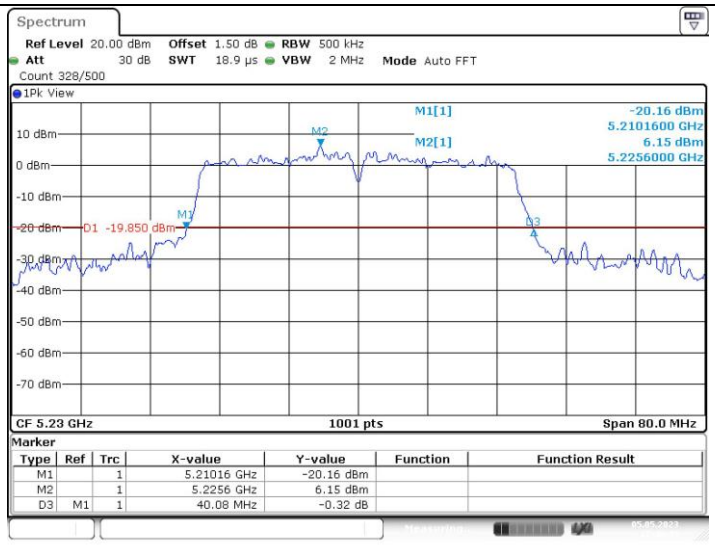
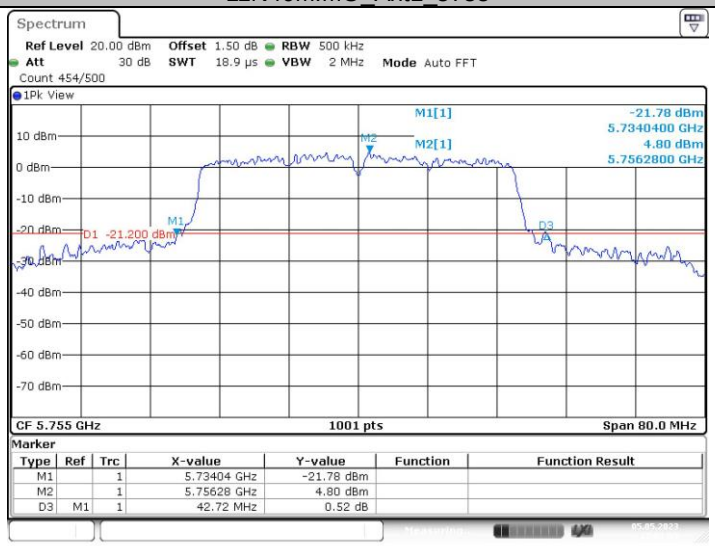


11N40MIMO_Ant1_5755



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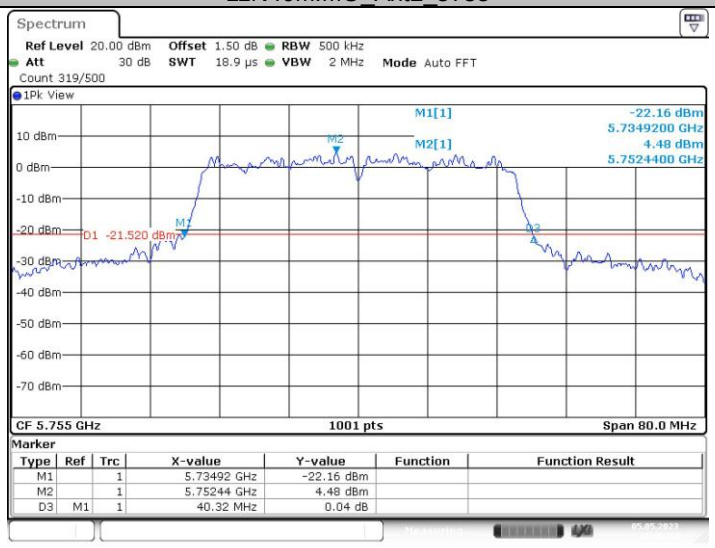

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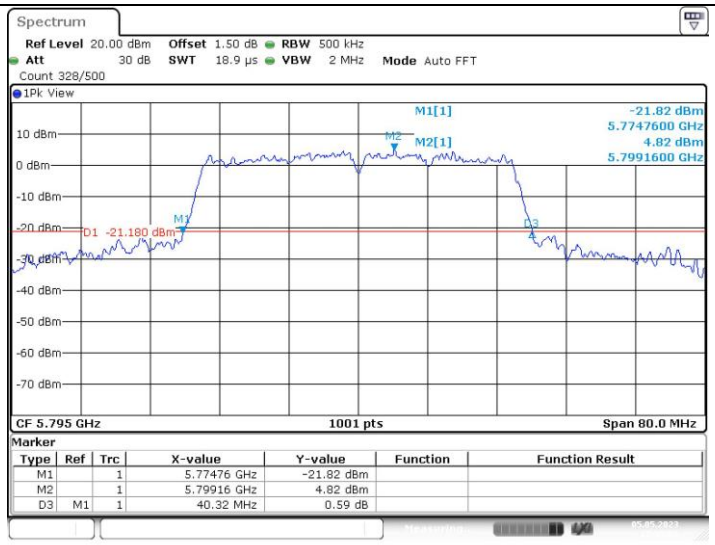

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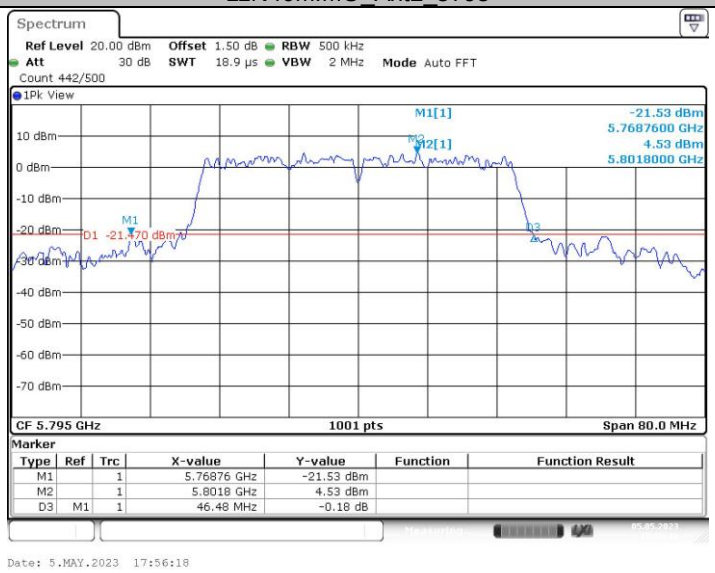
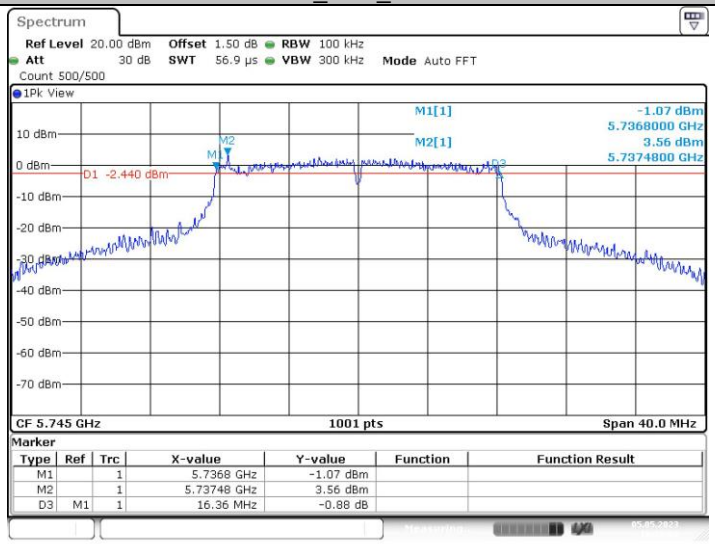


6dB Bandwidth Test

11A_Ant1_5745



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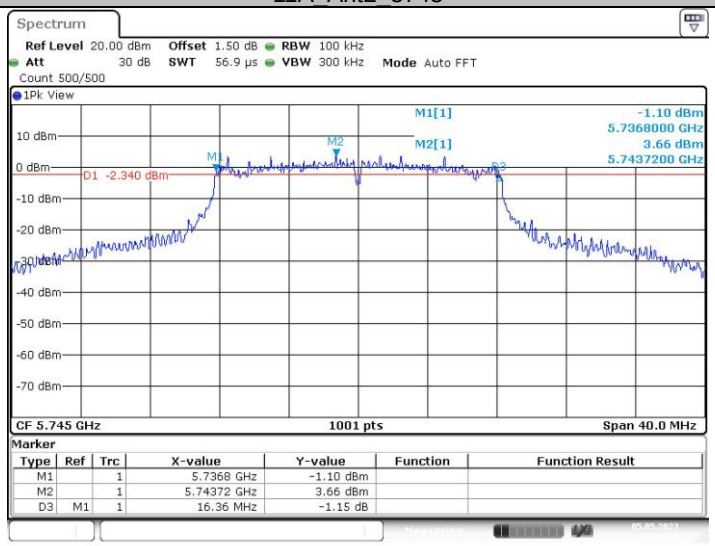
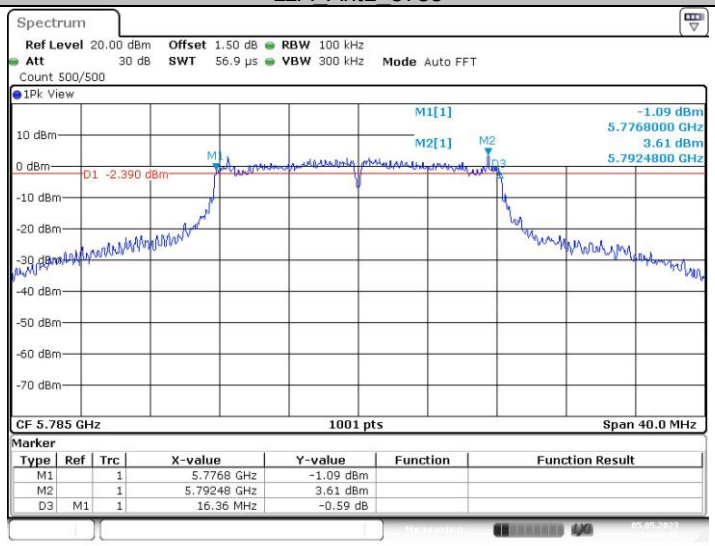


11A_Ant1_5785



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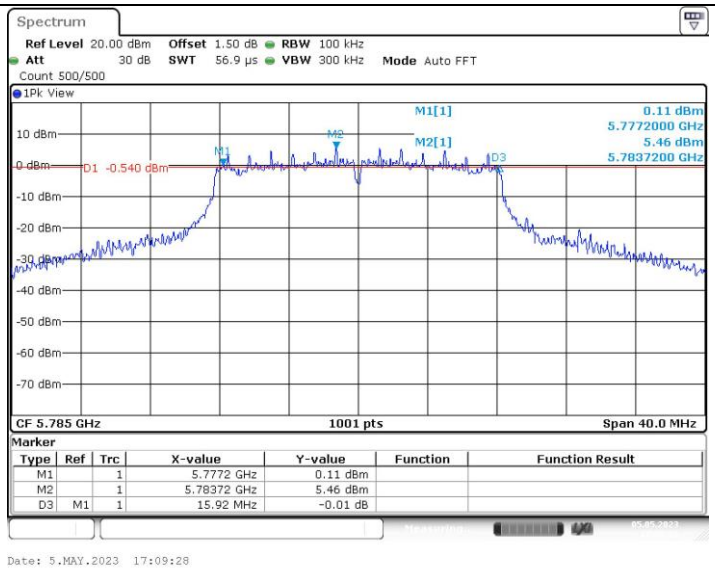

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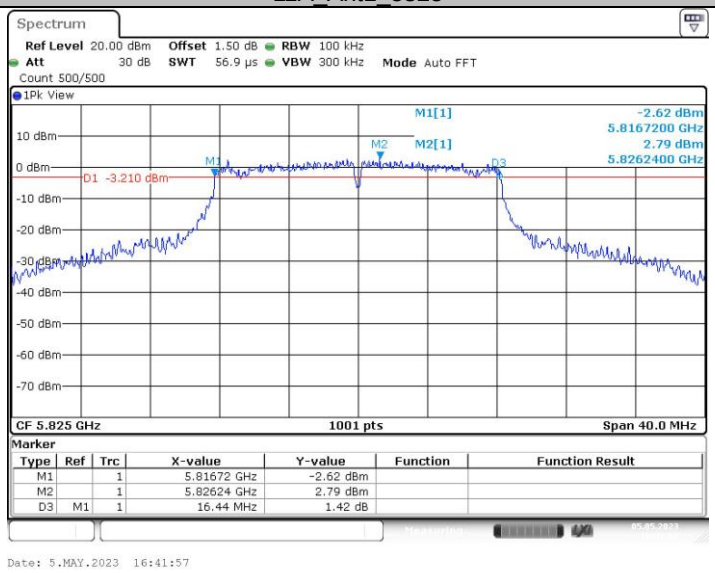

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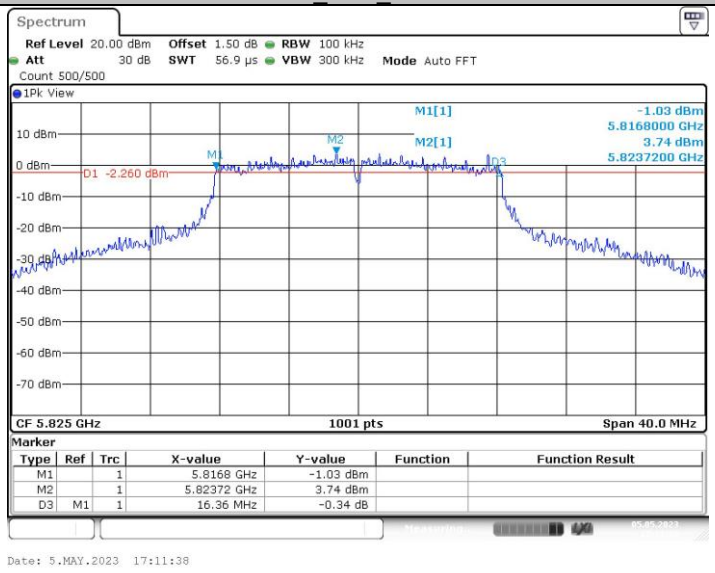

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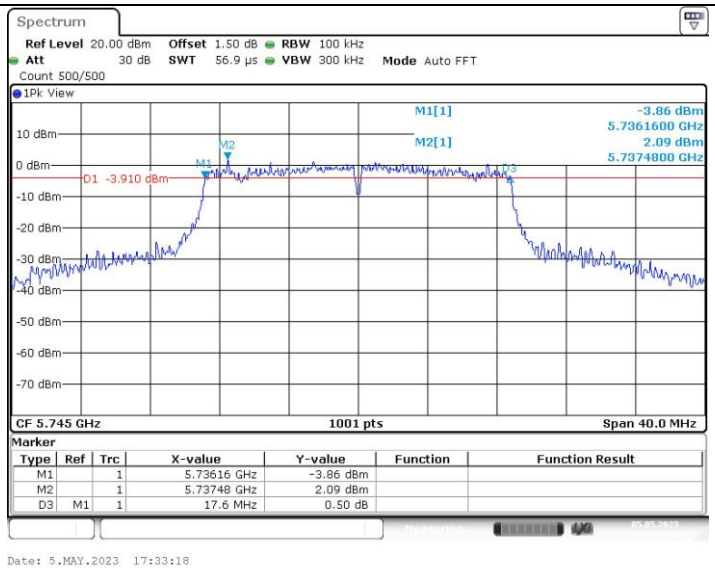

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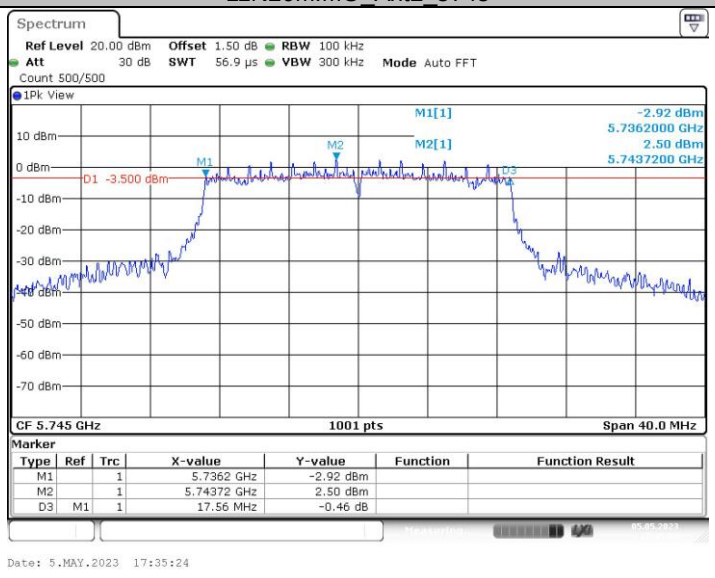

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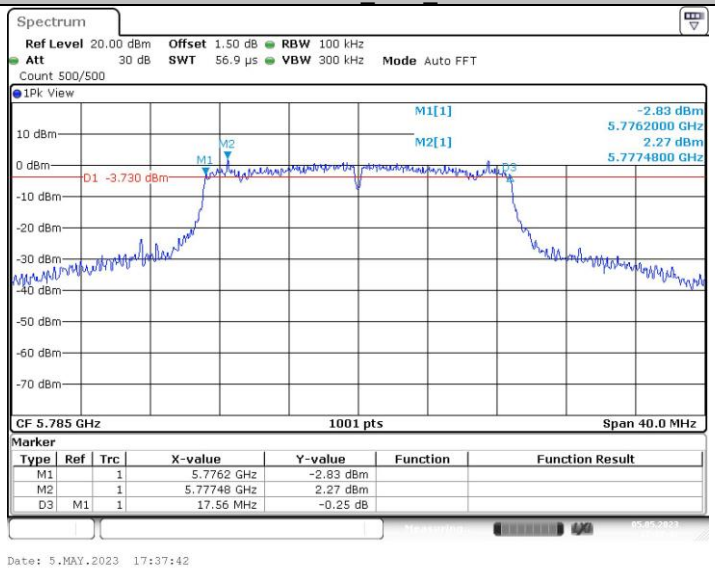

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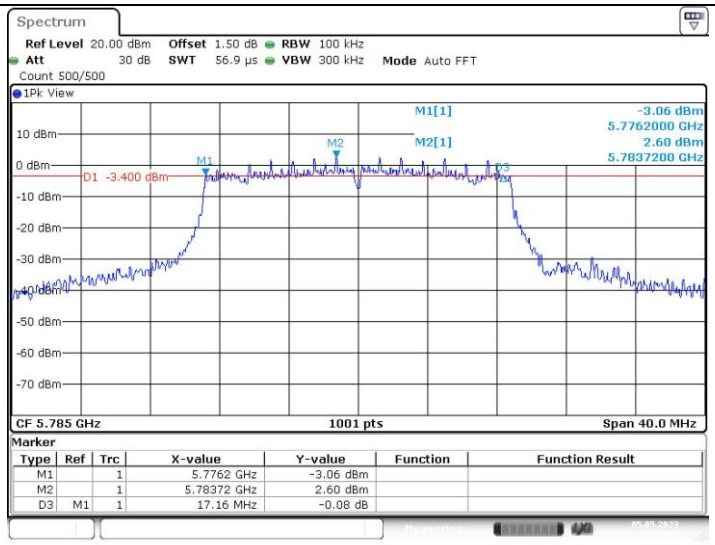

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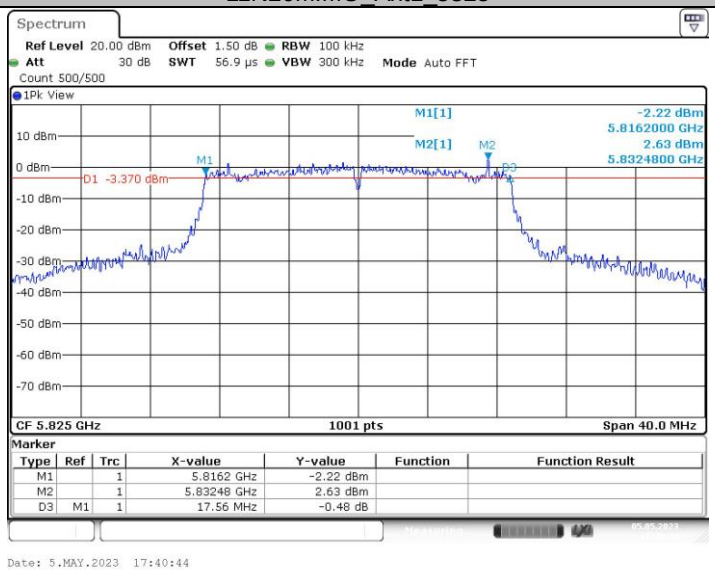

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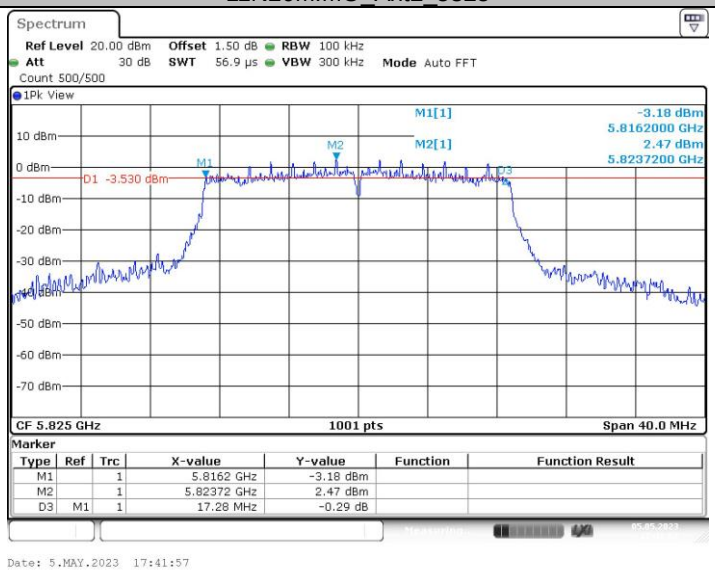
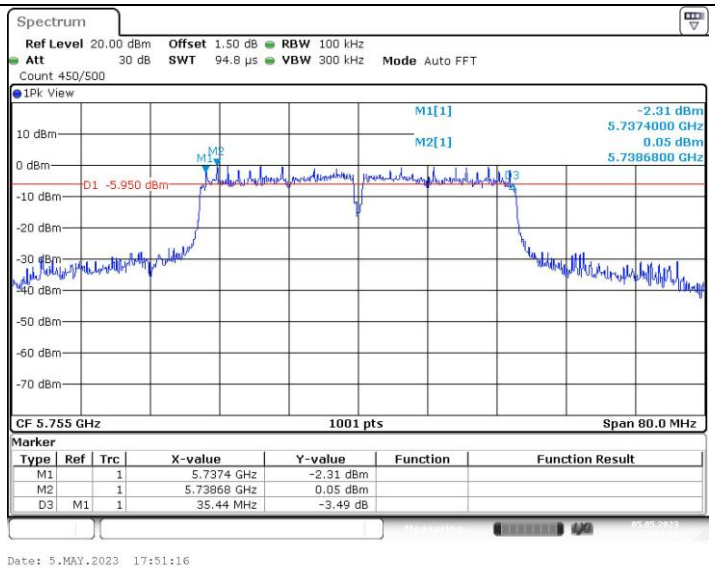


11N40MIMO_Ant1_5755



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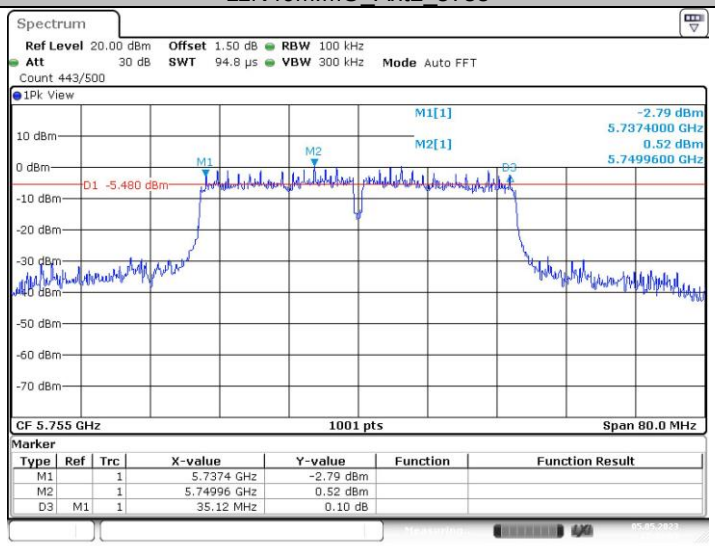

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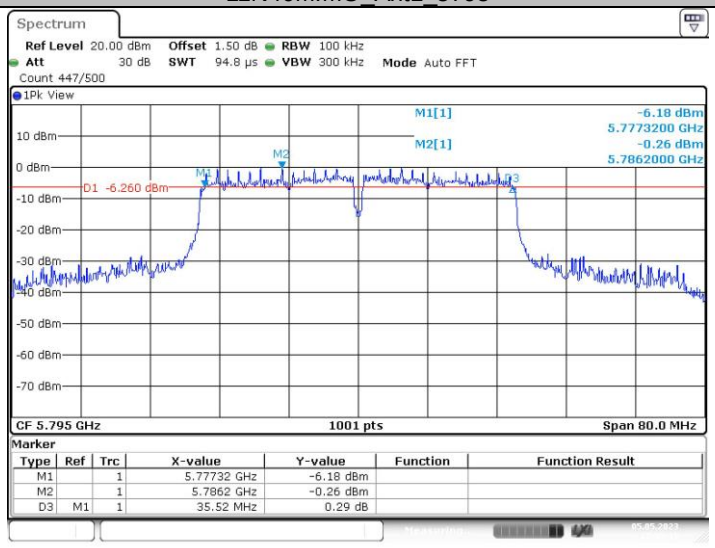

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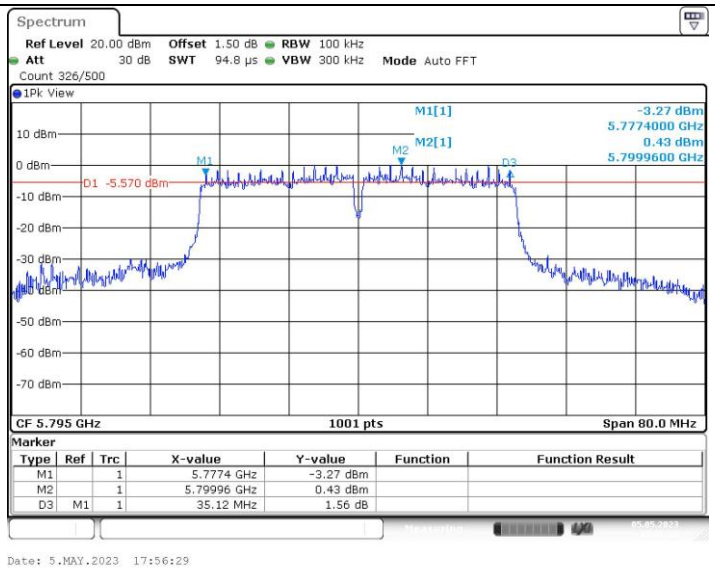
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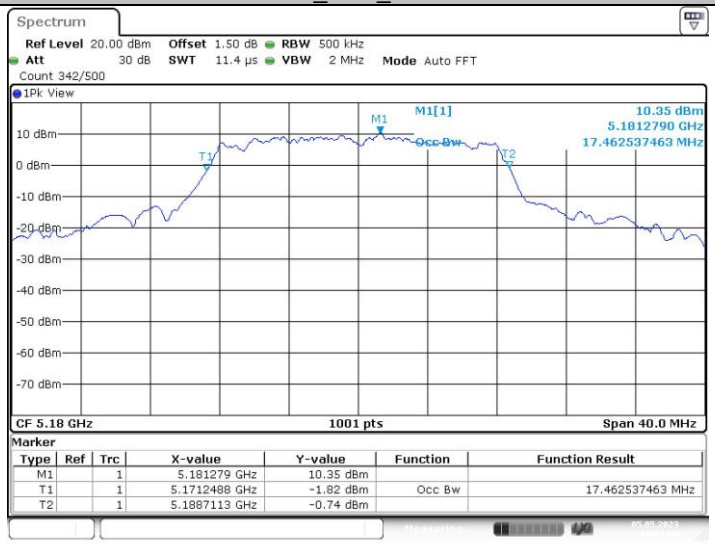
Ref Level 20.00 dBm Offset 1.50 dB RBW 100 kHz
Att 30 dB SWT 94.8 µs VBW 300 kHz Mode Auto FFT
Count 326/500
1Pk View
M1[1] -3.27 dBm 5.7774000 GHz
M2[1] 0.43 dBm 5.7999600 GHz
D1 -5.570 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 5.795 GHz 1001 pts Span 80.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 5.7774 GHz -3.27 dBm
M2 1 5.79996 GHz 0.43 dBm
D3 M1 1 35.12 MHz 1.56 dB
Date: 5.MAY.2023 17:56:29

99% Occupied Bandwidth Test

11A_Ant1_5180



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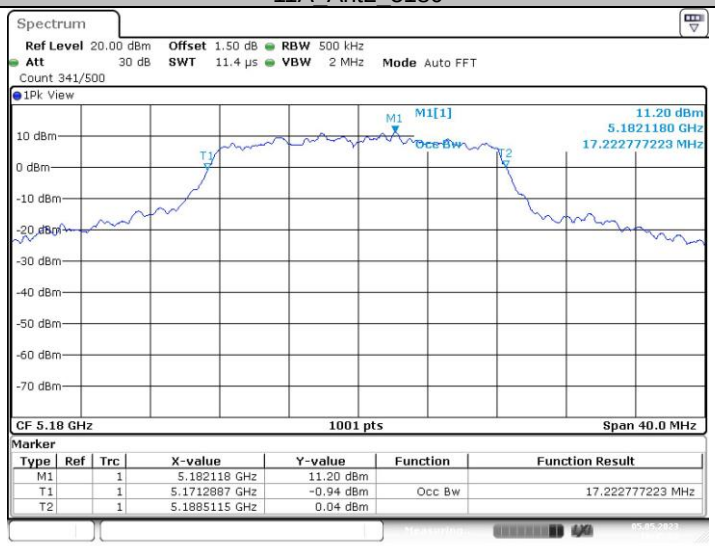
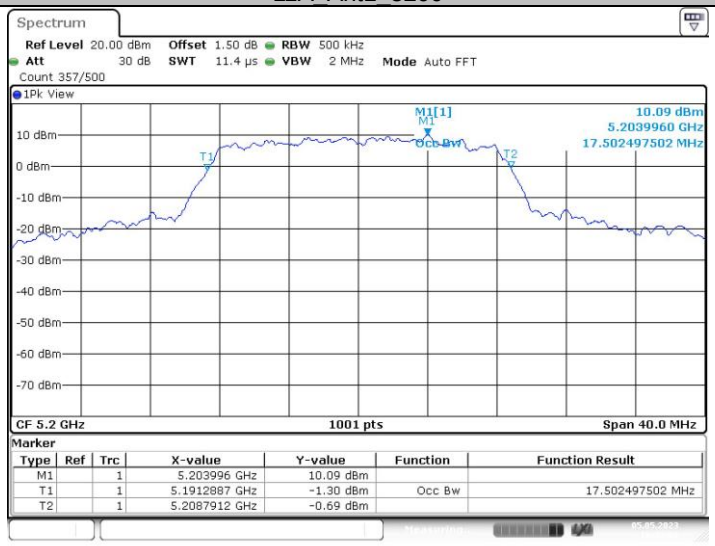


11A_Ant1_5200



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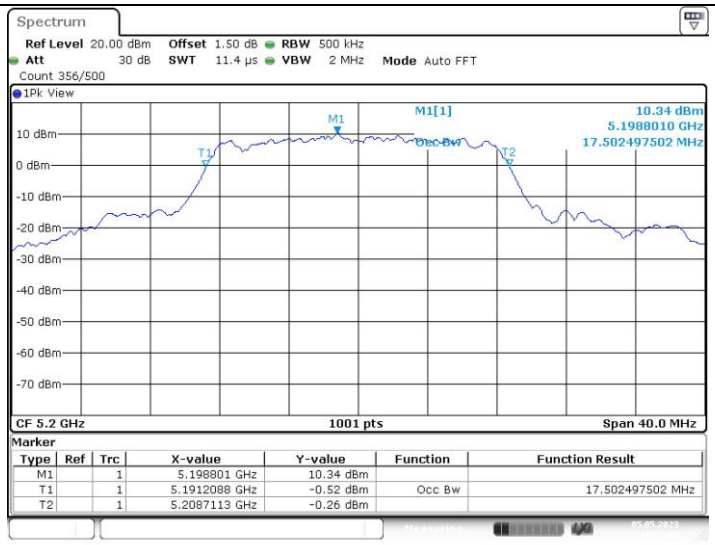
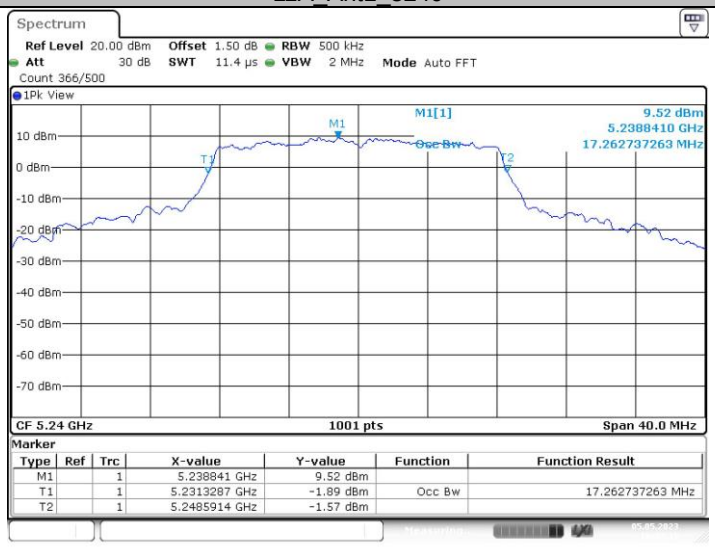


11A_Ant1_5240



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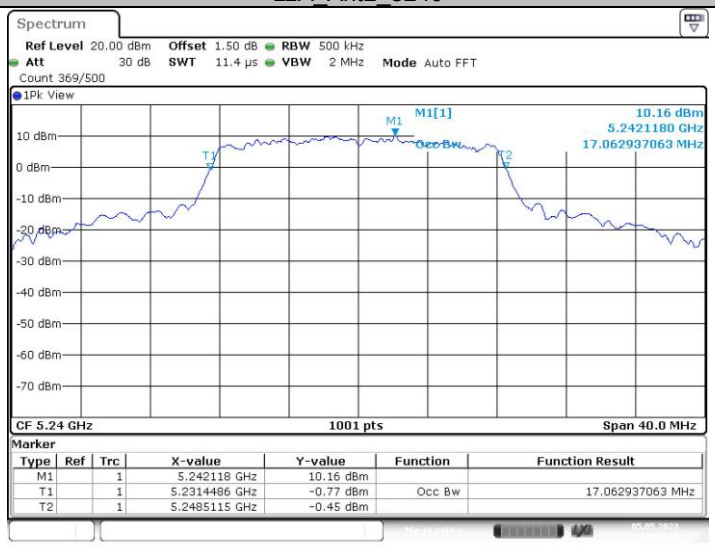

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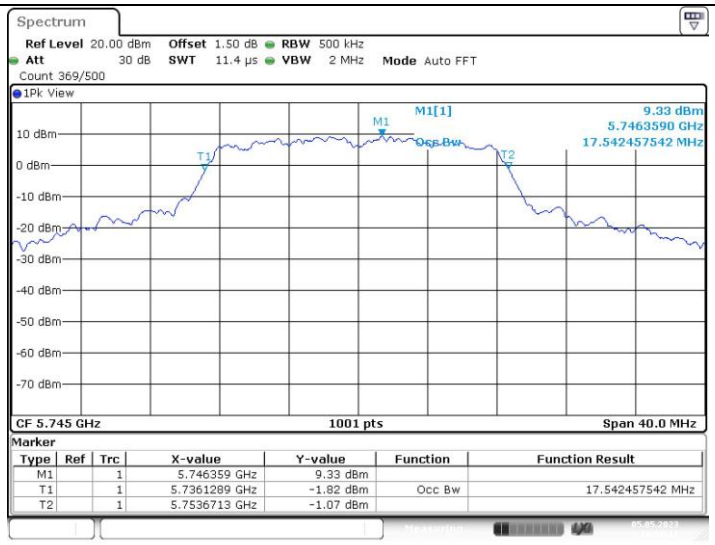

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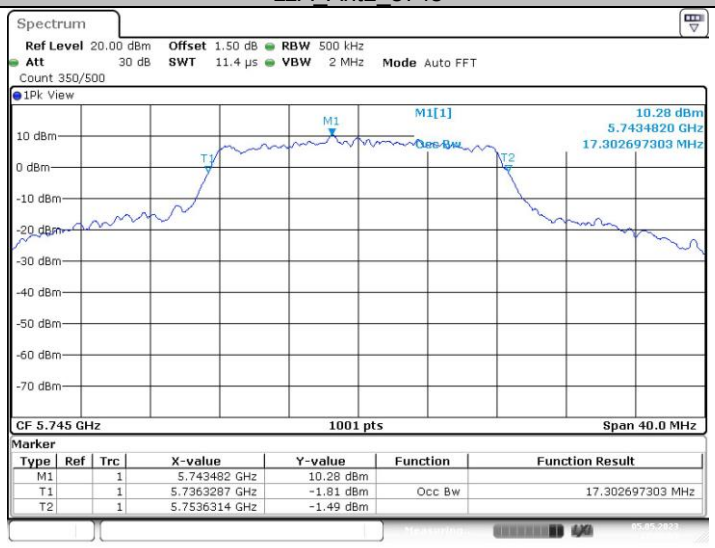

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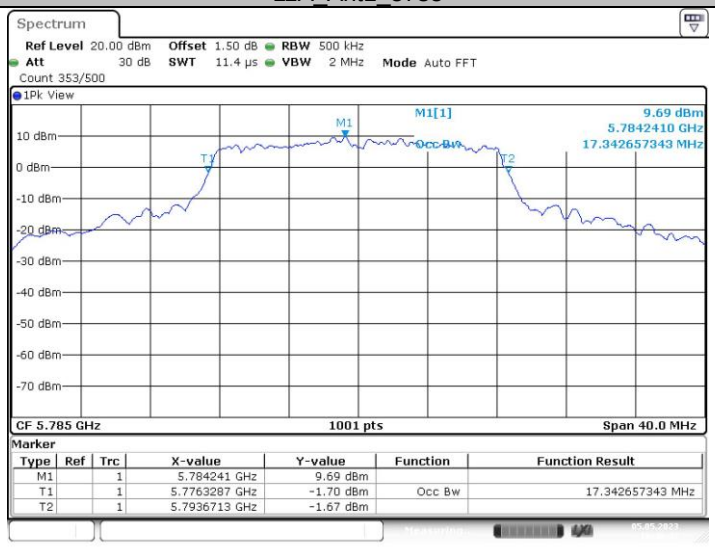

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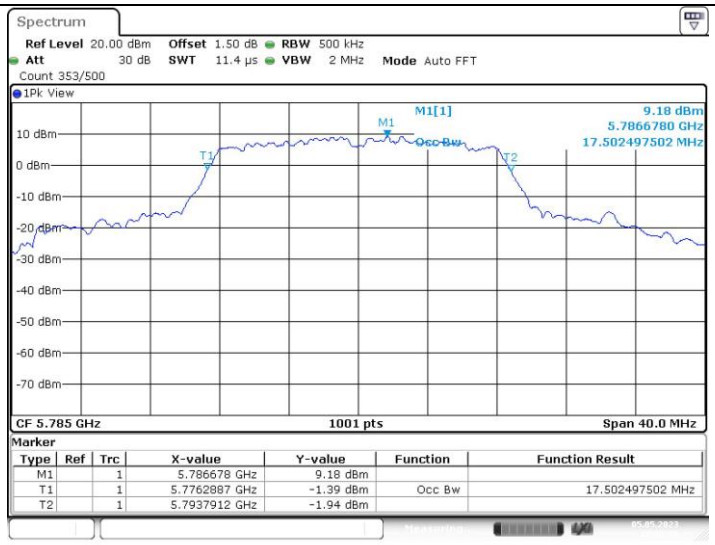

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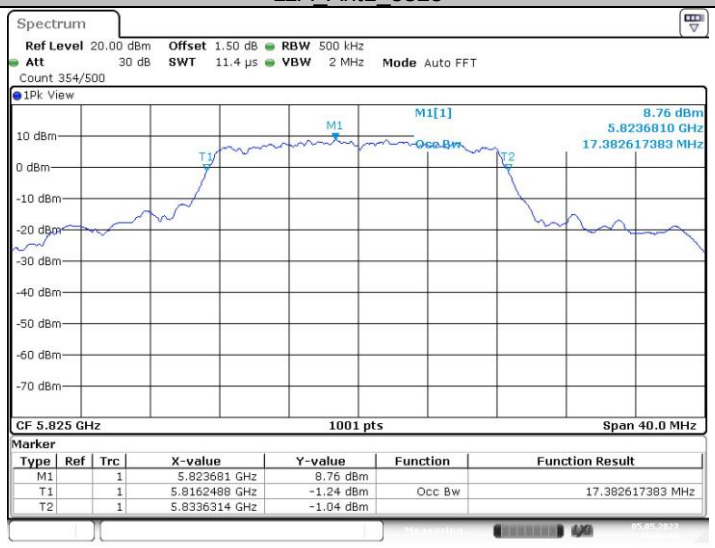

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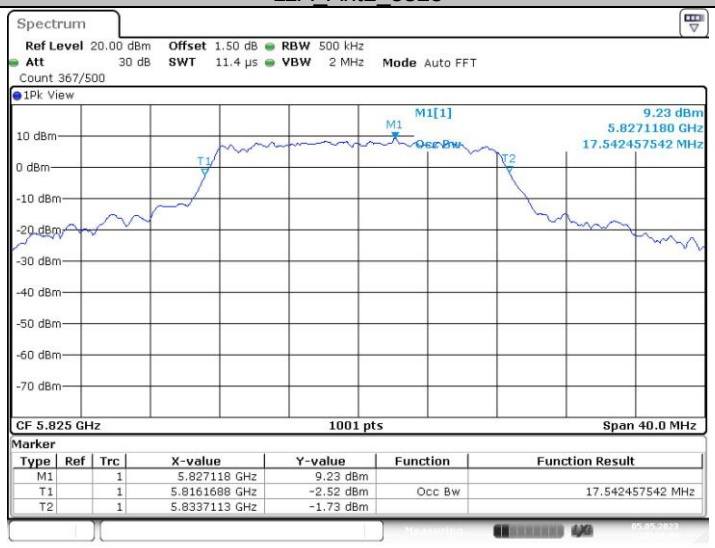
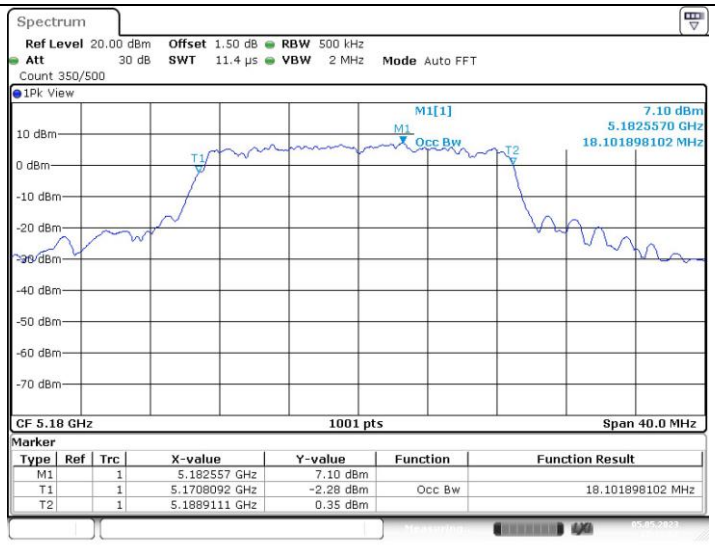


11N20MIMO_Ant1_5180



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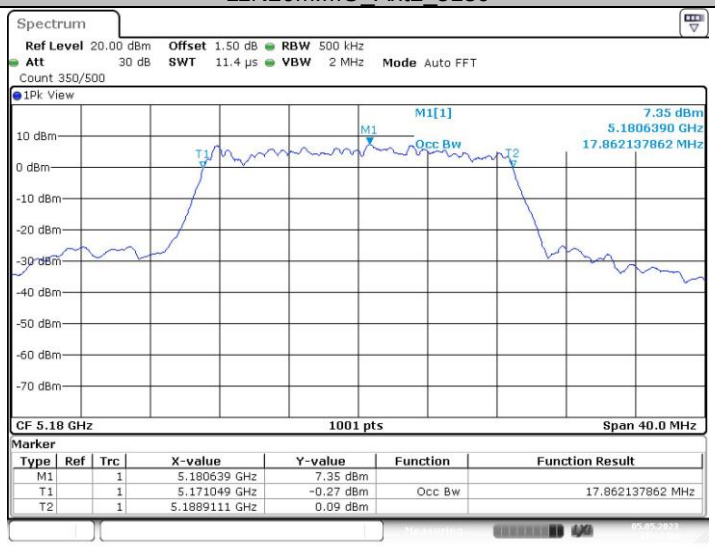

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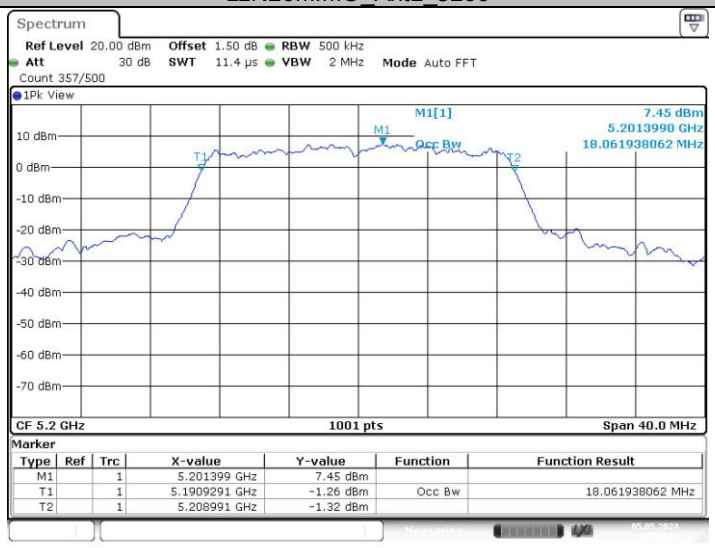

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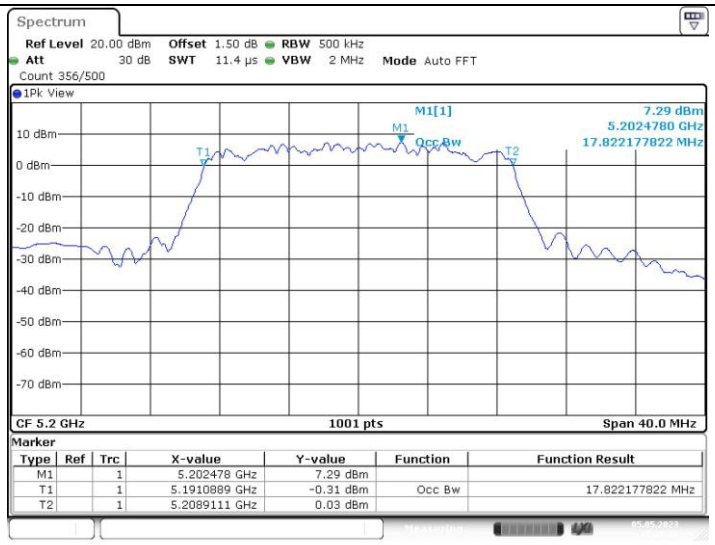

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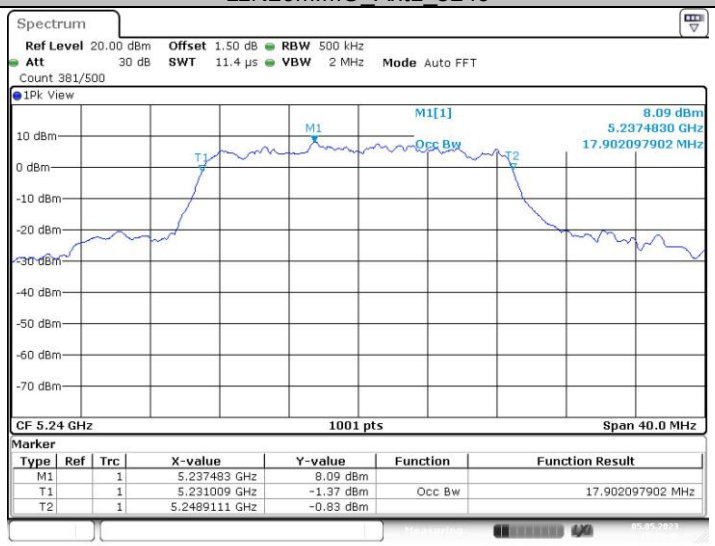

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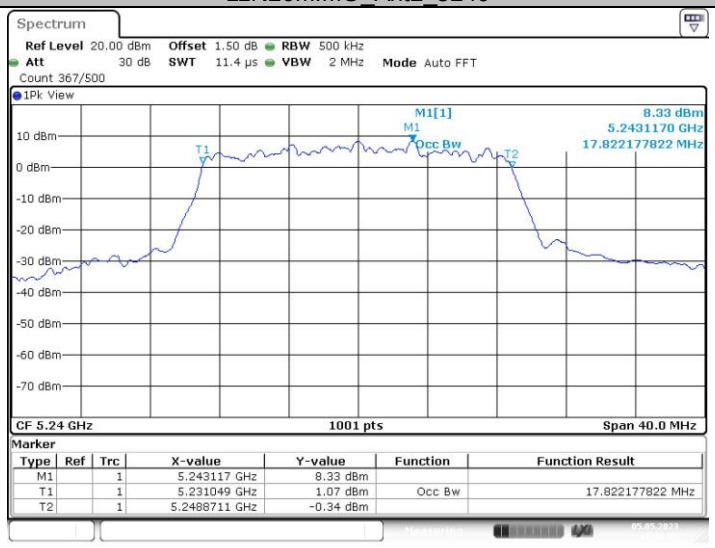

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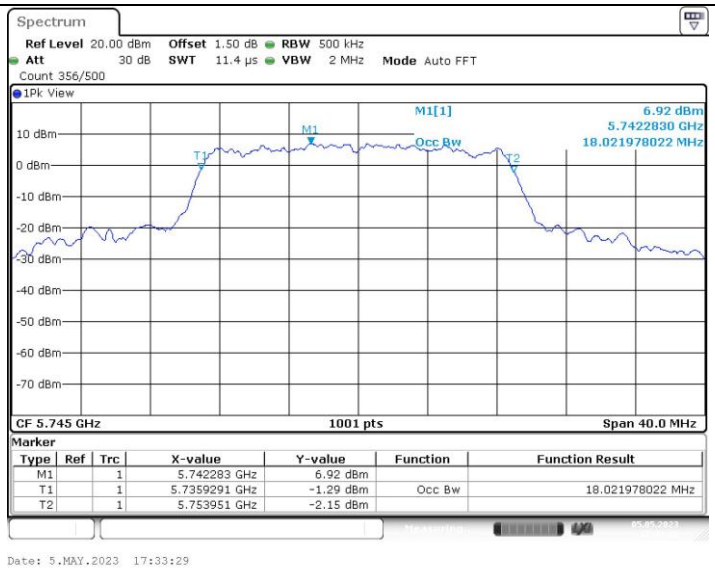

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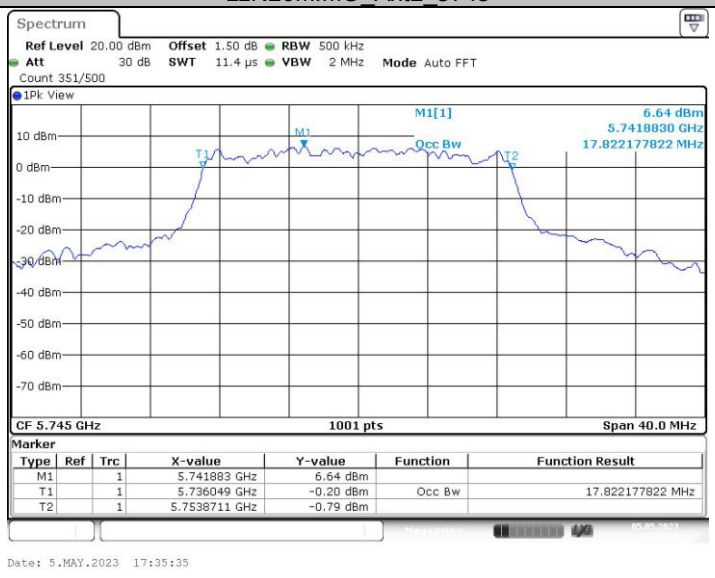

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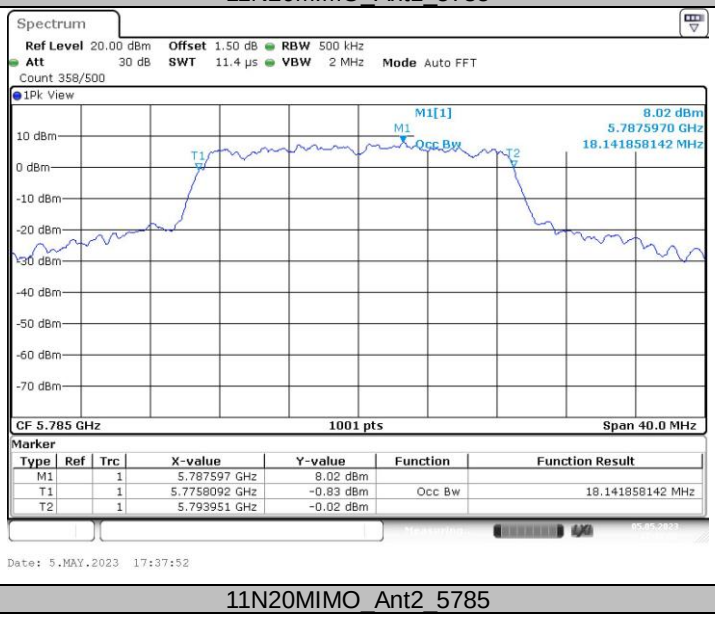

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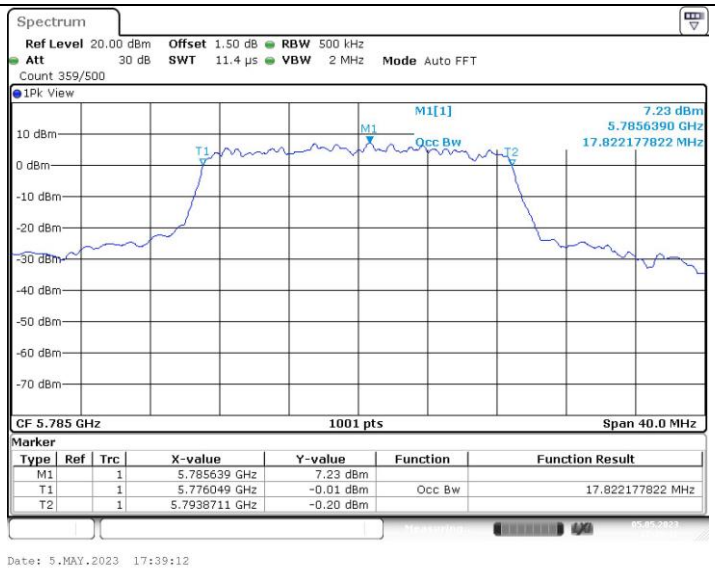

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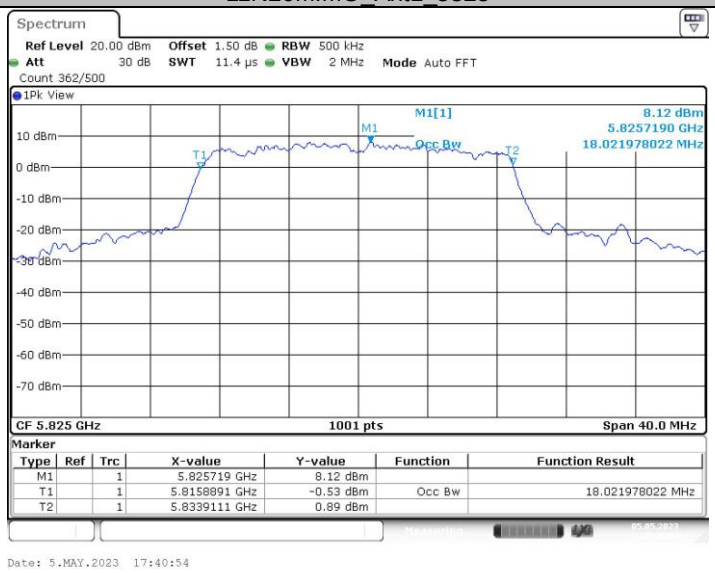

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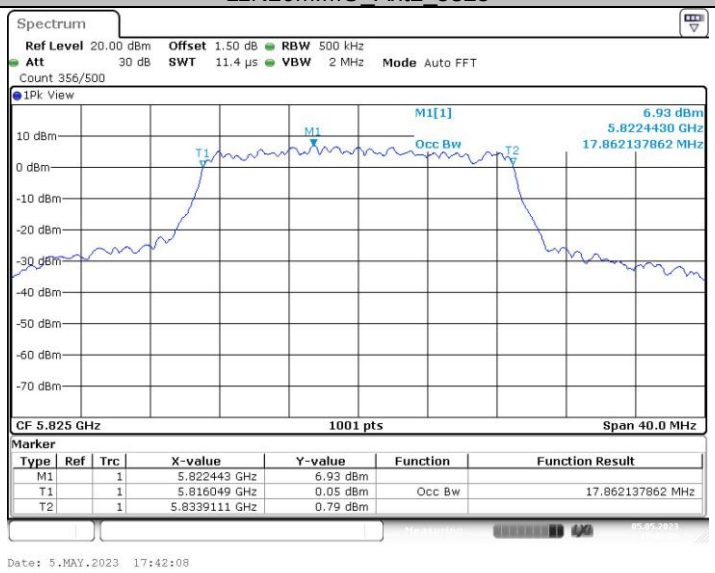

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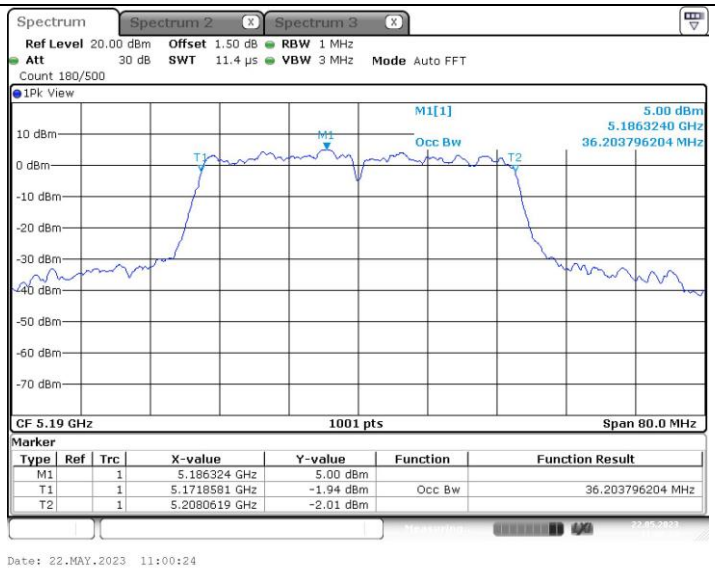

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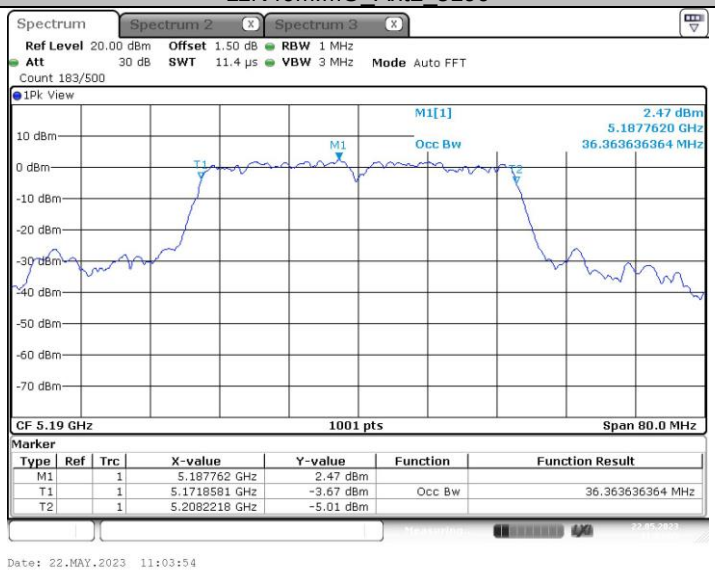

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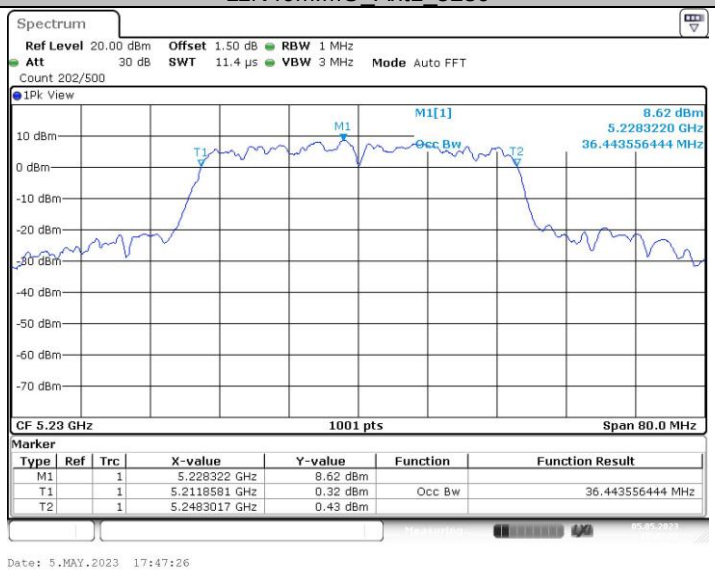

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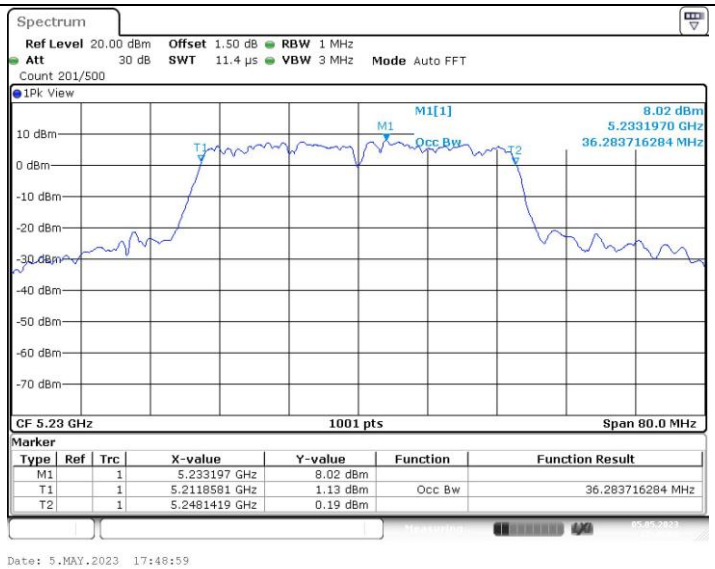

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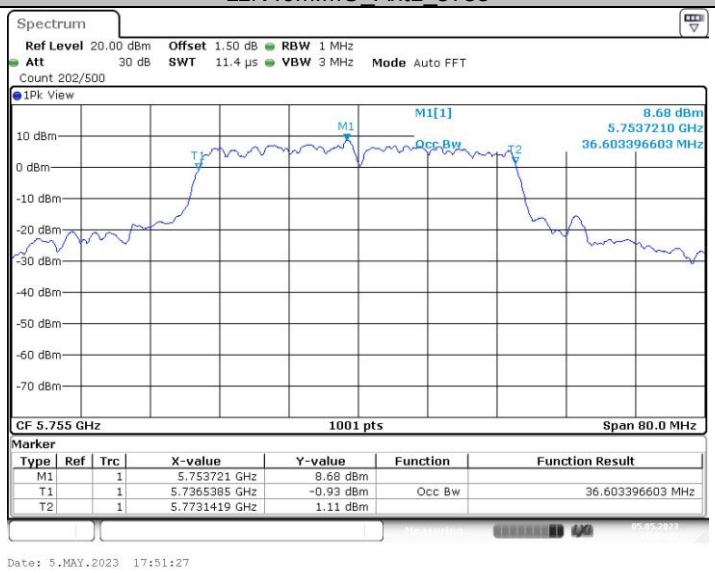

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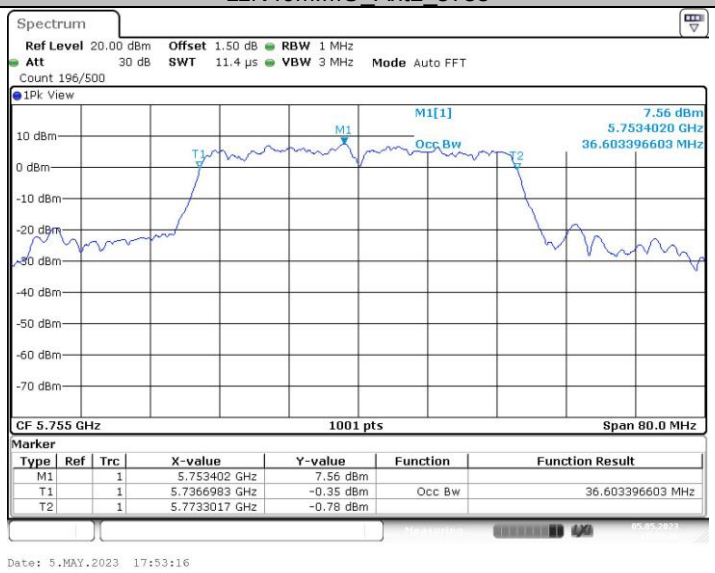
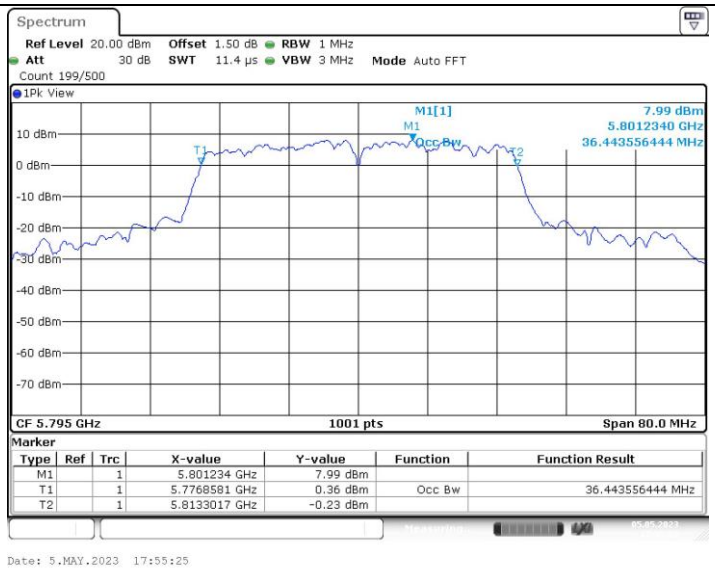
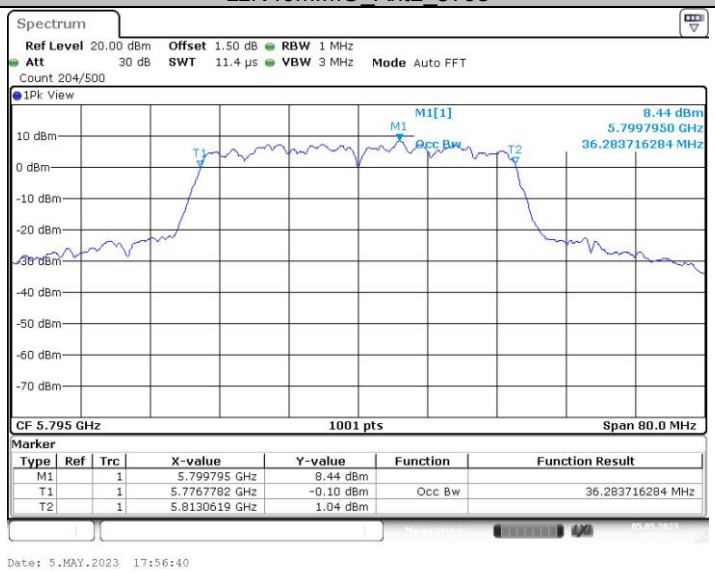


11N40MIMO_Ant1_5795



11N40MIMO_Ant2_5795



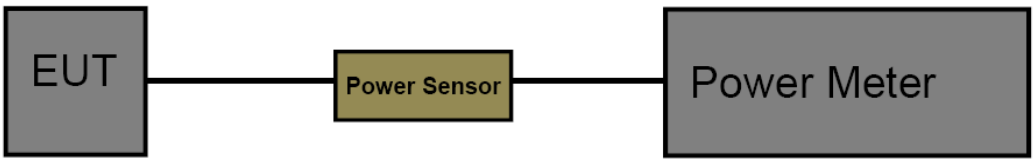
3.5. Output Power Test

Limit

FCC Part 15 Subpart E (15.407)		
Test Item	**Limit**	**Frequency Range(MHz)**
Conducted Output Power	Fixed: 1 Watt (30dBm) Mobile and Portable: 250mW (24dBm)	5150~5250
	250mW (24dBm)	5250~5350
	250mW (24dBm)	5500~5700
	1 Watt (30dBm)	5725~5850

IC Power&PSD Limit					
Frequency	Type of devices	Maximum Conducted Output Power	EIRP Output Power	Conducted Power Spectral Density	EIRP Power Spectral Density
5150MHz-5250MHz	in vehicles		30mW or 1.76 + 10 × $\log_{10}$B dBm, whichever is less (B=99% OBW in MHz)		
	Other Devices		200mW or 10 + 10 × $\log_{10}$B dBm, whichever is less (B=99% OBW in MHz)		10dBm/MHz
5250MHz-5350MHz	in vehicles		30mW or 1.76 + 10 × $\log_{10}$B dBm, whichever is less (B=99% OBW in MHz)		
	Other Devices	250mW or 11 + 10 × $\log_{10}$B dBm, whichever is less (B=99% OBW in MHz)	1W or 17 + 10 ×$\log_{10}$B dBm, whichever is less (B=99% OBW in MHz)	11dBm/Mhz	
5470MHz-5600MHz 5650MHz-5725MHz	ALL Devices	250mW or 11 + 10 × $\log_{10}$B dBm, whichever is less (B=99% OBW in MHz)	1W or 17 + 10 ×$\log_{10}$B dBm, whichever is less (B=99% OBW in MHz)	11dBm/Mhz	
5725MHz-5850MHz	ALL Devices	1W		30dBm/500KHz	

Test Configuration



Test Procedure

The measurement is according to section 3 of KDB 789033 D02 General UNII Test Procedures New Rules V02r01.

Test Mode

Please refer to the clause 2.4.

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11A	Ant1	5180	16.26	≤30	PASS
	Ant2	5180	16.30	≤30	PASS
	Ant1	5200	16.15	≤30	PASS
	Ant2	5200	16.10	≤30	PASS
	Ant1	5240	16.14	≤30	PASS
	Ant2	5240	16.16	≤30	PASS
	Ant1	5745	15.44	≤30	PASS
	Ant2	5745	15.49	≤30	PASS
	Ant1	5785	15.68	≤30	PASS
	Ant2	5785	15.41	≤30	PASS
	Ant1	5825	15.57	≤30	PASS
	Ant2	5825	15.88	≤30	PASS
11N20MIMO	Ant1	5180	13.85	≤28	PASS
	Ant2	5180	12.79	≤28	PASS
	total	5180	16.4	≤28	PASS
	Ant1	5200	14.13	≤28	PASS
	Ant2	5200	12.87	≤28	PASS
	total	5200	16.6	≤28	PASS
	Ant1	5240	13.81	≤28	PASS
	Ant2	5240	12.98	≤28	PASS
	total	5240	16.4	≤28	PASS
	Ant1	5745	13.98	≤28	PASS
	Ant2	5745	12.66	≤28	PASS
	total	5745	16.4	≤28	PASS
	Ant1	5785	14.37	≤28	PASS
	Ant2	5785	12.89	≤28	PASS
	total	5785	16.7	≤28	PASS
	Ant1	5825	14.39	≤28	PASS
	Ant2	5825	12.64	≤28	PASS
	total	5825	16.6	≤28	PASS
11N40MIMO	Ant1	5190	10.85	≤28	PASS
	Ant2	5190	9.10	≤28	PASS
	total	5190	13.1	≤28	PASS
	Ant1	5230	14.17	≤28	PASS
	Ant2	5230	13.32	≤28	PASS
	total	5230	16.8	≤28	PASS
	Ant1	5755	14.21	≤28	PASS
	Ant2	5755	13.15	≤28	PASS
	total	5755	16.7	≤28	PASS
	Ant1	5795	14.19	≤28	PASS
	Ant2	5795	13.56	≤28	PASS
	total	5795	16.9	≤28	PASS

3.6. Power Spectral Density Test

Limit

FCC Part 15 Subpart E(15.407)/ RSS-247

For the 5.15~5.25GHz band:

- Outdoor AP

  The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz.
  If G_{Tx}>6dBi, then PSD =17-(G_{Tx}-6).
- Indoor AP

  The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz.
  If G_{Tx}>6dBi, then PSD =17-(G_{Tx}-6).
- Point-to-point AP

  The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz.
  If G_{Tx}>23dBi, then PSD =17-(G_{Tx}-23).
- Client devices

  The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz.
  If G_{Tx}>6dBi, then PSD =11-(G_{Tx}-6).

For the 5.25~5.35GHz band:

The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz.
If G_{Tx}>6dBi, then PSD =11-(G_{Tx}-6).

For the 5.47~5.725GHz band:

The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz.
If G_{Tx}>6dBi, then PSD =11-(G_{Tx}-6).

For the 5.725~5.85GHz band:

- Point-to-multipoint systems (P2M)

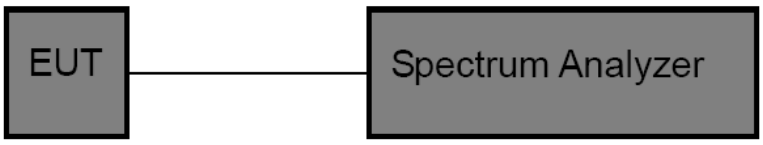
  The peak power spectral density (PSD) shall not exceed the lesser of 30dBm/500kHz.
  If G_{Tx}>6dBi, then PSD =30-(G_{Tx}-6).
- Point-to-point systems (P2P)

  The peak power spectral density (PSD) shall not exceed the lesser of 30dBm/500kHz.

Note: G_{Tx}: EUT Antenna gain.

IC Power&PSD Limit					
Frequency	Type of devices	Maximum Conducted Output Power	EIRP Output Power	Conducted Power Spectral Density	EIRP Power Spectral Density
5150MHz-5250MHz	in vehicles		30mW or 1.76 + 10 × $\log_{10}$B dBm, whichever is less (B=99% OBW in MHz)		
	Other Devices		200mW or 10 + 10 × $\log_{10}$B dBm, whichever is less (B=99% OBW in MHz)		10dBm/MHz
5250MHz-5350MHz	in vehicles		30mW or 1.76 + 10 × $\log_{10}$B dBm, whichever is less (B=99% OBW in MHz)		
	Other Devices	250mW or 11 + 10 × $\log_{10}$B dBm, whichever is less (B=99% OBW in MHz)	1W or 17 + 10 ×$\log_{10}$B dBm, whichever is less (B=99% OBW in MHz)	11dBm/Mhz	
5470MHz-5600MHz 5650MHz-5725MHz	ALL Devices	250mW or 11 + 10 × $\log_{10}$B dBm, whichever is less (B=99% OBW in MHz)	1W or 17 + 10 ×$\log_{10}$B dBm, whichever is less (B=99% OBW in MHz)	11dBm/Mhz	
5725MHz-5850MHz	ALL Devices	1W		30dBm/500KHz	

Test Configuration



Test Procedure

The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement is according to KDB 789033 D02 General UNII Test Procedures New Rules V02r01.

(1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
(2) Set analyzer center frequency to transmitting frequency.
(3) Set the span to encompass the entire emissions bandwidth (EBW)(alternatively, the entire 99% OBW) of the signal.
(4) RBW=1MHz for devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz RBW=500kHz for devices operating in the band 5.725-5.85 GHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10 log (500 kHz/RBW) to the measured result, whereas RBW (<500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement. If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10 log (1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
(5) Set the VBW to: ≥ 3 RBW
(6) Detector: AVG
(7) Trace: Max Hold and View
(7) Sweep time: auto
(8) Trace average at least 100 traces in power averaging.
(9) User the peak marker function to determine the maximum amplitude level within the RBW. Apply correction to the result if different RBW is used.

NOTE: The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

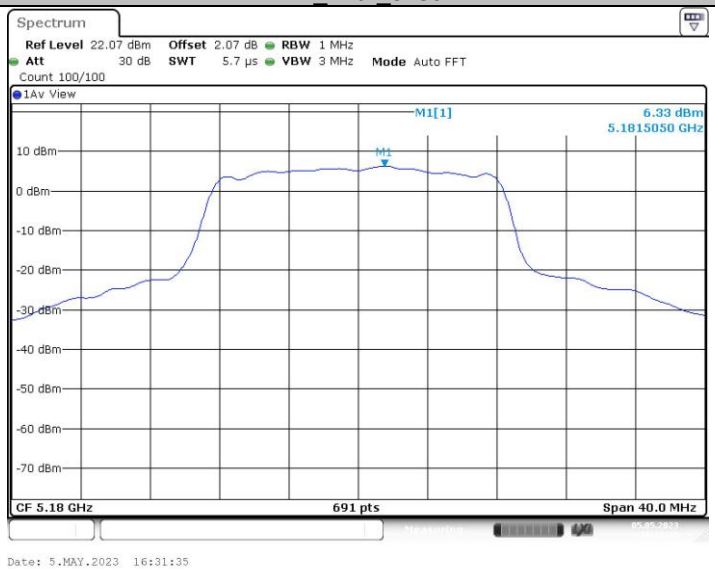
Test Mode

Please refer to the clause 2.4.

Test Result

TestMode	Antenna	Channel	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	Ant1	5180	6.33	≤17	PASS
	Ant2	5180	6.11	≤17	PASS
	Ant1	5200	6.1	≤17	PASS
	Ant2	5200	6.27	≤17	PASS
	Ant1	5240	6	≤17	PASS
	Ant2	5240	6.23	≤17	PASS
	Ant1	5745	2.71	≤30	PASS
	Ant2	5745	2.36	≤30	PASS
	Ant1	5785	2.14	≤30	PASS
	Ant2	5785	2.90	≤30	PASS
	Ant1	5825	2.31	≤30	PASS
	Ant2	5825	2.96	≤30	PASS
11N20MIMO	Ant1	5180	3.1	≤15	PASS
	Ant2	5180	2.88	≤15	PASS
	total	5180	6.00	≤15	PASS
	Ant1	5200	4.08	≤15	PASS
	Ant2	5200	2.85	≤15	PASS
	total	5200	6.52	≤15	PASS
	Ant1	5240	3.85	≤15	PASS
	Ant2	5240	3.19	≤15	PASS
	total	5240	6.54	≤15	PASS
	Ant1	5745	0.87	≤28	PASS
	Ant2	5745	0.10	≤28	PASS
	total	5745	3.51	≤28	PASS
	Ant1	5785	1.68	≤28	PASS
	Ant2	5785	0.11	≤28	PASS
	total	5785	3.98	≤28	PASS
	Ant1	5825	0.74	≤28	PASS
	Ant2	5825	-0.09	≤28	PASS
	total	5825	3.36	≤28	PASS
11N40MIMO	Ant1	5190	-2.04	≤15	PASS
	Ant2	5190	-4.05	≤15	PASS
	total	5190	0.08	≤15	PASS
	Ant1	5230	0.86	≤15	PASS
	Ant2	5230	0.08	≤15	PASS
	total	5230	3.50	≤15	PASS
	Ant1	5755	-1.34	≤28	PASS
	Ant2	5755	-3.60	≤28	PASS
	total	5755	0.69	≤28	PASS
	Ant1	5795	-1.76	≤28	PASS
	Ant2	5795	-3.32	≤28	PASS
	total	5795	0.54	≤28	PASS

11A_Ant1_5180



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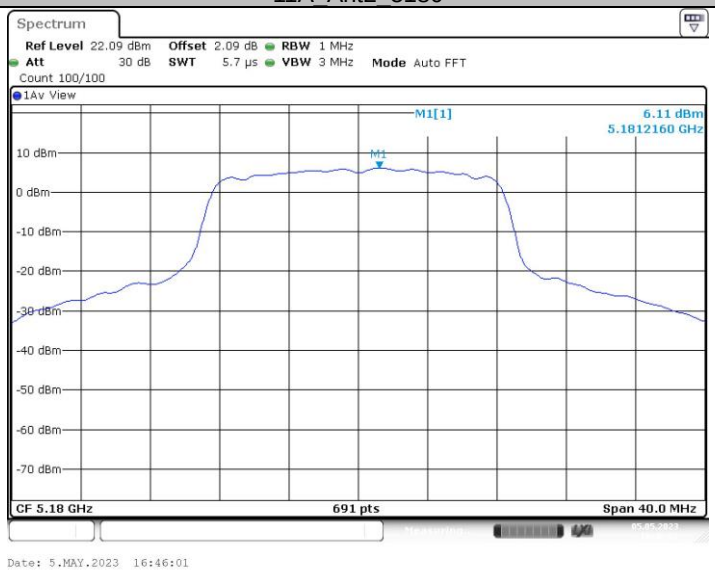

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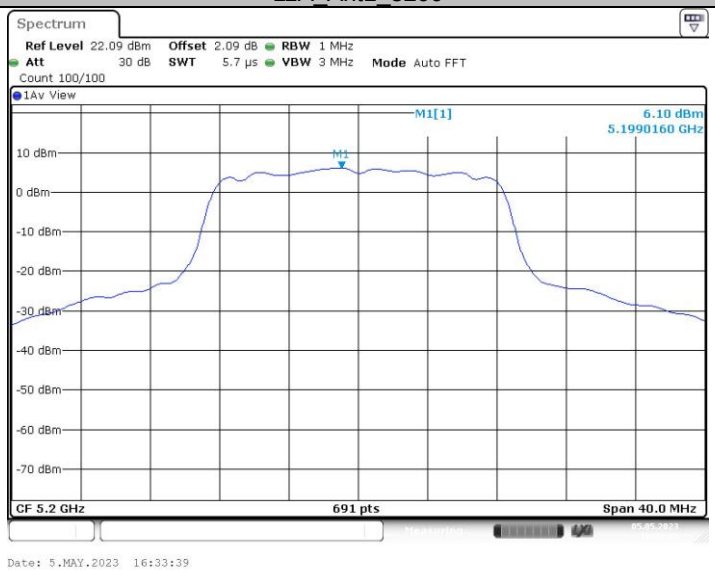

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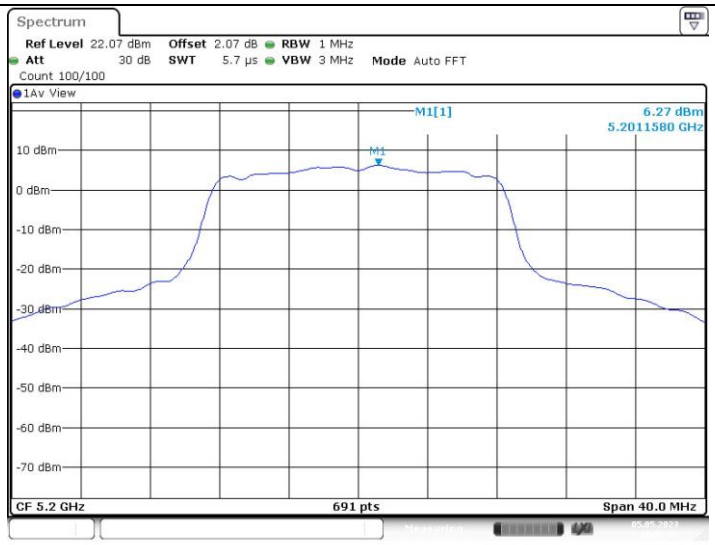

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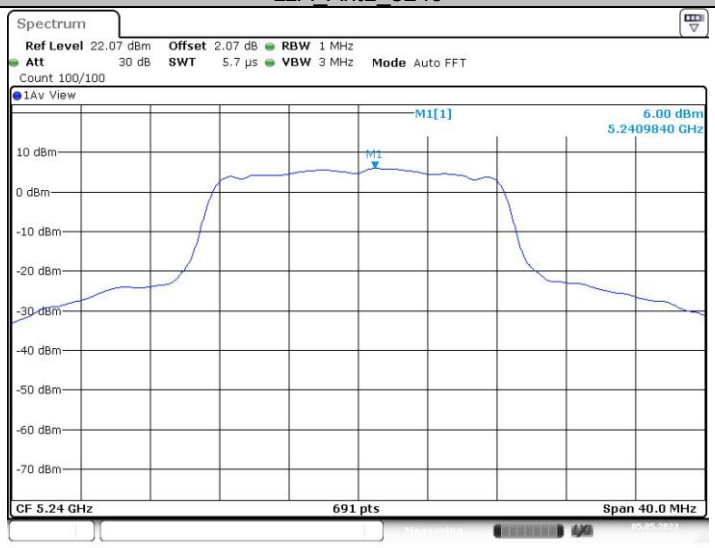

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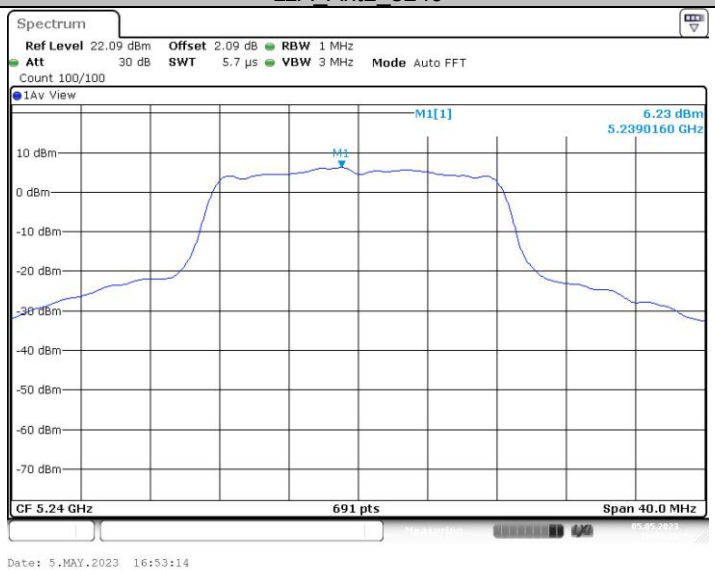

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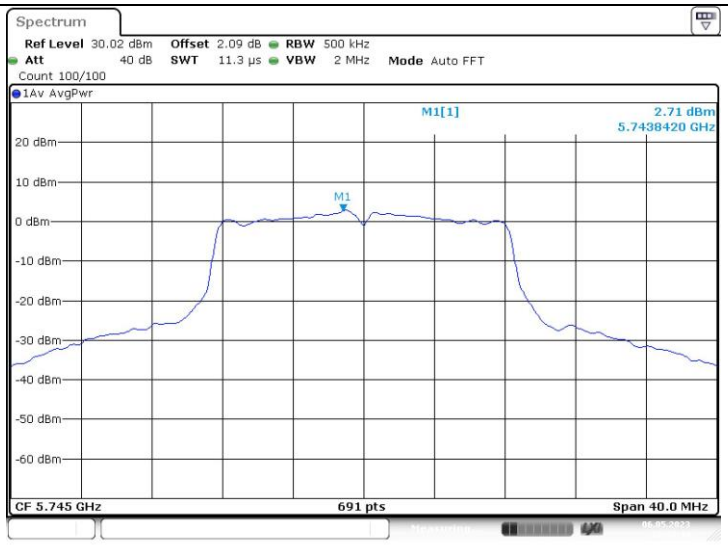

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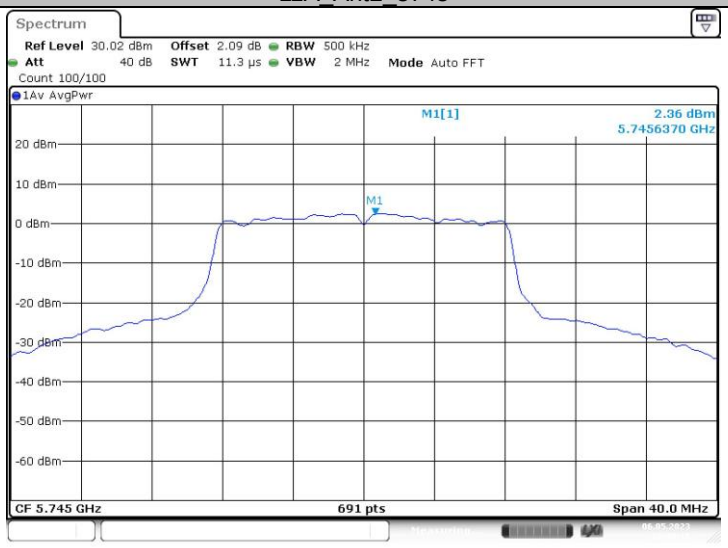

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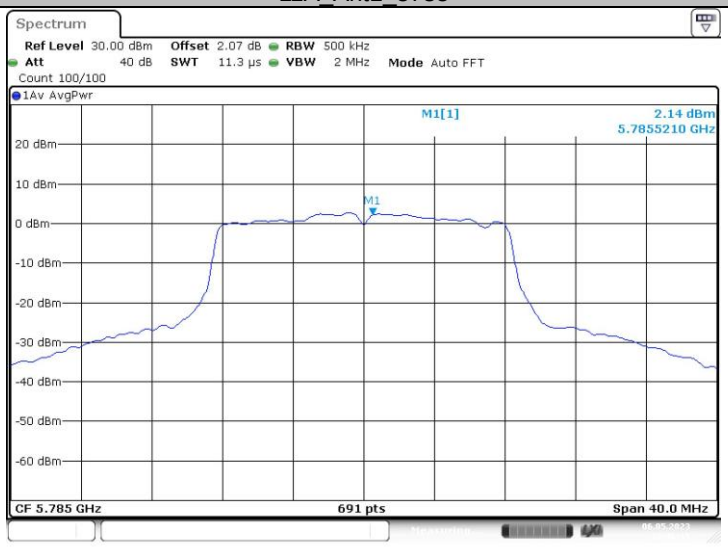

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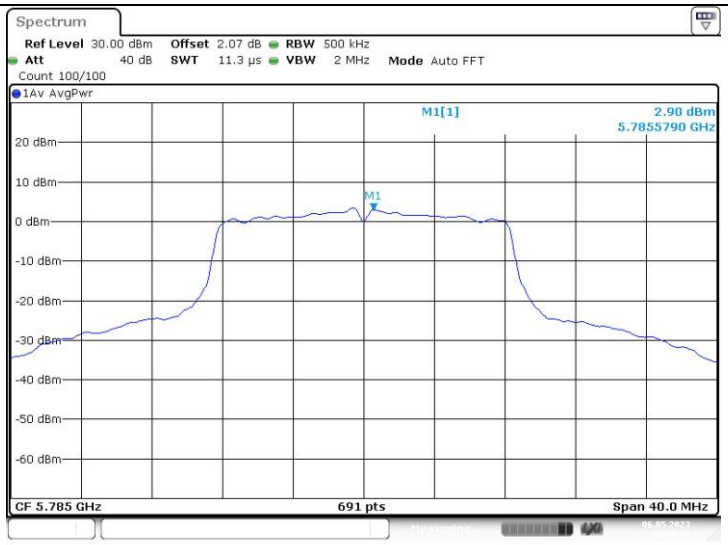

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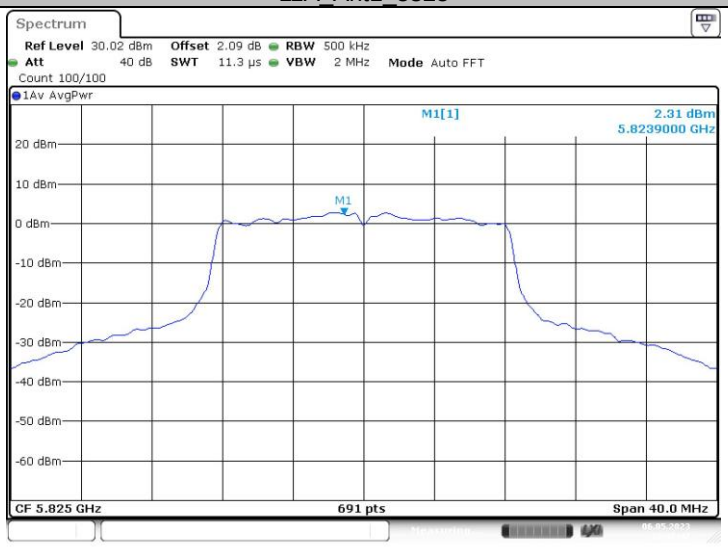

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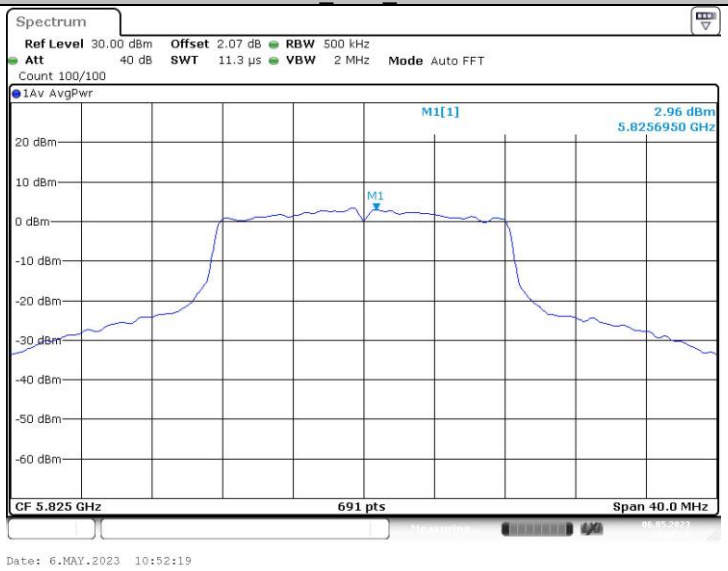

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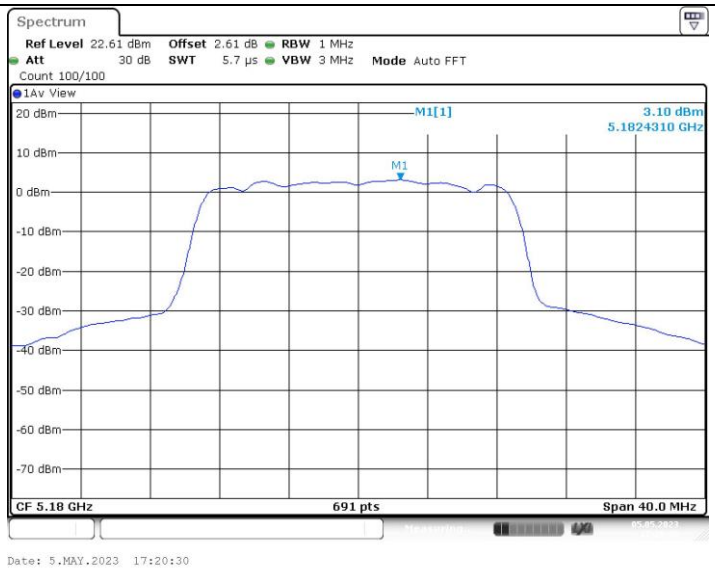

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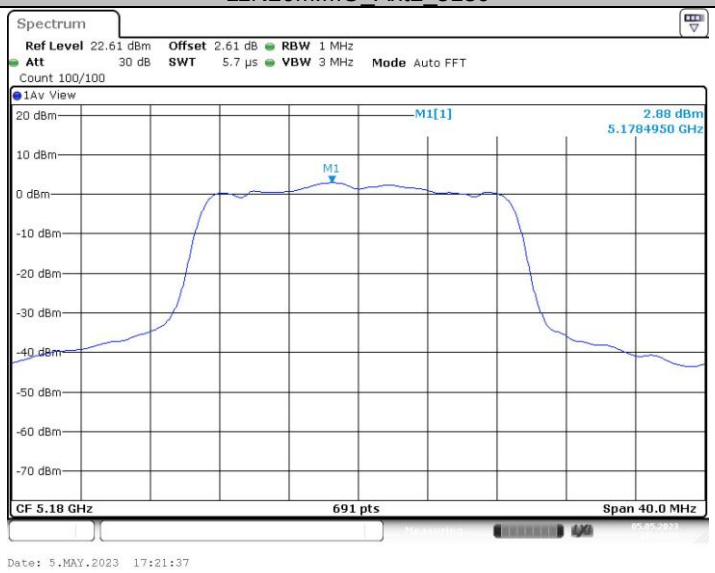

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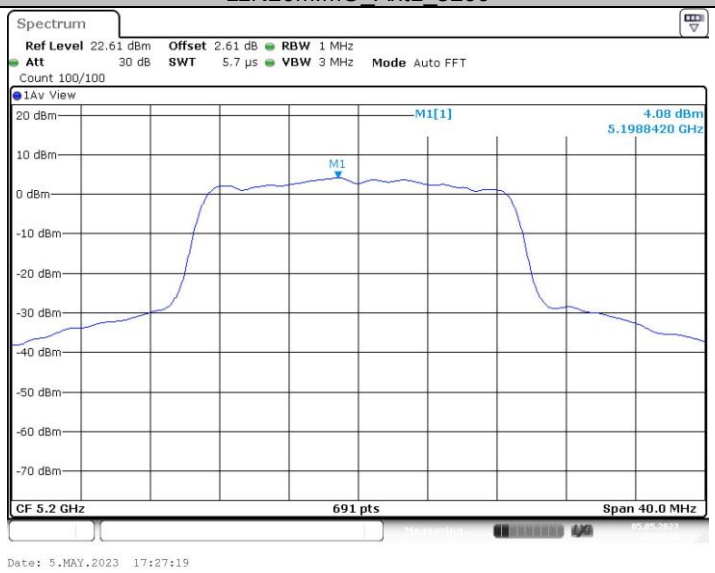
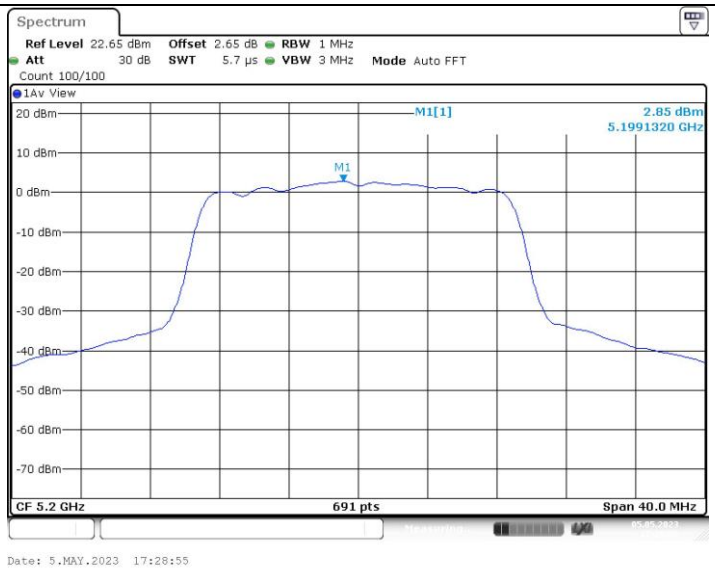


11N20MIMO_Ant2_5200



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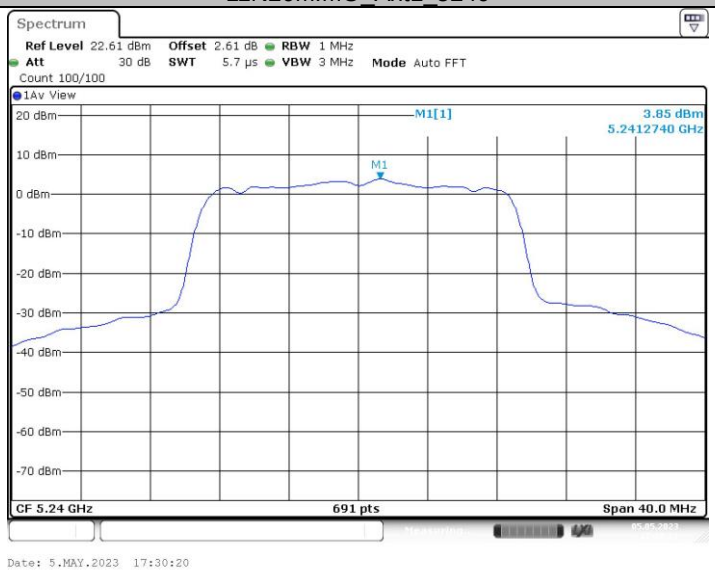
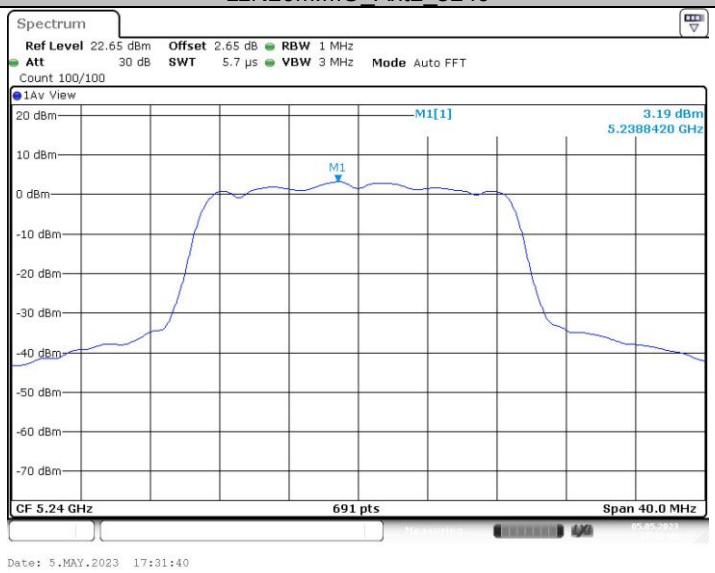


11N20MIMO_Ant2_5240



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