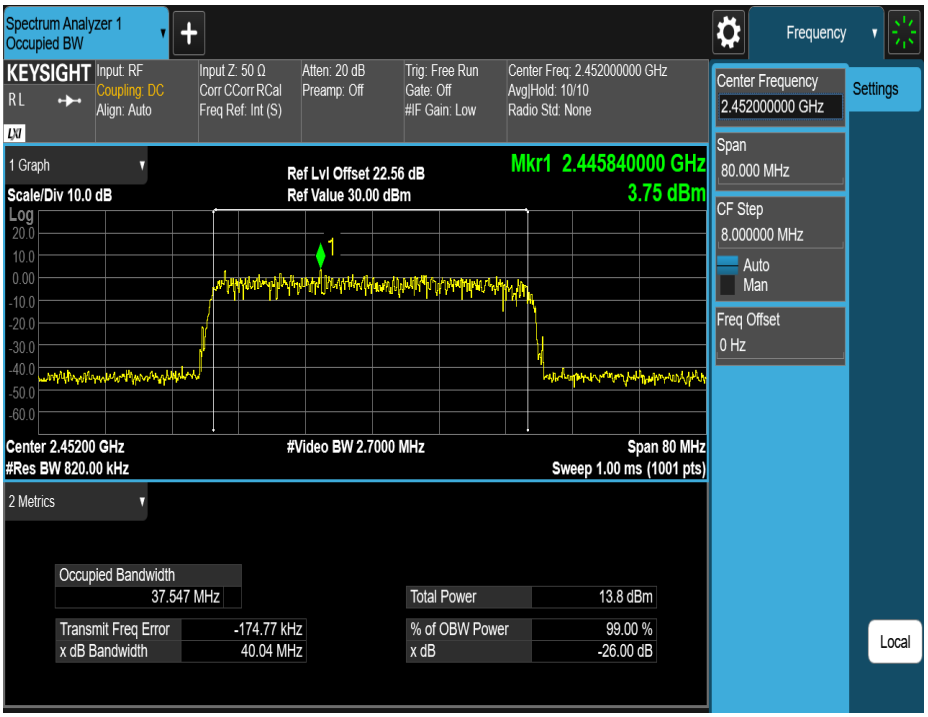
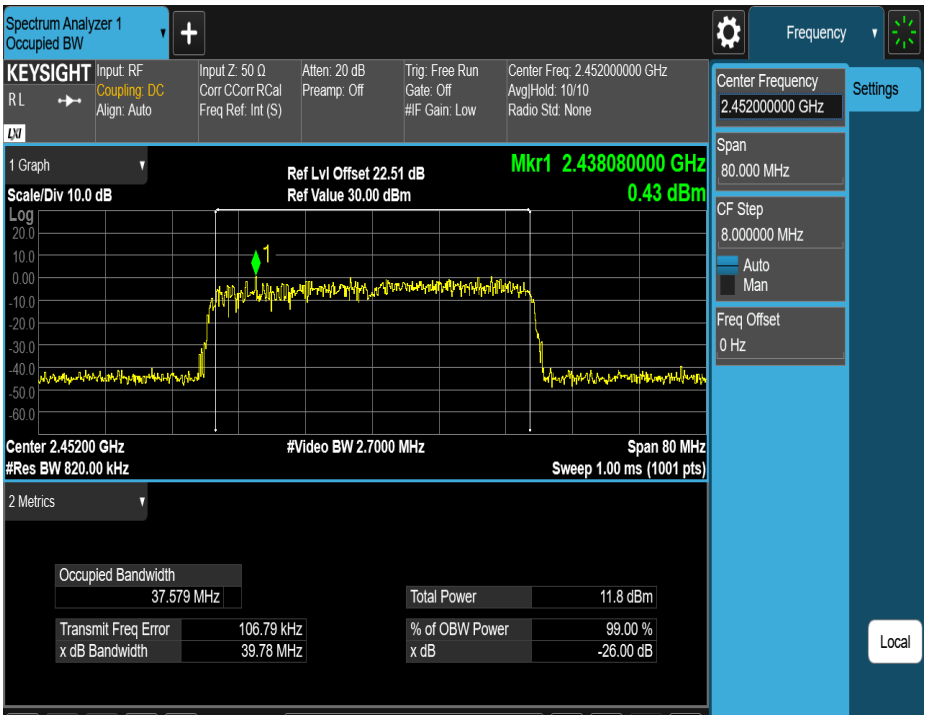
11AX40MIMO_Ant1_2452



11AX40MIMO_Ant2_2452



3.5 Maximum conducted (peak) output power

3.5.1 Limit

For systems using digital modulation in the 2400~2483.5MHz, The Maximum output Power shall not exceed 1W(30dBm)

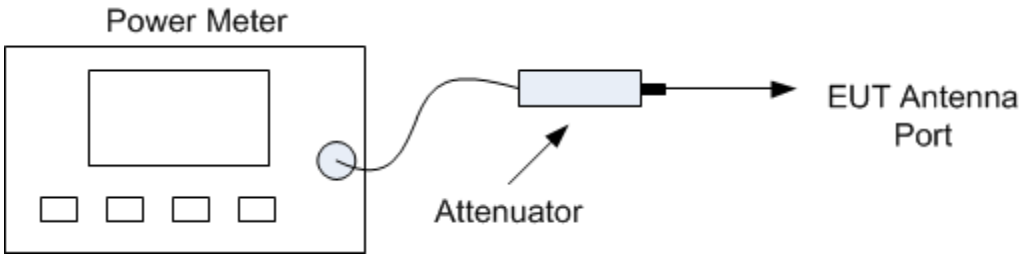
3.5.2 Test Procedure

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 power meter and antenna output port as show in the block diagram below.

b) The maximum output power was performed in accordance with method 11.9.2.3 of ANSI C63.10.

3.5.3 Test Setup



3.5.4 Table of Parameters of Text Software Setting

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

For Power Setting value

Test Software Version	Command					
Frequency (MHz)	2412		2437		2462	
Antenna	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2
IEEE 802.11b	17	17	17	17	17	17
IEEE 802.11g	17	17	17	17	17	17
Frequency (MHz)	2412		2437		2462	
IEEE 802.11n (20MHz)	14		14		14	
IEEE 802.11ax (20MHz)	14		14		14	
Frequency (MHz)	2422		2437		2452	
IEEE 802.11n (40MHz)	14		14		14	
IEEE 802.11ax(40MHz)	14		14		14	

3.5.5 The Result

Test Mode	Antenna	Frequency[MHz]	Peak power[dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	18.44	≤30.00	PASS
	Ant2	2412	17.11	≤30.00	PASS
	Ant1	2437	18.24	≤30.00	PASS
	Ant2	2437	17.09	≤30.00	PASS
	Ant1	2462	18.50	≤30.00	PASS
	Ant2	2462	16.86	≤30.00	PASS
11G	Ant1	2412	18.61	≤30.00	PASS
	Ant2	2412	16.63	≤30.00	PASS
	Ant1	2437	18.29	≤30.00	PASS
	Ant2	2437	16.86	≤30.00	PASS
	Ant1	2462	18.15	≤30.00	PASS
	Ant2	2462	16.56	≤30.00	PASS
11N20MIMO	Ant1	2412	16.45	≤27.71	PASS
	Ant2	2412	14.93	≤27.71	PASS
	total	2412	18.77	≤27.71	PASS
	Ant1	2437	16.60	≤27.71	PASS
	Ant2	2437	14.50	≤27.71	PASS
	total	2437	18.69	≤27.71	PASS
	Ant1	2462	16.37	≤27.71	PASS
	Ant2	2462	14.31	≤27.71	PASS
	total	2462	18.47	≤27.71	PASS
11N40MIMO	Ant1	2422	16.08	≤27.71	PASS
	Ant2	2422	14.12	≤27.71	PASS
	total	2422	18.22	≤27.71	PASS
	Ant1	2437	15.68	≤27.71	PASS
	Ant2	2437	14.02	≤27.71	PASS
	total	2437	17.94	≤27.71	PASS
	Ant1	2452	15.69	≤27.71	PASS
	Ant2	2452	13.93	≤27.71	PASS
	total	2452	17.91	≤27.71	PASS
11AX20MIMO	Ant1	2412	16.72	≤27.71	PASS
	Ant2	2412	14.75	≤27.71	PASS
	total	2412	**18.86**	≤27.71	PASS
	Ant1	2437	15.57	≤27.71	PASS
	Ant2	2437	14.84	≤27.71	PASS
	total	2437	18.23	≤27.71	PASS
	Ant1	2462	16.09	≤27.71	PASS
	Ant2	2462	14.69	≤27.71	PASS

	total	2462	18.46	≤27.71	PASS
11AX40MIMO	Ant1	2422	16.08	≤27.71	PASS
	Ant2	2422	13.71	≤27.71	PASS
	total	2422	18.07	≤27.71	PASS
	Ant1	2437	15.43	≤27.71	PASS
	Ant2	2437	14.12	≤27.71	PASS
	total	2437	17.83	≤27.71	PASS
	Ant1	2452	15.58	≤27.71	PASS
	Ant2	2452	13.76	≤27.71	PASS
	total	2452	17.77	≤27.71	PASS

Mode	ANT 1 Antenna Gain (dBi)	ANT 2 Antenna Gain (dBi)	Correlated chains directional gain (dBi)	Peak Power Limit (dBm)
EUT1, EUT2, EUT3, EUT4, EUT5, EUT6 and EUT7	5.25	5.32	8.29	27.71
EUT8 and EUT9	4.32	4.32	7.33	28.67

Unequal antenna gains, with equal transmit powers. For antenna gains given by G_1, G_2, …, G_N dBi

If transmit signals are correlated, then Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}]$ 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.]

EUT1/ EUT2/EUT3/EUT4/EUT5: Directional gain = $10\log[(10^{5.25/20} + 10^{5.32/20})^2/N_{ANT}]$ dBi=8.29

EUT6/EUT7: Directional gain = $10\log[(10^{4.32/20} + 10^{4.32/20})^2/N_{ANT}]$ dBi=7.33

3.6 Power Spectral Density

3.6.1 Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmitting.

3.6.2 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 tonscend test system and antenna output port as show in the block diagram below.

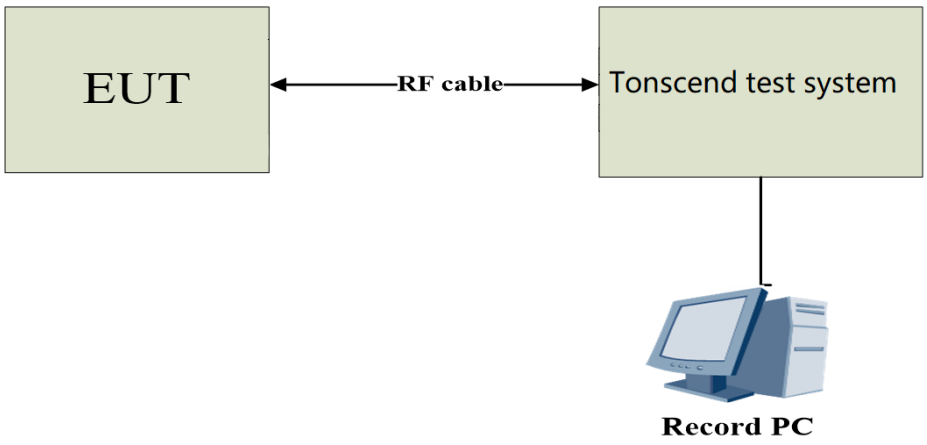
b) the spectrum analyser is set as follow:

RBW	3 kHz
VBW	10 kHz
Detector Mode	Peak
Trace Mode	Max Hold
Sweep Time	Auto

c) Wait for the trace to stabilize. Use the peak marker function to determine the maximum amplitude level within the RBW.

d) The value defined in step b shall be compared to the limits and be recorded .

3.6.3 Test Setup



3.6.4 The Result

Test Mode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-7.89	≤8.00	PASS
	Ant2	2412	-8.62	≤8.00	PASS
	Ant1	2437	-8.26	≤8.00	PASS
	Ant2	2437	-9.57	≤8.00	PASS
	Ant1	2462	-7.84	≤8.00	PASS
	Ant2	2462	-10.02	≤8.00	PASS
11G	Ant1	2412	-13.96	≤8.00	PASS
	Ant2	2412	-16.1	≤8.00	PASS
	Ant1	2437	-15.58	≤8.00	PASS
	Ant2	2437	-17.47	≤8.00	PASS
	Ant1	2462	-15.72	≤8.00	PASS
	Ant2	2462	-18.74	≤8.00	PASS
11N20MIMO	Ant1	2412	-17.46	≤5.71	PASS
	Ant2	2412	-18.67	≤5.71	PASS
	total	2412	-15.01	≤5.71	PASS
	Ant1	2437	-17.95	≤5.71	PASS
	Ant2	2437	-18.63	≤5.71	PASS
	total	2437	-15.27	≤5.71	PASS
	Ant1	2462	-17.1	≤5.71	PASS
	Ant2	2462	-18.88	≤5.71	PASS
	total	2462	-14.89	≤5.71	PASS
11N40MIMO	Ant1	2422	-18.98	≤5.71	PASS
	Ant2	2422	-21.53	≤5.71	PASS
	total	2422	-17.06	≤5.71	PASS
	Ant1	2437	-20.32	≤5.71	PASS
	Ant2	2437	-23.01	≤5.71	PASS
	total	2437	-18.45	≤5.71	PASS
	Ant1	2452	-19.88	≤5.71	PASS
	Ant2	2452	-23.38	≤5.71	PASS
	total	2452	-18.28	≤5.71	PASS
11AX20MIMO	Ant1	2412	-16.35	≤5.71	PASS
	Ant2	2412	-18.22	≤5.71	PASS
	total	2412	-14.17	≤5.71	PASS
	Ant1	2437	-17.8	≤5.71	PASS
	Ant2	2437	-20.07	≤5.71	PASS
	total	2437	-15.78	≤5.71	PASS
	Ant1	2462	-18.35	≤5.71	PASS
	Ant2	2462	-20.22	≤5.71	PASS
	total	2462	-16.17	≤5.71	PASS

11AX40MIMO	Ant1	2422	-19.34	≤5.71	PASS
	Ant2	2422	-21.33	≤5.71	PASS
	total	2422	-17.21	≤5.71	PASS
	Ant1	2437	-20.12	≤5.71	PASS
	Ant2	2437	-21.42	≤5.71	PASS
	total	2437	-17.71	≤5.71	PASS
	Ant1	2452	-19.9	≤5.71	PASS
	Ant2	2452	-22.44	≤5.71	PASS
	total	2452	-17.98	≤5.71	PASS

Mode	ANT 1 Antenna Gain (dBi)	ANT 2 Antenna Gain (dBi)	Correlated chains directional gain (dBi)	Peak PSD Limit (dBm)
EUT1, EUT2, EUT3, EUT4 and EUT5	5.25	5.32	8.29	5.71
EUT6 and EUT7	4.32	4.32	7.33	6.67
Unequal antenna gains, with equal transmit powers. For antenna gains given by G_1, G_2, …, G_N dBi If transmit signals are correlated, then Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}$] 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.]				
EUT1/ EUT2/EUT3/EUT4/EUT5: Directional gain = 10log[$(10^{5.25/20} + 10^{5.32/20})^2/N_{ANT}$] dBi=8.29 EUT6/EUT7: Directional gain = 10log[$(10^{4.32/20} + 10^{4.32/20})^2/N_{ANT}$] dBi=7.33				

11B_Ant1_2412

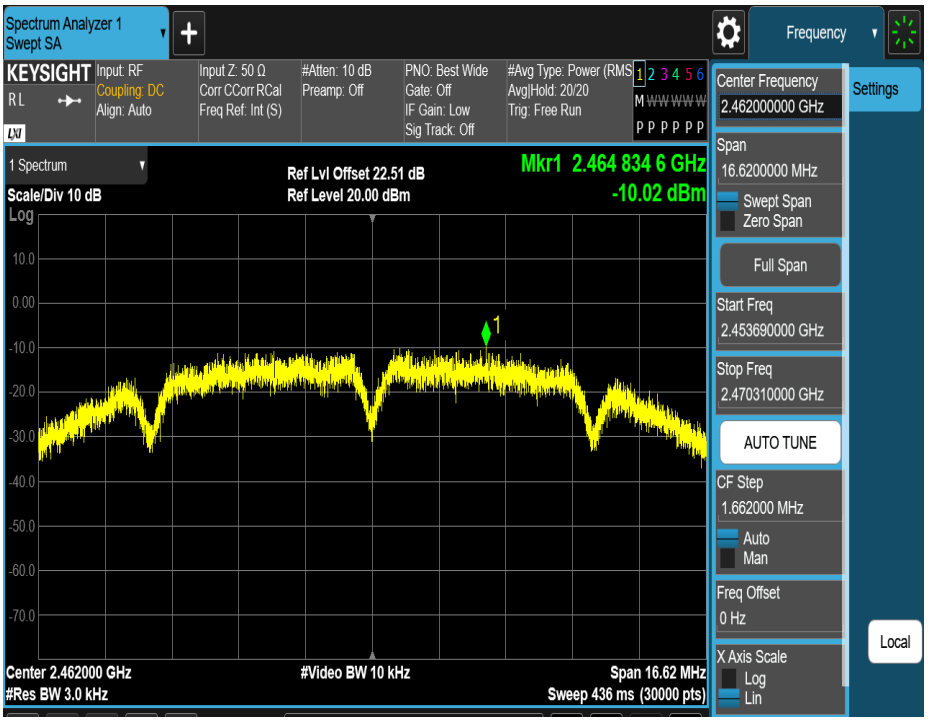
11B_Ant2_2412

11B_Ant1_2437

11B_Ant2_2437

11B_Ant1_2462

11B_Ant2_2462



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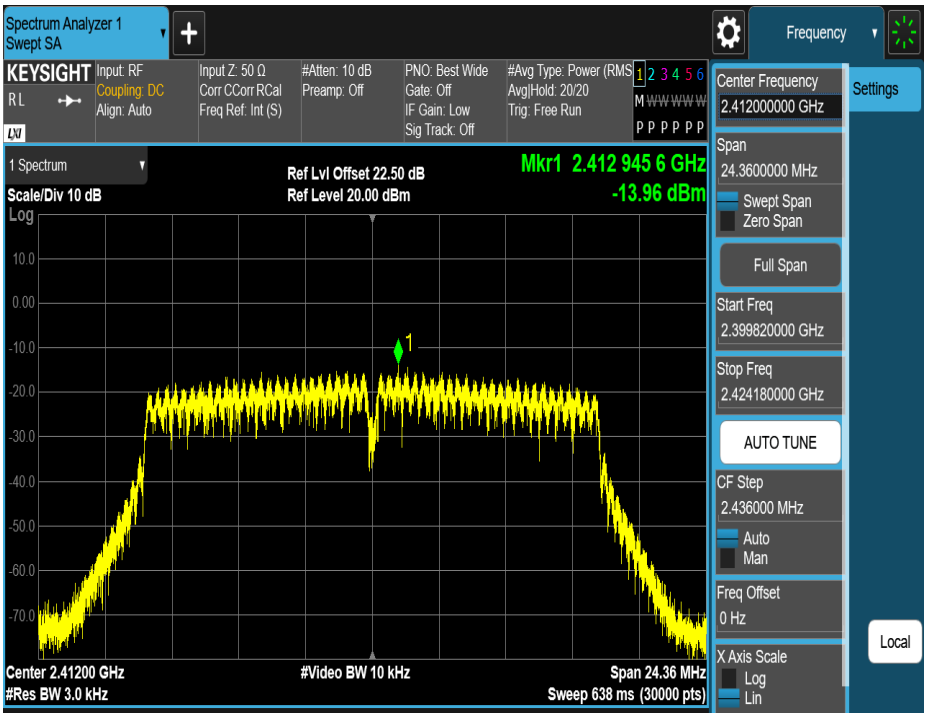

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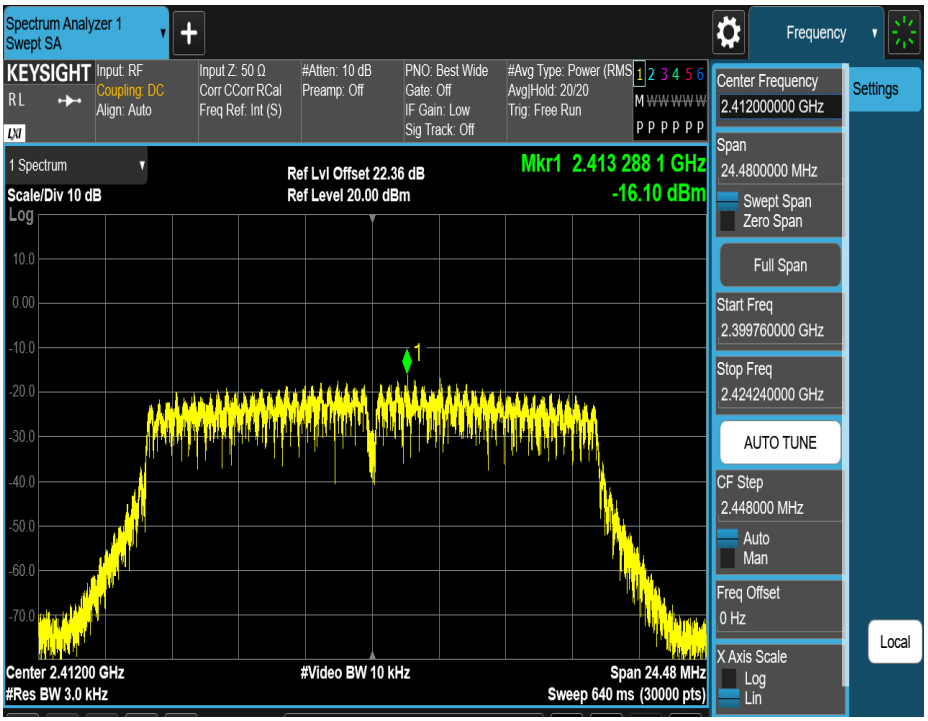

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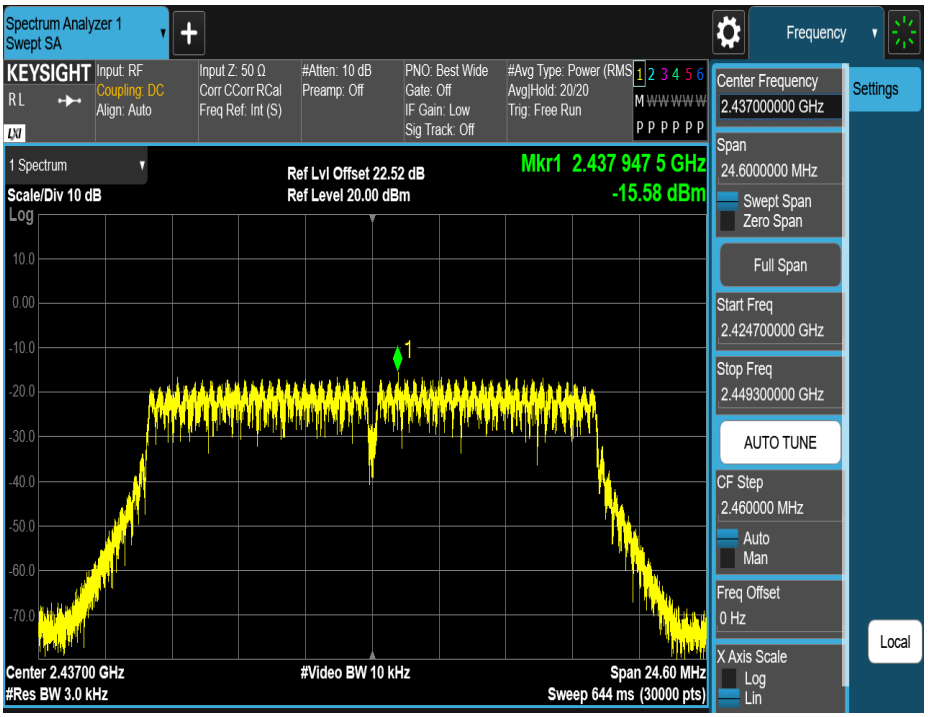

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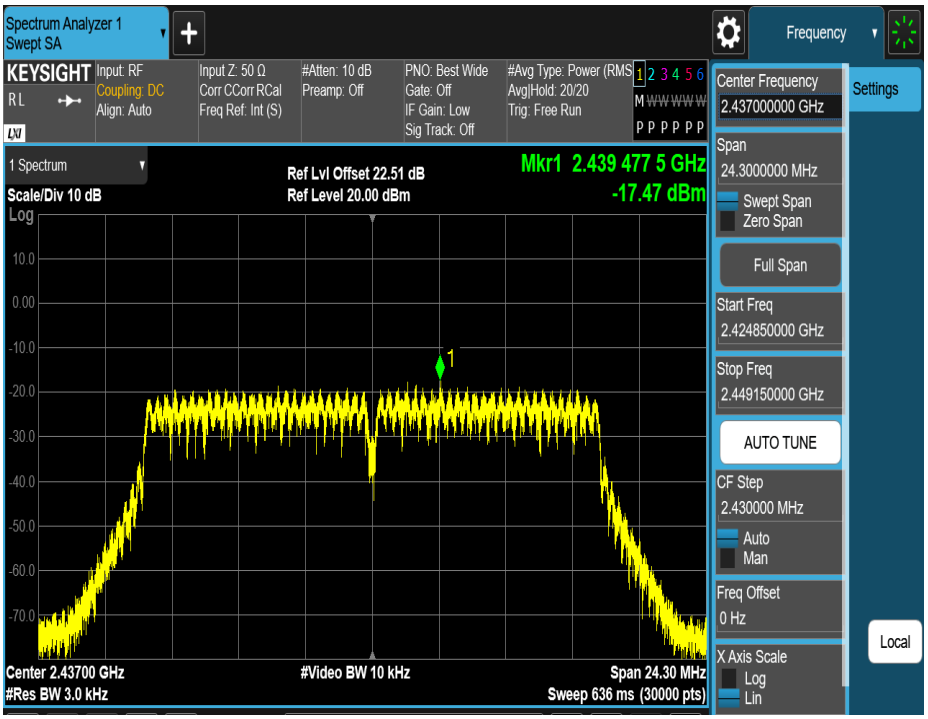

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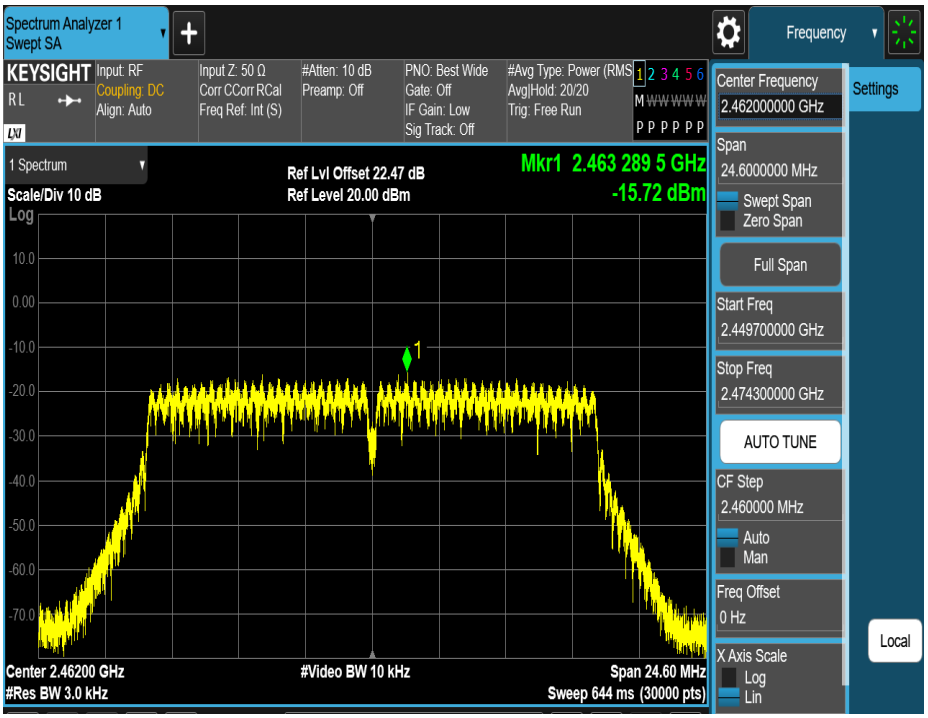

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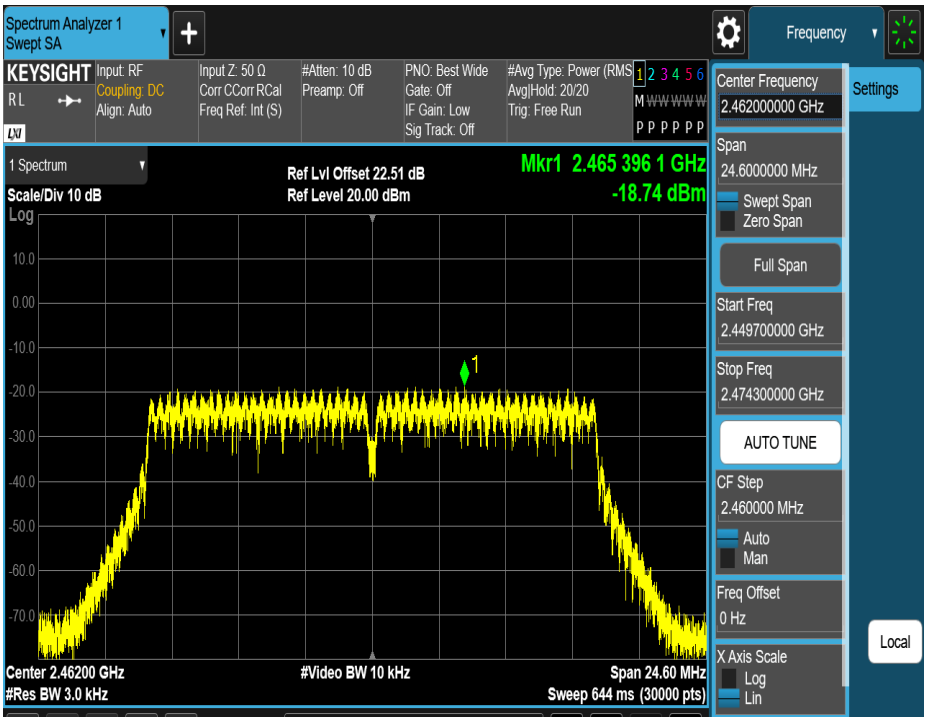

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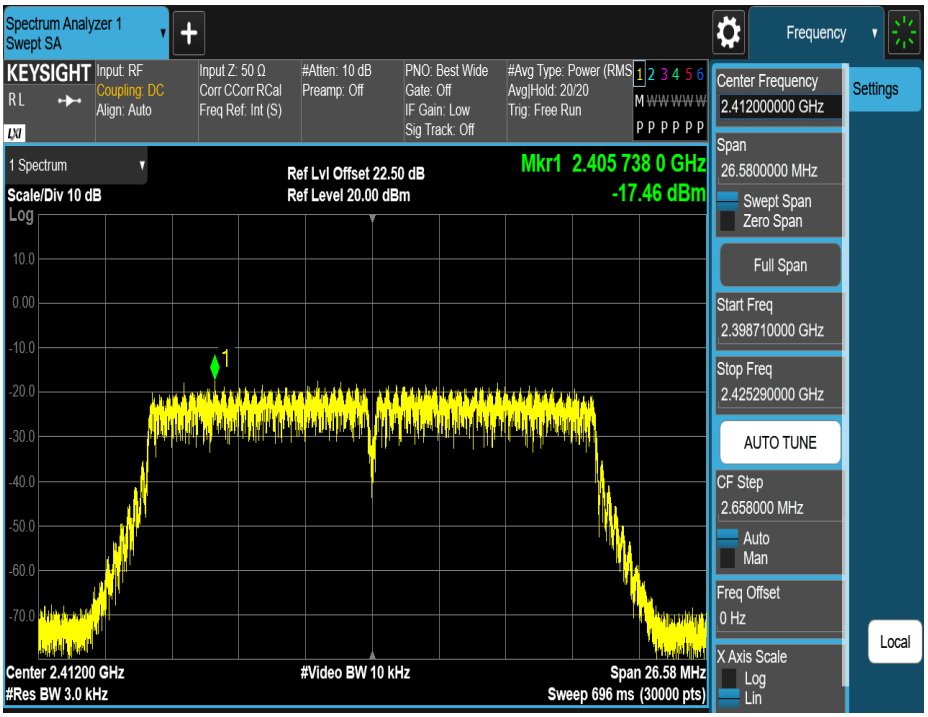

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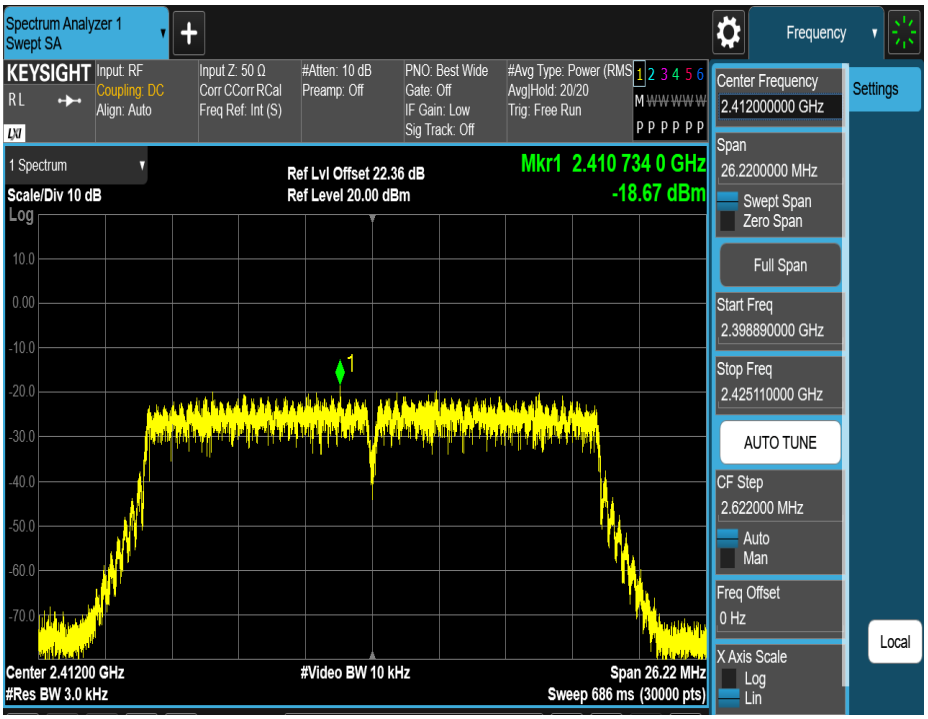

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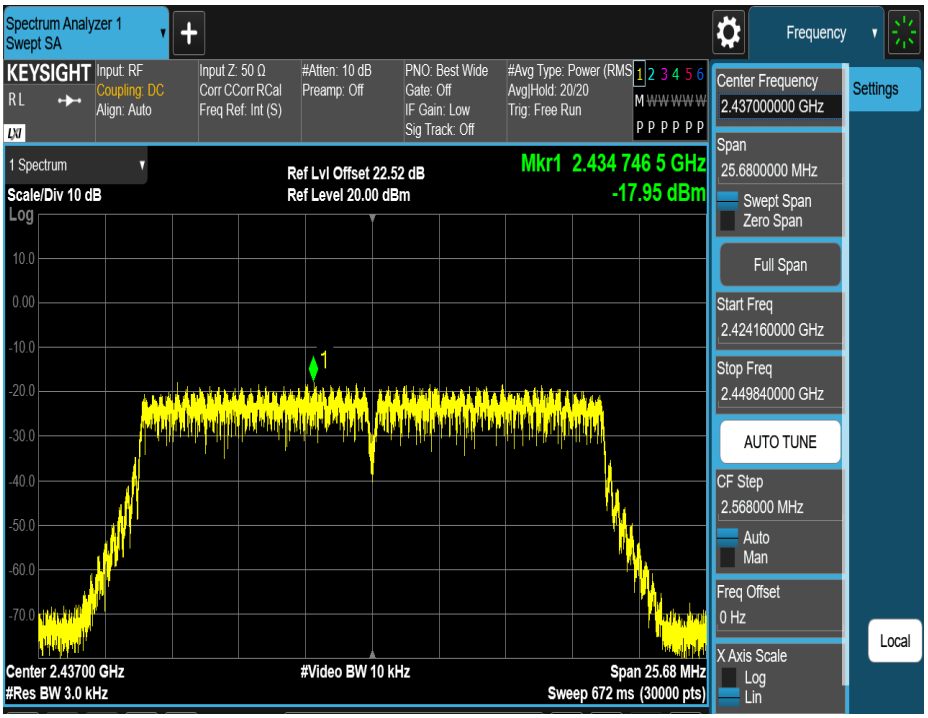

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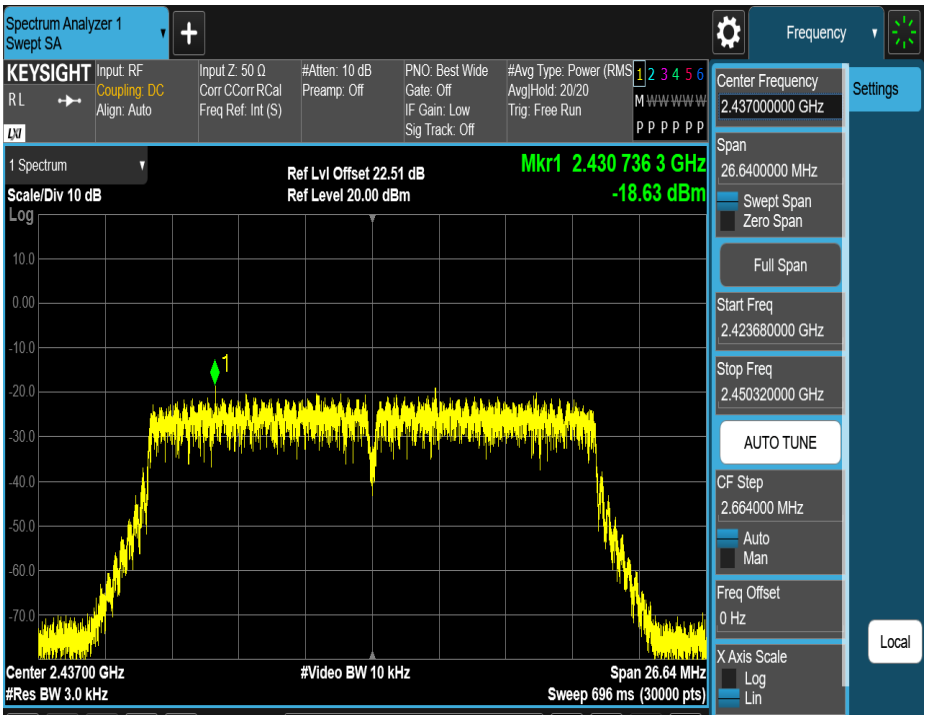

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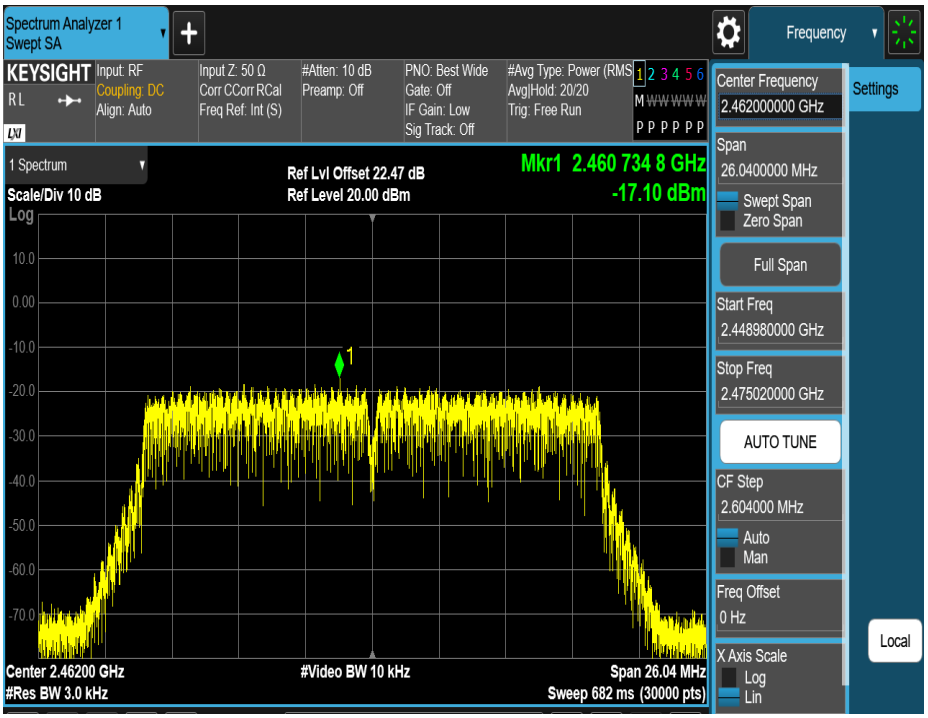

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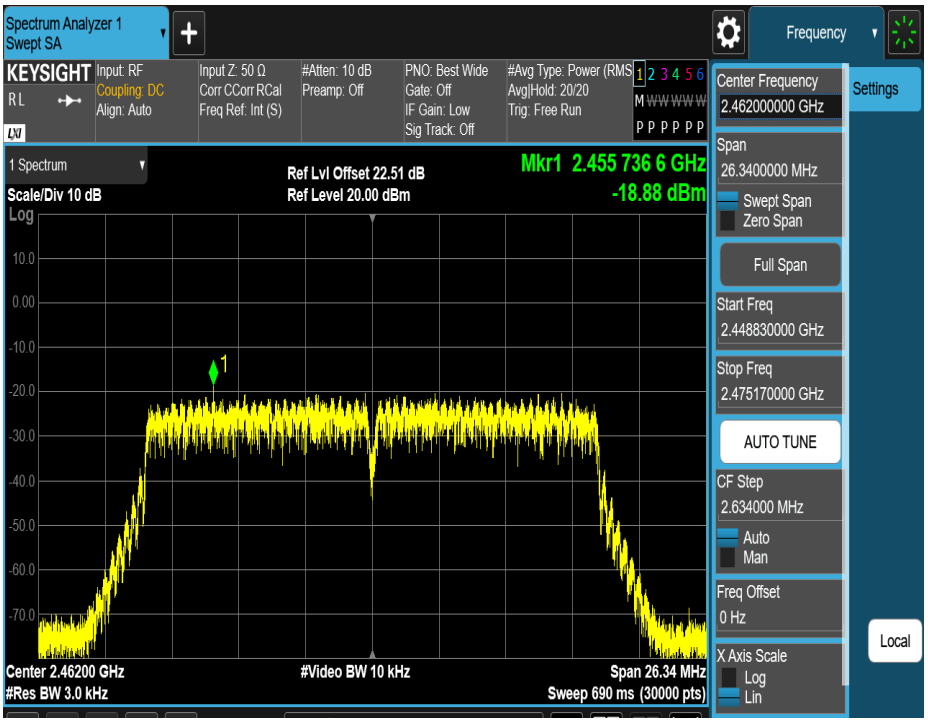

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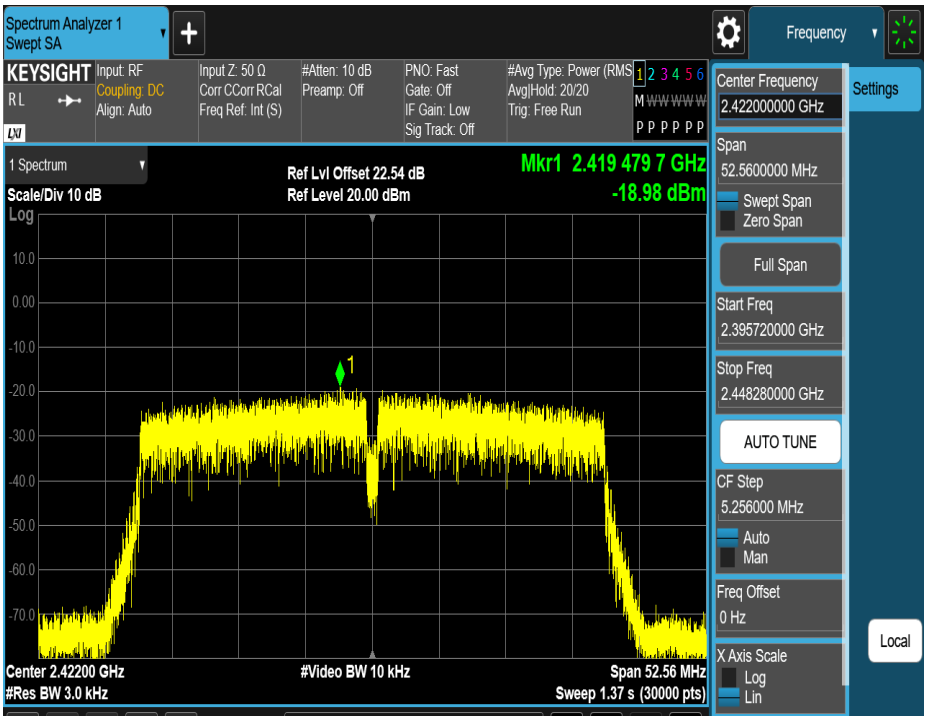

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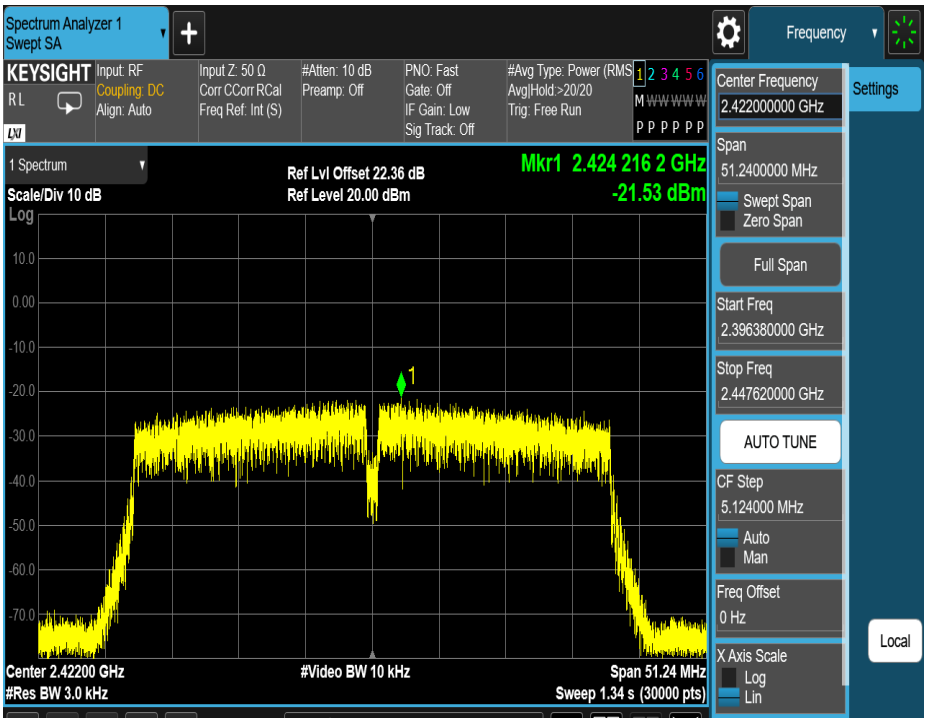

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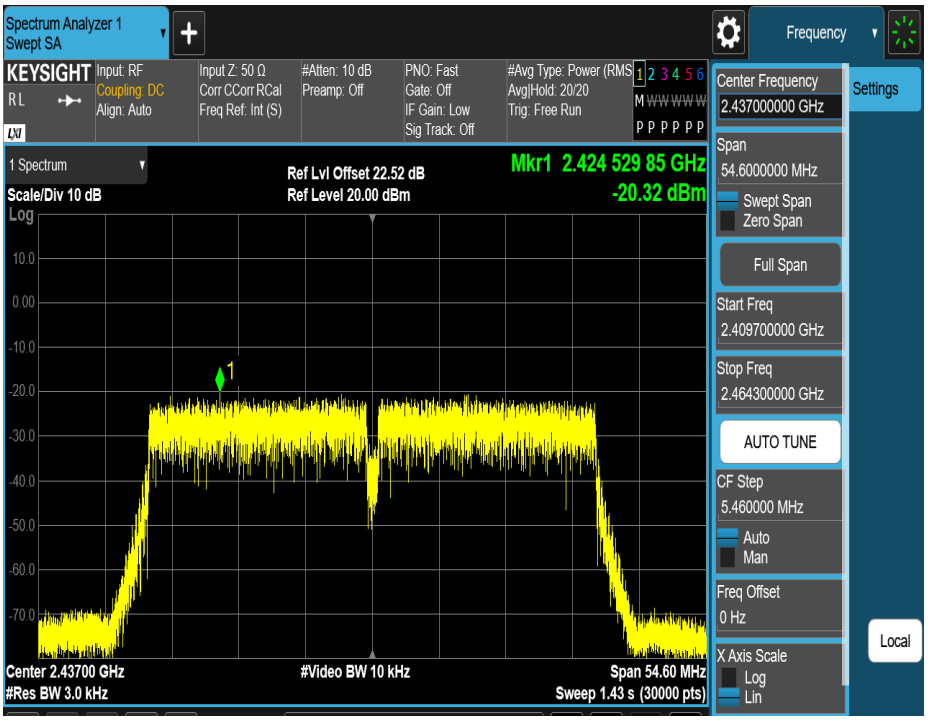

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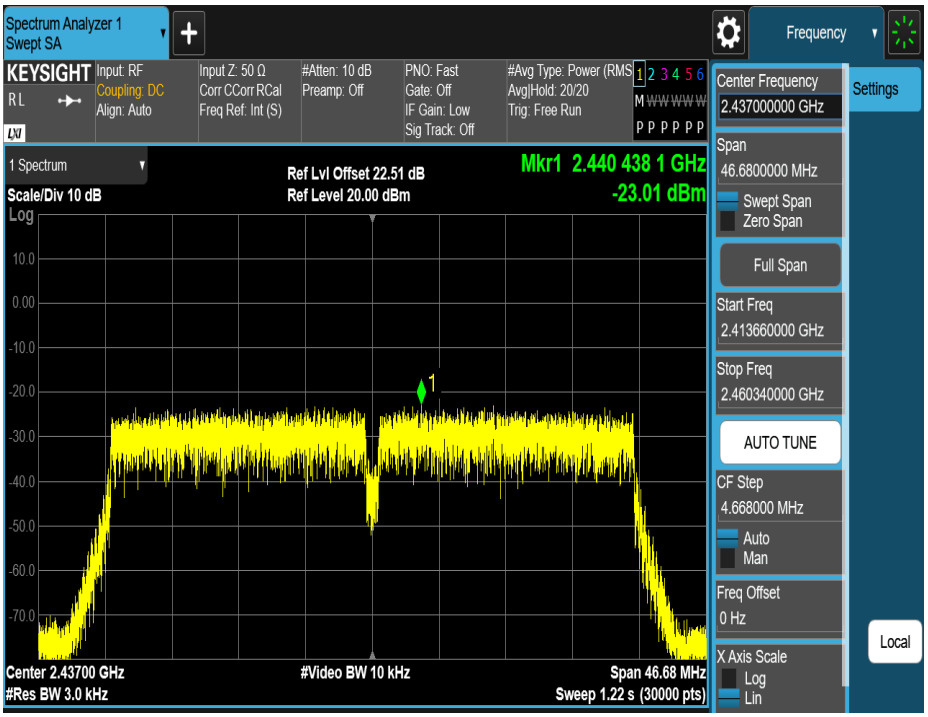

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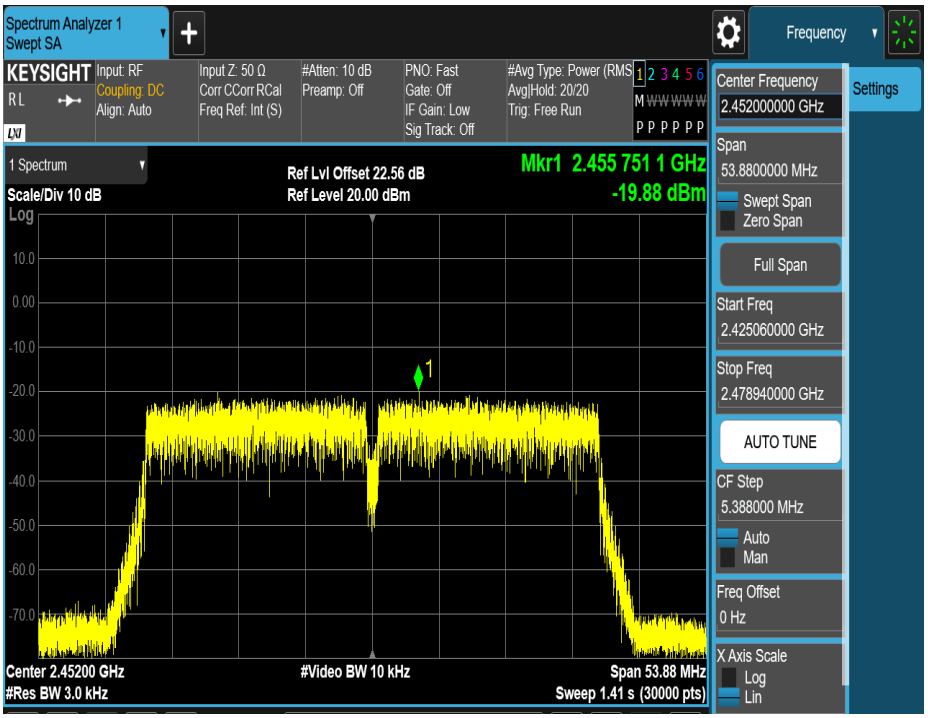

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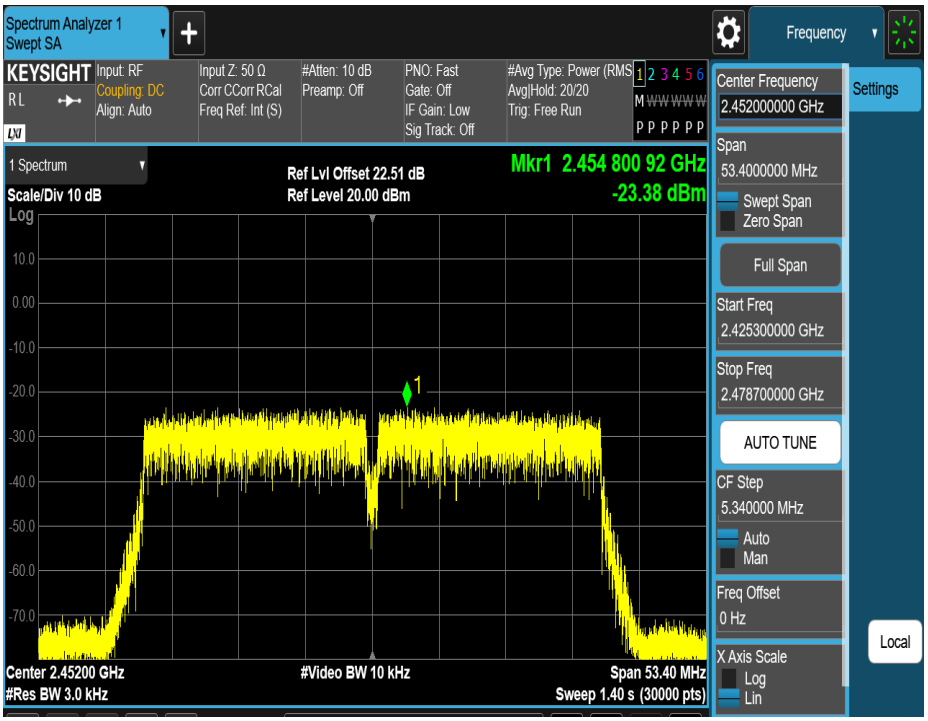
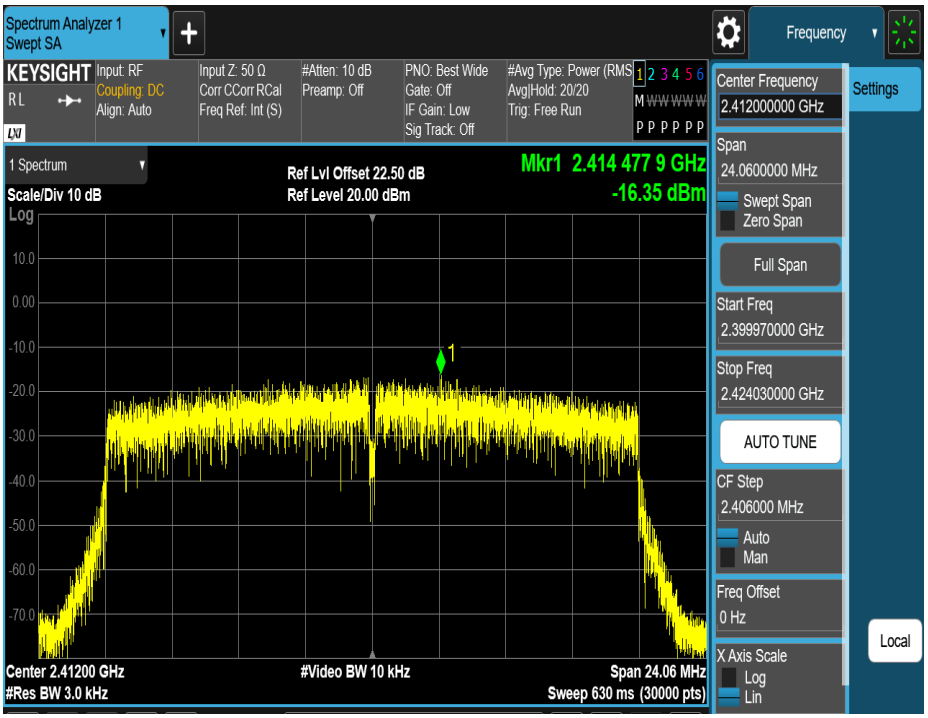


11AX20MIMO_Ant1_2412



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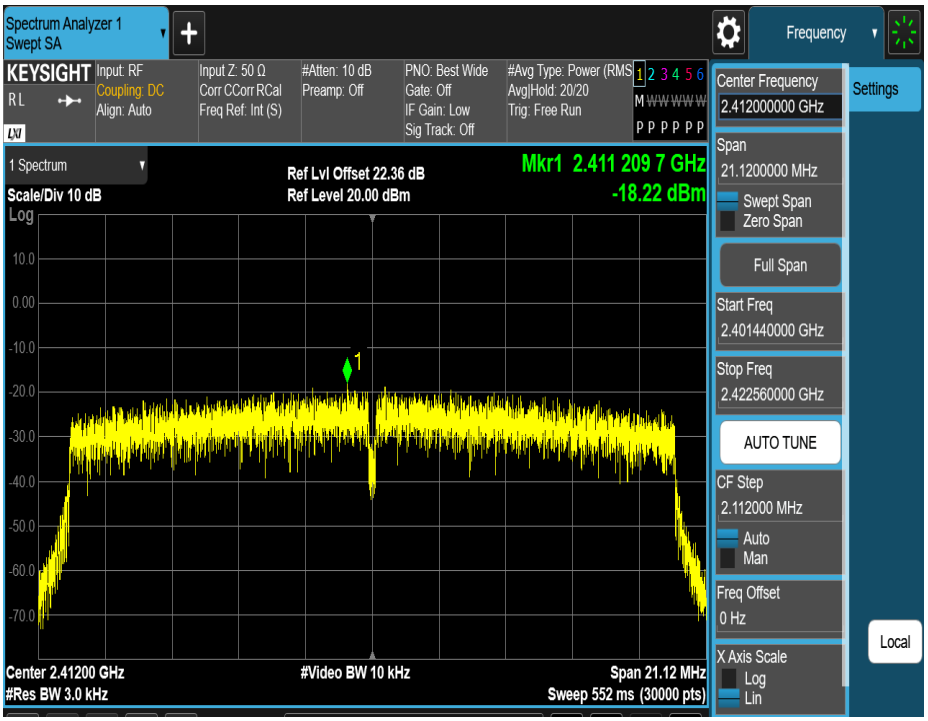

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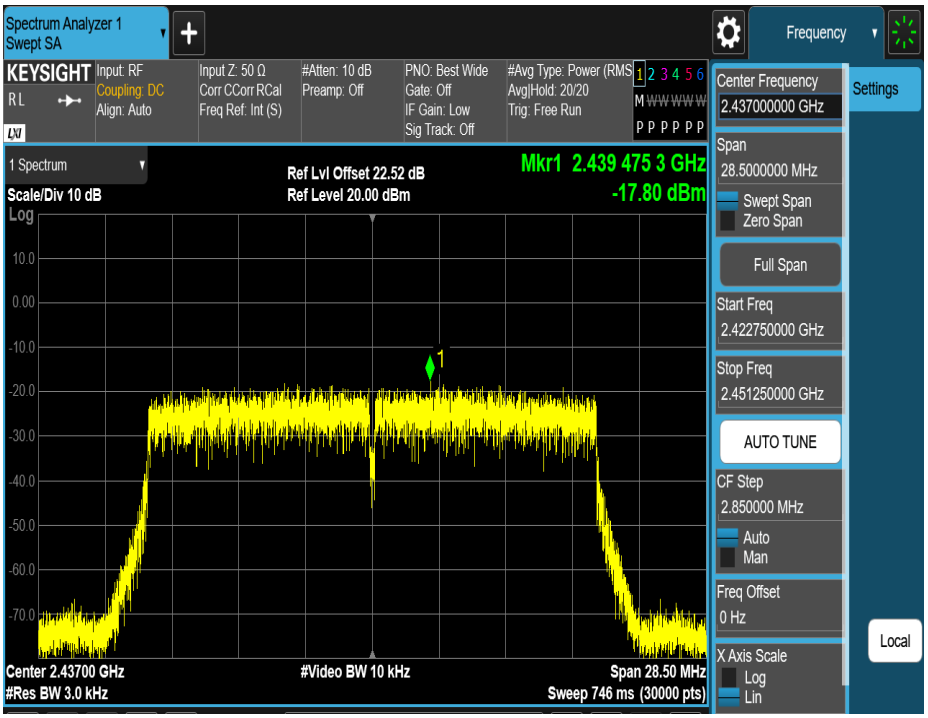

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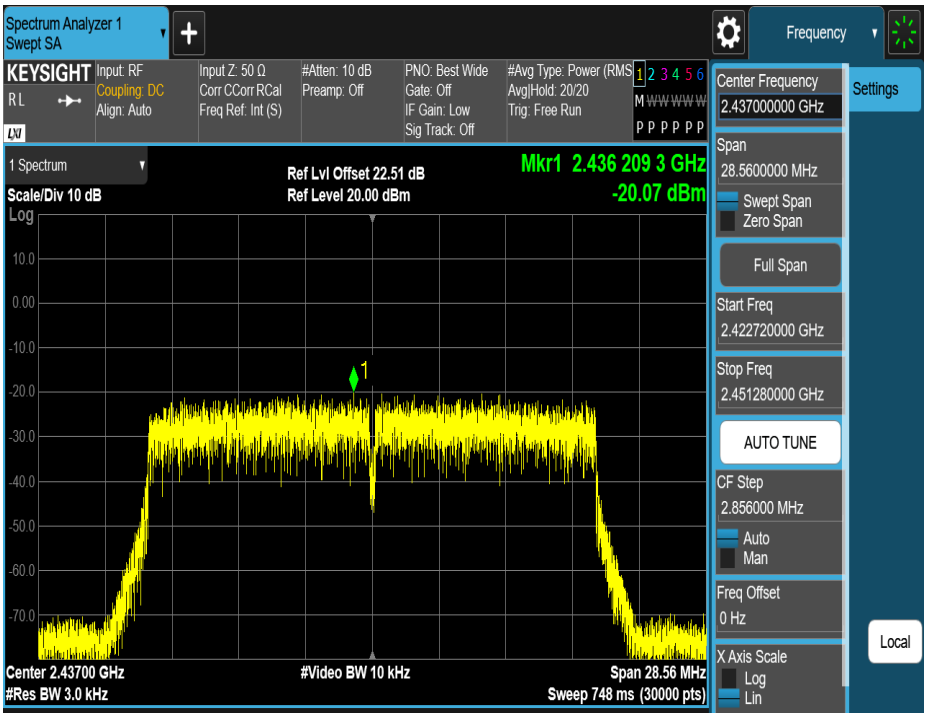

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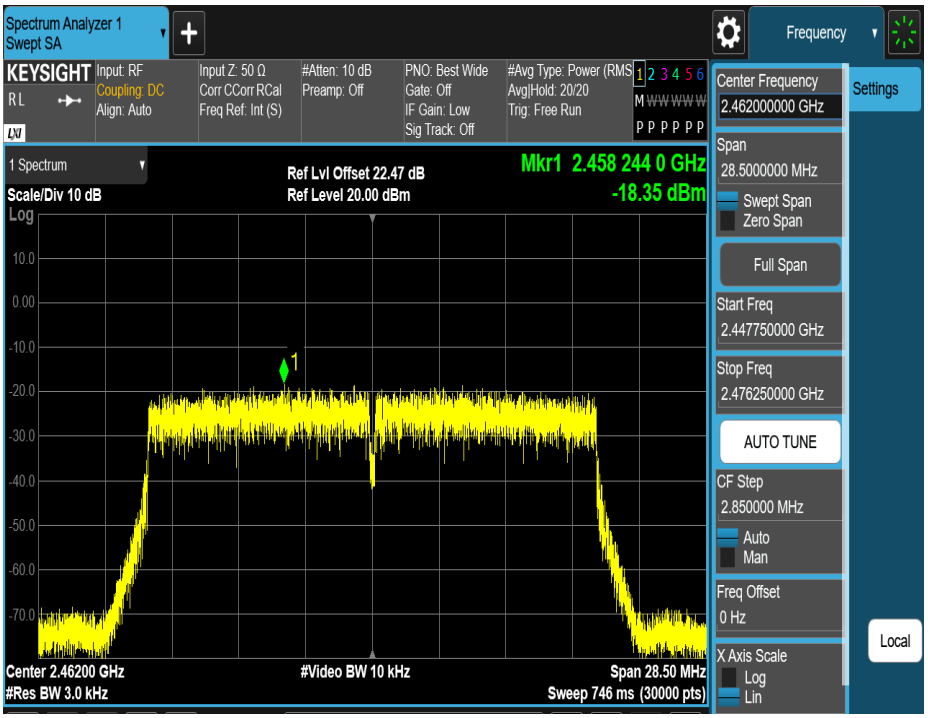

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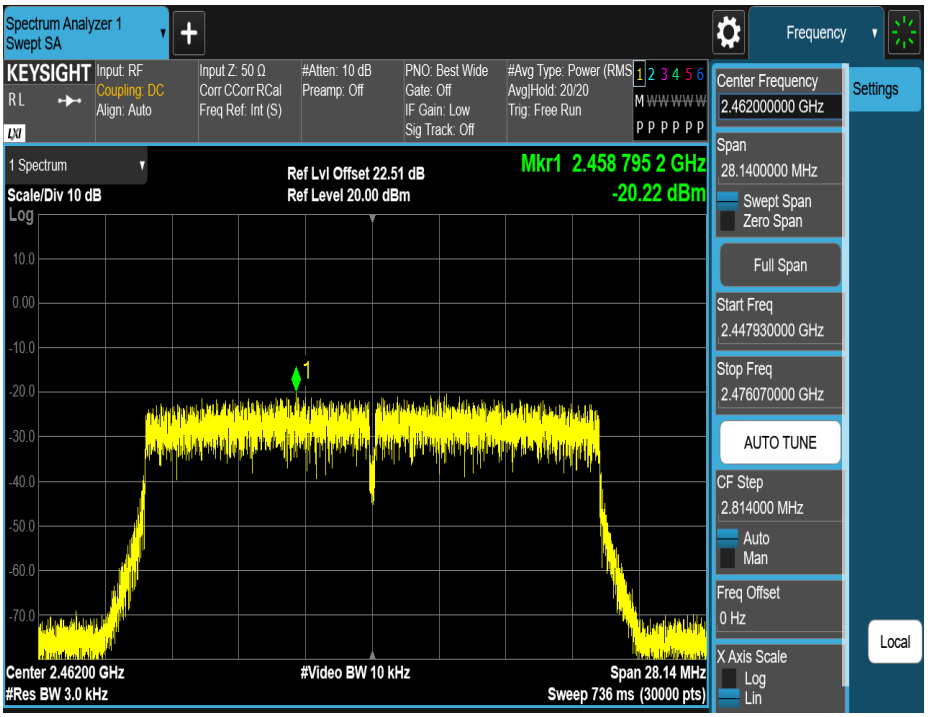
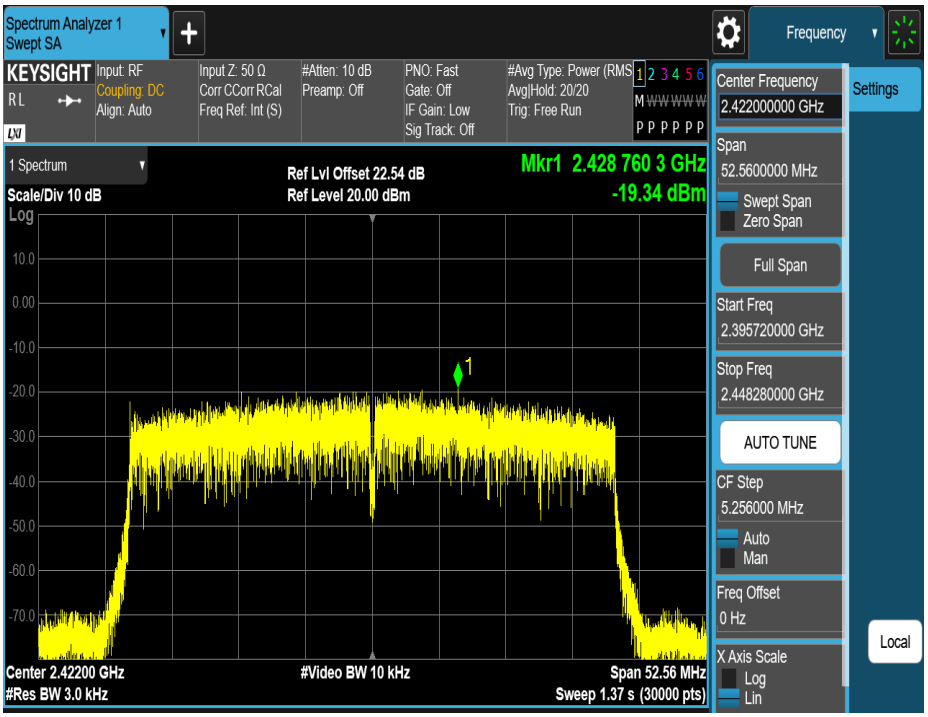


11AX40MIMO_Ant1_2422



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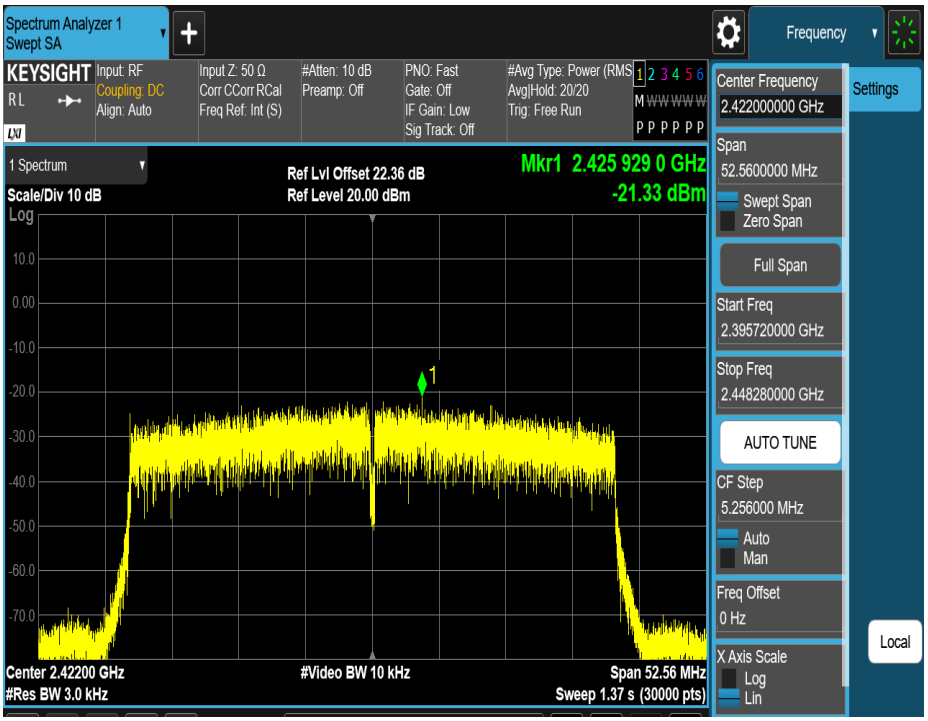
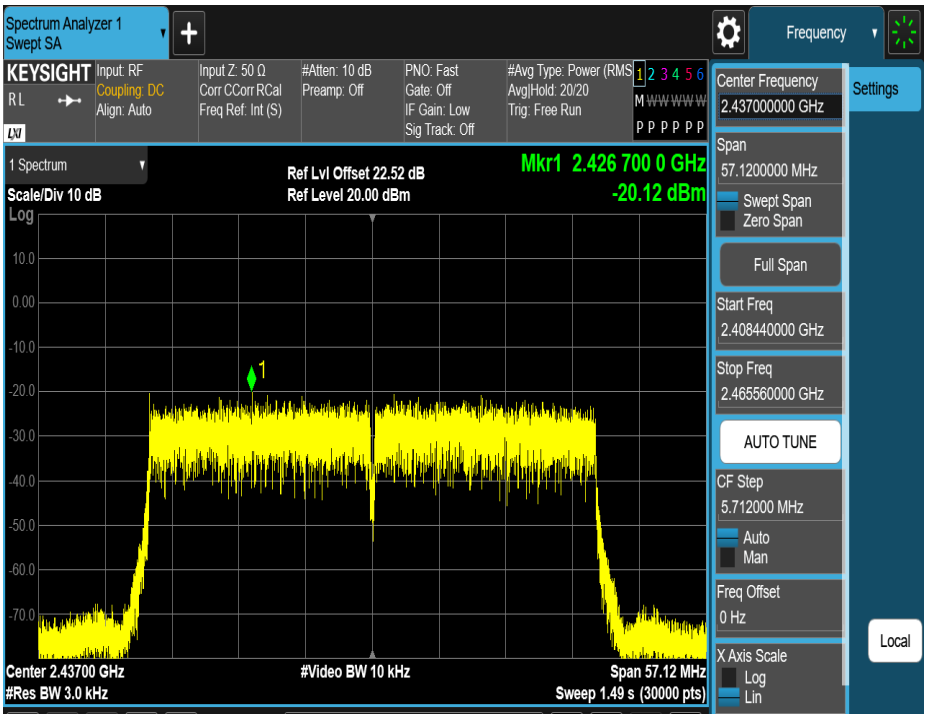


11AX40MIMO_Ant1_2437



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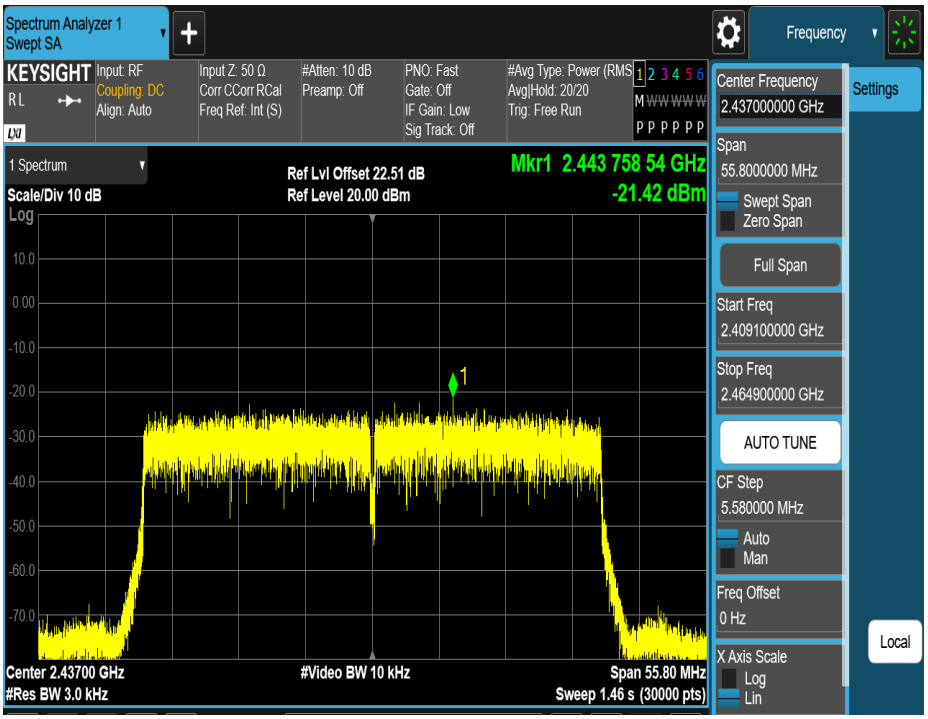

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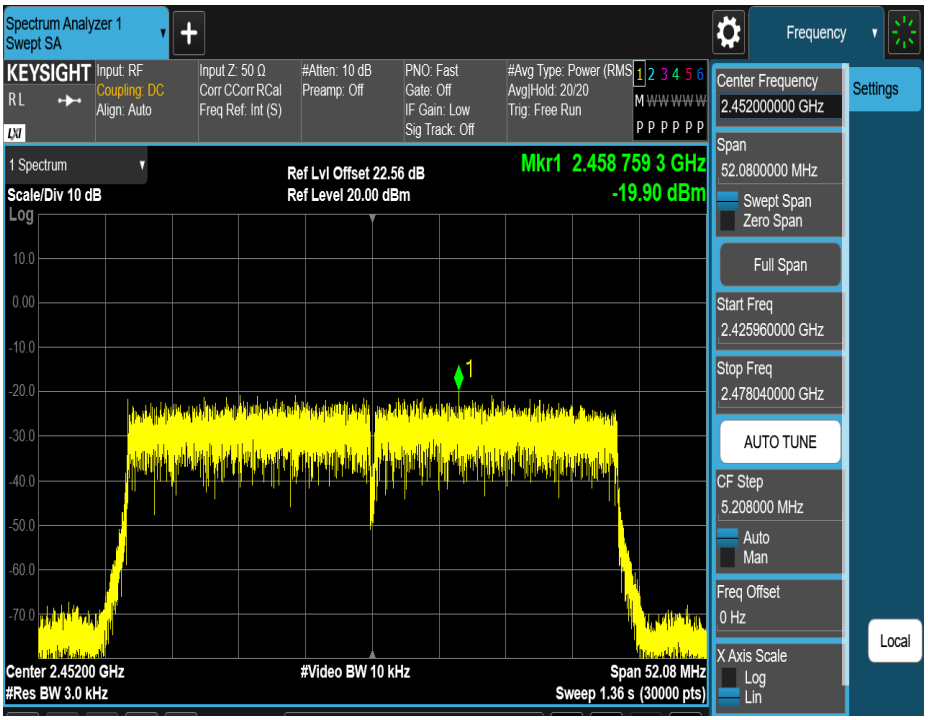
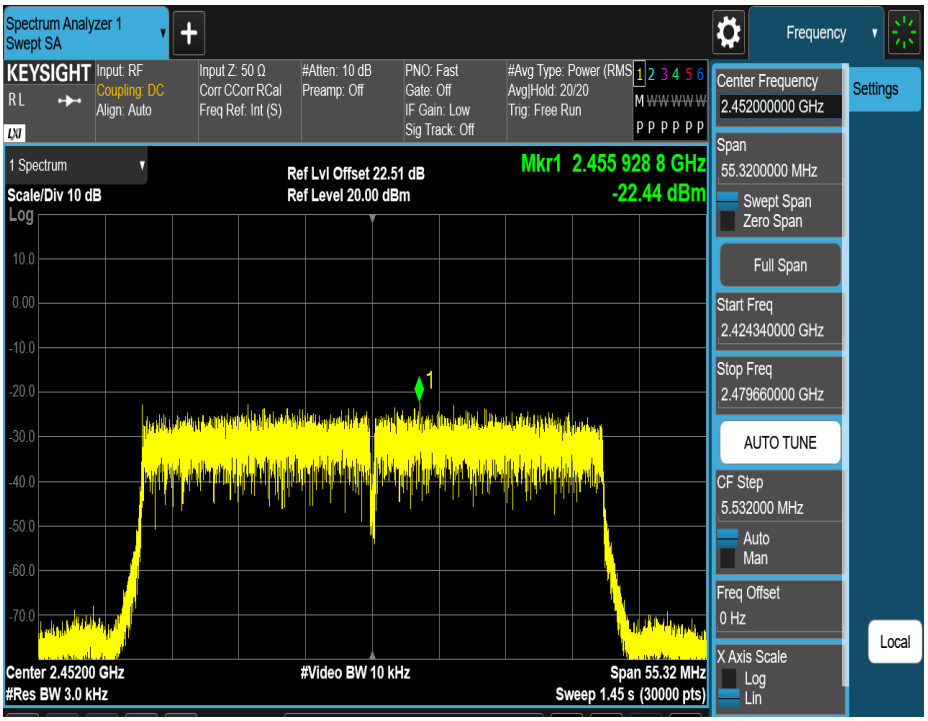
11AX40MIMO_Ant2_2452