



**MEASUREMENT REPORT**  
**FCC PART 15.407 / ISED RSS-247 UNII 802.11a/n/ac/ax(SU)**

**Applicant Name:**

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

**Date of Testing:**

6/2/2021 - 8/7/2021

**Test Site/Location:**

PCTEST Lab. Morgan Hill, CA, USA

**Test Report Serial No.:**

1C2106080048-07.BCG

<b>FCC ID:</b>	<b>BCGA2567</b>
<b>IC:</b>	<b>579C-A2567</b>
<b>APPLICANT:</b>	<b>Apple Inc.</b>

**Application Type:**

Certification

**Model/HVIN:**

A2567

**EUT Type:**

Tablet Device

**Frequency Range:**

5180 – 5825MHz

**Modulation Type:**

OFDM

**FCC Classification:**

Unlicensed National Information Infrastructure (UNII)

**FCC Rule Part(s):**

Part 15 Subpart E (15.407)

**ISED Specification:**

RSS-247 Issue 2

**Test Procedure(s):**

ANSI C63.10-2013, KDB 789033 D02 v02r01

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 789033 D02 v02r01. 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



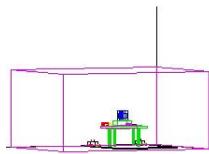
CERT #2041.02

<b>FCC ID:</b> BCGA2567 <b>IC:</b> 579C-A2567	<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> 1C2106080048-07.BCG	<b>Test Dates:</b> 6/2/2021 - 8/7/2021	<b>EUT Type:</b> Tablet Device	Page 1 of 351

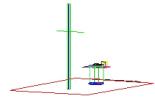
## T A B L E   O F   C O N T E N T S

1.0	INTRODUCTION .....	6
1.1	Scope.....	6
1.2	PCTEST Test Location.....	6
1.3	Test Facility / Accreditations.....	6
2.0	PRODUCT INFORMATION .....	7
2.1	Equipment Description .....	7
2.2	Device Capabilities.....	7
2.3	Antenna Description.....	10
2.4	Test Support Equipment.....	10
2.5	Test Configuration.....	11
2.6	Software and Firmware .....	11
2.7	EMI Suppression Device(s)/Modifications.....	12
3.0	DESCRIPTION OF TESTS .....	13
3.1	Evaluation Procedure .....	13
3.2	AC Line Conducted Emissions .....	13
3.3	Radiated Emissions.....	14
3.4	Environmental Conditions.....	14
4.0	ANTENNA REQUIREMENTS .....	15
5.0	MEASUREMENT UNCERTAINTY .....	16
6.0	TEST EQUIPMENT CALIBRATION DATA.....	17
7.0	TEST RESULTS .....	18
7.1	Summary.....	18
7.2	26dB & 99% Bandwidth Measurement – 802.11a/n/ac/ax(SU) .....	20
7.3	6dB & 99% Bandwidth Measurement – 802.11a/n/ac/ax(SU) .....	45
7.4	Conducted Output Power and Max EIRP Measurement – 802.11a/n/ac/ax(SU).....	54
7.5	Maximum Power Spectral Density – 802.11a/n/ac/ax(SU).....	85
7.6	Radiated Spurious Emissions – Above 1GHz .....	163
7.7	Radiated Spurious Emissions – Below 1GHz .....	340
7.8	AC Line-Conducted Emissions Measurement.....	345
8.0	CONCLUSION.....	351

FCC ID: BCGA2567 IC: 579C-A2567	 Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 2 of 351



# MEASUREMENT REPORT

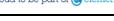


UNII Band	Channel Bandwidth (MHz)	Mode	Tx Frequency (MHz)	SISO				CDD/SDM					
				Antenna WF5T		Antenna WF2		Antenna WF5T		Antenna WF2		Summed	
				Max. Power (mW)	Max. Power (dBm)								
1	20	802.11a/n	5180 - 5240	93.972	19.73	94.406	19.75	47.315	16.75	47.315	16.75	94.624	19.76
2A		802.11a/n	5260 - 5320	94.189	19.74	94.406	19.75	47.315	16.75	47.315	16.75	94.624	19.76
2C		802.11a/n	5500 - 5720	94.406	19.75	94.406	19.75	47.315	16.75	47.098	16.73	94.406	19.75
3		802.11a/n	5745 - 5825	141.254	21.50	141.254	21.50	141.254	21.50	141.254	21.50	282.488	24.51
1	40	802.11n	5190 - 5230	140.605	21.48	134.586	21.29	89.125	19.50	89.125	19.50	178.238	22.51
2A		802.11n	5270 - 5310	138.676	21.42	137.721	21.39	89.125	19.50	89.125	19.50	178.238	22.51
2C		802.11n	5510 - 5710	138.357	21.41	141.254	21.50	89.125	19.50	89.125	19.50	175.388	22.44
3		802.11n	5755 - 5795	141.254	21.50	141.254	21.50	141.254	21.50	138.038	21.40	279.254	24.46
1	80	802.11ac	5210	30.974	14.91	31.189	14.94	21.380	13.30	20.941	13.21	42.364	16.27
2A		802.11ac	5290	22.233	13.47	22.387	13.50	21.135	13.25	21.038	13.23	42.170	16.25
2C		802.11ac	5530 - 5690	141.254	21.50	140.281	21.47	100.000	20.00	99.541	19.98	199.526	23.00
3		802.11ac	5775	87.297	19.41	89.125	19.50	79.433	19.00	76.736	18.85	156.315	21.94
1	20	802.11ax (SU)	5180 - 5240	93.541	19.71	90.991	19.59	47.315	16.75	47.315	16.75	94.624	19.76
2A		802.11ax (SU)	5260 - 5320	93.111	19.69	94.406	19.75	47.315	16.75	47.315	16.75	94.624	19.76
2C		802.11ax (SU)	5500 - 5720	94.406	19.75	92.897	19.68	47.315	16.75	47.315	16.75	94.624	19.76
3		802.11ax (SU)	5745 - 5825	141.254	21.50	139.637	21.45	141.254	21.50	140.281	21.47	281.190	24.49
1	40	802.11ax (SU)	5190 - 5230	140.605	21.48	139.637	21.45	86.896	19.39	88.716	19.48	175.792	22.45
2A		802.11ax (SU)	5270 - 5310	125.893	21.00	125.893	21.00	89.125	19.50	87.902	19.44	177.011	22.48
2C		802.11ax (SU)	5510 - 5710	140.929	21.49	141.254	21.50	89.125	19.50	89.125	19.50	177.828	22.50
3		802.11ax (SU)	5755 - 5795	141.254	21.50	141.254	21.50	141.254	21.50	138.676	21.42	279.898	24.47
1	80	802.11ax (SU)	5210	25.061	13.99	25.119	14.00	19.953	13.00	19.498	12.90	39.446	15.96
2A		802.11ax (SU)	5290	20.701	13.16	21.135	13.25	18.836	12.75	18.836	12.75	37.670	15.76
2C		802.11ax (SU)	5530 - 5690	141.254	21.50	141.254	21.50	100.000	20.00	98.401	19.93	198.609	22.98
3		802.11ax (SU)	5775	68.391	18.35	70.307	18.47	61.802	17.91	62.517	17.96	124.451	20.95

## FCC EUT Overview (Low Data Rate)

UNII Band	Channel Bandwidth (MHz)	Mode	Tx Frequency (MHz)	SISO				CDD/SDM					
				Antenna WF5T		Antenna WF2		Antenna WF5T		Antenna WF2		Summed	
				Max. Power (mW)	Max. Power (dBm)								
1	20	802.11a/n	5180 - 5240	33.497	15.25	33.497	15.25	17.579	12.45	17.742	12.49	35.318	15.48
2A		802.11a/n	5260 - 5320	94.189	19.74	94.406	19.75	47.315	16.75	47.315	16.75	94.624	19.76
2C		802.11a/n	5500 - 5720	94.406	19.75	94.406	19.75	47.315	16.75	47.098	16.73	94.406	19.75
3		802.11a/n	5745 - 5825	141.254	21.50	141.254	21.50	141.254	21.50	141.254	21.50	282.488	24.51
1	40	802.11n	5190 - 5230	63.096	18.00	63.096	18.00	31.623	15.00	31.769	15.02	63.387	18.02
2A		802.11n	5270 - 5310	138.676	21.42	137.721	21.39	89.125	19.50	89.125	19.50	178.238	22.51
2C		802.11n	5510 - 5710	138.357	21.41	141.254	21.50	86.099	19.35	89.125	19.50	175.388	22.44
3		802.11n	5755 - 5795	141.254	21.50	141.254	21.50	141.254	21.50	138.038	21.40	279.254	24.46
1	80	802.11ac	5210	30.974	14.91	31.189	14.94	21.380	13.30	20.941	13.21	42.364	16.27
2A		802.11ac	5290	22.233	13.47	22.387	13.50	21.135	13.25	21.038	13.23	42.170	16.25
2C		802.11ac	5530 - 5690	141.254	21.50	140.281	21.47	100.000	20.00	99.541	19.98	199.526	23.00
3		802.11ac	5775	87.297	19.41	89.125	19.50	79.433	19.00	76.736	18.85	156.315	21.94
1	20	802.11ax (SU)	5180 - 5240	33.497	15.25	33.497	15.25	17.783	12.50	17.140	12.34	34.834	15.42
2A		802.11ax (SU)	5260 - 5320	93.111	19.69	94.406	19.75	47.315	16.75	47.315	16.75	94.624	19.76
2C		802.11ax (SU)	5500 - 5720	94.406	19.75	92.897	19.68	47.315	16.75	47.315	16.75	94.624	19.76
3		802.11ax (SU)	5745 - 5825	141.254	21.50	139.637	21.45	141.254	21.50	140.281	21.47	281.190	24.49
1	40	802.11ax (SU)	5190 - 5230	60.674	17.83	61.235	17.87	33.497	15.25	32.211	15.08	65.766	18.18
2A		802.11ax (SU)	5270 - 5310	125.893	21.00	125.893	21.00	89.125	19.50	87.902	19.44	177.011	22.48
2C		802.11ax (SU)	5510 - 5710	140.929	21.49	141.254	21.50	89.125	19.50	88.716	19.48	177.828	22.50
3		802.11ax (SU)	5755 - 5795	141.254	21.50	141.254	21.50	141.254	21.50	138.676	21.42	279.898	24.47
1	80	802.11ax (SU)	5210	25.061	13.99	25.119	14.00	19.953	13.00	19.498	12.90	39.446	15.96
2A		802.11ax (SU)	5290	20.701	13.16	21.135	13.25	18.836	12.75	18.836	12.75	37.670	15.76
2C		802.11ax (SU)	5530 - 5690	141.254	21.50	141.254	21.50	100.000	20.00	98.401	19.93	198.609	22.98
3		802.11ax (SU)	5775	68.391	18.35	70.307	18.47	61.802	17.91	62.517	17.96	124.451	20.95

## ISED EUT Overview (Low Data Rate)

FCC ID: BCGA2567 IC: 579C-A2567	 <b>PCTEST®</b> Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)						Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device						

V 10.4 5/21/2021

All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

UNII Band	Channel Bandwidth (MHz)	Mode	Tx Frequency (MHz)	SISO				CDD/SDM					
				Antenna WF5T		Antenna WF2		Antenna WF5T		Antenna WF2		Summed	
				Max. Power (mW)	Max. Power (dBm)								
1	20	802.11a/n	5180 - 5240	92.470	19.66	94.189	19.74	47.315	16.75	46.666	16.69	93.111	19.69
2A		802.11a/n	5260 - 5320	94.406	19.75	93.756	19.72	45.082	16.54	47.315	16.75	92.045	19.64
2C		802.11a/n	5500 - 5720	93.111	19.69	93.972	19.73	46.774	16.70	46.559	16.68	93.325	19.70
3		802.11a/n	5745 - 5825	140.605	21.48	141.254	21.50	140.929	21.49	141.254	21.50	281.838	24.50
1	40	802.11n	5190 - 5230	136.773	21.36	136.458	21.35	84.140	19.25	88.920	19.49	172.982	22.38
2A		802.11n	5270 - 5310	138.038	21.40	141.254	21.50	89.125	19.50	88.105	19.45	177.419	22.49
2C		802.11n	5510 - 5710	141.254	21.50	139.316	21.44	89.125	19.50	89.125	19.50	177.419	22.49
3		802.11n	5755 - 5795	138.995	21.43	139.637	21.45	137.721	21.39	137.088	21.37	274.789	24.39
1	80	802.11ac	5210	24.604	13.91	23.605	13.73	19.679	12.94	19.953	13.00	39.628	15.98
2A		802.11ac	5290	20.370	13.09	20.091	13.03	19.055	12.80	19.588	12.92	38.637	15.87
2C		802.11ac	5530 - 5690	134.896	21.30	138.038	21.40	97.724	19.90	98.175	19.92	195.884	22.92
3		802.11ac	5775	74.989	18.75	79.433	19.00	67.920	18.32	70.795	18.50	138.676	21.42
1	20	802.11ax (SU)	5180 - 5240	94.406	19.75	93.756	19.72	47.315	16.75	47.315	16.75	94.624	19.76
2A		802.11ax (SU)	5260 - 5320	92.683	19.67	91.201	19.60	47.315	16.75	47.315	16.75	94.624	19.76
2C		802.11ax (SU)	5500 - 5720	93.541	19.71	94.406	19.75	47.315	16.75	47.315	16.75	94.624	19.76
3		802.11ax (SU)	5745 - 5825	137.721	21.39	141.254	21.50	141.254	21.50	141.254	21.50	281.190	24.49
1	40	802.11ax (SU)	5190 - 5230	138.038	21.40	138.676	21.42	87.902	19.44	89.125	19.50	177.011	22.48
2A		802.11ax (SU)	5270 - 5310	109.648	20.40	110.917	20.45	88.512	19.47	89.125	19.50	177.828	22.50
2C		802.11ax (SU)	5510 - 5710	141.254	21.50	141.254	21.50	89.125	19.50	89.125	19.50	177.011	22.48
3		802.11ax (SU)	5755 - 5795	141.254	21.50	140.281	21.47	141.254	21.50	140.605	21.48	281.838	24.50
1	80	802.11ax (SU)	5210	21.135	13.25	20.989	13.22	17.022	12.31	17.783	12.50	34.834	15.42
2A		802.11ax (SU)	5290	17.824	12.51	18.836	12.75	15.596	11.93	15.849	12.00	31.477	14.98
2C		802.11ax (SU)	5530 - 5690	136.458	21.35	139.316	21.44	99.541	19.98	97.724	19.90	197.242	22.95
3		802.11ax (SU)	5775	56.234	17.50	55.847	17.47	50.119	17.00	50.119	17.00	100.231	20.01

### FCC EUT Overview (Mid Data Rate)

UNII Band	Channel Bandwidth (MHz)	Mode	Tx Frequency (MHz)	SISO				CDD/SDM					
				Antenna WF5T		Antenna WF2		Antenna WF5T		Antenna WF2		Summed	
				Max. Power (mW)	Max. Power (dBm)								
1	20	802.11a/n	5180 - 5240	33.497	15.25	33.497	15.25	17.378	12.40	17.418	12.41	34.435	15.37
2A		802.11a/n	5260 - 5320	94.406	19.75	93.756	19.72	45.082	16.54	47.315	16.75	92.045	19.64
2C		802.11a/n	5500 - 5720	93.111	19.69	93.972	19.73	46.774	16.70	46.559	16.68	93.325	19.70
3		802.11a/n	5745 - 5825	140.605	21.48	141.254	21.50	140.929	21.49	141.254	21.50	281.838	24.50
1	40	802.11n	5190 - 5230	62.661	17.97	63.096	18.00	31.261	14.95	32.434	15.11	63.680	18.04
2A		802.11n	5270 - 5310	138.038	21.40	141.254	21.50	89.125	19.50	88.105	19.45	177.419	22.49
2C		802.11n	5510 - 5710	134.896	21.30	135.831	21.33	87.700	19.43	89.125	19.50	177.011	22.48
3		802.11n	5755 - 5795	138.995	21.43	139.637	21.45	137.721	21.39	137.088	21.37	274.789	24.39
1	80	802.11ac	5210	24.604	13.91	23.605	13.73	19.679	12.94	19.953	13.00	39.628	15.98
2A		802.11ac	5290	20.370	13.09	20.091	13.03	19.055	12.80	19.588	12.92	38.637	15.87
2C		802.11ac	5530 - 5690	134.896	21.30	138.038	21.40	97.724	19.90	98.175	19.92	195.884	22.92
3		802.11ac	5775	74.989	18.75	79.433	19.00	67.920	18.32	70.795	18.50	138.676	21.42
1	20	802.11ax (SU)	5180 - 5240	32.359	15.10	32.885	15.17	17.179	12.35	17.783	12.50	34.995	15.44
2A		802.11ax (SU)	5260 - 5320	92.683	19.67	91.201	19.60	47.315	16.75	47.315	16.75	94.624	19.76
2C		802.11ax (SU)	5500 - 5720	93.541	19.71	94.406	19.75	47.315	16.75	47.315	16.75	94.624	19.76
3		802.11ax (SU)	5745 - 5825	137.721	21.39	141.254	21.50	141.254	21.50	141.254	21.50	281.190	24.49
1	40	802.11ax (SU)	5190 - 5230	62.951	17.99	62.373	17.95	32.659	15.14	32.810	15.16	65.464	18.16
2A		802.11ax (SU)	5270 - 5310	109.648	20.40	110.917	20.45	88.512	19.47	89.125	19.50	177.828	22.50
2C		802.11ax (SU)	5510 - 5710	140.281	21.47	141.254	21.50	88.920	19.49	87.700	19.43	175.792	22.45
3		802.11ax (SU)	5755 - 5795	141.254	21.50	140.281	21.47	141.254	21.50	140.605	21.48	281.838	24.50
1	80	802.11ax (SU)	5210	21.135	13.25	20.989	13.22	17.022	12.31	17.783	12.50	34.834	15.42
2A		802.11ax (SU)	5290	17.824	12.51	18.836	12.75	15.596	11.93	15.849	12.00	31.477	14.98
2C		802.11ax (SU)	5530 - 5690	136.458	21.35	139.316	21.44	99.541	19.98	97.724	19.90	197.242	22.95
3		802.11ax (SU)	5775	56.234	17.50	55.847	17.47	50.119	17.00	50.119	17.00	100.231	20.01

### ISED EUT Overview (Mid Data Rate)

FCC ID: BCGA2567 IC: 579C-A2567	 <b>PCTEST®</b> Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 4 of 351

UNII Band	Channel Bandwidth (MHz)	Mode	Tx Frequency (MHz)	SISO				CDD/SDM					
				Antenna WF5T		Antenna WF2		Antenna WF5T		Antenna WF2		Summed	
				Max. Power (mW)	Max. Power (dBm)								
1	20	802.11a/n	5180 - 5240	94.406	19.75	94.406	19.75	46.238	16.65	47.315	16.75	93.541	19.71
2A		802.11a/n	5260 - 5320	93.972	19.73	94.406	19.75	46.666	16.69	47.206	16.74	93.756	19.72
2C		802.11a/n	5500 - 5720	94.406	19.75	94.406	19.75	46.345	16.66	46.881	16.71	92.897	19.68
3		802.11a/n	5745 - 5825	141.254	21.50	141.254	21.50	140.929	21.49	141.254	21.50	279.898	24.47
1	40	802.11n	5190 - 5230	140.929	21.49	141.254	21.50	86.298	19.36	83.560	19.22	169.824	22.30
2A		802.11n	5270 - 5310	125.893	21.00	125.893	21.00	85.507	19.32	85.704	19.33	171.396	22.34
2C		802.11n	5510 - 5710	140.605	21.48	141.254	21.50	89.125	19.50	87.700	19.43	176.604	22.47
3		802.11n	5755 - 5795	141.254	21.50	141.254	21.50	138.038	21.40	138.676	21.42	275.423	24.40
1	80	802.11ac	5210	22.336	13.49	22.284	13.48	17.783	12.50	17.783	12.50	35.563	15.51
2A		802.11ac	5290	17.783	12.50	17.783	12.50	16.634	12.21	16.144	12.08	32.810	15.16
2C		802.11ac	5530 - 5690	140.605	21.48	141.254	21.50	100.000	20.00	100.000	20.00	199.986	23.01
3		802.11ac	5775	70.469	18.48	70.632	18.49	61.518	17.89	61.660	17.90	123.310	20.91
1	20	802.11ax (SU)	5180 - 5240	94.406	19.75	93.972	19.73	47.315	16.75	45.709	16.60	93.111	19.69
2A		802.11ax (SU)	5260 - 5320	94.189	19.74	94.406	19.75	46.774	16.70	46.989	16.72	93.756	19.72
2C		802.11ax (SU)	5500 - 5720	93.325	19.70	94.406	19.75	47.206	16.74	47.206	16.74	94.189	19.74
3		802.11ax (SU)	5745 - 5825	141.254	21.50	141.254	21.50	141.254	21.50	138.038	21.40	279.254	24.46
1	40	802.11ax (SU)	5190 - 5230	133.352	21.25	133.352	21.25	87.498	19.42	89.125	19.50	176.604	22.47
2A		802.11ax (SU)	5270 - 5310	98.855	19.95	100.000	20.00	87.297	19.41	88.716	19.48	176.198	22.46
2C		802.11ax (SU)	5510 - 5710	141.254	21.50	141.254	21.50	85.704	19.33	88.105	19.45	173.380	22.39
3		802.11ax (SU)	5755 - 5795	141.254	21.50	141.254	21.50	141.254	21.50	139.316	21.44	279.898	24.47
1	80	802.11ax (SU)	5210	19.953	13.00	19.953	13.00	14.928	11.74	15.668	11.95	30.620	14.86
2A		802.11ax (SU)	5290	16.749	12.24	16.711	12.23	13.772	11.39	13.836	11.41	27.606	14.41
2C		802.11ax (SU)	5530 - 5690	140.605	21.48	140.929	21.49	100.000	20.00	95.499	19.80	195.434	22.91
3		802.11ax (SU)	5775	50.119	17.00	50.119	17.00	43.954	16.43	43.652	16.40	87.700	19.43

### FCC EUT Overview (High Data Rate)

UNII Band	Channel Bandwidth (MHz)	Mode	Tx Frequency (MHz)	SISO				CDD/SDM					
				Antenna WF5T		Antenna WF2		Antenna WF5T		Antenna WF2		Summed	
				Max. Power (mW)	Max. Power (dBm)								
1	20	802.11a/n	5180 - 5240	32.810	15.16	33.497	15.25	17.783	12.50	17.458	12.42	35.237	15.47
2A		802.11a/n	5260 - 5320	93.972	19.73	94.406	19.75	46.666	16.69	47.206	16.74	93.756	19.72
2C		802.11a/n	5500 - 5720	94.406	19.75	94.406	19.75	46.345	16.66	46.881	16.71	92.897	19.68
3		802.11a/n	5745 - 5825	141.254	21.50	141.254	21.50	140.929	21.49	141.254	21.50	279.898	24.47
1	40	802.11n	5190 - 5230	61.944	17.92	61.944	17.92	33.420	15.24	33.497	15.25	66.988	18.26
2A		802.11n	5270 - 5310	125.893	21.00	125.893	21.00	85.507	19.32	85.704	19.33	171.396	22.34
2C		802.11n	5510 - 5710	138.676	21.42	141.254	21.50	87.297	19.41	87.700	19.43	174.985	22.43
3		802.11n	5755 - 5795	141.254	21.50	141.254	21.50	138.038	21.40	138.676	21.42	275.423	24.40
1	80	802.11ac	5210	22.336	13.49	22.284	13.48	17.783	12.50	17.783	12.50	35.563	15.51
2A		802.11ac	5290	17.783	12.50	17.783	12.50	16.634	12.21	16.144	12.08	32.810	15.16
2C		802.11ac	5530 - 5690	140.605	21.48	141.254	21.50	100.000	20.00	100.000	20.00	199.986	23.01
3		802.11ac	5775	70.469	18.48	70.632	18.49	61.518	17.89	61.660	17.90	123.310	20.91
1	20	802.11ax (SU)	5180 - 5240	33.497	15.25	33.497	15.25	17.701	12.48	17.783	12.50	35.481	15.50
2A		802.11ax (SU)	5260 - 5320	94.189	19.74	94.406	19.75	46.774	16.70	46.989	16.72	93.756	19.72
2C		802.11ax (SU)	5500 - 5720	93.325	19.70	94.406	19.75	47.206	16.74	47.206	16.74	94.189	19.74
3		802.11ax (SU)	5745 - 5825	141.254	21.50	141.254	21.50	141.254	21.50	138.038	21.40	279.254	24.46
1	40	802.11ax (SU)	5190 - 5230	63.096	18.00	63.096	18.00	31.623	15.00	33.266	15.22	64.863	18.12
2A		802.11ax (SU)	5270 - 5310	98.855	19.95	100.000	20.00	87.297	19.41	88.716	19.48	176.198	22.46
2C		802.11ax (SU)	5510 - 5710	141.254	21.50	140.605	21.48	85.114	19.30	84.528	19.27	169.824	22.30
3		802.11ax (SU)	5755 - 5795	141.254	21.50	141.254	21.50	141.254	21.50	139.316	21.44	279.898	24.47
1	80	802.11ax (SU)	5210	19.953	13.00	19.953	13.00	14.928	11.74	15.668	11.95	30.620	14.86
2A		802.11ax (SU)	5290	16.749	12.24	16.711	12.23	13.772	11.39	13.836	11.41	27.606	14.41
2C		802.11ax (SU)	5530 - 5690	140.605	21.48	140.929	21.49	100.000	20.00	95.499	19.80	195.434	22.91
3		802.11ax (SU)	5775	50.119	17.00	50.119	17.00	43.954	16.43	43.652	16.40	87.700	19.43

### ISED EUT Overview (High Data Rate)

FCC ID: BCGA2567 IC: 579C-A2567	 <b>PCTEST®</b> Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 5 of 351

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

FCC ID: BCGA2567 IC: 579C-A2567	 PCTEST <sup>®</sup> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 6 of 351

## 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Apple Tablet Device FCC ID: BCGA2567** and **IC: 579C-A2567**. The test data contained in this report pertains only to the emissions due to the EUT's UNII 802.11a/n/ac/ax(SU) transmitter.

**Test Device Serial No.:** K9J4P7W07, M73026JKM2, LFHK3YVH7P

### 2.2 Device Capabilities

This device contains the following capabilities:

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

Band 1		Band 2A		Band 2C		Band 3	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
36	5180	52	5260	100	5500	149	5745
:	:	:	:	:	:	:	:
42	5210	56	5280	116	5580	157	5785
:	:	:	:	:	:	:	:
48	5240	64	5320	144	5720	165	5825

Table 2-1. 802.11a / 802.11n / 802.11ac / 802.11ax (20MHz) Frequency / Channel Operations

Band 1		Band 2A		Band 2C		Band 3	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
38	5190	54	5270	102	5510	151	5755
:	:	:	:	:	:	:	:
46	5230	62	5310	110	5550	159	5795
				142	5710		

Table 2-2. 802.11n / 802.11ac / 802.11ax (40MHz BW) Frequency / Channel Operations

Band 1		Band 2A		Band 2C		Band 3	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
42	5210	58	5290	106	5530	155	5775
				138	5690		

Table 2-3. 802.11ac / 802.11ax (80MHz BW) Frequency / Channel Operations

FCC ID: BCGA2567 IC: 579C-A2567	 PCTEST® Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 7 of 351

**Notes:**

1. 5GHz NII operation is possible in 20MHz, and 40MHz, and 80MHz channel bandwidths. 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 B)2)b) KDB 789033 D02 v02r01 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 WF5T	Antenna WF2	CDD
5GHz	a (Low Rate)	99.2	98.8	98.4
	a (Mid Rate)	96.6	96.7	96.6
	a (High Rate)	94.2	93.8	93.5
	n (HT20) (Low Rate)	96.7	97.0	94.7
	n (HT20) (Mid Rate)	95.9	96.1	92.7
	n (HT20) (High Rate)	93.4	93.0	89.2
	ax(SU) (HT20 Low Rate)	95.4	96.3	96.3
	ax(SU) (HT20 Mid Rate)	95.1	95.3	96.4
	ax(SU) (HT20 High Rate)	91.7	92.7	92.2
	n (HT40 Low Rate)	94.2	94.3	90.4
	n (HT40 Mid Rate)	92.7	92.8	88.9
	n (HT40 High Rate)	88.1	88.8	83.1
	ax(SU) (HT40 Low Rate)	93.6	93.3	93.5
	ax(SU) (HT40 Mid Rate)	92.0	91.7	92.1
	ax(SU) (HT40 High Rate)	87.9	88.2	88.0
	ac (HT80 Low Rate)	89.3	89.2	84.4
	ac (HT80 Mid Rate)	97.3	87.1	82.1
	ac (HT80 High Rate)	82.8	82.4	82.8
	ax(SU) (HT80 Low Rate)	88.7	88.6	88.7
	ax(SU) (HT80 Mid Rate)	87.3	87.2	87.0
	ax(SU) (HT80 High Rate)	83.6	83.1	82.8

**Table 2-4. Measured Duty Cycles**

FCC ID: BCGA2567 IC: 579C-A2567	 PCTEST® Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 8 of 351

2. The device employs MIMO technology. Below are the possible configurations.

WiFi Configurations		SISO		CDD		SDM		STBC	
		Antenna WF5T	Antenna WF2						
5GHz	11a	✓	✓	✓	✓	✗	✗	✗	✗
	11n (20MHz)	✓	✓	✓	✓	✓	✓	✓	✓
	11ax(SU) (20MHz)	✓	✓	✓	✓	✓	✓	✓	✓
	11n (40MHz)	✓	✓	✓	✓	✓	✓	✓	✓
	11ax(SU) (40MHz)	✓	✓	✓	✓	✓	✓	✓	✓
	11ac (80MHz)	✓	✓	✓	✓	✓	✓	✓	✓
	11ax(SU) (80MHz)	✓	✓	✓	✓	✓	✓	✓	✓

**Table 2-5. WIFI Configurations**

✓ = Support ; ✗ = NOT Support

**SISO** = Single Input Single Output

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

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

**STBC** = Space-Time Block Coding – 2Tx Function

**Data Rate(s) Tested:** 6Mbps, 9Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps, 54Mbps (802.11a)  
 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 – 20MHz)  
 13.5/15Mbps, 27/30Mbps, 40.5/45Mbps, 54/60Mbps, 81/90Mbps, 108/120Mbps, 121.5/135Mbps, 135/150Mbps (n – 40MHz BW)  
 29.3/32.5Mbps, 58.5/65Mbps, 87.8/97.5Mbps, 117/130Mbps, 175.5/195Mbps, 234/260Mbps, 263.3/292.5Mbps, 292.5/325Mbps, 351/390Mbps, 390/433.3Mbps (ac – 80MHz BW)  
 13/14.4Mbps, 26.28.9Mbps, 39/43.3Mbps, 52/57.8Mbps, 78/86.7Mbps, 104/115.6Mbps, 117/130Mbps, 130/144.4Mbps (MIMO n/ac – 20MHz) 156/173Mbps (MIMO ac – 20MHz)  
 27/30Mbps, 54/60Mbps, 81/90Mbps, 108/120Mbps, 162/180Mbps, 216/240Mbps, 243Mbps, 270Mbps, 270/300Mbps (MIMO n/ac – 40MHz) 324/360Mbps, 360/400Mbps (MIMO ac – 40MHz)  
 58.5/65Mbps, 117/130Mbps, 175.5/195Mbps, 234/260Mbps, 351/390Mbps, 468/520Mbps, 526.5/585Mbps, 585/650Mbps, 702/780Mbps, 780/866.7Mbps (MIMO ac – 80MHz)  
 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, 122/129.0Mbps, 135/143.4Mbps (ax – 20MHz)  
 16/17.2Mbps, 33/34.4Mbps, 49/51.6Mbps, 65/68.8Mbps, 98/103.2Mbps, 130/137.6Mbps, 146/154.9Mbps, 163/172.1Mbps, 195/206.5Mbps, 217/229.4Mbps, 244/258.1Mbps, 271/286.8Mbps (ax – 40MHz BW)  
 34/36.0Mbps, 68/72.1Mbps, 102/108.1Mbps, 136/144.1Mbps, 204/216.2Mbps, 272/288.2Mbps, 306/324.4Mbps, 340/360.3Mbps, 408/432.4Mbps, 453/480.4Mbps, 510/540.4Mbps, 567/600.5Mbps (ax – 80MHz BW)  
 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, 244/258Mbps, 270/286.8Mbps (MIMO ax – 20MHz)  
 32/34.4Mbps, 66/68.8Mbps, 98/103.2Mbps, 130/137.6Mbps, 196/206.5Mbps, 260/275.3 Mbps, 292/309.7Mbps, 326/344.1Mbps, 390/412.9Mbps, 434/458.8Mbps, 488/516.2Mbps, 540/573.5Mbps (MIMO ax – 40MHz)  
 68/72.1Mbps, 136/144.1Mbps, 204/216.2Mbps, 272/288.2Mbps, 408/432.4Mbps, 574/576.5Mbps, 612/648.5Mbps, 680/720.6Mbps, 816/864.7Mbps, 906/960.8Mbps, 1020/1080.9Mbps, 1134/1201Mbps (MIMO ax – 80MHz)

FCC ID: BCGA2567 IC: 579C-A2567	 <b>MEASUREMENT REPORT (CERTIFICATION)</b>			Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 9 of 351	

## 2.3 Antenna Description

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

Frequency [GHz]	Antenna Gain (dBi)	
	Antenna WF5T	Antenna WF2
5.150 – 5.250	3.4	2.6
5.250 – 5.350	4.5	2.2
5.470 – 5.725	4.5	2.4
5725 – 5.850	3.0	3.3

**Table 2-6. Highest Antenna Gain**

## 2.4 Test Support Equipment

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

**Table 2-7. Test Support Equipment List**

FCC ID: BCGA2567 IC: 579C-A2567	 <b>PCTEST</b> <sup>®</sup> <small>Proud to be part of </small>			MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device			

## 2.5 Test Configuration

The EUT was tested per the guidance of ANSI C63.10-2013 and KDB 789033 D02 v02r01. 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, 3.3 for radiated emissions test setups, and 7.2, 7.3, 7.4, and 7.5 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 HT20/40, 11ax(SU) HE20/40/80 and acVHT80 2TX CDD/SDM mode test data provided in this report covers 802.11n HT20/40, 11ax(SU) HE20/40/80 and 802.11acVHT80 2TX STBC mode

802.11ac VHT20 and VHT40 mode are different from 802.11n HT20 and HT40 only in control messages and have the same power settings.

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:

- 802.11a:
  - Low Data Rate: 12Mbps
  - Mid Data Rate: 24Mbps
  - High Data Rate: 36Mbps
- 802.11n HT20/40:
  - Low Data Rate: MCS2/MCS10 (SISO/CDD)
  - Mid Data Rate: MCS3/MCS11 (SISO/CDD)
  - High Data Rate: MCS5/MCS13 (SISO/CDD)
- 802.11ac VHT80:
  - Low Data Rate: MCS2
  - Mid Data Rate: MCS3
  - High Data Rate: MCS5
- 802.11ax(SU) HE20/HE40/HE80:
  - Low Data Rate: MCS2
  - Mid Data Rate: MCS3
  - High Data Rate: MCS5

**Notes:**

For 802.11ax-RU test results, see separate UNII 802.11ax (OFDMA) report, 1C2106080048-08.BCG

FCC ID: BCGA2567 IC: 579C-A2567	 <b>PCTEST</b> <sup>®</sup> Proud to be part of  <b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 11 of 351

## 2.6 Software and Firmware

The test was conducted with firmware version 19A42380m 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.

FCC ID: BCGA2567 IC: 579C-A2567	 <b>PCTEST</b> Proud to be part of 		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device		Page 12 of 351

## 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 789033 D02 v02r01 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 ground plane. Power cables for support equipment were routed down to the second LISN while ensuring that that 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 7.8. 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: BCGA2567 IC: 579C-A2567	 <b>PCTEST<sup>®</sup></b> Proud to be part of element		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device		Page 13 of 351

### 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 used 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: BCGA2567 IC: 579C-A2567	 <b>PCTEST®</b> Proud to be part of  <b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 14 of 351

## 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 connection to an external antenna.

### Conclusion:

The EUT complies with the requirement of §15.203.

FCC ID: BCGA2567 IC: 579C-A2567	 <b>PCTEST</b> Proud to be part of 		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 15 of 351	

## 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  $U_{CISPR}$  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 (<1GHz)	4.30
Radiated Disturbance (>1GHz)	4.78
Radiated Disturbance (>18GHz)	4.79

FCC ID: BCGA2567 IC: 579C-A2567	 PCTEST <sup>®</sup> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 16 of 351

## 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
Anritsu	ML2496A	Power Meter	11/3/2020	Annual	11/3/2021	184005
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
Agilent Technologies	N9030A	3Hz-44GHz PXA Signal Analyzer	3/31/2021	Annual	3/31/2022	MY49430244
ATM	180-442-KF	20dB Nominal Gain Horn Antenna	12/9/2020	Annual	12/9/2021	T058701-01
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)	5/3/2021	Annual	5/3/2022	205956
Keysight Technology	N9040B	UXA Signal Analyzer	12/19/2020	Annual	12/19/2021	MY57212015
Rohde & Schwarz	TS-PR8	Pre-Amplifier (30MHz - 8GHz)	12/3/2020	Annual	12/3/2021	102327
Rohde & Schwarz	TS-PR18	Pre-Amplifier (1GHz - 18GHz)	12/3/2020	Annual	12/3/2021	101648
Rohde & Schwarz	FSV40	Signal Analyzer (10Hz-40GHz)	3/16/2021	Annual	3/16/2022	101619
Rohde & Schwarz	ESW26	EMI Test Receiver	6/11/2021	Annual	6/11/2022	101299
Rohde & Schwarz	ESW44	EMI Test Receiver	11/9/2020	Annual	11/9/2021	101570
Rohde & Schwarz	TS-PR1840	Pre-Amplifier (18GHz - 40GHz)	4/29/2021	Annual	4/29/2022	100051
Rohde & Schwarz	TC-TA18	Cross Polarized Vivaldi Antenna (400MHz-18GHz)	10/2/2020	Annual	10/2/2021	101063
Rohde & Schwarz	HFH2-Z2	Loop Antenna	4/5/2021	Annual	4/5/2022	100519
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: BCGA2567 IC: 579C-A2567	 <b>PCTEST®</b> Proud to be part of  <b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 17 of 351

## 7.0 TEST RESULTS

### 7.1 Summary

Company Name: Apple Inc.  
 FCC ID: BCGA2567  
 IC: 579C-A2567  
 FCC Classification: Unlicensed National Information Infrastructure (UNII)

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.407	RSS-Gen [6.7]	26dB Bandwidth	N/A	CONDUCTED	N/A	Section 7.2
15.407(e)	RSS-Gen [6.7]	6dB Bandwidth	>500kHz(5725-5850MHz)		PASS	Section 7.3
2.1049	RSS-Gen [6.7]	Occupied Bandwidth	N/A		N/A	Section 7.2, Section 7.3
15.407 (a.1.iv), (a.2), (a.3)	RSS-247 [6.2]	Maximum Conducted Output Power	Maximum conducted powers must meet the limits detailed in 15.407 (a) (RSS-247 [6.2])		PASS	Section 7.4
15.407 (a.1.iv), (a.2), (a.3)	RSS-247 [6.2]	Maximum Power Spectral Density	Maximum power spectral density must meet the limits detailed in 15.407 (a) (RSS-247 [6.2])		PASS	Section 7.5
15.407(h)	RSS-247 [6.3]	Dynamic Frequency Selection	See DFS Test Report	RADIATED	PASS	See DFS Test Report (1C21060800 48-06.BCG)
15.407(b.1), (2), (3), (4)	RSS-247 [6.2]	Undesirable Emissions	Undesirable emissions must meet the limits detailed in 15.407(b) (RSS-247 [6.2])		PASS	Section 7.6
15.205, 15.407(b.1), (4), (5), (6)	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])		PASS	Section 7.6, 7.7
15.207	RSS-Gen [8.8]	AC Line Conducted 150kHz – 30MHz	< FCC 15.207 (RSS-Gen [8.8]) limits	AC LINE CONDUCTED	PASS	Section 7.8

Table 7-1. Summary of Test Results

FCC ID: BCGA2567 IC: 579C-A2567	 PCTEST <sup>®</sup> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 18 of 351

**Notes:**

- 1) All channels, modes, and modulations/data rates were investigated among all UNII bands. 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 "UNII Automation," Version 6.0.
- 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 1.3.2.
- 6) Per RSS-247 Section 6.2.3, transmission on channels which overlap the 5600-5650 MHz is prohibited. This device operates under these frequencies only under the control of a certified master device and does not support active scanning on these channels. This device does not transmit any beacons or initiate any transmissions in UNII Bands 2A or 2C.

FCC ID: BCGA2567 IC: 579C-A2567	 <b>PCTEST®</b> <small>Proud to be part of </small>		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device		Page 19 of 351

## 7.2 26dB & 99% Bandwidth Measurement – 802.11a/n/ac/ax(SU)

§2.1049; §15.407; RSS-Gen [6.7]

### Test Overview and Limit

The bandwidth at 26dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, and at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 26dB bandwidth.

***The 26dB bandwidth is used to determine the conducted power limits.***

### Test Procedure Used

ANSI C63.10-2013 – Section 12.4  
 KDB 789033 D02 v02r01 – Section C

### Test Settings

1. The signal analyzers' automatic bandwidth measurement capability was used to perform the 26dB bandwidth measurement. The "X" dB bandwidth parameter was set to  $X = 26$ . The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = approximately 1% of the emission bandwidth
3. VBW  $\geq 3 \times$  RBW
4. Detector = Peak
5. Trace mode = max hold

### 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

1. All antenna configurations and data rates were investigated and only the worst case are reported.
2. The data rates have been classified into three different groups; low data rate, middle rate, and high data rate. All three data rate groups of data rate have been investigated and only the worst case data rate per group is reported.
3. Low, mid, and high channels were tested and tabular data has been reported. Only mid channel bandwidth plots have been reported.

FCC ID: BCGA2567 IC: 579C-A2567	 <b>PCTEST</b> <sup>®</sup> Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 20 of 351

## Antenna WF5T 26dB & 99% Bandwidth Measurements

Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured 99% Occupied Bandwidth [MHz]	Measured 26dB Bandwidth [MHz]
Band 1	5180	36	n (20MHz)	19.5/21.7 (MCS2)	17.87
	5200	40	n (20MHz)	19.5/21.7 (MCS2)	17.73
	5240	48	n (20MHz)	19.5/21.7 (MCS2)	17.69
	5180	36	ax (SU) (20MHz)	24/25.8 (MCS2)	18.99
	5200	40	ax (SU) (20MHz)	24/25.8 (MCS2)	18.96
	5240	48	ax (SU) (20MHz)	24/25.8 (MCS2)	18.90
	5190	38	n (40MHz)	40.5/45 (MCS2)	36.54
	5230	46	n (40MHz)	40.5/45 (MCS2)	36.42
	5190	38	ax (SU) (40MHz)	49/51.6 (MCS2)	38.13
	5230	46	ax (SU) (40MHz)	49/51.6 (MCS2)	38.06
	5210	42	ac (80MHz)	87.8/97.5 (MCS2)	75.42
	5210	42	ax (SU) (80MHz)	102/108.1 (MCS2)	77.51
Band 2A	5260	52	n (20MHz)	19.5/21.7 (MCS2)	17.74
	5280	56	n (20MHz)	19.5/21.7 (MCS2)	17.74
	5320	64	n (20MHz)	19.5/21.7 (MCS2)	17.82
	5260	52	ax (SU) (20MHz)	24/25.8 (MCS2)	18.88
	5280	56	ax (SU) (20MHz)	24/25.8 (MCS2)	18.91
	5320	64	ax (SU) (20MHz)	24/25.8 (MCS2)	18.99
	5270	54	n (40MHz)	40.5/45 (MCS2)	36.30
	5310	62	n (40MHz)	40.5/45 (MCS2)	36.49
	5270	54	ax (SU) (40MHz)	49/51.6 (MCS2)	37.92
	5310	62	ax (SU) (40MHz)	49/51.6 (MCS2)	38.12
	5290	58	ac (80MHz)	87.8/97.5 (MCS2)	75.52
	5290	58	ax (SU) (80MHz)	102/108.1 (MCS2)	77.25
Band 2C	5500	100	n (20MHz)	19.5/21.7 (MCS2)	17.85
	5580	116	n (20MHz)	19.5/21.7 (MCS2)	17.69
	5720	144	n (20MHz)	19.5/21.7 (MCS2)	17.73
	5500	100	ax (SU) (20MHz)	24/25.8 (MCS2)	19.02
	5580	116	ax (SU) (20MHz)	24/25.8 (MCS2)	18.91
	5720	144	ax (SU) (20MHz)	24/25.8 (MCS2)	18.96
	5510	102	n (40MHz)	40.5/45 (MCS2)	36.57
	5550	110	n (40MHz)	40.5/45 (MCS2)	36.33
	5710	142	n (40MHz)	40.5/45 (MCS2)	36.31
	5510	102	ax (SU) (40MHz)	49/51.6 (MCS2)	38.15
	5550	110	ax (SU) (40MHz)	49/51.6 (MCS2)	37.90
	5710	142	ax (SU) (40MHz)	49/51.6 (MCS2)	37.95
Band 2C	5530	106	ac (80MHz)	87.8/97.5 (MCS2)	75.76
	5690	138	ac (80MHz)	87.8/97.5 (MCS2)	75.14
	5530	106	ax (SU) (80MHz)	102/108.1 (MCS2)	77.40
	5690	138	ax (SU) (80MHz)	102/108.1 (MCS2)	77.09
					81.55

Table 7-2. Conducted Bandwidth Measurements Antenna WF5T (Low Data Rate)

FCC ID: BCGA2567 IC: 579C-A2567	 PCTEST® Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 21 of 351

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured 99% Occupied Bandwidth [MHz]	Measured 26dB Bandwidth [MHz]
Band 1	5180	36	n (20MHz)	26/28.9 (MCS3)	17.72	20.66
	5200	40	n (20MHz)	26/28.9 (MCS3)	17.63	20.60
	5240	48	n (20MHz)	26/28.9 (MCS3)	17.70	20.71
	5180	36	ax (SU) (20MHz)	33/34.4 (MCS3)	19.01	21.17
	5200	40	ax (SU) (20MHz)	33/34.4 (MCS3)	18.93	20.92
	5240	48	ax (SU) (20MHz)	33/34.4 (MCS3)	18.91	21.04
	5190	38	n (40MHz)	54/60 (MCS3)	36.30	41.19
	5230	46	n (40MHz)	54/60 (MCS3)	36.44	42.00
	5190	38	ax (SU) (40MHz)	65/68.8 (MCS3)	38.02	46.30
	5230	46	ax (SU) (40MHz)	65/68.8 (MCS3)	38.06	49.33
	5210	42	ac (80MHz)	117/130 (MCS3)	75.34	80.76
	5210	42	ax (SU) (80MHz)	136/144.1 (MCS3)	75.78	81.53
	5260	52	n (20MHz)	26/28.9 (MCS3)	17.68	20.72
	5280	56	n (20MHz)	26/28.9 (MCS3)	17.67	20.72
Band 2A	5320	64	n (20MHz)	26/28.9 (MCS3)	17.71	20.99
	5260	52	ax (SU) (20MHz)	33/34.4 (MCS3)	18.92	20.91
	5280	56	ax (SU) (20MHz)	33/34.4 (MCS3)	18.92	20.92
	5320	64	ax (SU) (20MHz)	33/34.4 (MCS3)	18.97	21.10
	5270	54	n (40MHz)	54/60 (MCS3)	36.36	41.08
	5310	62	n (40MHz)	54/60 (MCS3)	36.39	40.89
	5270	54	ax (SU) (40MHz)	65/68.8 (MCS3)	37.89	41.33
	5310	62	ax (SU) (40MHz)	65/68.8 (MCS3)	38.00	41.74
	5290	58	ac (80MHz)	117/130 (MCS3)	75.49	81.44
	5290	58	ax (SU) (80MHz)	136/144.1 (MCS3)	75.44	81.25
	5500	100	n (20MHz)	26/28.9 (MCS3)	17.71	20.40
	5580	116	n (20MHz)	26/28.9 (MCS3)	17.72	20.53
	5720	144	n (20MHz)	26/28.9 (MCS3)	17.70	20.45
Band 2C	5500	100	ax (SU) (20MHz)	33/34.4 (MCS3)	18.98	21.46
	5580	116	ax (SU) (20MHz)	33/34.4 (MCS3)	18.93	20.79
	5720	144	ax (SU) (20MHz)	33/34.4 (MCS3)	18.92	21.00
	5510	102	n (40MHz)	54/60 (MCS3)	36.36	41.22
	5550	110	n (40MHz)	54/60 (MCS3)	36.34	41.00
	5710	142	n (40MHz)	54/60 (MCS3)	36.33	41.31
	5510	102	ax (SU) (40MHz)	65/68.8 (MCS3)	38.01	41.88
	5550	110	ax (SU) (40MHz)	65/68.8 (MCS3)	37.96	41.15
	5710	142	ax (SU) (40MHz)	65/68.8 (MCS3)	37.96	41.41
	5530	106	ac (80MHz)	117/130 (MCS3)	75.45	81.61
	5690	138	ac (80MHz)	117/130 (MCS3)	75.73	81.10
	5530	106	ax (SU) (80MHz)	136/144.1 (MCS3)	75.66	81.25
	5690	138	ax (SU) (80MHz)	136/144.1 (MCS3)	75.42	81.41

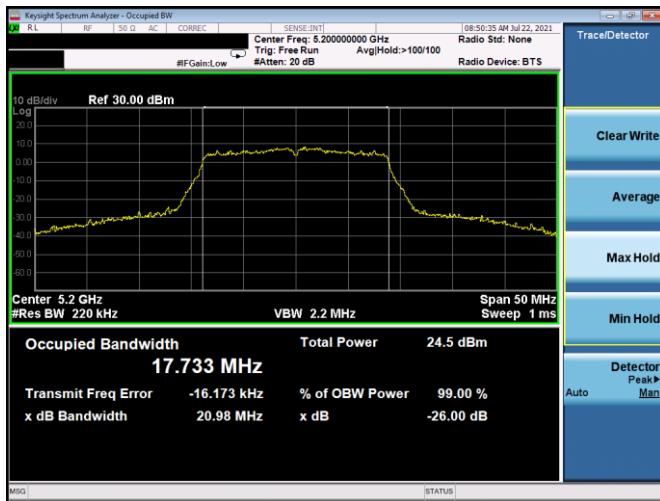
**Table 7-3. Conducted Bandwidth Measurements Antenna WF5T (Mid Data Rate)**

FCC ID: BCGA2567 IC: 579C-A2567	 <b>PCTEST®</b> Proud to be part of  <b>MEASUREMENT REPORT (CERTIFICATION)</b>			Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 22 of 351	

Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured 99% Occupied Bandwidth [MHz]	Measured 26dB Bandwidth [MHz]
Band 1	5180	36	n (20MHz)	52/57.8 (MCS5)	17.77
	5200	40	n (20MHz)	52/57.8 (MCS5)	17.85
	5240	48	n (20MHz)	52/57.8 (MCS5)	17.83
	5180	36	ax (SU) (20MHz)	65/68.8 (MCS5)	19.00
	5200	40	ax (SU) (20MHz)	65/68.8 (MCS5)	19.03
	5240	48	ax (SU) (20MHz)	65/68.8 (MCS5)	19.03
	5190	38	n (40MHz)	108/120 (MCS5)	36.39
	5230	46	n (40MHz)	108/120 (MCS5)	37.19
	5190	38	ax (SU) (40MHz)	130/137.6 (MCS5)	37.95
	5230	46	ax (SU) (40MHz)	130/137.6 (MCS5)	38.43
	5210	42	ac (80MHz)	234/260 (MCS5)	75.75
	5210	42	ax (SU) (80MHz)	272/288.2 (MCS5)	77.13
	5260	52	n (20MHz)	52/57.8 (MCS5)	17.87
	5280	56	n (20MHz)	52/57.8 (MCS5)	17.67
	5320	64	n (20MHz)	52/57.8 (MCS5)	17.83
Band 2A	5260	52	ax (SU) (20MHz)	65/68.8 (MCS5)	19.01
	5280	56	ax (SU) (20MHz)	65/68.8 (MCS5)	19.01
	5320	64	ax (SU) (20MHz)	65/68.8 (MCS5)	19.01
	5270	54	n (40MHz)	108/120 (MCS5)	36.65
	5310	62	n (40MHz)	108/120 (MCS5)	36.46
	5270	54	ax (SU) (40MHz)	130/137.6 (MCS5)	38.00
	5310	62	ax (SU) (40MHz)	130/137.6 (MCS5)	37.92
	5290	58	ac (80MHz)	234/260 (MCS5)	75.65
	5290	58	ax (SU) (80MHz)	272/288.2 (MCS5)	77.03
	5500	100	n (20MHz)	52/57.8 (MCS5)	17.81
	5580	116	n (20MHz)	52/57.8 (MCS5)	17.78
	5720	144	n (20MHz)	52/57.8 (MCS5)	17.86
	5500	100	ax (SU) (20MHz)	65/68.8 (MCS5)	18.96
	5580	116	ax (SU) (20MHz)	65/68.8 (MCS5)	18.90
Band 2C	5720	144	ax (SU) (20MHz)	65/68.8 (MCS5)	19.05
	5510	102	n (40MHz)	108/120 (MCS5)	36.51
	5550	110	n (40MHz)	108/120 (MCS5)	36.55
	5710	142	n (40MHz)	108/120 (MCS5)	36.66
	5510	102	ax (SU) (40MHz)	130/137.6 (MCS5)	37.92
	5550	110	ax (SU) (40MHz)	130/137.6 (MCS5)	38.03
	5710	142	ax (SU) (40MHz)	130/137.6 (MCS5)	38.16
	5530	106	ac (80MHz)	234/260 (MCS5)	75.76
	5690	138	ac (80MHz)	234/260 (MCS5)	76.29
	5530	106	ax (SU) (80MHz)	272/288.2 (MCS5)	77.17
	5690	138	ax (SU) (80MHz)	272/288.2 (MCS5)	77.66
					104.00

**Table 7-4. Conducted Bandwidth Measurements Antenna WF5T (High Data Rate)**

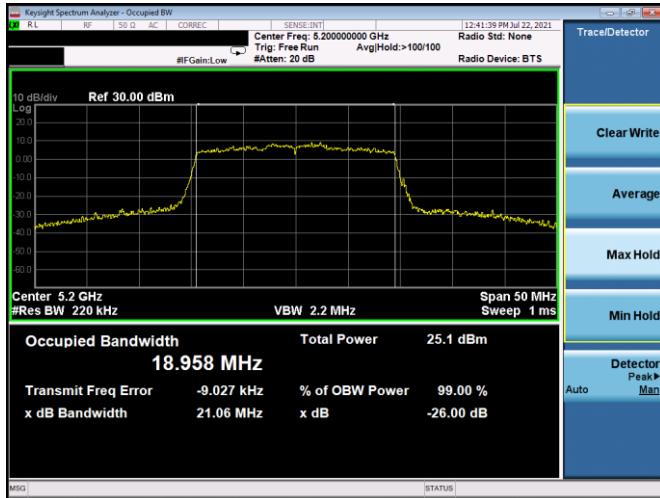
FCC ID: BCGA2567 IC: 579C-A2567	 PCTEST® Proud to be part of 			MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device			



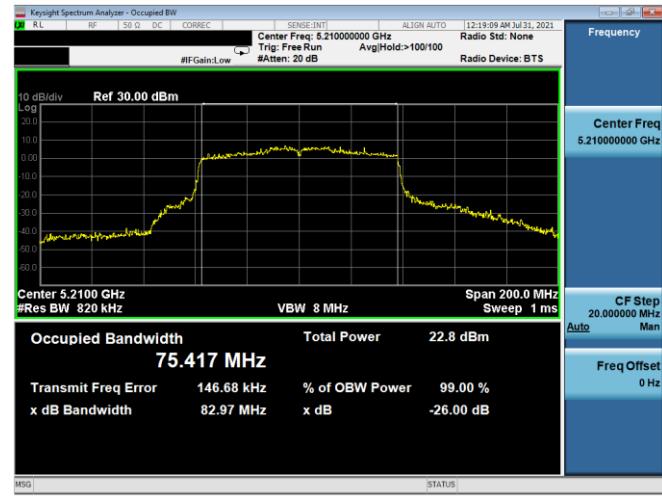
Plot 7-1. 26dB BW & 99% OBW Antenna WF5T (20MHz BW 802.11n – Ch. 40, MCS2)



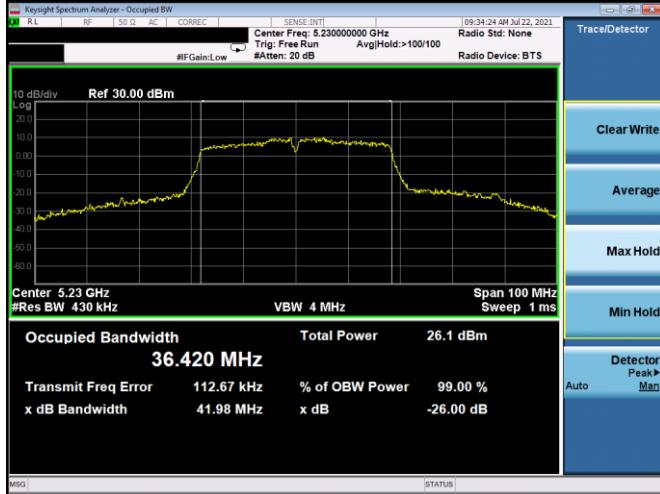
Plot 7-4. 26dB BW & 99% OBW Antenna WF5T (40MHz BW 802.11ax(SU) – Ch. 46, MCS2)



Plot 7-2. 26dB BW & 99% OBW Antenna WF5T (20MHz BW 802.11ax(SU) – Ch. 40, MCS2)



Plot 7-5. 26dB BW & 99% OBW Antenna WF5T (80MHz BW 802.11ac – Ch. 42, MCS2)

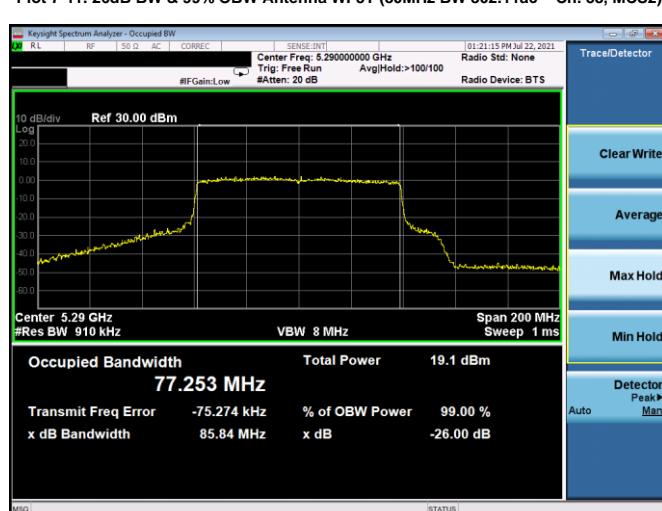
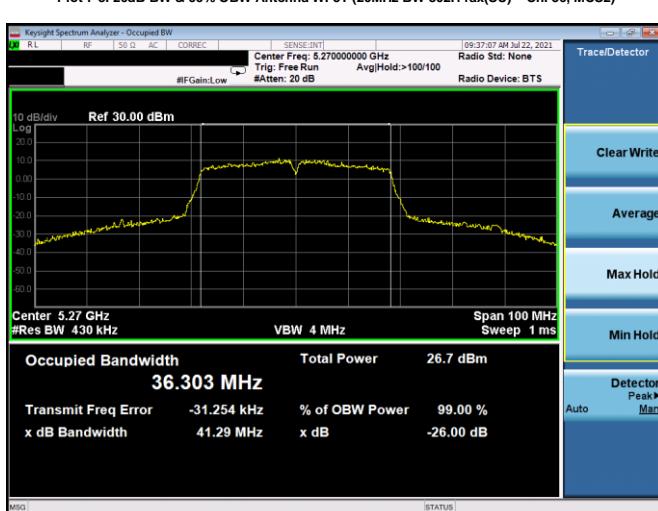
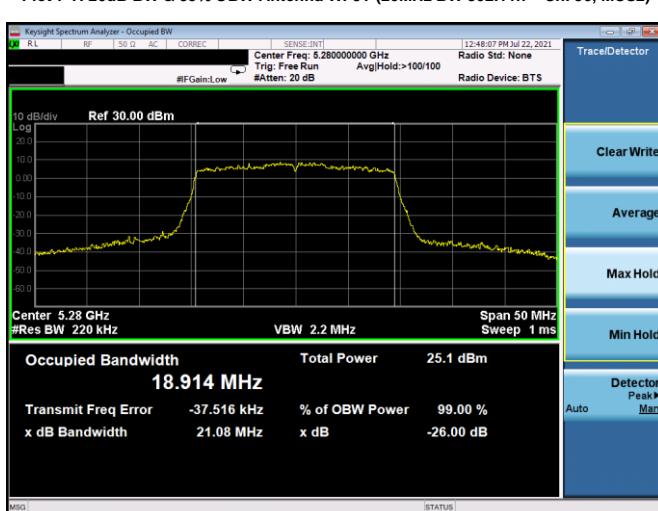


Plot 7-3. 26dB BW & 99% OBW Antenna WF5T (40MHz BW 802.11n – Ch. 46, MCS2)

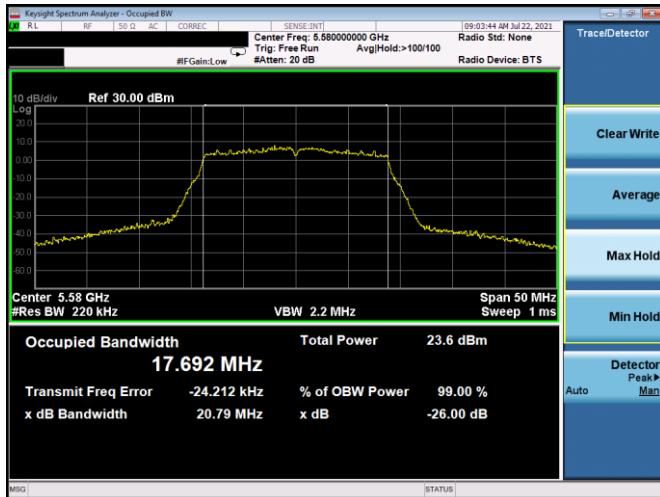


Plot 7-6. 26dB BW & 99% OBW Antenna WF5T (80MHz BW 802.11ax(SU) – Ch. 42, MCS2)

FCC ID: BCGA2567 IC: 579C-A2567	 Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	<b>Test Dates:</b> 6/2/2021 - 8/7/2021	<b>EUT Type:</b> Tablet Device	Page 24 of 351



FCC ID: BCGA2567 IC: 579C-A2567	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 25 of 351



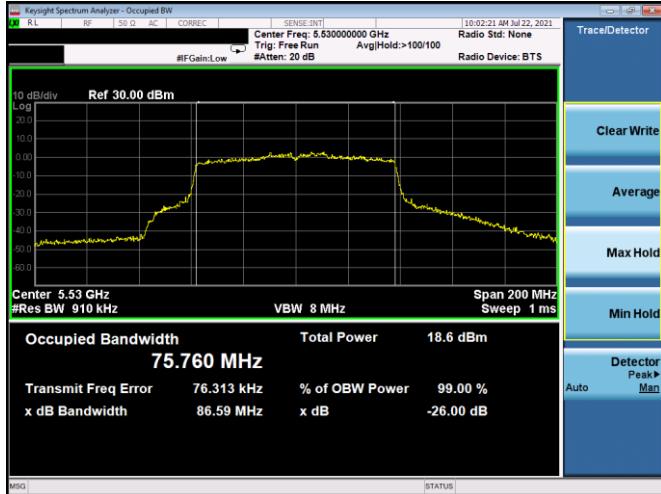
Plot 7-13. 26dB BW & 99% OBW Antenna WF5T (20MHz BW 802.11n – Ch. 116, MCS2)



Plot 7-16. 26dB BW & 99% OBW Antenna WF5T (40MHz BW 802.11ax(SU) – Ch. 110, MCS2)



Plot 7-14. 26dB BW & 99% OBW Antenna WF5T (20MHz BW 802.11ax(SU) – Ch. 116, MCS2)



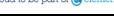
Plot 7-17. 26dB BW & 99% OBW Antenna WF5T (80MHz BW 802.11ac – Ch. 106, MCS2)

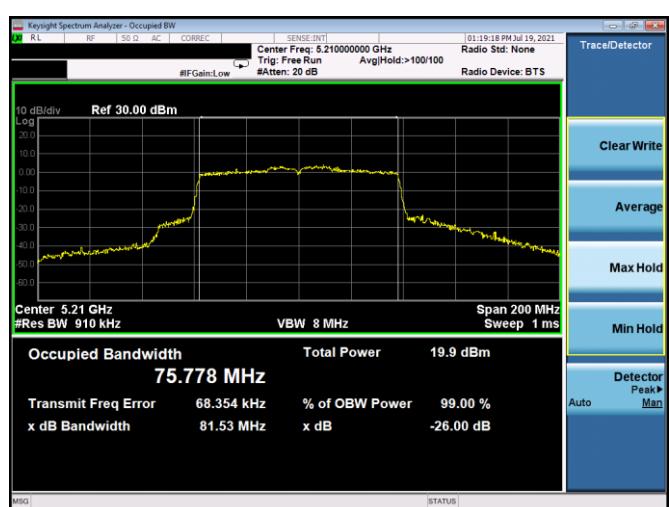
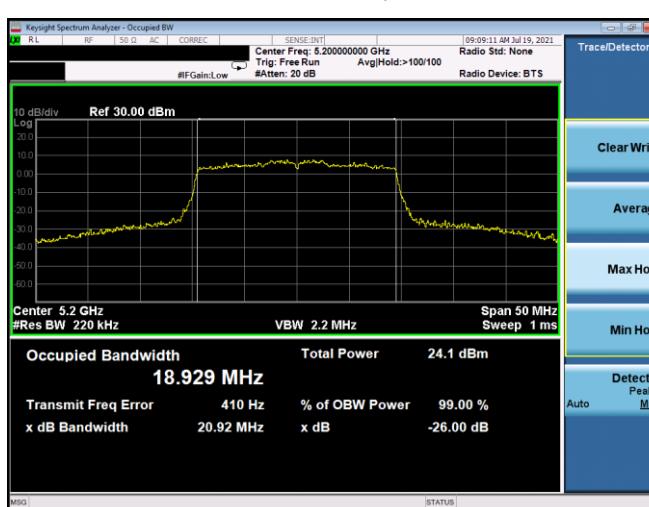


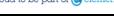
Plot 7-15. 26dB BW & 99% OBW Antenna WF5T (40MHz BW 802.11n – Ch. 110, MCS2)

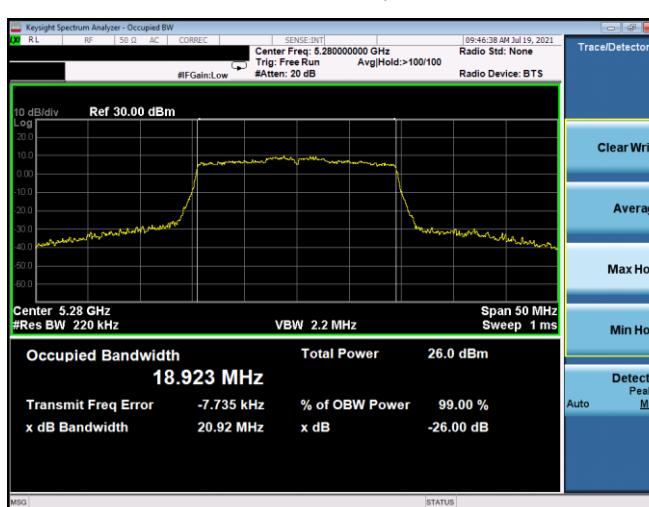


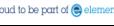
Plot 7-18. 26dB BW & 99% OBW Antenna WF5T (80MHz BW 802.11ax(SU) – Ch. 106, MCS2)

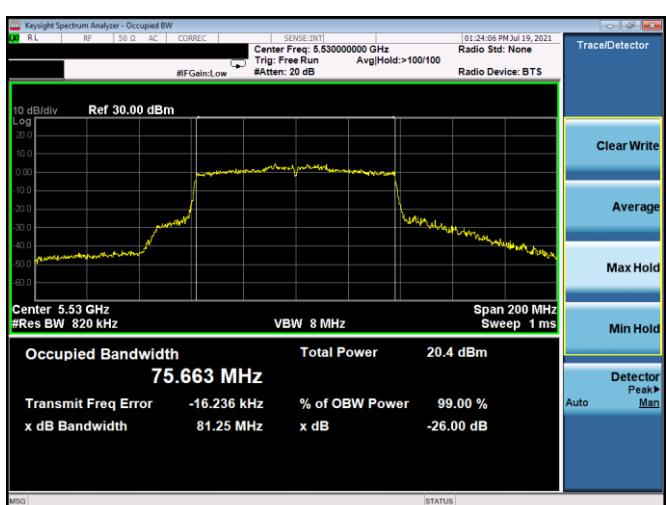
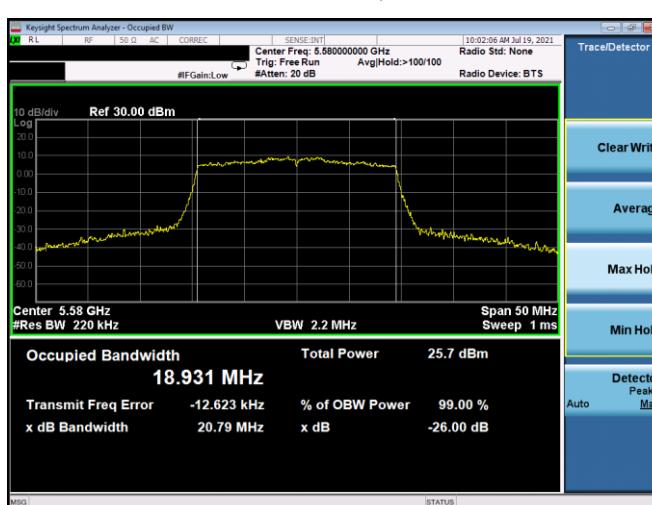
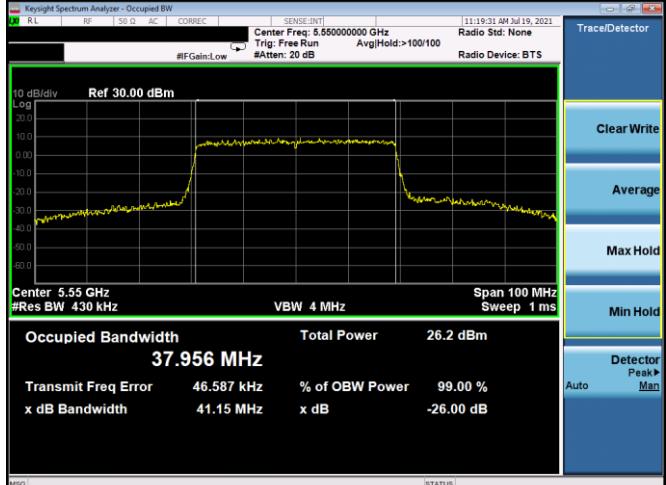
FCC ID: BCGA2567 IC: 579C-A2567	 PCTEST® Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 26 of 351

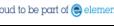


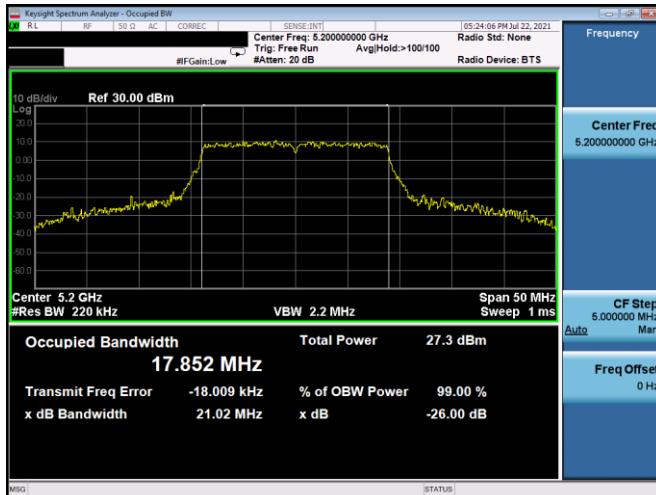
FCC ID: BCGA2567 IC: 579C-A2567	 PCTEST® Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 27 of 351



FCC ID: BCGA2567 IC: 579C-A2567	 PCTEST® Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 28 of 351



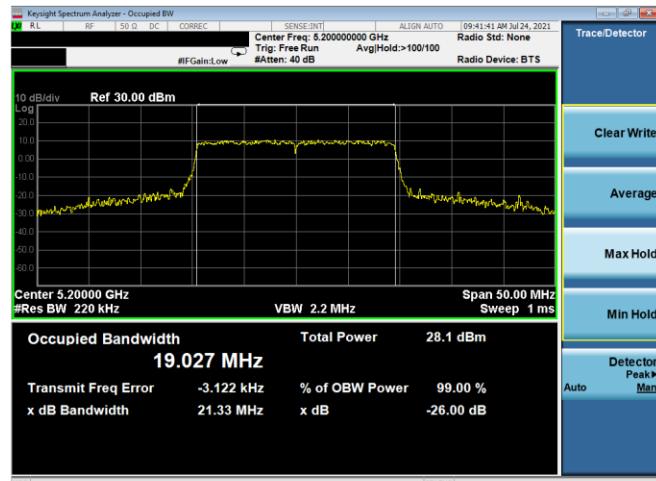
FCC ID: BCGA2567 IC: 579C-A2567	 PCTEST <sup>®</sup> Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 29 of 351



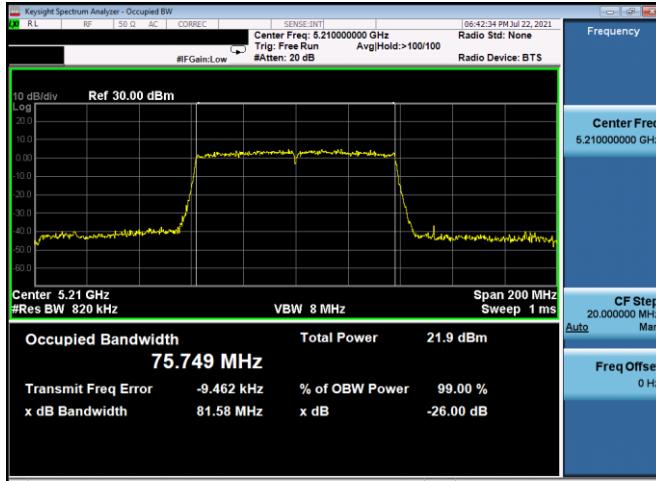
Plot 7-37. 26dB BW & 99% OBW Antenna WF5T (20MHz BW 802.11n – Ch. 40, MCS5)



Plot 7-40. 26dB BW & 99% OBW Antenna WF5T (40MHz BW 802.11ax(SU) – Ch. 46, MCS5)



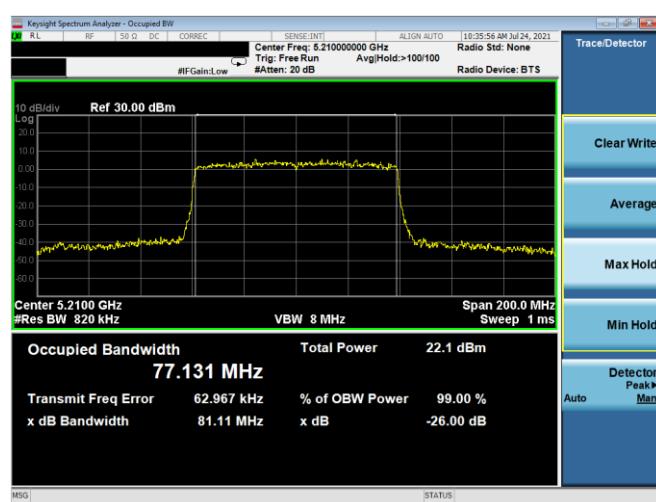
Plot 7-38. 26dB BW & 99% OBW Antenna WF5T (20MHz BW 802.11ax(SU) – Ch. 40, MCS5)



Plot 7-41. 26dB BW & 99% OBW Antenna WF5T (80MHz BW 802.11ac – Ch. 42, MCS5)

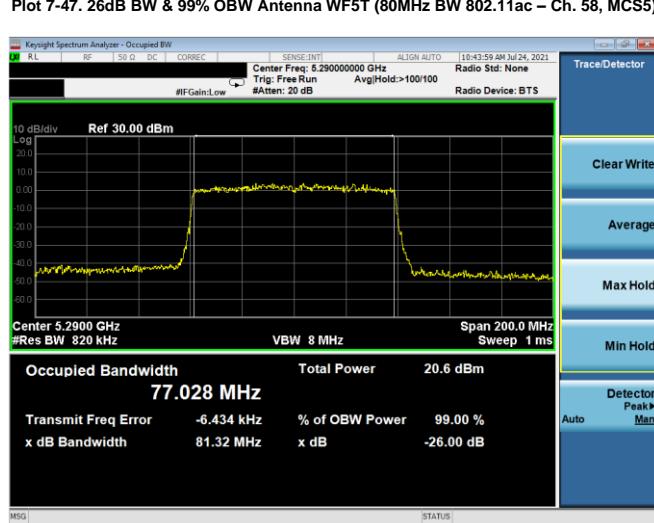
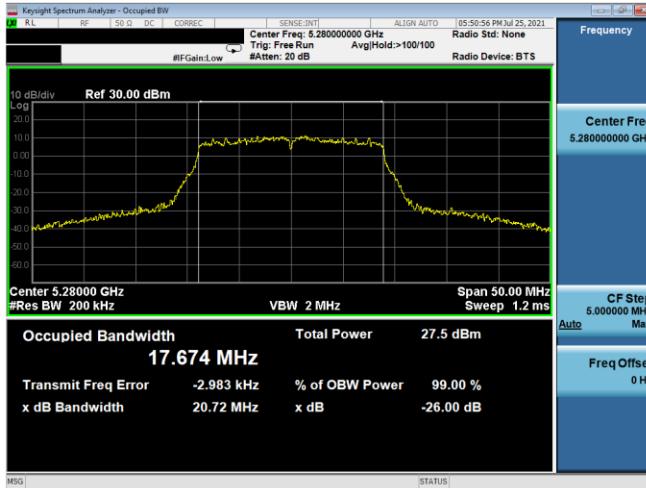


Plot 7-39. 26dB BW & 99% OBW Antenna WF5T (40MHz BW 802.11n – Ch. 46, MCS5)



Plot 7-42. 26dB BW & 99% OBW Antenna WF5T (80MHz BW 802.11ax(SU) – Ch. 42, MCS5)

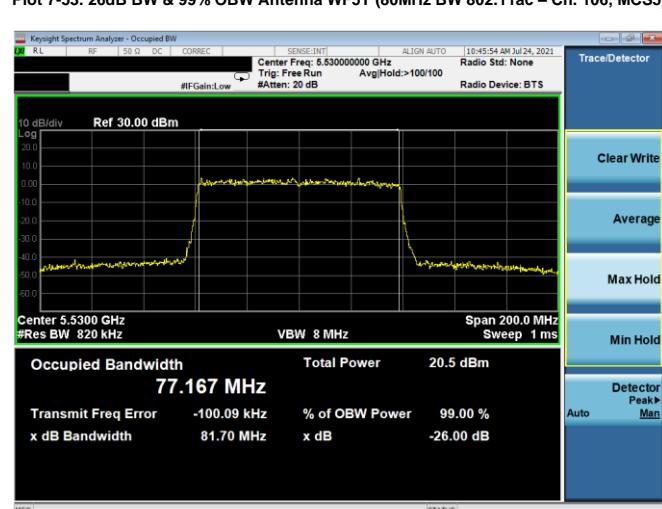
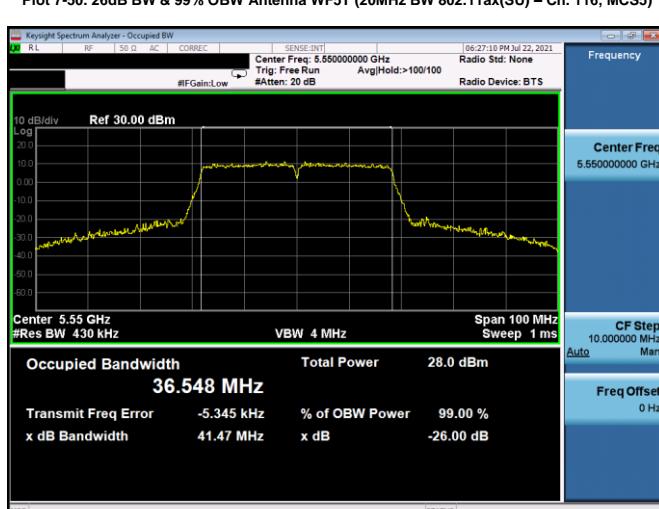
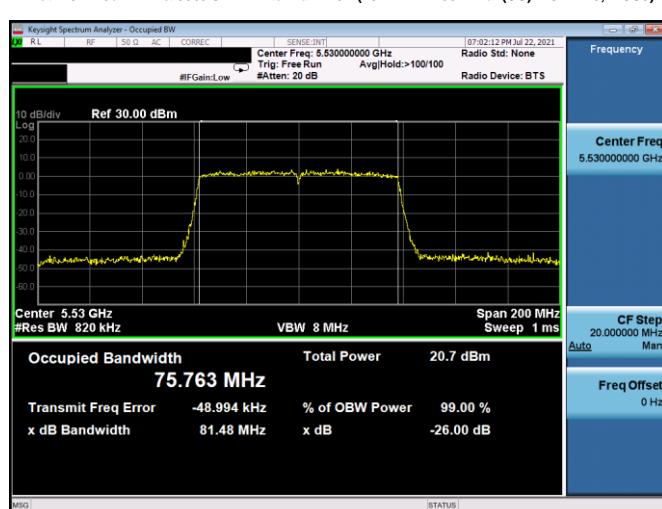
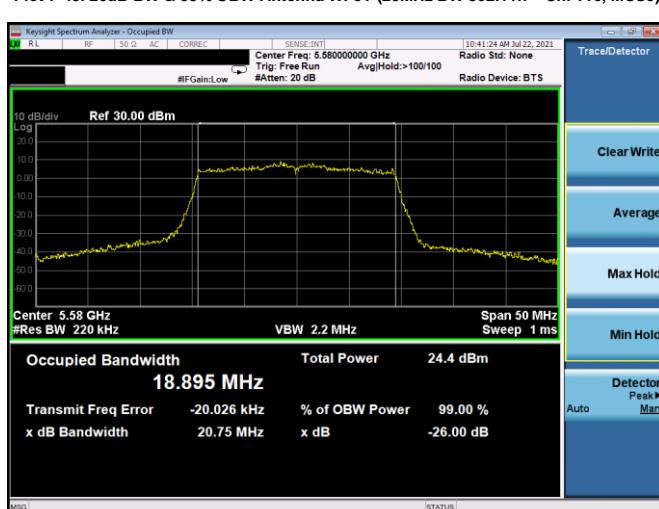
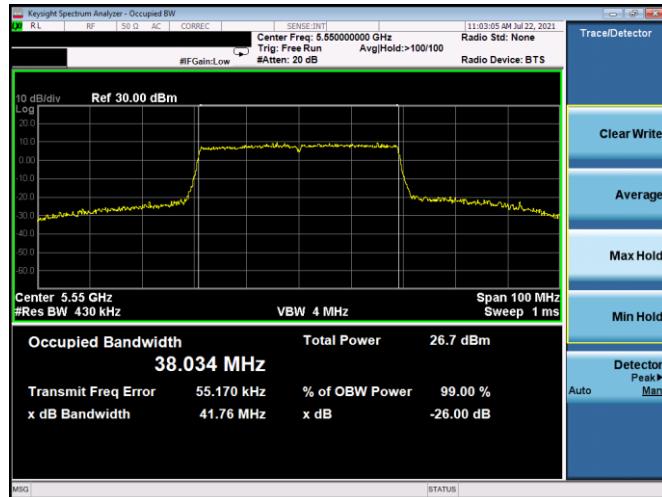
FCC ID: BCGA2567 IC: 579C-A2567	 PCTEST® Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 30 of 351

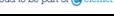


Plot 7-45. 26dB BW & 99% OBW Antenna WF5T (40MHz BW 802.11n - Ch. 54, MCS5)

Plot 7-48. 26dB BW & 99% OBW Antenna WF5T (80MHz BW 802.11ax(SU) - Ch. 58, MCS5)

FCC ID: BCGA2567 IC: 579C-A2567	 PCTEST® Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 31 of 351



FCC ID: BCGA2567 IC: 579C-A2567	 PCTEST® Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 32 of 351

## Antenna WF2 26dB & 99% Bandwidth Measurements

Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured 99% Occupied Bandwidth [MHz]	Measured 26dB Bandwidth [MHz]
Band 1	5180	36	n (20MHz)	19.5/21.7 (MCS2)	17.85
	5200	40	n (20MHz)	19.5/21.7 (MCS2)	17.73
	5240	48	n (20MHz)	19.5/21.7 (MCS2)	17.70
	5180	36	ax (SU) (20MHz)	24/25.8 (MCS2)	18.99
	5200	40	ax (SU) (20MHz)	24/25.8 (MCS2)	18.94
	5240	48	ax (SU) (20MHz)	24/25.8 (MCS2)	18.94
	5190	38	n (40MHz)	40.5/45 (MCS2)	36.57
	5230	46	n (40MHz)	40.5/45 (MCS2)	36.52
	5190	38	ax (SU) (40MHz)	49/51.6 (MCS2)	38.13
	5230	46	ax (SU) (40MHz)	49/51.6 (MCS2)	38.00
Band 2A	5210	42	ac (80MHz)	87.8/97.5 (MCS2)	77.50
	5210	42	ax (SU) (80MHz)	102/108.1 (MCS2)	77.46
	5260	52	n (20MHz)	19.5/21.7 (MCS2)	17.70
	5280	56	n (20MHz)	19.5/21.7 (MCS2)	17.73
	5320	64	n (20MHz)	19.5/21.7 (MCS2)	17.83
	5260	52	ax (SU) (20MHz)	24/25.8 (MCS2)	18.89
	5280	56	ax (SU) (20MHz)	24/25.8 (MCS2)	18.92
	5320	64	ax (SU) (20MHz)	24/25.8 (MCS2)	18.97
	5270	54	n (40MHz)	40.5/45 (MCS2)	36.34
	5310	62	n (40MHz)	40.5/45 (MCS2)	36.52
Band 2C	5270	54	ax (SU) (40MHz)	49/51.6 (MCS2)	37.93
	5310	62	ax (SU) (40MHz)	49/51.6 (MCS2)	38.08
	5290	58	ac (80MHz)	87.8/97.5 (MCS2)	77.42
	5290	58	ax (SU) (80MHz)	102/108.1 (MCS2)	77.31
	5500	100	n (20MHz)	19.5/21.7 (MCS2)	17.89
	5580	116	n (20MHz)	19.5/21.7 (MCS2)	17.71
	5720	144	n (20MHz)	19.5/21.7 (MCS2)	17.74
	5500	100	ax (SU) (20MHz)	24/25.8 (MCS2)	18.96
	5580	116	ax (SU) (20MHz)	24/25.8 (MCS2)	18.89
	5720	144	ax (SU) (20MHz)	24/25.8 (MCS2)	18.92
	5510	102	n (40MHz)	40.5/45 (MCS2)	36.62
	5550	110	n (40MHz)	40.5/45 (MCS2)	36.37
	5710	142	n (40MHz)	40.5/45 (MCS2)	36.49
	5510	102	ax (SU) (40MHz)	49/51.6 (MCS2)	38.14
	5550	110	ax (SU) (40MHz)	49/51.6 (MCS2)	38.01
	5710	142	ax (SU) (40MHz)	49/51.6 (MCS2)	38.03
	5530	106	ac (80MHz)	87.8/97.5 (MCS2)	77.36
	5690	138	ac (80MHz)	87.8/97.5 (MCS2)	77.22
	5530	106	ax (SU) (80MHz)	102/108.1 (MCS2)	77.27
	5690	138	ax (SU) (80MHz)	102/108.1 (MCS2)	77.12

Table 7-5. Conducted Bandwidth Measurements Antenna WF2 (Low Data Rate)

FCC ID: BCGA2567 IC: 579C-A2567	 PCTEST® Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 33 of 351

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured 99% Occupied Bandwidth [MHz]	Measured 26dB Bandwidth [MHz]
Band 1	5180	36	n (20MHz)	26/28.9 (MCS3)	17.75	21.06
	5200	40	n (20MHz)	26/28.9 (MCS3)	17.70	20.35
	5240	48	n (20MHz)	26/28.9 (MCS3)	17.70	20.51
	5180	36	ax (SU) (20MHz)	33/34.4 (MCS3)	18.92	20.98
	5200	40	ax (SU) (20MHz)	33/34.4 (MCS3)	18.91	20.78
	5240	48	ax (SU) (20MHz)	33/34.4 (MCS3)	18.90	20.76
	5190	38	n (40MHz)	54/60 (MCS3)	36.31	40.68
	5230	46	n (40MHz)	54/60 (MCS3)	36.43	41.25
	5190	38	ax (SU) (40MHz)	65/68.8 (MCS3)	38.06	52.69
	5230	46	ax (SU) (40MHz)	65/68.8 (MCS3)	38.04	41.63
	5210	42	ac (80MHz)	117/130 (MCS3)	75.27	80.99
	5210	42	ax (SU) (80MHz)	136/144.1 (MCS3)	77.31	81.84
	5260	52	n (20MHz)	26/28.9 (MCS3)	17.67	20.60
	5280	56	n (20MHz)	26/28.9 (MCS3)	17.68	20.43
Band 2A	5320	64	n (20MHz)	26/28.9 (MCS3)	17.68	20.63
	5260	52	ax (SU) (20MHz)	33/34.4 (MCS3)	18.92	21.02
	5280	56	ax (SU) (20MHz)	33/34.4 (MCS3)	18.91	20.79
	5320	64	ax (SU) (20MHz)	33/34.4 (MCS3)	18.98	20.75
	5270	54	n (40MHz)	54/60 (MCS3)	36.36	41.44
	5310	62	n (40MHz)	54/60 (MCS3)	36.35	40.98
	5270	54	ax (SU) (40MHz)	65/68.8 (MCS3)	37.89	41.56
	5310	62	ax (SU) (40MHz)	65/68.8 (MCS3)	38.09	53.87
	5290	58	ac (80MHz)	117/130 (MCS3)	75.34	80.32
	5290	58	ax (SU) (80MHz)	136/144.1 (MCS3)	77.09	81.83
	5500	100	n (20MHz)	26/28.9 (MCS3)	17.69	20.81
	5580	116	n (20MHz)	26/28.9 (MCS3)	17.65	20.86
	5720	144	n (20MHz)	26/28.9 (MCS3)	17.72	20.81
Band 2C	5500	100	ax (SU) (20MHz)	33/34.4 (MCS3)	18.98	20.80
	5580	116	ax (SU) (20MHz)	33/34.4 (MCS3)	18.91	20.86
	5720	144	ax (SU) (20MHz)	33/34.4 (MCS3)	18.93	20.80
	5510	102	n (40MHz)	54/60 (MCS3)	36.35	40.97
	5550	110	n (40MHz)	54/60 (MCS3)	36.37	41.07
	5710	142	n (40MHz)	54/60 (MCS3)	36.45	41.68
	5510	102	ax (SU) (40MHz)	65/68.8 (MCS3)	38.14	53.77
	5550	110	ax (SU) (40MHz)	65/68.8 (MCS3)	37.98	41.43
	5710	142	ax (SU) (40MHz)	65/68.8 (MCS3)	37.93	41.36
	5530	106	ac (80MHz)	117/130 (MCS3)	75.37	80.93
	5690	138	ac (80MHz)	117/130 (MCS3)	75.80	92.04
	5530	106	ax (SU) (80MHz)	136/144.1 (MCS3)	77.49	81.65
	5690	138	ax (SU) (80MHz)	136/144.1 (MCS3)	77.36	96.41

**Table 7-6. Conducted Bandwidth Measurements Antenna WF2 (Mid Data Rate)**

FCC ID: BCGA2567 IC: 579C-A2567	 PCTEST® Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device			

Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured 99% Occupied Bandwidth [MHz]	Measured 26dB Bandwidth [MHz]
Band 1	5180	36	n (20MHz)	52/57.8 (MCS5)	17.82
	5200	40	n (20MHz)	52/57.8 (MCS5)	17.84
	5240	48	n (20MHz)	52/57.8 (MCS5)	17.81
	5180	36	ax (SU) (20MHz)	65/68.8 (MCS5)	19.00
	5200	40	ax (SU) (20MHz)	65/68.8 (MCS5)	19.03
	5240	48	ax (SU) (20MHz)	65/68.8 (MCS5)	19.04
	5190	38	n (40MHz)	108/120 (MCS5)	36.45
	5230	46	n (40MHz)	108/120 (MCS5)	36.90
	5190	38	ax (SU) (40MHz)	130/137.6 (MCS5)	37.98
	5230	46	ax (SU) (40MHz)	130/137.6 (MCS5)	38.40
Band 2A	5210	42	ac (80MHz)	234/260 (MCS5)	75.69
	5210	42	ax (SU) (80MHz)	272/288.2 (MCS5)	77.19
	5260	52	n (20MHz)	52/57.8 (MCS5)	17.83
	5280	56	n (20MHz)	52/57.8 (MCS5)	17.68
	5320	64	n (20MHz)	52/57.8 (MCS5)	17.79
	5260	52	ax (SU) (20MHz)	65/68.8 (MCS5)	19.01
	5280	56	ax (SU) (20MHz)	65/68.8 (MCS5)	19.00
	5320	64	ax (SU) (20MHz)	65/68.8 (MCS5)	19.03
	5270	54	n (40MHz)	108/120 (MCS5)	36.75
	5310	62	n (40MHz)	108/120 (MCS5)	36.48
Band 2C	5270	54	ax (SU) (40MHz)	130/137.6 (MCS5)	38.09
	5310	62	ax (SU) (40MHz)	130/137.6 (MCS5)	37.88
	5290	58	ac (80MHz)	234/260 (MCS5)	75.77
	5290	58	ax (SU) (80MHz)	272/288.2 (MCS5)	77.15
	5500	100	n (20MHz)	52/57.8 (MCS5)	17.77
	5580	116	n (20MHz)	52/57.8 (MCS5)	17.88
	5720	144	n (20MHz)	52/57.8 (MCS5)	17.86
	5500	100	ax (SU) (20MHz)	65/68.8 (MCS5)	19.01
	5580	116	ax (SU) (20MHz)	65/68.8 (MCS5)	19.06
	5720	144	ax (SU) (20MHz)	65/68.8 (MCS5)	19.01
Band 2C	5510	102	n (40MHz)	108/120 (MCS5)	36.55
	5550	110	n (40MHz)	108/120 (MCS5)	36.49
	5710	142	n (40MHz)	108/120 (MCS5)	37.05
	5510	102	ax (SU) (40MHz)	130/137.6 (MCS5)	37.94
	5550	110	ax (SU) (40MHz)	130/137.6 (MCS5)	37.92
	5710	142	ax (SU) (40MHz)	130/137.6 (MCS5)	38.17
	5530	106	ac (80MHz)	234/260 (MCS5)	75.80
	5690	138	ac (80MHz)	234/260 (MCS5)	76.38
	5530	106	ax (SU) (80MHz)	272/288.2 (MCS5)	77.32
	5690	138	ax (SU) (80MHz)	272/288.2 (MCS5)	77.46

**Table 7-7. Conducted Bandwidth Measurements Antenna WF2 (High Data Rate)**

FCC ID: BCGA2567 IC: 579C-A2567	 PCTEST® Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2106080048-07.BCG	Test Dates: 6/2/2021 - 8/7/2021	EUT Type: Tablet Device	Page 35 of 351