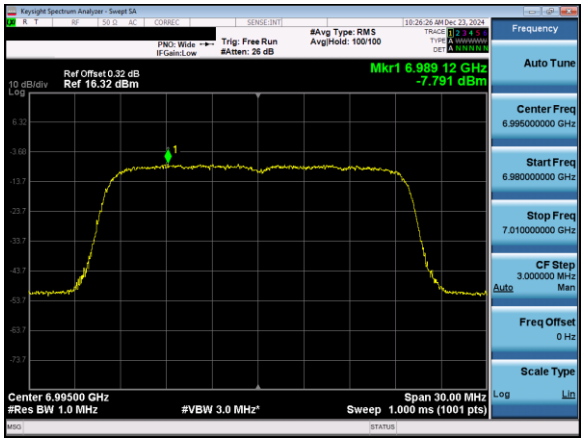
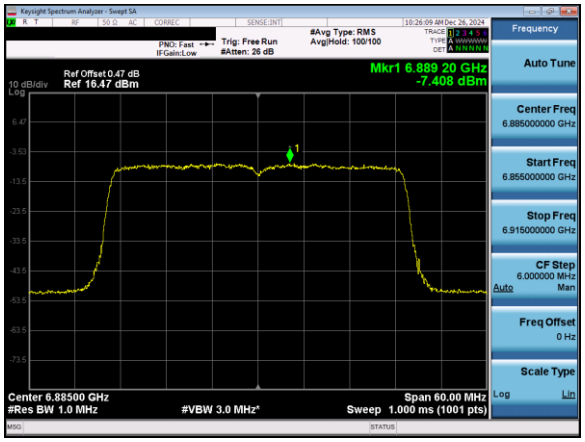
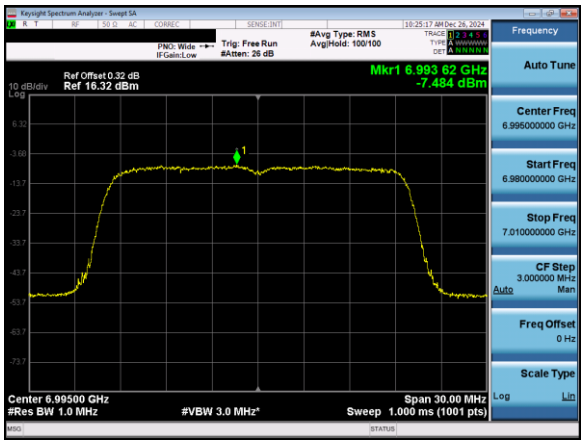


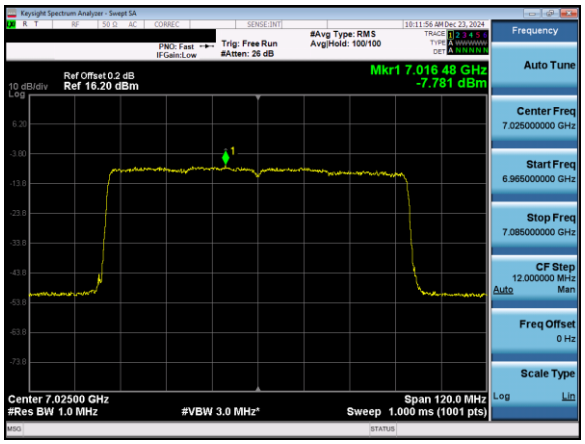
Plot 7-217. Power Spectral Density Plot SDM Primary Antenna 5T (20MHz 802.11ax (UNII Band 8) – Ch. 209)



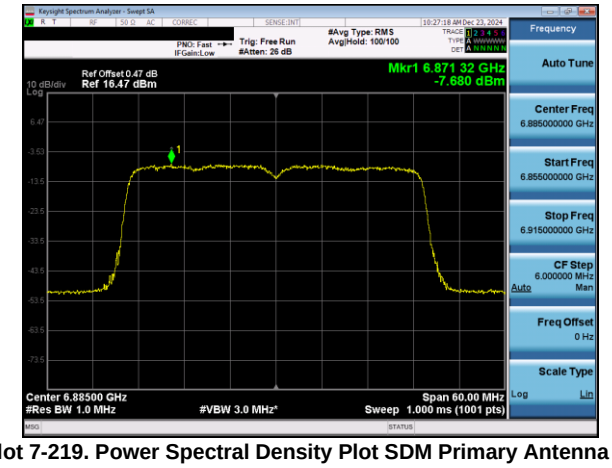
Plot 7-220. Power Spectral Density Plot SDM Primary Antenna 3b (40MHz 802.11ax (UNII Band 8) – Ch. 187)



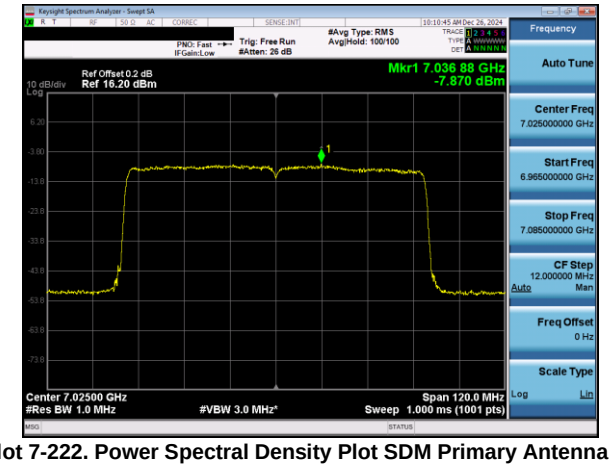
Plot 7-218. Power Spectral Density Plot SDM Primary Antenna 3b (20MHz 802.11ax (UNII Band 8) – Ch. 209)



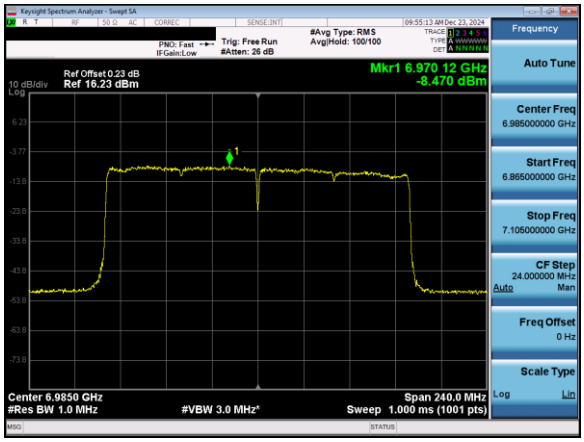
Plot 7-221. Power Spectral Density Plot SDM Primary Antenna 5T (80MHz 802.11ax (UNII Band 8) – Ch. 215)



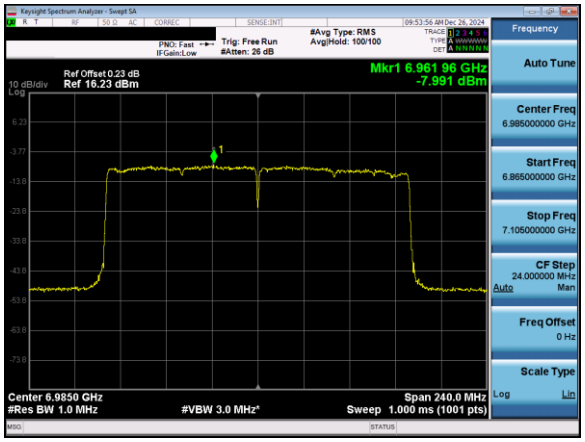
Plot 7-219. Power Spectral Density Plot SDM Primary Antenna 5T (40MHz 802.11ax (UNII Band 8) – Ch. 187)



Plot 7-222. Power Spectral Density Plot SDM Primary Antenna 3b (80MHz 802.11ax (UNII Band 8) – Ch. 215)



Plot 7-223. Power Spectral Density Plot SDM Primary Antenna 5T (160MHz 802.11ax (UNII Band 8) – Ch. 207)

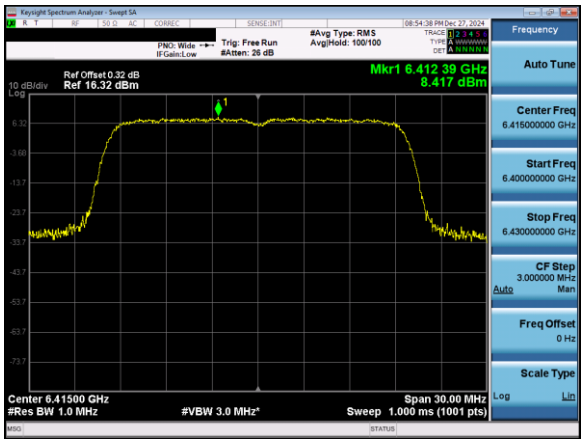


Plot 7-224. Power Spectral Density Plot SDM Primary Antenna 3b (160MHz 802.11ax (UNII Band 8) – Ch. 207)

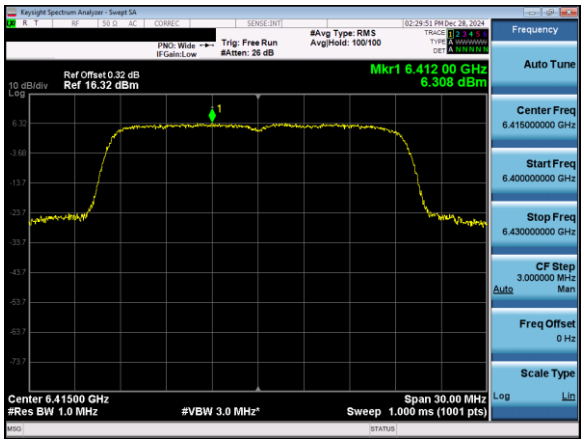
7.4.9 CDD/SDM Diversity Power Spectral Density Measurements – SP

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Mode	Antenna 5T Power Density [dBm/MHz]	Antenna 1b Power Density [dBm/MHz]	Summed MIMO Power Density [dBm/MHz]	Directional Gain [dBi]	e.i.r.p Density [dBm/MHz]	Max EIRP Density [dBm/MHz]	Margin [dB]
Band 5	5955	1	ax (20MHz)	270/286.8 (MCS11)	SDM	8.07	6.43	10.34	2.12	12.45	17	-4.55
	6175	45	ax (20MHz)	270/286.8 (MCS11)	CDD	8.26	6.41	10.44	4.32	14.77	17	-2.23
	6415	93	ax (20MHz)	270/286.8 (MCS11)	CDD	8.42	6.31	10.50	4.56	15.06	17	-1.94
	5965	3	ax (40MHz)	196/206.5 (MCS4)	CDD	5.43	3.33	7.52	4.90	12.42	17	-4.58
	6165	43	ax (40MHz)	540/573.5 (MCS11)	CDD	5.39	3.70	7.64	4.32	11.96	17	-5.04
	6405	91	ax (40MHz)	196/206.5 (MCS4)	CDD	5.54	3.76	7.75	4.56	12.31	17	-4.69
	5985	7	ax (80MHz)	1134/1201 (MCS11)	CDD	2.68	0.56	4.76	4.90	9.66	17	-7.34
	6145	39	ax (80MHz)	1134/1201 (MCS11)	CDD	2.85	0.85	4.97	4.32	9.30	17	-7.70
	6385	87	ax (80MHz)	408/432.4 (MCS4)	CDD	2.71	1.01	4.95	4.56	9.51	17	-7.49
	6025	15	ax (160MHz)	735/864.7 (MCS4)	CDD	-0.11	-1.76	2.15	4.90	7.05	17	-9.95
	6181	47	ax (160MHz)	2041.7/2402 (MCS11)	CDD	-0.19	-1.76	2.10	4.32	6.43	17	-10.57
	6345	79	ax (160MHz)	2041.7/2402 (MCS11)	CDD	-0.01	-1.82	2.19	4.56	6.75	17	-10.25
Band 6	6435	97	ax (20MHz)	98/103.2 (MCS4)	CDD	5.30	3.23	7.40	4.83	12.22	17	-4.78
	6475	105	ax (20MHz)	270/286.8 (MCS11)	CDD	5.02	3.46	7.32	4.83	12.15	17	-4.85
	6515	113	ax (20MHz)	270/286.8 (MCS11)	CDD	5.34	3.51	7.53	4.83	12.36	17	-4.64
	6445	99	ax (40MHz)	540/573.5 (MCS11)	CDD	3.24	1.19	5.34	4.83	10.17	17	-6.83
	6485	107	ax (40MHz)	540/573.5 (MCS11)	CDD	3.13	1.34	5.33	4.83	10.16	17	-6.84
	6525	115	ax (40MHz)	540/573.5 (MCS11)	CDD	3.33	1.47	5.51	4.83	10.34	17	-6.66
	6465	103	ax (80MHz)	408/432.4 (MCS4)	CDD	0.39	-1.64	2.50	4.83	7.33	17	-9.67
	6505	111	ax (160MHz)	2041.7/2402 (MCS11)	CDD	-2.76	-5.39	-0.87	4.83	3.96	17	-13.04
Band 7	6535	117	ax (20MHz)	270/286.8 (MCS11)	CDD	7.68	5.58	9.77	5.40	15.17	17	-1.83
	6695	149	ax (20MHz)	270/286.8 (MCS11)	CDD	7.75	5.77	9.88	5.40	15.29	17	-1.71
	6875	181	ax (20MHz)	270/286.8 (MCS11)	CDD	7.68	6.14	9.99	5.40	15.39	17	-1.61
	6565	123	ax (40MHz)	540/573.5 (MCS11)	CDD	4.96	2.81	7.03	5.40	12.43	17	-4.57
	6725	155	ax (40MHz)	540/573.5 (MCS11)	CDD	5.02	2.84	7.08	5.40	12.48	17	-4.52
	6845	179	ax (40MHz)	540/573.5 (MCS11)	CDD	5.07	3.25	7.26	5.40	12.67	17	-4.33
	6545	135	ax (80MHz)	1134/1201 (MCS11)	CDD	1.69	0.05	3.96	5.40	9.36	17	-7.64
	6705	151	ax (80MHz)	408/432.4 (MCS4)	CDD	1.86	0.06	4.06	5.40	9.46	17	-7.54
	6865	167	ax (80MHz)	408/432.4 (MCS4)	CDD	2.17	0.07	4.26	5.40	9.66	17	-7.34
	6665	143	ax (160MHz)	2041.7/2402 (MCS11)	CDD	-1.07	-2.83	1.15	5.40	6.55	17	-10.45

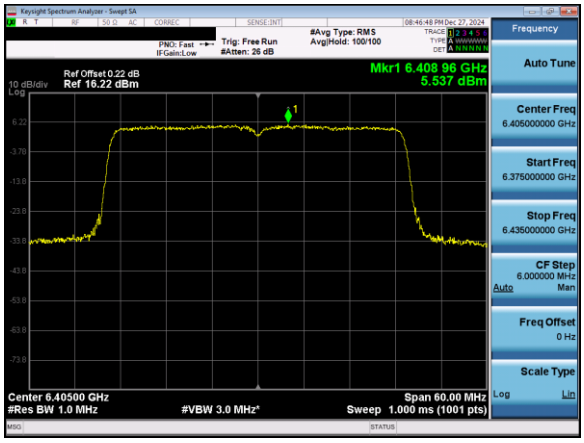
Table 7-56. Power Spectral Density Measurements CDD/SDM Diversity



Plot 7-225. Power Spectral Density Plot CDD Diversity Antenna 5T (20MHz 802.11ax (UNII Band 5) – Ch. 93)



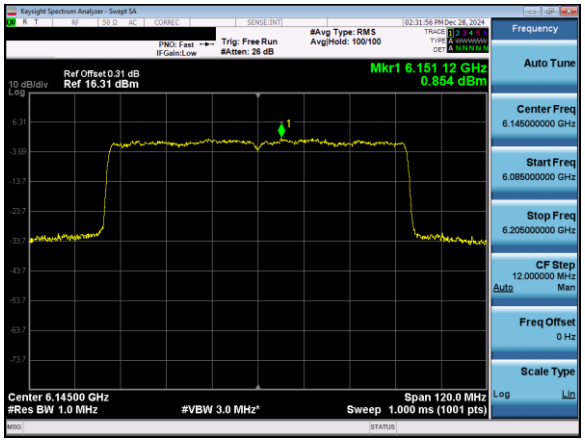
Plot 7-226. Power Spectral Density Plot CDD Diversity Antenna 1b (20MHz 802.11ax (UNII Band 5) – Ch. 93)



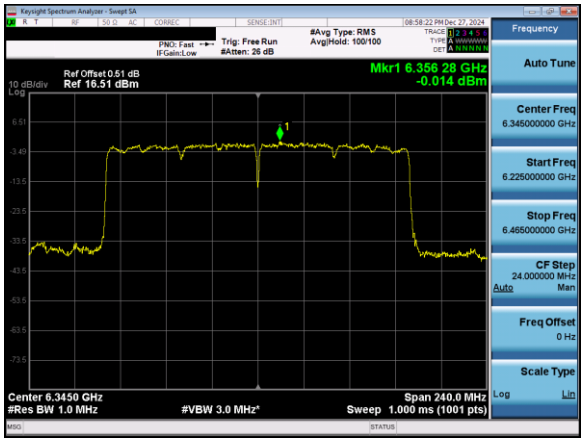
Plot 7-227. Power Spectral Density Plot CDD Diversity Antenna 5T (40MHz 802.11ax (UNII Band 5) – Ch. 91)

Plot 7-228. Power Spectral Density Plot CDD Diversity Antenna 1b (40MHz 802.11ax (UNII Band 5) – Ch. 91)

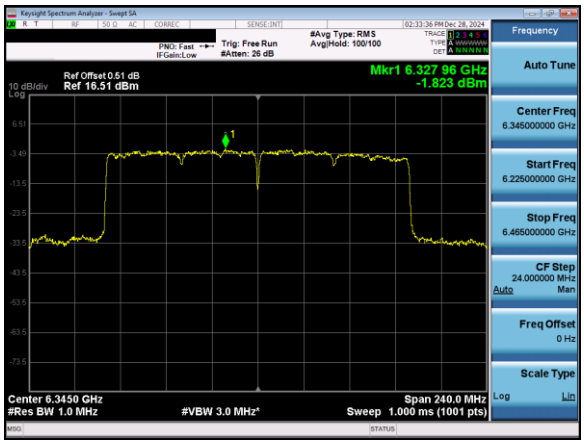
Plot 7-229. Power Spectral Density Plot CDD Diversity Antenna 5T (80MHz 802.11ax (UNII Band 5) – Ch. 39)



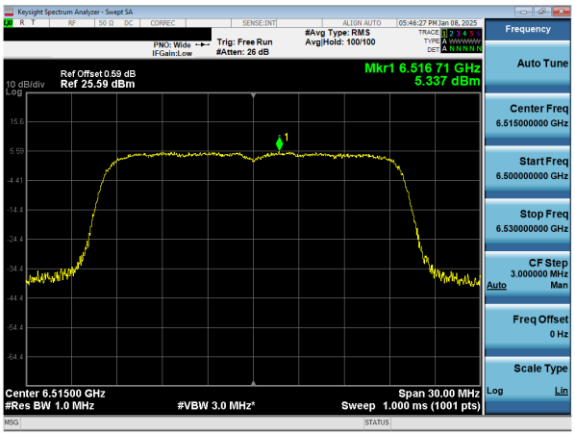
Plot 7-230. Power Spectral Density Plot CDD Diversity Antenna 1b (80MHz 802.11ax (UNII Band 5) – Ch. 39)



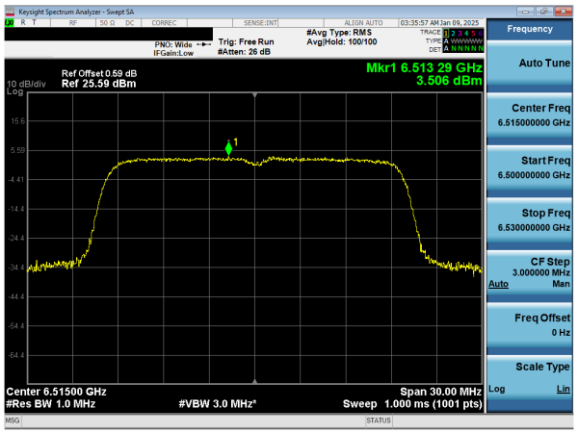
Plot 7-231. Power Spectral Density Plot CDD Diversity Antenna 5T (160MHz 802.11ax (UNII Band 5) – Ch. 79)



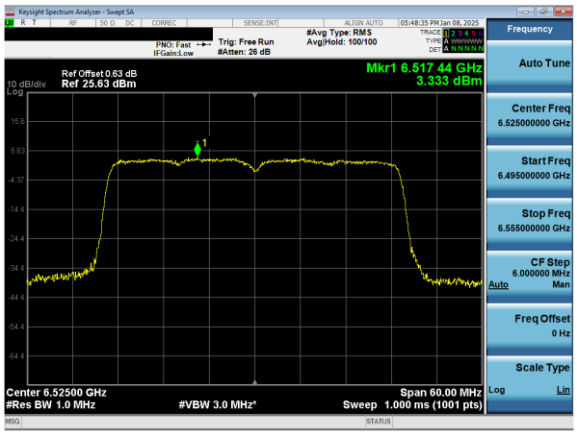
Plot 7-232. Power Spectral Density Plot CDD Diversity Antenna 1b (160MHz 802.11ax (UNII Band 5) – Ch. 79)



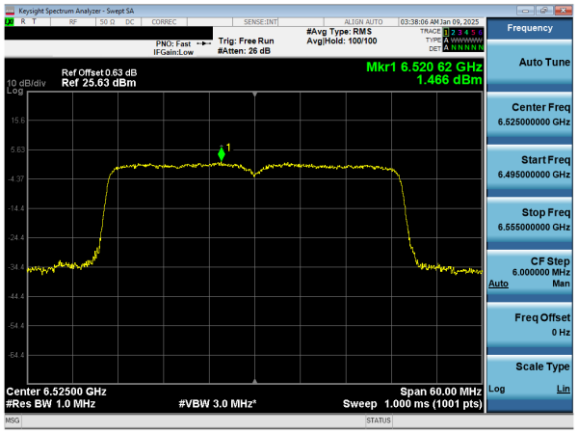
Plot 7-233. Power Spectral Density Plot CDD Diversity Antenna 5T (20MHz 802.11ax (UNII Band 6) – Ch. 113)



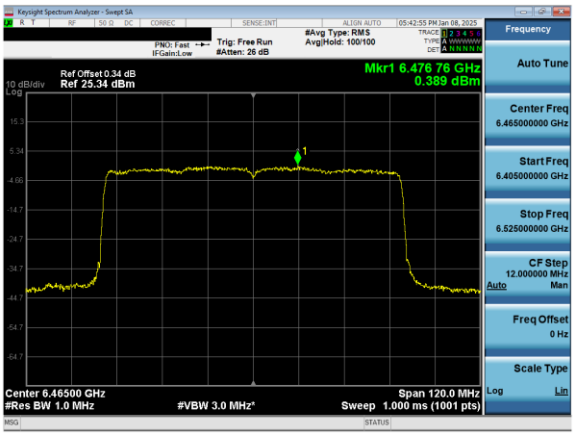
Plot 7-234. Power Spectral Density Plot CDD Diversity Antenna 1b (20MHz 802.11ax (UNII Band 6) – Ch. 113)



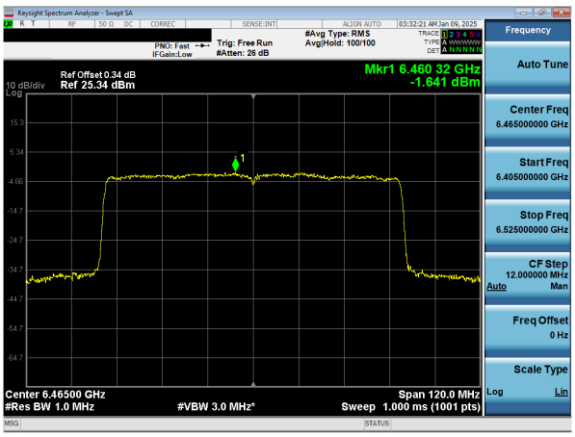
Plot 7-235. Power Spectral Density Plot CDD Diversity Antenna 5T (40MHz 802.11ax (UNII Band 6) – Ch. 115)



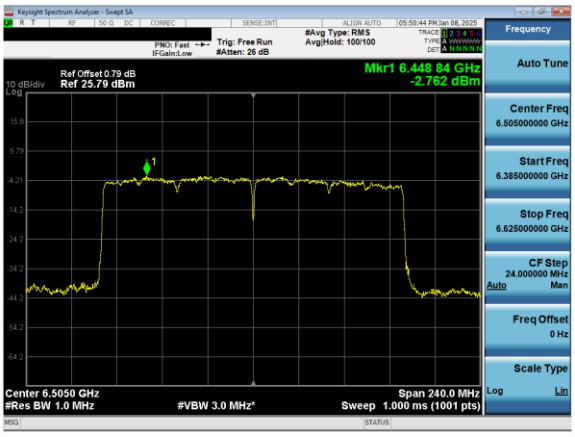
Plot 7-236. Power Spectral Density Plot CDD Diversity Antenna 1b (40MHz 802.11ax (UNII Band 6) – Ch. 115)



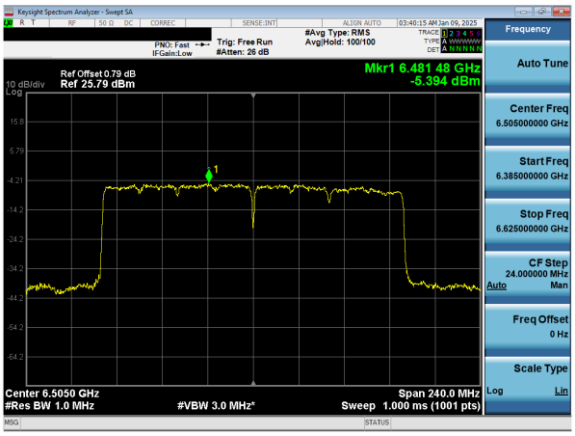
Plot 7-237. Power Spectral Density Plot CDD Diversity Antenna 5T (80MHz 802.11ax (UNII Band 6) – Ch. 103)



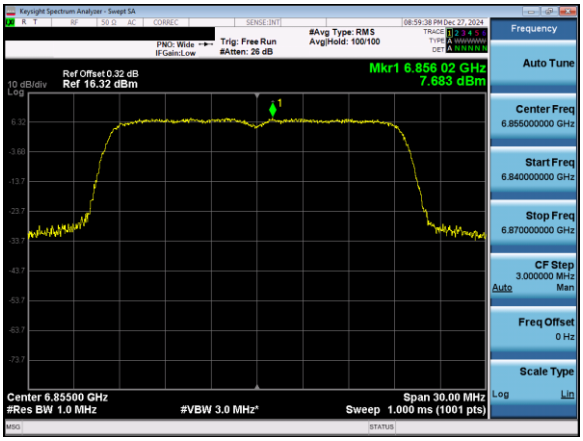
Plot 7-238. Power Spectral Density Plot CDD Diversity Antenna 1b (80MHz 802.11ax (UNII Band 6) – Ch. 103)



Plot 7-239. Power Spectral Density Plot CDD Diversity Antenna 5T (160MHz 802.11ax (UNII Band 6) – Ch. 111)

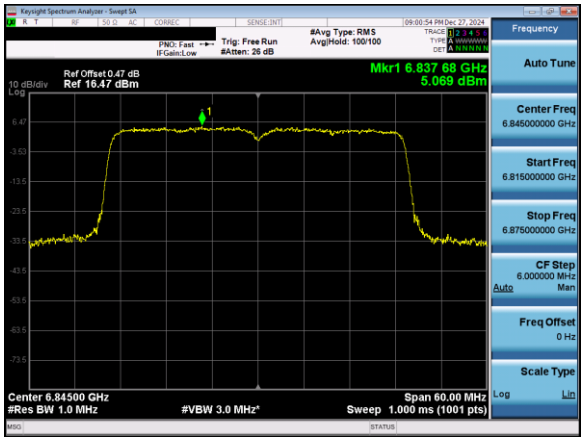


Plot 7-240. Power Spectral Density Plot CDD Diversity Antenna 1b (160MHz 802.11ax (UNII Band 6) – Ch. 111)



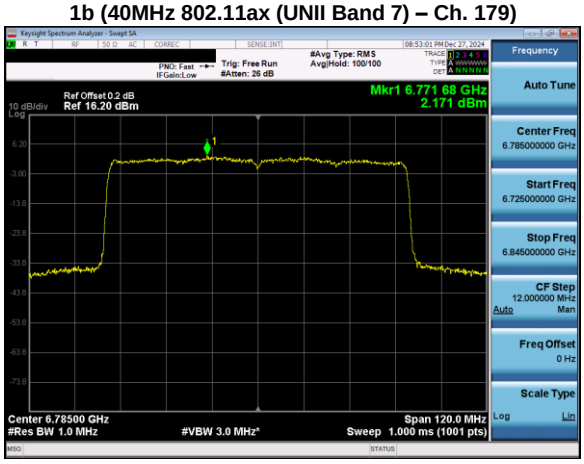
Plot 7-241. Power Spectral Density Plot CDD Diversity Antenna 5T (20MHz 802.11ax (UNII Band 7) – Ch. 181)

Plot 7-242. Power Spectral Density Plot CDD Diversity Antenna 1b (20MHz 802.11ax (UNII Band 7) – Ch. 181)

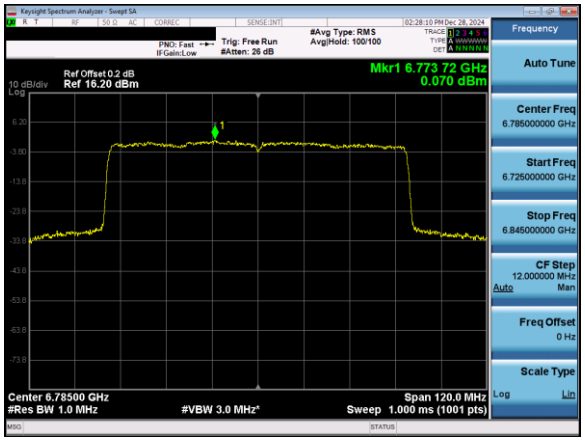


Plot 7-243. Power Spectral Density Plot CDD Diversity Antenna 5T (40MHz 802.11ax (UNII Band 7) – Ch. 179)

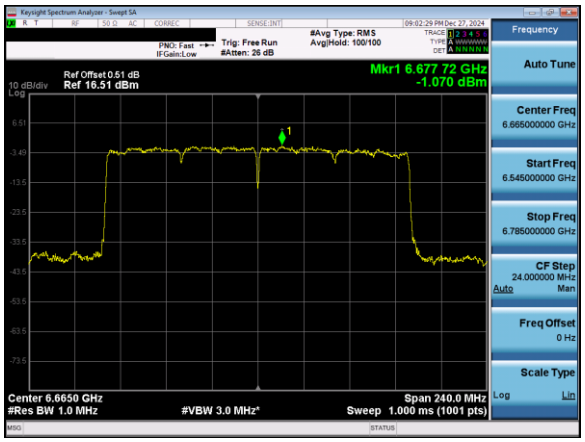
Plot 7-244. Power Spectral Density Plot CDD Diversity Antenna 1b (40MHz 802.11ax (UNII Band 7) – Ch. 179)



Plot 7-245. Power Spectral Density Plot CDD Diversity Antenna 5T (80MHz 802.11ax (UNII Band 7) – Ch. 167)



Plot 7-246. Power Spectral Density Plot CDD Diversity Antenna 1b (80MHz 802.11ax (UNII Band 7) – Ch. 167)



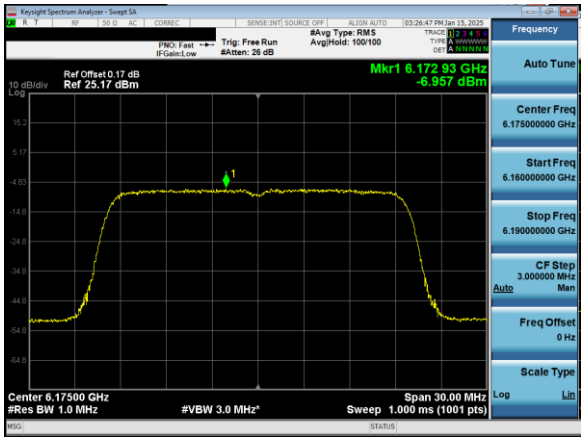
Plot 7-247. Power Spectral Density Plot CDD Diversity Antenna 5T (160MHz 802.11ax (UNII Band 7) – Ch. 143)

Plot 7-248. Power Spectral Density Plot CDD Diversity Antenna 1b (160MHz 802.11ax (UNII Band 7) – Ch. 143)

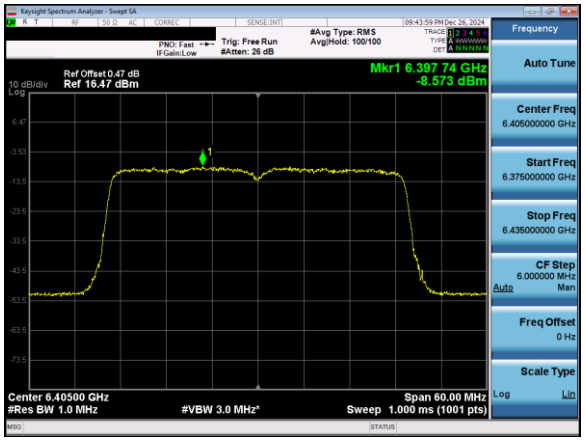
7.4.10 SDM Diversity Power Spectral Density Measurements – LPI

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Mode	Antenna 5T Power Density [dBm/MHz]	Antenna 1b Power Density [dBm/MHz]	Summed MIMO Power Density [dBm/MHz]	Directional Gain [dBi]	e.i.r.p Density [dBm/MHz]	Max EIRP Density [dBm/MHz]	Margin [dB]
Band 5	5955	1	ax (20MHz)	270/286.8 (MCS11)	SDM	-7.14	-9.24	-5.05	2.12	-2.93	-1	-1.93
	6175	45	ax (20MHz)	98/103.2 (MCS4)	SDM	-6.28	-8.67	-4.30	1.56	-2.74	-1	-1.74
	6415	93	ax (20MHz)	98/103.2 (MCS4)	SDM	-6.70	-8.70	-4.58	1.79	-2.79	-1	-1.79
	5965	3	ax (40MHz)	540/573.5 (MCS11)	SDM	-7.30	-8.82	-4.99	2.12	-2.87	-1	-1.87
	6165	43	ax (40MHz)	540/573.5 (MCS11)	SDM	-6.90	-8.51	-4.62	1.56	-3.06	-1	-2.06
	6405	91	ax (40MHz)	540/573.5 (MCS11)	SDM	-6.67	-8.57	-4.50	1.79	-2.72	-1	-1.72
	5985	7	ax (80MHz)	204/216.2 (MCS2)	SDM	-7.60	-9.36	-5.38	2.12	-3.26	-1	-2.26
	6145	39	ax (80MHz)	1134/1201 (MCS11)	SDM	-7.19	-9.05	-5.01	1.56	-3.45	-1	-2.45
	6385	87	ax (80MHz)	1134/1201 (MCS11)	SDM	-6.84	-8.56	-4.60	1.79	-2.82	-1	-1.82
	6025	15	ax (160MHz)	2041.7/2402 (MCS11)	SDM	-7.47	-9.41	-5.32	2.12	-3.21	-1	-2.21
	6185	47	ax (160MHz)	2041.7/2402 (MCS11)	SDM	-7.14	-8.68	-4.83	1.56	-3.27	-1	-2.27
	6345	79	ax (160MHz)	2041.7/2402 (MCS11)	SDM	-7.62	-9.22	-5.34	1.79	-3.55	-1	-2.55
Band 6	6435	97	ax (20MHz)	270/286.8 (MCS11)	SDM	-7.37	-8.84	-5.03	2.16	-2.87	-1	-1.87
	6475	105	ax (20MHz)	270/286.8 (MCS11)	SDM	-7.37	-8.87	-5.04	2.16	-2.88	-1	-1.88
	6515	113	ax (20MHz)	270/286.8 (MCS11)	SDM	-7.13	-8.70	-4.83	2.16	-2.67	-1	-1.67
	6445	99	ax (40MHz)	196/206.5 (MCS4)	SDM	-7.07	-9.09	-4.95	2.16	-2.79	-1	-1.79
	6485	107	ax (40MHz)	540/573.5 (MCS11)	SDM	-7.32	-8.78	-4.98	2.16	-2.82	-1	-1.82
	6525	115	ax (40MHz)	540/573.5 (MCS11)	SDM	-7.84	-8.82	-5.29	2.16	-3.13	-1	-2.13
	6465	103	ax (80MHz)	408/432.4 (MCS4)	SDM	-7.47	-9.31	-5.28	2.16	-3.12	-1	-2.12
	6505	111	ax (160MHz)	2041.7/2402 (MCS11)	SDM	-8.08	-9.88	-5.88	2.16	-3.72	-1	-2.72
Band 7	6535	117	ax (20MHz)	270/286.8 (MCS11)	SDM	-7.78	-9.26	-5.45	2.71	-2.74	-1	-1.74
	6695	149	ax (20MHz)	98/103.2 (MCS4)	SDM	-7.51	-9.20	-5.26	2.71	-2.56	-1	-1.56
	6875	185	ax (20MHz)	270/286.8 (MCS11)	SDM	-7.71	-9.32	-5.43	2.71	-2.72	-1	-1.72
	6565	123	ax (40MHz)	540/573.5 (MCS11)	SDM	-7.68	-9.28	-5.40	2.71	-2.69	-1	-1.69
	6725	155	ax (40MHz)	540/573.5 (MCS11)	SDM	-7.47	-9.06	-5.18	2.71	-2.47	-1	-1.47
	6845	179	ax (40MHz)	540/573.5 (MCS11)	SDM	-7.61	-8.71	-5.12	2.71	-2.41	-1	-1.41
	6545	119	ax (80MHz)	408/432.4 (MCS4)	SDM	-7.88	-9.75	-5.70	2.71	-3.00	-1	-2.00
	6705	151	ax (80MHz)	408/432.4 (MCS4)	SDM	-7.78	-9.51	-5.55	2.71	-2.84	-1	-1.84
	6865	183	ax (80MHz)	1134/1201 (MCS11)	SDM	-7.85	-9.80	-5.71	2.71	-3.00	-1	-2.00
	6665	143	ax (160MHz)	2041.7/2402 (MCS11)	SDM	-7.98	-9.46	-5.65	2.71	-2.94	-1	-1.94
	6825	175	ax (160MHz)	2041.7/2402 (MCS11)	SDM	-8.22	-9.61	-5.85	2.71	-3.14	-1	-2.14
Band 8	6895	189	ax (20MHz)	270/286.8 (MCS11)	SDM	-7.93	-9.41	-5.60	2.89	-2.71	-1	-1.71
	6995	209	ax (20MHz)	270/286.8 (MCS11)	SDM	-7.79	-9.66	-5.61	2.89	-2.72	-1	-1.72
	7115	233	ax (20MHz)	270/286.8 (MCS11)	SDM	-7.97	-9.62	-5.71	2.89	-2.82	-1	-1.82
	6885	187	ax (40MHz)	540/573.5 (MCS11)	SDM	-7.68	-9.18	-5.36	2.89	-2.47	-1	-1.47
	7005	211	ax (40MHz)	540/573.5 (MCS11)	SDM	-7.68	-9.01	-5.28	2.89	-2.39	-1	-1.39
	7085	227	ax (40MHz)	540/573.5 (MCS11)	SDM	-7.90	-9.43	-5.59	2.89	-2.70	-1	-1.70
	6945	199	ax (80MHz)	1134/1201 (MCS11)	SDM	-7.95	-9.57	-5.67	2.89	-2.78	-1	-1.78
	7025	215	ax (80MHz)	408/432.4 (MCS4)	SDM	-7.78	-9.71	-5.63	2.89	-2.74	-1	-1.74
	6985	207	ax (160MHz)	2041.7/2402 (MCS11)	SDM	-8.29	-9.44	-5.81	2.89	-2.92	-1	-1.92

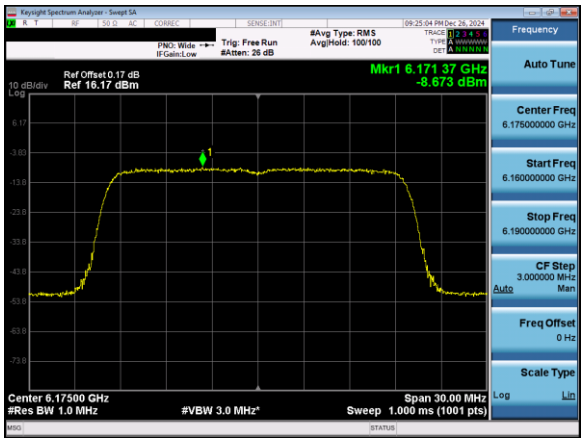
Table 7-57. Power Spectral Density Measurements SDM Diversity



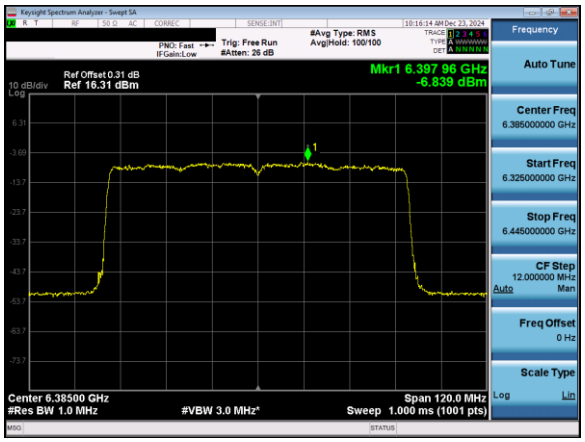
Plot 7-249. Power Spectral Density Plot SDM Diversity Antenna 5T (20MHz 802.11ax (UNII Band 5) – Ch. 45)



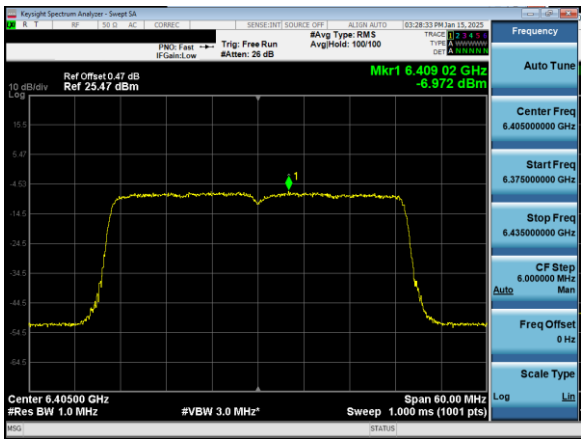
Plot 7-252. Power Spectral Density Plot SDM Diversity Antenna 1b (40MHz 802.11ax (UNII Band 5) – Ch. 91)



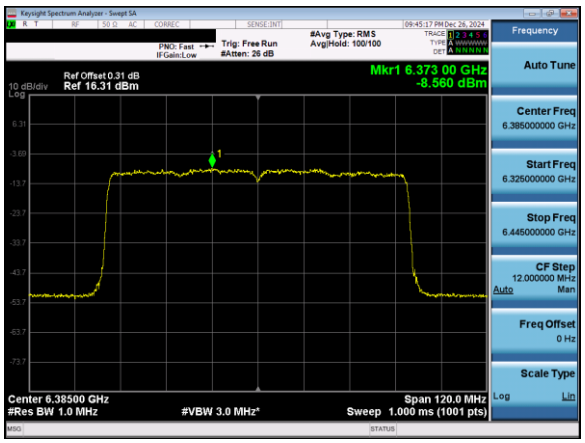
Plot 7-250. Power Spectral Density Plot SDM Diversity Antenna 1b (20MHz 802.11ax (UNII Band 5) – Ch. 45)



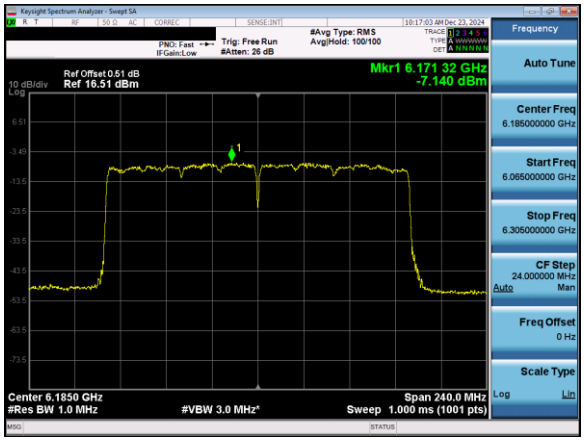
Plot 7-253. Power Spectral Density Plot SDM Diversity Antenna 5T (80MHz 802.11ax (UNII Band 5) – Ch. 87)



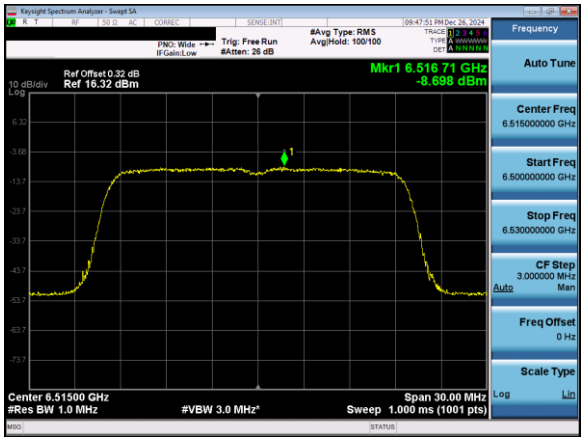
Plot 7-251. Power Spectral Density Plot SDM Diversity Antenna 5T (40MHz 802.11ax (UNII Band 5) – Ch. 91)



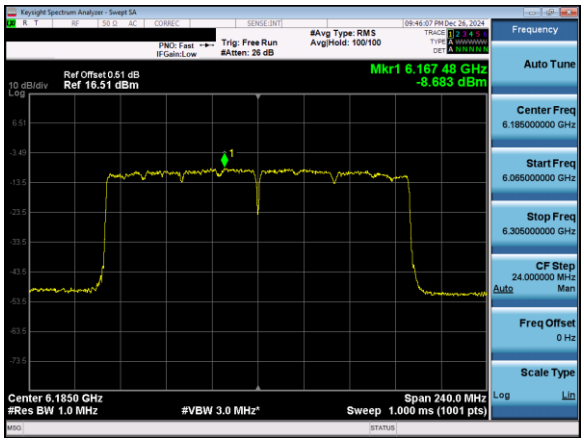
Plot 7-254. Power Spectral Density Plot SDM Diversity Antenna 1b (80MHz 802.11ax (UNII Band 5) – Ch. 87)



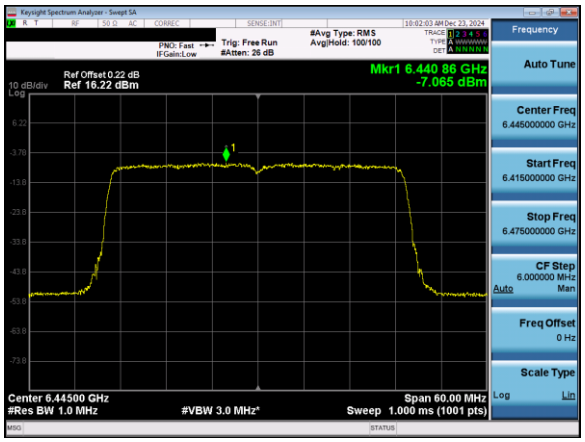
Plot 7-255. Power Spectral Density Plot SDM Diversity Antenna 5T (160MHz 802.11ax (UNII Band 5) – Ch. 47)



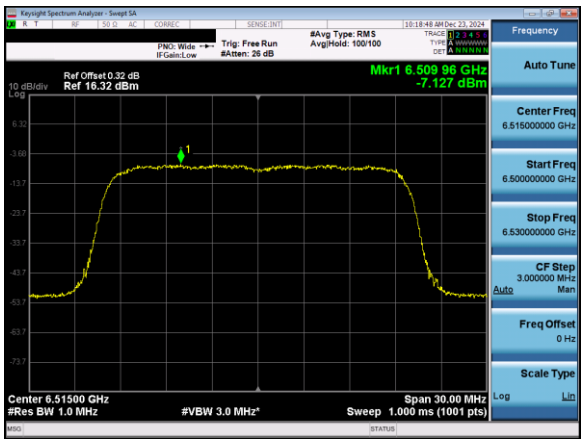
Plot 7-258. Power Spectral Density Plot SDM Diversity Antenna 1b (20MHz 802.11ax (UNII Band 6) – Ch. 113)



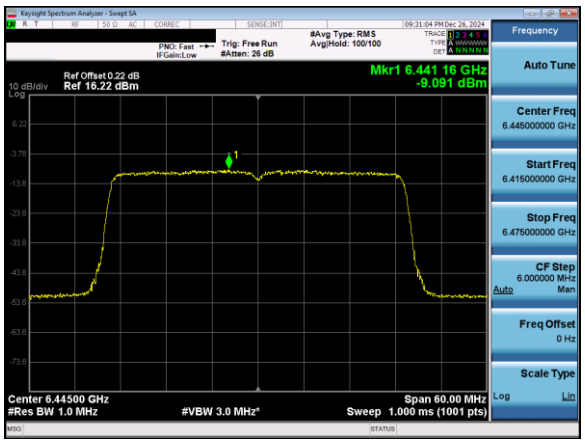
Plot 7-256. Power Spectral Density Plot SDM Diversity Antenna 1b (160MHz 802.11ax (UNII Band 5) – Ch. 47)



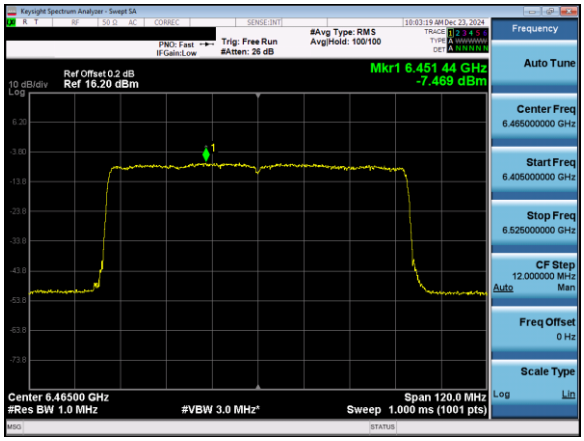
Plot 7-259. Power Spectral Density Plot SDM Diversity Antenna 5T (40MHz 802.11ax (UNII Band 6) – Ch. 99)



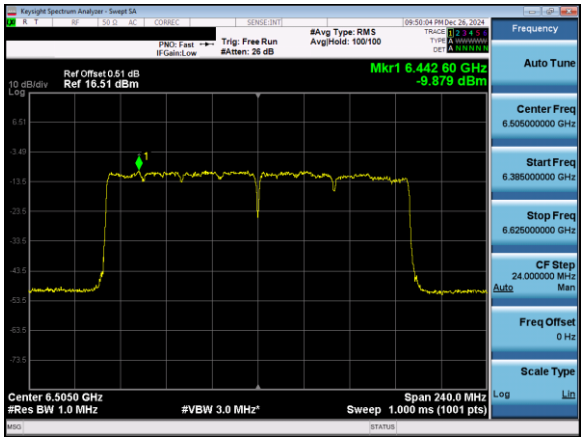
Plot 7-257. Power Spectral Density Plot SDM Diversity Antenna 5T (20MHz 802.11ax (UNII Band 6) – Ch. 113)



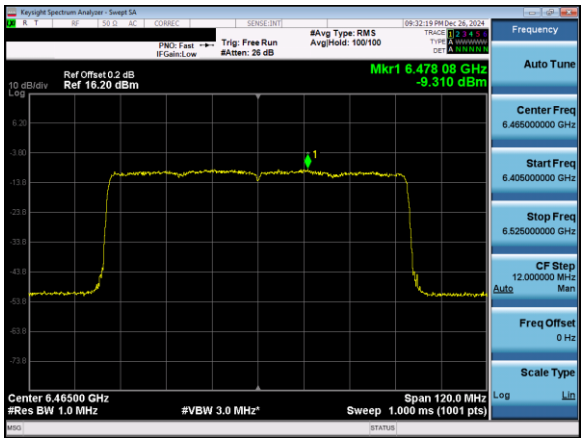
Plot 7-260. Power Spectral Density Plot SDM Diversity Antenna 1b (40MHz 802.11ax (UNII Band 6) – Ch. 99)



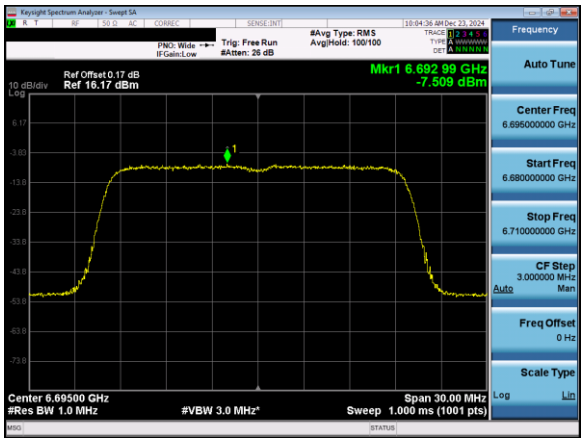
Plot 7-261. Power Spectral Density Plot SDM Diversity Antenna 5T (80MHz 802.11ax (UNII Band 6) – Ch. 103)



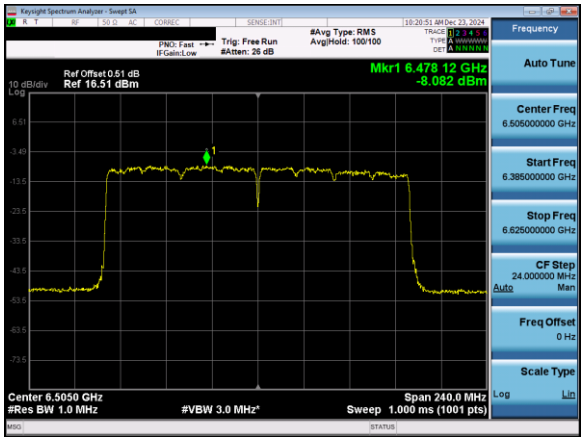
Plot 7-264. Power Spectral Density Plot SDM Diversity Antenna 1b (160MHz 802.11ax (UNII Band 6) – Ch. 111)



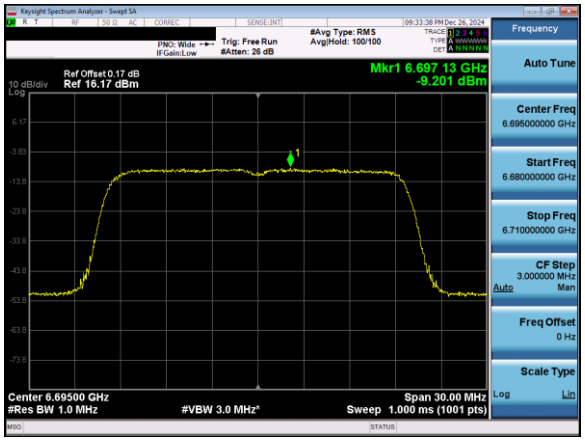
Plot 7-262. Power Spectral Density Plot SDM Diversity Antenna 1b (80MHz 802.11ax (UNII Band 6) – Ch. 103)



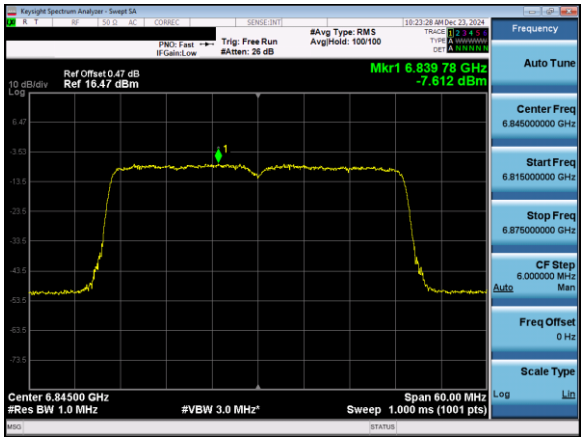
Plot 7-265. Power Spectral Density Plot SDM Diversity Antenna 5T (20MHz 802.11ax (UNII Band 7) – Ch. 149)



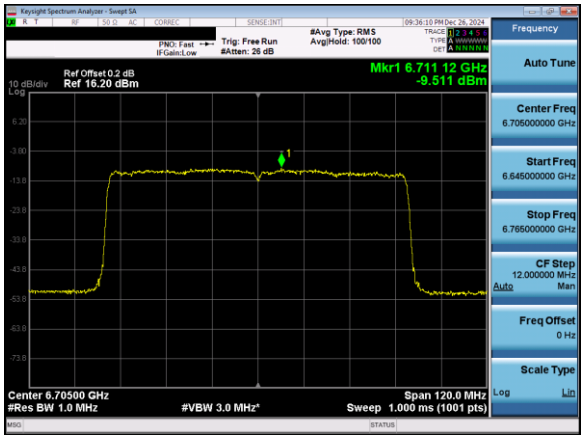
Plot 7-263. Power Spectral Density Plot SDM Diversity Antenna 5T (160MHz 802.11ax (UNII Band 6) – Ch. 111)



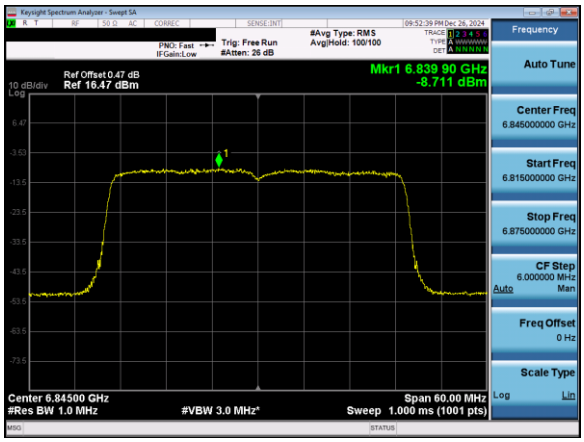
Plot 7-266. Power Spectral Density Plot SDM Diversity Antenna 1b (20MHz 802.11ax (UNII Band 7) – Ch. 149)



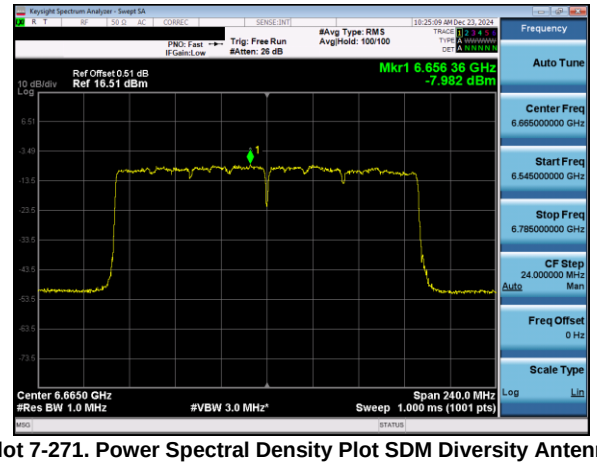
Plot 7-267. Power Spectral Density Plot SDM Diversity Antenna 5T (40MHz 802.11ax (UNII Band 7) – Ch. 179)



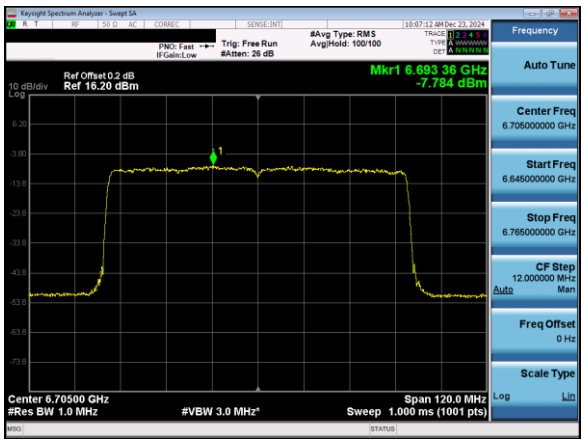
Plot 7-270. Power Spectral Density Plot SDM Diversity Antenna 1b (80MHz 802.11ax (UNII Band 7) – Ch. 151)



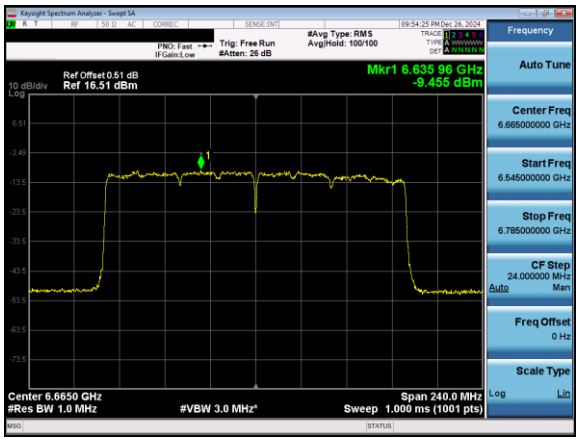
Plot 7-268. Power Spectral Density Plot SDM Diversity Antenna 1b (40MHz 802.11ax (UNII Band 7) – Ch. 179)



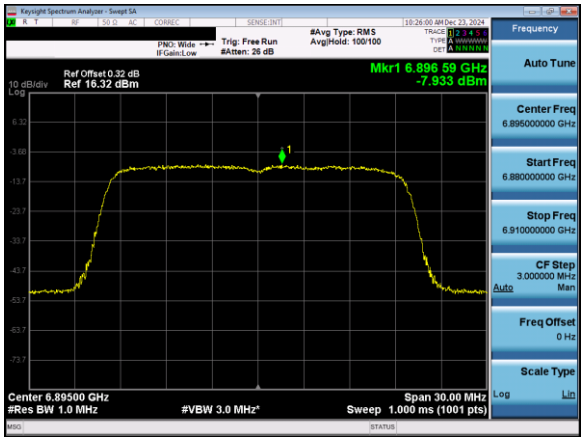
Plot 7-271. Power Spectral Density Plot SDM Diversity Antenna 5T (160MHz 802.11ax (UNII Band 7) – Ch. 143)



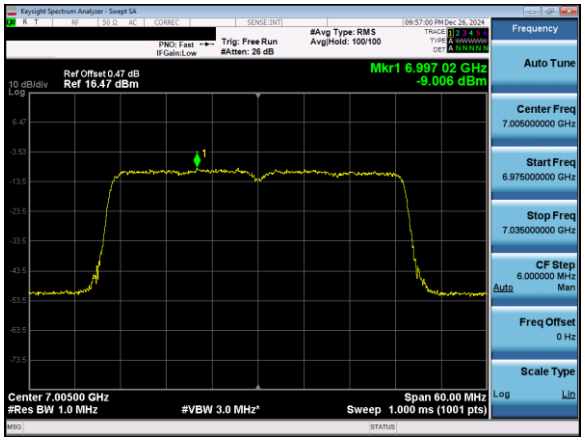
Plot 7-269. Power Spectral Density Plot SDM Diversity Antenna 5T (80MHz 802.11ax (UNII Band 7) – Ch. 151)



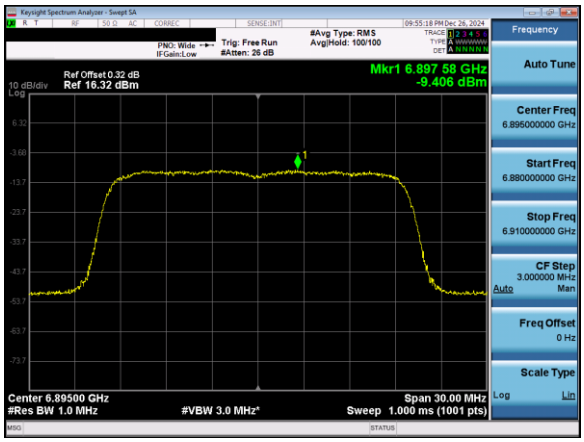
Plot 7-272. Power Spectral Density Plot SDM Diversity Antenna 1b (160MHz 802.11ax (UNII Band 7) – Ch. 143)



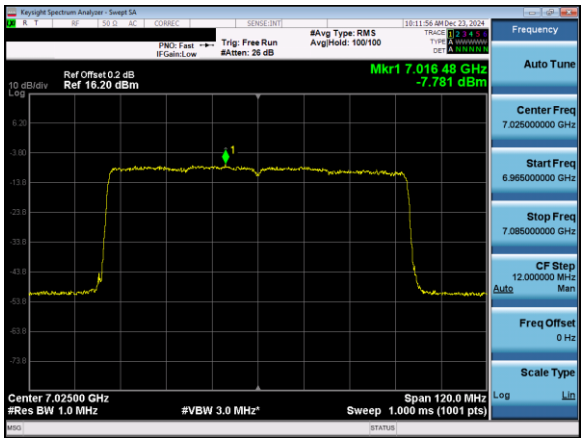
Plot 7-273. Power Spectral Density Plot SDM Diversity Antenna 5T (20MHz 802.11ax (UNII Band 8) – Ch. 189)



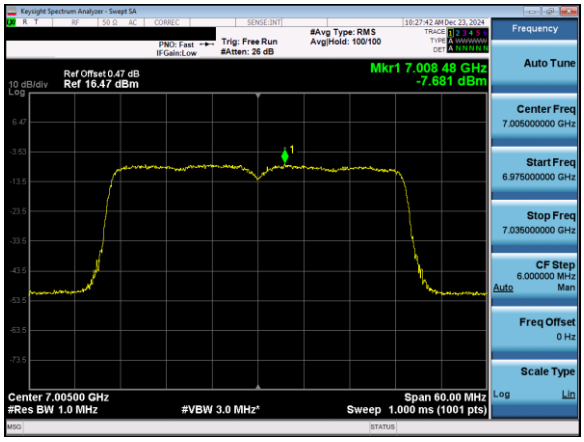
Plot 7-276. Power Spectral Density Plot SDM Diversity Antenna 1b (40MHz 802.11ax (UNII Band 8) – Ch. 211)



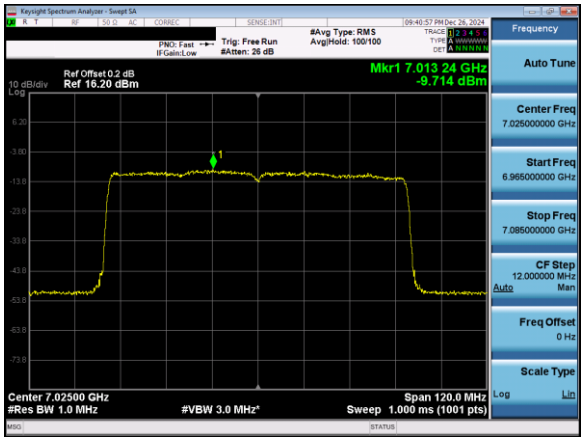
Plot 7-274. Power Spectral Density Plot SDM Diversity Antenna 1b (20MHz 802.11ax (UNII Band 8) – Ch. 189)



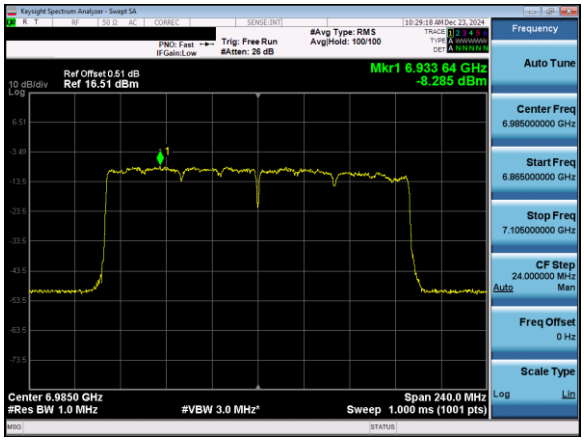
Plot 7-277. Power Spectral Density Plot SDM Diversity Antenna 5T (80MHz 802.11ax (UNII Band 8) – Ch. 215)



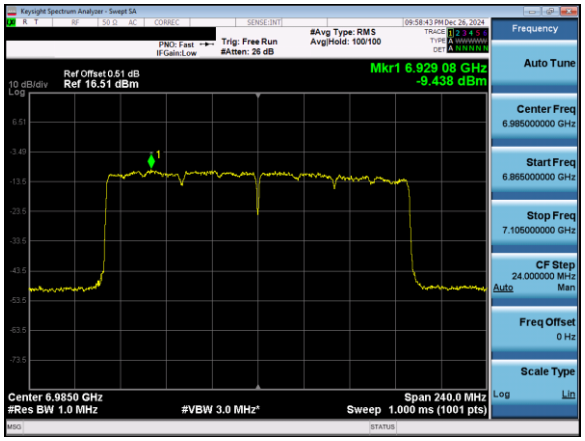
Plot 7-275. Power Spectral Density Plot SDM Diversity Antenna 5T (40MHz 802.11ax (UNII Band 8) – Ch. 211)



Plot 7-278. Power Spectral Density Plot SDM Diversity Antenna 1b (80MHz 802.11ax (UNII Band 8) – Ch. 215)



Plot 7-279. Power Spectral Density Plot SDM Diversity Antenna 5T (160MHz 802.11ax (UNII Band 8) – Ch. 207)



Plot 7-280. Power Spectral Density Plot SDM Diversity Antenna 1b (160MHz 802.11ax (UNII Band 8) – Ch. 207)

Note:

Per ANSI C63.10-2020 Section 14.5.2.2 and KDB 662911 v02r01 Section E)2), the power spectral density at Antenna 5T and Antenna 3b were first measured separately as shown in the section above. The measured values were then summed in linear power units then converted back to dBm.

Sample Directional Gain Calculation:

For correlated signals, assuming the antenna gain is 3.70 dBi for Antenna 5T and 0.20 dBi for Antenna 3b.

$$\text{Directional gain} = 10 \log[(10^{G_1/20} + 10^{G_2/20} + \ldots + 10^{G_N/20})^2 / N_{ANT}] \text{ dBi}$$
$$= 10 \log[(10^{1.7/20} + 10^{1.3/20} / 2] \text{ dBi}$$
$$= 5.14 \text{ dBi}$$

For uncorrelated signals, assuming the antenna gain is 1.70 dBi for Antenna 5T and 1.30 dBi for Antenna 3b.

$$\text{Directional gain} = 10 \log[(10^{G_1/10} + 10^{G_2/10} + \ldots + 10^{G_N/10}) / N_{ANT}] \text{ dBi}$$
$$= 10 \log[(10^{1.7/10} + 10^{1.3/10} / 2] \text{ dBi}$$
$$= 2.29 \text{ dBi}$$

Sample SDM Calculation:

At 5955MHz in 802.11ax (20MHz BW) mode, the average conducted power spectral density was measured to be -7.14 dBm for Antenna 5T and -7.27 dBm for Antenna 3b.

Antenna 5T + Antenna 3b = CDD/SDM

(-7.14 dBm + -7.27 dBm) = (0.193 mW + 0.187 mW) = 0.381 mW = -4.19 dBm

Sample e.i.r.p Power Spectral Density Calculation:

At 5955MHz in 802.11ax (20MHz BW) mode, the average SDM power density was calculated to be -4.19 dBm with directional gain of 2.29 dBi.

e.i.r.p. Power Spectral Density(dBm) = Power Spectral Density (dBm) + Ant gain (dBi)

-4.19 dBm + 2.29 dBi = -1.90 dBm

7.5 In-Band Emissions

§15.407(b)(7), RSS-248 [4.6.2]

Test Overview and Limit

The spectrum analyzer was connected to the antenna terminal while the EUT was operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2020 and KDB 789033 D02 v02r01, and at the appropriate frequencies.

For transmitters operating within the 5.925-7.125 GHz bands: Power spectral density must be suppressed by 20 dB at 1 MHz outside of channel edge, by 28 dB at one channel bandwidth from the channel center, and by 40 dB at one- and one-half times the channel bandwidth away from channel center. At frequencies between one megahertz outside an unlicensed device's channel edge and one channel bandwidth from the center of the channel, the limits must be linearly interpolated between 20 dB and 28 dB suppression, and at frequencies between one and one- and one-half times an unlicensed device's channel bandwidth, the limits must be linearly interpolated between 28 dB and 40 dB suppression. Emissions removed from the channel center by more than one- and one-half times the channel bandwidth must be suppressed by at least 40 dB.

Test Procedure Used

ANSI C63.10-2020 – Section 12.4.2.2
KDB 987594 D02 v03 – Section J

Test Settings

1. Connect output of the antenna port to a spectrum analyzer or EMI receiver, with appropriate attenuation, as to not damage the instrumentation.
2. Set the reference level of the measuring equipment in accordance with procedure 4.1.6.2 of ANSI C63.10-2020.
3. Measure the 26 dB EBW using the test procedure 12.5.2 of ANSI C63.10-2020. (This will be used to determine the channel edge.)
4. Measure the power spectral density (which will be used for emissions mask reference) using the following procedure:
    a) Set the span to encompass the entire 26 dB EBW of the signal.
    b) Set RBW = same RBW used for 26 dB EBW measurement.
    c) Set VBW ≥ 3 X RBW
    d) Number of points in sweep ≥ [2 X span / RBW].
    e) Sweep time = auto.
    f) Detector = RMS (i.e., power averaging)
    g) Trace average at least 100 traces in power averaging (rms) mode.
    h) Use the peak search function on the instrument to find the peak of the spectrum.
5. For the purposes of developing the emission mask, the channel bandwidth is defined as the 26 dB EBW.
6. Using the measuring equipment limit line function, develop the emissions mask based on the following requirements. The emissions power spectral density must be reduced below the peak power spectral density (in dB) as follows:
    i) Suppressed by 20 dB at 1 MHz outside of the channel edge. (The channel edge is defined as the 26-dB point on either side of the carrier center frequency.)
    j) Suppressed by 28 dB at one channel bandwidth from the channel center.
    k) Suppressed by 40 dB at one- and one-half times the channel bandwidth from the channel center.
7. Adjust the span to encompass the entire mask as necessary.
8. Clear trace.
9. Trace average at least 100 traces in power averaging (rms) mode.
10. Adjust the reference level as necessary so that the crest of the channel touches the top of the emission mask.

Test Setup

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

Figure 7-4. Test Instrument & Measurement Setup

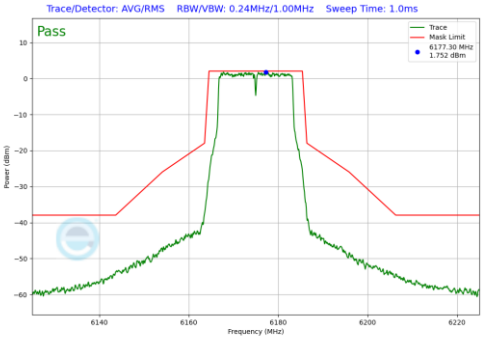
Test Notes

1. All data rates and channels were investigated, and tabular data has been reported. Only the worst-case plot was reported.

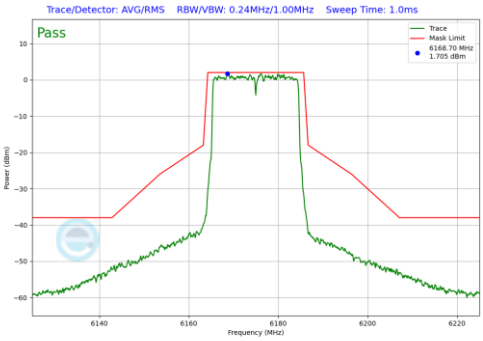
7.5.1 Antenna 5T In-Band Emission Measurements – SP

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Antenna 5T In-Band Emission
Band 5	5955	1	a	24	Pass
	6175	45	a	54	Pass
	6415	93	a	24	Pass
	5955	1	ax (20MHz)	135/143.4 (MCS11)	Pass
	6175	45	ax (20MHz)	49/51.6 (MCS4)	Pass
	6415	93	ax (20MHz)	135/143.4 (MCS11)	Pass
	5965	3	ax (40MHz)	271/286.8 (MCS11)	Pass
	6165	43	ax (40MHz)	271/286.8 (MCS11)	Pass
	6405	91	ax (40MHz)	271/286.8 (MCS11)	Pass
	5985	7	ax (80MHz)	567/600.5 (MCS11)	Pass
	6145	39	ax (80MHz)	567/600.5 (MCS11)	Pass
	6385	87	ax (80MHz)	204/216.2 (MCS4)	Pass
	6025	15	ax (160MHz)	1020.8/1201 (MCS11)	Pass
	6181	47	ax (160MHz)	1020.8/1201 (MCS11)	Pass
	6345	79	ax (160MHz)	1020.8/1201 (MCS11)	Pass
Band 6	6435	97	a	54	Pass
	6475	105	a	54	Pass
	6515	113	a	54	Pass
	6435	97	ax (20MHz)	49/51.6 (MCS4)	Pass
	6475	105	ax (20MHz)	135/143.4 (MCS11)	Pass
	6515	113	ax (20MHz)	135/143.4 (MCS11)	Pass
	6445	99	ax (40MHz)	271/286.8 (MCS11)	Pass
	6485	107	ax (40MHz)	271/286.8 (MCS11)	Pass
	6525	115	ax (40MHz)	271/286.8 (MCS11)	Pass
	6465	103	ax (80MHz)	204/216.2 (MCS4)	Pass
	6505	111	ax (160MHz)	1020.8/1201 (MCS11)	Pass
Band 7	6535	117	a	12	Pass
	6695	149	a	54	Pass
	6875	181	a	24	Pass
	6535	117	ax (20MHz)	135/143.4 (MCS11)	Pass
	6695	149	ax (20MHz)	49/51.6 (MCS4)	Pass
	6875	181	ax (20MHz)	24/25.8 (MCS2)	Pass
	6565	123	ax (40MHz)	98/103.2 (MCS4)	Pass
	6725	155	ax (40MHz)	98/103.2 (MCS4)	Pass
	6845	179	ax (40MHz)	271/286.8 (MCS11)	Pass
	6545	135	ax (80MHz)	204/216.2 (MCS4)	Pass
	6705	151	ax (80MHz)	567/600.5 (MCS11)	Pass
	6865	167	ax (80MHz)	567/600.5 (MCS11)	Pass
	6665	143	ax (160MHz)	1020.8/1201 (MCS11)	Pass

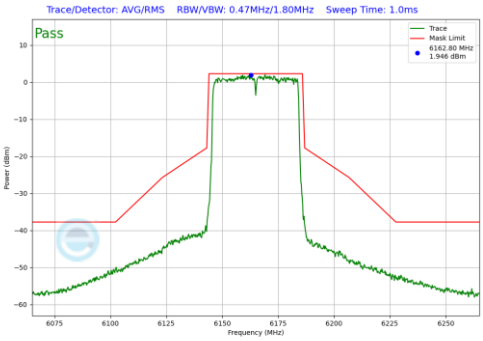
Table 7-58. In-Band Emission Measurements Antenna 5T



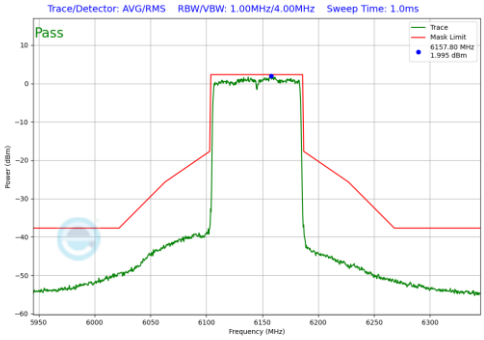
Plot 7-281. In-Band Emission Plot Antenna 5T (20MHz 802.11a (UNII Band 5) – Ch. 45)



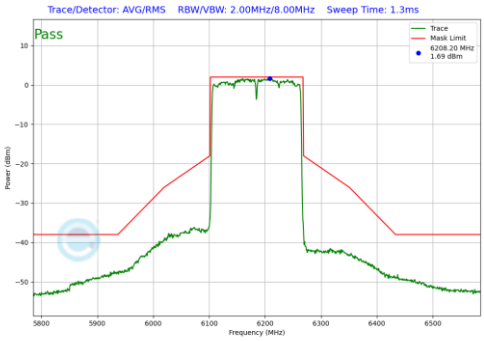
Plot 7-282. In-Band Emission Plot Antenna 5T (20MHz 802.11ax (UNII Band 5) – Ch. 45)



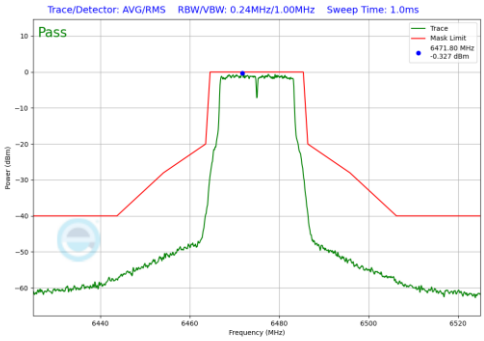
Plot 7-283. In-Band Emission Plot Antenna 5T (40MHz 802.11ax (UNII Band 5) – Ch. 43)



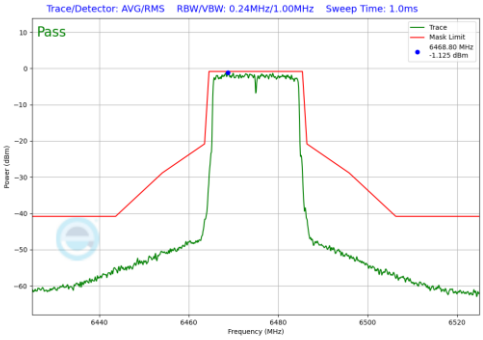
Plot 7-284. In-Band Emission Plot Antenna 5T (80MHz 802.11ax (UNII Band 5) – Ch. 39)



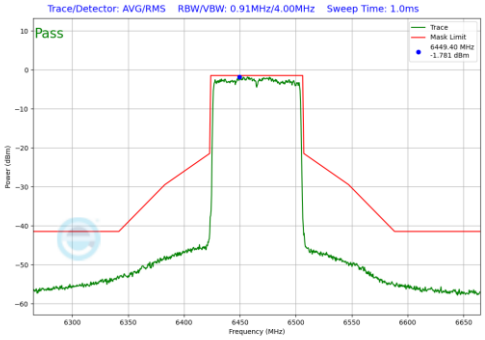
Plot 7-285. In-Band Emission Plot Antenna 5T (160MHz 802.11ax (UNII Band 5) – Ch. 47)



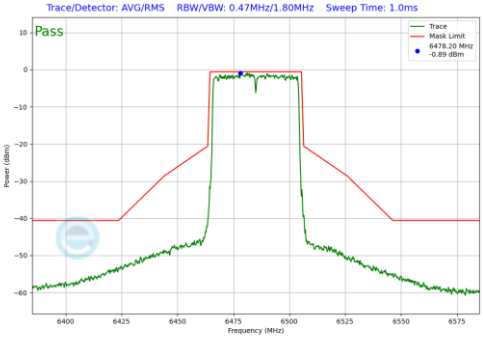
Plot 7-286. In-Band Emission Plot Antenna 5T (20MHz 802.11a (UNII Band 6) – Ch. 105)



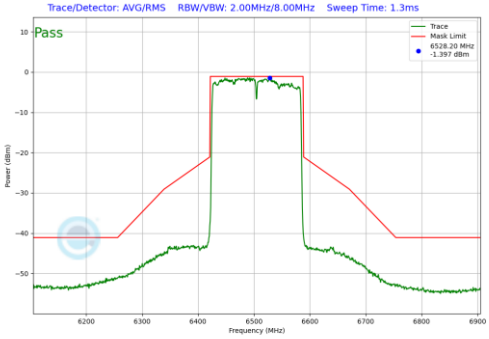
Plot 7-287. In-Band Emission Plot Antenna 5T (20MHz 802.11ax (UNII Band 6) – Ch. 105)



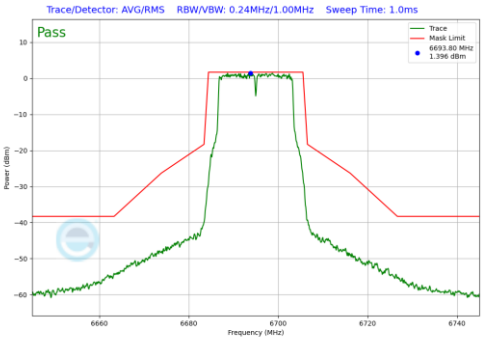
Plot 7-289. In-Band Emission Plot Antenna 5T (80MHz 802.11ax (UNII Band 6) – Ch. 103)



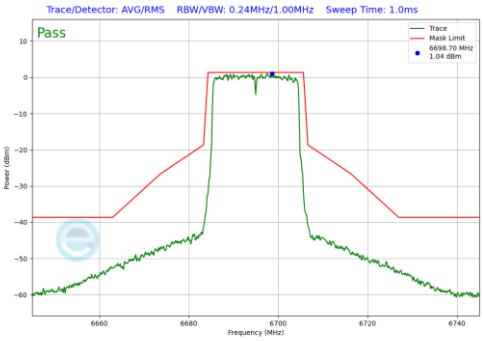
Plot 7-288. In-Band Emission Plot Antenna 5T (40MHz 802.11ax (UNII Band 6) – Ch. 107)



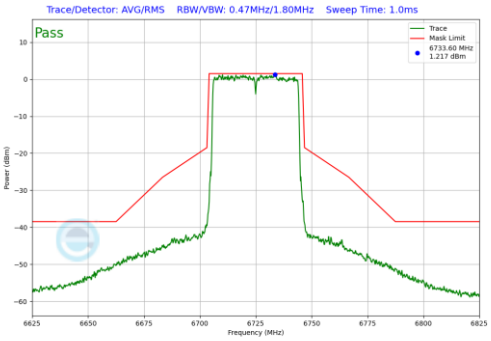
Plot 7-290. In-Band Emission Plot Antenna 5T (160MHz 802.11ax (UNII Band 6) – Ch. 111)



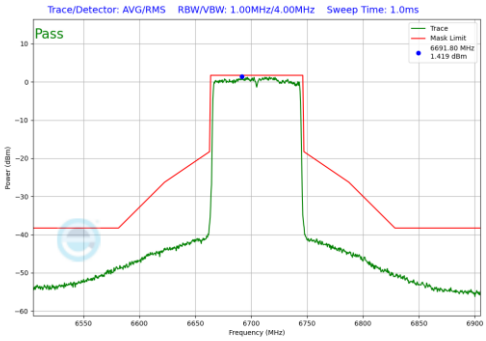
Plot 7-291. In-Band Emission Plot Antenna 5T (20MHz 802.11a (UNII Band 7) – Ch. 149)



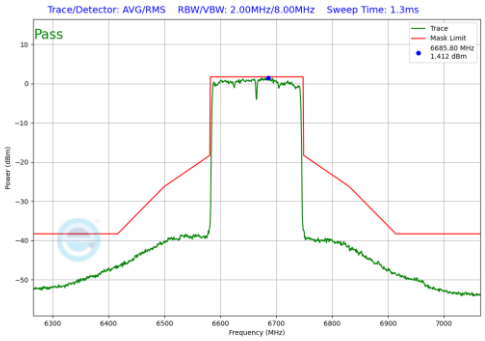
Plot 7-292. In-Band Emission Plot Antenna 5T (20MHz 802.11ax (UNII Band 7) – Ch. 149)



Plot 7-293. In-Band Emission Plot Antenna 5T (40MHz 802.11ax (UNII Band 7) – Ch. 155)



Plot 7-294. In-Band Emission Plot Antenna 5T (80MHz 802.11ax (UNII Band 7) – Ch. 151)

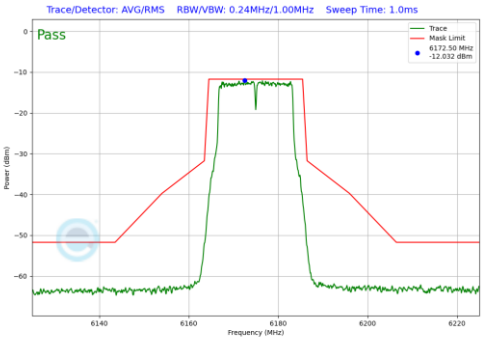


Plot 7-295. In-Band Emission Plot Antenna 5T (160MHz 802.11ax (UNII Band 7) – Ch. 143)

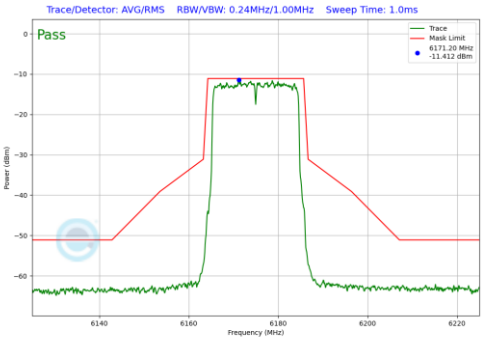
7.5.2 Antenna 5T In-Band Emission Measurements – LPI

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Antenna 5T In-Band Emission
Band 5	5955	1	a	54	Pass
	6175	45	a	54	Pass
	6415	93	a	24	Pass
	5955	1	ax (20MHz)	135/143.4 (MCS11)	Pass
	6175	45	ax (20MHz)	24/25.8 (MCS2)	Pass
	6415	93	ax (20MHz)	49/51.6 (MCS4)	Pass
	5965	3	ax (40MHz)	271/286.8 (MCS11)	Pass
	6165	43	ax (40MHz)	49/51.6 (MCS2)	Pass
	6405	91	ax (40MHz)	98/103.2 (MCS4)	Pass
	5985	7	ax (80MHz)	204/216.2 (MCS4)	Pass
	6145	39	ax (80MHz)	102/108.1 (MCS2)	Pass
	6385	87	ax (80MHz)	204/216.2 (MCS4)	Pass
	6025	15	ax (160MHz)	1020.8/1201 (MCS11)	Pass
	6185	47	ax (160MHz)	367.5/432.4 (MCS4)	Pass
	6345	79	ax (160MHz)	1020.8/1201 (MCS11)	Pass
Band 6	6435	97	a	54	Pass
	6475	105	a	54	Pass
	6515	113	a	12	Pass
	6435	97	ax (20MHz)	135/143.4 (MCS11)	Pass
	6475	105	ax (20MHz)	135/143.4 (MCS11)	Pass
	6515	113	ax (20MHz)	135/143.4 (MCS11)	Pass
	6445	99	ax (40MHz)	49/51.6 (MCS2)	Pass
	6485	107	ax (40MHz)	271/286.8 (MCS11)	Pass
	6525	115	ax (40MHz)	271/286.8 (MCS11)	Pass
	6465	103	ax (80MHz)	102/108.1 (MCS2)	Pass
	6505	111	ax (160MHz)	367.5/432.4 (MCS4)	Pass
Band 7	6535	117	a	54	Pass
	6695	149	a	54	Pass
	6875	185	a	49/51.6 (MCS2)	Pass
	6535	117	ax (20MHz)	135/143.4 (MCS11)	Pass
	6695	149	ax (20MHz)	135/143.4 (MCS11)	Pass
	6875	185	ax (20MHz)	135/143.4 (MCS11)	Pass
	6565	123	ax (40MHz)	271/286.8 (MCS11)	Pass
	6725	155	ax (40MHz)	271/286.8 (MCS11)	Pass
	6845	179	ax (40MHz)	271/286.8 (MCS11)	Pass
	6545	119	ax (80MHz)	204/216.2 (MCS4)	Pass
	6705	151	ax (80MHz)	204/216.2 (MCS4)	Pass
	6865	183	ax (80MHz)	204/216.2 (MCS4)	Pass
	6665	143	ax (160MHz)	367.5/432.4 (MCS4)	Pass
	6825	175	ax (160MHz)	1020.8/1201 (MCS11)	Pass
Band 8	6895	189	a	54	Pass
	6995	209	a	54	Pass
	7115	233	a	24	Pass
	6895	189	ax (20MHz)	135/143.4 (MCS11)	Pass
	6995	209	ax (20MHz)	24/25.8 (MCS2)	Pass
	7115	233	ax (20MHz)	49/51.6 (MCS4)	Pass
	6885	187	ax (40MHz)	98/103.2 (MCS4)	Pass
	7005	211	ax (40MHz)	12	Pass
	7085	227	ax (40MHz)	271/286.8 (MCS11)	Pass
	6945	199	ax (80MHz)	102/108.1 (MCS2)	Pass
	7025	215	ax (80MHz)	567/600.5 (MCS11)	Pass
	6985	207	ax (160MHz)	367.5/432.4 (MCS4)	Pass

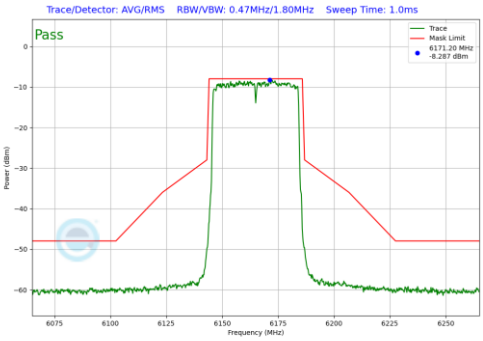
Table 7-59. In-Band Emission Measurements Antenna 5T



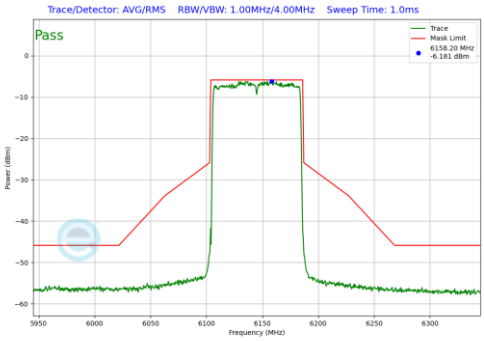
Plot 7-296. In-Band Emission Plot Antenna 5T (20MHz 802.11a (UNII Band 5) – Ch. 45)



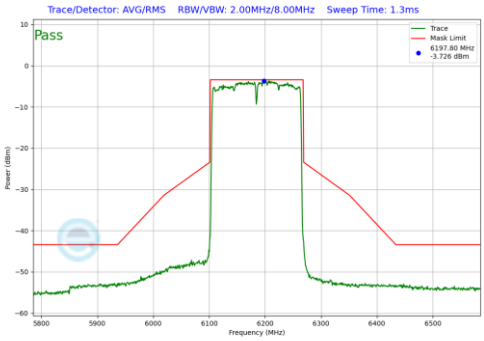
Plot 7-297. In-Band Emission Plot Antenna 5T (20MHz 802.11ax (UNII Band 5) – Ch. 45)



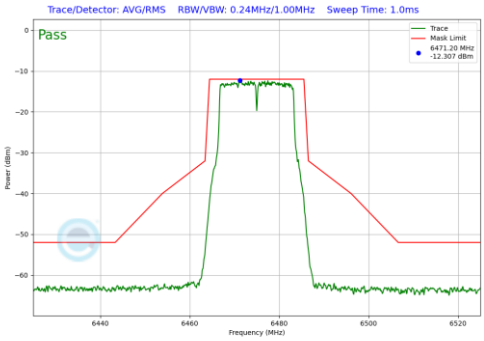
Plot 7-298. In-Band Emission Plot Antenna 5T (40MHz 802.11ax (UNII Band 5) – Ch. 43)



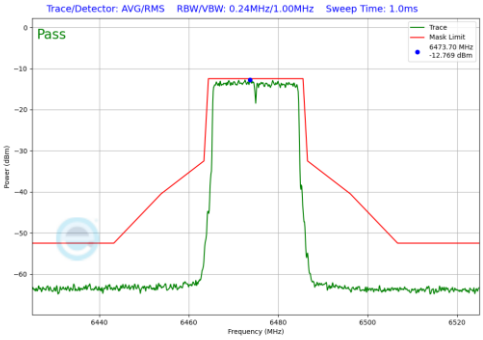
Plot 7-299. In-Band Emission Plot Antenna 5T (80MHz 802.11ax (UNII Band 5) – Ch. 39)



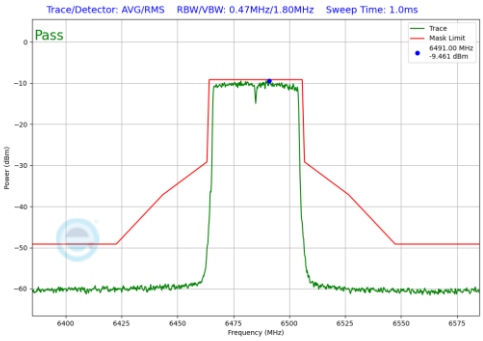
Plot 7-300. In-Band Emission Plot Antenna 5T (160MHz 802.11ax (UNII Band 5) – Ch. 47)



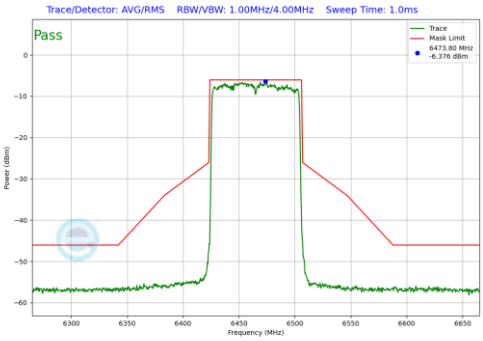
Plot 7-301. In-Band Emission Plot Antenna 5T (20MHz 802.11a (UNII Band 6) – Ch. 105)



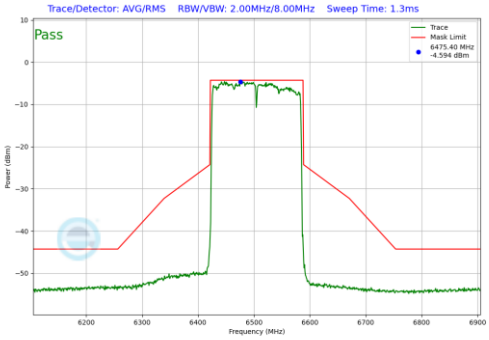
Plot 7-302. In-Band Emission Plot Antenna 5T (20MHz 802.11ax (UNII Band 6) – Ch. 105)



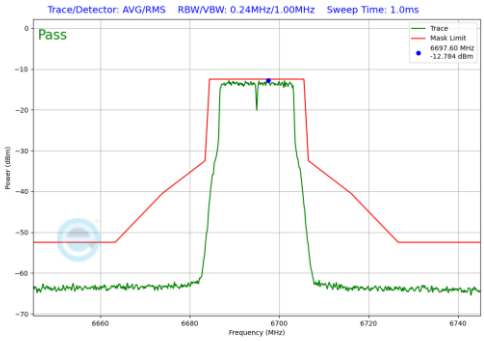
Plot 7-303. In-Band Emission Plot Antenna 5T (40MHz 802.11ax (UNII Band 6) – Ch. 107)



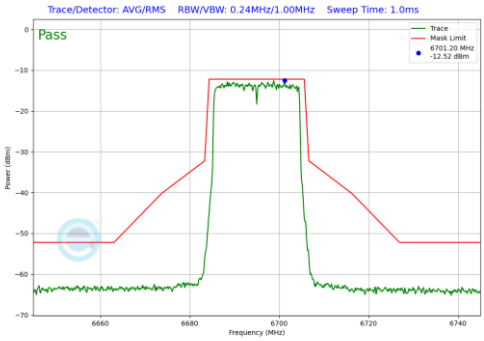
Plot 7-304. In-Band Emission Plot Antenna 5T (80MHz 802.11ax (UNII Band 6) – Ch. 103)



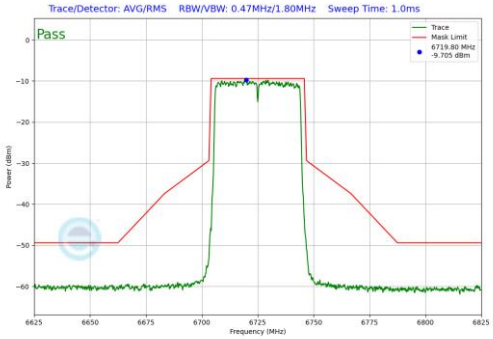
Plot 7-305. In-Band Emission Plot Antenna 5T (160MHz 802.11ax (UNII Band 6) – Ch. 111)



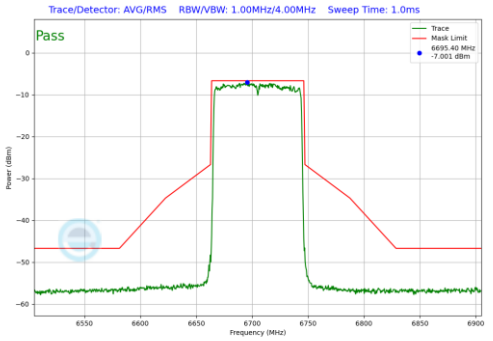
Plot 7-306. In-Band Emission Plot Antenna 5T (20MHz 802.11a (UNII Band 7) – Ch. 149)



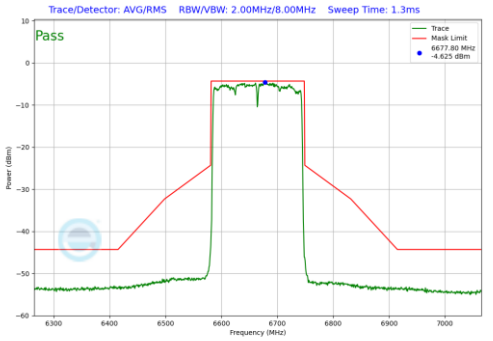
Plot 7-307. In-Band Emission Plot Antenna 5T (20MHz 802.11ax (UNII Band 7) – Ch. 149)



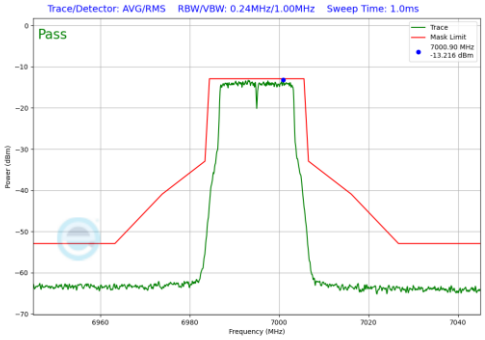
Plot 7-308. In-Band Emission Plot Antenna 5T (40MHz 802.11ax (UNII Band 7) – Ch. 155)



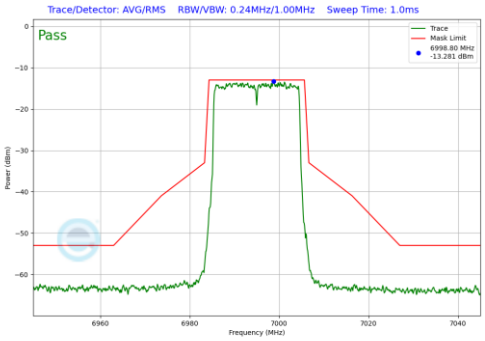
Plot 7-309. In-Band Emission Plot Antenna 5T (80MHz 802.11ax (UNII Band 7) – Ch. 151)



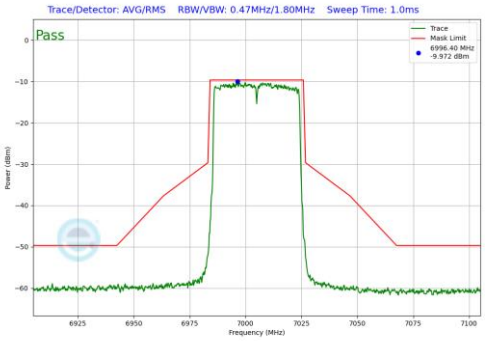
Plot 7-310. In-Band Emission Plot Antenna 5T (160MHz 802.11ax (UNII Band 7) – Ch. 143)



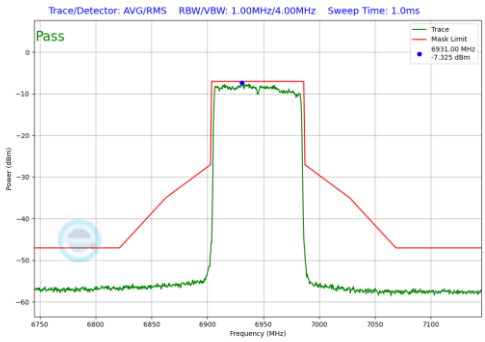
Plot 7-311. In-Band Emission Plot Antenna 5T (20MHz 802.11a (UNII Band 8) – Ch. 209)



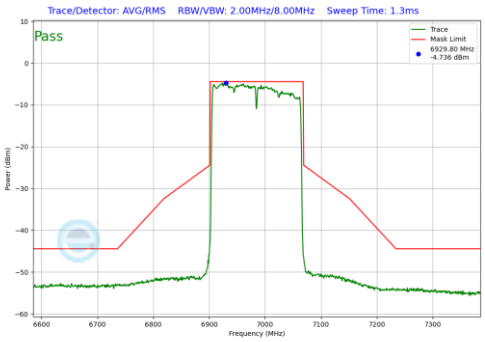
Plot 7-312. In-Band Emission Plot Antenna 5T (20MHz 802.11ax (UNII Band 8) – Ch. 209)



Plot 7-313. In-Band Emission Plot Antenna 5T (40MHz 802.11ax (UNII Band 8) – Ch. 211)



Plot 7-314. In-Band Emission Plot Antenna 5T (80MHz 802.11ax (UNII Band 8) – Ch. 199)



Plot 7-315. In-Band Emission Plot Antenna 5T (160MHz 802.11ax (UNII Band 8) – Ch. 207)