

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

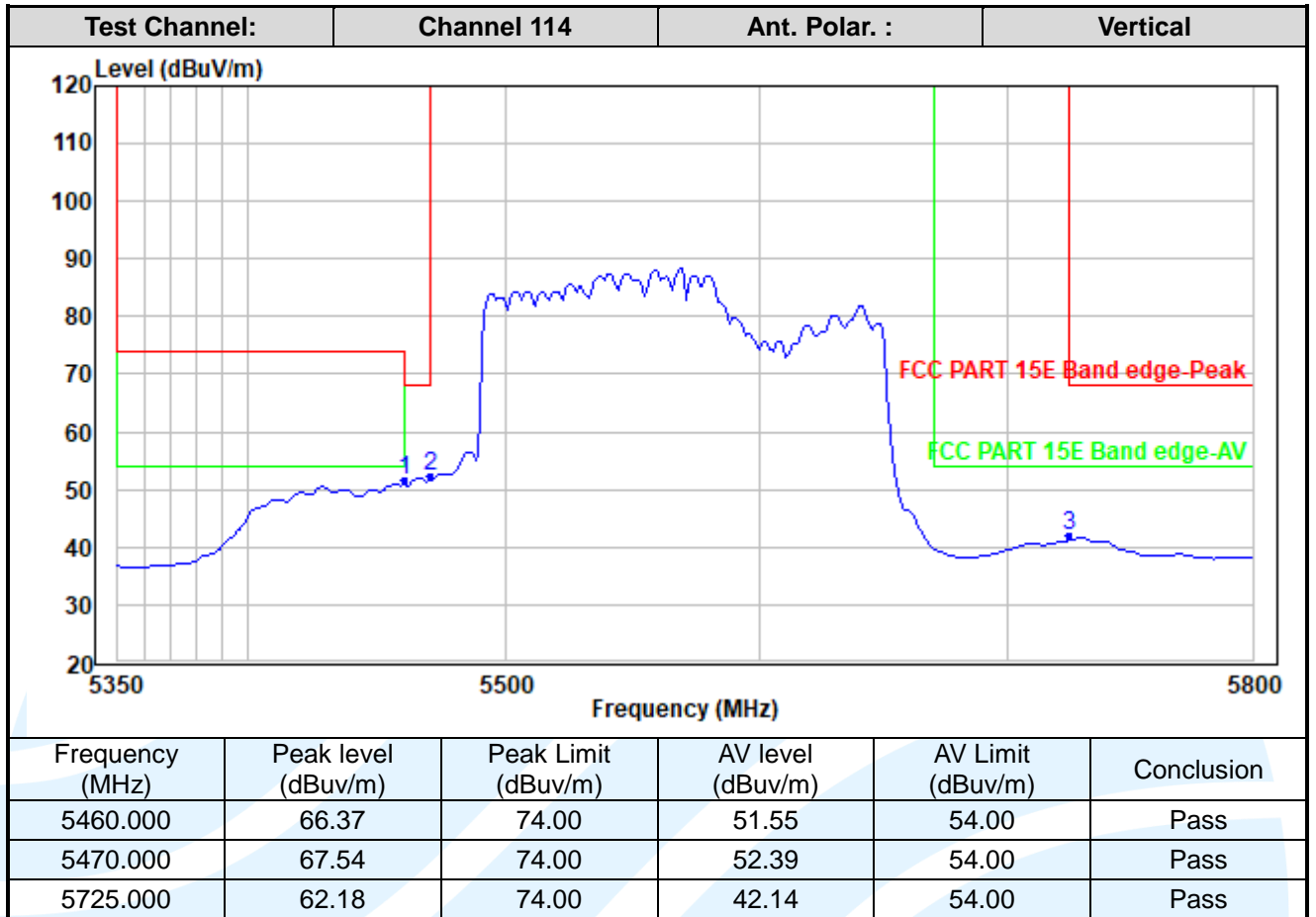
Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

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UTTR-RF-EN300328-V1.2



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UTTR-RF-EN300328-V1.2

5.8 AC POWER LINE CONDUCTED EMISSION

Test Requirement: FCC 47 CFR Part 15 Subpart C 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 4.4.2 for details.

Test Procedures:

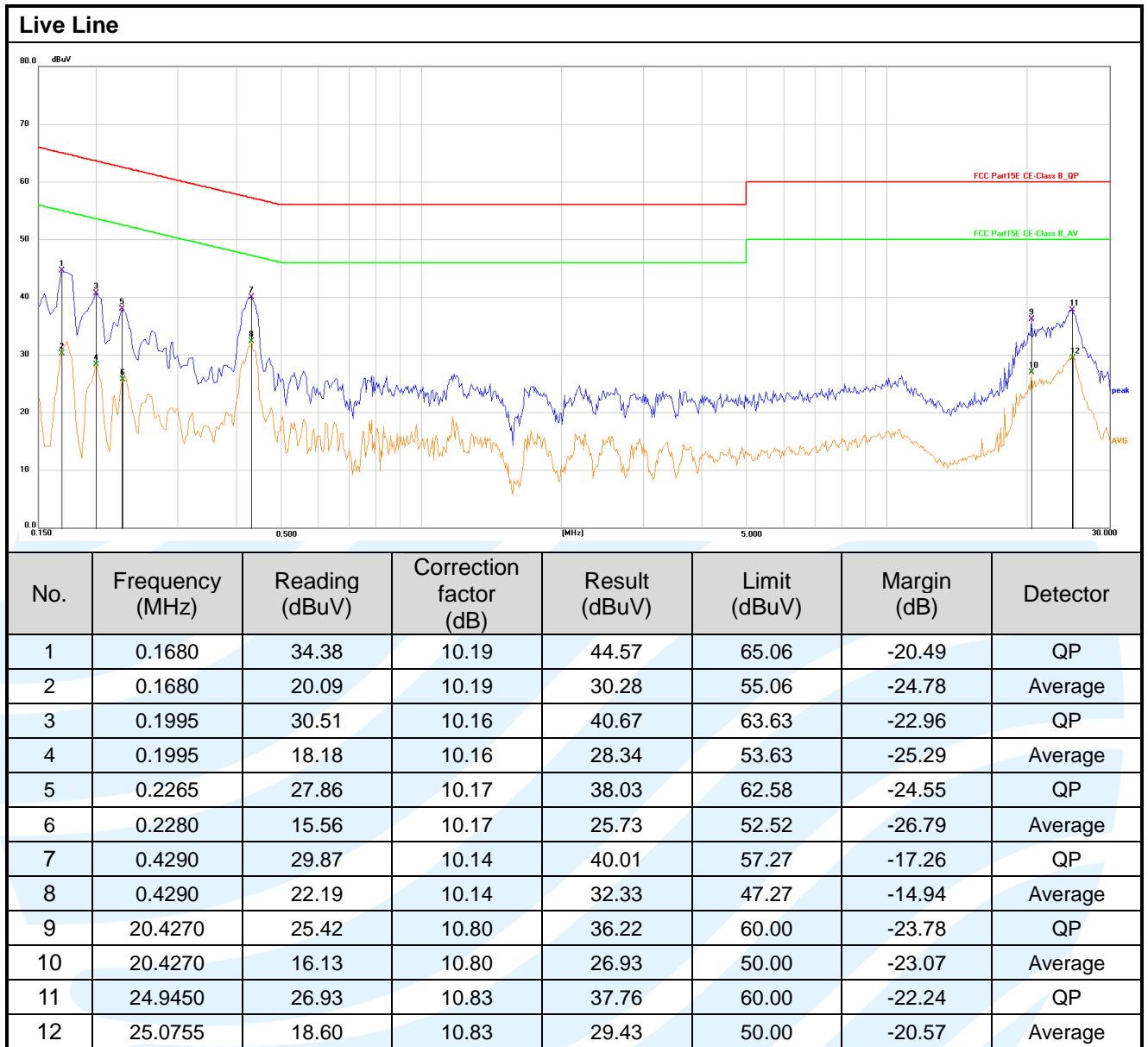
Test frequency range :150KHz-30MHz

- 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



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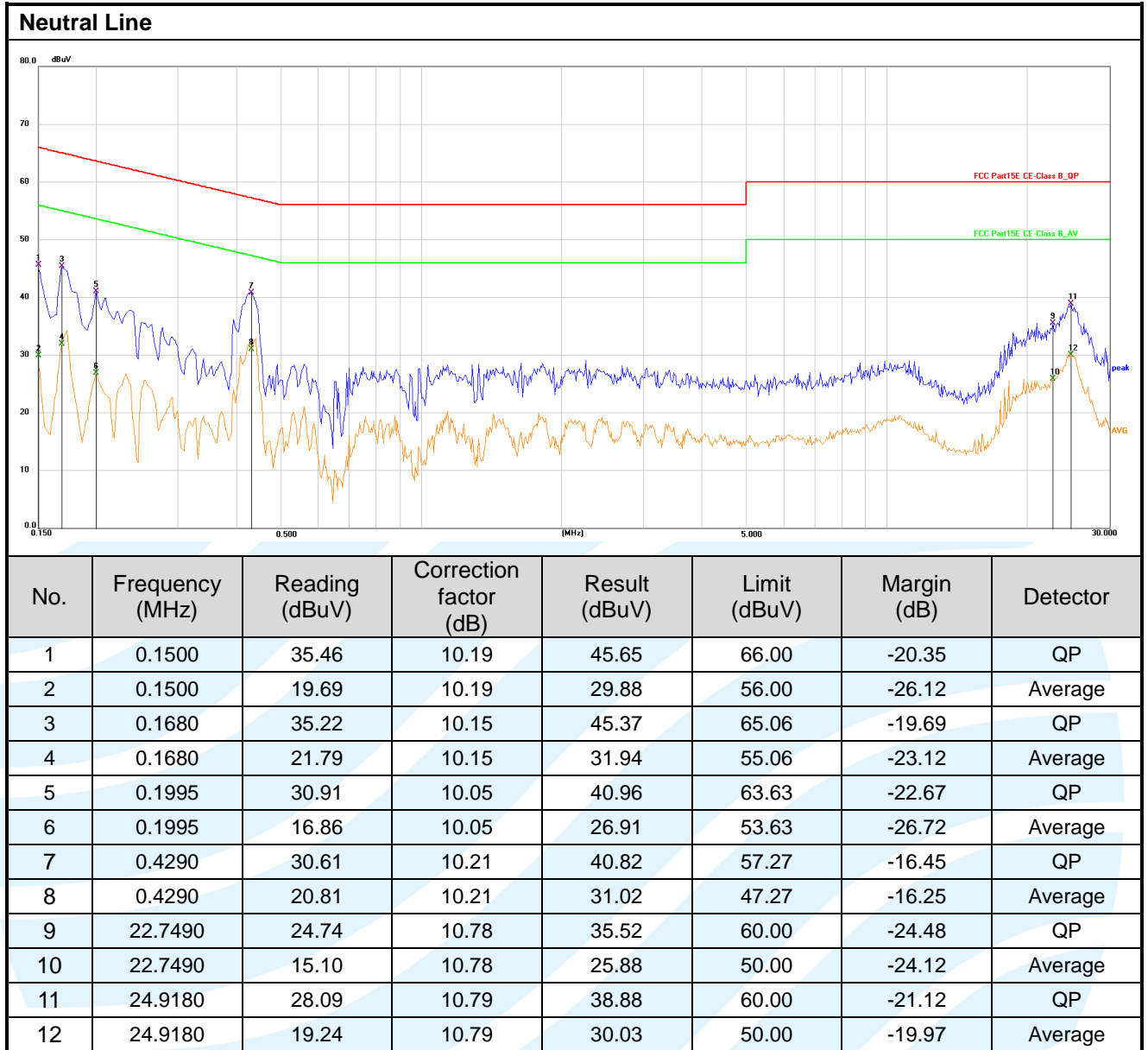
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Remark:

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.

APPENDIX A RF TEST DATA

A.1 99% BANDWIDTH

For U-NII-1, U-NII-2A and U-NII-2C Band:

Mode	Channel	RU & Index	Ant.	99% BW (MHz)
IEEE 802.11a	36	N/A	0	16.325
			1	16.334
	44		0	16.319
			1	16.300
	48		0	16.314
			1	16.302
	52		0	16.324
			1	16.331
	60		0	16.304
			1	16.301
	64		0	16.324
			1	16.301
100	0	16.335		
	1	16.314		
116	0	16.315		
	1	16.287		
140	0	16.306		
	1	16.321		
144	1	16.308		
	0	17.541		
IEEE 802.11n_20	36	N/A	1	17.550
			0	17.535
	44		1	17.525
			0	17.508
	48		1	17.515
			0	17.534
	52		1	17.543
			0	17.522
	60		1	17.511
			0	17.519
	64		1	17.531
			0	17.530
100	1	17.536		
	0	17.535		
116	1	17.524		
	0	17.518		
140	1	17.540		
	0	17.517		
144	1	17.523		
	0	35.894		
IEEE 802.11n_40	38	N/A	1	35.950
			0	35.901
	46		1	35.925
			0	35.896
	54		1	35.950
			0	35.888
	62		1	35.929
			0	35.882
	102		1	35.931
			0	35.874
	110		1	35.900
			0	35.869
134	1	35.898		
	0	35.889		
142	0	35.889		
	1	35.908		
IEEE 802.11ac_20	36	0	17.533	

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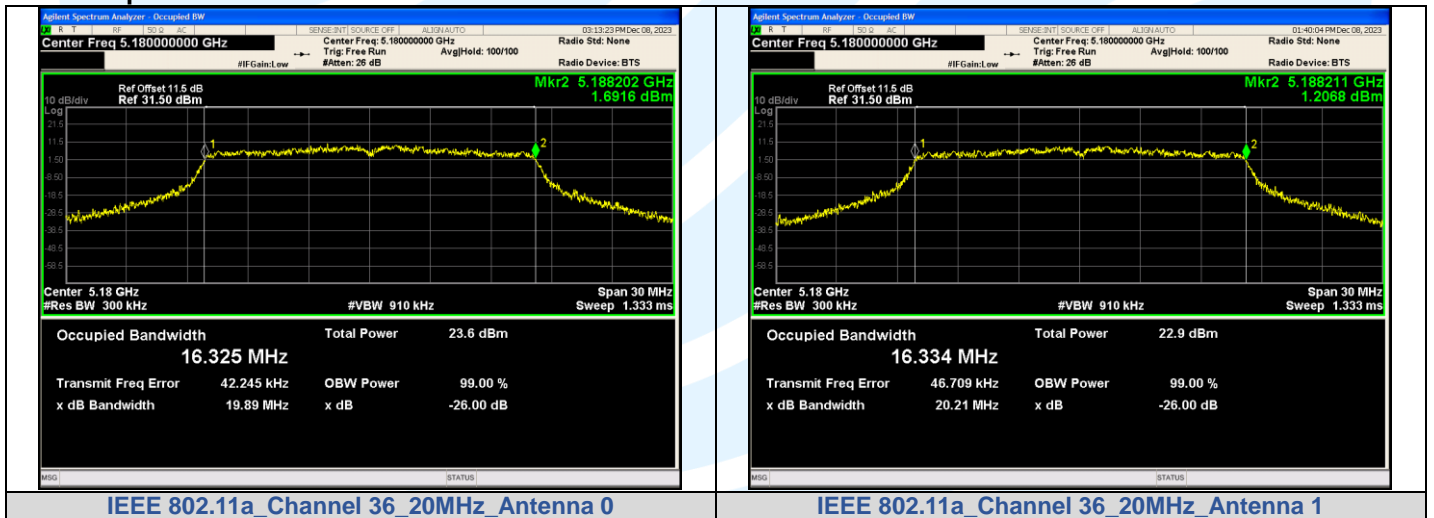
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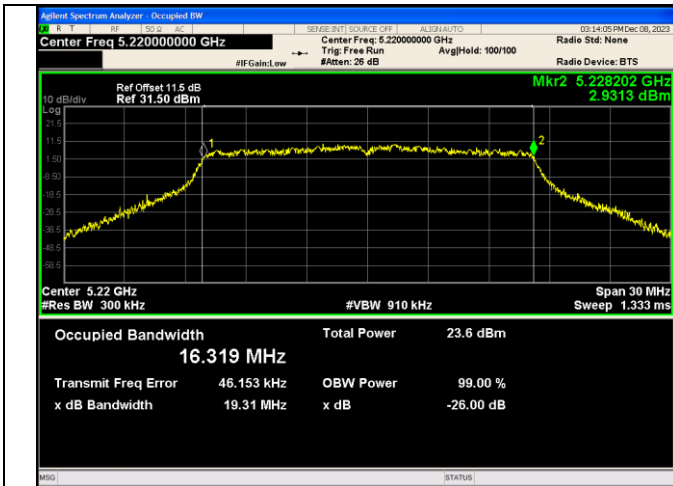
				1	17.557
	44			0	17.521
	48			1	17.535
	52			0	17.516
	60			1	17.518
	64			0	17.518
	100			1	17.524
	116			0	17.511
	140			1	17.539
	144			0	17.522
				1	17.521
				0	17.533
	IEEE 802.11ac_40		38		1
46			0	17.507	
54			1	17.517	
62			0	17.537	
102			1	17.532	
110			0	17.546	
134			1	17.502	
142			0	35.923	
			1	35.900	
			0	35.918	
IEEE 802.11ac_80	42		1	35.898	
	58		0	35.901	
	106		1	35.919	
	138		0	35.919	
			1	35.919	
IEEE 802.11ac_160	50		0	35.902	
	114		1	35.884	
			0	35.918	
			1	35.950	
			0	35.891	
IEEE 802.11ax_20	36	SU		1	35.930
	44			0	35.952
	48			1	35.920
	52			0	35.873
	60			1	35.903
	64			0	75.013
	100			1	75.130
	116			0	74.988
				1	75.041
		0	75.075		
		1	75.042		
		0	74.974		
		1	74.980		
		0	153.351		
		1	153.164		
		0	153.376		
		1	153.314		
		0	18.888		
		1	18.912		
		0	18.862		
		1	18.872		
		0	18.853		
		1	18.867		
		0	18.864		
		1	18.875		
		0	18.868		
		1	18.853		
		0	18.882		
		1	18.855		
		0	18.883		
		1	18.849		
		0	18.841		
		1	18.818		

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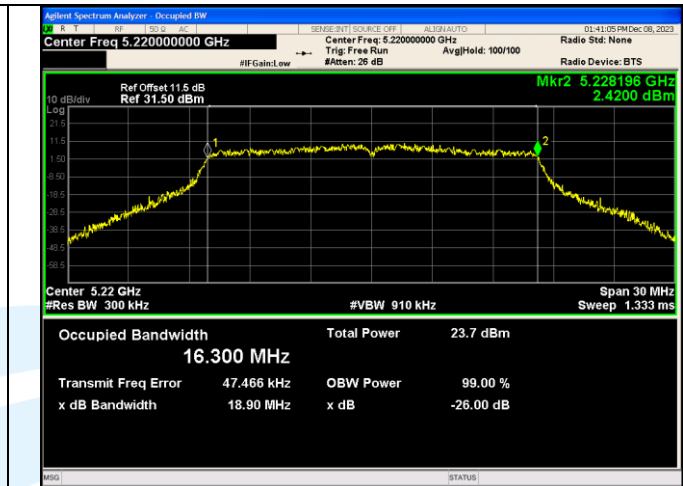
	140		0	18.902
	144		1	18.846
			0	18.859
			1	18.841
IEEE 802.11ax_40	38		0	37.597
			1	37.621
	46		0	37.500
			1	37.609
	54		0	37.576
			1	37.609
	62		0	37.595
			1	37.628
	102		0	37.590
			1	37.575
	110		0	37.593
			1	37.595
	134		0	37.651
			1	37.569
	142		0	37.584
			1	37.528
IEEE 802.11ax_80	42		0	76.691
			1	76.693
	58		0	76.670
			1	76.732
	106		0	76.724
			1	76.755
	138		0	76.539
			1	76.536
IEEE 802.11ax_160	50		0	154.534
			1	154.927
	114		0	154.910
			1	154.781

Test Graphs

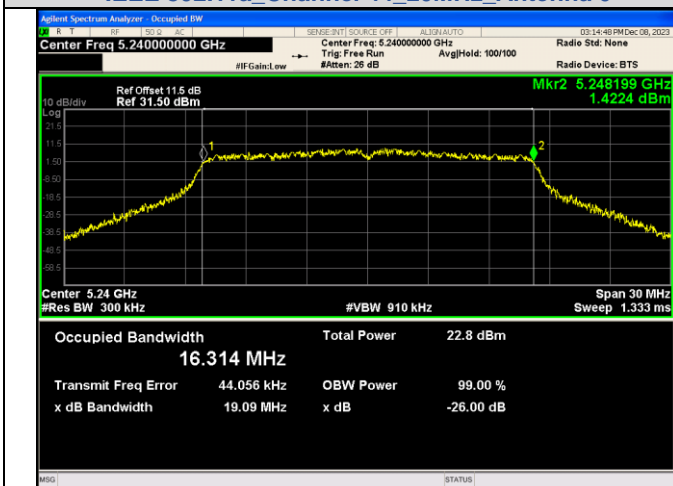




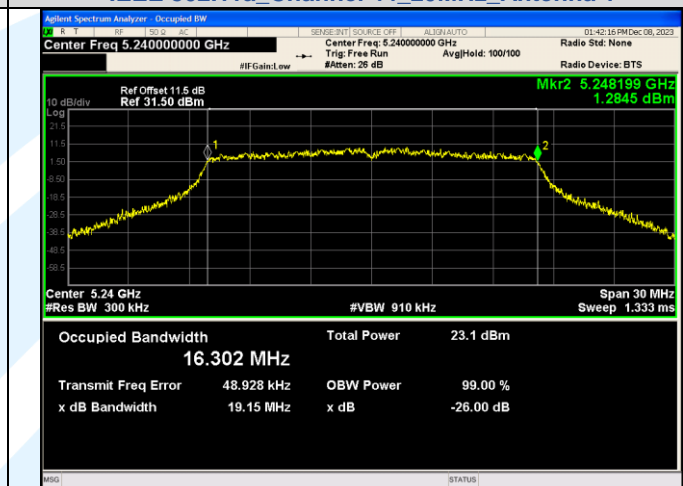
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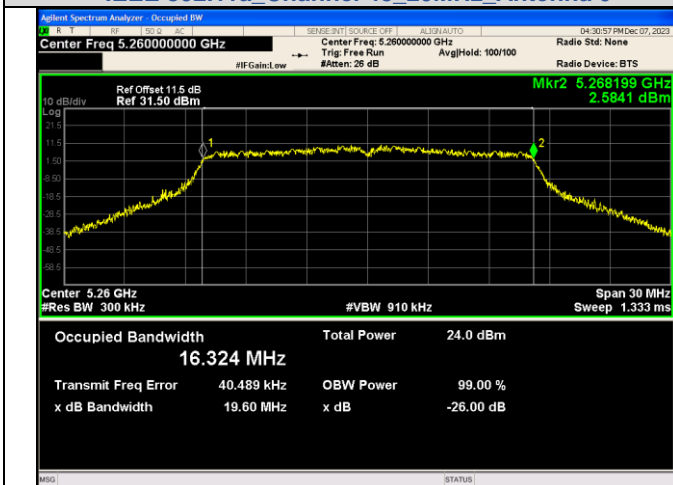
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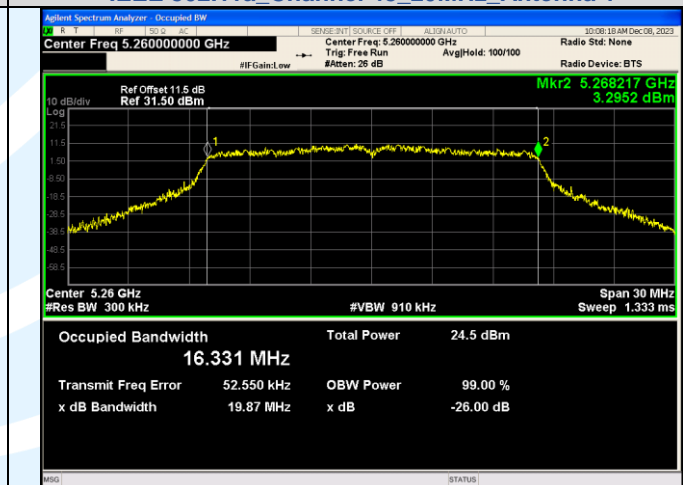
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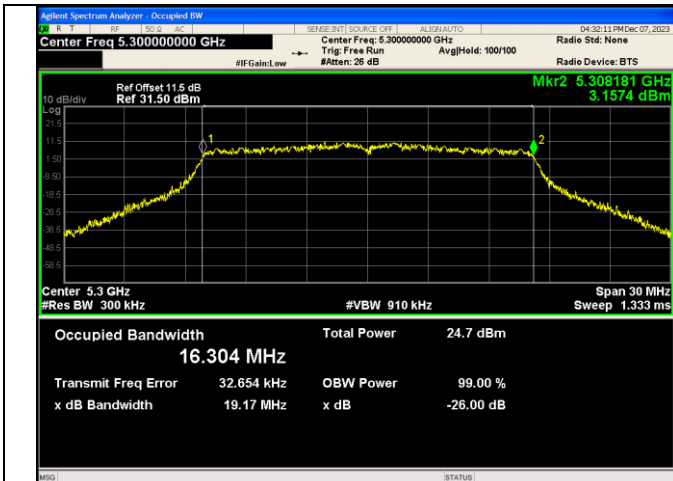
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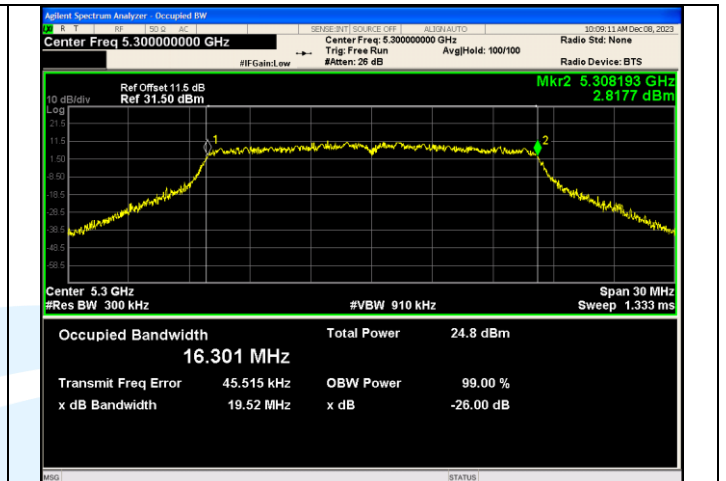
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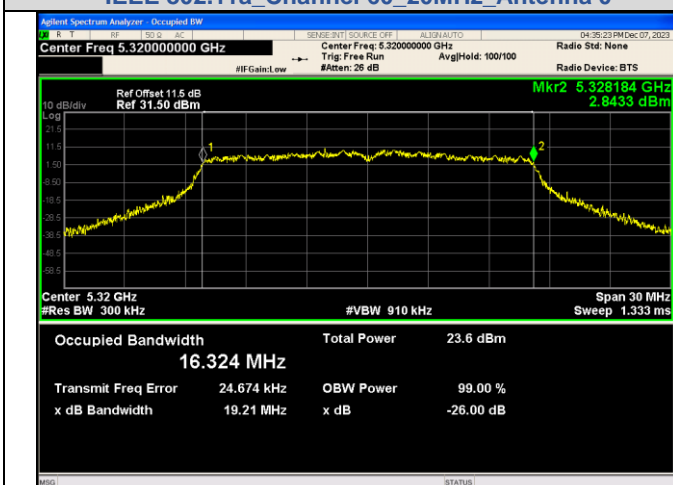
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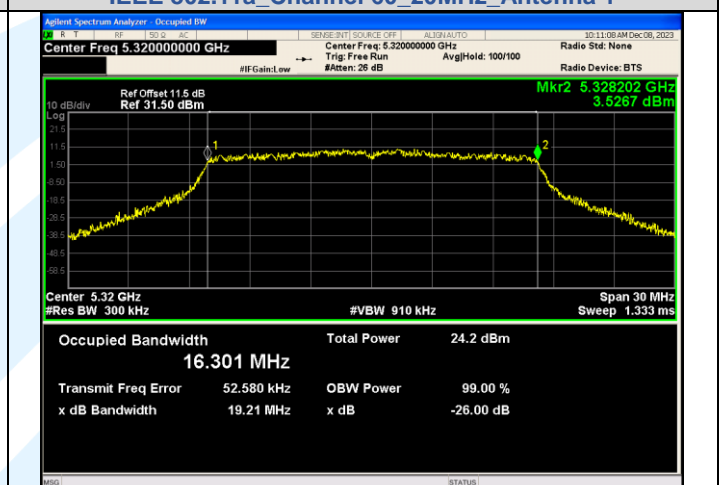
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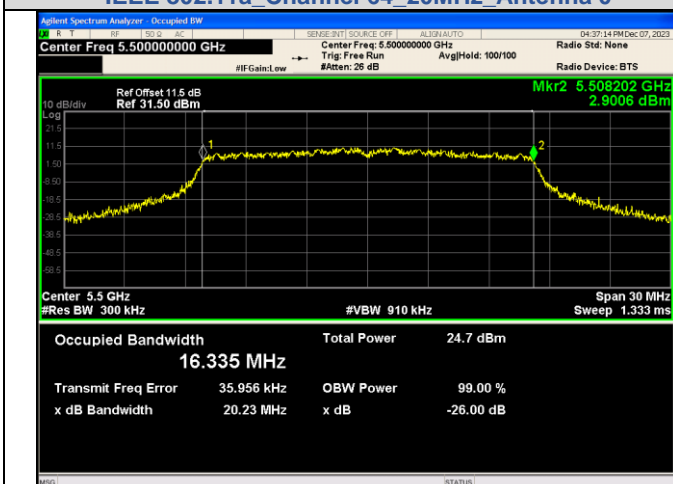
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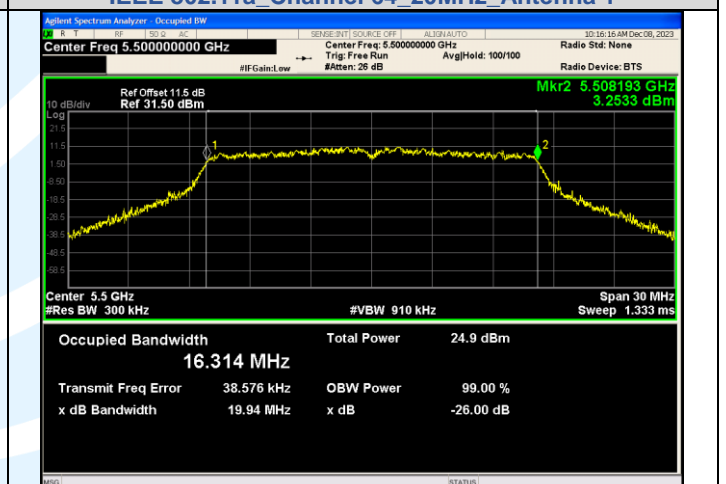
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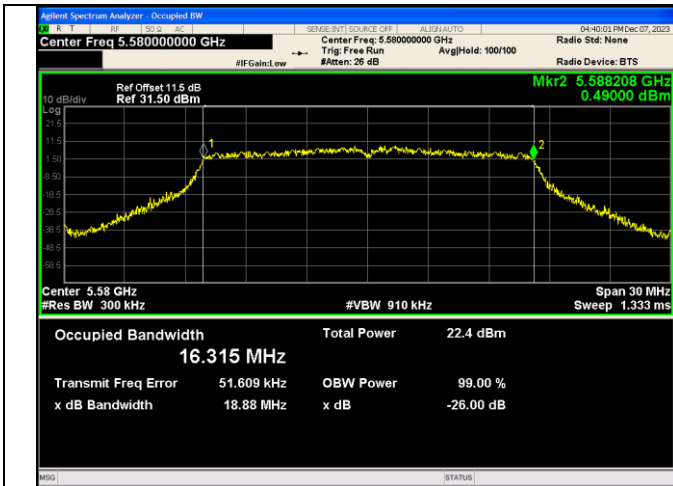
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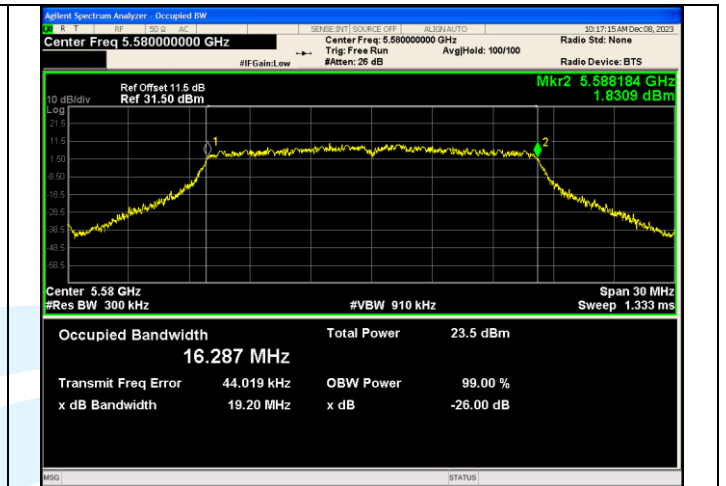
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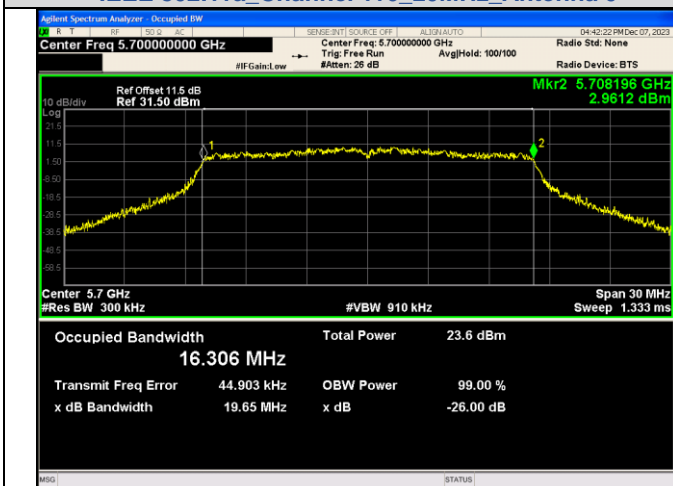
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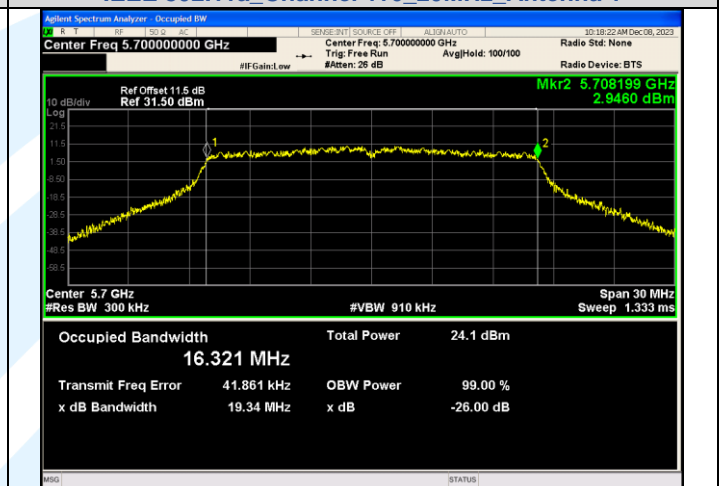
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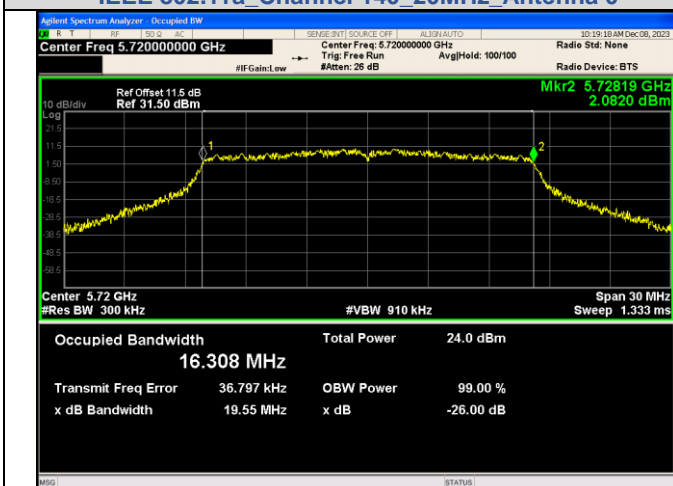
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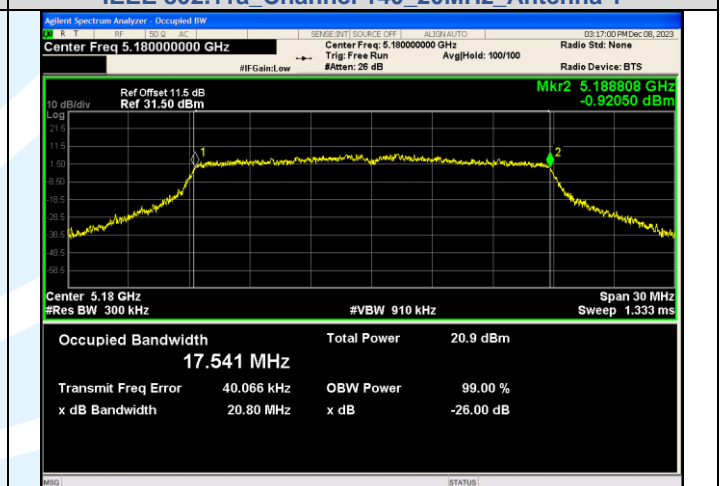
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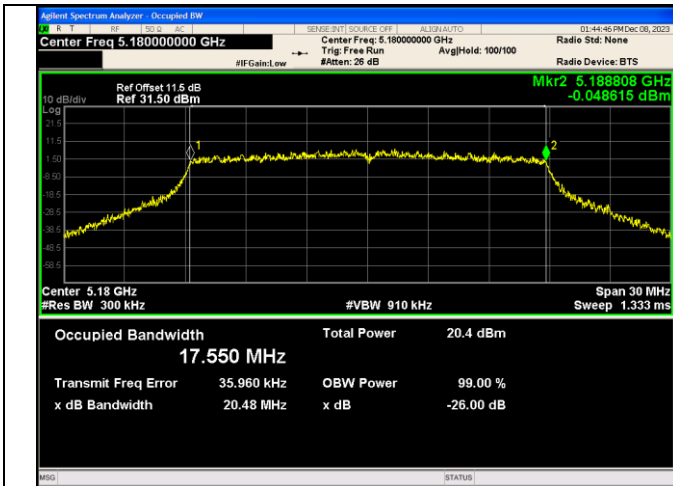
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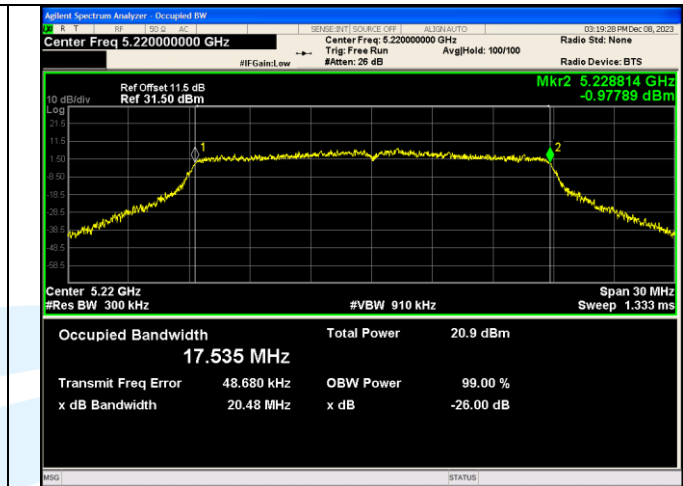
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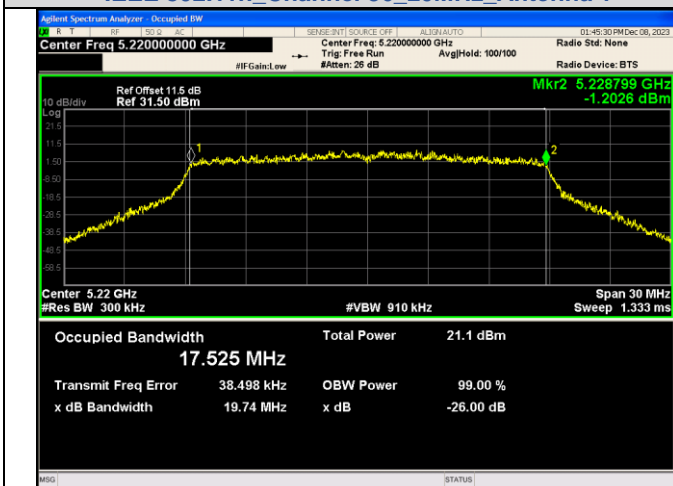
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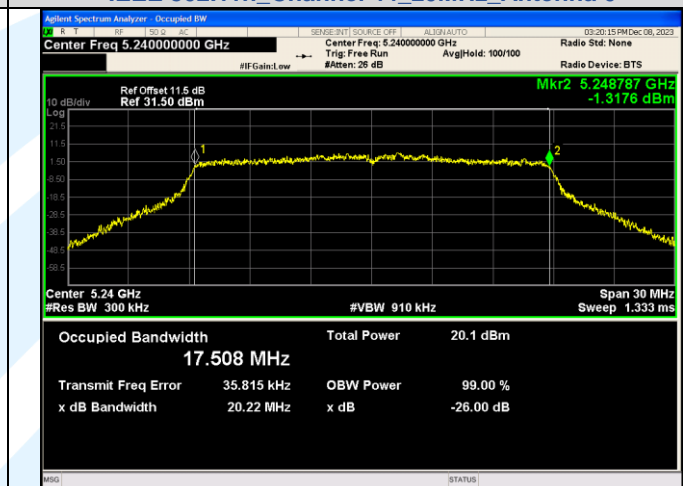
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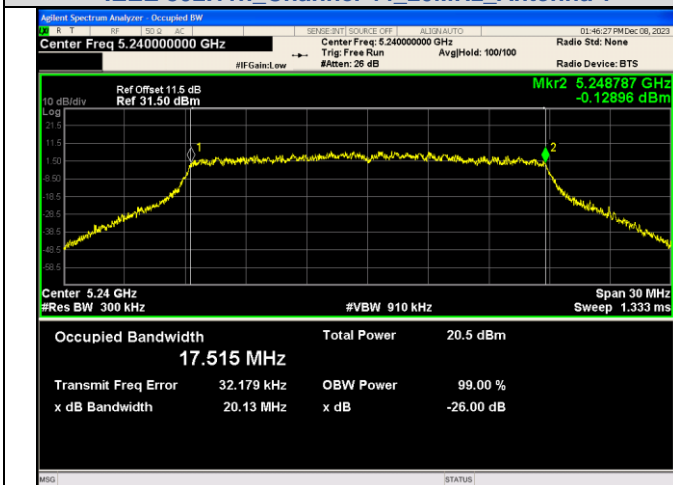
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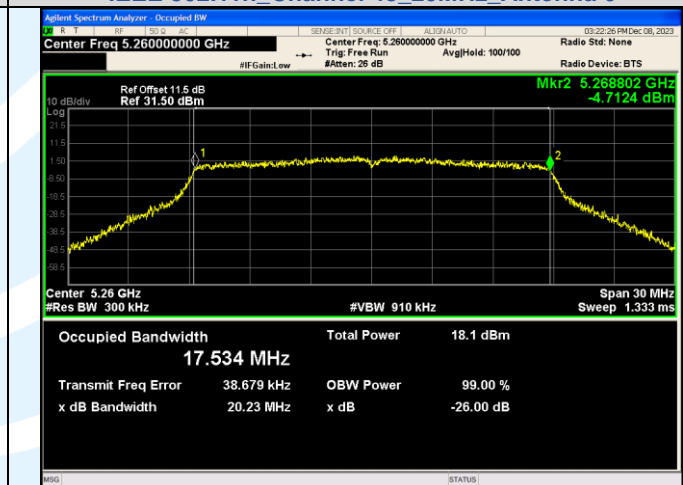
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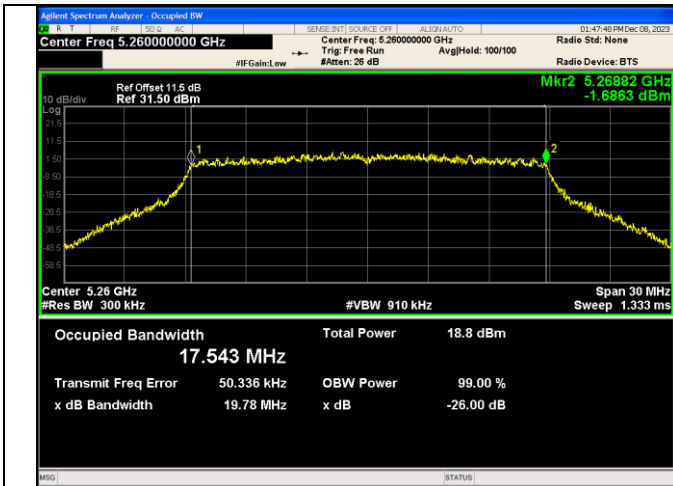
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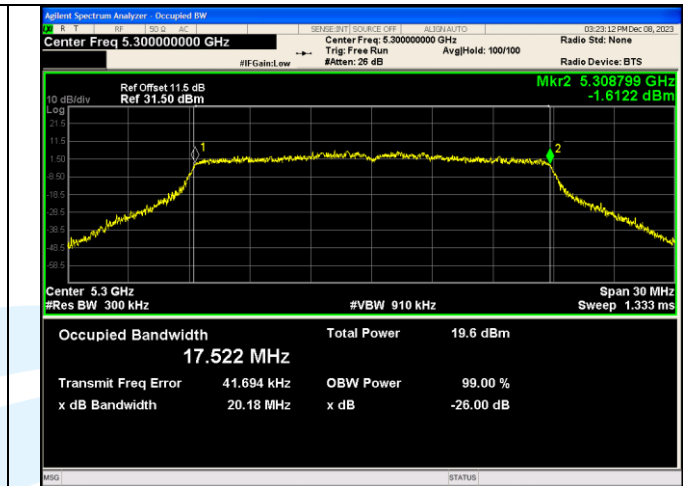
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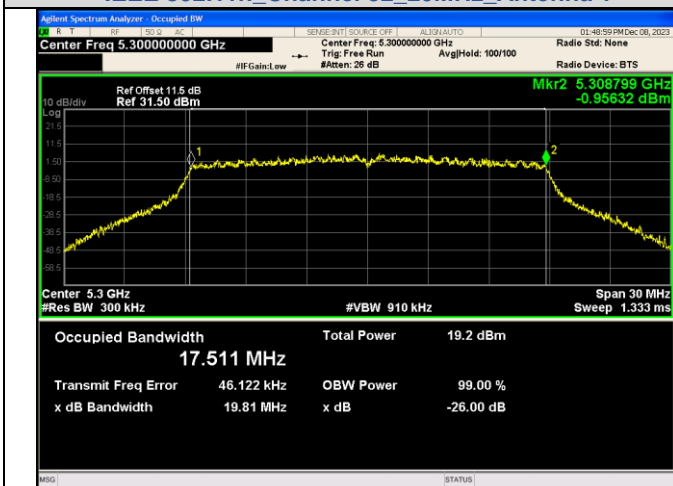
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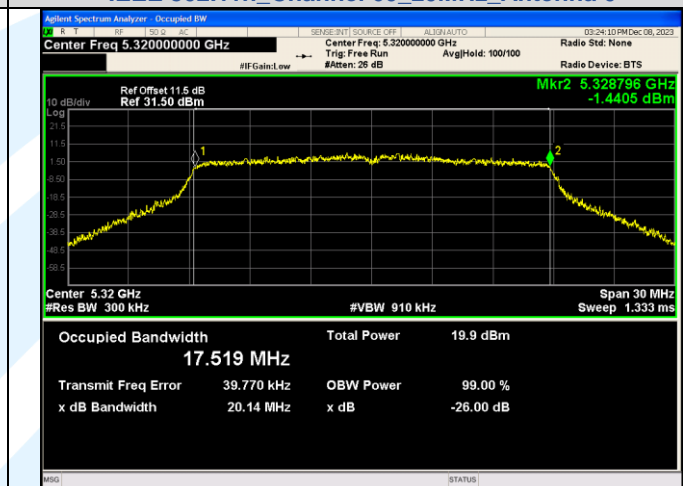
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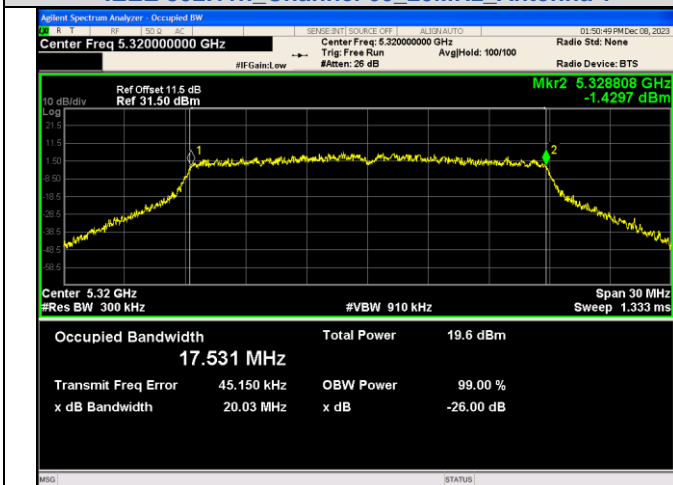
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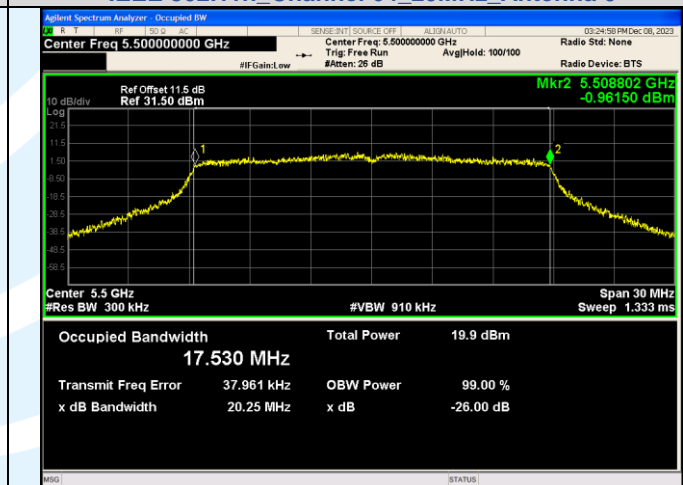
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IEEE 802.11n_Channel 64_20MHz_Antenna 0



IEEE 802.11n_Channel 64_20MHz_Antenna 1



IEEE 802.11n_Channel 100_20MHz_Antenna 0

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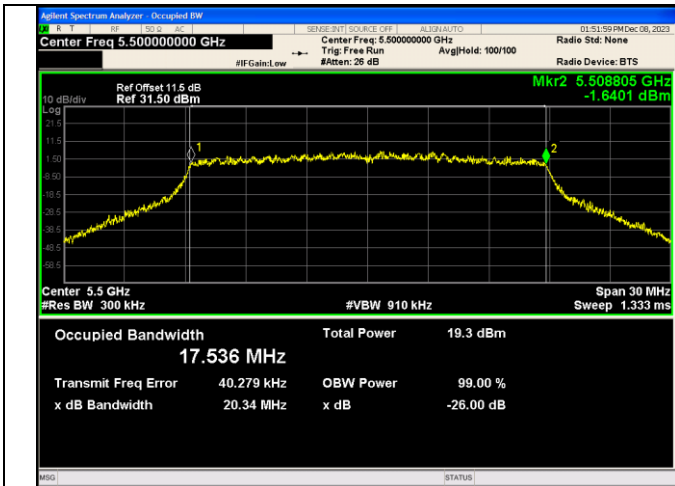
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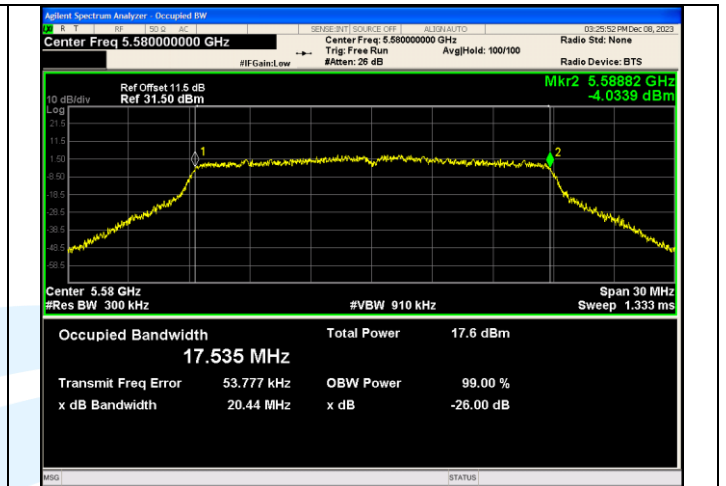
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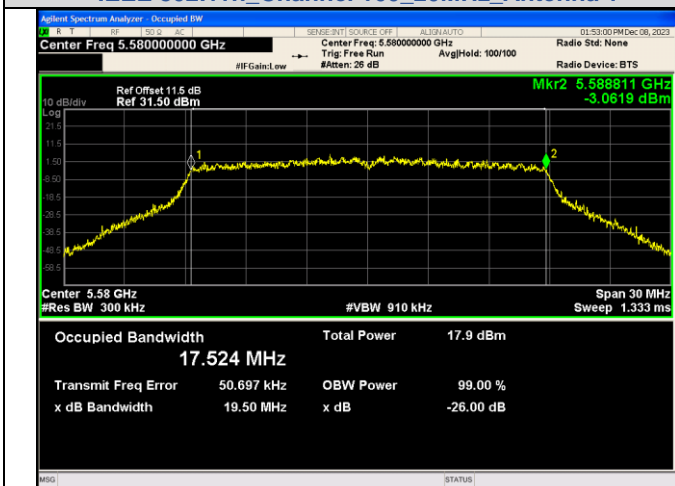
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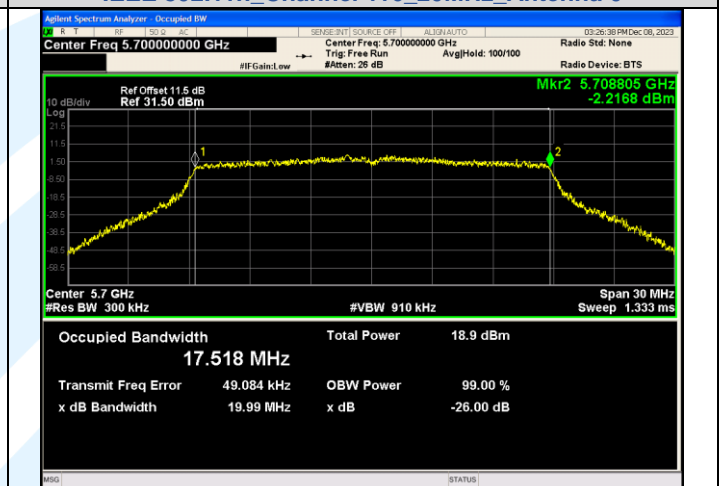
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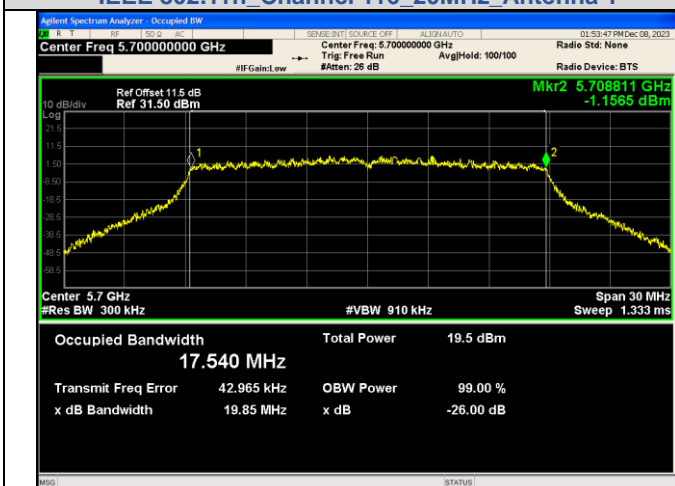
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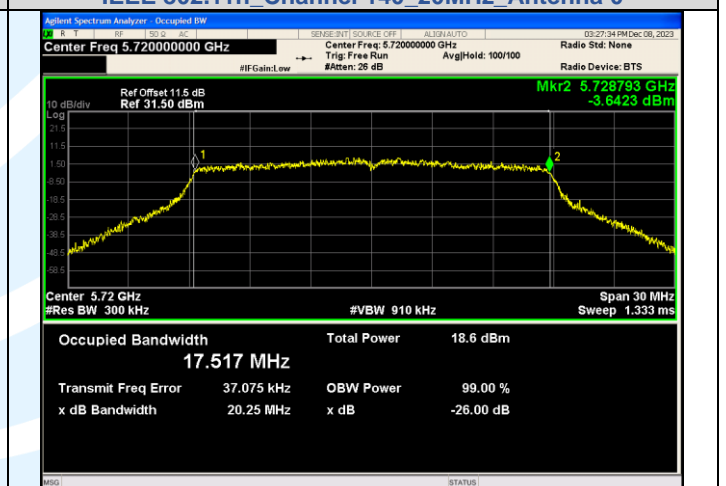
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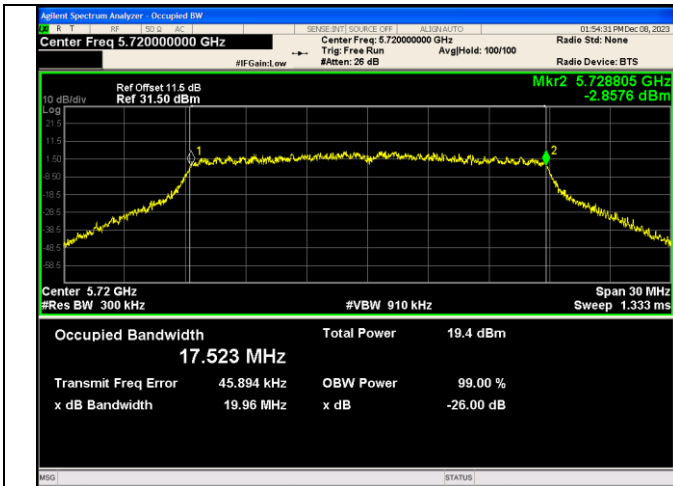
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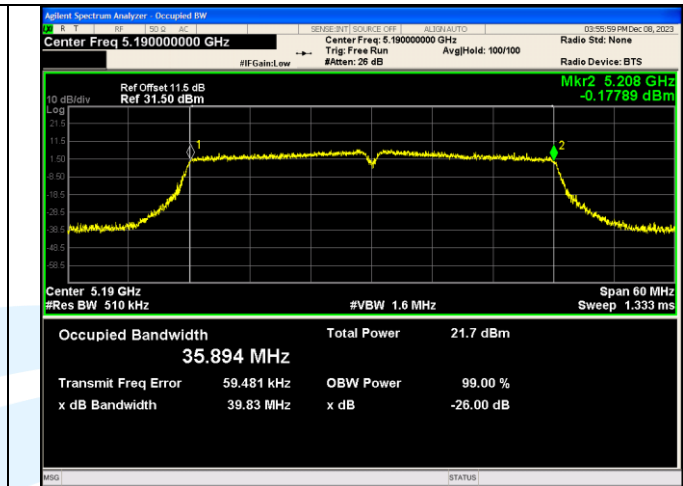
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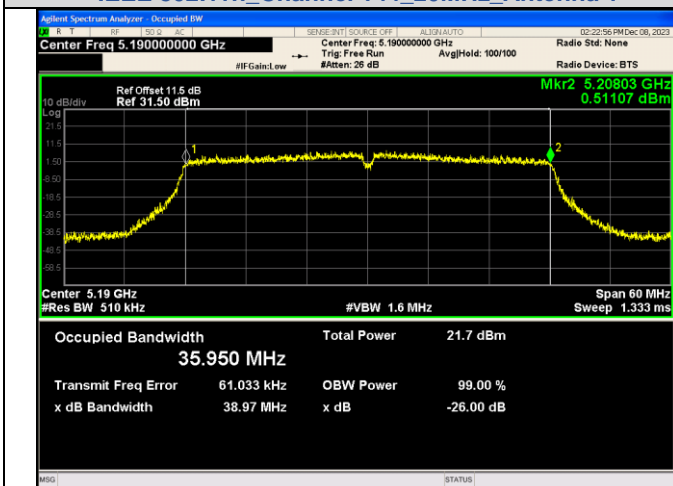
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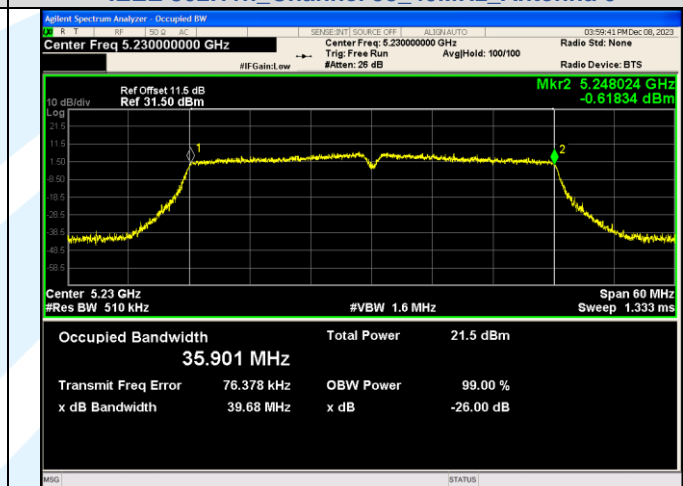
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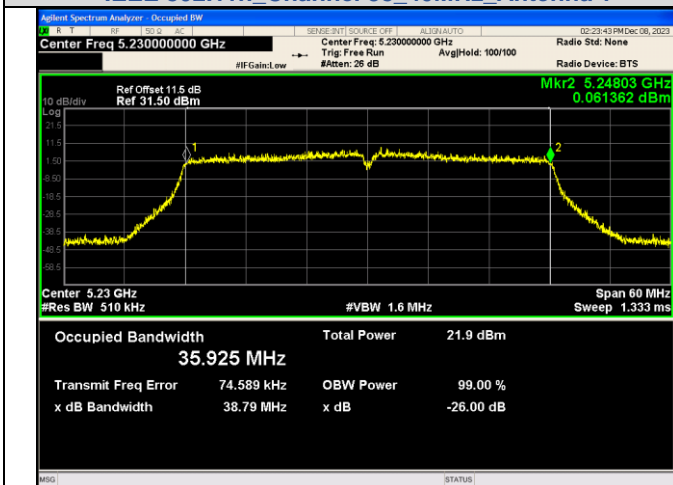
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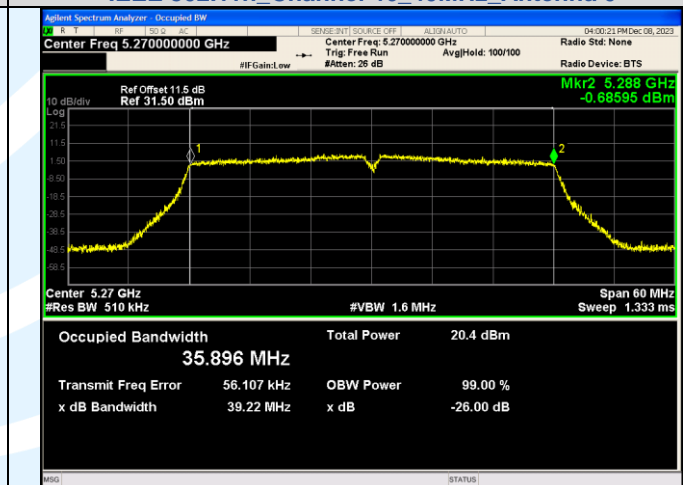
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IEEE 802.11n_Channel 46_40MHz_Antenna 0



IEEE 802.11n_Channel 46_40MHz_Antenna 1



IEEE 802.11n_Channel 54_40MHz_Antenna 0

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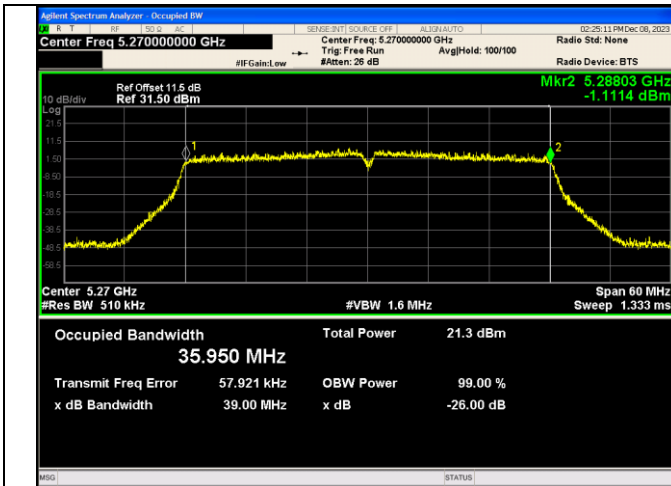
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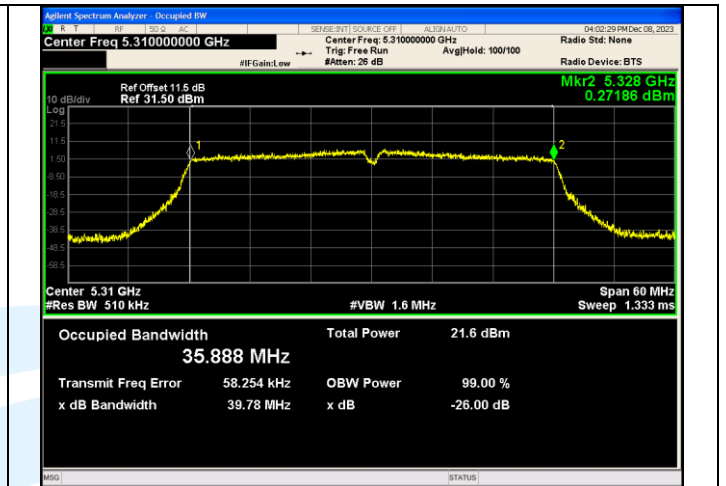
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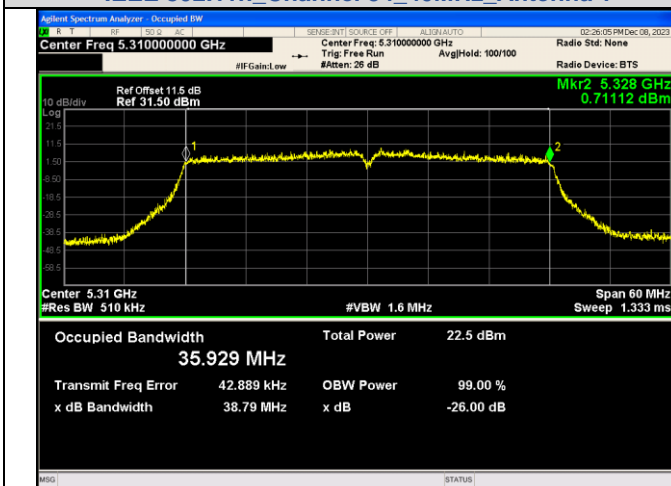
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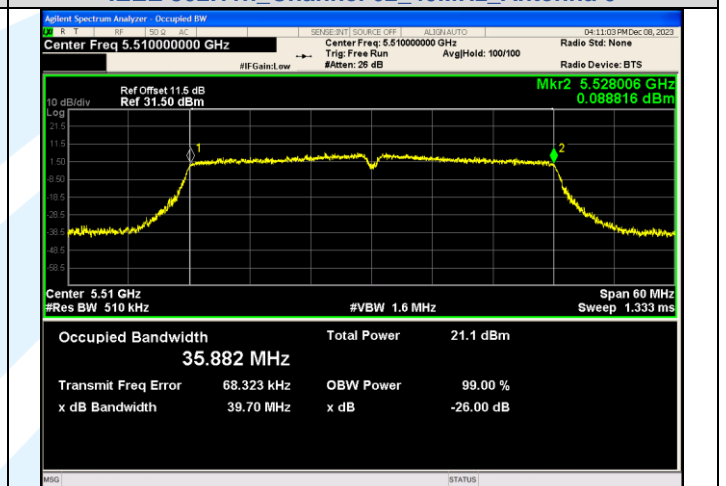
IEEE 802.11n_Channel 54_40MHz_Antenna 1



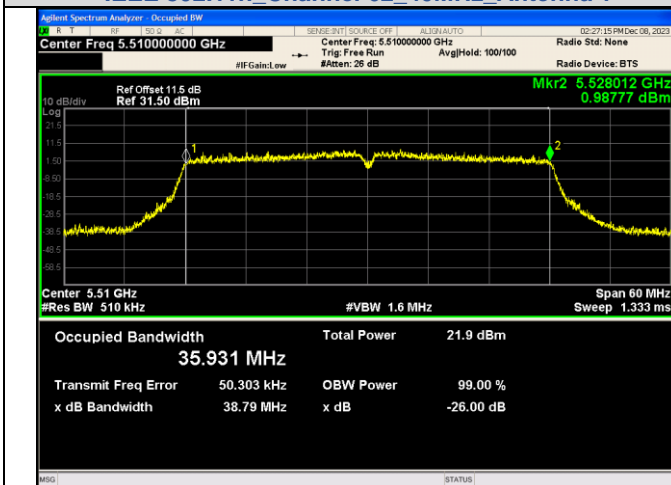
IEEE 802.11n_Channel 62_40MHz_Antenna 0



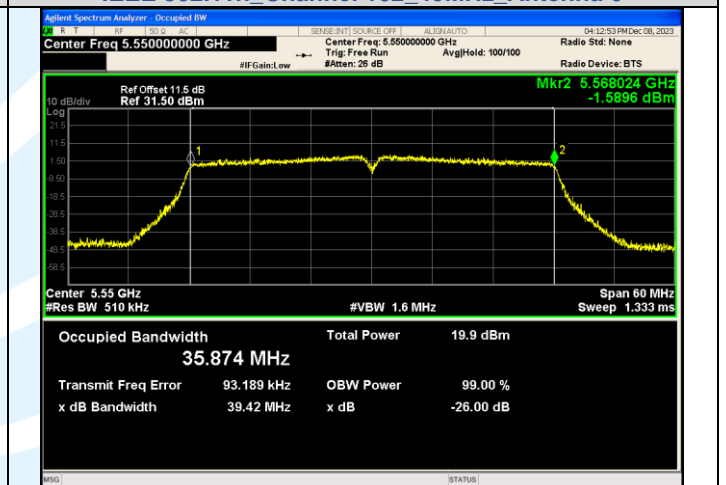
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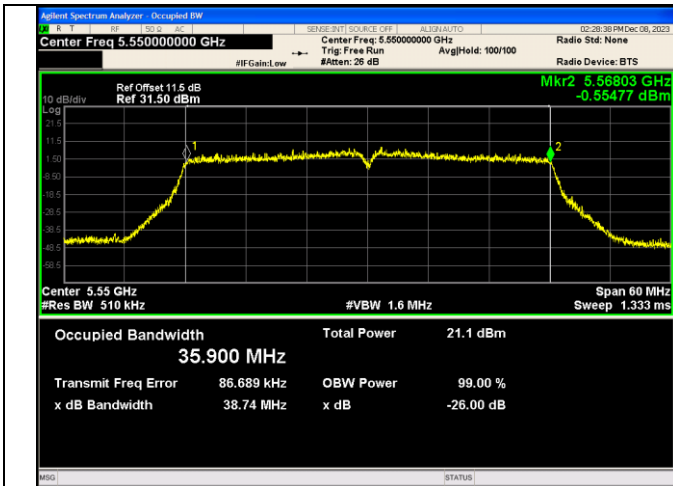
IEEE 802.11n_Channel 102_40MHz_Antenna 0



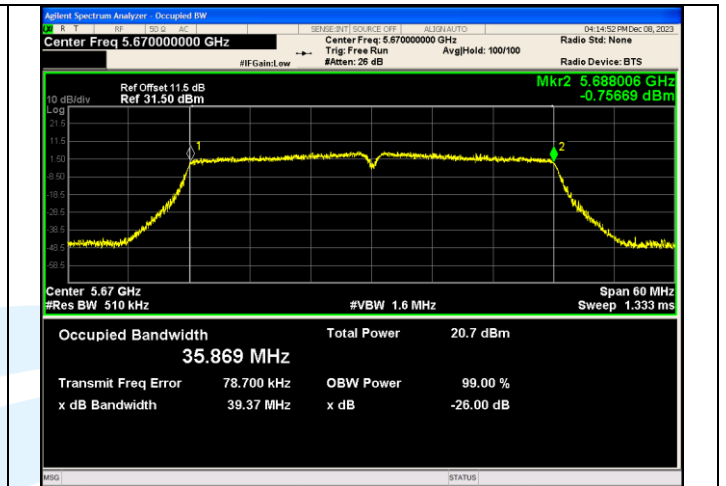
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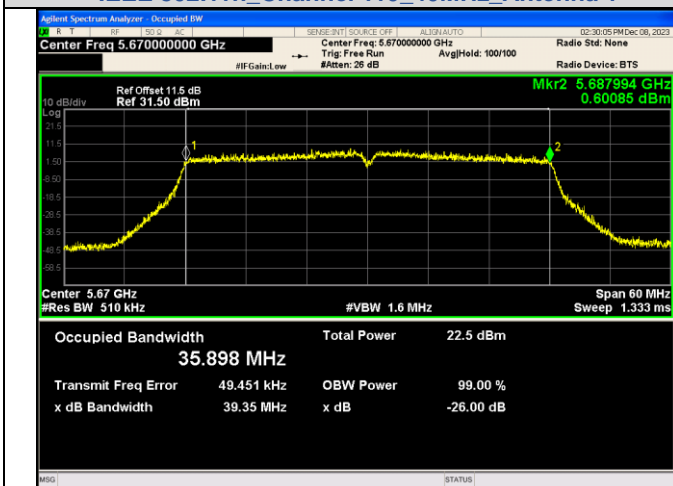
IEEE 802.11n_Channel 110_40MHz_Antenna 0



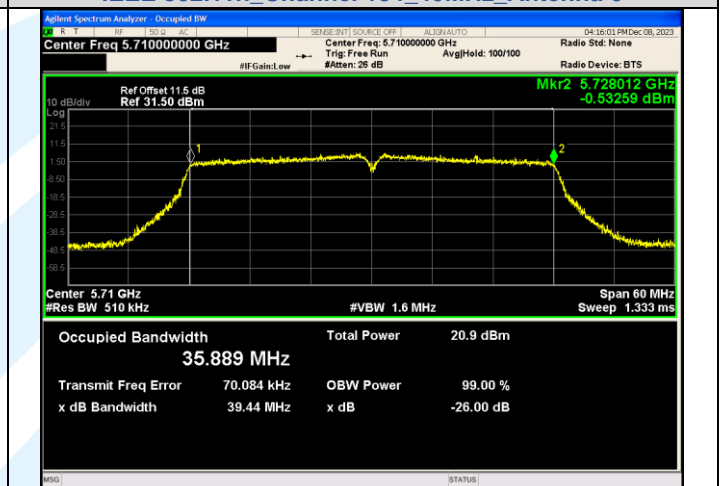
IEEE 802.11n_Channel 110_40MHz_Antenna 1



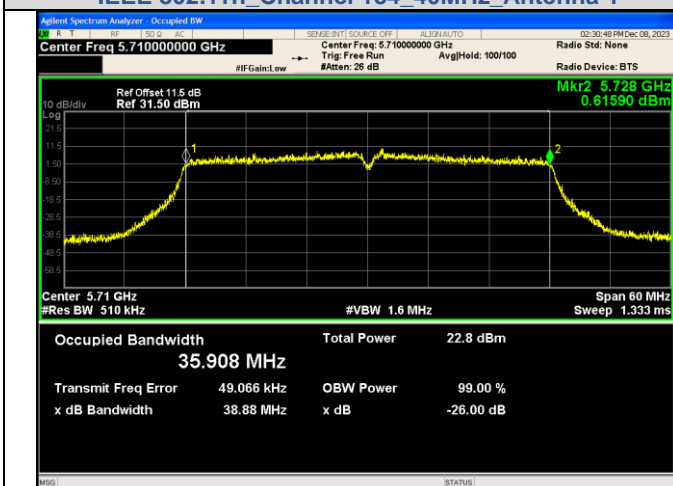
IEEE 802.11n_Channel 134_40MHz_Antenna 0



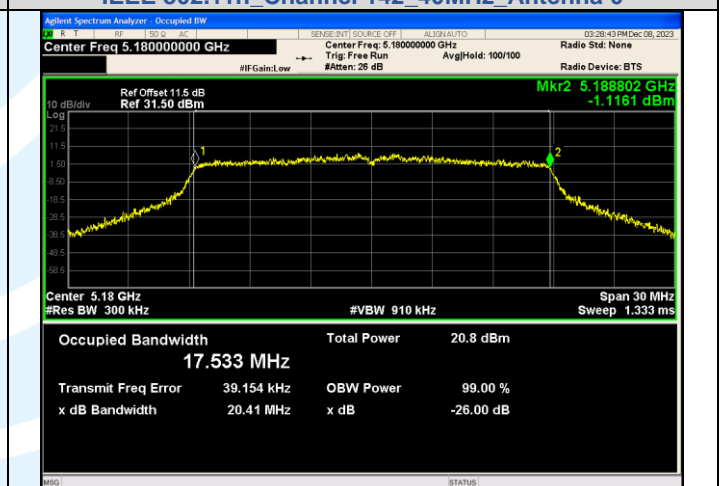
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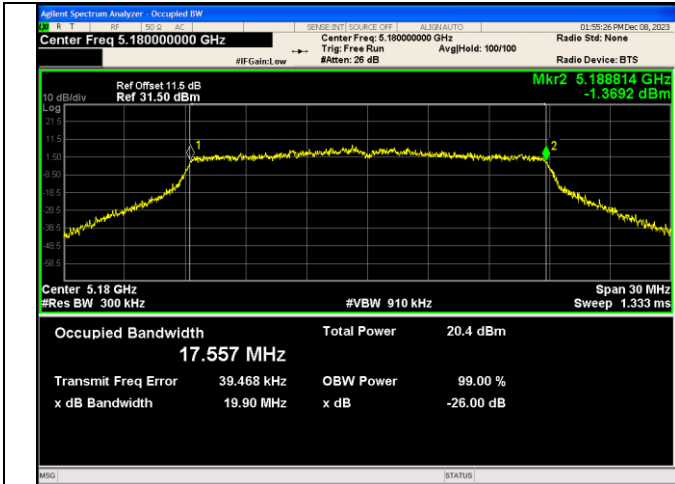
IEEE 802.11n_Channel 142_40MHz_Antenna 0



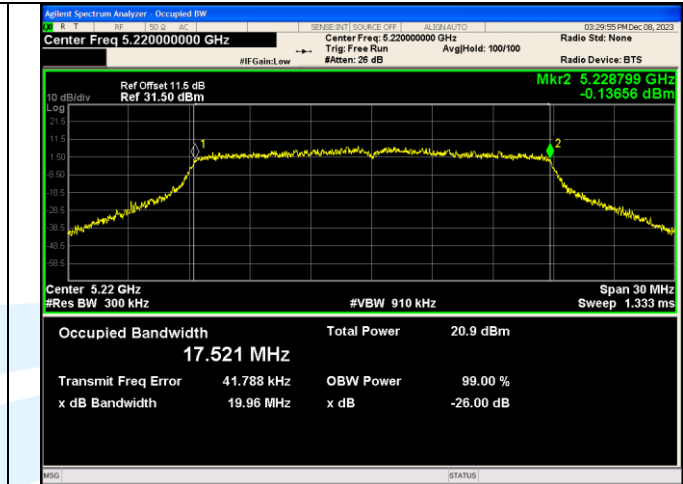
IEEE 802.11n_Channel 142_40MHz_Antenna 1



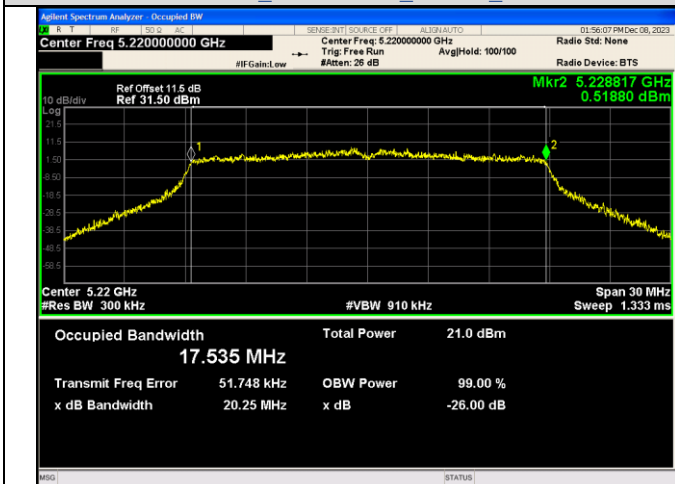
IEEE 802.11ac_Channel 36_20MHz_Antenna 0



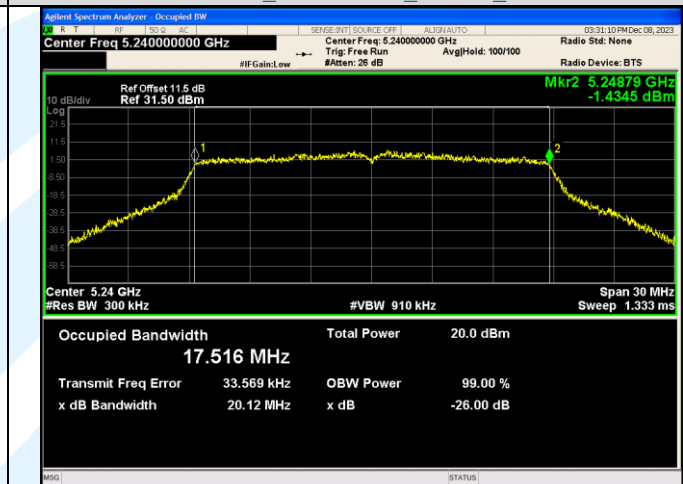
IEEE 802.11ac_Channel 36_20MHz_Antenna 1



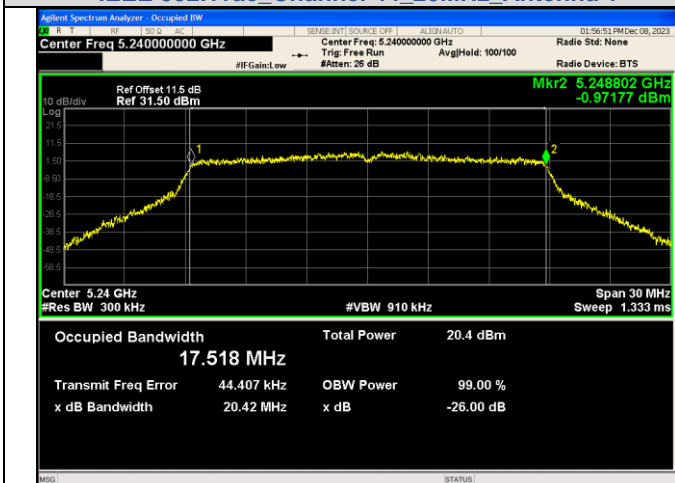
IEEE 802.11ac_Channel 44_20MHz_Antenna 0



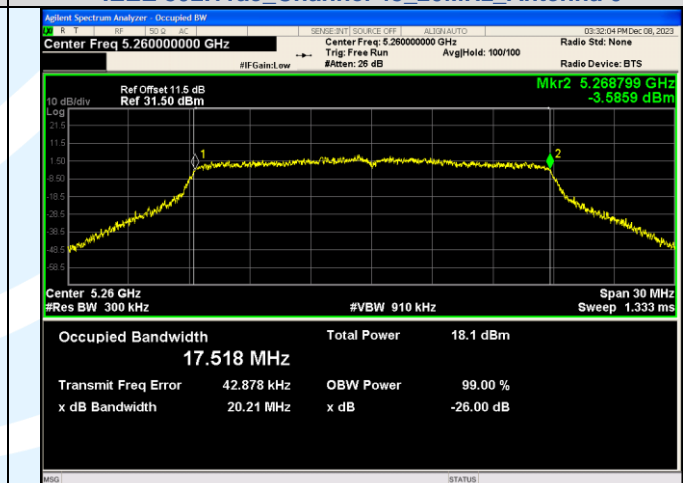
IEEE 802.11ac_Channel 44_20MHz_Antenna 1



IEEE 802.11ac_Channel 48_20MHz_Antenna 0



IEEE 802.11ac_Channel 48_20MHz_Antenna 1



IEEE 802.11ac_Channel 52_20MHz_Antenna 0