

TEST REPORT

Antenna Port	NR Modulation	GB Modulation	NR Carrier Bandwidth (MHz)	GB Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)		
					Channel position M		
					Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK	QPSK	10	10	46.03	32.17	-
B	QPSK	QPSK	10	10	45.76	31.98	-
C	QPSK	QPSK	10	10	45.78	32.00	-
D	QPSK	QPSK	10	10	45.82	32.04	-
Total					51.87	38.07	-
Limit					-	62.15	-
Max antenna gain					-	24.08	-

NR+GB-MC-4

Antenna Port	NR Modulation	GB Modulation	NR Carrier Bandwidth (MHz)	GB Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)		
					Channel position M		
					Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK	QPSK	5	10	46.04	32.18	-
B	QPSK	QPSK	5	10	45.87	31.96	-
C	QPSK	QPSK	5	10	45.92	32.03	-
D	QPSK	QPSK	5	10	45.94	32.03	-
Total					51.96	38.07	-
Limit					-	62.15	-
Max antenna gain					-	24.08	-

NR ESS IB-1C

Antenna Port	LTE Modulation	LTE Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)								
			Channel position B			Channel position M			Channel position T		
			Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)	Power (dBm)	Power (dBm/MHz)	PAR (dB)
A	QPSK	10	46.14	37.32	7.40	46.13	37.35	7.36	45.81	37.09	7.57
B	QPSK	10	46.04	37.18	7.38	46.00	37.18	7.33	45.66	36.95	7.55
C	QPSK	10	45.92	37.04	7.38	45.79	36.93	7.44	45.56	36.83	7.53
D	QPSK	10	45.94	37.07	7.44	45.89	37.07	7.47	45.72	37.00	7.53
Total			52.03	43.17	-	51.97	43.16	-	51.71	42.99	-
Limit			-	62.15	13.00	-	62.15	13.00	-	62.15	13.00
Max antenna gain			-	18.98	-	-	18.99	-	-	19.16	-

Antenna Port	LTE Modulation	LTE Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)								
			Channel position B			Channel position M			Channel position T		
			Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)
A	QPSK	15	46.11	36.87	7.44	46.04	36.86	7.42	45.78	36.77	7.76
B	QPSK	15	45.96	36.72	7.42	45.88	36.66	7.40	45.64	35.69	7.75
C	QPSK	15	45.88	36.7	7.45	45.89	36.77	7.39	45.63	36.71	7.78
D	QPSK	15	45.89	36.72	7.51	45.89	36.78	7.44	45.70	36.75	7.72
Total			51.98	42.77	-	51.95	42.79	-	51.71	42.52	-
Limit			-	62.15	13.00	-	62.15	13.00	-	62.15	13.00
Max antenna gain			-	19.38	-	-	19.36	-	-	19.63	-

Antenna Port	LTE Modulation	LTE Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)								
			Channel position B			Channel position M			Channel position T		
			Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)
A	QPSK	20	46.13	36.85	7.46	45.98	36.85	7.49	45.89	36.87	7.87
B	QPSK	20	45.88	36.67	7.43	45.87	36.69	7.45	45.70	36.67	7.88
C	QPSK	20	45.84	36.59	7.42	45.83	36.61	7.46	45.64	36.61	7.87
D	QPSK	20	45.90	36.66	7.46	45.90	36.63	7.47	45.71	36.63	7.86
Total			51.96	42.71	-	51.92	42.72	-	51.76	42.72	-
Limit			-	62.15	13.00	-	62.15	13.00	-	62.15	13.00
Max antenna gain			-	19.44	-	-	19.43	-	-	19.43	-

LTE+SA-MC-1

Antenna Port	LTE Modulation	LTE Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)								
			Channel position B			Channel position M			Channel position T		
			Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)
A	QPSK	5	46.13	43.25	-	45.41	41.93	-	45.65	42.55	-
B	QPSK	5	45.96	42.98	-	45.29	41.57	-	45.31	42.27	-
C	QPSK	5	45.34	42.40	-	45.30	41.65	-	45.31	42.31	-
D	QPSK	5	46.00	43.14	-	45.35	41.77	-	45.51	42.53	-
Total			51.89	48.98	-	51.36	47.75	-	51.47	48.44	-
Limit			-	62.15	-	-	62.15	-	-	62.15	-
Max antenna gain			-	13.17	-	-	14.40	-	-	13.71	-

TEST REPORT

LTE+SA-MC-2

Antenna Port	LTE Modulation	LTE Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)								
			Channel position B			Channel position M			Channel position T		
			Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)
A	QPSK	5	-	-	-	46.50	41.45	-	-	-	-
B	QPSK	5	-	-	-	45.98	41.75	-	-	-	-
C	QPSK	5	-	-	-	46.10	40.90	-	-	-	-
D	QPSK	5	-	-	-	45.94	40.62	-	-	-	-
Total			-	-	-	52.16	47.22	-	-	-	-
Limit			-	-	-	-	62.15	-	-	-	-
Max antenna gain			-	-	-	-	14.93	-	-	-	-

TEST REPORT**4 Occupied Bandwidth****Test result: Pass****4.1 Measurement Procedure**

The EUT was set to transmit at maximum power and testing was carried out on bottom, middle and top channels. Using the Occupied Bandwidth measurement function in the spectrum analyzer, the 26dB bandwidth was measured in accordance with FCC KDB 971168 D01 Clause 4.2.

The measurement method is from KDB 971168 4.2:

- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (i.e., two to five times the OBW).
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
- c) Set the reference level of the instrument as required to keep the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope must be at least $10\log(\text{OBW} / \text{RBW})$ below the reference level.
- d) Set the detection mode to peak, and the trace mode to max hold.
- e) Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

4.2 Measurement result

NR-1C

99% Occupied Bandwidth

Antenna Port	Modulation	Bandwidth	Occupied Bandwidth (MHz)		
			Channel Position B	Channel Position M	Channel Position T
A	QPSK	5MHz	4.4687	4.4727	4.4699
A	QPSK	10MHz	9.2853	9.2819	9.2836
A	QPSK	15MHz	14.119	14.120	14.115
A	QPSK	20MHz	18.902	18.901	18.897

-26dBc Occupied Bandwidth

Antenna Port	Modulation	Bandwidth	Occupied Bandwidth (MHz)		
			Channel Position B	Channel Position M	Channel Position T
A	QPSK	5MHz	4.835	4.841	4.837
A	QPSK	10MHz	9.767	9.769	9.776
A	QPSK	15MHz	14.81	14.80	14.79
A	QPSK	20MHz	19.79	19.77	19.77

QPSK, 5MHz, Channel position B



QPSK, 5MHz, Channel position M



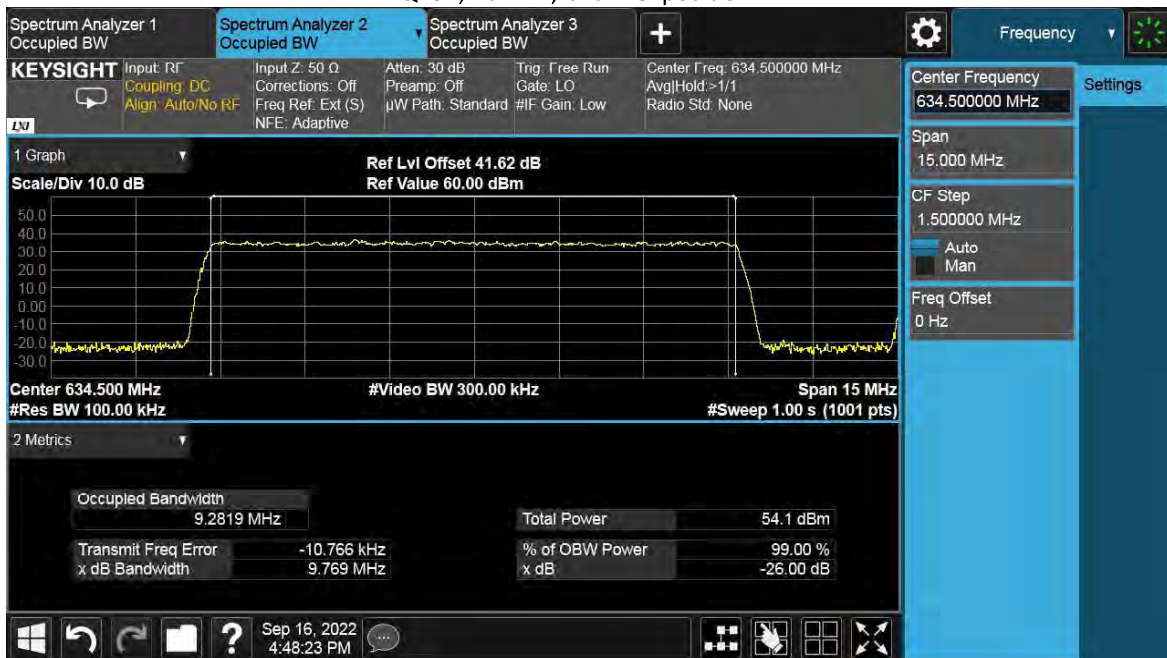
QPSK, 5MHz, Channel position T



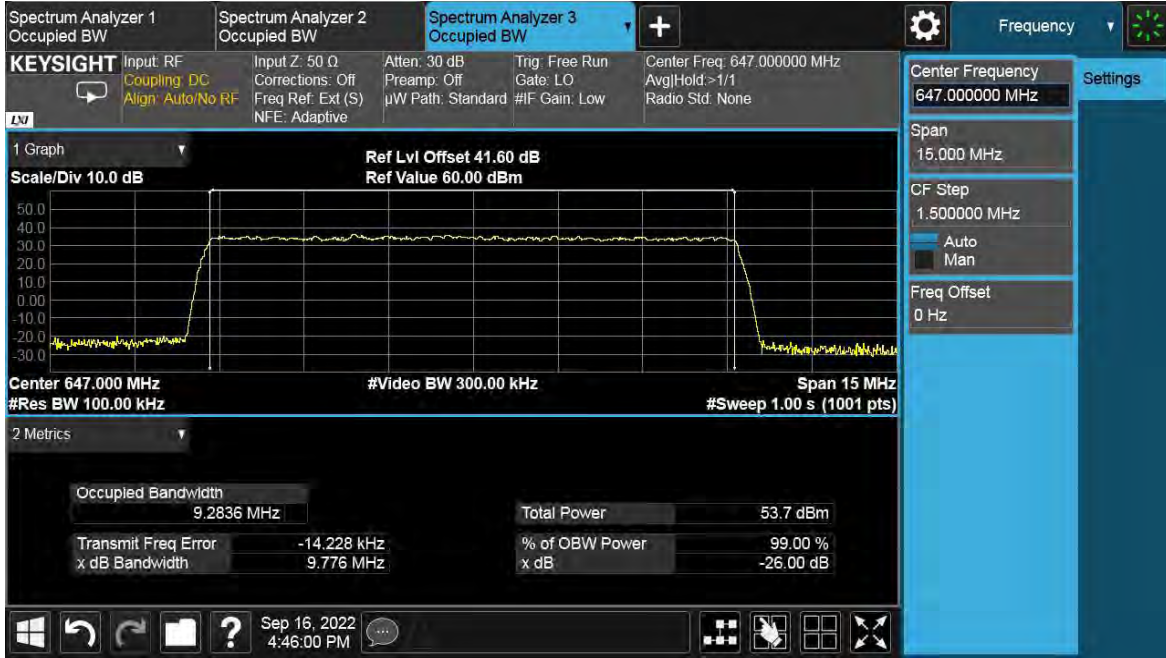
QPSK, 10MHz, Channel position B



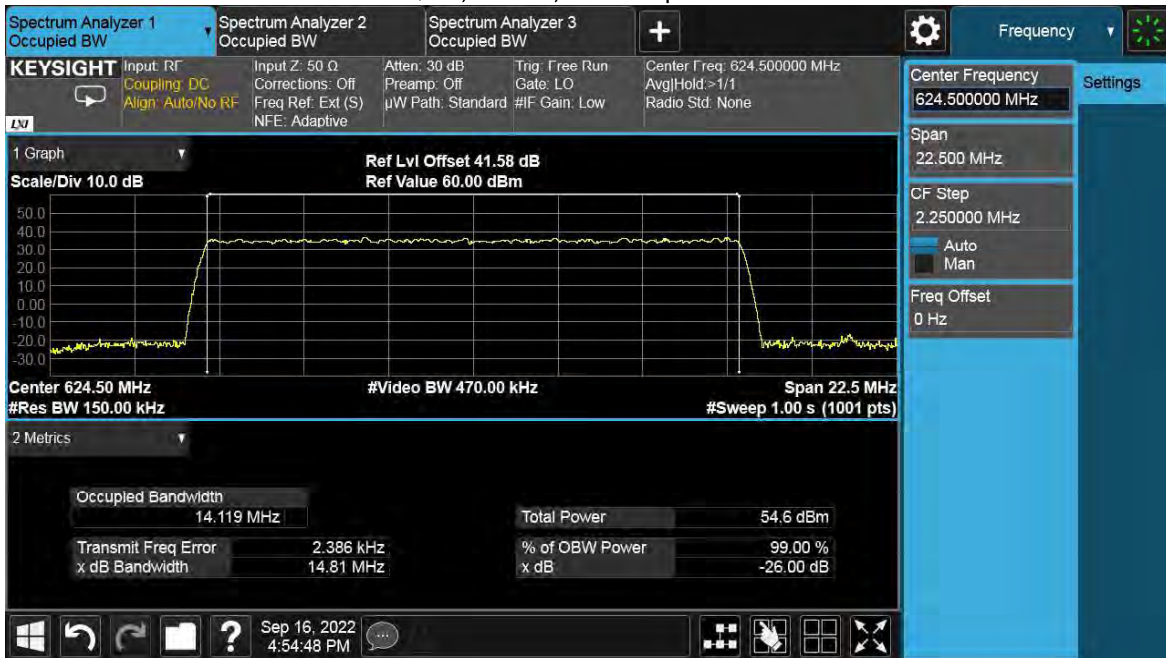
QPSK, 10MHz, Channel position M



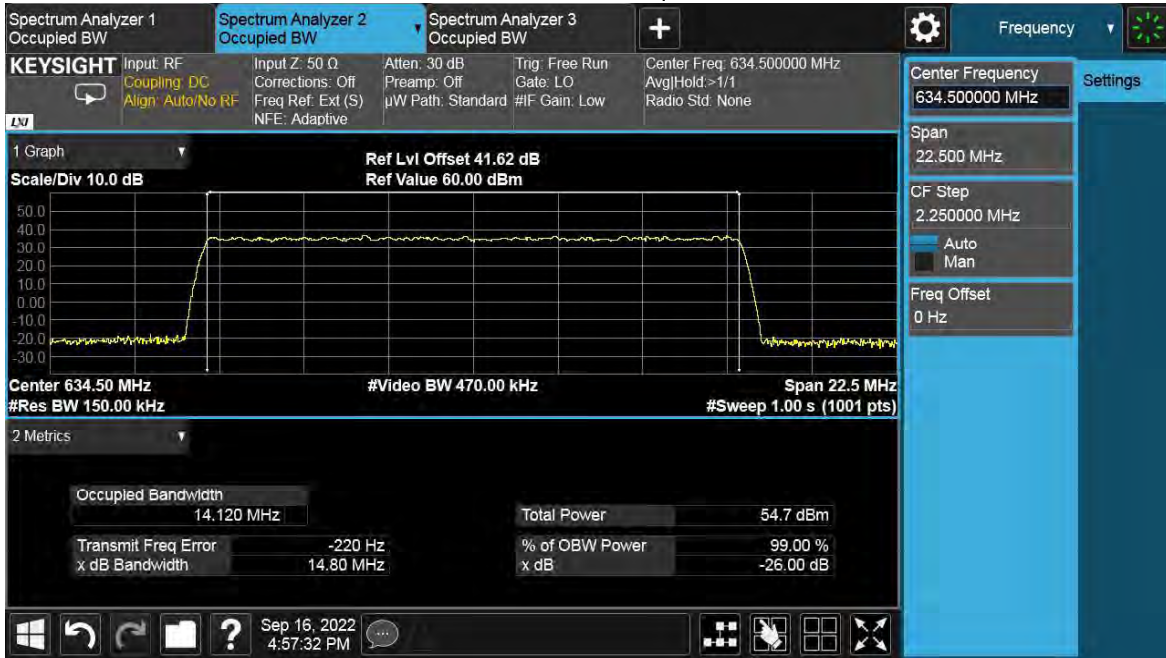
QPSK, 10MHz, Channel position T



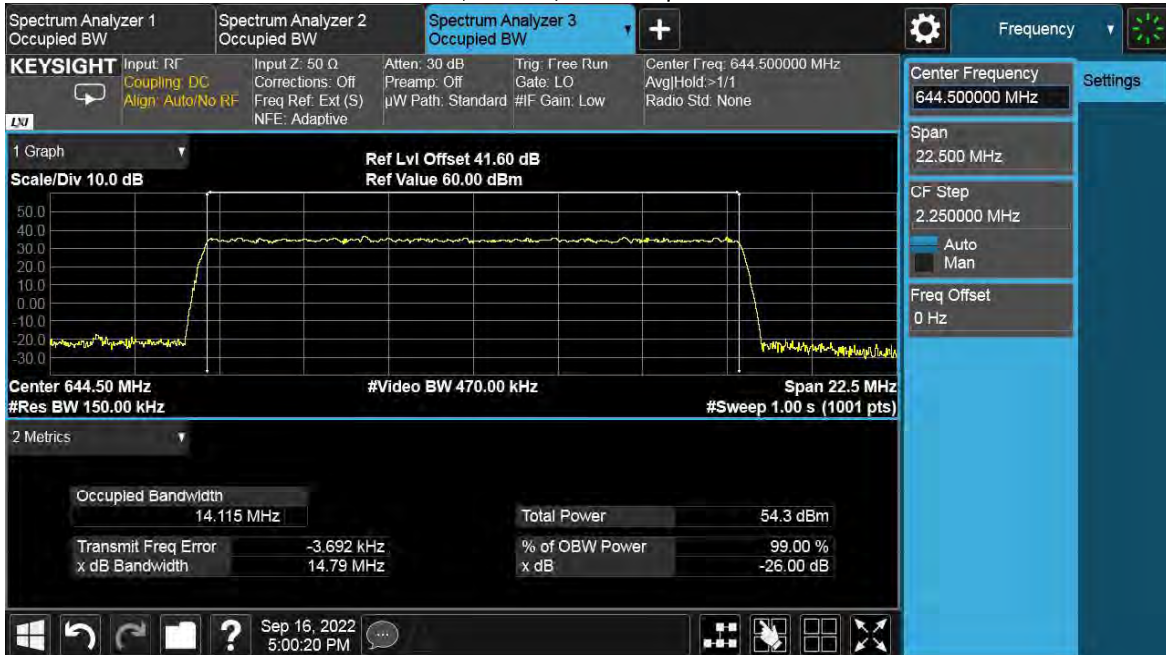
QPSK, 15MHz, Channel position B



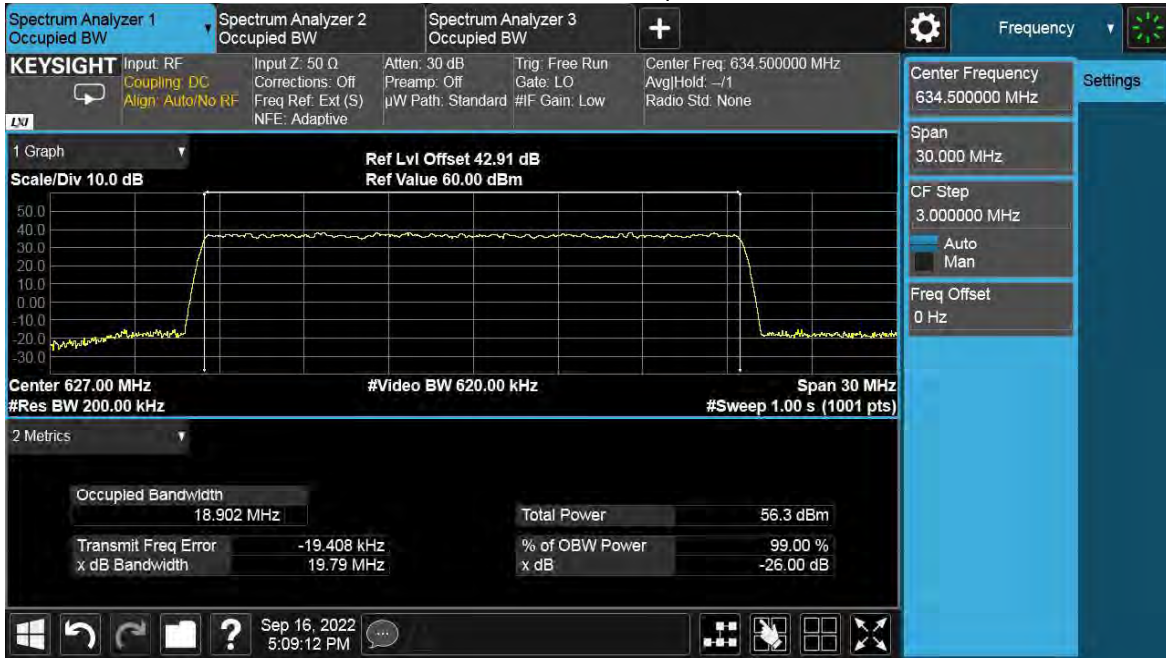
QPSK, 15MHz, Channel position M



QPSK, 15MHz, Channel position T



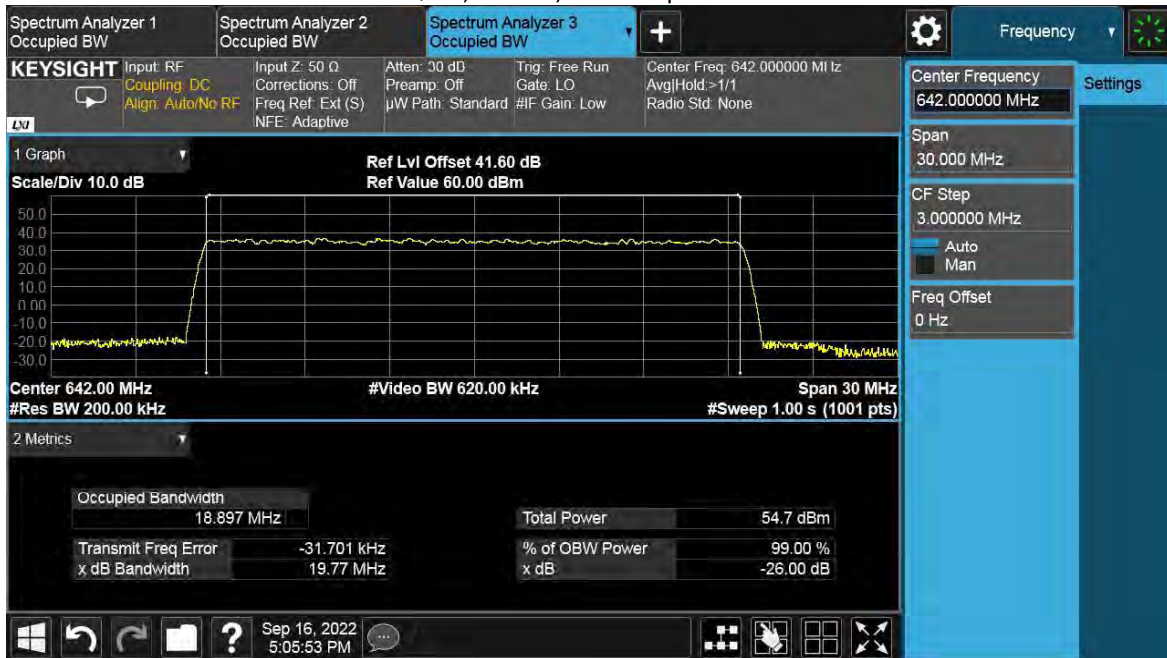
QPSK, 20MHz, Channel position B



QPSK, 20MHz, Channel position M



QPSK, 20MHz, Channel position T



LTE-1C

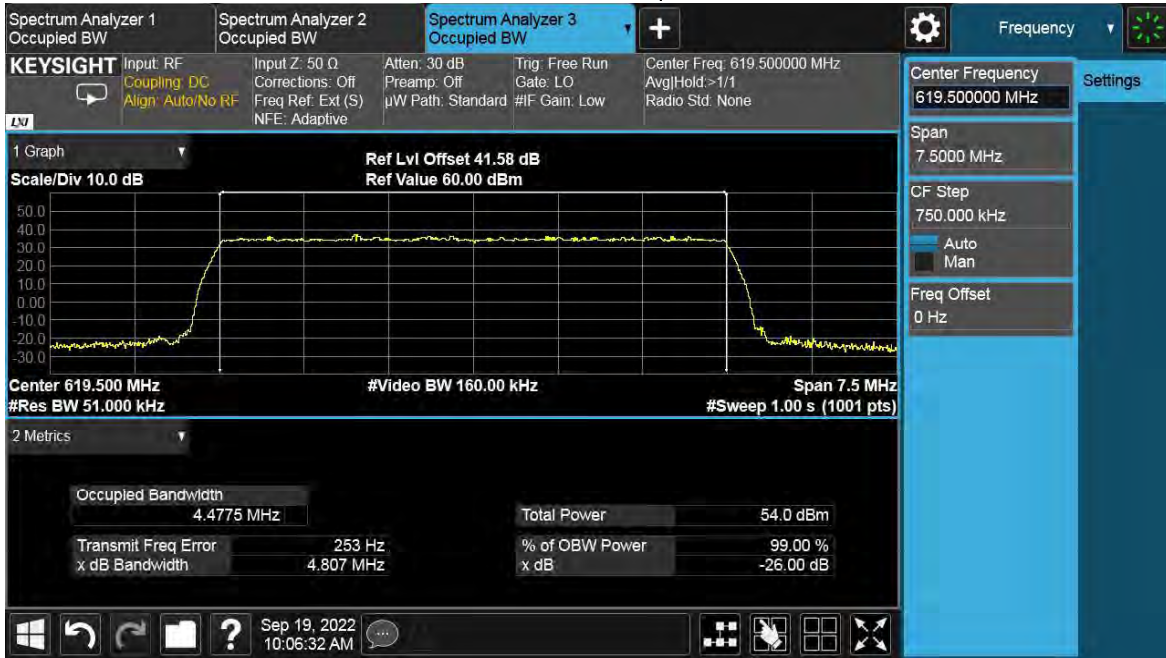
99% Occupied Bandwidth

Antenna Port	Modulation	Bandwidth	Occupied Bandwidth (MHz)		
			Channel Position B	Channel Position M	Channel Position T
A	QPSK	5MHz	4.4775	4.4776	4.4764
A	QPSK	10MHz	8.9585	8.9533	8.9548
A	QPSK	15MHz	13.428	13.425	13.432
A	QPSK	20MHz	17.837	17.875	17.871

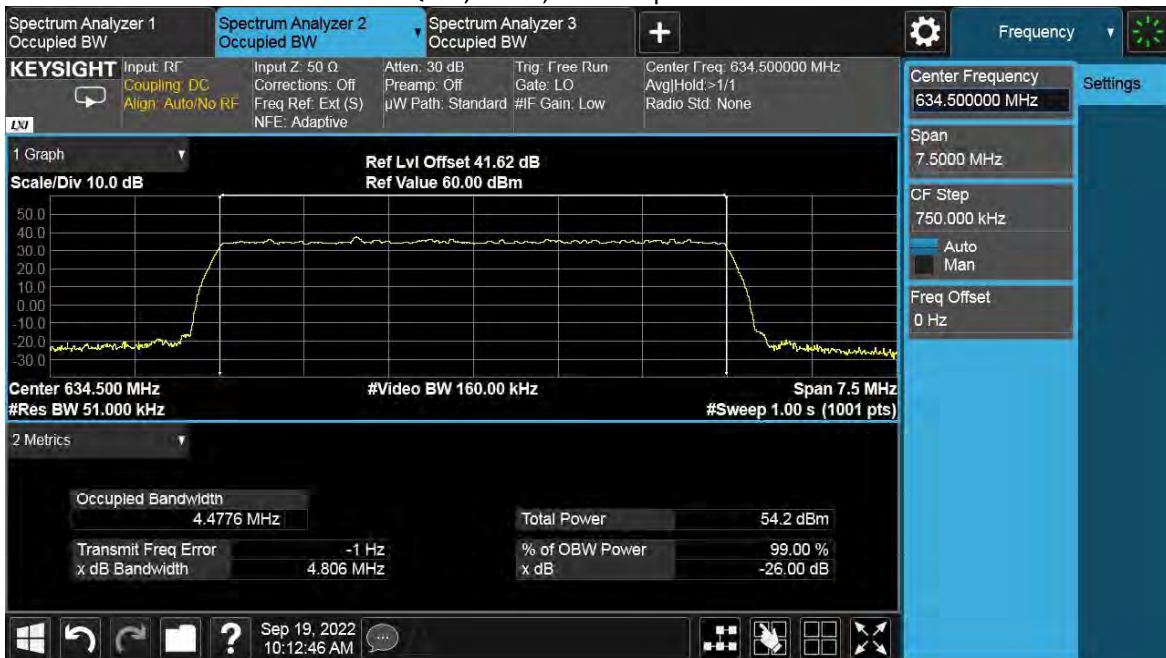
-26dBc Occupied Bandwidth

Antenna Port	Modulation	Bandwidth	Occupied Bandwidth (MHz)		
			Channel Position B	Channel Position M	Channel Position T
A	QPSK	5MHz	4.807	4.806	4.806
A	QPSK	10MHz	9.636	9.624	9.639
A	QPSK	15MHz	14.44	14.45	14.40
A	QPSK	20MHz	19.23	19.23	19.19

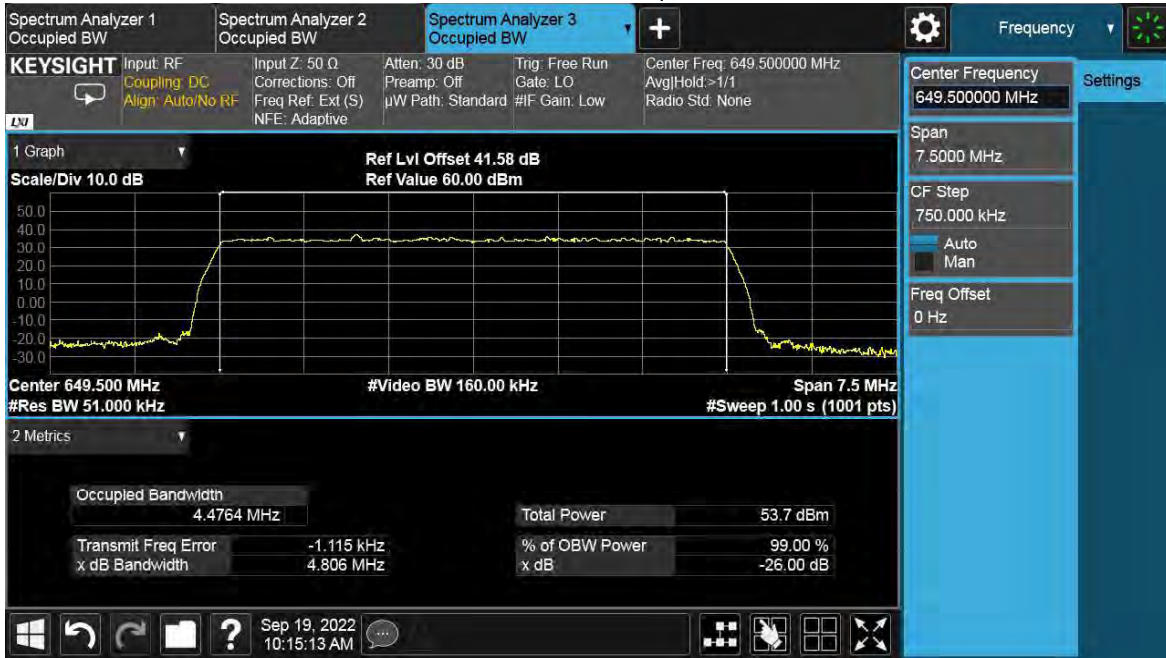
QPSK, 5MHz, Channel position B



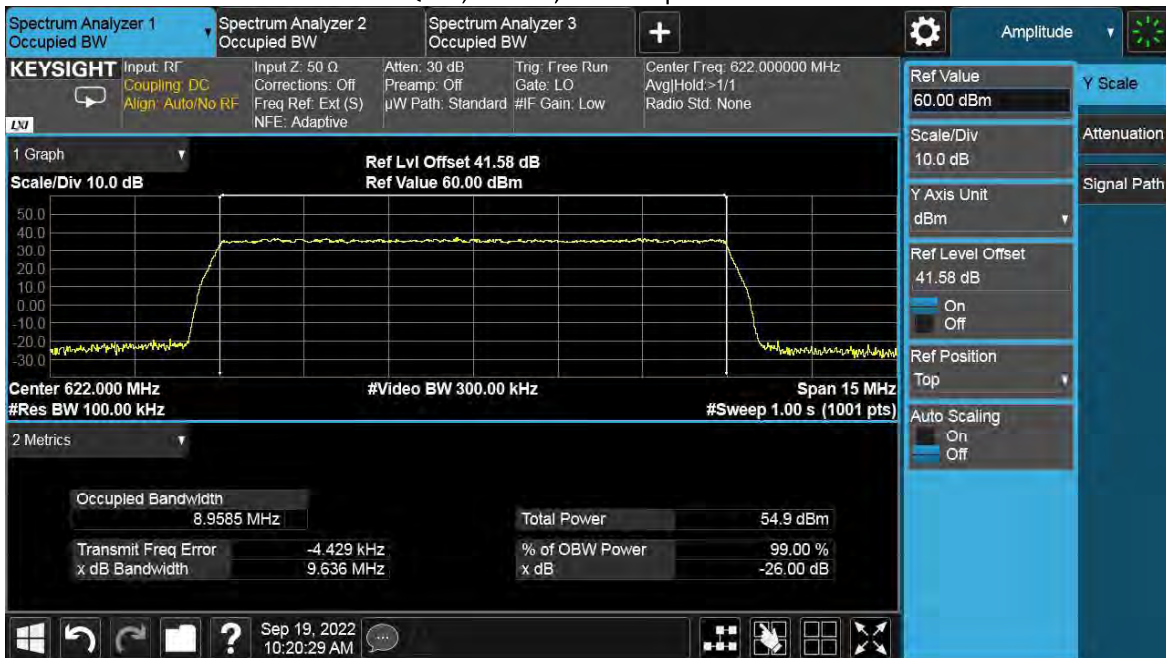
QPSK, 5MHz, Channel position M



QPSK, 5MHz, Channel position T



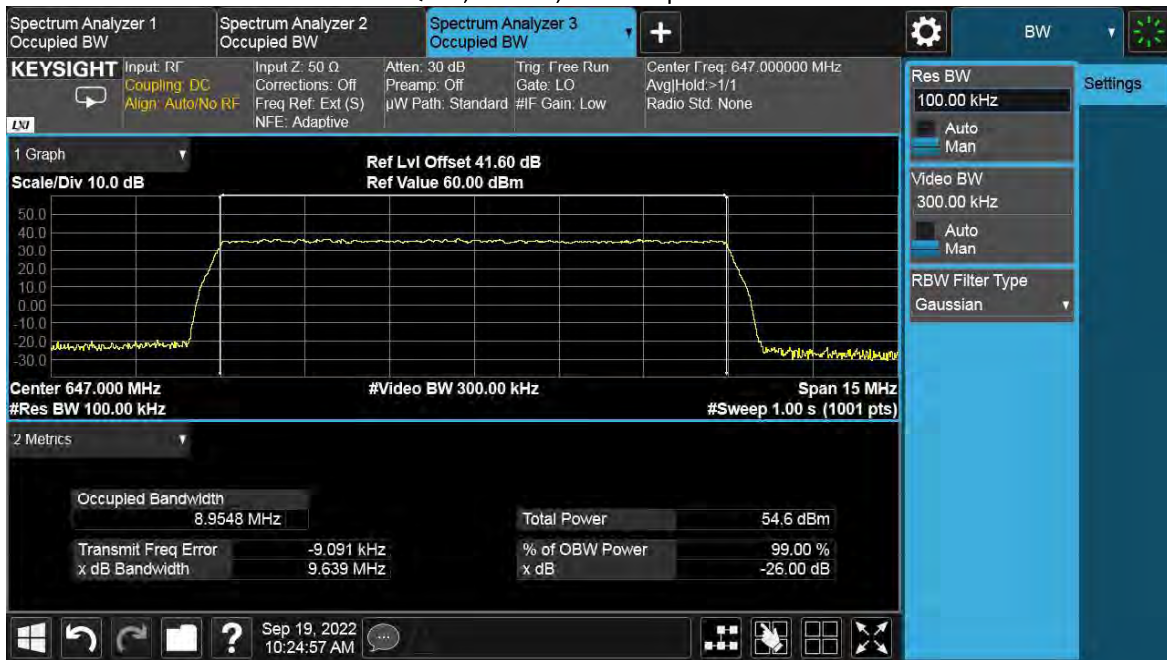
QPSK, 10MHz, Channel position B



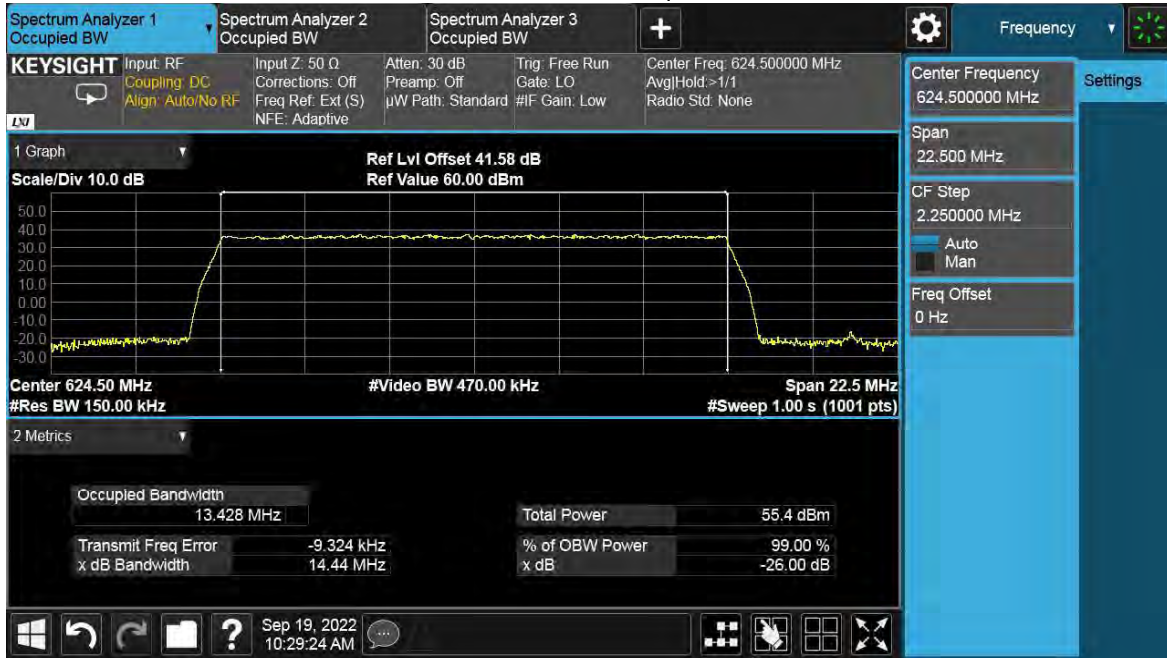
QPSK, 10MHz, Channel position M



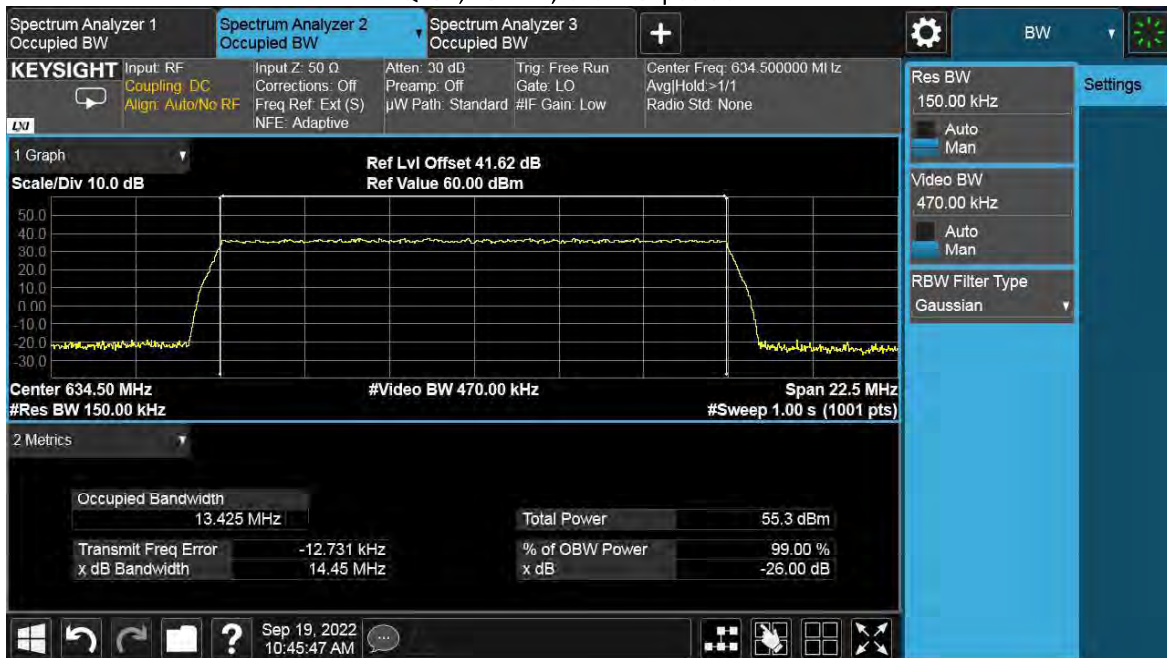
QPSK, 10MHz, Channel position T



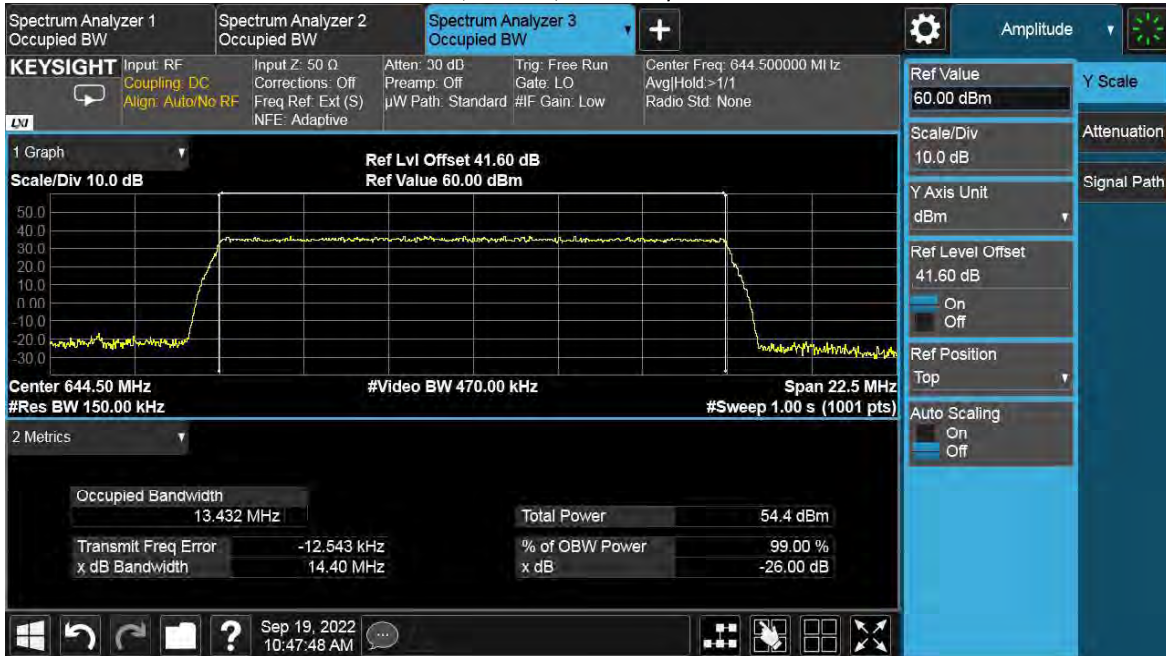
QPSK, 15MHz, Channel position B



QPSK, 15MHz, Channel position M



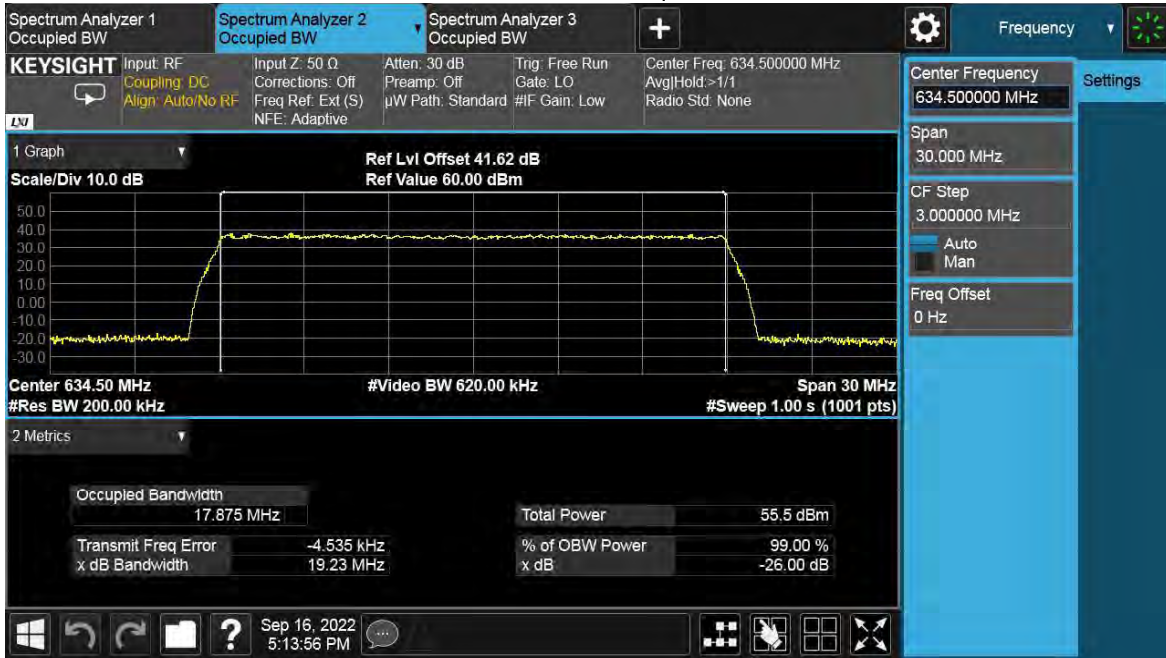
QPSK, 15MHz, Channel position T



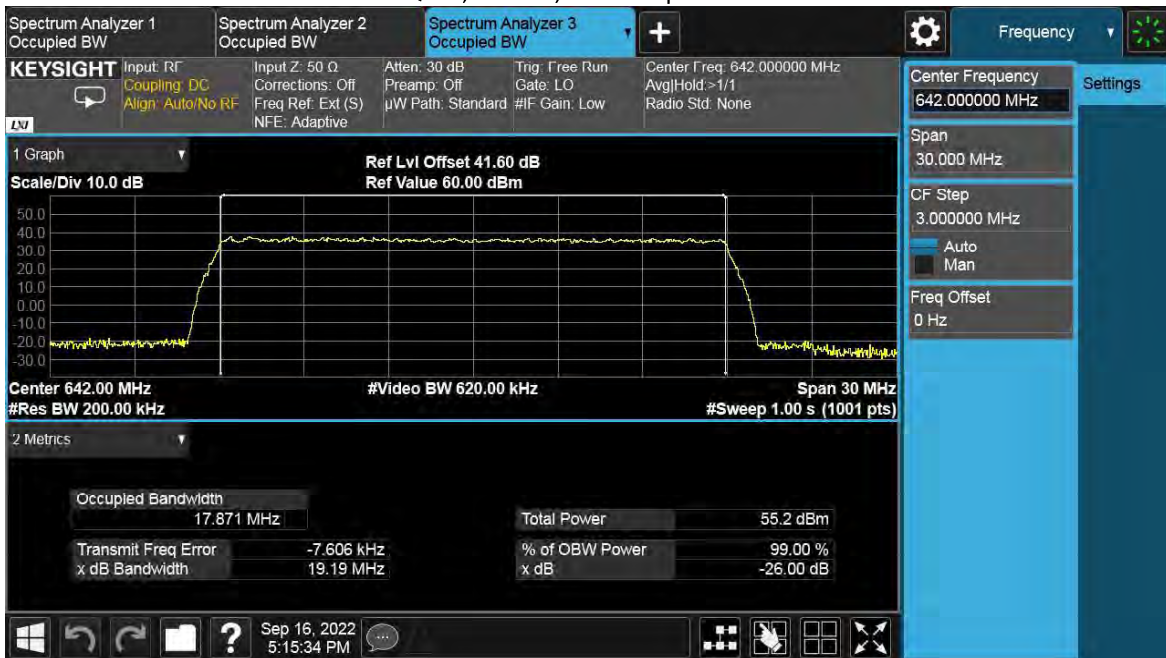
QPSK, 20MHz, Channel position B



QPSK, 20MHz, Channel position M



QPSK, 20MHz, Channel position T



GB-1C

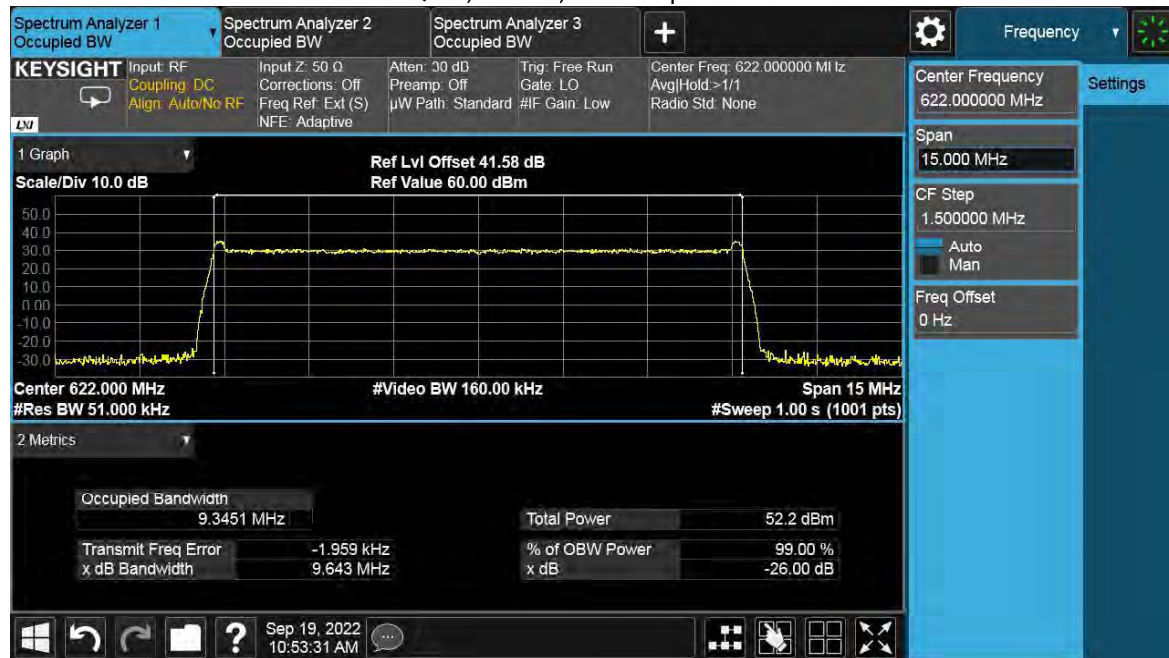
99% Occupied Bandwidth

Antenna Port	Modulation	Bandwidth	Occupied Bandwidth (MHz)		
			Channel Position B	Channel Position M	Channel Position T
A	QPSK	10MHz	9.3451	9.3820	9.3717
A	QPSK	15MHz	13.984	13.978	13.984
A	QPSK	20MHz	18.440	18.432	18.436

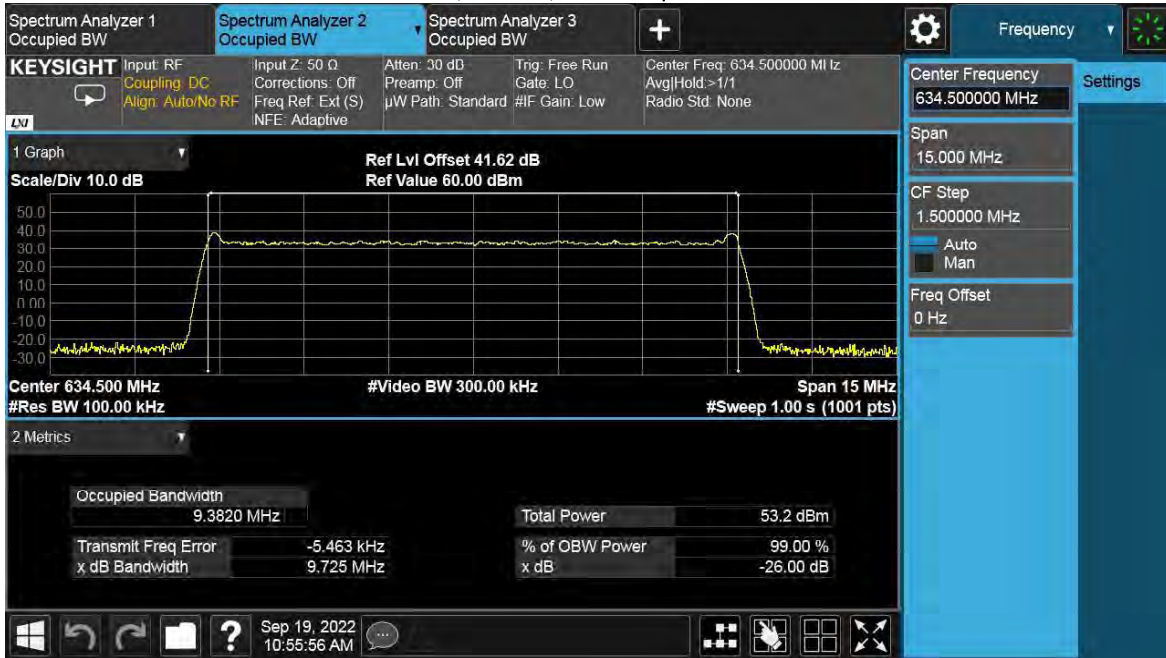
-26dBc Occupied Bandwidth

Antenna Port	Modulation	Bandwidth	Occupied Bandwidth (MHz)		
			Channel Position B	Channel Position M	Channel Position T
A	QPSK	10MHz	9.643	9.725	9.720
A	QPSK	15MHz	14.55	14.55	14.54
A	QPSK	20MHz	19.30	19.28	19.29

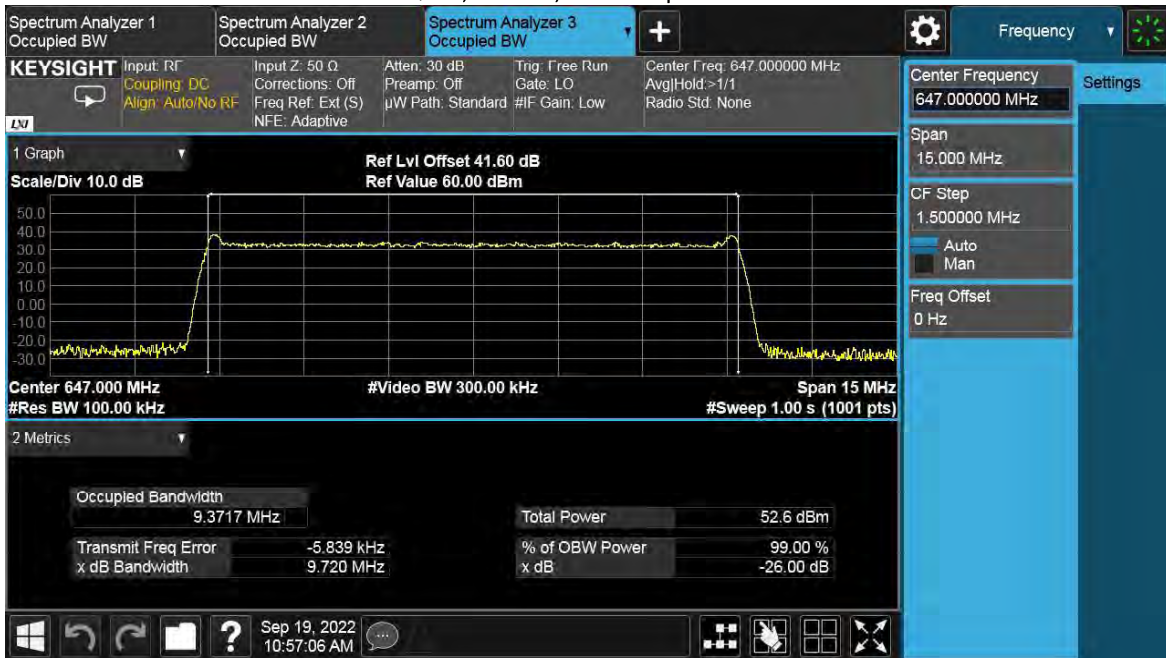
QPSK, 10MHz, Channel position B



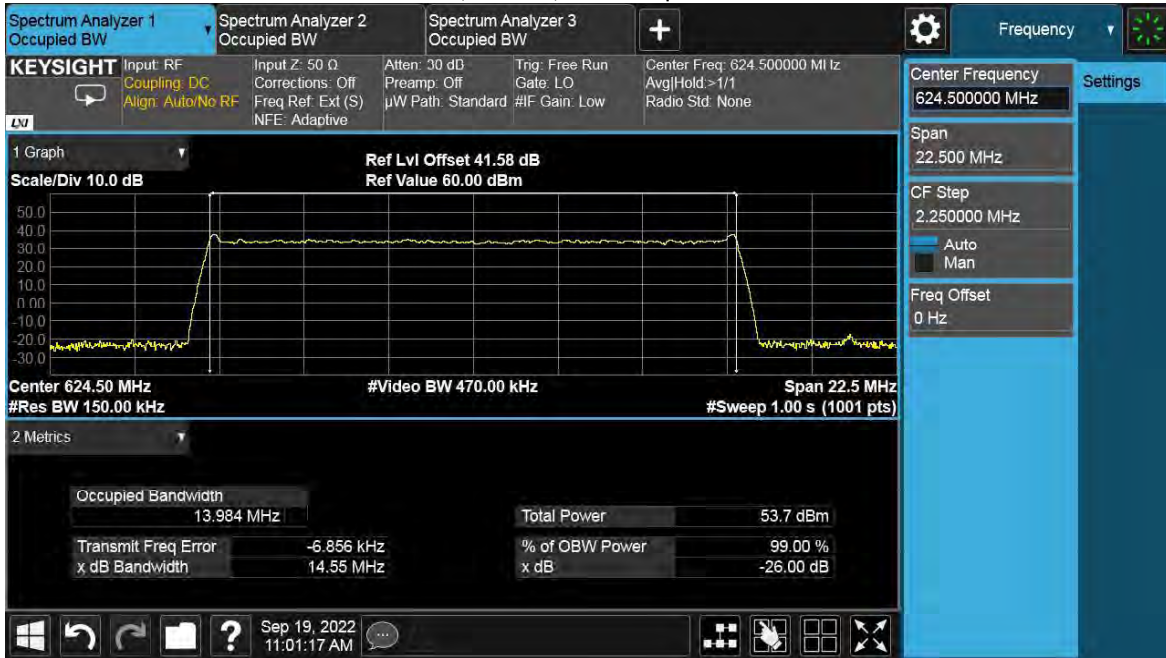
QPSK, 10MHz, Channel position M



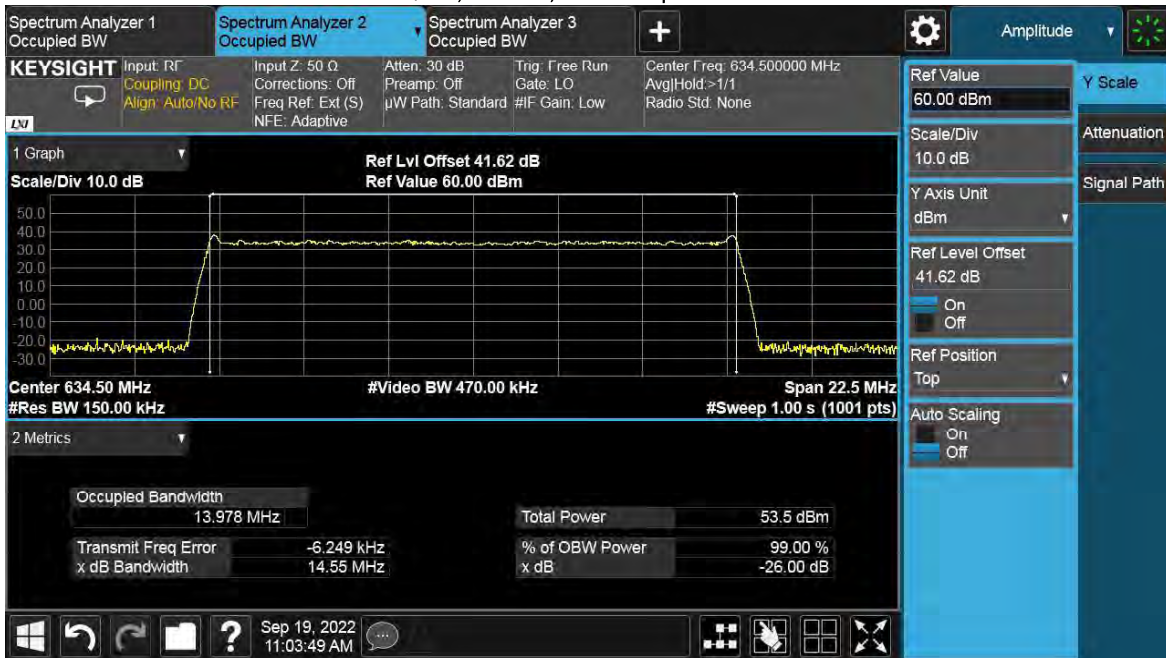
QPSK, 10MHz, Channel position T



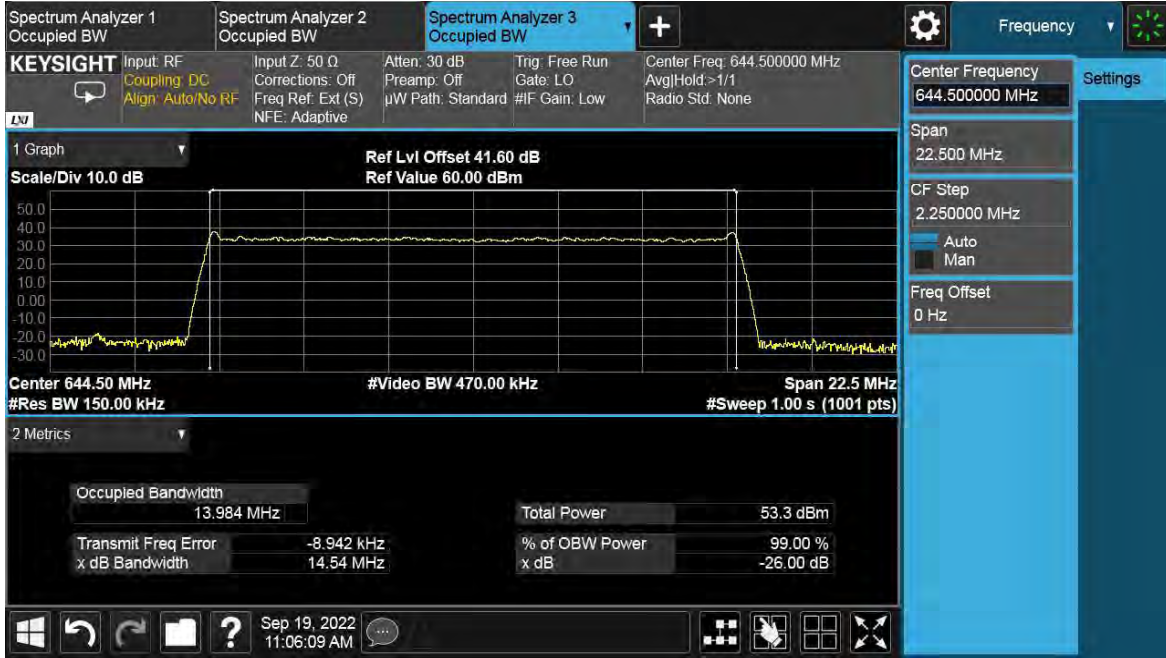
QPSK, 15MHz, Channel position B



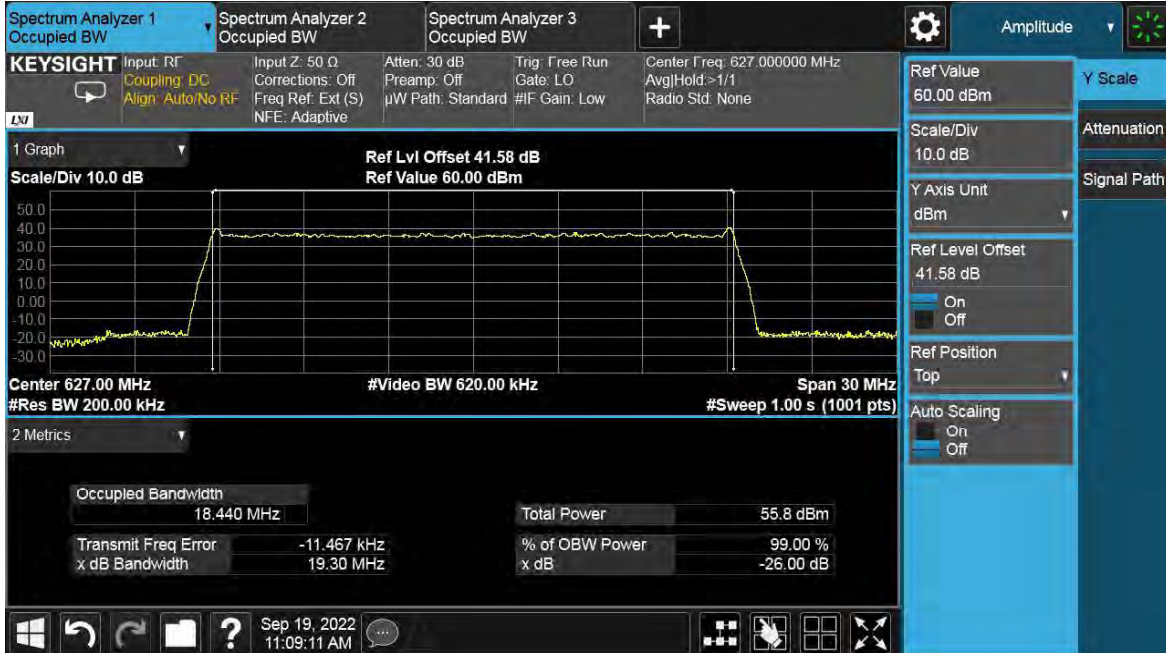
QPSK, 15MHz, Channel position M



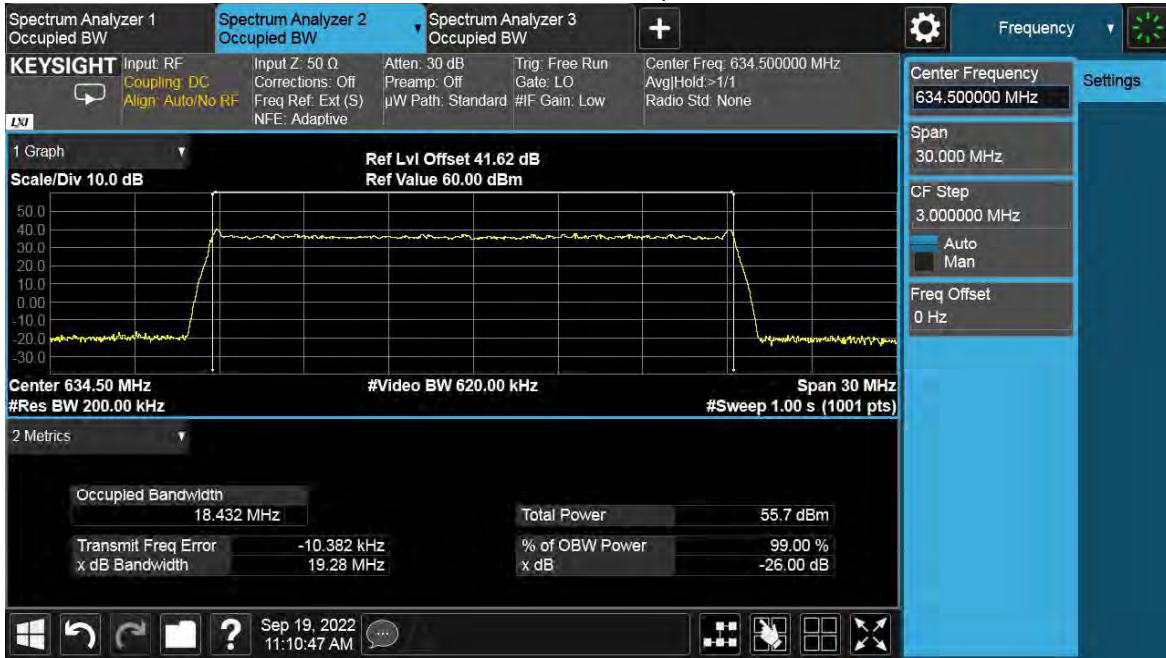
QPSK, 15MHz, Channel position T



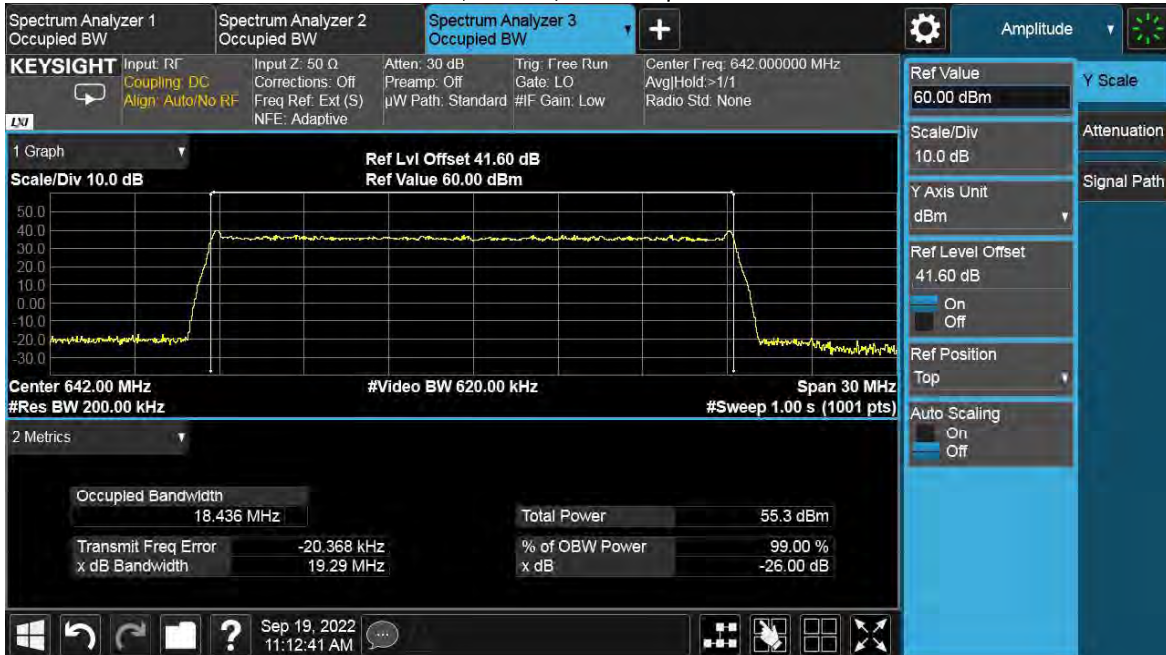
QPSK, 20MHz, Channel position B



QPSK, 20MHz, Channel position M



QPSK, 20MHz, Channel position T



TEST REPORT

SA-1C

99% Occupied Bandwidth

Antenna Port	Modulation	Bandwidth	Occupied Bandwidth (kHz)		
			Channel Position B	Channel Position M	Channel Position T
A	QPSK	0.2MHz	195.75	195.22	193.36

-26dBc Occupied Bandwidth

Antenna Port	Modulation	Bandwidth	Occupied Bandwidth (kHz)		
			Channel Position B	Channel Position M	Channel Position T
A	QPSK	0.2MHz	271.7	272.4	271.7

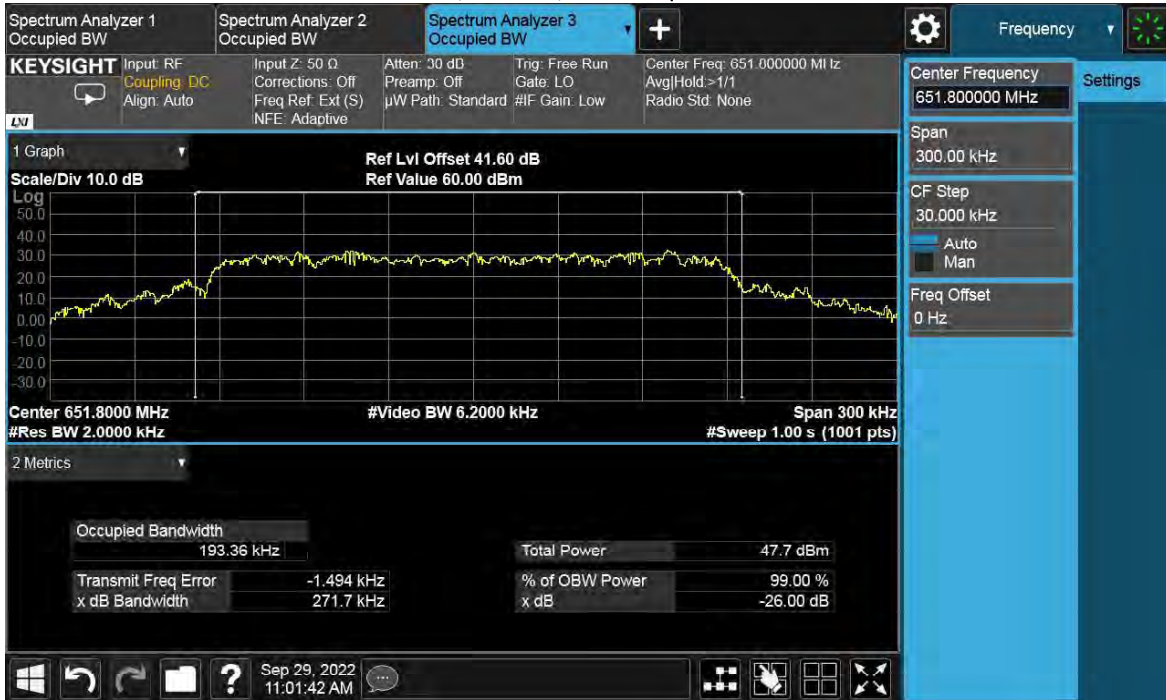
QPSK, 0.2MHz, Channel position B



QPSK, 0.2MHz, Channel position M



QPSK, 0.2MHz, Channel position T



NR ESS IB-1C

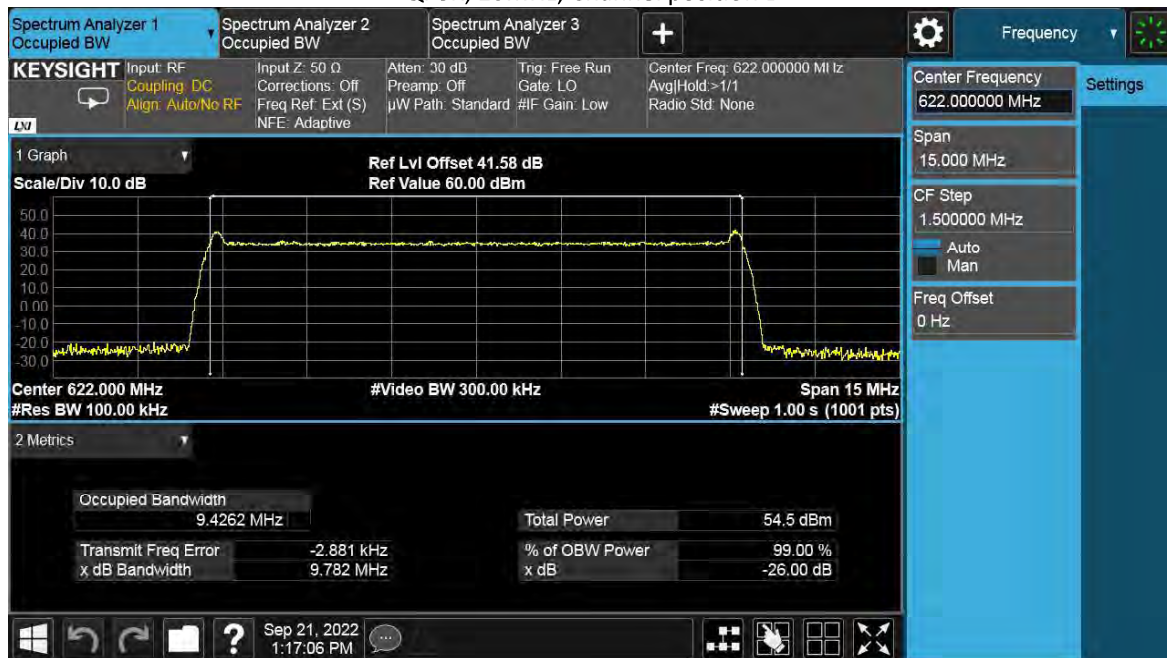
99% Occupied Bandwidth

Antenna Port	Modulation	Bandwidth	Occupied Bandwidth (MHz)		
			Channel Position B	Channel Position M	Channel Position T
A	QPSK	10MHz	9.4262	9.4193	9.4310
A	QPSK	15MHz	14.358	14.354	14.357
A	QPSK	20MHz	19.167	19.167	19.178

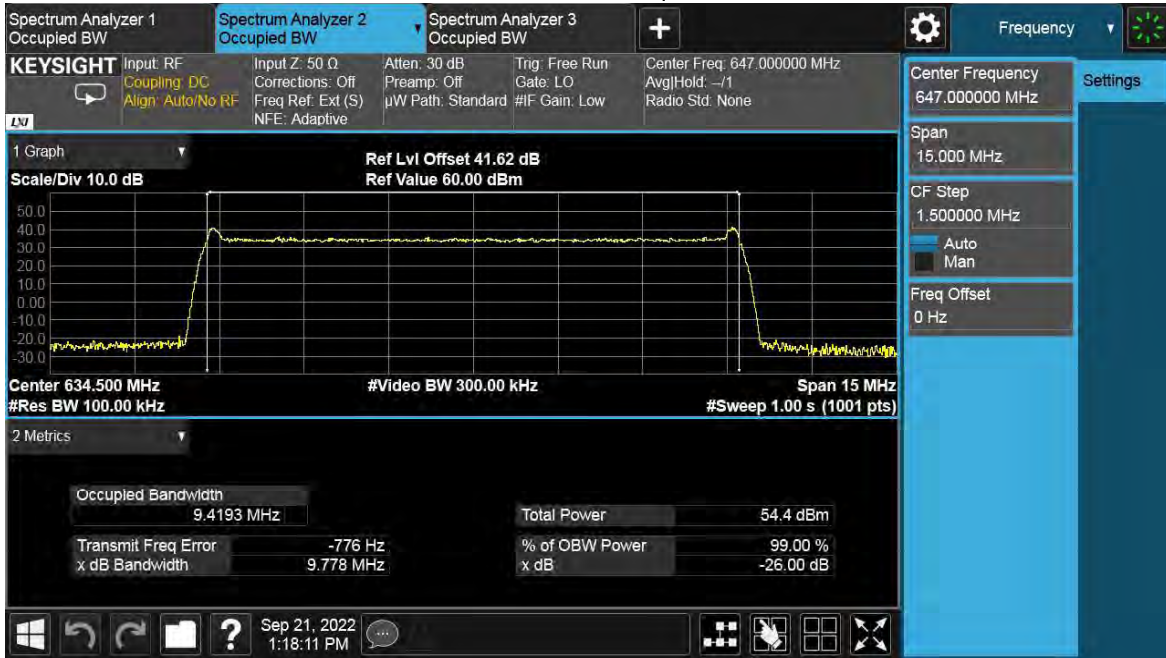
-26dBc Occupied Bandwidth

Antenna Port	Modulation	Bandwidth	Occupied Bandwidth (MHz)		
			Channel Position B	Channel Position M	Channel Position T
A	QPSK	10MHz	9.782	9.778	9.792
A	QPSK	15MHz	14.80	14.79	14.81
A	QPSK	20MHz	19.72	19.75	19.73

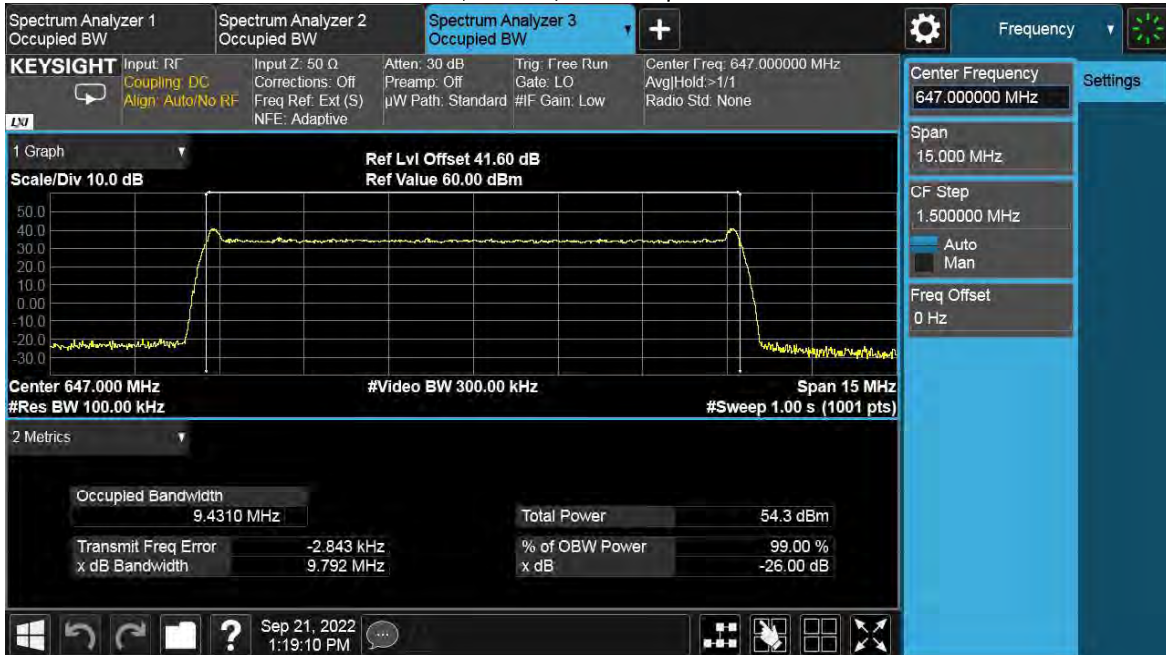
QPSK, 10MHz, Channel position B



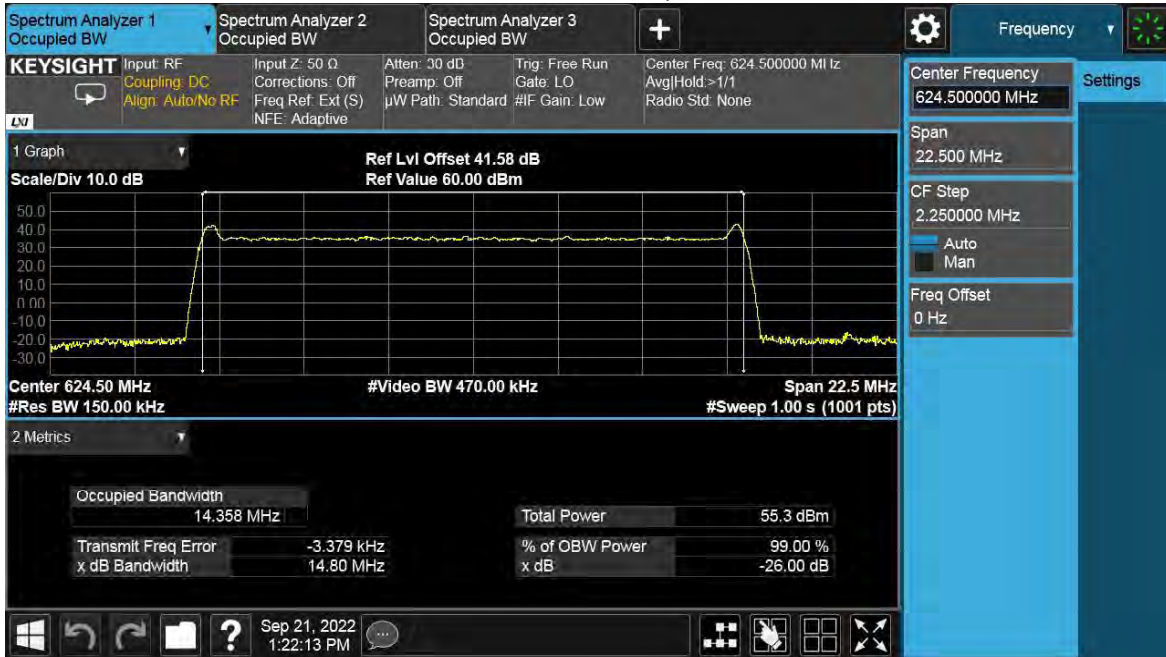
QPSK, 10MHz, Channel position M



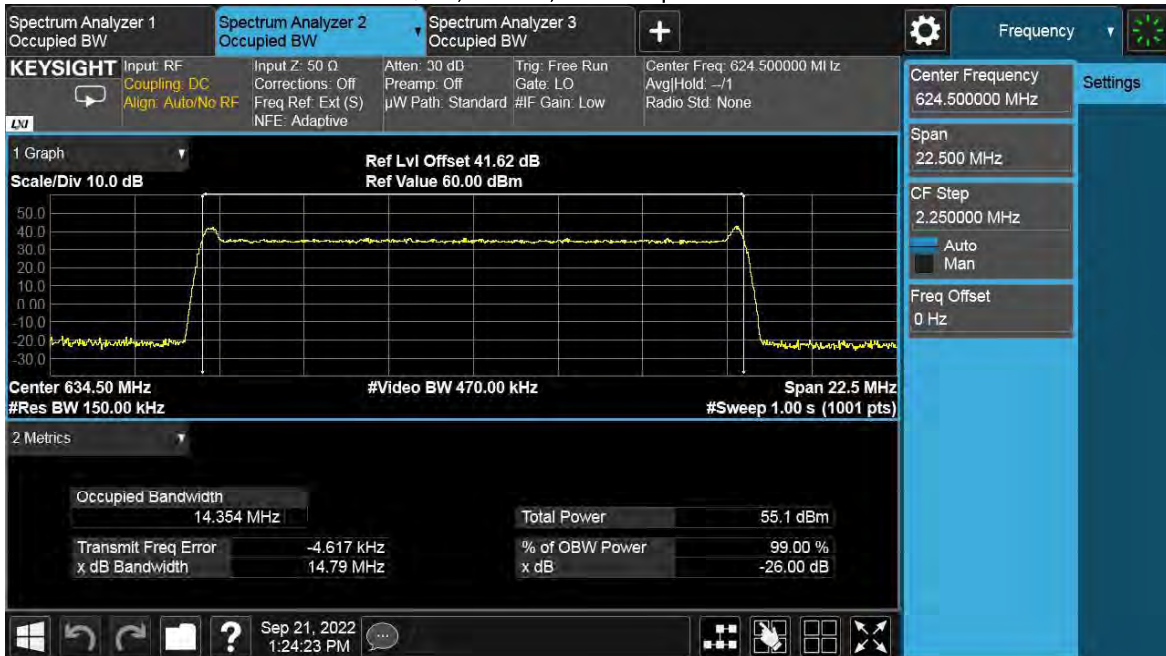
QPSK, 10MHz, Channel position T



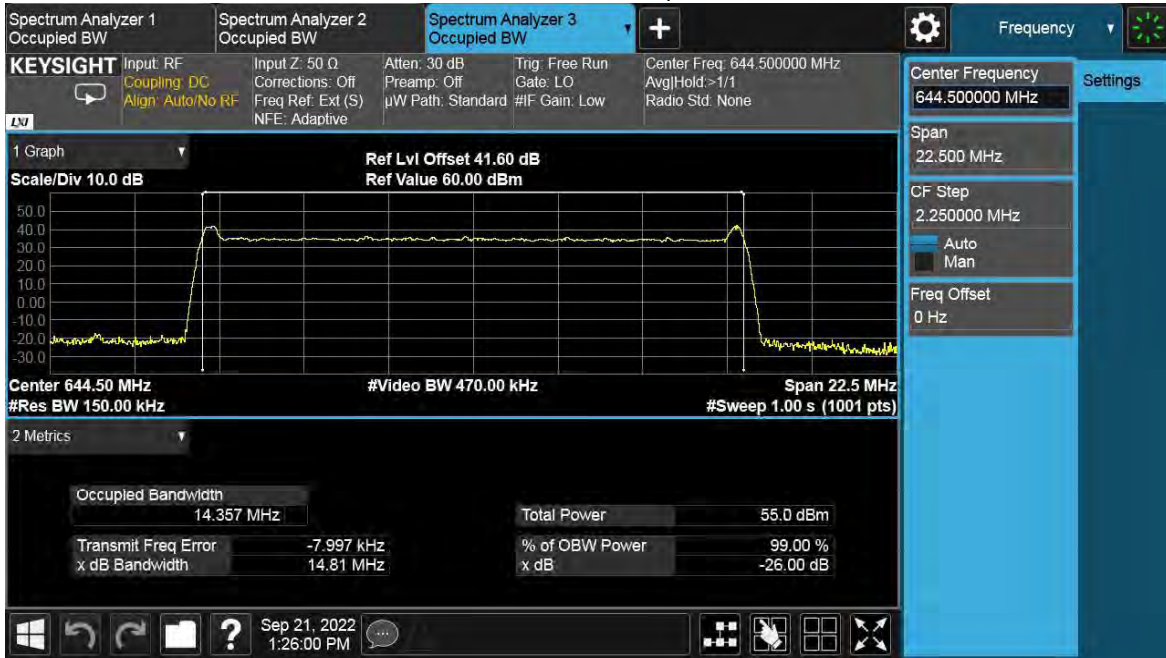
QPSK, 15MHz, Channel position B



QPSK, 15MHz, Channel position M



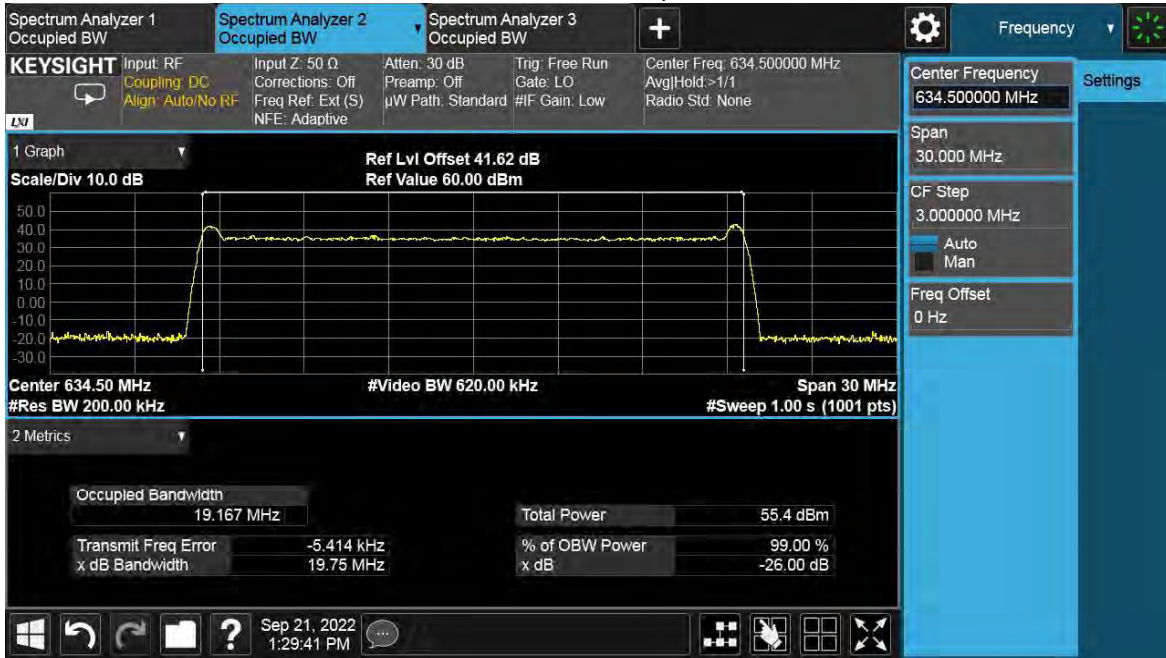
QPSK, 15MHz, Channel position T



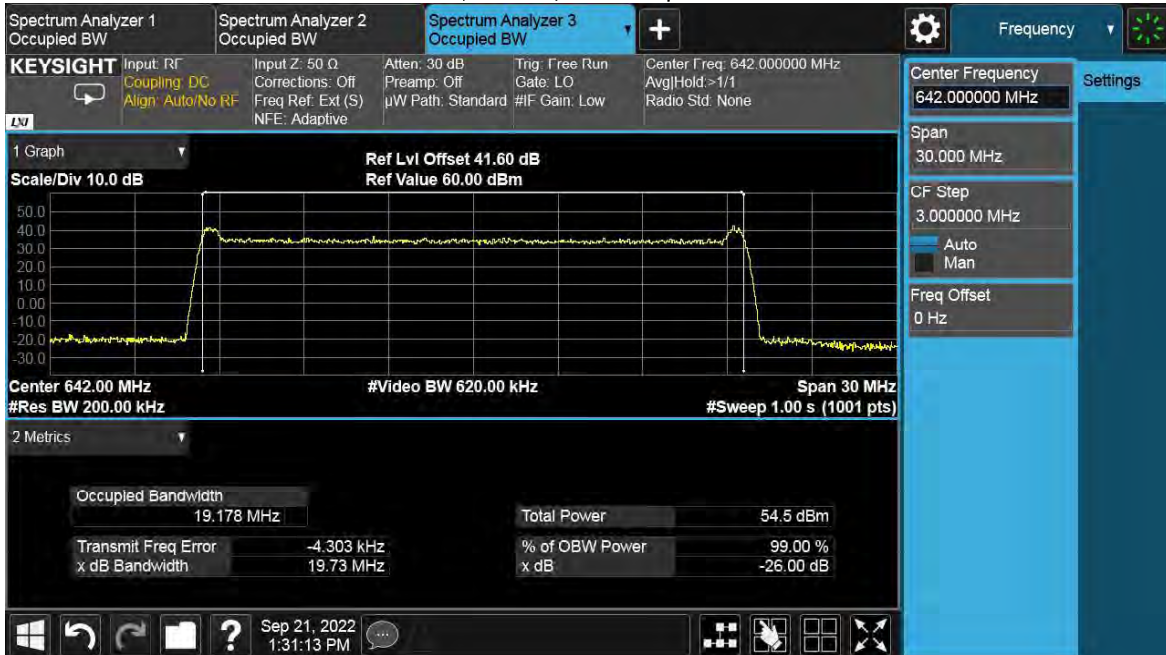
QPSK, 20MHz, Channel position B



QPSK, 20MHz, Channel position M



QPSK, 20MHz, Channel position T



5 Unwanted Emissions at Band Edge

Test result: Pass

5.1 Limit

The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least $43 + 10 \log_{10} p$ (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

5.2 Measurement Procedure

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

For MIMO mode configurations, the limit was adjusted with a correction of $-6.02 \text{ dB } [10 \log(1/4)]$ by using the Measure and Add $10 \log(N)$ dB technique according to KDB 662911 D01 Multiple Transmitter Output accounting for simultaneous transmission from antenna ports . Then the limit was adjusted to -19.02 dBm .

Spectrum analyzer detector was set as RMS.