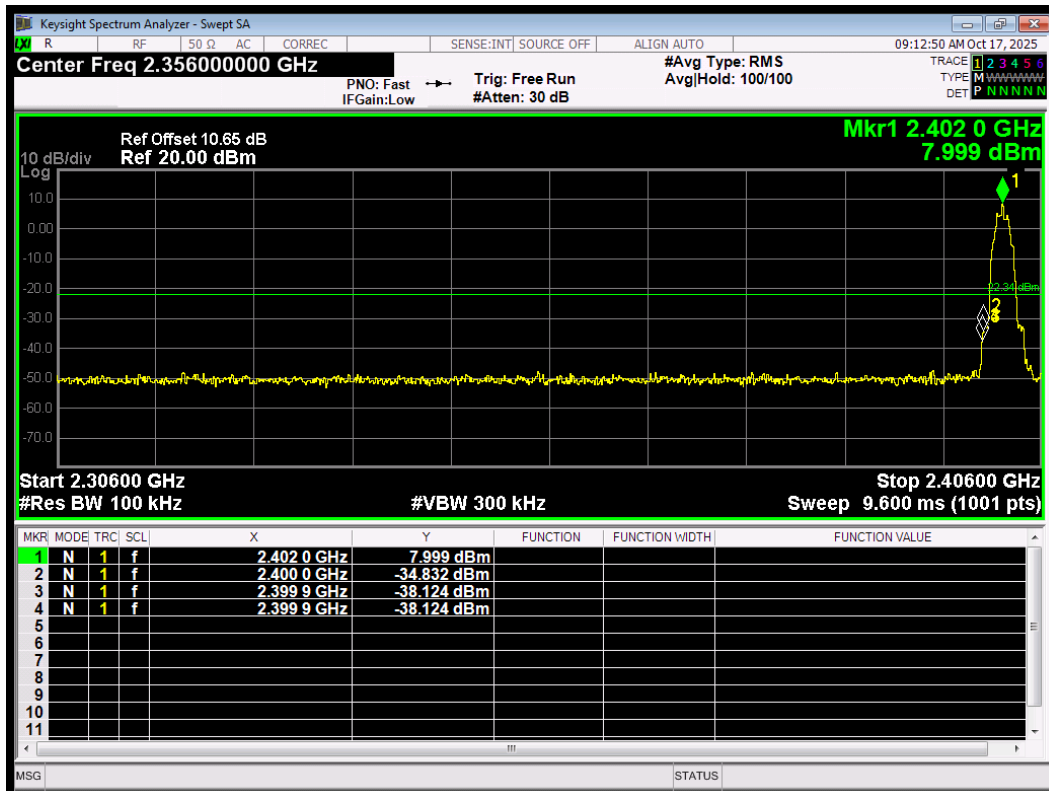


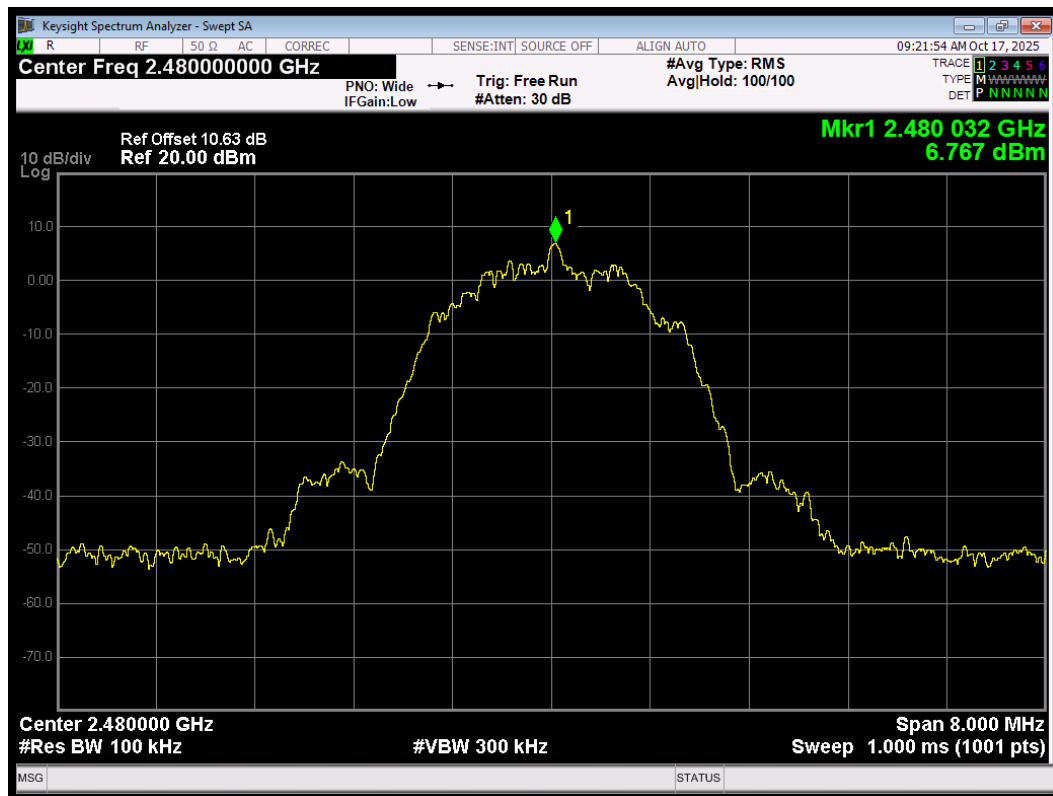
Band Edge BLE (2M) 2402MHz Ref



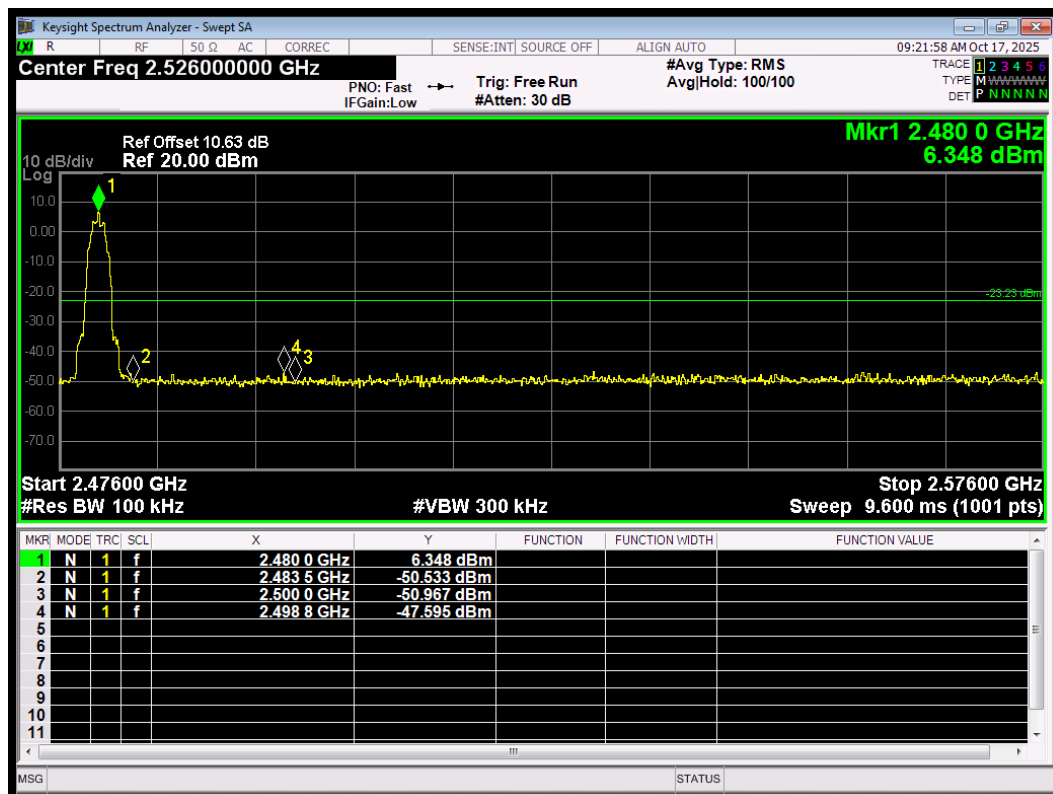
Band Edge BLE (2M) 2402MHz Emission



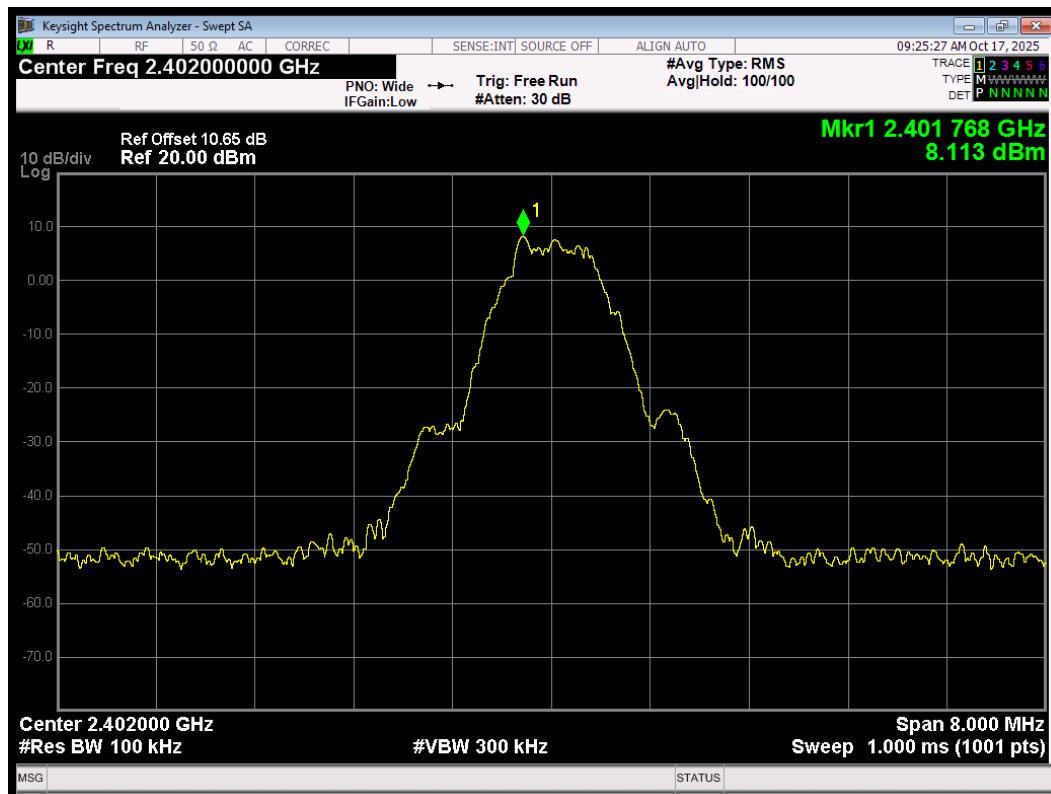
Band Edge BLE (2M) 2480MHz Ref



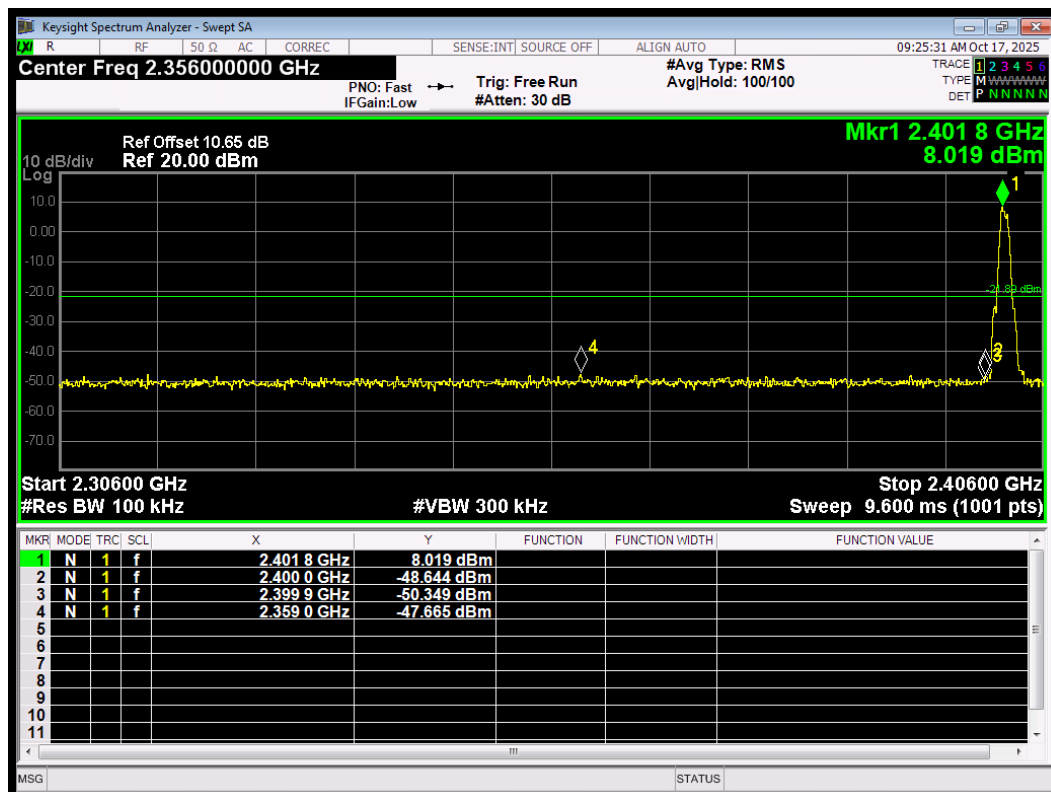
Band Edge BLE (2M) 2480MHz Emission



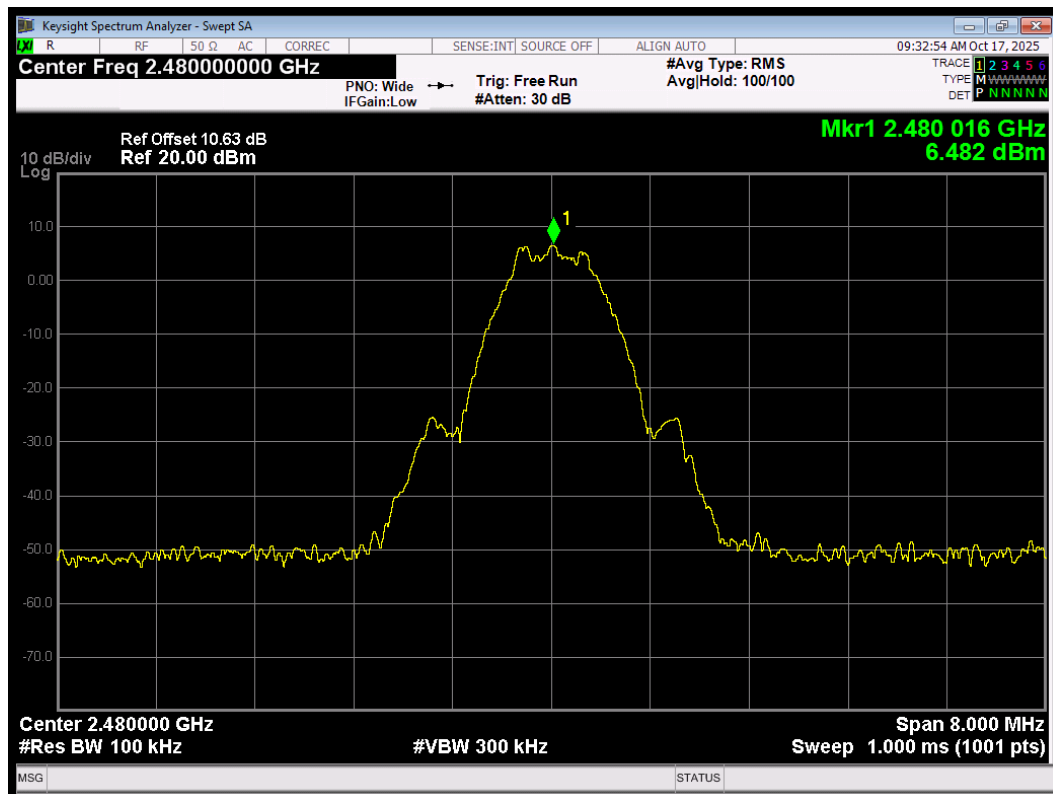
Band Edge S=2 2402MHz Ref



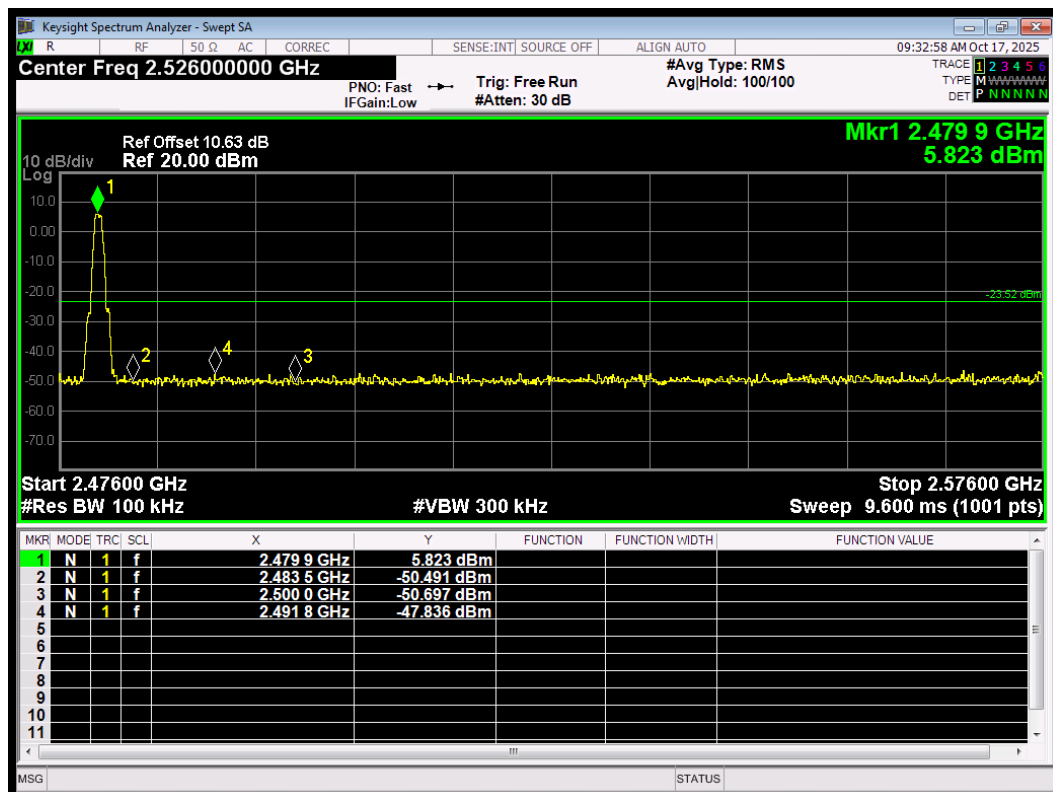
Band Edge S=2 2402MHz Emission



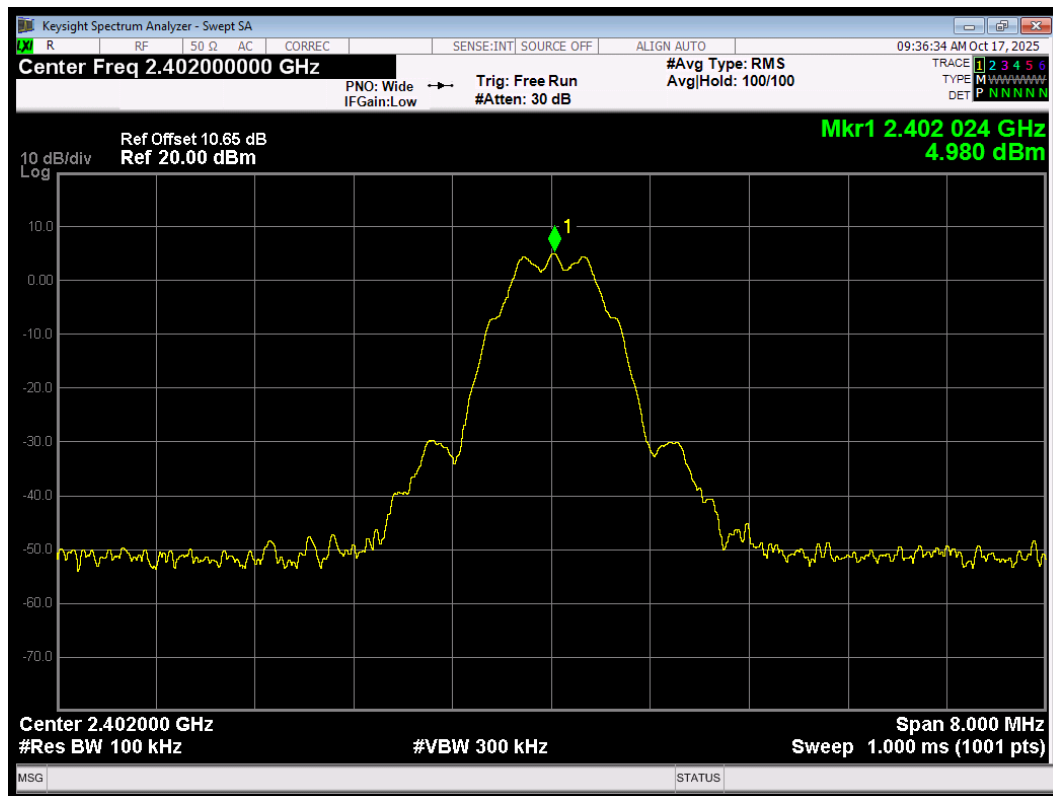
Band Edge S=2 2480MHz Ref



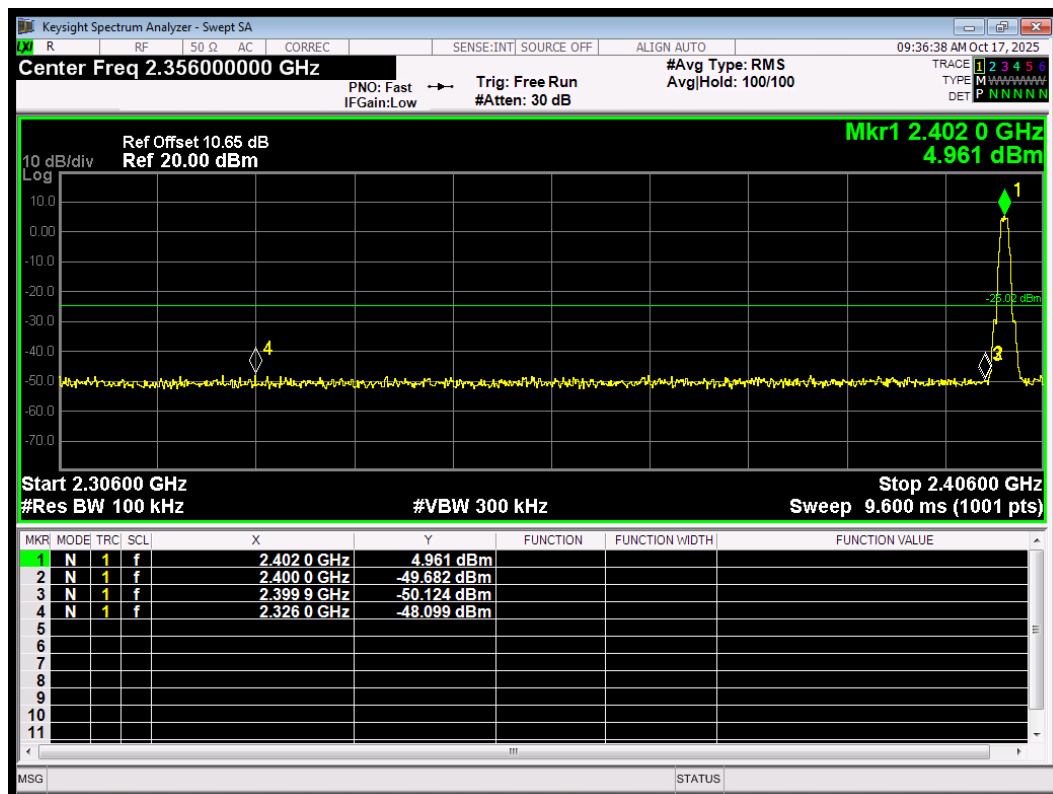
Band Edge S=2 2480MHz Emission



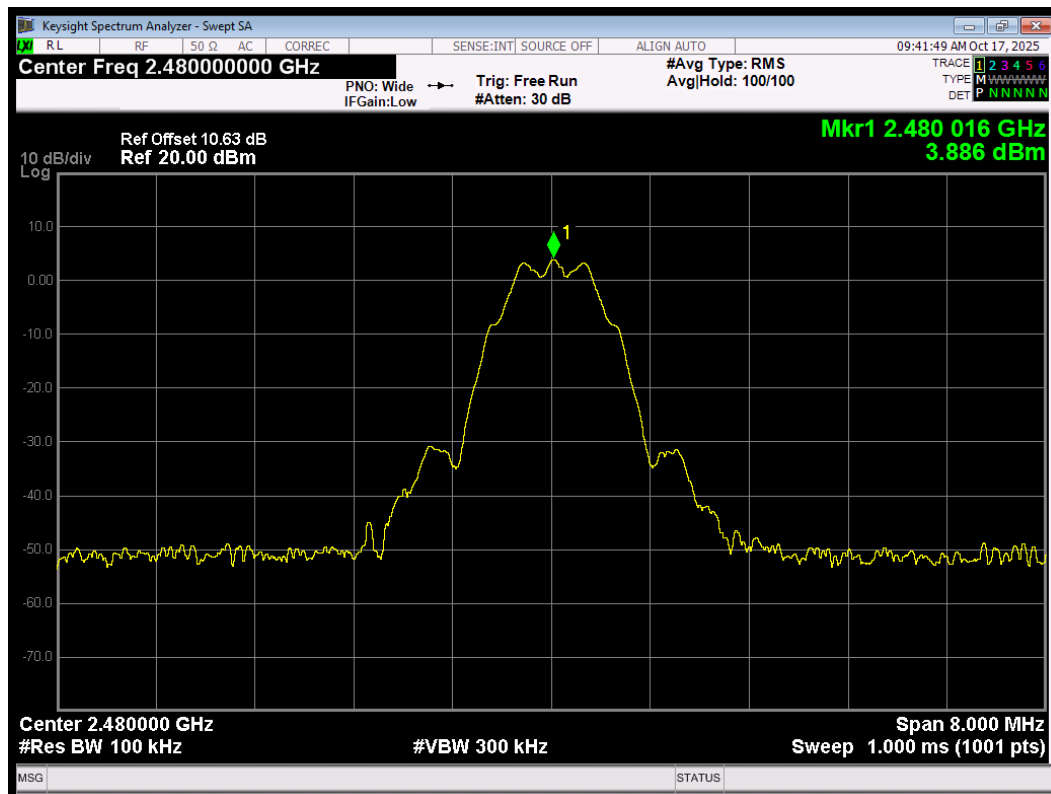
Band Edge S=8 2402MHz Ref



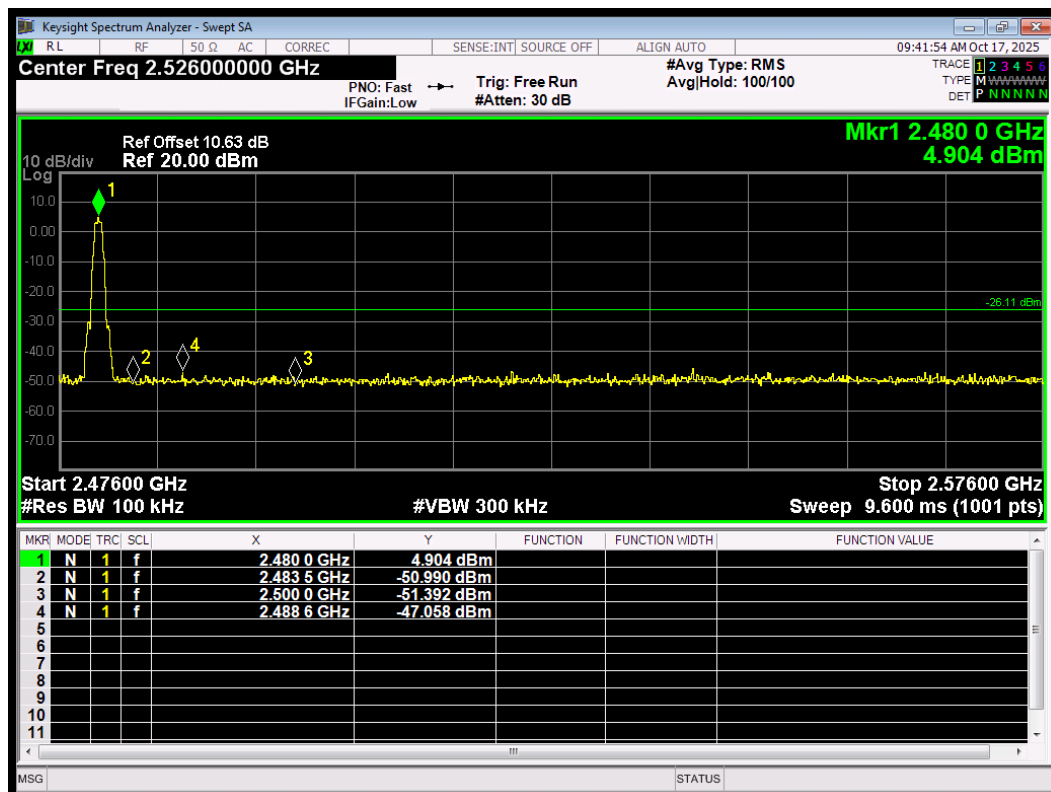
Band Edge S=8 2402MHz Emission



Band Edge S=8 2480MHz Ref

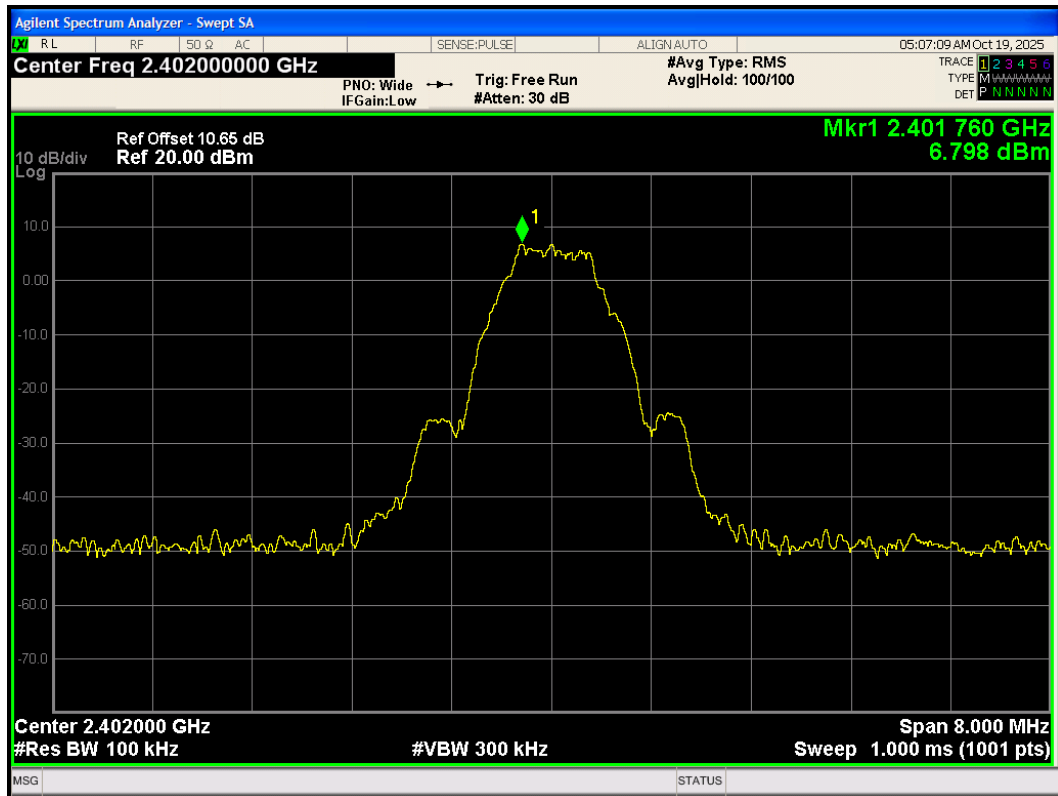


Band Edge S=8 2480MHz Emission

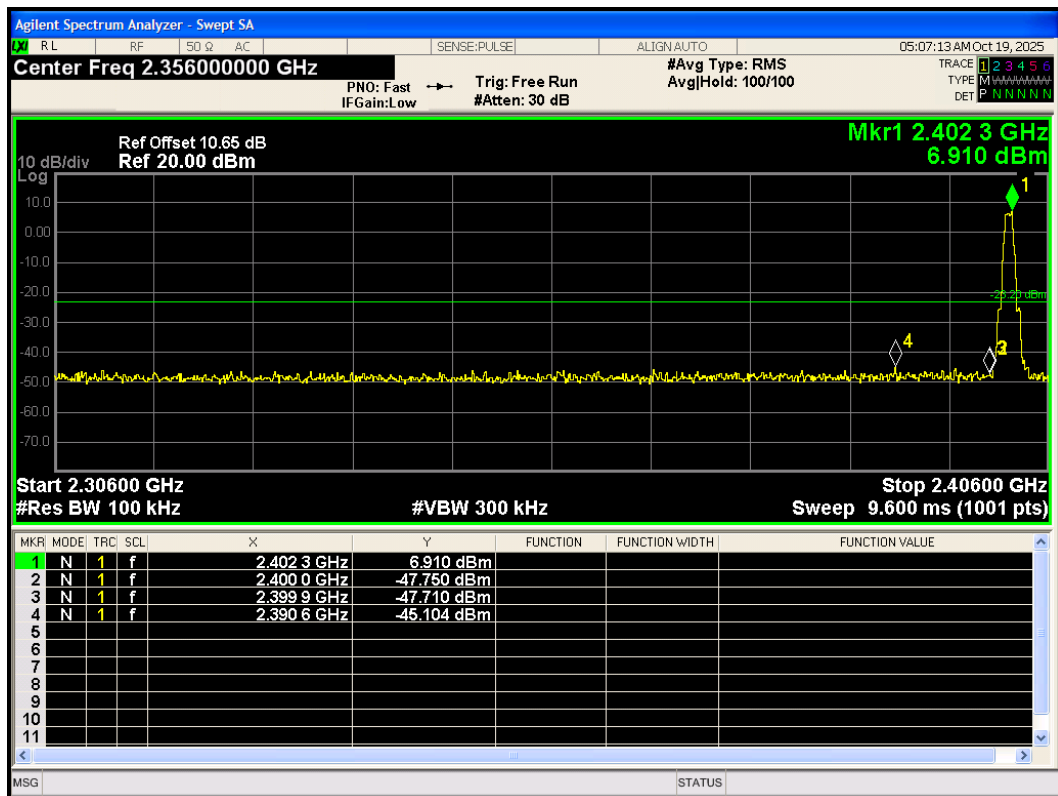


Antenna 2

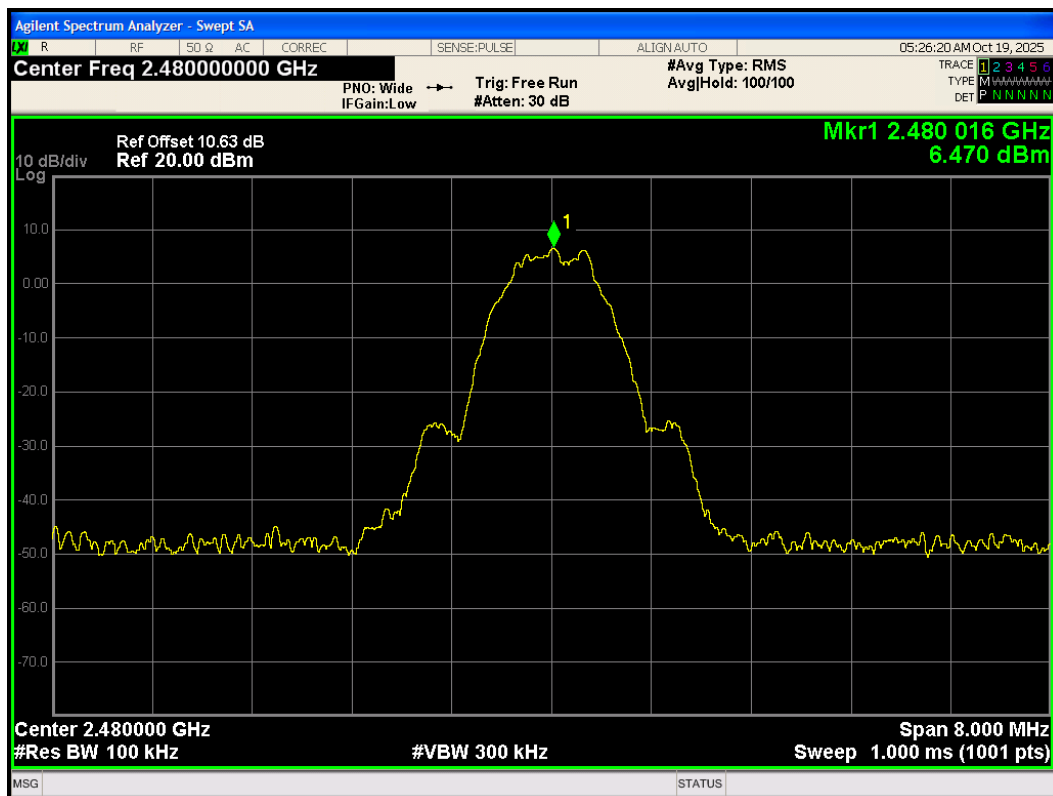
Band Edge BLE (1M) 2402MHz Ref



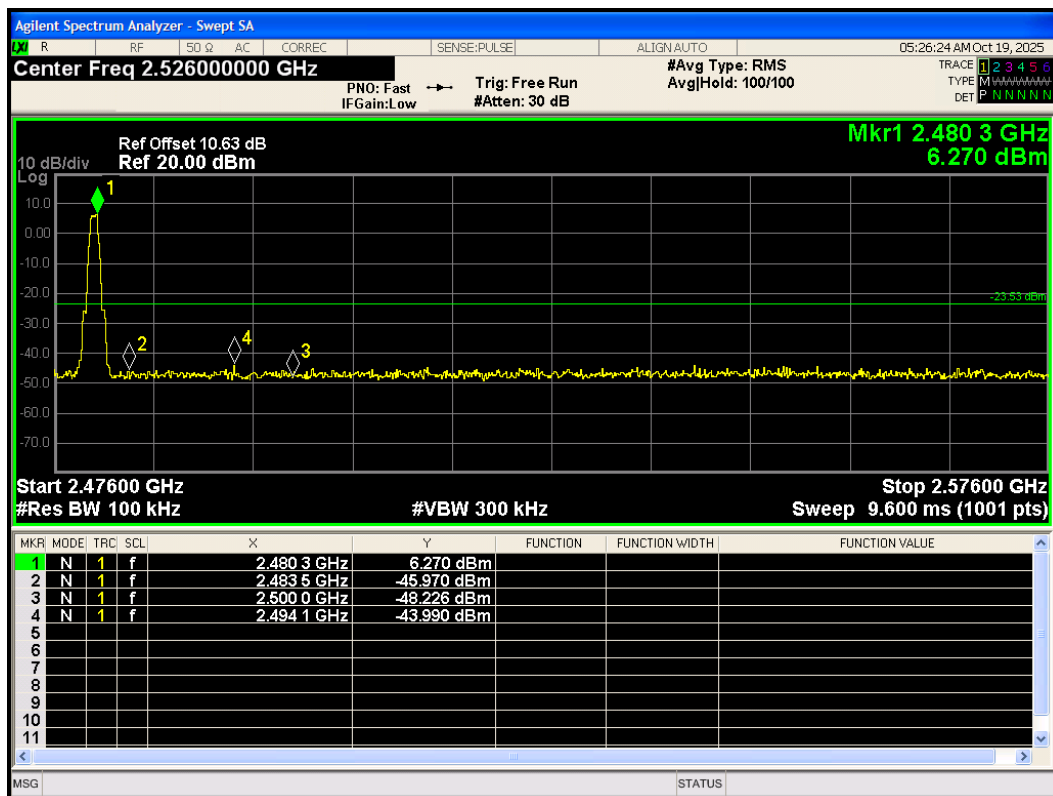
Band Edge BLE (1M) 2402MHz Emission



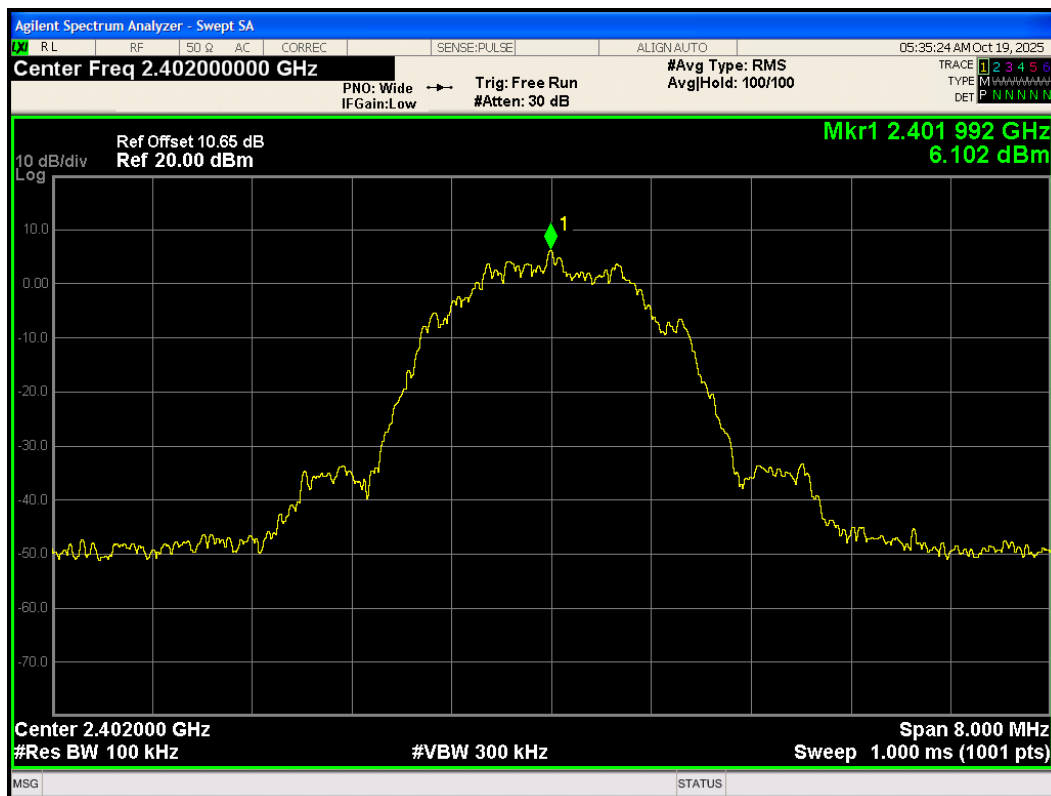
Band Edge BLE (1M) 2480MHz Ref



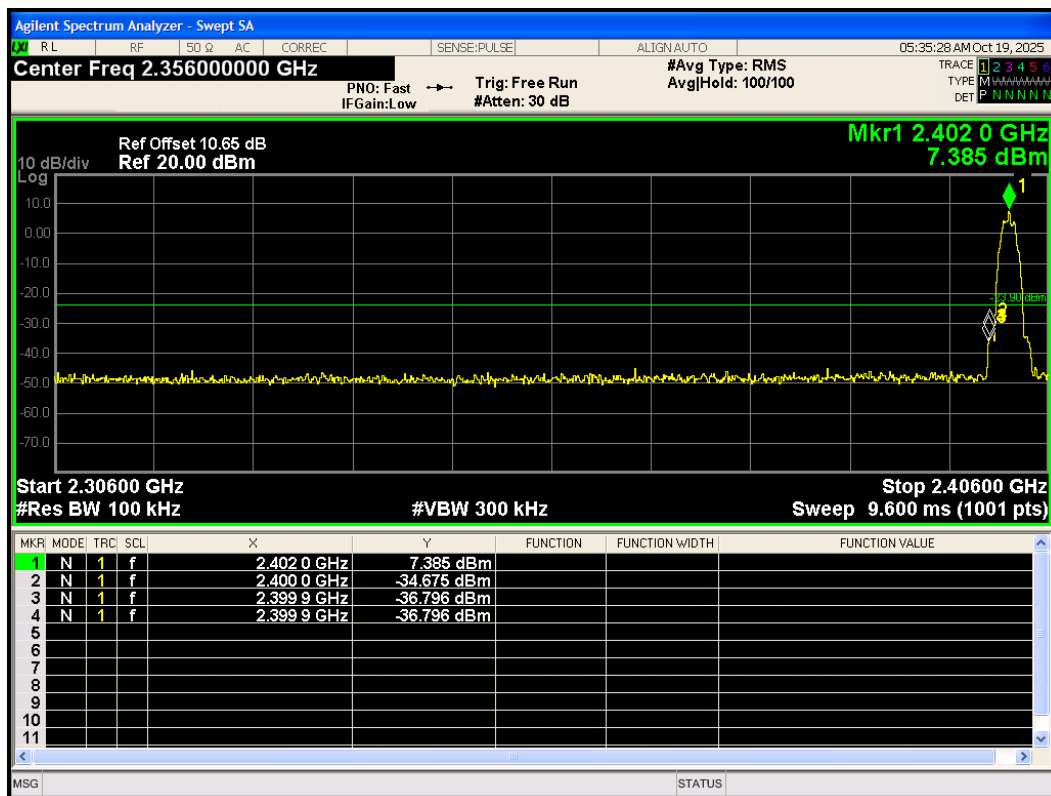
Band Edge BLE (1M) 2480MHz Emission



Band Edge BLE (2M) 2402MHz Ref



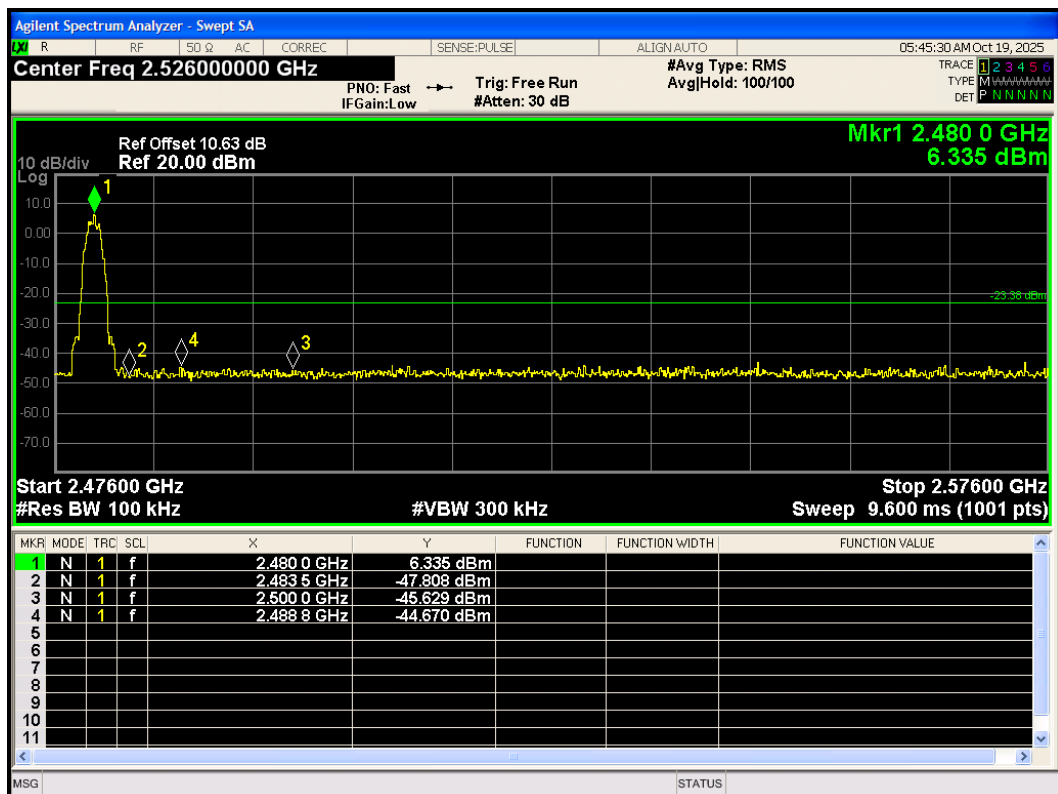
Band Edge BLE (2M) 2402MHz Emission



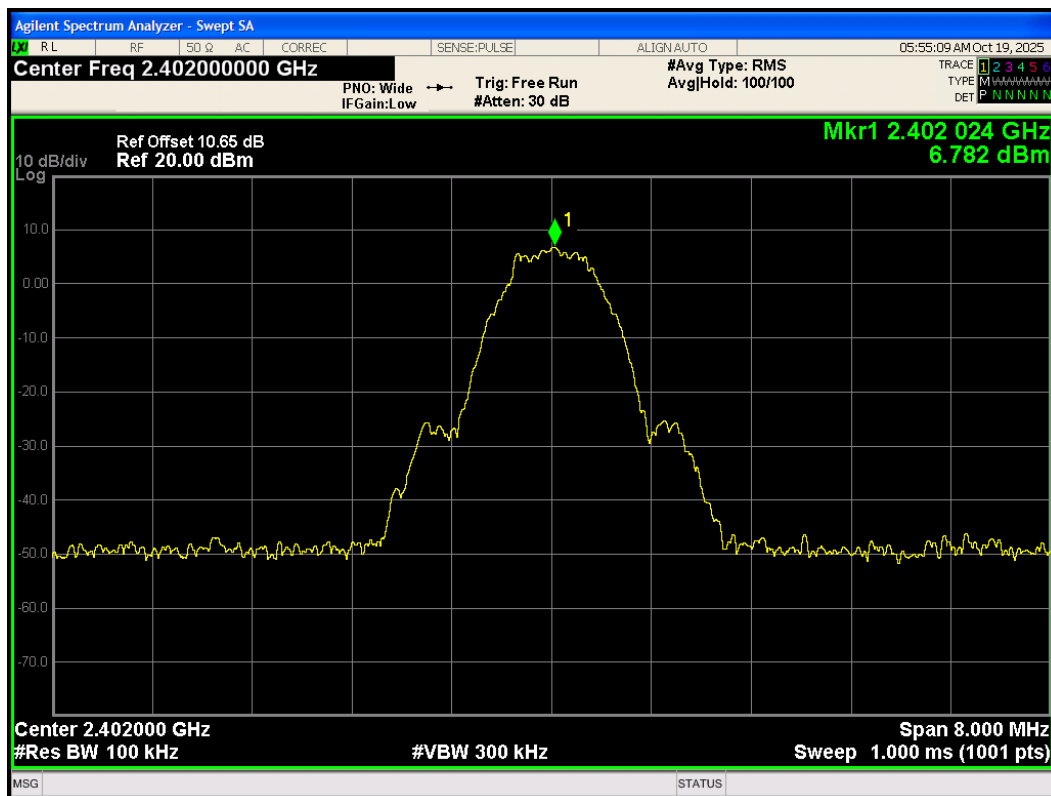
Band Edge BLE (2M) 2480MHz Ref



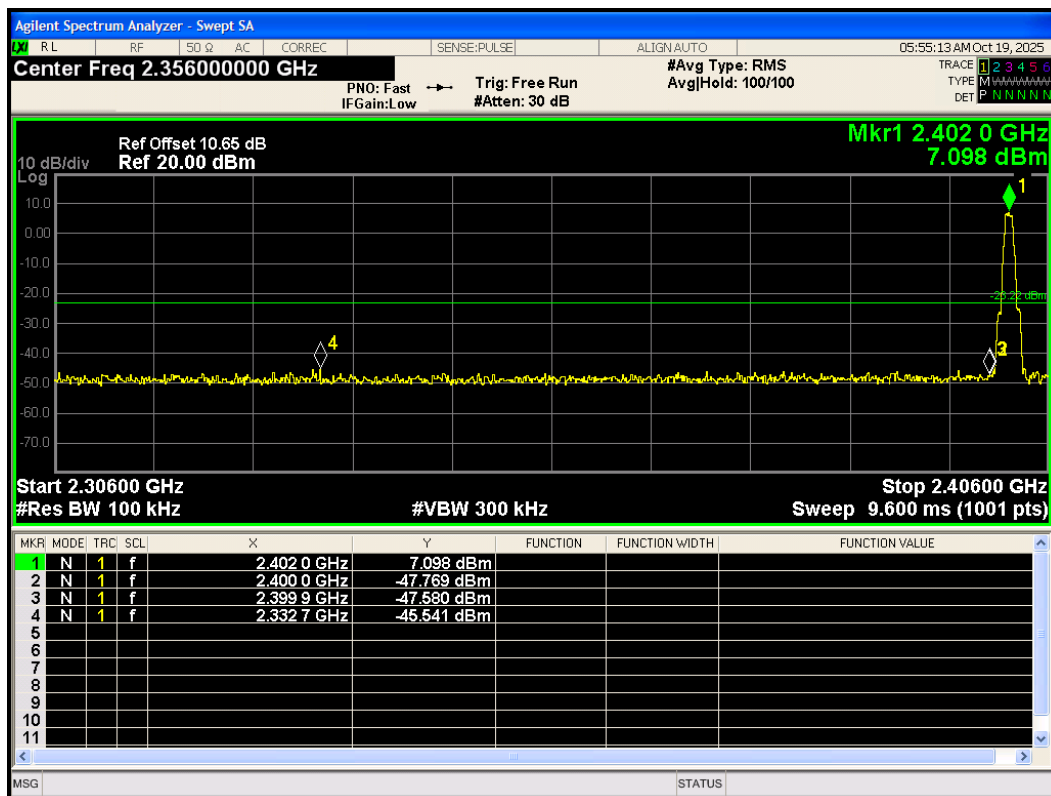
Band Edge BLE (2M) 2480MHz Emission



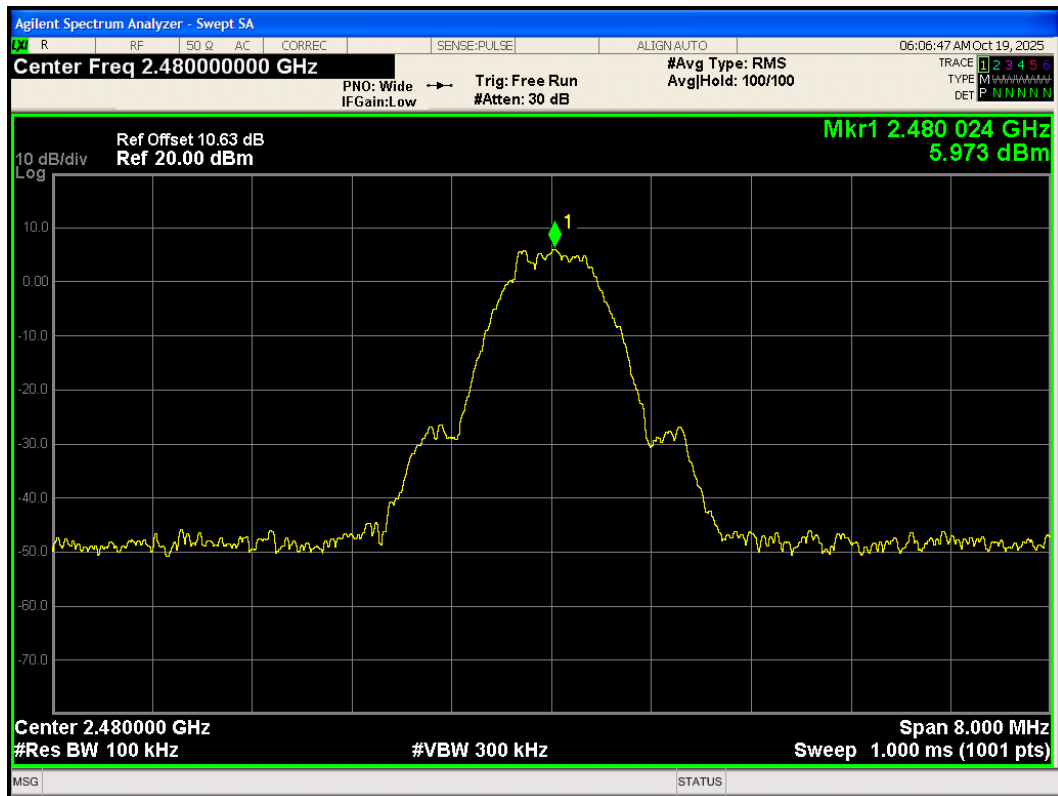
Band Edge S=2 2402MHz Ref



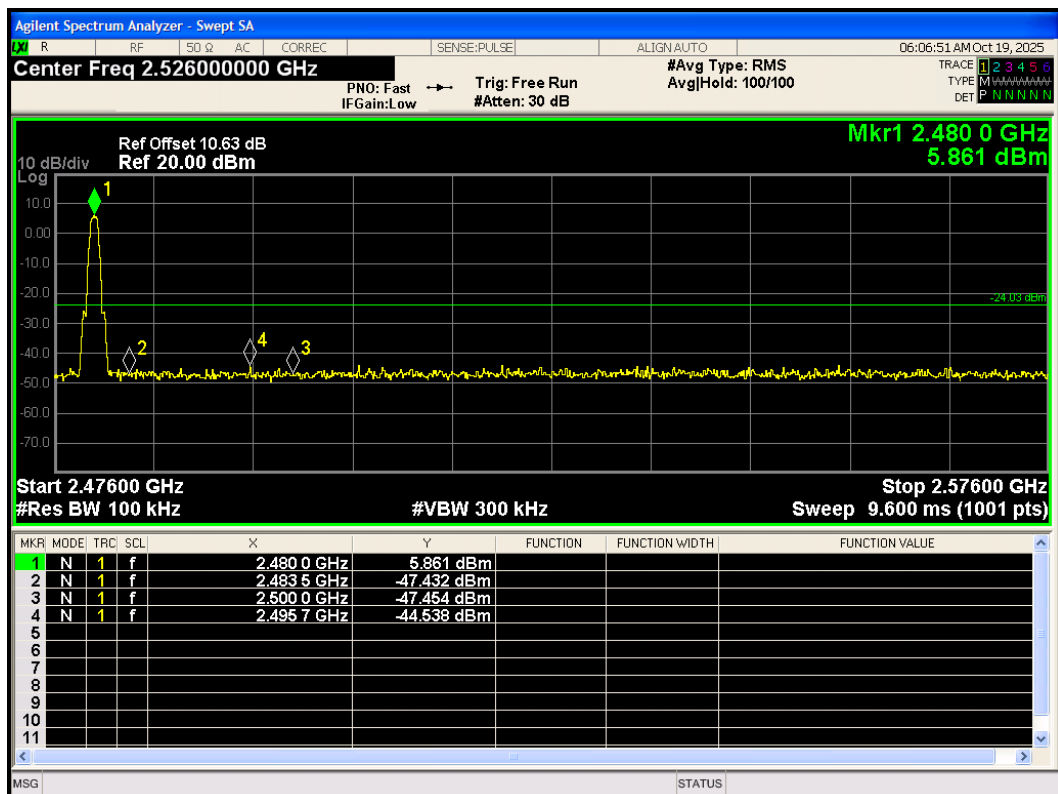
Band Edge S=2 2402MHz Emission



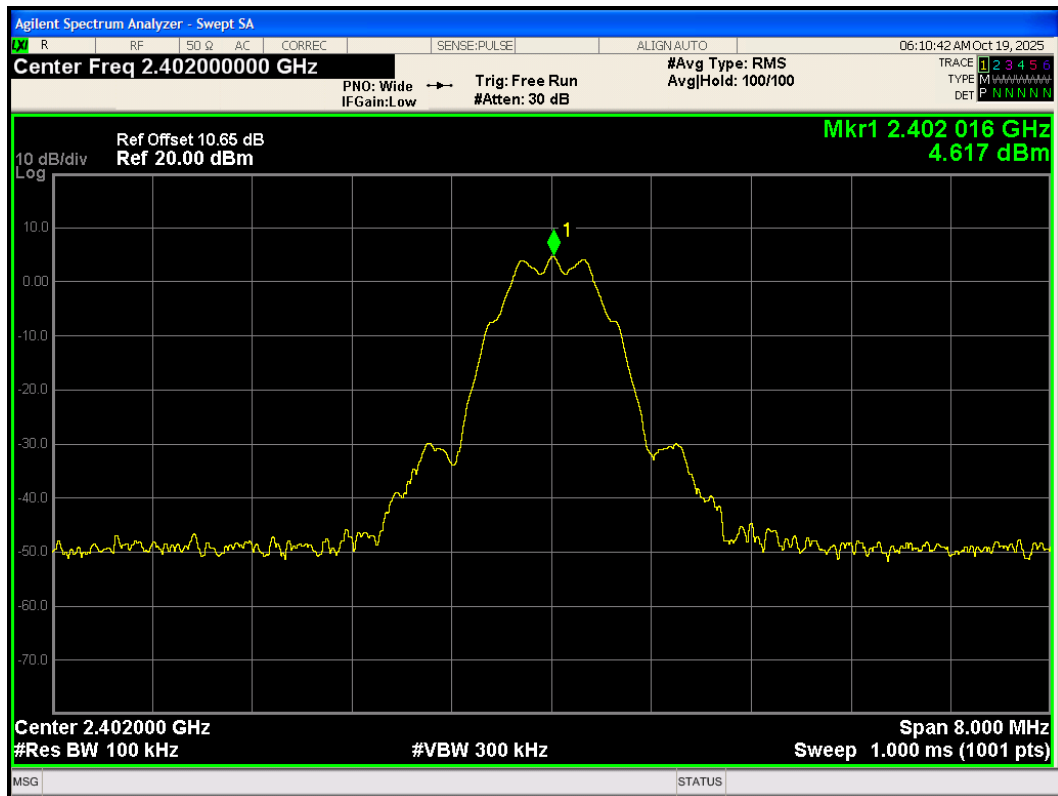
Band Edge S=2 2480MHz Ref



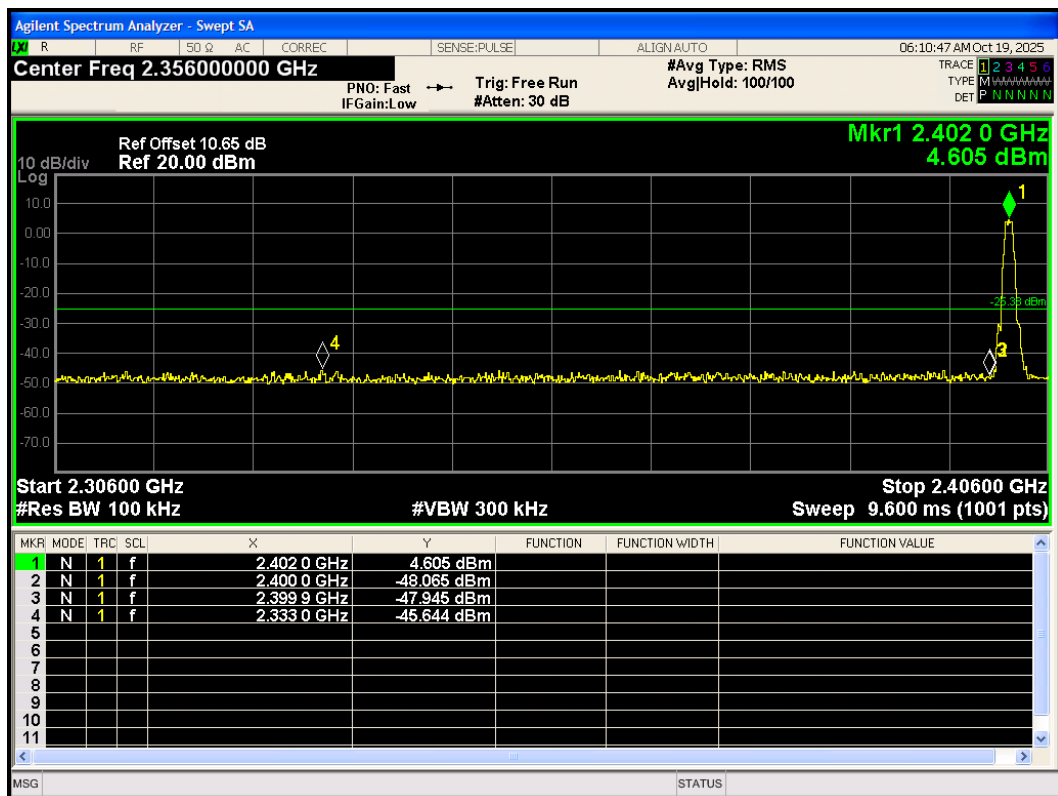
Band Edge S=2 2480MHz Emission



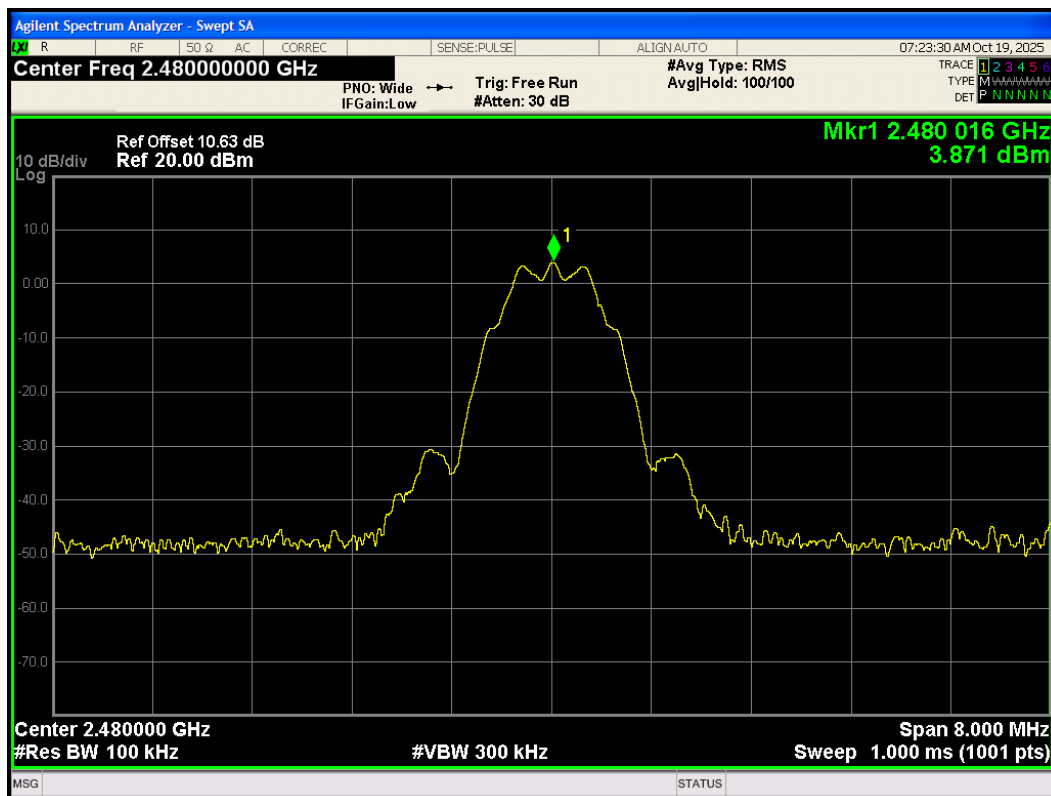
Band Edge S=8 2402MHz Ref



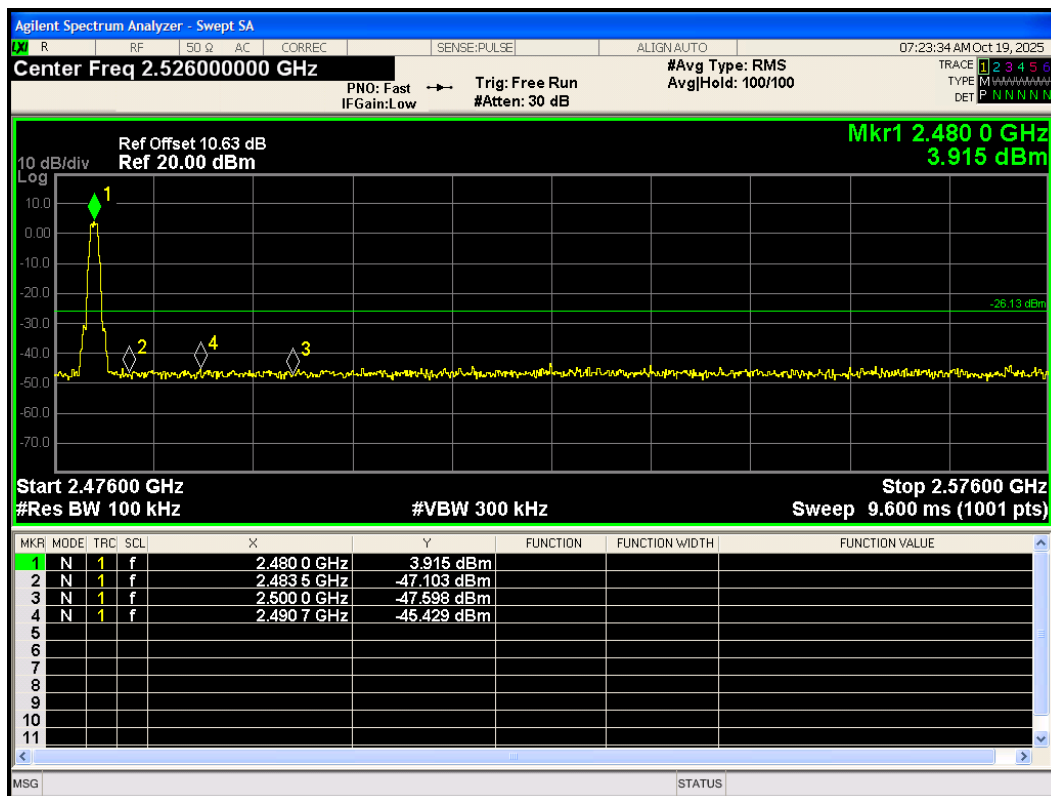
Band Edge S=8 2402MHz Emission



Band Edge S=8 2480MHz Ref

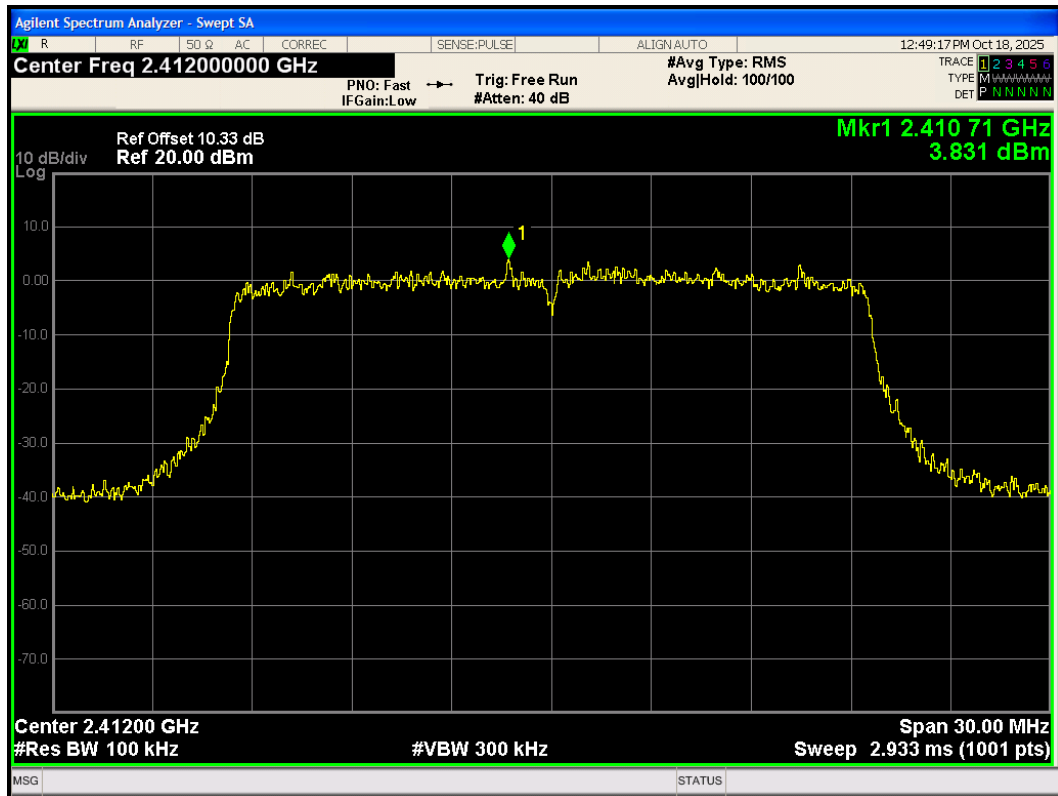


Band Edge S=8 2480MHz Emission

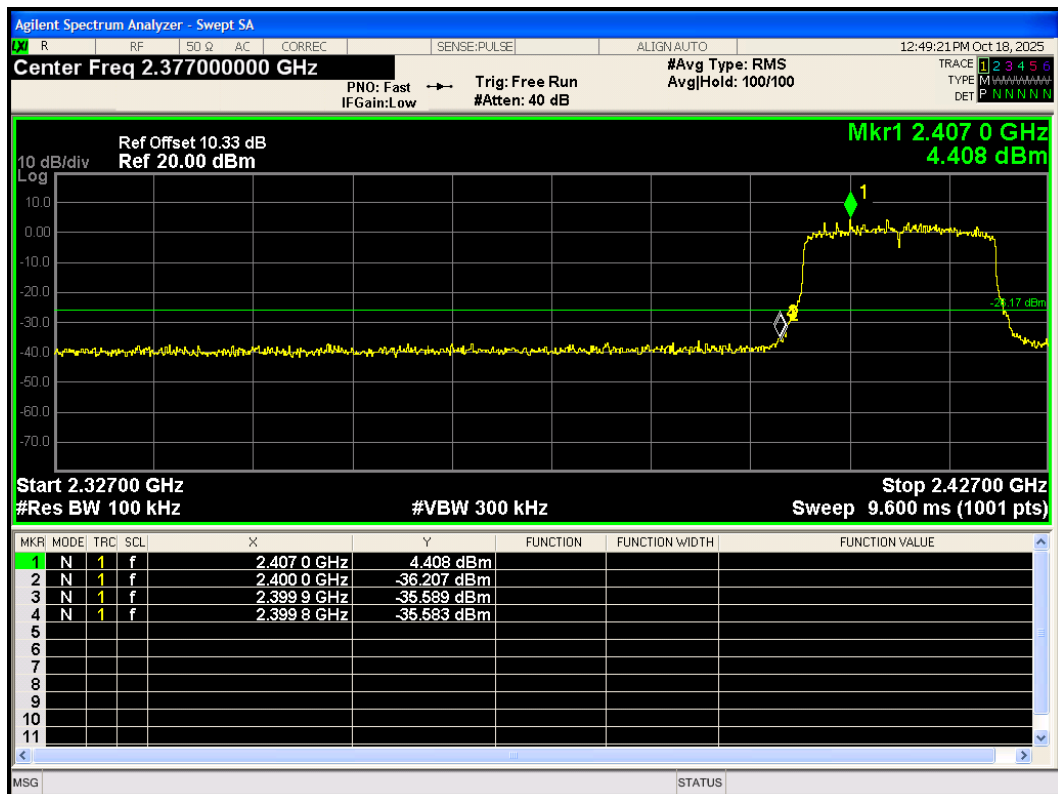


MIMO

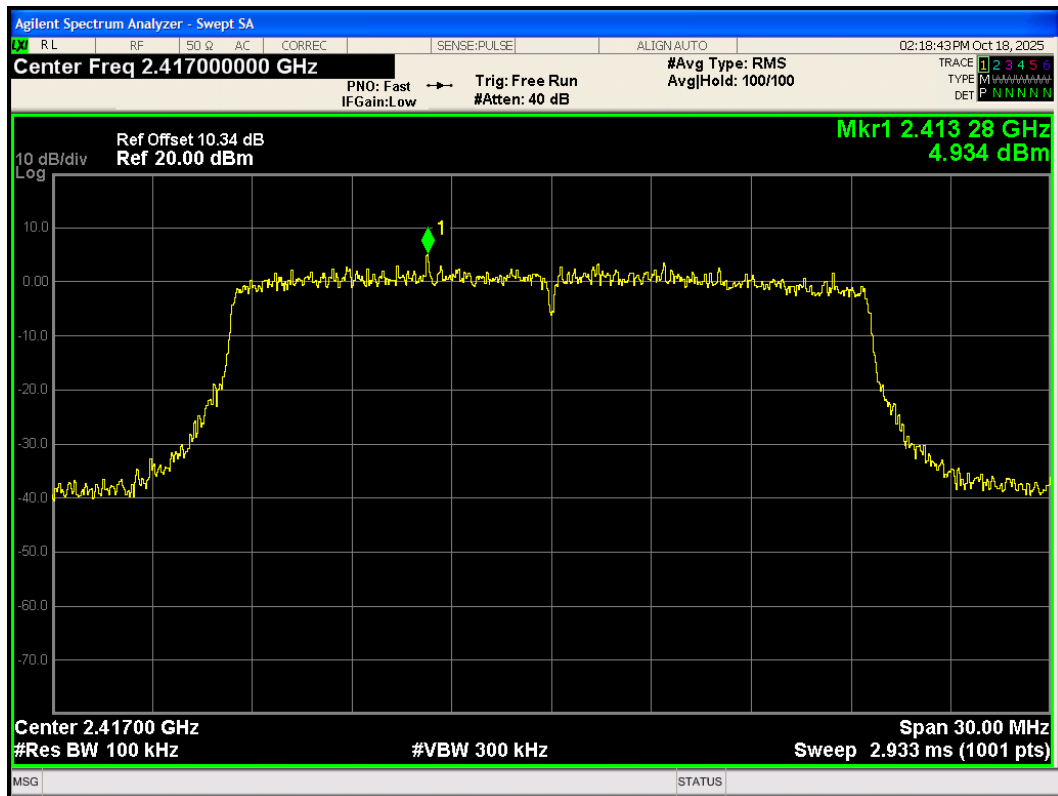
Band Edge 802.11ax(HE20) 2412MHz Ref



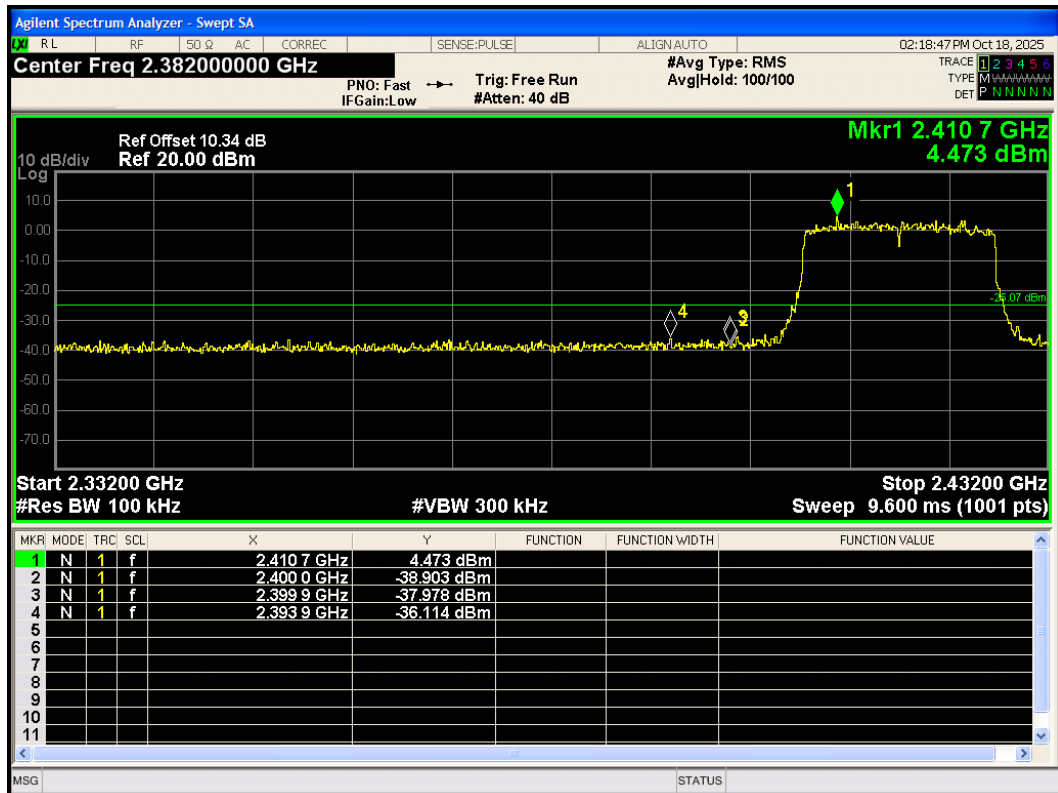
Band Edge 802.11ax(HE20) 2412MHz Emission



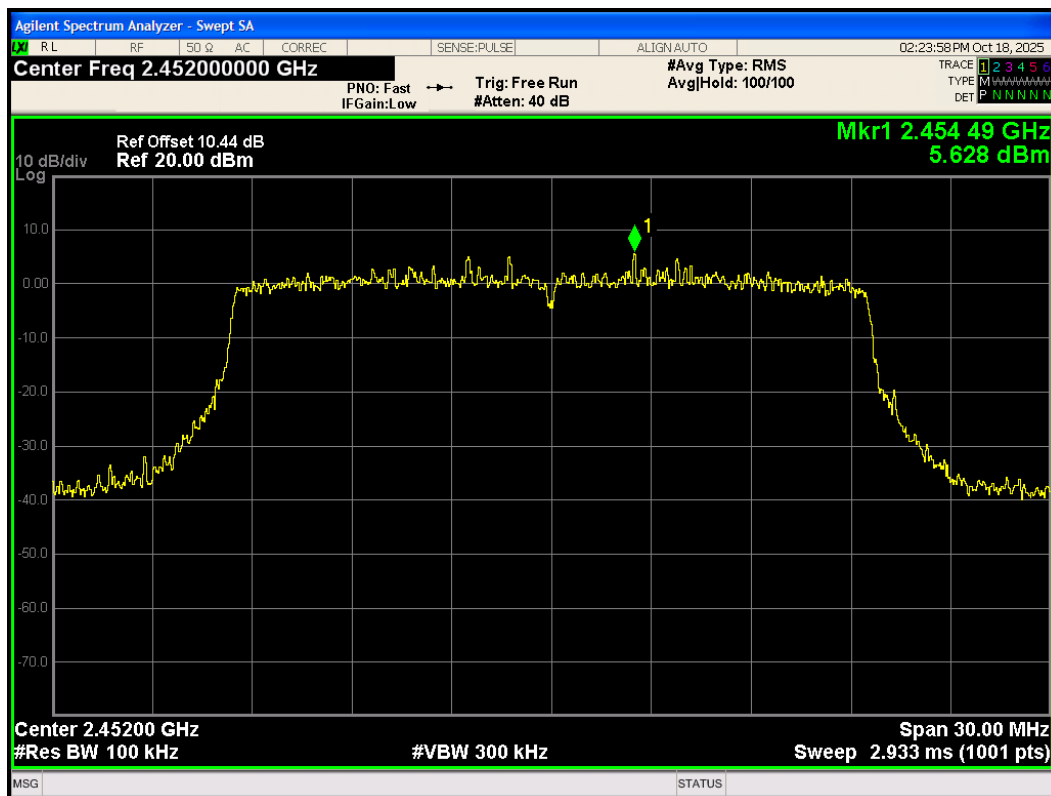
Band Edge 802.11ax(HE20) 2417MHz Ref



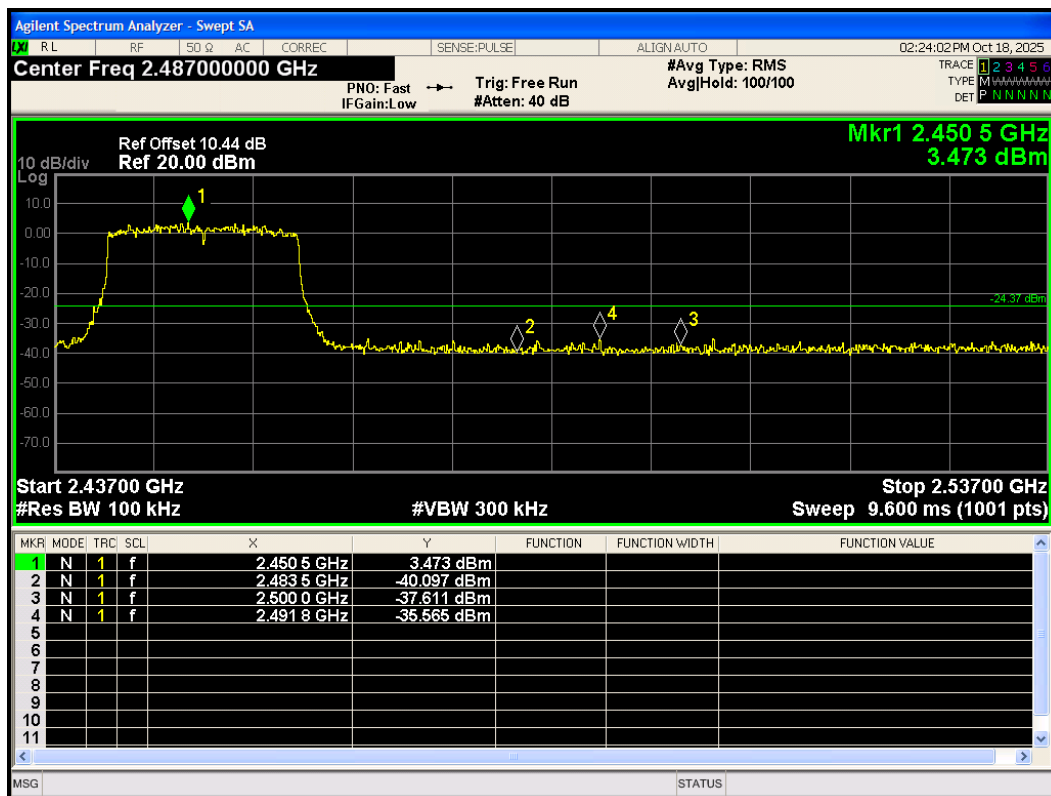
Band Edge 802.11ax(HE20) 2417MHz Emission



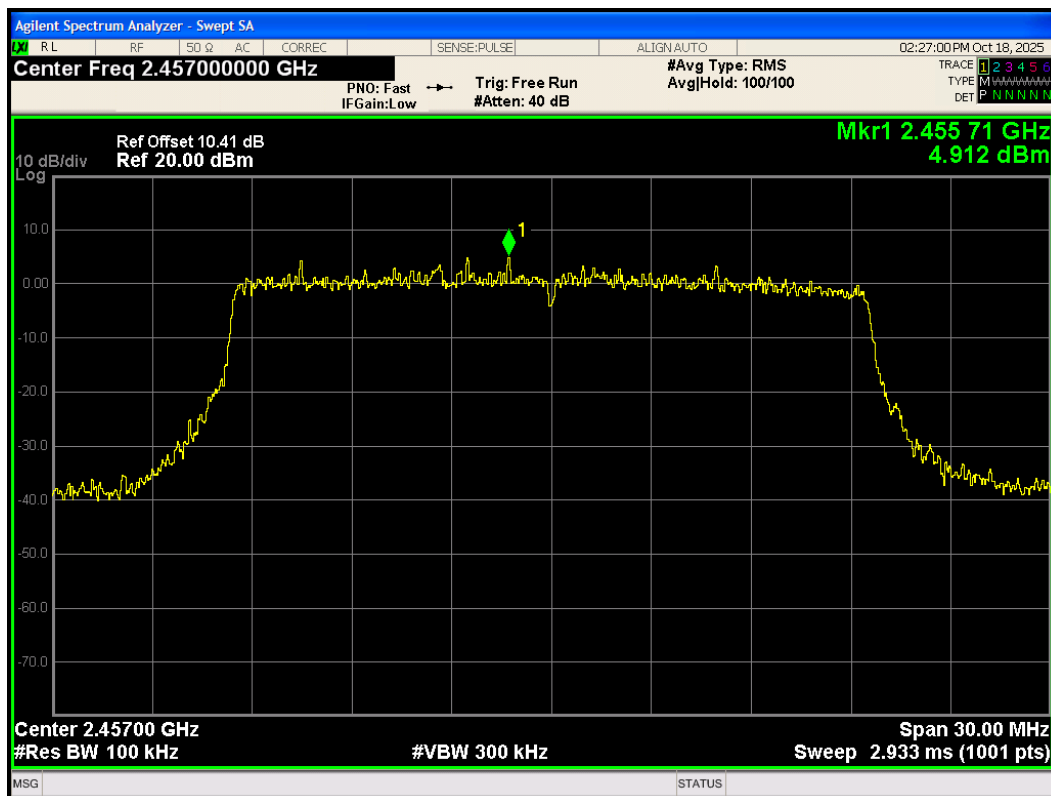
Band Edge 802.11ax(HE20) 2452MHz Ref



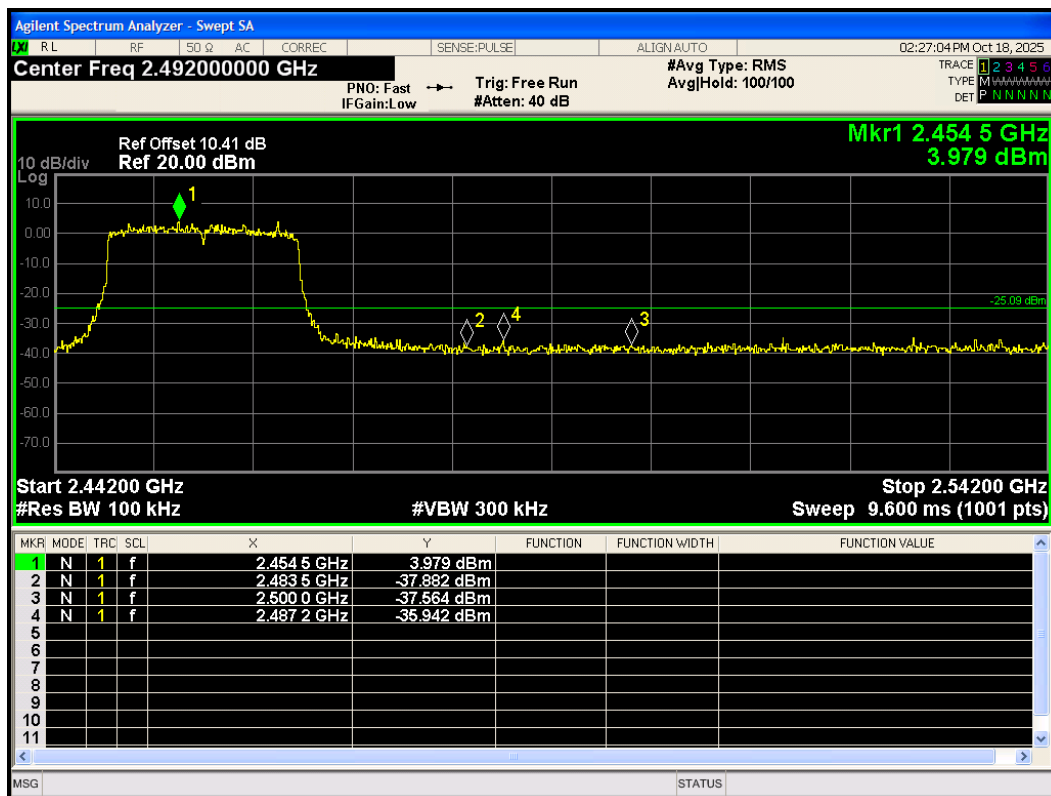
Band Edge 802.11ax(HE20) 2452MHz Emission



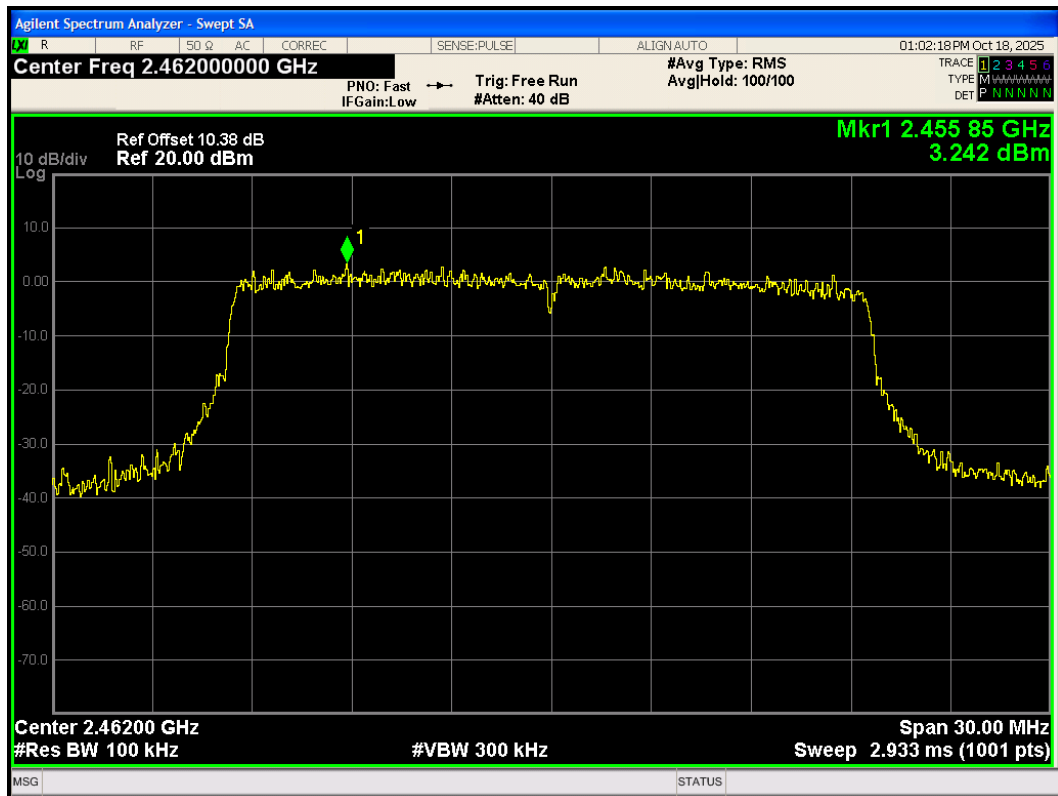
Band Edge 802.11ax(HE20) 2457MHz Ref



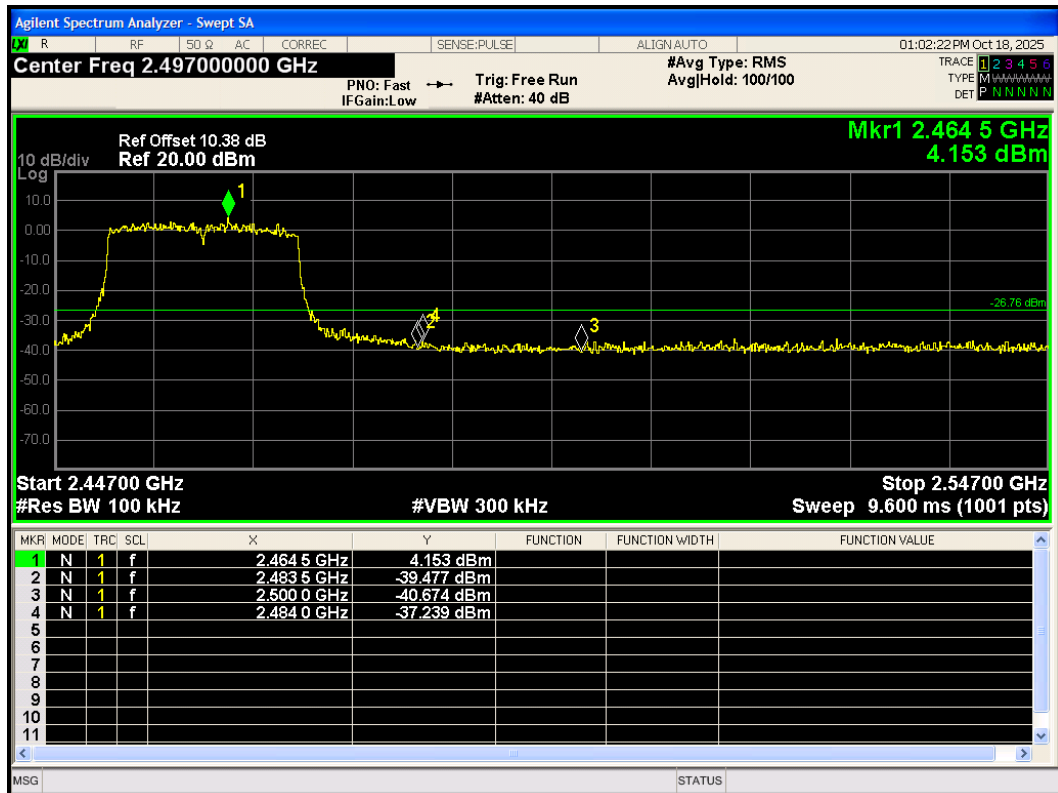
Band Edge 802.11ax(HE20) 2457MHz Emission



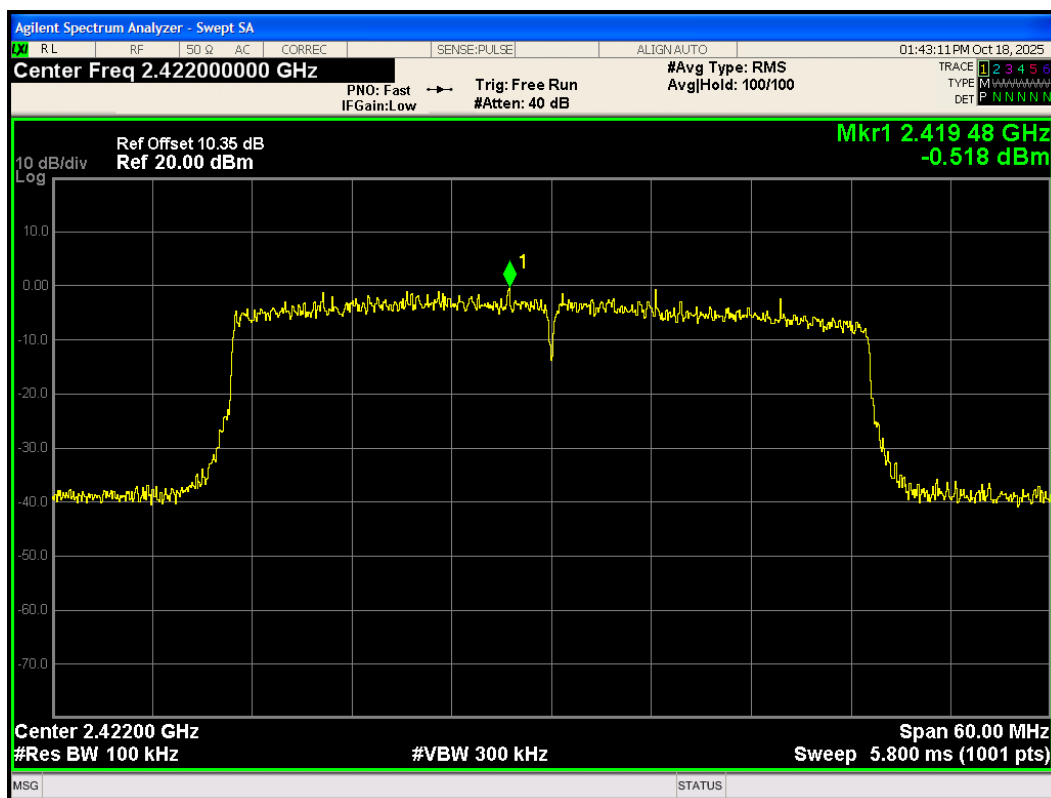
Band Edge 802.11ax(HE20) 2462MHz Ref



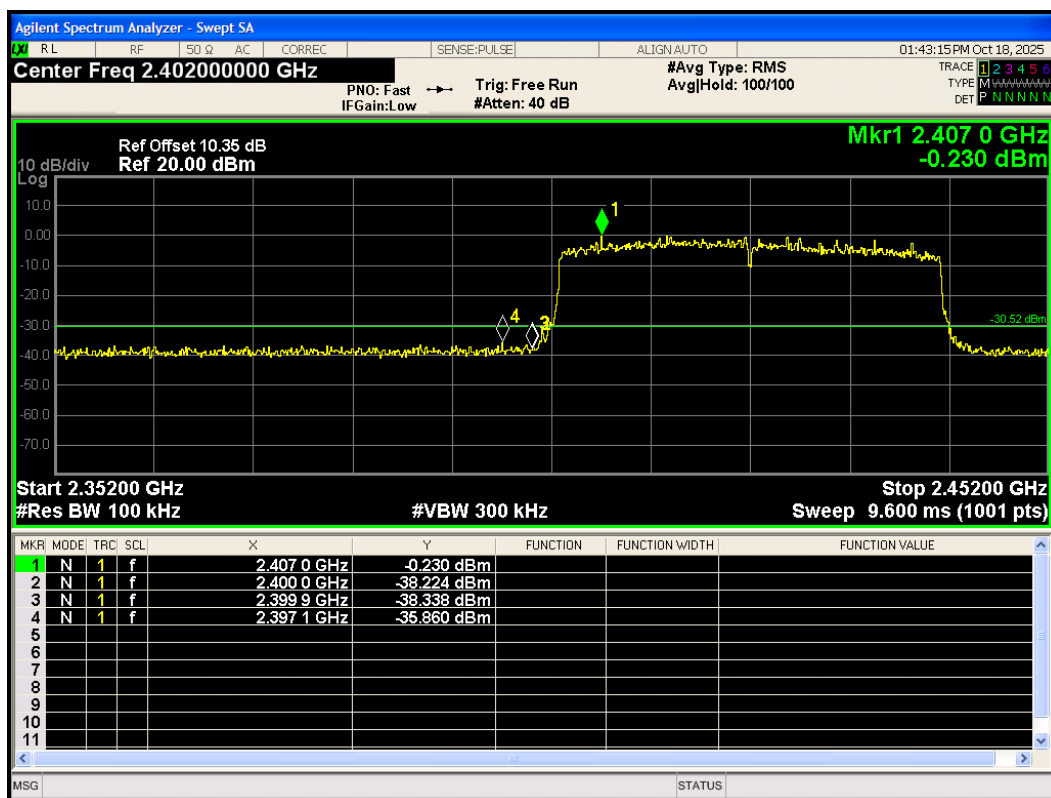
Band Edge 802.11ax(HE20) 2462MHz Emission



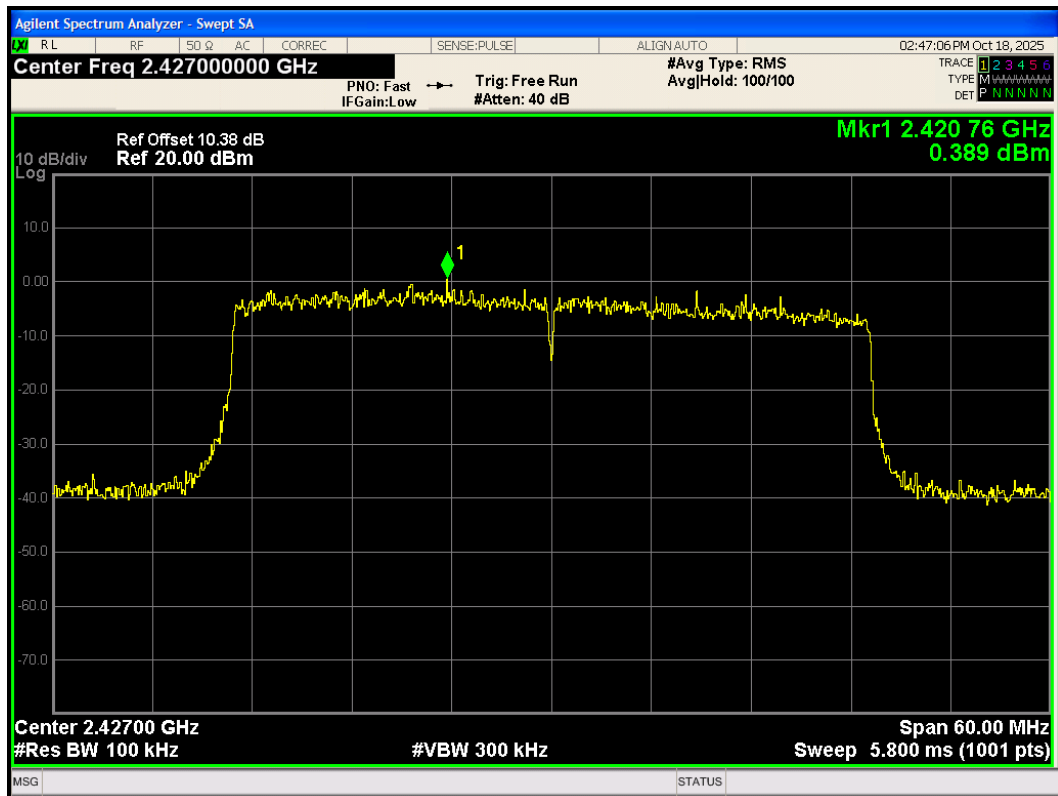
Band Edge 802.11ax(HE40) 2422MHz Ref



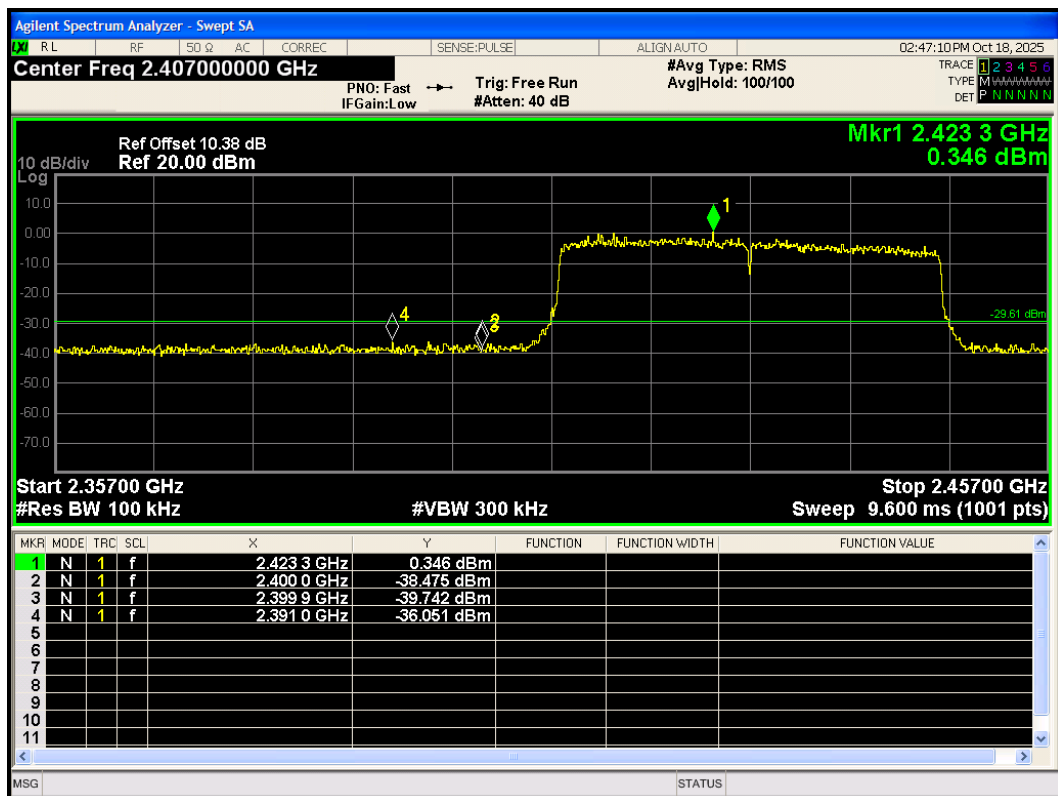
Band Edge 802.11ax(HE40) 2422MHz Emission



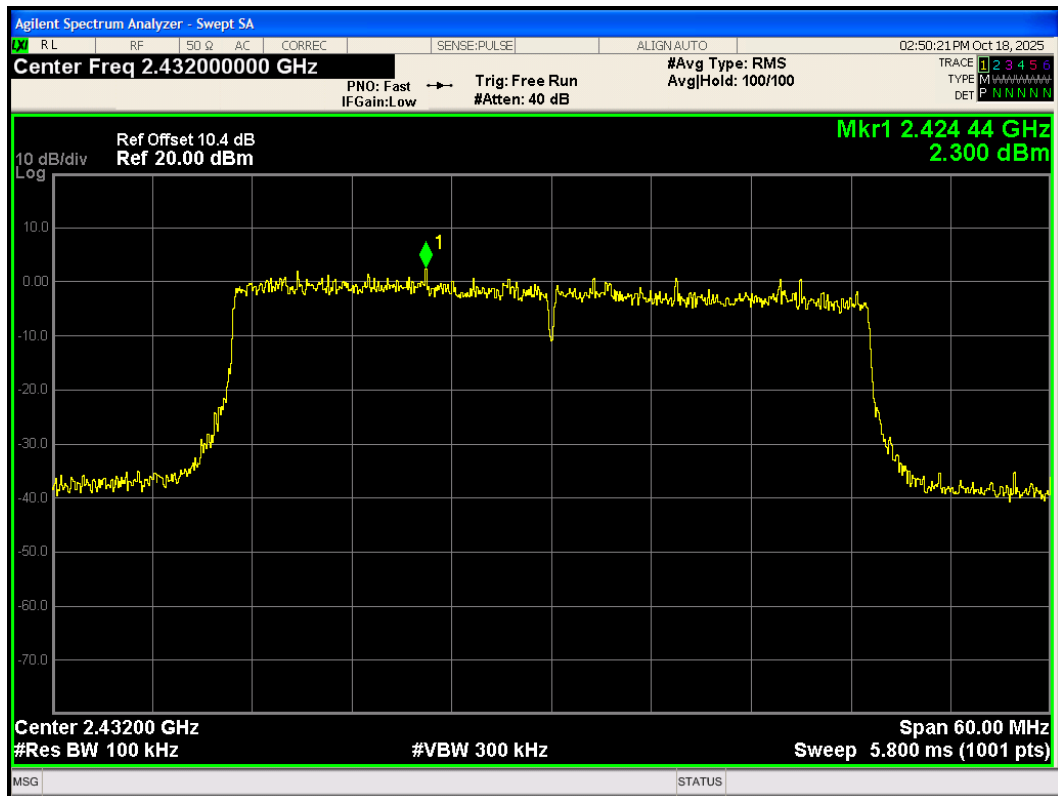
Band Edge 802.11ax(HE40) 2427MHz Ref



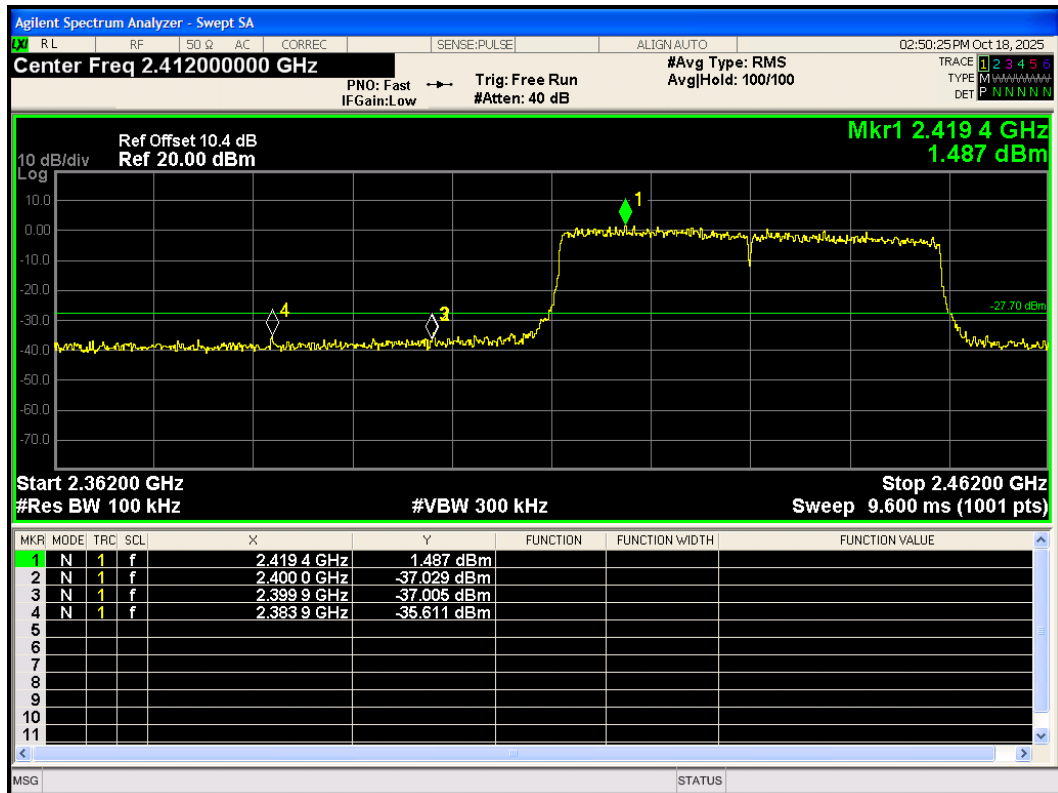
Band Edge 802.11ax(HE40) 2427MHz Emission



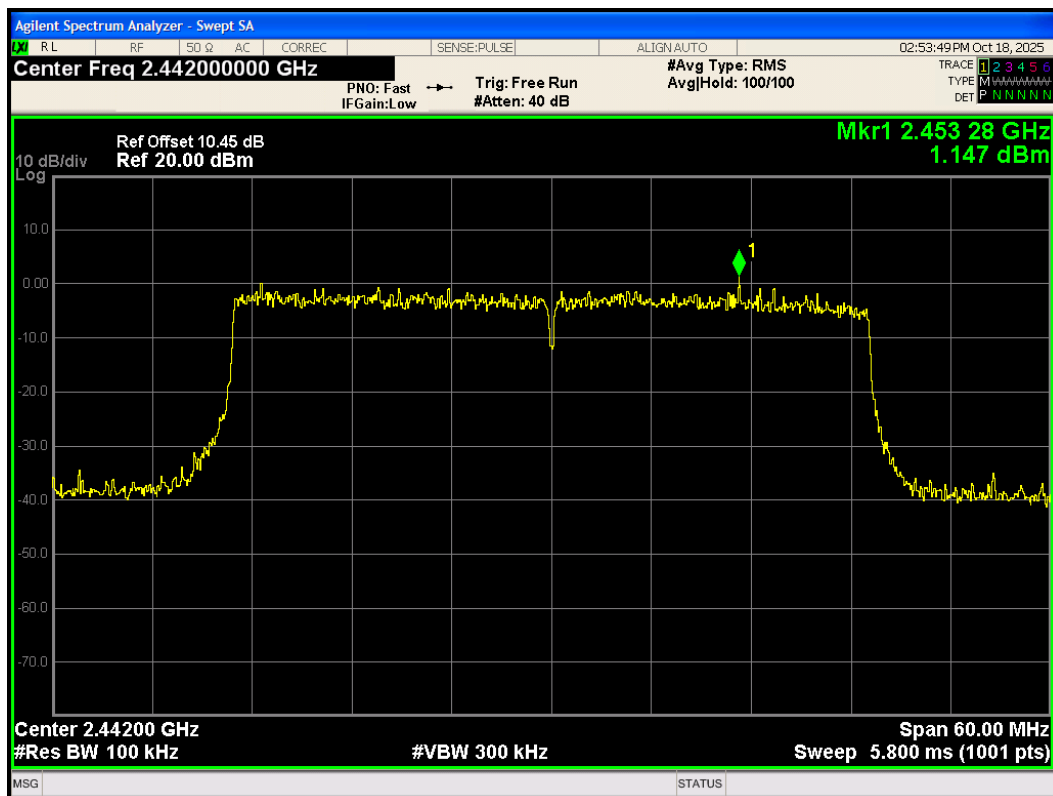
Band Edge 802.11ax(HE40) 2432MHz Ref



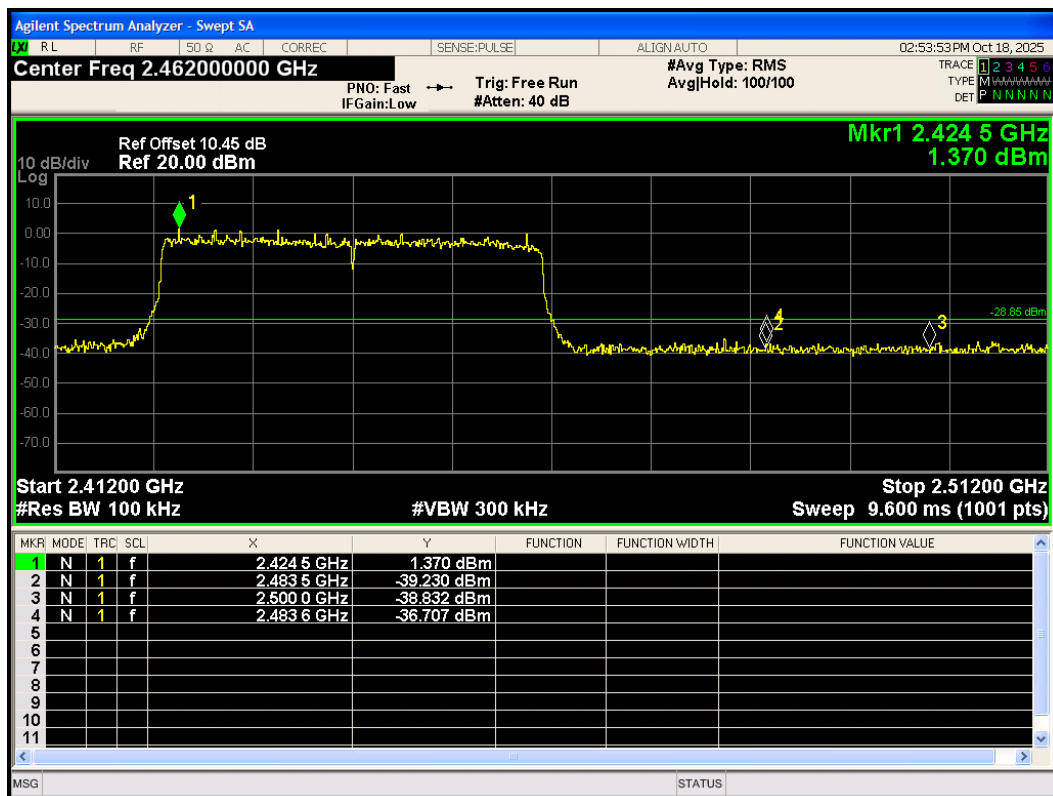
Band Edge 802.11ax(HE40) 2432MHz Emission



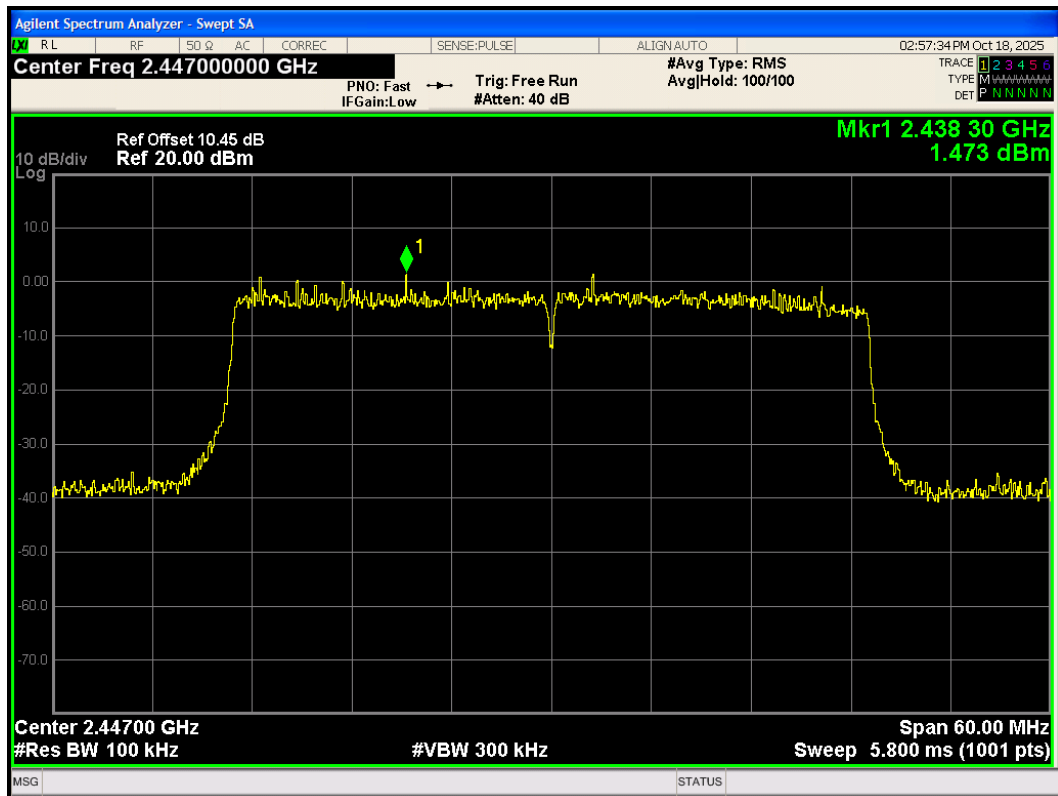
Band Edge 802.11ax(HE40) 2442MHz Ref



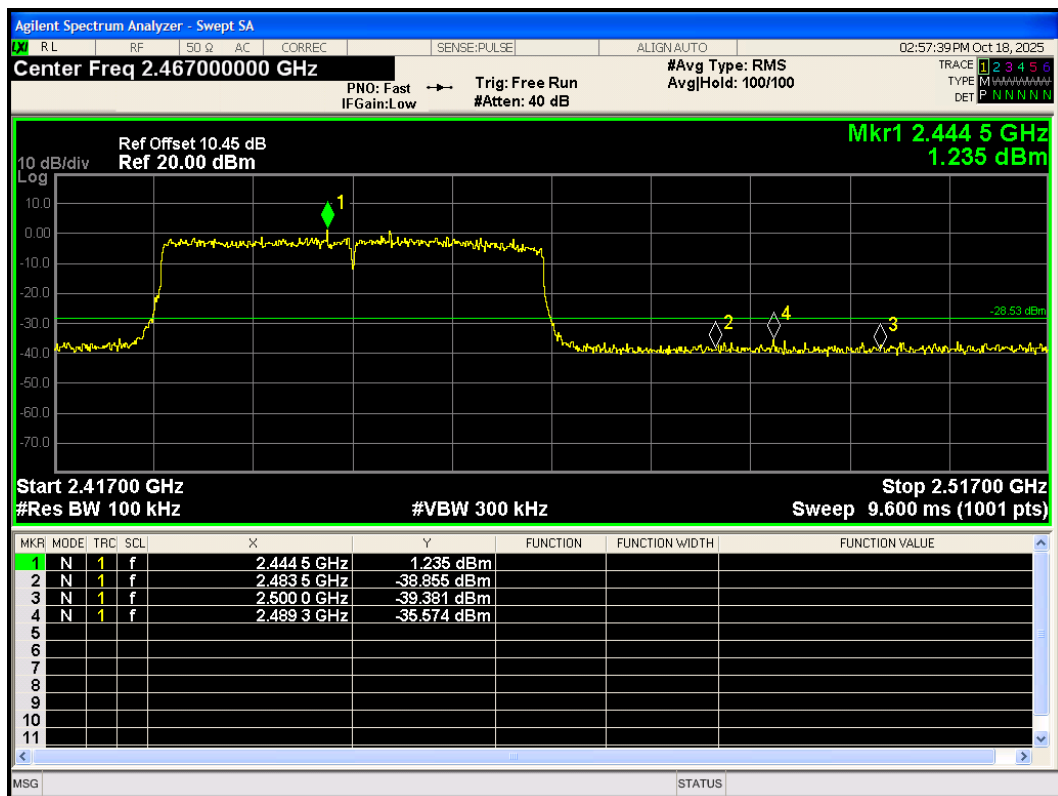
Band Edge 802.11ax(HE40) 2442MHz Emission



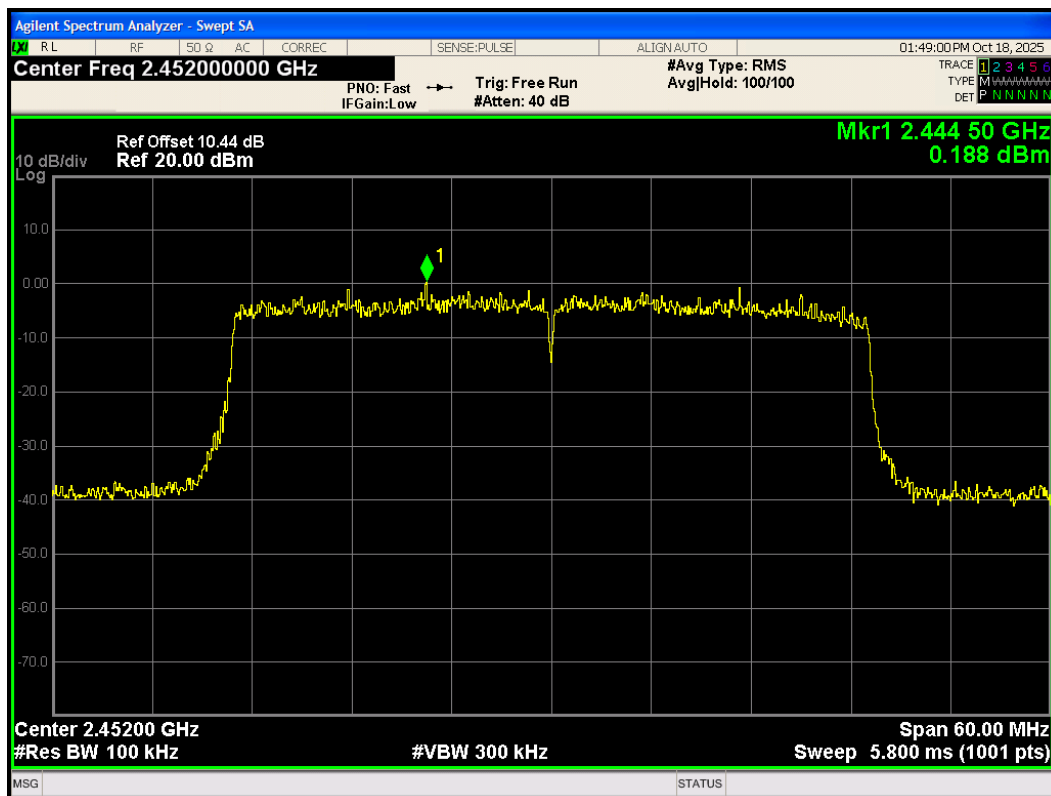
Band Edge 802.11ax(HE40) 2447MHz Ref



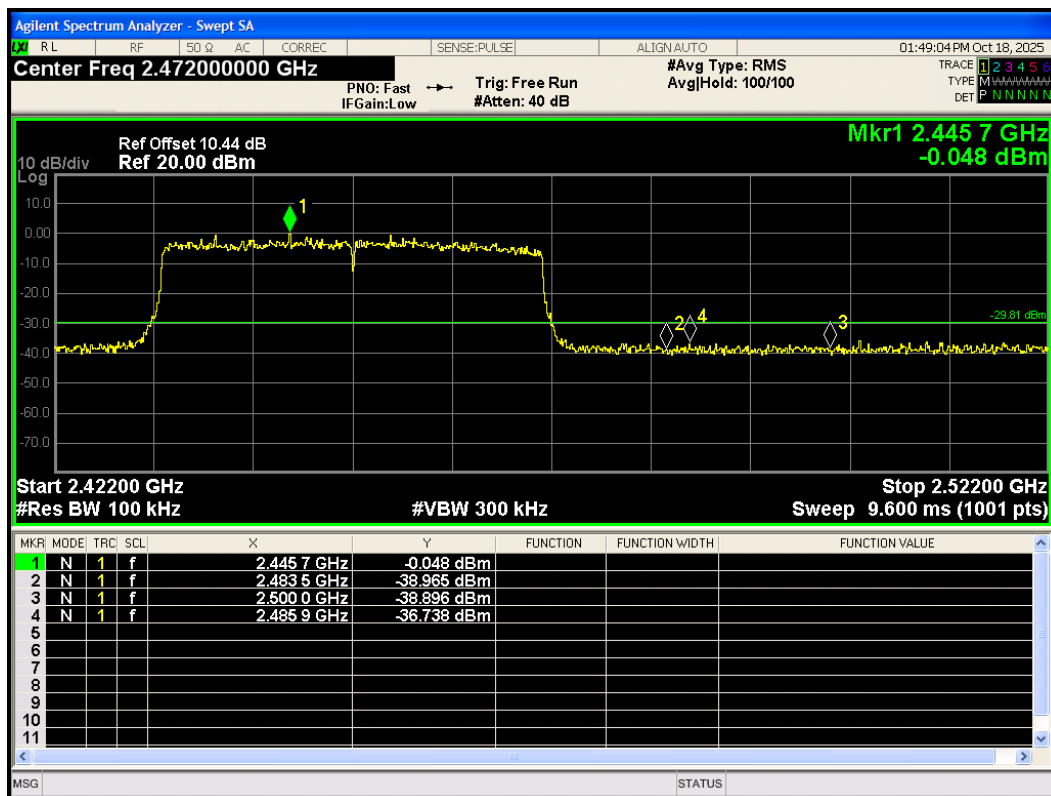
Band Edge 802.11ax(HE40) 2447MHz Emission



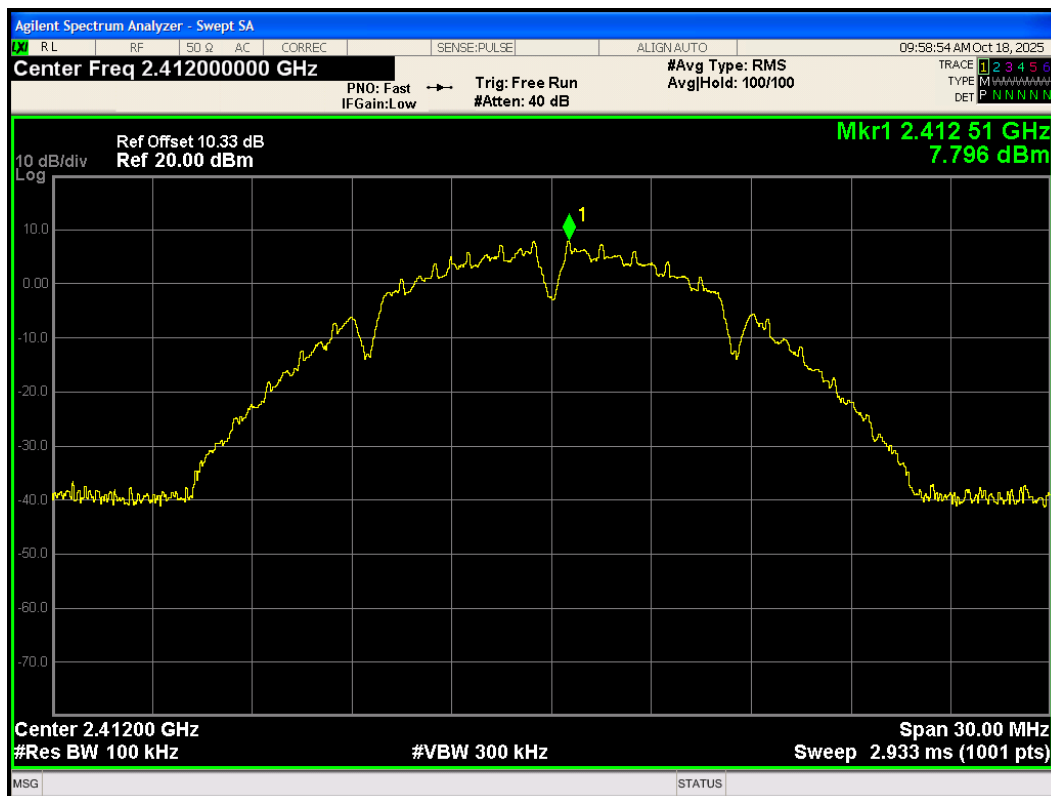
Band Edge 802.11ax(HE40) 2452MHz Ref



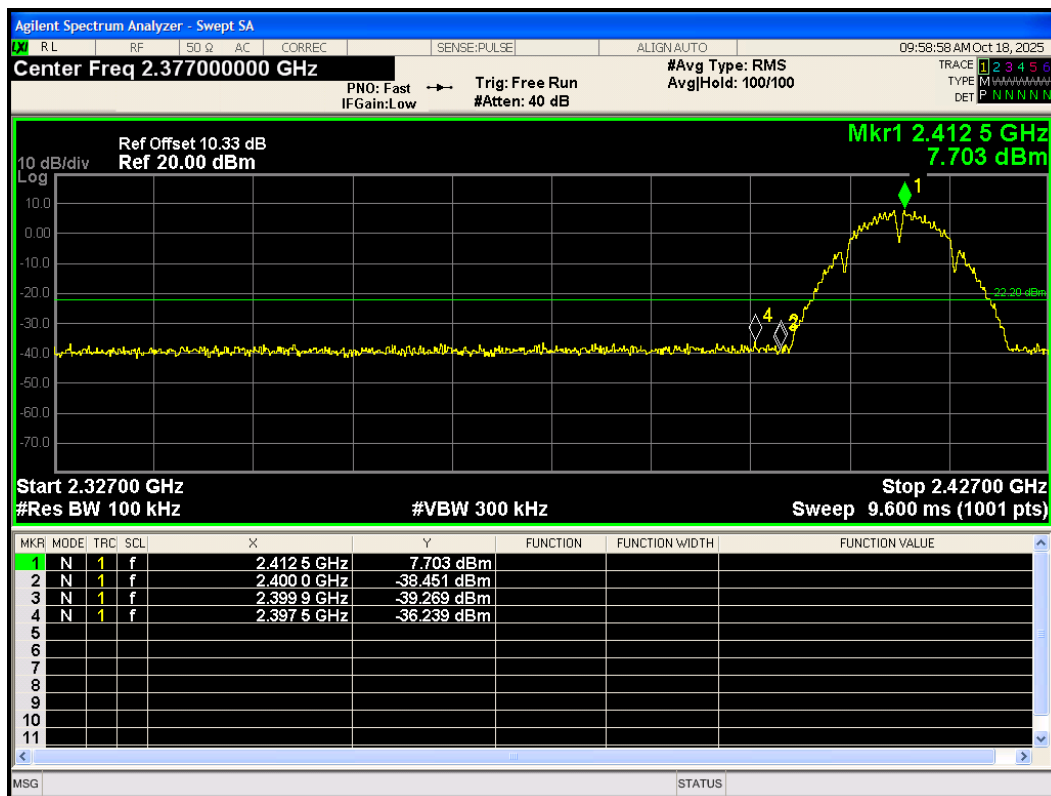
Band Edge 802.11ax(HE40) 2452MHz Emission



Band Edge 802.11b 2412MHz Ref



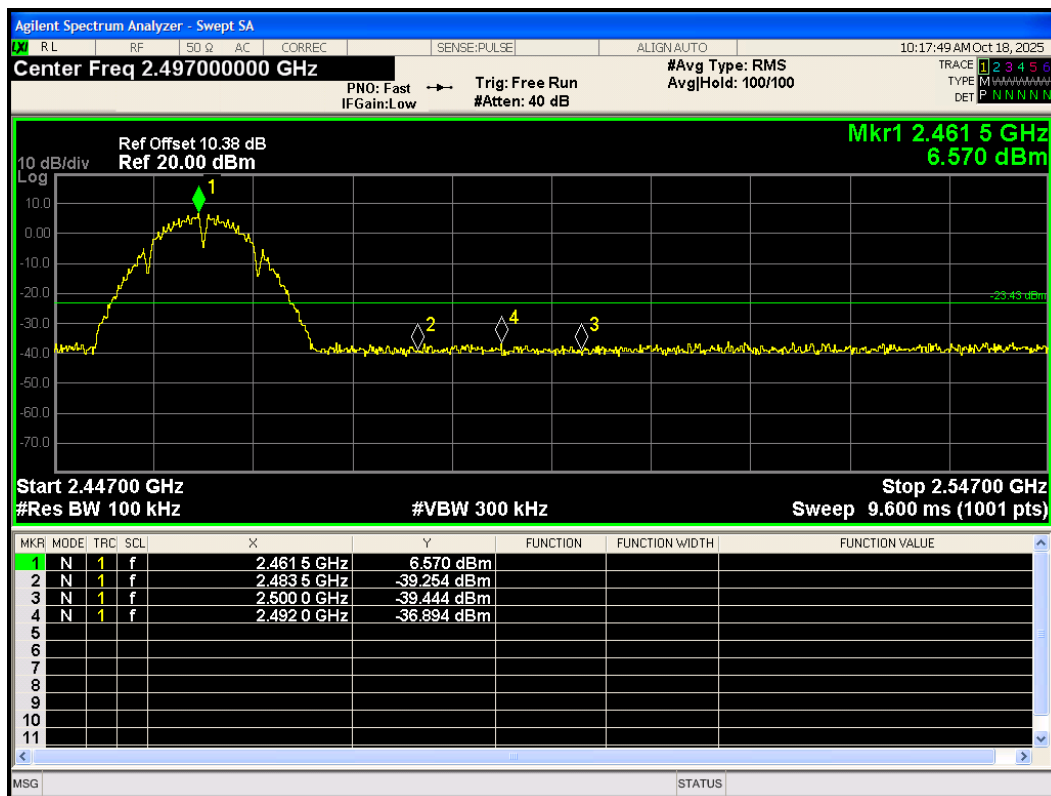
Band Edge 802.11b 2412MHz Emission



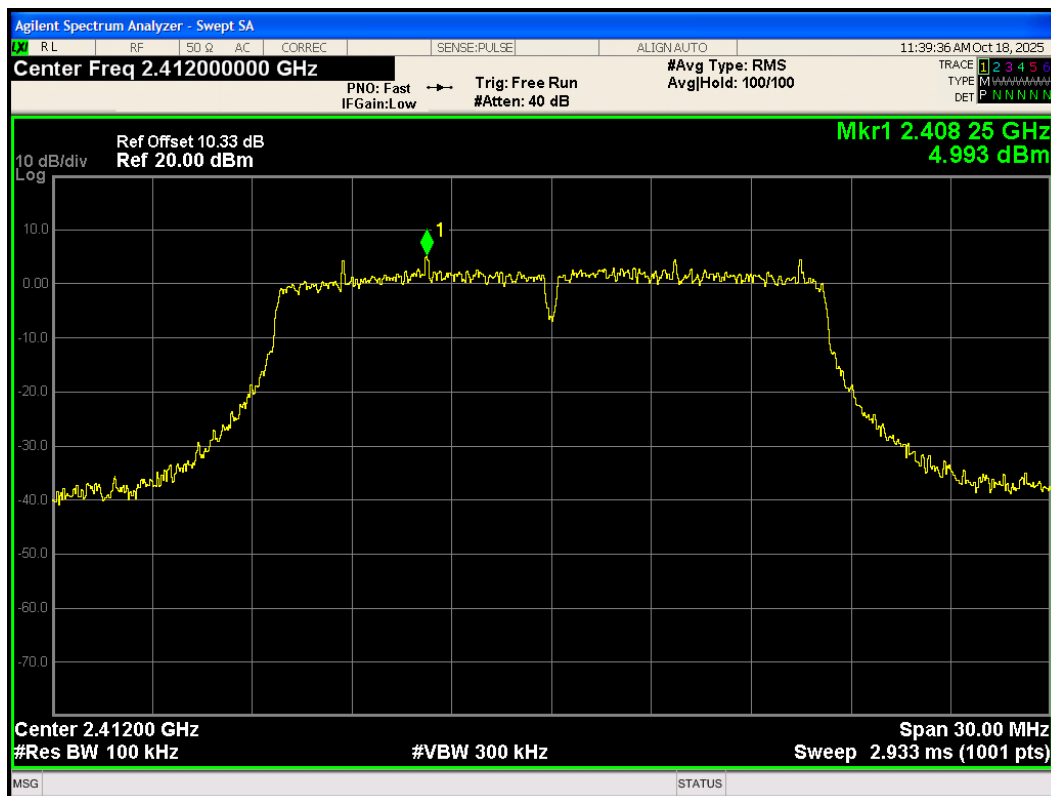
Band Edge 802.11b 2462MHz Ref



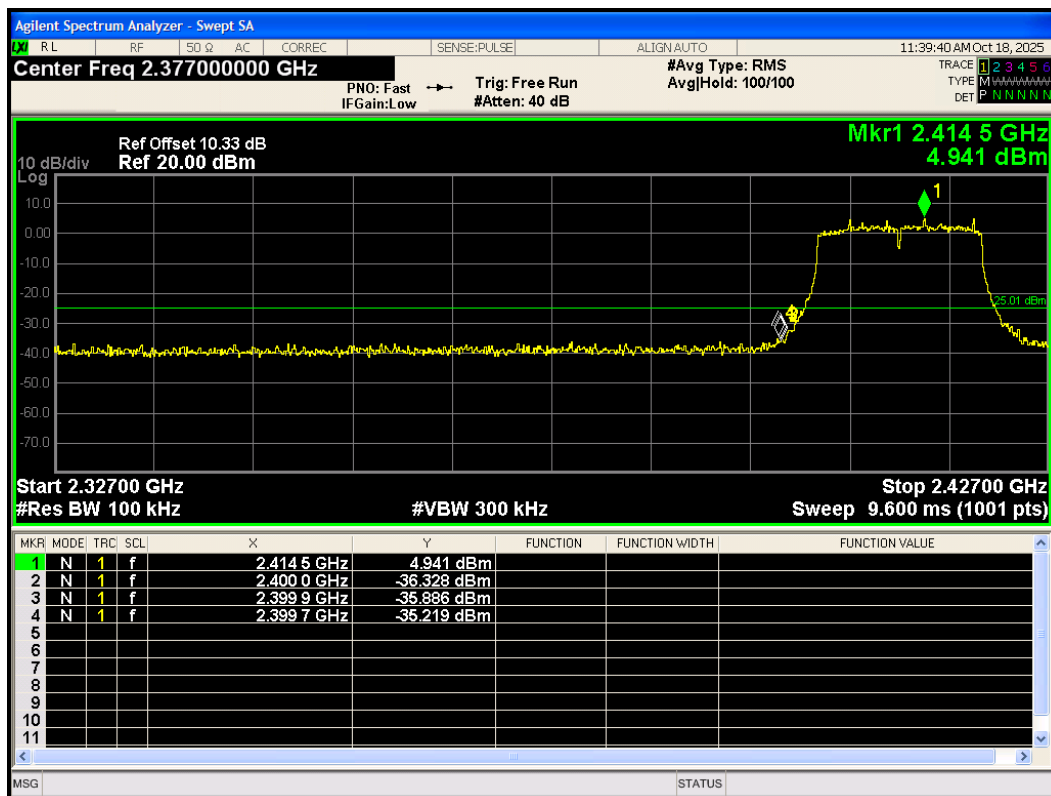
Band Edge 802.11b 2462MHz Emission



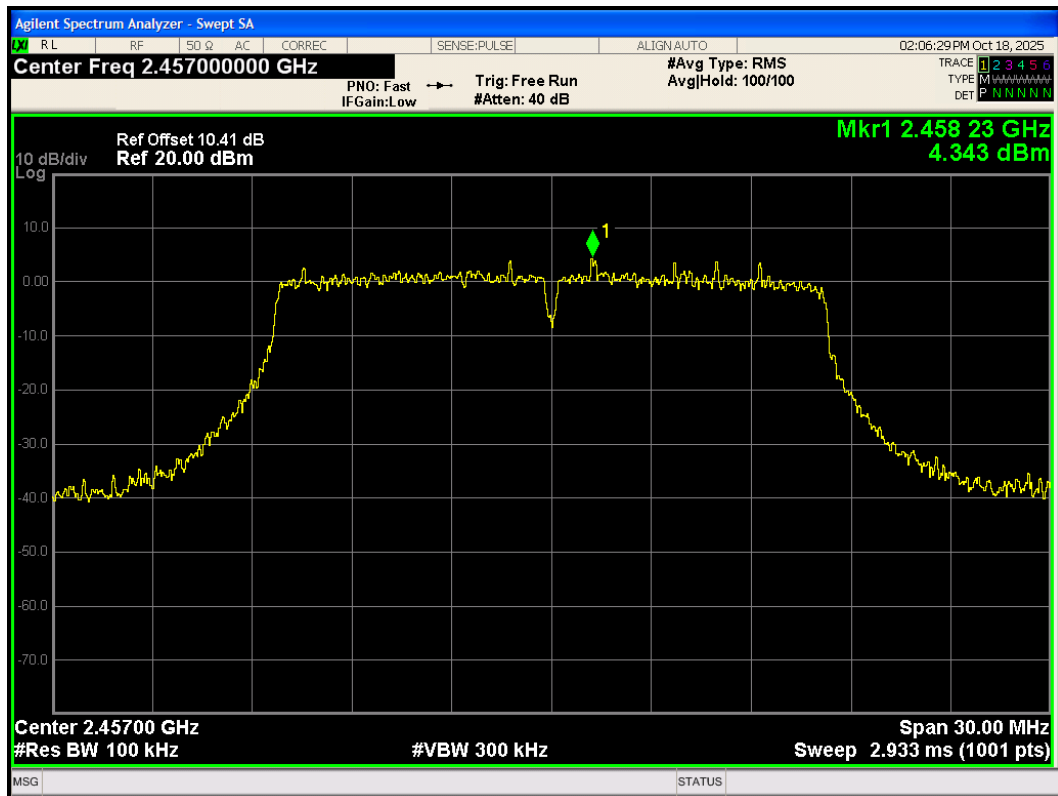
Band Edge 802.11g 2412MHz Ref



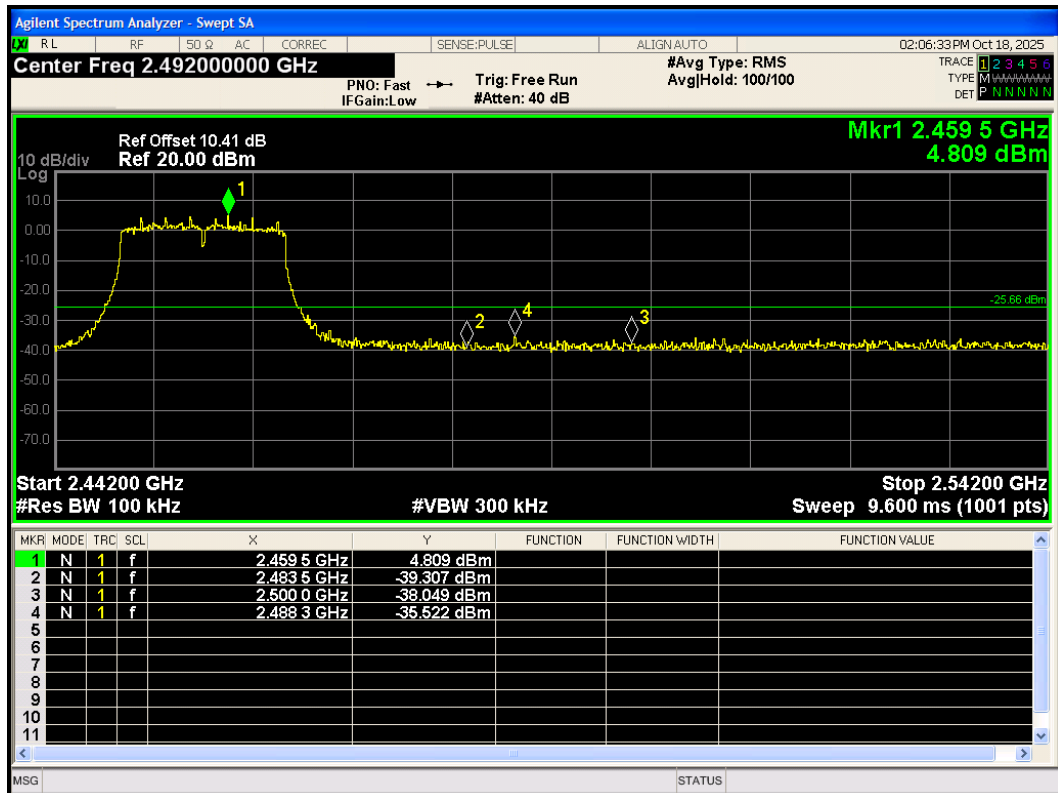
Band Edge 802.11g 2412MHz Emission



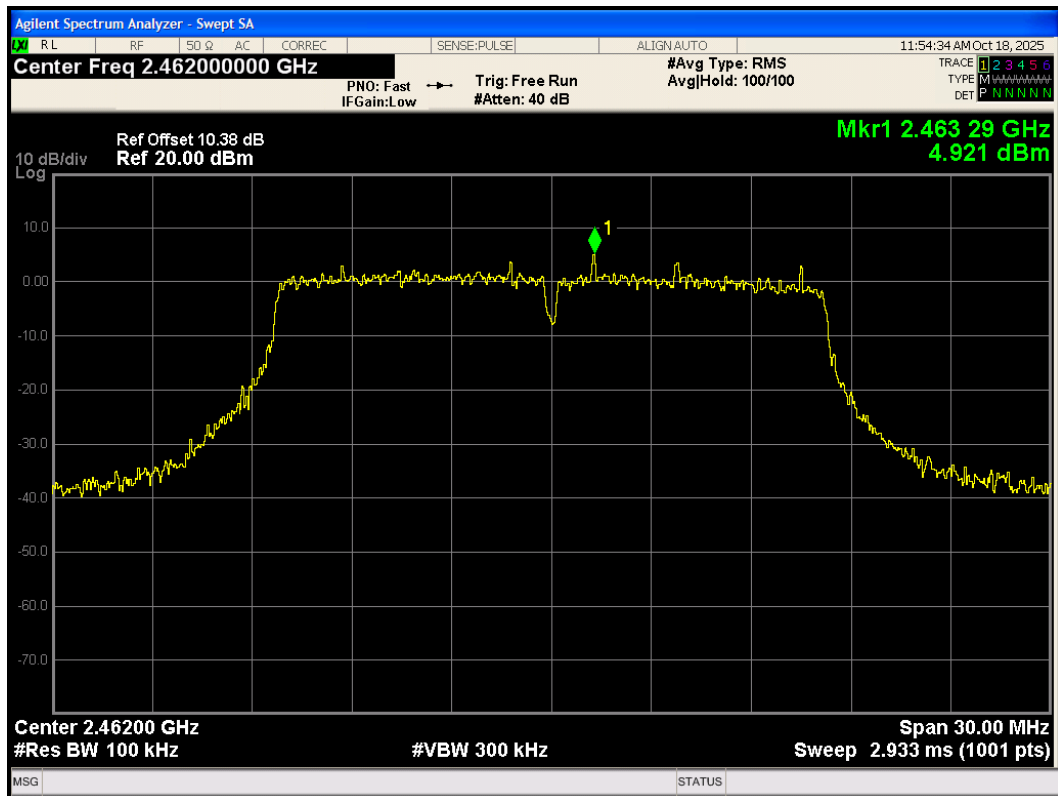
Band Edge 802.11g 2457MHz Ref



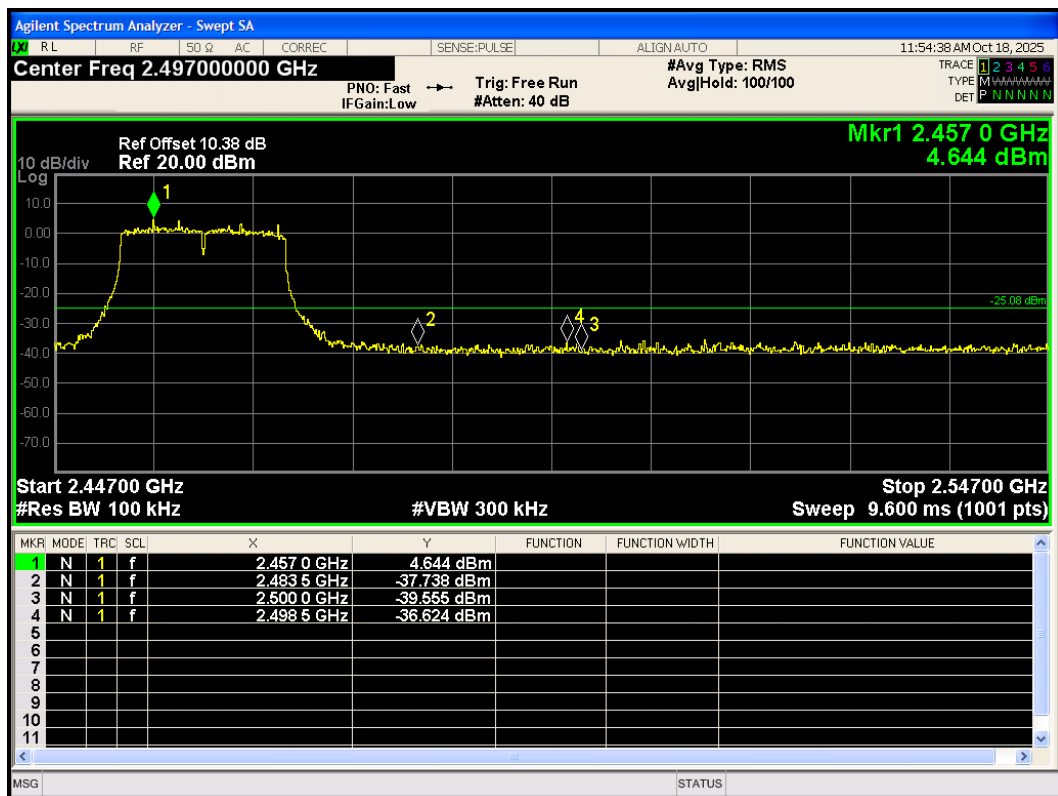
Band Edge 802.11g 2457MHz Emission



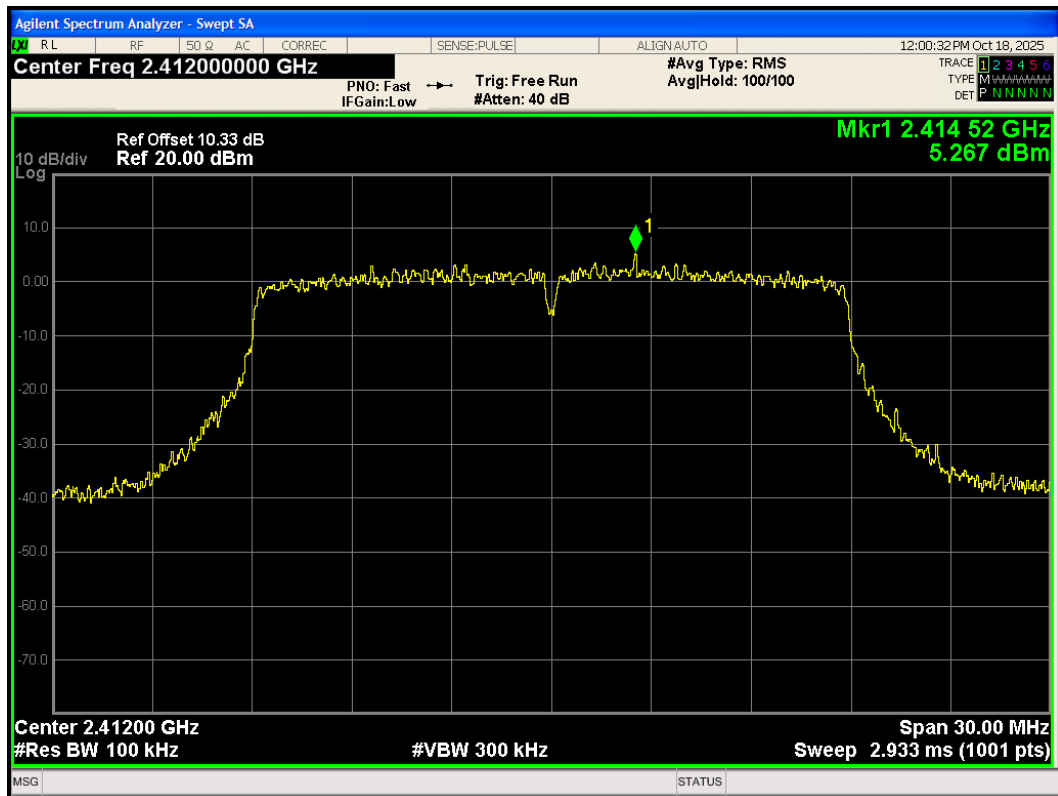
Band Edge 802.11g 2462MHz Ref



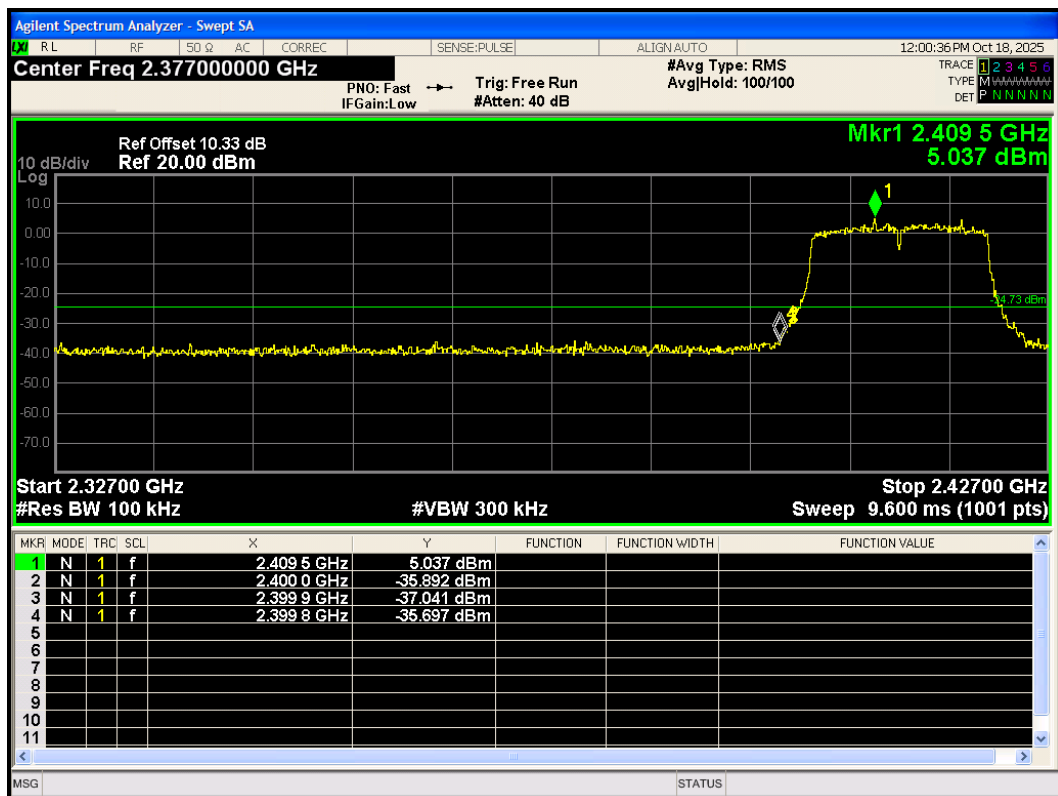
Band Edge 802.11g 2462MHz Emission



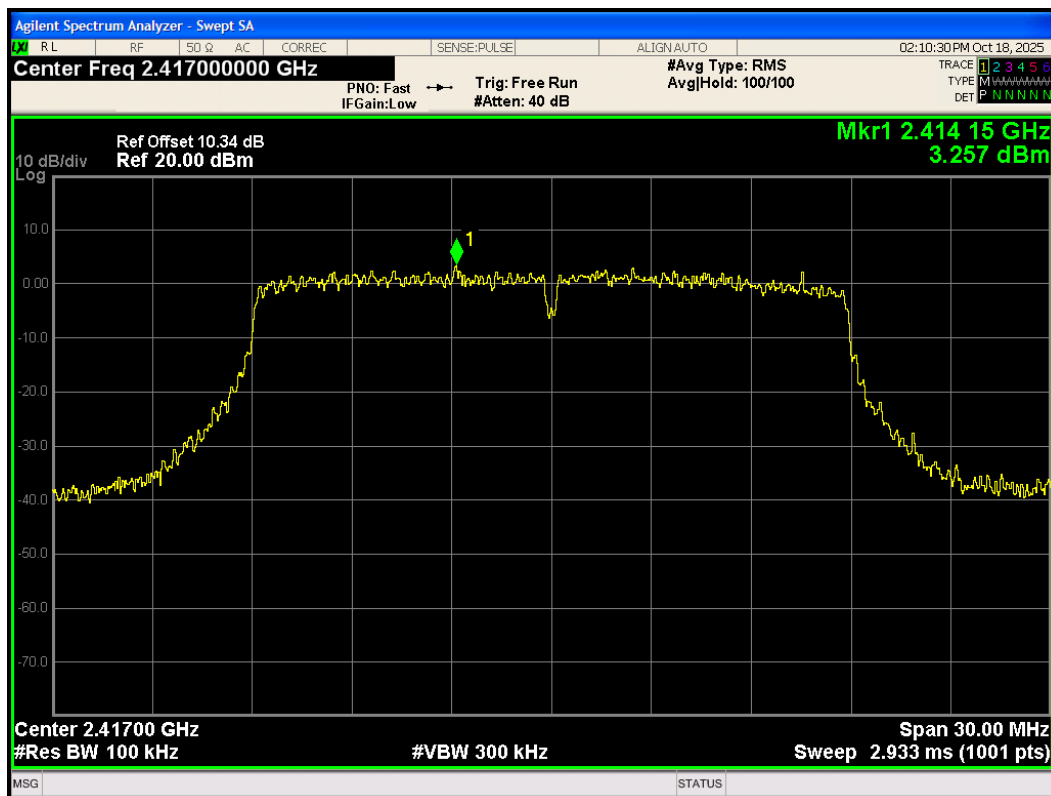
Band Edge 802.11n(HT20) 2412MHz Ref



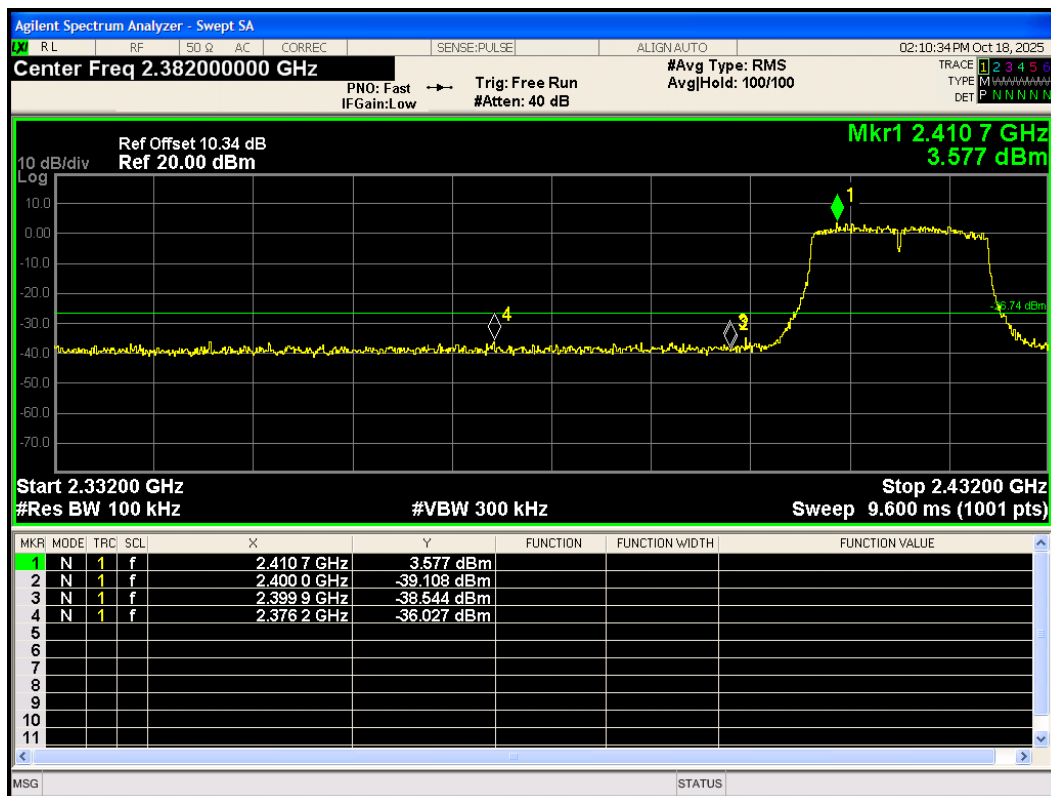
Band Edge 802.11n(HT20) 2412MHz Emission



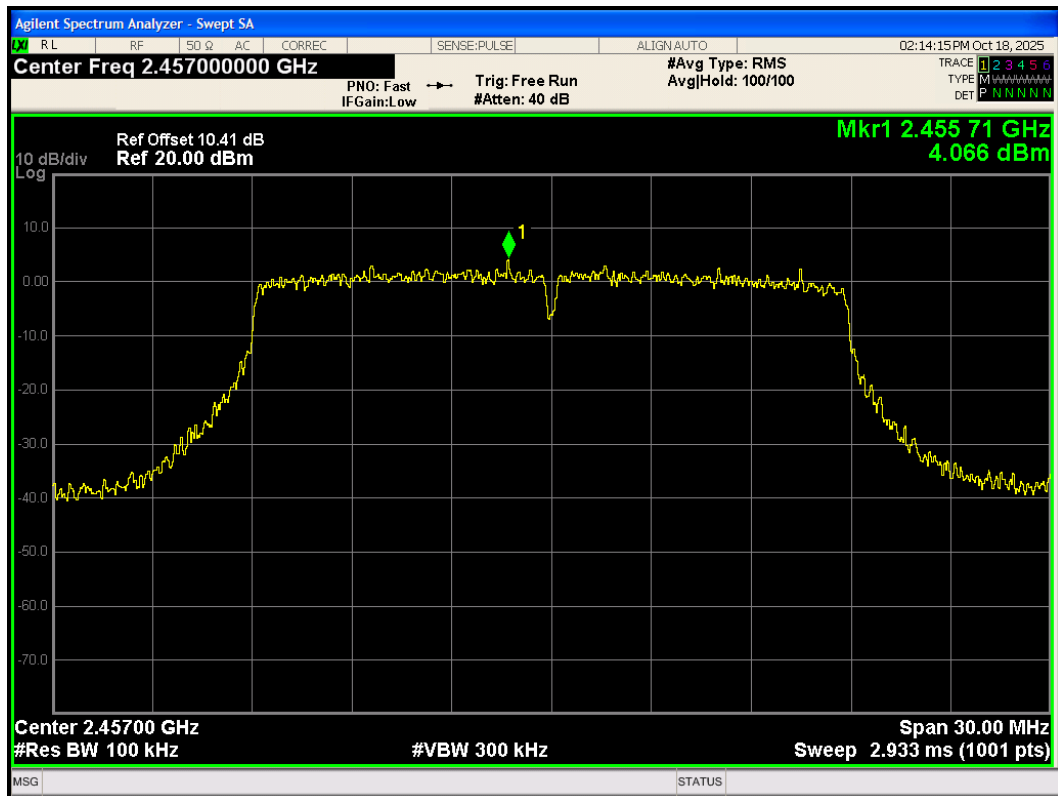
Band Edge 802.11n(HT20) 2417MHz Ref



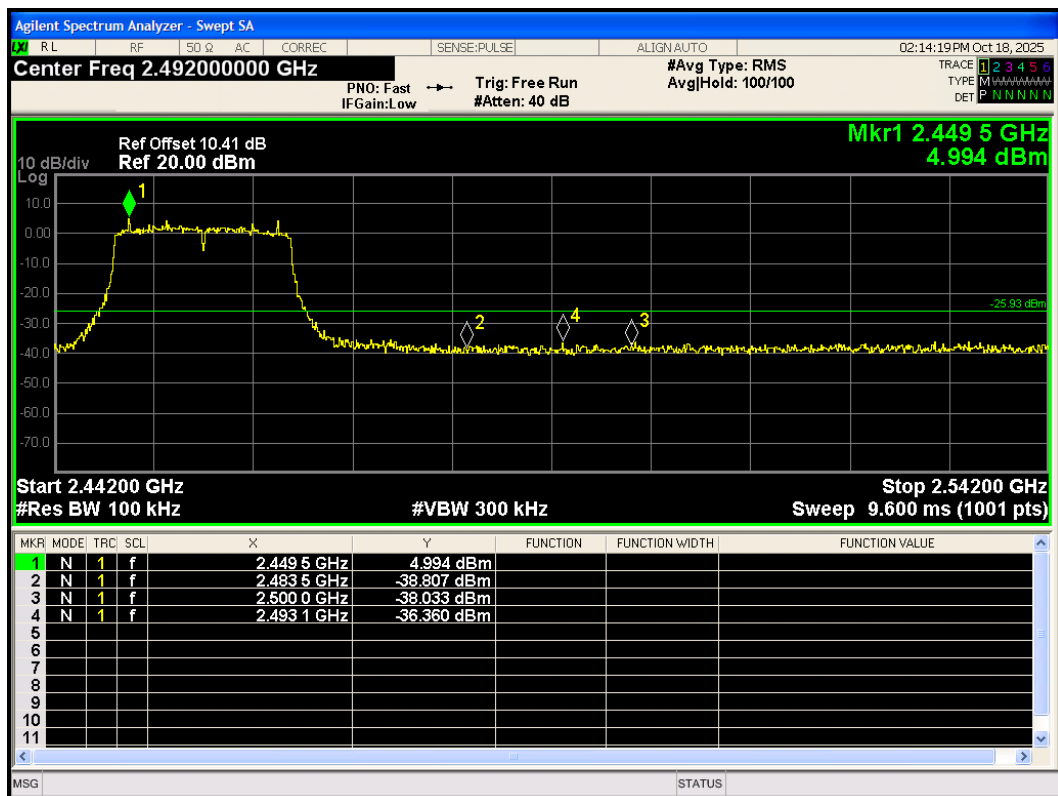
Band Edge 802.11n(HT20) 2417MHz Emission



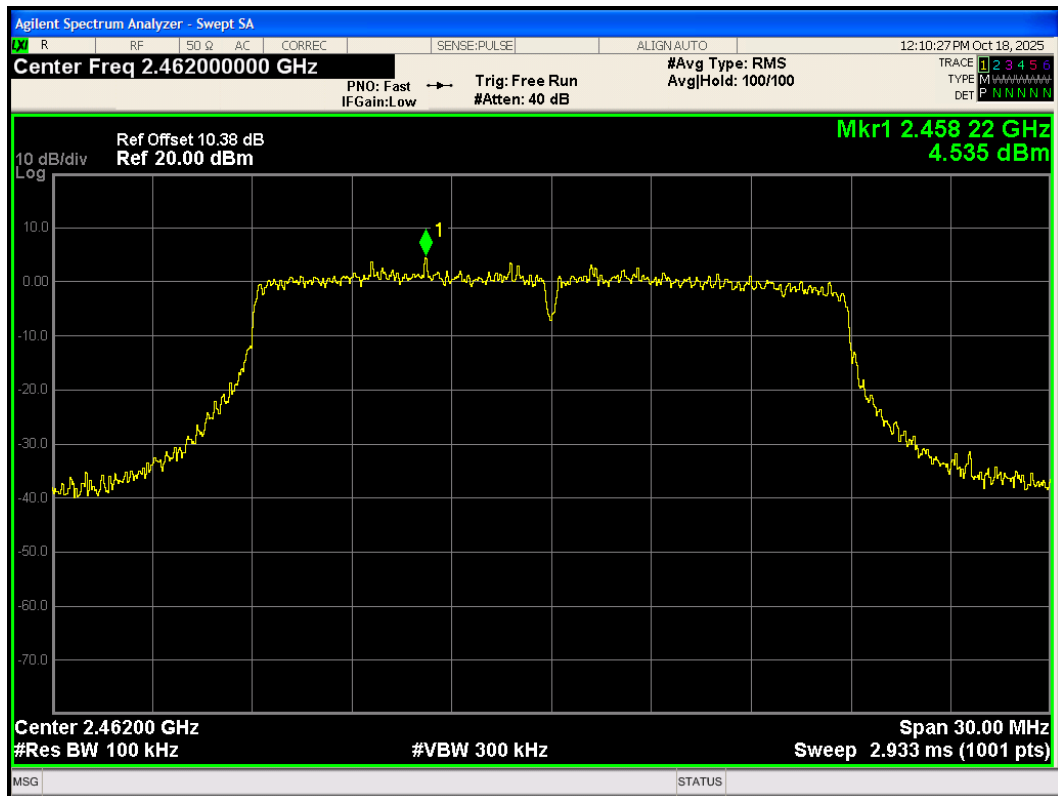
Band Edge 802.11n(HT20) 2457MHz Ref



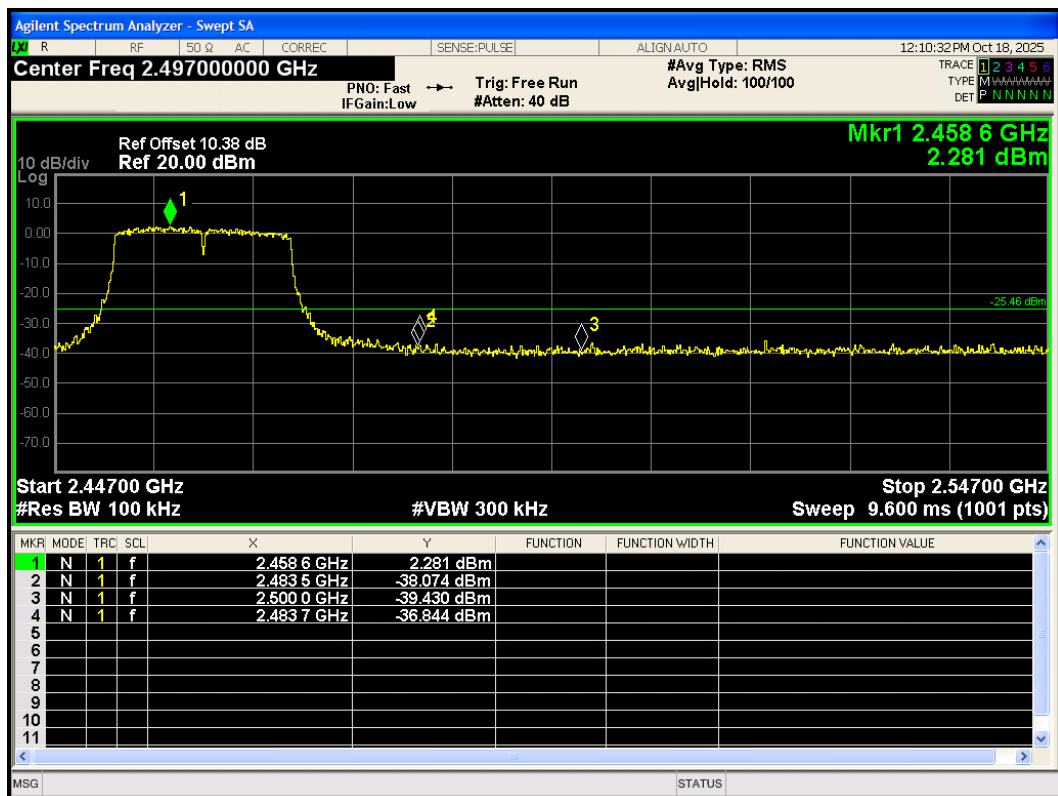
Band Edge 802.11n(HT20) 2457MHz Emission



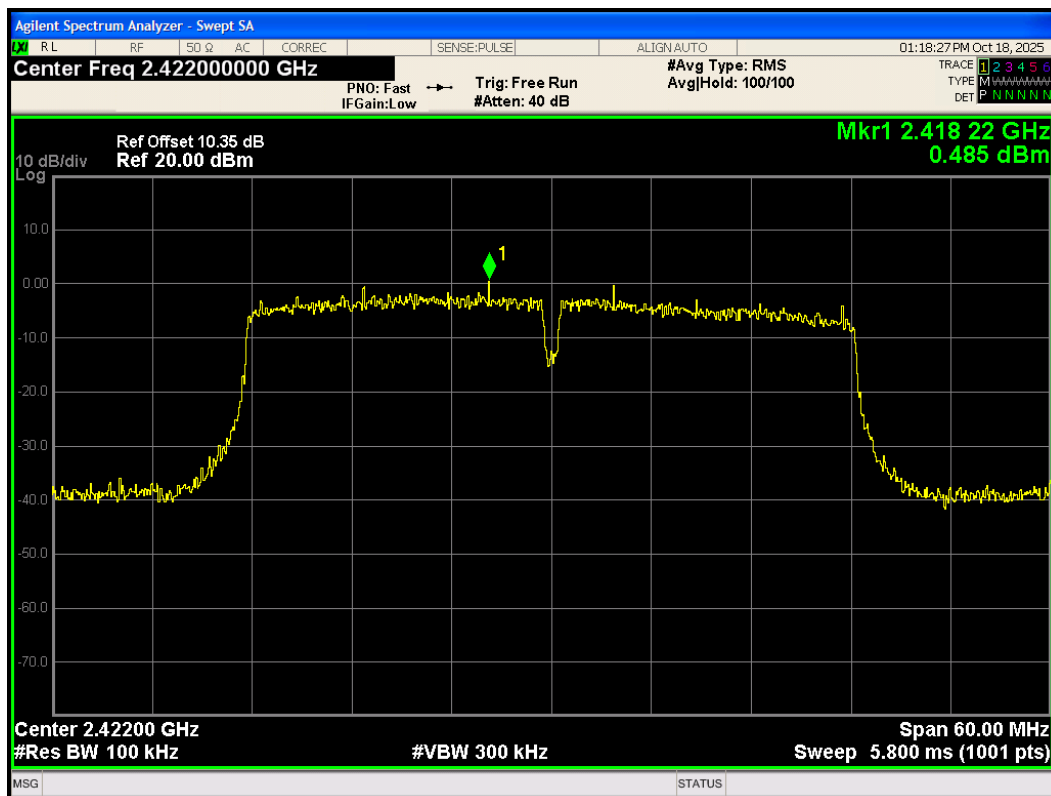
Band Edge 802.11n(HT20) 2462MHz Ref



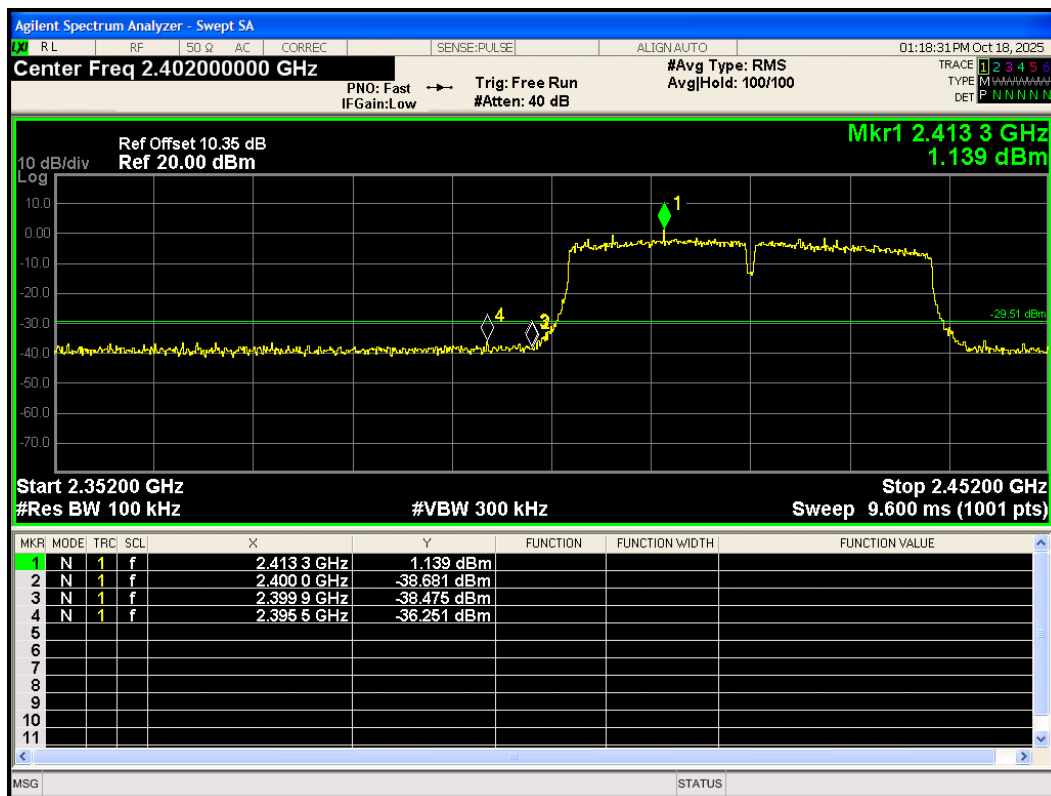
Band Edge 802.11n(HT20) 2462MHz Emission



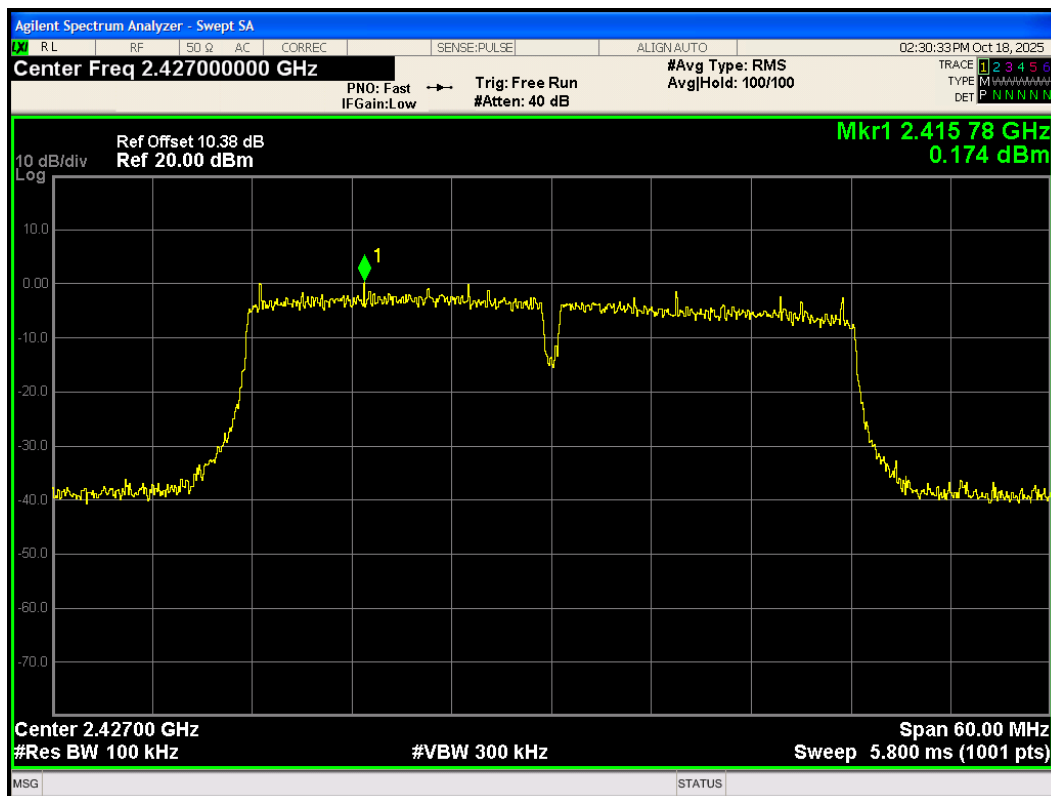
Band Edge 802.11n(HT40) 2422MHz Ref



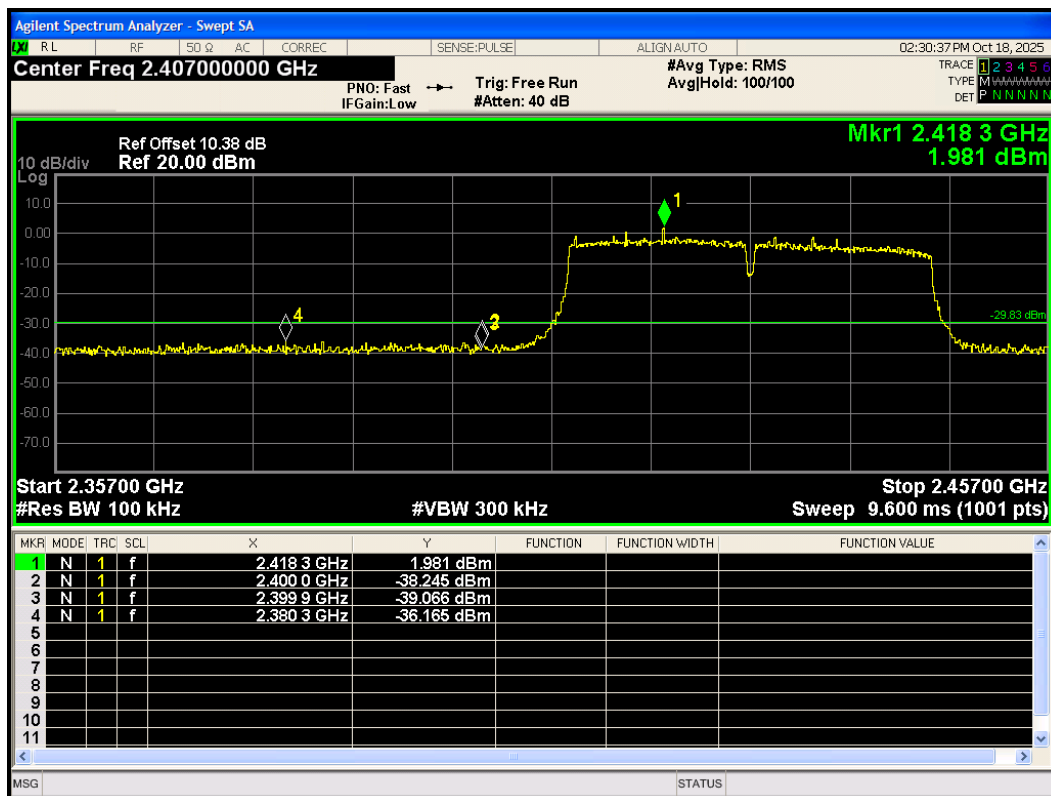
Band Edge 802.11n(HT40) 2422MHz Emission



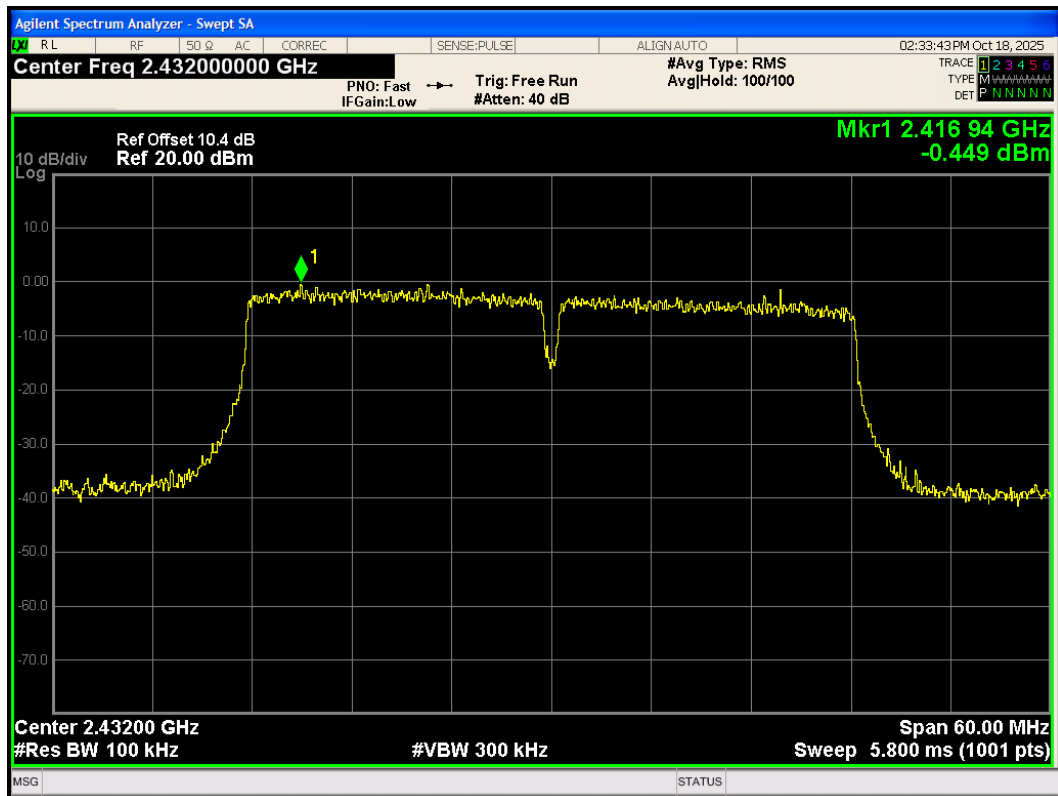
Band Edge 802.11n(HT40) 2427MHz Ref



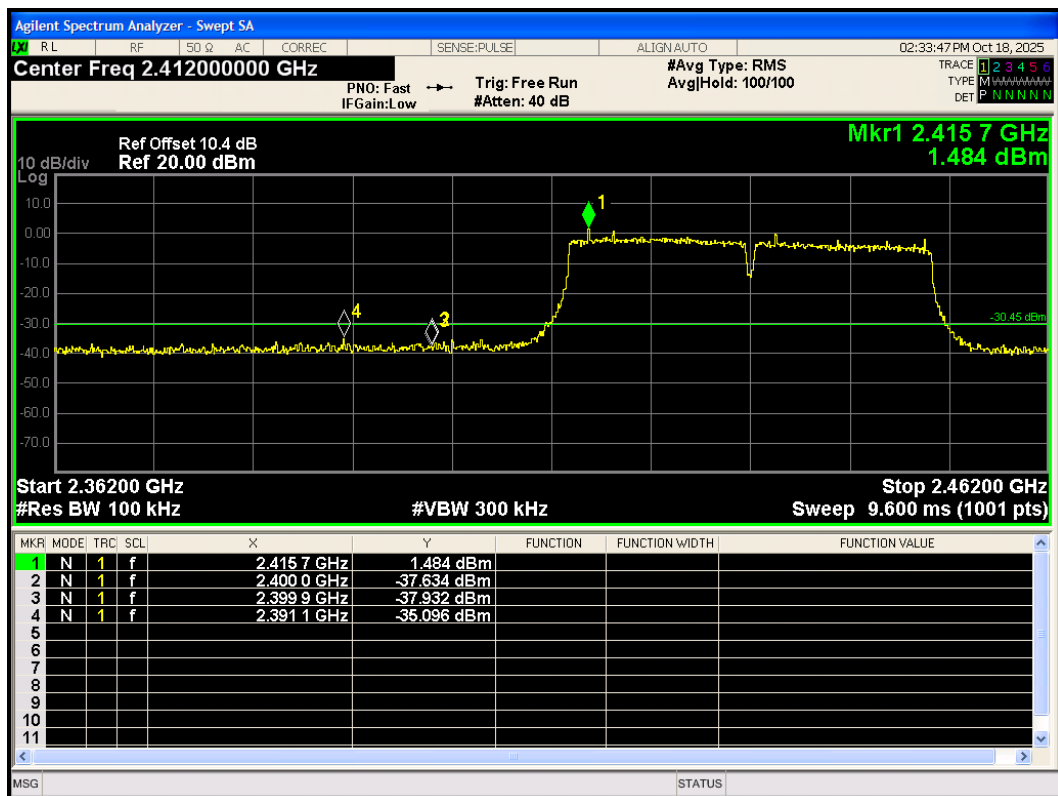
Band Edge 802.11n(HT40) 2427MHz Emission



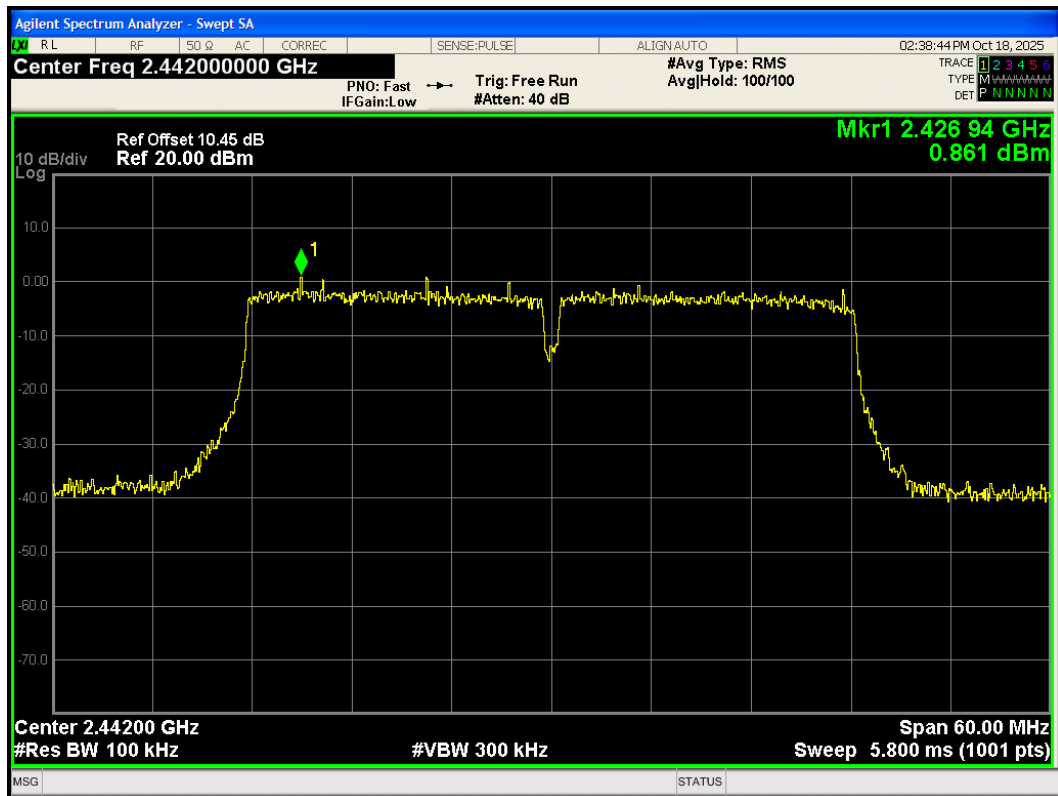
Band Edge 802.11n(HT40) 2432MHz Ref



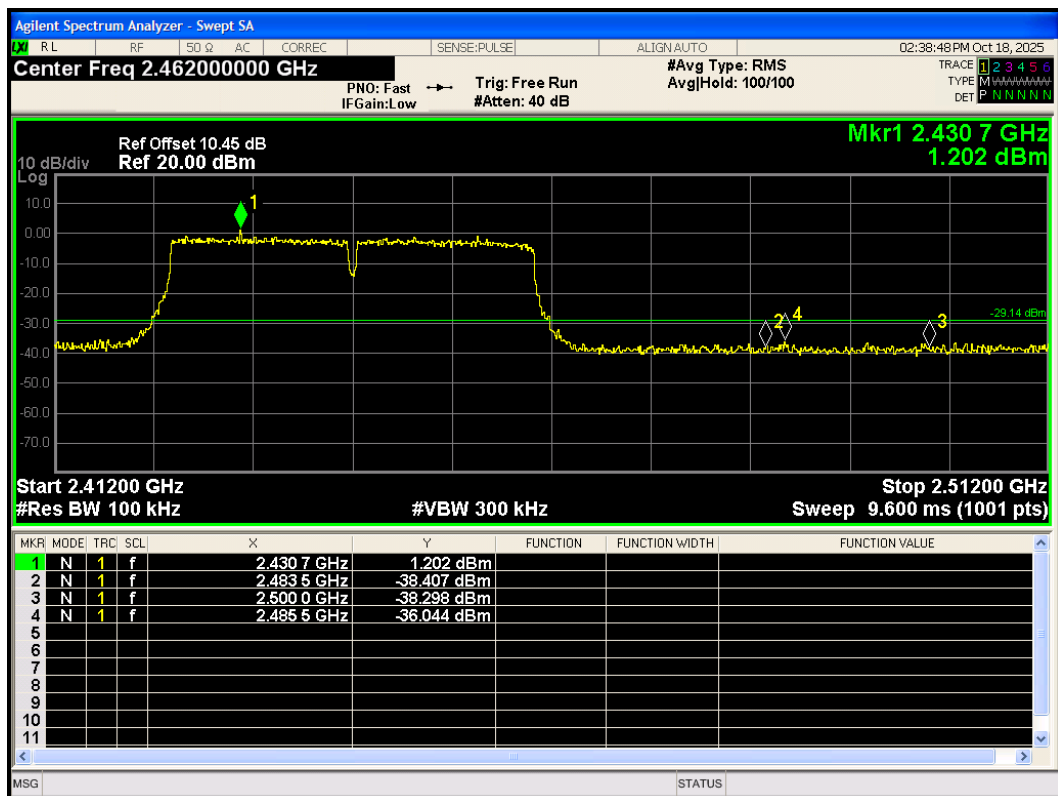
Band Edge 802.11n(HT40) 2432MHz Emission



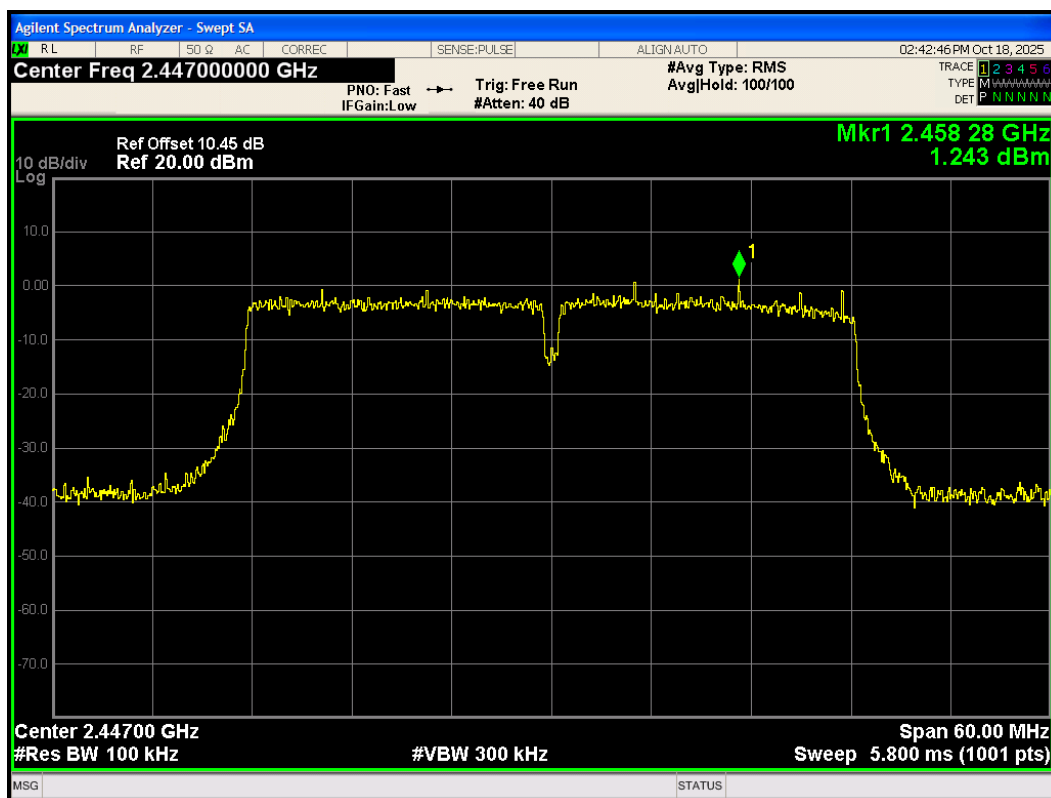
Band Edge 802.11n(HT40) 2442MHz Ref



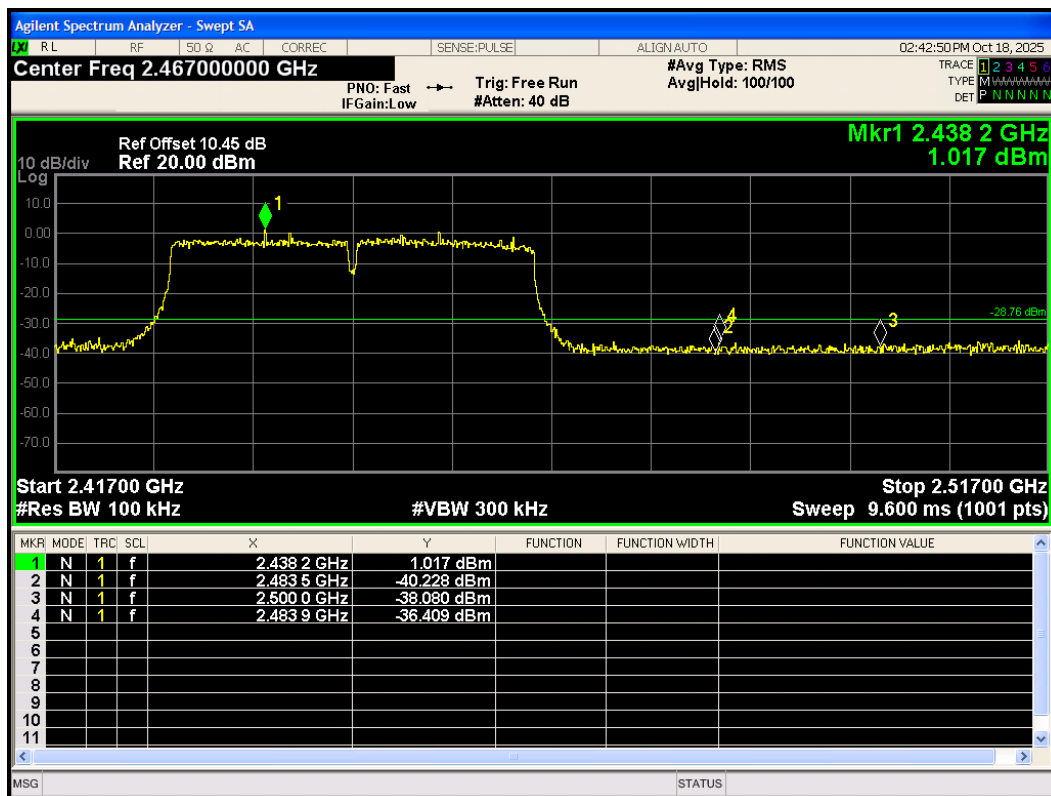
Band Edge 802.11n(HT40) 2442MHz Emission



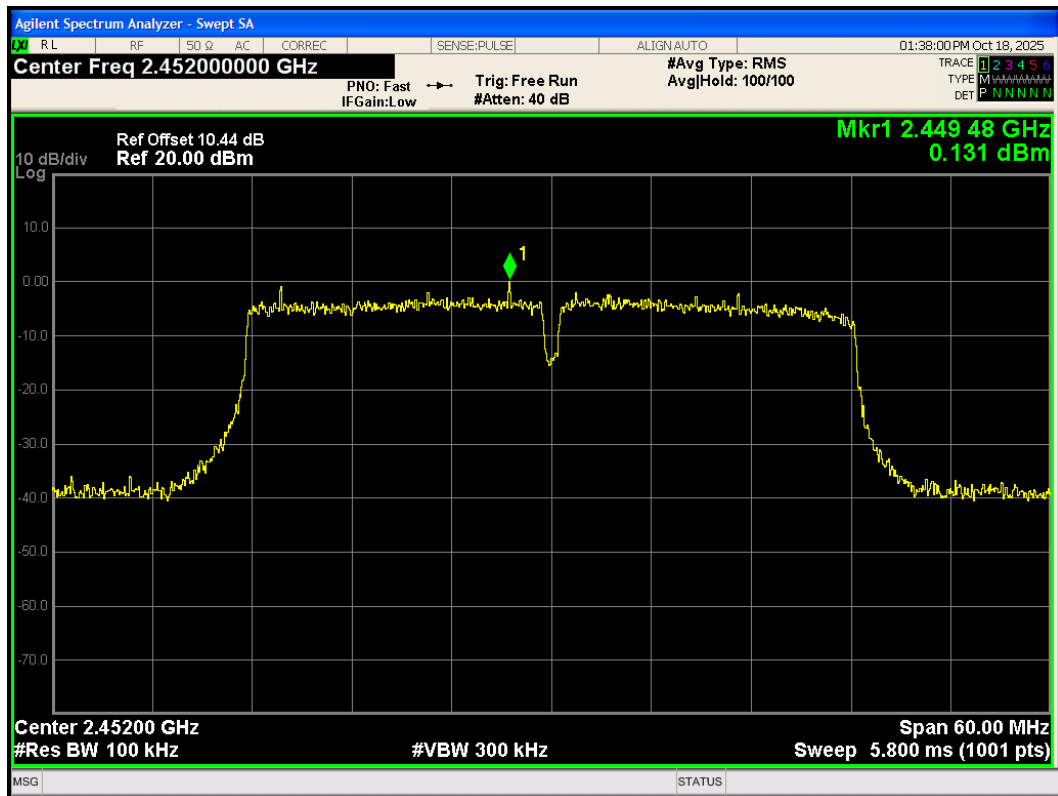
Band Edge 802.11n(HT40) 2447MHz Ref



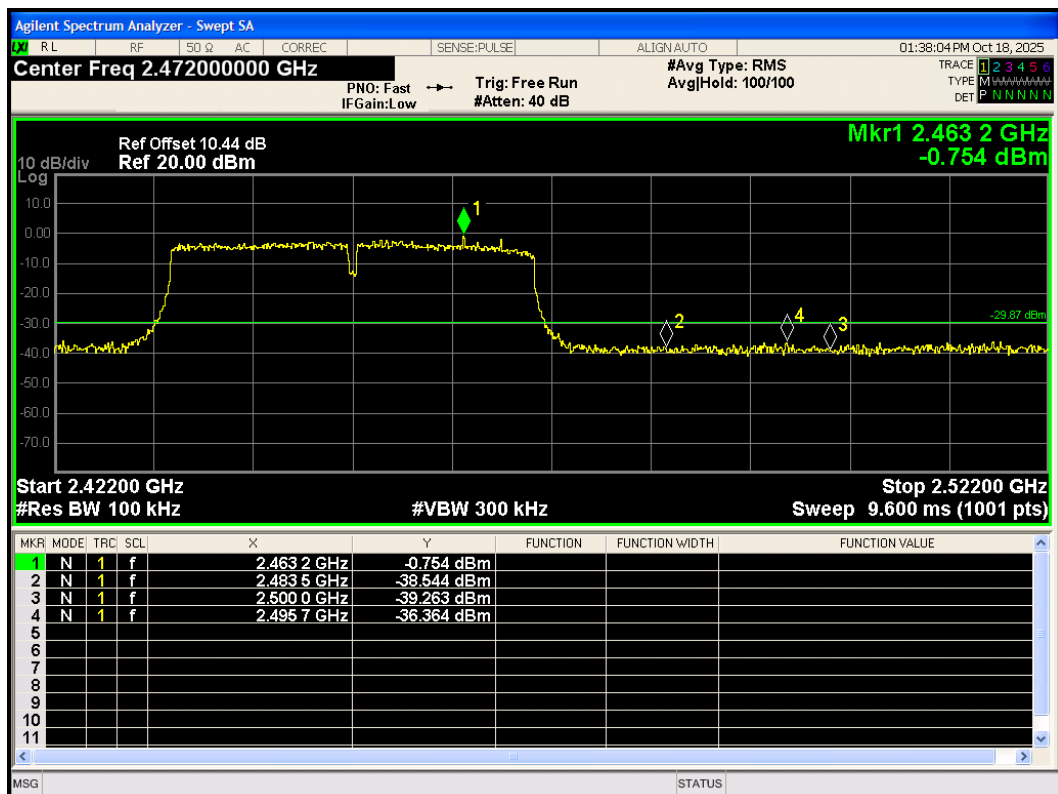
Band Edge 802.11n(HT40) 2447MHz Emission



Band Edge 802.11n(HT40) 2452MHz Ref



Band Edge 802.11n(HT40) 2452MHz Emission



6.4. Power Spectral Density

Antenna 1

Test Mode	Carrier frequency (MHz)/ Channel	Read Value (dBm / 3kHz)	Power Spectral Density (dBm / 3kHz)	Limit (dBm / 3kHz)	Conclusion
Bluetooth (Low Energy) (1M)	2402/CH0	-10.75	-8.72	8	PASS
	2440/CH19	-10.53	-8.50	8	PASS
	2480/CH39	-12.05	-10.02	8	PASS
Bluetooth (Low Energy) (2M)	2402/CH0	-14.97	-10.18	8	PASS
	2440/CH19	-15.15	-10.36	8	PASS
	2480/CH39	-16.41	-11.62	8	PASS
Bluetooth (Low Energy) (S=2)	2402/CH0	-6.88	-4.44	8	PASS
	2440/CH19	-6.35	-3.91	8	PASS
	2480/CH39	-7.71	-5.27	8	PASS
Bluetooth (Low Energy) (S=8)	2402/CH0	-0.01	0.81	8	PASS
	2440/CH19	-0.35	0.47	8	PASS
	2480/CH39	-1.49	-0.67	8	PASS
Note: Power Spectral Density =Read Value+Duty cycle correction factor					

Antenna 2

Test Mode	Carrier frequency (MHz)/ Channel	Read Value (dBm / 3kHz)	Power Spectral Density (dBm / 3kHz)	Limit (dBm / 3kHz)	Conclusion
Bluetooth (Low Energy) (1M)	2402/CH0	-11.10	-9.07	8	PASS
	2440/CH19	-11.32	-9.29	8	PASS
	2480/CH39	-12.25	-10.22	8	PASS
Bluetooth (Low Energy) (2M)	2402/CH0	-16.23	-11.44	8	PASS
	2440/CH19	-15.90	-11.11	8	PASS
	2480/CH39	-16.37	-11.58	8	PASS
Bluetooth (Low Energy) (S=2)	2402/CH0	-5.01	-2.57	8	PASS
	2440/CH19	-8.72	-6.28	8	PASS
	2480/CH39	-4.22	-1.78	8	PASS
Bluetooth (Low Energy) (S=8)	2402/CH0	0.71	1.53	8	PASS
	2440/CH19	0.76	1.58	8	PASS
	2480/CH39	-1.21	-0.39	8	PASS
Note: Power Spectral Density =Read Value+Duty cycle correction factor					

CDD/MIMO

Test Mode	Carrier frequency (MHz)/ Channel	Power Spectral Density				Total PSD	Limit (dBm / 3kHz)	Conclusion
		Antenna 1		Antenna 2				
		Read Value (dBm / 30kHz)	Power Spectral Density (dBm / 3kHz)	Read Value (dBm / 30kHz)	Power Spectral Density (dBm / 3kHz)	(dBm / 3kHz)		
802.11b	2412/CH1	-4.50	-14.50	-4.49	-14.49	-11.48	8.00	PASS
	2437/CH6	-4.99	-14.99	-5.00	-15.00	-11.98	8.00	PASS
	2462/CH11	-4.88	-14.88	-5.74	-15.74	-12.28	8.00	PASS
802.11g	2412/CH1	-7.18	-17.18	-7.07	-17.07	-14.11	8.00	PASS
	2437/CH6	-7.30	-17.30	-7.64	-17.64	-14.46	8.00	PASS
	2457/CH10	-7.98	-17.98	-7.91	-17.91	-14.93	8.00	PASS
	2462/CH11	-8.28	-18.28	-8.00	-18.00	-15.13	8.00	PASS

Note:1.Power Spectral Density (dBm/3kHz) =Read Value+Duty cycle correction factor + 10*LOG10(3 / 30)

2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),the power spectral density= $10\log(10^{(\text{PSD antenna1 in dBm}/10)}+10^{(\text{PSD antenna2 in dBm}/10)})$

3. 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 = $G_{\text{ANT MAX}} + \text{Array Gain}$. For PSD measurements on all devices, Array Gain= $10\log(N_{\text{ant}}/N_{\text{ss}})\text{dB}$, so directional gain= $G_{\text{ANT MAX}}+\text{Array Gain}=2.6+10\log(2/1)=5.61<6\text{dBi}$. So the PSD limit is 8 dBm / 3kHz

Test Mode	Carrier frequency (MHz)/ Channel	Power Spectral Density				Total PSD	Limit (dBm / 3kHz)	Conclusion
		Antenna 1		Antenna 2				
		Read Value (dBm / 30kHz)	Power Spectral Density (dBm / 3kHz)	Read Value (dBm / 30kHz)	Power Spectral Density (dBm / 3kHz)	(dBm / 3kHz)		
802.11n HT20	2412/CH1	-7.09	-17.09	-7.32	-17.32	-14.19	8.00	PASS
	2417/CH2	-7.57	-17.57	-7.83	-17.83	-14.69	8.00	PASS
	2437/CH6	-7.84	-17.84	-7.81	-17.81	-14.81	8.00	PASS
	2457/CH10	-8.19	-18.19	-8.01	-18.01	-15.09	8.00	PASS
	2462/CH11	-8.47	-18.47	-7.57	-17.57	-14.99	8.00	PASS
802.11n HT40	2422/CH3	-12.31	-22.31	-12.37	-22.37	-19.33	8.00	PASS
	2427/CH4	-12.24	-22.24	-12.45	-22.45	-19.33	8.00	PASS
	2432/CH5	-11.68	-21.68	-11.81	-21.81	-18.73	8.00	PASS
	2437/CH6	-9.80	-19.80	-10.21	-20.21	-16.99	8.00	PASS
	2442/CH7	-11.69	-21.69	-11.72	-21.72	-18.69	8.00	PASS

	2447/CH8	-12.15	-22.15	-12.18	-22.18	-19.15	8.00	PASS
	2452/CH9	-13.18	-23.18	-12.61	-22.61	-19.88	8.00	PASS
802.11ax HE20	2412/CH1	-9.40	-19.40	-9.58	-19.58	-16.48	8.00	PASS
	2417/CH2	-9.49	-19.49	-9.40	-19.40	-16.43	8.00	PASS
	2437/CH6	-9.35	-19.35	-8.82	-18.82	-16.07	8.00	PASS
	2452/CH9	-9.41	-19.41	-9.06	-19.06	-16.22	8.00	PASS
	2457/CH10	-9.66	-19.66	-9.38	-19.38	-16.51	8.00	PASS
	2462/CH11	-9.43	-19.43	-9.30	-19.30	-16.35	8.00	PASS
802.11ax HE40	2422/CH3	-13.58	-23.58	-13.95	-23.95	-20.75	8.00	PASS
	2427/CH4	-13.85	-23.85	-14.03	-24.03	-20.93	8.00	PASS
	2432/CH5	-11.55	-21.55	-11.89	-21.89	-18.71	8.00	PASS
	2437/CH6	-11.03	-21.03	-11.58	-21.58	-18.29	8.00	PASS
	2442/CH7	-13.26	-23.26	-13.65	-23.65	-20.44	8.00	PASS
	2447/CH8	-13.65	-23.65	-13.31	-23.31	-20.47	8.00	PASS
	2452/CH9	-14.30	-24.30	-13.85	-23.85	-21.06	8.00	PASS

Note: 1.Power Spectral Density (dBm/3kHz) =Read Value+Duty cycle correction factor + 10*LOG10(3 / 30)

2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),the power spectral density= $10 \log(10^{(PSD_{antenna1} \text{ in dBm/10})} + 10^{(PSD_{antenna2} \text{ in dBm/10})})$

3. Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F)2)d)(ii): If antenna gains are not equal, If all transmit signals are completely uncorrelated, then

Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10})/N_{ANT}] \text{ dBi} = 10 \log[(10^{G1/10} + 10^{G2/10})/2] = 1.91 \text{ dBi} < 6 \text{ dBi}$.

So the PSD limit is 8 dBm / 3kHz

Beamforming

Test Mode	Carrier frequency (MHz)/ Channel	Power Spectral Density				Total PSD	Limit (dBm / 3kHz)	Conclus ion
		Antenna 1		Antenna 2				
		Read Value (dBm / 30kHz)	Power Spectral Density (dBm / 3kHz)	Read Value (dBm / 30kHz)	Power Spectral Density (dBm / 3kHz)	(dBm / 3kHz)		
802.11n HT20	2412/CH1	-7.09	-17.09	-7.32	-17.32	-14.19	8.00	PASS
	2417/CH2	-7.57	-17.57	-7.83	-17.83	-14.69	8.00	PASS
	2437/CH6	-7.84	-17.84	-7.81	-17.81	-14.81	8.00	PASS
	2457/CH10	-8.19	-18.19	-8.01	-18.01	-15.09	8.00	PASS
	2462/CH11	-8.47	-18.47	-7.57	-17.57	-14.99	8.00	PASS
802.11n HT40	2422/CH3	-12.31	-22.31	-12.37	-22.37	-19.33	8.00	PASS
	2427/CH4	-12.24	-22.24	-12.45	-22.45	-19.33	8.00	PASS
	2432/CH5	-11.68	-21.68	-11.81	-21.81	-18.73	8.00	PASS
	2437/CH6	-9.80	-19.80	-10.21	-20.21	-16.99	8.00	PASS
	2442/CH7	-11.69	-21.69	-11.72	-21.72	-18.69	8.00	PASS
	2447/CH8	-12.15	-22.15	-12.18	-22.18	-19.15	8.00	PASS
	2452/CH9	-13.18	-23.18	-12.61	-22.61	-19.88	8.00	PASS
802.11ax HE20	2412/CH1	-9.40	-19.40	-9.58	-19.58	-16.48	8.00	PASS
	2417/CH2	-9.49	-19.49	-9.40	-19.40	-16.43	8.00	PASS
	2437/CH6	-9.35	-19.35	-8.82	-18.82	-16.07	8.00	PASS
	2452/CH9	-9.41	-19.41	-9.06	-19.06	-16.22	8.00	PASS
	2457/CH10	-9.66	-19.66	-9.38	-19.38	-16.51	8.00	PASS
	2462/CH11	-9.43	-19.43	-9.30	-19.30	-16.35	8.00	PASS
802.11ax HE40	2422/CH3	-13.58	-23.58	-13.95	-23.95	-20.75	8.00	PASS
	2427/CH4	-13.85	-23.85	-14.03	-24.03	-20.93	8.00	PASS
	2432/CH5	-11.55	-21.55	-11.89	-21.89	-18.71	8.00	PASS
	2437/CH6	-11.03	-21.03	-11.58	-21.58	-18.29	8.00	PASS
	2442/CH7	-13.26	-23.26	-13.65	-23.65	-20.44	8.00	PASS
	2447/CH8	-13.65	-23.65	-13.31	-23.31	-20.47	8.00	PASS
	2452/CH9	-14.30	-24.30	-13.85	-23.85	-21.06	8.00	PASS

Note:

1. Power Spectral Density (dBm/3kHz) = Read Value + Duty cycle correction factor + $10 \cdot \log_{10}(3 / 30)$

2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a), the power spectral density = $10 \log_{10}(10^{(\text{PSD antenna1 in dBm}/10)} + 10^{(\text{PSD antenna2 in dBm}/10)})$

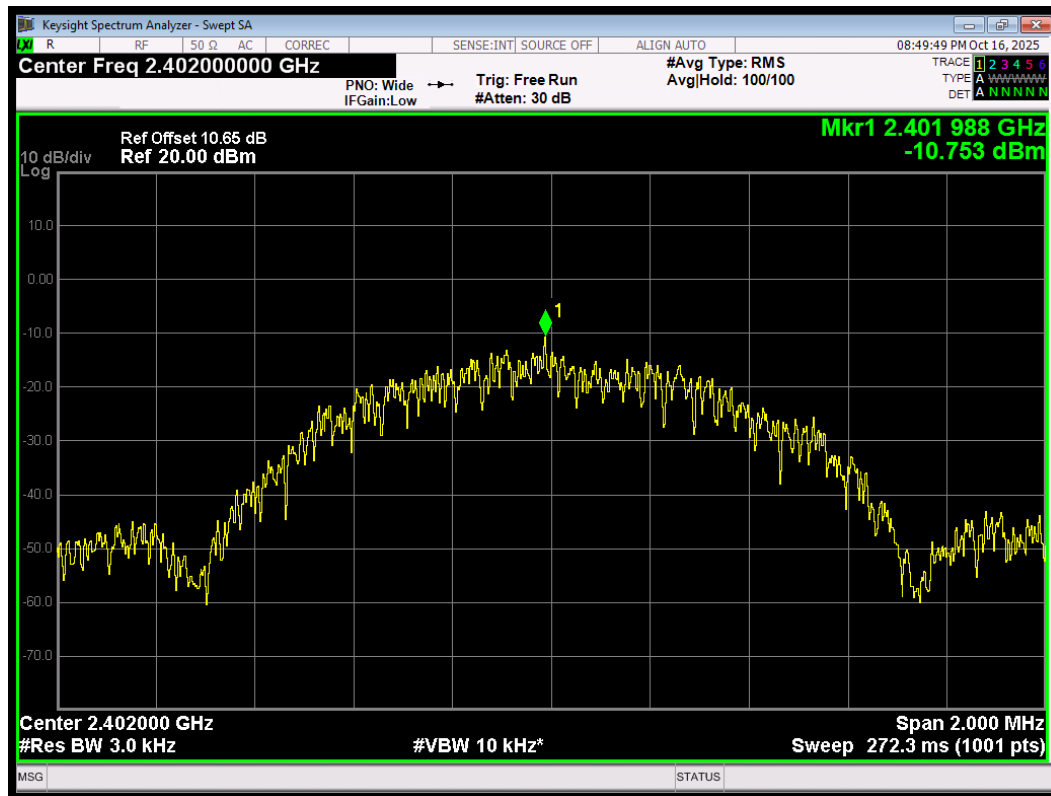
3. Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F)2)e)(ii): If antenna gains are not

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.

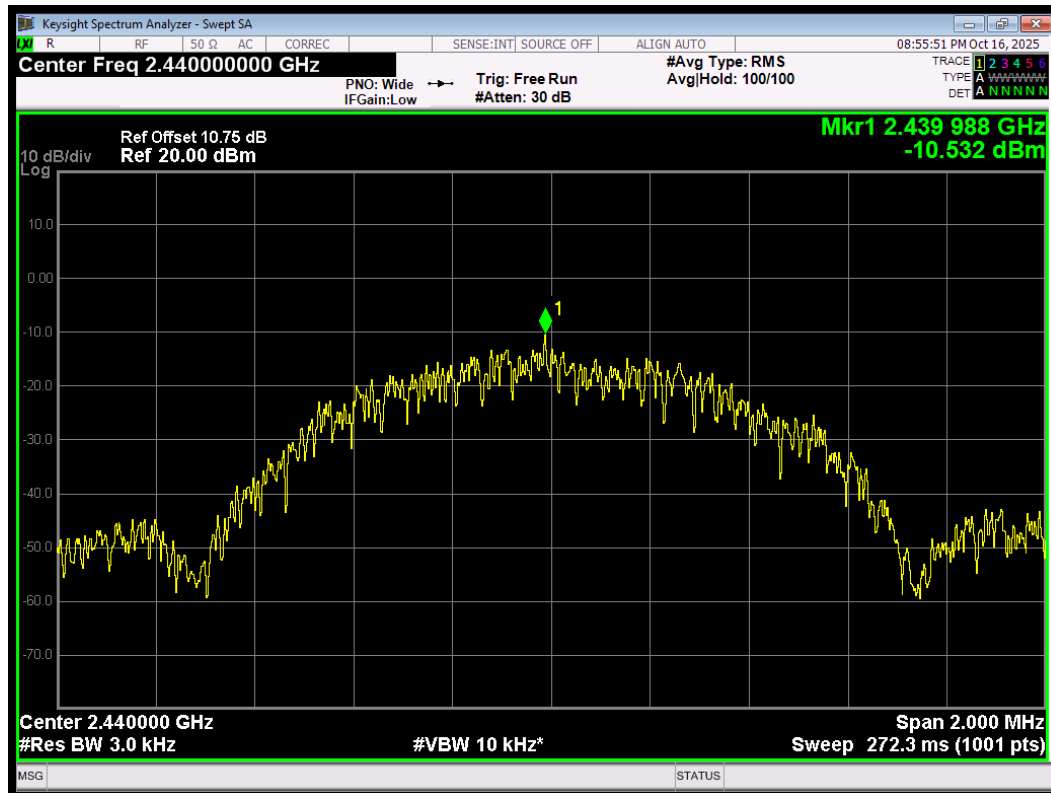
Directional gain = $G_{ANT\ MAX} + 10 \log(N_{ANT}/N_{ss}) = 2.60 + 10 \log(1/N_{ss}) = 5.61\ dBi < 6\ dBi$. So the PSD limit is 8 dBm / 3kHz

Antenna 1

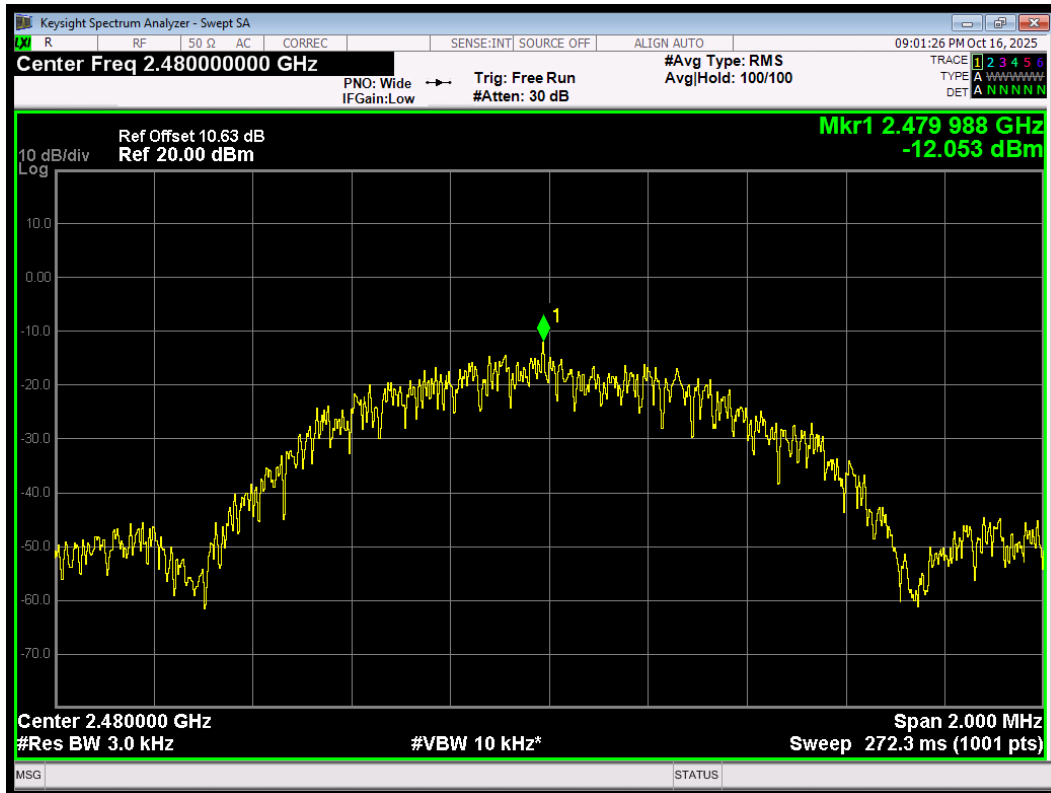
PSD BLE (1M) 2402MHz



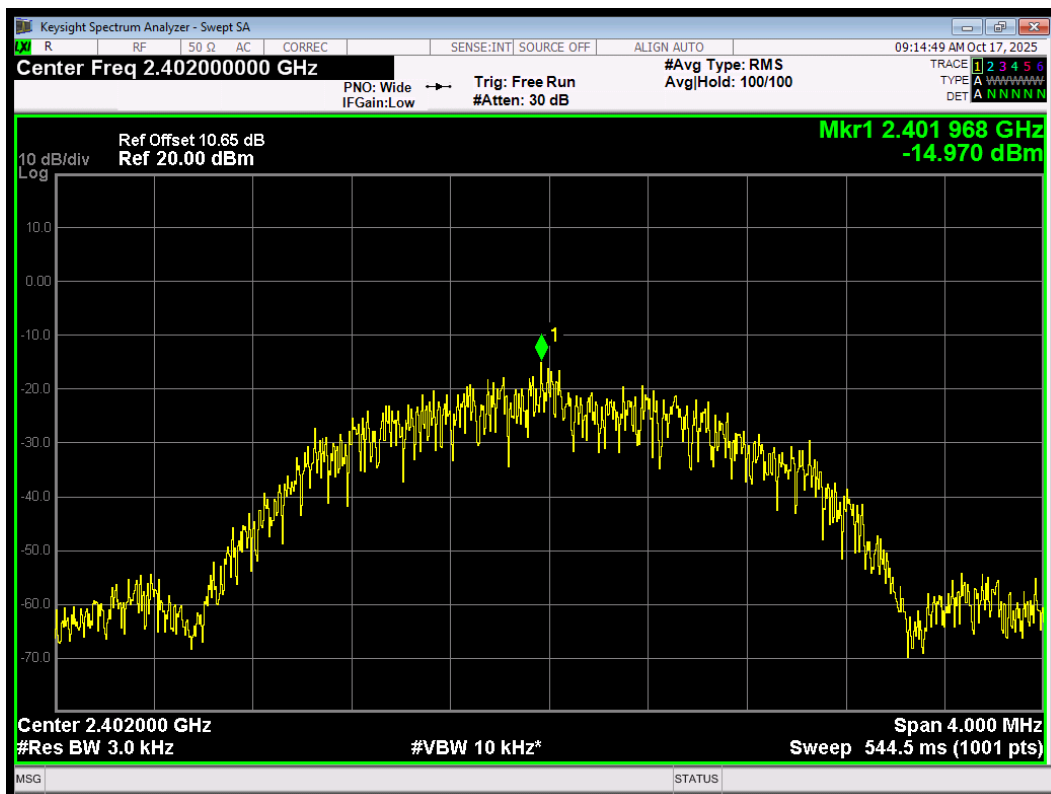
PSD BLE (1M) 2440MHz



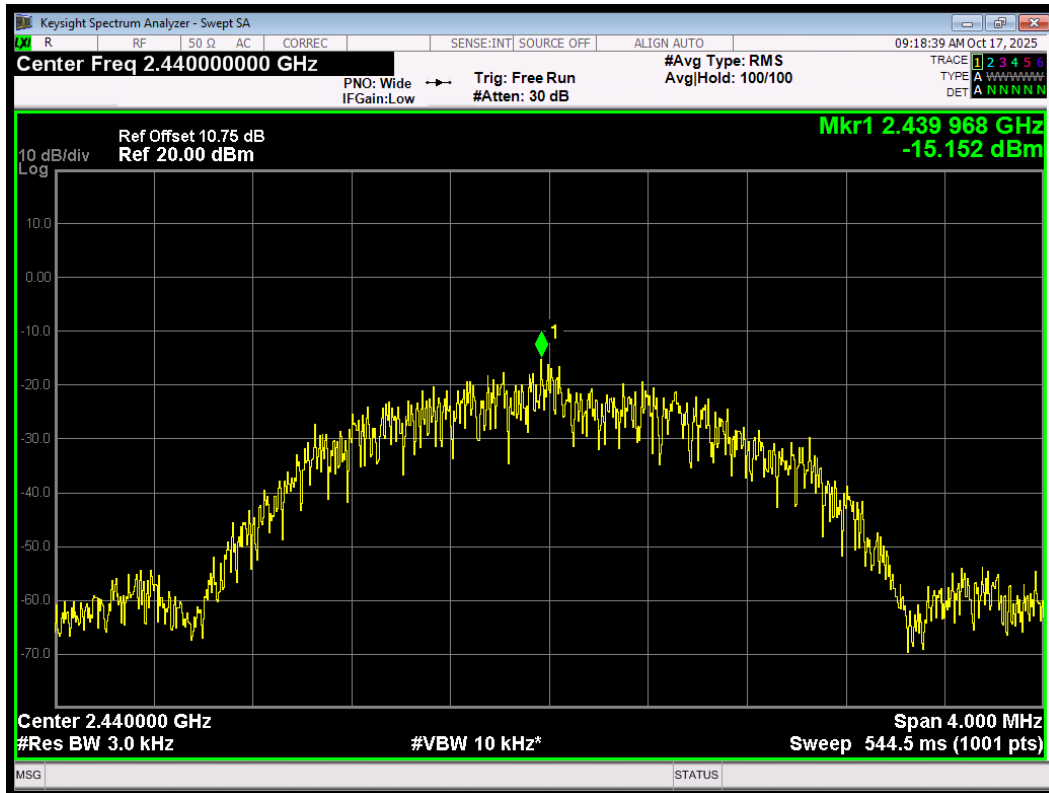
PSD BLE (1M) 2480MHz



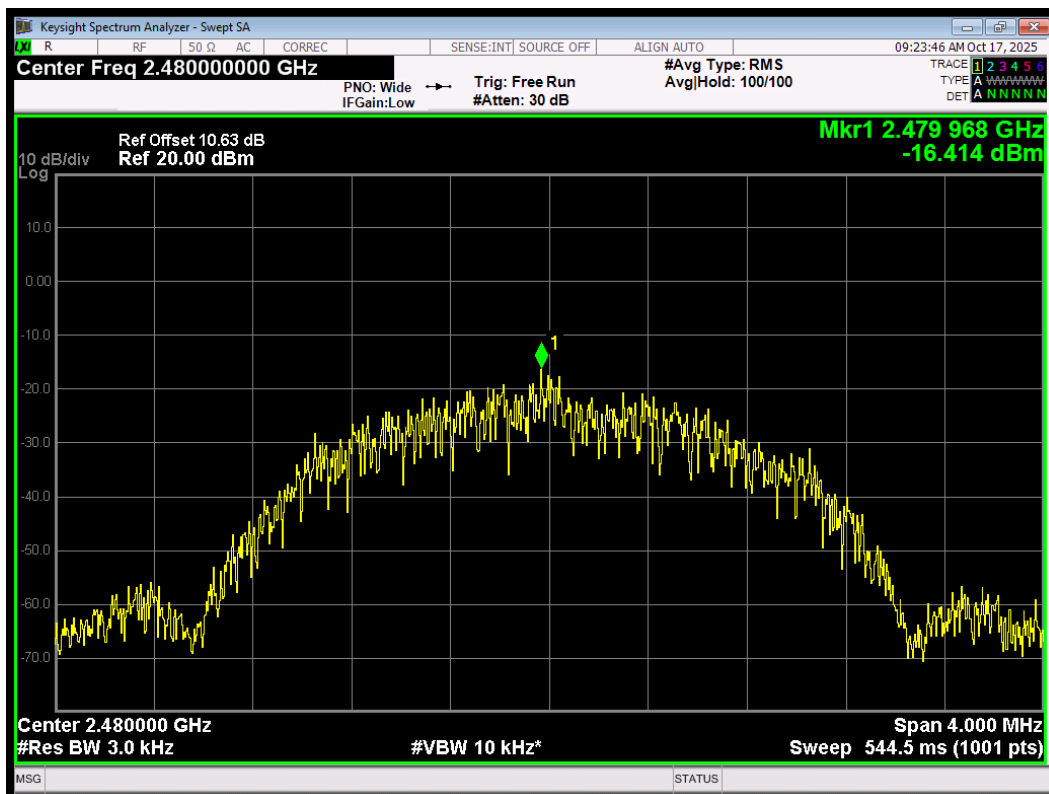
PSD BLE (2M) 2402MHz



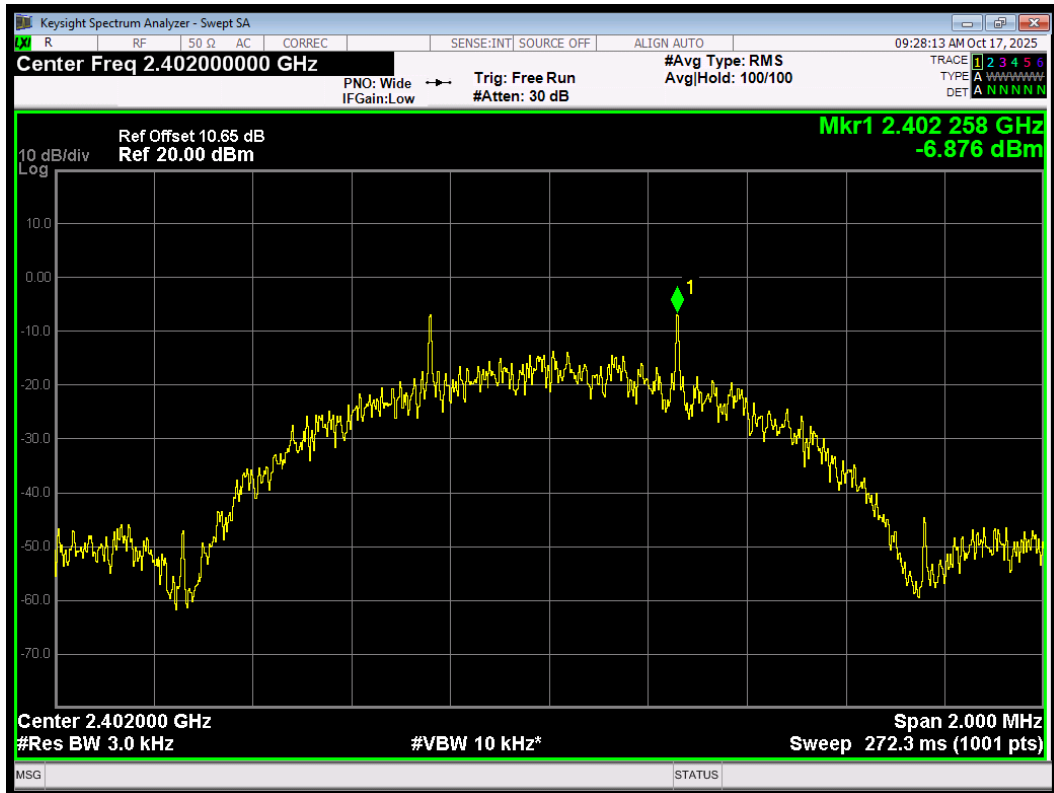
PSD BLE (2M) 2440MHz



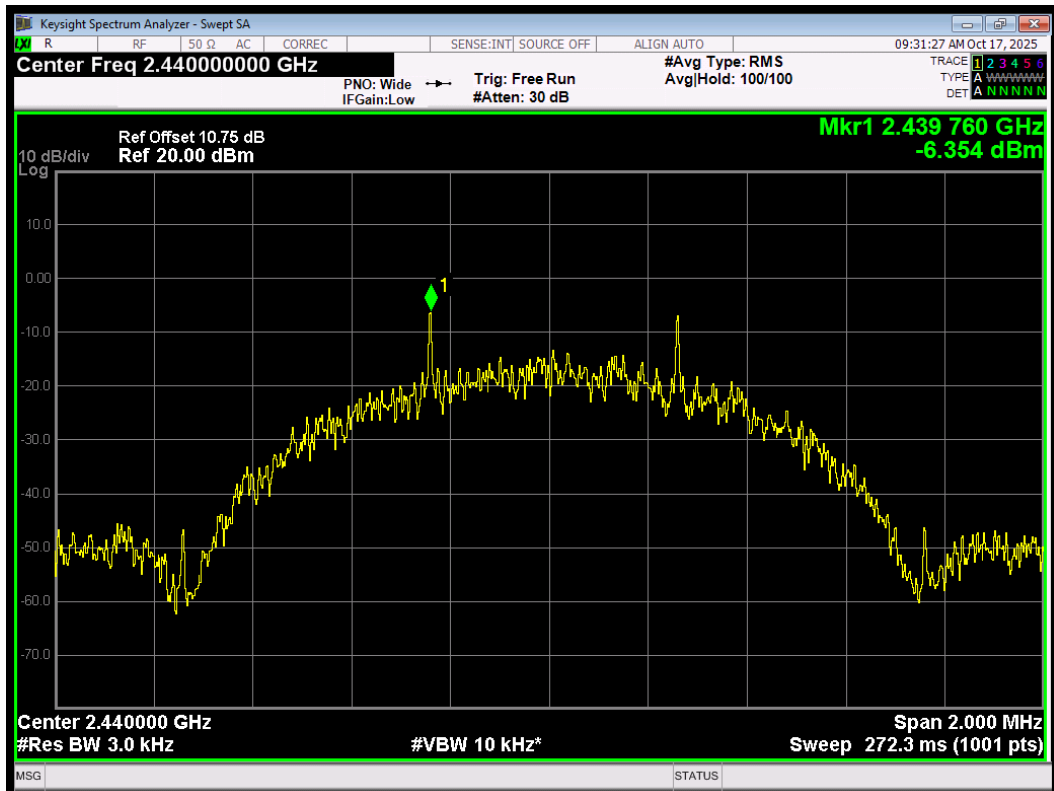
PSD BLE (2M) 2480MHz



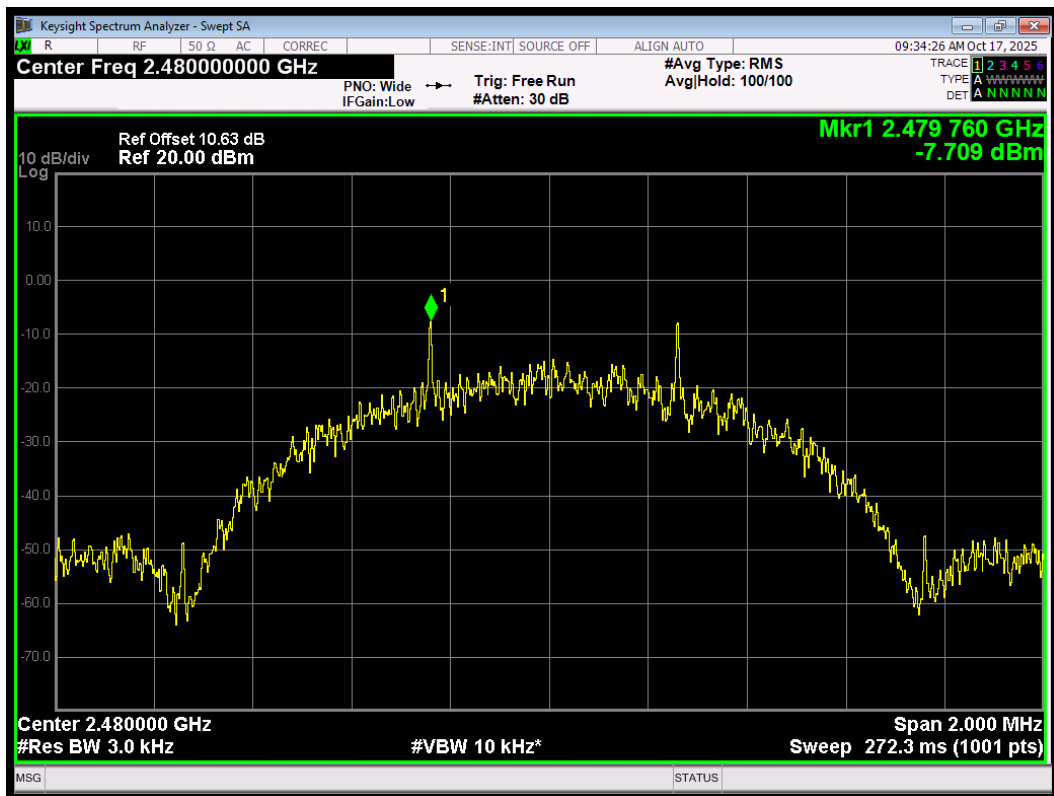
PSD S=2 2402MHz



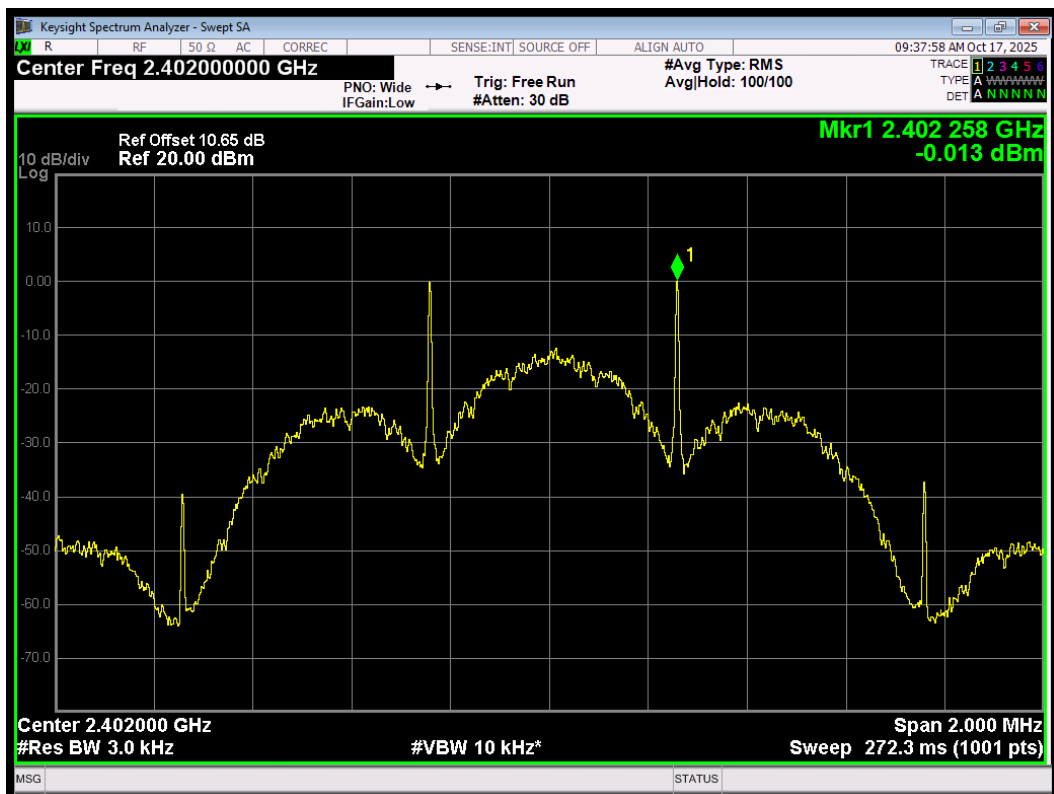
PSD S=2 2440MHz



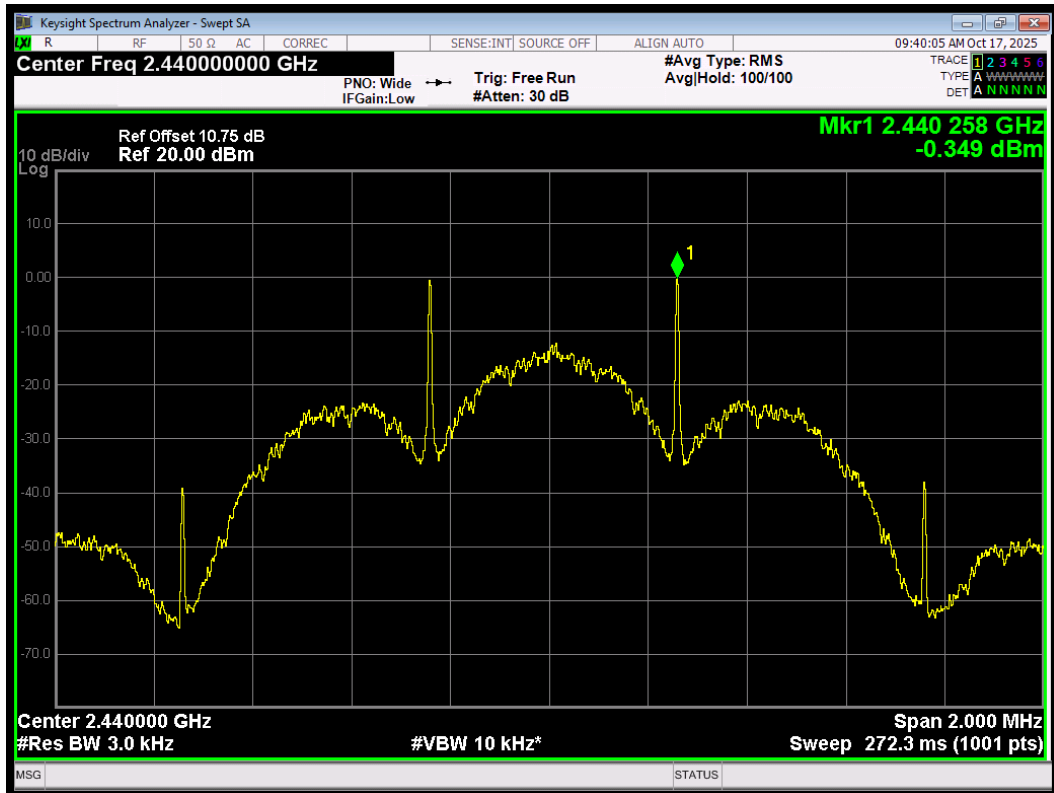
PSD S=2 2480MHz



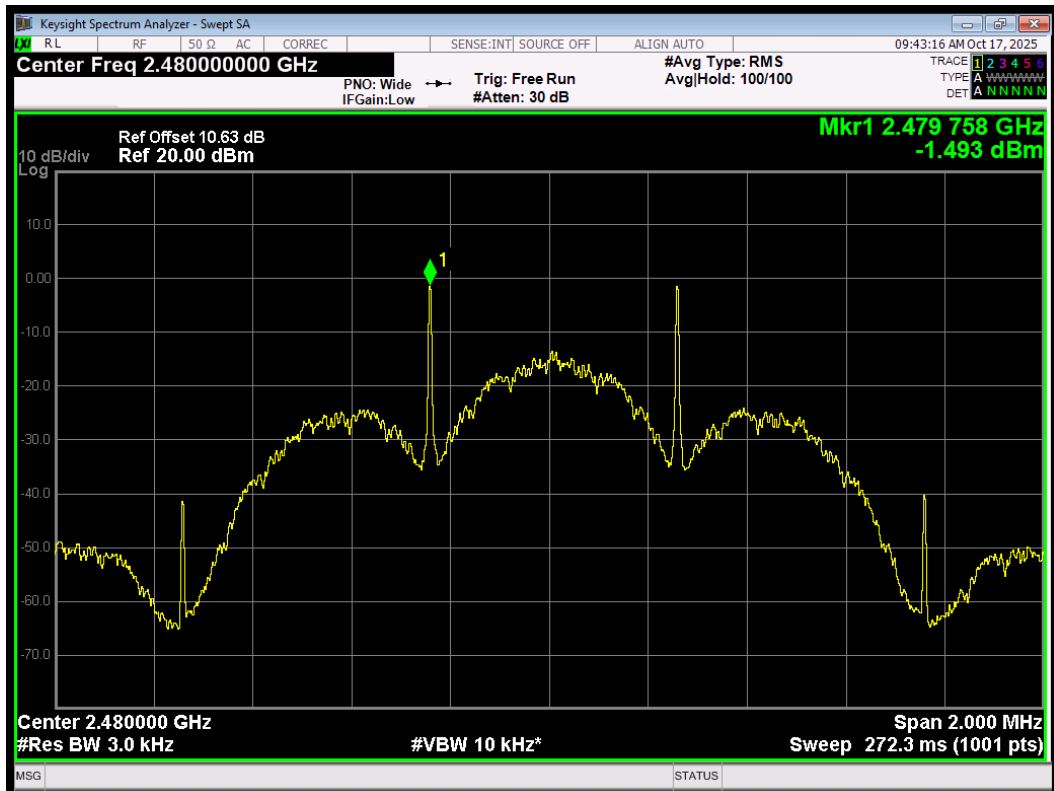
PSD S=8 2402MHz



PSD S=8 2440MHz

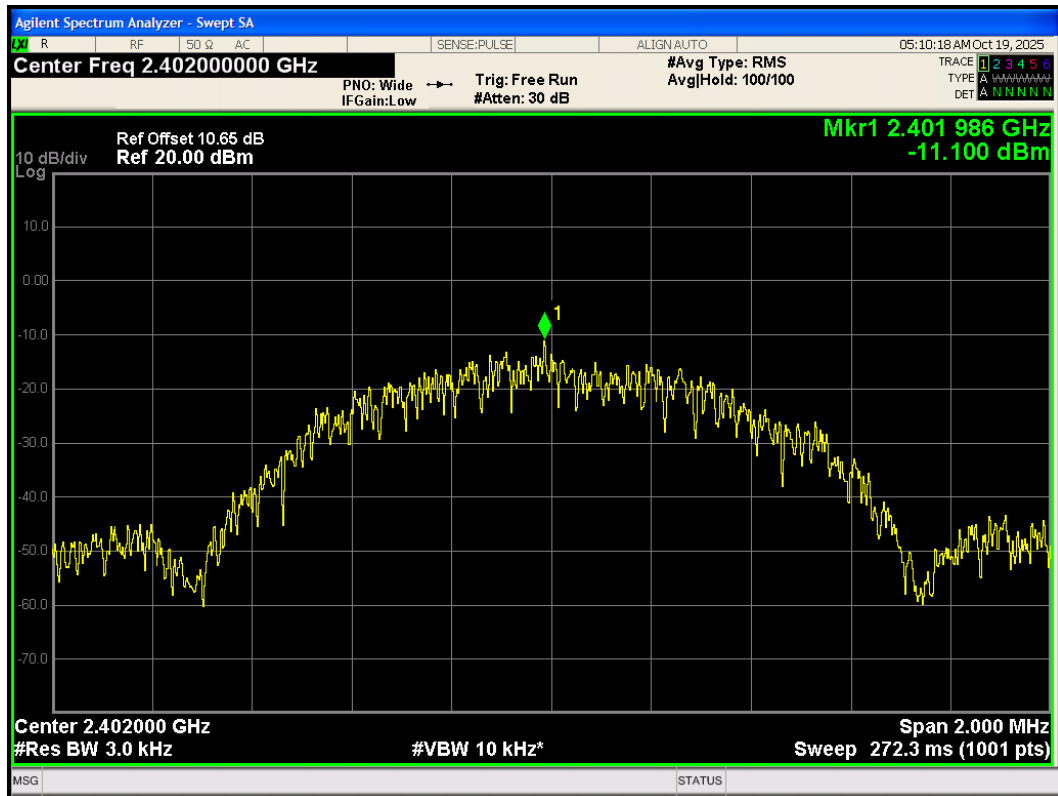


PSD S=8 2480MHz

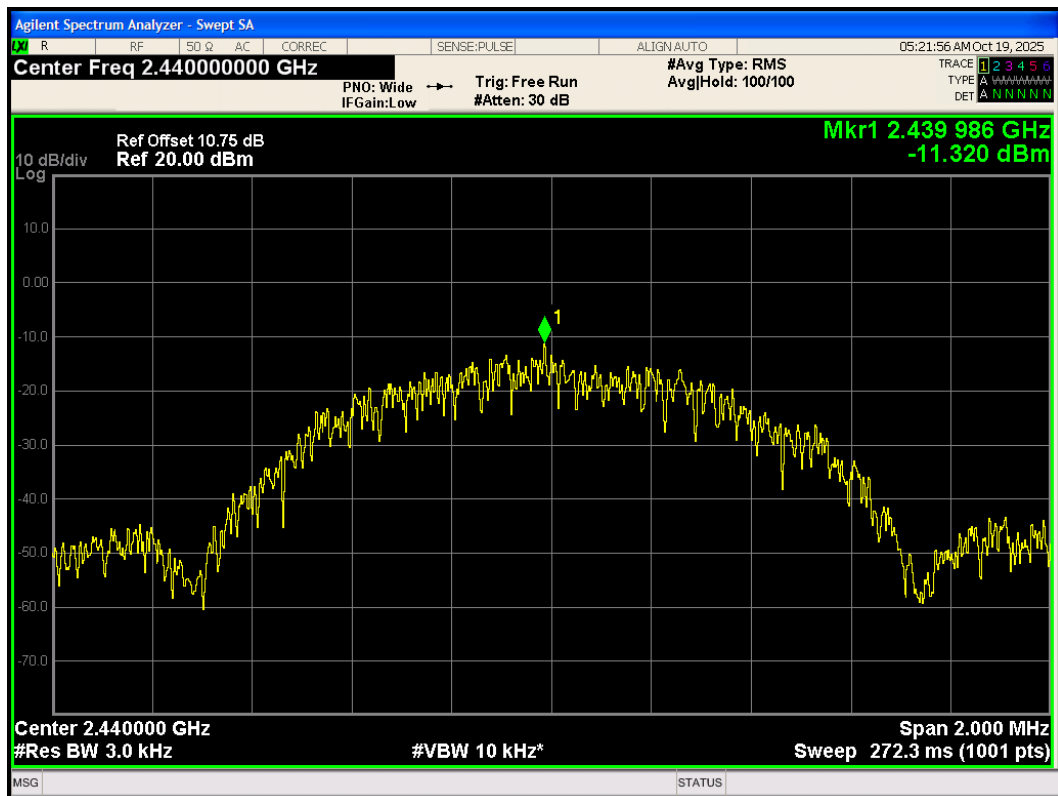


Antenna 2

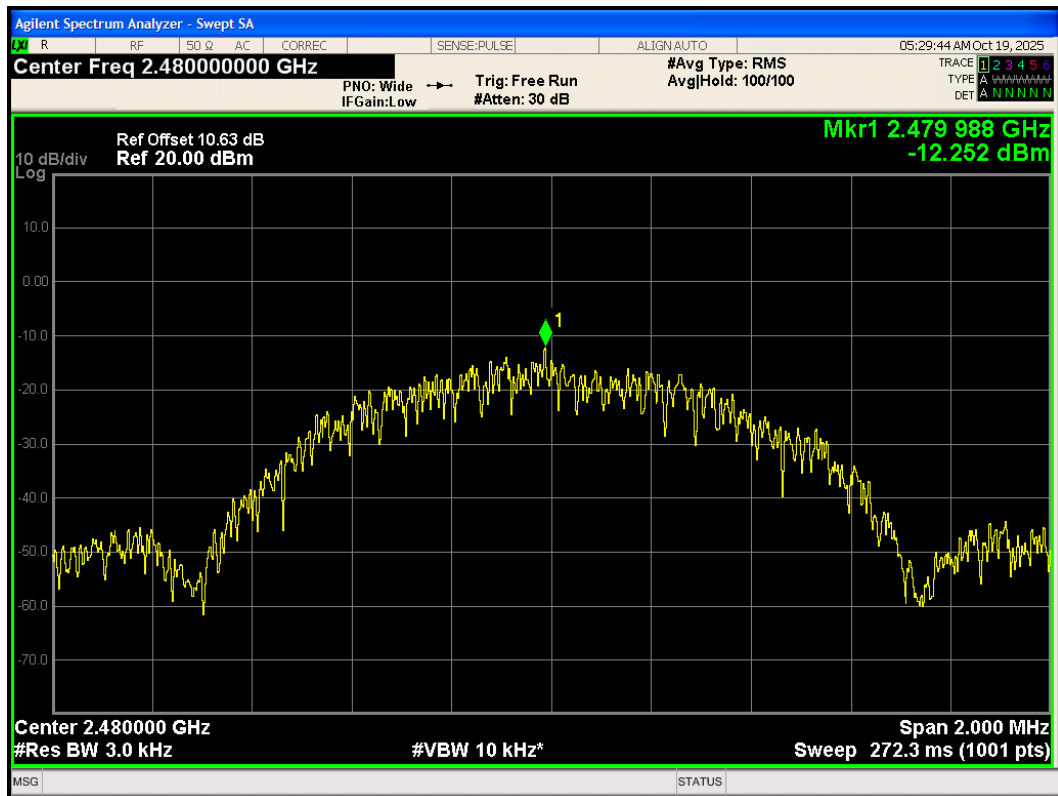
PSD BLE (1M) 2402MHz



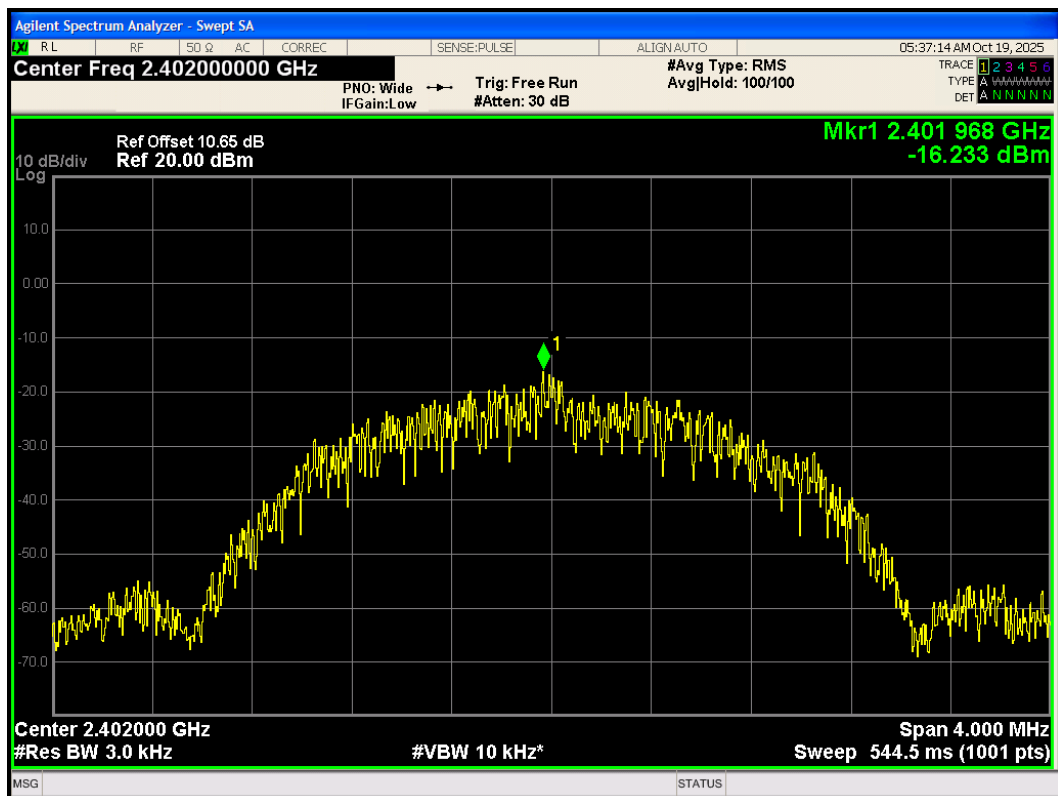
PSD BLE (1M) 2440MHz



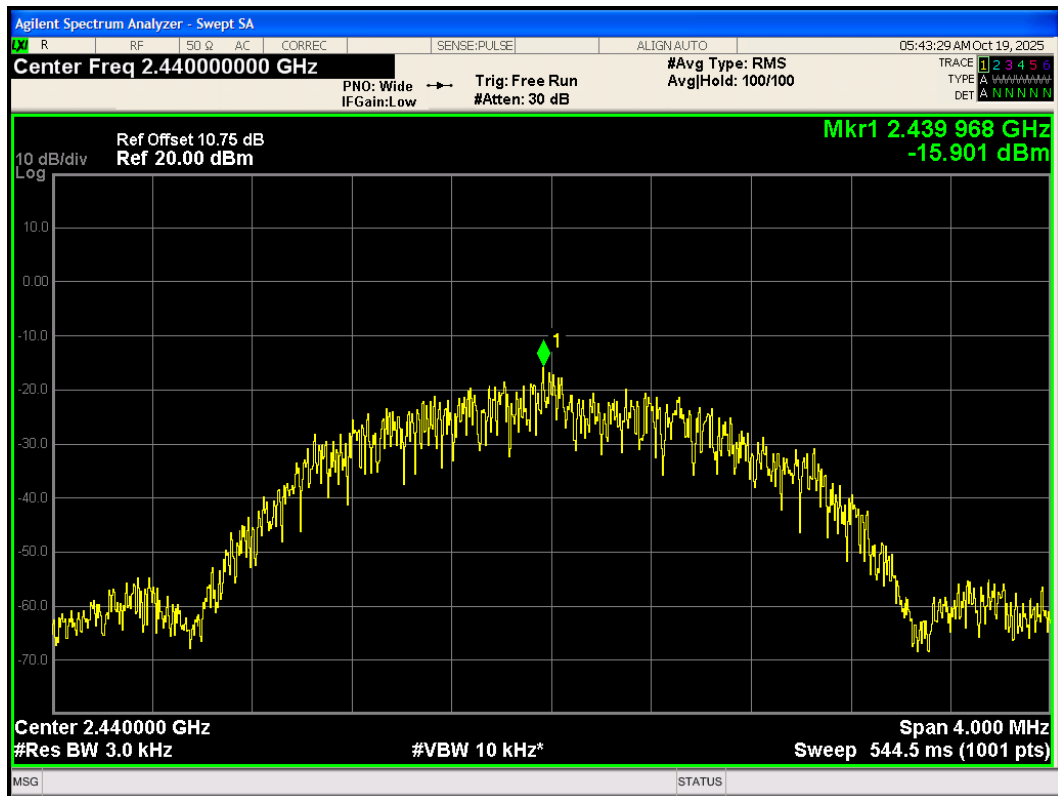
PSD BLE (1M) 2480MHz



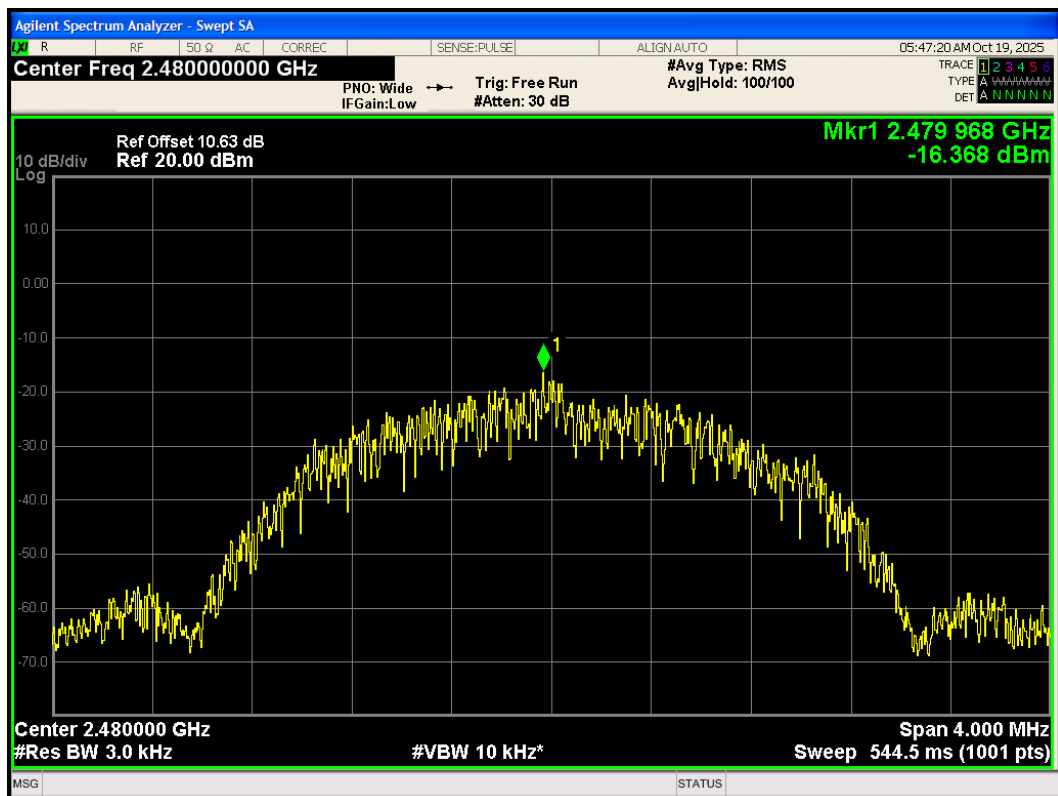
PSD BLE (2M) 2402MHz



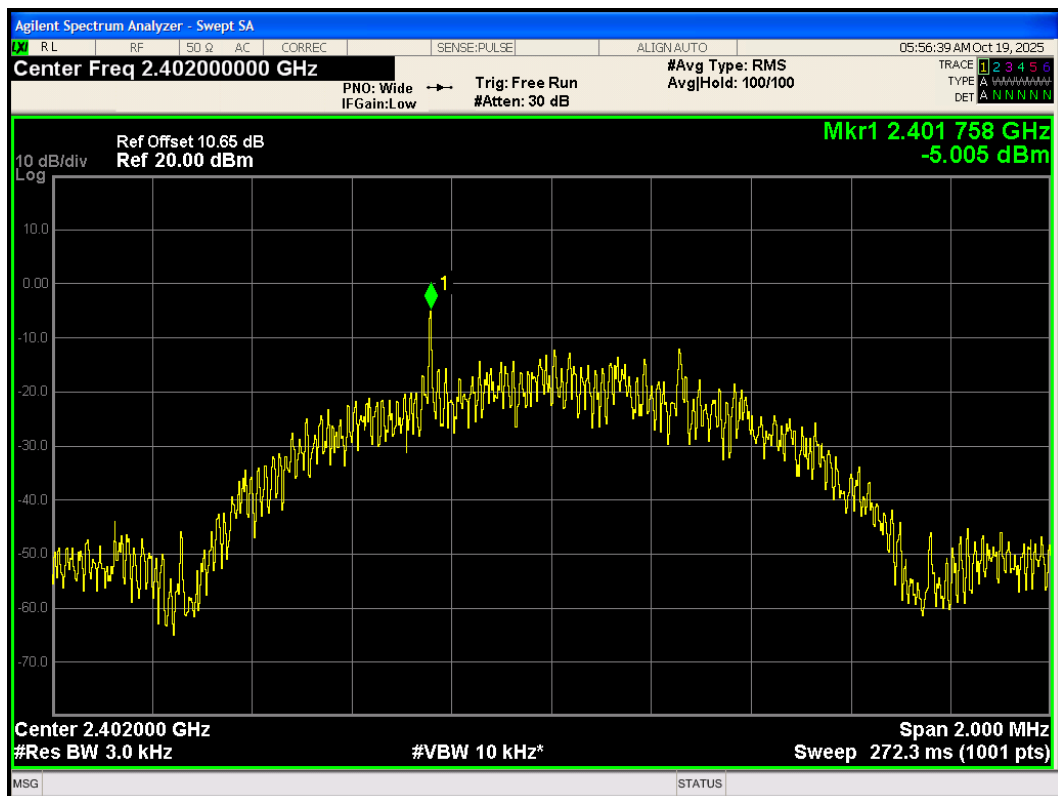
PSD BLE (2M) 2440MHz



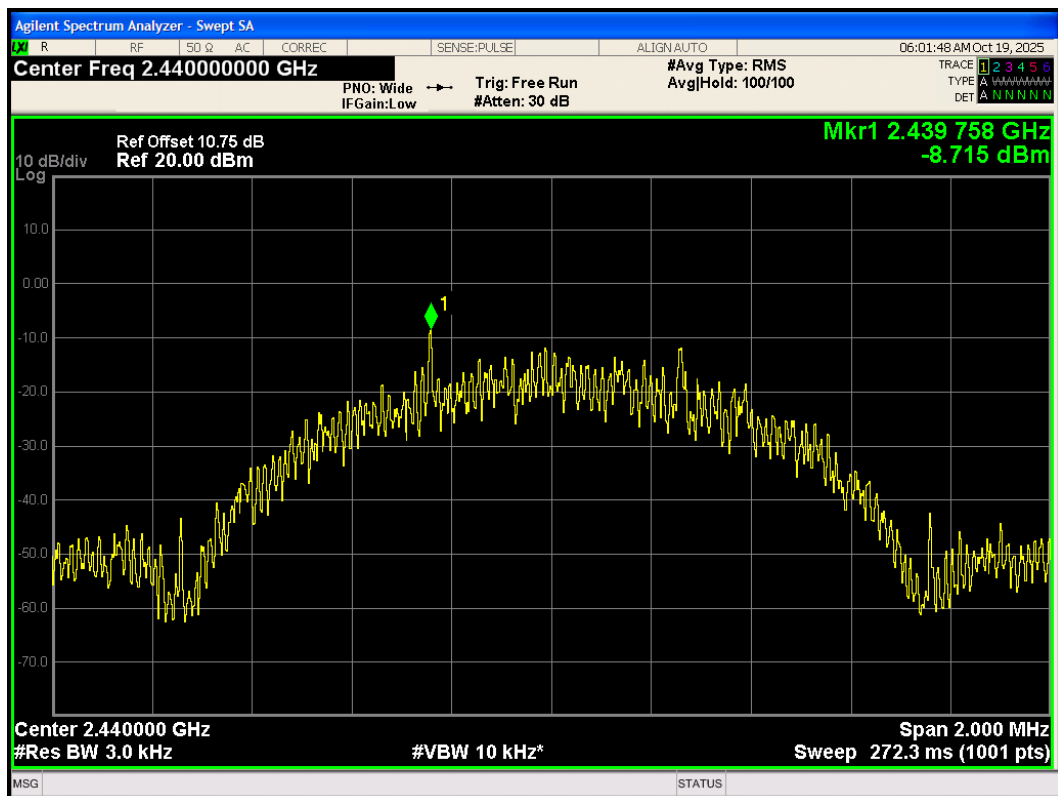
PSD BLE (2M) 2480MHz



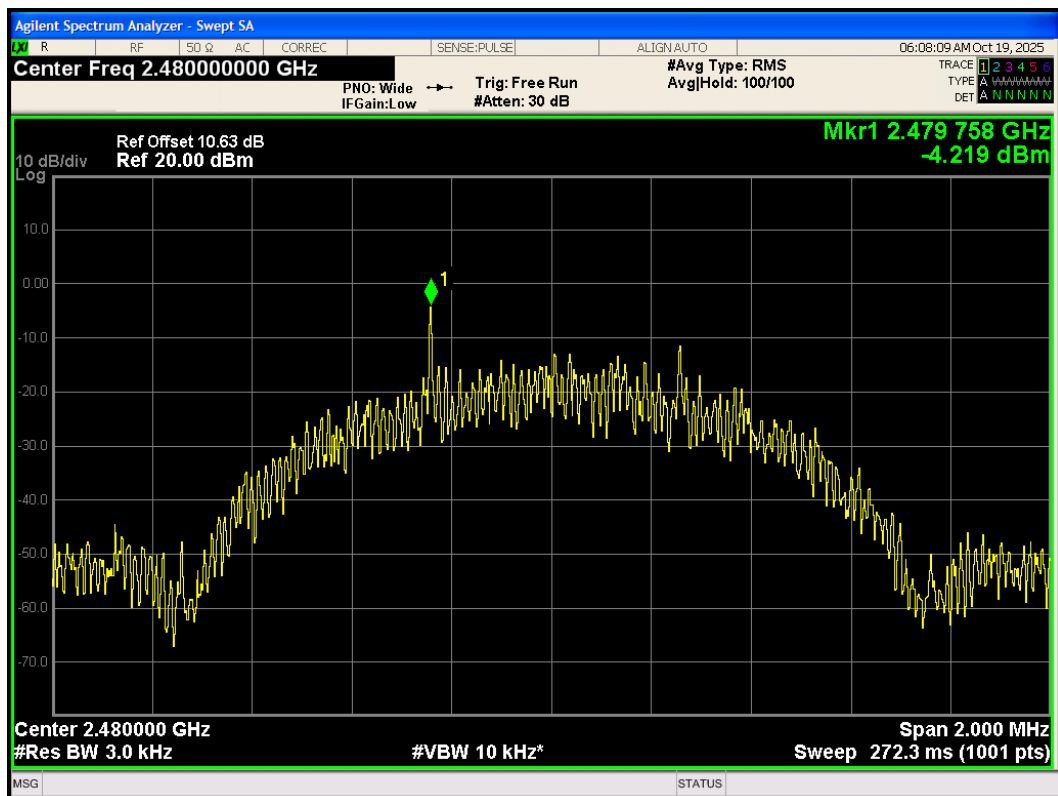
PSD S=2 2402MHz



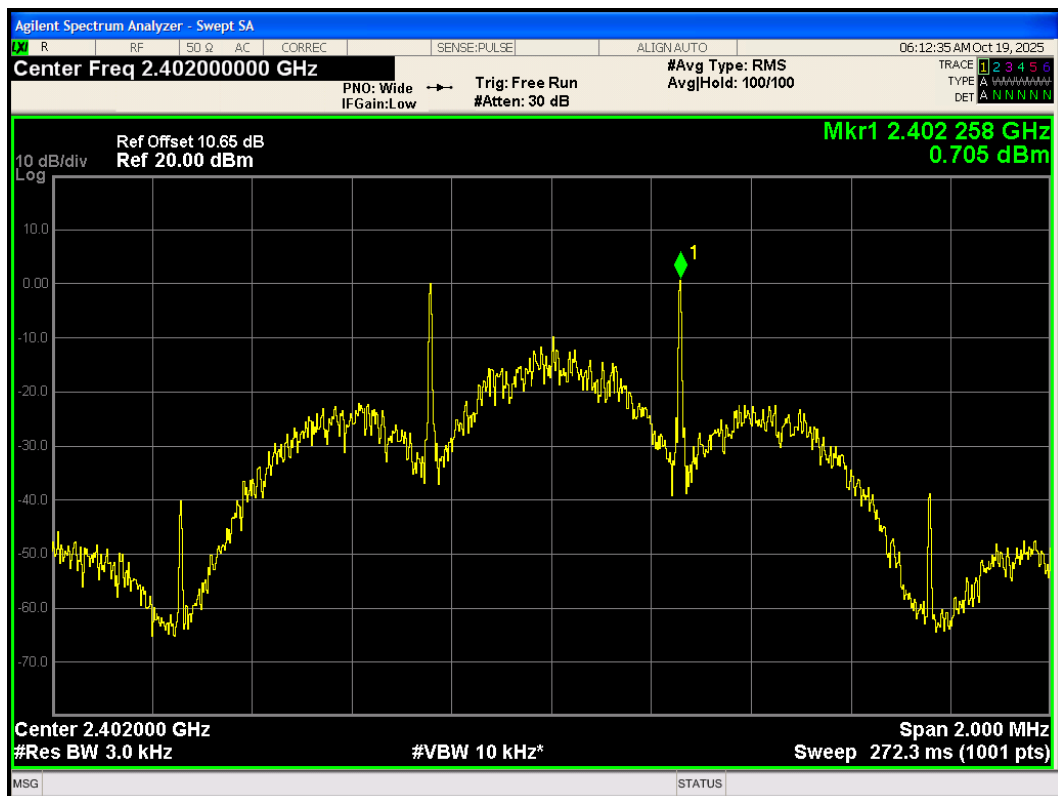
PSD S=2 2440MHz



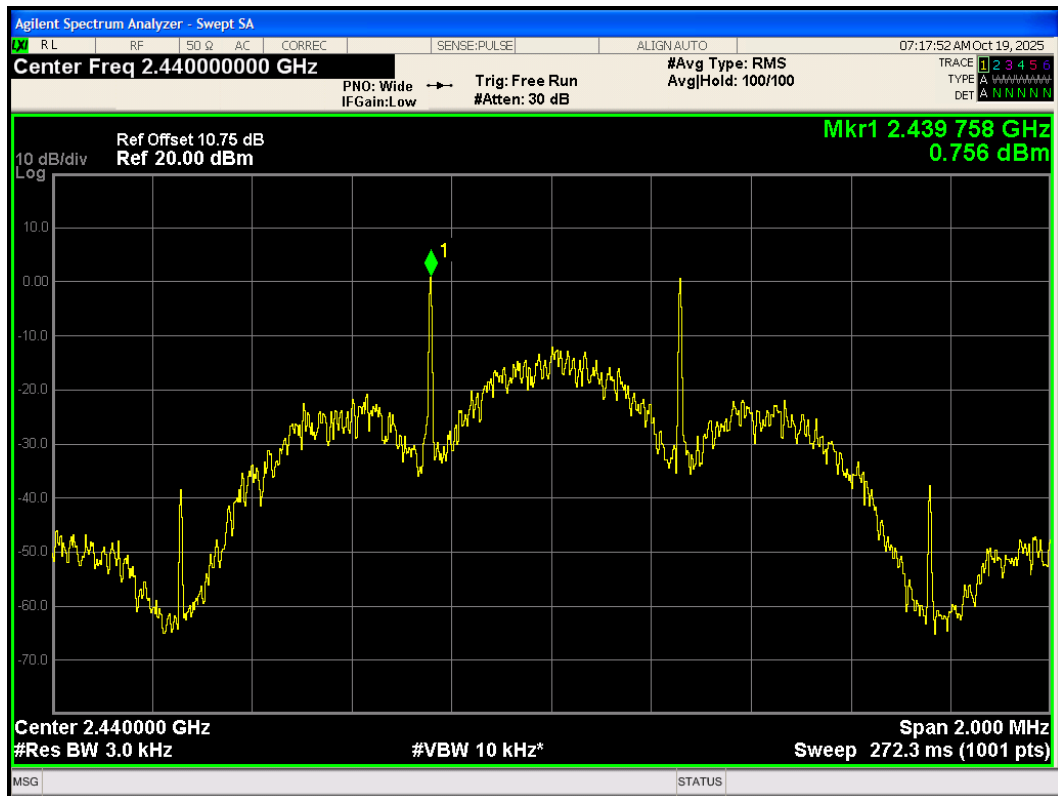
PSD S=2 2480MHz



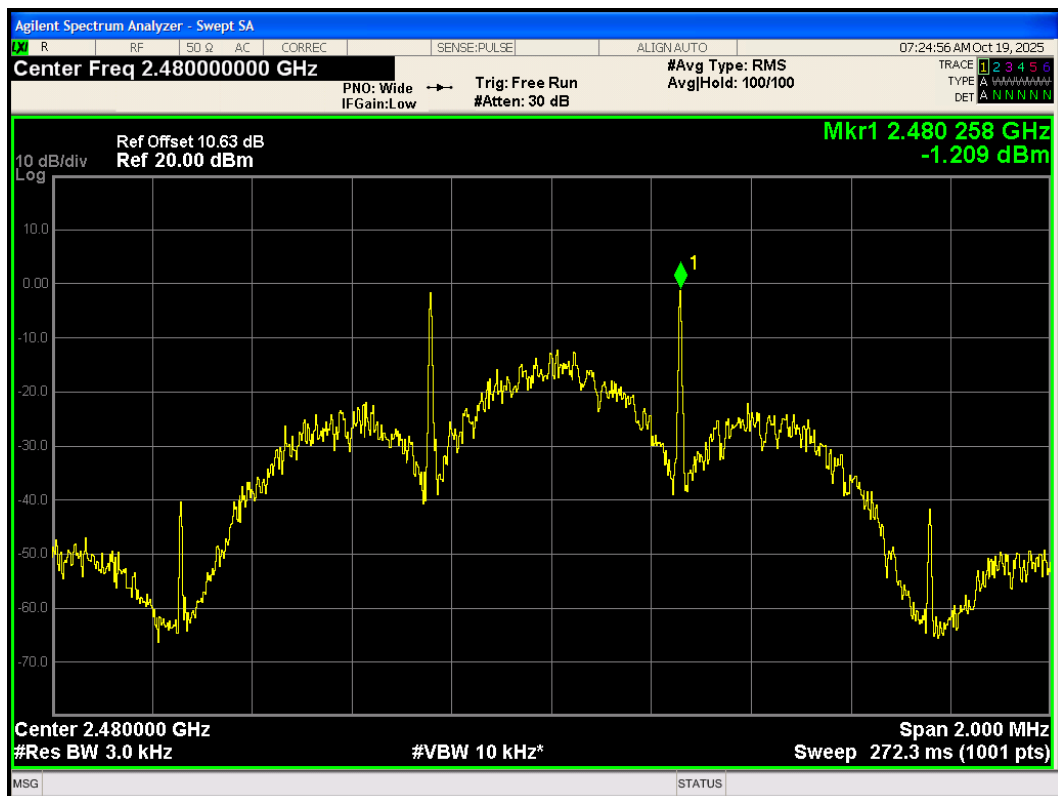
PSD S=8 2402MHz



PSD S=8 2440MHz

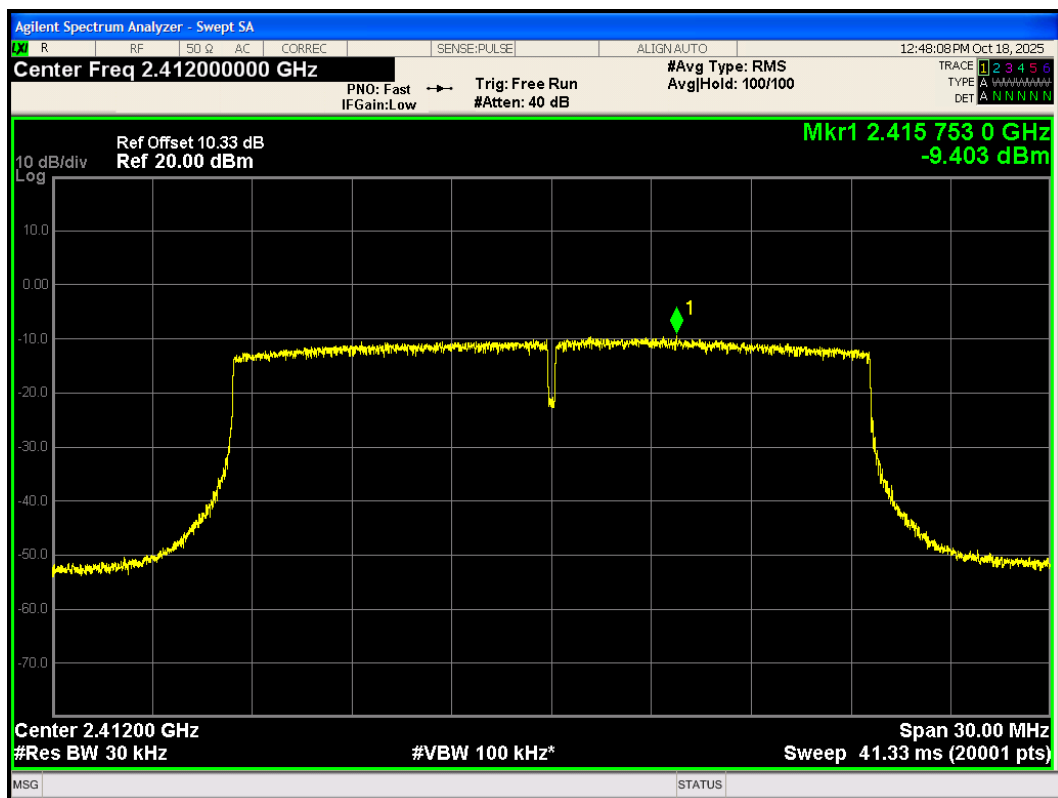


PSD S=8 2480MHz

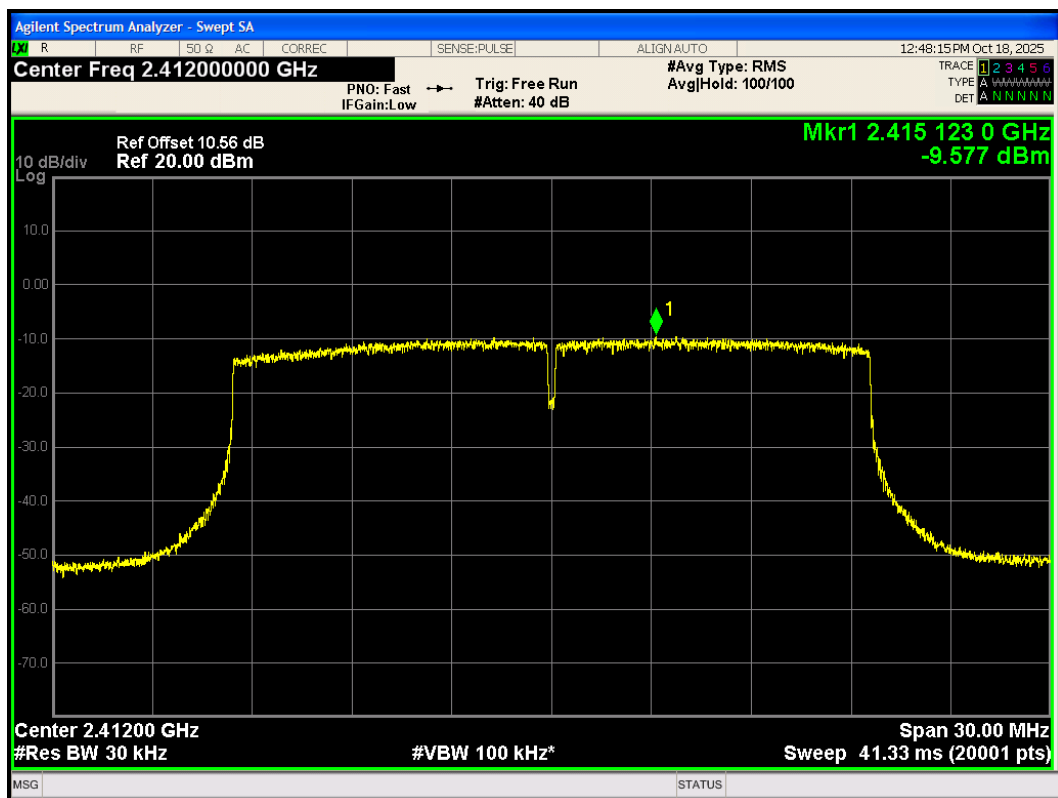


MIMO/Beamforming

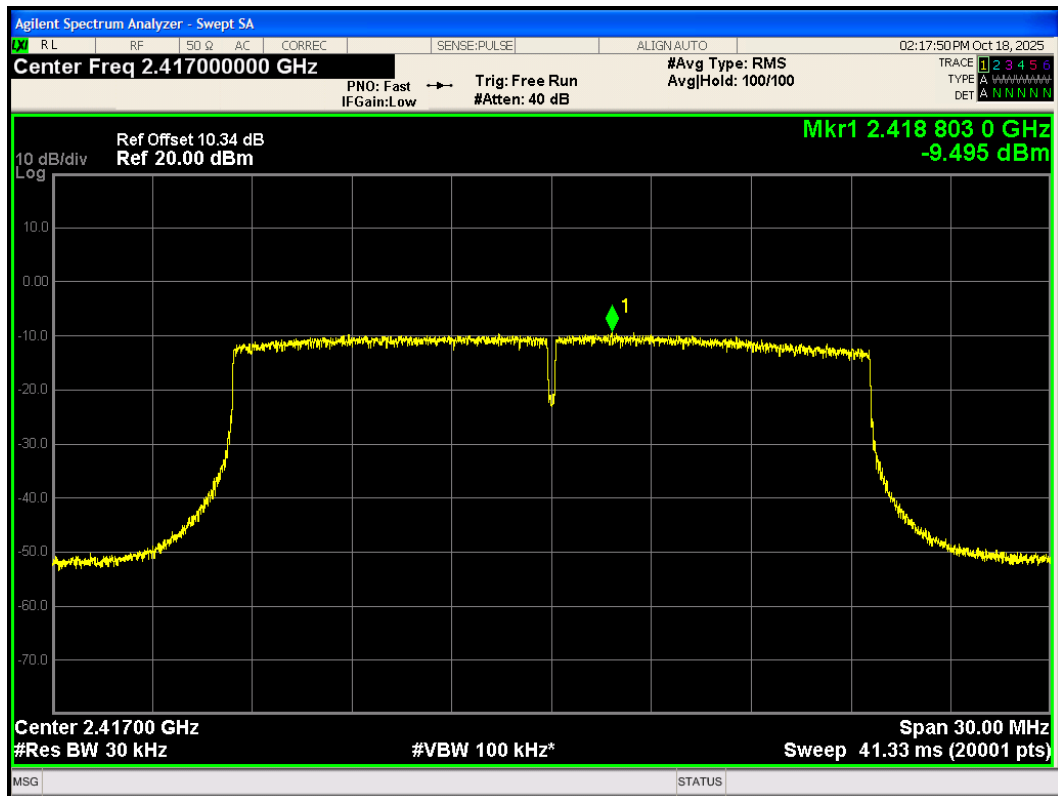
PSD 802.11ax(HE20) 2412MHz Ant1



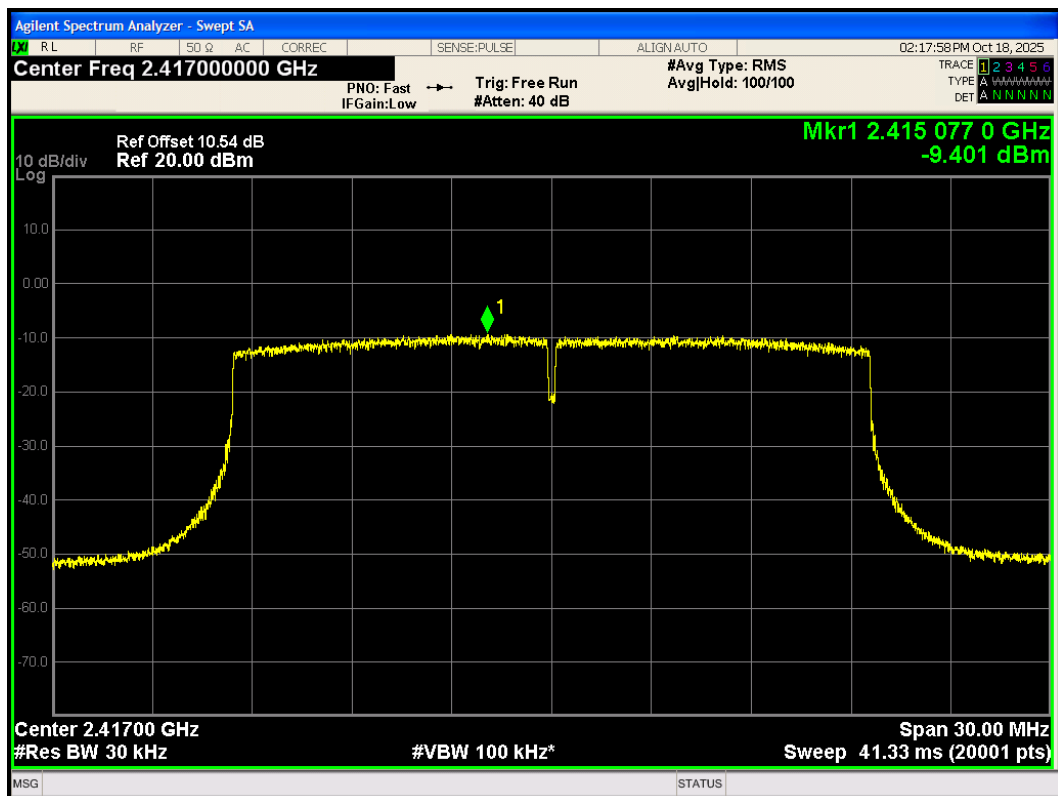
PSD 802.11ax(HE20) 2412MHz Ant2



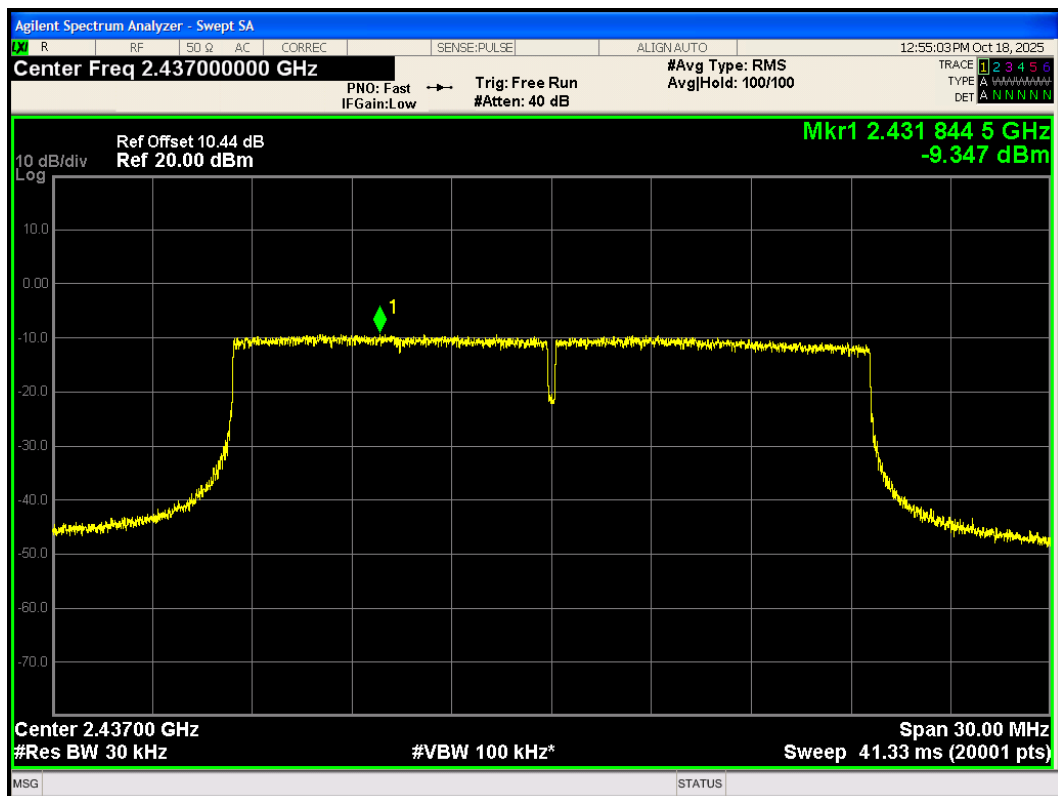
PSD 802.11ax(HE20) 2417MHz Ant1



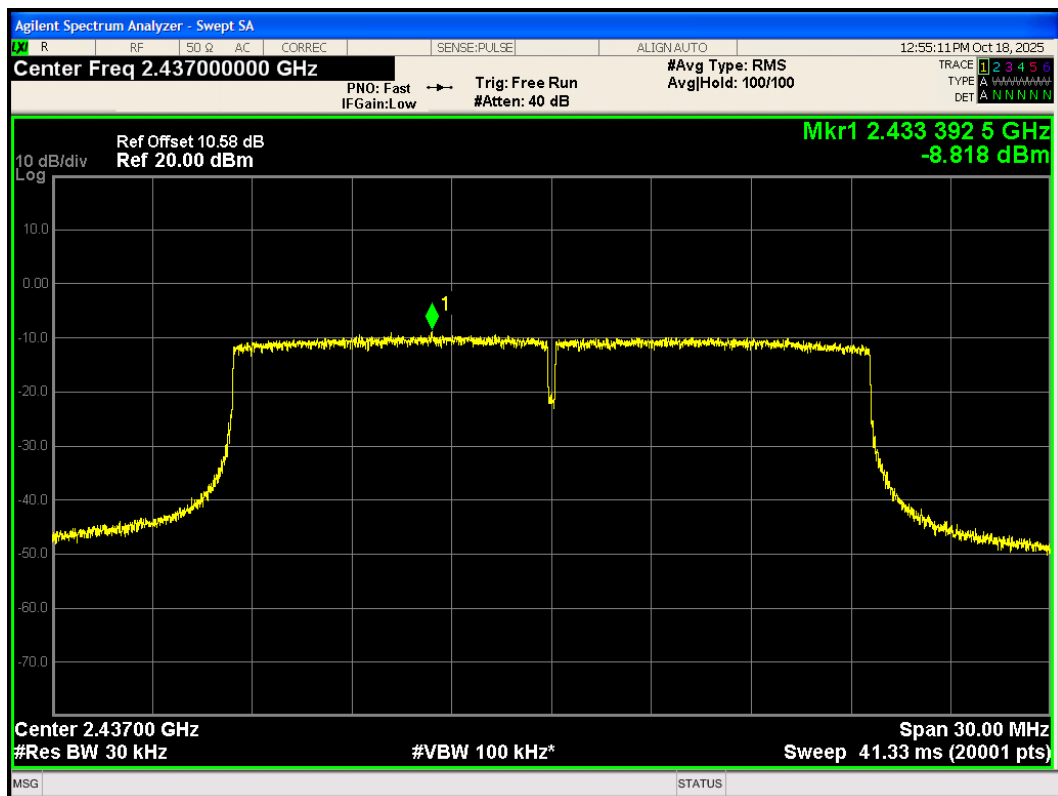
PSD 802.11ax(HE20) 2417MHz Ant2



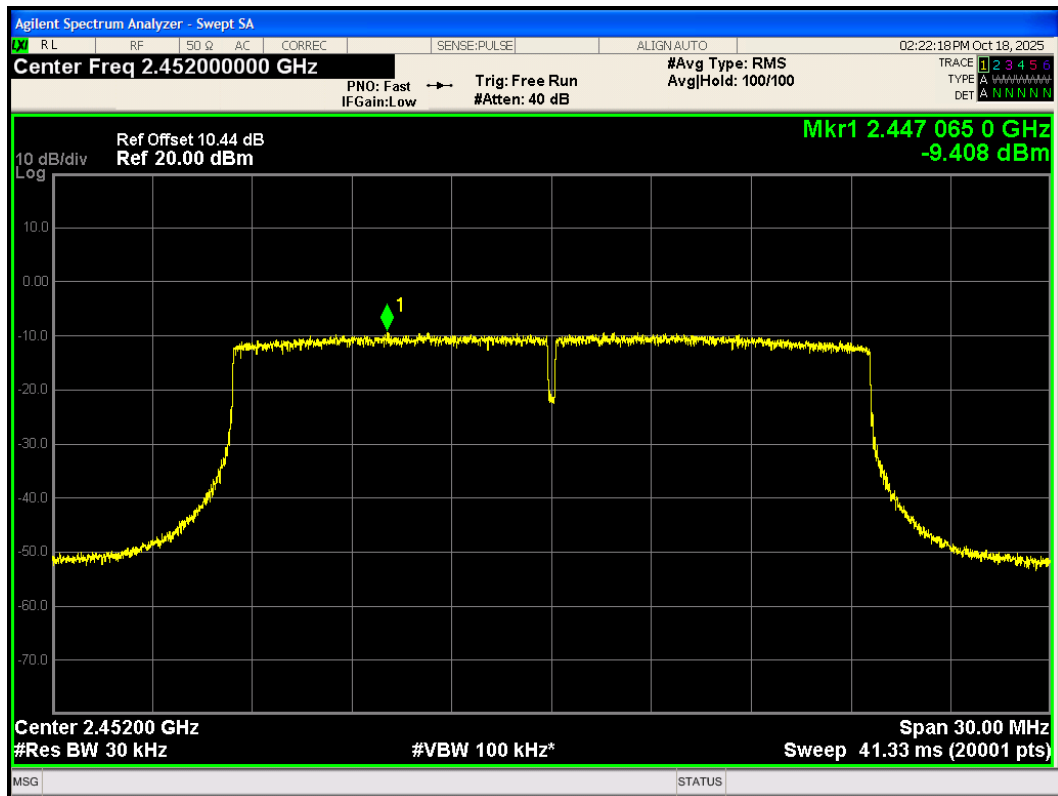
PSD 802.11ax(HE20) 2437MHz Ant1



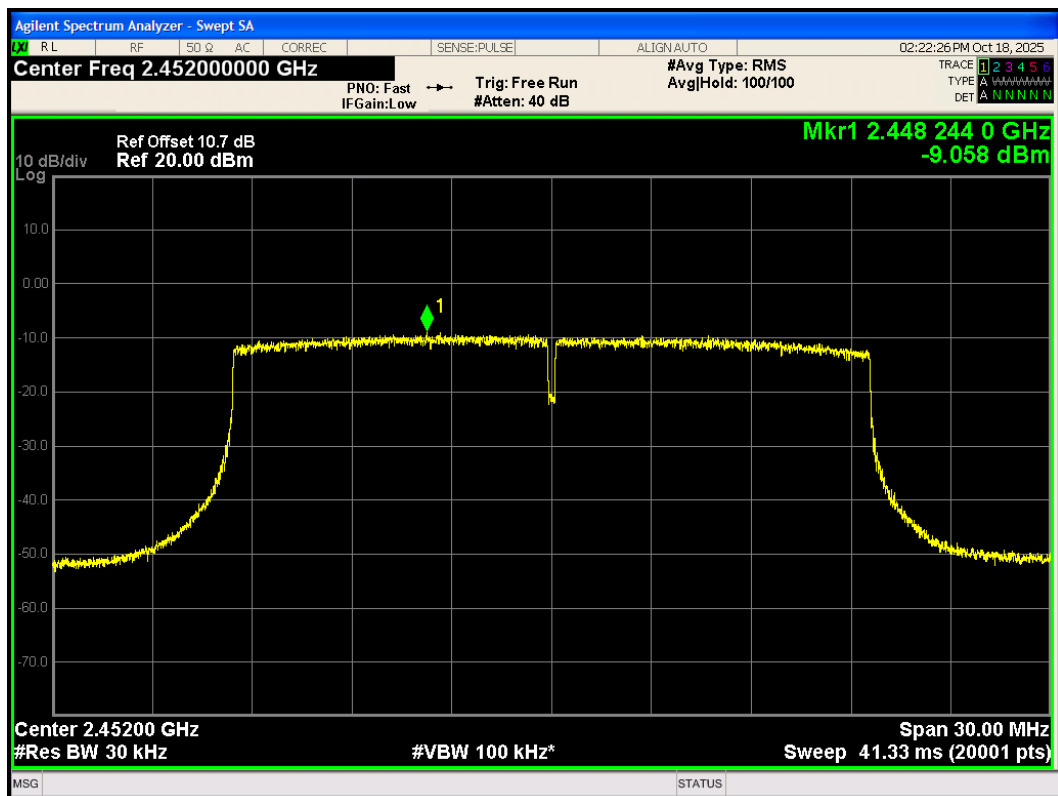
PSD 802.11ax(HE20) 2437MHz Ant2



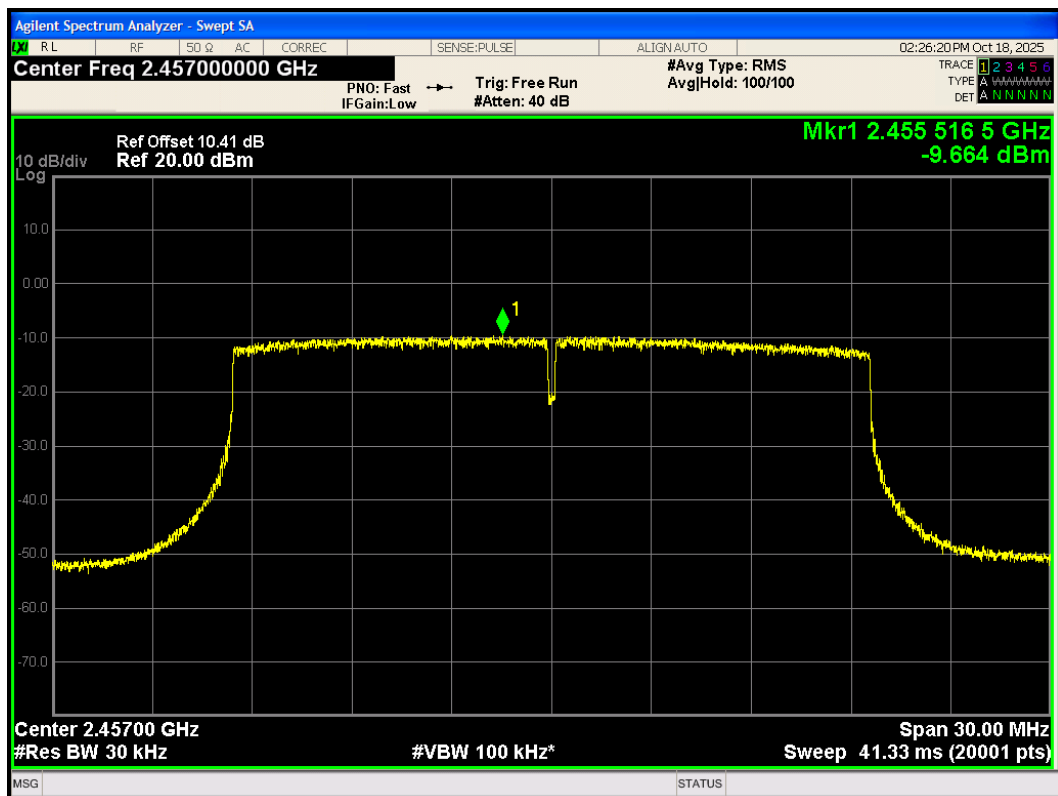
PSD 802.11ax(HE20) 2452MHz Ant1



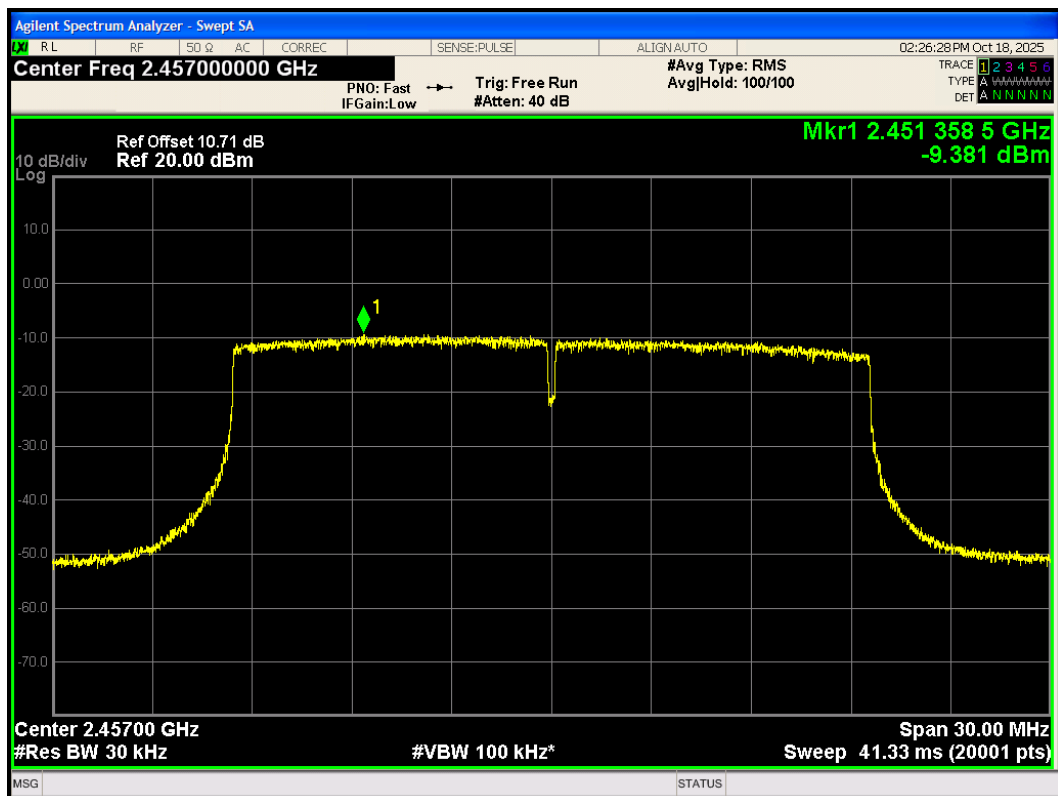
PSD 802.11ax(HE20) 2452MHz Ant2



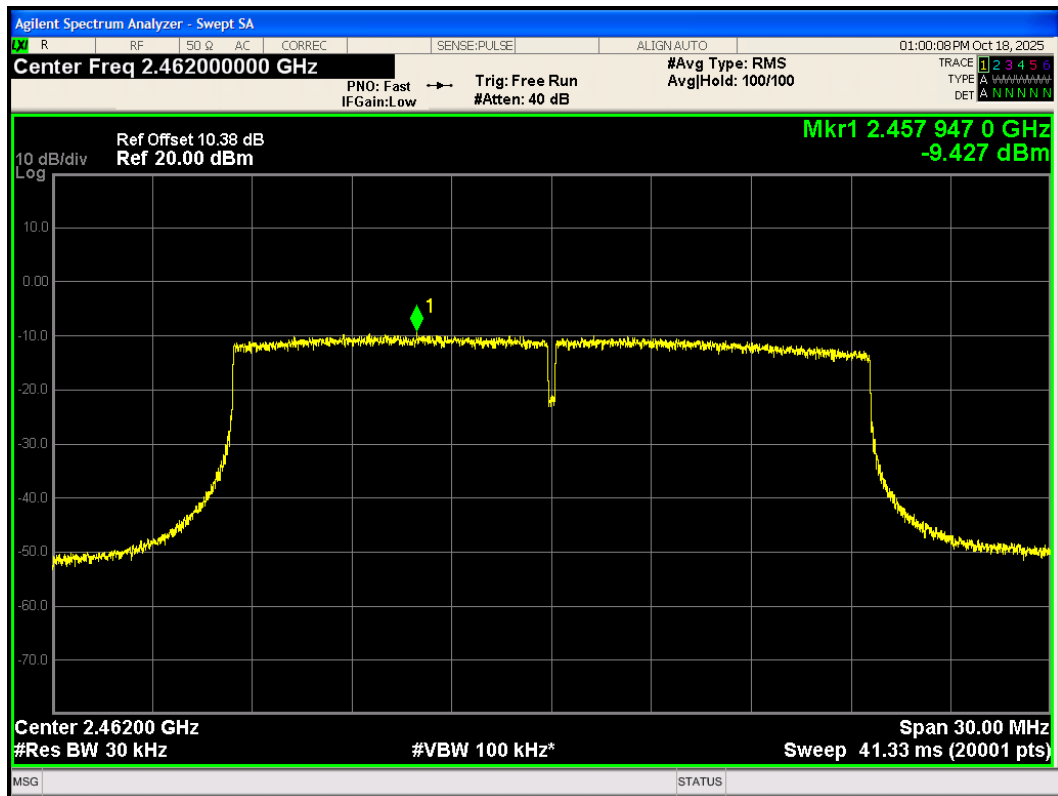
PSD 802.11ax(HE20) 2457MHz Ant1



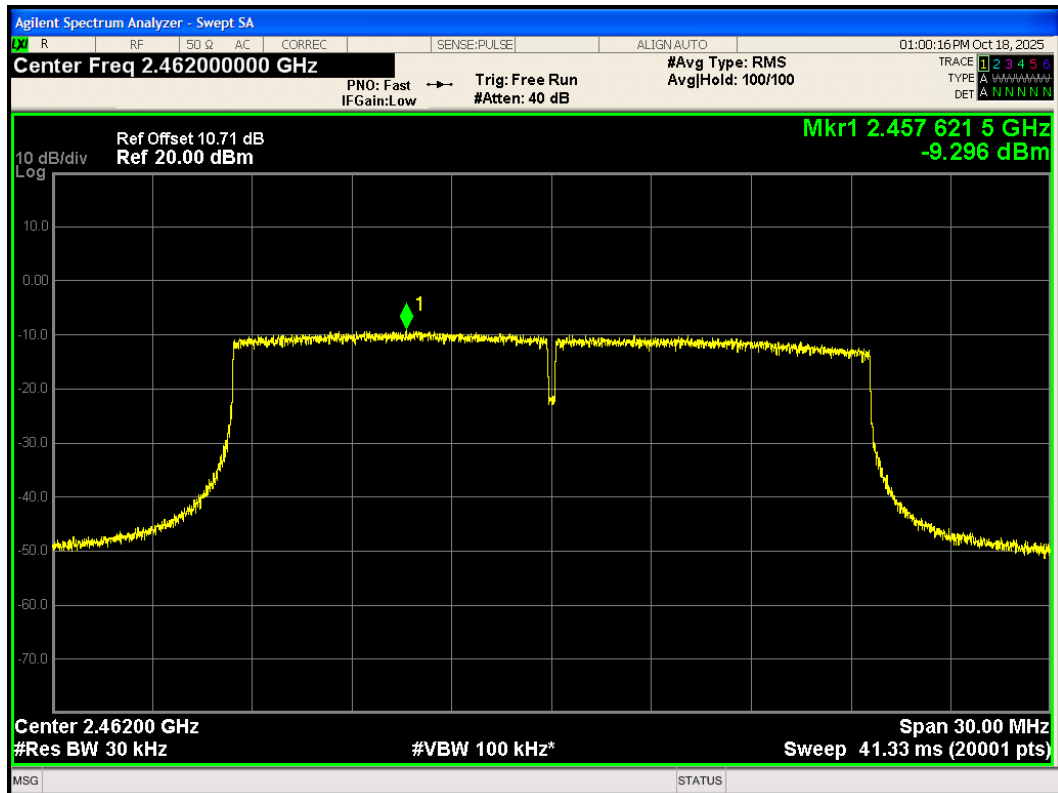
PSD 802.11ax(HE20) 2457MHz Ant2



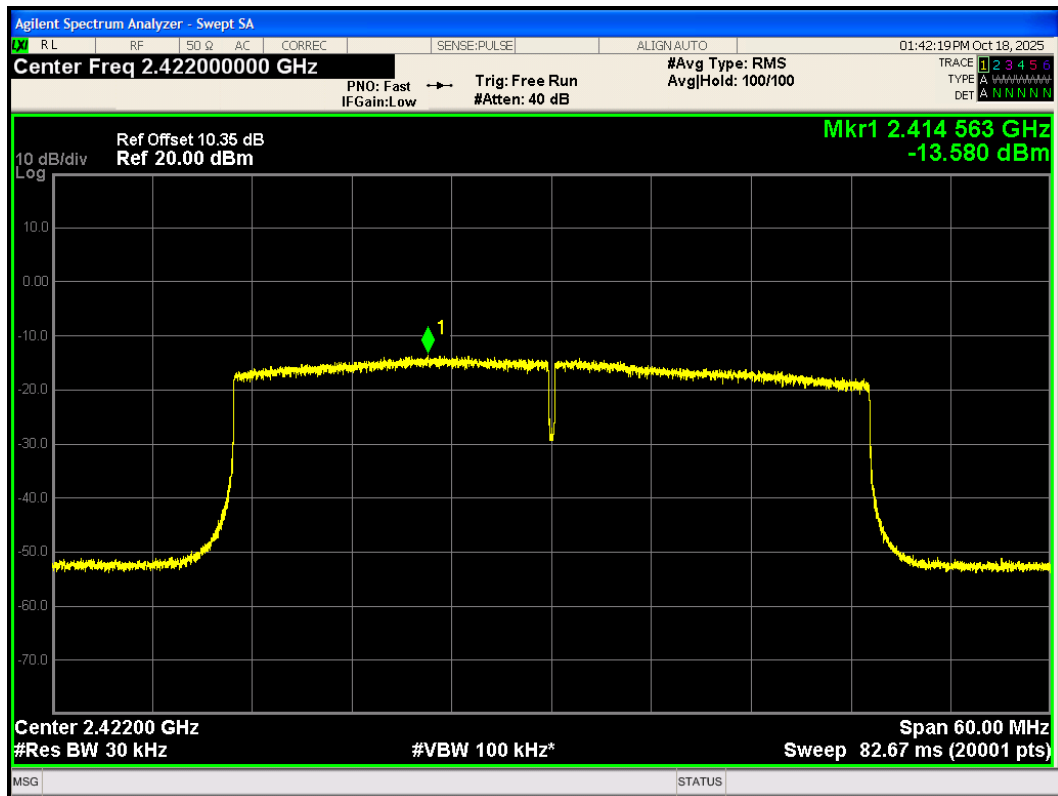
PSD 802.11ax(HE20) 2462MHz Ant1



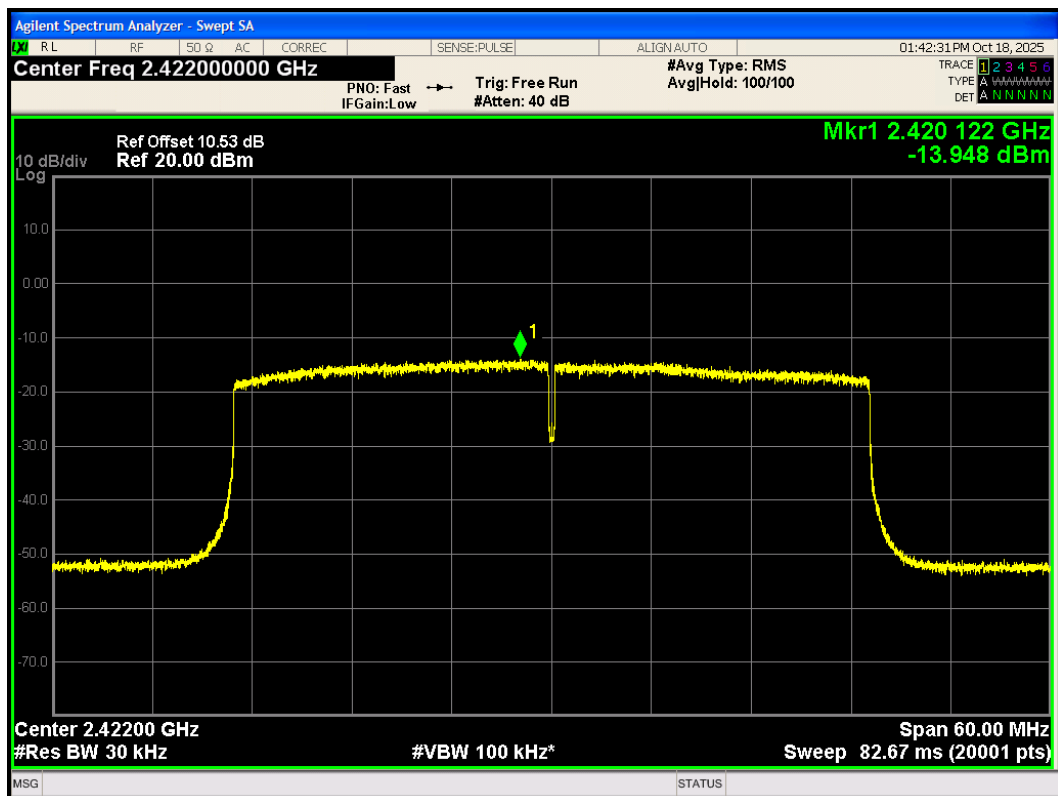
PSD 802.11ax(HE20) 2462MHz Ant2



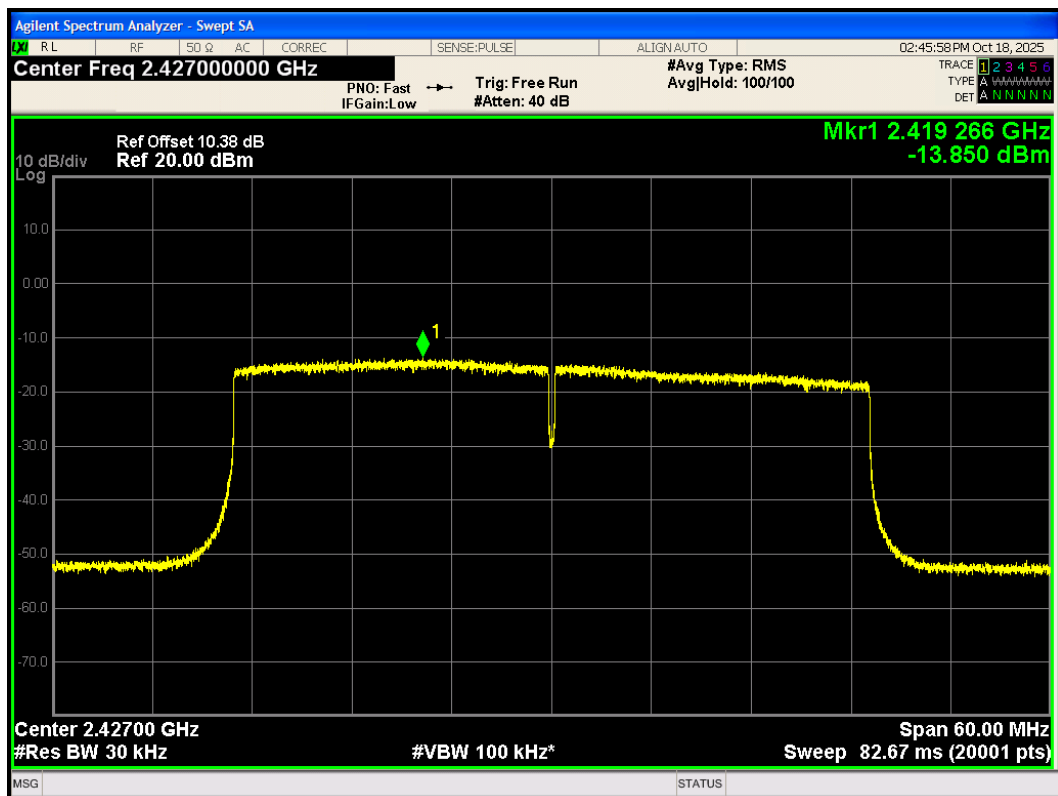
PSD 802.11ax(HE40) 2422MHz Ant1



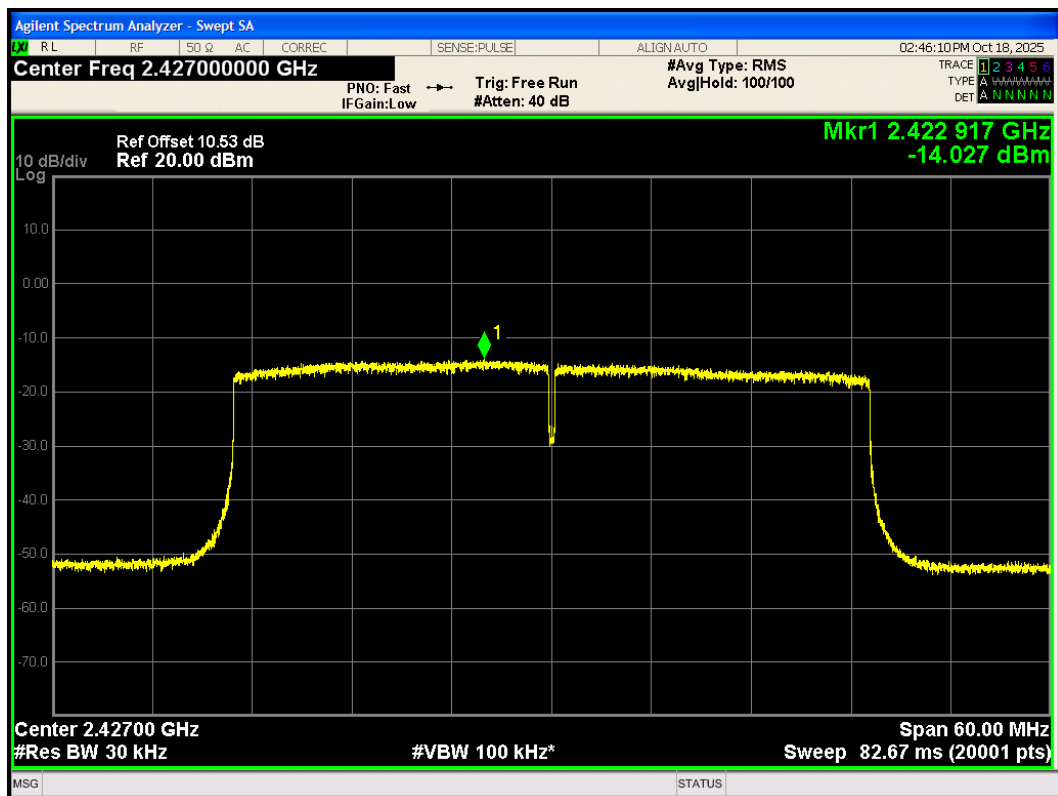
PSD 802.11ax(HE40) 2422MHz Ant2



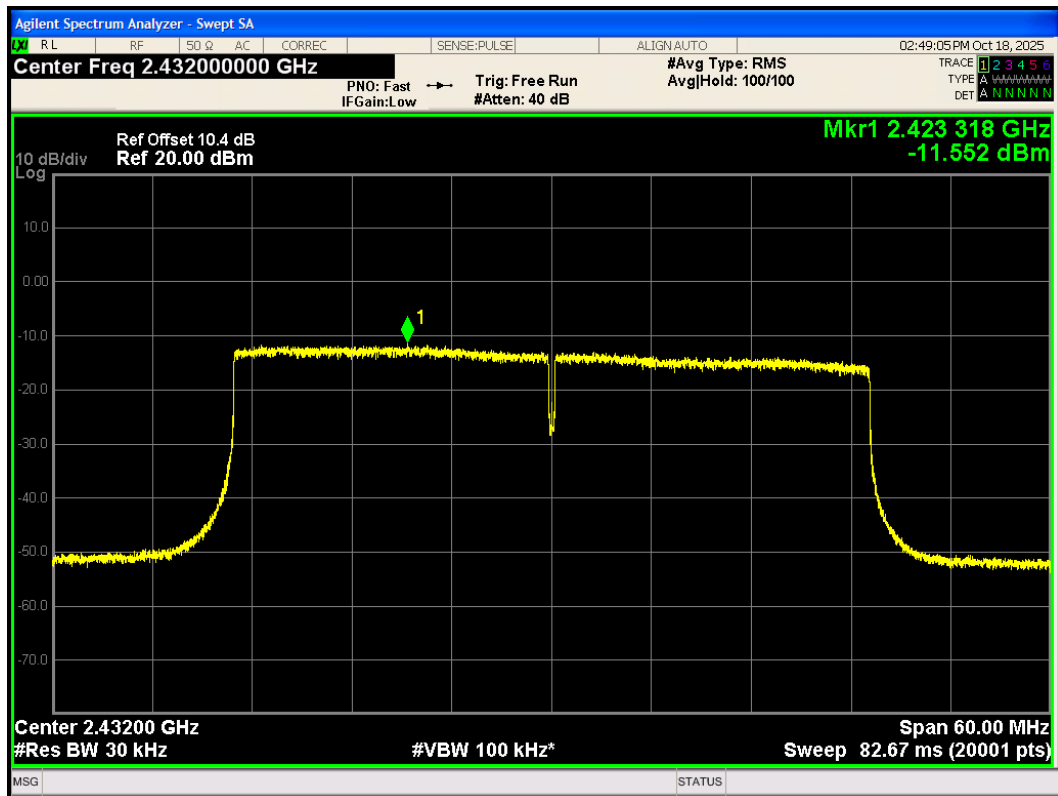
PSD 802.11ax(HE40) 2427MHz Ant1



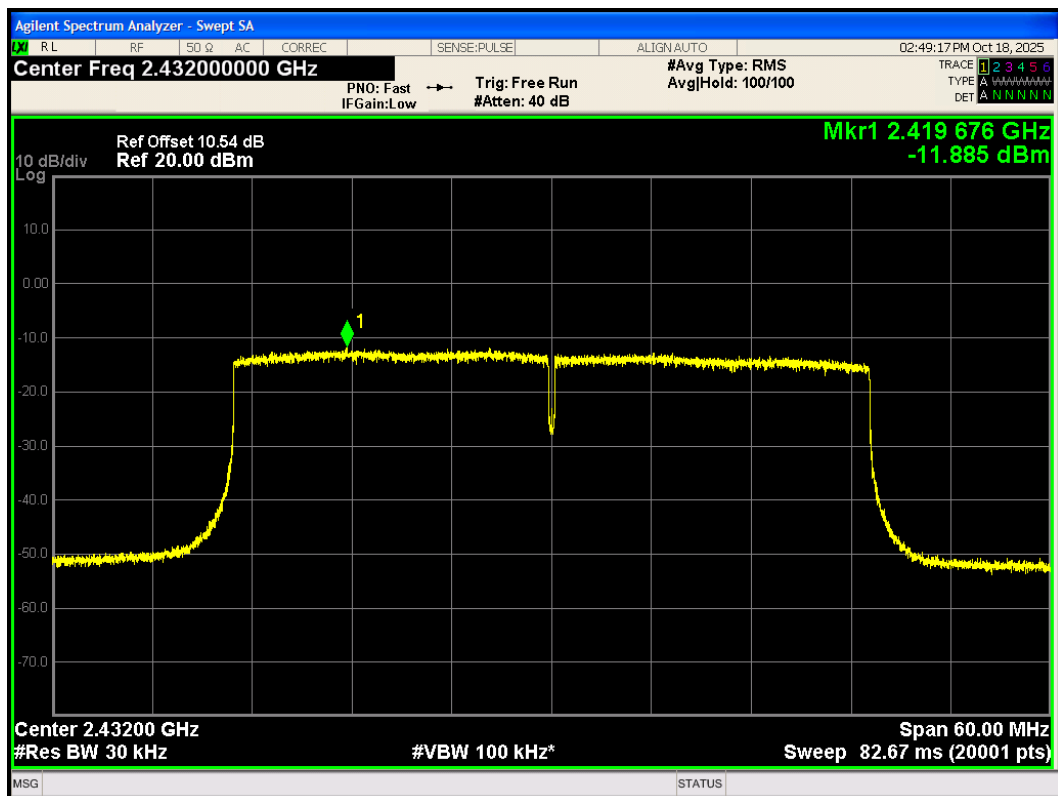
PSD 802.11ax(HE40) 2427MHz Ant2



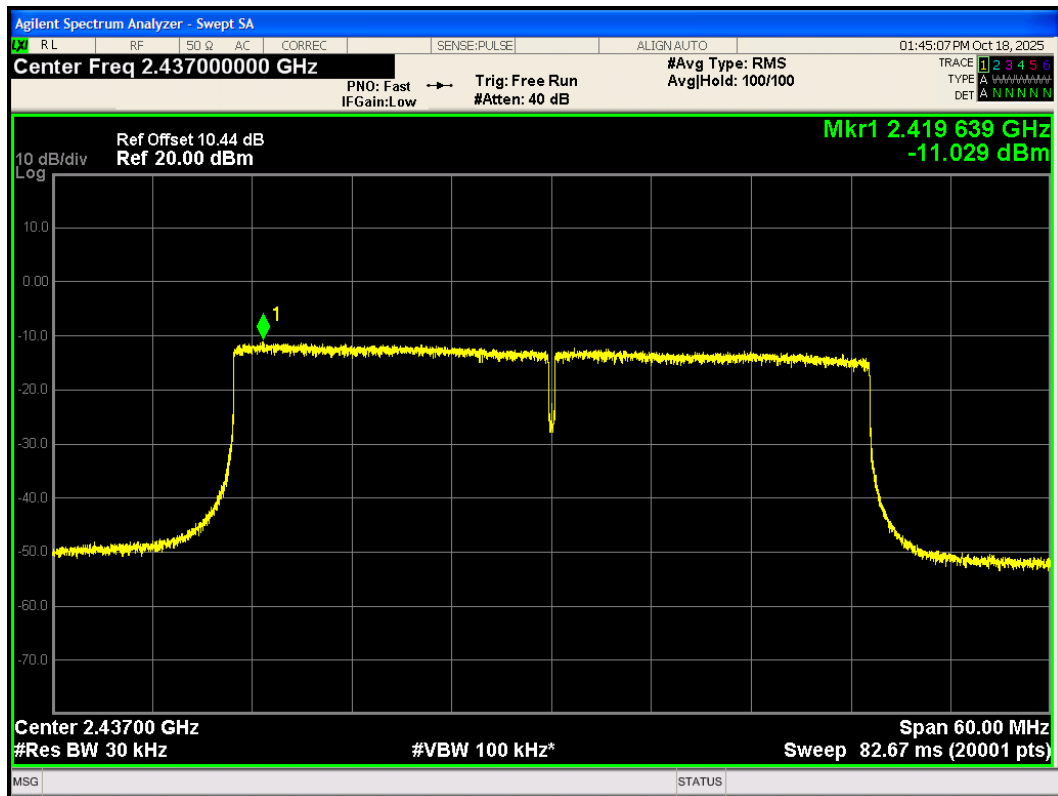
PSD 802.11ax(HE40) 2432MHz Ant1



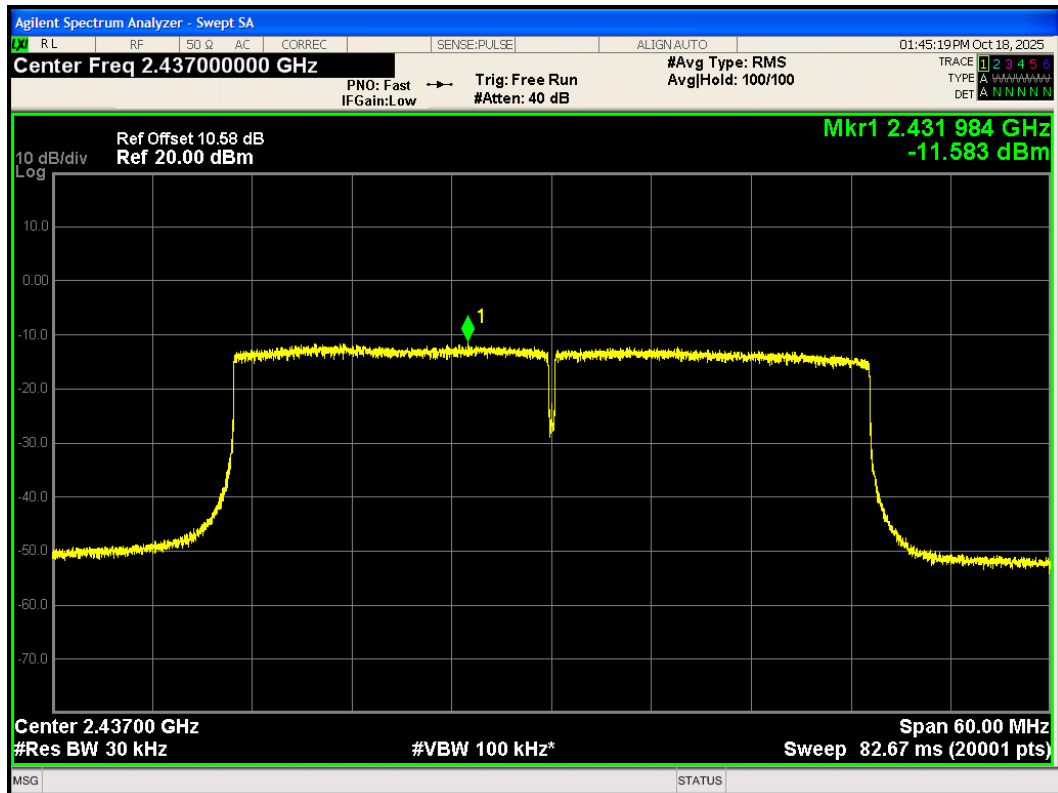
PSD 802.11ax(HE40) 2432MHz Ant2



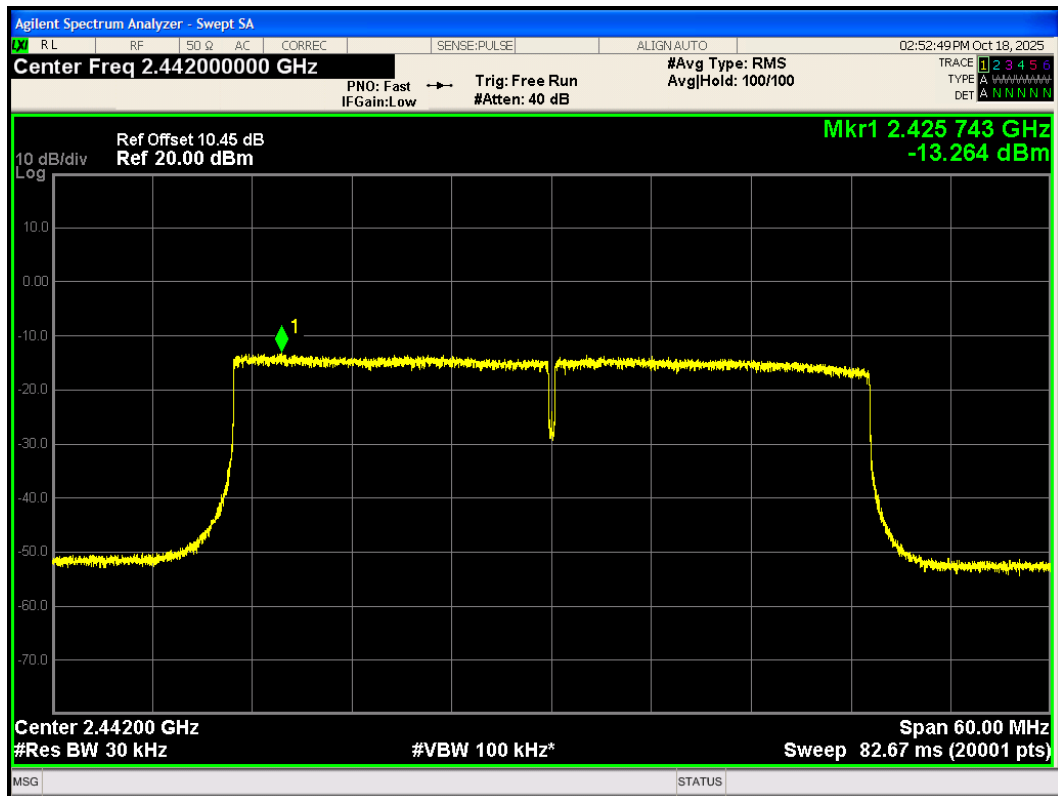
PSD 802.11ax(HE40) 2437MHz Ant1



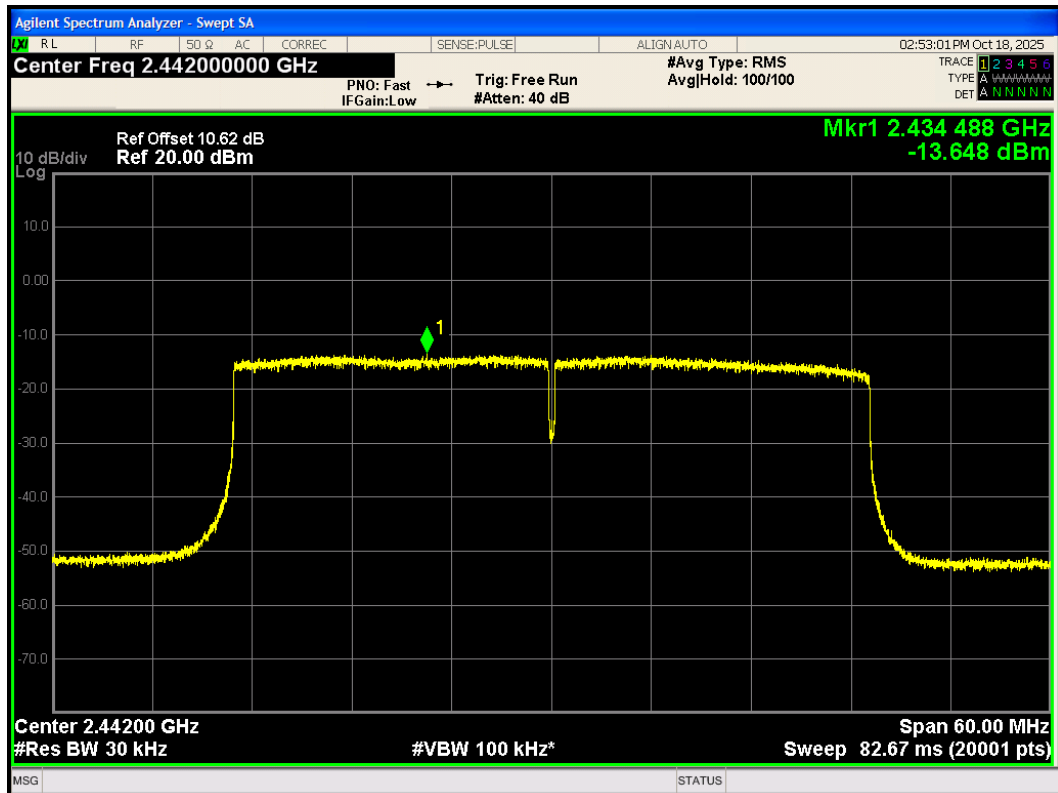
PSD 802.11ax(HE40) 2437MHz Ant2



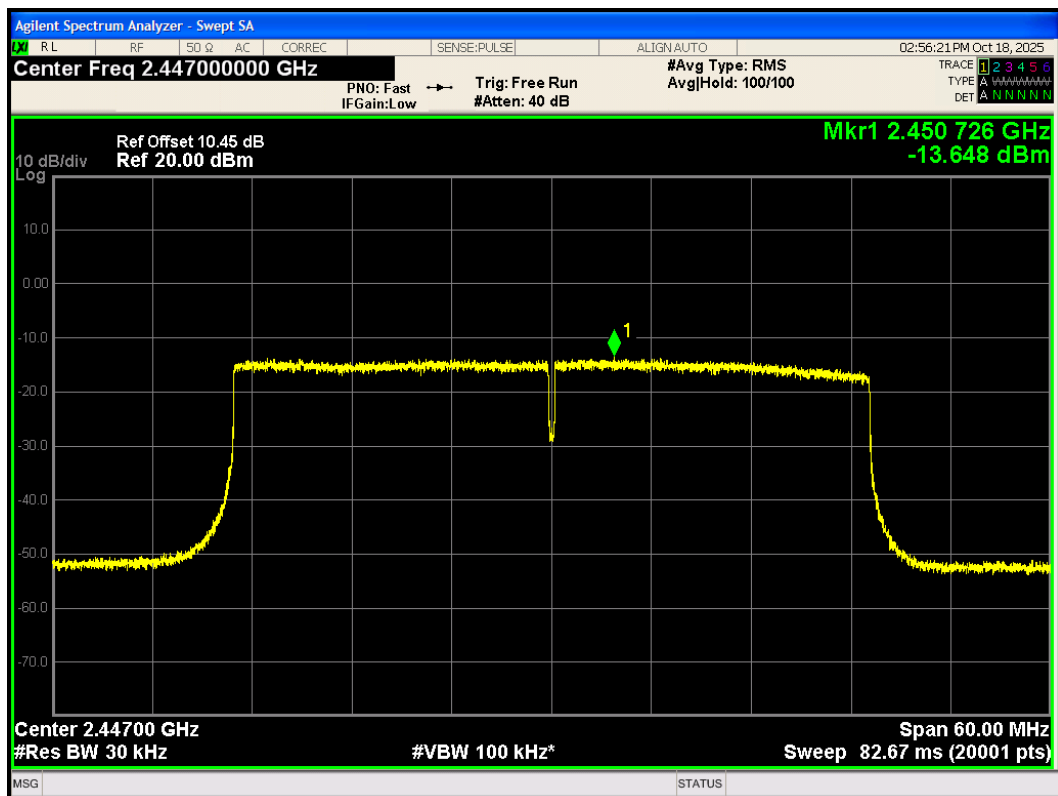
PSD 802.11ax(HE40) 2442MHz Ant1



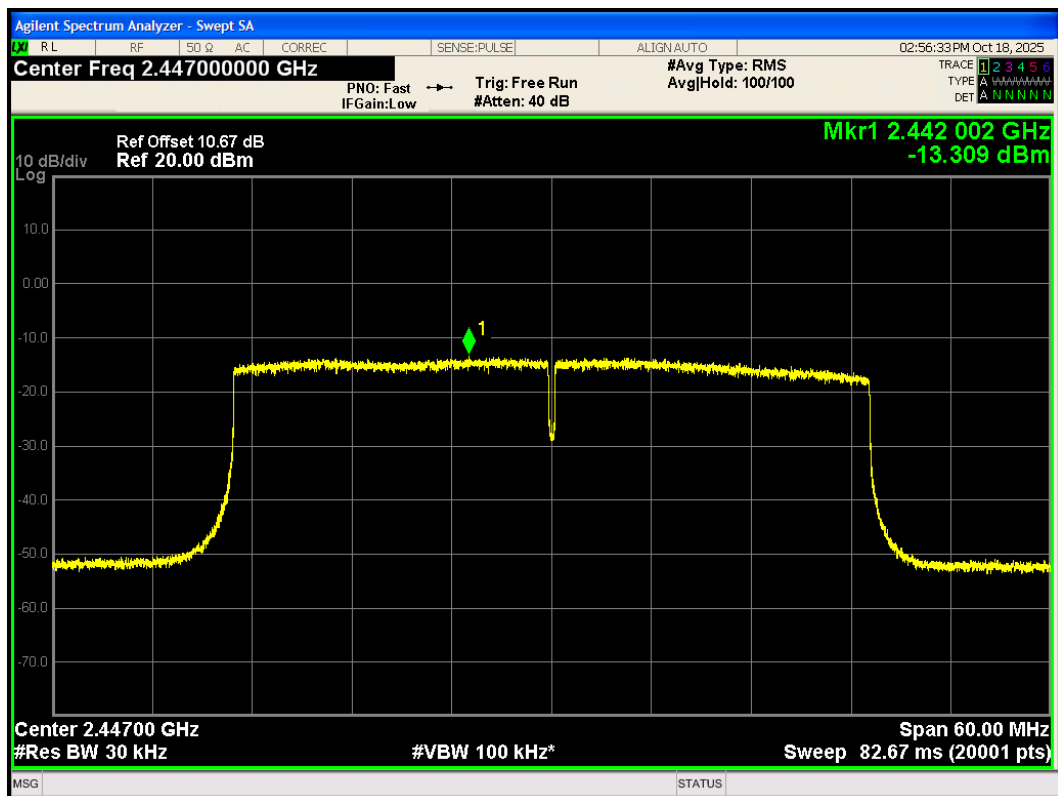
PSD 802.11ax(HE40) 2442MHz Ant2



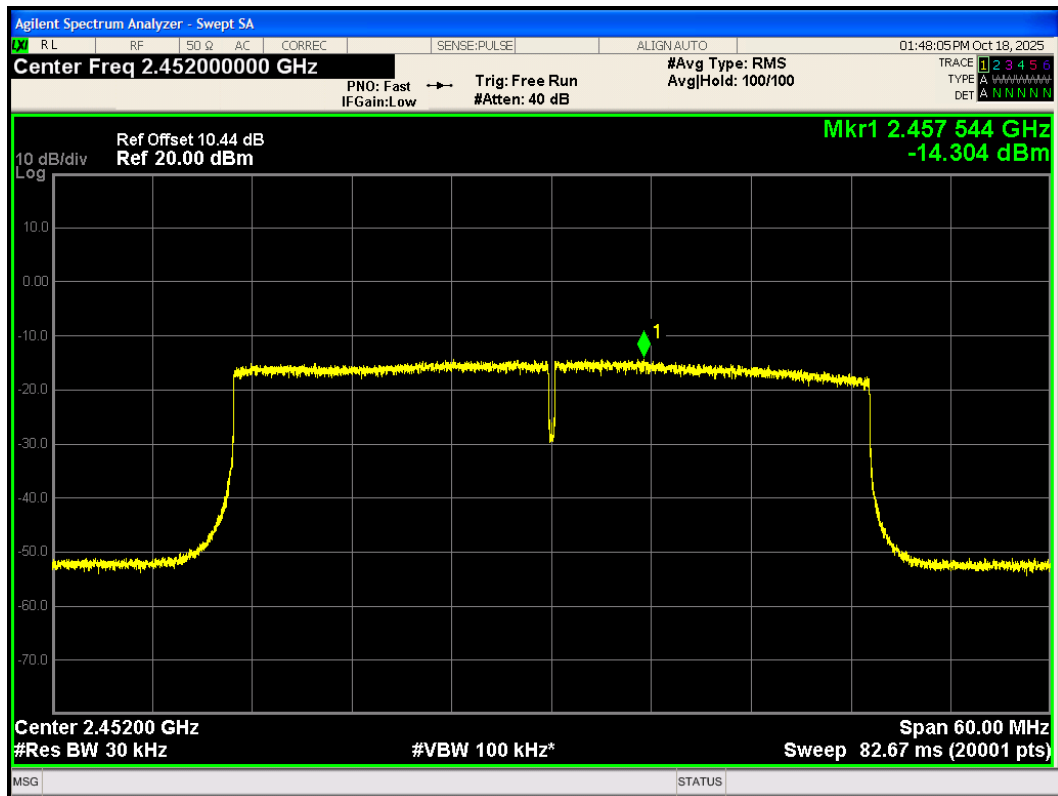
PSD 802.11ax(HE40) 2447MHz Ant1



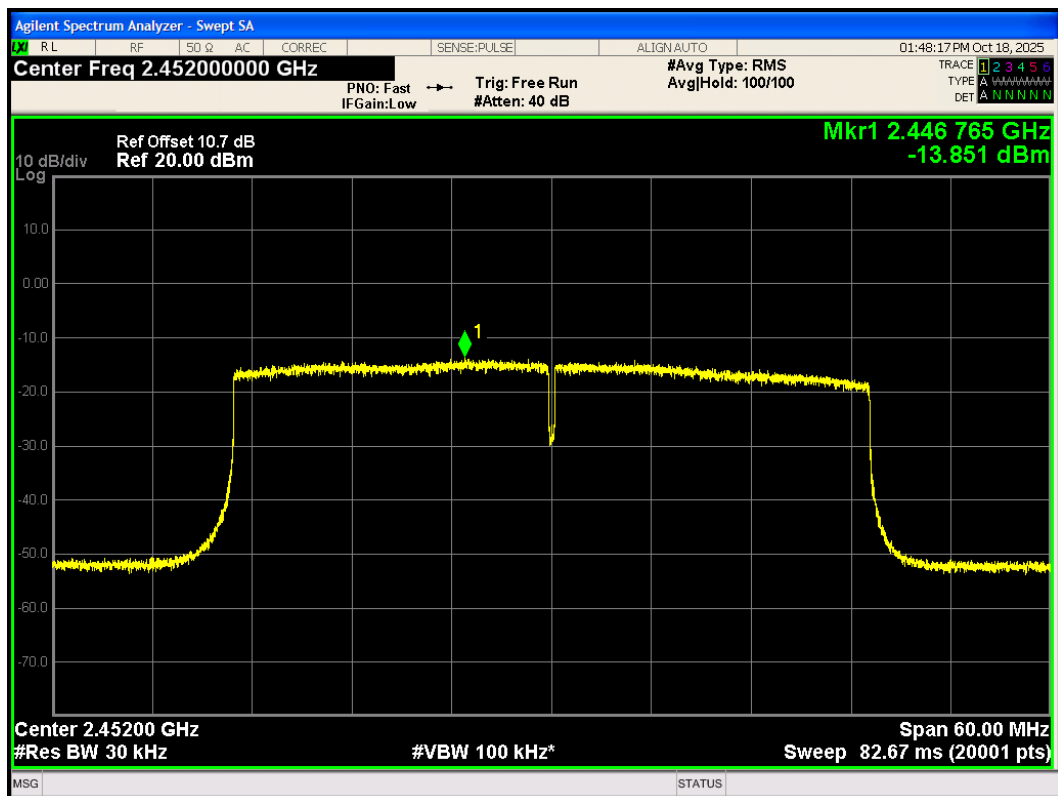
PSD 802.11ax(HE40) 2447MHz Ant2



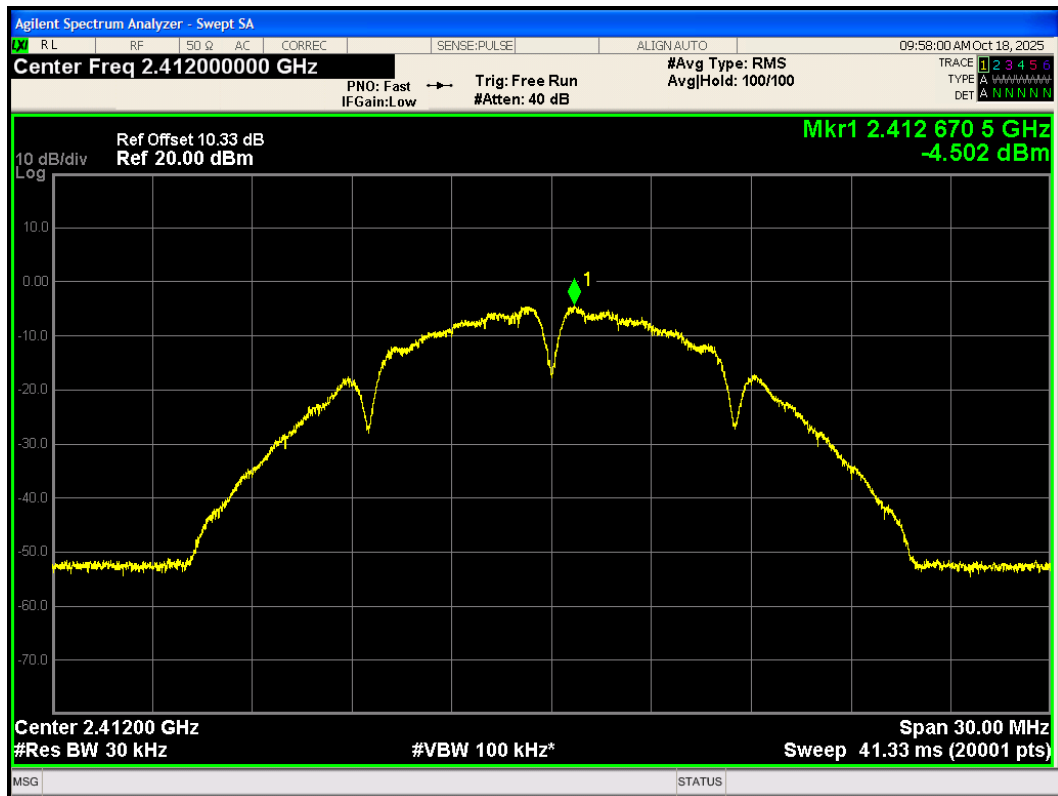
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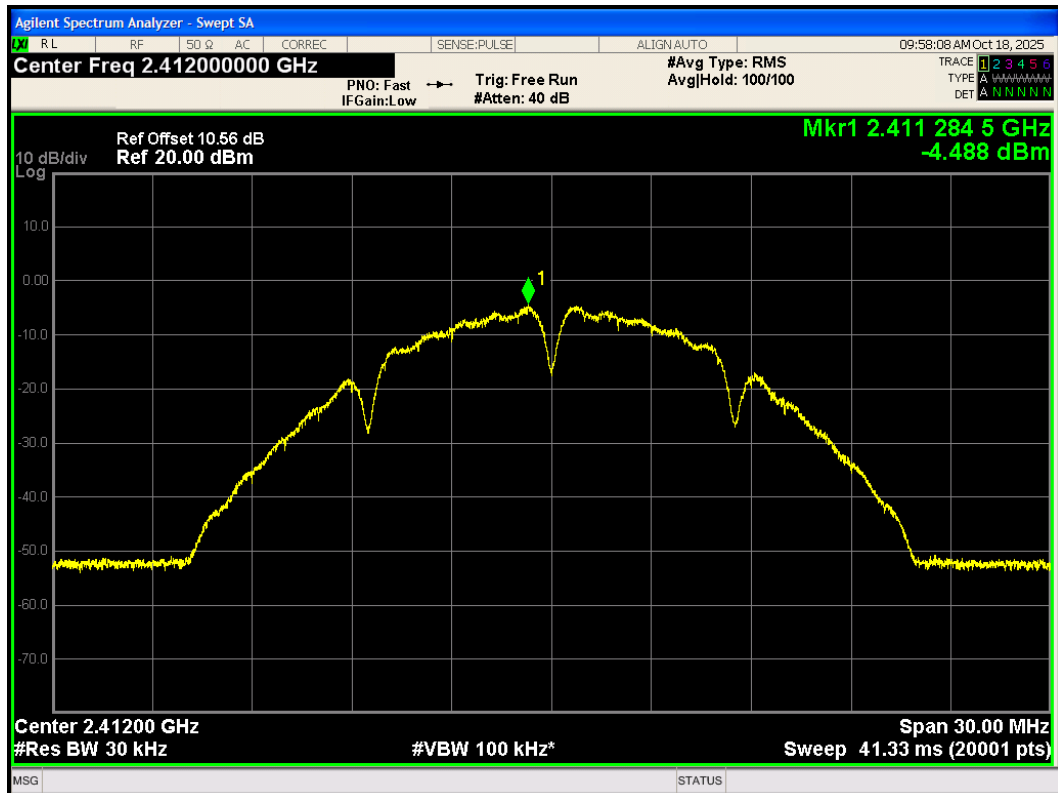
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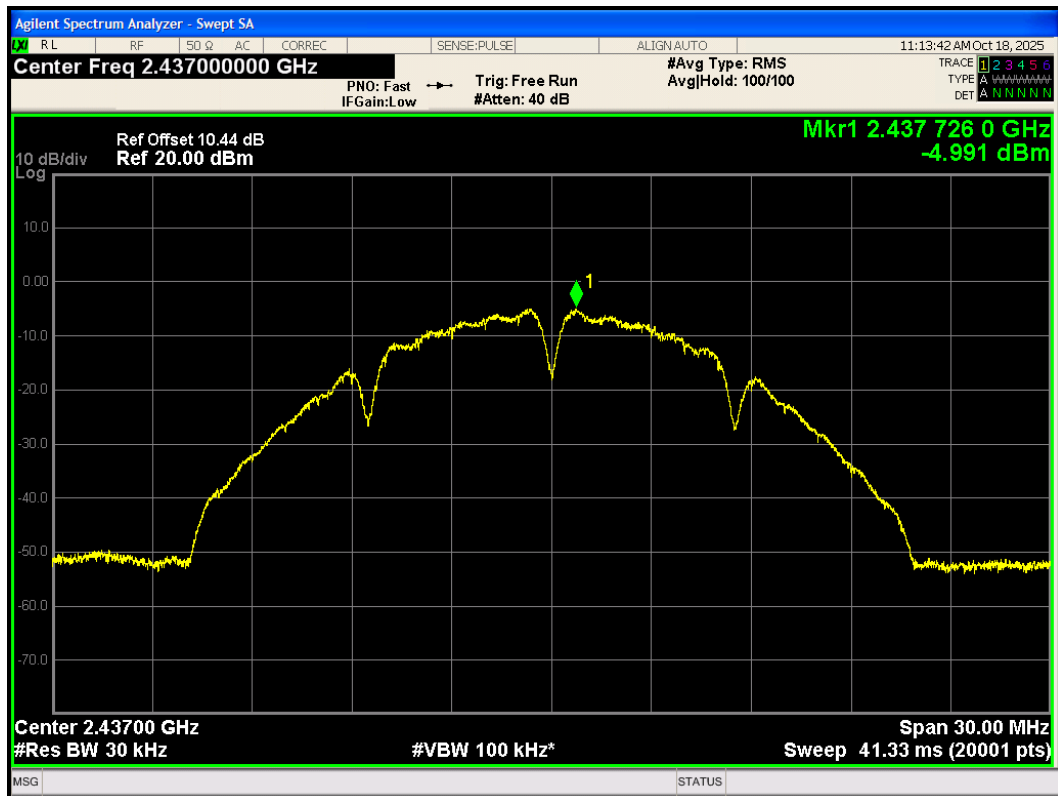
PSD 802.11b 2412MHz Ant1



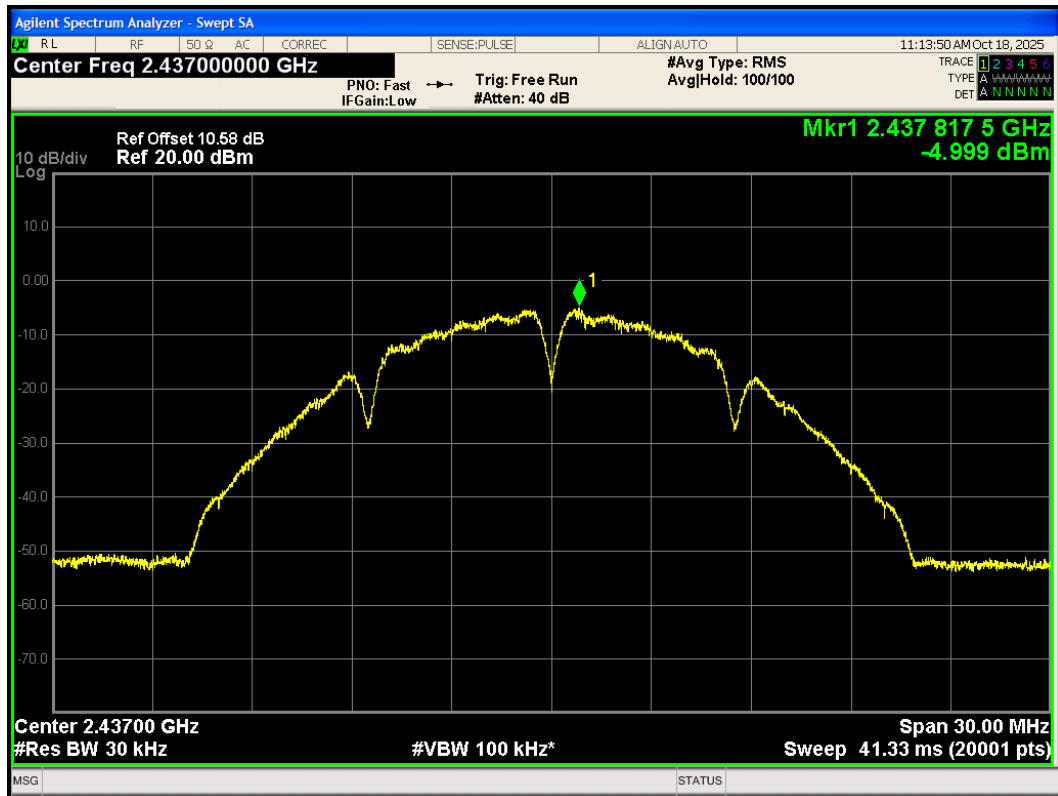
PSD 802.11b 2412MHz Ant2



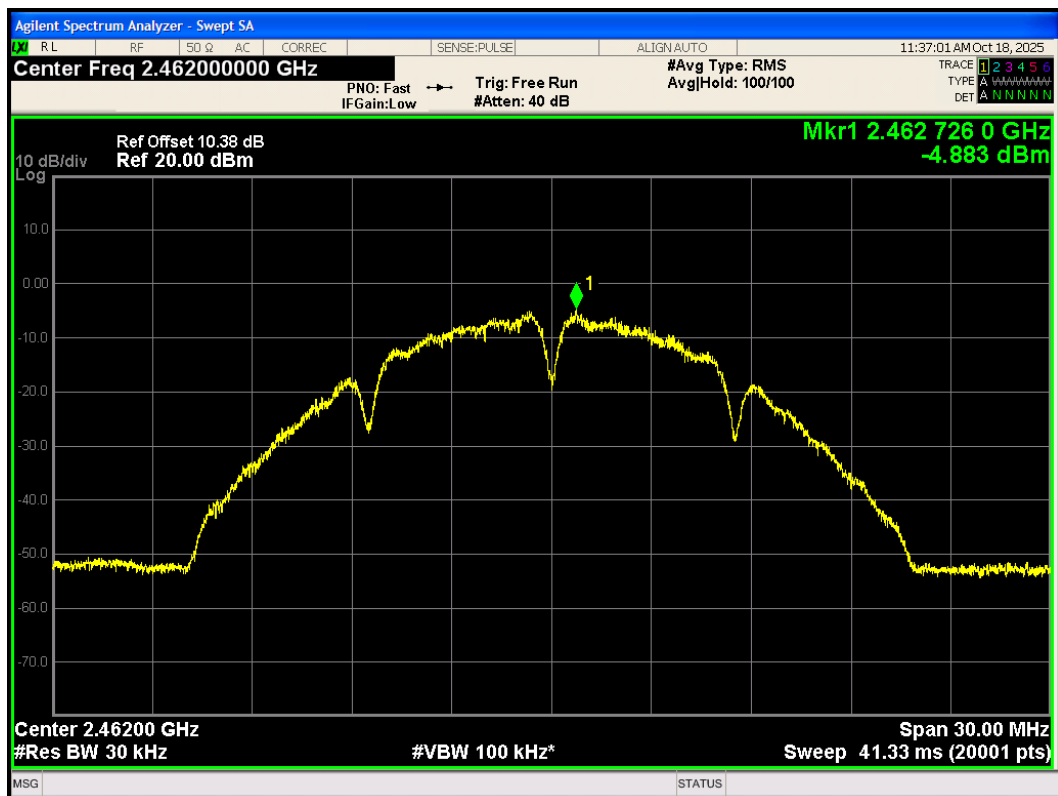
PSD 802.11b 2437MHz Ant1



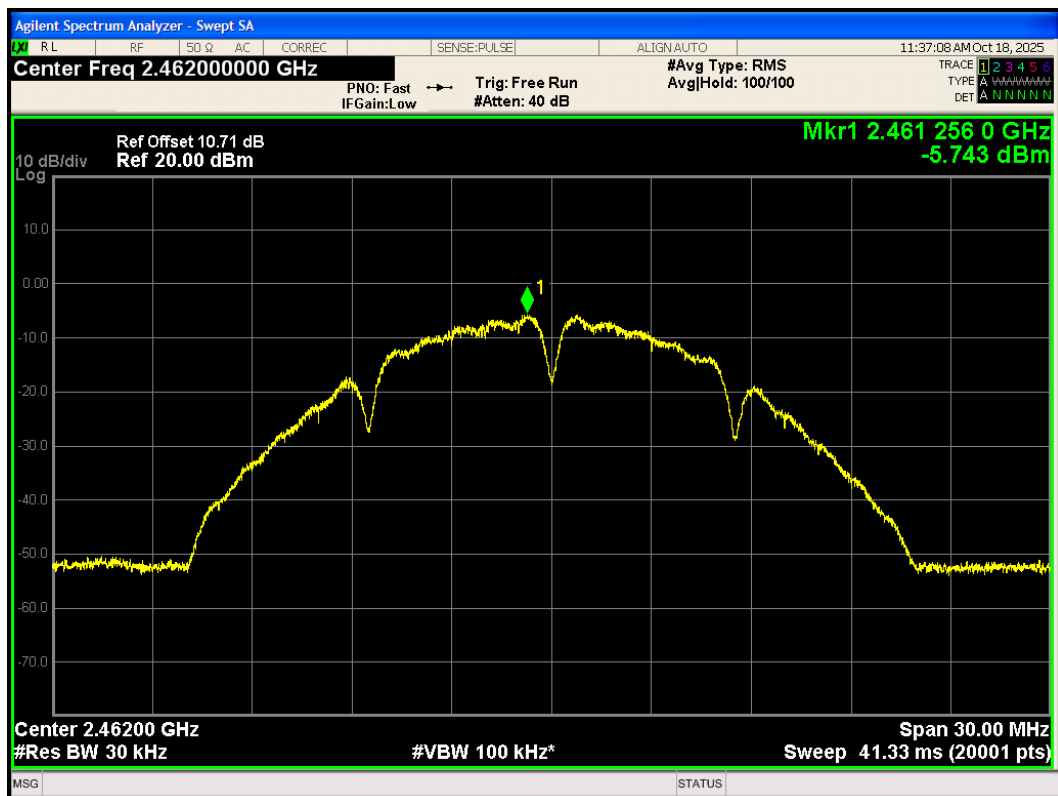
PSD 802.11b 2437MHz Ant2



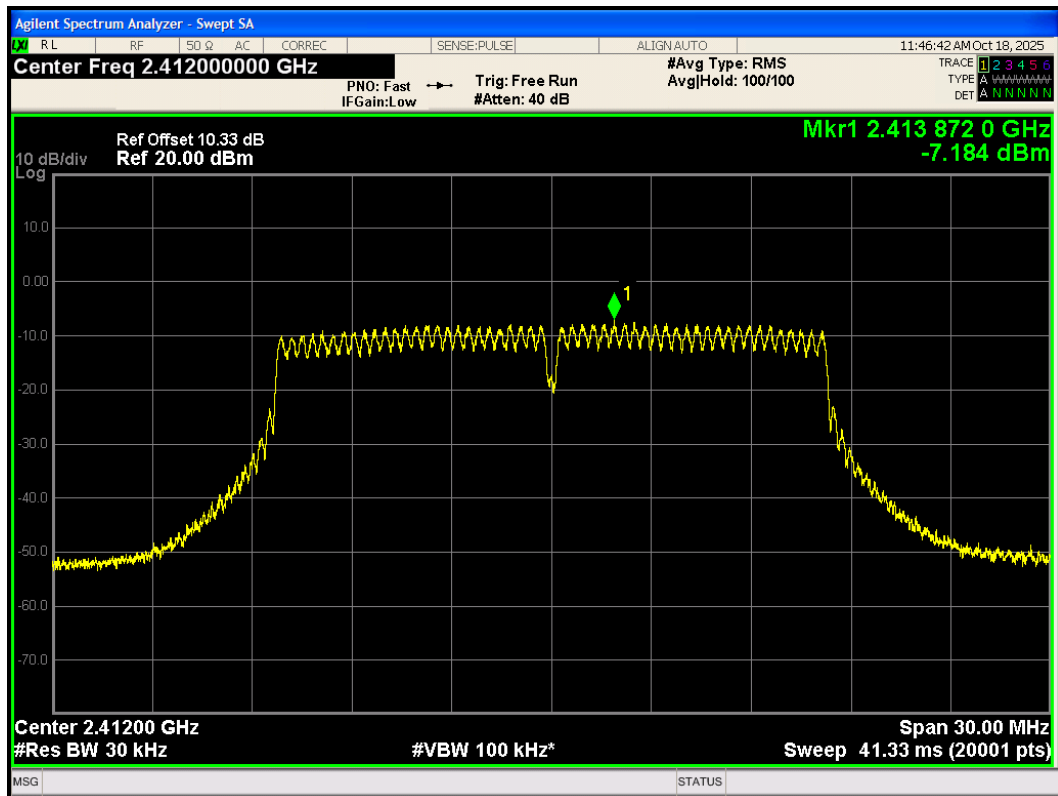
PSD 802.11b 2462MHz Ant1



PSD 802.11b 2462MHz Ant2



PSD 802.11g 2412MHz Ant1



PSD 802.11g 2412MHz Ant2

