

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	-10.83	-0.015307	Within authorized band for Band 12	Pass
	-20	-9.37	-0.013244		
	-10	-3.85	-0.005442		
	0	-4.86	-0.006869		
	10	-8.75	-0.012367		
	20	-11.79	-0.016664		
	30	-9.37	-0.013244		
	40	-10.54	-0.014898		
	50	-6.09	-0.008608		
16QAM					
3.80	-30	-11.79	-0.016664	Within authorized band for Band 12	Pass
	-20	-11.22	-0.015859		
	-10	-8.44	-0.011929		
	0	-9.96	-0.014078		
	10	-11.94	-0.016876		
	20	-12.76	-0.018035		
	30	-13.69	-0.019350		
	40	-9.38	-0.013258		
	50	-9.17	-0.012961		
64QAM					
3.80	-30	-12.13	-0.017145	Within authorized band for Band 12	Pass
	-20	-10.77	-0.015223		
	-10	-11.30	-0.015972		
	0	-3.05	-0.004311		
	10	-2.72	-0.003845		
	20	-8.13	-0.011491		
	30	-10.36	-0.014643		
	40	-5.29	-0.007477		
	50	-10.83	-0.015307		

Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-8.83	-0.012481	Within authorized band for Band 12	Pass
	3.80	-7.74	-0.010940		
	4.35	-9.84	-0.013908		
16QAM					
25	3.50	-9.83	-0.013894	Within authorized band for Band 12	Pass
	3.80	-8.33	-0.011774		
	4.35	-13.00	-0.018375		
64QAM					
25	3.50	-10.29	-0.014544	Within authorized band for Band 12	Pass
	3.80	-12.55	-0.017739		
	4.35	-6.94	-0.009809		
<i>Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.</i>					

## 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	-12.20	-0.017183	Within authorized band for Band 17	Pass
	-20	-13.12	-0.018479		
	-10	-8.50	-0.011972		
	0	-9.90	-0.013944		
	10	-9.73	-0.013704		
	20	-14.89	-0.020972		
	30	-9.67	-0.013620		
	40	-11.22	-0.015803		
	50	-8.35	-0.011761		
16QAM					
3.80	-30	-10.63	-0.014972	Within authorized band for Band 17	Pass
	-20	-5.26	-0.007408		
	-10	-7.94	-0.011183		
	0	-11.24	-0.015831		
	10	-10.89	-0.015338		
	20	-7.85	-0.011056		
	30	-9.51	-0.013394		
	40	-6.37	-0.008972		
	50	-9.60	-0.013521		
64QAM					
3.80	-30	-14.82	-0.020873	Within authorized band for Band 17	Pass
	-20	-14.52	-0.020451		
	-10	-9.34	-0.013155		
	0	-13.15	-0.018521		
	10	-7.34	-0.010338		
	20	-11.97	-0.016859		
	30	-9.47	-0.013338		
	40	-8.10	-0.011408		
	50	-10.24	-0.014423		

Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-15.85	-0.022324	Within authorized band for Band 17	Pass
	3.80	-13.98	-0.019690		
	4.35	-11.43	-0.016099		
16QAM					
25	3.50	-11.76	-0.016563	Within authorized band for Band 17	Pass
	3.80	-8.96	-0.012620		
	4.35	-12.33	-0.017366		
64QAM					
25	3.50	-11.32	-0.015944	Within authorized band for Band 17	Pass
	3.80	-12.37	-0.017423		
	4.35	-14.78	-0.020817		
<i>Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.</i>					

LTE Band 41 part:

Reference Frequency: LTE Band 41 (10MHz) Middle channel=40640 Frequency=2595.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.80	-30	-20.16	-0.007769	Within authorized band for Band 41	Pass
	-20	-17.58	-0.006775		
	-10	-11.72	-0.004516		
	0	-10.31	-0.003973		
	10	-13.40	-0.005164		
	20	-18.10	-0.006975		
	30	-2.76	-0.001064		
	40	-13.93	-0.005368		
	50	-12.00	-0.004624		
16QAM					
3.80	-30	-12.60	-0.004855	Within authorized band for Band 41	Pass
	-20	-4.94	-0.001904		
	-10	-16.05	-0.006185		
	0	-14.92	-0.005750		
	10	-14.66	-0.005649		
	20	6.81	0.002624		
	30	11.19	0.004312		
	40	-15.42	-0.005942		
	50	-14.18	-0.005464		
64QAM					
3.80	-30	-15.35	-0.005915	Within authorized band for Band 41	Pass
	-20	-13.72	-0.005287		
	-10	-12.99	-0.005006		
	0	-17.04	-0.006566		
	10	-17.22	-0.006636		
	20	-16.08	-0.006197		
	30	-16.99	-0.006547		
	40	-12.17	-0.004690		
	50	-14.28	-0.005503		

Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-13.60	-0.005241	Within authorized band for Band 41	Pass
	3.80	-10.30	-0.003969		
	4.35	-3.40	-0.001310		
16QAM					
25	3.50	8.13	0.003133	Within authorized band for Band41	Pass
	3.80	-18.73	-0.007218		
	4.35	8.08	0.003114		
64QAM					
25	3.50	-12.12	-0.004671	Within authorized band for Band41	Pass
	3.80	-14.13	-0.005445		
	4.35	-11.67	-0.004497		
<i>Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.</i>					

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	-18.30	-0.010487	Within authorized band for Band 66	Pass
	-20	-9.73	-0.005576		
	-10	-15.64	-0.008963		
	0	-10.23	-0.005862		
	10	-11.64	-0.006670		
	20	-10.31	-0.005908		
	30	-5.48	-0.003140		
	40	-9.90	-0.005673		
	50	-9.23	-0.005289		
16QAM					
3.80	-30	-16.55	-0.009484	Within authorized band for Band 66	Pass
	-20	-5.89	-0.003375		
	-10	9.47	0.005427		
	0	-5.22	-0.002991		
	10	10.54	0.006040		
	20	-10.33	-0.005920		
	30	-16.02	-0.009181		
	40	2.27	0.001301		
	50	-10.21	-0.005851		
64QAM					
3.80	-30	-14.22	-0.008149	Within authorized band for Band 66	Pass
	-20	3.82	0.002189		
	-10	-13.28	-0.007610		
	0	-14.69	-0.008418		
	10	-1.96	-0.001123		
	20	-3.83	-0.002195		
	30	-13.95	-0.007994		
	40	-15.48	-0.008871		
	50	-13.09	-0.007501		

Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
<b>QPSK</b>					
25	3.50	-11.00	-0.006304	Within authorized band for Band 66	Pass
	3.80	-3.10	-0.001777		
	4.35	-9.93	-0.005691		
<b>16QAM</b>					
25	3.50	-14.33	-0.008212	Within authorized band for Band 66	Pass
	3.80	-8.58	-0.004917		
	4.35	5.09	0.002917		
<b>64QAM</b>					
25	3.50	-14.59	-0.008361	Within authorized band for Band 66	Pass
	3.80	-12.50	-0.007163		
	4.35	9.04	0.005181		
<i>Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.</i>					



LTE Band 71 part:

Reference Frequency: LTE Band 71 (10MHz) Middle channel=133297 Frequency=680.5MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.80	-30	-14.28	-0.020985	Within authorized band for Band 71	Pass
	-20	-7.81	-0.011477		
	-10	-8.05	-0.011830		
	0	-5.62	-0.008259		
	10	-5.56	-0.008170		
	20	-11.96	-0.017575		
	30	-17.18	-0.025246		
	40	-8.13	-0.011947		
	50	-6.95	-0.010213		
16QAM					
3.80	-30	-12.20	-0.017928	Within authorized band for Band 71	Pass
	-20	-6.34	-0.009317		
	-10	-6.67	-0.009802		
	0	-7.14	-0.010492		
	10	-11.76	-0.017281		
	20	-13.60	-0.019985		
	30	-2.90	-0.004262		
	40	-12.93	-0.019001		
	50	-8.31	-0.012212		
64QAM					
3.80	-30	-12.30	-0.018075	Within authorized band for Band 71	Pass
	-20	-16.39	-0.024085		
	-10	-10.94	-0.016076		
	0	-8.84	-0.012990		
	10	-3.32	-0.004879		
	20	-11.66	-0.017134		
	30	-9.68	-0.014225		
	40	-8.28	-0.012168		
	50	-5.31	-0.007803		

Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-9.93	-0.014592	Within authorized band for Band 71	Pass
	3.80	-16.01	-0.023527		
	4.35	-7.65	-0.011242		
16QAM					
25	3.50	-11.19	-0.016444	Within authorized band for Band 71	Pass
	3.80	-12.43	-0.018266		
	4.35	-12.82	-0.018839		
64QAM					
25	3.50	-6.69	-0.009831	Within authorized band for Band 71	Pass
	3.80	-7.85	-0.011536		
	4.35	-7.07	-0.010389		
<i>Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.</i>					

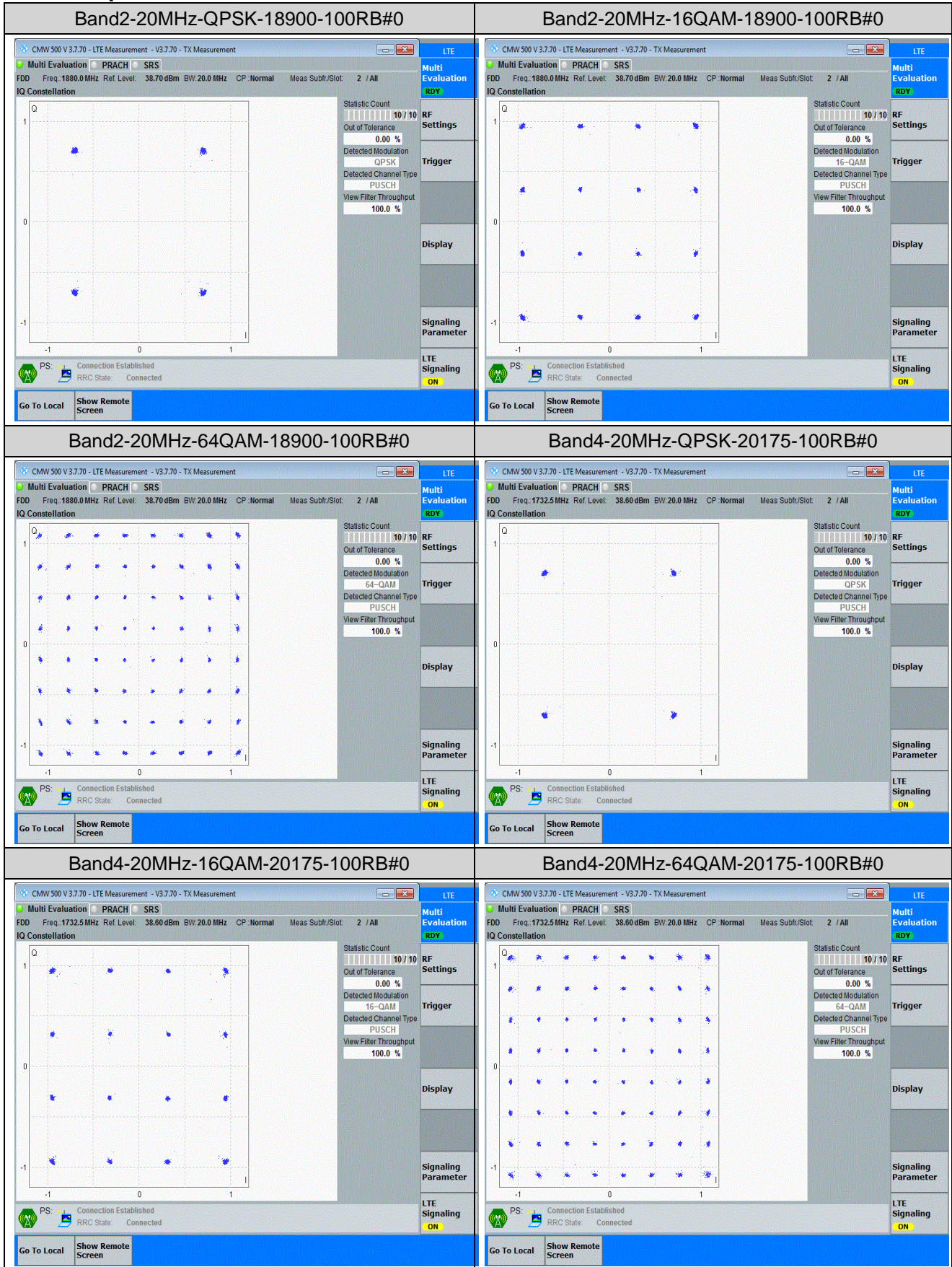
## Appendix G: Modulation Characteristics

### Test Result

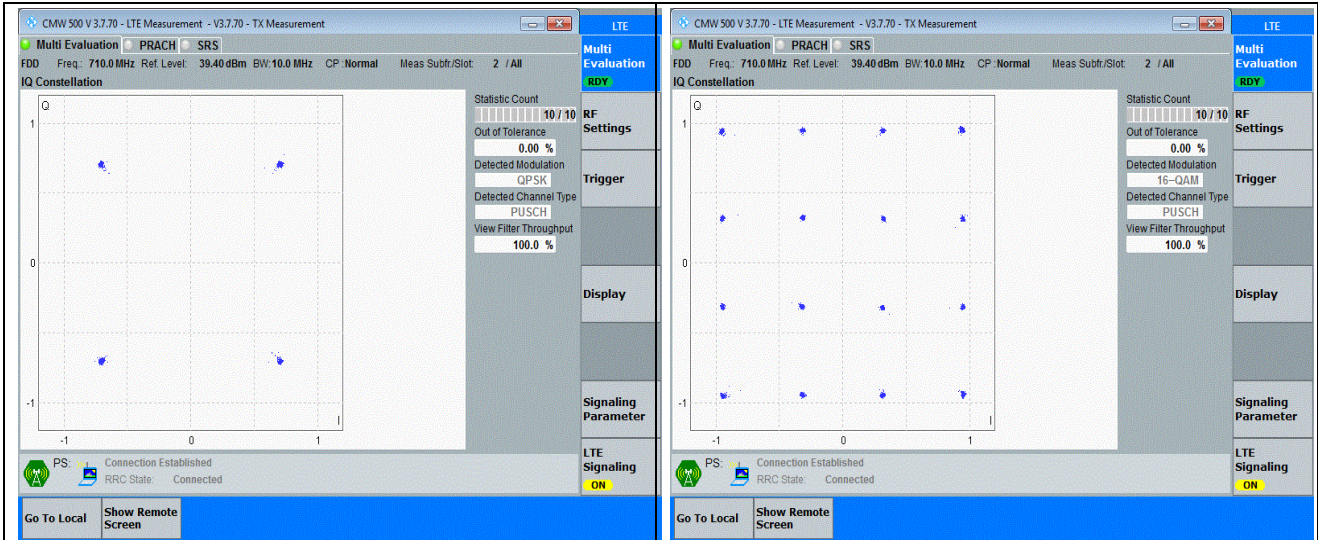
Band	Bandwidth	Modulation	Channel	RB Configuration	Result	Verdict
Band2	20MHz	QPSK	18900	100RB#0	PASS	PASS
Band2	20MHz	16QAM	18900	100RB#0	PASS	PASS
Band2	20MHz	64QAM	18900	100RB#0	PASS	PASS
Band4	20MHz	QPSK	20175	100RB#0	PASS	PASS
Band4	20MHz	16QAM	20175	100RB#0	PASS	PASS
Band4	20MHz	64QAM	20175	100RB#0	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
Band12	10MHz	QPSK	23095	50RB#0	PASS	PASS
Band12	10MHz	16QAM	23095	50RB#0	PASS	PASS
Band12	10MHz	64QAM	23095	50RB#0	PASS	PASS
Band17	10MHz	QPSK	23790	50RB#0	PASS	PASS
Band17	10MHz	16QAM	23790	50RB#0	PASS	PASS
Band17	10MHz	64QAM	23790	50RB#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
Band66	20MHz	QPSK	132322	100RB#0	PASS	PASS
Band66	20MHz	16QAM	132322	100RB#0	PASS	PASS
Band66	20MHz	64QAM	132322	100RB#0	PASS	PASS
Band71	20MHz	QPSK	133322	100RB#0	PASS	PASS
Band71	20MHz	16QAM	133322	100RB#0	PASS	PASS
Band71	20MHz	64QAM	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

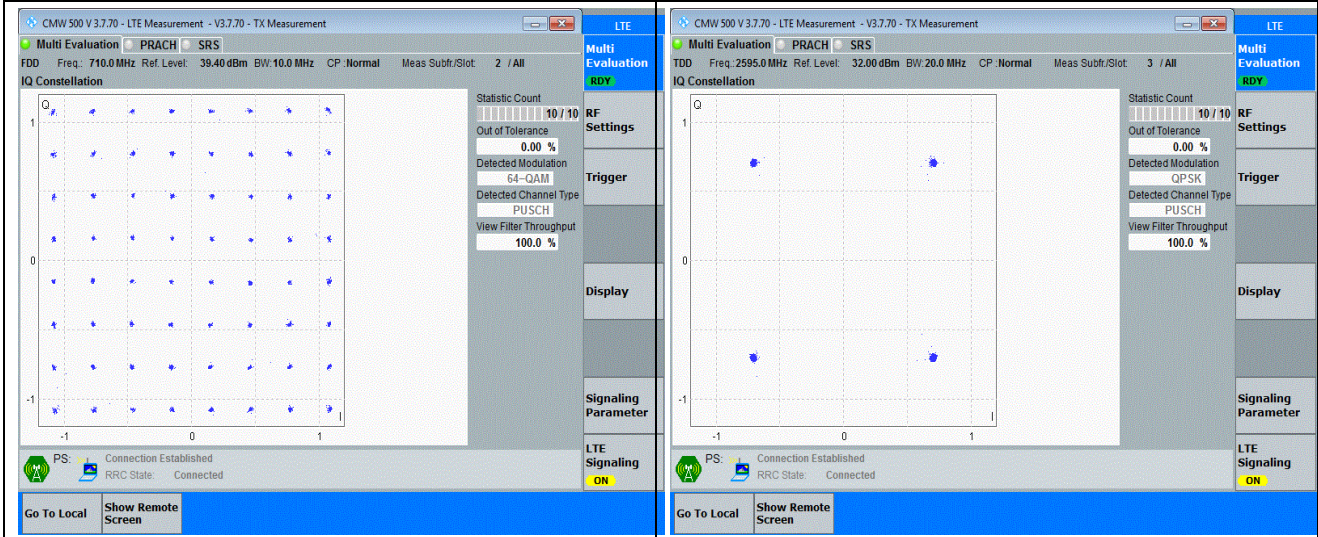


<p align="center"><b>Band5-10MHz-QPSK-20525-50RB#0</b></p>	<p align="center"><b>Band5-10MHz-16QAM-20525-50RB#0</b></p>
<p align="center"><b>Band5-10MHz-64QAM-20525-50RB#0</b></p>	<p align="center"><b>Band12-10MHz-QPSK-23095-50RB#0</b></p>
<p align="center"><b>Band12-10MHz-16QAM-23095-50RB#0</b></p>	<p align="center"><b>Band12-10MHz-64QAM-23095-50RB#0</b></p>
<p align="center"><b>Band17-10MHz-QPSK-23790-50RB#0</b></p>	<p align="center"><b>Band17-10MHz-16QAM-23790-50RB#0</b></p>



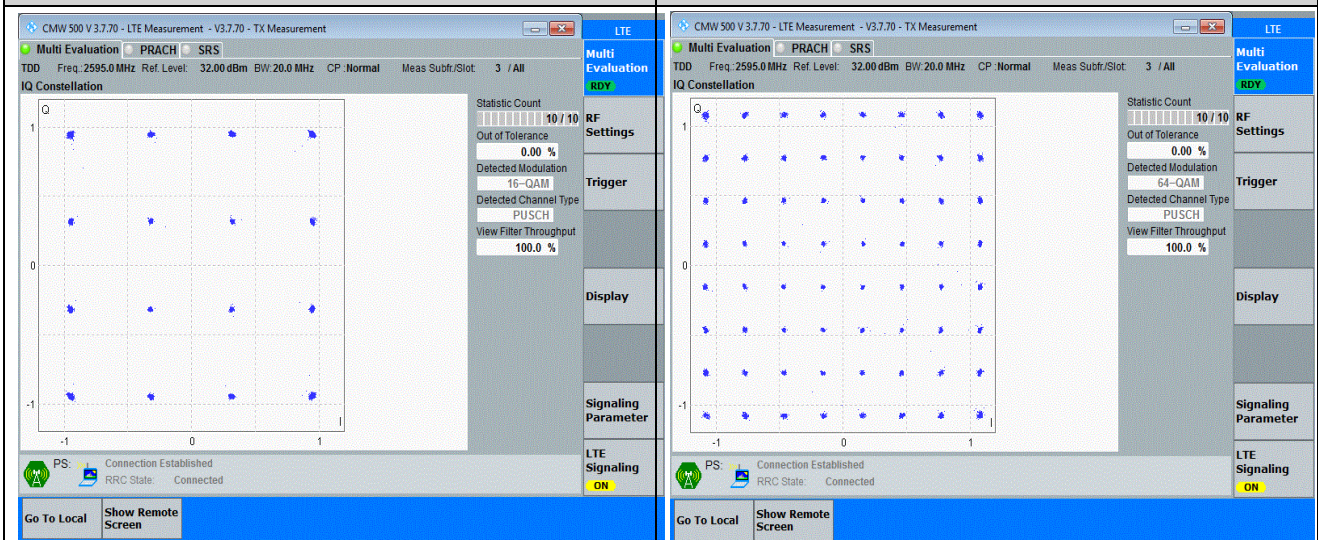
Band17-10MHz-64QAM-23790-50RB#0

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



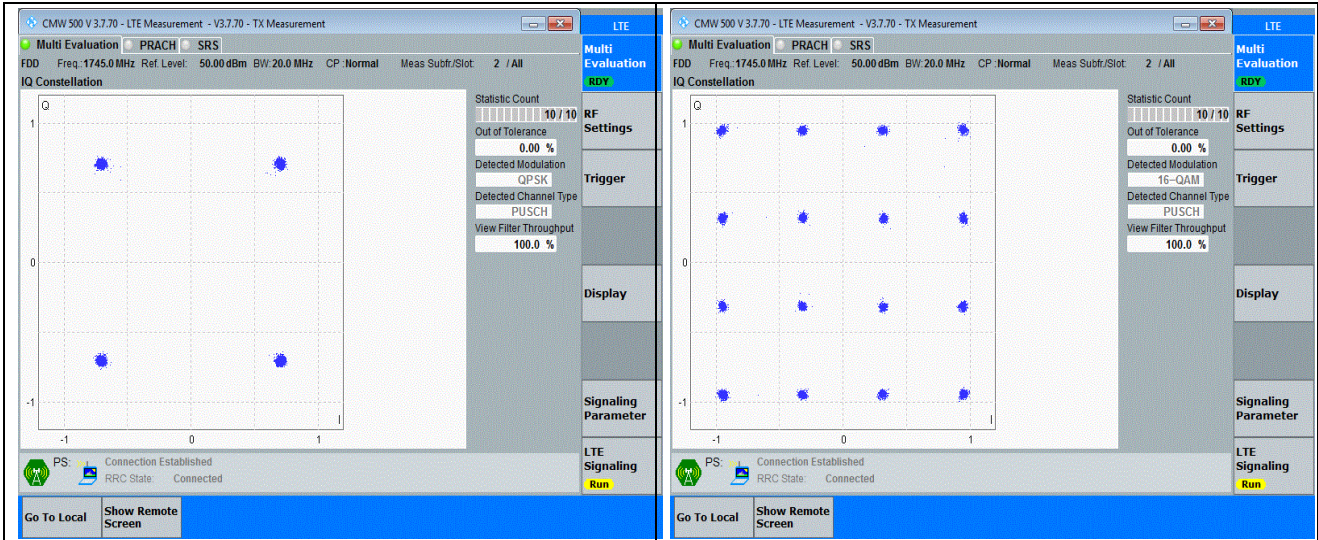
Band41-20MHz-16QAM-40640-100RB#0

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



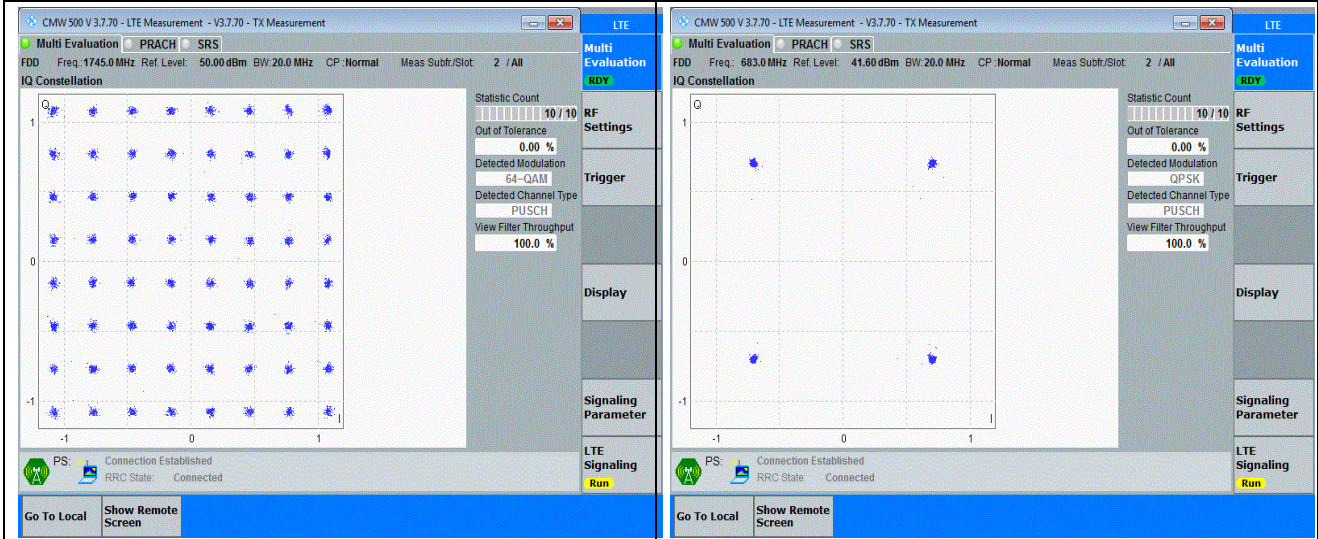
Band66-20MHz-QPSK-132322-100RB#0

Band66-20MHz-16QAM-132322-100RB#0



Band66-20MHz-64QAM-132322-100RB#0

Band71-20MHz-QPSK-133322-100RB#0



Band71-20MHz-16QAM-133322-100RB#0

Band71-20MHz-64QAM-133322-100RB#0

