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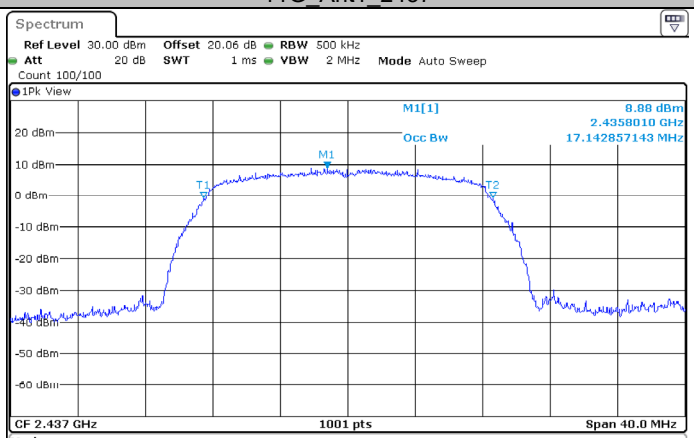


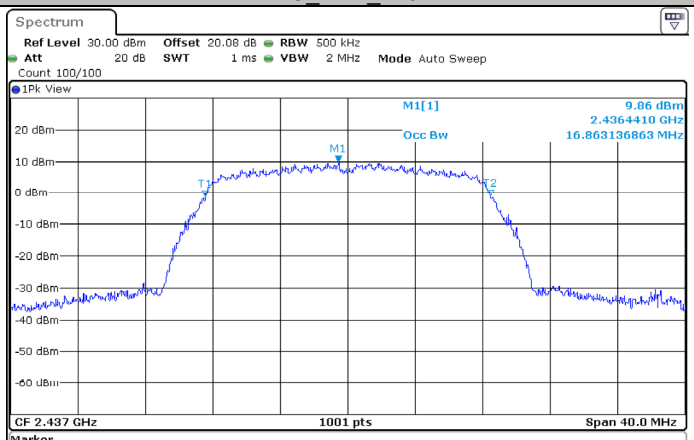
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.435801 GHz	8.88 dBm		
T1		1	2.4284486 GHz	-0.73 dBm	Occ Bw	17.142857143 MHz
T2		1	2.4455914 GHz	-0.82 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan

Date: 6.SEP.2024 23:15:46

11G_Ant2_2437



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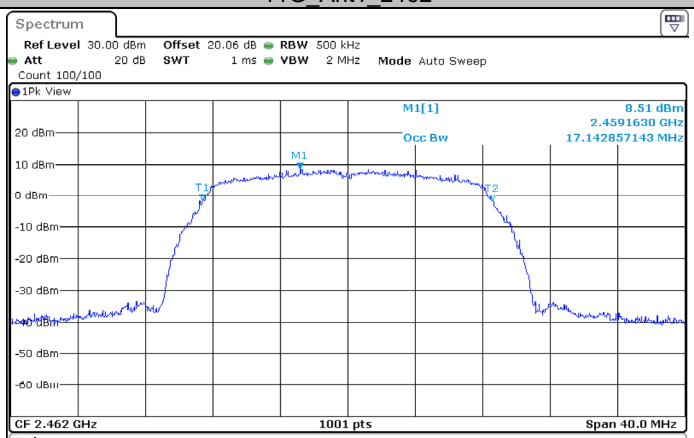
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.436441 GHz	9.86 dBm		
T1		1	2.4285684 GHz	-1.22 dBm	Occ Bw	16.863136863 MHz
T2		1	2.4454316 GHz	-0.85 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan

Date: 6.SEP.2024 23:16:54

11G_Ant1_2462



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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.459163 GHz	8.51 dBm		
T1		1	2.4534086 GHz	-1.58 dBm	Occ Bw	17.142857143 MHz
T2		1	2.4705514 GHz	-1.81 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:17:34

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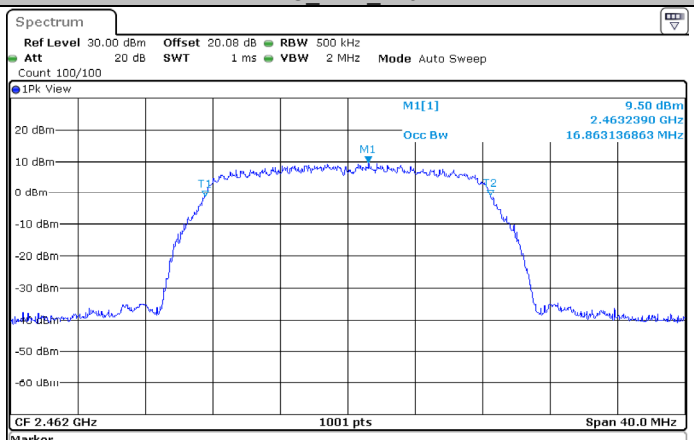

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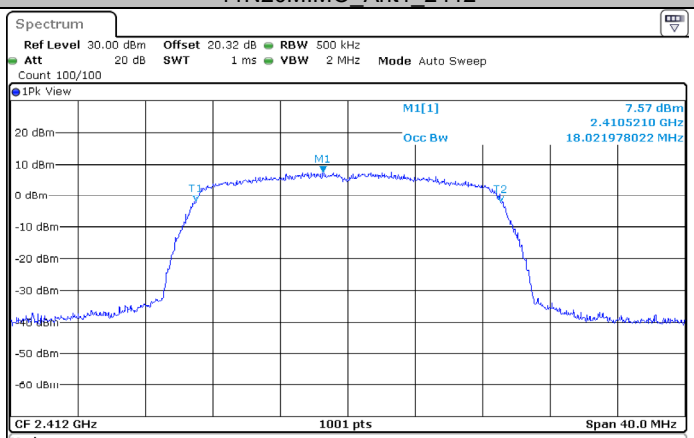
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.463239 GHz	9.50 dBm		
T1		1	2.4535684 GHz	-1.17 dBm	Occ Bw	16.863136863 MHz
T2		1	2.4704316 GHz	-0.96 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:18:16

11N20MIMO_Ant1_2412



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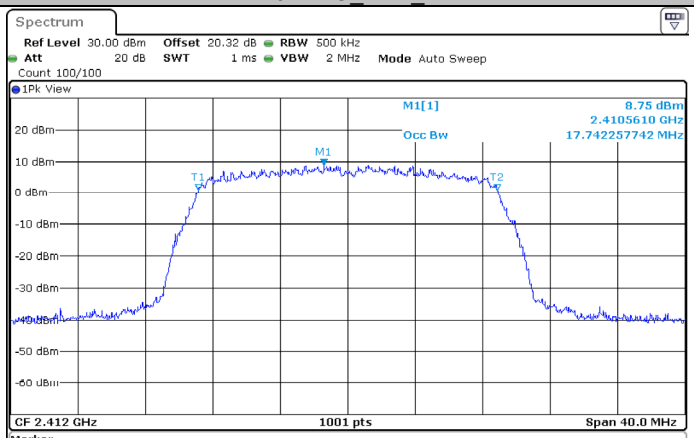
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.410521 GHz	7.57 dBm		
T1		1	2.403009 GHz	-1.82 dBm	Occ Bw	18.021978022 MHz
T2		1	2.421031 GHz	-2.09 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:20:16

11N20MIMO_Ant2_2412



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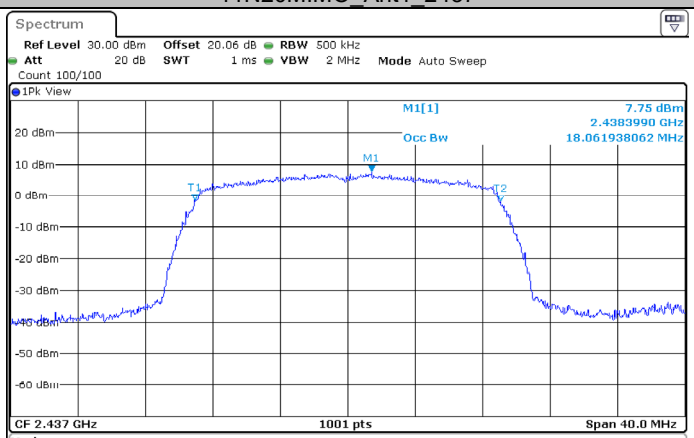
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.410561 GHz	8.75 dBm		
T1		1	2.4031289 GHz	0.91 dBm	Occ Bw	17.742257742 MHz
T2		1	2.4208711 GHz	0.80 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:20:52

11N20MIMO_Ant1_2437



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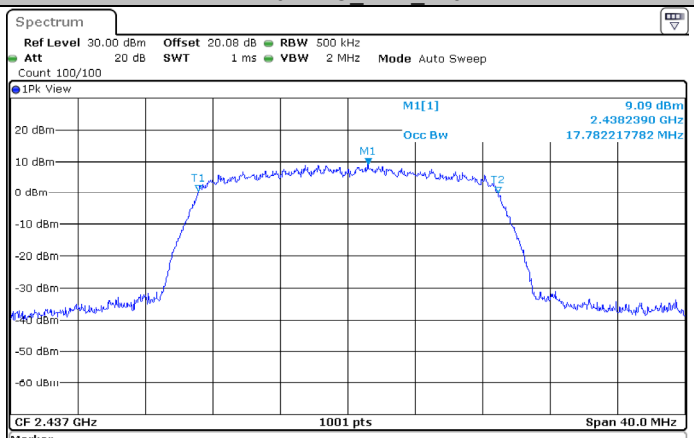
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.438399 GHz	7.75 dBm		
T1		1	2.427969 GHz	-1.52 dBm	Occ Bw	18.061938062 MHz
T2		1	2.446031 GHz	-1.86 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:22:08

11N20MIMO_Ant2_2437



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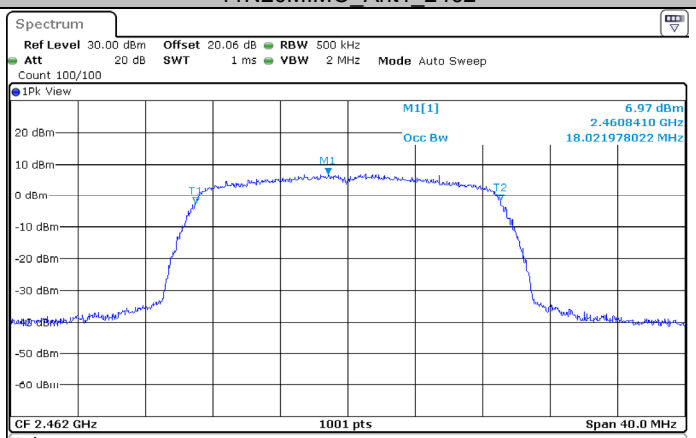
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.438239 GHz	9.09 dBm		
T1		1	2.4281289 GHz	0.53 dBm	Occ Bw	17.782217782 MHz
T2		1	2.4459111 GHz	0.22 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:22:45

11N20MIMO_Ant1_2462



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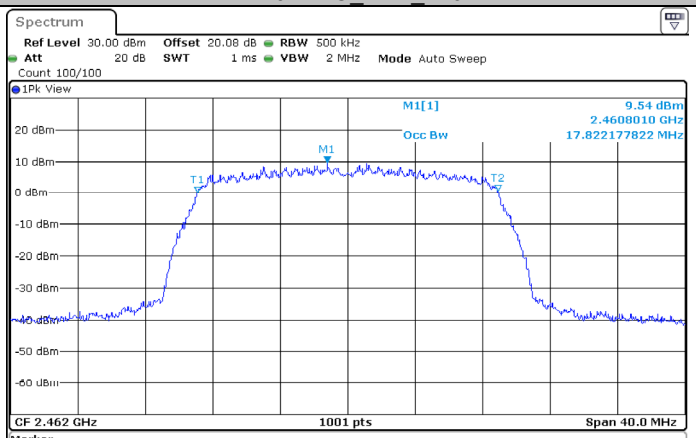
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.460841 GHz	6.97 dBm		
T1		1	2.453009 GHz	-2.65 dBm	Occ Bw	18.021978022 MHz
T2		1	2.471031 GHz	-1.43 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:23:39

11N20MIMO_Ant2_2462



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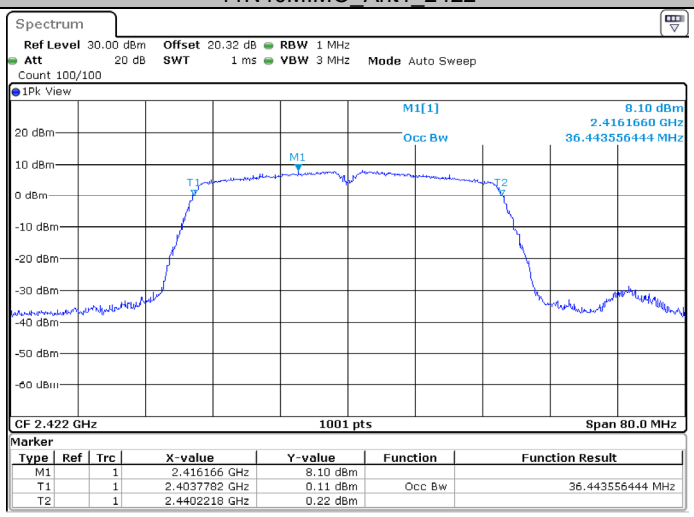
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.460801 GHz	9.54 dBm		
T1		1	2.4530889 GHz	0.15 dBm	Occ Bw	17.822177822 MHz
T2		1	2.4709111 GHz	0.57 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:24:15

11N40MIMO_Ant1_2422



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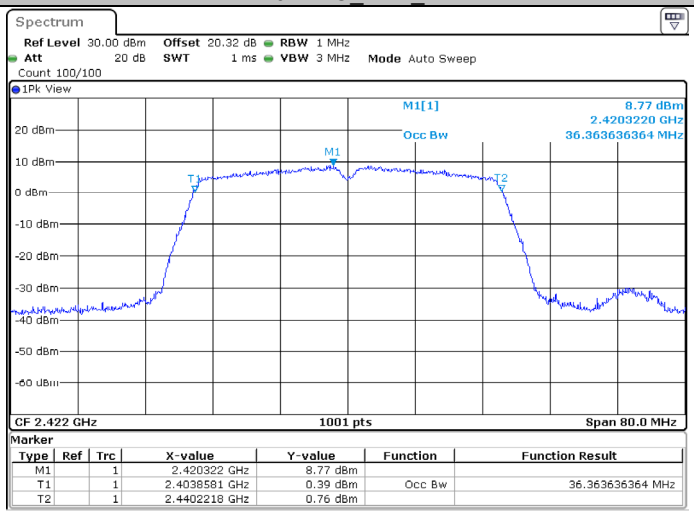

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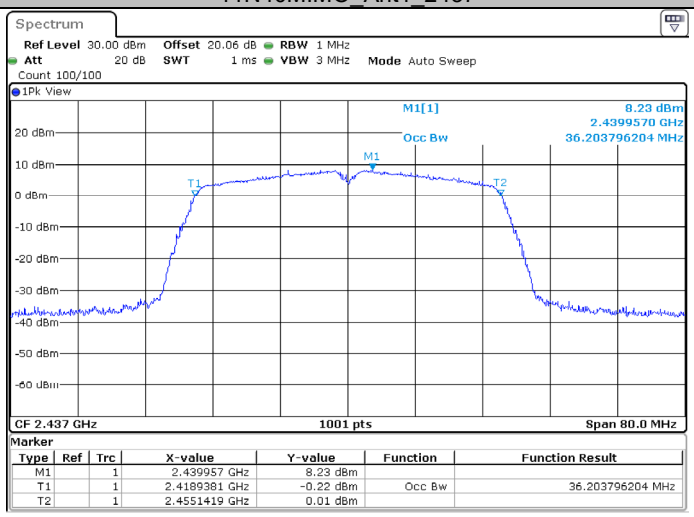

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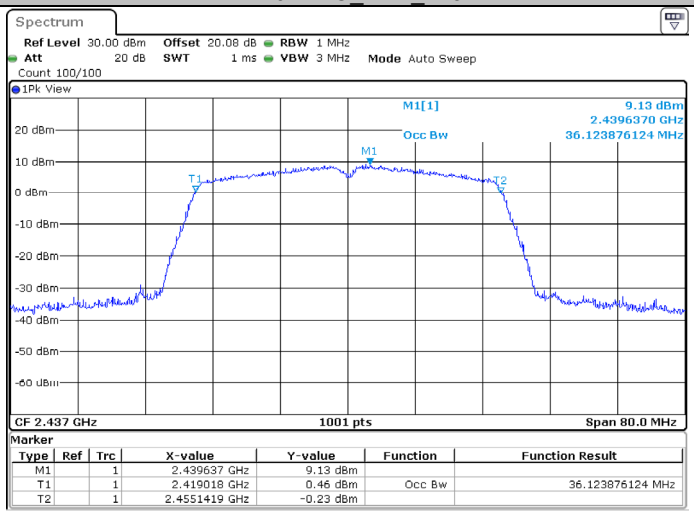
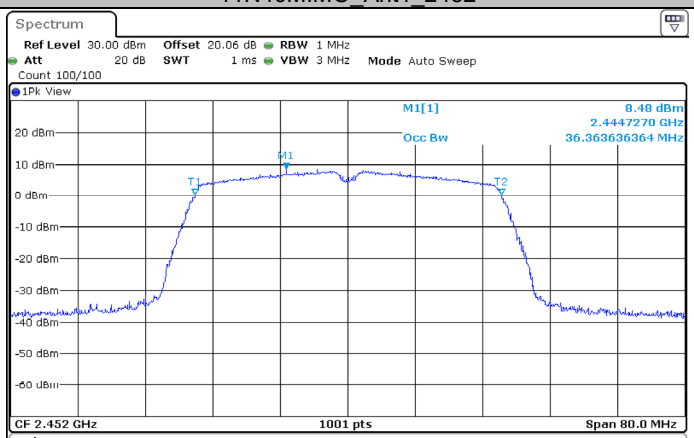


11N40MIMO_Ant1_2452

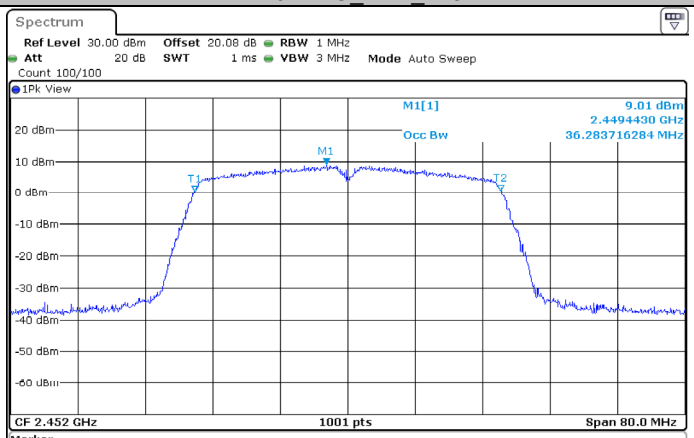


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.444727 GHz	8.48 dBm		
T1		1	2.4338581 GHz	0.24 dBm	Occ Bw	36.363636364 MHz
T2		1	2.4702218 GHz	0.38 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:29:26

11N40MIMO_Ant2_2452



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.449443 GHz	9.01 dBm		
T1		1	2.4338581 GHz	0.29 dBm	Occ Bw	36.283716284 MHz
T2		1	2.4701419 GHz	0.77 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:30:01

Appendix C: Maximum conducted output power

Test Result Peak

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	2412	17.46	≤30.00	PASS
	Ant2	2412	16.89	≤30.00	PASS
	Ant1	2437	17.32	≤30.00	PASS
	Ant2	2437	17.18	≤30.00	PASS
	Ant1	2462	16.91	≤30.00	PASS
	Ant2	2462	17.00	≤30.00	PASS
11G	Ant1	2412	21.76	≤30.00	PASS
	Ant2	2412	22.05	≤30.00	PASS
	Ant1	2437	21.60	≤30.00	PASS
	Ant2	2437	21.60	≤30.00	PASS
	Ant1	2462	21.32	≤30.00	PASS
	Ant2	2462	21.56	≤30.00	PASS
11N20MIMO	Ant1	2412	20.72	≤30.00	PASS
	Ant2	2412	21.06	≤30.00	PASS
	total	2412	23.90	≤30.00	PASS
	Ant1	2437	20.21	≤30.00	PASS
	Ant2	2437	20.70	≤30.00	PASS
	total	2437	23.47	≤30.00	PASS
	Ant1	2462	20.23	≤30.00	PASS
	Ant2	2462	20.56	≤30.00	PASS
	total	2462	23.41	≤30.00	PASS
11N40MIMO	Ant1	2422	20.84	≤30.00	PASS
	Ant2	2422	21.14	≤30.00	PASS
	total	2422	24.00	≤30.00	PASS
	Ant1	2437	20.66	≤30.00	PASS
	Ant2	2437	21.01	≤30.00	PASS
	total	2437	23.85	≤30.00	PASS
	Ant1	2452	20.74	≤30.00	PASS
	Ant2	2452	21.02	≤30.00	PASS
	total	2452	23.89	≤30.00	PASS

Note: The device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements on IEEE 802.11 devices:
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$

Max Antenna Gain:	2.34	dBi	Directional gain:	2.34	dBi

Appendix D: Maximum power spectral density

Test Result

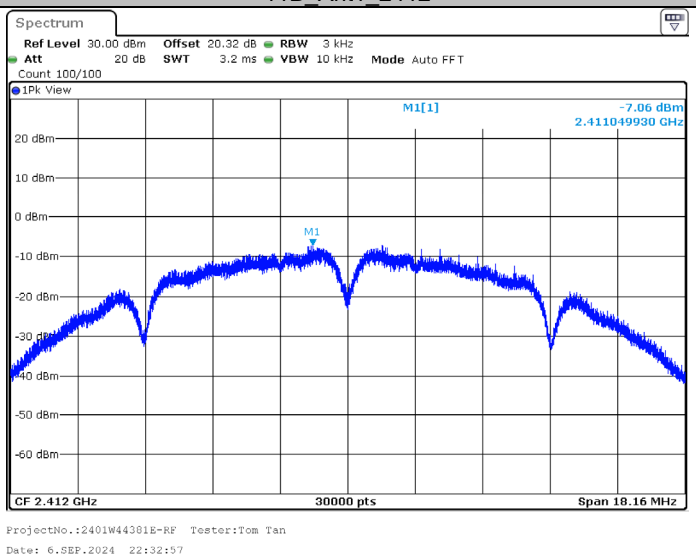
Test Mode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-7.06	≤8.00	PASS
	Ant2	2412	-7.26	≤8.00	PASS
	Ant1	2437	-6.59	≤8.00	PASS
	Ant2	2437	-7.29	≤8.00	PASS
	Ant1	2462	-7.47	≤8.00	PASS
	Ant2	2462	-7.02	≤8.00	PASS
11G	Ant1	2412	-9.34	≤8.00	PASS
	Ant2	2412	-8.98	≤8.00	PASS
	Ant1	2437	-9.89	≤8.00	PASS
	Ant2	2437	-9.78	≤8.00	PASS
	Ant1	2462	-9.75	≤8.00	PASS
	Ant2	2462	-10.22	≤8.00	PASS
11N20MIMO	Ant1	2412	-10.21	≤8.00	PASS
	Ant2	2412	-10.28	≤8.00	PASS
	total	2412	-7.23	≤8.00	PASS
	Ant1	2437	-11.25	≤8.00	PASS
	Ant2	2437	-10.64	≤8.00	PASS
	total	2437	-7.92	≤8.00	PASS
	Ant1	2462	-11.01	≤8.00	PASS
	Ant2	2462	-11.07	≤8.00	PASS
	total	2462	-8.03	≤8.00	PASS
11N40MIMO	Ant1	2422	-13.63	≤8.00	PASS
	Ant2	2422	-13.56	≤8.00	PASS
	total	2422	-10.58	≤8.00	PASS
	Ant1	2437	-14.28	≤8.00	PASS
	Ant2	2437	-13.48	≤8.00	PASS
	total	2437	-10.85	≤8.00	PASS
	Ant1	2452	-13.70	≤8.00	PASS
	Ant2	2452	-13.95	≤8.00	PASS
	total	2452	-10.81	≤8.00	PASS

Note:
The device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power spectral density (PSD) measurements on the devices:
Array Gain = 10 log(N_{ANT}/N_{SS}) dB

Max Antenna Gain:	2.34	dBi	Directional gain:	5.34	dBi

Test Graphs

11B_Ant1_2412



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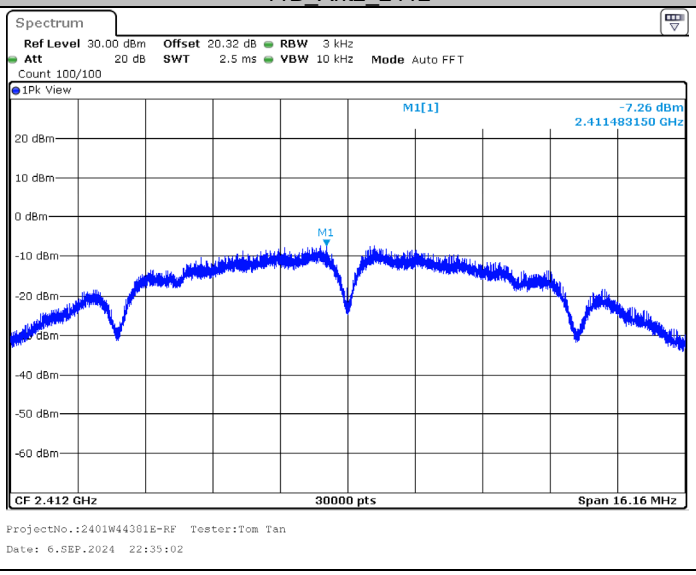

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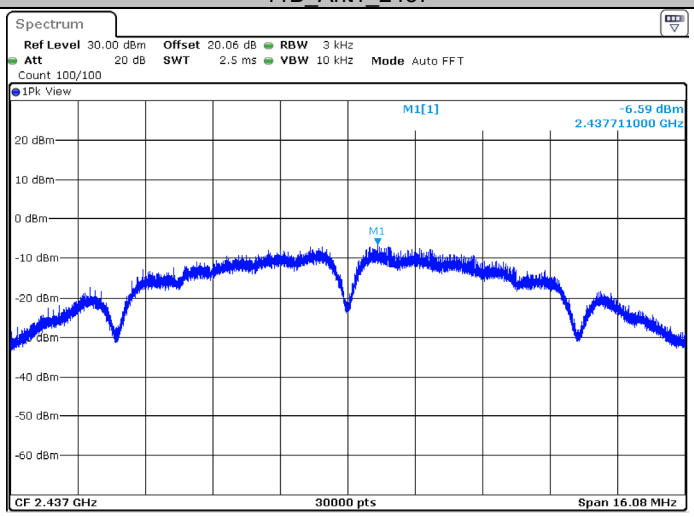
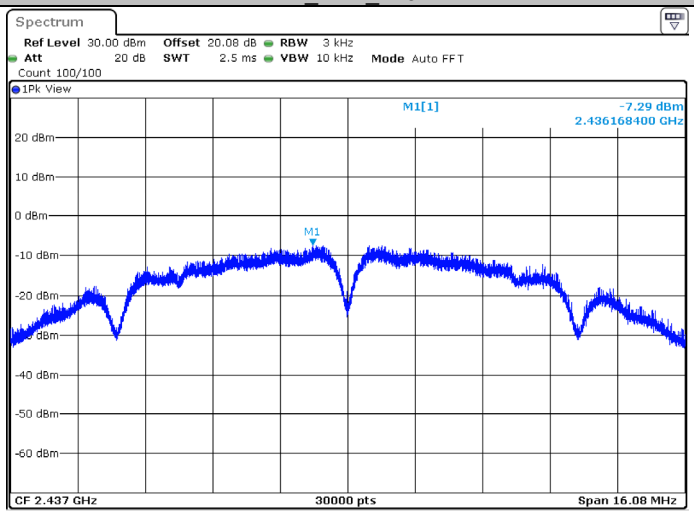


ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 22:36:35

11B_Ant2_2437



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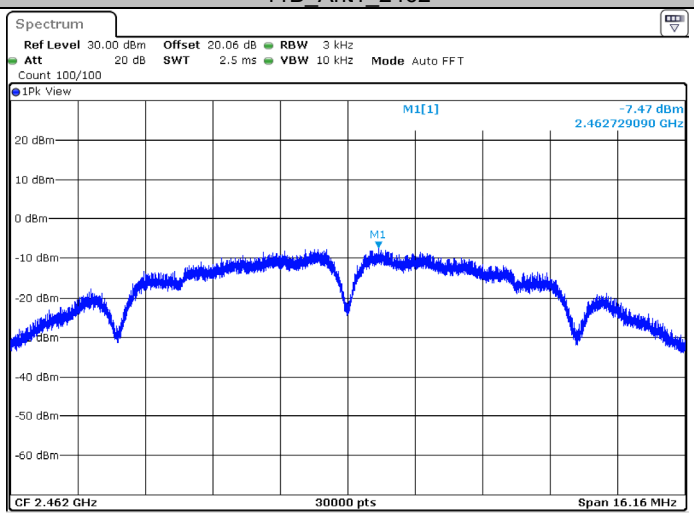

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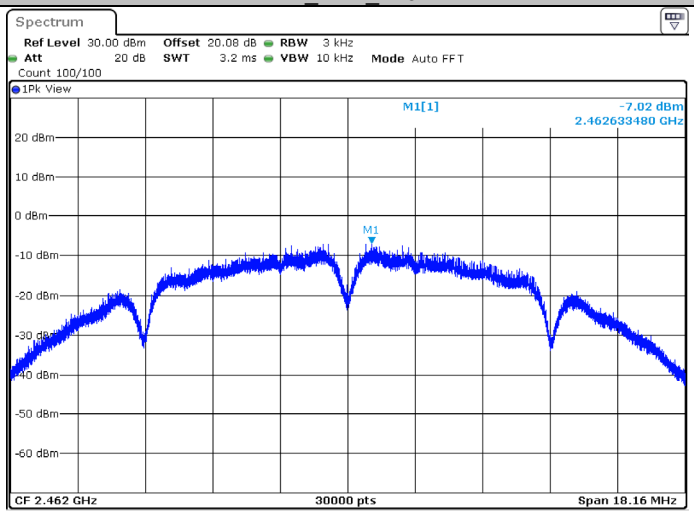

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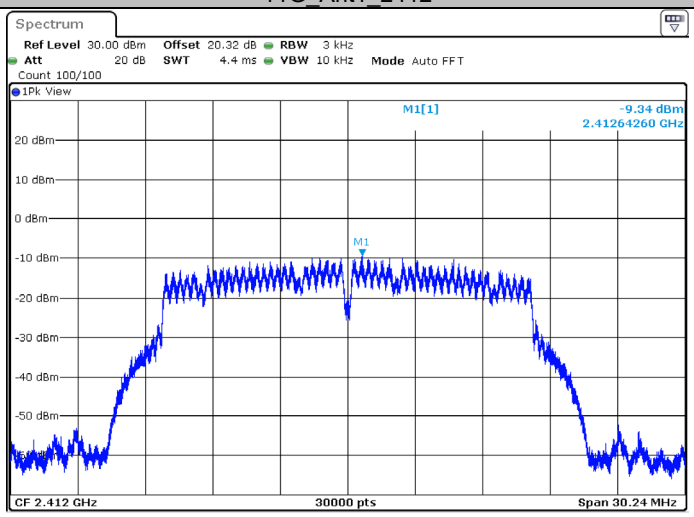

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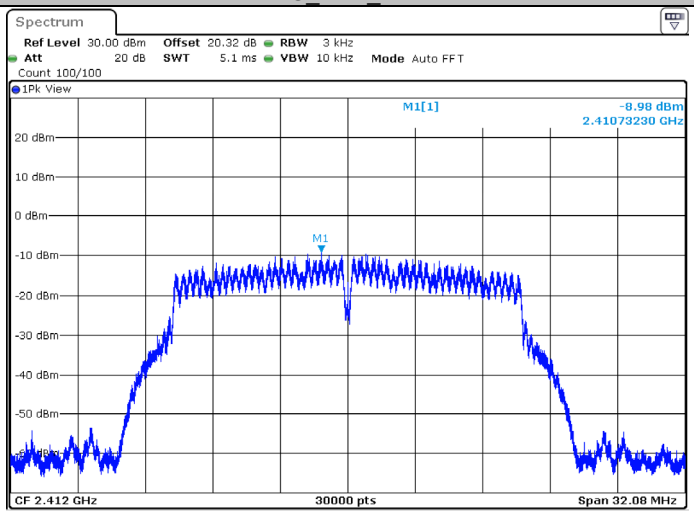

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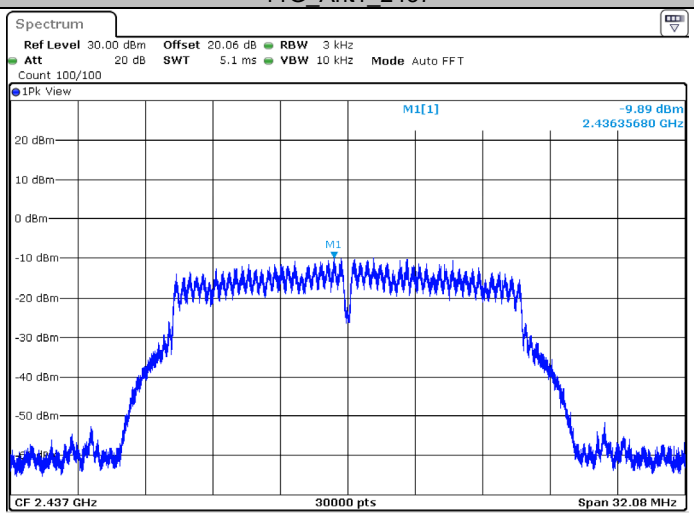

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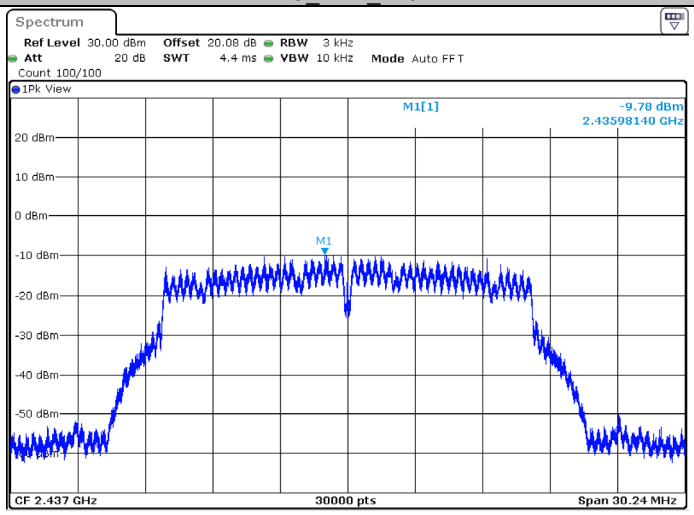

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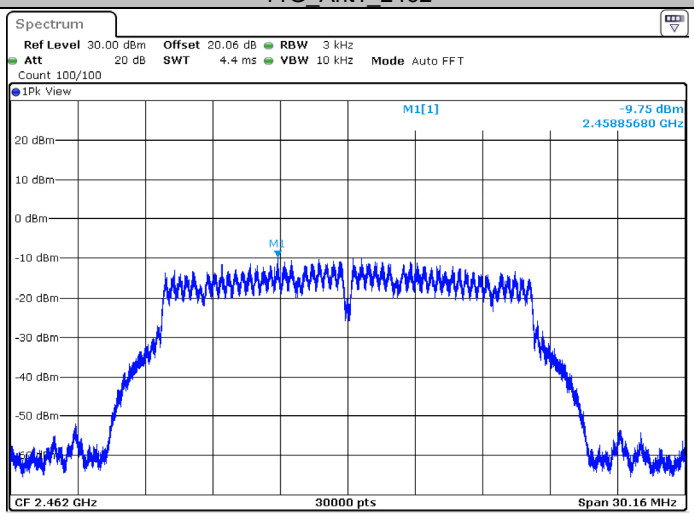

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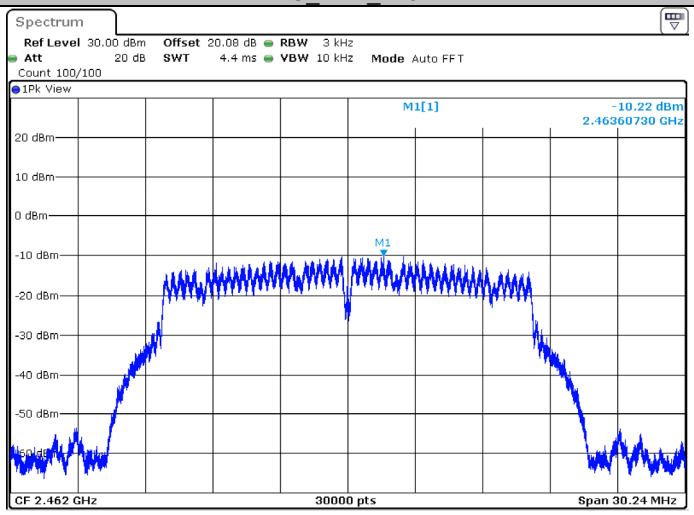

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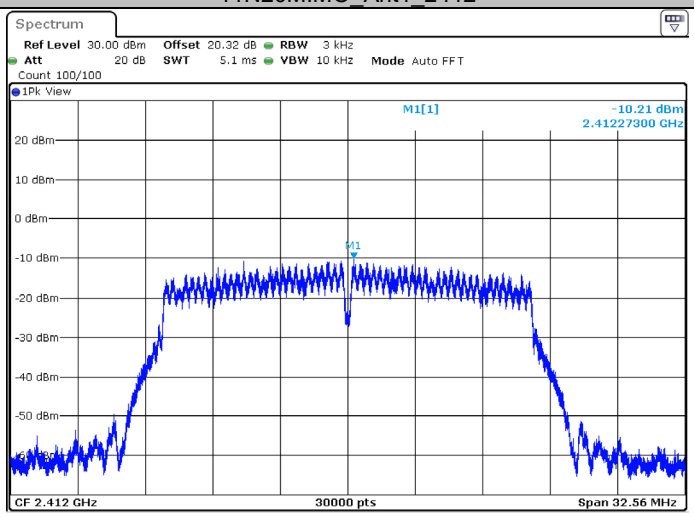

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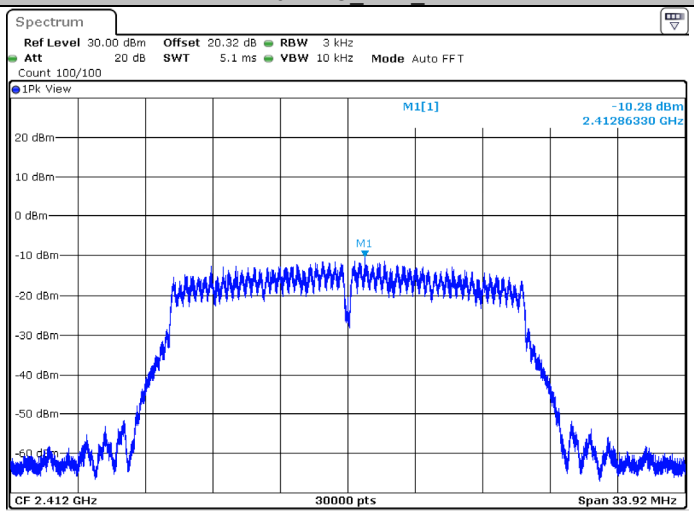

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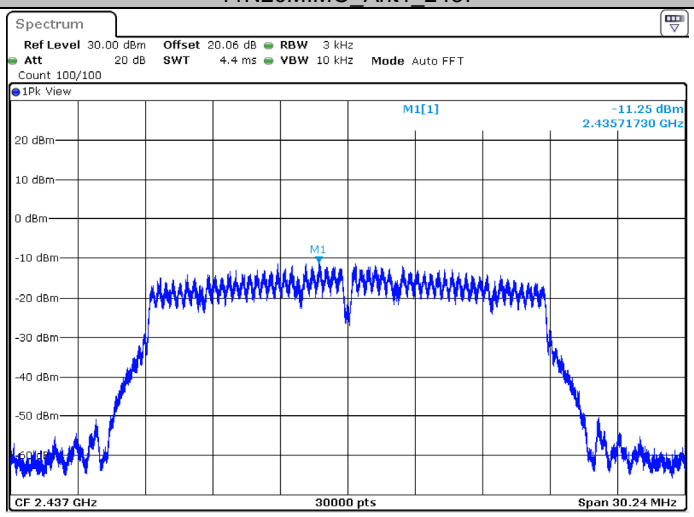
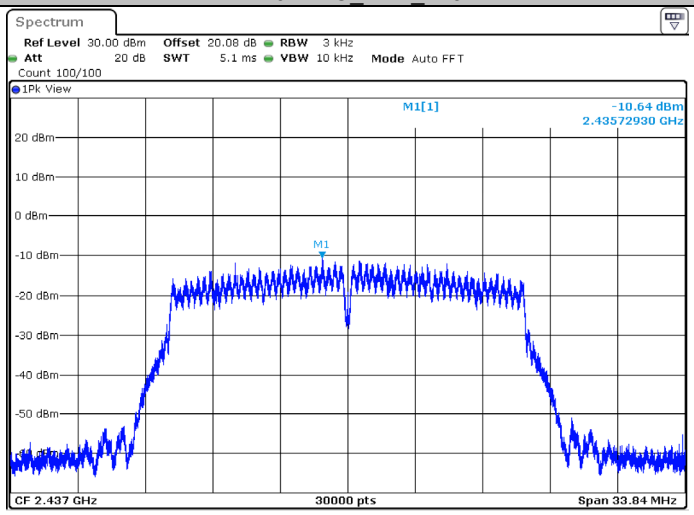


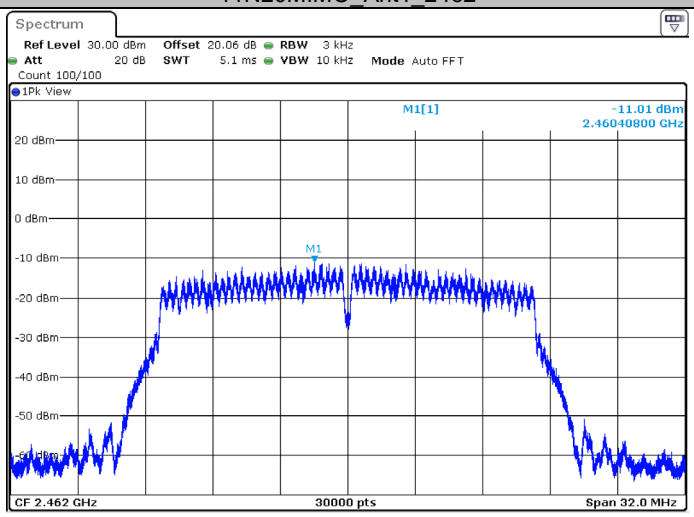
ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:22:21

11N20MIMO_Ant2_2437



ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:22:59

11N20MIMO_Ant1_2462



ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:23:53

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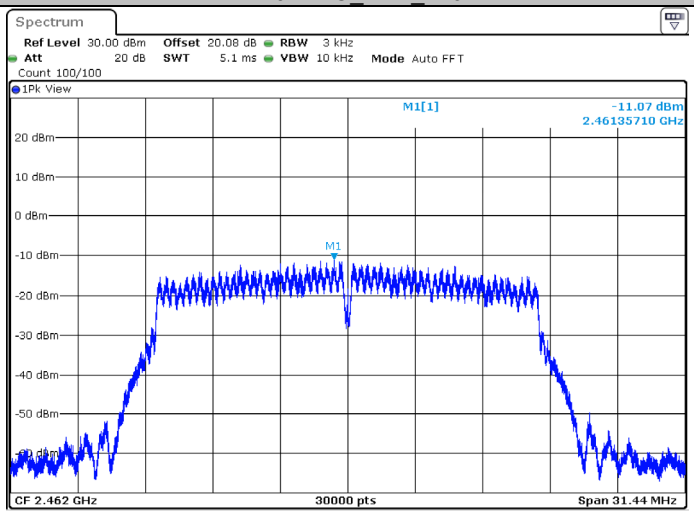
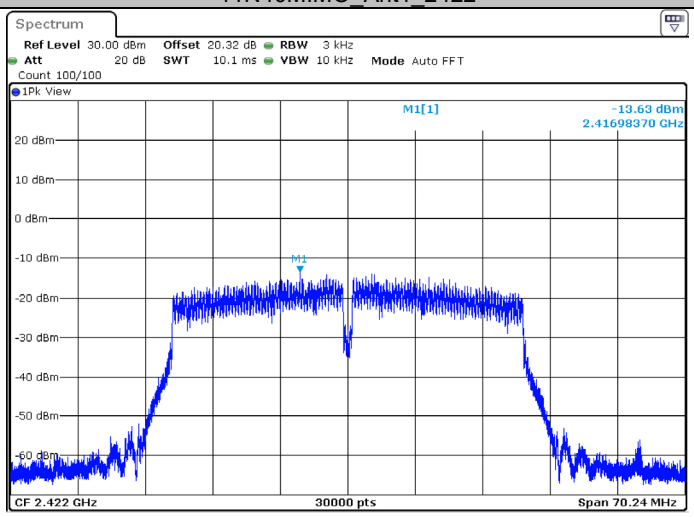


ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:24:29

11N40MIMO_Ant1_2422



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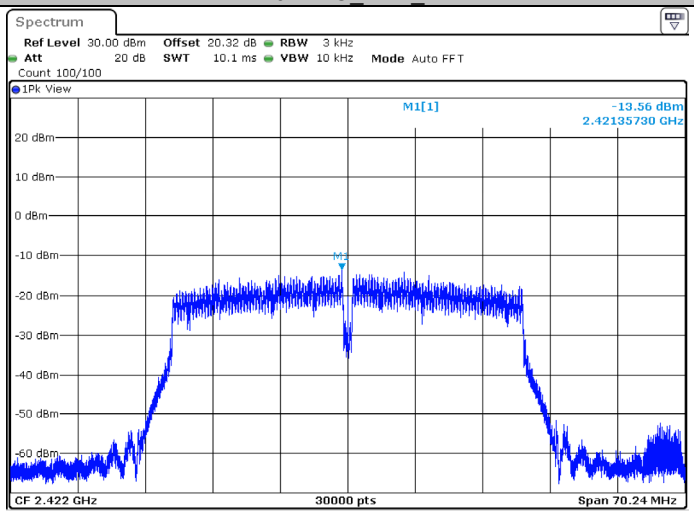

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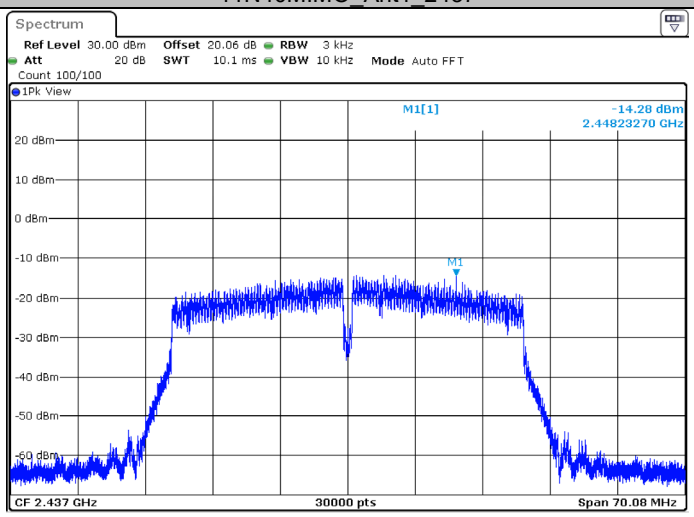

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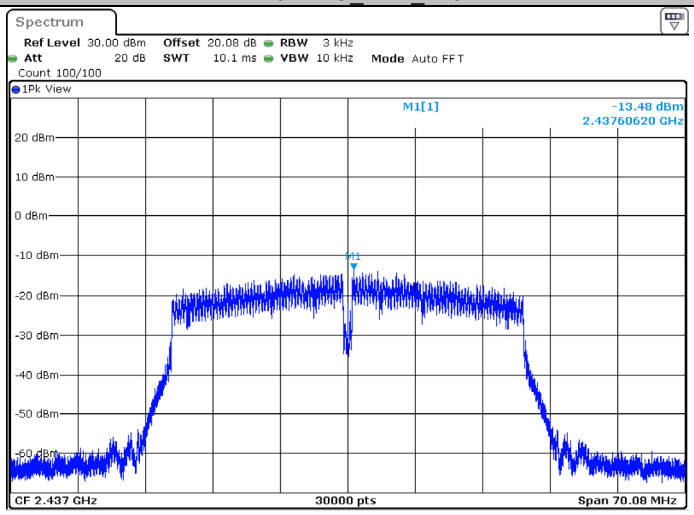

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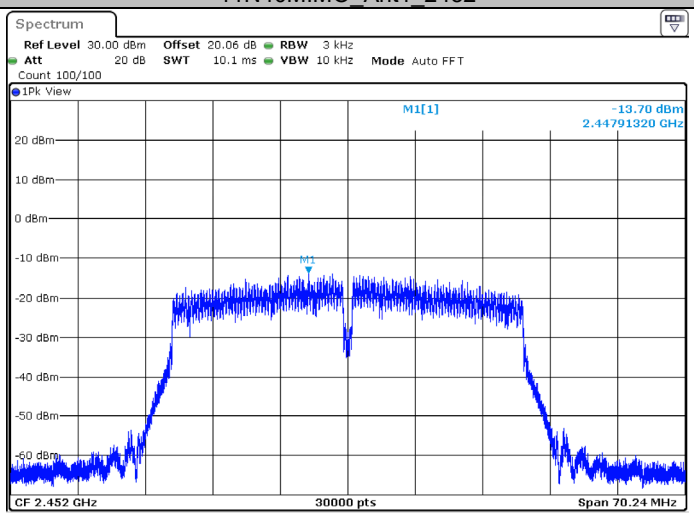

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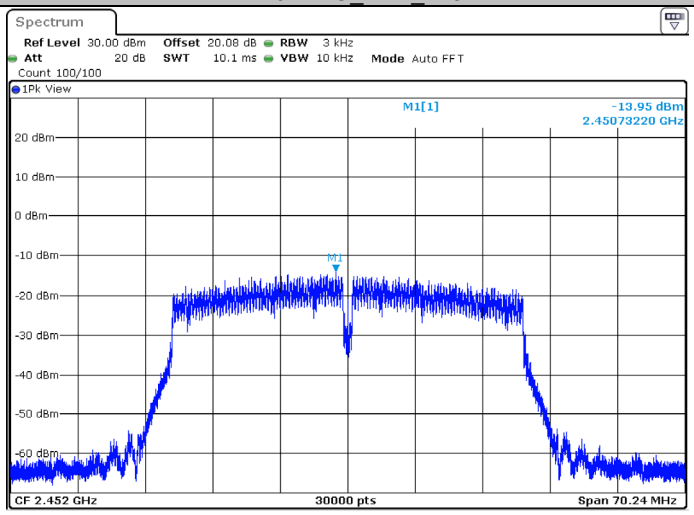
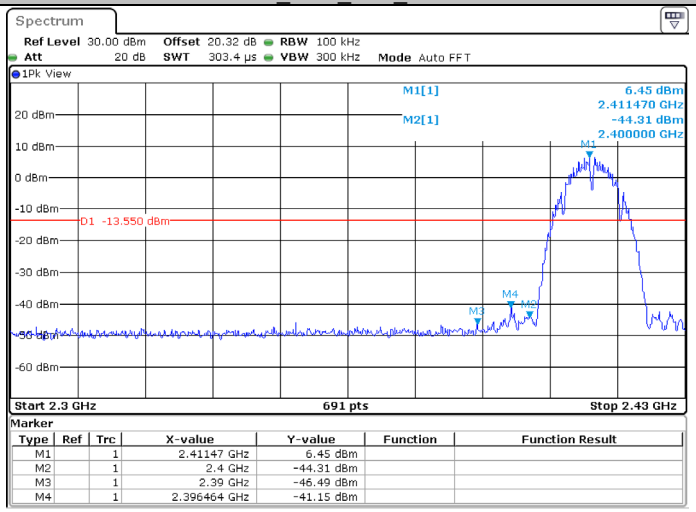


Appendix E: Band edge measurements

Test Graphs

11B_Ant1_Low_2412

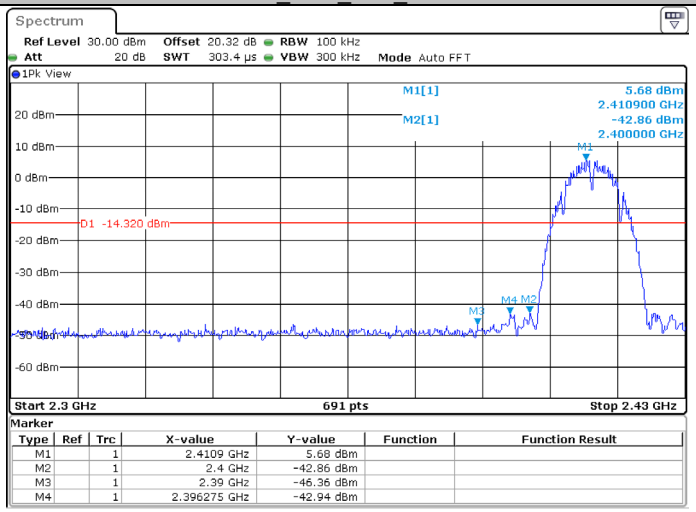


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.41147 GHz	6.45 dBm		
M2		1	2.4 GHz	-44.31 dBm		
M3		1	2.39 GHz	-46.49 dBm		
M4		1	2.396464 GHz	-41.15 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 22:33:06

11B_Ant2_Low_2412

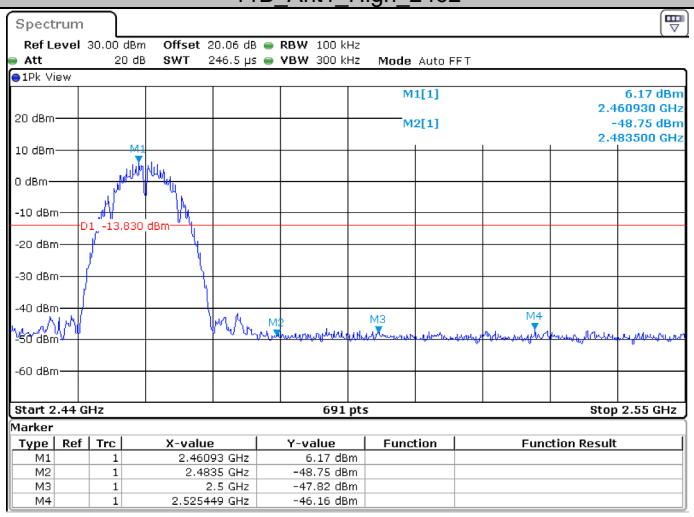


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4109 GHz	5.68 dBm		
M2		1	2.4 GHz	-42.86 dBm		
M3		1	2.39 GHz	-46.36 dBm		
M4		1	2.396275 GHz	-42.94 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 22:35:11

11B_Ant1_High_2462

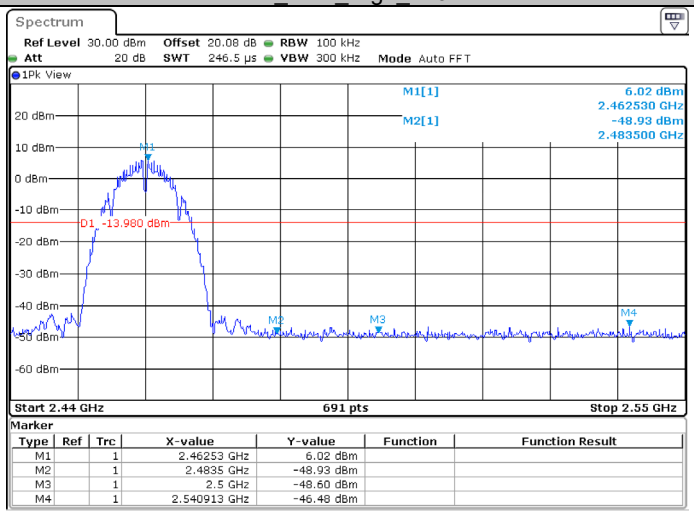


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.46093 GHz	6.17 dBm		
M2		1	2.4835 GHz	-48.75 dBm		
M3		1	2.5 GHz	-47.82 dBm		
M4		1	2.525449 GHz	-46.16 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:11:49

11B_Ant2_High_2462

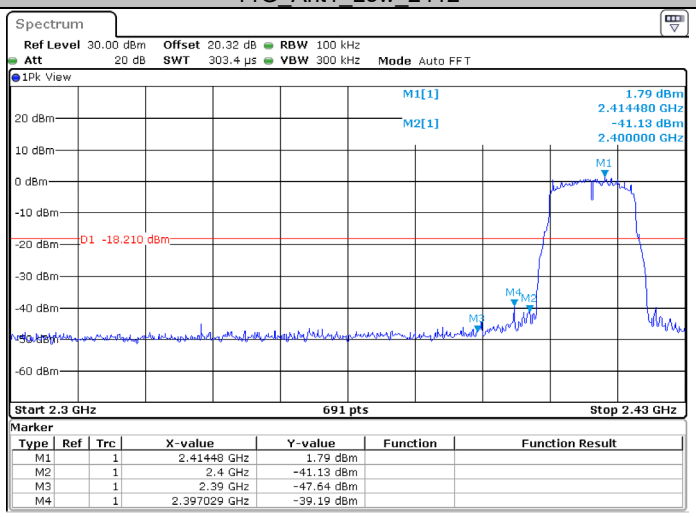


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.46253 GHz	6.02 dBm		
M2		1	2.4835 GHz	-48.93 dBm		
M3		1	2.5 GHz	-48.60 dBm		
M4		1	2.540913 GHz	-46.48 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:12:26

11G_Ant1_Low_2412



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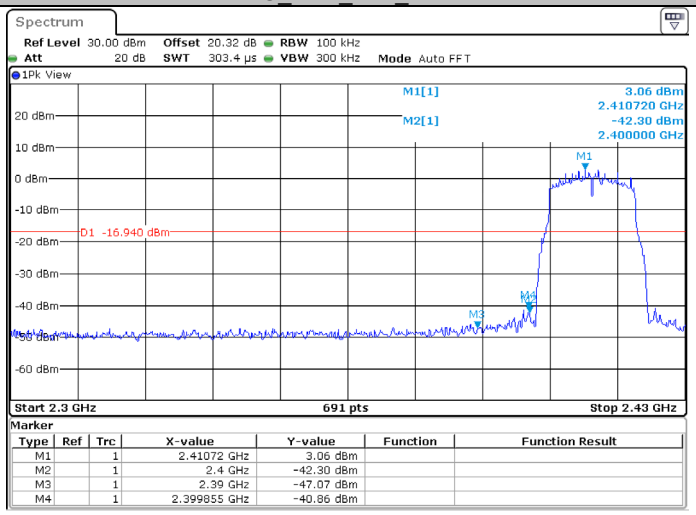
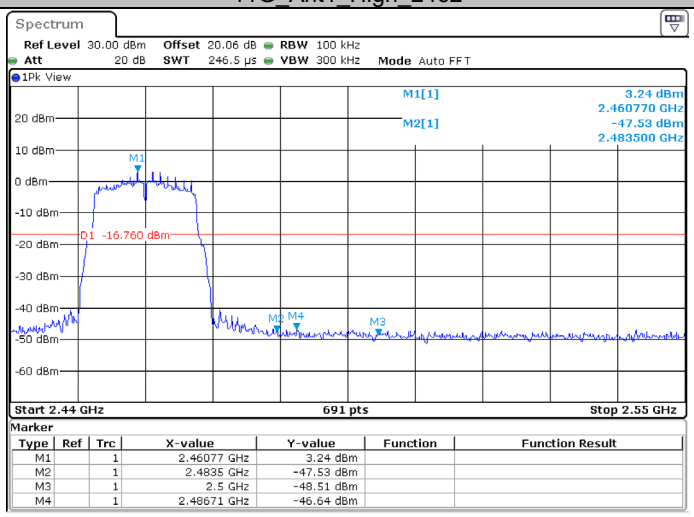


11G_Ant1_High_2462

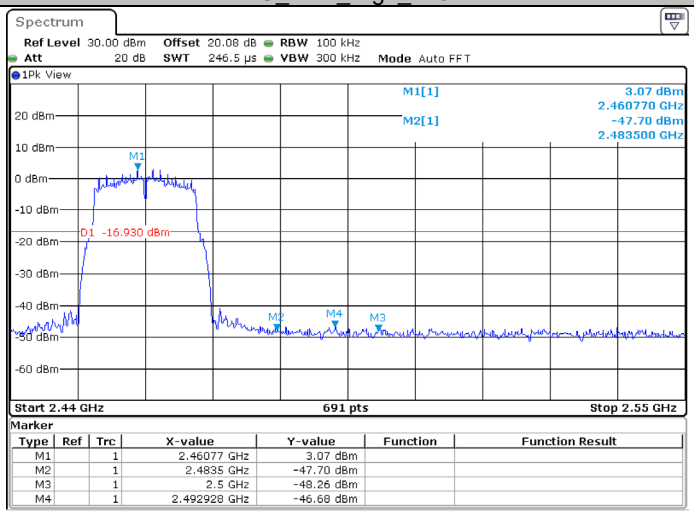


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.46077 GHz	3.24 dBm		
M2		1	2.4835 GHz	-47.53 dBm		
M3		1	2.5 GHz	-48.51 dBm		
M4		1	2.48671 GHz	-46.64 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:17:56

11G_Ant2_High_2462

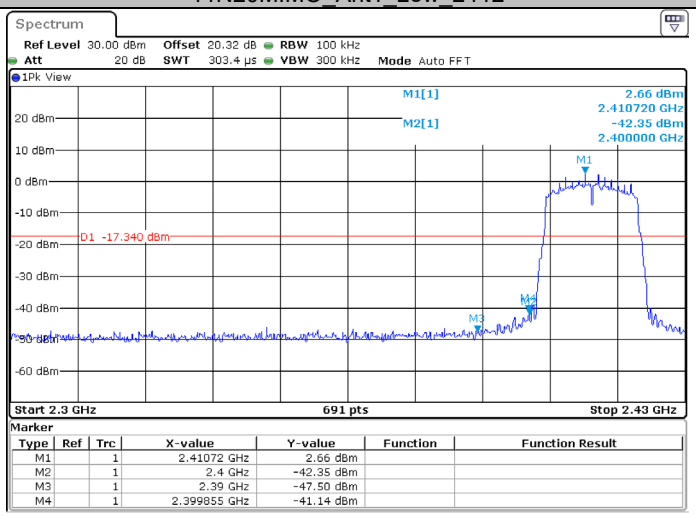


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.46077 GHz	3.07 dBm		
M2		1	2.4835 GHz	-47.70 dBm		
M3		1	2.5 GHz	-48.26 dBm		
M4		1	2.492928 GHz	-46.68 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:18:38

11N20MIMO_Ant1_Low_2412

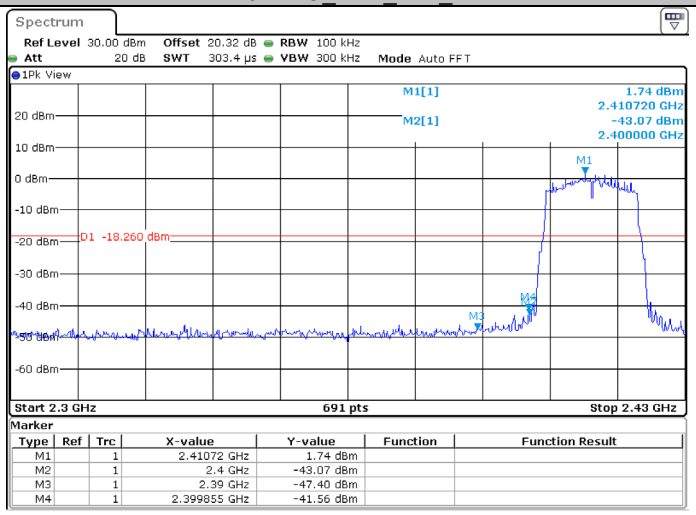


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.41072 GHz	2.66 dBm		
M2		1	2.4 GHz	-42.35 dBm		
M3		1	2.39 GHz	-47.50 dBm		
M4		1	2.399855 GHz	-41.14 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:20:38

11N20MIMO_Ant2_Low_2412

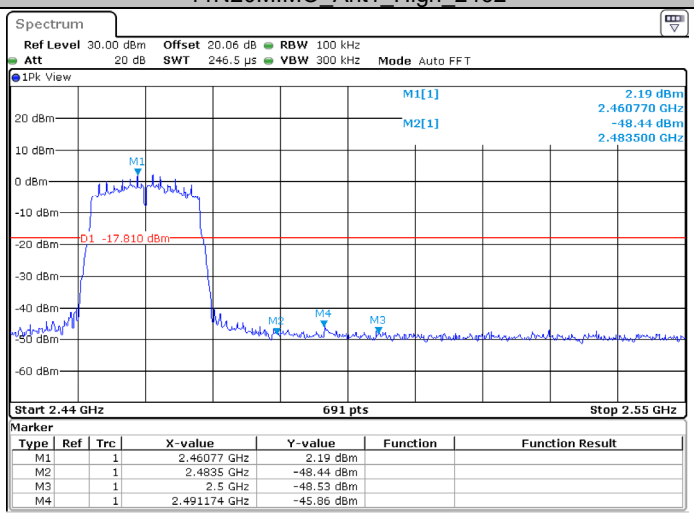


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.41072 GHz	1.74 dBm		
M2		1	2.4 GHz	-43.07 dBm		
M3		1	2.39 GHz	-47.40 dBm		
M4		1	2.399855 GHz	-41.56 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:21:16

11N20MIMO_Ant1_High_2462



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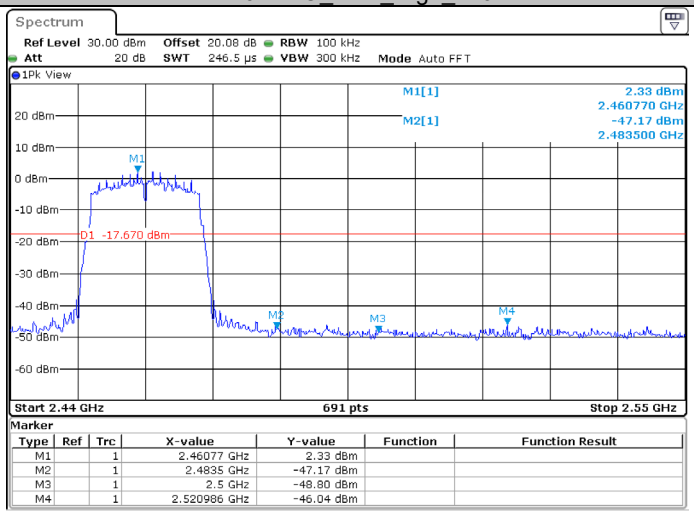
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.46077 GHz	2.19 dBm		
M2		1	2.4835 GHz	-48.44 dBm		
M3		1	2.5 GHz	-48.53 dBm		
M4		1	2.491174 GHz	-45.86 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:24:01

11N20MIMO_Ant2_High_2462

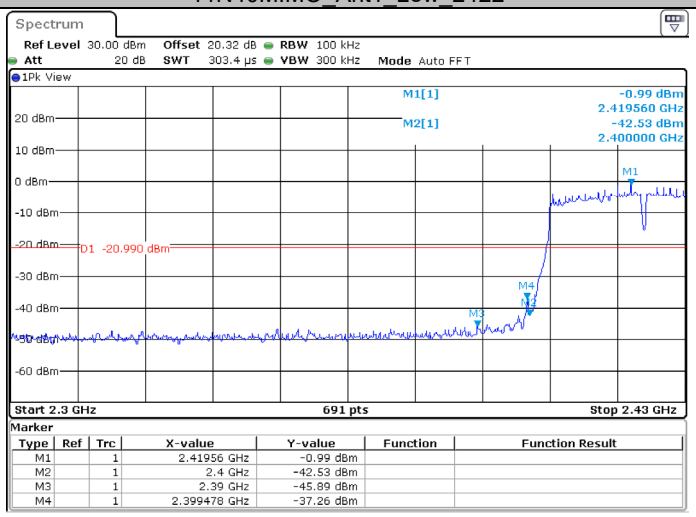


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.46077 GHz	2.33 dBm		
M2		1	2.4835 GHz	-47.17 dBm		
M3		1	2.5 GHz	-48.80 dBm		
M4		1	2.520986 GHz	-46.04 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:24:39

11N40MIMO_Ant1_Low_2422

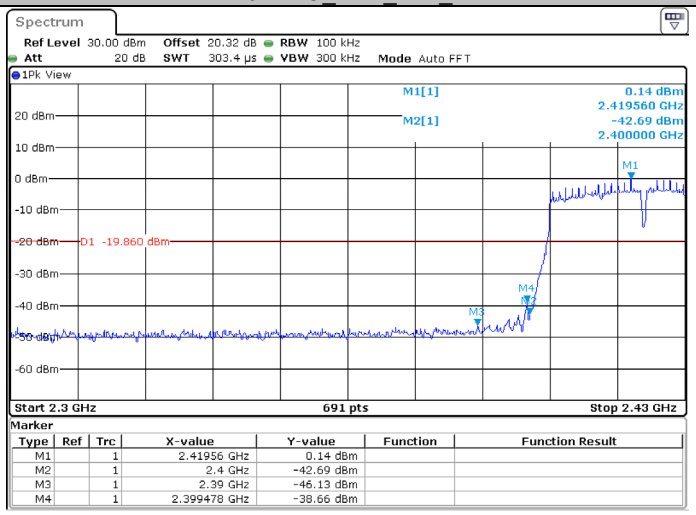


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.41956 GHz	-0.99 dBm		
M2		1	2.4 GHz	-42.53 dBm		
M3		1	2.39 GHz	-45.89 dBm		
M4		1	2.399478 GHz	-37.26 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:26:30

11N40MIMO_Ant2_Low_2422

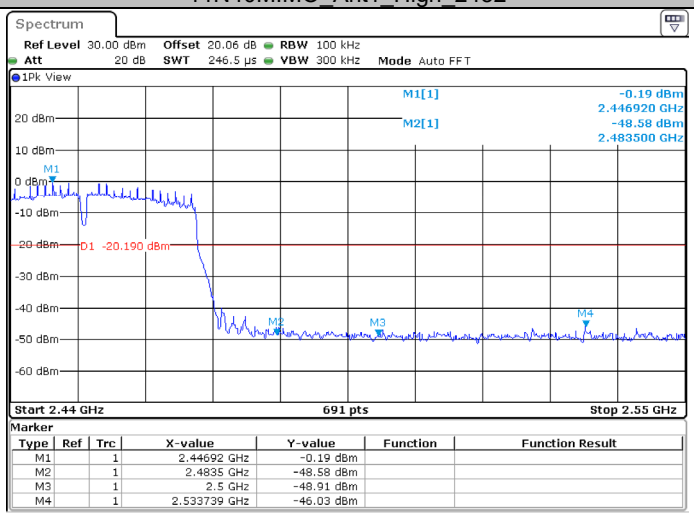


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.41956 GHz	0.14 dBm		
M2		1	2.4 GHz	-42.69 dBm		
M3		1	2.39 GHz	-46.13 dBm		
M4		1	2.399478 GHz	-38.66 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:27:07

11N40MIMO_Ant1_High_2452



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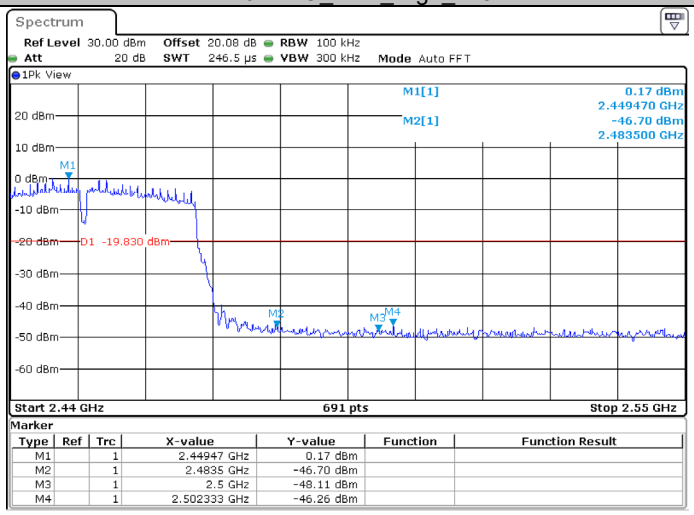
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.44692 GHz	-0.19 dBm		
M2		1	2.4835 GHz	-48.58 dBm		
M3		1	2.5 GHz	-48.91 dBm		
M4		1	2.533739 GHz	-46.03 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:29:47

11N40MIMO_Ant2_High_2452



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.44947 GHz	0.17 dBm		
M2		1	2.4835 GHz	-46.70 dBm		
M3		1	2.5 GHz	-48.11 dBm		
M4		1	2.502333 GHz	-46.26 dBm		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:30:25

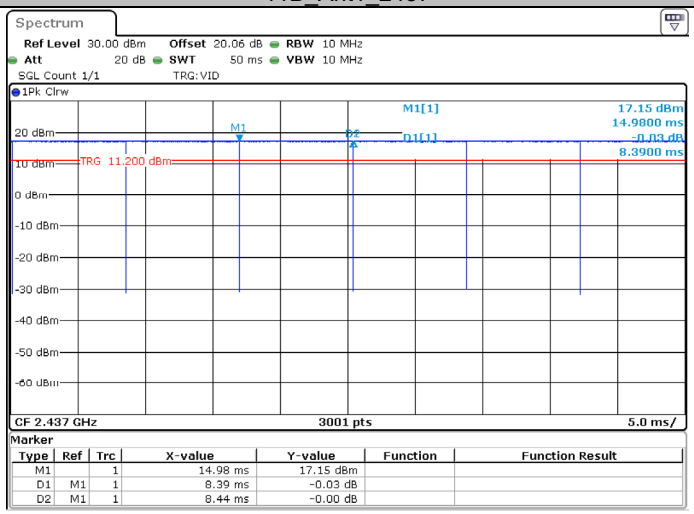
Appendix F: Duty Cycle

Test Result

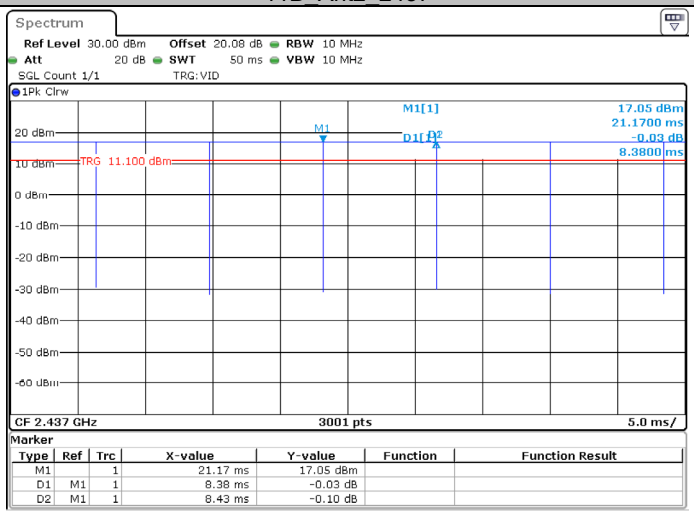
Test Mode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	1/T [Hz]	VBW Setting [kHz]
11B	Ant1	2437	8.39	8.44	99.41	-	0.01
	Ant2	2437	8.38	8.43	99.41	-	0.01
11G	Ant1	2437	1.38	1.43	96.50	725	1
	Ant2	2437	1.39	1.43	97.20	719	1
11N20MIMO	Ant1	2437	1.30	1.34	97.01	769	1
	Ant2	2437	1.29	1.34	96.27	775	1
11N40MIMO	Ant1	2437	0.65	0.70	92.86	1538	2
	Ant2	2437	0.64	0.69	92.75	1563	2

Test Graphs

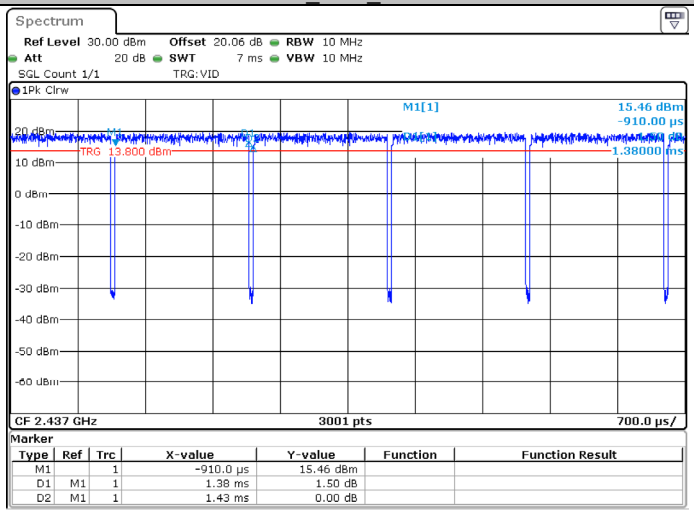
11B_Ant1_2437



11B_Ant2_2437



11G_Ant1_2437



ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:15:19

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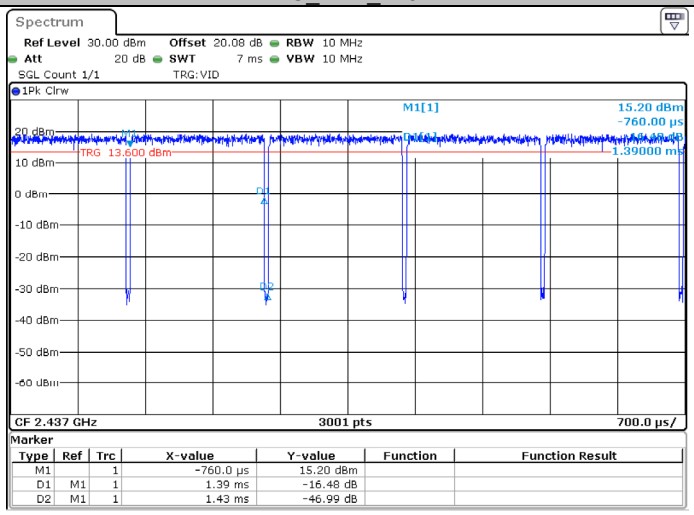
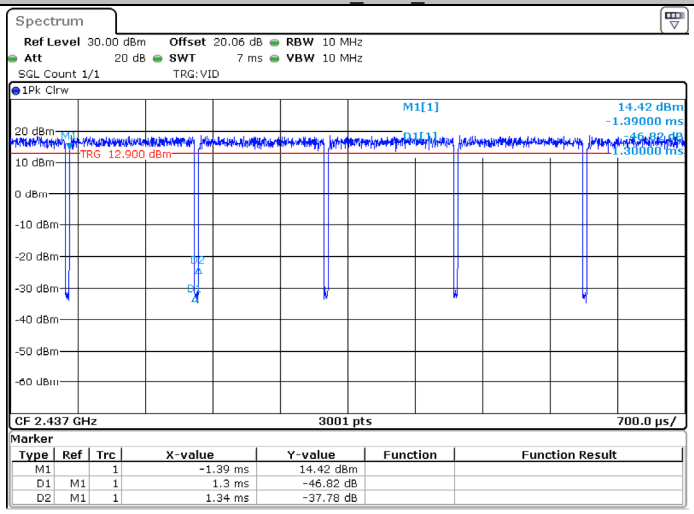


ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:16:41

11N20MIMO_Ant1_2437

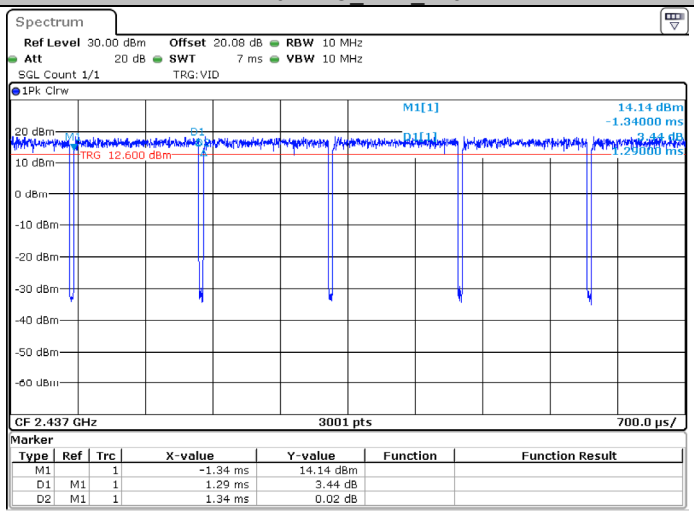


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	-1.39 ms	14.42 dBm		
D1	M1	1	1.3 ms	-46.82 dB		
D2	M1	1	1.34 ms	-37.78 dB		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:33:47

11N20MIMO_Ant2_2437

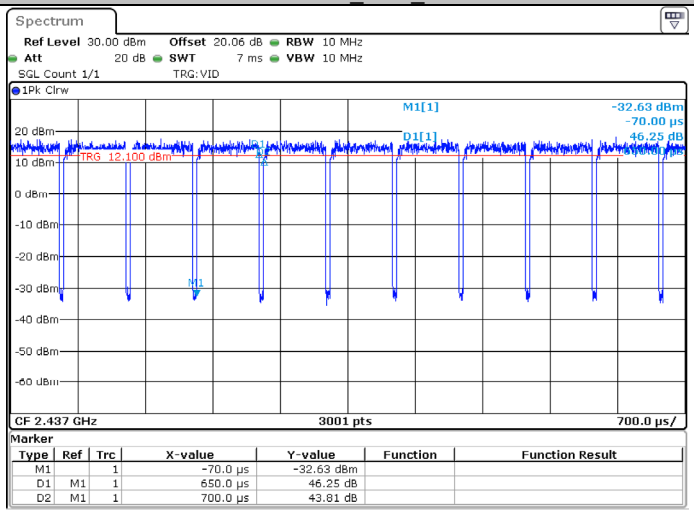


Marker

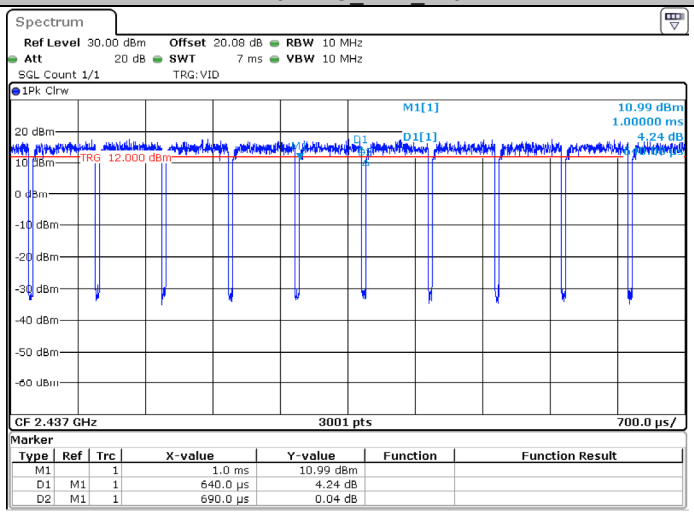
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	-1.34 ms	14.14 dBm		
D1	M1	1	1.29 ms	3.44 dB		
D2	M1	1	1.34 ms	0.02 dB		

ProjectNo.:2401W44381E-RF Tester:Tom Tan
Date: 6.SEP.2024 23:33:59

11N40MIMO_Ant1_2437



11N40MIMO_Ant2_2437



******* END OF REPORT *******