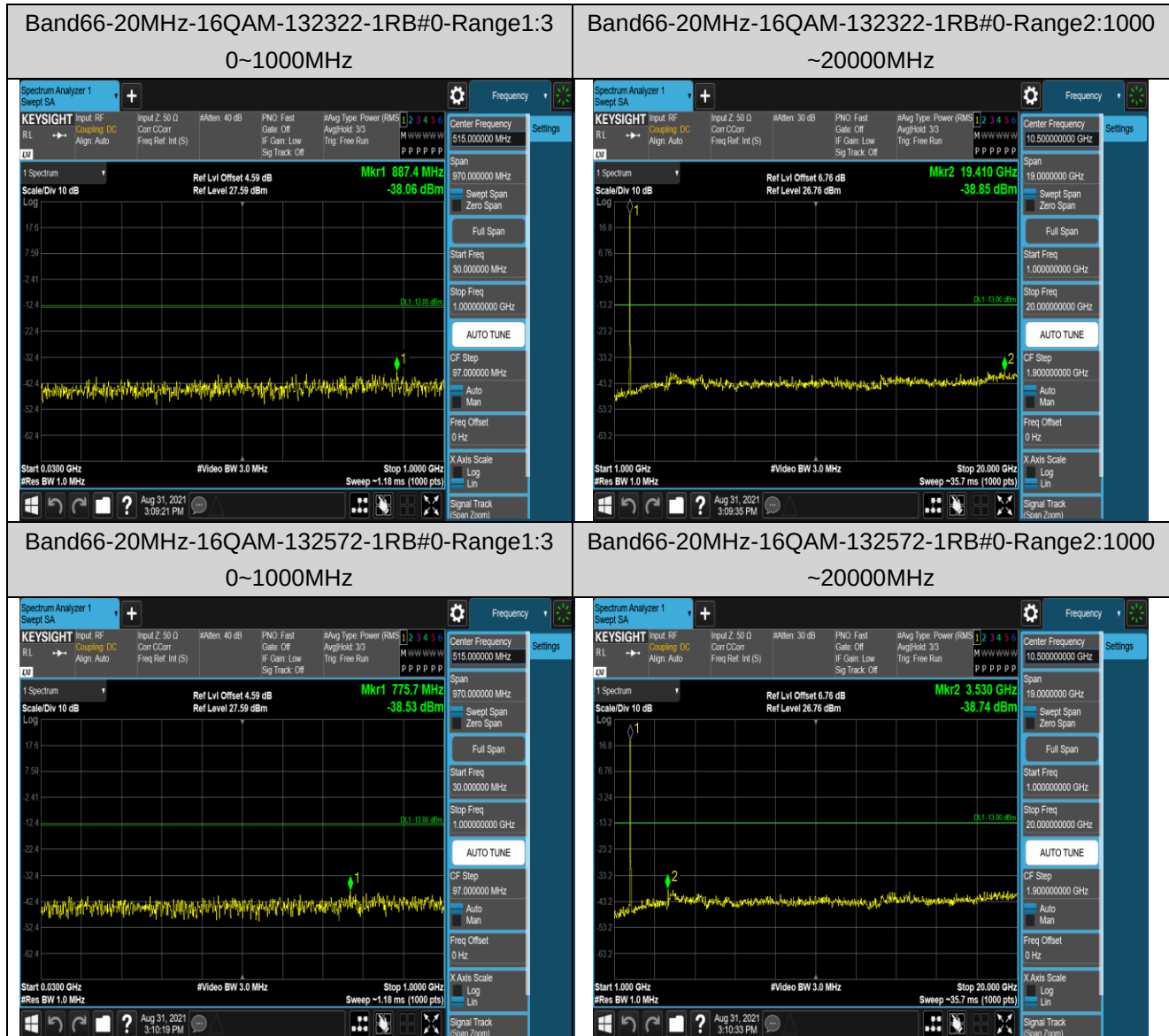




Appendix F: Frequency Stability

Test Result

LTE Band 25 part:

Reference Frequency: LTE Band 25 (10MHz) Middle channel=18900Frequency=1880.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-13.22	-0.007023	Within authorized band for Band 2	Pass
	-20	-10.67	-0.005668		
	-10	-6.22	-0.003304		
	0	-7.91	-0.004202		
	10	-11.44	-0.006077		
	20	-11.07	-0.005880		
	30	-7.01	-0.003724		
	40	-17.78	-0.009445		
	50	-8.18	-0.004345		
16QAM					
3.85	-30	-13.89	-0.007378	Within authorized band for Band 2	Pass
	-20	-15.12	-0.008032		
	-10	-12.04	-0.006396		
	0	-3.76	-0.001997		
	10	-7.48	-0.003973		
	20	-12.62	-0.006704		
	30	-7.40	-0.003931		
	40	-12.67	-0.006730		
	50	-12.19	-0.006475		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.23	-10.90	-0.005790	Within authorized band for Band 2	Pass
	3.85	-15.23	-0.008090		
	4.40	-6.84	-0.003633		
16QAM					
25	3.23	-4.76	-0.002529	Within authorized band for Band 2	Pass
	3.85	-5.82	-0.003092		
	4.40	-11.74	-0.006236		
Remark:All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 26 part:

Reference Frequency: LTE Band 26(10MHz) Middle channel=26740 Frequency=819.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-6.98	-0.008523	Within authorized band for Band 26	Pass
	-20	-6.64	-0.008107		
	-10	-5.46	-0.006667		
	0	-6.44	-0.007863		
	10	-4.81	-0.005873		
	20	-6.14	-0.007497		
	30	-6.34	-0.007741		
	40	-7.15	-0.008730		
	50	-6.35	-0.007753		
16QAM					
3.85	-30	-9.91	-0.012100	Within authorized band for Band 26	Pass
	-20	-9.74	-0.011893		
	-10	-3.49	-0.004261		
	0	-7.20	-0.008791		
	10	-10.27	-0.012540		
	20	-6.08	-0.007424		
	30	-6.92	-0.008449		
	40	-5.46	-0.006667		
	50	-8.87	-0.010830		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.23	-7.82	-0.009548	Within authorized band for Band 26	Pass
	3.85	-8.34	-0.010183		
	4.40	-2.00	-0.002442		
16QAM					
25	3.23	-7.88	-0.009621	Within authorized band for Band 26	Pass
	3.85	-6.68	-0.008156		
	4.40	-14.39	-0.017570		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 26 part:

Reference Frequency: LTE Band 26(10MHz) Middle channel=26915 Frequency=836.5MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-10.04	-0.012002	Within authorized band for Band 26	Pass
	-20	-14.10	-0.016856		
	-10	-9.90	-0.011835		
	0	-10.61	-0.012684		
	10	-6.84	-0.008177		
	20	-6.41	-0.007663		
	30	-11.12	-0.013293		
	40	-8.18	-0.009779		
	50	-8.83	-0.010556		
16QAM					
3.85	-30	-7.72	-0.009229	Within authorized band for Band 26	Pass
	-20	-11.46	-0.013700		
	-10	-9.50	-0.011357		
	0	-11.01	-0.013162		
	10	-13.50	-0.016139		
	20	-7.24	-0.008655		
	30	-12.22	-0.014608		
	40	-9.34	-0.011166		
	50	-8.31	-0.009934		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.23	-8.14	-0.009731	Within authorized band for Band 26	Pass
	3.85	-4.43	-0.005296		
	4.40	-9.81	-0.011727		
16QAM					
25	3.23	-11.23	-0.013425	Within authorized band for Band 26	Pass
	3.85	-11.22	-0.013413		
	4.40	-6.85	-0.008189		
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 (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-8.93	-0.003523	Within authorized band for Band 7	Pass
	-20	4.02	0.001586		
	-10	2.59	0.001022		
	0	-6.14	-0.002422		
	10	-7.95	-0.003136		
	20	-9.50	-0.003748		
	30	-10.37	-0.004091		
	40	-14.31	-0.005645		
	50	7.05	0.002781		
16QAM					
3.85	-30	-10.89	-0.004296	Within authorized band for Band 7	Pass
	-20	-6.28	-0.002477		
	-10	9.57	0.003775		
	0	-11.87	-0.004682		
	10	6.48	0.002556		
	20	-9.04	-0.003566		
	30	-10.04	-0.003961		
	40	-10.94	-0.004316		
	50	-9.94	-0.003921		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.23	-3.46	-0.001365	Within authorized band for Band 7	Pass
	3.85	-17.91	-0.007065		
	4.40	2.12	0.000836		
16QAM					
25	3.23	-17.08	-0.006738	Within authorized band for Band 7	Pass
	3.85	-9.77	-0.003854		
	4.40	-14.65	-0.005779		
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					
3.85	-30	-13.07	-0.018473	Within authorized band for Band 12	Pass
	-20	-9.97	-0.014092		
	-10	-12.56	-0.017753		
	0	-8.27	-0.011689		
	10	-3.45	-0.004876		
	20	-5.95	-0.008410		
	30	-7.08	-0.010007		
	40	-7.31	-0.010332		
	50	-11.40	-0.016113		
16QAM					
3.85	-30	-8.93	-0.012622	Within authorized band for Band 12	Pass
	-20	-7.24	-0.010233		
	-10	-7.75	-0.010954		
	0	-11.01	-0.015562		
	10	-5.49	-0.007760		
	20	-3.85	-0.005442		
	30	-3.91	-0.005527		
	40	-3.58	-0.005060		
	50	-4.53	-0.006403		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.23	-7.90	-0.011166	Within authorized band for Band 12	Pass
	3.85	-3.40	-0.004806		
	4.40	-11.63	-0.016438		
16QAM					
25	3.23	-6.62	-0.009357	Within authorized band for Band 12	Pass
	3.85	-6.57	-0.009286		
	4.40	-5.15	-0.007279		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 13 part:

Reference Frequency: LTE Band 13(10MHz) Middle channel=23230 Frequency=782.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-7.22	-0.009233	Within authorized band for Band 13	Pass
	-20	-10.50	-0.013427		
	-10	-10.17	-0.013005		
	0	-6.31	-0.008069		
	10	-8.20	-0.010486		
	20	-9.47	-0.012110		
	30	-10.31	-0.013184		
	40	-9.94	-0.012711		
	50	-6.69	-0.008555		
16QAM					
3.85	-30	-10.49	-0.013414	Within authorized band for Band 13	Pass
	-20	-4.58	-0.005857		
	-10	-11.84	-0.015141		
	0	-4.82	-0.006164		
	10	-11.32	-0.014476		
	20	-8.01	-0.010243		
	30	-7.34	-0.009386		
	40	-11.03	-0.014105		
	50	-12.27	-0.015691		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.23	-5.51	-0.007046	Within authorized band for Band 13	Pass
	3.85	-8.84	-0.011304		
	4.40	-7.85	-0.010038		
16QAM					
25	3.23	-11.99	-0.015332	Within authorized band for Band 13	Pass
	3.85	-8.28	-0.010588		
	4.40	-11.20	-0.014322		
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					
3.85	-30	-11.07	-0.015592	Within authorized band for Band 17	Pass
	-20	-12.20	-0.017183		
	-10	-13.02	-0.018338		
	0	-10.89	-0.015338		
	10	-7.97	-0.011225		
	20	-10.39	-0.014634		
	30	-5.42	-0.007634		
	40	-5.04	-0.007099		
	50	-6.68	-0.009408		
16QAM					
3.85	-30	-4.85	-0.006831	Within authorized band for Band 17	Pass
	-20	-7.87	-0.011085		
	-10	-8.13	-0.011451		
	0	-3.82	-0.005380		
	10	-7.44	-0.010479		
	20	-7.61	-0.010718		
	30	-6.09	-0.008577		
	40	-9.27	-0.013056		
	50	-3.89	-0.005479		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.23	-6.51	-0.009169	Within authorized band for Band 17	Pass
	3.85	-2.53	-0.003563		
	4.40	-10.60	-0.014930		
16QAM					
25	3.23	-13.39	-0.018859	Within authorized band for Band 17	Pass
	3.85	-9.34	-0.013155		
	4.40	1.20	0.001690		
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 (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-12.59	-0.004852	Within authorized band for Band 41	Pass
	-20	-17.27	-0.006655		
	-10	-5.11	-0.001969		
	0	-13.29	-0.005121		
	10	-12.92	-0.004979		
	20	-11.84	-0.004563		
	30	-12.99	-0.005006		
	40	-11.73	-0.004520		
	50	-10.94	-0.004216		
16QAM					
3.85	-30	-11.57	-0.004459	Within authorized band for Band 41	Pass
	-20	-9.60	-0.003699		
	-10	-7.28	-0.002805		
	0	-15.86	-0.006112		
	10	-15.85	-0.006108		
	20	-7.20	-0.002775		
	30	-11.27	-0.004343		
	40	-12.09	-0.004659		
	50	-12.59	-0.004852		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.23	-8.50	-0.003276	Within authorized band for Band 41	Pass
	3.85	-5.14	-0.001981		
	4.40	-12.73	-0.004906		
16QAM					
25	3.23	-9.16	-0.003530	Within authorized band for Band41	Pass
	3.85	-11.01	-0.004243		
	4.40	-10.33	-0.003981		
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=132322Frequency=1745.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-8.94	-0.005123	Within authorized band for Band 66	Pass
	-20	-5.11	-0.002928		
	-10	-4.11	-0.002355		
	0	-5.61	-0.003215		
	10	-9.08	-0.005203		
	20	-8.05	-0.004613		
	30	-6.90	-0.003954		
	40	-8.96	-0.005135		
	50	-10.10	-0.005788		
16QAM					
3.85	-30	-7.88	-0.004516	Within authorized band for Band 66	Pass
	-20	-9.13	-0.005232		
	-10	-7.94	-0.004550		
	0	-10.70	-0.006132		
	10	-5.08	-0.002911		
	20	-8.14	-0.004665		
	30	-7.84	-0.004493		
	40	-8.44	-0.004837		
	50	-8.28	-0.004745		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.23	-3.29	-0.001885	Within authorized band for Band 66	Pass
	3.85	-5.16	-0.002957		
	4.40	-7.15	-0.004097		
16QAM					
25	3.23	-10.49	-0.006011	Within authorized band for Band 66	Pass
	3.85	-7.97	-0.004567		
	4.40	-10.23	-0.005862		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

AppendixG:Modulation Characteristics

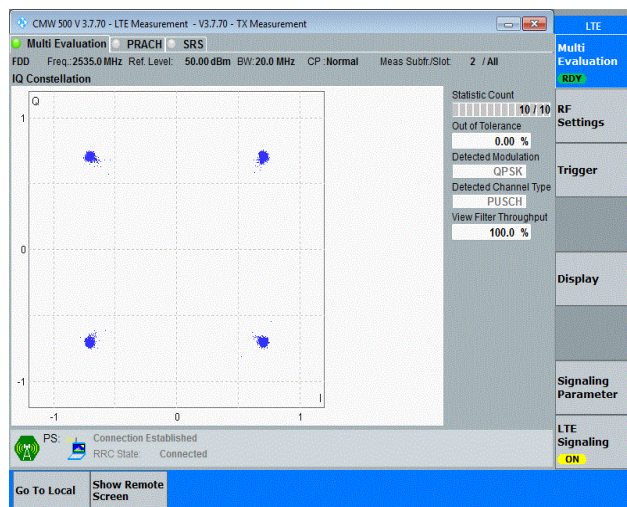
Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result	Verdict
Band7	20MHz	QPSK	21100	100RB#0	PASS	PASS
Band7	20MHz	16QAM	21100	100RB#0	PASS	PASS
Band12	10MHz	QPSK	23095	50RB#0	PASS	PASS
Band12	10MHz	16QAM	23095	50RB#0	PASS	PASS
Band13	10MHz	QPSK	23230	50RB#0	PASS	PASS
Band13	10MHz	16QAM	23230	50RB#0	PASS	PASS
Band17	10MHz	QPSK	23790	50RB#0	PASS	PASS
Band17	10MHz	16QAM	23790	50RB#0	PASS	PASS
Band25	20MHz	QPSK	26365	100RB#0	PASS	PASS
Band25	20MHz	16QAM	26365	100RB#0	PASS	PASS
Band26	15MHz	QPSK	26765	75RB#0	PASS	PASS
Band26	15MHz	QPSK	26915	75RB#0	PASS	PASS
Band26	15MHz	16QAM	26765	75RB#0	PASS	PASS
Band26	15MHz	16QAM	26915	75RB#0	PASS	PASS
Band41	20MHz	QPSK	40640	100RB#0	PASS	PASS
Band41	20MHz	16QAM	40640	100RB#0	PASS	PASS
Band66	20MHz	QPSK	132322	100RB#0	PASS	PASS
Band66	20MHz	16QAM	132322	100RB#0	PASS	PASS

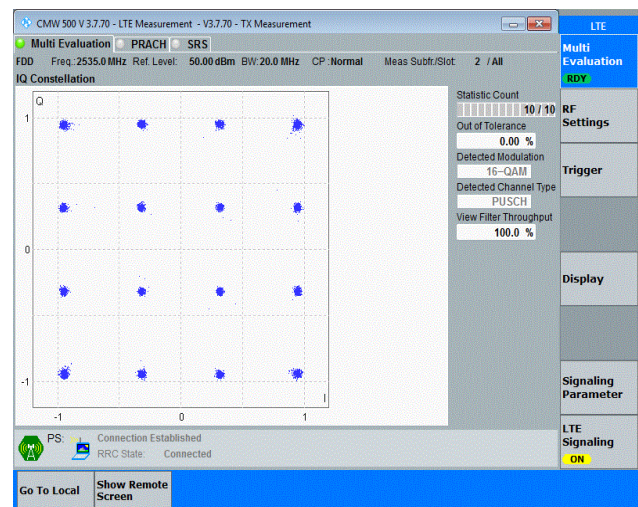
Remark:All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.

Test Graphs

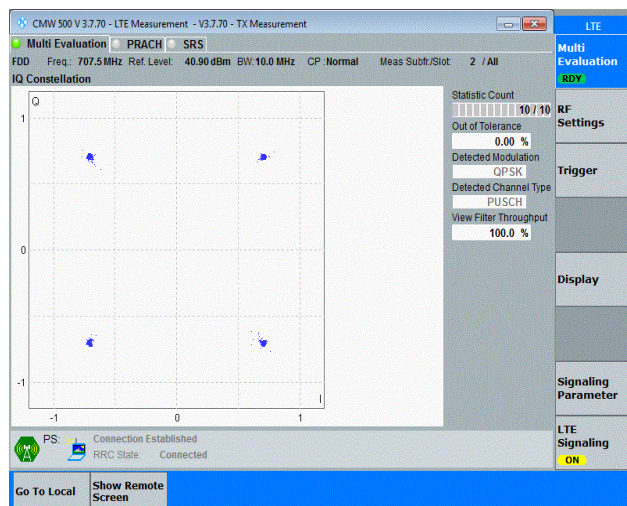
Band7-20MHz-QPSK-21100-100RB#0



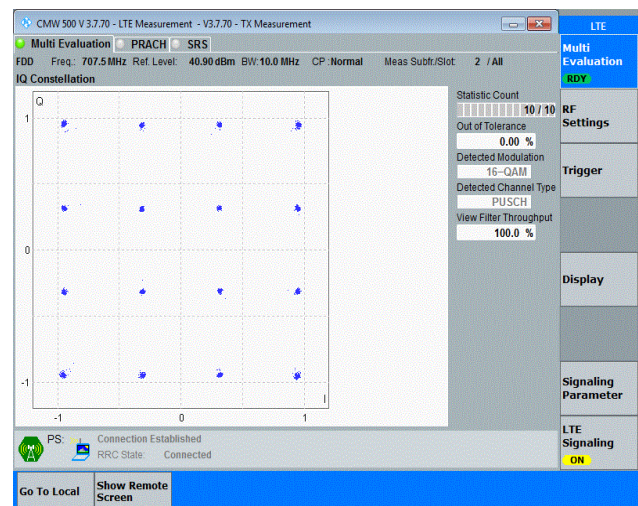
Band7-20MHz-16QAM-21100-100RB#0



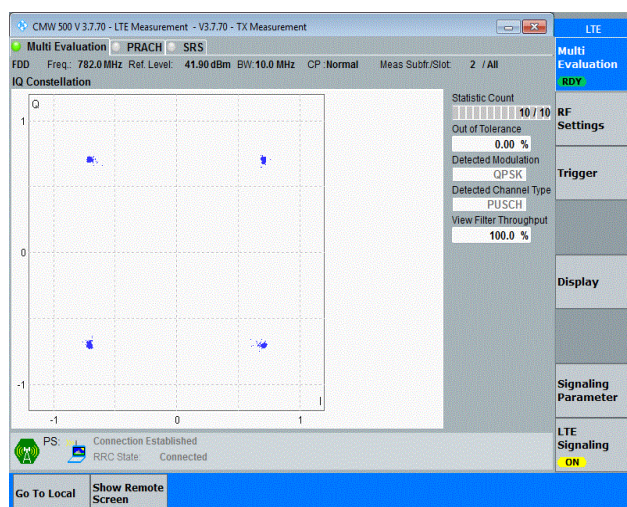
Band12-10MHz-QPSK-23095-50RB#0



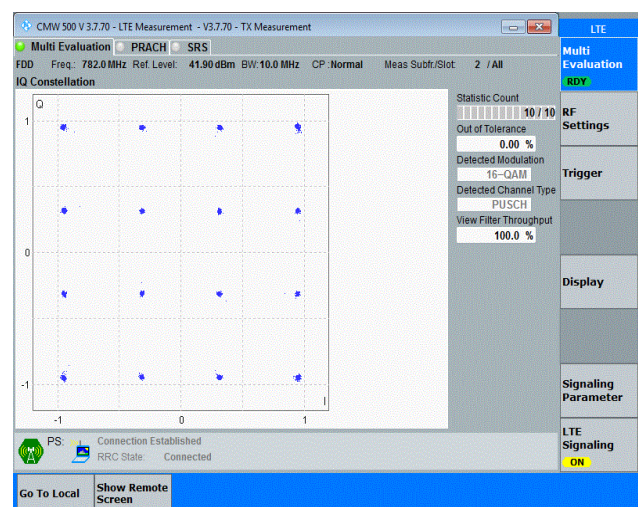
Band12-10MHz-16QAM-23095-50RB#0



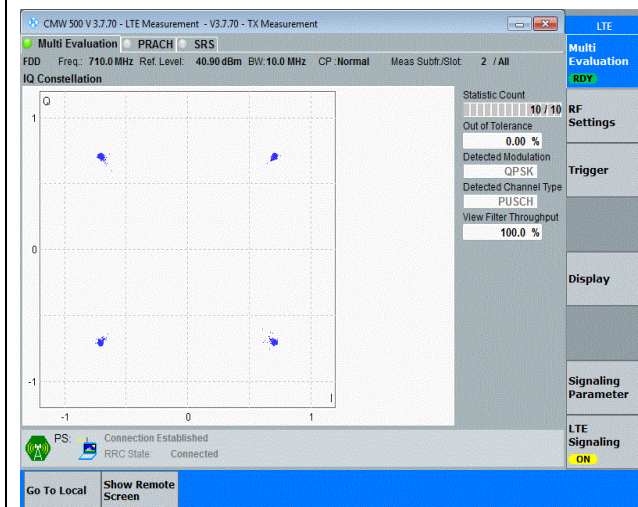
Band13-10MHz-QPSK-23230-50RB#0



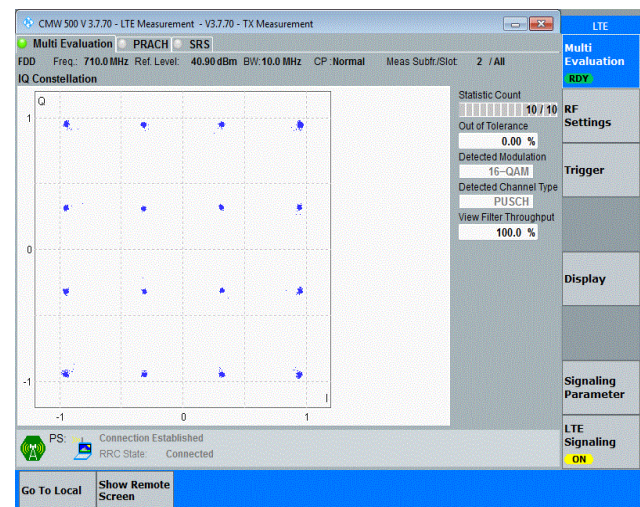
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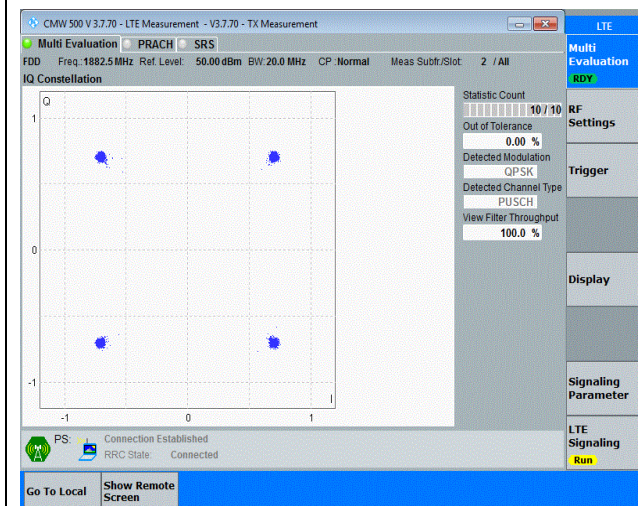
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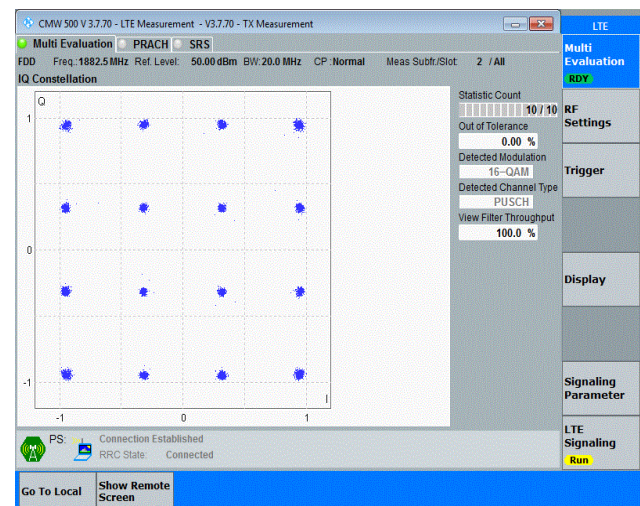
Band17-10MHz-16QAM-23790-50RB#0



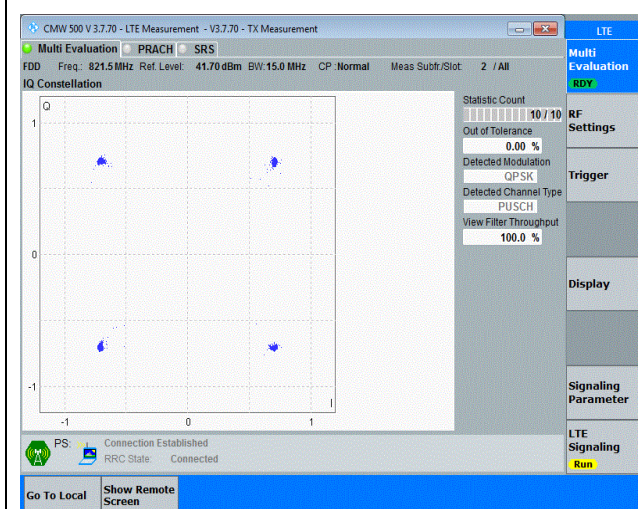
Band25-20MHz-QPSK-26365-100RB#0



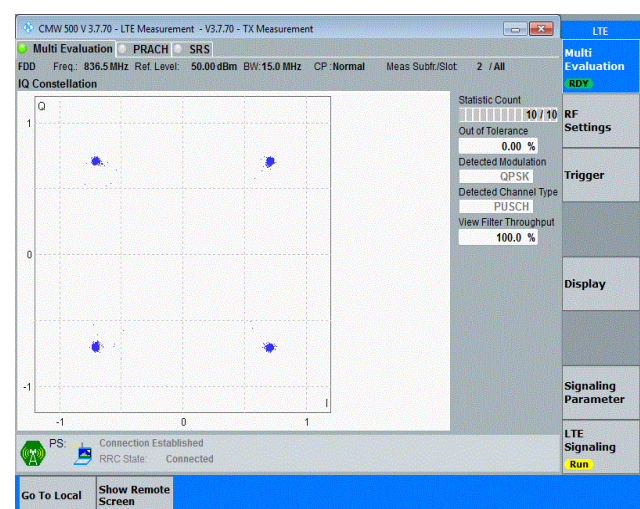
Band25-20MHz-16QAM-26365-100RB#0



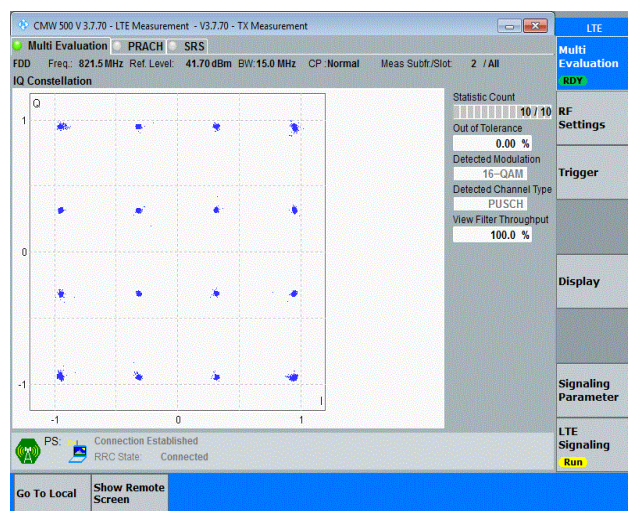
Band26-15MHz-QPSK-26765-75RB#0



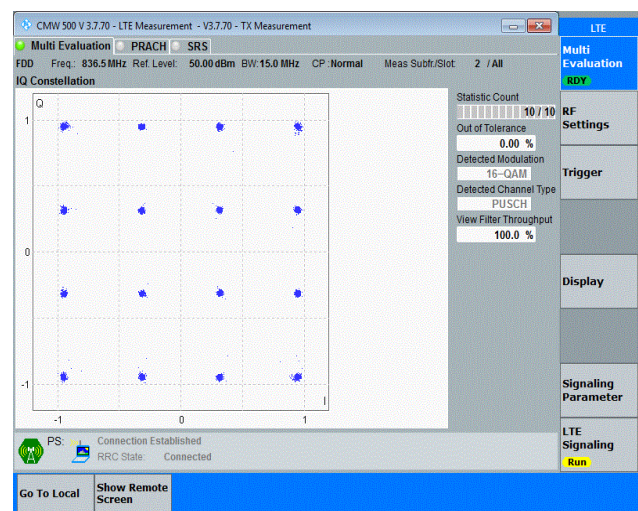
Band26-15MHz-QPSK-26915-75RB#0



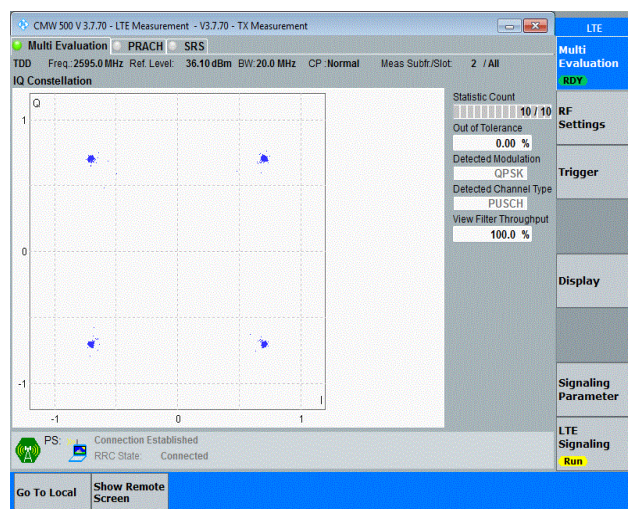
Band26-15MHz-16QAM-26765-75RB#0



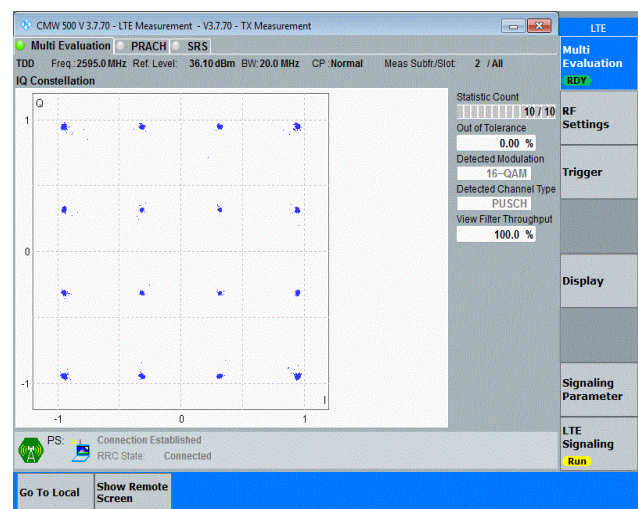
Band26-15MHz-16QAM-26915-75RB#0



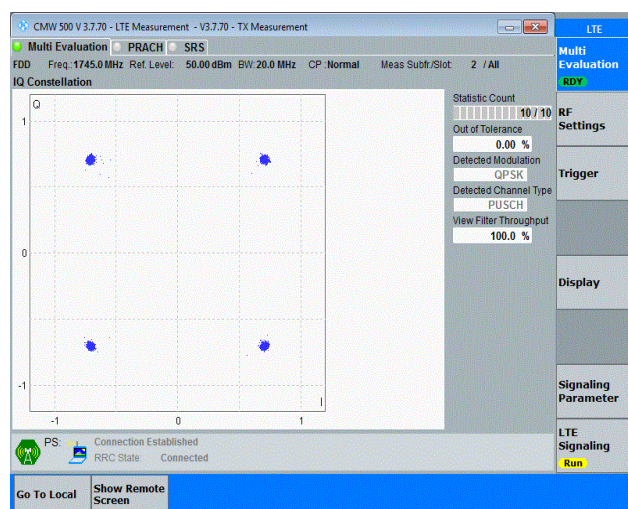
Band41-20MHz-QPSK-40640-100RB#0



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



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



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

