**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

Date of Testing:

11/28/2023 - 1/15/2024

Test Report Issue Date:

4/11/2024

Test Site/Location:

Element Materials Technology Morgan Hill, CA, USA

Test Report Serial No.:

1C2311270068-22.BCG

FCC ID:

BCGA2837

IC:

579C-A2837

APPLICANT:

Apple Inc.

Application Type:

Certification

Model/HVIN:

A2837, A3006

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 3

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.



RJ Ortanez
Executive Vice President

Prepared by: WKR0000005849

Reviewed by: WKR0000005796



FCC ID: BCGA2837 IC: 579C-A2837		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2311270068-22.BCG	Test Dates: 11/28/2023 - 1/15/2024	EUT Type: Tablet Device	Page 1 of 577

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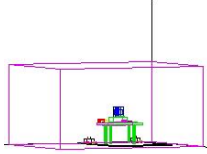
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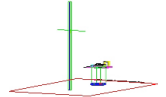
FCC ID: BCGA2837 IC: 579C-A2837		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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MEASUREMENT REPORT



UNI Band	Channel Bandwidth (MHz)	Mode	Tx Frequency (MHz)	SISO						CDDSDM Primary						CDDSDM Diversity					
				Antenna WFB5		Antenna 4a		Antenna 2a		Antenna WFB5		Antenna 4a		Summed		Antenna 4a		Antenna 2a		Summed	
				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)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)
1	20	802.11a/n	5180 - 5240	68.046	18.33	68.707	18.37	70.162	18.46	50.119	17.00	50.119	17.00	100.231	20.01	50.119	17.00	49.957	16.99	100.000	20.00
2A		802.11a/n	5260 - 5320	69.984	18.45	70.146	18.46	70.795	18.50	50.119	17.00	50.119	17.00	99.312	19.97	50.119	17.00	50.119	17.00	100.231	20.01
2C		802.11a/n	5500 - 5720	70.307	18.47	70.323	18.47	70.632	18.49	50.119	17.00	49.329	16.93	98.401	19.93	50.119	17.00	50.119	17.00	99.541	19.98
3	40	802.11a/n	5745 - 5825	70.307	18.47	69.984	18.45	70.469	18.48	69.823	18.44	70.632	18.49	140.605	21.48	70.632	18.49	70.469	18.48	140.605	21.48
1		802.11n	5190 - 5230	69.502	18.42	67.236	18.28	67.671	18.30	69.183	18.40	67.562	18.30	136.773	21.36	67.562	18.30	70.243	18.47	137.721	21.39
2A		802.11n	5270 - 5310	69.024	18.29	67.375	18.29	70.795	18.50	69.502	18.42	67.484	18.29	137.088	21.37	67.484	18.29	67.967	18.32	135.519	21.32
2C	80	802.11n	5510 - 5710	70.469	18.48	68.707	18.37	69.663	18.43	70.795	18.50	70.864	18.49	141.579	21.51	70.864	18.49	70.469	18.48	140.281	21.47
3		802.11n	5755 - 5795	70.795	18.50	69.823	18.44	69.984	18.45	70.307	18.47	66.558	18.23	136.773	21.36	69.663	18.43	70.632	18.49	139.637	21.45
1	160	802.11ac	5210	24.116	13.82	24.044	13.81	24.434	13.88	25.119	14.00	25.119	14.00	50.234	17.01	25.119	14.00	24.980	13.98	50.119	17.00
2A		802.11ac	5290	39.811	16.00	38.468	15.85	39.811	16.00	35.481	15.50	34.962	15.44	70.469	18.48	34.962	15.44	35.481	15.50	70.469	18.48
2C		802.11ac	5530 - 5690	70.632	18.49	69.486	18.42	69.663	18.43	70.632	18.49	69.199	18.40	139.637	21.45	69.199	18.40	69.984	18.45	134.276	21.28
3	160	802.11ac	5775	68.077	18.33	68.707	18.37	67.671	18.30	61.660	17.90	62.431	17.95	124.165	20.94	62.431	17.95	62.130	17.93	124.451	20.95
1/2A		802.11ac	5250	19.953	12.76	19.953	12.76	19.770	12.96	19.467	12.89	19.409	12.88	38.905	15.90	19.422	12.88	19.724	12.95	39.174	15.93
2C		802.11ac	5670	17.374	12.40	17.446	12.42	17.258	12.37	17.096	12.33	16.827	12.26	33.884	15.30	16.823	12.26	16.798	12.25	33.651	15.27
1	20	802.11ax (SU)	5180 - 5240	68.549	18.36	68.818	18.38	70.795	18.50	50.119	17.00	49.102	16.91	98.401	19.93	49.102	16.91	47.995	16.81	97.051	19.87
2A		802.11ax (SU)	5260 - 5320	70.146	18.46	70.795	18.50	70.795	18.50	50.119	17.00	50.119	17.00	100.231	20.01	50.119	17.00	50.119	17.00	100.231	20.01
2C		802.11ax (SU)	5500 - 5720	70.632	18.49	70.146	18.46	68.297	18.34	50.119	17.00	49.946	16.99	100.000	20.00	49.946	16.99	50.119	17.00	99.541	19.98
3	40	802.11ax (SU)	5745 - 5825	69.502	18.42	69.984	18.45	70.000	18.45	69.502	18.42	70.146	18.46	139.316	21.44	69.343	18.41	70.795	18.50	139.959	21.46
1		802.11ax (SU)	5190 - 5230	70.307	18.47	70.795	18.50	69.582	18.43	69.823	18.44	70.795	18.50	140.605	21.48	70.795	18.50	66.958	16.28	137.721	21.39
2A		802.11ax (SU)	5270 - 5310	70.307	18.47	69.199	18.40	70.795	18.50	69.984	18.45	68.612	18.36	136.676	21.42	68.612	18.36	69.711	18.43	138.357	21.41
3	80	802.11ax (SU)	5510 - 5710	69.823	18.44	70.795	18.50	70.469	18.48	70.307	18.47	69.024	18.39	139.316	21.44	69.024	18.39	69.183	18.40	138.357	21.41
1		802.11ax (SU)	5755 - 5795	70.469	18.48	68.250	18.34	70.534	18.48	70.632	18.49	70.469	18.48	141.254	21.50	69.343	18.41	69.984	18.45	139.316	21.44
2A		802.11ax (SU)	5270	25.119	13.00	24.638	13.02	24.194	13.04	25.119	14.00	23.961	13.80	49.091	16.91	23.961	13.80	23.961	13.80	47.973	16.81
2C	160	802.11ax (SU)	5290	39.811	16.00	38.985	15.91	38.637	15.87	26.644	14.26	26.632	14.25	53.333	17.27	26.632	14.25	27.466	14.39	54.075	17.33
3		802.11ax (SU)	5530 - 5690	69.502	18.42	70.146	18.46	69.183	18.40	69.343	18.41	68.360	18.35	137.088	21.37	69.183	18.40	69.823	18.44	138.038	21.40
1/2A		802.11ax (SU)	5775	61.518	17.89	62.806	17.88	68.077	18.33	53.951	17.32	56.234	17.50	110.154	20.42	56.234	17.50	56.234	17.50	112.460	20.51
2C	160	802.11ax (SU)	5250	19.665	12.94	19.953	13.00	19.697	12.94	19.467	12.89	19.422	12.88	38.905	15.90	19.422	12.88	19.729	12.95	39.174	15.93
3		802.11ax (SU)	5670	16.788	12.25	17.458	12.42	17.069	12.32	17.096	12.33	16.823	12.26	33.884	15.30	16.823	12.26	16.796	12.25	33.651	15.27

FCC EUT Overview (Low Data Rate)

UNI Band	Channel Bandwidth (MHz)	Mode	Tx Frequency (MHz)	SISO						CDD/SDM Primary						CDD/SDM Diversity					
				Antenna WFB5		Antenna 4a		Antenna 2a		Antenna WFB5		Antenna 4a		Summed		Antenna 4a		Antenna 2a		Summed	
				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)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)
1	20	802.11a/n	5180 - 5240	42.170	16.25	42.170	16.25	42.170	16.25	26.607	14.25	26.491	14.23	53.088	17.25	26.491	14.23	26.098	14.17	52.602	17.21
2A		802.11a/n	5260 - 5320	69.984	18.45	70.146	18.46	70.795	18.50	50.119	17.00	50.119	17.00	99.312	19.97	50.119	17.00	50.119	17.00	100.231	20.01
2C		802.11a/n	5500 - 5720	70.307	18.47	70.323	18.47	70.632	18.49	50.119	17.00	50.119	17.00	98.401	19.93	50.119	17.00	50.119	17.00	99.541	19.98
3	40	802.11a/n	5745 - 5825	70.307	18.47	69.984	18.45	70.469	18.48	69.823	18.44	70.632	18.49	140.605	21.48	70.632	18.49	70.469	18.48	140.605	21.48
1		802.11n	5190 - 5230	67.608	18.30	69.391	18.35	69.119	18.40	47.315	16.75	46.366	16.66	93.756	19.72	46.366	16.66	45.656	16.60	92.045	19.64
2A		802.11n	5270 - 5310	69.024	18.39	67.375	18.29	70.795	18.50	69.502	18.42	67.484	18.29	137.088	21.37	67.484	18.29	67.967	18.32	135.519	21.32
2C	80	802.11n	5510 - 5710	70.469	18.48	68.707	18.37	69.663	18.43	70.795	18.50	70.864	18.49	141.579	21.51	70.864	18.49	70.469	18.48	140.281	21.47
3		802.11n	5755 - 5795	70.795	18.50	69.823	18.44	69.984	18.45	70.307	18.47	66.558	18.23	136.773	21.36	69.663	18.43	70.632	18.49	139.637	21.45
1	160	802.11ac	5210	25.061	13.99	24.082	13.82	24.717	13.93	25.119	14.00	25.119	14.00	50.234	17.01	25.119	14.00	24.980	13.98	50.119	17.00
2A		802.11ac	5290	39.811	16.00	38.468	15.85	39.811	16.00	35.481	15.50	34.962	15.44	70.469	18.48	34.962	15.44	35.481	15.50	70.469	18.48
2C		802.11ac	5530 - 5690	70.146	18.46	69.343	18.41	69.663	18.43	70.632	18.49	69.024	18.39	139.637	21.45	64.417	18.09	69.984	18.45	134.276	21.28
3	160	802.11ac	5775	68.077	18.33	68.707	18.37	67.671	18.30	61.660	17.90	62.431	17.95	124.165	20.94	62.431	17.95	62.130	17.93	124.451	20.95
1/2A		802.11ac	5250	19.953	12.76	19.266	12.65	19.953	13.00	19.939	13.00	19.774	12.96	39.719	15.99	19.472	12.89	19.953	13.00	39.446	15.96
1	20	802.11ax (SU)	5180 - 5240	41.725	16.20	42.170	16.25	42.121	16.25	26.607	14.25	25.468	14.06	51.761	17.14	25.468	14.06	26.607	14.25	52.000	17.16
2A		802.11ax (SU)	5260 - 5320	70.146	18.46	70.795	18.50	70.795	18.50	50.119	17.00	50.119	17.00	100.231	20.01	50.119	17.00	50.119	17.00	100.231	20.01
2C		802.11ax (SU)	5500 - 5720	70.632	18.49	70.146	18.46	68.297	18.34	50.119	17.00	49.946	16.99	100.000	20.00	49.946	16.99	50.119	17.00	99.541	19.98
3	40	802.11ax (SU)	5745 - 5825	69.502	18.42	69.984	18.45	70.000	18.45	70.000	18.45	69.146	18.46	139.316	21.44	69.343	18.41	70.795	18.50	139.959	21.46
1		802.11ax (SU)	5190 - 5230	69.343	18.41	67.298	18.28	68.806	18.46	68.806	18.46	67.484	18.29	137.088	21.37	67.484	18.29	67.967	18.32	135.519	21.32
2A		802.11ax (SU)	5270 - 5310	70.307	18.47	69.198	18.40	70.795	18.50	69.894	18.45	68.612	18.36	138.676	21.42	68.612	18.36	69.711	18.43	138.357	21.41
2C	160	802.11ax (SU)	5510 - 5710	69.823	18.44	70.795	18.50	70.469	18.48	70.307	18.47	69.486	18.42	139.316	21.44	69.024	18.39	69.183	18.40	138.357	21.41
3		802.11ax (SU)	5755 - 5795	70.469	18.48	68.295	18.34	70.534	18.48	70.632	18.49	70.469	18.48	141.254	21.50	69.343	18.41	69.984	18.45	139.316	21.41
1	80	802.11ax (SU)	5210	23.963	13.60	24.088	13.82	24.689	13.93	25.119	14.00	23.961	13.80	49.901	16.91	23.961	13.80	23.961	13.80	49.773	16.81
2A		802.11ax (SU)	5290	39.811	16.00	38.985	15.91	36.637	15.87	26.644	14.26	26.632	14.25	53.033	16.91	26.632	14.25	27.466	14.30	54.075	17.31
2C		802.11ax (SU)	5530 - 5690	69.502	18.42	68.183	18.34	68.183	18.34	69.146	18.42	67.384	18.33	137.088	21.37	67.384	18.33	67.967	18.32	135.519	21.32
3	160	802.11ax (SU)	5775	61.510	17.89	62.906	17.98	60.777	18.33	53.951	17.72	56.234	17.50	110.154	20.42	56.234	17.50	56.234	17.50	112.460	20.51
1/2A		802.11ax (SU)	5250	19.953	13.30	19.903	13.00	18.871	12.78	19.543	12.91	19.472	12.89	39.894	15.91	19.472	12.89	18.270	12.96	39.264	15.94

UNII Band	Channel Bandwidth (MHz)	Mode	Tx Frequency (MHz)	SISO						CDD/SDM Primary						CDD/SDM Diversity					
				Antenna 1F5b		Antenna 4a		Antenna 2a		Antenna 1F5b		Antenna 4a		Summed		Antenna 4a		Antenna 2a		Summed	
				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)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)
1	20	802.11a/n	5180 - 5240	70.307	18.47	70.502	18.48	70.729	18.50	50.119	17.00	50.119	17.00	100.231	20.01	50.119	17.00	50.119	17.00	100.231	20.01
2A		802.11a/n	5260 - 5320	70.307	18.47	70.469	18.48	70.615	18.49	49.579	16.95	50.119	17.00	99.541	19.98	50.119	17.00	50.119	17.00	99.541	19.98
2C		802.11a/n	5500 - 5720	69.663	18.43	70.632	18.49	69.984	18.45	50.119	17.00	49.351	16.93	99.312	19.97	49.351	16.93	50.119	17.00	99.401	19.93
3	40	802.11a/n	5745 - 5825	69.343	18.41	69.984	18.45	70.469	18.48	70.307	18.47	138.676	21.42	70.307	18.47	70.146	18.46	140.281	21.47	140.281	21.47
1		802.11n	5190 - 5230	69.343	18.41	69.968	18.45	70.746	18.50	69.502	18.42	69.775	18.44	139.316	21.44	69.775	18.44	68.992	18.39	138.676	21.42
2A		802.11n	5270 - 5310	69.343	18.41	70.210	18.46	70.275	18.47	69.343	18.41	69.807	18.44	138.995	21.43	69.807	18.44	67.764	18.31	137.721	21.39
2C	80	802.11n	5510 - 5710	70.795	18.50	69.920	18.45	70.795	18.50	70.469	18.48	69.295	18.41	139.637	21.45	69.295	18.41	69.502	18.42	138.676	21.42
3		802.11n	5755 - 5795	69.663	18.43	67.967	18.32	69.183	18.40	70.632	18.49	68.897	18.38	139.637	21.45	68.897	18.38	70.632	18.49	139.637	21.45
1		802.11ac	5210	21.898	13.40	21.732	13.37	22.116	13.45	22.367	13.50	21.463	13.32	43.853	16.42	21.463	13.32	21.198	13.26	42.658	16.30
2A	160	802.11ac	5290	30.409	14.83	30.458	14.84	30.040	14.78	26.959	14.31	27.435	14.38	54.450	17.36	27.435	14.38	27.252	14.35	54.702	17.38
2C		802.11ac	5630 - 5690	69.502	18.42	69.502	18.42	69.024	18.39	70.146	18.46	69.343	18.41	139.637	21.45	69.343	18.41	68.865	18.38	138.357	21.41
3		802.11ac	5775	70.146	18.46	69.343	18.41	69.183	18.40	62.806	17.98	62.216	17.94	125.026	20.97	62.216	17.94	60.548	17.82	122.744	20.89
1/2A	20	802.11ac	5250	17.124	12.34	17.628	12.46	17.049	12.32	17.783	12.50	17.783	12.50	35.563	15.51	17.783	12.50	17.539	12.44	35.318	15.48
2C		802.11ac	5570	15.332	11.86	15.849	12.00	15.262	11.84	15.849	12.00	15.849	12.00	31.696	15.01	15.488	11.90	15.668	11.95	31.189	14.94
1		802.11ax (SU)	5180 - 5240	69.623	18.44	67.889	18.32	70.795	18.50	50.119	17.00	49.648	16.96	99.770	19.99	49.648	16.96	49.739	16.97	99.312	19.97
2A	40	802.11ax (SU)	5260 - 5320	69.502	18.42	70.275	18.47	69.438	18.42	49.317	16.93	48.764	16.88	97.499	19.98	48.764	16.88	50.119	17.00	98.955	19.95
2C		802.11ax (SU)	5500 - 5720	70.307	18.47	70.713	18.50	69.823	18.44	49.614	16.96	49.888	16.98	99.541	19.98	49.888	16.98	50.119	17.00	100.000	20.00
3		802.11ax (SU)	5745 - 5825	69.663	18.43	74.817	18.74	69.663	18.43	70.469	18.48	69.968	18.45	140.281	21.47	69.968	18.45	69.984	18.45	138.357	21.41
1	80	802.11ax (SU)	5190 - 5230	69.024	18.39	70.453	18.48	69.599	18.43	69.024	18.39	66.589	18.23	135.519	21.32	66.589	18.23	68.312	18.35	134.896	21.30
2A		802.11ax (SU)	5270 - 5310	70.146	18.46	70.795	18.50	70.033	18.45	69.183	18.40	68.124	18.33	137.404	21.38	68.124	18.33	67.920	18.32	136.144	21.34
2C		802.11ax (SU)	5510 - 5710	69.663	18.43	70.795	18.50	70.795	18.50	69.984	18.45	70.795	18.50	140.929	21.49	70.795	18.50	69.343	18.41	138.676	21.42
3	160	802.11ax (SU)	5755 - 5795	69.502	18.42	69.823	18.44	69.343	18.41	70.146	18.46	69.359	18.41	139.637	21.45	69.359	18.41	70.146	18.46	138.995	21.43
1		802.11ax (SU)	5210	21.772	13.38	21.697	13.36	21.355	13.30	19.792	12.97	19.953	13.00	39.719	15.99	19.953	13.00	18.932	12.77	38.905	15.90
2A		802.11ax (SU)	5290	31.623	15.00	30.690	14.87	31.623	15.00	27.612	14.41	27.549	14.40	55.208	17.42	27.549	14.40	28.184	14.50	55.719	17.46
2C	80	802.11ax (SU)	5630 - 5690	69.623	18.44	69.823	18.44	70.307	18.47	66.222	18.21	67.795	18.31	133.968	21.27	67.795	18.31	59.566	17.75	127.350	21.05
3		802.11ax (SU)	5745 - 5825	62.663	17.21	51.796	17.14	51.808	17.14	41.524	16.18	44.668	16.50	86.099	19.35	44.668	16.50	43.964	16.43	88.716	19.48
1/2A		802.11ax (SU)	5250	17.713	12.48	17.783	12.50	17.458	12.42	17.783	12.50	17.783	12.50	35.563	15.51	17.783	12.50	17.783	12.50	35.563	15.51
2C	160	802.11ax (SU)	5670	15.603	11.93	15.849	12.00	14.976	11.75	15.668	11.95	15.704	11.96	31.405	14.97	15.668	11.95	15.524	11.91	31.189	14.94

FCC EUT Overview (Mid Data Rate)

UNII Band	Channel Bandwidth (MHz)	Mode	Tx Frequency (MHz)	SISO						CDD/SDM Primary						CDD/SDM Diversity					
				Antenna 1F5b		Antenna 2a		Antenna 1F5b		Antenna 4a		Summed		Antenna 4a		Antenna 2a		Summed			
				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)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)		
1	20	802.11a/n	5180 - 5240	41.687	16.20	42.170	16.25	42.170	16.25	26.607	14.25	26.607	14.25	53.211	17.26	26.607	14.25	26.080	14.16	52.723	17.22
2A		802.11a/n	5260 - 5320	70.307	18.47	70.469	18.48	70.615	18.49	49.579	16.95	50.119	17.00	99.541	19.98	50.119	17.00	50.119	17.00	99.541	19.98
2C		802.11a/n	5500 - 5720	69.663	18.43	70.632	18.49	69.984	18.45	50.119	17.00	49.351	16.93	99.312	19.97	49.351	16.93	50.119	17.00	98.401	19.93
3		802.11a/n	5745 - 5825	69.343	18.41	69.984	18.45	70.469	18.48	70.307	18.47	138.676	21.42	70.307	18.47	70.146	18.46	140.281	21.47	140.281	21.47
1		802.11n	5190 - 5230	69.024	18.39	69.811	18.18	67.454	18.29	47.315	16.75	46.741	16.70	93.972	19.73	46.741	16.70	45.144	16.55	91.833	19.63
2A		802.11n	5270 - 5310	69.343	18.41	70.275	18.47	70.275	18.47	69.343	18.41	69.807	18.44	138.995	21.43	69.807	18.44	67.764	18.31	137.721	21.39
2C	80	802.11n	5510 - 5710	70.795	18.50	70.795	18.50	70.795	18.50	70.469	18.48	69.295	18.41	139.637	21.45	69.295	18.41	69.502	18.42	138.676	21.42
3		802.11n	5755 - 5795	69.663	18.43	69.183	18.40	69.183	18.40	70.632	18.49	68.897	18.38	139.637	21.45	68.897	18.38	70.632	18.49	139.637	21.45
1		802.11ac	5210	21.577	13.34	22.387	13.50	22.223	13.47	22.387	13.50	21.463	13.32	43.853	16.42	21.463	13.32	21.198	13.26	42.658	16.30
2A		802.11ac	5290	30.409	14.83	30.458	14.84	30.040	14.78	26.959	14.31	27.435	14.38	54.450	17.36	27.435	14.38	27.252	14.35	54.702	17.38
2C		802.11ac	5630 - 5690	69.502	18.42	69.502	18.42	69.024	18.39	70.146	18.46	69.343	18.41	139.637	21.45	69.343	18.41	68.865	18.38	138.357	21.41
3		802.11ac	5775	70.146	18.46	70.146	18.46	69.183	18.40	62.806	17.98	62.216	17.94	125.026	20.97	62.216	17.94	60.548	17.82	122.744	20.89
1/2A	160	802.11ac	5250	17.140	12.34	17.783	12.50	16.827	12.26	17.746	12.49	17.612	12.46	35.318	15.48	17.378	12.40	17.717	12.48	35.075	15.45
1		802.11ax (SU)	5180 - 5240	40.096	16.03	42.170	16.25	42.170	16.25	26.607	14.25	25.996	14.15	52.240	17.18	25.996	14.15	26.430	14.22	52.000	17.16
2A		802.11ax (SU)	5260 - 5320	69.502	18.42	70.275	18.47	69.438	18.42	49.317	16.93	48.764	16.88	97.499	19.98	48.764	16.88	50.119	17.00	98.955	19.95
2C		802.11ax (SU)	5500 - 5720	70.307	18.47	70.713	18.50	69.823	18.44	49.614	16.96	49.888	16.98	99.541	19.98	49.888	16.98	50.119	17.00	100.000	20.00
3		802.11ax (SU)	5745 - 5825	69.663	18.43	74.817	18.74	69.663	18.43	70.469	18.46	69.968	18.45	140.281	21.47	69.968	18.45	69.984	18.45	138.357	21.41
1		802.11ax (SU)	5190 - 5230	69.024	18.39	69.812	18.36	70.502	18.45	47.315	16.75	46.803	16.70	93.976	19.73	46.803	16.70	45.146	16.55	91.835	19.64
2A	40	802.11ax (SU)	5270 - 5310	69.343	18.41	70.273	18.45	70.033	18.45	69.183	18.40	69.124	18.33	137.404	21.38	69.124	18.33	67.920	18.23	136.144	21.34
2C		802.11ax (SU)	5510 - 5710	69.663	18.43	70.995	18.50	70.795	18.50	69.984	18.45	70.795	18.50	140.929	21.49	70.795	18.50	68.865	18.38	138.676	21.42
3		802.11ax (SU)	5755 - 5795	69.502	18.42	69.343	18.41	69.343	18.41	70.146	18.46	69.359	18.41	139.637	21.45	69.359	18.41	70.146	18.46	138.995	21.43
1		802.11ax (SU)	5210	21.375	13.30	22.380	13.50	22.331	13.49	19.134	12.82	19.360	12.87	38.508	15.85	19.360	12.87	19.516	12.90	38.905	15.90
2A		802.11ax (SU)	5390	31.623	15.00	30.669	14.87	31.623	15.00	27.612	14.41	27.549	14.40	55.205	17.42	27.549	14.40	28.184	14.50	55.719	17.46
2C		802.11ax (SU)	5530 - 5690	69.502	18.44	70.387	18.47	69.397	18.41	69.397	18.41	69.395	18.39	137.796	21.34	69.395	18.39	67.916	18.21	137.314	21.31
3	80	802.11ax (SU)	5775	52.650	17.21	52.650	17.21	51.908	17.14	47.524	16.18	44.668	16.50	86.090	19.35	44.668	16.50	43.964	16.23	84.741	19.32
1/2A		802.11ax (SU)	5250	17.783	12.52	17.822	12.31	16.904	12.28	17.424	12.49	17.620	12.46	35.318	15.45	16.981	12.26	17.366	12.37	35.016	12.48

UNII Band	Channel Bandwidth (MHz)	Mode	Tx Frequency (MHz)	SISO										CDD/SDM Primary										CDD/SDM Diversity						
				Antenna 1F5b		Antenna 4a		Antenna 2a		Antenna 1F5b		Antenna 4a		Summed		Antenna 4a		Antenna 2a		Summed										
				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)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)							
1		802.11a/n	5180 - 5240	70.307	18.47	68.124	18.33	69.984	18.45	49.374	16.94	50.119	17.00	99.541	19.98	50.119	17.00	50.119	17.00	100.231	20.01									
2A		802.11a/n	5260 - 5320	70.469	18.48	70.146	18.46	70.795	18.50	49.306	16.93	50.119	17.00	99.312	19.97	50.119	17.00	50.119	17.00	100.231	20.01									
2C		802.11a/n	5500 - 5720	70.795	18.50	69.343	18.41	70.307	18.47	50.015	16.99	50.119	17.00	98.401	19.93	50.119	17.00	50.119	17.00	100.231	20.01									
3		802.11a/n	5745 - 5825	70.469	18.48	70.632	18.49	70.469	18.48	70.146	18.46	70.146	18.46	139.637	21.45	69.343	18.41	69.984	18.45	139.316	21.44									
20	1		802.11n	5190 - 5230	70.795	18.50	70.146	18.46	69.327	18.41	67.764	18.31	65.058	18.13	132.739	21.23	65.058	18.13	66.650	18.24	131.826	21.20								
	2A		802.11n	5270 - 5310	69.663	18.43	68.391	18.35	70.795	18.50	69.024	18.39	66.328	18.22	135.207	21.31	66.328	18.22	66.819	18.25	133.045	21.24								
	2C		802.11n	5510 - 5710	70.307	18.47	69.502	18.42	69.663	18.43	69.984	18.45	69.663	18.43	138.995	21.43	68.849	18.38	69.663	18.43	138.357	21.41								
	3		802.11n	5755 - 5795	70.469	18.48	70.632	18.49	69.663	18.43	69.502	18.42	69.183	18.40	138.676	21.42	69.183	18.40	69.024	18.39	138.038	21.40								
	1		802.11ac	5210	19.629	12.80	19.534	12.91	19.963	13.00	19.888	12.99	19.324	12.86	39.174	15.93	19.324	12.86	19.963	13.00	39.264	15.94								
80	2A		802.11ac	5290	24.005	13.80	23.801	13.77	24.244	13.85	24.655	13.92	25.119	14.00	49.774	16.97	25.119	14.00	24.929	13.97	50.003	16.99								
	2C		802.11ac	5630 - 5690	70.307	18.47	70.146	18.46	69.343	18.41	69.663	18.43	69.183	18.40	138.995	21.43	69.024	18.39	69.343	18.41	138.357	21.41								
	3		802.11ac	5775	54.313	17.35	53.728	17.30	54.790	17.39	46.892	16.71	45.154	16.55	92.045	19.64	45.154	16.55	45.154	16.55	90.365	19.56								
	1/2A		802.11ac	5250	15.849	12.00	15.011	11.76	15.776	11.98	14.044	11.48	13.740	11.38	27.797	14.44	13.412	11.28	14.060	11.48	27.479	14.39								
	2C		802.11ac	5670	12.056	10.81	12.569	10.99	12.589	11.00	11.874	10.75	12.589	11.00	24.491	13.89	12.560	10.99	12.505	10.97	25.061	13.99								
20	1		802.11ax (SU)	5180 - 5240	69.502	18.42	68.659	18.37	70.307	18.47	49.992	16.99	49.091	16.91	98.175	19.92	49.091	16.91	48.029	16.82	97.051	19.87								
	2A		802.11ax (SU)	5260 - 5320	69.663	18.43	68.580	18.36	69.565	18.36	50.038	16.99	50.119	17.00	100.231	20.01	50.119	17.00	50.119	17.00	100.231	20.01								
	2C		802.11ax (SU)	5500 - 5720	69.663	18.43	70.632	18.49	69.823	18.44	49.113	16.91	50.119	17.00	99.083	19.96	50.119	17.00	49.808	16.97	99.312	19.97								
	3		802.11ax (SU)	5745 - 5825	70.469	18.48	70.632	18.49	69.663	18.43	69.183	18.40	69.183	18.40	138.038	21.40	69.502	18.42	69.502	18.42	138.676	21.42								
	1		802.11ax (SU)	5190 - 5230	69.984	18.45	67.205	18.27	68.171	18.34	70.632	18.49	67.453	18.29	138.038	21.40	67.453	18.29	70.795	18.50	138.357	21.41								
40	2A		802.11ax (SU)	5270 - 5310	70.469	18.48	68.375	18.35	69.199	18.40	69.183	18.40	67.499	18.29	136.773	21.36	67.499	18.29	69.839	18.44	137.404	21.38								
	2C		802.11ax (SU)	5510 - 5710	70.146	18.46	70.356	18.47	70.469	18.48	70.307	18.47	69.470	18.42	139.637	21.45	69.470	18.42	69.183	18.40	137.721	21.39								
	3		802.11ax (SU)	5755 - 5795	69.183	18.40	69.663	18.43	70.632	18.49	69.663	18.43	69.502	18.42	139.316	21.44	69.502	18.42	69.183	18.40	138.676	21.42								
	1		802.11ax (SU)	5210	17.783	12.50	17.140	12.34	17.555	12.44	16.850	12.27	17.235	12.36	34.119	15.33	17.235	12.36	17.783	12.50	34.995	15.44								
	2A		802.11ax (SU)	5290	24.199	13.84	25.119	14.00	24.712	13.93	24.121	13.82	23.757	13.76	47.863	16.80	23.757	13.76	25.044	13.99	48.753	16.88								
80	2C		802.11ax (SU)	5630 - 5690	69.984	18.45	69.502	18.42	70.307	18.47	69.183	18.40	70.146	18.46	139.316	21.44	70.146	18.46	69.663	18.43	139.959	21.46								
	3		802.11ax (SU)	5775	16.807	12.80	16.807	12.80	16.807	12.80	16.807	12.80	16.807	12.80	34.668	15.50	16.807	12.80	16.807	12.80	34.668	15.50								
	1/2A		802.11ax (SU)	5250	14.777	11.70	15.212	11.82	15.226	11.83	13.788	11.40	13.561	11.32	27.353	14.37	13.561	11.32	13.704	11.40	27.353	14.37								
	2C		802.11ax (SU)	5670	11.020	10.42	11.220	10.50	11.061	10.44	11.112	10.46	11.220	10.50	22.336	13.49	11.092	10.45	10.762	10.32	21.878	13.40								

FCC EUT Overview (High Data Rate)

UNII Band	Channel Bandwidth (MHz)	Mode	Tx Frequency (MHz)	SISO								CDD/SDM Primary				CDD/SDM Diversity					
				Antenna 1F5b		Antenna 4a		Antenna 2a		Antenna 1F5b		Antenna 4a		Summed		Antenna 4a		Antenna 2a		Summed	
				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)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)	Max. Power (mW)	Max. Power (dBm)
1	20	802.11a/n	5180 - 5240	42.894	16.32	42.170	16.25	42.170	16.25	26.098	14.17	26.607	14.25	52.119	17.17	26.607	14.25	26.134	14.17	52.360	17.19
2A		802.11a/n	5260 - 5320	70.469	18.48	70.146	18.46	70.795	18.50	49.306	16.93	50.119	17.00	99.312	19.97	50.119	17.00	50.119	17.00	100.231	20.01
2C		802.11a/n	5500 - 5720	70.795	18.50	69.343	18.41	70.307	18.47	50.015	16.99	50.119	17.00	98.401	19.93	50.119	17.00	50.119	17.00	99.083	19.96
3		802.11a/n	5745 - 5825	70.469	18.48	70.632	18.49	70.469	18.48	70.146	18.46	70.146	18.46	139.637	21.45	69.343	18.41	69.984	18.45	139.316	21.44
1		802.11n	5190 - 5230	69.663	18.43	61.887	17.92	68.855	18.25	45.217	16.55	46.291	16.66	91.411	19.61	46.291	16.66	47.315	16.75	93.541	19.71
2A	40	802.11n	5270 - 5310	69.623	18.44	68.391	18.35	70.795	18.50	69.024	18.39	66.328	18.22	135.207	21.31	66.328	18.22	66.819	18.25	133.045	21.24
2C		802.11n	5510 - 5710	68.865	18.36	67.873	18.32	62.533	18.03	69.984	18.45	69.663	18.43	138.995	21.43	68.849	18.38	69.663	18.43	138.357	21.41
3		802.11n	5755 - 5795	56.027	17.48	64.343	18.09	62.144	17.93	69.502	18.42	69.183	18.40	138.676	21.42	69.183	18.40	69.024	18.39	138.038	21.40
1		802.11ac	5210	19.489	12.90	19.307	12.99	19.324	12.86	19.302	12.86	19.028	12.79	38.371	15.84	19.028	12.79	19.953	13.00	38.994	15.91
2A		802.11ac	5290	24.005	13.80	23.801	13.77	24.244	13.85	24.655	13.92	25.119	14.00	49.774	16.97	25.119	14.00	24.929	13.97	50.003	16.99
2C	80	802.11ac	5630 - 5690	70.307	18.47	70.146	18.46	69.343	18.41	69.663	18.43	69.183	18.40	138.995	21.43	69.024	18.39	69.343	18.41	138.357	21.41
1		802.11ac	5775	54.313	17.35	53.728	17.30	54.750	17.39	46.862	16.71	45.154	16.55	92.045	19.64	45.154	16.55	90.365	19.56		
1		802.11n	5260	11.718	11.89	15.675	14.84	15.675	14.84	11.718	11.89	11.718	11.89	23.371	13.36	11.718	11.89	23.371	13.36	27.067	13.42
2C		802.11a/n	5180 - 5240	42.170	16.25	40.823	16.11	41.002	16.13	26.607	14.25	26.651	14.24	52.311	17.24	26.651	14.24	26.607	14.25	53.088	17.25
2A		20	802.11a/n (SU)	5260 - 5320	69.663	18.43	68.580	18.36	68.585	18.36	50.038	16.99	50.119	17.00	100.231	20.01	50.119	17.00	50.119	17.00	100.231
2C	802.11a/n (SU)		5500 - 5720	69.663	18.43	70.632	18.49	69.823	18.44	49.113	16.91	50.119	17.00	99.083	19.96	50.119	17.00	49.808	16.97	99.312	19.97
2C	802.11a/n		5745 - 5825	70.469	18.48	70.632	18.49	69.663	18.43	69.183	18.40	69.183	18.40	138.038	21.40	69.502	18.42	69.502	18.42	138.676	21.42
1	802.11a/n		5190 - 5230	70.146	18.46	68.175	18.16	67.422	18.25	45.835	16.61	42.915	16.75	93.541	19.69	47.315	16.75	44.720	16.51	92.345	19.64
2A	802.11a/n (SU)		5270 - 5310	70.885	18.45	70.375	18.35	69.129	18.40	69.183	18.40	67.499	16.82	138.773	21.36	67.499	16.82	68.839	16.47	137.404	21.38
2C	40	802.11a/n	5510 - 5710	68.865	18.36	70.586	18.47	65.690	18.18	70.307	18.47	69.470	18.42	139.637	21.45	69.470	18.42	69.183	18.40	137.721	21.39
3		802.11a/n (SU)	5755 - 5795	57.624	17.61	66.358	18.23	64.397	18.09	69.663	18.43	69.502	18.42	139.316	21.44	69.502	18.42	69.183	18.40	138.676	21.41
1		802.11ac	5210	17.783	12.50	17.123	12.30	17.783	12.50	17.783	12.50	16.971	12.30	34.754	15.51	16.971	12.30	17.583	12.42	34.514	15.38
2C		802.11a/n (SU)	5390	24.199	13.84	25.119	13.40	24.712	13.93	24.121	13.82	23.757	13.76	47.865	16.80	23.757	13.76	25.043	13.99	48.753	16.88
2C		802.11a/n	5530 - 5690	69.663	18.45	69.652	18.45	69.307	18.43	69.307	18.43	69.307	18.43	139.316	21.44	69.307	18.43	69.307	18.43	139.316	21.44
3	80	802.11a/n	5775	48.674	16.87	49.091	16.91	50.119	17.00	43.152	16.35	44.668	16.50	87.902	19.44	44.668	16.50	42.403	16.27	87.296	19.40
1/2A		802.11a/n (SU)	5250	15.136	11.80	15.096	15.24	11.83	13.747	11.38	14.125	11.50	27.661	14.45	27.661	14.45	11.50	14.125	11.50	28.249	14.51

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 Element Materials Technology Test Location

These measurement tests were conducted at the Element Materials Technology 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 Element Materials Technology located in Morgan Hill, CA 95037, U.S.A.

- Element Materials Technology 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.
- Element Washington DC LLC 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).
- Element Materials Technology facility is a registered (22831) test laboratory with the site description on file with ISED.
- Element Washington DC LLC is a Recognized U.S. Certification Assessment Body (CAB # US0110) for ISED Canada as designated by NIST under the U.S. and Canada Mutual Recognition Agreements (MRAs).

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Tablet Device FCC ID: BCGA2837** and **IC: 579C-A2837**. 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.: P9164KGHF6, Q1VQ22L4XG, N4LP6X9FG4, DLXGY600024000063A

2.2 Device Capabilities

This device contains the following capabilities:

850/1700/1900 WCDMA/HSPA, Multi-band LTE, 5G NR (FR1), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII, 802.11a/ax WIFI 6E, Bluetooth (1x, EDR, LE1M, LE2M, HDR4, HDR8), NB UNII (1x, HDR4, HDR8), WPT, 802.15.4

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

Band 1		Band 2A		Band 2C	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
50	5250	50	5250	114	5570

Table 2-4. 802.11ac / 802.11ax (160MHz BW) Frequency / Channel Operations

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Notes:

- 5GHz NII operation is possible in 20MHz, 40MHz, 80MHz and 160MHz 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 WF5b	Antenna 4a	Antenna 2a	CDD (Primary)	CDD (Diversity)
5GHz	a (Low Rate)	98.6	98.4	98.9	98.4	98.2
	a (Mid Rate)	94.4	94.2	93.8	93.5	94.0
	a (High Rate)	93.1	92.9	93.1	92.7	92.3
	n (HT20) (Low Rate)	96.4	96.6	96.6	93.3	93.3
	n (HT20) (Mid Rate)	93.5	93.3	93.5	89.3	89.7
	n (HT20) (High Rate)	0.0	90.8	91.0	85.7	85.7
	ax(SU) (HT20 Low Rate)	95.3	95.7	95.5	95.5	95.5
	ax(SU) (HT20 Mid Rate)	91.8	92.9	92.7	92.5	92.7
	ax(SU) (HT20 High Rate)	86.7	85.7	86.7	86.7	86.3
	n (HT40 Low Rate)	95.9	96.4	95.9	93.1	93.8
	n (HT40 Mid Rate)	93.5	93.3	93.5	89.5	89.1
	n (HT40 High Rate)	90.4	89.9	90.2	84.7	85.1
	ax(SU) (HT40 Low Rate)	95.3	95.7	95.9	95.9	95.9
	ax(SU) (HT40 Mid Rate)	92.7	92.5	92.9	92.3	92.9
	ax(SU) (HT40 High Rate)	86.3	85.7	86.1	86.3	86.1
	ac (HT80 Low Rate)	95.9	95.5	96.2	92.7	92.9
	ac (HT80 Mid Rate)	93.1	92.7	92.7	88.3	88.5
	ac (HT80 High Rate)	87.3	86.7	86.9	80.9	81.3
	ac (VHT160 Low Rate)	95.3	95.1	94.8	95.1	95.5
	ac (VHT160 Mid Rate)	92.0	92.3	91.8	92.3	92.3
	ac (VHT160 High Rate)	85.7	84.9	84.7	84.7	84.7
	ax(SU) (HE80 Low Rate)	94.6	94.4	94.6	91.2	90.8
	ax(SU) (HE80 Mid Rate)	91.0	91.0	90.2	85.3	85.3
	ax(SU) (HE80 High Rate)	84.1	84.9	85.1	80.4	80.4
	ax(SU) (HE160 Low Rate)	93.8	94.2	94.2	94.0	93.8
	ax(SU) (HE160 Mid Rate)	90.2	90.6	90.8	90.6	90.2
	ax(SU) (HE160 High Rate)	83.0	83.0	83.8	83.0	83.0

Table 2-5. Measured Duty Cycles

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2. The device employs CDD/SDM technology. Below are the possible configurations.

WIFI Configurations		SISO			Primary						Diversity					
					CDD		SDM		STBC		CDD		SDM		STBC	
		Antenna WF5b	Antenna 4a	Antenna 2a	Antenna WF5b	Antenna 4a	Antenna WF5b	Antenna 4a	Antenna WF5b	Antenna 4a	Antenna 4a	Antenna 2a	Antenna 4a	Antenna 2a	Antenna 4a	Antenna 2a
5GHz	11a	✓	✓	✓	✓	✓	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗
	11n (20MHz)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	11ax(SU)(20MHz)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	11n (40MHz)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	11ax(SU)(40MHz)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	11ac (80MHz)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	11ax(SU)(80MHz)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	11ac (160MHz)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	11ax(SU)(160MHz)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	11ax(SU)(160MHz)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 2-6. WIFI Configurations

✓ = Support ; ✗ = NOT Support

SISO = Single Input Single Output

SDM = Spatial Diversity Multiplexing – MIMO CDD function

CDD = Cyclic Delay Diversity - 2Tx Function

STBC = Space-Time Block Coding – 2Tx Function

Data Rate(s) Tested: 6, 9, 12, 18, 24, 36, 48, 54Mbps (802.11a)
6.5/7.2, 13/14.4, 19.5/21.7, 26/28.9, 39/43.3, 52/57.8, 58.5/65, 65/72.2 (n – 20MHz)
13.5/15, 27/30, 40.5/45, 54/60, 81/90, 108/120, 121.5/135, 135/150 (n – 40MHz BW)
29.3/32.5, 58.5/65, 87.8/97.5, 117/130, 175.5/195, 234/260, 263.3/292.5, 292.5/325, 351/390, 390/433.3 (ac – 80MHz BW)
13/14.4, 26.28.9, 39/43.3, 52/57.8, 78/86.7, 104/115.6, 117/130, 130/144.4Mbps (MIMO CDD n/ac – 20MHz)
156/173Mbps (MIMO CDD ac – 20MHz)
27/30, 54/60, 81/90, 108/120, 162/180, 216/240, 243/270, 270/300Mbps (MIMO CDD n/ac – 40MHz)
324/360, 360/400Mbps (MIMO CDD ac – 40MHz)
58.5/65, 117/130, 175.5/195, 234/260, 351/390, 468/520, 526.5/585, 585/650, 702/780, 780/866.7Mbps (MIMO CDD ac – 80MHz)
116/130, 234/260, 351/390, 468/520, 351/390, 468/520, 526.5/585, 585/650, 702/780, 780/866.7 (MIMO ac – 160MHz)
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, 122/129.0, 135/143.4 (ax – 20MHz)
16/17.2, 33/34.4, 49/51.6, 65/68.8, 98/103.2, 130/137.6, 146/154.9, 163/172.1, 195/206.5, 217/229.4, 244/258.1, 271/286.8 (ax – 40MHz BW)
34/36.0, 68/72.1, 102/108.1, 136/144.1, 204/216.2, 272/288.2, 306/324.4, 340/360.3, 408/432.4, 453/480.4, 510/540.4, 567/600.5 (ax – 80MHz BW)
136.2/144.2, 272/288.2, 408.2/432.4, 544.4, 576.4/816.6864.8, 1088.8/1153, 1225/1297, 1361.2/1441.2, 1633.4/1729.4, 1814.8/1921.6, 2041.6/2161.8, 2268.6/2402Mbps, (MIMO ax – 160MHz)

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3. 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	Wifi 2GHz	Bluetooth	Thread	Wifi 5GHz	Wifi 6GHz	NB UNII
		802.11 b/g/n/ax	BDR, EDR, HDR4/8, LE1/2M	802.15.4	802.11 a/n/ac/ax	802.11 a/ax	BDR, HDR4/8
Ant 2a	Config 1	✓	X	X	X	X	✓
Ant 2a	Config 2	X	✓	X	✓	X	X
Ant 2a	Config 3	X	✓	X	X	✓	X
Ant 2a	Config 4	X	X	✓	✓	X	X
Ant 2a	Config 5	X	X	✓	X	✓	X
Ant 4a	Config 6	✓	X	X	X	X	✓
Ant 4a	Config 7	X	✓	X	✓	X	X
Ant 4a	Config 8	X	✓	X	X	✓	X
Ant 4a	Config 9	X	X	✓	✓	X	X
Ant 4a	Config 10	X	X	✓	X	✓	X

Table 2-7. Simultaneous Transmission Configurations

✓ = Support; ✗ = Not Support

Note:

Specific 2.4GHz Wi-Fi antenna that can only transmit simultaneously with 2.4GHz Bluetooth antenna is listed in the SAR test report. For BT (2.4GHz) in connected mode and Wi-Fi (2.4GHz) - Wi-Fi max power will not exceed minimum of (13.5dBm, SAR max cap, Reg max cap) power. For BT (2.4GHz) in disconnected mode and Wi-Fi (2.4GHz) - BT will be using iPA only and Wi-Fi max power will not exceed minimum of (SAR max cap, Reg max cap) power. Bluetooth can simultaneously transmit with IEEE 802.11a/n/ac/ax 5/6 GHz on separate antenna.

TWDR Channels are not supported for ISED

2.3 Antenna Description

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

Frequency [GHz]	Antenna Gain (dBi)		
	Antenna WF5b	Antenna 4a	Antenna 2a
5.150 - 5.250	2.2	-0.3	-1.1
5.250 - 5.350	2.0	-0.2	-1.3
5.470 - 5.725	1.2	0.3	-0.8
5.725 - 5.850	0.4	0.4	-1.7

Table 2-8. Highest Antenna Gain

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2.4 Test Support Equipment

1	Apple MacBook Pro	Model:	A2141	S/N:	C02H604EQ05D
	w/AC/DC Adapter	Model:	A2166	S/N:	C4H042705ZNPM0WA6
2	Apple USB-C Cable	Model:	Spartan	S/N:	GXK1336018XKTR024
3	USB-C Cable	Model:	A246C	S/N:	DWH80115BK826GV19
	w/ AC Adapter	Model:	A2305	S/N:	C4H95160004PF4F4V
4	Apple Pencil	Model:	A2538	S/N:	KJ26TCFXJW
5	DC Power Supply	Model:	KPS3010D	S/N:	N/A

Table 2-9. Test Support Equipment List

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) HE20/40/80/160 and acVHT80/160 2TX CDD/SDM mode test data provided in this report covers 802.11n HT20/40, 11ax(SU) HE20/40/80/160 and 802.11acVHT80/160 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.

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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: 54Mbps
- 802.11n HT20/40:
 - Low Data Rate: MCS2/MCS10(SISO/CDD/SDM)
 - Mid Data Rate: MCS4/MCS12(SISO/CDD/SDM)
 - High Data Rate: MCS7/MCS15(SISO/CDD/SDM)
- 802.11ac VHT80/160:
 - Low Data Rate: MCS2(SISO/CDD/SDM)
 - Mid Data Rate: MCS4(SISO/CDD/SDM)
 - High Data Rate: MCS9(SISO/CDD/SDM)
- 802.11ax(SU) HE20/HE40/HE80/HE160
 - Low Data Rate: MCS2(SISO/CDD/SDM)
 - Mid Data Rate: MCS4(SISO/CDD/SDM)
 - High Data Rate: MCS11(SISO/CDD/SDM)

For 802.11ax-RU test result, see separate UNII 802.11ax (OFDMA) report, 1C2311270068-23.BCG

2.6 Software and Firmware

The test was conducted with firmware version 21E8197 installed on the EUT.

2.7 EMI Suppression Device(s)/Modifications

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

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3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

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

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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).

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4.0 ANTENNA REQUIREMENTS

Excerpt from §15.203 of the FCC Rules/Regulations:

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

- The 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.

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5.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.23-2012. All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the U_{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	2.07
Line Conducted Disturbance	1.91
Radiated Disturbance (<30MHz)	4.12
Radiated Disturbance (30MHz - 1GHz)	4.85
Radiated Disturbance (1 - 18GHz)	5.08
Radiated Disturbance (>18GHz)	4.59

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6.0 TEST EQUIPMENT CALIBRATION DATA

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

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent Technologies	N9030A	3Hz-44GHz PXA Signal Analyzer	6/21/2023	Annual	6/21/2024	MY49430244
Anritsu	ML2496A	Power Meter	4/4/2023	Annual	4/4/2024	1840005
Anritsu	MA2411B	Pulse Power Sensor	8/22/2023	Annual	8/22/2024	1726262
Anritsu	MA2411B	Pulse Power Sensor	4/5/2023	Annual	4/5/2024	1726261
ETS-Lindgren	3117	Double Ridged Guide Antenna (1-18 GHz)	3/30/2023	Annual	3/30/2024	00218555
Keysight Technology	N9040B	UXA Signal Analyzer	3/10/2023	Annual	3/10/2024	MY57212015
Rohde & Schwarz	TS-PR18	Pre-Amplifier (1GHz - 18GHz)	8/31/2023	Annual	8/31/2024	100052
Rohde & Schwarz	FSV40	Signal Analyzer (10Hz-40GHz)	5/11/2023	Annual	5/11/2024	101619
Rohde & Schwarz	ESW44	EMI Test Receiver	6/6/2023	Annual	6/6/2024	101668
Rohde & Schwarz	TS-PR8	Pre-Amplifier (30MHz - 8GHz)	6/22/2023	Annual	6/22/2024	102356
Rohde & Schwarz	TS-PR1840	Pre-Amplifier (18GHz - 40GHz)	6/2/2023	Annual	6/2/2024	100050
Rohde & Schwarz	HFH2-Z2	Loop Antenna	5/1/2023	Annual	5/1/2024	100519
Rohde & Schwarz	ENV216	Two-Line V-Network	6/8/2023	Annual	6/8/2024	192052
Schwarzbeck	VULB 9162	Bilog Antenna (30MHz - 6GHz)	4/17/2023	Annual	4/17/2024	00304

Table 6-1. Test Equipment List

Note:

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

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7.0 TEST RESULTS

7.1 Summary

Company Name: Apple Inc.
 FCC ID: BCGA2837
 IC: 579C-A2837
 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		PASS	Section 7.2, 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 (1C23112700 68-21.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 Conducted Emissions 150kHz – 30MHz	< FCC 15.207 (RSS-Gen [8.8]) limits	LINE CONDUCTED	PASS	Section 7.8

Table 7-1. Summary of Test Results

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 Element "UNII Automation," Version 7.0.
- 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 Element "Chamber Automation," Version 3.0.0.
- 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.

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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.

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7.2.1 Antenna WF5b 26dB & 99% Bandwidth Measurements

	Frequency [MHz]	Channel	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)	17.84	21.52
	5200	40	n (20MHz)	19.5/21.7 (MCS2)	17.73	20.90
	5240	48	n (20MHz)	19.5/21.7 (MCS2)	17.72	20.95
	5180	36	ax (SU) (20MHz)	24/25.8 (MCS2)	19.16	25.71
	5200	40	ax (SU) (20MHz)	24/25.8 (MCS2)	19.07	21.24
	5240	48	ax (SU) (20MHz)	24/25.8 (MCS2)	19.03	21.23
	5190	38	n (40MHz)	40/40.5 (MCS2)	36.57	42.19
	5230	46	n (40MHz)	40/40.5 (MCS2)	36.25	40.98
	5190	38	ax (SU) (40MHz)	49/51.6 (MCS2)	38.08	47.56
	5230	46	ax (SU) (40MHz)	49/51.6 (MCS2)	37.96	41.58
	5210	42	ac (80MHz)	87.8/97.5 (MCS2)	75.66	88.85
	5210	42	ax (SU) (80MHz)	102/108.1 (MCS2)	77.32	90.27
Band 1/2	5250	50	ac (160MHz)	87.8/97.5 (MCS2)	155.58	165.11
	5250	50	ax (SU) (160MHz)	102/108.1 (MCS2)	157.28	165.63
Band 2A	5260	52	n (20MHz)	19.5/21.7 (MCS2)	17.73	20.99
	5300	60	n (20MHz)	19.5/21.7 (MCS2)	17.72	20.93
	5320	64	n (20MHz)	19.5/21.7 (MCS2)	17.80	21.57
	5260	52	ax (SU) (20MHz)	24/25.8 (MCS2)	19.06	21.17
	5300	60	ax (SU) (20MHz)	24/25.8 (MCS2)	19.05	21.14
	5320	64	ax (SU) (20MHz)	24/25.8 (MCS2)	19.13	22.24
	5270	54	n (40MHz)	40/40.5 (MCS2)	36.35	41.15
	5310	62	n (40MHz)	40/40.5 (MCS2)	36.42	42.47
	5270	54	ax (SU) (40MHz)	49/51.6 (MCS2)	37.95	41.66
	5310	62	ax (SU) (40MHz)	49/51.6 (MCS2)	38.00	43.69
	5290	58	ac (80MHz)	87.8/97.5 (MCS2)	75.74	83.83
	5290	58	ax (SU) (80MHz)	102/108.1 (MCS2)	77.35	88.12
Band 2C	5500	100	n (20MHz)	19.5/21.7 (MCS2)	17.81	21.53
	5580	116	n (20MHz)	19.5/21.7 (MCS2)	17.72	20.90
	5720	144	n (20MHz)	19.5/21.7 (MCS2)	17.70	20.97
	5500	100	ax (SU) (20MHz)	24/25.8 (MCS2)	19.12	22.18
	5580	116	ax (SU) (20MHz)	24/25.8 (MCS2)	19.04	21.26
	5720	144	ax (SU) (20MHz)	24/25.8 (MCS2)	19.03	21.23
	5510	102	n (40MHz)	40/40.5 (MCS2)	36.43	42.21
	5550	110	n (40MHz)	40/40.5 (MCS2)	36.33	41.20
	5710	142	n (40MHz)	40/40.5 (MCS2)	36.24	41.02
	5510	102	ax (SU) (40MHz)	49/51.6 (MCS2)	38.11	43.50
	5550	110	ax (SU) (40MHz)	49/51.6 (MCS2)	37.99	41.48
	5710	142	ax (SU) (40MHz)	49/51.6 (MCS2)	37.95	41.45
	5530	106	ac (80MHz)	87.8/97.5 (MCS2)	75.71	83.83
	5690	138	ac (80MHz)	87.8/97.5 (MCS2)	75.46	80.88
	5530	106	ax (SU) (80MHz)	102/108.1 (MCS2)	77.42	86.03
	5690	138	ax (SU) (80MHz)	102/108.1 (MCS2)	77.14	82.21
	5570	114	ac (160MHz)	87.8/97.5 (MCS2)	154.71	164.95
	5570	114	ax (SU) (160MHz)	102/108.1 (MCS2)	156.54	165.07

Table 7-2. Conducted Bandwidth Measurements Antenna WF5b (Low Data Rate)

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	Frequency [MHz]	Channel	802.11 MODE	Data Rate [Mbps]	Measured 99% Occupied Bandwidth [MHz]	Measured 26dB Bandwidth [MHz]
Band 1	5180	36	n (20MHz)	39/43.3 (MCS4)	17.96	22.12
	5200	40	n (20MHz)	39/43.3 (MCS4)	17.73	20.74
	5240	48	n (20MHz)	39/43.3 (MCS4)	17.73	20.91
	5180	36	ax (SU) (20MHz)	49/51.6 (MCS4)	19.20	25.55
	5200	40	ax (SU) (20MHz)	49/51.6 (MCS4)	19.06	21.31
	5240	48	ax (SU) (20MHz)	49/51.6 (MCS4)	19.06	21.17
	5190	38	n (40MHz)	81/90 (MCS4)	36.62	40.69
	5230	46	n (40MHz)	81/90 (MCS4)	36.30	40.76
	5190	38	ax (SU) (40MHz)	98/103.2 (MCS4)	38.31	60.23
	5230	46	ax (SU) (40MHz)	98/103.2 (MCS4)	37.95	41.57
	5210	42	ac (80MHz)	175.5/195 (MCS4)	75.83	86.45
	5210	42	ax (SU) (80MHz)	204/216.2 (MCS4)	77.51	94.76
Band 1/2	5250	50	ac (160MHz)	175.5/195 (MCS4)	155.82	165.46
	5250	50	ax (SU) (160MHz)	204/216.2 (MCS4)	157.39	165.75
Band 2A	5260	52	n (20MHz)	39/43.3 (MCS4)	17.73	20.92
	5300	60	n (20MHz)	39/43.3 (MCS4)	17.72	20.74
	5320	64	n (20MHz)	39/43.3 (MCS4)	17.77	21.24
	5260	52	ax (SU) (20MHz)	49/51.6 (MCS4)	19.05	21.40
	5300	60	ax (SU) (20MHz)	49/51.6 (MCS4)	19.04	21.35
	5320	64	ax (SU) (20MHz)	49/51.6 (MCS4)	19.08	23.01
	5270	54	n (40MHz)	81/90 (MCS4)	36.42	41.37
	5310	62	n (40MHz)	81/90 (MCS4)	36.49	41.31
	5270	54	ax (SU) (40MHz)	98/103.2 (MCS4)	37.99	41.50
	5310	62	ax (SU) (40MHz)	98/103.2 (MCS4)	38.08	47.94
	5290	58	ac (80MHz)	175.5/195 (MCS4)	75.73	81.29
	5290	58	ax (SU) (80MHz)	204/216.2 (MCS4)	77.41	88.85
Band 2C	5500	100	n (20MHz)	39/43.3 (MCS4)	17.76	20.99
	5580	116	n (20MHz)	39/43.3 (MCS4)	17.72	20.86
	5720	144	n (20MHz)	39/43.3 (MCS4)	17.70	20.73
	5500	100	ax (SU) (20MHz)	49/51.6 (MCS4)	19.11	24.28
	5580	116	ax (SU) (20MHz)	49/51.6 (MCS4)	19.03	21.21
	5720	144	ax (SU) (20MHz)	49/51.6 (MCS4)	19.02	21.19
	5510	102	n (40MHz)	81/90 (MCS4)	36.53	41.44
	5550	110	n (40MHz)	81/90 (MCS4)	36.33	41.07
	5710	142	n (40MHz)	81/90 (MCS4)	36.25	40.96
	5510	102	ax (SU) (40MHz)	98/103.2 (MCS4)	38.11	54.31
	5550	110	ax (SU) (40MHz)	98/103.2 (MCS4)	37.97	41.64
	5710	142	ax (SU) (40MHz)	98/103.2 (MCS4)	37.92	41.38
	5530	106	ac (80MHz)	175.5/195 (MCS4)	75.75	81.12
	5690	138	ac (80MHz)	175.5/195 (MCS4)	75.51	80.88
	5530	106	ax (SU) (80MHz)	204/216.2 (MCS4)	77.38	82.88
	5690	138	ax (SU) (80MHz)	204/216.2 (MCS4)	77.25	81.55
	5570	114	ac (160MHz)	175.5/195 (MCS4)	154.72	165.27
	5570	114	ax (SU) (160MHz)	204/216.2 (MCS4)	156.61	165.55

Table 7-3. Conducted Bandwidth Measurements Antenna WF5b (Mid Data Rate)

FCC ID: BCGA2837 IC: 579C-A2837	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1C2311270068-22.BCG	Test Dates: 11/28/2023 - 1/15/2024	EUT Type: Tablet Device	Page 21 of 577

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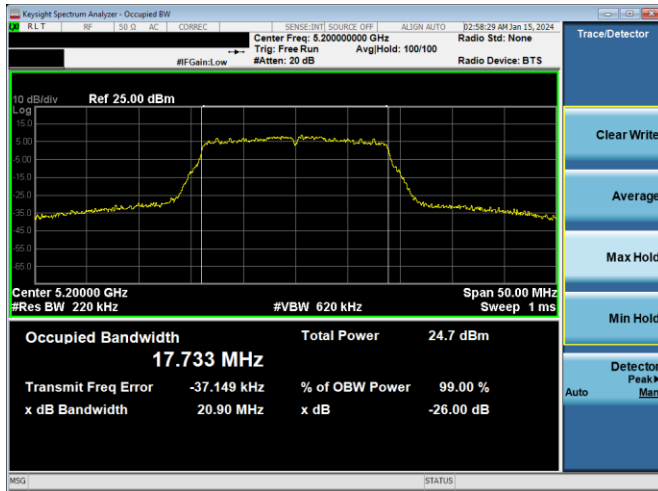
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	Frequency [MHz]	Channel	802.11 MODE	Data Rate [Mbps]	Measured 99% Occupied Bandwidth [MHz]	Measured 26dB Bandwidth [MHz]
Band 1	5180	36	n (20MHz)	65/72.2 (MCS7)	17.86	21.74
	5200	40	n (20MHz)	65/72.2 (MCS7)	17.91	21.42
	5240	48	n (20MHz)	65/72.2 (MCS7)	17.88	21.37
	5180	36	ax (SU) (20MHz)	135/143.4 (MCS11)	19.13	28.74
	5200	40	ax (SU) (20MHz)	135/143.4 (MCS11)	19.08	24.71
	5240	48	ax (SU) (20MHz)	135/143.4 (MCS11)	19.09	22.37
	5190	38	n (40MHz)	135/150 (MCS7)	36.80	42.17
	5230	46	n (40MHz)	135/150 (MCS7)	36.61	41.54
	5190	38	ax (SU) (40MHz)	271/286 (MCS11)	38.14	55.42
	5230	46	ax (SU) (40MHz)	271/286 (MCS11)	38.04	50.16
	5210	42	ac (80MHz)	390/433.3 (MCS9)	76.10	86.02
	5210	42	ax (SU) (80MHz)	567/600.5 (MCS11)	77.24	81.69
Band 1/2	5250	50	ac (160MHz)	390/433.3 (MCS9)	156.14	165.92
	5250	50	ax (SU) (160MHz)	567/600.5 (MCS11)	158.53	296.86
Band 2A	5260	52	n (20MHz)	65/72.2 (MCS7)	17.88	21.45
	5300	60	n (20MHz)	65/72.2 (MCS7)	17.87	21.17
	5320	64	n (20MHz)	65/72.2 (MCS7)	17.87	21.20
	5260	52	ax (SU) (20MHz)	135/143.4 (MCS11)	19.16	24.87
	5300	60	ax (SU) (20MHz)	135/143.4 (MCS11)	19.07	21.20
	5320	64	ax (SU) (20MHz)	135/143.4 (MCS11)	19.04	21.22
	5270	54	n (40MHz)	135/150 (MCS7)	36.61	41.31
	5310	62	n (40MHz)	135/150 (MCS7)	36.59	41.29
	5270	54	ax (SU) (40MHz)	271/286 (MCS11)	38.07	50.05
	5310	62	ax (SU) (40MHz)	271/286 (MCS11)	38.00	44.51
	5290	58	ac (80MHz)	390/433.3 (MCS9)	76.15	83.06
	5290	58	ax (SU) (80MHz)	567/600.5 (MCS11)	77.35	81.82
Band 2C	5500	100	n (20MHz)	65/72.2 (MCS7)	17.89	21.17
	5580	116	n (20MHz)	65/72.2 (MCS7)	17.85	21.17
	5720	144	n (20MHz)	65/72.2 (MCS7)	17.85	21.08
	5500	100	ax (SU) (20MHz)	135/143.4 (MCS11)	19.08	21.32
	5580	116	ax (SU) (20MHz)	135/143.4 (MCS11)	19.09	21.21
	5720	144	ax (SU) (20MHz)	135/143.4 (MCS11)	19.00	21.13
	5510	102	n (40MHz)	135/150 (MCS7)	36.59	41.33
	5550	110	n (40MHz)	135/150 (MCS7)	36.58	41.34
	5710	142	n (40MHz)	135/150 (MCS7)	36.59	41.22
	5510	102	ax (SU) (40MHz)	271/286 (MCS11)	38.04	44.63
	5550	110	ax (SU) (40MHz)	271/286 (MCS11)	38.04	47.81
	5710	142	ax (SU) (40MHz)	271/286 (MCS11)	37.96	41.40
	5530	106	ac (80MHz)	390/433.3 (MCS9)	76.04	82.83
	5690	138	ac (80MHz)	390/433.3 (MCS9)	75.98	81.89
	5530	106	ax (SU) (80MHz)	567/600.5 (MCS11)	77.36	81.60
	5690	138	ax (SU) (80MHz)	567/600.5 (MCS11)	77.10	81.59
	5570	114	ac (160MHz)	390/433.3 (MCS9)	155.37	166.13
	5570	114	ax (SU) (160MHz)	567/600.5 (MCS11)	156.98	195.70

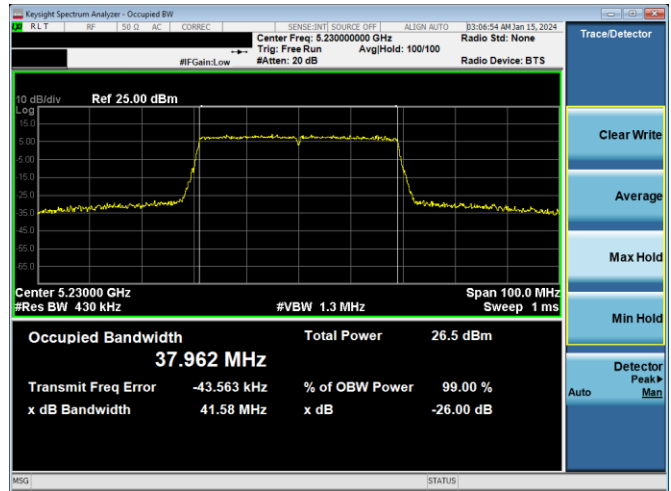
Table 7-4. Conducted Bandwidth Measurements Antenna WF5b (High Data Rate)

FCC ID: BCGA2837 IC: 579C-A2837	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1C2311270068-22.BCG	Test Dates: 11/28/2023 - 1/15/2024	EUT Type: Tablet Device	Page 22 of 577

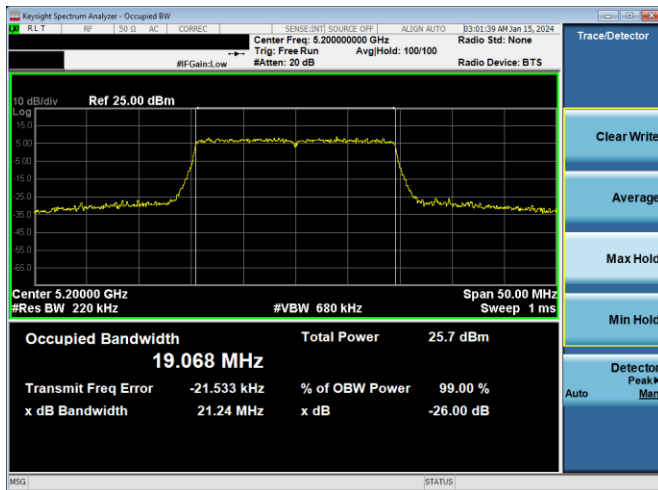
V 10.5 12/15/2021



Plot 7-1. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11n – Ch. 40, MCS2)



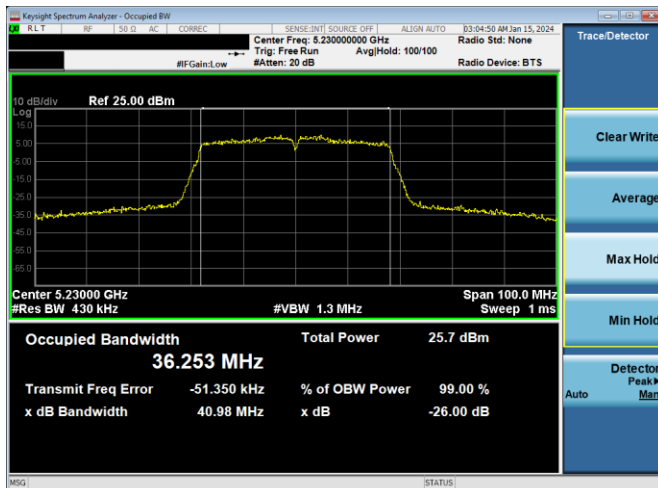
Plot 7-4. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11ax(SU) – Ch. 46, MCS2)



Plot 7-2. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11ax(SU) – Ch. 40, MCS2)



Plot 7-5. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ac – Ch. 42, MCS2)



Plot 7-3. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11n – Ch. 46, MCS2)

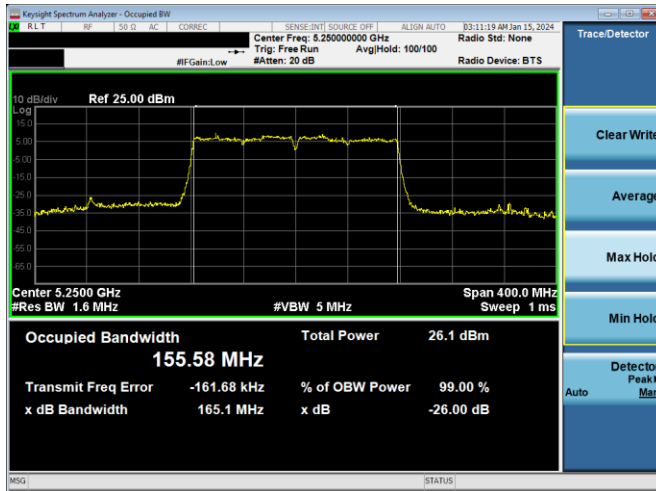


Plot 7-6. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ax(SU) – Ch. 42, MCS2)

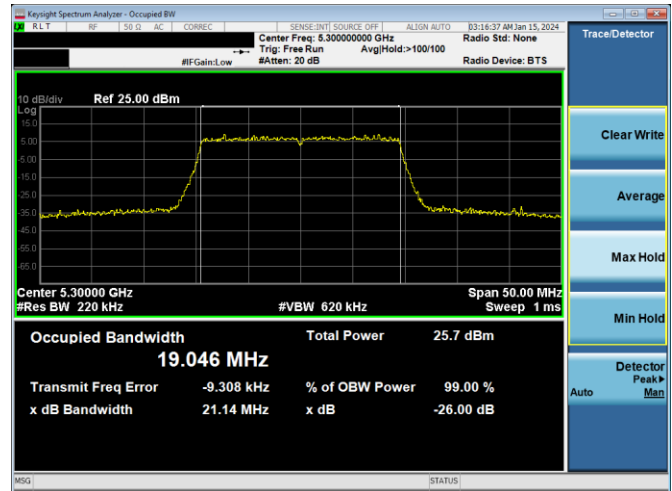
FCC ID: BCGA2837 IC: 579C-A2837		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2311270068-22.BCG	Test Dates: 11/28/2023 - 1/15/2024	EUT Type: Tablet Device	Page 23 of 577

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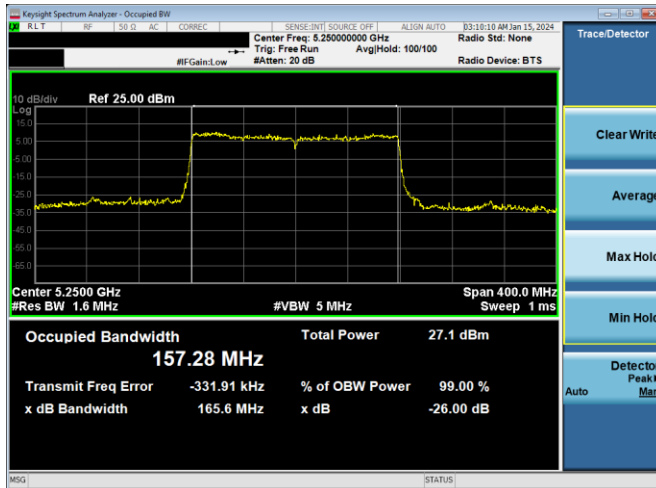
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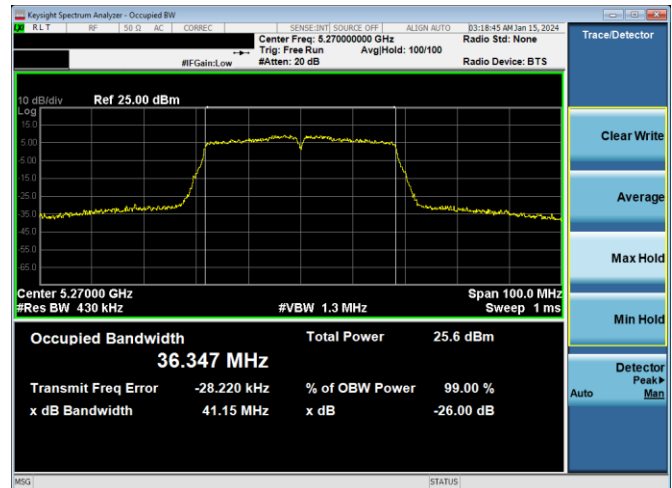
Plot 7-7. 26dB BW & 99% OBW Antenna WF5b (160MHz BW 802.11ac – Ch. 50, MCS2)



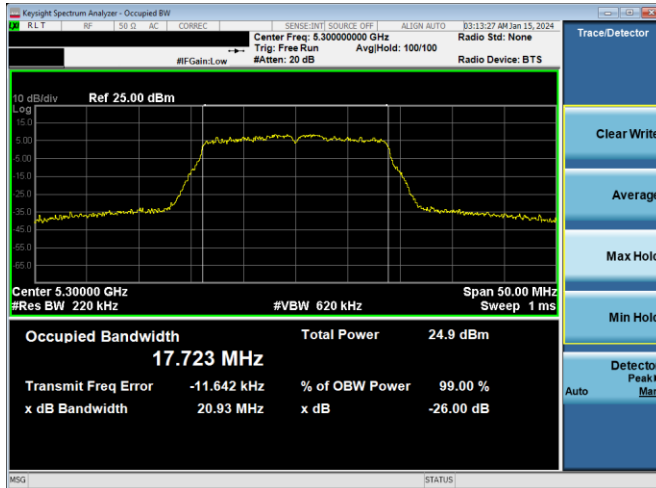
Plot 7-10. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11ax(SU) – Ch. 60, MCS2)



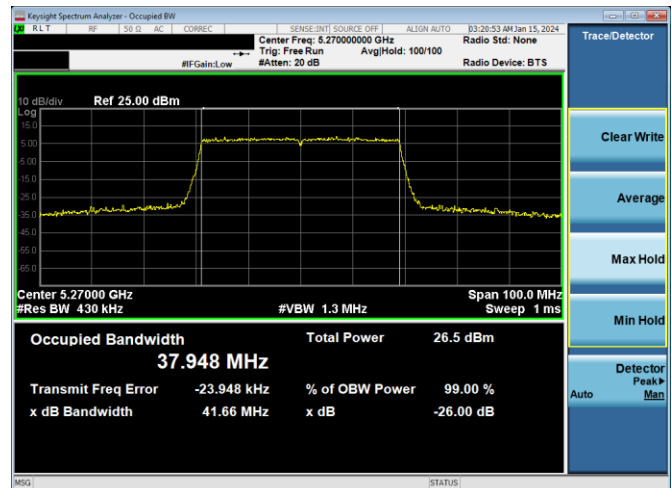
Plot 7-8. 26dB BW & 99% OBW Antenna WF5b (160MHz BW 802.11ac – Ch. 50, MCS2)



Plot 7-11. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11n – Ch. 54, MCS2)



Plot 7-9. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11n – Ch. 60, MCS2)

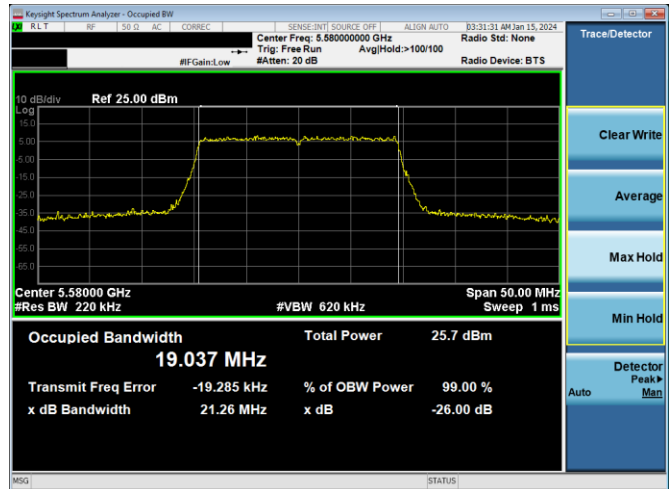


Plot 7-12. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11ax(SU) – Ch. 54, MCS2)

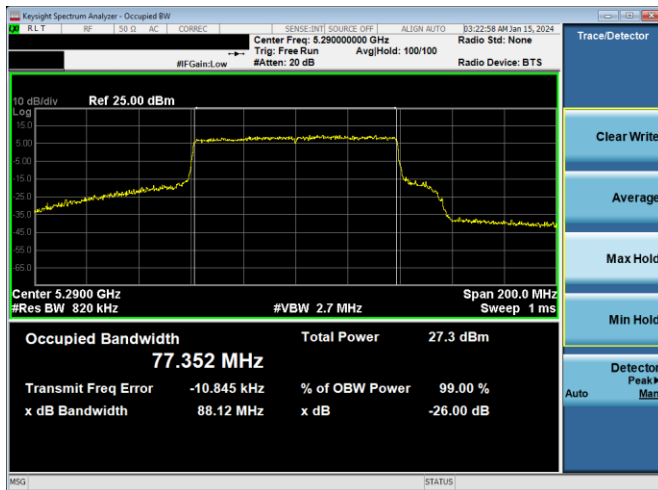
FCC ID: BCGA2837 IC: 579C-A2837		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2311270068-22.BCG	Test Dates: 11/28/2023 - 1/15/2024	EUT Type: Tablet Device	Page 24 of 577



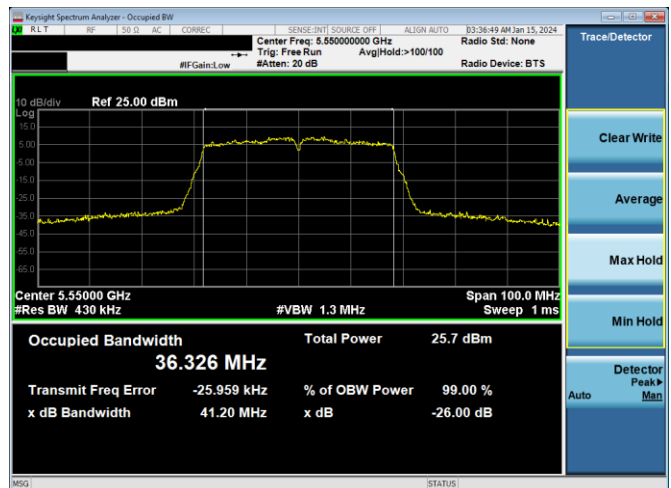
Plot 7-13. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ac – Ch. 58, MCS2)



Plot 7-16. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11ax(SU) – Ch. 116, MCS2)



Plot 7-14. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ax(SU) – Ch. 58, MCS2)



Plot 7-17. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11n – Ch. 110, MCS2)



Plot 7-15. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11n – Ch. 116, MCS2)



Plot 7-18. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11ax(SU) – Ch. 110, MCS2)

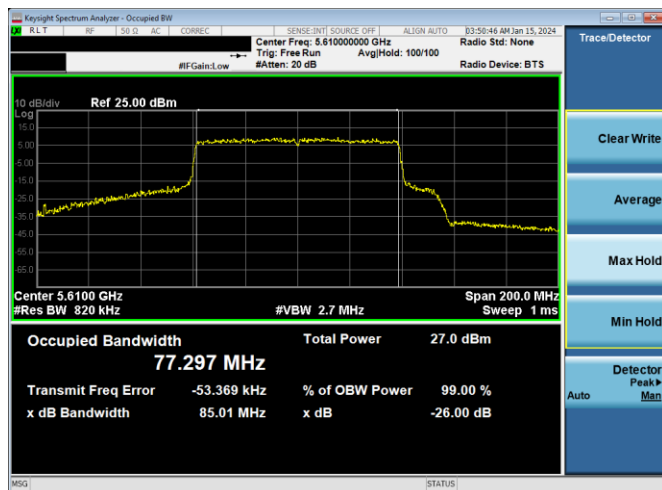
FCC ID: BCGA2837 IC: 579C-A2837	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2311270068-22.BCG	Test Dates: 11/28/2023 - 1/15/2024	EUT Type: Tablet Device	Page 25 of 577



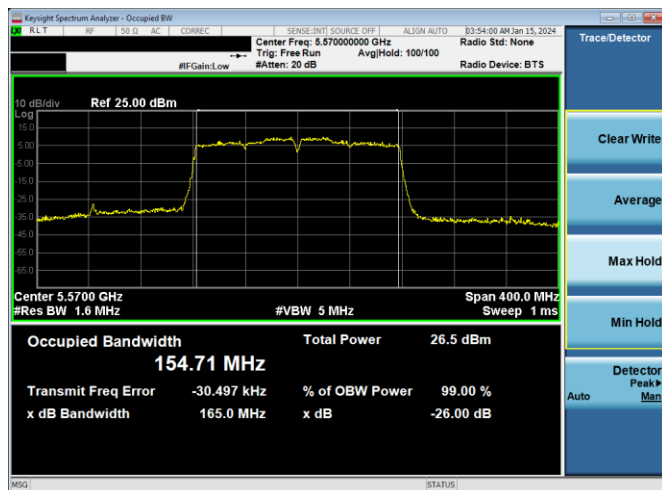
Plot 7-19. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ac - Ch. 122, MCS2)



Plot 7-22. 26dB BW & 99% OBW Antenna WF5b (160MHz BW 802.11ac - Ch. 114, MCS2)



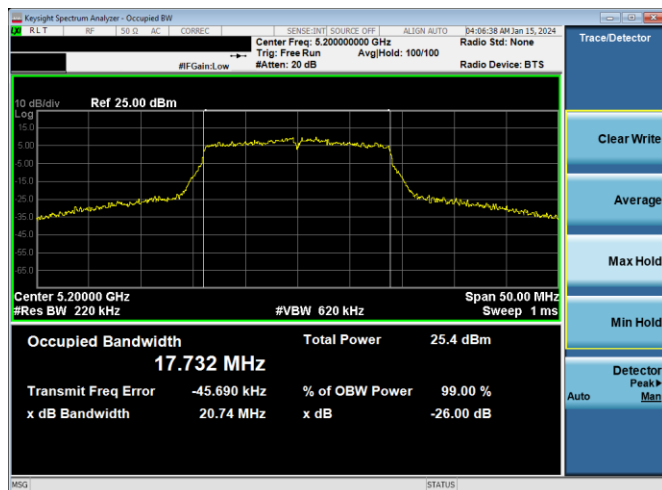
Plot 7-20. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ax(SU) - Ch. 122, MCS2)



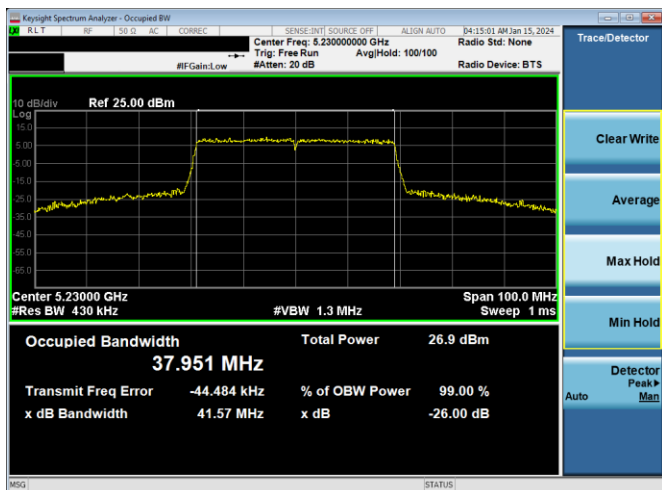
Plot 7-21. 26dB BW & 99% OBW Antenna WF5b (160MHz BW 802.11ac - Ch. 114, MCS2)

FCC ID: BCGA2837 IC: 579C-A2837	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2311270068-22.BCG	Test Dates: 11/28/2023 - 1/15/2024	EUT Type: Tablet Device	Page 26 of 577

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Plot 7-23. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11n – Ch. 40, MCS4)



Plot 7-26. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11ax(SU) – Ch. 46, MCS4)



Plot 7-24. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11ax(SU) – Ch. 40, MCS4)



Plot 7-27. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ac – Ch. 42, MCS4)



Plot 7-25. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11n – Ch. 46, MCS4)

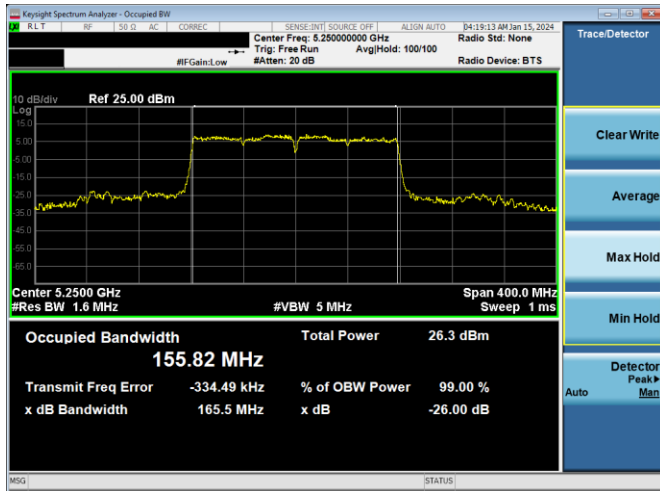


Plot 7-28. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ax(SU) – Ch. 42, MCS4)

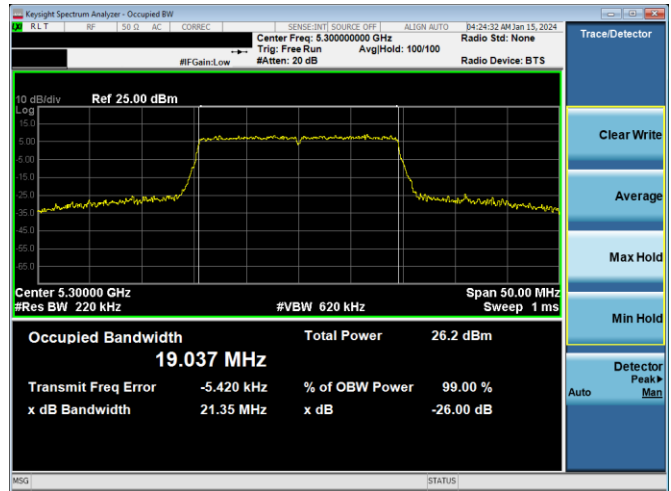
FCC ID: BCGA2837 IC: 579C-A2837		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2311270068-22.BCG	Test Dates: 11/28/2023 - 1/15/2024	EUT Type: Tablet Device	Page 27 of 577

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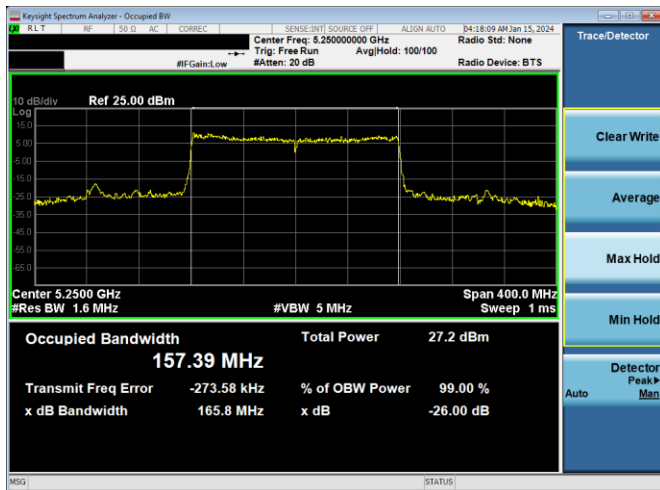
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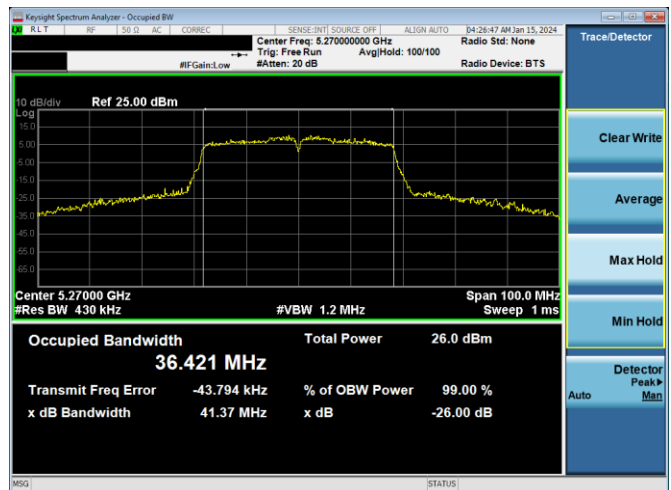
Plot 7-29. 26dB BW & 99% OBW Antenna WF5b (160MHz BW 802.11ac – Ch. 50, MCS4)



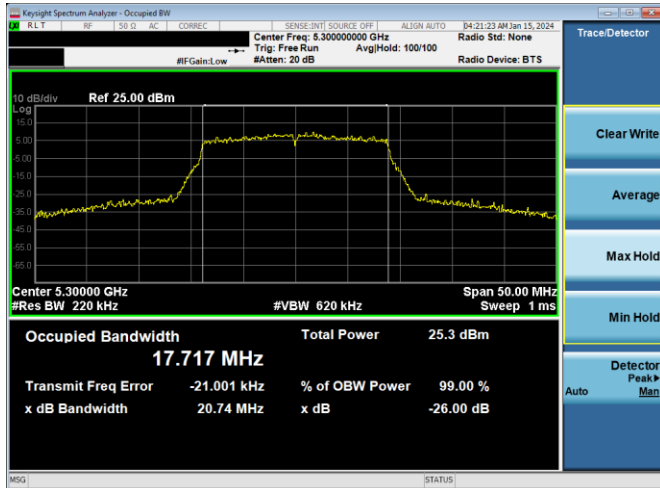
Plot 7-32. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11ax(SU) – Ch. 60, MCS4)



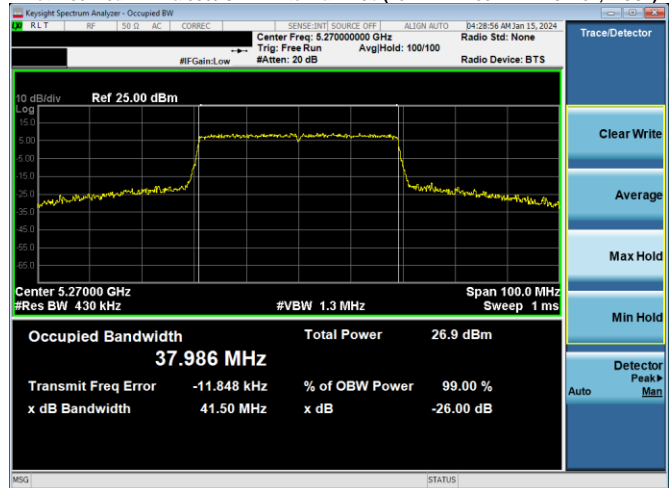
Plot 7-30. 26dB BW & 99% OBW Antenna WF5b (160MHz BW 802.11ac – Ch. 50, MCS4)



Plot 7-33. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11n – Ch. 54, MCS4)



Plot 7-31. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11n – Ch. 60, MCS4)

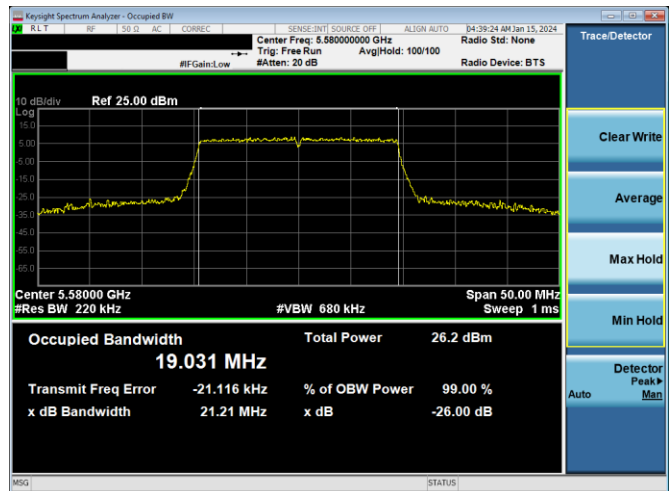


Plot 7-34. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11ax(SU) – Ch. 54, MCS4)

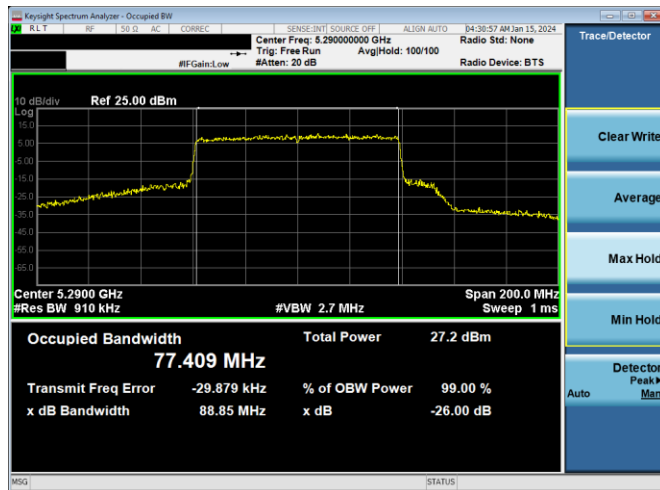
FCC ID: BCGA2837 IC: 579C-A2837	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1C2311270068-22.BCG	Test Dates: 11/28/2023 - 1/15/2024	EUT Type: Tablet Device	Page 28 of 577



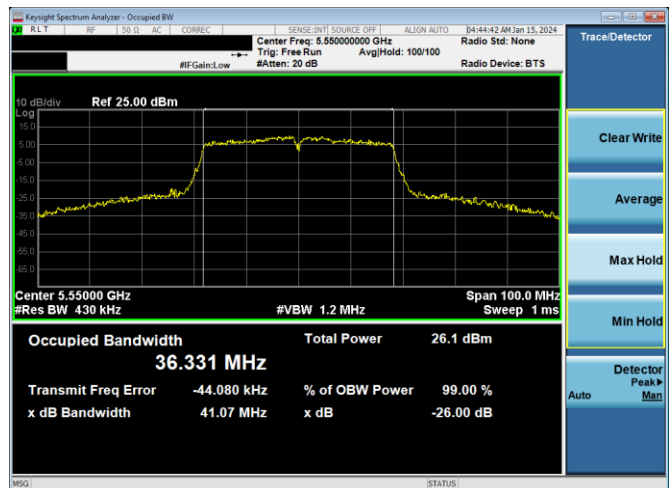
Plot 7-35. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ac – Ch. 58, MCS4)



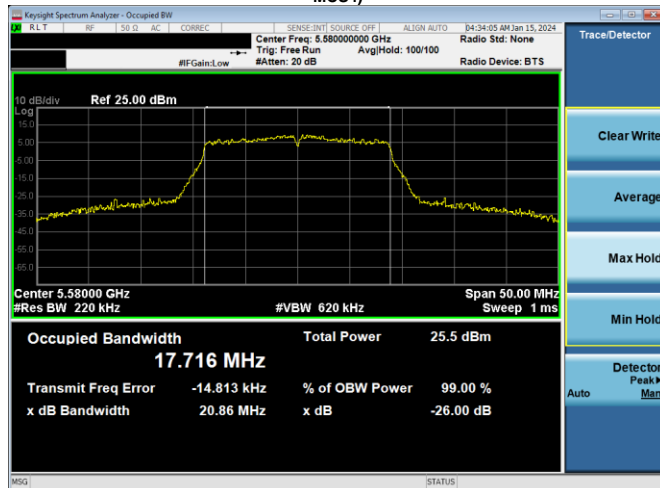
Plot 7-38. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11ax(SU) – Ch. 116, MCS4



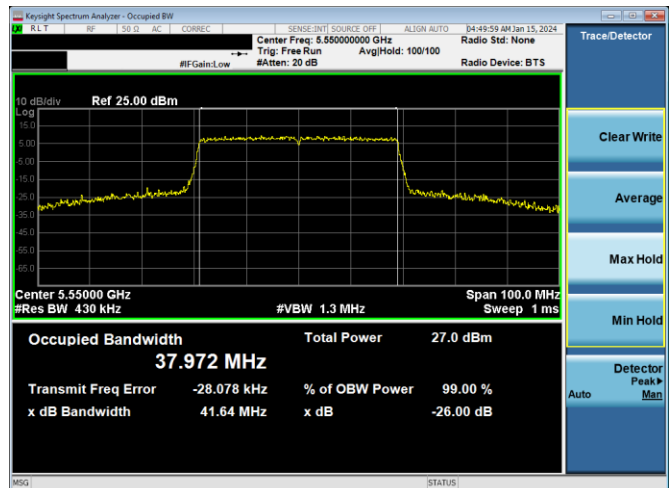
Plot 7-36. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ax(SU) – Ch. 58, MCS4)



Plot 7-39. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11n – Ch. 110, MCS4)



Plot 7-37. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11n – Ch. 116, MCS4)

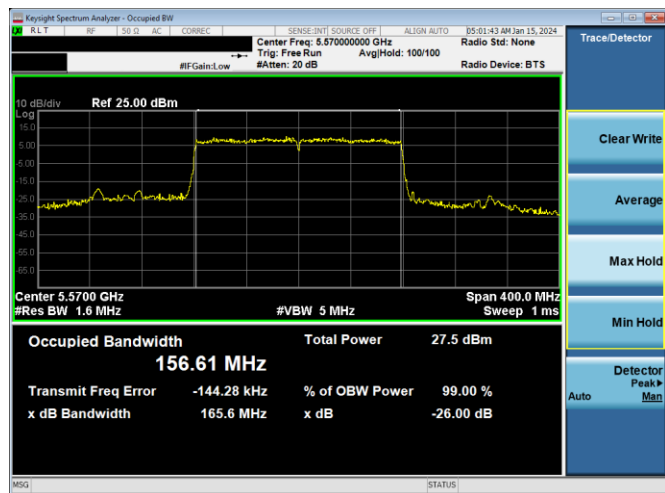


Plot 7-40. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11ax(SU) – Ch. 110, MCS4)

FCC ID: BCGA2837 IC: 579C-A2837	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2311270068-22.BCG	Test Dates: 11/28/2023 - 1/15/2024	EUT Type: Tablet Device	Page 29 of 577



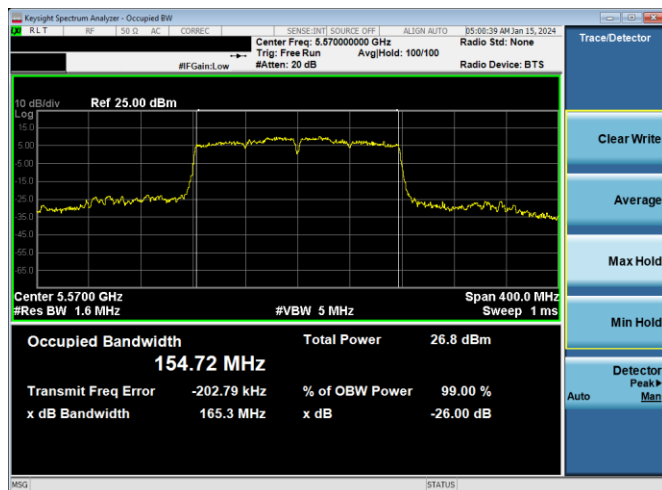
Plot 7-41. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ac – Ch. 122, MCS4)



Plot 7-44. 26dB BW & 99% OBW Antenna WF5b (160MHz BW 802.11ac – Ch. 114, MCS4)



Plot 7-42. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ax(SU) – Ch. 122, MCS4)

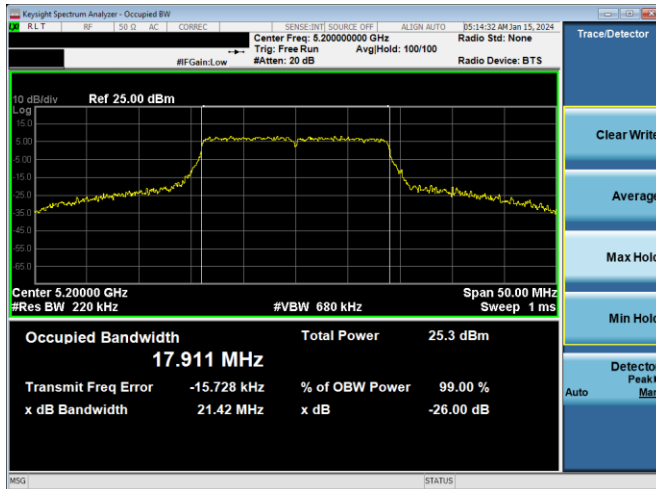


Plot 7-43. 26dB BW & 99% OBW Antenna WF5b (160MHz BW 802.11ac – Ch. 114, MCS4)

FCC ID: BCGA2837 IC: 579C-A2837	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2311270068-22.BCG	Test Dates: 11/28/2023 - 1/15/2024	EUT Type: Tablet Device	Page 30 of 577

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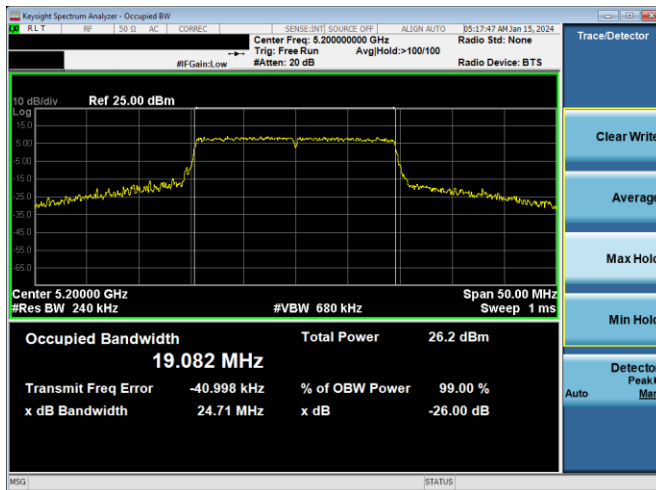
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Plot 7-45. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11n – Ch. 40, MCS7)



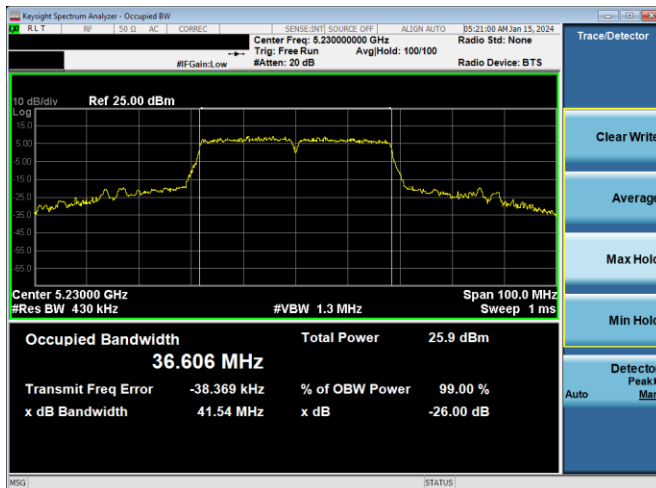
Plot 7-48. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11ax(SU) – Ch. 46, MCS11)



Plot 7-46. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11ax(SU) – Ch. 40, MCS11)



Plot 7-49. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ac – Ch. 42, MCS9)



Plot 7-47. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11n – Ch. 46, MCS7)

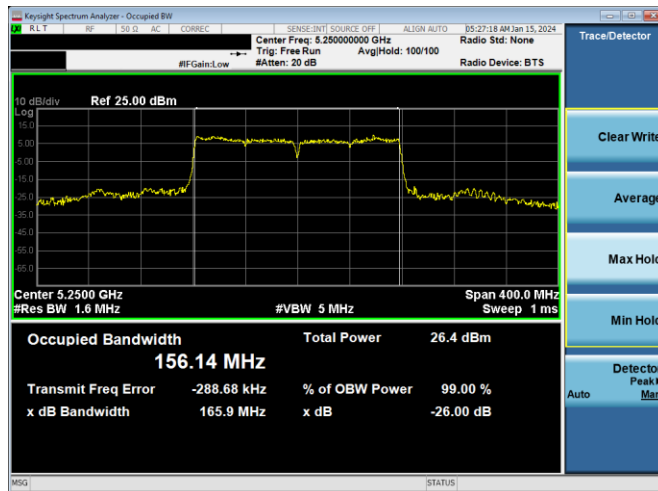


Plot 7-50. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ax(SU) – Ch. 42, MCS11)

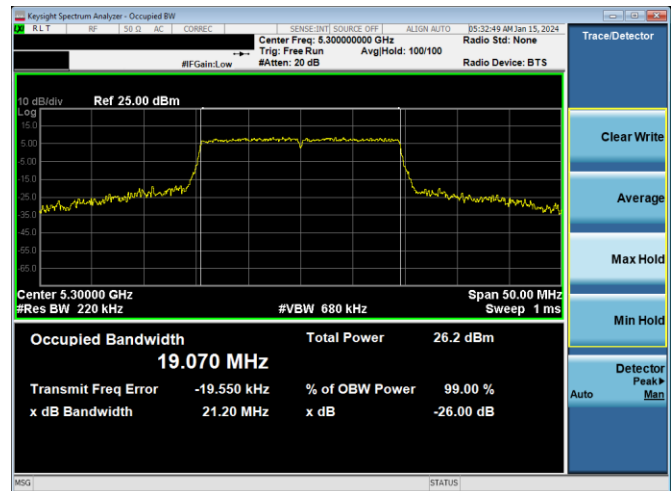
FCC ID: BCGA2837 IC: 579C-A2837		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2311270068-22.BCG	Test Dates: 11/28/2023 - 1/15/2024	EUT Type: Tablet Device	Page 31 of 577

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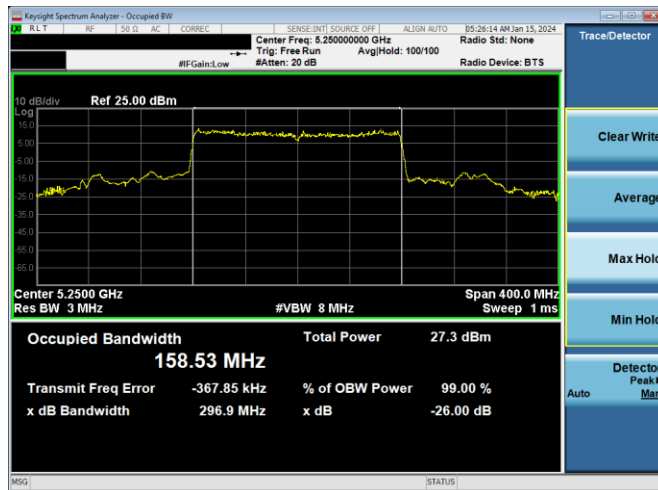
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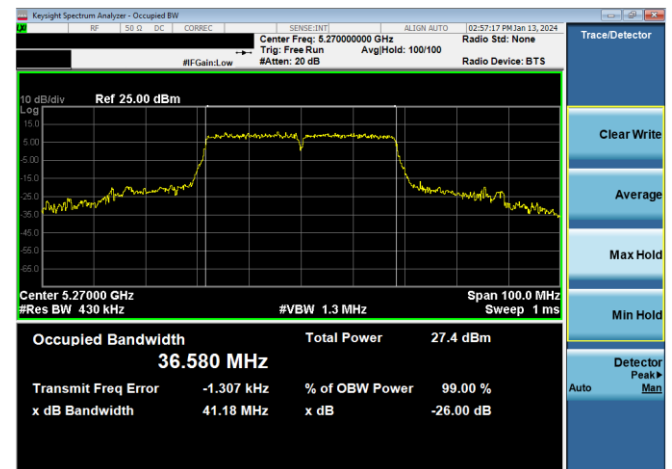
Plot 7-51. 26dB BW & 99% OBW Antenna WF5b (160MHz BW 802.11ac – Ch. 50, MCS9)



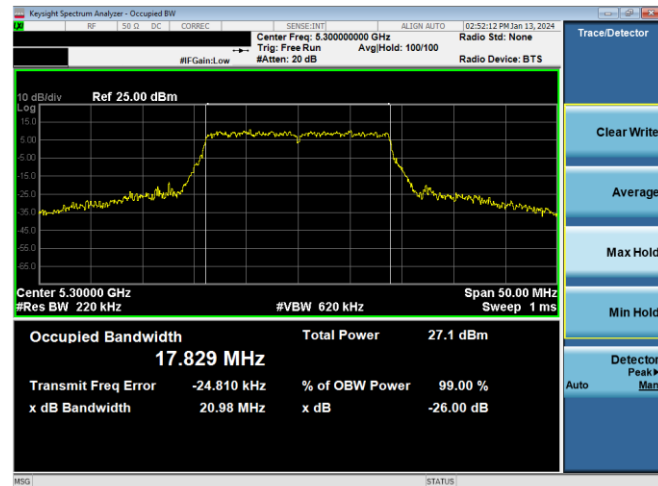
Plot 7-54. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11ax(SU) – Ch. 60, MCS11)



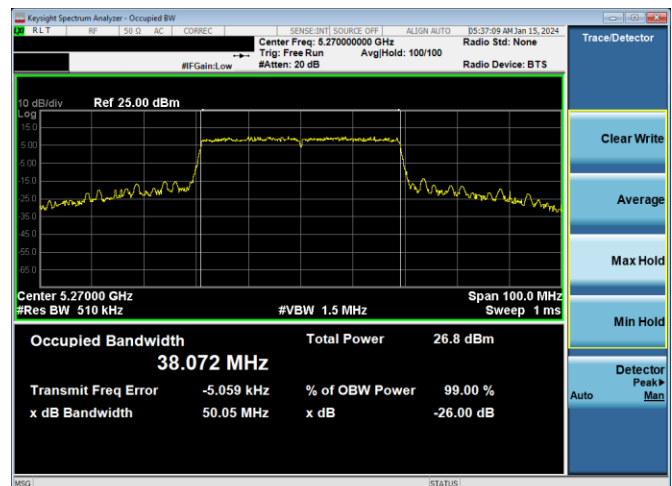
Plot 7-52. 26dB BW & 99% OBW Antenna WF5b (160MHz BW 802.11ac – Ch. 50, MCS11)



Plot 7-55. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11n – Ch. 54, MCS7)



Plot 7-53. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11n – Ch. 60, MCS7)

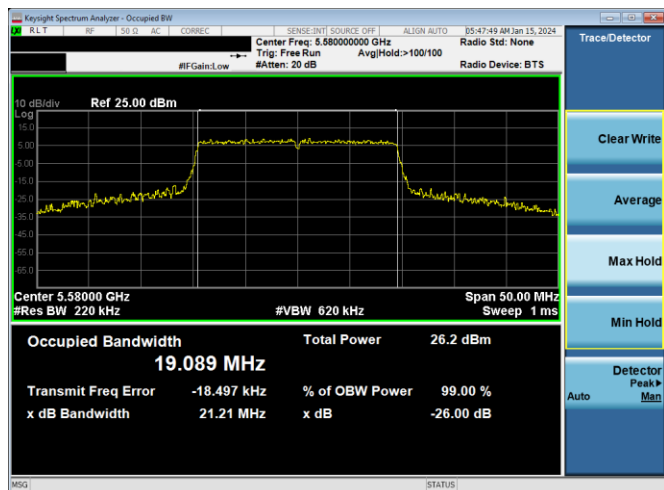


Plot 7-56. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11ax(SU) – Ch. 54, MCS11)

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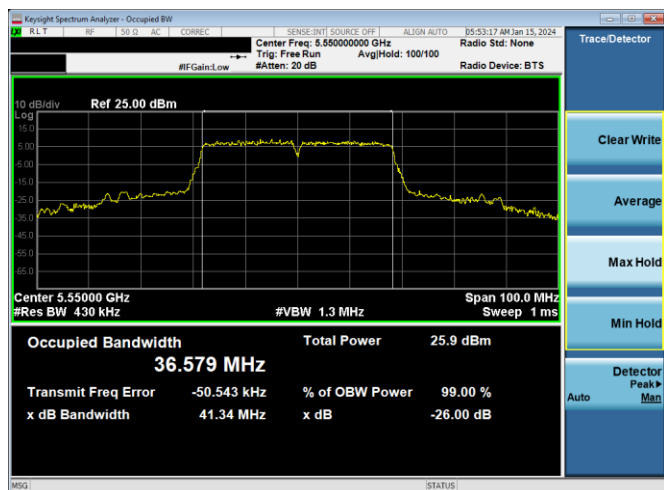
Plot 7-57. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ac – Ch. 58, MCS9)



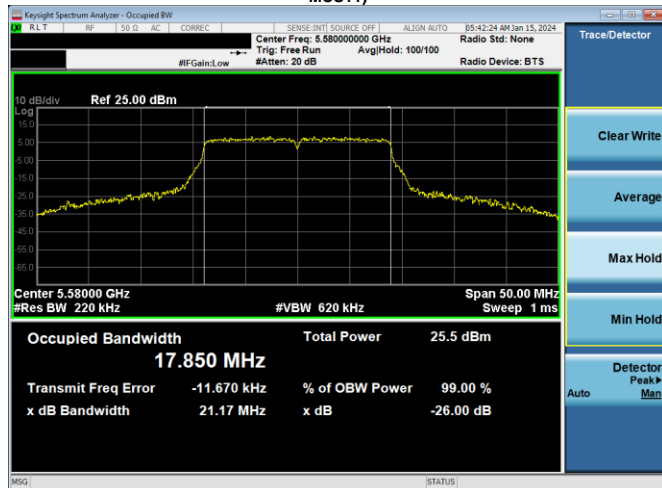
Plot 7-60. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11ax(SU) – Ch. 116, MCS11)



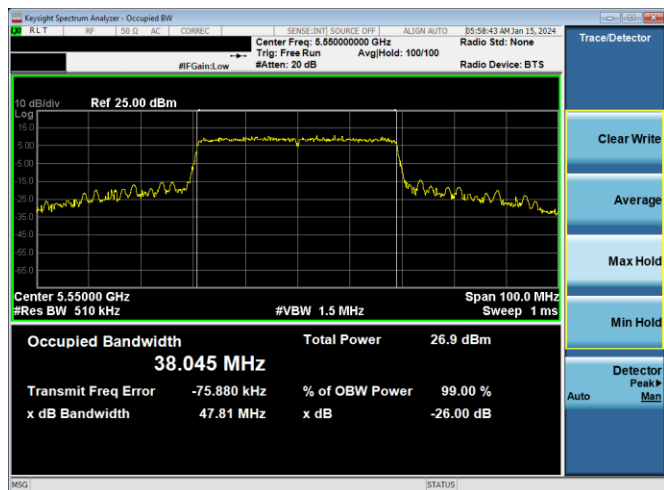
Plot 7-58. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ax(SU) – Ch. 58, MCS11)



Plot 7-61. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11n – Ch. 110), MCS9)



Plot 7-59. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11n – Ch. 116, MCS7)



Plot 7-62. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11ax(SU) – Ch. 110, MCS11)

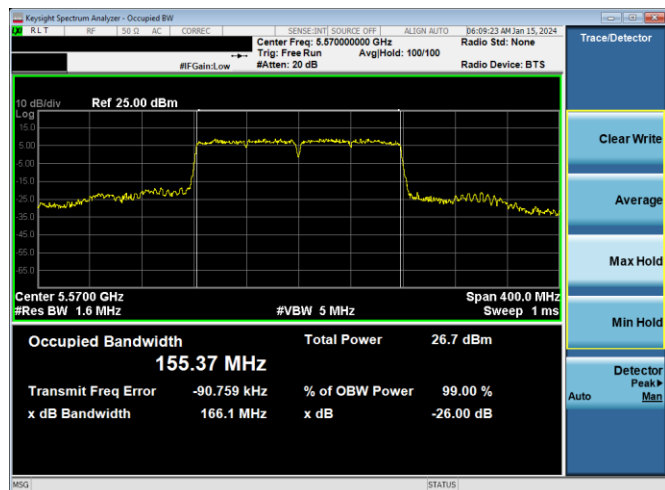
FCC ID: BCGA2837 IC: 579C-A2837		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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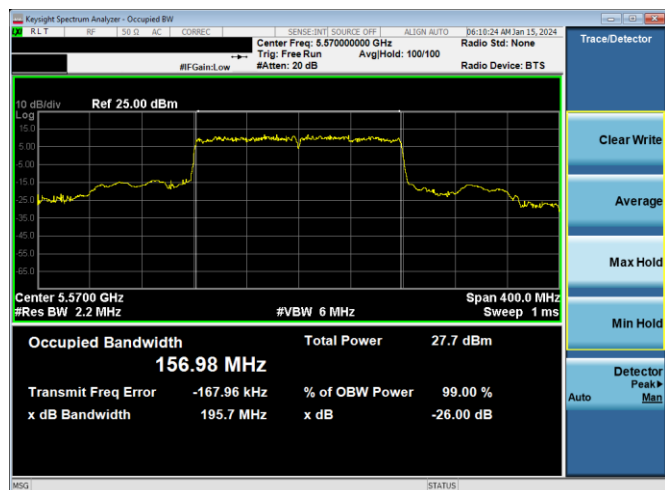
Plot 7-63. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ac – Ch. 122, MCS9)



Plot 7-65. 26dB BW & 99% OBW Antenna WF5b (160MHz BW 802.11ac – Ch. 114, MCS9)



Plot 7-64. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ax(SU) – Ch. 122, MCS11)



Plot 7-66. 26dB BW & 99% OBW Antenna WF5b (160MHz BW 802.11ac – Ch. 114, MCS11)

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7.2.2 Antenna 4a 26dB & 99% Bandwidth Measurements

	Frequency [MHz]	Channel	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)	17.80	21.38
	5200	40	n (20MHz)	19.5/21.7 (MCS2)	17.71	20.87
	5240	48	n (20MHz)	19.5/21.7 (MCS2)	17.72	20.72
	5180	36	ax (SU) (20MHz)	24/25.8 (MCS2)	19.14	23.80
	5200	40	ax (SU) (20MHz)	24/25.8 (MCS2)	19.05	21.25
	5240	48	ax (SU) (20MHz)	24/25.8 (MCS2)	19.04	21.20
	5190	38	n (40MHz)	40/40.5 (MCS2)	36.48	41.89
	5230	46	n (40MHz)	40/40.5 (MCS2)	36.22	40.60
	5190	38	ax (SU) (40MHz)	49/51.6 (MCS2)	38.00	43.10
	5230	46	ax (SU) (40MHz)	49/51.6 (MCS2)	37.92	41.52
	5210	42	ac (80MHz)	87.8/97.5 (MCS2)	75.43	81.79
	5210	42	ax (SU) (80MHz)	102/108.1 (MCS2)	77.24	84.56
Band 1/2	5250	50	ac (160MHz)	87.8/97.5 (MCS2)	154.41	164.04
	5250	50	ax (SU) (160MHz)	102/108.1 (MCS2)	156.62	164.92
Band 2A	5260	52	n (20MHz)	19.5/21.7 (MCS2)	17.69	20.99
	5300	60	n (20MHz)	19.5/21.7 (MCS2)	17.71	21.19
	5320	64	n (20MHz)	19.5/21.7 (MCS2)	17.81	21.46
	5260	52	ax (SU) (20MHz)	24/25.8 (MCS2)	19.00	21.17
	5300	60	ax (SU) (20MHz)	24/25.8 (MCS2)	19.01	21.42
	5320	64	ax (SU) (20MHz)	24/25.8 (MCS2)	19.14	22.65
	5270	54	n (40MHz)	40/40.5 (MCS2)	36.29	40.92
	5310	62	n (40MHz)	40/40.5 (MCS2)	36.43	41.91
	5270	54	ax (SU) (40MHz)	49/51.6 (MCS2)	37.92	41.47
	5310	62	ax (SU) (40MHz)	49/51.6 (MCS2)	38.03	43.49
	5290	58	ac (80MHz)	87.8/97.5 (MCS2)	75.56	82.42
	5290	58	ax (SU) (80MHz)	102/108.1 (MCS2)	77.26	83.92
Band 2C	5500	100	n (20MHz)	19.5/21.7 (MCS2)	17.79	21.23
	5580	116	n (20MHz)	19.5/21.7 (MCS2)	17.71	20.93
	5720	144	n (20MHz)	19.5/21.7 (MCS2)	17.72	20.74
	5500	100	ax (SU) (20MHz)	24/25.8 (MCS2)	19.15	22.23
	5580	116	ax (SU) (20MHz)	24/25.8 (MCS2)	19.02	21.30
	5720	144	ax (SU) (20MHz)	24/25.8 (MCS2)	19.05	21.37
	5510	102	n (40MHz)	40/40.5 (MCS2)	36.45	42.06
	5550	110	n (40MHz)	40/40.5 (MCS2)	36.22	41.06
	5710	142	n (40MHz)	40/40.5 (MCS2)	36.29	40.95
	5510	102	ax (SU) (40MHz)	49/51.6 (MCS2)	38.05	43.31
	5550	110	ax (SU) (40MHz)	49/51.6 (MCS2)	37.96	41.48
	5710	142	ax (SU) (40MHz)	49/51.6 (MCS2)	37.91	41.57
	5530	106	ac (80MHz)	87.8/97.5 (MCS2)	75.59	82.19
	5690	138	ac (80MHz)	87.8/97.5 (MCS2)	75.38	81.17
	5530	106	ax (SU) (80MHz)	102/108.1 (MCS2)	77.32	84.77
	5690	138	ax (SU) (80MHz)	102/108.1 (MCS2)	77.12	81.87
	5570	114	ac (160MHz)	87.8/97.5 (MCS2)	154.34	164.55
	5570	114	ax (SU) (160MHz)	102/108.1 (MCS2)	156.49	165.33

Table 7-5. Conducted Bandwidth Measurements Antenna 4a (Low Data Rate)

FCC ID: BCGA2837 IC: 579C-A2837	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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	Frequency [MHz]	Channel	802.11 MODE	Data Rate [Mbps]	Measured 99% Occupied Bandwidth [MHz]	Measured 26dB Bandwidth [MHz]
Band 1	5180	36	n (20MHz)	39/43.3 (MCS4)	17.75	20.94
	5200	40	n (20MHz)	39/43.3 (MCS4)	17.72	20.95
	5240	48	n (20MHz)	39/43.3 (MCS4)	17.73	21.04
	5180	36	ax (SU) (20MHz)	49/51.6 (MCS4)	19.10	25.68
	5200	40	ax (SU) (20MHz)	49/51.6 (MCS4)	18.99	21.14
	5240	48	ax (SU) (20MHz)	49/51.6 (MCS4)	19.02	21.06
	5190	38	n (40MHz)	81/90 (MCS4)	36.43	41.23
	5230	46	n (40MHz)	81/90 (MCS4)	36.30	40.41
	5190	38	ax (SU) (40MHz)	98/103.2 (MCS4)	38.11	47.97
	5230	46	ax (SU) (40MHz)	98/103.2 (MCS4)	37.98	41.22
	5210	42	ac (80MHz)	175.5/195 (MCS4)	75.49	80.87
	5210	42	ax (SU) (80MHz)	204/216.2 (MCS4)	77.18	81.67
Band 1/2	5250	50	ac (160MHz)	175.5/195 (MCS4)	154.43	164.09
	5250	50	ax (SU) (160MHz)	204/216.2 (MCS4)	156.61	164.58
Band 2A	5260	52	n (20MHz)	39/43.3 (MCS4)	17.72	20.91
	5300	60	n (20MHz)	39/43.3 (MCS4)	17.73	20.66
	5320	64	n (20MHz)	39/43.3 (MCS4)	17.75	20.90
	5260	52	ax (SU) (20MHz)	49/51.6 (MCS4)	19.01	21.10
	5300	60	ax (SU) (20MHz)	49/51.6 (MCS4)	19.00	21.35
	5320	64	ax (SU) (20MHz)	49/51.6 (MCS4)	19.09	24.69
	5270	54	n (40MHz)	81/90 (MCS4)	36.29	40.95
	5310	62	n (40MHz)	81/90 (MCS4)	36.42	41.30
	5270	54	ax (SU) (40MHz)	98/103.2 (MCS4)	37.94	41.53
	5310	62	ax (SU) (40MHz)	98/103.2 (MCS4)	38.19	57.89
	5290	58	ac (80MHz)	175.5/195 (MCS4)	75.57	80.90
	5290	58	ax (SU) (80MHz)	204/216.2 (MCS4)	77.20	82.20
Band 2C	5500	100	n (20MHz)	39/43.3 (MCS4)	17.74	21.02
	5580	116	n (20MHz)	39/43.3 (MCS4)	17.71	20.71
	5720	144	n (20MHz)	39/43.3 (MCS4)	17.70	20.83
	5500	100	ax (SU) (20MHz)	49/51.6 (MCS4)	19.06	21.50
	5580	116	ax (SU) (20MHz)	49/51.6 (MCS4)	19.04	20.92
	5720	144	ax (SU) (20MHz)	49/51.6 (MCS4)	19.04	21.30
	5510	102	n (40MHz)	81/90 (MCS4)	36.42	41.77
	5550	110	n (40MHz)	81/90 (MCS4)	36.33	40.88
	5710	142	n (40MHz)	81/90 (MCS4)	36.25	41.09
	5510	102	ax (SU) (40MHz)	98/103.2 (MCS4)	38.09	48.12
	5550	110	ax (SU) (40MHz)	98/103.2 (MCS4)	37.96	41.26
	5710	142	ax (SU) (40MHz)	98/103.2 (MCS4)	37.94	41.53
	5530	106	ac (80MHz)	175.5/195 (MCS4)	75.61	80.89
	5690	138	ac (80MHz)	175.5/195 (MCS4)	75.44	81.09
	5530	106	ax (SU) (80MHz)	204/216.2 (MCS4)	77.37	82.84
	5690	138	ax (SU) (80MHz)	204/216.2 (MCS4)	77.26	81.67
	5570	114	ac (160MHz)	175.5/195 (MCS4)	154.49	163.98
	5570	114	ax (SU) (160MHz)	204/216.2 (MCS4)	156.56	164.99

Table 7-6. Conducted Bandwidth Measurements Antenna 4a (Mid Data Rate)

FCC ID: BCGA2837 IC: 579C-A2837	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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	Frequency [MHz]	Channel	802.11 MODE	Data Rate [Mbps]	Measured 99% Occupied Bandwidth [MHz]	Measured 26dB Bandwidth [MHz]
Band 1	5180	36	n (20MHz)	65/72.2 (MCS7)	17.84	21.08
	5200	40	n (20MHz)	65/72.2 (MCS7)	17.84	20.90
	5240	48	n (20MHz)	65/72.2 (MCS7)	17.83	21.04
	5180	36	ax (SU) (20MHz)	135/143.4 (MCS11)	19.05	21.25
	5200	40	ax (SU) (20MHz)	135/143.4 (MCS11)	19.06	21.22
	5240	48	ax (SU) (20MHz)	135/143.4 (MCS11)	19.05	21.25
	5190	38	n (40MHz)	135/150 (MCS7)	36.55	41.11
	5230	46	n (40MHz)	135/150 (MCS7)	36.52	41.32
	5190	38	ax (SU) (40MHz)	271/286 (MCS11)	37.96	41.59
	5230	46	ax (SU) (40MHz)	271/286 (MCS11)	37.92	41.17
	5210	42	ac (80MHz)	390/433.3 (MCS9)	75.85	81.41
	5210	42	ax (SU) (80MHz)	567/600.5 (MCS11)	77.12	81.59
Band 1/2	5250	50	ac (160MHz)	390/433.3 (MCS9)	155.34	164.87
	5250	50	ax (SU) (160MHz)	567/600.5 (MCS11)	157.25	256.79
Band 2A	5260	52	n (20MHz)	65/72.2 (MCS7)	17.86	21.03
	5300	60	n (20MHz)	65/72.2 (MCS7)	17.85	21.10
	5320	64	n (20MHz)	65/72.2 (MCS7)	17.83	21.11
	5260	52	ax (SU) (20MHz)	135/143.4 (MCS11)	19.04	21.37
	5300	60	ax (SU) (20MHz)	135/143.4 (MCS11)	19.05	21.25
	5320	64	ax (SU) (20MHz)	135/143.4 (MCS11)	19.05	21.32
	5270	54	n (40MHz)	135/150 (MCS7)	36.65	41.35
	5310	62	n (40MHz)	135/150 (MCS7)	36.49	41.14
	5270	54	ax (SU) (40MHz)	271/286 (MCS11)	37.97	44.45
	5310	62	ax (SU) (40MHz)	271/286 (MCS11)	37.94	41.30
	5290	58	ac (80MHz)	390/433.3 (MCS9)	75.96	81.73
	5290	58	ax (SU) (80MHz)	567/600.5 (MCS11)	77.20	81.42
Band 2C	5500	100	n (20MHz)	65/72.2 (MCS7)	17.86	21.09
	5580	116	n (20MHz)	65/72.2 (MCS7)	17.86	21.03
	5720	144	n (20MHz)	65/72.2 (MCS7)	17.84	20.97
	5500	100	ax (SU) (20MHz)	135/143.4 (MCS11)	19.01	21.12
	5580	116	ax (SU) (20MHz)	135/143.4 (MCS11)	19.04	21.30
	5720	144	ax (SU) (20MHz)	135/143.4 (MCS11)	19.04	21.33
	5510	102	n (40MHz)	135/150 (MCS7)	36.57	41.41
	5550	110	n (40MHz)	135/150 (MCS7)	36.60	41.41
	5710	142	n (40MHz)	135/150 (MCS7)	36.50	41.34
	5510	102	ax (SU) (40MHz)	271/286 (MCS11)	37.92	41.35
	5550	110	ax (SU) (40MHz)	271/286 (MCS11)	37.90	41.32
	5710	142	ax (SU) (40MHz)	271/286 (MCS11)	37.93	41.37
	5530	106	ac (80MHz)	390/433.3 (MCS9)	75.94	81.68
	5690	138	ac (80MHz)	390/433.3 (MCS9)	75.96	81.51
	5530	106	ax (SU) (80MHz)	567/600.5 (MCS11)	77.15	81.44
	5690	138	ax (SU) (80MHz)	567/600.5 (MCS11)	77.32	81.91
	5570	114	ac (160MHz)	390/433.3 (MCS9)	155.23	165.54
	5570	114	ax (SU) (160MHz)	567/600.5 (MCS11)	156.40	165.47

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

FCC ID: BCGA2837 IC: 579C-A2837	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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