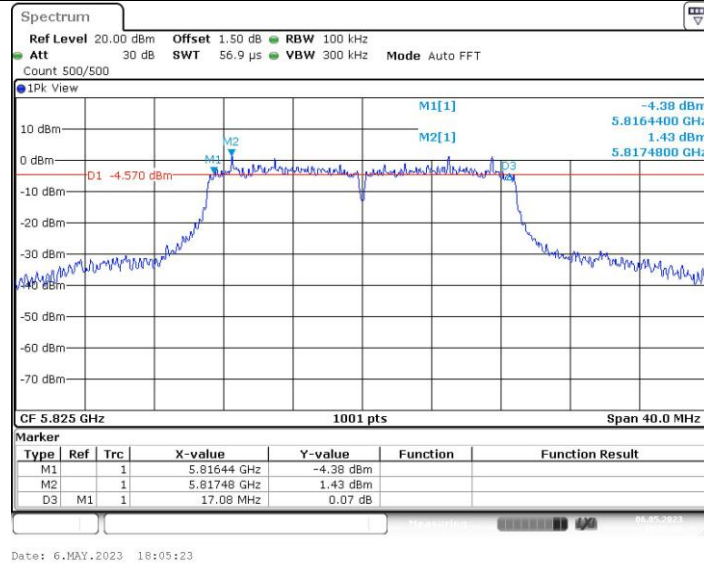
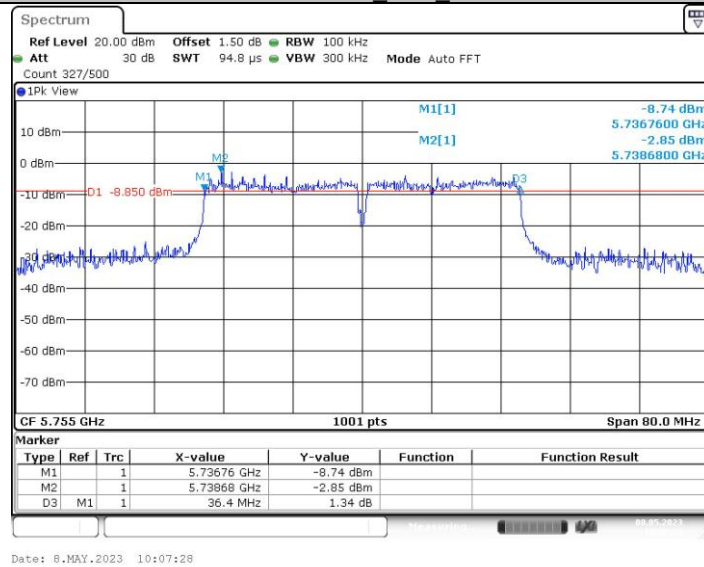
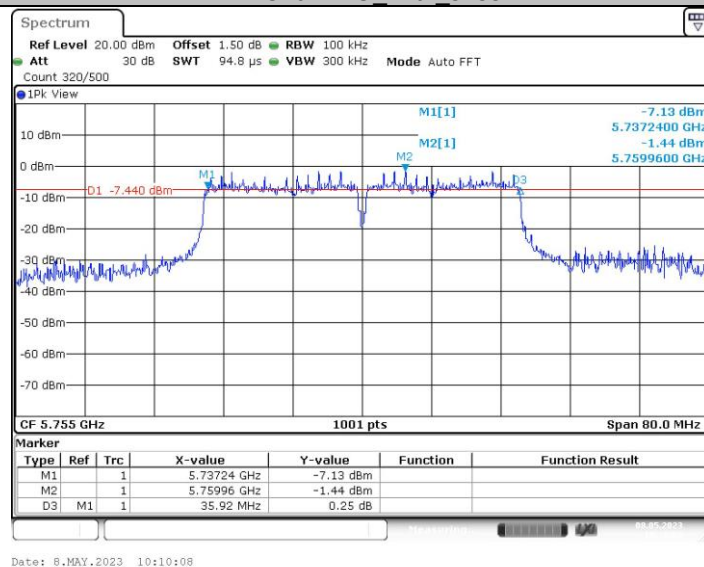




11AC40MIMO_Ant1_5755



11AC40MIMO_Ant2_5755



11AC40MIMO_Ant1_5795

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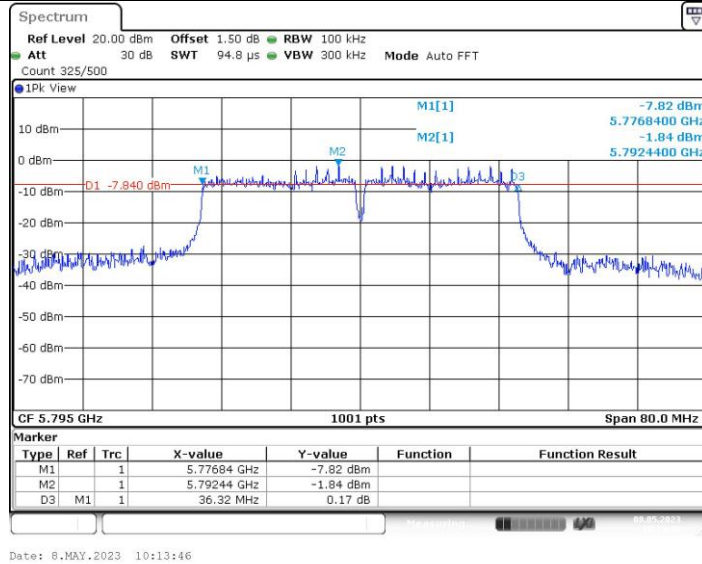
Tel.: (86)755-27521059

Fax: (86)755-27521011

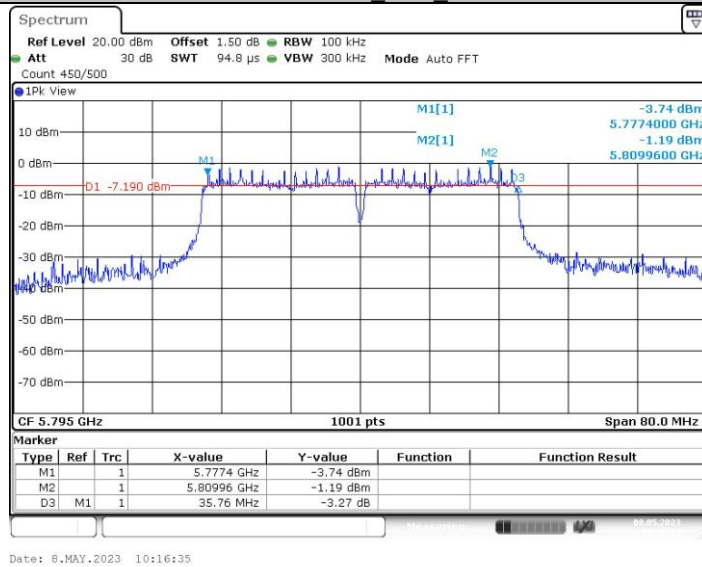
Http://www.sz-ctc.org.cn



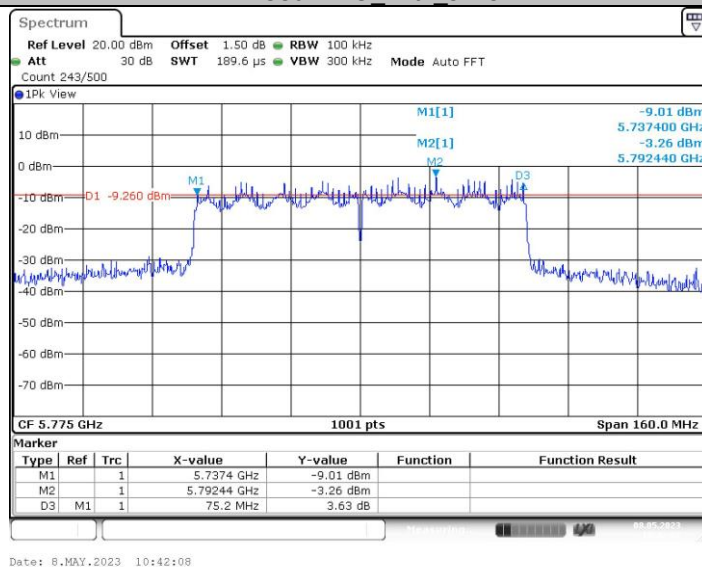
For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : yz.cnca.cn



11AC40MIMO_Ant2_5795



11AC80MIMO_Ant1_5775



11AC80MIMO_Ant2_5775

CTC Laboratories, Inc.

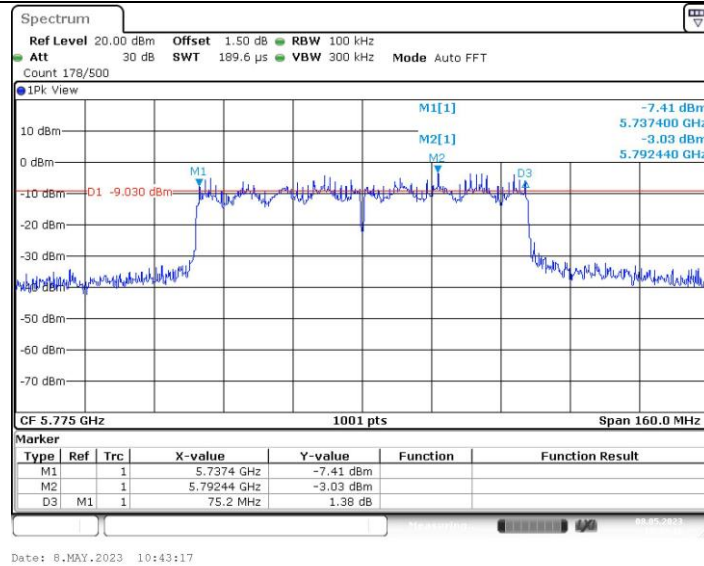
1-2/F, Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China

Tel.: (86)755-27521059

Fax: (86)755-27521011

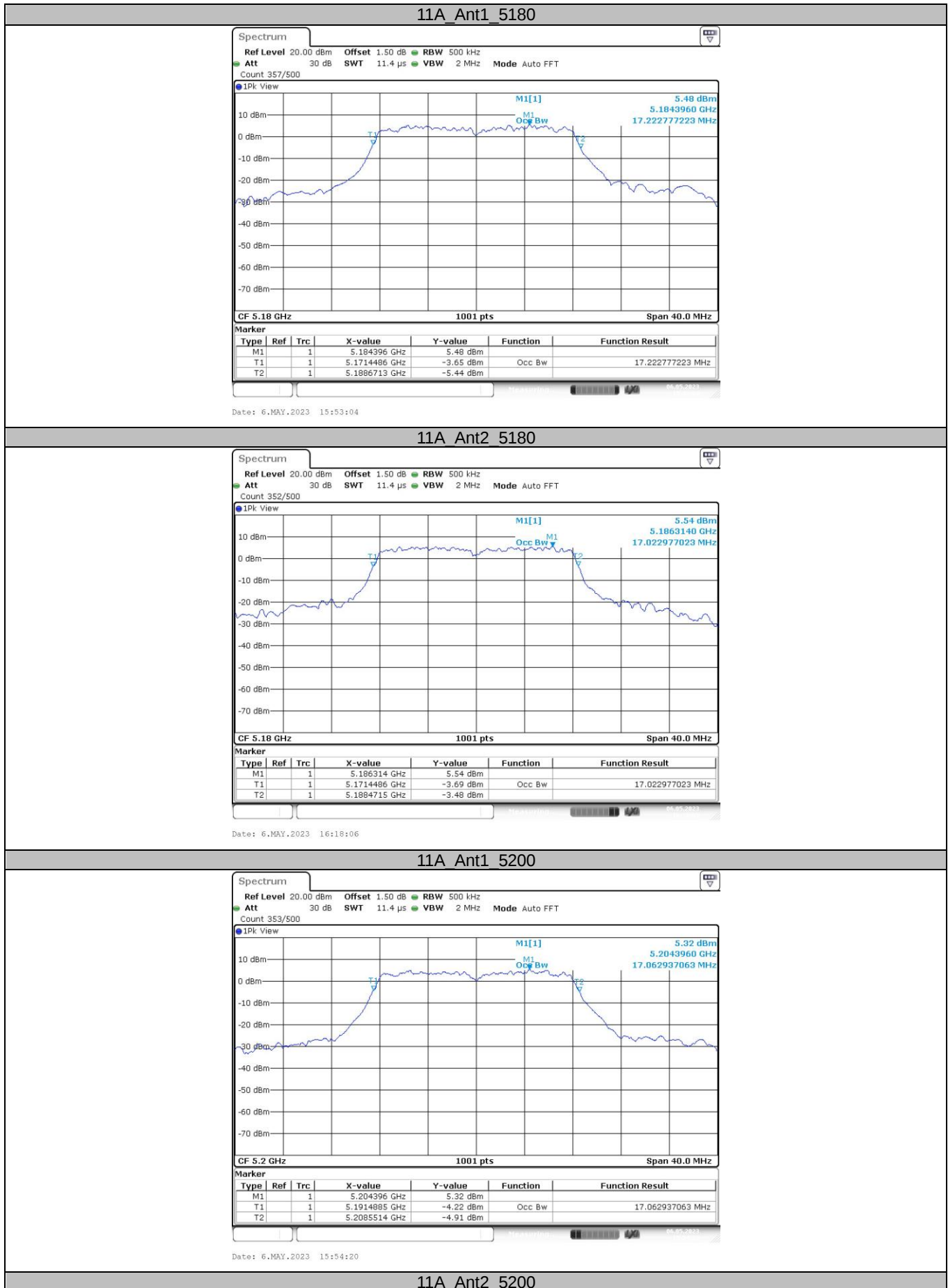
Http://www.sz-ctc.org.cn

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99% Occupied Bandwidth Test Graphs



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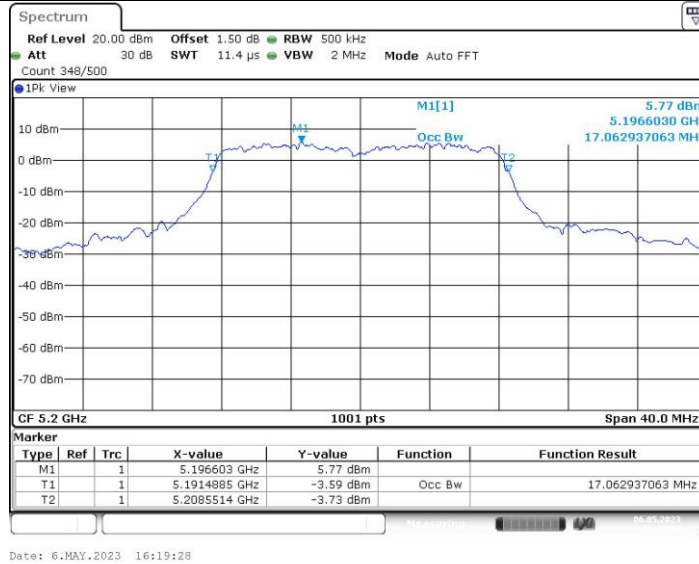
1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China

Tel.: (86)755-27521059

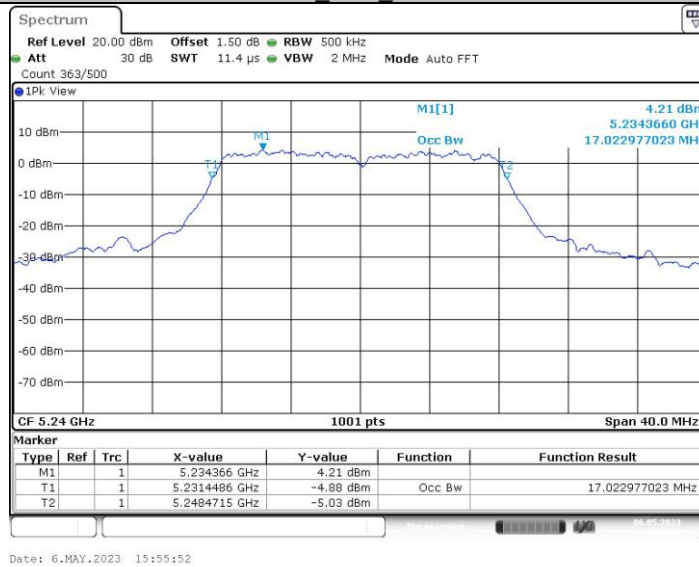
Fax: (86)755-27521011

Http://www.sz-ctc.org.cn

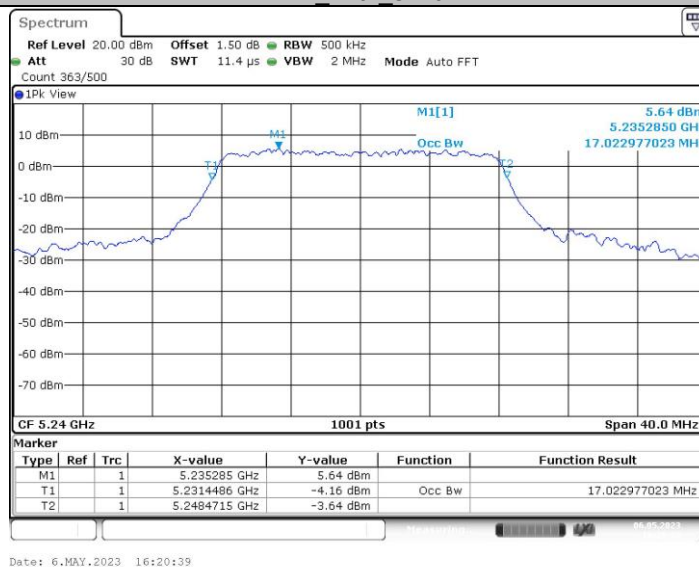
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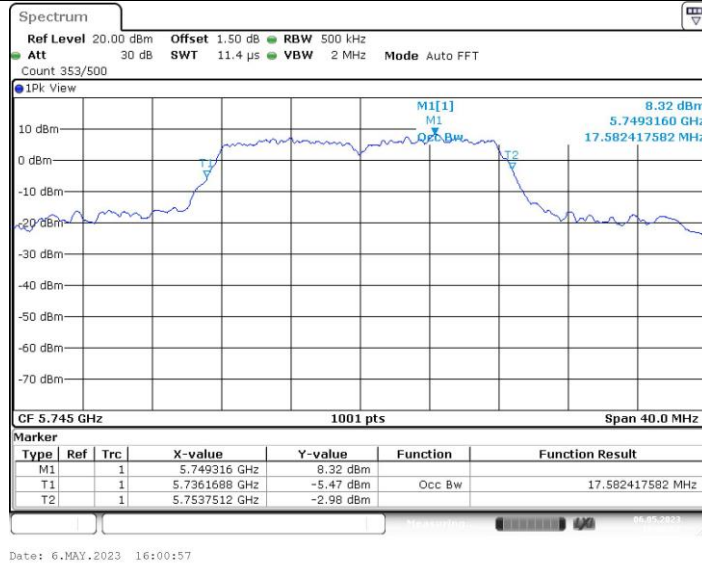
11A Ant1 5240



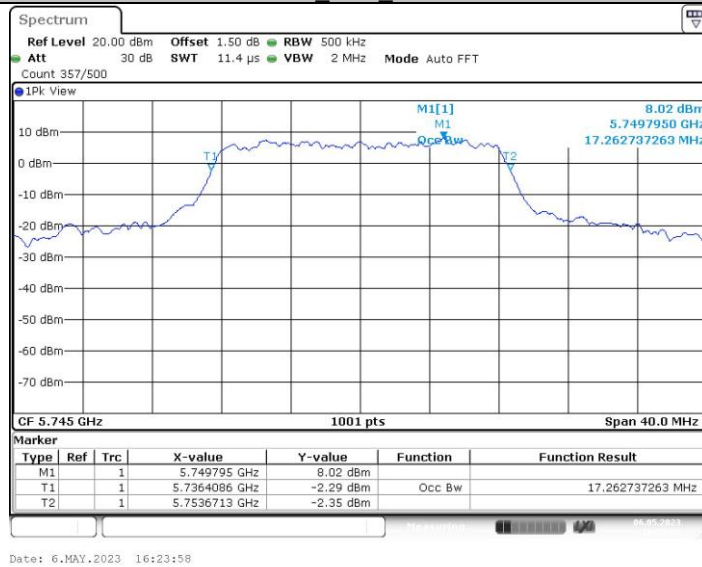
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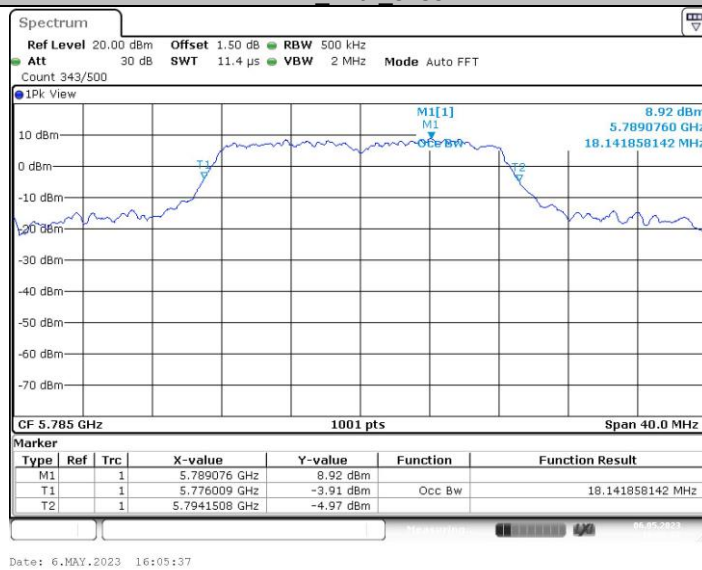
11A Ant1 5745



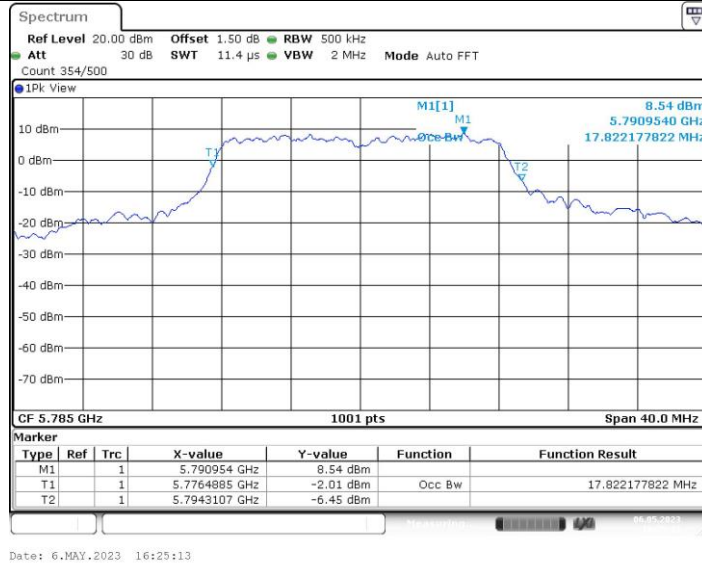
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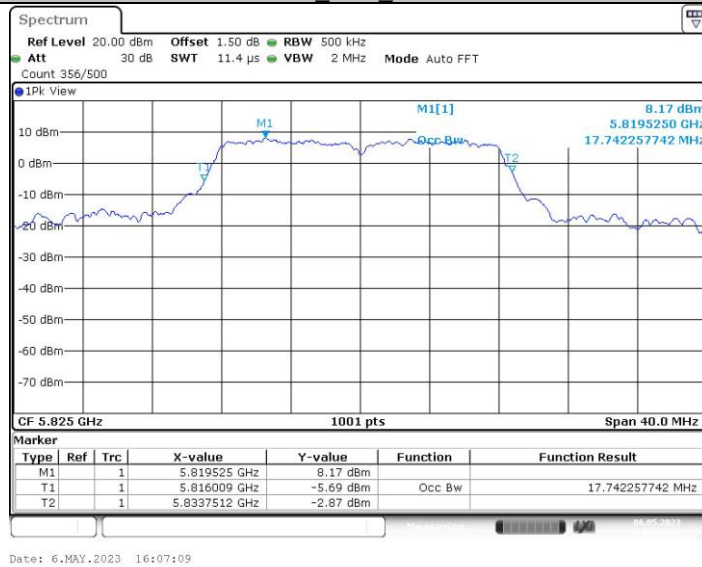
11A Ant1 5785



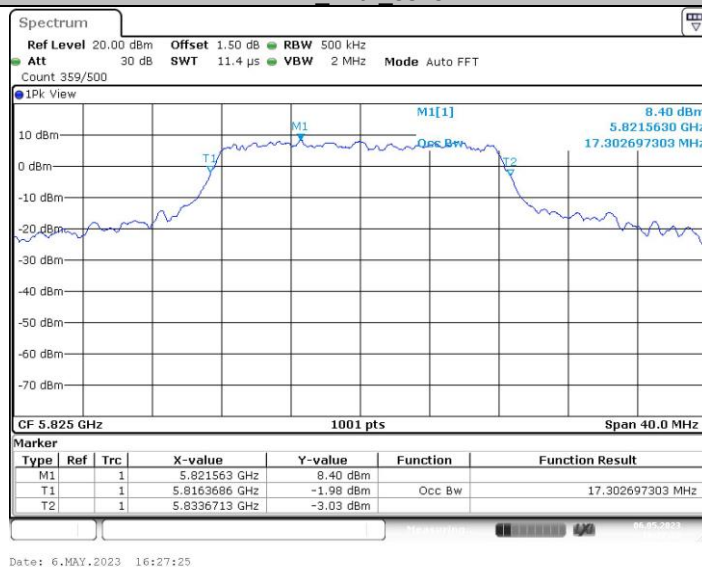
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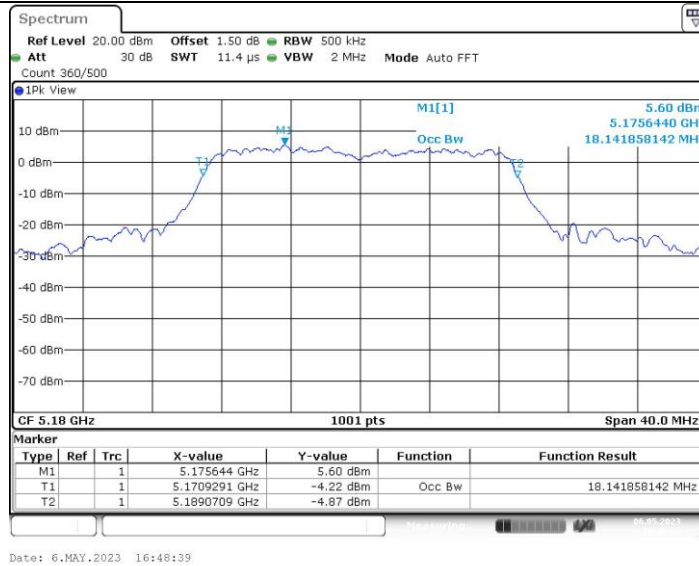
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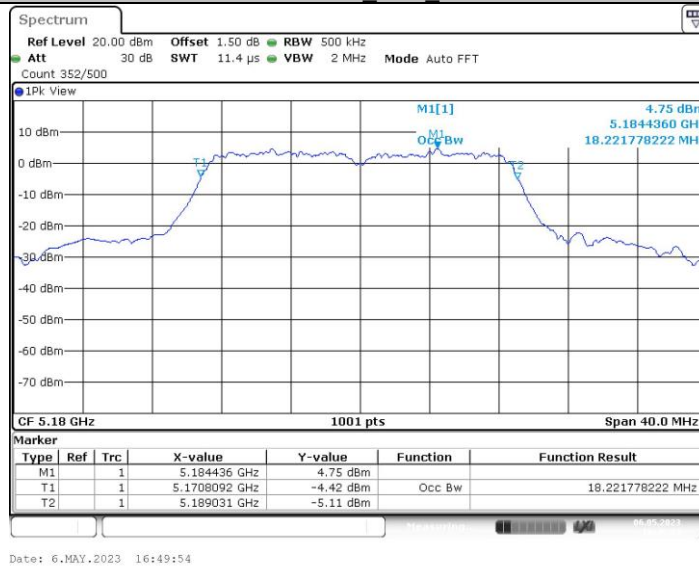
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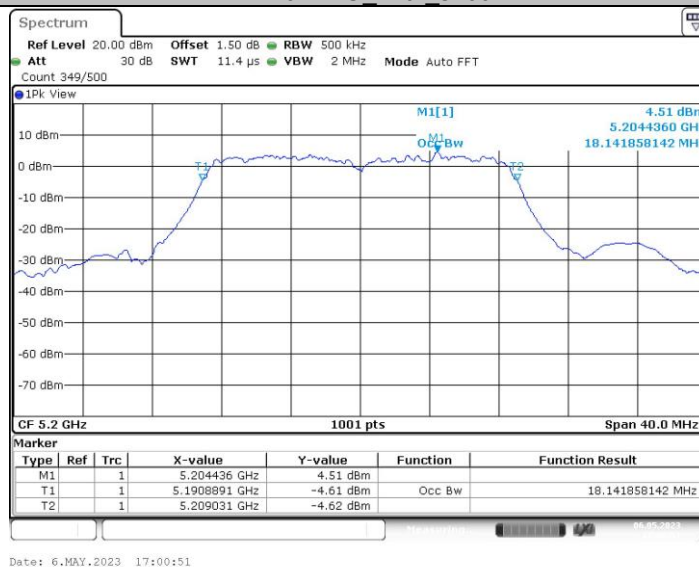
11N20MIMO Ant1 5180



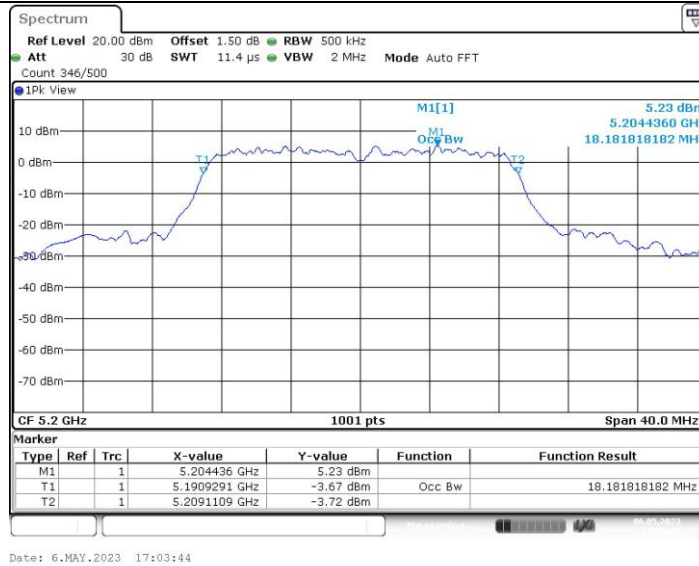
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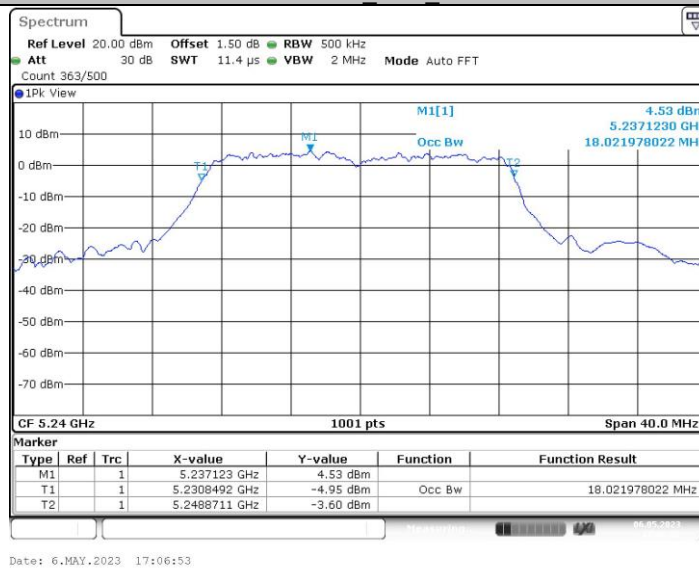
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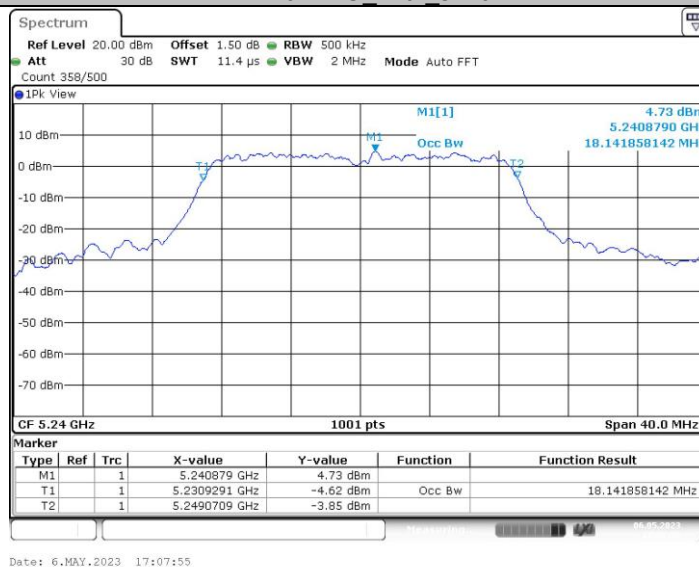
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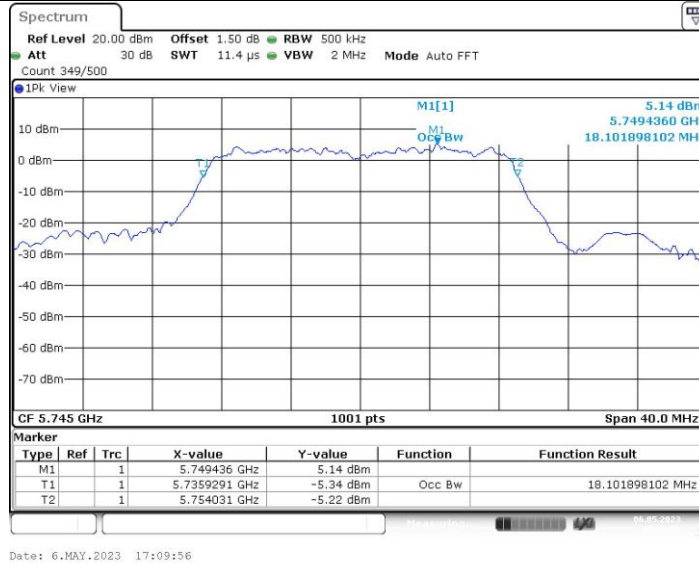
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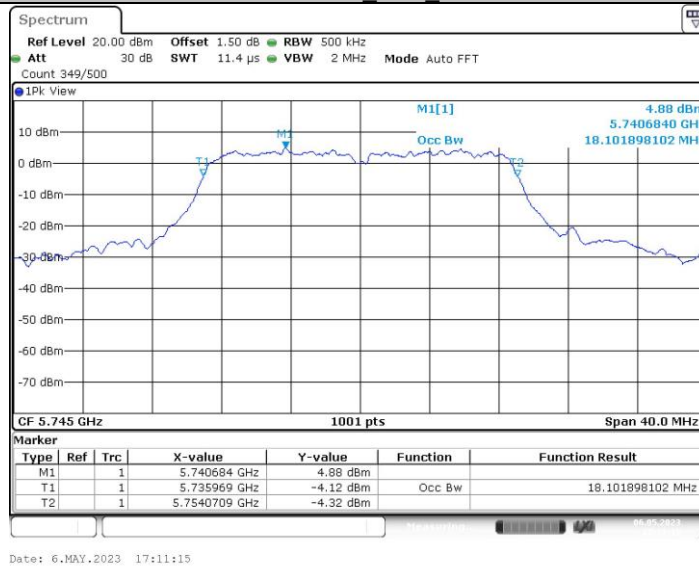
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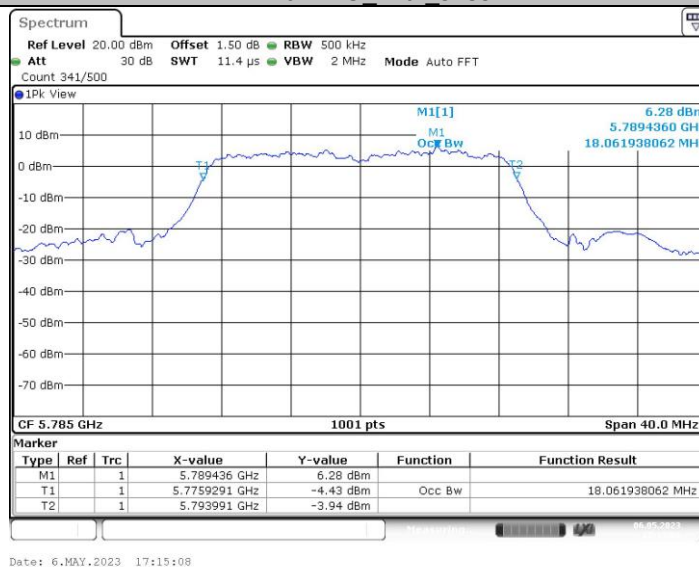
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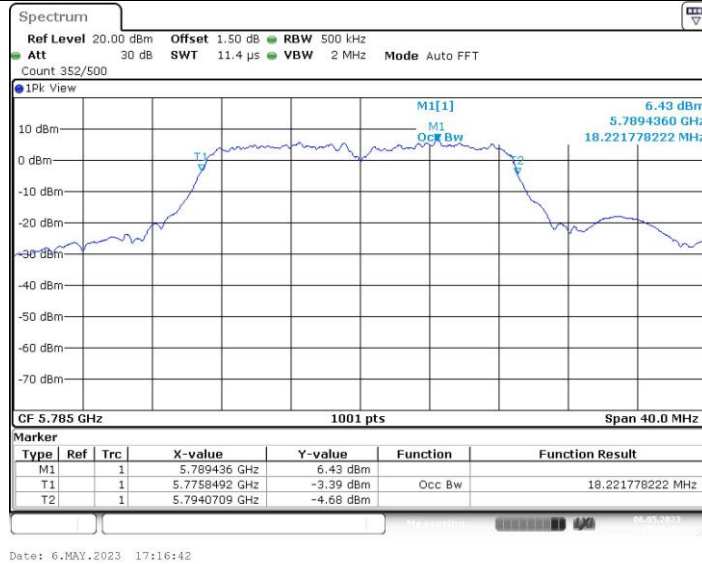
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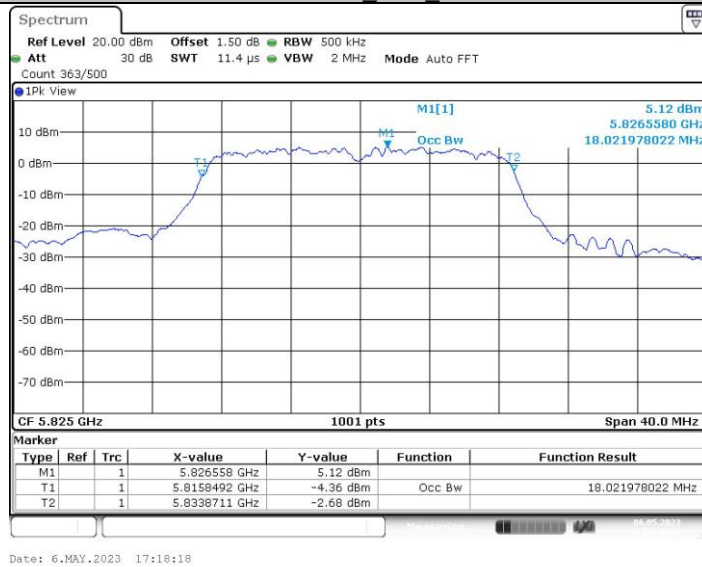
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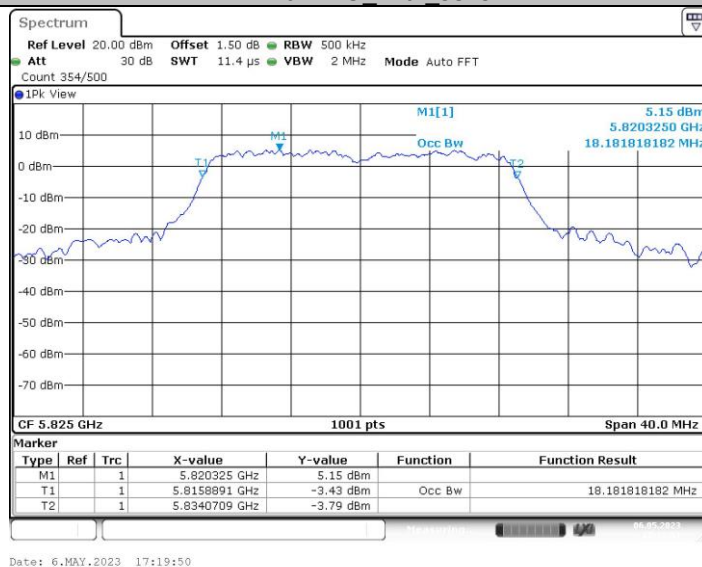
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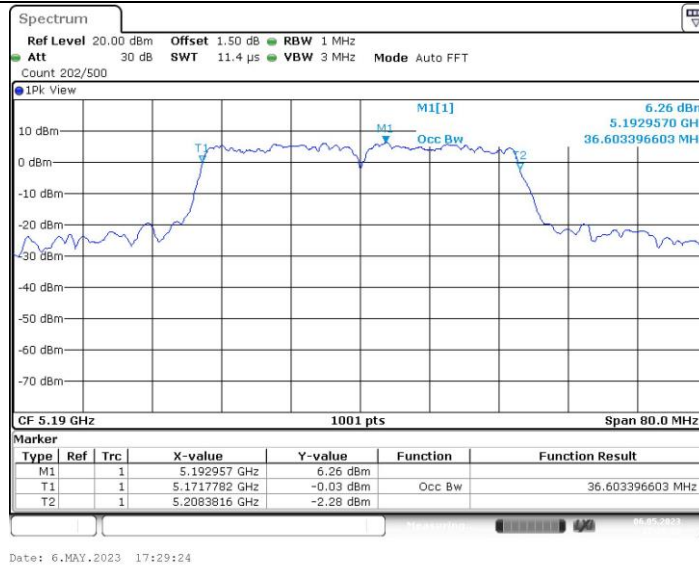
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11N20MIMO_Ant2_5825



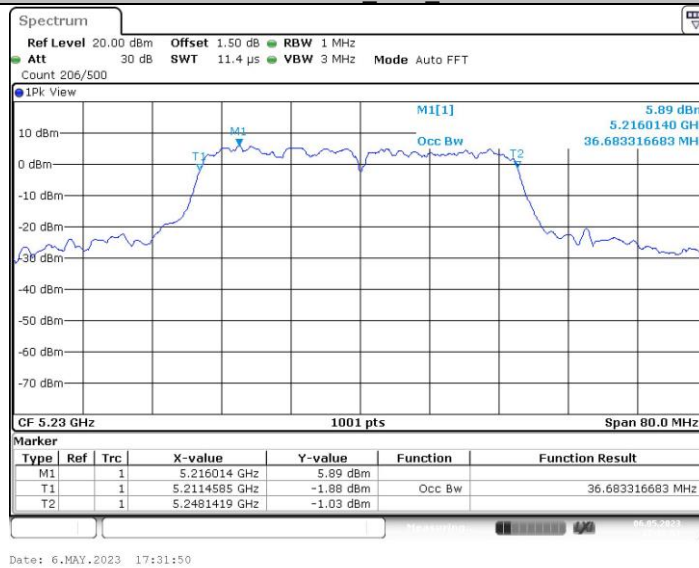
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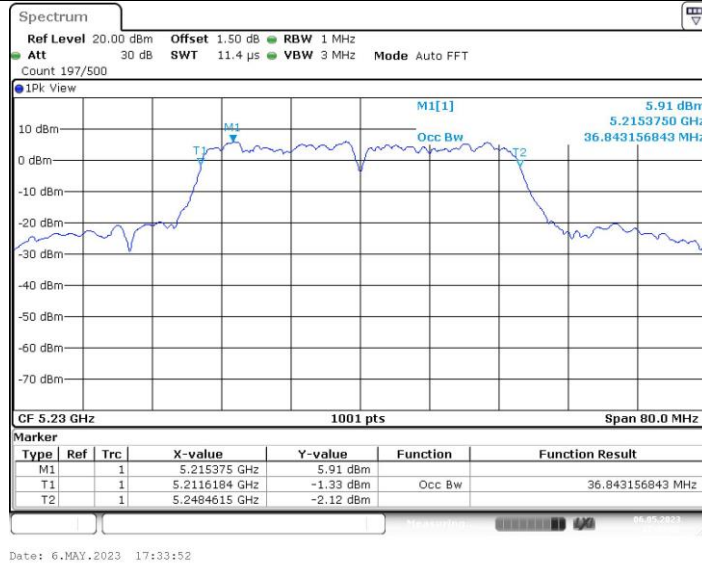
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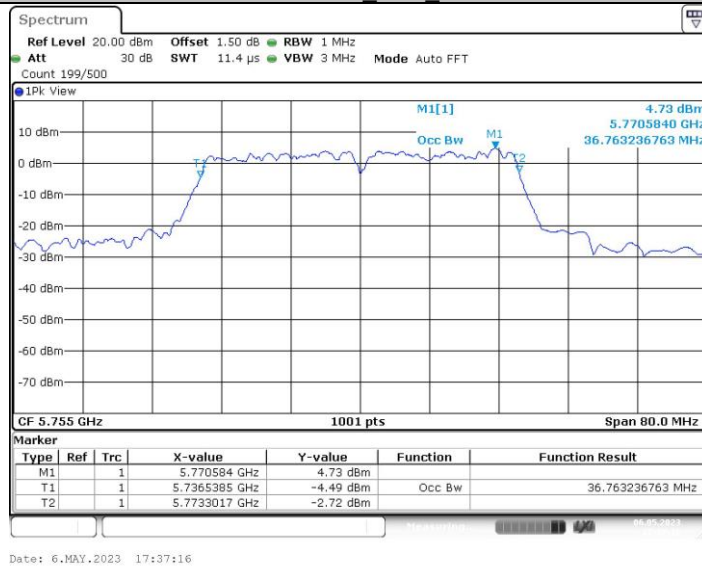
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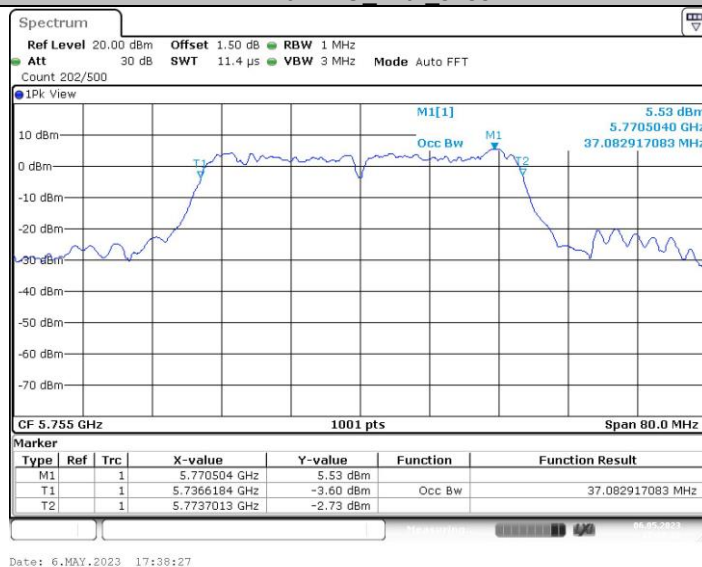
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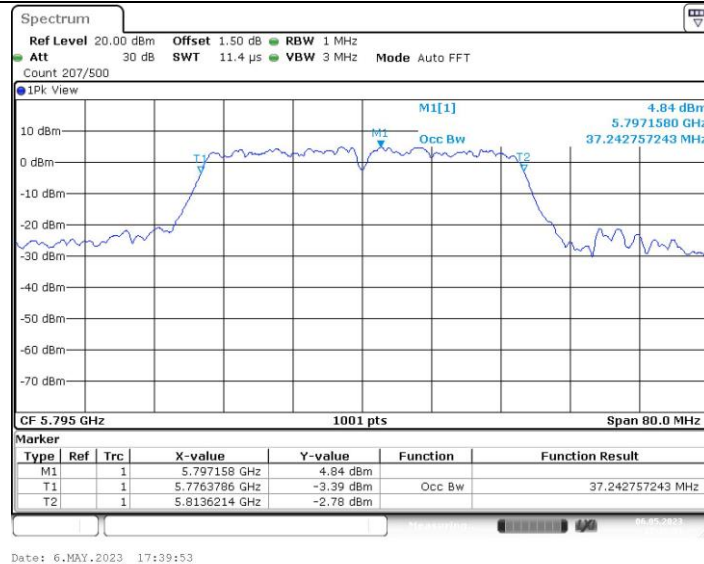
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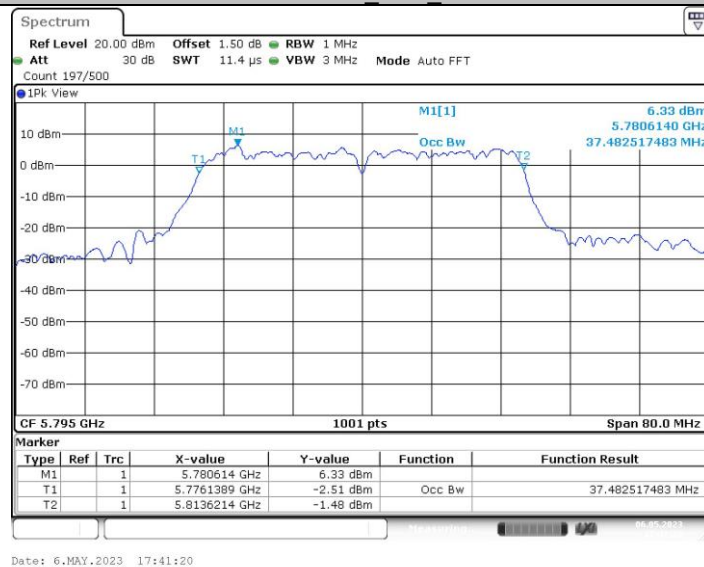
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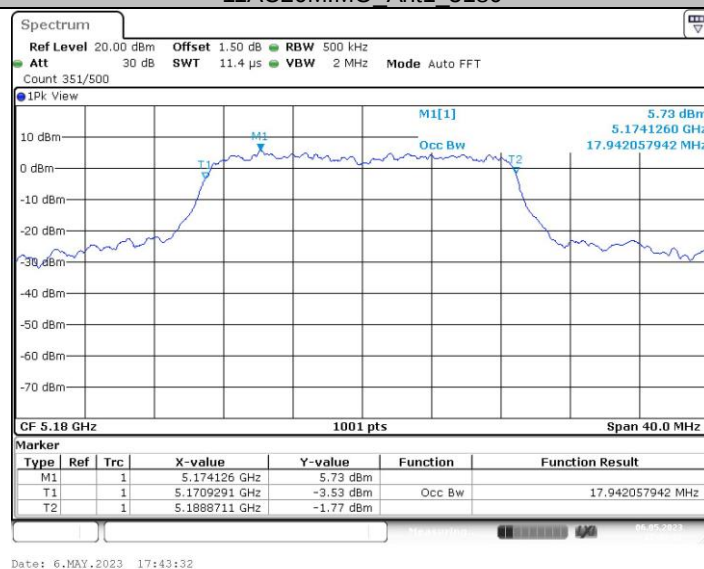
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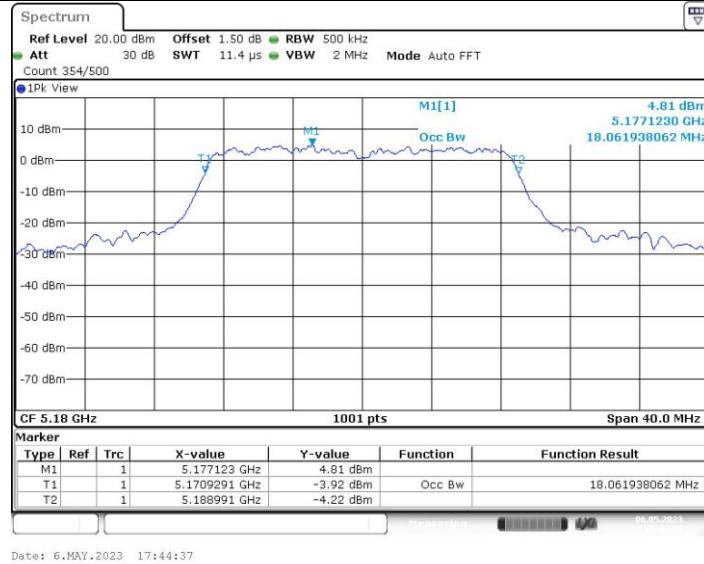
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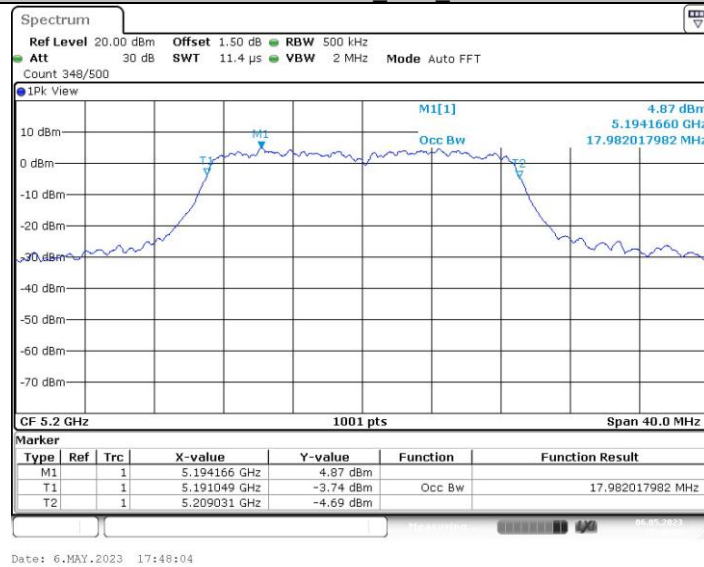
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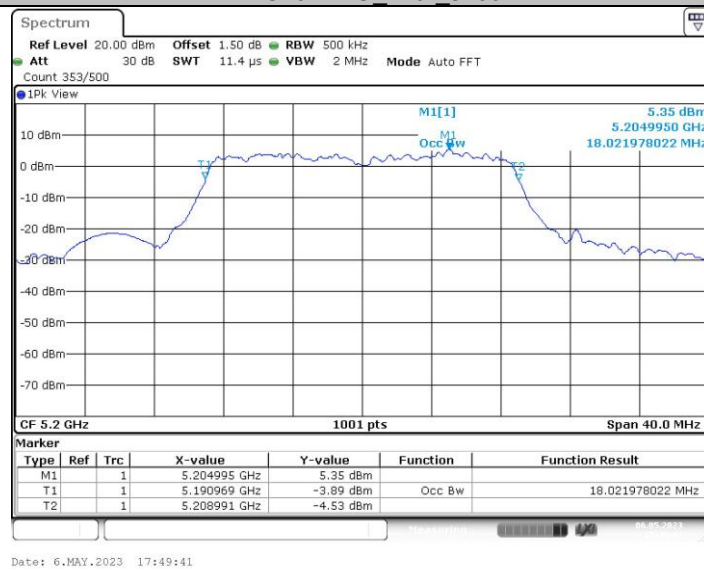
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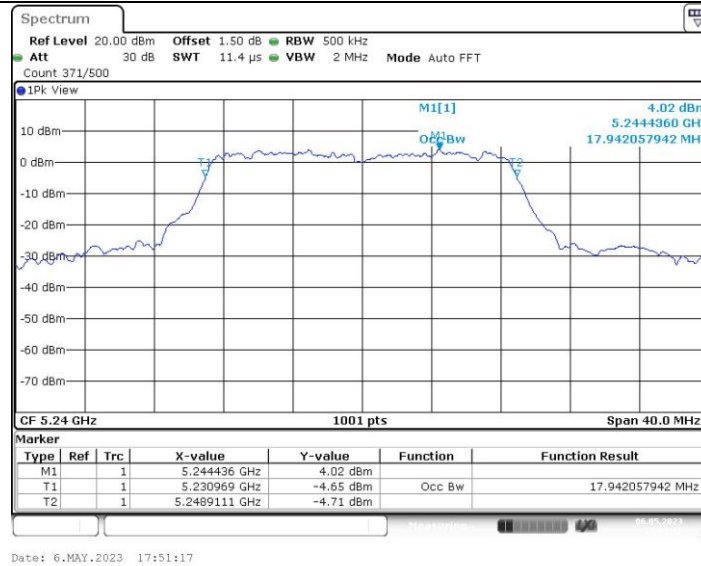
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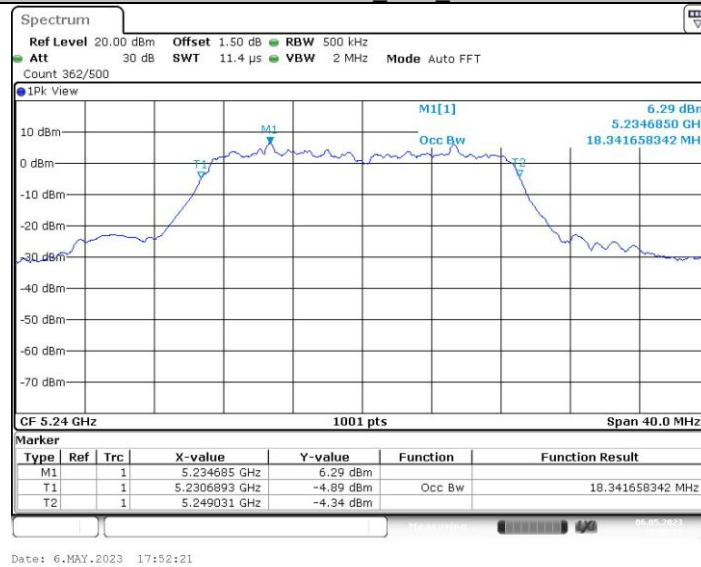
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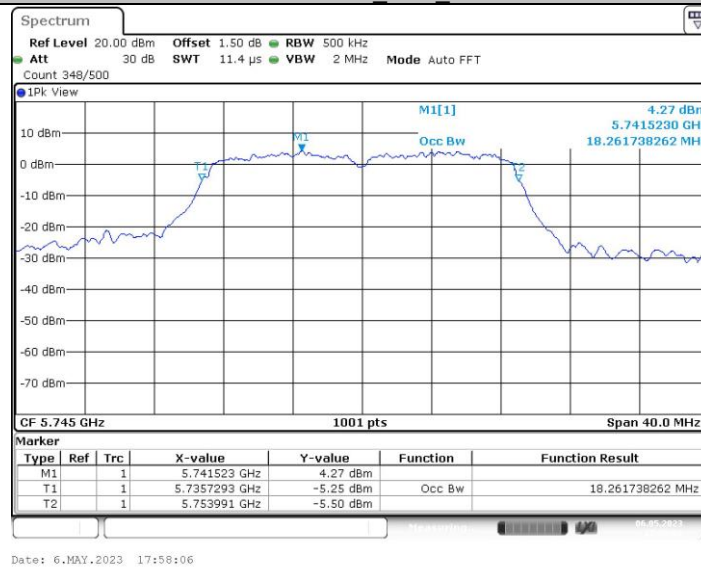
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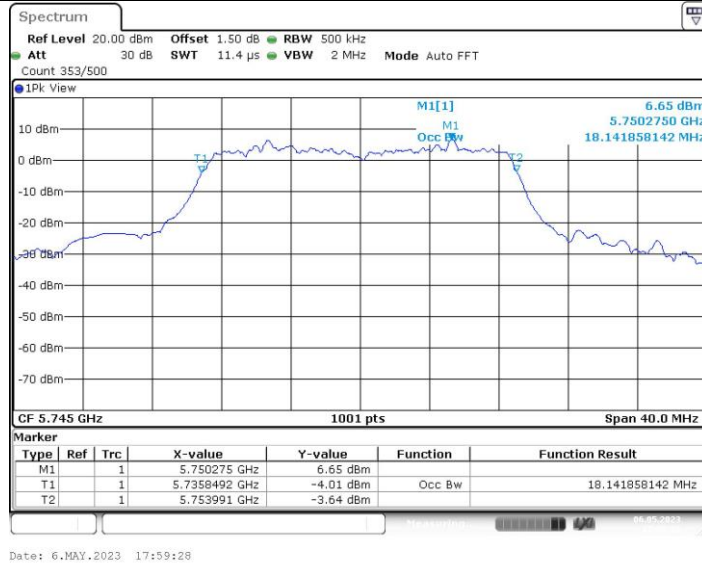
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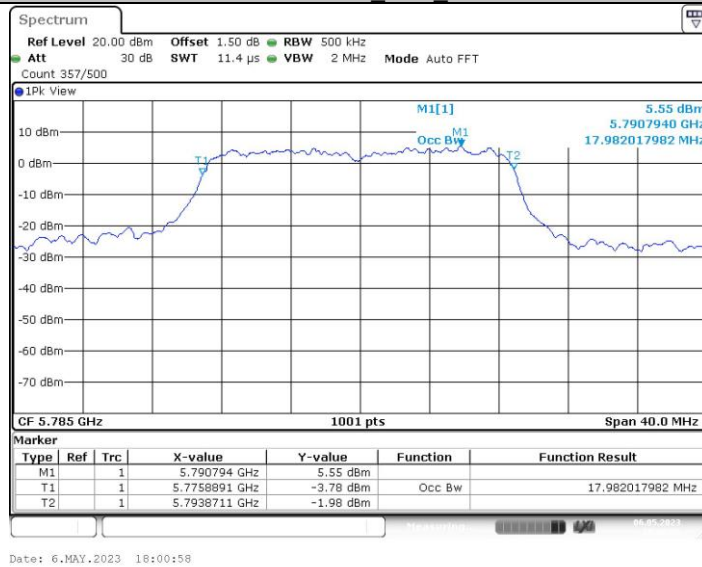
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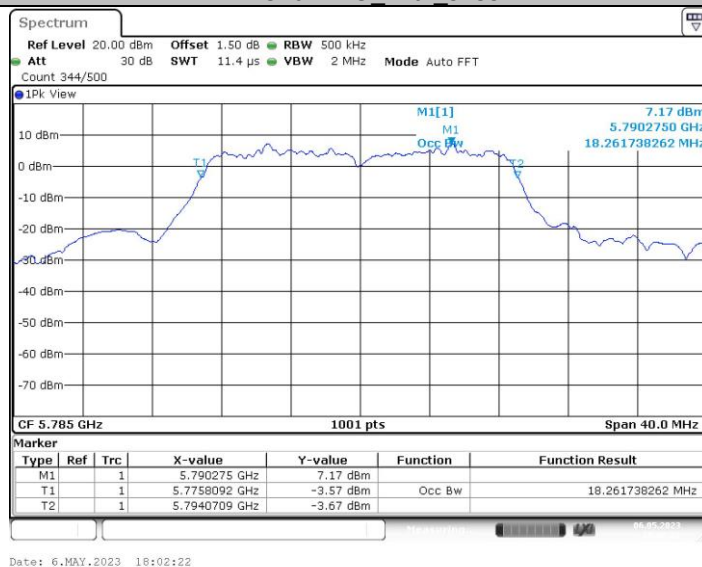
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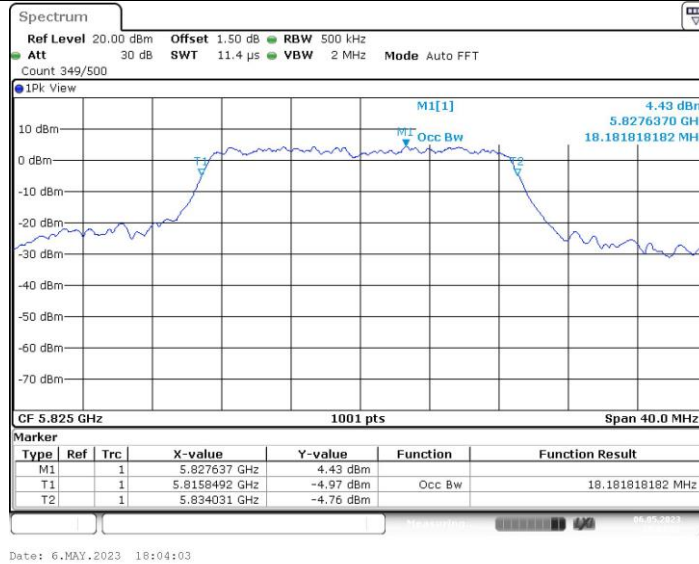
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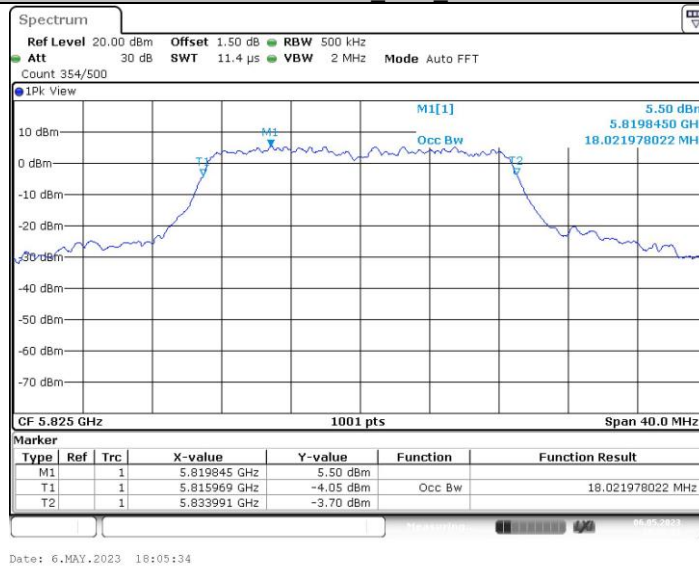
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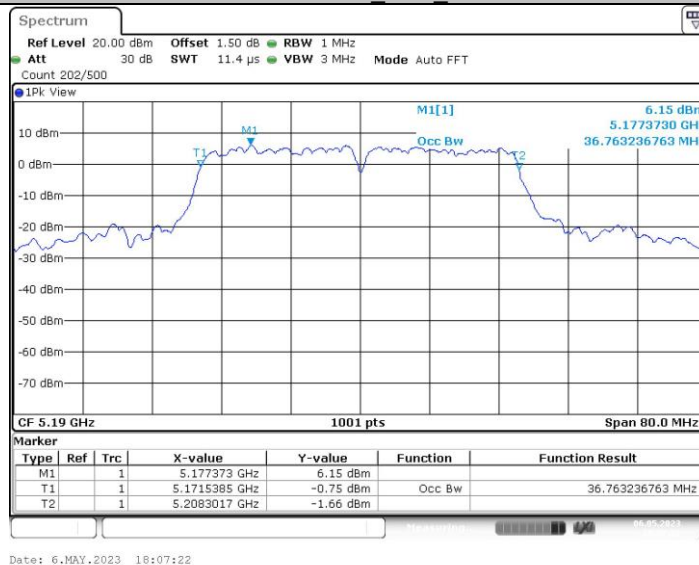
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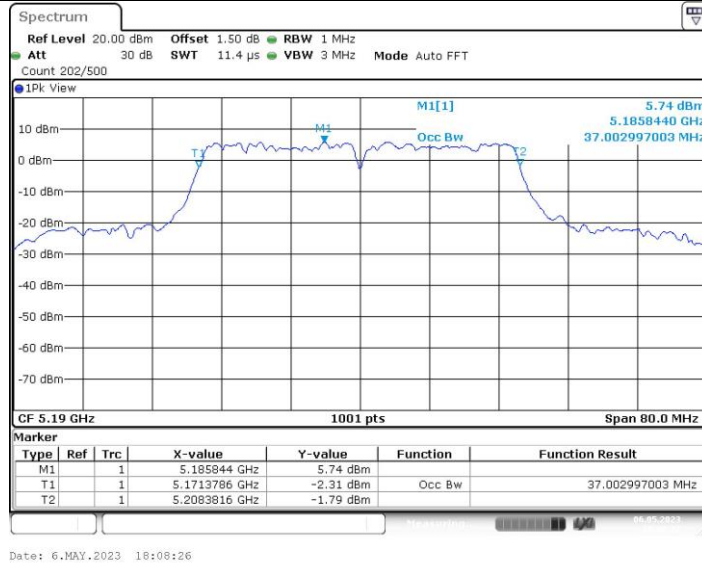
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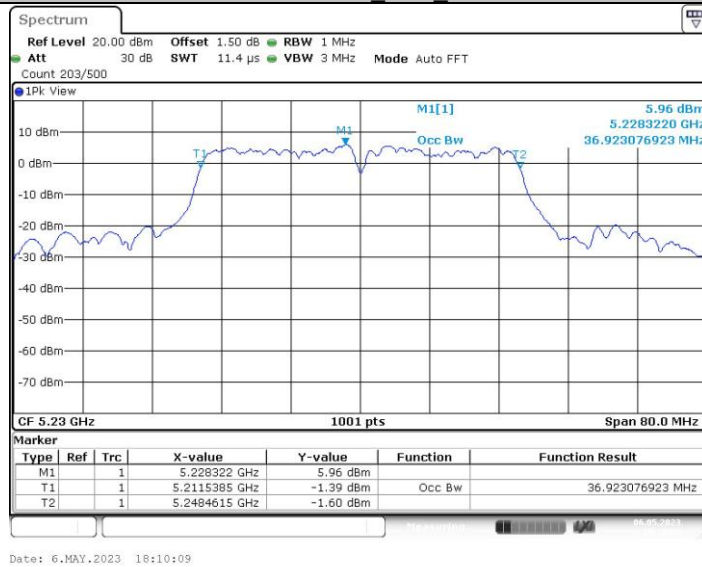
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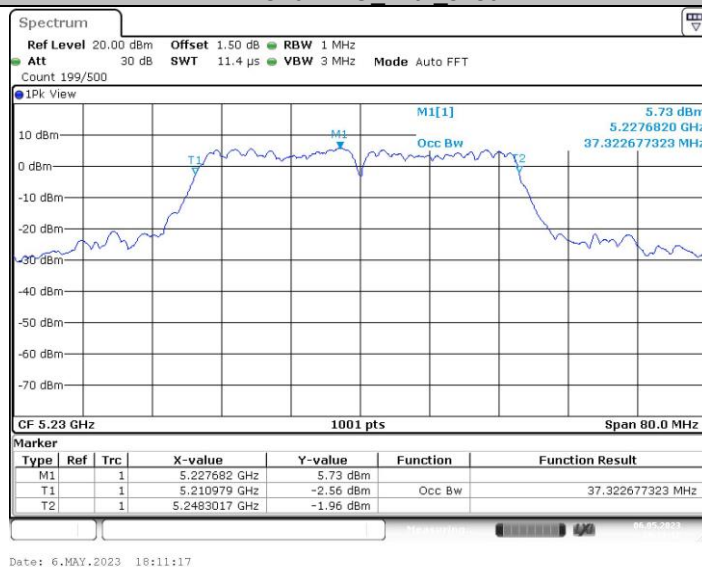
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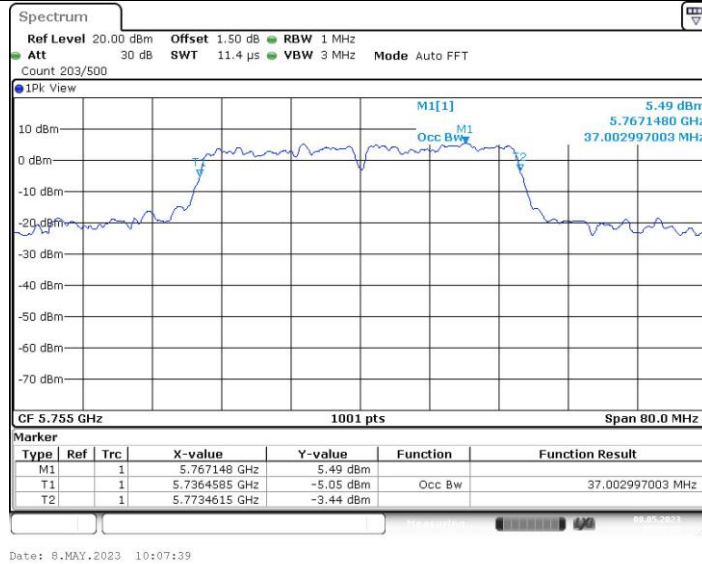
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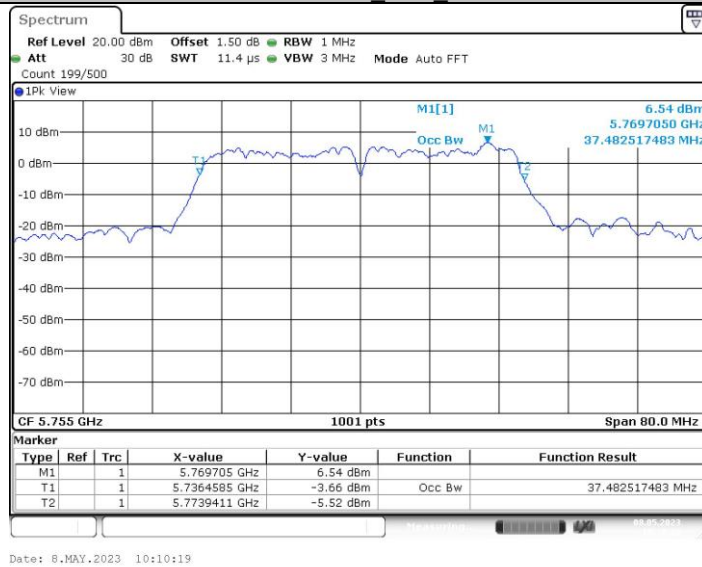
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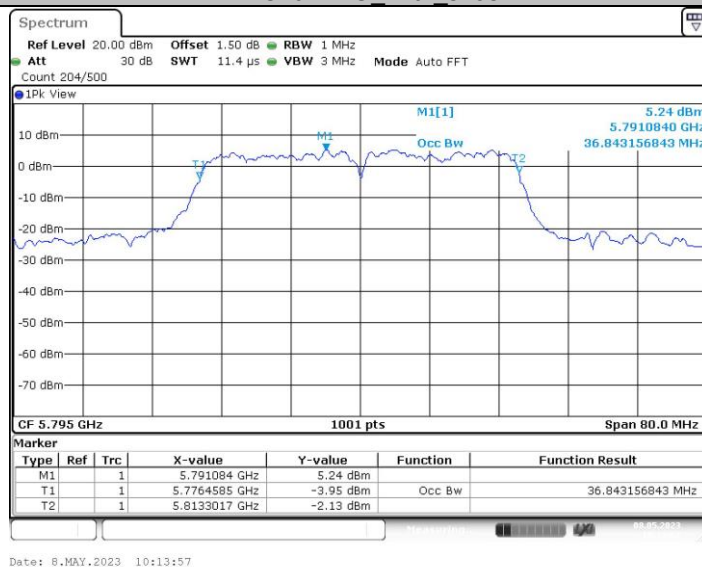
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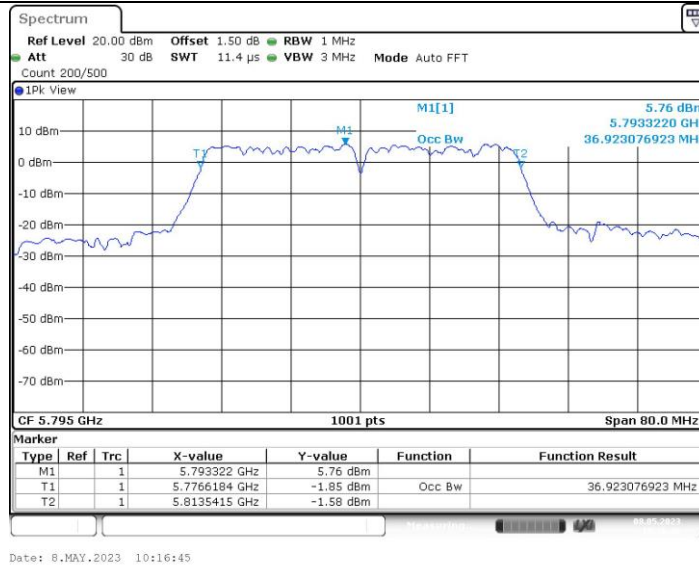
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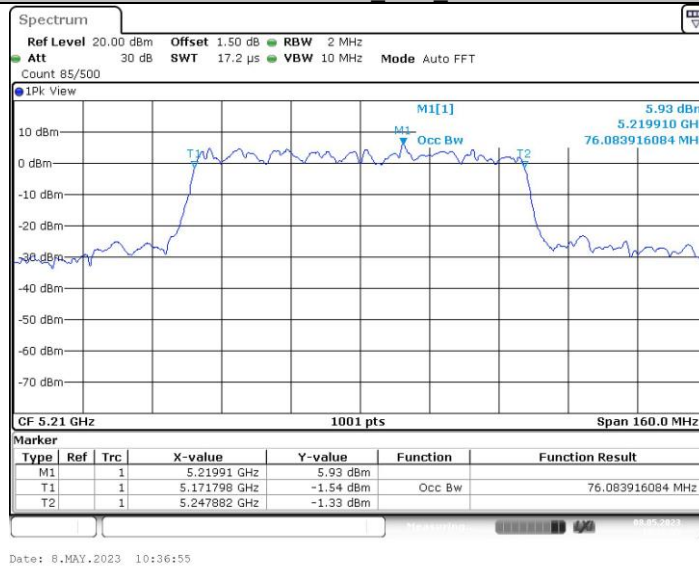
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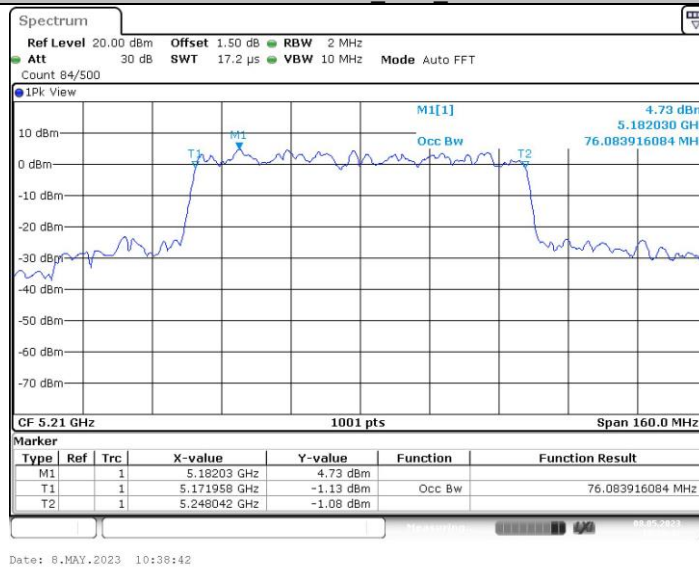
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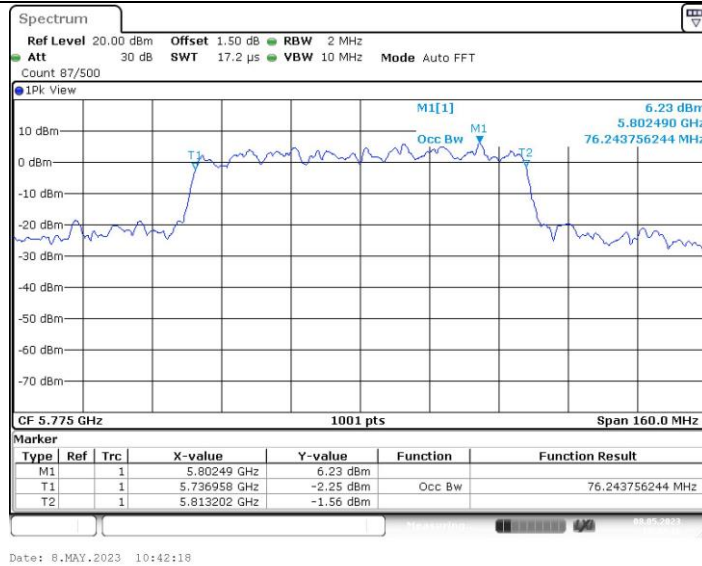
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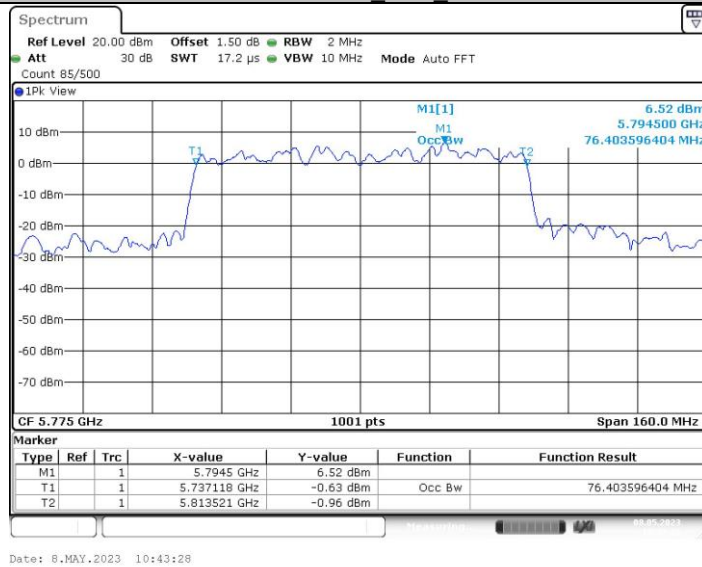
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11AC80MIMO_Ant1_5775



11AC80MIMO_Ant2_5775





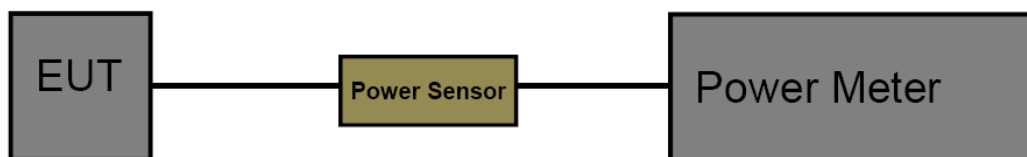
3.5. Output Power Test

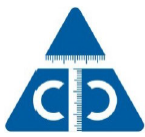
Limit

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 $1.76 + 10 \times \log_{10} B$ dBm, whichever is less (B=99% OBW in MHz)		
	Other Devices		200mW or $10 + 10 \times \log_{10} B$ dBm, whichever is less (B=99% OBW in MHz)		10dBm/MHz
5250MHz-5350MHz	in vehicles		30mW or $1.76 + 10 \times \log_{10} B$ dBm, whichever is less (B=99% OBW in MHz)		
	Other Devices	250mW or $11 + 10 \times \log_{10} B$ dBm, whichever is less (B=99% OBW in MHz)	1W or $17 + 10 \times \log_{10} B$ dBm, whichever is less (B=99% OBW in MHz)	11dBm/MHz	
5470MHz-5600MHz 5650MHz-5725MHz	ALL Devices	250mW or $11 + 10 \times \log_{10} B$ dBm, whichever is less (B=99% OBW in MHz)	1W or $17 + 10 \times \log_{10} B$ 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	11.97	≤30	PASS
	Ant2	5180	12.49	≤30	PASS
	Ant1	5200	11.75	≤30	PASS
	Ant2	5200	12.32	≤30	PASS
	Ant1	5240	11.01	≤30	PASS
	Ant2	5240	12.39	≤30	PASS
	Ant1	5745	14.06	≤30	PASS
	Ant2	5745	14.18	≤30	PASS
	Ant1	5785	15.41	≤30	PASS
	Ant2	5785	15.14	≤30	PASS
11N20MIMO	Ant1	5825	14.94	≤30	PASS
	Ant2	5825	14.71	≤30	PASS
	Ant1	5180	11.70	≤28	PASS
	Ant2	5180	11.26	≤28	PASS
	total	5180	14.5	≤28	PASS
	Ant1	5200	10.84	≤28	PASS
	Ant2	5200	11.87	≤28	PASS
	total	5200	14.4	≤28	PASS
	Ant1	5240	11.26	≤28	PASS
	Ant2	5240	11.41	≤28	PASS
	total	5240	14.3	≤28	PASS
	Ant1	5745	11.36	≤28	PASS
	Ant2	5745	11.72	≤28	PASS
	total	5745	14.6	≤28	PASS
	Ant1	5785	12.24	≤28	PASS
	Ant2	5785	12.68	≤28	PASS
	total	5785	15.5	≤28	PASS
11N40MIMO	Ant1	5825	11.87	≤28	PASS
	Ant2	5825	12.33	≤28	PASS
	total	5825	15.1	≤28	PASS
	Ant1	5190	12.56	≤28	PASS
	Ant2	5190	12.54	≤28	PASS
	total	5190	15.6	≤28	PASS
	Ant1	5230	11.99	≤28	PASS
	Ant2	5230	12.06	≤28	PASS
	total	5230	15.0	≤28	PASS
	Ant1	5755	10.90	≤28	PASS
11AC20MIMO	Ant2	5755	11.17	≤28	PASS
	total	5755	14.0	≤28	PASS
	Ant1	5795	11.45	≤28	PASS
	Ant2	5795	11.88	≤28	PASS
	total	5795	14.7	≤28	PASS
	Ant1	5180	11.98	≤28	PASS
	Ant2	5180	11.79	≤28	PASS
	total	5180	14.9	≤28	PASS
	Ant1	5200	11.63	≤28	PASS
	Ant2	5200	11.65	≤28	PASS
11AC20MIMO	total	5200	14.7	≤28	PASS
	Ant1	5240	11.14	≤28	PASS
	Ant2	5240	11.31	≤28	PASS
	total	5240	14.2	≤28	PASS
	Ant1	5745	11.30	≤28	PASS
	Ant2	5745	11.30	≤28	PASS

CTC Laboratories, Inc.

1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China

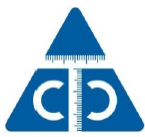
Tel.: (86)755-27521059

Fax: (86)755-27521011

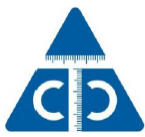
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	Ant2	5745	11.60	≤28	PASS
	total	5745	14.5	≤28	PASS
	Ant1	5785	12.17	≤28	PASS
	Ant2	5785	12.62	≤28	PASS
	total	5785	15.4	≤28	PASS
	Ant1	5825	11.70	≤28	PASS
	Ant2	5825	12.24	≤28	PASS
	total	5825	15.0	≤28	PASS
11AC40MIMO	Ant1	5190	12.62	≤28	PASS
	Ant2	5190	12.55	≤28	PASS
	total	5190	15.6	≤28	PASS
	Ant1	5230	11.90	≤28	PASS
	Ant2	5230	11.99	≤28	PASS
	total	5230	15.0	≤28	PASS
	Ant1	5755	11.74	≤28	PASS
	Ant2	5755	12.14	≤28	PASS
	total	5755	15.0	≤28	PASS
	Ant1	5795	11.62	≤28	PASS
	Ant2	5795	12.19	≤28	PASS
	total	5795	14.9	≤28	PASS
11AC80MIMO	Ant1	5210	11.42	≤28	PASS
	Ant2	5210	11.13	≤28	PASS
	total	5210	14.3	≤28	PASS
	Ant1	5775	11.47	≤28	PASS
	Ant2	5775	11.73	≤28	PASS
	total	5775	14.6	≤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 $G_{TX} > 6\text{dBi}$, then $\text{PSD} = 17 - (G_{TX} - 6)$.
- Indoor AP
The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz.
If $G_{TX} > 6\text{dBi}$, then $\text{PSD} = 17 - (G_{TX} - 6)$.
- Point-to-point AP
The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz.
If $G_{TX} > 23\text{dBi}$, then $\text{PSD} = 17 - (G_{TX} - 23)$.
- Client devices
The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz.
If $G_{TX} > 6\text{dBi}$, then $\text{PSD} = 11 - (G_{TX} - 6)$.

For the 5.25~5.35GHz band:

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

For the 5.47~5.725GHz band:

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

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 $G_{TX} > 6\text{dBi}$, then $\text{PSD} = 30 - (G_{TX} - 6)$.
- 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 $1.76 + 10 \times \log_{10} B$ dBm, whichever is less (B=99% OBW in MHz)		
	Other Devices		200mW or $10 + 10 \times \log_{10} B$ dBm, whichever is less (B=99% OBW in MHz)		10dBm/MHz
5250MHz-5350MHz	in vehicles		30mW or $1.76 + 10 \times \log_{10} B$ dBm, whichever is less (B=99% OBW in MHz)		
	Other Devices	250mW or $11 + 10 \times \log_{10} B$ dBm, whichever is less (B=99% OBW in MHz)	1W or $17 + 10 \times \log_{10} B$ dBm, whichever is less (B=99% OBW in MHz)	11dBm/MHz	
5470MHz-5600MHz 5650MHz-5725MHz	ALL Devices	250mW or $11 + 10 \times \log_{10} B$ dBm, whichever is less (B=99% OBW in MHz)	1W or $17 + 10 \times \log_{10} B$ dBm, whichever is less (B=99% OBW in MHz)	11dBm/MHz	
5725MHz-5850MHz	ALL Devices	1W		30 dBm/500KHz	

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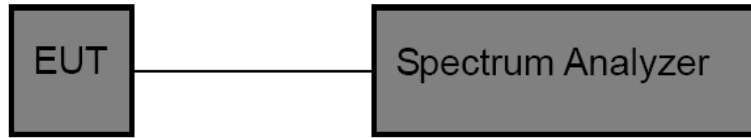
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Test Configuration



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.

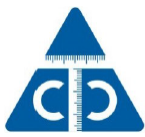
- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Set analyzer center frequency to transmitting frequency.
- (3) Set the span to encompass the entire emissions bandwidth (EBW)(alternatively, the entire 99% OBW) of the signal.
- (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 $10 \log (500 \text{ kHz}/\text{RBW})$ 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 $10 \log (1\text{MHz}/\text{RBW})$ to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
- (5) Set the VBW to: $\geq 3 \text{ RBW}$
- (6) Detector: AVG
- (7) Trace: Max Hold and View
- (7) Sweep time: auto
- (8) Trace average at least 100 traces in power averaging.
- (9) Use 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	1.34	≤17	PASS
	Ant2	5180	1.02	≤17	PASS
	Ant1	5200	1.41	≤17	PASS
	Ant2	5200	0.82	≤17	PASS
	Ant1	5240	0.28	≤17	PASS
	Ant2	5240	0.46	≤17	PASS
	Ant1	5745	-0.69	≤30	PASS
	Ant2	5745	-1.14	≤30	PASS
	Ant1	5785	0.23	≤30	PASS
	Ant2	5785	0.20	≤30	PASS
11N20MIMO	Ant1	5825	0.24	≤30	PASS
	Ant2	5825	-0.18	≤28	PASS
	Ant1	5180	0.8	≤15	PASS
	Ant2	5180	0.28	≤15	PASS
	total	5180	3.56	≤15	PASS
	Ant1	5200	0.4	≤15	PASS
	Ant2	5200	1.3	≤15	PASS
	total	5200	3.88	≤15	PASS
	Ant1	5240	0.5	≤15	PASS
	Ant2	5240	1.01	≤15	PASS
	total	5240	3.77	≤15	PASS
	Ant1	5745	-4.58	≤28	PASS
	Ant2	5745	-3.95	≤28	PASS
	total	5745	-1.24	≤28	PASS
	Ant1	5785	-3.70	≤28	PASS
	Ant2	5785	-3.10	≤28	PASS
	total	5785	-0.38	≤28	PASS
	Ant1	5825	-3.84	≤28	PASS
	Ant2	5825	-3.63	≤28	PASS
	total	5825	-0.72	≤28	PASS
11N40MIMO	Ant1	5190	-1.14	≤15	PASS
	Ant2	5190	-0.85	≤15	PASS
	total	5190	2.02	≤15	PASS
	Ant1	5230	-1.04	≤15	PASS
	Ant2	5230	-1.58	≤15	PASS
	total	5230	1.71	≤15	PASS
	Ant1	5755	-7.28	≤28	PASS
	Ant2	5755	-7.73	≤28	PASS
	total	5755	-4.49	≤28	PASS
	Ant1	5795	-7.27	≤28	PASS
11AC20MIMO	Ant2	5795	-6.22	≤28	PASS
	total	5795	-3.7	≤28	PASS
	Ant1	5180	1.1	≤15	PASS
	Ant2	5180	0.92	≤15	PASS
	total	5180	4.02	≤15	PASS
	Ant1	5200	0.89	≤15	PASS
	Ant2	5200	0.82	≤15	PASS
	total	5200	3.87	≤15	PASS
	Ant1	5240	0.04	≤15	PASS
	Ant2	5240	0.48	≤15	PASS
	total	5240	3.28	≤15	PASS
	Ant1	5745	-4.51	≤28	PASS
	Ant2	5745	-4.22	≤28	PASS
	total	5745	-1.35	≤28	PASS
	Ant1	5785	-3.78	≤28	PASS
	Ant2	5785	-3.47	≤28	PASS
	total	5785	-0.61	≤28	PASS
	Ant1	5825	-3.78	≤28	PASS
	Ant2	5825	-3.59	≤28	PASS
	total	5825	-0.67	≤28	PASS
11AC40MIMO	Ant1	5190	-1.05	≤15	PASS
	Ant2	5190	-1.27	≤15	PASS

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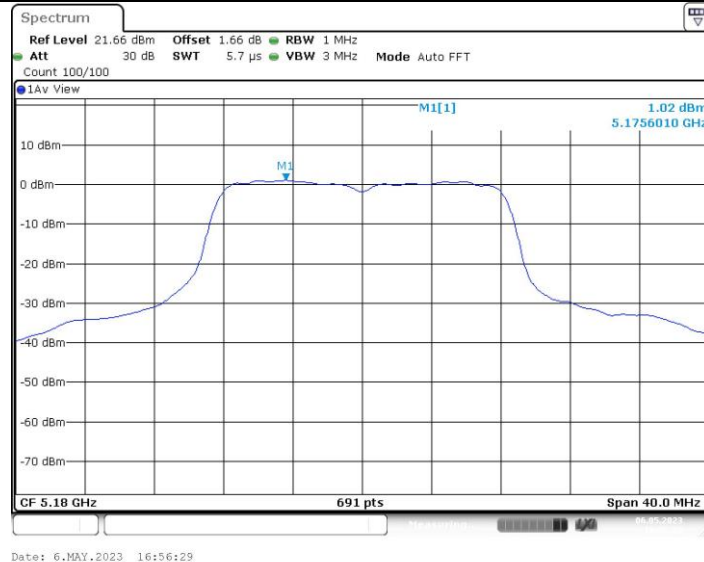
	total	5190	1.85	≤15	PASS
	Ant1	5230	-1.54	≤15	PASS
	Ant2	5230	-1.28	≤15	PASS
	total	5230	1.60	≤15	PASS
	Ant1	5755	-4.94	≤28	PASS
	Ant2	5755	-4.47	≤28	PASS
	total	5755	-1.69	≤28	PASS
	Ant1	5795	-5.01	≤28	PASS
	Ant2	5795	-4.38	≤28	PASS
11AC80MIMO	total	5795	-1.67	≤28	PASS
	Ant1	5210	-4.01	≤15	PASS
	Ant2	5210	-4.39	≤15	PASS
	total	5210	-1.19	≤15	PASS
	Ant1	5775	-6.81	≤28	PASS
	Ant2	5775	-6.84	≤28	PASS
	total	5775	-3.81	≤28	PASS

11A_Ant1_5180



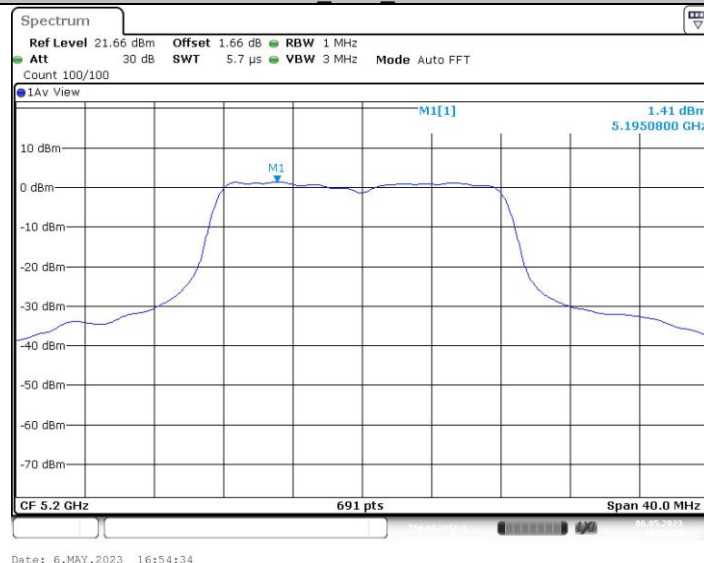
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11A_Ant2_5180



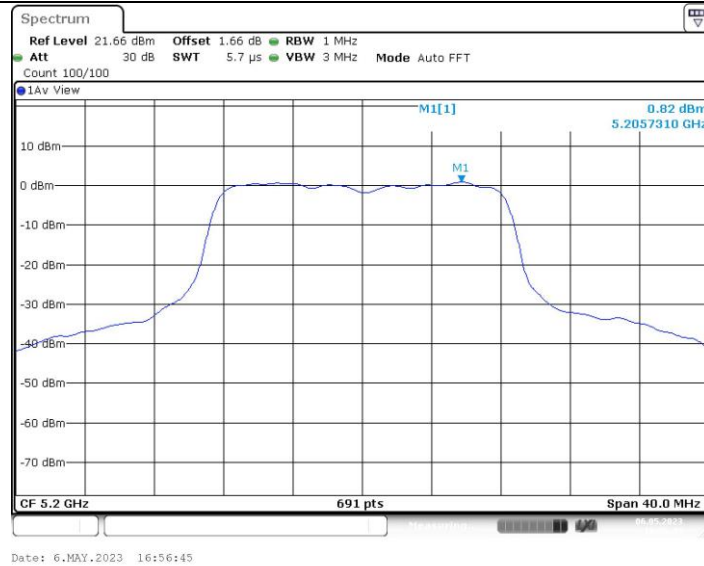
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11A_Ant1_5200



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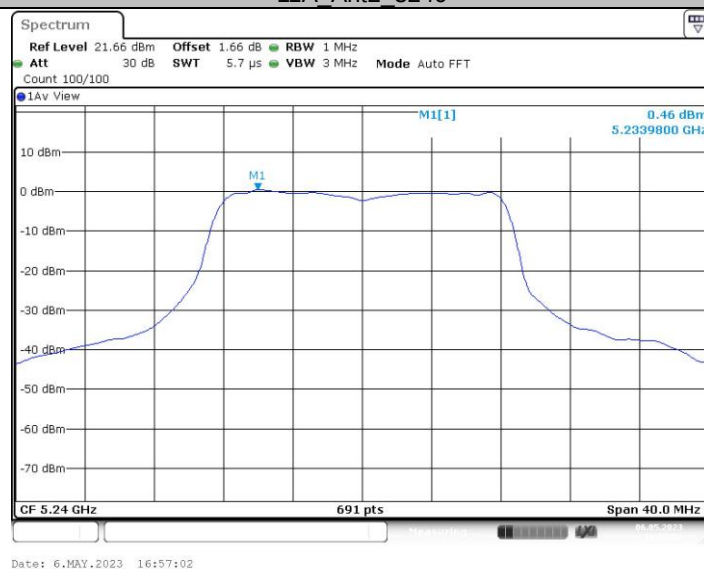
11A_Ant2_5200



11A Ant1 5240



11A Ant2 5240



11A Ant1 5745

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