Appendix-2.4G WiFi

Conducted Test Data

Conducted Output Power

Test Result

Mode	Channel	Peak Output Power (dBm)	Peak Output Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Result
IEEE 802.11b	1	14.09	≤30	18.20	≤36	PASS
	6	14.57	≤30	18.68	≤36	PASS
	11	**14.73**	≤30	18.84	≤36	PASS
IEEE 802.11g	1	18.77	≤30	22.88	≤36	PASS
	6	**19.39**	≤30	23.50	≤36	PASS
	11	18.91	≤30	23.02	≤36	PASS
IEEE 802.11n_20	1	18.49	≤30	22.60	≤36	PASS
	6	**18.85**	≤30	22.96	≤36	PASS
	11	18.62	≤30	22.73	≤36	PASS
IEEE 802.11n_40	3	19.05	≤30	23.16	≤36	PASS
	6	**19.23**	≤30	23.34	≤36	PASS
	9	18.22	≤30	22.33	≤36	PASS

Note: EIRP = P_{out} + G_{ant}, where P_{out} is the conducted output power (i.e., the Peak Output Power in the table), and G_{ant} is the antenna gain equal to 4.11 dBi.

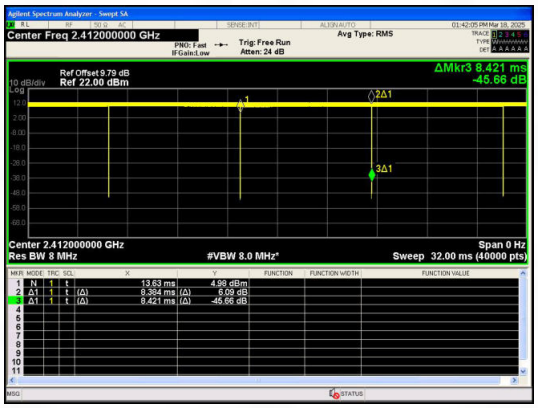
BTF Testing Lab (Shenzhen) Co., Ltd.
101/201/301, Building 1, Block 2, Tantou Industrial Park,Tantou Community, Songgang Subdistrict, Bao'an District, Shenzhen, China
Email: info@btf-lab.com Tel: +86-755-23146130 http://www.btf-lab.com

Duty Cycle

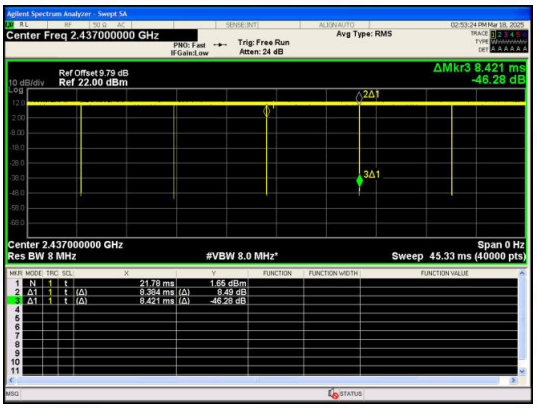
Test Result

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	8.384	8.421	99.56	0.9956	0.0192	0.1193
		6		8.384	8.421	99.57	0.9957	0.0187	0.1193
		11		8.384	8.421	99.56	0.9956	0.0192	0.1193
IEEE 802.11g	6	1		1.396	1.438	97.08	0.9708	0.1287	0.7163
		6		1.396	1.437	97.15	0.9715	0.1256	0.7163
		11		1.396	1.438	97.08	0.9708	0.1287	0.7163
IEEE 802.11n_20	MCS 0	1		1.304	1.346	96.88	0.9688	0.1377	0.7669
		6		1.303	1.345	96.91	0.9691	0.1363	0.7675
		11		1.304	1.346	96.88	0.9688	0.1377	0.7669
IEEE 802.11n_40		3		0.650	0.693	93.87	0.9387	0.2747	1.5385
		6		0.650	0.693	93.86	0.9386	0.2752	1.5385
		9		0.650	0.693	93.87	0.9387	0.2747	1.5385

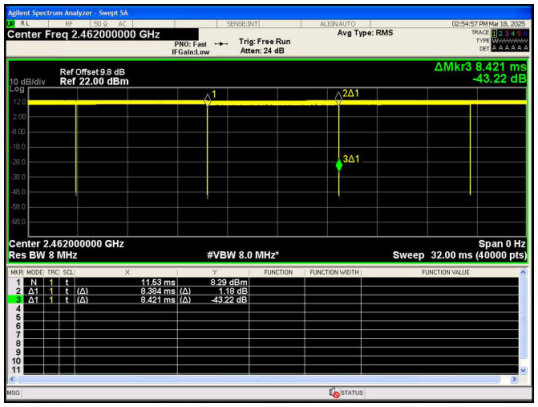
Test Graphs



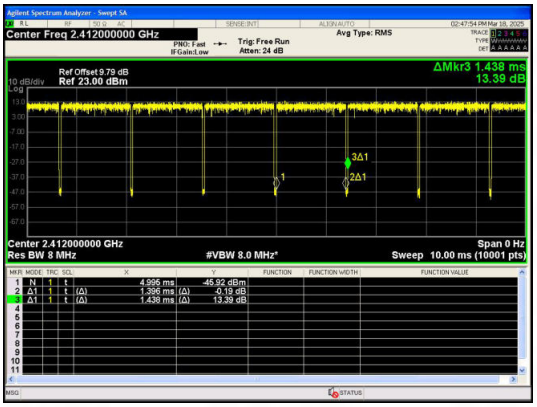
IEEE 802.11b_20MHz_Channel 1



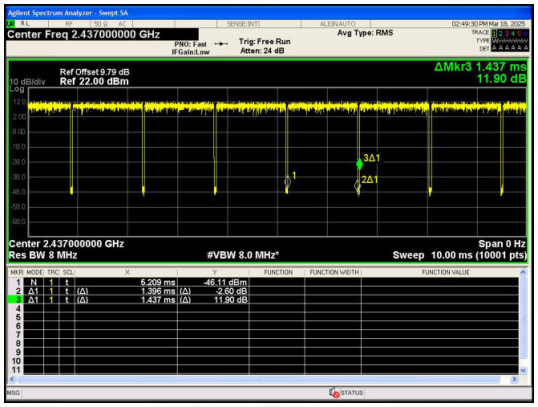
IEEE 802.11b_20MHz_Channel 6



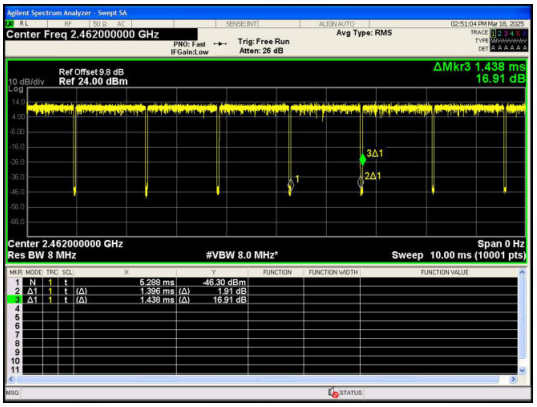
IEEE 802.11b_20MHz_Channel 11



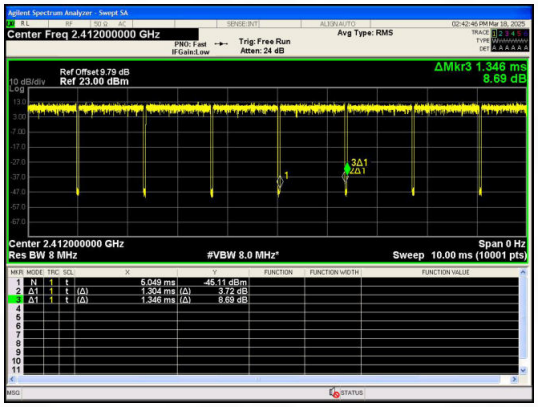
IEEE 802.11g_20MHz_Channel 1



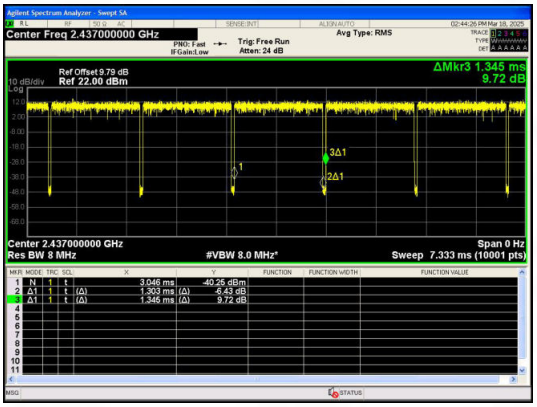
IEEE 802.11g_20MHz_Channel 6



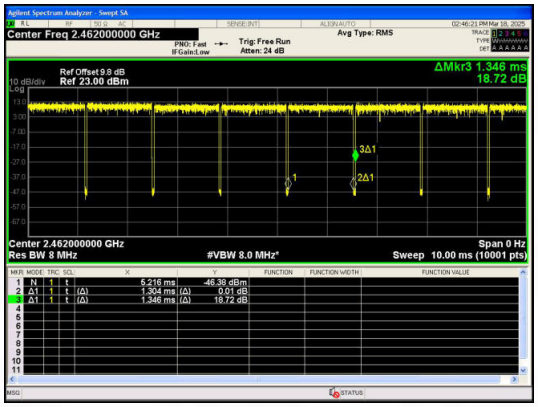
IEEE 802.11g_20MHz_Channel 11



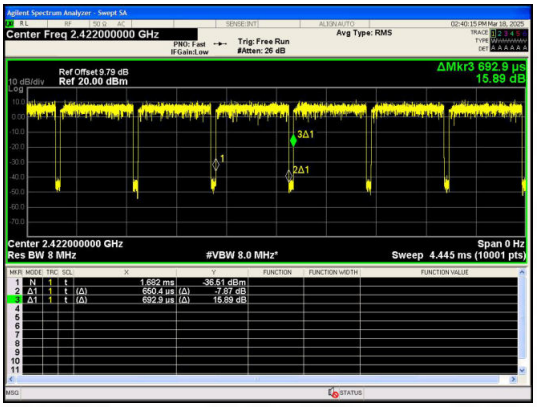
IEEE 802.11n_20MHz_Channel 1



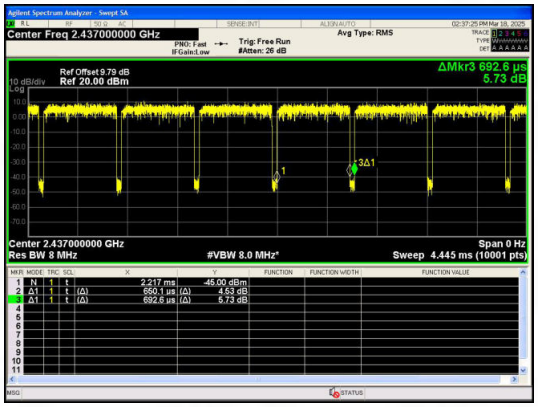
IEEE 802.11n_20MHz_Channel 6



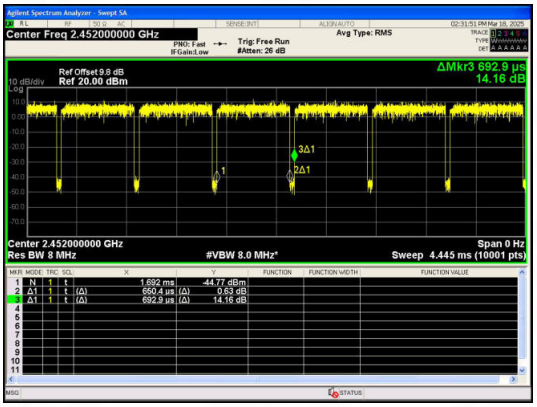
IEEE 802.11n_20MHz_Channel 11



IEEE 802.11n_40MHz_Channel 3



IEEE 802.11n_40MHz_Channel 6



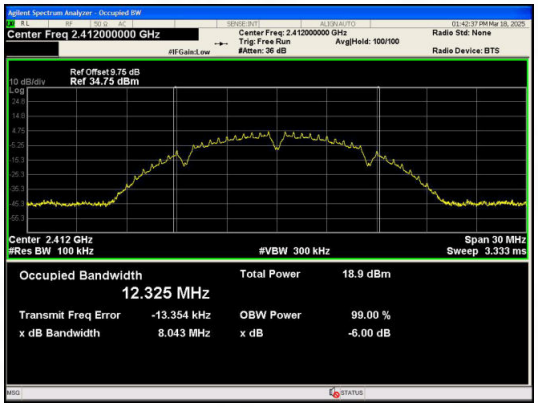
IEEE 802.11n_40MHz_Channel 9

6dB Bandwidth

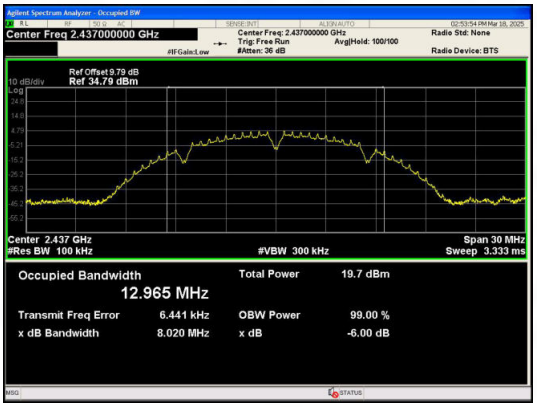
Test Result

Mode	Channel	Ant.	Center Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)	Result
IEEE 802.11b	1	0	2412	8.043	≥0.5	PASS
	6		2437	8.020		PASS
	11		2462	7.108		PASS
IEEE 802.11g	1		2412	15.06		PASS
	6		2437	15.49		PASS
	11		2462	13.83		PASS
IEEE 802.11n_20	1		2412	15.09		PASS
	6		2437	16.31		PASS
	11		2462	13.84		PASS
IEEE 802.11n_40	3		2422	30.08		PASS
	6		2437	36.35		PASS
	9		2452	26.29		PASS

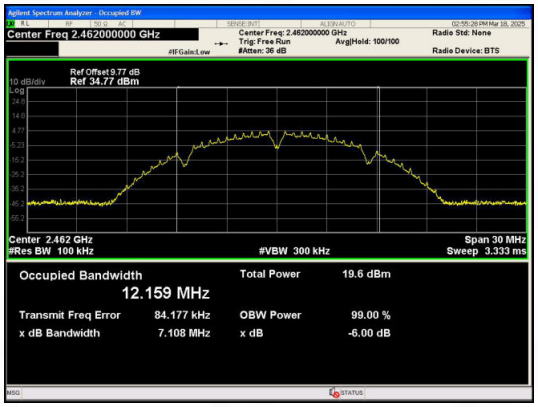
Test Graphs

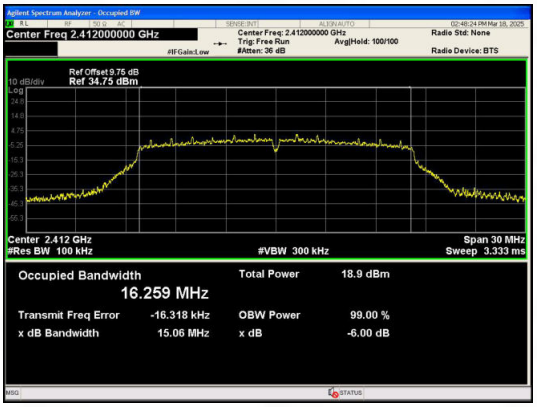


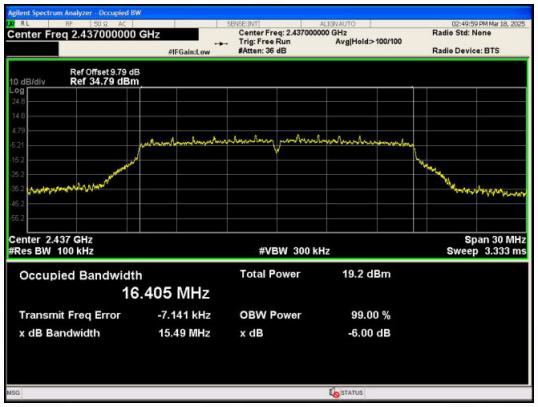
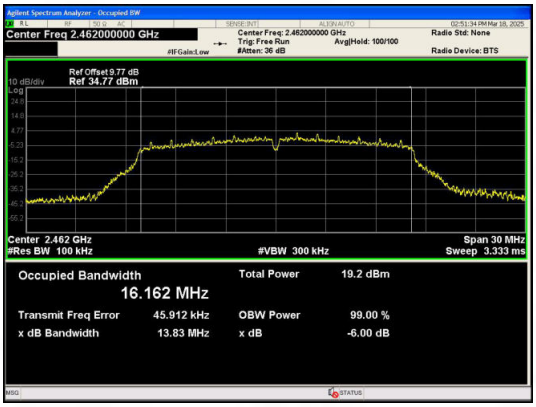
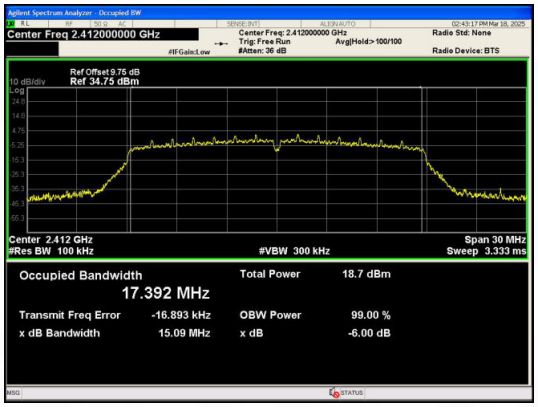
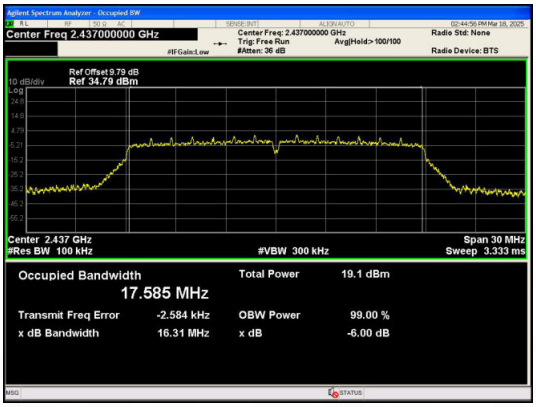
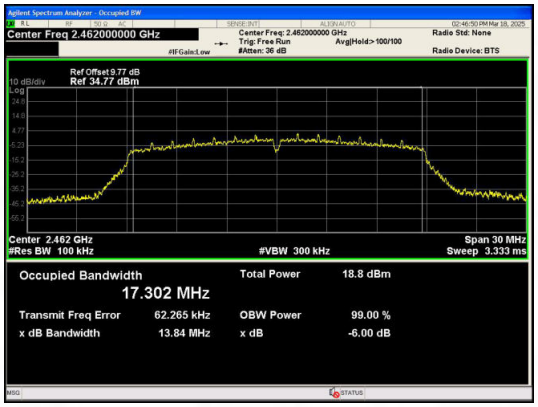
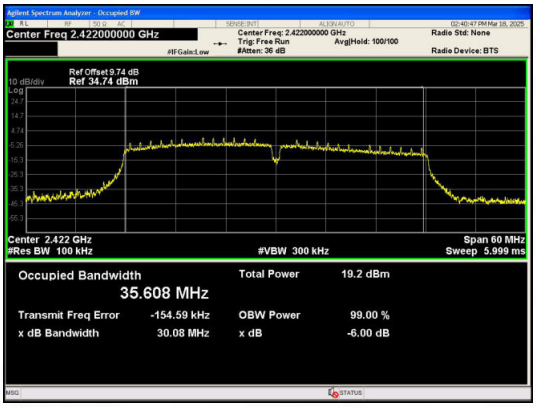
IEEE 802.11b_Channel 1_20MHz_Antenna 0

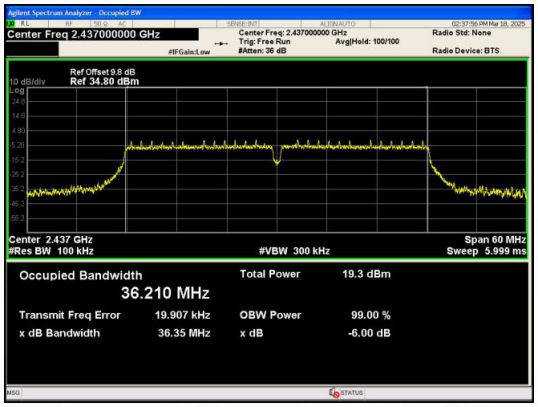


IEEE 802.11b_Channel 6_20MHz_Antenna 0





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

99% Bandwidth

Test Result

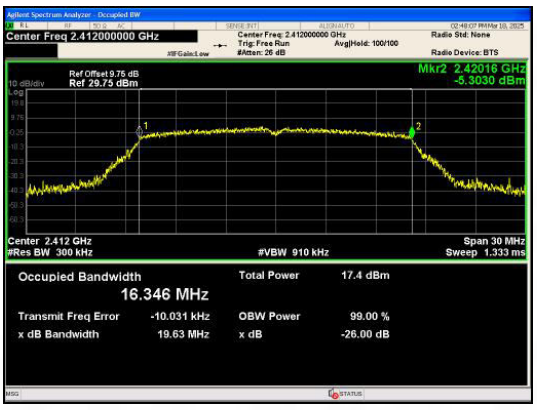
Mode	Channel	Ant.	Center Frequency (MHz)	99% BW (MHz)
IEEE 802.11b	1	0	2412	12.313
	6		2437	12.954
	11		2462	12.130
IEEE 802.11g	1		2412	16.346
	6		2437	16.683
	11		2462	16.246
IEEE 802.11n_20	1		2412	17.471
	6		2437	17.739
	11		2462	17.387
IEEE 802.11n_40	3		2422	35.784
	6		2437	36.521
	9		2452	35.641

Test Graphs

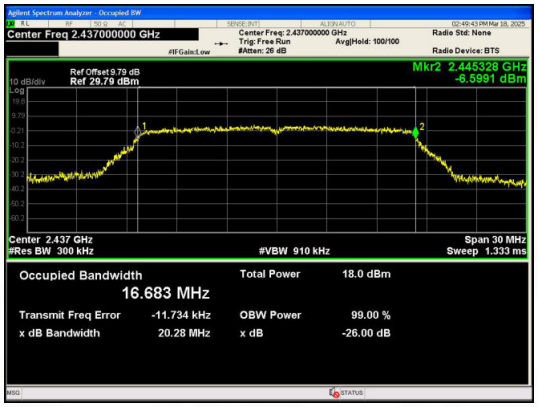
IEEE 802.11b_Channel 1_20MHz_Antenna 0

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

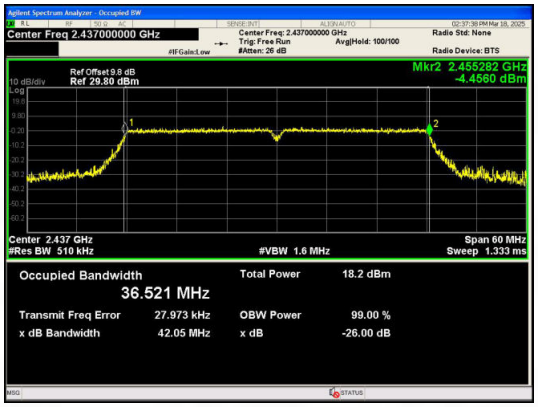
IEEE 802.11n_Channel 1_20MHz_Antenna 0

IEEE 802.11n_Channel 6_20MHz_Antenna 0

IEEE 802.11n_Channel 11_20MHz_Antenna 0

IEEE 802.11n_Channel 3_40MHz_Antenna 0

BTF Testing Lab (Shenzhen) Co., Ltd.
101/201/301, Building 1, Block 2, Tantou Industrial Park,Tantou Community, Songgang Subdistrict, Bao'an District, Shenzhen, China
Email: info@btf-lab.com Tel: +86-755-23146130 http://www.btf-lab.com



IEEE 802.11n_Channel 6_40MHz_Antenna 0

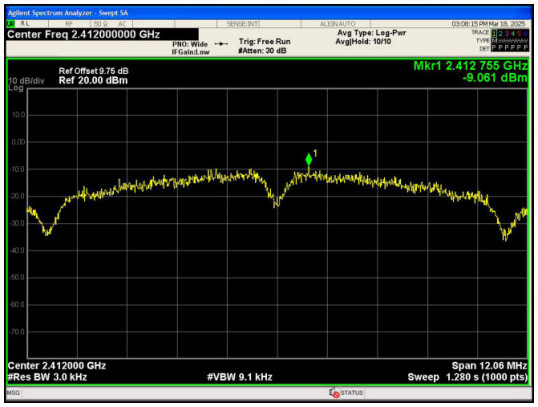
IEEE 802.11n_Channel 9_40MHz_Antenna 0

Power Spectral Density

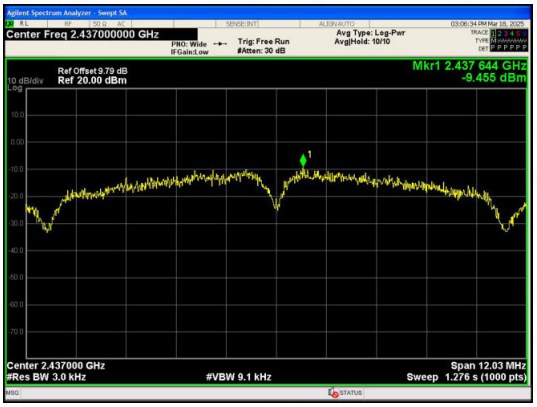
Test Result

Mode	Channel	PSD (dBm/3kHz) Ant. 0	Limit (dBm/3kHz)	Result
IEEE 802.11b	1	-9.061	≤8	PASS
	6	-9.455		PASS
	11	-8.957		PASS
IEEE 802.11g	1	-11.040		PASS
	6	-11.997		PASS
	11	-10.534		PASS
IEEE 802.11n_20	1	-11.655		PASS
	6	-13.377		PASS
	11	-11.124		PASS
IEEE 802.11n_40	3	-14.447		PASS
	6	-14.590		PASS
	9	-11.842		PASS

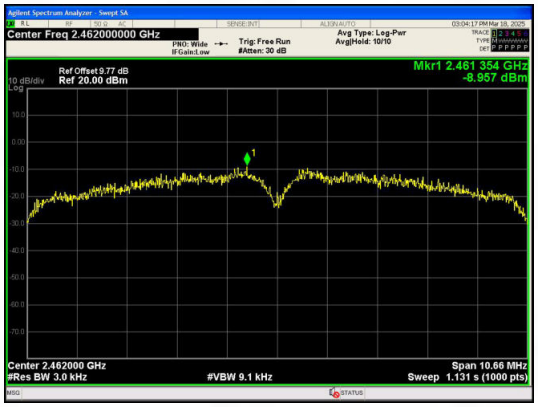
Test Graphs



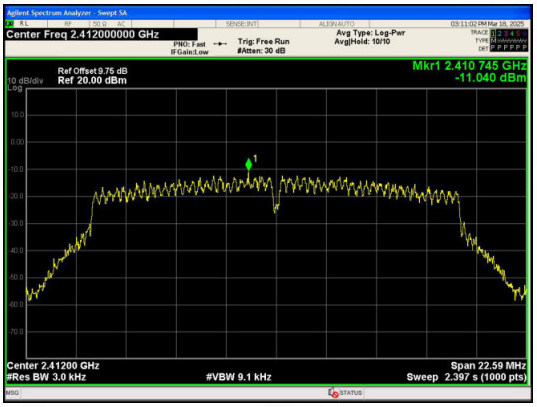
IEEE 802.11b_Channel 1_20MHz_Antenna 0



IEEE 802.11b_Channel 6_20MHz_Antenna 0

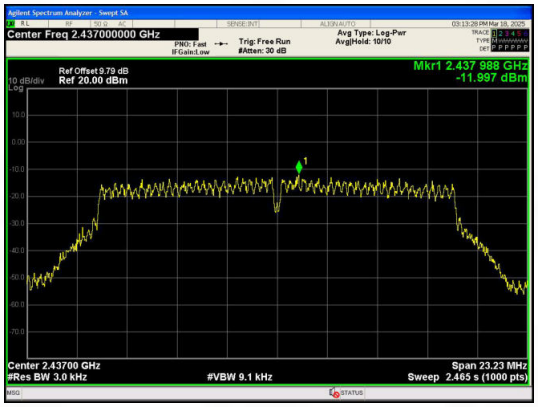
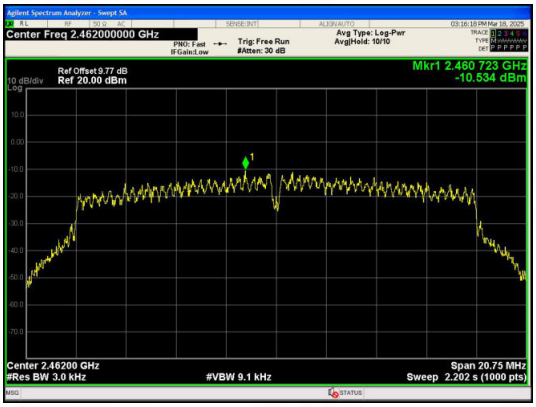
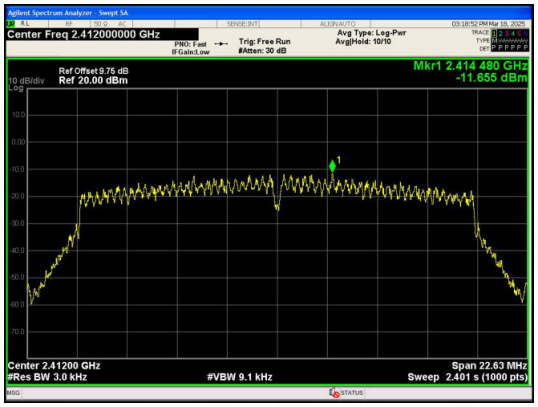
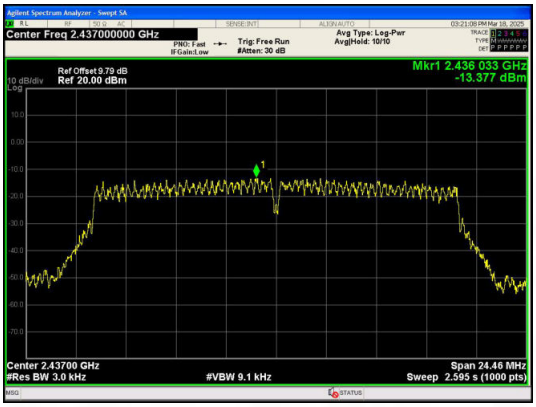
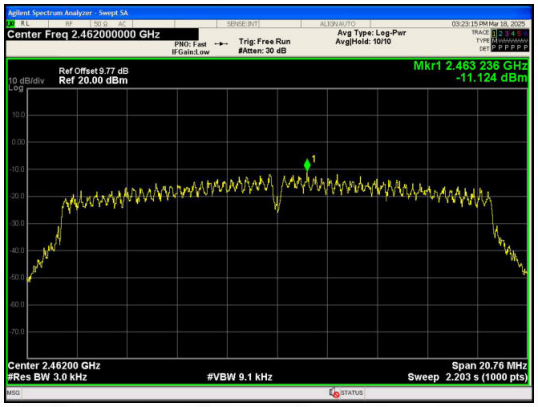
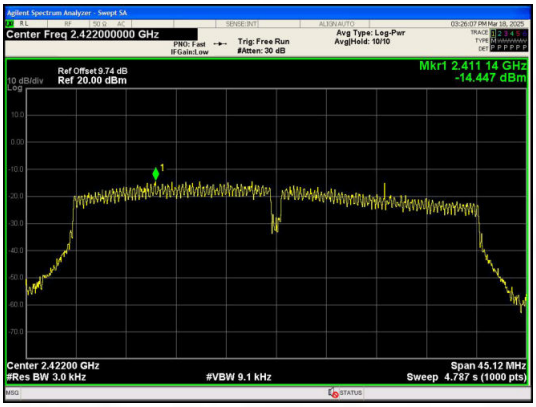


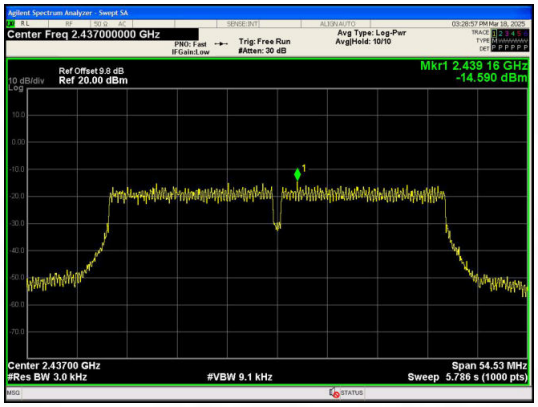
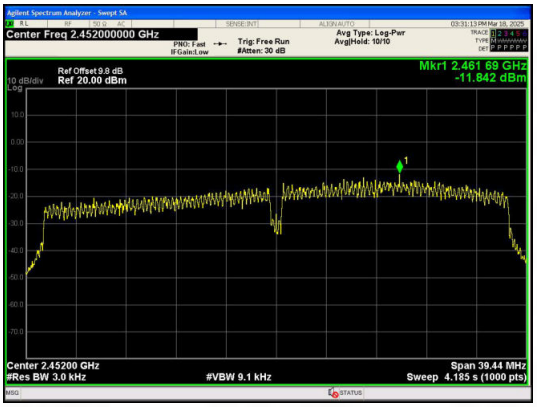
IEEE 802.11b_Channel 11_20MHz_Antenna 0



IEEE 802.11g_Channel 1_20MHz_Antenna 0

BTF Testing Lab (Shenzhen) Co., Ltd.
101/201/301, Building 1, Block 2, Tantou Industrial Park,Tantou Community, Songgang Subdistrict, Bao'an District, Shenzhen, China
Email: info@btf-lab.com Tel: +86-755-23146130 http://www.btf-lab.com

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

Note:The maximum loss of the test system for testing at 30MHz-26.5GHz is 17.2dB. The offset on the test chart is the offset of the main frequency, and the margin is sufficient to offset the difference between the maximum loss of the system and the offset of the main frequency.

Test Result

Mode	Channel	Ant.	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
IEEE 802.11b	1	0	2353.55	-41.975	-15.21	-26.765	PASS
			2400.00	-43.932	-15.21	-28.722	PASS
			4824.20	-49.837	-15.21	-34.627	PASS
			7228.20	-55.144	-15.21	-39.934	PASS
			9632.80	-56.477	-15.21	-41.267	PASS
			24675.4	-44.755	-15.21	-29.545	PASS
	6		4874.18	-45.771	-15.23	-30.541	PASS
			7307.51	-56.576	-15.23	-41.346	PASS
			9729.60	-56.565	-15.23	-41.335	PASS
			24714.7	-45.047	-15.23	-29.817	PASS
	11		2483.50	-43.583	-15.17	-28.413	PASS
			4924.12	-52.943	-15.17	-37.773	PASS
			7396.77	-56.192	-15.17	-41.022	PASS
			9843.21	-58.410	-15.17	-43.240	PASS
			24834.6	-45.104	-15.17	-29.934	PASS
IEEE 802.11g	1		2398.92	-37.850	-17.02	-20.830	PASS
			2400.00	-38.360	-17.02	-21.340	PASS
			4807.40	-55.712	-17.02	-38.692	PASS
			7229.50	-53.923	-17.02	-36.903	PASS
			9658.40	-56.814	-17.02	-39.794	PASS
			24568.0	-45.037	-17.02	-28.017	PASS
	6		4880.42	-55.599	-17.43	-38.169	PASS
			7302.51	-55.115	-17.43	-37.685	PASS
			9728.35	-56.920	-17.43	-39.490	PASS
			24866.4	-45.284	-17.43	-27.854	PASS
	11		2483.50	-43.586	-16.83	-26.756	PASS
			4940.35	-55.136	-16.83	-38.306	PASS
			7366.19	-56.955	-16.83	-40.125	PASS
			9860.06	-57.648	-16.83	-40.818	PASS
			24822.1	-45.113	-16.83	-28.283	PASS

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101/201/301, Building 1, Block 2, Tantou Industrial Park,Tantou Community, Songgang Subdistrict, Bao'an District, Shenzhen, China
Email: info@btf-lab.com Tel: +86-755-23146130 http://www.btf-lab.com

IEEE 802.11n_20	1		2398.27	-37.638	-17.05	-20.588	PASS
			2400.00	-37.719	-17.05	-20.669	PASS
			4830.50	-56.357	-17.05	-39.307	PASS
			7218.90	-55.334	-17.05	-38.284	PASS
			9636.00	-56.039	-17.05	-38.989	PASS
			24735.3	-45.538	-17.05	-28.488	PASS
	6		4869.19	-55.199	-17.71	-37.489	PASS
			7318.74	-56.229	-17.71	-38.519	PASS
			9760.18	-56.791	-17.71	-39.081	PASS
			24568.0	-45.126	-17.71	-27.416	PASS
	11		2483.50	-43.773	-16.6	-27.173	PASS
			4935.98	-55.992	-16.6	-39.392	PASS
			7388.66	-56.526	-16.6	-39.926	PASS
			9848.20	-57.144	-16.6	-40.544	PASS
			24680.4	-44.628	-16.6	-28.028	PASS
IEEE 802.11n_40	3		2398.40	-35.240	-19.4	-15.840	PASS
			2400.00	-36.241	-19.4	-16.841	PASS
			4839.80	-56.214	-19.4	-36.814	PASS
			7230.70	-55.742	-19.4	-36.342	PASS
			9656.60	-56.714	-19.4	-37.314	PASS
			24619.8	-43.784	-19.4	-24.384	PASS
	6		4891.03	-55.140	-21.15	-33.990	PASS
			7282.54	-56.049	-21.15	-34.899	PASS
			9773.92	-57.070	-21.15	-35.920	PASS
			24813.3	-45.389	-21.15	-24.239	PASS
	9		2483.50	-42.579	-18.83	-23.749	PASS
			4921.00	-55.955	-18.83	-37.125	PASS
			7316.25	-56.331	-18.83	-37.501	PASS
			9835.72	-56.638	-18.83	-37.808	PASS
			24627.9	-44.973	-18.83	-26.143	PASS

Test Graphs

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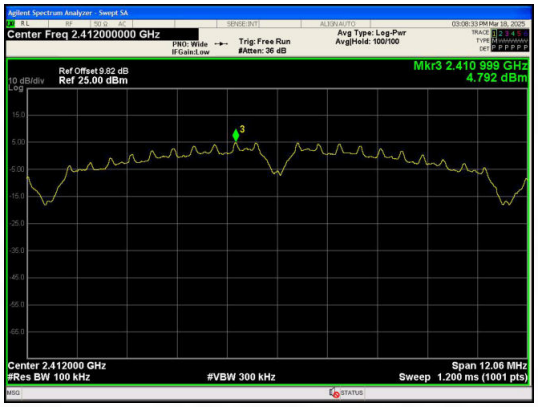
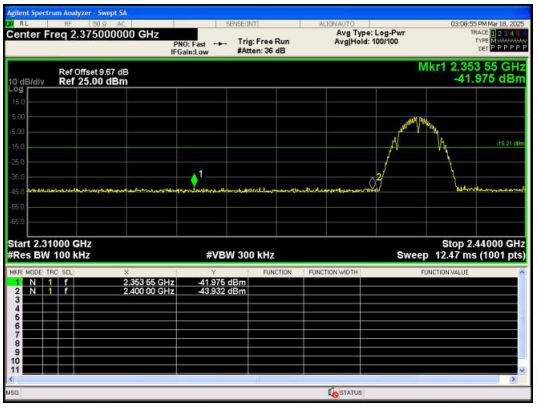
Email: info@btf-lab.com Tel: +86-755-23146130 http://www.btf-lab.com



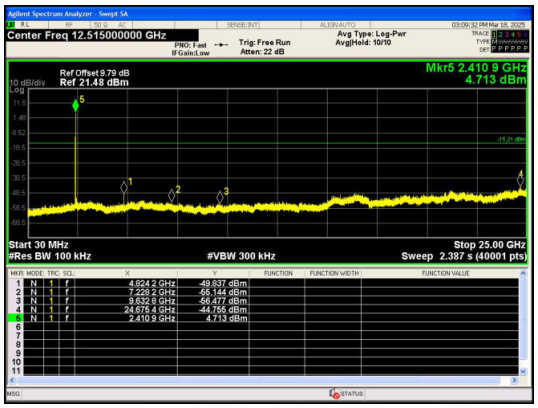
In-Band Reference Level

IEEE 802.11b_Channel 1_20MHz_Antenna 0



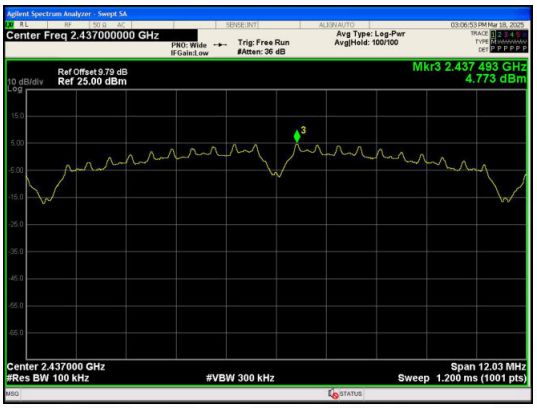
Out Of Band Emission

IEEE 802.11b_Channel 1_20MHz_Antenna 0



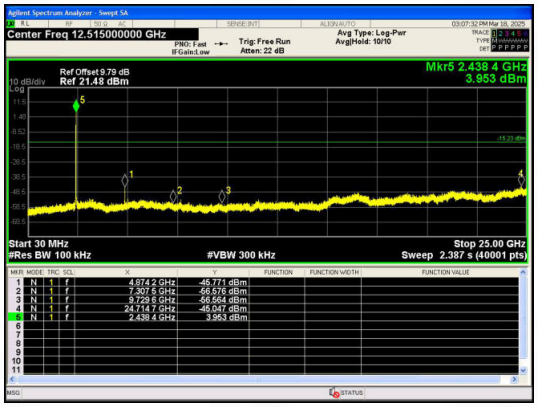
30.0 MHz - 25000.0 MHz

IEEE 802.11b_Channel 1_20MHz_Antenna 0



In-Band Reference Level

IEEE 802.11b_Channel 6_20MHz_Antenna 0

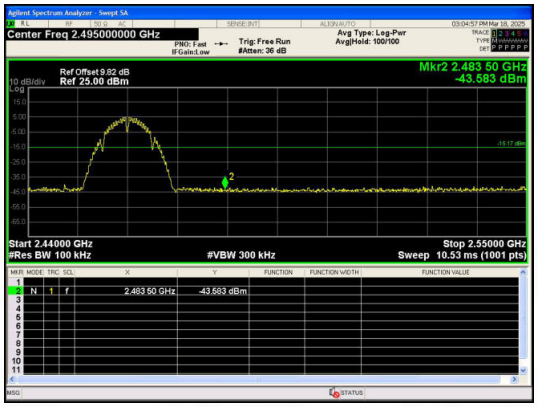
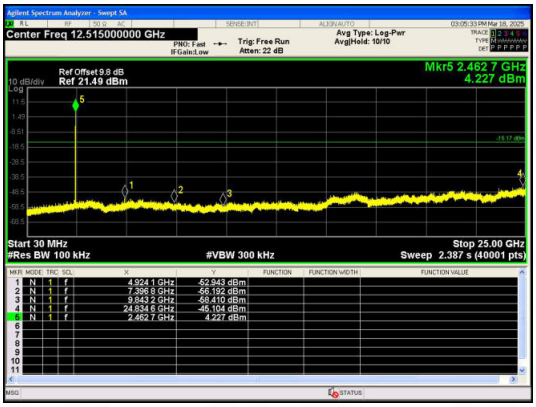


30.0 MHz - 25000.0 MHz

IEEE 802.11b_Channel 6_20MHz_Antenna 0

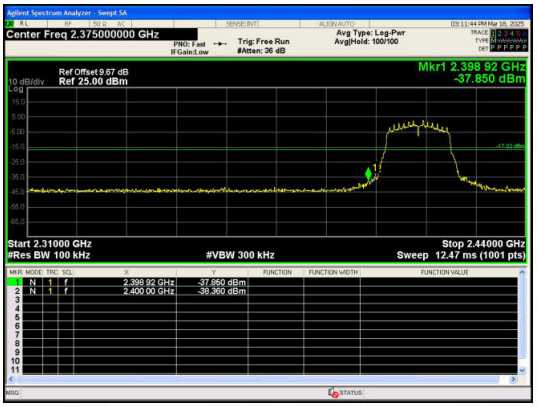
In-Band Reference Level

IEEE 802.11b_Channel 11_20MHz_Antenna 0

	
Out Of Band Emission **IEEE 802.11b_Channel 11_20MHz_Antenna 0**	**30.0 MHz - 25000.0 MHz** **IEEE 802.11b_Channel 11_20MHz_Antenna 0**

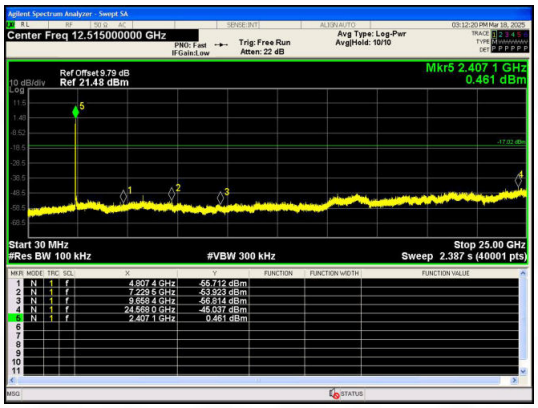
In-Band Reference Level

IEEE 802.11g_Channel 1_20MHz_Antenna 0



Out Of Band Emission

IEEE 802.11g_Channel 1_20MHz_Antenna 0

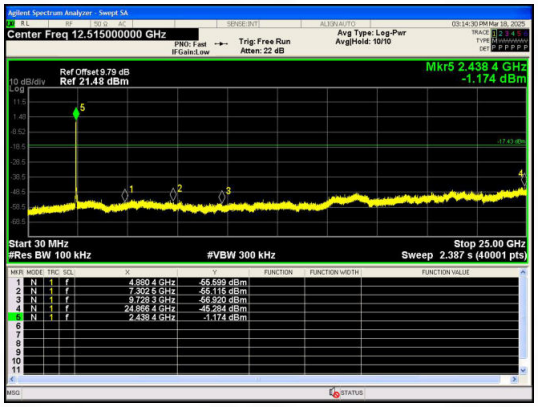


30.0 MHz - 25000.0 MHz

IEEE 802.11g_Channel 1_20MHz_Antenna 0

In-Band Reference Level

IEEE 802.11g_Channel 6_20MHz_Antenna 0

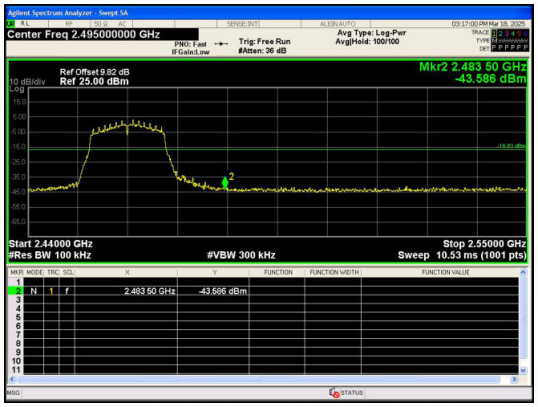


30.0 MHz - 25000.0 MHz

IEEE 802.11g_Channel 6_20MHz_Antenna 0

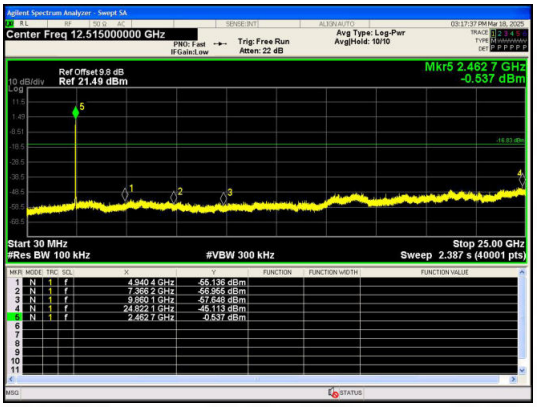
In-Band Reference Level

IEEE 802.11g_Channel 11_20MHz_Antenna 0



Out Of Band Emission

IEEE 802.11g_Channel 11_20MHz_Antenna 0

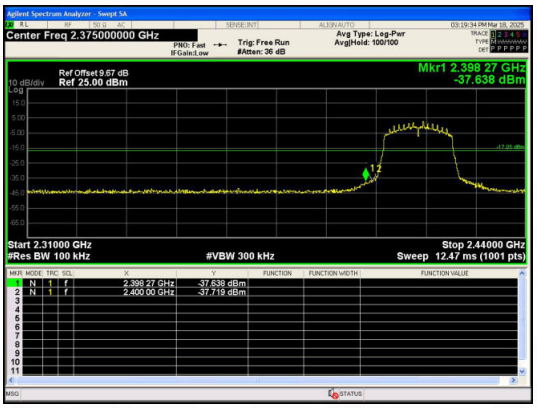


30.0 MHz - 25000.0 MHz

IEEE 802.11g_Channel 11_20MHz_Antenna 0

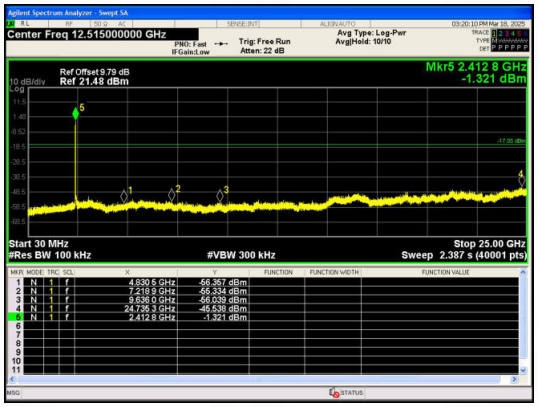
In-Band Reference Level

IEEE 802.11n_Channel 1_20MHz_Antenna 0



Out Of Band Emission

IEEE 802.11n_Channel 1_20MHz_Antenna 0

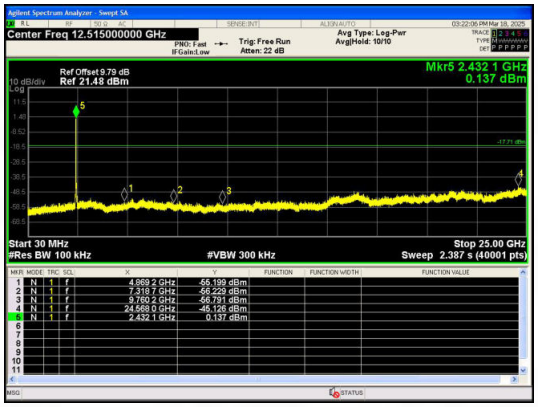


30.0 MHz - 25000.0 MHz

IEEE 802.11n_Channel 1_20MHz_Antenna 0

In-Band Reference Level

IEEE 802.11n_Channel 6_20MHz_Antenna 0

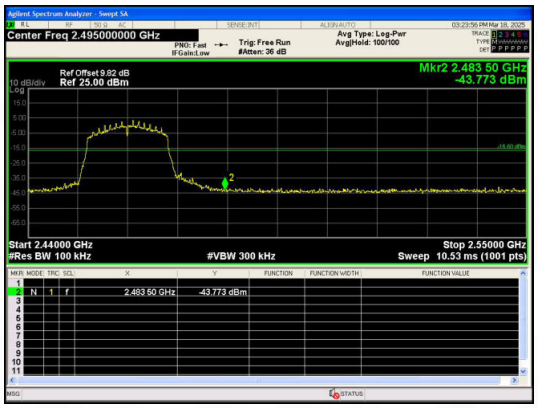


30.0 MHz - 25000.0 MHz

IEEE 802.11n_Channel 6_20MHz_Antenna 0

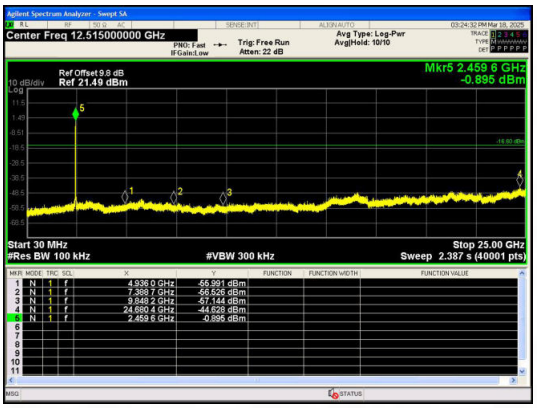
In-Band Reference Level

IEEE 802.11n_Channel 11_20MHz_Antenna 0



Out Of Band Emission

IEEE 802.11n_Channel 11_20MHz_Antenna 0

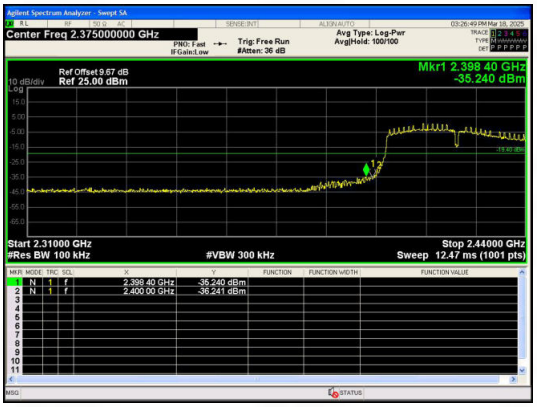


30.0 MHz - 25000.0 MHz

IEEE 802.11n_Channel 11_20MHz_Antenna 0

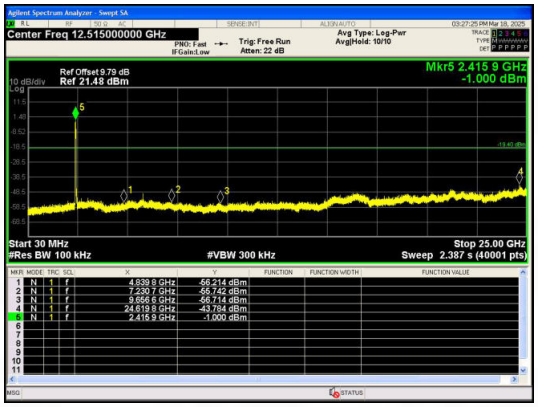
In-Band Reference Level

IEEE 802.11n_Channel 3_40MHz_Antenna 0



Out Of Band Emission

IEEE 802.11n_Channel 3_40MHz_Antenna 0

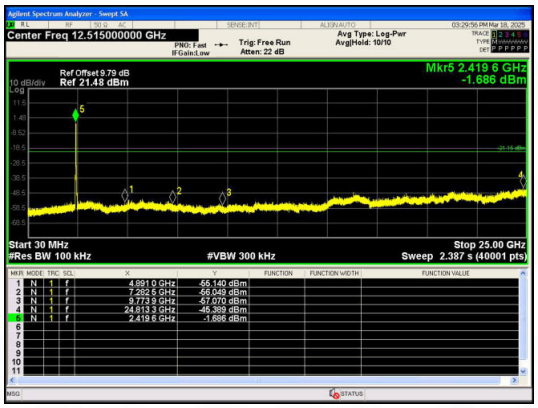


30.0 MHz - 25000.0 MHz

IEEE 802.11n_Channel 3_40MHz_Antenna 0

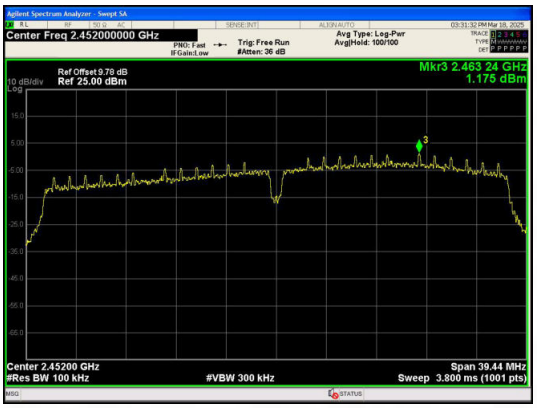
In-Band Reference Level

IEEE 802.11n_Channel 6_40MHz_Antenna 0



30.0 MHz - 25000.0 MHz

IEEE 802.11n_Channel 6_40MHz_Antenna 0

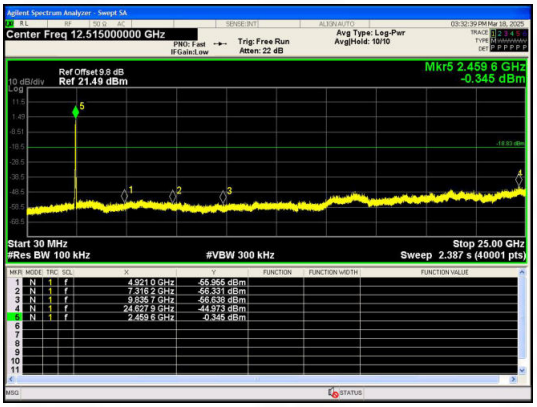


In-Band Reference Level

IEEE 802.11n_Channel 9_40MHz_Antenna 0

Out Of Band Emission

IEEE 802.11n_Channel 9_40MHz_Antenna 0



30.0 MHz - 25000.0 MHz

IEEE 802.11n_Channel 9_40MHz_Antenna 0

BTF Testing Lab (Shenzhen) Co., Ltd.
101/201/301, Building 1, Block 2, Tantou Industrial Park,Tantou Community, Songgang Subdistrict, Bao'an District, Shenzhen, China
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