

Appendix A

Report No.:	CISRR240113080
FCC ID:	2AXS5-FLW8189FSA7-A
Product Name:	FLW8189FSA7-A WiFi module
Model No.:	FLW8189FSA7-A
Test Engineer:	Lucas Huang
Supervised by:	Rory Huang

Conducted Peak Output Power

Test Result

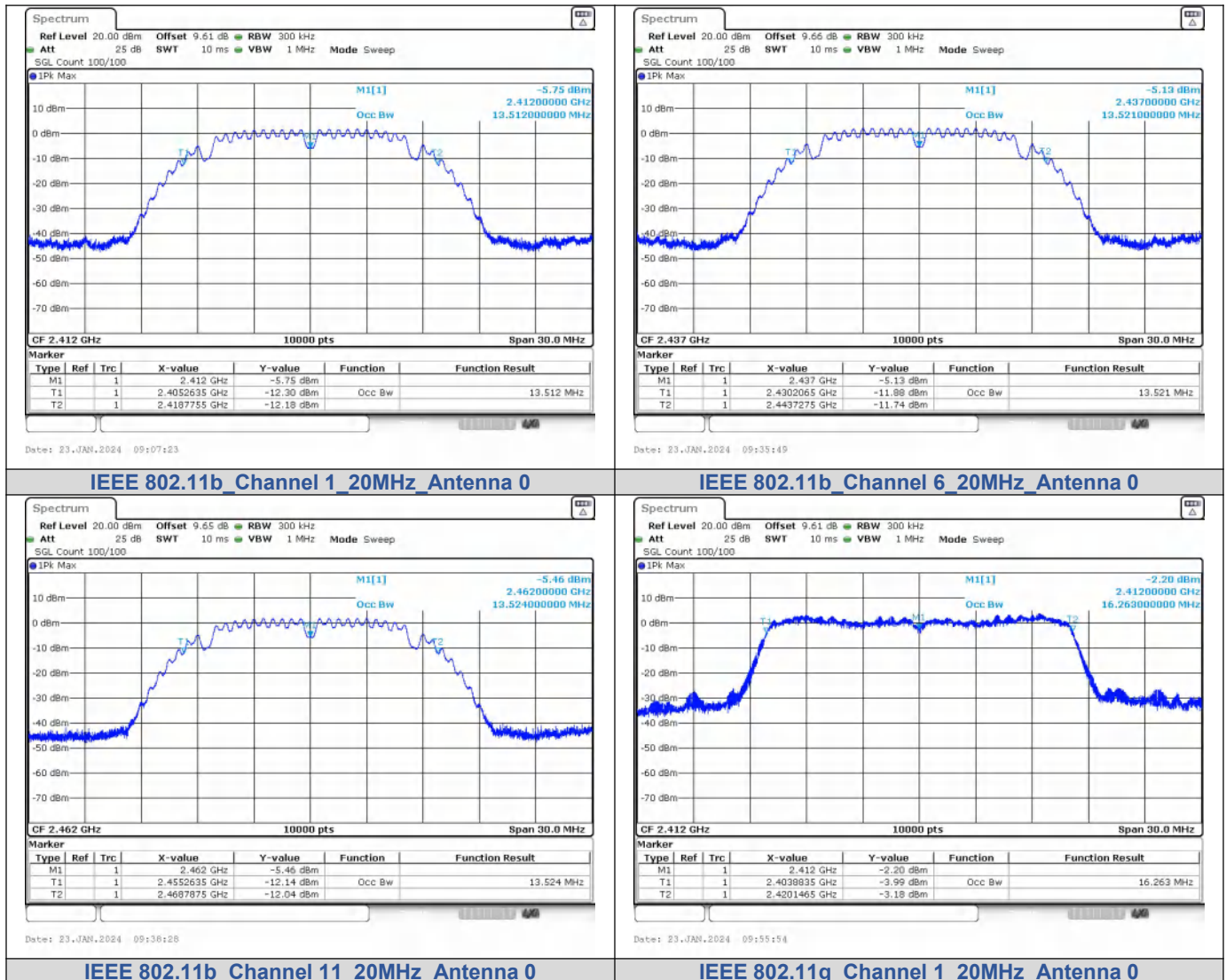
Mode	Channel	Ant. 0 (dBm)	Limit (dBm)	Result
IEEE 802.11b	1	17.87	30	PASS
	6	17.83	30	PASS
	11	17.69	30	PASS
IEEE 802.11g	1	16.63	30	PASS
	6	16.80	30	PASS
	11	16.96	30	PASS
IEEE 802.11n_20	1	15.52	30	PASS
	6	15.76	30	PASS
	11	15.87	30	PASS
IEEE 802.11n_40	3	14.81	30	PASS
	6	14.78	30	PASS
	9	14.79	30	PASS

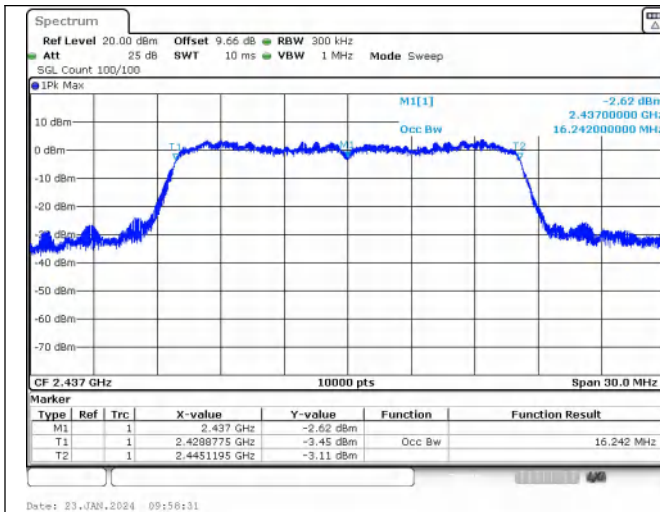
99% Bandwidth

Test Result

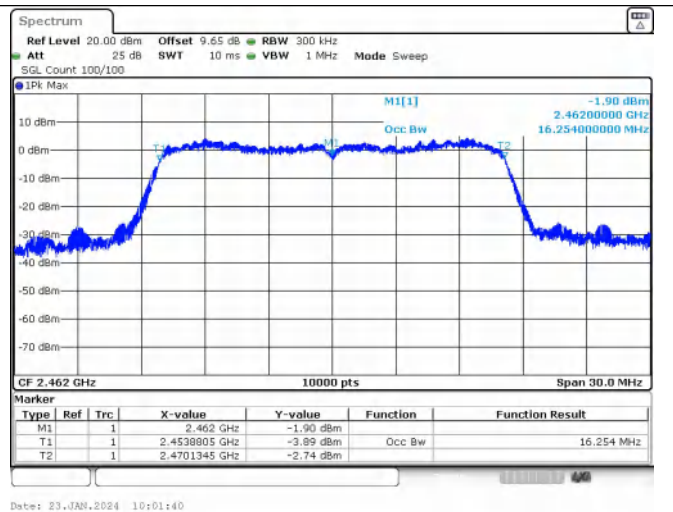
Mode	Channel	Ant.	99% BW (MHz)
IEEE 802.11b	1	0	13.510
	6		13.520
	11		13.520
IEEE 802.11g	1		16.260
	6		16.240
	11		16.250
IEEE 802.11n_20	1		16.240
	6		16.270
	11		16.240
IEEE 802.11n_40	3		36.120
	6		36.150
	9		36.190

Test Graphs

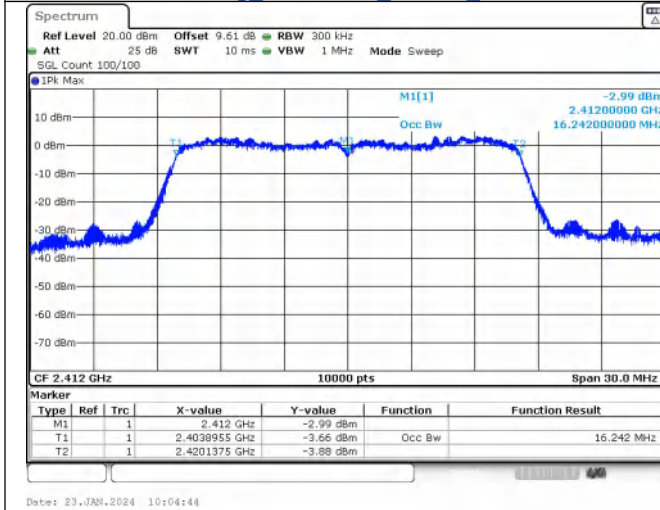




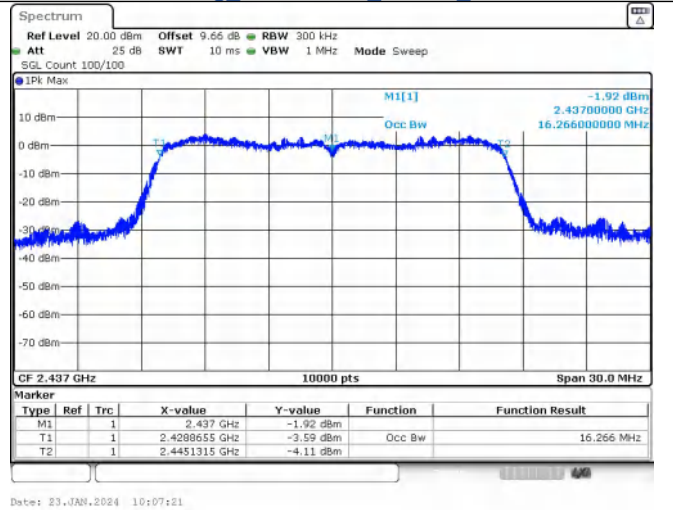
IEEE 802.11g_Channel 6_20MHz_Antenna 0



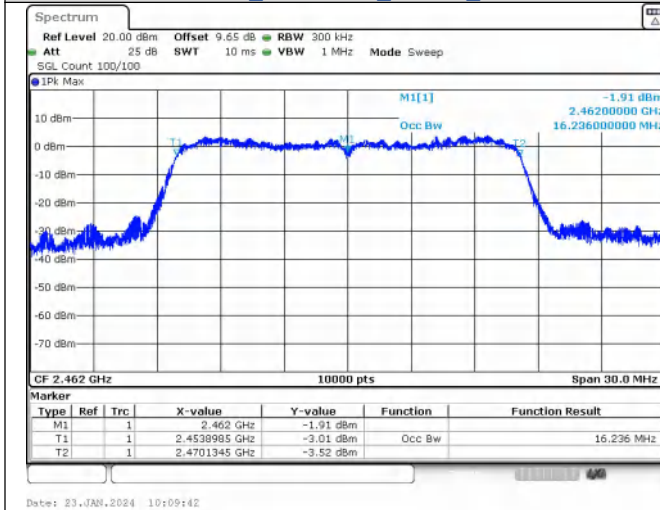
IEEE 802.11g_Channel 11_20MHz_Antenna 0



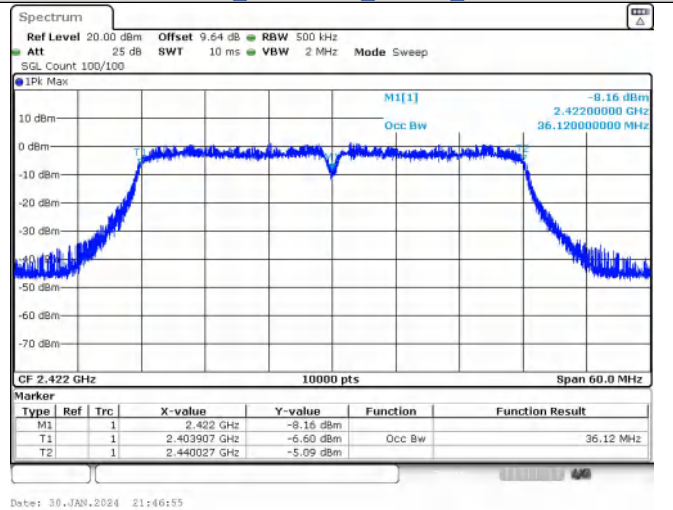
IEEE 802.11n_Channel 1_20MHz_Antenna 0



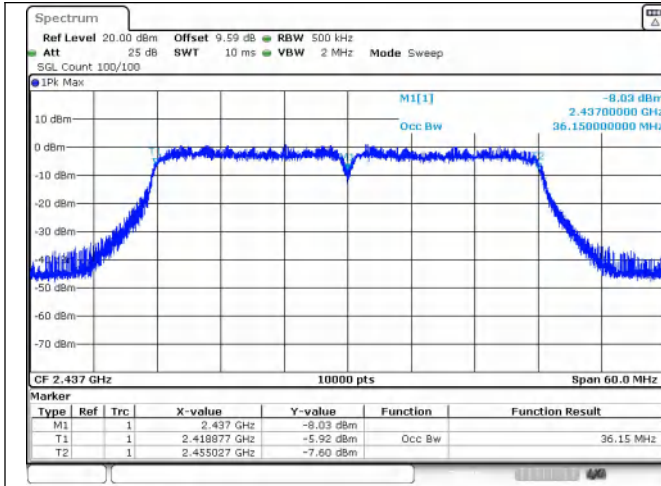
IEEE 802.11n_Channel 6_20MHz_Antenna 0



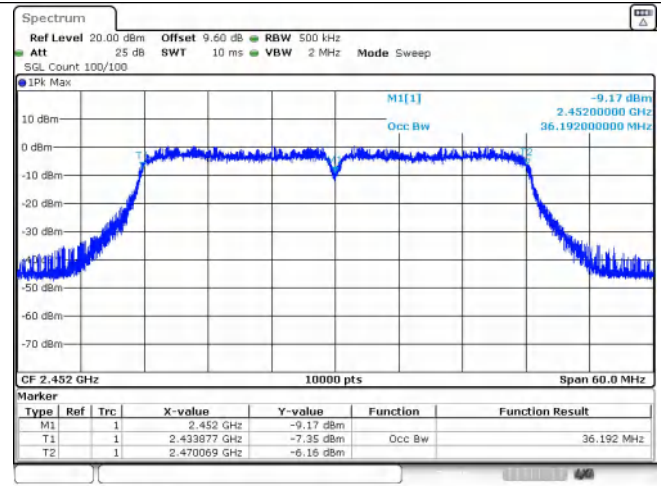
IEEE 802.11n_Channel 11_20MHz_Antenna 0



IEEE 802.11n_Channel 3_40MHz_Antenna 0



IEEE 802.11n_Channel 6_40MHz_Antenna 0



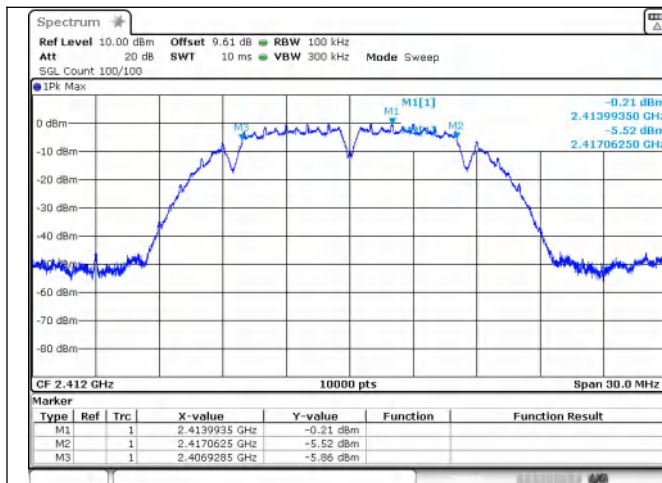
IEEE 802.11n_Channel 9_40MHz_Antenna 0

6dB Bandwidth

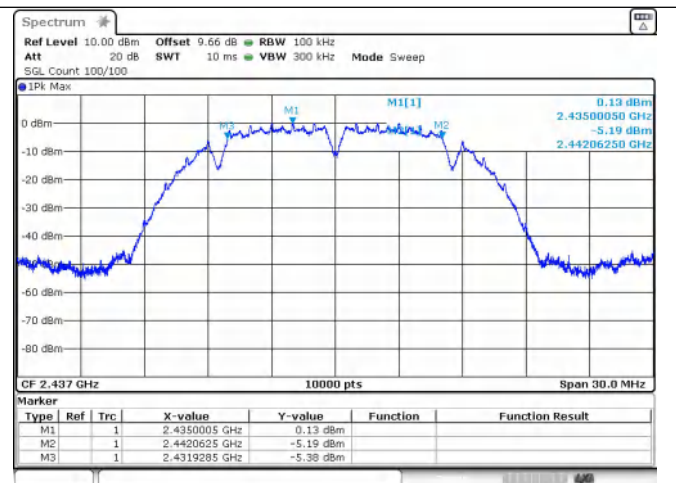
Test Result

Mode	Channel	Ant.	Center Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)	Result
IEEE 802.11b	1	0	2412	10.13	0.5	PASS
	6		2437	10.13		PASS
	11		2462	10.14		PASS
IEEE 802.11g	1		2412	16.31		PASS
	6		2437	16.30		PASS
	11		2462	16.29		PASS
IEEE 802.11n_20	1		2412	16.28		PASS
	6		2437	16.28		PASS
	11		2462	16.28		PASS
IEEE 802.11n_40	3		2422	35.21		PASS
	6		2437	35.23		PASS
	9		2452	35.24		PASS

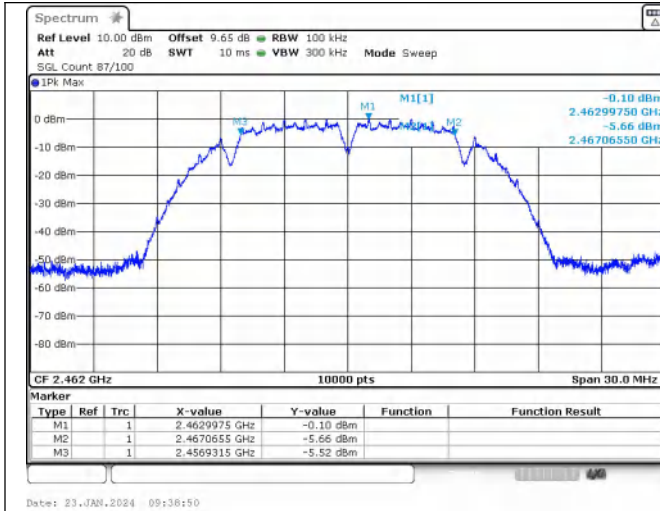
Test Graphs



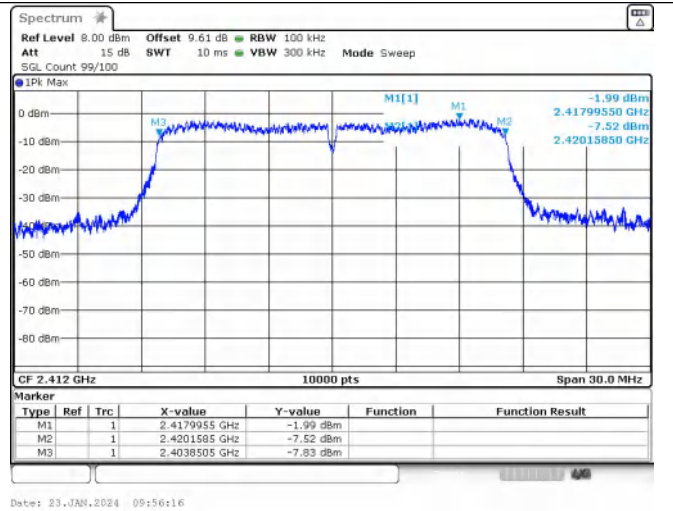
IEEE 802.11b_Channel 1_20MHz_Antenna 0



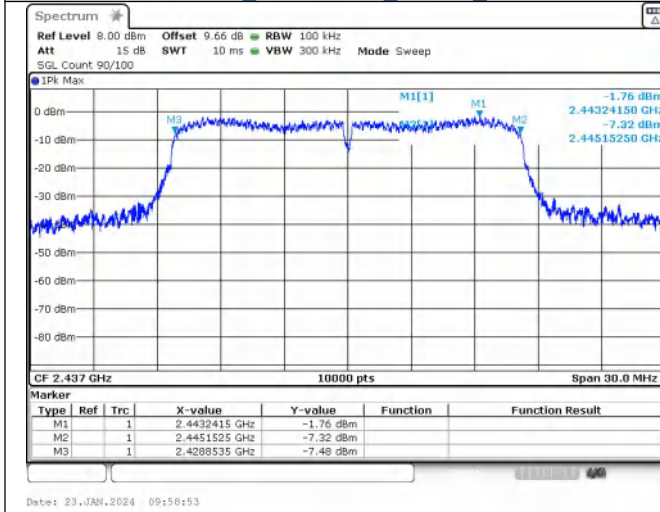
IEEE 802.11b_Channel 6_20MHz_Antenna 0



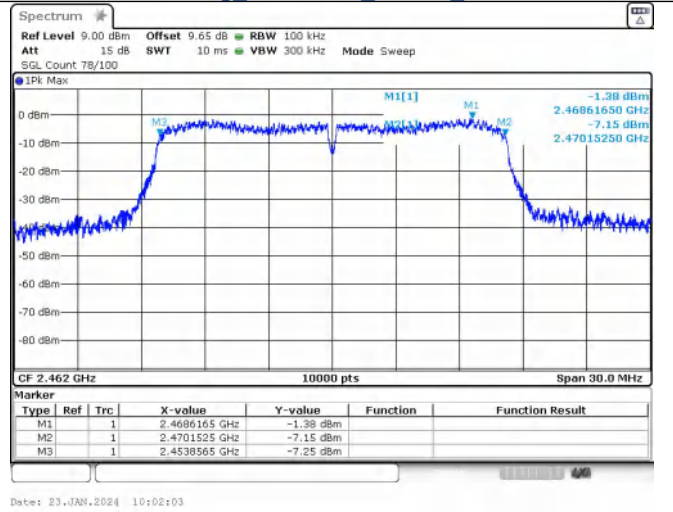
IEEE 802.11b_Channel 11_20MHz_Antenna 0



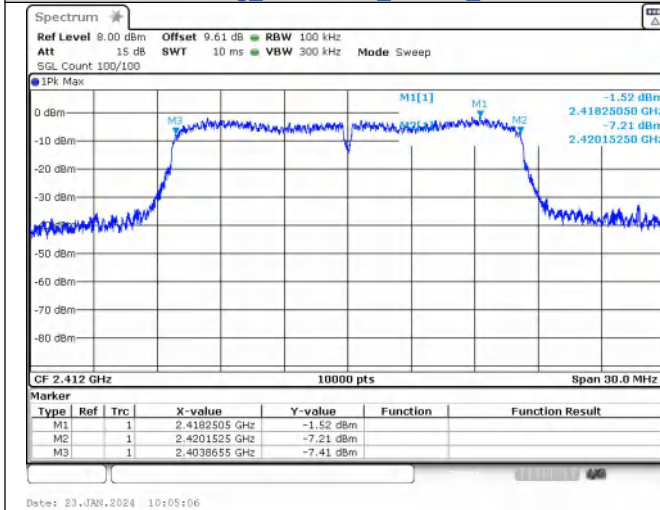
IEEE 802.11g_Channel 1_20MHz_Antenna 0



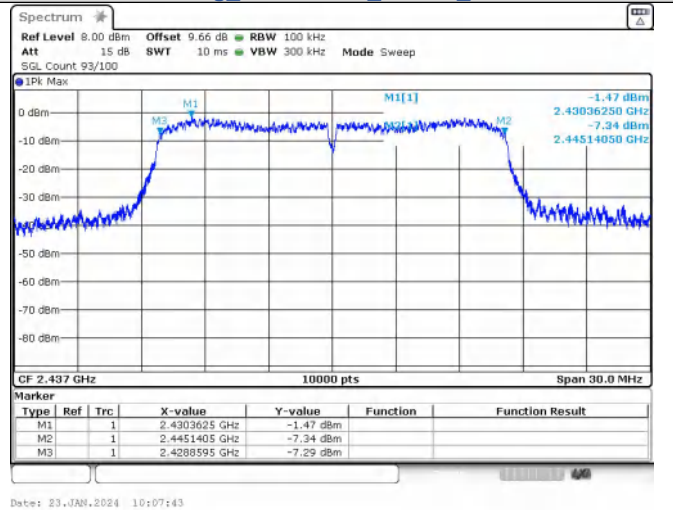
IEEE 802.11g_Channel 6_20MHz_Antenna 0



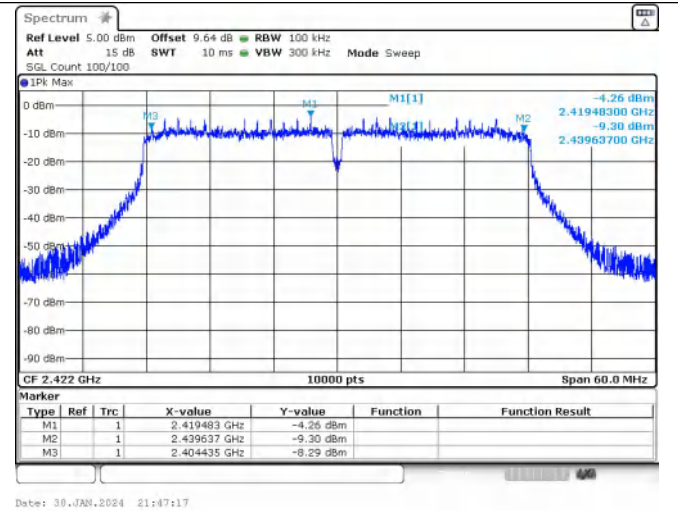
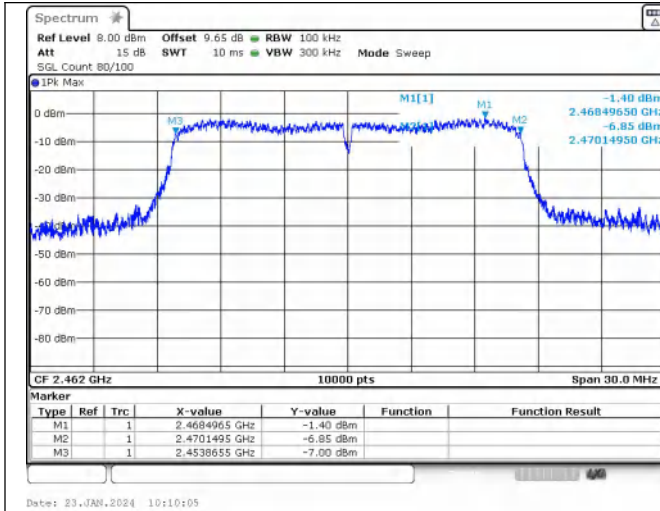
IEEE 802.11g_Channel 11_20MHz_Antenna 0



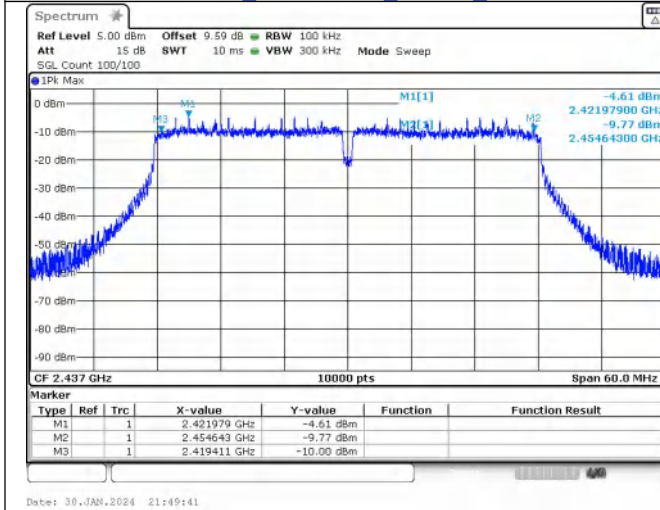
IEEE 802.11n_Channel 1_20MHz_Antenna 0



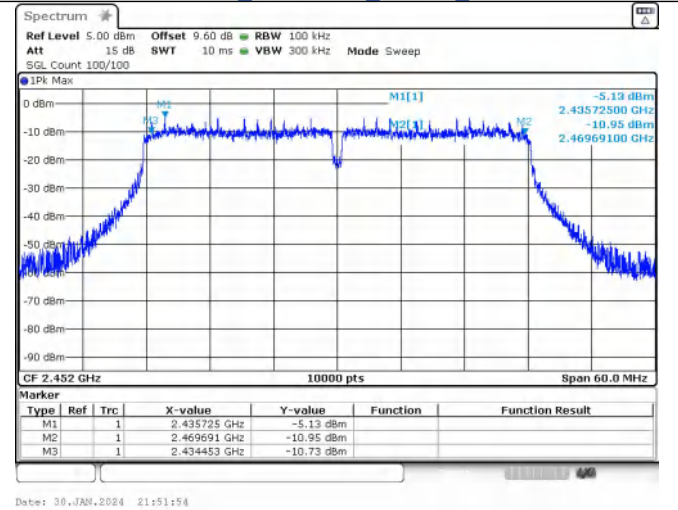
IEEE 802.11n_Channel 6_20MHz_Antenna 0



IEEE 802.11n_Channel 11_20MHz_Antenna 0



IEEE 802.11n_Channel 3_40MHz_Antenna 0



IEEE 802.11n_Channel 6_40MHz_Antenna 0

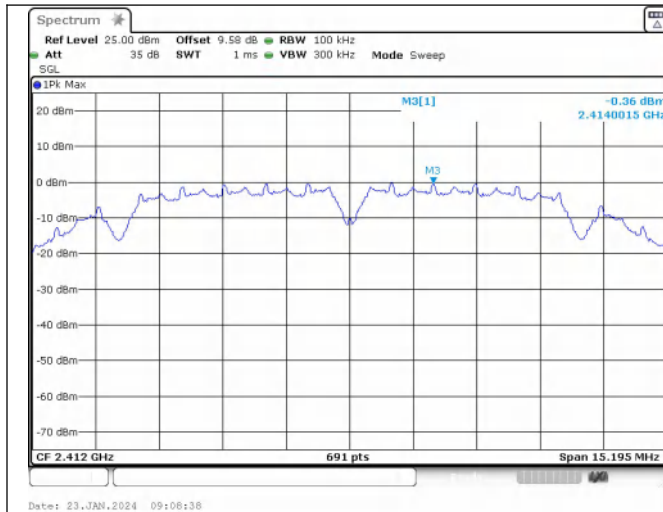
IEEE 802.11n_Channel 9_40MHz_Antenna 0

Conducted Out Of Band Emission

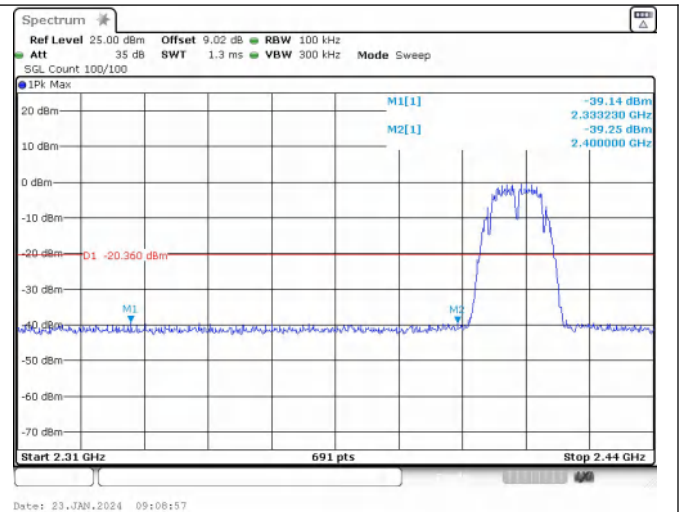
Test Result

Mode	Channel	Ant.	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
IEEE 802.11b	1	0	2400.00	-39.252	-20.36	-18.892	PASS
			2333.23	-39.138	-20.36	-18.778	PASS
	6		4823.80	-32.270	-20.36	-11.910	PASS
			4873.76	-31.543	-20.1	-11.443	PASS
	11		2483.50	-40.886	-20.1	-20.786	PASS
			4923.70	-31.931	-20.1	-11.831	PASS
IEEE 802.11g	1		2400.00	-33.619	-21.81	-11.809	PASS
	6		4826.32	-37.918	-21.81	-16.108	PASS
			4866.27	-39.394	-21.79	-17.604	PASS
			2483.50	-38.484	-21.33	-17.154	PASS
			4926.20	-37.815	-21.33	-16.485	PASS
IEEE 802.11n_20	1		2400.00	-33.824	-21.44	-12.384	PASS
	6	4825.49	-39.338	-21.44	-17.898	PASS	
		4876.26	-38.239	-21.33	-16.909	PASS	
		2483.50	-39.011	-21.52	-17.491	PASS	
		17685.9	-39.055	-21.52	-17.535	PASS	
IEEE 802.11n_40	3	2400.00	-39.612	-24.12	-15.492	PASS	
		2360.14	-38.799	-24.12	-14.679	PASS	
		17266.4	-39.389	-24.12	-15.269	PASS	
	6	15666.6	-39.262	-24.58	-14.682	PASS	
		9	2483.50	-40.653	-24.81	-15.843	PASS
			17601.8	-39.532	-24.81	-14.722	PASS

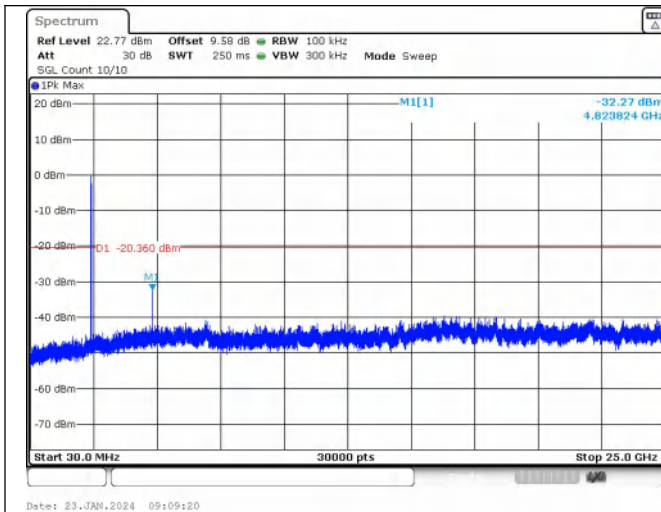
Test Graphs



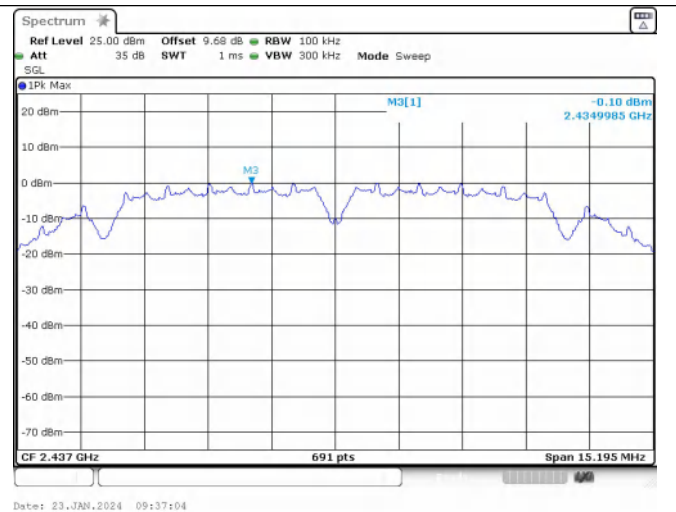
In-Band Reference Level
IEEE 802.11b_Channel 1_20MHz_Antenna 0



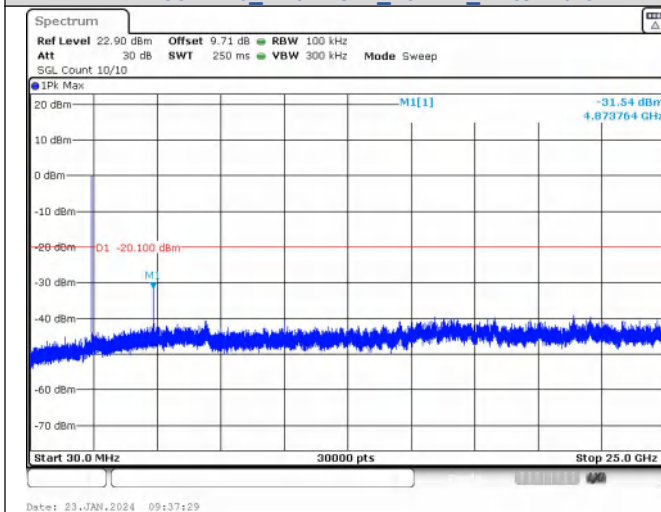
Out Of Band Emission
IEEE 802.11b_Channel 1_20MHz_Antenna 0



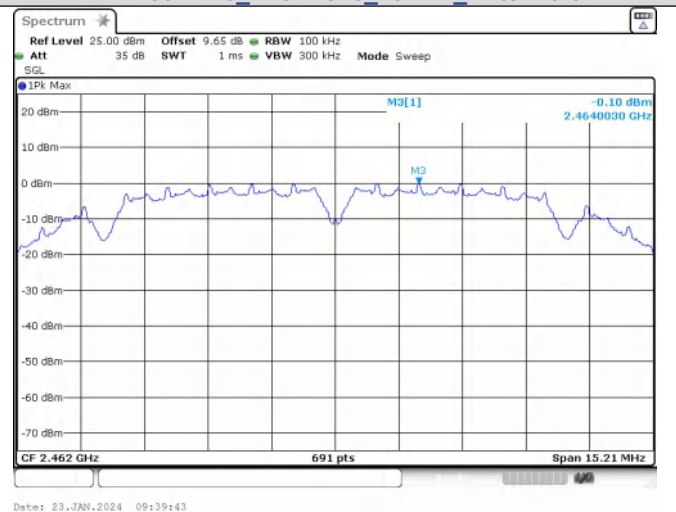
Spurious Emission
IEEE 802.11b_Channel 1_20MHz_Antenna 0



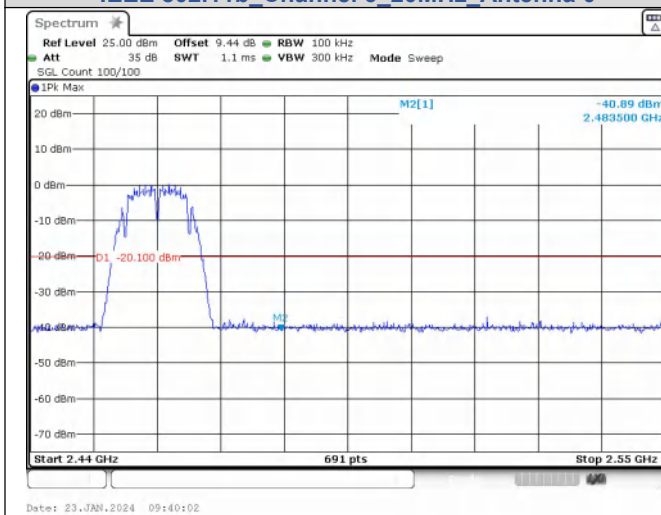
In-Band Reference Level
IEEE 802.11b_Channel 6_20MHz_Antenna 0



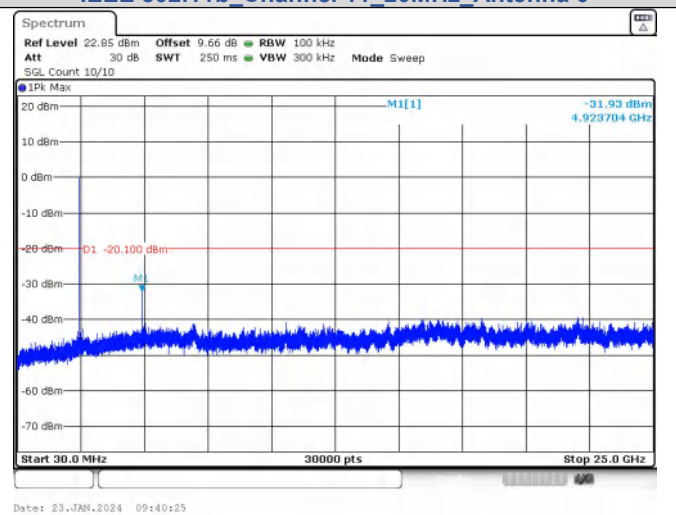
Spurious Emissions
IEEE 802.11b_Channel 6_20MHz_Antenna 0



In-Band Reference Level
IEEE 802.11b_Channel 11_20MHz_Antenna 0

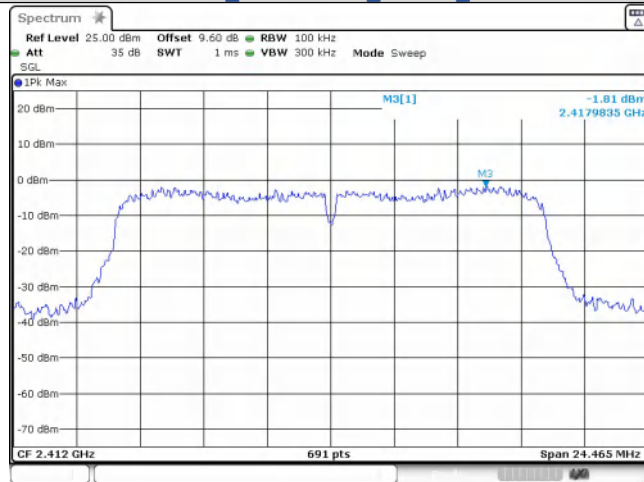


Out Of Band Emission



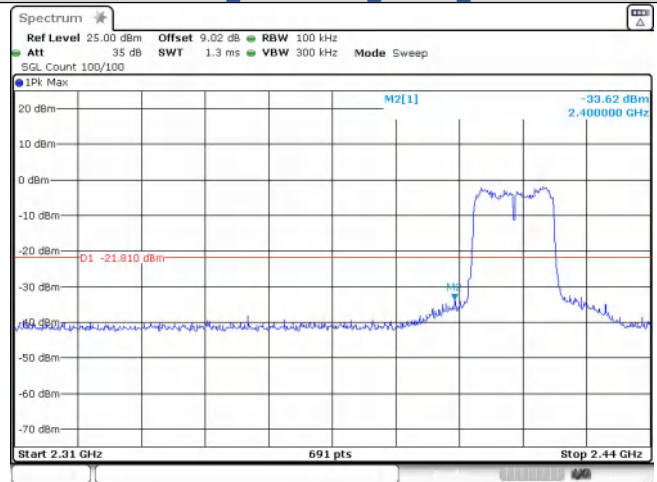
Spurious Emission

IEEE 802.11b Channel 11_20MHz_Antenna 0



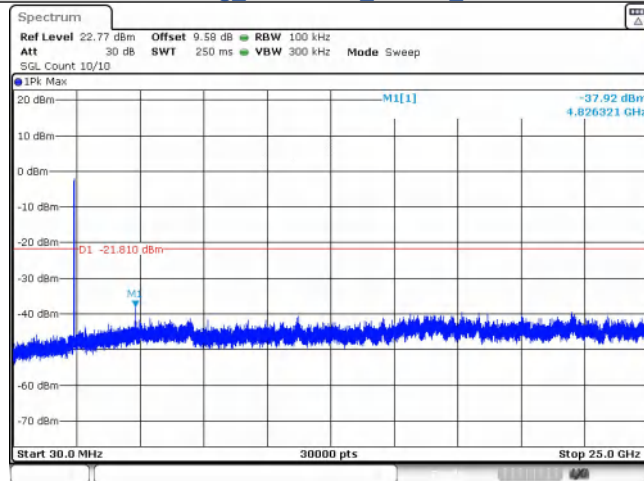
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IEEE 802.11b Channel 11_20MHz_Antenna 0



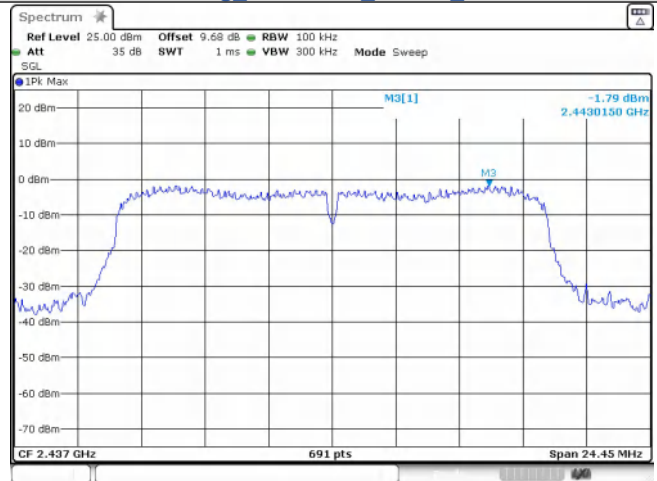
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In-Band Reference Level IEEE 802.11g_Channel 1_20MHz_Antenna 0



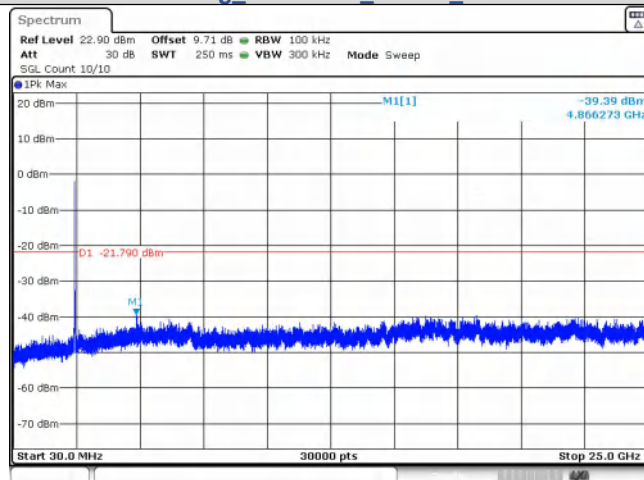
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Out Of Band Emission IEEE 802.11g_Channel 1_20MHz_Antenna 0



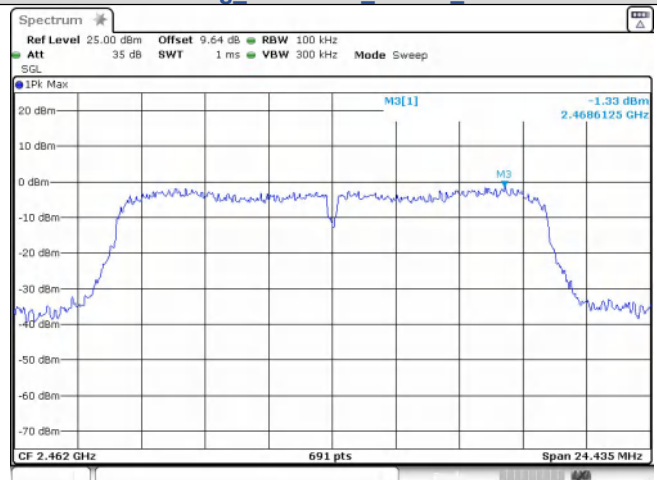
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Spurious Emission IEEE 802.11g_Channel 1_20MHz_Antenna 0

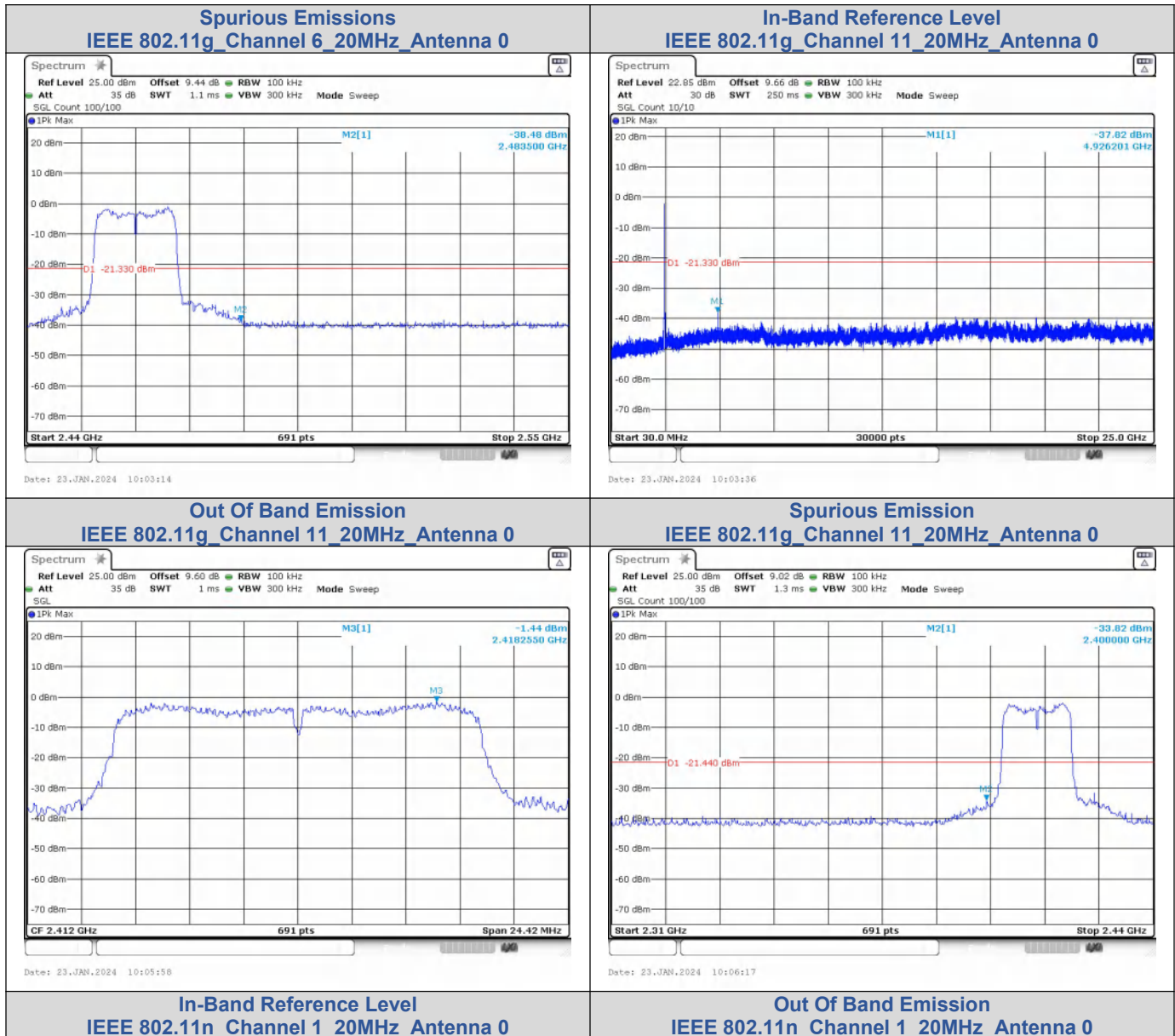


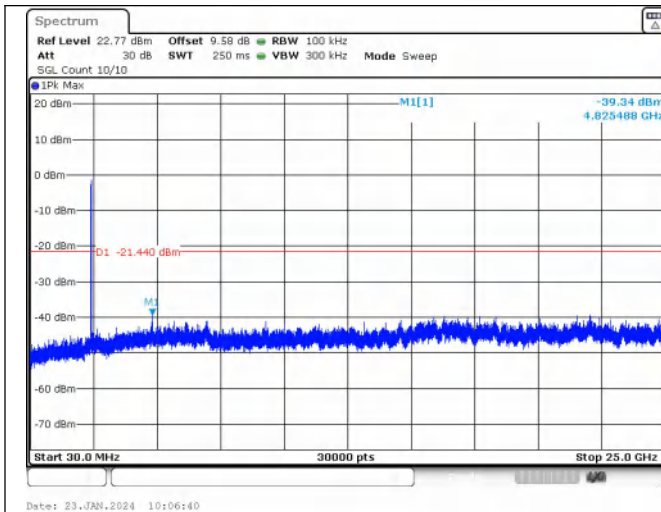
Date: 23.JAN.2024 10:00:10

In-Band Reference Level IEEE 802.11g_Channel 6_20MHz_Antenna 0

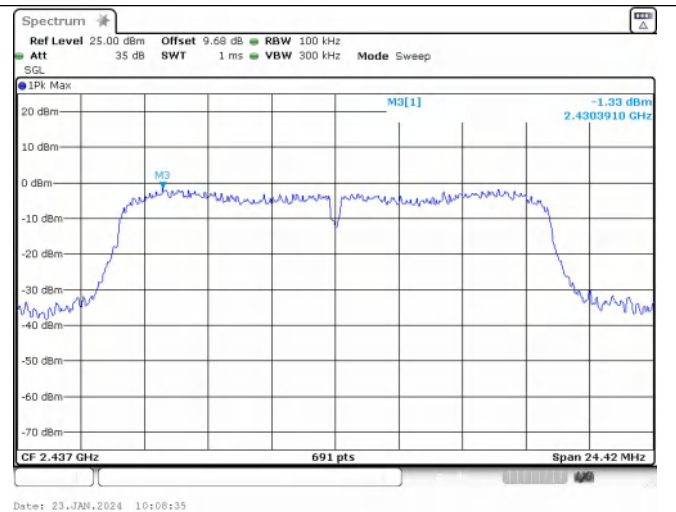


Date: 23.JAN.2024 10:02:54

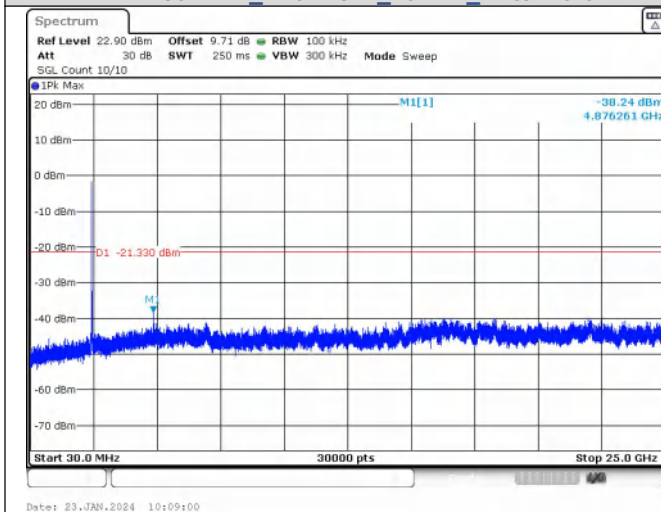




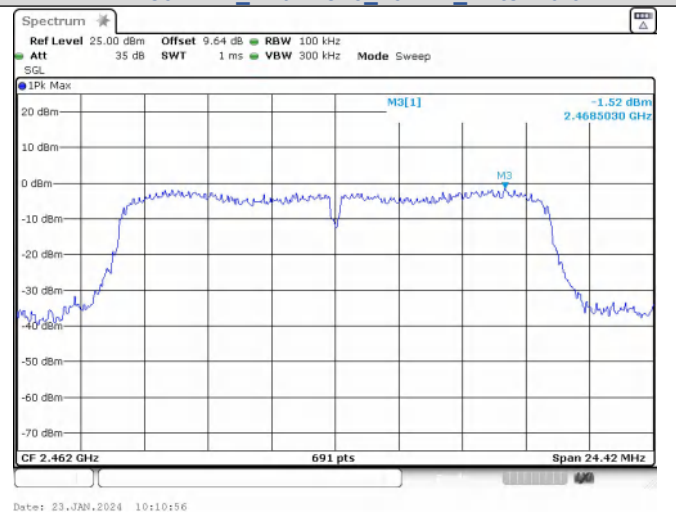
Spurious Emission
IEEE 802.11n_Channel 1_20MHz_Antenna 0



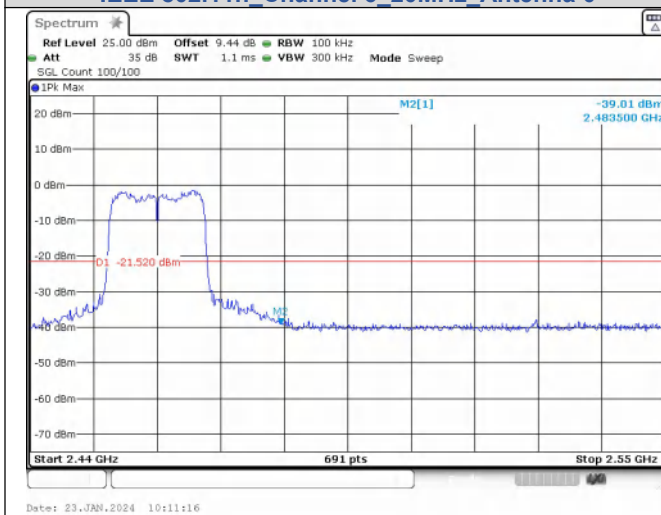
In-Band Reference Level
IEEE 802.11n_Channel 6_20MHz_Antenna 0



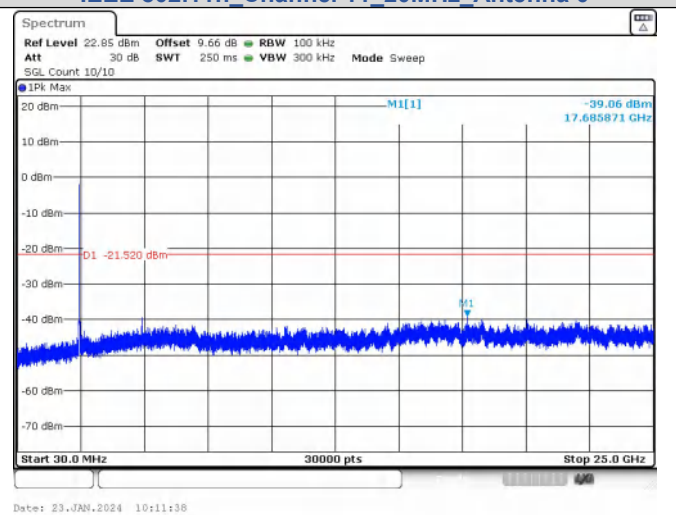
Spurious Emissions
IEEE 802.11n_Channel 6_20MHz_Antenna 0



In-Band Reference Level
IEEE 802.11n_Channel 11_20MHz_Antenna 0

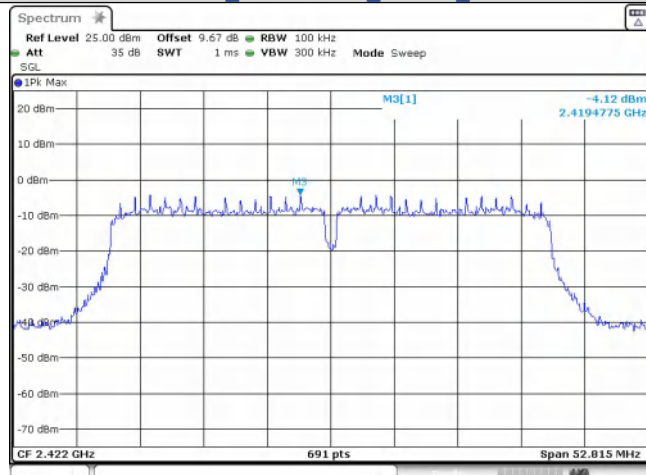


Out Of Band Emission



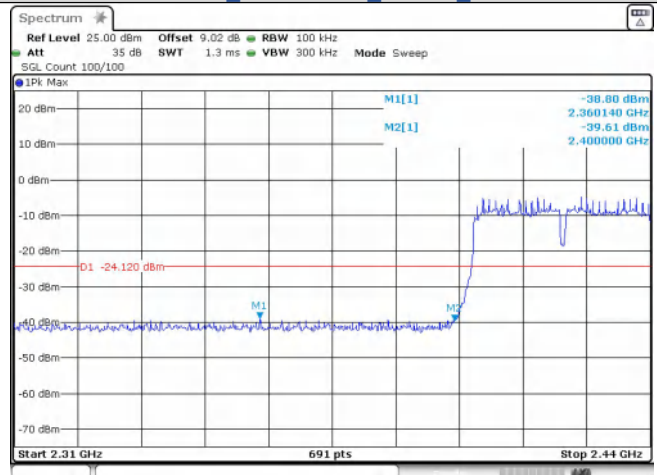
Spurious Emission

IEEE 802.11n Channel 11_20MHz_Antenna 0



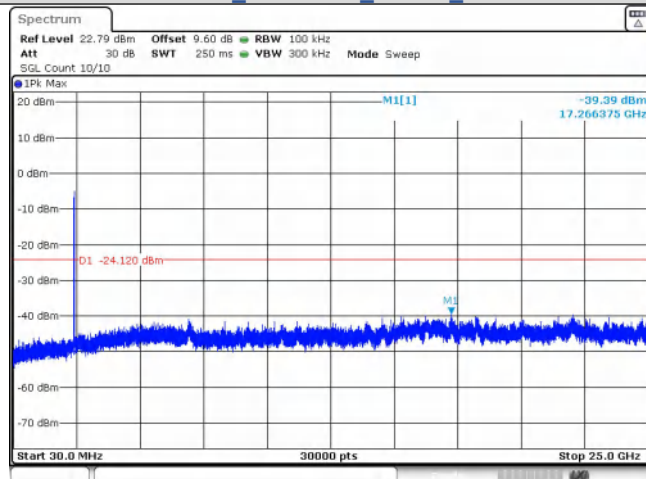
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IEEE 802.11n Channel 11_20MHz_Antenna 0



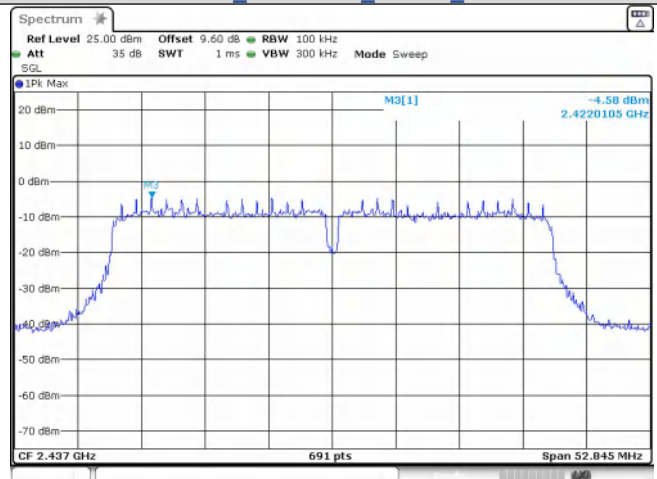
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In-Band Reference Level IEEE 802.11n_Channel 3_40MHz_Antenna 0



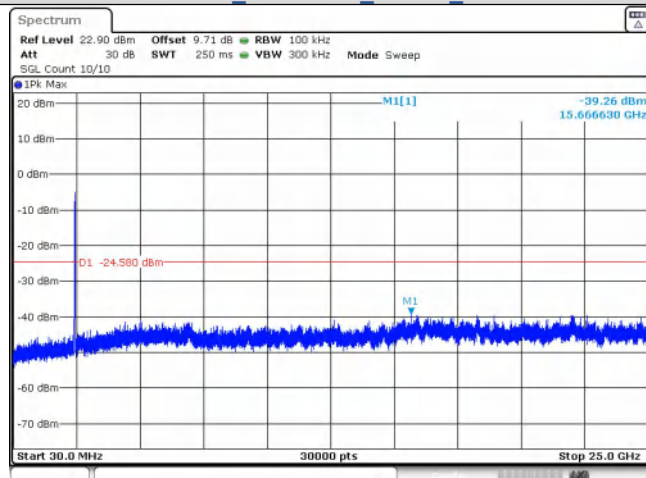
Date: 30.JAN.2024 21:48:36

Out Of Band Emission IEEE 802.11n_Channel 3_40MHz_Antenna 0



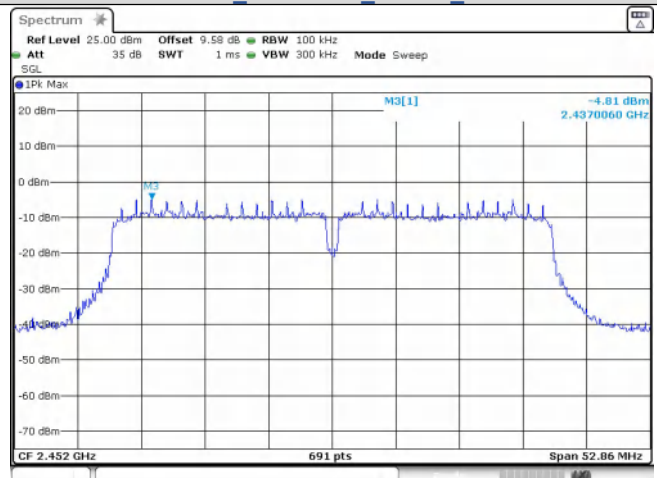
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Spurious Emission IEEE 802.11n_Channel 3_40MHz_Antenna 0

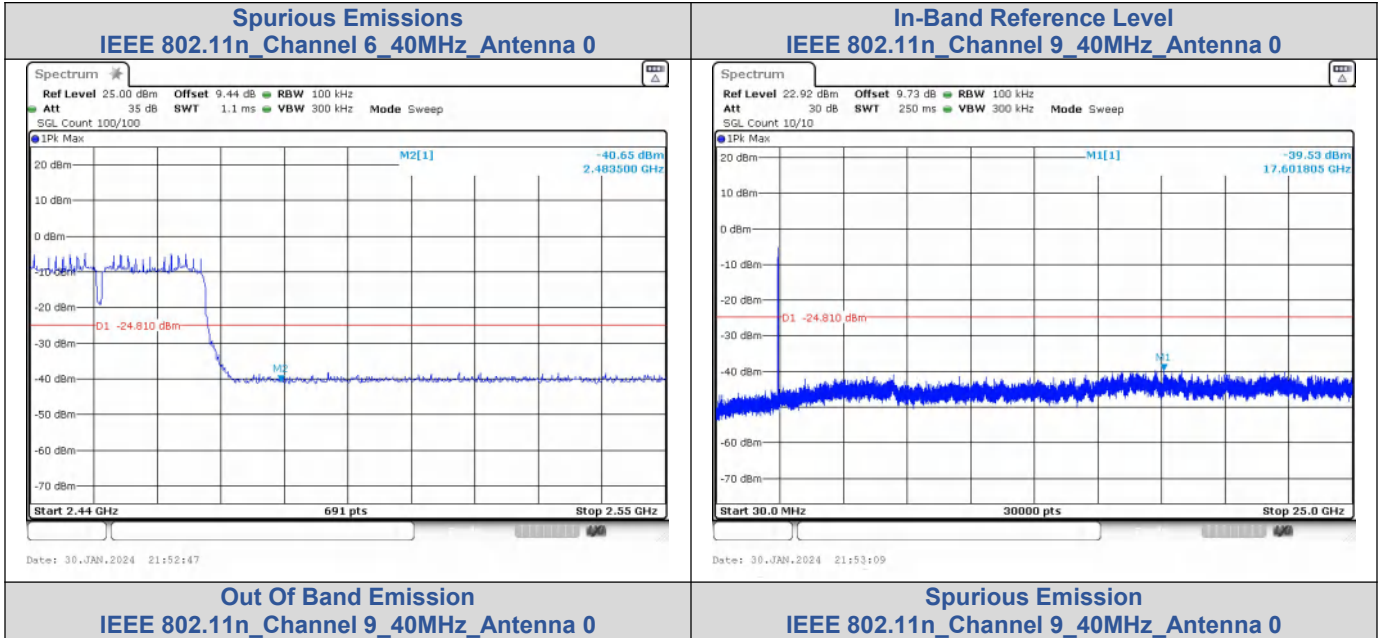


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In-Band Reference Level IEEE 802.11n_Channel 6_40MHz_Antenna 0



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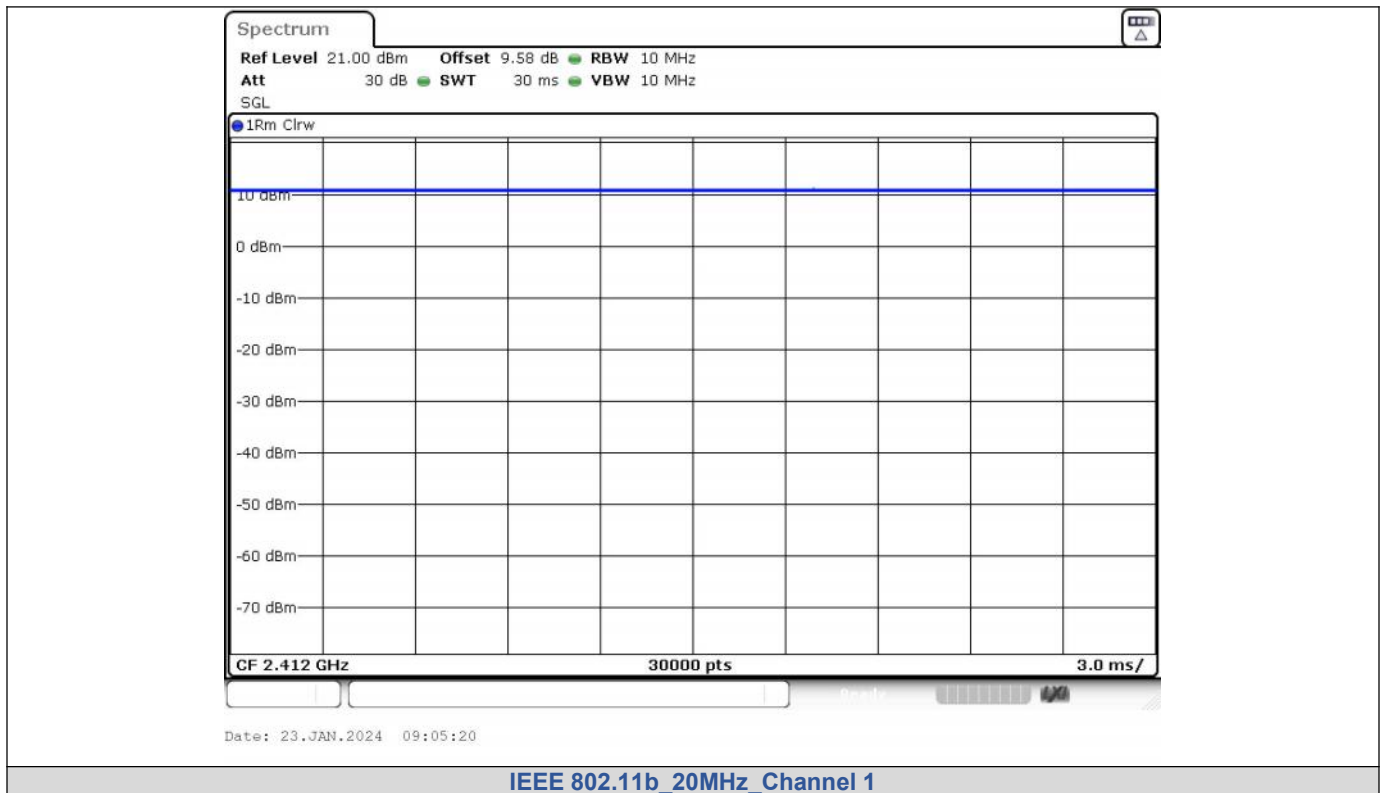


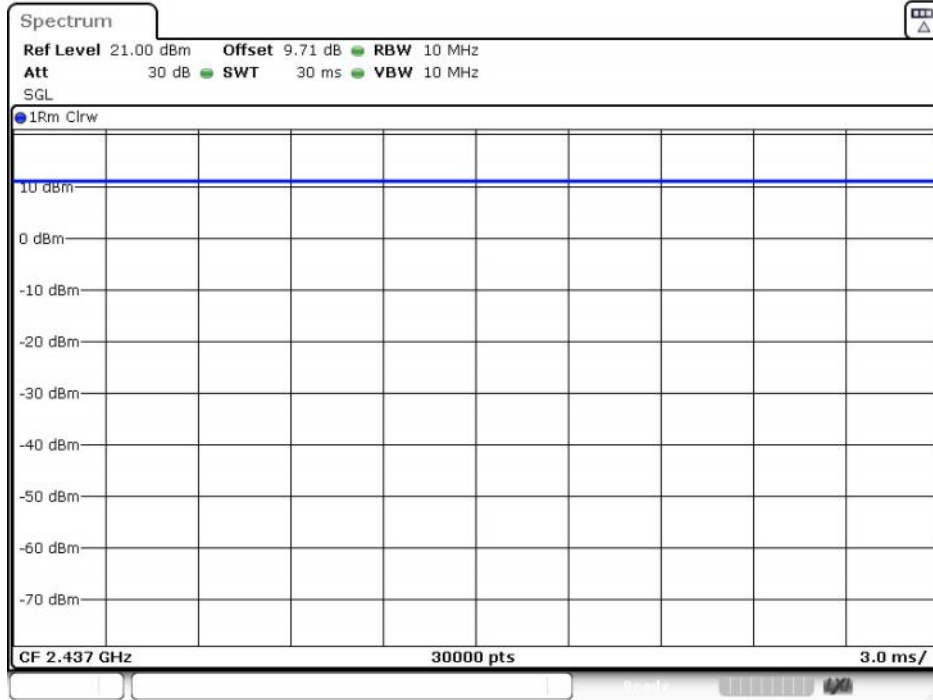
Duty Cycle

Test Result

Mode	Data rates	Channel	Antenna	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
IEEE 802.11b	1	1	1	30.000	30.000	100	1	0.0	0.03
		6		30.000	30.000	100	1	0.0	0.03
		11		30.000	30.000	100	1	0.0	0.03
IEEE 802.11g		1		10.000	10.000	100	1	0.0	0.10
		6		10.000	10.000	100	1	0.0	0.10
		11		10.000	10.000	100	1	0.0	0.10
IEEE 802.11n_20	MCS 0	1		10.000	10.000	100	1	0.0	0.10
		6		10.000	10.000	100	1	0.0	0.10
		11		10.000	10.000	100	1	0.0	0.10
IEEE 802.11n_40		3		10.000	10.000	100	1	0.0	0.10
		6		10.000	10.000	100	1	0.0	0.10
		9		10.000	10.000	100	1	0.0	0.10

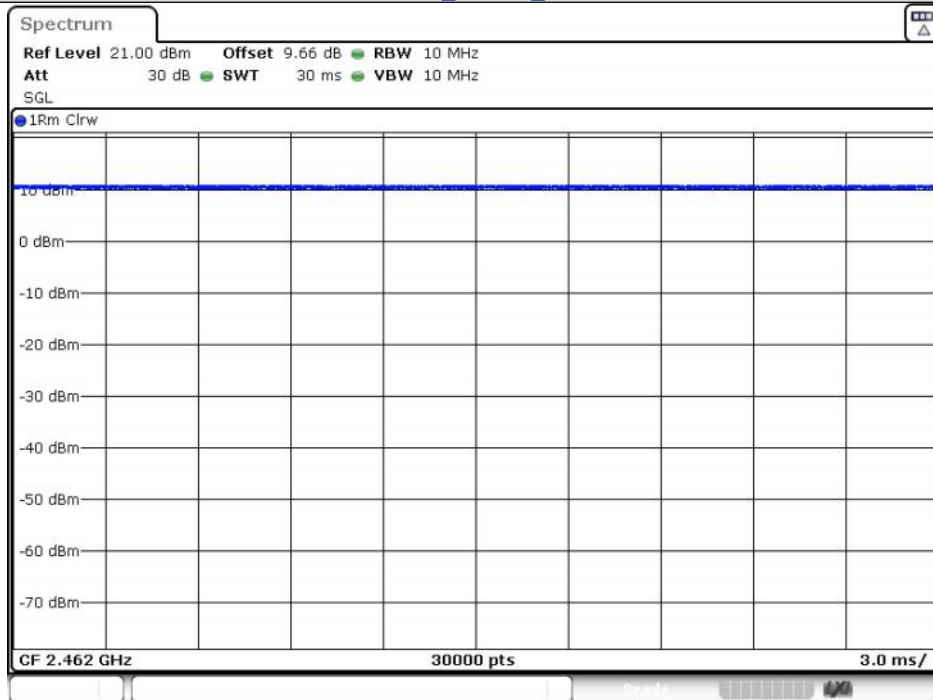
Test Graphs





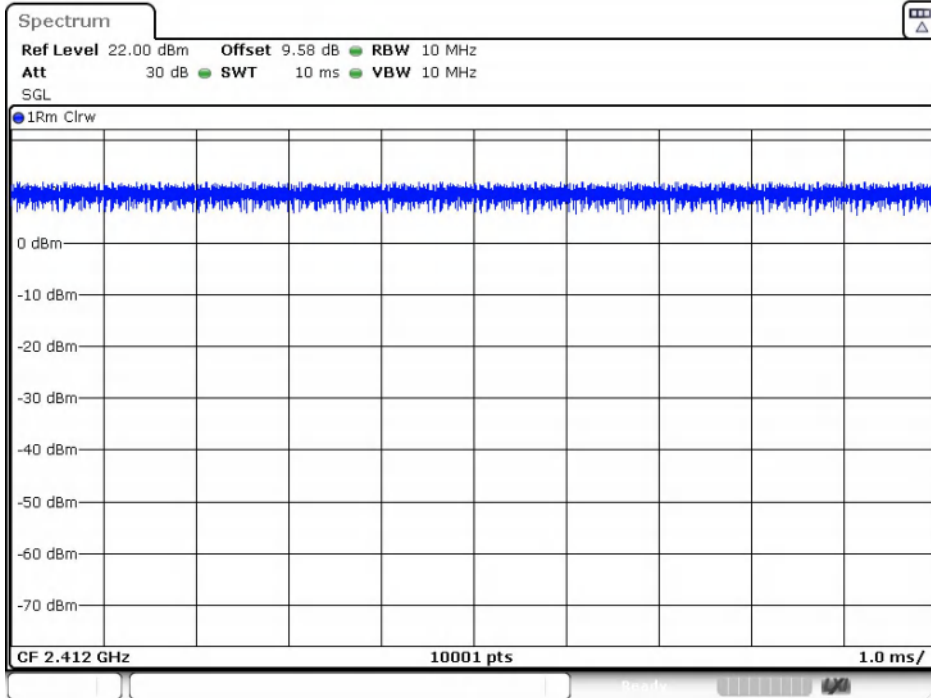
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IEEE 802.11b_20MHz_Channel 6



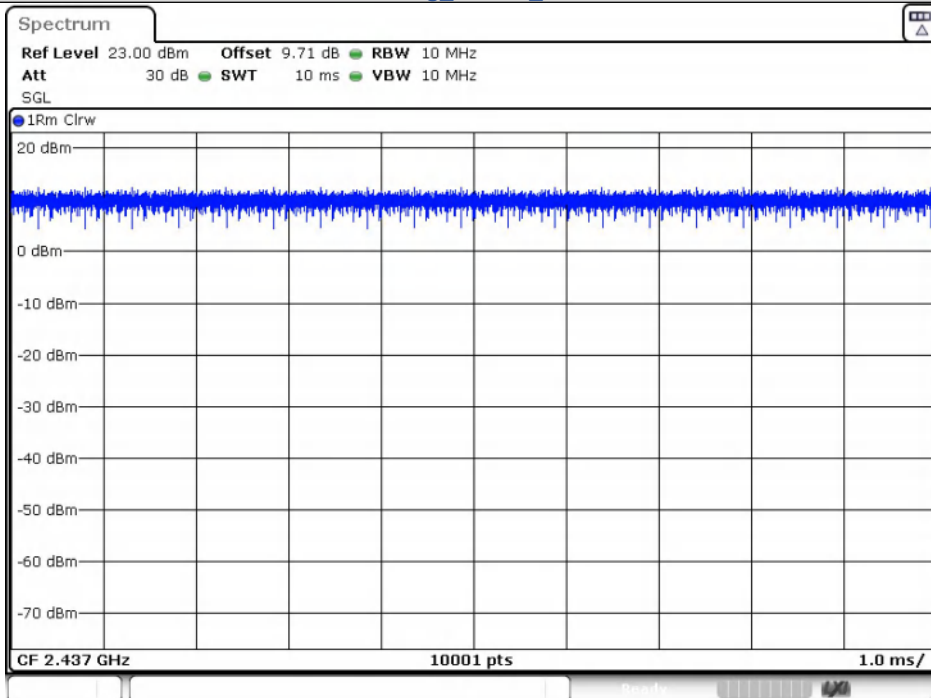
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IEEE 802.11b_20MHz_Channel 11



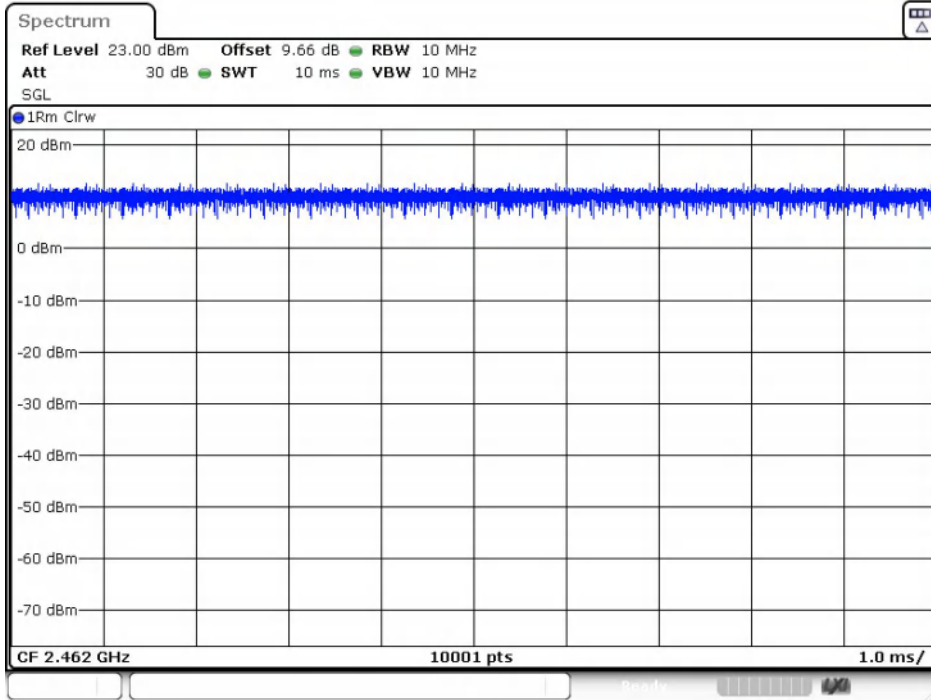
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IEEE 802.11g_20MHz_Channel 1



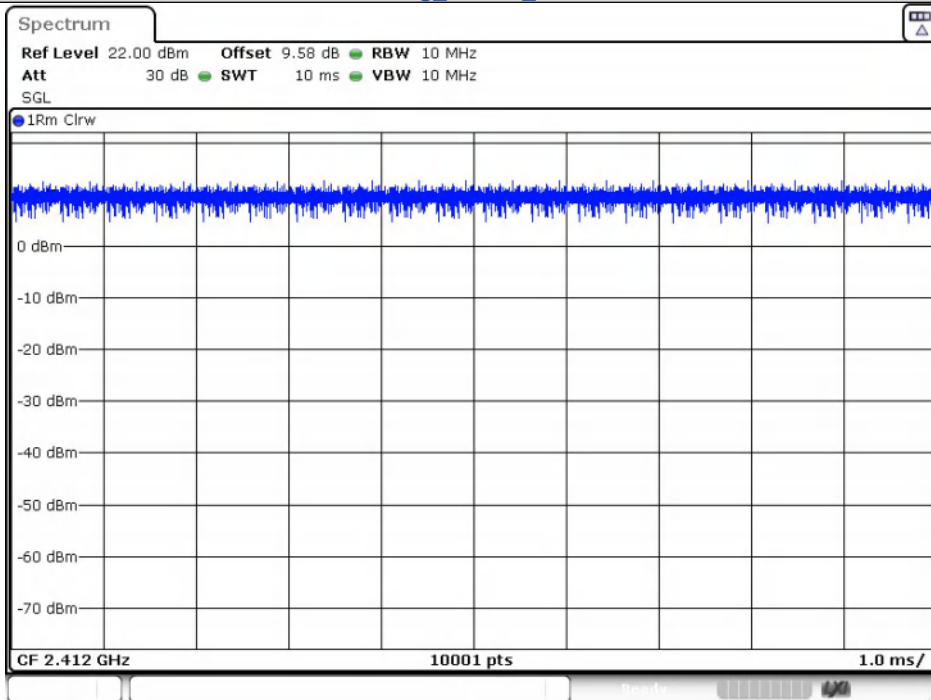
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IEEE 802.11g_20MHz_Channel 6



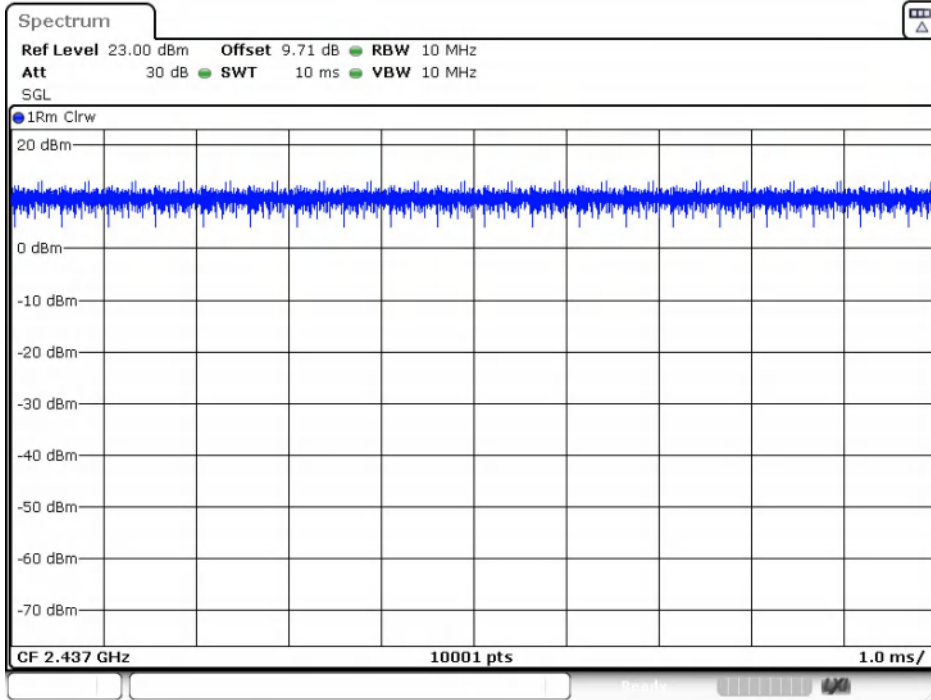
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IEEE 802.11g_20MHz_Channel 11



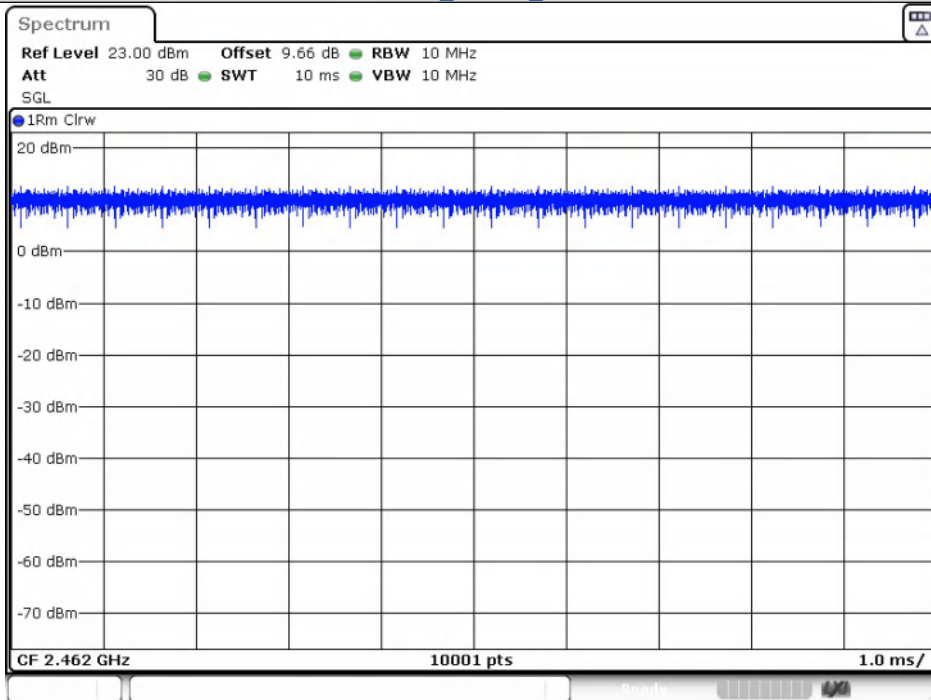
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IEEE 802.11n_20MHz_Channel 1



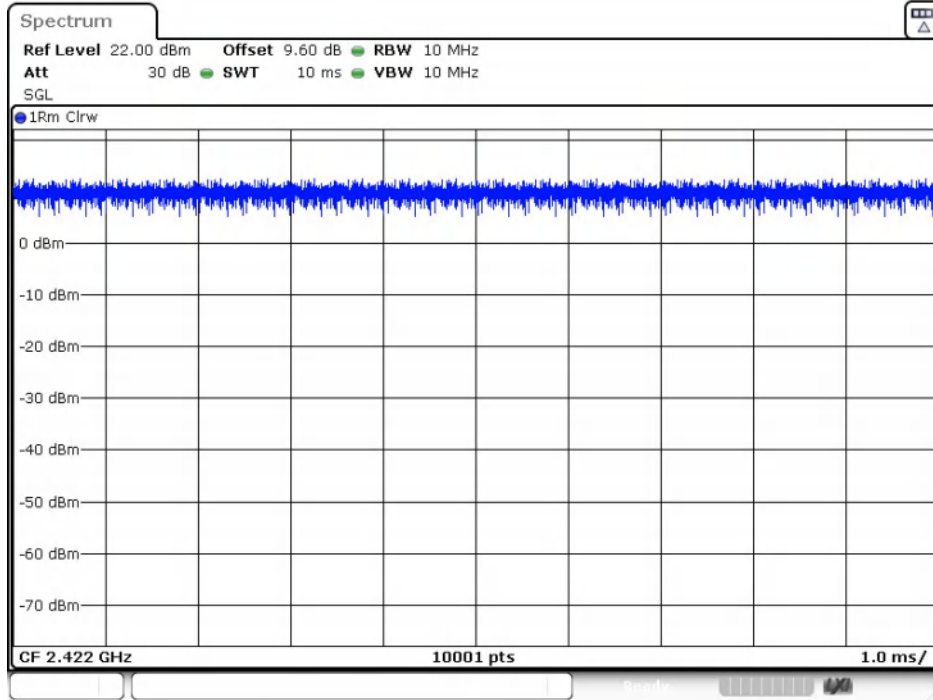
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IEEE 802.11n_20MHz_Channel 6



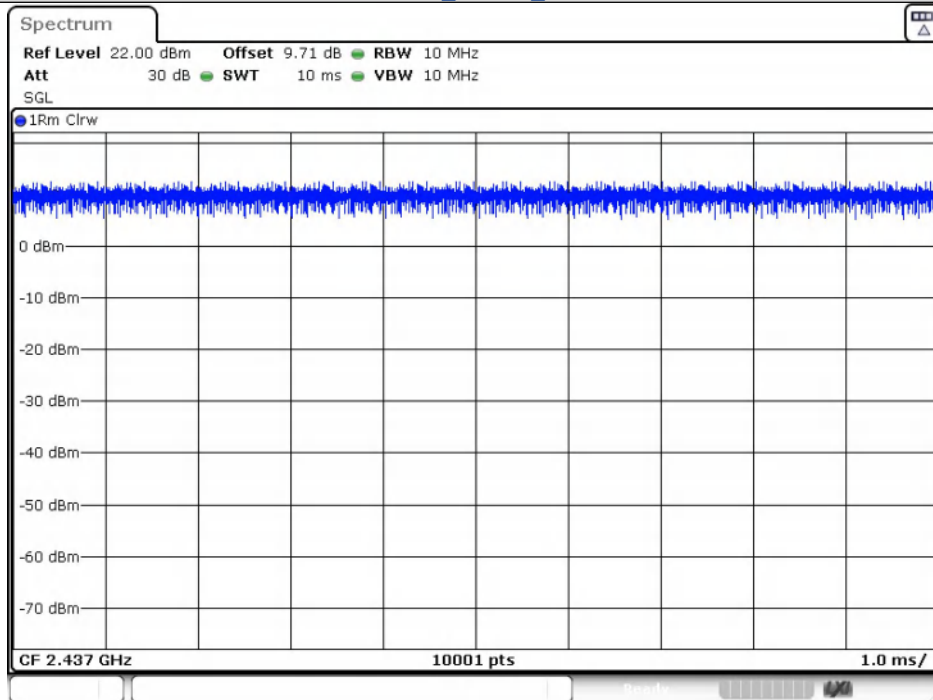
Date: 23.JAN.2024 10:09:28

IEEE 802.11n_20MHz_Channel 11



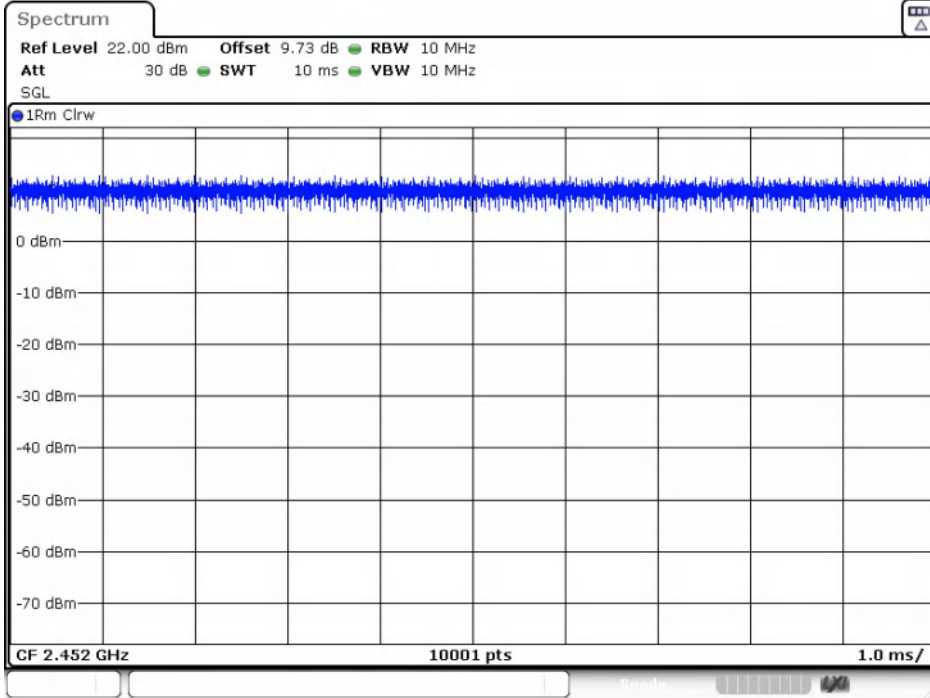
Date: 23.JAN.2024 10:12:19

IEEE 802.11n_40MHz_Channel 3



Date: 23.JAN.2024 10:14:52

IEEE 802.11n_40MHz_Channel 6



Date: 23.JAN.2024 10:18:14

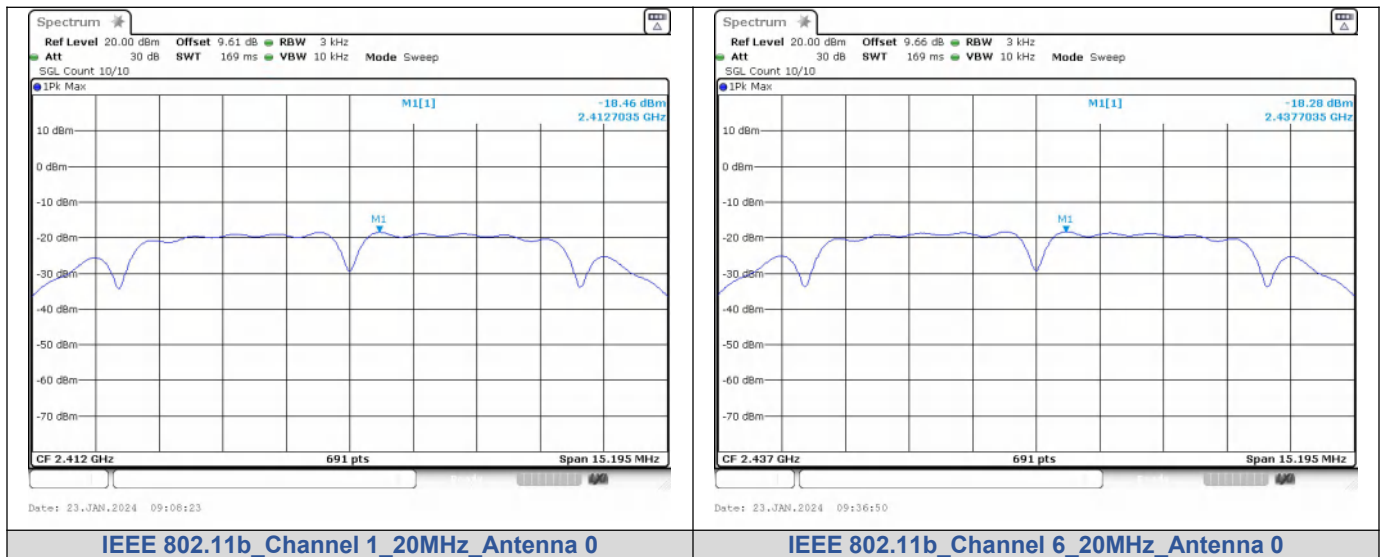
IEEE 802.11n_40MHz_Channel 9

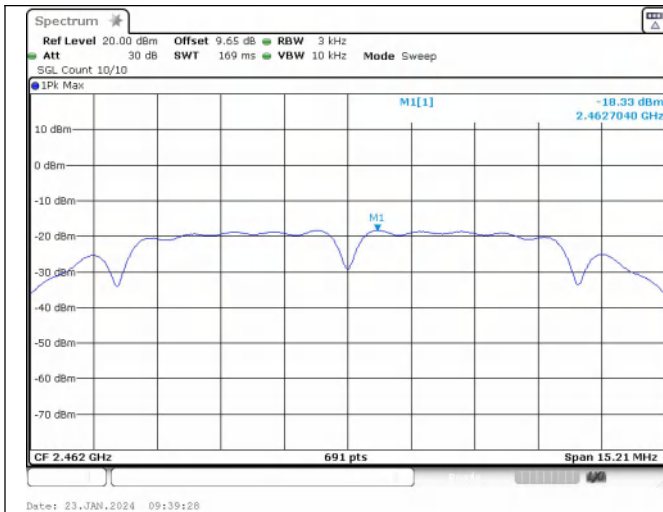
Power Spectral Density

Test Result

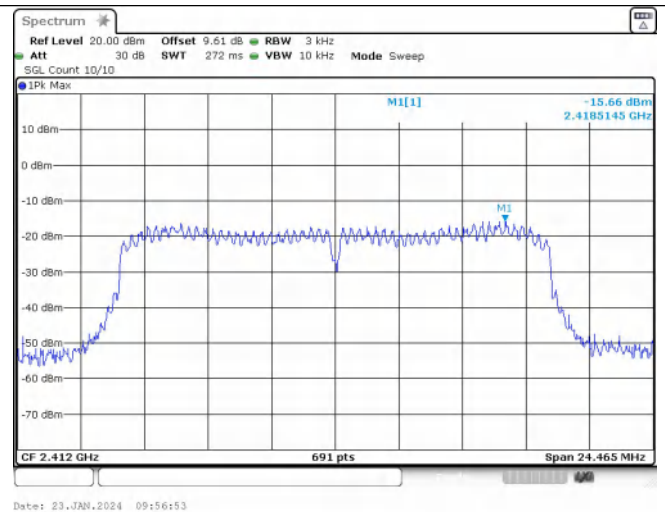
Mode	Channel	PSD (dBm/3kHz) Ant. 0	Limit (dBm/3kHz)	Result
IEEE 802.11b	1	-18.459	8	PASS
	6	-18.279		PASS
	11	-18.327		PASS
IEEE 802.11g	1	-15.660		PASS
	6	-15.445		PASS
	11	-15.554		PASS
IEEE 802.11n_20	1	-15.661		PASS
	6	-15.761		PASS
	11	-15.447		PASS
IEEE 802.11n_40	3	-20.033		PASS
	6	-20.136		PASS
	9	-16.028		PASS

Test Graphs

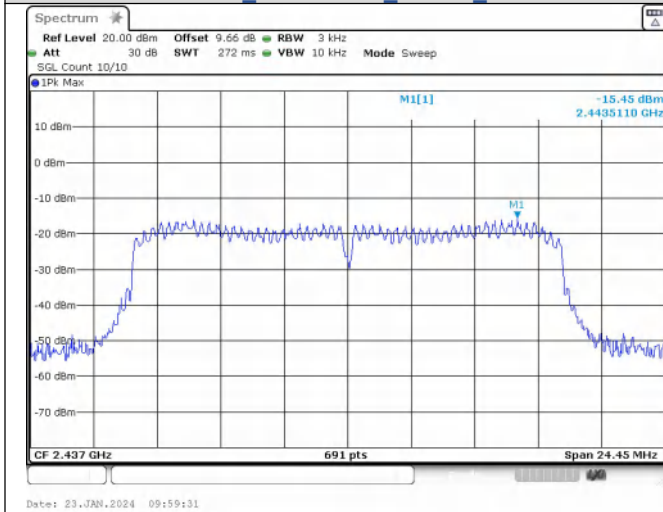




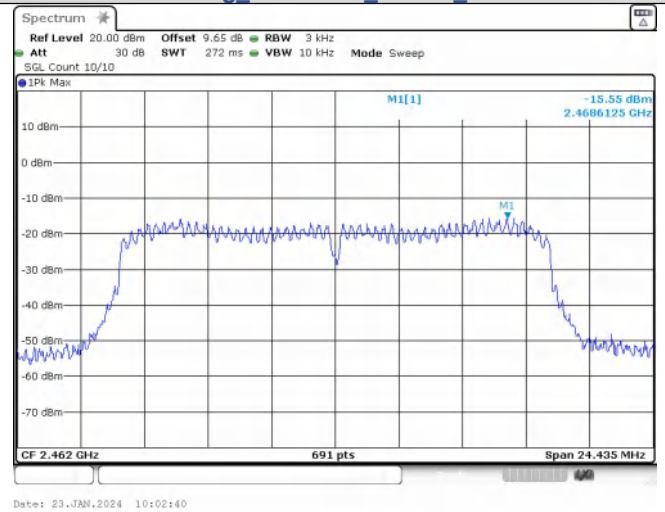
IEEE 802.11b_Channel 11_20MHz_Antenna 0



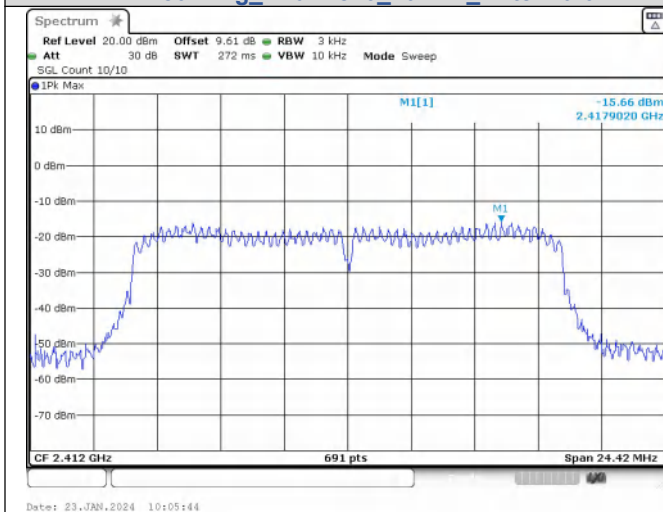
IEEE 802.11g_Channel 1_20MHz_Antenna 0



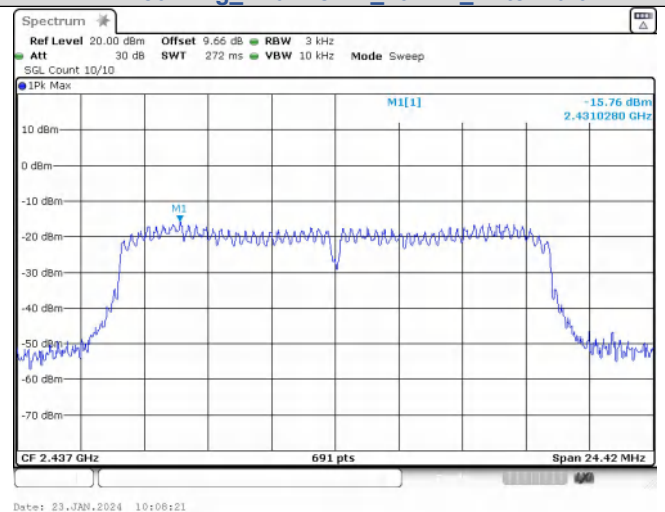
IEEE 802.11g_Channel 6_20MHz_Antenna 0



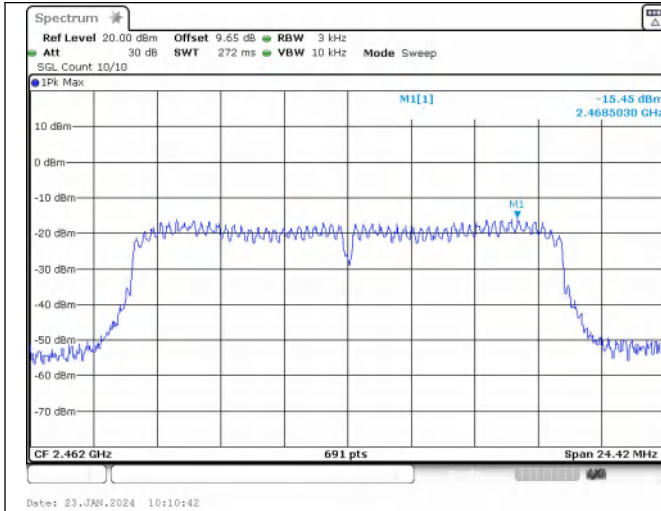
IEEE 802.11g_Channel 11_20MHz_Antenna 0



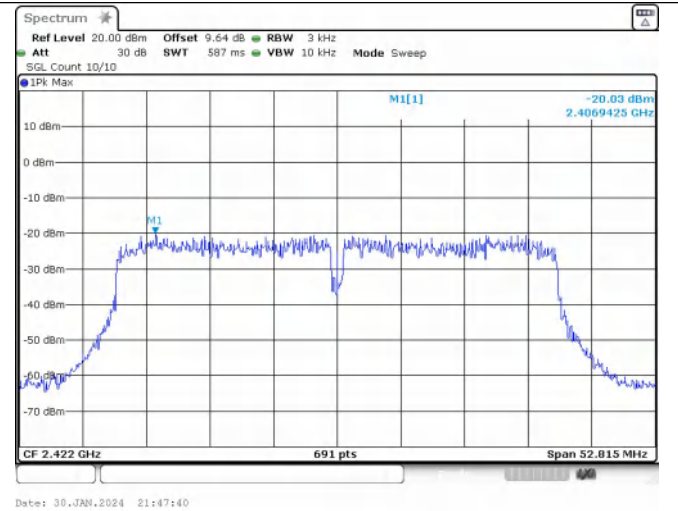
IEEE 802.11n_Channel 1_20MHz_Antenna 0



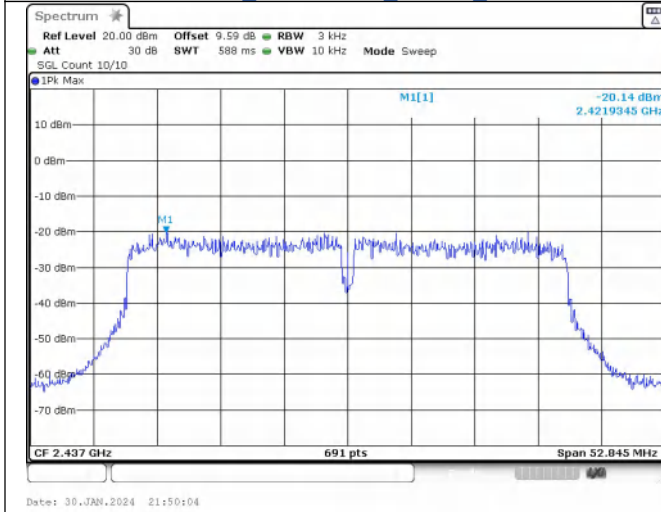
IEEE 802.11n_Channel 6_20MHz_Antenna 0



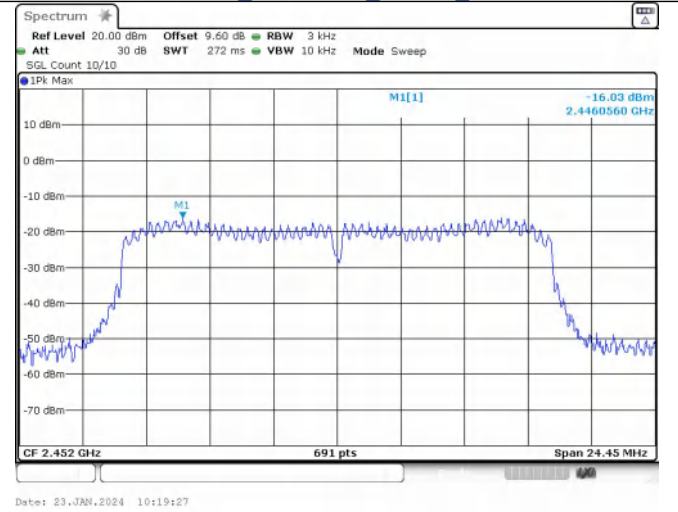
IEEE 802.11n_Channel 11_20MHz_Antenna 0



IEEE 802.11n_Channel 3_40MHz_Antenna 0



IEEE 802.11n_Channel 6_40MHz_Antenna 0



IEEE 802.11n_Channel 9_40MHz_Antenna 0