Element Materials Technology
(formerly PCTEST)
18855 Adams Court, Morgan Hill, CA 95037 USA
Tel. 408.538.5600
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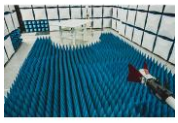

MEASUREMENT REPORT
FCC PART 15.407 / ISED RSS-247 UNII 802.11a/n/ac/ax(SU)

Applicant Name:
Apple Inc.
One Apple Park Way
Cupertino, CA 95014

Date of Testing:
1/3/2024 - 3/24/2024
Test Report Issue Date:
4/4/2024
Test Site/Location:
Element Materials Technology Morgan Hill
Test Report Serial No.:
1C2311270070-22-R2.BCG

FCC ID:	**BCGA2926**
IC:	**579C-A2926**
APPLICANT:	**Apple Inc.**

Application Type:	Certification
Model/HVIN:	A2926, A3007
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.

This revised Test Report (S/N: 1C2311270070-22-R2.BCG) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose accordingly.

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

RJ Ortanez
Executive Vice President

Prepared by: WKR0000005849

Reviewed by: WKR0000007111

ACCREDITED
CERT #2041.02

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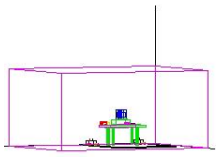
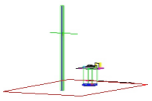


MEASUREMENT REPORT



UNII Band	Channel Bandwidth (MHz)	Mode	Tx Frequency (MHz)	SISO						CDD/SDM Primary						CDD/SDM Diversity					
				Antenna WF5b		Antenna 4a		Antenna 2a		Antenna WF5b		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	65.857	18.19	69.550	18.42	70.697	18.49	50.061	17.00	49.900	16.98	99.312	19.97	49.900	16.98	49.545	16.95	99.083	19.96
2A		802.11a/n	5260 - 5320	68.360	18.35	70.795	18.50	70.795	18.50	49.091	16.91	50.119	17.00	99.312	19.97	50.119	17.00	50.119	17.00	98.855	19.95
2C		802.11a/n	5500 - 5720	66.681	18.24	70.372	18.47	68.360	18.35	49.877	16.98	49.227	16.92	98.855	19.95	49.227	16.92	50.119	17.00	98.855	19.95
3		802.11a/n	5745 - 5825	66.988	18.26	69.390	18.41	67.158	18.27	65.313	18.15	69.968	18.45	135.207	21.31	69.968	18.45	69.343	18.41	137.088	21.37
1	40	802.11n	5190 - 5230	66.757	18.25	69.888	18.44	69.199	18.40	67.608	18.30	70.453	18.48	138.038	21.40	70.453	18.48	69.936	18.45	140.281	21.47
2A		802.11n	5270 - 5310	67.019	18.26	70.795	18.50	67.858	18.32	67.375	18.29	67.639	18.30	134.896	21.30	67.639	18.30	69.343	18.41	137.088	21.37
2C		802.11n	5510 - 5710	67.081	18.27	70.275	18.47	68.155	18.34	67.050	18.26	69.390	18.41	136.458	21.35	69.390	18.41	68.786	18.38	138.038	21.40
3		802.11n	5755 - 5795	65.373	18.15	68.659	18.37	67.717	18.31	64.670	18.11	70.113	18.46	134.896	21.30	70.113	18.46	68.250	18.34	138.357	21.41
1	80	802.11ac	5210	21.822	13.39	22.024	13.43	22.336	13.49	22.387	13.50	21.439	13.31	43.853	16.42	21.439	13.31	22.233	13.47	43.652	16.40
2A		802.11ac	5290	39.283	15.94	39.075	15.92	36.392	15.61	32.727	15.15	35.270	15.47	67.920	18.32	35.270	15.47	35.205	15.47	70.469	18.48
2C		802.11ac	5530 - 5690	68.865	18.38	67.795	18.31	67.174	18.27	65.163	18.14	68.770	18.37	133.968	21.27	68.770	18.37	66.804	18.25	135.519	21.32
3		802.11ac	5775	64.714	18.11	65.464	18.16	64.714	18.11	64.863	18.12	66.222	18.21	131.220	21.18	66.222	18.21	66.405	18.22	132.739	21.23
1/2A	160	802.11ac	5250	17.783	12.50	16.368	12.14	17.061	12.32	16.218	12.10	16.558	12.19	32.810	15.16	16.558	12.19	16.255	12.11	135.519	21.32
2C		802.11ac	5570	18.876	12.76	19.498	12.90	18.967	12.78	18.967	12.78	19.187	12.83	38.194	15.82	19.187	12.83	19.011	12.79	132.739	21.23
1	20	802.11ax (SU)	5180 - 5240	69.008	18.39	70.795	18.50	70.795	18.50	50.096	17.00	48.876	16.89	99.083	19.96	48.876	16.89	48.095	16.82	97.051	19.87
2A		802.11ax (SU)	5260 - 5320	69.311	18.41	70.178	18.46	70.259	18.47	50.119	17.00	50.026	16.99	99.312	19.97	50.026	16.99	49.797	16.97	99.770	19.99
2C		802.11ax (SU)	5500 - 5720	69.390	18.41	70.795	18.50	68.281	18.34	50.119	17.00	49.774	16.97	100.000	20.00	50.003	16.99	50.119	17.00	100.231	20.01
3		802.11ax (SU)	5745 - 5825	70.340	18.47	70.795	18.50	70.550	18.49	69.088	18.39	70.795	18.50	139.316	21.44	70.795	18.50	70.097	18.46	140.929	21.49
1	40	802.11ax (SU)	5190 - 5230	67.484	18.29	66.911	18.26	69.711	18.43	67.936	18.32	70.518	18.48	138.357	21.41	70.518	18.48	69.920	18.45	140.281	21.47
2A		802.11ax (SU)	5270 - 5310	67.842	18.32	67.004	18.26	68.533	18.36	67.375	18.29	68.707	18.37	136.144	21.34	68.707	18.37	69.231	18.40	138.038	21.40
2C		802.11ax (SU)	5510 - 5710	67.375	18.29	70.795	18.50	67.546	18.30	68.014	18.33	70.795	18.50	135.519	21.32	70.795	18.50	68.187	18.34	138.995	21.43
3		802.11ax (SU)	5755 - 5795	65.720	18.18	67.499	18.29	68.155	18.34	66.681	18.24	67.952	18.32	134.586	21.29	67.952	18.32	68.124	18.33	136.144	21.34
1	80	802.11ax (SU)	5210	19.765	12.96	19.953	13.00	19.373	12.87	19.953	13.00	19.557	12.91	39.537	15.97	19.557	12.91	19.360	12.87	38.905	15.90
2A		802.11ax (SU)	5290	31.383	14.97	31.340	14.96	30.234	14.81	30.591	14.86	30.339	14.82	60.954	17.85	30.339	14.82	30.061	14.78	60.395	17.81
2C		802.11ax (SU)	5530 - 5690	65.163	18.14	67.236	18.28	67.406	18.29	70.146	18.46	69.647	18.43	138.357	21.41	69.647	18.43	67.313	18.28	137.088	21.37
3		802.11ax (SU)	5775	62.661	17.97	61.944	17.92	62.661	17.97	62.806	17.98	61.802	17.91	124.738	20.96	61.802	17.91	62.230	17.94	124.165	20.94
1/2A	160	802.11ax (SU)	5250	17.116	12.33	17.474	12.42	17.539	12.44	16.255	12.11	16.444	12.16	32.734	15.15	16.444	12.16	16.634	12.21	33.113	15.20
2C		802.11ax (SU)	5570	19.507	12.90	19.706	12.95	19.543	12.91	19.011	12.79	19.231	12.84	38.282	15.83	19.231	12.84	19.543	12.91	38.815	15.89

FCC EUT Overview (Low Data Rate)

UNII Band	Channel Bandwidth (MHz)	Mode	Tx Frequency (MHz)	SISO						CDD/SDM Primary						CDD/SDM Diversity					
				Antenna WF5b		Antenna 4a		Antenna 2a		Antenna WF5b		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	49.636	16.96	50.003	16.99	50.119	17.00	31.477	14.98	30.535	14.85	61.944	17.92	30.535	14.85	31.623	15.00	61.944	17.92
2A		802.11a/n	5260 - 5320	68.360	18.35	70.795	18.50	70.795	18.50	49.091	16.91	50.119	17.00	99.312	19.97	50.119	17.00	50.119	17.00	98.855	19.95
2C		802.11a/n	5500 - 5720	66.681	18.24	70.372	18.47	68.360	18.35	49.877	16.98	49.227	16.92	98.855	19.95	49.227	16.92	50.119	17.00	98.855	19.95
3		802.11a/n	5745 - 5825	66.988	18.26	69.390	18.41	67.158	18.27	65.313	18.15	69.968	18.45	135.207	21.31	69.968	18.45	69.343	18.41	137.088	21.37
1	40	802.11n	5190 - 5230	65.464	18.16	69.888	18.44	69.199	18.40	53.088	17.25	54.765	17.39	107.895	20.33	54.765	17.39	53.260	17.26	108.143	20.34
2A		802.11n	5270 - 5310	67.019	18.26	70.795	18.50	67.858	18.32	67.375	18.29	67.639	18.30	134.896	21.30	67.639	18.30	69.343	18.41	137.088	21.37
2C		802.11n	5510 - 5710	67.081	18.27	70.275	18.47	68.155	18.34	67.050	18.26	69.390	18.41	136.458	21.35	69.390	18.41	68.786	18.38	138.038	21.40
3		802.11n	5755 - 5795	65.373	18.15	68.659	18.37	67.717	18.31	64.670	18.11	70.113	18.46	134.896	21.30	70.113	18.46	68.250	18.34	138.357	21.41
1	80	802.11ac	5210	21.792	13.38	22.024	13.43	22.336	13.49	22.387	13.50	21.439	13.31	43.853	16.42	21.439	13.31	22.233	13.47	43.652	16.40
2A		802.11ac	5290	39.283	15.94	39.075	15.92	36.392	15.61	32.727	15.15	35.270	15.47	67.920	18.32	35.270	15.47	35.205	15.47	70.469	18.48
2C		802.11ac	5530 - 5690	64.863	18.12	63.299	18.01	64.269	18.08	64.714	18.11	66.696	18.24	131.522	21.19	66.696	18.24	65.013	18.13	131.826	21.20
3		802.11ac	5775	64.714	18.11	65.464	18.16	64.714	18.11	64.863	18.12	66.222	18.21	131.220	21.18	66.222	18.21	66.405	18.22	132.739	21.23
1/2A	160	802.11ac	5250	17.783	12.50	16.368	12.14	17.061	12.32	16.218	12.10	16.558	12.19	131.220	21.18	16.558	12.19	16.255	12.11	131.826	21.20
1	20	802.11ax (SU)	5180 - 5240	48.084	16.82	48.730	16.88	50.119	17.00	31.514	14.99	31.024	14.92	62.517	17.96	31.024	14.92	31.038	14.92	61.944	17.92
2A		802.11ax (SU)	5260 - 5320	69.311	18.41	70.178	18.46	70.259	18.47	50.119	17.00	50.026	16.99	99.312	19.97	50.026	16.99	49.797	16.97	99.770	19.99
2C		802.11ax (SU)	5500 - 5720	69.390	18.41	70.795	18.50	68.281	18.34	50.119	17.00	49.774	16.97	100.000	20.00	49.774	16.97	50.119	17.00	98.401	19.93
3		802.11ax (SU)	5745 - 5825	70.340	18.47	70.795	18.50	70.550	18.49	69.088	18.39	70.795	18.50	139.316	21.44	70.795	18.50	70.097	18.46	140.929	21.49
1	40	802.11ax (SU)	5190 - 5230	67.143	18.27	66.911	18.26	69.711	18.43	55.744	17.46	54.163	17.34	109.901	20.41	54.163	17.34	56.234	17.50	110.408	20.43
2A		802.11ax (SU)	5270 - 5310	67.842	18.32	67.004	18.26	68.533	18.36	67.375	18.29	68.707	18.37	136.144	21.34	68.707	18.37	69.231	18.40	138.038	21.40
2C		802.11ax (SU)	5510 - 5710	64.284	18.08	70.795	18.50	67.546	18.30	64.313	18.08	70.795	18.50	135.207	21.31	70.795	18.50	68.187	18.34	138.995	21.43
3		802.11ax (SU)	5755 - 5795	65.720	18.18	67.499	18.29	68.155	18.34	66.681	18.24	67.952	18.32	134.586	21.29	67.952	18.32	68.124	18.33	136.144	21.34
1	80	802.11ax (SU)	5210	19.697	12.94	19.953	13.00	19.373	12.87	19.953	13.00	19.557	12.91	39.537	15.97	19.557	12.91	19.360	12.87	38.905	15.90
2A		802.11ax (SU)	5290	31.383	14.97	31.340	14.96	30.234	14.81	30.591	14.86	30.339	14.82	60.954	17.85	30.339	14.82	30.061	14.78	60.395	17.81
2C		802.11ax (SU)	5530 - 5690	65.163	18.14	65.675	18.17	65.766	18.18	70.146	18.46	68.312	18.35	138.357	21.41	68.312	18.35	67.143	18.27	135.519	21.32
3		802.11ax (SU)	5775	62.661	17.97	61.944	17.92	62.661	17.97	62.806	17.98	61.802	17.91	124.738	20.96	61.802	17.91	62.230	17.94	124.165	20.94
1/2A	160	802.11ax (SU)	5250	17.116	12.33	17.474	12.42	17.539	12.44	16.255	12.11	16.444	12.16	32.734	15.15	16.444	12.16	16.634	12.21	33.113	15.20

ISED EUT Overview (Low Data Rate)

UNII Band	Channel Bandwidth (MHz)	Mode	Tx Frequency (MHz)	SISO						CDD/SDM Primary						CDD/SDM Diversity					
				Antenna WF5b		Antenna 4a		Antenna 2a		Antenna WF5b		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	66.819	18.25	70.795	18.50	70.307	18.47	49.992	16.99	49.545	16.95	99.312	19.97	49.545	16.95	50.003	16.99	99.312	19.97
2A		802.11a/n	5260 - 5320	68.501	18.36	70.550	18.49	70.778	18.50	49.957	16.99	50.119	17.00	100.000	20.00	50.119	17.00	50.003	16.99	100.000	20.00
2C		802.11a/n	5500 - 5720	69.663	18.43	70.632	18.49	69.823	18.44	49.888	16.98	49.900	16.98	99.770	19.99	49.900	16.98	49.317	16.93	98.628	19.94
3		802.11a/n	5745 - 5825	69.024	18.39	70.033	18.45	68.014	18.33	65.013	18.13	69.024	18.39	132.130	21.21	69.024	18.39	67.764	18.31	136.773	21.36
1	40	802.11n	5190 - 5230	67.205	18.27	67.329	18.28	69.759	18.44	64.983	18.13	69.679	18.43	134.586	21.29	69.679	18.43	68.250	18.34	138.038	21.40
2A		802.11n	5270 - 5310	67.360	18.28	68.124	18.33	67.143	18.27	66.374	18.22	67.344	18.28	133.660	21.26	67.344	18.28	68.014	18.33	135.207	21.31
2C		802.11n	5510 - 5710	67.811	18.31	66.988	18.26	69.904	18.45	68.234	18.34	70.226	18.47	138.357	21.41	70.226	18.47	69.486	18.42	138.676	21.42
3		802.11n	5755 - 5795	65.238	18.15	69.647	18.43	68.438	18.35	65.313	18.15	68.834	18.38	132.434	21.22	68.834	18.38	66.298	18.22	135.207	21.31
1	80	802.11ac	5210	19.953	13.00	19.346	12.87	18.993	12.79	17.418	12.41	17.254	12.37	34.674	15.40	17.254	12.37	16.800	12.25	34.041	15.32
2A		802.11ac	5290	30.423	14.83	29.669	14.72	30.896	14.90	26.996	14.31	27.720	14.43	54.702	17.38	27.720	14.43	26.903	14.30	54.576	17.37
2C		802.11ac	5530 - 5690	66.988	18.26	63.959	18.06	66.222	18.21	65.615	18.17	64.893	18.12	130.617	21.16	64.893	18.12	70.632	18.49	135.519	21.32
3		802.11ac	5775	64.714	18.11	65.615	18.17	65.464	18.16	66.222	18.21	67.608	18.30	133.968	21.27	67.608	18.30	65.539	18.17	133.045	21.24
1/2A	160	802.11ac	5250	15.740	11.97	15.276	11.84	14.689	11.67	13.152	11.19	13.062	11.16	26.242	14.19	13.062	11.16	13.274	11.23	135.519	21.32
2C		802.11ac	5570	17.673	12.47	17.783	12.50	16.634	12.21	16.634	12.21	16.596	12.20	33.266	15.22	16.596	12.20	16.982	12.30	133.045	21.24
1	20	802.11ax (SU)	5180 - 5240	69.695	18.43	69.663	18.43	69.454	18.42	48.978	16.90	49.431	16.94	98.401	19.93	49.431	16.94	49.136	16.91	97.499	19.89
2A		802.11ax (SU)	5260 - 5320	70.275	18.47	70.307	18.47	69.502	18.42	48.540	16.86	49.797	16.97	98.401	19.93	49.797	16.97	50.119	17.00	98.855	19.95
2C		802.11ax (SU)	5500 - 5720	70.632	18.49	70.146	18.46	70.372	18.47	49.295	16.93	50.119	17.00	98.401	19.93	50.119	17.00	49.249	16.92	99.312	19.97
3		802.11ax (SU)	5745 - 5825	68.580	18.36	70.795	18.50	70.795	18.50	70.307	18.47	70.307	18.47	138.357	21.41	70.307	18.47	69.247	18.40	137.088	21.37
1	40	802.11ax (SU)	5190 - 5230	69.775	18.44	69.920	18.45	70.795	18.50	68.913	18.38	66.927	18.26	135.831	21.33	66.927	18.26	70.129	18.46	137.088	21.37
2A		802.11ax (SU)	5270 - 5310	70.049	18.45	70.259	18.47	69.311	18.41	69.135	18.40	69.072	18.39	138.357	21.41	69.072	18.39	70.162	18.46	139.316	21.44
2C		802.11ax (SU)	5510 - 5710	69.599	18.43	69.056	18.39	70.129	18.46	69.151	18.40	68.344	18.35	137.404	21.38	68.344	18.35	70.795	18.50	137.721	21.39
3		802.11ax (SU)	5755 - 5795	67.546	18.30	68.818	18.38	68.976	18.39	66.619	18.24	68.501	18.36	135.207	21.31	68.501	18.36	67.733	18.31	136.144	21.34
1	80	802.11ax (SU)	5210	17.515	12.43	17.418	12.41	16.792	12.25	17.783	12.50	17.587	12.45	35.400	15.49	17.587	12.45	17.559	12.45	35.156	15.46
2A		802.11ax (SU)	5290	27.340	14.37	27.353	14.37	28.074	14.48	27.246	14.35	27.669	14.42	54.954	17.40	27.669	14.42	27.746	14.43	55.463	17.44
2C		802.11ax (SU)	5530 - 5690	65.917	18.19	68.344	18.35	65.163	18.14	65.615	18.17	68.281	18.34	133.968	21.27	68.281	18.34	68.549	18.36	136.773	21.36
3		802.11ax (SU)	5775	40.365	16.06	44.055	16.44	40.087	16.03	40.926	16.12	41.879	16.22	82.794	19.18	41.879	16.22	42.560	16.29	84.528	19.27
1/2A	160	802.11ax (SU)	5250	15.276	11.84	15.090	11.79	14.825	11.71	13.836	11.41	13.709	11.37	27.542	14.40	13.709	11.37	13.213	11.21	26.915	14.30
2C		802.11ax (SU)	5570	17.370	12.40	16.943	12.29	16.982	12.30	16.634	12.21	17.140	12.34	33.806	15.29	17.140	12.34	16.943	12.29	34.119	15.33

FCC EUT Overview (Mid Data Rate)

UNII Band	Channel Bandwidth (MHz)	Mode	Tx Frequency (MHz)	SISO						CDD/SDM Primary						CDD/SDM Diversity					
				Antenna WF5b		Antenna 4a		Antenna 2a		Antenna WF5b		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	50.119	17.00	50.119	17.00	49.808	16.97	31.623	15.00	31.543	14.99	62.373	17.95	31.543	14.99	31.492	14.98	62.230	17.94
2A		802.11a/n	5260 - 5320	68.501	18.36	70.550	18.49	70.778	18.50	49.957	16.99	50.119	17.00	100.000	20.00	50.119	17.00	50.003	16.99	100.000	20.00
2C		802.11a/n	5500 - 5720	69.343	18.41	70.632	18.49	68.659	18.37	49.888	16.98	49.900	16.98	99.770	19.99	49.900	16.98	49.317	16.93	98.628	19.94
3		802.11a/n	5745 - 5825	69.024	18.39	70.033	18.45	68.014	18.33	65.013	18.13	69.024	18.39	132.130	21.21	69.024	18.39	67.764	18.31	136.773	21.36
1	40	802.11n	5190 - 5230	67.205	18.27	67.329	18.28	69.759	18.44	54.891	17.40	55.081	17.41	109.901	20.41	55.081	17.41	53.211	17.26	108.393	20.35
2A		802.11n	5270 - 5310	67.360	18.28	68.124	18.33	67.143	18.27	66.374	18.22	67.344	18.28	133.660	21.26	67.344	18.28	68.014	18.33	135.207	21.31
2C		802.11n	5510 - 5710	63.504	18.03	66.573	18.23	67.733	18.31	68.234	18.34	70.226	18.47	138.357	21.41	70.226	18.47	66.176	18.21	136.458	21.35
3		802.11n	5755 - 5795	65.238	18.15	69.647	18.43	68.438	18.35	65.313	18.15	68.834	18.38	132.434	21.22	68.834	18.38	66.298	18.22	135.207	21.31
1	80	802.11ac	5210	19.953	13.00	19.346	12.87	18.993	12.79	17.418	12.41	17.254	12.37	34.674	15.40	17.254	12.37	16.800	12.25	34.041	15.32
2A		802.11ac	5290	30.423	14.83	29.669	14.72	30.896	14.90	26.996	14.31	27.720	14.43	54.702	17.38	27.720	14.43	26.903	14.30	54.576	17.37
2C		802.11ac	5530 - 5690	66.988	18.26	63.959	18.06	66.222	18.21	65.615	18.17	64.893	18.12	130.617	21.16	64.893	18.12	70.632	18.49	135.519	21.32
3		802.11ac	5775	64.714	18.11	65.615	18.17	65.464	18.16	66.222	18.21	67.608	18.30	133.968	21.27	67.608	18.30	65.539	18.17	133.045	21.24
1/2A	160	802.11ac	5250	15.740	11.97	15.276	11.84	14.689	11.67	13.152	11.19	13.062	11.16	133.968	21.27	13.062	11.16	13.274	11.23	135.519	21.32
1	20	802.11ax (SU)	5180 - 5240	48.106	16.82	49.946	16.99	50.119	17.00	31.623	15.00	31.046	14.92	62.517	17.96	31.046	14.92	31.623	15.00	62.373	17.95
2A		802.11ax (SU)	5260 - 5320	70.275	18.47	70.307	18.47	69.502	18.42	48.540	16.86	49.797	16.97	98.401	19.93	49.797	16.97	50.119	17.00	98.855	19.95
2C		802.11ax (SU)	5500 - 5720	70.632	18.49	70.146	18.46	70.372	18.47	49.295	16.93	50.119	17.00	98.401	19.93	50.119	17.00	49.249	16.92	99.312	19.97
3		802.11ax (SU)	5745 - 5825	68.580	18.36	70.795	18.50	70.795	18.50	70.307	18.47	70.307	18.47	138.357	21.41	70.307	18.47	69.247	18.40	137.088	21.37
1	40	802.11ax (SU)	5190 - 5230	69.775	18.44	69.920	18.45	70.795	18.50	55.501	17.44	55.348	17.43	110.917	20.45	55.348	17.43	54.513	17.37	109.901	20.41
2A		802.11ax (SU)	5270 - 5310	70.049	18.45	70.259	18.47	69.311	18.41	69.135	18.40	69.072	18.39	138.357	21.41	69.072	18.39	70.162	18.46	139.316	21.44
2C		802.11ax (SU)	5510 - 5710	66.039	18.20	69.056	18.39	70.129	18.46	65.193	18.14	67.360	18.28	132.434	21.22	67.360	18.28	69.024	18.39	136.458	21.35
3		802.11ax (SU)	5755 - 5795	67.546	18.30	68.818	18.38	68.976	18.39	66.619	18.24	68.501	18.36	135.207	21.31	68.501	18.36	67.733	18.31	136.144	21.34
1	80	802.11ax (SU)	5210	17.515	12.43	17.418	12.41	16.792	12.25	17.783	12.50	17.587	12.45	35.400	15.49	17.587	12.45	17.559	12.45	35.156	15.46
2A		802.11ax (SU)	5290	27.340	14.37	27.353	14.37	28.074	14.48	27.246	14.35	27.669	14.42	54.954	17.40	27.669	14.42	27.746	14.43	55.463	17.44
2C		802.11ax (SU)	5530 - 5690	65.917	18.19	68.344	18.35	65.163	18.14	65.615	18.17	68.281	18.34	133.968	21.27	68.281	18.34	68.549	18.36	136.773	21.36
3		802.11ax (SU)	5775	40.365	16.06	44.055	16.44	40.087	16.03	40.926	16.12	41.879	16.22	82.794	19.18	41.879	16.22	42.560	16.29	84.528	19.27
1/2A	160	802.11ax (SU)	5250	15.276	11.84	15.090	11.79	14.825	11.71	13.836	11.41	13.709	11.37	27.542	14.40	13.709	11.37	13.213	11.21	26.915	14.30

ISED EUT Overview (Mid Data Rate)

UNII Band	Channel Bandwidth (MHz)	Mode	Tx Frequency (MHz)	SISO						CDD/SDM Primary						CDD/SDM Diversity					
				Antenna WF5b		Antenna 4a		Antenna 2a		Antenna WF5b		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	64.819	18.12	68.802	18.38	70.795	18.50	49.888	16.98	49.534	16.95	99.312	19.97	49.534	16.95	49.317	16.93	98.175	19.92
2A		802.11a/n	5260 - 5320	68.046	18.33	70.404	18.48	70.404	18.48	49.877	16.98	50.119	17.00	98.855	19.95	50.119	17.00	49.888	16.98	99.541	19.98
2C		802.11a/n	5500 - 5720	67.764	18.31	70.469	18.48	69.359	18.41	49.705	16.96	50.119	17.00	99.770	19.99	50.119	17.00	50.119	17.00	99.770	19.99
3		802.11a/n	5745 - 5825	68.486	18.36	69.807	18.44	66.988	18.26	69.823	18.44	70.795	18.50	135.831	21.33	70.795	18.50	66.988	18.26	137.721	21.39
1	40	802.11n	5190 - 5230	64.744	18.11	67.936	18.32	67.282	18.28	64.714	18.11	64.744	18.11	129.420	21.12	64.744	18.11	69.711	18.43	134.586	21.29
2A		802.11n	5270 - 5310	66.283	18.21	67.174	18.27	68.754	18.37	65.464	18.16	65.615	18.17	131.220	21.18	65.615	18.17	68.328	18.35	133.968	21.27
2C		802.11n	5510 - 5710	66.313	18.22	70.113	18.46	67.344	18.28	66.222	18.21	70.033	18.45	136.144	21.34	70.033	18.45	67.453	18.29	135.519	21.32
3		802.11n	5755 - 5795	64.165	18.07	68.014	18.33	65.615	18.17	66.834	18.25	68.865	18.38	135.831	21.33	68.865	18.38	67.298	18.28	136.144	21.34
1	80	802.11ac	5210	15.531	11.91	15.664	11.95	15.269	11.84	15.704	11.96	15.560	11.92	31.261	14.95	15.560	11.92	15.329	11.86	30.903	14.90
2A		802.11ac	5290	22.080	13.44	21.878	13.40	21.612	13.35	22.336	13.49	21.414	13.31	43.752	16.41	21.414	13.31	21.868	13.40	43.251	16.36
2C		802.11ac	5530 - 5690	68.865	18.38	63.402	18.02	66.681	18.24	66.374	18.22	69.823	18.44	136.144	21.34	69.823	18.44	68.865	18.38	138.676	21.42
3		802.11ac	5775	52.845	17.23	51.642	17.13	53.211	17.26	53.703	17.30	52.000	17.16	105.682	20.24	52.000	17.16	54.613	17.37	106.660	20.28
1/2A	160	802.11ac	5250	13.459	11.29	13.372	11.26	13.900	11.43	12.218	10.87	12.078	10.82	24.322	13.86	12.078	10.82	11.912	10.76	138.676	21.42
2C		802.11ac	5570	15.560	11.92	15.628	11.94	15.560	11.92	12.388	10.93	11.995	10.79	24.378	13.87	11.995	10.79	12.218	10.87	106.660	20.28
1	20	802.11ax (SU)	5180 - 5240	64.953	18.13	69.295	18.41	70.000	18.45	49.762	16.97	49.204	16.92	97.949	19.91	49.204	16.92	49.363	16.93	97.051	19.87
2A		802.11ax (SU)	5260 - 5320	68.802	18.38	69.183	18.40	69.072	18.39	49.877	16.98	49.249	16.92	97.724	19.90	49.249	16.92	49.900	16.98	97.949	19.91
2C		802.11ax (SU)	5500 - 5720	67.298	18.28	70.632	18.49	68.976	18.39	49.170	16.92	49.591	16.95	97.275	19.88	49.591	16.95	50.096	17.00	99.312	19.97
3		802.11ax (SU)	5745 - 5825	69.502	18.42	68.312	18.35	65.751	18.18	67.967	18.32	70.795	18.50	137.088	21.37	70.795	18.50	70.323	18.47	139.637	21.45
1	40	802.11ax (SU)	5190 - 5230	65.615	18.17	67.764	18.31	67.437	18.29	66.543	18.23	67.593	18.30	134.276	21.28	67.593	18.30	67.081	18.27	134.586	21.29
2A		802.11ax (SU)	5270 - 5310	68.155	18.34	67.873	18.32	69.390	18.41	69.040	18.39	68.202	18.34	137.088	21.37	68.202	18.34	69.775	18.44	138.038	21.40
2C		802.11ax (SU)	5510 - 5710	66.988	18.26	70.795	18.50	70.113	18.46	70.632	18.49	70.795	18.50	137.721	21.39	70.795	18.50	67.936	18.32	138.357	21.41
3		802.11ax (SU)	5755 - 5795	65.313	18.15	68.786	18.38	66.313	18.22	64.625	18.10	70.033	18.45	134.586	21.29	70.033	18.45	67.686	18.31	137.721	21.39
1	80	802.11ax (SU)	5210	15.453	11.89	15.241	11.83	15.560	11.92	15.300	11.85	15.524	11.91	30.832	14.89	15.524	11.91	15.392	11.87	30.903	14.90
2A		802.11ax (SU)	5290	21.994	13.42	21.863	13.40	21.979	13.42	19.543	12.91	19.351	12.87	38.905	15.90	19.351	12.87	19.498	12.90	38.815	15.89
2C		802.11ax (SU)	5530 - 5690	65.766	18.18	64.968	18.13	68.549	18.36	68.077	18.33	66.283	18.21	134.276	21.28	66.283	18.21	67.453	18.29	133.660	21.26
3		802.11ax (SU)	5775	41.879	16.22	43.652	16.40	40.926	16.12	41.879	16.22	43.053	16.34	84.918	19.29	43.053	16.34	41.879	16.22	84.918	19.29
1/2A	160	802.11ax (SU)	5250	13.996	11.46	13.785	11.39	13.552	11.32	12.274	10.89	12.417	10.94	24.717	13.93	12.417	10.94	12.218	10.87	24.660	13.92
2C		802.11ax (SU)	5570	12.474	10.96	12.246	10.88	12.388	10.93	11.066	10.44	10.914	10.38	21.979	13.42	10.914	10.38	10.593	10.25	21.528	13.33

FCC EUT Overview (High Data Rate)

UNII Band	Channel Bandwidth (MHz)	Mode	Tx Frequency (MHz)	SISO						CDD/SDM Primary						CDD/SDM Diversity					
				Antenna WF5b		Antenna 4a		Antenna 2a		Antenna WF5b		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	50.119	17.00	49.865	16.98	49.431	16.94	31.311	14.96	31.623	15.00	62.661	17.97	31.623	15.00	31.623	15.00	61.944	17.92
2A		802.11a/n	5260 - 5320	68.046	18.33	70.404	18.48	70.404	18.48	49.877	16.98	50.119	17.00	98.855	19.95	50.119	17.00	49.888	16.98	99.541	19.98
2C		802.11a/n	5500 - 5720	67.764	18.31	70.469	18.48	69.359	18.41	49.705	16.96	50.119	17.00	99.770	19.99	50.119	17.00	50.119	17.00	99.770	19.99
3		802.11a/n	5745 - 5825	68.486	18.36	69.807	18.44	66.988	18.26	69.823	18.44	70.795	18.50	135.831	21.33	70.795	18.50	66.988	18.26	137.721	21.39
1	40	802.11n	5190 - 5230	64.744	18.11	67.936	18.32	67.282	18.28	52.735	17.22	53.678	17.30	106.414	20.27	53.678	17.30	55.654	17.46	109.396	20.39
2A		802.11n	5270 - 5310	66.283	18.21	67.174	18.27	68.754	18.37	65.464	18.16	65.615	18.17	131.220	21.18	65.615	18.17	68.328	18.35	133.968	21.27
2C		802.11n	5510 - 5710	64.863	18.12	68.454	18.35	65.418	18.16	64.417	18.09	66.374	18.22	130.918	21.17	66.374	18.22	66.681	18.24	133.045	21.24
3		802.11n	5755 - 5795	64.165	18.07	68.014	18.33	65.615	18.17	66.834	18.25	68.865	18.38	135.831	21.33	68.865	18.38	67.298	18.28	136.144	21.34
1	80	802.11ac	5210	15.531	11.91	15.664	11.95	15.269	11.84	15.704	11.96	15.560	11.92	31.261	14.95	15.560	11.92	15.329	11.86	30.903	14.90
2A		802.11ac	5290	22.080	13.44	21.878	13.40	21.612	13.35	22.336	13.49	21.414	13.31	43.752	16.41	21.414	13.31	21.868	13.40	43.251	16.36
2C		802.11ac	5530 - 5690	68.865	18.38	63.402	18.02	66.681	18.24	66.374	18.22	69.823	18.44	136.144	21.34	69.823	18.44	68.865	18.38	138.676	21.42
3		802.11ac	5775	52.845	17.23	51.642	17.13	53.211	17.26	53.703	17.30	52.000	17.16	105.682	20.24	52.000	17.16	54.613	17.37	106.660	20.28
1/2A	160	802.11ac	5250	13.459	11.29	13.372	11.26	13.900	11.43	12.218	10.87	12.078	10.82	105.682	20.24	12.078	10.82	11.912	10.76	138.676	21.42
1	20	802.11ax (SU)	5180 - 5240	50.119	17.00	48.978	16.90	49.329	16.93	31.405	14.97	31.333	14.96	61.802	17.91	31.333	14.96	30.825	14.89	61.944	17.92
2A		802.11ax (SU)	5260 - 5320	68.802	18.38	69.183	18.40	69.072	18.39	49.877	16.98	49.249	16.92	97.724	19.90	49.249	16.92	49.900	16.98	97.949	19.91
2C		802.11ax (SU)	5500 - 5720	67.298	18.28	70.632	18.49	68.976	18.39	49.170	16.92	49.591	16.95	97.275	19.88	49.591	16.95	50.096	17.00	99.312	19.97
3		802.11ax (SU)	5745 - 5825	69.502	18.42	68.312	18.35	65.751	18.18	67.967	18.32	70.795	18.50	137.088	21.37	70.795	18.50	70.323	18.47	139.637	21.45
1	40	802.11ax (SU)	5190 - 5230	65.615	18.17	67.764	18.31	67.437	18.29	54.250	17.34	55.847	17.47	110.154	20.42	55.847	17.47	54.790	17.39	110.662	20.44
2A		802.11ax (SU)	5270 - 5310	68.155	18.34	67.873	18.32	69.390	18.41	69.040	18.39	68.202	18.34	137.088	21.37	68.202	18.34	69.775	18.44	138.038	21.40
2C		802.11ax (SU)	5510 - 5710	66.988	18.26	70.795	18.50	65.978	18.19	70.632	18.49	67.143	18.27	137.721	21.39	67.143	18.27	67.827	18.31	134.896	21.30
3		802.11ax (SU)	5755 - 5795	65.313	18.15	68.786	18.38	66.313	18.22	64.625	18.10	70.033	18.45	134.586	21.29	70.033	18.45	67.686	18.31	137.721	21.39
1	80	802.11ax (SU)	5210	15.453	11.89	15.241	11.83	15.560	11.92	15.300	11.85	15.524	11.91	30.832	14.89	15.524	11.91	15.392	11.87	30.903	14.90
2A		802.11ax (SU)	5290	21.994	13.42	21.863	13.40	21.979	13.42	19.543	12.91	19.351	12.87	38.905	15.90	19.351	12.87	19.498	12.90	38.815	15.89
2C		802.11ax (SU)	5530 - 5690	65.766	18.18	64.968	18.13	68.549	18.36	68.077	18.33	66.283	18.21	134.276	21.28	66.283	18.21	67.453	18.29	133.660	21.26
3		802.11ax (SU)	5775	41.879	16.22	43.652	16.40	40.926	16.12	41.879	16.22	43.053	16.34	84.918	19.29	43.053	16.34	41.879	16.22	84.918	19.29
1/2A	160	802.11ax (SU)	5250	13.996	11.46	13.785	11.39	13.552	11.32	12.274	10.89	12.417	10.94	24.717	13.93	12.417	10.94	12.218	10.87	24.660	13.92

ISED EUT Overview (High Data Rate)

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

1.3 Test Facility / Accreditations

Measurements were performed at Element 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).

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Tablet Device FCC ID: BCGA2926** and **IC: 579C-A2926**. 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.: FDQ6LM9XK2, QNQV177VJH, KF6WWWG416, DLXGYF0001J000063C

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, 802.15.4, Bluetooth (1x, EDR, LE1M, LE2M, HDR4, HDR8), WPT, NB UNII (1x, HDR4, HDR8)

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

Notes:

1. 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)	98.2	98.2	98.6	98.6	98.4
	a (Mid Rate)	94.8	94.6	94.2	93.8	94.2
	a (High Rate)	92.9	93.3	92.9	93.3	92.7
	n (HT20) (Low Rate)	96.2	96.4	96.6	93.3	93.8
	n (HT20) (Mid Rate)	93.5	93.3	93.8	88.9	89.7
	n (HT20) (High Rate)	91.2	90.6	90.4	84.9	85.1
	ax(SU) (HT20 Low Rate)	95.3	95.5	95.5	95.7	95.7
	ax(SU) (HT20 Mid Rate)	92.7	92.5	92.5	92.5	92.7
	ax(SU) (HT20 High Rate)	85.7	85.5	86.1	86.5	85.7
	n (HT40 Low Rate)	95.9	96.4	96.4	93.8	93.1
	n (HT40 Mid Rate)	93.1	93.5	93.1	88.7	89.5
	n (HT40 High Rate)	0.0	90.6	90.8	85.7	85.1
	ax(SU) (HT40 Low Rate)	95.7	95.9	95.7	95.7	95.7
	ax(SU) (HT40 Mid Rate)	92.5	92.7	92.7	92.7	92.7
	ax(SU) (HT40 High Rate)	85.5	85.7	86.3	86.3	85.5
	ac (VHT160 Low Rate)	95.5	95.7	95.9	92.7	92.5
	ac (VHT160 Mid Rate)	92.0	92.3	92.7	88.9	88.5
	ac (VHT160 High Rate)	86.7	86.9	86.9	82.2	82.2
	ac (HT80 Low Rate)	95.1	94.8	95.5	94.8	95.5
	ac (HT80 Mid Rate)	92.3	92.3	91.8	92.3	91.8
	ac (HT80 High Rate)	85.7	85.7	85.7	85.7	85.3
	ax(SU) (HT80 Low Rate)	94.4	94.4	94.8	91.2	90.8
	ax(SU) (HT80 Mid Rate)	90.8	90.6	91.0	86.3	85.3
	ax(SU) (HT80 High Rate)	84.5	84.5	84.9	79.4	79.4
	ax(SU) (HE160 Low Rate)	93.8	94.0	94.0	93.5	93.8
	ax(SU) (HE160 Mid Rate)	89.9	89.9	89.9	89.9	90.6
	ax(SU) (HE160 High Rate)	83.0	83.4	83.4	83.8	83.4

Table 2-5. Measured Duty Cycles

2. The device employs MIMO 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)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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, 65/72.2Mbps (n – 20MHz)

13.5/15, 27/30, 40.5/45, 54/60, 81/90, 108/120, 121.5/135, 135/150Mbps (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, 390/433.3Mbps (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, 780/866.7Mbps (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, 135/143.4Mbps (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, 271/286.8Mbps (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, 567/600.5Mbps (ax – 80MHz BW).
136.2/144.2, 2721/288.2, 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)

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	LTE/FR1 NR	
		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	MB/HB	UHB
2a	Config 1	✗	✓	✗	✓	✗	✗	✗	✗
2a	Config 2	✗	✓	✗	✗	✓	✗	✗	✗
2a	Config 3	✓	✗	✗	✗	✗	✓	✗	✗
2a	Config 4	✗	✗	✓	✓	✗	✗	✗	✗
2a	Config 5	✗	✗	✓	✗	✓	✗	✗	✗
4a	Config 6	✗	✓	✗	✓	✗	✗	✗	✗
4a	Config 7	✗	✓	✗	✗	✓	✗	✗	✗
4a	Config 8	✓	✗	✗	✗	✗	✓	✗	✗
4a	Config 9	✗	✗	✓	✓	✗	✗	✗	✗
4a	Config 10	✗	✗	✓	✗	✓	✗	✗	✗

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	1.4	-1.1	-1.6
5.250 - 5.350	1.2	-1.7	-1.4
5.470 - 5.725	0.9	1.3	-0.2
5.725 - 5.850	0.7	1.3	-0.6

Table 2-8. Highest Antenna Gain

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.

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, 1C2311270070-23.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.

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.

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

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.

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 (±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

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
ESPEC	SU-241	Tabletop Temperature Chamber	11/17/2023	Annual	11/17/2024	92009574
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	CMW500	Wideband Radio Communication Tester	11/30/2023	Annual	11/30/2024	161616
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	12/27/2023	Annual	12/27/2024	164715
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	FSW43	Signal Analyzer (2Hz-43.5GHz)	7/13/2023	Annual	7/13/2024	101261
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.

7.0 TEST RESULTS

7.1 Summary

Company Name: Apple Inc.
FCC ID: BCGA2926
IC: 579C-A2926
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 (1C2311270070-21.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	Section7.6, 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.

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 x 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.

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)	17.81	21.74
	5200	40	n (20MHz)	19.5/21.7 (MCS2)	17.74	21.03
	5240	48	n (20MHz)	19.5/21.7 (MCS2)	17.73	21.02
	5180	36	ax (SU) (20MHz)	24/25.8 (MCS2)	19.12	22.15
	5200	40	ax (SU) (20MHz)	24/25.8 (MCS2)	19.06	21.18
	5240	48	ax (SU) (20MHz)	24/25.8 (MCS2)	19.04	21.26
	5190	38	n (40MHz)	40.5/45 (MCS2)	36.51	41.73
	5230	46	n (40MHz)	40.5/45 (MCS2)	36.43	41.66
	5190	38	ax (SU) (40MHz)	49/51.6 (MCS2)	38.06	43.29
	5230	46	ax (SU) (40MHz)	49/51.6 (MCS2)	38.06	41.99
	5210	42	ac (80MHz)	87.8/97.5 (MCS2)	75.76	85.26
	5210	42	ax (SU) (80MHz)	102/108.1 (MCS2)	77.33	87.16
Band 1/2	5250	50	ac (160MHz)	175.5/195 (MCS2)	155.53	166.38
	5250	50	ax (SU) (160MHz)	204.2/216.2 (MCS2)	157.33	165.40
Band 2A	5260	52	n (20MHz)	19.5/21.7 (MCS2)	17.74	21.02
	5300	60	n (20MHz)	19.5/21.7 (MCS2)	17.72	20.91
	5320	64	n (20MHz)	19.5/21.7 (MCS2)	17.84	21.38
	5260	52	ax (SU) (20MHz)	24/25.8 (MCS2)	19.07	21.37
	5300	60	ax (SU) (20MHz)	24/25.8 (MCS2)	19.05	21.31
	5320	64	ax (SU) (20MHz)	24/25.8 (MCS2)	19.09	21.75
	5270	54	n (40MHz)	40.5/45 (MCS2)	36.34	41.50
	5310	62	n (40MHz)	40.5/45 (MCS2)	36.45	42.80
	5270	54	ax (SU) (40MHz)	49/51.6 (MCS2)	38.04	41.94
	5310	62	ax (SU) (40MHz)	49/51.6 (MCS2)	38.07	44.10
	5290	58	ac (80MHz)	87.8/97.5 (MCS2)	75.62	82.33
	5290	58	ax (SU) (80MHz)	102/108.1 (MCS2)	77.40	84.51
Band 2C	5500	100	n (20MHz)	19.5/21.7 (MCS2)	17.80	21.29
	5580	116	n (20MHz)	19.5/21.7 (MCS2)	17.72	20.77
	5720	144	n (20MHz)	19.5/21.7 (MCS2)	17.72	20.84
	5500	100	ax (SU) (20MHz)	24/25.8 (MCS2)	19.15	21.84
	5580	116	ax (SU) (20MHz)	24/25.8 (MCS2)	19.06	21.22
	5720	144	ax (SU) (20MHz)	24/25.8 (MCS2)	19.05	21.23
	5510	102	n (40MHz)	40.5/45 (MCS2)	36.46	44.82
	5550	110	n (40MHz)	40.5/45 (MCS2)	36.32	41.12
	5710	142	n (40MHz)	40.5/45 (MCS2)	36.29	41.13
	5510	102	ax (SU) (40MHz)	49/51.6 (MCS2)	38.05	47.74
	5550	110	ax (SU) (40MHz)	49/51.6 (MCS2)	37.97	41.67
	5710	142	ax (SU) (40MHz)	49/51.6 (MCS2)	37.95	41.79
	5530	106	ac (80MHz)	87.8/97.5 (MCS2)	75.69	85.21
	5610*	122	ac (80MHz)	87.8/97.5 (MCS2)	75.68	82.76
	5690	138	ac (80MHz)	87.8/97.5 (MCS2)	75.48	81.25
	5530	106	ax (SU) (80MHz)	102/108.1 (MCS2)	77.31	91.71
	5610*	122	ax (SU) (80MHz)	102/108.1 (MCS2)	77.31	84.14
	5690	138	ax (SU) (80MHz)	102/108.1 (MCS2)	77.23	82.05
	5570*	114	ac (160MHz)	175.5/195 (MCS2)	154.43	164.60
	5570*	114	ax (SU) (160MHz)	204.2/216.2 (MCS2)	156.63	165.36

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

*TDWR channel is not supported for ISED (denoted by a * next to the frequency)

	Frequency [MHz]	Channel	802.11 MODE	Data Rate [Mbps]	Measured 99% Occupied Bandwidth [MHz]	Measured 26dB Bandwidth [MHz]
Band 1	5180	36	n (20MHz)	81/90 (MCS4)	17.82	21.36
	5200	40	n (20MHz)	81/90 (MCS4)	17.78	20.98
	5240	48	n (20MHz)	81/90 (MCS4)	17.74	20.87
	5180	36	ax (SU) (20MHz)	49/51.6 (MCS4)	19.10	21.96
	5200	40	ax (SU) (20MHz)	49/51.6 (MCS4)	19.13	21.43
	5240	48	ax (SU) (20MHz)	49/51.6 (MCS4)	19.07	21.29
	5190	38	n (40MHz)	81/90 (MCS4)	36.43	41.41
	5230	46	n (40MHz)	81/90 (MCS4)	36.68	48.64
	5190	38	ax (SU) (40MHz)	98/103.2 (MCS4)	38.22	57.90
	5230	46	ax (SU) (40MHz)	98/103.2 (MCS4)	38.26	57.51
	5210	42	ac (80MHz)	175.5/195 (MCS4)	75.58	85.81
	5210	42	ax (SU) (80MHz)	49/51.6 (MCS4)	77.28	81.78
Band 1/2	5250	50	ac (160MHz)	351/390 (MCS4)	155.30	165.61
	5250	50	ax (SU) (160MHz)	408.3/432.4 (MCS4)	157.17	165.59
Band 2A	5260	52	n (20MHz)	81/90 (MCS4)	17.77	21.02
	5300	60	n (20MHz)	81/90 (MCS4)	17.73	20.92
	5320	64	n (20MHz)	81/90 (MCS4)	17.76	20.98
	5260	52	ax (SU) (20MHz)	49/51.6 (MCS4)	19.05	21.34
	5300	60	ax (SU) (20MHz)	49/51.6 (MCS4)	19.04	21.41
	5320	64	ax (SU) (20MHz)	49/51.6 (MCS4)	19.06	22.60
	5270	54	n (40MHz)	81/90 (MCS4)	36.61	46.96
	5310	62	n (40MHz)	81/90 (MCS4)	36.39	41.63
	5270	54	ax (SU) (40MHz)	98/103.2 (MCS4)	38.22	52.81
	5310	62	ax (SU) (40MHz)	98/103.2 (MCS4)	38.04	47.77
	5290	58	ac (80MHz)	175.5/195 (MCS4)	75.68	81.57
	5290	58	ax (SU) (80MHz)	49/51.6 (MCS4)	77.34	81.88
Band 2C	5500	100	n (20MHz)	81/90 (MCS4)	17.73	21.08
	5580	116	n (20MHz)	81/90 (MCS4)	17.77	20.86
	5720	144	n (20MHz)	81/90 (MCS4)	17.71	20.78
	5500	100	ax (SU) (20MHz)	49/51.6 (MCS4)	19.07	22.71
	5580	116	ax (SU) (20MHz)	49/51.6 (MCS4)	19.06	21.36
	5720	144	ax (SU) (20MHz)	49/51.6 (MCS4)	19.06	21.28
	5510	102	n (40MHz)	81/90 (MCS4)	36.34	40.94
	5550	110	n (40MHz)	81/90 (MCS4)	36.45	41.69
	5710	142	n (40MHz)	81/90 (MCS4)	36.46	41.37
	5510	102	ax (SU) (40MHz)	98/103.2 (MCS4)	38.07	47.14
	5550	110	ax (SU) (40MHz)	98/103.2 (MCS4)	37.99	41.38
	5590	118	ax (SU) (40MHz)	98/103.2 (MCS4)	38.09	46.91
	5530	106	ac (80MHz)	175.5/195 (MCS4)	75.57	81.02
	5610*	122	ac (80MHz)	175.5/195 (MCS4)	75.65	81.26
	5690	138	ac (80MHz)	175.5/195 (MCS4)	75.67	81.09
	5530	106	ax (SU) (80MHz)	49/51.6 (MCS4)	77.28	81.95
	5610*	122	ax (SU) (80MHz)	49/51.6 (MCS4)	77.32	81.86
	5690	138	ax (SU) (80MHz)	49/51.6 (MCS4)	77.36	82.72
	5570*	114	ac (160MHz)	351/390 (MCS4)	154.48	164.20
	5570*	114	ax (SU) (160MHz)	408.3/432.4 (MCS4)	156.63	165.41

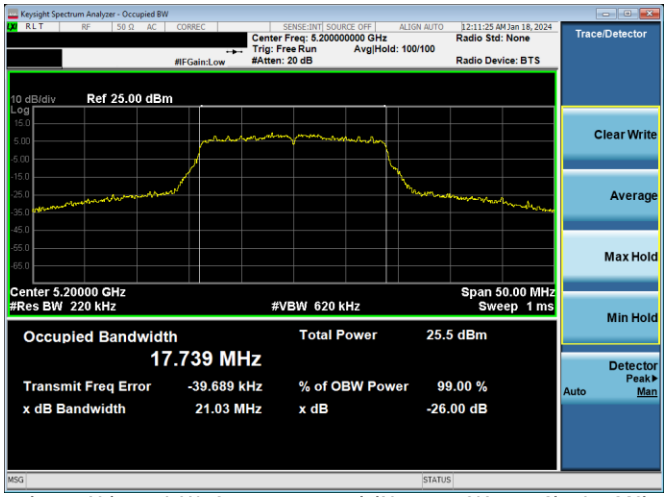
Table 7-3. Conducted Bandwidth Measurements Antenna WF5b (Mid Data Rate)

*TDWR channel is not supported for ISED (denoted by a * next to the frequency)

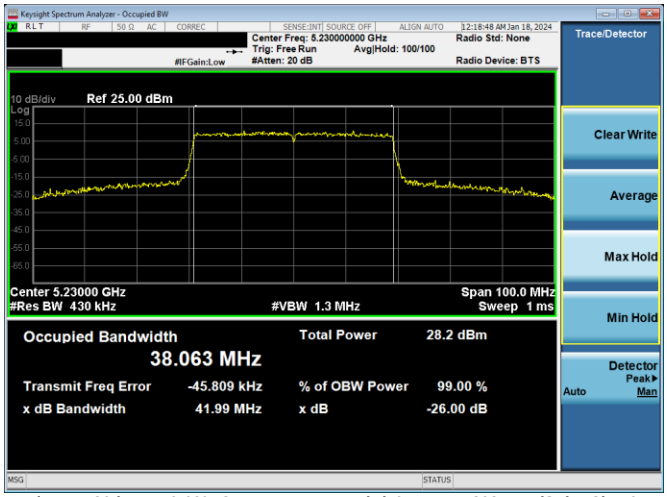
	Frequency [MHz]	Channel	802.11 MODE	Data Rate [Mbps]	Measured 99% Occupied Bandwidth [MHz]	Measured 26dB Bandwidth [MHz]
Band 1	5180	36	n (20MHz)	65/72.2 (MCS7)	17.88	21.29
	5200	40	n (20MHz)	65/72.2 (MCS7)	18.06	25.42
	5240	48	n (20MHz)	65/72.2 (MCS7)	18.01	21.37
	5180	36	ax (SU) (20MHz)	135/143.4 (MCS11)	19.02	21.03
	5200	40	ax (SU) (20MHz)	135/143.4 (MCS11)	19.19	31.04
	5240	48	ax (SU) (20MHz)	135/143.4 (MCS11)	19.24	24.05
	5190	38	n (40MHz)	135/150 (MCS7)	36.52	41.28
	5230	46	n (40MHz)	135/150 (MCS7)	37.57	72.99
	5190	38	ax (SU) (40MHz)	135/143.4 (MCS11)	37.90	41.62
	5230	46	ax (SU) (40MHz)	135/143.4 (MCS11)	38.28	65.51
	5210	42	ac (80MHz)	390/433.3 (MCS9)	75.87	81.64
	5210	42	ax (SU) (80MHz)	567/600.5 (MCS11)	77.21	81.67
Band 1/2	5250	50	ac (160MHz)	780/866.7 (MCS9)	155.86	165.48
	5250	50	ax (SU) (160MHz)	1134.3/1201 (MCS11)	157.10	165.22
Band 2A	5260	52	n (20MHz)	65/72.2 (MCS7)	18.02	21.95
	5300	60	n (20MHz)	65/72.2 (MCS7)	18.00	21.44
	5320	64	n (20MHz)	65/72.2 (MCS7)	17.85	21.04
	5260	52	ax (SU) (20MHz)	135/143.4 (MCS11)	19.21	25.86
	5300	60	ax (SU) (20MHz)	135/143.4 (MCS11)	19.15	24.20
	5320	64	ax (SU) (20MHz)	135/143.4 (MCS11)	19.04	21.22
	5270	54	n (40MHz)	135/150 (MCS7)	37.44	72.98
	5310	62	n (40MHz)	135/150 (MCS7)	36.52	41.15
	5270	54	ax (SU) (40MHz)	135/143.4 (MCS11)	38.18	60.75
	5310	62	ax (SU) (40MHz)	135/143.4 (MCS11)	37.96	41.20
	5290	58	ac (80MHz)	390/433.3 (MCS9)	75.94	82.02
	5290	58	ax (SU) (80MHz)	567/600.5 (MCS11)	77.07	81.72
Band 2C	5500	100	n (20MHz)	65/72.2 (MCS7)	17.82	21.08
	5580	116	n (20MHz)	65/72.2 (MCS7)	17.94	22.21
	5720	144	n (20MHz)	65/72.2 (MCS7)	17.89	21.40
	5500	100	ax (SU) (20MHz)	135/143.4 (MCS11)	19.05	21.26
	5580	116	ax (SU) (20MHz)	135/143.4 (MCS11)	19.10	24.02
	5720	144	ax (SU) (20MHz)	135/143.4 (MCS11)	19.05	21.40
	5510	102	n (40MHz)	135/150 (MCS7)	36.53	41.13
	5550	110	n (40MHz)	135/150 (MCS7)	37.00	56.12
	5710	142	n (40MHz)	135/150 (MCS7)	37.11	54.53
	5510	102	ax (SU) (40MHz)	135/143.4 (MCS11)	37.96	41.29
	5550	110	ax (SU) (40MHz)	135/143.4 (MCS11)	38.01	50.30
	5710	142	ax (SU) (40MHz)	135/143.4 (MCS11)	38.13	55.82
	5530	106	ac (80MHz)	390/433.3 (MCS9)	75.89	81.29
	5610*	122	ac (80MHz)	390/433.3 (MCS9)	76.05	81.77
	5690	138	ac (80MHz)	390/433.3 (MCS9)	76.16	83.13
	5530	106	ax (SU) (80MHz)	567/600.5 (MCS11)	77.23	81.58
	5610*	122	ax (SU) (80MHz)	567/600.5 (MCS11)	77.21	81.62
	5690	138	ax (SU) (80MHz)	567/600.5 (MCS11)	77.32	91.77
	5570*	114	ac (160MHz)	780/866.7 (MCS9)	155.13	165.43
	5570*	114	ax (SU) (160MHz)	1134.3/1201 (MCS11)	156.38	165.26

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

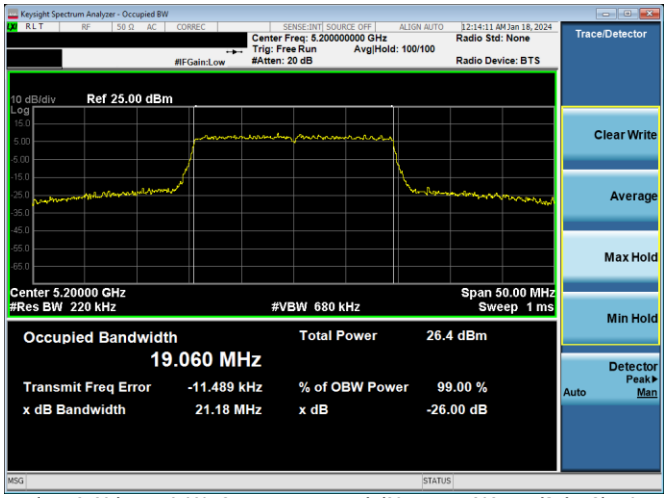
*TDWR channel is not supported for ISED (denoted by a * next to the frequency)



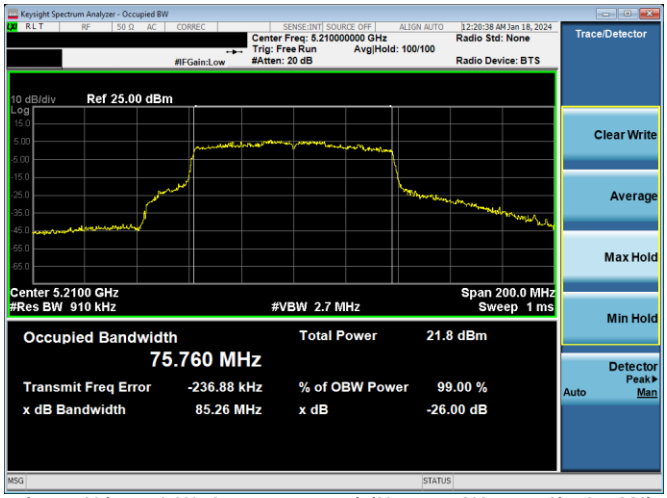
Plot 7-1. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11n – Ch. 40, MCS2)



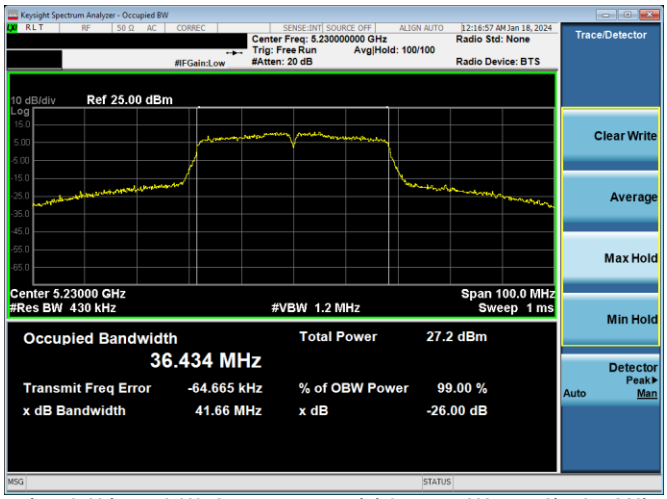
Plot 7-4. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11ax(SU) – Ch. 46, MCS2)



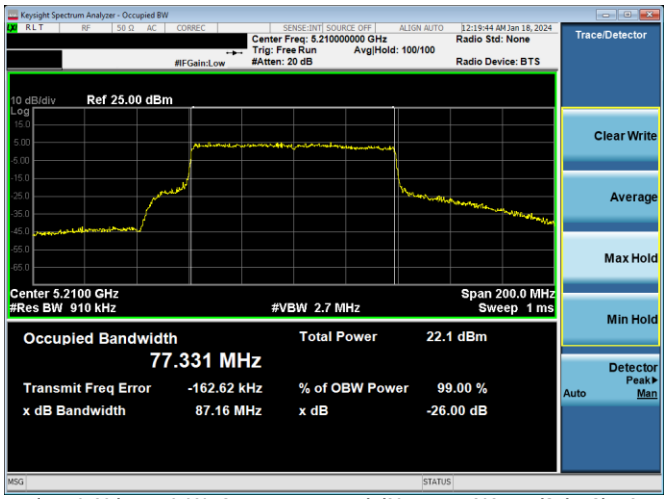
Plot 7-2. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11ax(SU) – Ch. 40, MCS2)



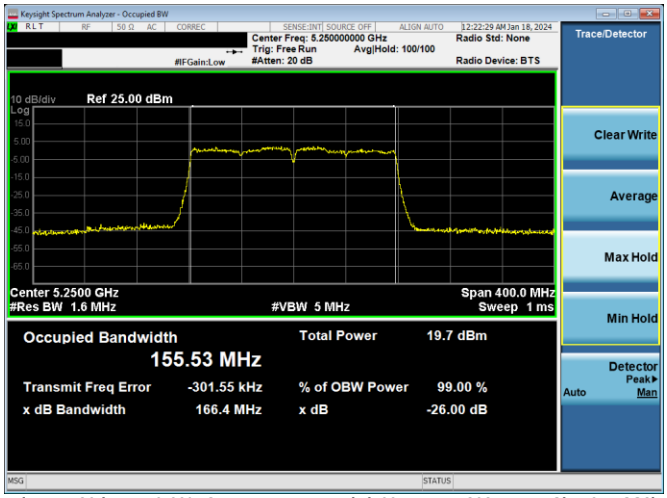
Plot 7-5. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ac – Ch. 42, MCS2)



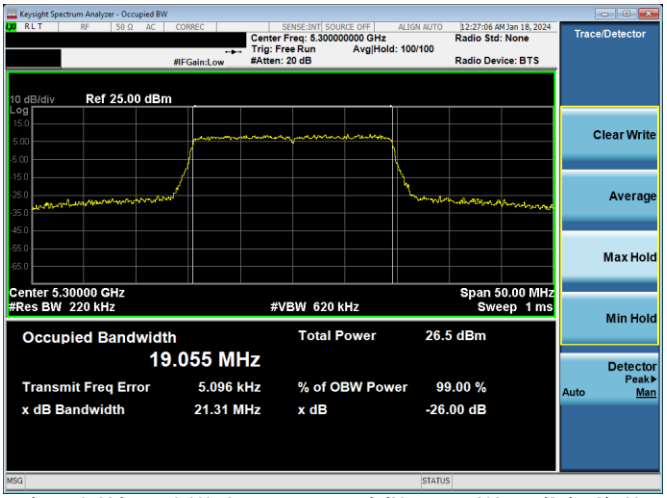
Plot 7-3. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11n – Ch. 46, MCS2)



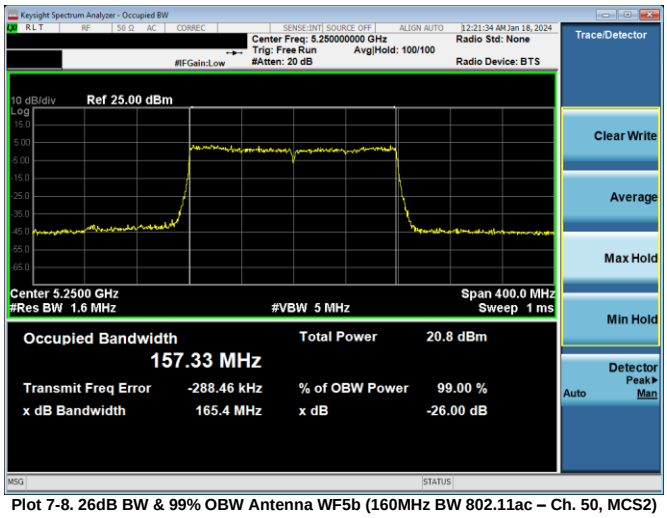
Plot 7-6. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ax(SU) – Ch. 42, MCS2)



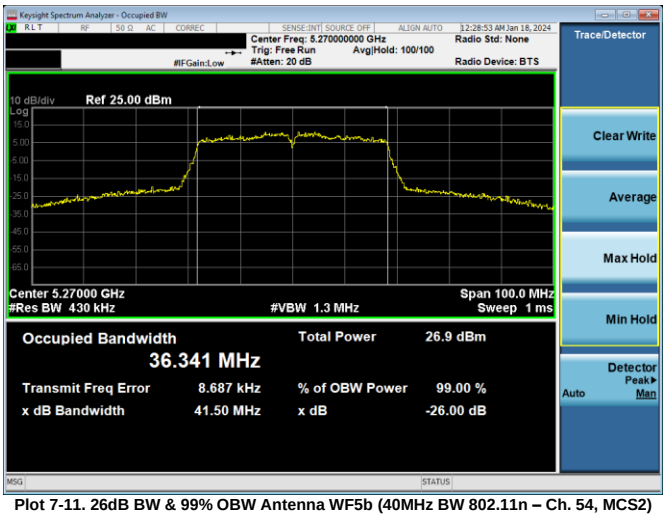
Plot 7-7. 26dB BW & 99% OBW Antenna WF5b (160MHz BW 802.11ac – Ch. 50, MCS2)



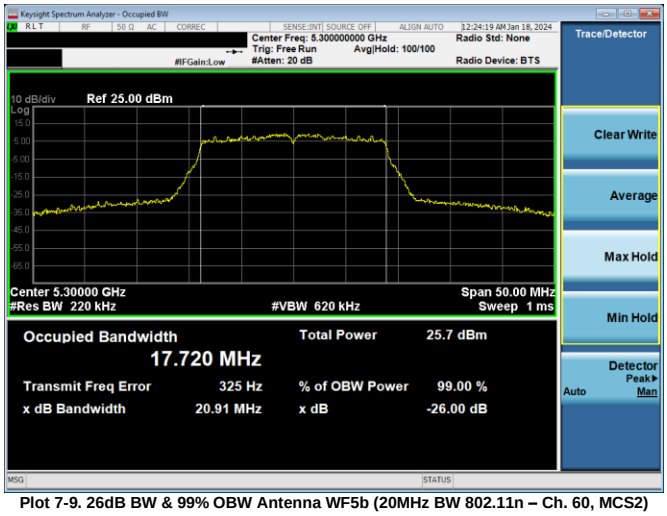
Plot 7-10. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11ax(SU) – Ch. 60, MCS2)



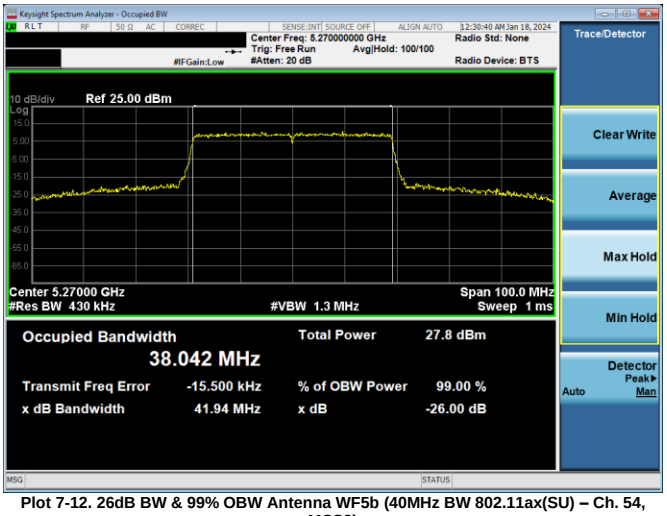
Plot 7-8. 26dB BW & 99% OBW Antenna WF5b (160MHz BW 802.11ac – Ch. 50, MCS2)



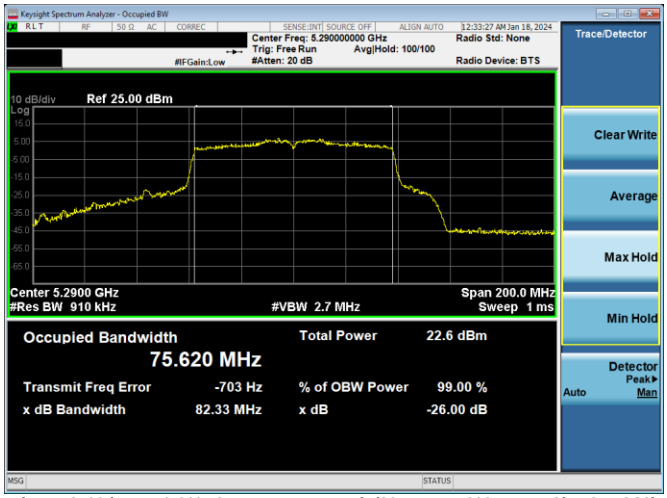
Plot 7-11. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11n – Ch. 54, MCS2)



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

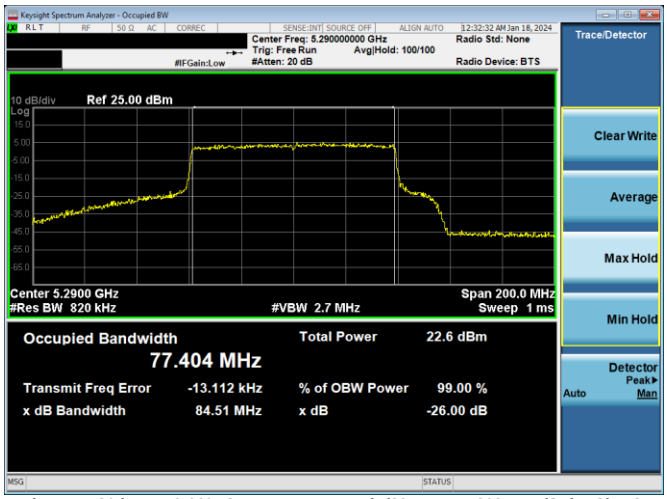


Plot 7-12. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11ax(SU) – Ch. 54, MCS2)

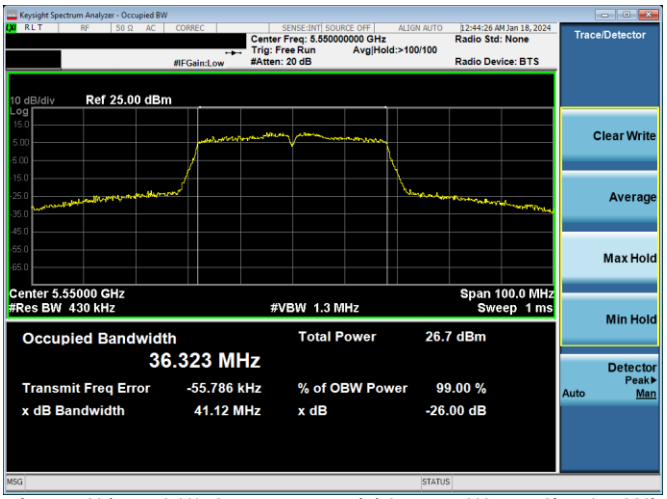


Plot 7-13. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ac – Ch. 58, MCS2)

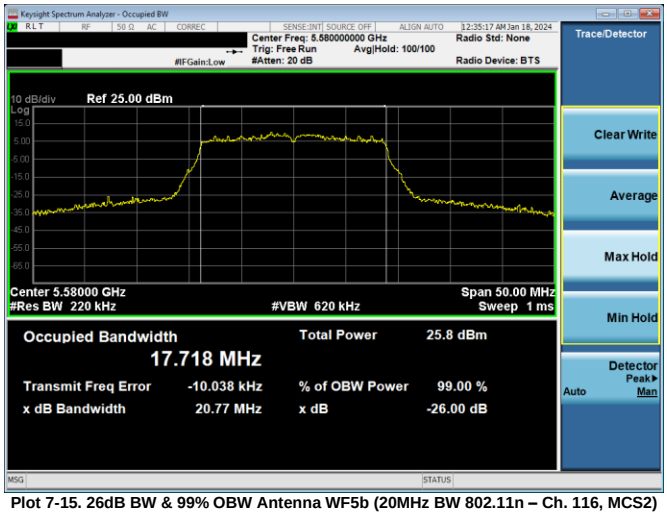
Plot 7-16. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11ax(SU) – Ch. 116, MCS2)



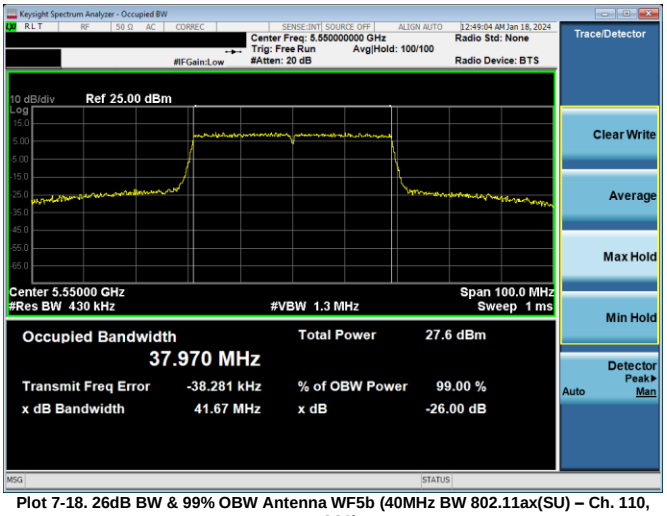
Plot 7-14. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ax(SU) – Ch. 58, MCS2)



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



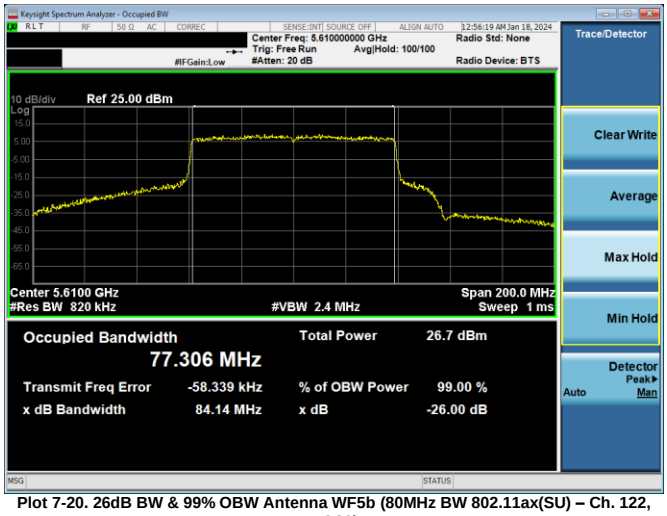
Plot 7-15. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11n – Ch. 116, MCS2)



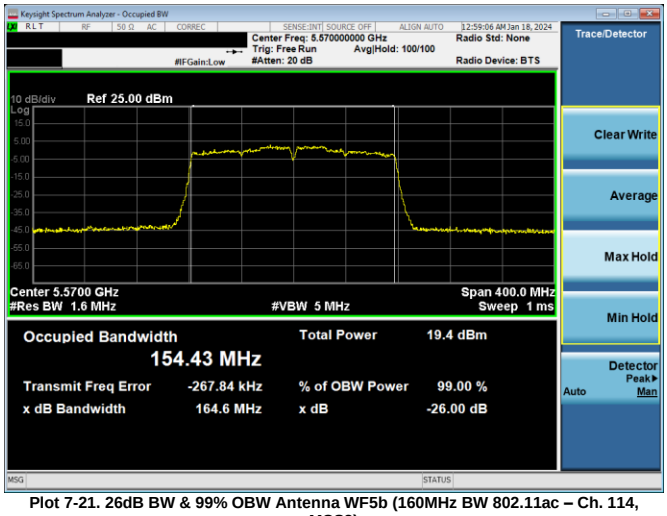
Plot 7-18. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11ax(SU) – Ch. 110, MCS2)

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

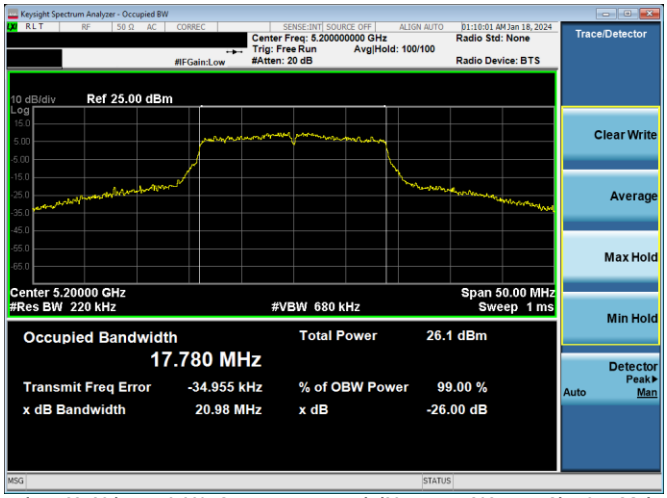
Plot 7-22. 26dB BW & 99% OBW Antenna WF5b (160MHz BW 802.11ac – Ch. 114, MCS2)



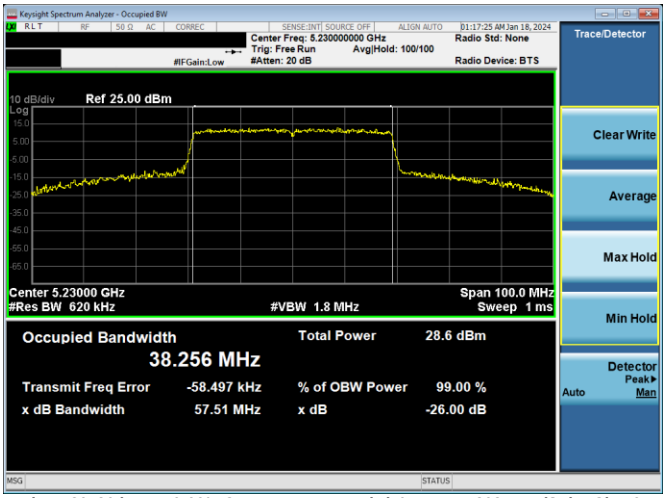
Plot 7-20. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ax(SU) – Ch. 122, MCS2)



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

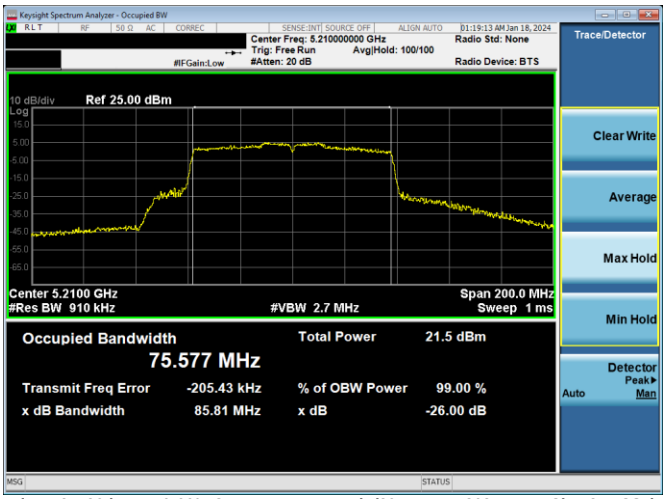


Plot 7-23. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11n – Ch. 40, MCS4)

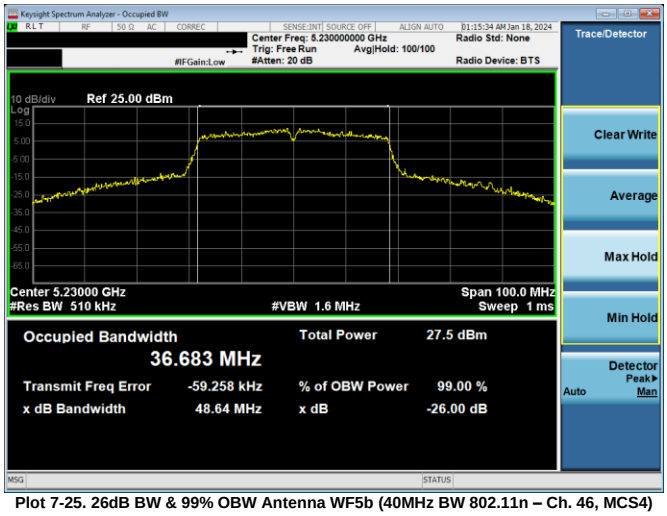


Plot 7-26. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11ax(SU) – Ch. 46, MCS4)

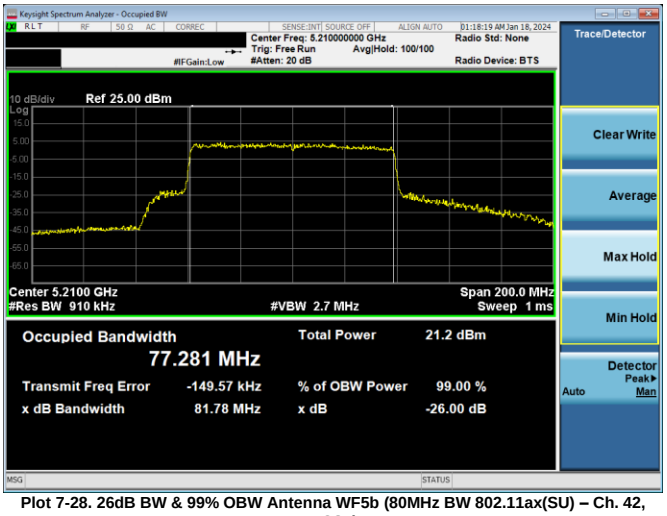
Plot 7-24. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11ax(SU) – Ch. 40, MCS4)



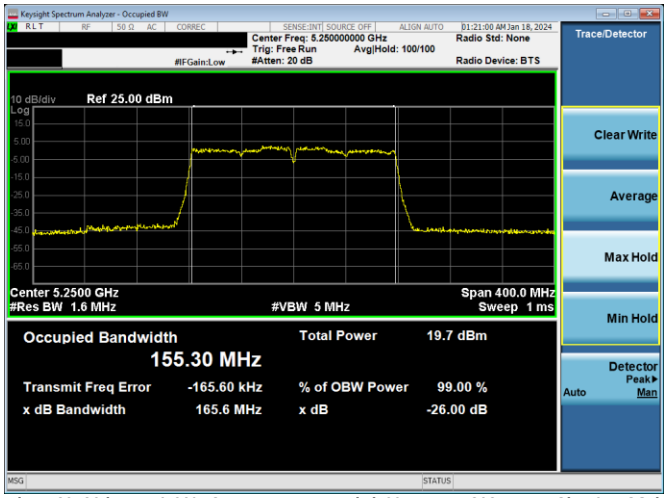
Plot 7-27. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ac – Ch. 42, MCS4)



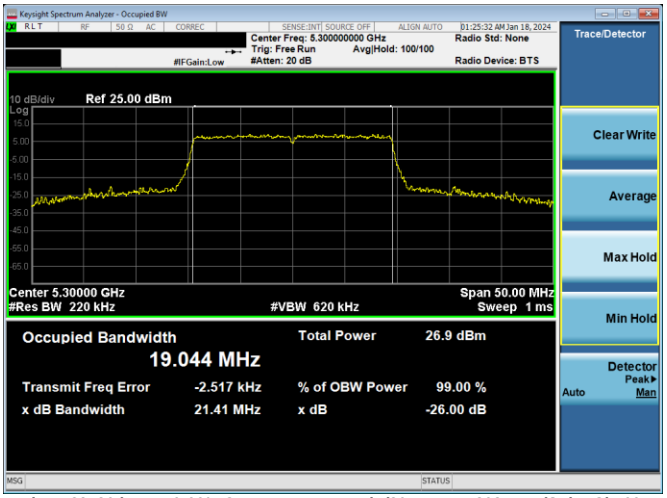
Plot 7-25. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11n – Ch. 46, MCS4)



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



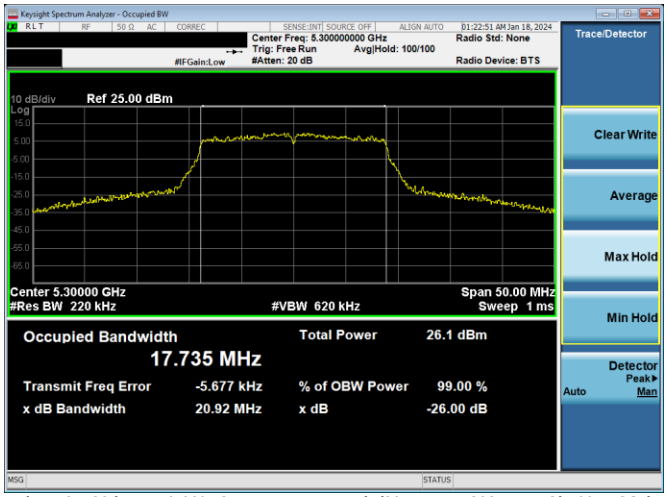
Plot 7-29. 26dB BW & 99% OBW Antenna WF5b (160MHz BW 802.11ac – Ch. 50, MCS4)



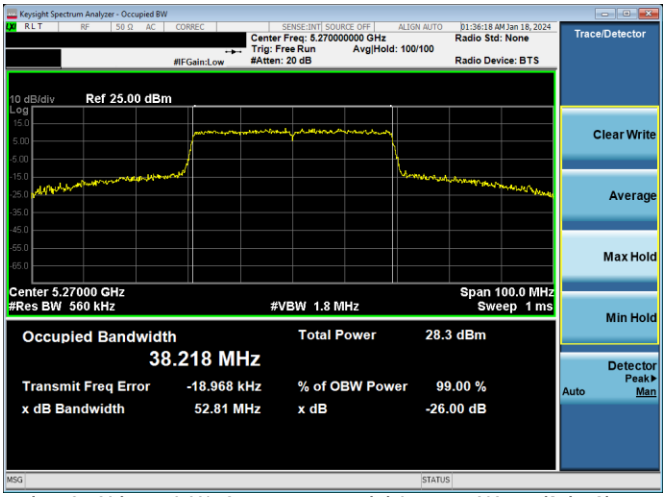
Plot 7-32. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11ax(SU) – Ch. 60, MCS4)

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)

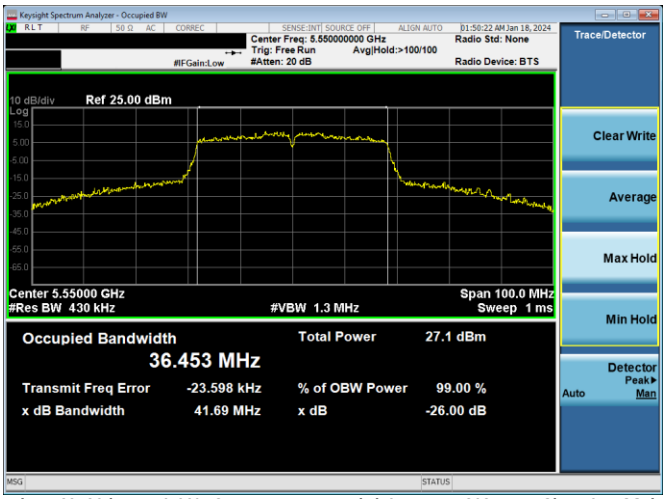


Plot 7-34. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11ax(SU) – Ch. 54, MCS4)

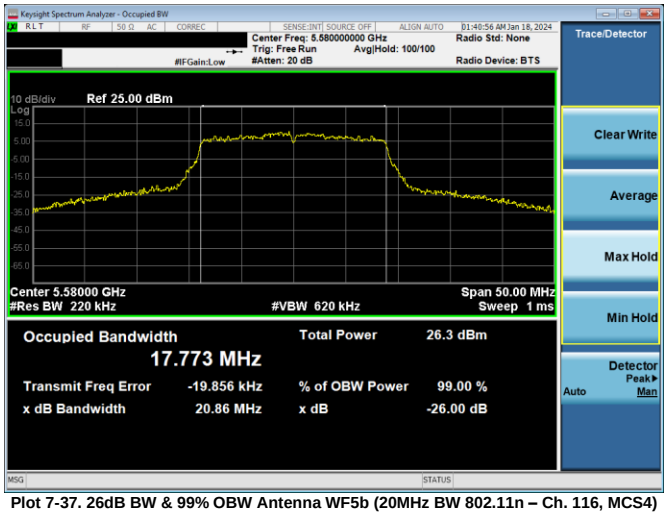
Plot 7-35. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ac – Ch. 58, MCS4)

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

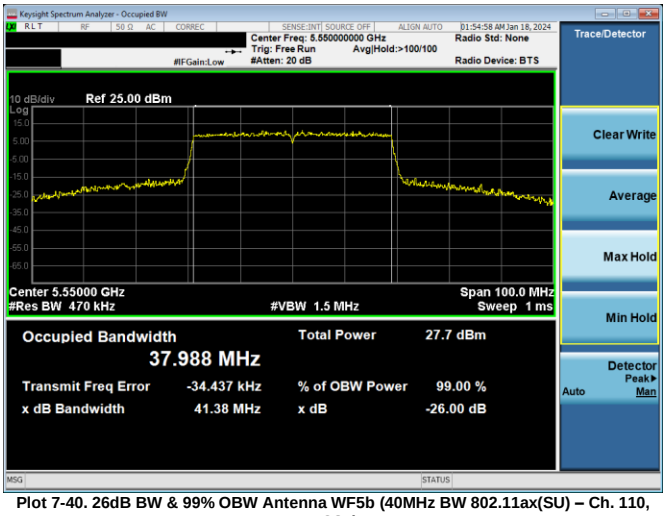
Plot 7-36. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ax(SU) – Ch. 58, MCS4)



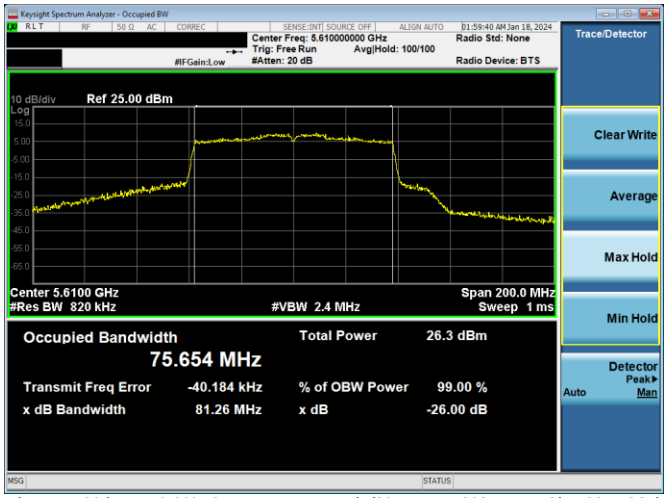
Plot 7-39. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11n – Ch. 110, MCS4)



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

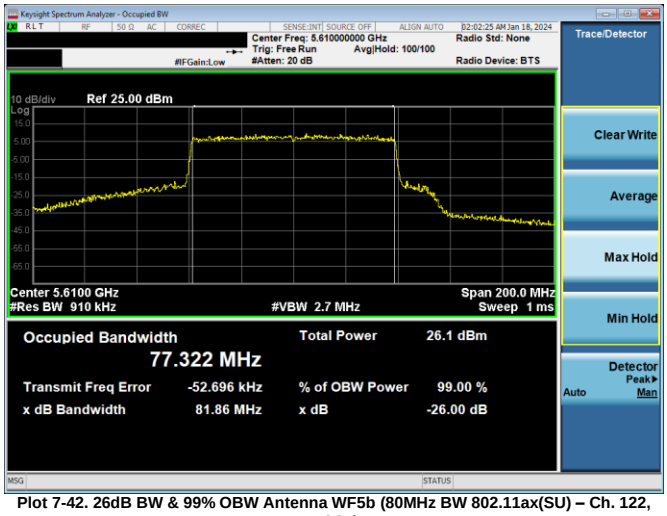


Plot 7-40. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11ax(SU) – Ch. 110, MCS4)

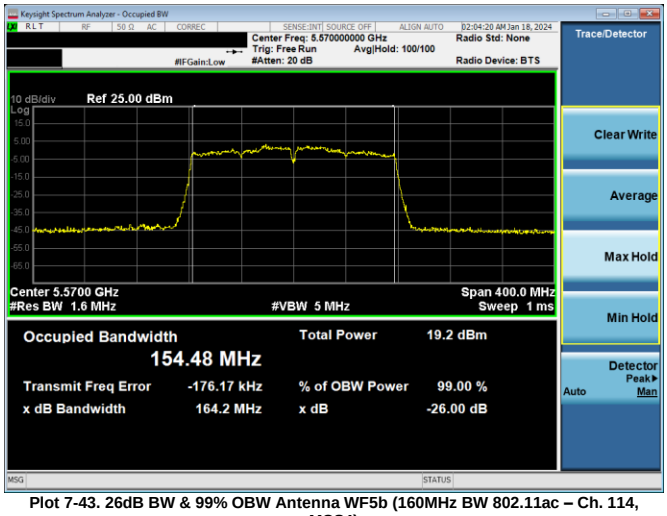


Plot 7-41. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ac – Ch. 122, MCS4)

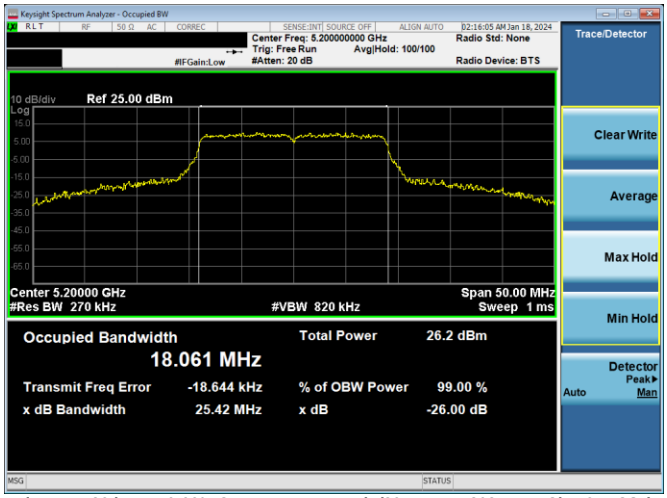
Plot 7-44. 26dB BW & 99% OBW Antenna WF5b (160MHz BW 802.11ac – Ch. 114, MCS4)



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

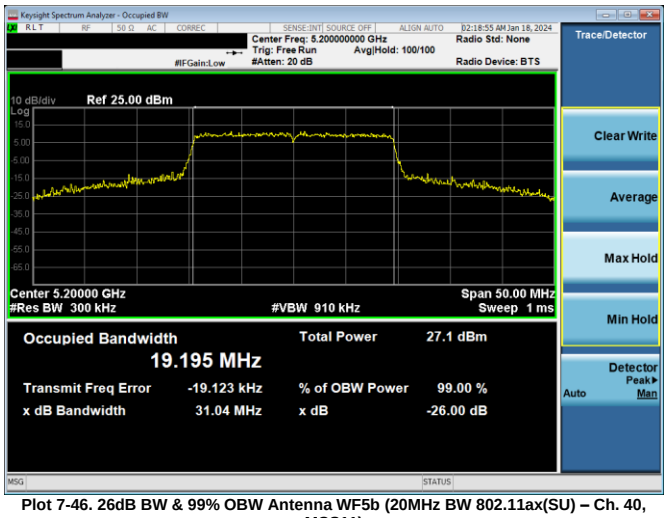


Plot 7-43. 26dB BW & 99% OBW Antenna WF5b (160MHz BW 802.11ac – Ch. 114, MCS4)

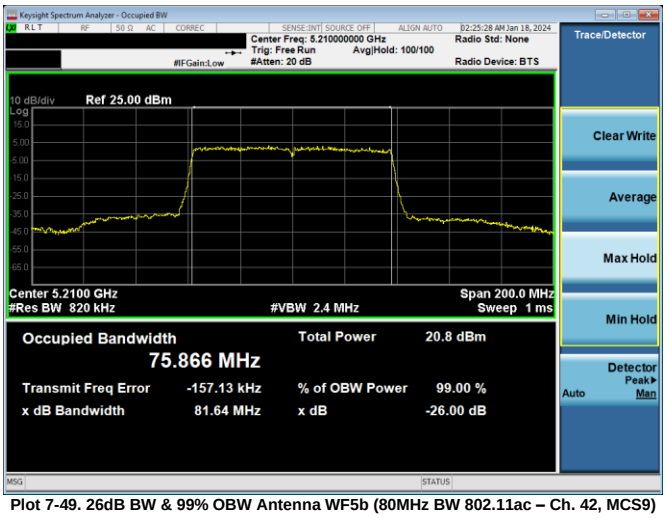


Plot 7-45. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11n – Ch. 40, MCS7)

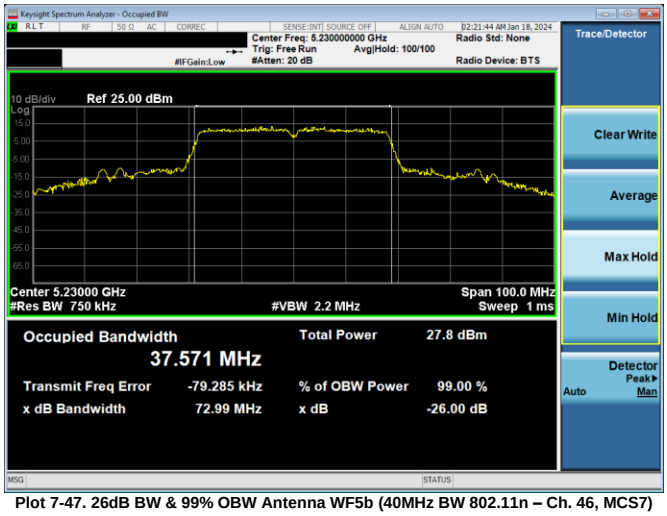
Plot 7-48. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11ax(SU) – Ch. 46, MCS11)



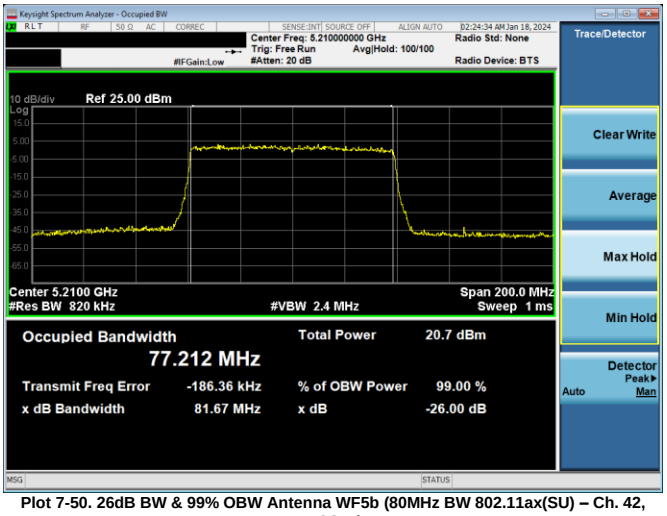
Plot 7-46. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11ax(SU) – Ch. 40, MCS11)



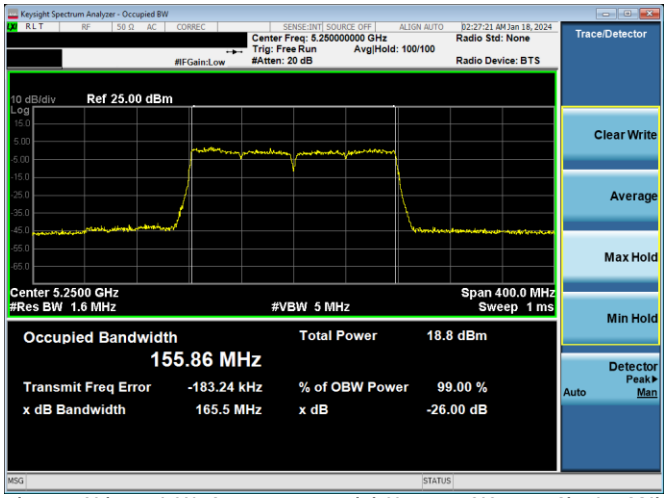
Plot 7-49. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ac – Ch. 42, MCS9)



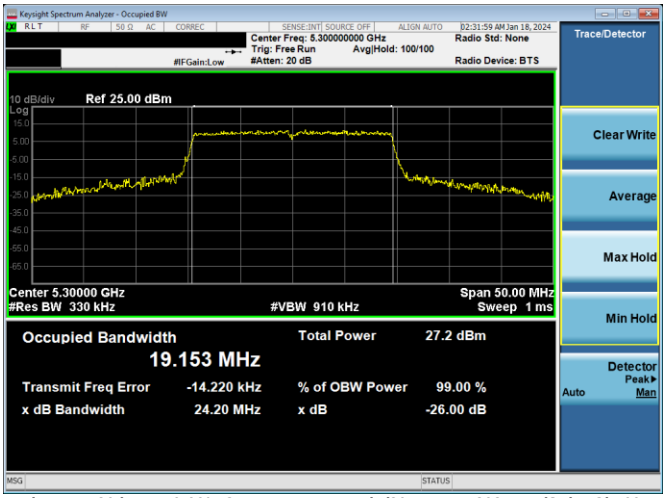
Plot 7-47. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11n – Ch. 46, MCS7)



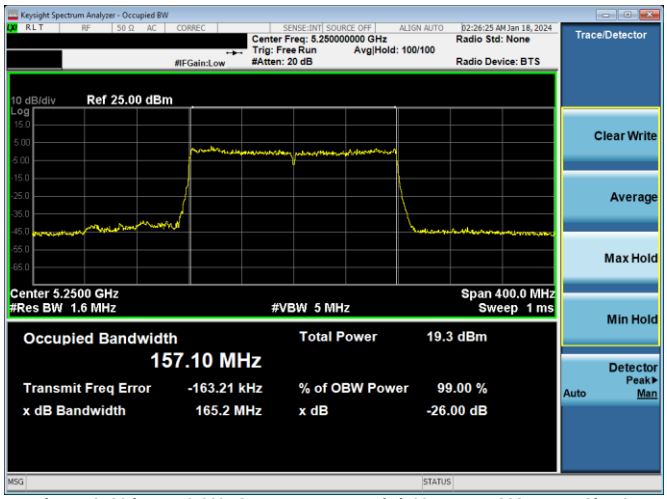
Plot 7-50. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ax(SU) – Ch. 42, MCS11)



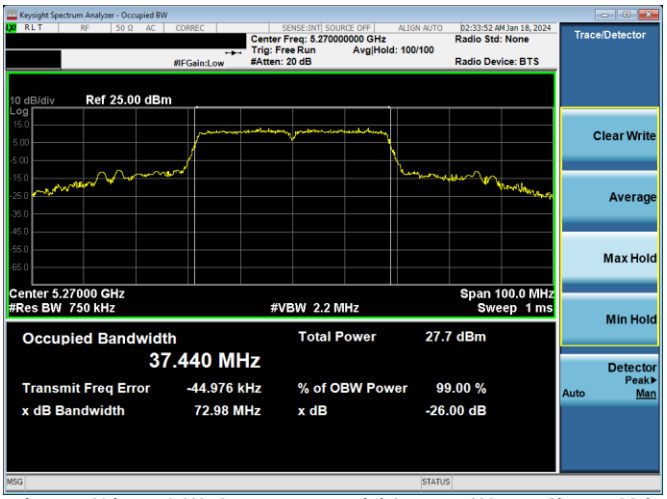
Plot 7-51. 26dB BW & 99% OBW Antenna WF5b (160MHz BW 802.11ac – Ch. 50, MCS9)



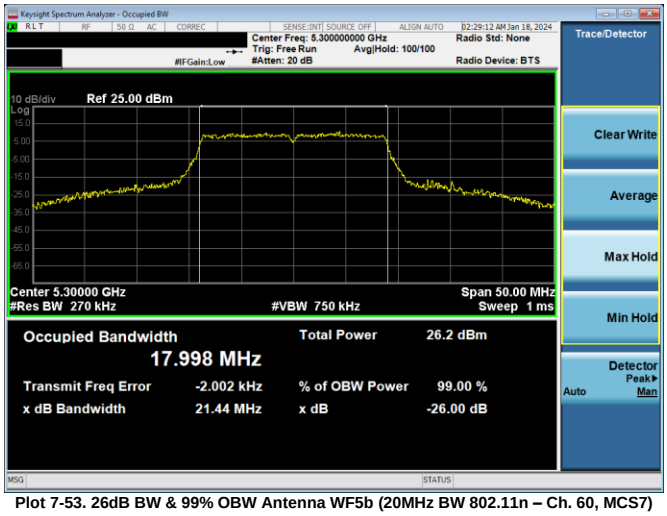
Plot 7-54. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11ax(SU) – Ch. 60, MCS11)



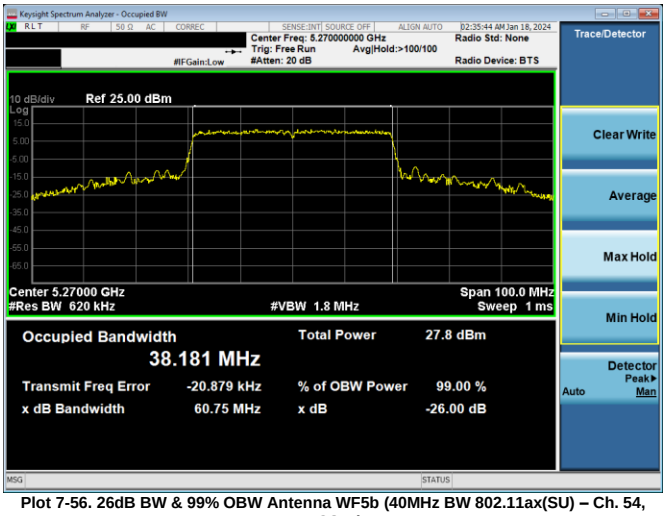
Plot 7-52. 26dB BW & 99% OBW Antenna WF5b (160MHz BW 802.11ac – Ch. 50, MCS11)



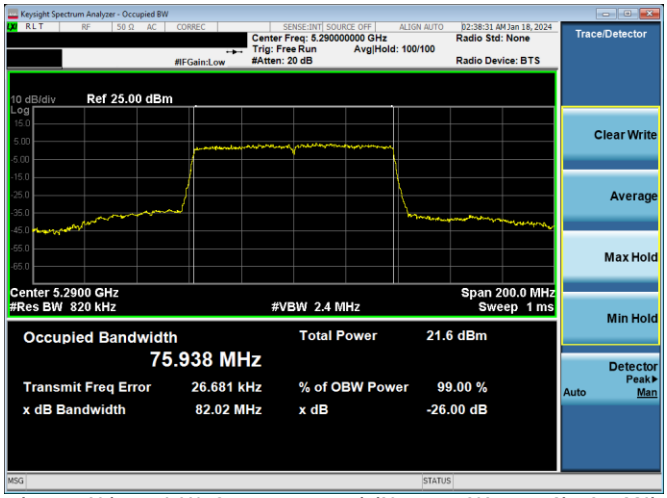
Plot 7-55. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11n – Ch. 54, MCS7)



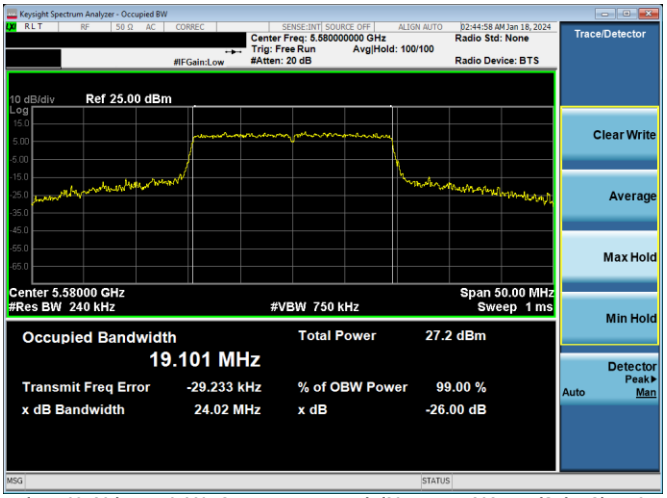
Plot 7-53. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11n – Ch. 60, MCS7)



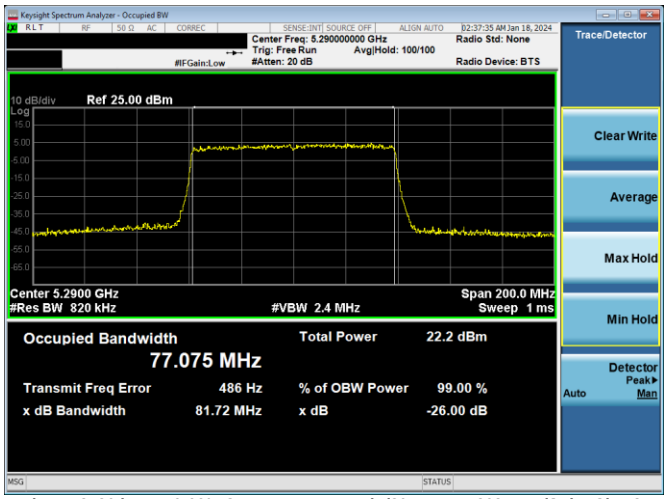
Plot 7-56. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11ax(SU) – Ch. 54, MCS11)



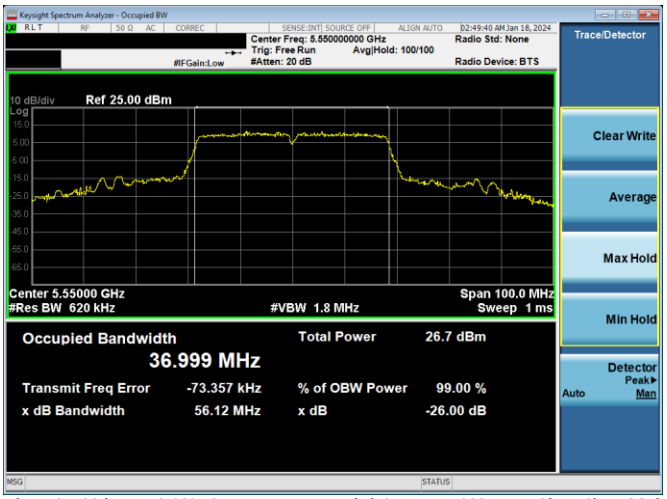
Plot 7-57. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ac – Ch. 58, MCS9)



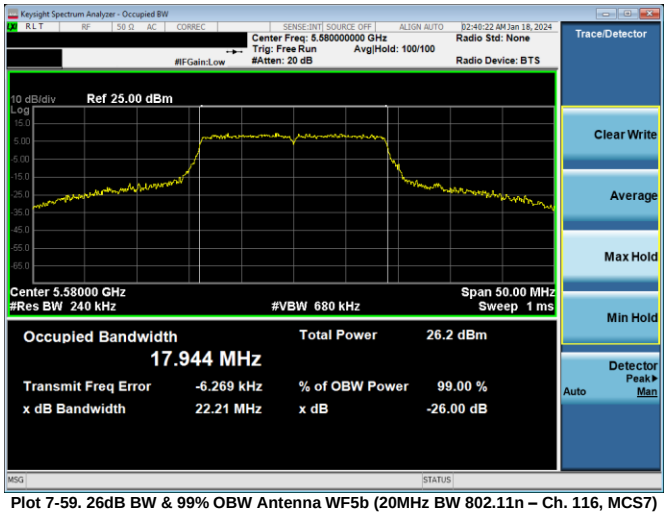
Plot 7-60. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11ax(SU) – Ch. 116, MCS11)



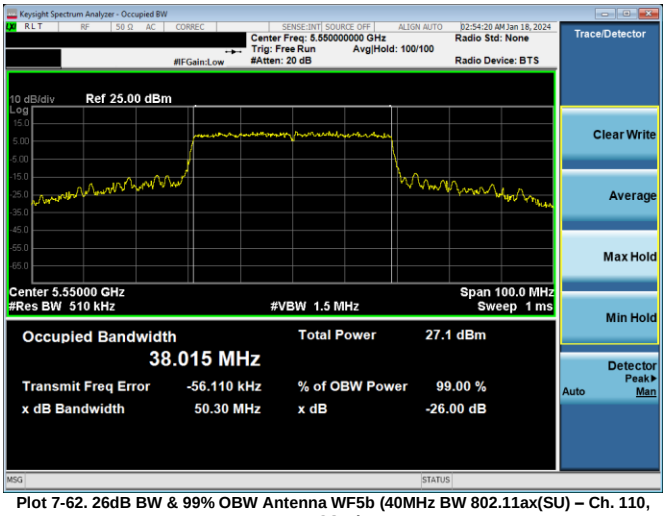
Plot 7-58. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ax(SU) – Ch. 58, MCS11)



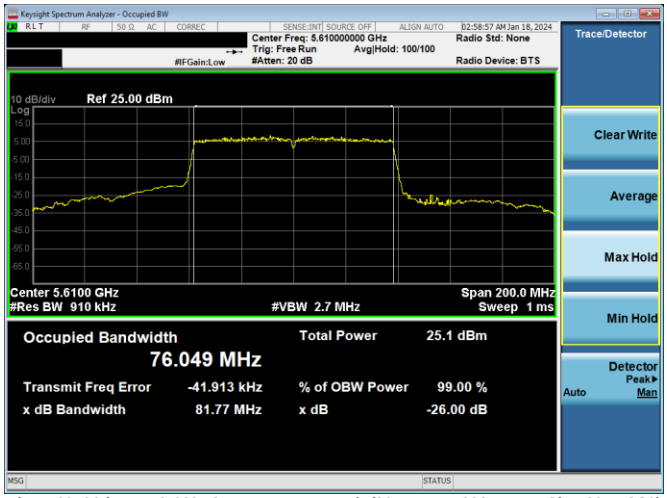
Plot 7-61. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11n – Ch. 110) , MCS7)



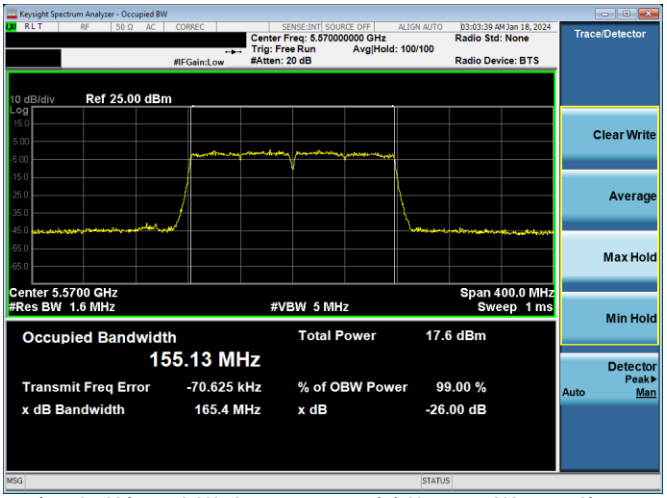
Plot 7-59. 26dB BW & 99% OBW Antenna WF5b (20MHz BW 802.11n – Ch. 116, MCS7)



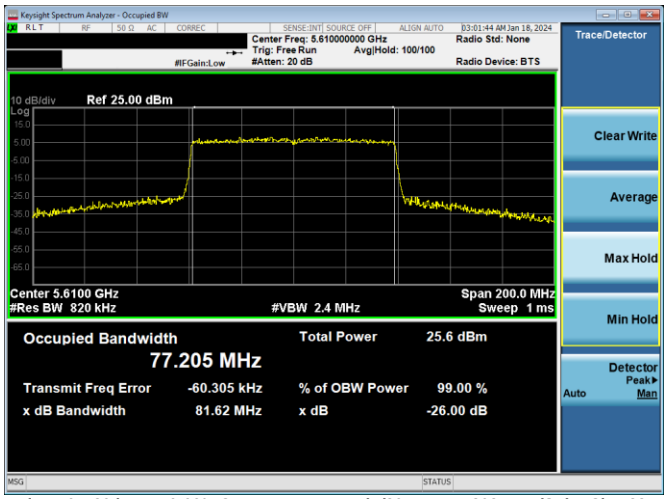
Plot 7-62. 26dB BW & 99% OBW Antenna WF5b (40MHz BW 802.11ax(SU) – Ch. 110, MCS11)



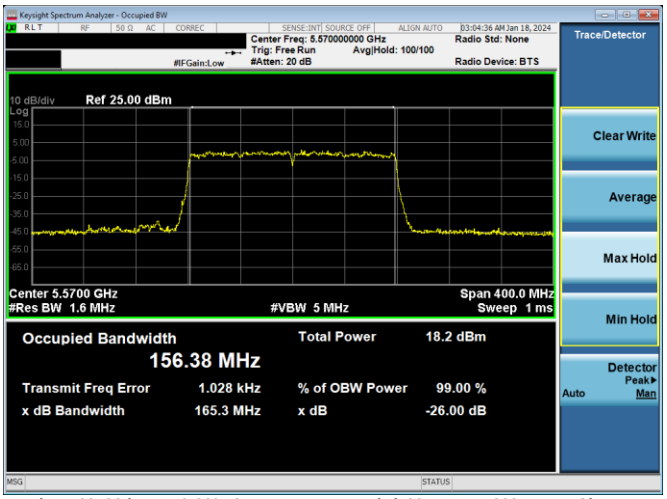
Plot 7-63. 26dB BW & 99% OBW Antenna WF5b (80MHz BW 802.11ac – Ch. 122, MCS9)



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)

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)	17.81	21.50
	5200	40	n (20MHz)	19.5/21.7 (MCS2)	17.72	20.92
	5240	48	n (20MHz)	19.5/21.7 (MCS2)	17.72	20.92
	5180	36	ax (SU) (20MHz)	24/25.8 (MCS2)	19.08	21.85
	5200	40	ax (SU) (20MHz)	24/25.8 (MCS2)	19.01	21.11
	5240	48	ax (SU) (20MHz)	24/25.8 (MCS2)	19.06	21.27
	5190	38	n (40MHz)	40.5/45 (MCS2)	36.45	41.82
	5230	46	n (40MHz)	40.5/45 (MCS2)	36.29	40.95
	5190	38	ax (SU) (40MHz)	49/51.6 (MCS2)	38.02	45.34
	5230	46	ax (SU) (40MHz)	49/51.6 (MCS2)	37.95	41.58
	5210	42	ac (80MHz)	87.8/97.5 (MCS2)	75.54	82.94
	5210	42	ax (SU) (80MHz)	102/108.1 (MCS2)	77.11	85.75
Band 1/2	5250	50	ac (160MHz)	175.5/195 (MCS2)	154.63	164.37
	5250	50	ax (SU) (160MHz)	204.2/216.2 (MCS2)	156.69	164.83
Band 2A	5260	52	n (20MHz)	19.5/21.7 (MCS2)	17.72	20.94
	5300	60	n (20MHz)	19.5/21.7 (MCS2)	17.72	20.85
	5320	64	n (20MHz)	19.5/21.7 (MCS2)	17.82	21.54
	5260	52	ax (SU) (20MHz)	24/25.8 (MCS2)	19.06	21.17
	5300	60	ax (SU) (20MHz)	24/25.8 (MCS2)	19.05	21.21
	5320	64	ax (SU) (20MHz)	24/25.8 (MCS2)	19.10	22.25
	5270	54	n (40MHz)	40.5/45 (MCS2)	36.26	40.97
	5310	62	n (40MHz)	40.5/45 (MCS2)	36.41	42.20
	5270	54	ax (SU) (40MHz)	49/51.6 (MCS2)	37.96	41.57
	5310	62	ax (SU) (40MHz)	49/51.6 (MCS2)	38.09	43.10
	5290	58	ac (80MHz)	87.8/97.5 (MCS2)	75.62	82.40
	5290	58	ax (SU) (80MHz)	102/108.1 (MCS2)	77.29	82.65
Band 2C	5500	100	n (20MHz)	19.5/21.7 (MCS2)	17.80	21.42
	5580	116	n (20MHz)	19.5/21.7 (MCS2)	17.74	20.94
	5720	144	n (20MHz)	19.5/21.7 (MCS2)	17.71	20.88
	5500	100	ax (SU) (20MHz)	24/25.8 (MCS2)	19.13	24.23
	5580	116	ax (SU) (20MHz)	24/25.8 (MCS2)	19.06	21.07
	5720	144	ax (SU) (20MHz)	24/25.8 (MCS2)	19.05	21.29
	5510	102	n (40MHz)	40.5/45 (MCS2)	36.41	44.61
	5550	110	n (40MHz)	40.5/45 (MCS2)	36.26	41.22
	5710	142	n (40MHz)	40.5/45 (MCS2)	36.33	41.09
	5510	102	ax (SU) (40MHz)	49/51.6 (MCS2)	38.11	47.48
	5550	110	ax (SU) (40MHz)	49/51.6 (MCS2)	37.94	41.47
	5710	142	ax (SU) (40MHz)	49/51.6 (MCS2)	37.94	41.69
	5530	106	ac (80MHz)	87.8/97.5 (MCS2)	75.74	86.80
	5610*	122	ac (80MHz)	87.8/97.5 (MCS2)	75.74	86.06
	5690	138	ac (80MHz)	87.8/97.5 (MCS2)	75.46	80.96
	5530	106	ax (SU) (80MHz)	102/108.1 (MCS2)	77.30	90.88
	5610*	122	ax (SU) (80MHz)	102/108.1 (MCS2)	77.13	85.88
	5690	138	ax (SU) (80MHz)	102/108.1 (MCS2)	77.10	81.72
	5570*	114	ac (160MHz)	175.5/195 (MCS2)	154.27	164.12
	5570*	114	ax (SU) (80MHz)	204.2/216.2 (MCS2)	156.47	165.18

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

*TDWR channel is not supported for ISED (denoted by a * next to the frequency)

	Frequency [MHz]	Channel	802.11 MODE	Data Rate [Mbps]	Measured 99% Occupied Bandwidth [MHz]	Measured 26dB Bandwidth [MHz]
Band 1	5180	36	n (20MHz)	81/90 (MCS4)	17.77	21.03
	5200	40	n (20MHz)	81/90 (MCS4)	17.75	20.89
	5240	48	n (20MHz)	81/90 (MCS4)	17.72	20.92
	5180	36	ax (SU) (20MHz)	49/51.6 (MCS4)	19.06	23.96
	5200	40	ax (SU) (20MHz)	49/51.6 (MCS4)	19.07	21.32
	5240	48	ax (SU) (20MHz)	49/51.6 (MCS4)	19.03	21.20
	5190	38	n (40MHz)	81/90 (MCS4)	36.41	41.08
	5230	46	n (40MHz)	81/90 (MCS4)	36.27	41.23
	5190	38	ax (SU) (40MHz)	98/103.2 (MCS4)	38.13	47.63
	5230	46	ax (SU) (40MHz)	98/103.2 (MCS4)	37.95	41.85
	5210	42	ac (80MHz)	175.5/195 (MCS4)	75.44	80.66
	5210	42	ax (SU) (80MHz)	49/51.6 (MCS4)	77.15	81.80
Band 1/2	5250	50	ac (160MHz)	351/390 (MCS4)	154.54	164.28
	5250	50	ax (SU) (160MHz)	408.3/432.4 (MCS4)	156.44	164.34
Band 2A	5260	52	n (20MHz)	81/90 (MCS4)	17.71	20.81
	5300	60	n (20MHz)	81/90 (MCS4)	17.74	20.89
	5320	64	n (20MHz)	81/90 (MCS4)	17.77	20.85
	5260	52	ax (SU) (20MHz)	49/51.6 (MCS4)	19.04	21.31
	5300	60	ax (SU) (20MHz)	49/51.6 (MCS4)	19.06	21.07
	5320	64	ax (SU) (20MHz)	49/51.6 (MCS4)	19.09	21.23
	5270	54	n (40MHz)	81/90 (MCS4)	36.37	40.74
	5310	62	n (40MHz)	81/90 (MCS4)	36.39	41.04
	5270	54	ax (SU) (40MHz)	98/103.2 (MCS4)	37.95	41.65
	5310	62	ax (SU) (40MHz)	98/103.2 (MCS4)	38.15	57.65
	5290	58	ac (80MHz)	175.5/195 (MCS4)	75.50	81.47
	5290	58	ax (SU) (80MHz)	49/51.6 (MCS4)	77.24	81.80
Band 2C	5500	100	n (20MHz)	81/90 (MCS4)	17.75	20.75
	5580	116	n (20MHz)	81/90 (MCS4)	17.70	20.76
	5720	144	n (20MHz)	81/90 (MCS4)	17.71	20.43
	5500	100	ax (SU) (20MHz)	49/51.6 (MCS4)	19.06	21.28
	5580	116	ax (SU) (20MHz)	49/51.6 (MCS4)	19.01	21.25
	5720	144	ax (SU) (20MHz)	49/51.6 (MCS4)	19.03	21.20
	5510	102	n (40MHz)	81/90 (MCS4)	36.33	41.14
	5550	110	n (40MHz)	81/90 (MCS4)	36.38	40.91
	5710	142	n (40MHz)	81/90 (MCS4)	36.43	40.96
	5510	102	ax (SU) (40MHz)	98/103.2 (MCS4)	38.04	47.98
	5550	110	ax (SU) (40MHz)	98/103.2 (MCS4)	37.93	41.32
	5590	118	ax (SU) (40MHz)	98/103.2 (MCS4)	37.96	41.55
	5530	106	ac (80MHz)	175.5/195 (MCS4)	75.55	81.22
	5610*	122	ac (80MHz)	175.5/195 (MCS4)	75.56	81.22
	5690	138	ac (80MHz)	175.5/195 (MCS4)	75.55	80.98
	5530	106	ax (SU) (80MHz)	49/51.6 (MCS4)	77.34	81.95
	5610*	122	ax (SU) (80MHz)	49/51.6 (MCS4)	77.35	81.83
	5690	138	ax (SU) (80MHz)	49/51.6 (MCS4)	77.26	81.74
	5570*	114	ac (160MHz)	351/390 (MCS4)	154.42	164.30
	5570*	114	ax (SU) (80MHz)	408.3/432.4 (MCS4)	156.27	165.12

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

*TDWR channel is not supported for ISED (denoted by a * next to the frequency)

	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)	17.81	21.12
	5200	40	n (20MHz)	65/72.2 (MCS7)	17.89	20.95
	5240	48	n (20MHz)	65/72.2 (MCS7)	17.86	21.26
	5180	36	ax (SU) (20MHz)	135/143.4 (MCS11)	19.02	21.24
	5200	40	ax (SU) (20MHz)	135/143.4 (MCS11)	19.08	21.36
	5240	48	ax (SU) (20MHz)	135/143.4 (MCS11)	19.08	21.20
	5190	38	n (40MHz)	135/150 (MCS7)	36.45	41.38
	5230	46	n (40MHz)	135/150 (MCS7)	36.63	41.46
	5190	38	ax (SU) (40MHz)	135/143.4 (MCS11)	37.89	41.45
	5230	46	ax (SU) (40MHz)	135/143.4 (MCS11)	38.01	50.10
	5210	42	ac (80MHz)	390/433.3 (MCS9)	75.77	81.33
	5210	42	ax (SU) (80MHz)	567/600.5 (MCS11)	77.04	81.30
Band 1/2	5250	50	ac (160MHz)	780/866.7 (MCS9)	155.12	165.00
	5250	50	ax (SU) (160MHz)	1134.3/1201 (MCS11)	156.15	164.65
Band 2A	5260	52	n (20MHz)	65/72.2 (MCS7)	17.86	21.13
	5300	60	n (20MHz)	65/72.2 (MCS7)	17.87	21.16
	5320	64	n (20MHz)	65/72.2 (MCS7)	17.84	21.04
	5260	52	ax (SU) (20MHz)	135/143.4 (MCS11)	19.11	21.41
	5300	60	ax (SU) (20MHz)	135/143.4 (MCS11)	19.08	22.66
	5320	64	ax (SU) (20MHz)	135/143.4 (MCS11)	19.07	21.18
	5270	54	n (40MHz)	135/150 (MCS7)	37.02	54.38
	5310	62	n (40MHz)	135/150 (MCS7)	36.53	41.40
	5270	54	ax (SU) (40MHz)	135/143.4 (MCS11)	38.08	50.09
	5310	62	ax (SU) (40MHz)	135/143.4 (MCS11)	37.89	41.31
	5290	58	ac (80MHz)	390/433.3 (MCS9)	75.81	81.39
	5290	58	ax (SU) (80MHz)	567/600.5 (MCS11)	77.15	81.54
Band 2C	5500	100	n (20MHz)	65/72.2 (MCS7)	17.82	20.97
	5580	116	n (20MHz)	65/72.2 (MCS7)	17.86	21.05
	5720	144	n (20MHz)	65/72.2 (MCS7)	17.85	21.23
	5500	100	ax (SU) (20MHz)	135/143.4 (MCS11)	19.08	21.19
	5580	116	ax (SU) (20MHz)	135/143.4 (MCS11)	19.10	21.26
	5720	144	ax (SU) (20MHz)	135/143.4 (MCS11)	19.06	21.30
	5510	102	n (40MHz)	135/150 (MCS7)	36.46	41.21
	5550	110	n (40MHz)	135/150 (MCS7)	36.56	41.39
	5710	142	n (40MHz)	135/150 (MCS7)	36.73	41.45
	5510	102	ax (SU) (40MHz)	135/143.4 (MCS11)	37.90	41.65
	5550	110	ax (SU) (40MHz)	135/143.4 (MCS11)	37.95	41.38
	5710	142	ax (SU) (40MHz)	135/143.4 (MCS11)	38.01	50.23
	5530	106	ac (80MHz)	390/433.3 (MCS9)	75.97	81.31
	5610*	122	ac (80MHz)	390/433.3 (MCS9)	75.86	81.26
	5690	138	ac (80MHz)	390/433.3 (MCS9)	76.03	82.79
	5530	106	ax (SU) (80MHz)	567/600.5 (MCS11)	77.20	82.17
	5610*	122	ax (SU) (80MHz)	567/600.5 (MCS11)	77.19	81.62
	5690	138	ax (SU) (80MHz)	567/600.5 (MCS11)	77.23	81.78
	5570*	114	ac (160MHz)	780/866.7 (MCS9)	155.06	165.59
	5570*	114	ax (SU) (80MHz)	1134.3/1201 (MCS11)	156.08	165.33

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

*TDWR channel is not supported for ISED (denoted by a * next to the frequency)