Appendix A

RF Test Data for 2.4GWIFI(Conducted Measurement)

Product Name: DLP Smart Projector

Trade Mark: N/A

Test Model: P09-II

Environmental Conditions

Temperature:	25.8° C
Relative Humidity:	52.5%
ATM Pressure:	100.0 kPa
Test Engineer:	Sean She
Supervised by:	Eder Zhan

Conducted Peak Output Power

Test Result

Conducted peak output power

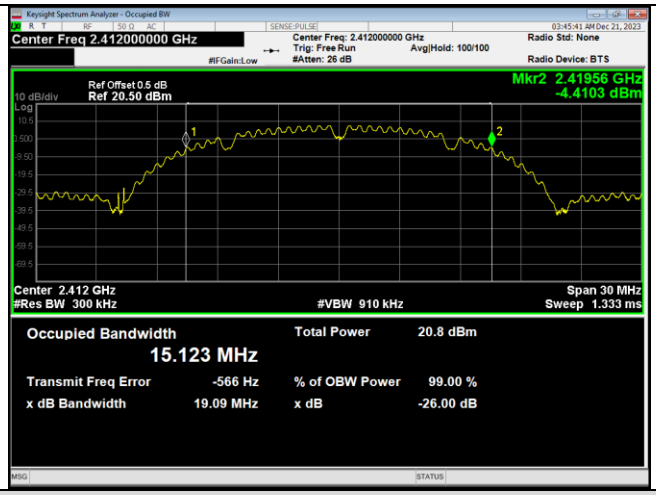
Mode	Channel	Antenna 1 (dBm)	Total (dBm)	Limit (dBm)	Result
IEEE 802.11b	1	19.65	N/A	30	PASS
	6	19.43	N/A	30	PASS
	11	19.21	N/A	30	PASS
IEEE 802.11g	1	21.75	N/A	30	PASS
	6	21.45	N/A	30	PASS
	11	21.26	N/A	30	PASS
IEEE 802.11n_20	1	21.64	N/A	30	PASS
	6	21.42	N/A	30	PASS
	11	21.14	N/A	30	PASS
IEEE 802.11n_40	3	21.76	N/A	30	PASS
	6	21.65	N/A	30	PASS
	9	21.51	N/A	30	PASS

99% Bandwidth

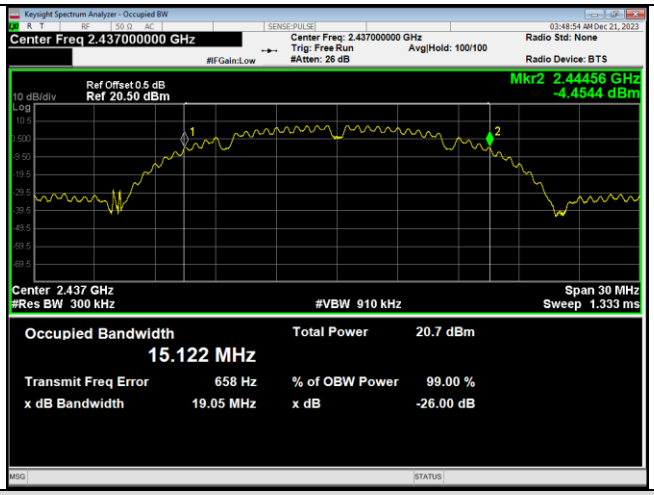
Test Result

Mode	Channel	Ant.	99% BW (MHz)
IEEE 802.11b	1	1	15.123
	6		15.122
	11		15.102
IEEE 802.11g	1		16.829
	6		16.694
	11		16.716
IEEE 802.11n_20	1		17.830
	6		17.800
	11		17.788
IEEE 802.11n_40	3		36.294
	6		36.324
	9		36.337

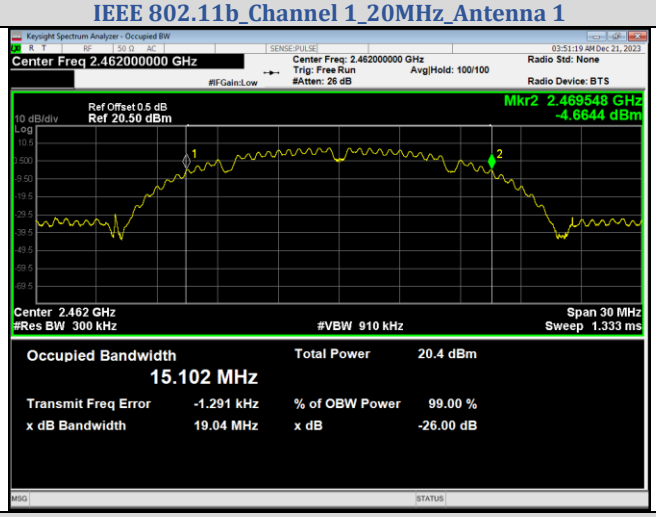
Test Graphs



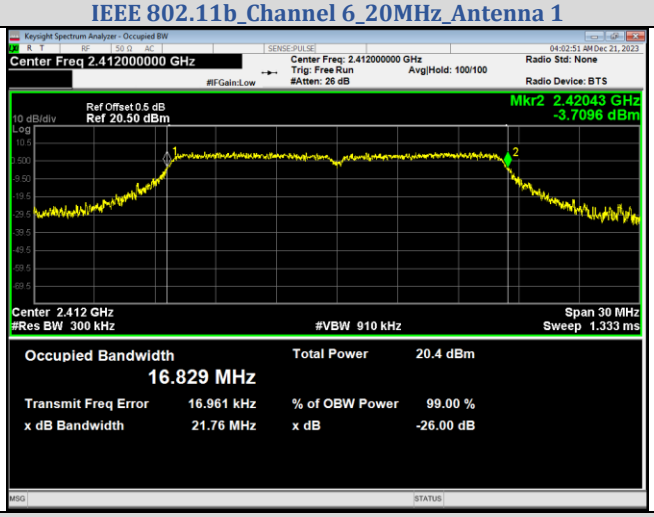
IEEE 802.11b_Channel 1_20MHz_Antenna 1



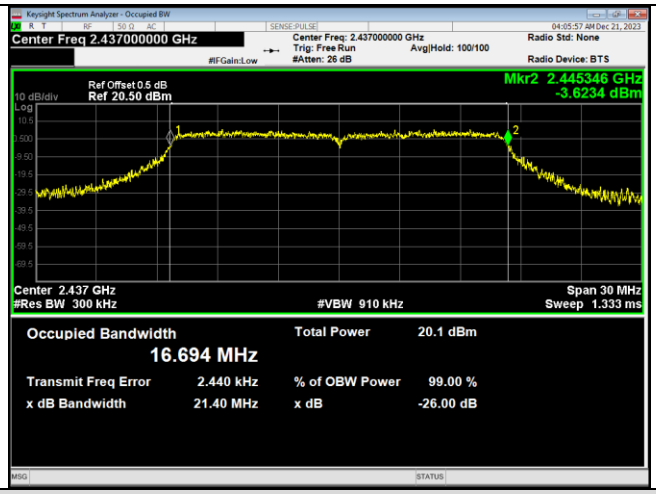
IEEE 802.11b_Channel 6_20MHz_Antenna 1



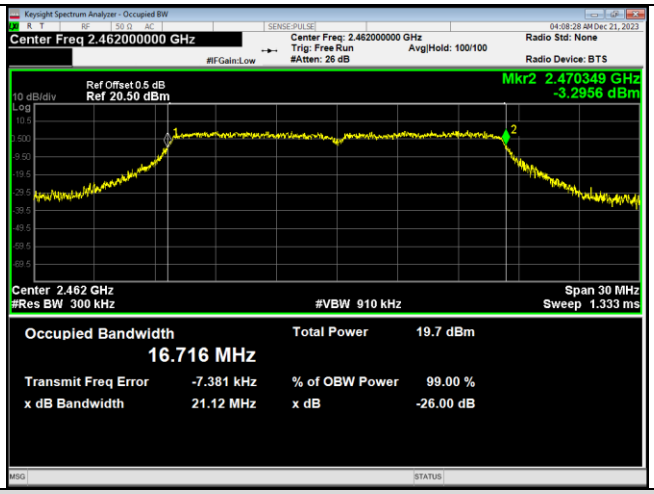
IEEE 802.11b_Channel 11_20MHz_Antenna 1



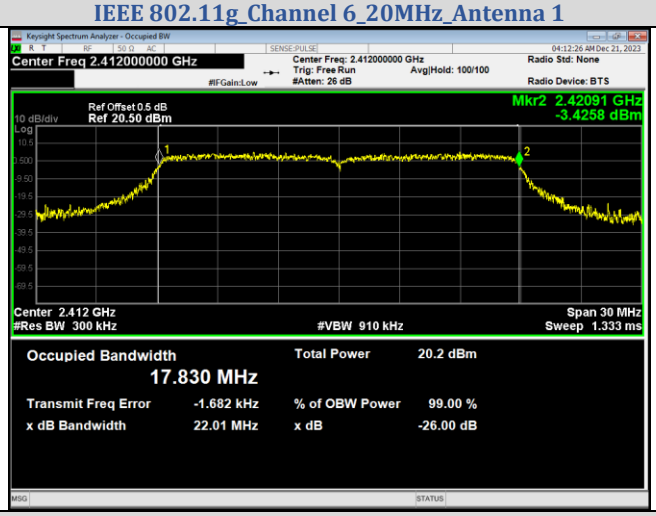
IEEE 802.11g_Channel 1_20MHz_Antenna 1



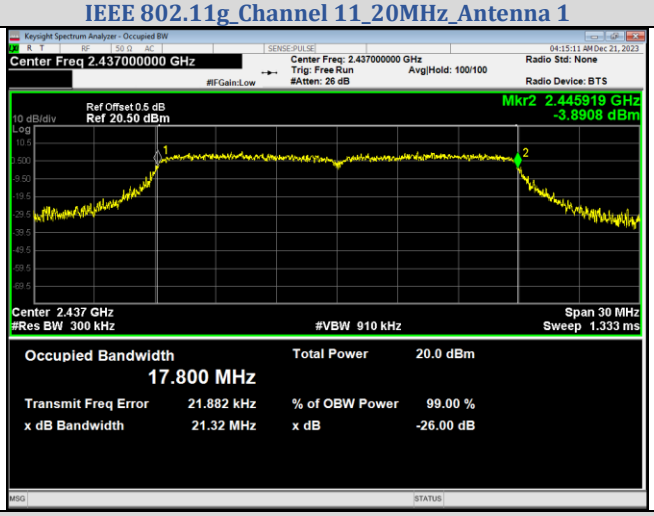
IEEE 802.11g_Channel 6_20MHz_Antenna 1



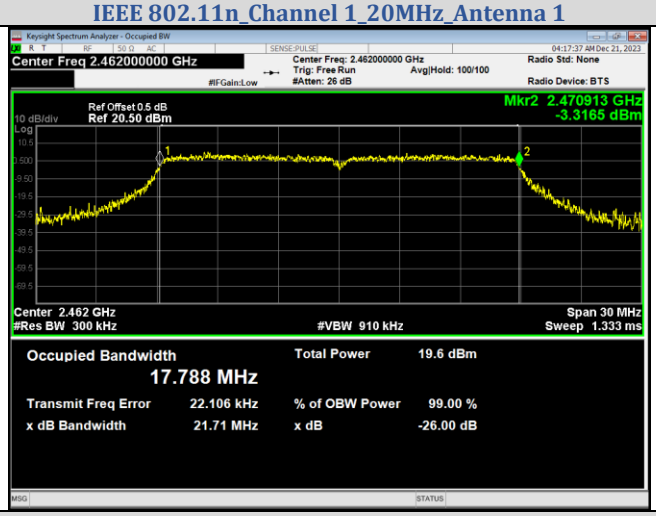
IEEE 802.11g_Channel 11_20MHz_Antenna 1



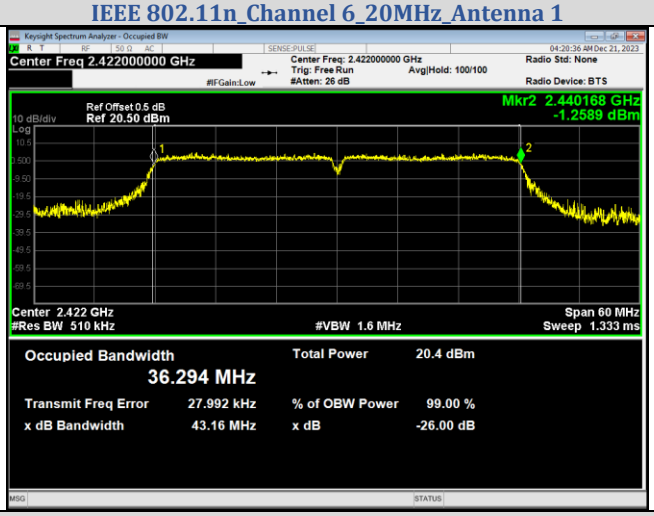
IEEE 802.11n_Channel 1_20MHz_Antenna 1



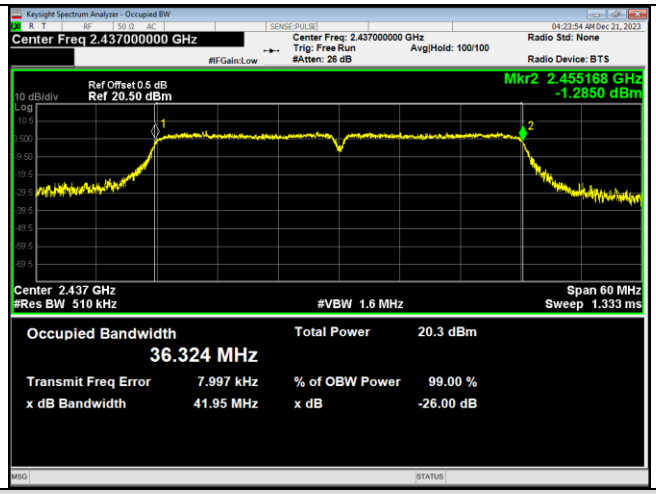
IEEE 802.11n_Channel 6_20MHz_Antenna 1



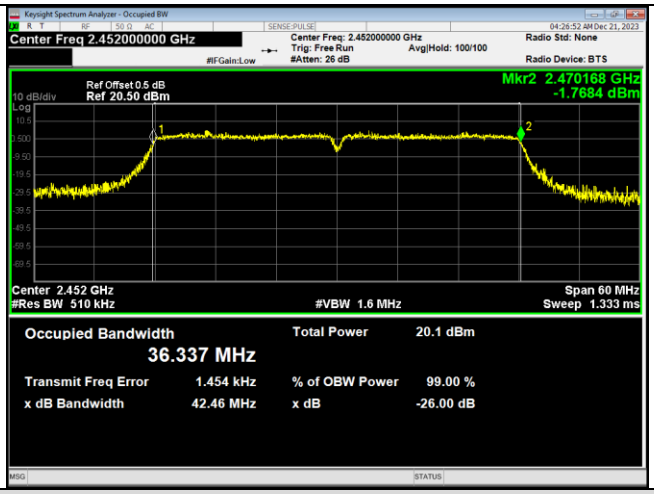
IEEE 802.11n_Channel 11_20MHz_Antenna 1



IEEE 802.11n_Channel 3_40MHz_Antenna 1



IEEE 802.11n_Channel 6_40MHz_Antenna 1



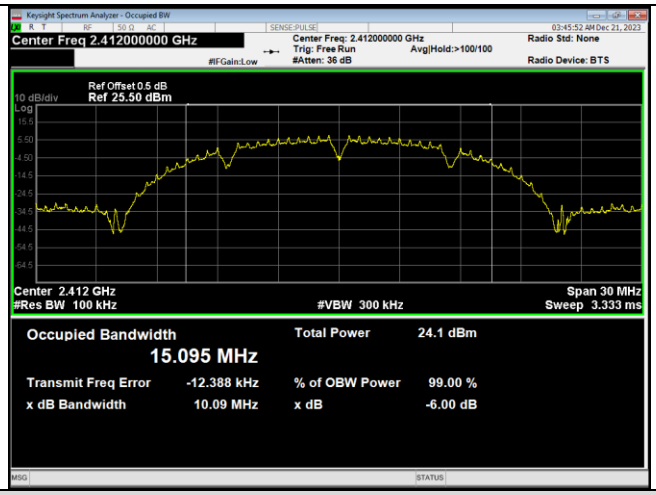
IEEE 802.11n_Channel 9_40MHz_Antenna 1

6dB Bandwidth

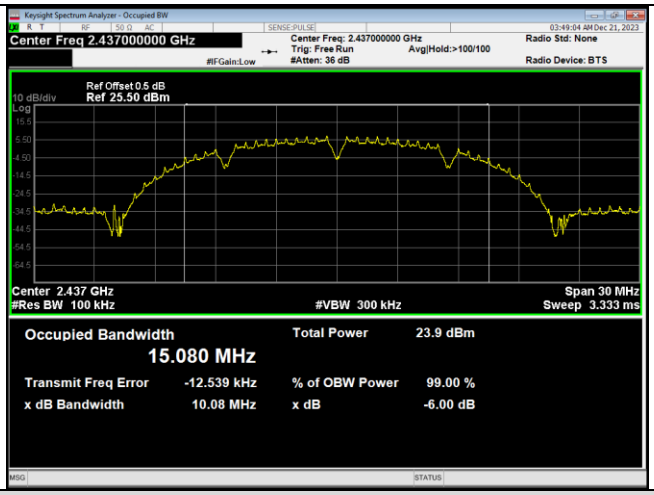
Test Result

Mode	Channel	Ant.	Center Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)	Result
IEEE 802.11b	1	1	2412	10.09	0.5	PASS
	6		2437	10.08		PASS
	11		2462	10.07		PASS
IEEE 802.11g	1		2412	16.34		PASS
	6		2437	16.33		PASS
	11		2462	16.32		PASS
IEEE 802.11n_20	1		2412	17.51		PASS
	6		2437	17.53		PASS
	11		2462	17.32		PASS
IEEE 802.11n_40	3		2422	35.68		PASS
	6		2437	35.71		PASS
	9		2452	35.54		PASS

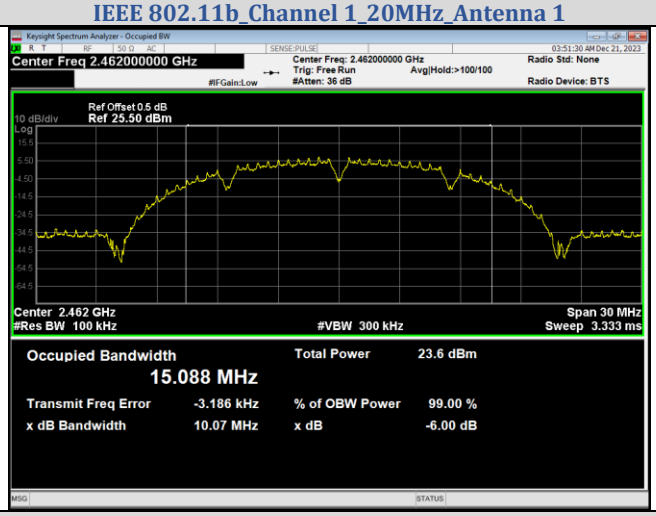
Test Graphs



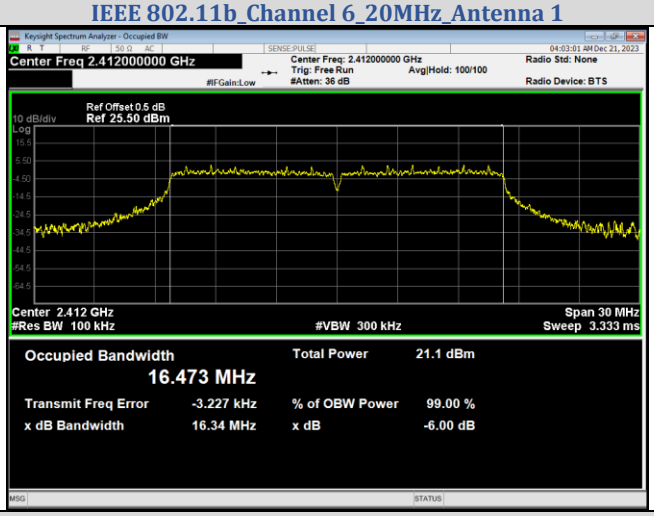
IEEE 802.11b_Channel 1_20MHz_Antenna 1



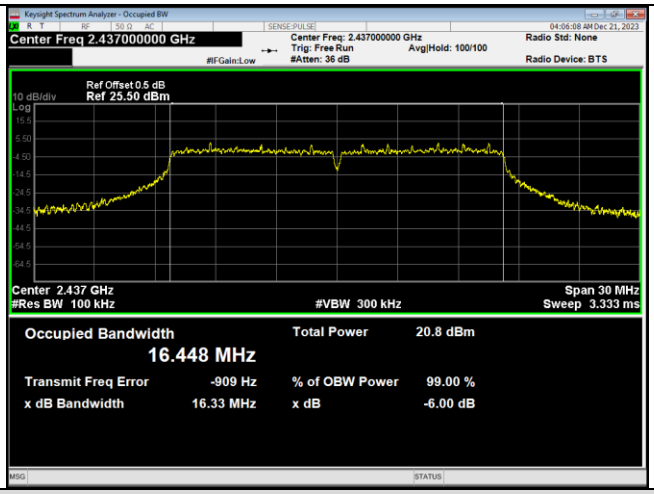
IEEE 802.11b_Channel 6_20MHz_Antenna 1



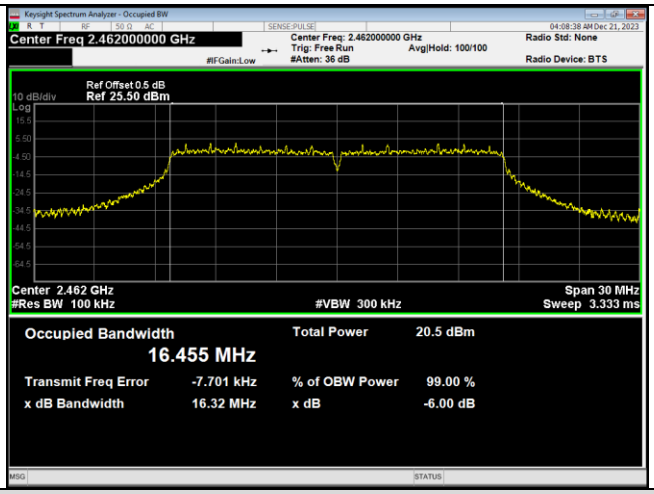
IEEE 802.11b_Channel 11_20MHz_Antenna 1



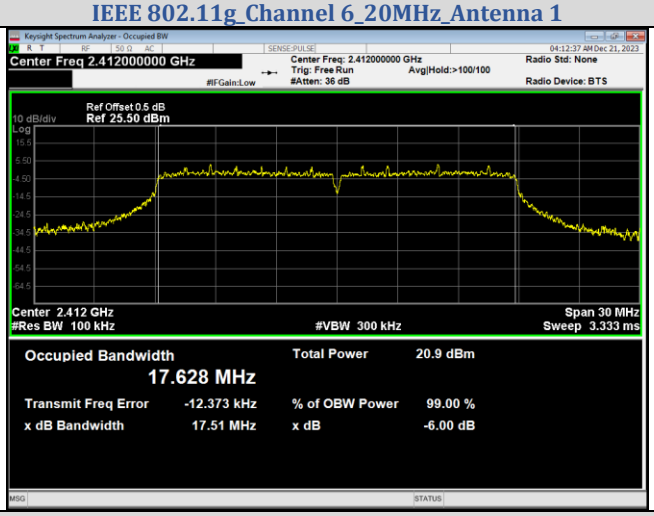
IEEE 802.11g_Channel 1_20MHz_Antenna 1



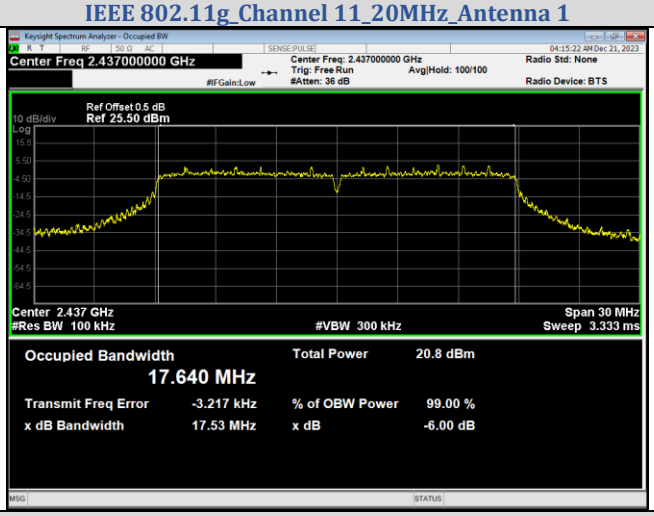
IEEE 802.11g_Channel 6_20MHz_Antenna 1



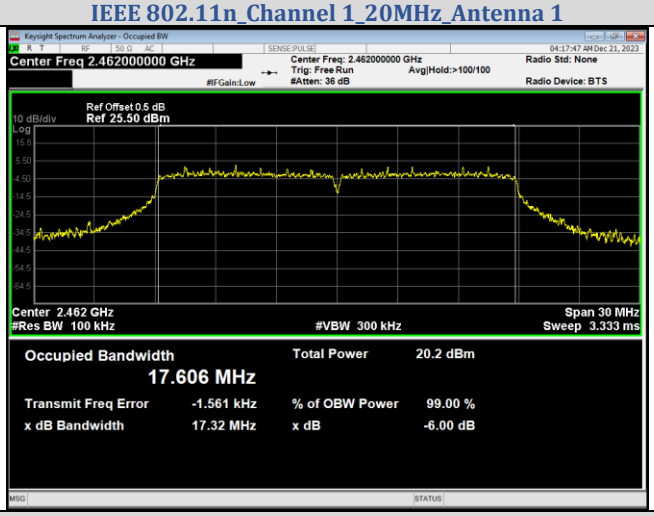
IEEE 802.11g_Channel 11_20MHz_Antenna 1



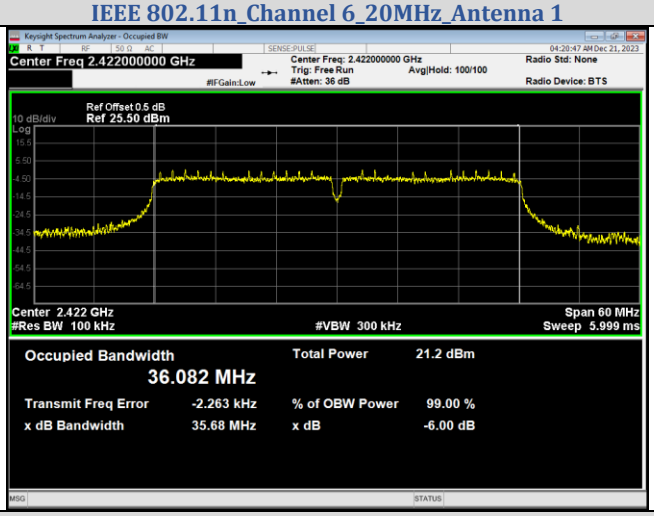
IEEE 802.11n_Channel 1_20MHz_Antenna 1



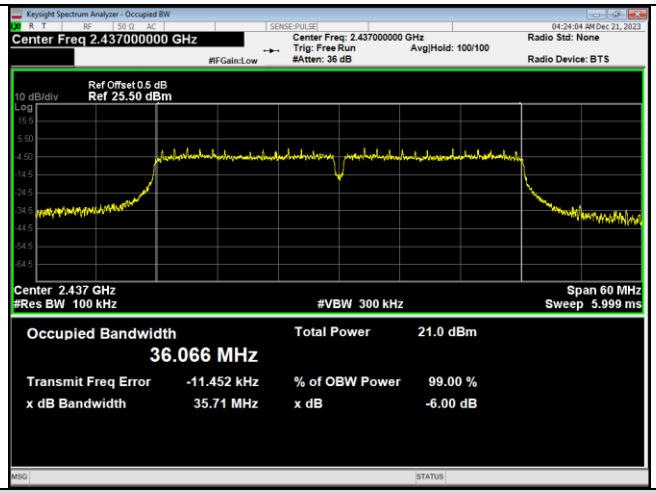
IEEE 802.11n_Channel 6_20MHz_Antenna 1



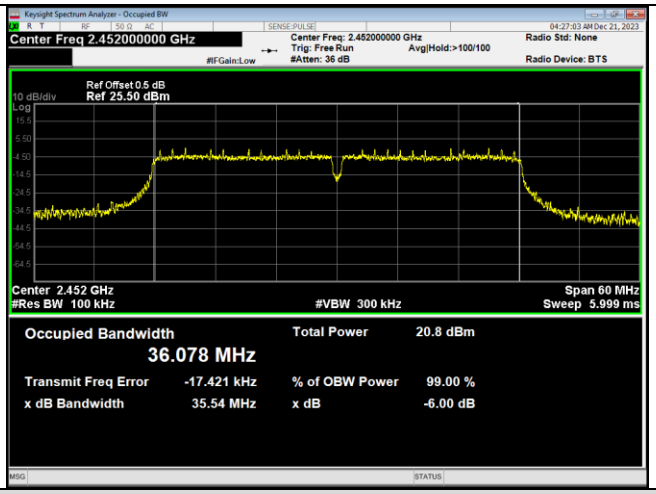
IEEE 802.11n_Channel 11_20MHz_Antenna 1



IEEE 802.11n_Channel 3_40MHz_Antenna 1



IEEE 802.11n_Channel 6_40MHz_Antenna 1



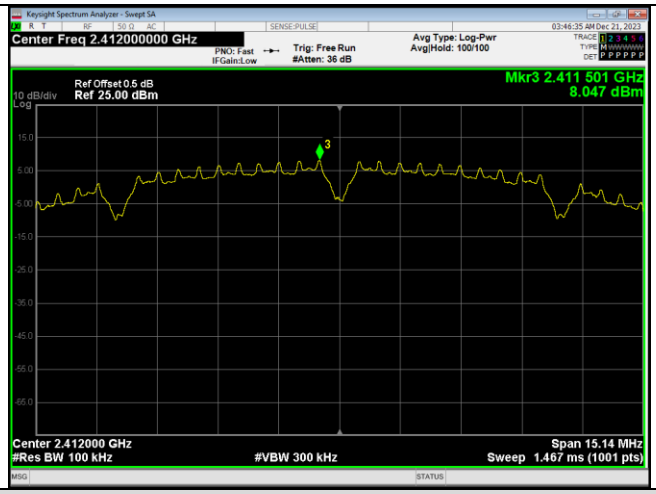
IEEE 802.11n_Channel 9_40MHz_Antenna 1

Conducted Out Of Band Emission

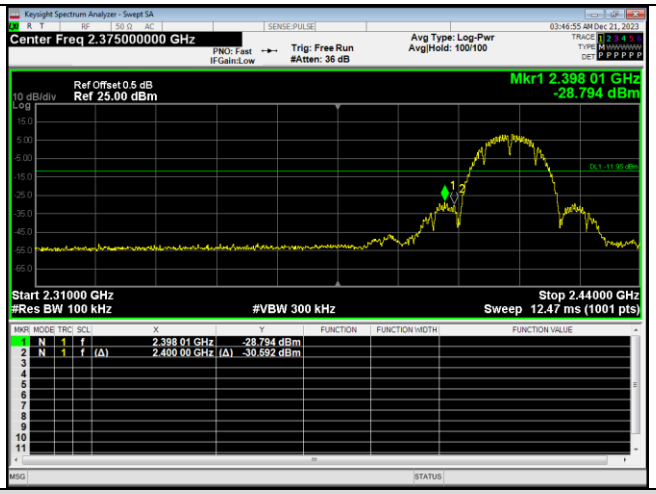
Test Result

Mode	Channel	Ant.	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
IEEE 802.11b	1	1	2400.00	-30.592	-11.95	-18.642	PASS
			2398.01	-28.794	-11.95	-16.844	PASS
			24912.6	-39.684	-11.95	-27.734	PASS
	6		24850.8	-40.301	-12.18	-28.121	PASS
	11		2483.50	-51.600	-12.68	-38.920	PASS
			24854.5	-40.362	-12.68	-27.682	PASS
IEEE 802.11g	1		2400.00	-28.761	-16.46	-12.301	PASS
			24669.8	-40.482	-16.46	-24.022	PASS
	6		24472.5	-40.859	-16.66	-24.199	PASS
	11		2483.50	-44.881	-16.72	-28.161	PASS
			24810.8	-40.510	-16.72	-23.790	PASS
IEEE 802.11n_20	1		2400.00	-29.748	-16.52	-13.228	PASS
			2397.62	-29.465	-16.52	-12.945	PASS
			24954.4	-41.073	-16.52	-24.553	PASS
	6		24686.0	-41.122	-16.63	-24.492	PASS
	11		2483.50	-41.791	-16.84	-24.951	PASS
			24743.4	-40.395	-16.84	-23.555	PASS
IEEE 802.11n_40	3		2400.00	-31.621	-19.49	-12.131	PASS
			2398.40	-29.520	-19.49	-10.030	PASS
			24946.3	-39.844	-19.49	-20.354	PASS
	6		24988.8	-40.519	-19.48	-21.039	PASS
	9		2483.50	-38.531	-19.63	-18.901	PASS
			24477.5	-40.133	-19.63	-20.503	PASS

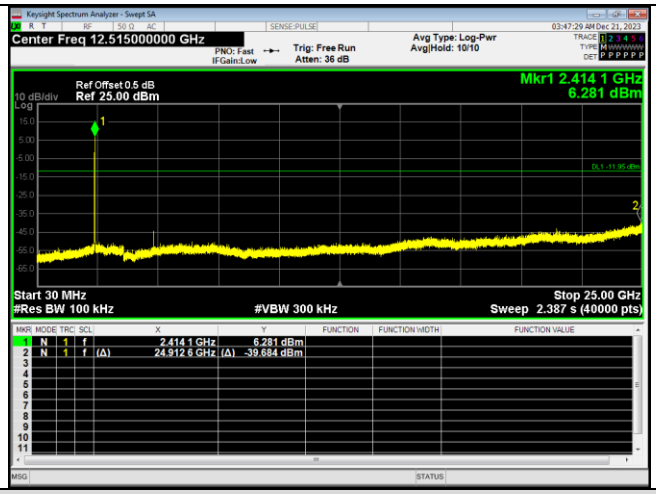
Test Graphs



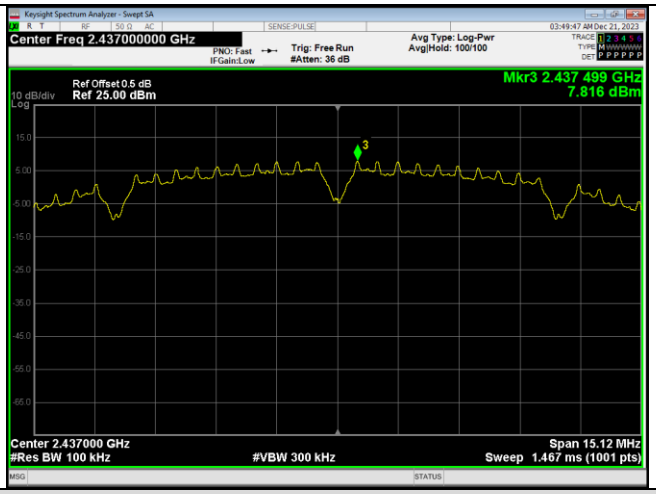
In-Band Reference Level
IEEE 802.11b_Channel 1_20MHz_Antenna 1



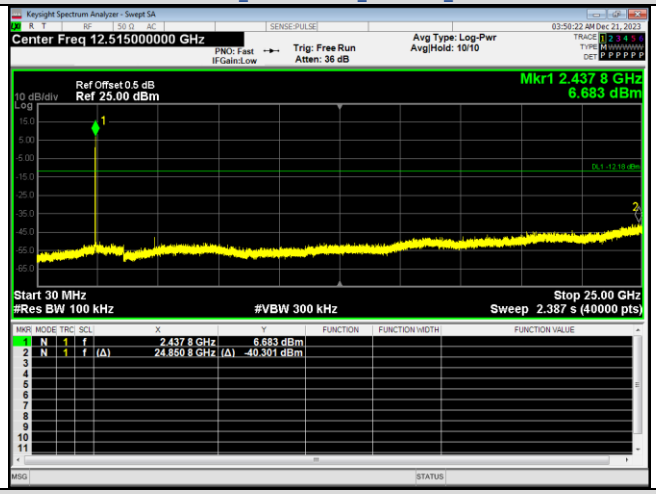
Out Of Band Emission
IEEE 802.11b_Channel 1_20MHz_Antenna 1



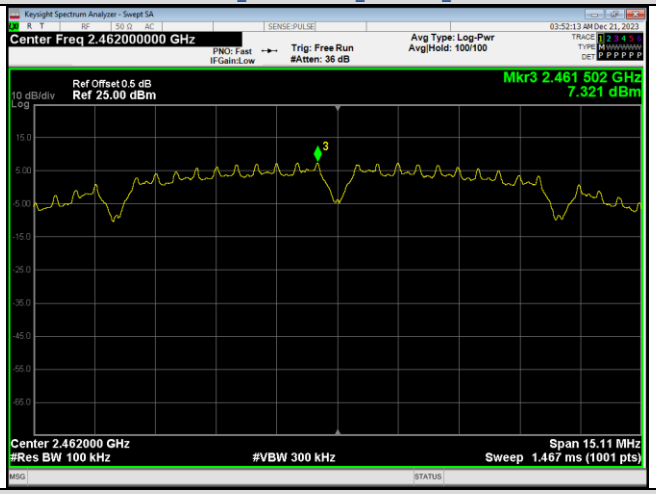
Spurious Emission
IEEE 802.11b_Channel 1_20MHz_Antenna 1



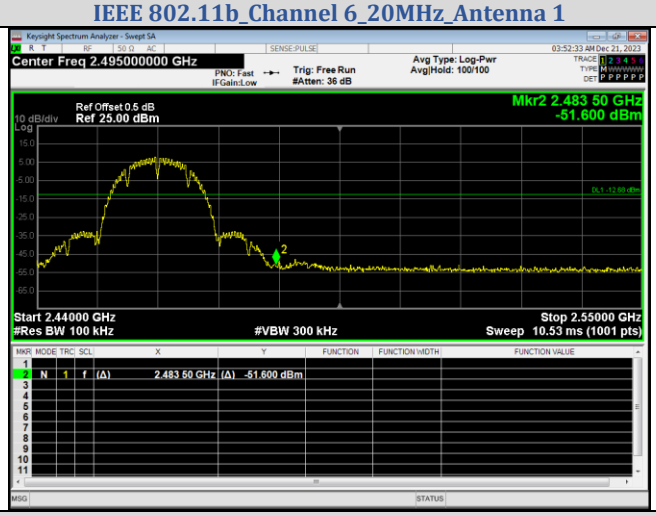
In-Band Reference Level
IEEE 802.11b_Channel 6_20MHz_Antenna 1



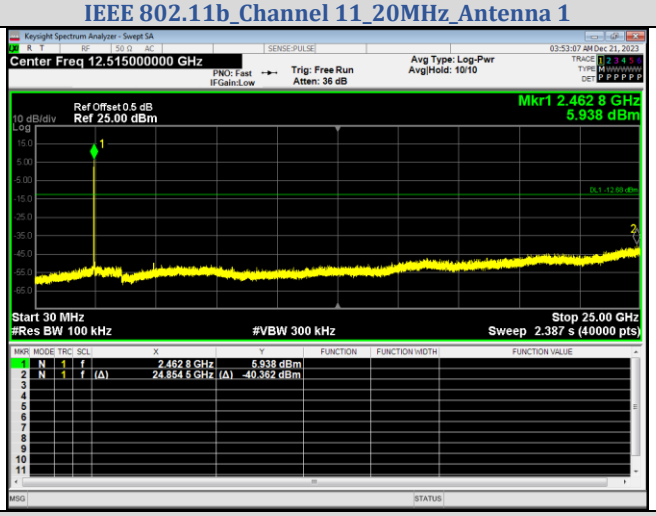
Spurious Emissions
IEEE 802.11b_Channel 6_20MHz_Antenna 1



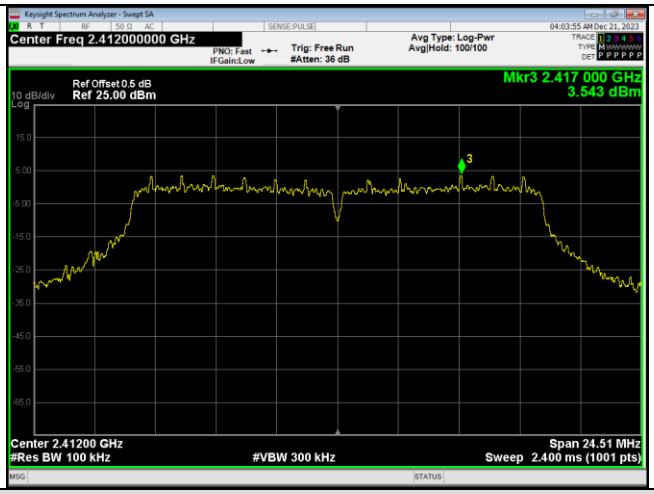
In-Band Reference Level
IEEE 802.11b_Channel 11_20MHz_Antenna 1



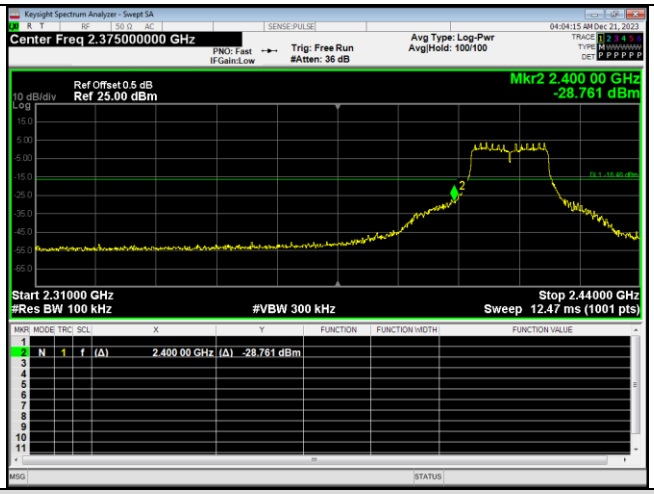
Out Of Band Emission
IEEE 802.11b_Channel 11_20MHz_Antenna 1



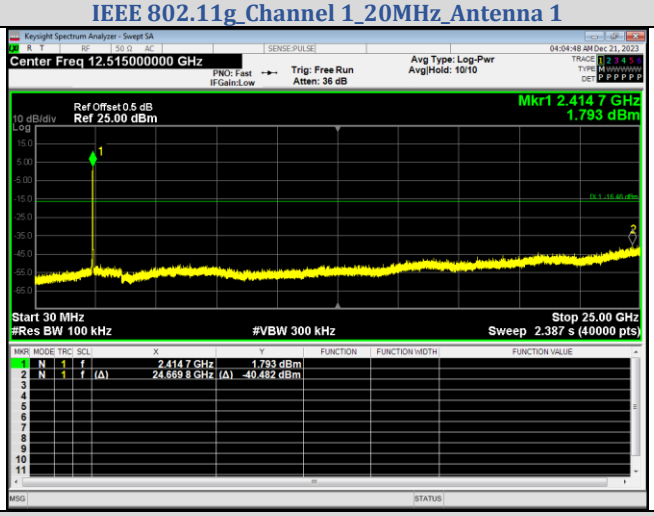
Spurious Emission
IEEE 802.11b_Channel 11_20MHz_Antenna 1



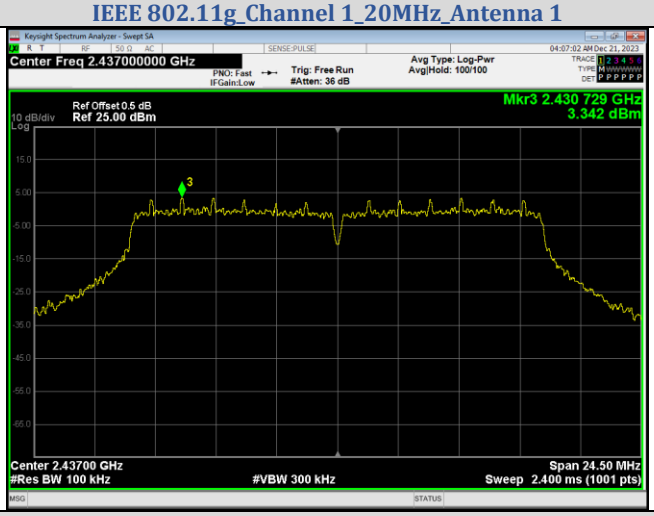
In-Band Reference Level
IEEE 802.11g_Channel 1_20MHz_Antenna 1



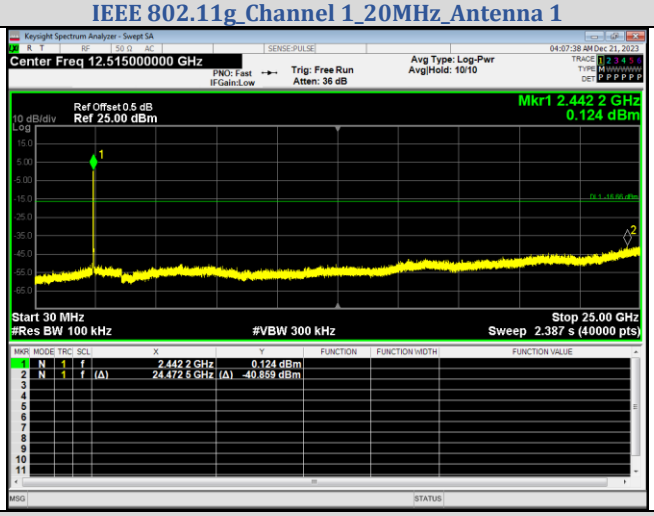
Out Of Band Emission
IEEE 802.11g_Channel 1_20MHz_Antenna 1



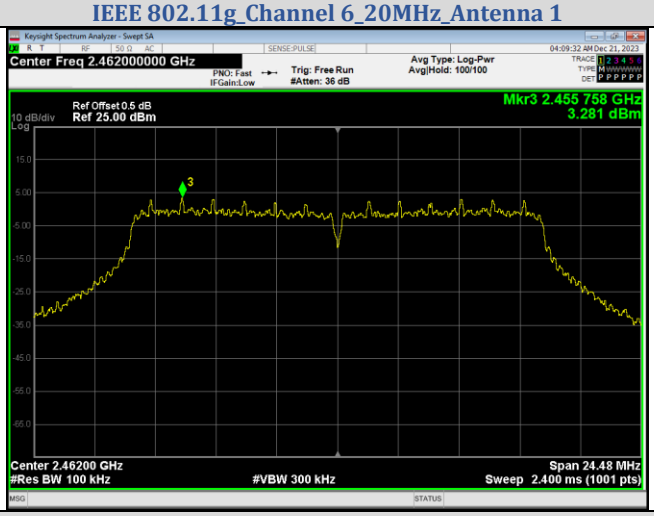
Spurious Emission
IEEE 802.11g_Channel 1_20MHz_Antenna 1



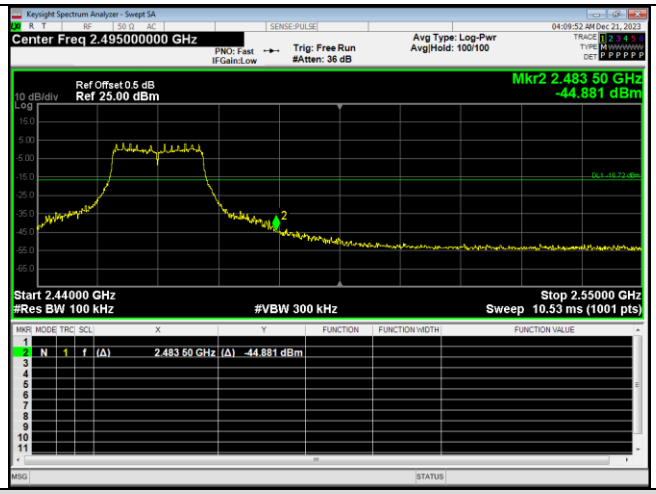
In-Band Reference Level
IEEE 802.11g_Channel 6_20MHz_Antenna 1



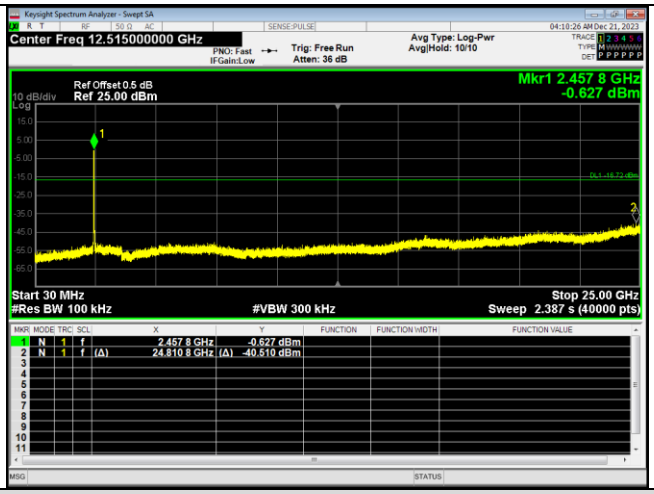
Spurious Emissions
IEEE 802.11g_Channel 6_20MHz_Antenna 1



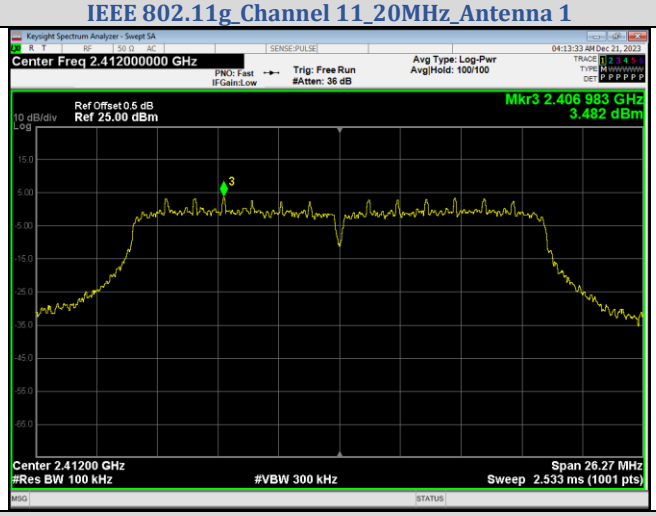
In-Band Reference Level
IEEE 802.11g_Channel 11_20MHz_Antenna 1



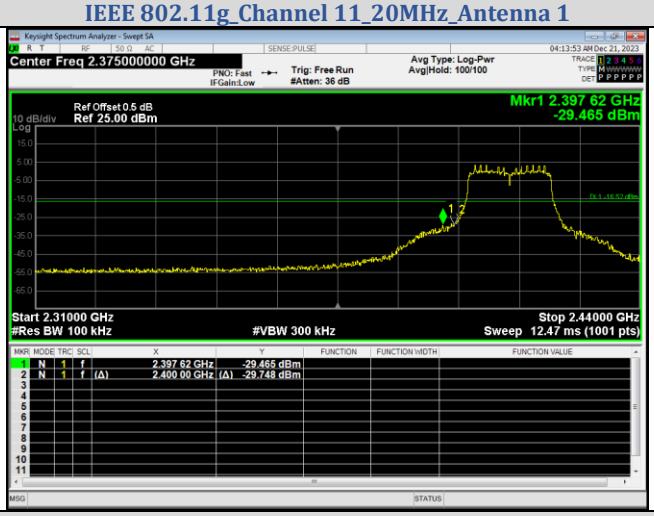
Out Of Band Emission
IEEE 802.11g_Channel 11_20MHz_Antenna 1



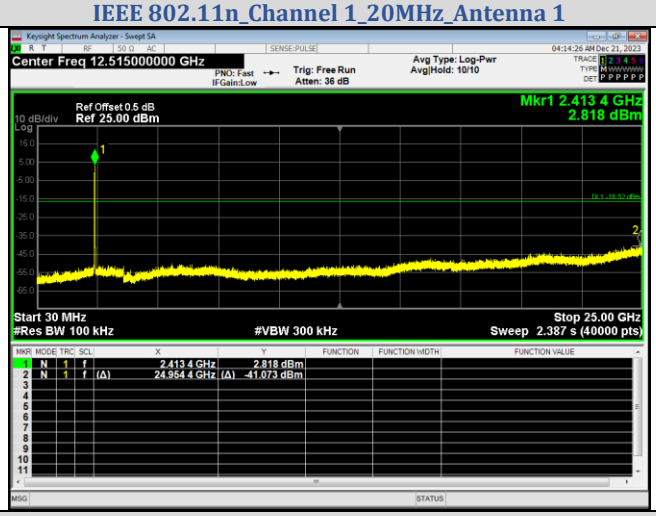
Spurious Emission
IEEE 802.11g_Channel 11_20MHz_Antenna 1



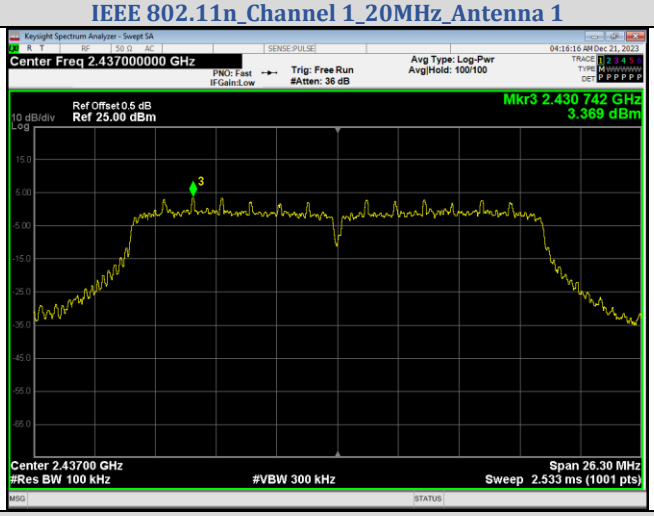
In-Band Reference Level
IEEE 802.11n_Channel 1_20MHz_Antenna 1



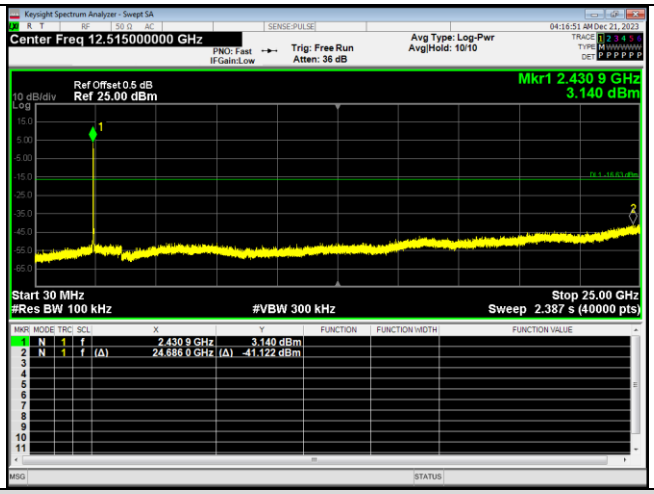
Out Of Band Emission
IEEE 802.11n_Channel 1_20MHz_Antenna 1



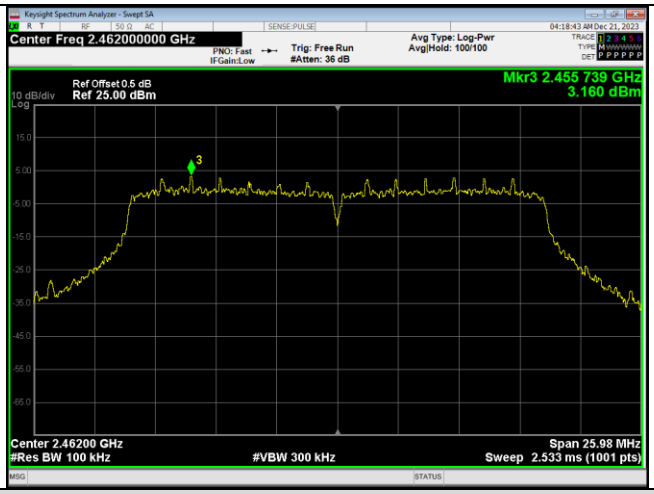
Spurious Emission
IEEE 802.11n_Channel 1_20MHz_Antenna 1



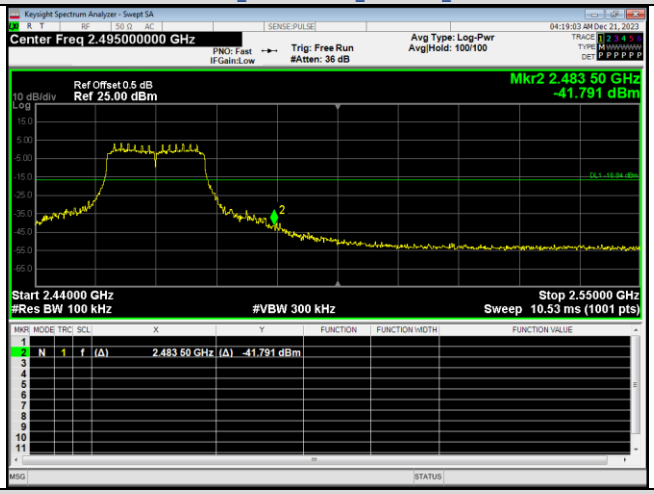
In-Band Reference Level
IEEE 802.11n_Channel 6_20MHz_Antenna 1



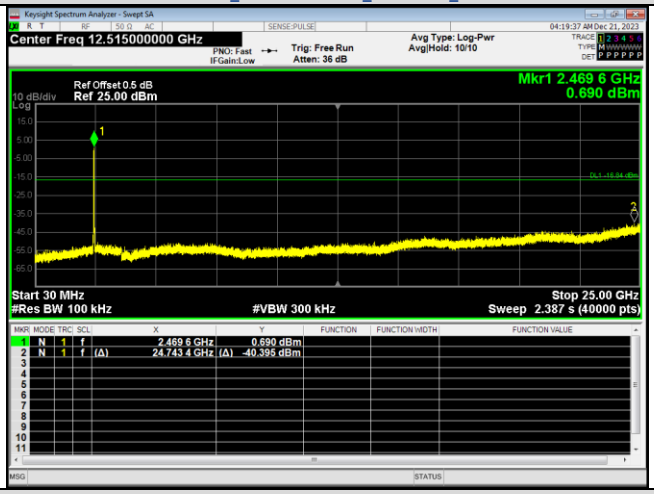
Spurious Emissions
IEEE 802.11n_Channel 6_20MHz_Antenna 1



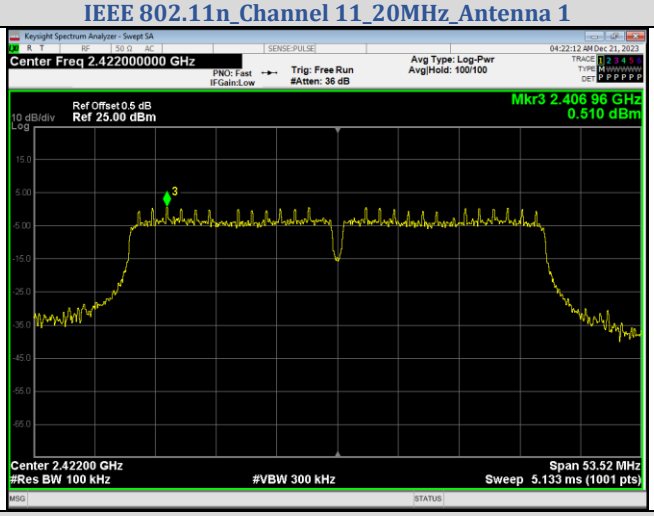
In-Band Reference Level
IEEE 802.11n_Channel 11_20MHz_Antenna 1



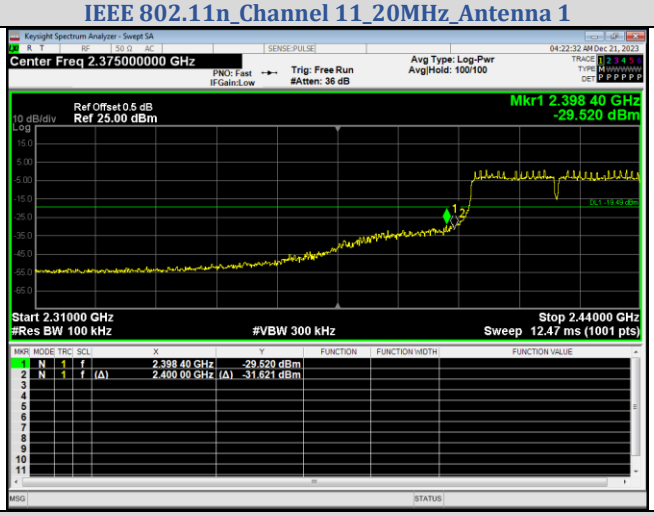
Out Of Band Emission
IEEE 802.11n_Channel 11_20MHz_Antenna 1



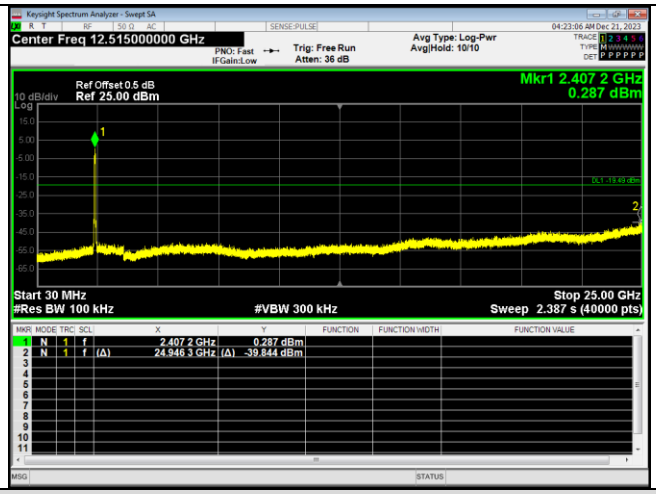
Spurious Emission
IEEE 802.11n_Channel 11_20MHz_Antenna 1



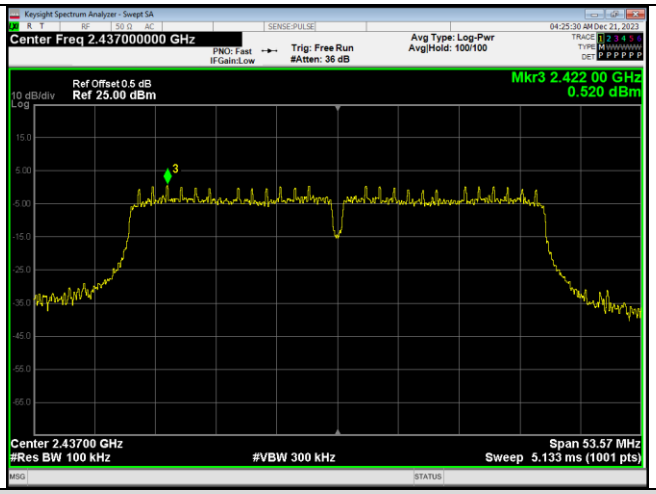
In-Band Reference Level
IEEE 802.11n_Channel 3_40MHz_Antenna 1



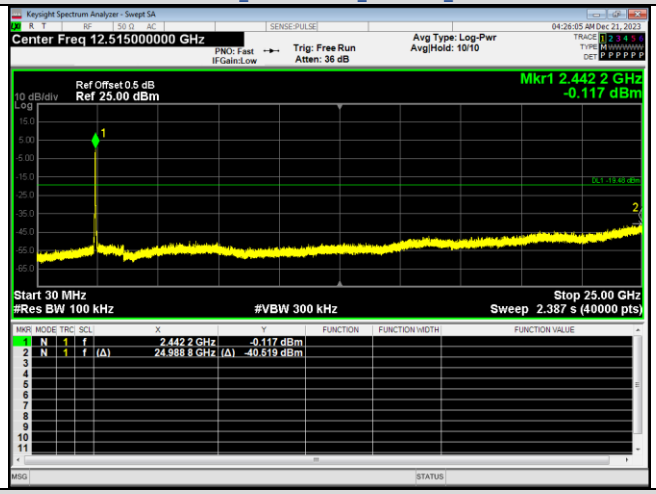
Out Of Band Emission
IEEE 802.11n_Channel 3_40MHz_Antenna 1



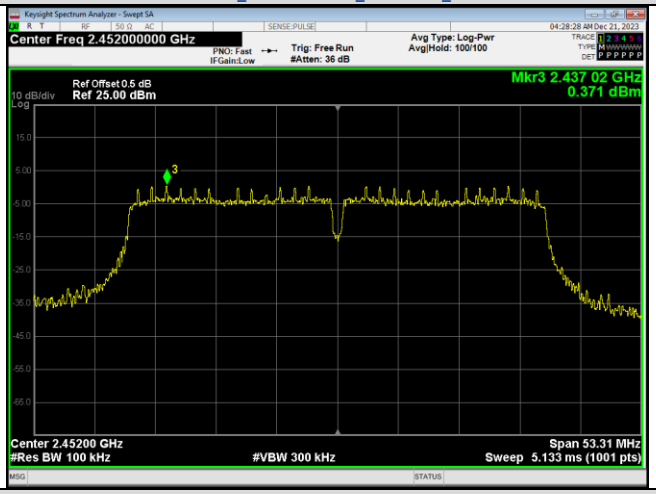
Spurious Emission
IEEE 802.11n_Channel 3_40MHz_Antenna 1



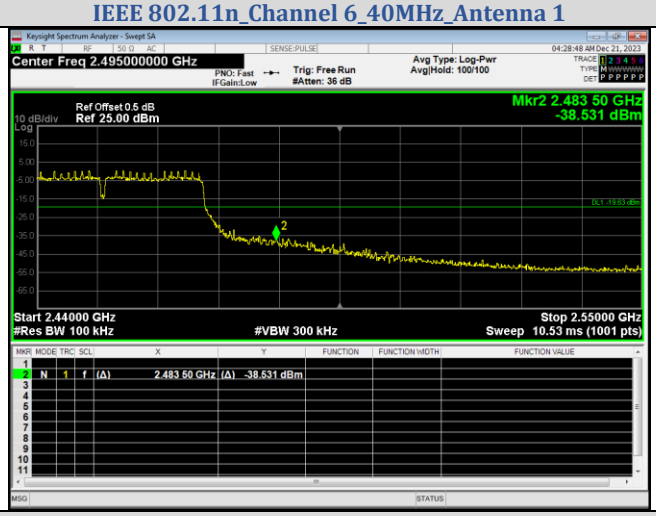
In-Band Reference Level
IEEE 802.11n_Channel 6_40MHz_Antenna 1



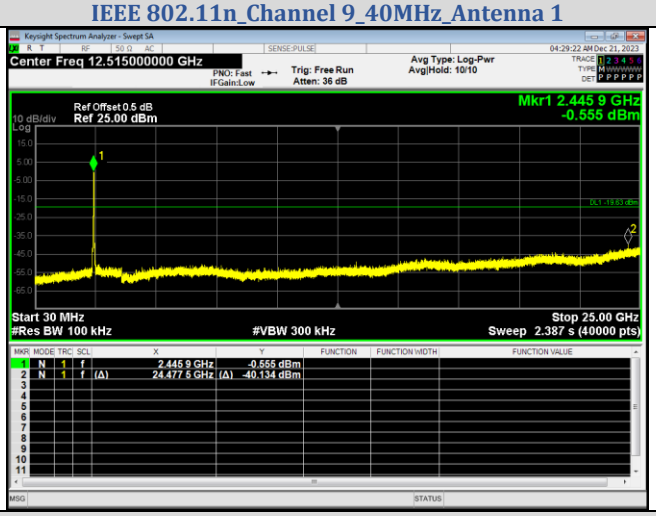
Spurious Emissions
IEEE 802.11n_Channel 6_40MHz_Antenna 1



In-Band Reference Level
IEEE 802.11n_Channel 9_40MHz_Antenna 1



Out Of Band Emission
IEEE 802.11n_Channel 9_40MHz_Antenna 1



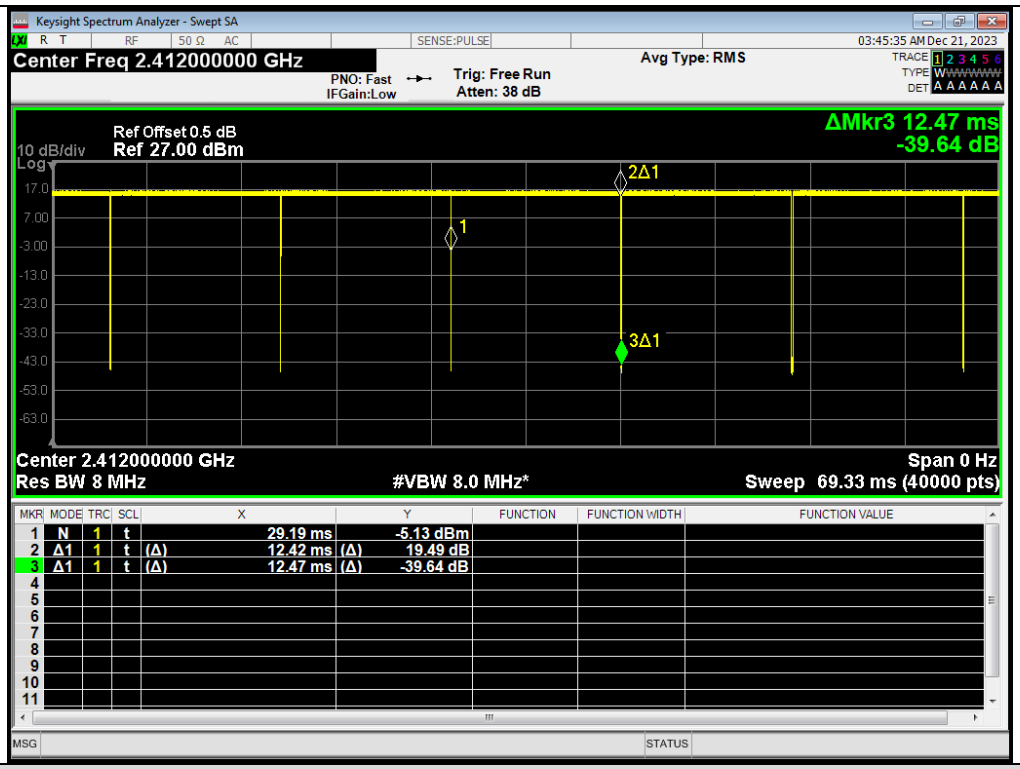
Spurious Emission
IEEE 802.11n_Channel 9_40MHz_Antenna 1

Duty Cycle

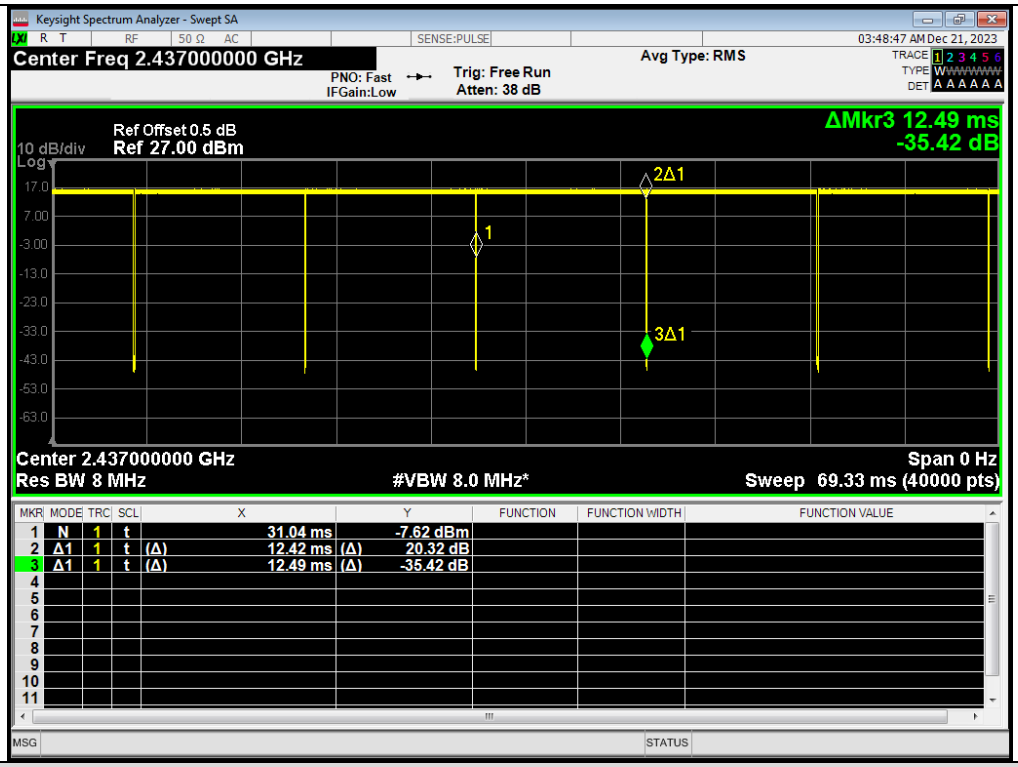
Test Result

Mode	Data rates	Channel	Antenna	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)
IEEE 802.11b	1Mbps	1	1	12.419	12.471	99.58	0.9958	0.0183
		6		12.421	12.490	99.44	0.9944	0.0244
		11		12.421	12.563	98.87	0.9887	0.0494
IEEE 802.11g	6Mbps	1		2.068	2.236	92.49	0.9249	0.3391
		6		2.070	2.202	94.01	0.9401	0.2683
		11		2.070	2.220	93.24	0.9324	0.304
IEEE 802.11n_20	MCS 0	1		1.926	1.959	98.32	0.9832	0.0736
		6		1.922	2.056	93.51	0.9351	0.2914
		11		1.926	2.013	95.68	0.9568	0.1918
IEEE 802.11n_40		3		0.945	1.025	92.23	0.9223	0.3513
		6		0.945	1.115	84.78	0.8478	0.7171
		9		0.948	1.108	85.49	0.8549	0.6808

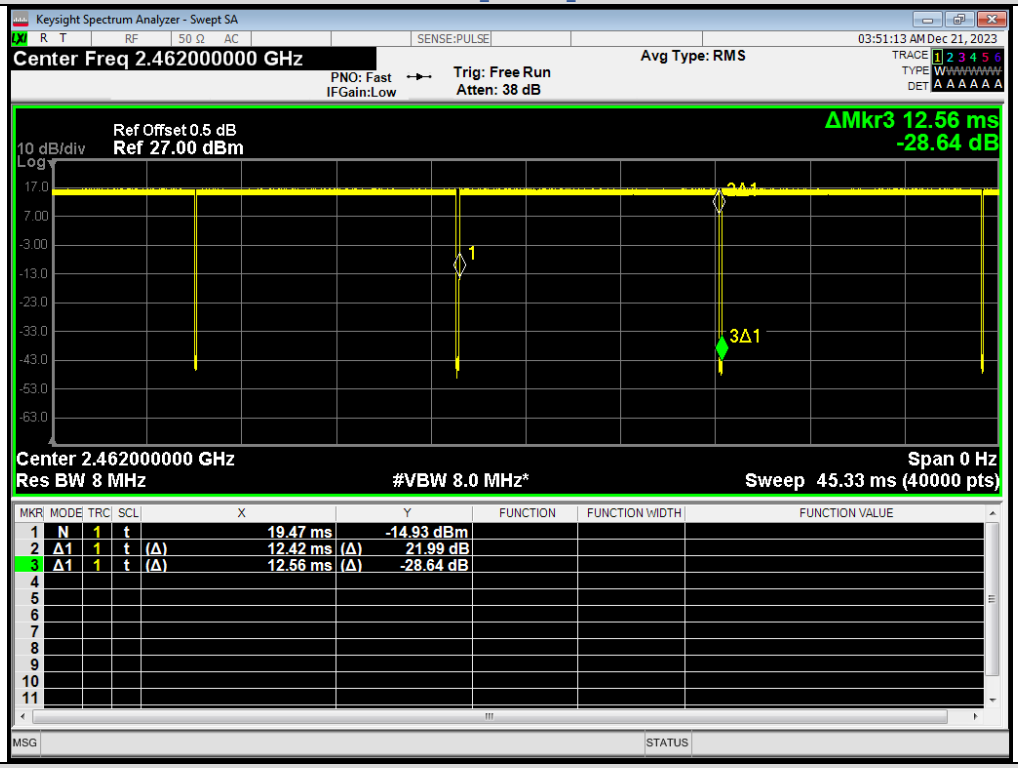
Test Graphs



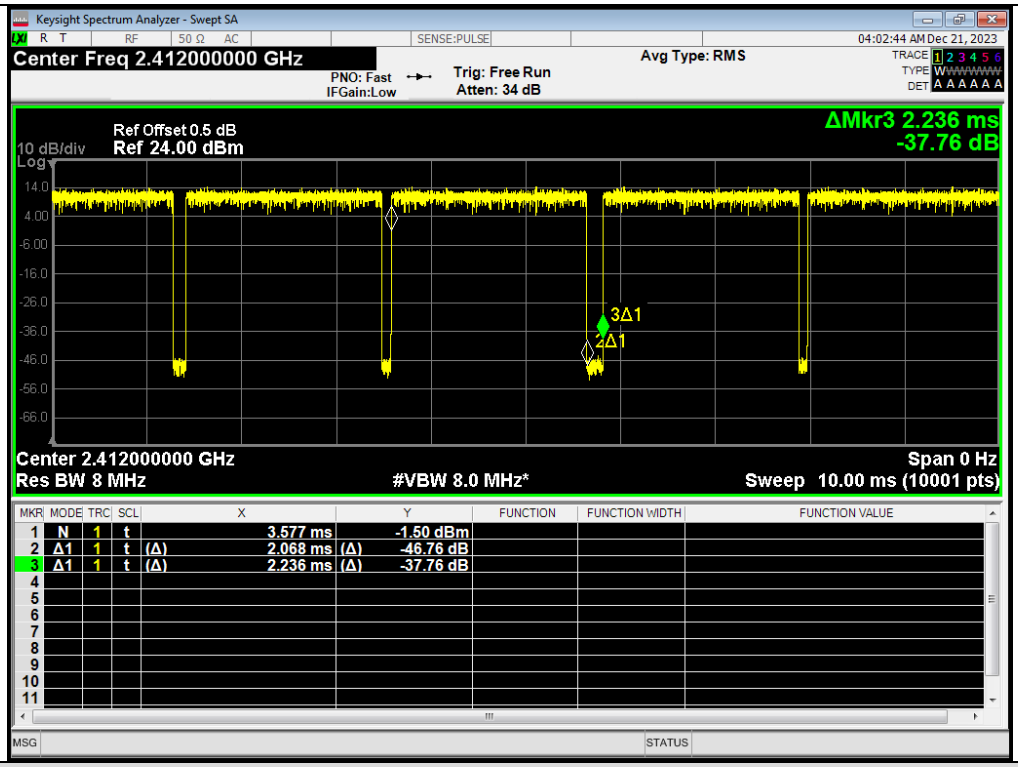
IEEE 802.11b_20MHz_Channel 1



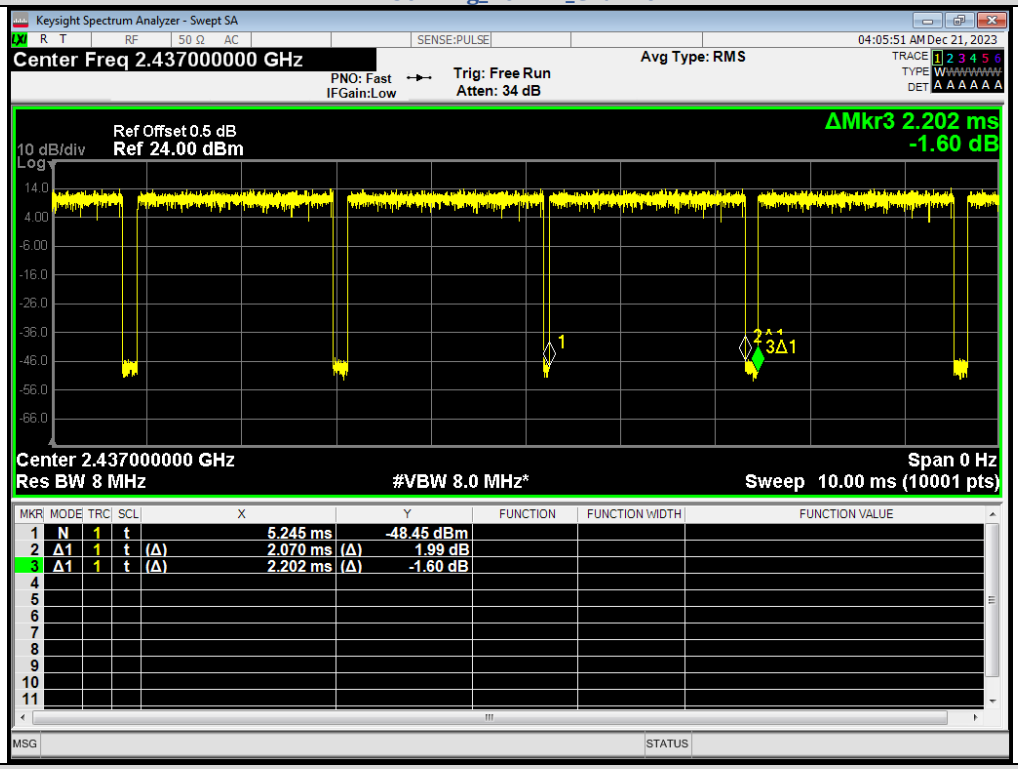
IEEE 802.11b_20MHz_Channel 6



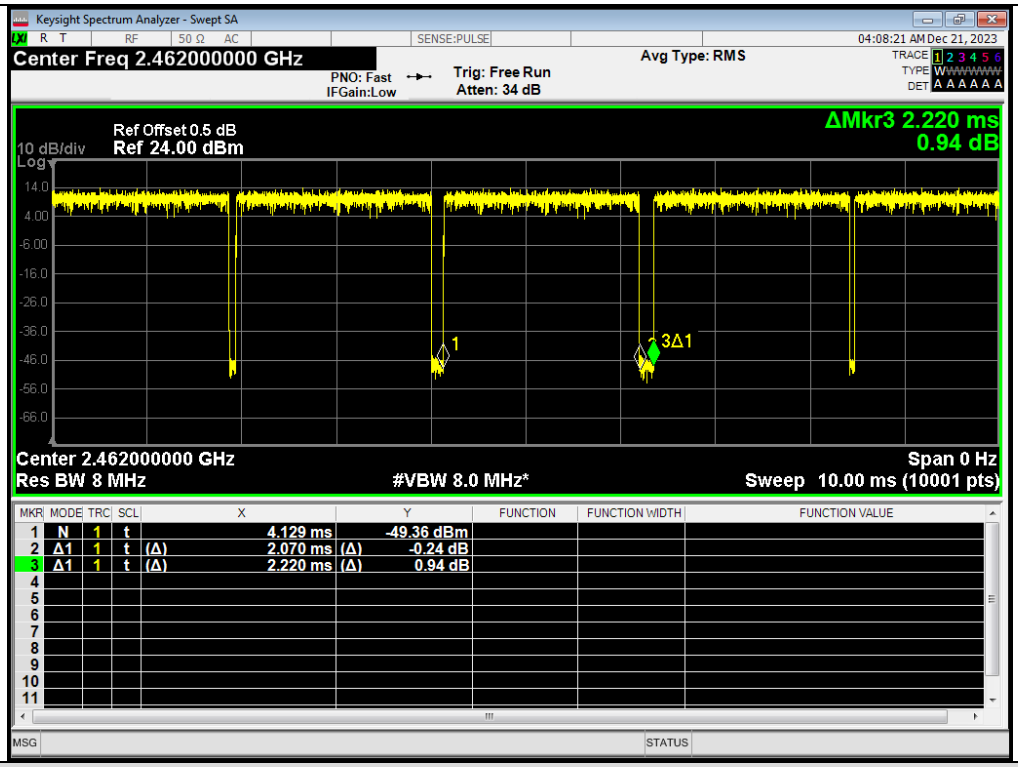
IEEE 802.11b_20MHz_Channel 11



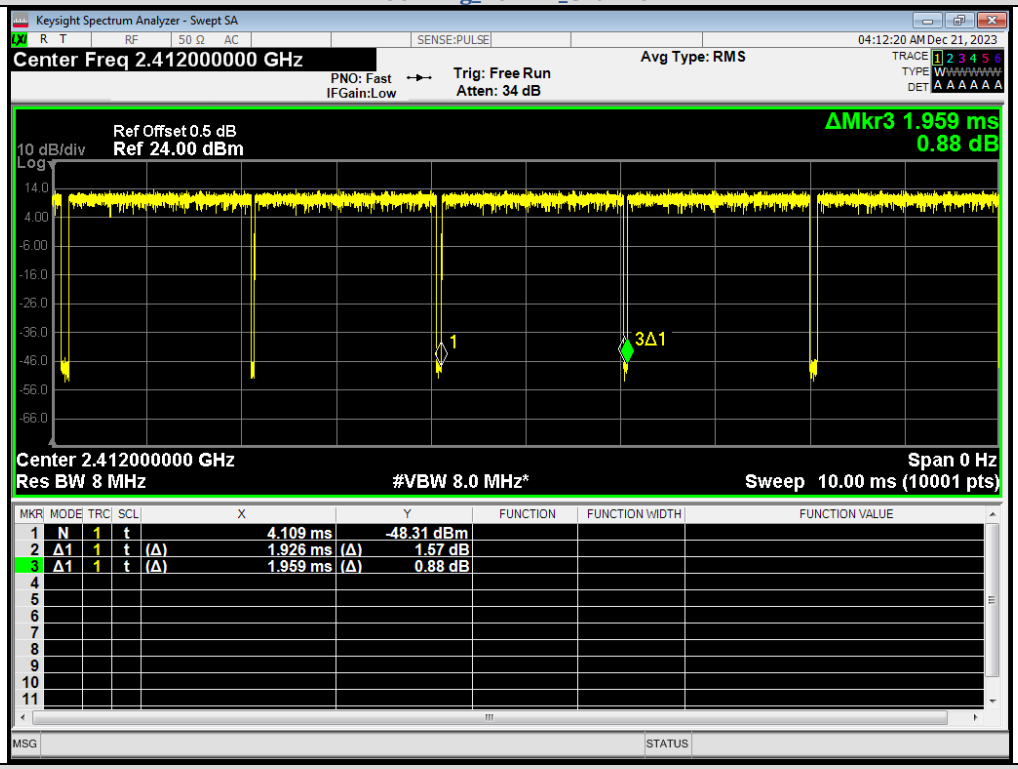
IEEE 802.11g_20MHz_Channel 1



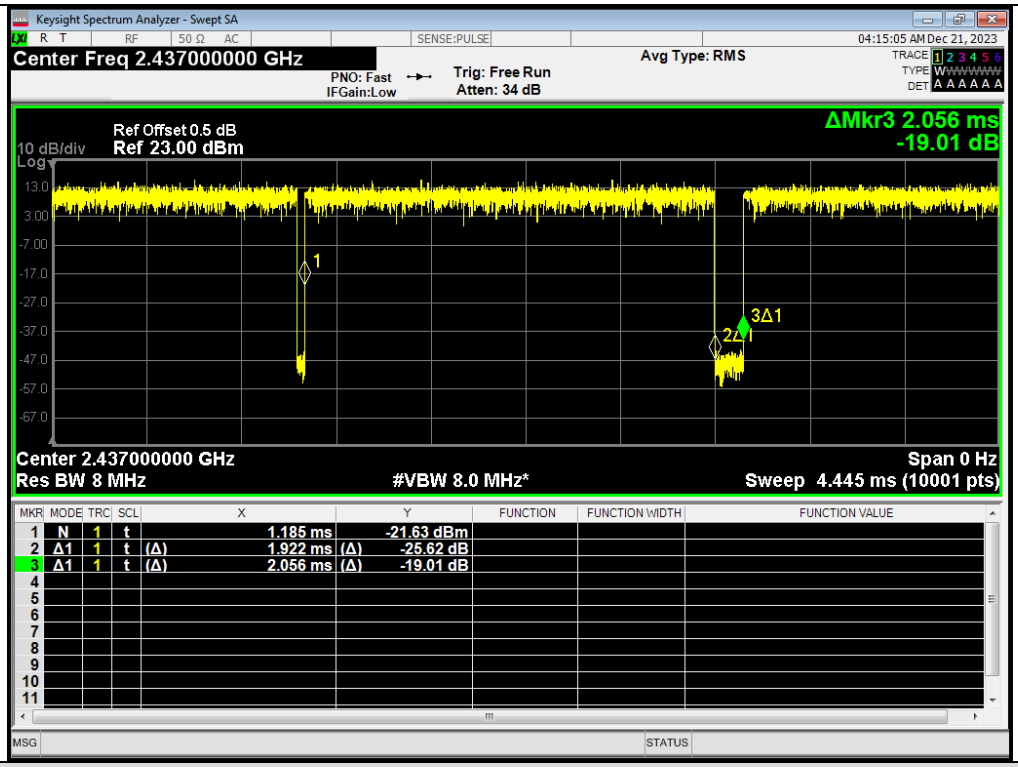
IEEE 802.11g_20MHz_Channel 6



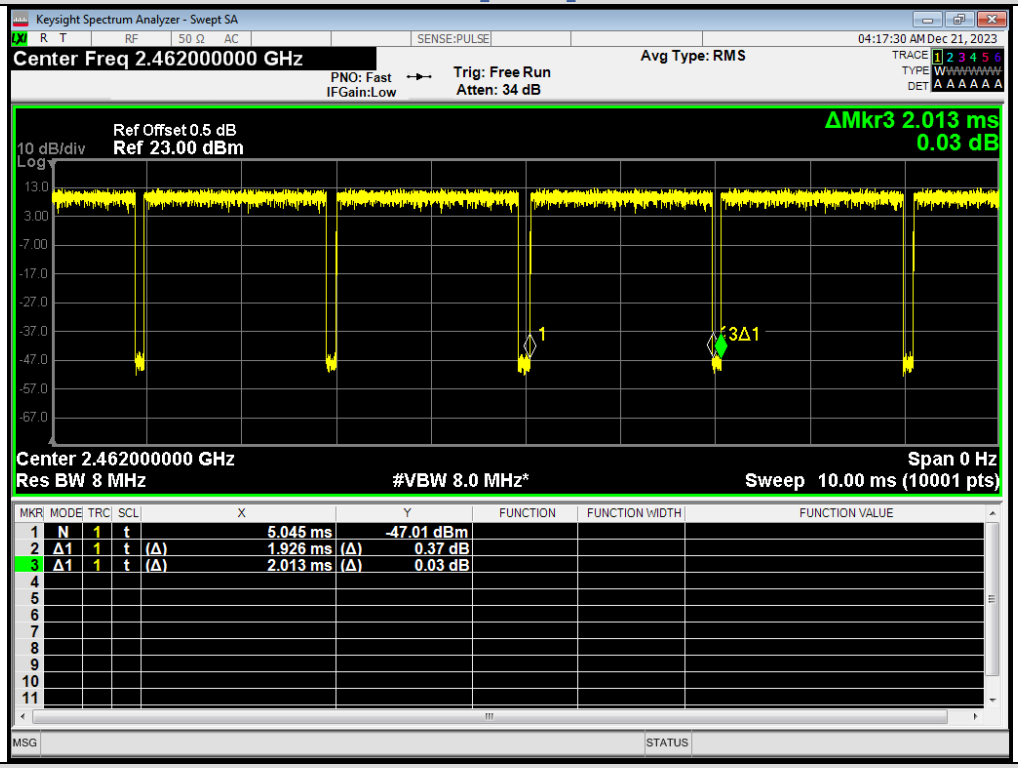
IEEE 802.11g_20MHz_Channel 11



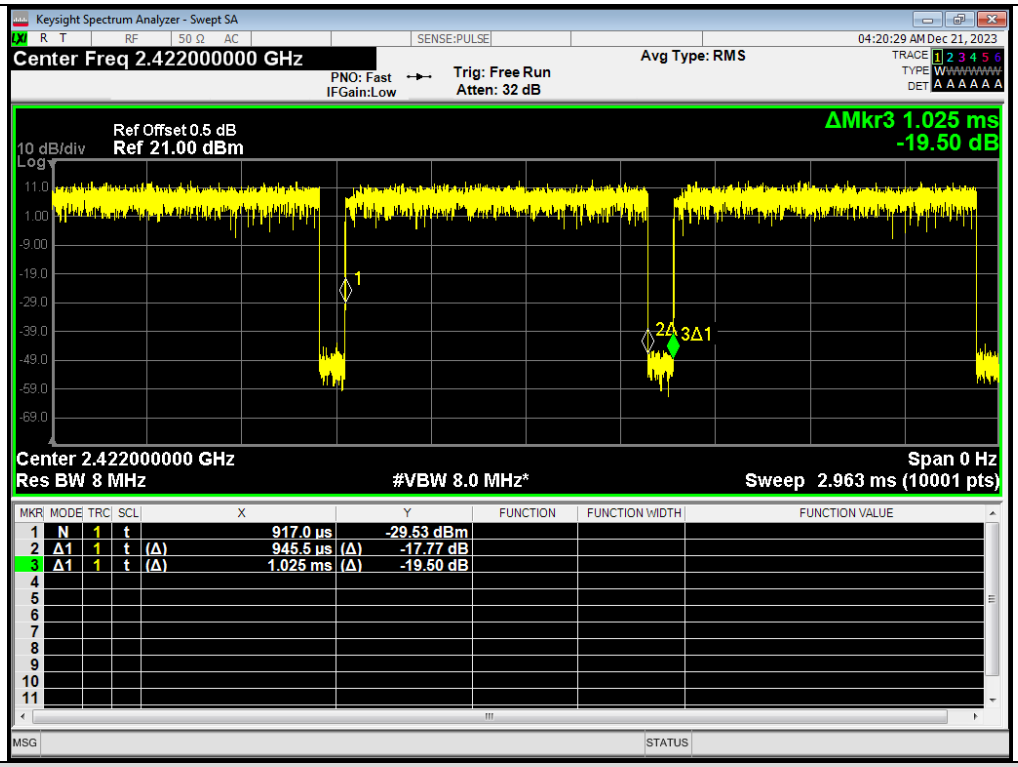
IEEE 802.11n_20MHz_Channel 1



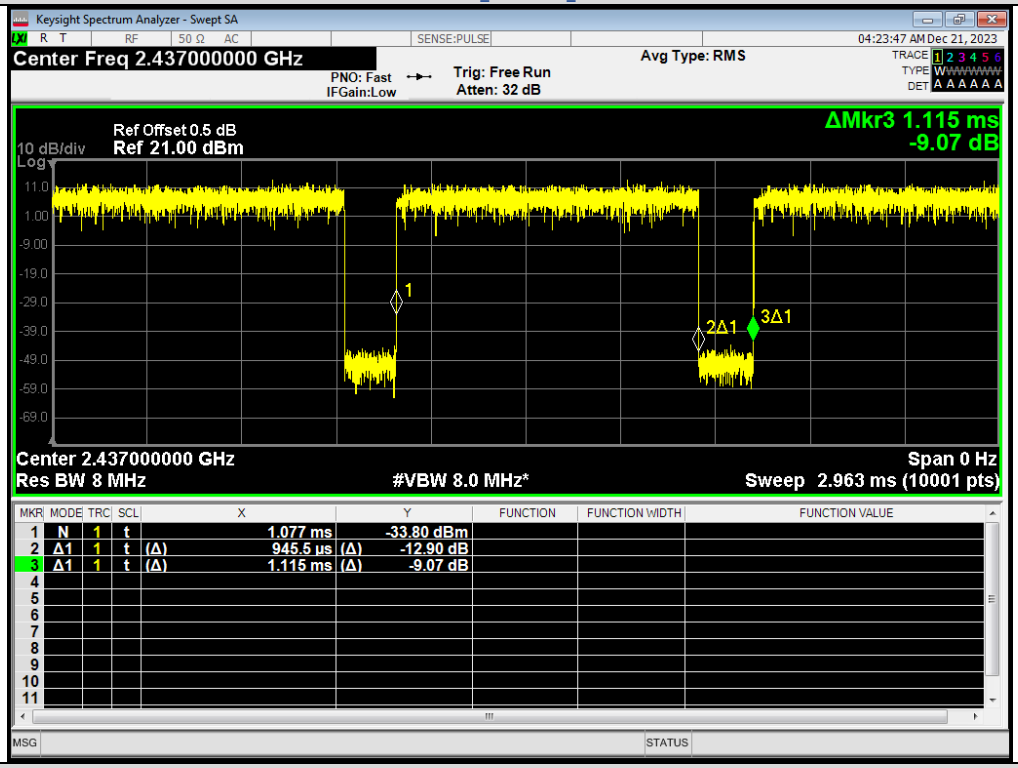
IEEE 802.11n_20MHz_Channel 6



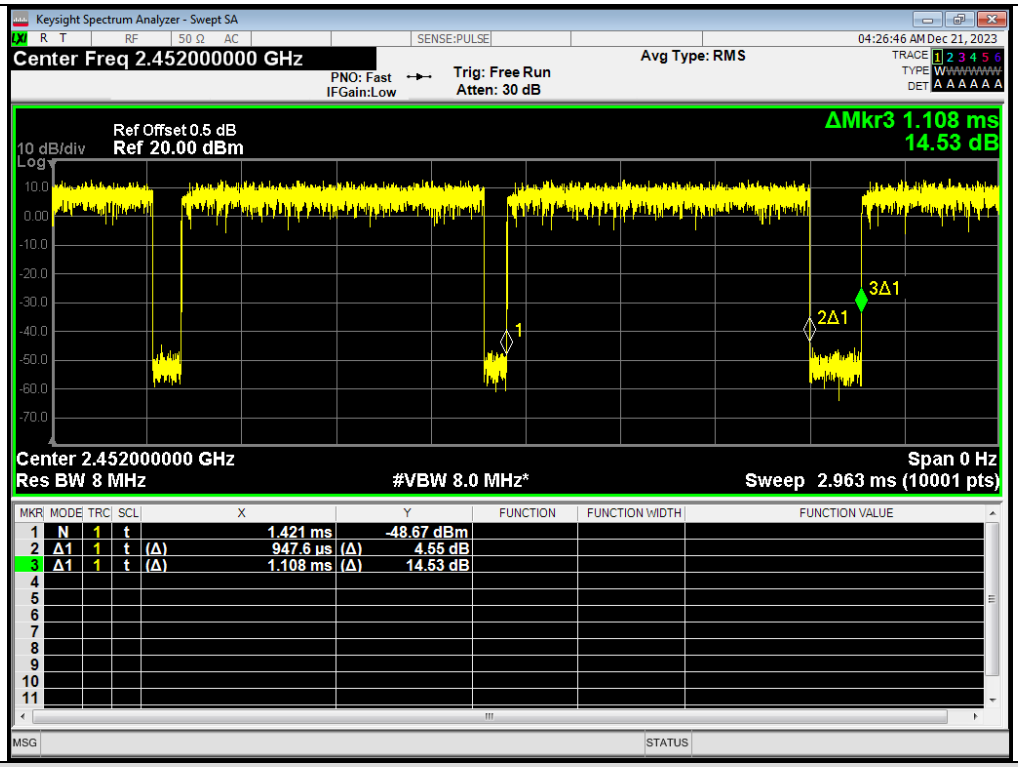
IEEE 802.11n_20MHz_Channel 11



IEEE 802.11n_40MHz_Channel 3



IEEE 802.11n_40MHz_Channel 6



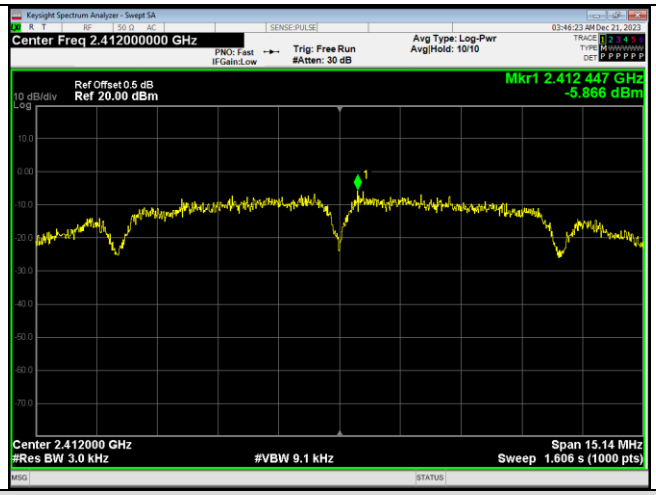
IEEE 802.11n_40MHz_Channel 9

Power Spectral Density

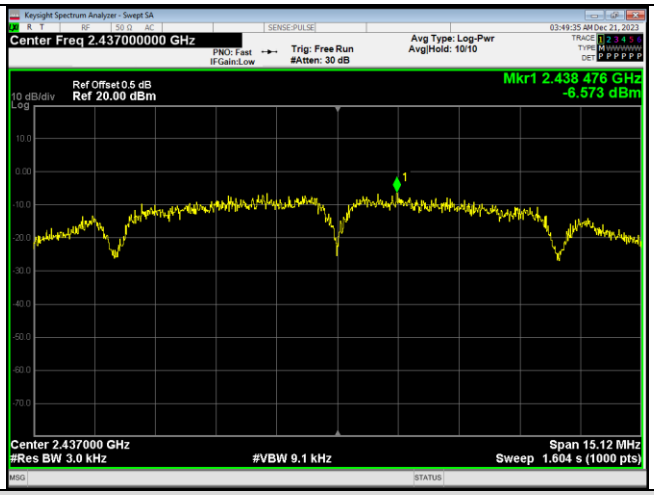
Test Result

Mode	Channel	PSD (dBm/3kHz) Antenna 1	Limit (dBm/3kHz)	Result
IEEE 802.11b	1	-5.866	8	PASS
	6	-6.573		PASS
	11	-6.398		PASS
IEEE 802.11g	1	-10.422		PASS
	6	-10.268		PASS
	11	-11.229		PASS
IEEE 802.11n_20	1	-10.641		PASS
	6	-9.051		PASS
	11	-11.635		PASS
IEEE 802.11n_40	3	-13.963		PASS
	6	-13.454		PASS
	9	-13.659		PASS

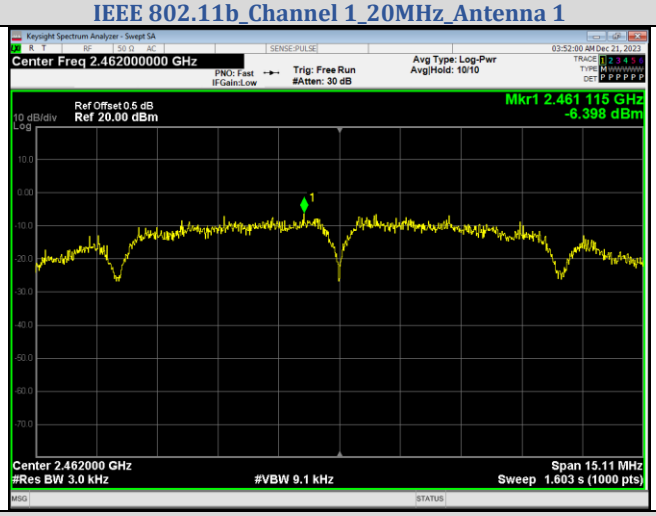
Test Graphs



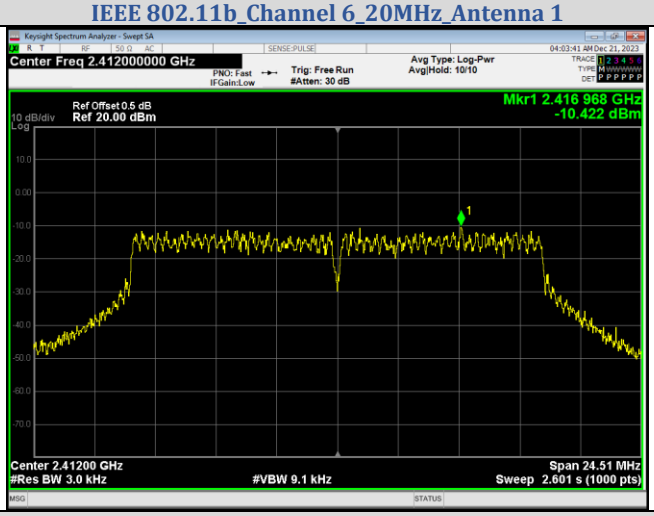
IEEE 802.11b_Channel 1_20MHz_Antenna 1



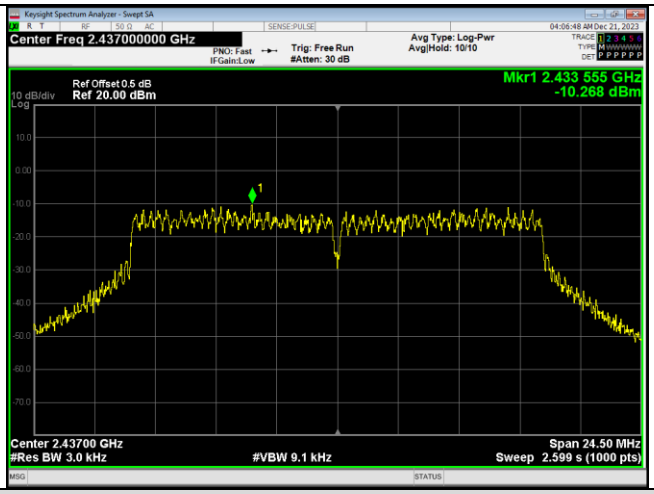
IEEE 802.11b_Channel 6_20MHz_Antenna 1



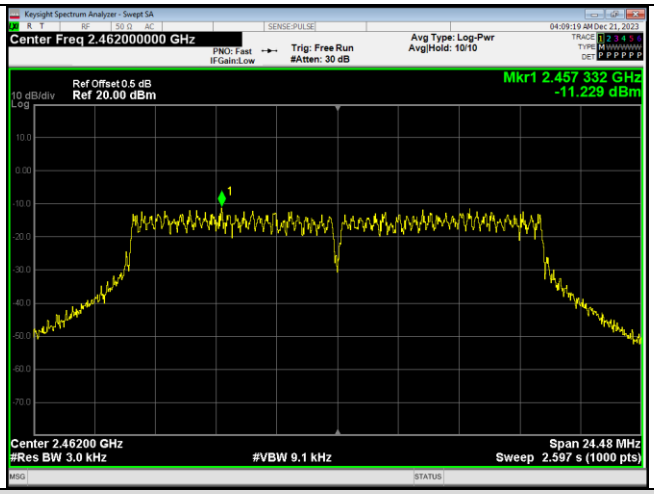
IEEE 802.11b_Channel 11_20MHz_Antenna 1



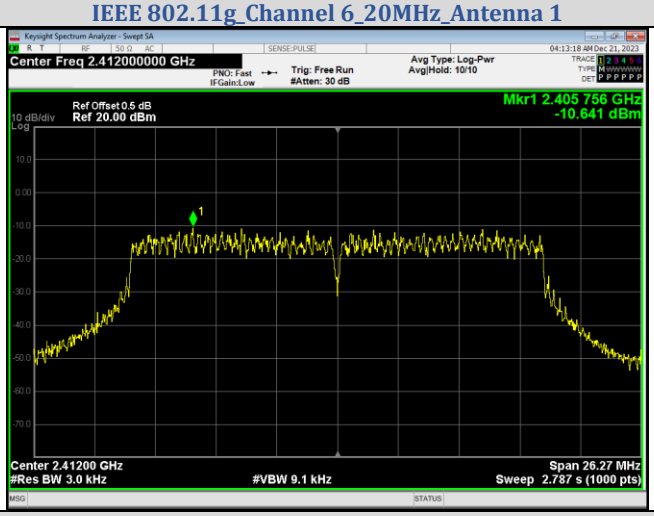
IEEE 802.11g_Channel 1_20MHz_Antenna 1



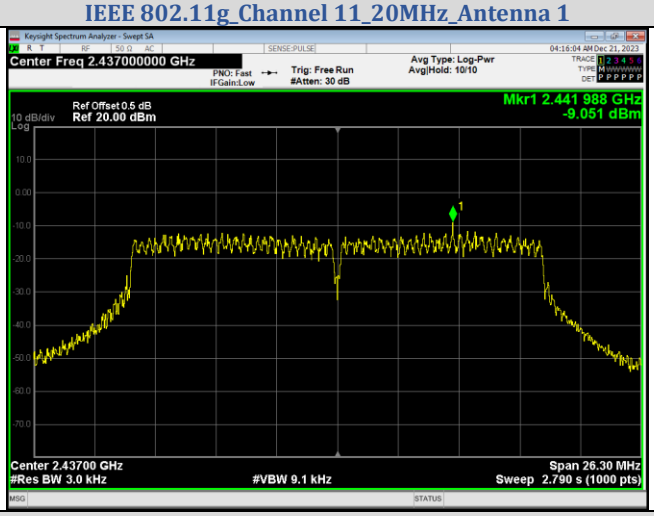
IEEE 802.11g_Channel 6_20MHz_Antenna 1



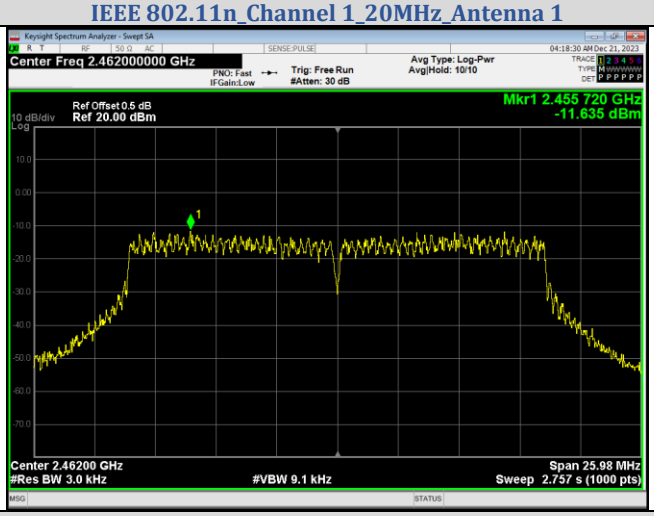
IEEE 802.11g_Channel 11_20MHz_Antenna 1



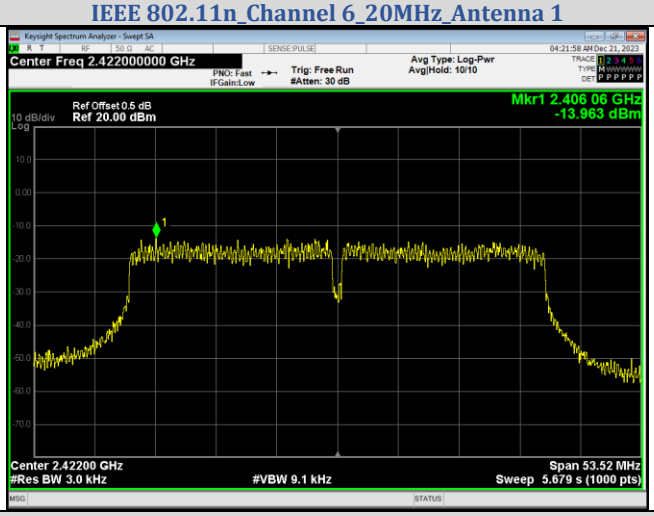
IEEE 802.11n_Channel 1_20MHz_Antenna 1



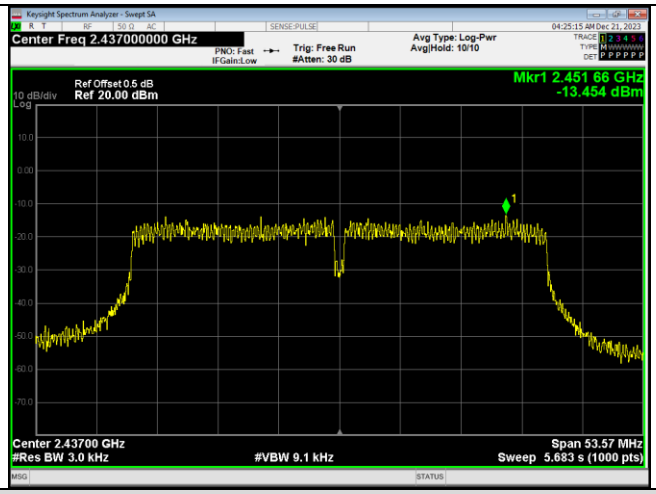
IEEE 802.11n_Channel 6_20MHz_Antenna 1



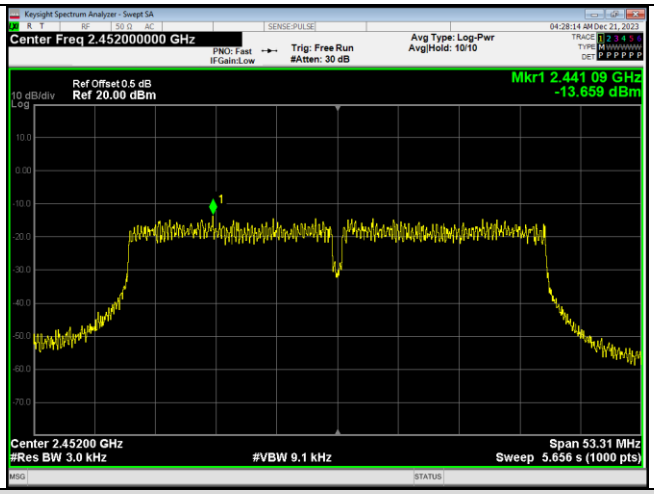
IEEE 802.11n_Channel 11_20MHz_Antenna 1



IEEE 802.11n_Channel 3_40MHz_Antenna 1



IEEE 802.11n_Channel 6_40MHz_Antenna 1



IEEE 802.11n_Channel 9_40MHz_Antenna 1