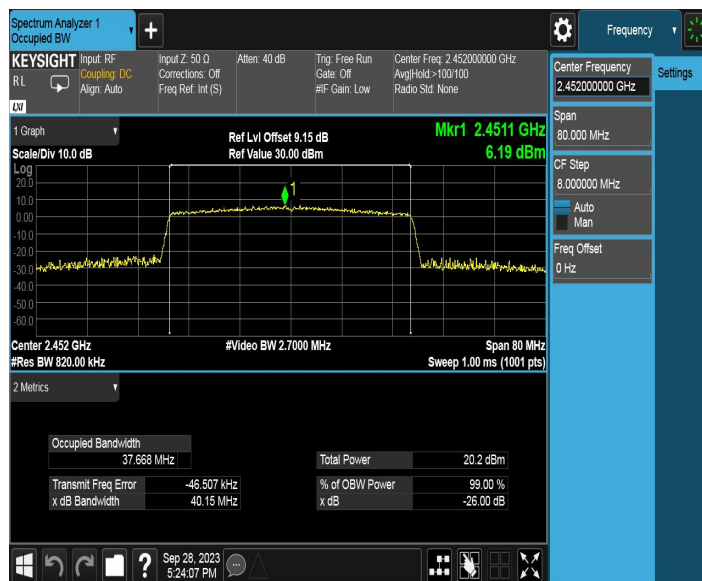
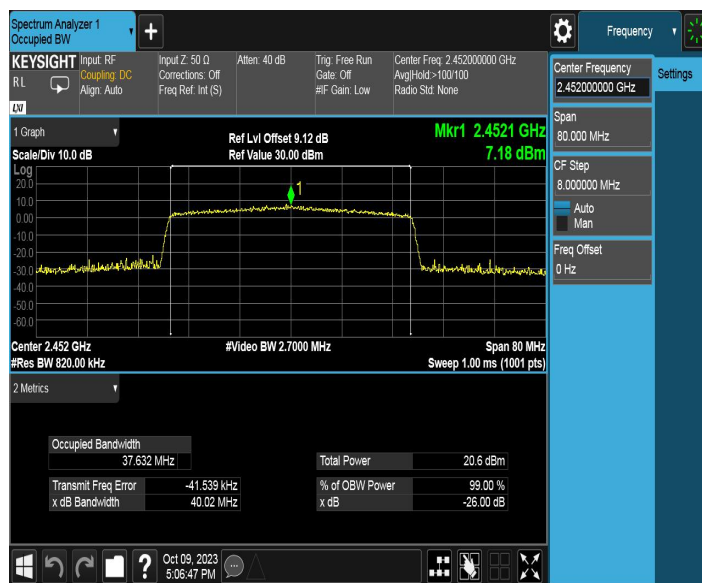




11AX40MIMO_Ant2_2452



7.3. Output Power Measurement

7.3.1. Test Limit

The maximum conducted output power is 1 Watt. And for antenna gain greater than 6dBi the limit shall reduce by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

7.3.2. Test Procedure Used

ANSI C63.10-2013 – Section 11.9.2.2.4

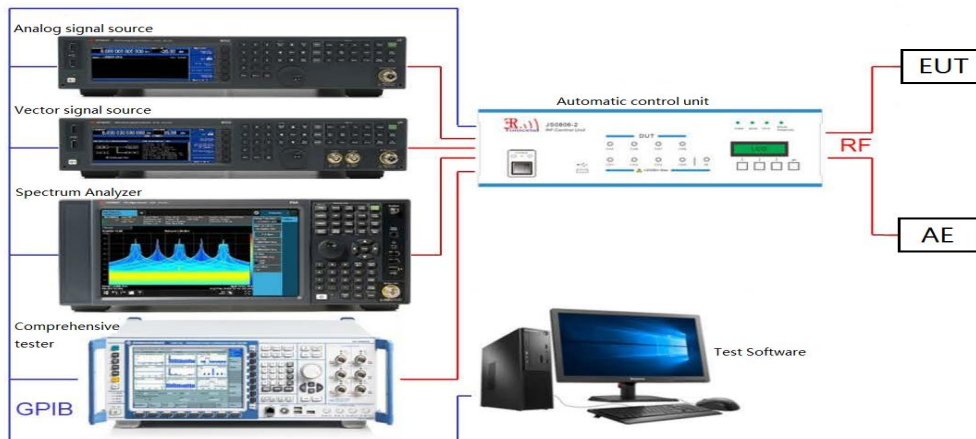
KDB 558074 D01 v05r02 – Section 8.3.2.2

7.3.3. Test Setting

1. Set span to at least 1.5 times the OBW..
2. Set RBW = 1% to 5% of the OBW, not to exceed 1 MHz.
3. Set VBW $\geq [3 \times \text{RBW}]$.
4. Number of points in sweep $\geq [2 \times \text{span} / \text{RBW}]$. (This gives bin-to-bin spacing $\text{RBW} / 2$, so that narrowband signals are not lost between frequency bins.)
5. Sweep time = auto.
6. Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
7. Do not use sweep triggering. Allow the sweep to “free run.”
8. Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed such that the average accurately represents the true average over the ON and OFF periods of the transmitter.
9. Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function with band limits set equal to the OBW band edges. If the instrument does not have a band power function, then sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum. 10. Add $[10 \log (1 / D)]$, where D is the duty cycle, to the measured power to compute the average power during the actual transmission times (because the measurement represents an average over both

the ON and OFF times of the transmission). For example, add $[10 \log (1/0.25)] = 6 \text{ dB}$ if the duty cycle is 25%.

7.3.4. Test Setup



7.3.5. Test Result of Output Power

Power output test was verified over all data rates of each mode shown as below, and then choose the maximum power output (yellow marker) for final test of each channel.

N _{TX}	Data Rate (Mbps)	
	802.11b	802.11g
1	1	6
1	2	9
1	5.5	12
1	11	18
1	--	24
1	--	36
1	--	48
1	--	54

N _{TX}	MCS Index for 802.11n	Data Rate (Mbps)			
		20MHz Bandwidth		40MHz Bandwidth	
		800ns GI	400ns GI	800ns GI	400ns GI
1	0	6.5	7.2	13.5	15.0
1	1	13.0	14.4	27.0	30.0
1	2	19.5	21.7	40.5	45.0
1	3	26.0	28.9	54.0	60.0
1	4	39.0	43.3	81.0	90.0
1	5	52.0	57.8	108.0	120.0
1	6	58.5	65.0	121.5	135.0
1	7	65.0	72.2	135.0	150.0
2	15	130.0	144.4	270.0	300.0

N _{TX}	MCS Index for 802.11ax	Data Rate (Mbps)			
		20MHz Bandwidth		40MHz Bandwidth	
		1600ns GI	800ns GI	1600ns GI	800ns GI
1	0	8.0	8.6	16.0	17.2
1	1	16.0	17.2	33.0	34.4
1	2	24.0	25.8	49.0	51.6
1	3	33.0	34.4	65.0	68.8
1	4	49.0	51.6	98.0	103.2

1	5	65.0	68.6	130.0	137.6
1	6	73.0	77.4	146.0	154.9
1	7	81.0	86.0	163.0	172.1
1	8	98.0	103.2	195.0	206.5
1	9	108.0	114.7	217.0	229.4
1	10	122.0	129.0	244.0	258.1
1	11	135.0	143.5	271.0	286.8
2	11	270.0	287.0	542.0	573.6

Note: Power output test was verified over all data rates of each mode shown as above, and then choose the maximum power output (yellow marker) for final test of each channel.

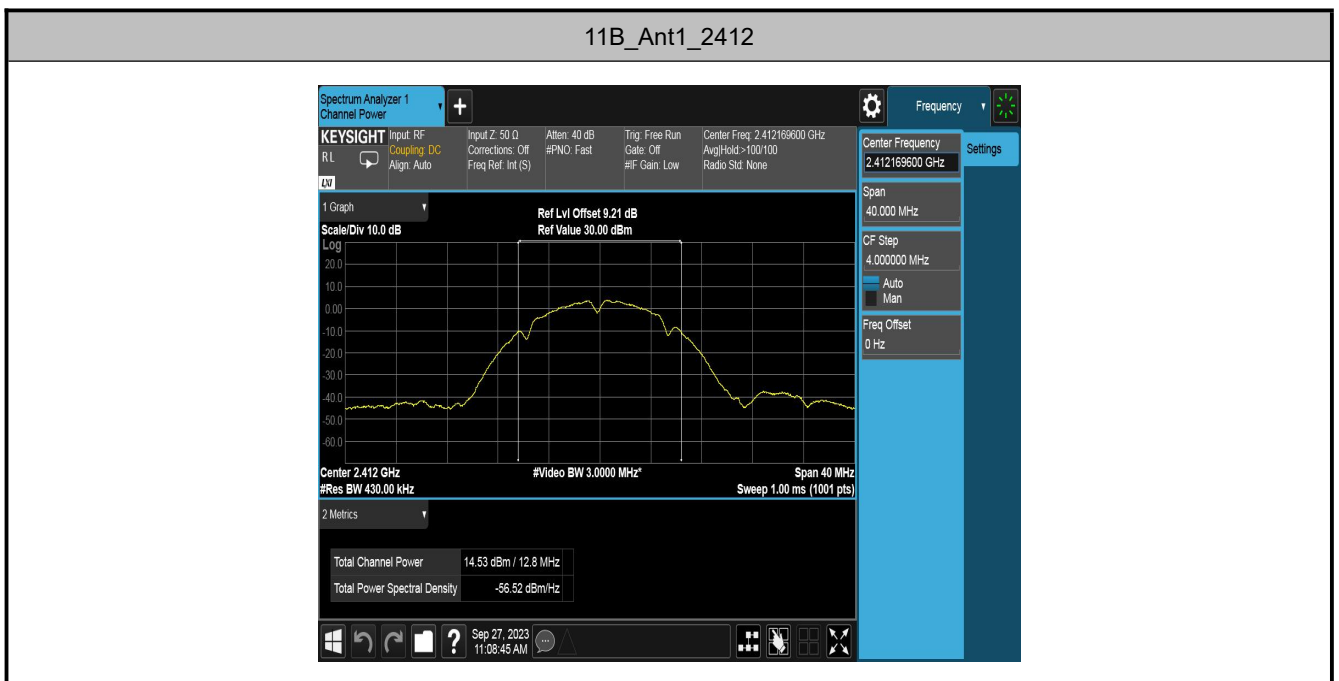
Test Result of Maximum conducted output power

Test Mode	Antenna	Frequency [MHz]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	14.53	≤30.00	PASS
	Ant2	2412	15.87	≤30.00	PASS
	Ant1	2437	14.42	≤30.00	PASS
	Ant2	2437	15.36	≤30.00	PASS
	Ant1	2462	13.76	≤30.00	PASS
	Ant2	2462	14.88	≤30.00	PASS
11G	Ant1	2412	9.60	≤30.00	PASS
	Ant2	2412	11.09	≤30.00	PASS
	Ant1	2437	10.65	≤30.00	PASS
	Ant2	2437	11.40	≤30.00	PASS
	Ant1	2462	9.52	≤30.00	PASS
	Ant2	2462	10.66	≤30.00	PASS
11N20MIMO	Ant1	2412	10.03	≤30.00	PASS
	Ant2	2412	10.93	≤30.00	PASS
	Total	2412	13.51	≤30.00	PASS
	Ant1	2437	10.59	≤30.00	PASS
	Ant2	2437	11.19	≤30.00	PASS
	Total	2437	13.91	≤30.00	PASS
	Ant1	2462	9.74	≤30.00	PASS
	Ant2	2462	10.52	≤30.00	PASS
	Total	2462	13.16	≤30.00	PASS
11N40MIMO	Ant1	2422	13.83	≤30.00	PASS
	Ant2	2422	14.72	≤30.00	PASS
	Total	2422	17.31	≤30.00	PASS
	Ant1	2437	14.44	≤30.00	PASS
	Ant2	2437	15.17	≤30.00	PASS
	Total	2437	17.83	≤30.00	PASS
	Ant1	2452	13.02	≤30.00	PASS
	Ant2	2452	13.14	≤30.00	PASS
	Total	2452	16.09	≤30.00	PASS
11AX20MIMO	Ant1	2412	13.88	≤30.00	PASS
	Ant2	2412	13.01	≤30.00	PASS
	Total	2412	16.48	≤30.00	PASS

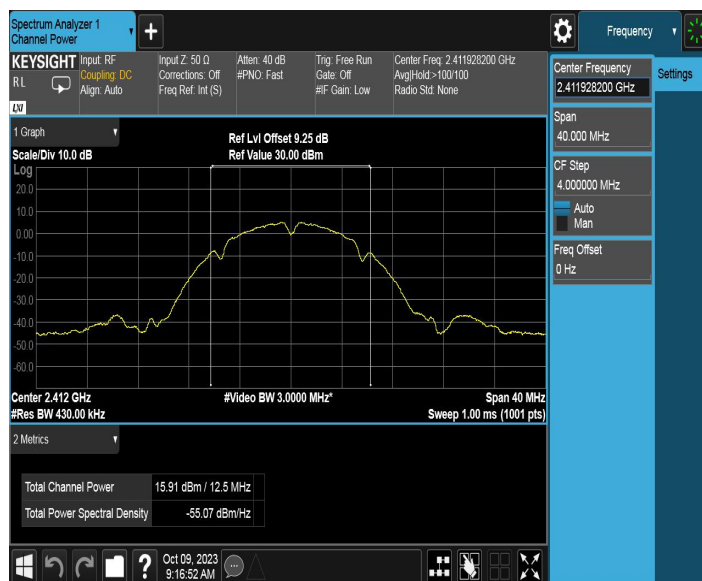
	Ant1	2437	14.20	≤ 30.00	PASS
	Ant2	2437	13.47	≤ 30.00	PASS
	Total	2437	16.86	≤ 30.00	PASS
	Ant1	2462	13.22	≤ 30.00	PASS
	Ant2	2462	12.94	≤ 30.00	PASS
	Total	2462	16.09	≤ 30.00	PASS
11AX40MIMO	Ant1	2422	10.84	≤ 30.00	PASS
	Ant2	2422	11.55	≤ 30.00	PASS
	Total	2422	14.22	≤ 30.00	PASS
	Ant1	2437	11.18	≤ 30.00	PASS
	Ant2	2437	11.94	≤ 30.00	PASS
	Total	2437	14.59	≤ 30.00	PASS
	Ant1	2452	11.13	≤ 30.00	PASS
	Ant2	2452	11.74	≤ 30.00	PASS
	Total	2452	14.46	≤ 30.00	PASS

The Duty Cycle Factor is compensated in the Offset of graph.

Test Graphs



11B_Ant2_2412



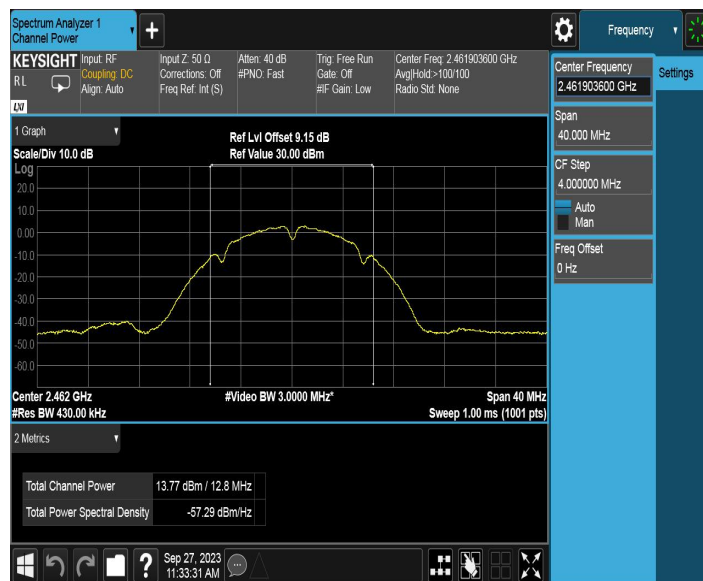
11B_Ant1_2437



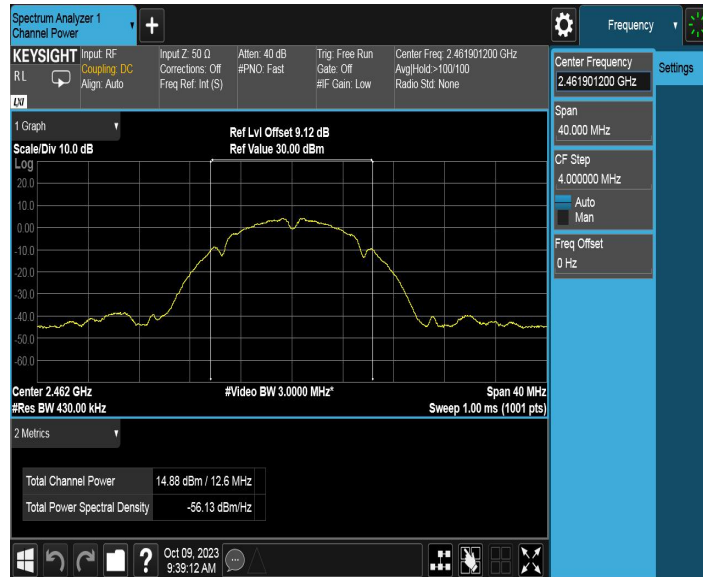
11B_Ant2_2437



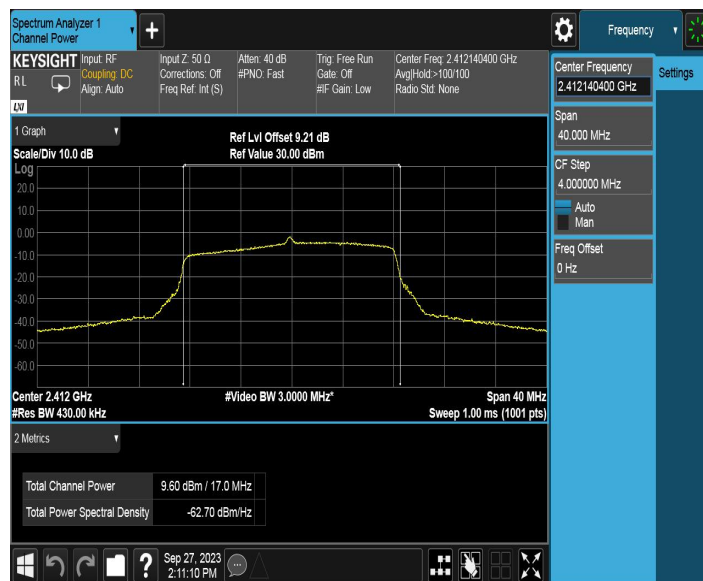
11B_Ant1_2462



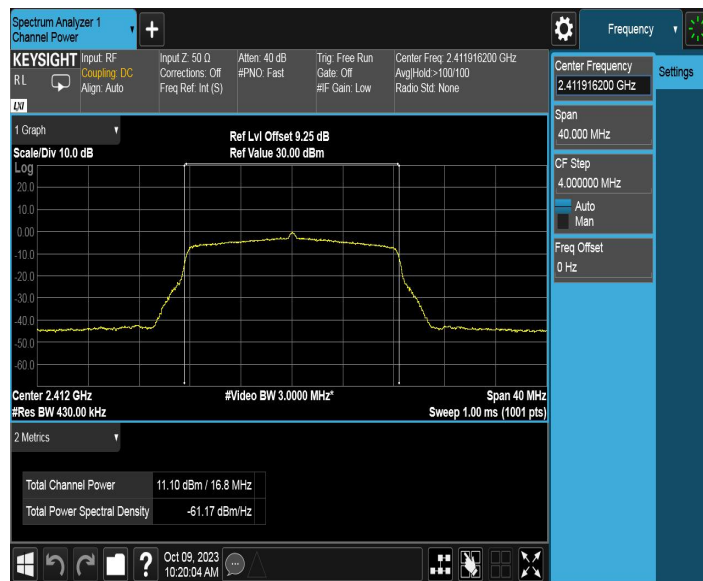
11B_Ant2_2462



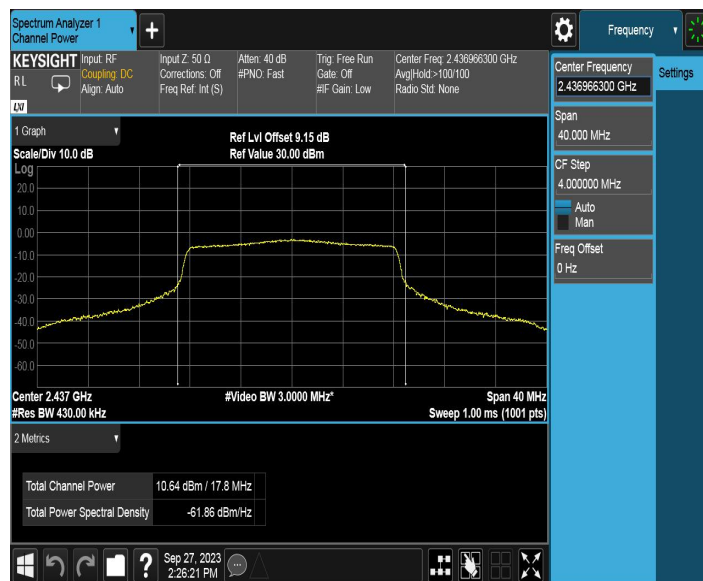
11G_Ant1_2412



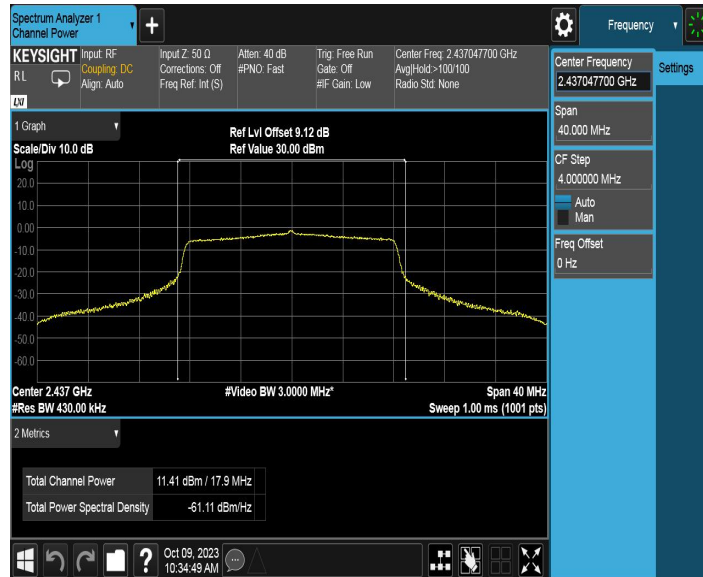
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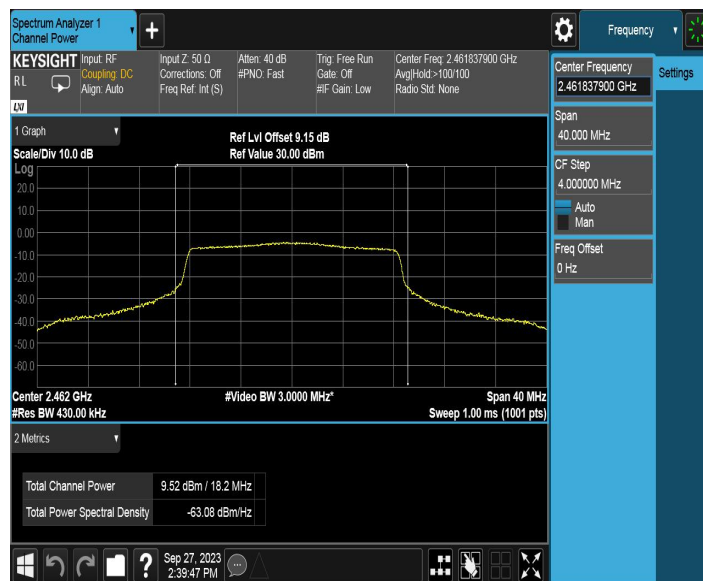
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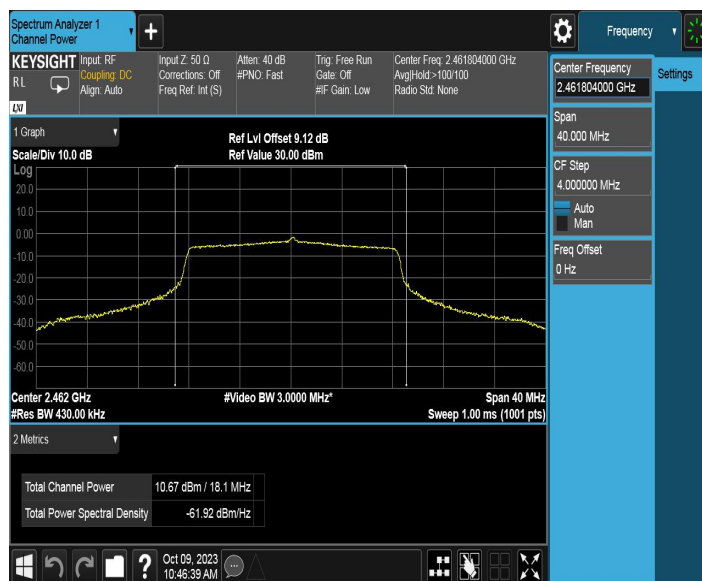
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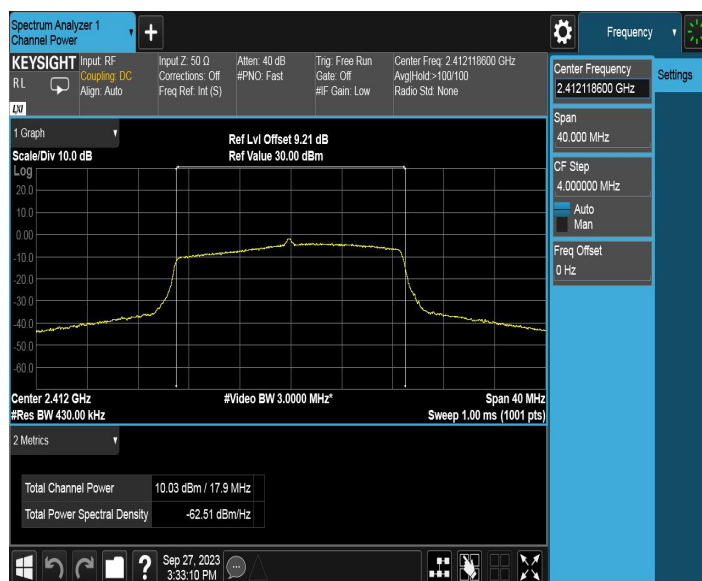
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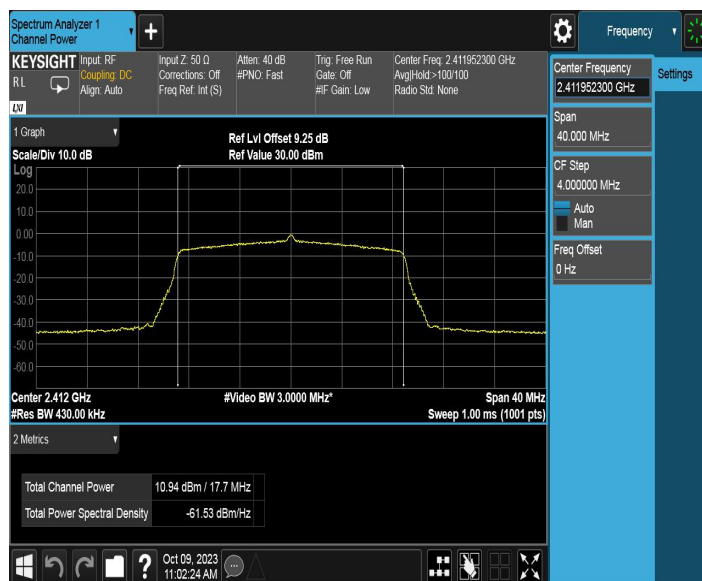
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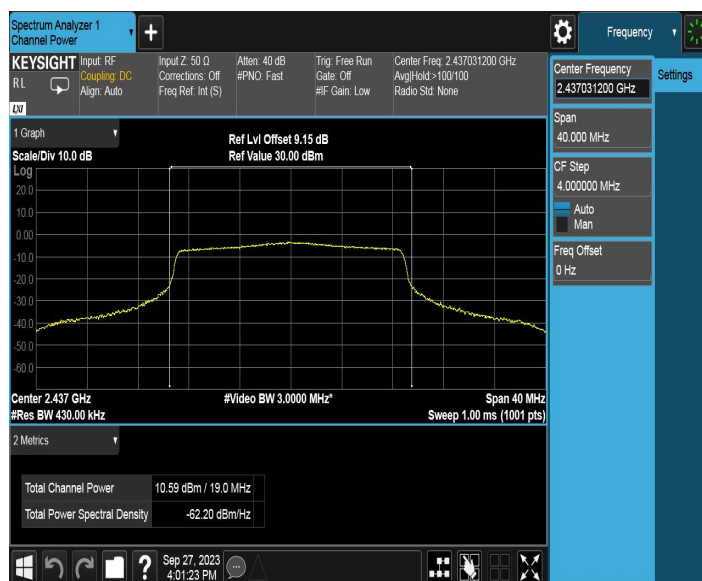
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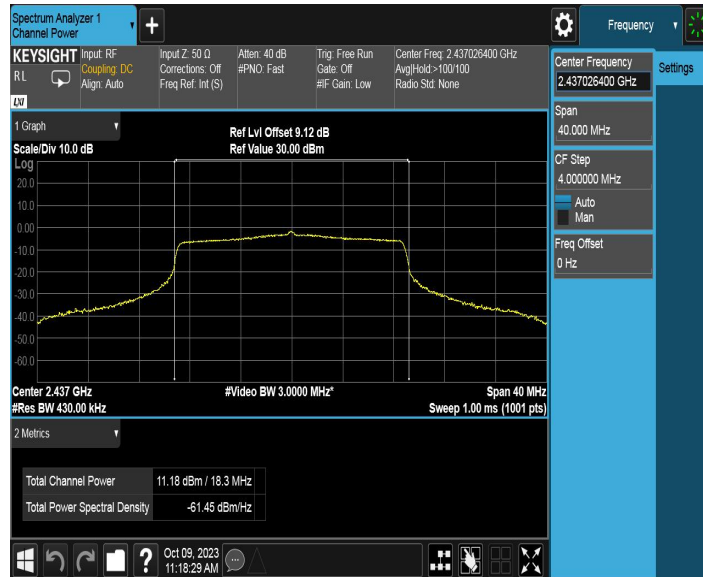
11N20MIMO_Ant2_2412



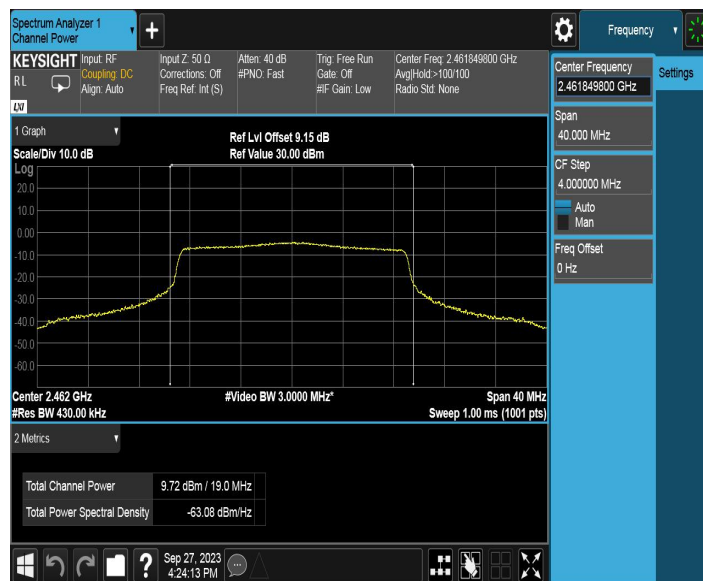
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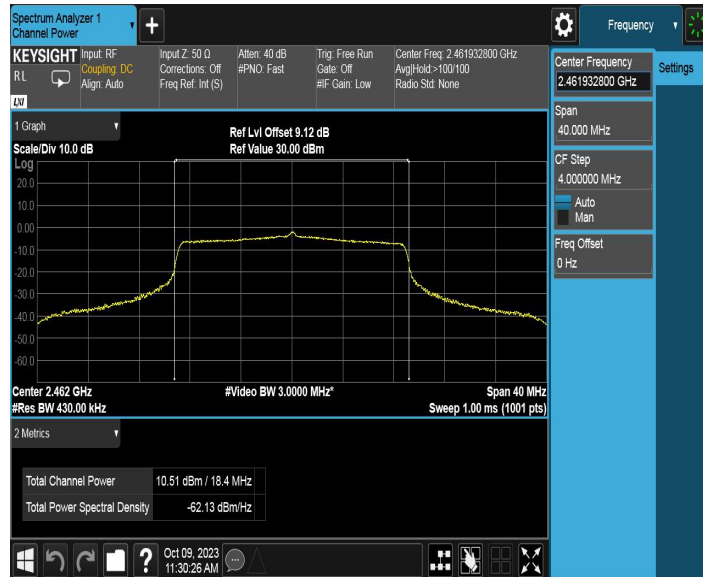
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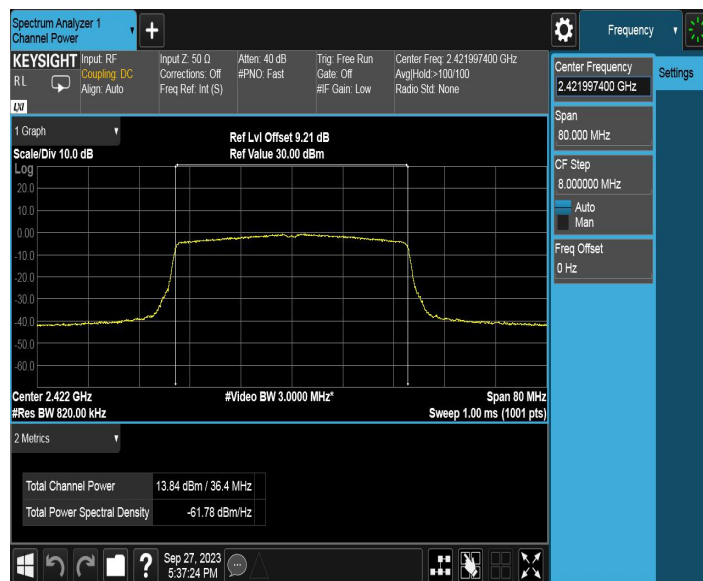
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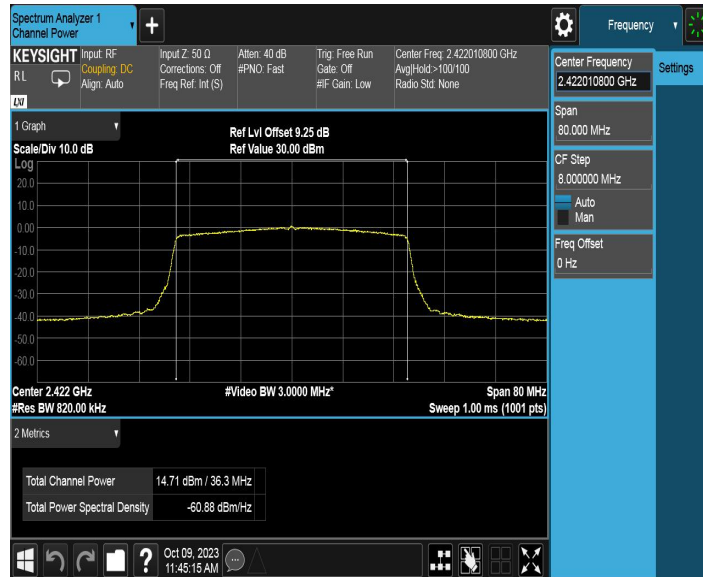
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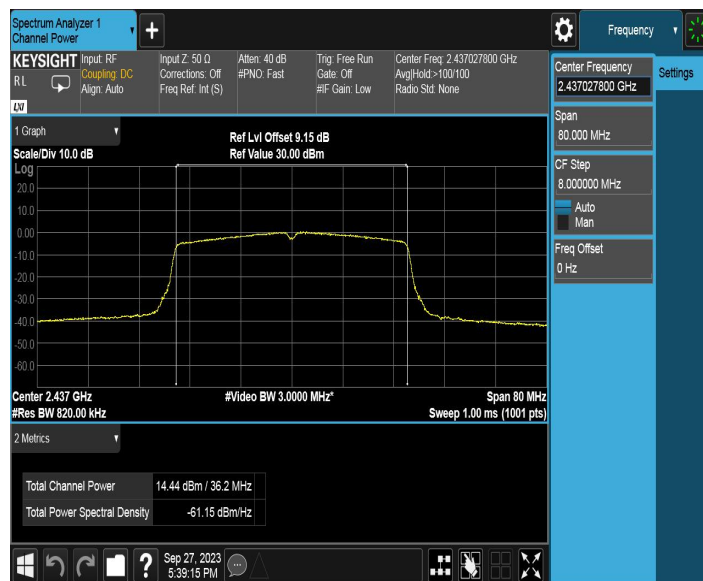
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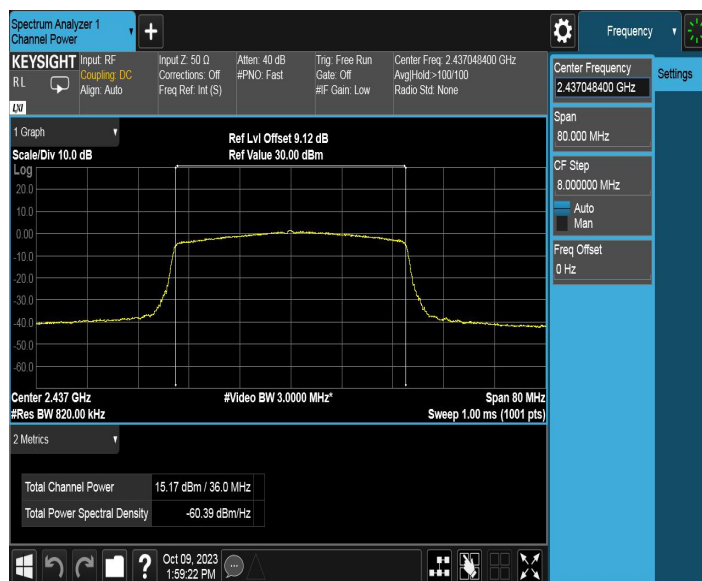
11N40MIMO_Ant2_2422



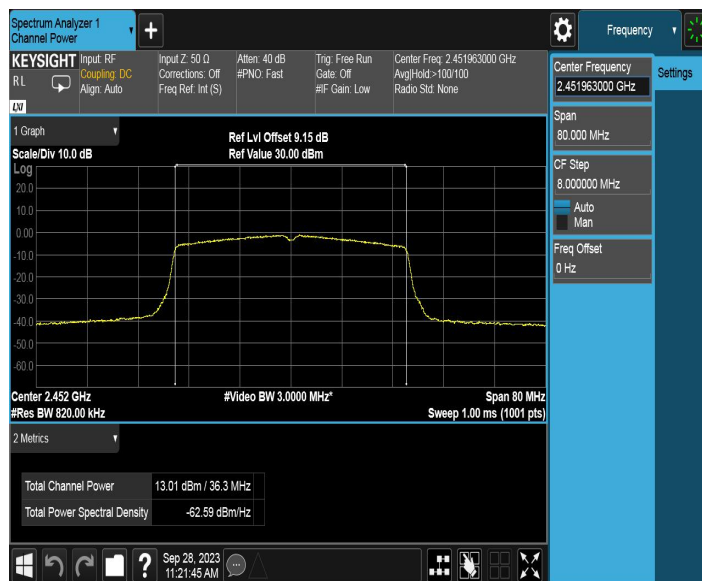
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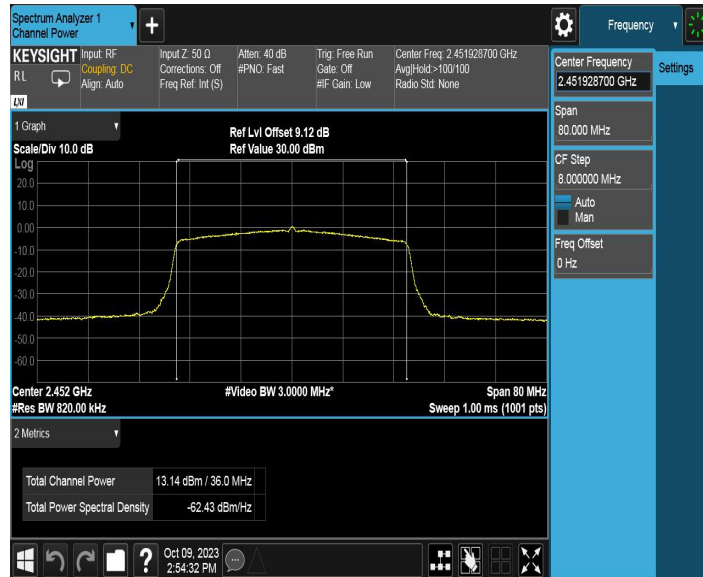
11N40MIMO_Ant2_2437



11N40MIMO_Ant1_2452



11N40MIMO_Ant2_2452



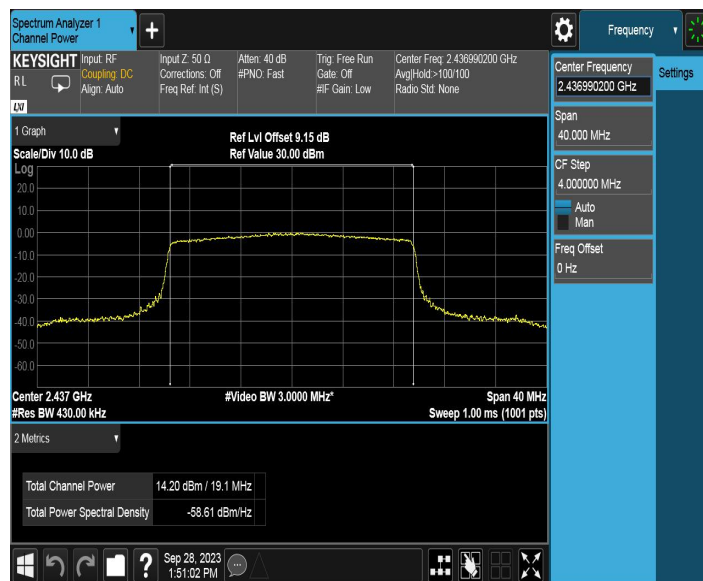
11AX20MIMO_Ant1_2412



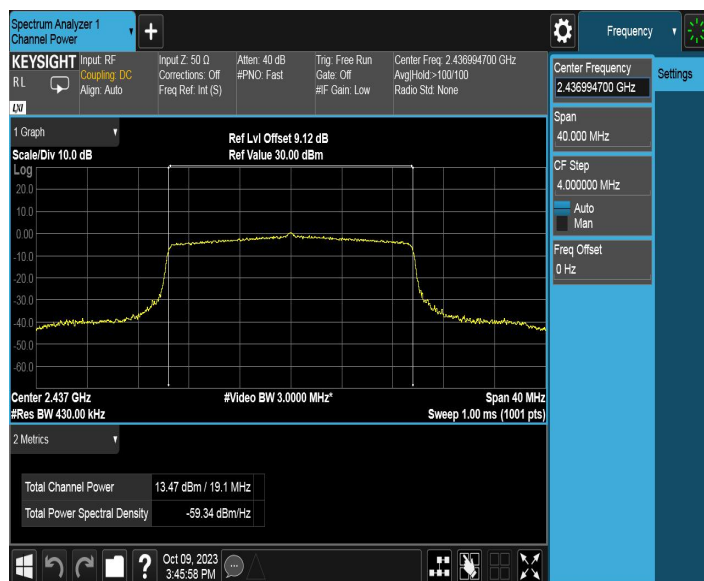
11AX20MIMO_Ant2_2412



11AX20MIMO_Ant1_2437



11AX20MIMO_Ant2_2437



11AX20MIMO_Ant1_2462

