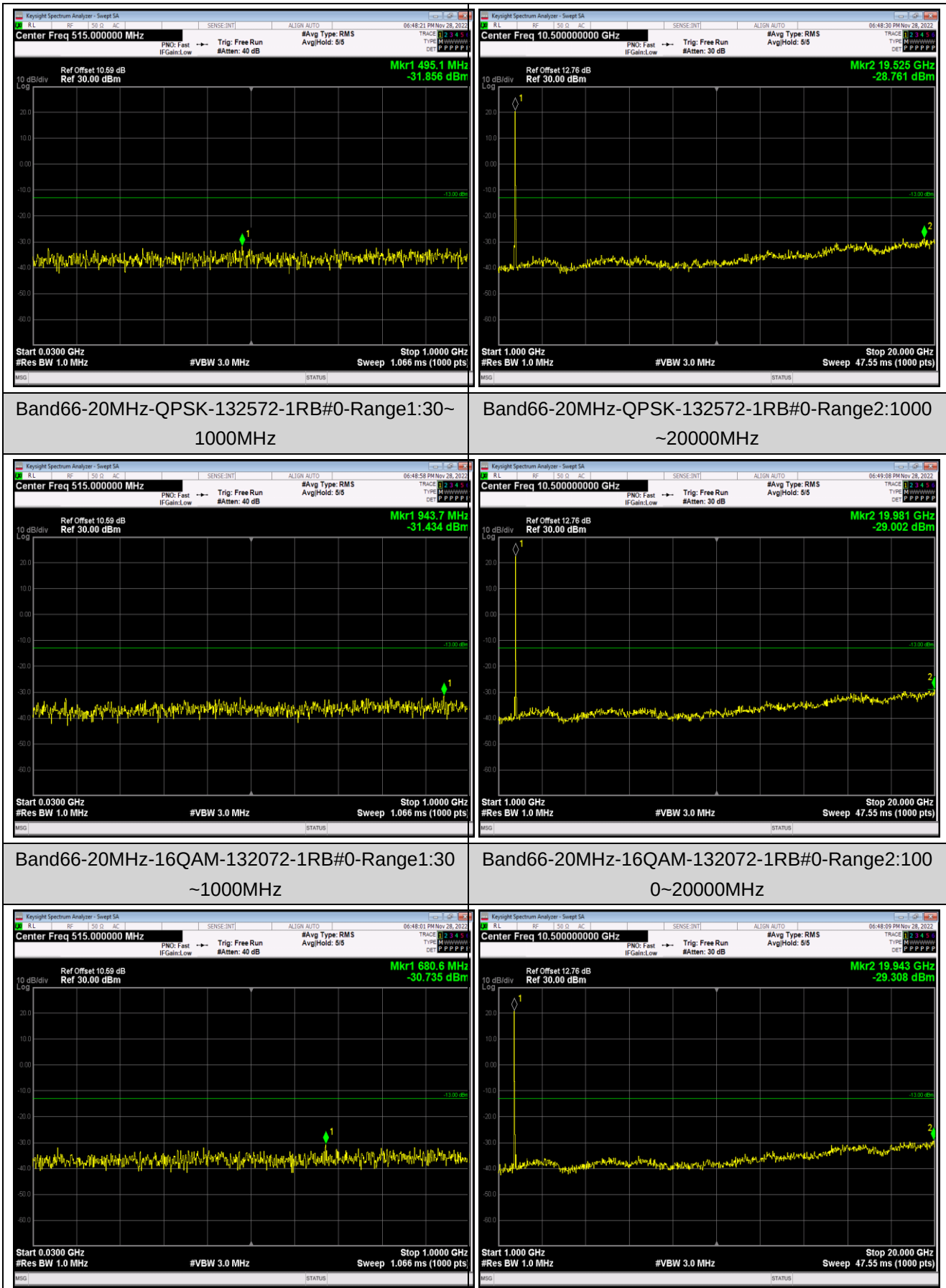
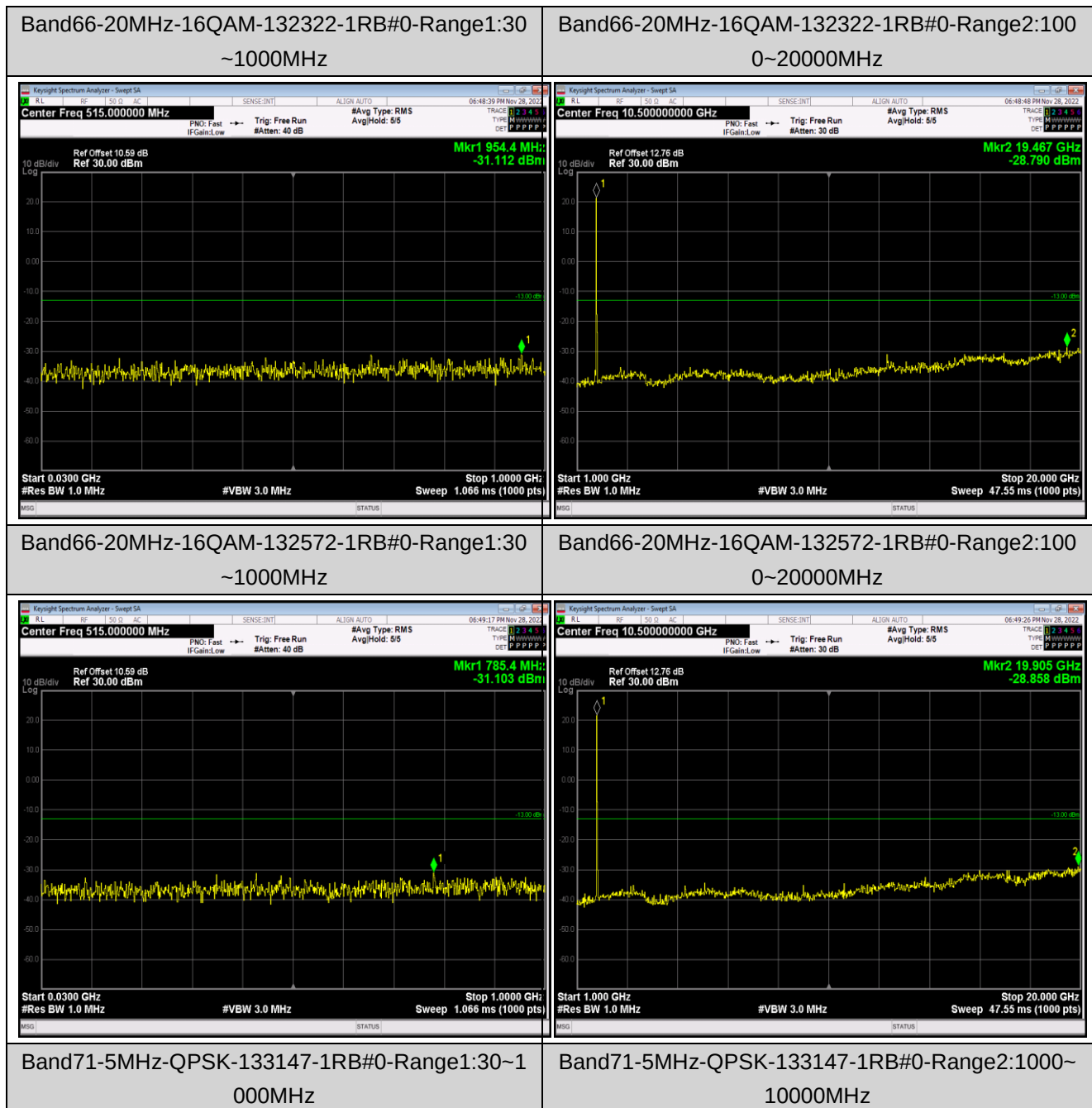
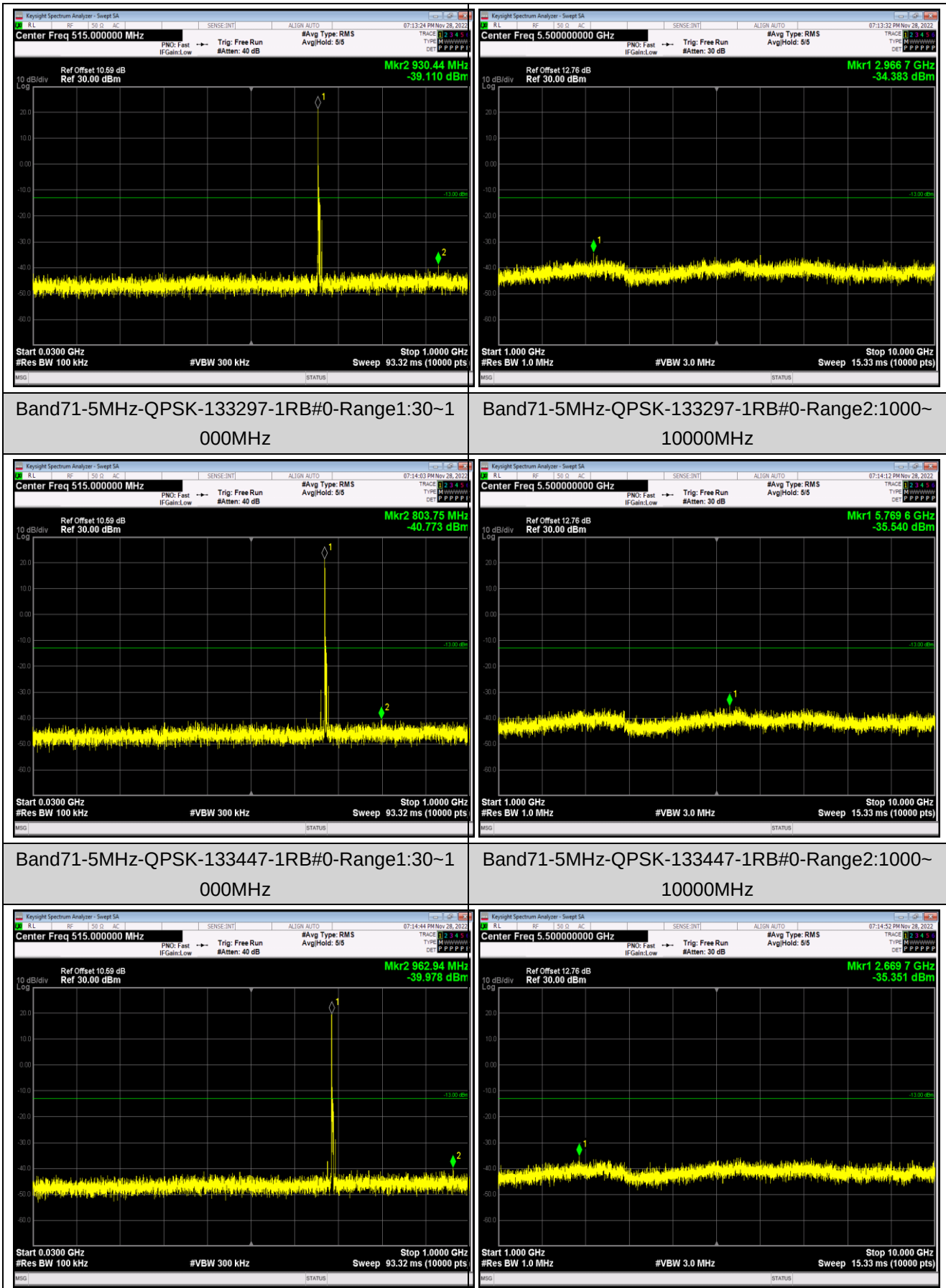
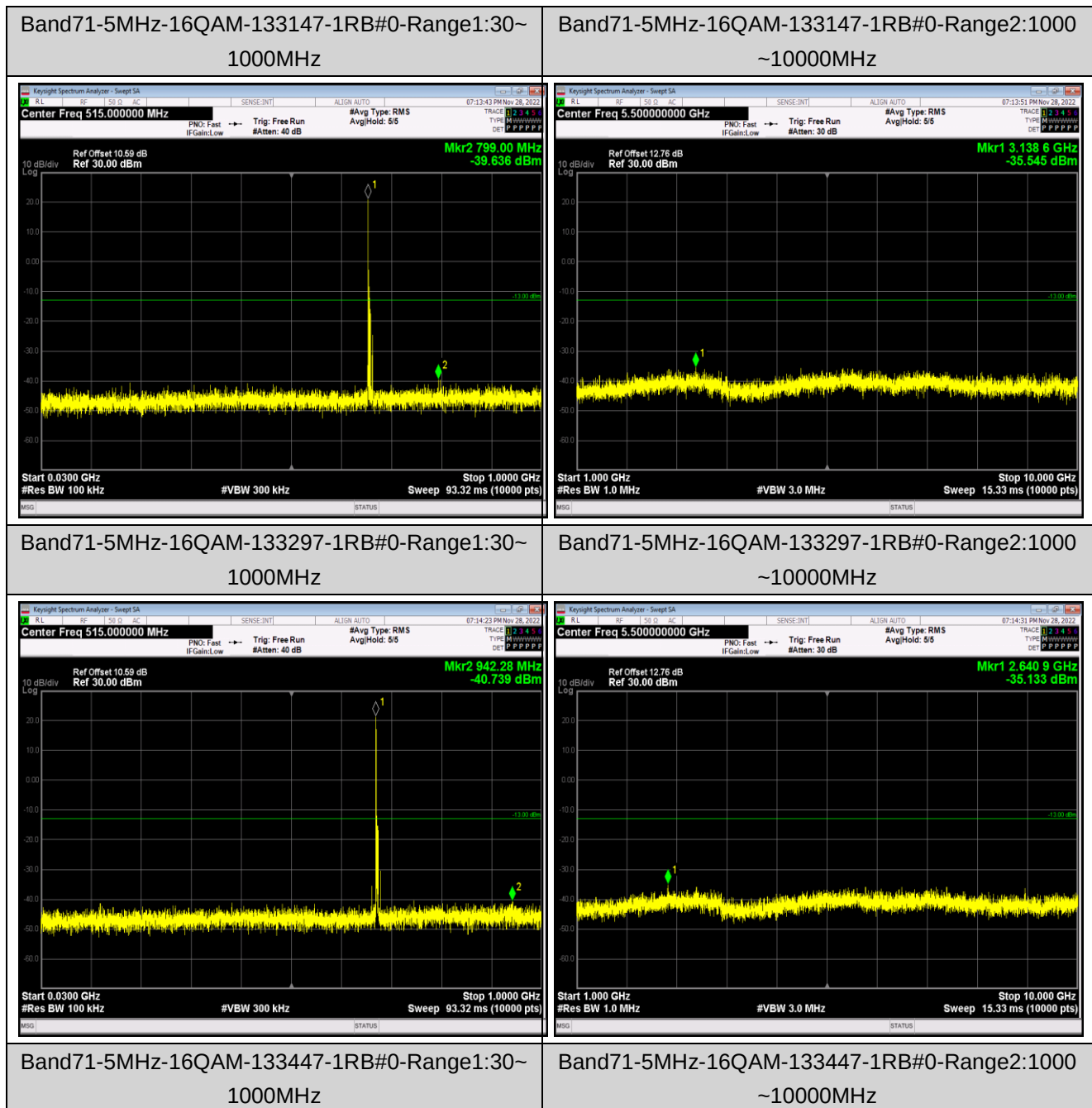
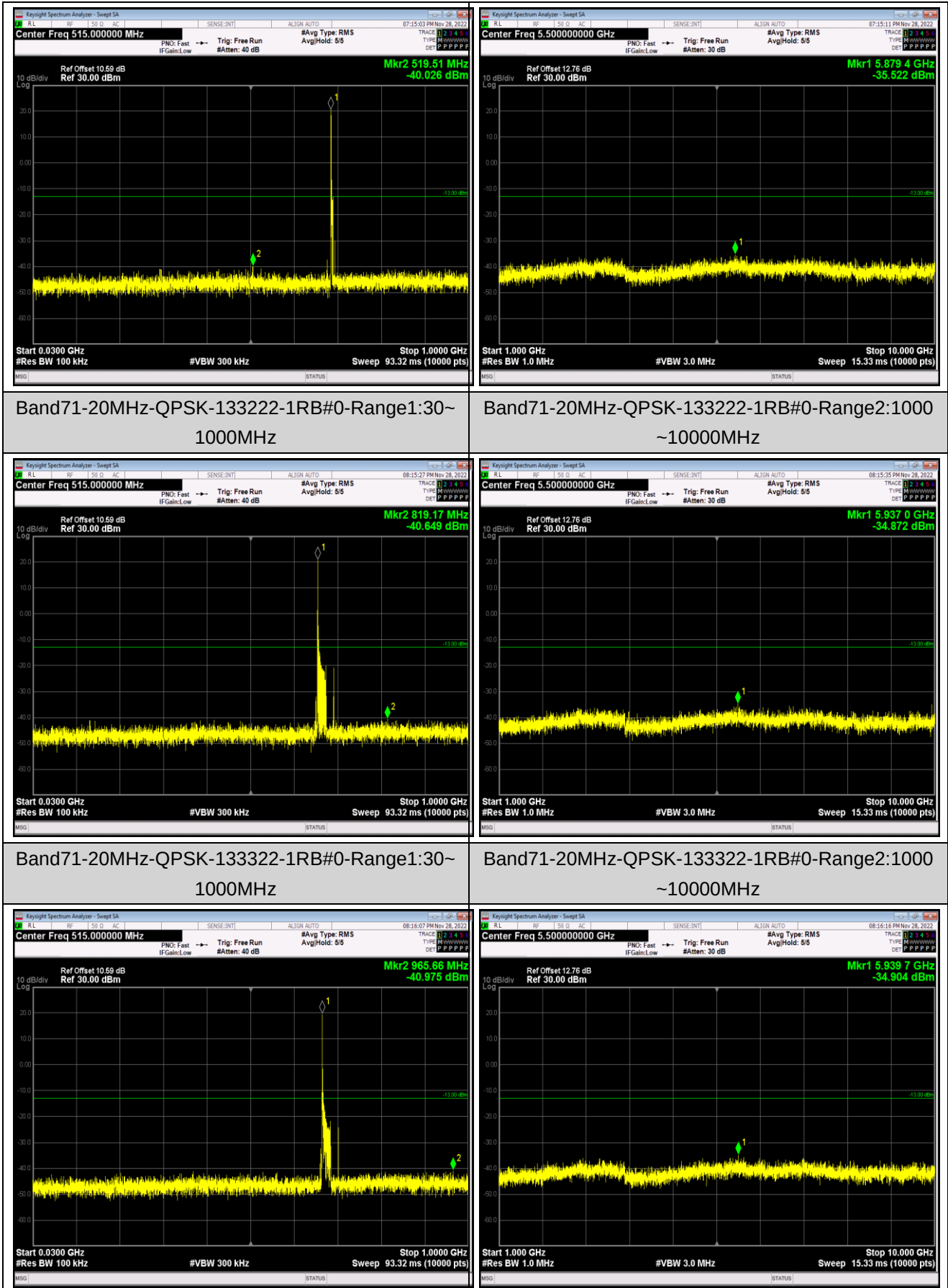


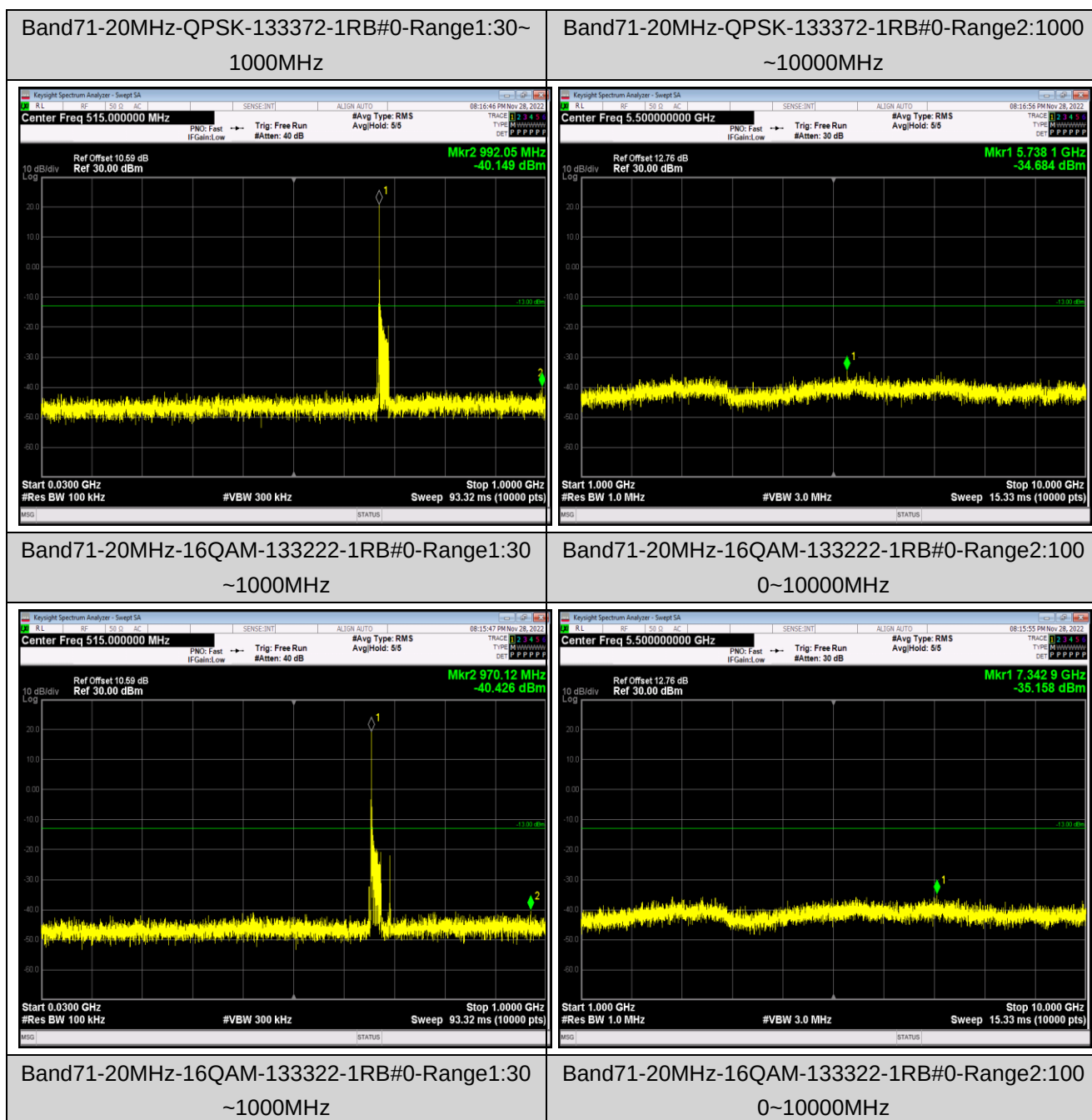


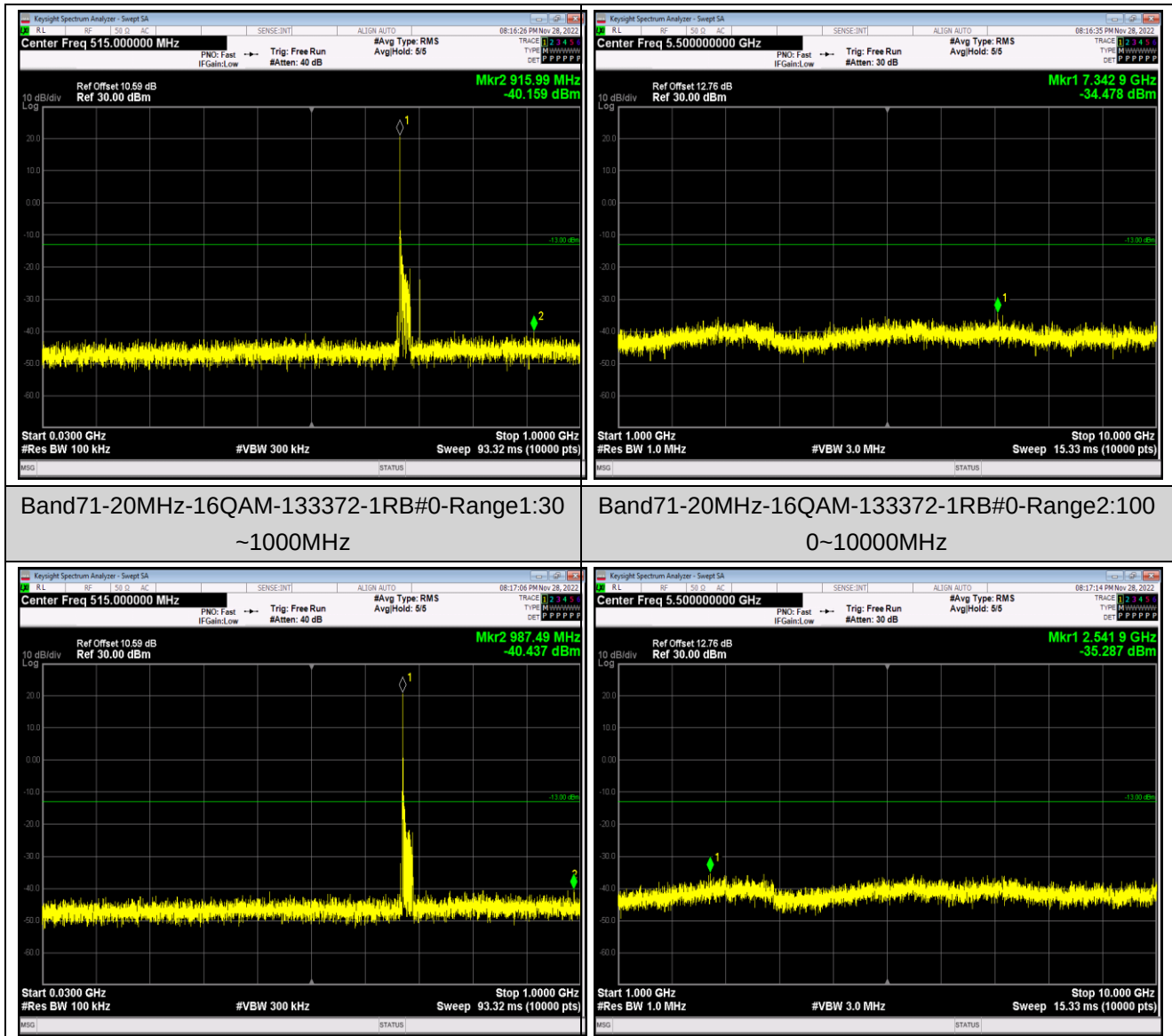












Appendix F: Frequency Stability

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					
3.80	-30	-21.40	-0.011383	Within authorized band for Band 2	Pass
	-20	-8.10	-0.004309		
	-10	8.63	0.004590		
	0	19.61	0.010431		
	10	20.63	0.010973		
	20	24.08	0.012809		
	30	22.30	0.011862		
	40	16.06	0.008543		
	50	9.37	0.004984		
16QAM					
3.80	-30	-17.68	-0.009404	Within authorized band for Band 2	Pass
	-20	-29.84	-0.015872		
	-10	-45.72	-0.024319		
	0	-55.20	-0.029362		
	10	-6.44	-0.003426		
	20	-10.99	-0.005846		
	30	-16.42	-0.008734		
	40	-20.40	-0.010851		
	50	-26.99	-0.014356		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-32.93	-0.017516	Within authorized band for Band 2	Pass
	3.80	-15.88	-0.008447		
	4.40	-29.41	-0.015644		
16QAM					
25	3.50	-18.60	-0.009894	Within authorized band for Band 2	Pass
	3.80	12.72	0.006766		
	4.40	-38.70	-0.020585		
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 (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.80	-30	-10.14	-0.012122	±2.5	Pass
	-20	-13.59	-0.016246		
	-10	-13.43	-0.016055		
	0	-16.97	-0.020287		
	10	-20.69	-0.024734		
	20	-24.42	-0.029193		
	30	-23.73	-0.028368		
	40	-26.48	-0.031656		
	50	-27.55	-0.032935		
16QAM					
3.80	-30	-28.82	-0.034453	±2.5	Pass
	-20	-28.11	-0.033604		
	-10	-27.21	-0.032528		
	0	-27.65	-0.033054		
	10	-28.65	-0.034250		
	20	-30.47	-0.036426		
	30	-30.24	-0.036151		
	40	-31.06	-0.037131		
	50	-27.89	-0.033341		
Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	1.65	0.001973	±2.5	Pass
	3.80	5.51	0.006587		
	4.40	-4.82	-0.005762		
16QAM					
25	3.50	-29.65	-0.035445	±2.5	Pass
	3.80	-27.62	-0.033019		
	4.40	-32.70	-0.039091		
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					
3.80	-30	-13.66	-0.019307	Within authorized band for Band 12	Pass
	-20	-13.02	-0.018403		
	-10	-12.00	-0.016961		
	0	-9.70	-0.013710		
	10	-9.73	-0.013753		
	20	-9.51	-0.013442		
	30	-10.64	-0.015039		
	40	-13.07	-0.018473		
	50	-14.96	-0.021145		
16QAM					
3.80	-30	-18.04	-0.025498	Within authorized band for Band 12	Pass
	-20	-18.67	-0.026389		
	-10	-22.00	-0.031095		
	0	-22.19	-0.031364		
	10	-21.97	-0.031053		
	20	-20.33	-0.028735		
	30	-23.05	-0.032580		
	40	-25.01	-0.035350		
	50	-27.44	-0.038784		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-10.49	-0.014827	Within authorized band for Band 12	Pass
	3.80	-2.15	-0.003039		
	4.40	-12.55	-0.017739		
16QAM					
25	3.50	-16.38	-0.023152	Within authorized band for Band 12	Pass
	3.80	-15.18	-0.021456		
	4.40	-18.25	-0.025795		
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					
3.80	-30	-17.92	-0.025239	Within authorized band for Band 17	Pass
	-20	-16.15	-0.022746		
	-10	-14.75	-0.020775		
	0	-14.28	-0.020113		
	10	-14.03	-0.019761		
	20	-13.59	-0.019141		
	30	-12.96	-0.018254		
	40	-13.40	-0.018873		
	50	-15.09	-0.021254		
16QAM					
3.80	-30	-18.51	-0.026070	Within authorized band for Band 17	Pass
	-20	-21.44	-0.030197		
	-10	-24.20	-0.034085		
	0	-26.71	-0.037620		
	10	-27.62	-0.038901		
	20	-29.07	-0.040944		
	30	-31.14	-0.043859		
	40	-32.10	-0.045211		
	50	-32.57	-0.045873		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-16.01	-0.022549	Within authorized band for Band 17	Pass
	3.80	-6.91	-0.009732		
	4.40	-16.12	-0.022704		
16QAM					
25	3.50	-14.65	-0.020634	Within authorized band for Band 17	Pass
	3.80	-14.00	-0.019718		
	4.40	-16.65	-0.023451		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 41 part: (2555-2655)

Reference Frequency: LTE Band 41 (10MHz) Middle channel=40740 Frequency=2605MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.80	-30	15.85	0.006084	Within authorized band for Band 41	Pass
	-20	9.90	0.003800		
	-10	8.47	0.003251		
	0	-7.20	-0.002764		
	10	-15.06	-0.005781		
	20	-9.54	-0.003662		
	30	-10.63	-0.004081		
	40	-14.23	-0.005463		
	50	-9.27	-0.003559		
16QAM					
3.80	-30	-8.83	-0.003390	Within authorized band for Band 41	Pass
	-20	-7.14	-0.002741		
	-10	-11.84	-0.004545		
	0	-9.64	-0.003701		
	10	-6.09	-0.002338		
	20	-7.97	-0.003060		
	30	7.22	0.002772		
	40	-11.74	-0.004507		
	50	-5.59	-0.002146		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	15.49	0.005946	Within authorized band for Band 41	Pass
	3.80	21.97	0.008434		
	4.40	12.80	0.004914		
16QAM					
25	3.50	-18.40	-0.007063	Within authorized band for Band41	Pass
	3.80	-17.09	-0.006560		
	4.40	-11.93	-0.004580		
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					
3.80	-30	19.86	0.011381	Within authorized band for Band 66	Pass
	-20	21.36	0.012241		
	-10	27.65	0.015845		
	0	34.15	0.019570		
	10	33.09	0.018963		
	20	40.61	0.023272		
	30	45.86	0.026281		
	40	-4.49	-0.002573		
	50	7.77	0.004453		
16QAM					
3.80	-30	13.39	0.007673	Within authorized band for Band 66	Pass
	-20	15.96	0.009146		
	-10	15.51	0.008888		
	0	13.42	0.007691		
	10	16.06	0.009203		
	20	14.95	0.008567		
	30	16.32	0.009352		
	40	12.59	0.007215		
	50	12.82	0.007347		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	18.27	0.010470	Within authorized band for Band 66	Pass
	3.80	33.37	0.019123		
	4.40	18.24	0.010453		
16QAM					
25	3.50	14.33	0.008212	Within authorized band for Band 66	Pass
	3.80	8.93	0.005117		
	4.40	15.06	0.008630		
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=132322 Frequency=680.5MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.80	-30	1.12	0.001646	Within authorized band for Band 71	Pass
	-20	-3.69	-0.005422		
	-10	-2.30	-0.003380		
	0	-4.32	-0.006348		
	10	-5.24	-0.007700		
	20	-4.96	-0.007289		
	30	-5.54	-0.008141		
	40	-6.32	-0.009287		
	50	-5.81	-0.008538		
16QAM					
3.80	-30	-6.08	-0.008935	Within authorized band for Band 71	Pass
	-20	-6.91	-0.010154		
	-10	-6.77	-0.009949		
	0	-6.74	-0.009904		
	10	-7.52	-0.011051		
	20	-6.32	-0.009287		
	30	-7.67	-0.011271		
	40	-7.94	-0.011668		
	50	-7.34	-0.010786		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	3.28	0.004820	Within authorized band for Band 71	Pass
	3.80	6.42	0.009434		
	4.40	2.70	0.003968		
16QAM					
25	3.50	-7.01	-0.010301	Within authorized band for Band 71	Pass
	3.80	-6.28	-0.009229		
	4.40	-6.11	-0.008979		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

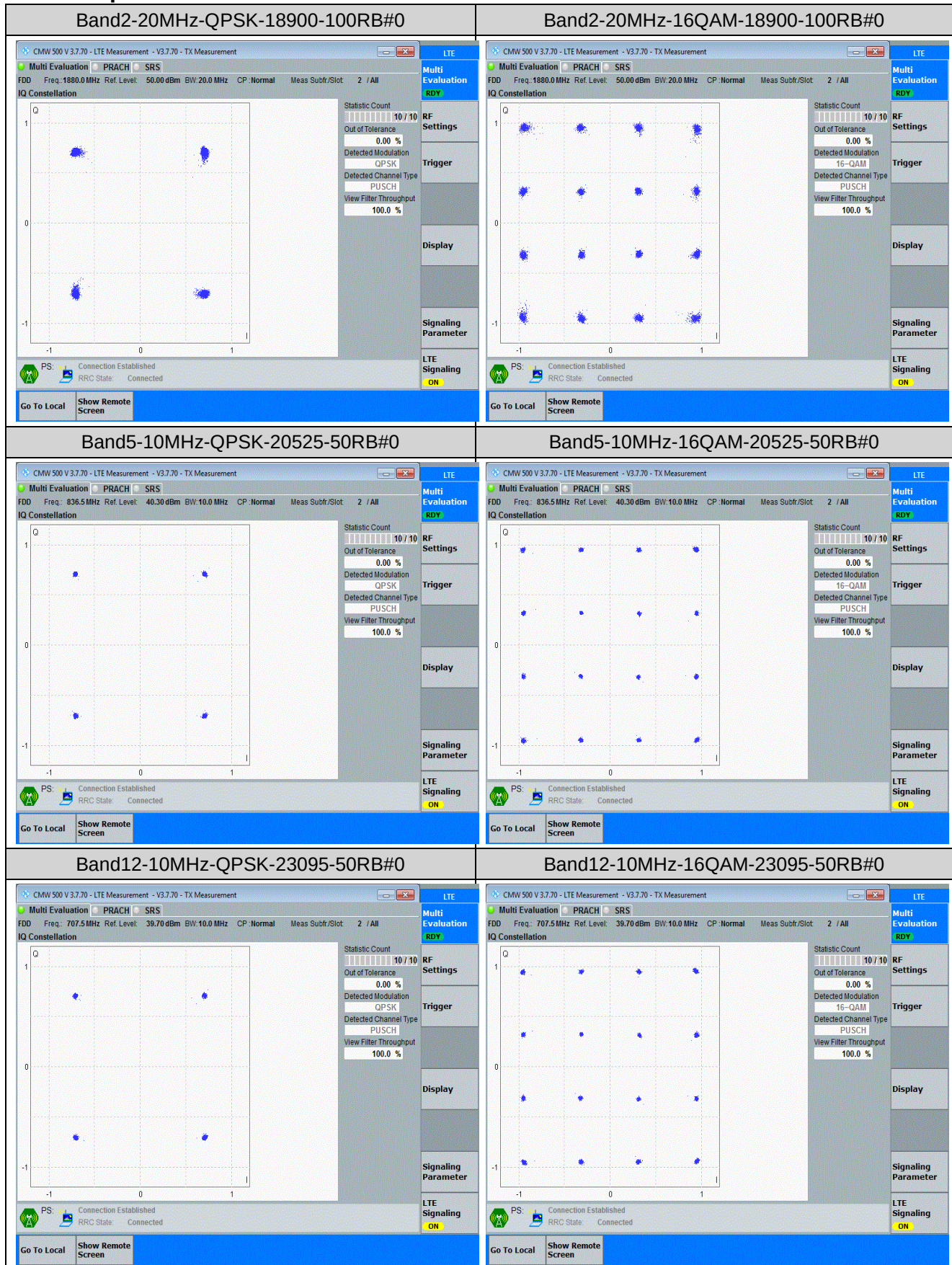
Appendix G: Modulation Characteristics

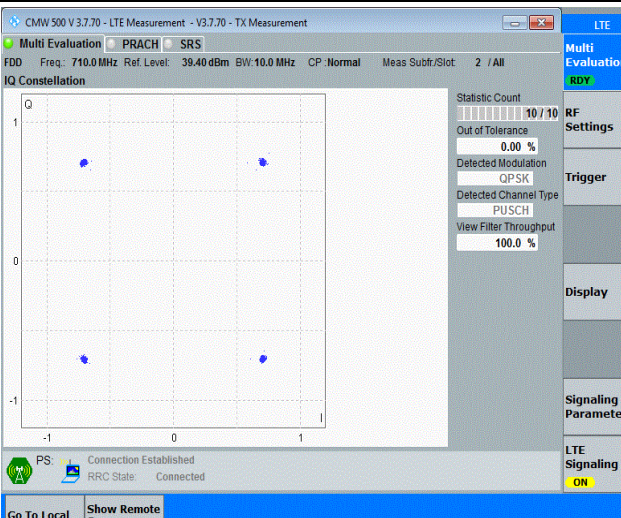
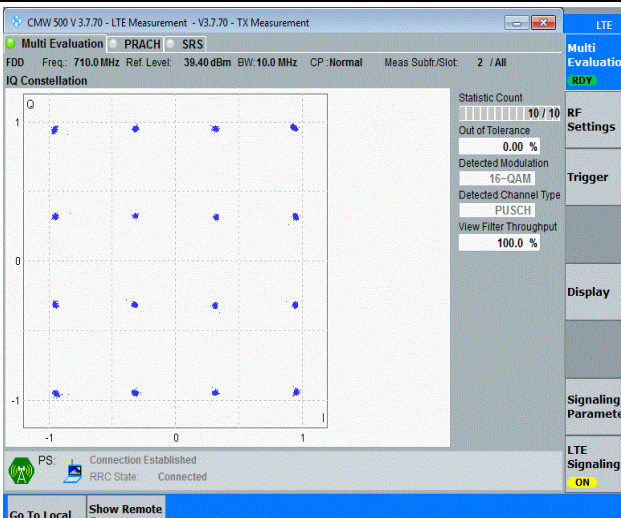
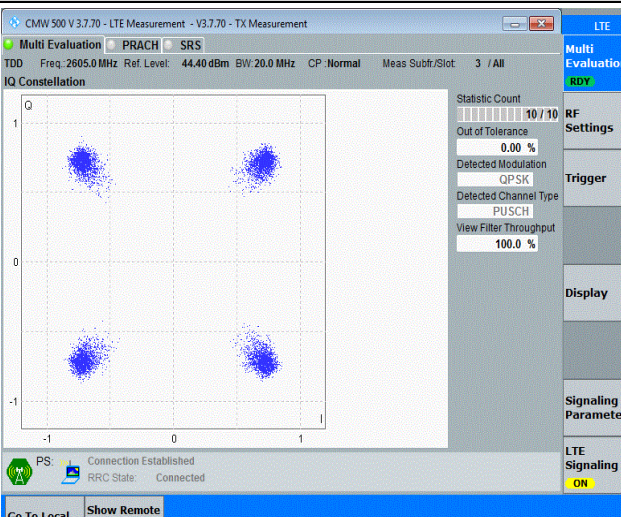
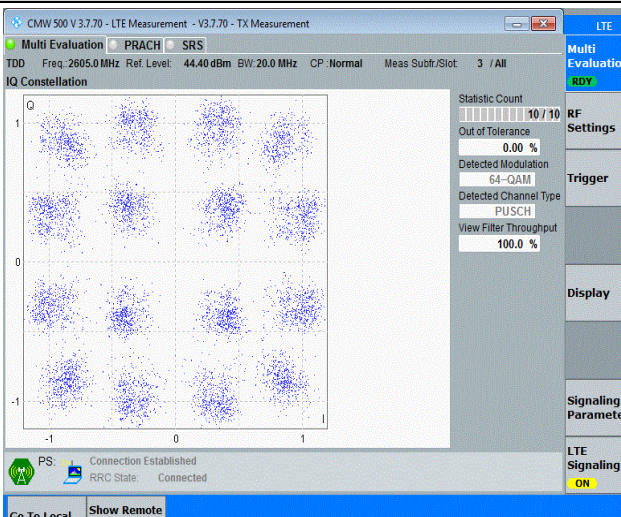
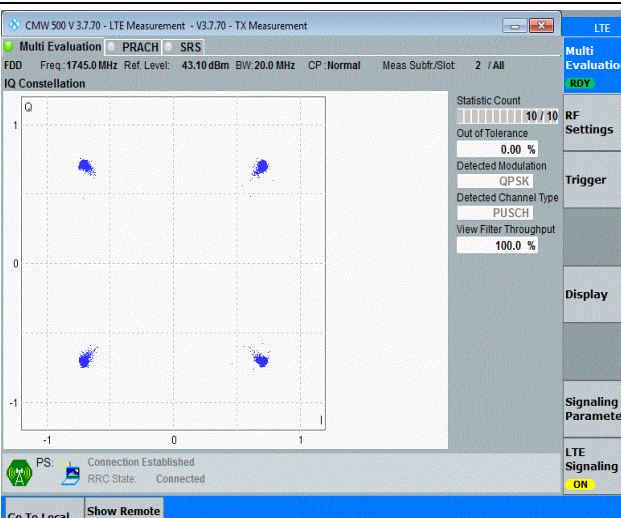
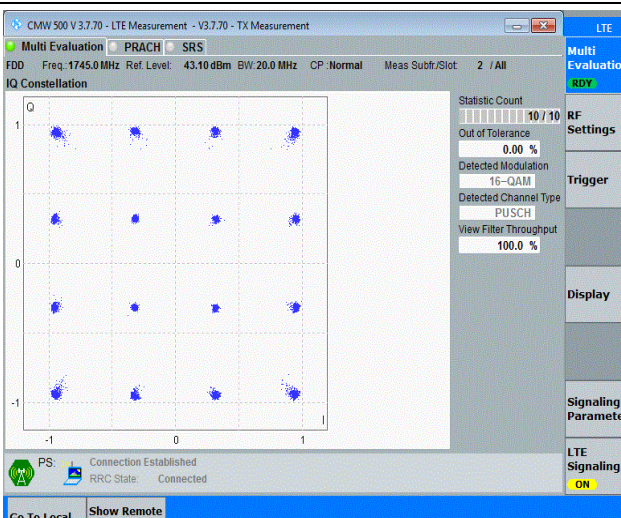
Test Result

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
Band41	20MHz	64QAM	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



Band17-10MHz-QPSK-23790-50RB#0 	Band17-10MHz-16QAM-23790-50RB#0 
Band41-20MHz-QPSK-40740-100RB#0 	Band41-20MHz-16QAM-40740-100RB#0 
Band66-20MHz-QPSK-132322-100RB#0 	Band66-20MHz-16QAM-132322-100RB#0 
Band71-20MHz-QPSK-133322-100RB#0	Band71-20MHz-16QAM-133322-100RB#0

