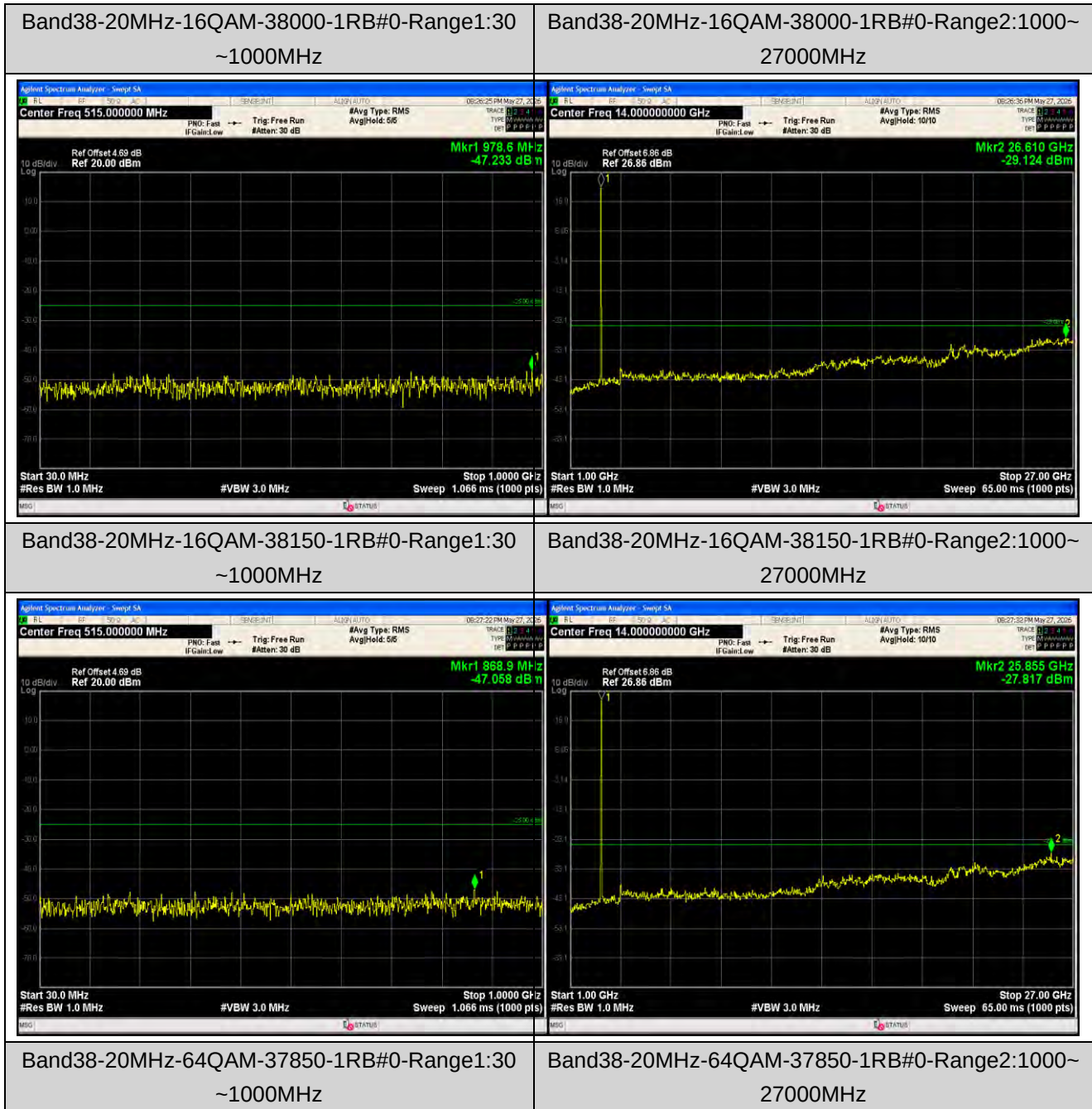
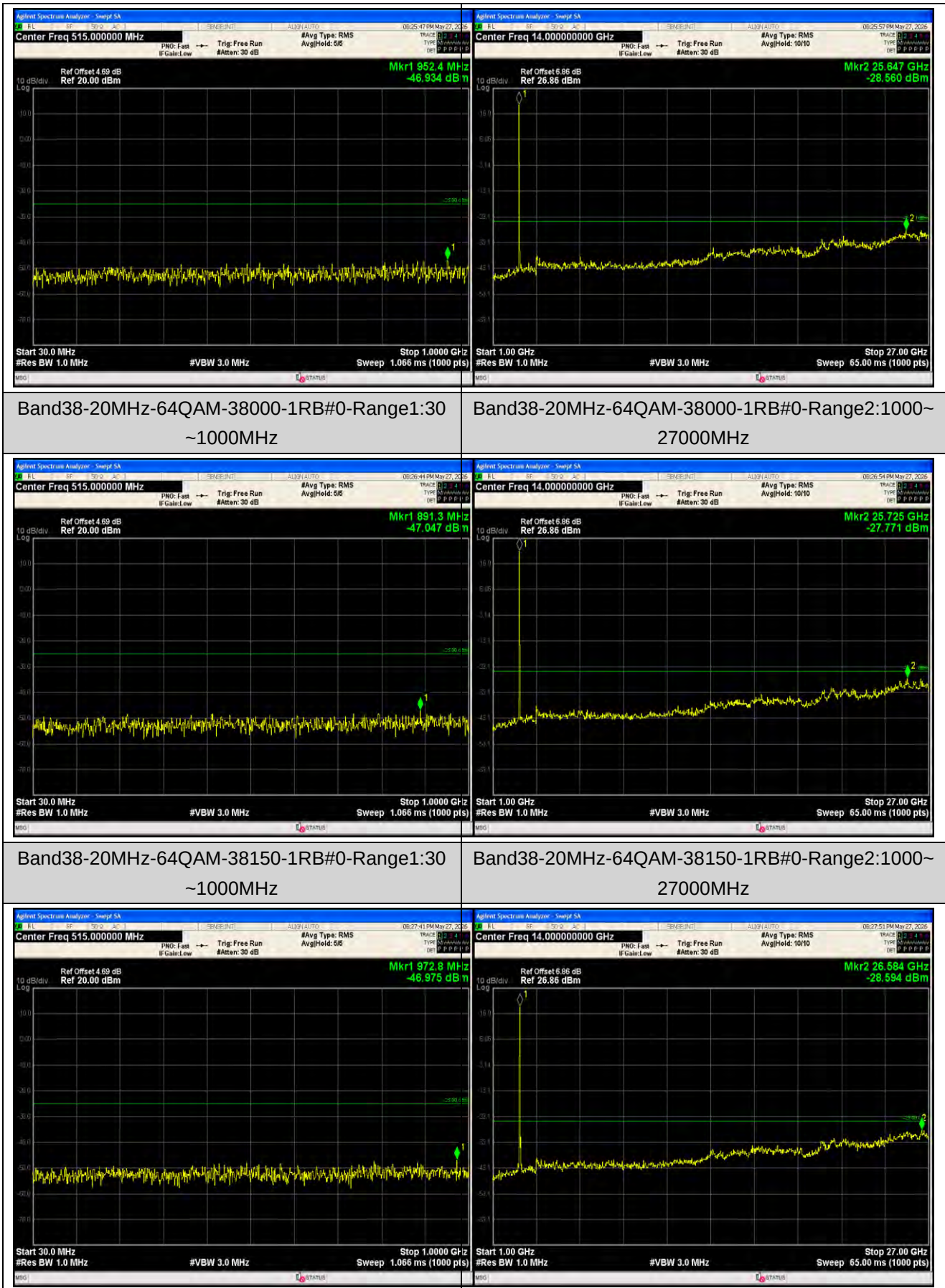




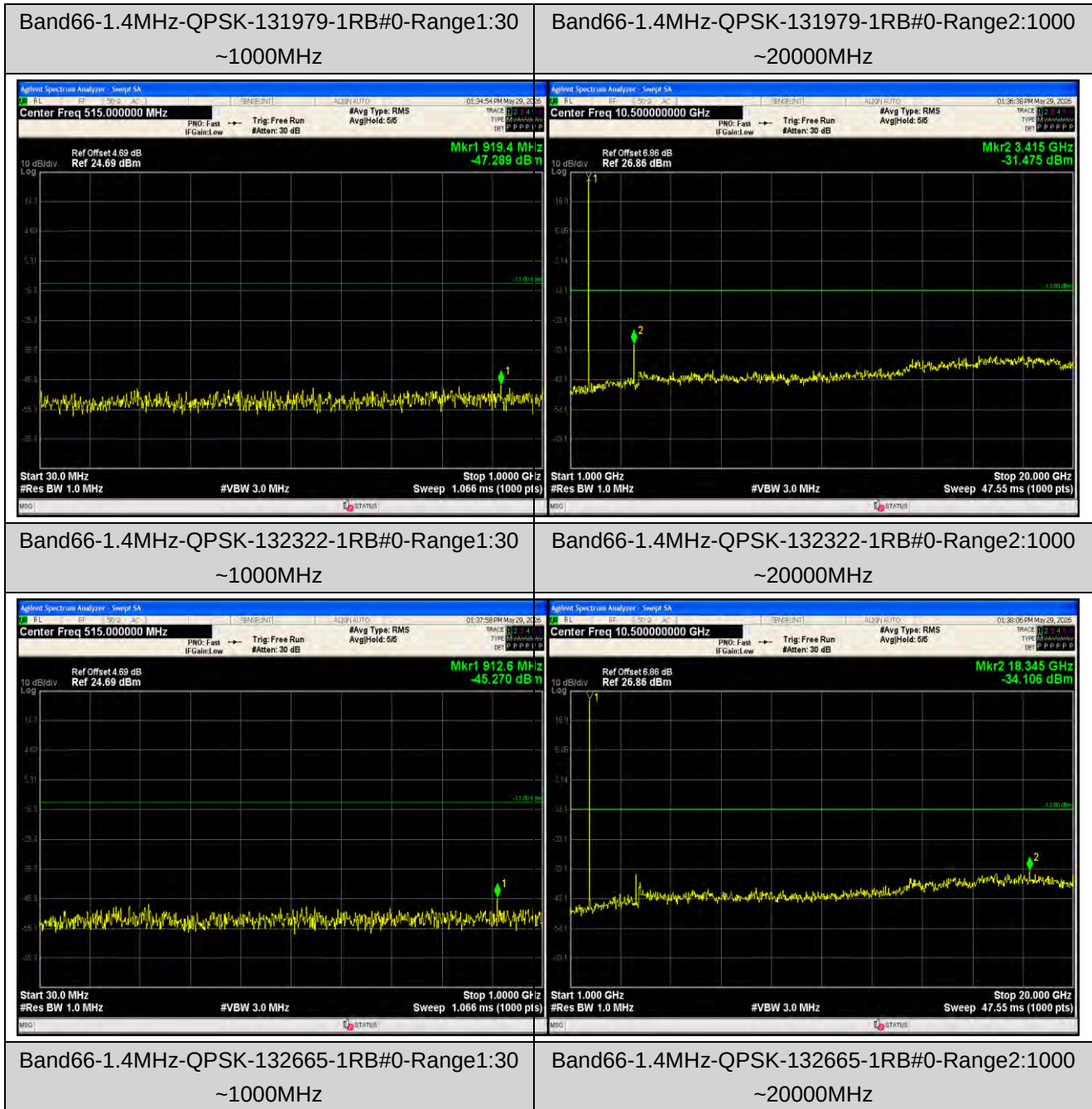


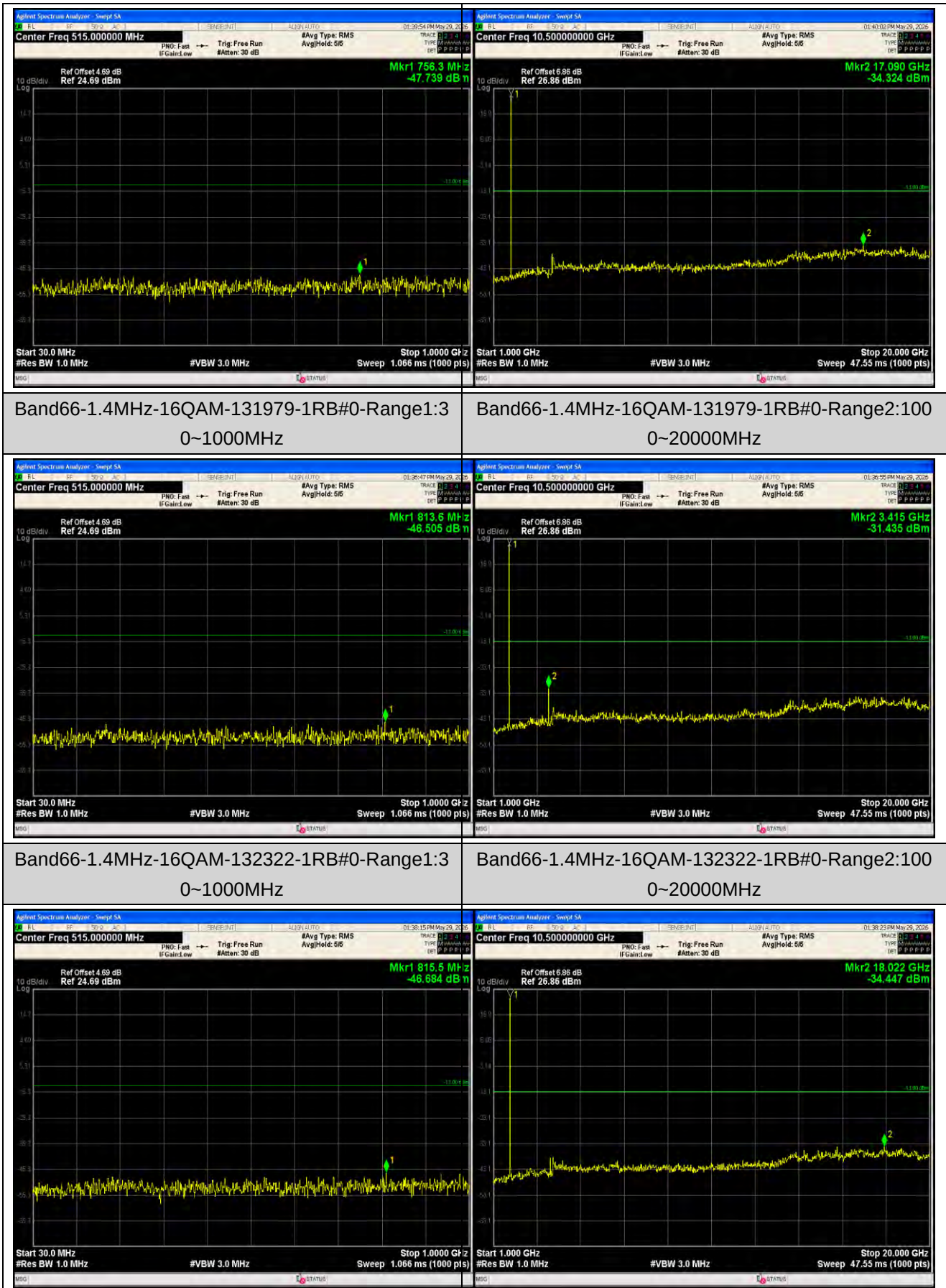
JianYan Testing Group Shenzhen Co., Ltd.

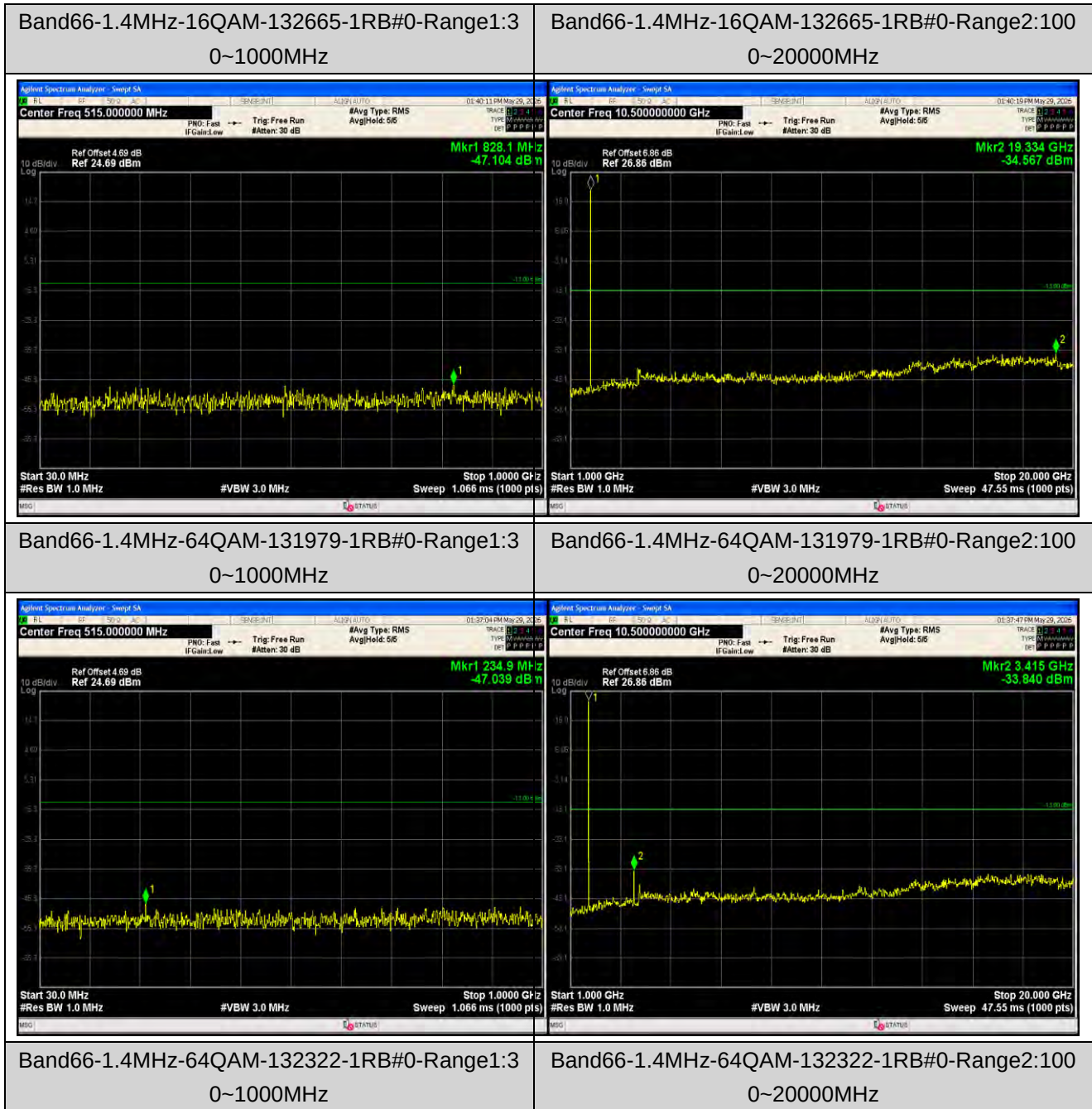
No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.

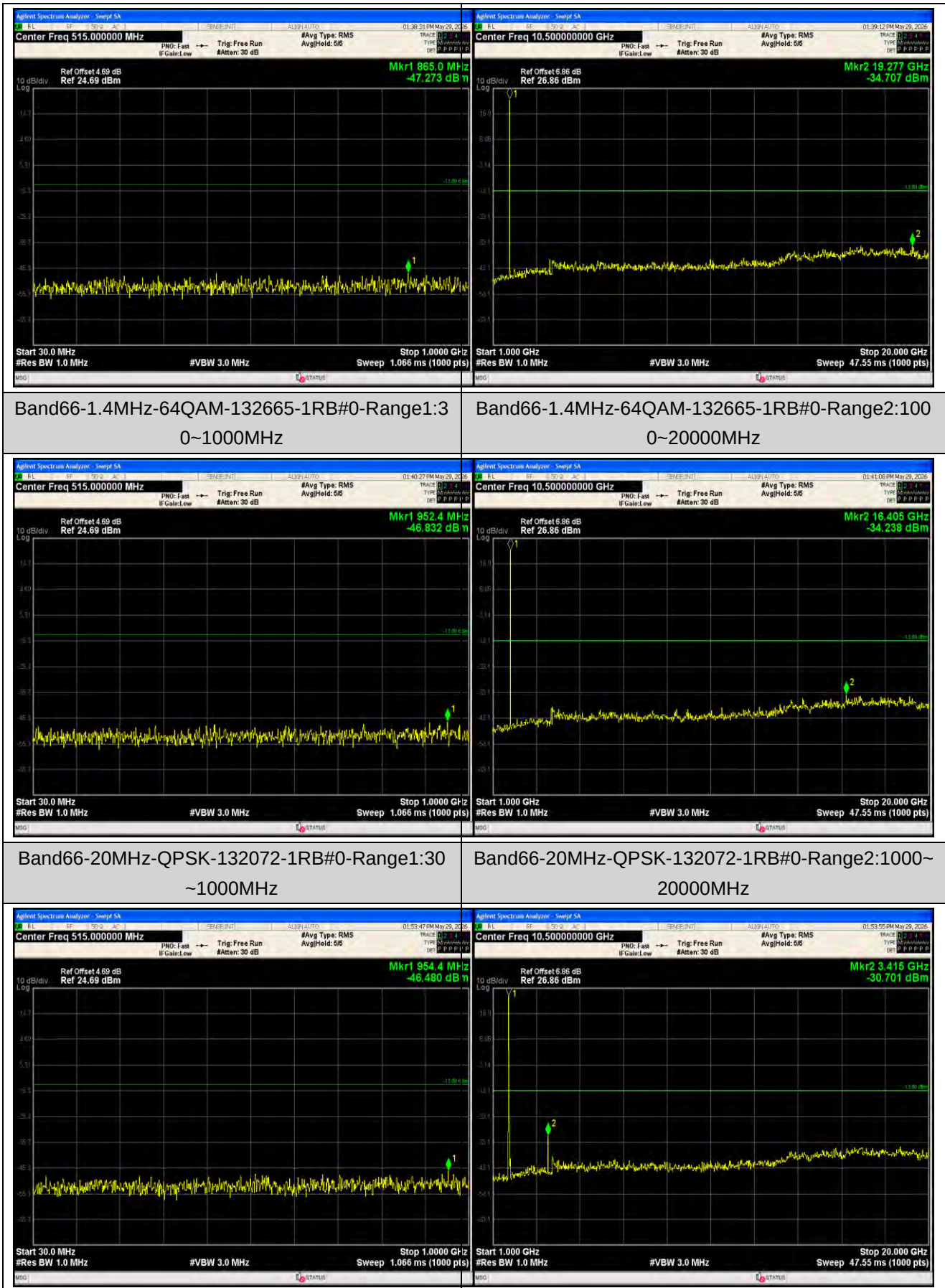
Tel: +86-755-23118282, Fax: +86-755-23116366

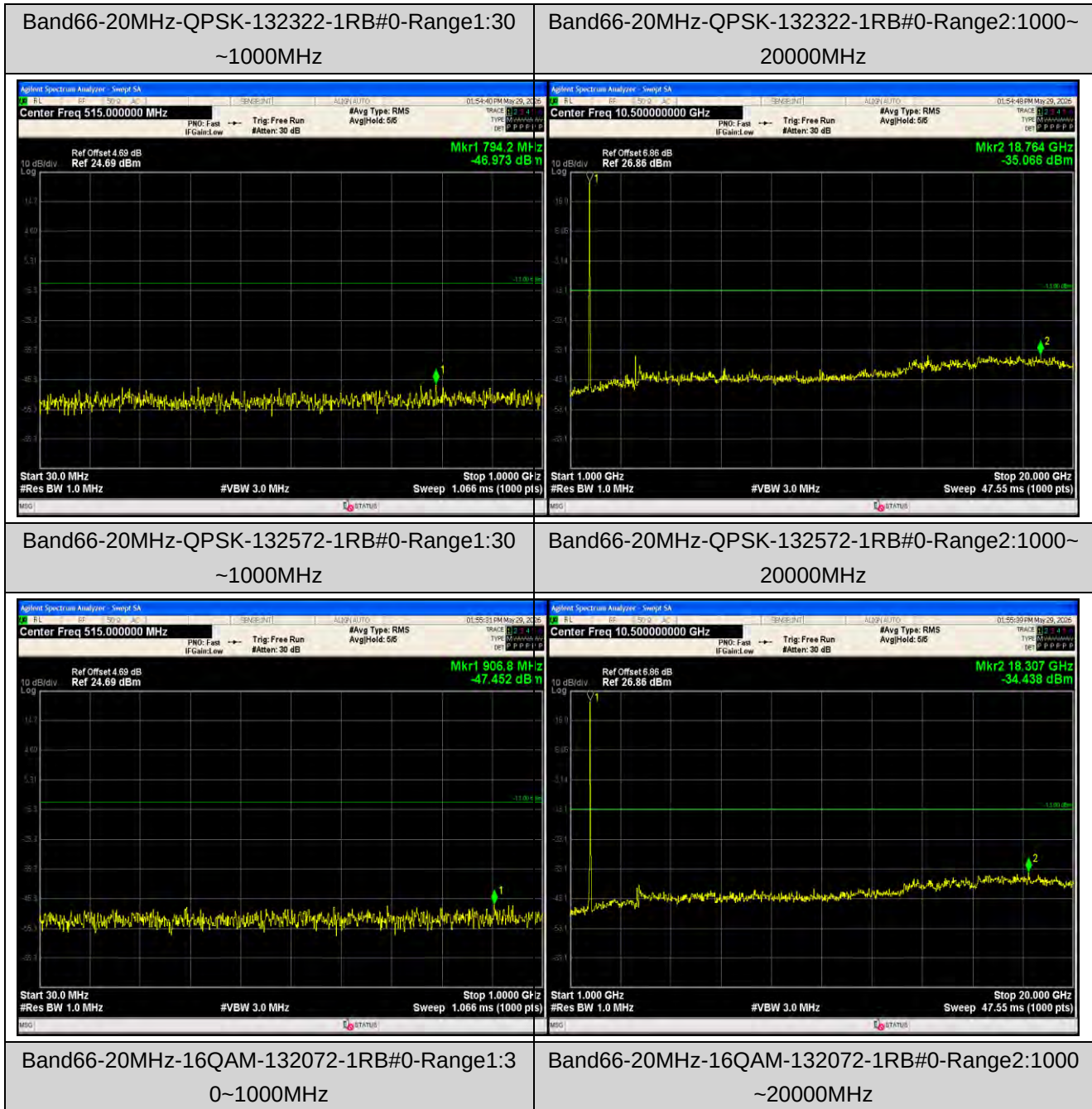
Project No.: JYTSZR2605029

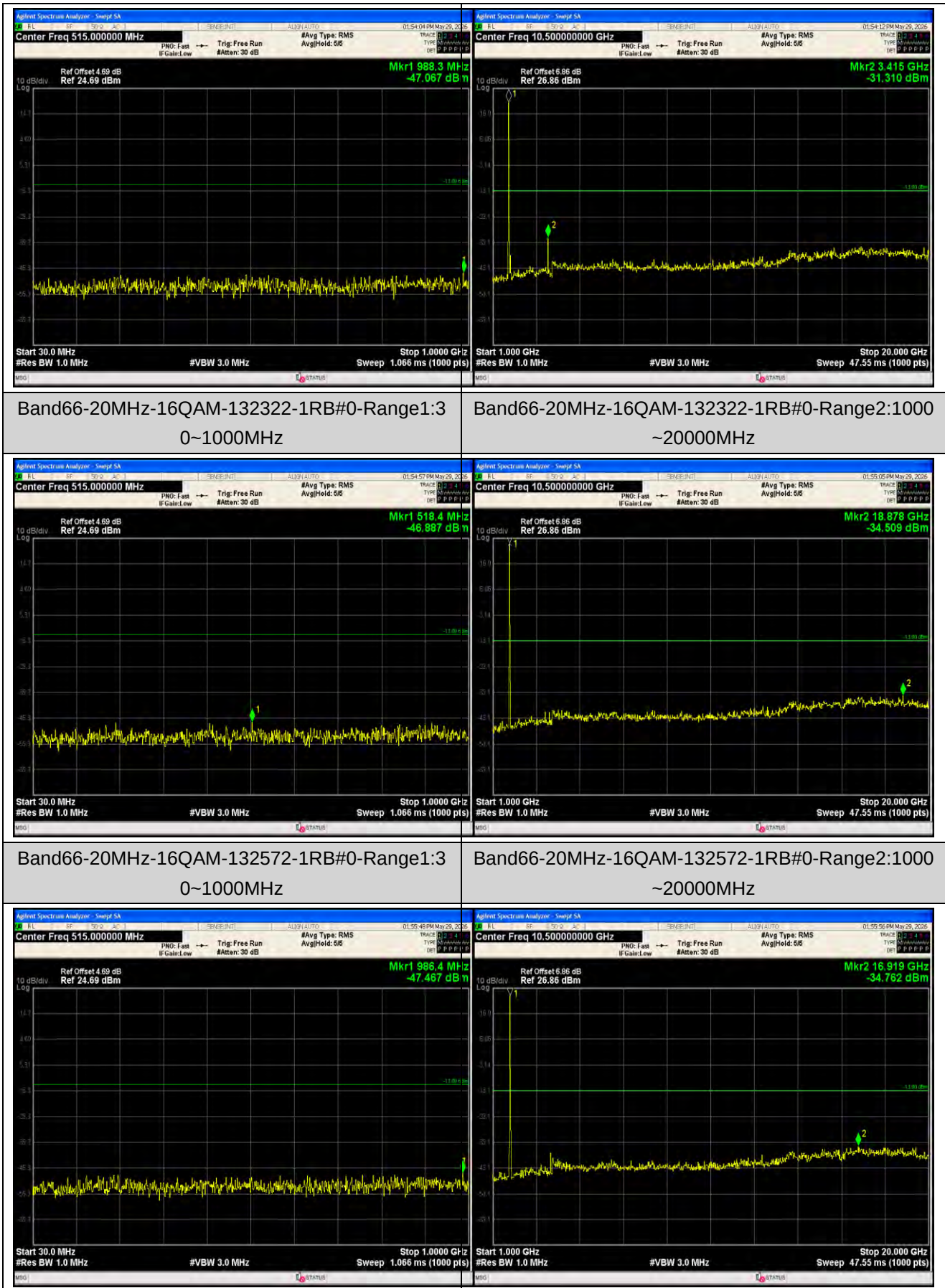


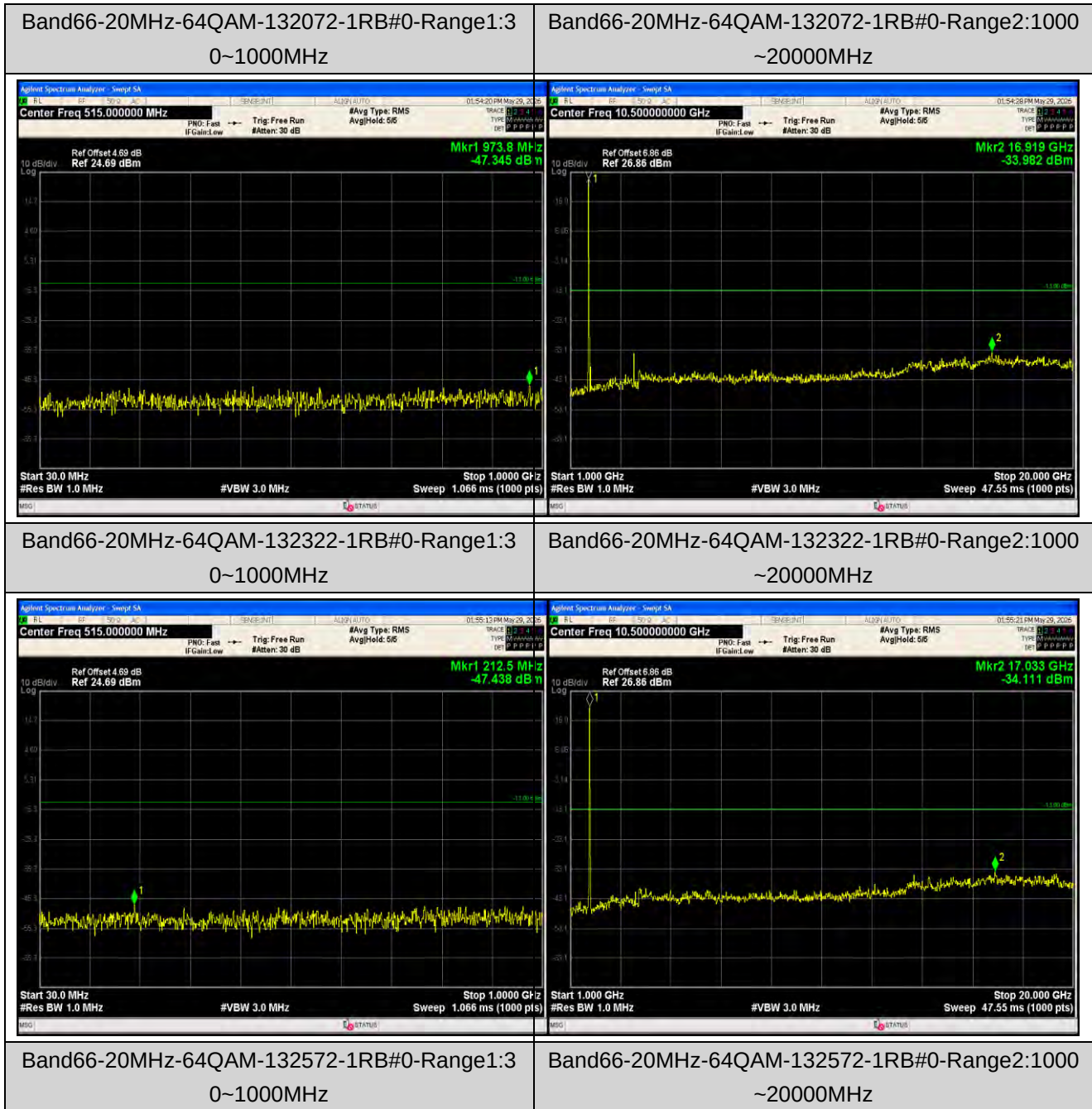


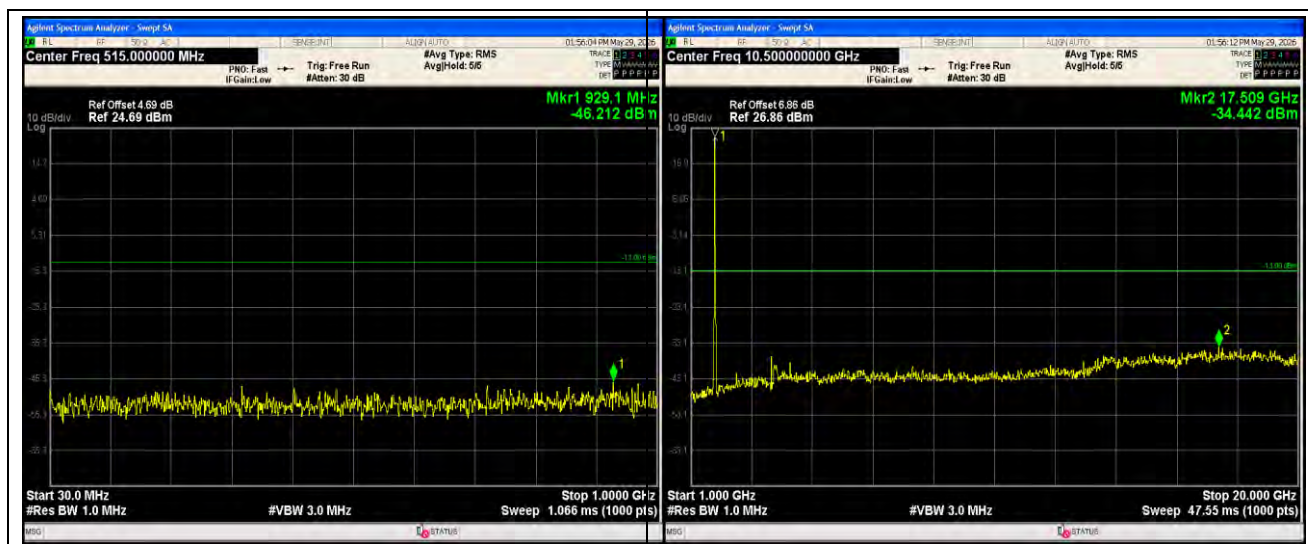












Appendix F: Frequency Stability

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					
3.87	-30	18.37	0.009771	Within authorized band for Band 2	Pass
	-20	41.69	0.022176		
	-10	52.97	0.028176		
	0	57.08	0.030362		
	10	25.18	0.013394		
	20	23.30	0.012394		
	30	26.09	0.013878		
	40	39.05	0.020771		
	50	36.62	0.019479		
16QAM					
3.87	-30	42.41	0.022559	Within authorized band for Band 2	Pass
	-20	27.34	0.014543		
	-10	30.21	0.016069		
	0	31.23	0.016612		
	10	21.09	0.011218		
	20	26.24	0.013957		
	30	24.29	0.012920		
	40	12.79	0.006803		
	50	-7.28	-0.003872		
64QAM					
3.87	-30	-21.07	-0.011207	Within authorized band for Band 2	Pass
	-20	-12.96	-0.006894		
	-10	-15.38	-0.008181		
	0	-24.09	-0.012814		
	10	-24.29	-0.012920		
	20	-32.64	-0.017362		
	30	-33.00	-0.017553		
	40	-31.00	-0.016489		
	50	-35.82	-0.019053		

Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-16.77	-0.008920	Within authorized band for Band 2	Pass
	3.87	-43.17	-0.022963		
	4.20	14.31	0.007612		
16QAM					
25	3.50	54.27	0.028867	Within authorized band for Band 2	Pass
	3.87	46.62	0.024798		
	4.20	45.22	0.024053		
64QAM					
25	3.50	10.86	0.005777	Within authorized band for Band 2	Pass
	3.87	9.37	0.004984		
	4.20	-10.84	-0.005766		
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					
3.87	-30	-14.39	-0.017203	±2.5	Pass
	-20	-17.14	-0.020490		
	-10	-17.44	-0.020849		
	0	-20.01	-0.023921		
	10	-18.90	-0.022594		
	20	-22.97	-0.027460		
	30	-22.65	-0.027077		
	40	-22.47	-0.026862		
	50	-23.03	-0.027531		
16QAM					
3.87	-30	-11.14	-0.013317	±2.5	Pass
	-20	-6.61	-0.007902		
	-10	-3.40	-0.004065		
	0	8.55	0.010221		
	10	11.54	0.013796		
	20	13.63	0.016294		
	30	19.13	0.022869		
	40	21.53	0.025738		
	50	26.08	0.031178		
64QAM					
3.87	-30	44.88	0.053652	±2.5	Pass
	-20	53.74	0.064244		
	-10	11.42	0.013652		
	0	16.57	0.019809		
	10	21.01	0.025117		
	20	26.31	0.031452		
	30	30.84	0.036868		
	40	32.60	0.038972		
	50	40.27	0.048141		

Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-6.35	-0.007591	±2.5	Pass
	3.87	-6.72	-0.008033		
	4.20	-10.24	-0.012241		
16QAM					
25	3.50	-19.05	-0.022773	±2.5	Pass
	3.87	-23.86	-0.028524		
	4.20	-16.38	-0.019582		
64QAM					
25	3.50	28.40	0.033951	±2.5	Pass
	3.87	20.74	0.024794		
	4.20	38.87	0.046467		
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 (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.87	-30	-44.37	-0.017503	Within authorized band for Band 7	Pass
	-20	-41.96	-0.016552		
	-10	-50.48	-0.019913		
	0	-61.55	-0.024280		
	10	-55.02	-0.021704		
	20	-64.87	-0.025590		
	30	-16.44	-0.006485		
	40	-47.22	-0.018627		
	50	-32.11	-0.012667		
16QAM					
3.87	-30	20.33	0.008020	Within authorized band for Band 7	Pass
	-20	18.21	0.007183		
	-10	28.67	0.011310		
	0	21.66	0.008544		
	10	38.98	0.015377		
	20	33.26	0.013120		
	30	28.91	0.011404		
	40	31.36	0.012371		
	50	-8.35	-0.003294		
64QAM					
3.87	-30	36.79	0.014513	Within authorized band for Band 7	Pass
	-20	-15.01	-0.005921		
	-10	28.84	0.011377		
	0	55.06	0.021720		
	10	33.75	0.013314		
	20	-26.46	-0.010438		
	30	-15.99	-0.006308		
	40	19.88	0.007842		
	50	50.50	0.019921		

Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-39.01	-0.015389	Within authorized band for Band 7	Pass
	3.87	13.33	0.005258		
	4.20	-16.49	-0.006505		
16QAM					
25	3.50	15.86	0.006256	Within authorized band for Band 7	Pass
	3.87	-7.35	-0.002899		
	4.20	10.43	0.004114		
64QAM					
25	3.50	9.04	0.003566	Within authorized band for Band 7	Pass
	3.87	26.06	0.010280		
	4.20	37.55	0.014813		
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					
3.87	-30	-16.31	-0.023053	Within authorized band for Band 12	Pass
	-20	-19.74	-0.027901		
	-10	-14.68	-0.020749		
	0	-16.59	-0.023449		
	10	-15.25	-0.021555		
	20	-15.98	-0.022587		
	30	-17.25	-0.024382		
	40	-15.13	-0.021385		
	50	-16.95	-0.023958		
16QAM					
3.87	-30	-11.09	-0.015675	Within authorized band for Band 12	Pass
	-20	-12.45	-0.017597		
	-10	-11.70	-0.016537		
	0	-9.61	-0.013583		
	10	-8.65	-0.012226		
	20	-9.67	-0.013668		
	30	-7.27	-0.010276		
	40	-9.58	-0.013541		
	50	-6.07	-0.008580		
64QAM					
3.87	-30	8.90	0.012580	Within authorized band for Band 12	Pass
	-20	8.23	0.011633		
	-10	9.63	0.013611		
	0	4.01	0.005668		
	10	7.24	0.010233		
	20	8.05	0.011378		
	30	10.11	0.014290		
	40	11.84	0.016735		
	50	12.45	0.017597		

Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-15.16	-0.021428	Within authorized band for Band 12	Pass
	3.87	-10.44	-0.014756		
	4.20	-16.92	-0.023915		
16QAM					
25	3.50	-13.35	-0.018869	Within authorized band for Band 12	Pass
	3.87	-16.79	-0.023731		
	4.20	-14.98	-0.021173		
64QAM					
25	3.50	-2.76	-0.003901	Within authorized band for Band 12	Pass
	3.87	-5.15	-0.007279		
	4.20	5.98	0.008452		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 38 part:

Reference Frequency: LTE Band 38(10MHz) Middle channel=38000 Frequency=2595.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.87	-30	-39.47	-0.015210	Within authorized band for Band 38	Pass
	-20	-55.93	-0.021553		
	-10	-15.89	-0.006123		
	0	-61.18	-0.023576		
	10	-41.21	-0.015881		
	20	-53.57	-0.020644		
	30	-19.34	-0.007453		
	40	-37.85	-0.014586		
	50	-44.27	-0.017060		
16QAM					
3.87	-30	-19.28	-0.007430	Within authorized band for Band 38	Pass
	-20	-8.14	-0.003137		
	-10	-21.06	-0.008116		
	0	-35.33	-0.013615		
	10	-25.69	-0.009900		
	20	-10.03	-0.003865		
	30	13.55	0.005222		
	40	36.98	0.014250		
	50	48.24	0.018590		
64QAM					
3.87	-30	26.99	0.010401	Within authorized band for Band 38	Pass
	-20	-18.22	-0.007021		
	-10	15.34	0.005911		
	0	31.81	0.012258		
	10	37.54	0.014466		
	20	61.00	0.023507		
	30	51.78	0.019954		
	40	58.72	0.022628		
	50	30.40	0.011715		

Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	19.38	0.007468	Within authorized band for Band 38	Pass
	3.87	-23.00	-0.008863		
	4.20	-15.41	-0.005938		
16QAM					
25	3.50	-43.10	-0.016609	Within authorized band for Band 38	Pass
	3.87	-50.02	-0.019276		
	4.20	-22.96	-0.008848		
64QAM					
25	3.50	28.50	0.010983	Within authorized band for Band 38	Pass
	3.87	9.36	0.003607		
	4.20	44.02	0.016963		
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					
3.87	-30	11.74	0.006728	Within authorized band for Band 66	Pass
	-20	10.43	0.005977		
	-10	-7.81	-0.004476		
	0	9.58	0.005490		
	10	11.53	0.006607		
	20	9.50	0.005444		
	30	11.36	0.006510		
	40	29.77	0.017060		
	50	30.36	0.017398		
16QAM					
3.87	-30	-8.51	-0.004877	Within authorized band for Band 66	Pass
	-20	-20.97	-0.012017		
	-10	-8.20	-0.004699		
	0	12.50	0.007163		
	10	20.10	0.011519		
	20	23.00	0.013181		
	30	28.08	0.016092		
	40	27.47	0.015742		
	50	36.08	0.020676		
64QAM					
3.87	-30	34.68	0.019874	Within authorized band for Band 66	Pass
	-20	50.13	0.028728		
	-10	21.66	0.012413		
	0	33.17	0.019009		
	10	41.10	0.023553		
	20	46.59	0.026699		
	30	52.50	0.030086		
	40	54.49	0.031226		
	50	12.10	0.006934		

Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-9.56	-0.005479	Within authorized band for Band 66	Pass
	3.87	15.22	0.008722		
	4.20	13.36	0.007656		
16QAM					
25	3.50	42.64	0.024436	Within authorized band for Band 66	Pass
	3.87	34.03	0.019501		
	4.20	51.68	0.029616		
64QAM					
25	3.50	14.88	0.008527	Within authorized band for Band 66	Pass
	3.87	45.46	0.026052		
	4.20	26.78	0.015347		
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
Band2	20MHz	64QAM	18900	100RB#0	PASS	PASS
Band5	10MHz	QPSK	20525	50RB#0	PASS	PASS
Band5	10MHz	16QAM	20525	50RB#0	PASS	PASS
Band5	10MHz	64QAM	20525	50RB#0	PASS	PASS
Band7	20MHz	QPSK	21100	100RB#0	PASS	PASS
Band7	20MHz	16QAM	21100	100RB#0	PASS	PASS
Band7	20MHz	64QAM	21100	100RB#0	PASS	PASS
Band12	10MHz	QPSK	23095	50RB#0	PASS	PASS
Band12	10MHz	16QAM	23095	50RB#0	PASS	PASS
Band12	10MHz	64QAM	23095	50RB#0	PASS	PASS
Band38	20MHz	QPSK	38000	100RB#0	PASS	PASS
Band38	20MHz	16QAM	38000	100RB#0	PASS	PASS
Band38	20MHz	64QAM	38000	100RB#0	PASS	PASS
Band66	20MHz	QPSK	132322	100RB#0	PASS	PASS
Band66	20MHz	16QAM	132322	100RB#0	PASS	PASS
Band66	20MHz	64QAM	132322	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

