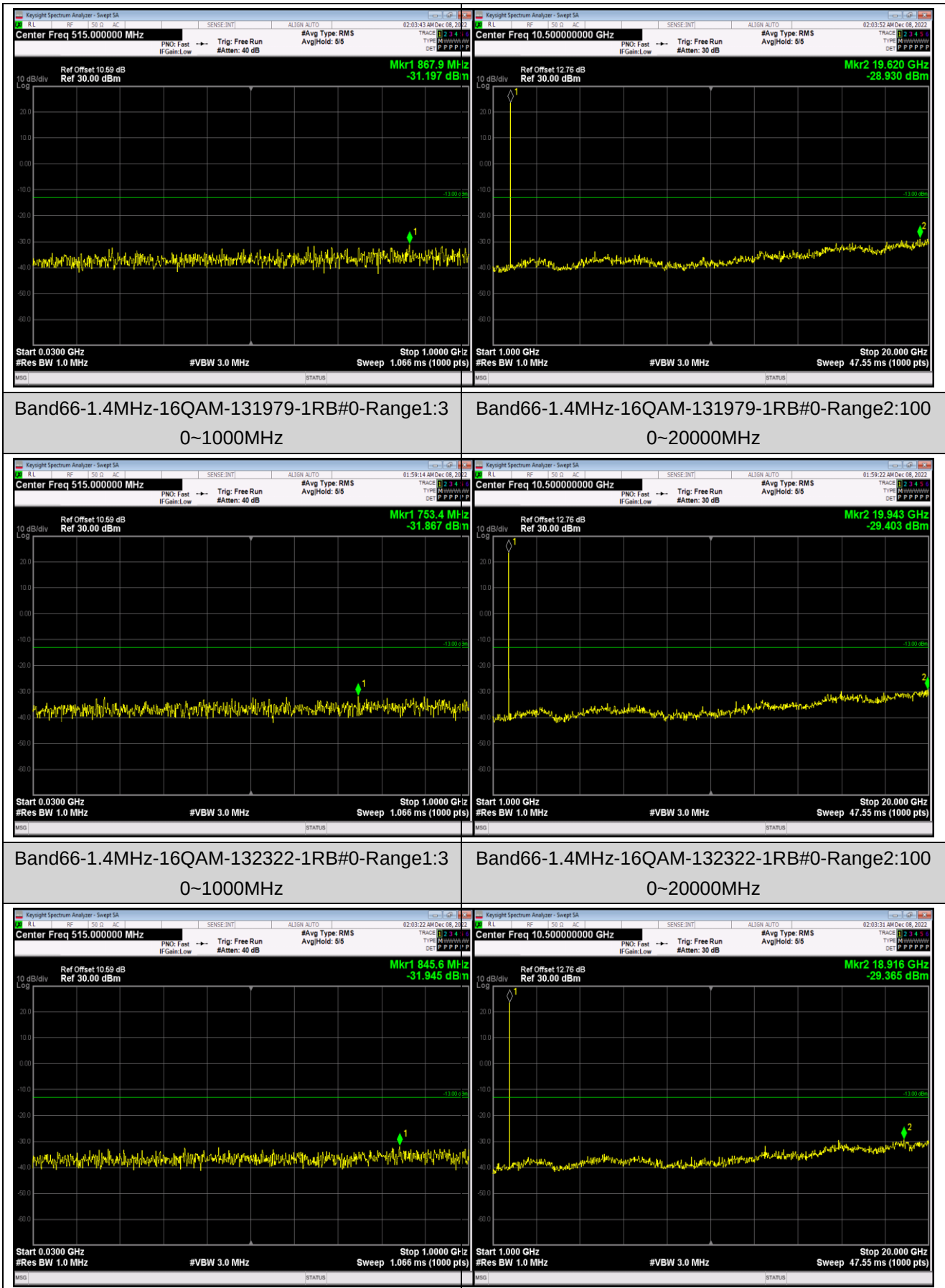
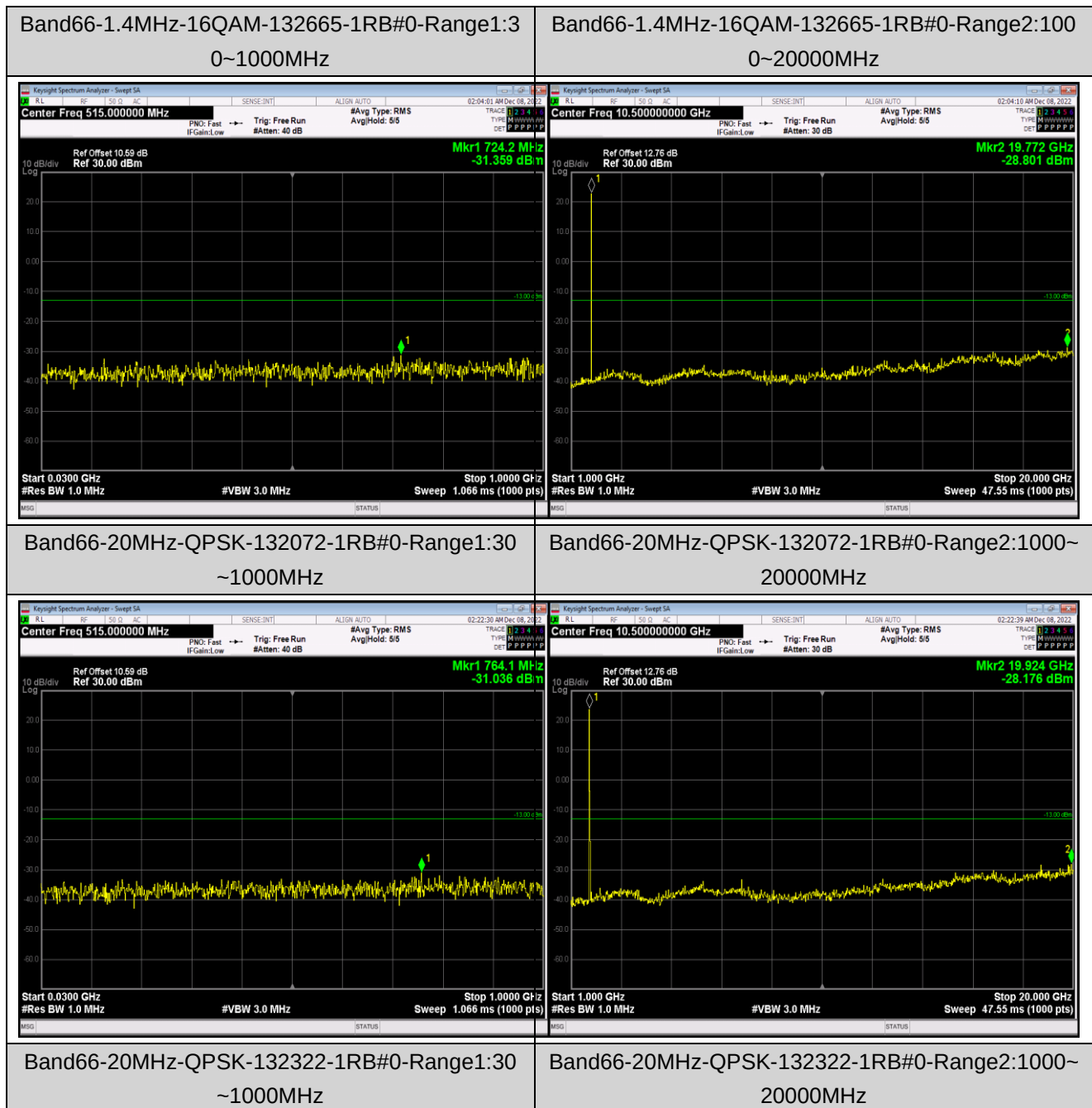
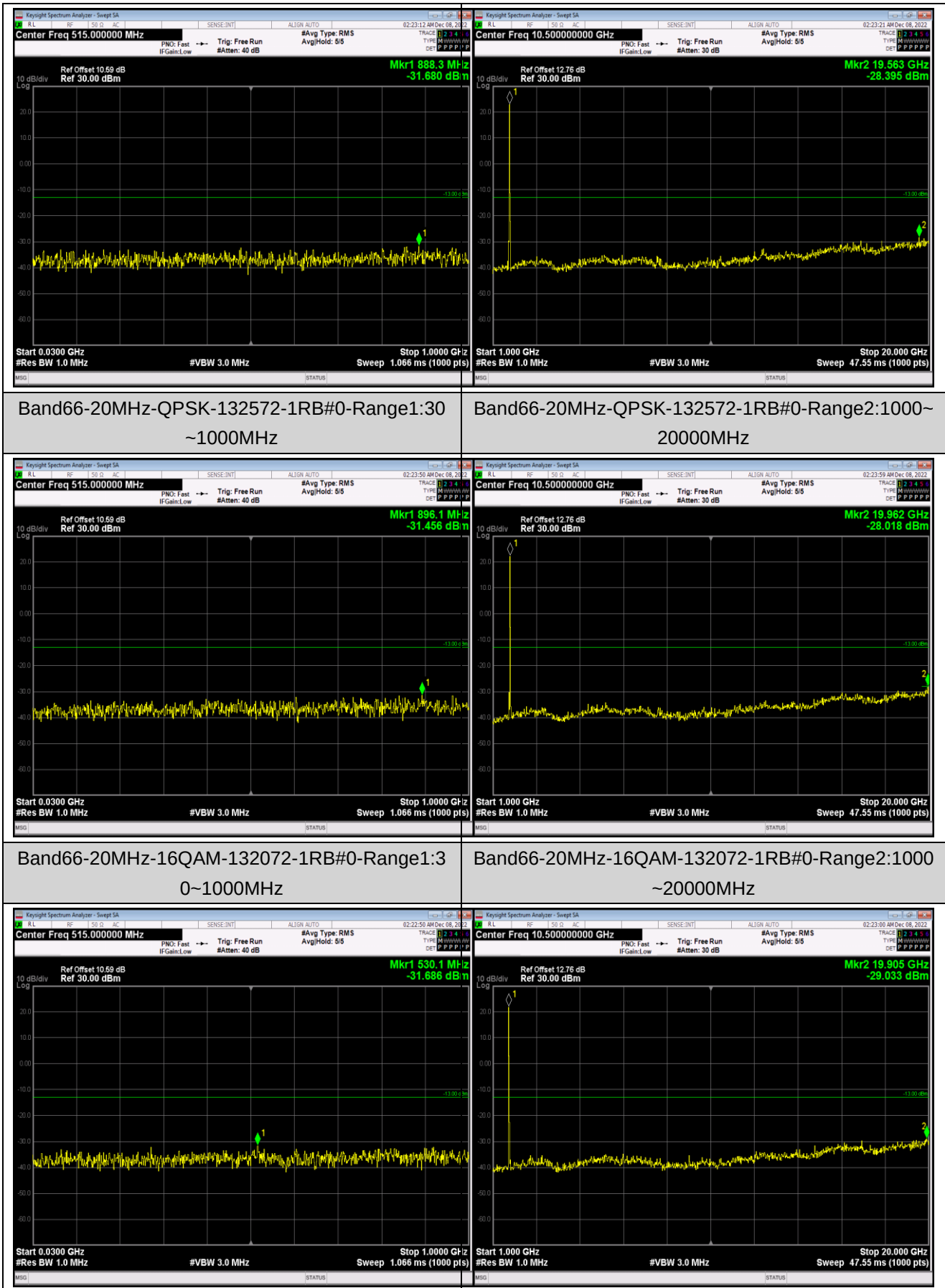
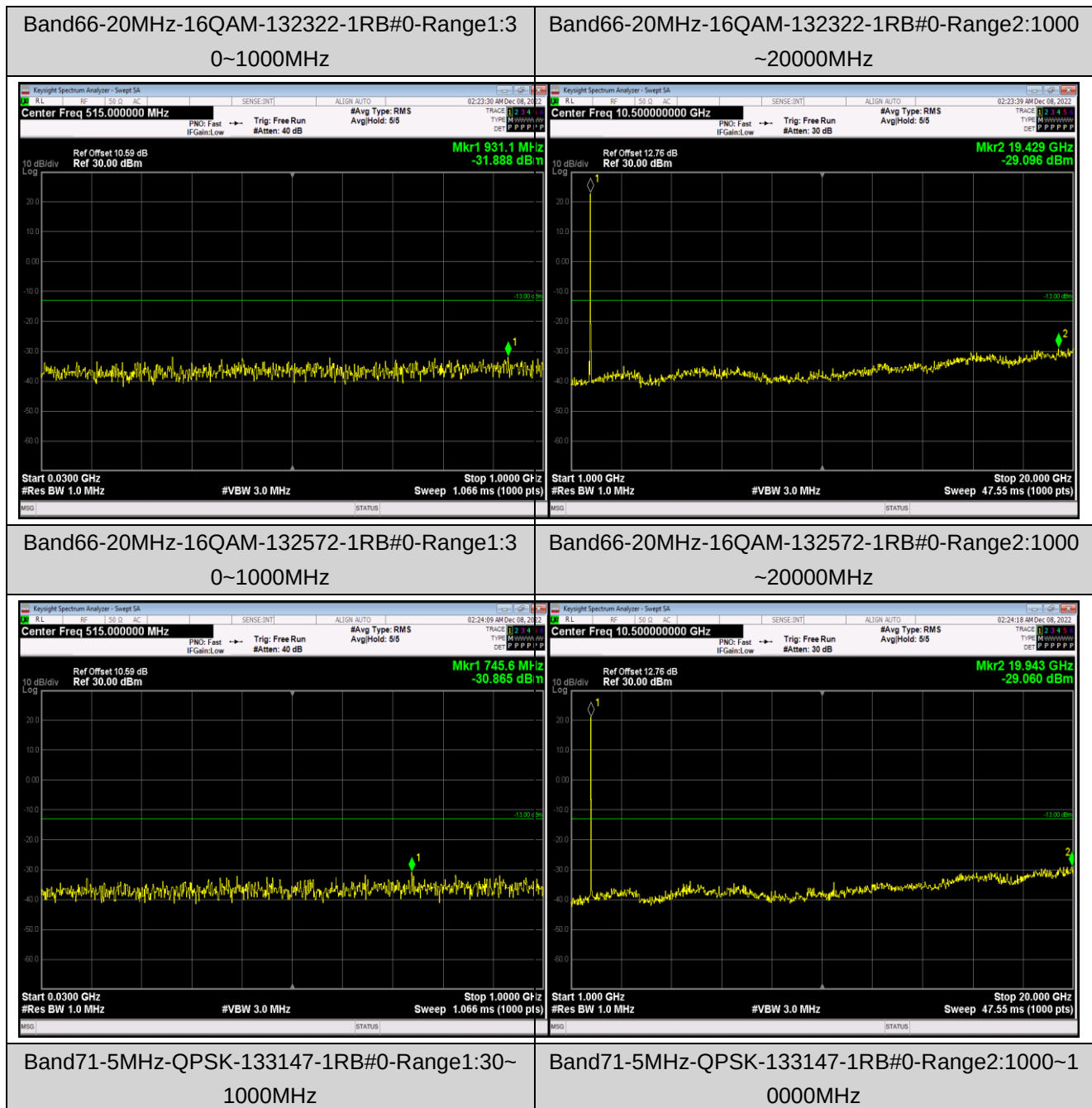
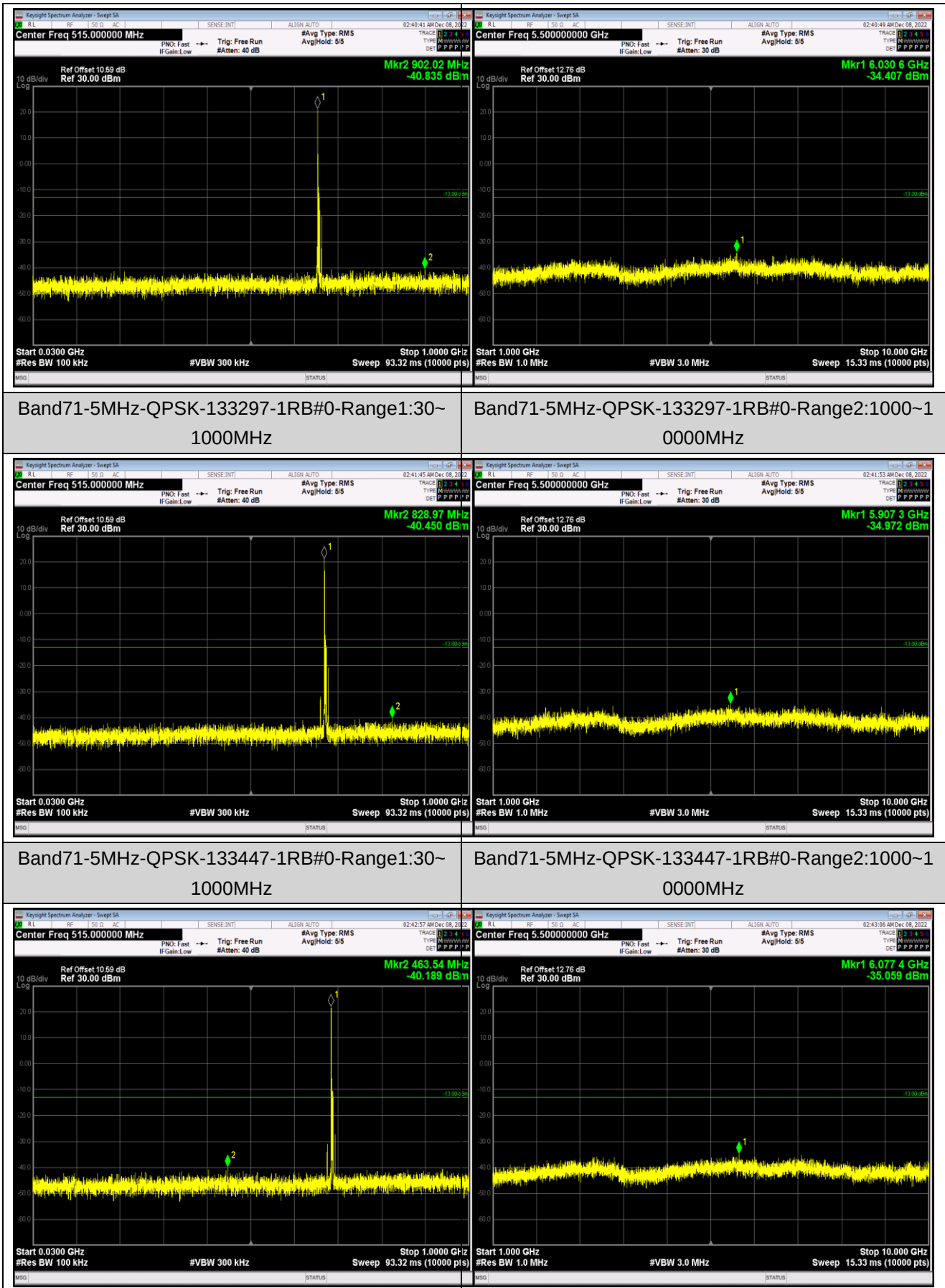


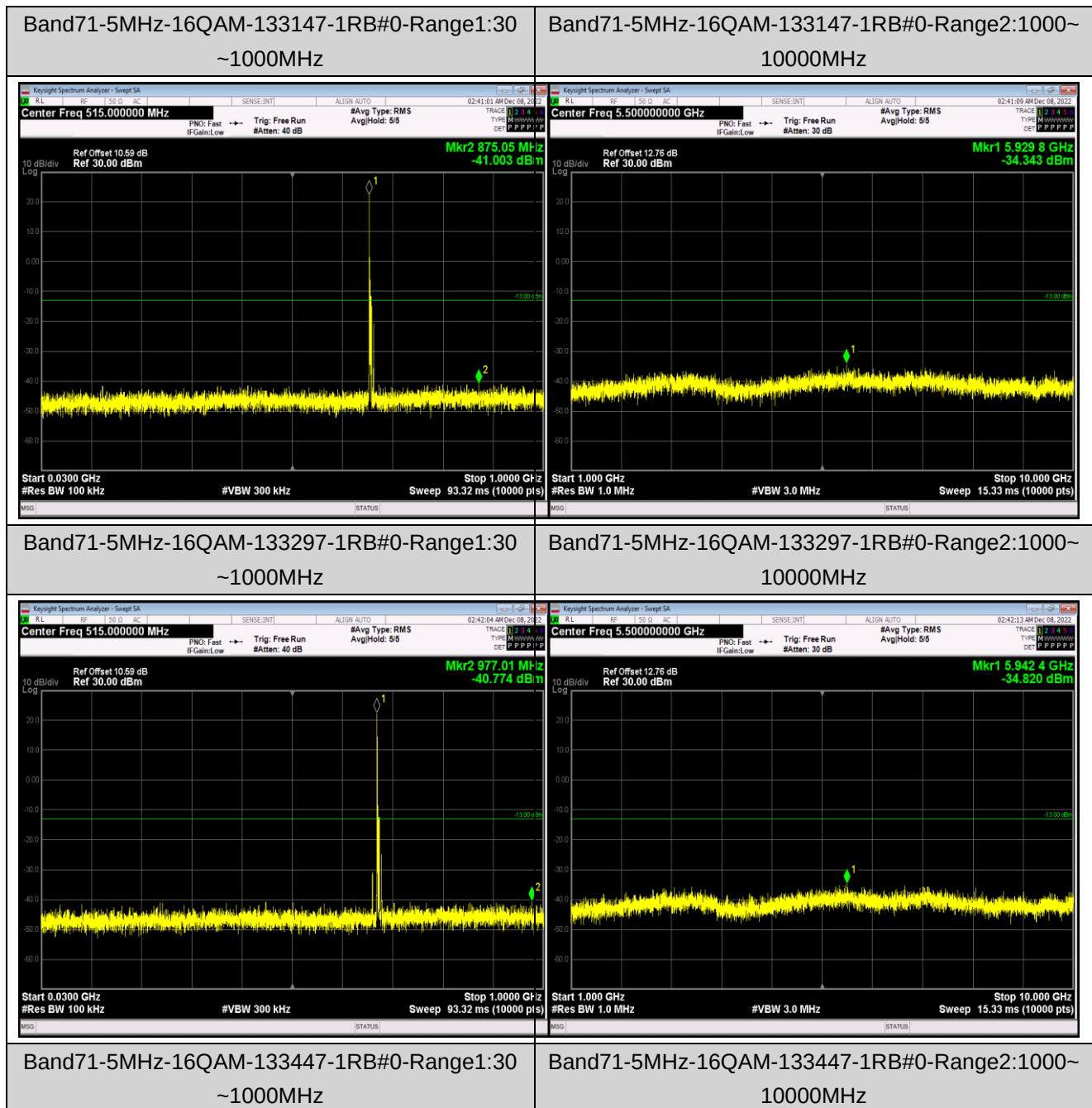


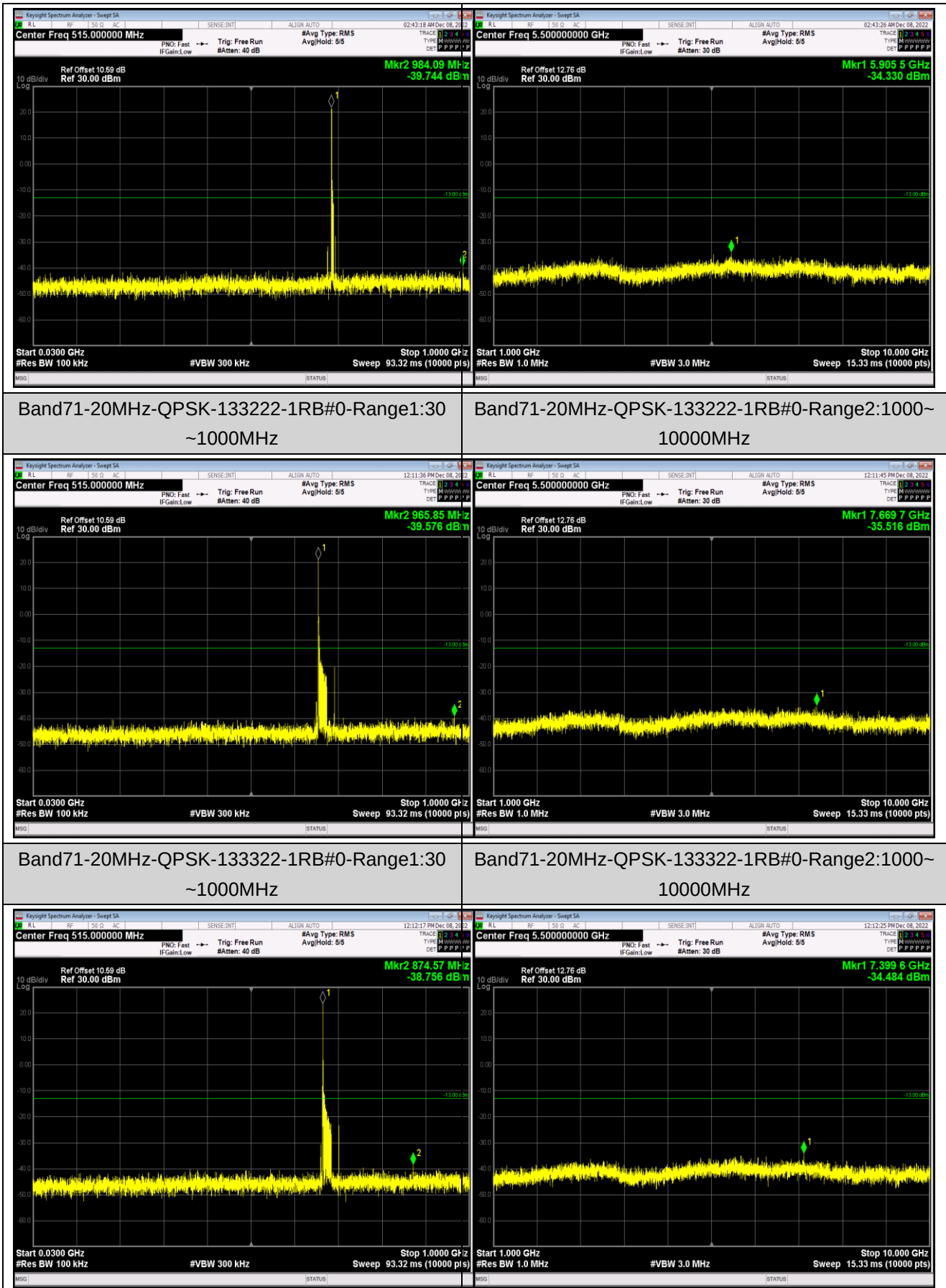


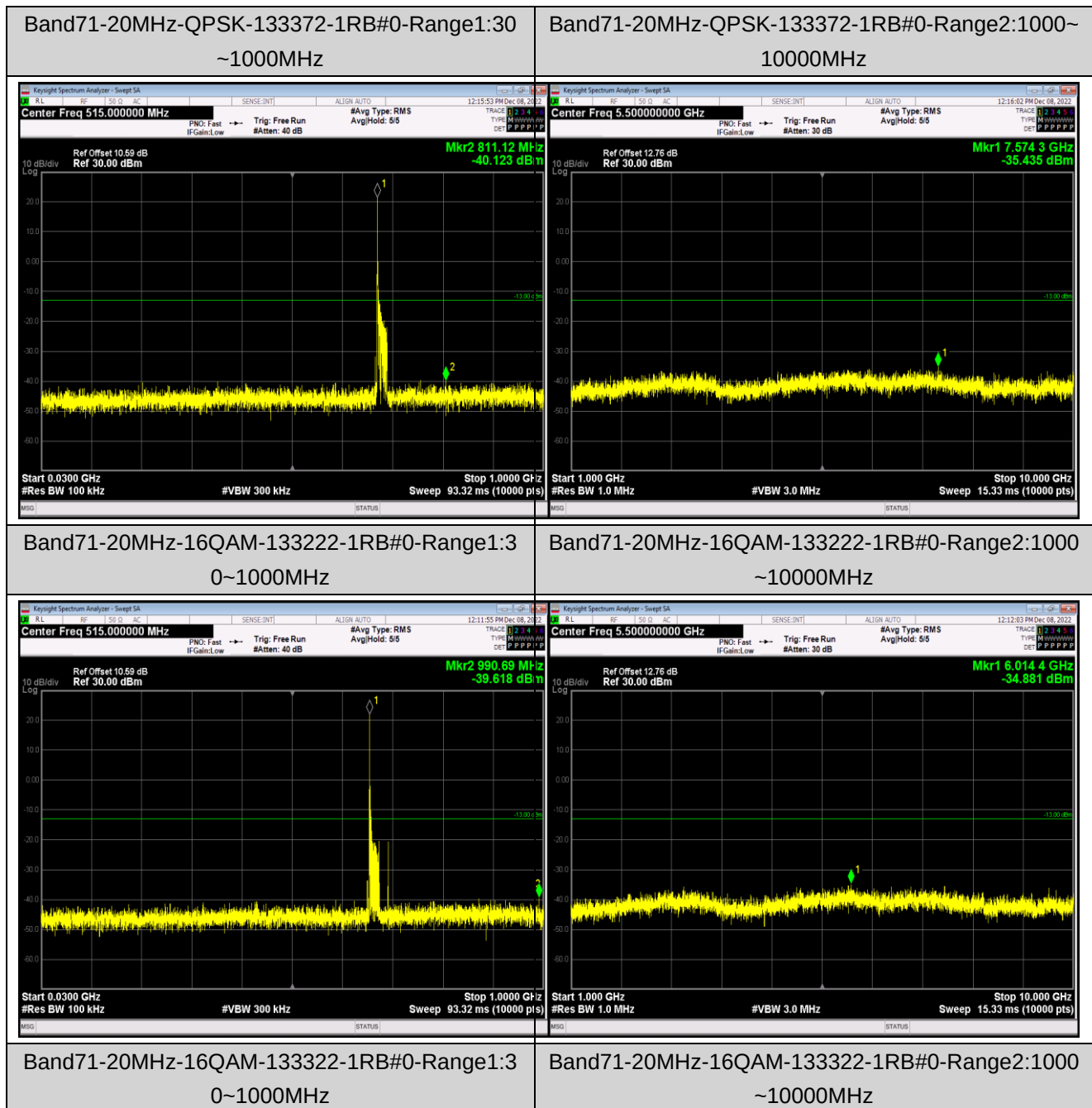


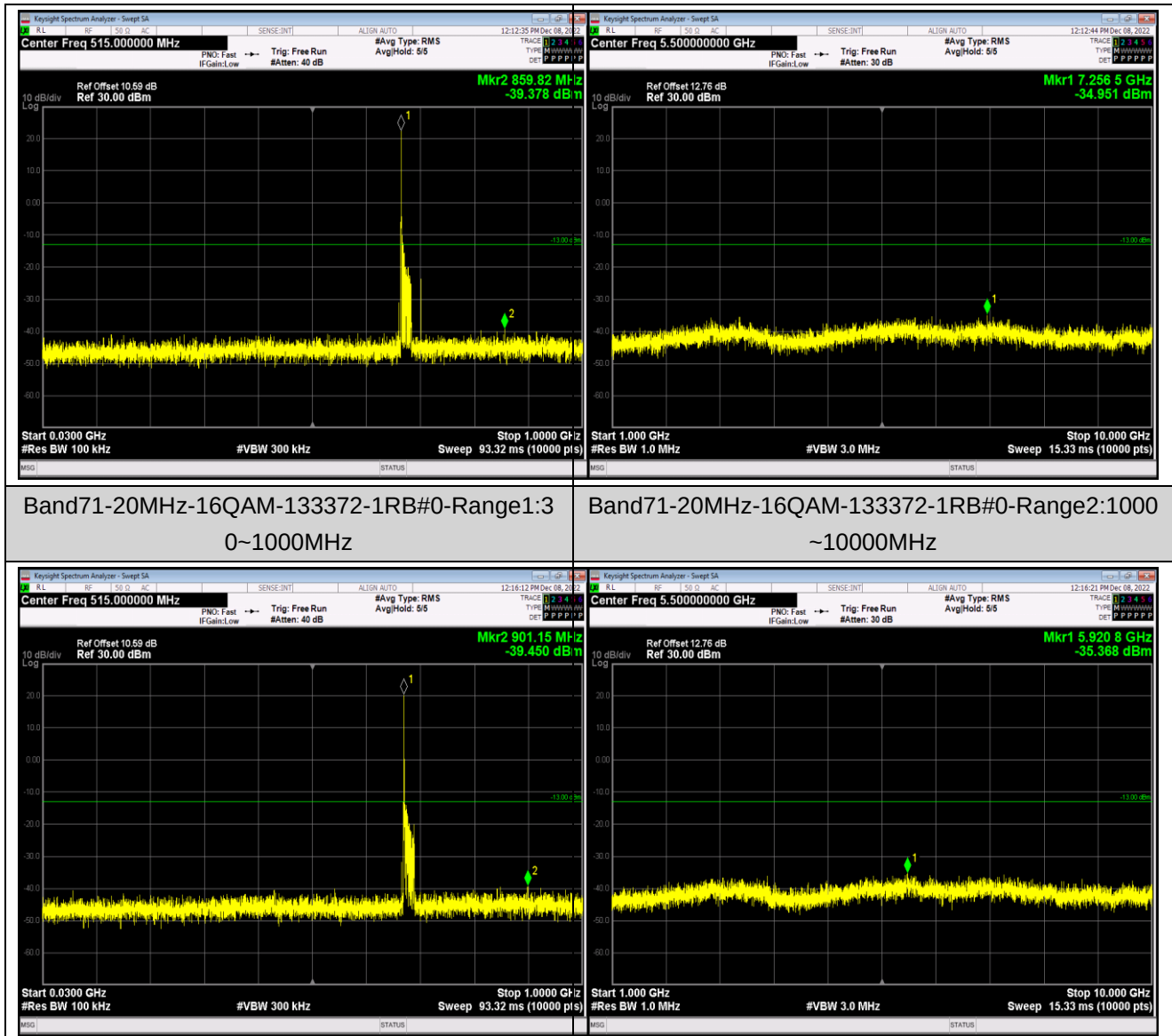












Appendix F: Frequency Stability

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					
3.8	-30	-37.15	-0.019761	Within authorized band for Band 2	Pass
	-20	-38.57	-0.020516		
	-10	-27.39	-0.014569		
	0	6.57	0.003495		
	10	-26.36	-0.014021		
	20	-45.46	-0.024181		
	30	-34.03	-0.018101		
	40	17.80	0.009468		
	50	3.92	0.002085		
16QAM					
3.8	-30	-26.46	-0.014074	Within authorized band for Band 2	Pass
	-20	-30.56	-0.016255		
	-10	-31.39	-0.016697		
	0	-38.25	-0.020346		
	10	-38.84	-0.020660		
	20	-47.69	-0.025367		
	30	-46.61	-0.024793		
	40	-13.28	-0.007064		
	50	-21.06	-0.011202		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	-13.05	-0.006941	Within authorized band for Band 2	Pass
	3.8	22.99	0.012229		
	4.35	5.99	0.003186		
16QAM					
25	3.45	-20.93	-0.011133	Within authorized band for Band 2	Pass
	3.8	-20.83	-0.011080		
	4.35	-25.99	-0.013824		
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					
3.8	-30	-38.21	-0.045678	±2.5	Pass
	-20	-42.63	-0.050962		
	-10	-46.86	-0.056019		
	0	-48.64	-0.058147		
	10	-2.53	-0.003025		
	20	-4.78	-0.005714		
	30	-6.84	-0.008177		
	40	-8.77	-0.010484		
	50	-10.59	-0.012660		
16QAM					
3.8	-30	-2.37	-0.002833	±2.5	Pass
	-20	3.35	0.004005		
	-10	8.13	0.009719		
	0	10.81	0.012923		
	10	15.12	0.018075		
	20	17.08	0.020418		
	30	22.16	0.026491		
	40	25.19	0.030114		
	50	24.86	0.029719		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	-31.33	-0.037454	±2.5	Pass
	3.8	-37.48	-0.044806		
	4.35	-37.89	-0.045296		
16QAM					
25	3.45	-8.75	-0.010460	±2.5	Pass
	3.8	-10.51	-0.012564		
	4.35	-4.84	-0.005786		
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					
3.8	-30	-16.72	-0.023633	Within authorized band for Band 12	Pass
	-20	-20.20	-0.028551		
	-10	-19.43	-0.027463		
	0	-22.80	-0.032226		
	10	-21.59	-0.030516		
	20	-20.80	-0.029399		
	30	-20.74	-0.029314		
	40	-20.00	-0.028269		
	50	-22.03	-0.031138		
16QAM					
3.8	-30	-11.26	-0.015915	Within authorized band for Band 12	Pass
	-20	-5.99	-0.008466		
	-10	-3.08	-0.004353		
	0	3.76	0.005314		
	10	4.88	0.006898		
	20	5.92	0.008367		
	30	7.84	0.011081		
	40	11.66	0.016481		
	50	13.80	0.019505		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	-17.68	-0.024989	Within authorized band for Band 12	Pass
	3.8	-20.84	-0.029456		
	4.35	-15.61	-0.022064		
16QAM					
25	3.45	-19.17	-0.027095	Within authorized band for Band 12	Pass
	3.8	-21.19	-0.029951		
	4.35	-17.60	-0.024876		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 17 part:

Reference Frequency: LTE Band 17(10MHz) Middle channel=23790 Frequency=710.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.8	-30	-28.62	-0.040310	Within authorized band for Band 17	Pass
	-20	-31.54	-0.044423		
	-10	-32.79	-0.046183		
	0	-36.91	-0.051986		
	10	-37.64	-0.053014		
	20	-38.58	-0.054338		
	30	-40.07	-0.056437		
	40	-43.10	-0.060704		
	50	-46.49	-0.065479		
16QAM					
3.8	-30	11.56	0.016282	Within authorized band for Band 17	Pass
	-20	16.69	0.023507		
	-10	21.13	0.029761		
	0	21.82	0.030732		
	10	23.76	0.033465		
	20	25.92	0.036507		
	30	28.22	0.039746		
	40	31.16	0.043887		
	50	32.03	0.045113		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	-20.81	-0.029310	Within authorized band for Band 17	Pass
	3.8	-29.74	-0.041887		
	4.35	-24.89	-0.035056		
16QAM					
25	3.45	6.14	0.008648	Within authorized band for Band 17	Pass
	3.8	5.02	0.007070		
	4.35	8.05	0.011338		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 41 part:

Reference Frequency: LTE Band 41 (10MHz) Middle channel=40740 Frequency=2605.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.8	-30	44.27	0.016994	Within authorized band for Band 41	Pass
	-20	23.90	0.009175		
	-10	38.87	0.014921		
	0	-20.73	-0.007958		
	10	-17.32	-0.006649		
	20	-17.94	-0.006887		
	30	-16.11	-0.006184		
	40	-6.19	-0.002376		
	50	13.12	0.005036		
16QAM					
3.8	-30	29.13	0.011182	Within authorized band for Band 41	Pass
	-20	41.16	0.015800		
	-10	21.46	0.008238		
	0	31.61	0.012134		
	10	58.82	0.022580		
	20	-11.69	-0.004488		
	30	13.30	0.005106		
	40	27.21	0.010445		
	50	37.19	0.014276		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	-5.38	-0.002065	Within authorized band for Band 41	Pass
	3.8	35.78	0.013735		
	4.35	24.22	0.009298		
16QAM					
25	3.45	37.21	0.014284	Within authorized band for Band41	Pass
	3.8	23.39	0.008979		
	4.35	47.76	0.018334		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 66 part include LTE Band 4:

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					
3.8	-30	-24.55	-0.014069	Within authorized band for Band 66	Pass
	-20	-33.80	-0.019370		
	-10	-42.23	-0.024201		
	0	-7.40	-0.004241		
	10	-10.96	-0.006281		
	20	-15.56	-0.008917		
	30	-18.70	-0.010716		
	40	-20.81	-0.011926		
	50	-23.46	-0.013444		
16QAM					
3.8	-30	-4.72	-0.002705	Within authorized band for Band 66	Pass
	-20	7.38	0.004229		
	-10	13.12	0.007519		
	0	23.53	0.013484		
	10	22.62	0.012963		
	20	18.93	0.010848		
	30	15.12	0.008665		
	40	19.74	0.011312		
	50	26.09	0.014951		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	-19.40	-0.011117	Within authorized band for Band 66	Pass
	3.8	-25.43	-0.014573		
	4.35	-28.08	-0.016092		
16QAM					
25	3.45	-22.09	-0.012659	Within authorized band for Band 66	Pass
	3.8	-24.15	-0.013840		
	4.35	-11.10	-0.006361		
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 66 (10MHz) Middle channel=133297 Frequency=680.5MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.8	-30	-23.93	-0.035165	Within authorized band for Band 71	Pass
	-20	-31.24	-0.045907		
	-10	-33.39	-0.049067		
	0	-37.62	-0.055283		
	10	-39.31	-0.057766		
	20	-42.29	-0.062145		
	30	-45.83	-0.067348		
	40	-48.78	-0.071683		
	50	-51.08	-0.075062		
16QAM					
3.8	-30	-43.76	-0.064306	Within authorized band for Band 71	Pass
	-20	-41.04	-0.060309		
	-10	-40.07	-0.058883		
	0	-38.72	-0.056899		
	10	-37.32	-0.054842		
	20	-32.27	-0.047421		
	30	-32.52	-0.047788		
	40	-29.51	-0.043365		
	50	-28.70	-0.042175		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	-19.93	-0.029287	Within authorized band for Band 71	Pass
	3.8	-28.57	-0.041984		
	4.35	-21.13	-0.031051		
16QAM					
25	3.45	-52.27	-0.076811	Within authorized band for Band 71	Pass
	3.8	-51.51	-0.075694		
	4.35	-49.11	-0.072168		
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
Band12	10MHz	QPSK	23095	50RB#0	PASS	PASS
Band12	10MHz	16QAM	23095	50RB#0	PASS	PASS
Band17	10MHz	QPSK	23790	50RB#0	PASS	PASS
Band17	10MHz	16QAM	23790	50RB#0	PASS	PASS
Band41	20MHz	QPSK	40740	100RB#0	PASS	PASS
Band41	20MHz	16QAM	40740	100RB#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

