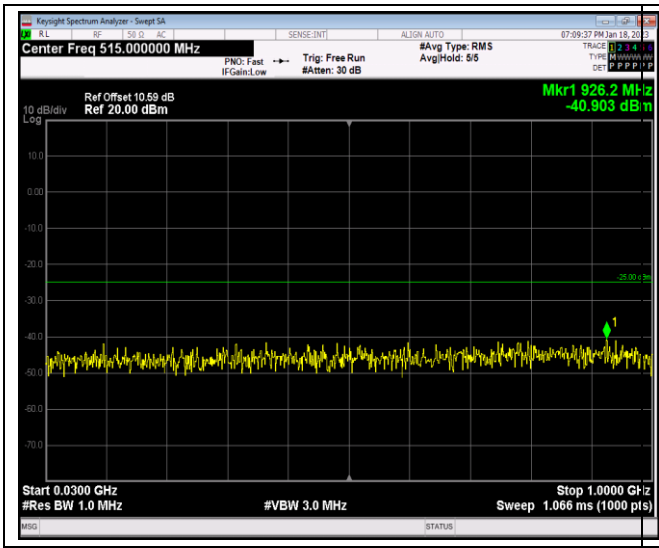
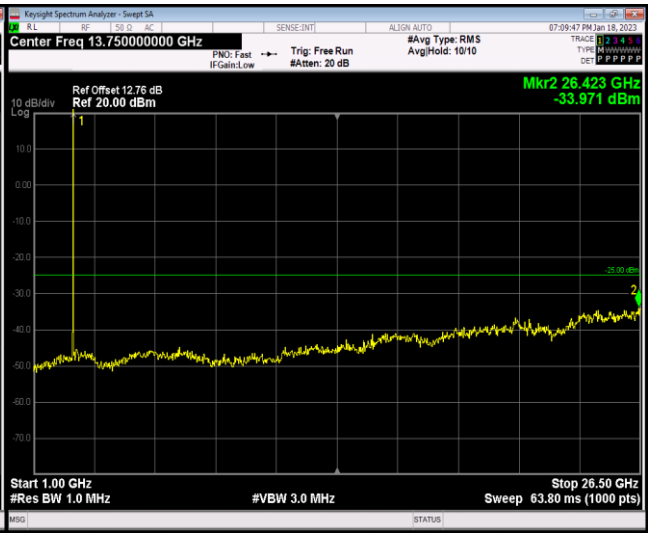
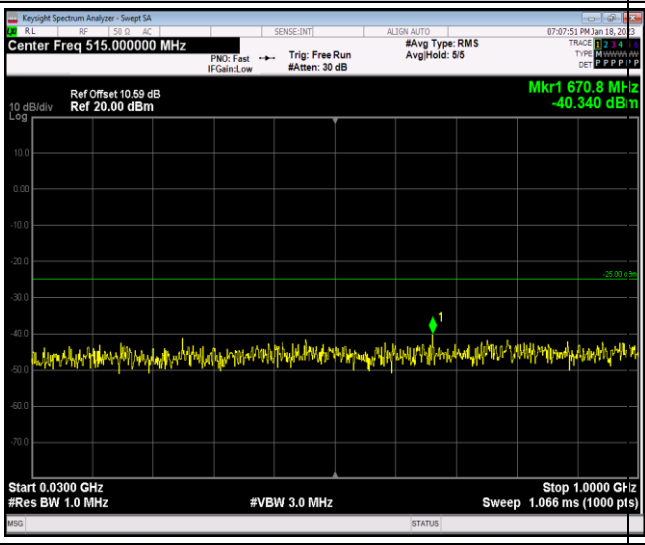


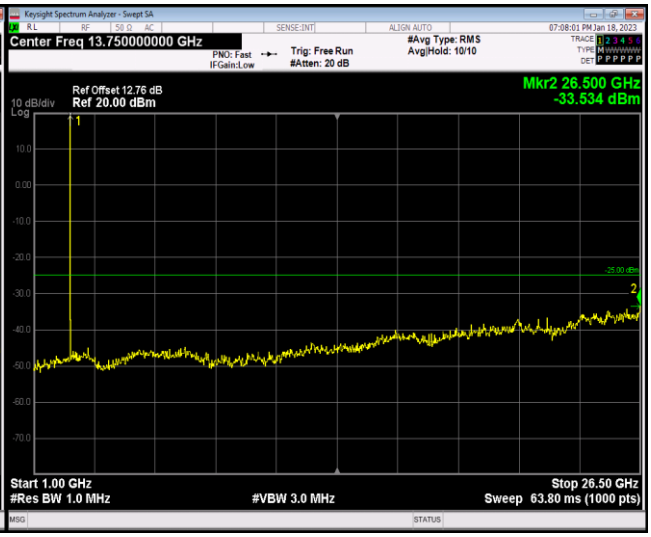
Band41-5MHz-64QAM-40065-1RB#0-Range1:30~1000MHz



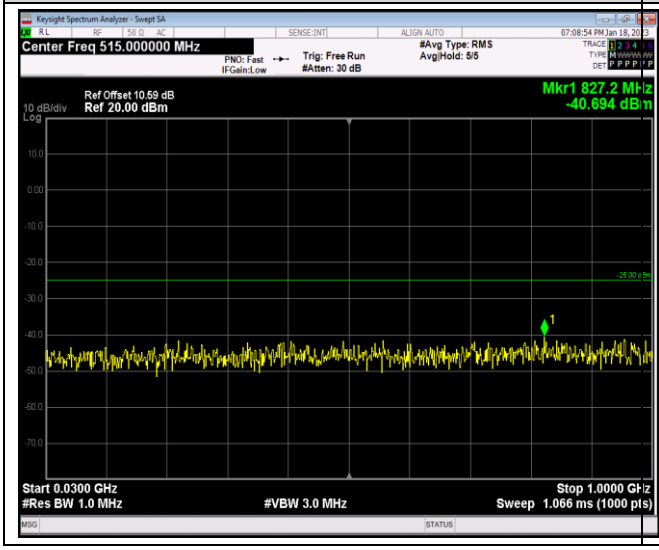
Band41-5MHz-64QAM-40065-1RB#0-Range2:1000~26500MHz

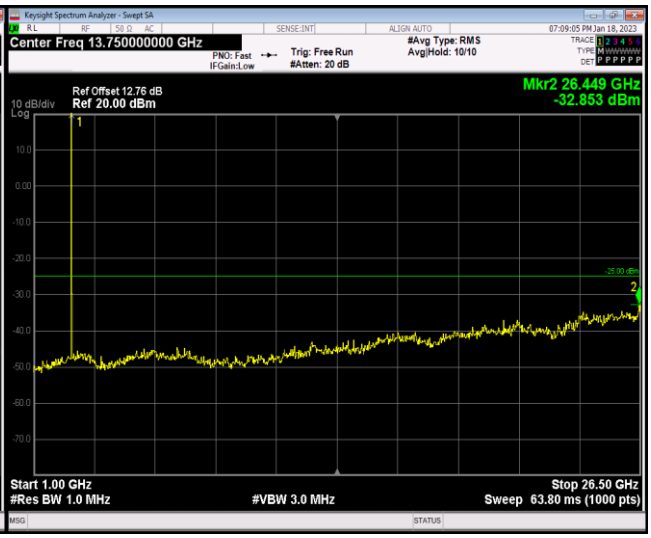


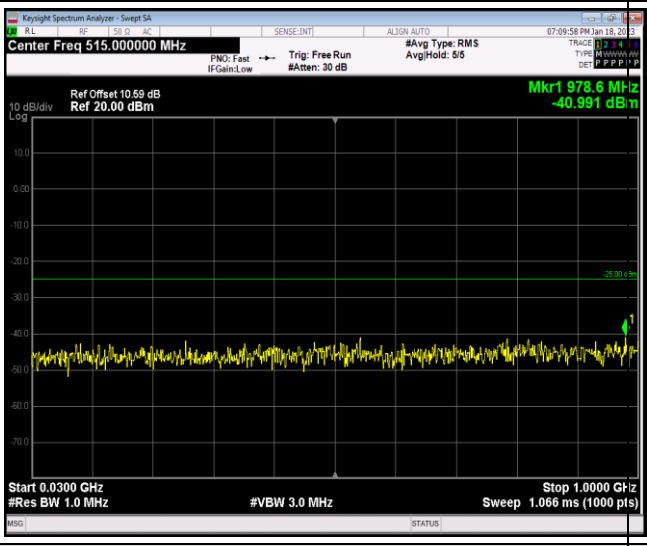
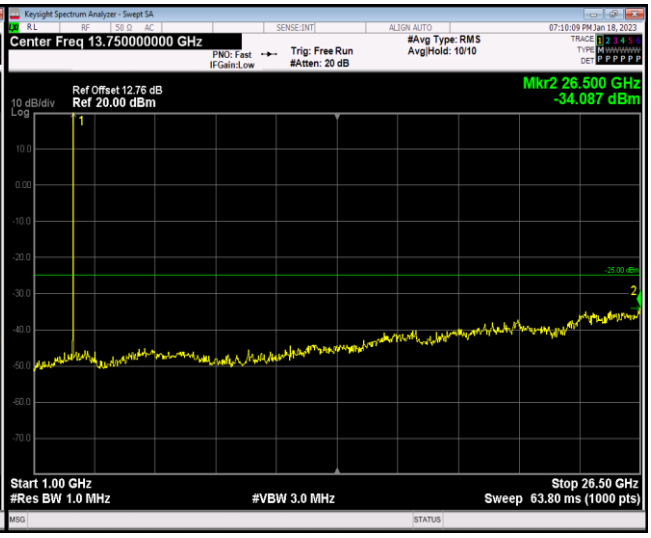
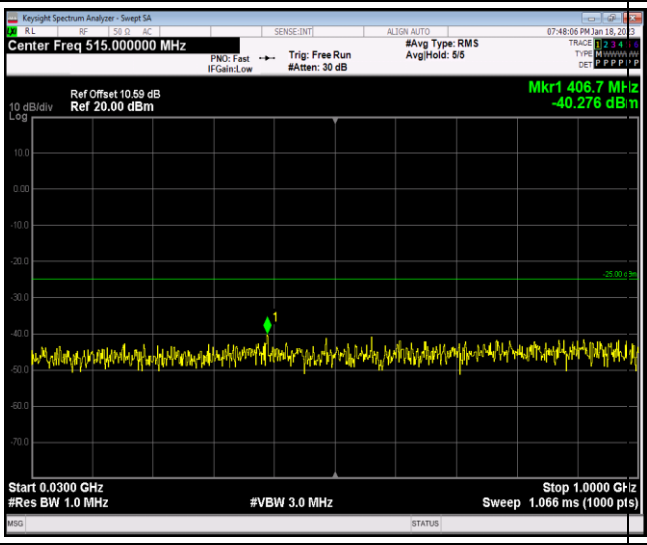
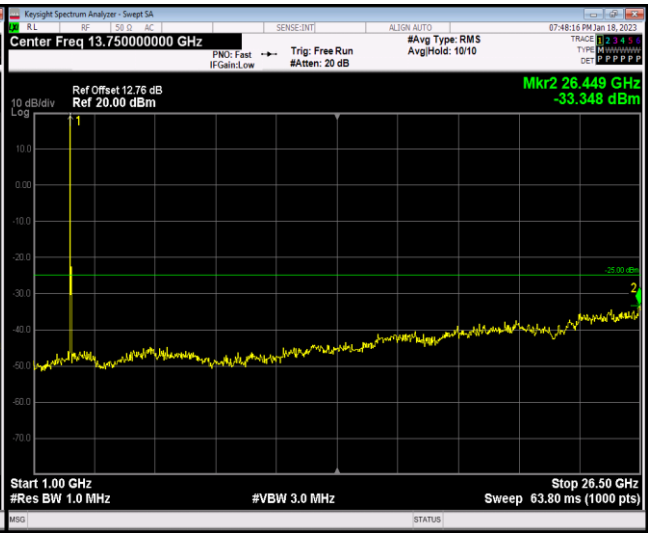
Band41-5MHz-64QAM-40640-1RB#0-Range1:30~1000MHz

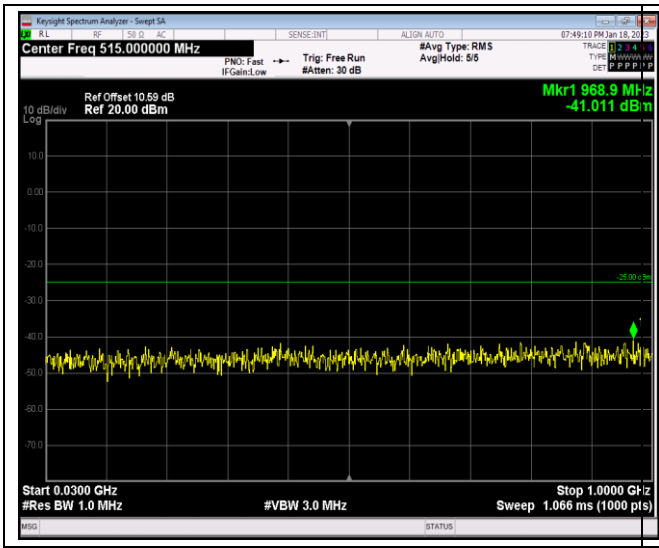


Band41-5MHz-64QAM-40640-1RB#0-Range2:1000~26500MHz

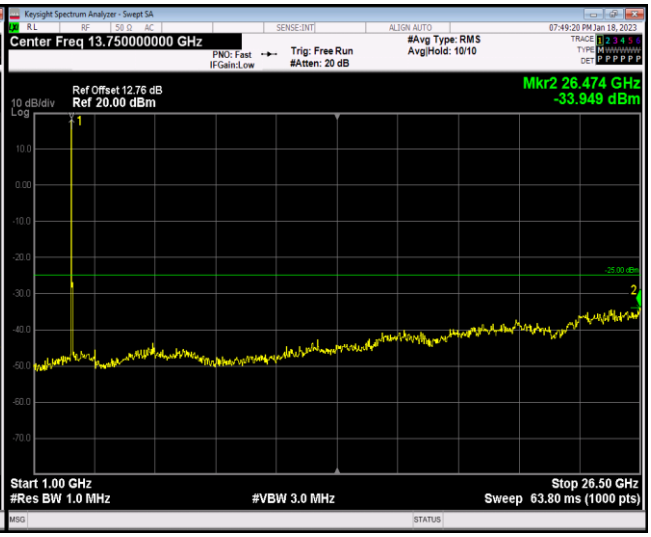




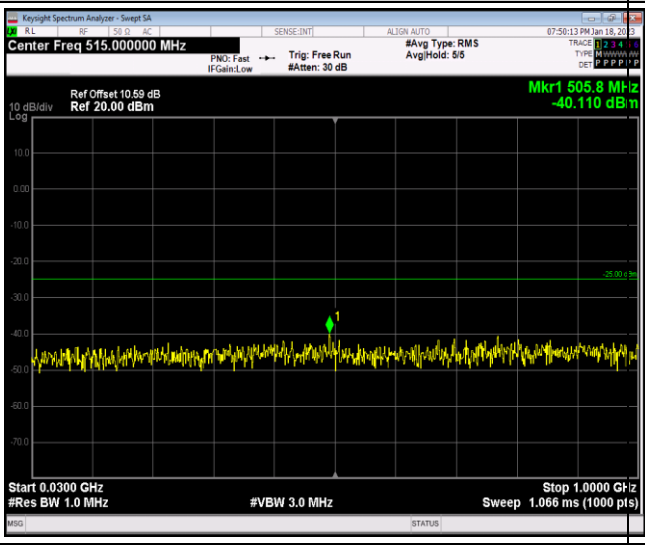
Band41-5MHz-64QAM-41215-1RB#0-Range1:30~1000MHz	Band41-5MHz-64QAM-41215-1RB#0-Range2:1000~26500MHz
	
Band41-20MHz-QPSK-40140-1RB#0-Range1:30~1000MHz	Band41-20MHz-QPSK-40140-1RB#0-Range2:1000~26500MHz
	
Band41-20MHz-QPSK-40640-1RB#0-Range1:30~1000MHz	Band41-20MHz-QPSK-40640-1RB#0-Range2:1000~26500MHz



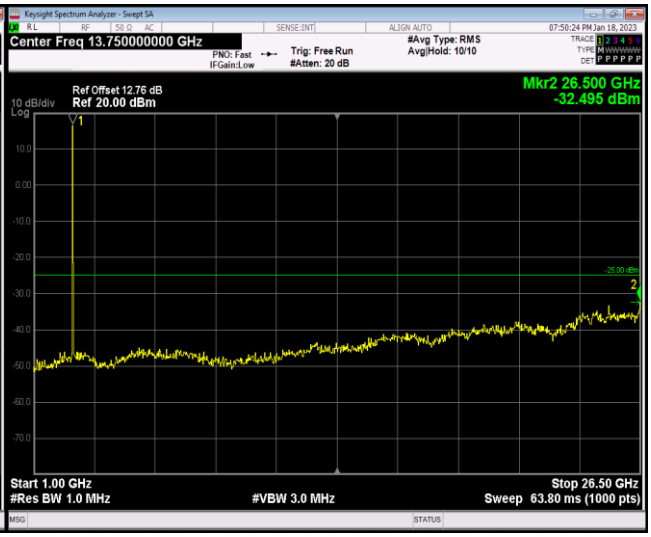
Band41-20MHz-QPSK-41140-1RB#0-Range1:30~1000MHz



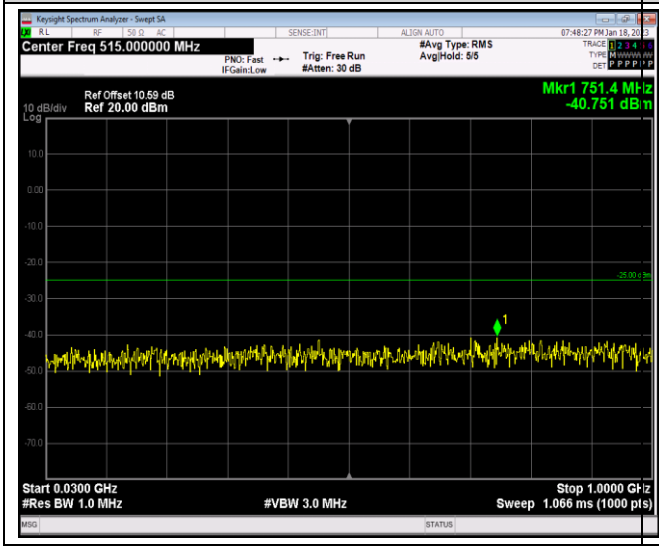
Band41-20MHz-QPSK-41140-1RB#0-Range2:1000~26500MHz

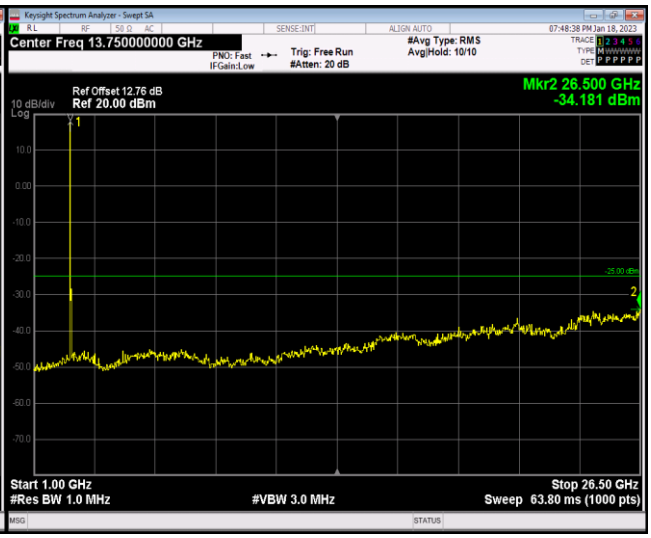


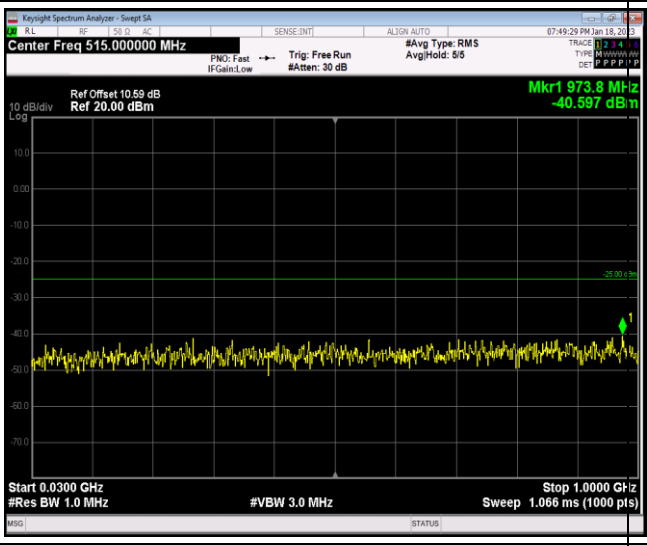
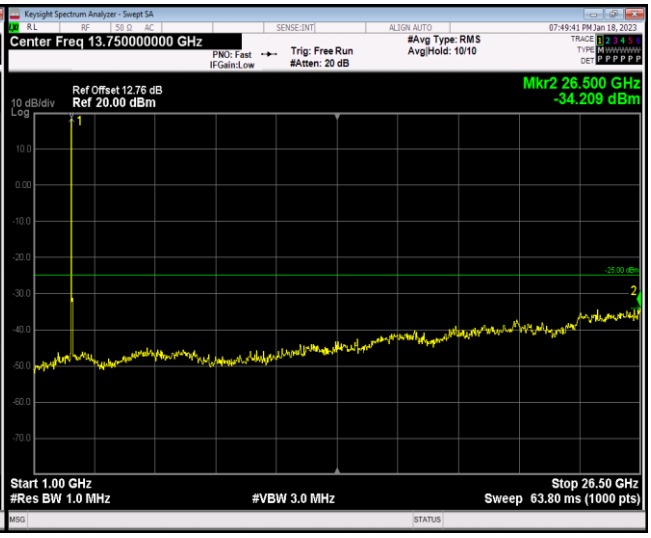
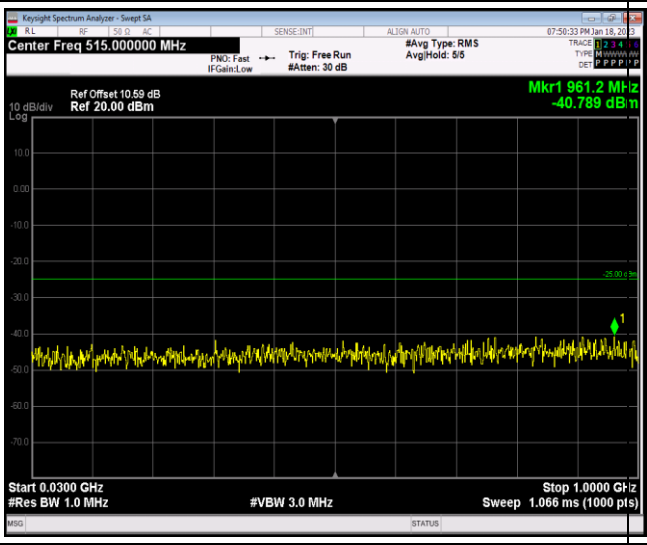
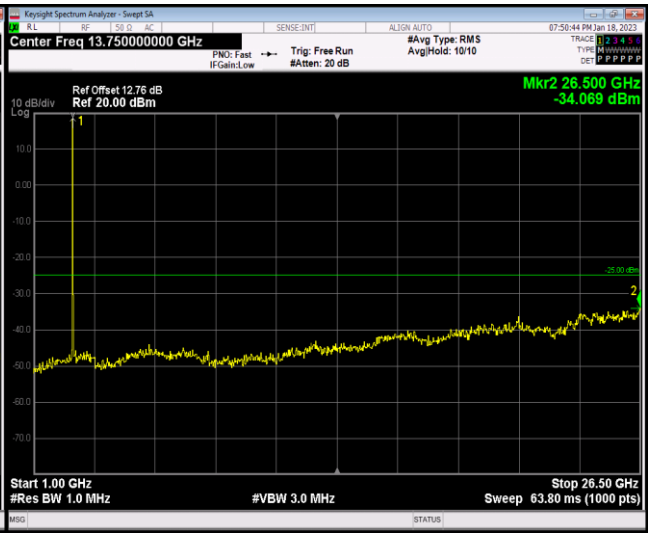
Band41-20MHz-16QAM-40140-1RB#0-Range1:30~1000MHz

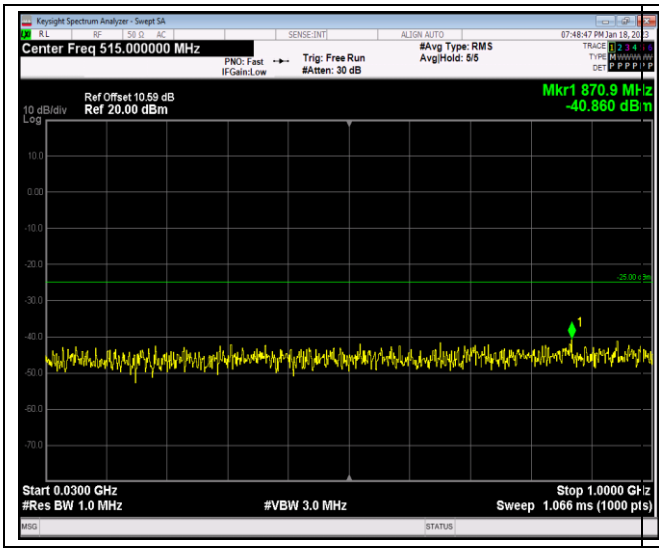


Band41-20MHz-16QAM-40140-1RB#0-Range2:1000~26500MHz

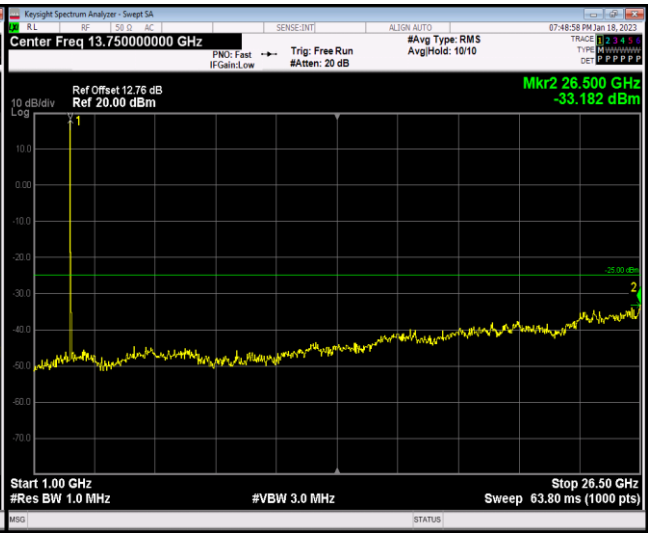




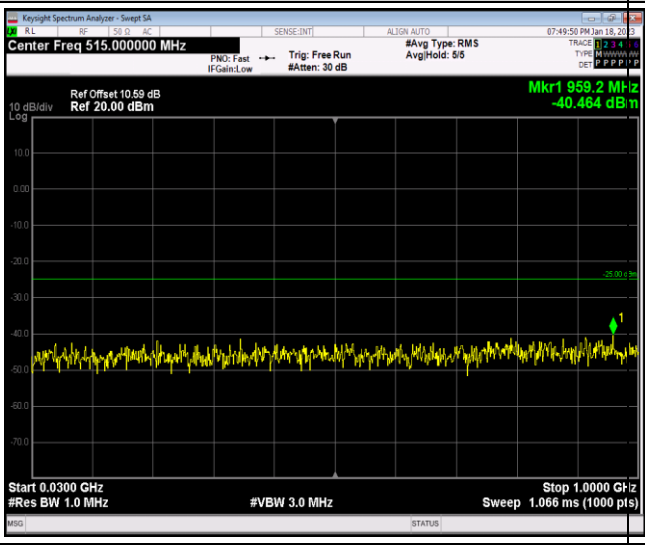
Band41-20MHz-16QAM-40640-1RB#0-Range1:30~1000MHz	Band41-20MHz-16QAM-40640-1RB#0-Range2:1000~26500MHz
	
Band41-20MHz-16QAM-41140-1RB#0-Range1:30~1000MHz	Band41-20MHz-16QAM-41140-1RB#0-Range2:1000~26500MHz
	
Band41-20MHz-64QAM-40140-1RB#0-Range1:30~1000MHz	Band41-20MHz-64QAM-40140-1RB#0-Range2:1000~26500MHz



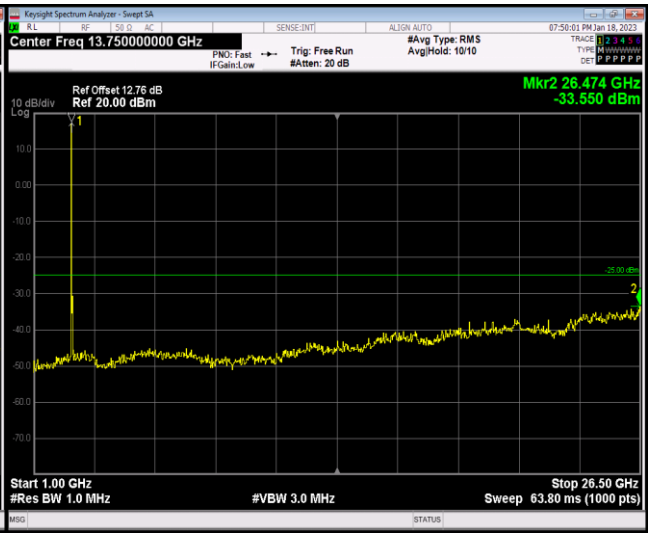
Band41-20MHz-64QAM-40640-1RB#0-Range1:30 ~1000MHz



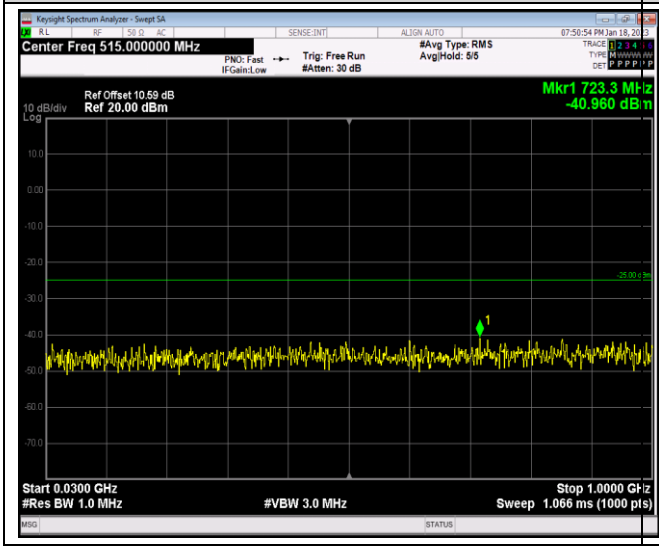
Band41-20MHz-64QAM-40640-1RB#0-Range2:1000~26500MHz

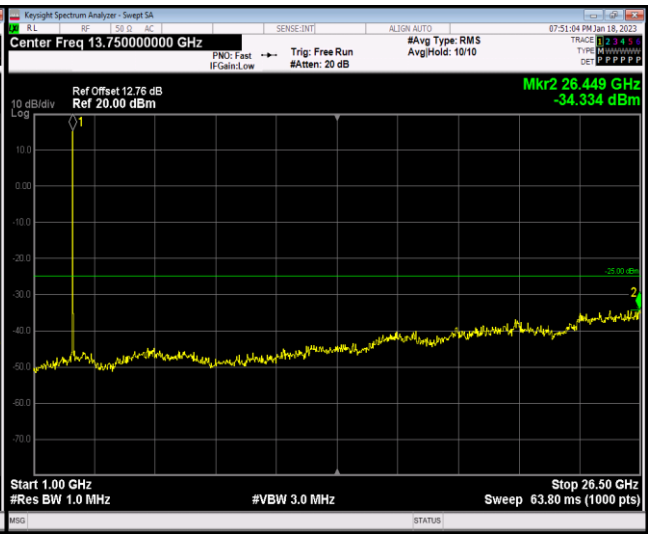


Band41-20MHz-64QAM-41140-1RB#0-Range1:30 ~1000MHz



Band41-20MHz-64QAM-41140-1RB#0-Range2:1000~26500MHz





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 (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-14.13	-0.007516	Within authorized band for Band 2	Pass
	-20	-20.93	-0.011133		
	-10	-19.76	-0.010511		
	0	-16.49	-0.008771		
	10	-9.34	-0.004968		
	20	-19.08	-0.010149		
	30	-18.38	-0.009777		
	40	-16.24	-0.008638		
	50	-19.87	-0.010569		
16QAM					
3.85	-30	2.99	0.001590	Within authorized band for Band 2	Pass
	-20	3.29	0.001750		
	-10	-13.82	-0.007351		
	0	-16.01	-0.008516		
	10	-3.83	-0.002037		
	20	-17.40	-0.009255		
	30	-10.81	-0.005750		
	40	-15.52	-0.008255		
	50	-5.56	-0.002957		
64QAM					
3.85	-30	-11.62	-0.006181	Within authorized band for Band 2	Pass
	-20	-12.17	-0.006473		
	-10	-11.32	-0.006021		
	0	-11.96	-0.006362		
	10	-14.49	-0.007707		
	20	-15.31	-0.008144		
	30	-14.06	-0.007479		
	40	-2.05	-0.001090		
	50	-12.06	-0.006415		

Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	-14.16	-0.007532	Within authorized band for Band 2	Pass
	3.85	-15.62	-0.008309		
	4.40	-4.46	-0.002372		
16QAM					
25	3.45	-14.48	-0.007702	Within authorized band for Band 2	Pass
	3.85	-18.01	-0.009580		
	4.40	-10.84	-0.005766		
64QAM					
25	3.45	-13.60	-0.007234	Within authorized band for Band 2	Pass
	3.85	-6.08	-0.003234		
	4.40	-9.04	-0.004809		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 4 part:

Reference Frequency: LTE Band 4(10MHz) Middle channel=20175 Frequency=1732.5MHz					
Temperature					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-6.77	-0.003908	Within authorized band for Band 4	Pass
	-20	-6.49	-0.003746		
	-10	-15.08	-0.008704		
	0	-6.38	-0.003683		
	10	6.81	0.003931		
	20	-8.68	-0.005010		
	30	-10.73	-0.006193		
	40	-1.69	-0.000975		
	50	-9.14	-0.005276		
16QAM					
3.85	-30	-2.69	-0.001553	Within authorized band for Band 4	Pass
	-20	-4.15	-0.002395		
	-10	-12.70	-0.007330		
	0	3.76	0.002170		
	10	6.95	0.004012		
	20	-11.96	-0.006903		
	30	-11.29	-0.006517		
	40	-12.36	-0.007134		
	50	3.49	0.002014		
64QAM					
3.85	-30	-10.96	-0.006326	Within authorized band for Band 4	Pass
	-20	-10.97	-0.006332		
	-10	1.57	0.000906		
	0	-3.50	-0.002020		
	10	5.76	0.003325		
	20	-15.58	-0.008993		
	30	-9.57	-0.005524		
	40	-8.10	-0.004675		
	50	-8.83	-0.005097		

Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	-12.15	-0.007013	Within authorized band for Band 4	Pass
	3.85	-9.48	-0.005472		
	4.40	-11.03	-0.006367		
16QAM					
25	3.45	-14.78	-0.008531	Within authorized band for Band 4	Pass
	3.85	-12.06	-0.006961		
	4.40	-10.77	-0.006216		
64QAM					
25	3.45	-11.24	-0.006488	Within authorized band for Band 4	Pass
	3.85	-10.74	-0.006199		
	4.40	-12.36	-0.007134		
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					
3.85	-30	-8.21	-0.009815	±2.5	Pass
	-20	-7.72	-0.009229		
	-10	-6.77	-0.008093		
	0	-6.25	-0.007472		
	10	-7.90	-0.009444		
	20	-8.31	-0.009934		
	30	-7.18	-0.008583		
	40	-8.81	-0.010532		
	50	-9.64	-0.011524		
16QAM					
3.85	-30	-8.48	-0.010137	±2.5	Pass
	-20	-9.34	-0.011166		
	-10	-8.35	-0.009982		
	0	-4.49	-0.005368		
	10	-10.76	-0.012863		
	20	-3.09	-0.003694		
	30	-6.27	-0.007496		
	40	-13.55	-0.016198		
	50	-5.19	-0.006204		
64QAM					
3.85	-30	-12.83	-0.015338	±2.5	Pass
	-20	-10.33	-0.012349		
	-10	-9.13	-0.010915		
	0	-5.09	-0.006085		
	10	-10.10	-0.012074		
	20	-10.69	-0.012779		
	30	-4.52	-0.005403		
	40	-10.36	-0.012385		
	50	-6.78	-0.008105		

Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	4.84	0.005786	±2.5	Pass
	3.85	-7.38	-0.008822		
	4.40	-8.48	-0.010137		
16QAM					
25	3.45	-6.84	-0.008177	±2.5	Pass
	3.85	-12.37	-0.014788		
	4.40	-7.38	-0.008822		
64QAM					
25	3.45	-5.51	-0.006587	±2.5	Pass
	3.85	-5.78	-0.006910		
	4.40	-7.75	-0.009265		
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					
3.85	-30	-18.27	-0.007207	Within authorized band for Band 7	Pass
	-20	-12.59	-0.004966		
	-10	-11.67	-0.004604		
	0	-9.38	-0.003700		
	10	-21.53	-0.008493		
	20	-15.46	-0.006099		
	30	-22.00	-0.008679		
	40	-17.92	-0.007069		
	50	-13.25	-0.005227		
16QAM					
3.85	-30	18.91	0.007460	Within authorized band for Band 7	Pass
	-20	18.53	0.007310		
	-10	17.72	0.006990		
	0	-13.56	-0.005349		
	10	-10.84	-0.004276		
	20	-5.82	-0.002296		
	30	-17.70	-0.006982		
	40	-15.72	-0.006201		
	50	5.16	0.002036		
64QAM					
3.85	-30	-12.93	-0.005101	Within authorized band for Band 7	Pass
	-20	10.87	0.004288		
	-10	13.78	0.005436		
	0	-3.98	-0.001570		
	10	-18.21	-0.007183		
	20	-11.74	-0.004631		
	30	-17.12	-0.006753		
	40	-14.56	-0.005744		
	50	-9.46	-0.003732		

Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	-8.84	-0.003487	Within authorized band for Band 7	Pass
	3.85	-20.28	-0.008000		
	4.40	-16.87	-0.006655		
16QAM					
25	3.45	-15.72	-0.006201	Within authorized band for Band 7	Pass
	3.85	-13.39	-0.005282		
	4.40	15.69	0.006189		
64QAM					
25	3.45	10.26	0.004047	Within authorized band for Band 7	Pass
	3.85	-14.81	-0.005842		
	4.40	-13.18	-0.005199		
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=40640 Frequency=2595.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-14.98	-0.005773	Within authorized band for Band 41	Pass
	-20	-13.60	-0.005241		
	-10	-10.00	-0.003854		
	0	10.47	0.004035		
	10	-12.66	-0.004879		
	20	2.43	0.000936		
	30	-8.10	-0.003121		
	40	-11.79	-0.004543		
	50	-12.60	-0.004855		
16QAM					
3.85	-30	12.20	0.004701	Within authorized band for Band 41	Pass
	-20	-15.75	-0.006069		
	-10	-19.96	-0.007692		
	0	-15.03	-0.005792		
	10	-15.39	-0.005931		
	20	-12.09	-0.004659		
	30	-3.13	-0.001206		
	40	-4.79	-0.001846		
	50	8.08	0.003114		
64QAM					
3.85	-30	-12.46	-0.004802	Within authorized band for Band 41	Pass
	-20	3.91	0.001507		
	-10	-14.15	-0.005453		
	0	-13.07	-0.005037		
	10	-14.56	-0.005611		
	20	-28.90	-0.011137		
	30	21.01	0.008096		
	40	-12.12	-0.004671		
	50	-18.38	-0.007083		

Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	-10.71	-0.004127	Within authorized band for Band 41	Pass
	3.85	-11.93	-0.004597		
	4.40	10.50	0.004046		
16QAM					
25	3.45	-3.03	-0.001168	Within authorized band for Band41	Pass
	3.85	5.14	0.001981		
	4.40	-11.14	-0.004293		
64QAM					
25	3.45	-17.95	-0.006917	Within authorized band for Band41	Pass
	3.85	5.12	0.001973		
	4.40	-9.81	-0.003780		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

Appendix G: Modulation Characteristics

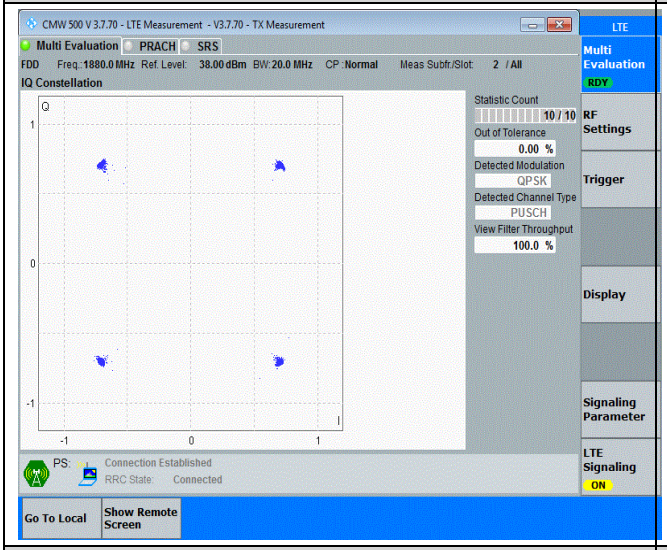
Test Result

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
Band4	20MHz	QPSK	20175	100RB#0	PASS	PASS
Band4	20MHz	16QAM	20175	100RB#0	PASS	PASS
Band4	20MHz	64QAM	20175	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
Band41	20MHz	QPSK	40640	100RB#0	PASS	PASS
Band41	20MHz	16QAM	40640	100RB#0	PASS	PASS
Band41	20MHz	64QAM	40640	100RB#0	PASS	PASS

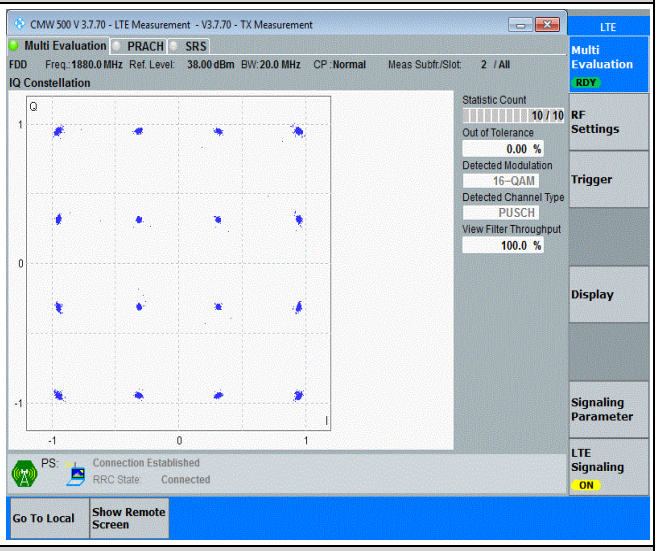
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.

Test Graphs

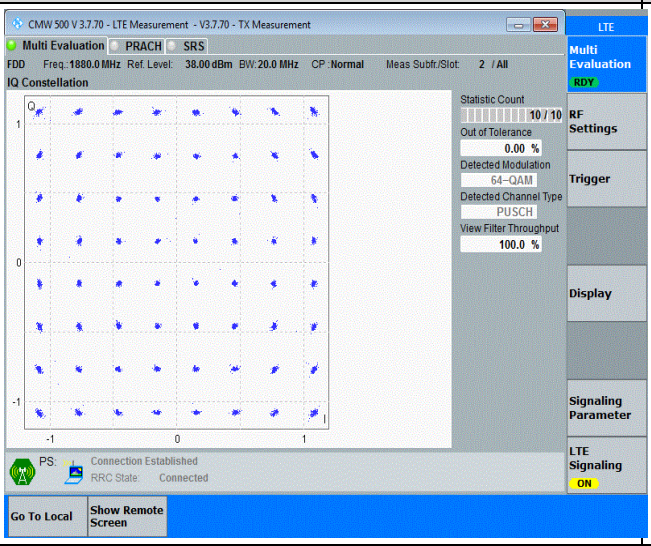
Band2-20MHz-QPSK-18900-100RB#0



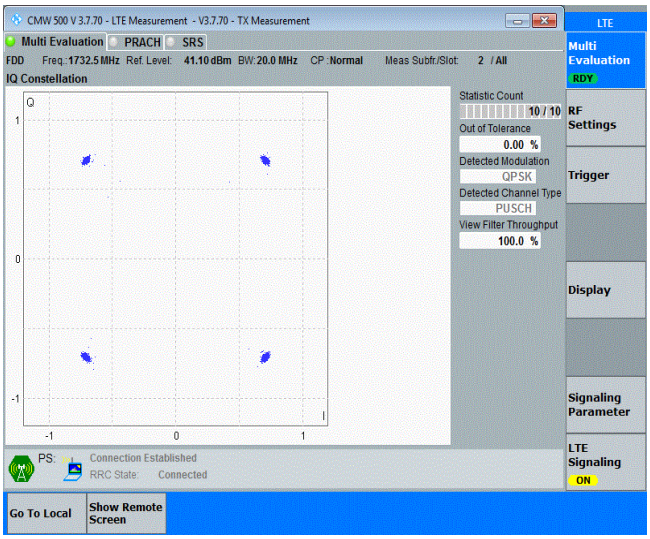
Band2-20MHz-16QAM-18900-100RB#0



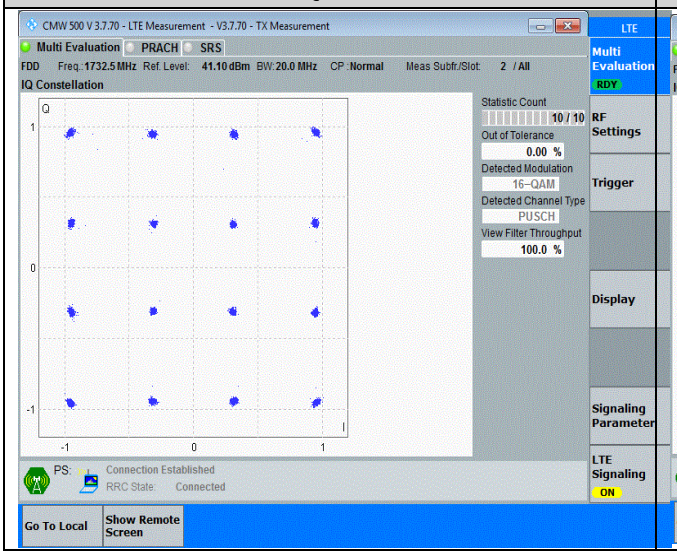
Band2-20MHz-64QAM-18900-100RB#0



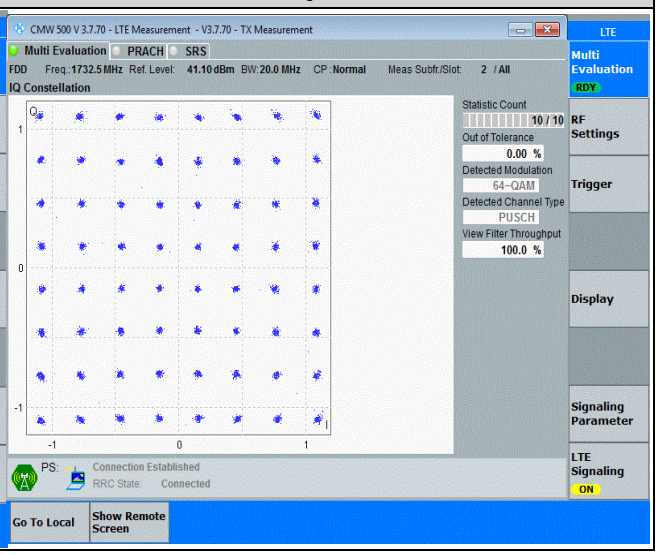
Band4-20MHz-QPSK-20175-100RB#0



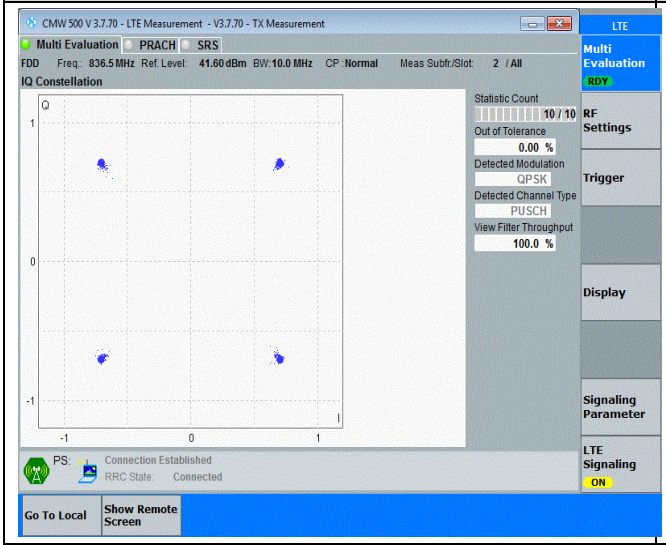
Band4-20MHz-16QAM-20175-100RB#0



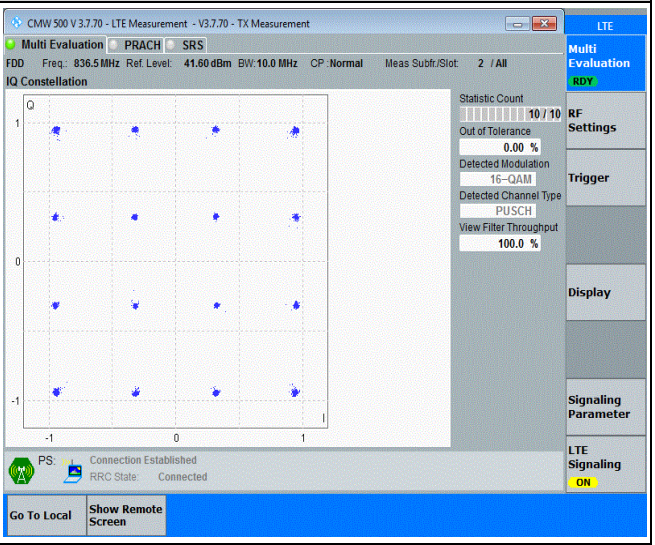
Band4-20MHz-64QAM-20175-100RB#0



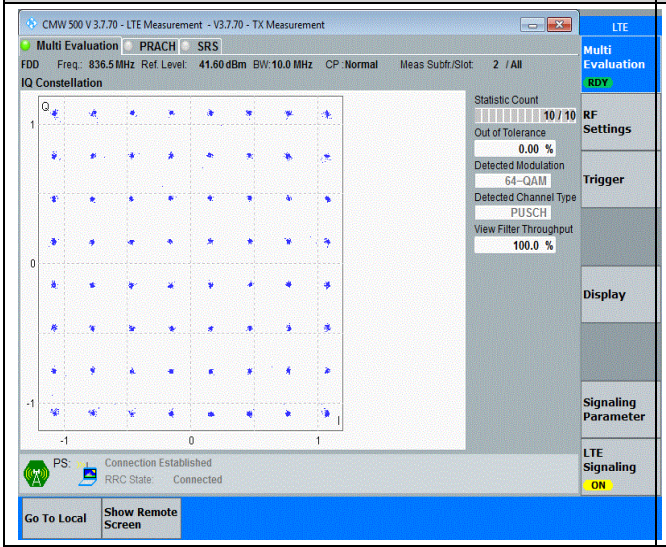
Band5-10MHz-QPSK-20525-50RB#0



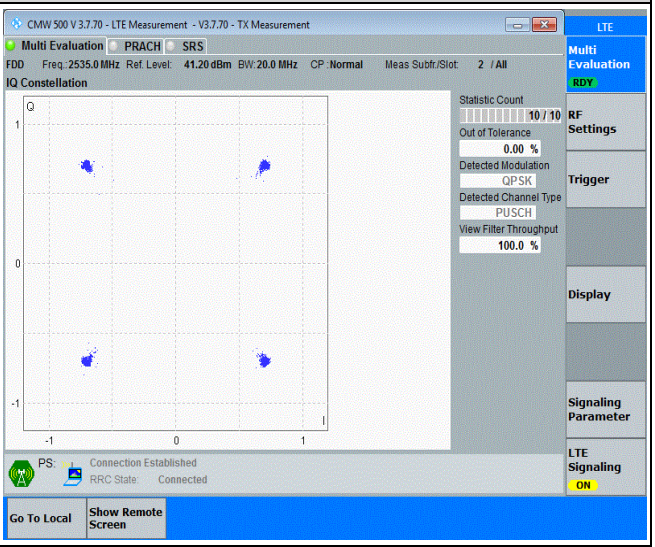
Band5-10MHz-16QAM-20525-50RB#0



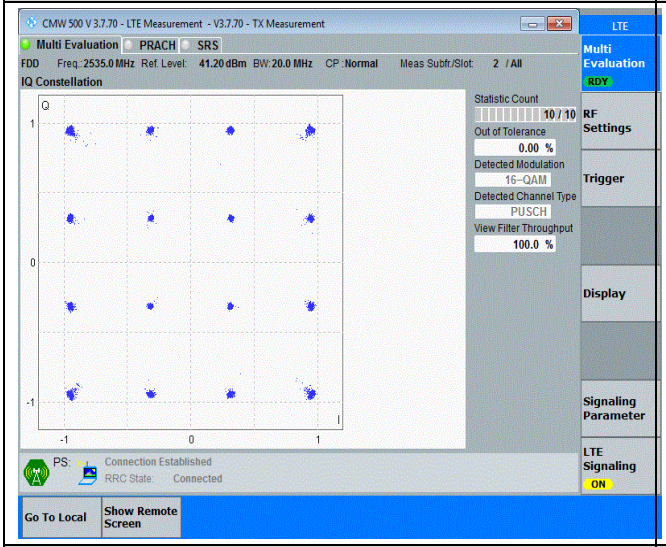
Band5-10MHz-64QAM-20525-50RB#0



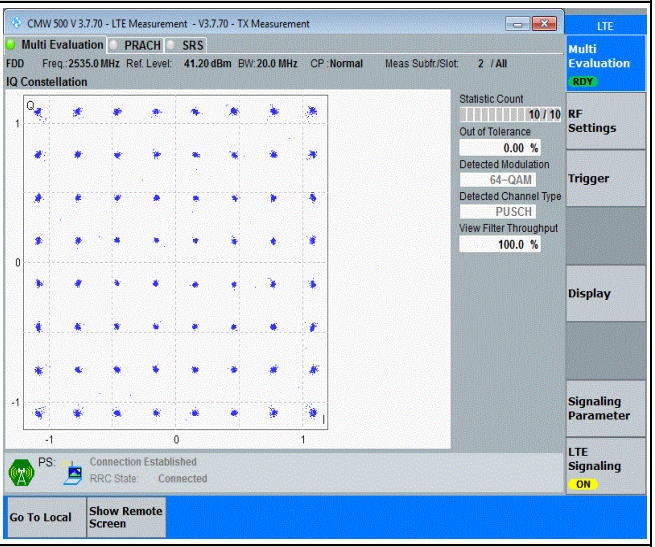
Band7-20MHz-QPSK-21100-100RB#0



Band7-20MHz-16QAM-21100-100RB#0

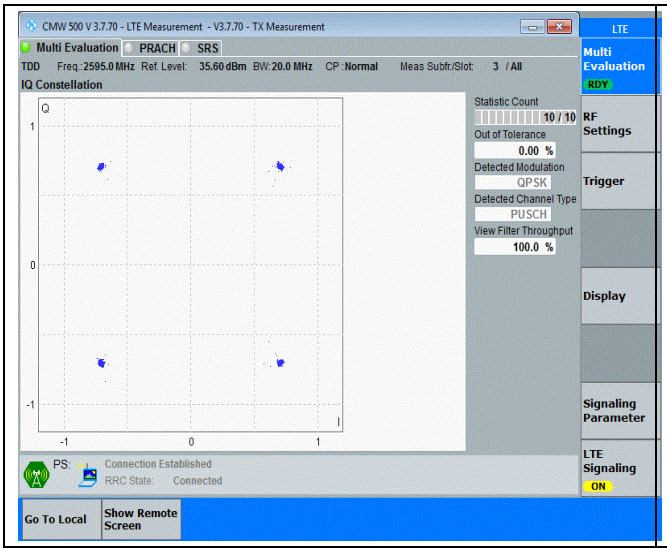


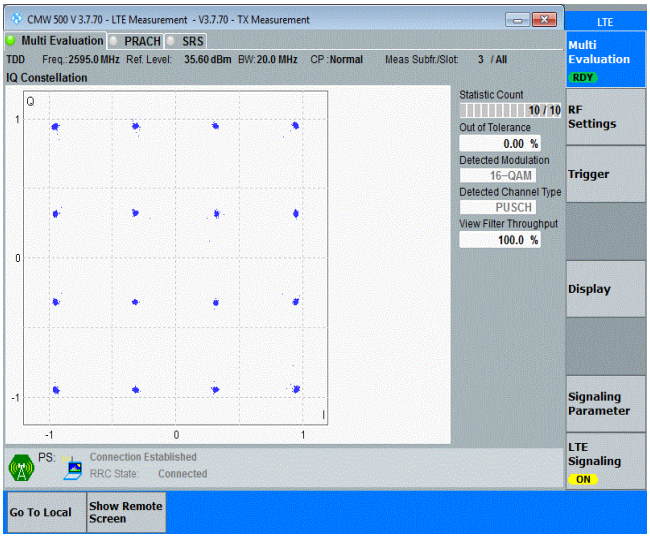
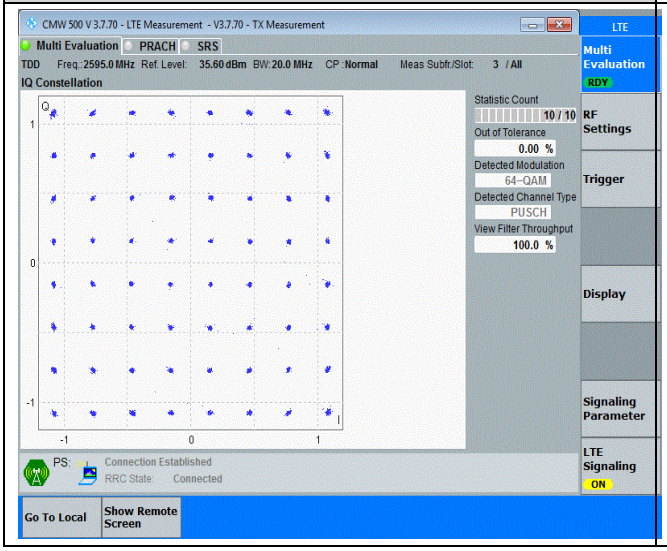
Band7-20MHz-64QAM-21100-100RB#0



Band41-20MHz-QPSK-40640-100RB#0

Band41-20MHz-16QAM-40640-100RB#0





Band41-20MHz-64QAM-40640-100RB#0