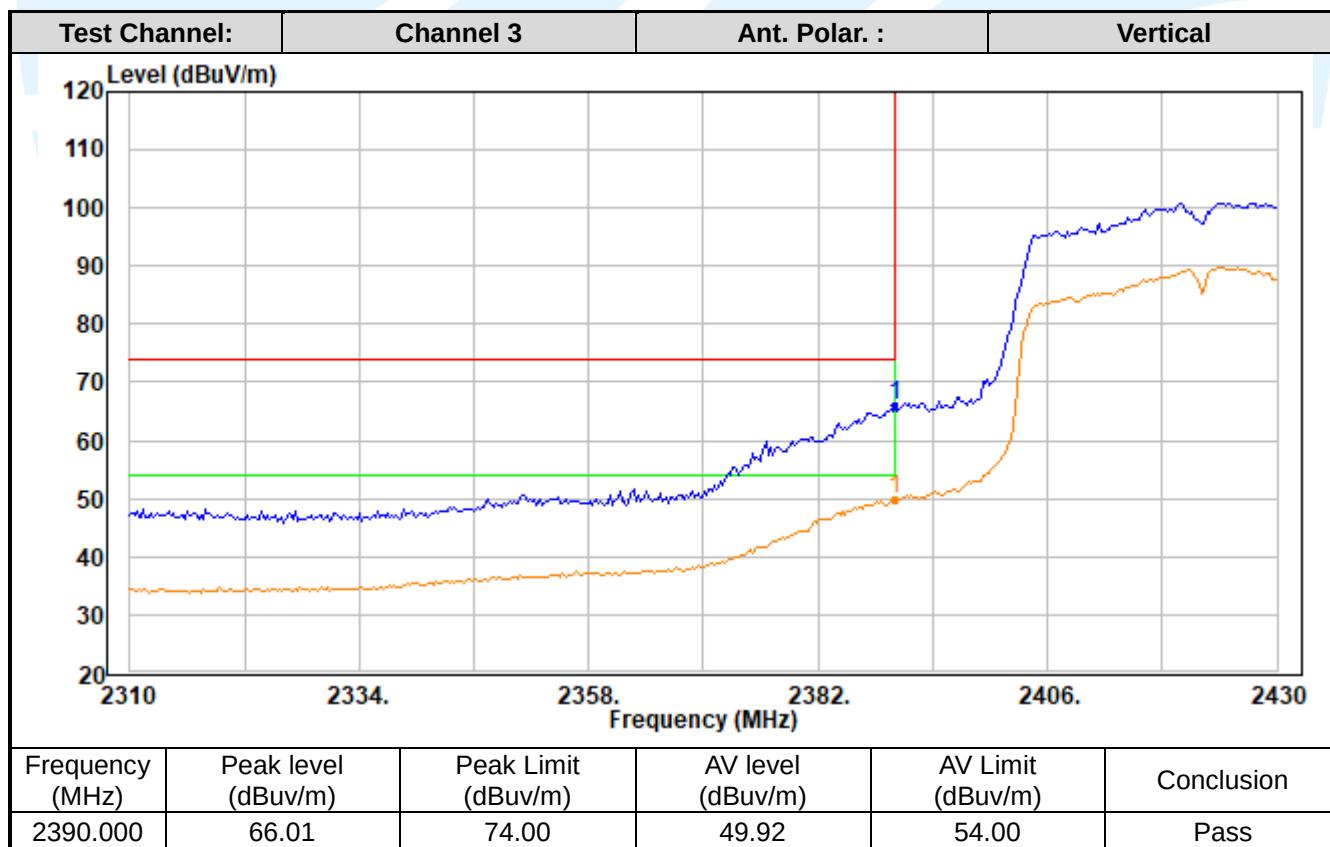
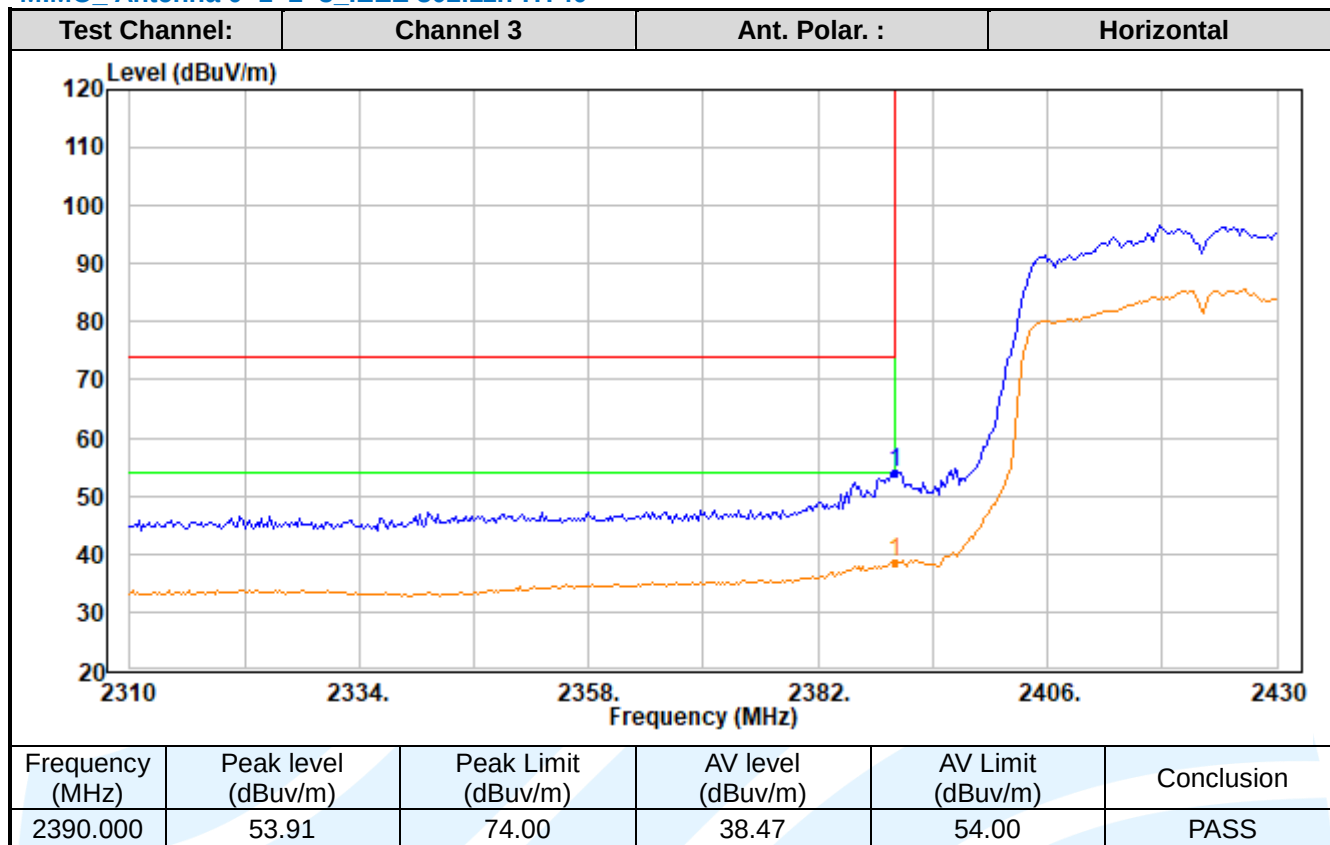


MIMO_Antenna 0+1+2+3 IEEE 802.11n-HT40



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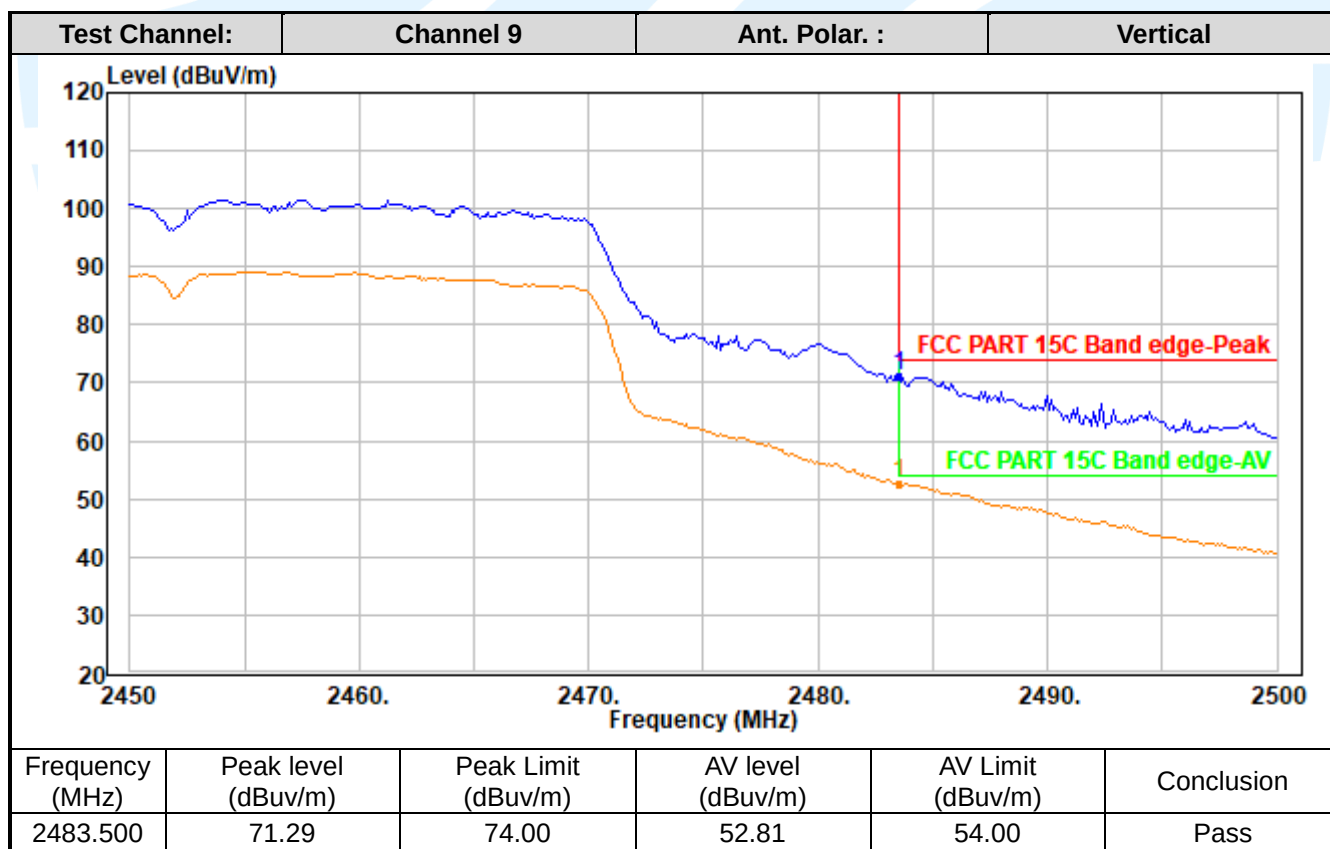
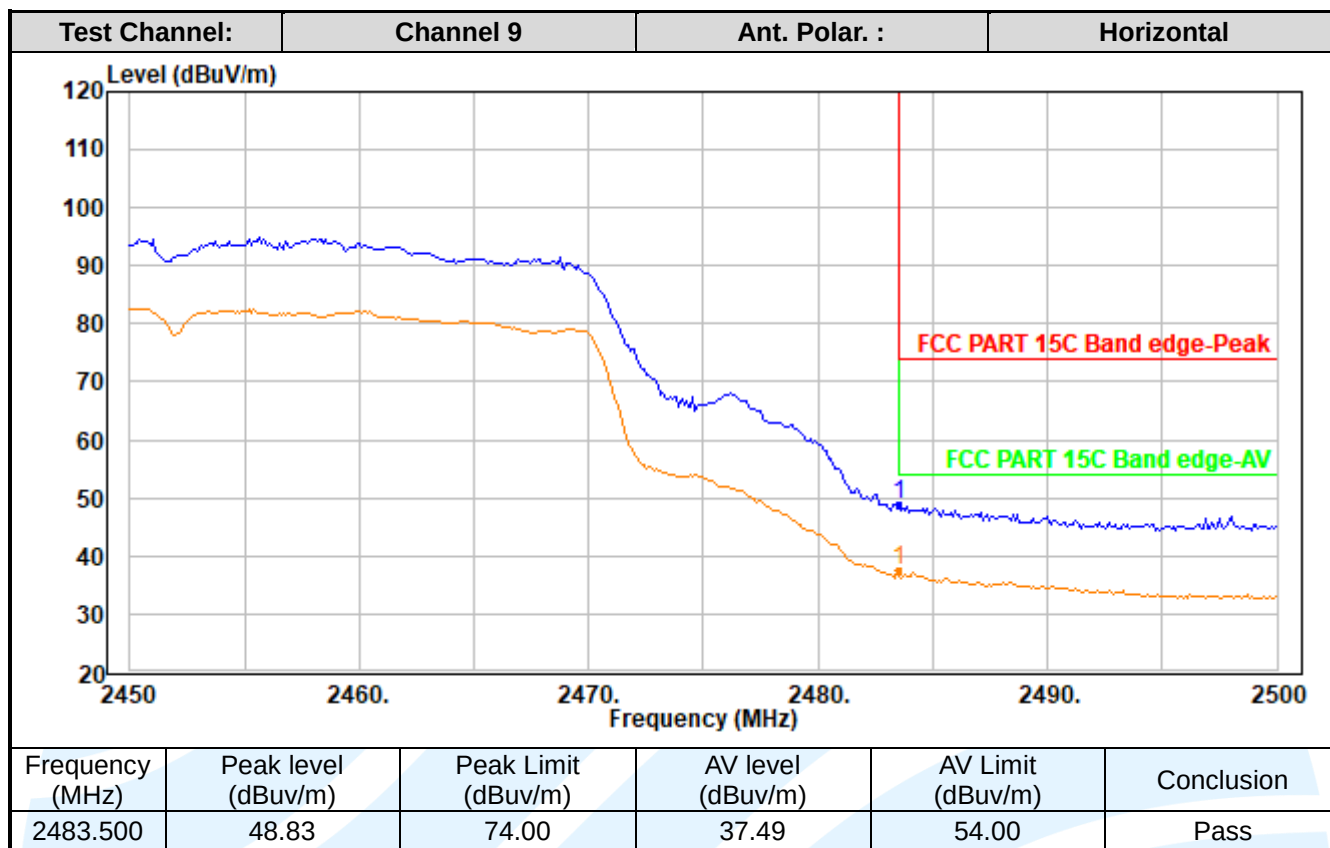
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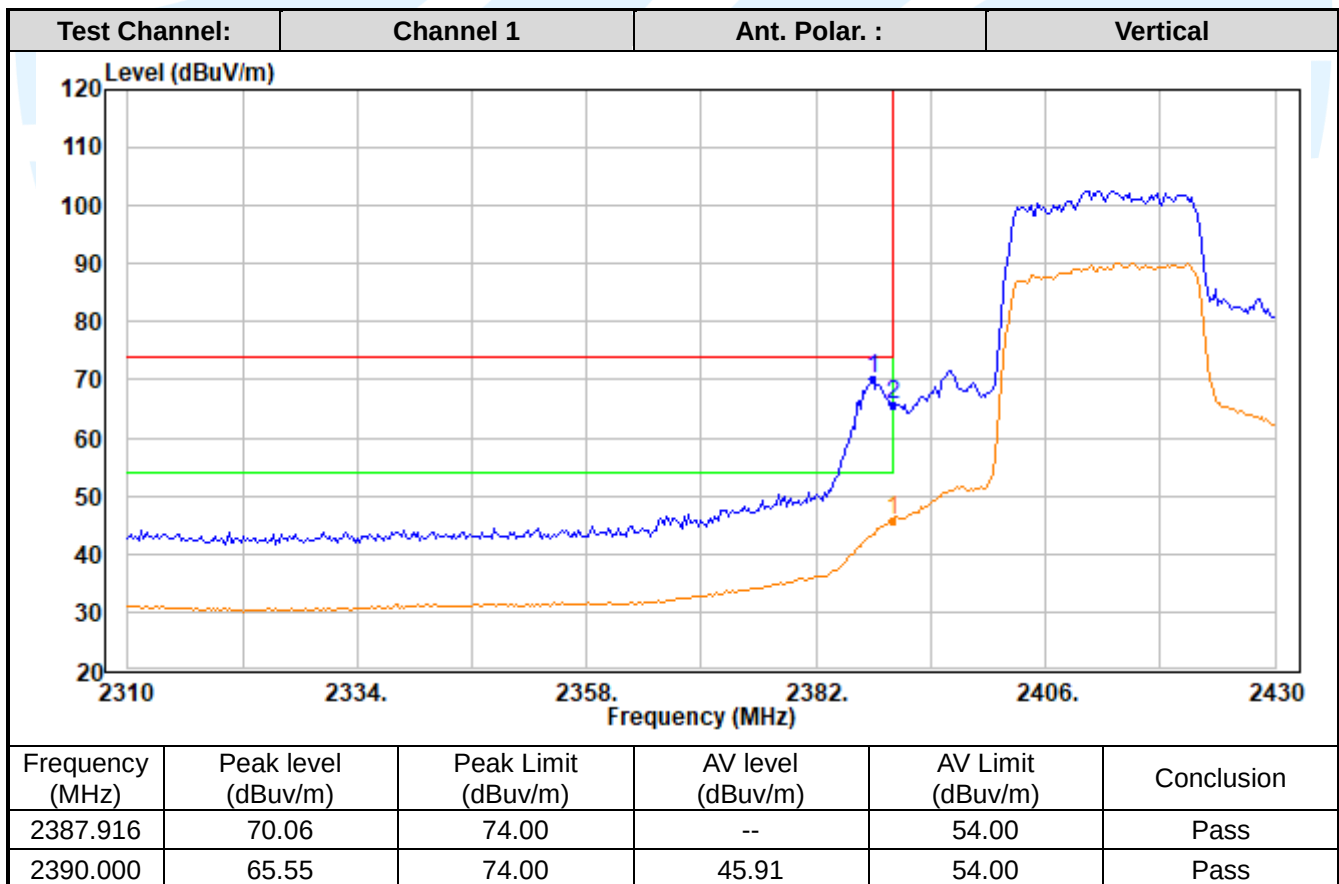
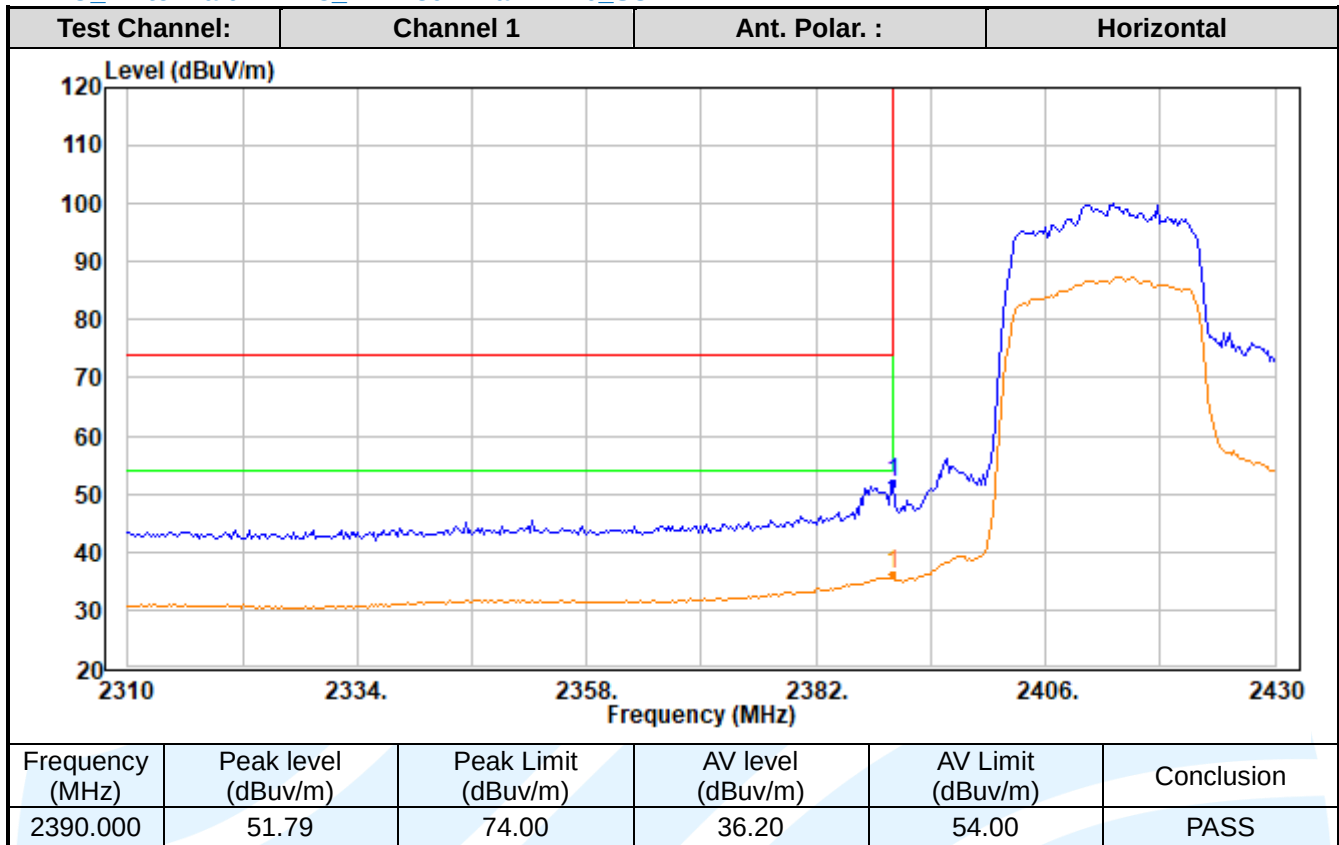
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MIMO_Antenna 0+1+2+3 IEEE 802.11ax-HT20_SU



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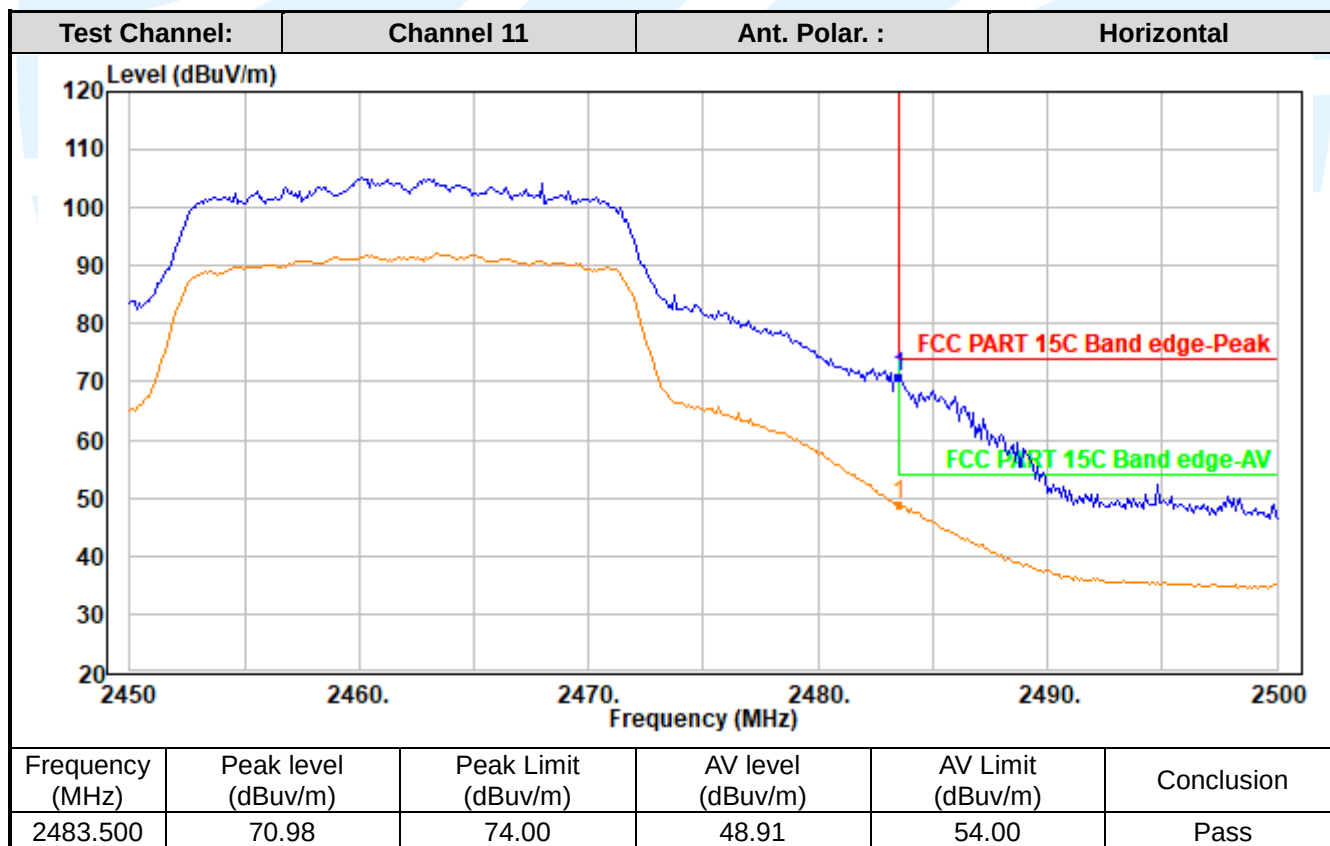
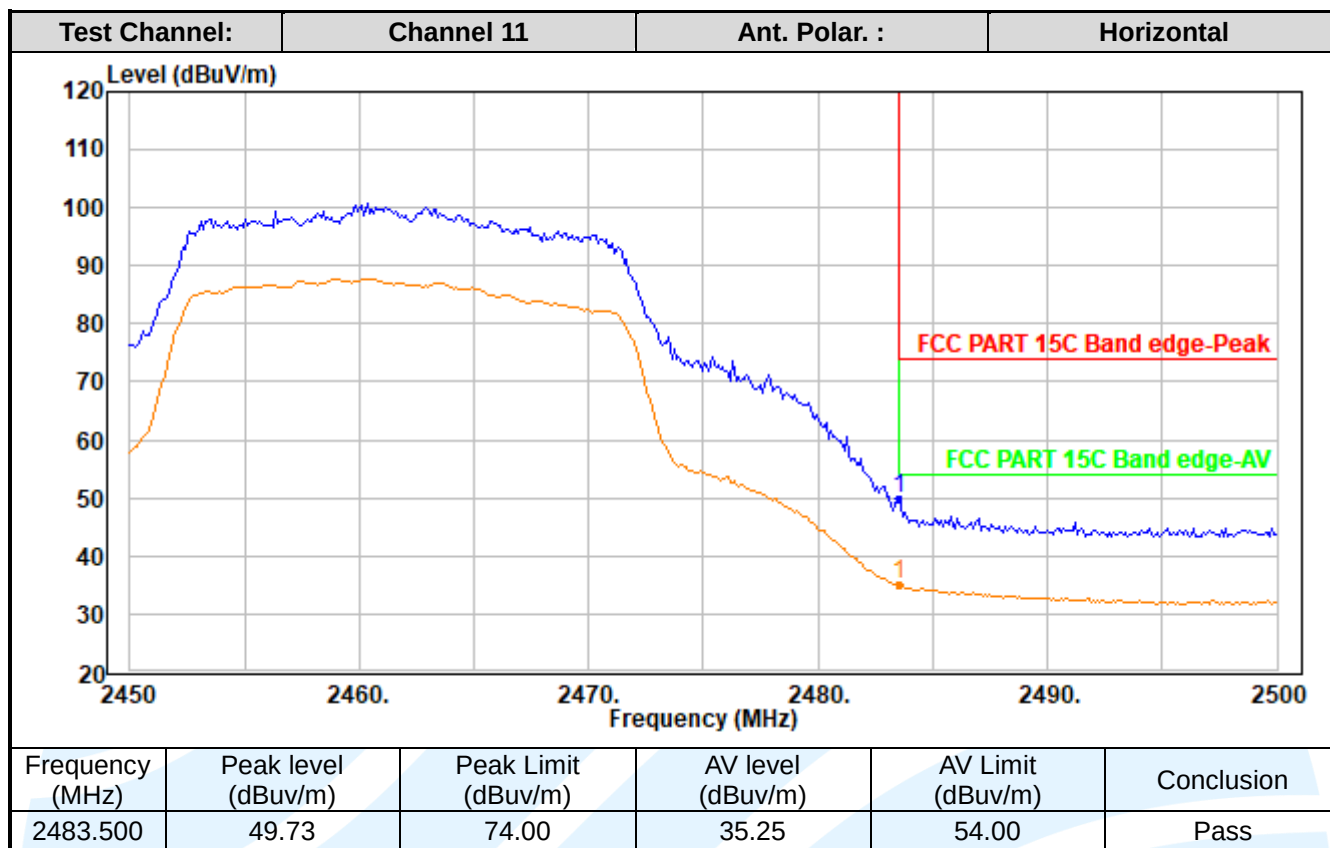
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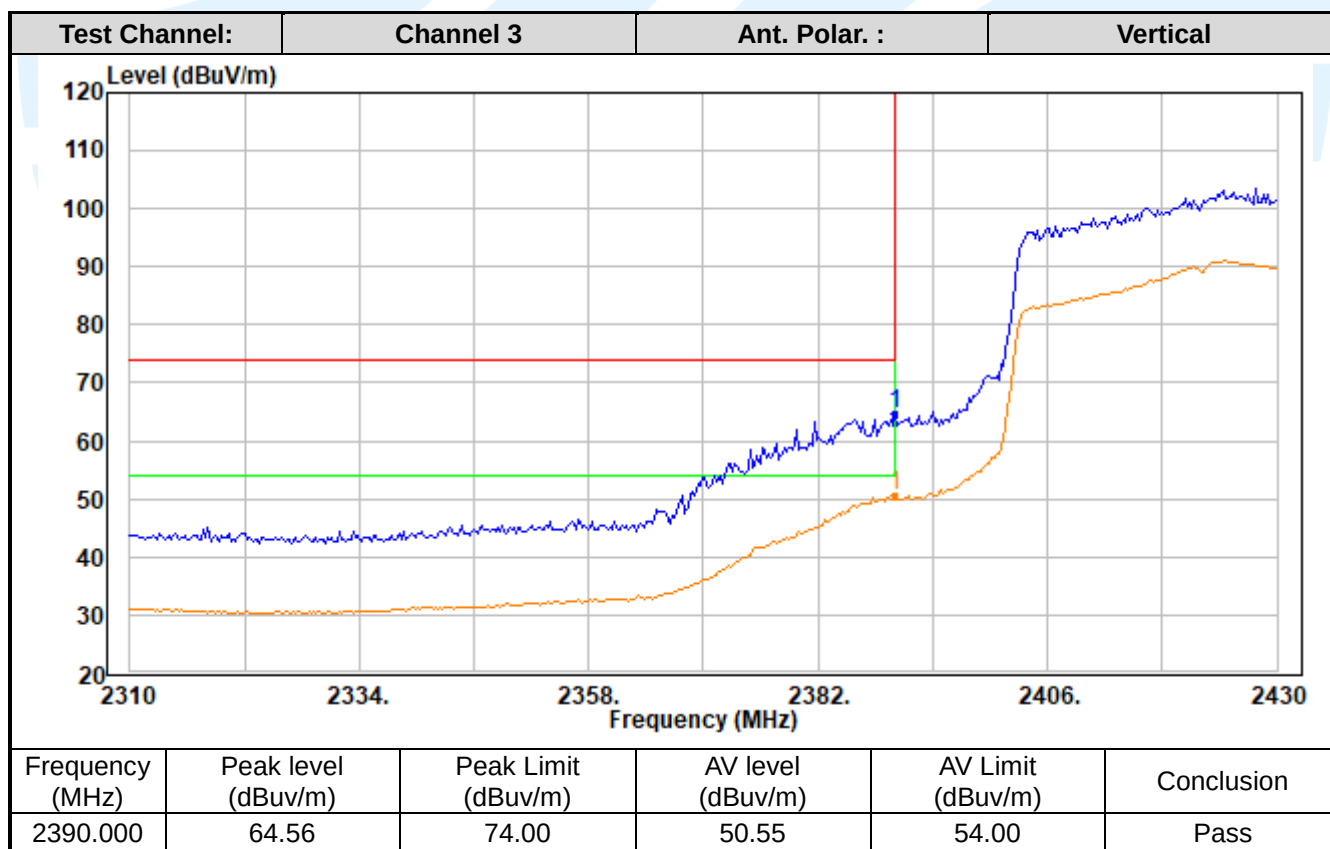
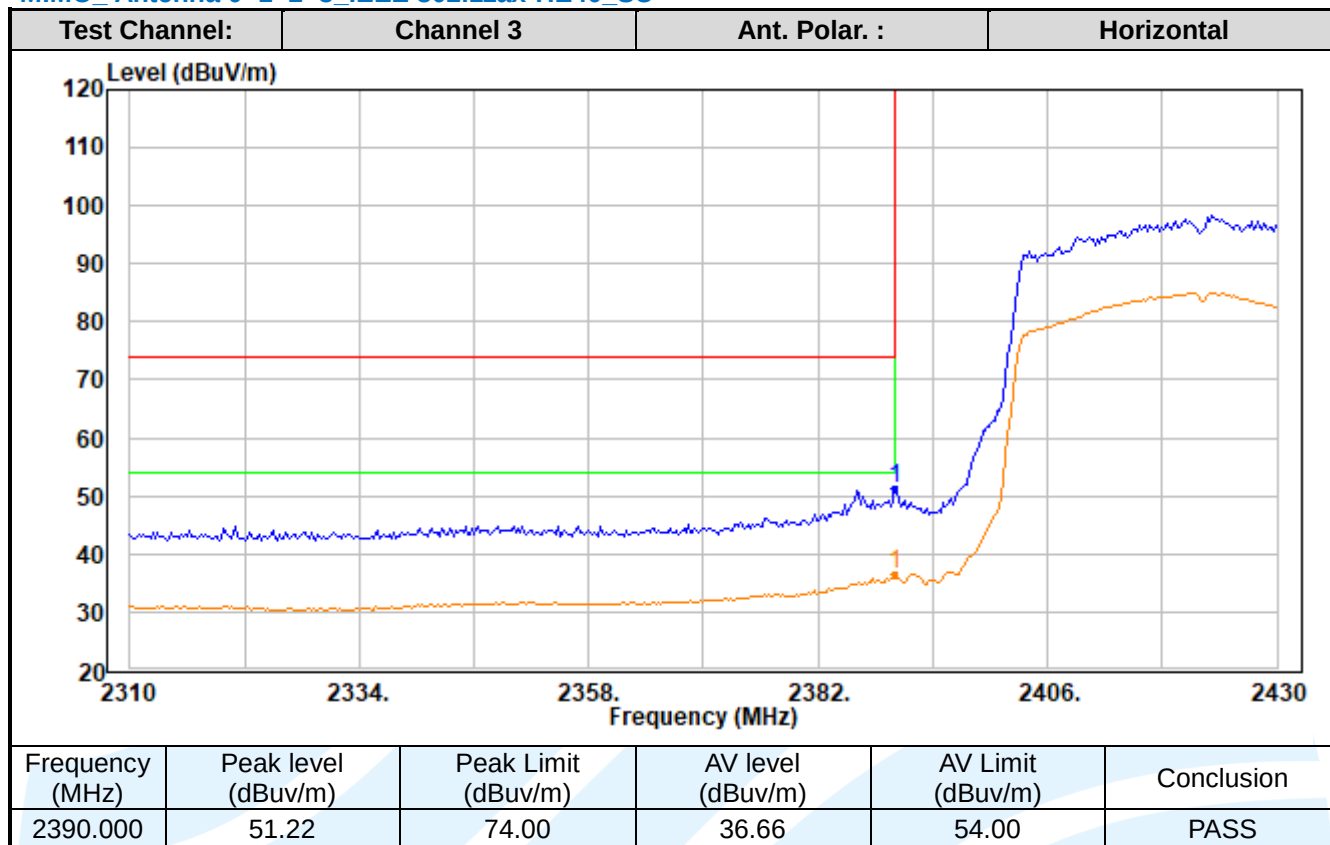
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MIMO_Antenna 0+1+2+3 IEEE 802.11ax-HE40_SU



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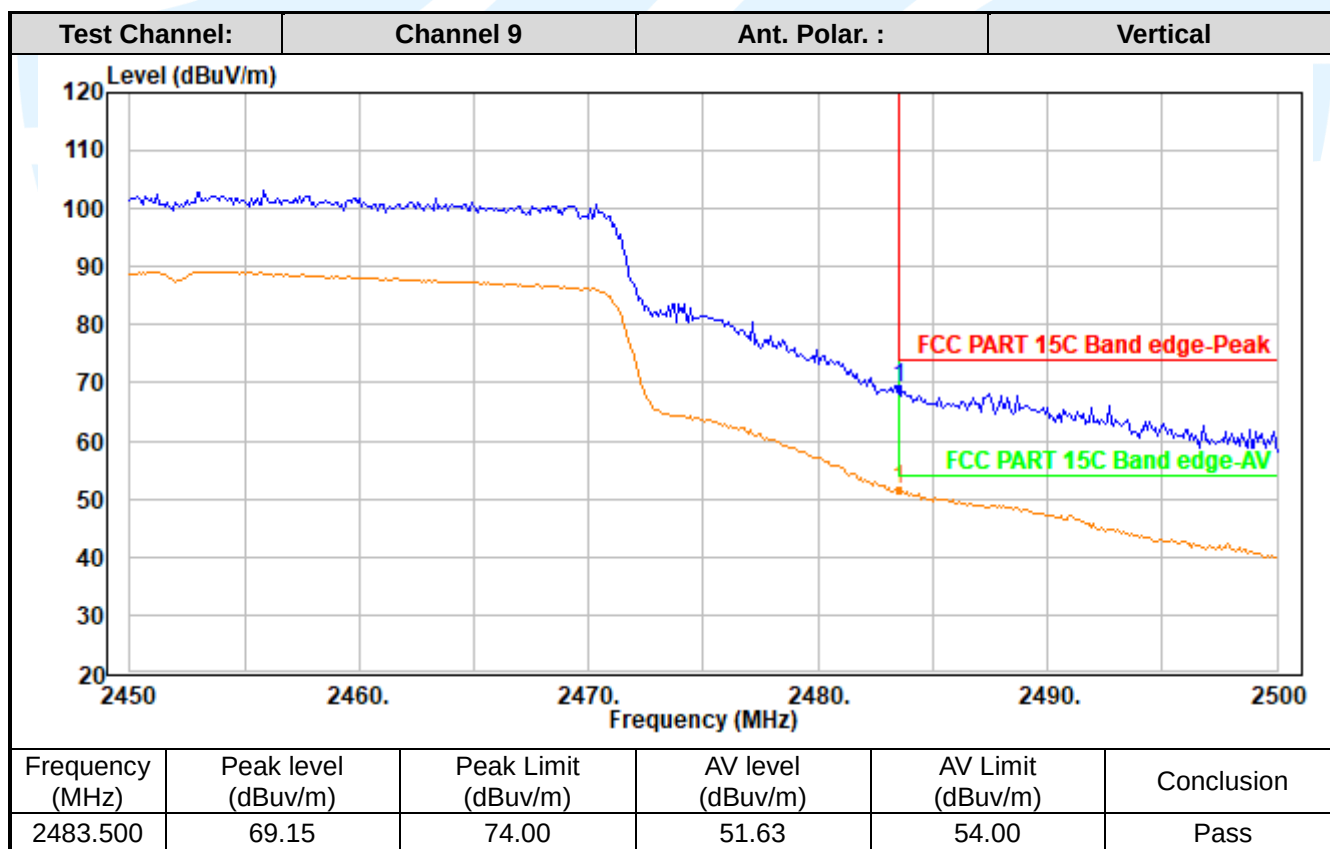
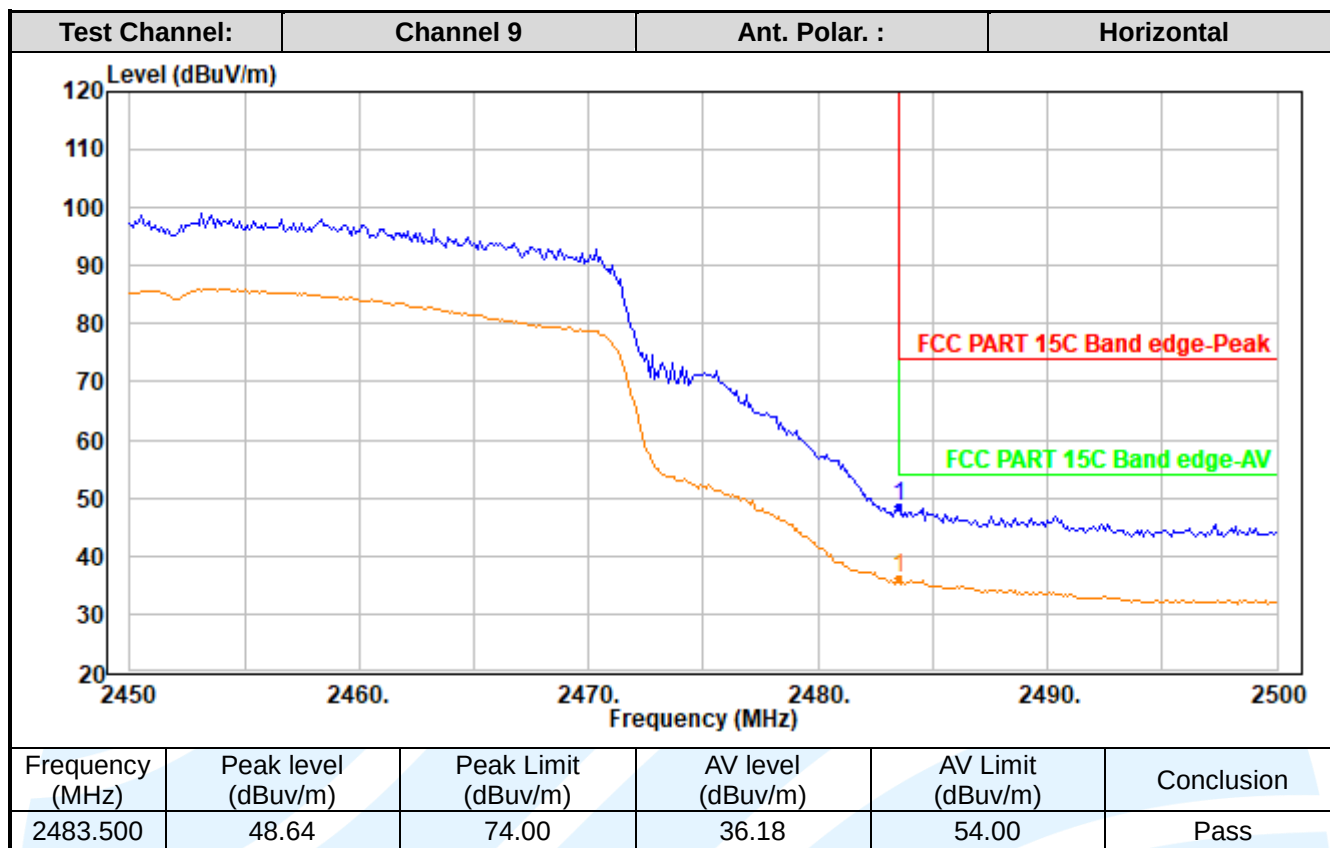
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5.9 CONDUCTED EMISSION

Test Requirement: 47 CFR Part 15C Section 15.207

Test Method: ANSI C63.10-2013 Section 6.2

Limits:

Frequency range (MHz)	Limits (dB(μV))	
	Quasi-peak	Average
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50

Remark:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz.

Test Setup: Refer to section 4.5.2 for details.

Test Procedures:

Test frequency range :150KHz-30MHz

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Equipment Used: Refer to section 3 for details.

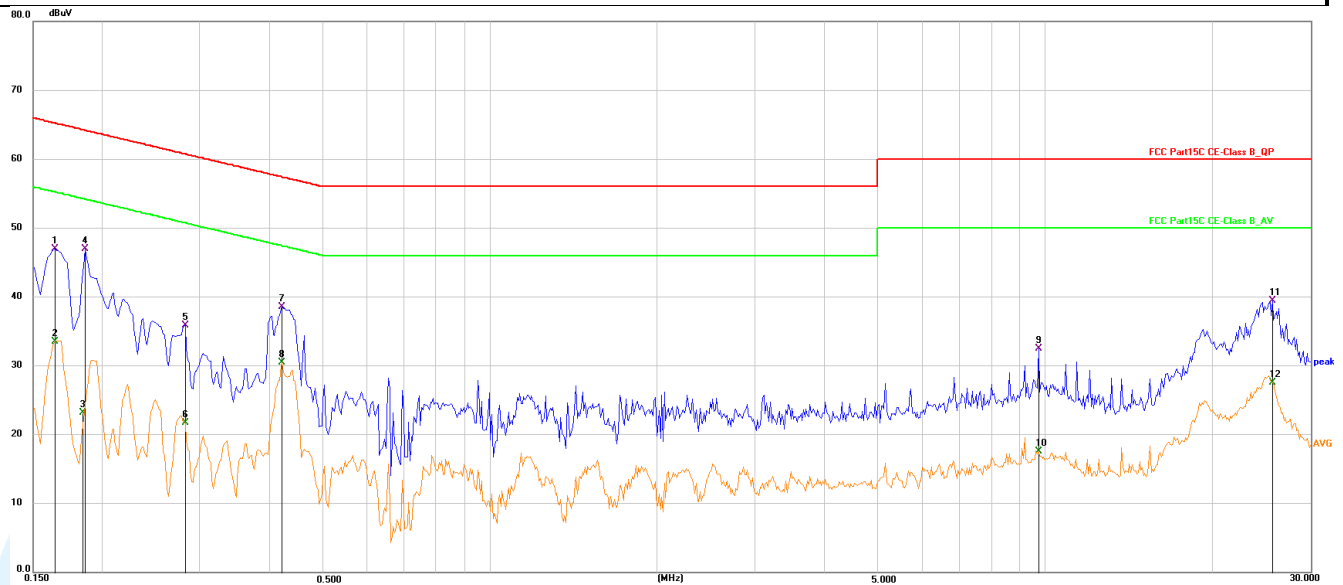
Test Result: Pass

The worst measurement data as follows:

Quasi Peak and Average:

Mode: WIFI Link

Live Line



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1641	36.78	10.19	46.97	65.25	-18.28	QP
2	0.1641	23.32	10.19	33.51	55.25	-21.74	AVG
3	0.1853	13.04	10.17	23.21	54.24	-31.03	AVG
4	0.1864	36.75	10.17	46.92	64.20	-17.28	QP
5	0.2818	25.66	10.20	35.86	60.76	-24.90	QP
6	0.2818	11.51	10.20	21.71	50.76	-29.05	AVG
7	0.4215	28.36	10.14	38.50	57.42	-18.92	QP
8	0.4215	20.29	10.14	30.43	47.42	-16.99	AVG
9	9.7051	21.98	10.48	32.46	60.00	-27.54	QP
10	9.7051	7.03	10.48	17.51	50.00	-32.49	AVG
11	25.5912	28.65	10.84	39.49	60.00	-20.51	QP
12	25.5912	16.71	10.84	27.55	50.00	-22.45	AVG

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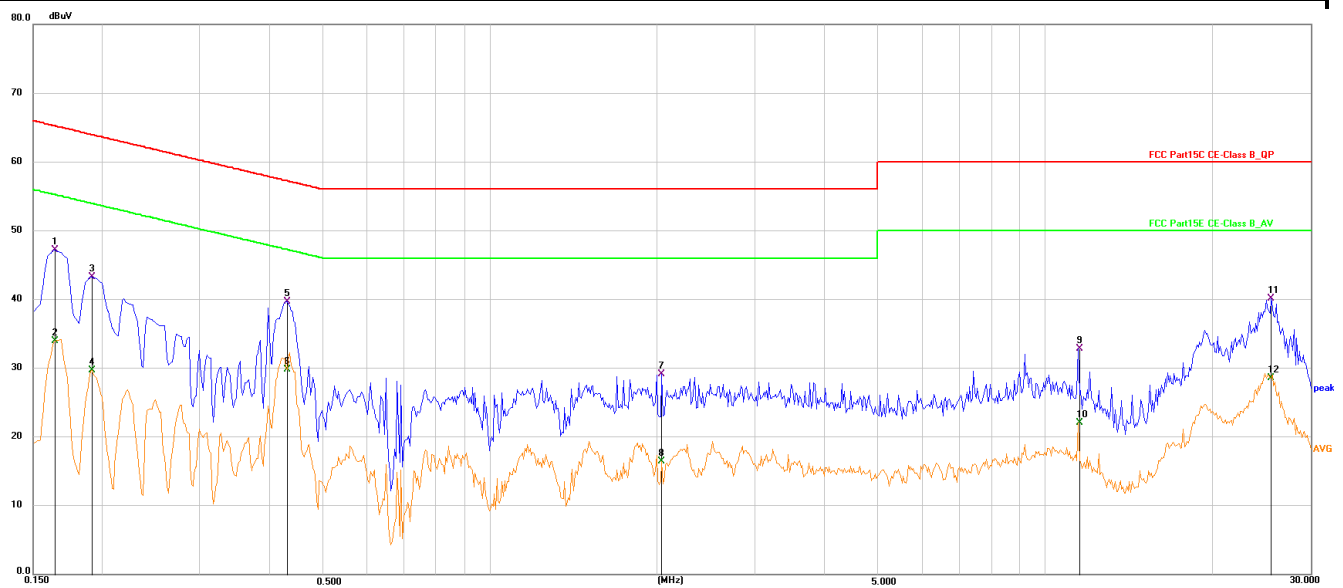
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Neutral Line



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1635	37.02	10.16	47.18	65.28	-18.10	QP
2	0.1635	23.73	10.16	33.89	55.28	-21.39	AVG
3	0.1905	33.22	10.07	43.29	64.01	-20.72	QP
4	0.1905	19.56	10.07	29.63	54.01	-24.38	AVG
5	0.4290	29.48	10.21	39.69	57.27	-17.58	QP
6	0.4290	19.58	10.21	29.79	47.27	-17.48	AVG
7	2.0354	18.77	10.34	29.11	56.00	-26.89	QP
8	2.0354	6.13	10.34	16.47	46.00	-29.53	AVG
9	11.4584	22.39	10.46	32.85	60.00	-27.15	QP
10	11.4584	11.63	10.46	22.09	50.00	-27.91	AVG
11	25.5075	29.26	10.81	40.07	60.00	-19.93	QP
12	25.5075	17.71	10.81	28.52	50.00	-21.48	AVG

Remark:

1. Correct Factor = LISN Factor + Cable Loss + Pulse Limiter Factor, the value was added to Original Receiver Reading by the software automatically.
2. Result = Reading + Correct Factor.
3. Margin = Result - Limit
4. An initial pre-scan was performed on the Phase and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

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APPENDIX A RF TEST DATA

A.1 6DB BANDWIDTH

Mode	Channel	RU & Index	Ant.	Center Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)	Result
IEEE 802.11b	1	N/A	0	2412	8.087	0.5	PASS
			1	2412	8.063		PASS
			2	2412	8.073		PASS
			3	2412	8.077		PASS
	6		0	2437	8.084		PASS
			1	2437	8.085		PASS
			2	2437	8.078		PASS
			3	2437	8.063		PASS
	11		0	2462	8.086		PASS
			1	2462	8.082		PASS
			2	2462	8.077		PASS
			3	2462	8.083		PASS
IEEE 802.11g	1	0	2412	15.32	PASS		
		1	2412	15.45	PASS		
		2	2412	15.71	PASS		
		3	2412	15.64	PASS		
	6	0	2437	15.10	PASS		
		1	2437	15.11	PASS		
		2	2437	15.65	PASS		
		3	2437	15.44	PASS		
	11	0	2462	15.13	PASS		
		1	2462	15.14	PASS		
		2	2462	15.08	PASS		
		3	2462	16.29	PASS		
IEEE 802.11n_20	1	0	2412	15.93	PASS		
		1	2412	17.27	PASS		
		2	2412	16.91	PASS		
		3	2412	16.89	PASS		
	6	0	2437	15.71	PASS		
		1	2437	17.54	PASS		
		2	2437	16.32	PASS		
		3	2437	16.52	PASS		
	11	0	2462	16.27	PASS		
		1	2462	16.33	PASS		
		2	2462	16.53	PASS		
		3	2462	16.04	PASS		
IEEE 802.11n_40	3	0	2422	35.12	PASS		
		1	2422	35.11	PASS		
		2	2422	35.12	PASS		
		3	2422	35.11	PASS		
	6	0	2437	35.12	PASS		
		1	2437	35.12	PASS		
		2	2437	35.12	PASS		
		3	2437	35.10	PASS		
	9	0	2452	35.12	PASS		
		1	2452	35.11	PASS		
		2	2452	35.11	PASS		
		3	2452	35.11	PASS		
IEEE 802.11ax_20	1	SU	0	2412	18.37	PASS	
			1	2412	17.68	PASS	
			2	2412	18.65	PASS	
			3	2412	18.11	PASS	
	6		0	2437	17.67	PASS	
			1	2437	16.37	PASS	
			2	2437	18.36	PASS	
			3	2437	18.05	PASS	
	11		0	2462	17.77	PASS	

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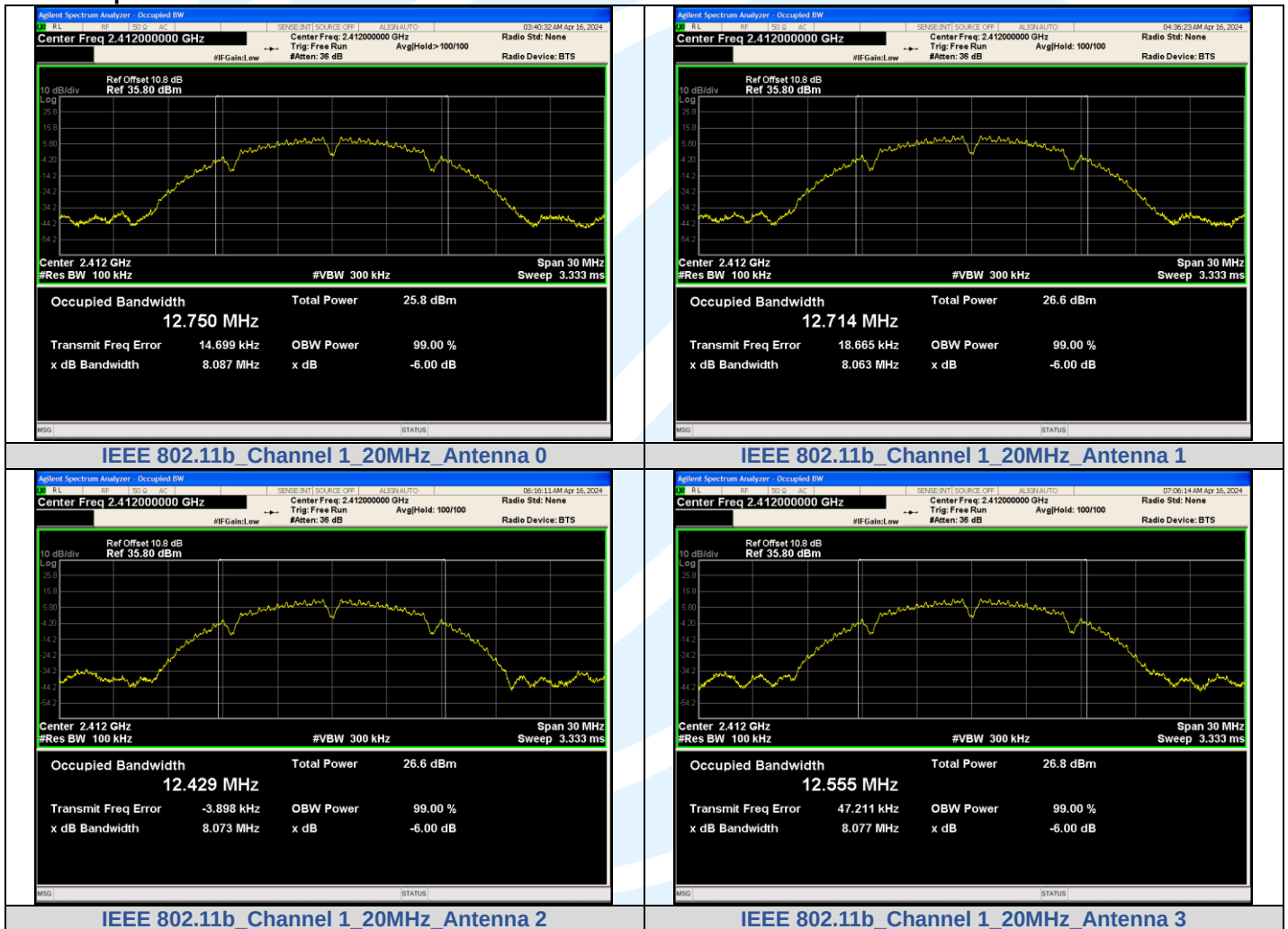
E-mail: info@uttlab.com

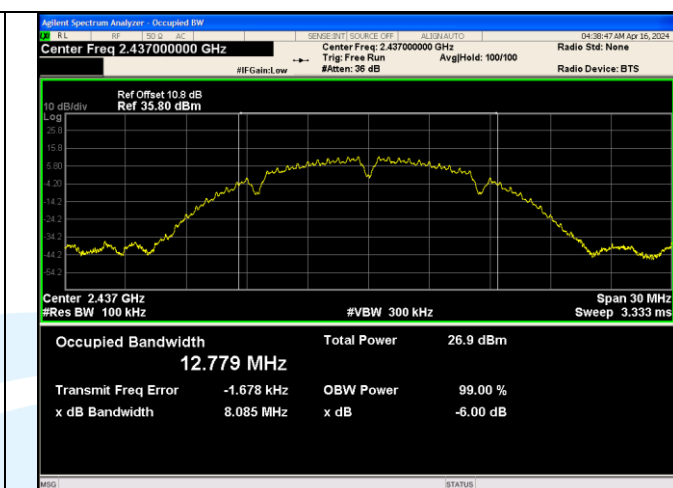
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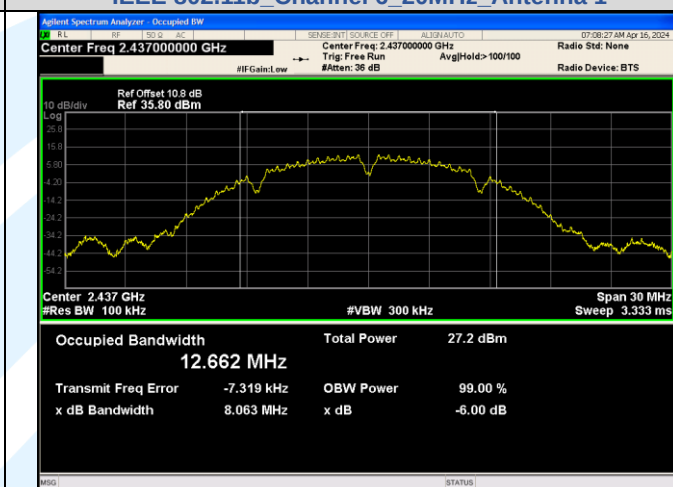
IEEE 802.11ax_40		1	2462	17.55		PASS
		2	2462	18.32		PASS
		3	2462	18.11		PASS
	3	0	2422	36.30		PASS
		1	2422	35.31		PASS
		2	2422	35.12		PASS
	6	3	2422	36.27		PASS
		0	2437	36.35		PASS
		1	2437	36.07		PASS
	9	2	2437	36.07		PASS
		3	2437	36.76		PASS
		0	2452	36.33		PASS
		1	2452	35.82		PASS
		2	2452	36.05		PASS
		3	2452	36.73		PASS

Test Graphs

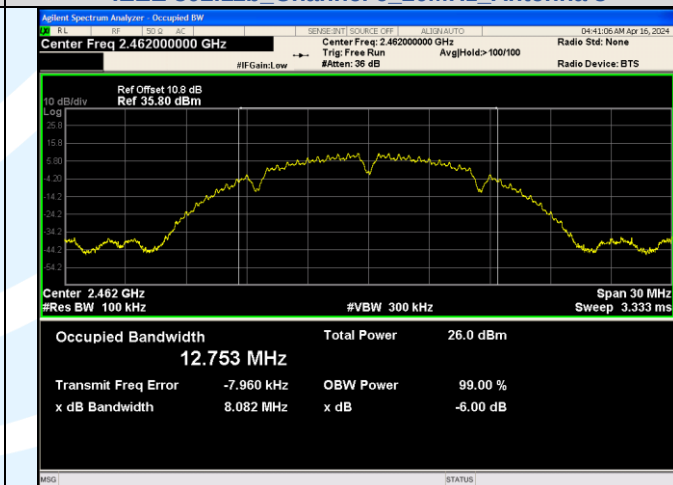




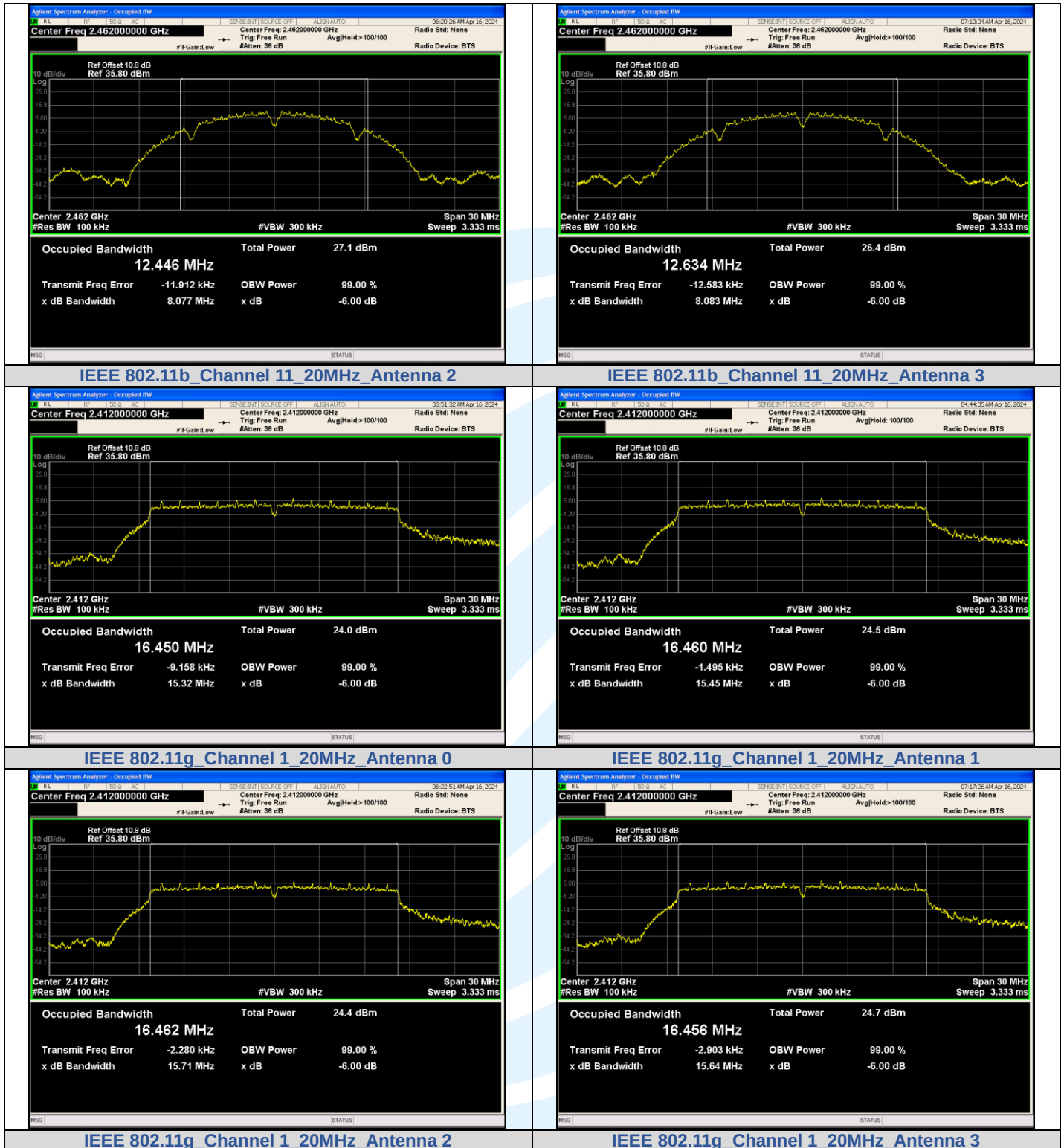
IEEE 802.11b Channel 6 20MHz Antenna 1

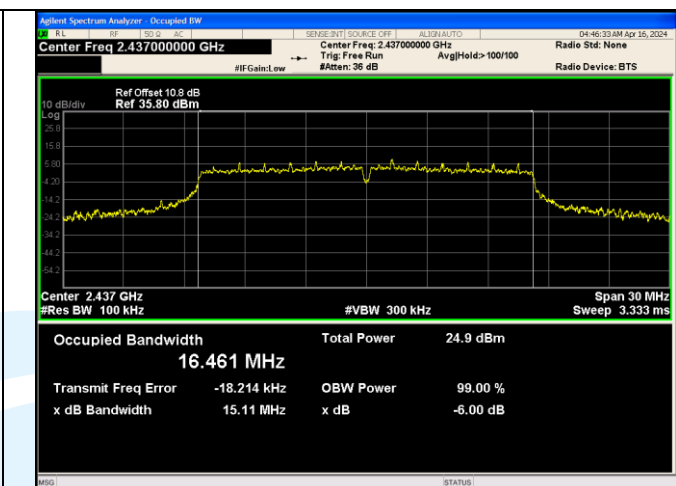


IEEE 802.11b Channel 6 20MHz Antenna 3

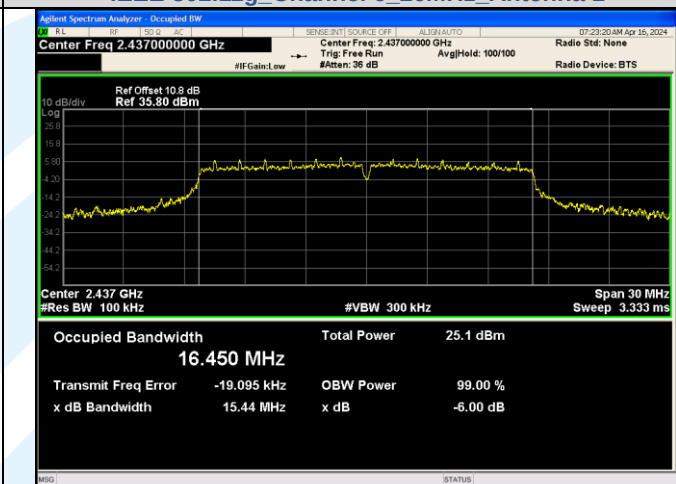


IEEE 802.11b Channel 11 20MHz Antenna 1

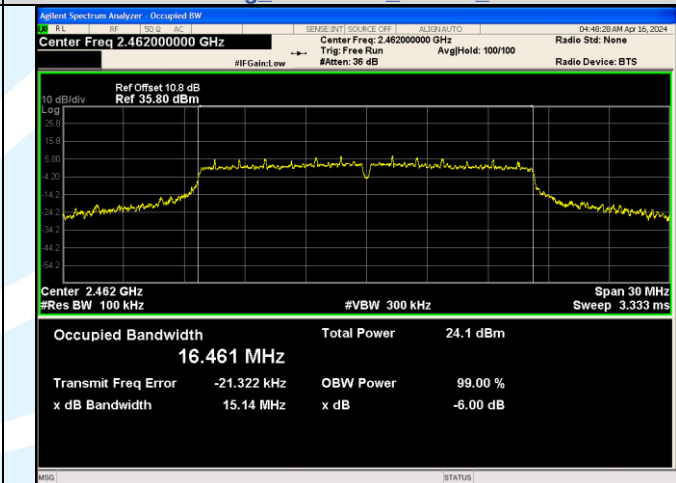




IEEE 802.11g Channel 6 20MHz Antenna 1



IEEE 802.11g_Channel 6_20MHz_Antenna 3



IEEE 802.11g_Channel 11_20MHz_Antenna 1

