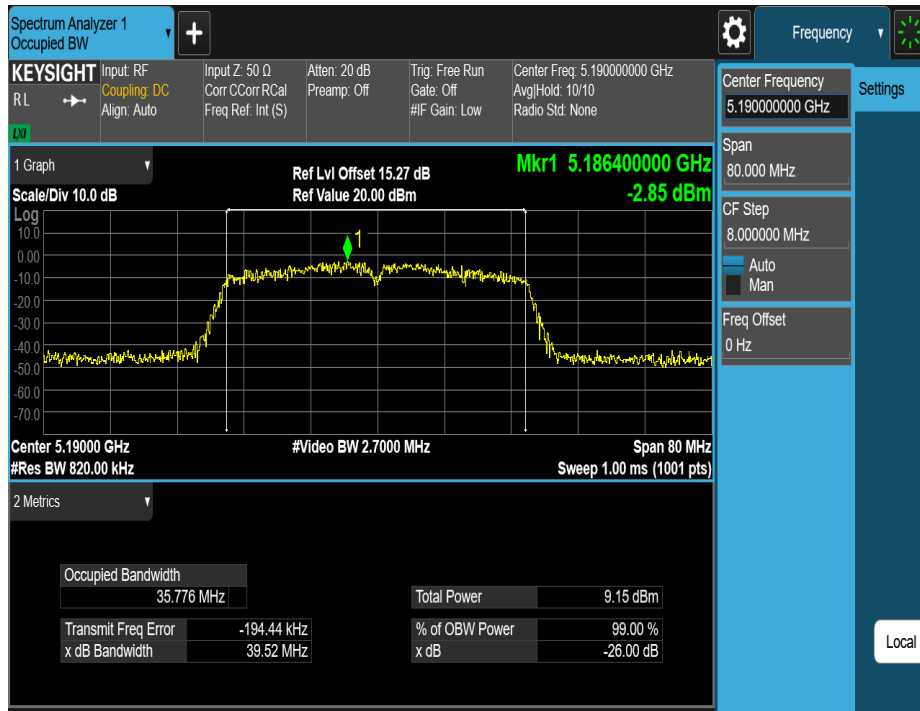
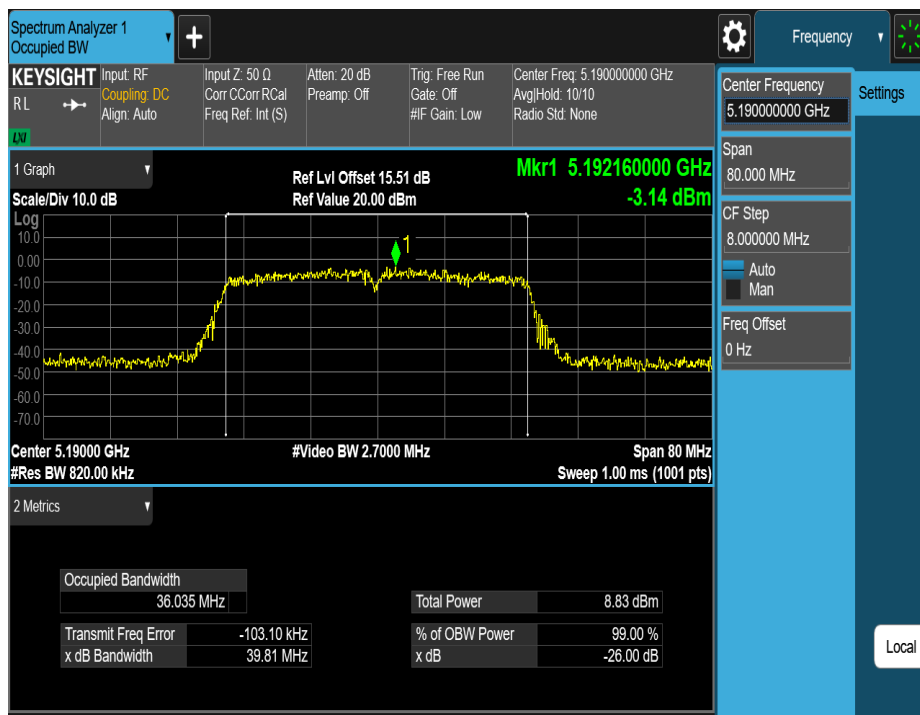


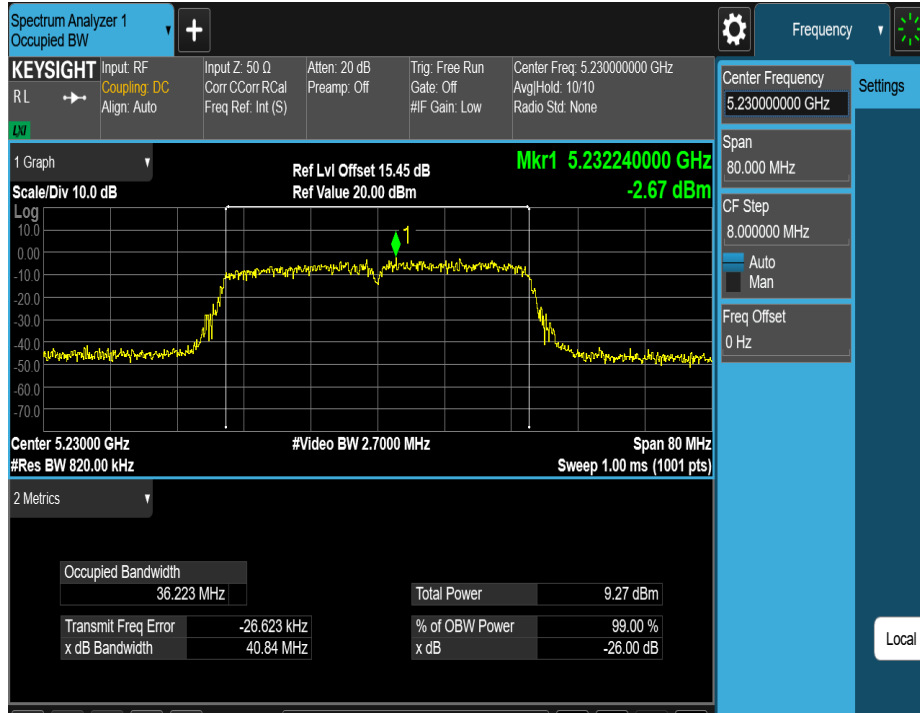
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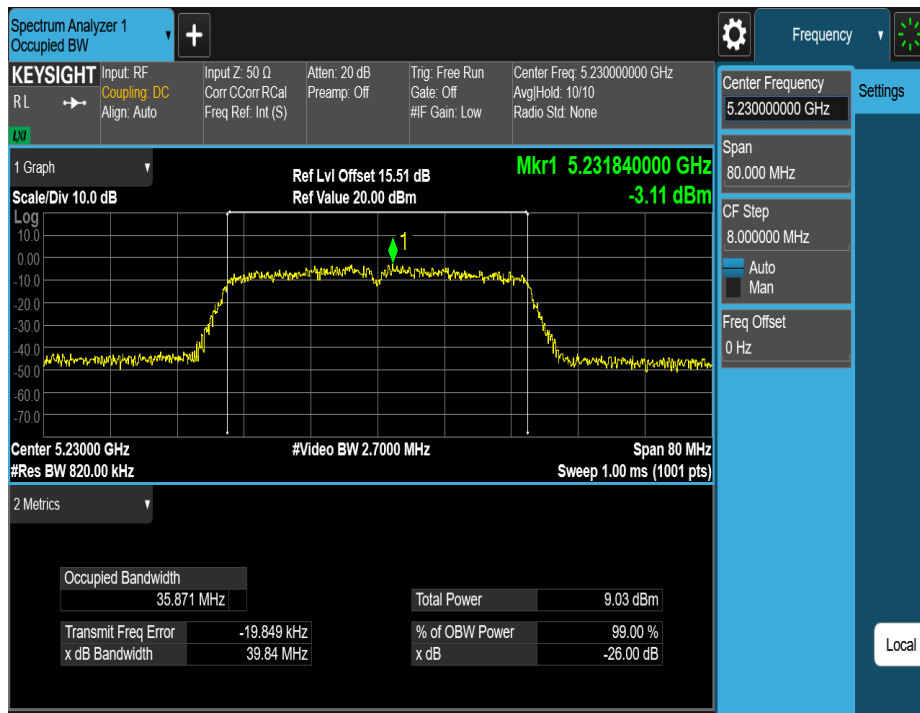
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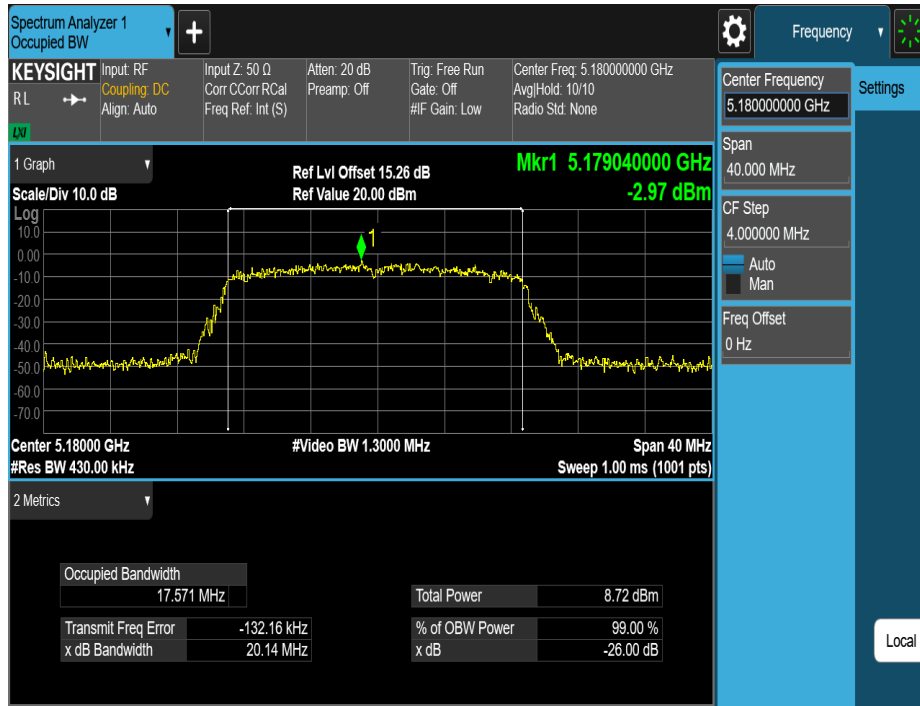
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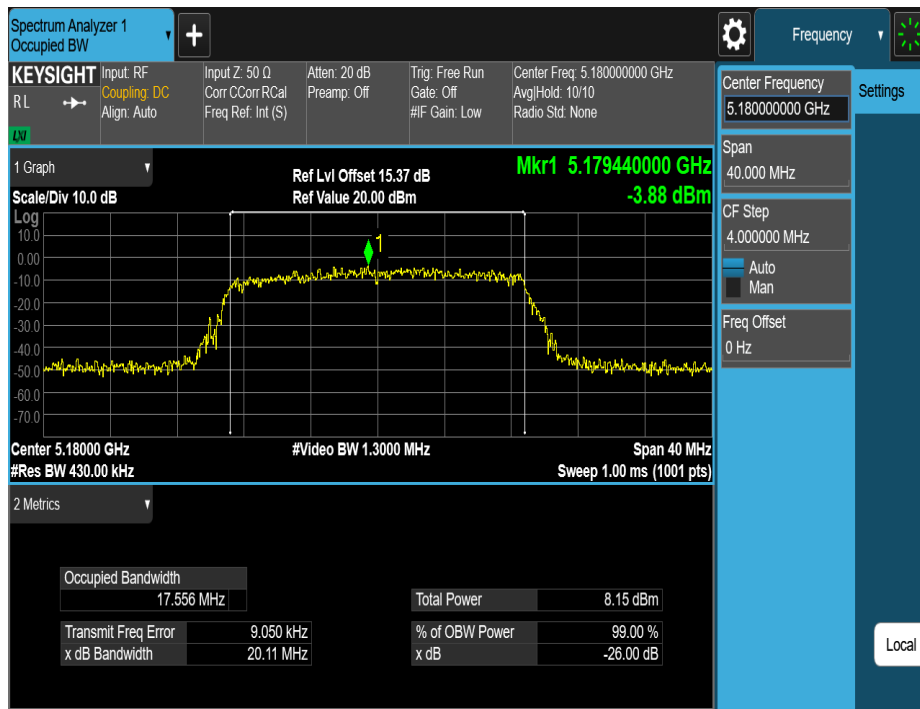
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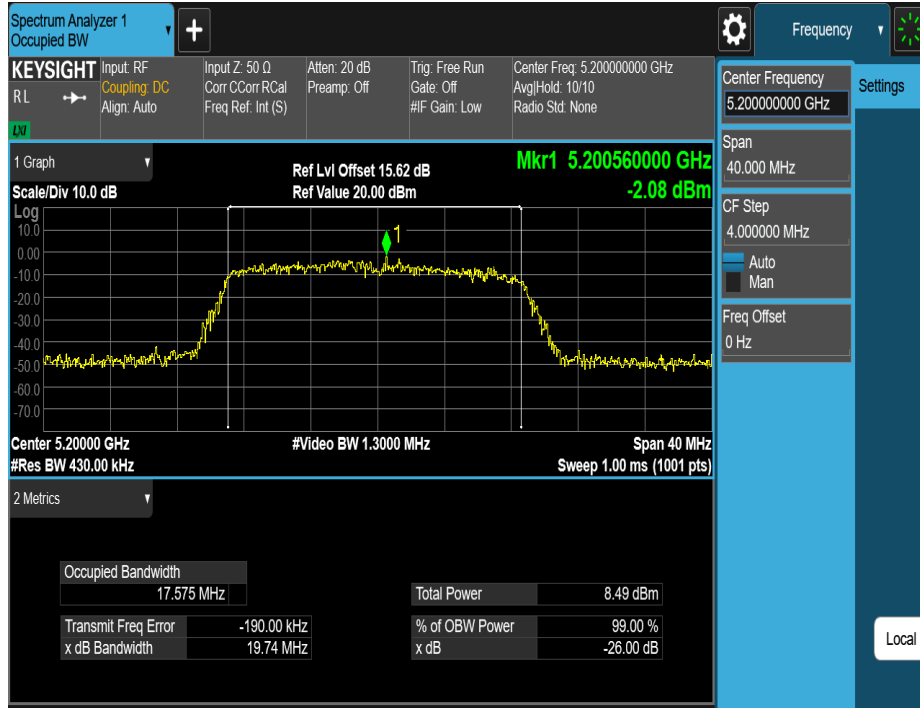
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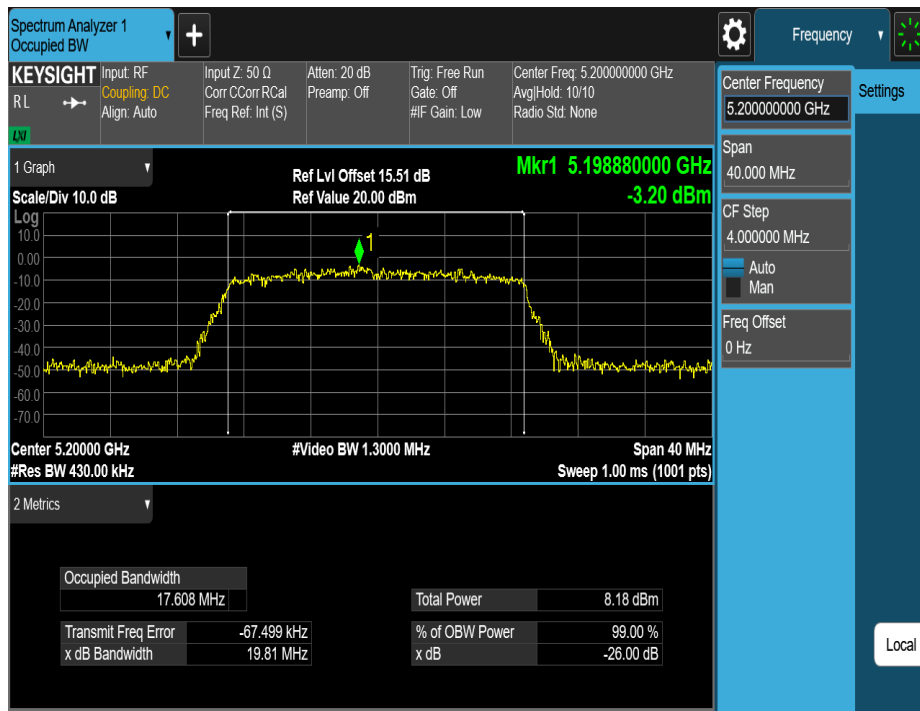
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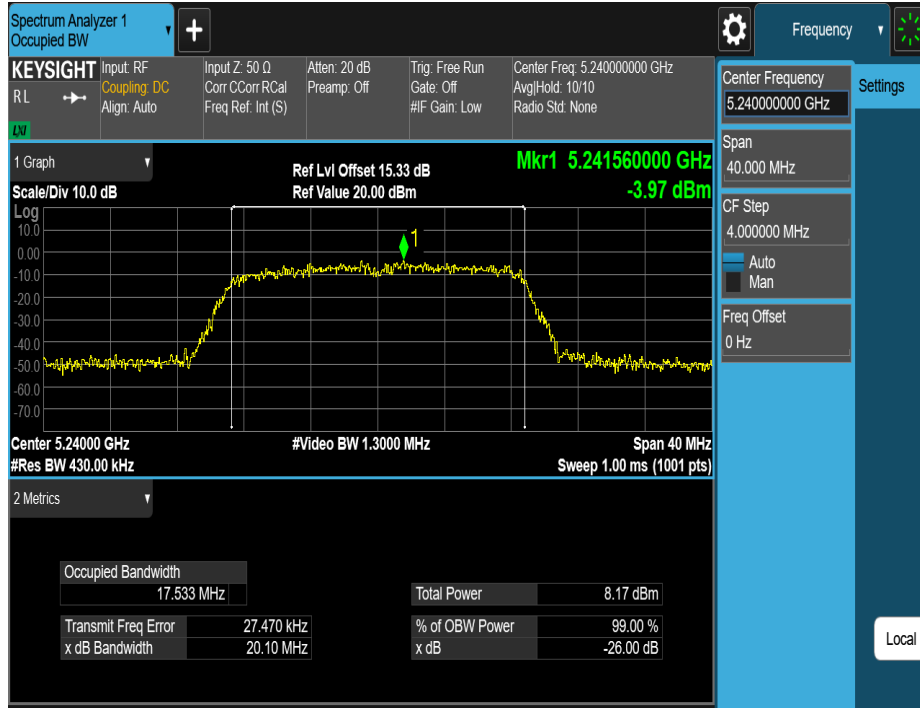
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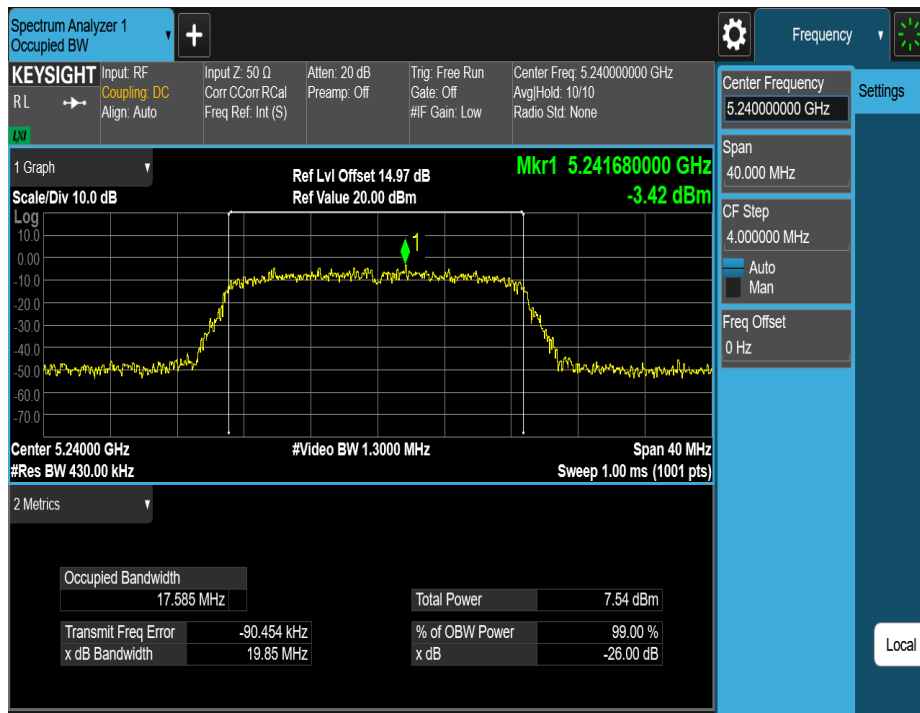
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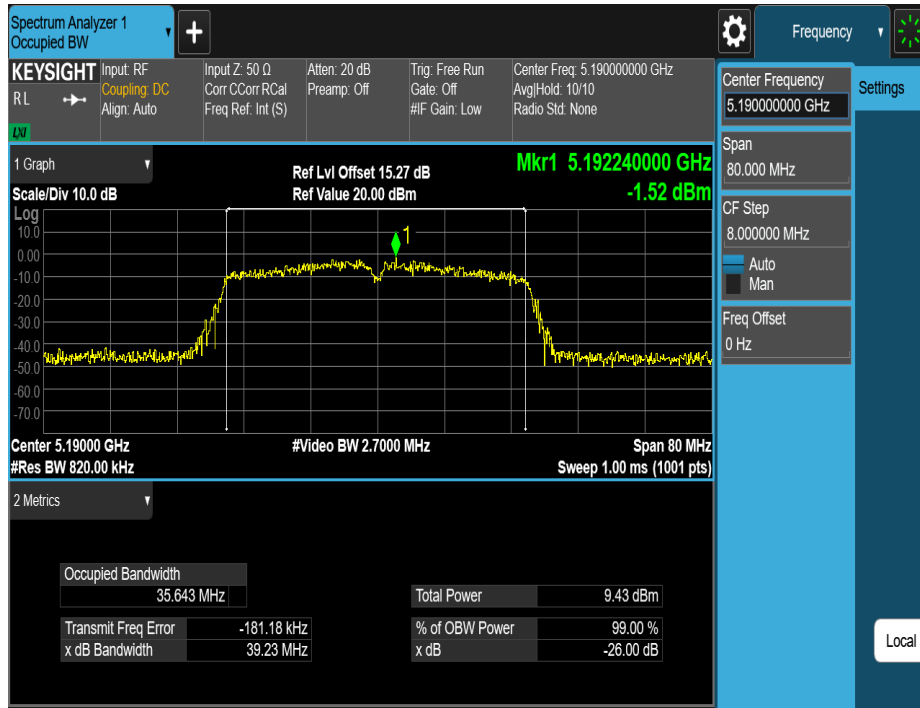
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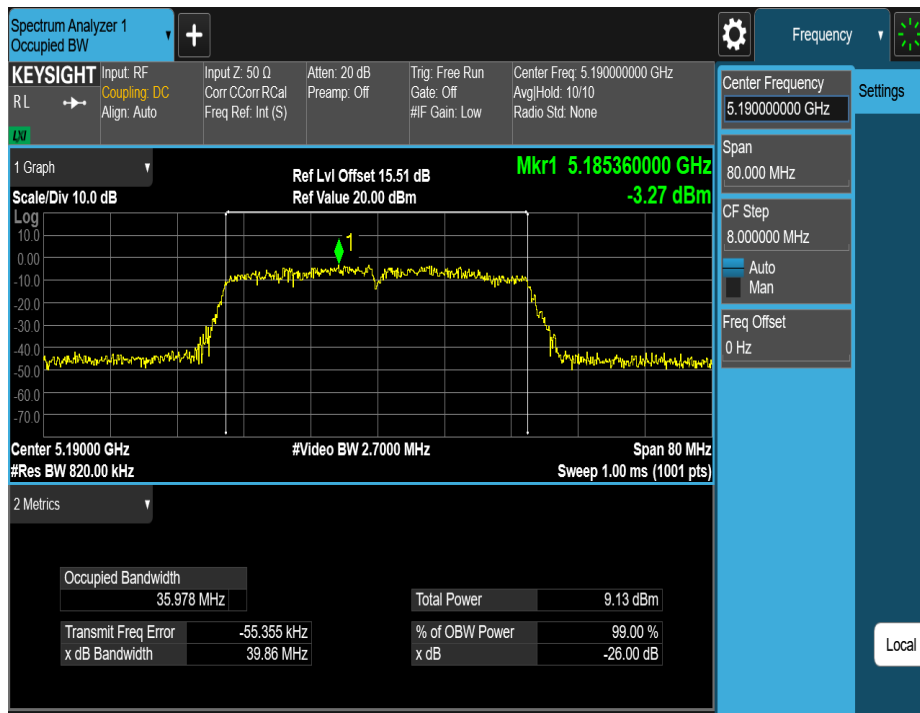
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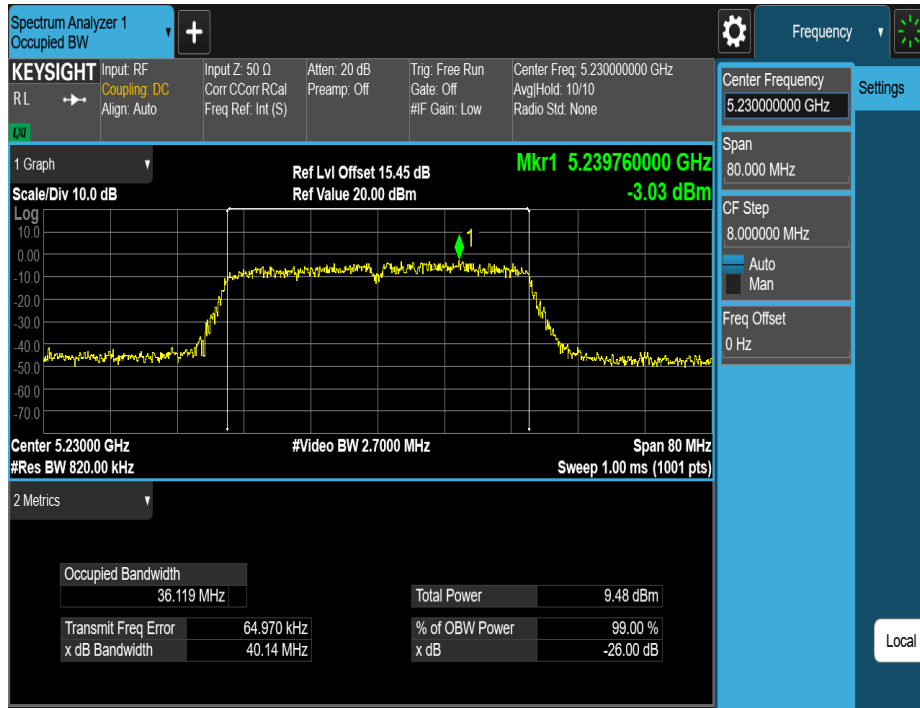
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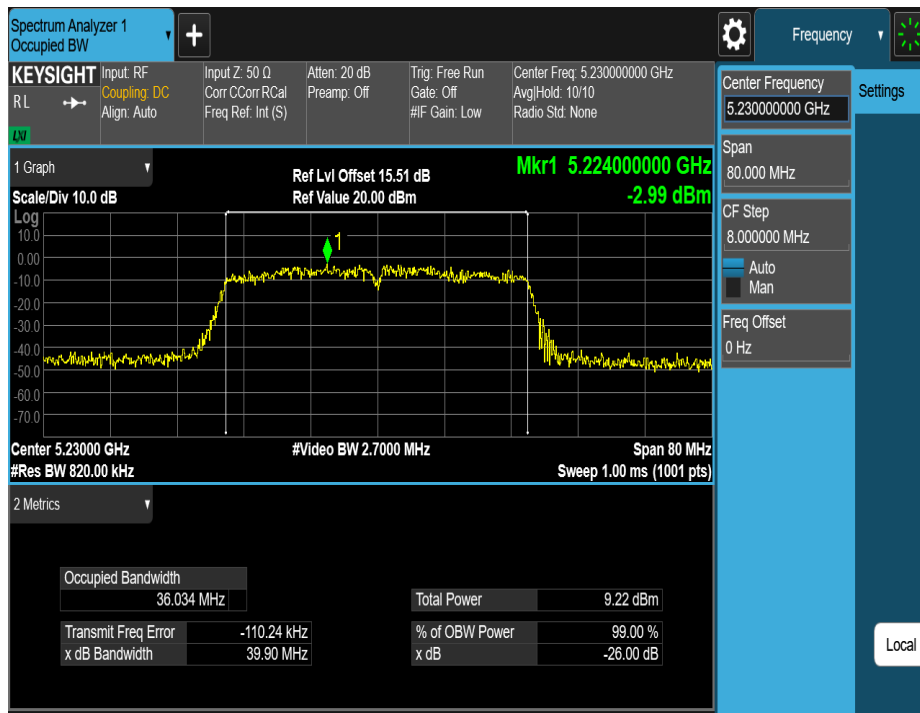
11AC40MIMO_Ant2_5190



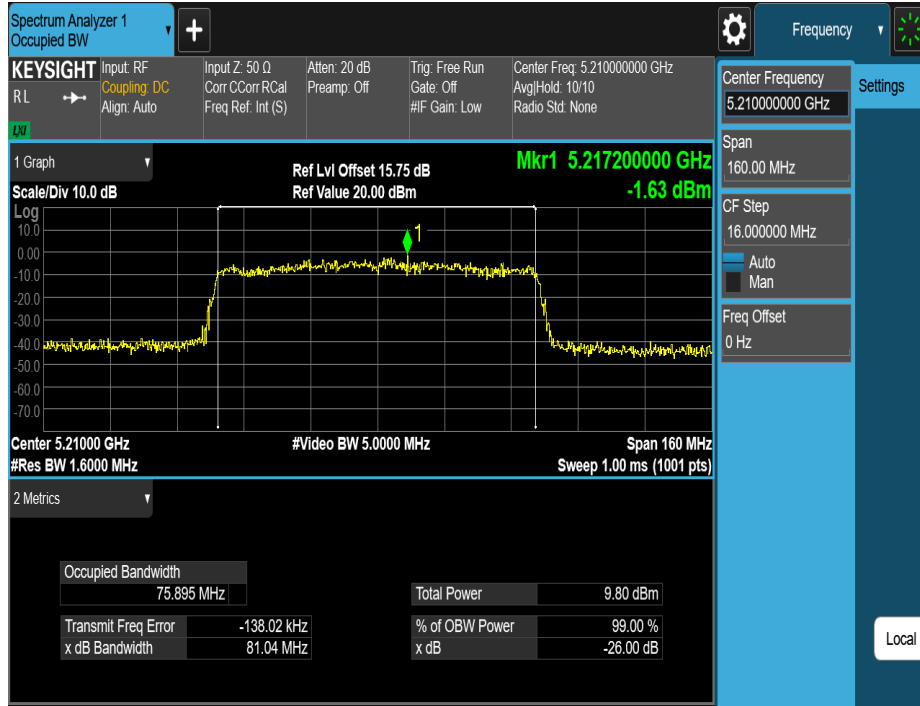
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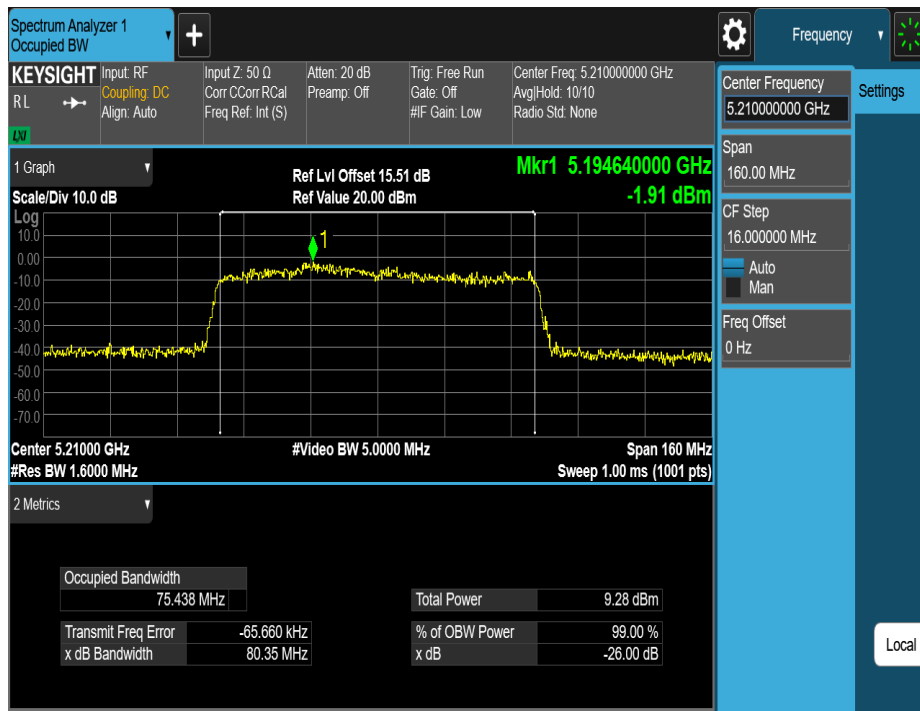
11AC40MIMO_Ant2_5230



11AC80MIMO_Ant1_5210



11AC80MIMO_Ant2_5210



3.4 Conducted Output Power

3.4.1 Limit

FCC Part15, Subpart E (15.407)			
Section	Test Item	Limit	Frequency Range (MHz)
15.407(a)	Conducted Output Power	Master device: 1 Watt (30 dBm) Client device: 250 mW (23.98 dBm)	5150-5250
		250 mW (23.98 dBm)	5250-5350
		250 mW (23.98 dBm)	5470-5725
		1 Watt (30dBm)	5725-5850

Note:

a. For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

b. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10log B, where B is the 26dB Bandwidth in megahertz.

3.4.2 Test Procedure

Test Method	
●Conducted Measurement	○Radiated Measurement
Test Channels	
●Lowest, Middle and Highest Channel	○ Lowest and Highest Channel
Environmental conditions	
●Normal	○Normal and Extreme
Note:●:Test ○:No Test	

a) The EUT was directly connected to the power meter and antenna output port as show in the block diagram below.

b) Test was performed in accordance with method of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

3.4.3 Test Setup



3.4.4 Table of Parameters of Text Software Setting

UNII-1			
Test Software Version	Command		
Frequency (MHz)	5180	5200	5240
IEEE 802.11a	default	default	default
IEEE 802.11n(HT20)	default	default	default
IEEE 802.11ac(VHT20)	default	default	default
Frequency (MHz)	5190	5230	
IEEE 802.11n(HT40)	default	default	
IEEE 802.11ac(VHT40)	default	default	
Frequency (MHz)	5210		
IEEE 802.11ac(VHT80)	default		

3.4.5 The Result

Test Mode	Antenna	Freq(MHz)	Result [dBm] ^{note1}	Limit [dBm]	Verdict
11A-CDD	Ant1	5180	5.13	≤22.48	PASS
	Ant2	5180	4.60	≤22.48	PASS
	total	5180	7.88	≤22.48	PASS
	Ant1	5200	4.97	≤22.48	PASS
	Ant2	5200	4.50	≤22.48	PASS
	total	5200	7.75	≤22.48	PASS
	Ant1	5240	4.82	≤22.48	PASS
	Ant2	5240	4.01	≤22.48	PASS
	total	5240	7.44	≤22.48	PASS
11N20MIMO	Ant1	5180	3.88	≤22.48	PASS
	Ant2	5180	3.64	≤22.48	PASS
	total	5180	6.77	≤22.48	PASS
	Ant1	5200	3.99	≤22.48	PASS
	Ant2	5200	3.25	≤22.48	PASS
	total	5200	6.65	≤22.48	PASS
	Ant1	5240	3.53	≤22.48	PASS
	Ant2	5240	2.95	≤22.48	PASS
	total	5240	6.26	≤22.48	PASS
11N40MIMO	Ant1	5190	4.19	≤22.48	PASS
	Ant2	5190	3.97	≤22.48	PASS
	total	5190	7.09	≤22.48	PASS
	Ant1	5230	4.29	≤22.48	PASS
	Ant2	5230	3.83	≤22.48	PASS
	total	5230	7.08	≤22.48	PASS
11AC20MIMO	Ant1	5180	4.05	≤22.48	PASS
	Ant2	5180	3.66	≤22.48	PASS
	total	5180	6.87	≤22.48	PASS
	Ant1	5200	3.92	≤22.48	PASS
	Ant2	5200	3.45	≤22.48	PASS
	total	5200	6.70	≤22.48	PASS
	Ant1	5240	3.86	≤22.48	PASS
	Ant2	5240	3.00	≤22.48	PASS
	total	5240	6.46	≤22.48	PASS
11AC40MIMO	Ant1	5190	4.31	≤22.48	PASS
	Ant2	5190	4.16	≤22.48	PASS
	total	5190	7.25	≤22.48	PASS
	Ant1	5230	3.94	≤22.48	PASS
	Ant2	5230	3.62	≤22.48	PASS
	total	5230	6.79	≤22.48	PASS

11AC80MIMO	Ant1	5210	4.60	≤22.48	PASS
	Ant2	5210	3.72	≤22.48	PASS
	total	5210	7.19	≤22.48	PASS

Note1: The measured value already includes the cable loss and DT factor.

For MIMO mode

Frequency Band	ANT 1 Antenna Gain (dBi)	ANT 2 Antenna Gain (dBi)	Correlated chains directional gain (dBi)	Conducted Power Limit (dBm)
U-NII-1	4.72	4.26	7.50	22.48
Unequal antenna gains, with equal transmit powers. For antenna gains given by $G_1, G_2, \dots, G_N$ dBi If transmit signals are correlated, then Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{ANT}]$ dBi [Note the “20”s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.] Directional gain = $10 \log[(10^{4.72/20} + 10^{4.26/20})^2 / N_{ANT}]$ dBi=7.50				

3.5 Power Spectral Density

3.5.1 Limit

FCC Part15, Subpart E (15.407)			
Section	Test Item	Limit	Frequency Range (MHz)
15.407(a)	Power Spectral Density	Master device: 17 dBm/MHz Client device: 11 dBm/MHz	5150-5250
		11 dBm/MHz	5250-5350
		11 dBm/MHz	5470-5725
		30 dBm/500 kHz	5725-5850

Note:

- For UNII-3, according to KDB publication 789033 D02 General UNII Test Procedures New Rules v02r01, section II.F.5., it is acceptable to set RBW at 300kHz and VBW at 1500kHz if the spectrum analyzer does not have 500 kHz RBW. Then, add $10 \log (500 \text{ kHz}/300 \text{ kHz})$ to the measured result, i.e. 2.22 dB.
- During the test of U-NII 3 PSD, the measurement result with RBW=300kHz has been added 2.22 dB by compensating offset, offset=cable loss+duty factor+ $10\log(500\text{kHz}/300\text{kHz})$.

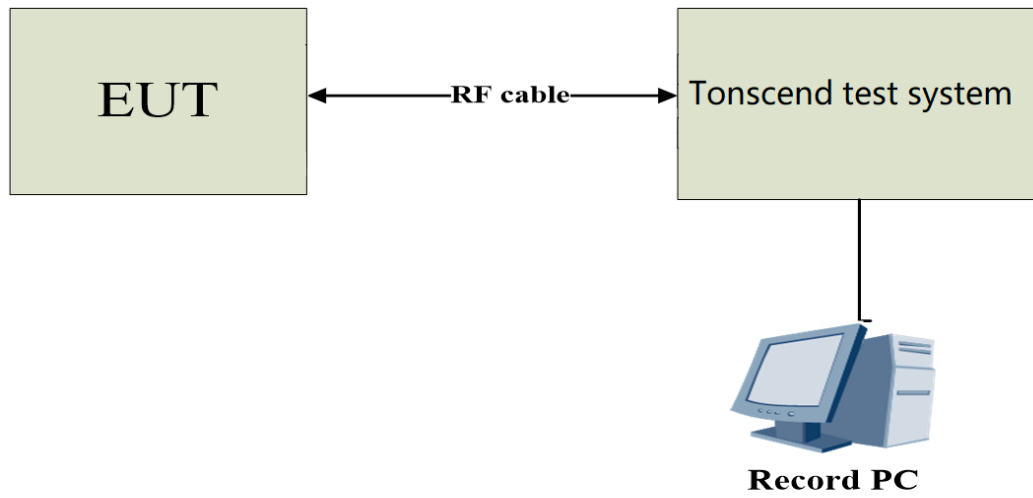
3.5.2 Test Procedure

Test Method	
●Conducted Measurement	○Radiated Measurement
Test Channels	
●Lowest, Middle and Highest Channel	○ Lowest and Highest Channel
Environmental conditions	
●Normal	○Normal and Extreme
Note:●:Test ○:No Test	

a) The EUT was directly connected to the tonscond test system and antenna output port as show in the block diagram below. Spectrum analyser settings as following:

Centre Frequency	The centre frequency of the channel under test
RBW	= 1 MHz (Band1/2/3); = 500kHz (Band4)
VBW	$\geq 3 \times \text{RBW}$
Frequency span	2 x Nominal Channel Bandwidth
Detector Mode	RMS
Trace Mode	Max Hold
Sweep Time	Auto Couple

3.5.3 Test Setup



3.5.4 The Result

Test Mode	Antenna	Freq(MHz)	Result [dBm/MHz] ^{NOTE1}	Limit[dBm/MHz]	Verdict
11A-CDD	Ant1	5180	-4.72	≤9.50	PASS
	Ant2	5180	-5.31	≤9.50	PASS
	total	5180	-1.99	≤9.50	PASS
	Ant1	5200	-4.38	≤9.50	PASS
	Ant2	5200	-5.14	≤9.50	PASS
	total	5200	-1.73	≤9.50	PASS
	Ant1	5240	-5.02	≤9.50	PASS
	Ant2	5240	-5.96	≤9.50	PASS
	total	5240	-2.45	≤9.50	PASS
11N20MIMO	Ant1	5180	-5.7	≤9.50	PASS
	Ant2	5180	-6.26	≤9.50	PASS
	total	5180	-2.96	≤9.50	PASS
	Ant1	5200	-5.41	≤9.50	PASS
	Ant2	5200	-6.29	≤9.50	PASS
	total	5200	-2.82	≤9.50	PASS
	Ant1	5240	-6.41	≤9.50	PASS
	Ant2	5240	-6.91	≤9.50	PASS
	total	5240	-3.64	≤9.50	PASS
11N40MIMO	Ant1	5190	-8.19	≤9.50	PASS
	Ant2	5190	-8.7	≤9.50	PASS
	total	5190	-5.43	≤9.50	PASS
	Ant1	5230	-8.69	≤9.50	PASS
	Ant2	5230	-8.99	≤9.50	PASS
	total	5230	-5.83	≤9.50	PASS
11AC20MIMO	Ant1	5180	-5.45	≤9.50	PASS
	Ant2	5180	-5.94	≤9.50	PASS
	total	5180	-2.68	≤9.50	PASS
	Ant1	5200	-5.56	≤9.50	PASS
	Ant2	5200	-5.96	≤9.50	PASS
	total	5200	-2.75	≤9.50	PASS
	Ant1	5240	-5.62	≤9.50	PASS
	Ant2	5240	-6.62	≤9.50	PASS
	total	5240	-3.08	≤9.50	PASS
11AC40MIMO	Ant1	5190	-7.41	≤9.50	PASS
	Ant2	5190	-8.18	≤9.50	PASS
	total	5190	-4.77	≤9.50	PASS
	Ant1	5230	-9.05	≤9.50	PASS
	Ant2	5230	-9.16	≤9.50	PASS
	total	5230	-6.09	≤9.50	PASS

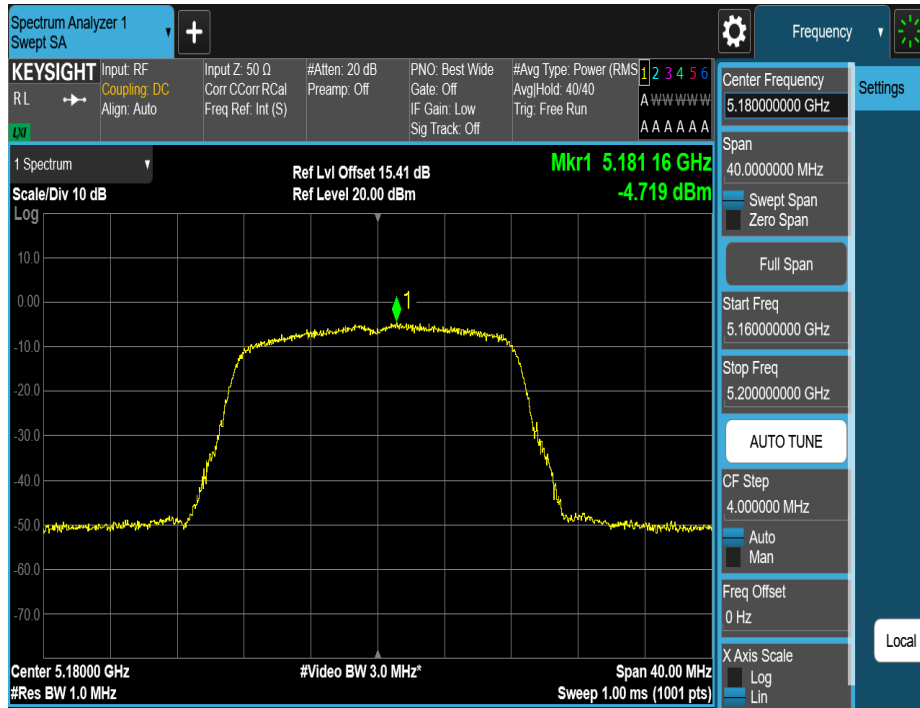
11AC80MIMO	Ant1	5210	-10.85	≤9.50	PASS
	Ant2	5210	-10.55	≤9.50	PASS
	total	5210	-7.69	≤9.50	PASS

Note1: The measured value already includes the cable loss and DT factor.

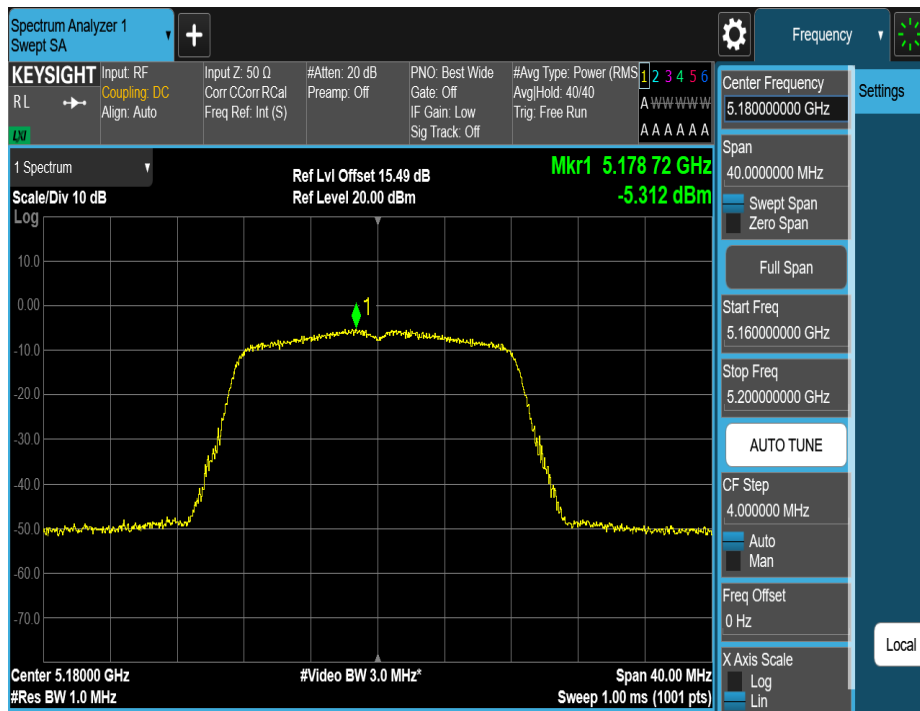
For MIMO mode

Frequency Band	ANT 1 Antenna Gain (dBi)	ANT 2 Antenna Gain (dBi)	Correlated chains directional gain (dBi)	Max. PSD Limit (dBm)
U-NII-1	4.72	4.26	7.50	9.50
Unequal antenna gains, with equal transmit powers. For antenna gains given by $G_1, G_2, \dots, G_N$ dBi If transmit signals are correlated, then Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{ANT}]$ dBi [Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.] Directional gain = $10 \log[(10^{4.72/20} + 10^{4.26/20})^2 / N_{ANT}]$ dBi=7.50				

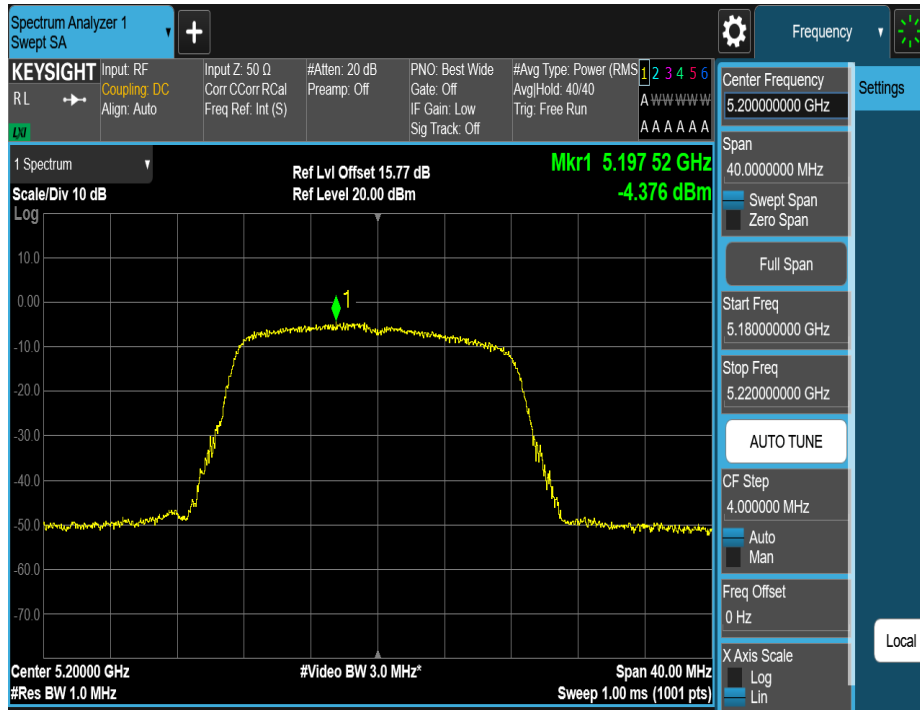
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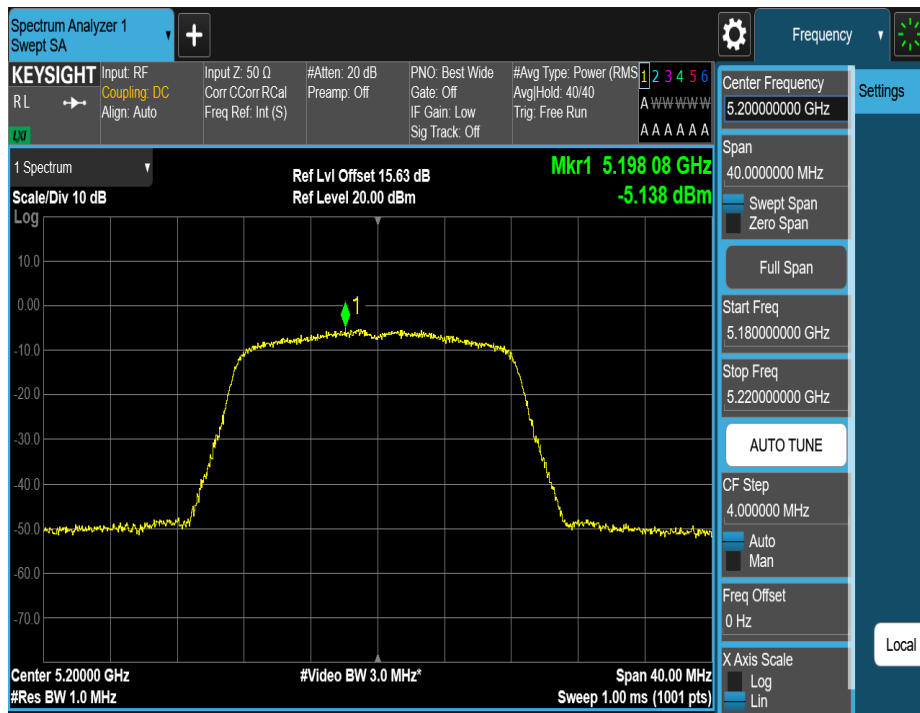
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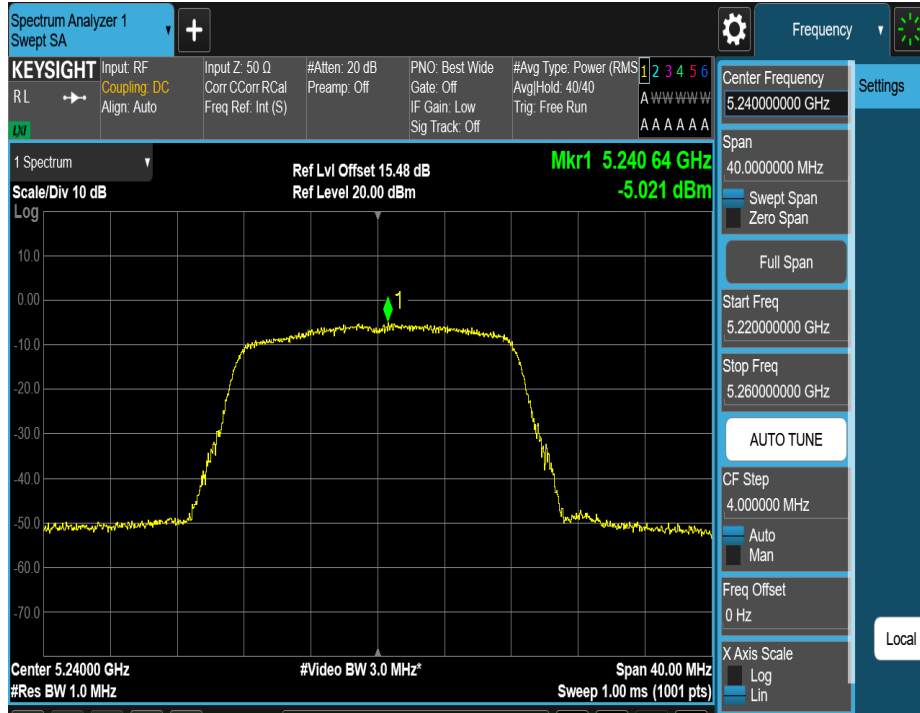
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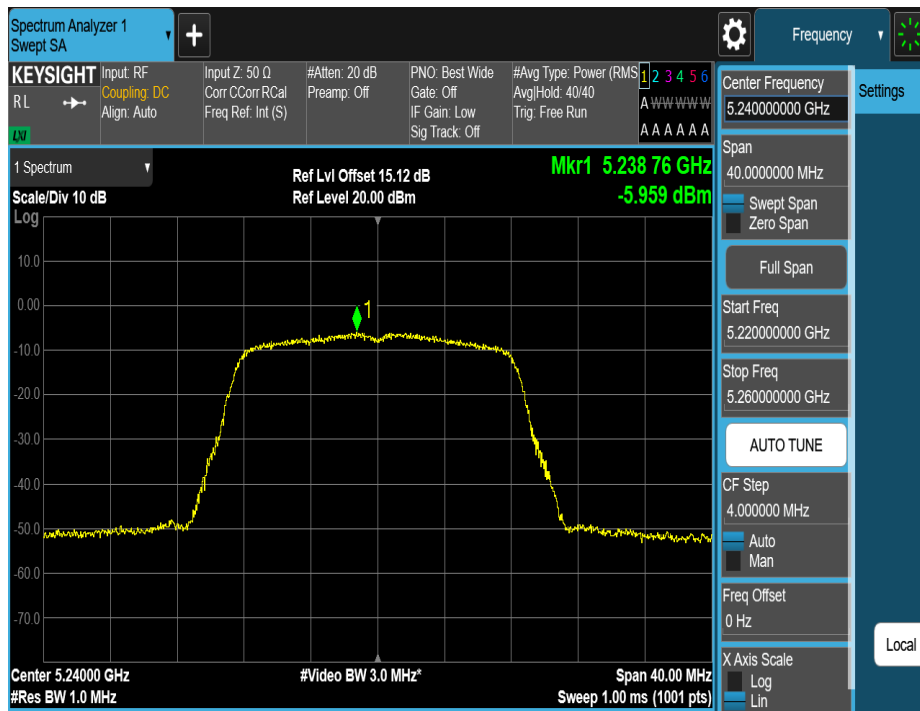
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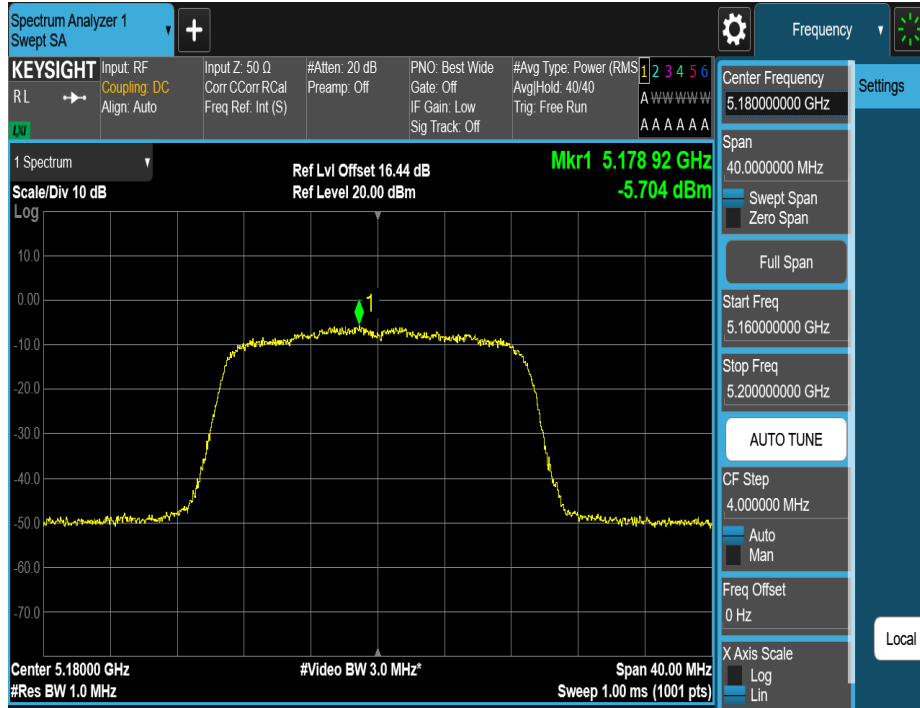
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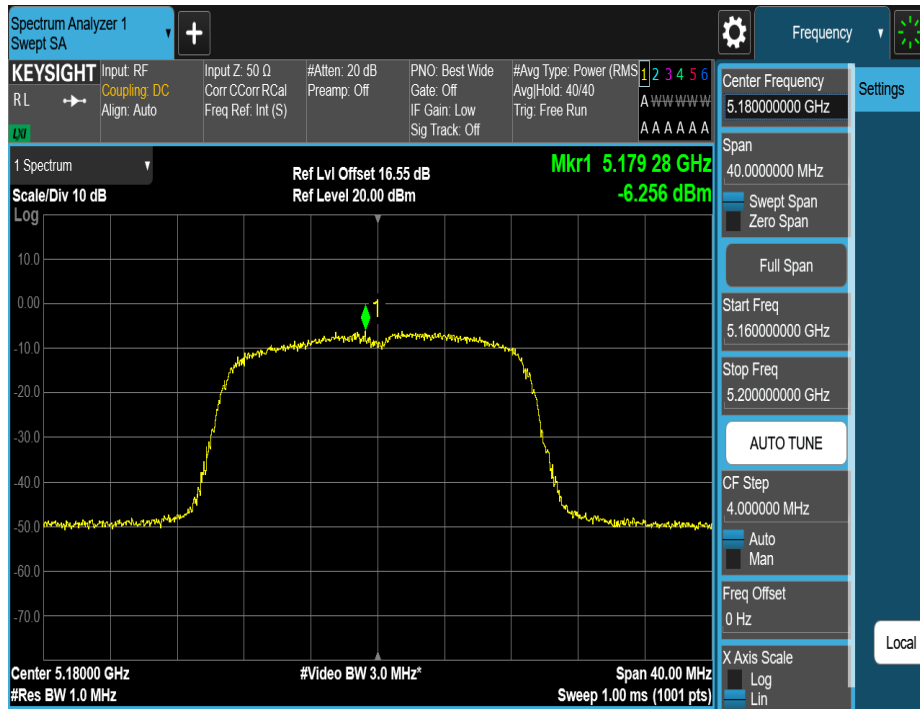
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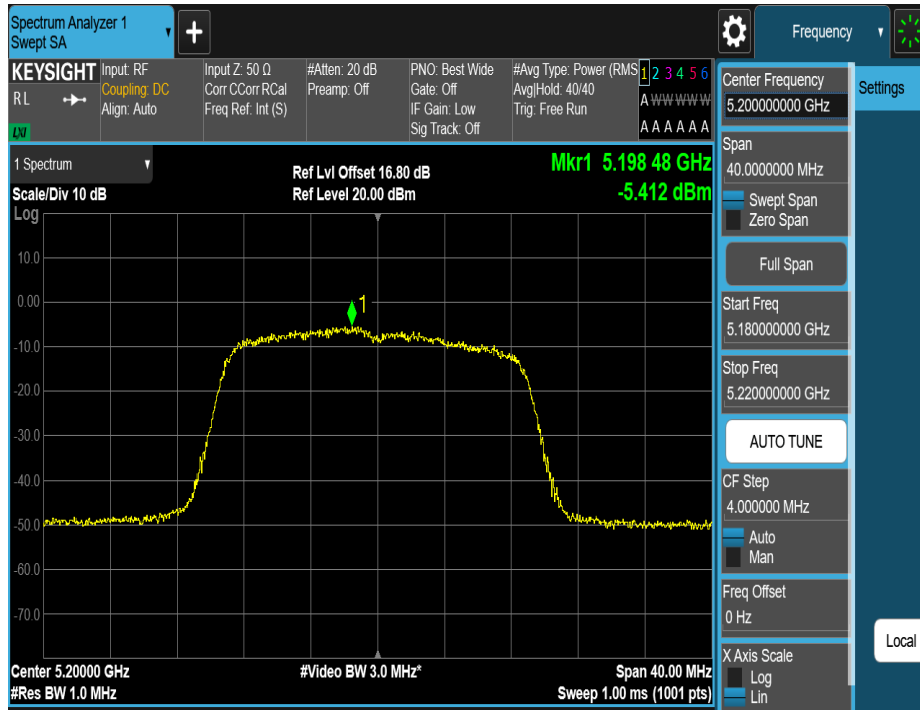
11N20MIMO_Ant1_5180



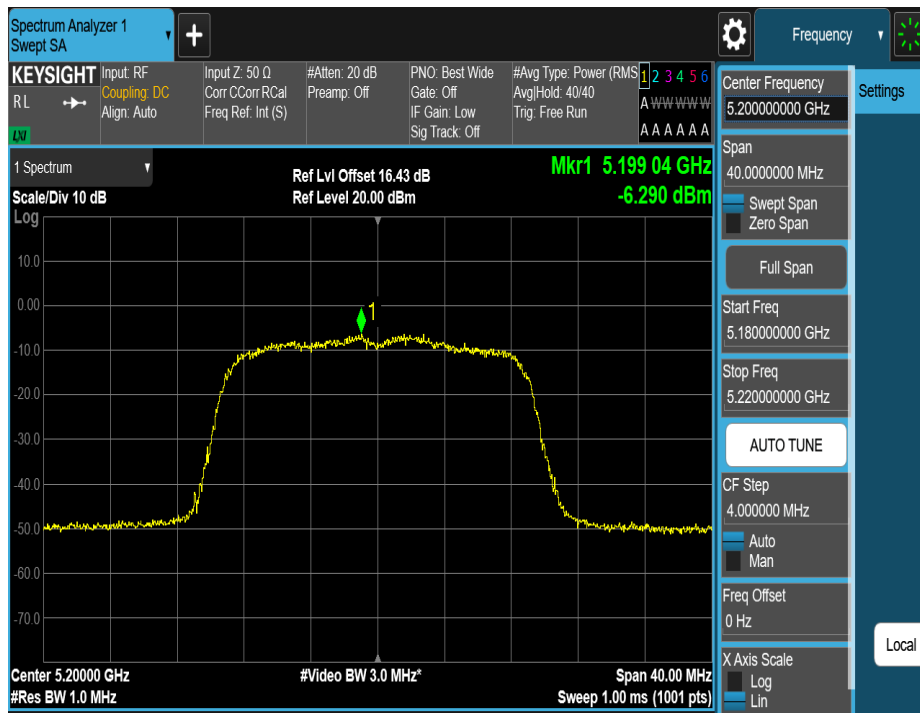
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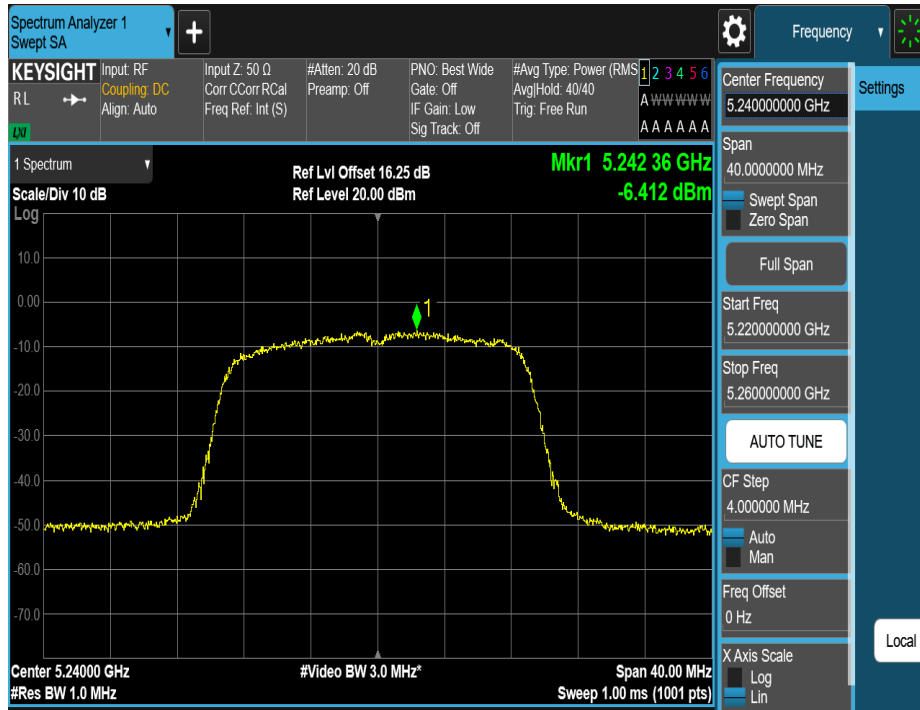
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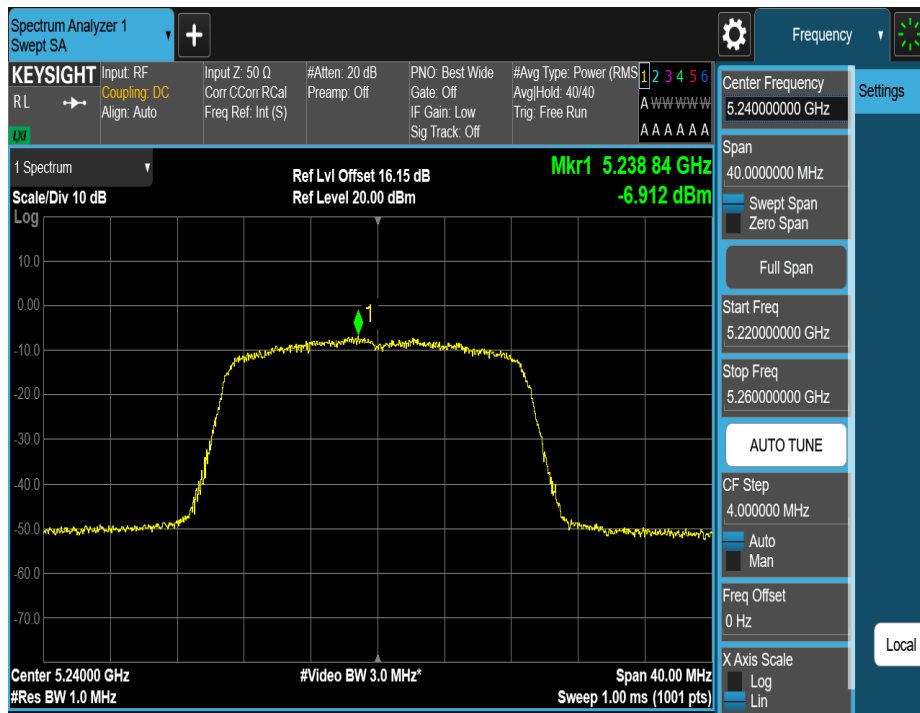
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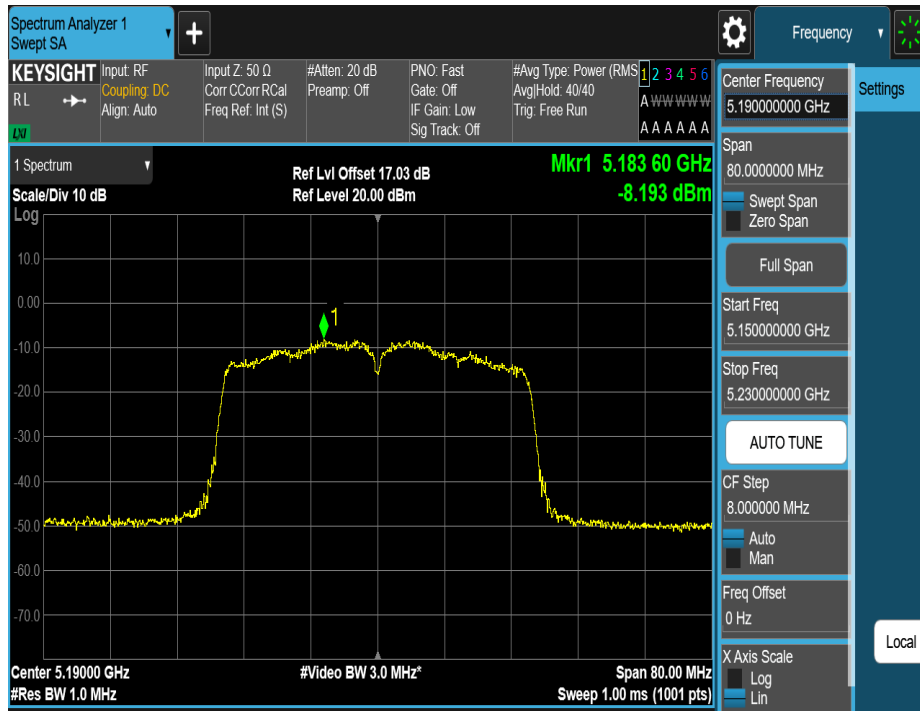
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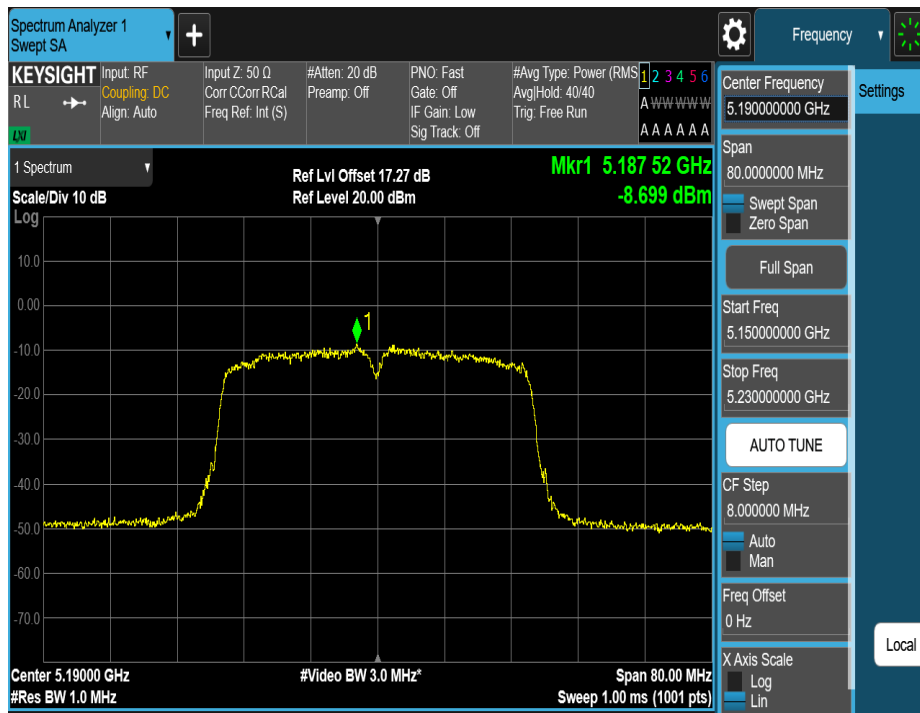
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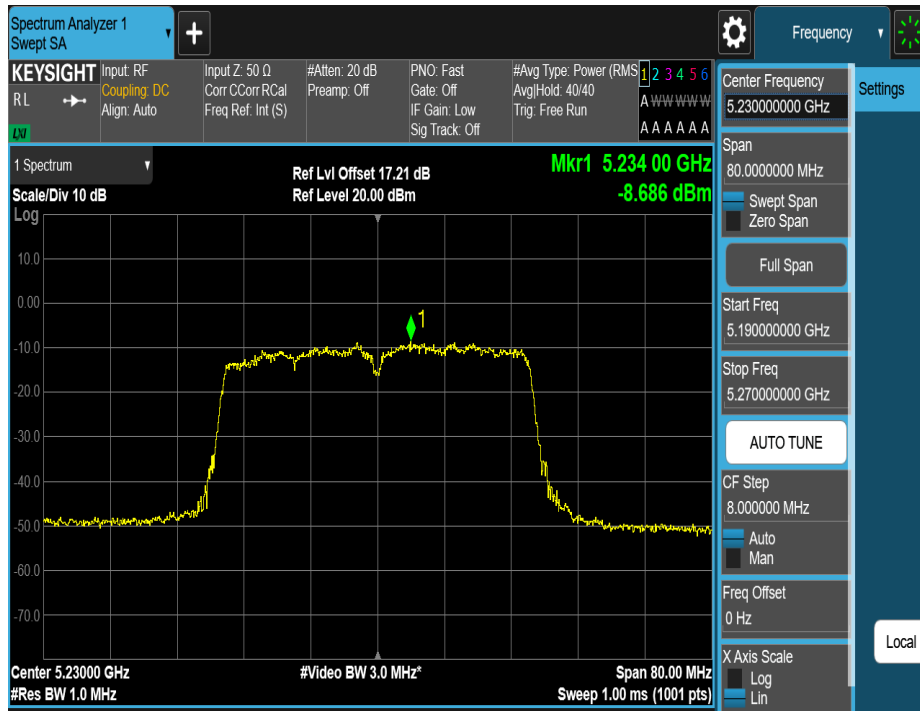
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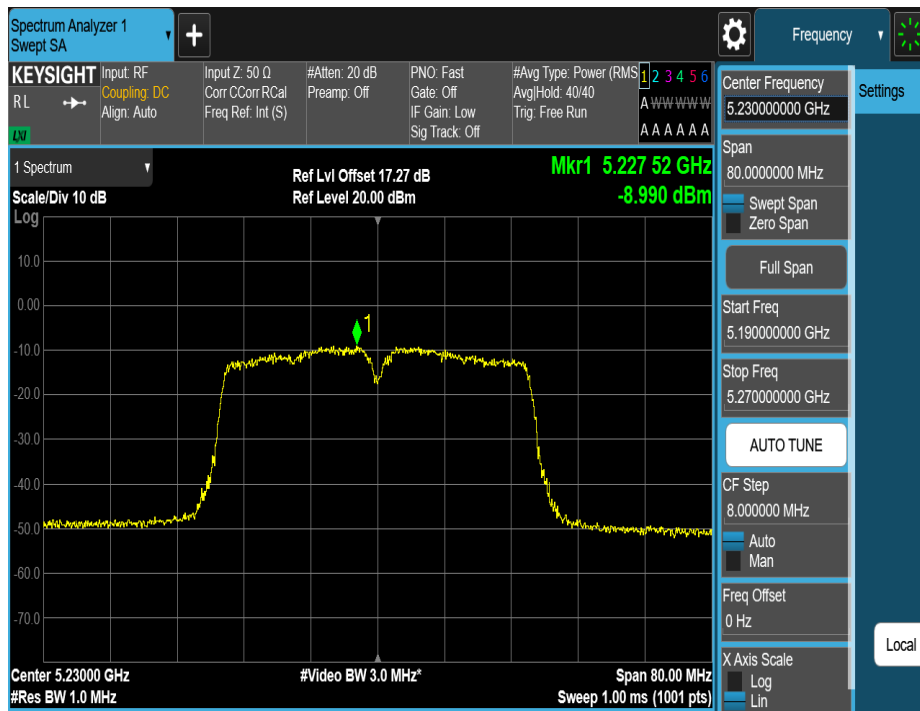
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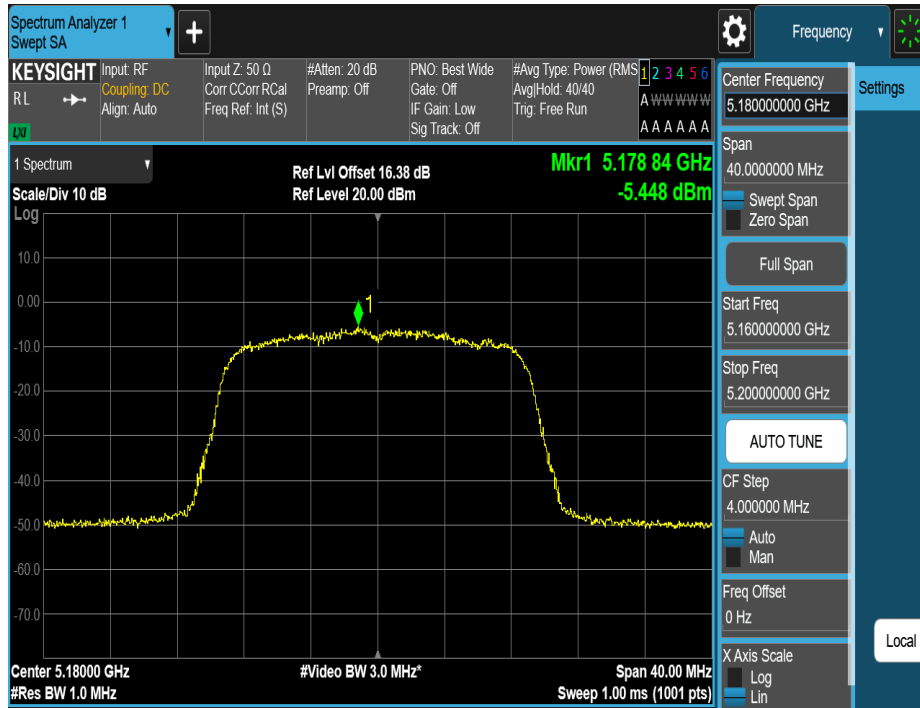
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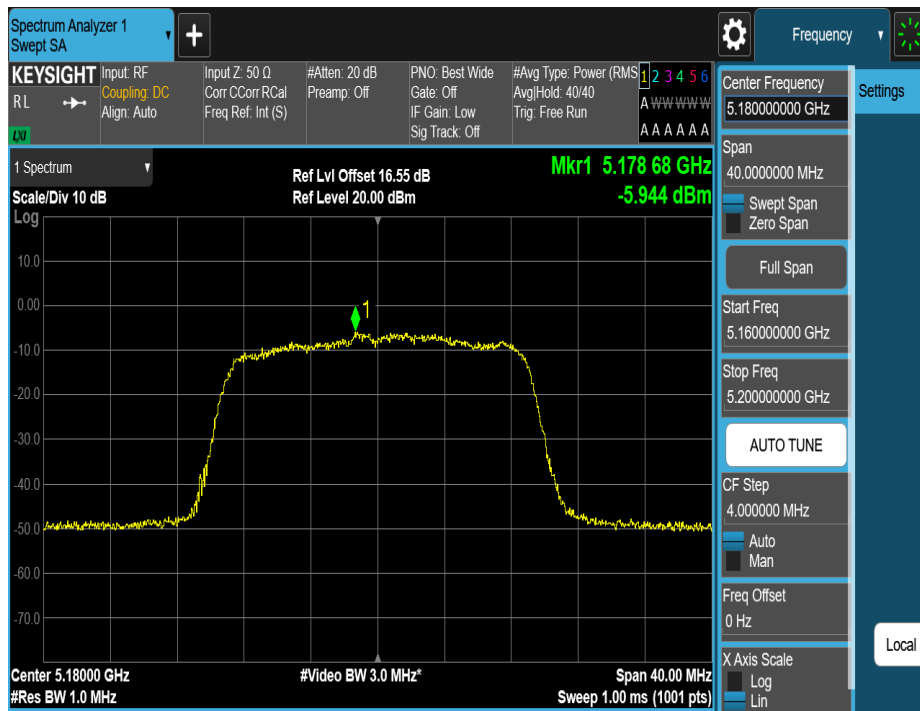
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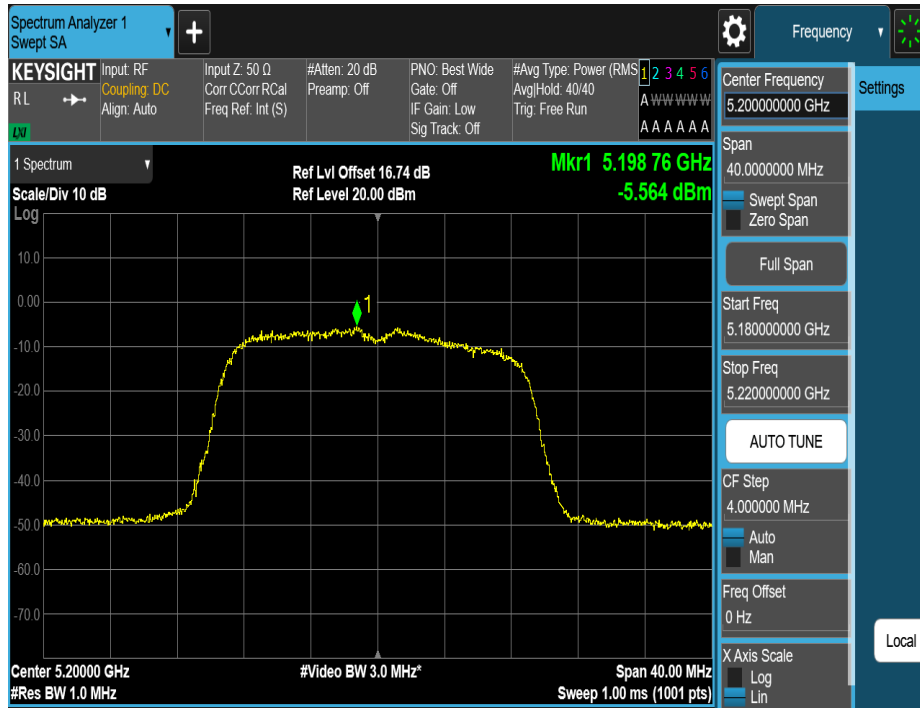
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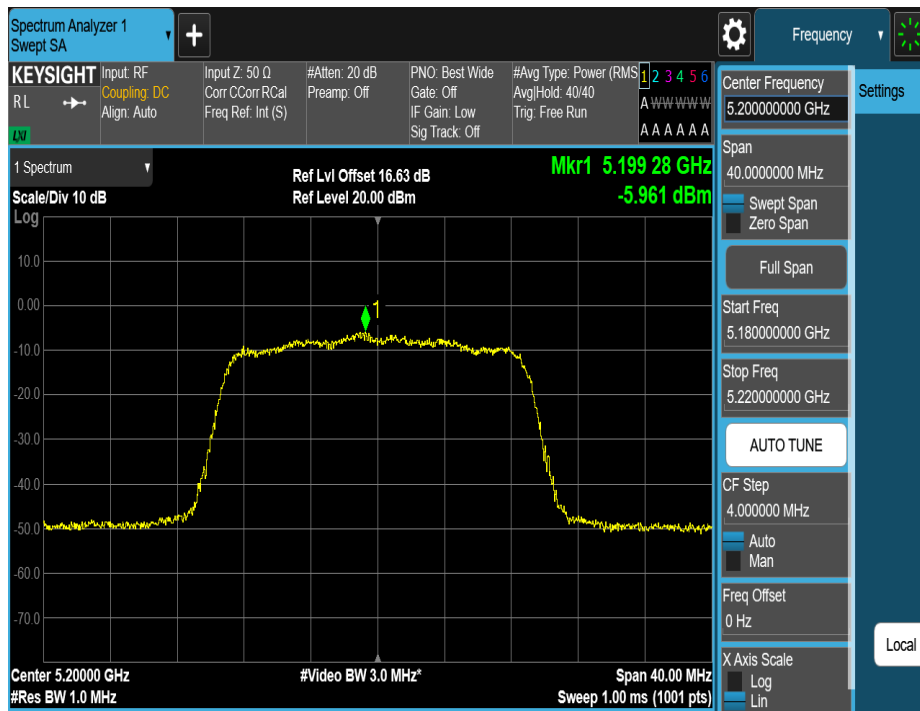
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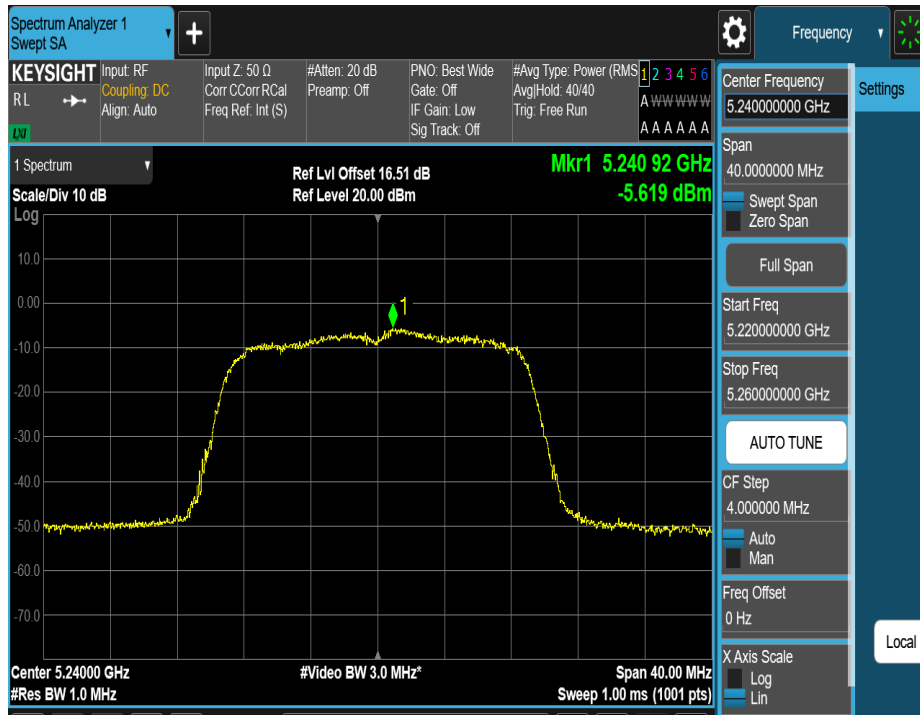
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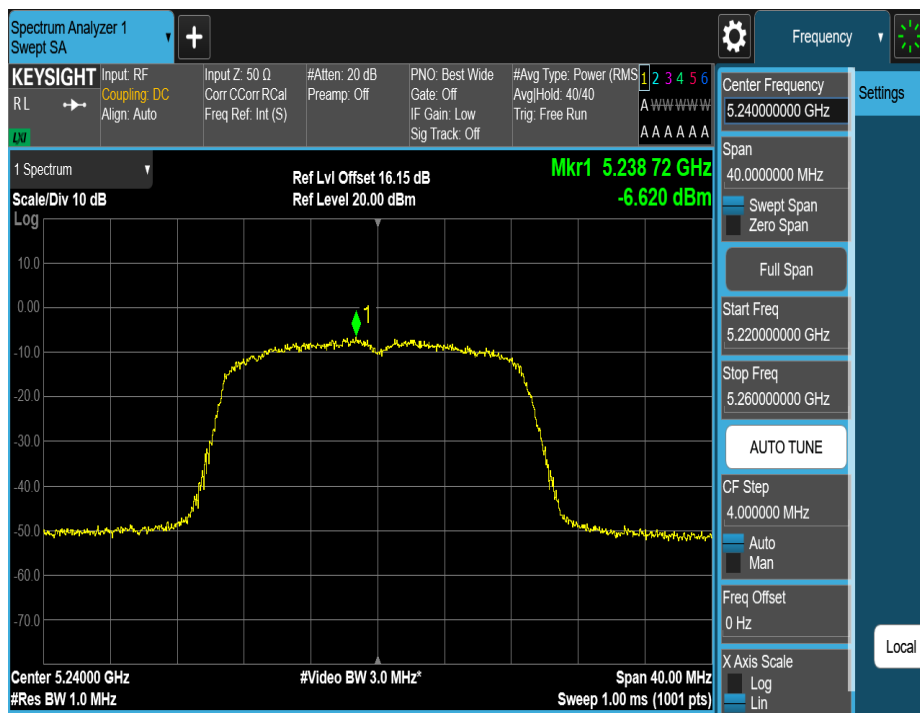
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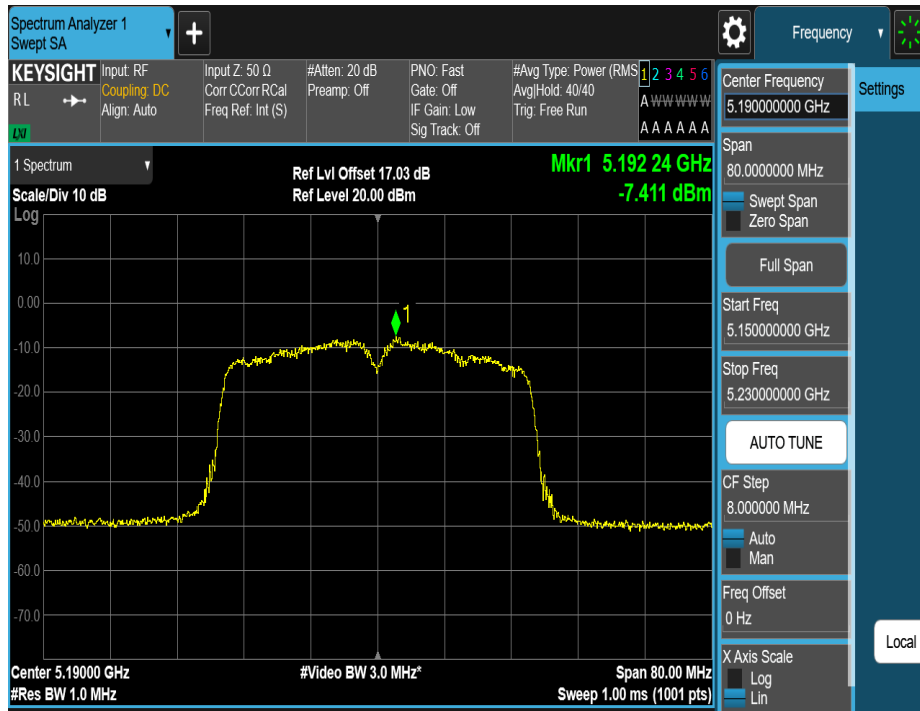
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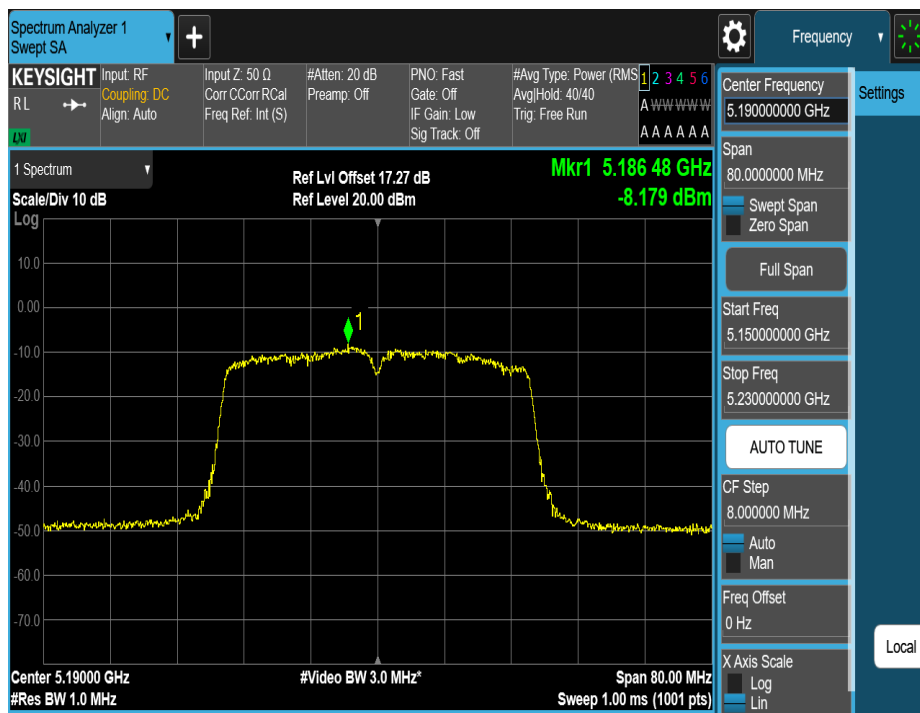
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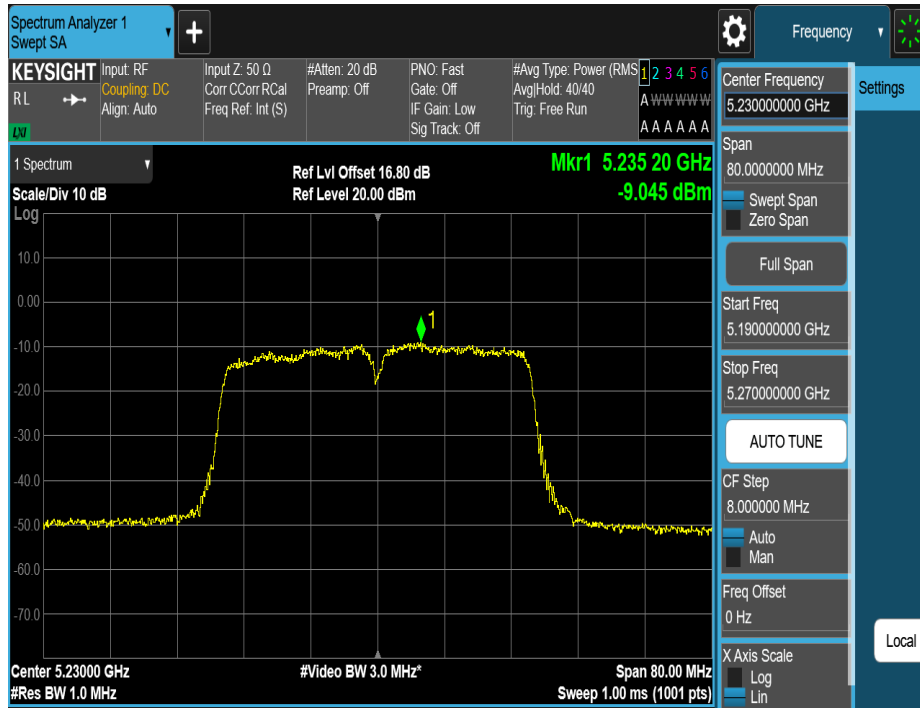
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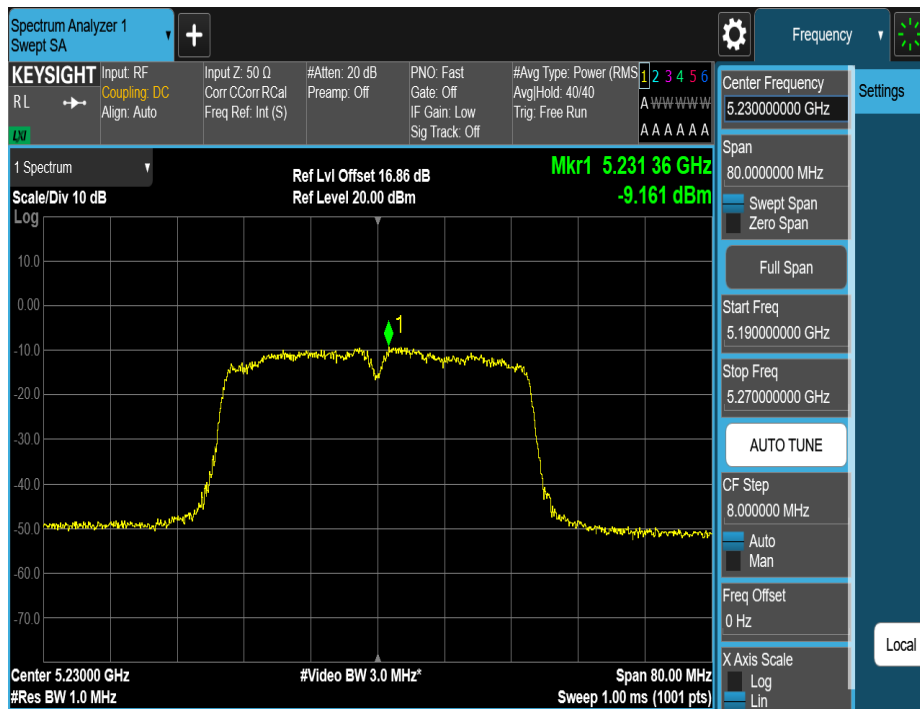
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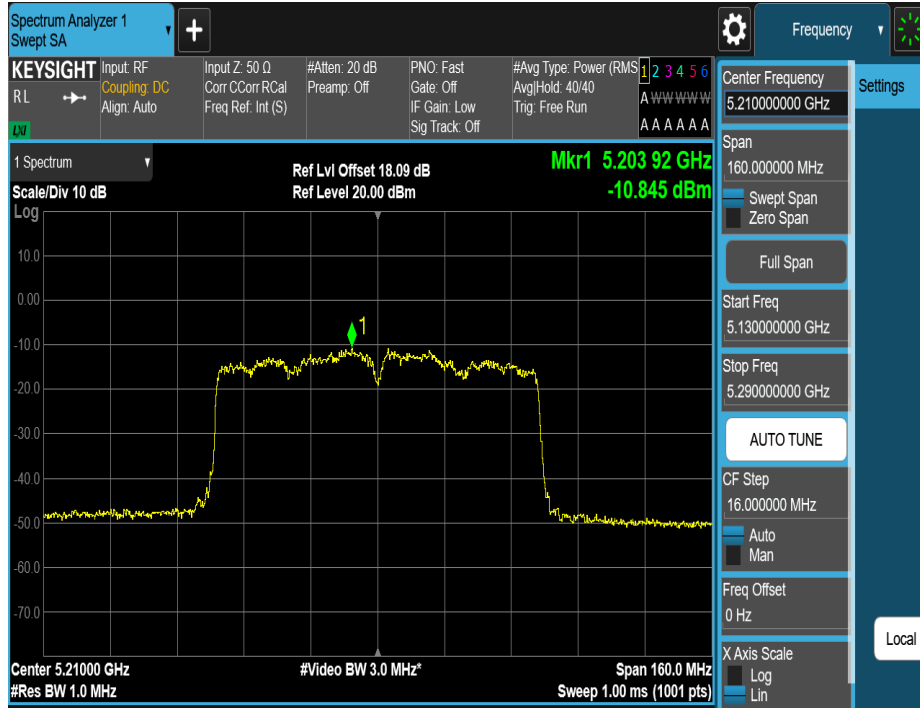
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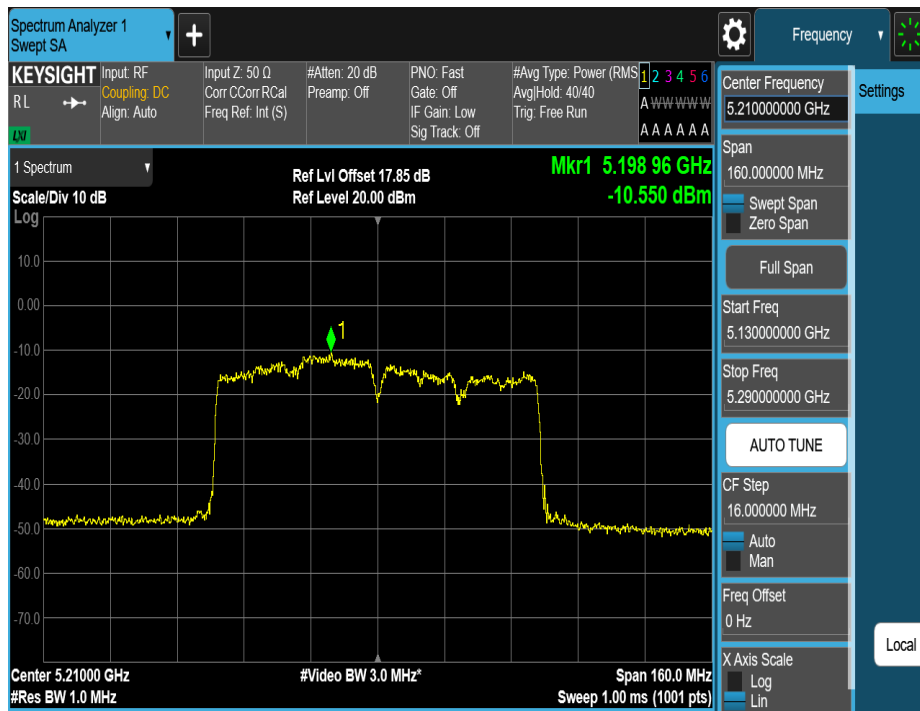
11AC40MIMO_Ant2_5230



11AC80MIMO_Ant1_5210



11AC80MIMO_Ant2_5210



(END OF REPORT)