

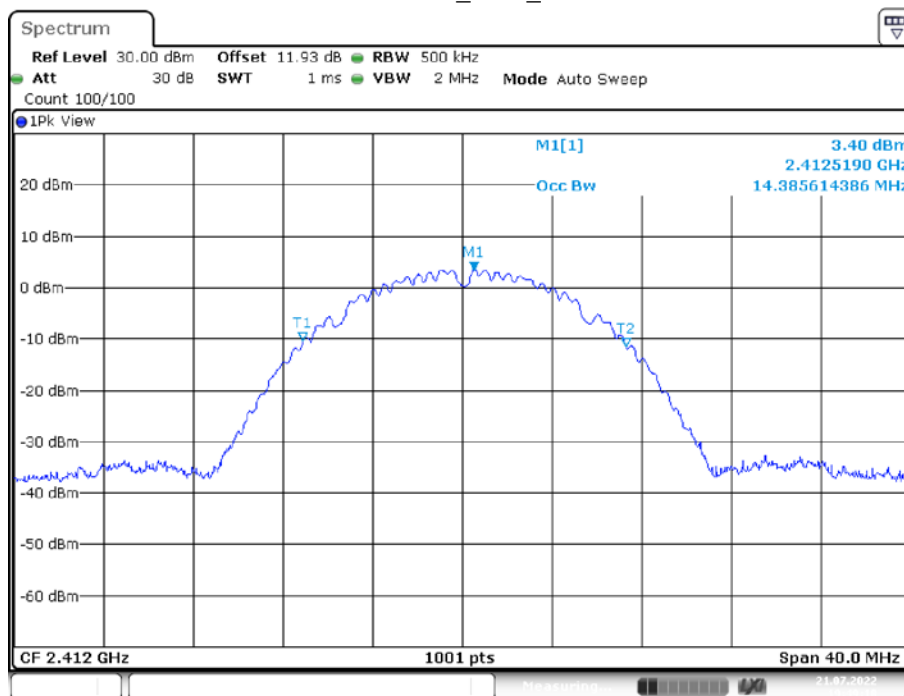
APPENDIX B: Occupied Channel Bandwidth

Test Result:

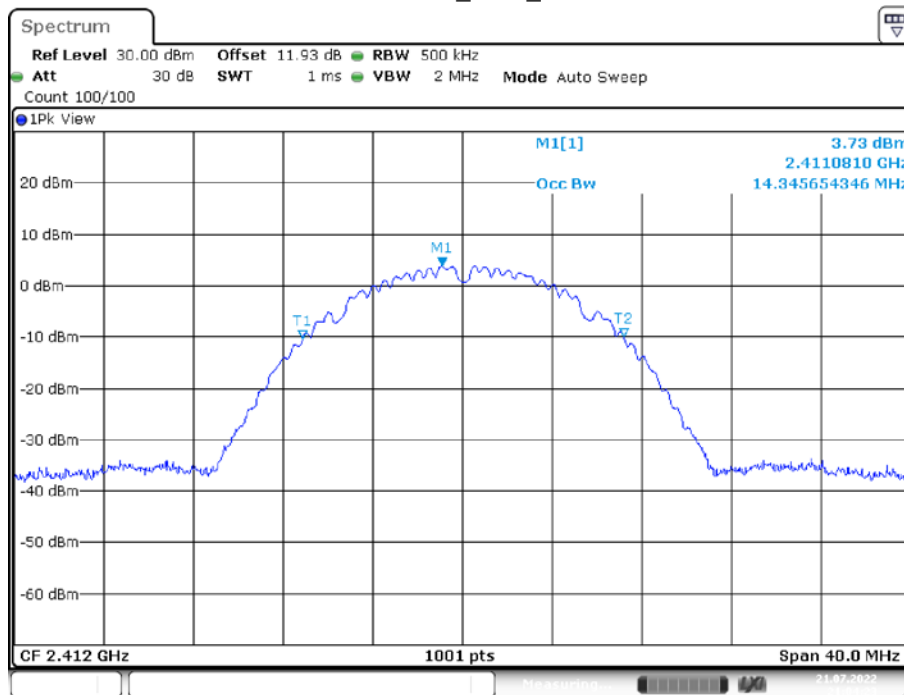
Test Mode	Antenna	Channel	OCB [MHz]	Limit[MHz]	Verdict
11B MIMO	Ant1	2412	14.386	---	PASS
	Ant2	2412	14.346	---	PASS
	Ant1	2442	14.426	---	PASS
	Ant2	2442	14.306	---	PASS
	Ant1	2472	14.386	---	PASS
	Ant2	2472	14.306	---	PASS
11G MIMO	Ant1	2412	17.143	---	PASS
	Ant2	2412	16.703	---	PASS
	Ant1	2442	17.183	---	PASS
	Ant2	2442	16.663	---	PASS
	Ant1	2472	17.143	---	PASS
	Ant2	2472	16.743	---	PASS
11N20 MIMO	Ant1	2412	17.902	---	PASS
	Ant2	2412	17.542	---	PASS
	Ant1	2442	17.902	---	PASS
	Ant2	2442	17.582	---	PASS
	Ant1	2472	17.902	---	PASS
	Ant2	2472	17.622	---	PASS
11N40 MIMO	Ant1	2422	36.124	---	PASS
	Ant2	2422	36.284	---	PASS
	Ant1	2442	36.044	---	PASS
	Ant2	2442	36.364	---	PASS
	Ant1	2462	36.124	---	PASS
	Ant2	2462	36.284	---	PASS

Test Graphs:

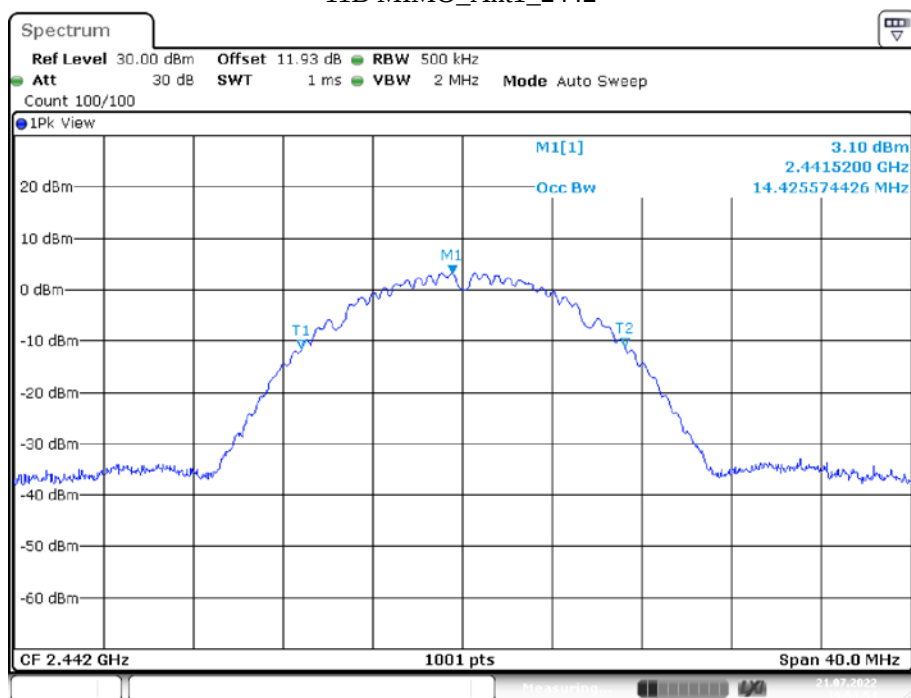
11B MIMO_Ant1_2412



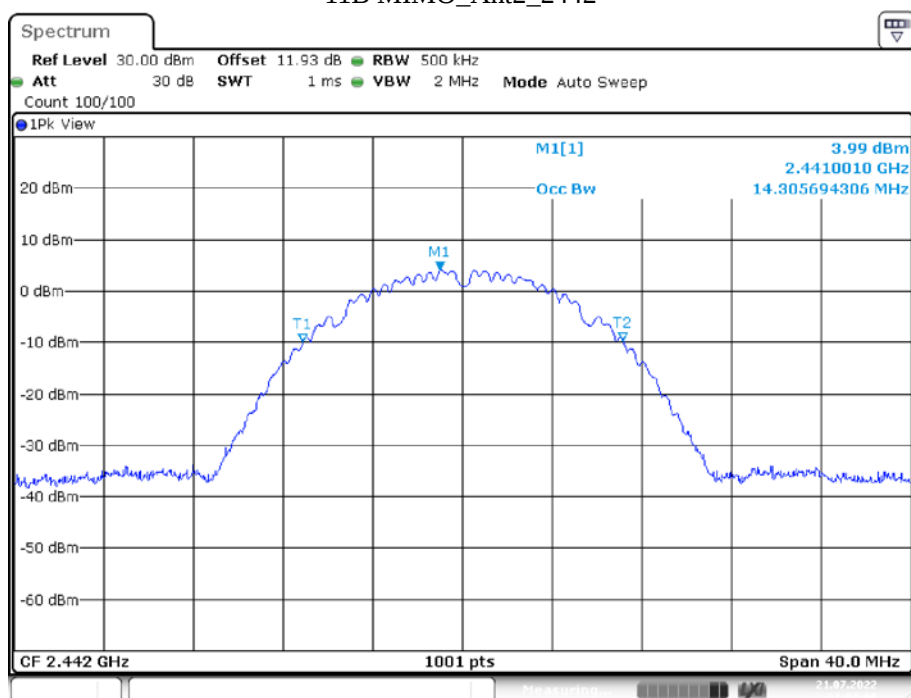
11B MIMO_Ant2_2412



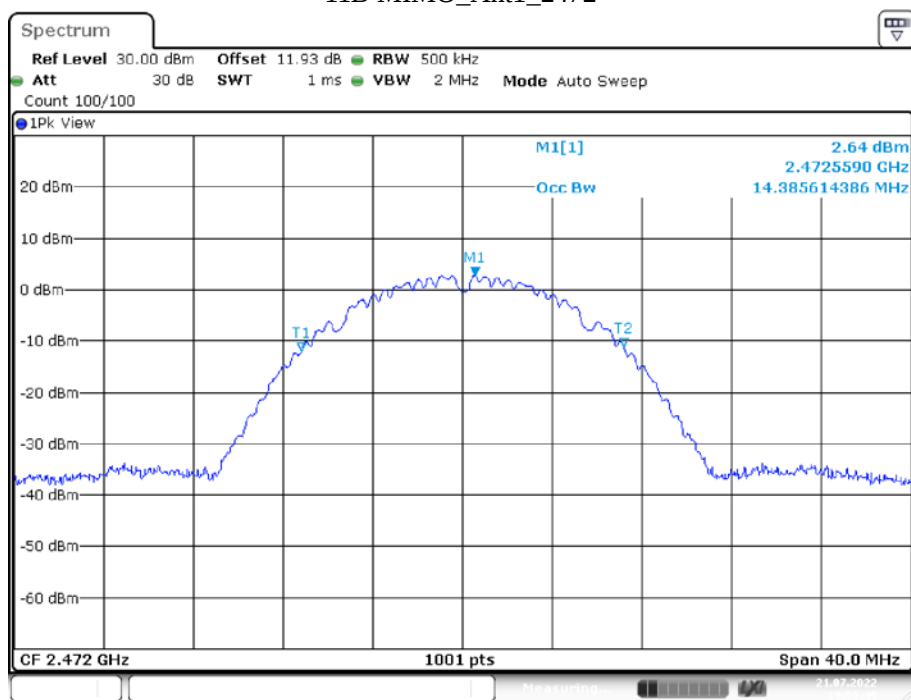
11B MIMO_Ant1_2442



11B MIMO_Ant2_2442

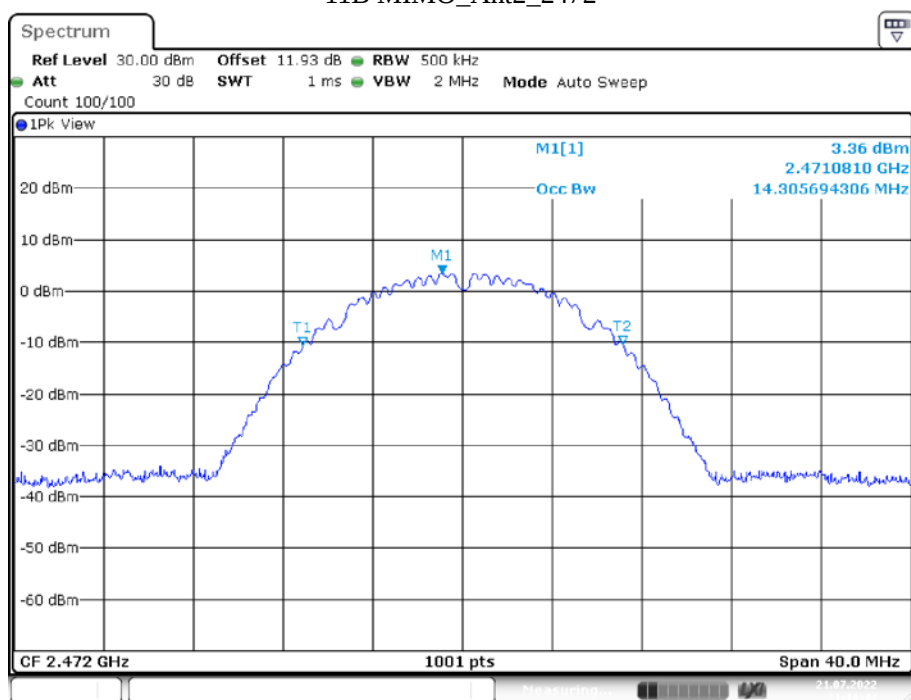


11B MIMO_Ant1_2472



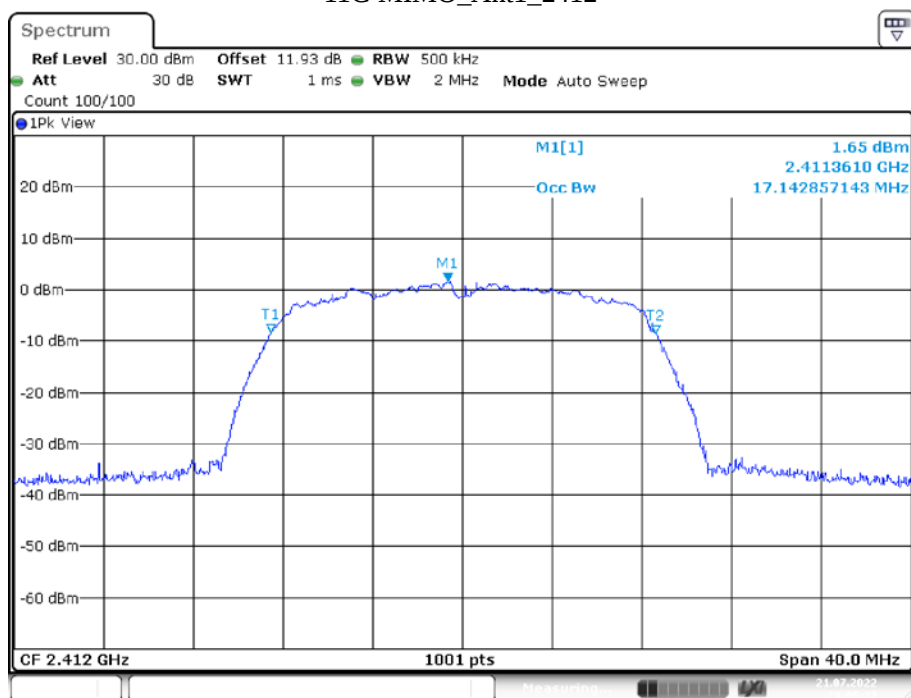
Date: 21.JUL.2022 19:59:50

11B MIMO_Ant2_2472



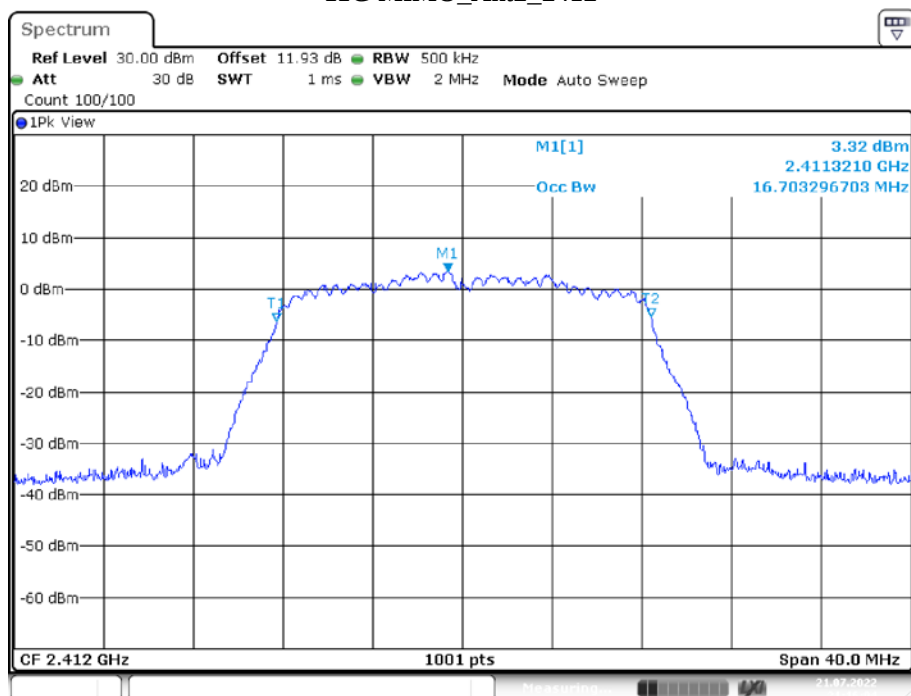
Date: 21.JUL.2022 21:11:45

11G MIMO_Ant1_2412



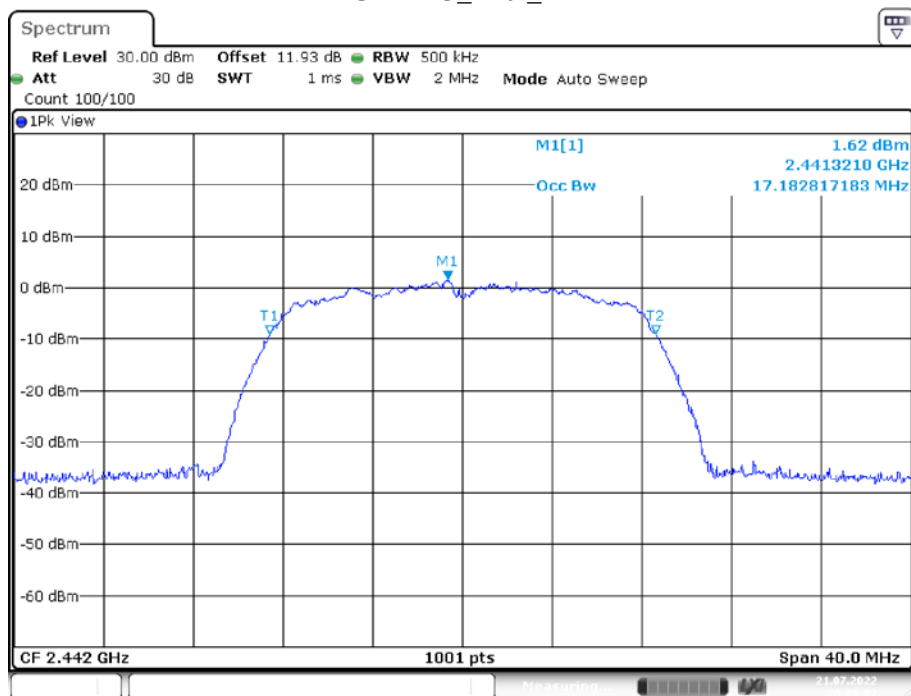
Date: 21.JUL.2022 20:05:28

11G MIMO_Ant2_2412



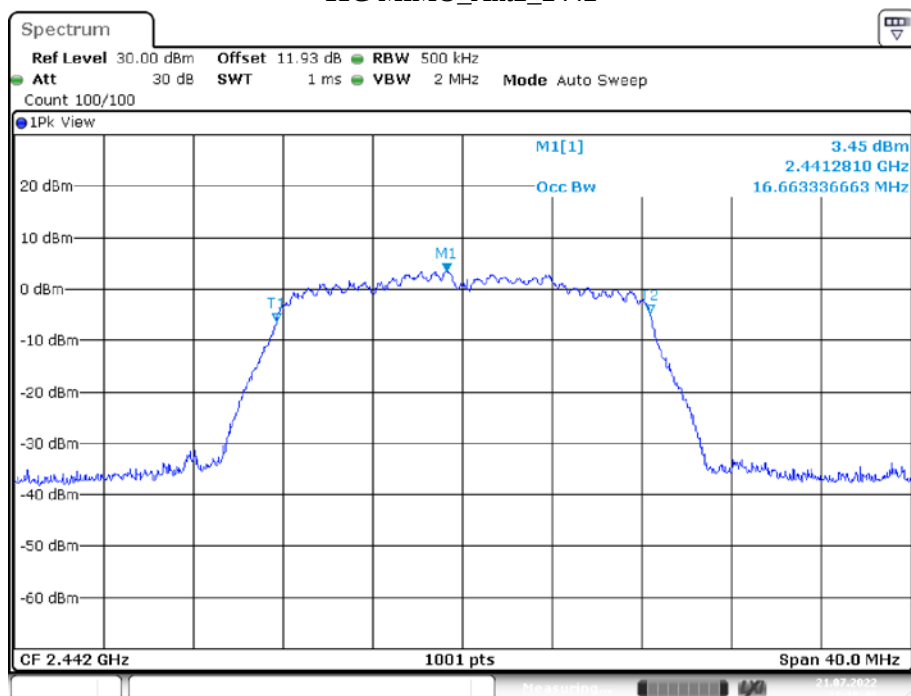
Date: 21.JUL.2022 21:16:05

11G MIMO_Ant1_2442



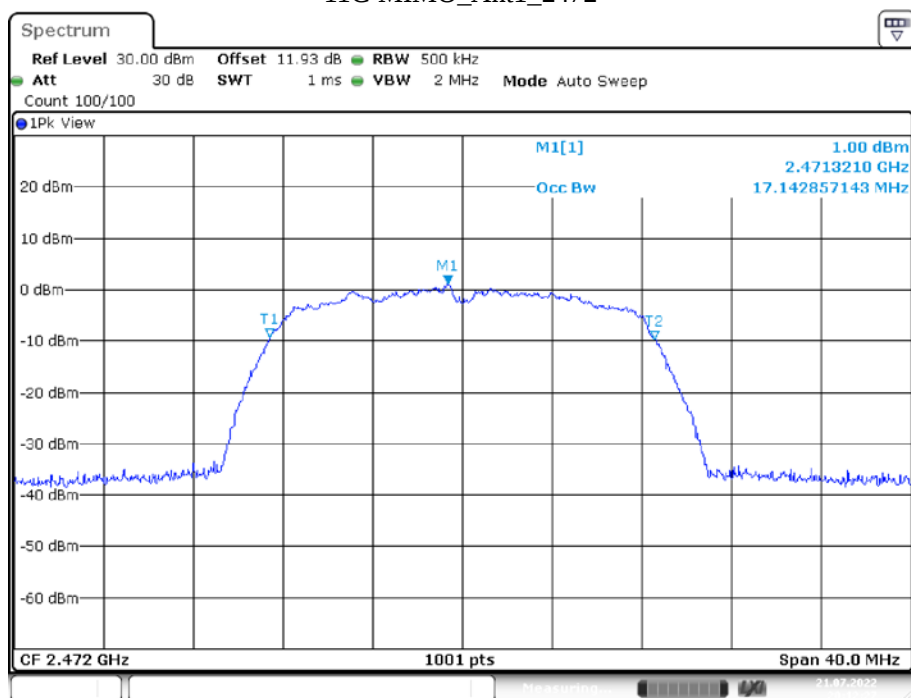
Date: 21.JUL.2022 20:09:03

11G MIMO_Ant2_2442

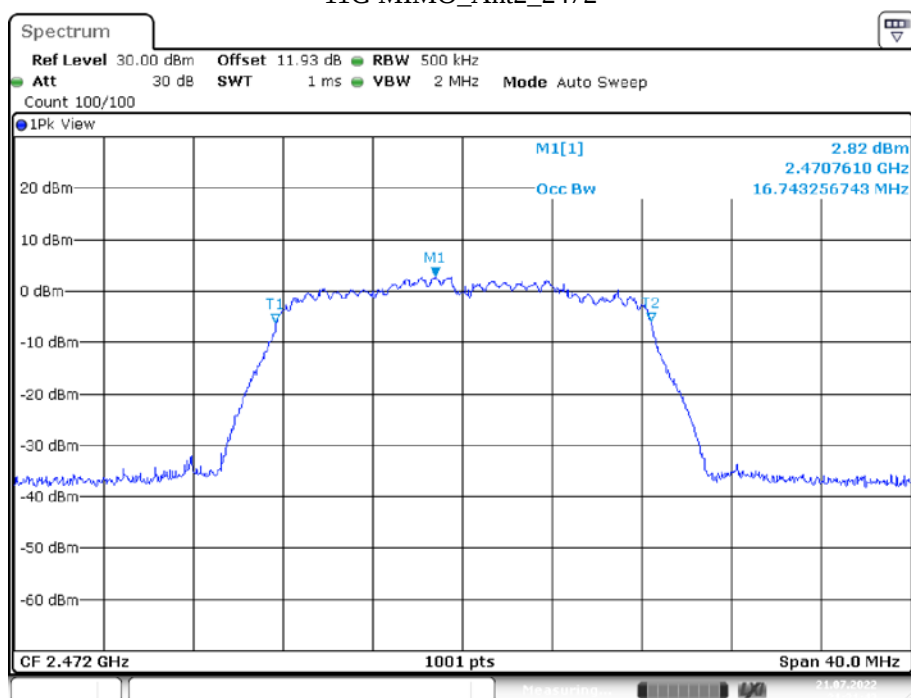


Date: 21.JUL.2022 21:19:40

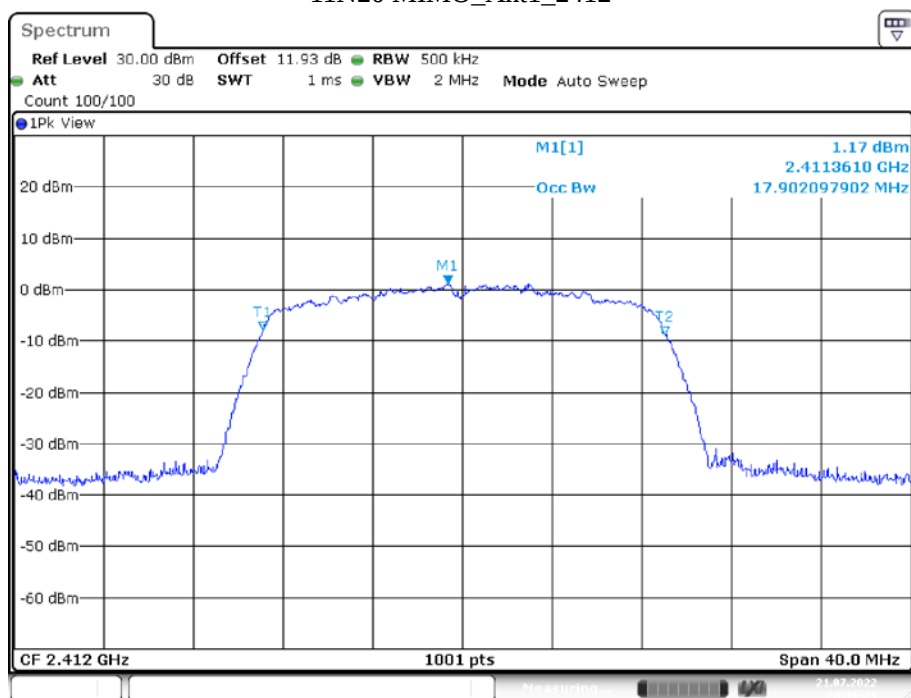
11G MIMO_Ant1_2472



11G MIMO_Ant2_2472

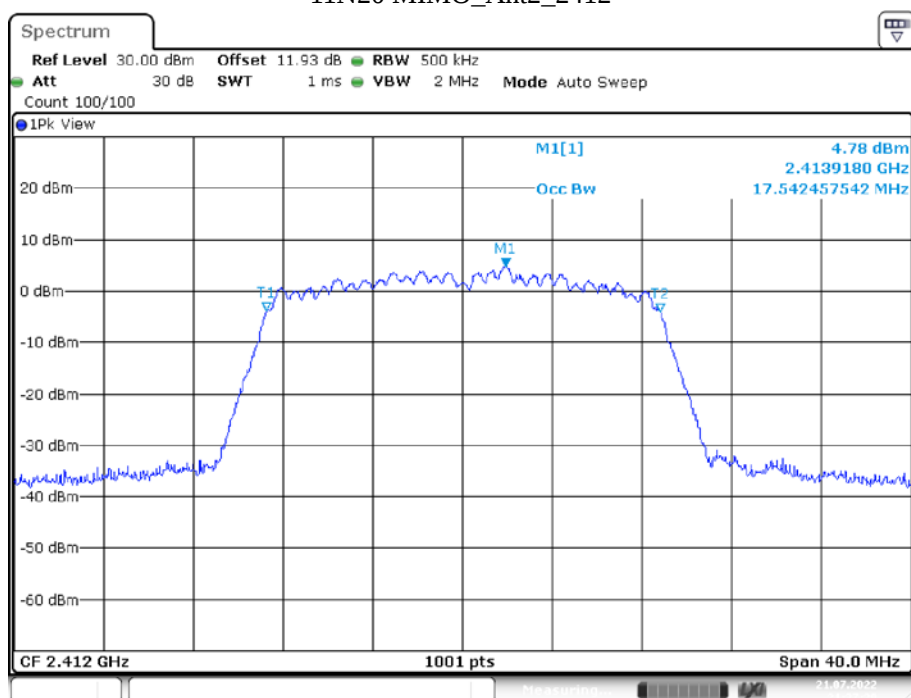


11N20 MIMO_Ant1_2412



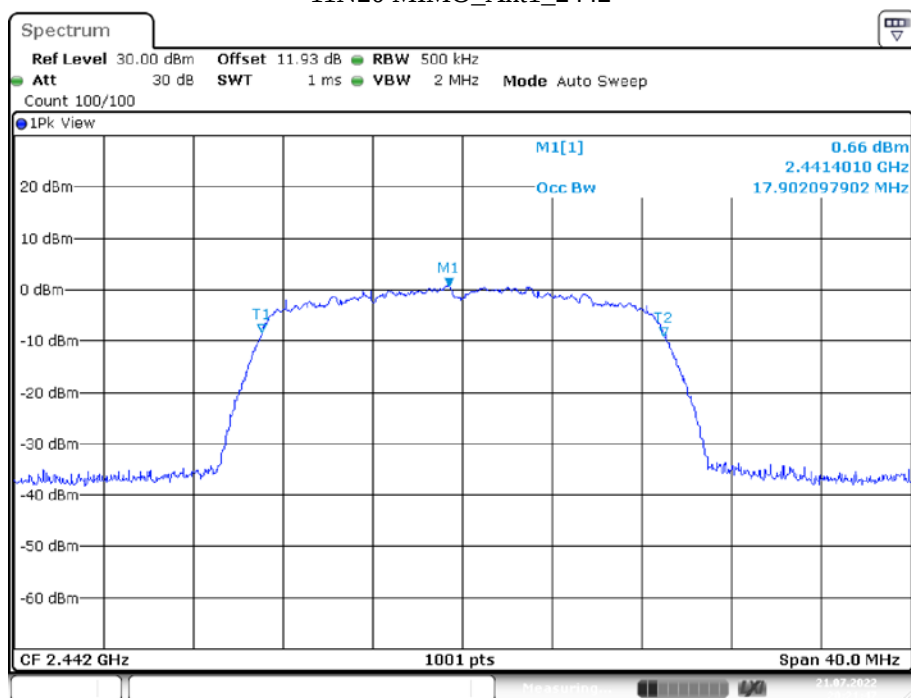
Date: 21.JUL.2022 20:16:22

11N20 MIMO_Ant2_2412

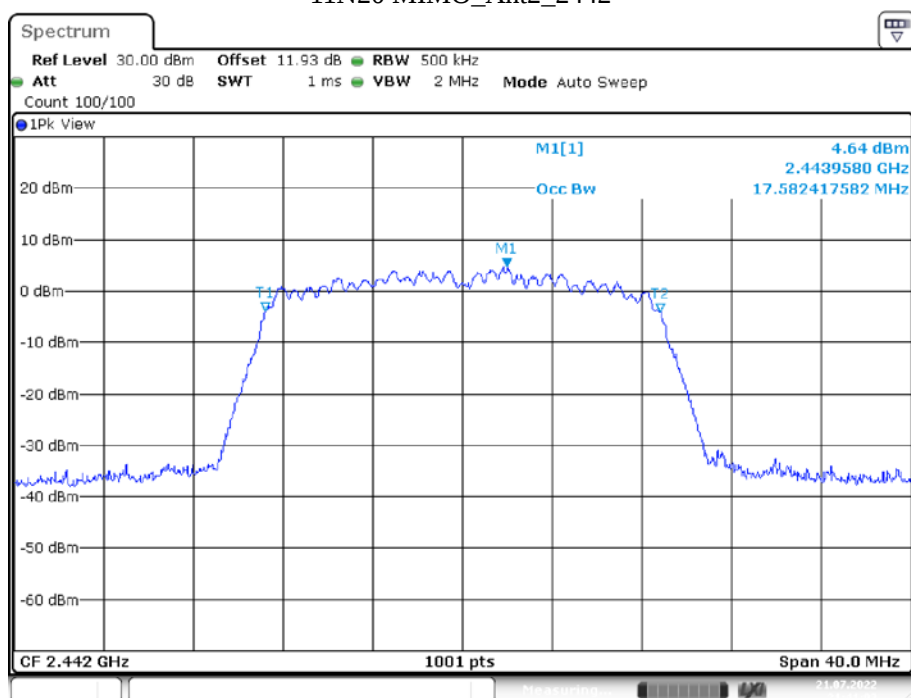


Date: 21.JUL.2022 21:37:30

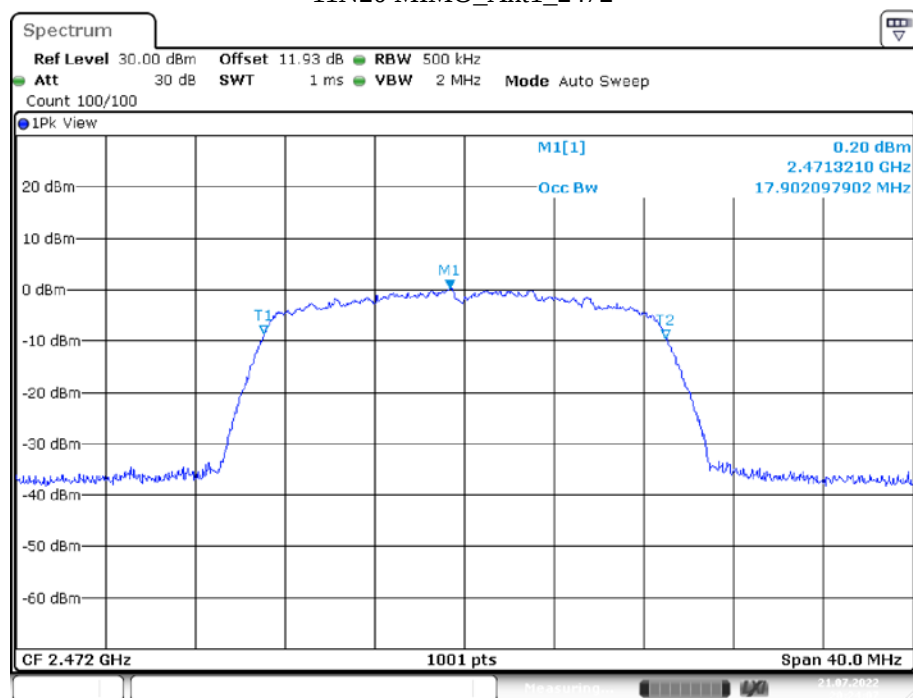
11N20 MIMO_Ant1_2442



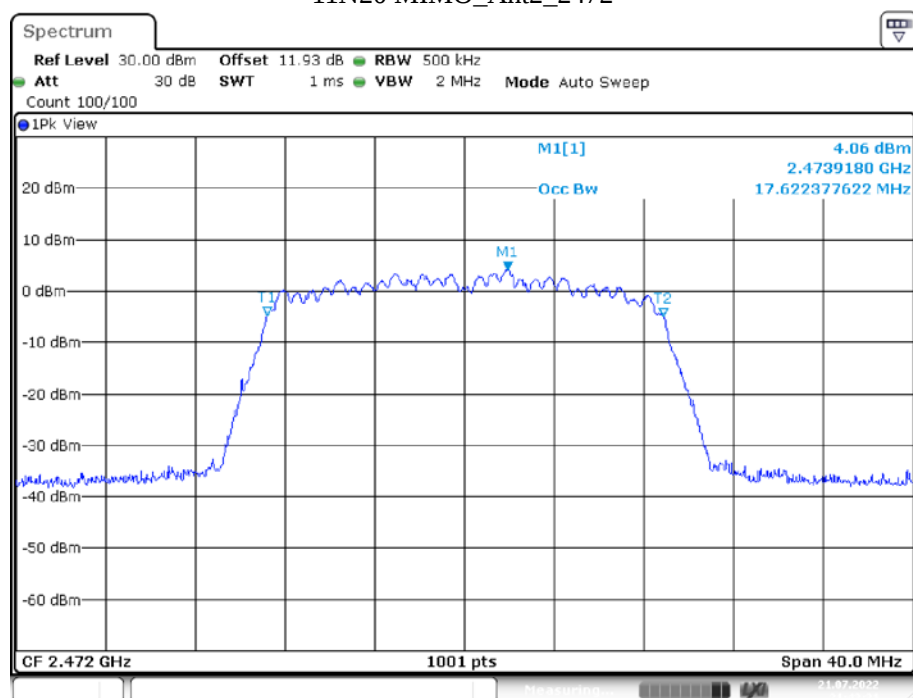
11N20 MIMO_Ant2_2442



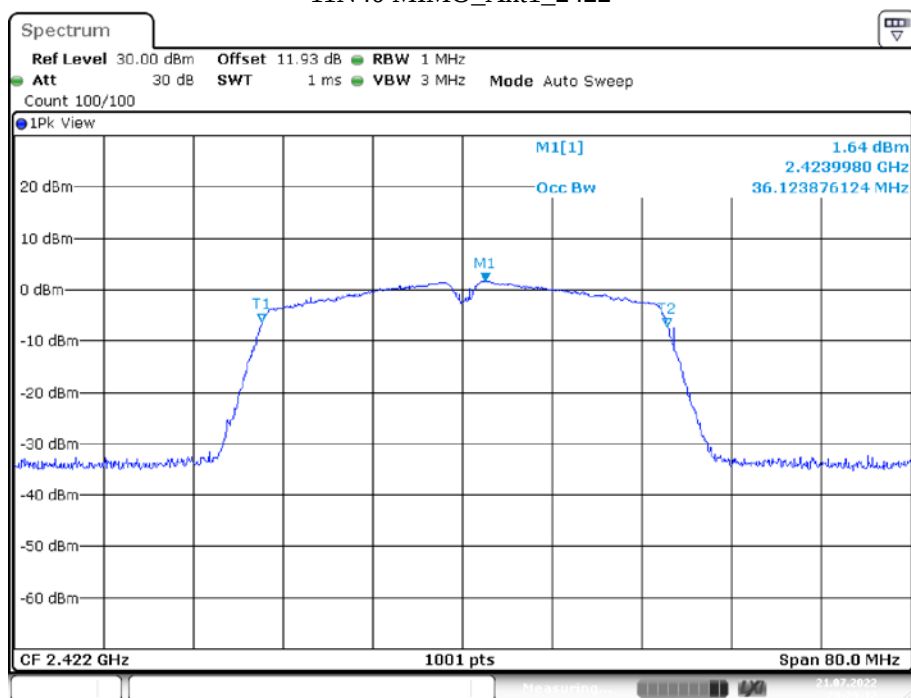
11N20 MIMO_Ant1_2472



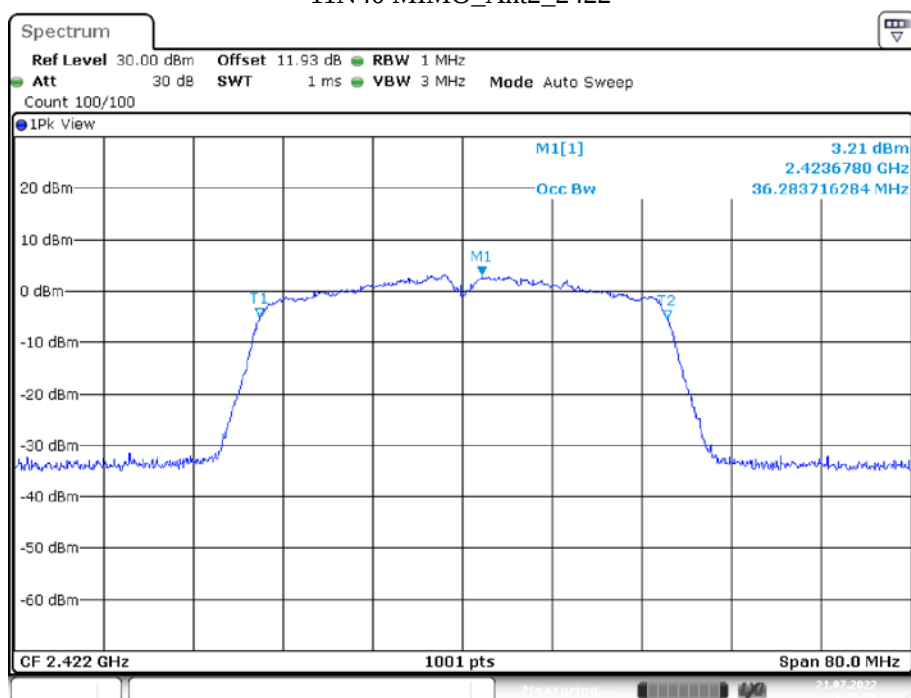
11N20 MIMO_Ant2_2472



11N40 MIMO_Ant1_2422



11N40 MIMO_Ant2_2422



Spectrum

Ref Level 30.00 dBm Offset 11.93 dB RBW 1 MHz
 Att 30 dB SWT 1 ms VBW 3 MHz Mode Auto Sweep
 Count 100/100

● IPk View

M1[1] 1.80 dBm
 2.4455160 GHz
 36.043956044 MHz

Occ Bw

T1 M1 T2

CF 2.442 GHz 1001 pts Span 80.0 MHz

21.07.2022

Date: 21.JUL.2022 20:33:14

Spectrum

Ref Level 30.00 dBm Offset 11.93 dB RBW 1 MHz
Att 30 dB SWT 1 ms VBW 3 MHz Mode Auto Sweep
Count 100/100

● LPk View

M1[1] 3.34 dBm
Occ Bw 2.4390430 GHz
36.363636364 MHz

20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm

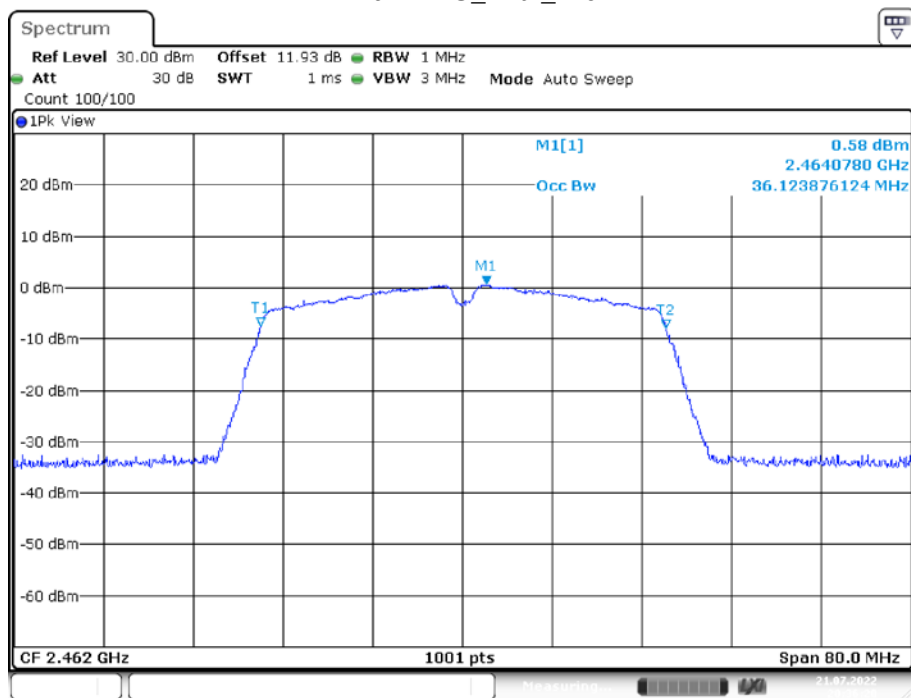
T1 M1 T2

CF 2.442 GHz 1001 pts Span 80.0 MHz

21.07.2022

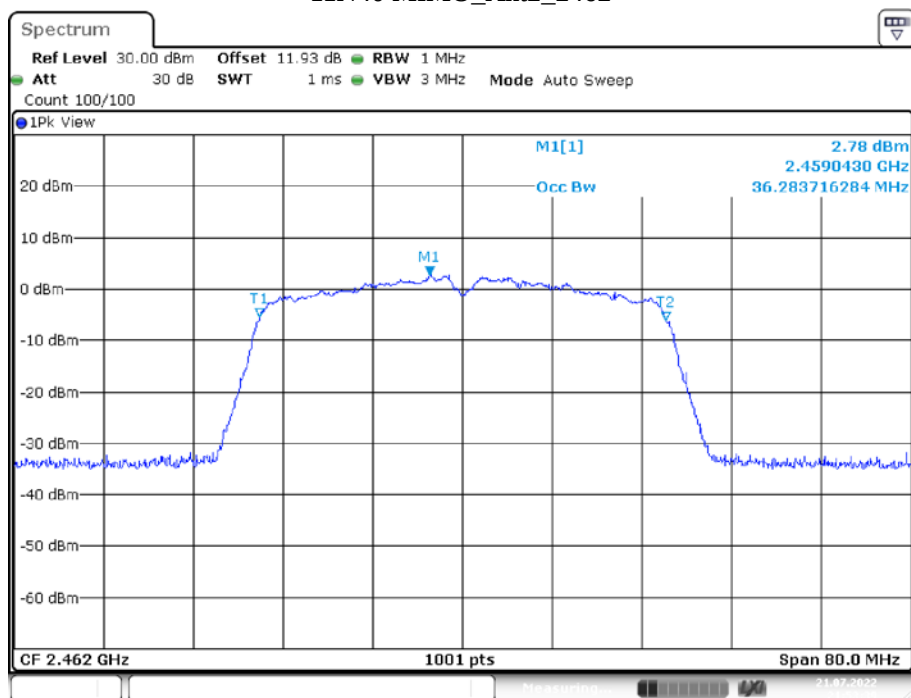
Date: 21.JUL.2022 21:50:53

11N40 MIMO_Ant1_2462



Date: 21.JUL.2022 20:36:21

11N40 MIMO_Ant2_2462



Date: 21.JUL.2022 21:53:40

APPENDIX C: Maximum conducted output power**Test Result**

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B MIMO	Ant1	2412	10.89	<=30	PASS
	Ant2	2412	11.55	<=30	PASS
	total	2412	14.24	<=30	PASS
	Ant1	2442	10.46	<=30	PASS
	Ant2	2442	11.40	<=30	PASS
	total	2442	13.97	<=30	PASS
	Ant1	2472	10.06	<=30	PASS
	Ant2	2472	10.88	<=30	PASS
	total	2472	13.50	<=30	PASS
11G MIMO	Ant1	2412	10.24	<=30	PASS
	Ant2	2412	11.26	<=30	PASS
	total	2412	13.79	<=30	PASS
	Ant1	2442	10.22	<=30	PASS
	Ant2	2442	11.35	<=30	PASS
	total	2442	13.83	<=30	PASS
	Ant1	2472	8.97	<=30	PASS
	Ant2	2472	10.87	<=30	PASS
	total	2472	13.03	<=30	PASS
11N20 MIMO	Ant1	2412	10.12	<=30	PASS
	Ant2	2412	10.84	<=30	PASS
	total	2412	13.51	<=30	PASS
	Ant1	2442	10.10	<=30	PASS
	Ant2	2442	11.84	<=30	PASS
	total	2442	14.07	<=30	PASS
	Ant1	2472	9.39	<=30	PASS
	Ant2	2472	11.39	<=30	PASS
	total	2472	13.51	<=30	PASS

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11N40 MIMO	Ant1	2422	8.35	<=30	PASS
	Ant2	2422	9.02	<=30	PASS
	total	2422	11.71	<=30	PASS
	Ant1	2442	7.73	<=30	PASS
	Ant2	2442	9.15	<=30	PASS
	total	2442	11.51	<=30	PASS
	Ant1	2462	7.26	<=30	PASS
	Ant2	2462	8.30	<=30	PASS
	total	2462	10.82	<=30	PASS

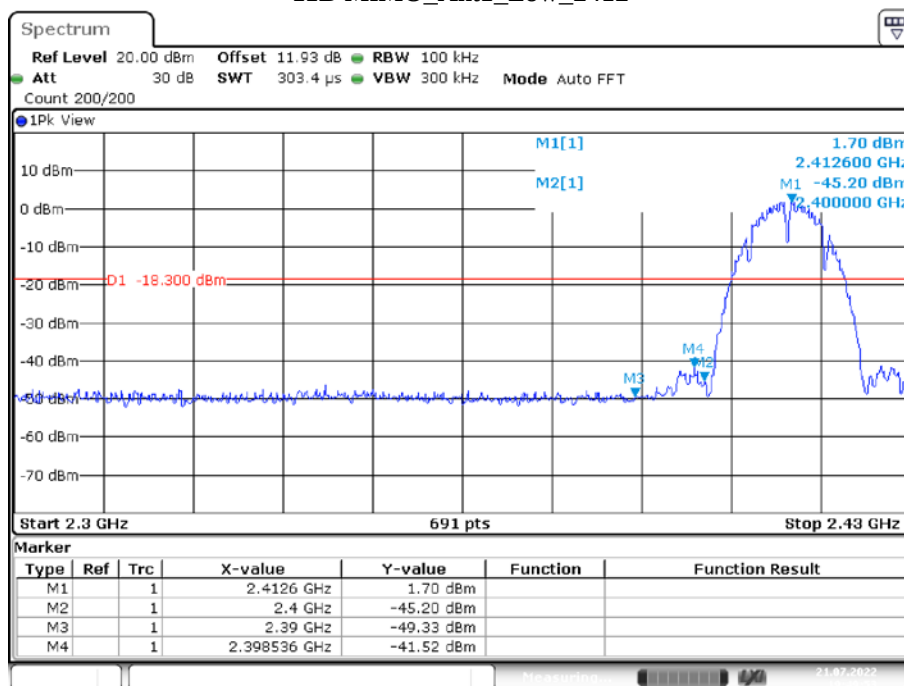
Note: The maximum antenna gain is 6 dBi. The device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements on IEEE 802.11 devices:

Array Gain = 0dB (i.e., no array gain) For $N_{ANT} \leq 4$;

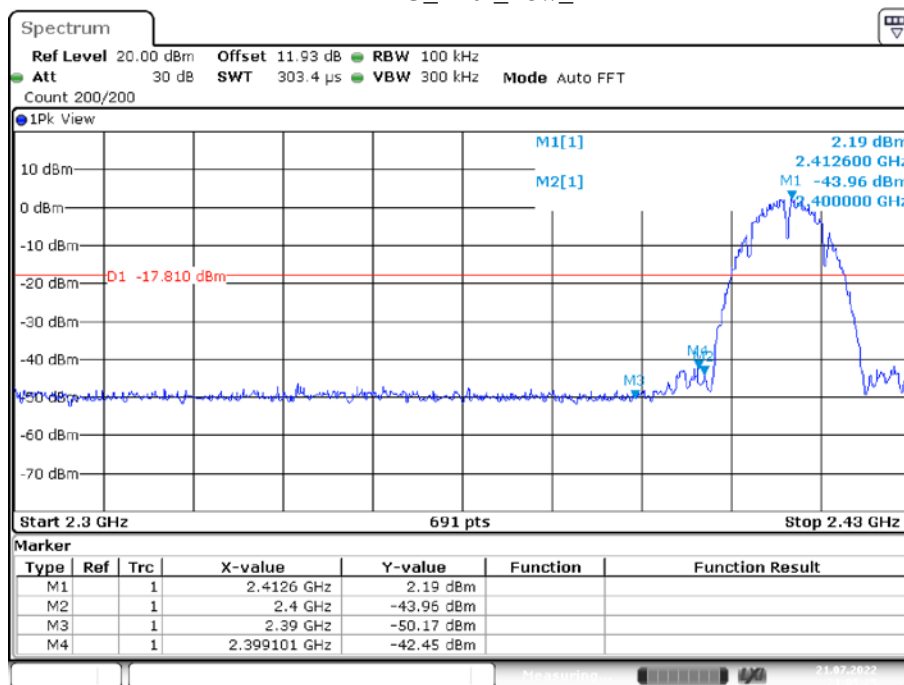
So: Directional gain=6dBi, the limit is not reduced.

APPENDIX D: Band edge measurements**Test Graphs**

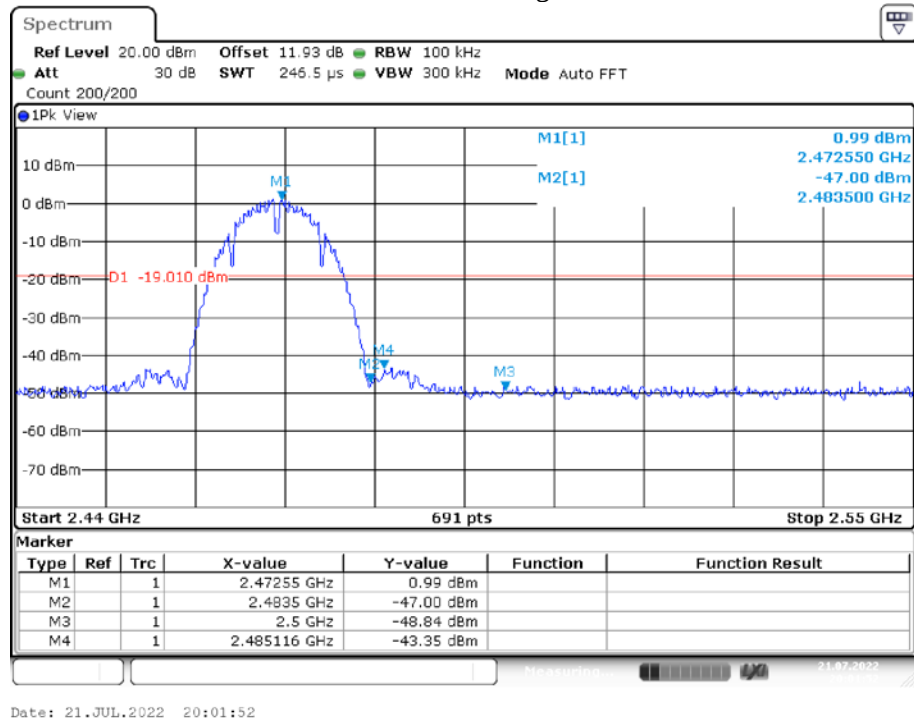
11B MIMO_Ant1_Low_2412



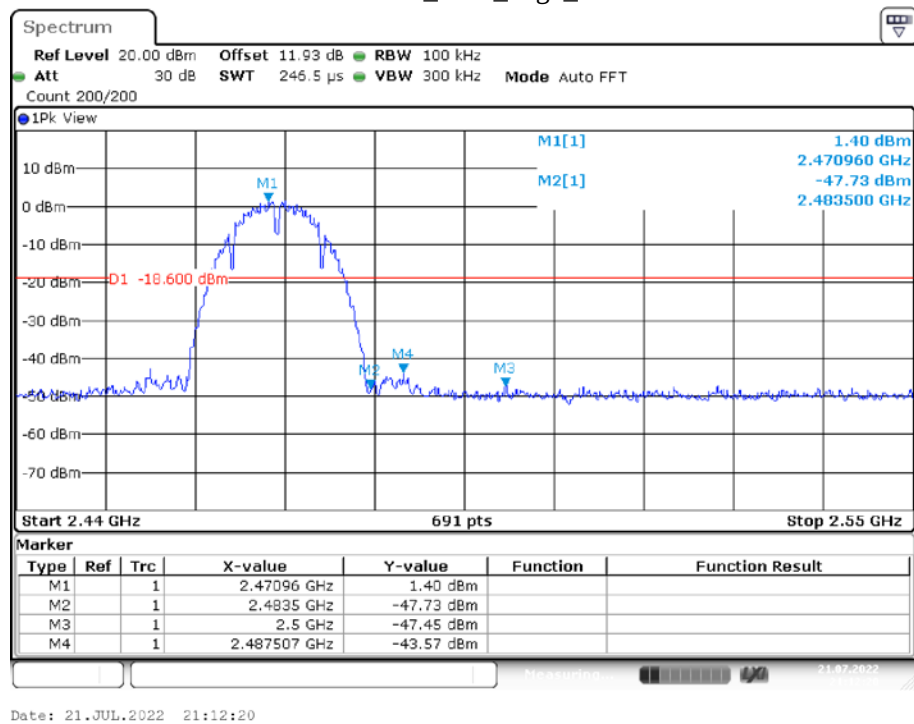
11B MIMO_Ant1_Low_2412



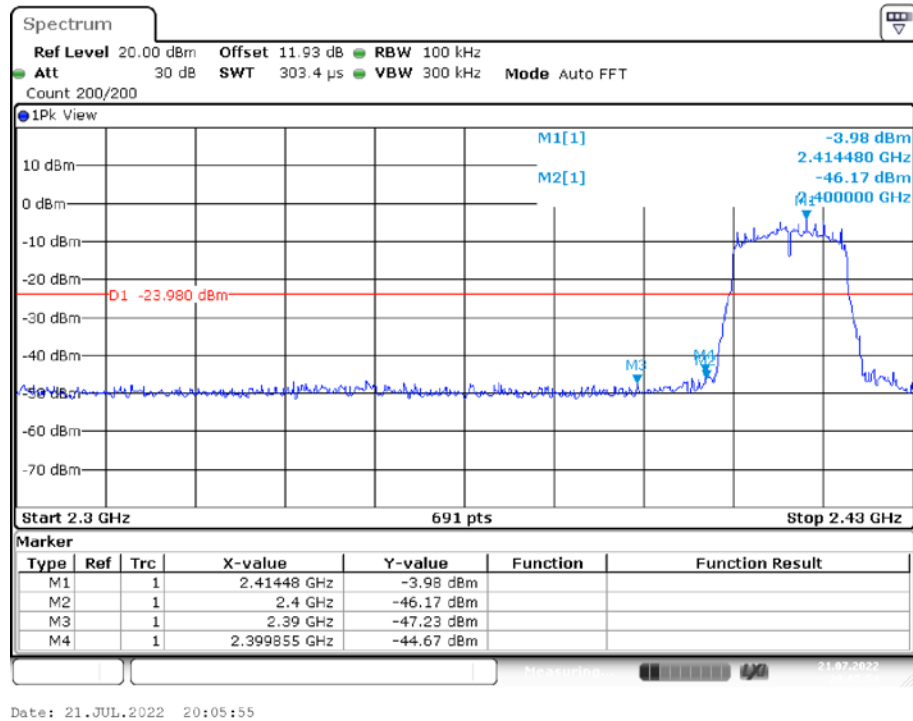
11B MIMO_Ant1_High_2472



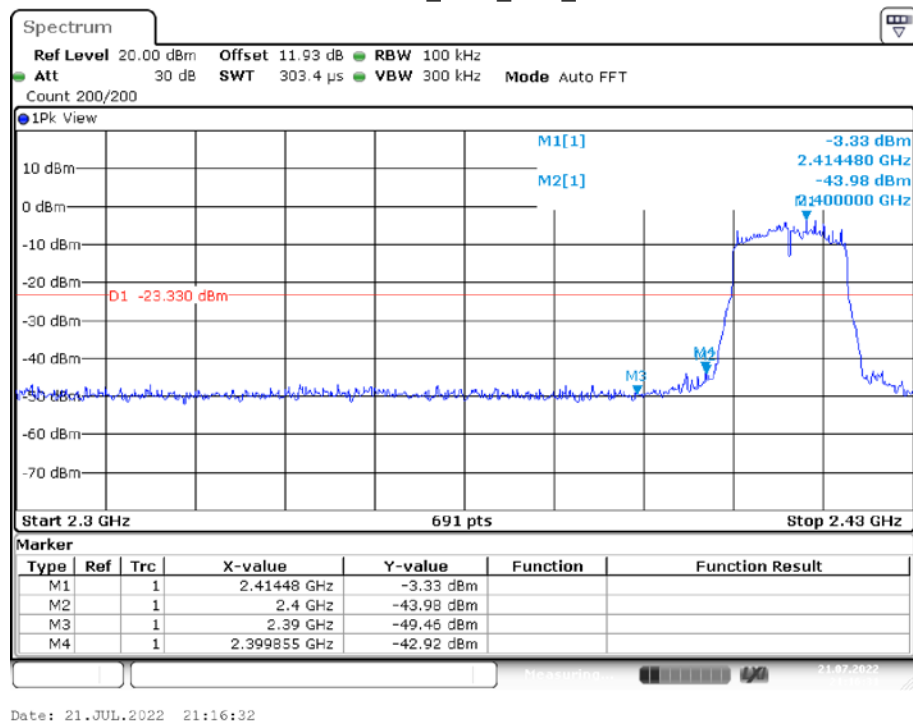
11B MIMO_Ant1_High_2472



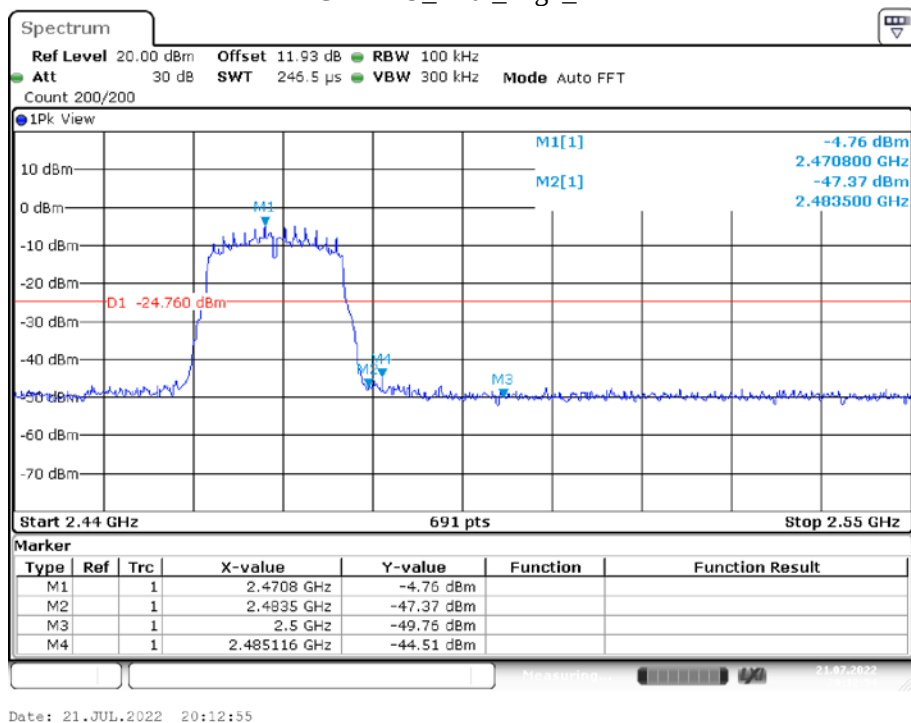
11G MIMO_Ant1_Low_2412



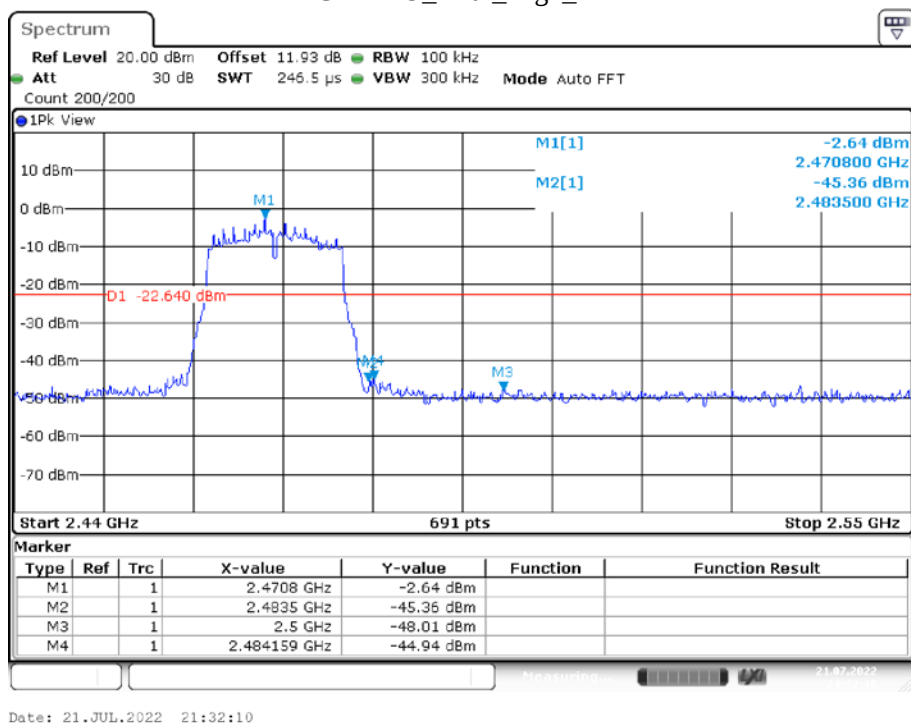
11G MIMO_Ant1_Low_2412



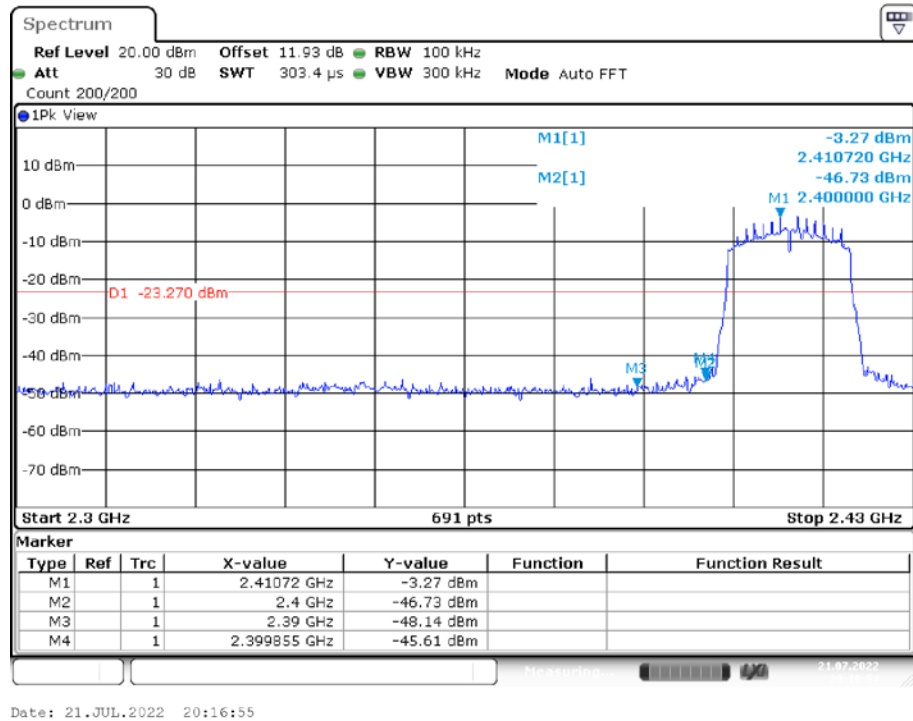
11G MIMO_Ant1_High_2472



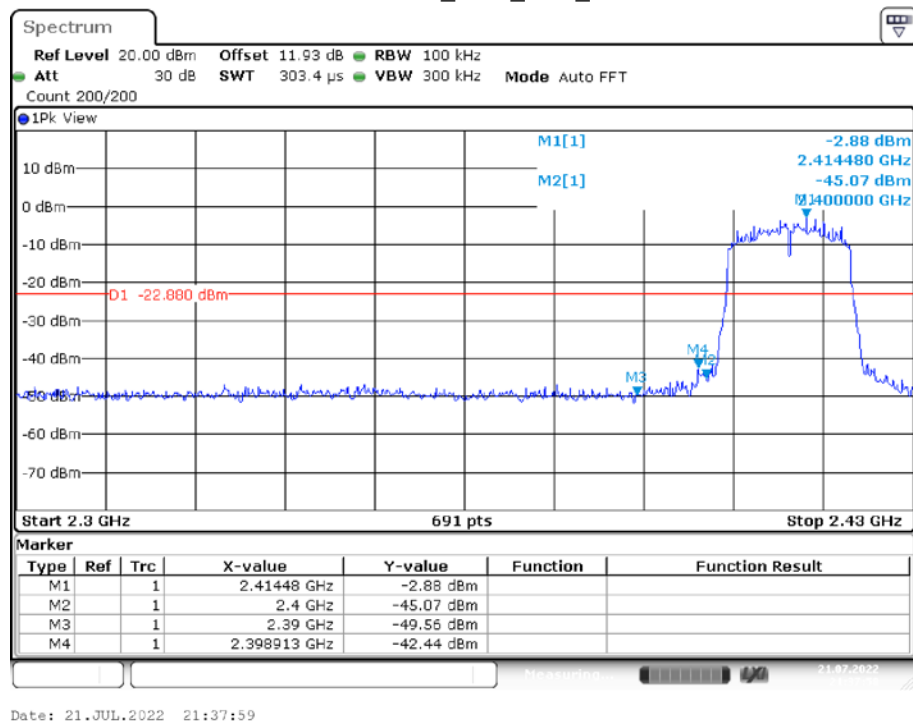
11G MIMO_Ant1_High_2472



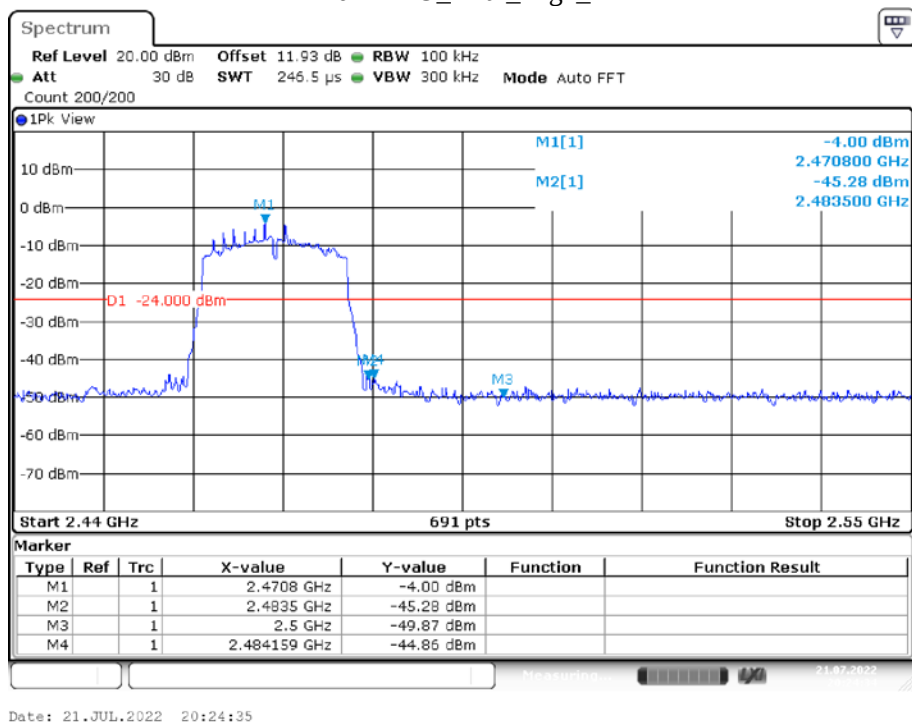
11N20 MIMO_Ant1_Low_2412



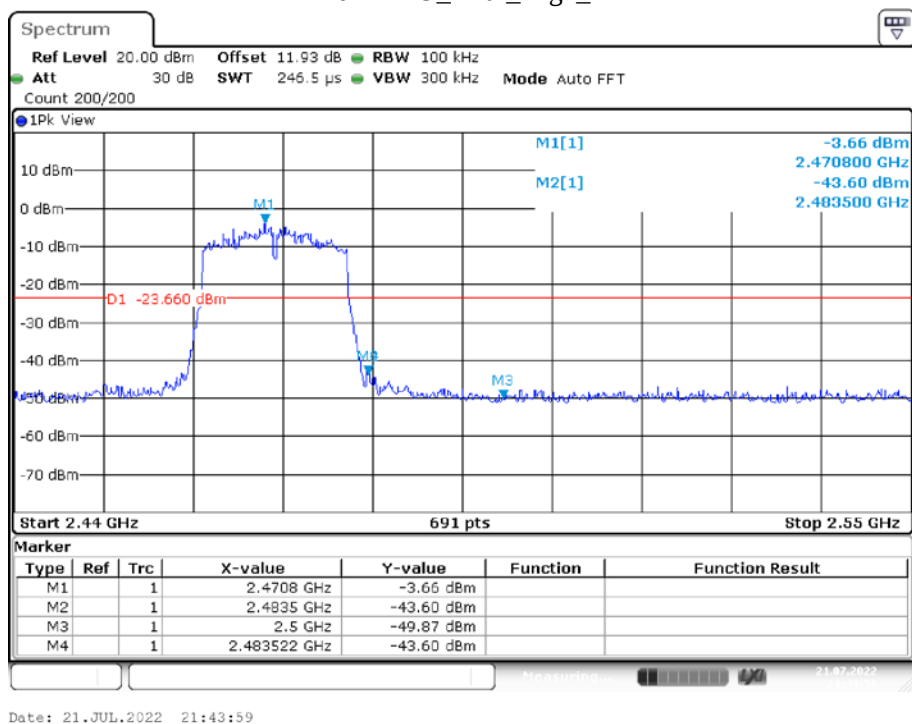
11N20 MIMO_Ant1_Low_2412



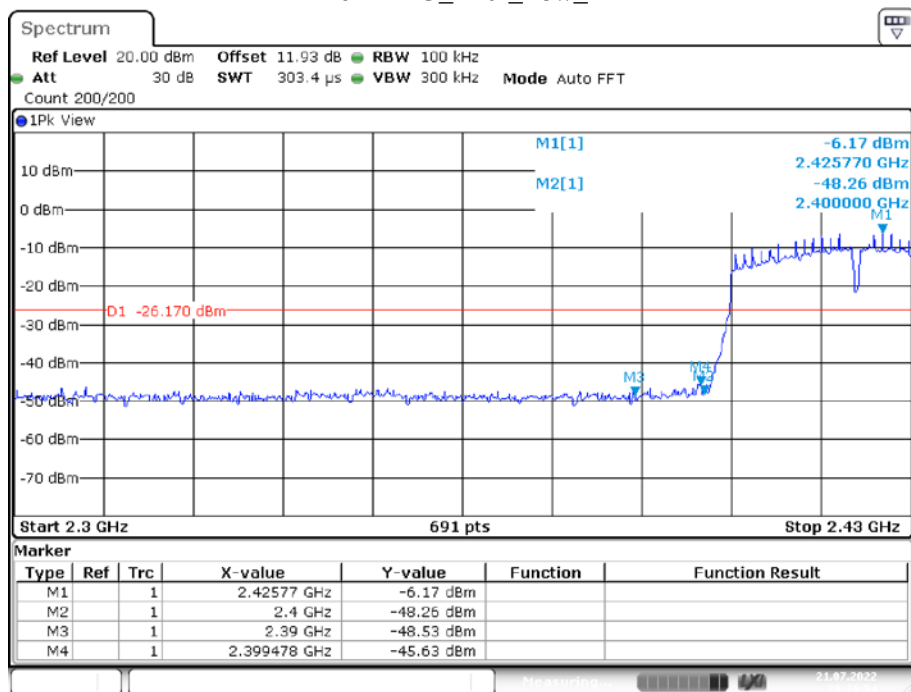
11N20 MIMO_Ant1_High_2472



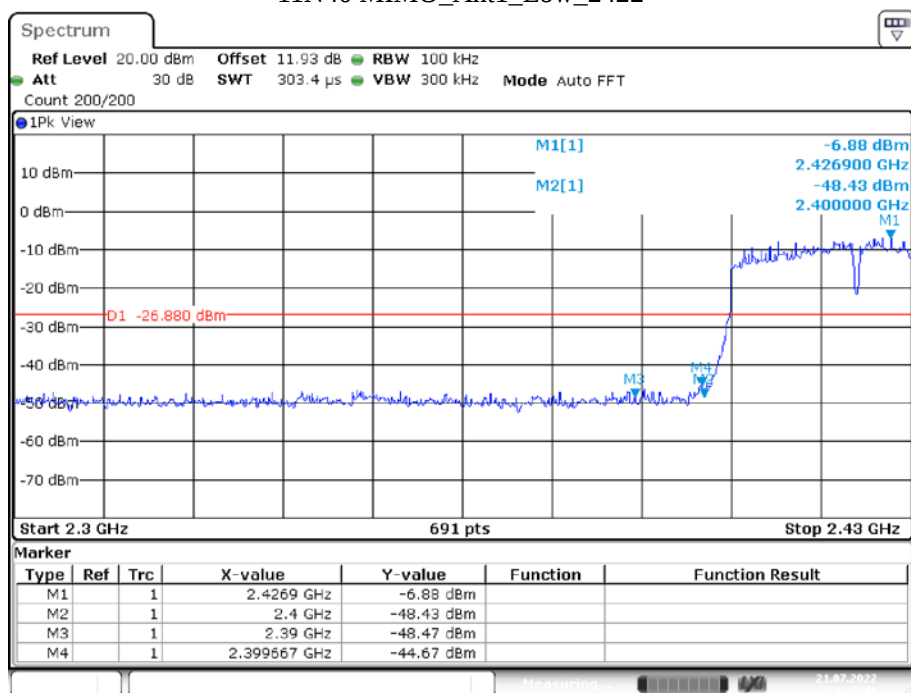
11N20 MIMO_Ant1_High_2472



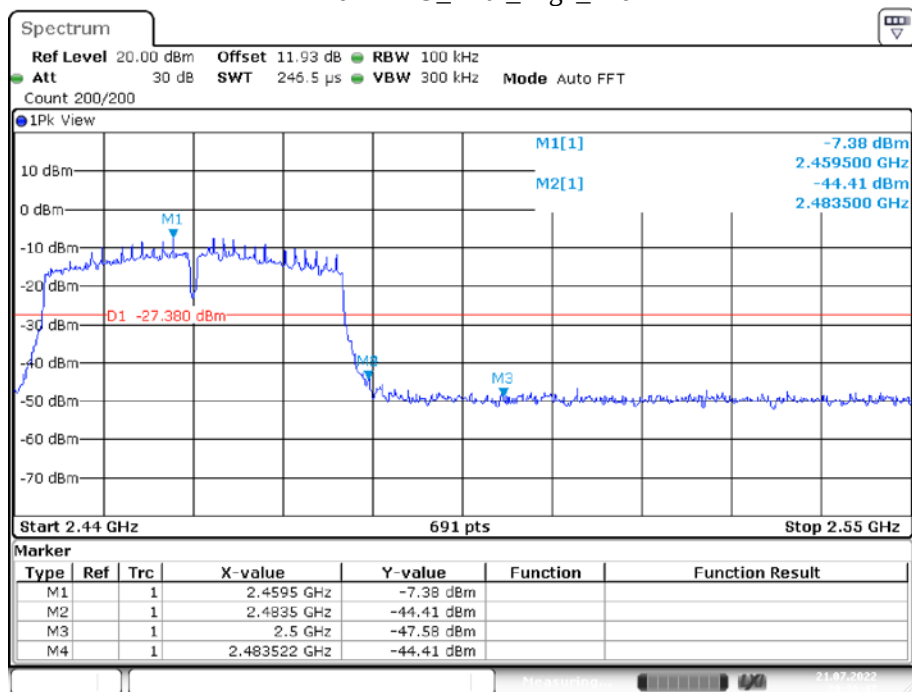
11N40 MIMO_Ant1_Low_2422



11N40 MIMO_Ant1_Low_2422

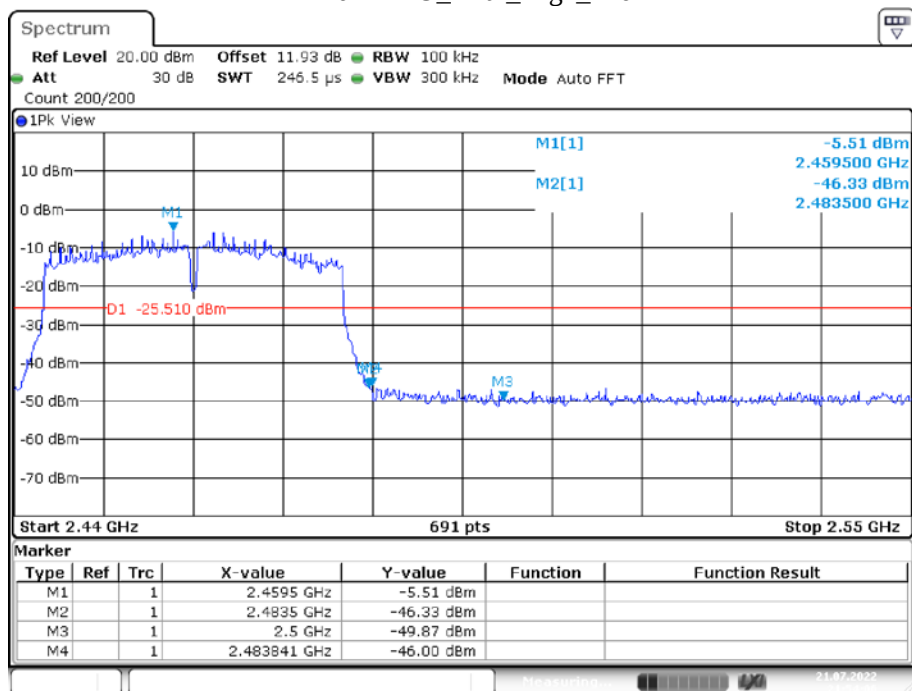


11N40 MIMO_Ant1_High_2462



Date: 21.JUL.2022 20:36:47

11N40 MIMO_Ant1_High_2462



Date: 21.JUL.2022 21:54:07

APPENDIX E: Maximum power spectral density**Test Result**

TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
11B MIMO	Ant1	2412	0.94	<=4.99	PASS
	Ant2	2412	1.26	<=4.99	PASS
	total	2412	4.11	<=4.99	PASS
	Ant1	2442	0.6	<=4.99	PASS
	Ant2	2442	1.53	<=4.99	PASS
	total	2442	4.10	<=4.99	PASS
	Ant1	2472	0.15	<=4.99	PASS
	Ant2	2472	0.81	<=4.99	PASS
	total	2472	3.50	<=4.99	PASS
11G MIMO	Ant1	2412	-19.57	<=4.99	PASS
	Ant2	2412	-18.13	<=4.99	PASS
	total	2412	-15.78	<=4.99	PASS
	Ant1	2442	-19.28	<=4.99	PASS
	Ant2	2442	-17.36	<=4.99	PASS
	total	2442	-15.20	<=4.99	PASS
	Ant1	2472	-19.9	<=4.99	PASS
	Ant2	2472	-19.03	<=4.99	PASS
	total	2472	-16.43	<=4.99	PASS
11N20 MIMO	Ant1	2412	-19.01	<=4.99	PASS
	Ant2	2412	-16.83	<=4.99	PASS
	total	2412	-14.77	<=4.99	PASS
	Ant1	2442	-18.94	<=4.99	PASS
	Ant2	2442	-17.26	<=4.99	PASS
	total	2442	-15.01	<=4.99	PASS
	Ant1	2472	-19.74	<=4.99	PASS
	Ant2	2472	-17.83	<=4.99	PASS
	total	2472	-15.67	<=4.99	PASS

TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
11N40 MIMO	Ant1	2422	-21.9	≤ 4.99	PASS
	Ant2	2422	-21.1	≤ 4.99	PASS
	total	2422	-18.47	≤ 4.99	PASS
	Ant1	2442	-22.48	≤ 4.99	PASS
	Ant2	2442	-21.32	≤ 4.99	PASS
	total	2442	-18.85	≤ 4.99	PASS
	Ant1	2462	-23.23	≤ 4.99	PASS
	Ant2	2462	-21.65	≤ 4.99	PASS
	total	2462	-19.36	≤ 4.99	PASS

Note:

The maximum antenna gain is 6.0dBi. 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:

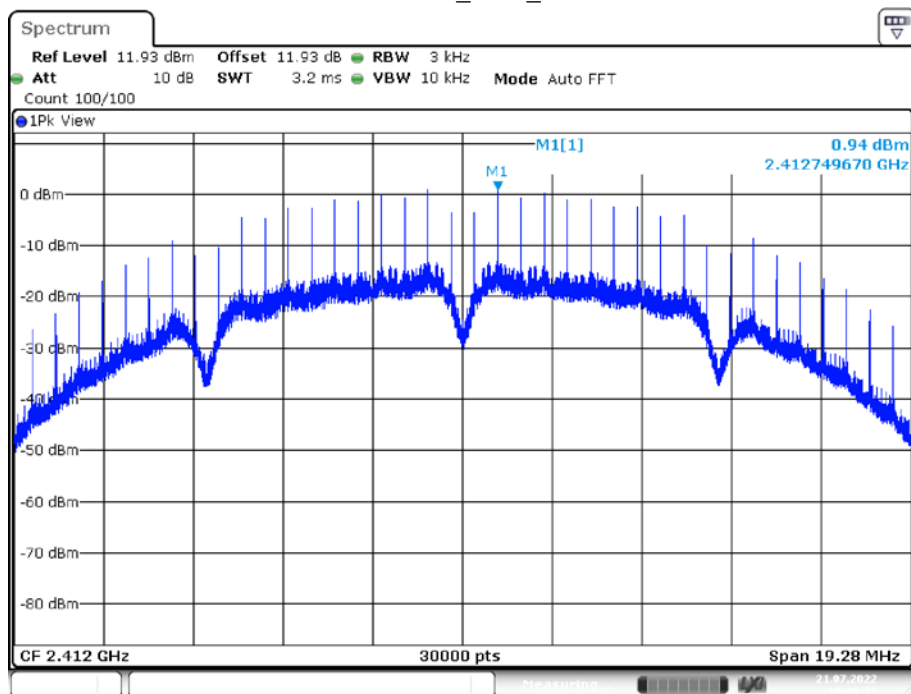
Array Gain = $10 \log(N_{\text{ANT}}/N_{\text{ss}})$ dB

Directional gain = $G_{\text{ANT}} + \text{Array Gain} = 6.0 + 10 * \log(2/1) = 9.01 \text{dBi} > 6 \text{dBi}$

So the limit should be reduce $(9.01 - 6) \text{dB} = 3.01 \text{dB}$.

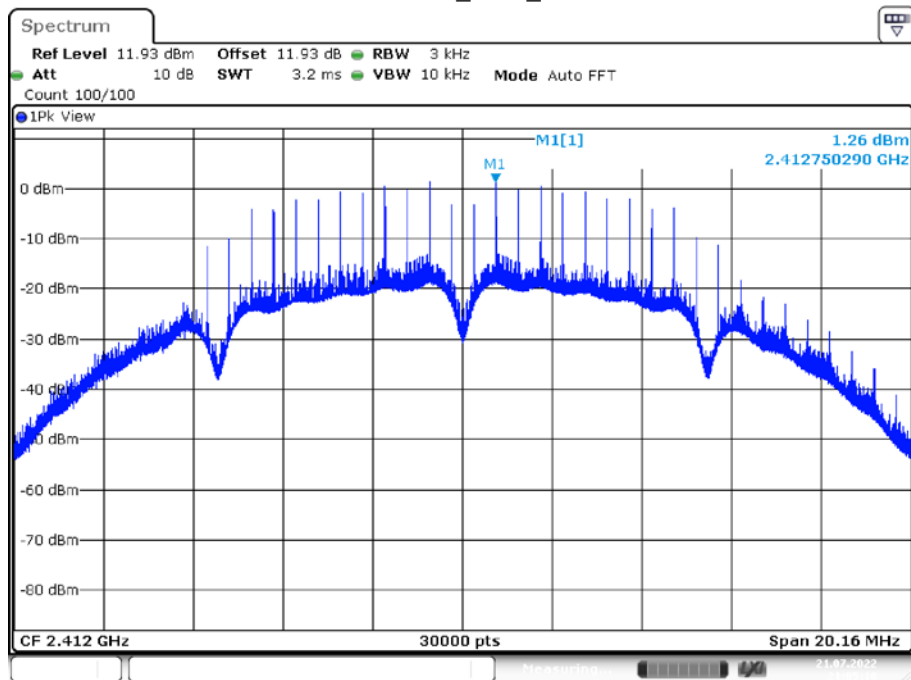
Test Graphs

11B MIMO_Ant1_2412



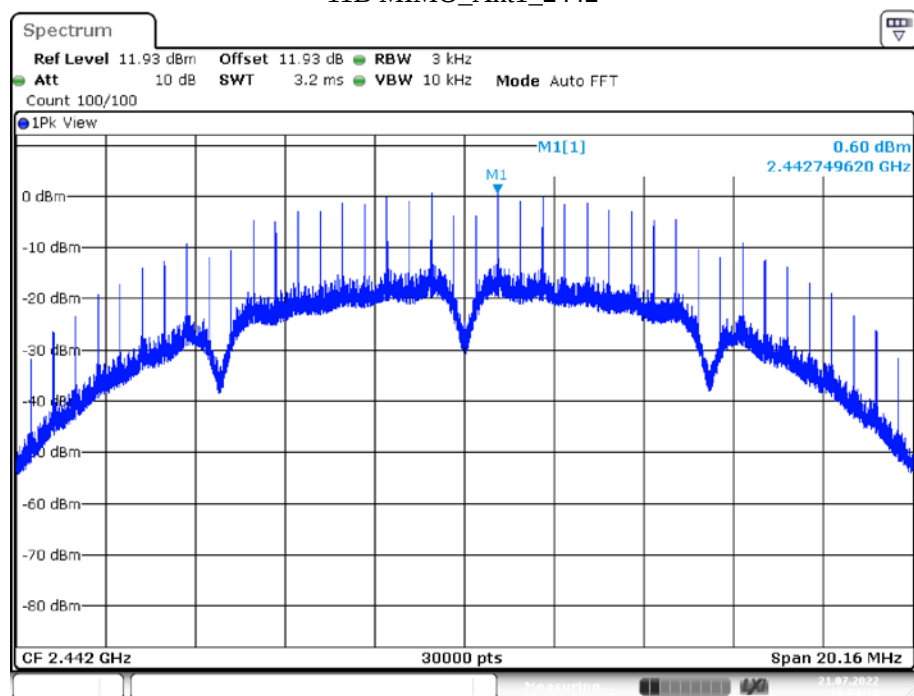
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11B MIMO_Ant2_2412

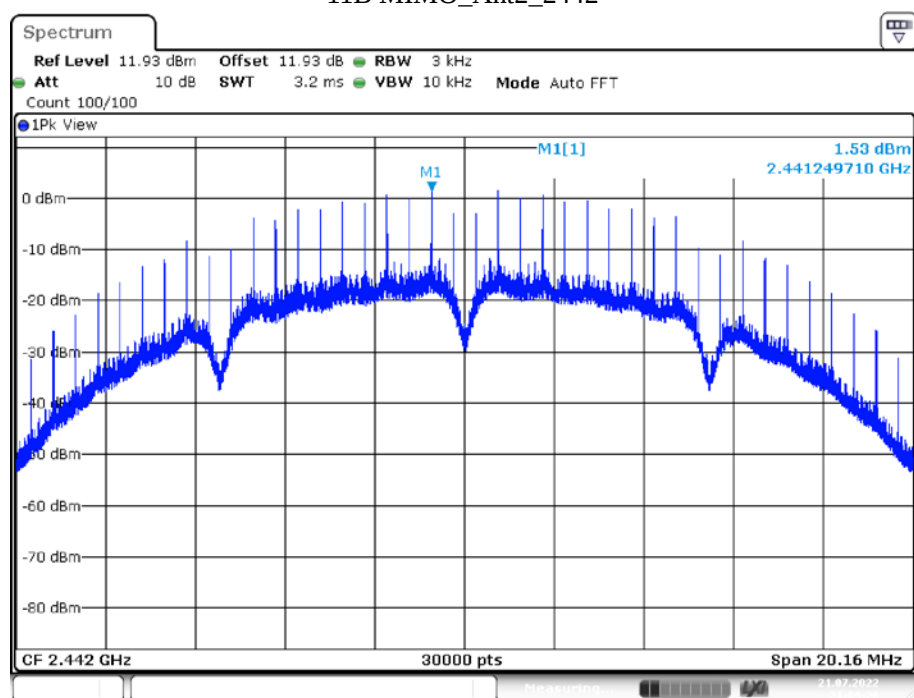


Date: 21.JUL.2022 21:05:11

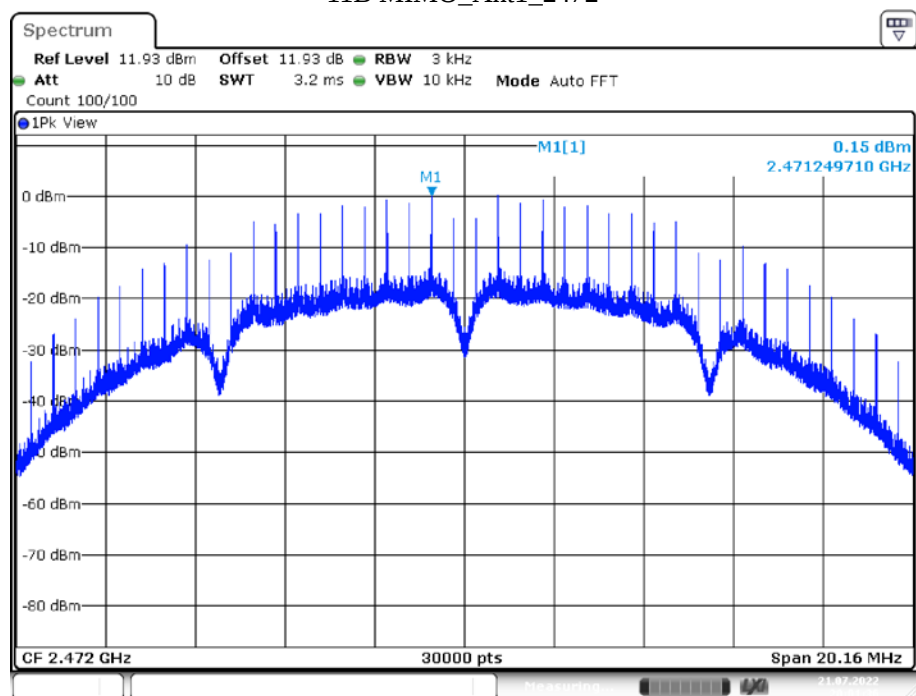
11B MIMO_Ant1_2442



11B MIMO_Ant2_2442

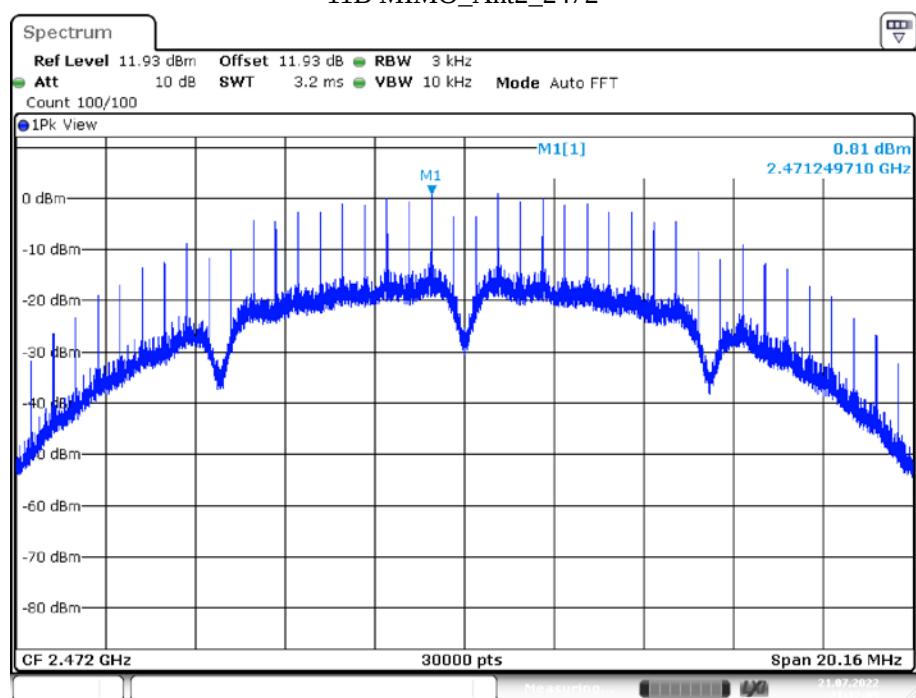


11B MIMO_Ant1_2472



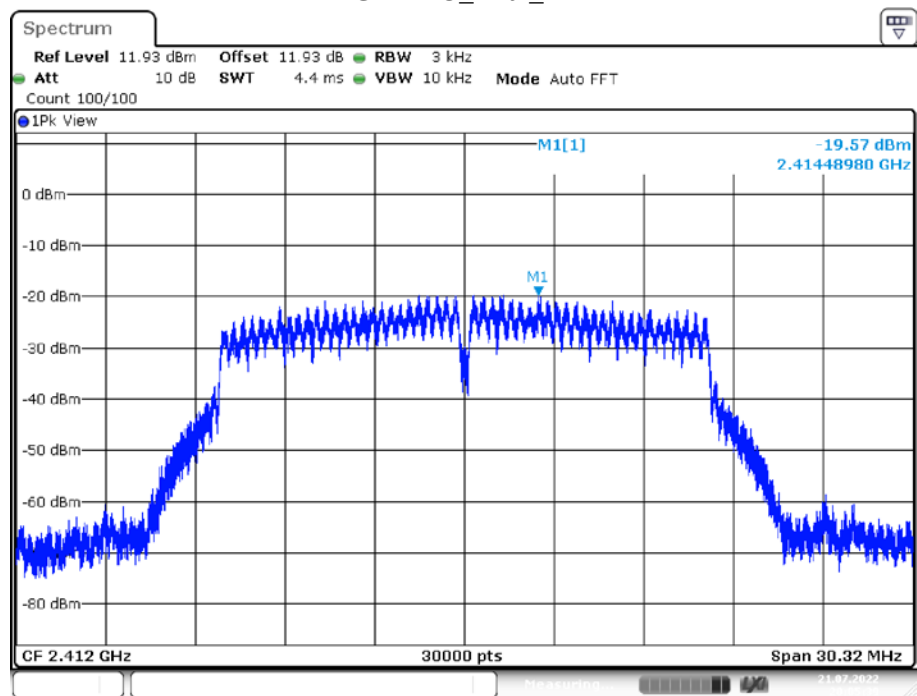
Date: 21.JUL.2022 20:01:37

11B MIMO_Ant2_2472



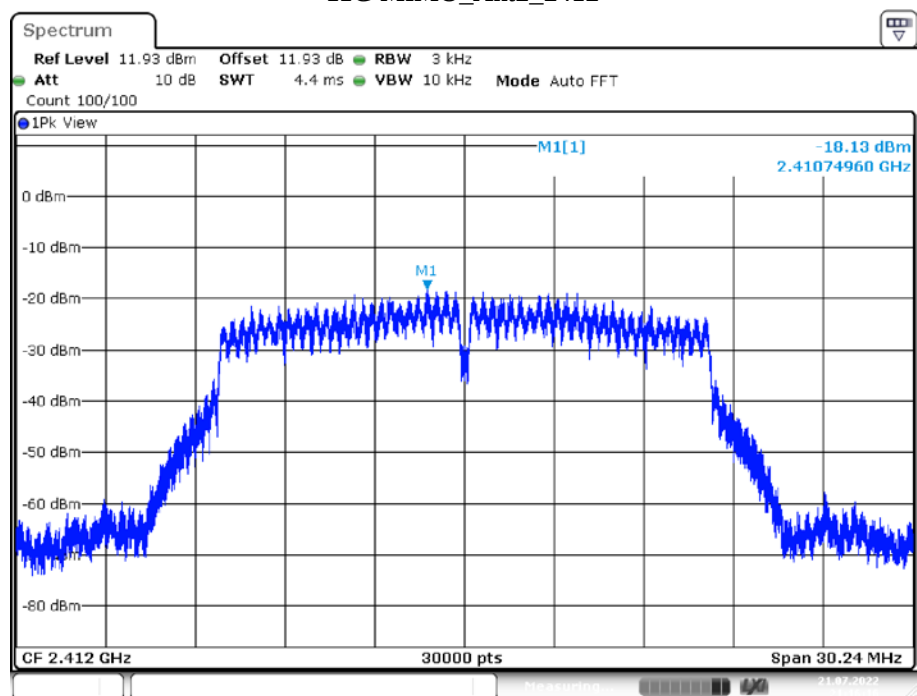
Date: 21.JUL.2022 21:12:05

11G MIMO_Ant1_2412



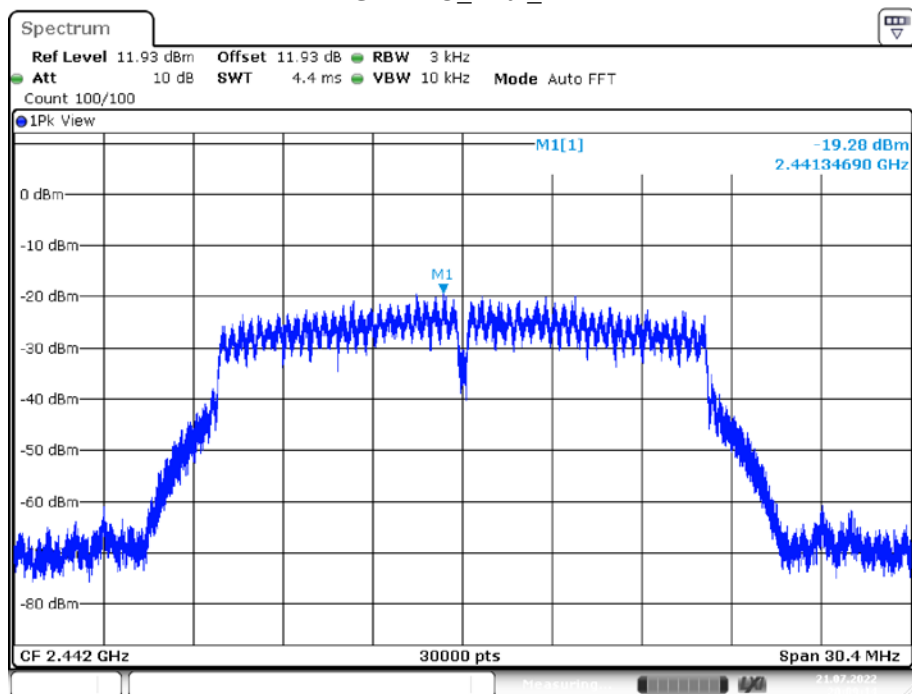
Date: 21.JUL.2022 20:05:40

11G MIMO_Ant2_2412



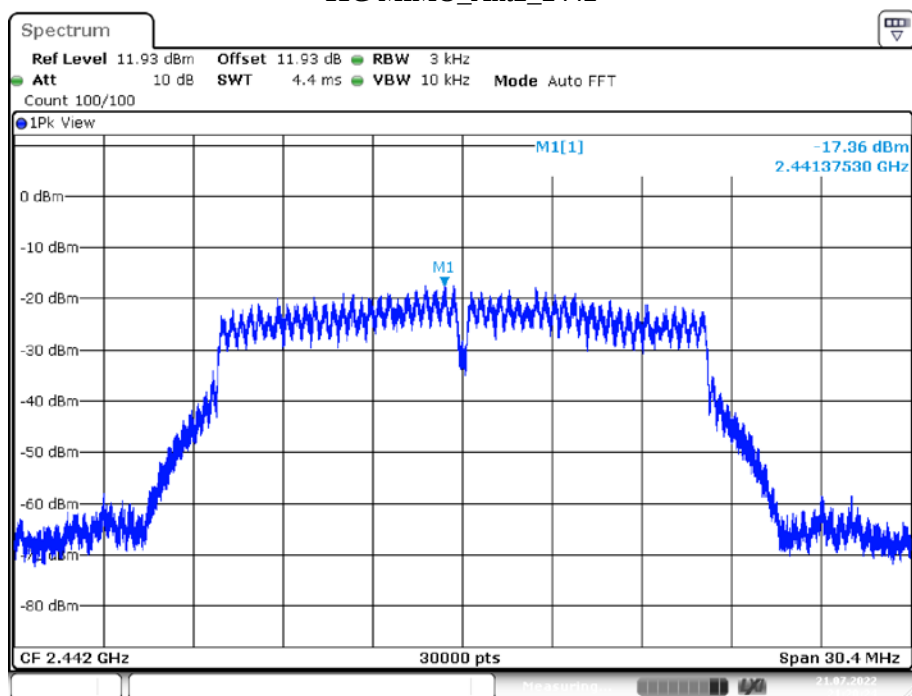
Date: 21.JUL.2022 21:16:17

11G MIMO_Ant1_2442



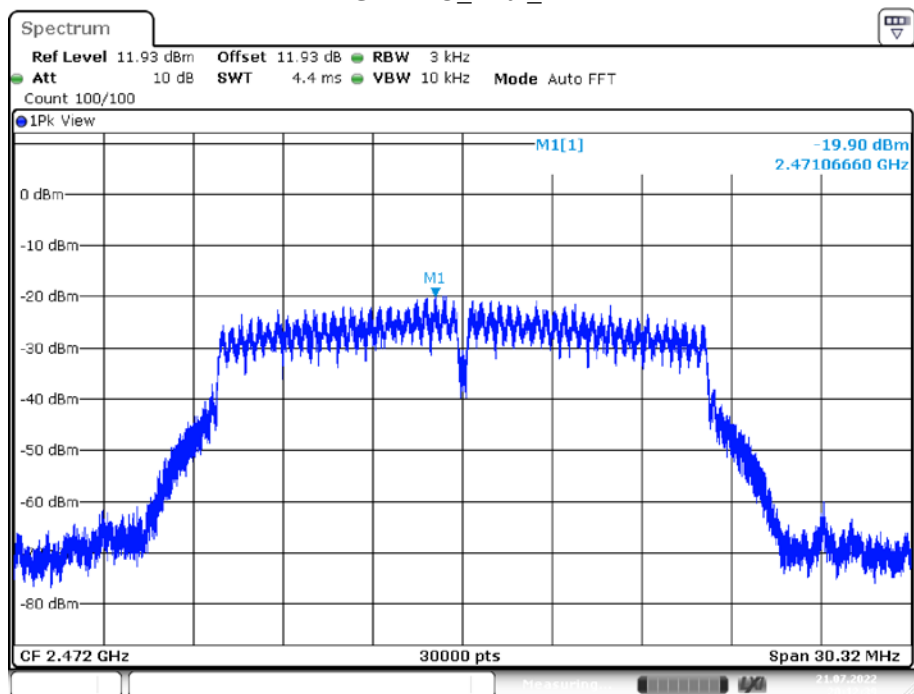
Date: 21.JUL.2022 20:09:15

11G MIMO_Ant2_2442



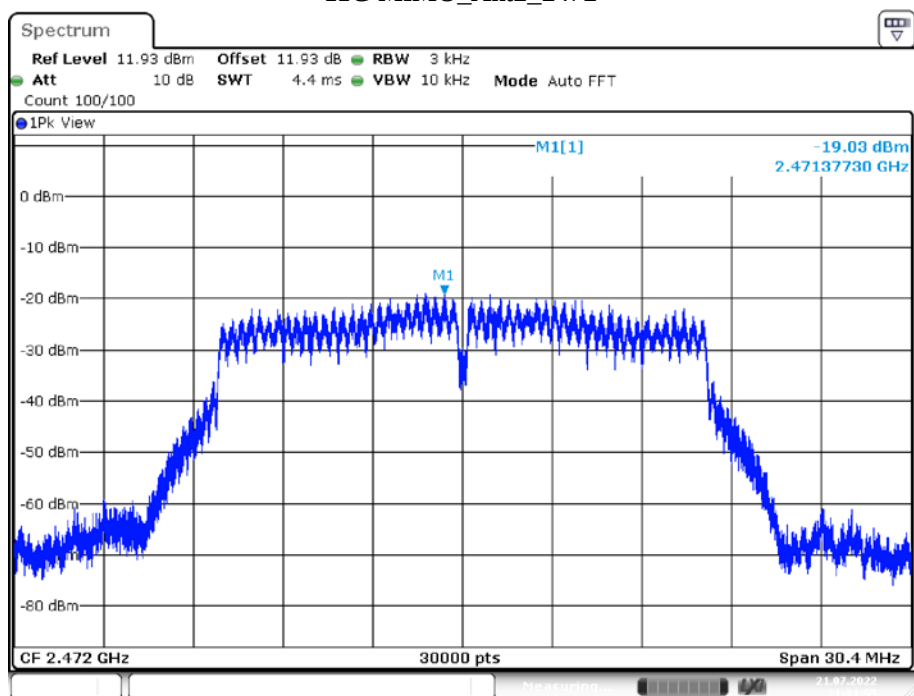
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11G MIMO_Ant1_2472



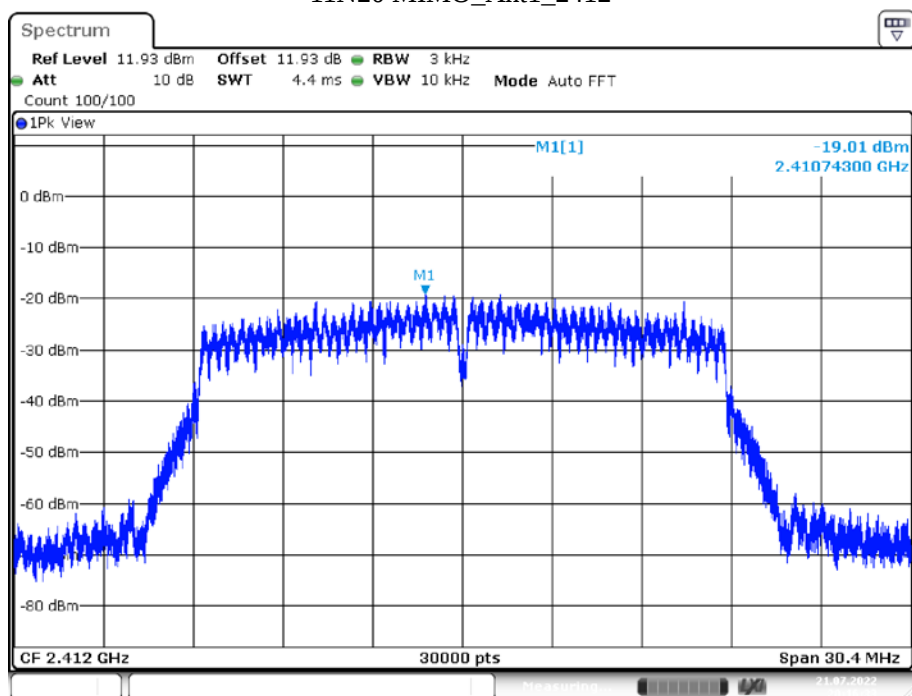
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11G MIMO_Ant2_2472

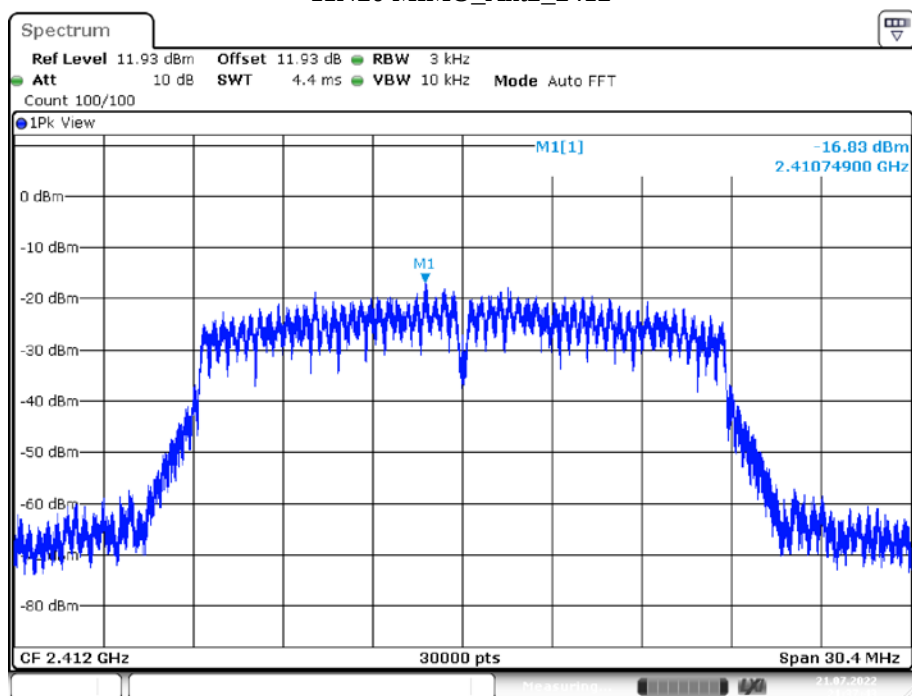


Date: 21.JUL.2022 21:31:55

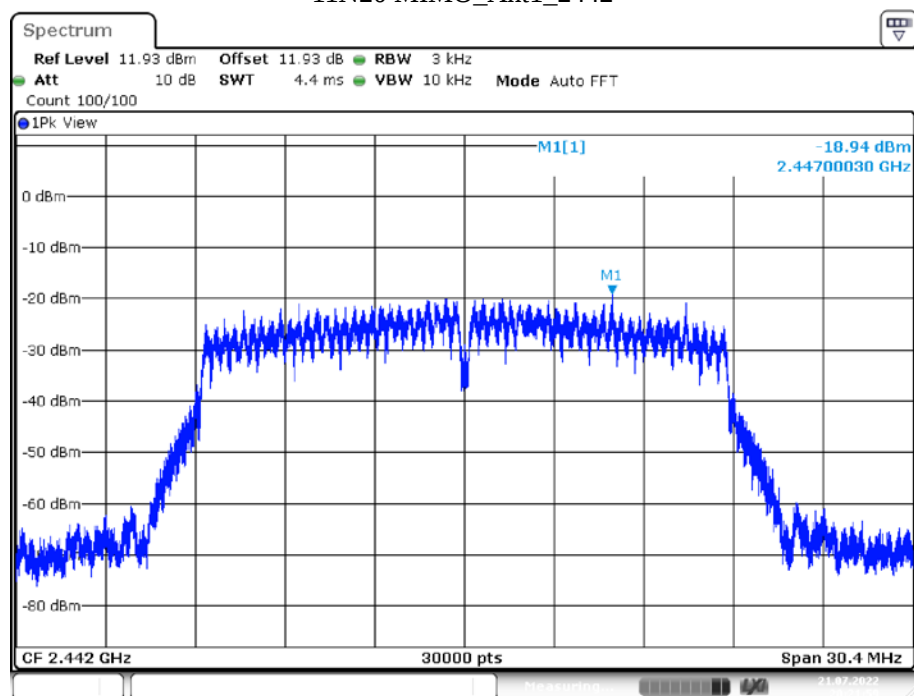
11N20 MIMO_Ant1_2412



11N20 MIMO_Ant2_2412

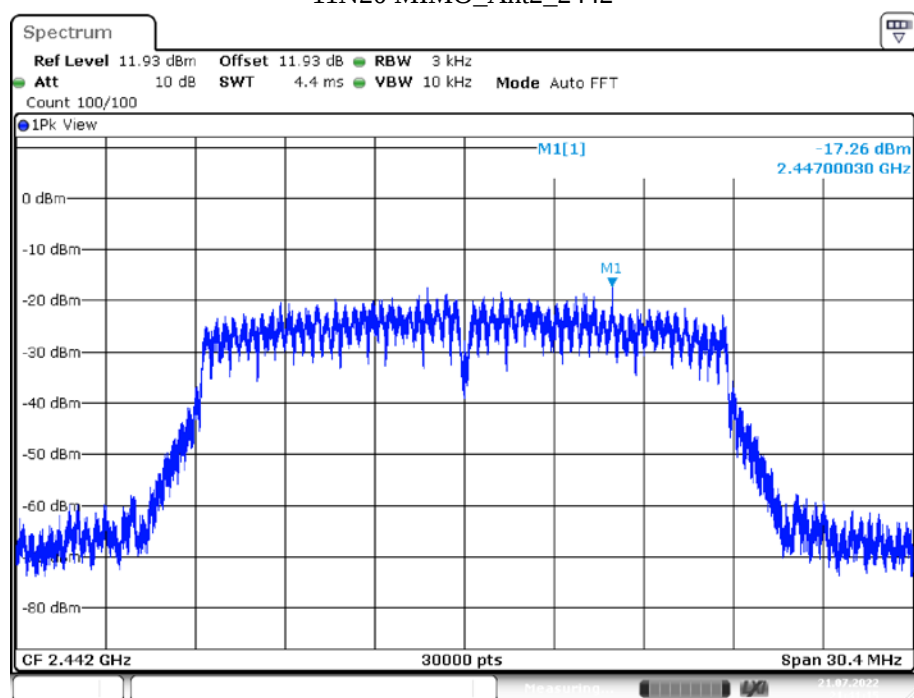


11N20 MIMO_Ant1_2442



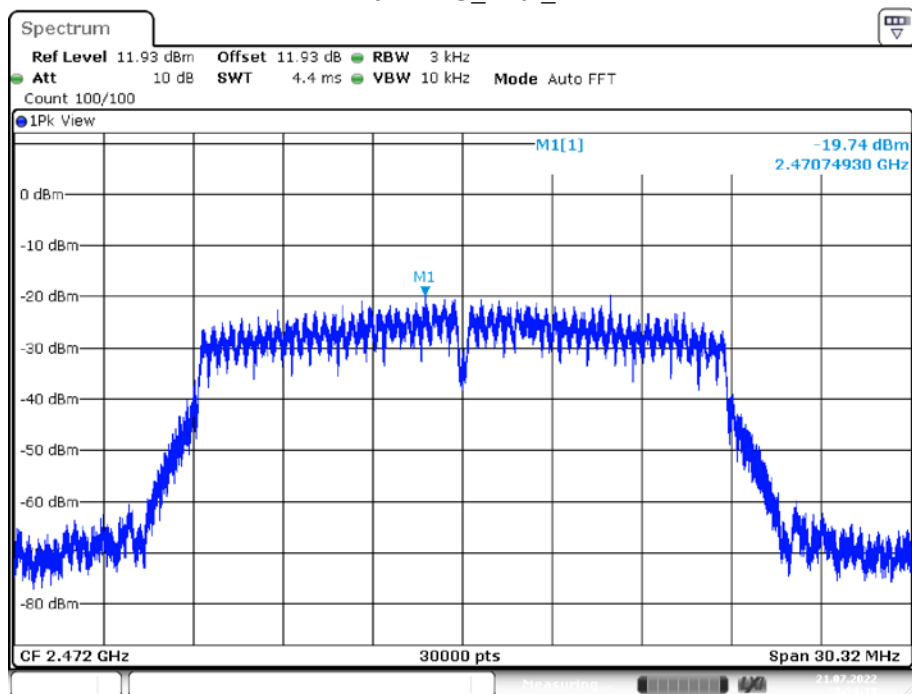
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11N20 MIMO_Ant2_2442



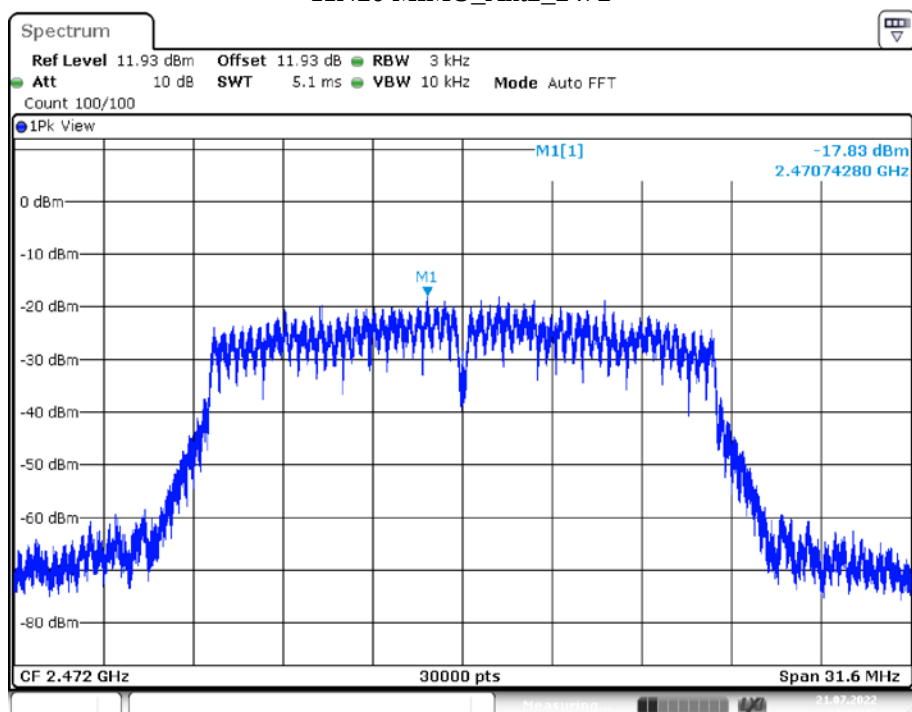
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11N20 MIMO_Ant1_2472



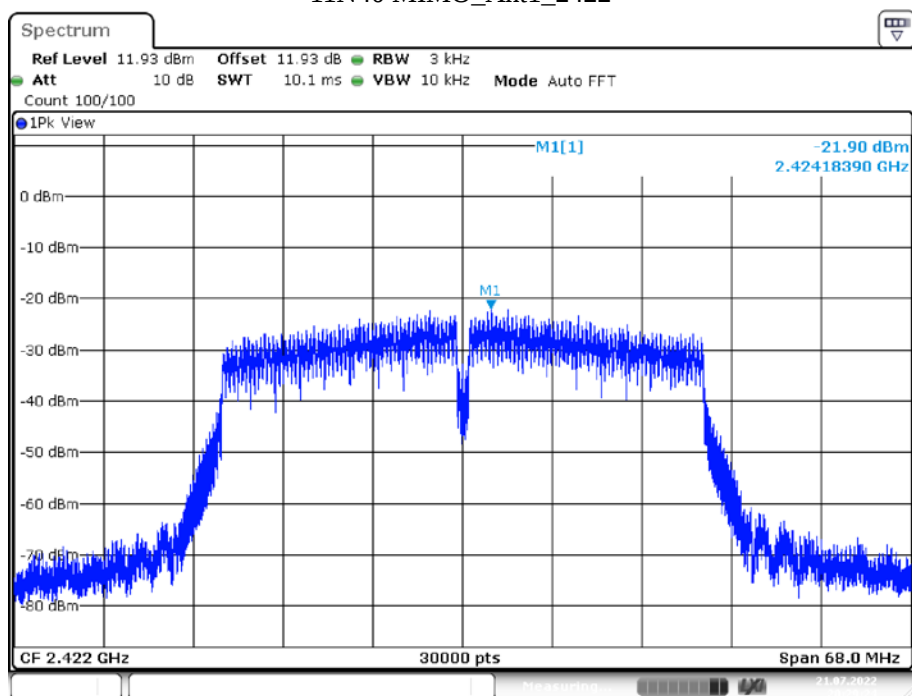
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11N20 MIMO_Ant2_2472



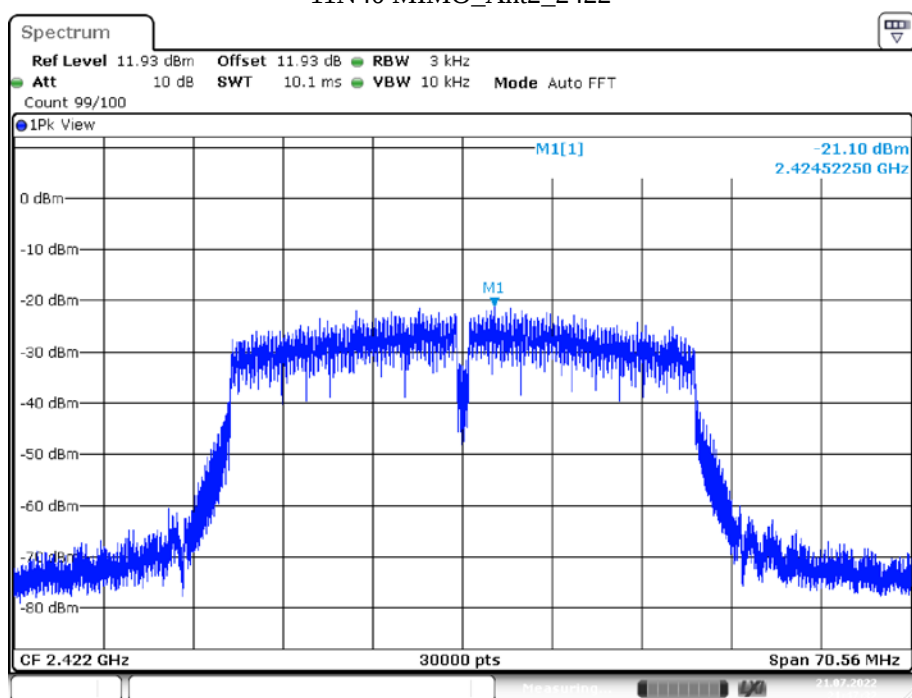
Date: 21.JUL.2022 21:43:44

11N40 MIMO_Ant1_2422



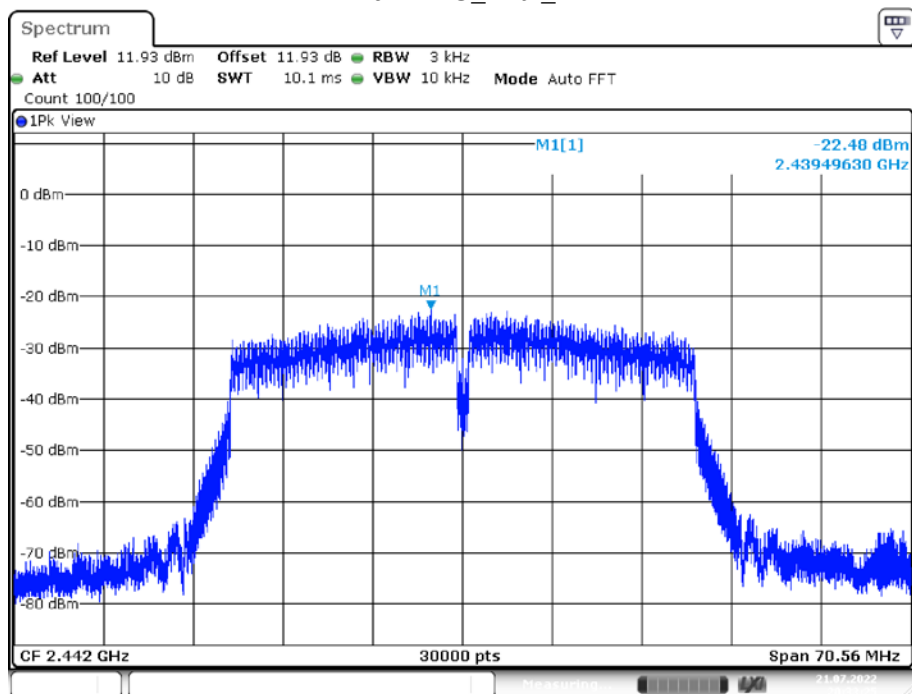
Date: 21.JUL.2022 20:29:25

11N40 MIMO_Ant2_2422



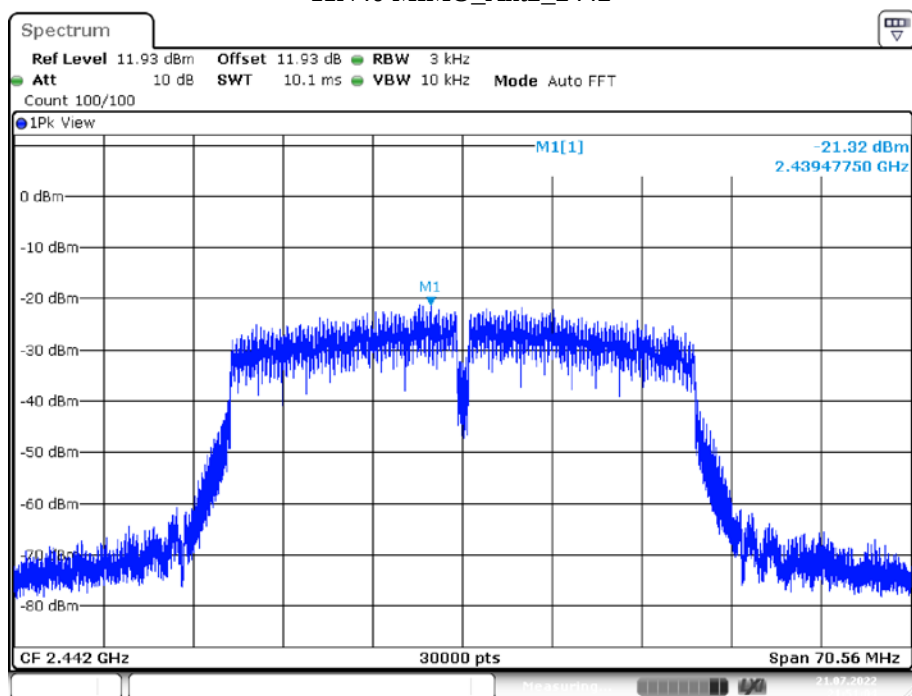
Date: 21.JUL.2022 21:47:33

11N40 MIMO_Ant1_2442



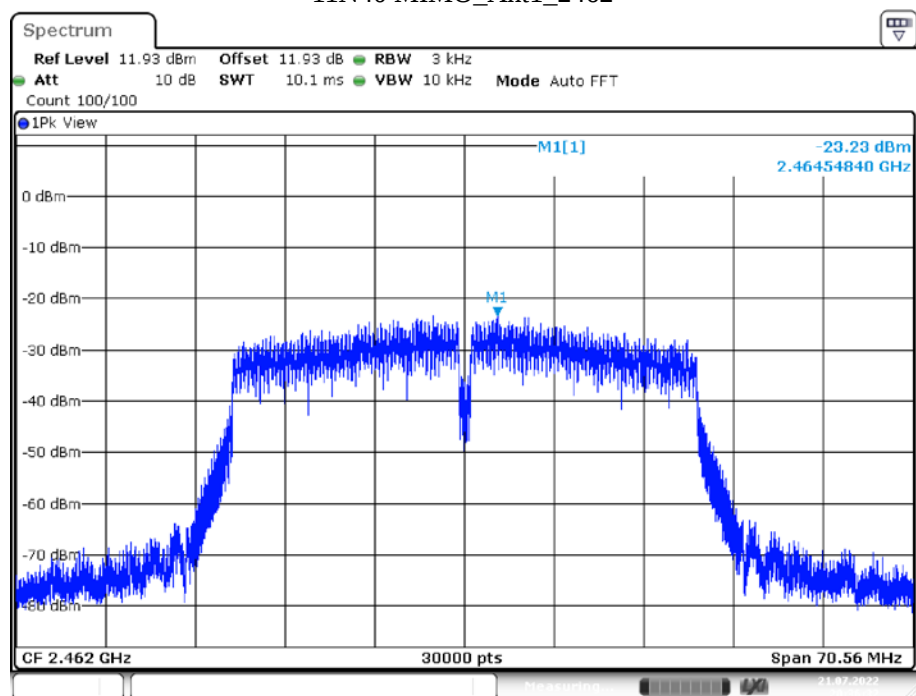
Date: 21.JUL.2022 20:33:25

11N40 MIMO_Ant2_2442



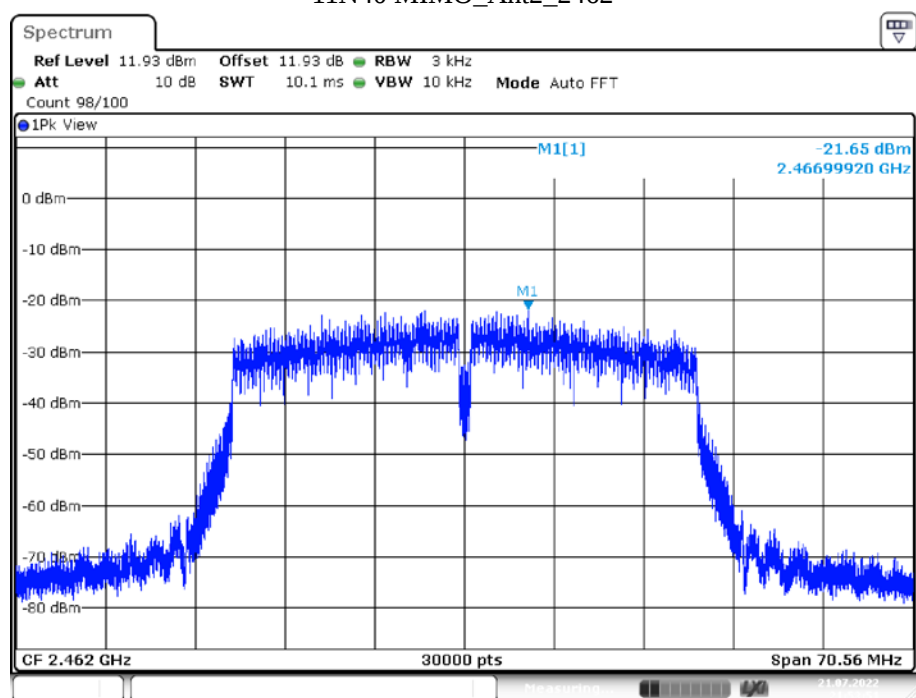
Date: 21.JUL.2022 21:51:05

11N40 MIMO_Ant1_2462



Date: 21.JUL.2022 20:36:32

11N40 MIMO_Ant2_2462



Date: 21.JUL.2022 21:53:52

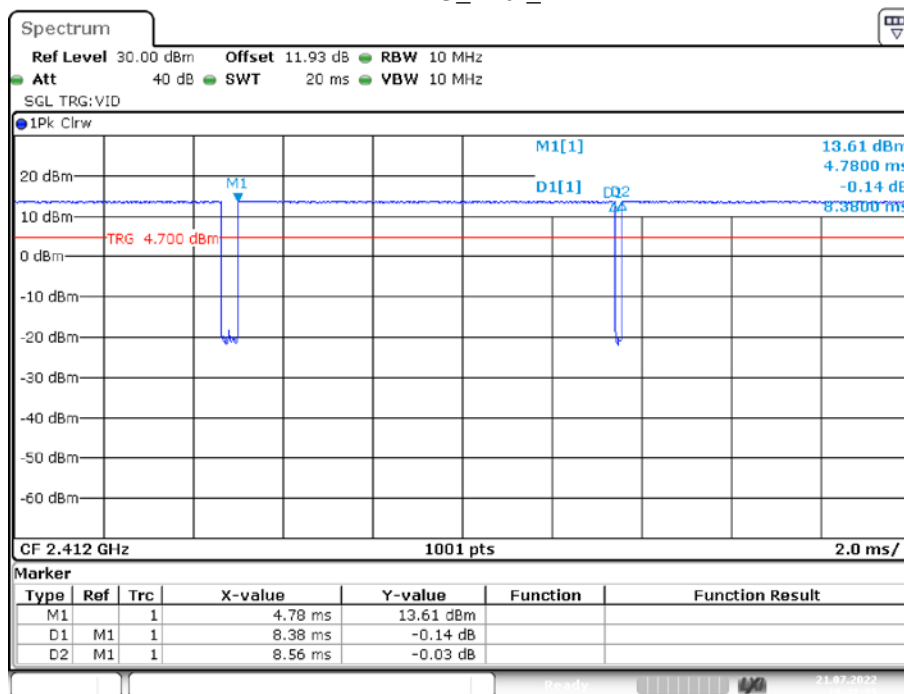
APPENDIX F: Duty Cycle

Test Result

Test Mode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
11B MIMO	Ant1	2412	8.38	8.56	97.90
	Ant2	2412	8.38	8.84	94.80
	Ant1	2442	8.38	8.78	95.44
	Ant2	2442	8.40	8.68	96.77
	Ant1	2472	8.38	8.70	96.32
	Ant2	2472	8.38	8.84	94.80
11G MIMO	Ant1	2412	1.38	1.82	75.82
	Ant2	2412	1.38	1.78	77.53
	Ant1	2442	1.38	1.52	90.79
	Ant2	2442	1.37	1.65	83.03
	Ant1	2472	1.38	1.58	87.34
	Ant2	2472	1.38	1.80	76.67
11N20 MIMO	Ant1	2412	1.28	1.65	77.58
	Ant2	2412	1.29	1.51	85.43
	Ant1	2442	1.29	1.49	86.58
	Ant2	2442	1.29	1.71	75.44
	Ant1	2472	1.29	1.71	75.44
	Ant2	2472	1.29	1.43	90.21
11N40 MIMO	Ant1	2422	0.63	1.05	60.00
	Ant2	2422	0.63	0.81	77.78
	Ant1	2442	0.63	0.87	72.41
	Ant2	2442	0.63	0.97	64.95
	Ant1	2462	0.63	0.87	72.41
	Ant2	2462	0.63	0.83	75.90

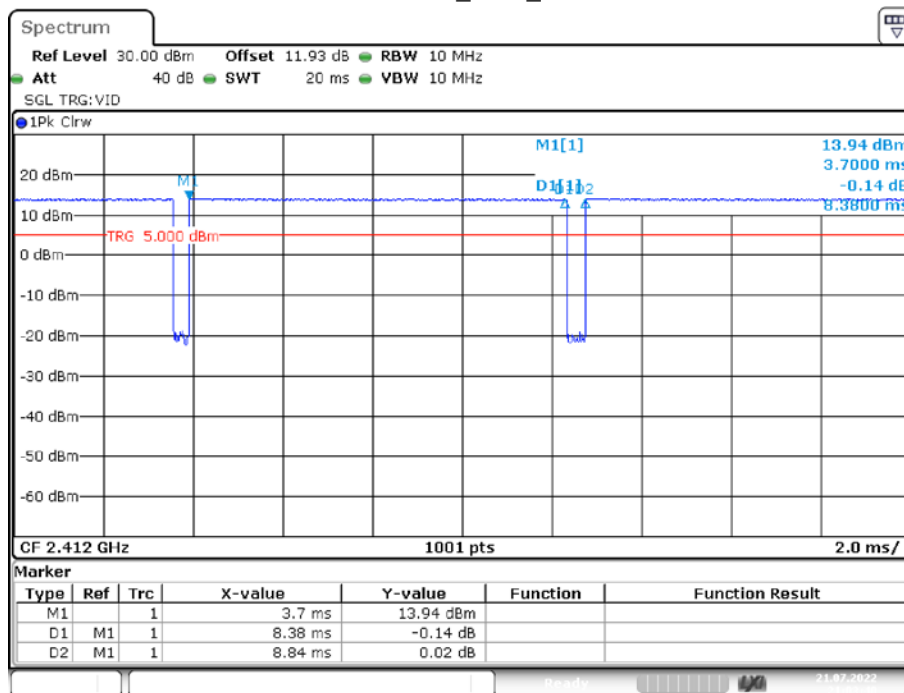
Test Graphs

11B MIMO_Ant1_2412



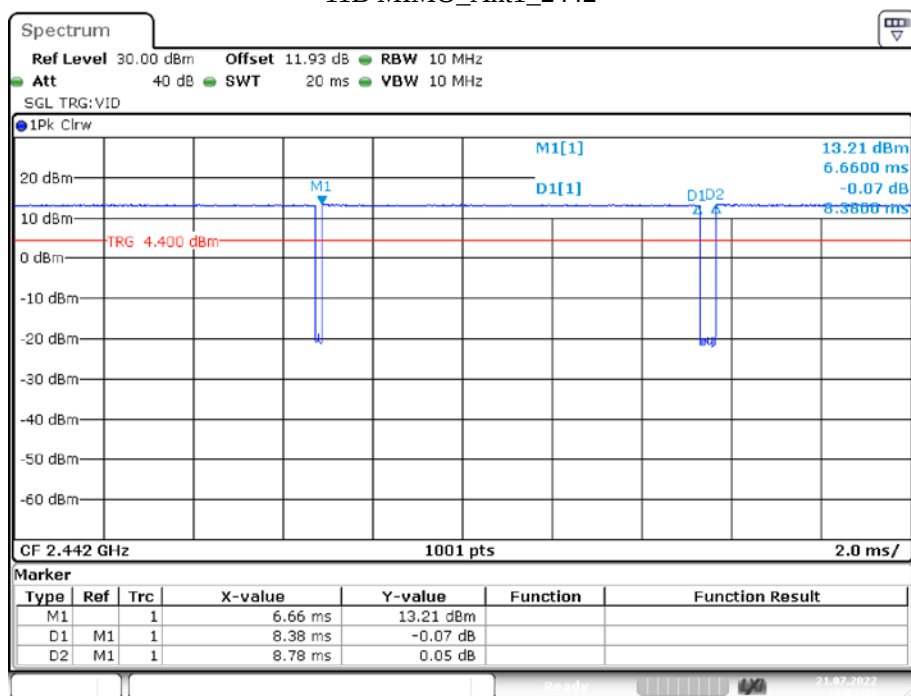
Date: 21.JUL.2022 19:48:36

11B MIMO_Ant1_2412



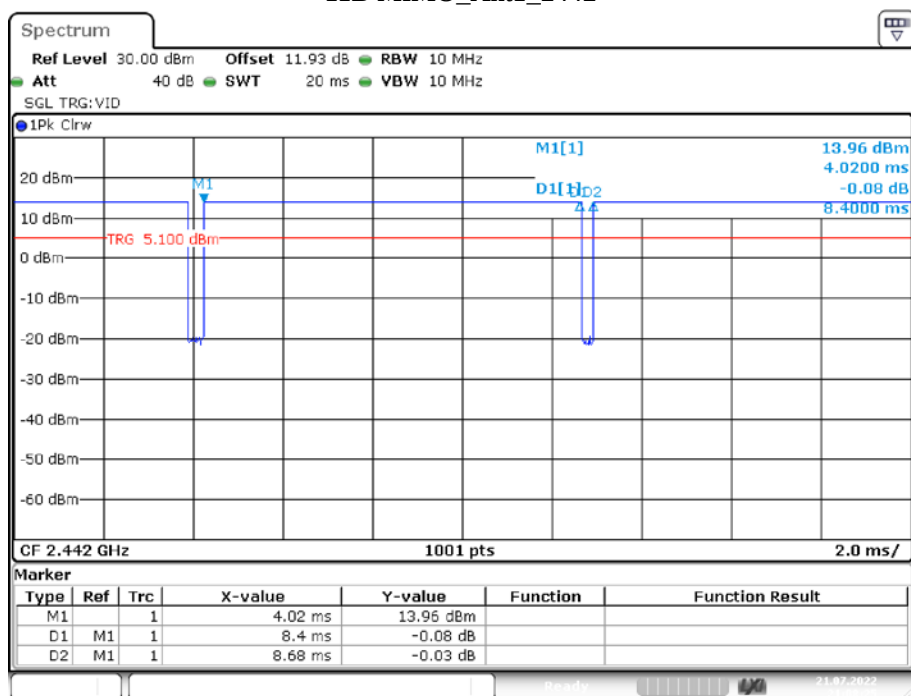
Date: 21.JUL.2022 21:03:41

11B MIMO_Ant1_2442



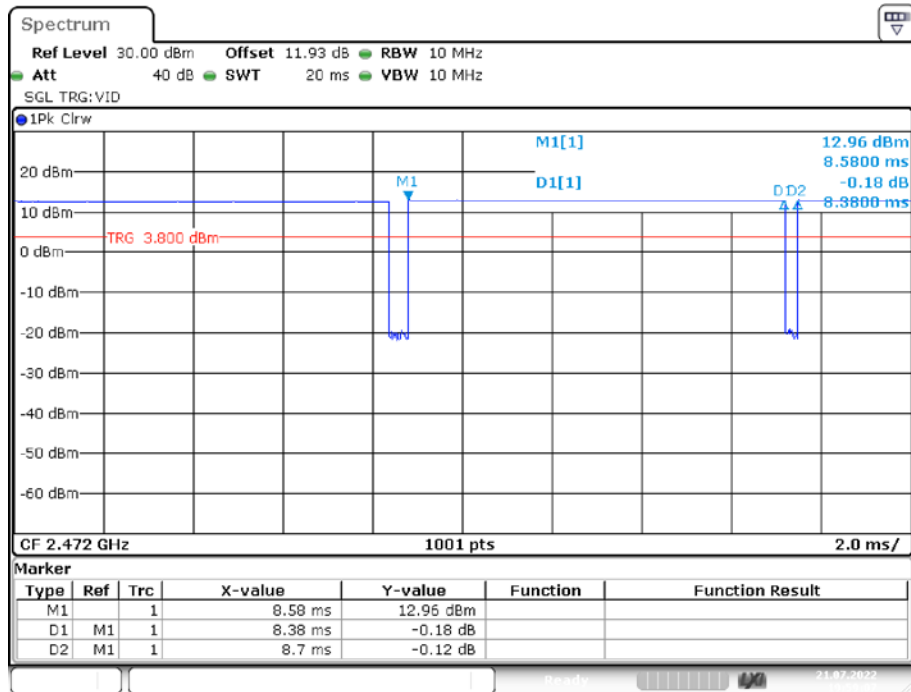
Date: 21.JUL.2022 19:53:12

11B MIMO_Ant1_2442



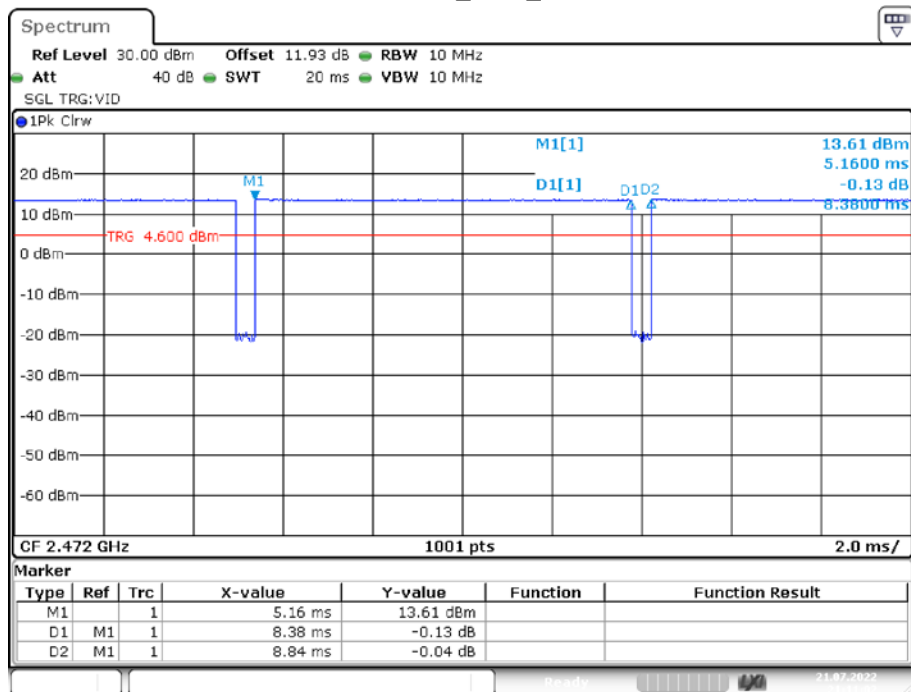
Date: 21.JUL.2022 21:08:26

11B MIMO_Ant1_2472



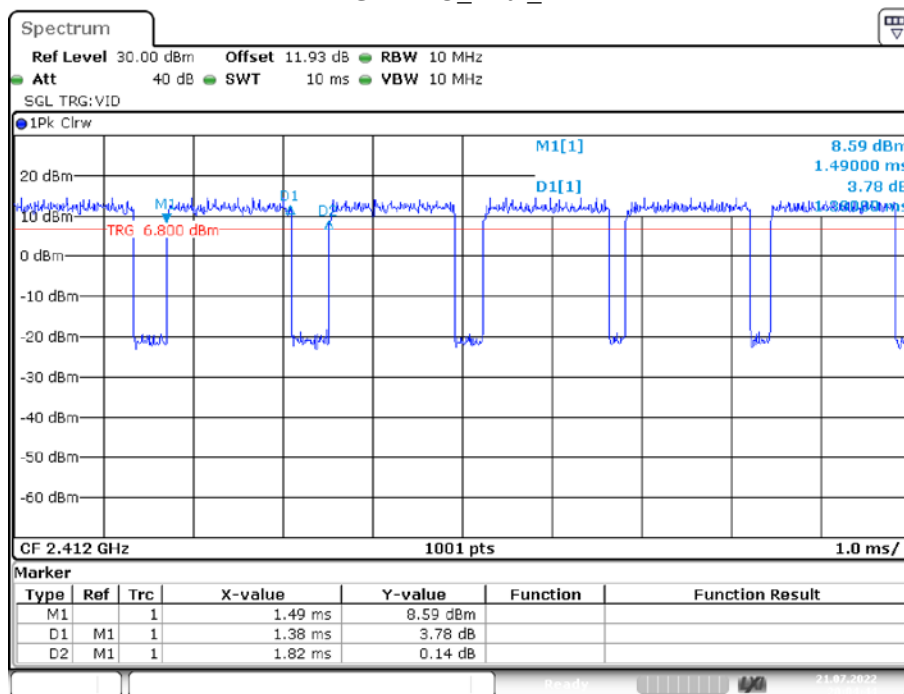
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11B MIMO_Ant1_2472

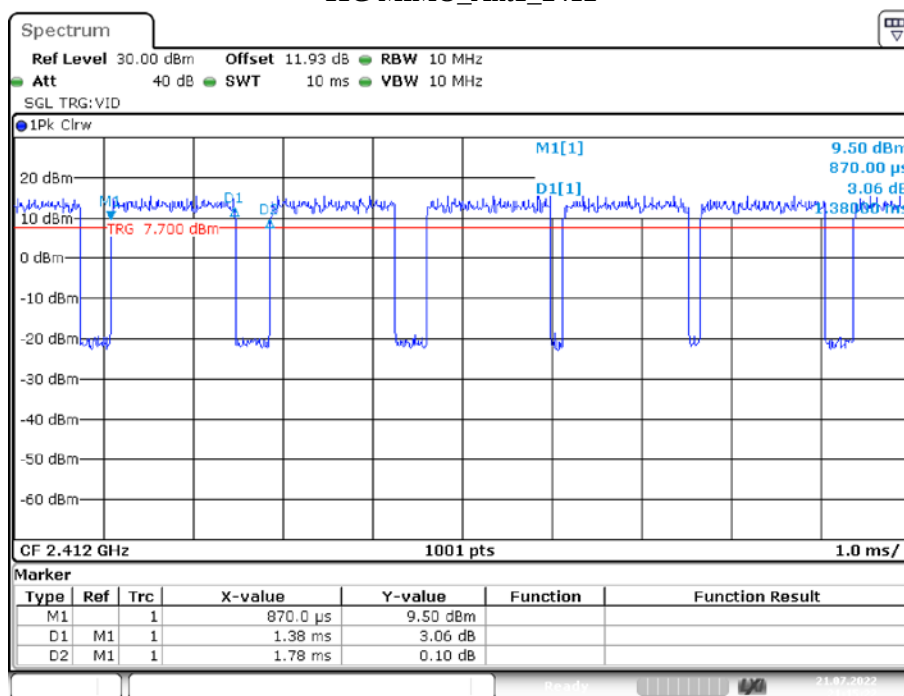


Date: 21.JUL.2022 21:11:03

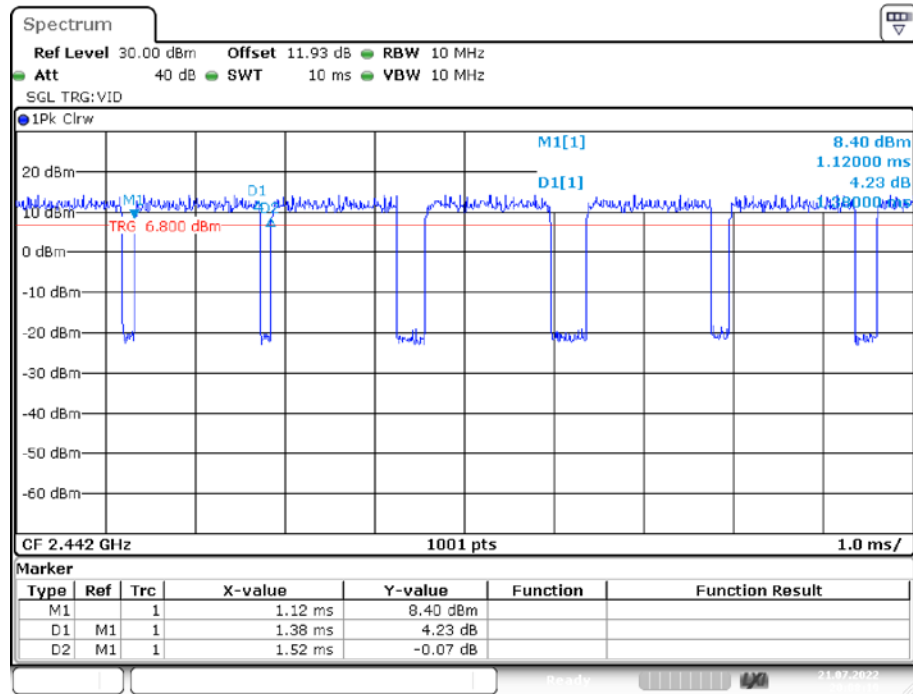
11G MIMO_Ant1_2412



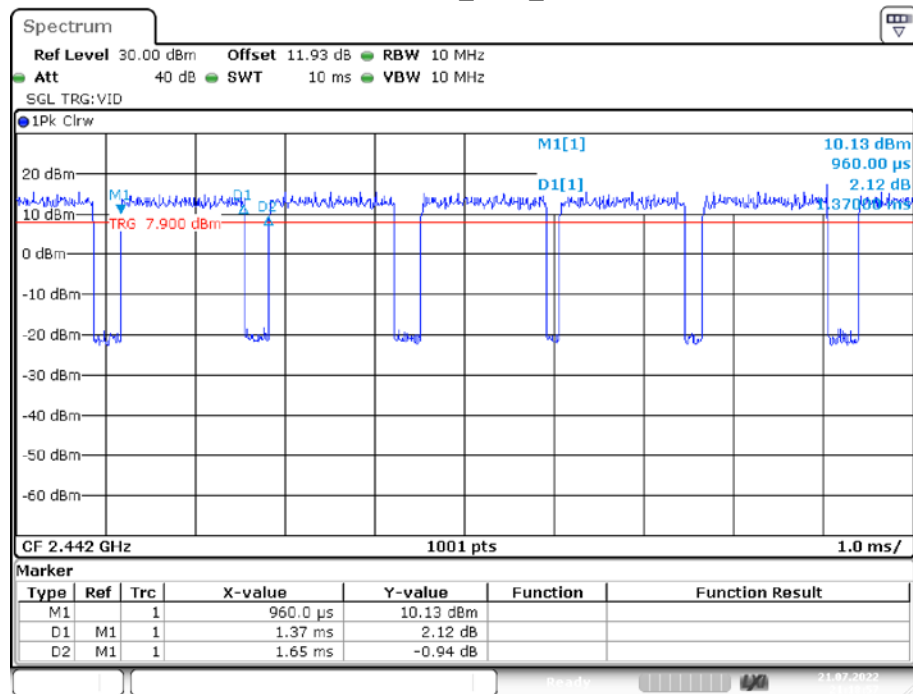
11G MIMO_Ant1_2412



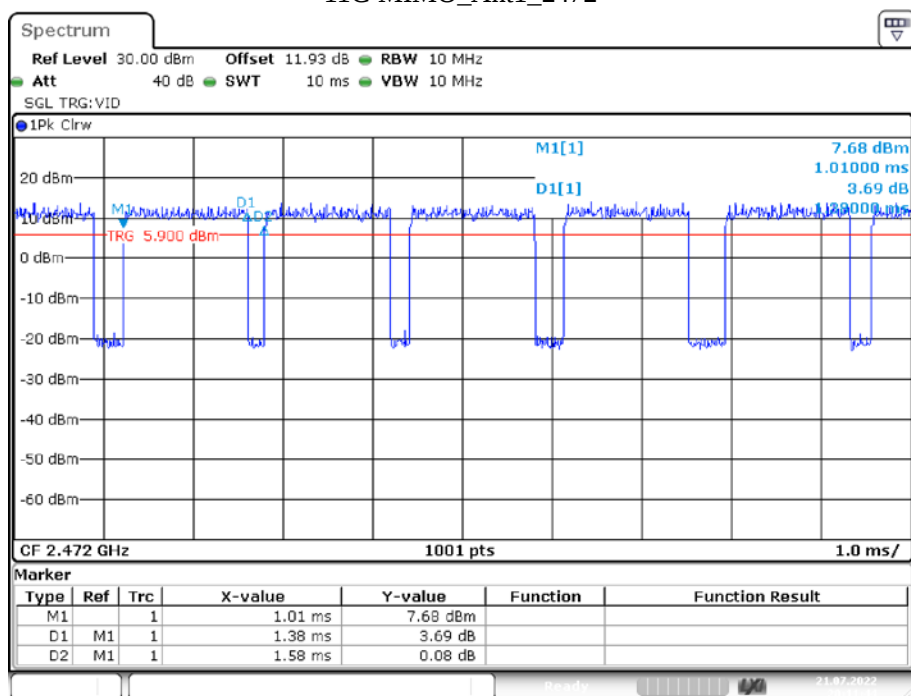
11G MIMO_Ant1_2442



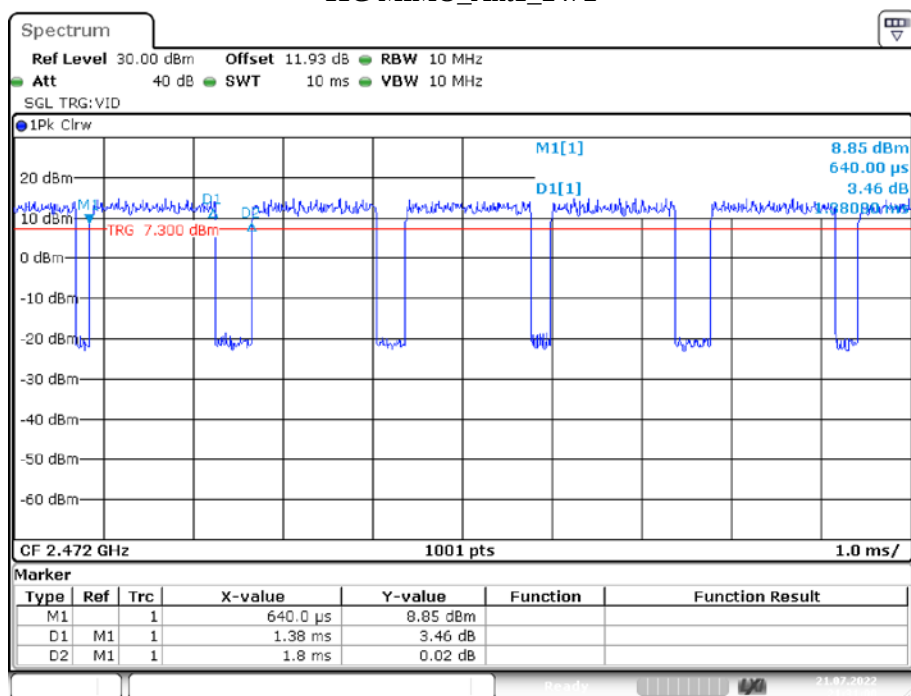
11G MIMO_Ant1_2442



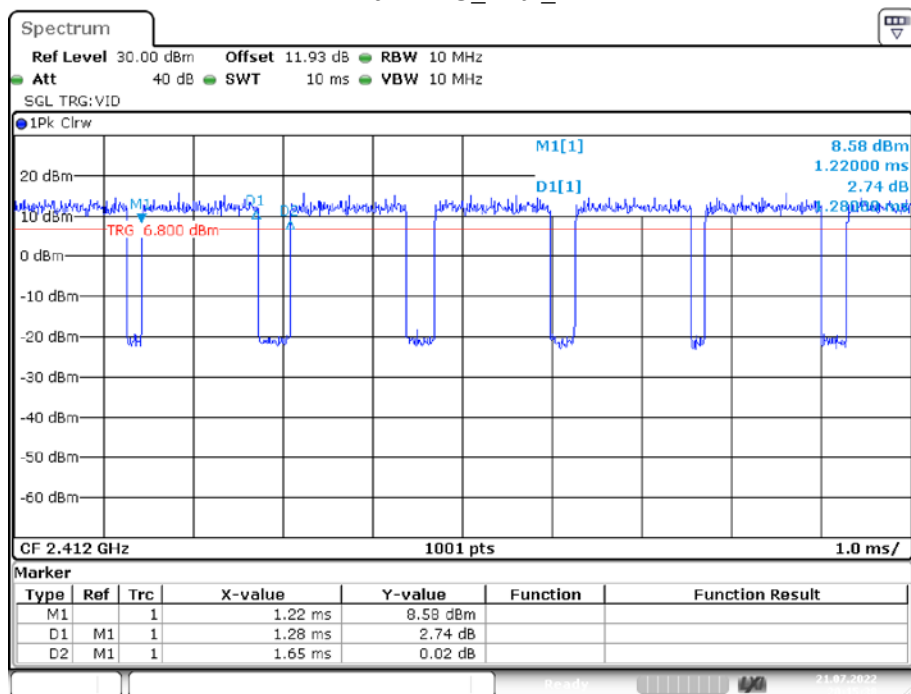
11G MIMO_Ant1_2472



11G MIMO_Ant1_2472

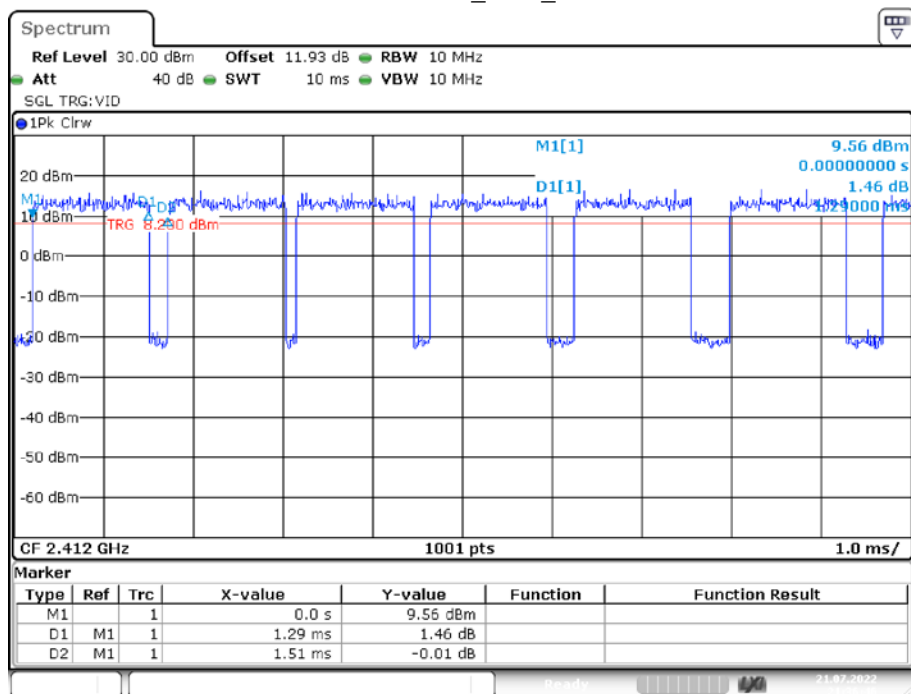


11N20 MIMO_Ant1_2412



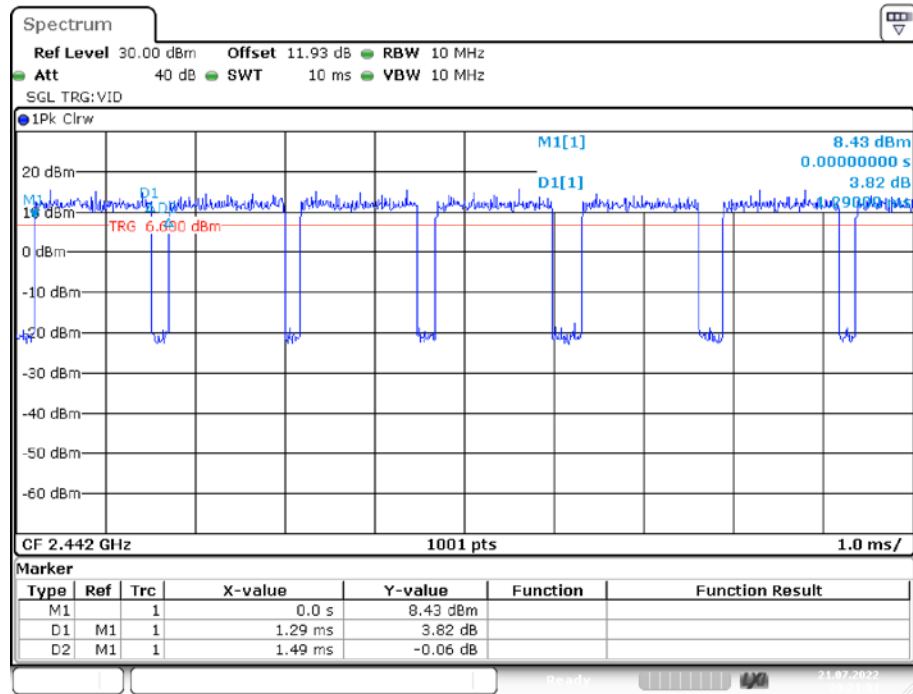
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11N20 MIMO_Ant1_2412

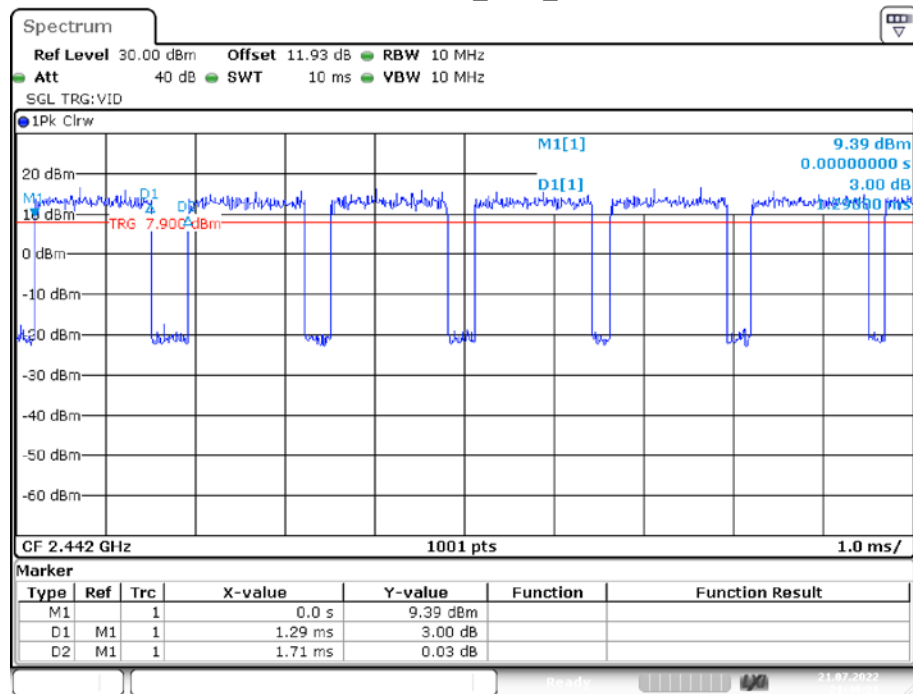


Date: 21.JUL.2022 21:36:47

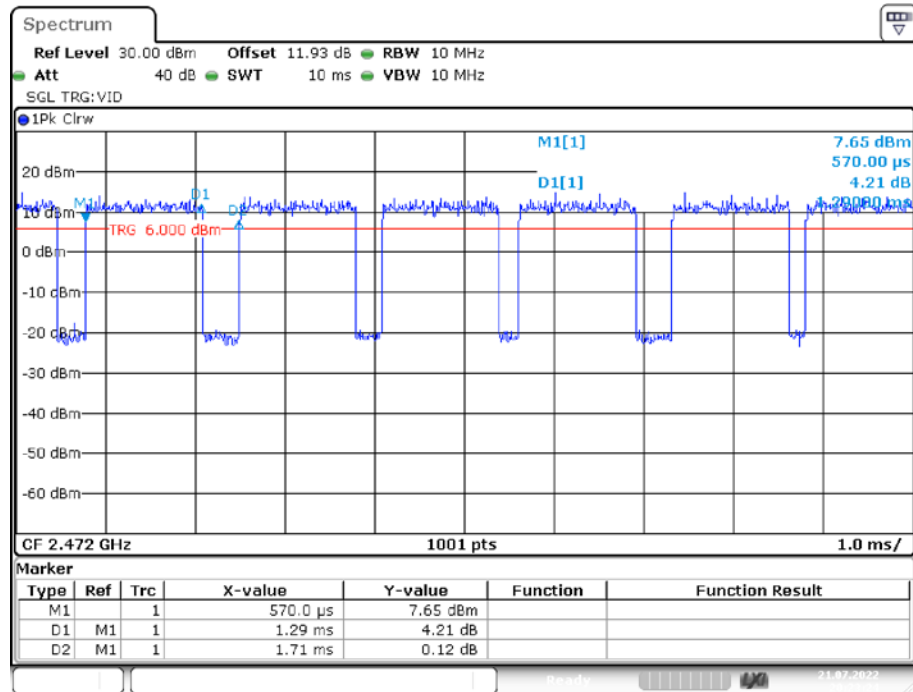
11N20 MIMO_Ant1_2442



11N20 MIMO_Ant1_2442

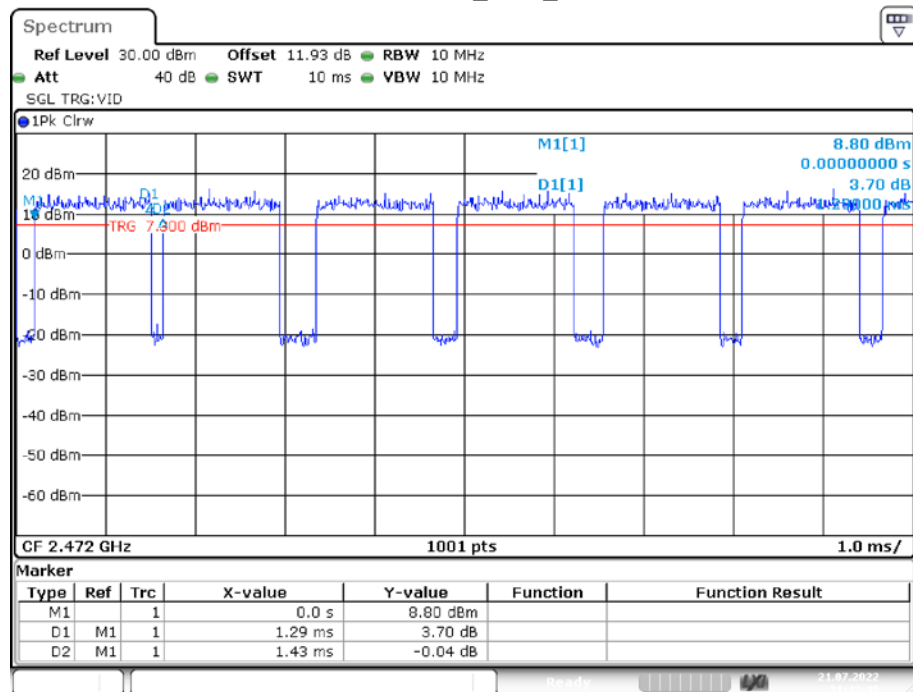


11N20 MIMO_Ant1_2472



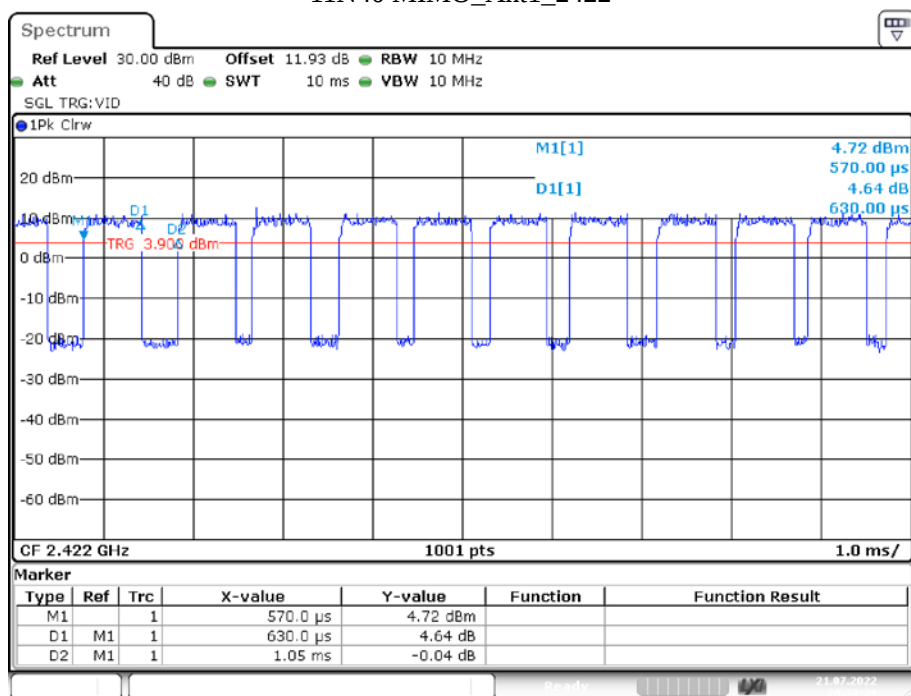
Date: 21.JUL.2022 20:23:25

11N20 MIMO_Ant1_2472



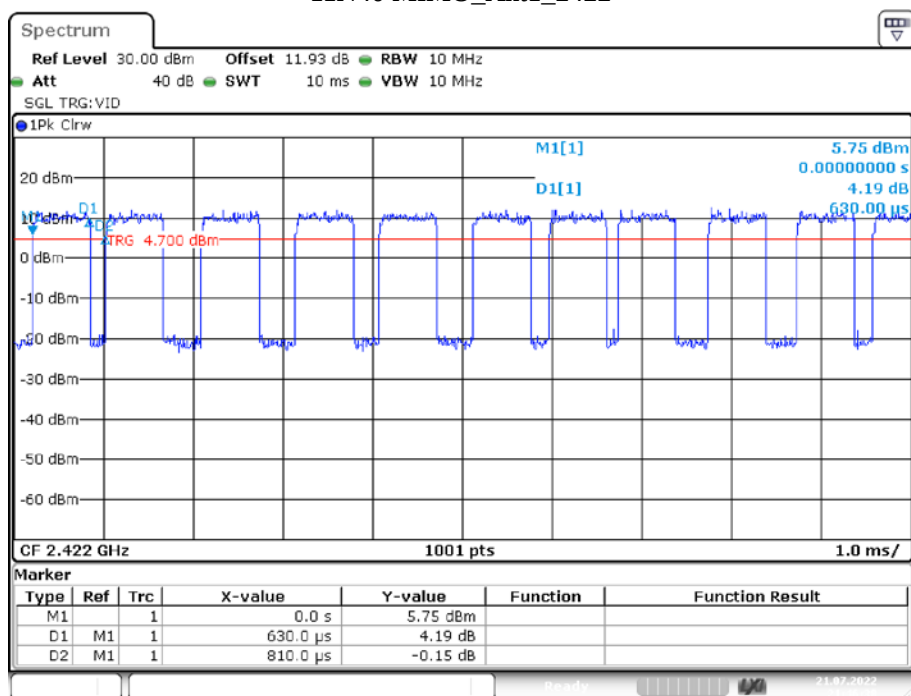
Date: 21.JUL.2022 21:42:49

11N40 MIMO_Ant1_2422



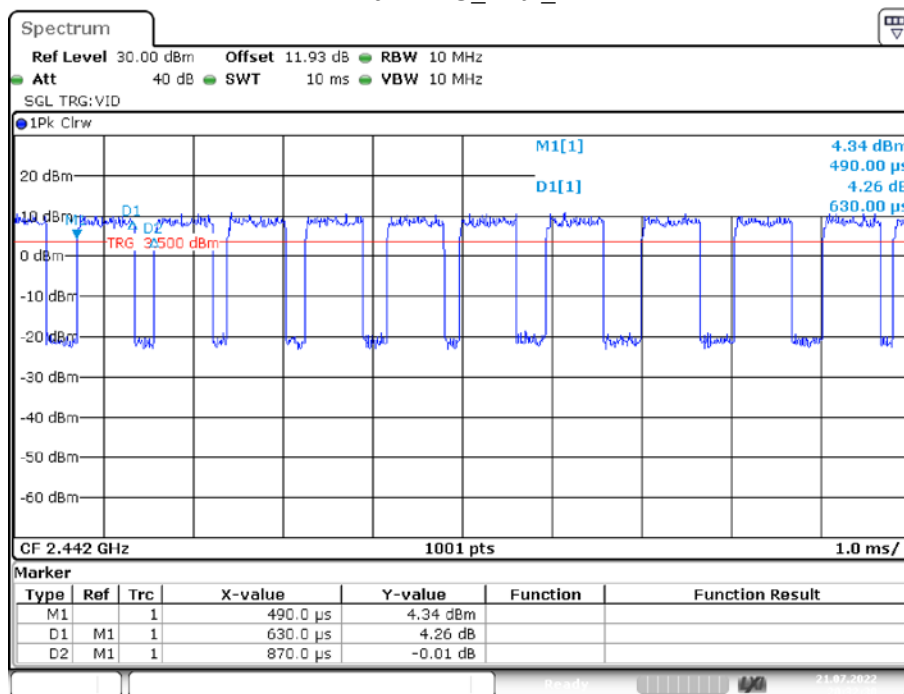
Date: 21.JUL.2022 20:28:30

11N40 MIMO_Ant1_2422



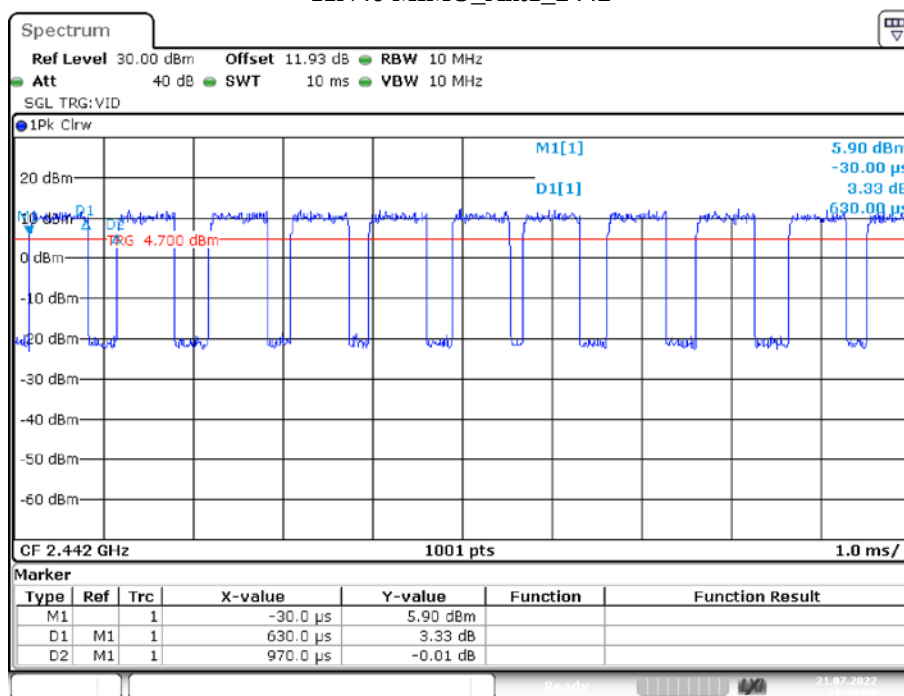
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11N40 MIMO_Ant1_2442



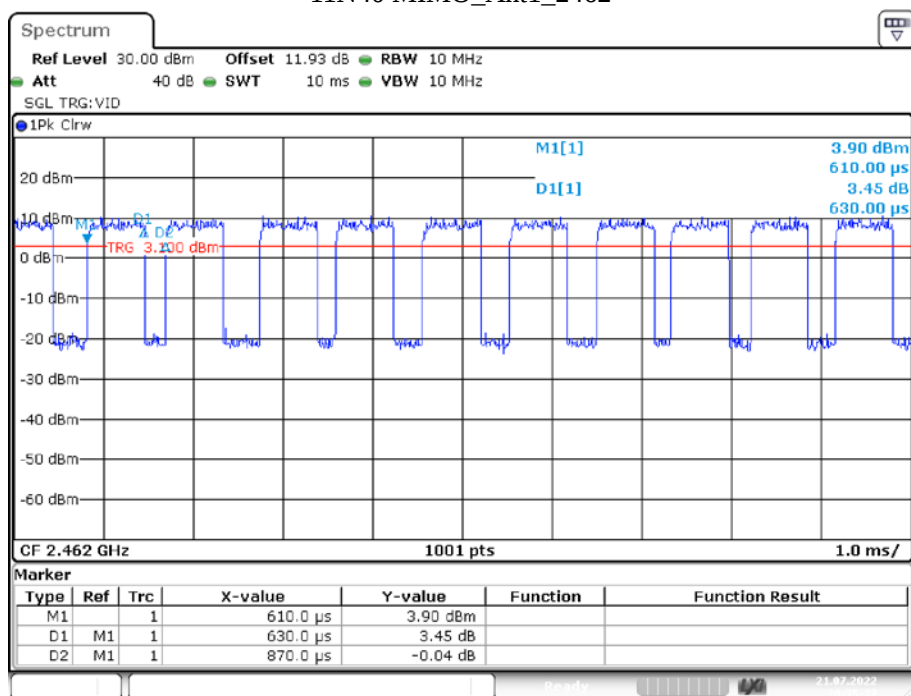
Date: 21.JUL.2022 20:32:30

11N40 MIMO_Ant1_2442

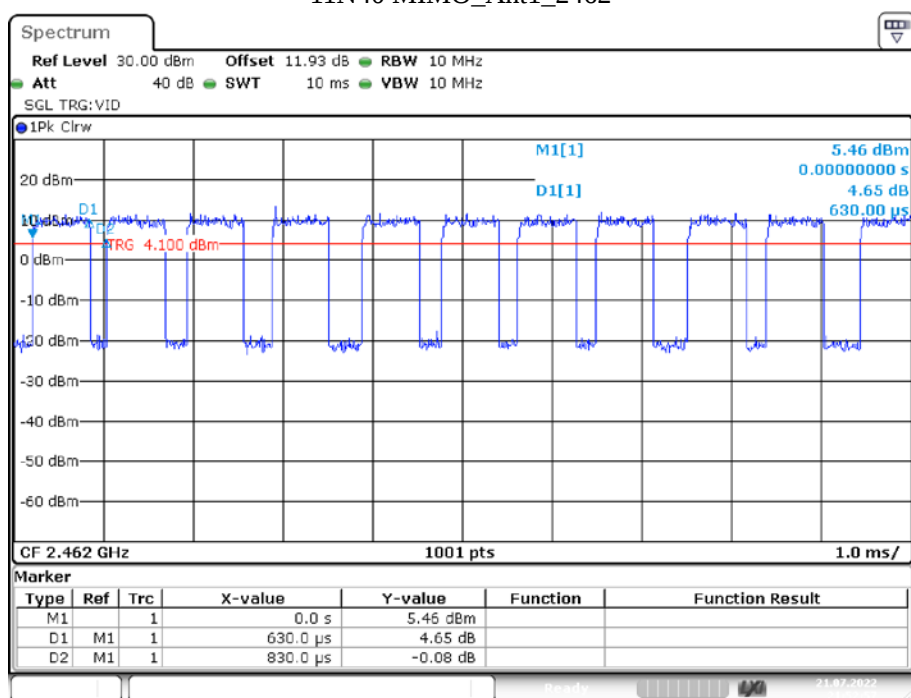


Date: 21.JUL.2022 21:50:10

11N40 MIMO_Ant1_2462



11N40 MIMO_Ant1_2462



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