

99% & 26dB Bandwidth

Test Result

5G NR N48 SCS=30kHz 10MHz						
Modulation	CH	RB Allocation	99% Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit (MHz)	Verdict
DFT-s-OFDM PI/2 BPSK	Low	Outer_Full	8.65	9.97	/	Pass
CP-OFDM QPSK		Outer_Full	8.65	10.23	/	Pass
DFT-s-OFDM PI/2 BPSK	Middle	Outer_Full	8.66	10.22	/	Pass
CP-OFDM QPSK		Outer_Full	8.65	10.01	/	Pass
DFT-s-OFDM PI/2 BPSK	High	Outer_Full	8.64	10.05	/	Pass
CP-OFDM QPSK		Outer_Full	8.68	10.17	/	Pass

5G NR N48 SCS=30kHz 15MHz						
Modulation	CH	RB Allocation	99% Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit (MHz)	Verdict
DFT-s-OFDM PI/2 BPSK	Low	Outer_Full	13.74	15.69	/	Pass
CP-OFDM QPSK		Outer_Full	12.98	14.7	/	Pass
DFT-s-OFDM PI/2 BPSK	Middle	Outer_Full	13.71	15.34	/	Pass
CP-OFDM QPSK		Outer_Full	12.99	14.5	/	Pass
DFT-s-OFDM PI/2 BPSK	High	Outer_Full	13.72	15.44	/	Pass
CP-OFDM QPSK		Outer_Full	8.63	10.1	/	Pass

5G NR N48 SCS=30kHz 20MHz						
Modulation	CH	RB Allocation	99% Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit (MHz)	Verdict
DFT-s-OFDM PI/2 BPSK	Low	Outer_Full	18.33	20.32	/	Pass
CP-OFDM QPSK		Outer_Full	17.95	19.66	/	Pass
DFT-s-OFDM PI/2 BPSK	Middle	Outer_Full	17.91	19.57	/	Pass
CP-OFDM QPSK		Outer_Full	18.3	20.07	/	Pass
DFT-s-OFDM PI/2 BPSK	High	Outer_Full	18.3	20.21	/	Pass
CP-OFDM QPSK		Outer_Full	12.98	14.55	/	Pass

Test Graph



N48-10M-OBW-L-CP-OFDM-QPSK



N48-10M-OBW-M-CP-OFDM-QPSK



N48-10M-OBW-L-DFT-s-OFDM-Pi2 BPSK



N48-10M-OBW-H-DFT-s-OFDM-Pi2 BPSK



N48-10M-OBW-H-CP-OFDM-QPSK



N48-15M-OBW-L-CP-OFDM-QPSK



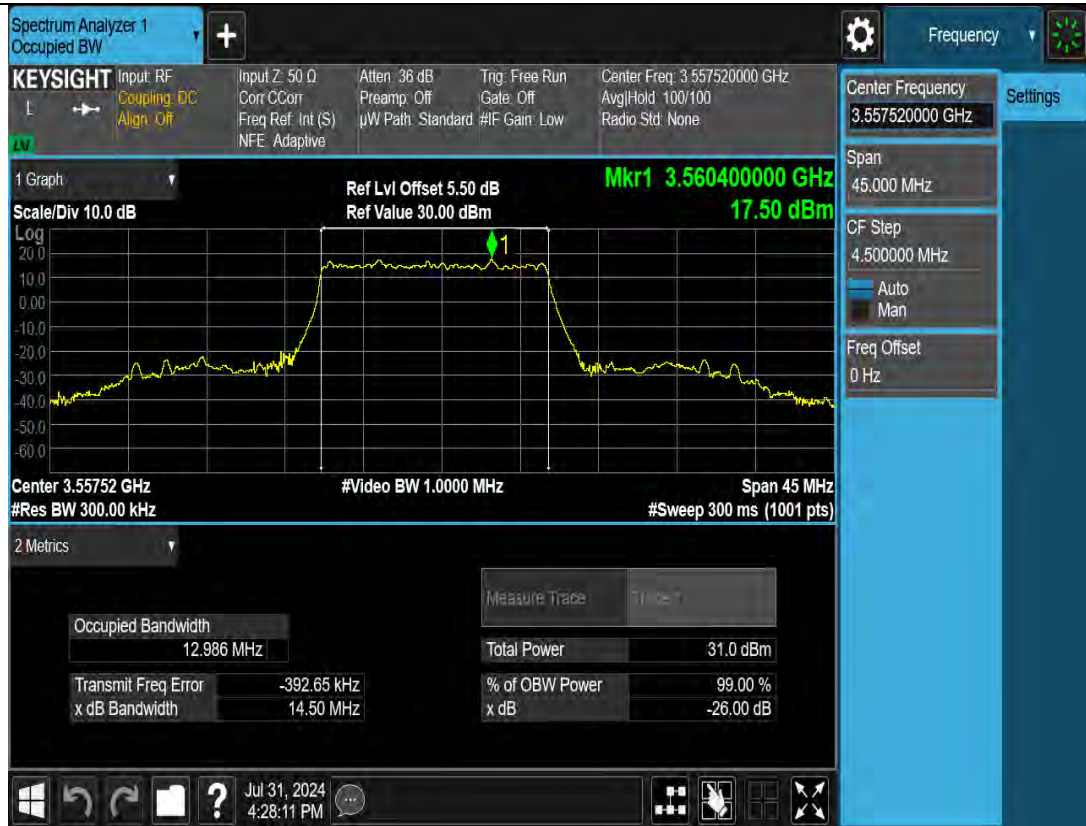
N48-15M-OBW-H-DFT-s-OFDM-Pi2 BPSK



N48-15M-OBW-M-CP-OFDM-QPSK



N48-15M-OBW-L-DFT-s-OFDM-Pi2 BPSK



N48-15M-OBW-H-CP-OFDM-QPSK



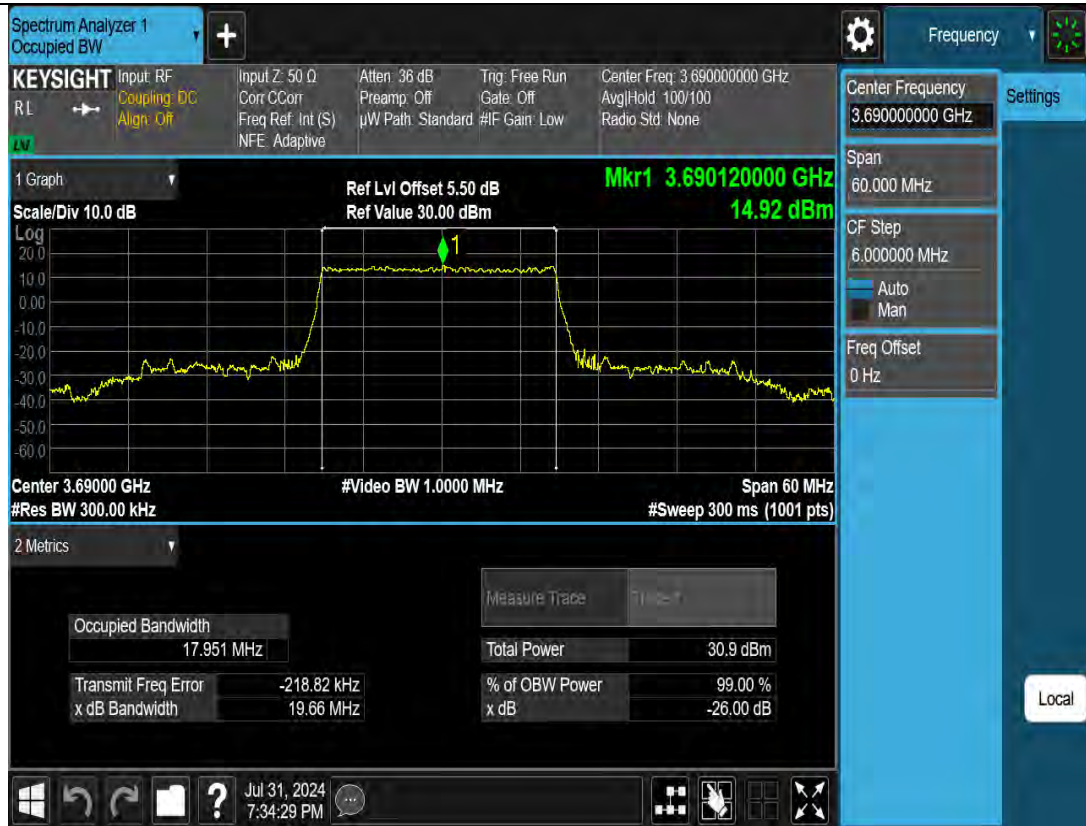
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N48-20M-OBW-L-CP-OFDM-QPSK



N48-20M-OBW-H-DFT-s-OFDM-Pi2 BPSK



N48-20M-OBW-M-DFT-s-OFDM-Pi2 BPSK



N48-20M-OBW-M-CP-OFDM-QPSK



N48-20M-OBW-H-CP-OFDM-QPSK



N48-15M-OBW-M-DFT-s-OFDM-Pi2 BPSK



Peak-Average Ratio

Test Result

5G NR N48 SCS=30kHz 10MHz					
Modulation	CH	RB Allocation	Peak-Average Ratio (dB)	Limit	Verdict
DFT-s-OFDM PI/2 BPSK	Low	Outer_Full	4.66	<=13	Pass
CP-OFDM QPSK		Outer_Full	7.05	<=13	Pass
DFT-s-OFDM PI/2 BPSK	Middle	Outer_Full	7.07	<=13	Pass
CP-OFDM QPSK		Outer_Full	4.72	<=13	Pass
DFT-s-OFDM PI/2 BPSK	High	Outer_Full	4.62	<=13	Pass
CP-OFDM QPSK		Outer_Full	7.06	<=13	Pass

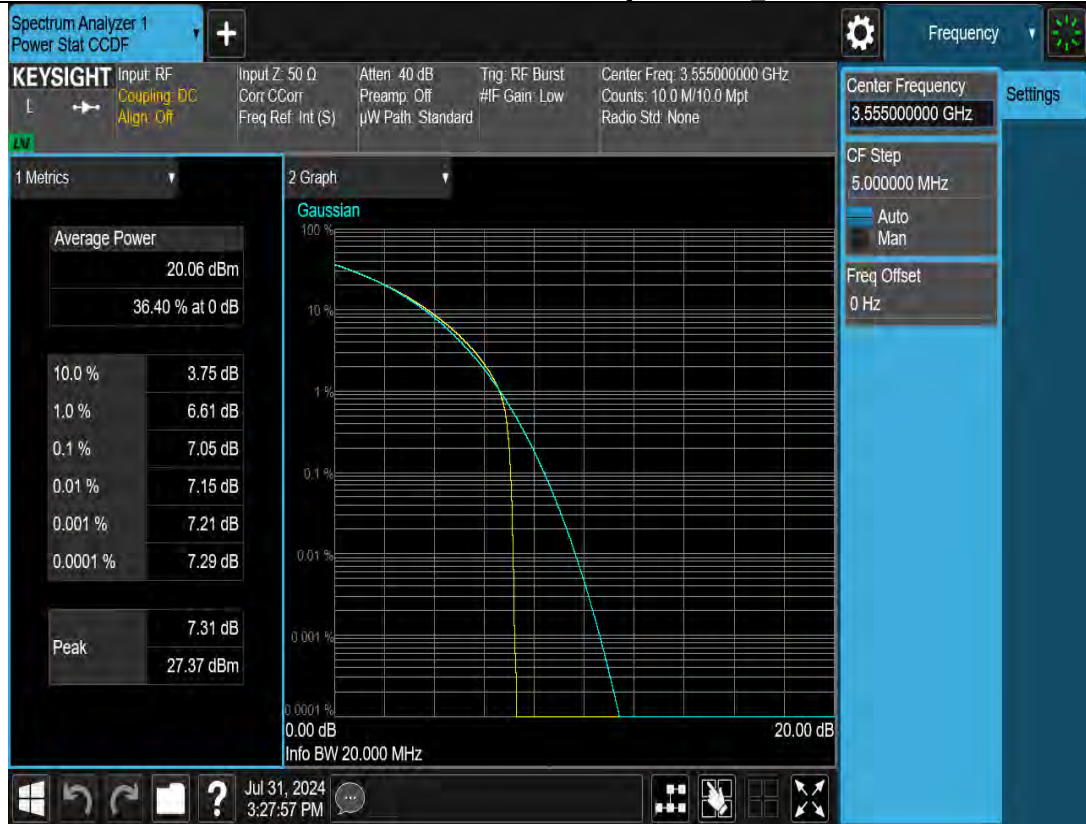
5G NR N48 SCS=30kHz 15MHz					
Modulation	CH	RB Allocation	Peak-Average Ratio (dB)	Limit	Verdict
DFT-s-OFDM PI/2 BPSK	Low	Outer_Full	7.39	<=13	Pass
CP-OFDM QPSK		Outer_Full	4.52	<=13	Pass
DFT-s-OFDM PI/2 BPSK	Middle	Outer_Full	7.49	<=13	Pass
CP-OFDM QPSK		Outer_Full	4.52	<=13	Pass
DFT-s-OFDM PI/2 BPSK	High	Outer_Full	7.49	<=13	Pass
CP-OFDM QPSK		Outer_Full	4.69	<=13	Pass

5G NR N48 SCS=30kHz 20MHz					
Modulation	CH	RB Allocation	Peak-Average Ratio (dB)	Limit	Verdict
DFT-s-OFDM PI/2 BPSK	Low	Outer_Full	6.96	<=13	Pass
CP-OFDM QPSK		Outer_Full	4.49	<=13	Pass
DFT-s-OFDM PI/2 BPSK	Middle	Outer_Full	4.5	<=13	Pass
CP-OFDM QPSK		Outer_Full	6.95	<=13	Pass
DFT-s-OFDM PI/2 BPSK	High	Outer_Full	7.33	<=13	Pass
CP-OFDM QPSK		Outer_Full	4.53	<=13	Pass

Test Graph



N48-10M-PAPR-L-CP-OFDM-QPSK-Outer Full



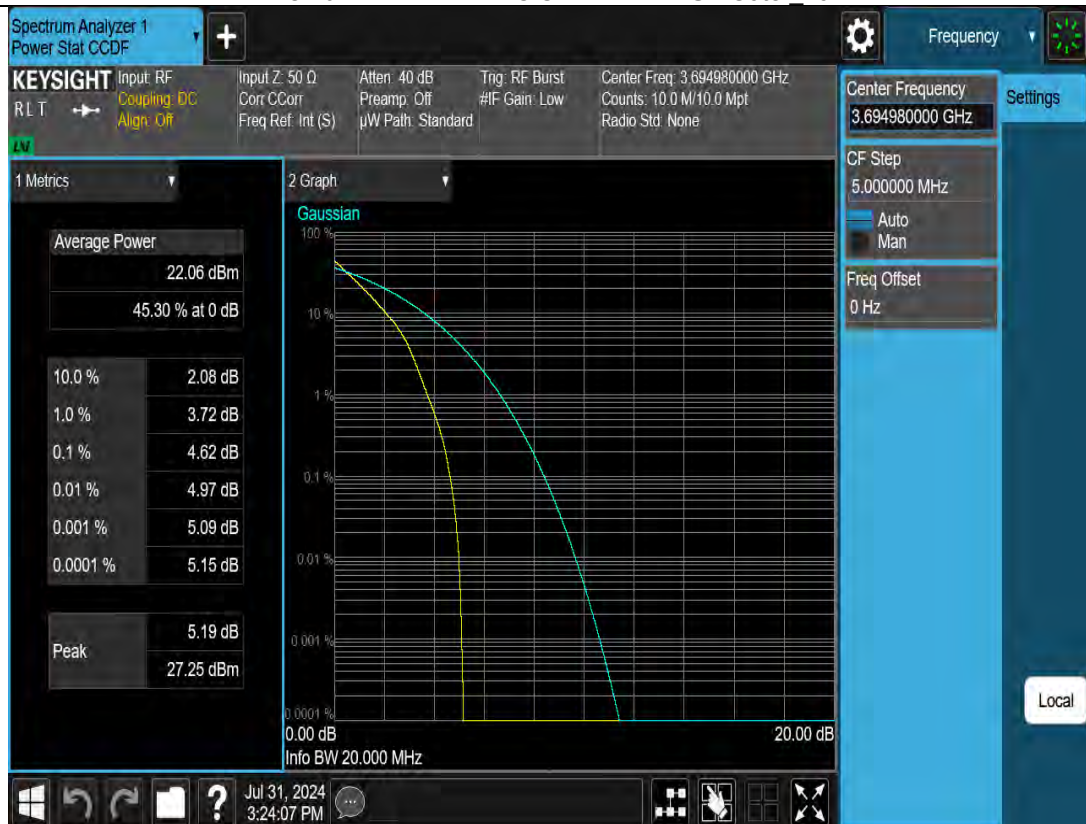
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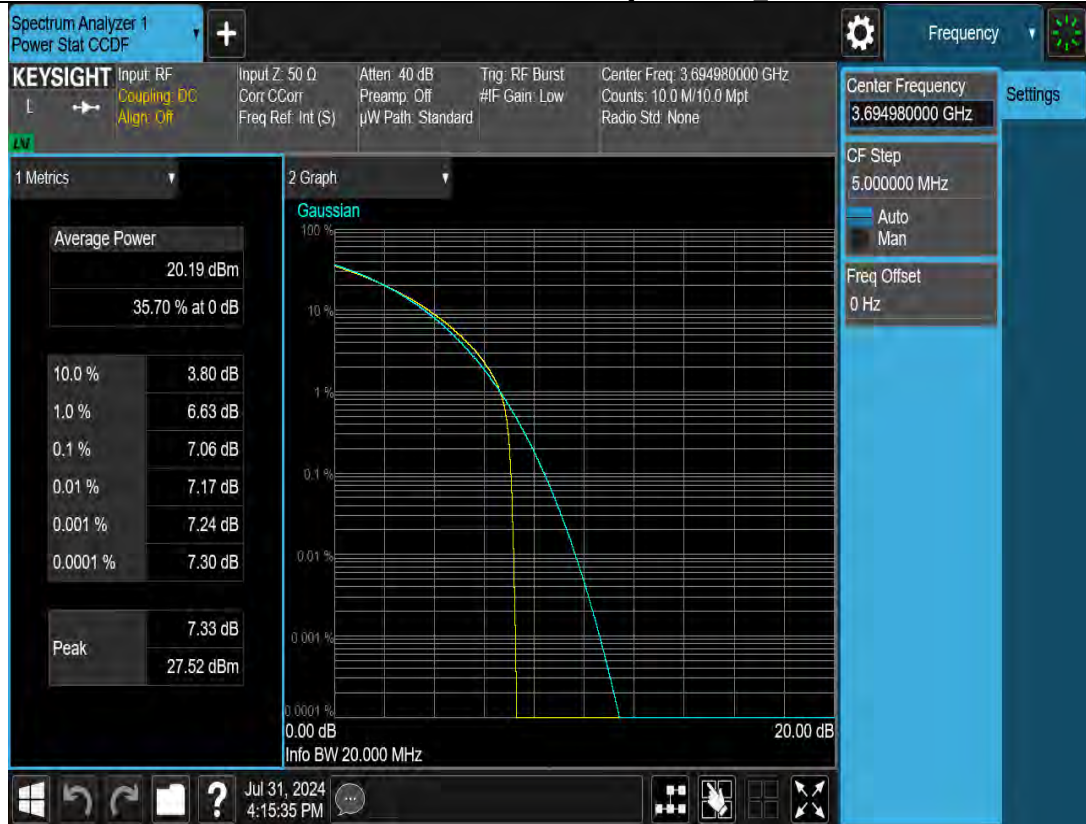
N48-10M-PAPR-L-DFT-s-OFDM-Pi2 BPSK-Outer Full



N48-10M-PAPR-H-DFT-s-OFDM-Pi2 BPSK-Outer Full

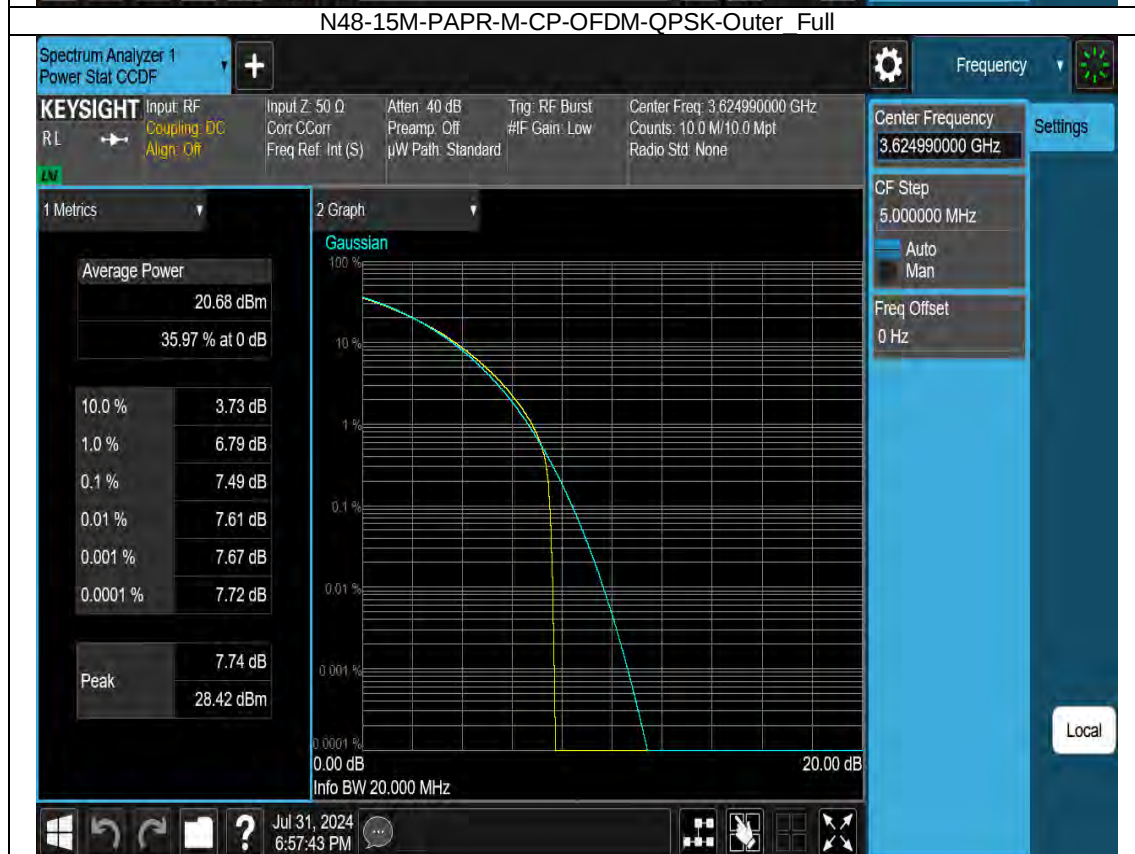


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N48-15M-PAPR-L-CP-OFDM-QPSK-Outer Full

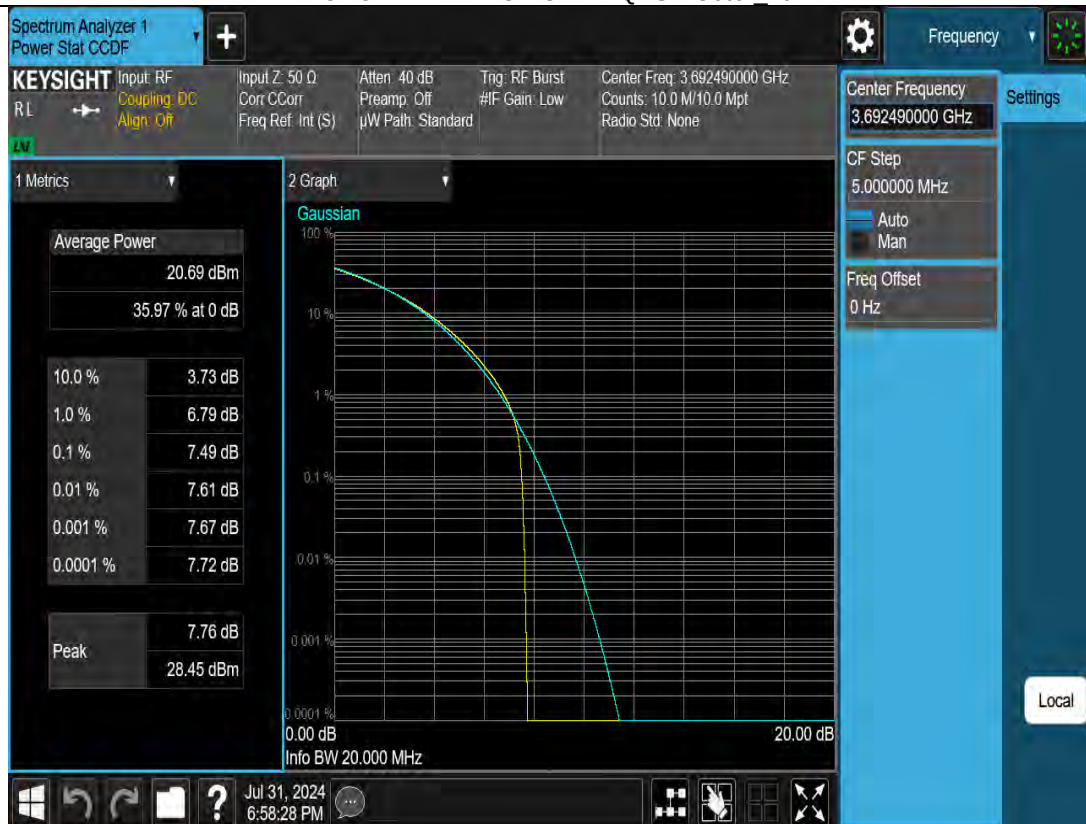


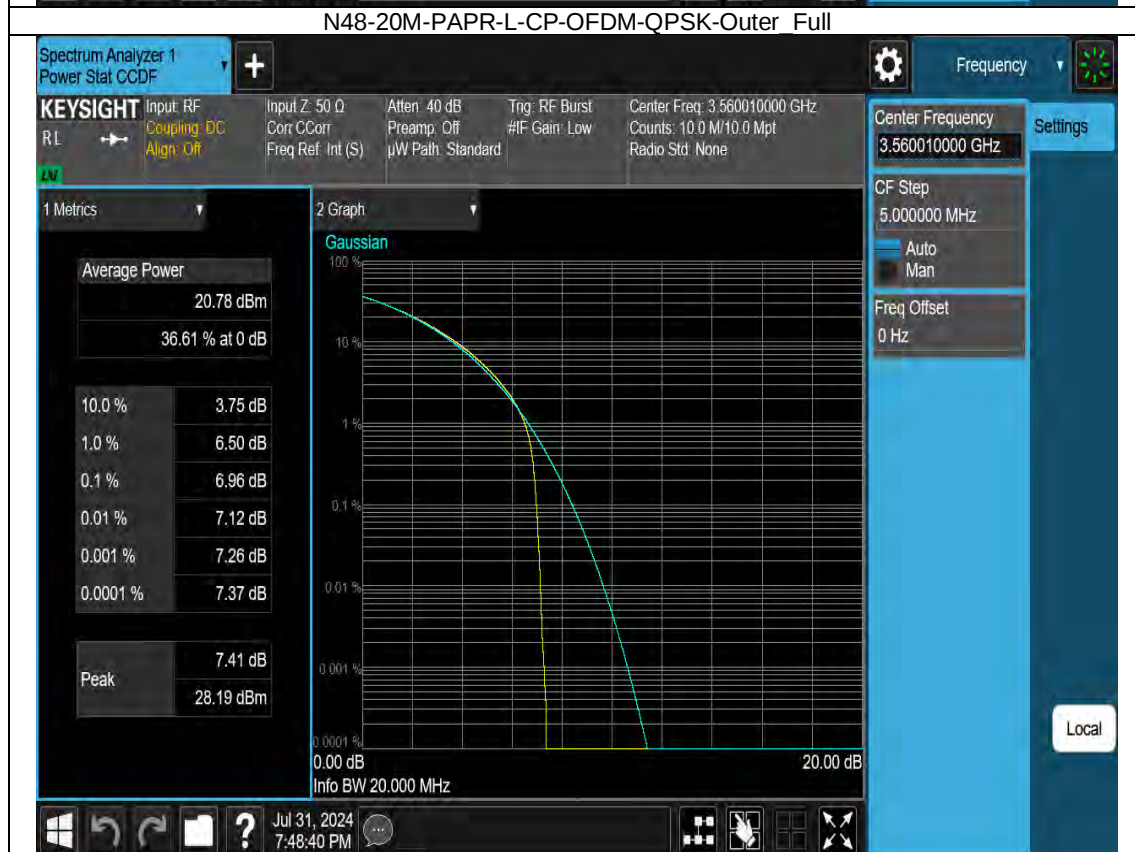


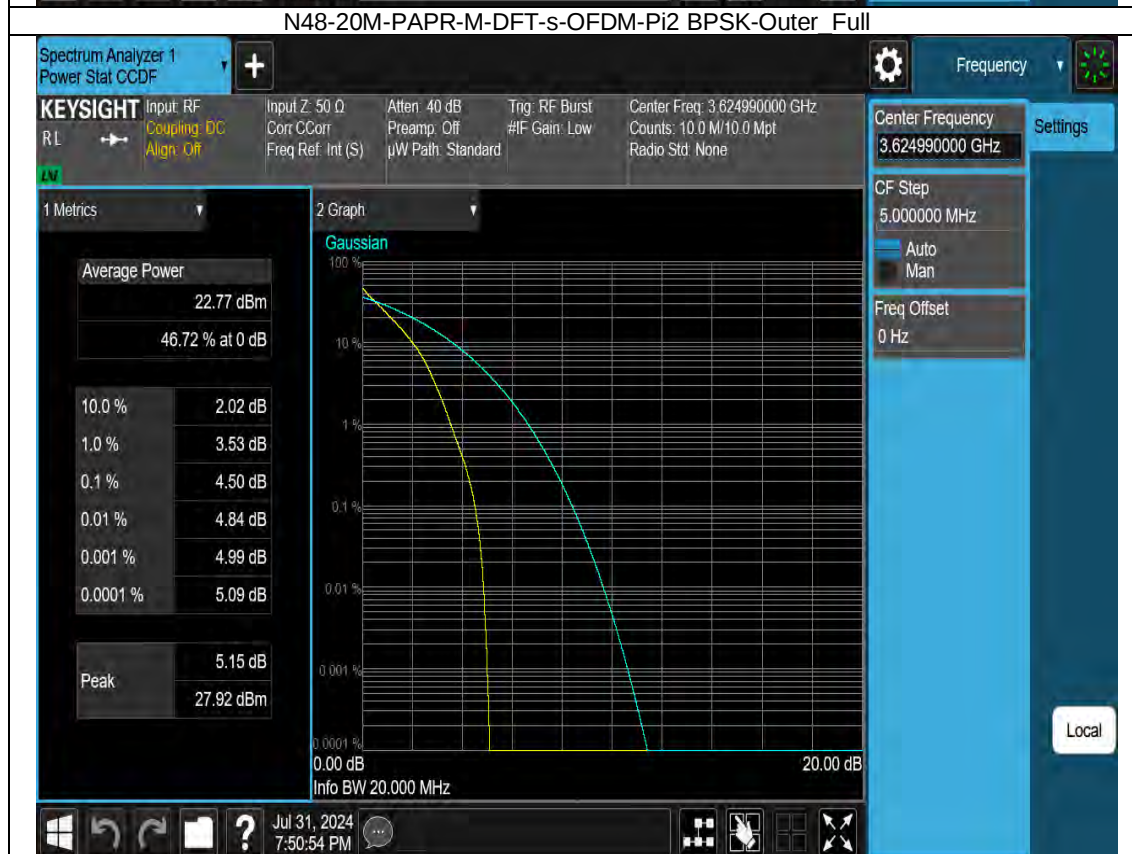
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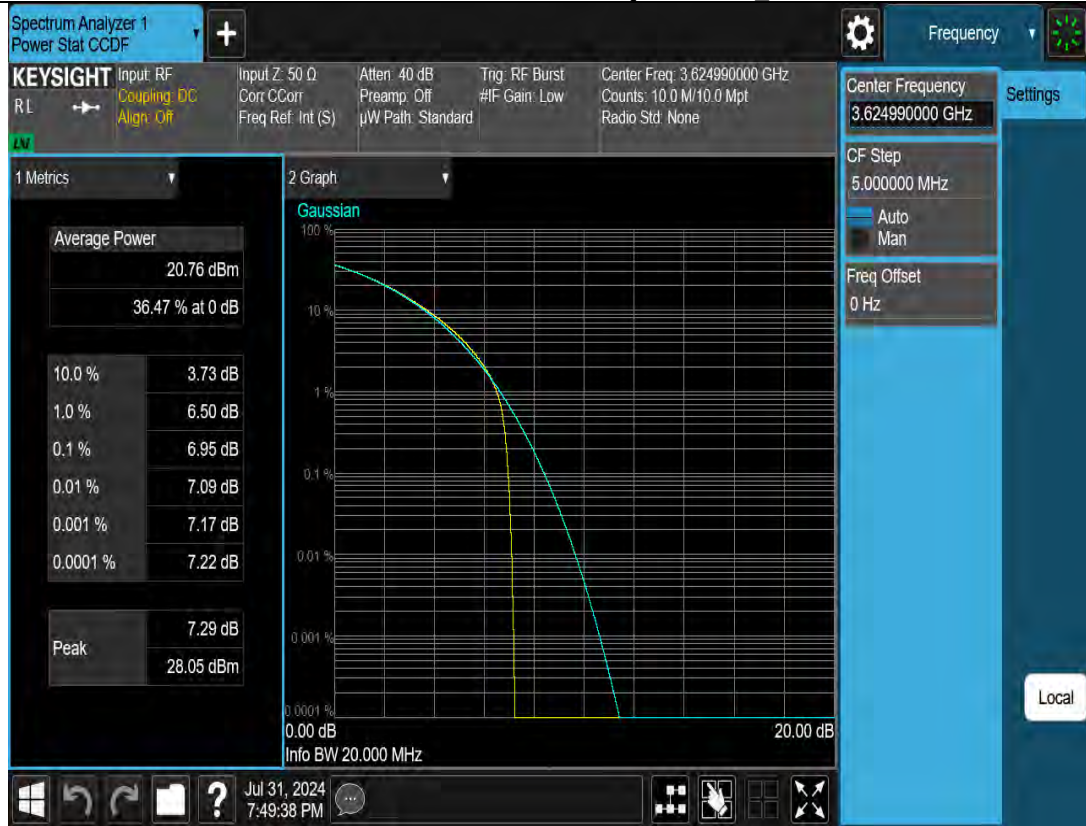
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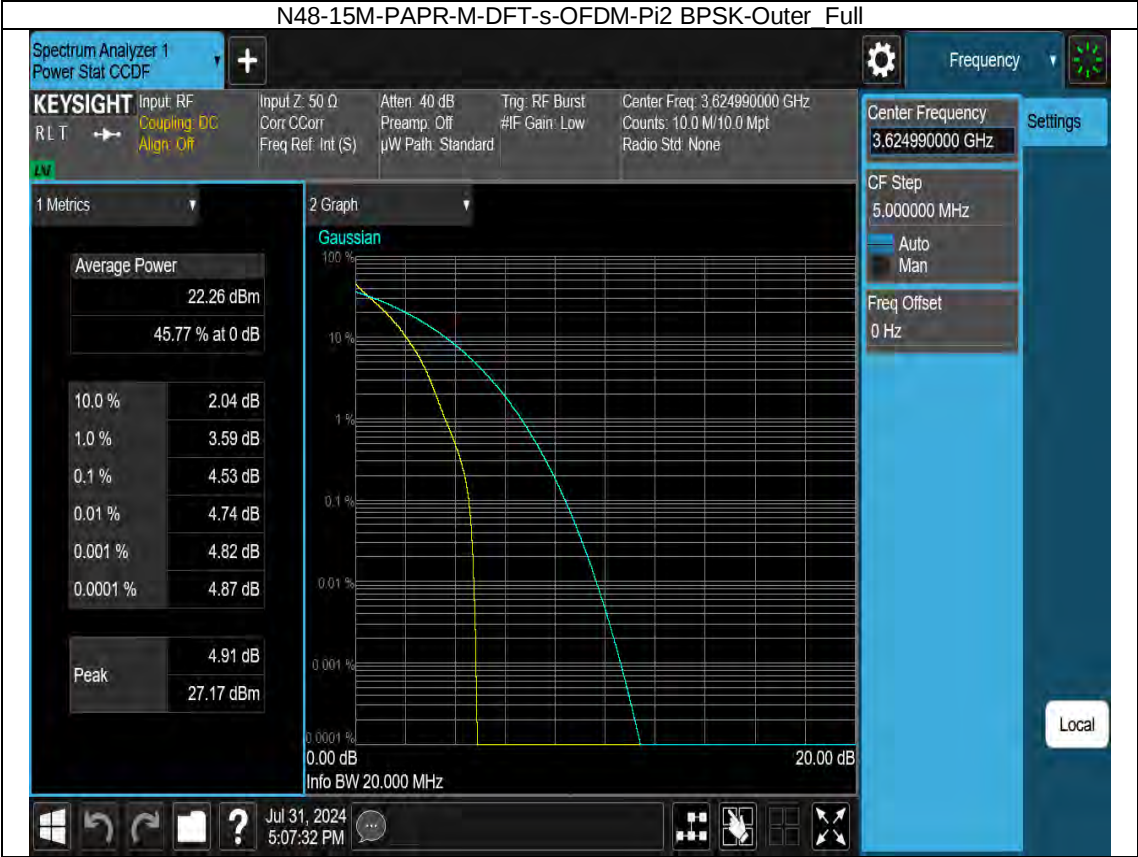


N48-20M-PAPR-M-CP-OFDM-QPSK-Outer Full



N48-20M-PAPR-H-CP-OFDM-QPSK-Outer Full





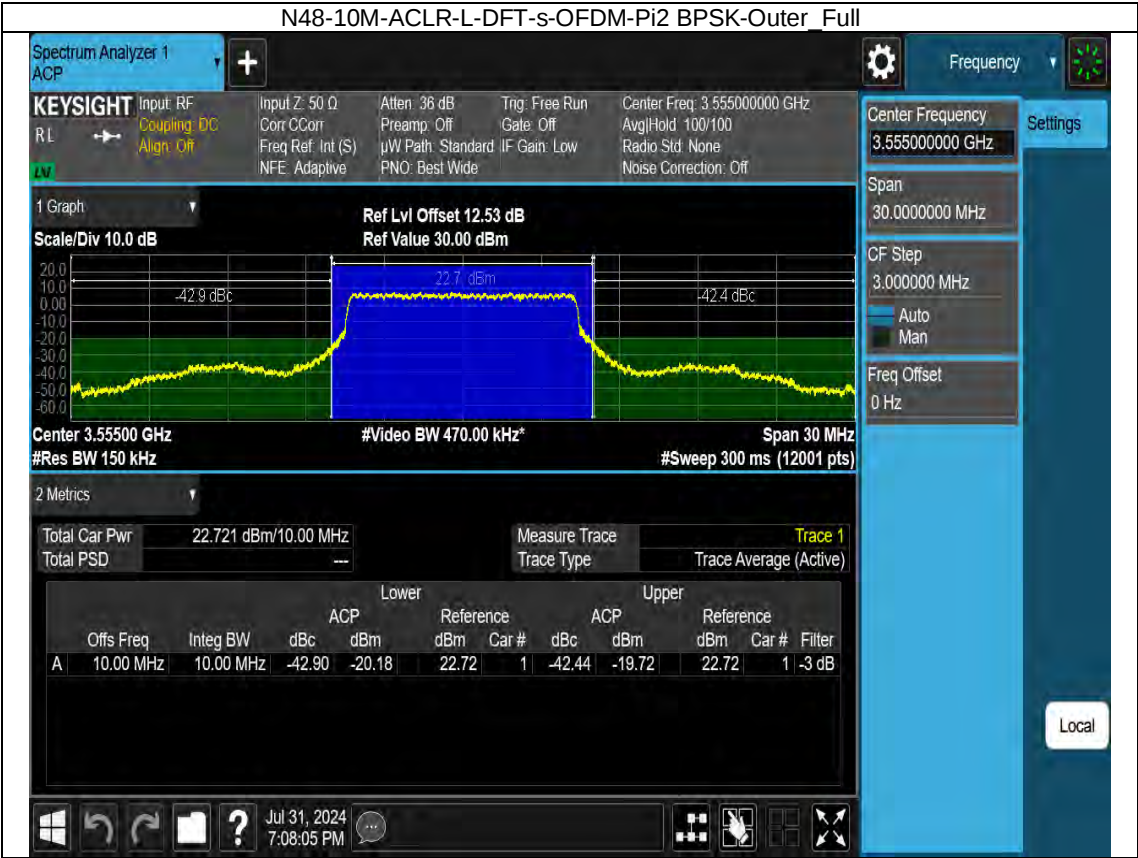
Adjacent Channel Power

5G NR N48 SCS=30kHz 10MHz						
Modulation	CH	RB Allocation	Channel Spacing (MHz)		Limit (dBc)	Verdict
			-10	+10		
DFT-s-OFDM PI/2 BPSK	Low	Outer_Full	42.9	42.44	≥30	Pass
		1RB0	41.34	62.38	≥30	Pass
		1RB_Max	64.95	41.24	≥30	Pass
	Middle	Outer_Full	40.44	40.84	≥30	Pass
		1RB0	40.7	63.38	≥30	Pass
		1RB_Max	63.67	41.38	≥30	Pass
	Middle	Outer_Full	42.71	42.27	≥30	Pass
		1RB0	41.89	59.71	≥30	Pass
		1RB_Max	59.84	42.58	≥30	Pass
CP-OFDM QPSK	Low	Outer_Full	40.08	40.93	≥30	Pass
		1RB0	39.6	57.88	≥30	Pass
		1RB_Max	57.96	41.01	≥30	Pass
	Middle	Outer_Full	43.44	43.16	≥30	Pass
		1RB0	41.29	57.93	≥30	Pass
		1RB_Max	58.24	41.5	≥30	Pass
	Middle	Outer_Full	40.73	41.19	≥30	Pass
		1RB0	40.34	56.05	≥30	Pass
		1RB_Max	56.19	41.64	≥30	Pass

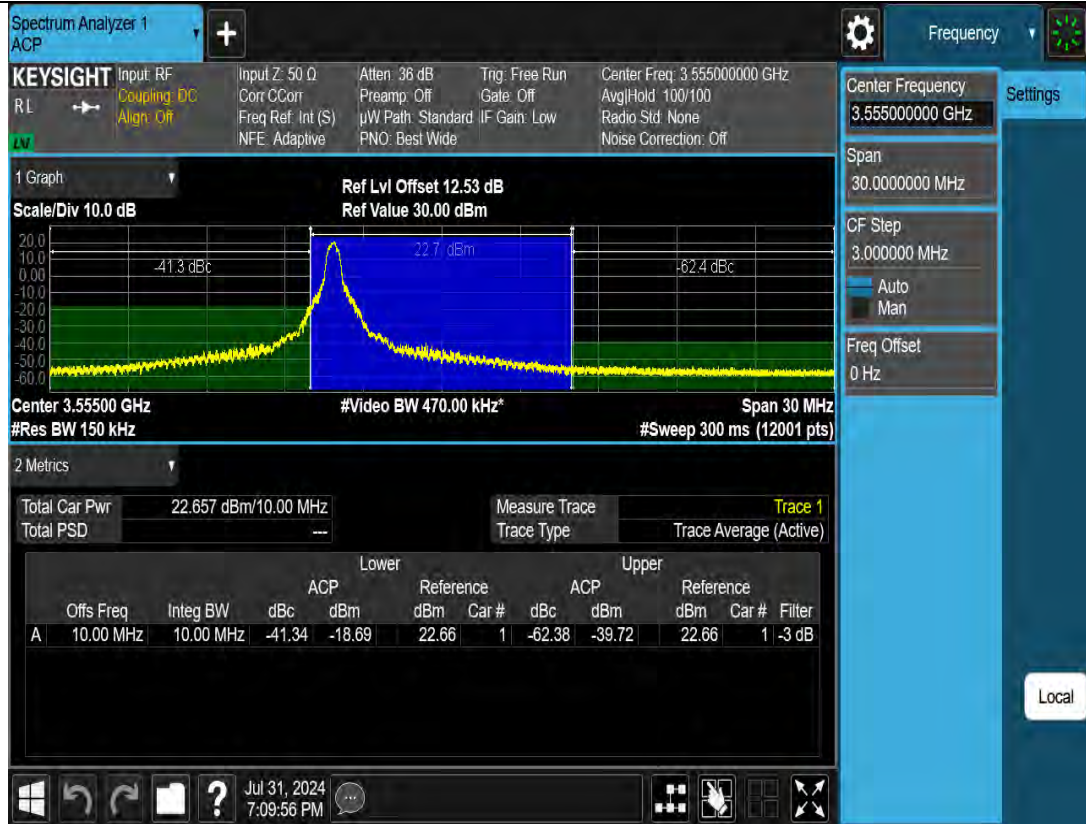
5G NR N48 SCS=30kHz 15MHz						
Modulation	CH	RB Allocation	Channel Spacing (MHz)		Limit (dBc)	Verdict
			-15	+15		
DFT-s-OFDM PI/2 BPSK	Low	Outer_Full	42.98	45.25	≥30	Pass
		1RB0	38.07	64.33	≥30	Pass
		1RB_Max	64.56	38.01	≥30	Pass
	Middle	Outer_Full	40.57	40.93	≥30	Pass
		1RB0	36.35	62.63	≥30	Pass
		1RB_Max	61.24	38.68	≥30	Pass
	Middle	Outer_Full	42.52	44.91	≥30	Pass
		1RB0	37.96	59.01	≥30	Pass
		1RB_Max	59.29	39.16	≥30	Pass
CP-OFDM QPSK	Low	Outer_Full	40.18	40.36	≥30	Pass
		1RB0	37.1	56.16	≥30	Pass
		1RB_Max	56.41	38.03	≥30	Pass
	Middle	Outer_Full	43.35	45.83	≥30	Pass
		1RB0	37.83	56.97	≥30	Pass
		1RB_Max	57.76	38.96	≥30	Pass
	Middle	Outer_Full	40.23	40.35	≥30	Pass
		1RB0	36.39	54.25	≥30	Pass
		1RB_Max	54.6	37.91	≥30	Pass

5G NR N48 SCS=30kHz 20MHz						
Modulation	CH	RB Allocation	Channel Spacing (MHz)		Limit (dBc)	Verdict
			-20	+20		
DFT-s-OFDM PI/2 BPSK	Low	Outer_Full	43.17	44.2	≥ 30	Pass
		1RB0	41.1	61.49	≥ 30	Pass
		1RB_Max	62.51	41.74	≥ 30	Pass
	Middle	Outer_Full	39.78	40.01	≥ 30	Pass
		1RB0	41.78	59.26	≥ 30	Pass
		1RB_Max	59.8	42.29	≥ 30	Pass
	Middle	Outer_Full	42.92	43.49	≥ 30	Pass
		1RB0	42.82	56.28	≥ 30	Pass
		1RB_Max	56.71	42.35	≥ 30	Pass
CP-OFDM QPSK	Low	Outer_Full	39.93	40.2	≥ 30	Pass
		1RB0	40.81	54.41	≥ 30	Pass
		1RB_Max	54.76	40.93	≥ 30	Pass
	Middle	Outer_Full	43.37	44.26	≥ 30	Pass
		1RB0	42.27	54.57	≥ 30	Pass
		1RB_Max	55.76	42.41	≥ 30	Pass
	Middle	Outer_Full	40.12	40.58	≥ 30	Pass
		1RB0	40.78	53.21	≥ 30	Pass
		1RB_Max	53.93	41.4	≥ 30	Pass

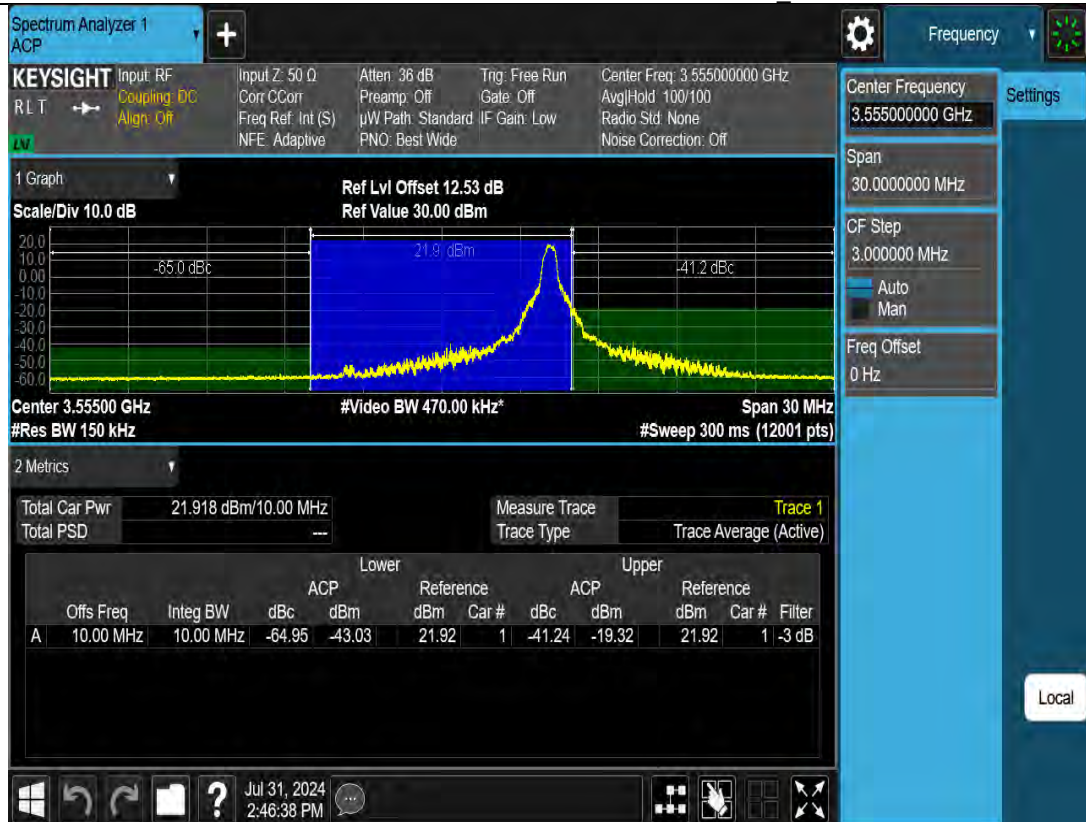
Test graph



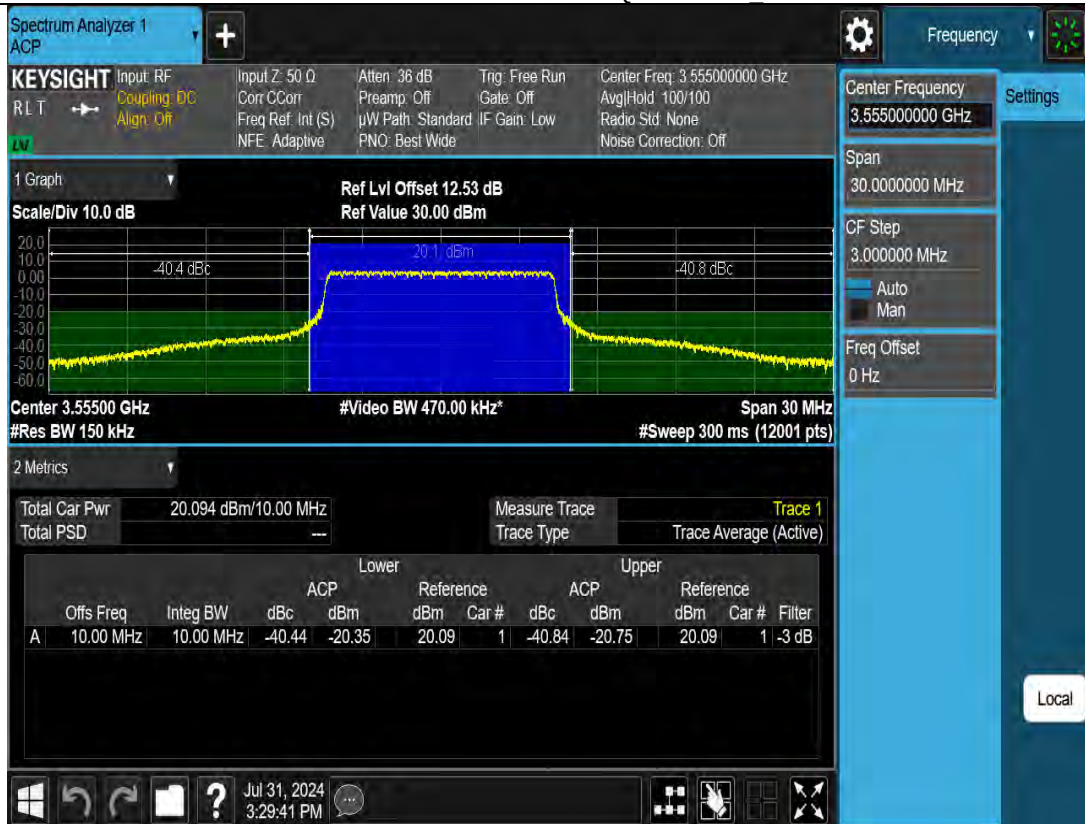
N48-10M-ACLR-L-DFT-s-OFDM-Pi2 BPSK-1RB0



N48-10M-ACLR-L-DFT-s-OFDM-Pi2 BPSK-1RB Max



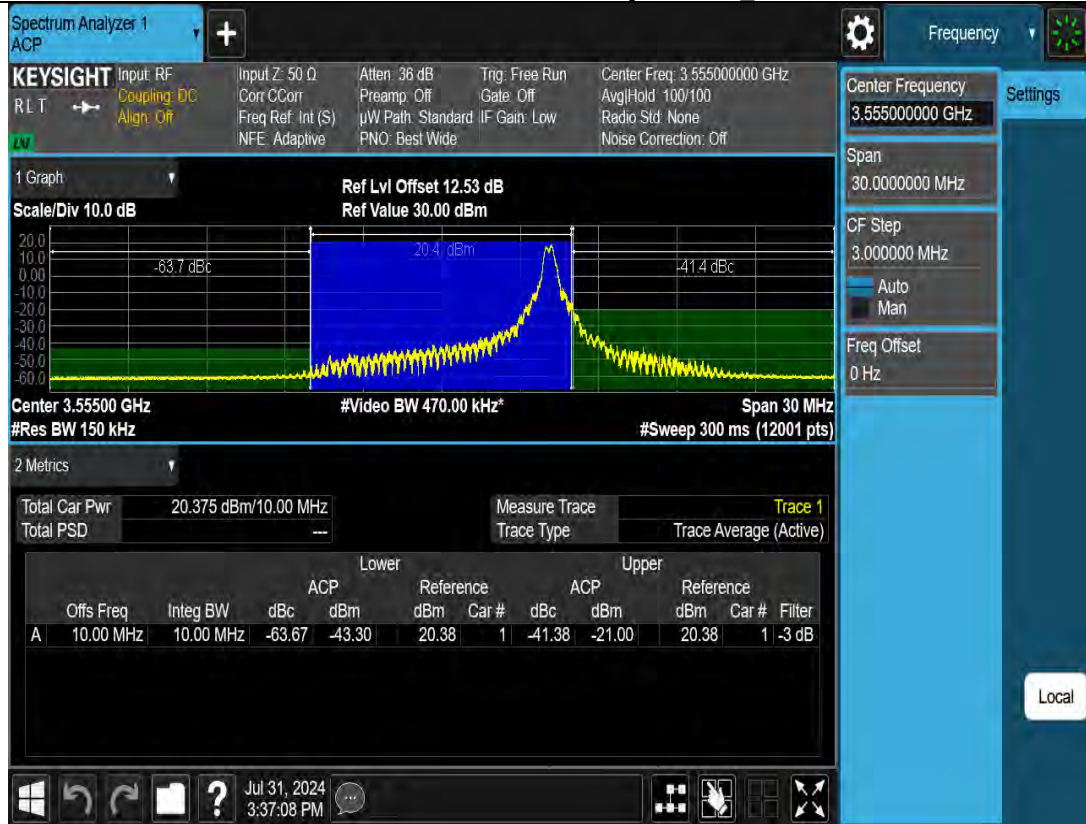
N48-10M-ACLR-L-CP-OFDM-QPSK-Outer Full



N48-10M-ACLR-L-CP-OFDM-QPSK-1RB0



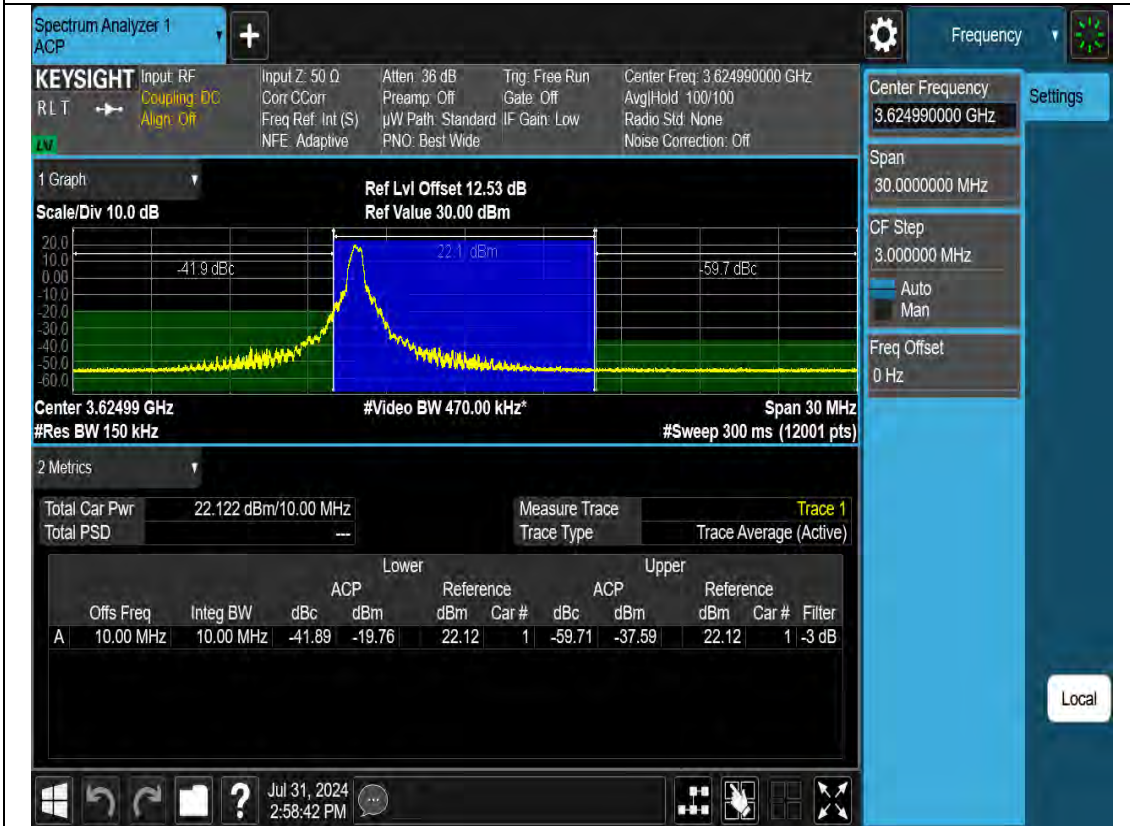
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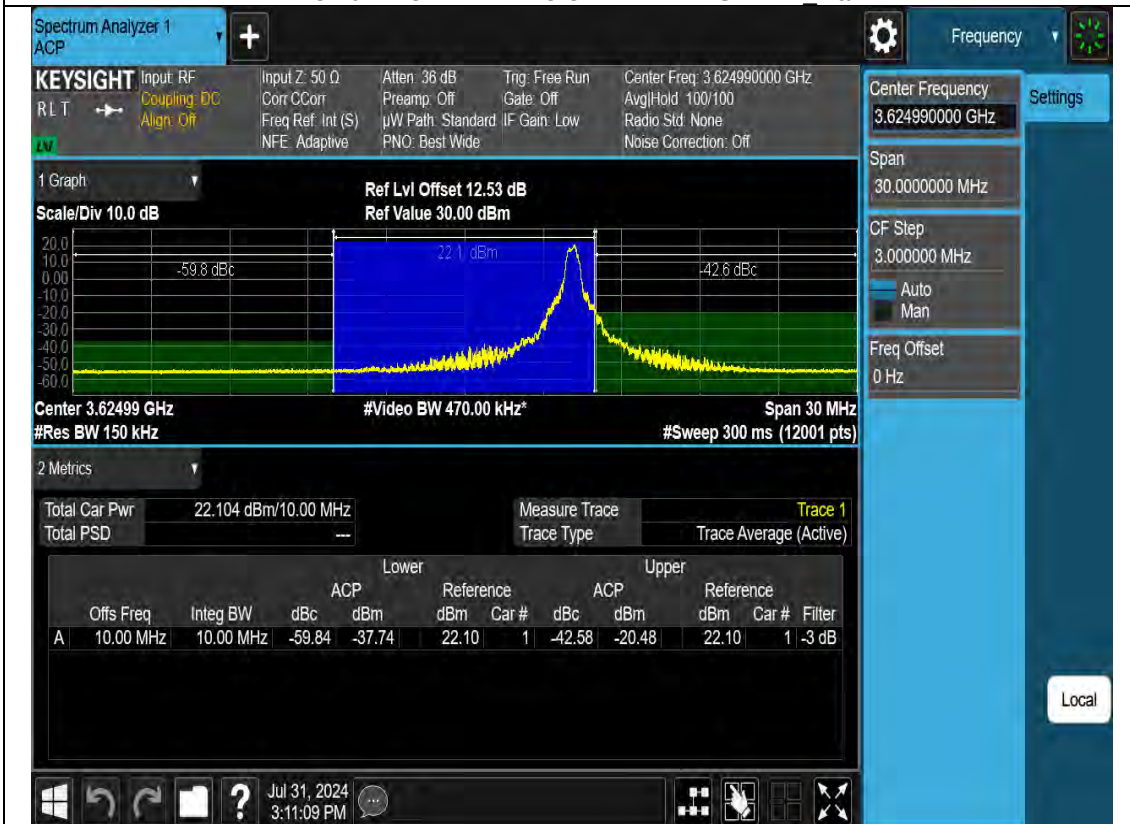
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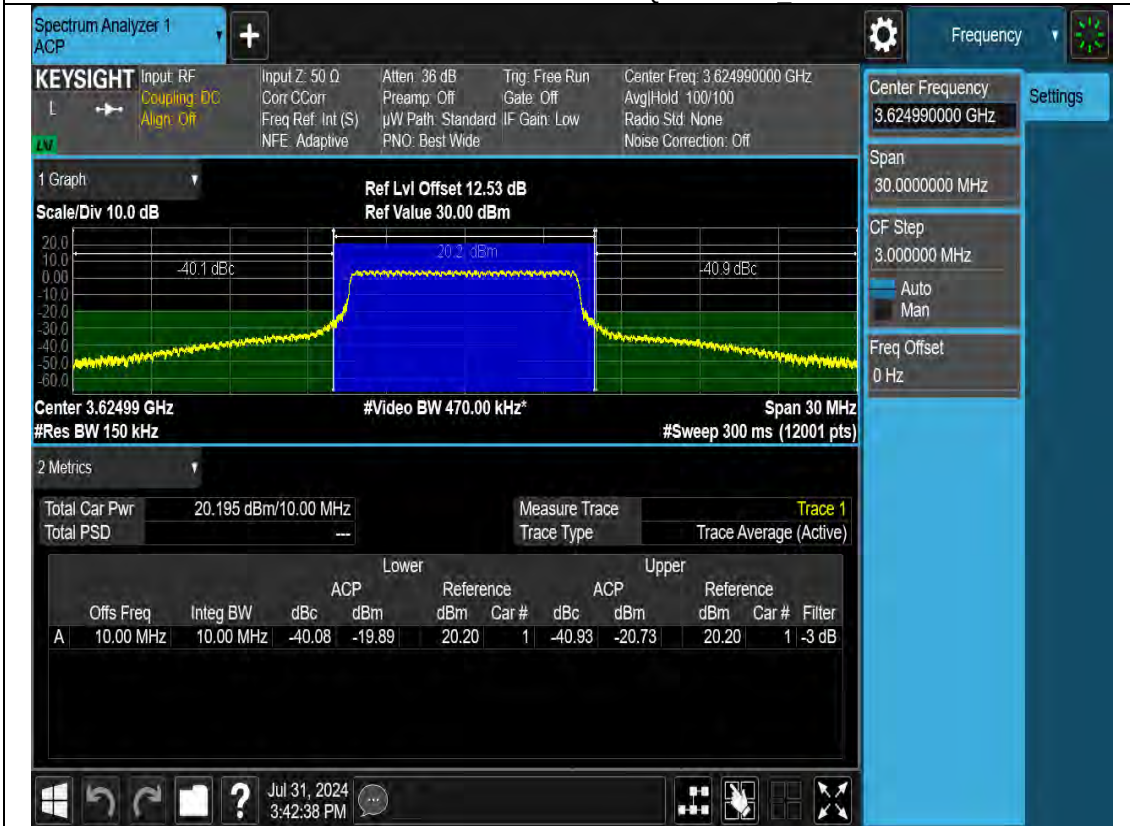
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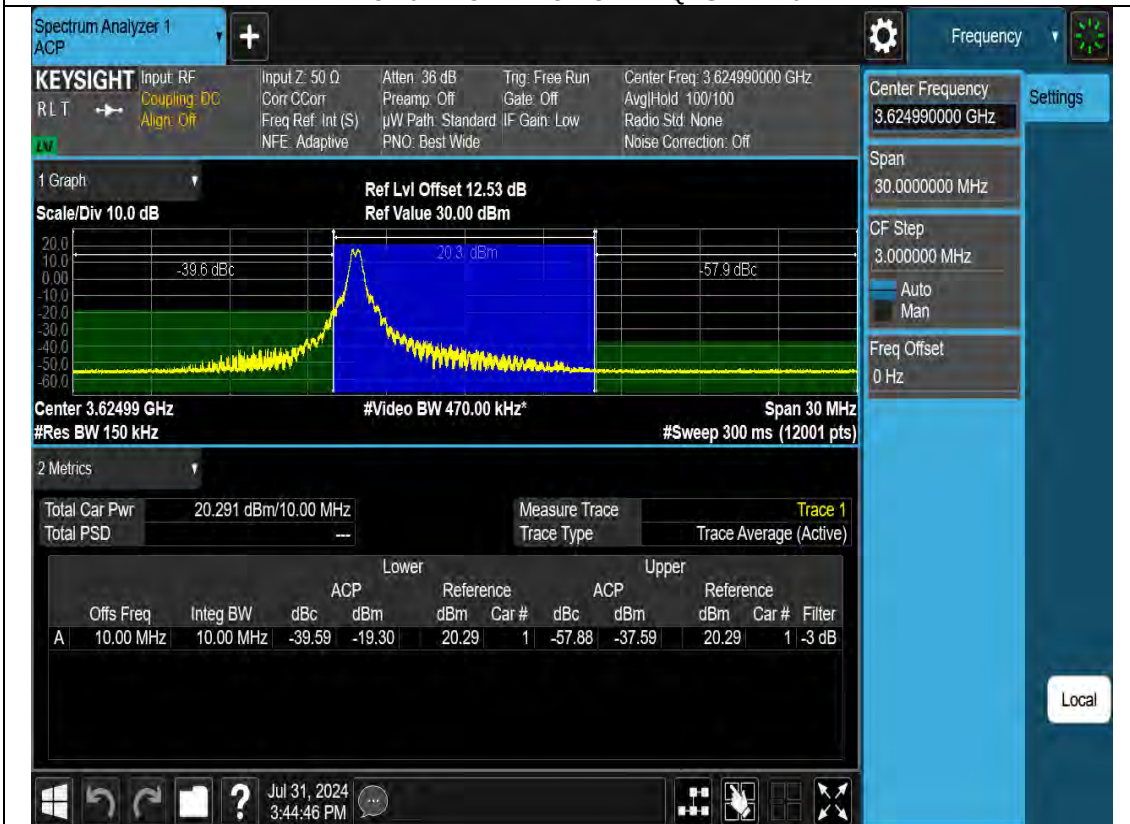
N48-10M-ACLR-M-DFT-s-OFDM-Pi2 BPSK-1RB Max



N48-10M-ACLR-M-CP-OFDM-QPSK-Outer Full



N48-10M-ACLR-M-CP-OFDM-QPSK-1RB0



N48-10M-ACLR-M-CP-OFDM-QPSK-1RB Max

Keysight Spectrum Analyzer 1 ACP

Input: RF
Coupling: DC
Align: Off

Input Z: 50 Ω
Corr: CCorr
Freq Ref: Int (S)
NFE: Adaptive

Atten: 36 dB
Preamp: Off
μW Path: Standard
PNO: Best Wide

Trig: Free Run
Gate: Off
IF Gain: Low
Noise Correction: Off

Center Freq: 3.624990000 GHz
Avg/Hold: 100/100
Radio Std: None

Center Frequency: 3.624990000 GHz

Span: 30.0000000 MHz

CF Step: 3.000000 MHz

Auto **Man**

Freq Offset: 0 Hz

1 Graph

Scale/Div: 10.0 dB

Ref Lvl Offset: 12.53 dB
Ref Value: 30.00 dBm

Center: 3.62499 GHz
#Res BW: 150 kHz
#Video BW: 470.00 kHz*
Span: 30 MHz
#Sweep: 300 ms (12001 pts)

2 Metrics

Total Car Pwr: 20.167 dBm/10.00 MHz
Total PSD: ---

Measure Trace: Trace 1
Trace Type: Trace Average (Active)

		Lower				Upper					
		ACP		Reference		ACP		Reference			
Offs	Freq	Integ BW	dBc	dBm	dBm	Car #	dBc	dBm	dBm	Car #	Filter
A	10.00 MHz	10.00 MHz	-57.95	-37.79	20.17	1	-41.01	-20.84	20.17	1	-3 dB

Local

Spectrum Analyzer 1
ACP

KEYSIGHT Input: RF
R L T $\rightarrow$ Coupling: DC
Align: Off

Input Z: 50 Ω
Corr C Corr
Freq Ref: Int (S)
NFE: Adaptive

Atten: 36 dB
Preamp: Off
 μ W Path: Standard
PNO: Best Wide

Trig: Free Run
Gate: Off
IF Gain: Low

Center Freq: 3.694980000 GHz
Avg/Hold: 100/100
Radio Std: None
Noise Correction: Off

Center Frequency
3.694980000 GHz

Span
30.0000000 MHz

CF Step
3.0000000 MHz

Auto
Man

Freq Offset
0 Hz

1 Graph
Scale/Div 10.0 dB
Ref Lvl Offset 12.53 dB
Ref Value 30.00 dBm

21.8 dBm
-43.4 dBc
-43.2 dBc

Center 3.69498 GHz
#Res BW 150 kHz
#Video BW 470.00 kHz*
Span 30 MHz
#Sweep 300 ms (12001 pts)

2 Metrics
Total Car Pwr 21.808 dBm/10.00 MHz
Total PSD ---

Measure Trace
Trace Type Trace Average (Active)

Trace 1

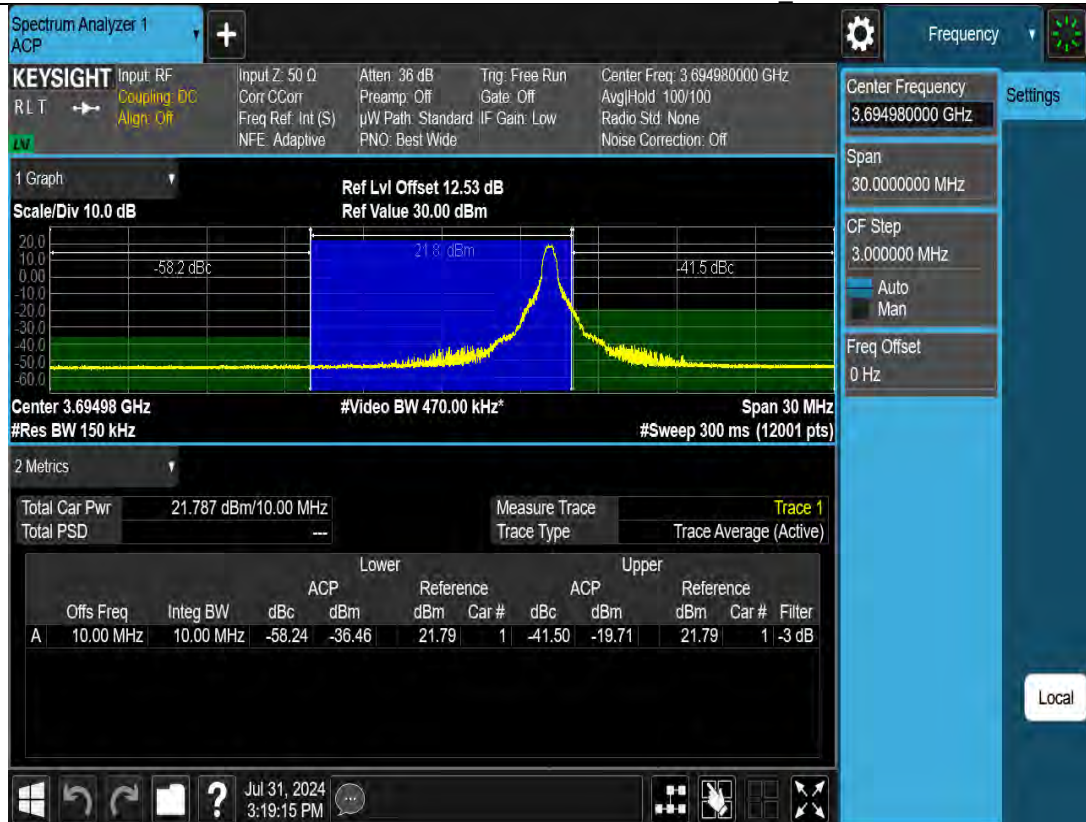
Lower							Upper				
Offs Freq	Integ BW	dBc	ACP dBm	Reference dBm	Car #		ACP dBc	ACP dBm	Reference dBm	Car #	Filter
A	10.00 MHz	10.00 MHz	-43.44	-21.63	21.81	1	-43.16	-21.35	21.81	1	-3 dB

Local

N48-10M-ACLR-H-DFT-s-OFDM-Pi2 BPSK-1RB0



N48-10M-ACLR-H-DFT-s-OFDM-Pi2 BPSK-1RB Max



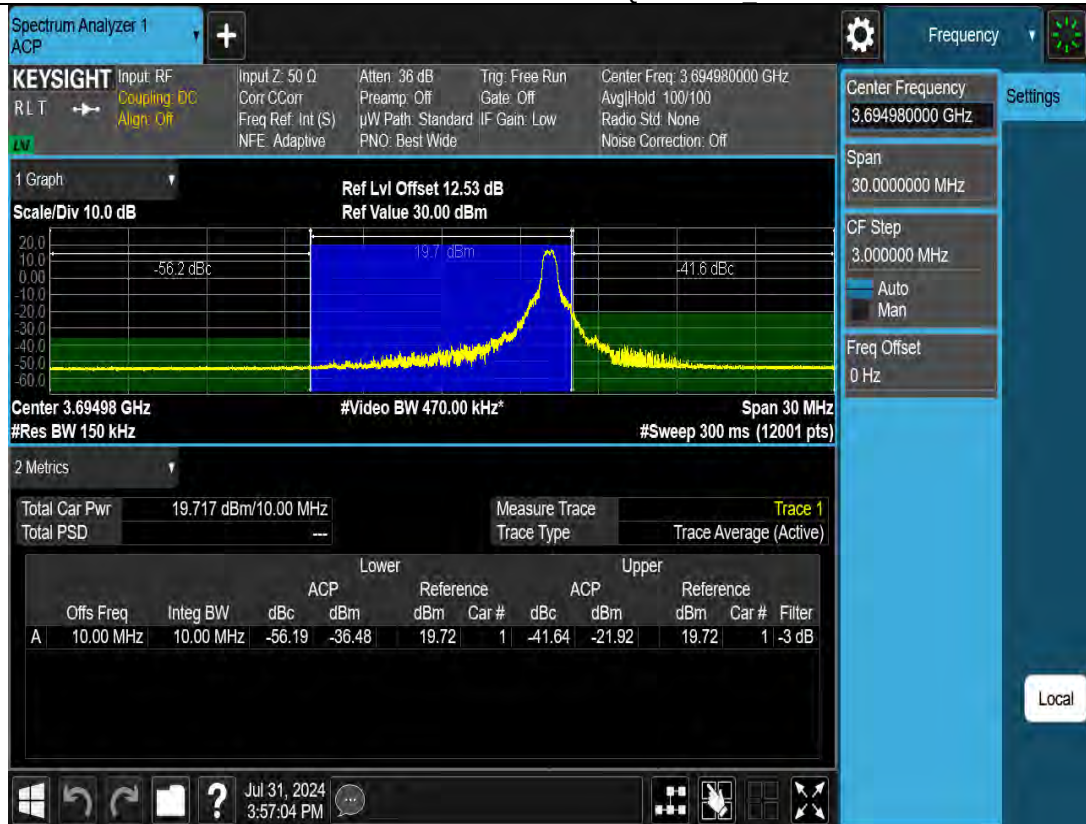
N48-10M-ACLR-H-CP-OFDM-QPSK-Outer Full



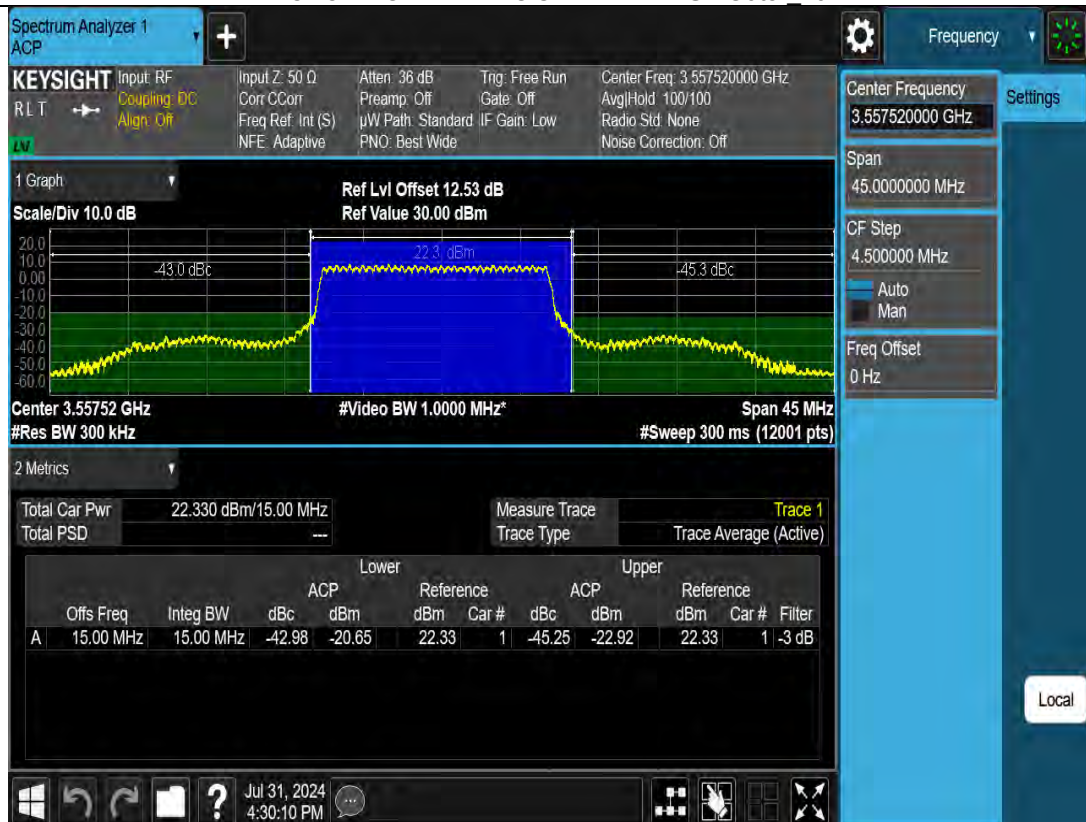
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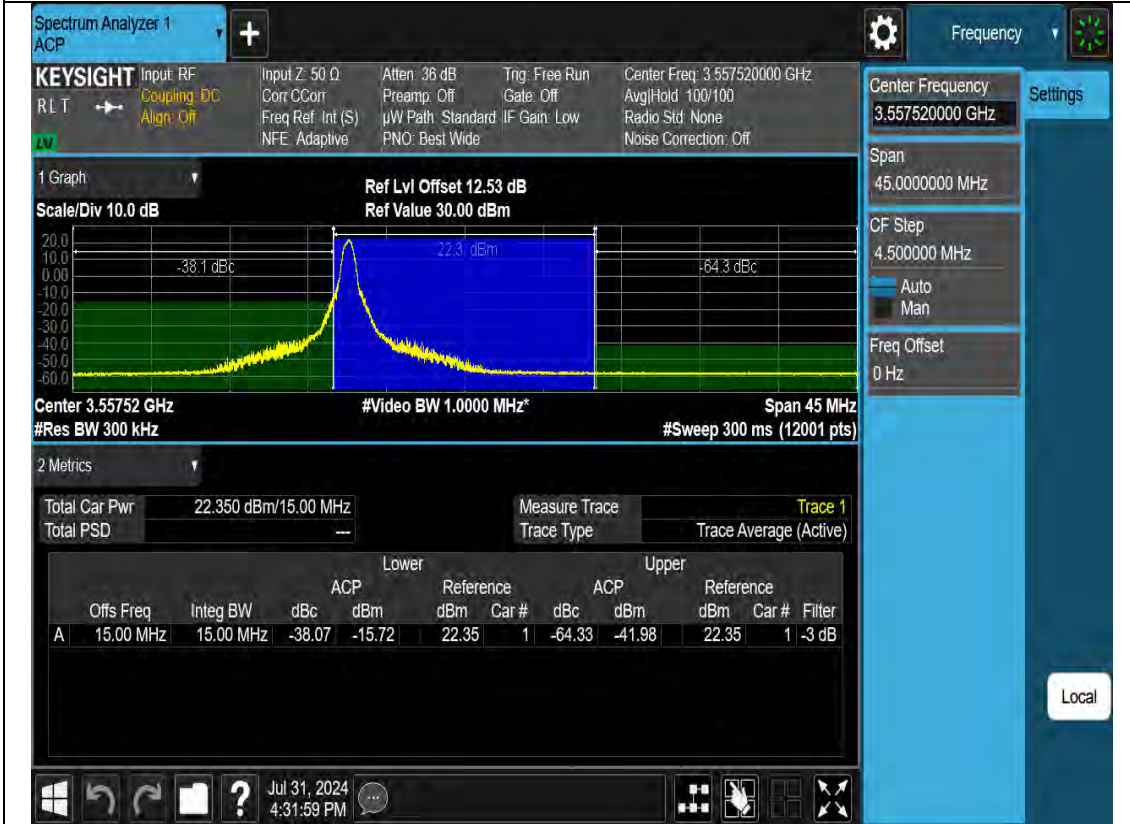
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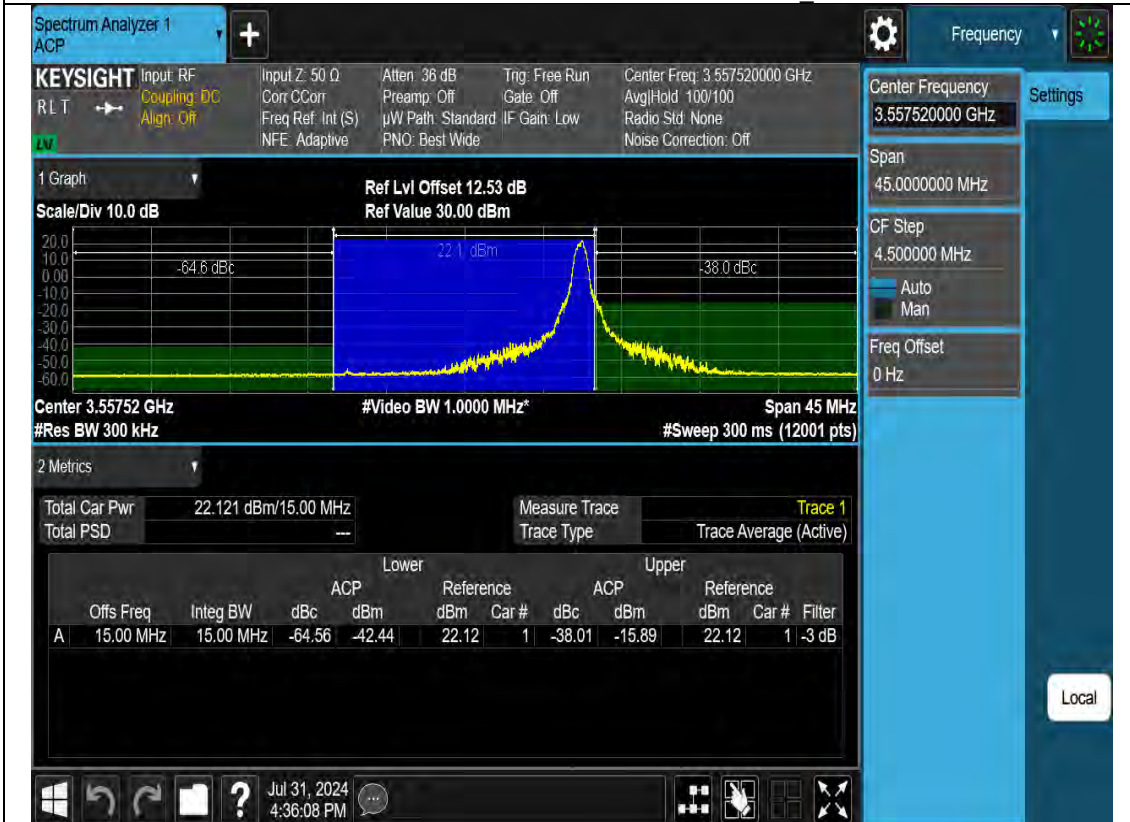
N48-15M-ACLR-L-DFT-s-OFDM-Pi2 BPSK-Outer Full



N48-15M-ACLR-L-DFT-s-OFDM-Pi2 BPSK-1RB0



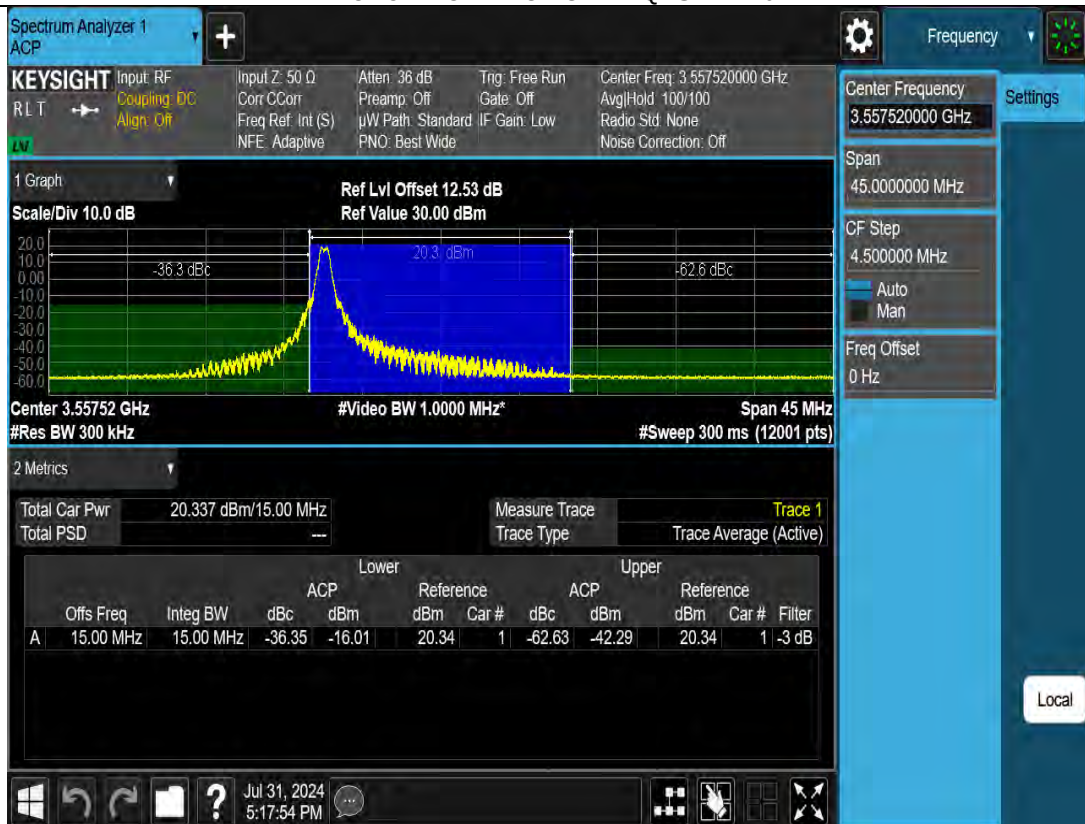
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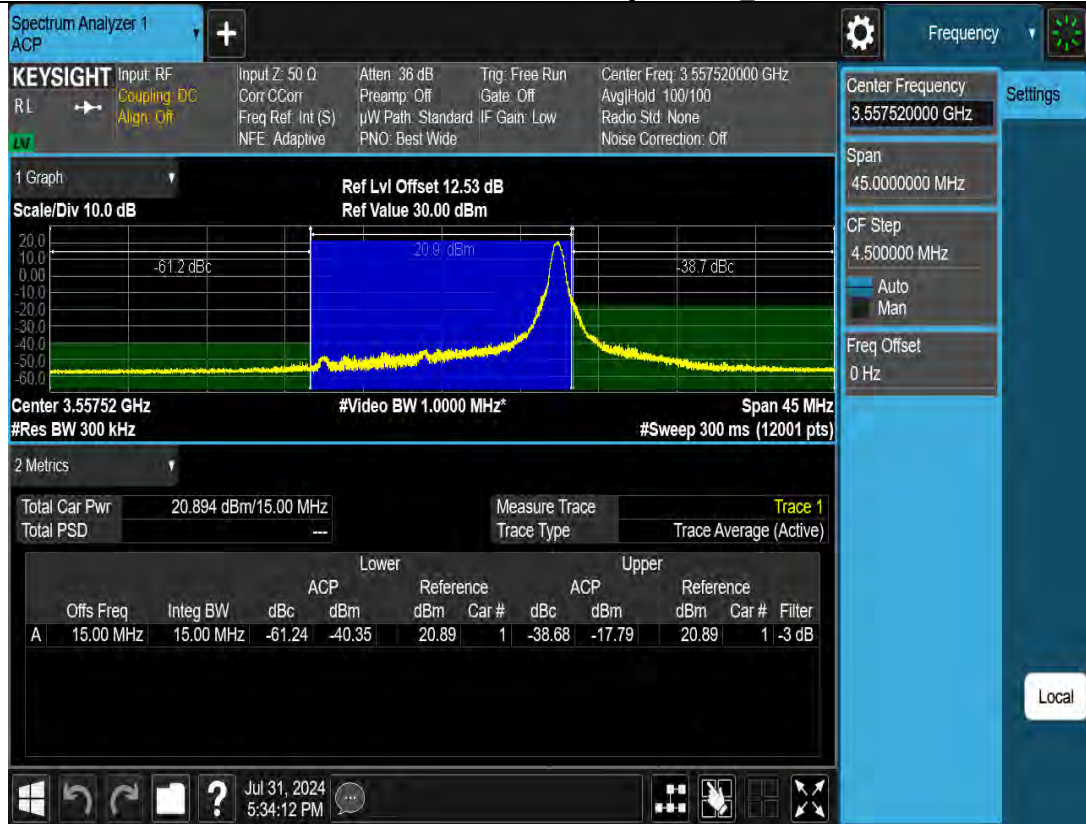
N48-15M-ACLR-L-CP-OFDM-QPSK-Outer Full



N48-15M-ACLR-L-CP-OFDM-QPSK-1RB0



N48-15M-ACLR-L-CP-OFDM-QPSK-1RB Max



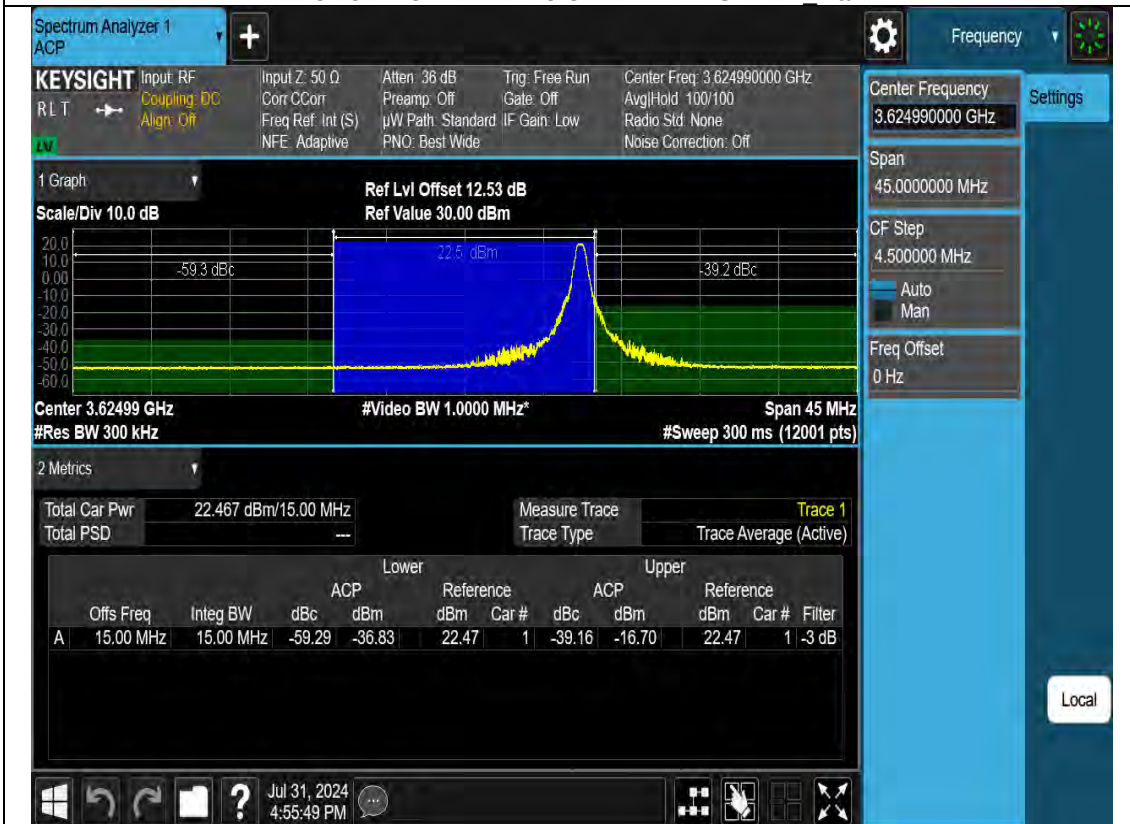
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N48-15M-ACLR-M-DFT-s-OFDM-Pi2 BPSK-1RB0



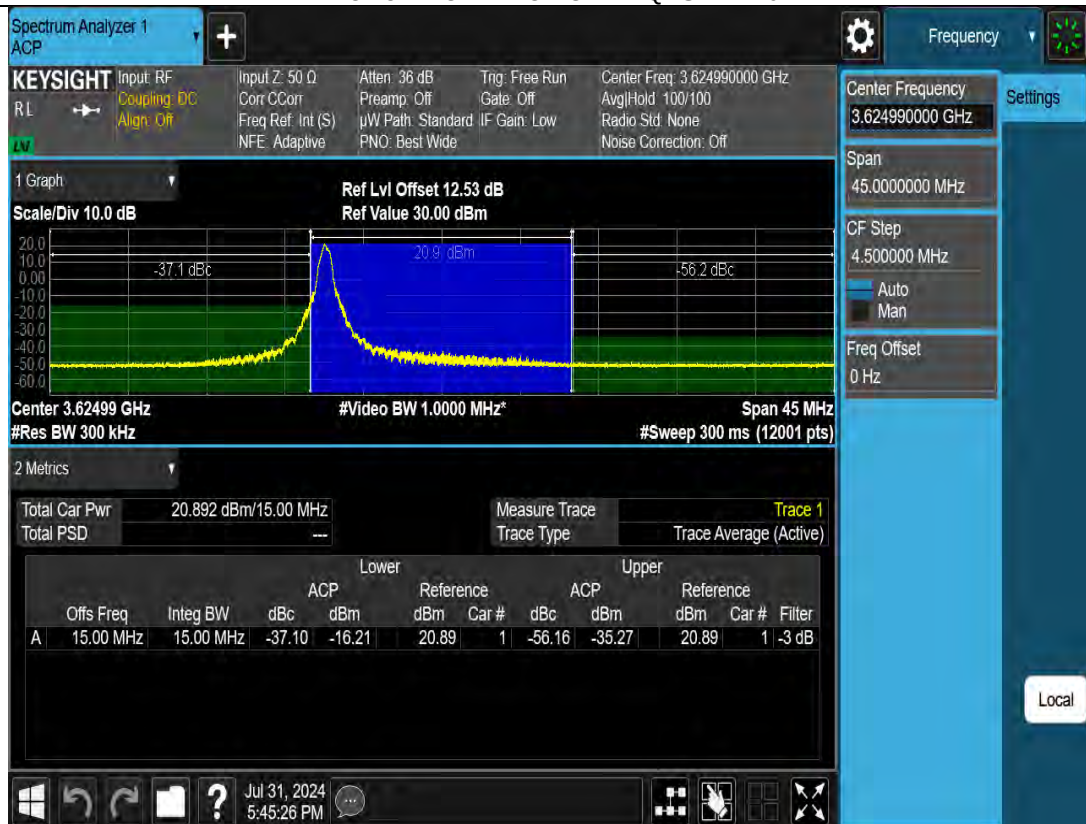
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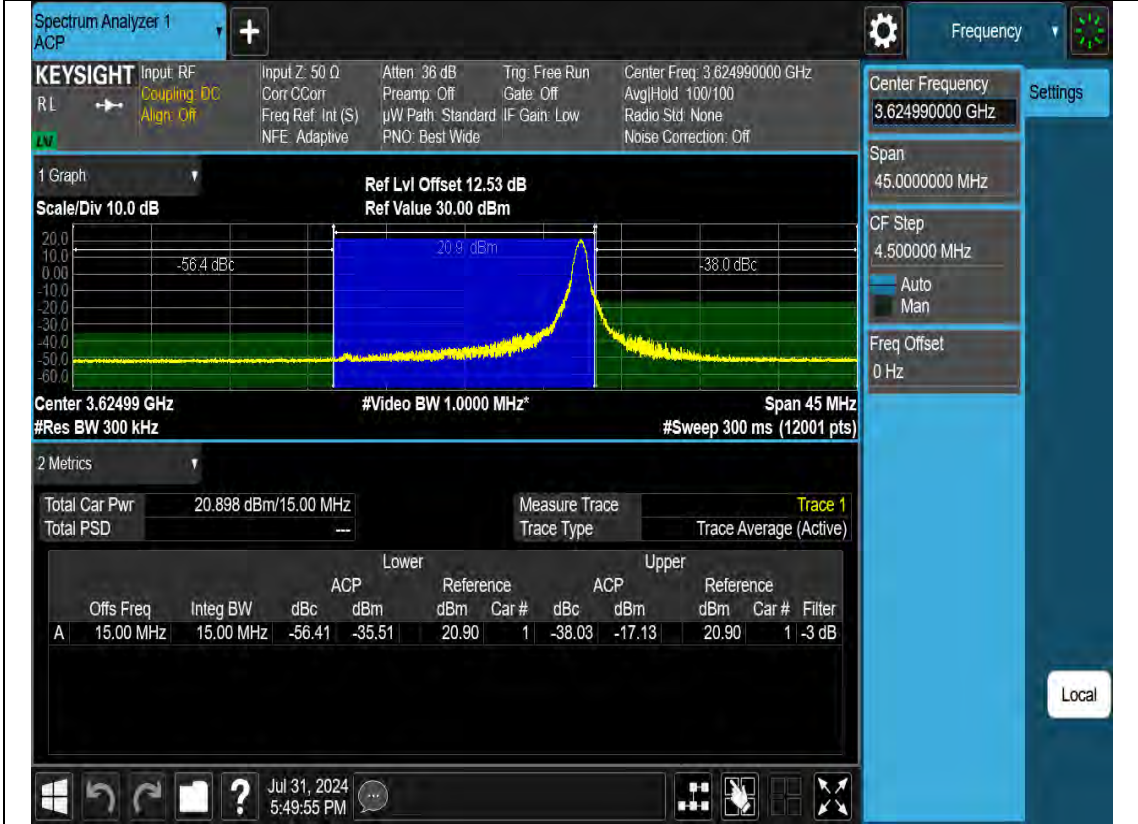
N48-15M-ACLR-M-CP-OFDM-QPSK-Outer Full



N48-15M-ACLR-M-CP-OFDM-QPSK-1RB0



N48-15M-ACLR-M-CP-OFDM-QPSK-1RB Max



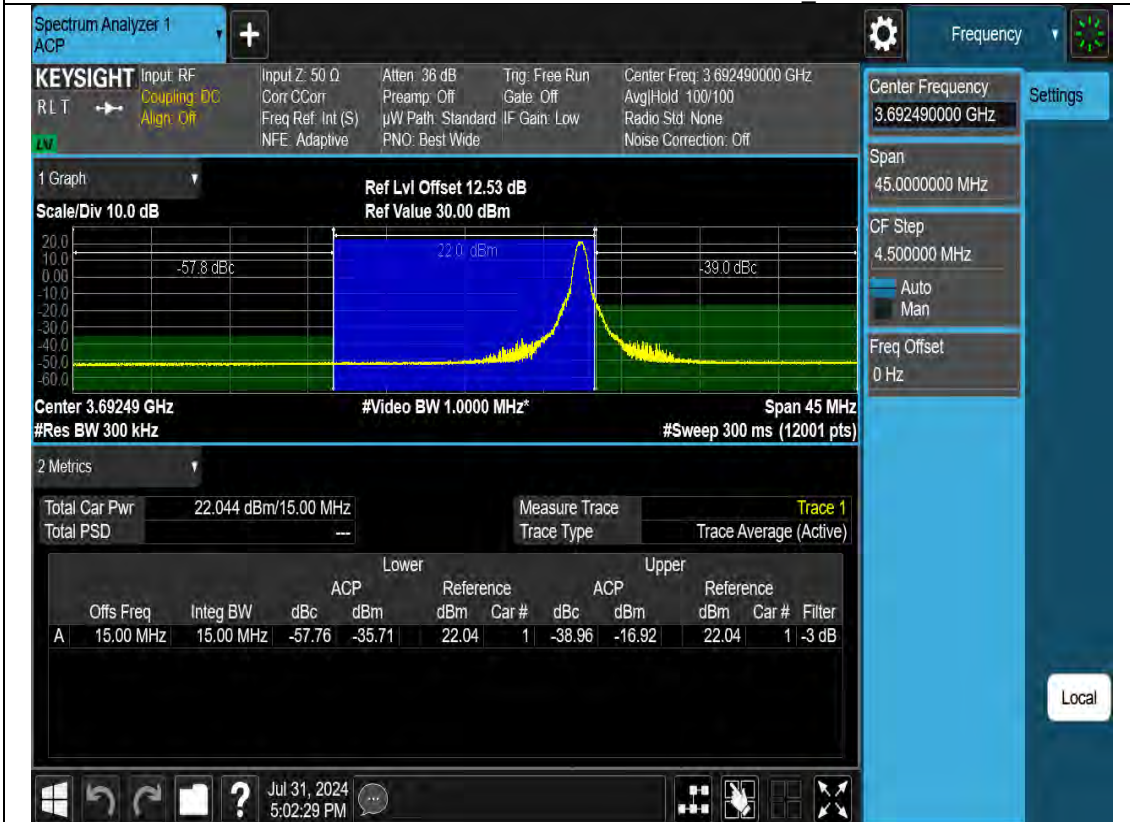
N48-15M-ACLR-H-DFT-s-OFDM-Pi2 BPSK-Outer Full



N48-15M-ACLR-H-DFT-s-OFDM-Pi2 BPSK-1RB0



N48-15M-ACLR-H-DFT-s-OFDM-Pi2 BPSK-1RB Max



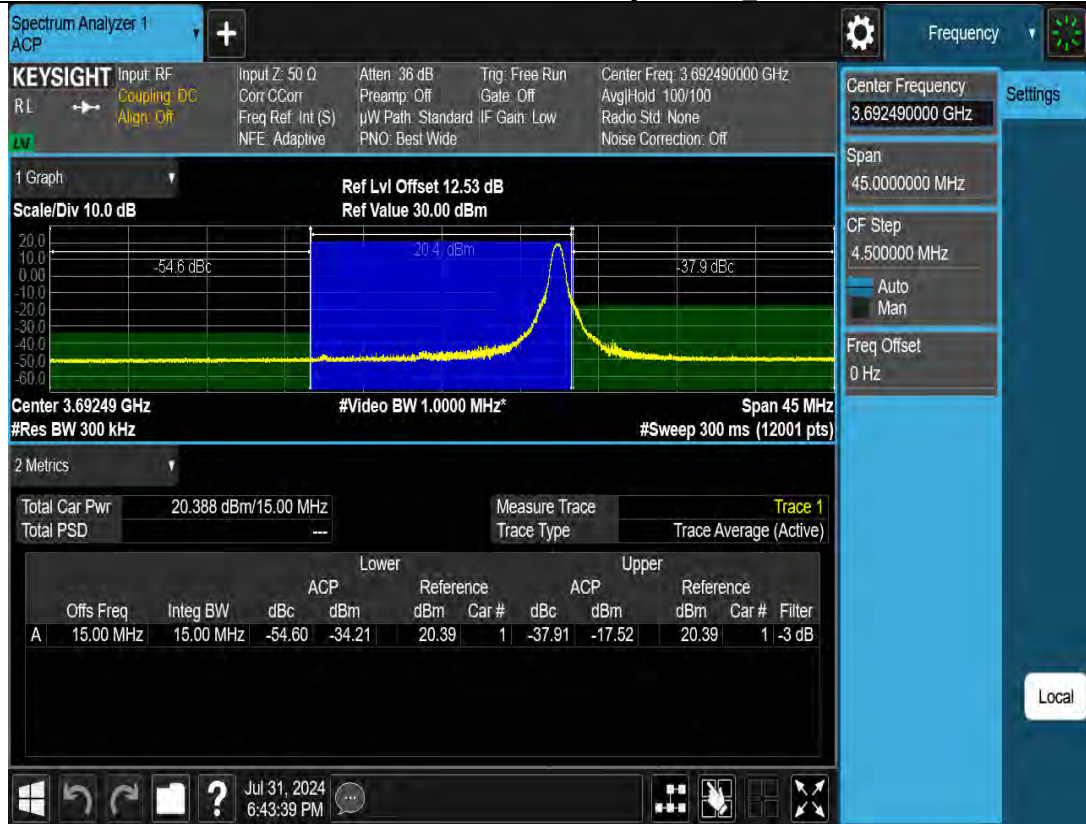
N48-15M-ACLR-H-CP-OFDM-QPSK-Outer Full



N48-15M-ACLR-H-CP-OFDM-QPSK-1RB0



N48-15M-ACLR-H-CP-OFDM-QPSK-1RB Max



N48-20M-ACLR-L-DFT-s-OFDM-Pi2 BPSK-Outer Full



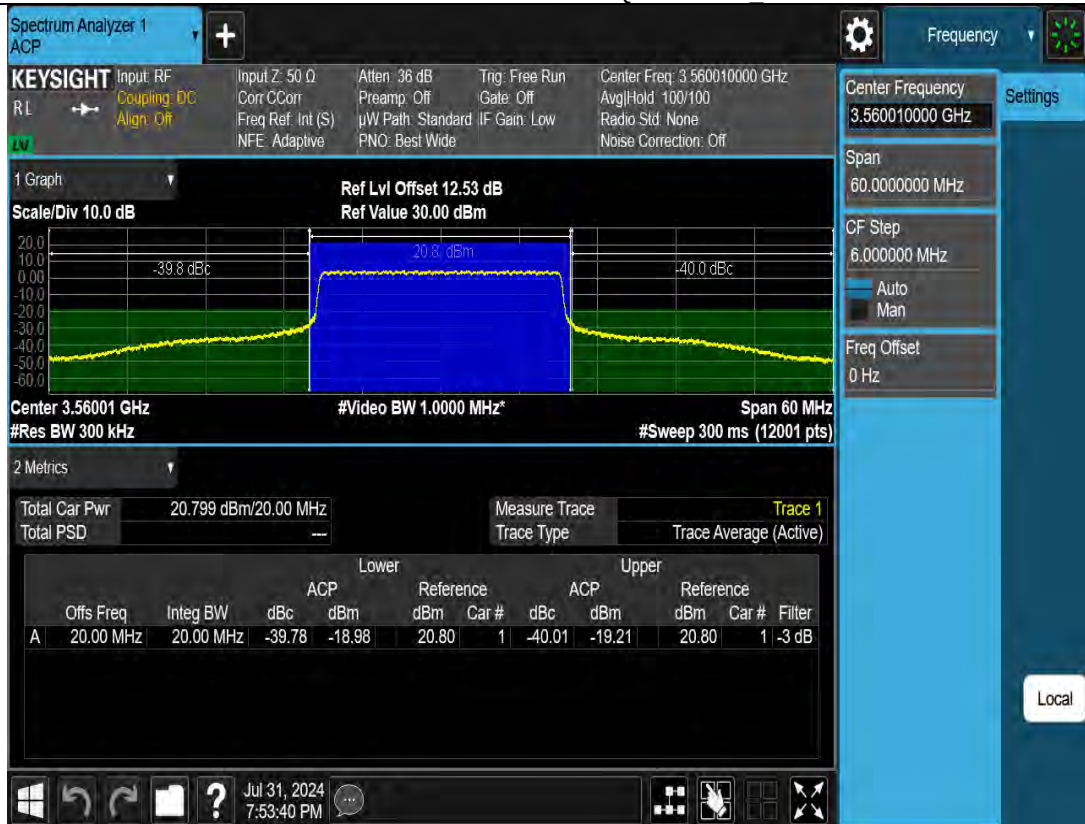
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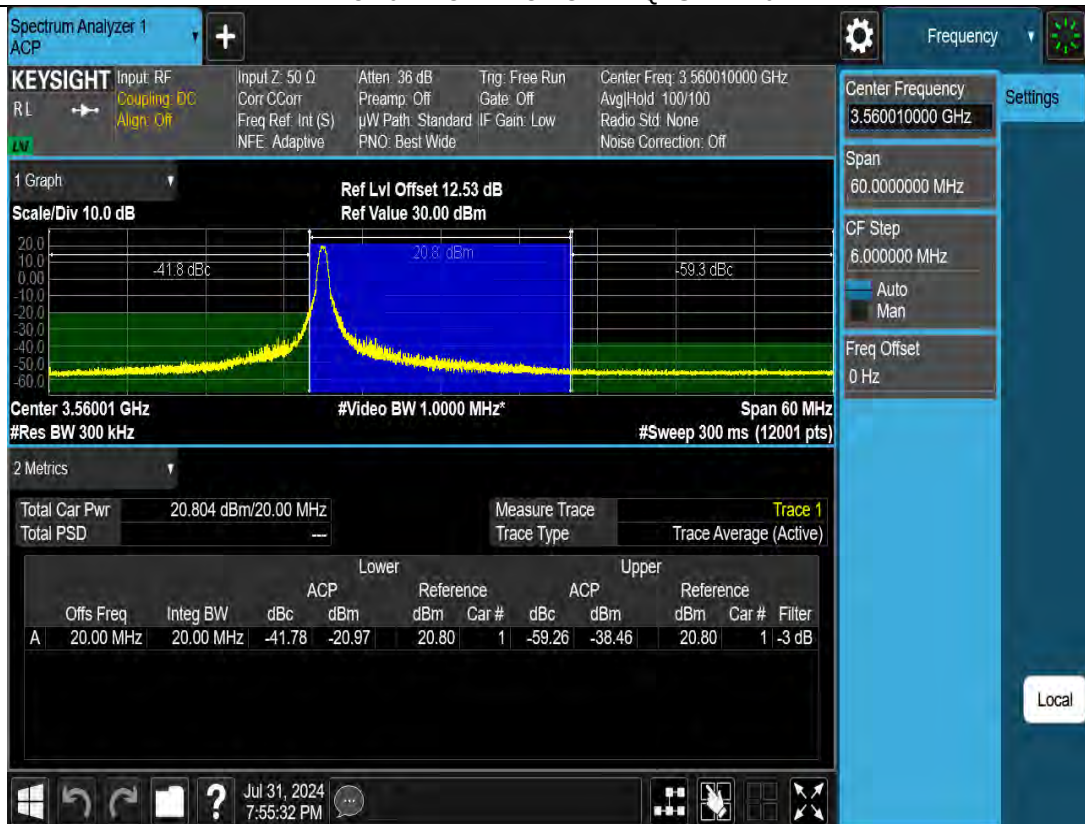
N48-20M-ACLR-L-DFT-s-OFDM-Pi2 BPSK-1RB Max



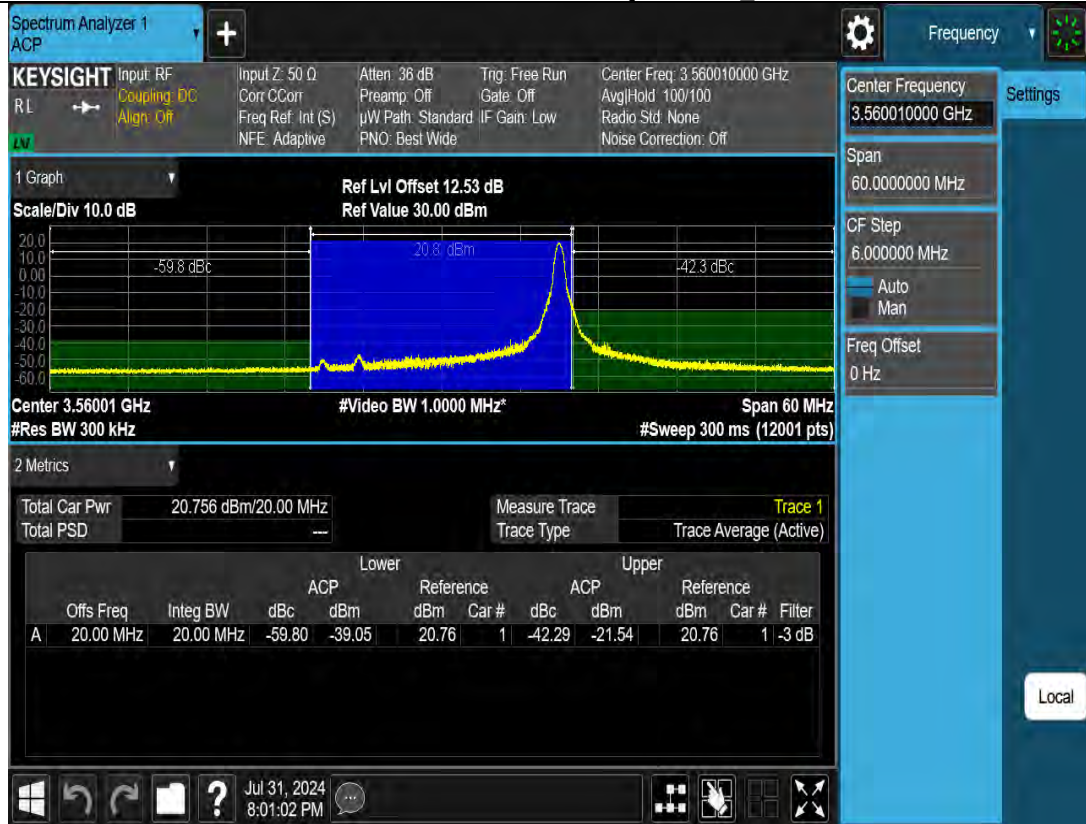
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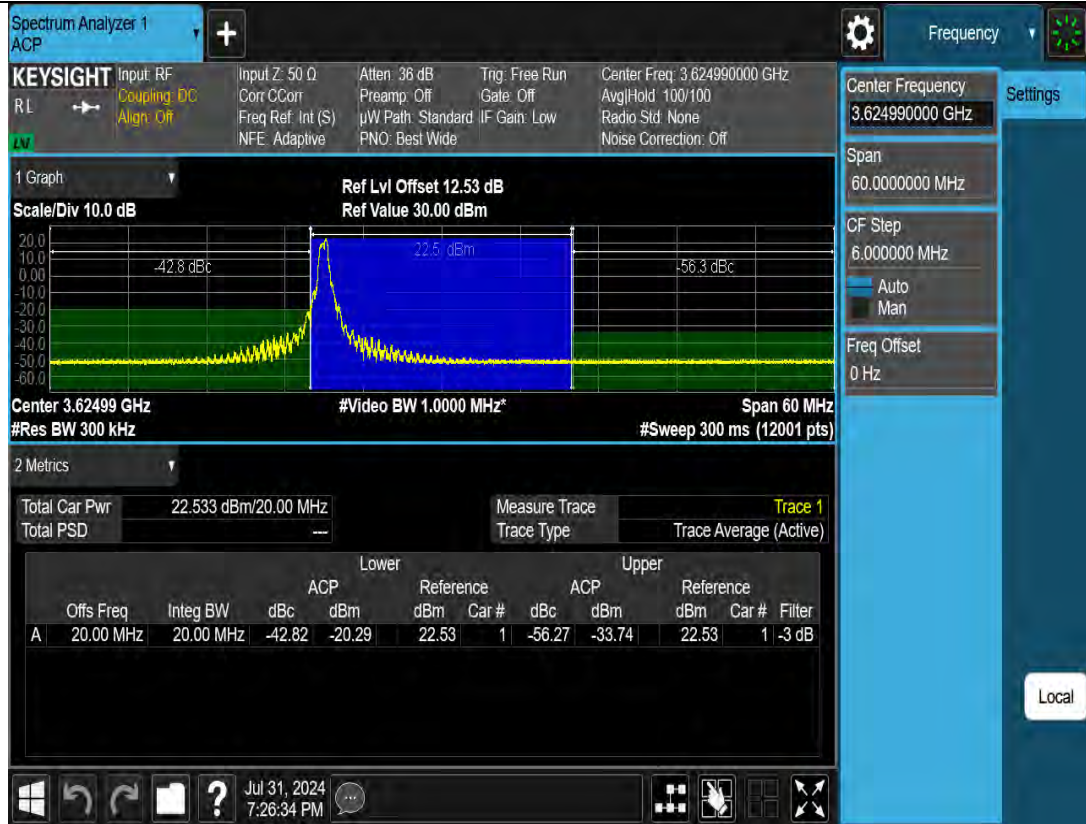
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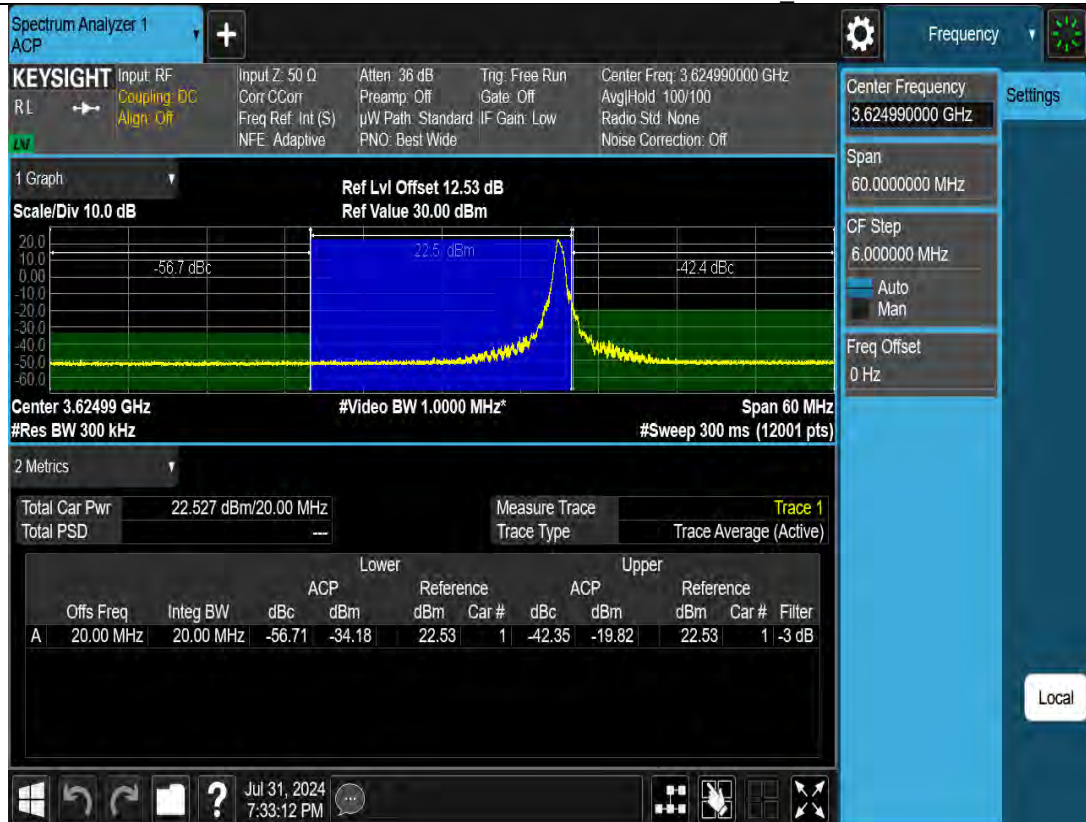
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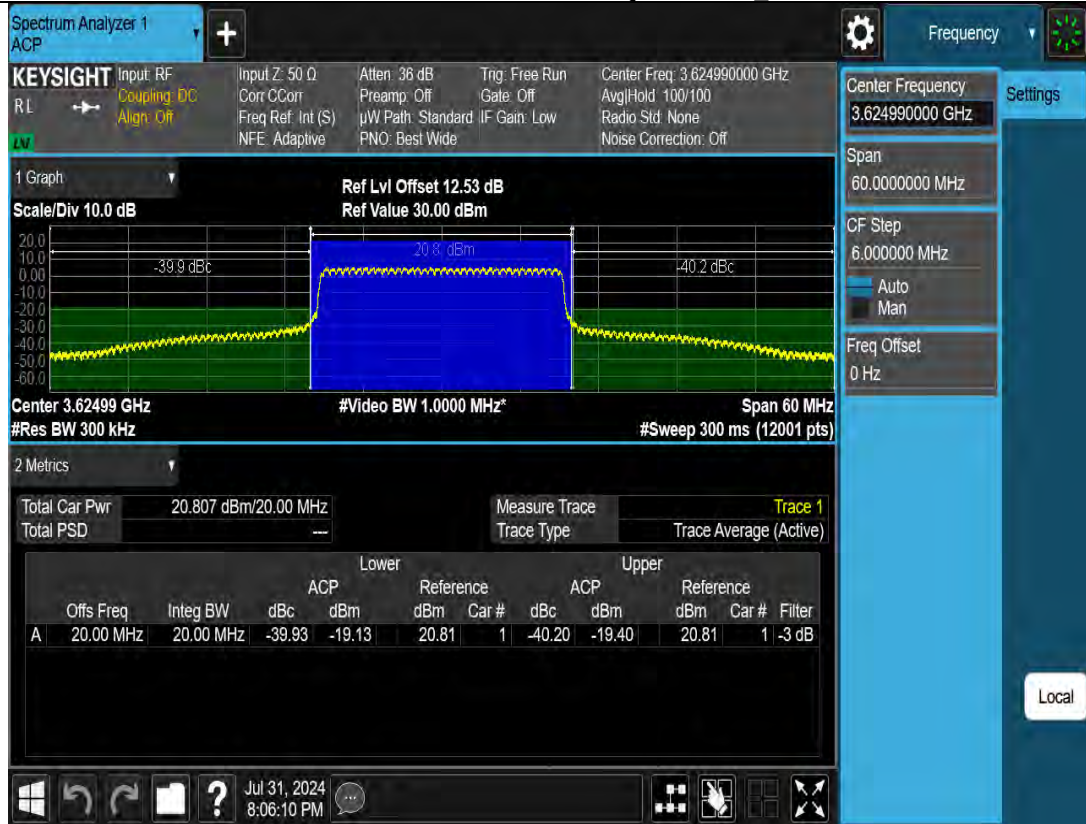
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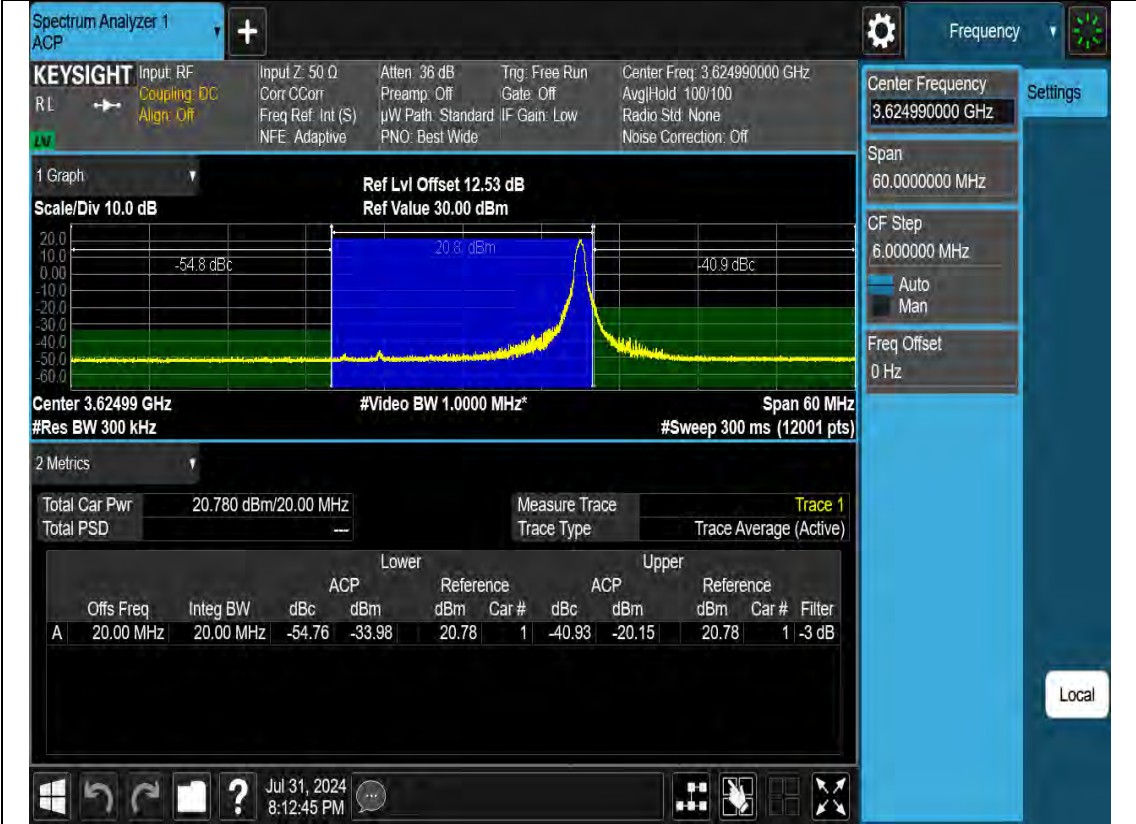
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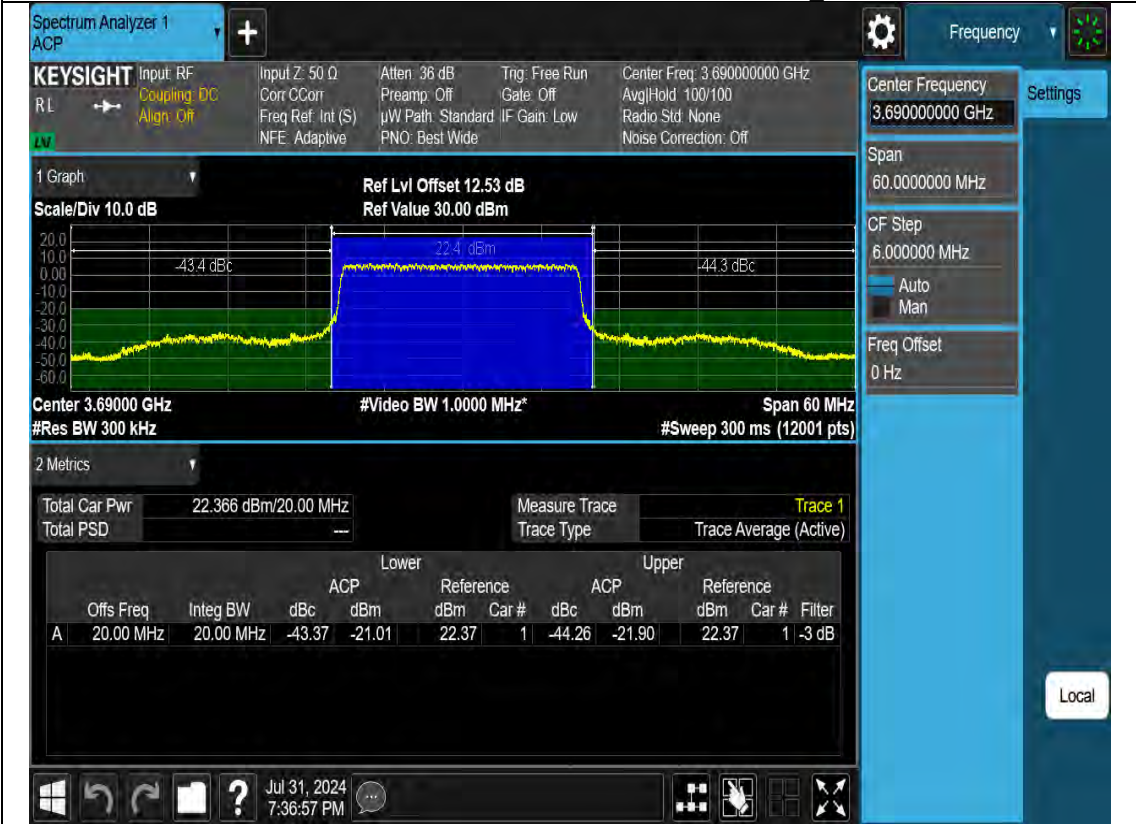
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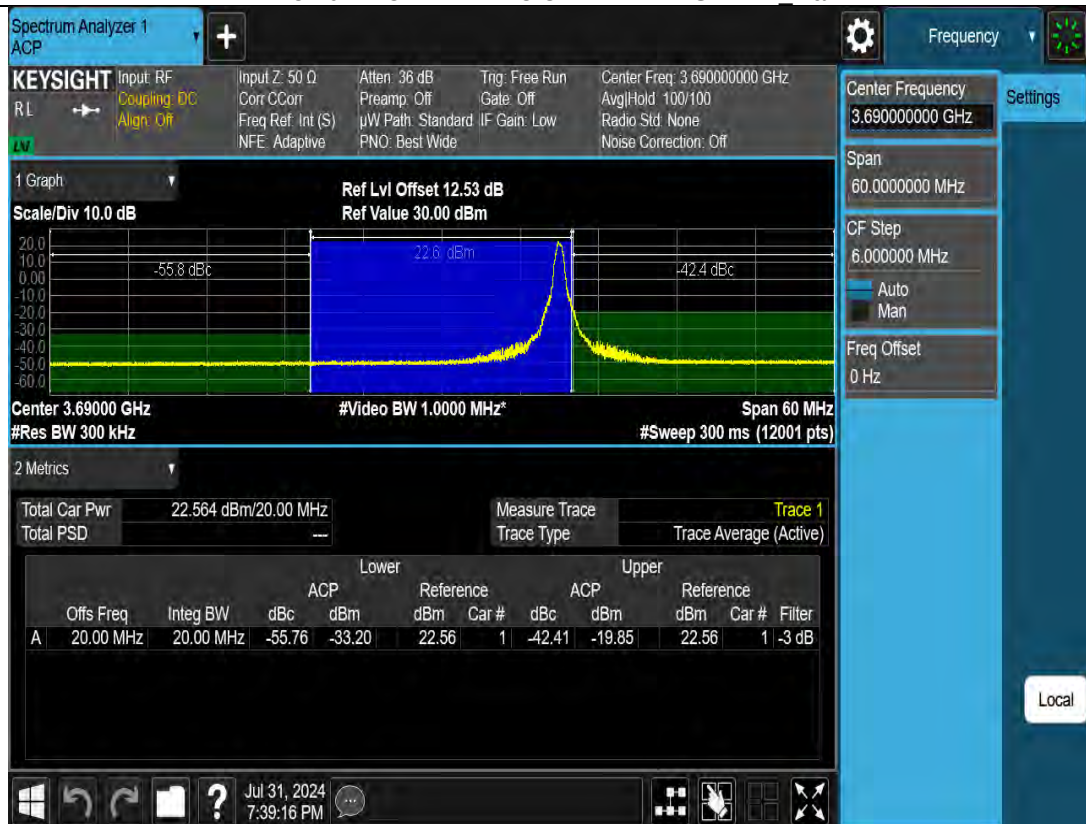
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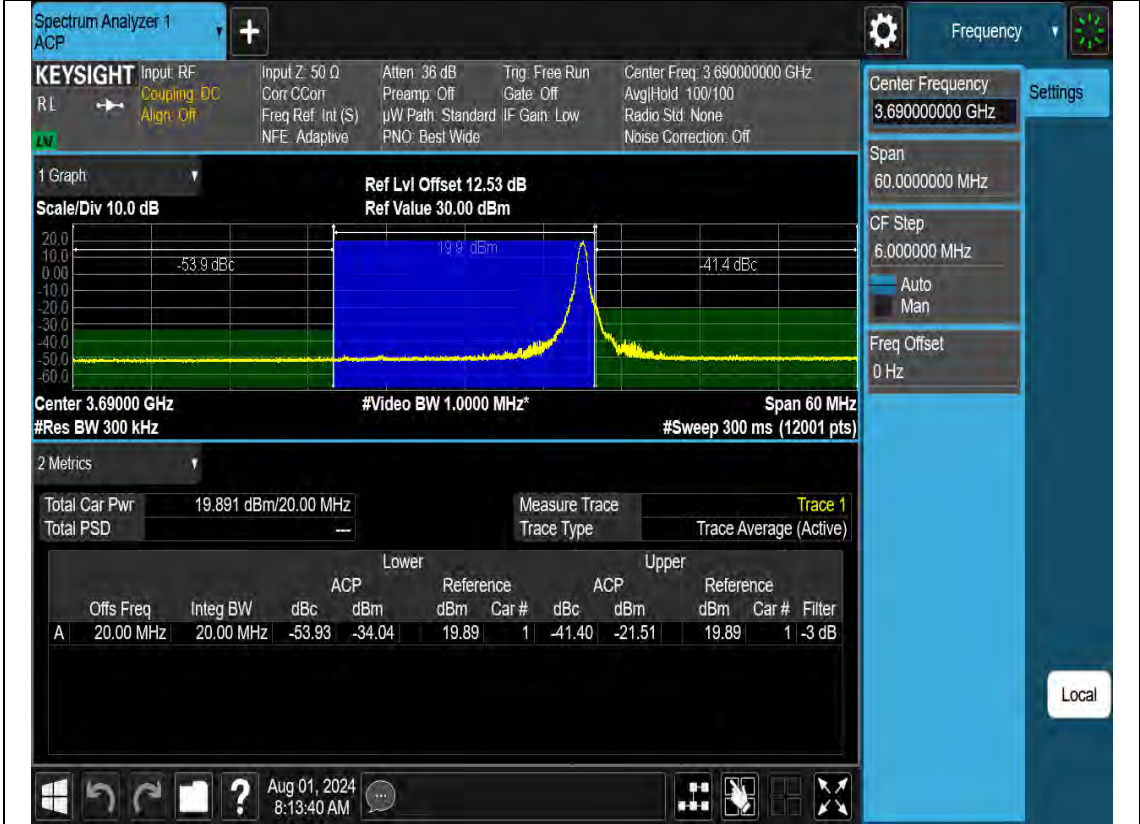
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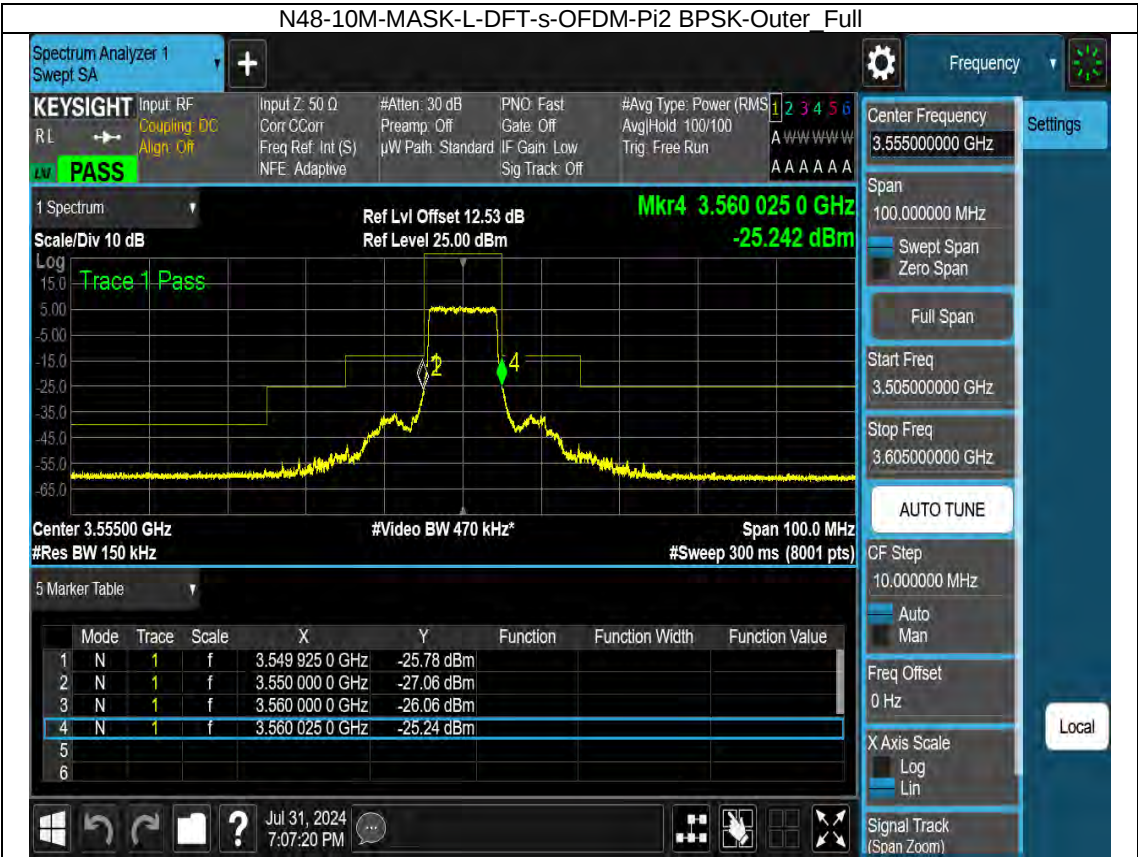


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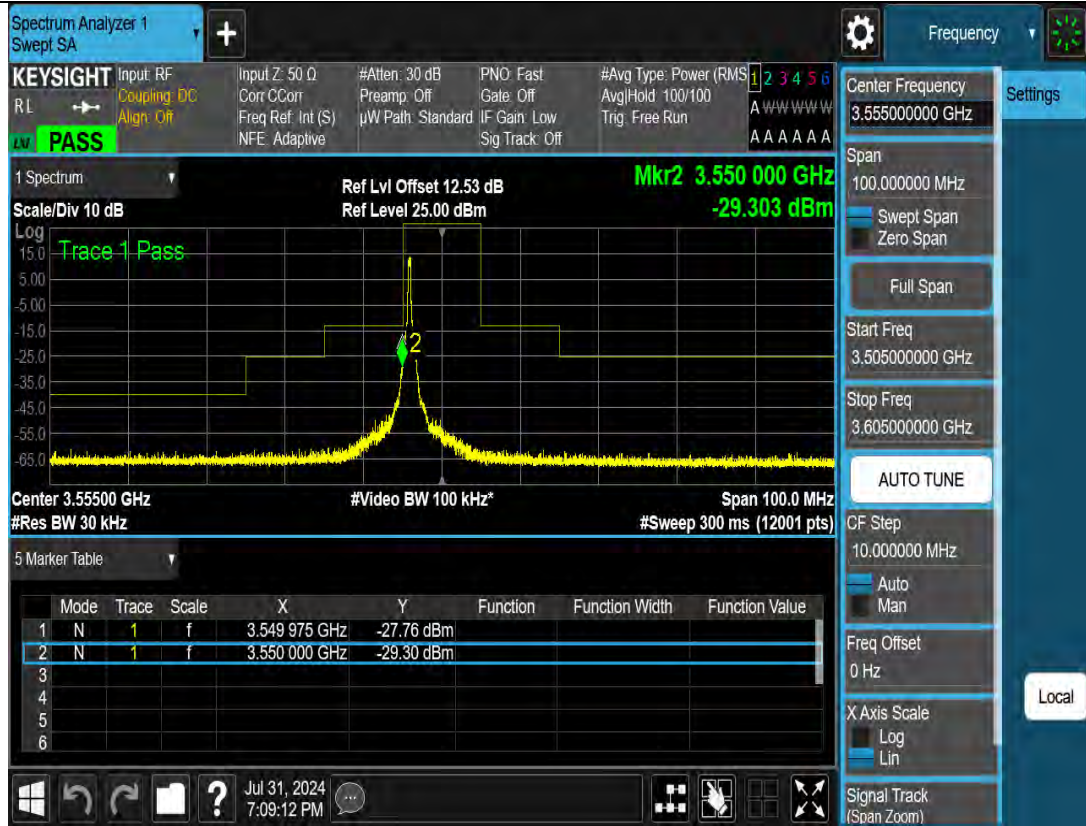


Emission mask

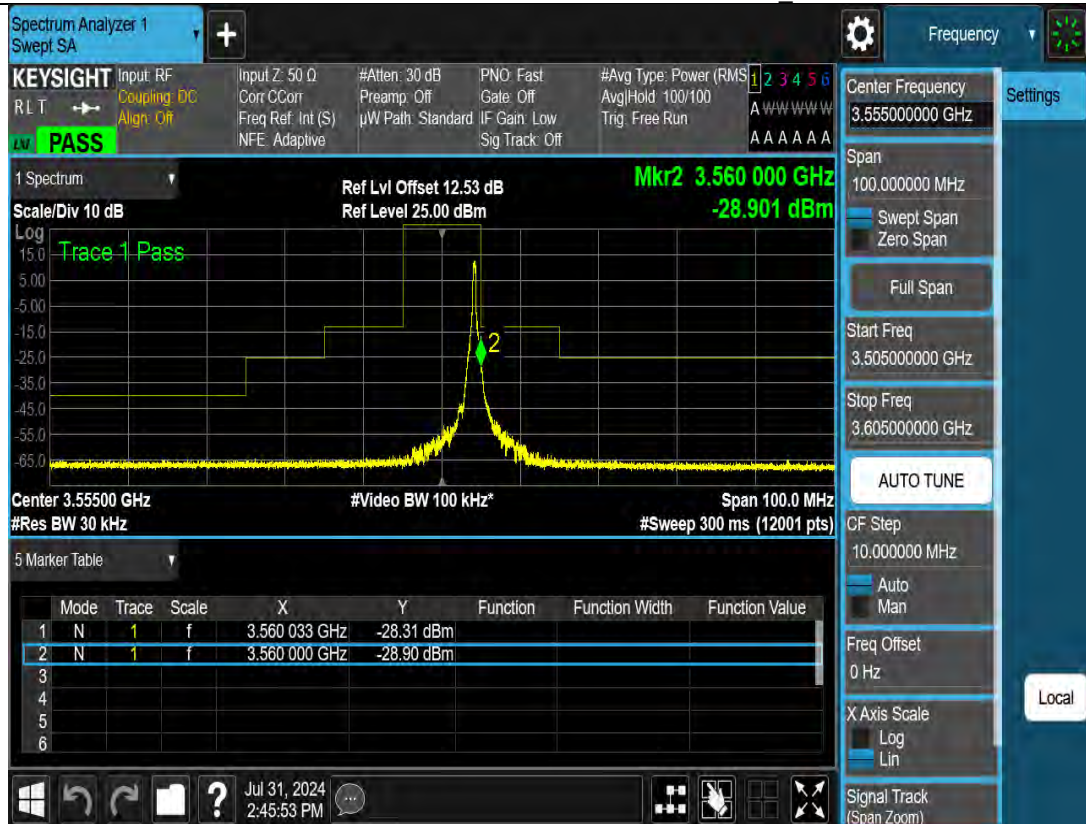
test graph



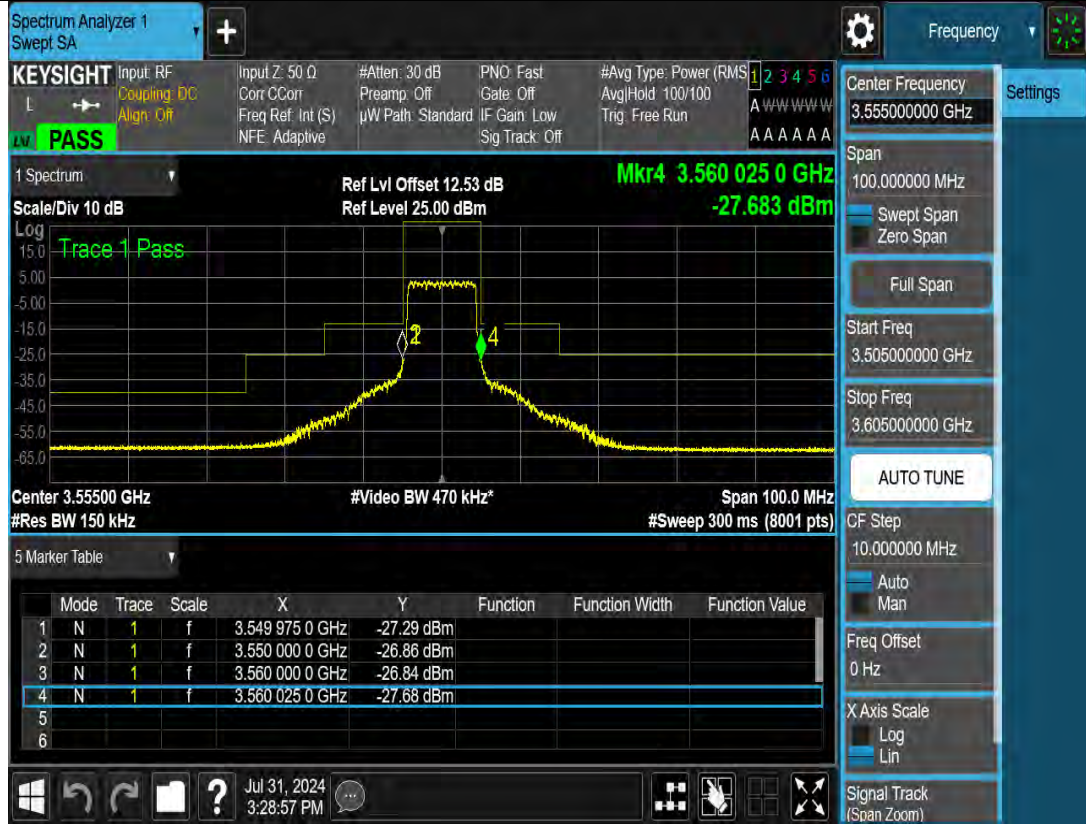
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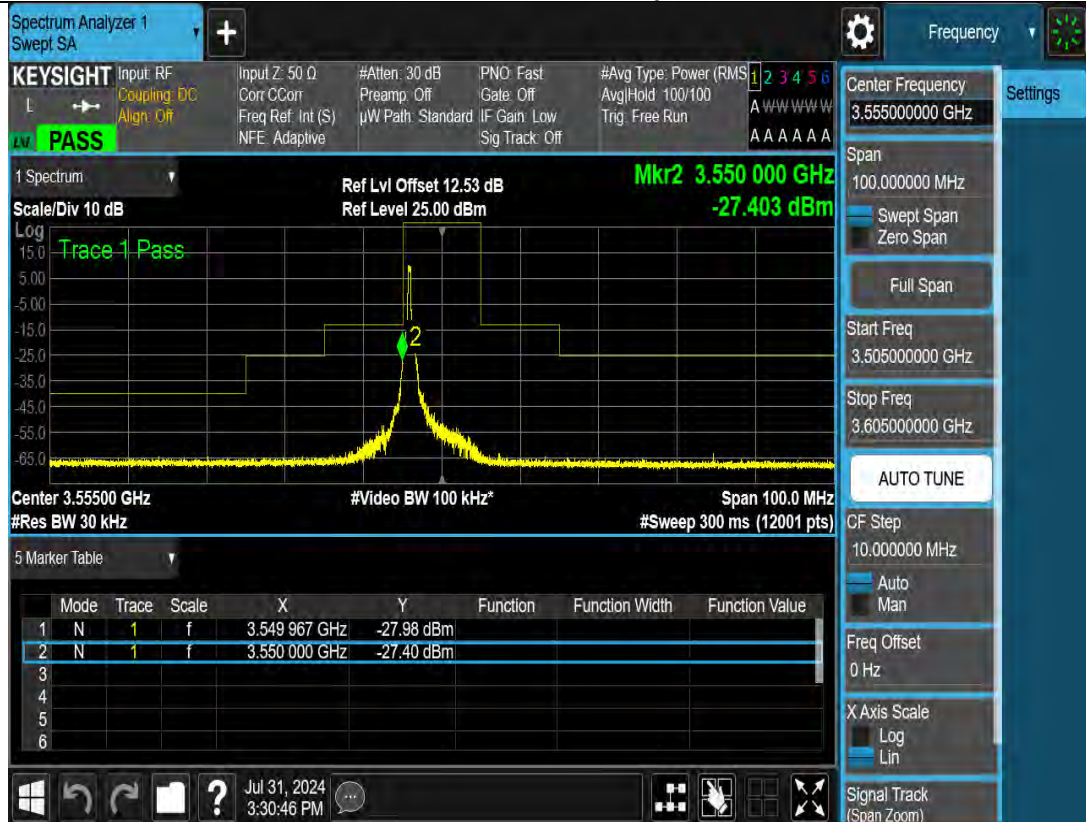
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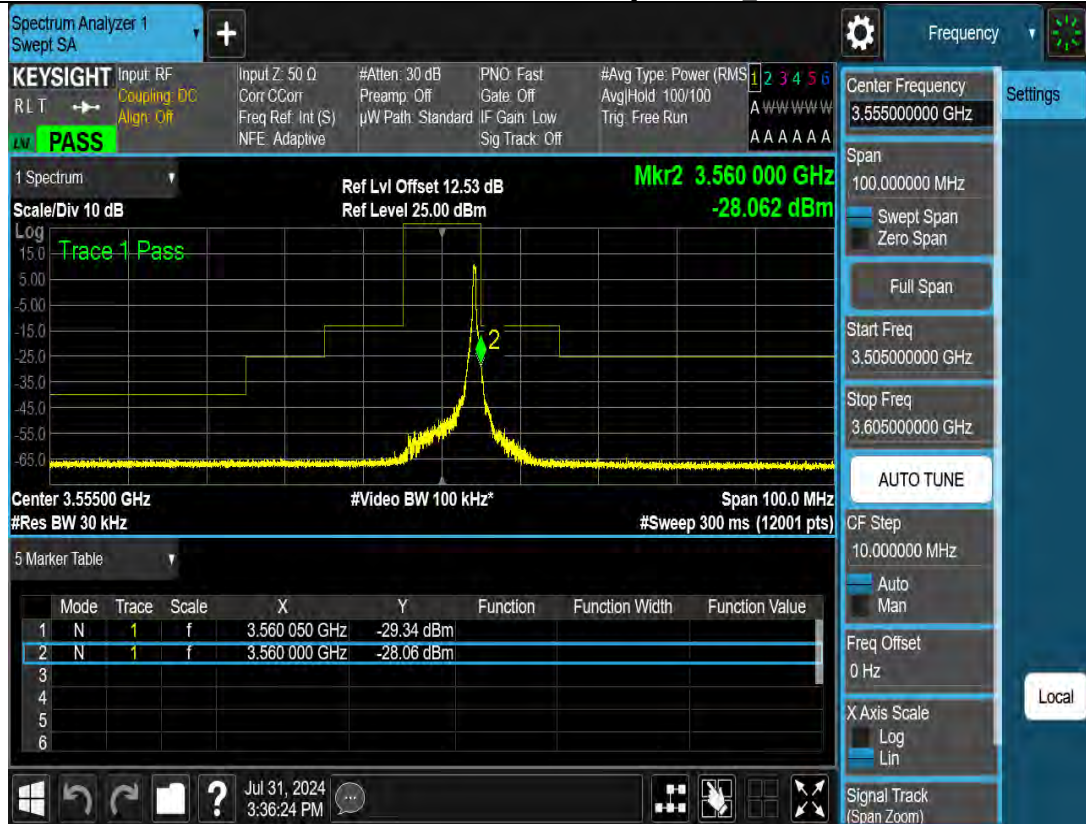
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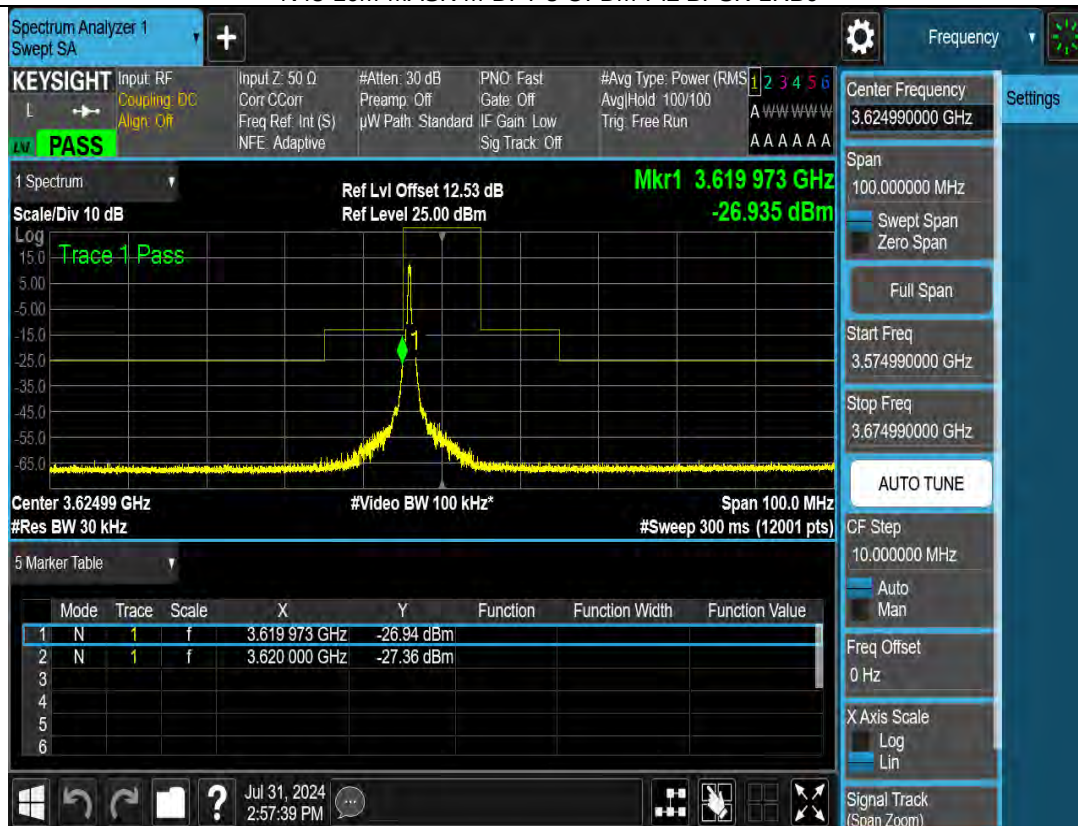
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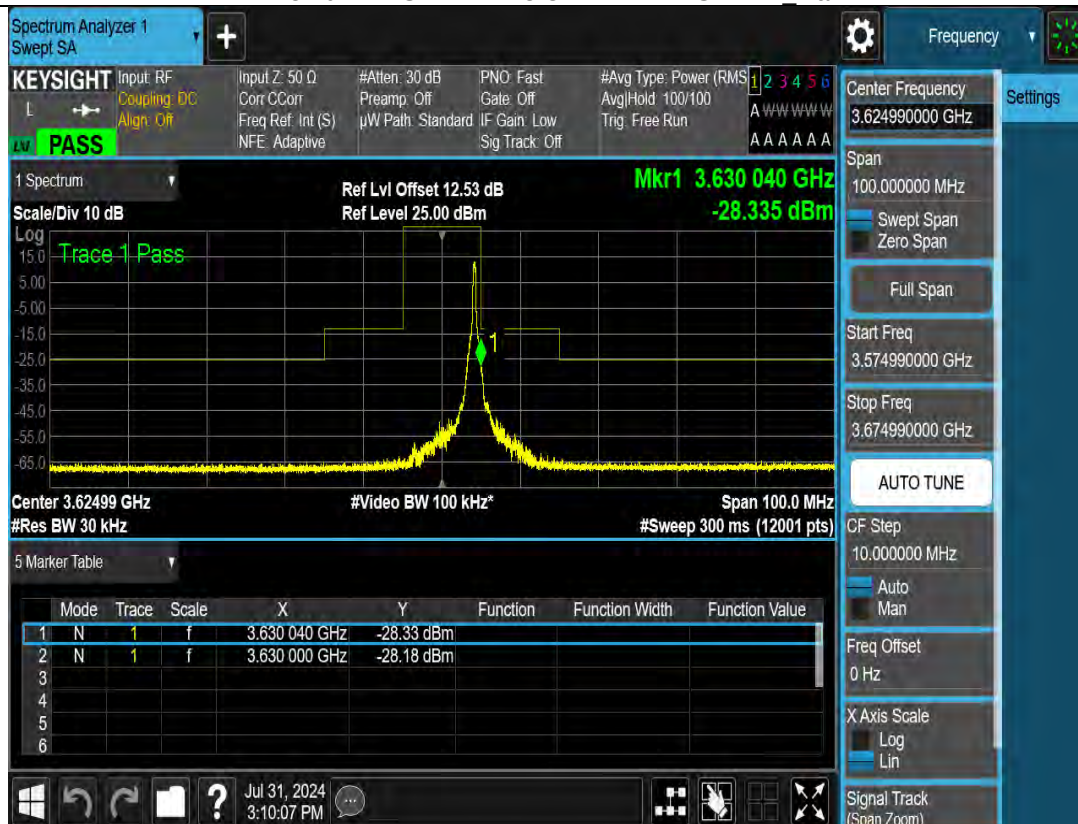
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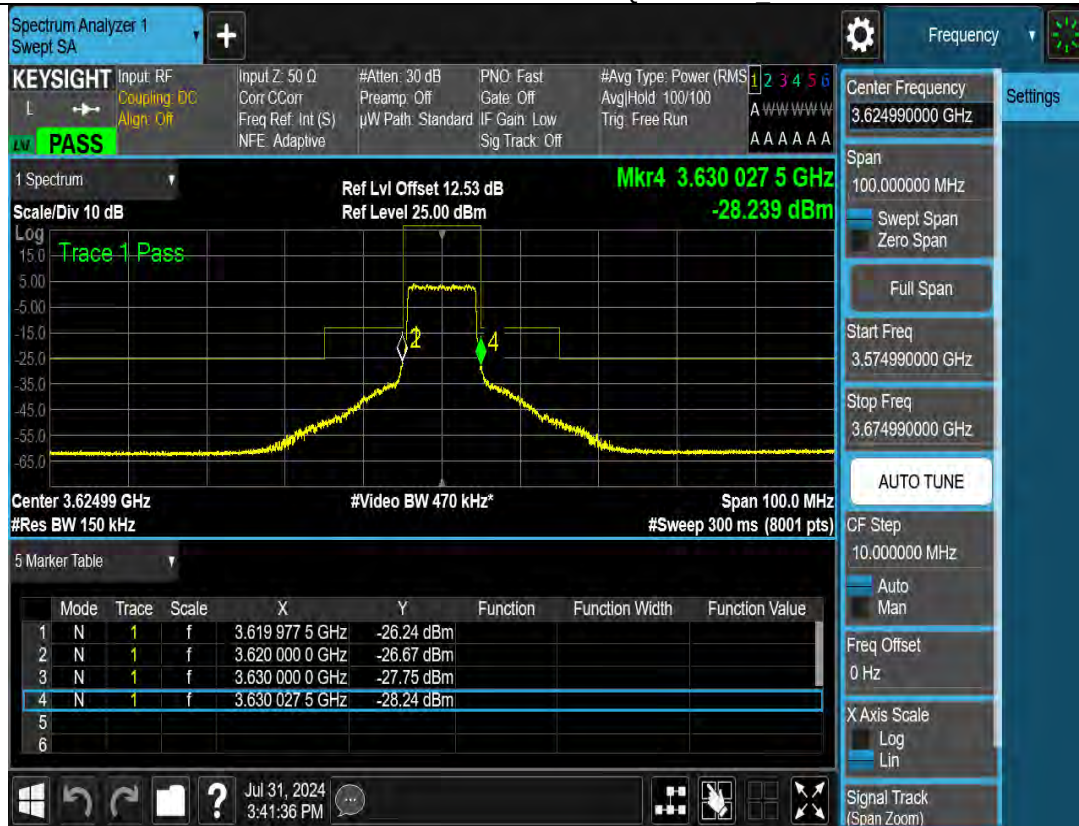
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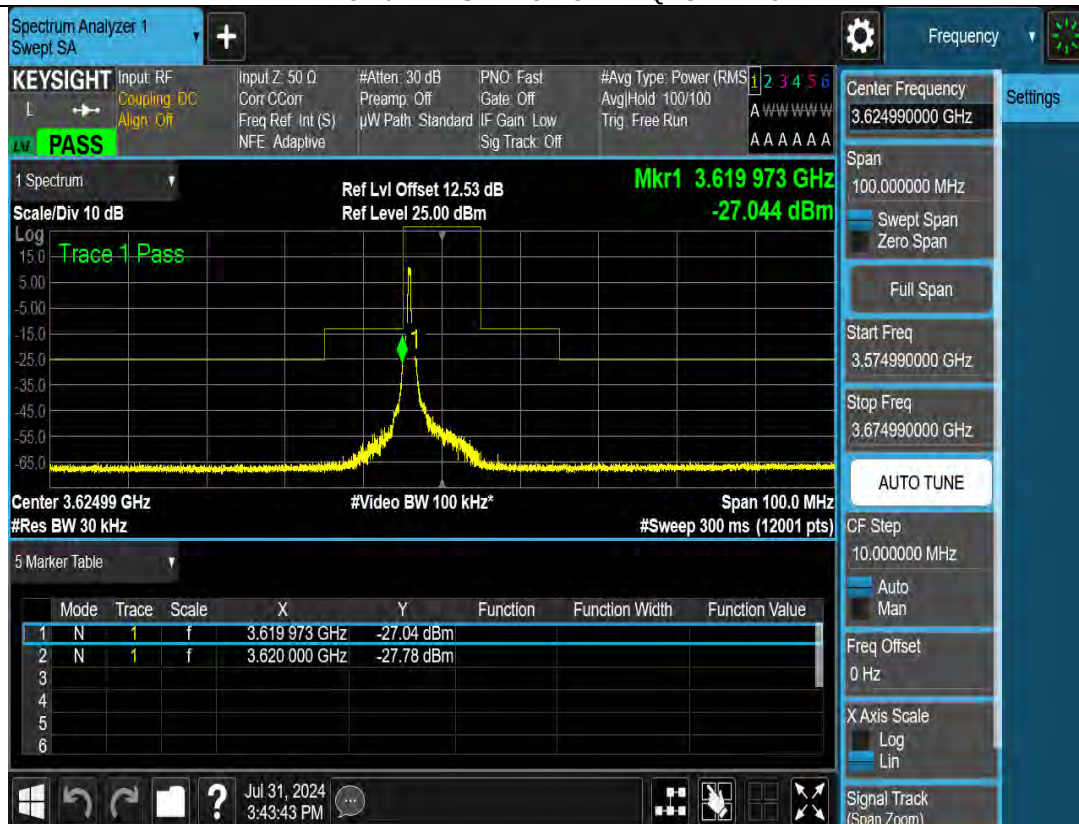
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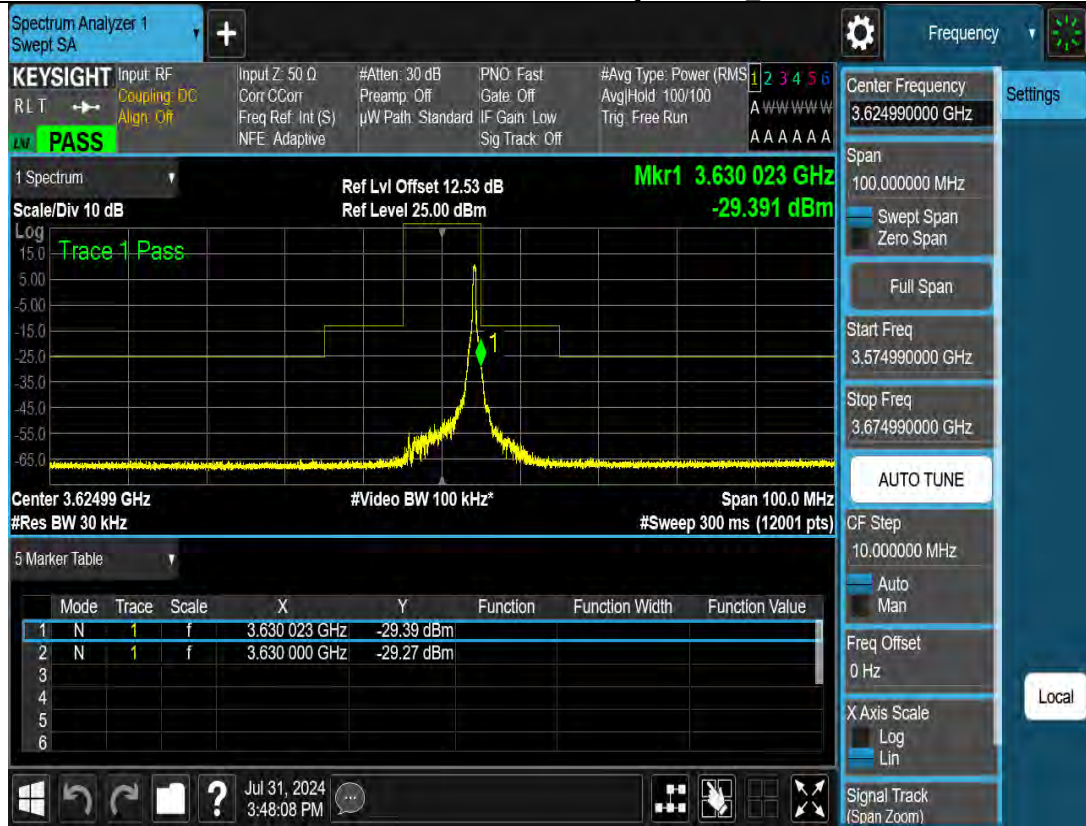
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N48-10M-MASK-M-CP-OFDM-QPSK-1RB0



N48-10M-MASK-M-CP-OFDM-QPSK-1RB Max



N48-10M-MASK-H-DFT-s-OFDM-Pi2 BPSK-Outer Full

