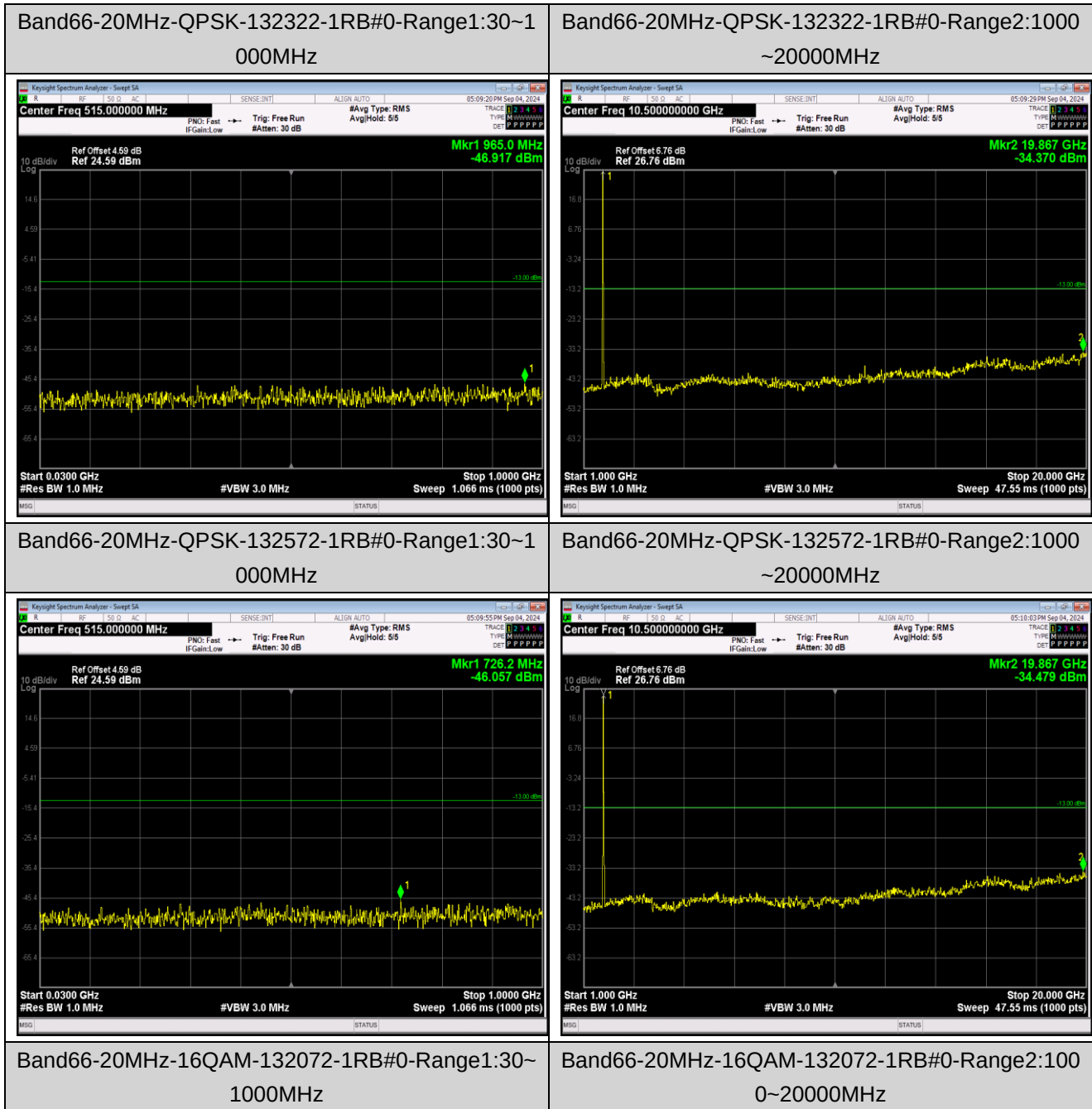
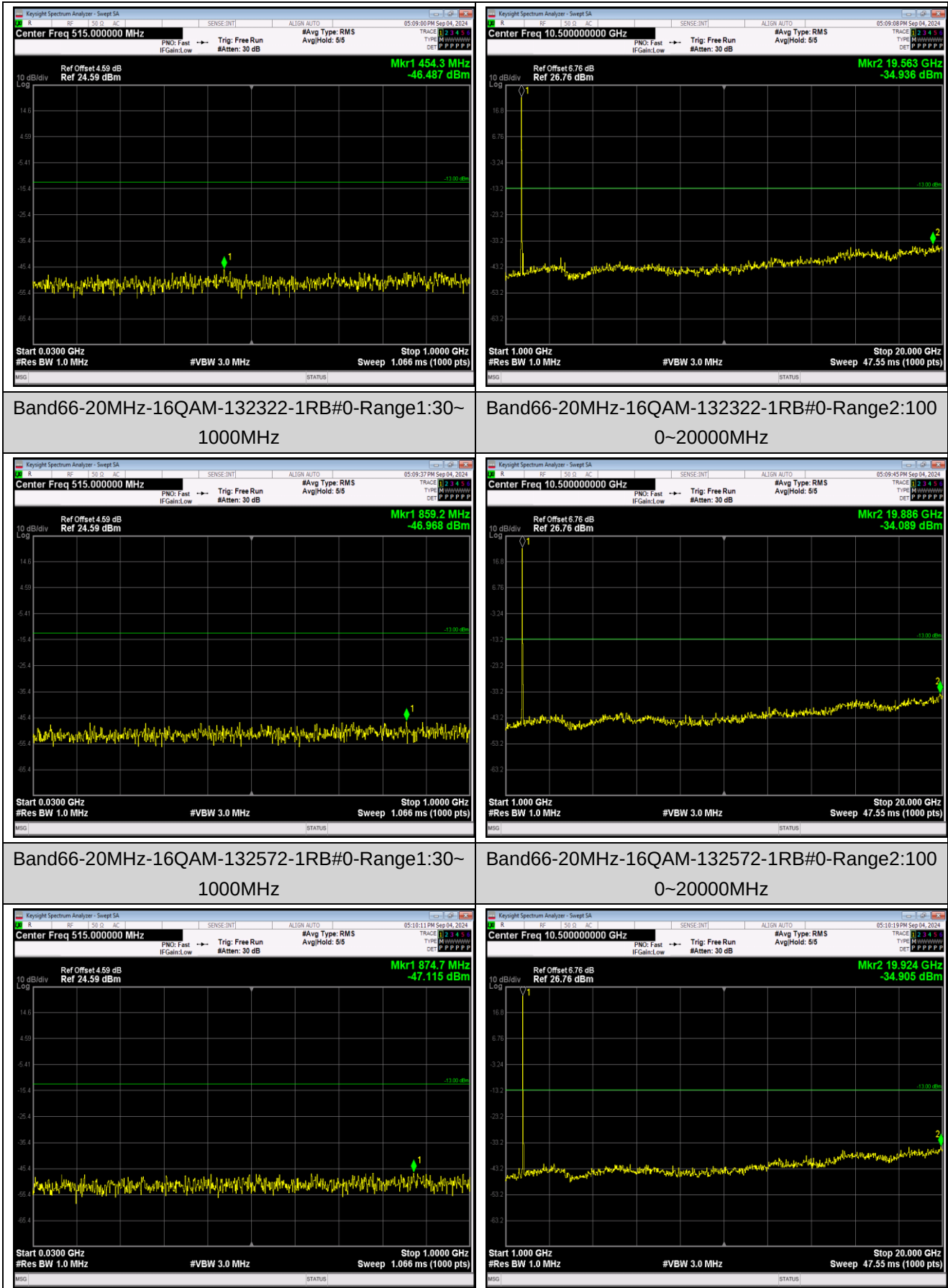
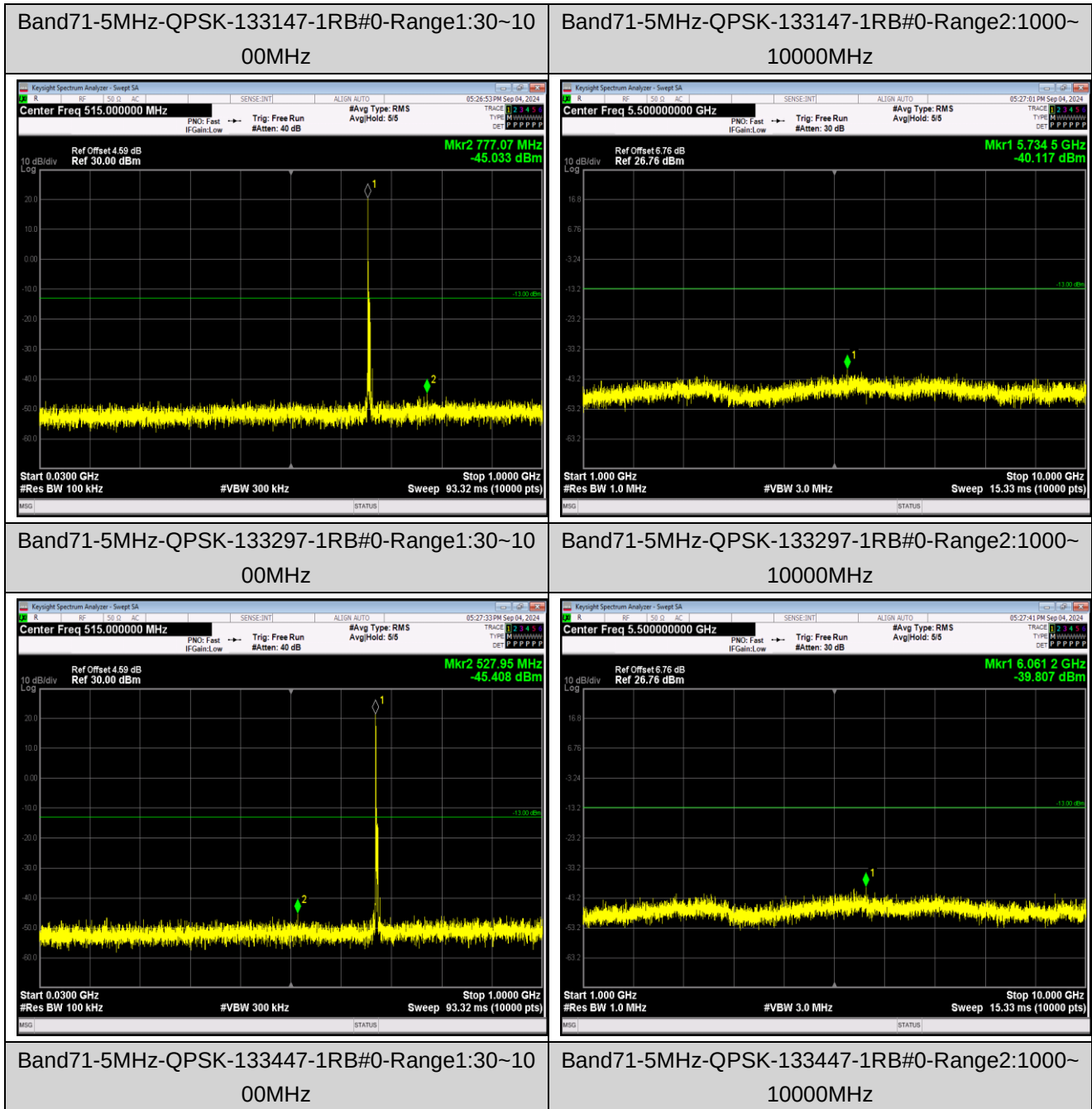
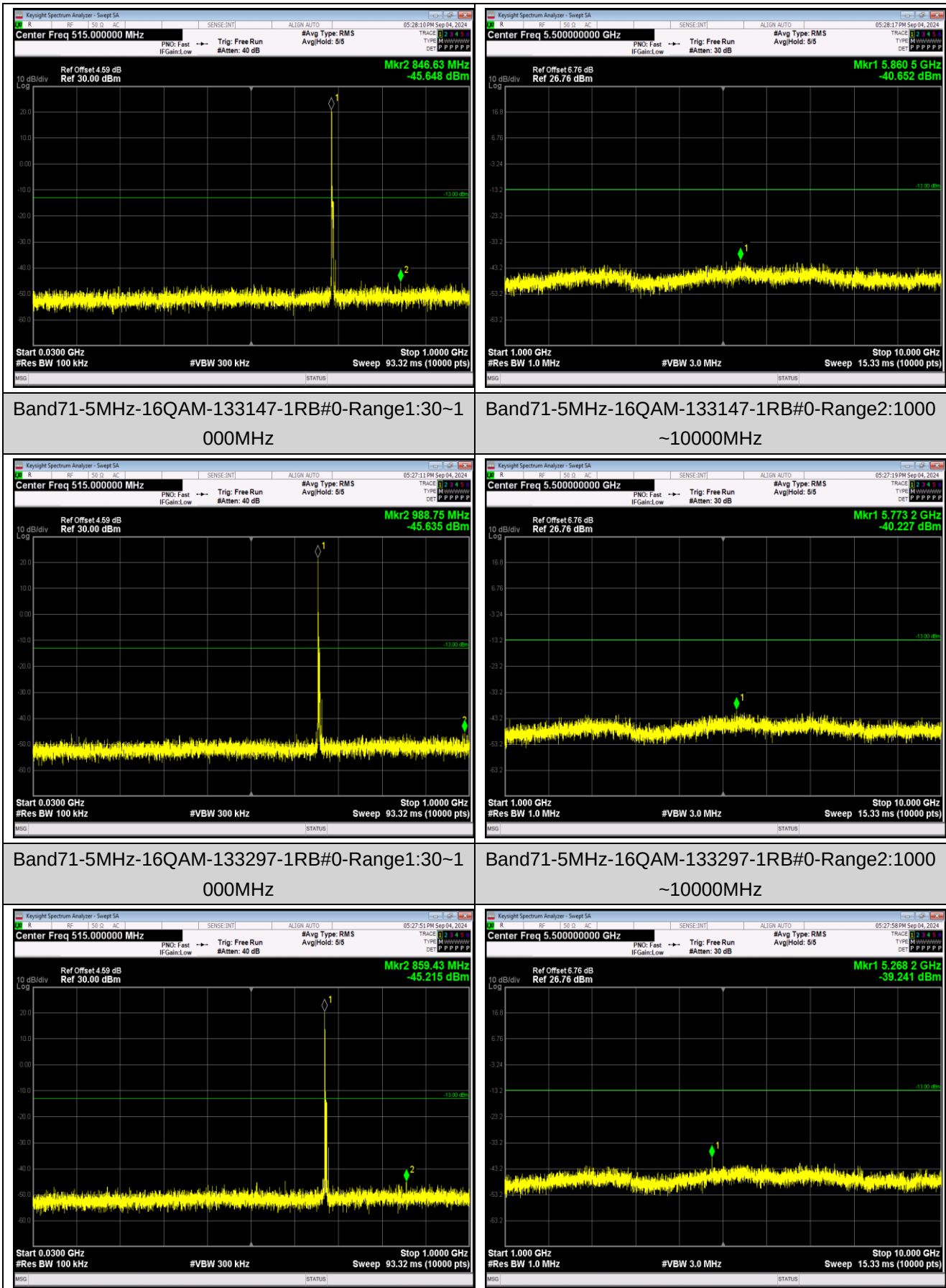
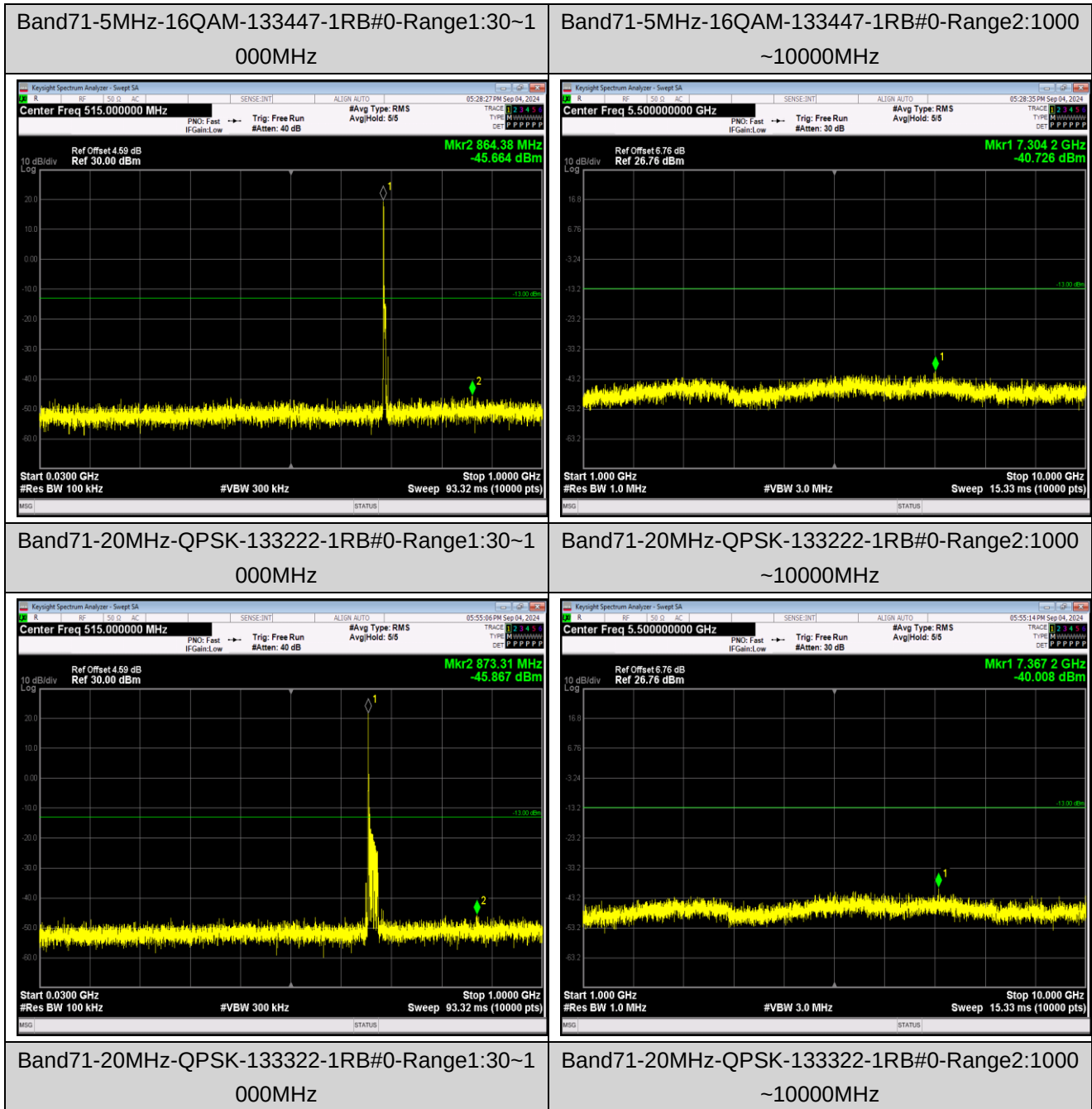


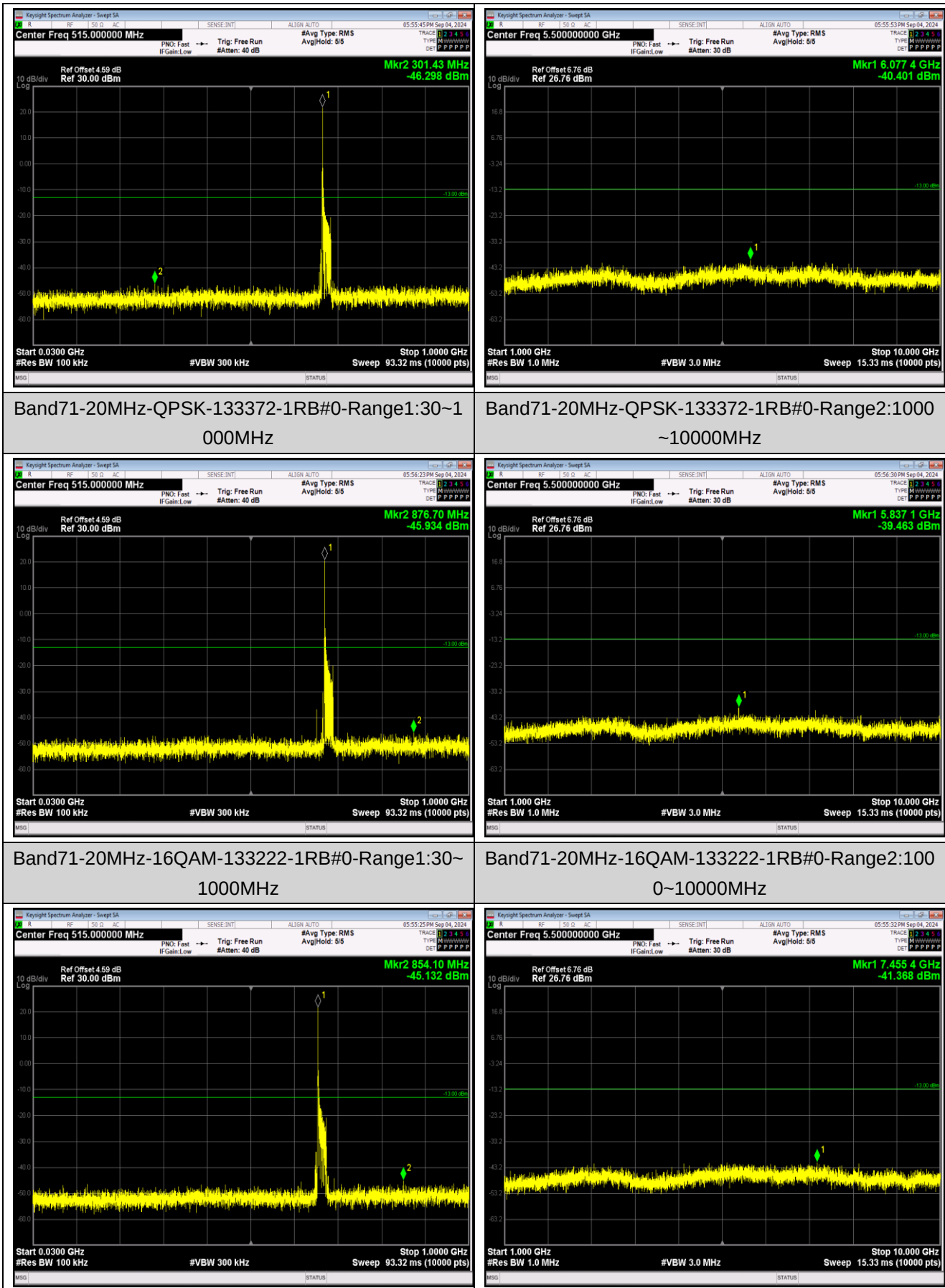


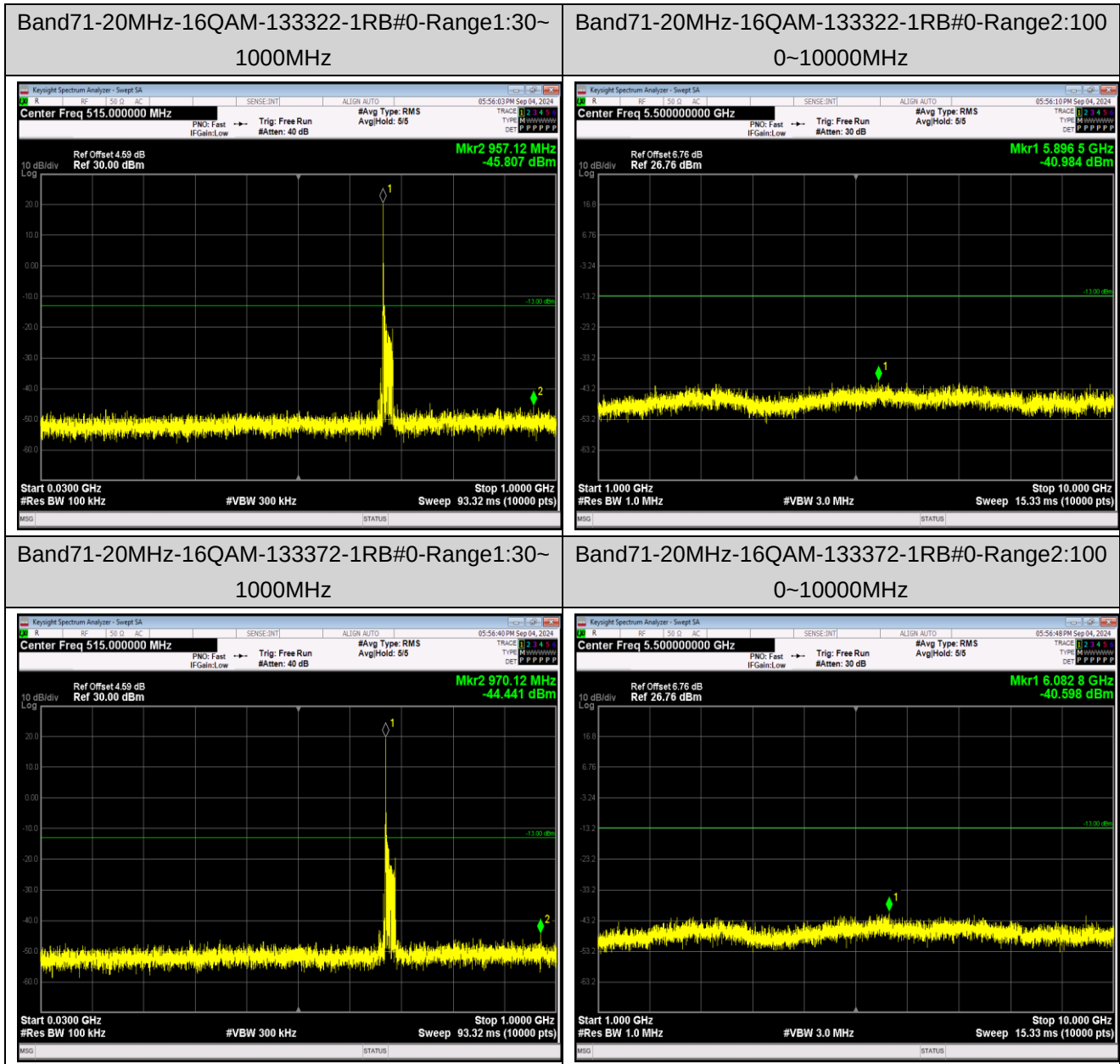












Appendix F: Frequency Stability

Test Result

LTE Band 2 part:

Reference Frequency: LTE Band 2 (10MHz) Middle channel=18900 Frequency=1880.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-31.50	-0.016755	Within authorized band for Band 2	Pass
	-20	-22.99	-0.012229		
	-10	18.98	0.010096		
	0	-29.37	-0.015622		
	10	-29.01	-0.015431		
	20	-50.20	-0.026702		
	30	-14.59	-0.007761		
	40	-24.59	-0.013080		
	50	25.95	0.013803		
16QAM					
3.85	-30	30.90	0.016436	Within authorized band for Band 2	Pass
	-20	26.02	0.013840		
	-10	39.95	0.021250		
	0	45.56	0.024234		
	10	34.03	0.018101		
	20	34.48	0.018340		
	30	39.54	0.021032		
	40	36.18	0.019245		
	50	47.58	0.025309		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	2.75	-46.18	-0.024564	Within authorized band for Band 2	Pass
	3.85	-30.80	-0.016383		
	4.40	-46.78	-0.024883		
16QAM					
25	2.75	13.10	0.006968	Within authorized band for Band 2	Pass
	3.85	35.36	0.018809		
	4.40	23.20	0.012340		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 5 part:

Reference Frequency: LTE Band 5(10MHz) Middle channel=20525 Frequency=836.5MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-37.16	-0.044423	±2.5	Pass
	-20	-33.55	-0.040108		
	-10	-28.77	-0.034393		
	0	-27.62	-0.033019		
	10	-29.20	-0.034907		
	20	-23.27	-0.027818		
	30	-27.64	-0.033042		
	40	-28.34	-0.033879		
	50	-37.05	-0.044292		
16QAM					
3.85	-30	-44.99	-0.053784	±2.5	Pass
	-20	-26.72	-0.031943		
	-10	-23.76	-0.028404		
	0	-20.50	-0.024507		
	10	-19.14	-0.022881		
	20	-17.95	-0.021458		
	30	-14.71	-0.017585		
	40	-18.84	-0.022522		
	50	-25.09	-0.029994		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	2.75	-26.79	-0.032026	±2.5	Pass
	3.85	-50.02	-0.059797		
	4.40	-32.03	-0.038290		
16QAM					
25	2.75	-23.69	-0.028320	±2.5	Pass
	3.85	-27.68	-0.033090		
	4.40	-34.82	-0.041626		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 7 part:

Reference Frequency: LTE Band 7(10MHz) Middle channel=21100 Frequency=2535.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	46.78	0.018454	Within authorized band for Band 7	Pass
	-20	30.97	0.012217		
	-10	37.52	0.014801		
	0	52.80	0.020828		
	10	49.52	0.019535		
	20	66.70	0.026312		
	30	48.15	0.018994		
	40	29.14	0.011495		
	50	44.12	0.017404		
16QAM					
3.85	-30	-41.13	-0.016225	Within authorized band for Band 7	Pass
	-20	-68.42	-0.026990		
	-10	-45.96	-0.018130		
	0	27.08	0.010682		
	10	41.50	0.016371		
	20	42.96	0.016947		
	30	42.07	0.016596		
	40	51.37	0.020264		
	50	43.75	0.017258		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	2.75	20.56	0.008110	Within authorized band for Band 7	Pass
	3.85	-55.68	-0.021964		
	4.40	24.59	0.009700		
16QAM					
25	2.75	-24.13	-0.009519	Within authorized band for Band 7	Pass
	3.85	-25.98	-0.010249		
	4.40	-58.51	-0.023081		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 12 part:

Reference Frequency: LTE Band 12(10MHz) Middle channel=23095 Frequency=707.5MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-40.80	-0.057668	Within authorized band for Band 12	Pass
	-20	-16.22	-0.022926		
	-10	-32.64	-0.046134		
	0	-36.62	-0.051760		
	10	-43.20	-0.061060		
	20	-52.94	-0.074827		
	30	-18.91	-0.026728		
	40	-23.59	-0.033343		
	50	-26.36	-0.037258		
16QAM					
3.85	-30	54.47	0.076989	Within authorized band for Band 12	Pass
	-20	11.42	0.016141		
	-10	23.56	0.033300		
	0	34.25	0.048410		
	10	31.96	0.045173		
	20	21.94	0.031011		
	30	37.64	0.053201		
	40	40.41	0.057117		
	50	51.77	0.073173		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	2.75	-44.70	-0.063180	Within authorized band for Band 12	Pass
	3.85	6.68	0.009442		
	4.40	-53.32	-0.075364		
16QAM					
25	2.75	39.14	0.055322	Within authorized band for Band 12	Pass
	3.85	-41.73	-0.058982		
	4.40	46.26	0.065385		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 66 part:

Reference Frequency: LTE Band 66 (10MHz) Middle channel=132322 Frequency=1745.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-48.72	-0.027920	Within authorized band for Band 66	Pass
	-20	-12.19	-0.006986		
	-10	-31.50	-0.018052		
	0	-15.02	-0.008607		
	10	-40.13	-0.022997		
	20	-36.08	-0.020676		
	30	-14.66	-0.008401		
	40	-34.53	-0.019788		
	50	-47.04	-0.026957		
16QAM					
3.85	-30	-16.08	-0.009215	Within authorized band for Band 66	Pass
	-20	37.58	0.021536		
	-10	39.32	0.022533		
	0	17.80	0.010201		
	10	48.78	0.027954		
	20	23.22	0.013307		
	30	46.95	0.026905		
	40	30.11	0.017255		
	50	45.49	0.026069		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	2.75	-31.89	-0.018275	Within authorized band for Band 66	Pass
	3.85	20.48	0.011736		
	4.40	-28.32	-0.016229		
16QAM					
25	2.75	43.42	0.024883	Within authorized band for Band 66	Pass
	3.85	-47.34	-0.027129		
	4.40	39.08	0.022395		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 71 part:

Reference Frequency: LTE Band 71 (10MHz) Middle channel=133297 Frequency=680.5MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-44.00	-0.064658	Within authorized band for Band 71	Pass
	-20	-15.39	-0.022616		
	-10	-33.23	-0.048832		
	0	-56.48	-0.082998		
	10	-14.59	-0.021440		
	20	-20.16	-0.029625		
	30	-23.96	-0.035209		
	40	-30.48	-0.044791		
	50	-37.44	-0.055018		
16QAM					
3.85	-30	40.91	0.060118	Within authorized band for Band 71	Pass
	-20	51.88	0.076238		
	-10	5.64	0.008288		
	0	11.74	0.017252		
	10	20.90	0.030713		
	20	29.64	0.043556		
	30	40.40	0.059368		
	40	39.75	0.058413		
	50	49.82	0.073211		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	2.75	-57.31	-0.084217	Within authorized band for Band 71	Pass
	3.85	56.08	0.082410		
	4.40	-6.38	-0.009375		
16QAM					
25	2.75	-7.28	-0.010698	Within authorized band for Band 71	Pass
	3.85	-40.86	-0.060044		
	4.40	21.46	0.031536		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

Appendix G: Modulation Characteristics

Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result	Verdict
Band2	20MHz	QPSK	18900	100RB#0	PASS	PASS
Band2	20MHz	16QAM	18900	100RB#0	PASS	PASS
Band5	10MHz	QPSK	20525	50RB#0	PASS	PASS
Band5	10MHz	16QAM	20525	50RB#0	PASS	PASS
Band7	20MHz	QPSK	21100	100RB#0	PASS	PASS
Band7	20MHz	16QAM	21100	100RB#0	PASS	PASS
Band12	10MHz	QPSK	23095	50RB#0	PASS	PASS
Band12	10MHz	16QAM	23095	50RB#0	PASS	PASS
Band66	20MHz	QPSK	132322	100RB#0	PASS	PASS
Band66	20MHz	16QAM	132322	100RB#0	PASS	PASS
Band71	20MHz	QPSK	133322	100RB#0	PASS	PASS
Band71	20MHz	16QAM	133322	100RB#0	PASS	PASS

Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.

Test Graphs

