



11N40SISO-Ant1-5755-PASS



11N40SISO-Ant1-5795-PASS



11AC20SISO-Ant1-5745-PASS



11AC20SISO-Ant1-5825-PASS



11AC40SISO-Ant1-5755-PASS



11AC40SISO-Ant1-5795-PASS



11AX20SISO-Ant1-5745-PASS



11AX20SISO-Ant1-5825-PASS



11AX40SISO-Ant1-5755-PASS



11AX40SISO-Ant1-5795-PASS



6.7 Restricted Band

Test Requirement : FCC Part15 E Section 15.407(b)

Test site : Measurement Distance: 3m

Test Limit :	Frequency	Limit (dBUV/m @3m)	Remark
	Above 1GHz	74	Peak Value
		54	Average Value

Test Procedure:

1. The EUT was placed on a styrofoam table which is 1.5m above ground plane.
2. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.
8. The test above 1GHz must be use the fully anechoic room, and the test below 1GHz use the half anechoic room

Test Result:

Worst case mode:		802.11a(6Mbps)		Test channel:		36		
NO.	Freq. [MHz]	level [dBμV/m]	Factor [dB]	Emission level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector Type
1	5150	43.48	6.53	50.01	68.2	18.19	H	Peak
2	5150	31.19	6.53	37.72	54	16.28	H	Average
3	5150	50.01	6.53	56.54	68.2	11.66	V	Peak
4	5150	40.92	6.53	47.45	54	6.55	V	Average



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Worst case mode:		802.11a(6Mbps)		Test channel:		165		
NO.	Freq. [MHz]	level [dBμV/m]	Factor [dB]	Emission level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector Type
1	5850	46.56	6.64	53.2	68.2	15	H	Peak
2	5850	38.33	6.64	44.97	54	9.03	H	Average
3	5850	45.01	6.64	51.65	68.2	16.55	V	Peak
4	5850	34.91	6.64	41.55	54	12.45	V	Average

Note: Only recorded the worst case in the report.



7 Emission Bandwidth and Occupied Bandwidth

Test Requirement	: FCC CFR47 Part 15 Section 15.407(a)(e)
Test Method	: ANSI C63.10-2020 According to FCC §15.407(a), The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less.
Test Limit	: Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth. As per FCC §15.407(e): for equipment operating in the band 5725 – 5850 MHz, the minimum 6 dB bandwidth of U-NII devices shall be 500 kHz.

7.1 Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, Emission Bandwidth (EBW)

a) Set RBW = approximately 1% of the emission bandwidth; b) Set the VBW > RBW; c) Detector = Peak; d) Trace mode = max hold; e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%; 99% Occupied Bandwidth

The 99% occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5 % of the total mean power of the given emission. Measurement of the 99% occupied bandwidth is required only as a condition for using the optional band-edge measurement techniques described in II.G.3.d). Measurements of 99% occupied bandwidth may also optionally be used in lieu of the EBW to define the minimum frequency range over which the spectrum is integrated when measuring maximum conducted output power as described in II.E. However, the EBW must be measured to determine bandwidth dependent limits on maximum conducted output power in accordance with 15.407(a).

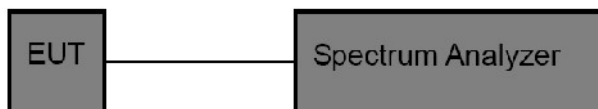
The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set $VBW \geq 3 \cdot RBW$
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency.



The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

7.2 Test setup



7.3 Test Result

PASS

Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations / data rates and antenna ports.

Following channel was selected for the final test as listed below.

99% occupied bandwidth:

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	17.754	5171.0847	5188.8387	---	---
11A	Ant1	5200	17.922	5191.0052	5208.9272	---	---
11A	Ant1	5240	17.952	5230.9578	5248.9098	---	---
11A	Ant1	5745	17.896	5736.0211	5753.9171	---	---
11A	Ant1	5785	17.851	5776.1172	5793.9682	---	---
11A	Ant1	5825	17.975	5815.9761	5833.9511	---	---
11N20SISO	Ant1	5180	18.828	5170.6145	5189.4425	---	---
11N20SISO	Ant1	5200	18.908	5190.4946	5209.4026	---	---
11N20SISO	Ant1	5240	18.794	5230.5820	5249.3760	---	---
11N20SISO	Ant1	5745	18.824	5735.5721	5754.3961	---	---
11N20SISO	Ant1	5785	18.942	5775.5866	5794.5286	---	---
11N20SISO	Ant1	5825	19.014	5815.5198	5834.5338	---	---
11N40SISO	Ant1	5190	37.490	5171.2736	5208.7636	---	---
11N40SISO	Ant1	5230	36.918	5211.6248	5248.5428	---	---
11N40SISO	Ant1	5755	37.235	5736.4674	5773.7024	---	---
11N40SISO	Ant1	5795	37.299	5776.5050	5813.8040	---	---
11AC20SISO	Ant1	5180	18.545	5170.7384	5189.2834	---	---
11AC20SISO	Ant1	5200	18.642	5190.6942	5209.3362	---	---
11AC20SISO	Ant1	5240	18.539	5230.7331	5249.2721	---	---
11AC20SISO	Ant1	5745	18.773	5735.5850	5754.3580	---	---
11AC20SISO	Ant1	5785	18.893	5775.5975	5794.4905	---	---
11AC20SISO	Ant1	5825	19.012	5815.5602	5834.5722	---	---
11AC40SISO	Ant1	5190	37.076	5171.4728	5208.5488	---	---
11AC40SISO	Ant1	5230	36.904	5211.6556	5248.5596	---	---
11AC40SISO	Ant1	5755	37.235	5736.3724	5773.6074	---	---
11AC40SISO	Ant1	5795	37.319	5776.4867	5813.8057	---	---
11AX20SISO	Ant1	5180	19.314	5170.3263	5189.6403	---	---
11AX20SISO	Ant1	5200	19.392	5190.3562	5209.7482	---	---
11AX20SISO	Ant1	5240	19.344	5230.3009	5249.6449	---	---
11AX20SISO	Ant1	5745	19.515	5735.2302	5754.7452	---	---
11AX20SISO	Ant1	5785	19.449	5775.3160	5794.7650	---	---
11AX20SISO	Ant1	5825	19.456	5815.3349	5834.7909	---	---
11AX40SISO	Ant1	5190	38.154	5170.9206	5209.0746	---	---

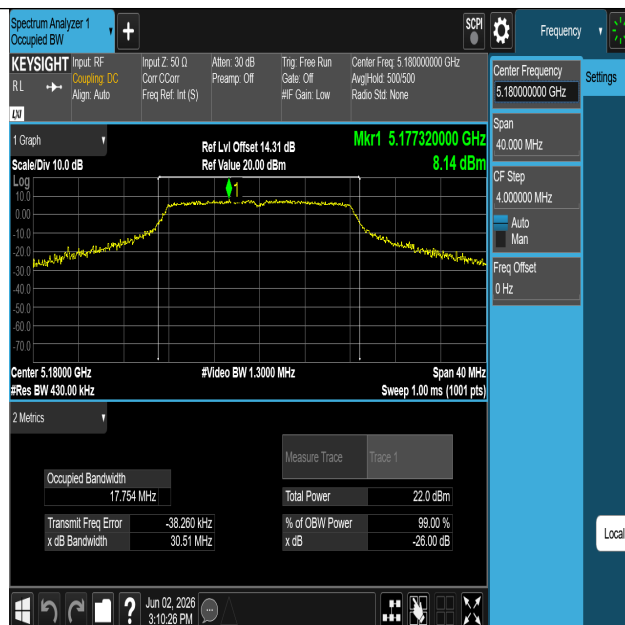


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11AX40SISO	Ant1	5230	38.067	5211.0203	5249.0873	---	---
11AX40SISO	Ant1	5755	38.218	5735.8721	5774.0901	---	---
11AX40SISO	Ant1	5795	38.243	5775.9825	5814.2255	---	---



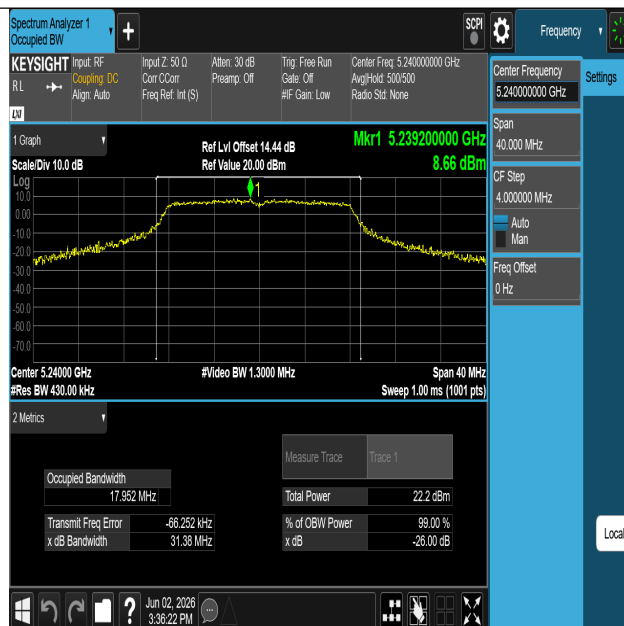
Test Graphs:



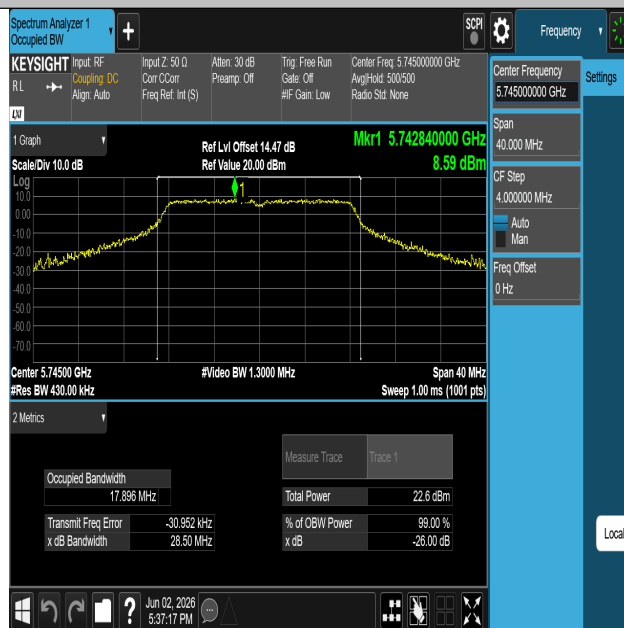
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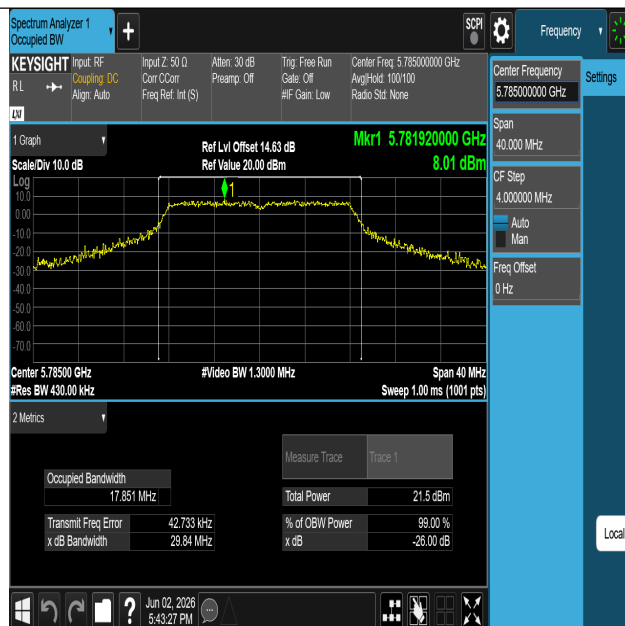
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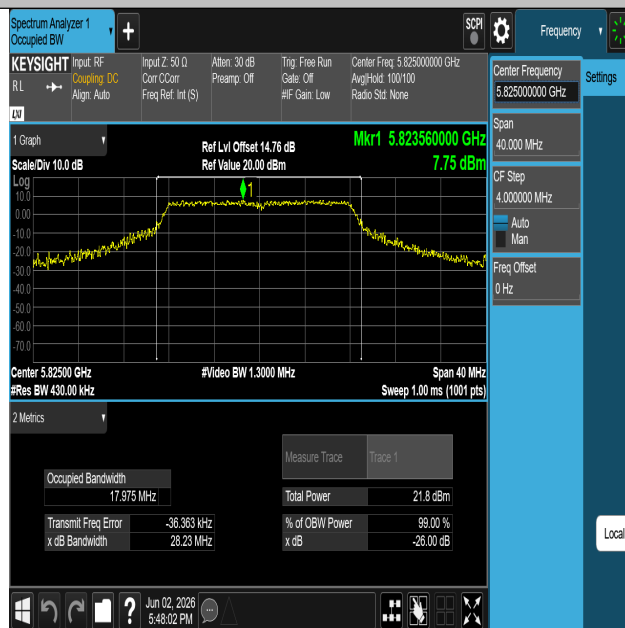
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11A-Ant1-5745



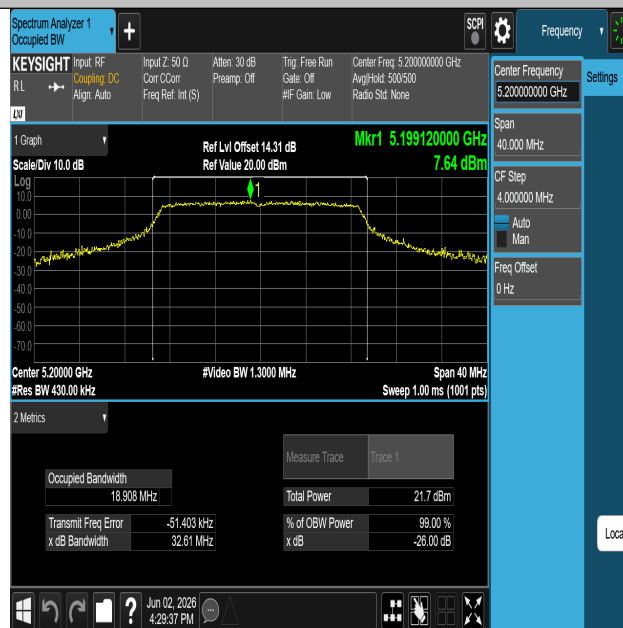
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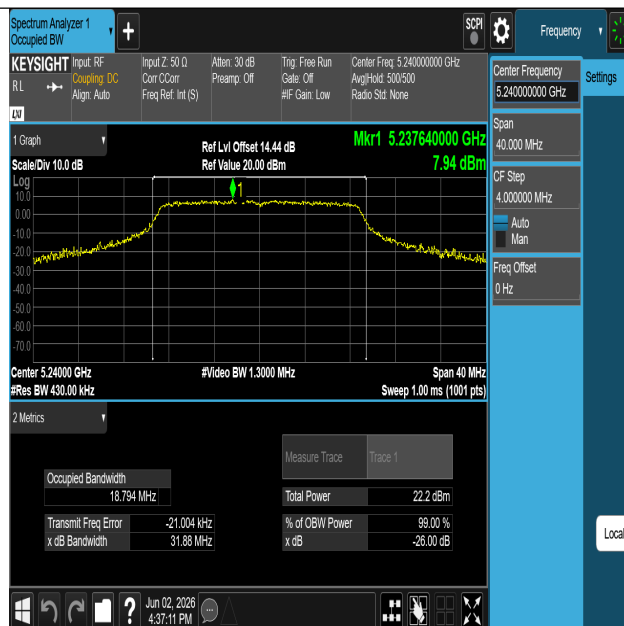
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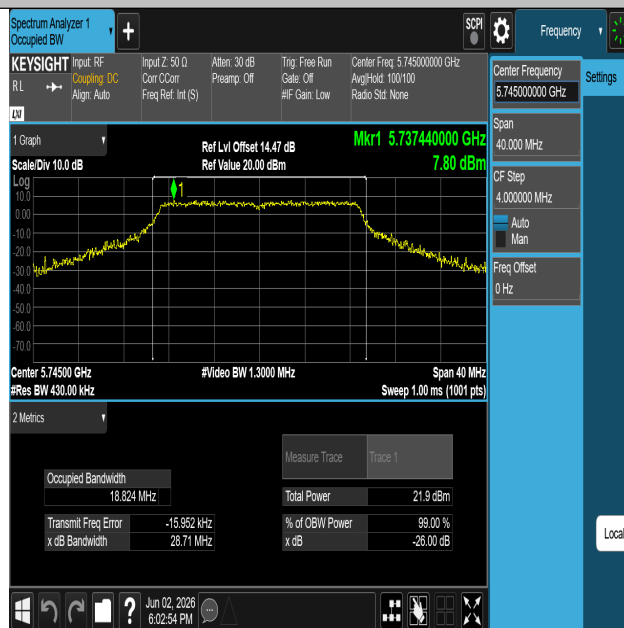
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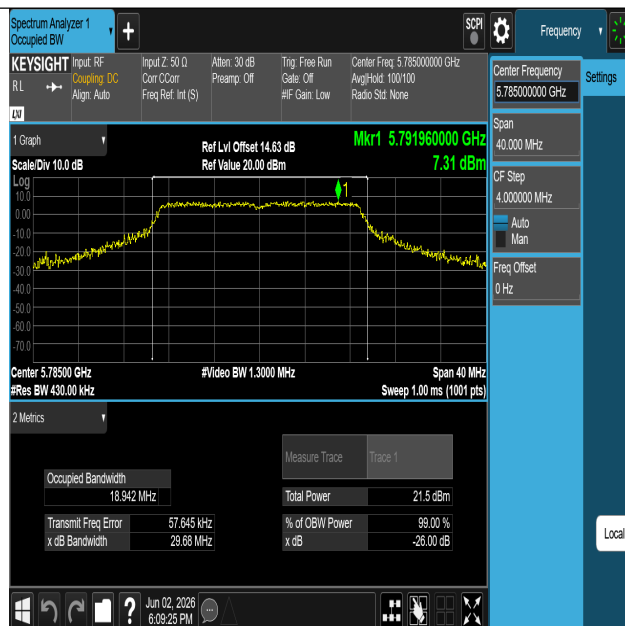
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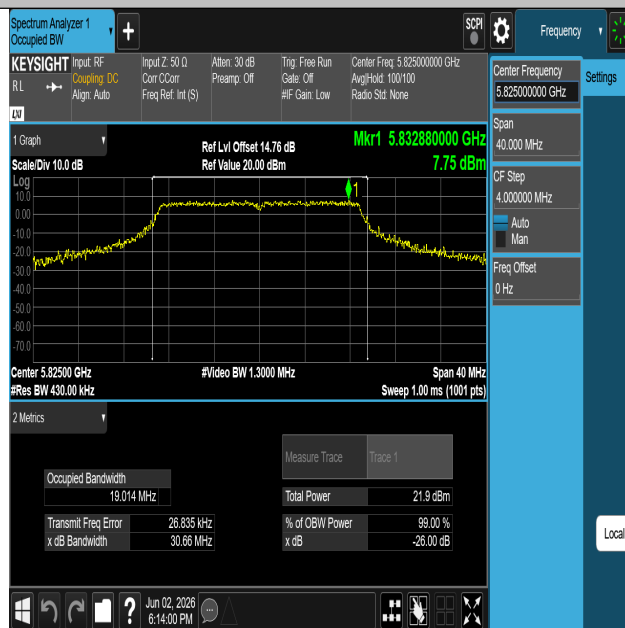
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11N20SISO-Ant1-5745



11N20SISO-Ant1-5785



11N20SISO-Ant1-5825



11N40SISO-Ant1-5190



11N40SISO-Ant1-5230



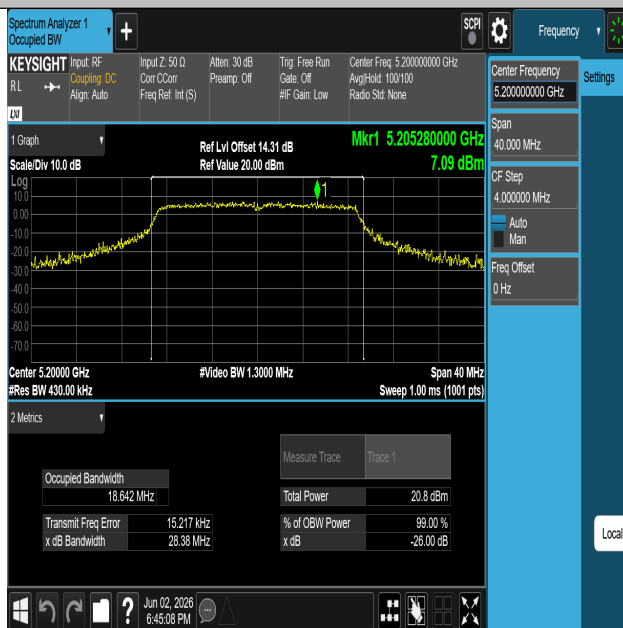
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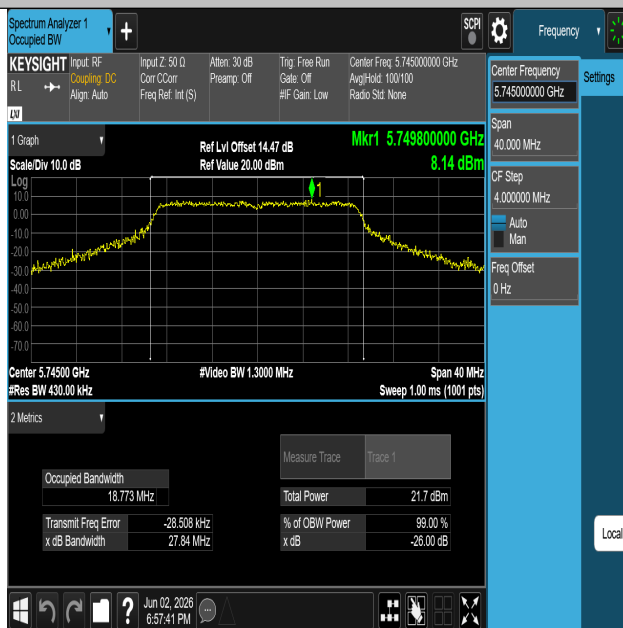
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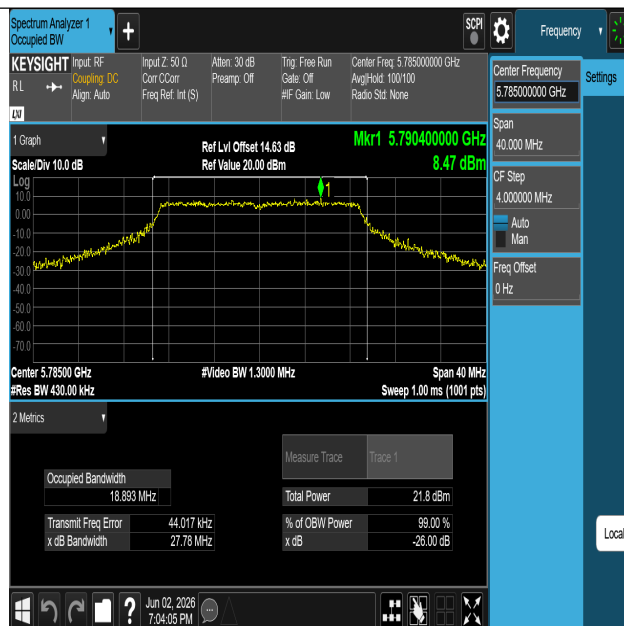
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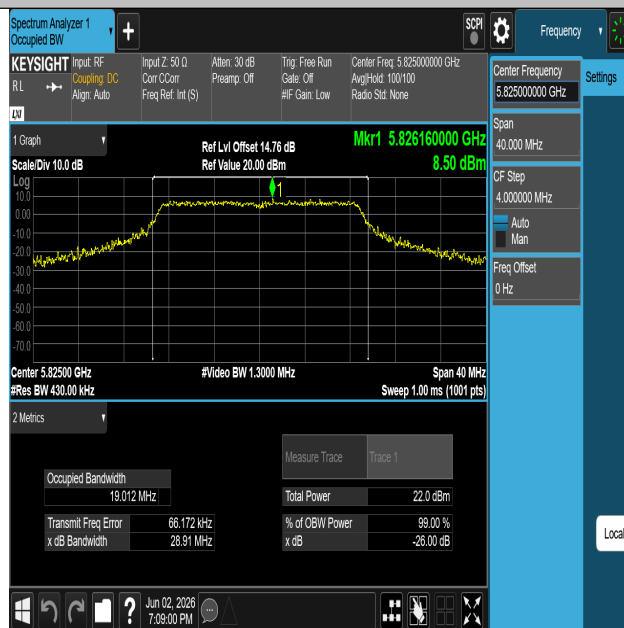
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11AC20SISO-Ant1-5745



11AC20SISO-Ant1-5785



11AC20SISO-Ant1-5825



11AC40SISO-Ant1-5190



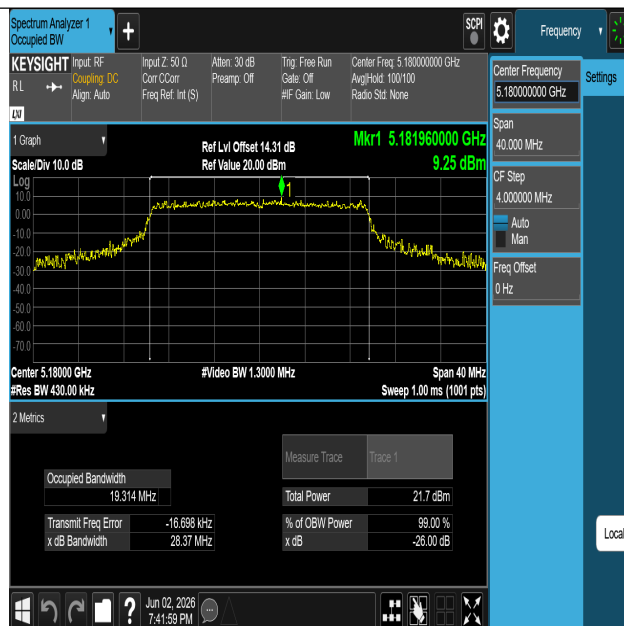
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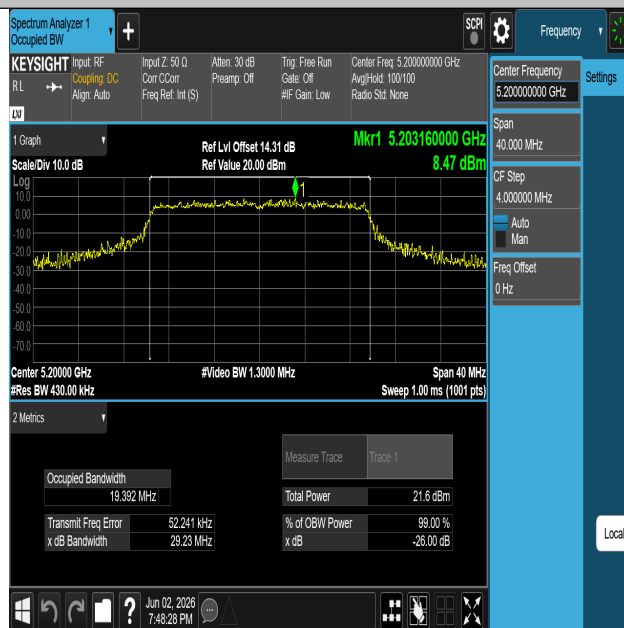
11AC40SISO-Ant1-5755



11AC40SISO-Ant1-5795



11AX20SISO-Ant1-5180



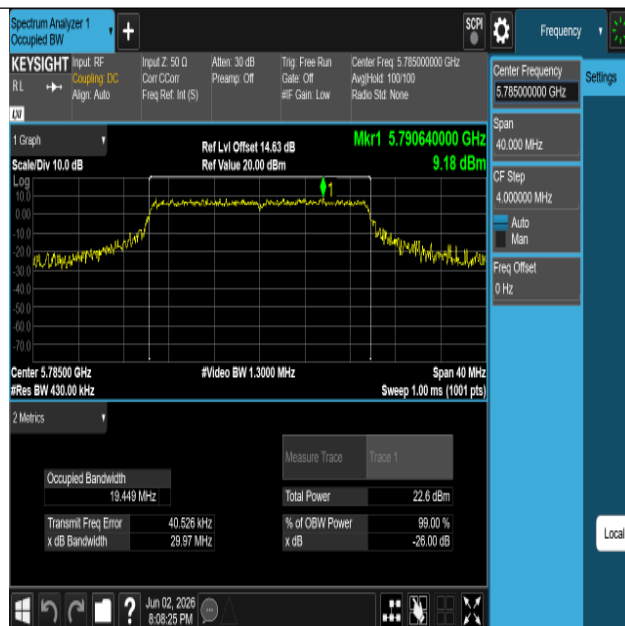
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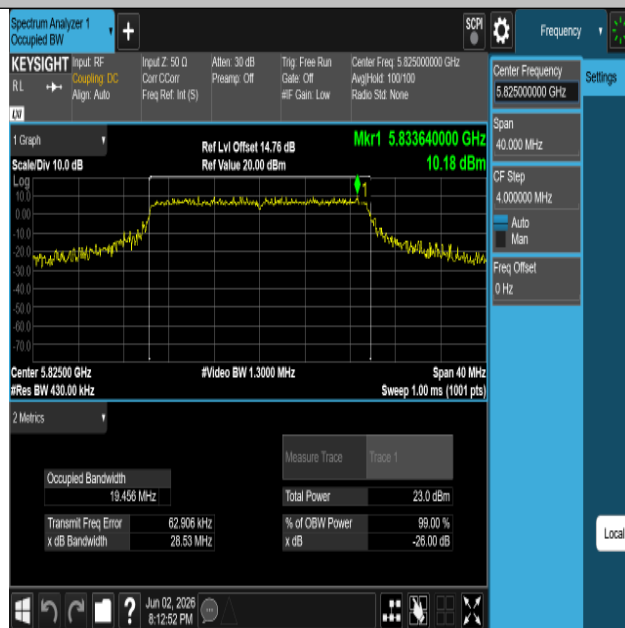
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11AX20SISO-Ant1-5745



11AX20SISO-Ant1-5785



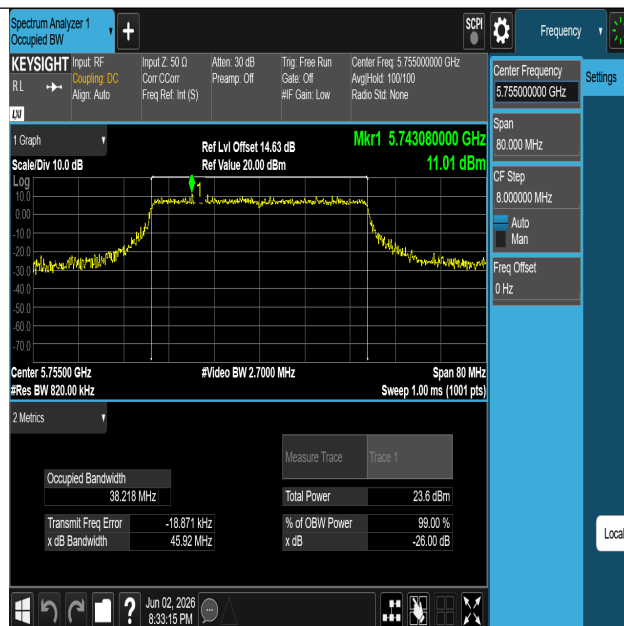
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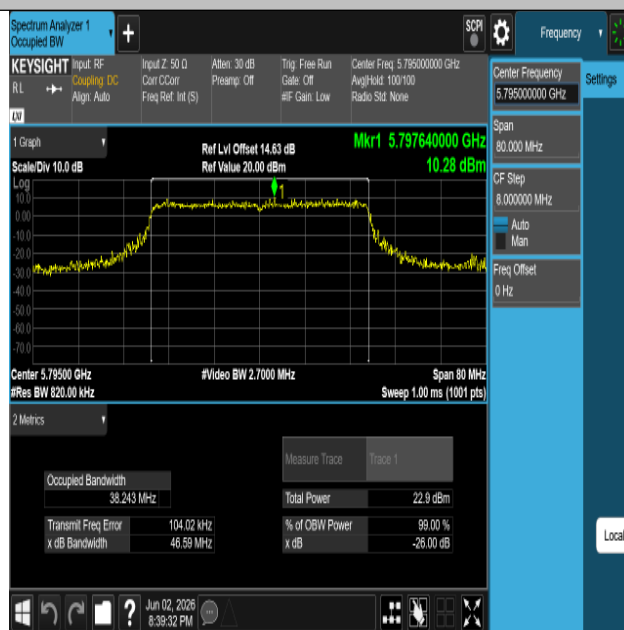
11AX40SISO-Ant1-5190



11AX40SISO-Ant1-5230



11AX40SISO-Ant1-5755



11AX40SISO-Ant1-5795



26 dB emission bandwidth:

TestMode	Antenna	Frequency[MHz]	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	23.320	5168.280	5191.600	---	---
11A	Ant1	5200	23.960	5188.320	5212.280	---	---
11A	Ant1	5240	25.840	5227.040	5252.880	---	---
11A	Ant1	5745	24.520	5732.480	5757.000	---	---
11A	Ant1	5785	26.000	5772.000	5798.000	---	---
11A	Ant1	5825	26.160	5812.200	5838.360	---	---
11N20SISO	Ant1	5180	25.440	5167.520	5192.960	---	---
11N20SISO	Ant1	5200	25.840	5186.360	5212.200	---	---
11N20SISO	Ant1	5240	25.680	5226.840	5252.520	---	---
11N20SISO	Ant1	5745	26.840	5731.840	5758.680	---	---
11N20SISO	Ant1	5785	25.280	5772.320	5797.600	---	---
11N20SISO	Ant1	5825	29.200	5810.880	5840.080	---	---
11N40SISO	Ant1	5190	45.360	5167.360	5212.720	---	---
11N40SISO	Ant1	5230	46.560	5207.520	5254.080	---	---
11N40SISO	Ant1	5755	47.040	5730.680	5777.720	---	---
11N40SISO	Ant1	5795	46.560	5771.960	5818.520	---	---
11AC20SISO	Ant1	5180	24.400	5167.520	5191.920	---	---
11AC20SISO	Ant1	5200	25.120	5187.440	5212.560	---	---
11AC20SISO	Ant1	5240	25.680	5227.000	5252.680	---	---
11AC20SISO	Ant1	5745	26.480	5732.160	5758.640	---	---
11AC20SISO	Ant1	5785	25.880	5772.600	5798.480	---	---
11AC20SISO	Ant1	5825	28.480	5811.320	5839.800	---	---
11AC40SISO	Ant1	5190	50.800	5164.000	5214.800	---	---
11AC40SISO	Ant1	5230	46.480	5207.280	5253.760	---	---
11AC40SISO	Ant1	5755	46.800	5731.400	5778.200	---	---
11AC40SISO	Ant1	5795	47.840	5771.000	5818.840	---	---
11AX20SISO	Ant1	5180	26.680	5166.360	5193.040	---	---
11AX20SISO	Ant1	5200	25.280	5187.480	5212.760	---	---
11AX20SISO	Ant1	5240	27.720	5227.400	5255.120	---	---
11AX20SISO	Ant1	5745	26.800	5731.680	5758.480	---	---
11AX20SISO	Ant1	5785	25.320	5772.480	5797.800	---	---
11AX20SISO	Ant1	5825	27.520	5811.520	5839.040	---	---
11AX40SISO	Ant1	5190	43.680	5168.000	5211.680	---	---
11AX40SISO	Ant1	5230	46.960	5206.400	5253.360	---	---
11AX40SISO	Ant1	5755	43.920	5733.160	5777.080	---	---
11AX40SISO	Ant1	5795	45.040	5772.600	5817.640	---	---

**26 dB emission bandwidth Test Graphs:**

11A-Ant1-5180



11A-Ant1-5200



11A-Ant1-5240



11A-Ant1-5745



11A-Ant1-5785



11A-Ant1-5825



11N20SISO-Ant1-5180



11N20SISO-Ant1-5200



11N20SISO-Ant1-5240



11N20SISO-Ant1-5745



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11N40SISO-Ant1-5755



11N40SISO-Ant1-5795



11AC20SISO-Ant1-5180



11AC20SISO-Ant1-5200



11AC20SISO-Ant1-5240



11AC20SISO-Ant1-5745



11AC20SISO-Ant1-5785



11AC20SISO-Ant1-5825



11AC40SISO-Ant1-5190



11AC40SISO-Ant1-5230



11AC40SISO-Ant1-5755



11AC40SISO-Ant1-5795



11AX20SISO-Ant1-5180



11AX20SISO-Ant1-5200



11AX20SISO-Ant1-5240



11AX20SISO-Ant1-5745



11AX20SISO-Ant1-5785



11AX20SISO-Ant1-5825



11AX40SISO-Ant1-5190



11AX40SISO-Ant1-5230



11AX40SISO-Ant1-5755



11AX40SISO-Ant1-5795



Minimum 6 dB bandwidth:

TestMode	Antenna	Frequency[MHz]	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	16.360	5736.800	5753.160	0.5	PASS
11A	Ant1	5785	16.400	5776.760	5793.160	0.5	PASS
11A	Ant1	5825	16.400	5816.800	5833.200	0.5	PASS
11N20SISO	Ant1	5745	17.640	5736.160	5753.800	0.5	PASS
11N20SISO	Ant1	5785	17.600	5776.200	5793.800	0.5	PASS
11N20SISO	Ant1	5825	17.600	5816.200	5833.800	0.5	PASS
11N40SISO	Ant1	5755	36.320	5736.840	5773.160	0.5	PASS
11N40SISO	Ant1	5795	36.320	5776.840	5813.160	0.5	PASS
11N40SISO	Ant1	5745	17.600	5736.160	5753.760	0.5	PASS
11AC20SISO	Ant1	5785	17.600	5776.160	5793.760	0.5	PASS
11AC20SISO	Ant1	5825	17.640	5816.160	5833.800	0.5	PASS
11AC40SISO	Ant1	5755	36.320	5736.840	5773.160	0.5	PASS
11AC40SISO	Ant1	5795	36.320	5776.840	5813.160	0.5	PASS
11AX20SISO	Ant1	5745	18.880	5735.520	5754.400	0.5	PASS
11AX20SISO	Ant1	5785	18.880	5775.560	5794.440	0.5	PASS
11AX20SISO	Ant1	5825	19.080	5815.400	5834.480	0.5	PASS
11AX40SISO	Ant1	5755	38.000	5735.960	5773.960	0.5	PASS
11AX40SISO	Ant1	5795	37.920	5776.040	5813.960	0.5	PASS



Minimum 6 dB bandwidth Test Graphs:



11A-Ant1-5745-PASS



11A-Ant1-5785-PASS



11A-Ant1-5825-PASS



11N20SISO-Ant1-5745-PASS



11N20SISO-Ant1-5785-PASS



11N20SISO-Ant1-5825-PASS