

Beamforming

U-NII-1

Mode	Channel/ Frequency (MHz)	Power Spectral Density					Limit (dBm /MHz)	Conclusion
		Antenna 1		Antenna 2		Total PSD (dBm/MHz)		
		Read Value (dBm/MHz)	PSD (dBm/MHz)	Read Value (dBm/MHz)	PSD (dBm/MHz)			
802.11n HT20	36/5180	10.16	10.33	10.89	11.06	13.72	17.00	PASS
	40/5200	13.05	13.22	13.62	13.79	16.52	17.00	PASS
	48/5240	12.97	13.14	13.61	13.78	16.48	17.00	PASS
802.11n HT40	38/5190	2.82	3.16	3.40	3.74	6.47	17.00	PASS
	46/5230	10.47	10.81	10.19	10.53	13.68	17.00	PASS
802.11ac VHT20	36/5180	10.28	10.61	11.08	11.41	14.04	17.00	PASS
	40/5200	12.82	13.15	13.43	13.76	16.48	17.00	PASS
	48/5240	12.79	13.12	13.56	13.89	16.53	17.00	PASS
802.11ac VHT40	38/5190	2.72	3.35	3.08	3.71	6.54	17.00	PASS
	46/5230	10.57	11.20	10.36	10.99	14.11	17.00	PASS
802.11ac VHT80	42/5210	-0.08	0.99	0.28	1.35	4.18	17.00	PASS
802.11ax HE20	36/5180	10.48	10.89	11.05	11.46	14.19	17.00	PASS
	40/5200	12.90	13.31	13.72	14.13	16.75	17.00	PASS
	48/5240	13.05	13.46	13.88	14.29	16.91	17.00	PASS
802.11ax HE40	38/5190	3.59	4.30	3.49	4.20	7.26	17.00	PASS
	46/5230	10.24	10.95	10.24	10.95	13.96	17.00	PASS
802.11ax HE80	42/5210	0.88	2.03	0.46	1.61	4.84	17.00	PASS

Note: 1. Power Spectral Density =Read Value+Duty cycle correction factor

2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f)(ii): If antenna gains are not equal, the user may use either of the following methods to calculate Directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain.

Directional gain = $G_{ANT\ MAX} + \text{Array Gain}$, For PSD measurements on all devices, Array Gain=10log(N_{ant}/N_{ss})dB,

So Directional gain = $G_{ANT\ MAX} + \text{Array Gain} = 4.69 + 0 = 4.69\ \text{dBi} < 6\ \text{dBi}$. So the PSD limit is 17dBm

U-NII-2A

Mode	Channel /Frequency (MHz)	Power Spectral Density					Limit (dBm /MHz)	Conclusion
		Antenna 1		Antenna 2		Total PSD (dBm/MHz)		
		Read Value (dBm/MHz)	PSD (dBm/MHz)	Read Value (dBm/MHz)	PSD (dBm/MHz)			
802.11n HT20	52/5260	7.33	7.50	7.48	7.65	10.59	11.00	PASS
	60/5300	7.45	7.62	7.65	7.82	10.73	11.00	PASS
	64/5320	7.10	7.27	7.26	7.43	10.36	11.00	PASS
802.11n HT40	54/5270	5.88	6.22	6.27	6.61	9.43	11.00	PASS
	62/5310	3.87	4.21	4.10	4.44	7.34	11.00	PASS
802.11ac VHT20	52/5260	7.26	7.59	7.68	8.01	10.82	11.00	PASS
	60/5300	7.37	7.70	7.54	7.87	10.80	11.00	PASS
	64/5320	6.46	6.79	6.69	7.02	9.92	11.00	PASS
802.11ac VHT40	54/5270	6.11	6.74	6.09	6.72	9.74	11.00	PASS
	62/5310	3.54	4.17	3.80	4.43	7.31	11.00	PASS
802.11ac VHT80	58/5290	2.09	3.16	2.61	3.68	6.44	11.00	PASS
802.11ac VHT160	50/5250	-2.26	-0.67	-2.08	-0.49	2.43	11.00	PASS
802.11ax HE20	52/5260	6.83	7.24	7.45	7.86	10.57	11.00	PASS
	60/5300	6.68	7.09	7.13	7.54	10.33	11.00	PASS
	64/5320	7.00	7.41	7.56	7.97	10.71	11.00	PASS
802.11ax HE40	54/5270	5.80	6.51	6.15	6.86	9.70	11.00	PASS
	62/5310	3.15	3.86	3.68	4.39	7.14	11.00	PASS
802.11ax HE80	58/5290	0.87	2.02	1.06	2.21	5.13	11.00	PASS
802.11ax HE160	50/5250	-2.28	-0.68	-2.32	-0.72	2.31	11.00	PASS

Note: 1. Power Spectral Density =Read Value+Duty cycle correction factor

2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f)(ii): If antenna gains are not equal, the user may use either of the following methods to calculate Directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain.

Directional gain = $G_{ANT \text{ MAX}} + \text{Array Gain}$, For PSD measurements on all devices, Array Gain=10log(Nant/Nss)dB,

So Directional gain = $G_{ANT \text{ MAX}} + \text{Array Gain} = 4.69 + 0 = 4.69 \text{ dBi} < 6 \text{ dBi}$. So the PSD limit is 11dBm

U-NII-2C

Mode	Channel /Frequency (MHz)	Power Spectral Density					Limit (dBm /MHz)	Conclusion
		Antenna 1		Antenna 2		Total PSD (dBm/MHz)		
		Read Value (dBm/MHz)	PSD (dBm/MHz)	Read Value (dBm/MHz)	PSD (dBm/MHz)			
802.11n HT20	100/5500	5.92	6.09	5.90	6.07	9.09	11.00	PASS
	120/5600	6.75	6.92	6.91	7.08	10.01	11.00	PASS
	140/5700	6.33	6.50	7.16	7.33	9.95	11.00	PASS
	144/5720	6.26	6.43	6.99	7.16	9.82	11.00	PASS
802.11n HT40	102/5510	2.95	3.29	3.32	3.66	6.49	11.00	PASS
	118/5590	6.66	7.00	6.95	7.29	10.16	11.00	PASS
	134/5670	5.54	5.88	5.76	6.10	9.00	11.00	PASS
	142/5710	5.80	6.14	6.71	7.05	9.63	11.00	PASS
802.11ac VHT20	100/5500	4.78	5.11	5.16	5.49	8.31	11.00	PASS
	120/5600	6.75	7.08	7.35	7.68	10.40	11.00	PASS
	140/5700	6.30	6.63	7.45	7.78	10.25	11.00	PASS
	144/5720	6.08	6.41	7.15	7.48	9.99	11.00	PASS
802.11ac VHT40	102/5510	3.17	3.80	3.02	3.65	6.74	11.00	PASS
	118/5590	6.31	6.94	6.10	6.73	9.85	11.00	PASS
	134/5670	5.33	5.96	5.77	6.40	9.20	11.00	PASS
	142/5710	6.00	6.63	6.48	7.11	9.89	11.00	PASS
802.11ac VHT80	106/5530	-0.34	0.73	-0.13	0.94	3.85	11.00	PASS
	122/5610	2.59	3.66	3.21	4.28	6.99	11.00	PASS
	138/5690	2.44	3.51	3.43	4.50	7.04	11.00	PASS
802.11ac VHT160	114/5570	-3.99	-2.40	-3.71	-2.12	0.75	11.00	PASS
802.11ax HE20	100/5500	7.20	7.61	7.42	7.83	10.73	11.00	PASS
	120/5600	7.27	7.68	7.71	8.12	10.92	11.00	PASS
	140/5700	6.31	6.72	7.00	7.41	10.09	11.00	PASS
	144/5720	6.75	7.16	7.54	7.95	10.58	11.00	PASS
802.11ax HE40	102/5510	3.40	4.11	3.43	4.14	7.14	11.00	PASS
	118/5590	5.96	6.67	6.75	7.46	10.09	11.00	PASS
	134/5670	4.20	4.91	4.60	5.31	8.12	11.00	PASS
	142/5710	5.85	6.56	6.71	7.42	10.02	11.00	PASS
802.11ax HE80	106/5530	-1.07	0.08	-0.23	0.92	3.53	11.00	PASS
	122/5610	2.76	3.91	2.76	3.91	6.92	11.00	PASS
	138/5690	2.61	3.76	3.72	4.87	7.36	11.00	PASS
802.11ax HE160	114/5570	-3.62	-2.02	-3.67	-2.07	0.97	11.00	PASS

Note: 1. Power Spectral Density =Read Value+Duty cycle correction factor

2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f)(ii): If antenna gains are not equal, the user

may use either of the following methods to calculate Directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain.

Directional gain = $G_{ANT \text{ MAX}} + \text{Array Gain}$, For PSD measurements on all devices, Array Gain = $10\log(N_{ant}/N_{ss})\text{dB}$,

So Directional gain = $G_{ANT \text{ MAX}} + \text{Array Gain} = 4.78 + 0 = 4.78 \text{ dBi} < 6 \text{ dBi}$. So the PSD limit is 11dBm

U-NII-3

Mode	Channel/ Frequency (MHz)	Power Spectral Density					Limit (dBm/ 500kHz)	Conclusion
		Antenna 1		Antenna 2		Total Power (dBm/500kHz)		
		Read Value (dBm/470kHz)	PSD (dBm/500kHz)	Read Value (dBm470kHz)	PSD (dBm/500kHz)			
802.11n HT20	144/5720	2.17	2.61	3.26	3.70	6.20	30.00	PASS
	149/5745	8.77	9.21	9.90	10.34	12.82	30.00	PASS
	157/5785	8.32	8.76	9.33	9.77	12.30	30.00	PASS
	165/5825	8.94	9.38	8.90	9.34	12.37	30.00	PASS
802.11n HT40	142/5710	0.34	0.95	1.62	1.87	4.45	30.00	PASS
	151/5755	5.40	6.01	6.67	7.28	9.70	30.00	PASS
	159/5795	5.81	6.42	6.07	6.68	9.56	30.00	PASS
802.11ac VHT20	144/5720	2.34	2.94	3.37	3.97	6.49	30.00	PASS
	149/5745	8.67	9.27	10.17	10.77	13.09	30.00	PASS
	157/5785	8.43	9.03	9.06	9.66	12.37	30.00	PASS
	165/5825	8.80	9.40	8.82	9.42	12.42	30.00	PASS
802.11ac VHT40	142/5710	0.90	1.80	1.89	2.79	5.33	30.00	PASS
	151/5755	5.32	6.22	6.65	7.55	9.94	30.00	PASS
	159/5795	5.64	6.54	6.09	6.99	9.78	30.00	PASS
802.11ac VHT80	138/5690	-1.47	-0.13	-0.44	0.90	3.42	30.00	PASS
	155/5775	-0.90	0.44	0.43	1.77	4.16	30.00	PASS
802.11ax HE20	144/5720	2.39	3.07	3.67	4.35	6.77	30.00	PASS
	149/5745	8.23	8.91	10.15	10.83	12.98	30.00	PASS
	157/5785	8.63	9.31	9.23	9.91	12.63	30.00	PASS
	165/5825	8.93	9.61	8.76	9.44	12.53	30.00	PASS
802.11ax HE40	142/5710	1.38	2.36	2.92	3.90	6.21	30.00	PASS
	151/5755	3.58	4.56	4.51	5.49	8.06	30.00	PASS
	159/5795	5.69	6.67	6.34	7.32	10.02	30.00	PASS
802.11ax HE80	138/5690	-1.40	0.02	-0.85	0.57	3.31	30.00	PASS
	155/5775	-1.32	0.10	-0.11	1.31	3.76	30.00	PASS

Note: 1. Power Spectral Density =Read Value+Duty cycle correction factor +10*log(500/470).

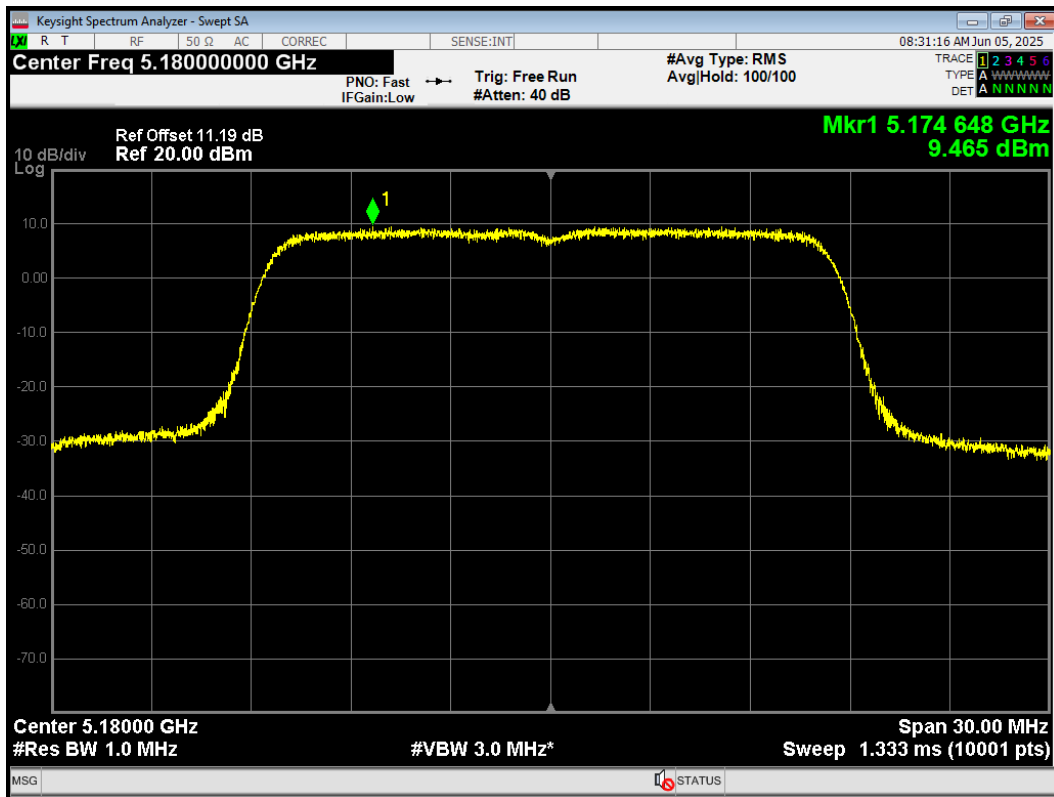
2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f(ii): If antenna gains are not equal, the user may use either of the following methods to calculate Directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain.

Directional gain = $G_{ANT\ MAX} + \text{Array Gain}$, For PSD measurements on all devices, Array Gain=10log(Nant/Nss)dB,

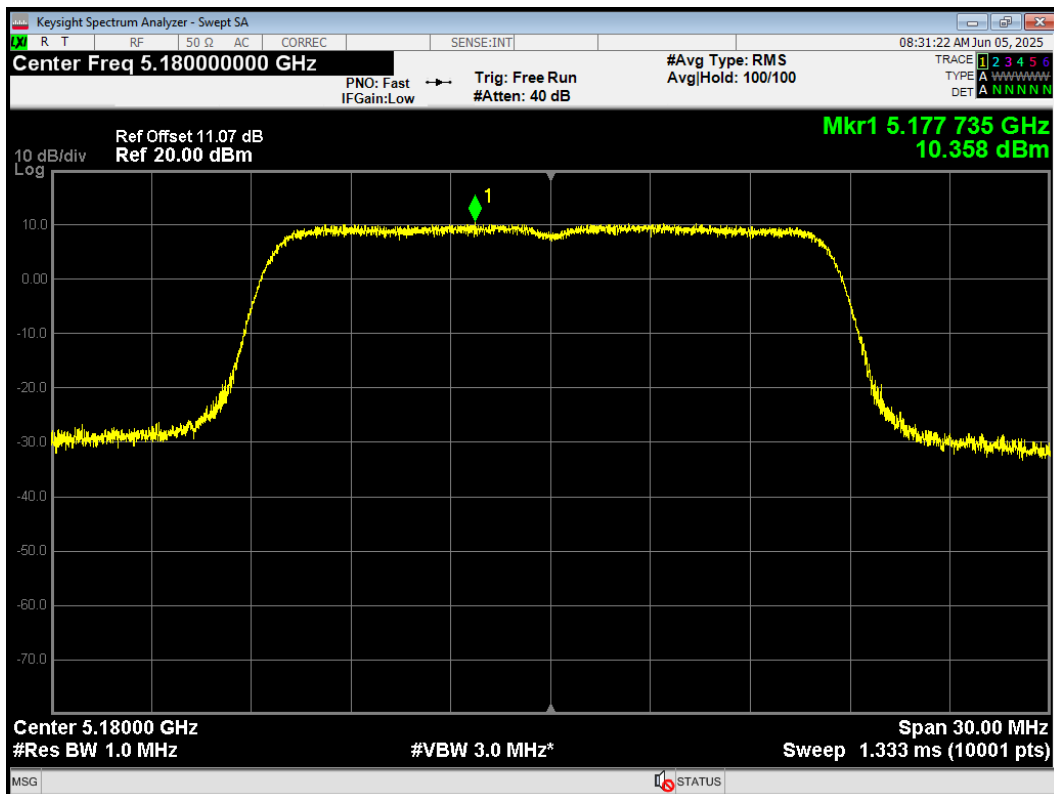
So Directional gain = $G_{ANT\ MAX} + \text{Array Gain} = 4.82 + 0 = 4.82\ \text{dBi} < 6\ \text{dBi}$. So the PSD limit is 30dBm

AOT
MIMO
U-NII-1

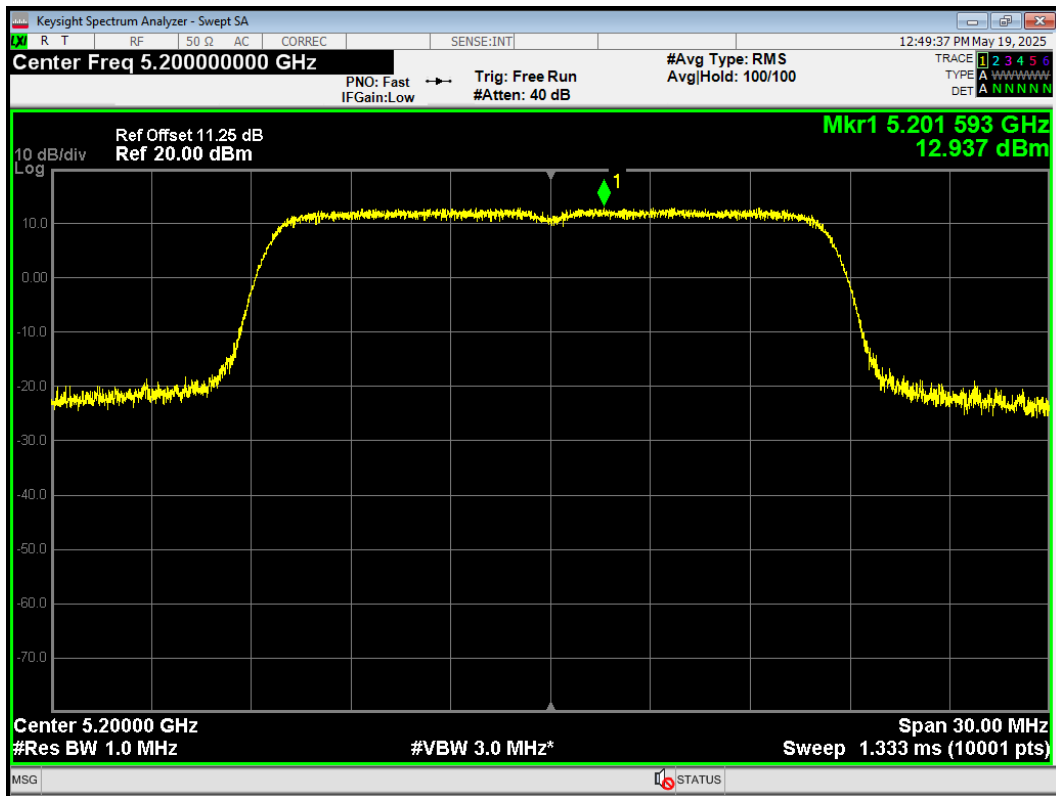
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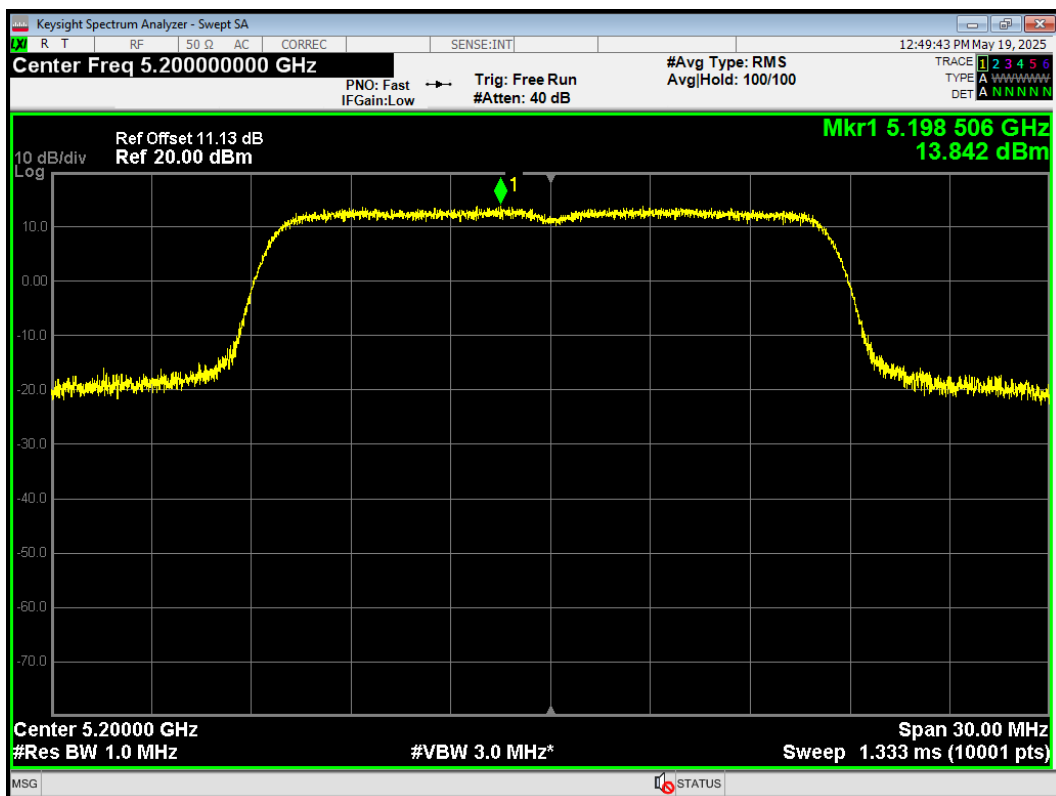
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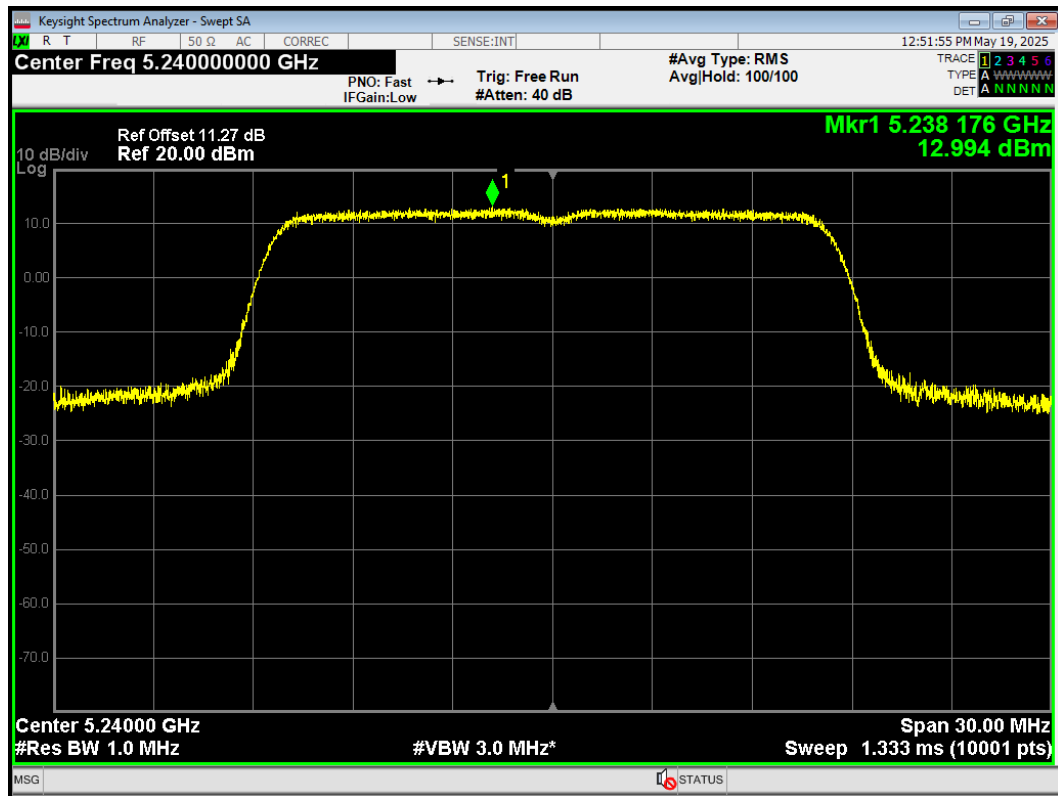
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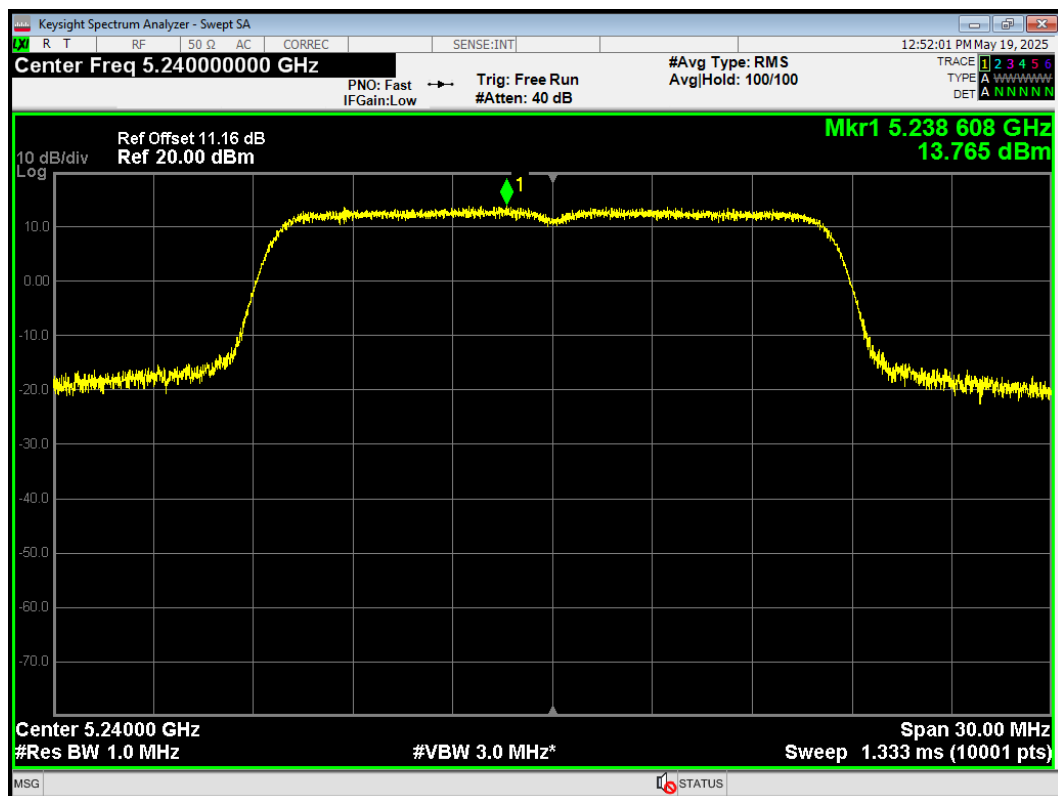
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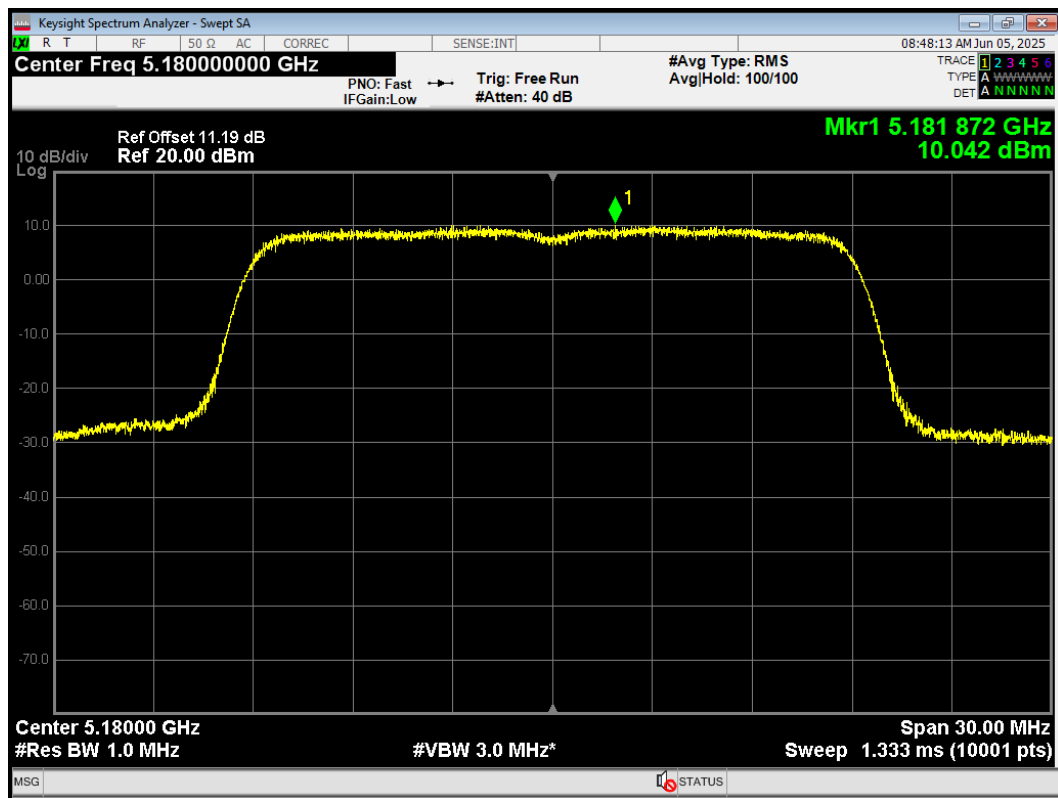
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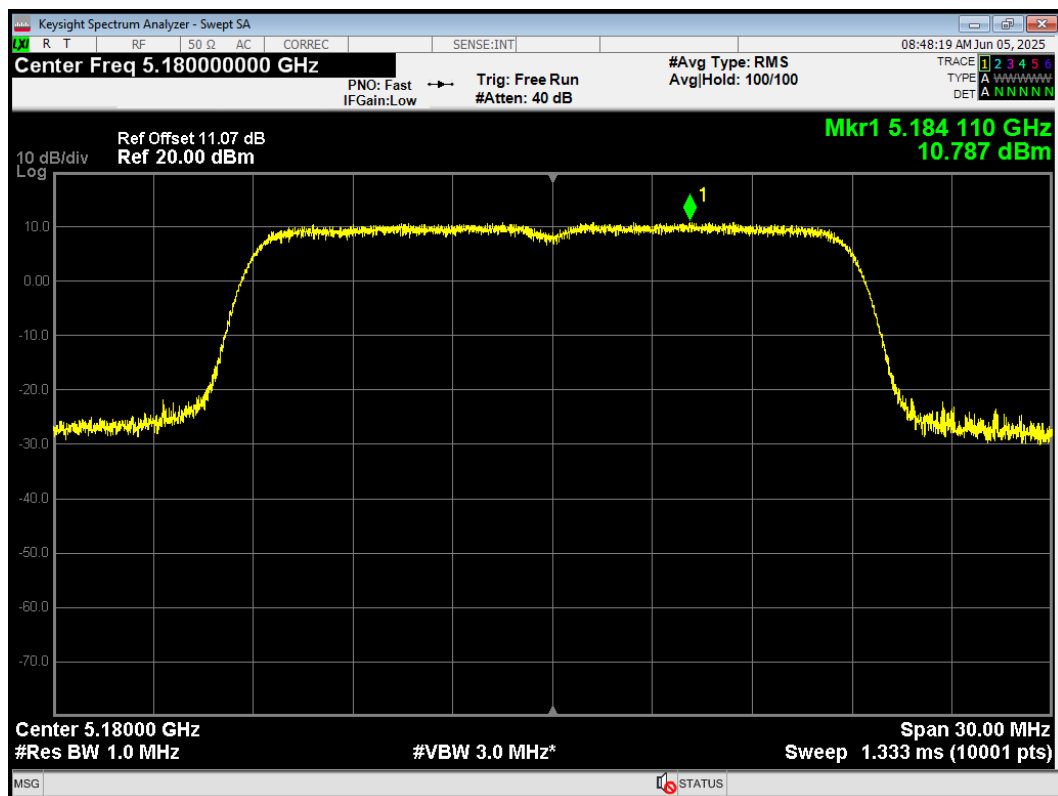
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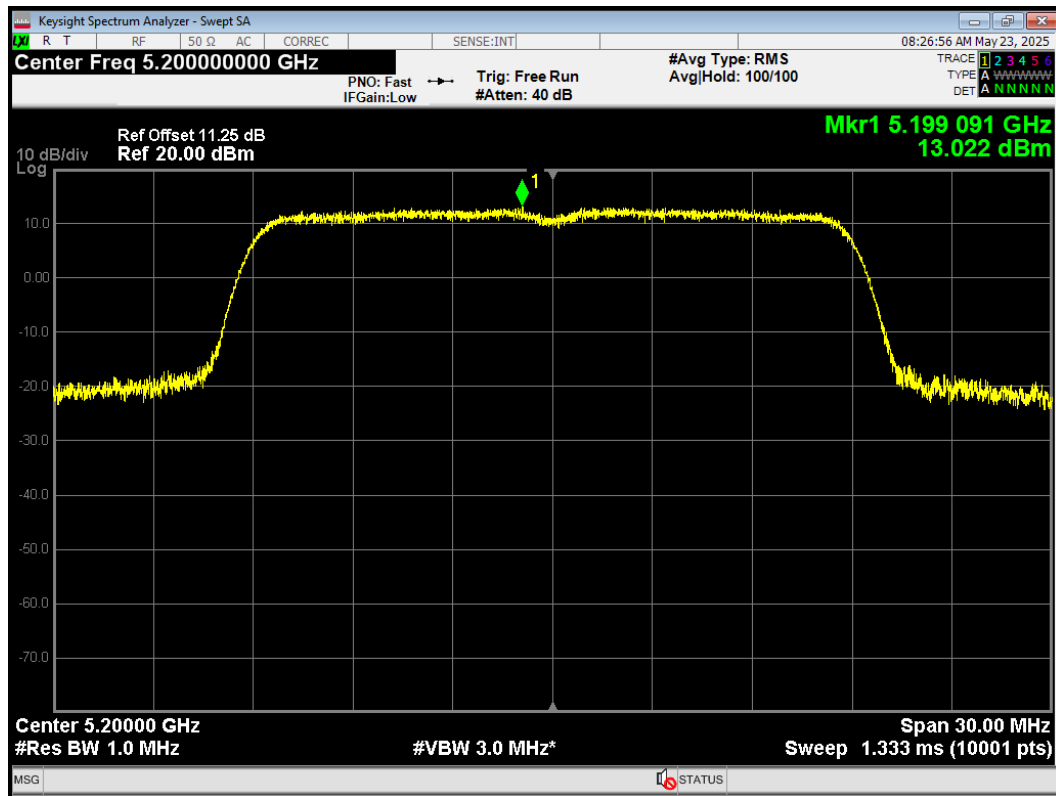
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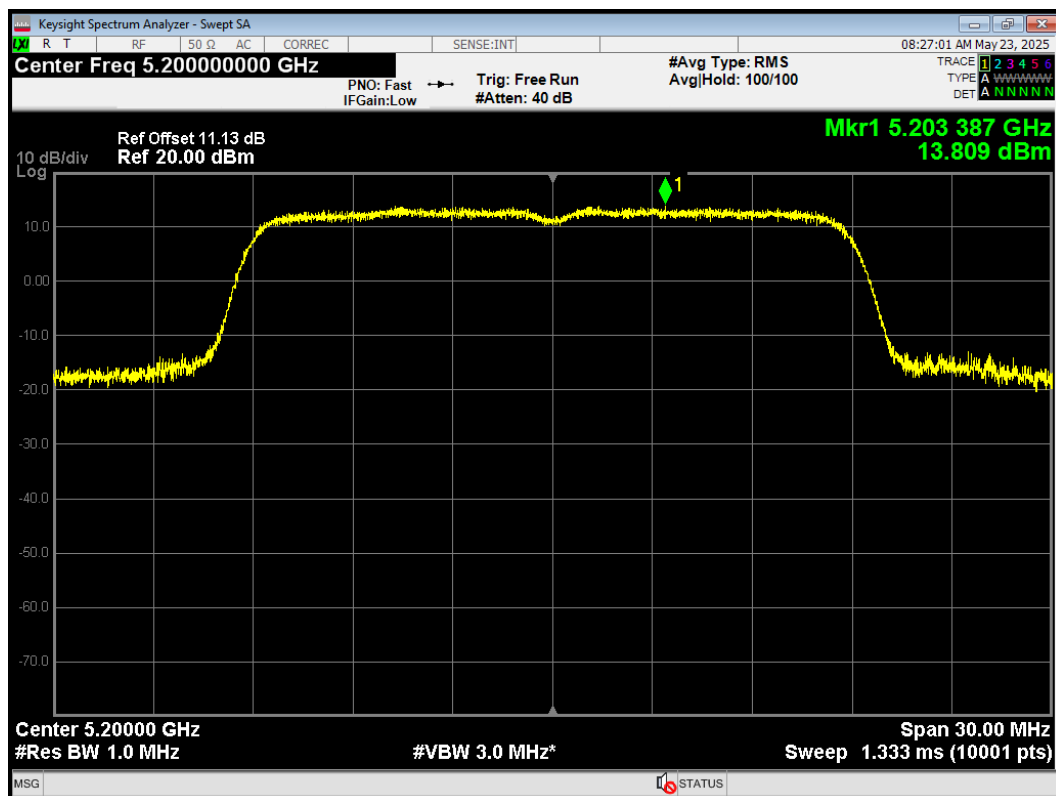
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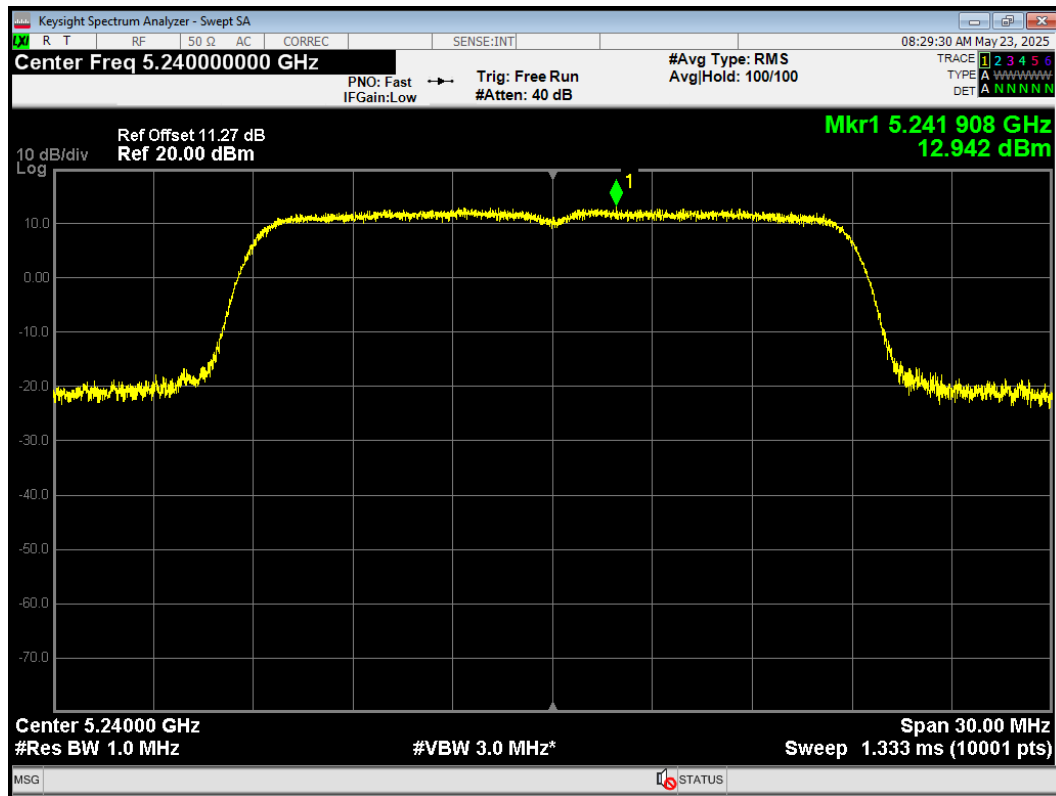
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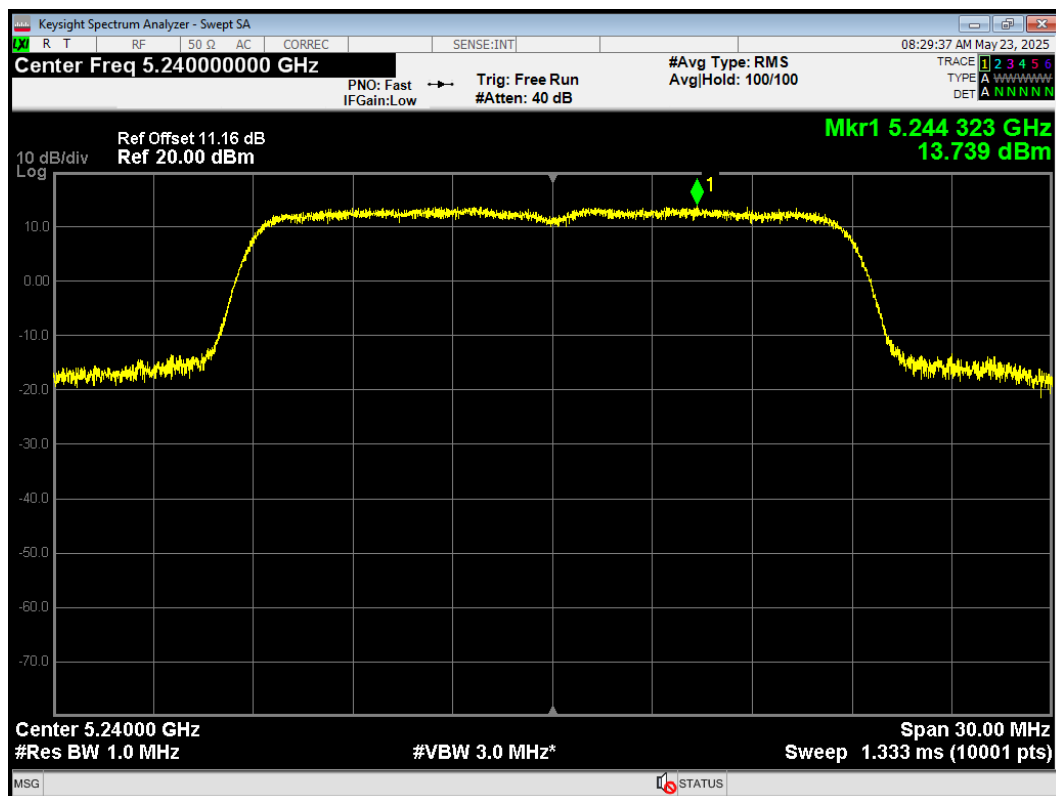
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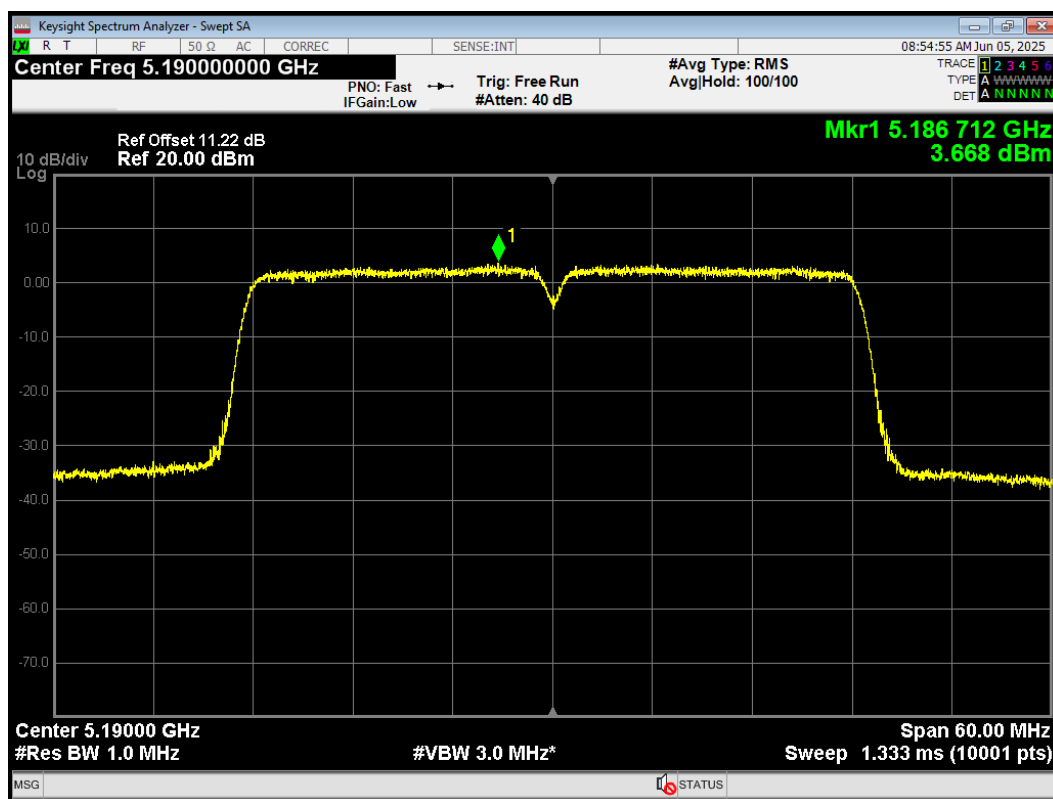
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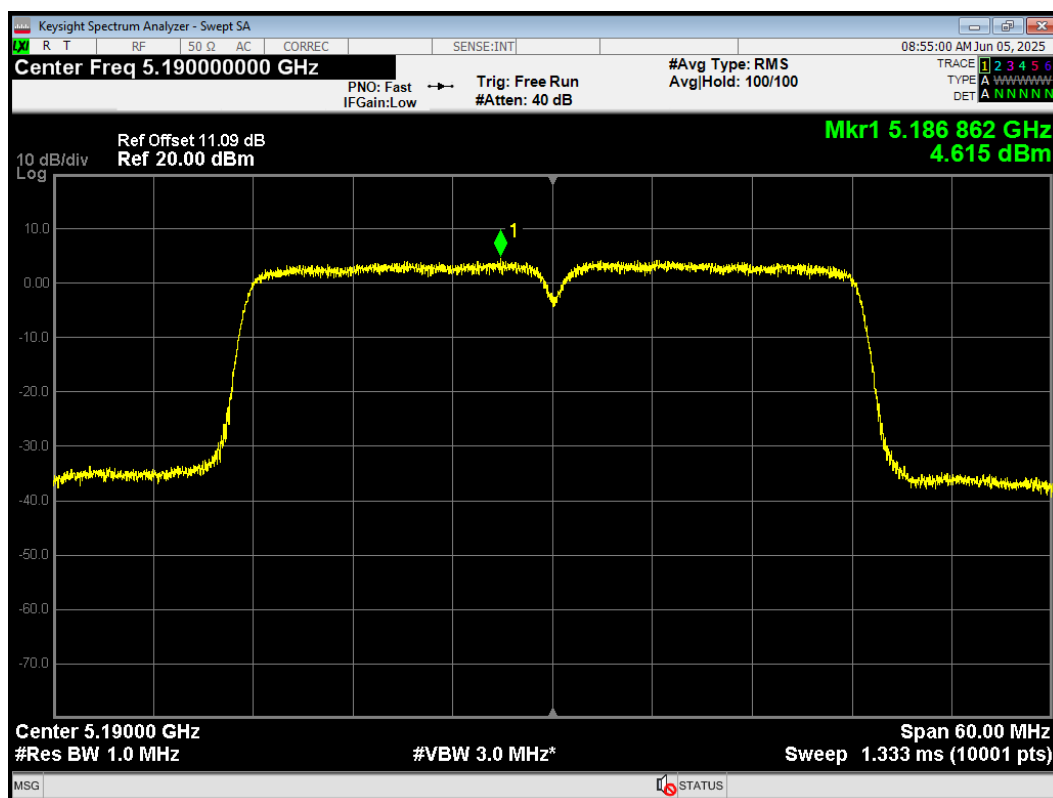
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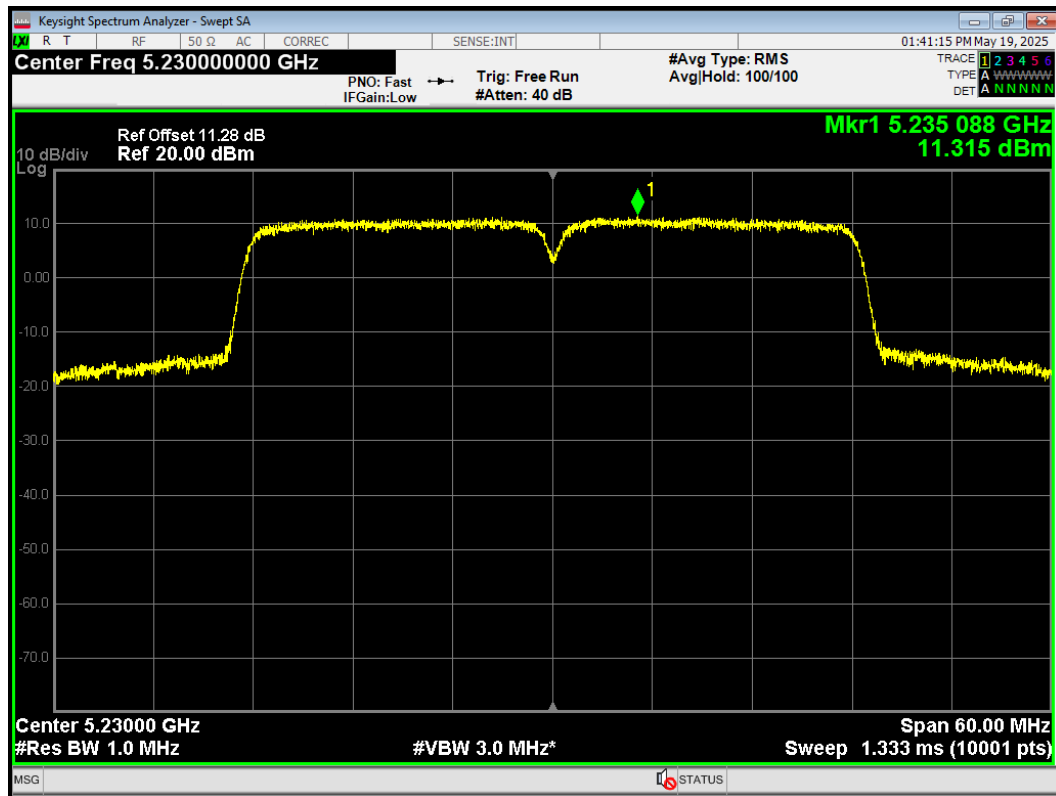
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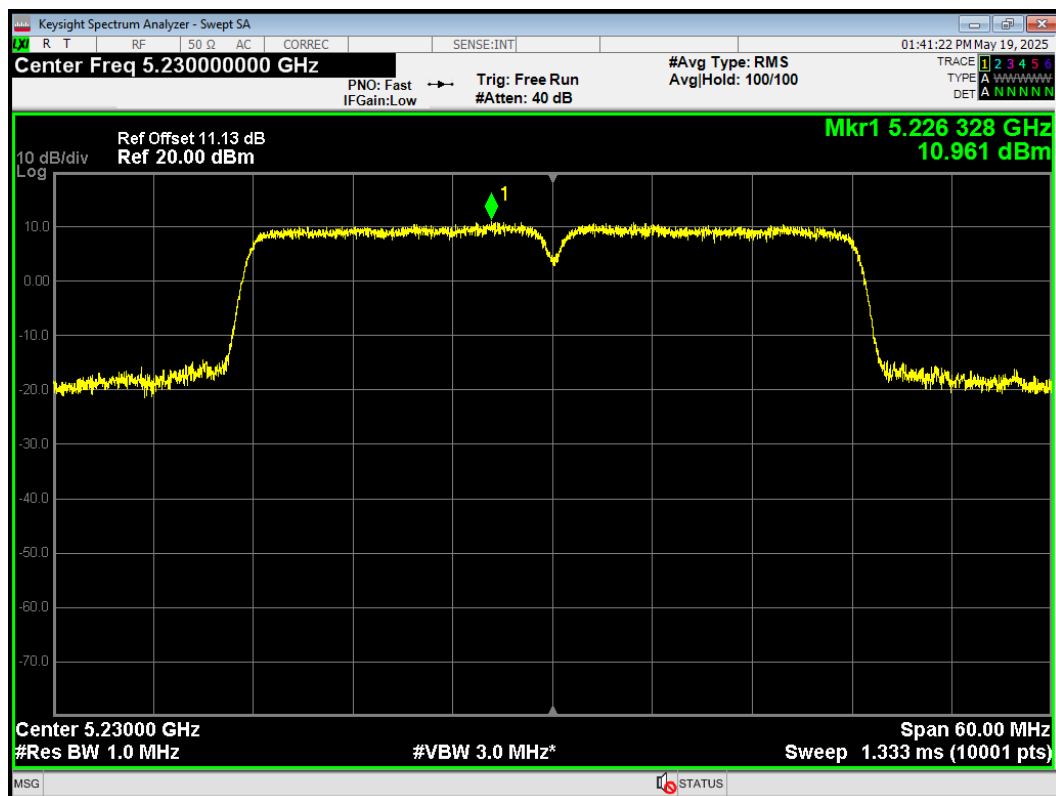
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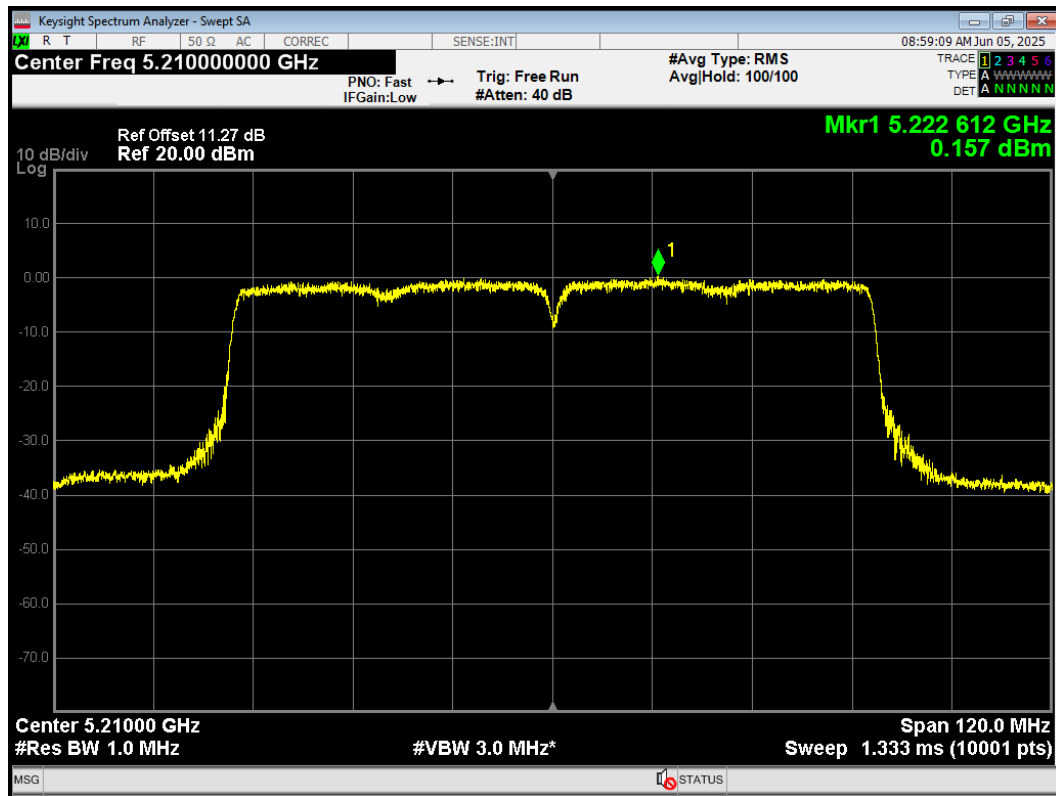
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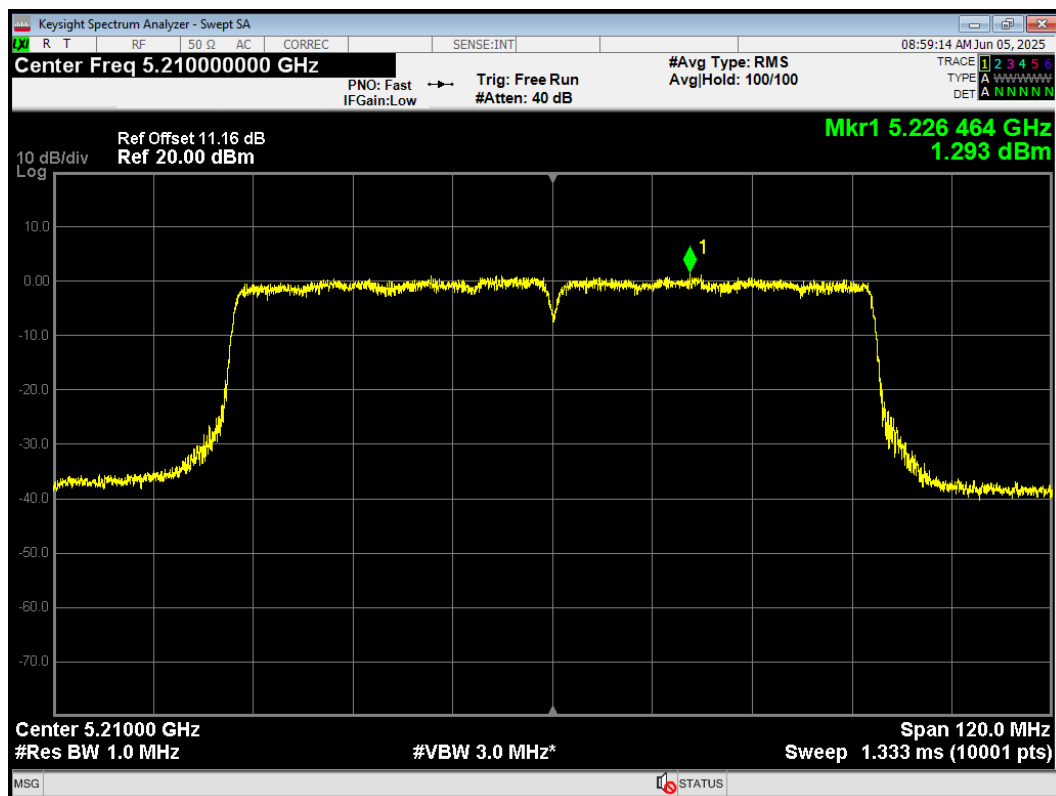
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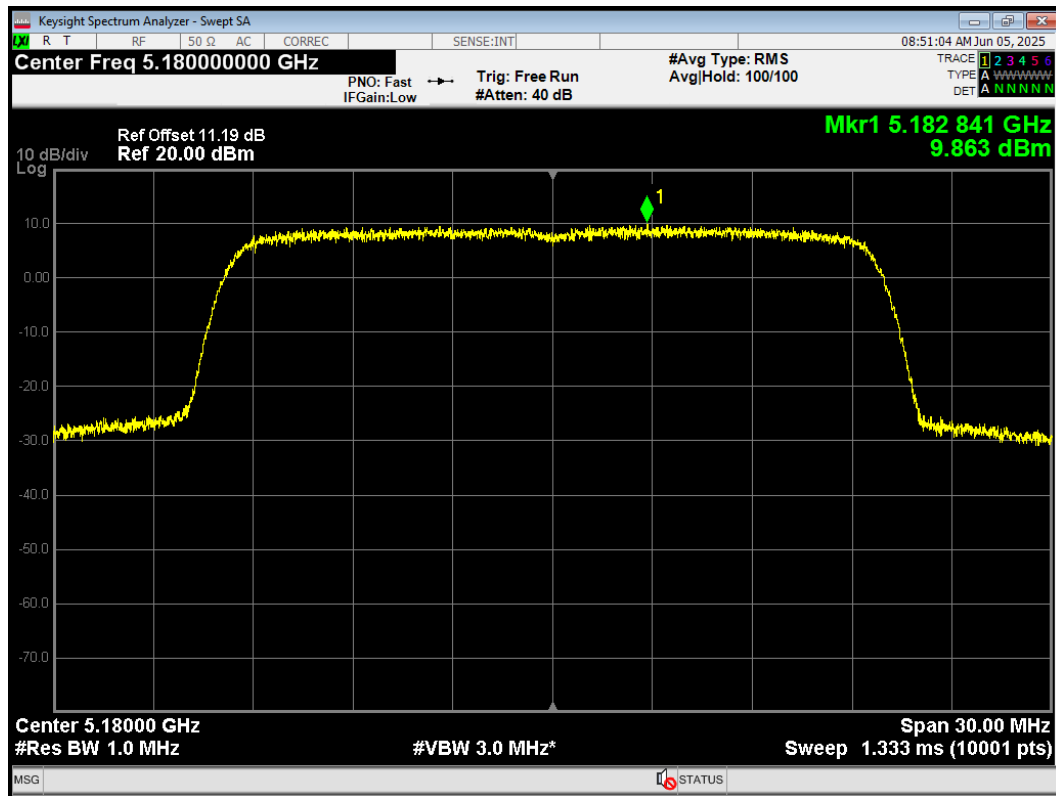
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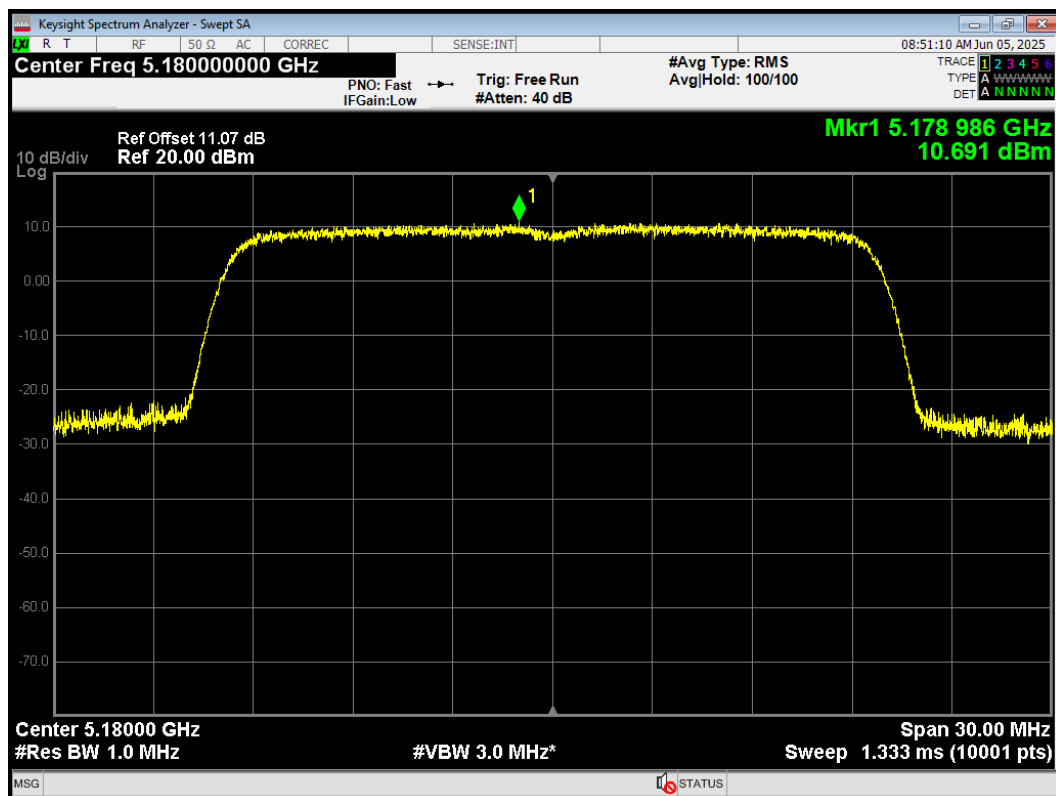
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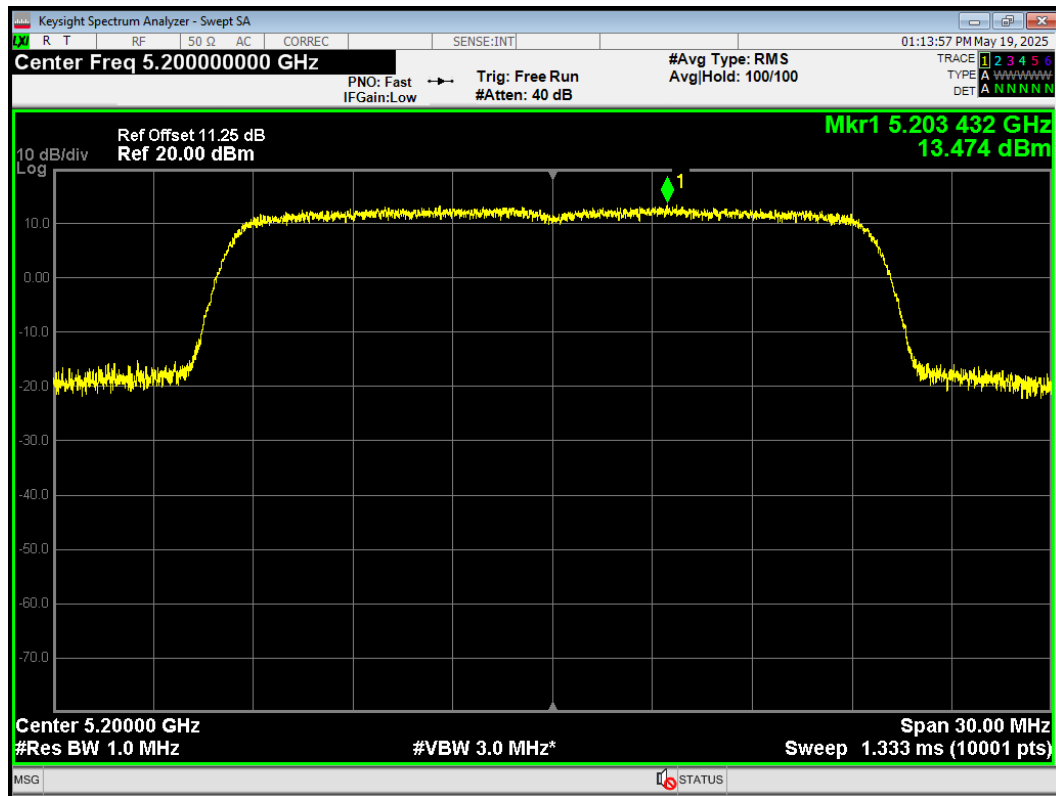
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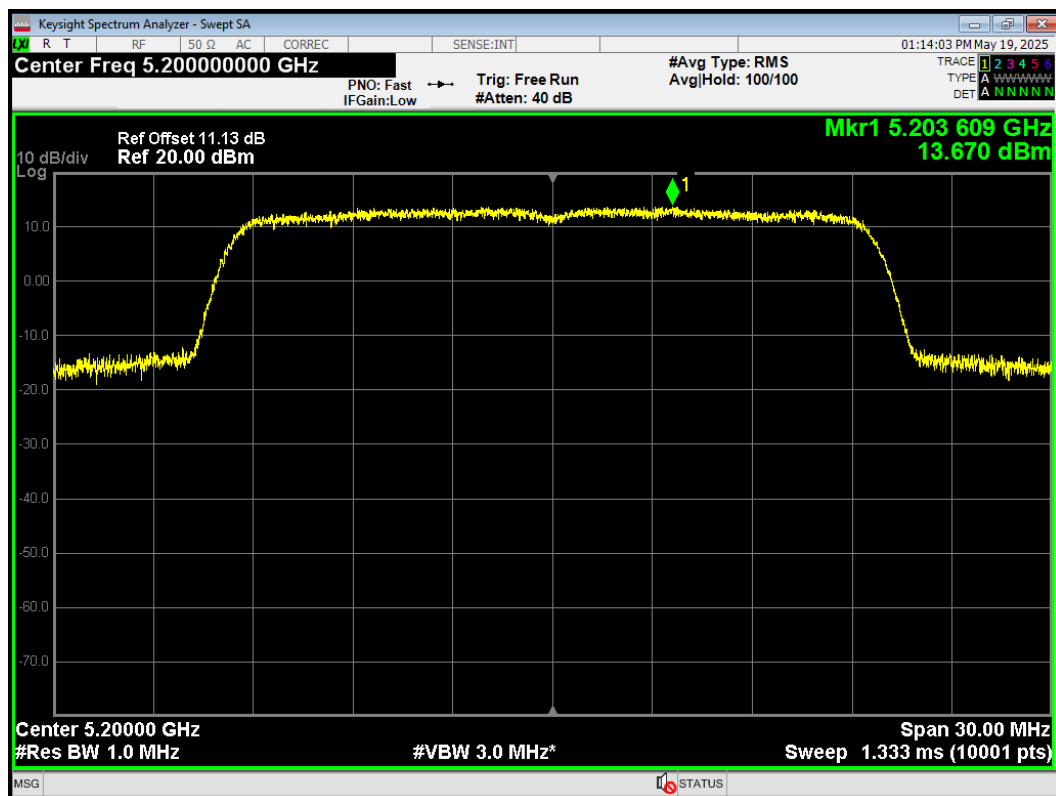
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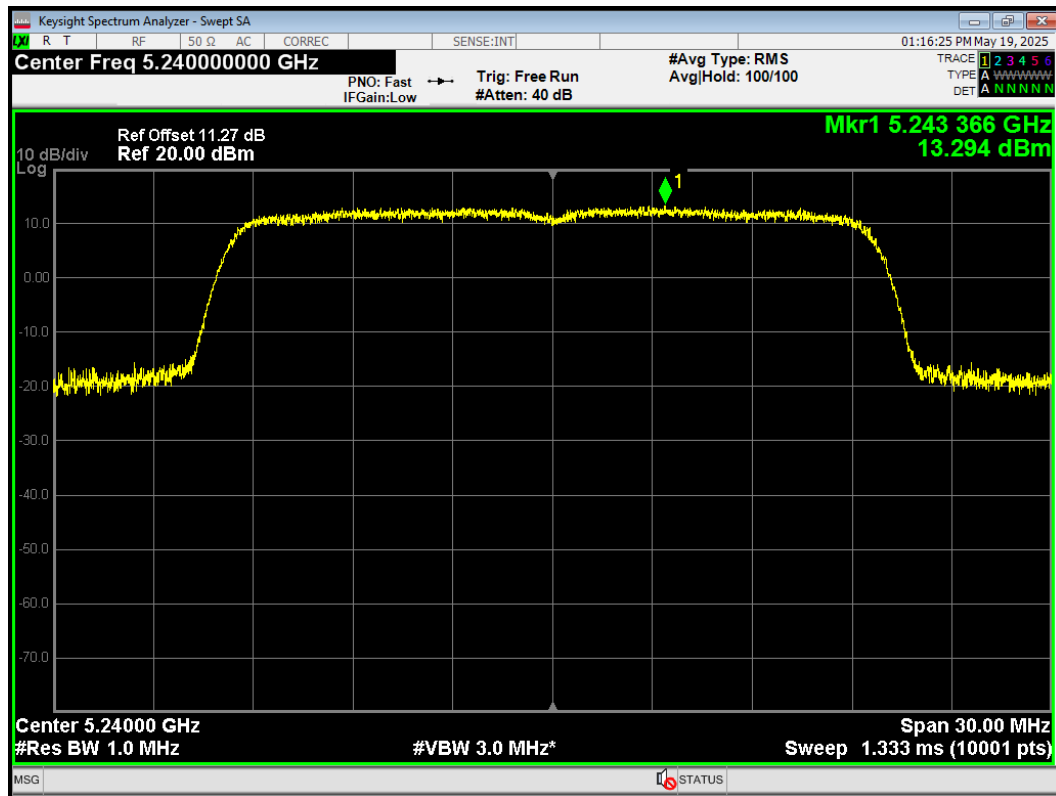
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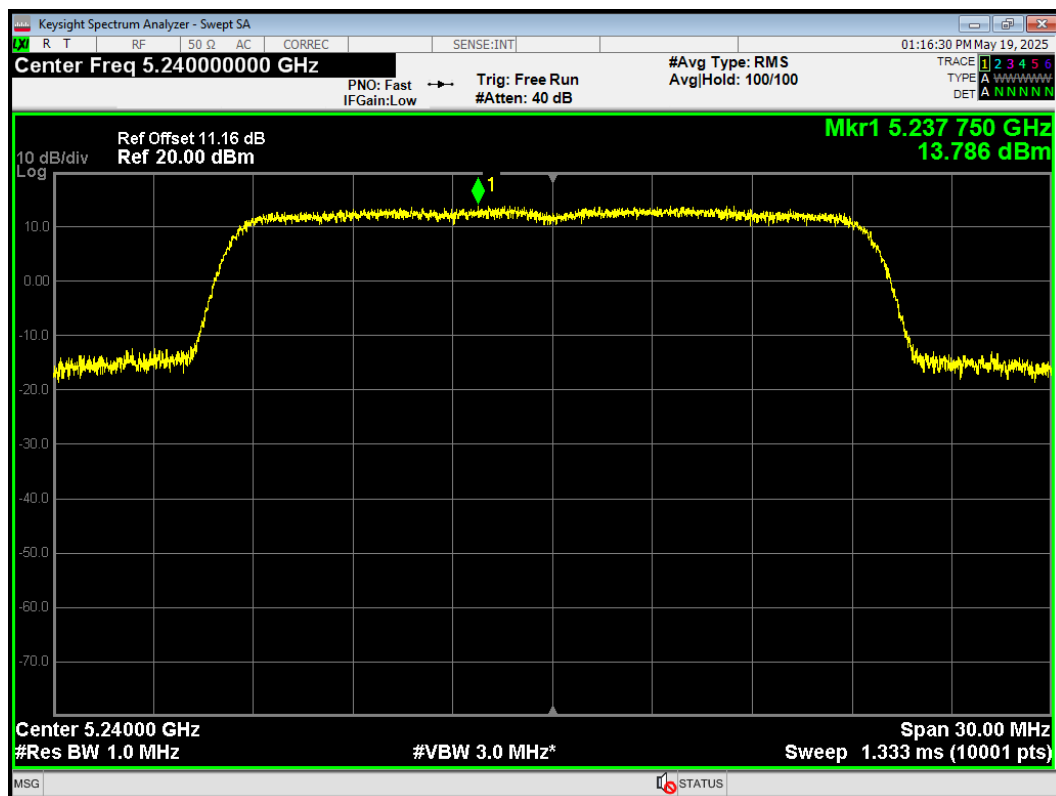
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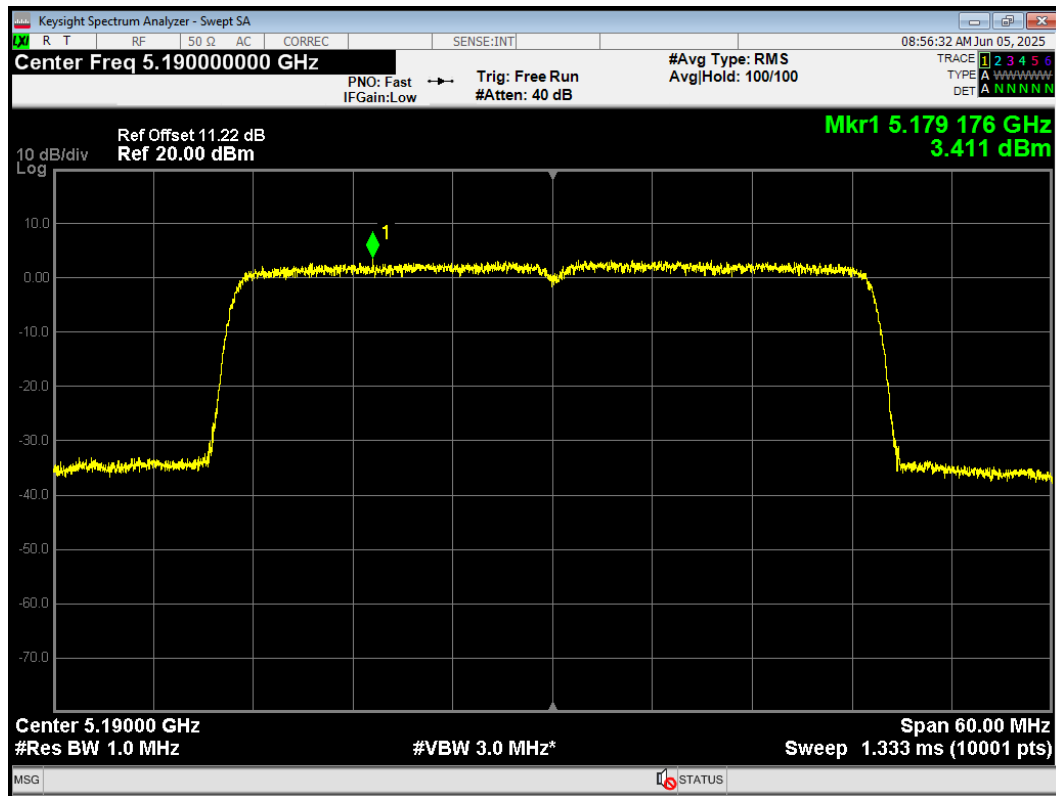
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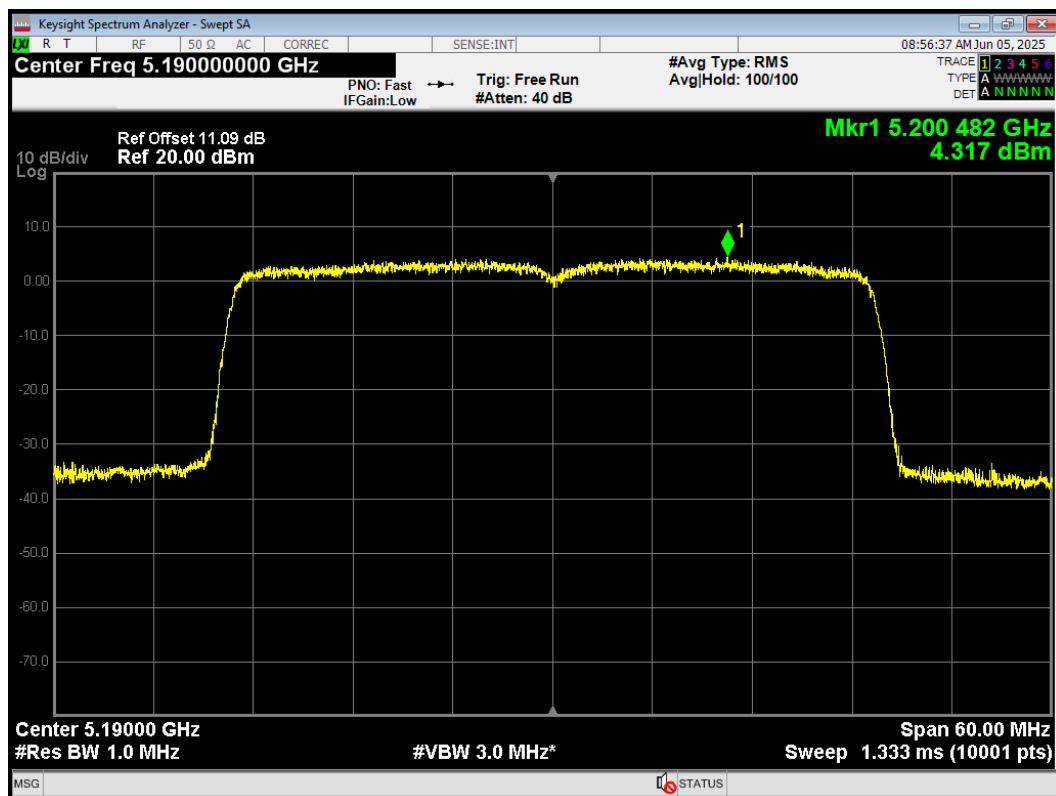
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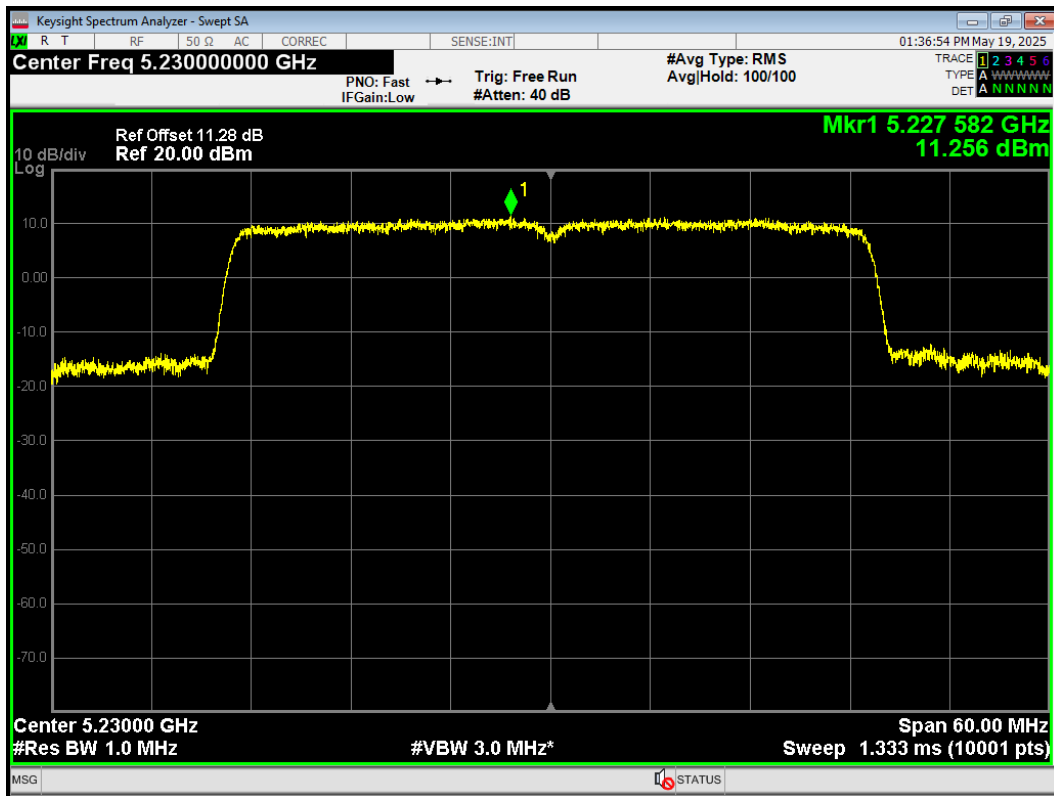
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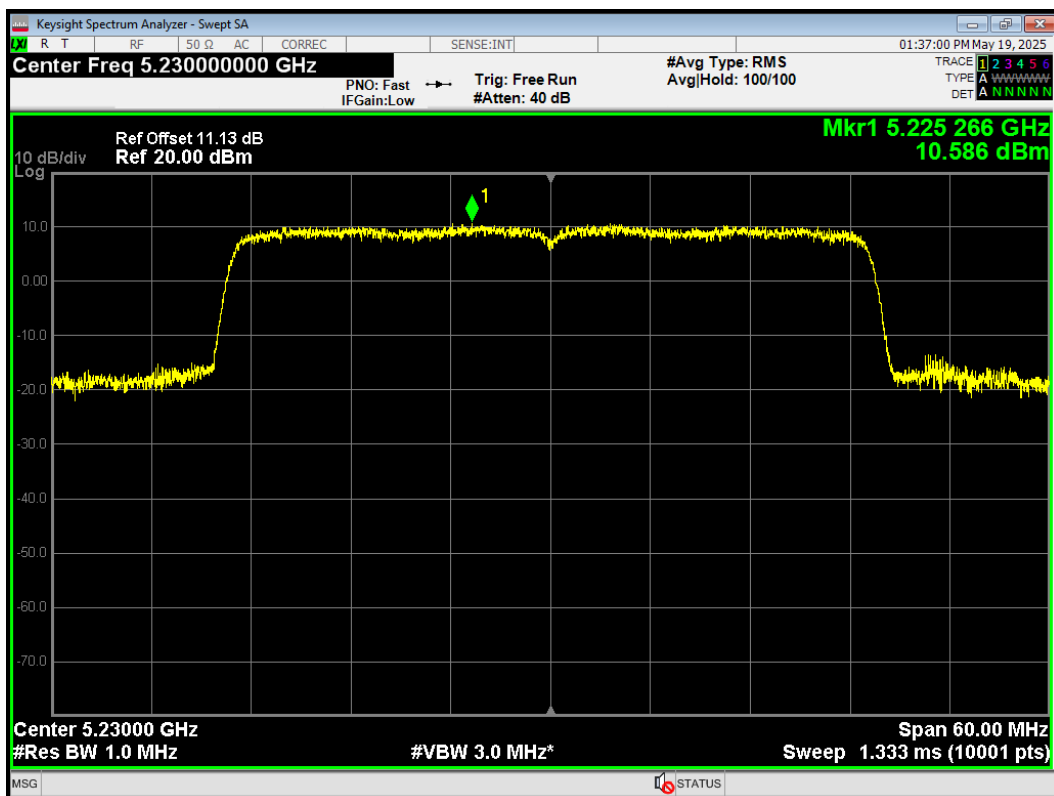
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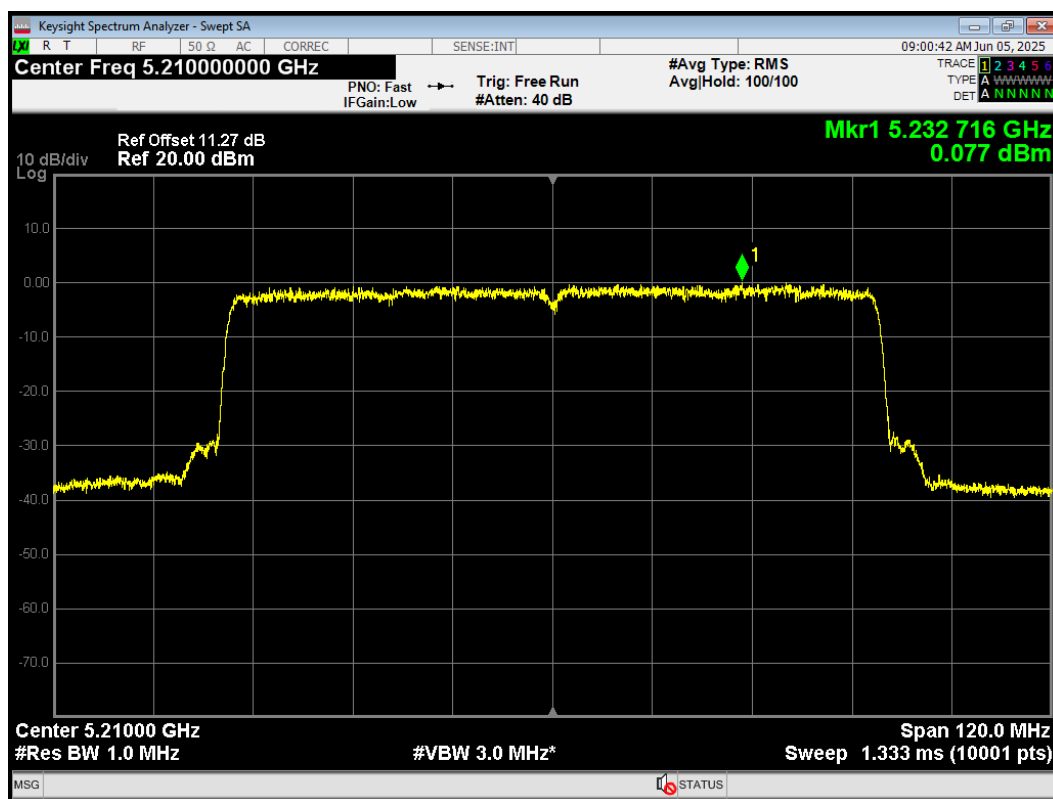
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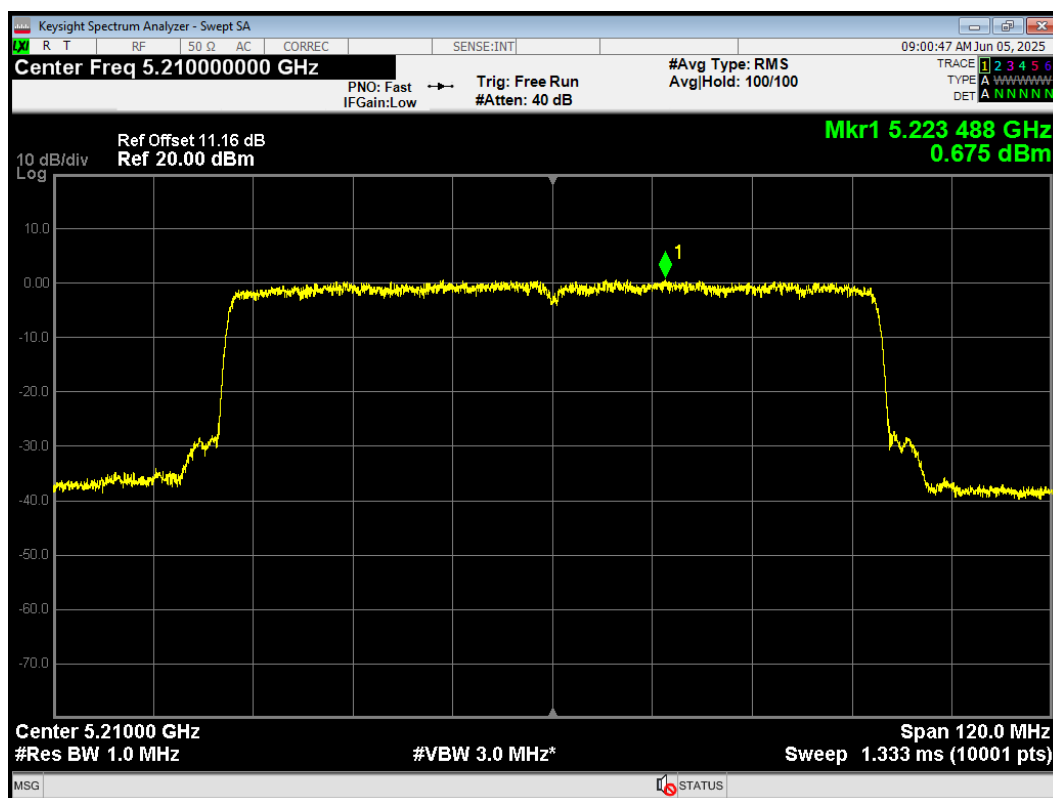
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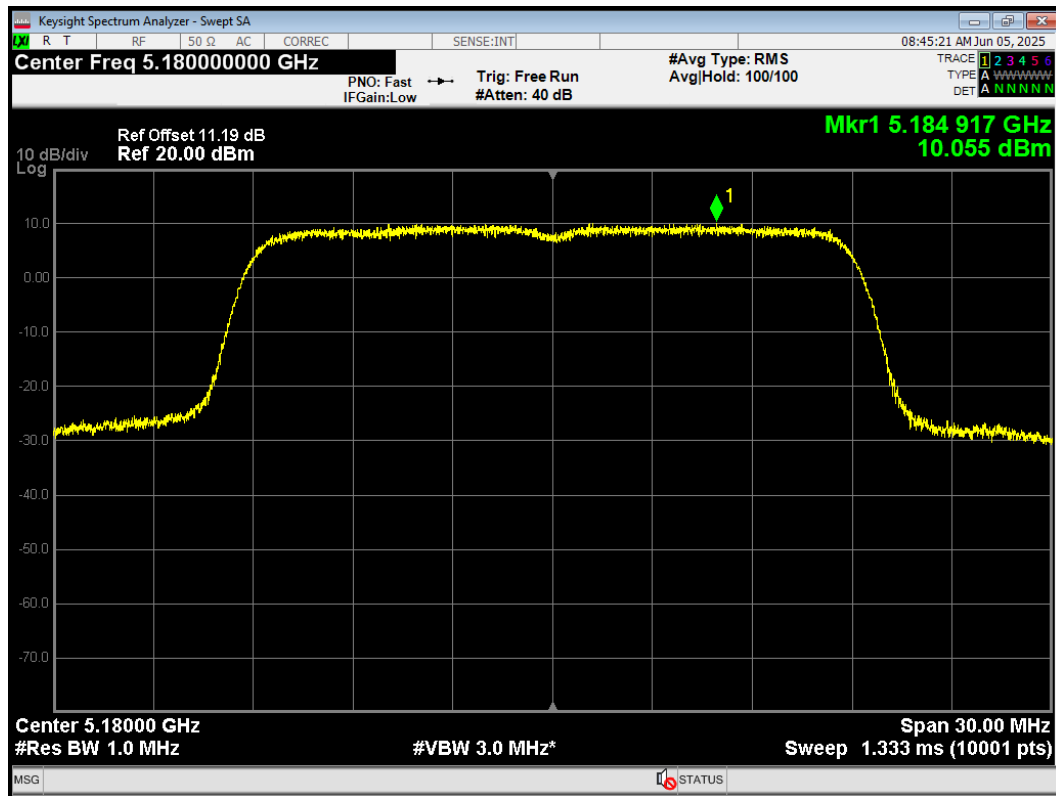
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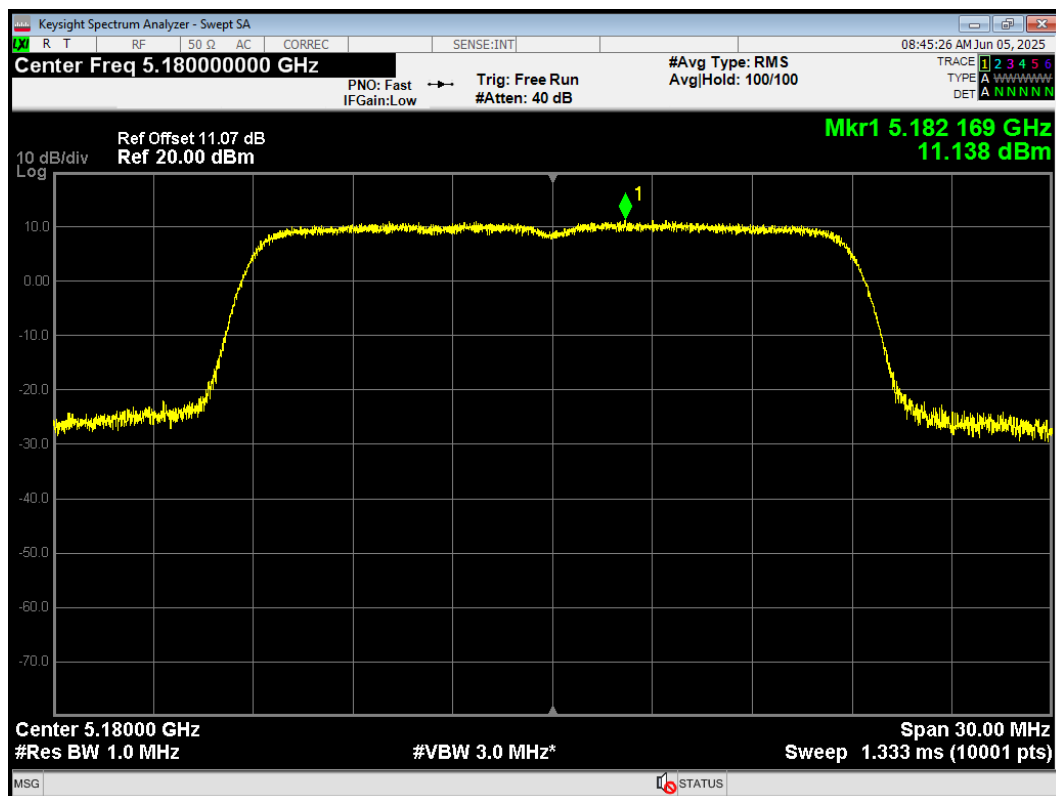
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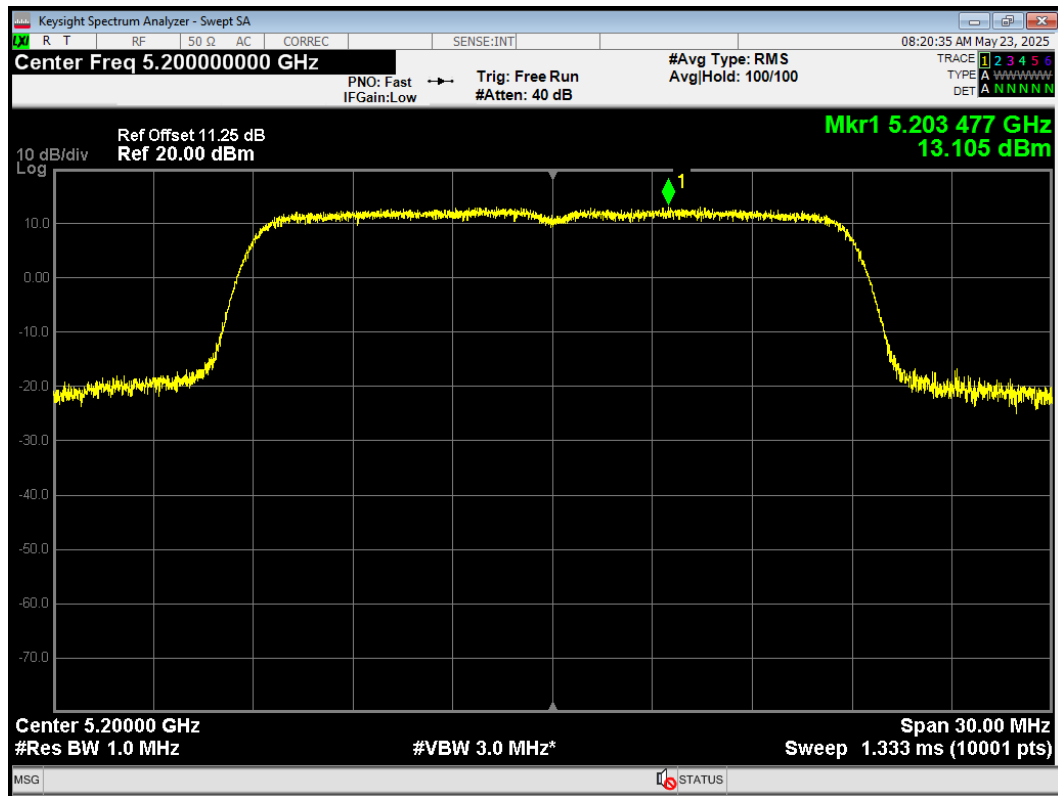
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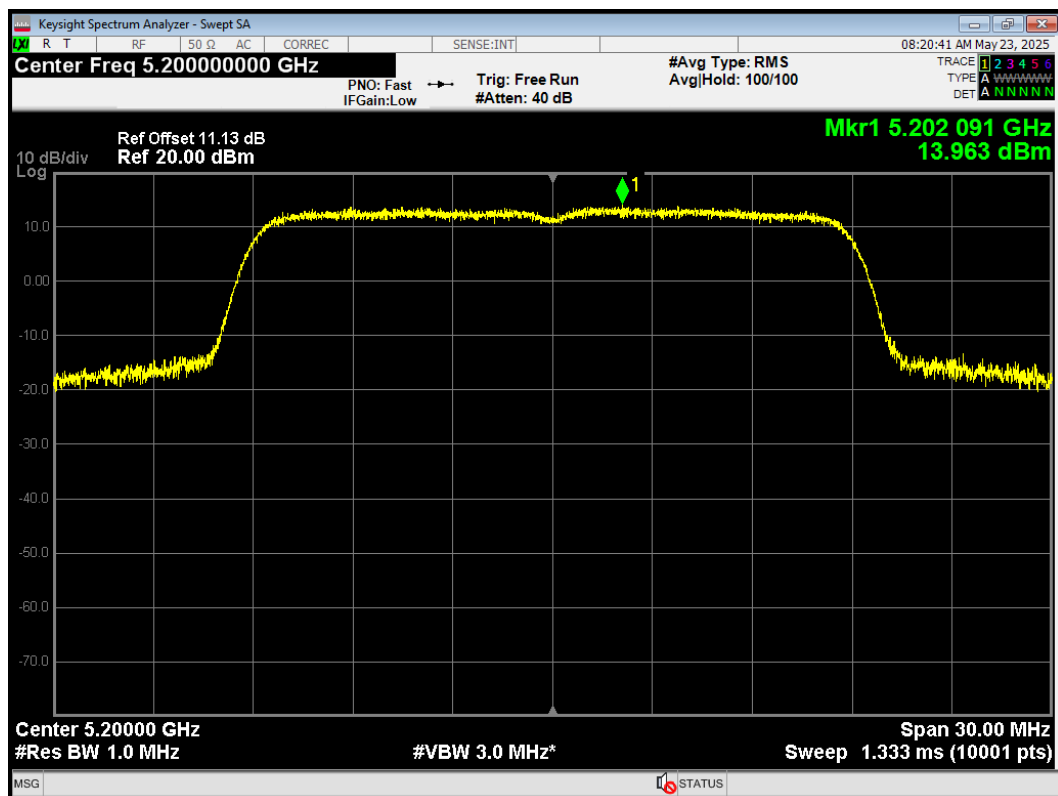
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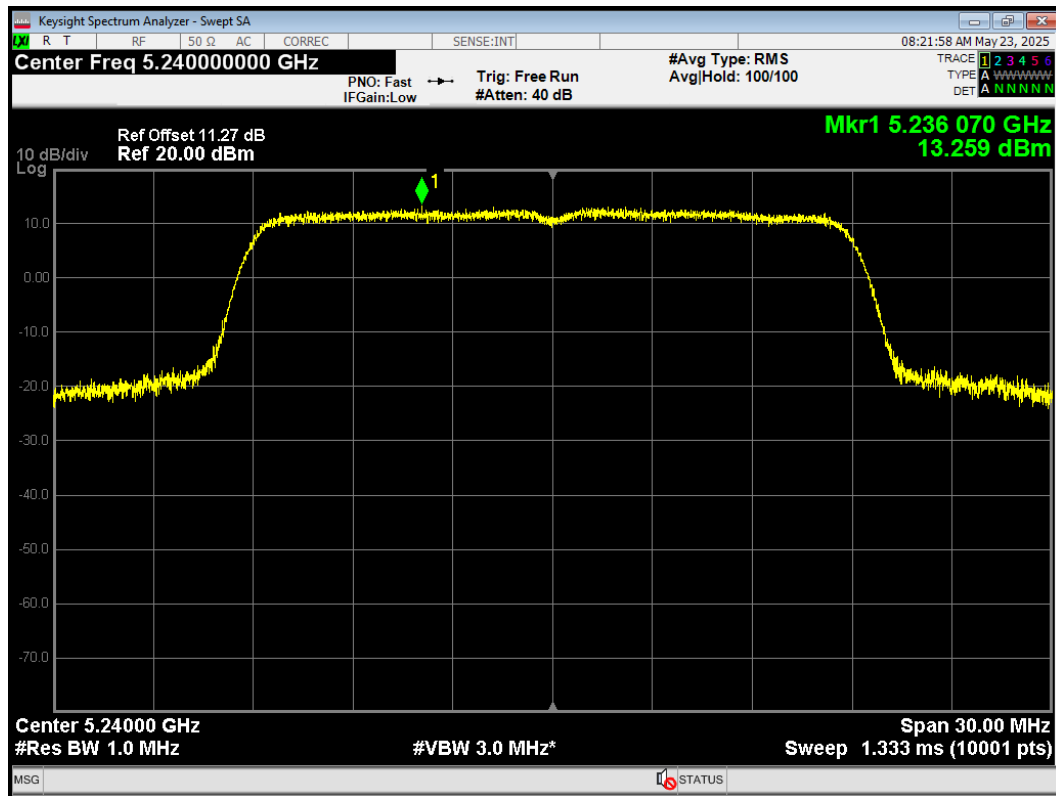
PSD 802.11n(HT20) 5200MHz Ant1



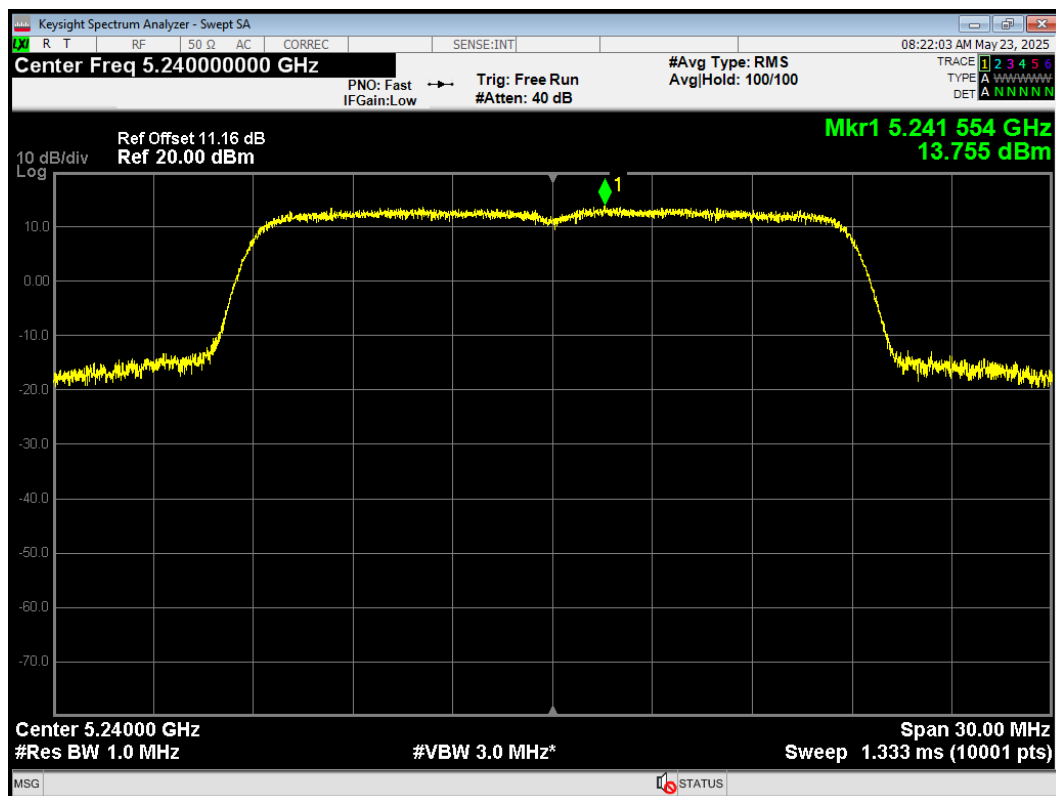
PSD 802.11n(HT20) 5200MHz Ant2



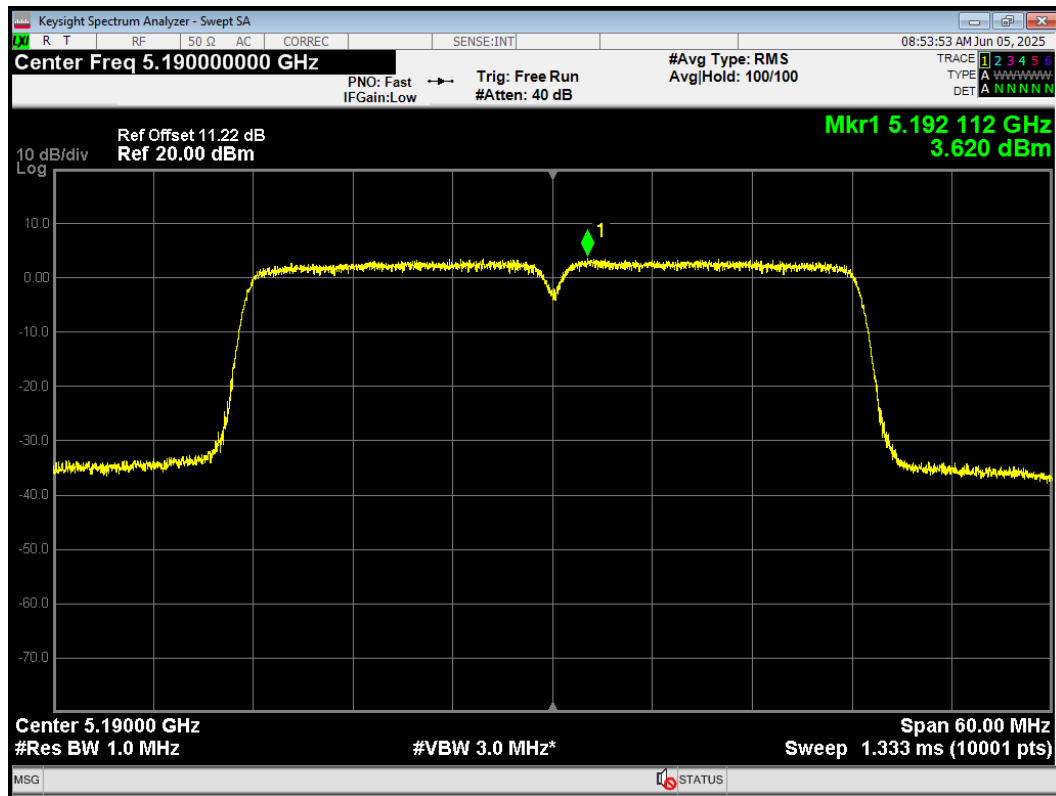
PSD 802.11n(HT20) 5240MHz Ant1



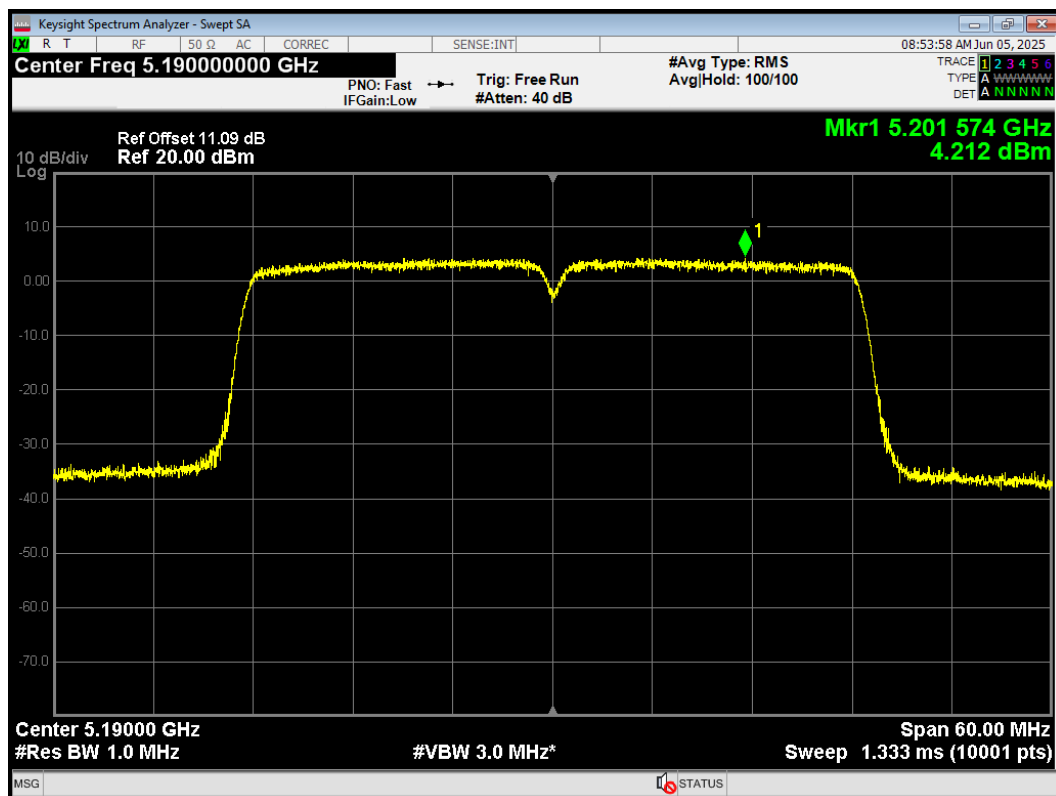
PSD 802.11n(HT20) 5240MHz Ant2



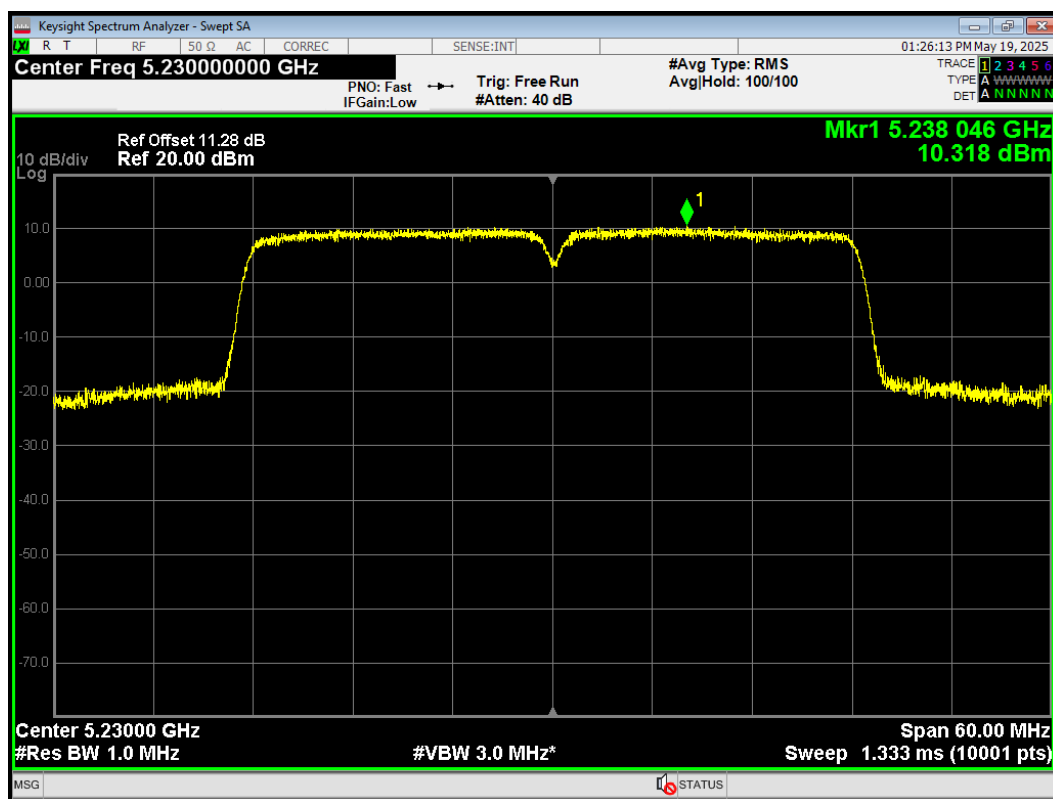
PSD 802.11n(HT40) 5190MHz Ant1



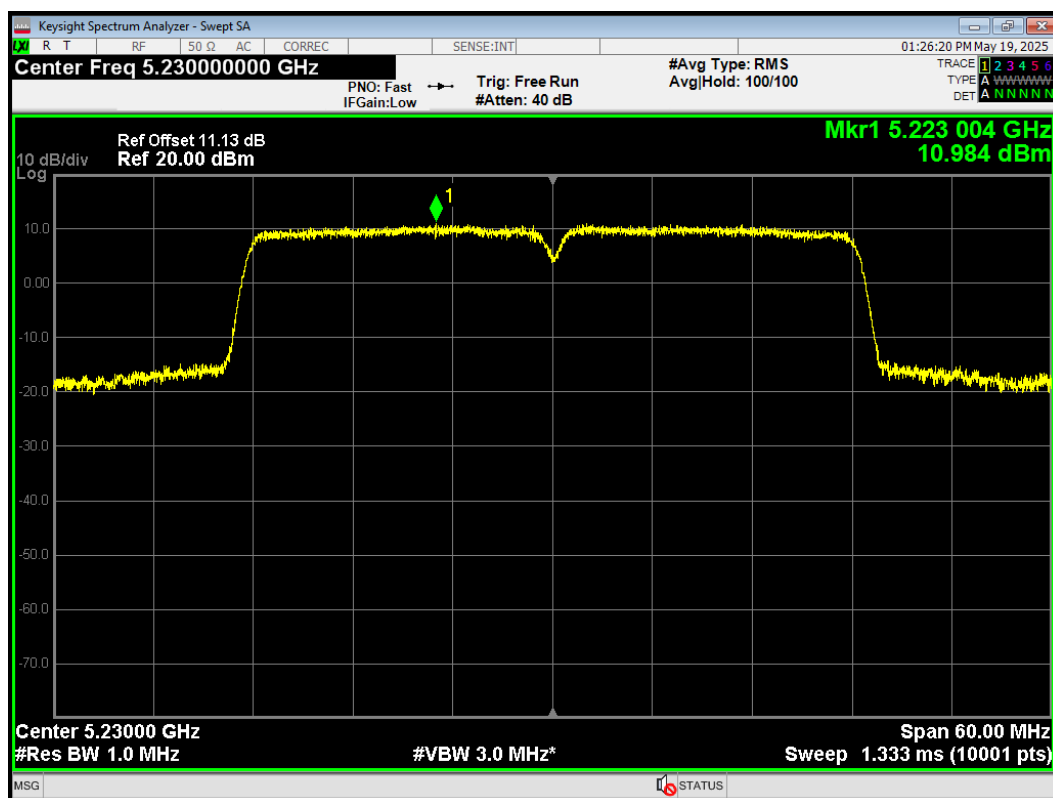
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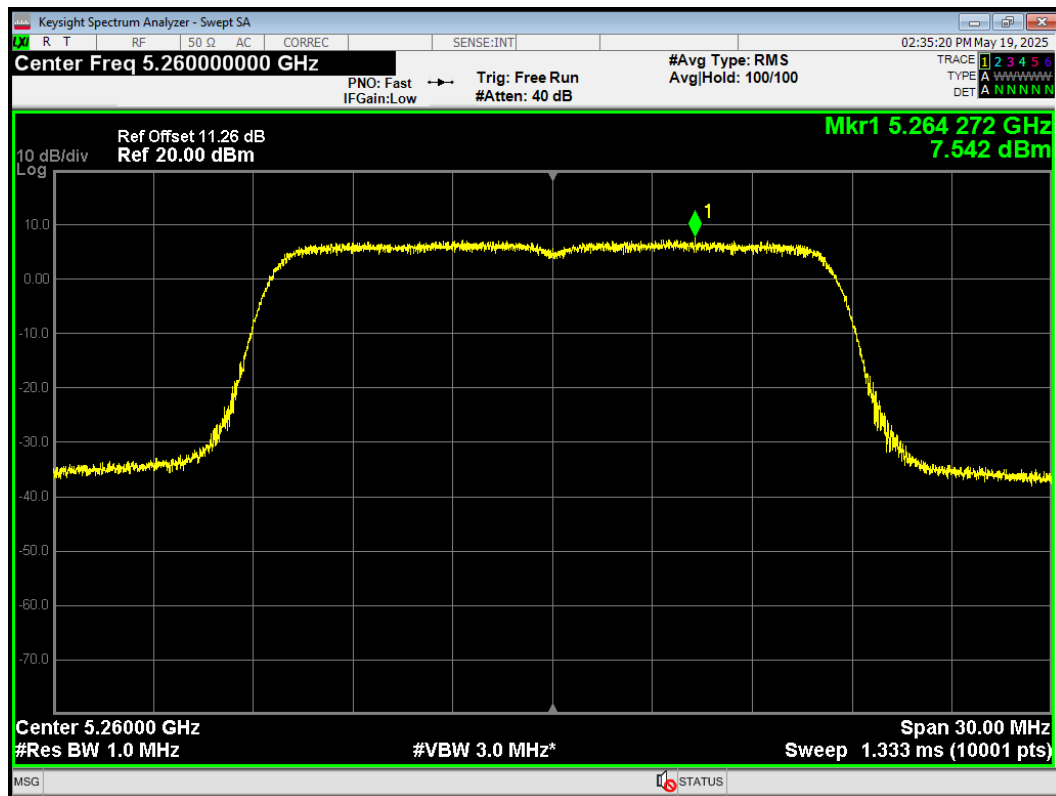
PSD 802.11n(HT40) 5230MHz Ant1



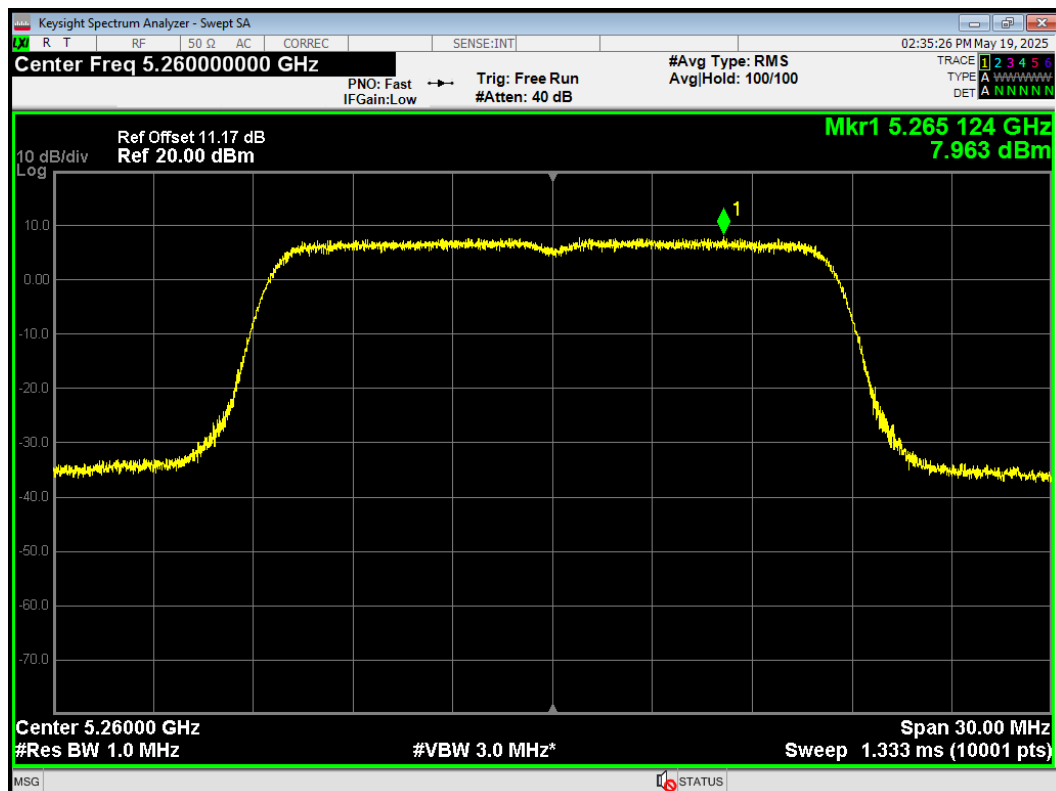
PSD 802.11n(HT40) 5230MHz Ant2



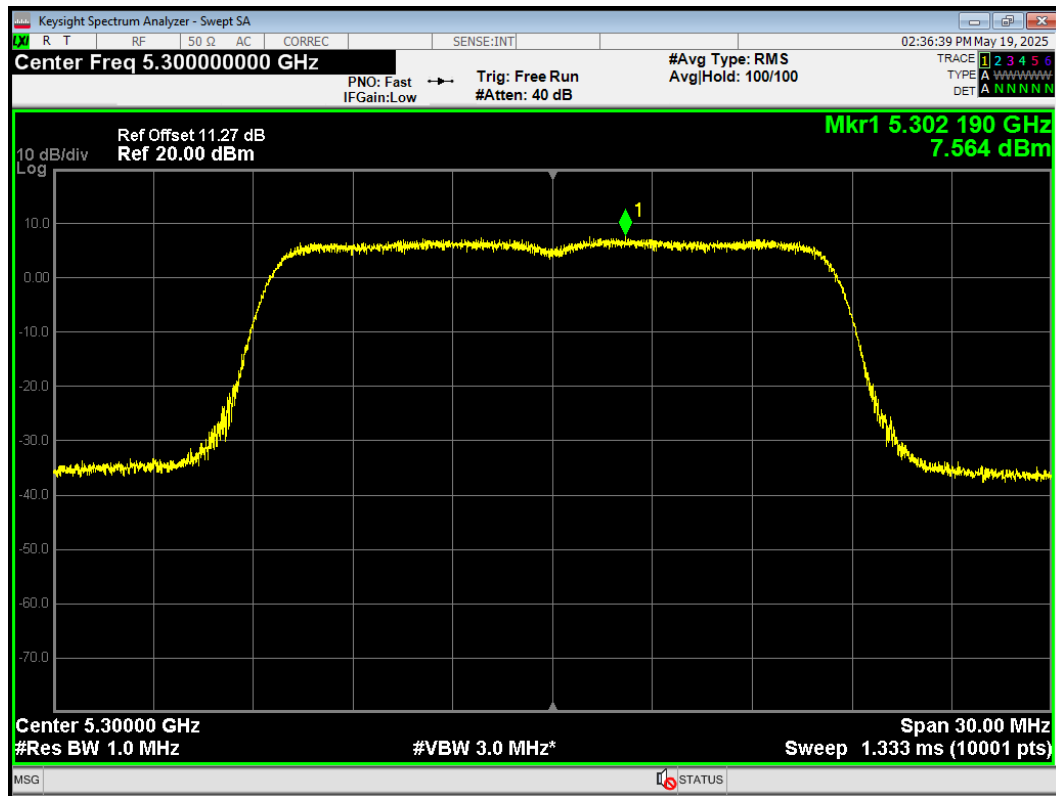
PSD 802.11a 5260MHz Ant1



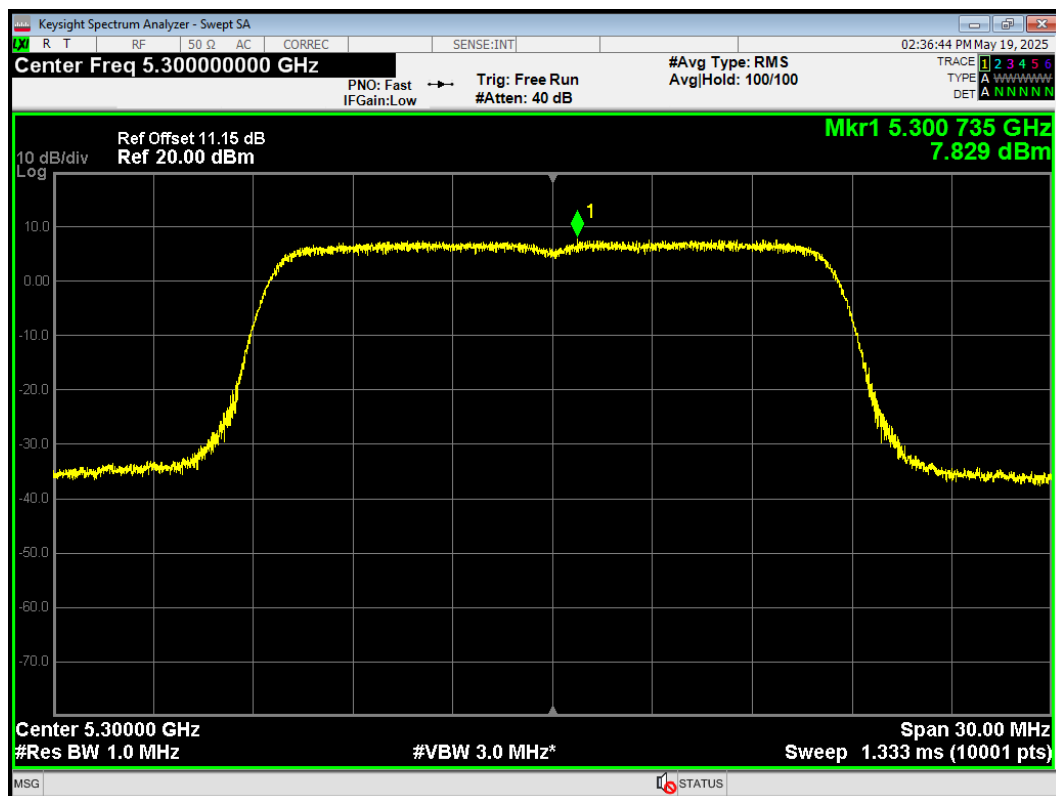
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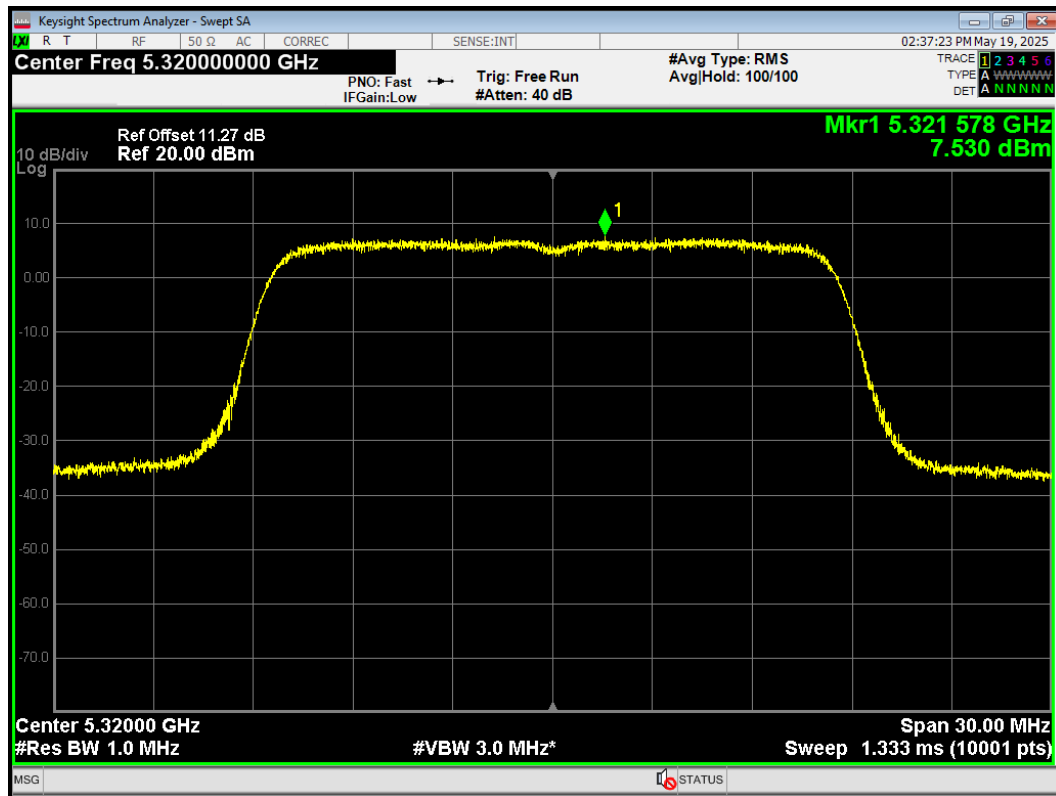
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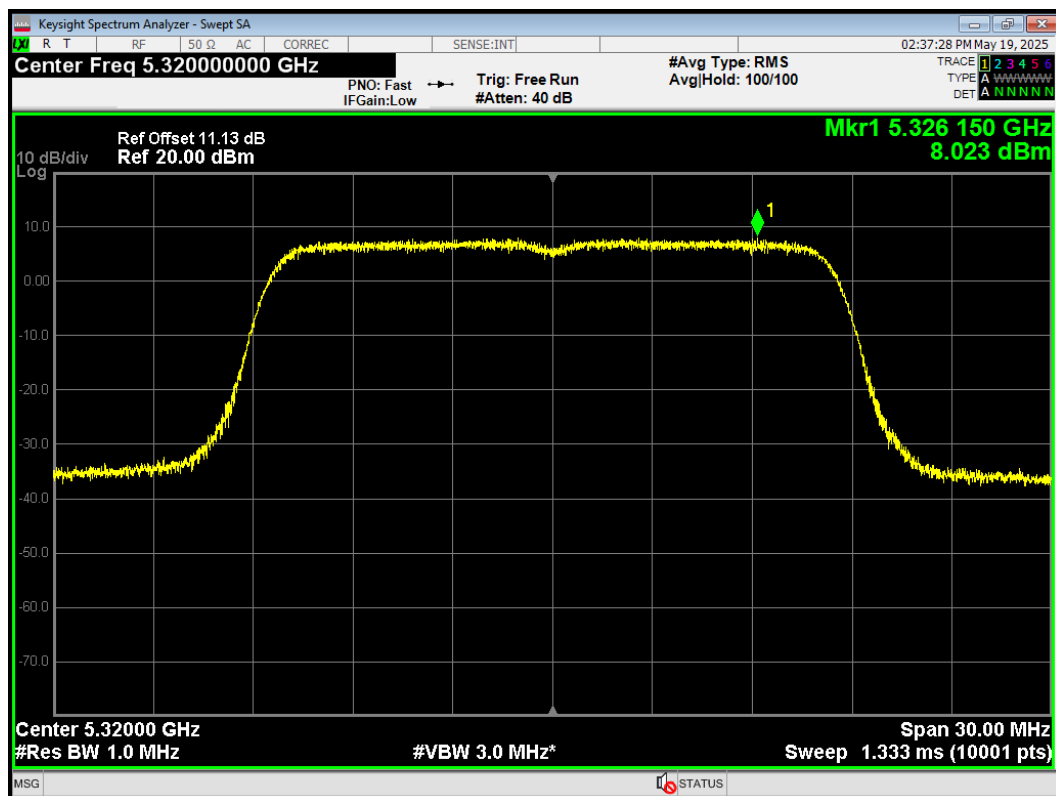
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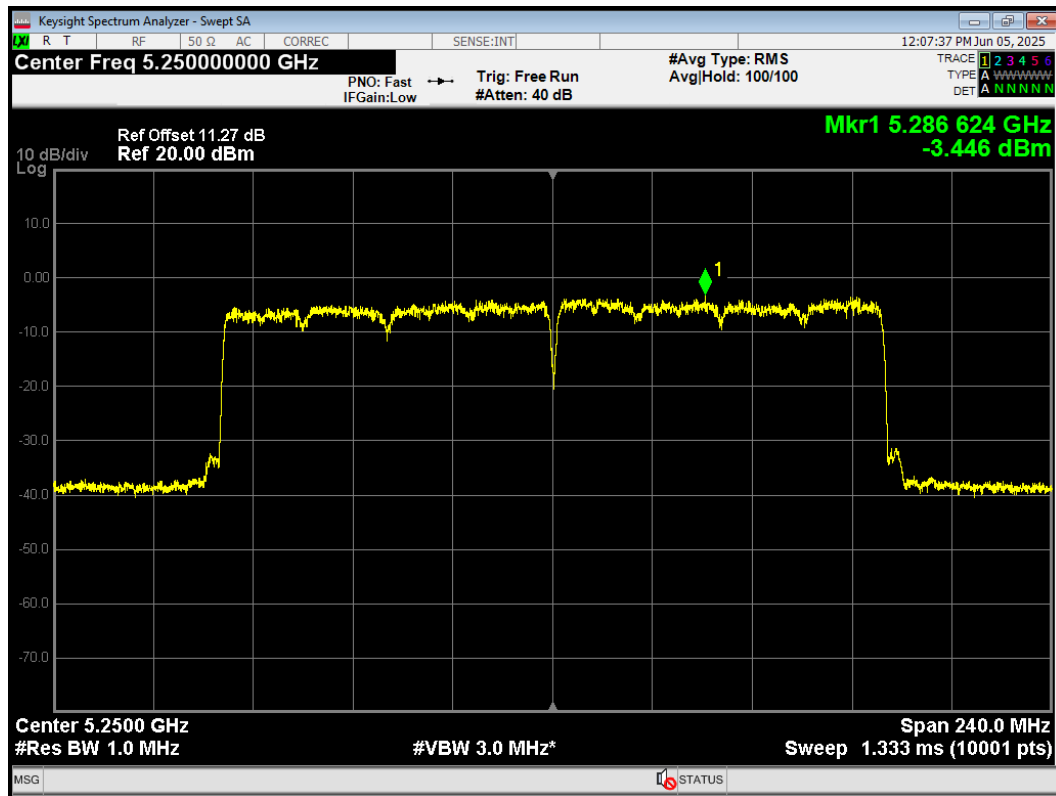
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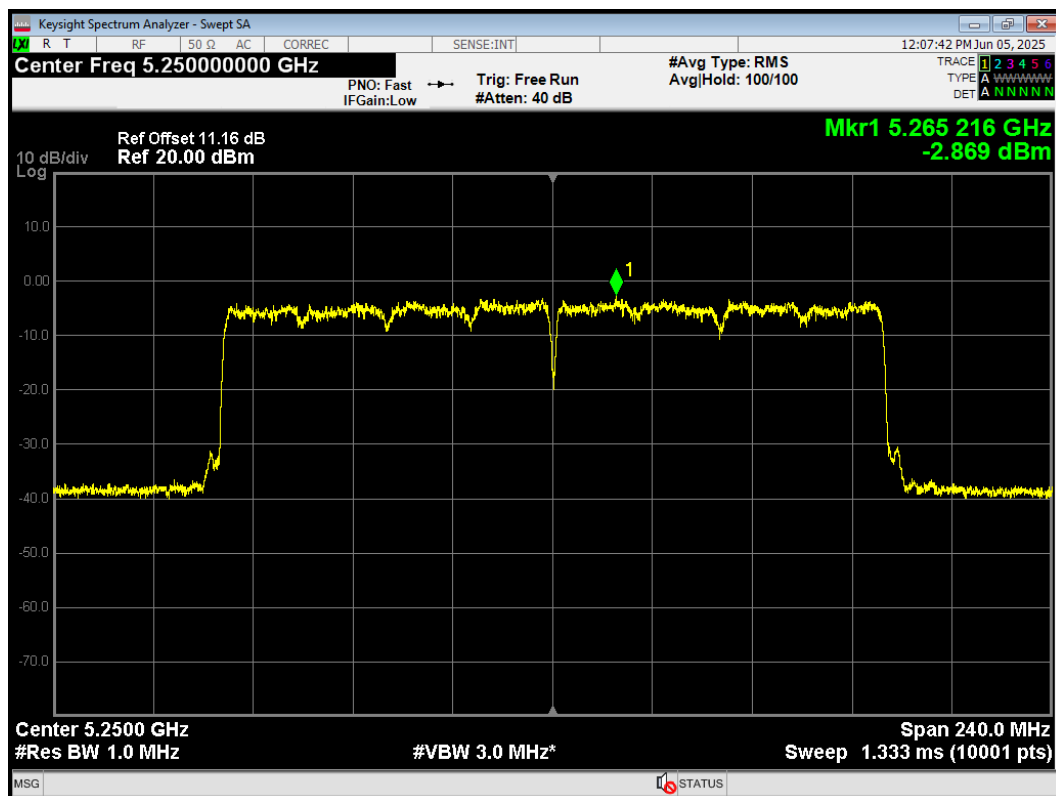
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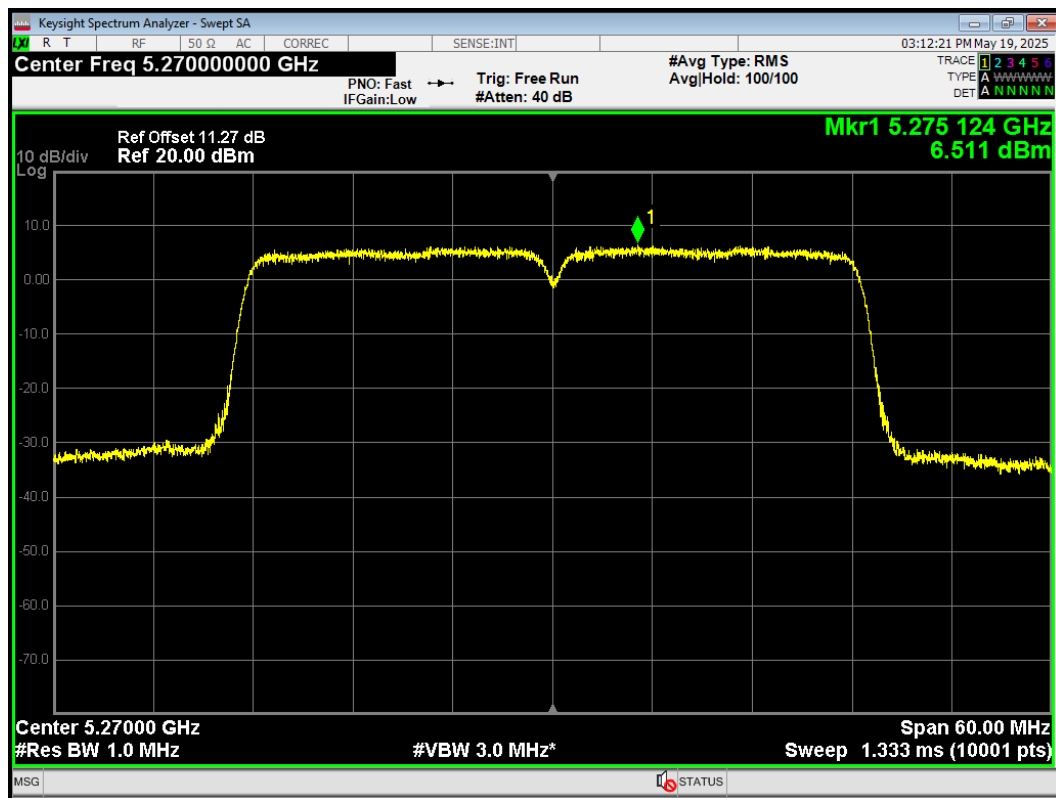
PSD 802.11ac(VHT160) 5250MHz Ant1



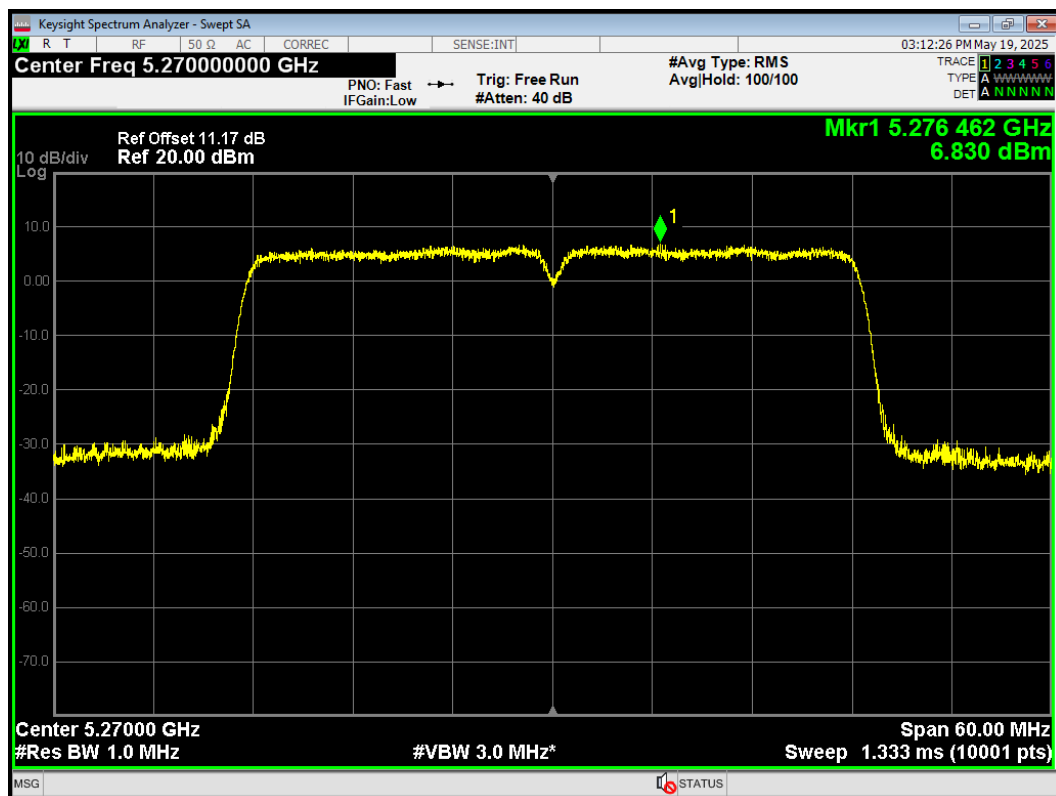
PSD 802.11ac(VHT160) 5250MHz Ant2



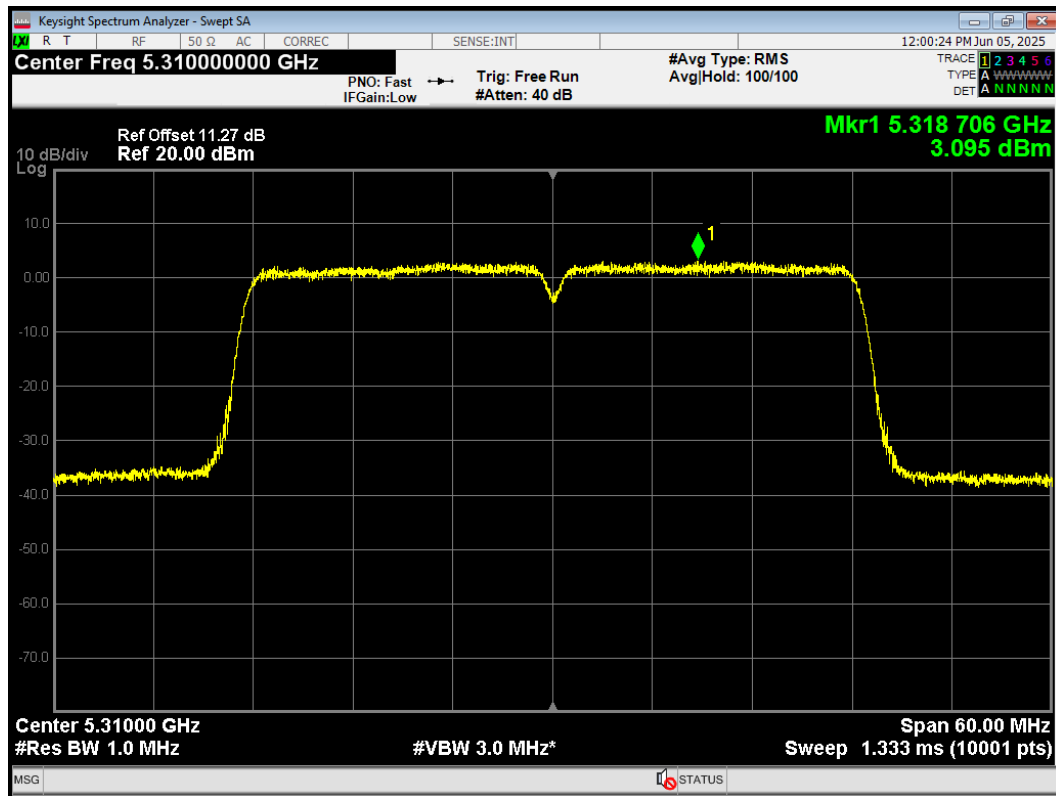
PSD 802.11ac(VHT40) 5270MHz Ant1



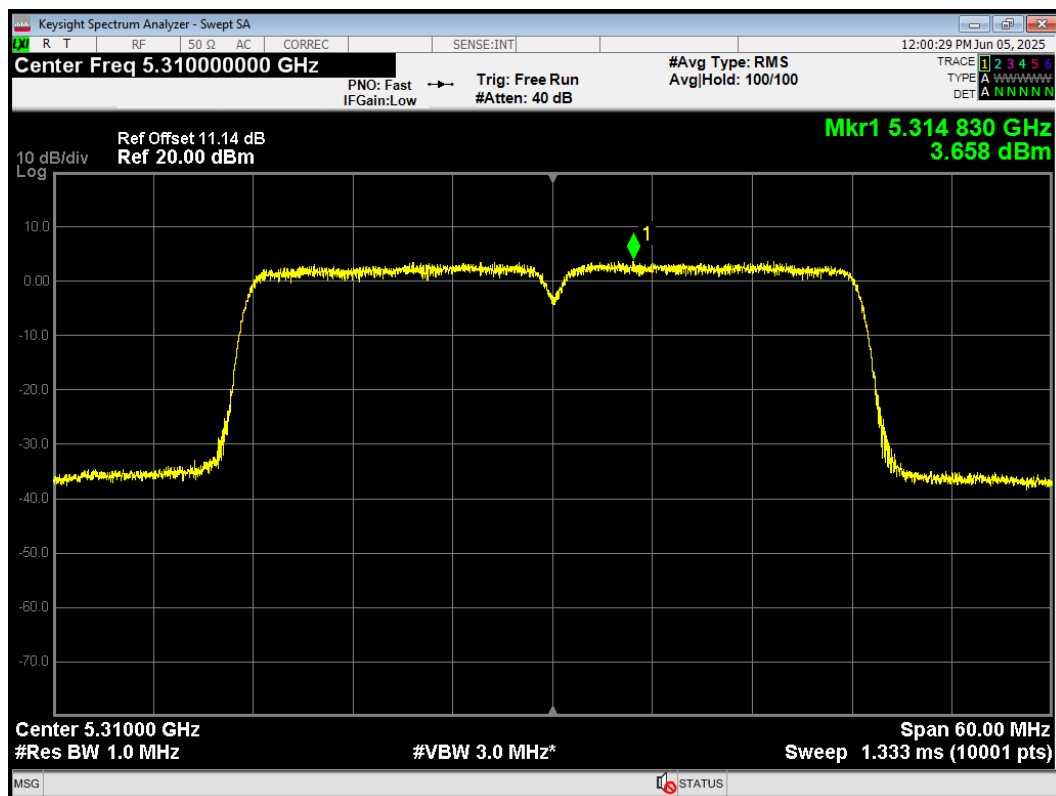
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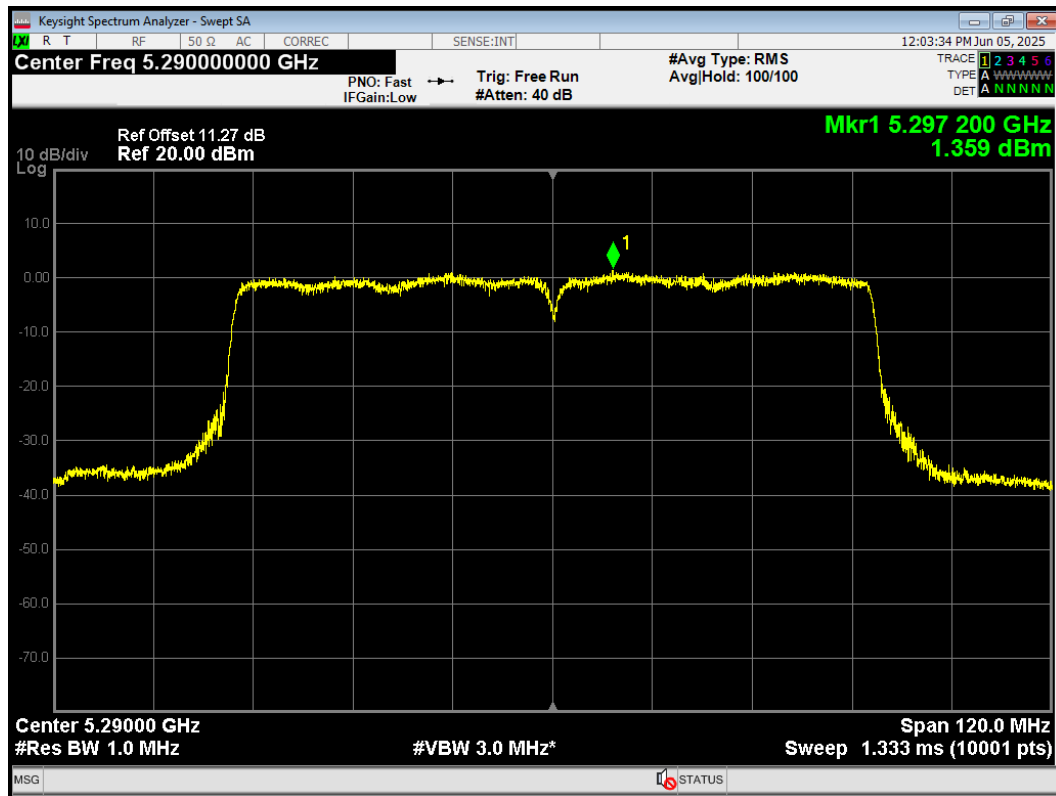
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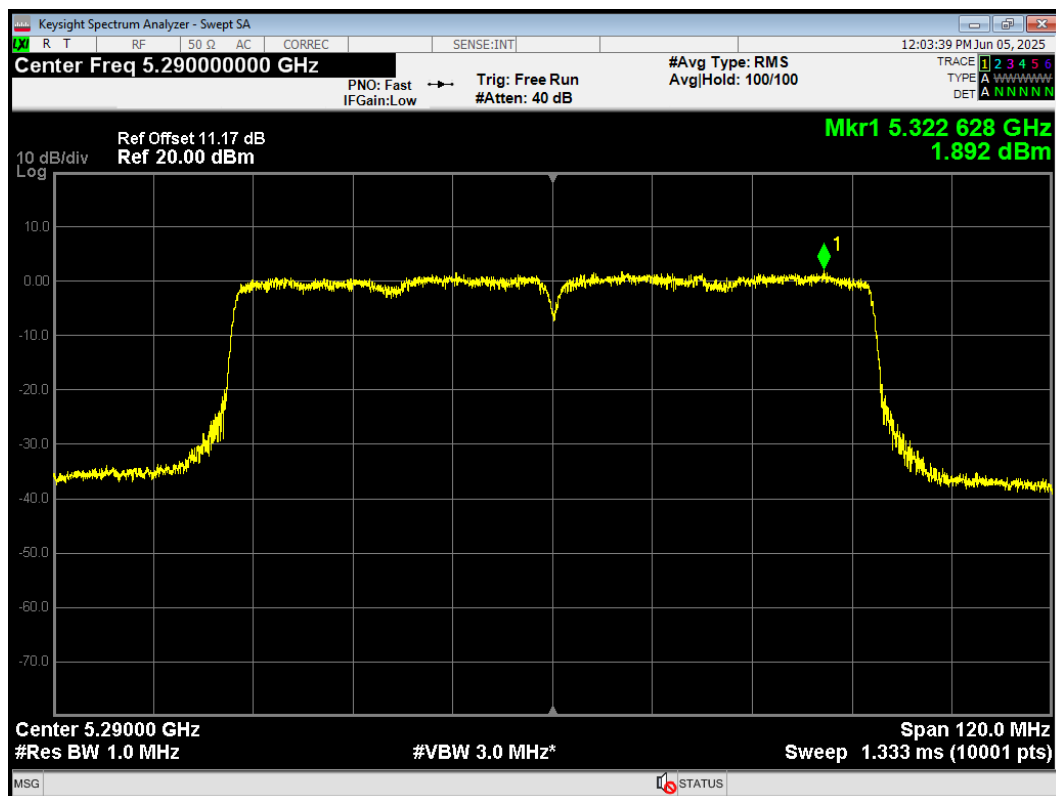
PSD 802.11ac(VHT40) 5310MHz Ant2



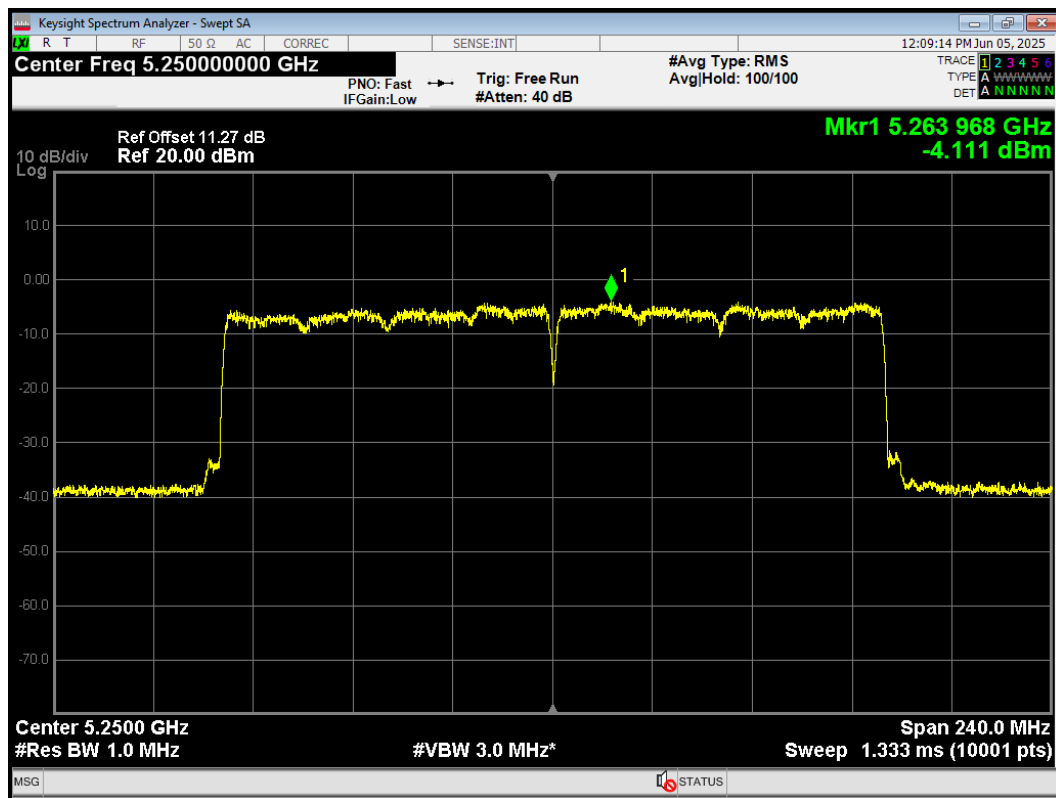
PSD 802.11ac(VHT80) 5290MHz Ant1



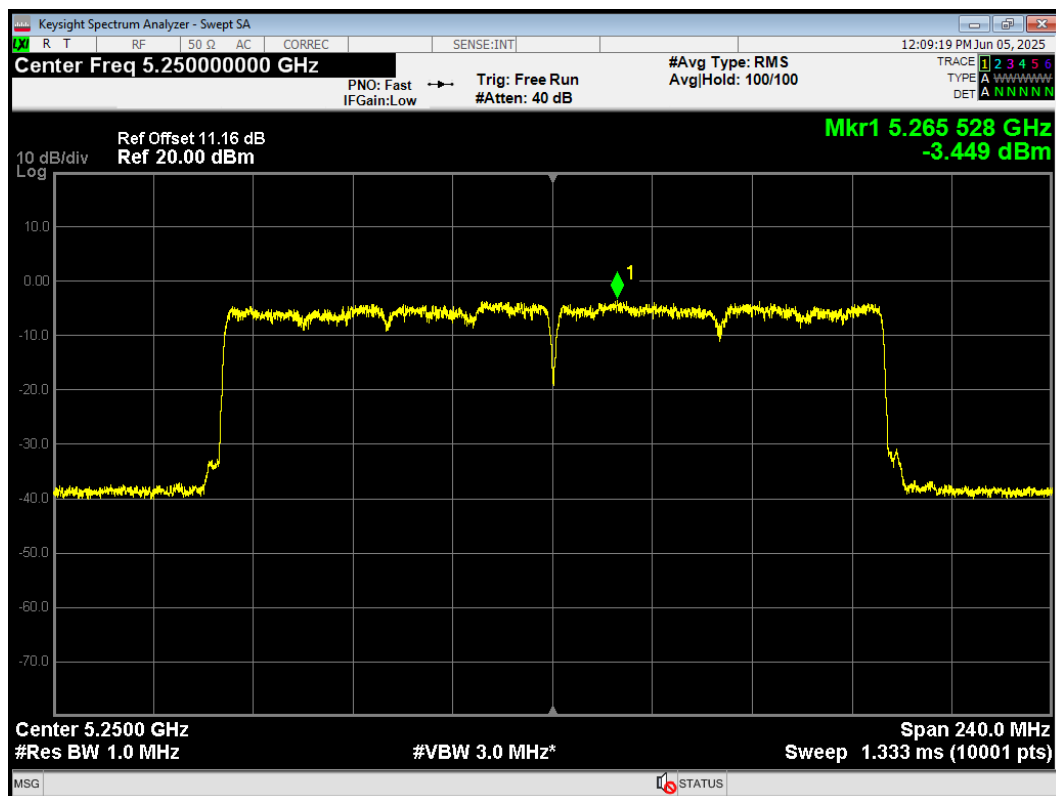
PSD 802.11ac(VHT80) 5290MHz Ant2



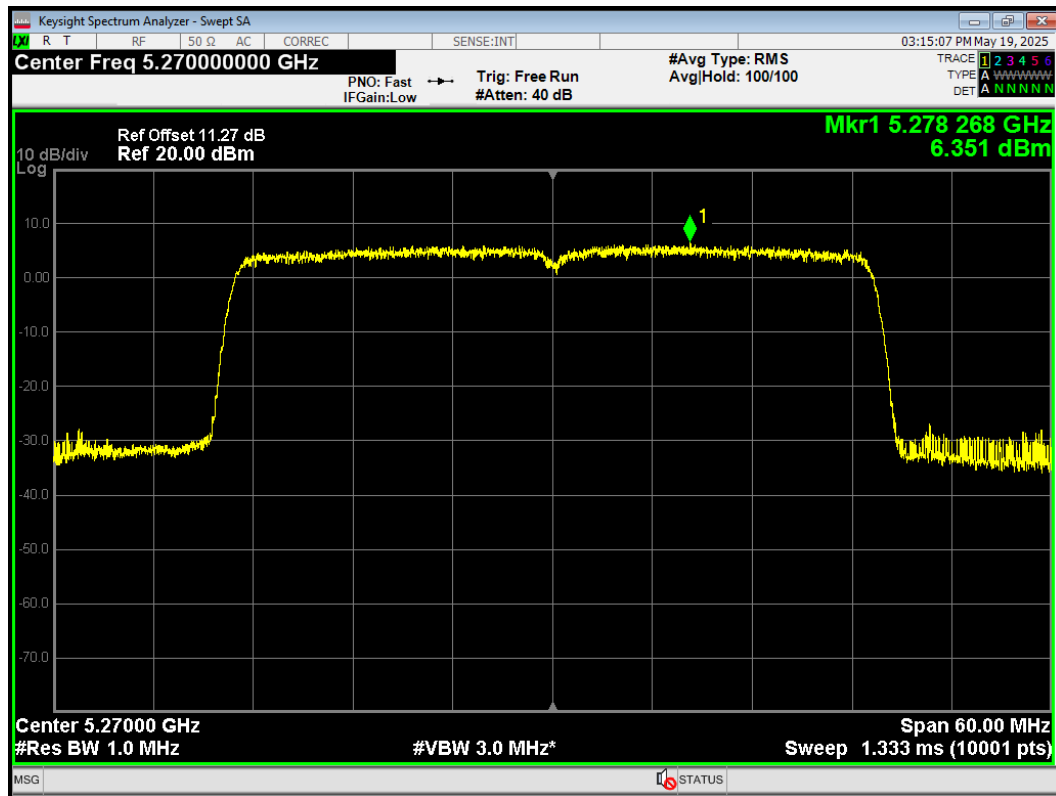
PSD 802.11ax(HE160) 5250MHz Ant1



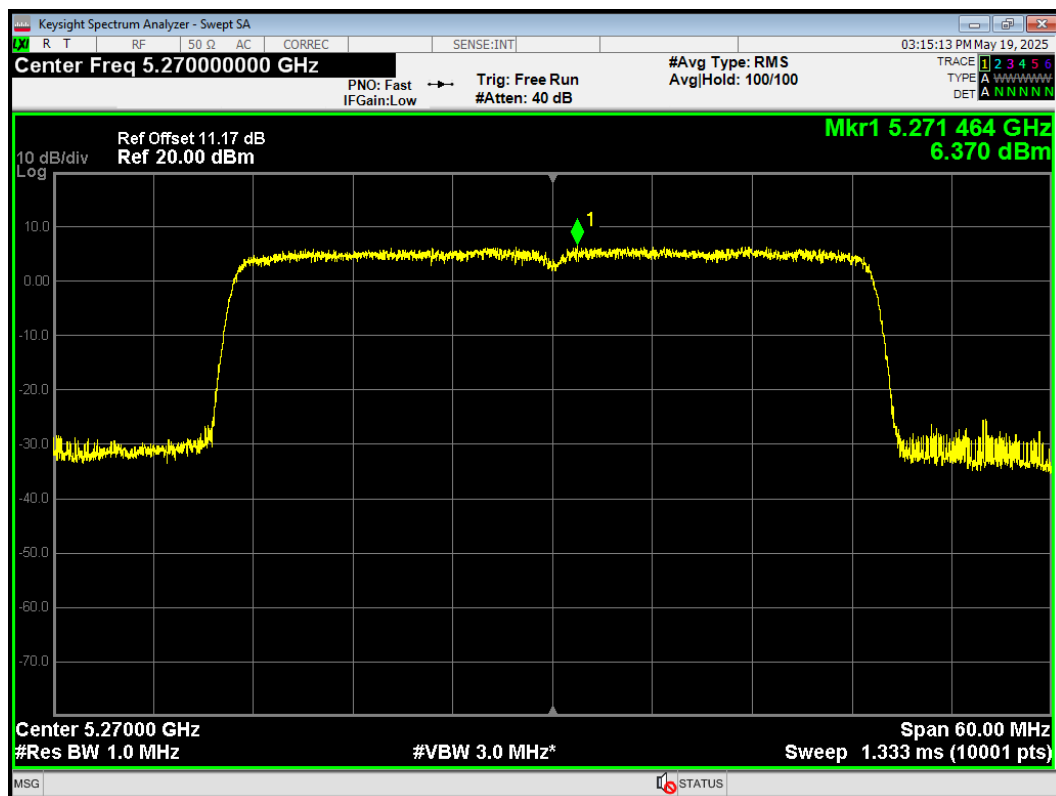
PSD 802.11ax(HE160) 5250MHz Ant2



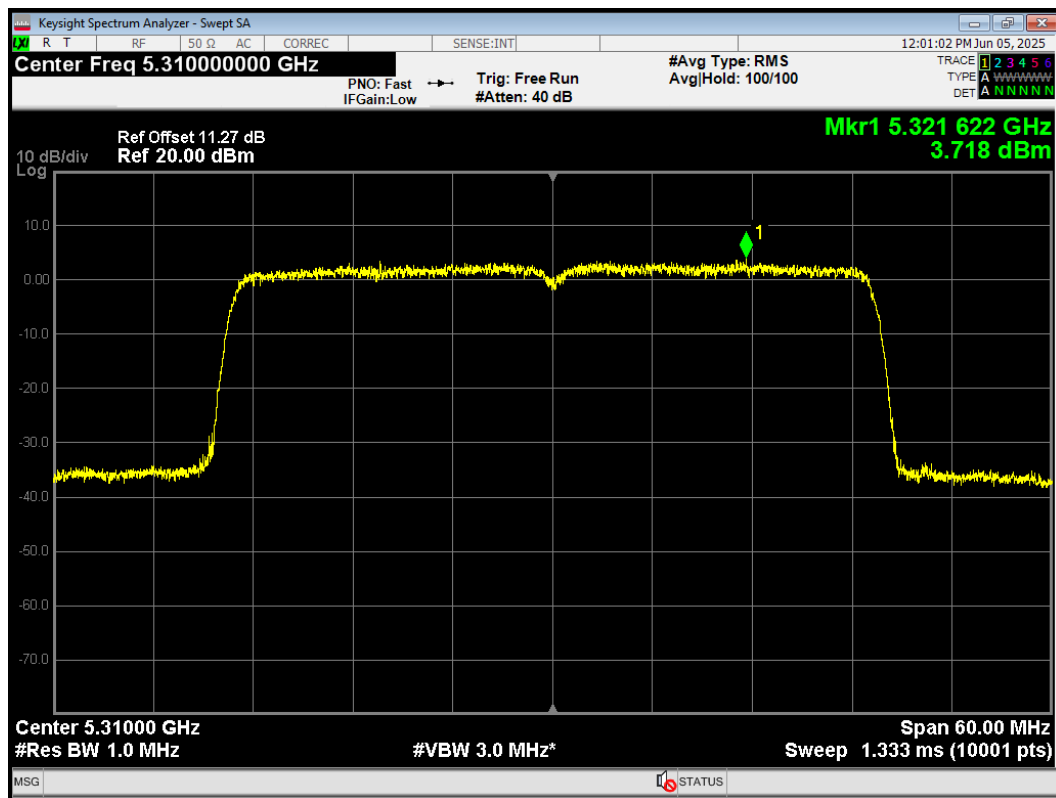
PSD 802.11ax(HE40) 5270MHz Ant1



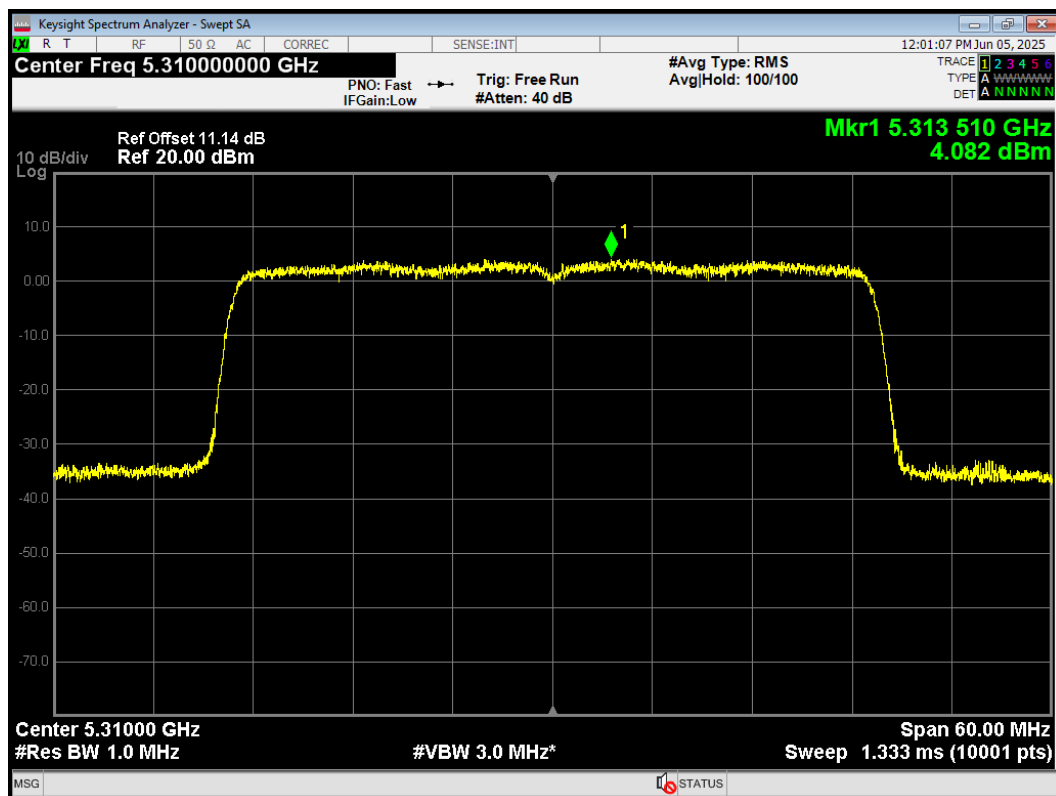
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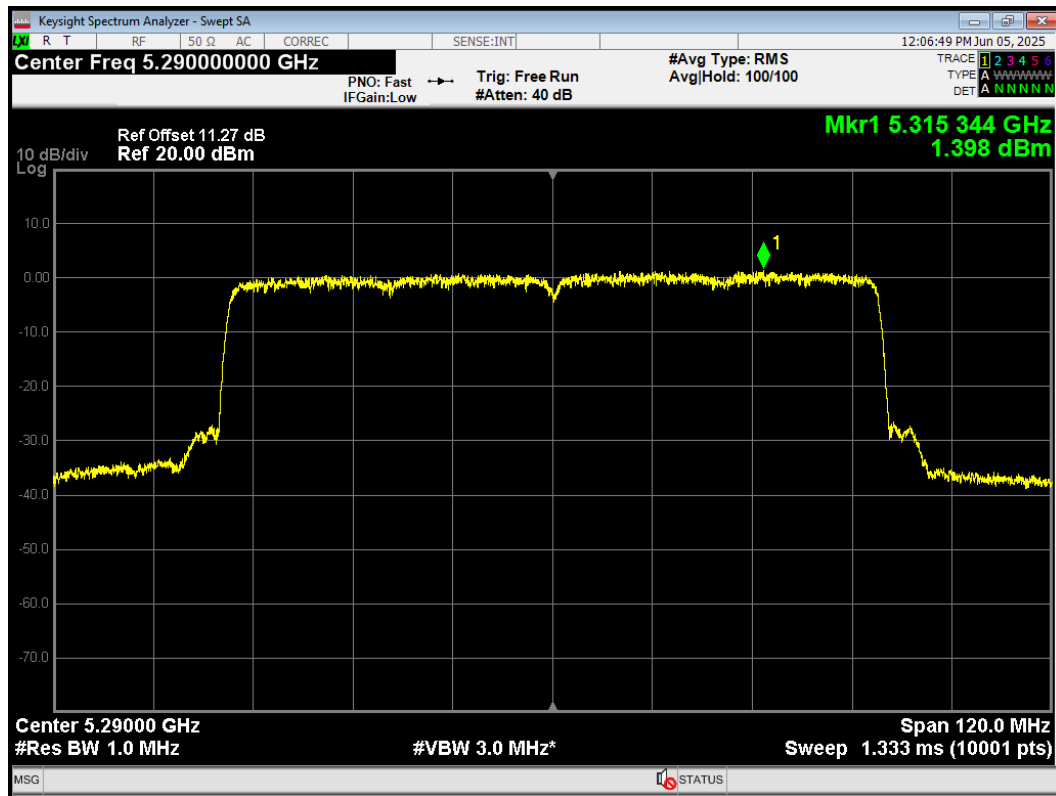
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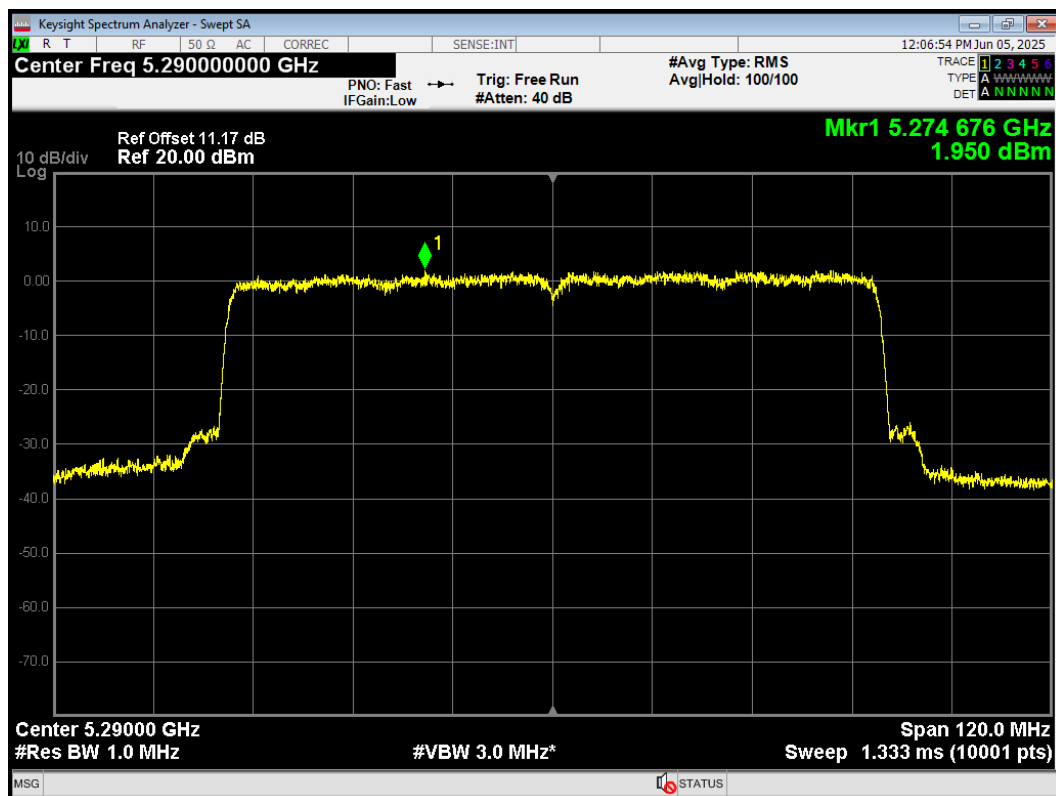
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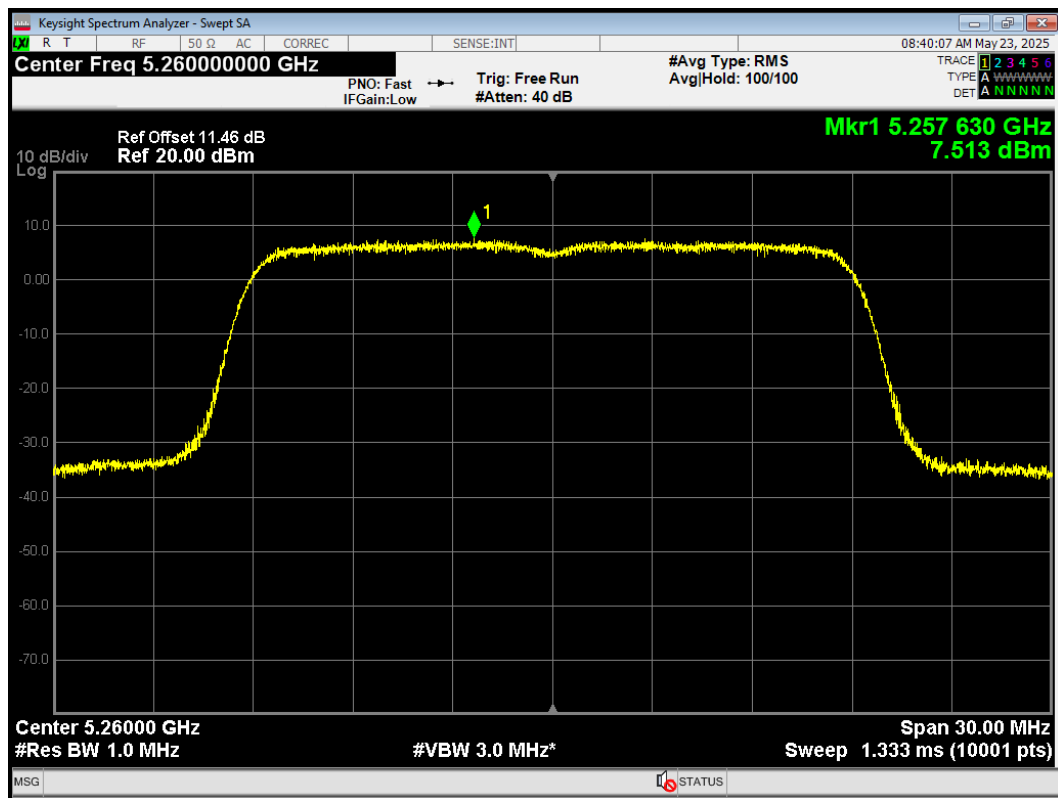
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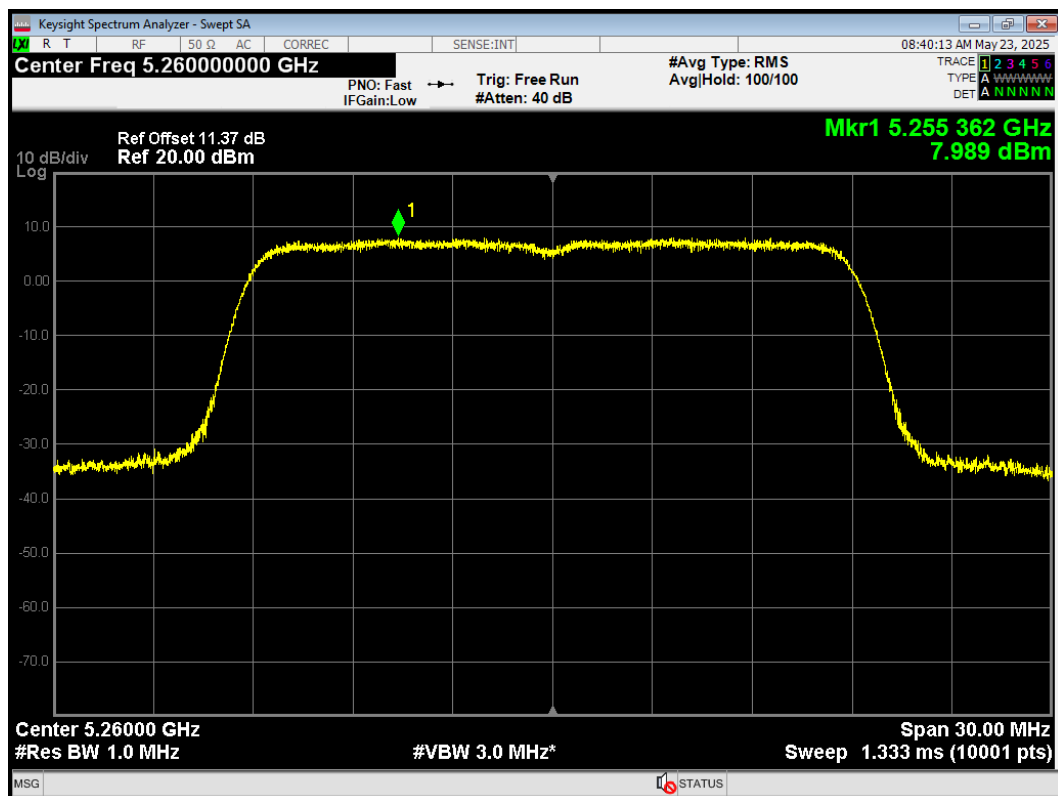
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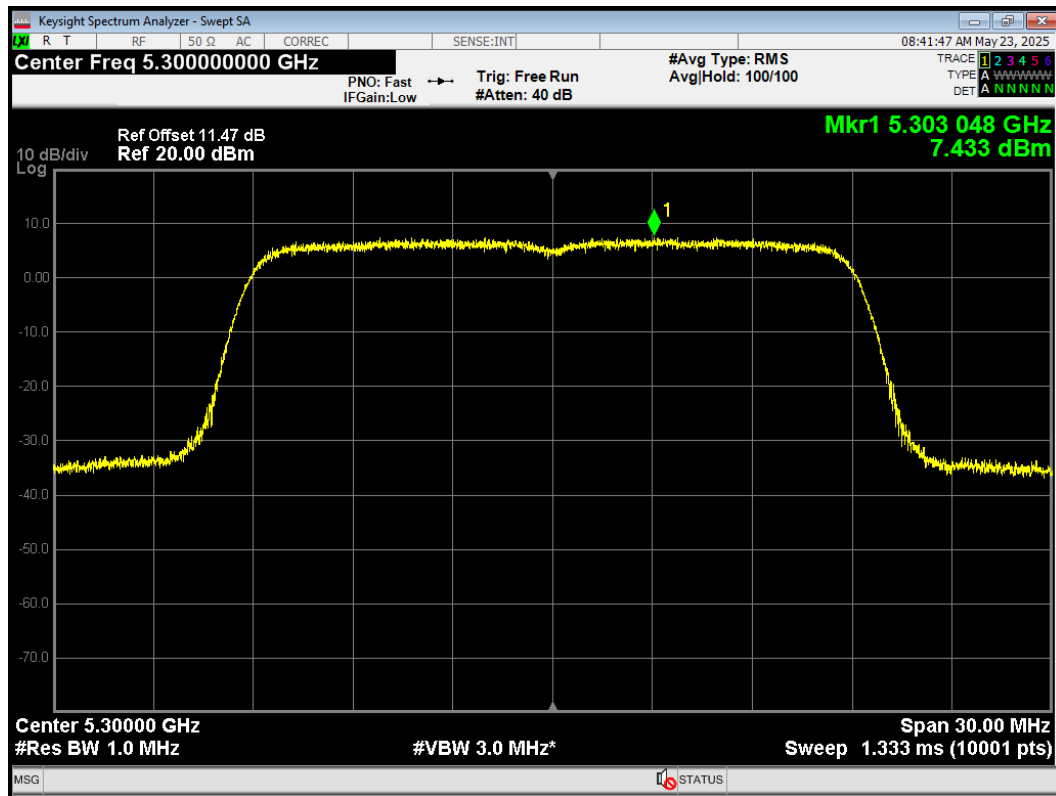
PSD 802.11n(HT20) 5260MHz Ant1



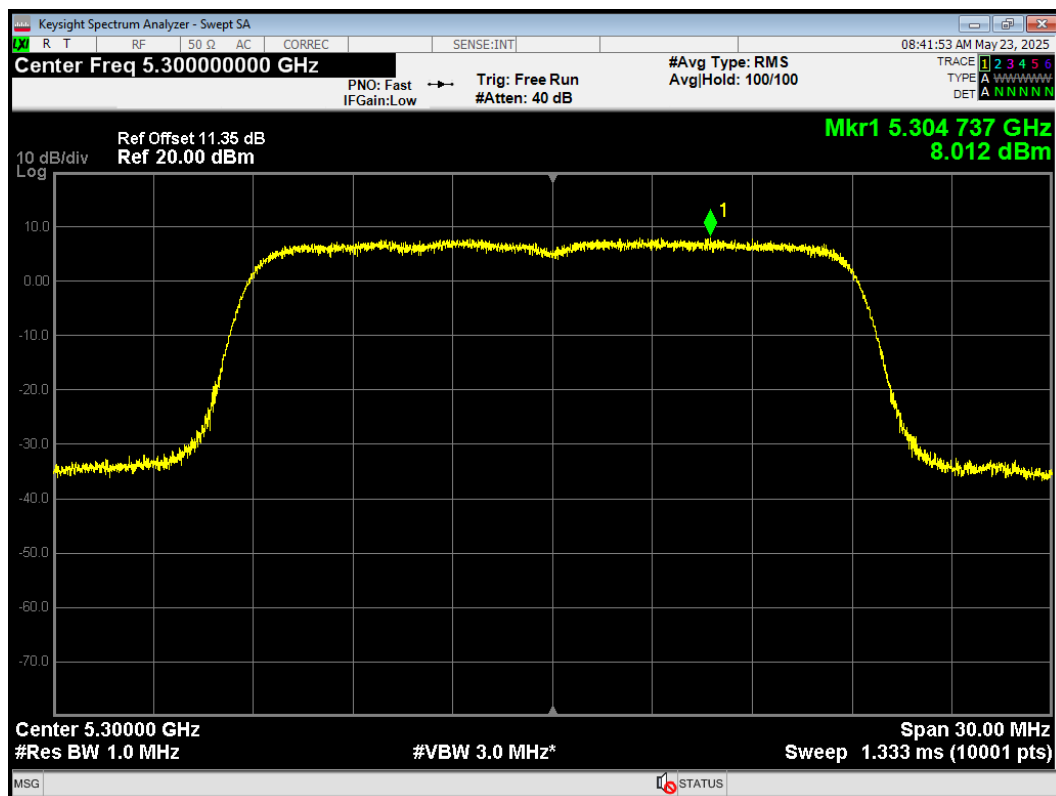
PSD 802.11n(HT20) 5260MHz Ant2



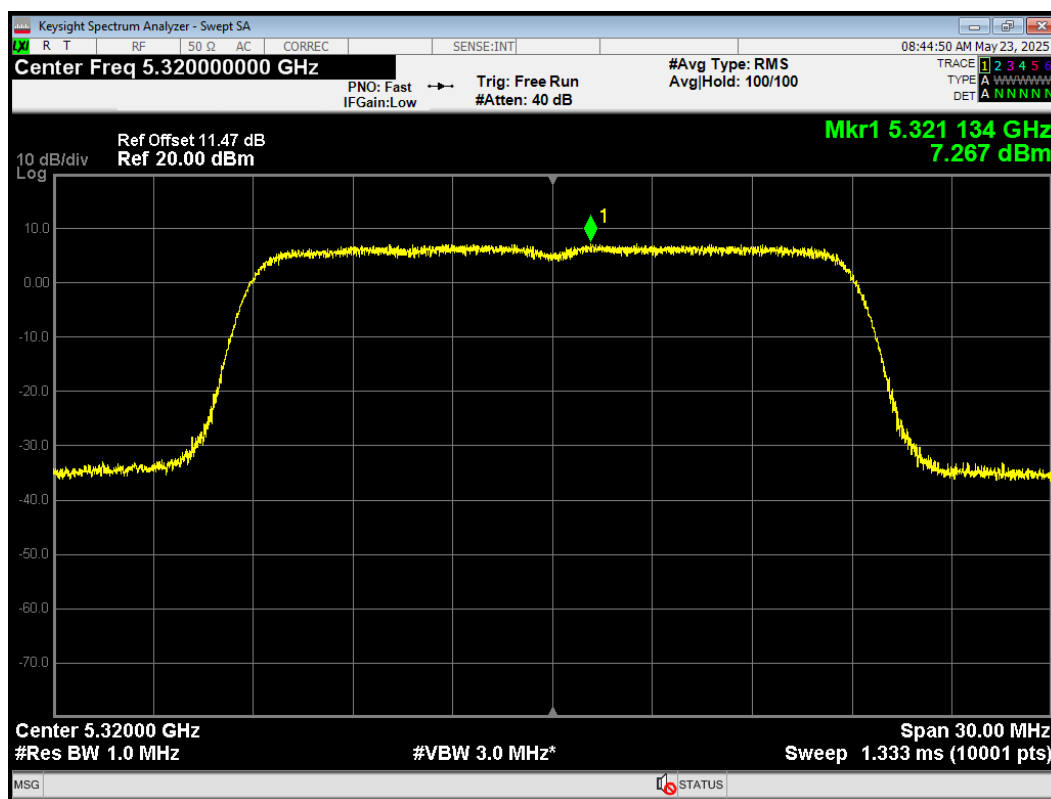
PSD 802.11n(HT20) 5300MHz Ant1



PSD 802.11n(HT20) 5300MHz Ant2



PSD 802.11n(HT20) 5320MHz Ant1



PSD 802.11n(HT20) 5320MHz Ant2

