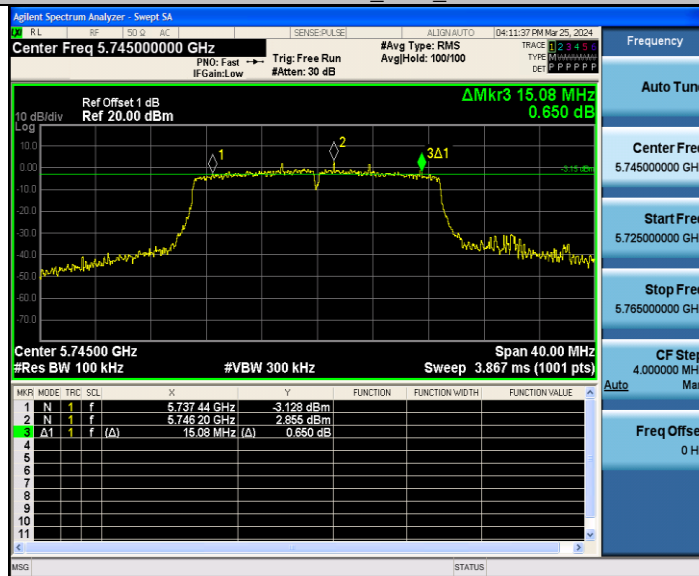
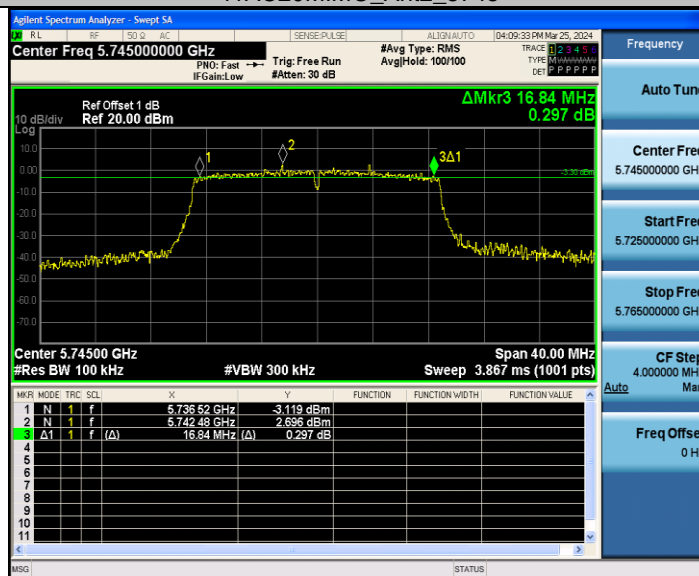




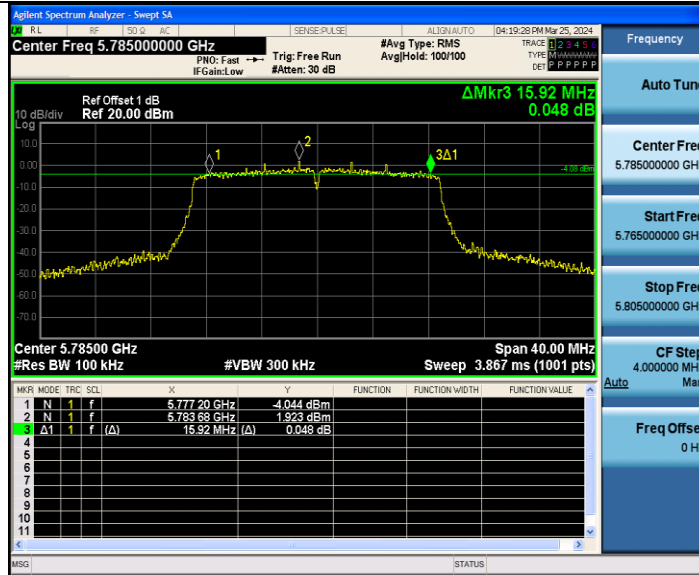
11AC20MIMO_Ant1_5745



11AC20MIMO_Ant2_5745



11AC20MIMO_Ant1_5785



11AC20MIMO_Ant2_5785

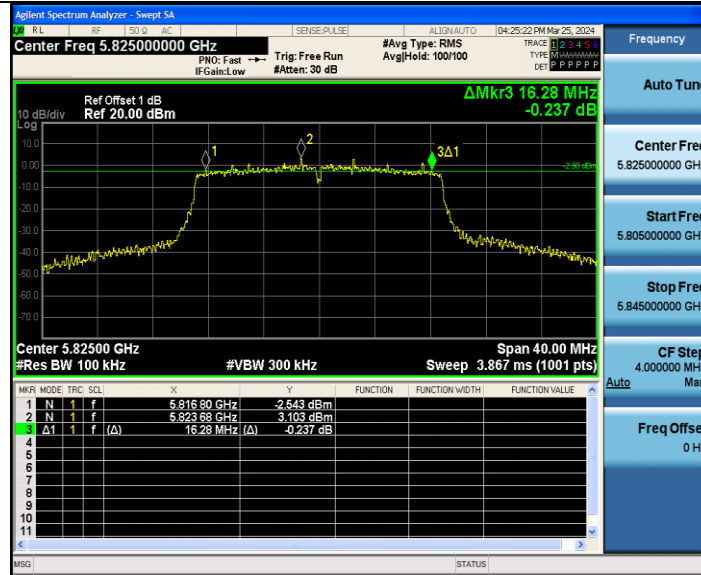


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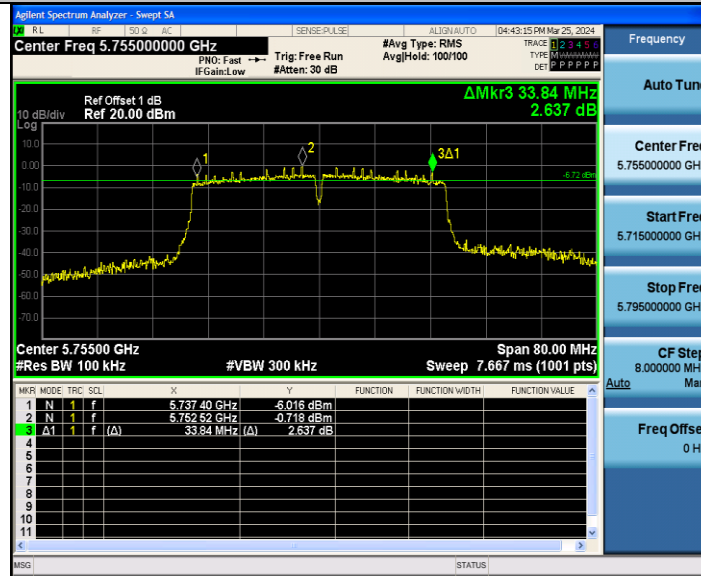


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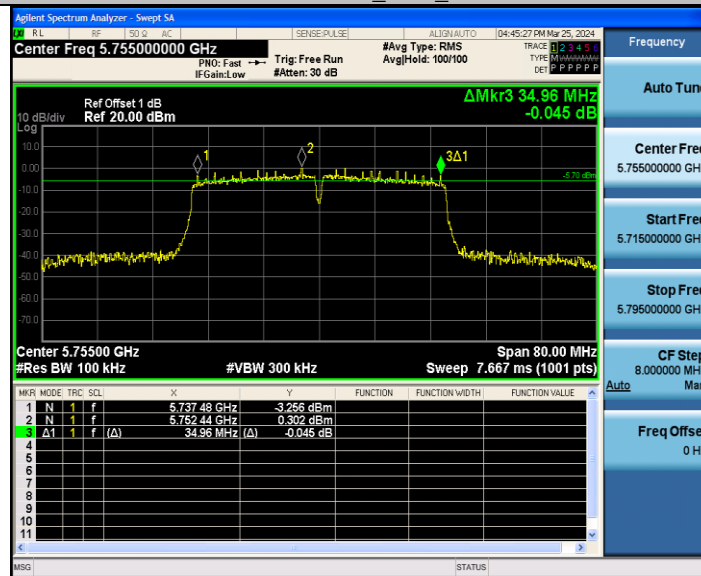




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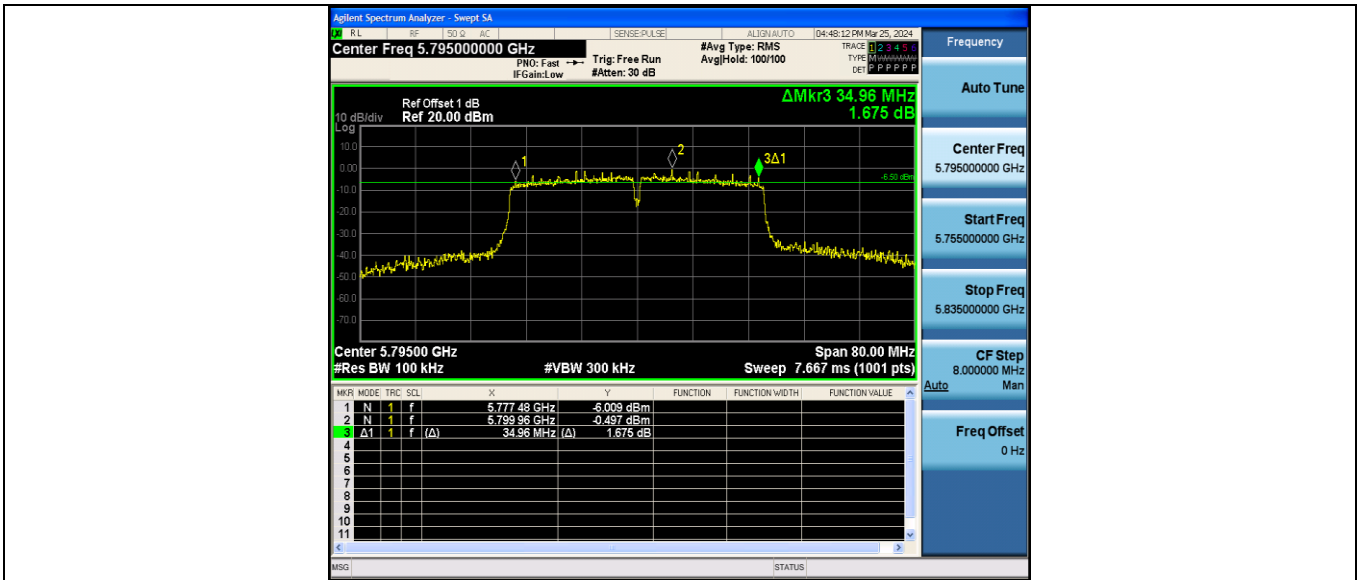


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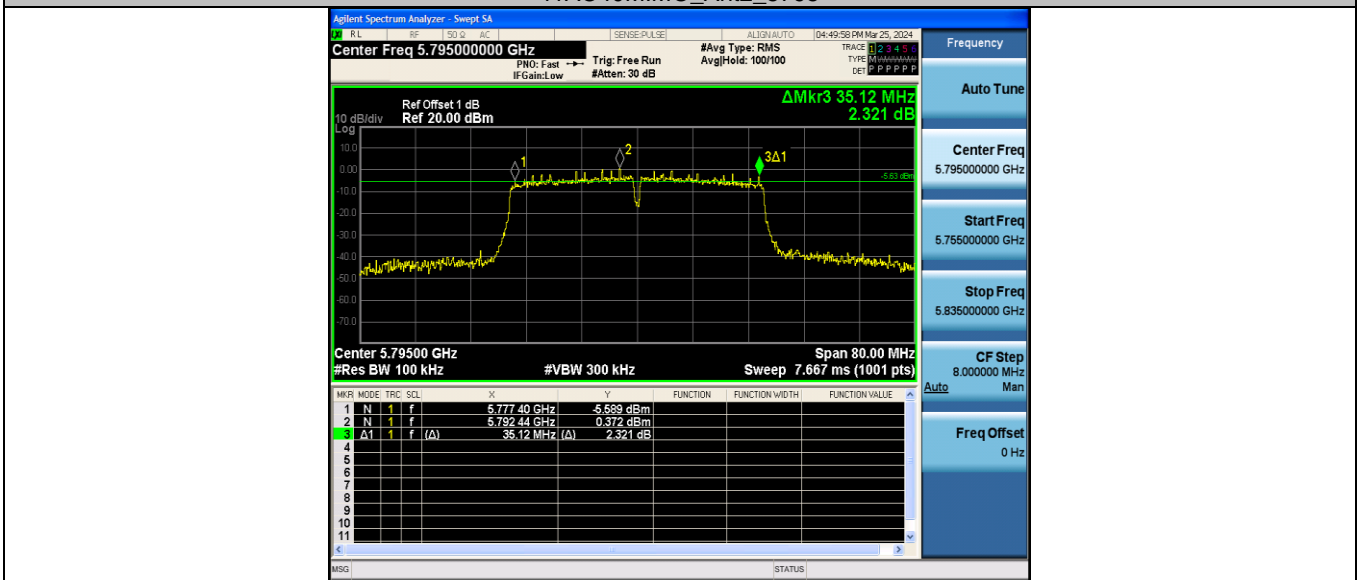


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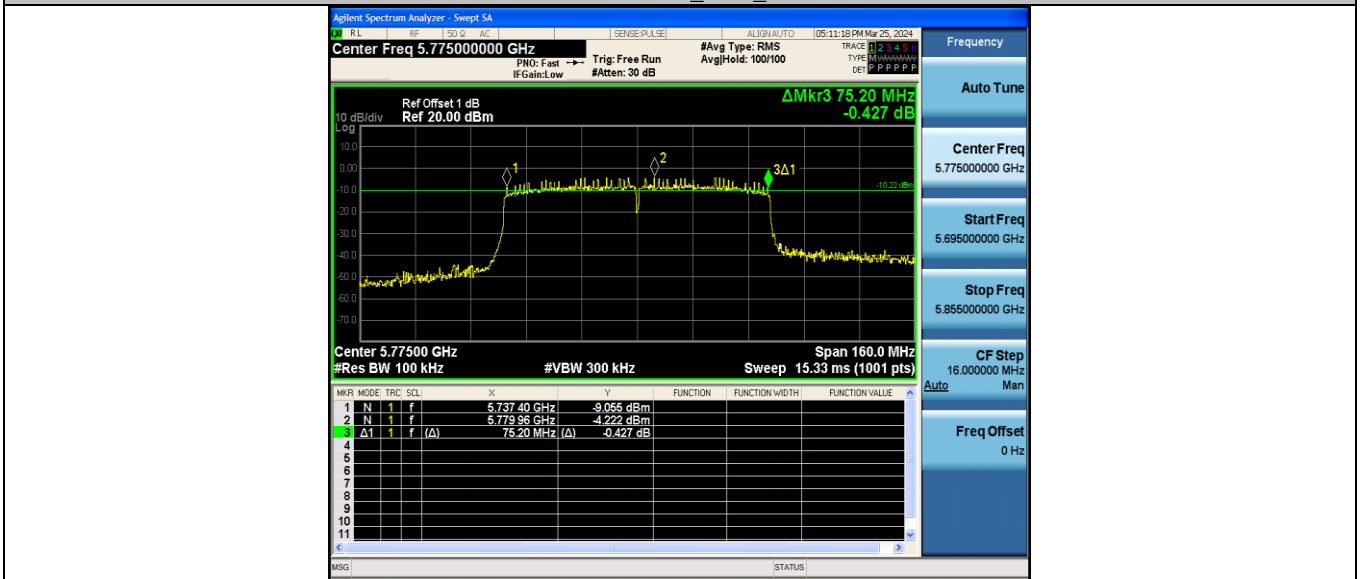




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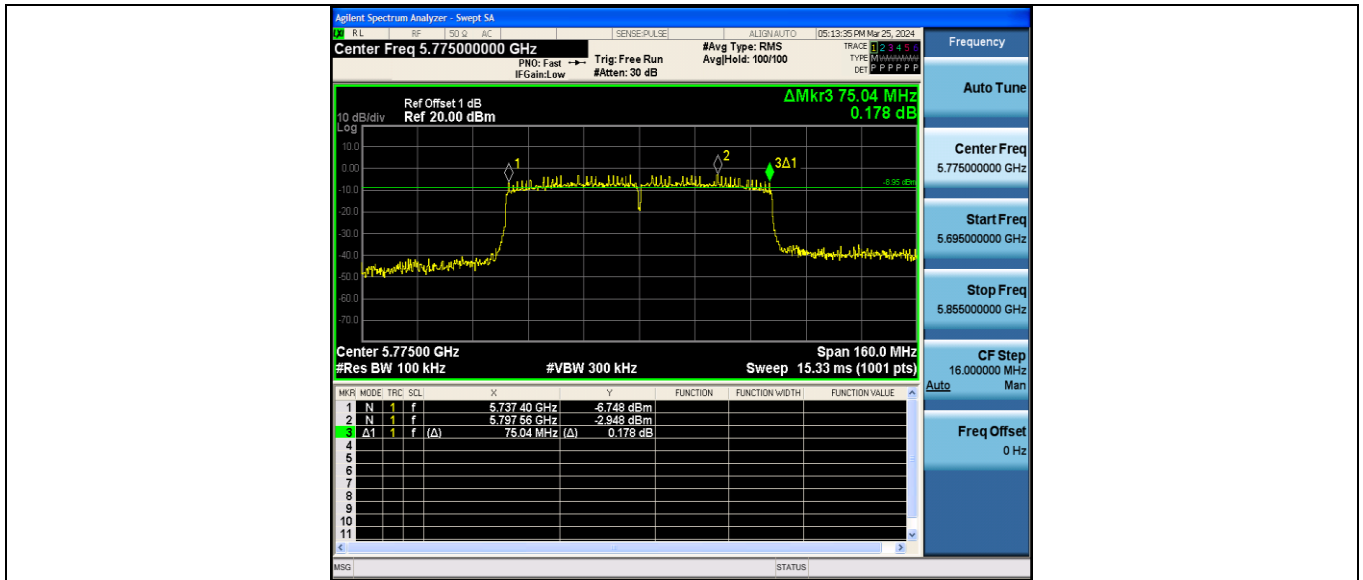


11AC80MIMO_Ant1_5775



11AC80MIMO_Ant2_5775







Occupied Channel Bandwidth

Test Mode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	16.459	5171.7515	5188.2105	---	---
	Ant2	5180	16.434	5171.7449	5188.1789	---	---
	Ant1	5200	16.481	5191.7392	5208.2202	---	---
	Ant2	5200	16.404	5191.7721	5208.1761	---	---
	Ant1	5240	16.456	5231.7684	5248.2244	---	---
	Ant2	5240	16.470	5231.7429	5248.2129	---	---
	Ant1	5745	16.609	5736.7396	5753.3486	---	---
	Ant2	5745	16.828	5736.5482	5753.3762	---	---
	Ant1	5785	16.520	5776.7429	5793.2629	---	---
	Ant2	5785	16.771	5776.5439	5793.3149	---	---
	Ant1	5825	16.533	5816.7419	5833.2749	---	---
	Ant2	5825	16.587	5816.6944	5833.2814	---	---
11N20MIMO	Ant1	5180	17.531	5171.2141	5188.7451	---	---
	Ant2	5180	17.656	5171.1476	5188.8036	---	---
	Ant1	5200	17.543	5191.1930	5208.7360	---	---
	Ant2	5200	17.574	5191.2235	5208.7975	---	---
	Ant1	5240	17.537	5231.2075	5248.7445	---	---
	Ant2	5240	17.518	5231.2868	5248.8048	---	---
	Ant1	5745	17.547	5736.1847	5753.7317	---	---
	Ant2	5745	17.636	5736.1542	5753.7902	---	---
	Ant1	5785	17.591	5776.1540	5793.7450	---	---
	Ant2	5785	17.557	5776.1874	5793.7444	---	---
	Ant1	5825	17.584	5816.1814	5833.7654	---	---
	Ant2	5825	17.572	5816.1836	5833.7556	---	---
11N40MIMO	Ant1	5190	35.931	5172.0713	5208.0023	---	---
	Ant2	5190	35.908	5172.0441	5207.9521	---	---
	Ant1	5230	35.891	5212.0608	5247.9518	---	---
	Ant2	5230	35.892	5211.9922	5247.8842	---	---
	Ant1	5755	35.951	5737.0324	5772.9834	---	---
	Ant2	5755	36.016	5736.9838	5772.9998	---	---
	Ant1	5795	36.016	5777.0157	5813.0317	---	---
	Ant2	5795	36.059	5776.9568	5813.0158	---	---
11AC20MIMO	Ant1	5180	17.540	5171.2194	5188.7594	---	---
	Ant2	5180	17.520	5171.2016	5188.7216	---	---
	Ant1	5200	17.553	5191.1993	5208.7523	---	---
	Ant2	5200	17.518	5191.2102	5208.7282	---	---
	Ant1	5240	17.545	5231.2090	5248.7540	---	---
	Ant2	5240	17.540	5231.2013	5248.7413	---	---
	Ant1	5745	17.563	5736.1824	5753.7454	---	---
	Ant2	5745	17.564	5736.1633	5753.7273	---	---
	Ant1	5785	17.552	5776.1937	5793.7457	---	---
	Ant2	5785	17.617	5776.1626	5793.7796	---	---
	Ant1	5825	17.577	5816.1958	5833.7728	---	---
	Ant2	5825	17.562	5816.1844	5833.7464	---	---
11AC40MIMO	Ant1	5190	35.891	5172.0597	5207.9507	---	---
	Ant2	5190	35.847	5172.0574	5207.9044	---	---
	Ant1	5230	35.955	5212.0217	5247.9767	---	---
	Ant2	5230	35.915	5211.9698	5247.8848	---	---
	Ant1	5755	35.976	5737.0410	5773.0170	---	---
	Ant2	5755	35.958	5736.9816	5772.9396	---	---
	Ant1	5795	35.961	5777.0112	5812.9722	---	---
	Ant2	5795	35.959	5777.0008	5812.9598	---	---
11AC80MIMO	Ant1	5210	75.067	5172.6754	5247.7424	---	---
	Ant2	5210	74.800	5172.6158	5247.4158	---	---
	Ant1	5775	75.307	5737.3820	5812.6890	---	---
	Ant2	5775	75.239	5737.4040	5812.6430	---	---

CTC Laboratories, Inc.

Room 101 Building B, No. 7, Lanqing 1st Road, Luhu Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China

Tel.: (86)755-27521059

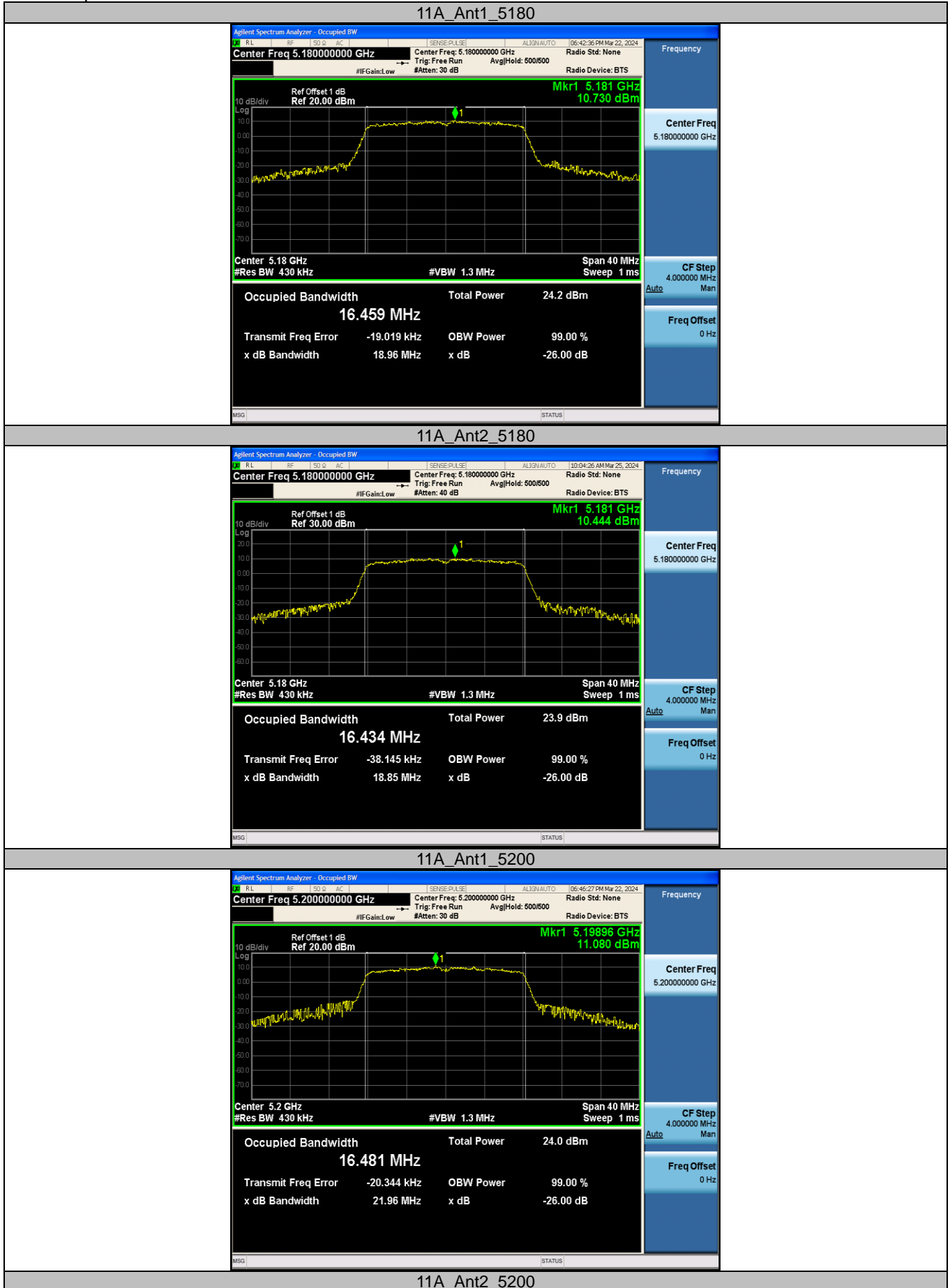
Fax: (86)755-27521011

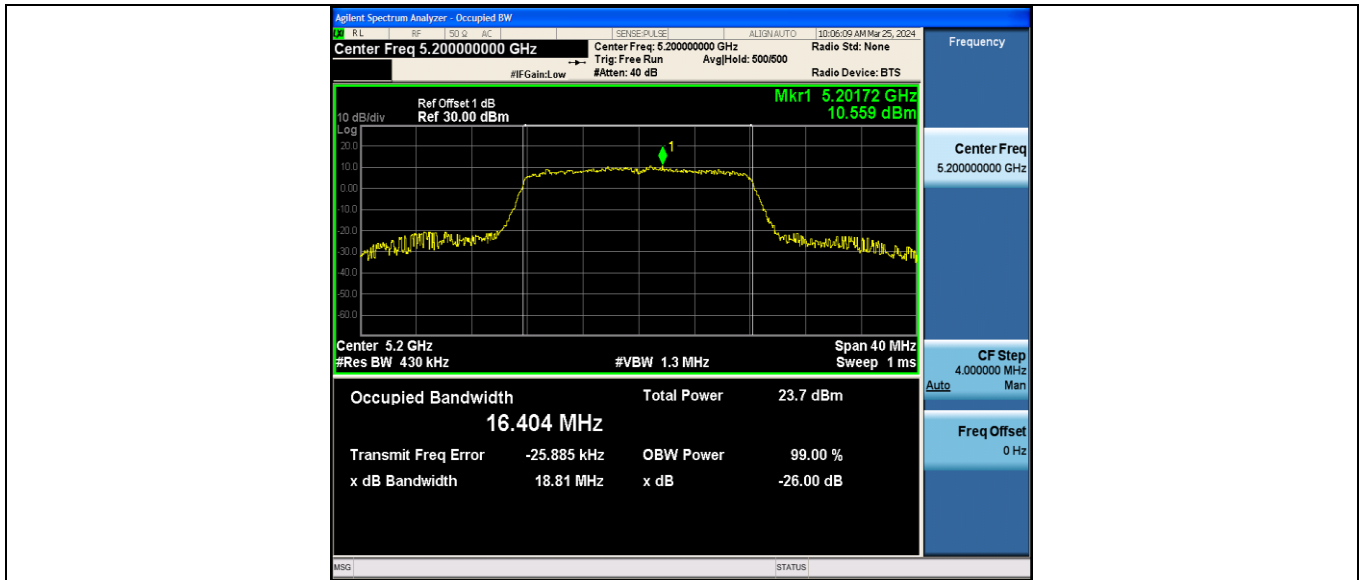
Http://www.sz-ctc.org.cn

中国国家认证认可监督管理委员会
Certification and Accreditation Administration of the People's Republic of ChinaFor anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : yz.cnca.cn

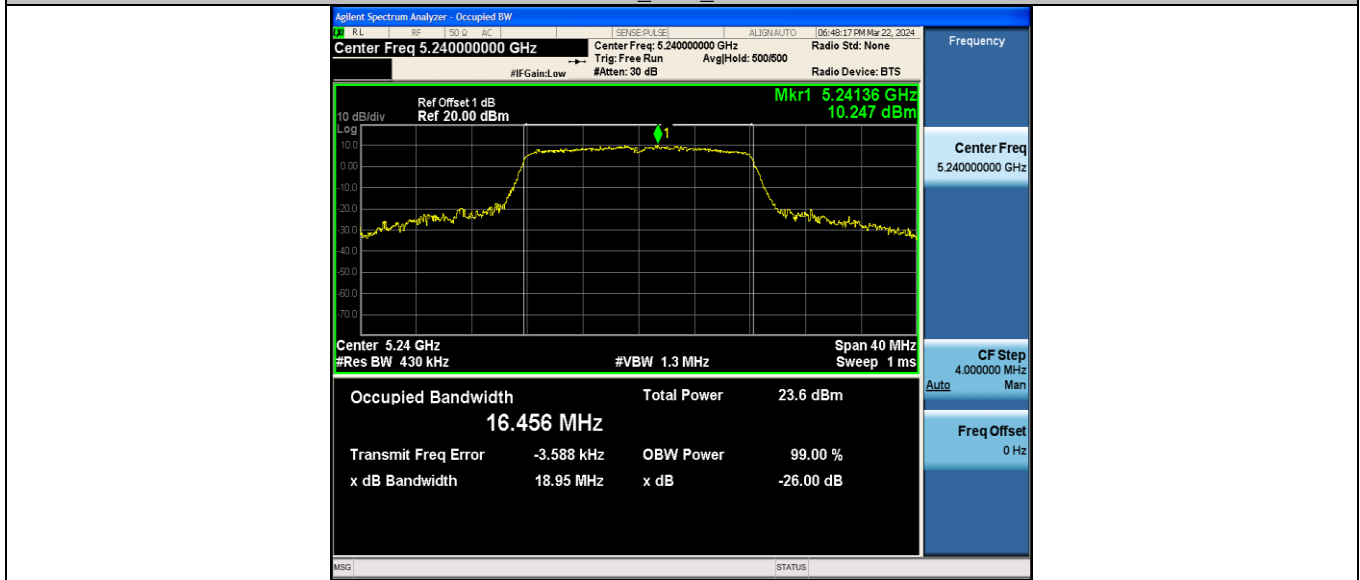


Test Graphs

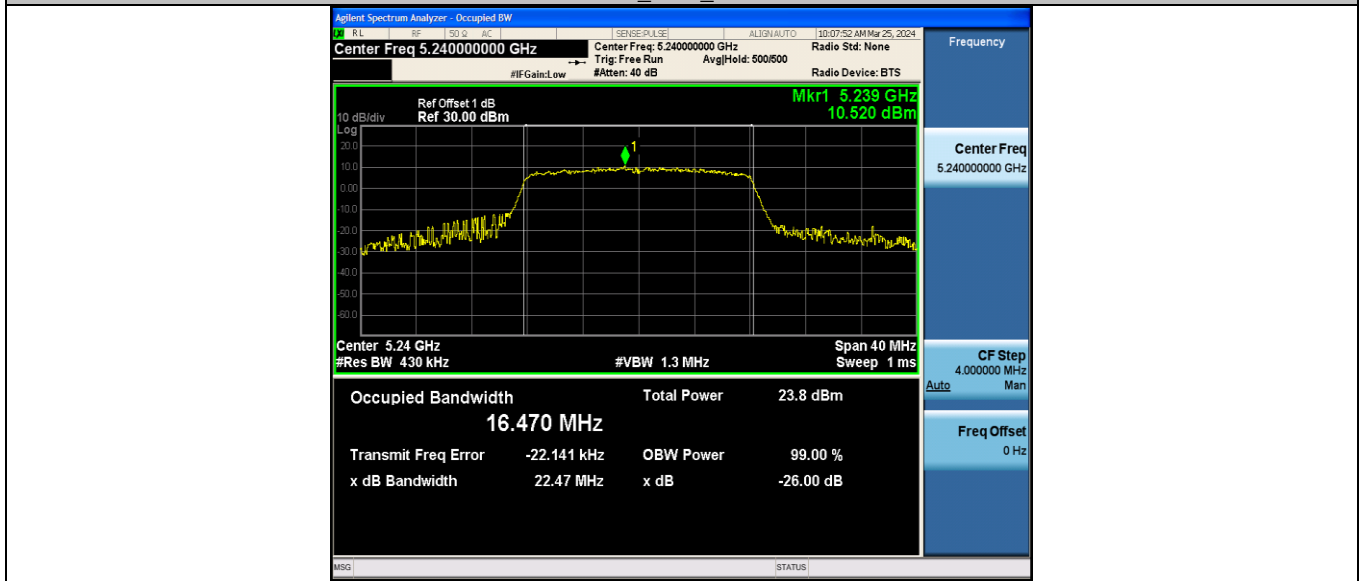




11A_Ant1_5240

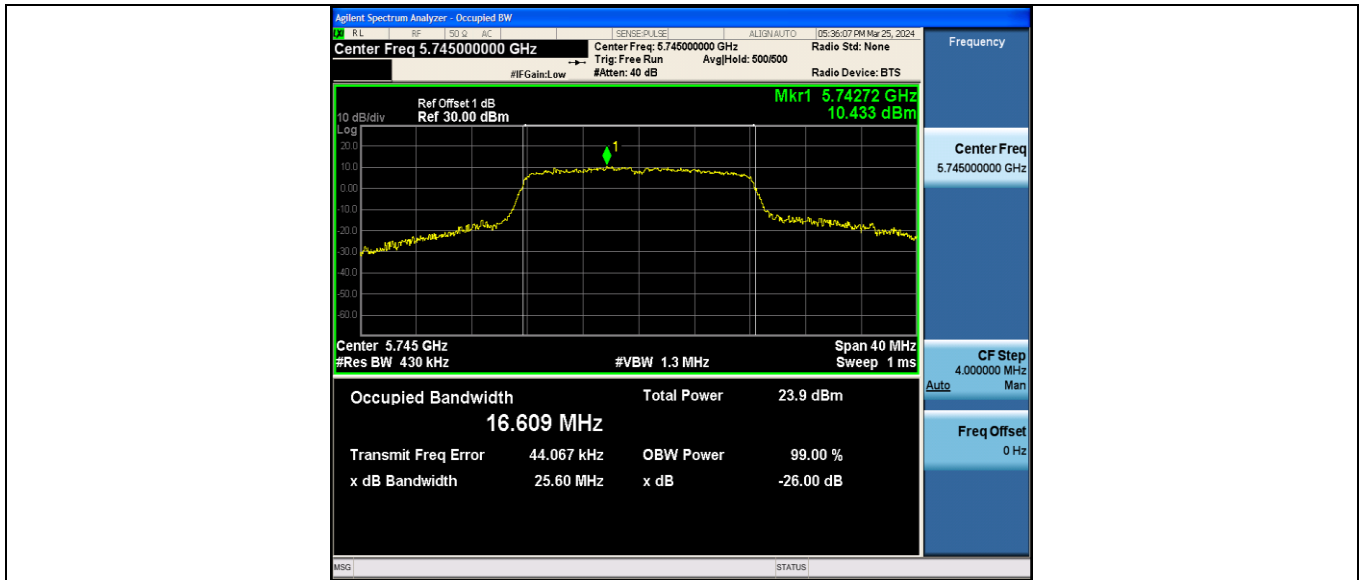


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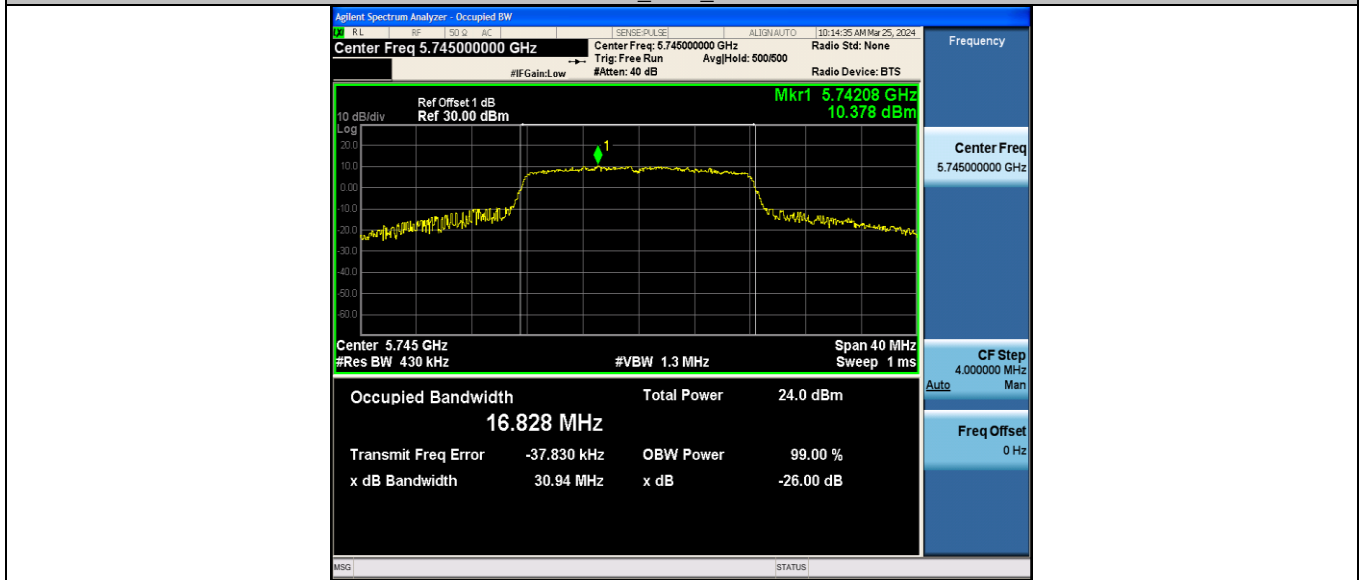


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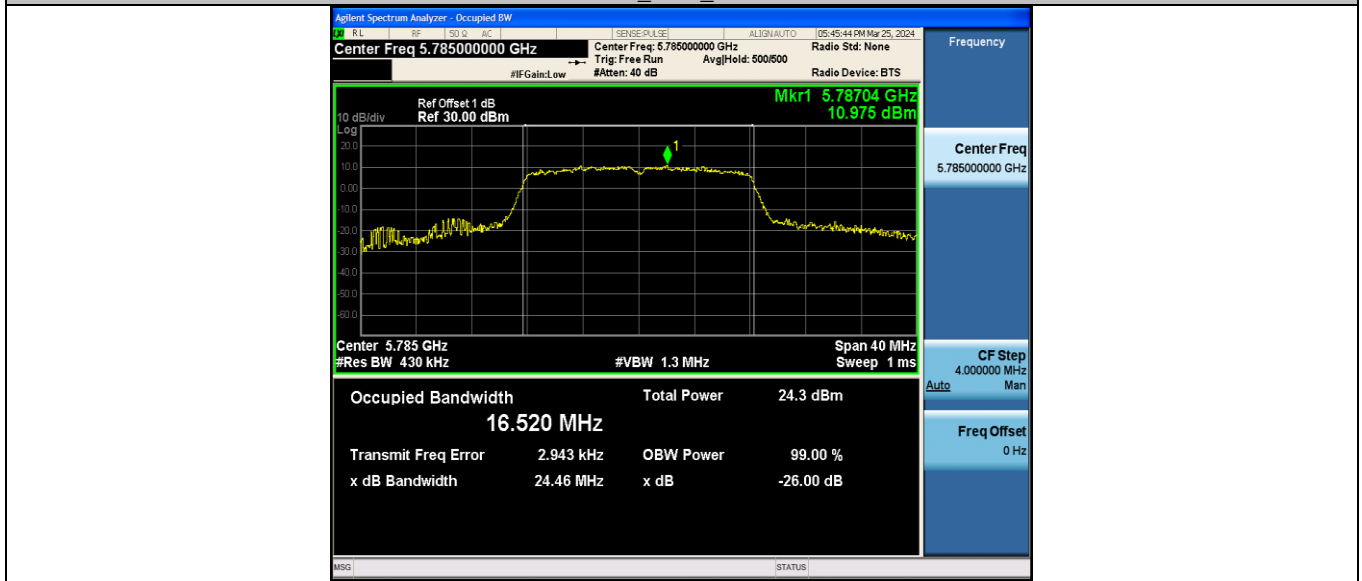




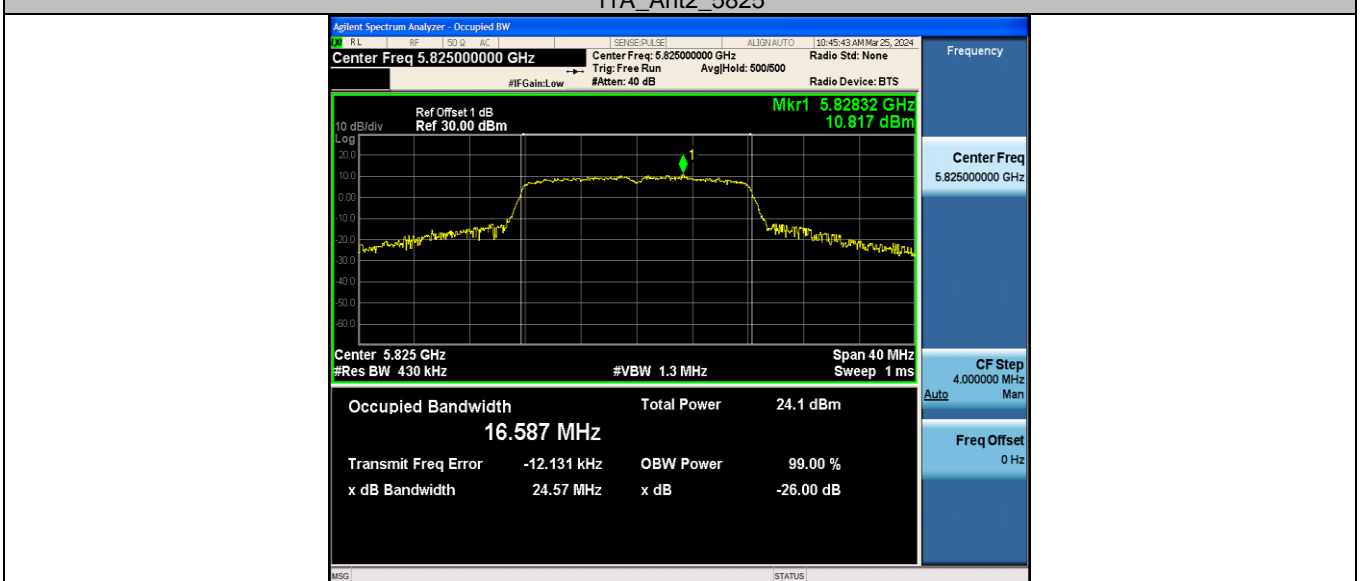
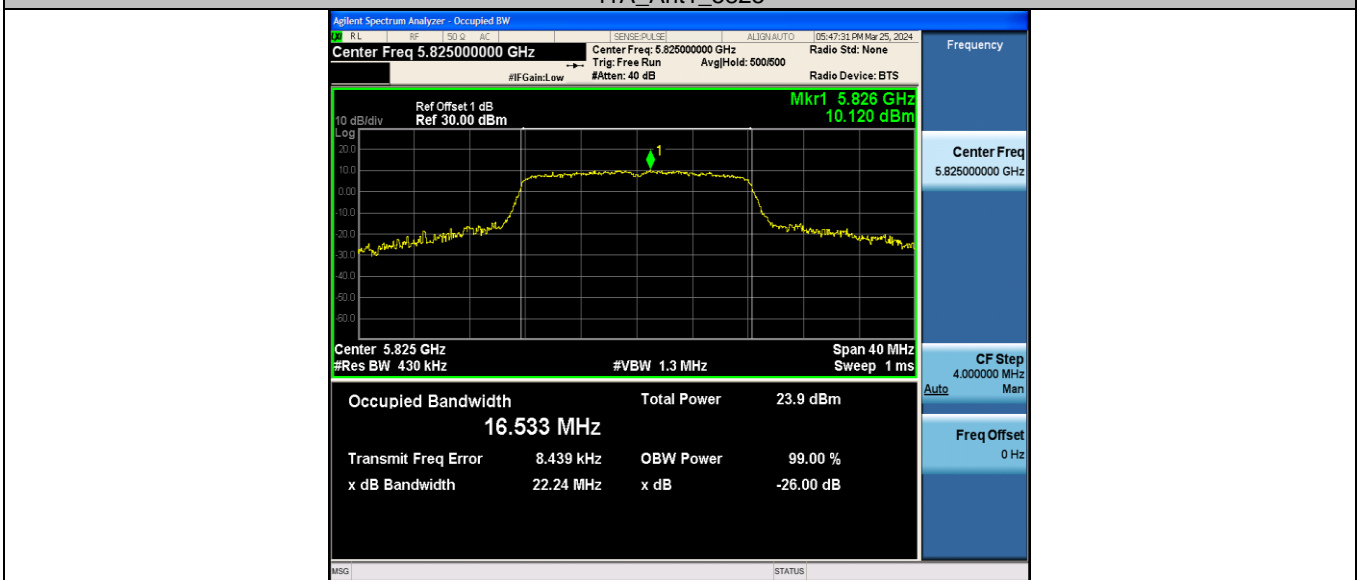
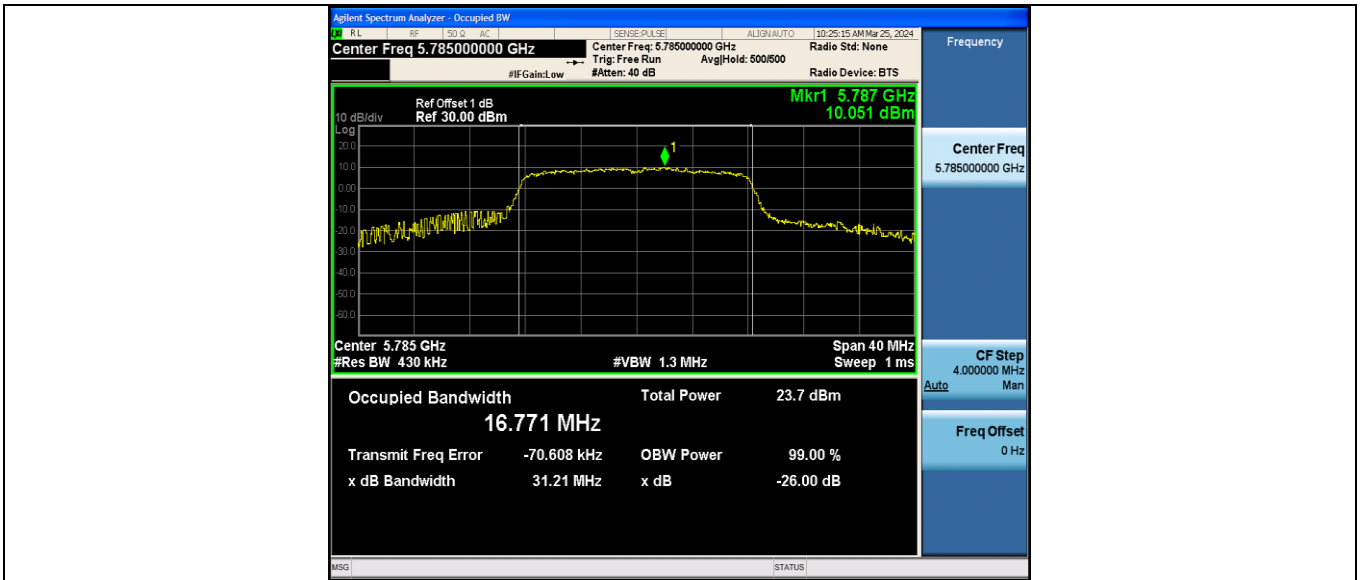
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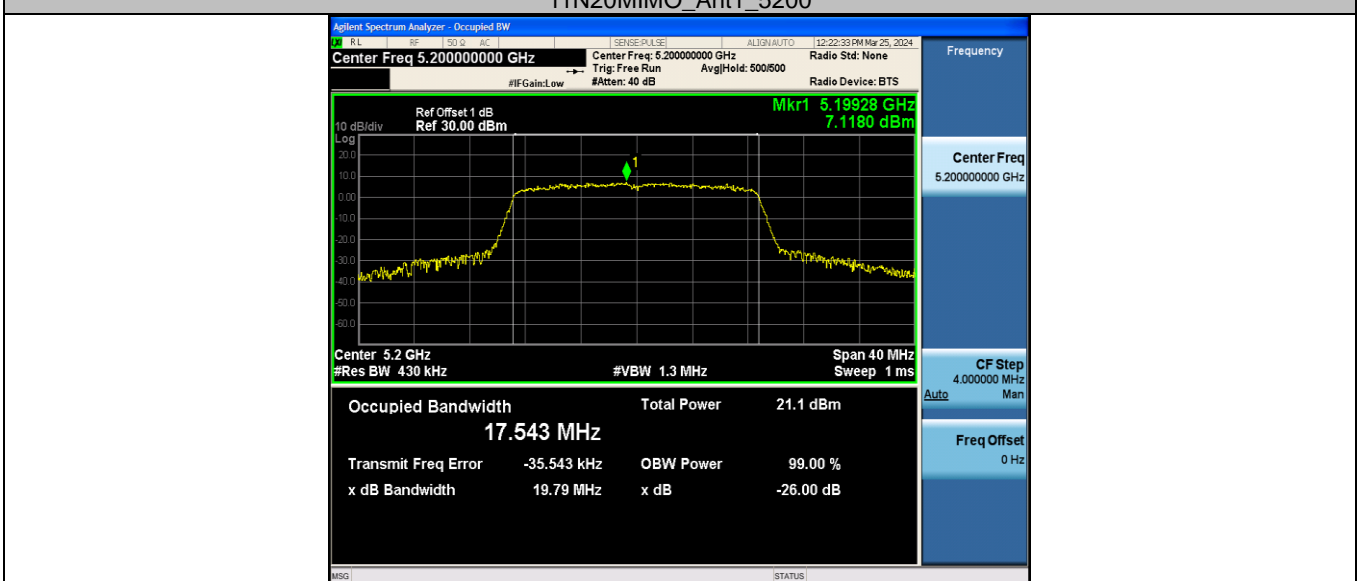
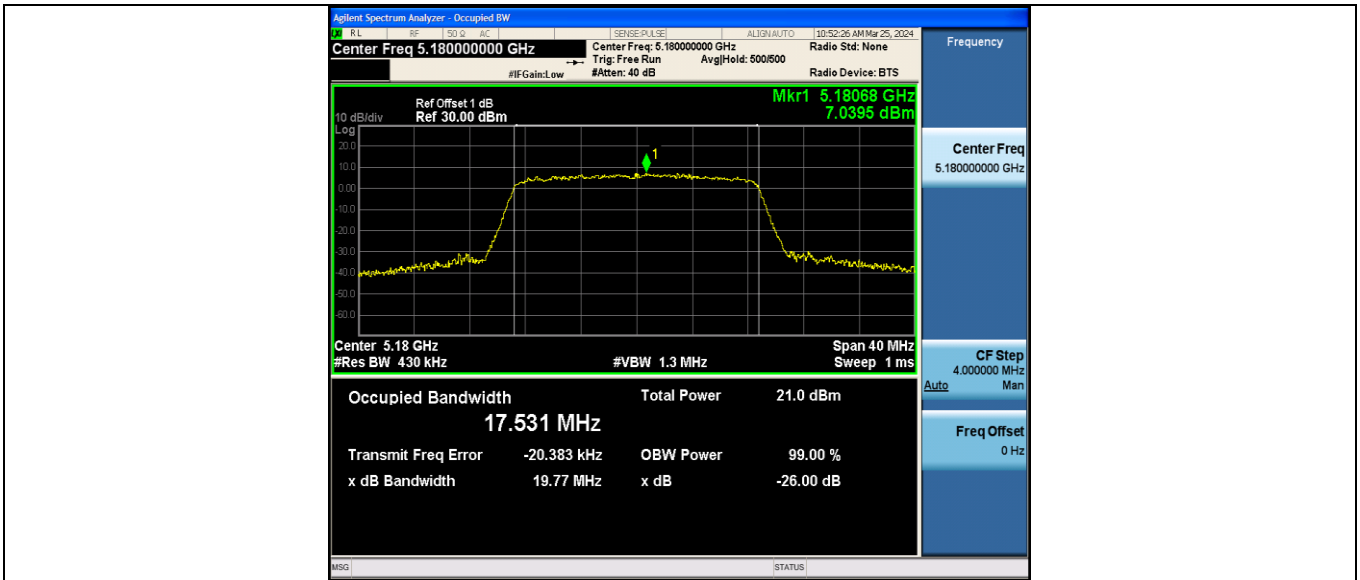


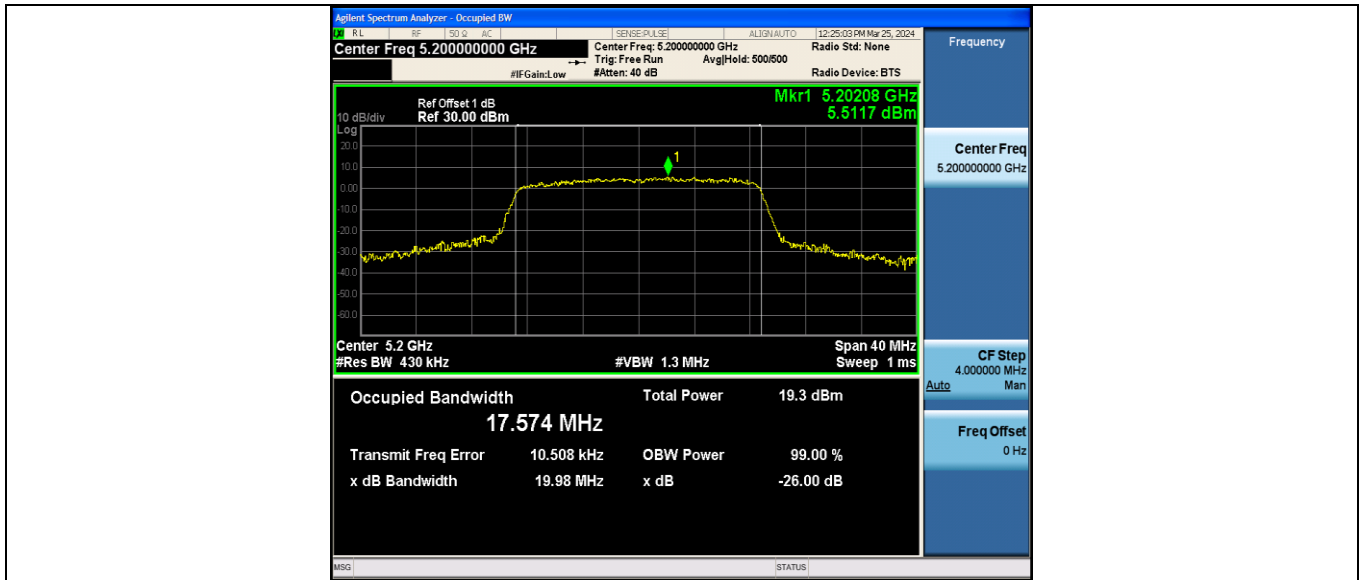
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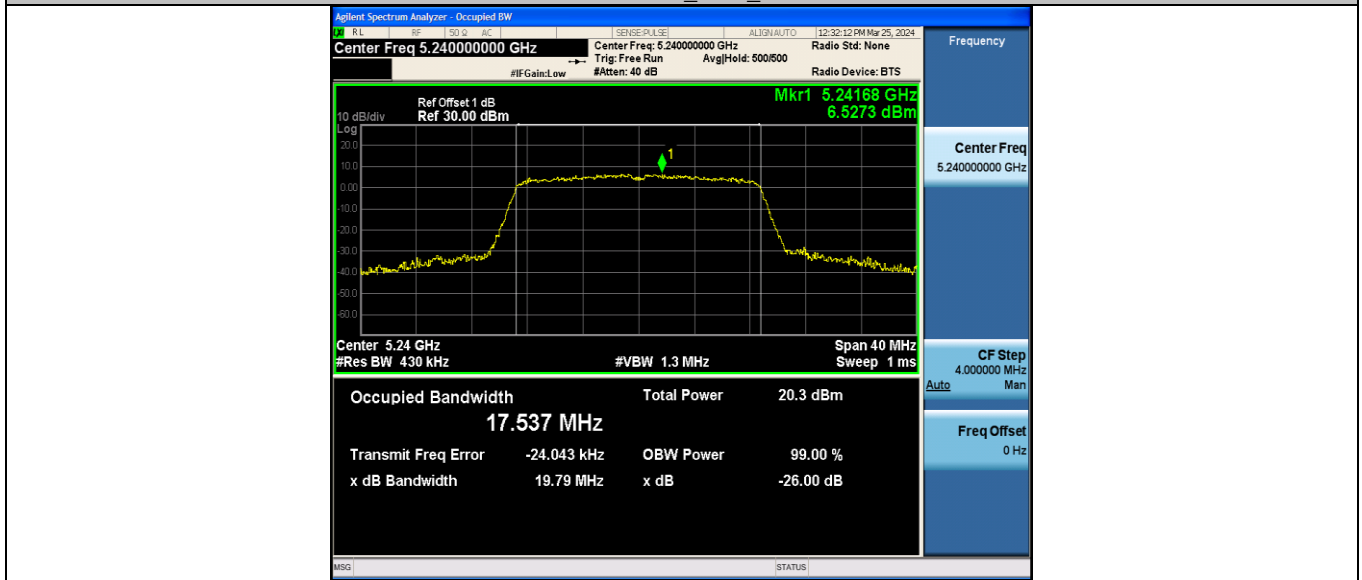
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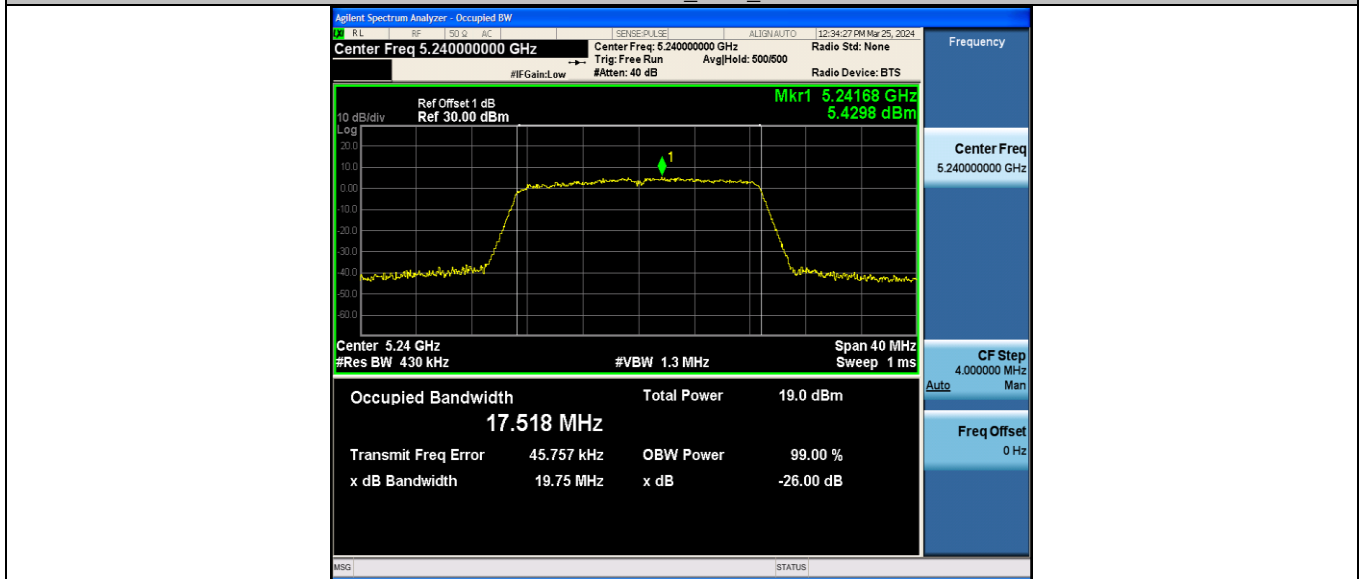




11N20MIMO_Ant1_5240

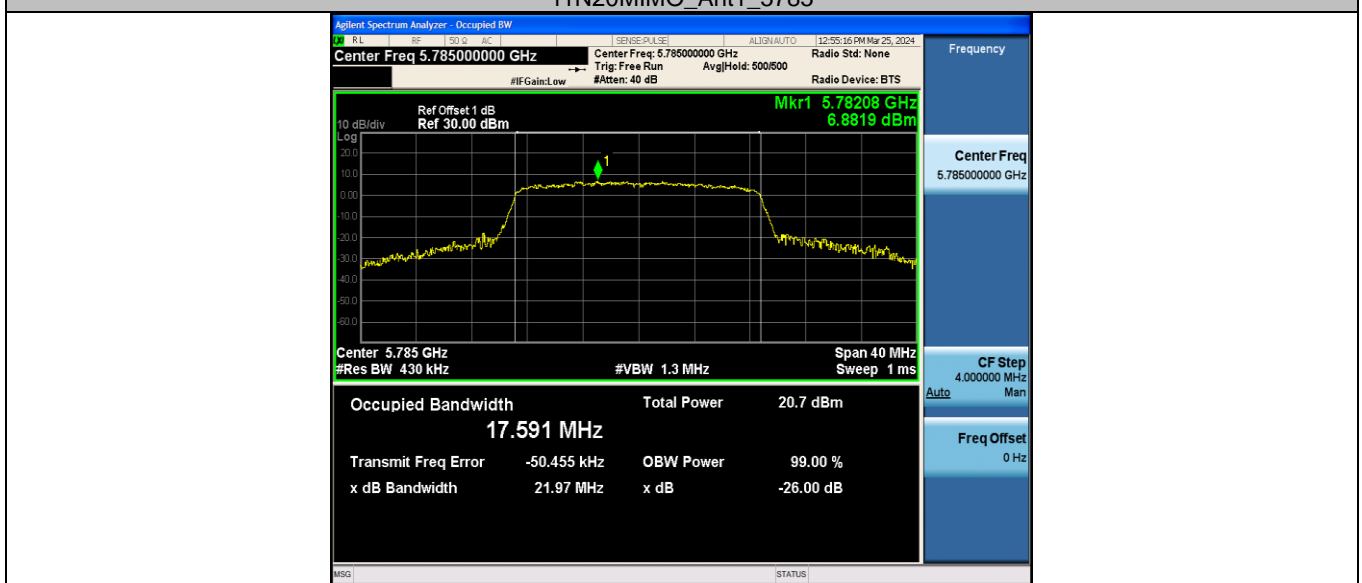
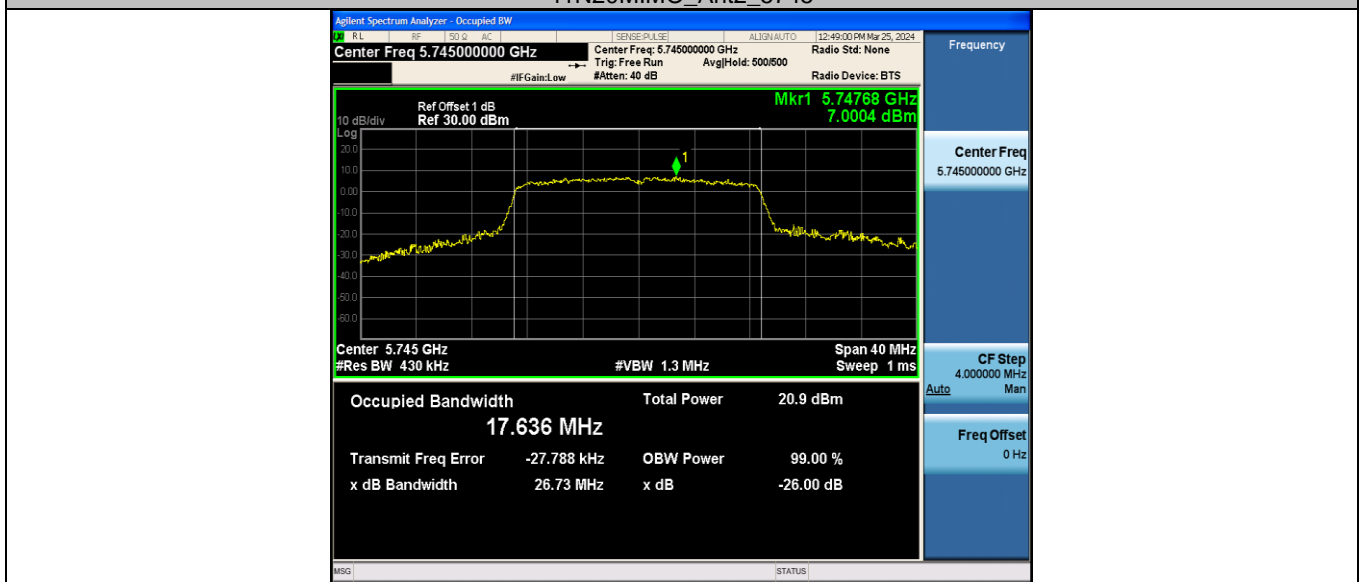
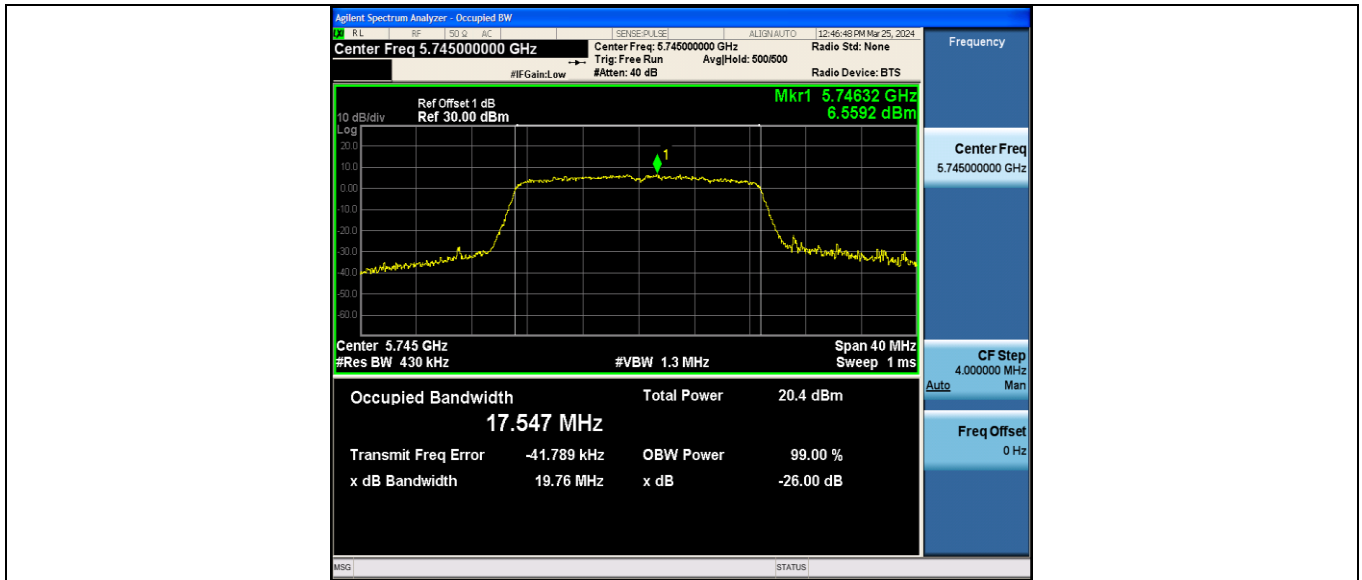


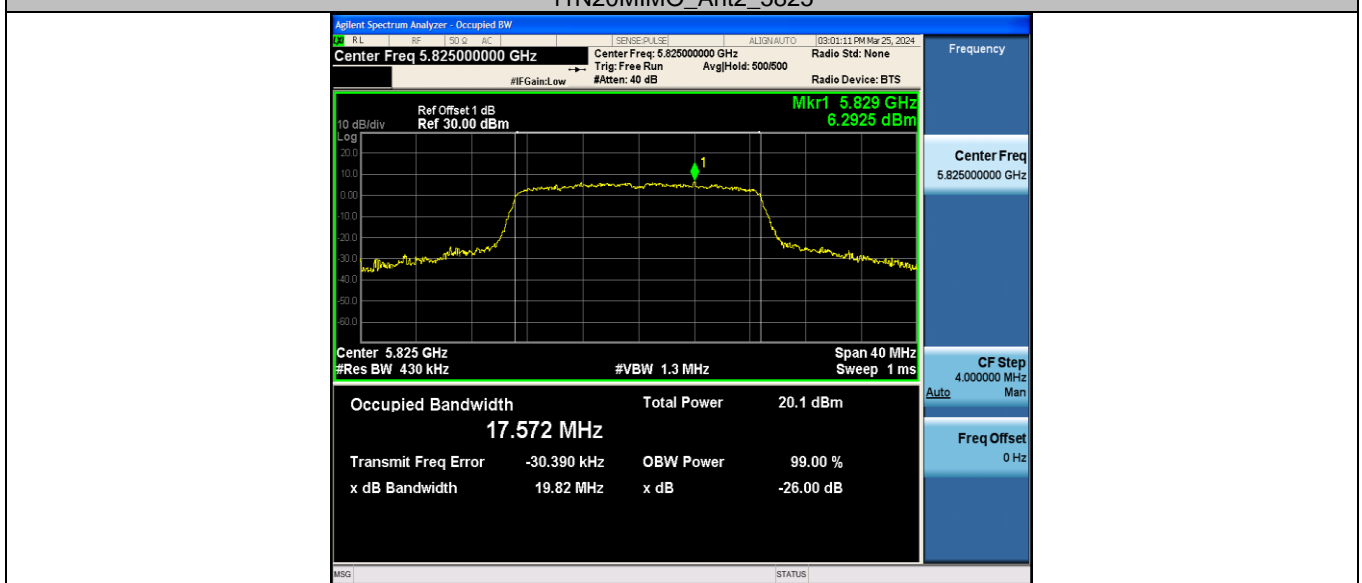
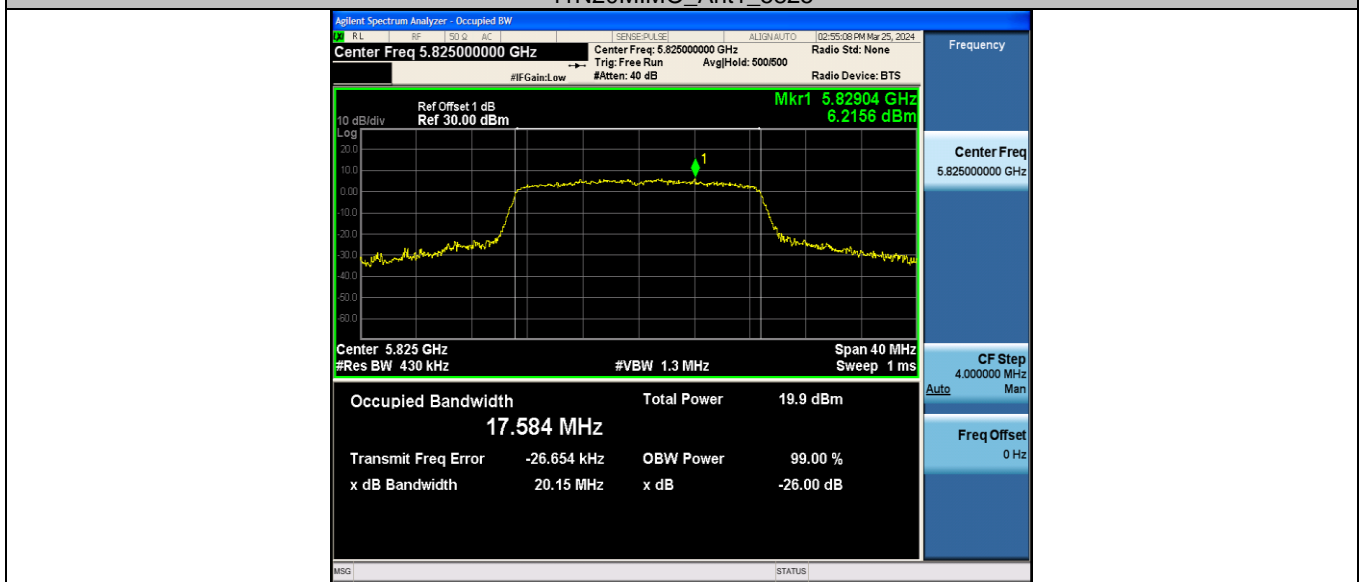
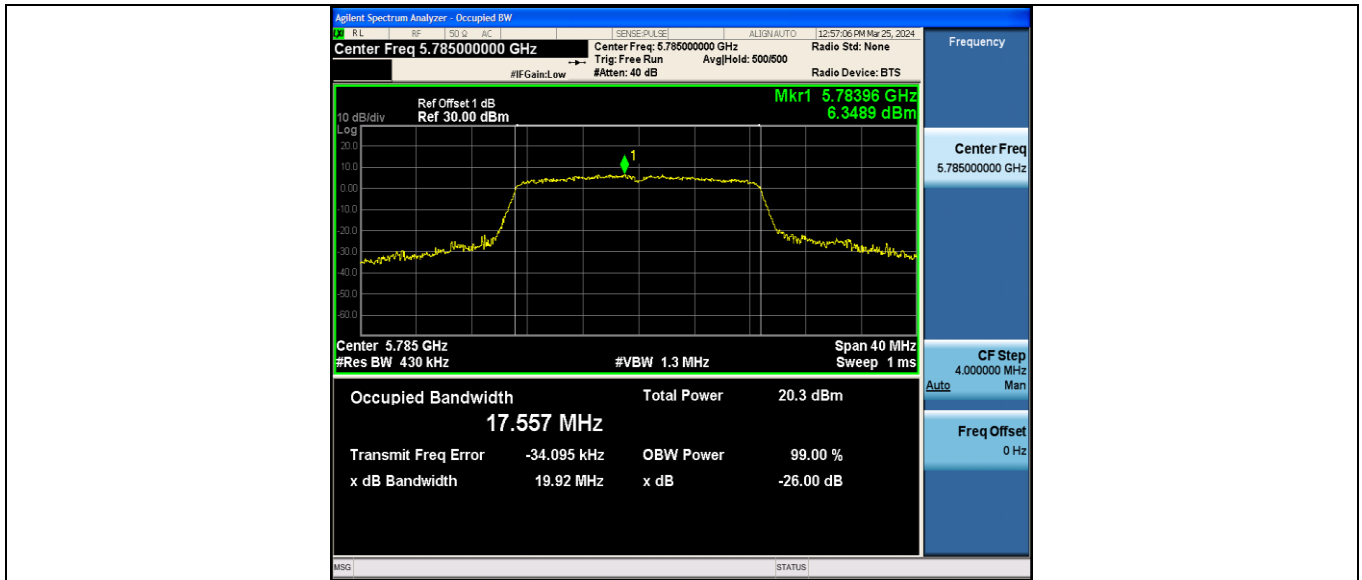
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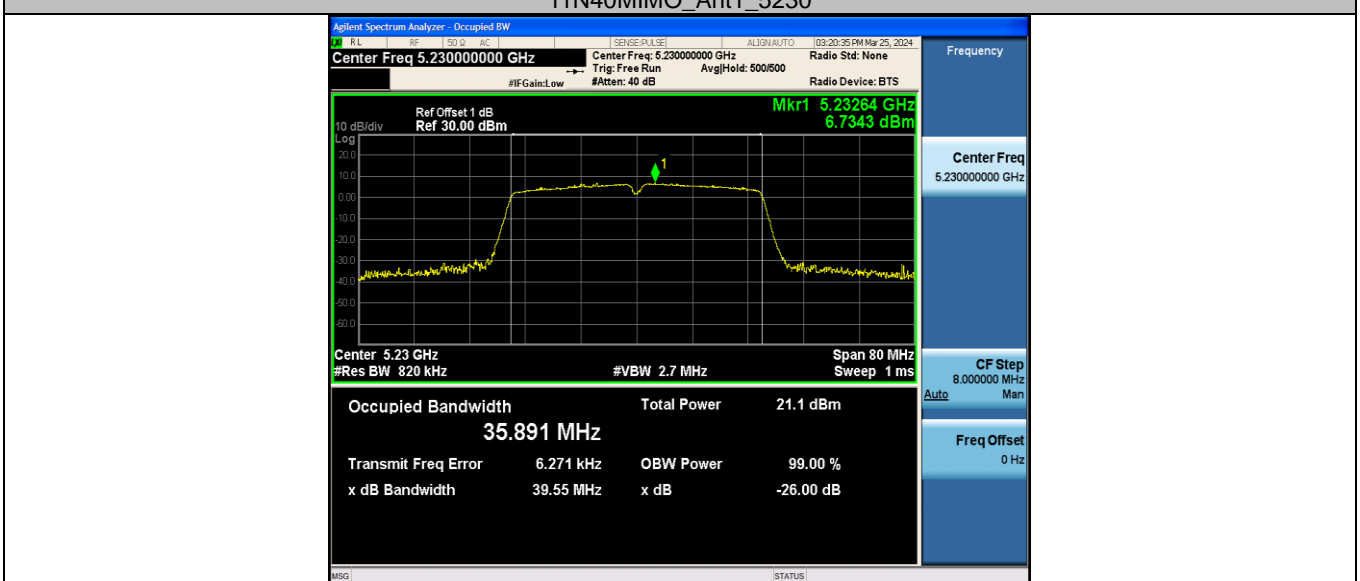
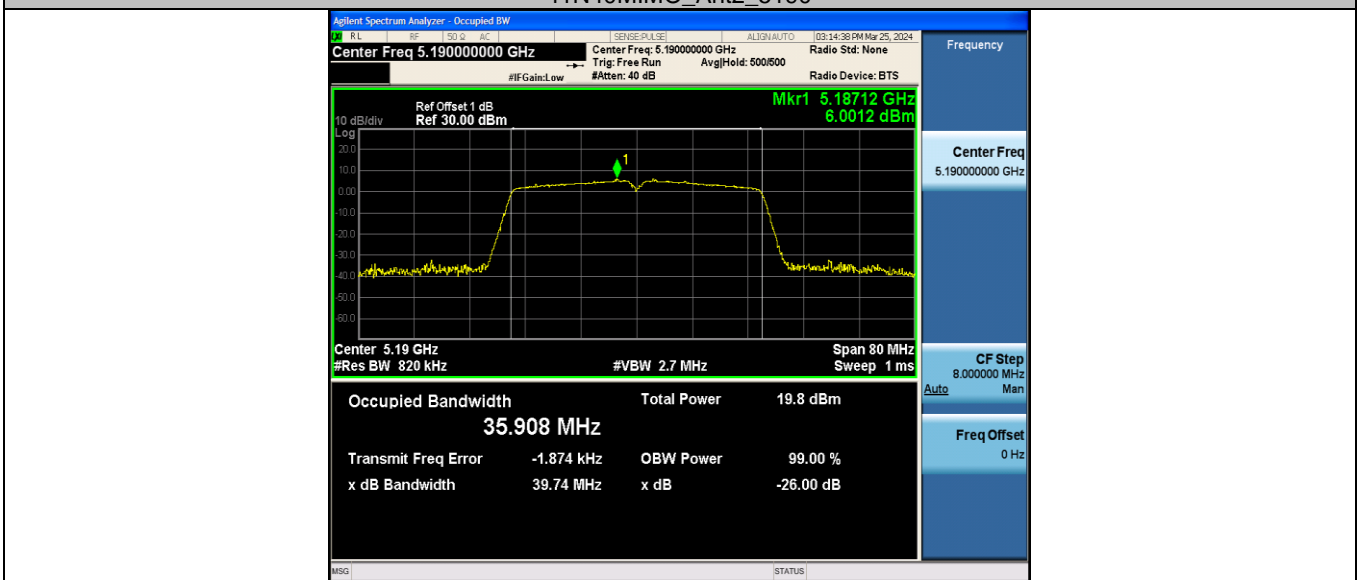
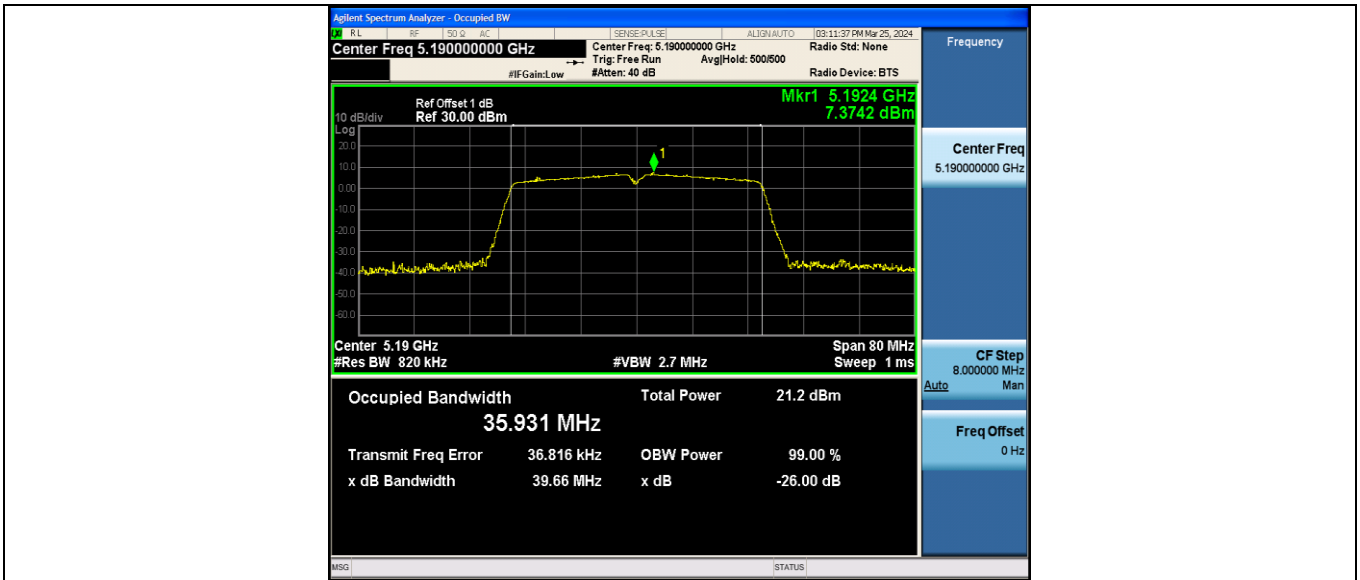


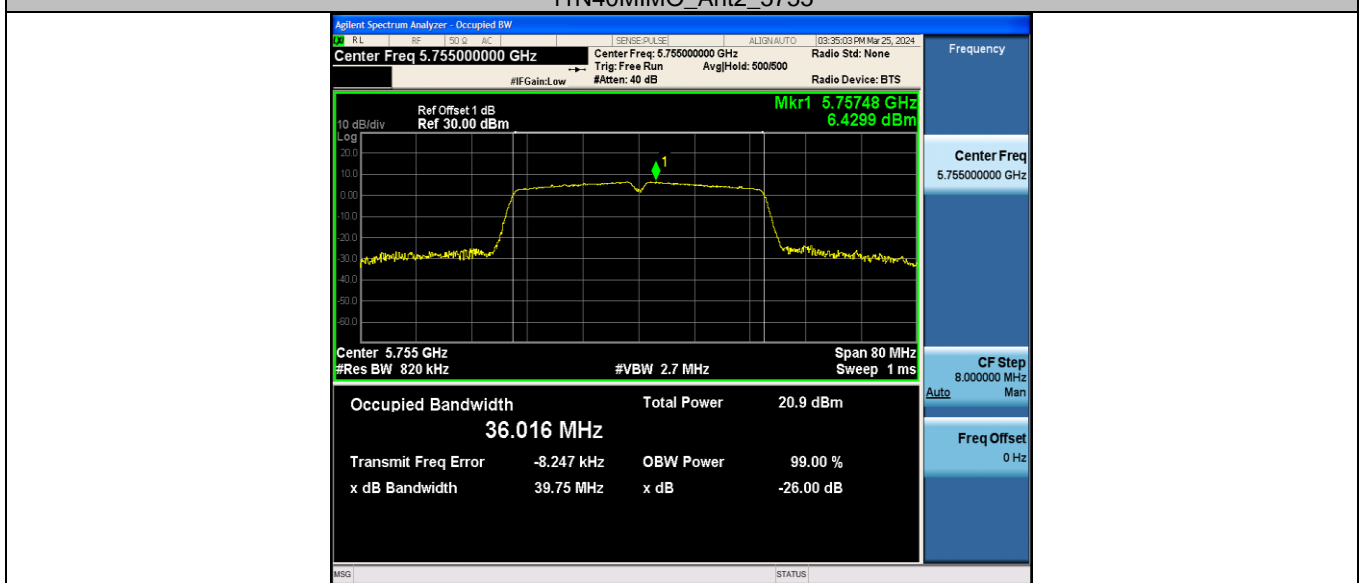
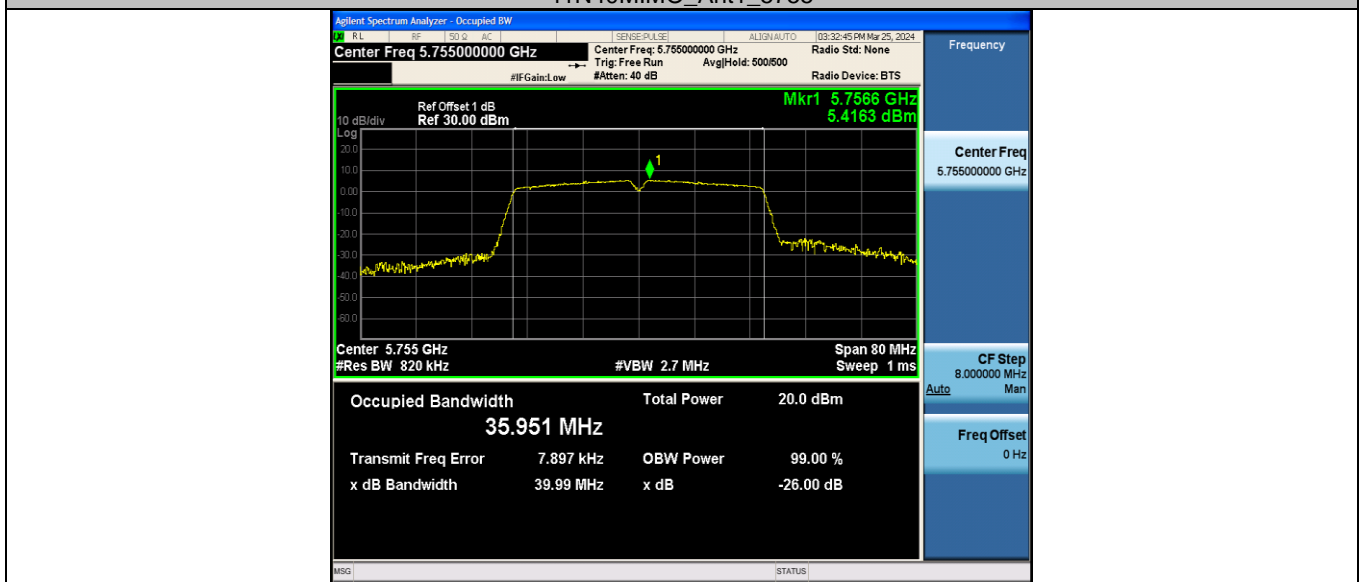
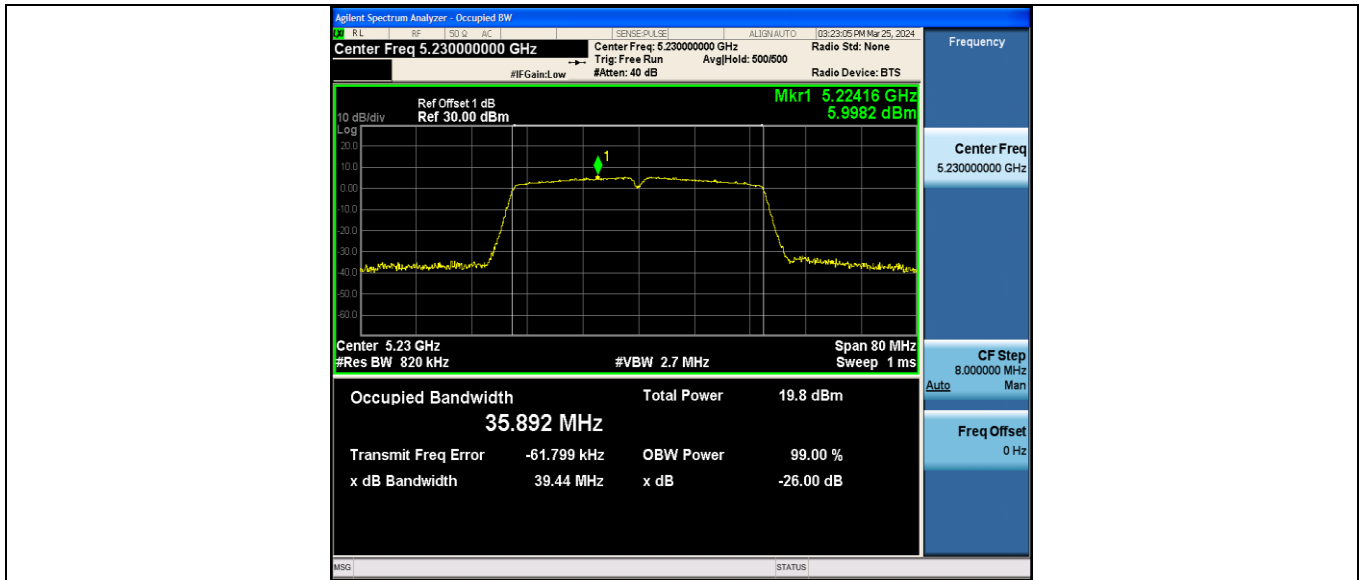
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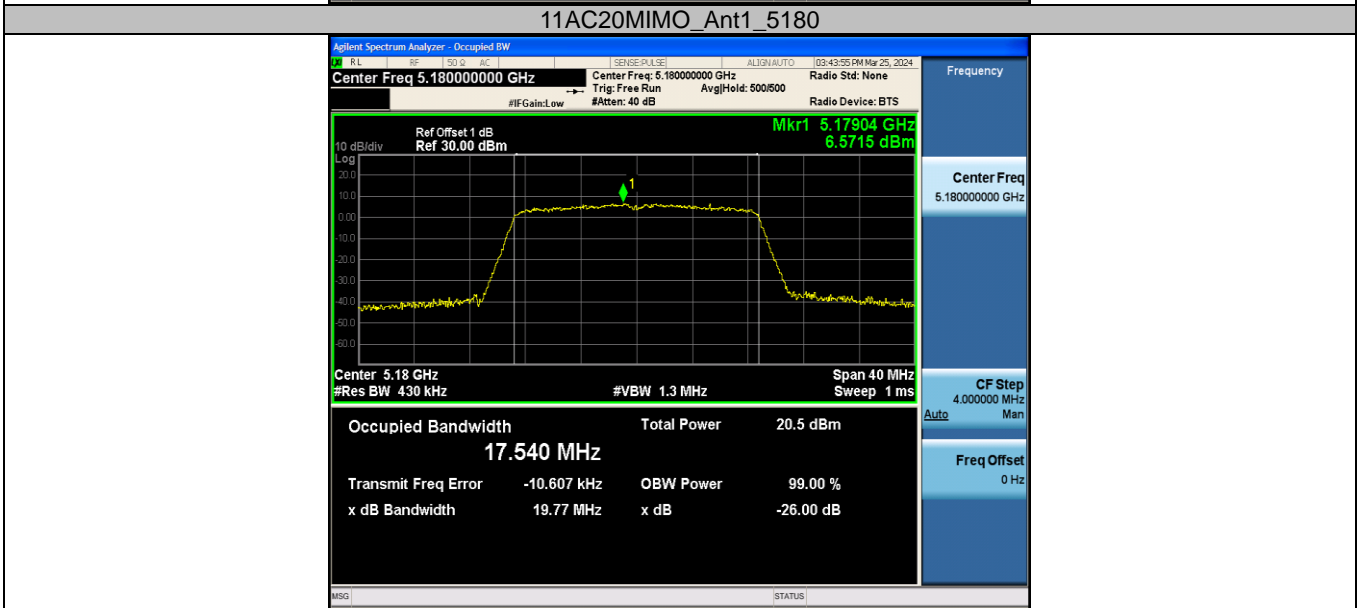
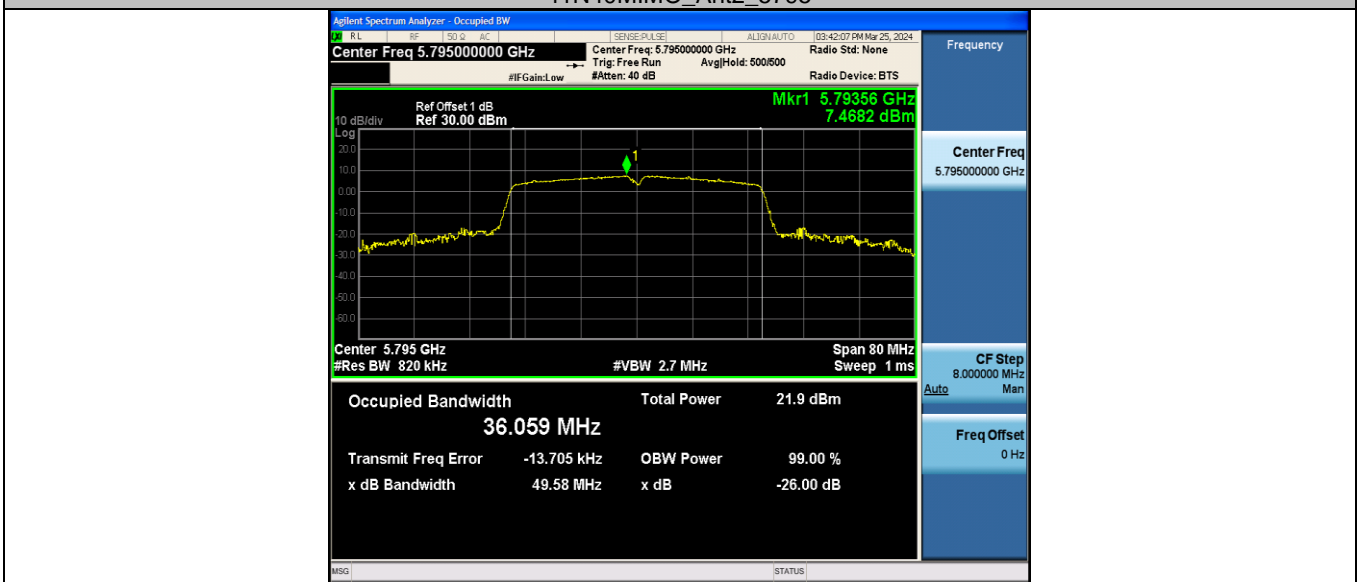
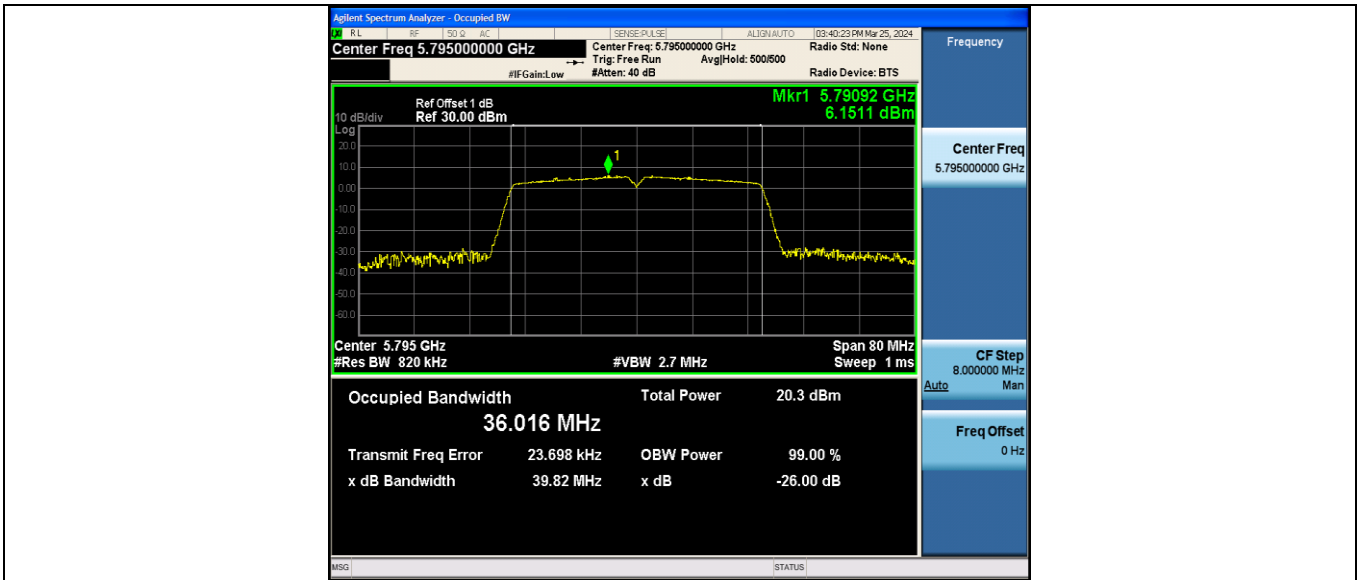




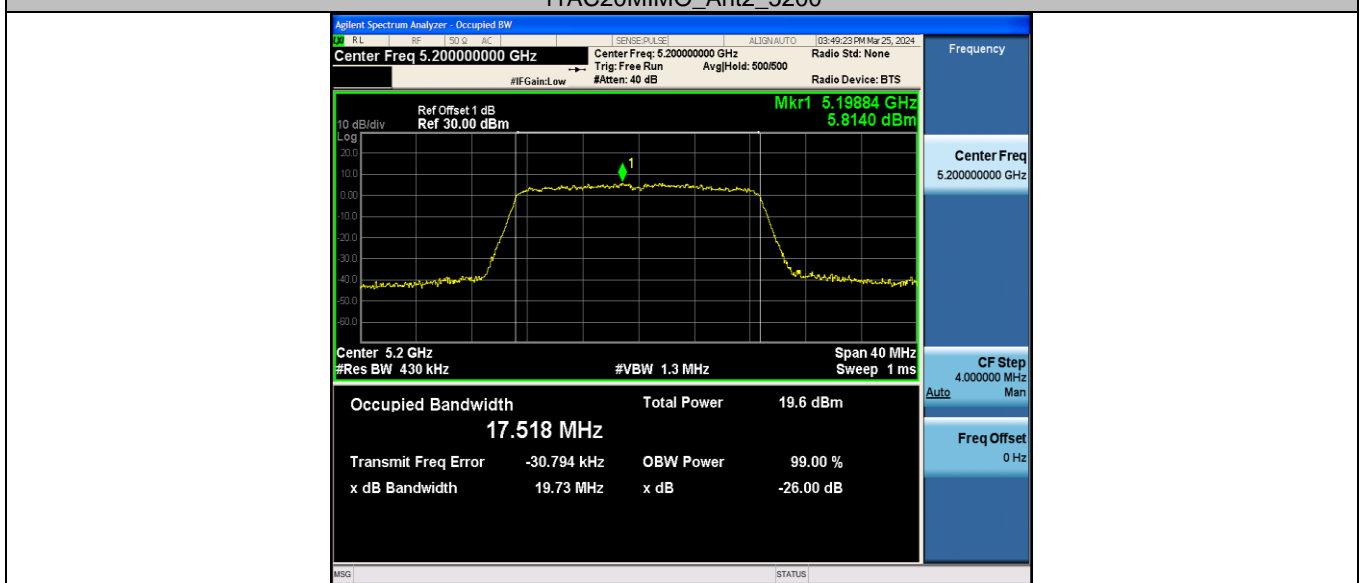
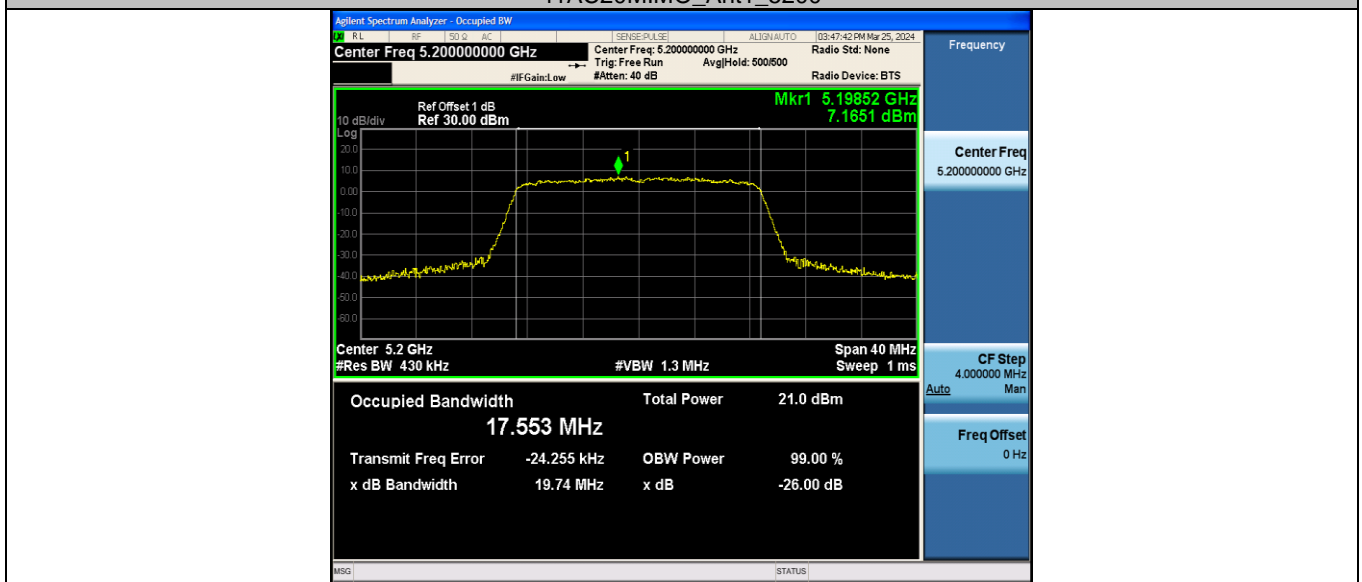
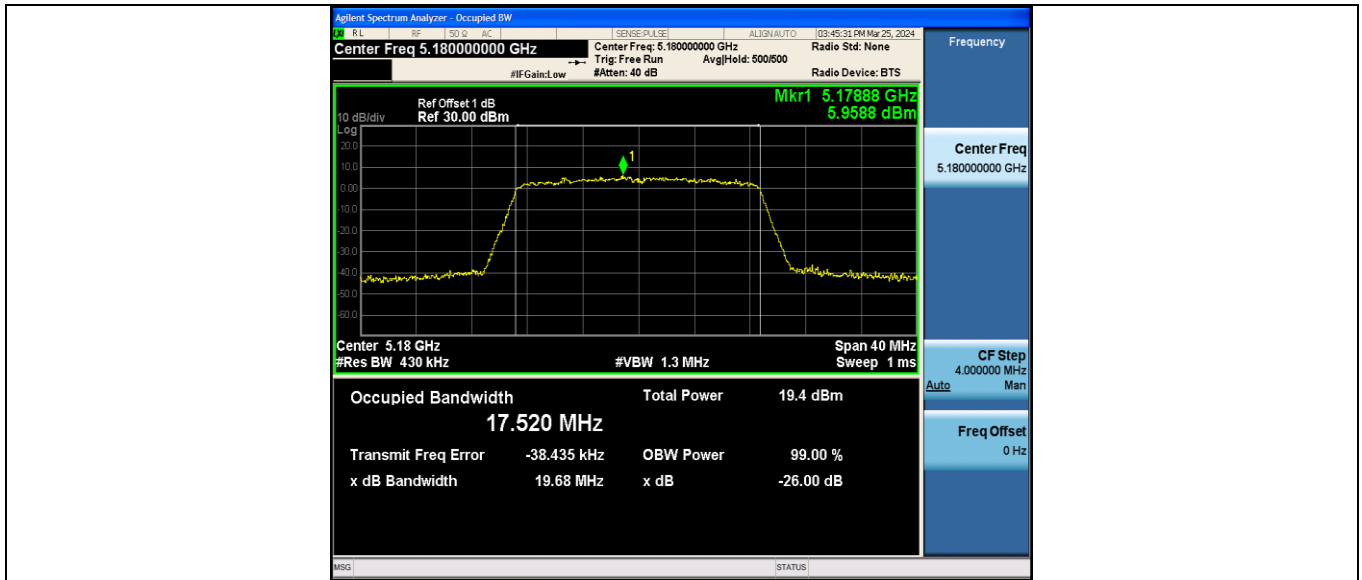


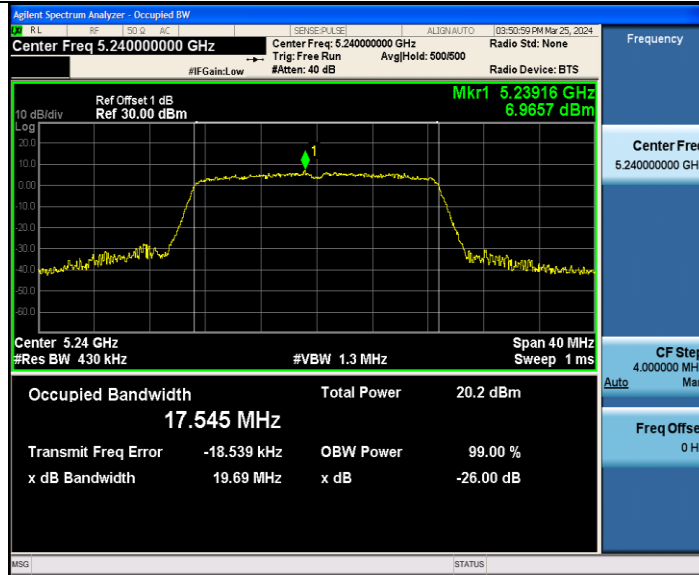




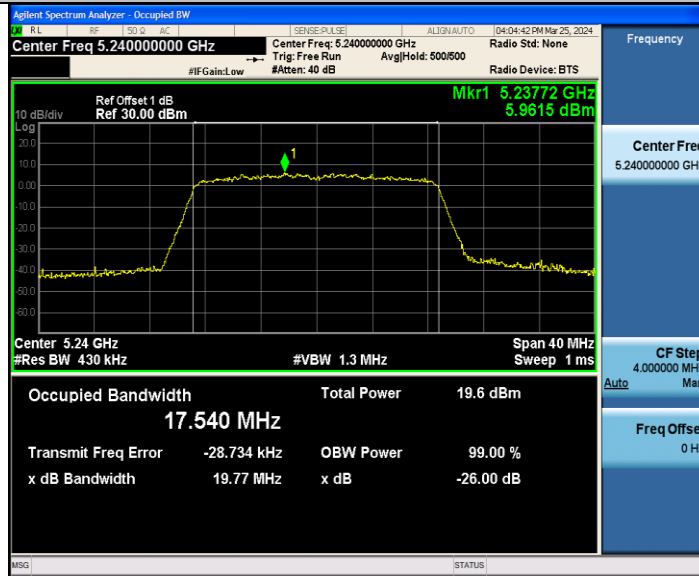


11AC20MIMO_Ant2_5180





11AC20MIMO_Ant2_5240

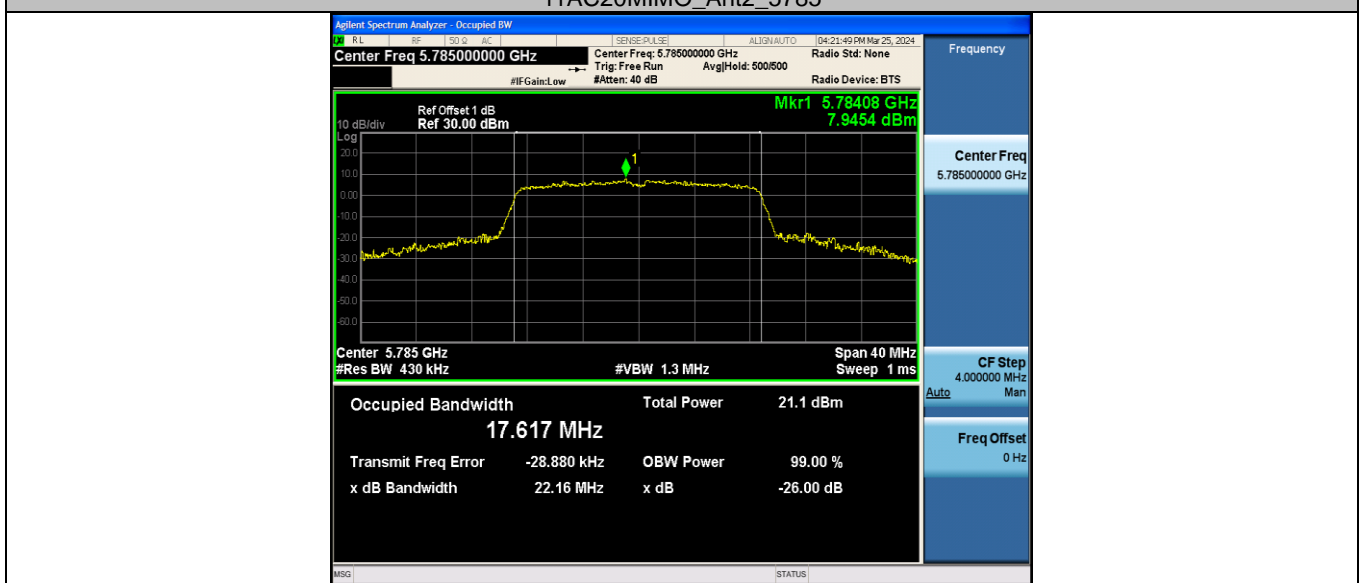
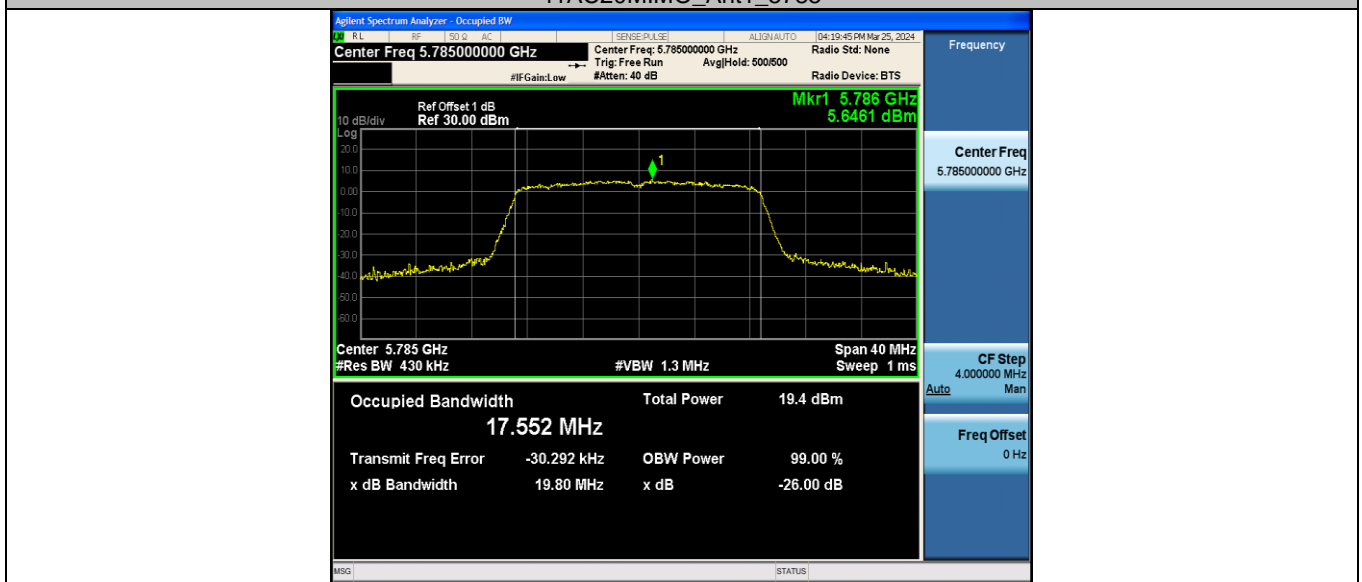
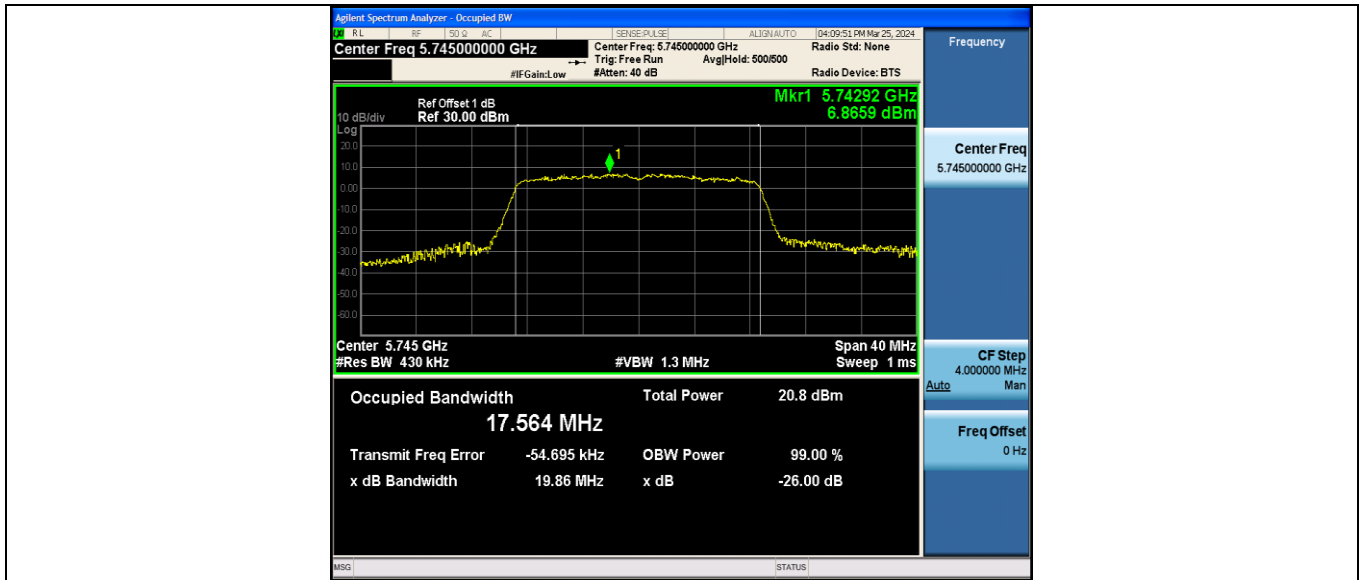


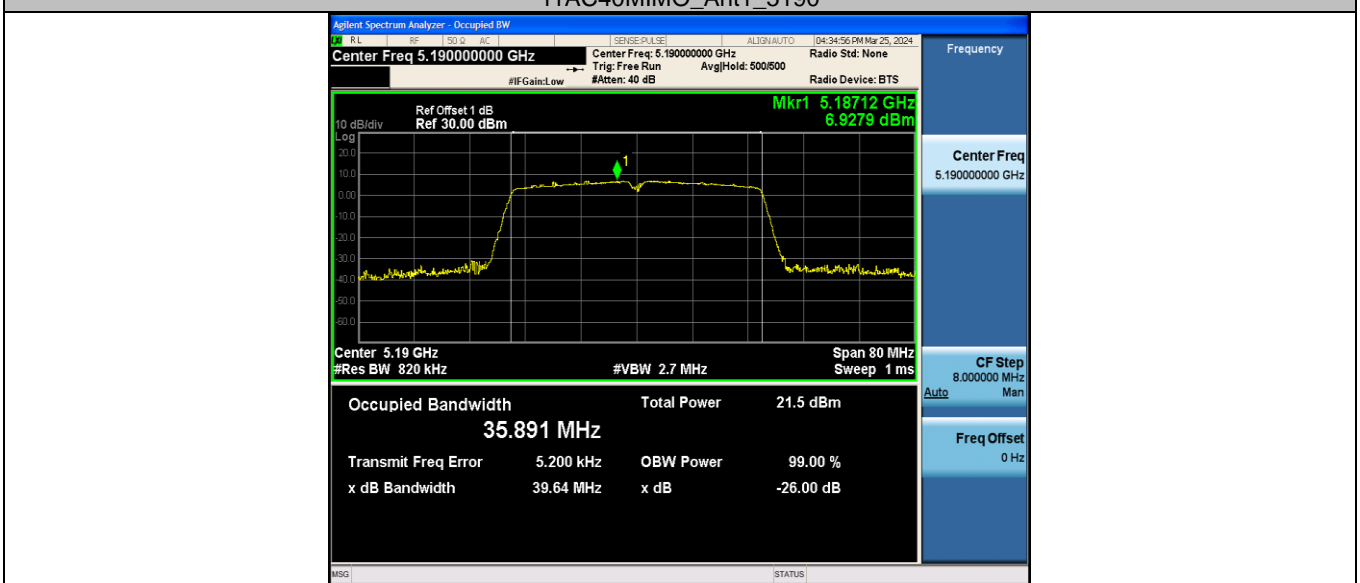
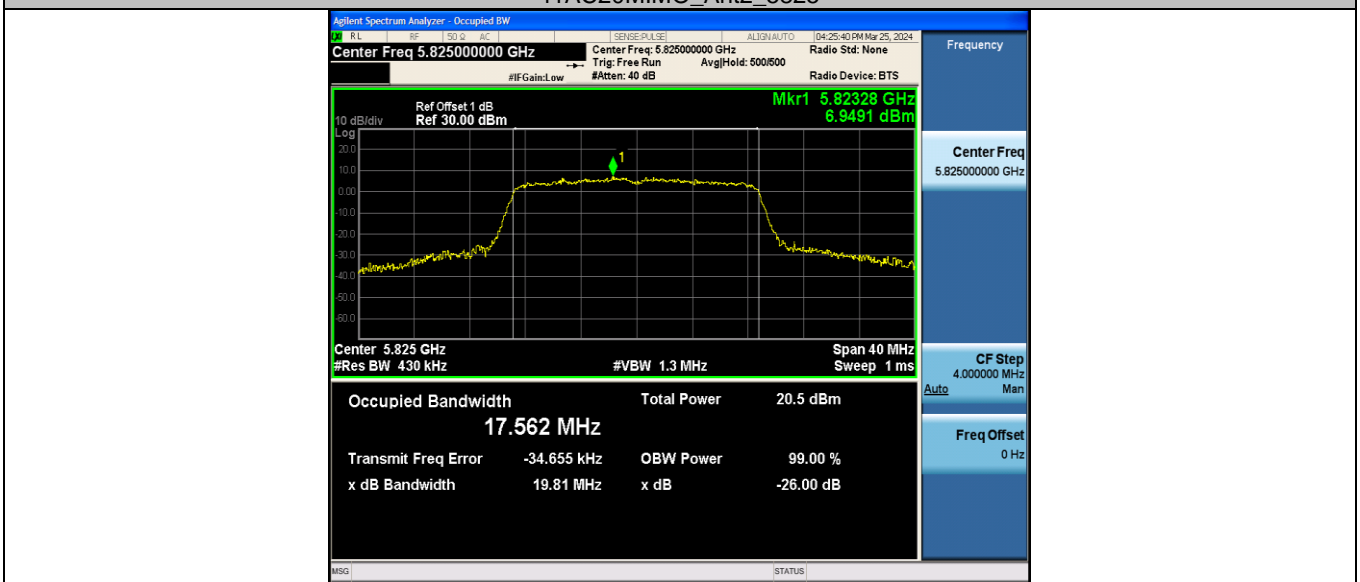
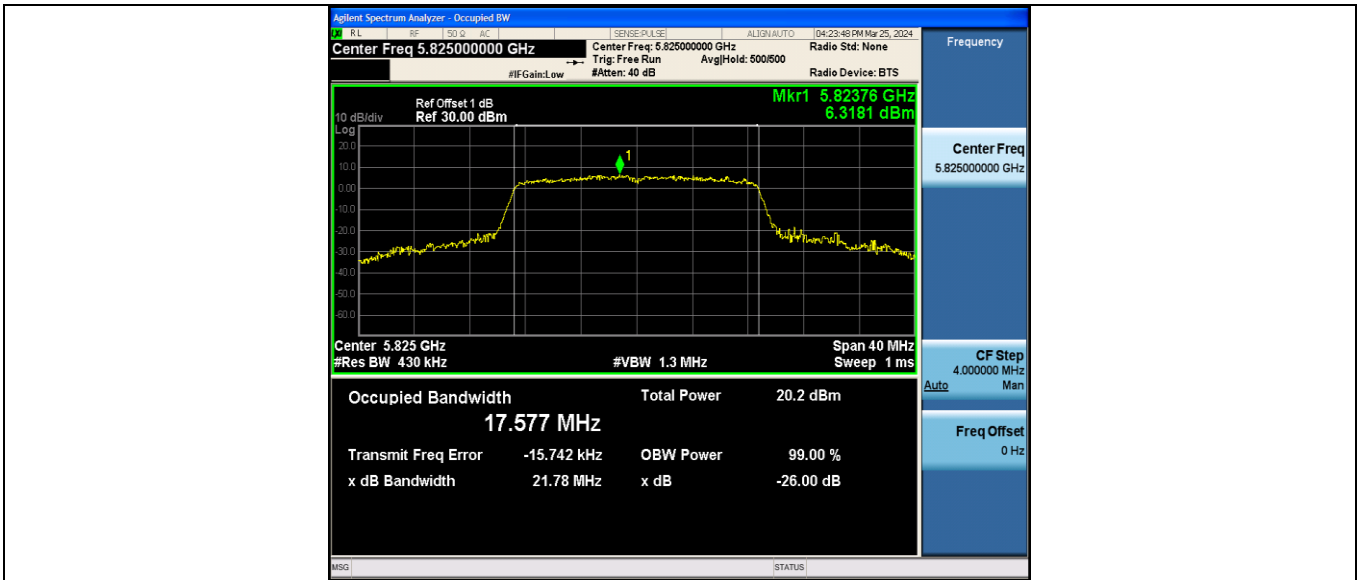
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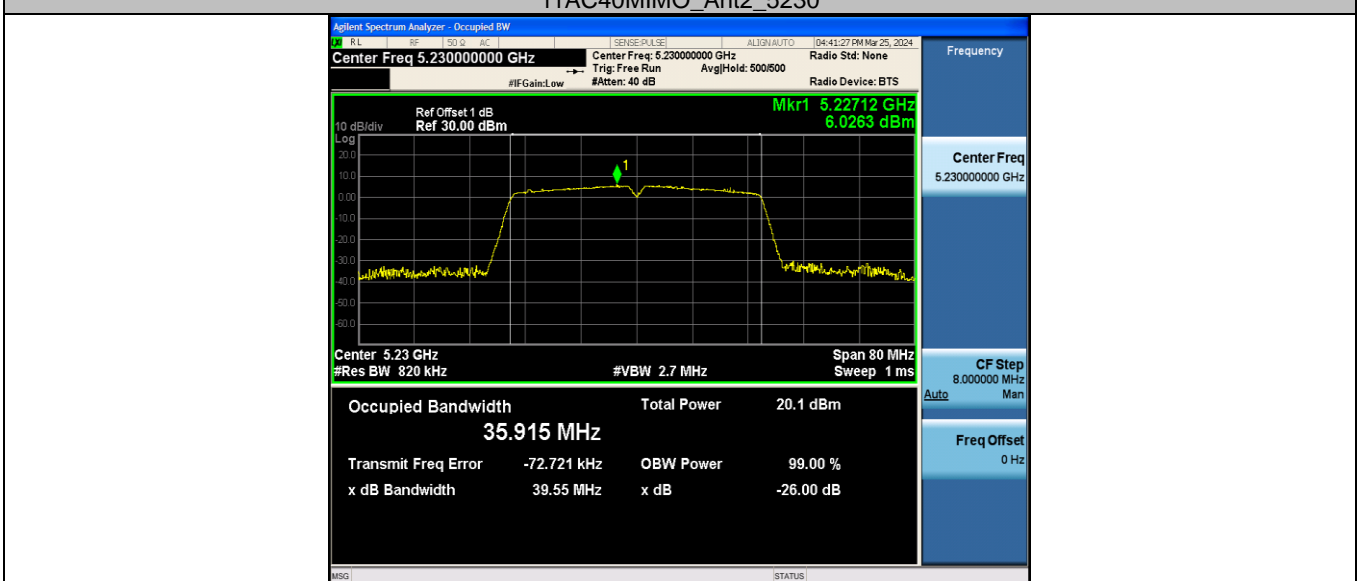
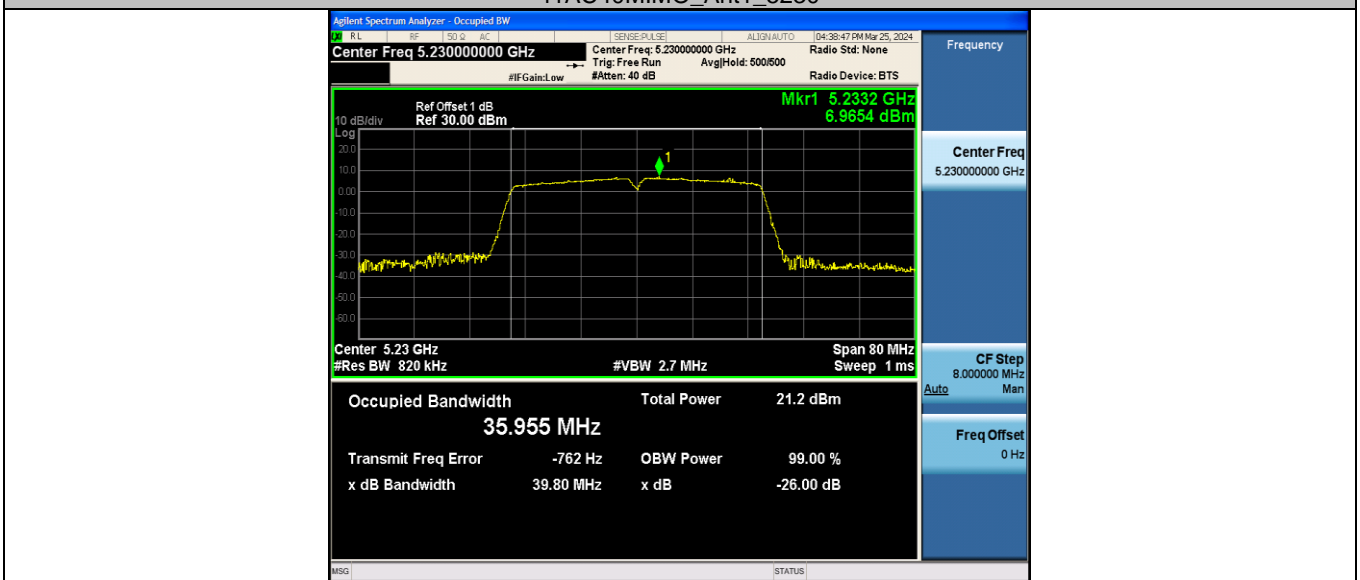
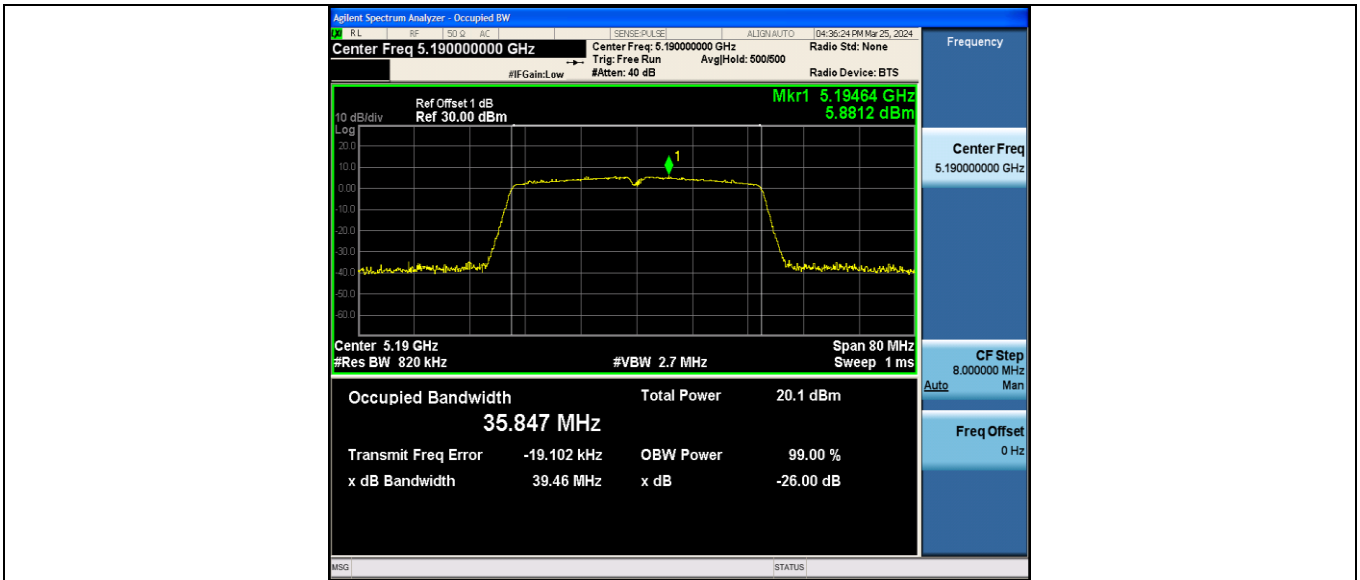


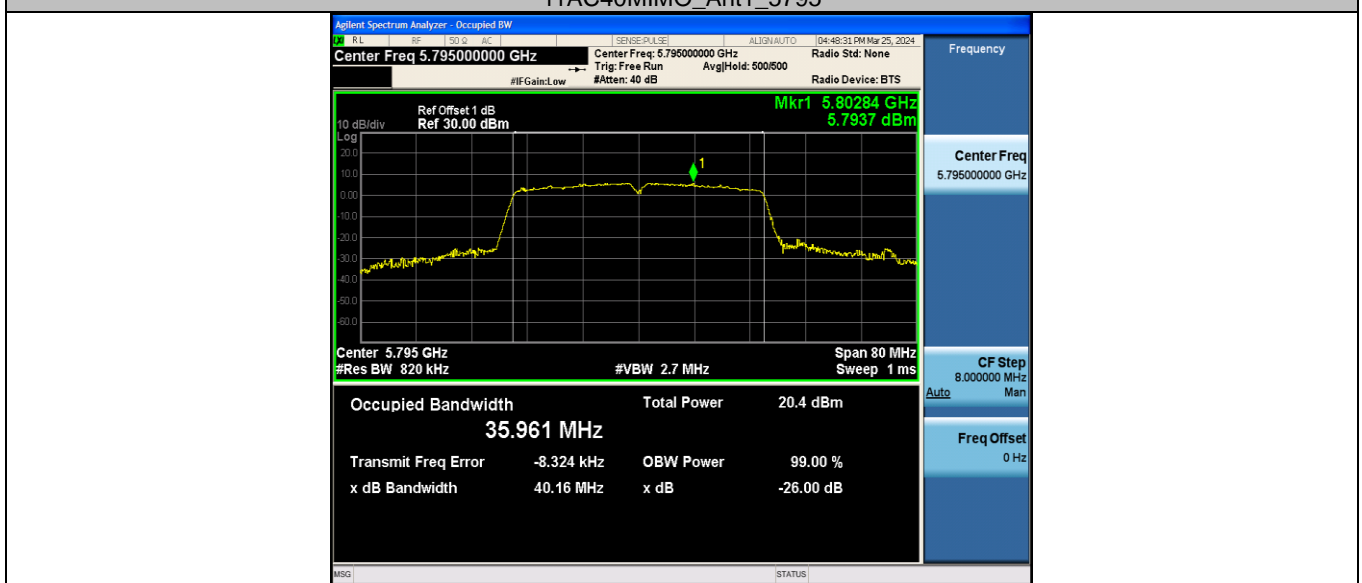
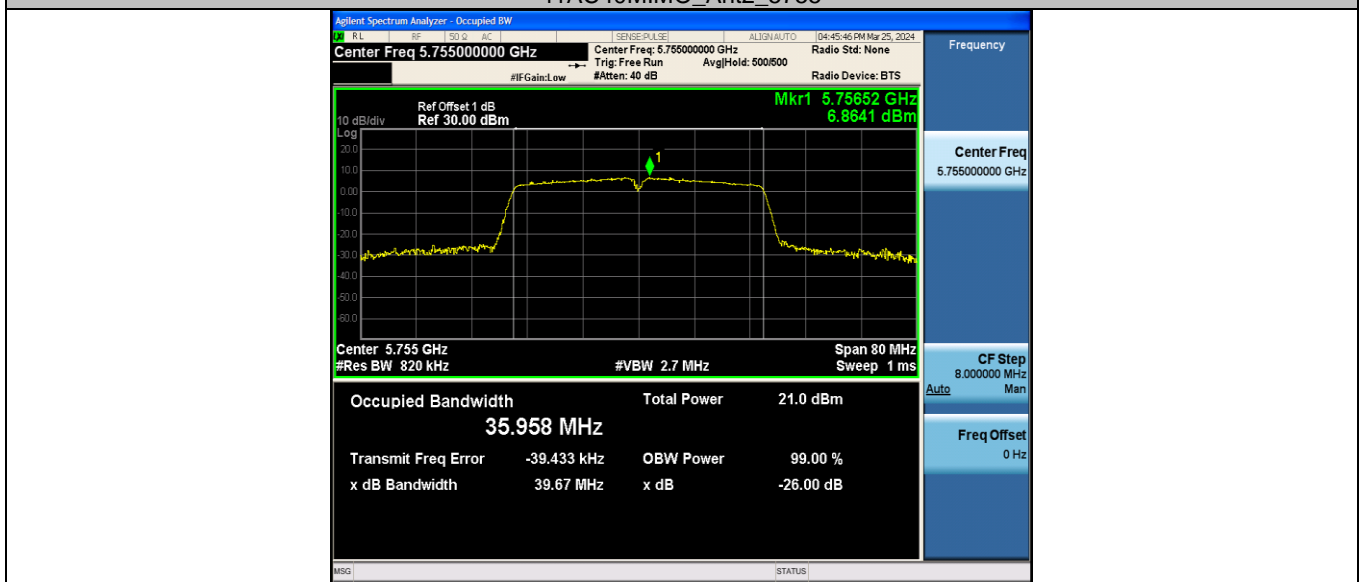
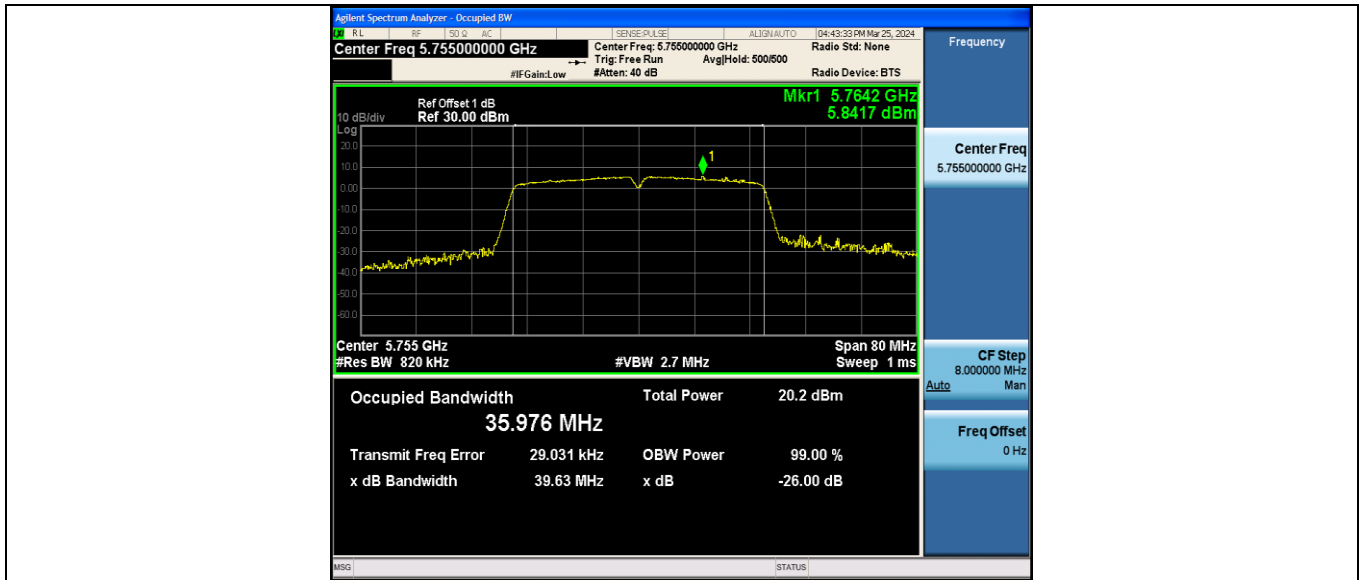
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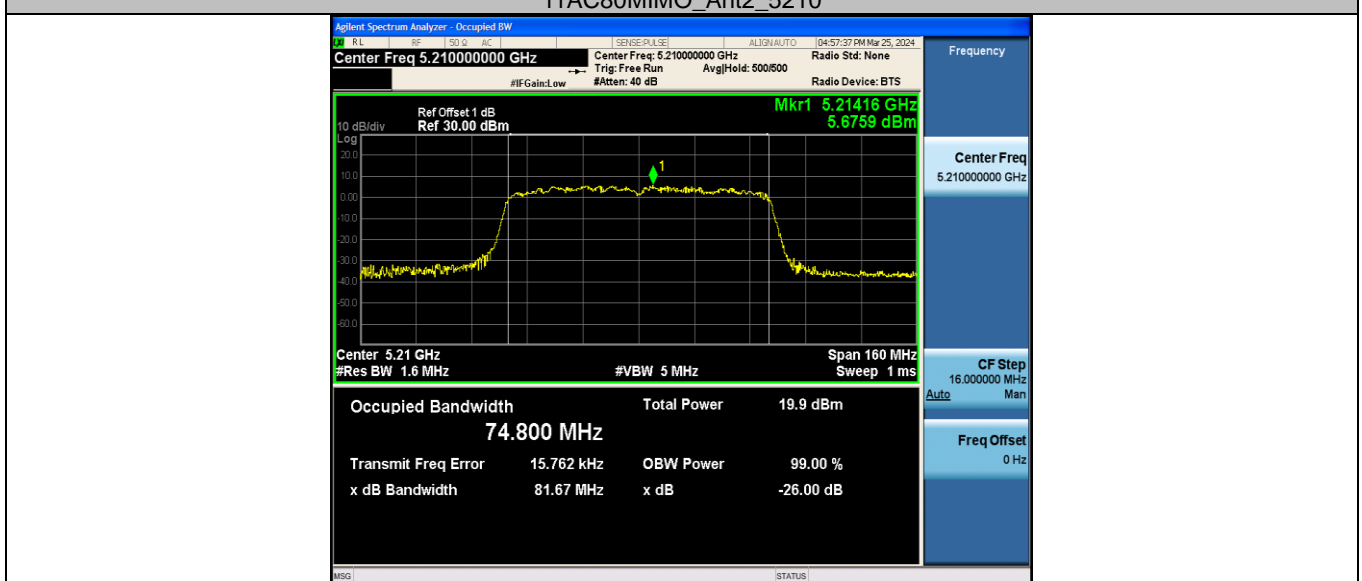
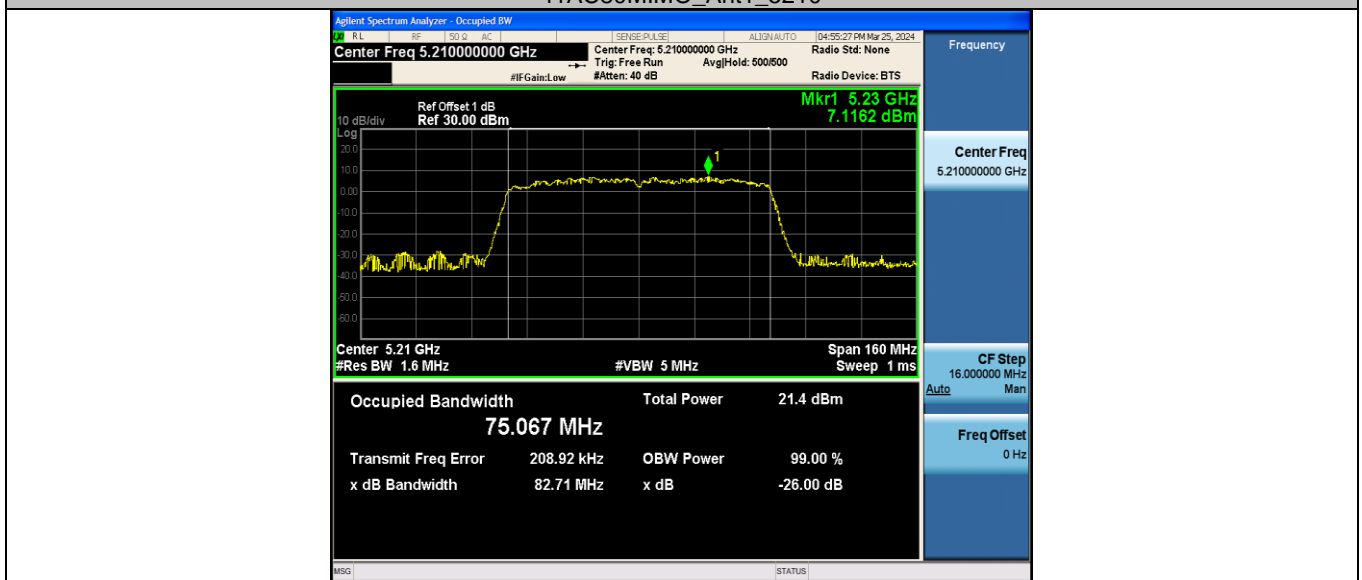
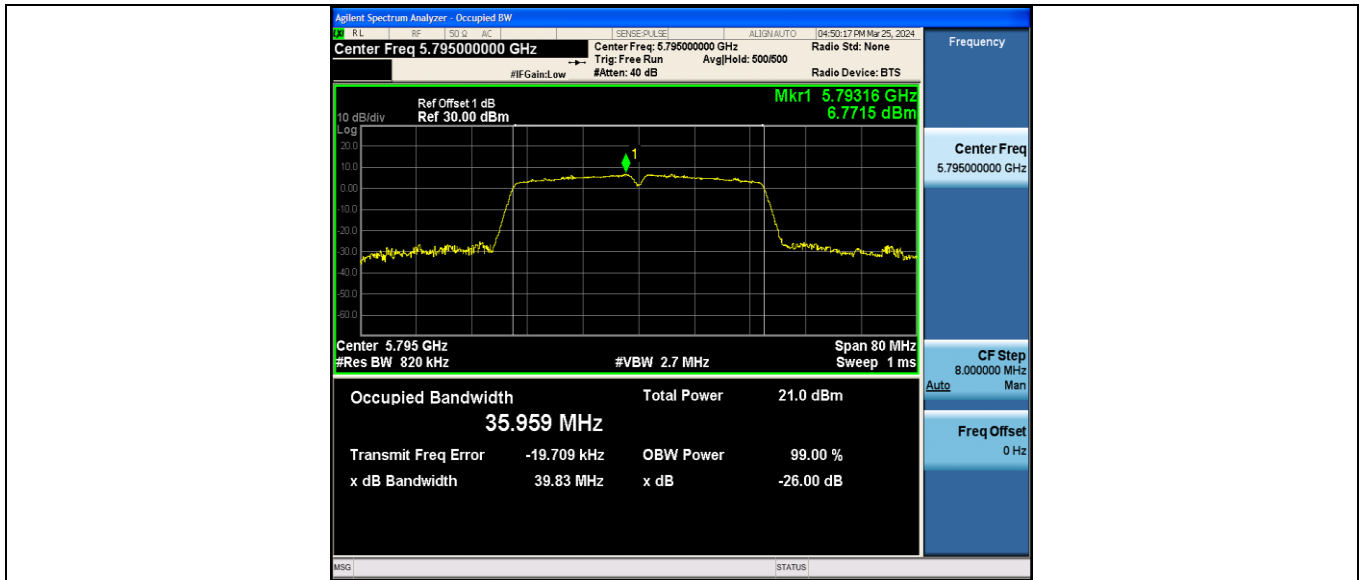






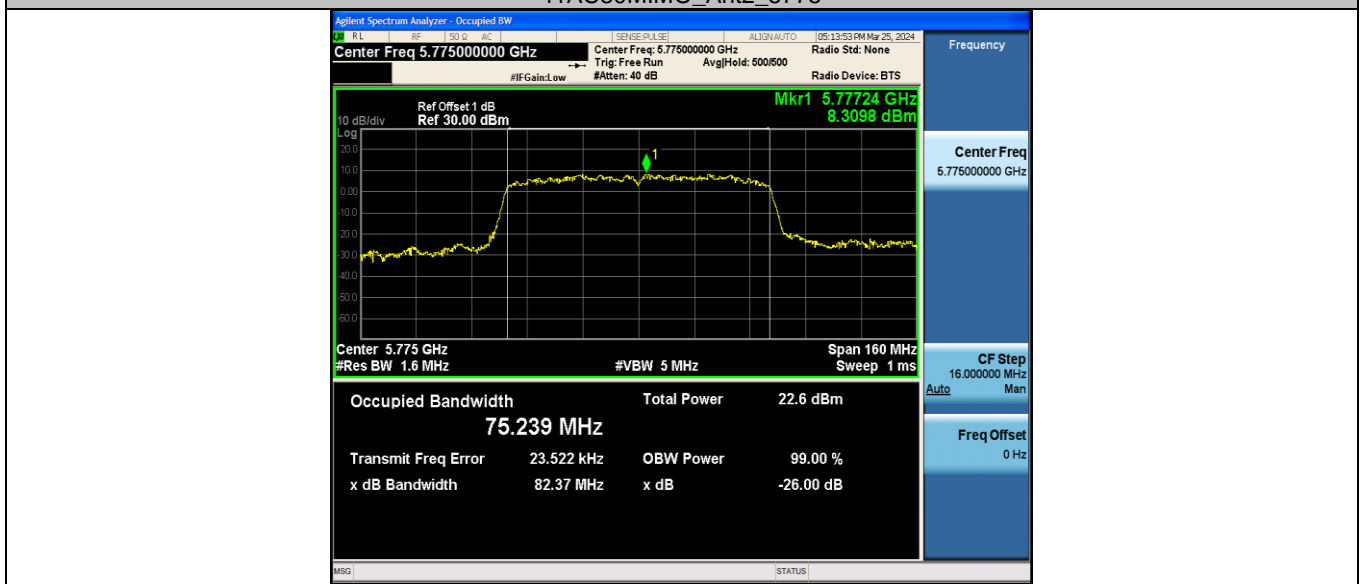
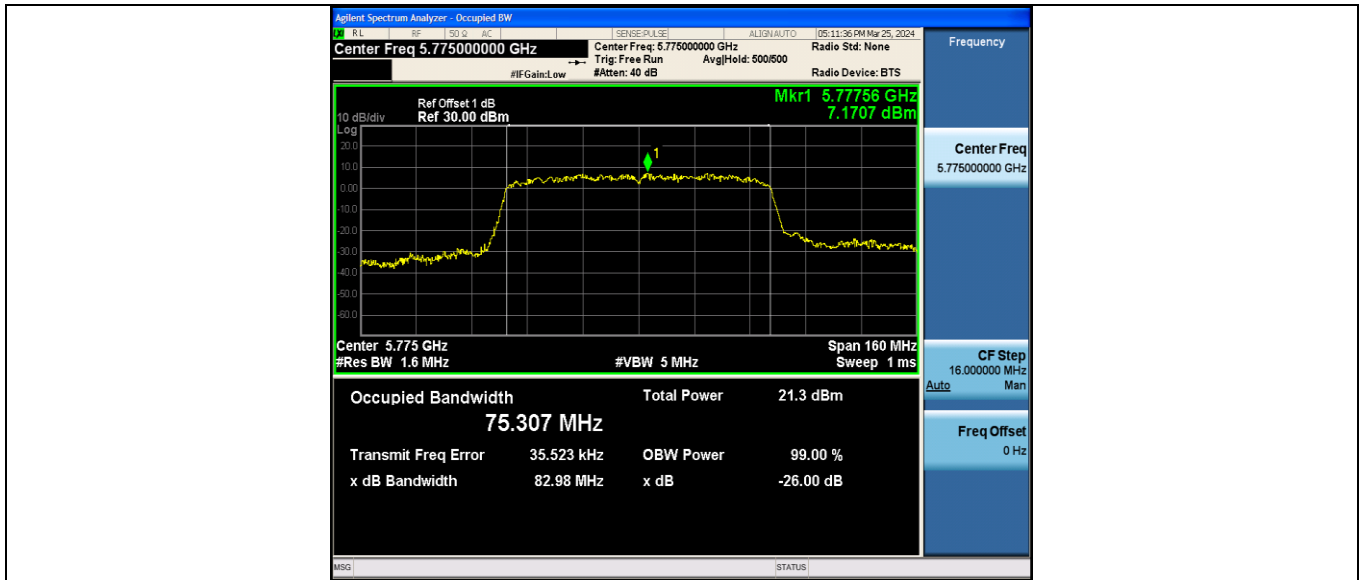






11AC80MIMO_Ant1_5775





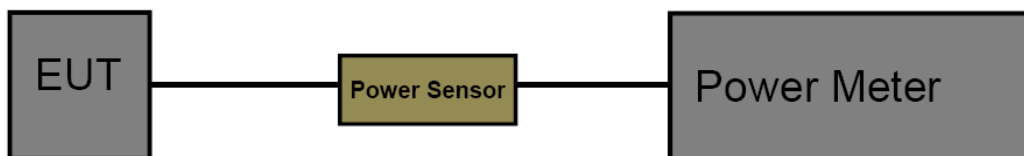
3.5. Output Power Test

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)		10 dBm/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

Test Mode	Antenna	Freq(MHz)	Result [dBm]	Limit [dBm]	Verdict
11A	Ant1	5180	17.32	≤22.28	PASS
	Ant2	5180	17.32	≤22.28	PASS
	Ant1	5200	17.37	≤22.28	PASS
	Ant2	5200	17.02	≤22.28	PASS
	Ant1	5240	16.95	≤22.28	PASS
	Ant2	5240	17.20	≤22.28	PASS
	Ant1	5745	17.32	≤28.65	PASS
	Ant2	5745	17.30	≤28.65	PASS
	Ant1	5785	17.47	≤28.65	PASS
	Ant2	5785	17.07	≤28.65	PASS
	Ant1	5825	17.35	≤28.65	PASS
	Ant2	5825	17.39	≤28.65	PASS
11N20MIMO	Ant1	5180	14.40	≤22.28	PASS
	Ant2	5180	12.20	≤22.28	PASS
	total	5180	16.45	≤22.28	PASS
	Ant1	5200	14.54	≤22.28	PASS
	Ant2	5200	12.49	≤22.28	PASS
	total	5200	16.65	≤22.28	PASS
	Ant1	5240	13.67	≤22.28	PASS
	Ant2	5240	12.40	≤22.28	PASS
	total	5240	16.09	≤22.28	PASS
	Ant1	5745	13.73	≤28.65	PASS
	Ant2	5745	14.17	≤28.65	PASS
	total	5745	16.97	≤28.65	PASS
	Ant1	5785	13.91	≤28.65	PASS
	Ant2	5785	13.96	≤28.65	PASS
	total	5785	16.95	≤28.65	PASS
	Ant1	5825	13.19	≤28.65	PASS
	Ant2	5825	13.35	≤28.65	PASS
	total	5825	16.28	≤28.65	PASS
11N40MIMO	Ant1	5190	13.98	≤22.28	PASS
	Ant2	5190	12.60	≤22.28	PASS
	total	5190	16.35	≤22.28	PASS
	Ant1	5230	13.98	≤22.28	PASS
	Ant2	5230	12.64	≤22.28	PASS
	total	5230	16.37	≤22.28	PASS
	Ant1	5755	13.01	≤28.65	PASS
	Ant2	5755	13.87	≤28.65	PASS
	total	5755	16.47	≤28.65	PASS
	Ant1	5795	12.83	≤28.65	PASS
	Ant2	5795	14.37	≤28.65	PASS
	total	5795	16.68	≤28.65	PASS
11AC20MIMO	Ant1	5180	13.84	≤22.28	PASS
	Ant2	5180	12.71	≤22.28	PASS
	total	5180	16.32	≤22.28	PASS
	Ant1	5200	14.43	≤22.28	PASS

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	Ant2	5200	12.77	≤22.28	PASS
	total	5200	16.69	≤22.28	PASS
	Ant1	5240	13.43	≤22.28	PASS
	Ant2	5240	12.89	≤22.28	PASS
	total	5240	16.18	≤22.28	PASS
	Ant1	5745	13.11	≤28.65	PASS
	Ant2	5745	14.33	≤28.65	PASS
	total	5745	16.77	≤28.65	PASS
	Ant1	5785	12.63	≤28.65	PASS
	Ant2	5785	14.56	≤28.65	PASS
	total	5785	16.71	≤28.65	PASS
	Ant1	5825	13.56	≤28.65	PASS
	Ant2	5825	13.86	≤28.65	PASS
	total	5825	16.72	≤28.65	PASS
	11AC40MIMO	Ant1	5190	13.95	≤22.28
Ant2		5190	12.64	≤22.28	PASS
total		5190	16.35	≤22.28	PASS
Ant1		5230	13.77	≤22.28	PASS
Ant2		5230	12.84	≤22.28	PASS
total		5230	16.34	≤22.28	PASS
Ant1		5755	13.02	≤28.65	PASS
Ant2		5755	13.55	≤28.65	PASS
total		5755	16.30	≤28.65	PASS
Ant1		5795	12.89	≤28.65	PASS
Ant2		5795	13.57	≤28.65	PASS
total		5795	16.25	≤28.65	PASS
11AC80MIMO	Ant1	5210	13.11	≤22.28	PASS
	Ant2	5210	11.28	≤22.28	PASS
	total	5210	15.30	≤22.28	PASS
	Ant1	5775	13.20	≤28.65	PASS
	Ant2	5775	13.85	≤28.65	PASS
	total	5775	16.55	≤28.65	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 $\text{PSD} = 11 - (G_{Tx} - 6)$.

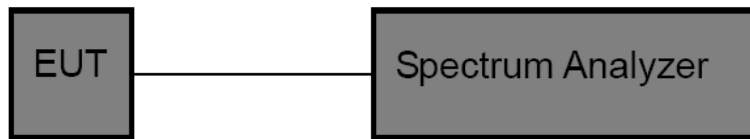
For the 5.725~5.85GHz band:

- 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-5800MHz 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 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
- (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.