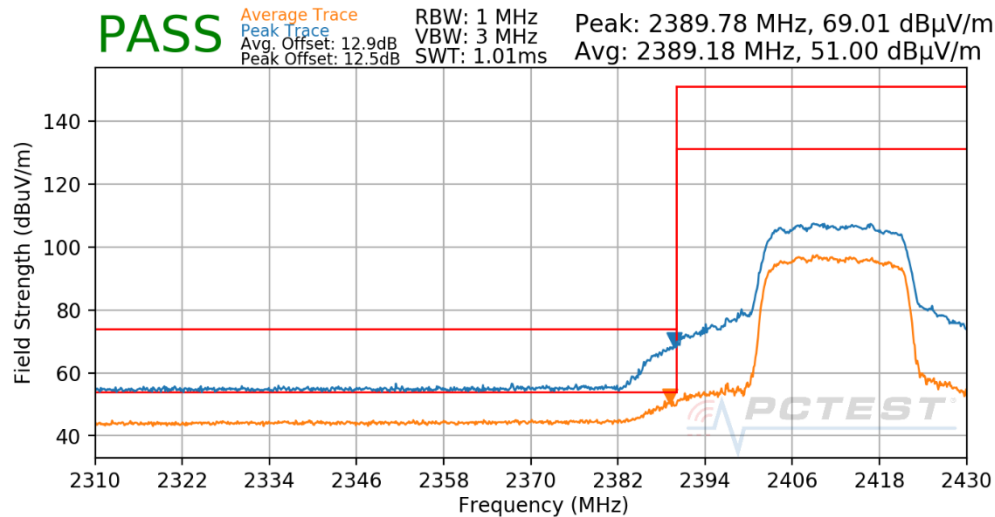
Mode: 802.11ax - SU  
Data Rate: MCS3  
Distance of Measurements: 3 Meters  
Operating Frequency: 2412MHz  
Channel: 1



**Plot 7-87. Radiated Restricted Lower Band Edge Measurement CDD**

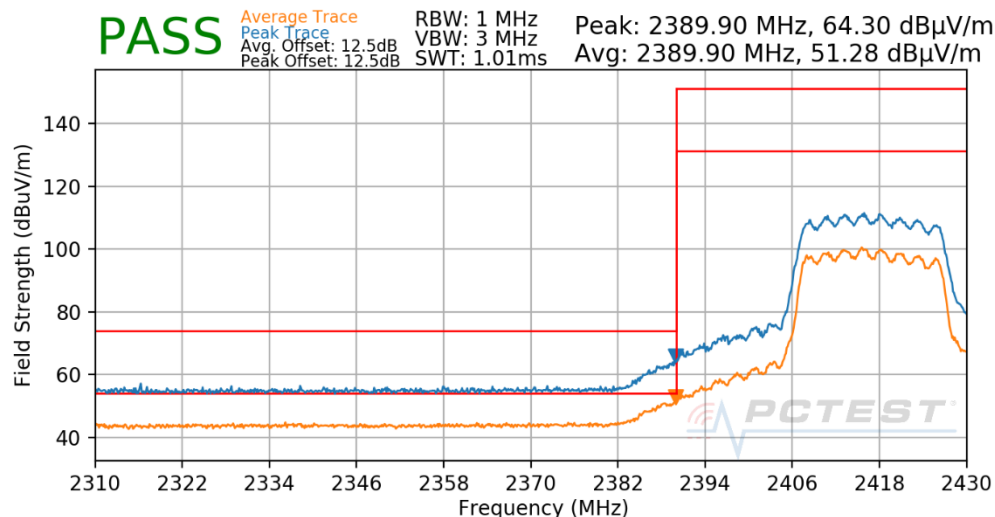
FCC ID: BCGA2461 IC: 579C-A2461	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020006-10.BCG	Test Dates: 12/15/2020-3/18/2021	EUT Type: Tablet Device	Page 67 of 79

Mode: 802.11ax - SU  
Data Rate: MCS5  
Distance of Measurements: 3 Meters  
Operating Frequency: 2412MHz  
Channel: 1



**Plot 7-88. Radiated Restricted Lower Band Edge Measurement CDD**

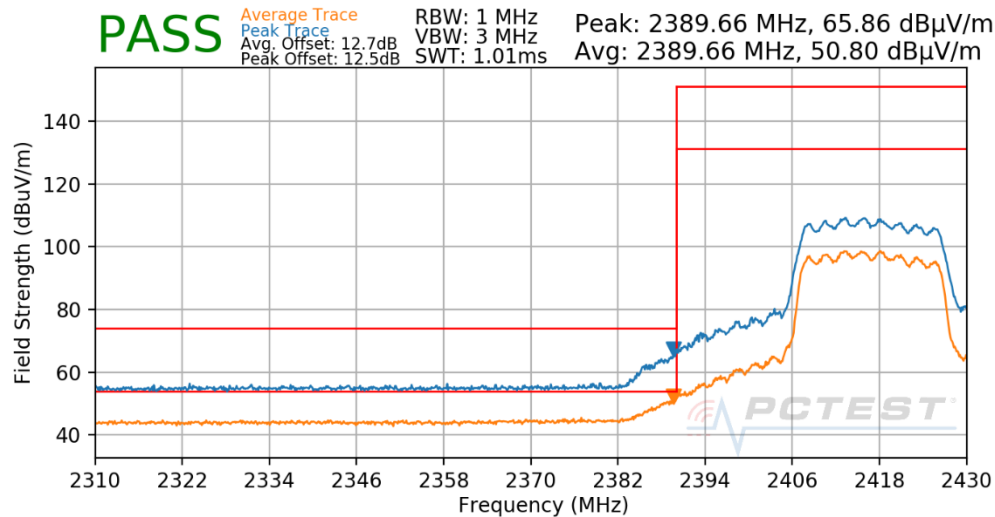
Mode: 802.11ax - SU  
Data Rate: MCS0  
Distance of Measurements: 3 Meters  
Operating Frequency: 2417MHz  
Channel: 2



**Plot 7-89. Radiated Restricted Lower Band Edge Measurement CDD**

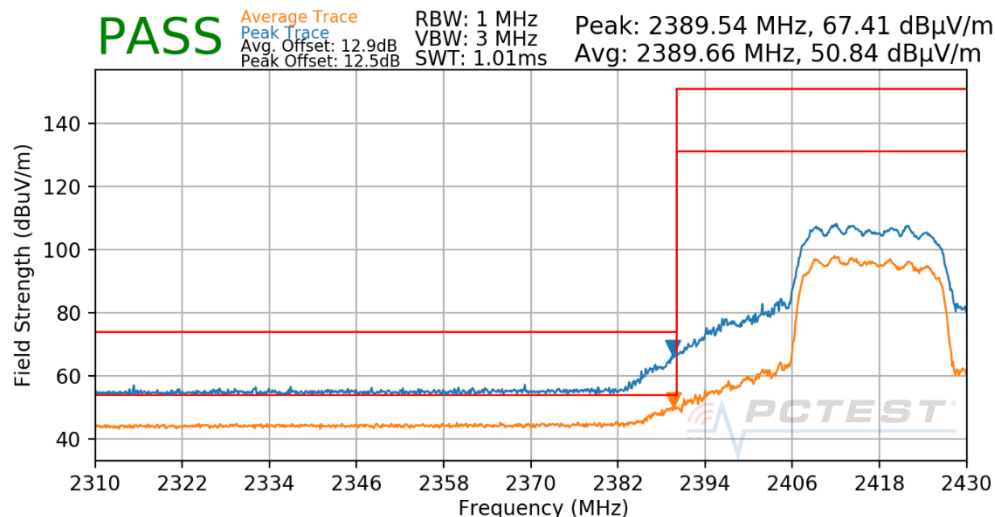
FCC ID: BCGA2461 IC: 579C-A2461	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020006-10.BCG	Test Dates: 12/15/2020-3/18/2021	EUT Type: Tablet Device	Page 68 of 79

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



**Plot 7-90. Radiated Restricted Lower Band Edge Measurement CDD**

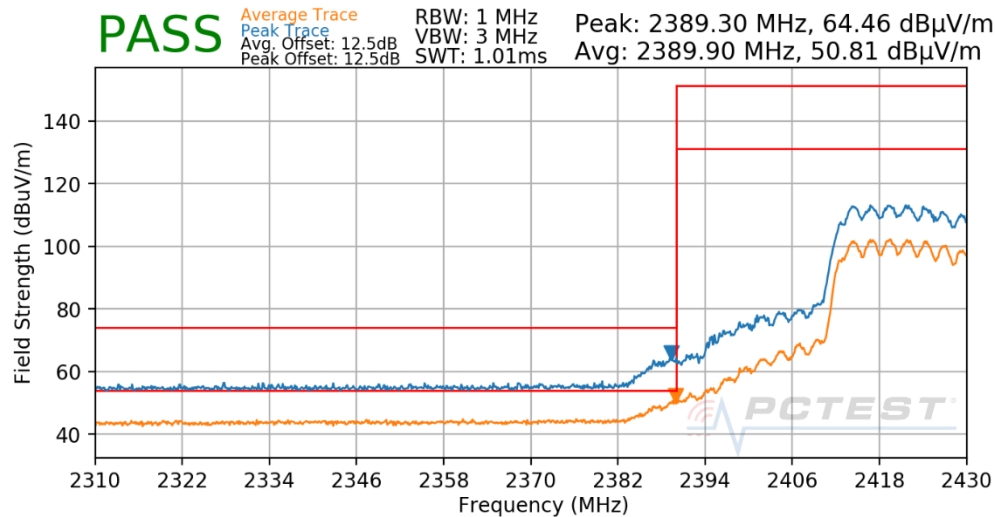
Mode: 802.11ax - SU  
Data Rate: MCS5  
Distance of Measurements: 3 Meters  
Operating Frequency: 2417MHz  
Channel: 2



**Plot 7-91. Radiated Restricted Lower Band Edge Measurement CDD**

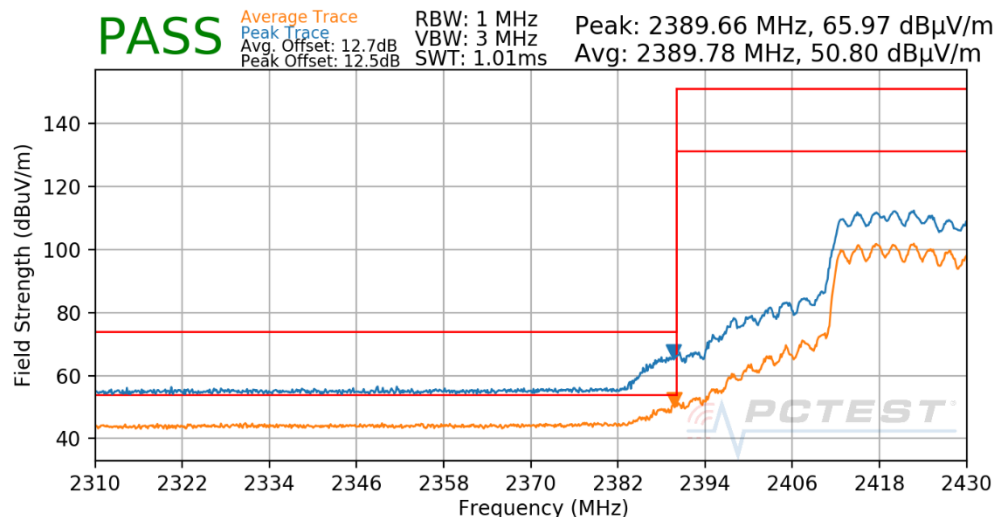
FCC ID: BCGA2461 IC: 579C-A2461	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020006-10.BCG	Test Dates: 12/15/2020-3/18/2021	EUT Type: Tablet Device	Page 69 of 79

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



**Plot 7-92. Radiated Restricted Lower Band Edge Measurement CDD**

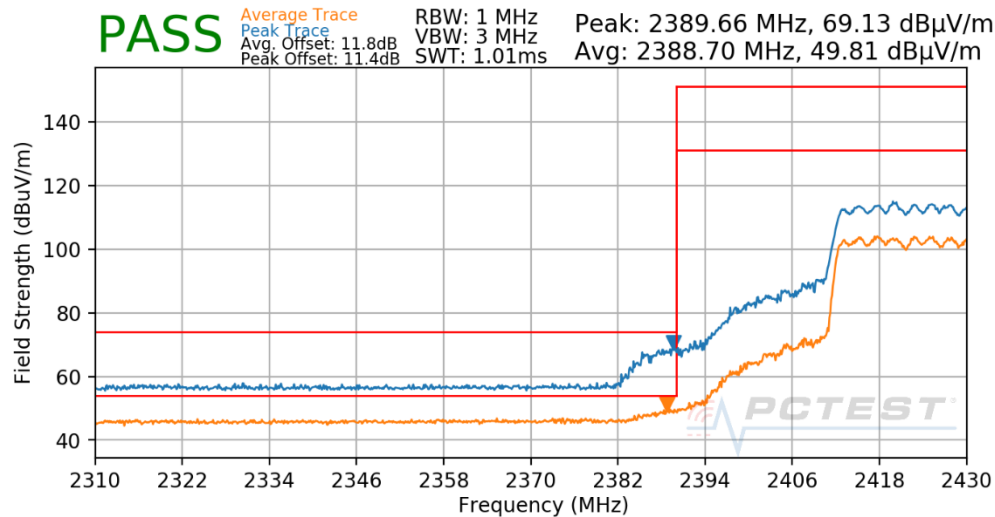
Mode: 802.11ax - SU  
Data Rate: MCS3  
Distance of Measurements: 3 Meters  
Operating Frequency: 2422MHz  
Channel: 3



**Plot 7-93. Radiated Restricted Lower Band Edge Measurement CDD**

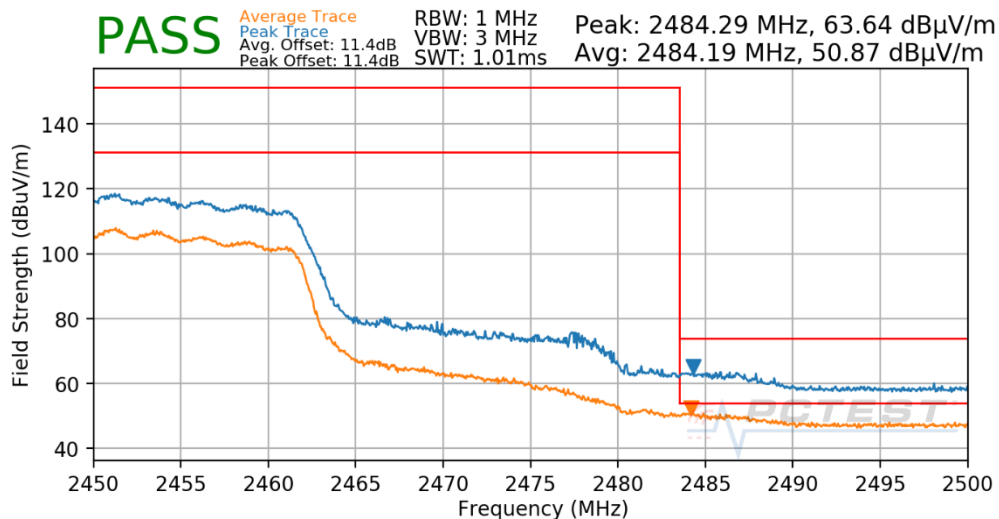
FCC ID: BCGA2461 IC: 579C-A2461	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020006-10.BCG	Test Dates: 12/15/2020-3/18/2021	EUT Type: Tablet Device	Page 70 of 79

Mode: 802.11ax - SU  
Data Rate: MCS5  
Distance of Measurements: 3 Meters  
Operating Frequency: 2422MHz  
Channel: 3



**Plot 7-94. Radiated Restricted Lower Band Edge Measurement CDD**

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

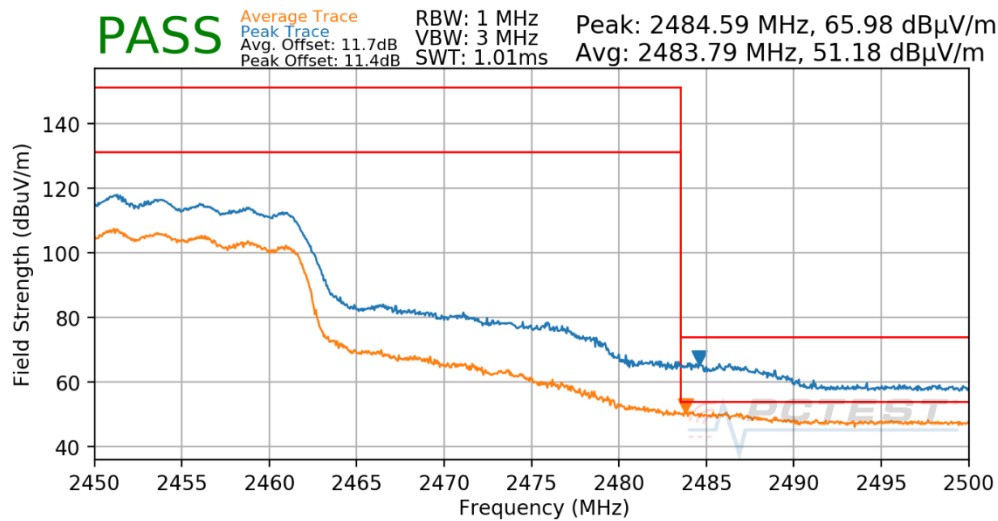


**Plot 7-95. Radiated Restricted Upper Band Edge Measurement CDD**

FCC ID: BCGA2461 IC: 579C-A2461	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020006-10.BCG	Test Dates: 12/15/2020-3/18/2021	EUT Type: Tablet Device	Page 71 of 79

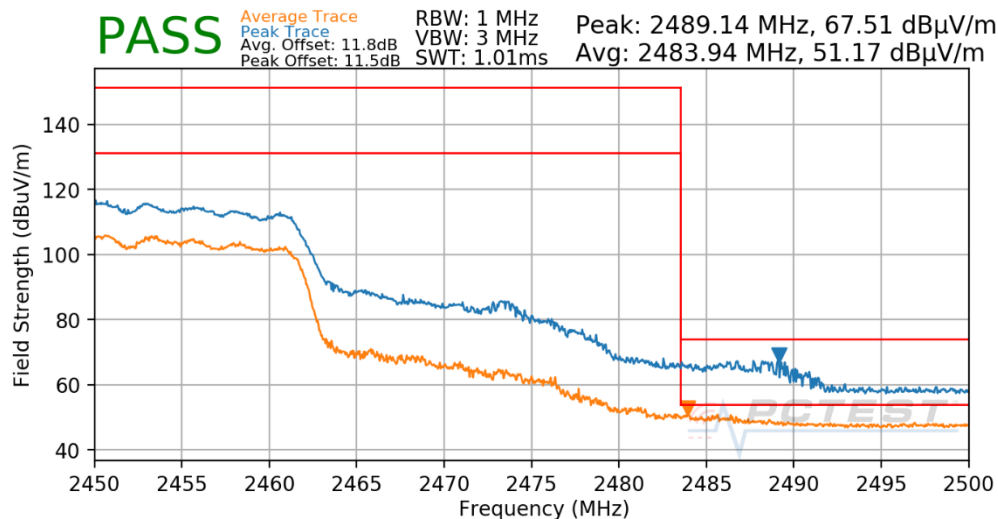


Mode: 802.11ax - SU  
Data Rate: MCS3  
Distance of Measurements: 3 Meters  
Operating Frequency: 2452MHz  
Channel: 9



**Plot 7-96. Radiated Restricted Upper Band Edge Measurement CDD**

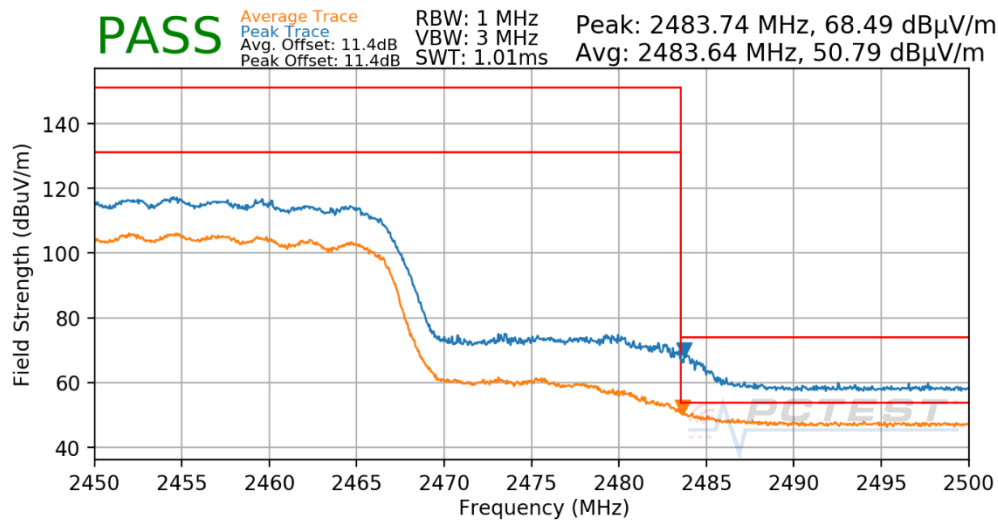
Mode: 802.11ax - SU  
Data Rate: MCS5  
Distance of Measurements: 3 Meters  
Operating Frequency: 2452MHz  
Channel: 9



**Plot 7-97. Radiated Restricted Upper Band Edge Measurement CDD**

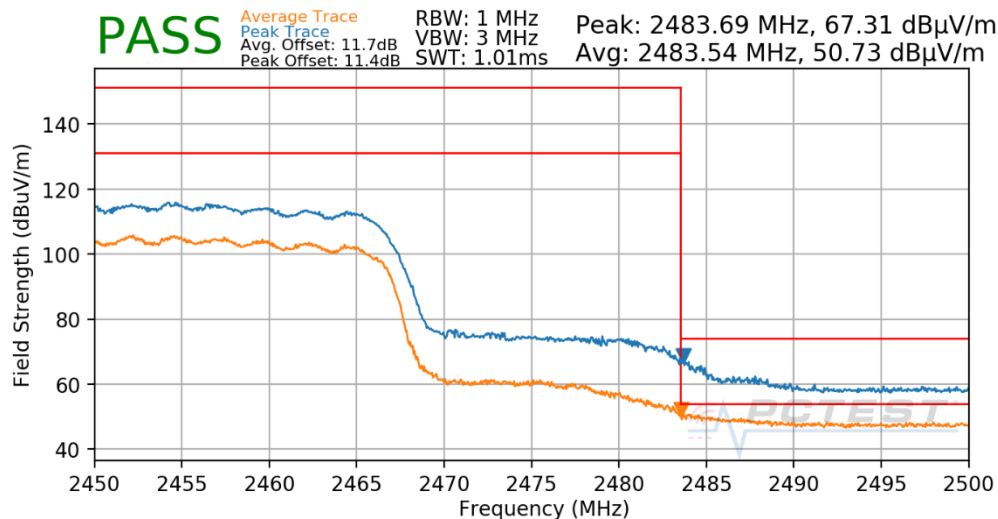
FCC ID: BCGA2461 IC: 579C-A2461	<b>PCTEST</b> Proud to be part of element	<b>DATA REFERENCE REPORT (CERTIFICATION)</b>	Approved by: Quality Manager
Test Report S/N: 1C2101020006-10.BCG	Test Dates: 12/15/2020-3/18/2021	EUT Type: Tablet Device	Page 72 of 79

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



**Plot 7-98. Radiated Restricted Upper Band Edge Measurement CDD**

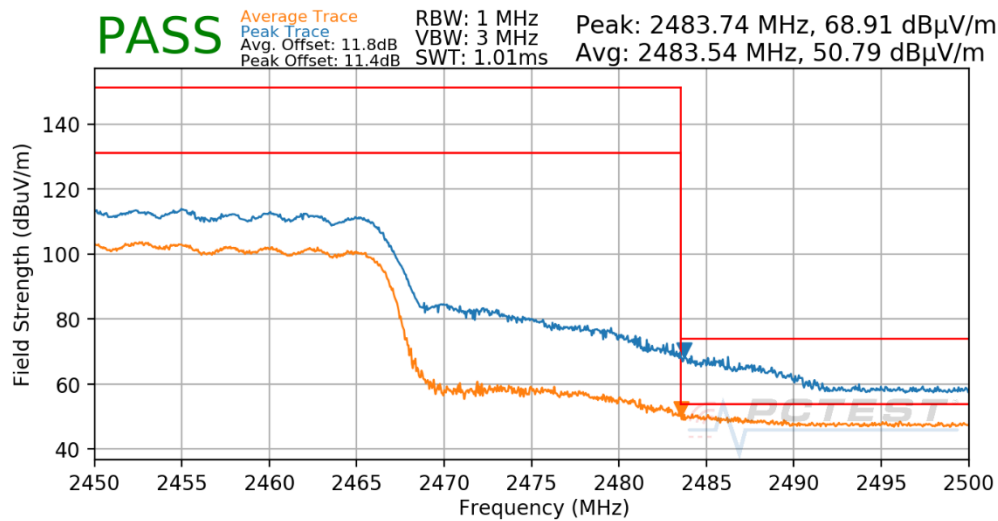
Mode: 802.11ax - SU  
Data Rate: MCS3  
Distance of Measurements: 3 Meters  
Operating Frequency: 2457MHz  
Channel: 10



**Plot 7-99. Radiated Restricted Upper Band Edge Measurement CDD**

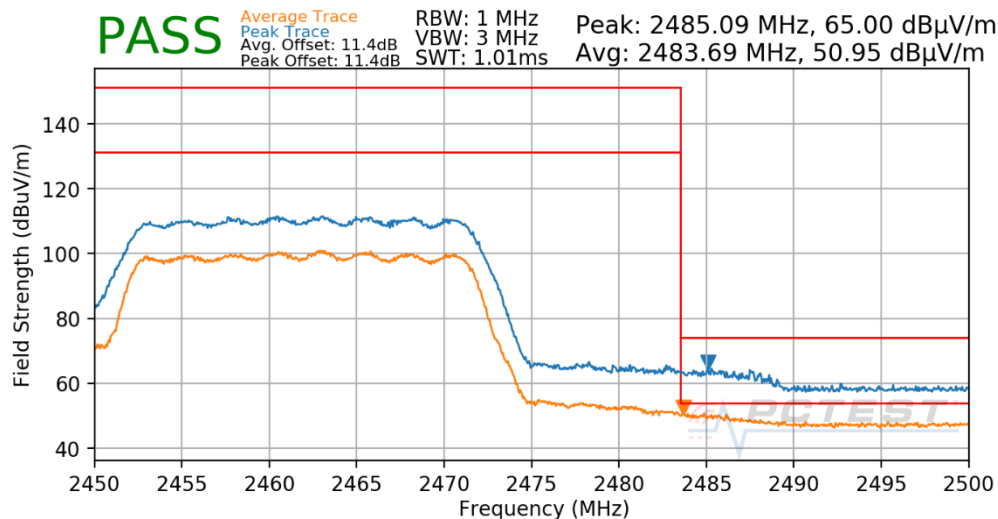
FCC ID: BCGA2461 IC: 579C-A2461	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020006-10.BCG	Test Dates: 12/15/2020-3/18/2021	EUT Type: Tablet Device	Page 73 of 79

Mode: 802.11ax - SU  
Data Rate: MCS5  
Distance of Measurements: 3 Meters  
Operating Frequency: 2457MHz  
Channel: 10



**Plot 7-100. Radiated Restricted Upper Band Edge Measurement CDD**

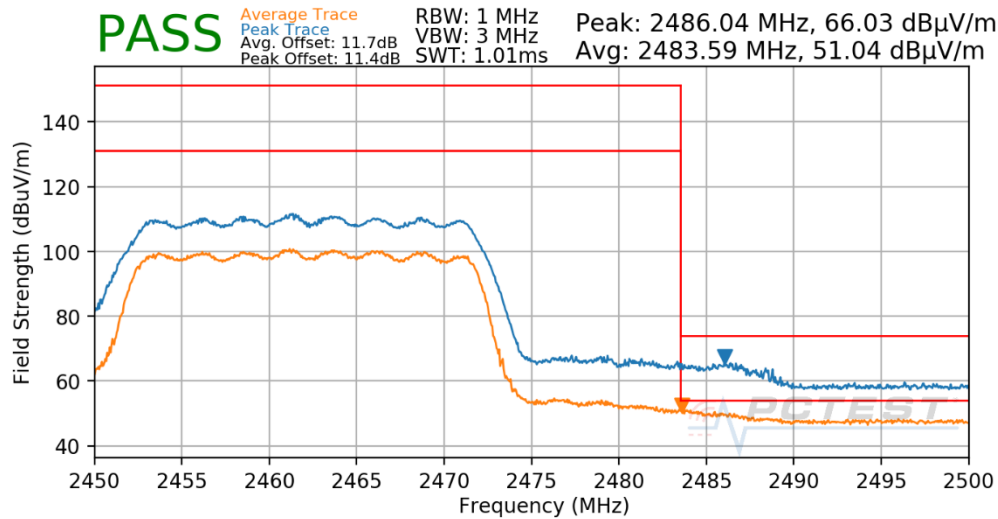
Mode: 802.11ax - SU  
Data Rate: MCS0  
Distance of Measurements: 3 Meters  
Operating Frequency: 2462MHz  
Channel: 11



**Plot 7-101. Radiated Restricted Upper Band Edge Measurement CDD**

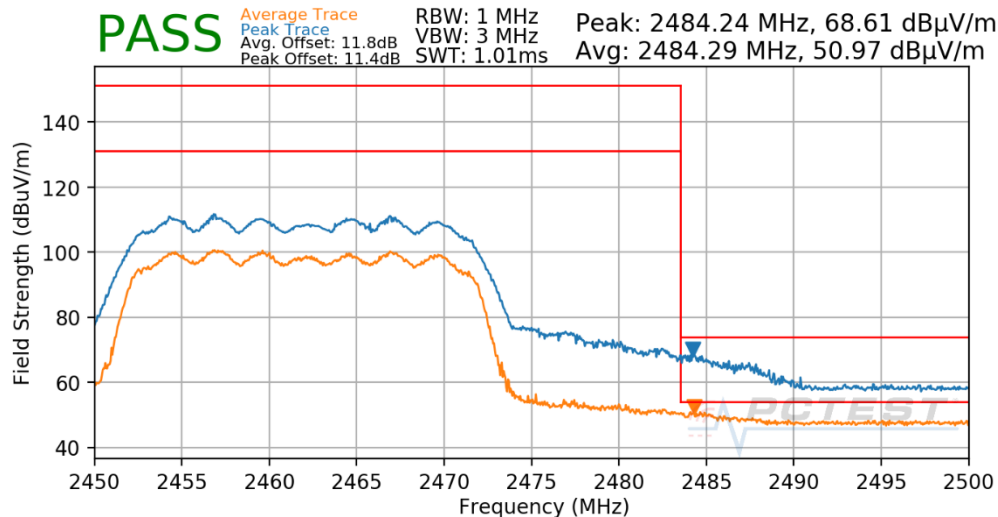
FCC ID: BCGA2461 IC: 579C-A2461	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020006-10.BCG	Test Dates: 12/15/2020-3/18/2021	EUT Type: Tablet Device	Page 74 of 79

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



**Plot 7-102. Radiated Restricted Upper Band Edge Measurement CDD**

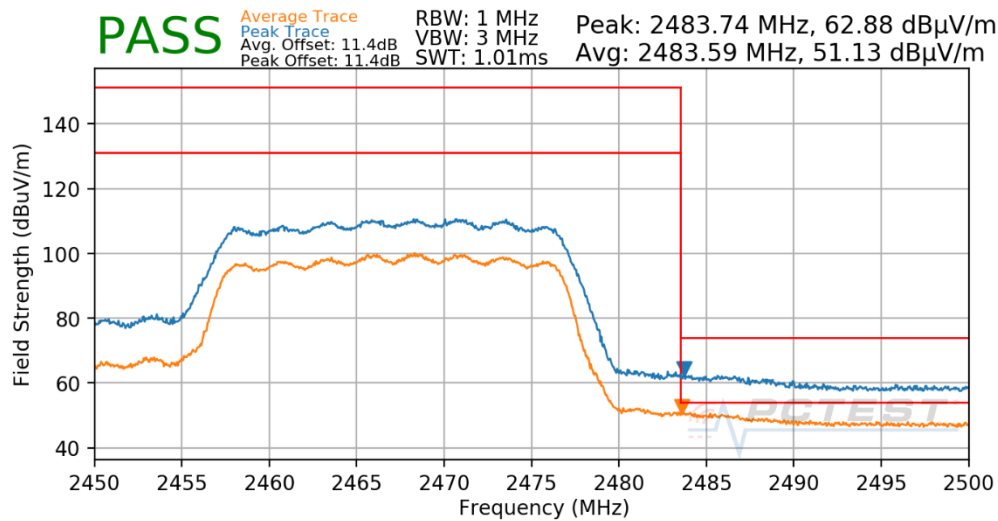
Mode: 802.11ax - SU  
Data Rate: MCS5  
Distance of Measurements: 3 Meters  
Operating Frequency: 2462MHz  
Channel: 11



**Plot 7-103. Radiated Restricted Upper Band Edge Measurement CDD**

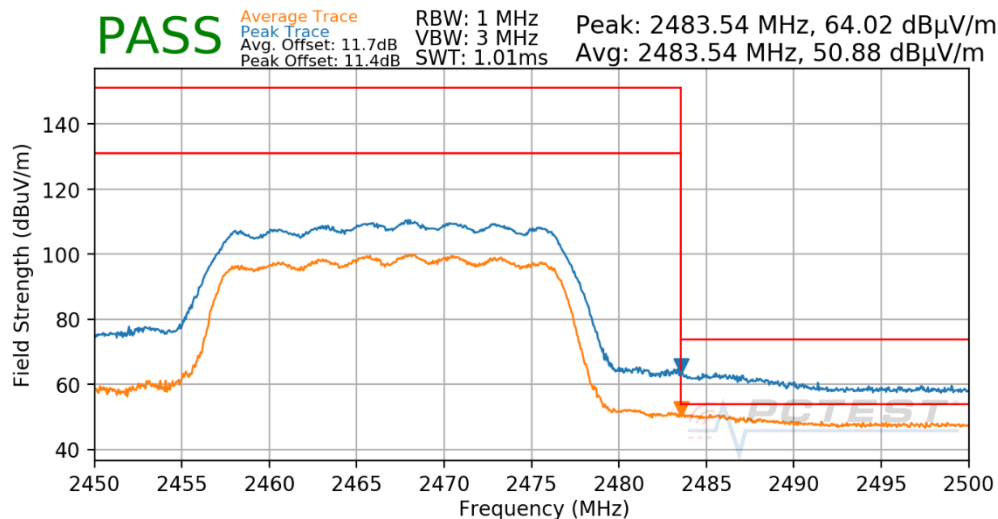
FCC ID: BCGA2461 IC: 579C-A2461	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020006-10.BCG	Test Dates: 12/15/2020-3/18/2021	EUT Type: Tablet Device	Page 75 of 79

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



**Plot 7-104. Radiated Restricted Upper Band Edge Measurement CDD**

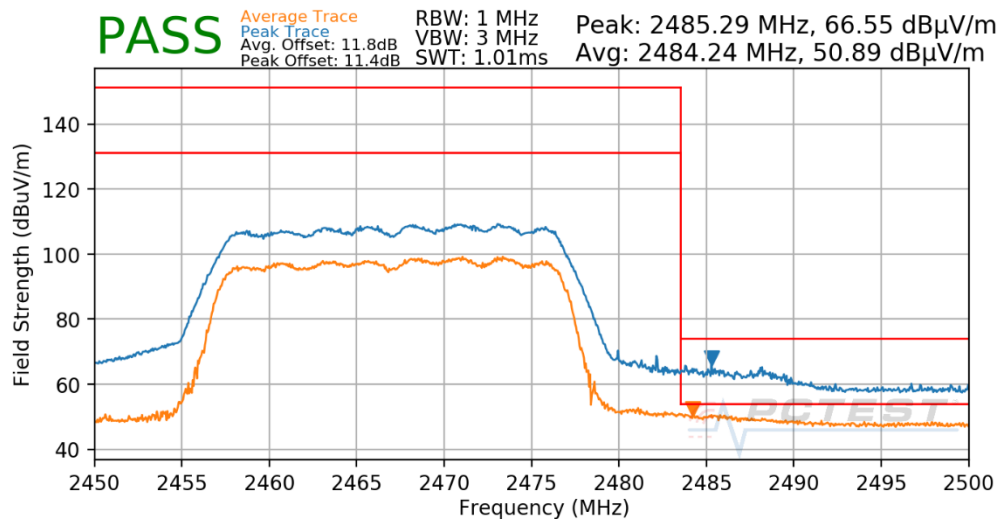
Mode: 802.11ax - SU  
Data Rate: MCS3  
Distance of Measurements: 3 Meters  
Operating Frequency: 2467MHz  
Channel: 12



**Plot 7-105. Radiated Restricted Upper Band Edge Measurement CDD**

FCC ID: BCGA2461 IC: 579C-A2461	<b>PCTEST</b> Proud to be part of element	DATA REFERENCE REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020006-10.BCG	Test Dates: 12/15/2020-3/18/2021	EUT Type: Tablet Device	Page 76 of 79

Mode: 802.11ax - SU  
Data Rate: MCS5  
Distance of Measurements: 3 Meters  
Operating Frequency: 2467MHz  
Channel: 12



**Plot 7-106. Radiated Restricted Upper Band Edge Measurement CDD**

FCC ID: BCGA2461 IC: 579C-A2461	<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> 1C2101020006-10.BCG	<b>Test Dates:</b> 12/15/2020-3/18/2021	<b>EUT Type:</b> Tablet Device	Page 77 of 79

## 8.0 CONCLUSION

The spot-check data measured for variant model **FCC ID: BCGA2461 / IC: 579C-A2461** is in tolerance with reference model FCC ID: BCGA2379 / IC: 579C-A2379 per FCC/ISED Approved Data Referencing Test Plan. Additionally, Antenna 4a radiated testing has been fully conducted and results were found in compliance with Part 15 Subpart C (15.247) of the FCC Rules and RSS-247 of the Innovation, Science and Economic Development Canada Rules.

<b>FCC ID:</b> BCGA2461 <b>IC:</b> 579C-A2461	 <b>PCTEST</b> <sup>®</sup> Proud to be part of  element	<b>DATA REFERENCE REPORT</b> (CERTIFICATION)	<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1C2101020006-10.BCG	<b>Test Dates:</b> 12/15/2020-3/18/2021	<b>EUT Type:</b> Tablet Device	Page 78 of 79

## 9.0 APPENDIX A: REFERENCE MODEL TEST REPORT

Attached is the test report (1C2101020005-09-R1.BCG) from reference model FCC ID: BCGA2379 / IC: 579C-A2379, which includes referenced data results.

<b>FCC ID:</b> BCGA2461 <b>IC:</b> 579C-A2461	 <b>PCTEST</b> <sup>®</sup> Proud to be part of  element	<b>DATA REFERENCE REPORT</b> (CERTIFICATION)	<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1C2101020006-10.BCG	<b>Test Dates:</b> 12/15/2020-3/18/2021	<b>EUT Type:</b> Tablet Device	Page 79 of 79





## MEASUREMENT 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:**

12/15/2020 - 2/20/2021

**Test Site/Location:**

PCTEST Lab. Morgan Hill, CA, USA

**Test Report Serial No.:**

1C2101020005-09-R1.BCG

**FCC ID:**

**BCGA2379**

**IC:**

**579C-A2379**

**APPLICANT:**

**Apple Inc.**

**Application Type:**

Certification

**Model/HVIN:**

A2379

**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.

This revised Test Report (S/N: 1C2101020005-09-R1.BCG) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

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

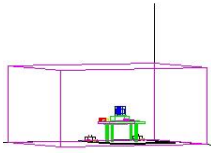


<b>FCC ID:</b> BCGA2379 <b>IC:</b> 579C-A2379	 <b>MEASUREMENT REPORT</b> <b>(CERTIFICATION)</b>		<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1C2101020005-09-R1.BCG	<b>Test Dates:</b> 12/15/2020 - 2/20/2021	<b>EUT Type:</b> Tablet Device	Page 1 of 315

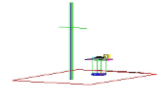
# TABLE OF CONTENTS

1.0	INTRODUCTION .....	4
1.1	Scope.....	4
1.2	PCTEST Test Location.....	4
1.3	Test Facility / Accreditations.....	4
2.0	PRODUCT INFORMATION .....	5
2.1	Equipment Description .....	5
2.2	Device Capabilities.....	5
2.3	Antenna Description.....	7
2.4	Test Support Equipment.....	7
2.5	Test Configuration.....	7
2.6	Software and Firmware .....	8
2.7	EMI Suppression Device(s)/Modifications.....	8
3.0	DESCRIPTION OF TESTS .....	9
3.1	Evaluation Procedure .....	9
3.2	AC Line Conducted Emissions .....	9
3.3	Radiated Emissions.....	10
3.4	Environmental Conditions.....	10
4.0	ANTENNA REQUIREMENTS .....	11
5.0	MEASUREMENT UNCERTAINTY .....	12
6.0	TEST EQUIPMENT CALIBRATION DATA.....	13
7.0	TEST RESULTS .....	14
7.1	Summary.....	14
7.2	6dB Bandwidth Measurement .....	15
7.3	Output Power Measurement.....	50
7.3.1	Average Output Power Measurement.....	51
7.3.2	Peak Output Power Measurement .....	55
7.4	Power Spectral Density .....	60
7.5	Conducted Authorized Band Edge .....	125
7.6	Conducted Spurious Emissions.....	200
7.7	Radiated Spurious Emissions – Above 1 GHz .....	208
7.7.1	Antenna 4a Radiated Spurious Emission Measurements.....	211
7.7.2	Antenna 2a Radiated Spurious Emission Measurements.....	217
7.7.3	CDD Radiated Spurious Emission Measurements .....	223
7.7.4	Antenna 4a Radiated Restricted Band Edge Measurements.....	231
7.7.5	Antenna 2a Radiated Restricted Band Edge Measurements.....	256
7.7.6	CDD Radiated Restricted Band Edge Measurements .....	281
7.8	Radiated Spurious Emissions – Below 1GHz .....	304
7.9	AC Line-Conducted Emissions Measurement.....	309
8.0	CONCLUSION.....	315

FCC ID: BCGA2379 IC: 579C-A2379	 <b>PCTEST</b> Proud to be part of 	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1C2101020005-09-R1.BCG	<b>Test Dates:</b> 12/15/2020 - 2/20/2021	<b>EUT Type:</b> Tablet Device	Page 2 of 315



# MEASUREMENT REPORT



Mode	Tx Frequency (MHz)	Antenna 4a				Antenna 2a			
		Avg Conducted		Peak Conducted		Avg Conducted		Peak Conducted	
		Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)
802.11g	2412 - 2472	79.433	19.00	322.849	25.09	79.433	19.00	301.995	24.80
802.11n	2412 - 2472	79.068	18.98	318.420	25.03	79.250	18.99	324.340	25.11
802.11ax-SU	2412 - 2467	79.250	18.99	330.370	25.19	79.433	19.00	327.341	25.15

## EUT Overview SISO (Low Data Rate)

Mode	Tx Frequency (MHz)	Antenna 4a				Antenna 2a				CDD			
		Avg Conducted		Peak Conducted		Avg Conducted		Peak Conducted		Avg Conducted		Peak Conducted	
		Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)
802.11g	2412 - 2472	70.146	18.46	285.102	24.55	70.795	18.50	277.971	24.44	140.929	21.49	563.638	27.51
802.11n	2412 - 2472	70.632	18.49	287.078	24.58	70.795	18.50	280.543	24.48	140.605	21.48	567.545	27.54
802.11ax-SU	2412 - 2467	67.764	18.31	463.447	26.66	70.632	18.49	443.609	26.47	138.357	21.41	905.733	29.57

## EUT Overview CDD (Low Data Rate)

Mode	Tx Frequency (MHz)	Antenna 4a				Antenna 2a			
		Avg Conducted		Peak Conducted		Avg Conducted		Peak Conducted	
		Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)
802.11g	2412 - 2472	70.795	18.50	334.195	25.24	70.795	18.50	319.154	25.04
802.11n	2412 - 2472	70.795	18.50	344.350	25.37	69.663	18.43	335.738	25.26
802.11ax-SU	2412 - 2467	70.795	18.50	361.410	25.58	70.795	18.50	355.631	25.51

## EUT Overview SISO (Mid Data Rate)

Mode	Tx Frequency (MHz)	Antenna 4a				Antenna 2a				CDD			
		Avg Conducted		Peak Conducted		Avg Conducted		Peak Conducted		Avg Conducted		Peak Conducted	
		Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)
802.11g	2412 - 2472	62.661	17.97	315.500	24.99	61.518	17.89	308.319	24.89	123.880	20.93	623.735	27.95
802.11n	2412 - 2472	62.373	17.95	314.051	24.97	61.376	17.88	309.742	24.91	123.880	20.93	623.735	27.95
802.11ax-SU	2412 - 2467	59.566	17.75	319.154	25.04	60.534	17.82	310.456	24.92	120.226	20.80	629.506	27.99

## EUT Overview CDD (Mid Data Rate)

Mode	Tx Frequency (MHz)	Antenna 4a				Antenna 2a			
		Avg Conducted		Peak Conducted		Avg Conducted		Peak Conducted	
		Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)
802.11b	2412 - 2462	79.250	18.99	151.705	21.81	79.068	18.98	151.008	21.79
802.11g	2412 - 2472	63.096	18.00	421.697	26.25	62.951	17.99	409.261	26.12
802.11n	2412 - 2472	61.094	17.86	384.592	25.85	61.094	17.86	386.367	25.87
802.11ax-SU	2412 - 2467	62.373	17.95	389.942	25.91	62.517	17.96	386.367	25.87

## EUT Overview SISO (High Data Rate)

Mode	Tx Frequency (MHz)	Antenna 4a				Antenna 2a				CDD			
		Avg Conducted		Peak Conducted		Avg Conducted		Peak Conducted		Avg Conducted		Peak Conducted	
		Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)
802.11g	2412 - 2472	56.234	17.50	375.837	25.75	56.234	17.50	376.704	25.76	111.429	20.47	743.019	28.71
802.11n	2412 - 2472	55.590	17.45	368.978	25.67	56.234	17.50	370.681	25.69	111.944	20.49	739.605	28.69
802.11ax-SU	2412 - 2467	56.234	17.50	314.051	24.97	56.234	17.50	303.389	24.82	112.460	20.51	618.016	27.91

## EUT Overview CDD (High Data Rate)

FCC ID: BCGA2379 IC: 579C-A2379	 <b>PCTEST</b> Proud to be part of 	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1C2101020005-09-R1.BCG	<b>Test Dates:</b> 12/15/2020 - 2/20/2021	<b>EUT Type:</b> Tablet Device	Page 3 of 315

## 1.0 INTRODUCTION

### 1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada.

### 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 ISSED Standards (RSS).
- PCTEST facility is a registered (22831) test laboratory with the site description on file with ISSED.

<b>FCC ID:</b> BCGA2379 <b>IC:</b> 579C-A2379	 <b>PCTEST</b> Proud to be part of  element	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1C2101020005-09-R1.BCG	<b>Test Dates:</b> 12/15/2020 - 2/20/2021	<b>EUT Type:</b> Tablet Device	Page 4 of 315

## 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Apple Tablet Device FCC ID: BCGA2379** and **IC: 579C-A2379**. The test data contained in this report pertains only to the emissions due to the EUT's WLAN (DTS) transmitter.

**Test Device Serial No.:** H4MTX492NT, NN63X069PP, JR9GHQH6LP, KRF23LVQ2T

### 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/FR2), 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	98.8	-
	g (Low Data Rate)	99.0	99.0	98.8
	g (Mid Data Rate)	97.2	97.2	97.2
	g (High Data Rate)	92.6	92.6	90.9
	n (Low Data Rate)	98.8	98.8	98.0
	n (Mid Data Rate)	95.4	96.0	92.7
	n (High Data Rate)	92.0	91.5	86.9
	11ax - SU (Low Data Rate)	98.0	98.7	98.0
	11ax - SU (Mid Data Rate)	93.8	94.6	94.8
	11ax - SU (High Data Rate)	91.3	91.7	90.2

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

FCC ID: BCGA2379 IC: 579C-A2379	 <b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1C2101020005-09-R1.BCG	Test Dates: 12/15/2020 - 2/20/2021	EUT Type: Tablet Device	Page 5 of 315

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)  
8/8.6, 16/17.2, 24/25.8, 33/34.4, 49/51.6, 65/68.8, 73/77.4, 81/86.0, 98/103.2,  
108/114.7 (11ax)

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

**Note:**

All the above simultaneous transmission configurations have been tested and the worst case configuration was found to be config 7 and reported in UNII 802.11ax (OFDMA) and FCC part 27b test reports.

FCC ID: BCGA2379 IC: 579C-A2379	 <b>PCTEST</b> Proud to be part of 	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1C2101020005-09-R1.BCG	<b>Test Dates:</b> 12/15/2020 - 2/20/2021	<b>EUT Type:</b> Tablet Device	Page 6 of 315

## 2.3 Antenna Description

Following antenna gains provided by manufacturer were used for the testing.

Frequency [GHz]	Antenna Gain (dBi)	
	Antenna 4a	Antenna 2a
2.4	2.0	3.0

**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**

## 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 testing and AC line conducted testing. See Sections 3.2 for AC line conducted emissions test setups, Section 3.3 for radiated emissions test setups, and, 7.2, 7.3, 7.4, 7.5, and 7.6 for antenna port conducted 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.

FCC ID: BCGA2379 IC: 579C-A2379	 <b>MEASUREMENT REPORT (CERTIFICATION)</b>	Approved by: Quality Manager
Test Report S/N: 1C2101020005-09-R1.BCG	Test Dates: 12/15/2020 - 2/20/2021	EUT Type: Tablet Device
Page 7 of 315		

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

For 802.11ax-RU test results, see separate WLAN (OFDMA) report, 1C2101020005-10.BCG

## 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.

<b>FCC ID:</b> BCGA2379 <b>IC:</b> 579C-A2379	 <b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1C2101020005-09-R1.BCG	<b>Test Dates:</b> 12/15/2020 - 2/20/2021	<b>EUT Type:</b> Tablet Device	Page 8 of 315



## 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 AC Line Conducted Emissions

The line-conducted facility is located inside a 7m x 3.66m x 2.7m shielded enclosure. The shielded enclosure is manufactured by AP Americas. The shielding effectiveness of the shielded room is in accordance with MIL-Std-285 or NSA 65-6. A 1m x 1.5m wooden table 80cm high is placed 40cm away from the vertical wall and 80cm away from the sidewall of the shielded room. Two 10kHz-30MHz, 50Ω/50μH Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room floor. Power to the LISNs is filtered by external high-current high-insertion loss power line filters. The external power line filter is EPCOS 2X60A Power Line Filter (100dB Attenuation, 14kHz-18GHz) and the two EPCOs 2X48A filters (100dB Minimum Insertion Loss, 14kHz - 10GHz). These filters attenuate ambient signal noise from entering the measurement lines. These filters are also bonded to the shielded enclosure.

The EUT is powered from one LISN and the support equipment is powered from the second LISN. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and this supply line(s) will be connected to the second LISN. All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference groundplane. Power cables for support equipment were routed down to the second LISN while ensuring that the cables were not draped over the second LISN.

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 RF output of the LISN was connected to the spectrum analyzer and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The spectrum was scanned from 150kHz to 30MHz with a spectrum analyzer. The detector function was set to peak mode for exploratory measurements while the bandwidth of the analyzer was set to 10kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions is used for final measurements on the same test site. The analyzer is set to CISPR quasi-peak and average detectors with a 9kHz resolution bandwidth for final measurements.

Line conducted emissions test results are shown in Section 7.9. Automated test software was used to perform the AC line conducted emissions testing. Automated measurement software utilized is Rohde & Schwarz EMC32, Version 10.50.40.

FCC ID: BCGA2379 IC: 579C-A2379	 <b>PCTEST</b> Proud to be part of 	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1C2101020005-09-R1.BCG	<b>Test Dates:</b> 12/15/2020 - 2/20/2021	<b>EUT Type:</b> Tablet Device	Page 9 of 315

### 3.3 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.

### 3.4 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).

FCC ID: BCGA2379 IC: 579C-A2379	 <b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1C2101020005-09-R1.BCG	<b>Test Dates:</b> 12/15/2020 - 2/20/2021	<b>EUT Type:</b> Tablet Device	Page 10 of 315

## 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 antennas of the EUT are **permanently attached**.
- There are no provisions for connections to an external antenna.

### Conclusion:

The EUT unit complies with the requirement of §15.203.

FCC ID: BCGA2379 IC: 579C-A2379	 <b>PCTEST</b> Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020005-09-R1.BCG	Test Dates: 12/15/2020 - 2/20/2021	EUT Type: Tablet Device	Page 11 of 315

## 5.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013. All measurement uncertainty values are shown with a coverage factor of  $k = 2$  to indicate a 95% level of confidence. The measurement 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)
Conducted Bench Top Measurements	1.65
Line Conducted Disturbance	2.75
Radiated Disturbance (<30MHz)	4.06
Radiated Disturbance (30MHz - 1GHz)	4.30
Radiated Disturbance (1 - 18GHz)	4.78
Radiated Disturbance (>18GHz)	4.79

FCC ID: BCGA2379 IC: 579C-A2379	 <b>MEASUREMENT REPORT (CERTIFICATION)</b>	Approved by: Quality Manager
Test Report S/N: 1C2101020005-09-R1.BCG	Test Dates: 12/15/2020 - 2/20/2021	EUT Type: Tablet Device
		Page 12 of 315

## 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	3Hz-44GHz PXA Signal Analyzer	3/4/2020	Annual	3/4/2021	MY49430244
Anritsu	ML2496A	Power Meter	4/9/2020	Annual	4/9/2021	2002005
Anritsu	MA2411B	Pulse Power Sensor	3/10/2020	Annual	3/10/2021	1911105
Anritsu	MA2411B	Pulse Power Sensor	3/10/2020	Annual	3/10/2021	1911106
ATM	180-442A-KF	20dB Nominal Gain Horn Antenna	8/11/2020	Annual	8/11/2021	T058701-01
COM-POWER	LIN-120A	LISN	3/4/2020	Annual	3/4/2021	241297
Rohde & Schwarz	TS-PR8	Pre-Amplifier (30MHz - 8GHz)	3/4/2020	Annual	3/4/2021	102325
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.

FCC ID: BCGA2379 IC: 579C-A2379	 <b>MEASUREMENT REPORT (CERTIFICATION)</b>	Approved by: Quality Manager
Test Report S/N: 1C2101020005-09-R1.BCG	Test Dates: 12/15/2020 - 2/20/2021	EUT Type: Tablet Device
		Page 13 of 315

## 7.0 TEST RESULTS

### 7.1 Summary

Company Name: Apple Inc.

FCC ID: BCGA2379

IC: 579C-A2379

FCC Classification: Digital Transmission System (DTS)

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.247(a)(2)	RSS-247 [5.2]	6dB Bandwidth	> 500kHz	CONDUCTED	PASS	Section 7.2
2.1049	RSS-Gen [6.7]	Occupied Bandwidth	N/A		N/A	Section 7.2
15.247(b)(3)	RSS-247 [5.4]	Transmitter Output Power	< 1 Watt		PASS	Sections 7.3
15.247(e)	RSS-247 [5.2]	Transmitter Power Spectral Density	< 8dBm / 3kHz Band		PASS	Section 7.4
15.247(d)	RSS-247 [5.5]	Band Edge / Out-of-Band Emissions	≥ 20dBc		PASS	Sections 7.5, 7.6
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 7.7, 7.8
15.207	RSS-Gen [8.8]	AC Conducted Emissions 150kHz – 30MHz	< FCC 15.207 limits (RSS-Gen[8.8])	AC LINE CONDUCTED	PASS	Section 7.9

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

#### Notes:

- 1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables and attenuators.
- 4) For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST “WLAN Automation,” Version 1.2.
- 5) 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.

FCC ID: BCGA2379 IC: 579C-A2379	 <b>MEASUREMENT REPORT (CERTIFICATION)</b>	Approved by: Quality Manager
Test Report S/N: 1C2101020005-09-R1.BCG	Test Dates: 12/15/2020 - 2/20/2021	EUT Type: Tablet Device
Page 14 of 315		

## 7.2 6dB Bandwidth Measurement

§2.1049; §15.247(a.2); RSS-247 [5.2]

### Test Overview and Limit

The bandwidth at 6dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the transmitter antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated and the worst case configuration results are reported in this section.

***The minimum permissible 6dB bandwidth is 500 kHz.***

### Test Procedure Used

ANSI C63.10-2013 – Section 11.8.2 Option 2  
KDB 558074 D01 v05r02 – Section 8.2

### Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to  $X = 6$ . The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 100kHz
3. VBW  $\geq 3 \times$  RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize

### Test Setup

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



**Figure 7-1. Test Instrument & Measurement Setup**

### Test Notes

None.

FCC ID: BCGA2379 IC: 579C-A2379	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020005-09-R1.BCG	Test Dates: 12/15/2020 - 2/20/2021	EUT Type: Tablet Device	Page 15 of 315

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## Antenna 4a 6 dB Bandwidth Measurements

Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	99% Occupied Bandwidth [MHz]	6dB Bandwidth [MHz]	Minimum 6dB Bandwidth [MHz]	Pass / Fail
2412	1	g	6	16.679	15.860	0.500	Pass
2437	6	g	6	16.450	15.790	0.500	Pass
2462	11	g	6	16.522	15.460	0.500	Pass
2412	1	n	6.5/7.2 (MCS0)	17.712	17.310	0.500	Pass
2437	6	n	6.5/7.2 (MCS0)	17.629	16.970	0.500	Pass
2462	11	n	6.5/7.2 (MCS0)	17.702	16.670	0.500	Pass
2412	1	ax-SU	8/8.6 (MCS0)	18.938	18.340	0.500	Pass
2437	6	ax-SU	8/8.6 (MCS0)	18.943	18.810	0.500	Pass
2462	11	ax-SU	8/8.6 (MCS0)	18.876	18.520	0.500	Pass

**Table 7-2. Conducted Bandwidth Measurements Antenna 4a (Low Data Rate)**

Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	99% Occupied Bandwidth [MHz]	6dB Bandwidth [MHz]	Minimum 6dB Bandwidth [MHz]	Pass / Fail
2412	1	g	18	16.555	16.070	0.500	Pass
2437	6	g	18	16.423	16.010	0.500	Pass
2462	11	g	18	16.457	15.220	0.500	Pass
2412	1	n	26/28.9 (MCS3)	17.659	17.690	0.500	Pass
2437	6	n	26/28.9 (MCS3)	17.640	17.750	0.500	Pass
2462	11	n	26/28.9 (MCS3)	17.625	17.710	0.500	Pass
2412	1	ax-SU	33/34.4 (MCS3)	18.897	19.030	0.500	Pass
2437	6	ax-SU	33/34.4 (MCS3)	18.869	19.040	0.500	Pass
2462	11	ax-SU	33/34.4 (MCS3)	18.858	18.920	0.500	Pass

**Table 7-3. Conducted Bandwidth Measurements Antenna 4a (Mid Data Rate)**

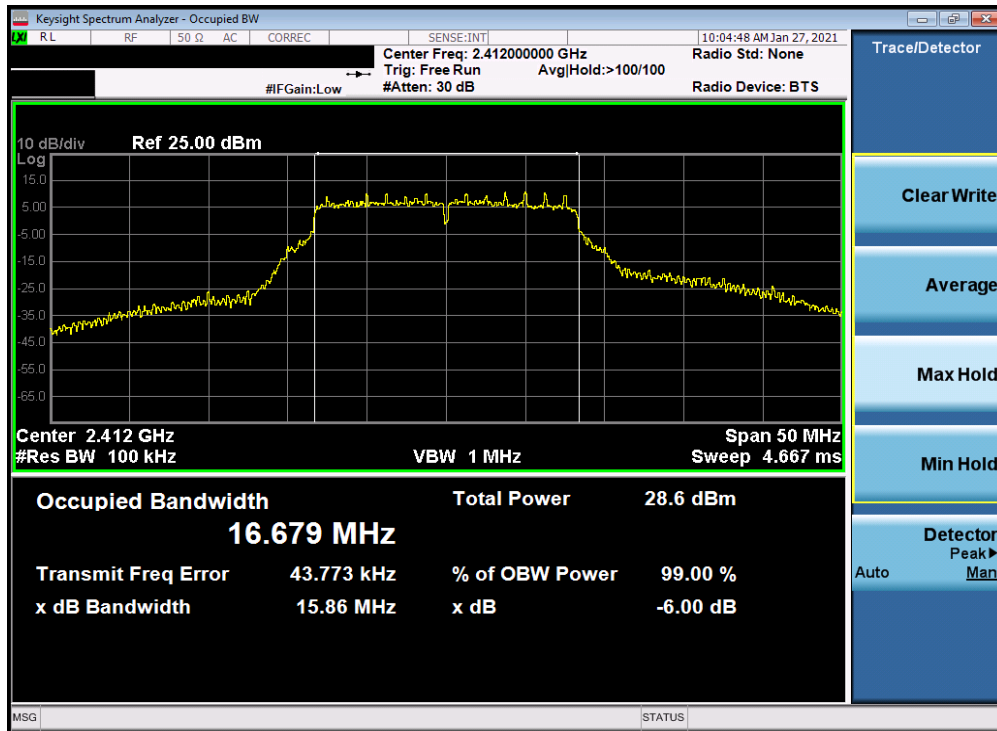
FCC ID: BCGA2379 IC: 579C-A2379	 <b>PCTEST</b> Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020005-09-R1.BCG	Test Dates: 12/15/2020 - 2/20/2021	EUT Type: Tablet Device	Page 16 of 315



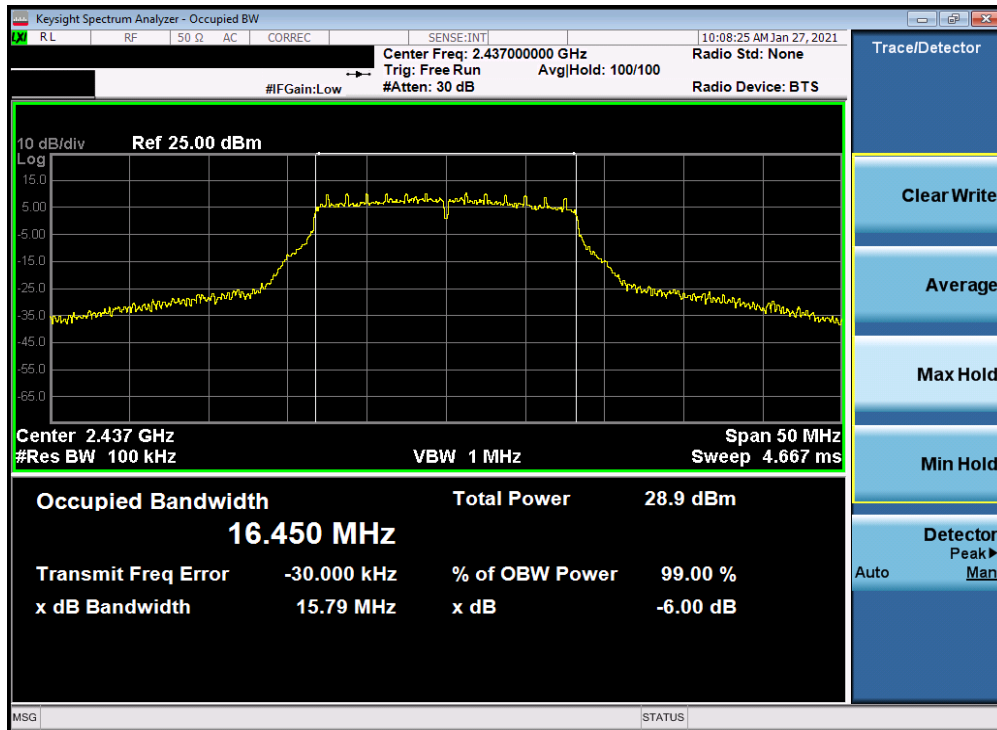
Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	99% Occupied Bandwidth [MHz]	6dB Bandwidth [MHz]	Minimum 6dB Bandwidth [MHz]	Pass / Fail
2412	1	b	11	12.748	8.507	0.500	Pass
2437	6	b	11	12.648	7.644	0.500	Pass
2462	11	b	11	12.692	8.053	0.500	Pass
2412	1	g	54	16.554	16.470	0.500	Pass
2437	6	g	54	16.499	16.470	0.500	Pass
2462	11	g	54	16.502	16.430	0.500	Pass
2412	1	n	65/72.2 (MCS7)	20.435	17.720	0.500	Pass
2437	6	n	65/72.2 (MCS7)	17.958	17.670	0.500	Pass
2462	11	n	65/72.2 (MCS7)	18.088	17.670	0.500	Pass
2412	1	ax-SU	65/68.8 (MCS5)	18.935	19.100	0.500	Pass
2437	6	ax-SU	65/68.8 (MCS5)	18.952	19.000	0.500	Pass
2462	11	ax-SU	65/68.8 (MCS5)	18.929	19.090	0.500	Pass

**Table 7-4. Conducted Bandwidth Measurements Antenna 4a (High Data Rate)**

FCC ID: BCGA2379 IC: 579C-A2379	 <b>PCTEST</b> Proud to be part of 	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1C2101020005-09-R1.BCG	<b>Test Dates:</b> 12/15/2020 - 2/20/2021	<b>EUT Type:</b> Tablet Device	Page 17 of 315

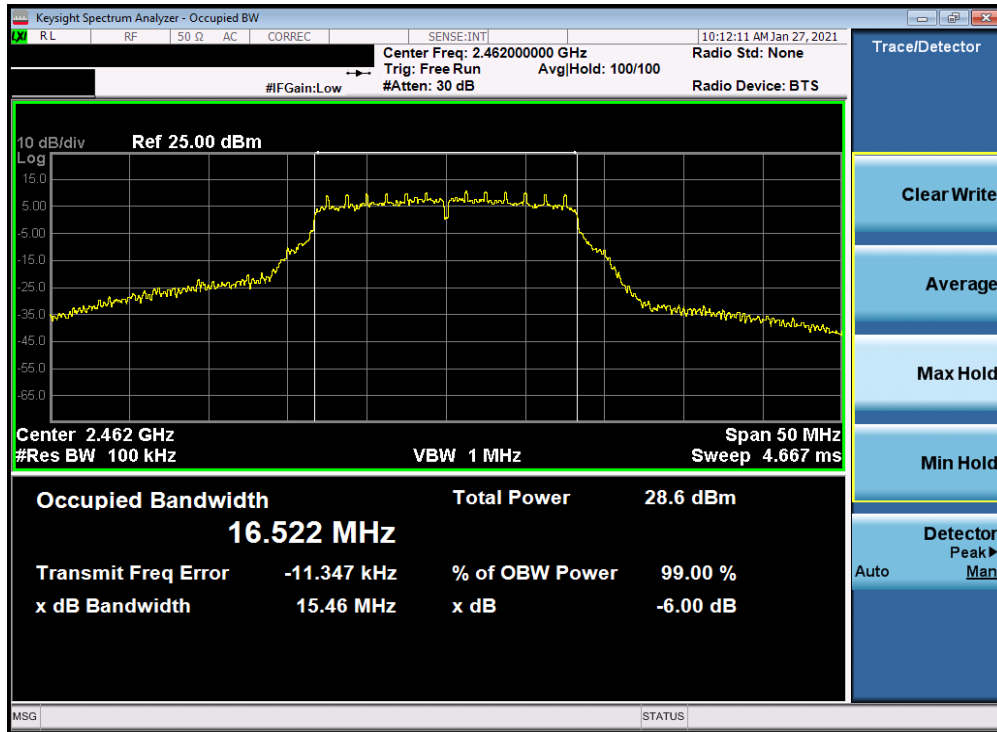


Plot 7-1. 6dB Bandwidth Plot Antenna 4a (802.11g – Ch. 1) – 6Mbps

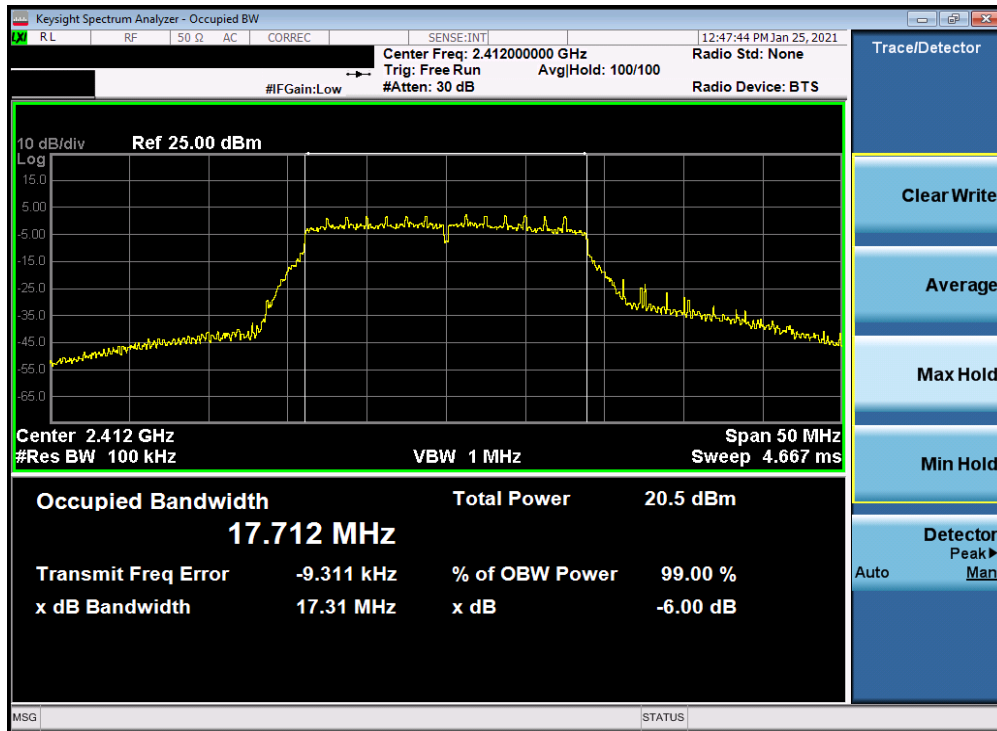


Plot 7-2. 6dB Bandwidth Plot Antenna 4a (802.11g – Ch. 6) – 6Mbps

FCC ID: BCGA2379 IC: 579C-A2379	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020005-09-R1.BCG	Test Dates: 12/15/2020 - 2/20/2021	EUT Type: Tablet Device	Page 18 of 315

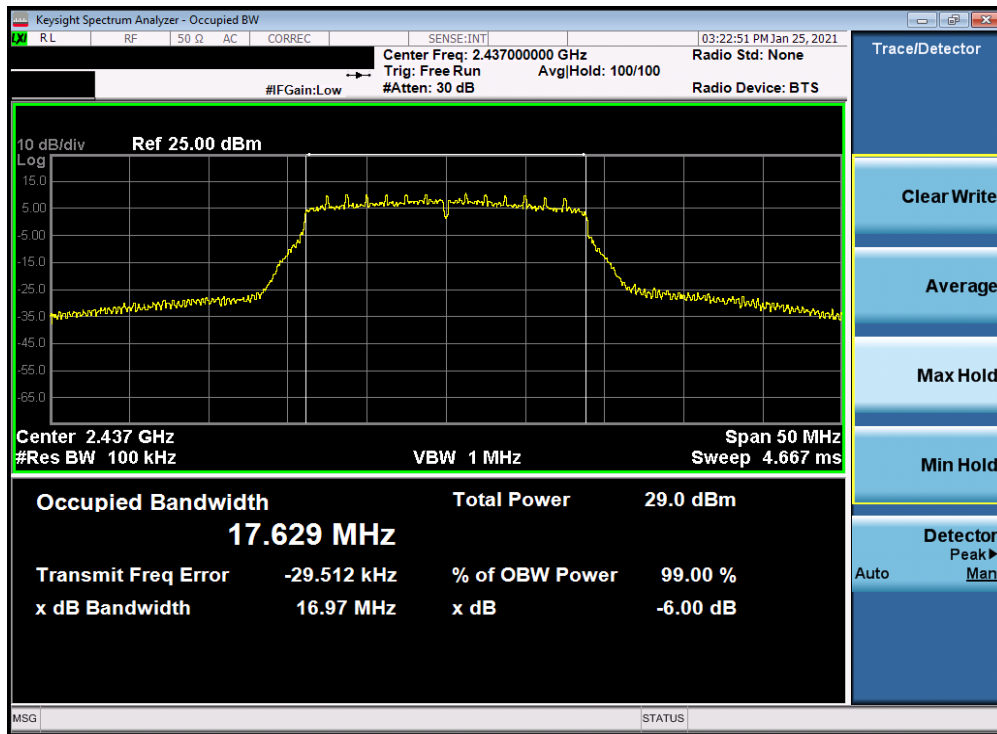


Plot 7-3. 6dB Bandwidth Plot Antenna 4a (802.11g – Ch. 11) – 6Mbps

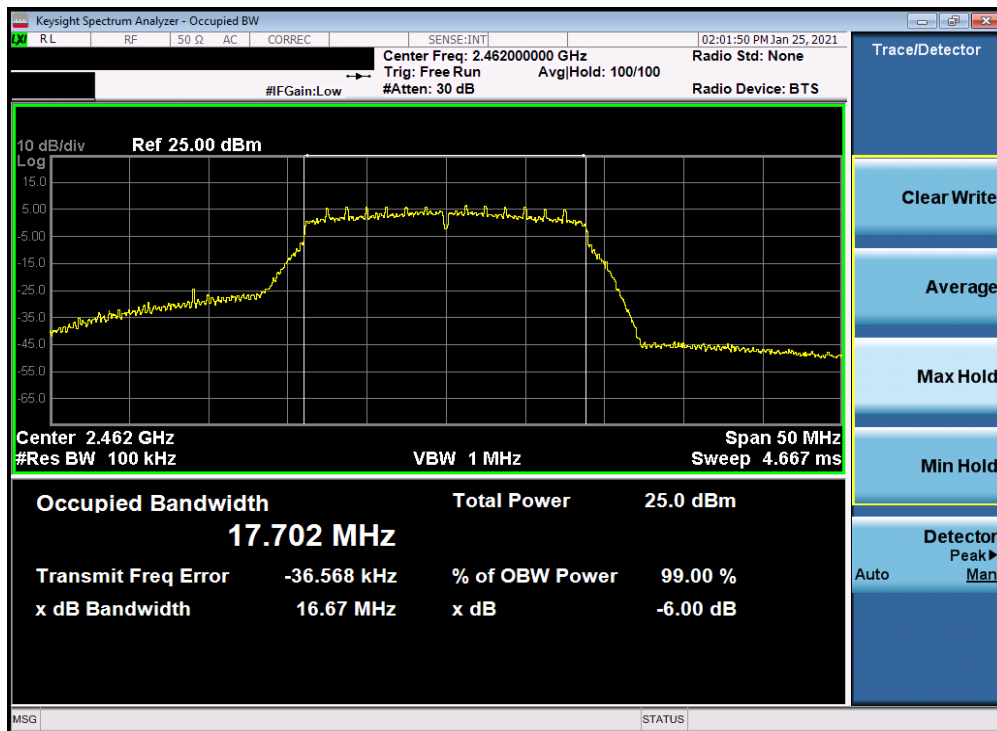


Plot 7-4. 6dB Bandwidth Plot Antenna 4a (802.11n (2.4GHz) – Ch. 1) – MCS0

FCC ID: BCGA2379 IC: 579C-A2379	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020005-09-R1.BCG	Test Dates: 12/15/2020 - 2/20/2021	EUT Type: Tablet Device	Page 19 of 315

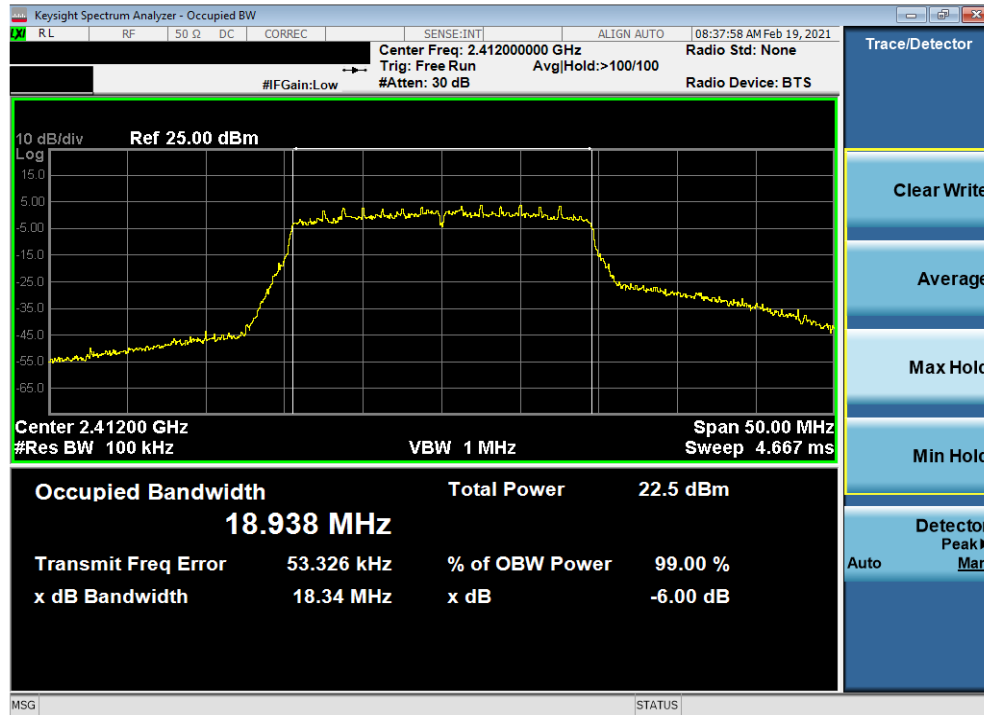


Plot 7-5. 6dB Bandwidth Plot Antenna 4a (802.11n (2.4GHz) – Ch. 6) – MCS0

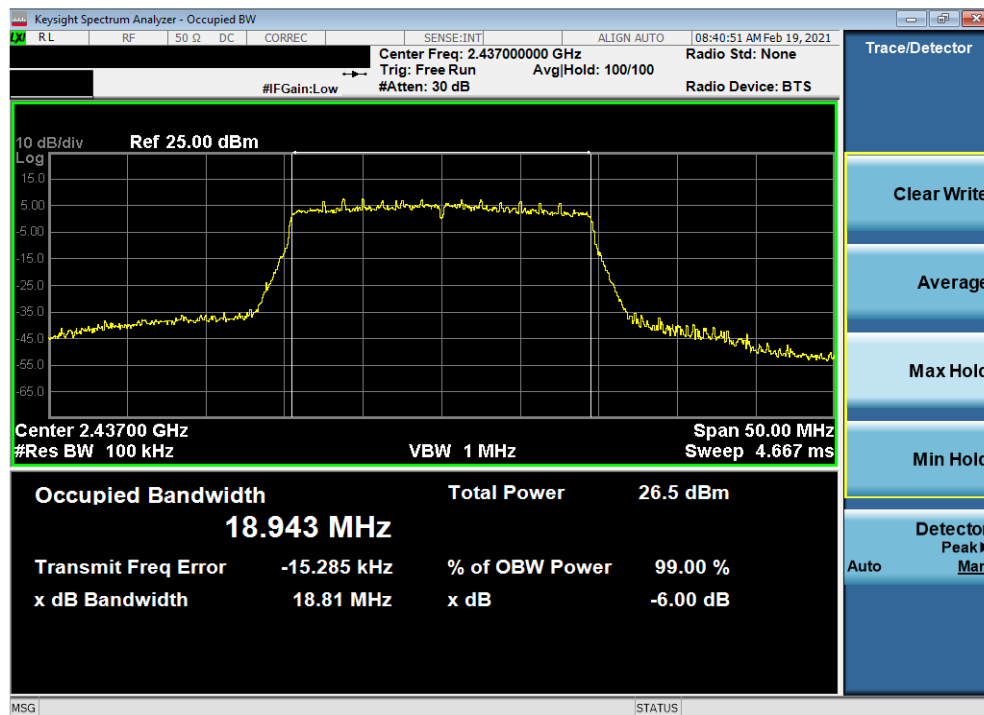


Plot 7-6. 6dB Bandwidth Plot Antenna 4a (802.11n (2.4GHz) – Ch. 11) – MCS0

FCC ID: BCGA2379 IC: 579C-A2379		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020005-09-R1.BCG	Test Dates: 12/15/2020 - 2/20/2021	EUT Type: Tablet Device	Page 20 of 315

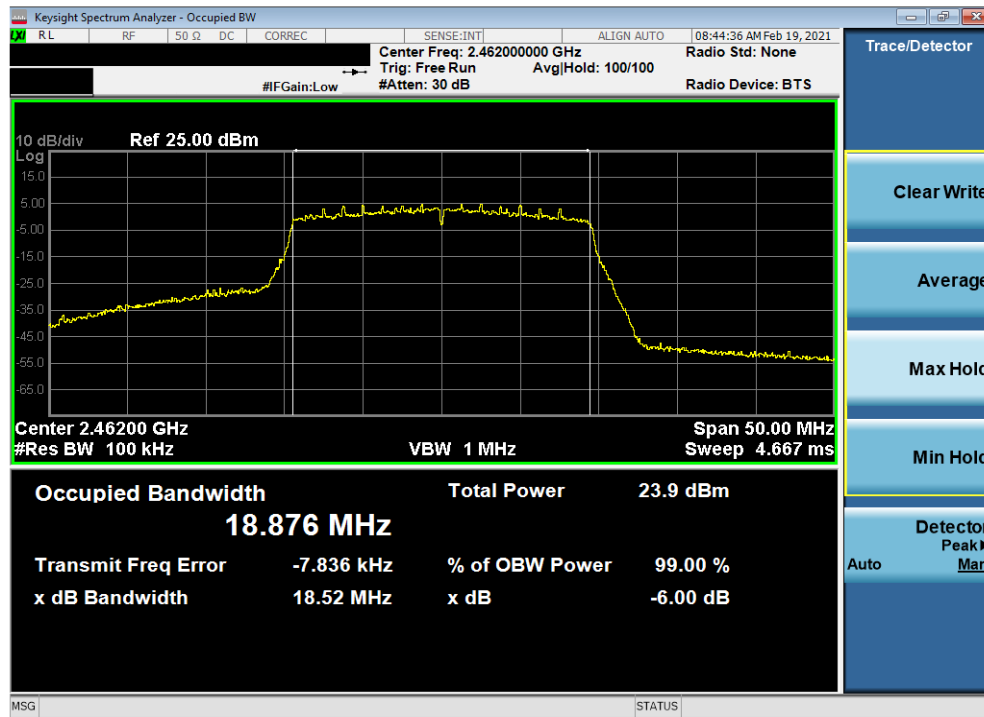


Plot 7-7. 6dB Bandwidth Plot Antenna 4a (802.11ax (SU - 2.4GHz) – Ch. 1) – MCS0

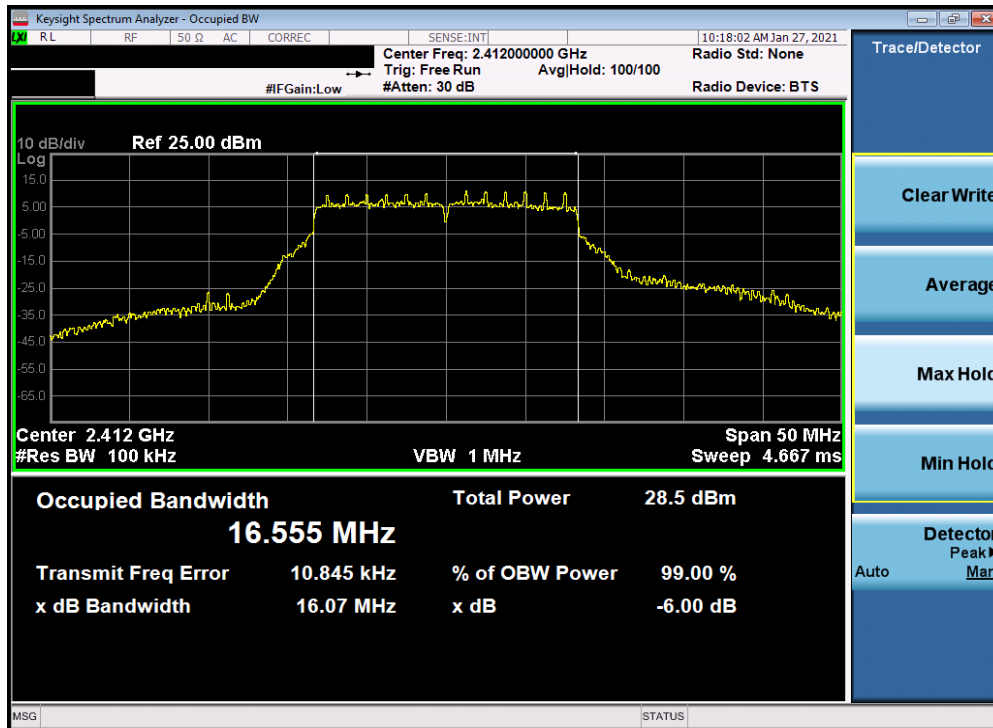


Plot 7-8. 6dB Bandwidth Plot Antenna 4a (802.11ax (SU - 2.4GHz) – Ch. 6) – MCS0

FCC ID: BCGA2379 IC: 579C-A2379		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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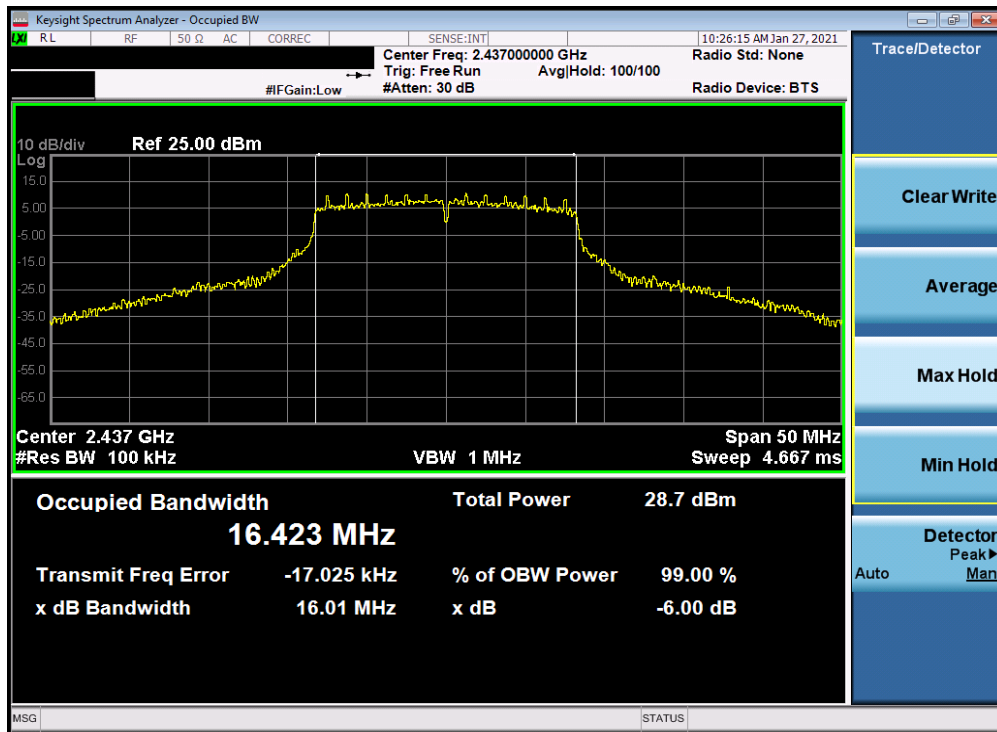


Plot 7-9. 6dB Bandwidth Plot Antenna 4a (802.11ax (SU - 2.4GHz) – Ch. 11) – MCS0

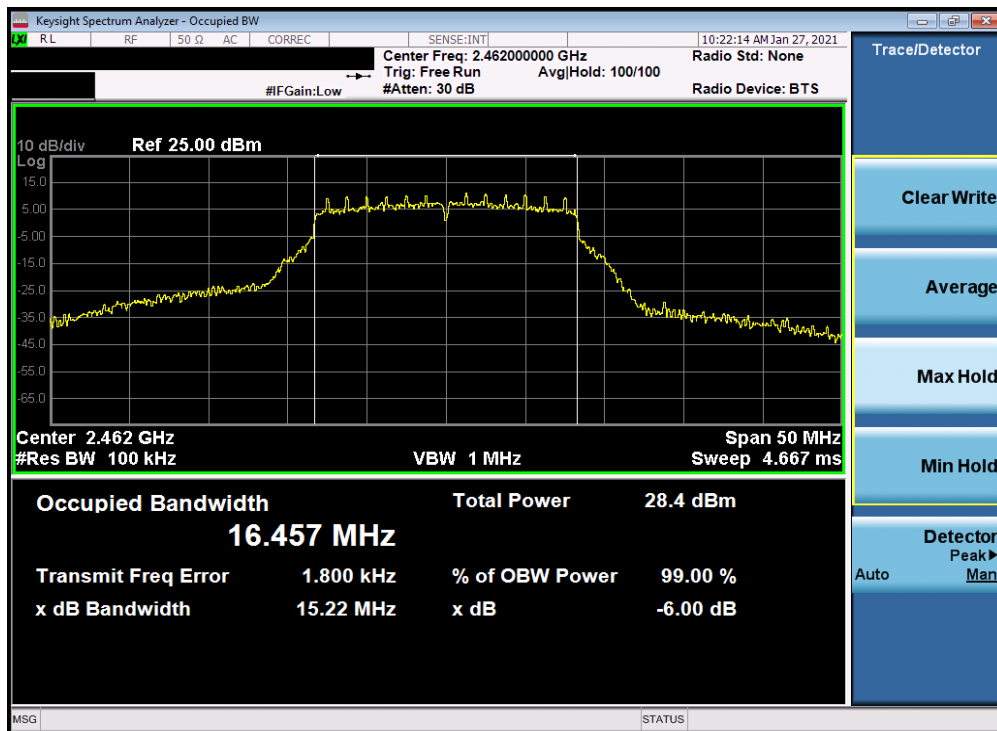


Plot 7-10. 6dB Bandwidth Plot Antenna 4a (802.11g – Ch. 1) – 18Mbps

FCC ID: BCGA2379 IC: 579C-A2379	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020005-09-R1.BCG	Test Dates: 12/15/2020 - 2/20/2021	EUT Type: Tablet Device	Page 22 of 315

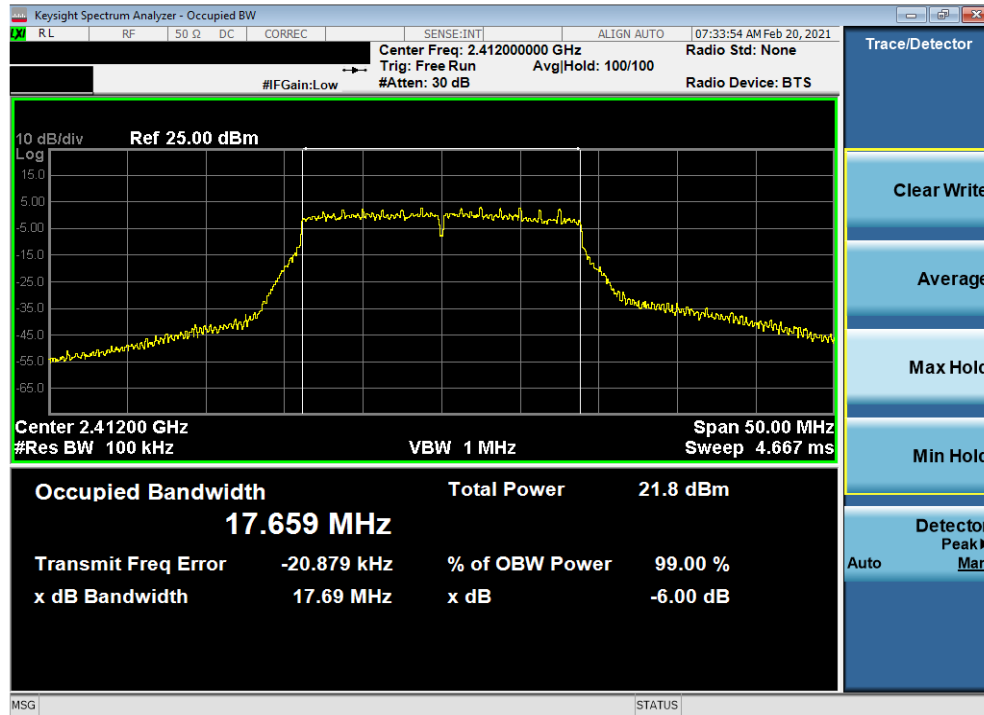


Plot 7-11. 6dB Bandwidth Plot Antenna 4a (802.11g – Ch. 6) – 18Mbps

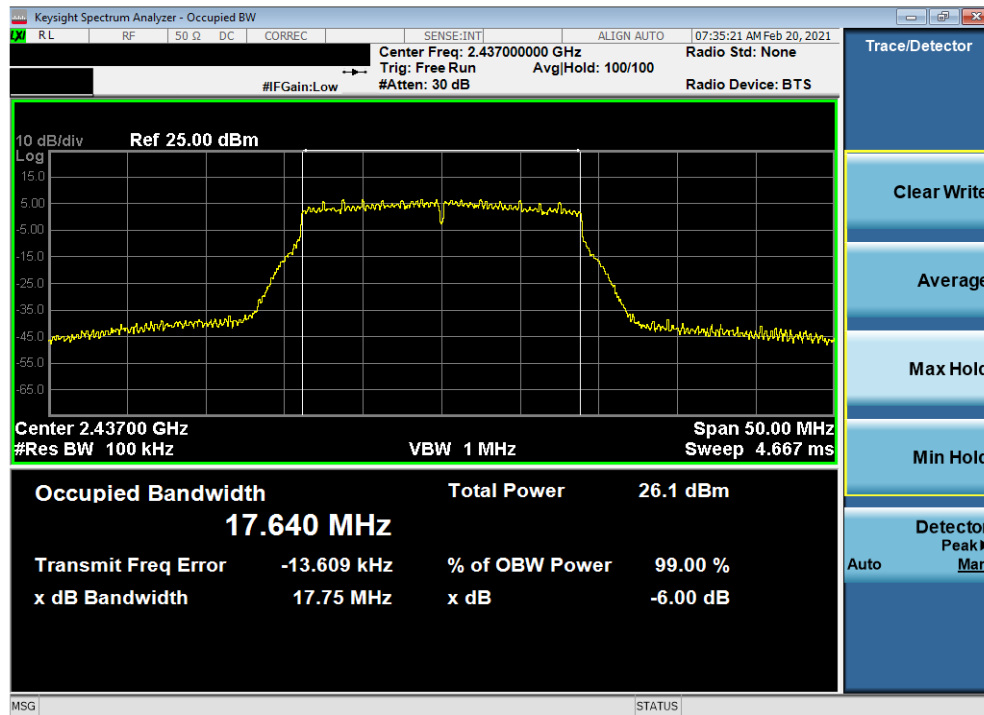


Plot 7-12. 6dB Bandwidth Plot Antenna 4a (802.11g – Ch. 11) – 18Mbps

FCC ID: BCGA2379 IC: 579C-A2379	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020005-09-R1.BCG	Test Dates: 12/15/2020 - 2/20/2021	EUT Type: Tablet Device	Page 23 of 315



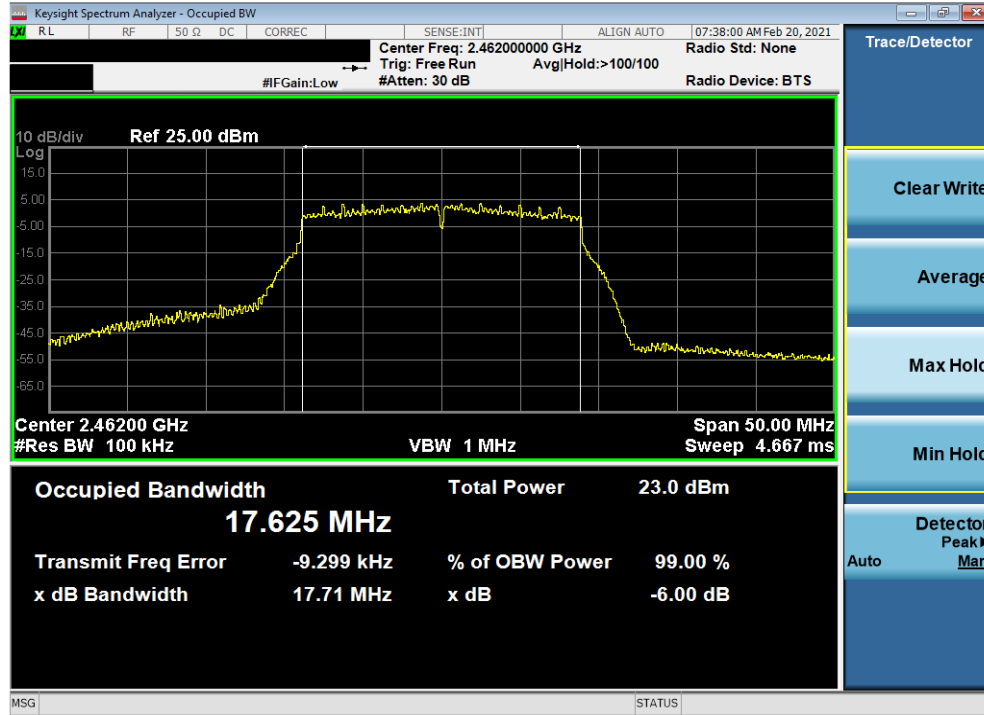
Plot 7-13. 6dB Bandwidth Plot Antenna 4a (802.11n (2.4GHz) – Ch. 1) – MCS3



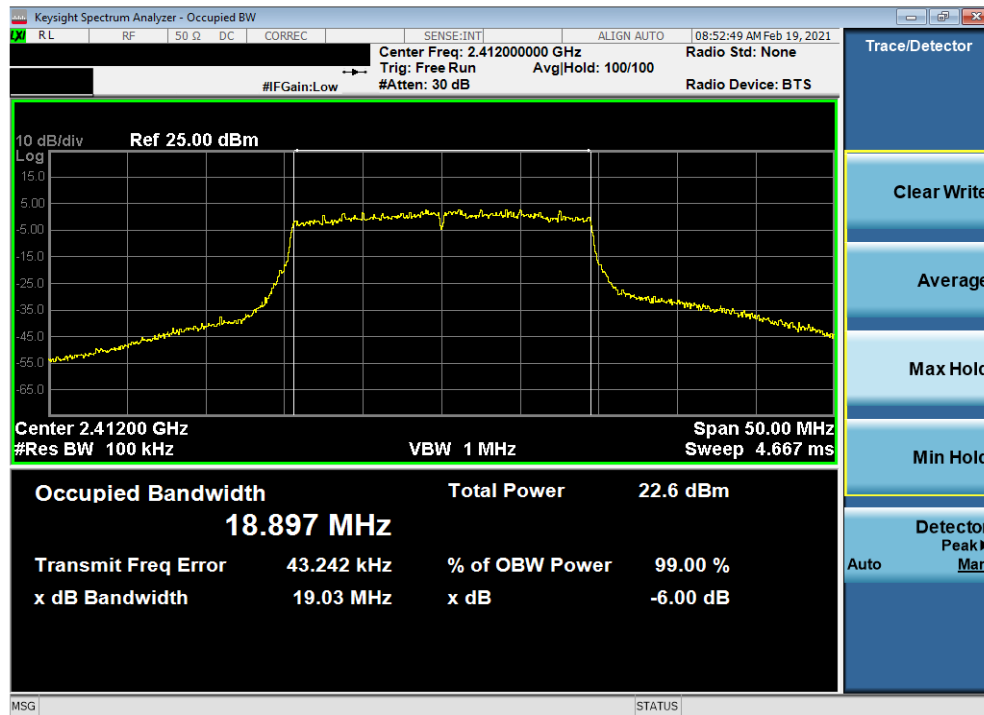
Plot 7-14. 6dB Bandwidth Plot Antenna 4a (802.11n (2.4GHz) – Ch. 6) – MCS3

FCC ID: BCGA2379 IC: 579C-A2379	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020005-09-R1.BCG	Test Dates: 12/15/2020 - 2/20/2021	EUT Type: Tablet Device	Page 24 of 315



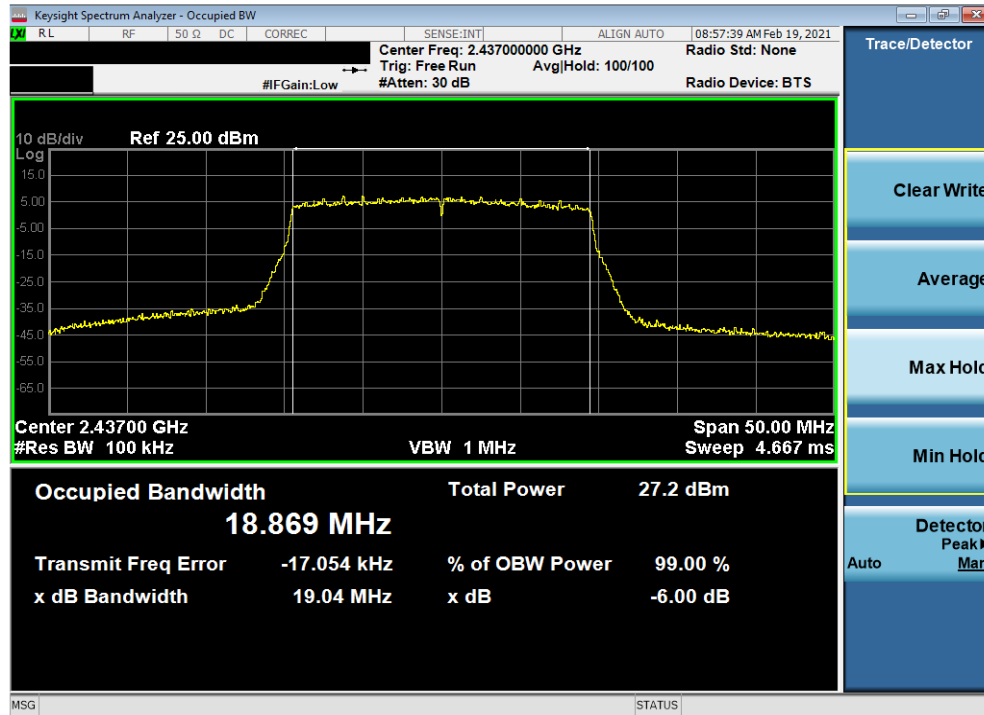


Plot 7-15. 6dB Bandwidth Plot Antenna 4a (802.11n (2.4GHz) – Ch. 11) – MCS3

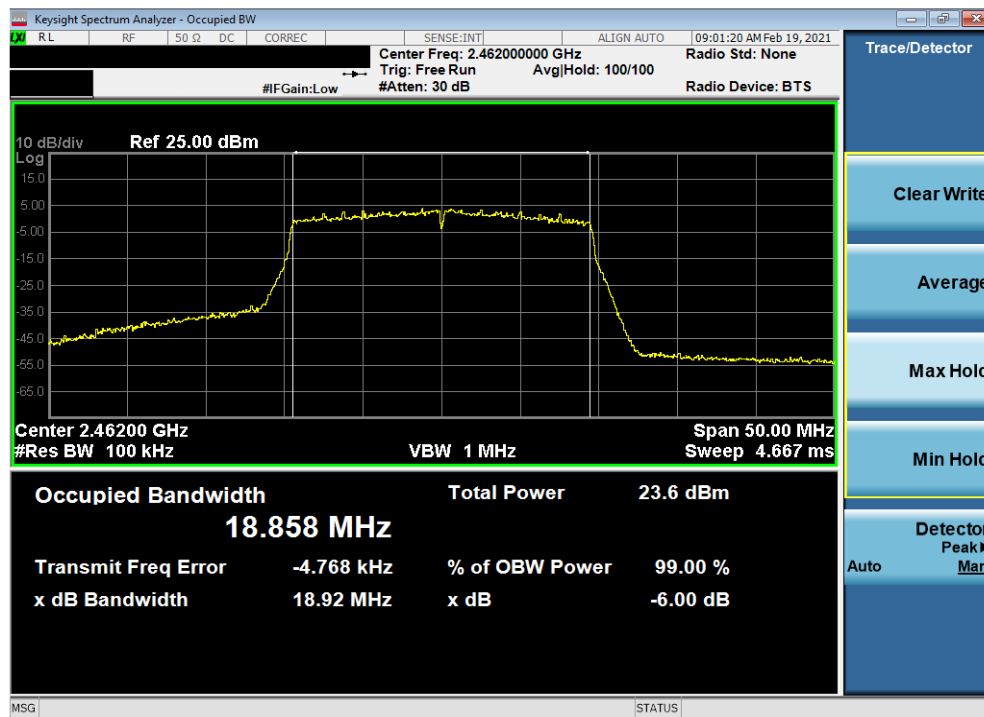


Plot 7-16. 6dB Bandwidth Plot Antenna 4a (802.11ax (SU - 2.4GHz) – Ch. 1) – MCS3

FCC ID: BCGA2379 IC: 579C-A2379		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020005-09-R1.BCG	Test Dates: 12/15/2020 - 2/20/2021	EUT Type: Tablet Device	Page 25 of 315

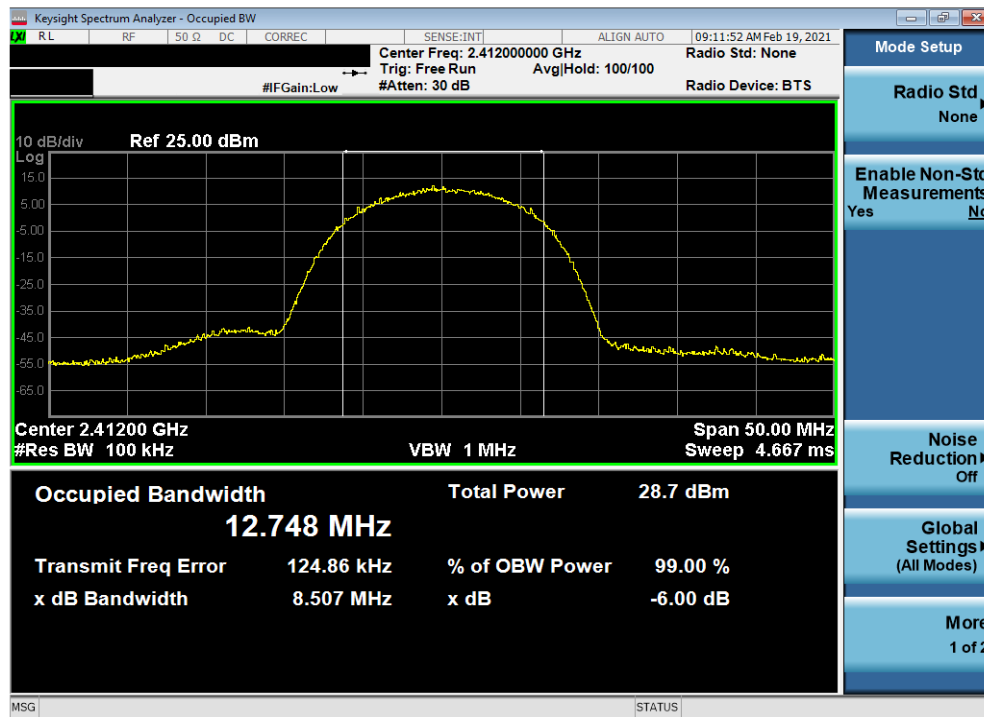


Plot 7-17. 6dB Bandwidth Plot Antenna 4a (802. 11ax (SU - 2.4GHz) – Ch. 6) – MCS3

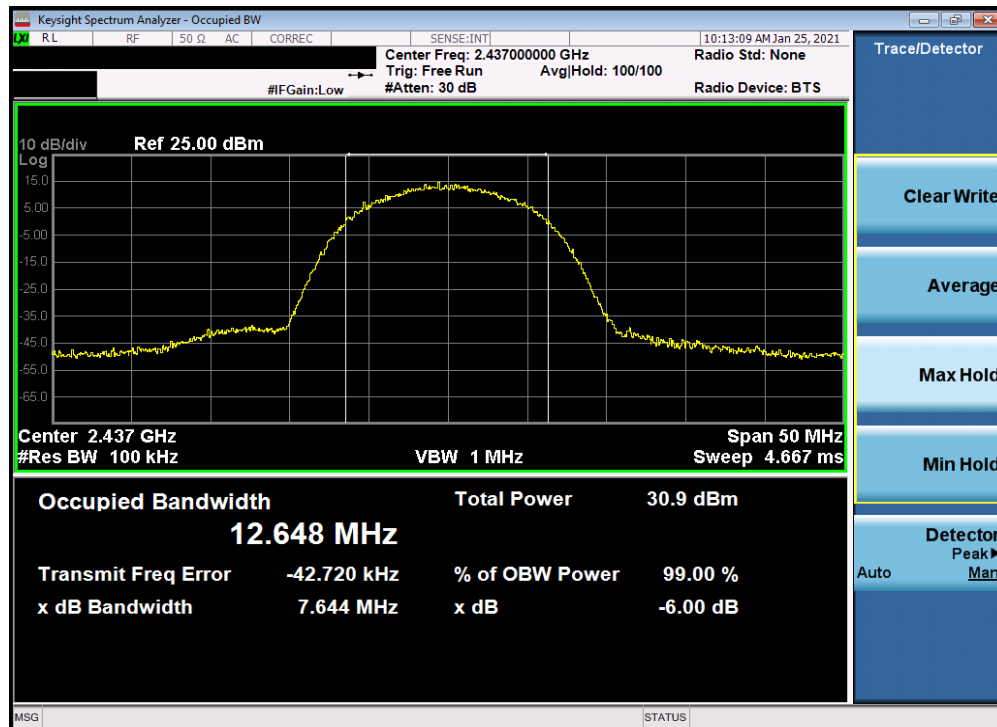


Plot 7-18. 6dB Bandwidth Plot Antenna 4a (802. 11ax (SU - 2.4GHz) – Ch. 11) – MCS3

FCC ID: BCGA2379 IC: 579C-A2379	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020005-09-R1.BCG	Test Dates: 12/15/2020 - 2/20/2021	EUT Type: Tablet Device	Page 26 of 315

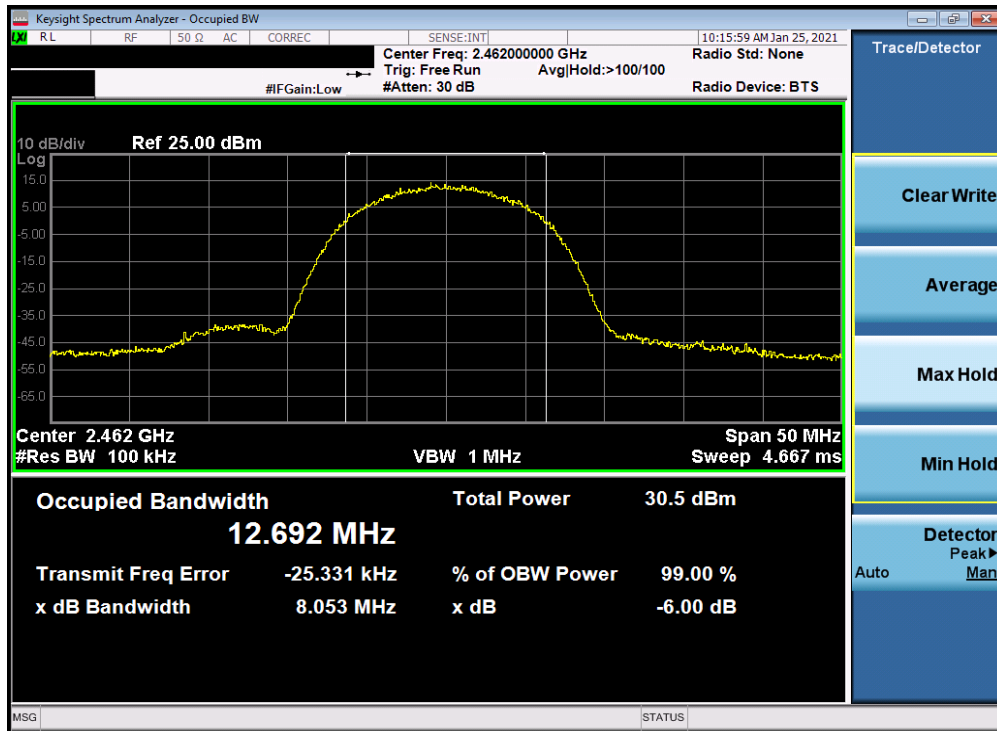


Plot 7-19. 6dB Bandwidth Plot Antenna 4a (802.11b - Ch. 1) - 11Mbps

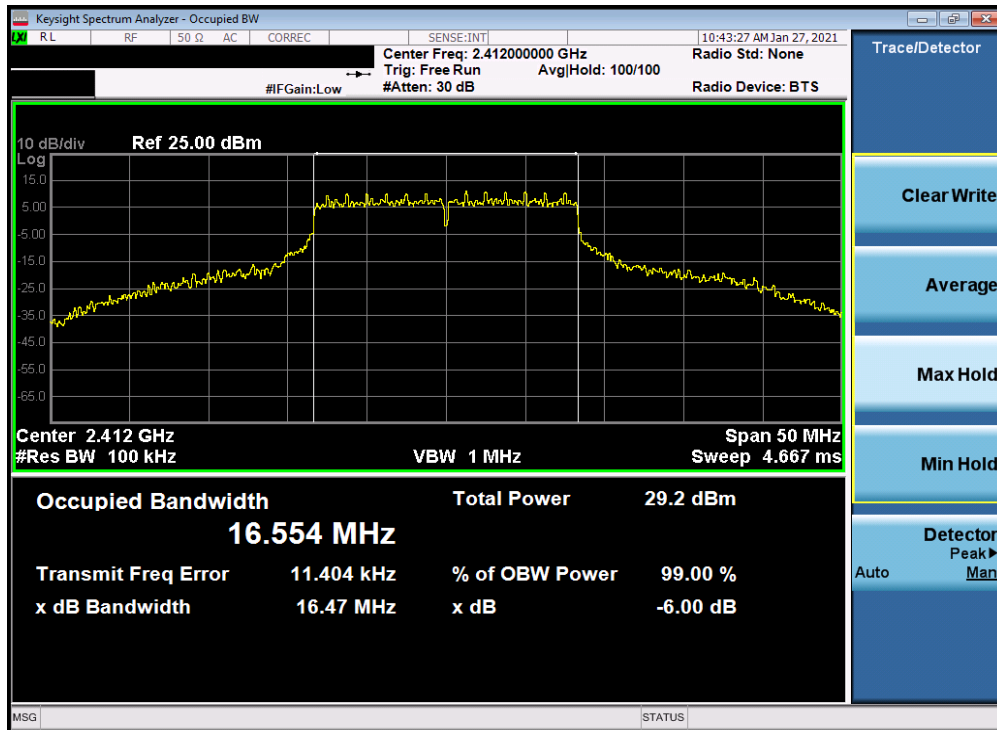


Plot 7-20. 6dB Bandwidth Plot Antenna 4a (802.11b - Ch. 6) - 11Mbps

FCC ID: BCGA2379 IC: 579C-A2379	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020005-09-R1.BCG	Test Dates: 12/15/2020 - 2/20/2021	EUT Type: Tablet Device	Page 27 of 315



Plot 7-21. 6dB Bandwidth Plot Antenna 4a (802.11b – Ch. 11) – 11Mbps



Plot 7-22. 6dB Bandwidth Plot Antenna 4a (802.11g – Ch. 1) – 54Mbps

FCC ID: BCGA2379 IC: 579C-A2379	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020005-09-R1.BCG	Test Dates: 12/15/2020 - 2/20/2021	EUT Type: Tablet Device	Page 28 of 315