

Appendix I

Test Results of LTE Band 4

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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	23.47	3.89	27.36	30.00	Pass
				3	23.12	3.89	27.01		Pass
				5	23.09	3.89	26.98		Pass
			3	0	22.07	3.89	25.96		Pass
				1	22.49	3.89	26.38		Pass
				3	22.65	3.89	26.54		Pass
			6	0	22.11	3.89	26.00		Pass
		Mid	1	0	23.04	3.89	26.93		Pass
				3	23.59	3.89	27.48		Pass
				5	23.41	3.89	27.30		Pass
			3	0	22.60	3.89	26.49		Pass
				1	21.95	3.89	25.84		Pass
				3	22.43	3.89	26.32		Pass
			6	0	22.72	3.89	26.61		Pass
		High	1	0	23.67	3.89	27.56		Pass
				3	23.48	3.89	27.37		Pass
				5	23.04	3.89	26.93		Pass
			3	0	22.35	3.89	26.24		Pass
				1	22.69	3.89	26.58		Pass
				3	22.58	3.89	26.47		Pass
			6	0	22.83	3.89	26.72		Pass
	16QAM	Low	1	0	23.12	3.89	27.01	30.00	Pass
				3	23.09	3.89	26.98		Pass
				5	22.58	3.89	26.47		Pass
			3	0	22.12	3.89	26.01		Pass
				1	22.60	3.89	26.49		Pass
				3	22.94	3.89	26.83		Pass
			6	0	21.86	3.89	25.75		Pass
		Mid	1	0	23.43	3.89	27.32		Pass
				3	23.20	3.89	27.09		Pass
				5	23.12	3.89	27.01		Pass
			3	0	22.76	3.89	26.65		Pass
				1	22.65	3.89	26.54		Pass
				3	22.41	3.89	26.30		Pass
			6	0	22.64	3.89	26.53		Pass
		High	1	0	23.12	3.89	27.01		Pass
				3	23.28	3.89	27.17		Pass
				5	22.79	3.89	26.68		Pass
			3	0	22.50	3.89	26.39		Pass
				1	22.61	3.89	26.50		Pass
				3	22.72	3.89	26.61		Pass
			6	0	22.07	3.89	25.96		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	22.32	3.89	26.21	30.00	Pass
				8	22.19	3.89	26.08		Pass
				14	22.50	3.89	26.39		Pass
			8	0	22.21	3.89	26.10		Pass
				4	22.65	3.89	26.54		Pass
				7	22.79	3.89	26.68		Pass
			15	0	21.95	3.89	25.84		Pass
		Mid	1	0	22.04	3.89	25.93		Pass
				8	22.12	3.89	26.01		Pass
				14	22.76	3.89	26.65		Pass
			8	0	21.95	3.89	25.84		Pass
				4	22.04	3.89	25.93		Pass
				7	22.37	3.89	26.26		Pass
			15	0	22.51	3.89	26.40		Pass
		High	1	0	22.40	3.89	26.29		Pass
				8	22.63	3.89	26.52		Pass
				14	22.72	3.89	26.61		Pass
			8	0	22.11	3.89	26.00		Pass
				4	22.82	3.89	26.71		Pass
				7	21.56	3.89	25.45		Pass
			15	0	21.75	3.89	25.64		Pass
	16QAM	Low	1	0	21.42	3.89	25.31	30.00	Pass
				8	21.61	3.89	25.50		Pass
				14	22.09	3.89	25.98		Pass
			8	0	22.34	3.89	26.23		Pass
				4	22.97	3.89	26.86		Pass
				7	22.48	3.89	26.37		Pass
			15	0	21.95	3.89	25.84		Pass
		Mid	1	0	21.71	3.89	25.60		Pass
				8	21.63	3.89	25.52		Pass
				14	21.88	3.89	25.77		Pass
			8	0	21.96	3.89	25.85		Pass
				4	22.06	3.89	25.95		Pass
				7	22.01	3.89	25.90		Pass
			15	0	22.79	3.89	26.68		Pass
		High	1	0	21.65	3.89	25.54		Pass
				8	21.74	3.89	25.63		Pass
				14	21.28	3.89	25.17		Pass
			8	0	21.61	3.89	25.50		Pass
				4	21.55	3.89	25.44		Pass
				7	21.13	3.89	25.02		Pass
			15	0	21.92	3.89	25.81		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	22.09	3.89	25.98	30.00	Pass
				12	22.67	3.89	26.56		Pass
				24	22.94	3.89	26.83		Pass
			12	0	21.53	3.89	25.42		Pass
				7	21.69	3.89	25.58		Pass
				13	21.71	3.89	25.60		Pass
			25	0	21.64	3.89	25.53		Pass
		Mid	1	0	21.53	3.89	25.42		Pass
				12	21.67	3.89	25.56		Pass
				24	21.80	3.89	25.69		Pass
			12	0	21.69	3.89	25.58		Pass
				7	21.77	3.89	25.66		Pass
				13	21.41	3.89	25.30		Pass
			25	0	22.03	3.89	25.92		Pass
		High	1	0	21.62	3.89	25.51		Pass
				12	21.78	3.89	25.67		Pass
				24	21.90	3.89	25.79		Pass
			12	0	21.85	3.89	25.74		Pass
				7	21.44	3.89	25.33		Pass
				13	21.63	3.89	25.52		Pass
			25	0	21.32	3.89	25.21		Pass
	16QAM	Low	1	0	21.27	3.89	25.16	30.00	Pass
				12	21.69	3.89	25.58		Pass
				24	21.57	3.89	25.46		Pass
			12	0	21.65	3.89	25.54		Pass
				7	21.88	3.89	25.77		Pass
				13	21.29	3.89	25.18		Pass
			25	0	21.93	3.89	25.82		Pass
		Mid	1	0	21.45	3.89	25.34		Pass
				12	21.86	3.89	25.75		Pass
				24	22.01	3.89	25.90		Pass
			12	0	21.92	3.89	25.81		Pass
				7	21.76	3.89	25.65		Pass
				13	22.00	3.89	25.89		Pass
			25	0	21.77	3.89	25.66		Pass
		High	1	0	21.40	3.89	25.29		Pass
				12	21.63	3.89	25.52		Pass
				24	21.57	3.89	25.46		Pass
			12	0	21.89	3.89	25.78		Pass
				7	21.64	3.89	25.53		Pass
				13	21.26	3.89	25.15		Pass
			25	0	21.74	3.89	25.63		Pass

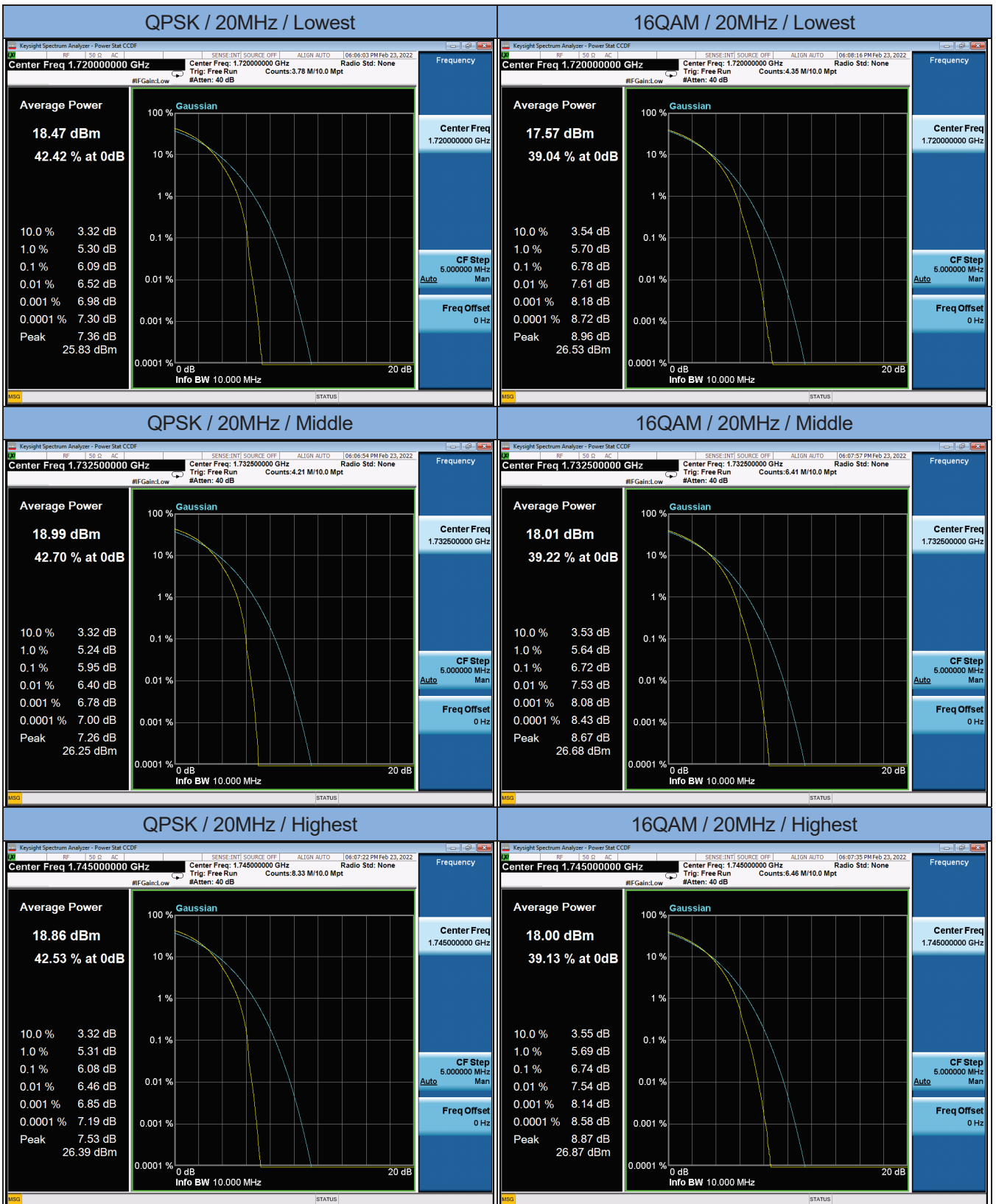
BW (MHz)	Modulation	Channel	RB Allocation		Average Power (dBm)	GT - LC (dB)	EIRP (dBm)	Limit (dBm)	Result
			Size	Offset					
10	QPSK	Low	1	0	22.82	3.89	26.71	30.00	Pass
				25	22.75	3.89	26.64		Pass
				49	22.29	3.89	26.18		Pass
			25	0	21.73	3.89	25.62		Pass
				12	21.74	3.89	25.63		Pass
				25	21.66	3.89	25.55		Pass
			50	0	21.52	3.89	25.41		Pass
		Mid	1	0	21.64	3.89	25.53		Pass
				25	21.17	3.89	25.06		Pass
				49	21.50	3.89	25.39		Pass
			25	0	21.73	3.89	25.62		Pass
				12	21.29	3.89	25.18		Pass
				25	21.52	3.89	25.41		Pass
			50	0	21.63	3.89	25.52		Pass
		High	1	0	21.70	3.89	25.59		Pass
				25	21.61	3.89	25.50		Pass
				49	21.99	3.89	25.88		Pass
			25	0	21.48	3.89	25.37		Pass
				12	21.60	3.89	25.49		Pass
				25	21.31	3.89	25.20		Pass
			50	0	21.11	3.89	25.00		Pass
	16QAM	Low	1	0	21.29	3.89	25.18	30.00	Pass
				25	21.37	3.89	25.26		Pass
				49	21.80	3.89	25.69		Pass
			25	0	21.53	3.89	25.42		Pass
				12	21.16	3.89	25.05		Pass
				25	21.84	3.89	25.73		Pass
			50	0	21.49	3.89	25.38		Pass
		Mid	1	0	21.97	3.89	25.86		Pass
				25	21.52	3.89	25.41		Pass
				49	21.66	3.89	25.55		Pass
			25	0	21.70	3.89	25.59		Pass
				12	22.03	3.89	25.92		Pass
				25	21.95	3.89	25.84		Pass
			50	0	21.44	3.89	25.33		Pass
		High	1	0	21.26	3.89	25.15		Pass
				25	21.38	3.89	25.27		Pass
				49	21.65	3.89	25.54		Pass
			25	0	21.52	3.89	25.41		Pass
				12	21.08	3.89	24.97		Pass
				25	21.49	3.89	25.38		Pass
			50	0	21.23	3.89	25.12		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	21.97	3.89	25.86	30.00	Pass
				37	22.08	3.89	25.97		Pass
				74	22.62	3.89	26.51		Pass
			36	0	21.97	3.89	25.86		Pass
				20	22.12	3.89	26.01		Pass
				39	22.67	3.89	26.56		Pass
			75	0	21.30	3.89	25.19		Pass
		Mid	1	0	21.76	3.89	25.65		Pass
				37	21.52	3.89	25.41		Pass
				74	21.43	3.89	25.32		Pass
			36	0	21.20	3.89	25.09		Pass
				20	21.87	3.89	25.76		Pass
				39	21.55	3.89	25.44		Pass
			75	0	21.49	3.89	25.38		Pass
		High	1	0	21.93	3.89	25.82		Pass
				37	21.80	3.89	25.69		Pass
				74	21.43	3.89	25.32		Pass
			36	0	21.61	3.89	25.50		Pass
				20	21.62	3.89	25.51		Pass
				39	21.44	3.89	25.33		Pass
			75	0	21.93	3.89	25.82		Pass
	16QAM	Low	1	0	21.76	3.89	25.65	30.00	Pass
				37	21.52	3.89	25.41		Pass
				74	21.65	3.89	25.54		Pass
			36	0	22.13	3.89	26.02		Pass
				20	21.99	3.89	25.88		Pass
				39	21.85	3.89	25.74		Pass
			75	0	21.03	3.89	24.92		Pass
		Mid	1	0	21.42	3.89	25.31		Pass
				37	21.47	3.89	25.36		Pass
				74	21.84	3.89	25.73		Pass
			36	0	21.56	3.89	25.45		Pass
				20	21.08	3.89	24.97		Pass
				39	21.61	3.89	25.50		Pass
			75	0	22.39	3.89	26.28		Pass
		High	1	0	21.42	3.89	25.31		Pass
				37	21.91	3.89	25.80		Pass
				74	21.88	3.89	25.77		Pass
			36	0	21.46	3.89	25.35		Pass
				20	21.93	3.89	25.82		Pass
				39	21.60	3.89	25.49		Pass
			75	0	21.54	3.89	25.43		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	22.03	3.89	25.92	30.00	Pass
				49	21.71	3.89	25.60		Pass
				99	22.29	3.89	26.18		Pass
			50	0	21.74	3.89	25.63		Pass
				24	22.05	3.89	25.94		Pass
				50	21.86	3.89	25.75		Pass
			100	0	21.90	3.89	25.79		Pass
		Mid	1	0	22.32	3.89	26.21		Pass
				49	21.41	3.89	25.30		Pass
				99	21.55	3.89	25.44		Pass
			50	0	21.62	3.89	25.51		Pass
				24	21.79	3.89	25.68		Pass
				50	21.94	3.89	25.83		Pass
			100	0	21.53	3.89	25.42		Pass
		High	1	0	21.61	3.89	25.50		Pass
				49	21.89	3.89	25.78		Pass
				99	21.30	3.89	25.19		Pass
			50	0	21.72	3.89	25.61		Pass
				24	21.66	3.89	25.55		Pass
				50	21.89	3.89	25.78		Pass
			100	0	21.85	3.89	25.74		Pass
	16QAM	Low	1	0	21.46	3.89	25.35	30.00	Pass
				49	21.71	3.89	25.60		Pass
				99	21.52	3.89	25.41		Pass
			50	0	21.21	3.89	25.10		Pass
				24	21.93	3.89	25.82		Pass
				50	21.92	3.89	25.81		Pass
			100	0	21.79	3.89	25.68		Pass
		Mid	1	0	21.84	3.89	25.73		Pass
				49	21.68	3.89	25.57		Pass
				99	21.53	3.89	25.42		Pass
			50	0	21.50	3.89	25.39		Pass
				24	21.69	3.89	25.58		Pass
				50	21.37	3.89	25.26		Pass
			100	0	22.01	3.89	25.90		Pass
		High	1	0	21.95	3.89	25.84		Pass
				49	21.82	3.89	25.71		Pass
				99	21.48	3.89	25.37		Pass
			50	0	21.85	3.89	25.74		Pass
				24	21.72	3.89	25.61		Pass
				50	21.04	3.89	24.93		Pass
			100	0	21.65	3.89	25.54		Pass

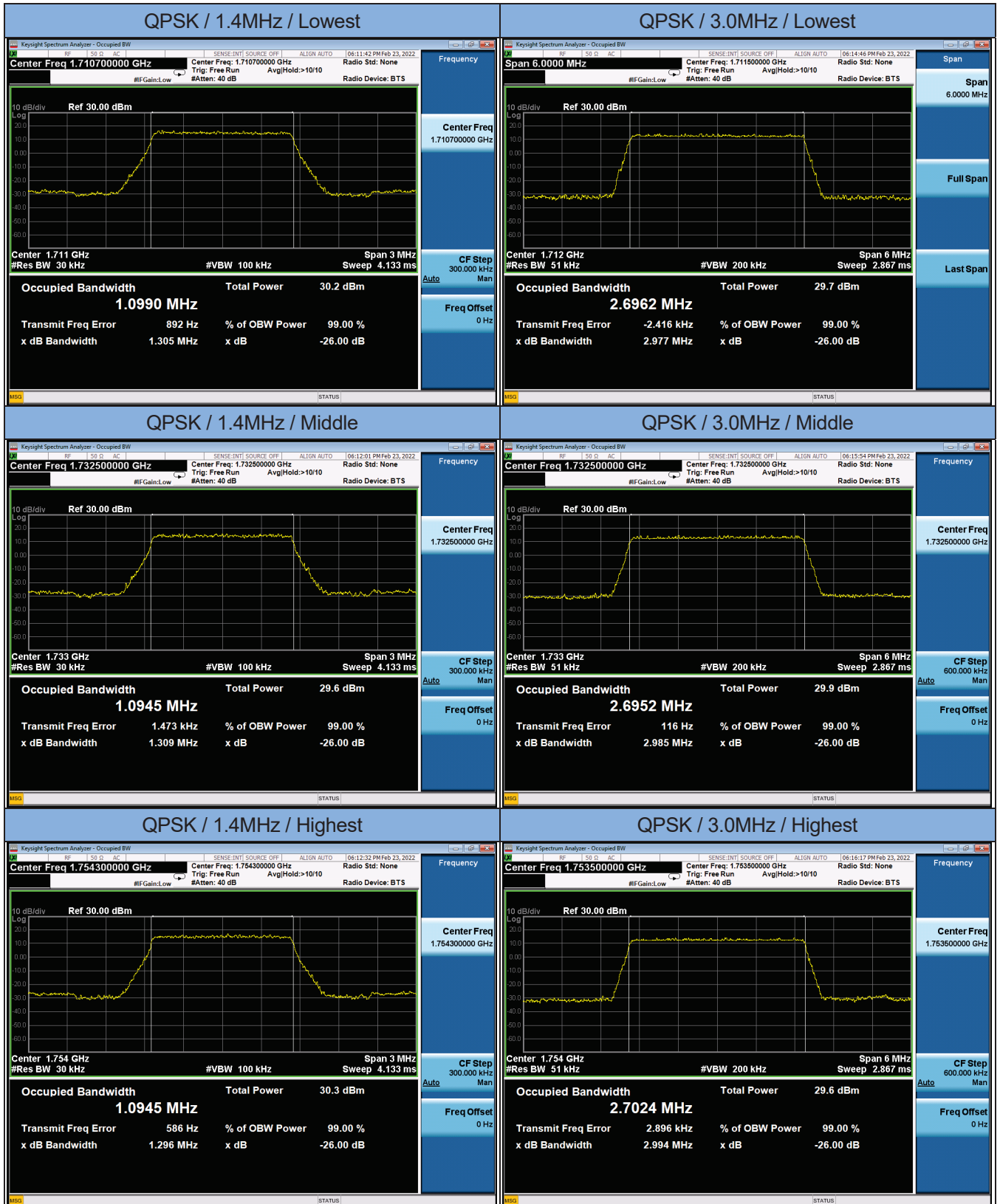
3. Peak-to-Average Ratio

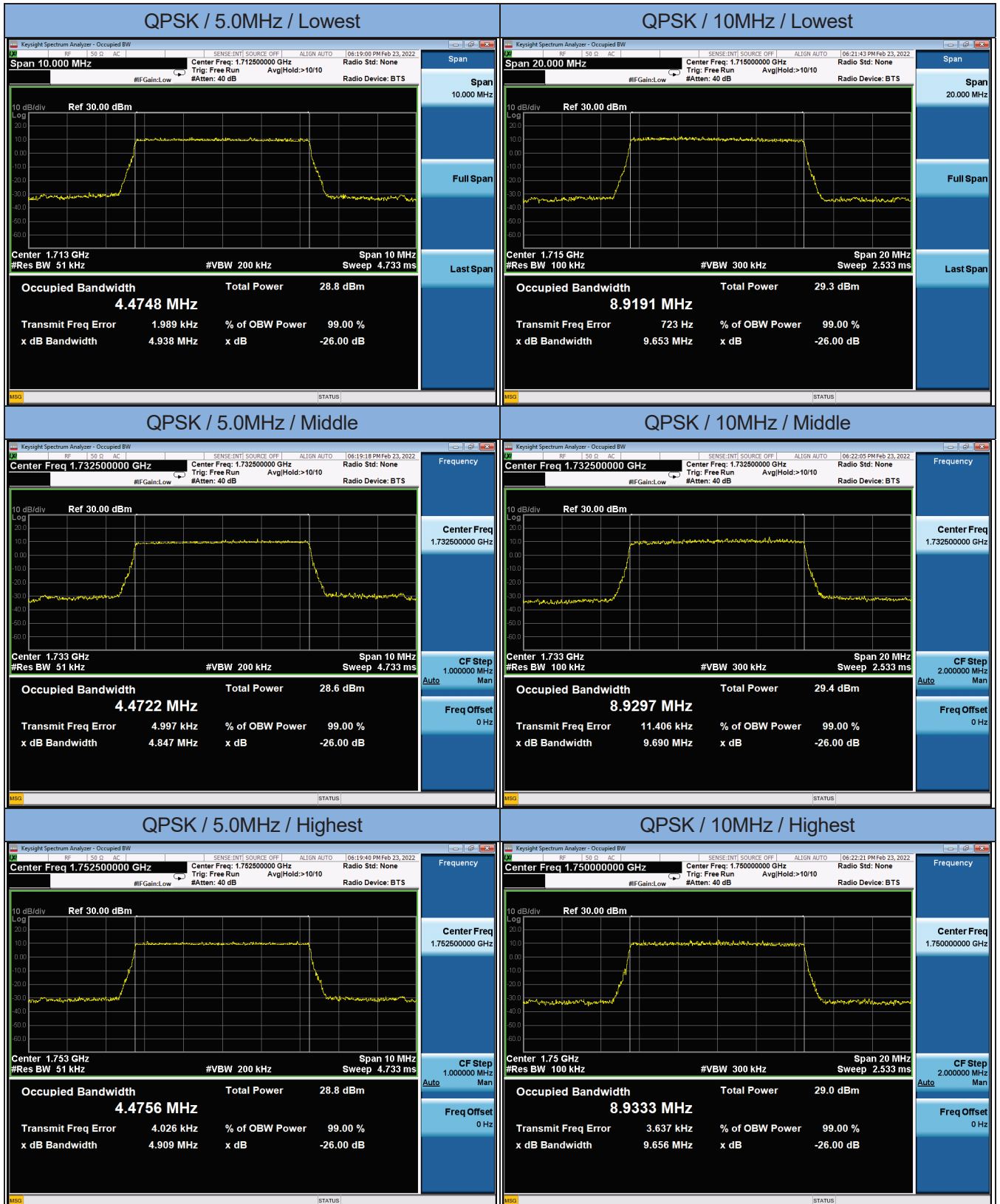
BW (MHz)	Modulation	Channel	RB Allocation		Peak-to-Average Ratio (dB)	Limit (dBm)	Result
			Size	Offset			
20	QPSK	Low	Full	0	6.09	13.0	Pass
		Mid	Full	0	5.95		Pass
		High	Full	0	6.08		Pass
	16QAM	Low	Full	0	6.78	13.0	Pass
		Mid	Full	0	6.72		Pass
		High	Full	0	6.74		Pass

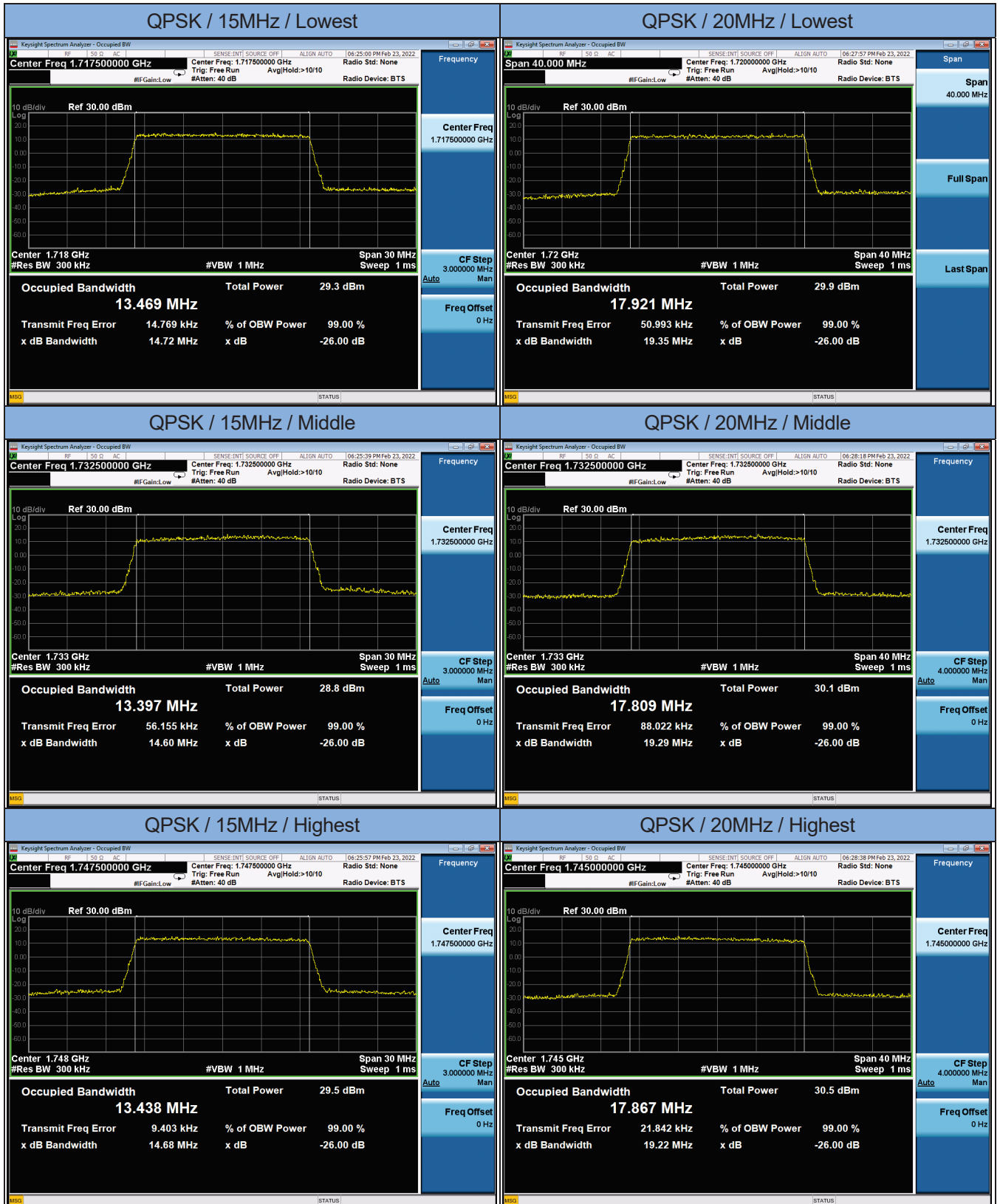


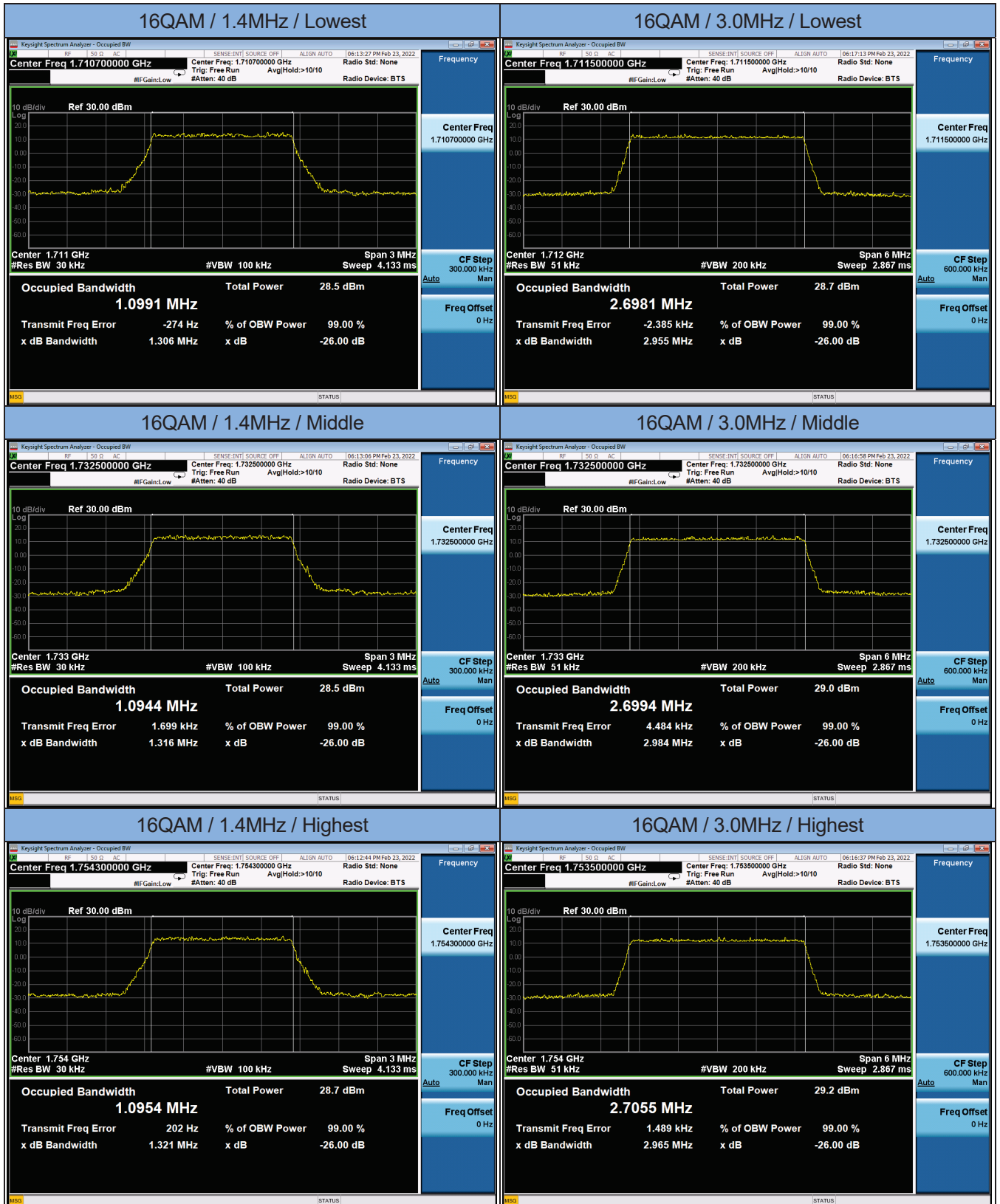
4. Occupied Bandwidth

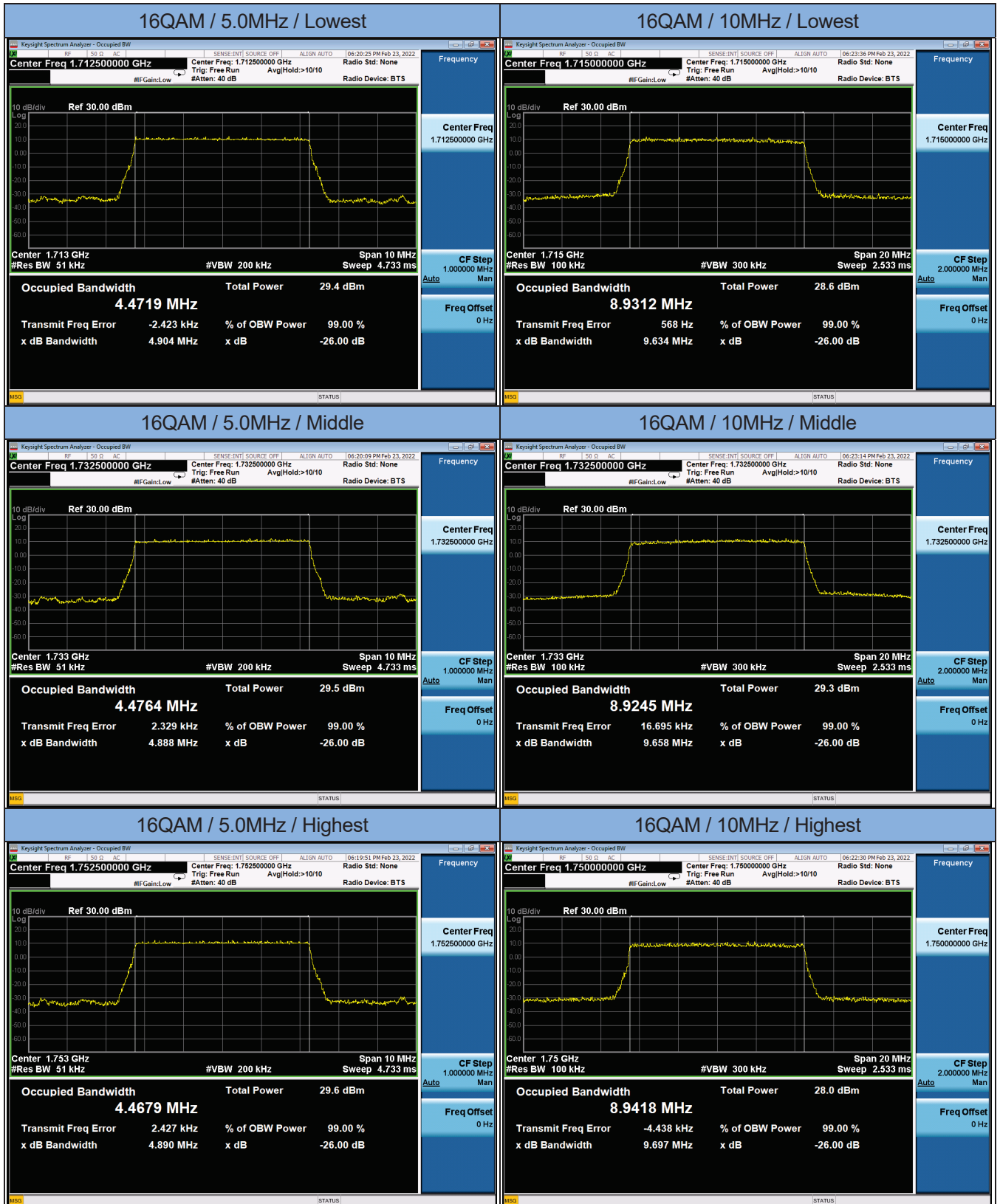
BW (MHz)	Modulation	Channel	RB Allocation		26dB BW (MHz)	99% OBW (MHz)	Limit (dBm)	Result
			Size	Offset				
1.4	QPSK	Low	Full	0	1.305	1.099	---	Pass
		Mid	Full	0	1.309	1.0945		Pass
		High	Full	0	1.296	1.0945		Pass
	16QAM	Low	Full	0	1.306	1.0991	---	Pass
		Mid	Full	0	1.316	1.0944		Pass
		High	Full	0	1.321	1.0954		Pass
3.0	QPSK	Low	Full	0	2.977	2.6962	---	Pass
		Mid	Full	0	2.985	2.6952		Pass
		High	Full	0	2.994	2.7024		Pass
	16QAM	Low	Full	0	2.955	2.6981	---	Pass
		Mid	Full	0	2.984	2.6994		Pass
		High	Full	0	2.965	2.7055		Pass
5.0	QPSK	Low	Full	0	4.938	4.4748	---	Pass
		Mid	Full	0	4.847	4.4722		Pass
		High	Full	0	4.909	4.4756		Pass
	16QAM	Low	Full	0	4.904	4.4719	---	Pass
		Mid	Full	0	4.888	4.4764		Pass
		High	Full	0	4.890	4.4679		Pass
10	QPSK	Low	Full	0	9.653	8.9191	---	Pass
		Mid	Full	0	9.690	8.9297		Pass
		High	Full	0	9.656	8.9333		Pass
	16QAM	Low	Full	0	9.634	8.9312	---	Pass
		Mid	Full	0	9.658	8.9245		Pass
		High	Full	0	9.697	8.9418		Pass
15	QPSK	Low	Full	0	14.72	13.469	---	Pass
		Mid	Full	0	14.60	13.397		Pass
		High	Full	0	14.68	13.438		Pass
	16QAM	Low	Full	0	14.73	13.465	---	Pass
		Mid	Full	0	14.56	13.422		Pass
		High	Full	0	14.76	13.471		Pass
20	QPSK	Low	Full	0	19.35	17.921	---	Pass
		Mid	Full	0	19.29	17.809		Pass
		High	Full	0	19.22	17.867		Pass
	16QAM	Low	Full	0	19.43	17.964	---	Pass
		Mid	Full	0	19.15	17.844		Pass
		High	Full	0	19.18	17.864		Pass

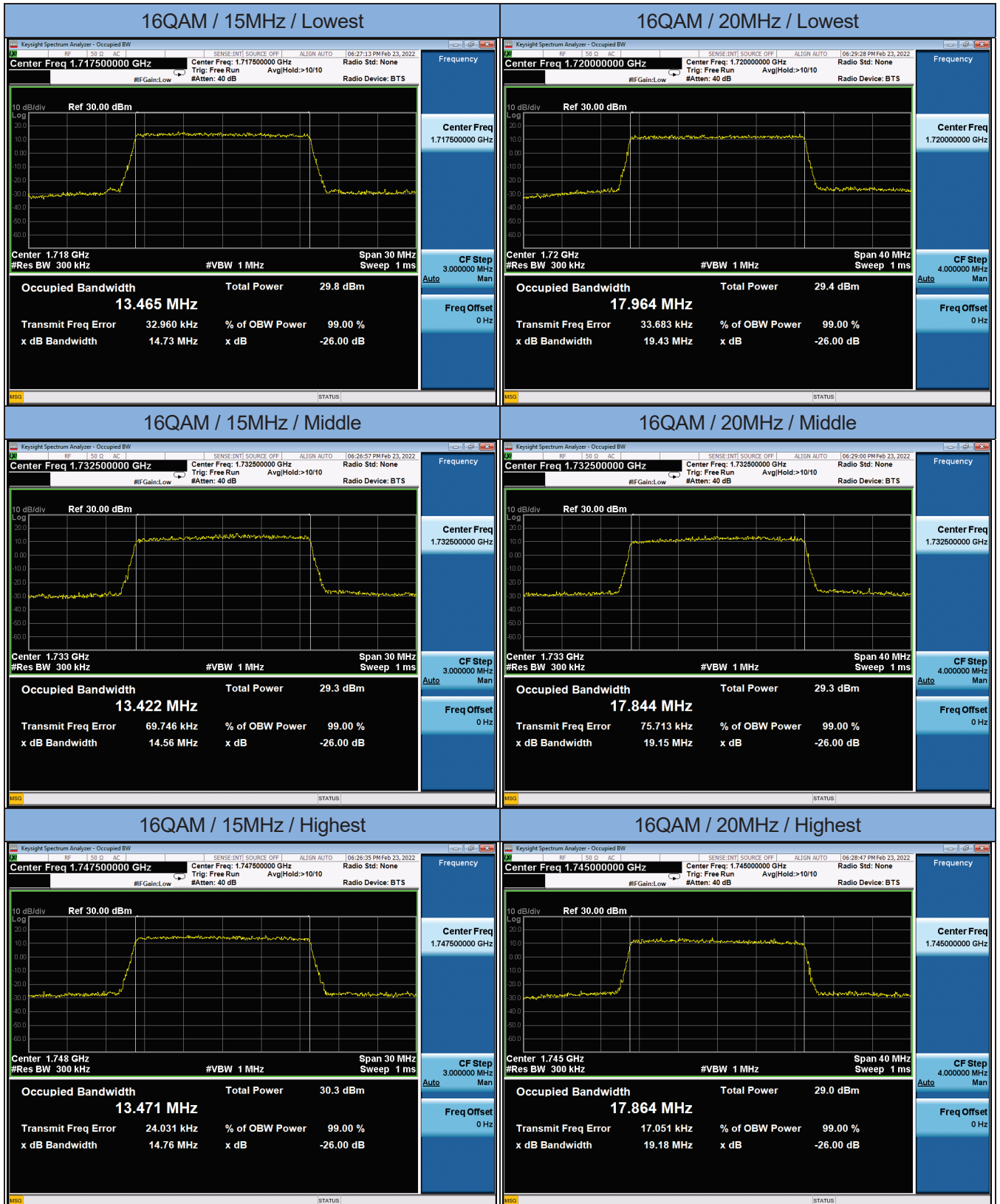




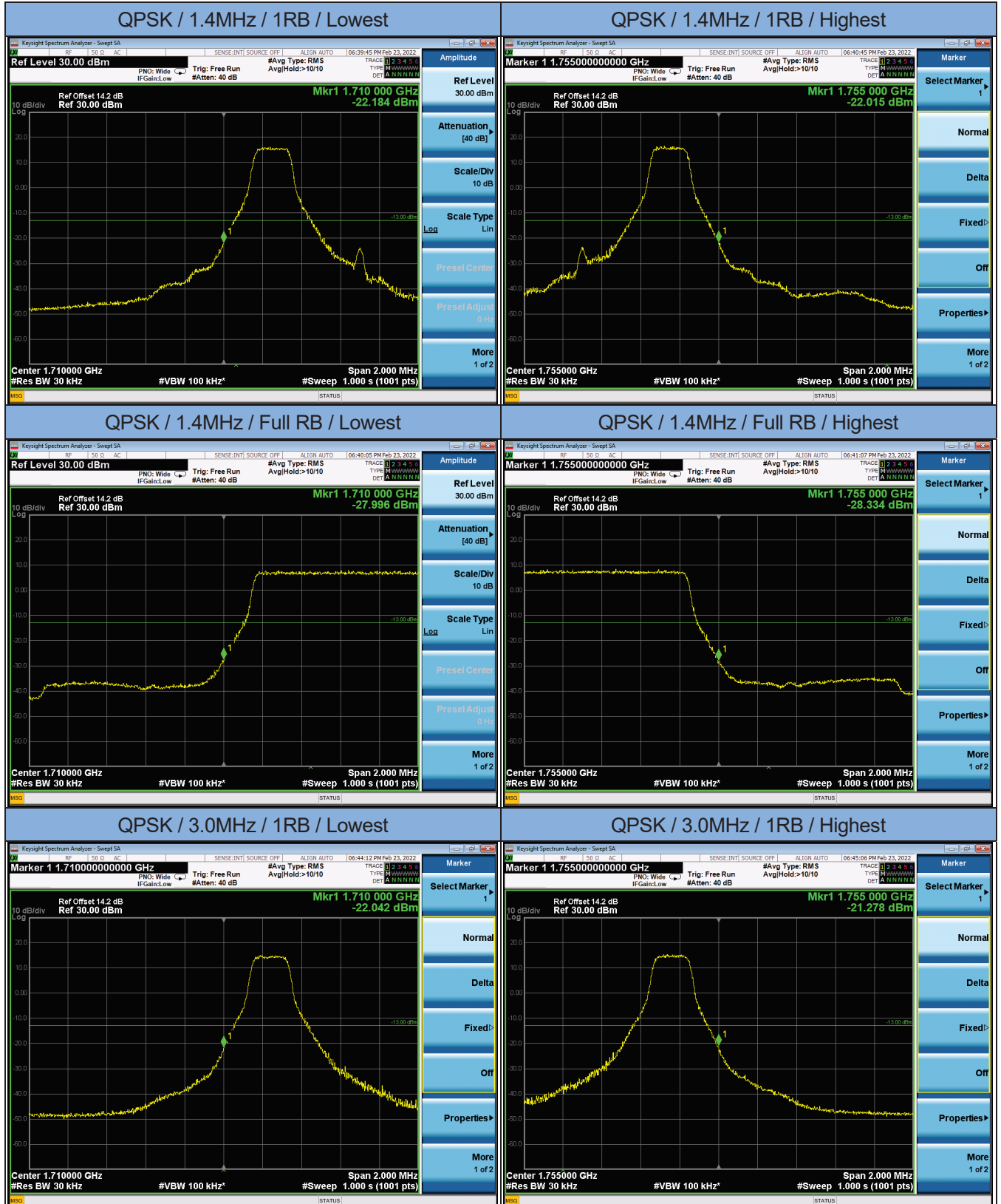




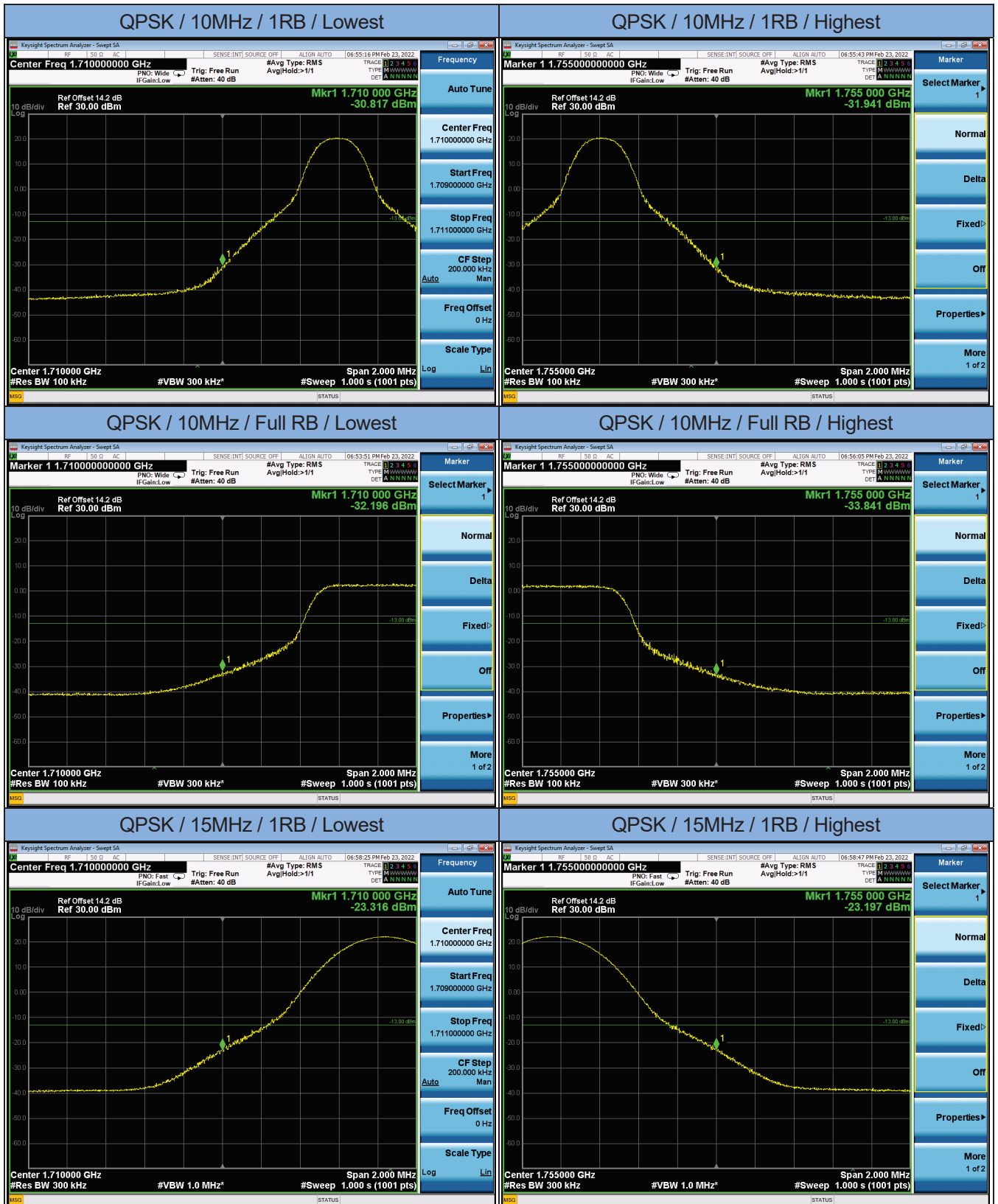


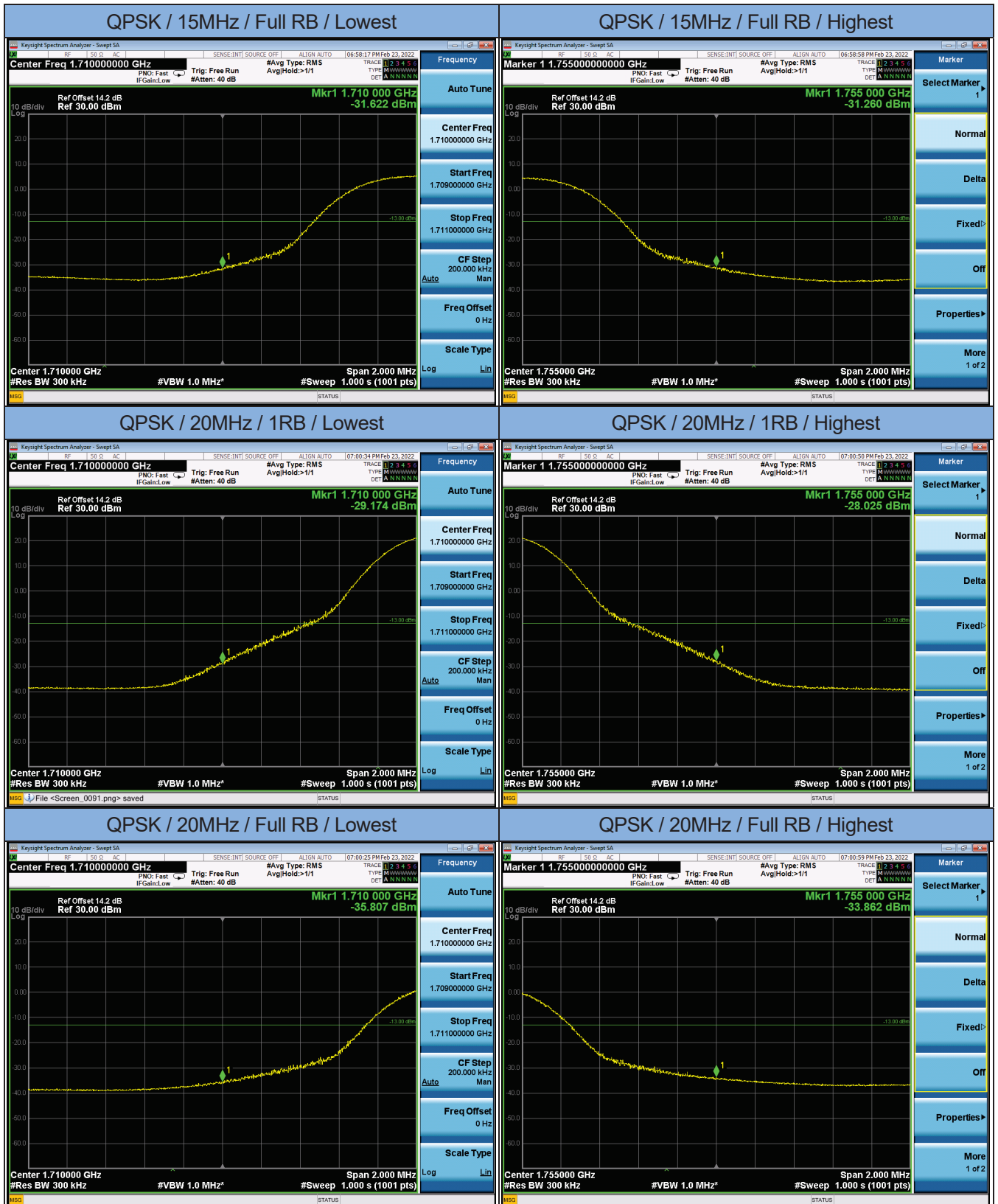


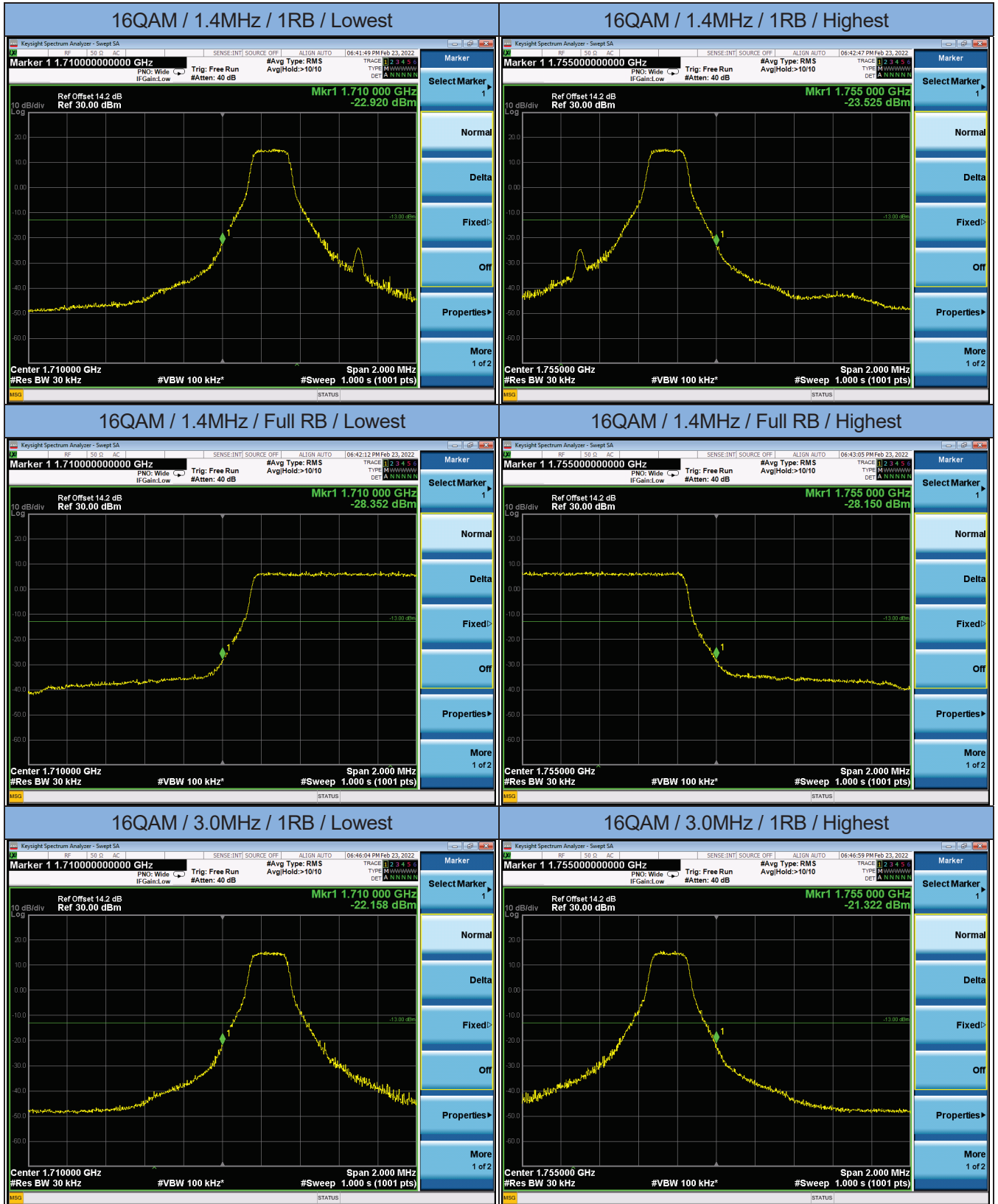
5. Band Edge

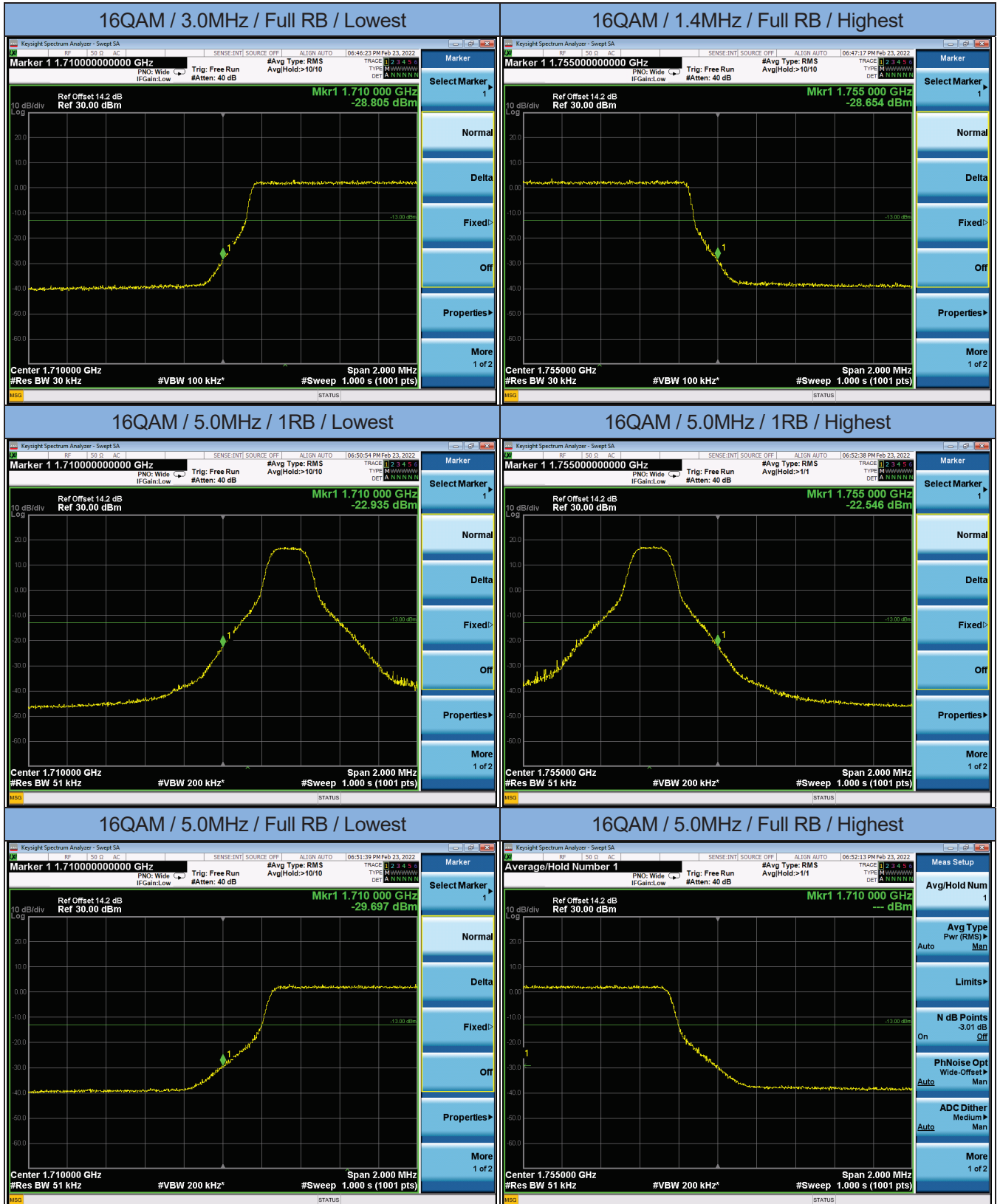


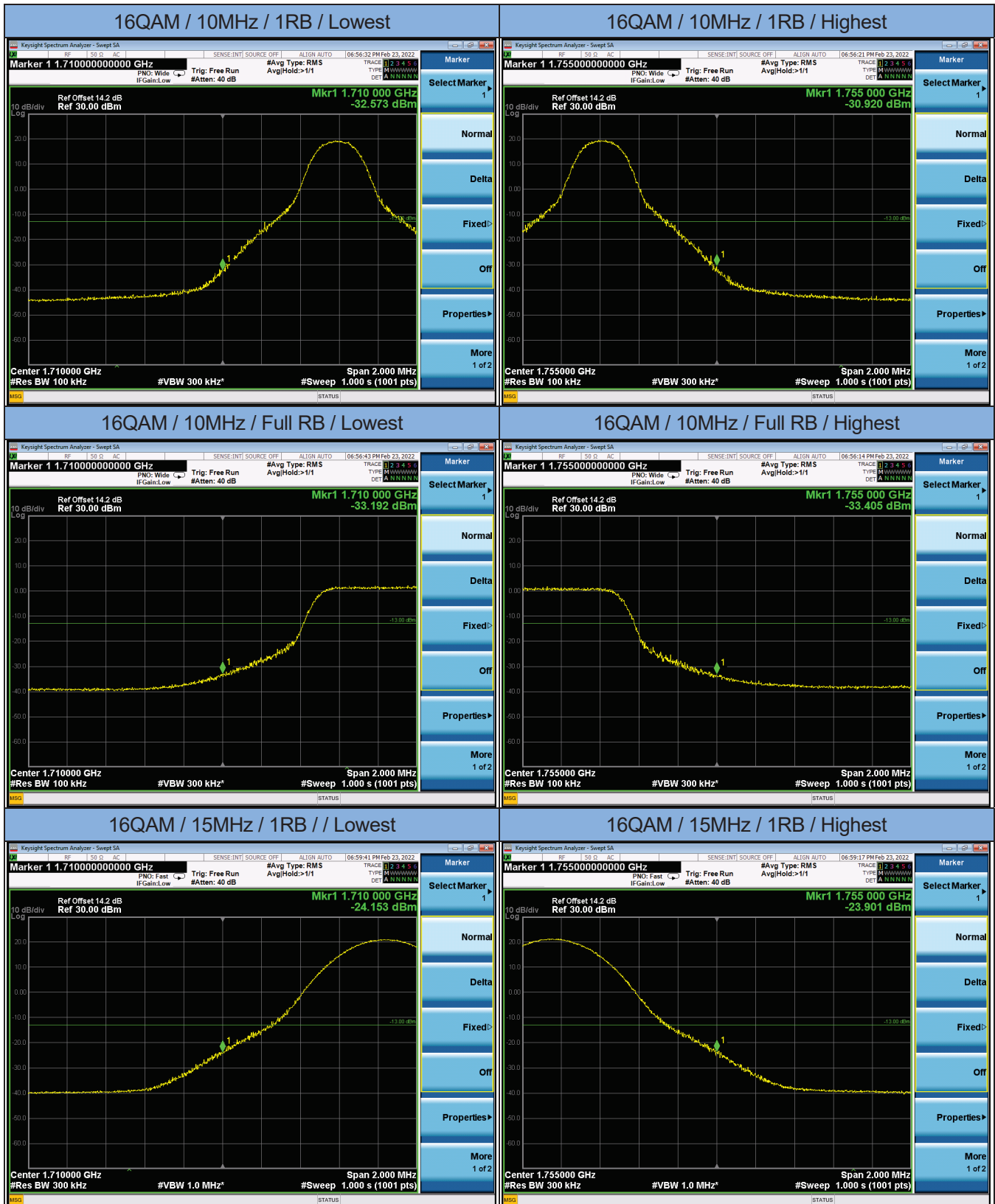


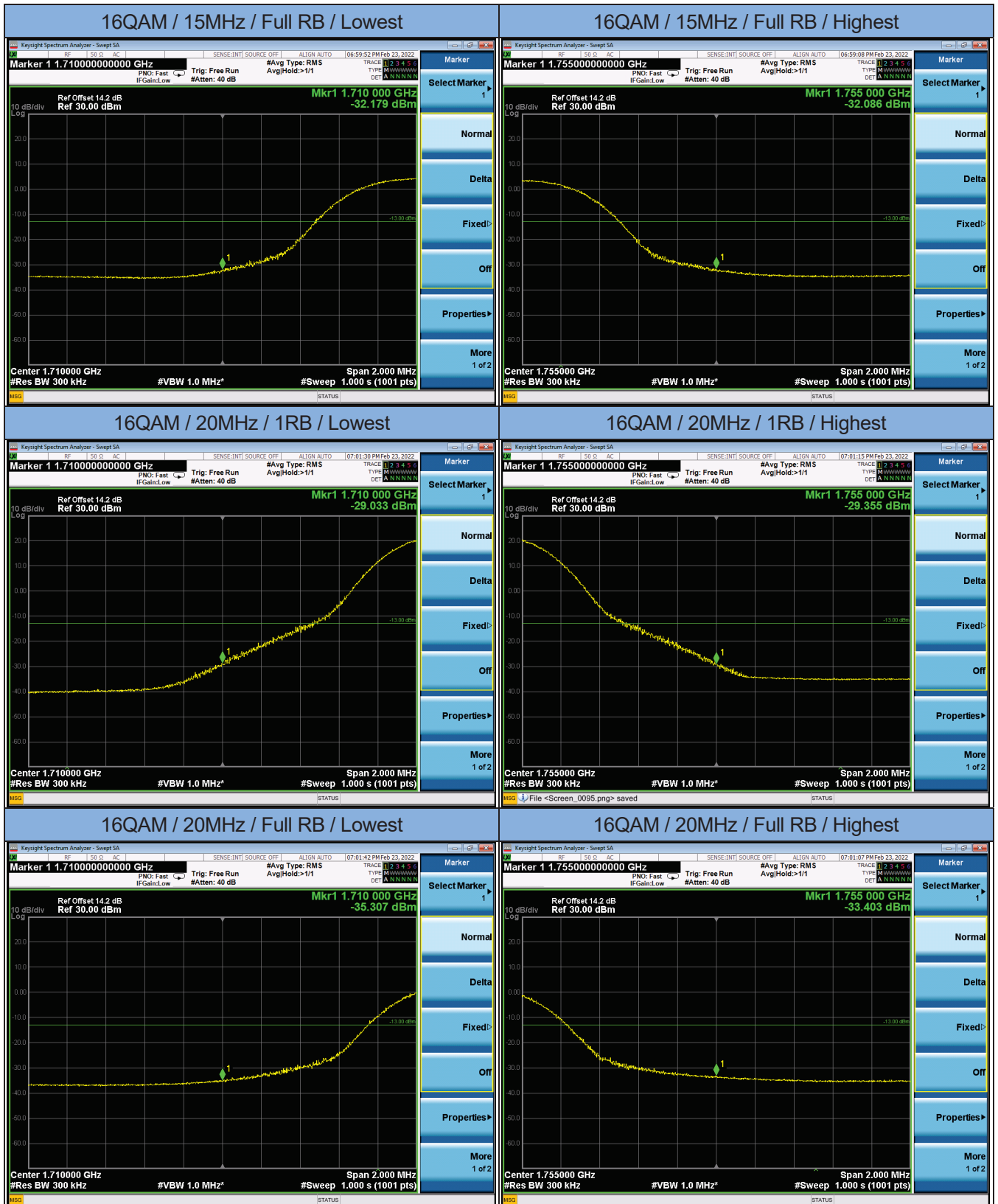




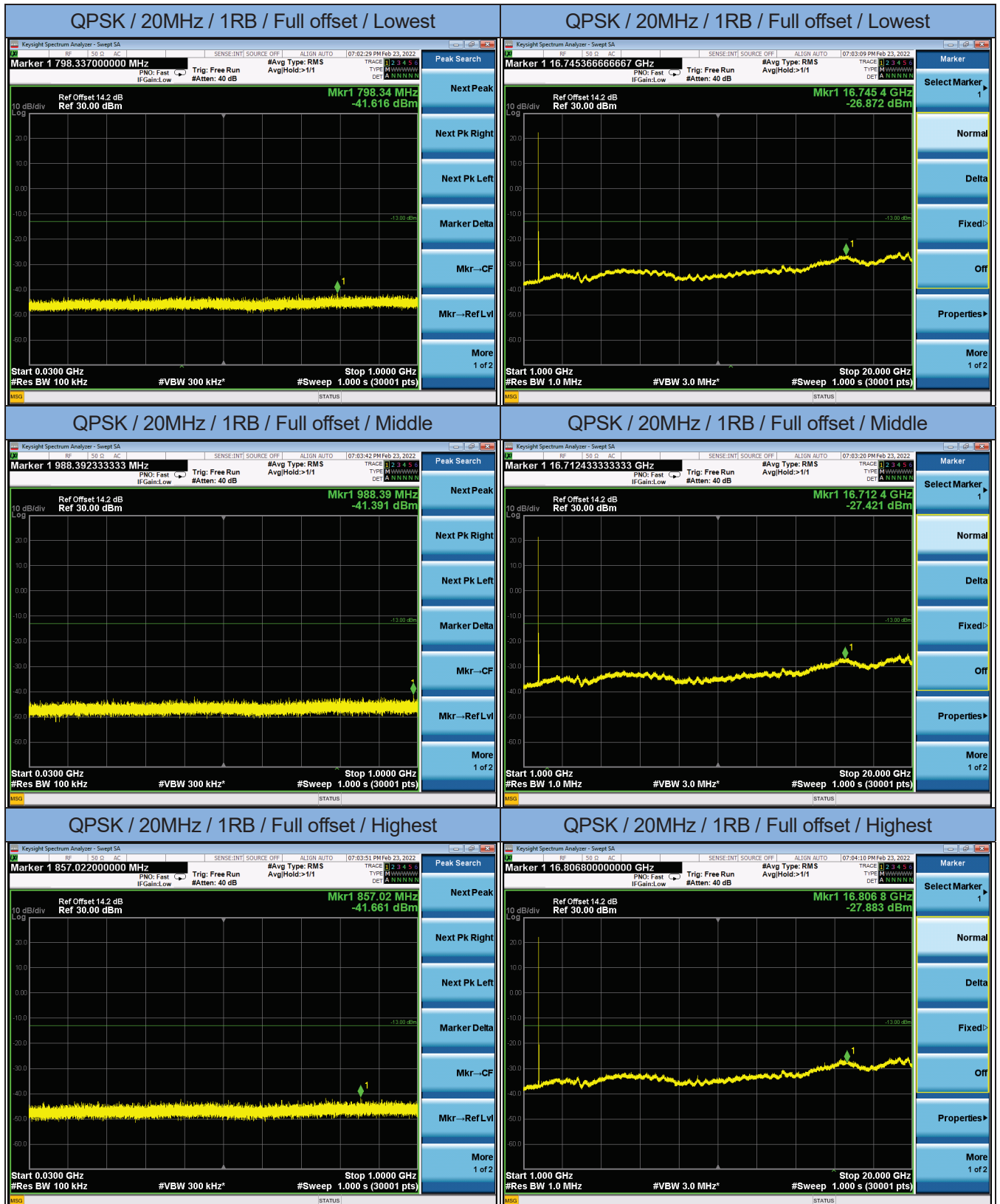


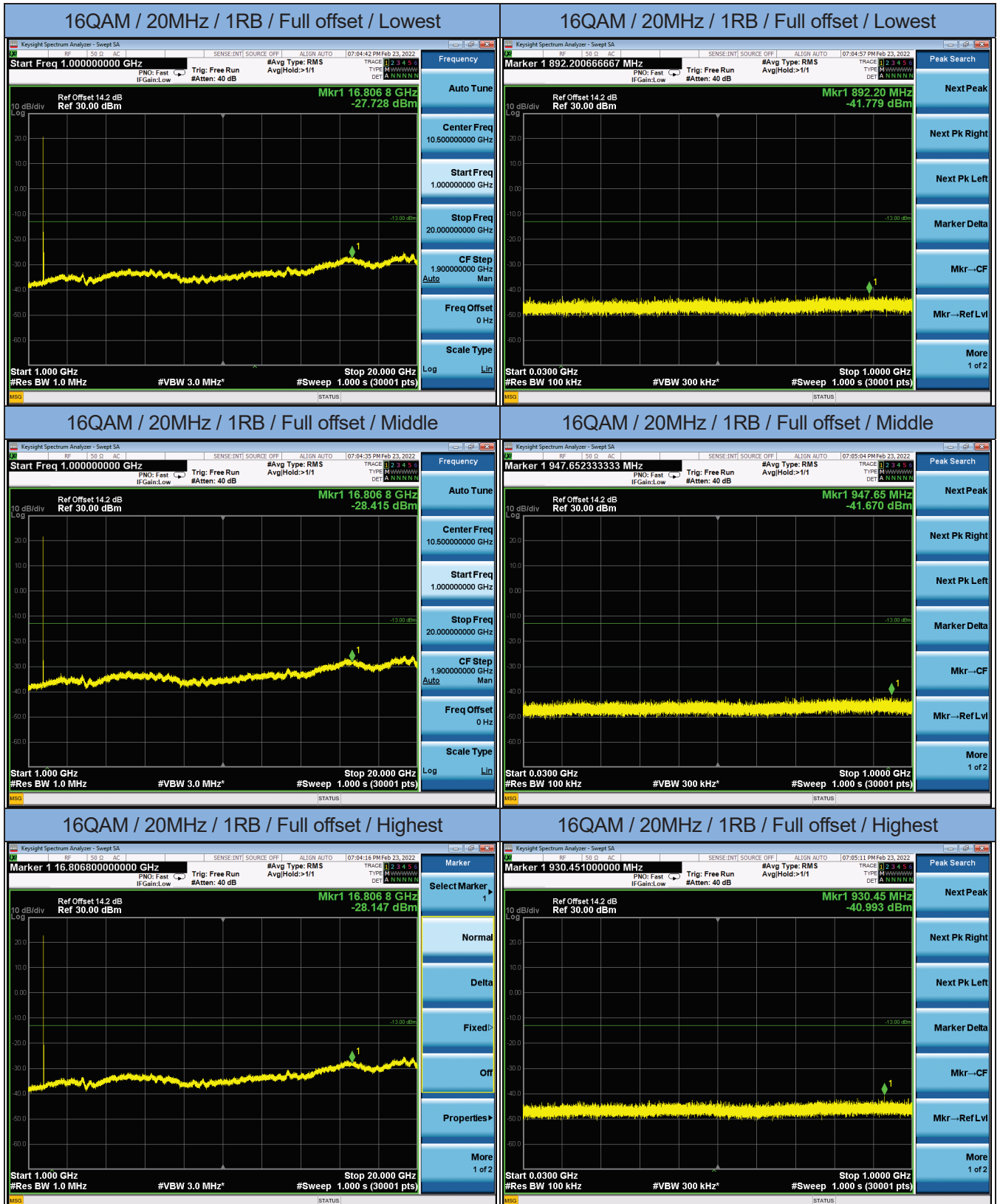






6. Transmitter Spurious Emissions





7. Field Strength of Spurious Radiation

LTE Band 4 / 20M / QPSK					
Channel	Frequency (MHz)	Polarization (H/V)	Meas. Level (dBm)	Limit (dBm)	Margin (dBm)
Lowest	652.71	H	-58.99	-13	-45.99
	3440	H	-46.57	-13	-33.57
	5160	H	-36.49	-13	-23.49
	6880	H	-47.04	-13	-34.04
	654.29	V	-63.12	-13	-50.12
	3440	V	-47.27	-13	-34.27
	5160	V	-38.59	-13	-25.59
	6880	V	-45.68	-13	-32.68
Middle	652.12	H	-57.23	-13	-44.23
	3465	H	-47.23	-13	-34.23
	5197.5	H	-35.91	-13	-22.91
	6930	H	-46.30	-13	-33.30
	654.81	V	-65.87	-13	-52.87
	3465	V	-46.94	-13	-33.94
	5197.5	V	-37.87	-13	-24.87
	6930	V	-44.92	-13	-31.92
Highest	652.60	H	-54.76	-13	-41.76
	3490	H	-46.75	-13	-33.75
	5235	H	-36.80	-13	-23.80
	6980	H	-46.12	-13	-33.12
	654.53	V	-65.04	-13	-52.04
	3490	V	-47.53	-13	-34.53
	5235	V	-36.14	-13	-23.14
	6980	V	-45.58	-13	-32.58

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

8. Frequency Stability

LTE Band 4 / 20M / QPSK / Full RB					
Middle channel, $f_0 = 1732.5$ MHz					
Temperature (°C)	Power Supplied (Vdc)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (dBm)	Result
-30	12	-4.1	-0.002367	±2.5	PASS
-20		-2.9	-0.001674	±2.5	PASS
-10		-3.5	-0.002020	±2.5	PASS
0		4.1	0.002367	±2.5	PASS
20		2.2	0.001270	±2.5	PASS
30		3.8	0.002193	±2.5	PASS
40		-1.9	-0.001097	±2.5	PASS
50		-2.0	-0.001154	±2.5	PASS
20	10.8	3.4	0.001962	±2.5	PASS
	52.8	-1.7	-0.000981	±2.5	PASS

---End---