Beamforming, ANT B

Modulation Type: 802.11n HT20

CH01

Modulation Type: 802.11n HT40

CH03

CH06

CH06

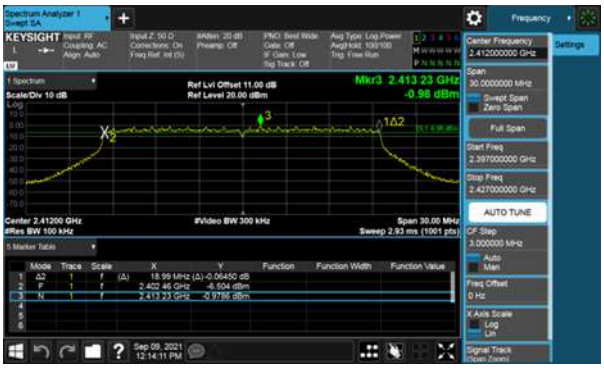
CH11

CH09

Beamforming, ANT B

Modulation Type: 802.11ax HE20

CH01



Modulation Type: 802.11ax HE40

CH03

CH06

CH06

CH11

CH09

Beamforming, ANT C

Modulation Type: 802.11n HT20

CH01

CH06

CH11

Modulation Type: 802.11n HT40

CH03

CH06

CH09

Beamforming, ANT C

Modulation Type: 802.11ax HE20

CH01

Modulation Type: 802.11ax HE40

CH03

CH06

CH06

CH11

CH09

Beamforming, ANT D

Modulation Type: 802.11n HT20

CH01

Modulation Type: 802.11n HT40

CH03

CH06

CH06

CH11

CH09

Beamforming, ANT D

Modulation Type: 802.11ax HE20

CH01

Modulation Type: 802.11ax HE40

CH03

CH06

CH06

CH11

CH09

Beamforming, ANT E

Modulation Type: 802.11n HT20

CH01

Modulation Type: 802.11n HT40

CH03

CH06

CH06

CH11

CH09

Beamforming, ANT E

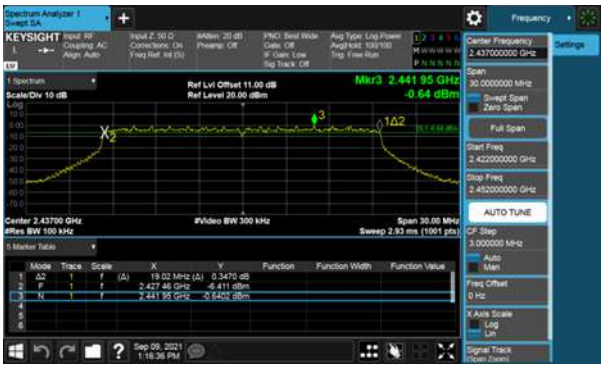
Modulation Type: 802.11ax HE20

CH01

Modulation Type: 802.11ax HE40

CH03

CH06



CH06

CH11

CH09

10. Maximum Peak and Average Output Power

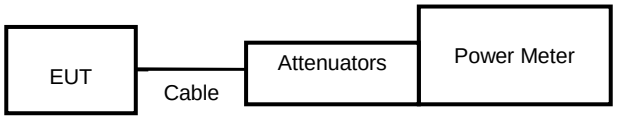
10.1 Test Limit

The Maximum Peak Output Power Measurement is 30dBm.
If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi

10.2 Test Procedures

The antenna port (RF output) of the EUT was connected to the input (RF input) of a power meter. Power was read directly from the meter and cable loss connection was added to the reading to obtain power at the EUT antenna terminal. The EUT Output Power was set to maximum to produce the worse case test result.

10.3 Test Setup Layout



10.4 Test Result and Data

(Non-Beamforming)

Setting	Modulation Mode	Channel	Frequency (MHz)	Conducted(peak) output power (dBm)				Total PK power (dBm)	Total PK power (mW)	Powe Limit (dBm)
				ANT B	ANT C	ANT D	ANT E			
17.5	11b	1	2412	23.71	22.89	22.92	23.90	29.40	870.855	30.00
17.5		6	2437	23.49	22.72	22.60	23.55	29.13	818.860	30.00
17.5		11	2462	23.38	22.69	22.51	23.47	29.05	804.120	30.00
14.5	11g	1	2412	23.85	23.26	23.22	23.94	29.60	912.133	30.00
14.5		6	2437	23.77	23.10	22.99	23.63	29.41	872.148	30.00
14.5		11	2462	23.68	23.02	23.04	23.78	29.41	873.947	30.00
15	11n HT20	1	2412	23.76	23.38	23.12	23.94	29.58	908.313	30.00
15		6	2437	23.54	22.95	22.93	24.12	29.43	877.748	30.00
15		11	2462	23.77	23.06	23.42	24.21	29.66	923.953	30.00
15	11n HT40	3	2422	23.86	23.09	22.96	23.97	29.51	894.081	30.00
15		6	2437	23.72	23.06	22.86	23.96	29.44	879.889	30.00
15		9	2452	23.97	23.29	23.17	24.33	29.74	941.274	30.00
14.5	11ax HE20	1	2412	24.33	23.40	23.36	24.29	29.89	975.100	30.00
14.5		6	2437	23.48	22.94	23.02	24.22	29.47	884.320	30.00
14.5		11	2462	24.02	23.42	23.38	24.48	29.87	970.448	30.00
15	11ax HE40	3	2422	24.22	23.57	23.41	24.35	29.93	983.301	30.00
15		6	2437	23.96	22.82	22.83	23.94	29.44	879.920	30.00
15		9	2452	23.95	23.15	23.04	24.28	29.66	924.141	30.00

Setting	Modulation Mode	Channel	Frequency (MHz)	Conducted(average) output power (dBm)				Total AV power (dBm)	Total AV power (mW)	Powe Limit (dBm)
				ANT B	ANT C	ANT D	ANT E			
17.5	11b	1	2412	18.17	17.25	17.24	18.26	23.78	238.658	NA
17.5		6	2437	17.98	17.09	16.91	17.96	23.53	225.582	NA
17.5		11	2462	17.88	17.08	16.87	17.83	23.46	221.741	NA
14.5	11g	1	2412	14.63	13.89	13.94	14.58	20.29	107.013	NA
14.5		6	2437	14.62	13.90	13.85	14.44	20.24	105.584	NA
14.5		11	2462	14.41	13.70	13.69	14.40	20.09	101.979	NA
15	11n HT20	1	2412	15.11	14.62	14.32	15.21	20.85	121.636	NA
15		6	2437	14.90	14.20	14.17	15.42	20.72	118.161	NA
15		11	2462	14.92	14.12	14.32	15.36	20.73	118.264	NA
15	11n HT40	3	2422	14.51	13.66	13.57	14.55	20.12	102.737	NA
15		6	2437	14.22	13.56	13.42	14.47	19.96	99.091	NA
15		9	2452	14.48	13.68	13.61	14.63	20.14	103.391	NA
14.5	11ax HE20	1	2412	14.68	13.72	13.70	14.59	20.22	105.143	NA
14.5		6	2437	14.31	13.51	13.59	14.80	20.11	102.472	NA
14.5		11	2462	14.10	13.42	13.43	14.51	19.91	97.961	NA
15	11ax HE40	3	2422	14.45	13.65	13.54	14.53	20.09	102.009	NA
15		6	2437	14.49	13.43	13.43	14.58	20.04	100.885	NA
15		9	2452	14.31	13.44	13.40	14.57	19.98	99.577	NA

Note: Average power is for reference only.

(Beamforming)

Setting	Modulation Mode	Channel	Frequency (MHz)	Conducted(peak) output power (dBm)				Total PK power (dBm)	Total PK power (mW)	Powe Limit (dBm)
				ANT B	ANT C	ANT D	ANT E			
9.5	11n HT20	1	2412	19.96	19.74	20.87	20.03	26.19	416.145	26.63
9.5		6	2437	19.35	19.76	20.91	20.34	26.15	412.177	26.63
9.5		11	2462	19.83	19.95	21.18	20.24	26.35	431.918	26.63
9.5	11n HT40	3	2422	19.96	20.35	21.26	20.33	26.52	449.030	26.63
9.5		6	2437	19.74	20.07	21.18	20.09	26.33	429.128	26.63
9.5		9	2452	19.81	20.31	21.28	20.26	26.47	443.564	26.63
9	11ax HE20	1	2412	20.20	20.28	21.32	20.17	26.54	450.883	26.63
9		6	2437	20.01	20.08	21.09	20.20	26.39	435.331	26.63
9		11	2462	19.98	20.05	21.02	20.10	26.33	429.501	26.63
9	11ax HE40	3	2422	20.23	20.20	21.26	20.17	26.51	447.803	26.63
9		6	2437	20.64	20.29	21.02	20.05	26.54	450.415	26.63
9		9	2452	20.32	20.19	21.38	20.22	26.58	454.719	26.63

Setting	Modulation Mode	Channel	Frequency (MHz)	Conducted(average) output power (dBm)				Total AV power (dBm)	Total AV power (mW)	Powe Limit (dBm)
				ANT B	ANT C	ANT D	ANT E			
9.5	11n HT20	1	2412	10.98	11.25	11.92	11.75	17.51	56.389	NA
9.5		6	2437	10.72	10.95	11.93	11.56	17.34	54.166	NA
9.5		11	2462	10.61	10.88	11.95	11.52	17.29	53.612	NA
9.5	11n HT40	3	2422	10.74	10.87	11.93	11.05	17.19	52.406	NA
9.5		6	2437	10.13	10.35	11.47	10.58	16.68	46.600	NA
9.5		9	2452	10.23	10.40	11.28	10.49	16.64	46.131	NA
9	11ax HE20	1	2412	10.74	10.71	11.47	11.61	17.17	52.150	NA
9		6	2437	10.06	10.63	11.75	11.70	17.11	51.454	NA
9		11	2462	10.44	10.78	11.96	11.60	17.26	53.192	NA
9	11ax HE40	3	2422	10.49	11.04	11.93	11.21	17.22	52.709	NA
9		6	2437	10.36	10.53	11.63	10.62	16.84	48.251	NA
9		9	2452	10.32	10.52	11.18	10.53	16.67	46.457	NA

Note: Average power is for reference only.

11. Power Spectral Density

11.1 Test Limit

The Maximum of Power Spectral Density Measurement is 8dBm.

If transmitting antennas of directional gain greater than 6 dBi are used, the power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi

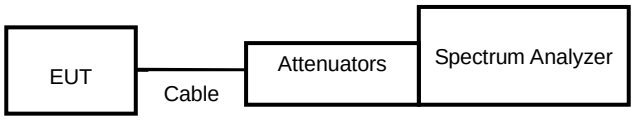
11.2 Test Procedures

a. The transmitter output was connected to spectrum analyzer.

b. The spectrum analyzer's resolution bandwidth were set at 3kHz RBW and 10KHz VBW as that of the fundamental frequency. Set the sweep time=auto couple.

c. The power spectral density was measured and recorded.

11.3 Test Setup Layout



11.4 Test Result and Data

(Non-Beamforming)

Modulation Type	Channel	Frequency (MHz)	Maximum Power Density of 3KHz Bandwidth(dBm)				Sum chain (dBm)	Duty Cycle CF(dB)	Total PSD (dBm)	Limit (dBm)
			ANT B	ANT C	ANT D	ANT E				
11b	1	2412	-4.06	-5.45	-5.14	-4.01	1.40	0.00	1.40	4.63
	6	2437	-6.15	-6.76	-6.79	-6.12	-0.42	0.00	-0.42	4.63
	11	2462	-6.2	-7.05	-6.95	-6.93	-0.75	0.00	-0.75	4.63
11g	1	2412	-10.7	-11.85	-8.44	-9.86	-4.01	0.00	-4.01	4.63
	6	2437	-10.37	-11.29	-9.39	-9.85	-4.15	0.00	-4.15	4.63
	11	2462	-10.38	-12.14	-8.73	-9.85	-4.09	0.00	-4.09	4.63
11n HT20	1	2412	-10.4	-10.03	-7.86	-9.5	-3.31	0.00	-3.31	4.63
	6	2437	-10.64	-11.16	-7.89	-8.9	-3.43	0.00	-3.43	4.63
	11	2462	-10.35	-10.87	-8.16	-10.04	-3.71	0.00	-3.71	4.63
11n HT40	3	2422	-13.48	-14.66	-14.79	-11.23	-7.27	0.00	-7.27	4.63
	6	2437	-12.44	-14.41	-8.44	-9.92	-4.71	0.00	-4.71	4.63
	9	2452	-10.75	-14.12	-7.95	-9.46	-4.02	0.00	-4.02	4.63
11ax HE20	1	2412	-10.05	-12.06	-12.25	-10.88	-5.20	0.00	-5.20	4.63
	6	2437	-11.26	-11.96	-8.91	-9.78	-4.29	0.00	-4.29	4.63
	11	2462	-10.59	-12.34	-8.53	-9.38	-3.97	0.00	-3.97	4.63
11ax HE40	3	2422	-11.02	-13.8	-8.44	-8.68	-3.98	0.00	-3.98	4.63
	6	2437	-10.78	-13.06	-8.26	-8.97	-3.88	0.00	-3.88	4.63
	9	2452	-10.14	-12.58	-8.38	-9.13	-3.77	0.00	-3.77	4.63

(Beamforming)

Modulation Type	Channel	Frequency (MHz)	Maximum Power Density of 3KHz Bandwidth(dBm)				Sum chain (dBm)	Duty Cycle CF(dB)	Total PSD (dBm)	Limit (dBm)
			ANT B	ANT C	ANT D	ANT E				
11n HT20	1	2412	-16.74	-19.06	-16.99	-19.17	-11.82	0.00	-11.82	4.63
	6	2437	-16.23	-15.94	-14.36	-16.25	-9.60	0.00	-9.60	4.63
	11	2462	-15.63	-16.12	-14.61	-16.52	-9.64	0.00	-9.64	4.63
11n HT40	3	2422	-21.56	-17.53	-17.42	-16.63	-11.91	0.00	-11.91	4.63
	6	2437	-18.28	-17.87	-15.05	-16.17	-10.62	0.00	-10.62	4.63
	9	2452	-18.63	-18.11	-19.13	-18.27	-12.50	0.00	-12.50	4.63
11ax HE20	1	2412	-16.59	-16.67	-14.79	-16.57	-10.06	0.00	-10.06	4.63
	6	2437	-15.95	-16.70	-15.04	-16.75	-10.03	0.00	-10.03	4.63
	11	2462	-17.08	-16.55	-15.62	-17.39	-10.59	0.00	-10.59	4.63
11ax HE40	3	2422	-17.55	-17.33	-17.05	-17.72	-11.38	0.00	-11.38	4.63
	6	2437	-17.45	-18.63	-16.96	-17.45	-11.56	0.00	-11.56	4.63
	9	2452	-17.68	-18.36	-17.21	-20.05	-12.18	0.00	-12.18	4.63

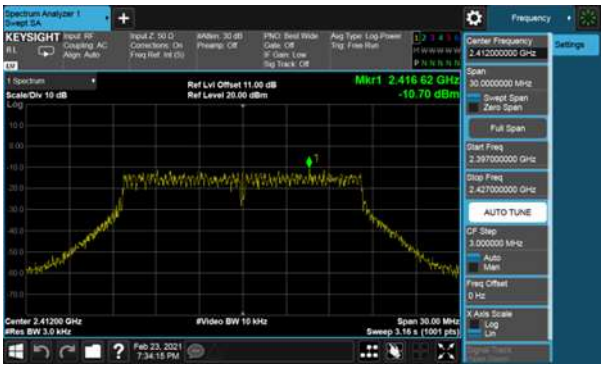
Non-Beamforming, ANT B

Modulation Type: 802.11b

CH01

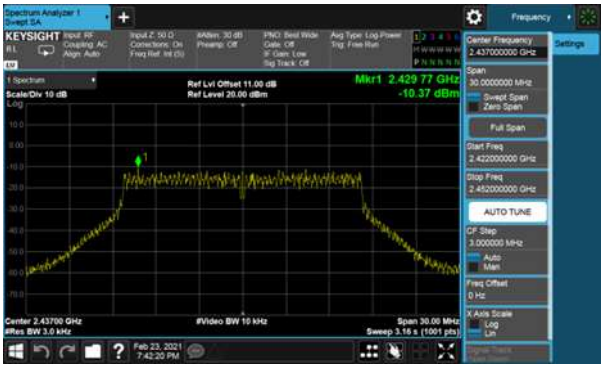
Modulation Type: 802.11g

CH01



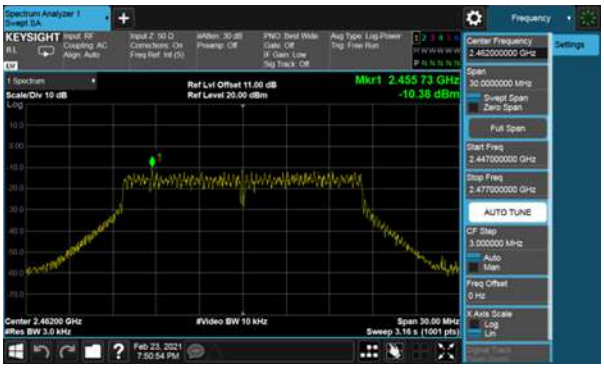
CH06

CH06



CH11

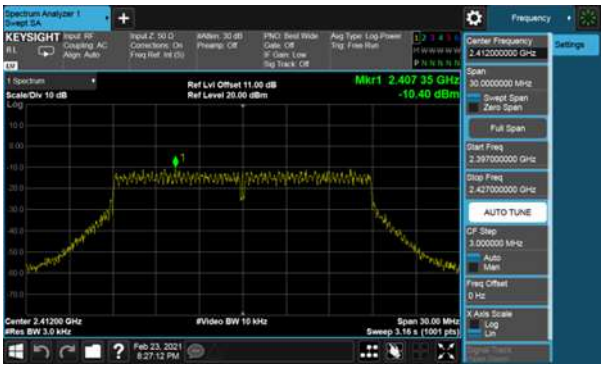
CH11



Non-Beamforming, ANT B

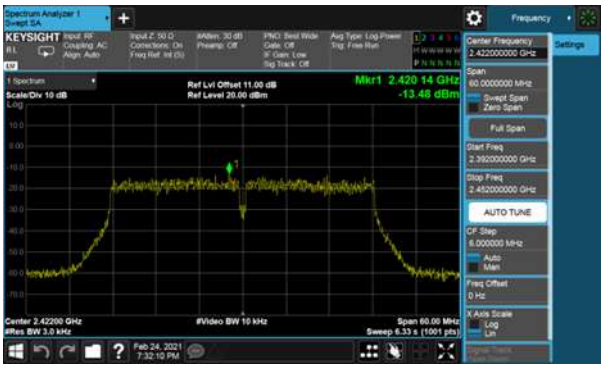
Modulation Type: 802.11n HT20

CH01

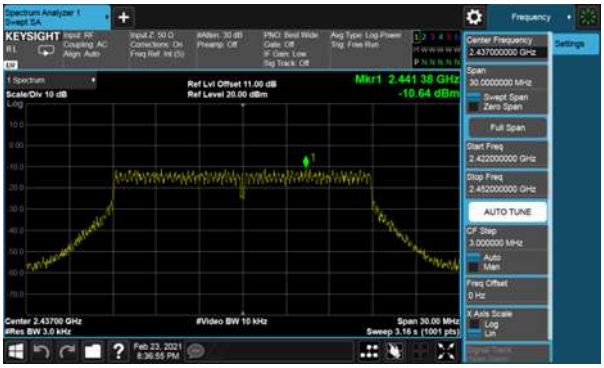


Modulation Type: 802.11n HT40

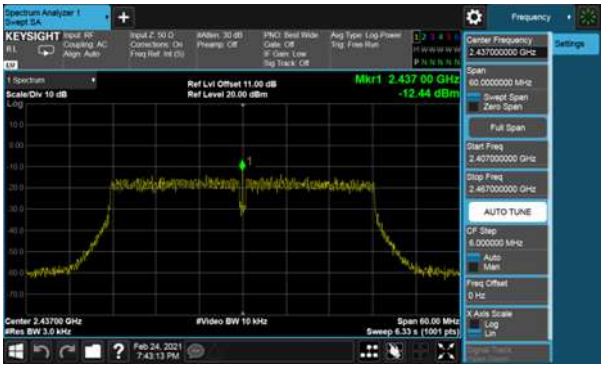
CH03



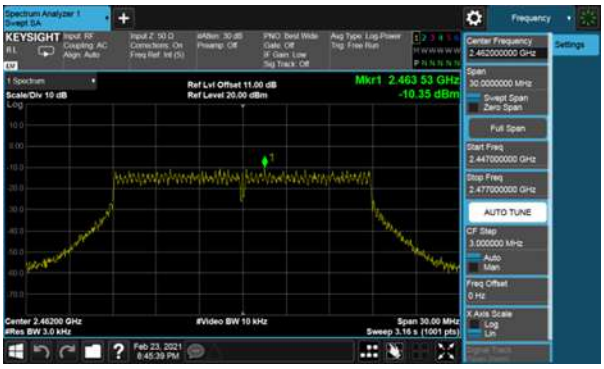
CH06



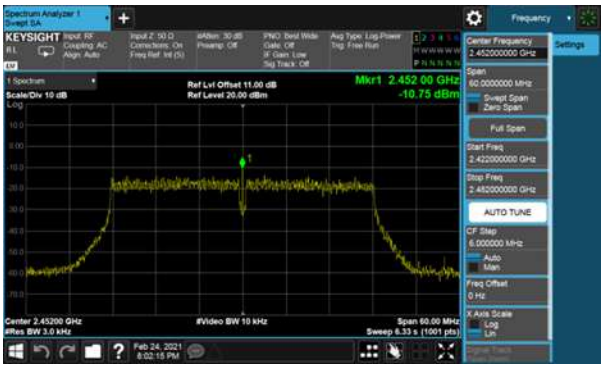
CH06



CH11



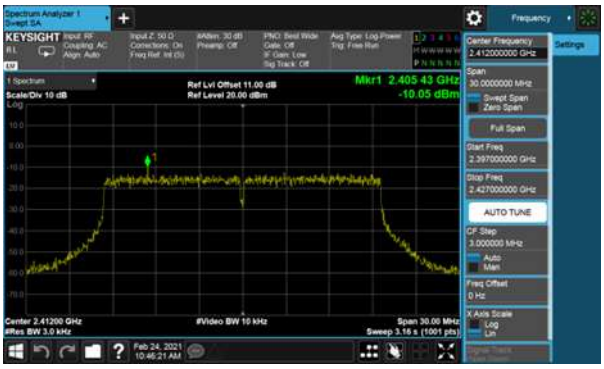
CH09



Non-Beamforming, ANT B

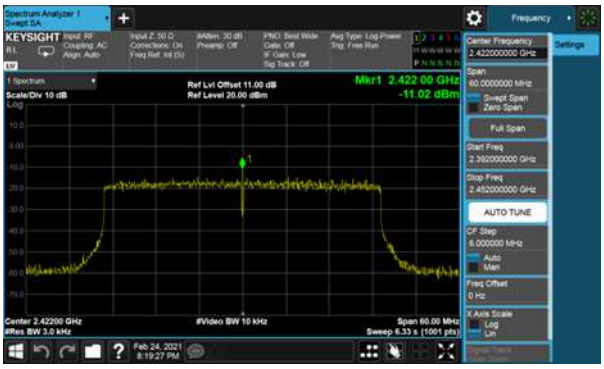
Modulation Type: 802.11ax HE20

CH01

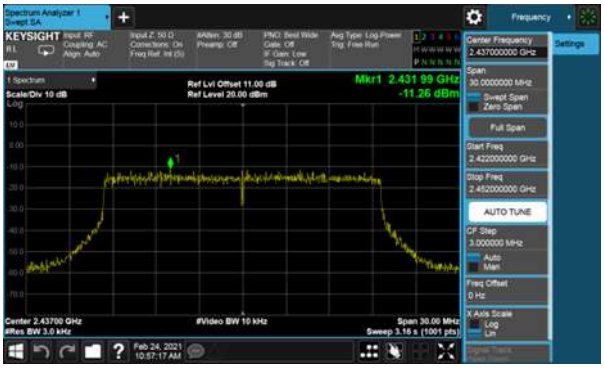


Modulation Type: 802.11ax HE40

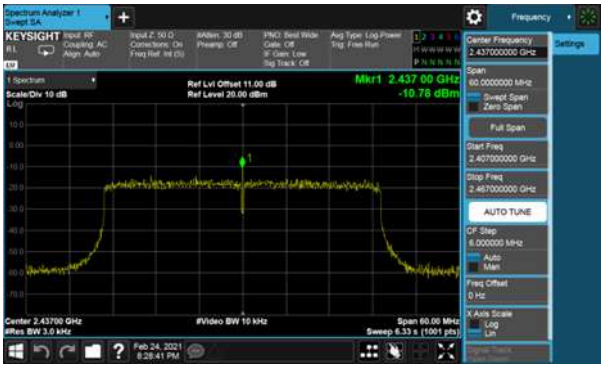
CH03



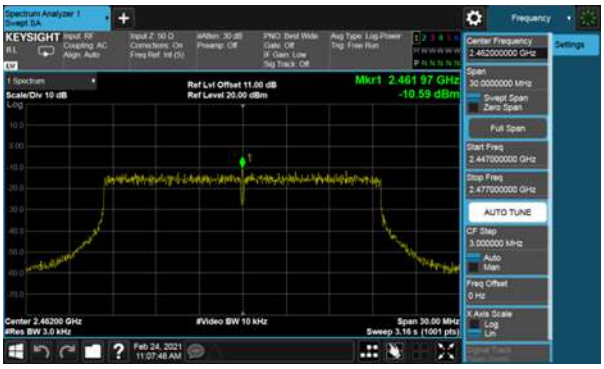
CH06



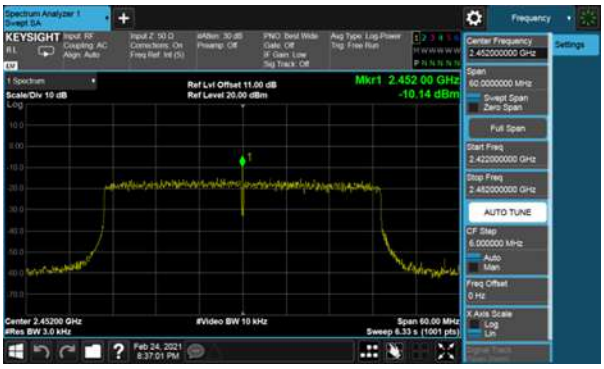
CH06



CH11



CH09



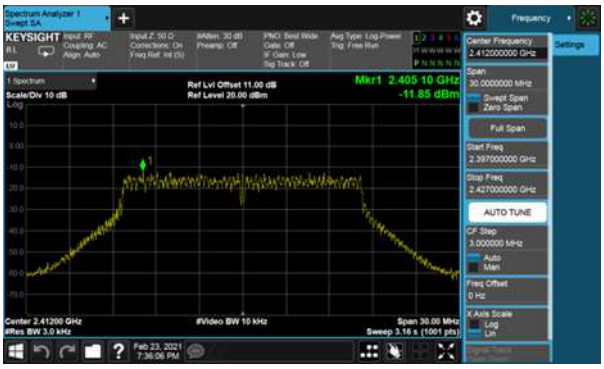
Non-Beamforming, ANT C

Modulation Type: 802.11b

CH01

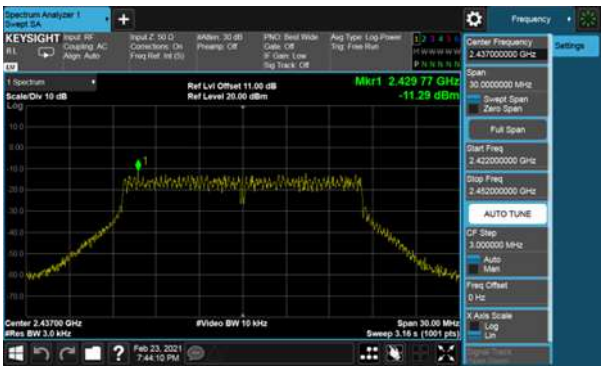
Modulation Type: 802.11g

CH01



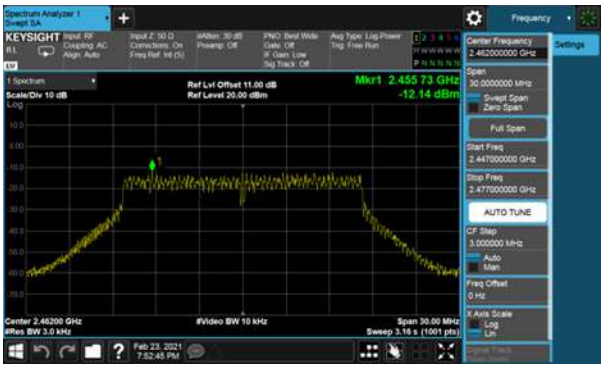
CH06

CH06



CH11

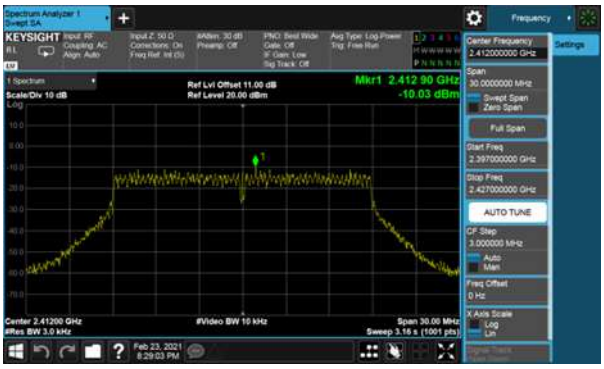
CH11



Non-Beamforming, ANT C

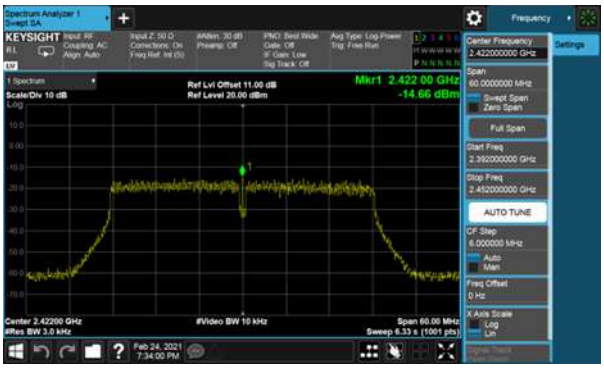
Modulation Type: 802.11n HT20

CH01

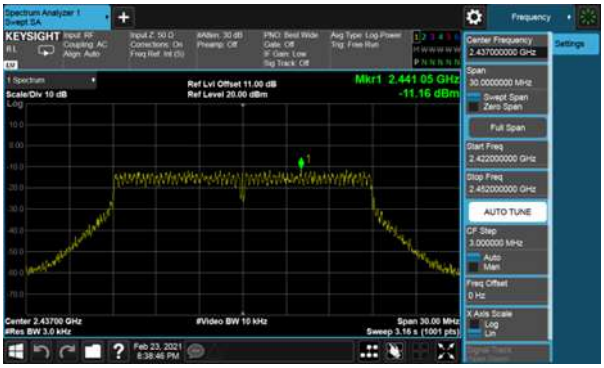


Modulation Type: 802.11n HT40

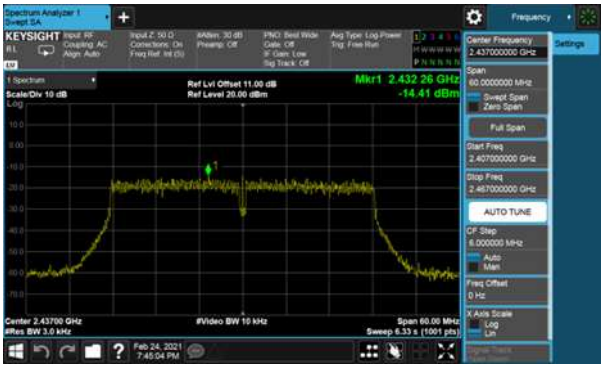
CH03



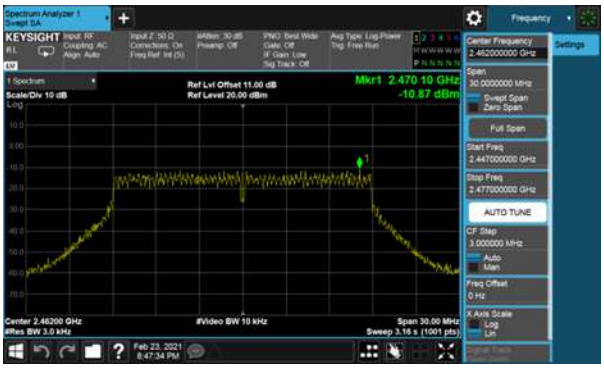
CH06



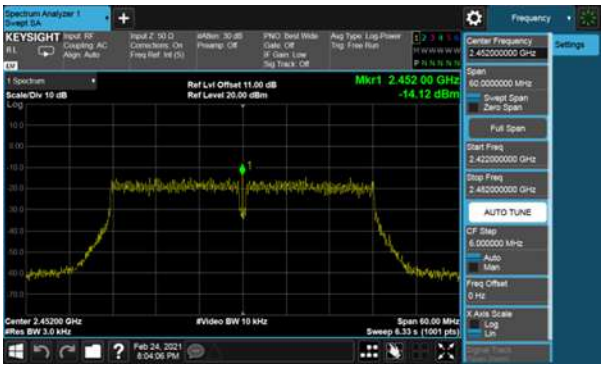
CH06



CH11



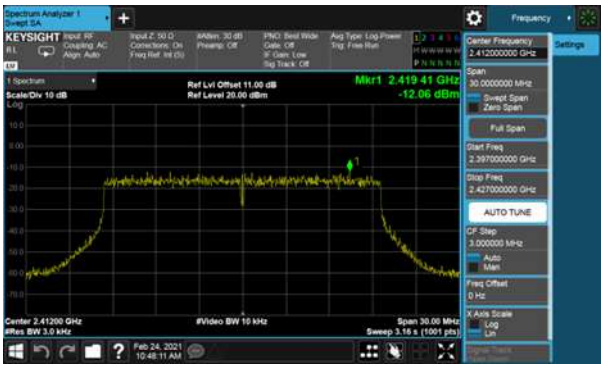
CH09



Non-Beamforming, ANT C

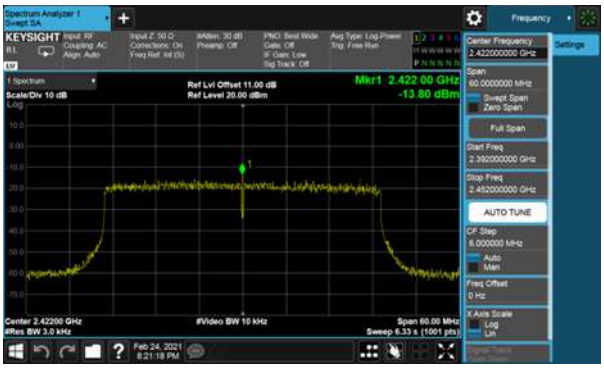
Modulation Type: 802.11ax HE20

CH01

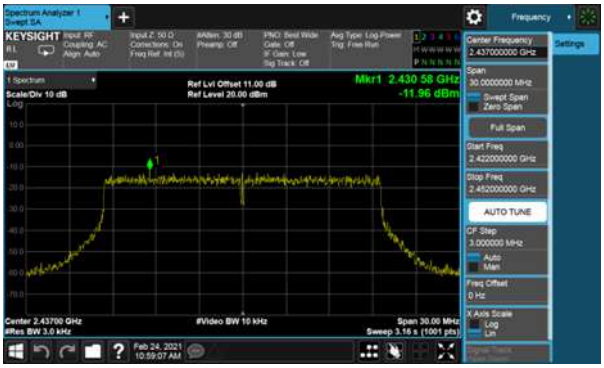


Modulation Type: 802.11ax HE40

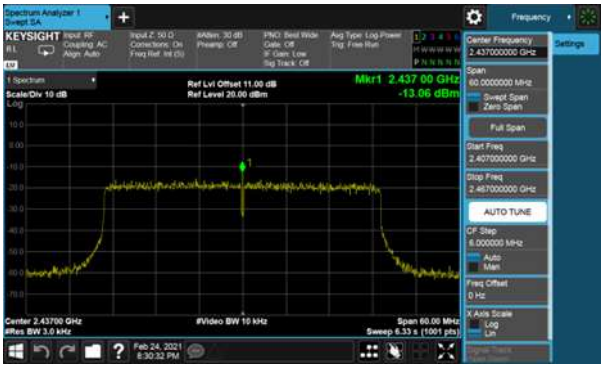
CH03



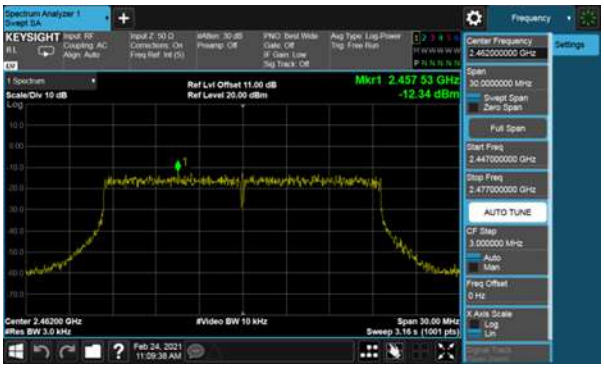
CH06



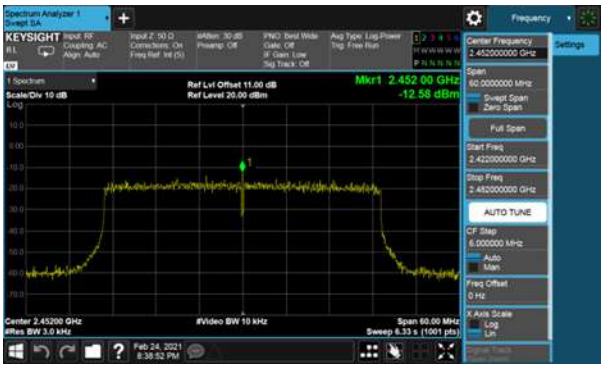
CH06



CH11



CH09



Non-Beamforming, ANT D

Modulation Type: 802.11b

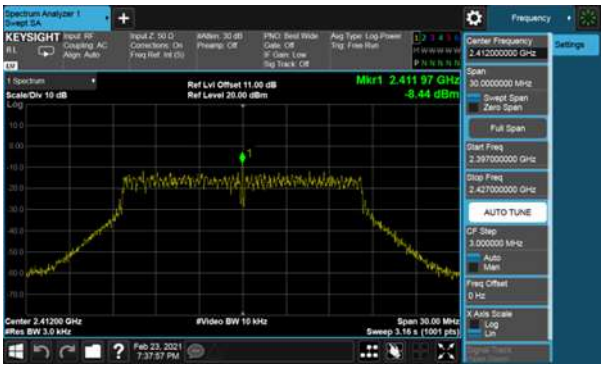
CH01

CH06

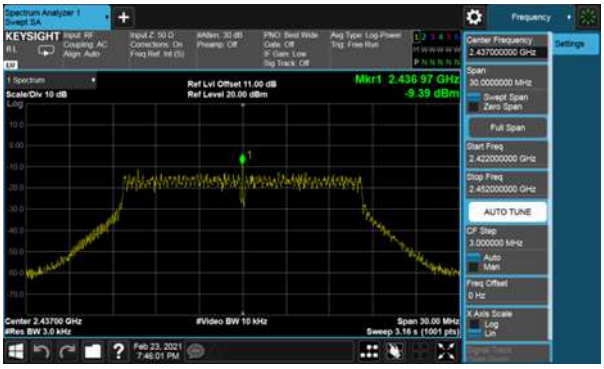
CH11

Modulation Type: 802.11g

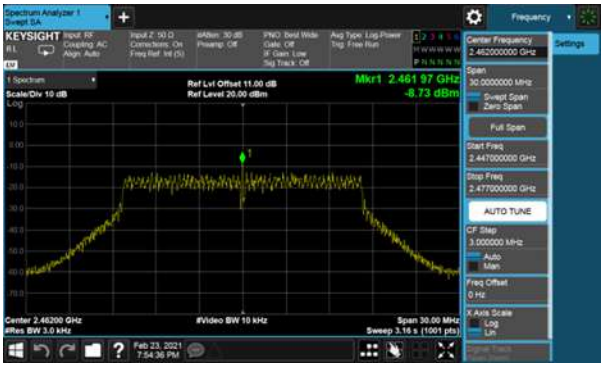
CH01



CH06



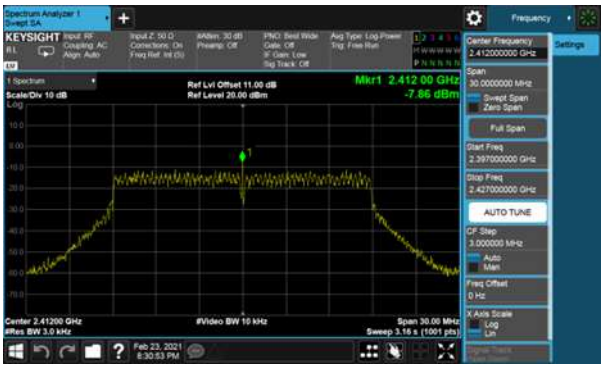
CH11



Non-Beamforming, ANT D

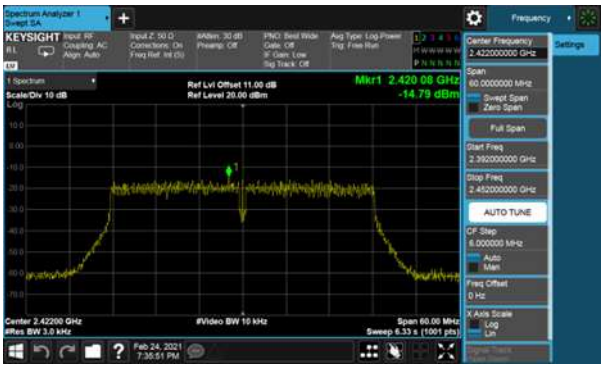
Modulation Type: 802.11n HT20

CH01

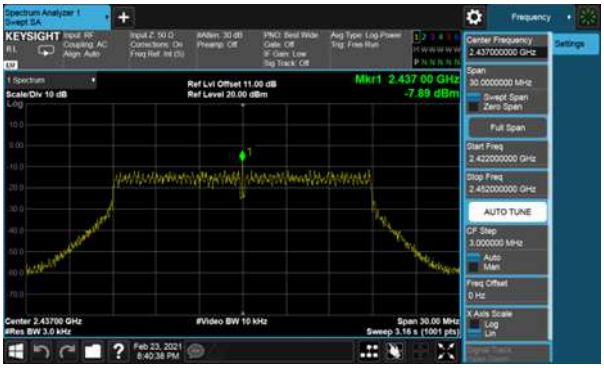


Modulation Type: 802.11n HT40

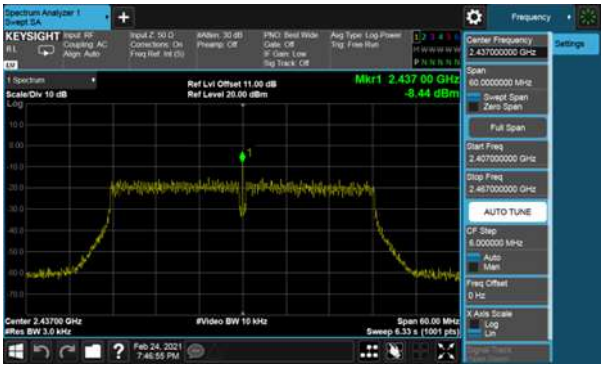
CH03



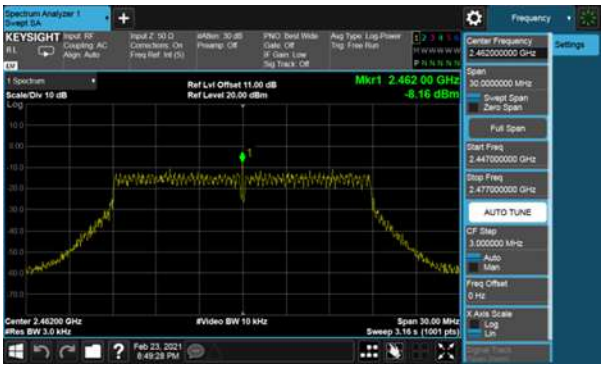
CH06



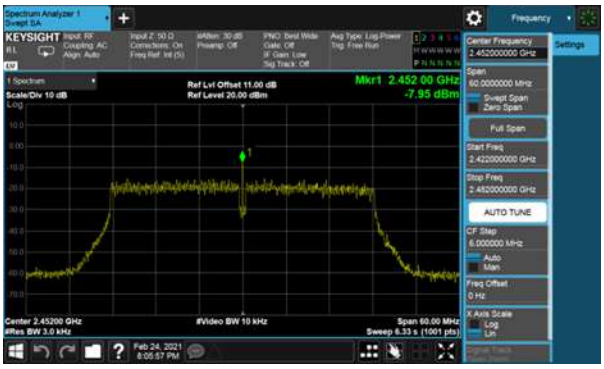
CH06



CH11



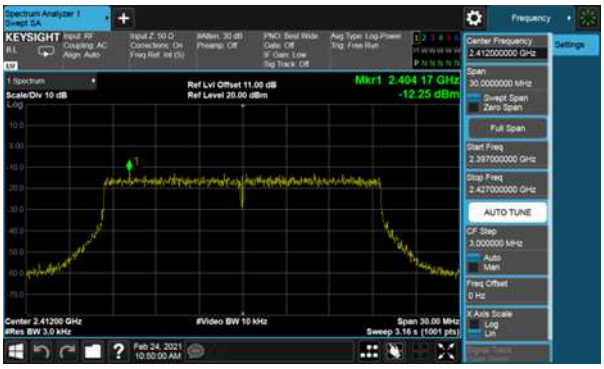
CH09



Non-Beamforming, ANT D

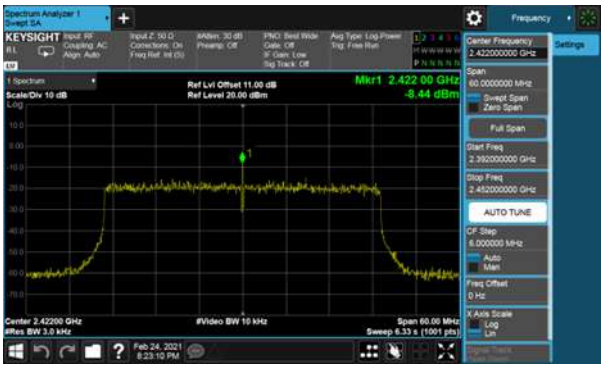
Modulation Type: 802.11ax HE20

CH01

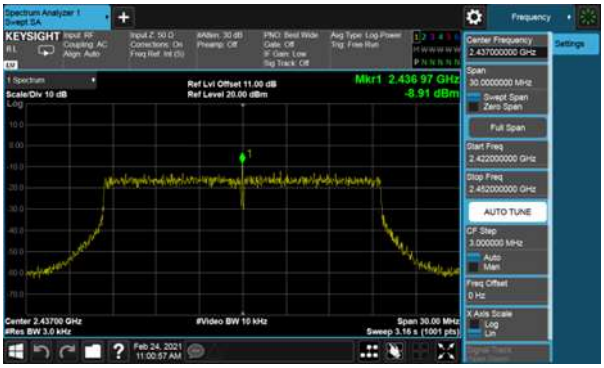


Modulation Type: 802.11ax HE40

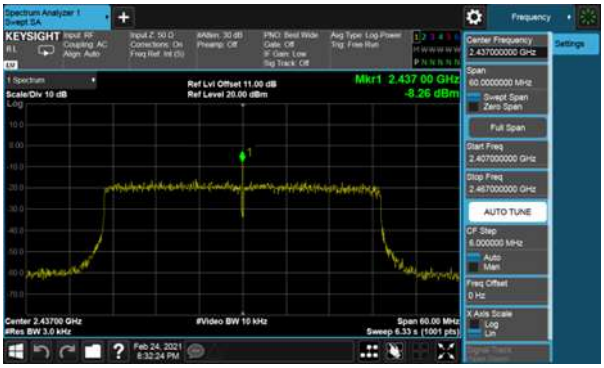
CH03



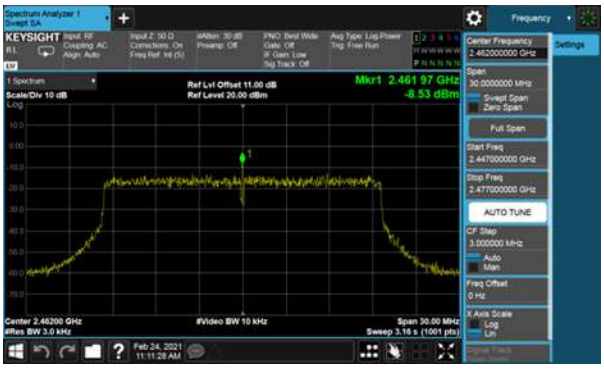
CH06



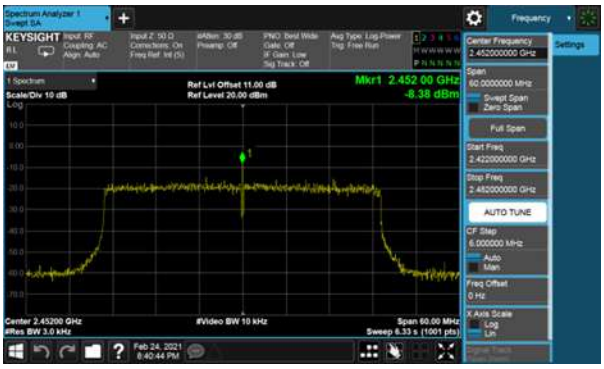
CH06



CH11



CH09



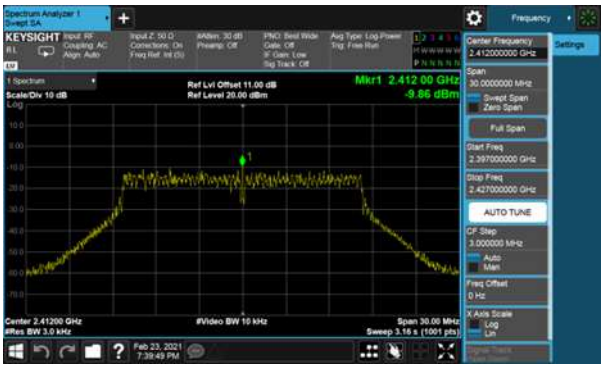
Non-Beamforming, ANT E

Modulation Type: 802.11b

CH01

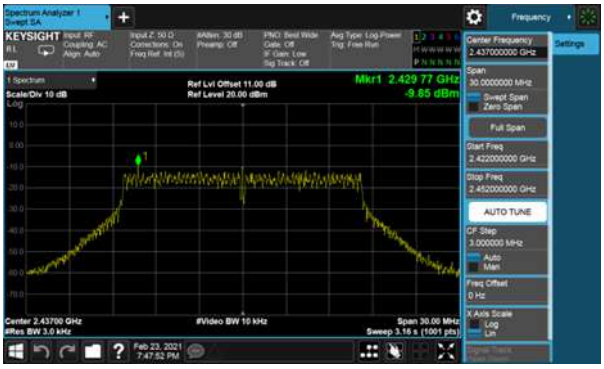
Modulation Type: 802.11g

CH01



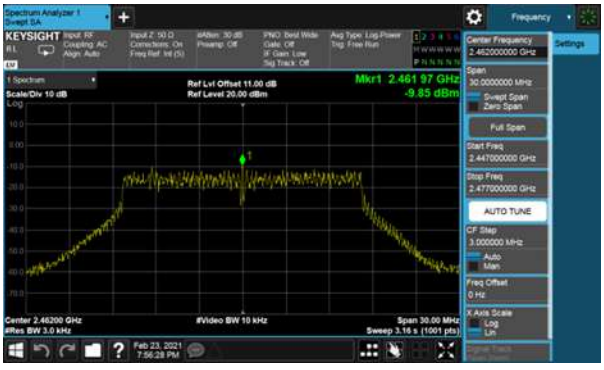
CH06

CH06



CH11

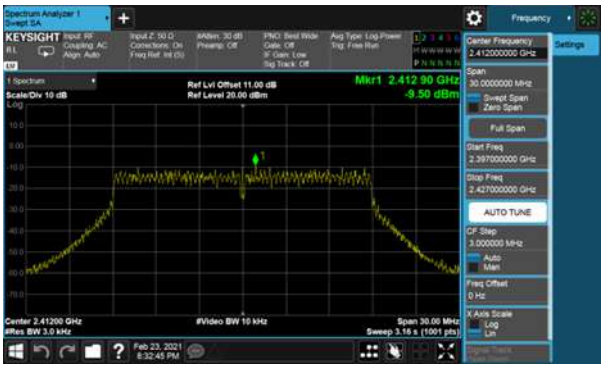
CH11



Non-Beamforming, ANT E

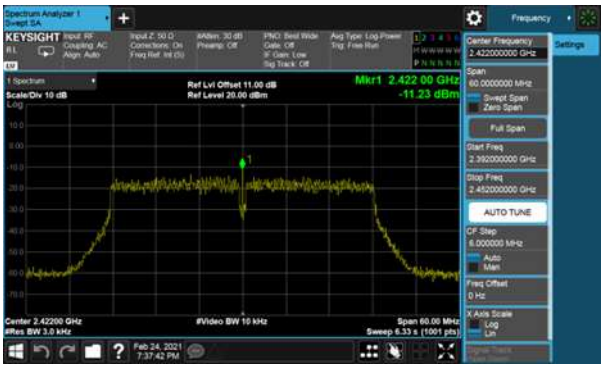
Modulation Type: 802.11n HT20

CH01

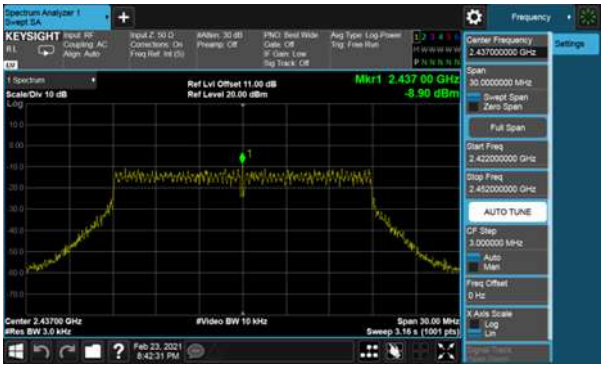


Modulation Type: 802.11n HT40

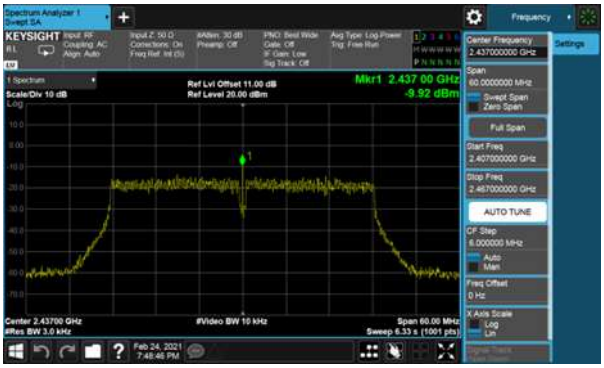
CH03



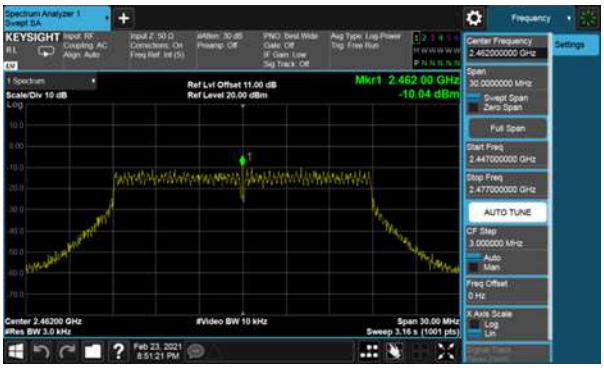
CH06



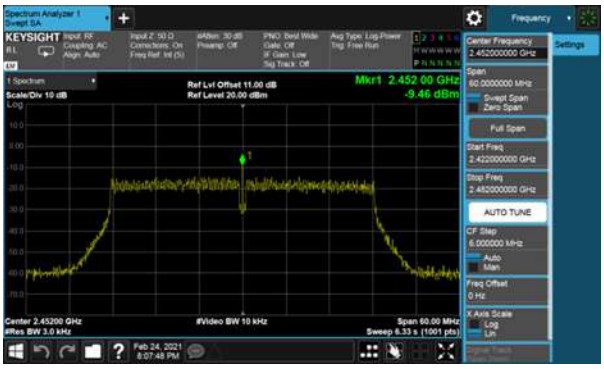
CH06



CH11



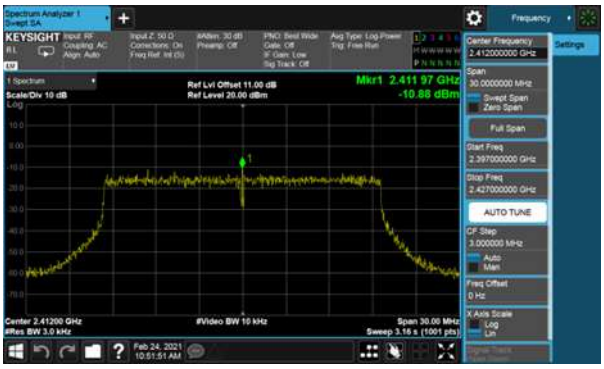
CH09



Non-Beamforming, ANT E

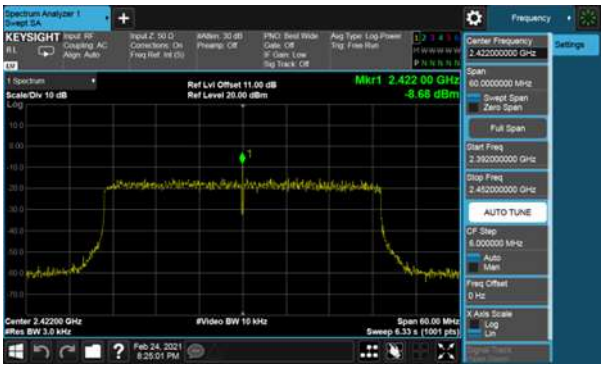
Modulation Type: 802.11ax HE20

CH01

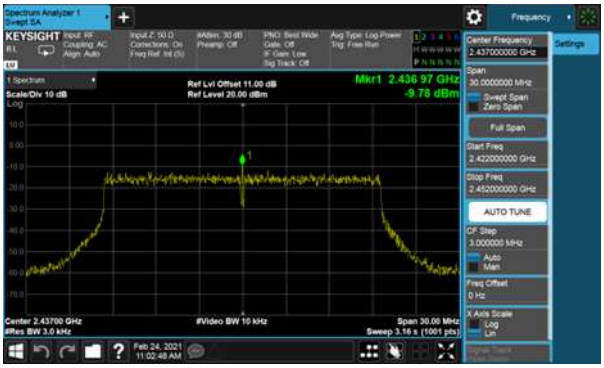


Modulation Type: 802.11ax HE40

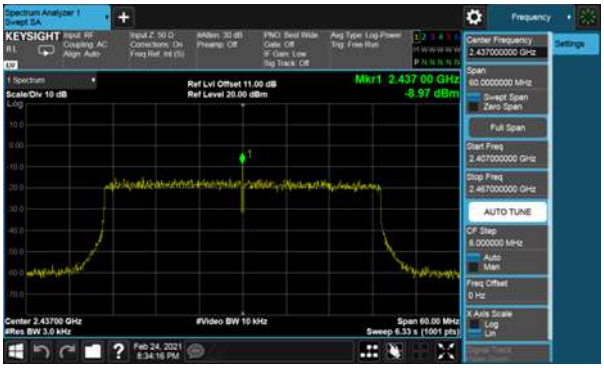
CH03



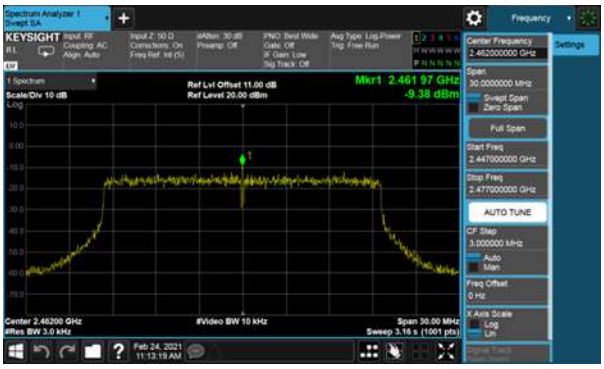
CH06



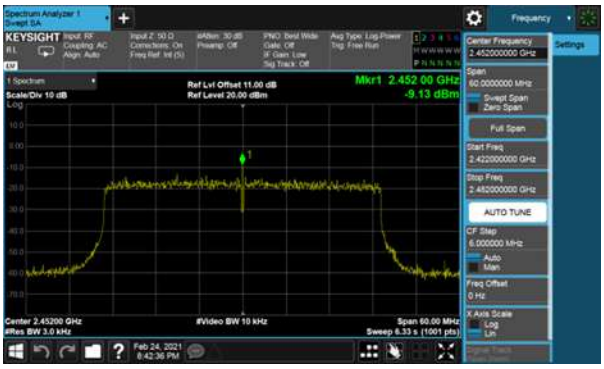
CH06



CH11



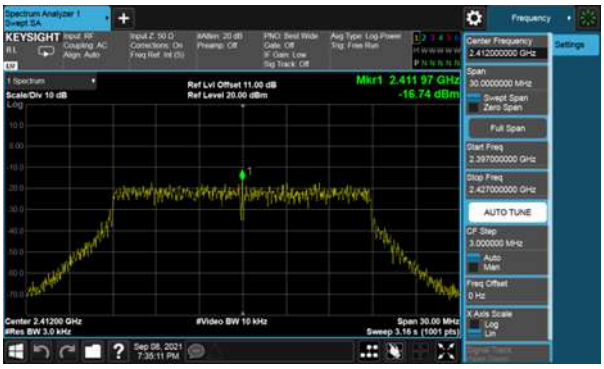
CH09



Beamforming, ANT B

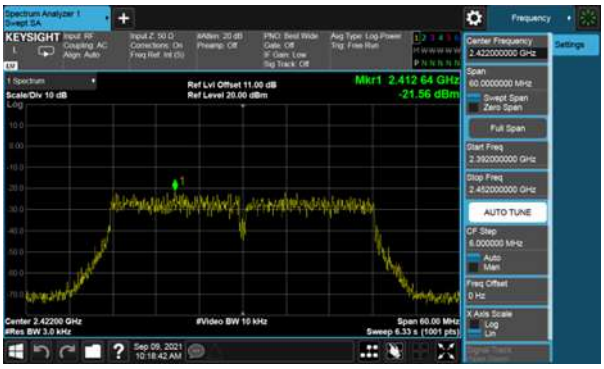
Modulation Type: 802.11n HT20

CH01

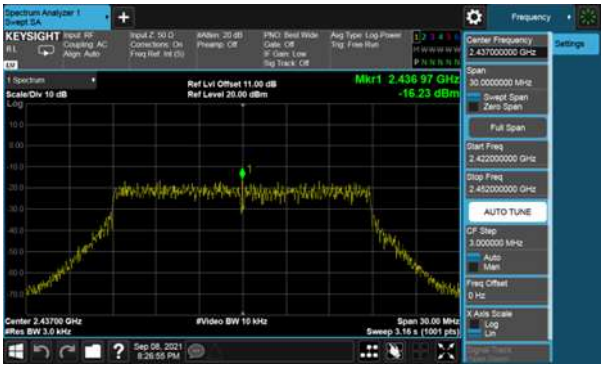


Modulation Type: 802.11n HT40

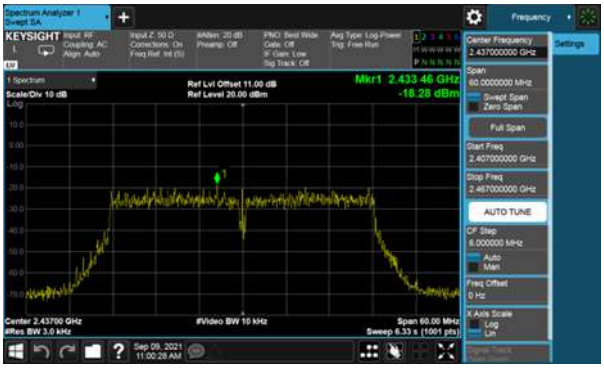
CH03



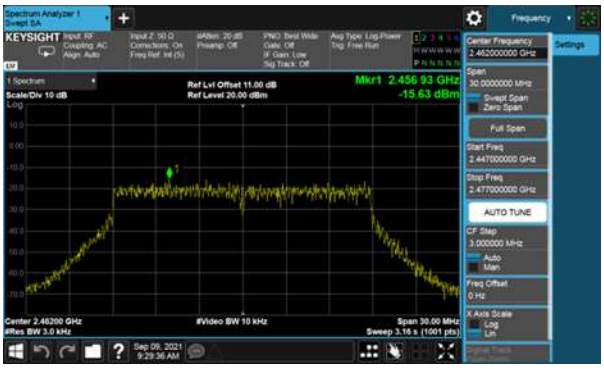
CH06



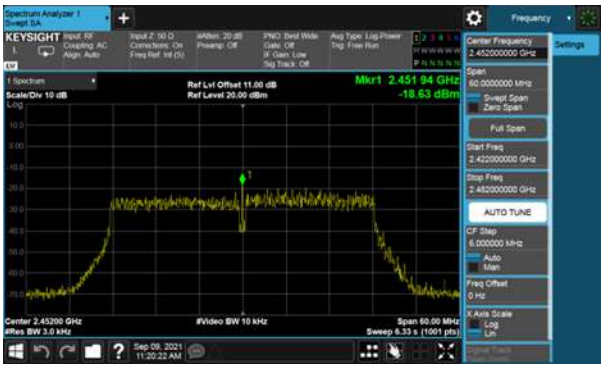
CH06



CH11



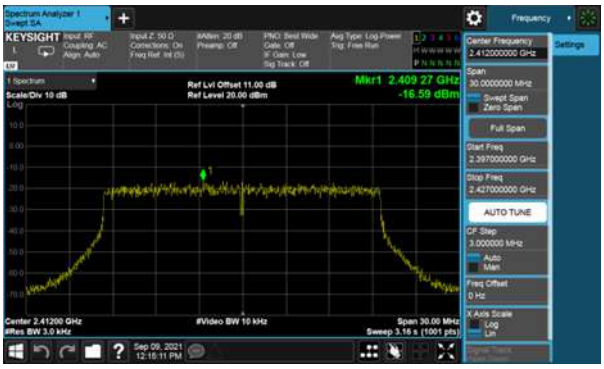
CH09



Beamforming, ANT B

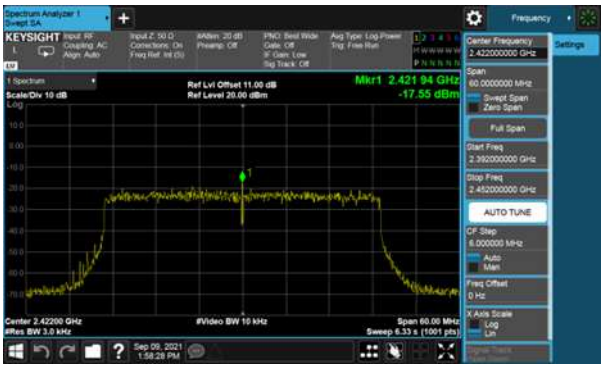
Modulation Type: 802.11ax HE20

CH01

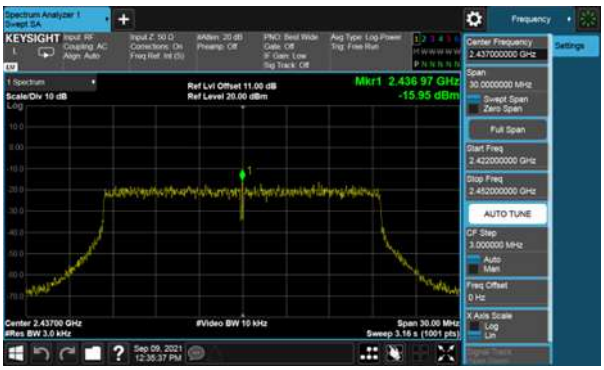


Modulation Type: 802.11ax HE40

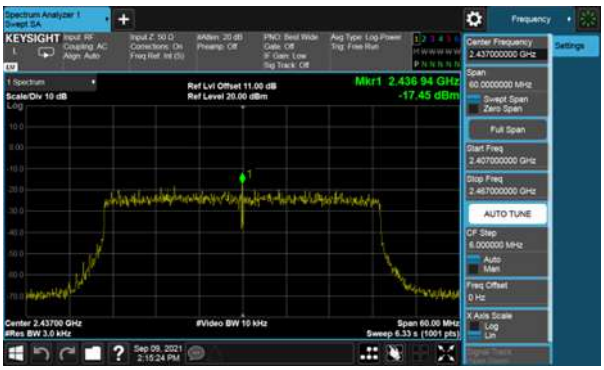
CH03



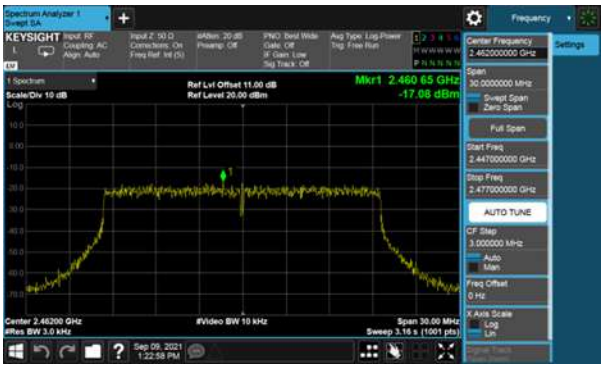
CH06



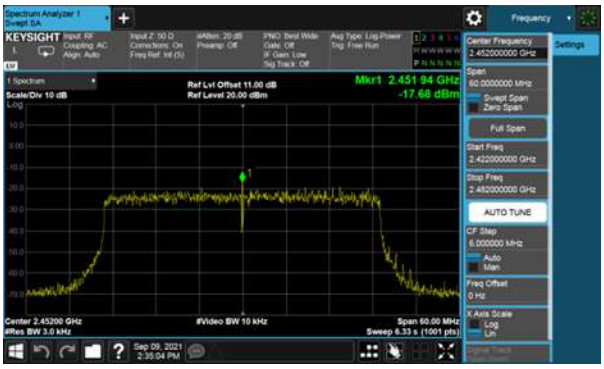
CH06



CH11



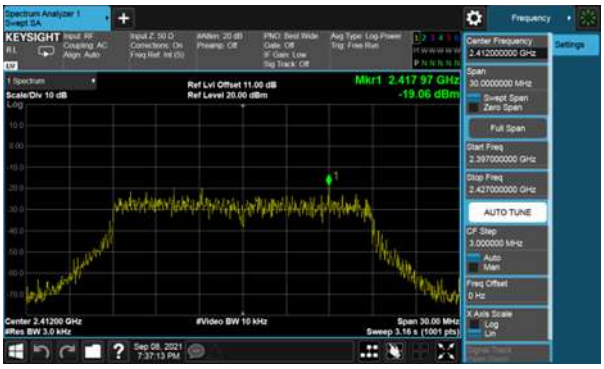
CH09



Beamforming, ANT C

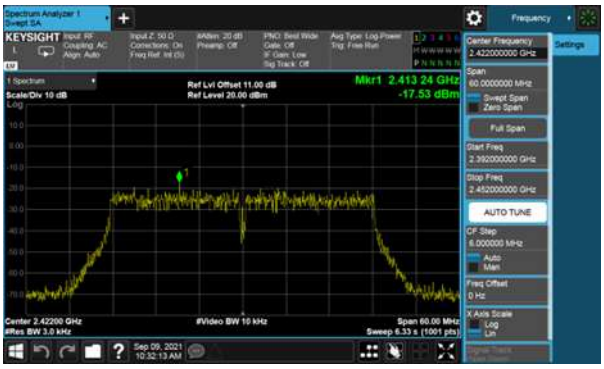
Modulation Type: 802.11n HT20

CH01

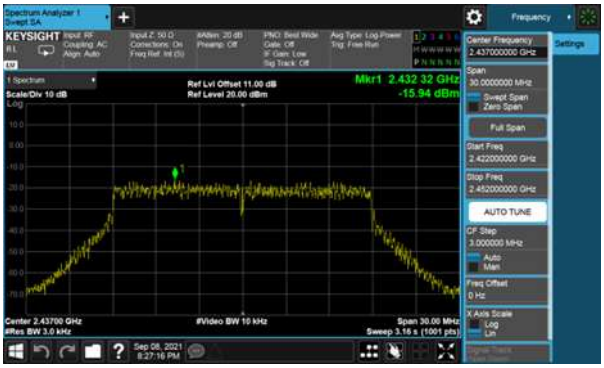


Modulation Type: 802.11n HT40

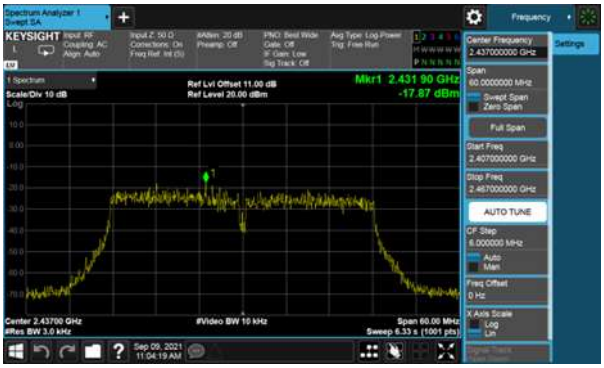
CH03



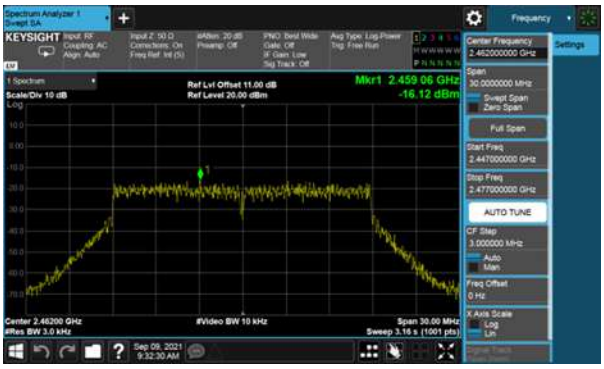
CH06



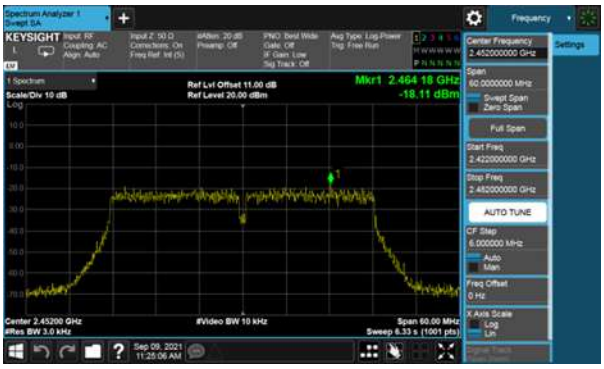
CH06



CH11



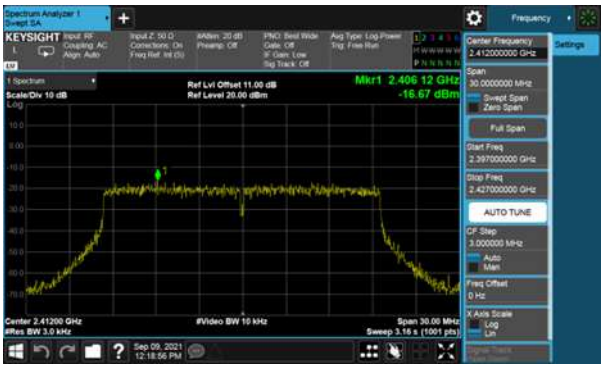
CH09



Beamforming, ANT C

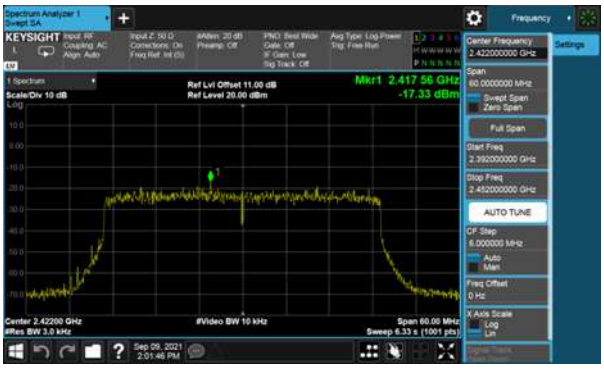
Modulation Type: 802.11ax HE20

CH01

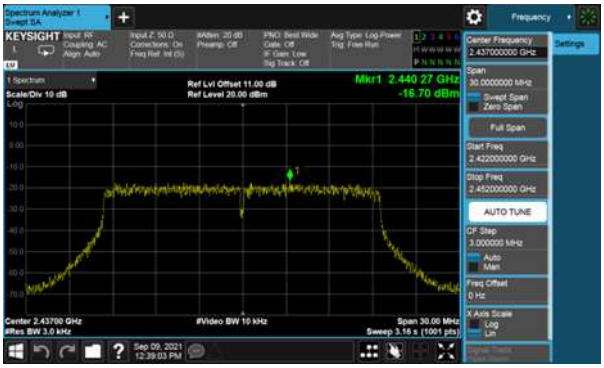


Modulation Type: 802.11ax HE40

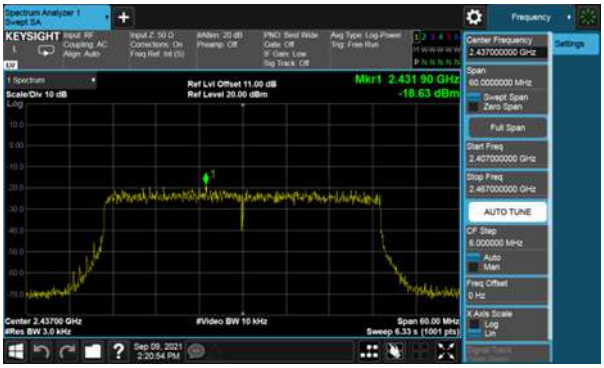
CH03



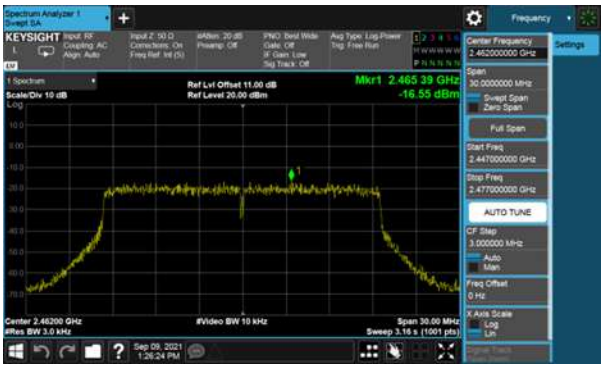
CH06



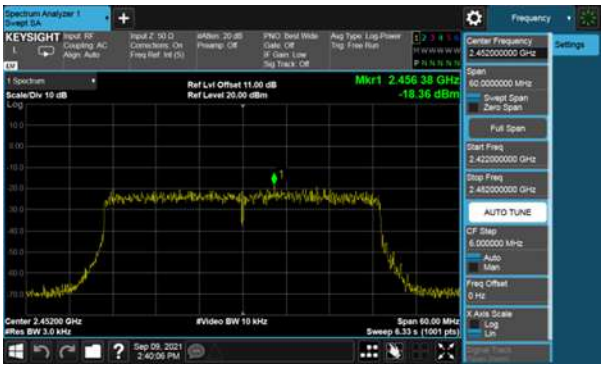
CH06



CH11



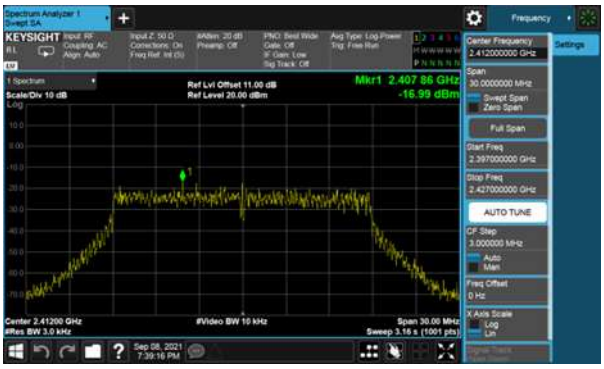
CH09



Beamforming, ANT D

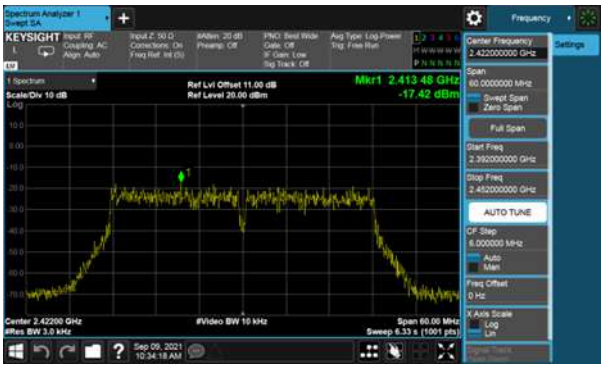
Modulation Type: 802.11n HT20

CH01

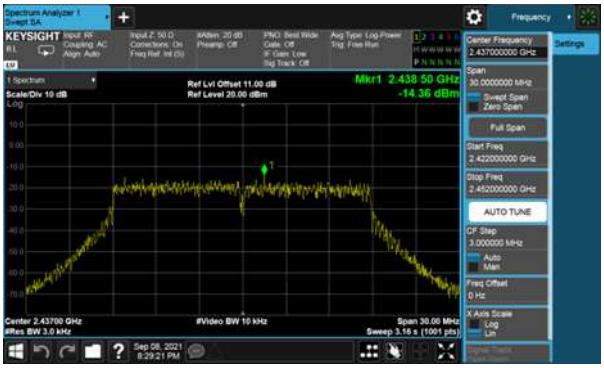


Modulation Type: 802.11n HT40

CH03



CH06



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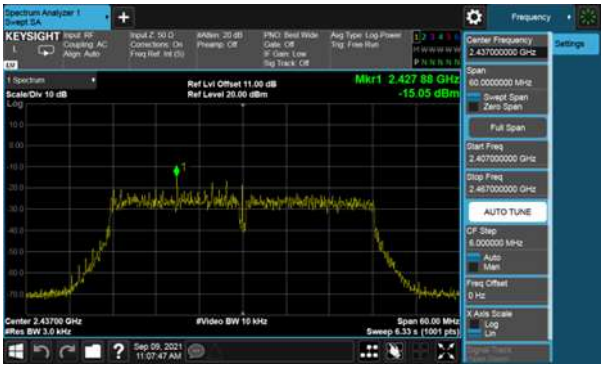
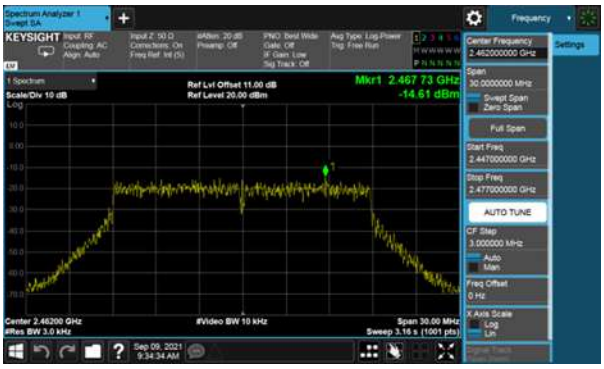
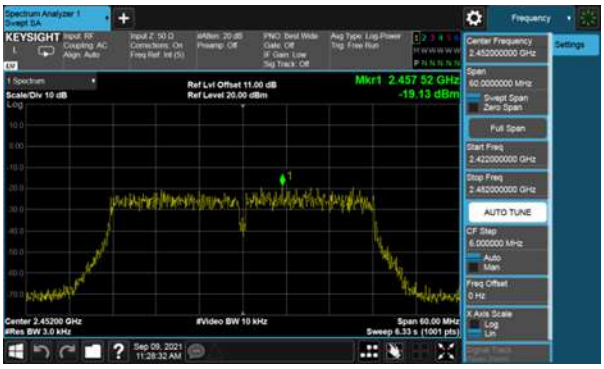


CH11



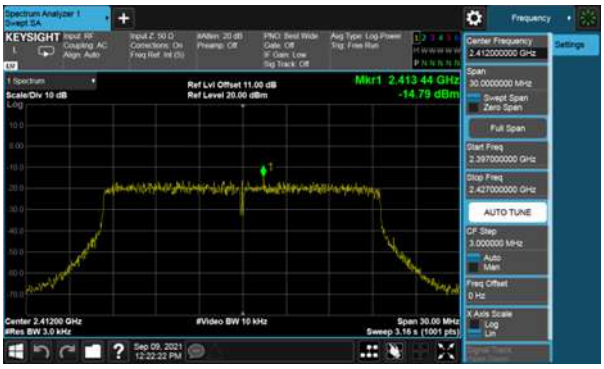
CH09



Beamforming, ANT D

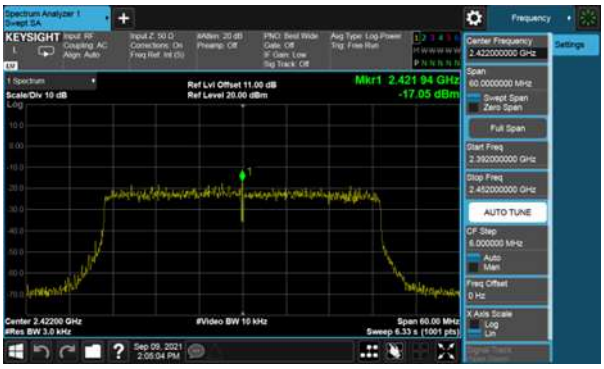
Modulation Type: 802.11ax HE20

CH01

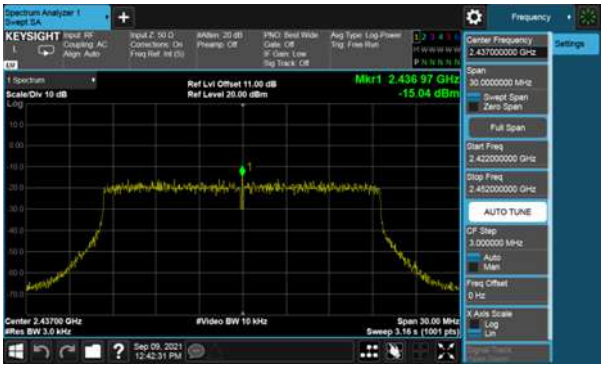


Modulation Type: 802.11ax HE40

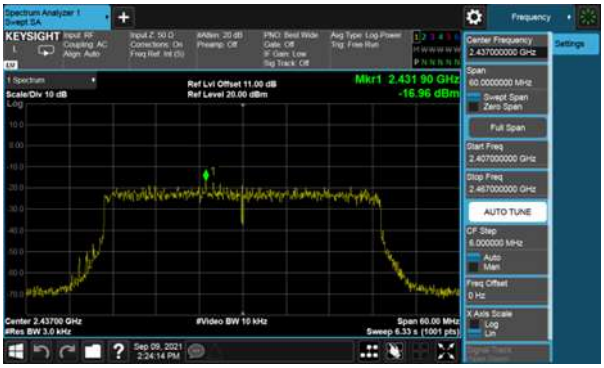
CH03



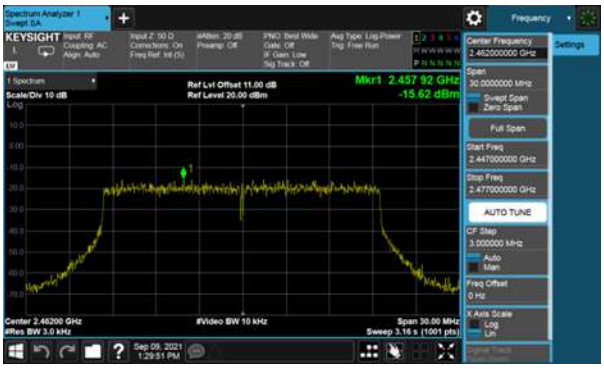
CH06



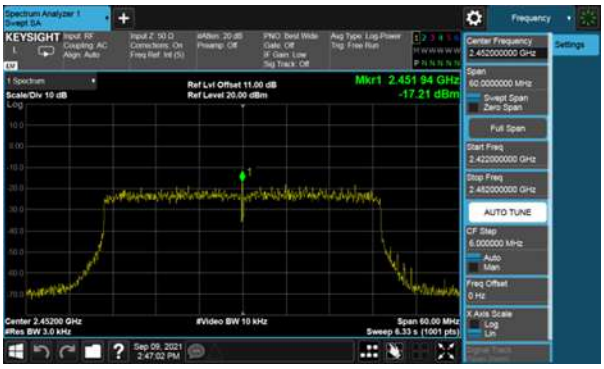
CH06



CH11



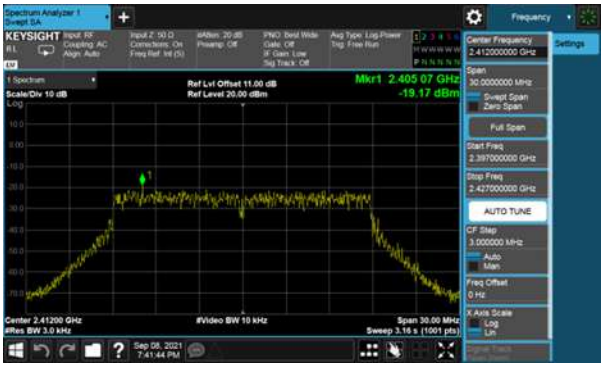
CH09



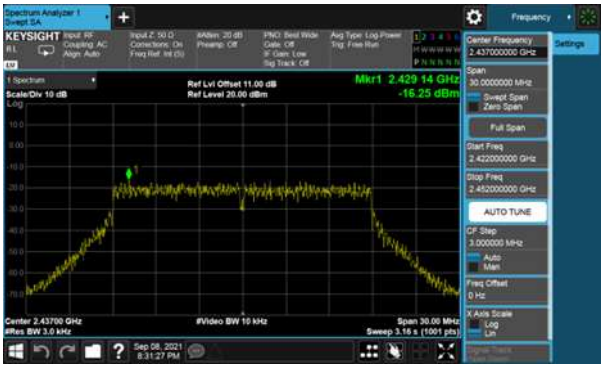
Beamforming, ANT E

Modulation Type: 802.11n HT20

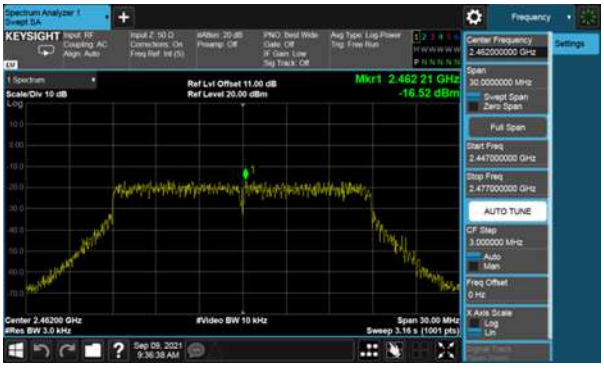
CH01



CH06

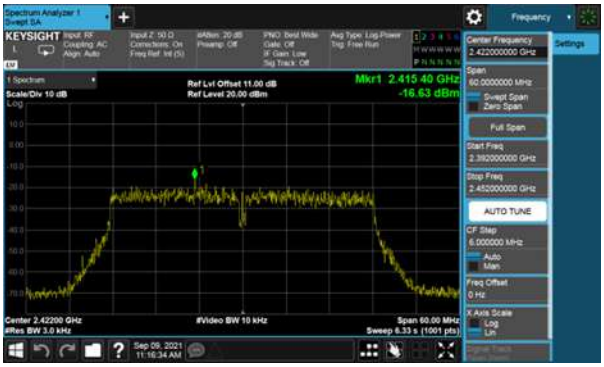


CH11

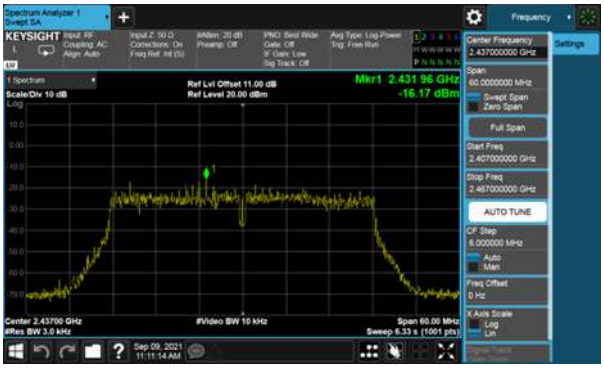


Modulation Type: 802.11n HT40

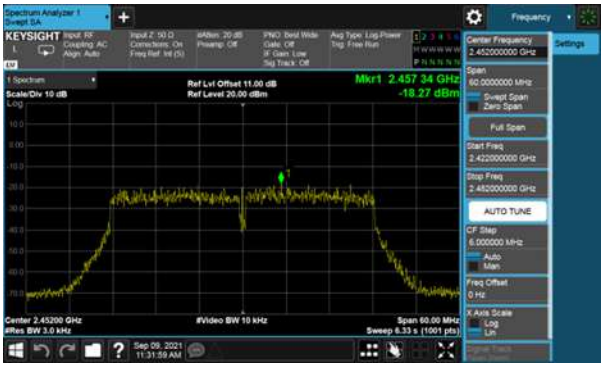
CH03



CH06



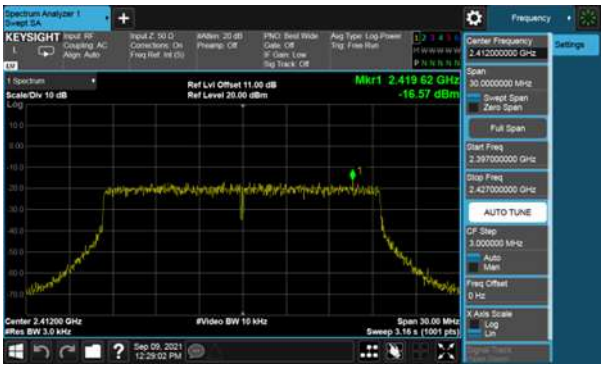
CH09



Beamforming, ANT E

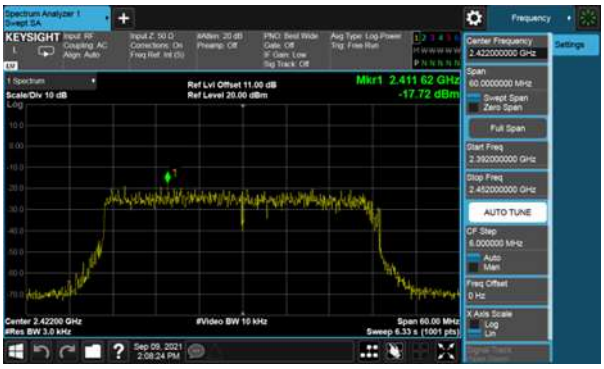
Modulation Type: 802.11ax HE20

CH01

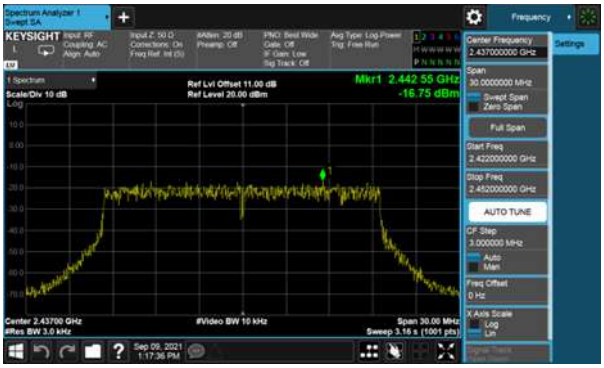


Modulation Type: 802.11ax HE40

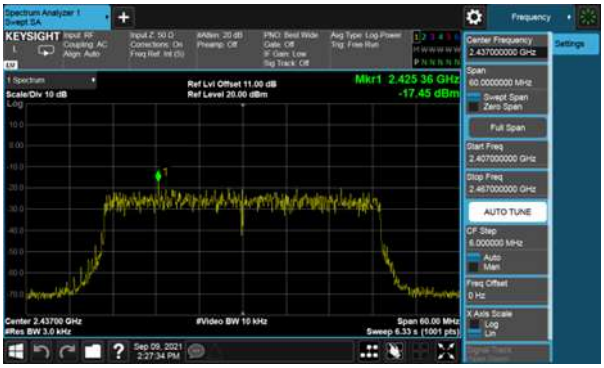
CH03



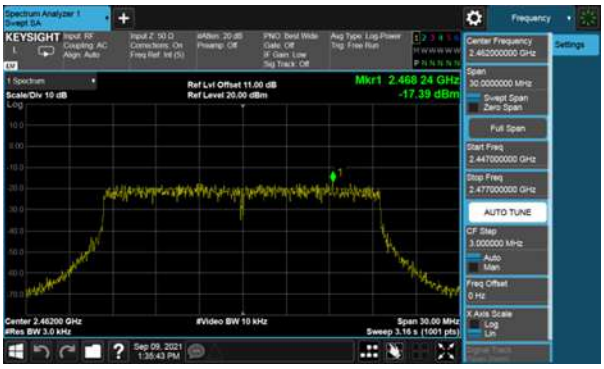
CH06



CH06



CH11



CH09