

Appendix I

Test Results of LTE Band 2

Table of Contents

1. Test Conditions	3
2. Conducted Output Power and EIRP	4
3. Peak-to-Average Ratio	10
4. Occupied Bandwidth	12
5. Band Edge	19
6. Transmitter Spurious Emissions.....	27
7. Field Strength of Spurious Radiation.....	29
8. Frequency Stability	30

1. Test Conditions

Item	Environment	Test Channel	RB size	Modulation	BW (MHz)	Test by
Conducted Output Power	☒ N.T / N.V.	☒ Low ☒ Mid ☒ High	☒ 1 ☒ Half ☒ Full	☒ QPSK ☒ 16QAM	☒ 1.4 ☒ 3 ☒ 5 ☒ 10 ☒ 15 ☒ 20	Sean
EIRP/ERP	☒ N.T / N.V.	☒ Low ☒ Mid ☒ High	☒ 1 ☒ Half ☒ Full	☒ QPSK ☒ 16QAM	☒ 1.4 ☒ 3 ☒ 5 ☒ 10 ☒ 15 ☒ 20	Sean
Peak-to-Average Ratio	☒ N.T / N.V.	☒ Low ☒ Mid ☒ High	☒ 1 ☐ Half ☒ Full	☒ QPSK ☒ 16QAM	☒ 20	Sean
Occupied Bandwidth	☒ N.T / N.V.	☒ Low ☒ Mid ☒ High	☐ 1 ☐ Half ☒ Full	☒ QPSK ☒ 16QAM	☒ 1.4 ☒ 3 ☒ 5 ☒ 10 ☒ 15 ☒ 20	Sean
Conducted Band Edge	☒ N.T / N.V.	☒ Low ☐ Mid ☒ High	☒ 1 ☐ Half ☒ Full	☒ QPSK ☒ 16QAM	☒ 1.4 ☒ 3 ☒ 5 ☒ 10 ☒ 15 ☒ 20	Sean
Spurious Emission at Antenna Terminal	☒ N.T / N.V.	☒ Low ☒ Mid ☒ High	☒ 1 ☐ Half ☐ Full	☒ QPSK ☒ 16QAM	☒ 20	Sean
Field Strength of Spurious Radiation	☒ N.T / N.V.	☒ Low ☒ Mid ☒ High	☒ worst case			Sean
Frequency Stability	☒ N.T / N.V. ☒ L.T / L.V. ☒ L.T / H.V. ☒ H.T / L.V. ☒ H.T / H.V.	☐ Low ☒ Mid ☐ High	☐ 1 ☐ Half ☒ Full	☒ QPSK ☐ 16QAM	☒ 20	Sean

NOTE: All settings for RB allocation, modulation mode, channel, channel bandwidth and environment required by the standard are considered and tested; only the worst case and normal test plots are shown on the report.

2. Conducted Output Power and EIRP

BW (MHz)	Modulation	Channel	RB Allocation		Average Power (dBm)	GT - LC (dB)	EIRP (dBm)	Limit (dBm)	Result
			Size	Offset					
1.4	QPSK	Low	1	0	22.09	2.81	24.90	33.00	Pass
				3	21.89	2.81	24.70		Pass
				5	22.43	2.81	25.24		Pass
			3	0	22.16	2.81	24.97		Pass
				1	22.95	2.81	25.76		Pass
				3	23.04	2.81	25.85		Pass
			6	0	22.19	2.81	25.00		Pass
		Mid	1	0	22.76	2.81	25.57		Pass
				3	22.23	2.81	25.04		Pass
				5	22.46	2.81	25.27		Pass
			3	0	22.50	2.81	25.31		Pass
				1	22.17	2.81	24.98		Pass
				3	21.96	2.81	24.77		Pass
			6	0	21.84	2.81	24.65		Pass
		High	1	0	21.05	2.81	23.86		Pass
				3	21.87	2.81	24.68		Pass
				5	22.04	2.81	24.85		Pass
			3	0	22.37	2.81	25.18		Pass
				1	22.89	2.81	25.70		Pass
				3	21.07	2.81	23.88		Pass
			6	0	21.79	2.81	24.60		Pass
	16QAM	Low	1	0	22.40	2.81	25.21	33.00	Pass
				3	22.35	2.81	25.16		Pass
				5	22.23	2.81	25.04		Pass
			3	0	21.19	2.81	24.00		Pass
				1	21.87	2.81	24.68		Pass
				3	22.30	2.81	25.11		Pass
			6	0	22.78	2.81	25.59		Pass
		Mid	1	0	21.64	2.81	24.45		Pass
				3	21.56	2.81	24.37		Pass
				5	21.63	2.81	24.44		Pass
			3	0	21.52	2.81	24.33		Pass
				1	21.36	2.81	24.17		Pass
				3	21.40	2.81	24.21		Pass
			6	0	21.76	2.81	24.57		Pass
		High	1	0	21.84	2.81	24.65		Pass
				3	22.07	2.81	24.88		Pass
				5	21.15	2.81	23.96		Pass
			3	0	22.98	2.81	25.79		Pass
				1	22.04	2.81	24.85		Pass
				3	21.61	2.81	24.42		Pass
			6	0	22.02	2.81	24.83		Pass

BW (MHz)	Modulation	Channel	RB Allocation		Average Power (dBm)	GT - LC (dB)	EIRP (dBm)	Limit (dBm)	Result
			Size	Offset					
3.0	QPSK	Low	1	0	21.32	2.81	24.13	33.00	Pass
				8	21.67	2.81	24.48		Pass
				14	22.04	2.81	24.85		Pass
			8	0	22.97	2.81	25.78		Pass
				4	21.85	2.81	24.66		Pass
				7	21.63	2.81	24.44		Pass
			15	0	21.76	2.81	24.57		Pass
		Mid	1	0	21.80	2.81	24.61		Pass
				8	21.92	2.81	24.73		Pass
				14	21.04	2.81	23.85		Pass
			8	0	20.89	2.81	23.70		Pass
				4	21.44	2.81	24.25		Pass
				7	21.67	2.81	24.48		Pass
			15	0	20.98	2.81	23.79		Pass
		High	1	0	20.66	2.81	23.47		Pass
				8	21.45	2.81	24.26		Pass
				14	21.60	2.81	24.41		Pass
			8	0	21.78	2.81	24.59		Pass
				4	21.82	2.81	24.63		Pass
				7	21.22	2.81	24.03		Pass
			15	0	22.07	2.81	24.88		Pass
	16QAM	Low	1	0	21.04	2.81	23.85	33.00	Pass
				8	21.96	2.81	24.77		Pass
				14	22.02	2.81	24.83		Pass
			8	0	21.84	2.81	24.65		Pass
				4	21.65	2.81	24.46		Pass
				7	21.74	2.81	24.55		Pass
			15	0	21.80	2.81	24.61		Pass
		Mid	1	0	21.97	2.81	24.78		Pass
				8	20.99	2.81	23.80		Pass
				14	21.27	2.81	24.08		Pass
			8	0	21.62	2.81	24.43		Pass
				4	21.33	2.81	24.14		Pass
				7	21.70	2.81	24.51		Pass
			15	0	21.62	2.81	24.43		Pass
		High	1	0	21.91	2.81	24.72		Pass
				8	21.86	2.81	24.67		Pass
				14	21.73	2.81	24.54		Pass
			8	0	21.64	2.81	24.45		Pass
				4	21.55	2.81	24.36		Pass
				7	21.40	2.81	24.21		Pass
			15	0	21.32	2.81	24.13		Pass

BW (MHz)	Modulation	Channel	RB Allocation		Average Power (dBm)	GT - LC (dB)	EIRP (dBm)	Limit (dBm)	Result
			Size	Offset					
5.0	QPSK	Low	1	0	22.63	2.81	25.44	33.00	Pass
				12	22.15	2.81	24.96		Pass
				24	22.48	2.81	25.29		Pass
			12	0	21.92	2.81	24.73		Pass
				7	22.80	2.81	25.61		Pass
				13	22.93	2.81	25.74		Pass
			25	0	22.14	2.81	24.95		Pass
		Mid	1	0	23.07	2.81	25.88		Pass
				12	22.45	2.81	25.26		Pass
				24	22.21	2.81	25.02		Pass
			12	0	22.19	2.81	25.00		Pass
				7	22.07	2.81	24.88		Pass
				13	21.89	2.81	24.70		Pass
			25	0	22.40	2.81	25.21		Pass
		High	1	0	22.71	2.81	25.52		Pass
				12	22.65	2.81	25.46		Pass
				24	22.59	2.81	25.40		Pass
			12	0	21.79	2.81	24.60		Pass
				7	22.68	2.81	25.49		Pass
				13	22.15	2.81	24.96		Pass
			25	0	22.90	2.81	25.71		Pass
	16QAM	Low	1	0	21.97	2.81	24.78	33.00	Pass
				12	21.64	2.81	24.45		Pass
				24	21.55	2.81	24.36		Pass
			12	0	21.43	2.81	24.24		Pass
				7	21.80	2.81	24.61		Pass
				13	21.93	2.81	24.74		Pass
			25	0	21.72	2.81	24.53		Pass
		Mid	1	0	21.94	2.81	24.75		Pass
				12	21.24	2.81	24.05		Pass
				24	21.11	2.81	23.92		Pass
			12	0	21.47	2.81	24.28		Pass
				7	21.60	2.81	24.41		Pass
				13	21.50	2.81	24.31		Pass
			25	0	21.52	2.81	24.33		Pass
		High	1	0	21.44	2.81	24.25		Pass
				12	21.87	2.81	24.68		Pass
				24	21.91	2.81	24.72		Pass
			12	0	20.87	2.81	23.68		Pass
				7	21.46	2.81	24.27		Pass
				13	21.15	2.81	23.96		Pass
			25	0	21.72	2.81	24.53		Pass

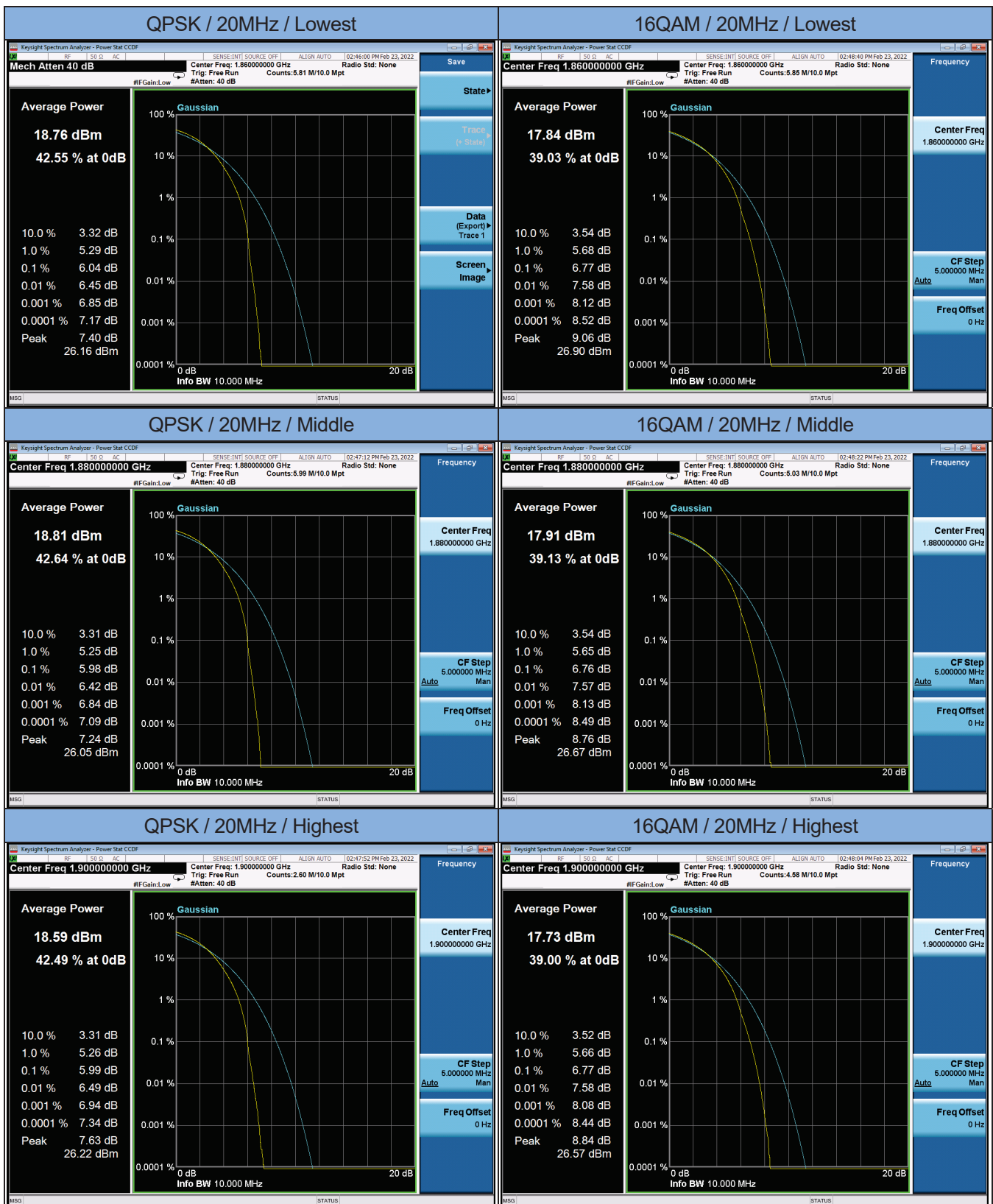
BW (MHz)	Modulation	Channel	RB Allocation		Average Power (dBm)	GT - LC (dB)	EIRP (dBm)	Limit (dBm)	Result
			Size	Offset					
10	QPSK	Low	1	0	22.76	2.81	25.57	33.00	Pass
				25	22.64	2.81	25.45		Pass
				49	22.42	2.81	25.23		Pass
			25	0	22.87	2.81	25.68		Pass
				12	22.64	2.81	25.45		Pass
				25	22.21	2.81	25.02		Pass
			50	0	22.14	2.81	24.95		Pass
		Mid	1	0	22.95	2.81	25.76		Pass
				25	22.78	2.81	25.59		Pass
				49	23.12	2.81	25.93		Pass
			25	0	22.95	2.81	25.76		Pass
				12	22.04	2.81	24.85		Pass
				25	21.69	2.81	24.50		Pass
			50	0	22.08	2.81	24.89		Pass
		High	1	0	21.75	2.81	24.56		Pass
				25	21.64	2.81	24.45		Pass
				49	20.97	2.81	23.78		Pass
			25	0	21.79	2.81	24.60		Pass
				12	22.62	2.81	25.43		Pass
				25	22.35	2.81	25.16		Pass
			50	0	22.41	2.81	25.22		Pass
	16QAM	Low	1	0	21.47	2.81	24.28	33.00	Pass
				25	21.52	2.81	24.33		Pass
				49	21.80	2.81	24.61		Pass
			25	0	21.76	2.81	24.57		Pass
				12	22.63	2.81	25.44		Pass
				25	22.15	2.81	24.96		Pass
			50	0	22.17	2.81	24.98		Pass
		Mid	1	0	22.55	2.81	25.36		Pass
				25	21.79	2.81	24.60		Pass
				49	21.87	2.81	24.68		Pass
			25	0	20.48	2.81	23.29		Pass
				12	22.04	2.81	24.85		Pass
				25	22.12	2.81	24.93		Pass
			50	0	22.39	2.81	25.20		Pass
		High	1	0	22.45	2.81	25.26		Pass
				25	21.17	2.81	23.98		Pass
				49	21.90	2.81	24.71		Pass
			25	0	21.42	2.81	24.23		Pass
				12	21.71	2.81	24.52		Pass
				25	21.63	2.81	24.44		Pass
			50	0	21.10	2.81	23.91		Pass

BW (MHz)	Modulation	Channel	RB Allocation		Average Power (dBm)	GT - LC (dB)	EIRP (dBm)	Limit (dBm)	Result
			Size	Offset					
15	QPSK	Low	1	0	22.62	2.81	25.43	33.00	Pass
				37	21.76	2.81	24.57		Pass
				74	20.97	2.81	23.78		Pass
			36	0	21.36	2.81	24.17		Pass
				20	21.79	2.81	24.60		Pass
				39	22.00	2.81	24.81		Pass
			75	0	21.54	2.81	24.35		Pass
		Mid	1	0	21.37	2.81	24.18		Pass
				37	21.54	2.81	24.35		Pass
				74	21.98	2.81	24.79		Pass
			36	0	22.02	2.81	24.83		Pass
				20	22.19	2.81	25.00		Pass
				39	21.78	2.81	24.59		Pass
			75	0	22.63	2.81	25.44		Pass
		High	1	0	22.81	2.81	25.62		Pass
				37	22.19	2.81	25.00		Pass
				74	21.99	2.81	24.80		Pass
			36	0	21.72	2.81	24.53		Pass
				20	21.63	2.81	24.44		Pass
				39	22.45	2.81	25.26		Pass
			75	0	22.04	2.81	24.85		Pass
	16QAM	Low	1	0	21.46	2.81	24.27	33.00	Pass
				37	21.82	2.81	24.63		Pass
				74	21.79	2.81	24.60		Pass
			36	0	21.64	2.81	24.45		Pass
				20	21.53	2.81	24.34		Pass
				39	21.37	2.81	24.18		Pass
			75	0	21.40	2.81	24.21		Pass
		Mid	1	0	21.44	2.81	24.25		Pass
				37	21.67	2.81	24.48		Pass
				74	21.18	2.81	23.99		Pass
			36	0	21.53	2.81	24.34		Pass
				20	20.72	2.81	23.53		Pass
				39	22.03	2.81	24.84		Pass
			75	0	21.94	2.81	24.75		Pass
		High	1	0	21.71	2.81	24.52		Pass
				37	21.58	2.81	24.39		Pass
				74	21.69	2.81	24.50		Pass
			36	0	21.72	2.81	24.53		Pass
				20	21.33	2.81	24.14		Pass
				39	21.49	2.81	24.30		Pass
			75	0	21.52	2.81	24.33		Pass

BW (MHz)	Modulation	Channel	RB Allocation		Average Power (dBm)	GT - LC (dB)	EIRP (dBm)	Limit (dBm)	Result
			Size	Offset					
20	QPSK	Low	1	0	21.89	2.81	24.70	33.00	Pass
				49	21.64	2.81	24.45		Pass
				99	21.43	2.81	24.24		Pass
			50	0	21.26	2.81	24.07		Pass
				24	21.22	2.81	24.03		Pass
				50	21.19	2.81	24.00		Pass
			100	0	21.72	2.81	24.53		Pass
		Mid	1	0	21.64	2.81	24.45		Pass
				49	21.95	2.81	24.76		Pass
				99	22.04	2.81	24.85		Pass
			50	0	21.71	2.81	24.52		Pass
				24	21.63	2.81	24.44		Pass
				50	20.69	2.81	23.50		Pass
			100	0	21.65	2.81	24.46		Pass
		High	1	0	20.77	2.81	23.58		Pass
				49	20.98	2.81	23.79		Pass
				99	20.76	2.81	23.57		Pass
			50	0	21.42	2.81	24.23		Pass
				24	21.09	2.81	23.90		Pass
				50	21.70	2.81	24.51		Pass
			100	0	21.52	2.81	24.33		Pass
	16QAM	Low	1	0	21.12	2.81	23.93	33.00	Pass
				49	20.95	2.81	23.76		Pass
				99	21.07	2.81	23.88		Pass
			50	0	21.42	2.81	24.23		Pass
				24	21.63	2.81	24.44		Pass
				50	21.04	2.81	23.85		Pass
			100	0	20.99	2.81	23.80		Pass
		Mid	1	0	21.12	2.81	23.93		Pass
				49	21.40	2.81	24.21		Pass
				99	21.33	2.81	24.14		Pass
			50	0	21.51	2.81	24.32		Pass
				24	21.17	2.81	23.98		Pass
				50	21.09	2.81	23.90		Pass
			100	0	21.56	2.81	24.37		Pass
		High	1	0	21.42	2.81	24.23		Pass
				49	20.63	2.81	23.44		Pass
				99	20.90	2.81	23.71		Pass
			50	0	21.12	2.81	23.93		Pass
				24	20.97	2.81	23.78		Pass
				50	21.30	2.81	24.11		Pass
			100	0	21.55	2.81	24.36		Pass

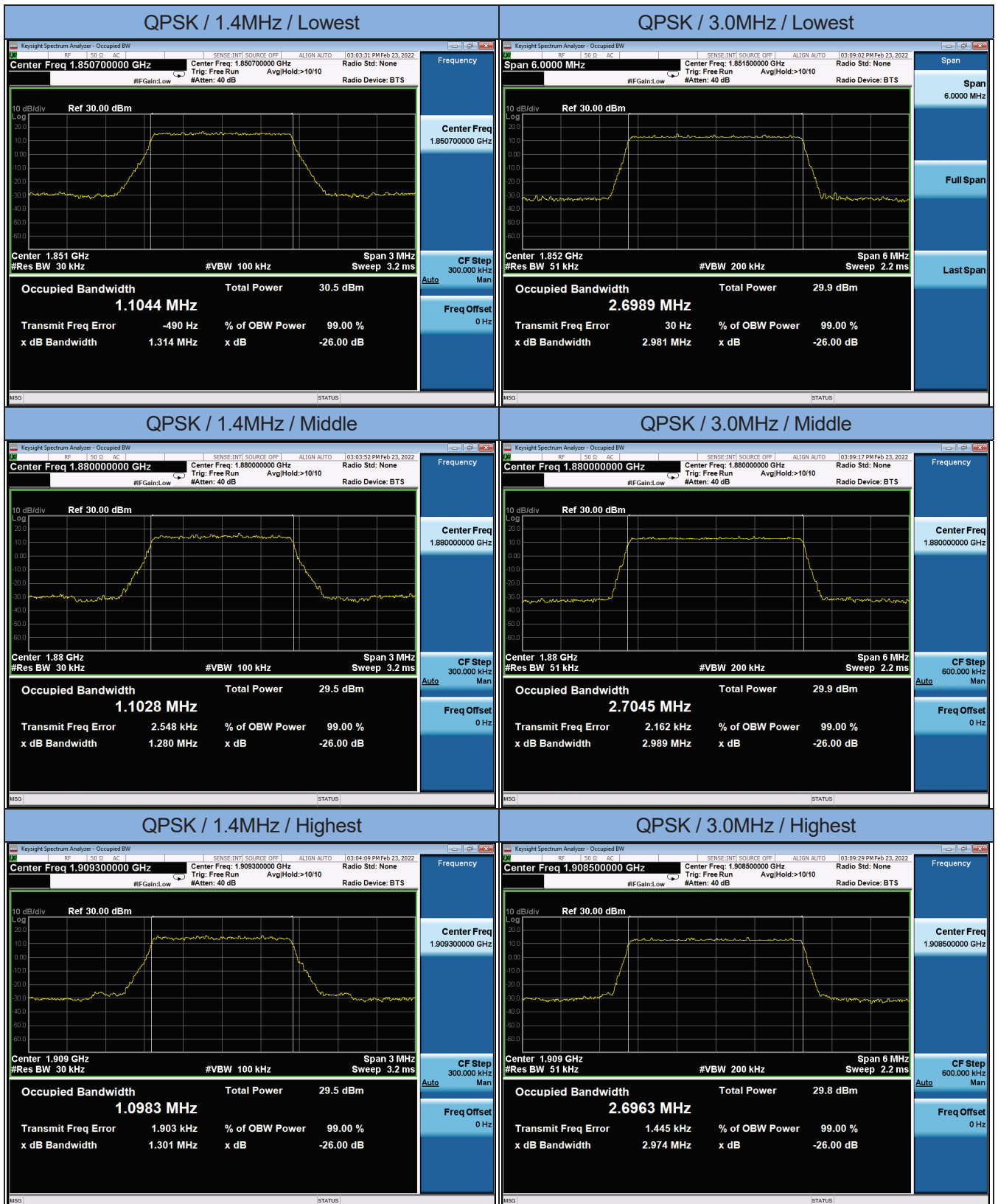
3. Peak-to-Average Ratio

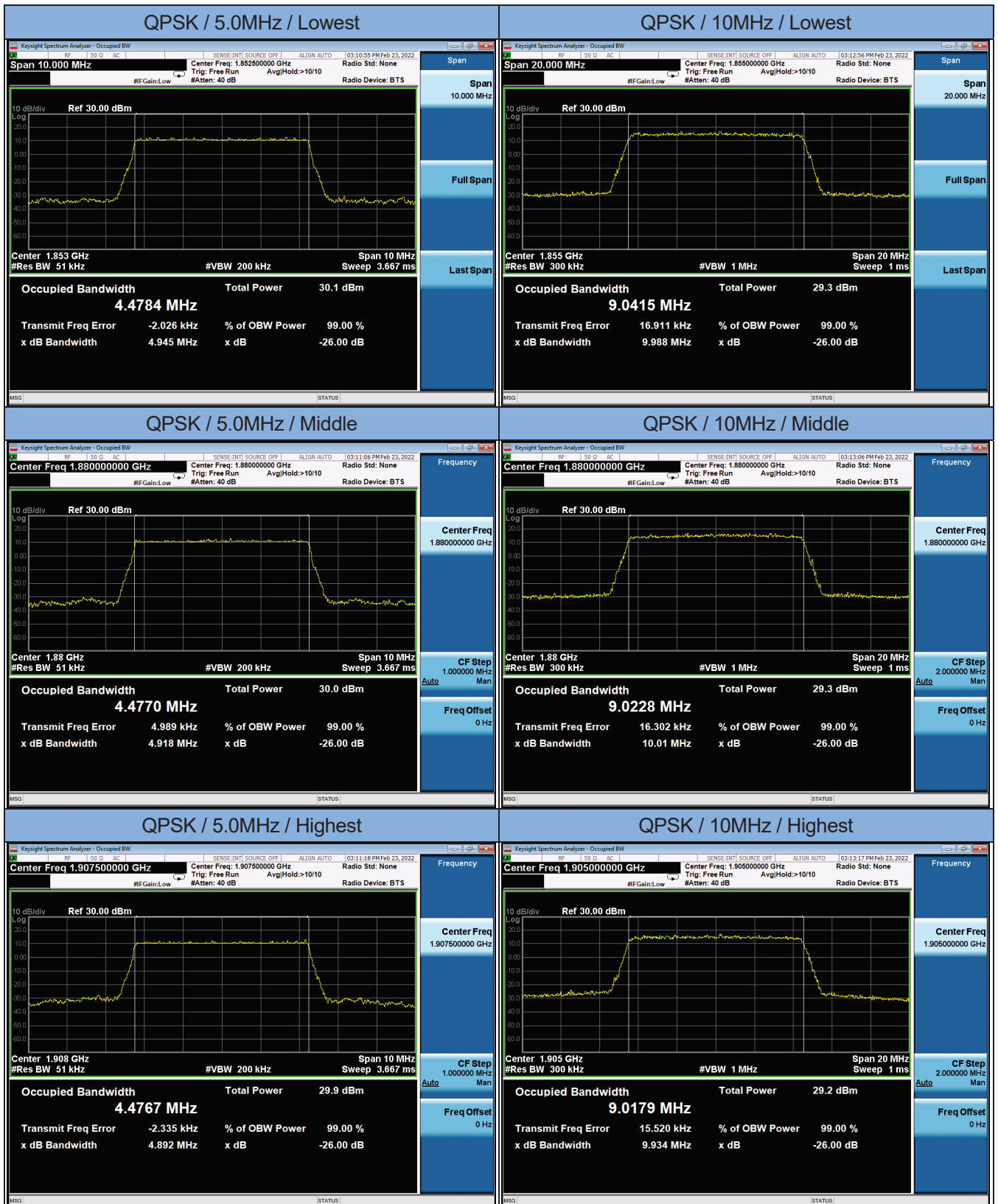
BW (MHz)	Modulation	Channel	RB Allocation		Peak-to-Average Ratio (dB)	Limit (dBm)	Result
			Size	Offset			
20	QPSK	Low	Full	0	6.04	13.0	Pass
		Mid	Full	0	5.98		Pass
		High	Full	0	5.99		Pass
	16QAM	Low	Full	0	6.77	13.0	Pass
		Mid	Full	0	6.76		Pass
		High	Full	0	6.77		Pass

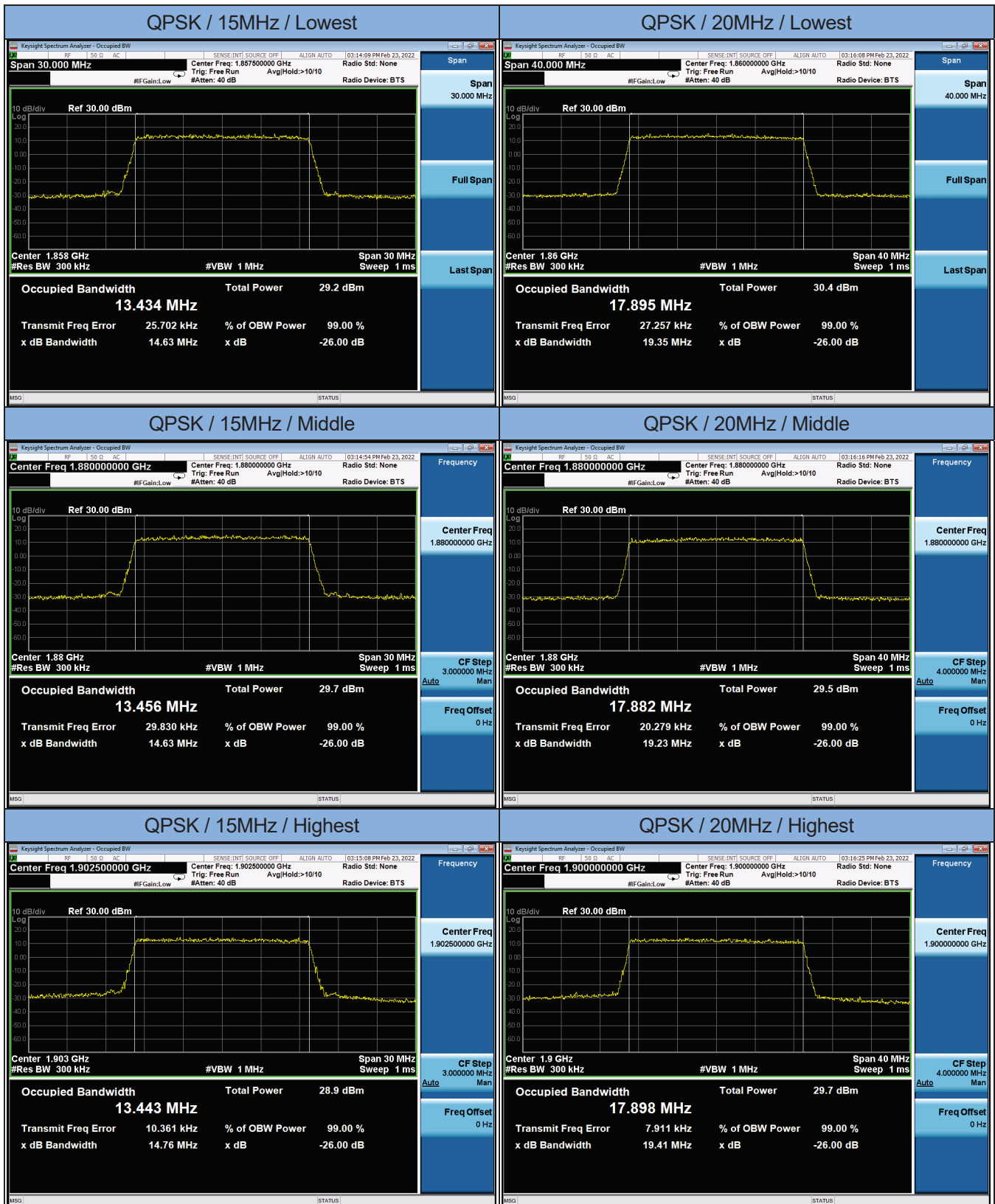


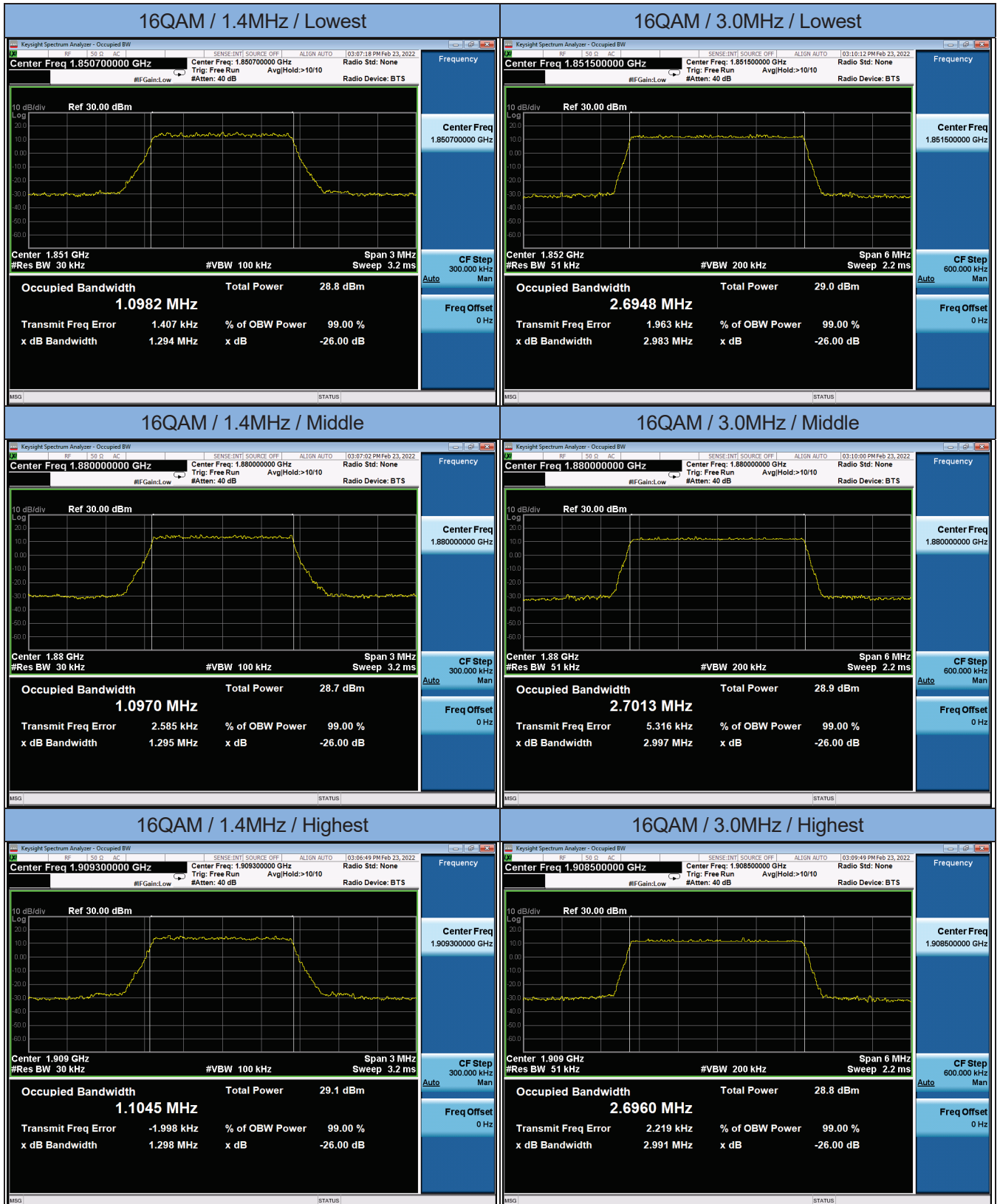
4. Occupied Bandwidth

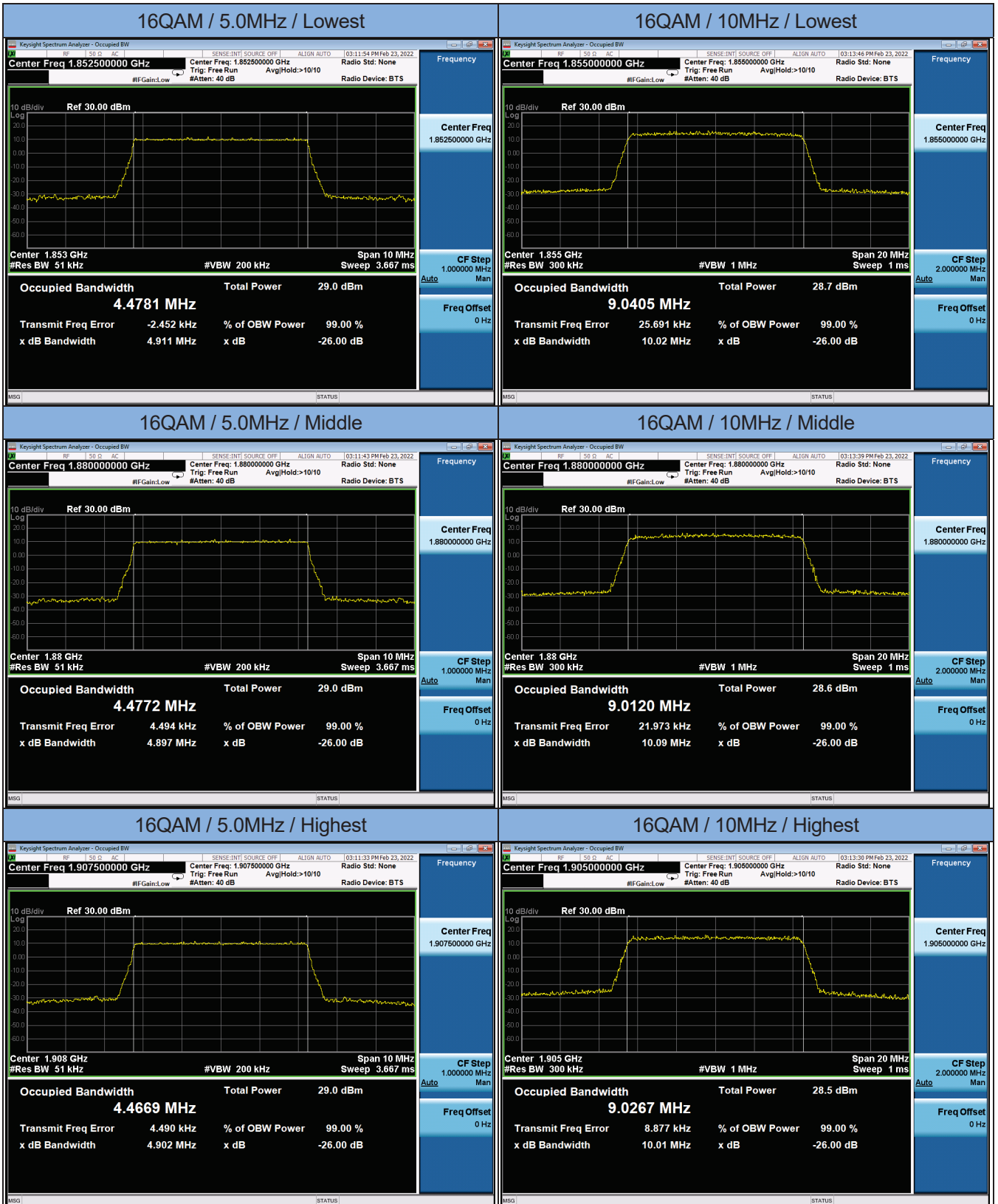
BW (MHz)	Modulation	Channel	RB Allocation		26dB BW (MHz)	99% OBW (MHz)	Limit (dBm)	Result
			Size	Offset				
1.4	QPSK	Low	Full	0	1.314	1.1044	---	Pass
		Mid	Full	0	1.280	1.1028		Pass
		High	Full	0	1.301	1.0983		Pass
	16QAM	Low	Full	0	1.294	1.0982	---	Pass
		Mid	Full	0	1.295	1.0970		Pass
		High	Full	0	1.298	1.1045		Pass
3.0	QPSK	Low	Full	0	2.981	2.6989	---	Pass
		Mid	Full	0	2.989	2.7045		Pass
		High	Full	0	2.974	2.6963		Pass
	16QAM	Low	Full	0	2.983	2.6948	---	Pass
		Mid	Full	0	2.997	2.7013		Pass
		High	Full	0	2.991	2.6960		Pass
5.0	QPSK	Low	Full	0	4.945	4.4784	---	Pass
		Mid	Full	0	4.918	4.4770		Pass
		High	Full	0	4.892	4.4767		Pass
	16QAM	Low	Full	0	4.911	4.4781	---	Pass
		Mid	Full	0	4.897	4.4772		Pass
		High	Full	0	4.902	4.4669		Pass
10	QPSK	Low	Full	0	9.988	9.0415	---	Pass
		Mid	Full	0	10.01	9.0228		Pass
		High	Full	0	9.934	9.0179		Pass
	16QAM	Low	Full	0	10.02	9.0405	---	Pass
		Mid	Full	0	10.09	9.0120		Pass
		High	Full	0	10.01	9.0267		Pass
15	QPSK	Low	Full	0	14.63	13.434	---	Pass
		Mid	Full	0	14.63	13.456		Pass
		High	Full	0	14.76	13.443		Pass
	16QAM	Low	Full	0	14.53	13.447	---	Pass
		Mid	Full	0	14.62	13.462		Pass
		High	Full	0	14.69	13.475		Pass
20	QPSK	Low	Full	0	19.35	17.895	---	Pass
		Mid	Full	0	19.23	17.882		Pass
		High	Full	0	19.41	17.898		Pass
	16QAM	Low	Full	0	19.40	17.863	---	Pass
		Mid	Full	0	19.27	17.858		Pass
		High	Full	0	19.38	17.897		Pass

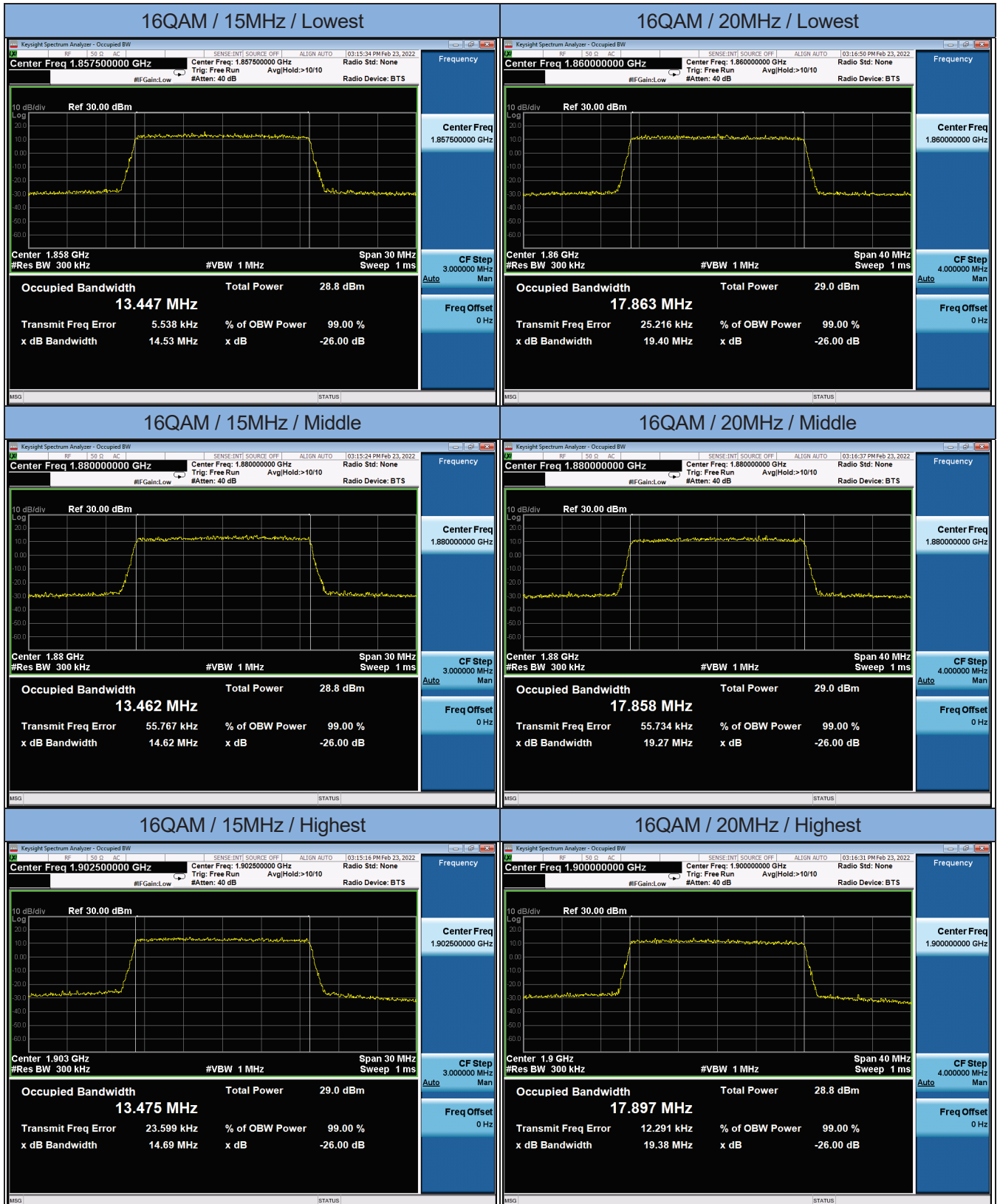




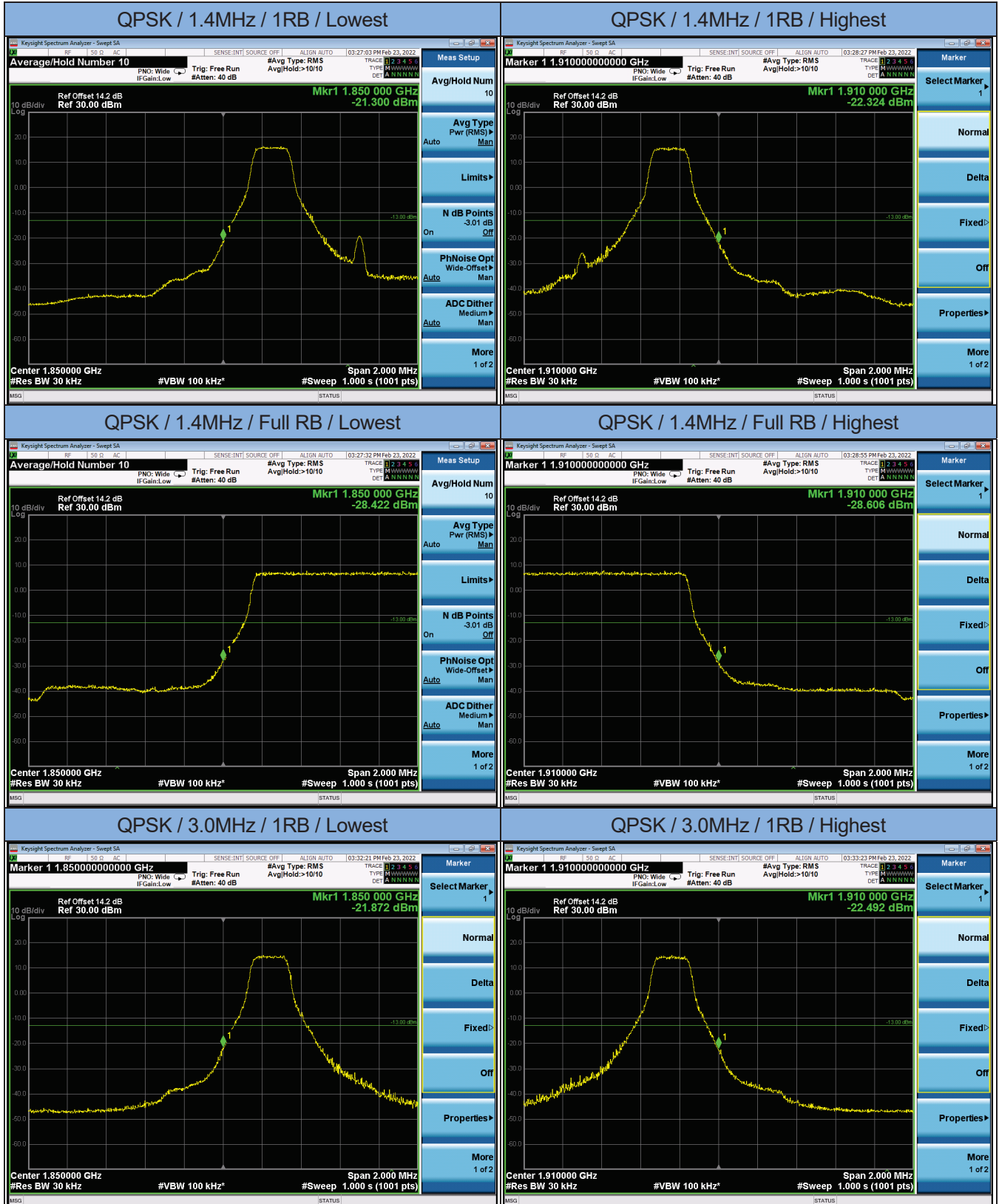


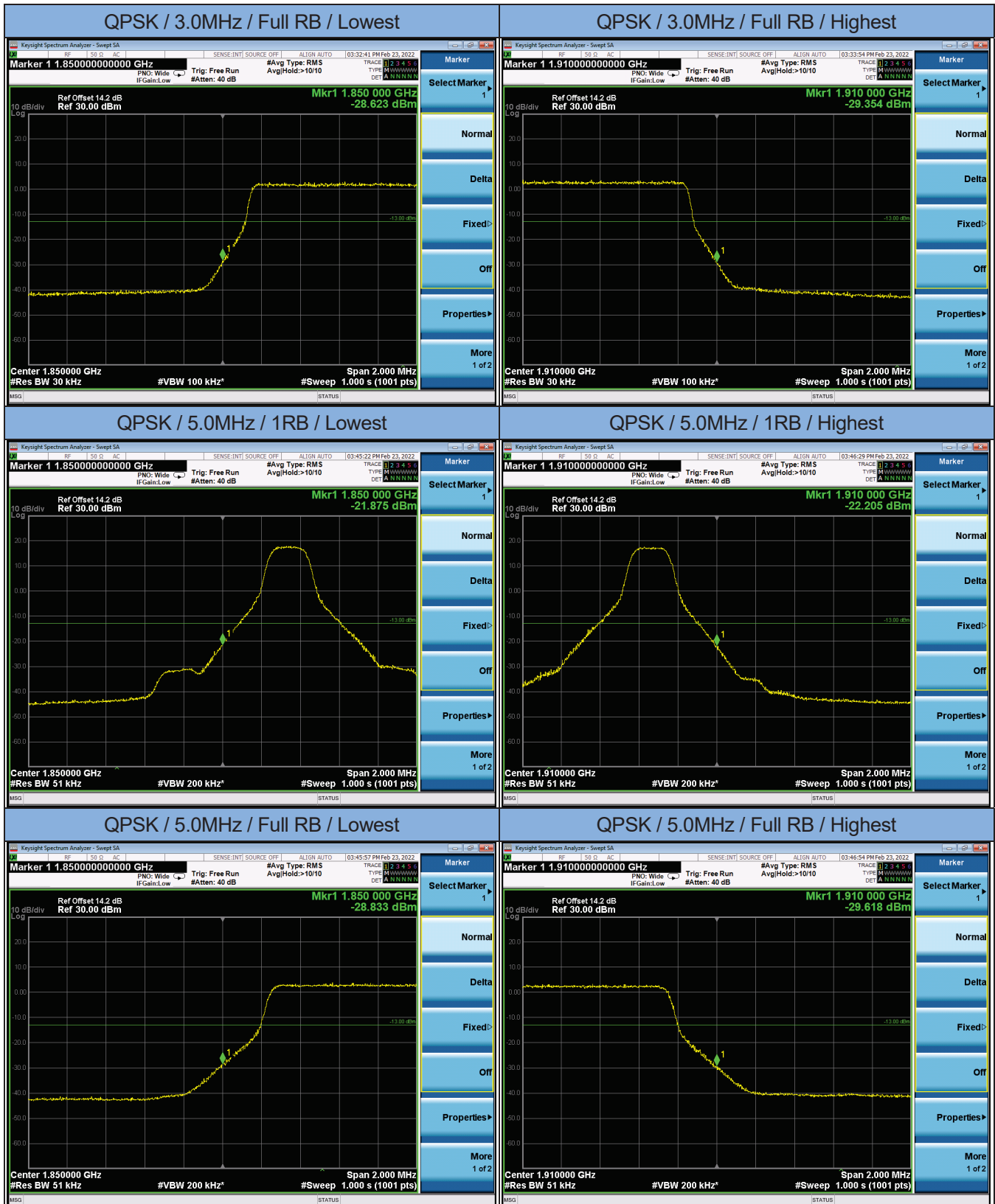


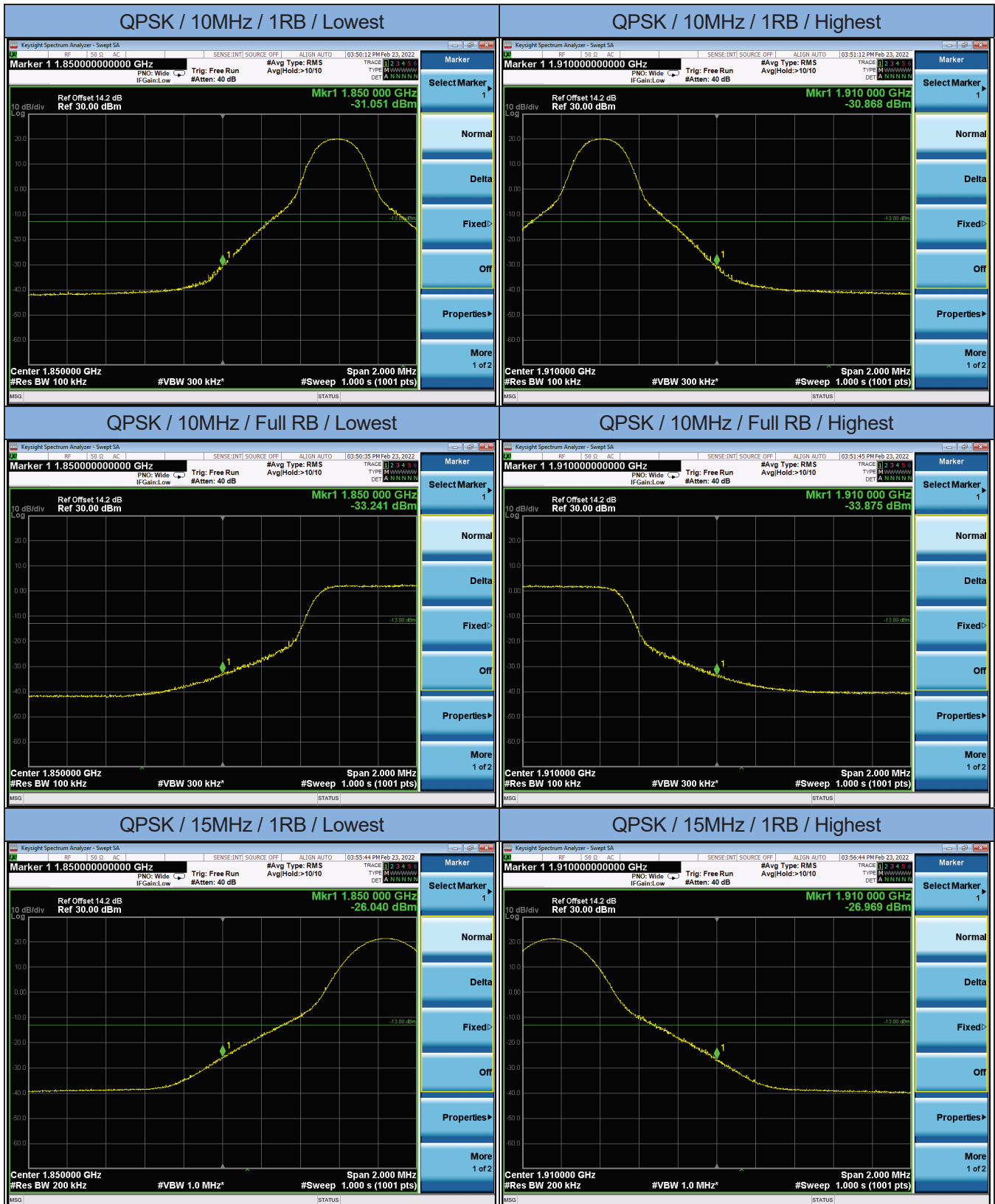


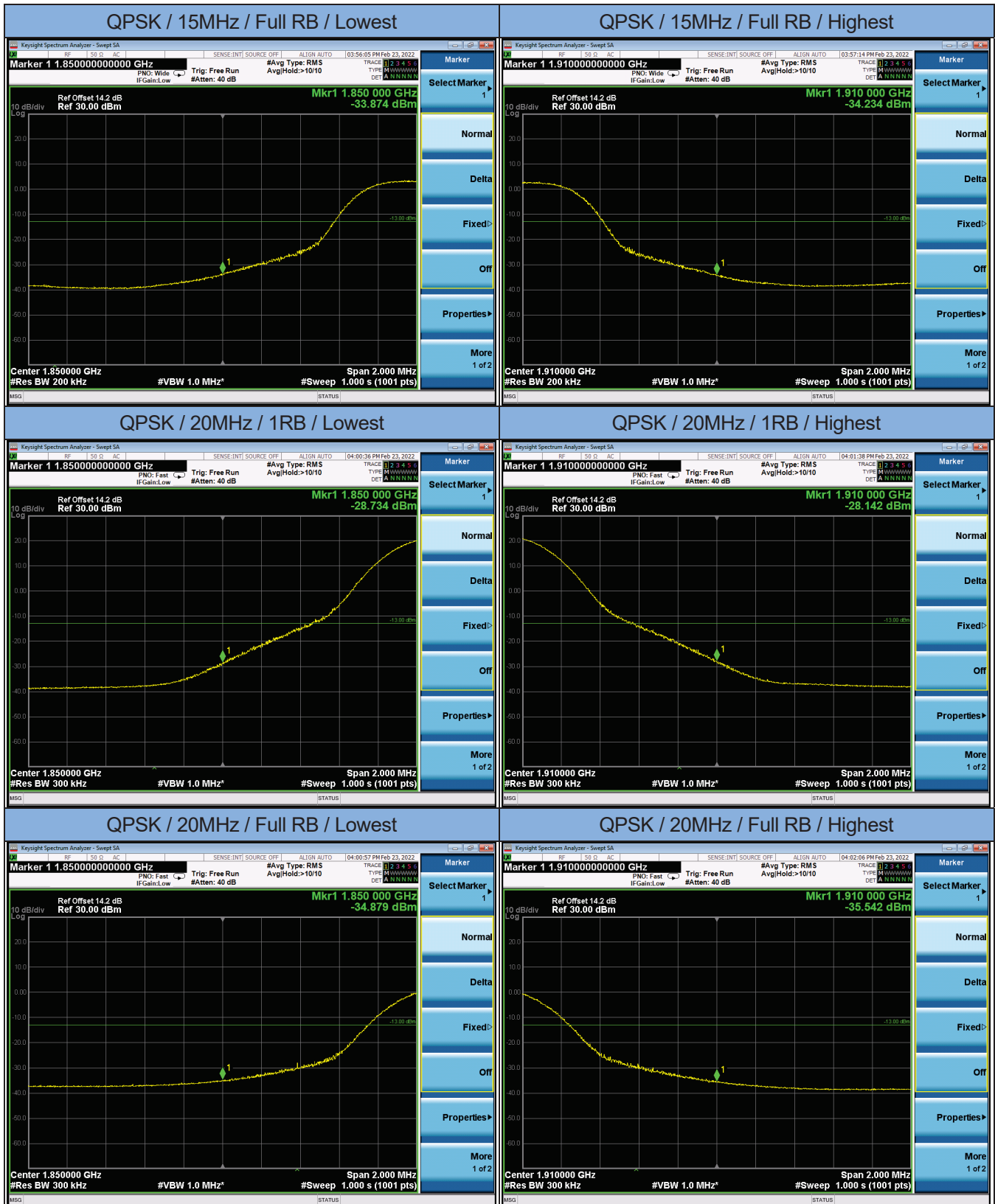


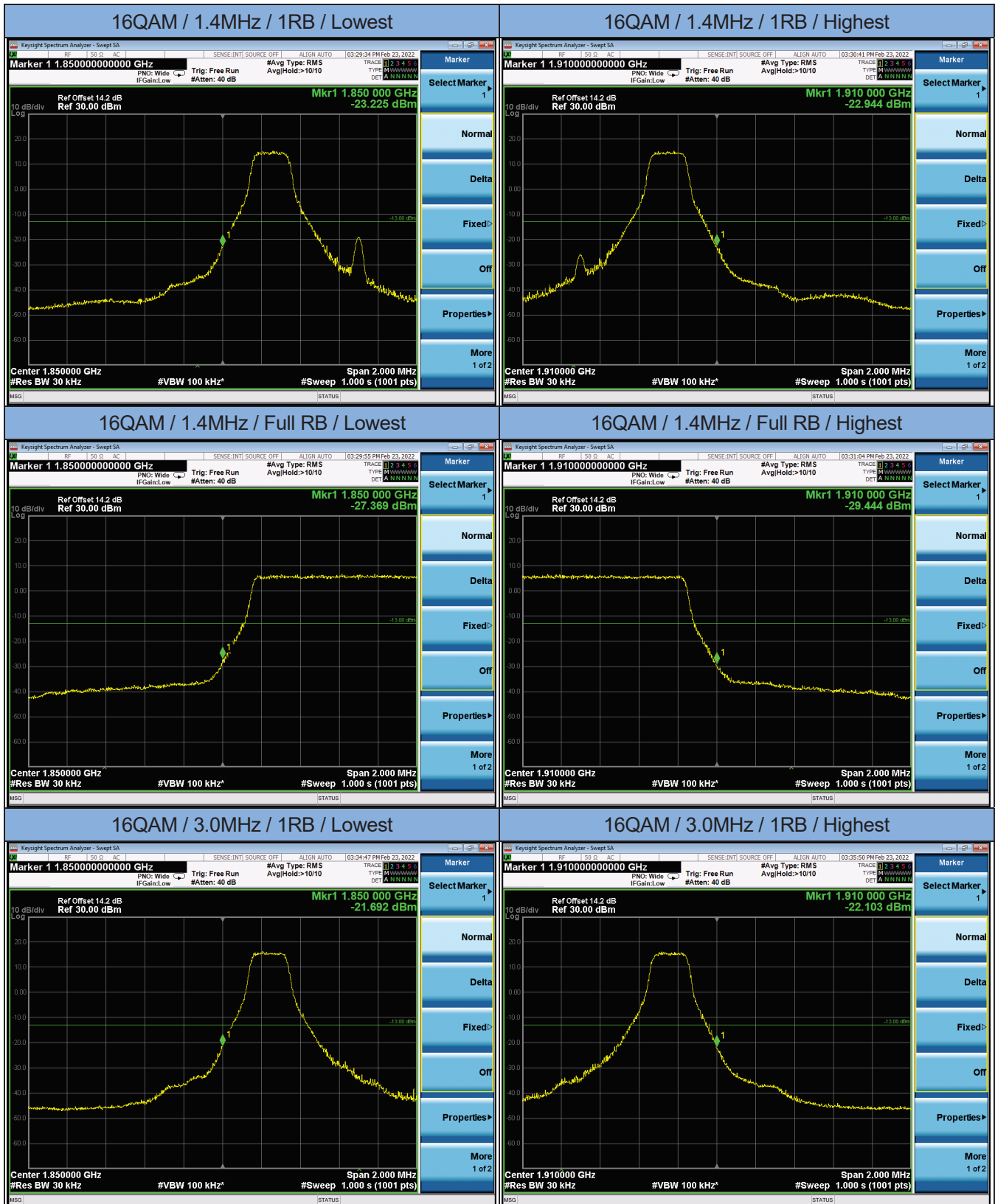
5. Band Edge

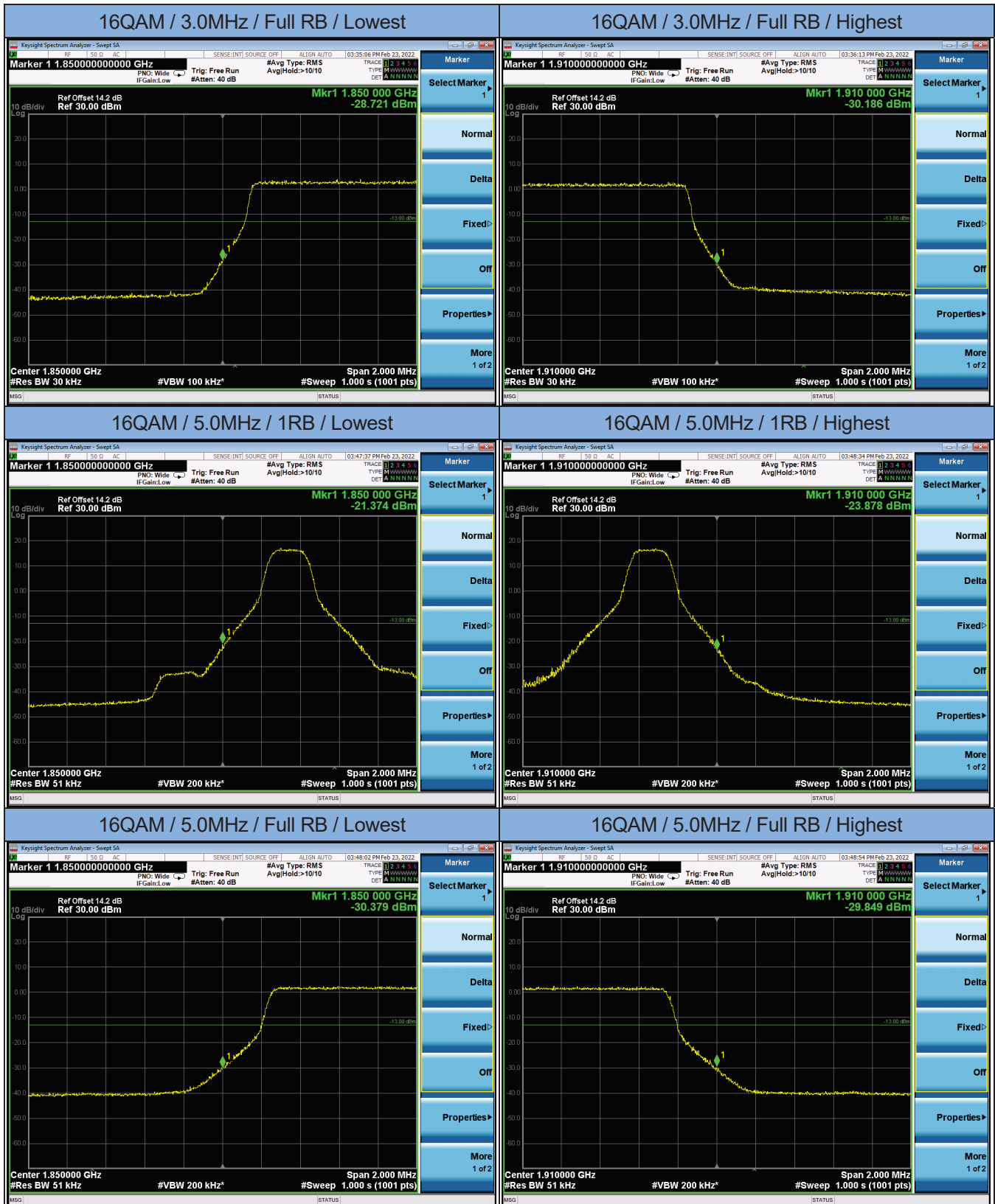


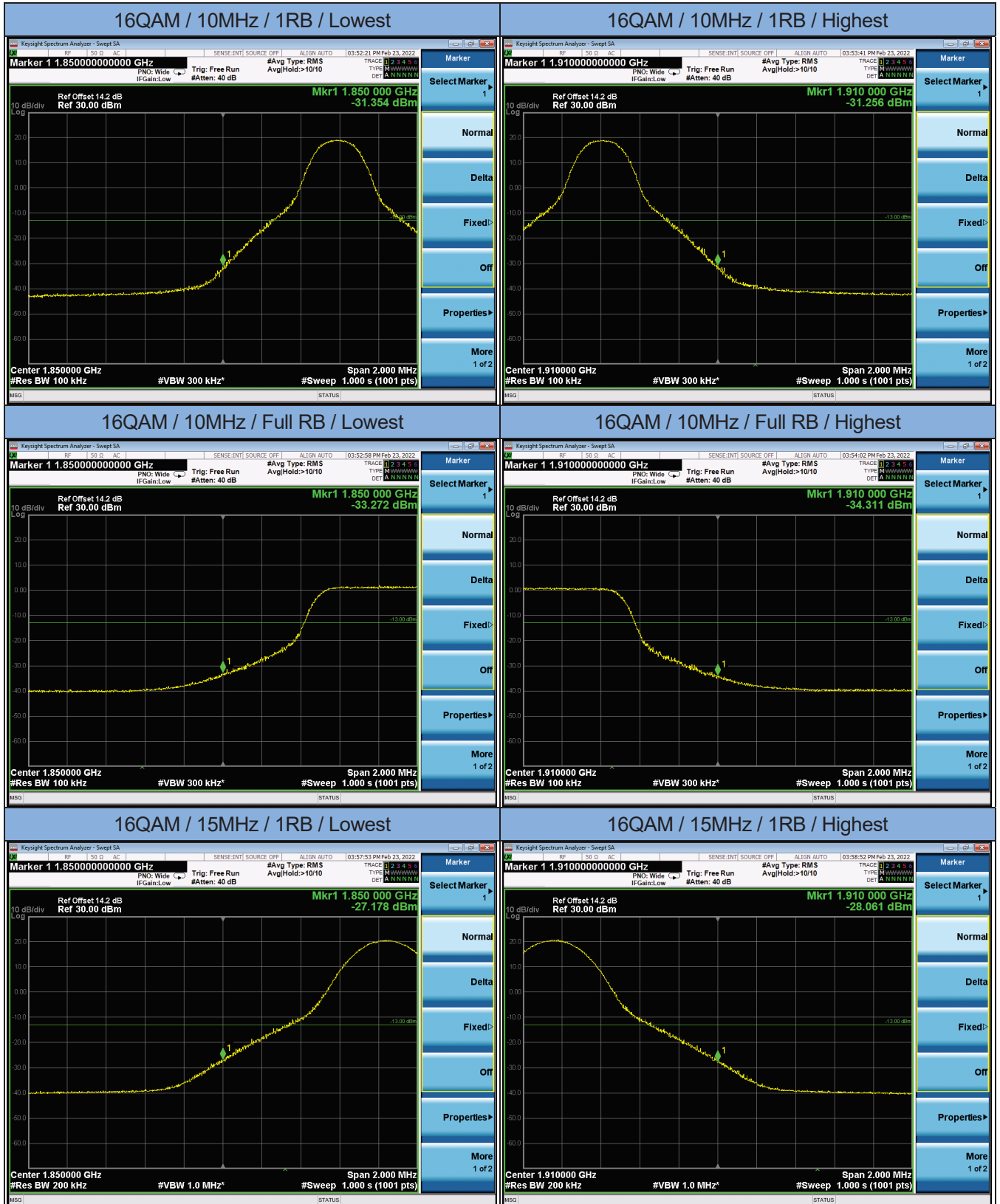


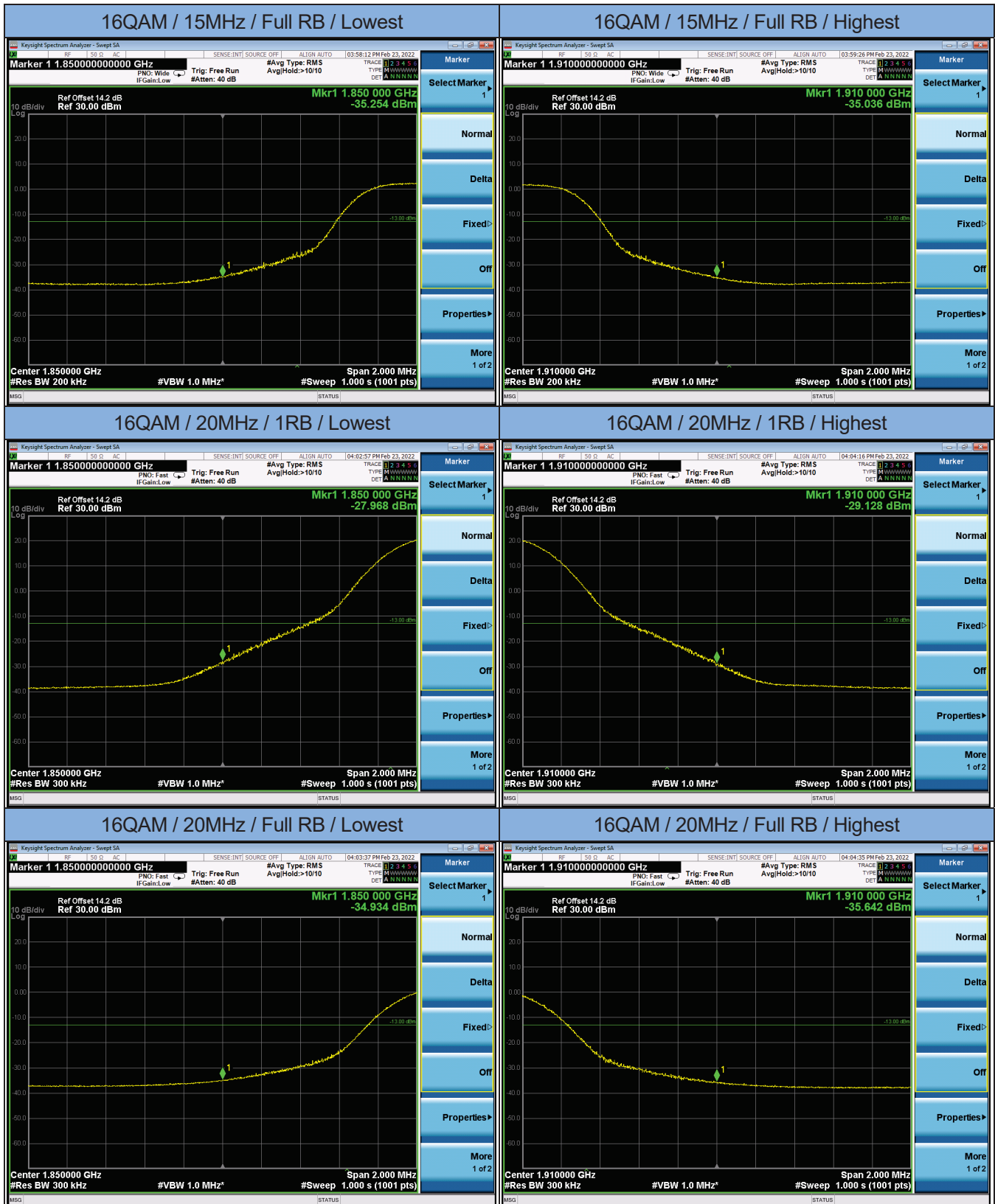




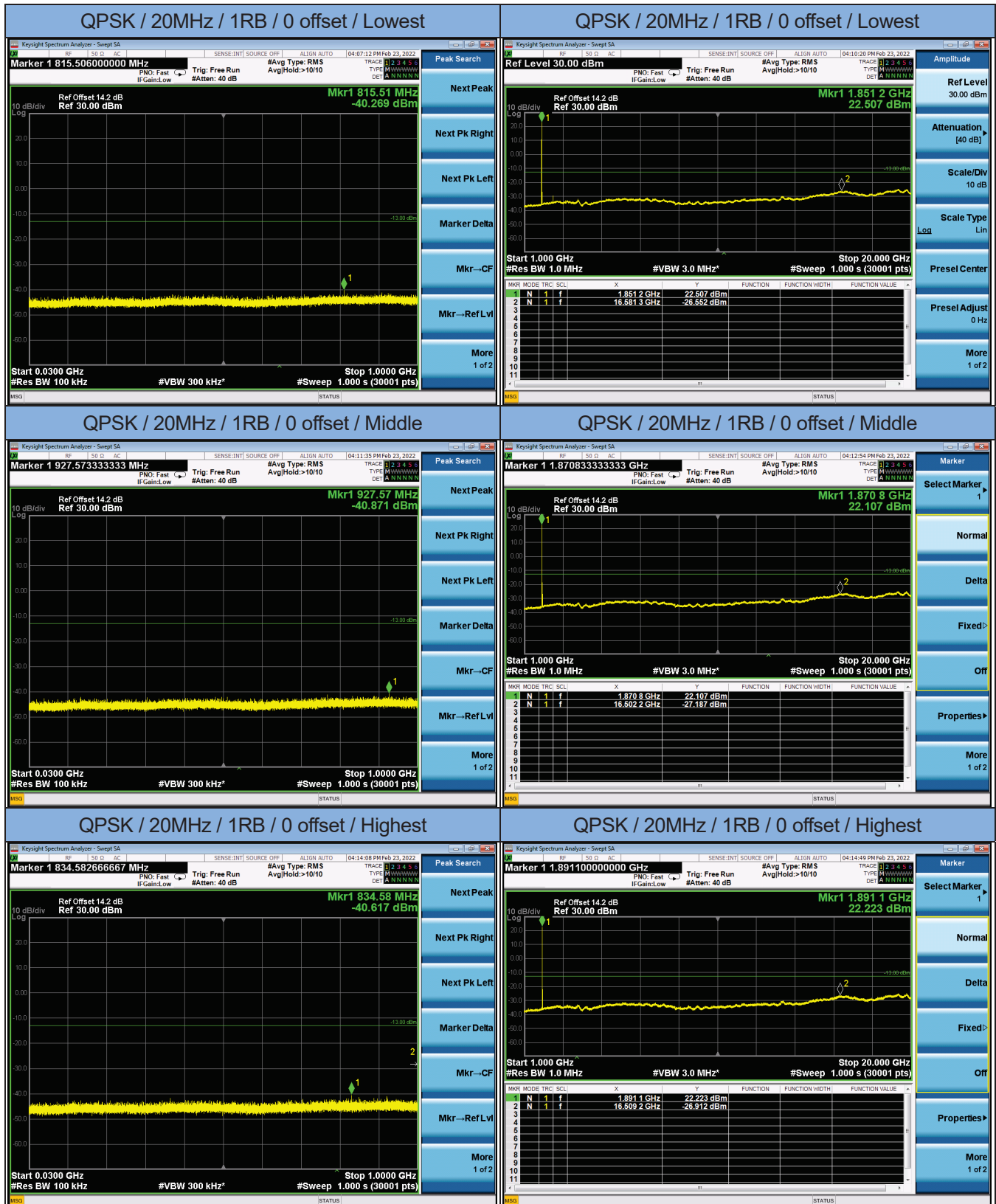


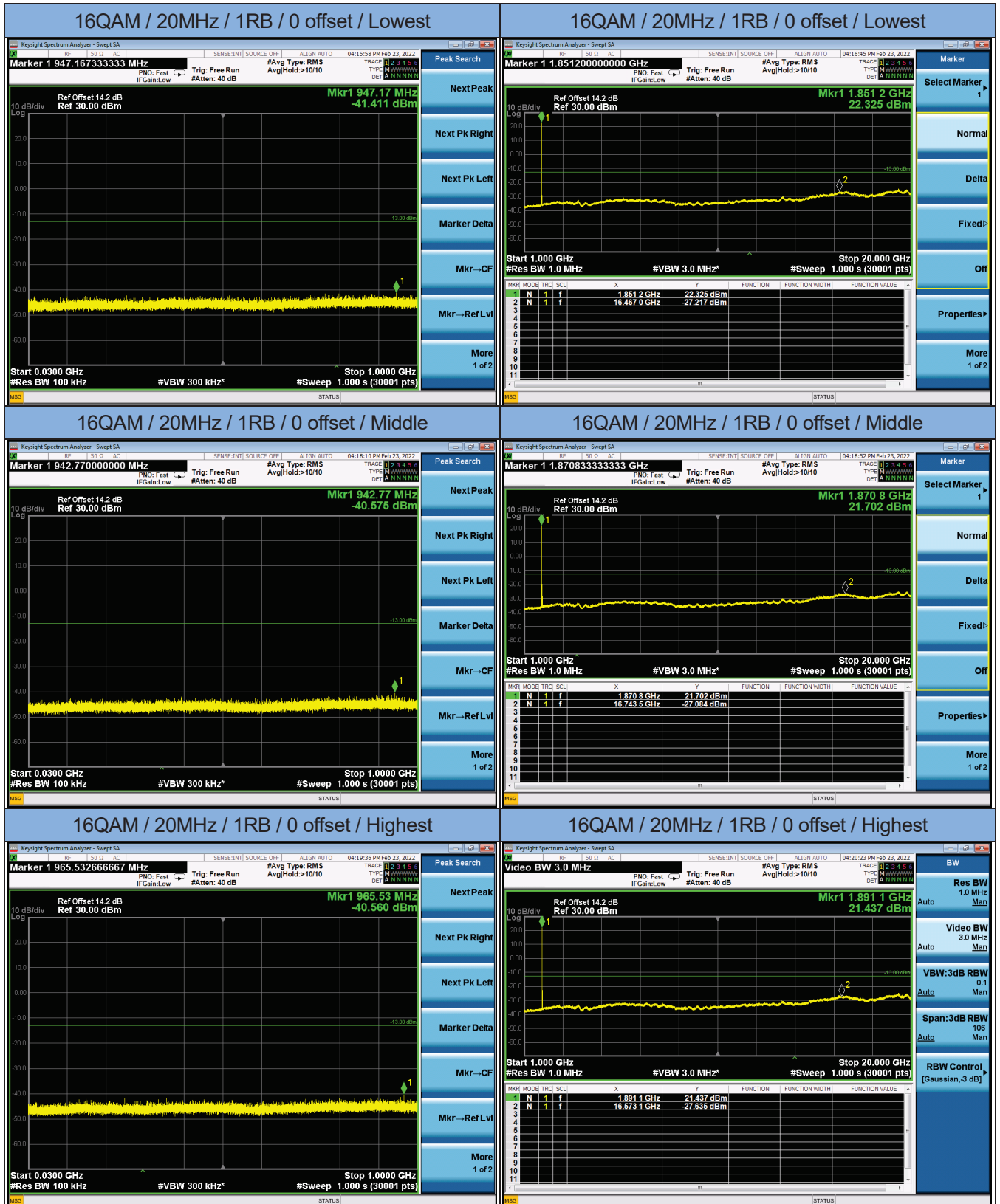






6. Transmitter Spurious Emissions





7. Field Strength of Spurious Radiation

LTE Band 2 / 20M / QPSK					
Channel	Frequency (MHz)	Polarization (H/V)	Meas. Level (dBm)	Limit (dBm)	Margin (dBm)
Lowest	652.71	H	-58.92	-13	-45.92
	3720	H	-48.95	-13	-35.95
	5580	H	-34.72	-13	-21.72
	7440	H	-38.95	-13	-25.95
	657.48	V	-64.22	-13	-51.22
	3720	V	-45.64	-13	-32.64
	5580	V	-38.92	-13	-25.92
	7440	V	-40.05	-13	-27.05
Middle	653.71	H	-57.41	-13	-44.41
	3760	H	-47.53	-13	-34.53
	5640	H	-37.64	-13	-24.64
	7520	H	-40.05	-13	-27.05
	656.81	V	-65.09	-13	-52.09
	3760	V	-43.27	-13	-30.27
	5640	V	-34.66	-13	-21.66
	7520	V	-40.72	-13	-27.72
Highest	652.70	H	-56.66	-13	-43.66
	3800	H	-46.94	-13	-33.94
	5700	H	-35.82	-13	-22.82
	7600	H	-37.47	-13	-24.47
	655.19	V	-64.80	-13	-51.80
	3800	V	-47.50	-13	-34.50
	5700	V	-36.18	-13	-23.18
	7600	V	-39.15	-13	-26.15

Note: Other emissions are more than 20dB below the limits.

8. Frequency Stability

LTE Band 2 / 20M / QPSK / Full RB					
Middle channel, $f_o = 1880.0$ MHz					
Temperature (°C)	Power Supplied (Vdc)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (dBm)	Result
-30	12	-4.0	-0.002128	±2.5	PASS
-20		2.0	0.001064	±2.5	PASS
-10		-1.9	-0.001011	±2.5	PASS
0		3.9	0.002074	±2.5	PASS
20		4.2	0.002234	±2.5	PASS
30		2.1	0.001117	±2.5	PASS
40		5.2	0.002766	±2.5	PASS
50		-1.9	-0.001011	±2.5	PASS
20	10.8	4.8	0.002553	±2.5	PASS
	52.8	-2.2	-0.001170	±2.5	PASS

---End---