

FOR 99 PERCENT OCCUPIED BANDWIDTH

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.

FOR 26dB BANDWIDTH

- 1) Set RBW = approximately 1% of the emission bandwidth.
- 2) Set the VBW > RBW.
- 3) Detector = Peak.
- 4) Trace mode = max hold.
- 5) Measure the maximum width of the emission that is 26 dB down from the peak 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%.

FOR 6dB BANDWIDTH

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

3.4.5 DEVIATION FROM TEST STANDARD

No deviation.

3.4.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.



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3.4.7 TEST RESULTS

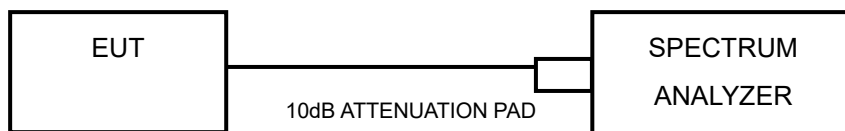
Please Refer to Appendix A/B Of this test report.

3.5 MAXIMUM POWER SPECTRAL DENSITY MEASUREMENT

3.5.1 LIMITS OF MAXIMUM POWER SPECTRAL DENSITY MEASUREMENT

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	17dBm/ MHz
		Fixed point-to-point Access Point	
		Indoor Access Point	
	√	Client devices	11dBm/ MHz
U-NII-2A	√		11dBm/ MHz
U-NII-2C	√		11dBm/ MHz
U-NII-3	√		30dBm/ 500kHz

3.5.2 TEST SETUP



3.5.3 TEST INSTRUMENTS

Refer to section 3.3.3 to get information of above instrument.

3.5.4 TEST PROCEDURES

Using method SA-2

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 1 MHz, Set VBW $\geq$ 3 MHz, Detector = RMS
- 3) Set Channel power measure = 1MHz
- 4) Sweep time = auto, trigger set to "free run".
- 5) Trace average at least 100 traces in power averaging mode.
- 6) Add $10 \log (1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission).
- 7) Record the max value

3.5.5 DEVIATION FROM TEST STANDARD

No deviation.

3.5.6 EUT OPERATING CONDITIONS

Same as 3.1.6.



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3.5.7 TEST RESULTS

Please Refer to Appendix C Of this test report.



4 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).

5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

6 Appendix

APPENDIX A1: EMISSION BANDWIDTH

TEST RESULT

TestMode	Antenna	Channel	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	26.400	5167.920	5194.320	---	PASS
		5200	24.000	5189.240	5213.240	---	PASS
		5240	28.280	5226.960	5255.240	---	PASS
		5260	27.480	5246.920	5274.400	---	PASS
		5300	26.080	5287.080	5313.160	---	PASS
		5320	28.400	5305.520	5333.920	---	PASS
		5500	26.800	5486.040	5512.840	---	PASS
		5580	26.720	5566.680	5593.400	---	PASS
		5700	29.840	5684.640	5714.480	---	PASS
		5745	27.680	5730.840	5758.520	---	PASS
		5785	31.280	5768.800	5800.080	---	PASS
		5825	31.840	5808.840	5840.680	---	PASS
11N20SISO	Ant1	5180	31.640	5164.840	5196.480	---	PASS
		5200	27.760	5186.760	5214.520	---	PASS
		5240	32.280	5223.120	5255.400	---	PASS
		5260	30.240	5243.960	5274.200	---	PASS
		5300	28.960	5285.560	5314.520	---	PASS
		5320	27.840	5306.040	5333.880	---	PASS
		5500	26.840	5486.880	5513.720	---	PASS
		5580	29.120	5566.400	5595.520	---	PASS
		5700	28.240	5686.400	5714.640	---	PASS
		5745	31.240	5729.520	5760.760	---	PASS
		5785	31.160	5768.280	5799.440	---	PASS
		5825	35.960	5806.880	5842.840	---	PASS
11N40SISO	Ant1	5190	48.720	5164.480	5213.200	---	PASS
		5230	52.800	5207.280	5260.080	---	PASS
		5270	45.520	5247.360	5292.880	---	PASS
		5310	50.560	5286.320	5336.880	---	PASS
		5510	51.920	5483.440	5535.360	---	PASS



		5550	47.760	5528.560	5576.320	---	PASS
		5670	48.320	5644.720	5693.040	---	PASS
		5755	62.400	5727.320	5789.720	---	PASS
		5795	56.080	5768.360	5824.440	---	PASS
11AC20SISO	Ant1	5180	28.240	5166.080	5194.320	---	PASS
		5200	28.000	5186.240	5214.240	---	PASS
		5240	27.480	5227.240	5254.720	---	PASS
		5260	28.800	5246.360	5275.160	---	PASS
		5300	30.040	5285.680	5315.720	---	PASS
		5320	27.800	5306.800	5334.600	---	PASS
		5500	30.680	5484.280	5514.960	---	PASS
		5580	27.000	5566.120	5593.120	---	PASS
		5700	26.440	5686.360	5712.800	---	PASS
		5745	33.480	5728.360	5761.840	---	PASS
		5785	32.080	5769.520	5801.600	---	PASS
		5825	31.640	5807.760	5839.400	---	PASS
11AC40SISO	Ant1	5190	40.000	5170.160	5210.160	---	PASS
		5230	43.280	5207.600	5250.880	---	PASS
		5270	41.360	5249.760	5291.120	---	PASS
		5310	40.560	5290.080	5330.640	---	PASS
		5510	42.000	5488.480	5530.480	---	PASS
		5550	41.200	5528.960	5570.160	---	PASS
		5670	42.000	5650.080	5692.080	---	PASS
		5755	40.800	5734.200	5775.000	---	PASS
		5795	40.240	5774.520	5814.760	---	PASS
11AC80SISO	Ant1	5210	82.560	5169.040	5251.600	---	PASS
		5290	82.880	5249.040	5331.920	---	PASS
		5530	84.320	5487.920	5572.240	---	PASS
		5610	87.200	5565.360	5652.560	---	PASS
		5775	81.600	5734.360	5815.960	---	PASS

TEST GRAPHS



11A_Ant1_5180



11A_Ant1_5200



11A_Ant1_5240



11A_Ant1_5260



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11A_Ant1_5300



11A_Ant1_5320



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11A_Ant1_5500



11A_Ant1_5580



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11A_Ant1_5700



11A_Ant1_5745



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11A_Ant1_5785



11A_Ant1_5825



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11N20SISO_Ant1_5180



11N20SISO_Ant1_5200



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11N20SISO_Ant1_5240



11N20SISO_Ant1_5260



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11N20SISO_Ant1_5300



11N20SISO_Ant1_5320

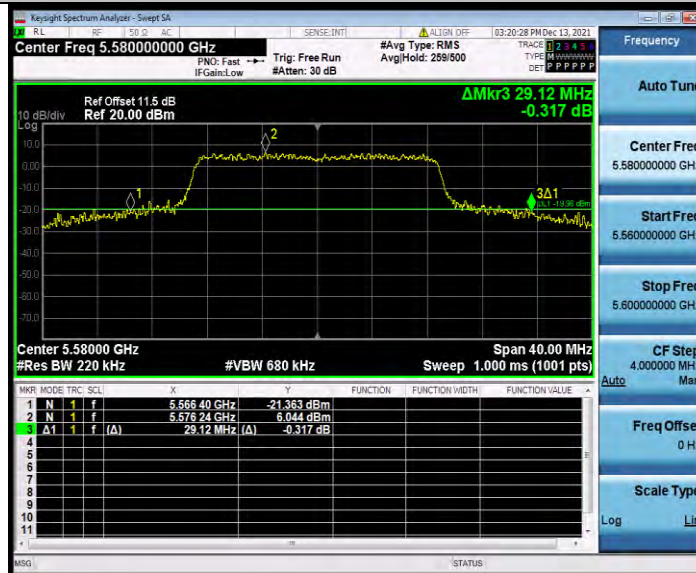


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11N20SISO_Ant1_5500



11N20SISO_Ant1_5580

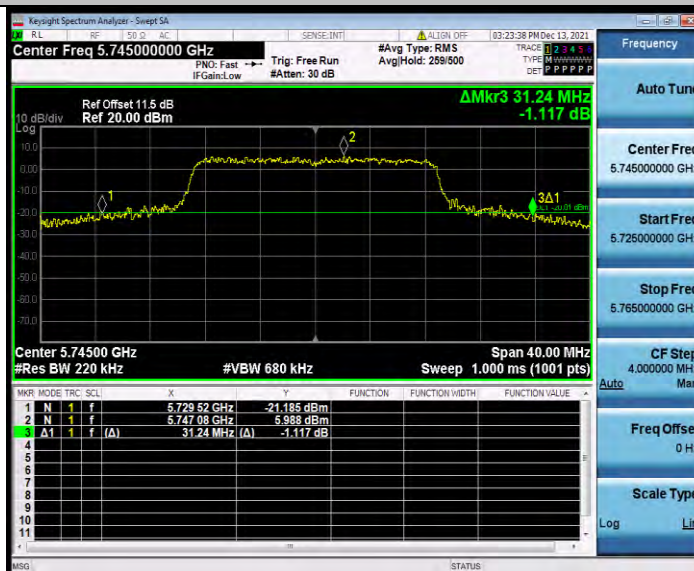


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11N20SISO_Ant1_5700



11N20SISO_Ant1_5745



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Test Report No.: W7L-P22090015-1RF03



11N20SISO_Ant1_5785



11N20SISO_Ant1_5825



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Test Report No.: W7L-P22090015-1RF03



11N40SISO_Ant1_5190



11N40SISO_Ant1_5230



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11N40SISO_Ant1_5270

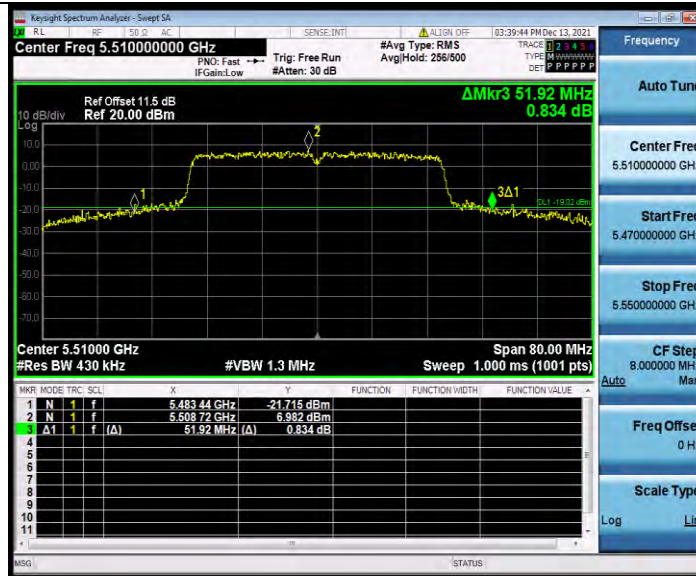


11N40SISO_Ant1_5310



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11N40SISO_Ant1_5510



11N40SISO_Ant1_5550



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11N40SISO_Ant1_5670



11N40SISO_Ant1_5755



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Test Report No.: W7L-P22090015-1RF03



11N40SISO_Ant1_5795



11AC20SISO_Ant1_5180



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11AC20SISO_Ant1_5200



11AC20SISO_Ant1_5240



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Test Report No.: W7L-P22090015-1RF03



11AC20SISO_Ant1_5260



11AC20SISO_Ant1_5300



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VERITAS

Test Report No.: W7L-P22090015-1RF03



11AC20SISO_Ant1_5320



11AC20SISO_Ant1_5500



11AC20SISO_Ant1_5580

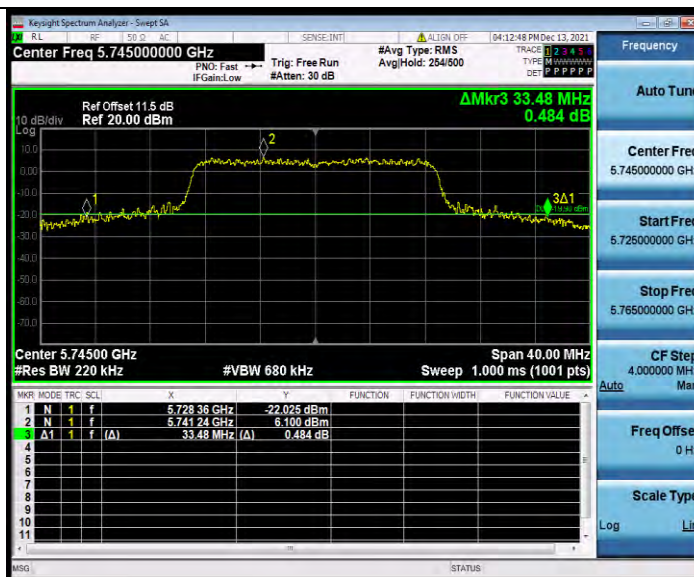


11AC20SISO_Ant1_5700



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11AC20SISO_Ant1_5745



11AC20SISO_Ant1_5785



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11AC20SISO_Ant1_5825



11AC40SISO_Ant1_5190



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11AC40SISO_Ant1_5230



11AC40SISO_Ant1_5270



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Test Report No.: W7L-P22090015-1RF03



11AC40SISO_Ant1_5310



11AC40SISO_Ant1_5510



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11AC40SISO_Ant1_5550



11AC40SISO_Ant1_5670



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11AC40SISO_Ant1_5755



11AC40SISO_Ant1_5795



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11AC80SISO_Ant1_5210



11AC80SISO_Ant1_5290



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Test Report No.: W7L-P22090015-1RF03



11AC80SISO_Ant1_5530



11AC80SISO_Ant1_5610



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Test Report No.: W7L-P22090015-1RF03



APPENDIX A2: OCCUPIED CHANNEL BANDWIDTH

TEST RESULT

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	17.253	5171.392	5188.645	---	PASS
		5200	17.217	5191.400	5208.617	---	PASS
		5240	17.234	5231.403	5248.637	---	PASS
		5260	17.251	5251.388	5268.639	---	PASS
		5300	17.244	5291.388	5308.632	---	PASS
		5320	17.263	5311.364	5328.627	---	PASS
		5500	17.243	5491.354	5508.597	---	PASS
		5580	17.210	5571.389	5588.599	---	PASS
		5700	17.314	5691.343	5708.657	---	PASS
		5745	17.346	5736.322	5753.668	---	PASS
		5785	17.702	5776.119	5793.821	---	PASS
		5825	17.878	5816.012	5833.890	---	PASS
11N20SISO	Ant1	5180	18.052	5170.989	5189.041	---	PASS
		5200	18.096	5190.979	5209.075	---	PASS
		5240	18.083	5230.979	5249.062	---	PASS
		5260	18.023	5250.995	5269.018	---	PASS
		5300	18.088	5290.934	5309.022	---	PASS
		5320	18.038	5310.947	5328.985	---	PASS
		5500	18.115	5490.893	5509.008	---	PASS
		5580	18.101	5570.928	5589.029	---	PASS
		5700	18.100	5690.919	5709.019	---	PASS
		5745	18.229	5735.848	5754.077	---	PASS
		5785	18.271	5775.828	5794.099	---	PASS
		5825	18.248	5815.843	5834.091	---	PASS
11N40SISO	Ant1	5190	36.598	5171.752	5208.350	---	PASS
		5230	36.534	5211.810	5248.344	---	PASS
		5270	36.561	5251.745	5288.306	---	PASS
		5310	36.551	5291.762	5328.313	---	PASS
		5510	36.544	5491.659	5528.203	---	PASS
		5550	36.555	5531.741	5568.296	---	PASS



		5670	36.462	5651.748	5688.210	---	PASS
		5755	36.772	5736.547	5773.319	---	PASS
		5795	36.838	5776.570	5813.408	---	PASS
11AC20SISO	Ant1	5180	18.088	5170.934	5189.022	---	PASS
		5200	18.104	5190.946	5209.050	---	PASS
		5240	18.073	5230.962	5249.035	---	PASS
		5260	18.117	5250.922	5269.039	---	PASS
		5300	18.062	5290.978	5309.040	---	PASS
		5320	17.972	5310.995	5328.967	---	PASS
		5500	18.057	5490.961	5509.018	---	PASS
		5580	18.051	5570.955	5589.006	---	PASS
		5700	18.017	5690.981	5708.998	---	PASS
		5745	18.170	5735.889	5754.059	---	PASS
		5785	18.222	5775.875	5794.097	---	PASS
		5825	18.269	5815.847	5834.116	---	PASS
11AC40SISO	Ant1	5190	36.355	5171.812	5208.167	---	PASS
		5230	36.330	5211.848	5248.178	---	PASS
		5270	36.317	5251.810	5288.127	---	PASS
		5310	36.374	5291.797	5328.171	---	PASS
		5510	36.385	5491.791	5528.176	---	PASS
		5550	36.426	5531.748	5568.174	---	PASS
		5670	36.342	5651.769	5688.111	---	PASS
		5755	36.389	5736.772	5773.161	---	PASS
		5795	36.330	5776.775	5813.105	---	PASS
11AC80SISO	Ant1	5210	75.753	5172.154	5247.907	---	PASS
		5290	75.684	5252.146	5327.830	---	PASS
		5530	75.750	5492.077	5567.827	---	PASS
		5610	75.718	5572.068	5647.786	---	PASS
		5775	75.779	5737.032	5812.811	---	PASS

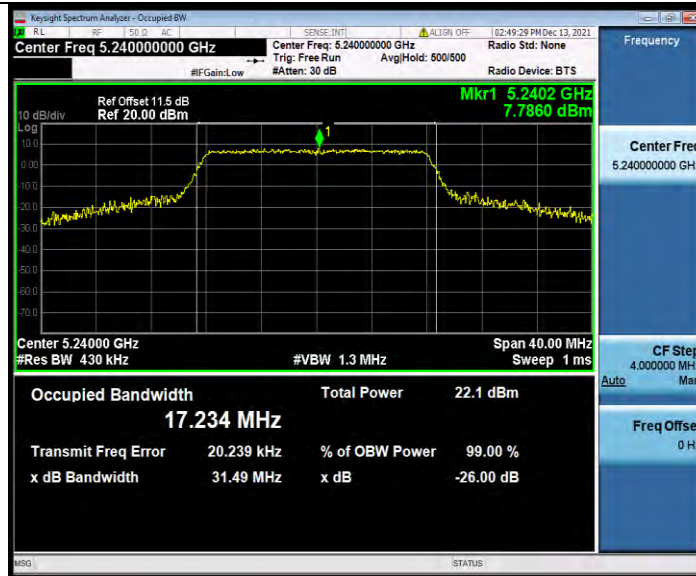
TEST GRAPHS





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11A_Ant1_5240



11A_Ant1_5260



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11A_Ant1_5300

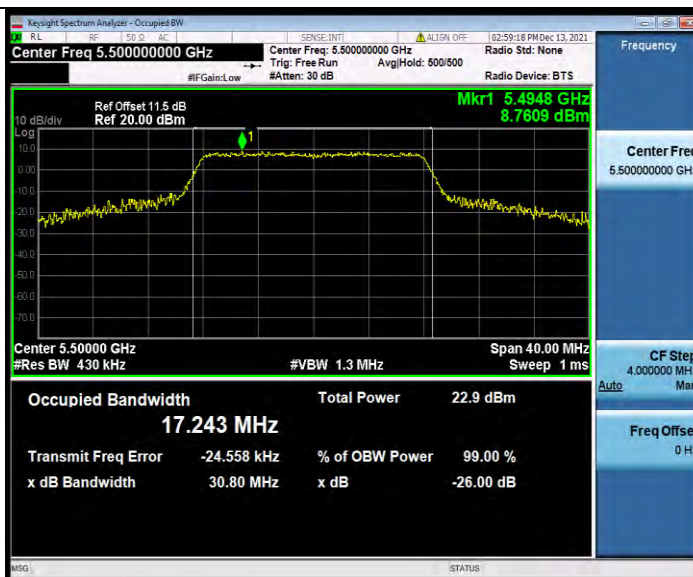


11A_Ant1_5320



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11A_Ant1_5500



11A_Ant1_5580

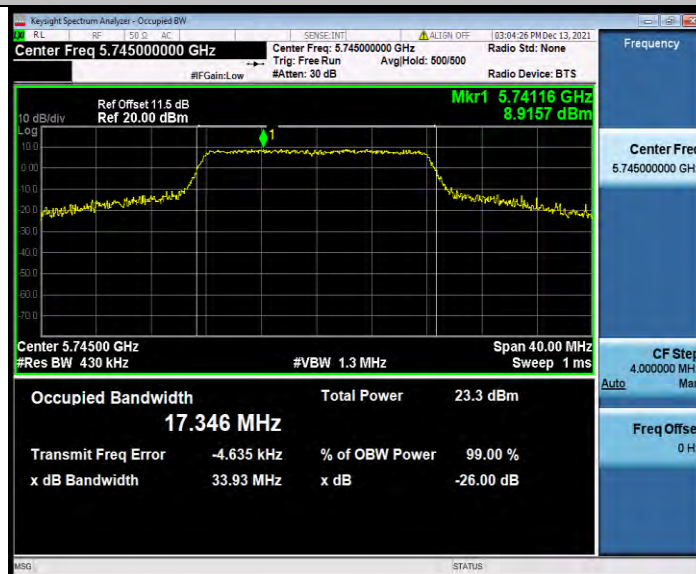


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11A_Ant1_5700



11A_Ant1_5745



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11A_Ant1_5785



11A_Ant1_5825

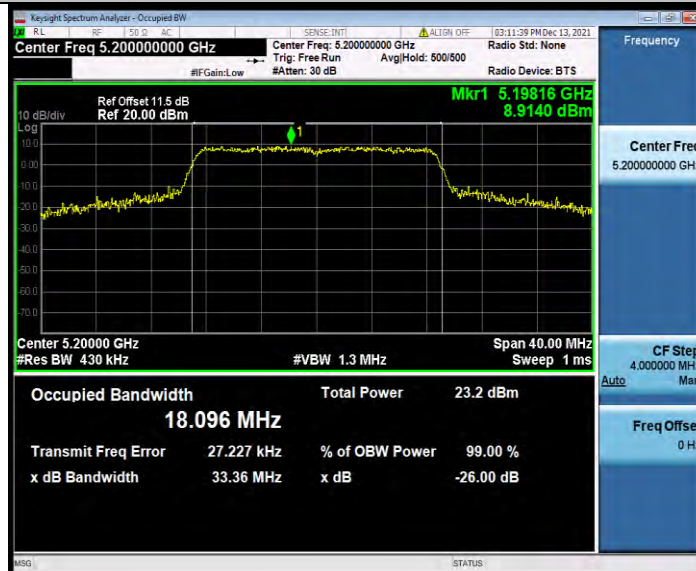


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11N20SISO_Ant1_5180



11N20SISO_Ant1_5200



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11N20SISO_Ant1_5240



11N20SISO_Ant1_5260

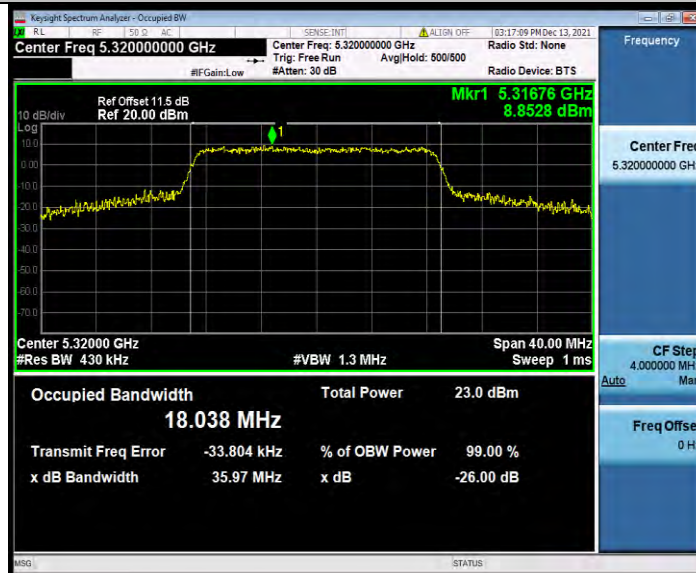


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11N20SISO_Ant1_5300

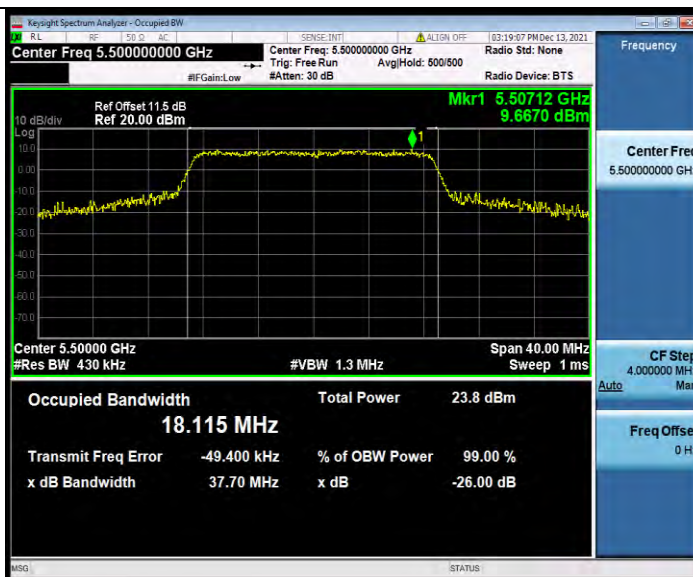


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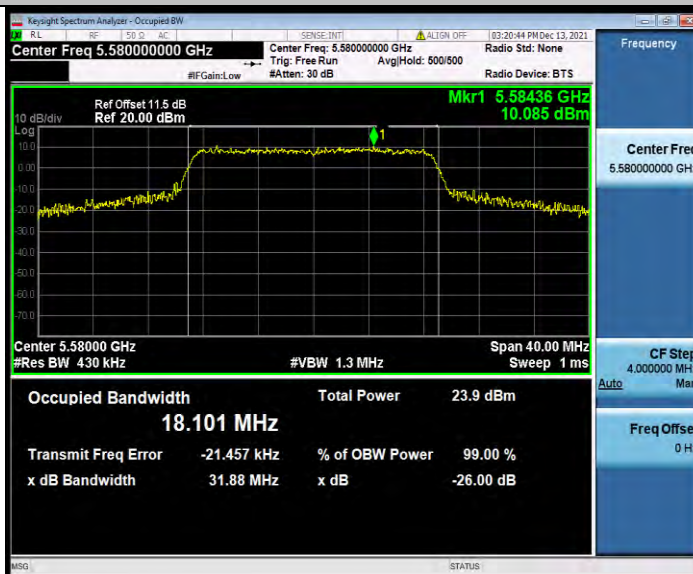


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VERITAS

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11N20SISO_Ant1_5500



11N20SISO_Ant1_5580

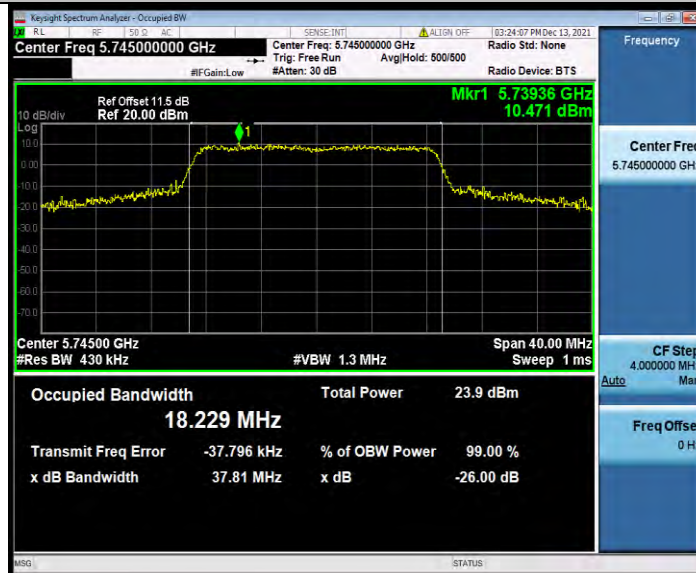


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VERITAS

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11N20SISO_Ant1_5700

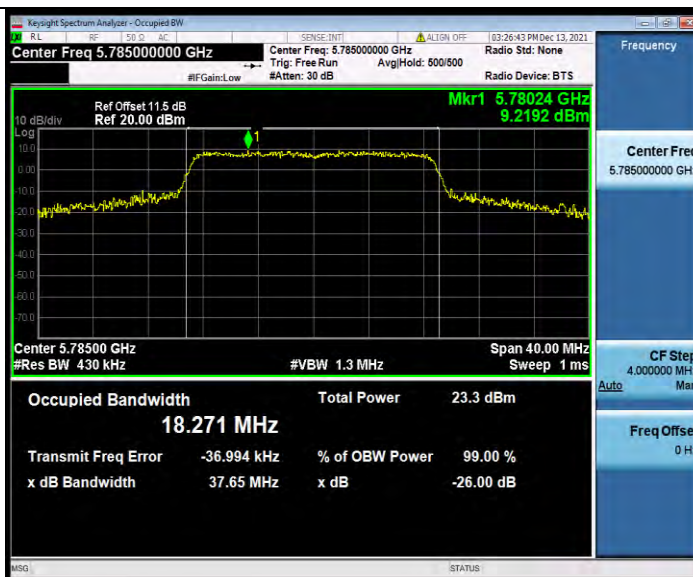


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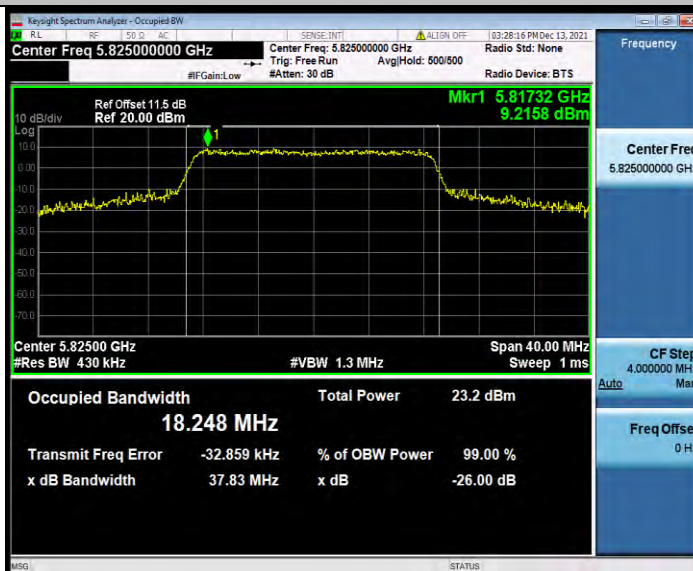


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VERITAS

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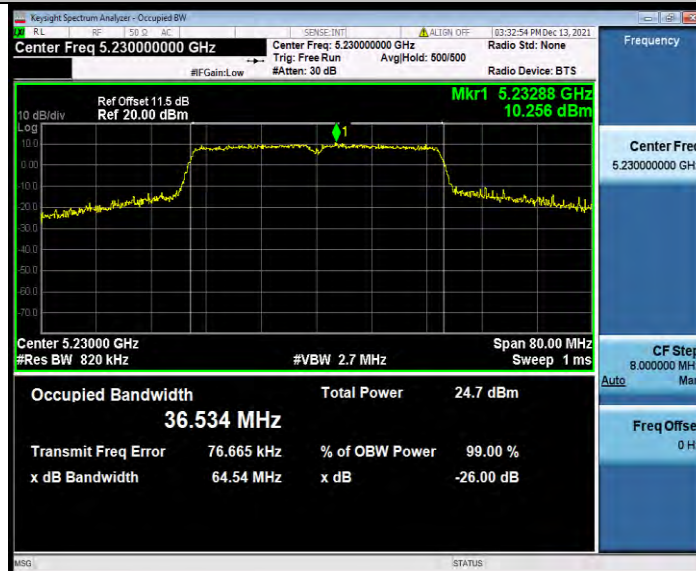
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11N20SISO_Ant1_5825



11N40SISO_Ant1_5190



11N40SISO_Ant1_5230