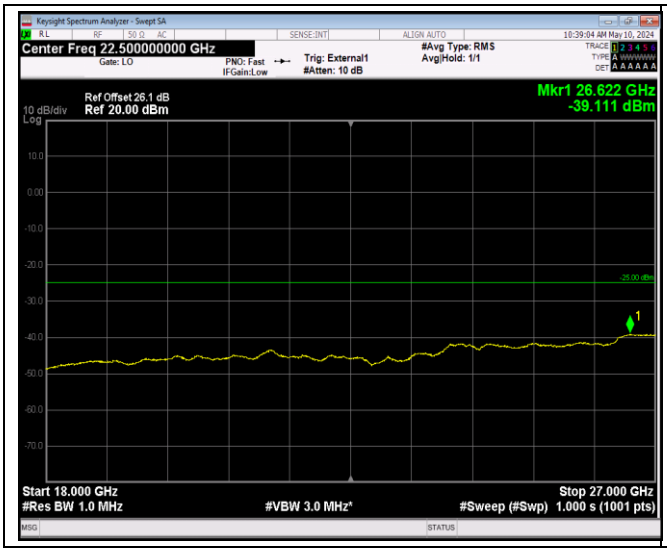
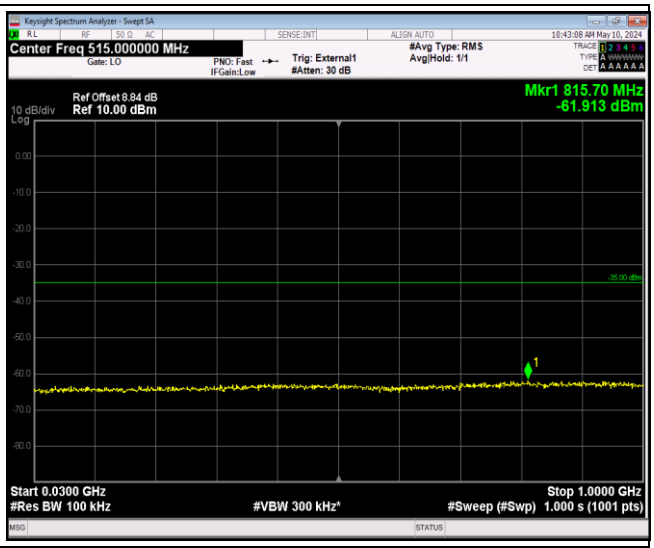
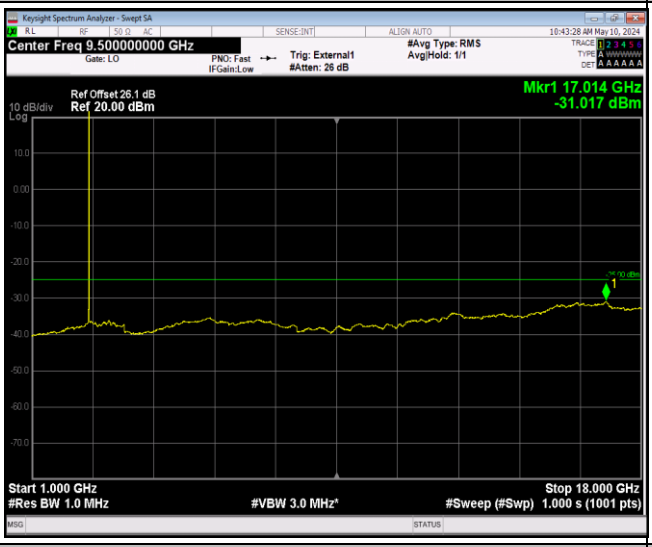


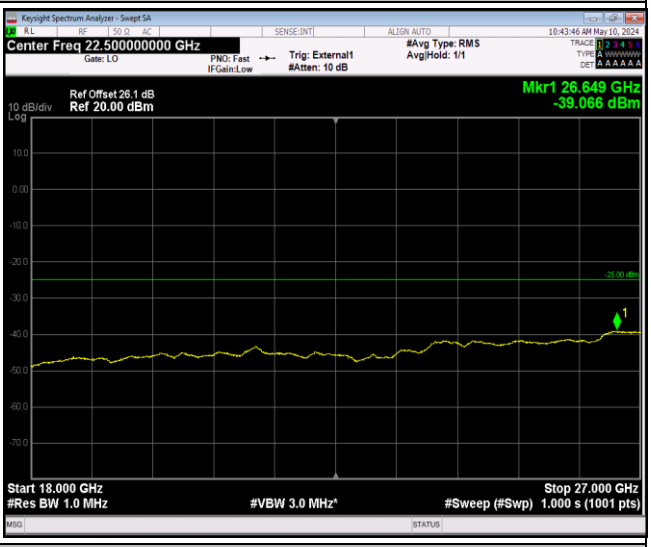
Band41_5MHz_64QAM_40065_1RB#0_18000~27000_18000~27000



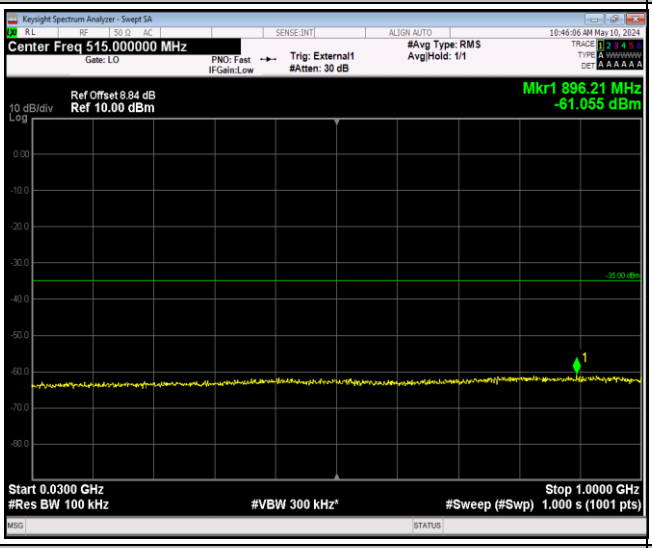
Band41_5MHz_64QAM_40640_1RB#0_30~1000_30~1000



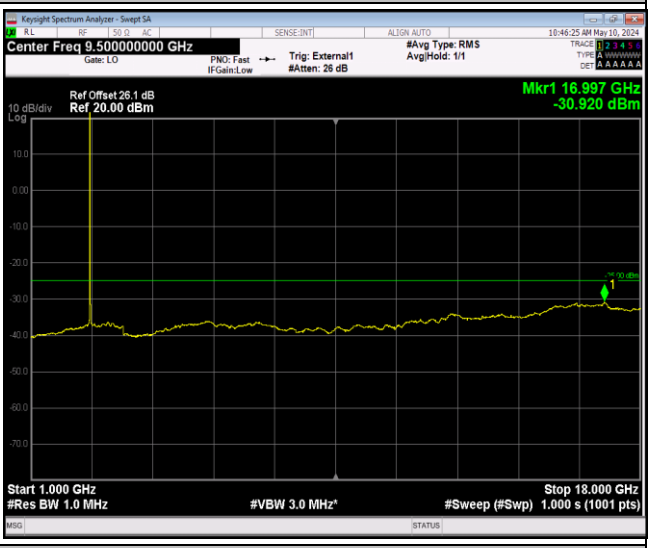
Band41_5MHz_64QAM_40640_1RB#0_1000~18000_1000~18000



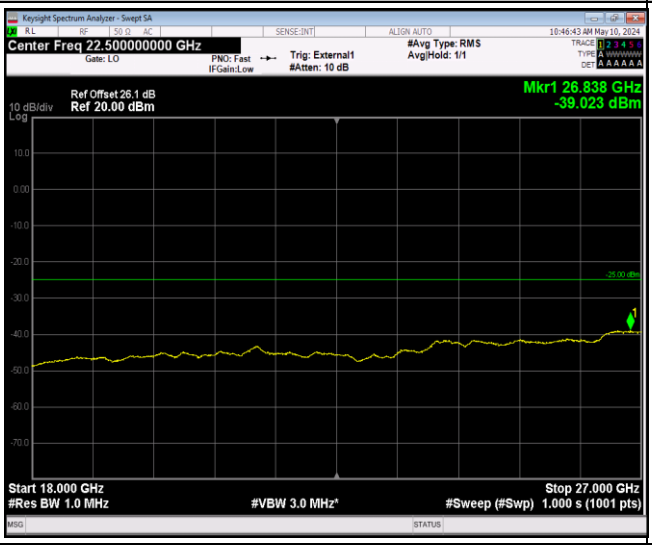
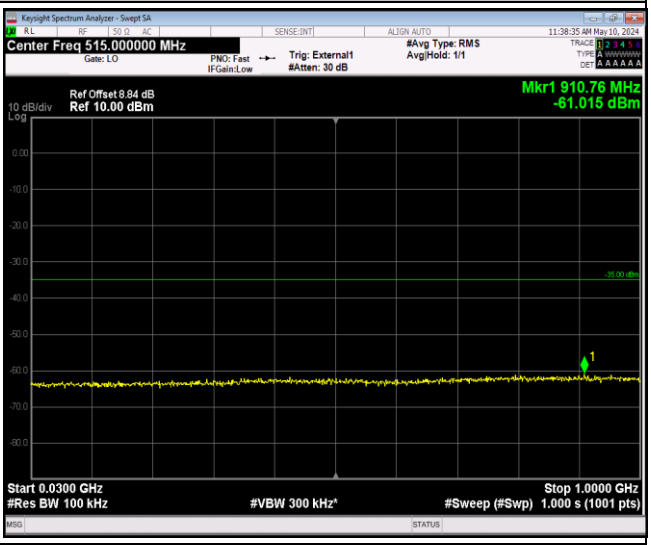
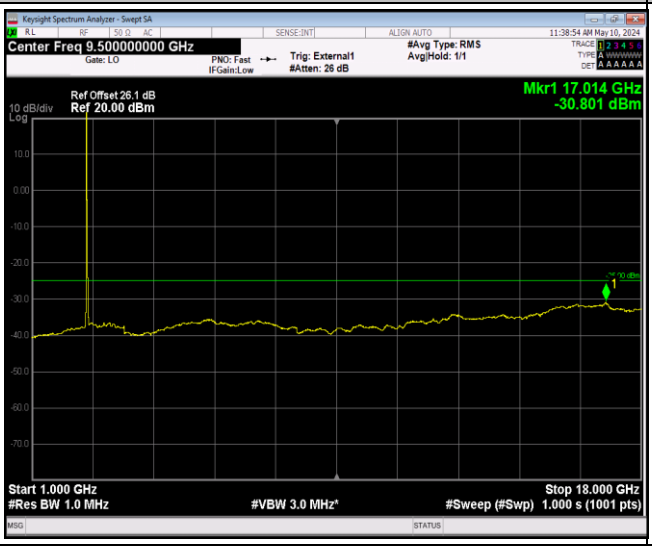
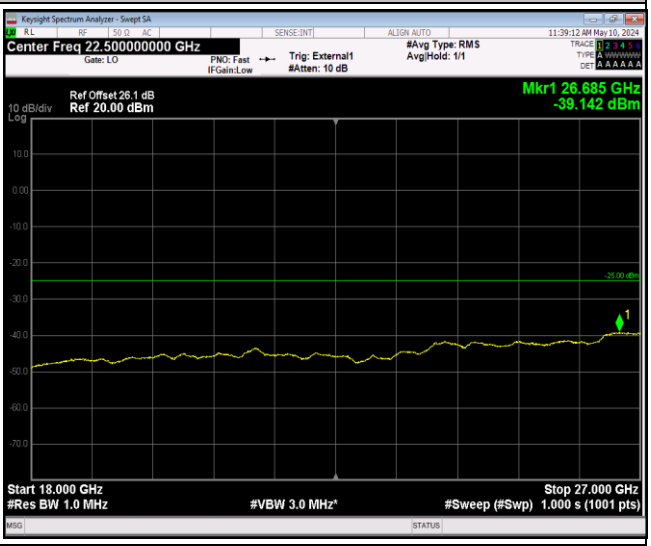
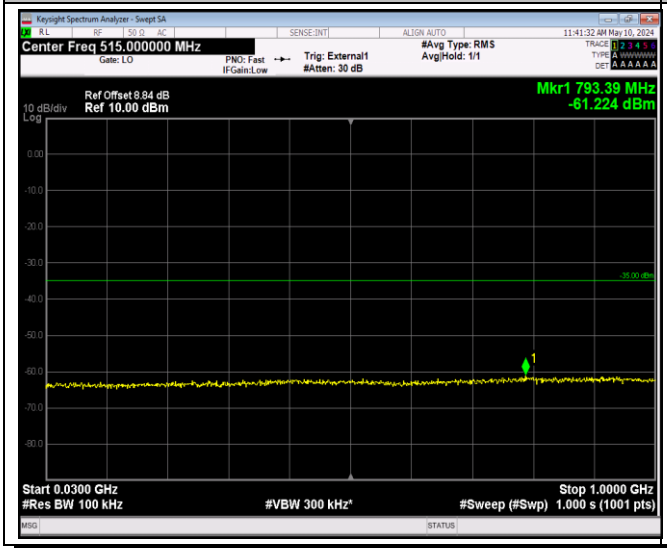
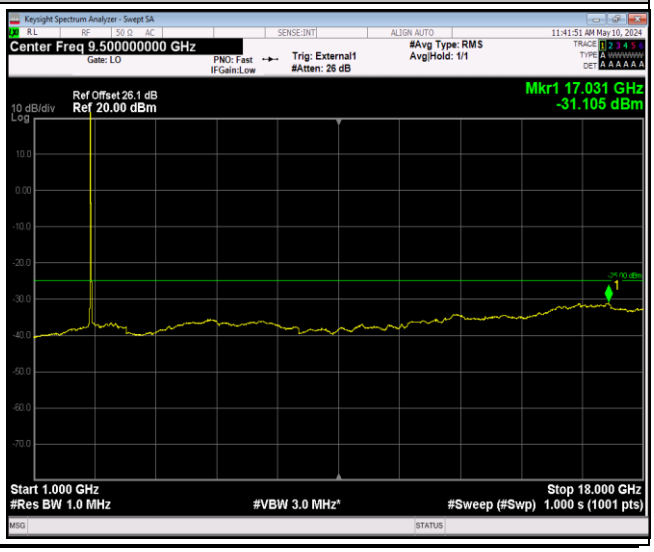
Band41_5MHz_64QAM_40640_1RB#0_18000~27000_18000~27000



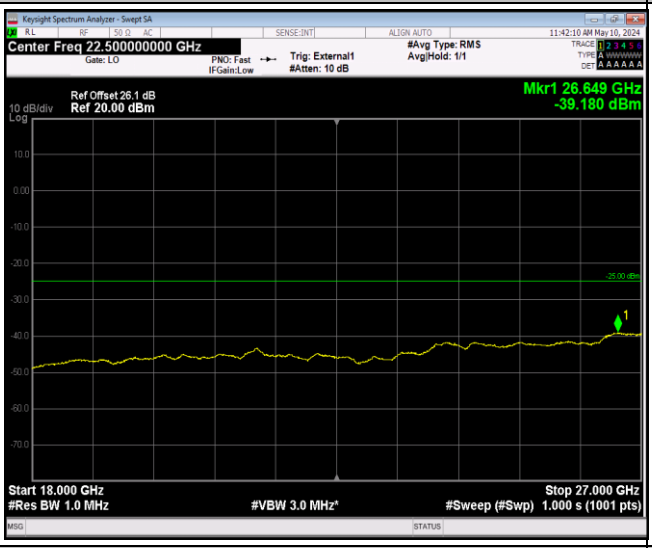
Band41_5MHz_64QAM_41215_1RB#0_30~1000_30~100



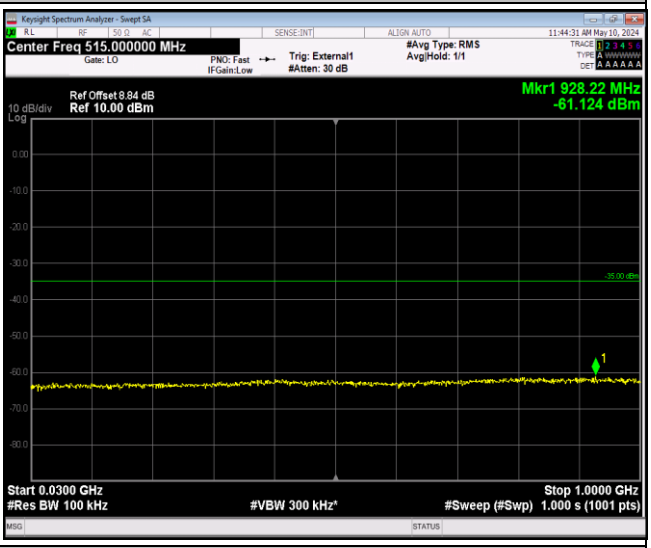
Band41_5MHz_64QAM_41215_1RB#0_1000~18000_100

0	0~18000
	
Band41_5MHz_64QAM_41215_1RB#0_18000~27000_18000~27000	Band41_20MHz_QPSK_40140_1RB#0_30~1000_30~1000
	
Band41_20MHz_QPSK_40140_1RB#0_1000~18000_1000~18000	Band41_20MHz_QPSK_40140_1RB#0_18000~27000_18000~27000
	

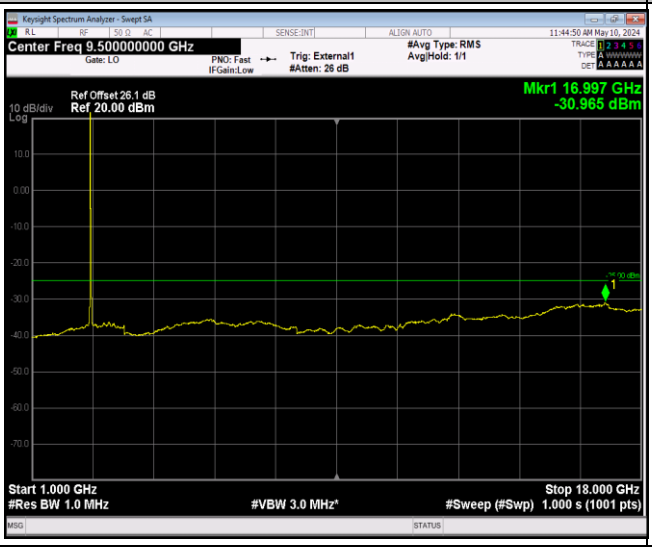
Band41_20MHz_QPSK_40640_1RB#0_30~1000_30~1000



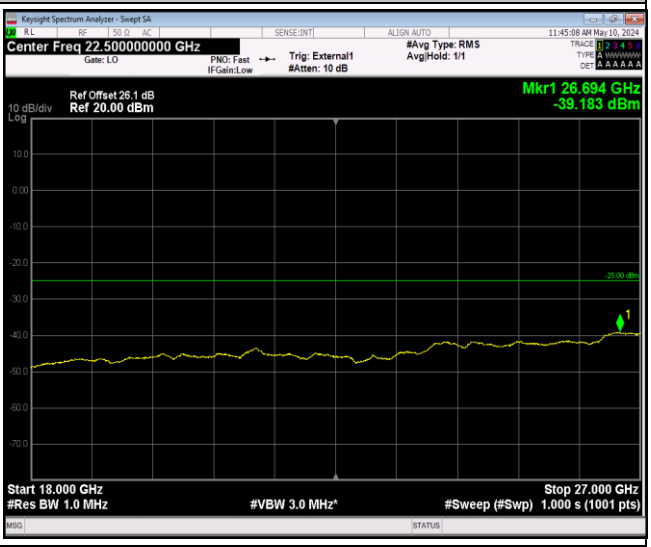
Band41_20MHz_QPSK_40640_1RB#0_1000~18000_1000~18000



Band41_20MHz_QPSK_40640_1RB#0_18000~27000_18000~27000

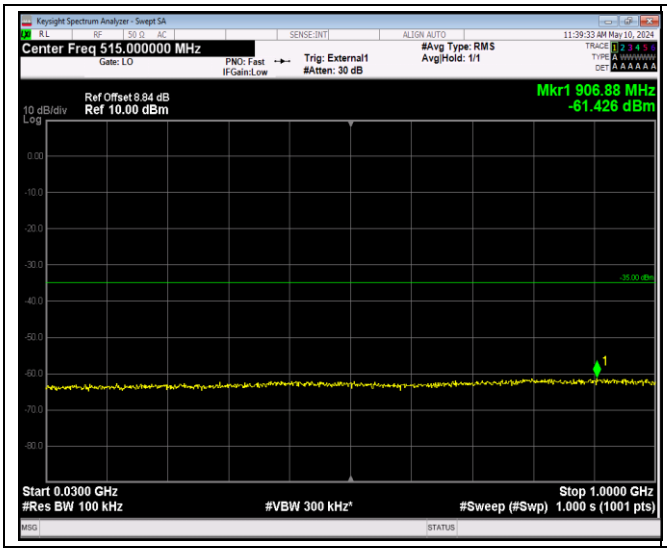


Band41_20MHz_QPSK_41140_1RB#0_30~1000_30~1000

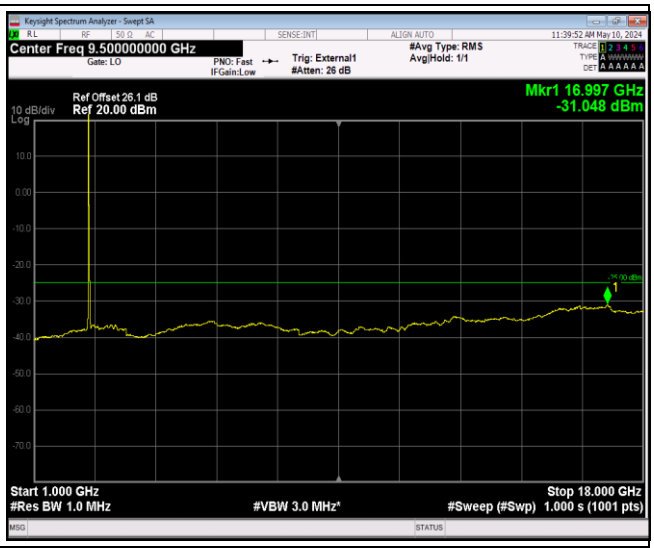


Band41_20MHz_QPSK_41140_1RB#0_1000~18000_1000~18000

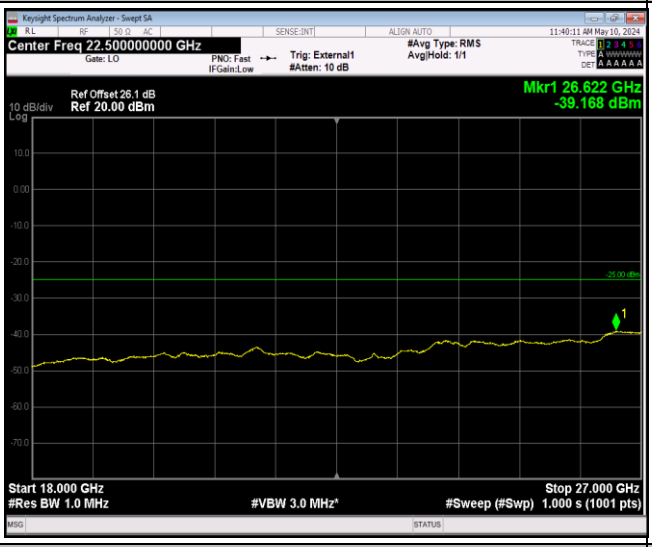
Band41_20MHz_QPSK_41140_1RB#0_18000~27000_18000~27000



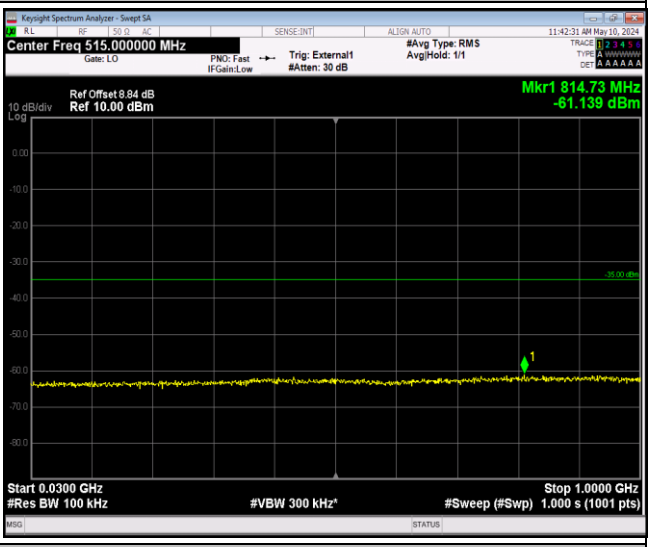
Band41_20MHz_16QAM_40140_1RB#0_30~1000_30~1000



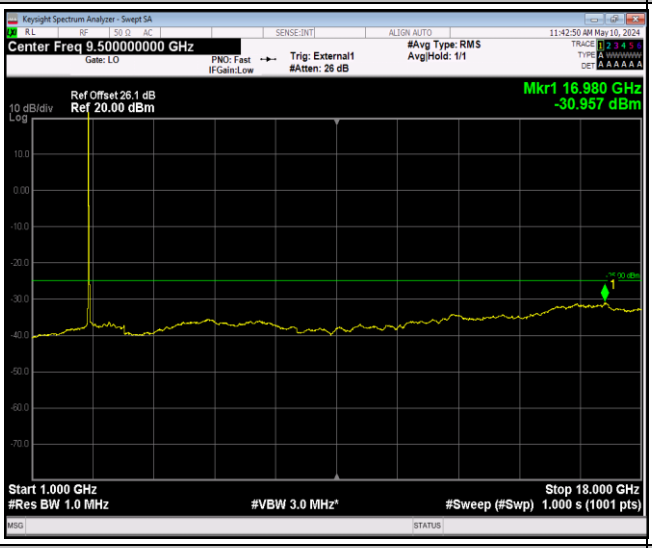
Band41_20MHz_16QAM_40140_1RB#0_1000~18000_1000~18000



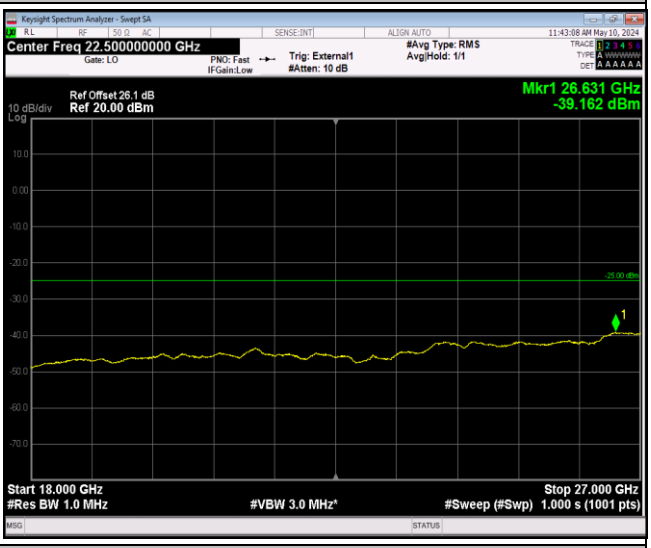
Band41_20MHz_16QAM_40140_1RB#0_18000~27000_18000~27000



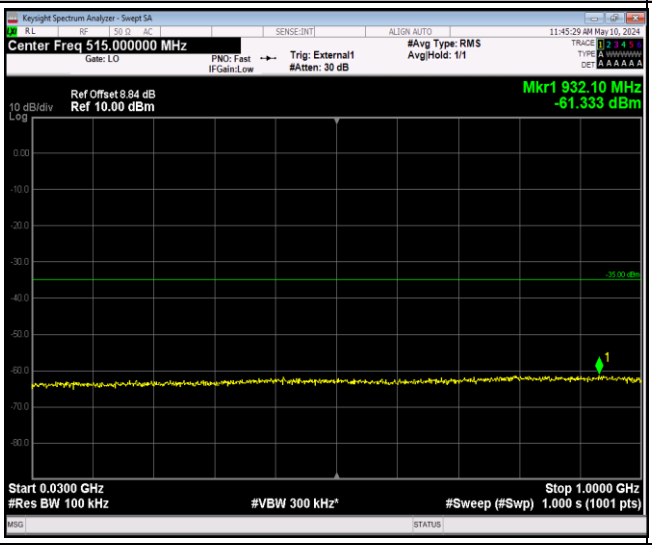
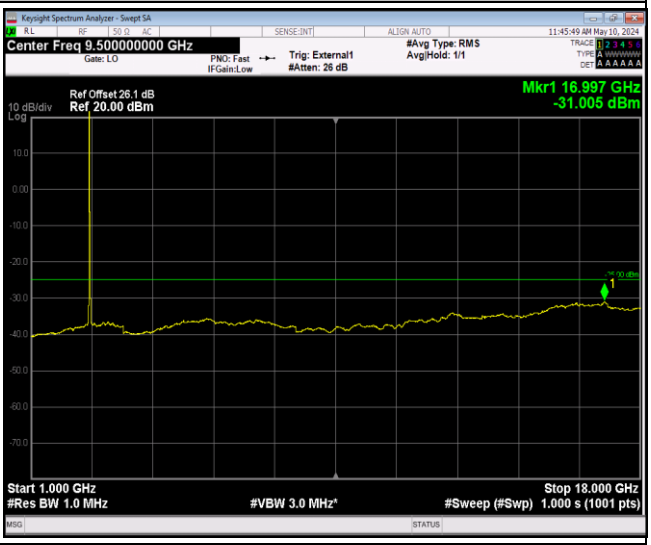
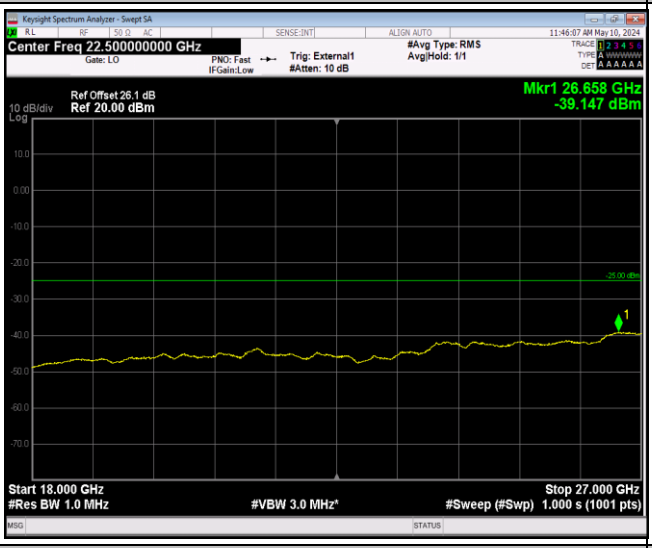
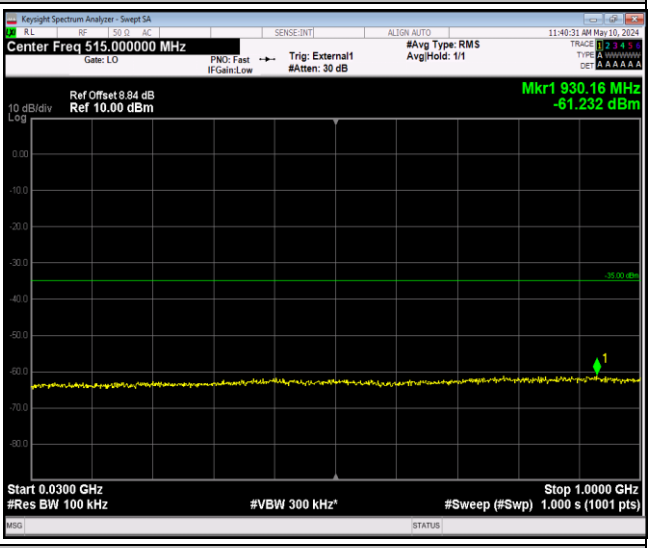
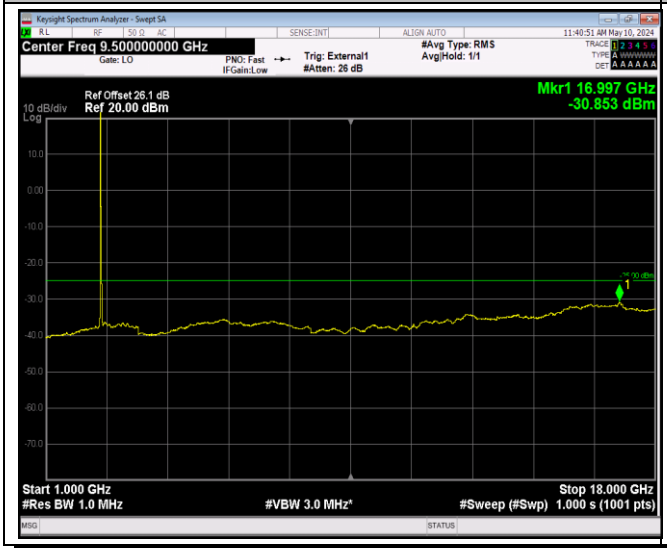
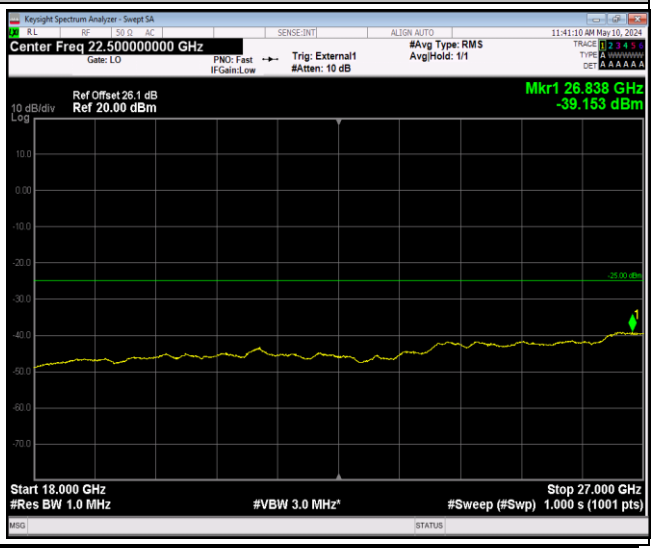
Band41_20MHz_16QAM_40640_1RB#0_30~1000_30~1000



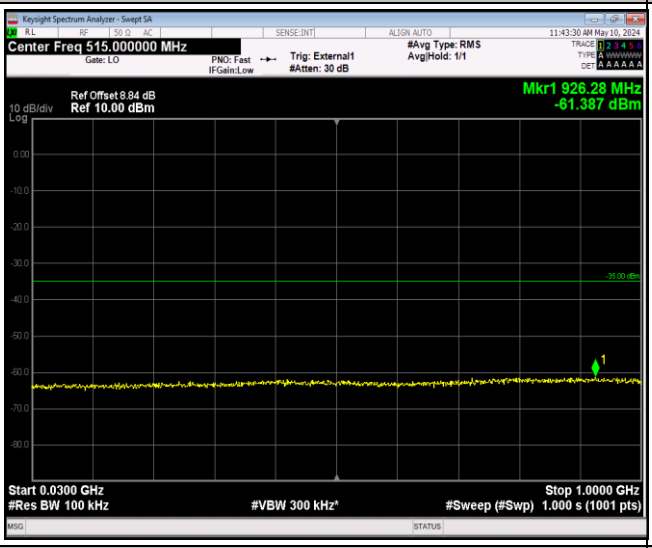
Band41_20MHz_16QAM_40640_1RB#0_1000~18000_10



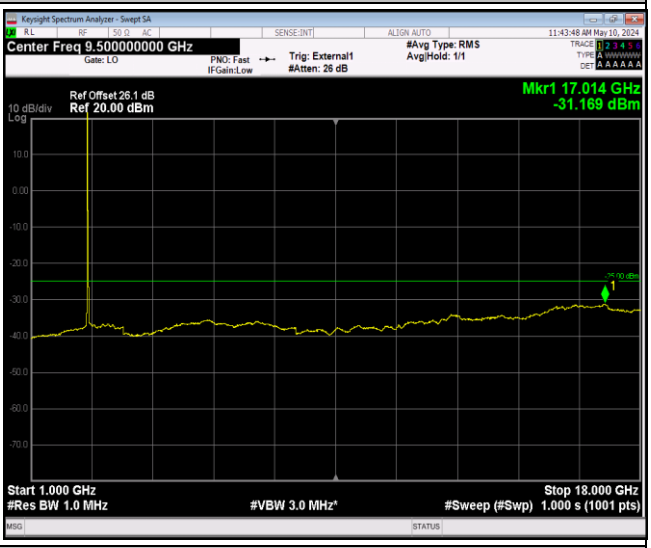
Band41_20MHz_16QAM_40640_1RB#0_18000~27000_1

00~18000	8000~27000
	
Band41_20MHz_16QAM_41140_1RB#0_30~1000_30~1000	Band41_20MHz_16QAM_41140_1RB#0_1000~18000_1000~18000
	
Band41_20MHz_16QAM_41140_1RB#0_18000~27000_18000~27000	Band41_20MHz_64QAM_40140_1RB#0_30~1000_30~1000
	

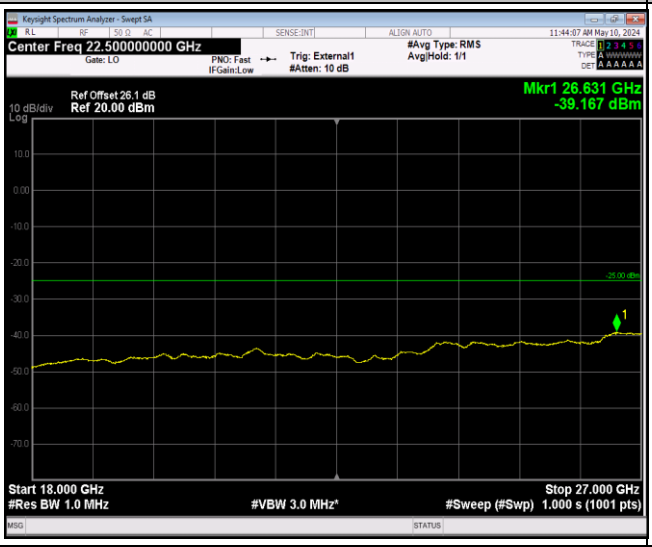
Band41_20MHz_64QAM_40140_1RB#0_1000~18000_1000~18000



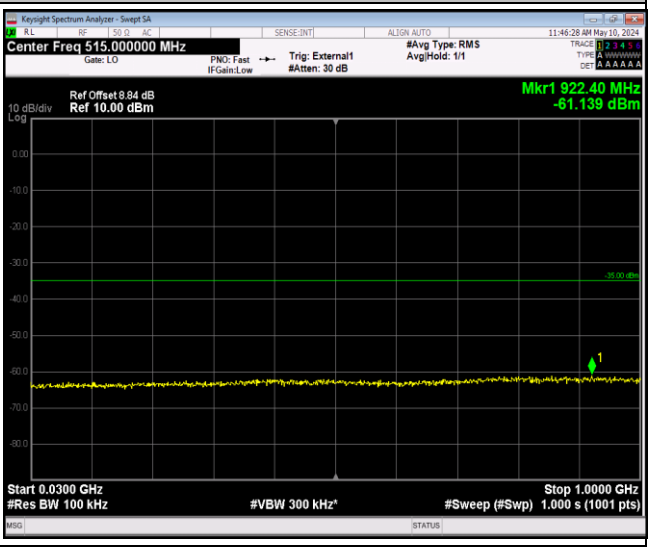
Band41_20MHz_64QAM_40140_1RB#0_18000~27000_18000~27000



Band41_20MHz_64QAM_40640_1RB#0_30~1000_30~1000

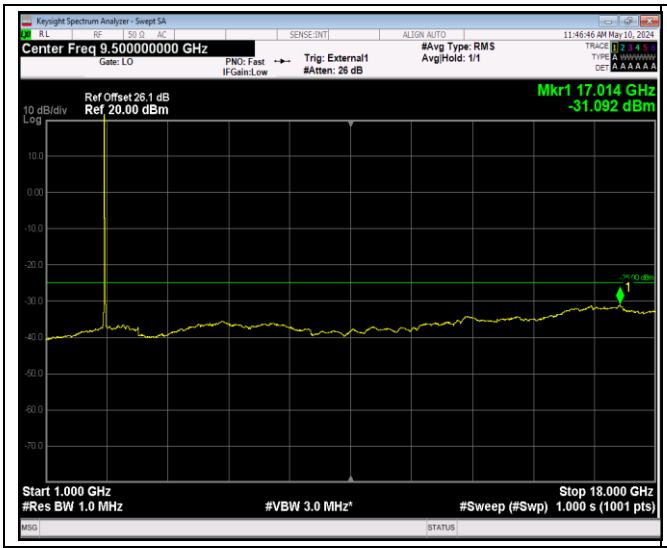
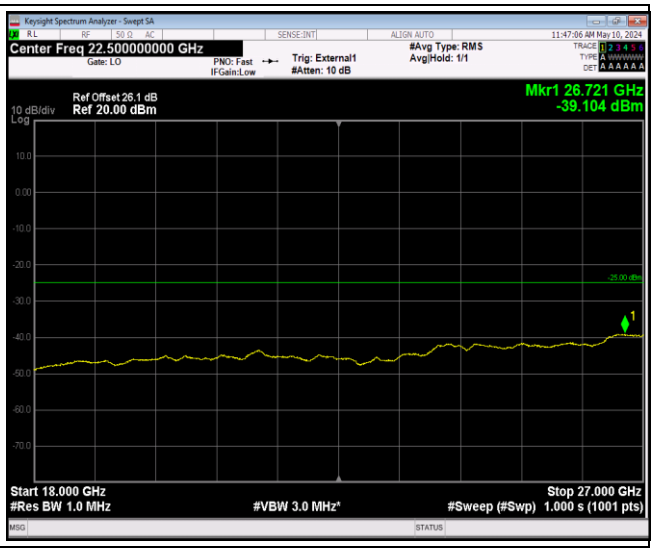


Band41_20MHz_64QAM_40640_1RB#0_1000~18000_1000~18000



Band41_20MHz_64QAM_40640_1RB#0_18000~27000_18000~27000

Band41_20MHz_64QAM_41140_1RB#0_30~1000_30~1000

	
Band41_20MHz_64QAM_41140_1RB#0_1000~18000_1000~18000	Band41_20MHz_64QAM_41140_1RB#0_18000~27000_18000~27000

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					
3.91	-30	-11.01	-0.005856	Within authorized band for Band 2	Pass
	-20	9.80	0.005213		
	-10	9.97	0.005303		
	0	-10.51	-0.005590		
	10	-9.16	-0.004872		
	20	-11.90	-0.006330		
	30	9.46	0.005032		
	40	8.65	0.004601		
	50	10.17	0.005410		
16QAM					
3.91	-30	-4.72	-0.002511	Within authorized band for Band 2	Pass
	-20	4.53	0.002410		
	-10	4.61	0.002452		
	0	-8.20	-0.004362		
	10	7.88	0.004191		
	20	1.80	0.000957		
	30	-9.80	-0.005213		
	40	-8.37	-0.004452		
	50	2.05	0.001090		
64QAM					
3.91	-30	-9.67	-0.005144	Within authorized band for Band 2	Pass
	-20	-4.59	-0.002441		
	-10	-11.00	-0.005851		
	0	-9.88	-0.005255		
	10	9.78	0.005202		
	20	-5.48	-0.002915		
	30	-13.39	-0.007122		
	40	8.91	0.004739		
	50	-11.77	-0.006261		

Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	-2.69	-0.001431	Within authorized band for Band 2	Pass
	3.91	-11.14	-0.005926		
	4.50	-1.43	-0.000761		
16QAM					
25	3.45	-6.95	-0.003697	Within authorized band for Band 2	Pass
	3.91	11.12	0.005915		
	4.50	6.82	0.003628		
64QAM					
25	3.45	-12.23	-0.006505	Within authorized band for Band 2	Pass
	3.91	6.48	0.003447		
	4.50	-9.47	-0.005037		
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					
3.91	-30	-2.26	-0.001304	Within authorized band for Band 4	Pass
	-20	-8.37	-0.004831		
	-10	-10.01	-0.005778		
	0	10.90	0.006291		
	10	2.99	0.001726		
	20	-5.12	-0.002955		
	30	7.28	0.004202		
	40	8.85	0.005108		
	50	-5.05	-0.002915		
16QAM					
3.91	-30	-11.22	-0.006476	Within authorized band for Band 4	Pass
	-20	-12.72	-0.007342		
	-10	-10.51	-0.006066		
	0	7.52	0.004341		
	10	-2.49	-0.001437		
	20	-9.67	-0.005582		
	30	-8.24	-0.004756		
	40	-4.96	-0.002863		
	50	-6.69	-0.003861		
64QAM					
3.91	-30	-6.95	-0.004012	Within authorized band for Band 4	Pass
	-20	-8.43	-0.004866		
	-10	-11.03	-0.006367		
	0	-7.08	-0.004087		
	10	3.29	0.001899		
	20	6.74	0.003890		
	30	-9.16	-0.005287		
	40	-7.91	-0.004566		
	50	-10.34	-0.005968		

Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	4.91	0.002834	Within authorized band for Band 4	Pass
	3.91	-10.24	-0.005911		
	4.50	-6.87	-0.003965		
16QAM					
25	3.45	-3.09	-0.001784	Within authorized band for Band 4	Pass
	3.91	-10.03	-0.005789		
	4.50	-1.83	-0.001056		
64QAM					
25	3.45	-7.40	-0.004271	Within authorized band for Band 4	Pass
	3.91	-9.41	-0.005431		
	4.50	-4.98	-0.002874		
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					
3.91	-30	-4.21	-0.005033	±2.5	Pass
	-20	-3.30	-0.003945		
	-10	-5.29	-0.006324		
	0	-4.23	-0.005057		
	10	-7.04	-0.008416		
	20	-10.71	-0.012803		
	30	-5.92	-0.007077		
	40	-7.42	-0.008870		
	50	-3.89	-0.004650		
16QAM					
3.91	-30	-4.65	-0.005559	±2.5	Pass
	-20	-11.12	-0.013293		
	-10	4.62	0.005523		
	0	-9.57	-0.011441		
	10	1.75	0.002092		
	20	-4.61	-0.005511		
	30	-9.27	-0.011082		
	40	-7.72	-0.009229		
	50	-8.07	-0.009647		
64QAM					
3.91	-30	-5.26	-0.006288	±2.5	Pass
	-20	-7.54	-0.009014		
	-10	-5.55	-0.006635		
	0	-7.94	-0.009492		
	10	-3.10	-0.003706		
	20	-6.25	-0.007472		
	30	-4.46	-0.005332		
	40	-6.64	-0.007938		
	50	3.05	0.003646		

Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	-6.69	-0.007998	±2.5	Pass
	3.91	-5.79	-0.006922		
	4.50	-3.72	-0.004447		
16QAM					
25	3.45	-5.52	-0.006599	±2.5	Pass
	3.91	-2.19	-0.002618		
	4.50	-6.22	-0.007436		
64QAM					
25	3.45	-3.99	-0.004770	±2.5	Pass
	3.91	-5.14	-0.006145		
	4.50	-7.88	-0.009420		
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					
3.91	-30	-14.86	-0.005862	Within authorized band for Band 7	Pass
	-20	-15.35	-0.006055		
	-10	-19.00	-0.007495		
	0	-16.78	-0.006619		
	10	-13.68	-0.005396		
	20	-13.13	-0.005179		
	30	-11.22	-0.004426		
	40	10.04	0.003961		
	50	-13.79	-0.005440		
16QAM					
3.91	-30	-4.35	-0.001716	Within authorized band for Band 7	Pass
	-20	12.50	0.004931		
	-10	-14.39	-0.005677		
	0	-22.73	-0.008966		
	10	8.43	0.003325		
	20	7.70	0.003037		
	30	-4.91	-0.001937		
	40	9.17	0.003617		
	50	11.13	0.004391		
64QAM					
3.91	-30	-9.83	-0.003878	Within authorized band for Band 7	Pass
	-20	8.41	0.003318		
	-10	-10.51	-0.004146		
	0	-20.81	-0.008209		
	10	-13.36	-0.005270		
	20	8.43	0.003325		
	30	-17.85	-0.007041		
	40	-18.01	-0.007105		
	50	-11.06	-0.004363		

Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	-12.99	-0.005124	Within authorized band for Band 7	Pass
	3.91	-12.30	-0.004852		
	4.50	-7.85	-0.003097		
16QAM					
25	3.45	-12.95	-0.005108	Within authorized band for Band 7	Pass
	3.91	-14.66	-0.005783		
	4.50	-15.29	-0.006032		
64QAM					
25	3.45	10.07	0.003972	Within authorized band for Band 7	Pass
	3.91	9.77	0.003854		
	4.50	14.91	0.005882		
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					
3.91	-30	-8.78	-0.003383	Within authorized band for Band 41	Pass
	-20	-9.70	-0.003738		
	-10	4.52	0.001742		
	0	-10.81	-0.004166		
	10	-10.47	-0.004035		
	20	-3.35	-0.001291		
	30	6.11	0.002355		
	40	-11.19	-0.004312		
	50	9.21	0.003549		
16QAM					
3.91	-30	-4.56	-0.001757	Within authorized band for Band 41	Pass
	-20	4.18	0.001611		
	-10	-10.41	-0.004012		
	0	4.45	0.001715		
	10	-18.10	-0.006975		
	20	-11.56	-0.004455		
	30	-6.77	-0.002609		
	40	4.48	0.001726		
	50	-2.46	-0.000948		
64QAM					
3.91	-30	-10.69	-0.004119	Within authorized band for Band 41	Pass
	-20	9.13	0.003518		
	-10	-9.78	-0.003769		
	0	9.43	0.003634		
	10	-7.75	-0.002987		
	20	4.72	0.001819		
	30	-7.61	-0.002933		
	40	-6.69	-0.002578		
	50	-11.86	-0.004570		

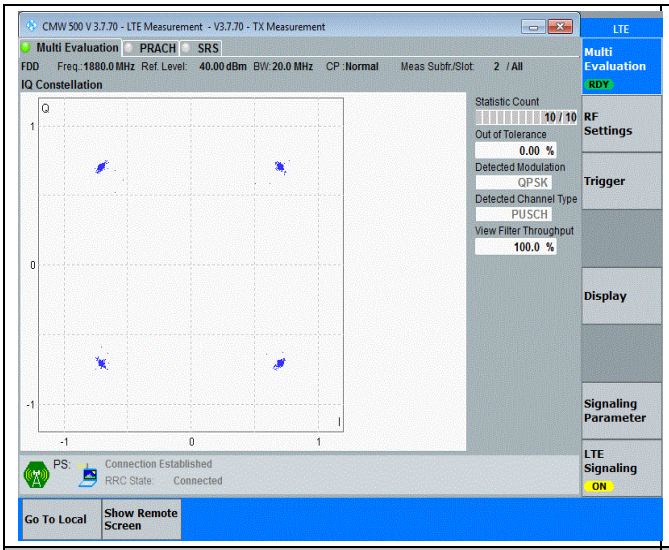
Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	7.10	0.002736	Within authorized band for Band 41	Pass
	3.91	-8.01	-0.003087		
	4.50	-5.41	-0.002085		
16QAM					
25	3.45	-4.23	-0.001630	Within authorized band for Band41	Pass
	3.91	-9.51	-0.003665		
	4.50	-9.66	-0.003723		
64QAM					
25	3.45	-5.41	-0.002085	Within authorized band for Band41	Pass
	3.91	-9.07	-0.003495		
	4.50	5.38	0.002073		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

Appendix G: Modulation Characteristics

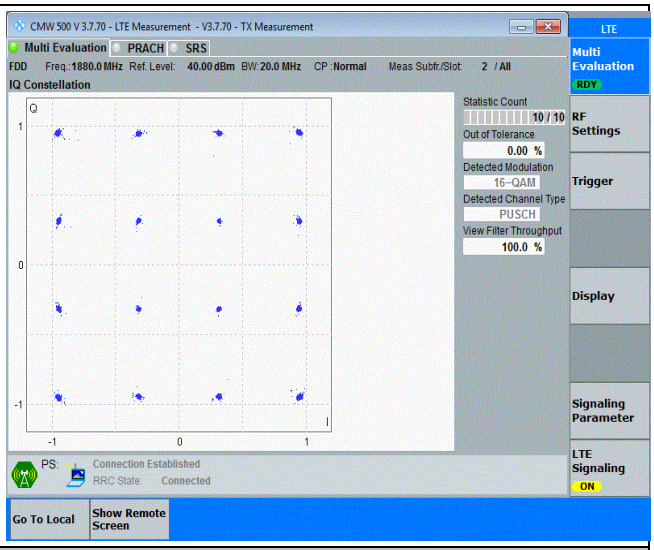
Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Verdict
Band2	20MHz	QPSK	18900	100RB#0	PASS
Band2	20MHz	16QAM	18900	100RB#0	PASS
Band2	20MHz	64QAM	18900	100RB#0	PASS
Band4	20MHz	QPSK	20175	100RB#0	PASS
Band4	20MHz	16QAM	20175	100RB#0	PASS
Band4	20MHz	64QAM	20175	100RB#0	PASS
Band5	10MHz	QPSK	20525	50RB#0	PASS
Band5	10MHz	16QAM	20525	50RB#0	PASS
Band5	10MHz	64QAM	20525	50RB#0	PASS
Band7	20MHz	QPSK	21100	100RB#0	PASS
Band7	20MHz	16QAM	21100	100RB#0	PASS
Band7	20MHz	64QAM	21100	100RB#0	PASS
41(2535-2655)	20MHz	QPSK	40640	100RB#0	PASS
41(2535-2655)	20MHz	16QAM	40640	100RB#0	PASS
41(2535-2655)	20MHz	64QAM	40640	100RB#0	PASS

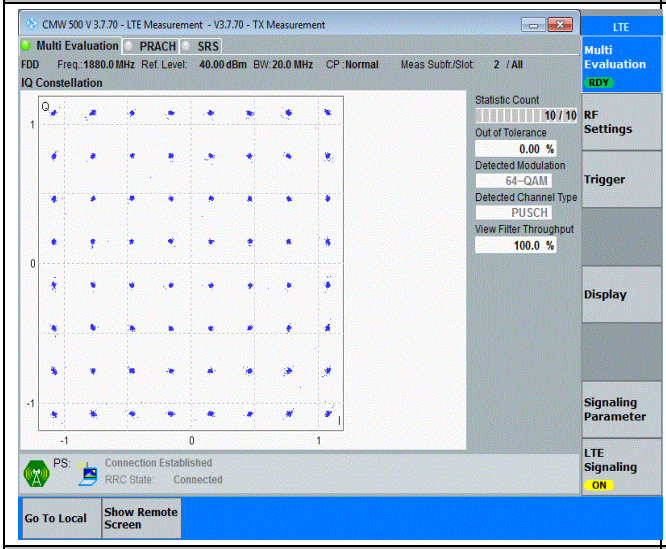
Test Graphs



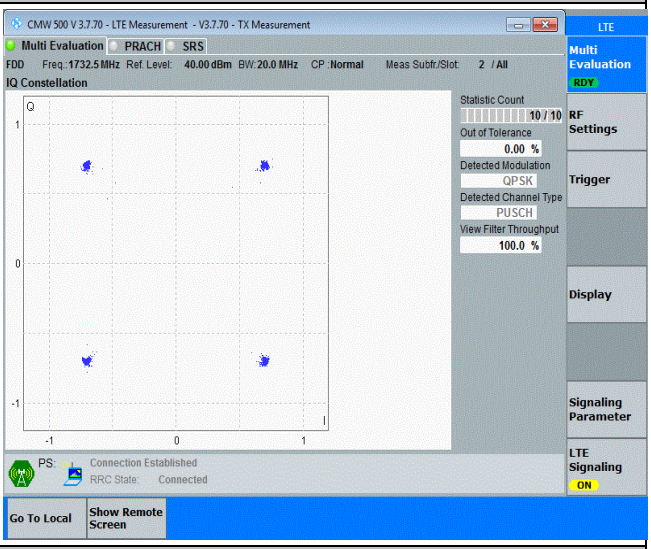
Band2-20MHz-QPSK-18900-100RB#0-PASS



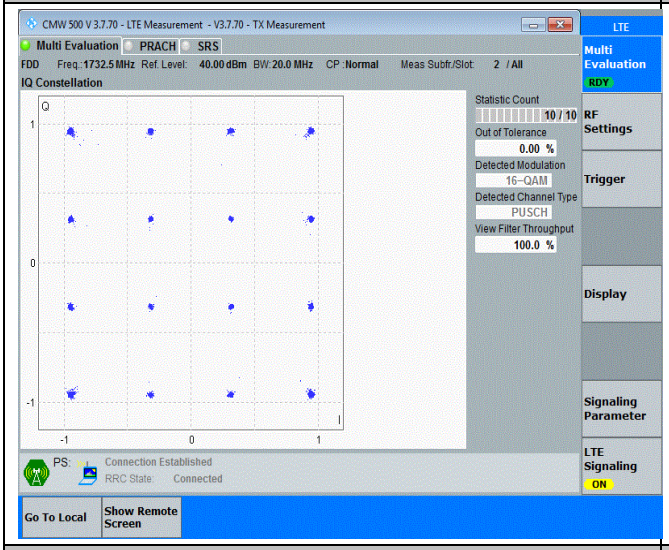
Band2-20MHz-16QAM-18900-100RB#0-PASS



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



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



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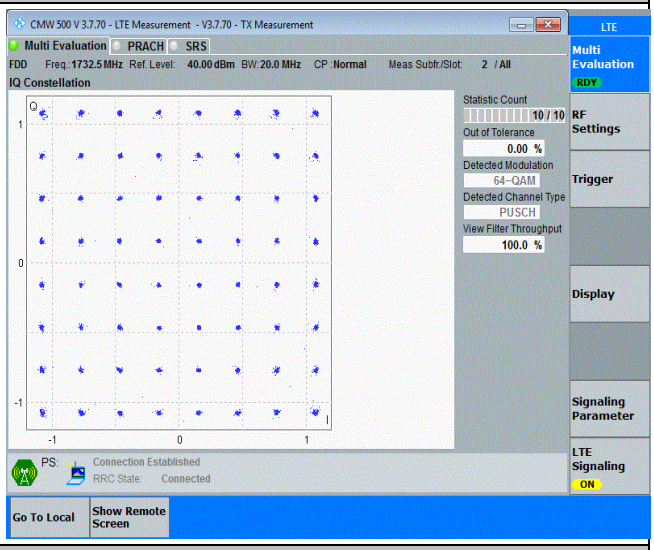
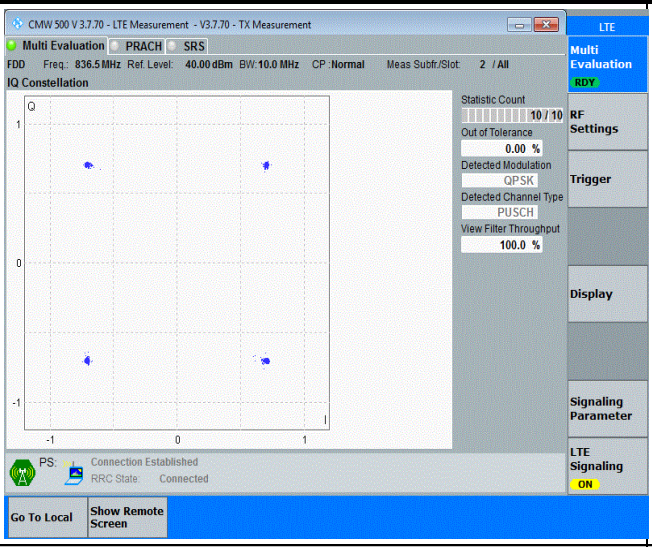
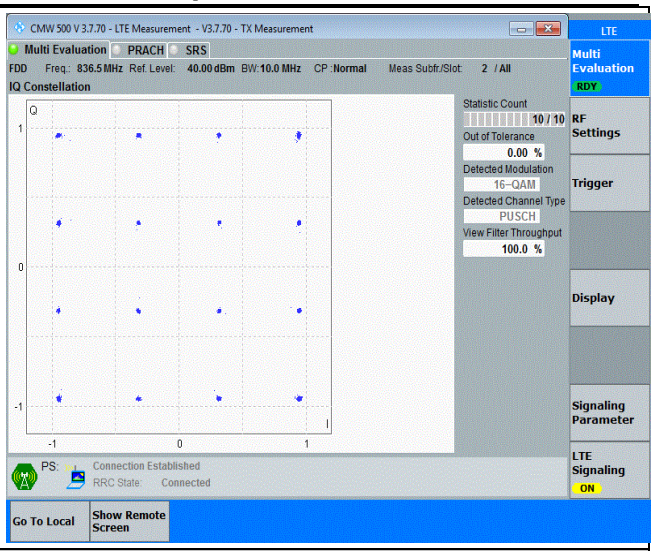


Band4-20MHz-64QAM-20175-100RB#0-PASS



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



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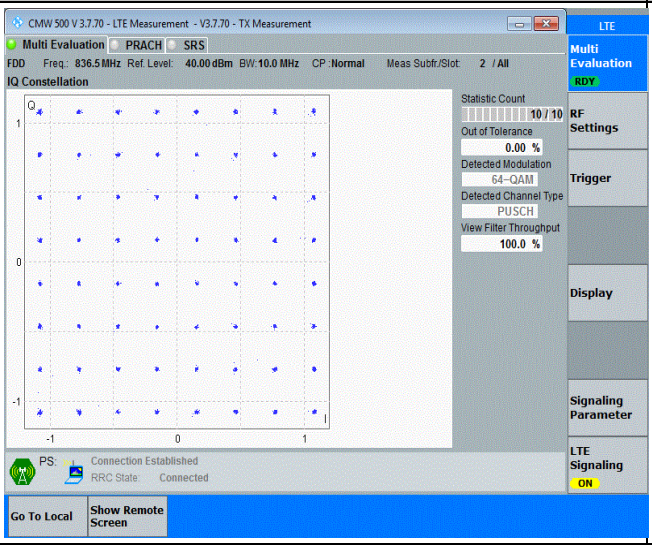

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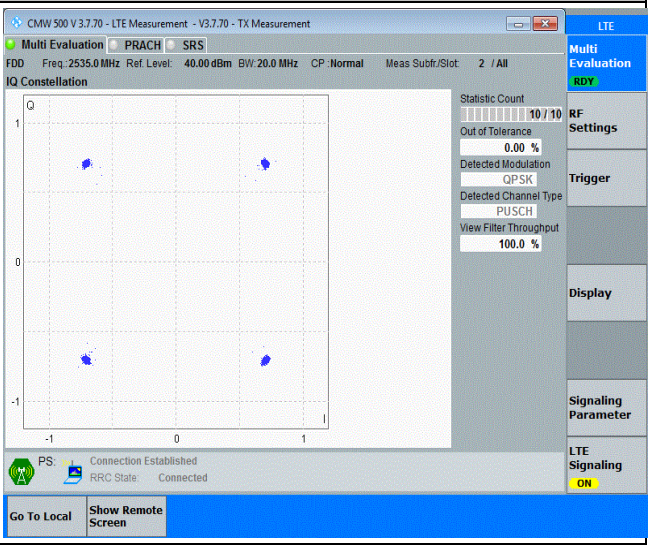
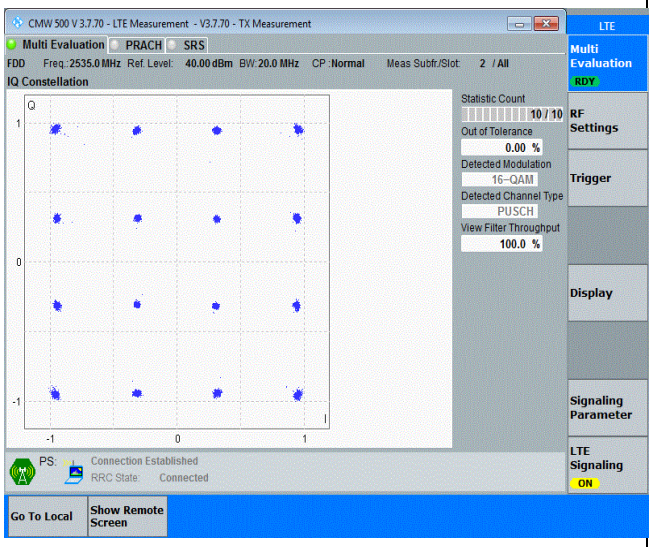
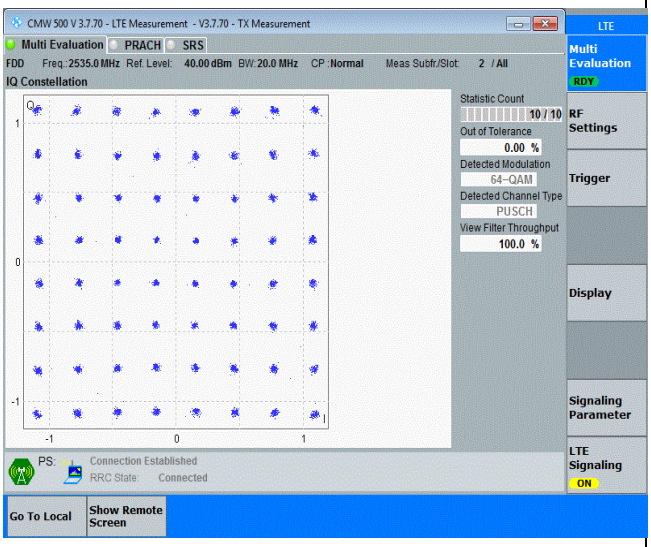


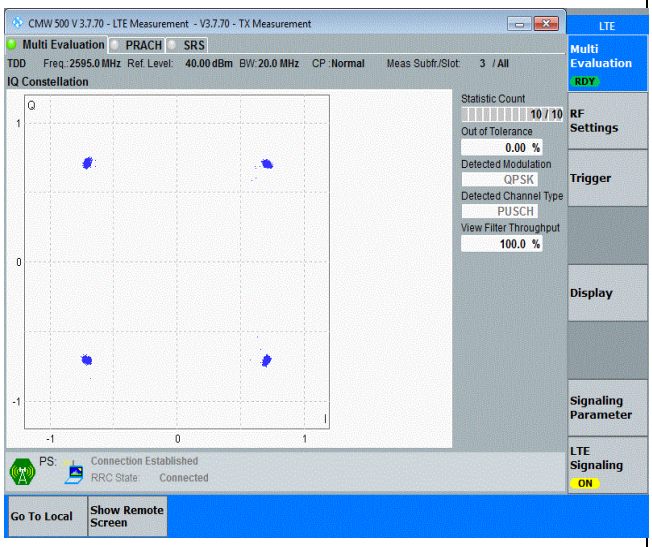
Band7-20MHz-QPSK-21100-100RB#0-PASS



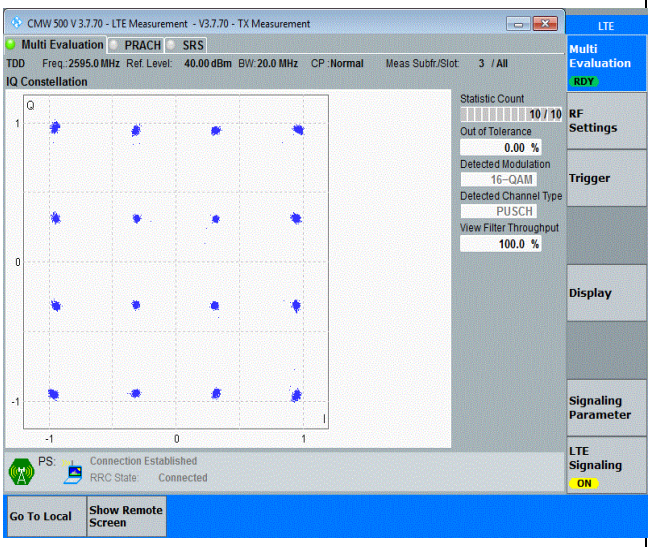
Band7-20MHz-16QAM-21100-100RB#0-PASS



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



41(2535-2655)-20MHz-QPSK-40640-100RB#0-PASS



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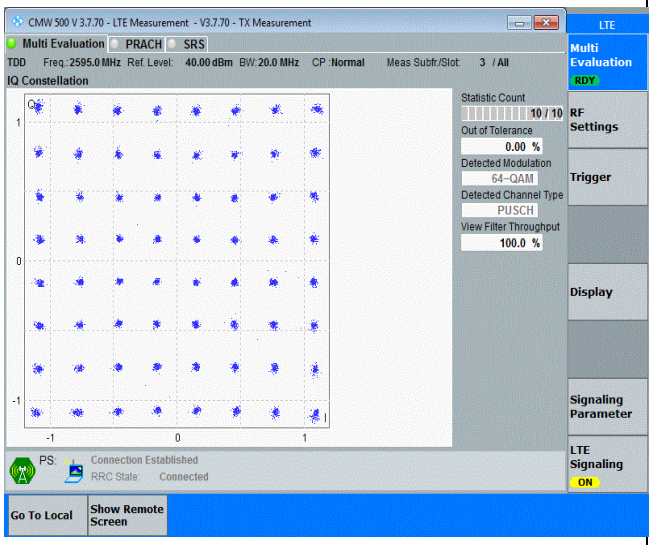

41(2535-2655)-20MHz-64QAM-40640-100RB#0-PASS