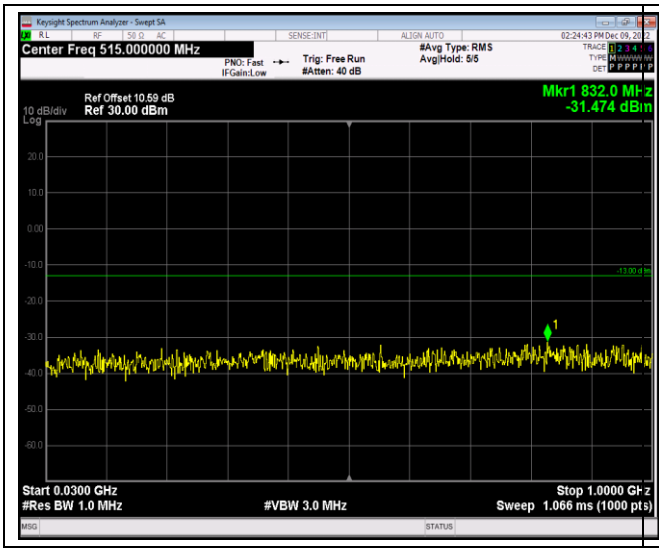
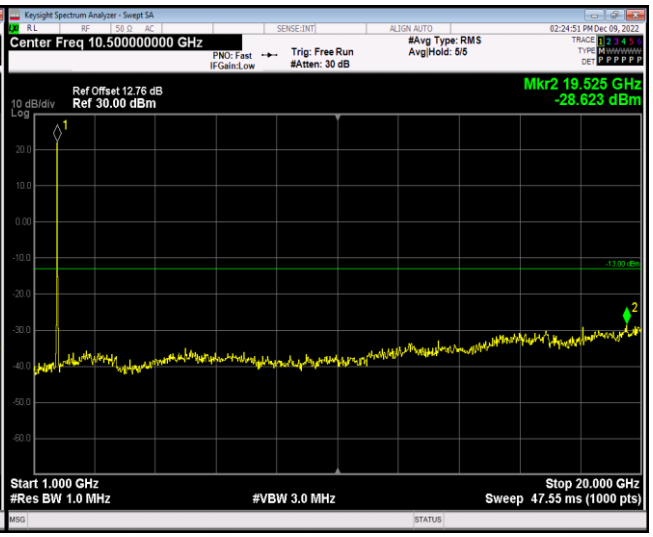
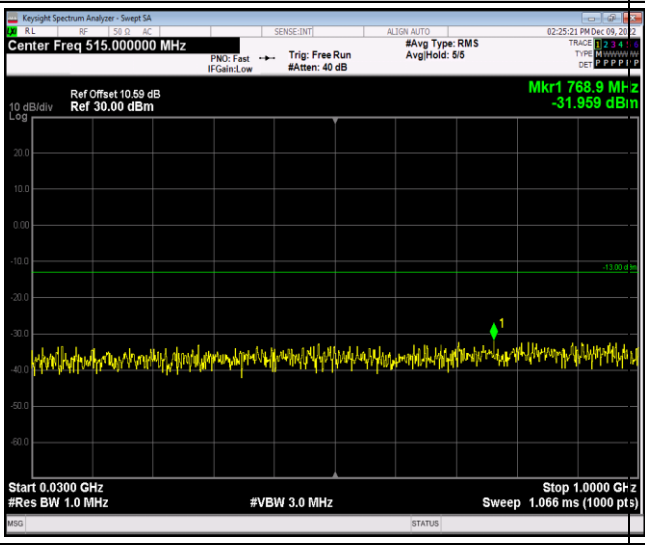


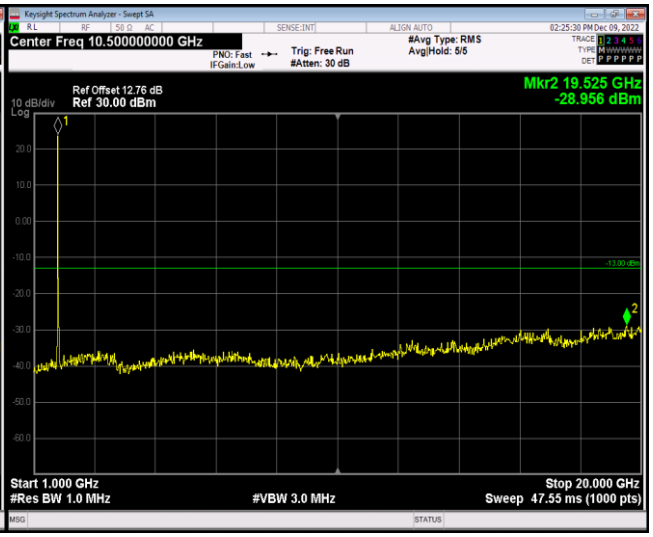
Band66-20MHz-QPSK-132572-1RB#0-Range1:30~1000MHz



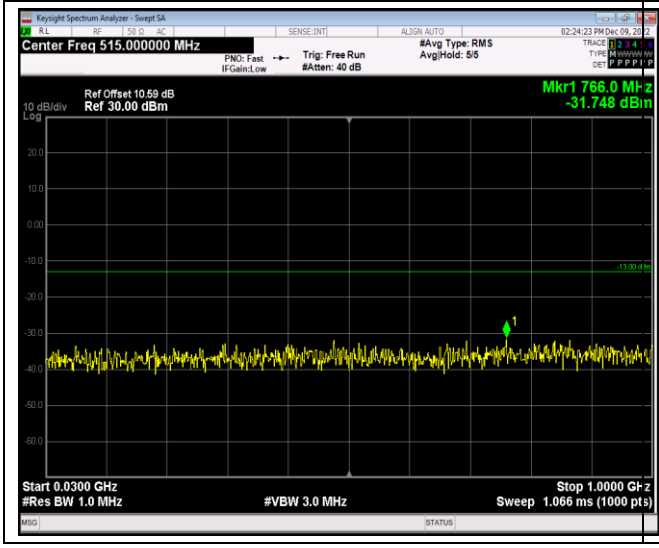
Band66-20MHz-QPSK-132572-1RB#0-Range2:1000~20000MHz

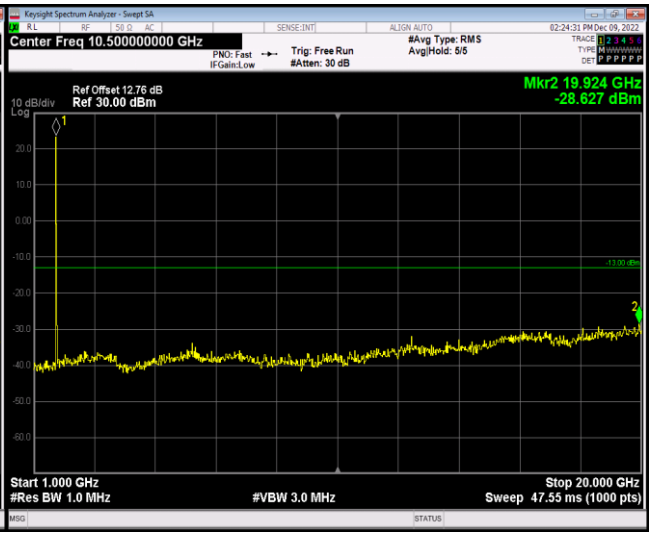


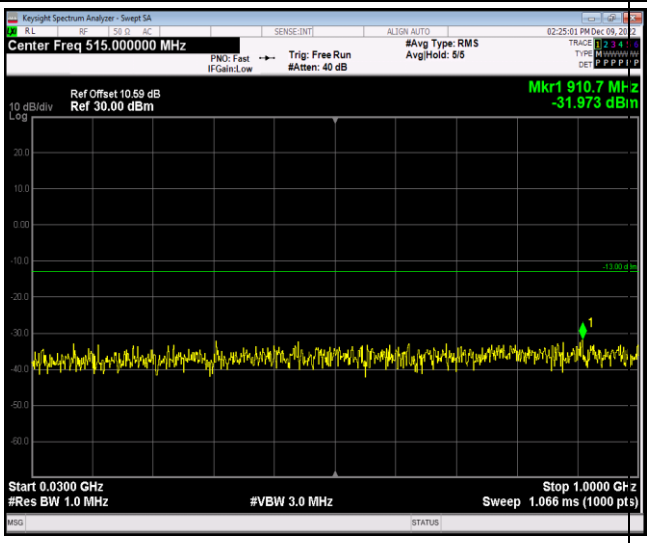
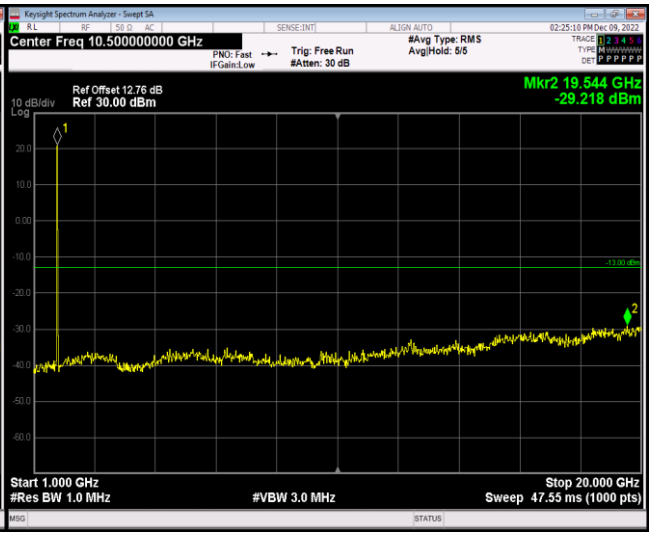
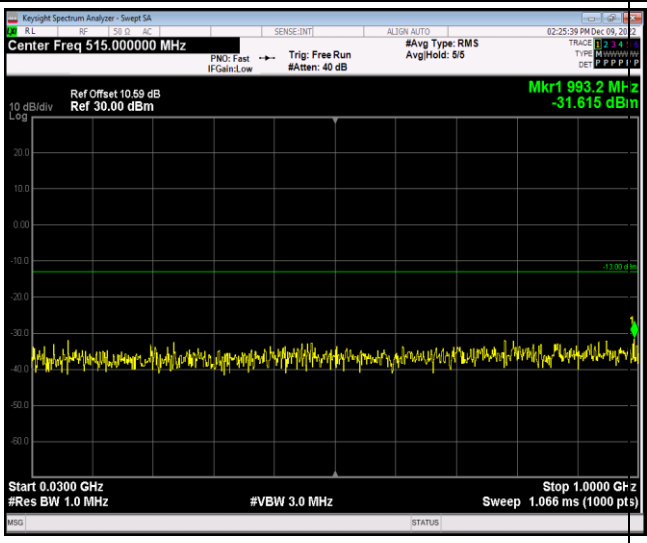
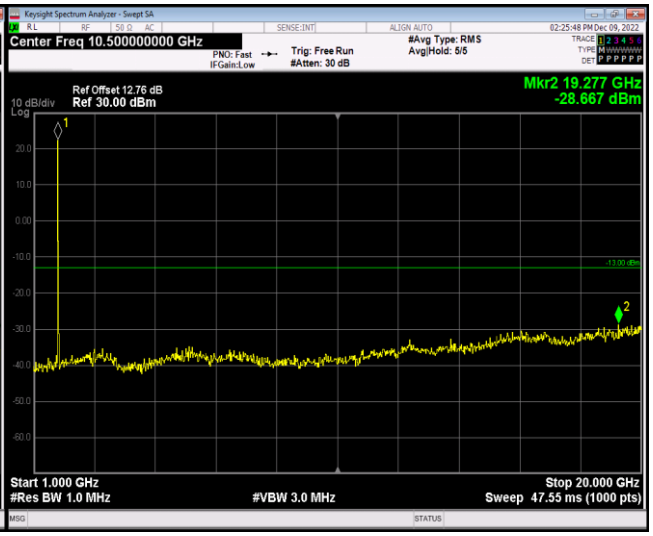
Band66-20MHz-16QAM-132072-1RB#0-Range1:30~1000MHz

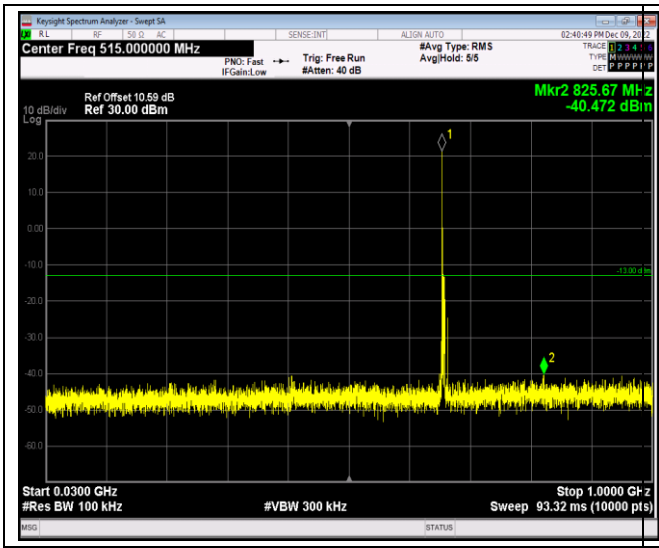


Band66-20MHz-16QAM-132072-1RB#0-Range2:1000~20000MHz

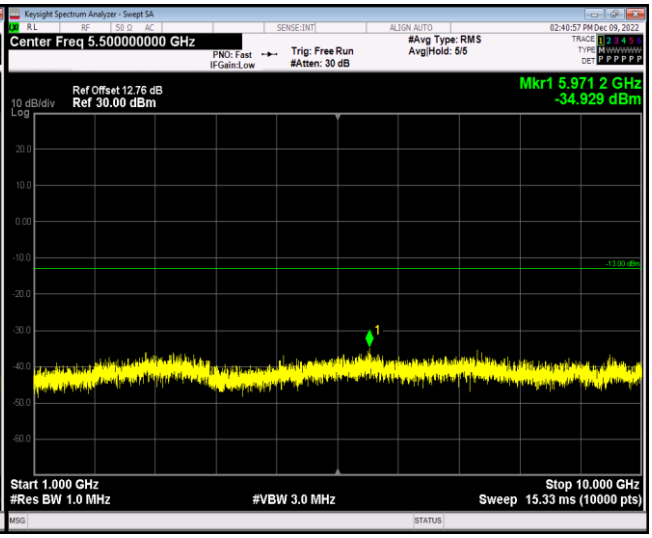




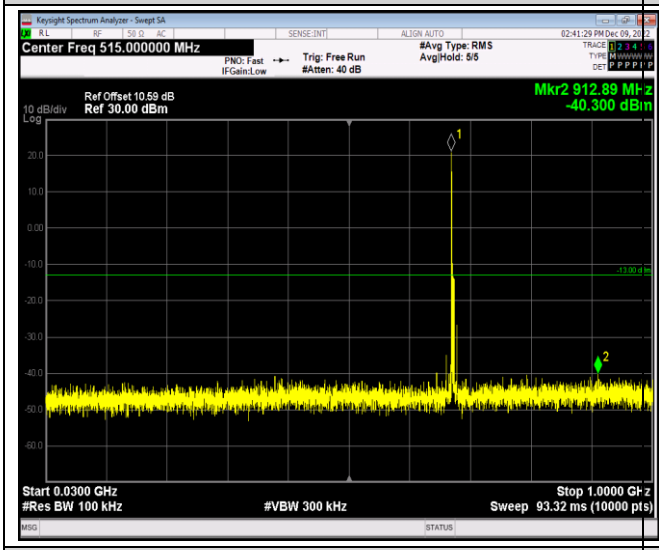
Band66-20MHz-16QAM-132322-1RB#0-Range1:30~1000MHz	Band66-20MHz-16QAM-132322-1RB#0-Range2:1000~20000MHz
	
Band66-20MHz-16QAM-132572-1RB#0-Range1:30~1000MHz	Band66-20MHz-16QAM-132572-1RB#0-Range2:1000~20000MHz
	
Band71-5MHz-QPSK-133147-1RB#0-Range1:30~1000MHz	Band71-5MHz-QPSK-133147-1RB#0-Range2:1000~10000MHz



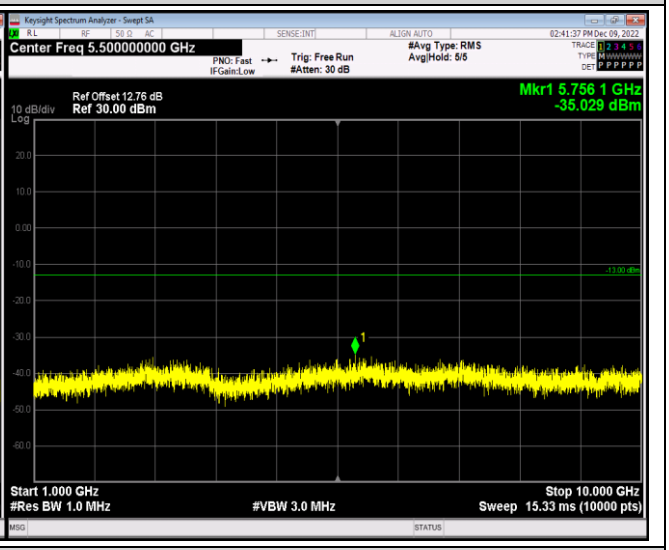
Band71-5MHz-QPSK-133297-1RB#0-Range1:30~1000MHz



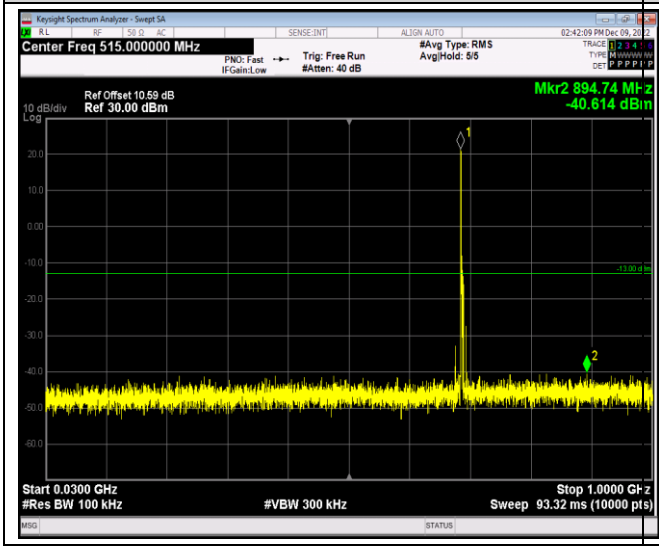
Band71-5MHz-QPSK-133297-1RB#0-Range2:1000~10000MHz

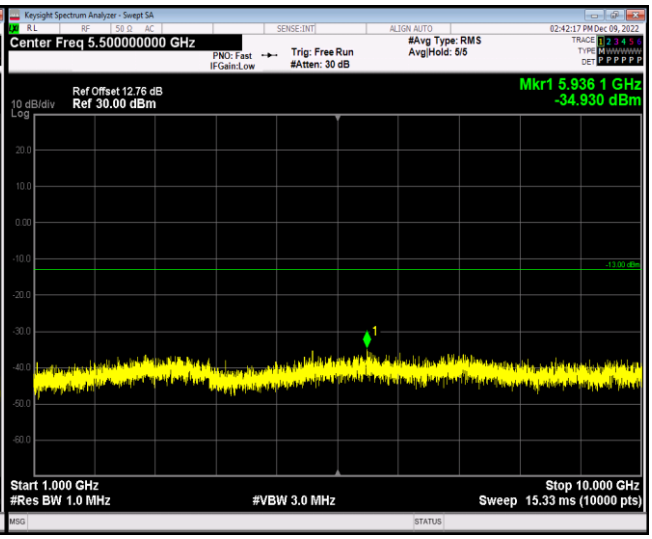


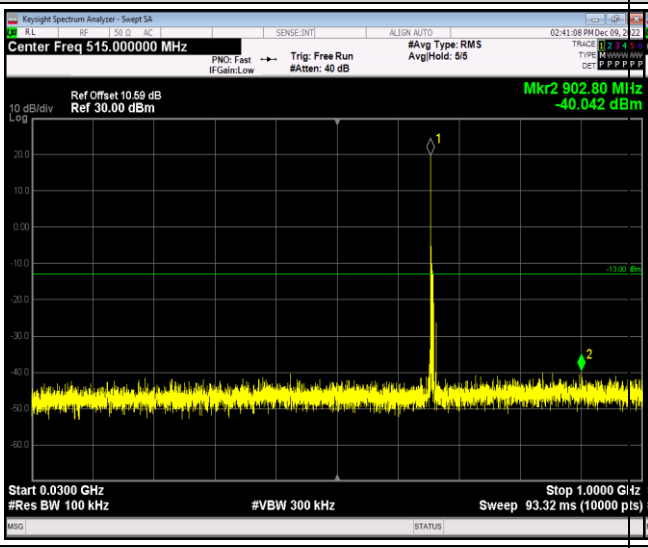
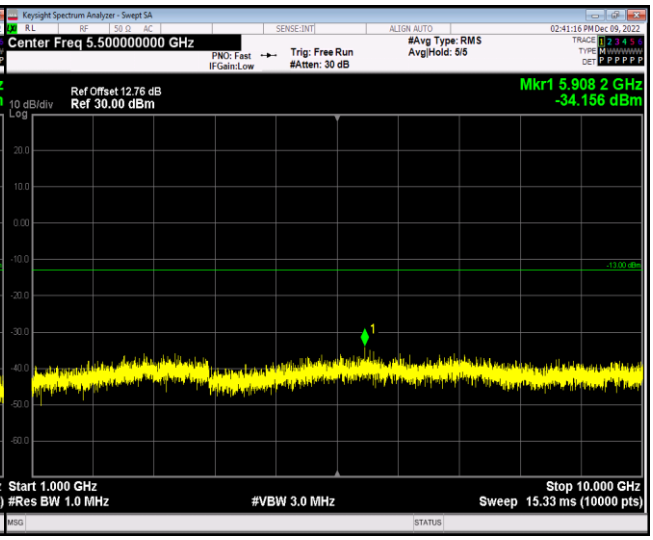
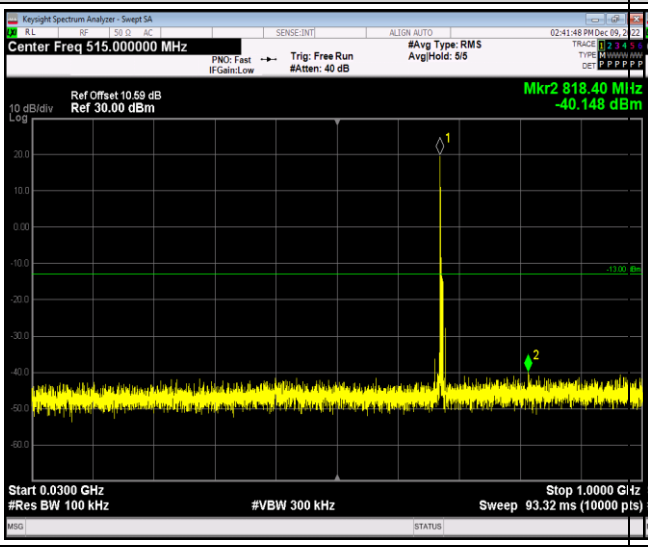
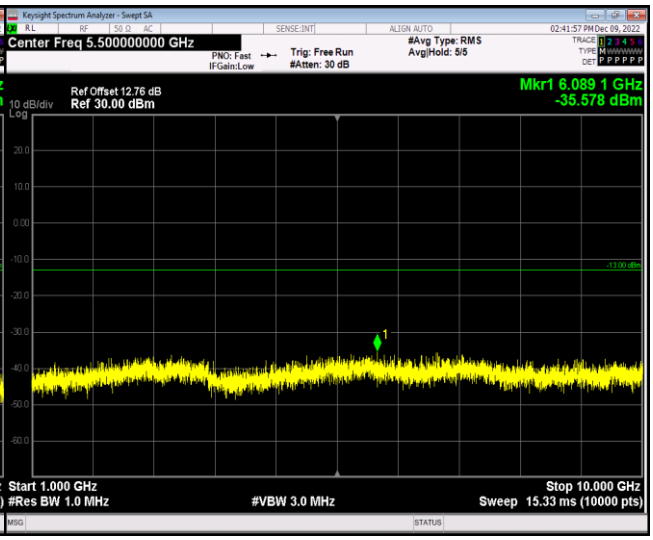
Band71-5MHz-QPSK-133447-1RB#0-Range1:30~1000MHz

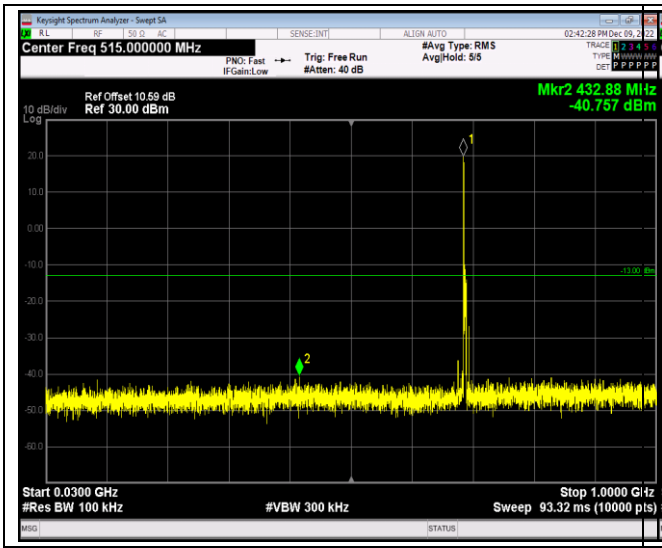


Band71-5MHz-QPSK-133447-1RB#0-Range2:1000~10000MHz

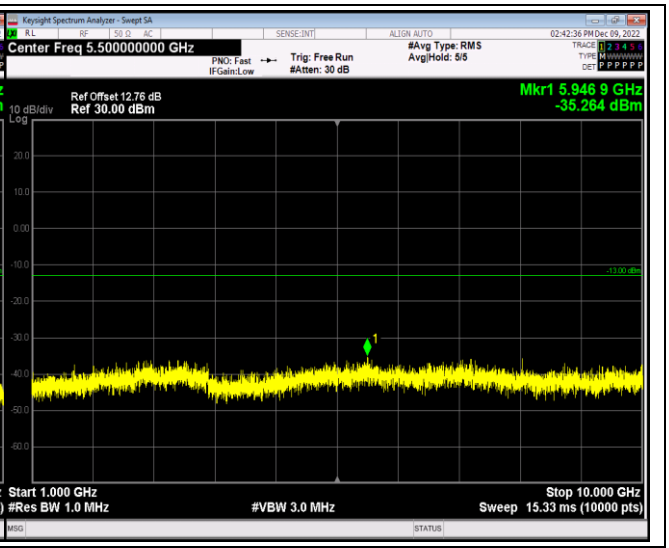




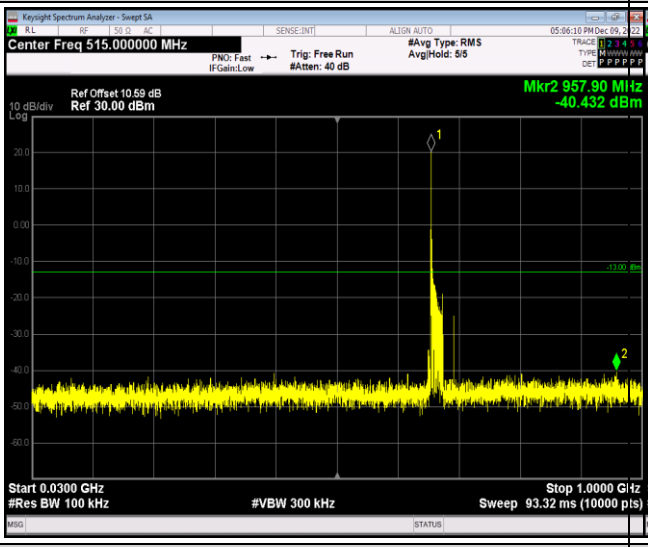
Band71-5MHz-16QAM-133147-1RB#0-Range1:30 ~1000MHz	Band71-5MHz-16QAM-133147-1RB#0-Range2:1000~ 10000MHz
	
Band71-5MHz-16QAM-133297-1RB#0-Range1:30 ~1000MHz	Band71-5MHz-16QAM-133297-1RB#0-Range2:1000~ 10000MHz
	
Band71-5MHz-16QAM-133447-1RB#0-Range1:30 ~1000MHz	Band71-5MHz-16QAM-133447-1RB#0-Range2:1000~ 10000MHz



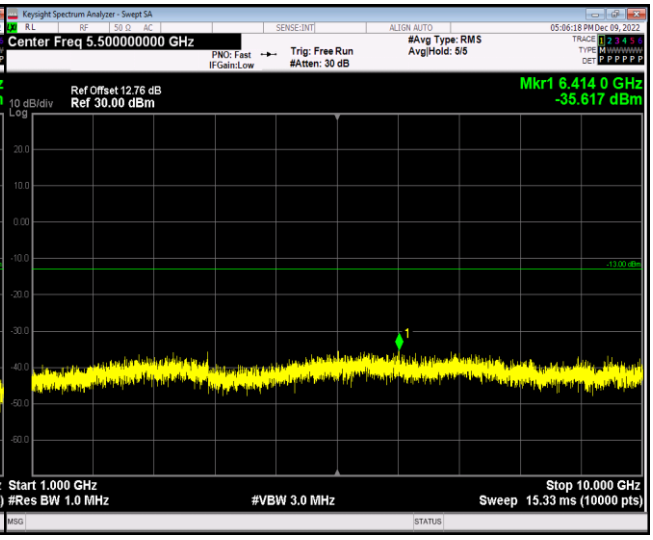
Band71-20MHz-QPSK-133222-1RB#0-Range1:30 ~1000MHz



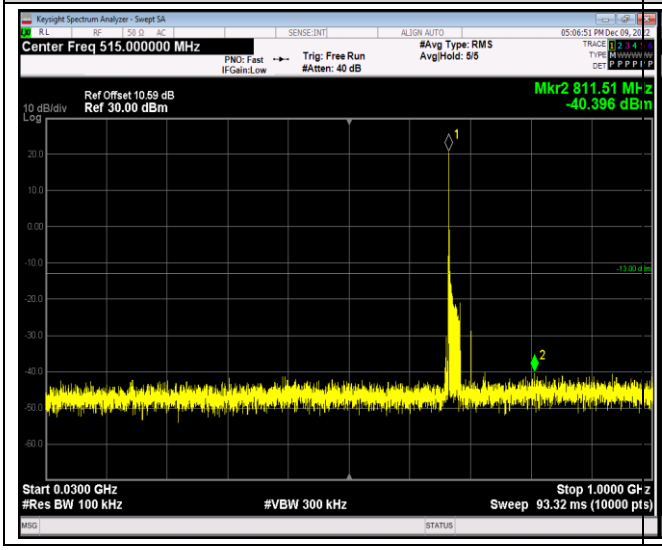
Band71-20MHz-QPSK-133222-1RB#0-Range2:1000~10000MHz

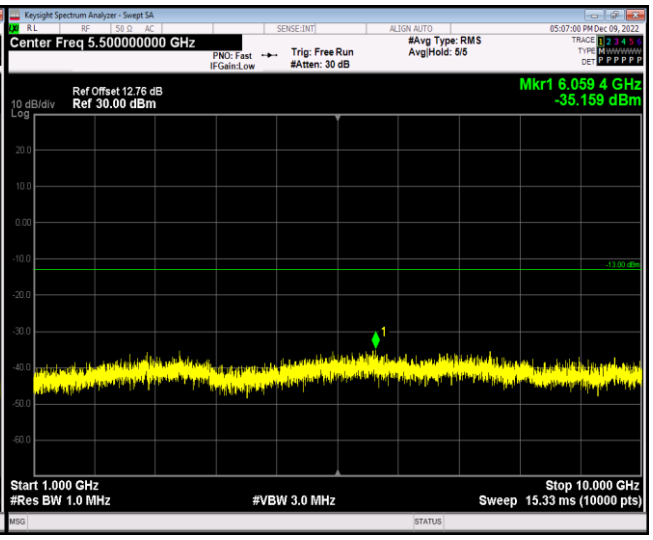


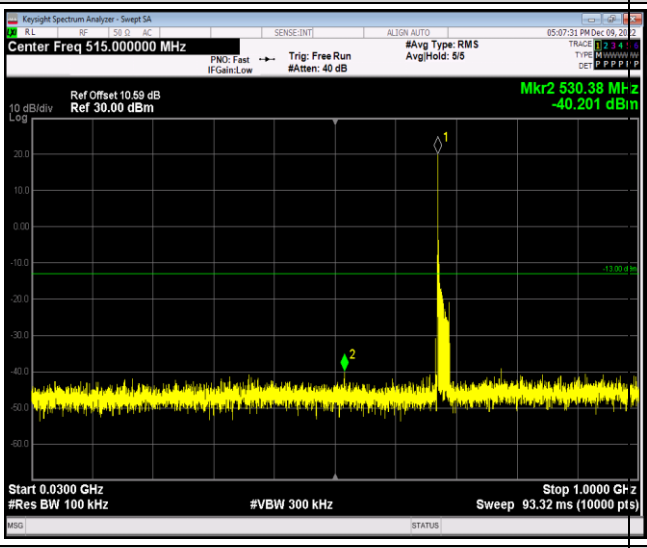
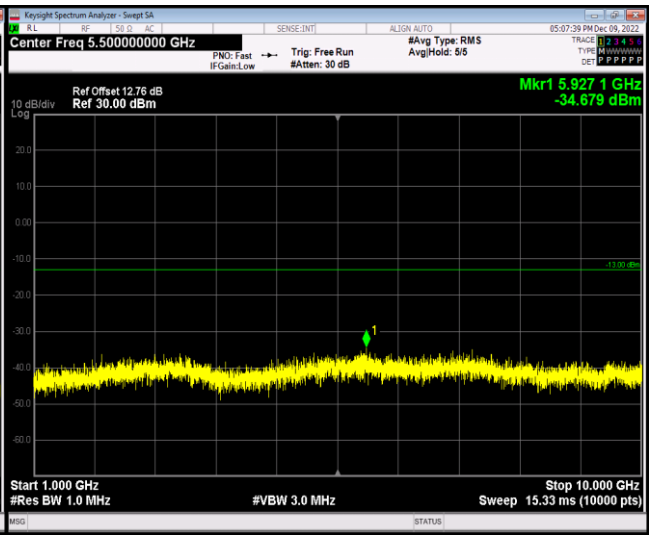
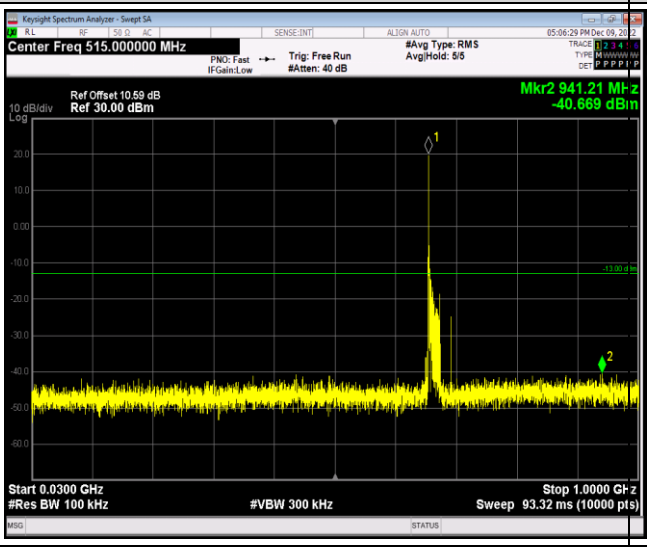
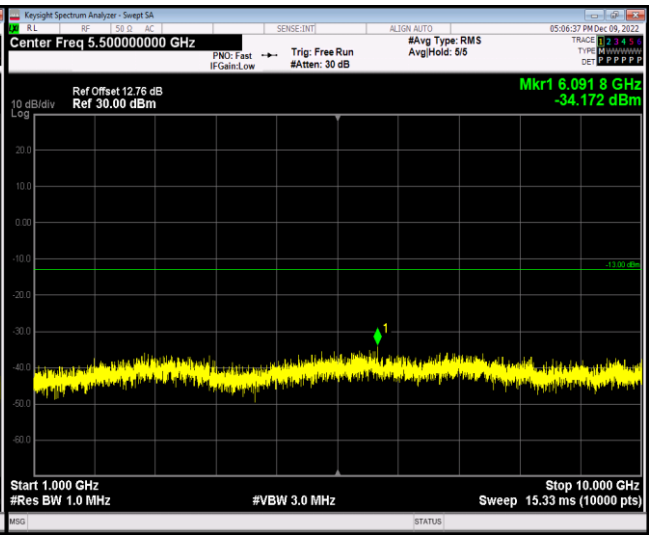
Band71-20MHz-QPSK-133322-1RB#0-Range1:30 ~1000MHz

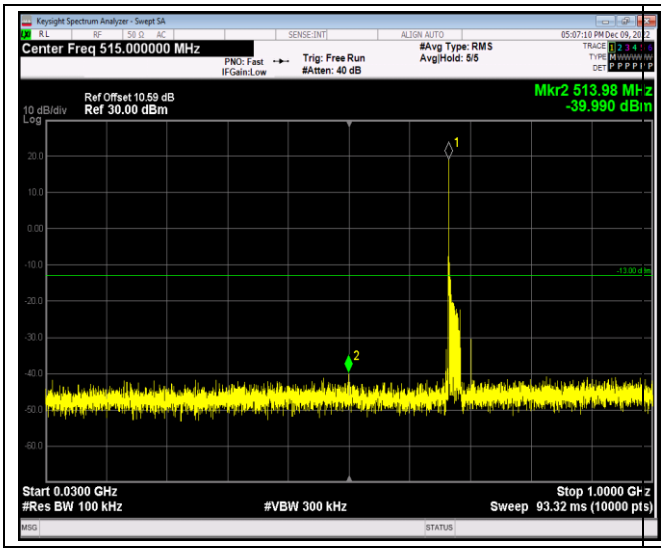


Band71-20MHz-QPSK-133322-1RB#0-Range2:1000~10000MHz

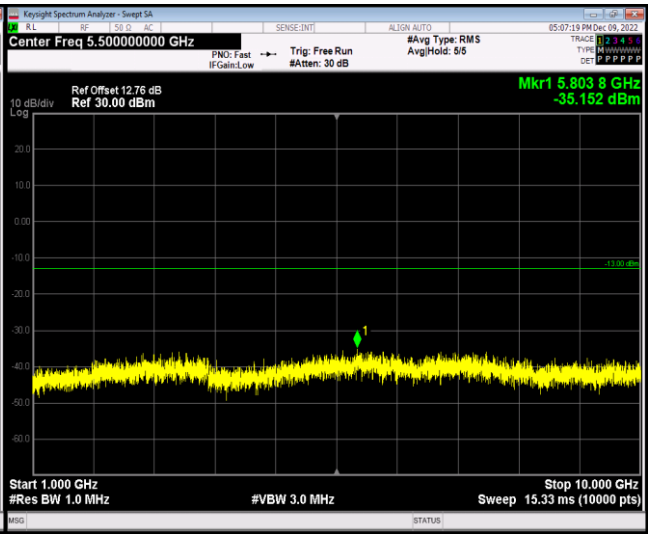




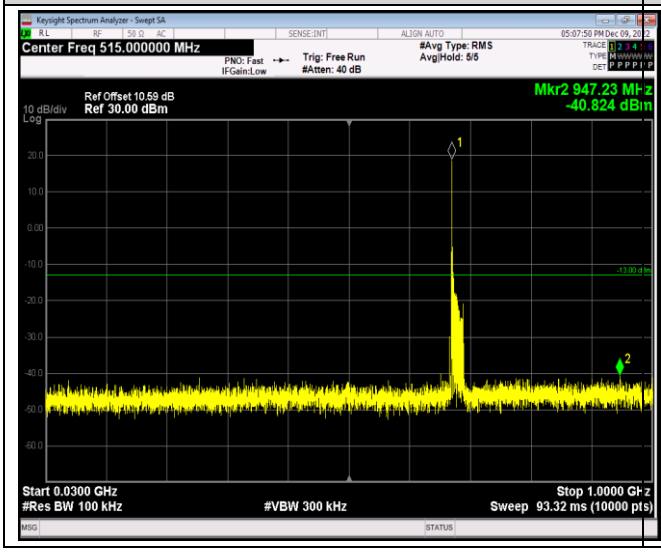
Band71-20MHz-QPSK-133372-1RB#0-Range1:30~1000MHz	Band71-20MHz-QPSK-133372-1RB#0-Range2:1000~10000MHz
	
Band71-20MHz-16QAM-133222-1RB#0-Range1:30~1000MHz	Band71-20MHz-16QAM-133222-1RB#0-Range2:1000~10000MHz
	
Band71-20MHz-16QAM-133322-1RB#0-Range1:30~1000MHz	Band71-20MHz-16QAM-133322-1RB#0-Range2:1000~10000MHz

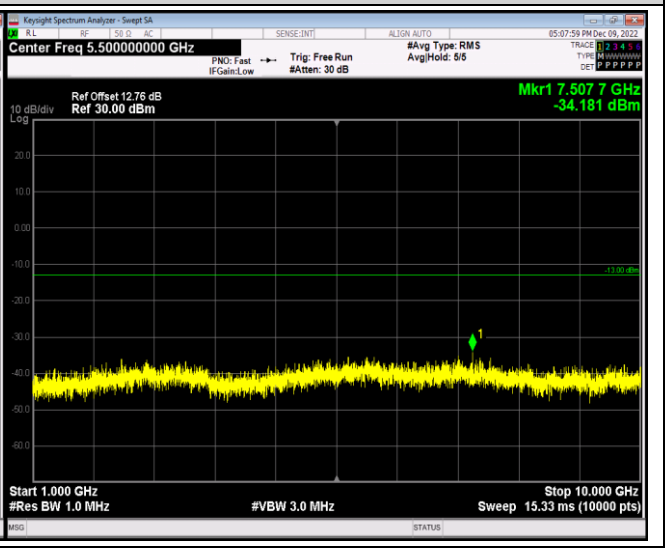


Band71-20MHz-16QAM-133372-1RB#0-Range1:30~1000MHz



Band71-20MHz-16QAM-133372-1RB#0-Range2:1000~10000MHz





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	-36.61	-0.019473	Within authorized band for Band 2	Pass
	-20	-14.32	-0.007617		
	-10	-12.77	-0.006793		
	0	-9.56	-0.005085		
	10	10.80	0.005745		
	20	7.17	0.003814		
	30	16.79	0.008931		
	40	17.81	0.009473		
	50	24.83	0.013207		
16QAM					
3.85	-30	18.27	0.009718	Within authorized band for Band 2	Pass
	-20	30.13	0.016027		
	-10	43.89	0.023346		
	0	34.96	0.018596		
	10	34.69	0.018452		
	20	45.08	0.023979		
	30	-27.97	-0.014878		
	40	10.06	0.005351		
	50	28.37	0.015090		
Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-15.94	-0.008479	Within authorized band for Band 2	Pass
	3.85	-13.96	-0.007426		
	4.20	-5.46	-0.002904		
16QAM					
25	3.50	36.82	0.019585	Within authorized band for Band 2	Pass
	3.85	42.94	0.022840		
	4.20	34.95	0.018590		
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	-27.68	-0.033090	±2.5	Pass
	-20	-26.51	-0.031692		
	-10	-24.96	-0.029839		
	0	-22.54	-0.026946		
	10	-17.11	-0.020454		
	20	-13.93	-0.016653		
	30	-12.32	-0.014728		
	40	-13.88	-0.016593		
	50	-9.28	-0.011094		
16QAM					
3.85	-30	-16.48	-0.019701	±2.5	Pass
	-20	-23.56	-0.028165		
	-10	-26.98	-0.032253		
	0	-30.06	-0.035935		
	10	-33.32	-0.039833		
	20	-35.86	-0.042869		
	30	-36.52	-0.043658		
	40	-40.11	-0.047950		
	50	-43.52	-0.052026		
Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-16.98	-0.020299	±2.5	Pass
	3.85	-7.42	-0.008870		
	4.20	-19.91	-0.023802		
16QAM					
25	3.50	-6.22	-0.007436	±2.5	Pass
	3.85	-6.90	-0.008249		
	4.20	-14.88	-0.017788		
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 (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-22.77	-0.032184	Within authorized band for Band 12	Pass
	-20	-23.53	-0.033258		
	-10	-25.02	-0.035364		
	0	-25.69	-0.036311		
	10	-25.76	-0.036410		
	20	-25.09	-0.035463		
	30	-26.41	-0.037329		
	40	-26.36	-0.037258		
	50	-25.65	-0.036254		
16QAM					
3.85	-30	-25.39	-0.035887	Within authorized band for Band 12	Pass
	-20	-27.59	-0.038996		
	-10	-30.06	-0.042488		
	0	-30.43	-0.043011		
	10	-32.69	-0.046205		
	20	-32.79	-0.046346		
	30	-34.59	-0.048890		
	40	-34.23	-0.048382		
	50	-35.02	-0.049498		
Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-15.25	-0.021555	Within authorized band for Band 12	Pass
	3.85	-8.93	-0.012622		
	4.20	-20.71	-0.029272		
16QAM					
25	3.50	-24.79	-0.035039	Within authorized band for Band 12	Pass
	3.85	-26.15	-0.036961		
	4.20	-24.60	-0.034770		
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 (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-16.51	-0.023254	Within authorized band for Band 17	Pass
	-20	-18.48	-0.026028		
	-10	-17.82	-0.025099		
	0	-19.17	-0.027000		
	10	-20.48	-0.028845		
	20	-20.69	-0.029141		
	30	-22.00	-0.030986		
	40	-20.54	-0.028930		
	50	-21.56	-0.030366		
16QAM					
3.85	-30	-25.86	-0.036423	Within authorized band for Band 17	Pass
	-20	-28.21	-0.039732		
	-10	-29.64	-0.041746		
	0	-32.44	-0.045690		
	10	-33.10	-0.046620		
	20	-35.46	-0.049944		
	30	-36.03	-0.050746		
	40	-37.91	-0.053394		
	50	-38.18	-0.053775		
Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-25.23	-0.035535	Within authorized band for Band 17	Pass
	3.85	-6.48	-0.009127		
	4.20	-19.38	-0.027296		
16QAM					
25	3.50	-23.03	-0.032437	Within authorized band for Band 17	Pass
	3.85	-23.20	-0.032676		
	4.20	-23.96	-0.033746		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 41 part:（2535-2655）

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	-29.41	-0.011290	Within authorized band for Band 41	Pass
	-20	-48.17	-0.018491		
	-10	-42.84	-0.016445		
	0	-24.55	-0.009424		
	10	-52.33	-0.020088		
	20	41.37	0.015881		
	30	-18.48	-0.007094		
	40	-14.73	-0.005655		
	50	-35.12	-0.013482		
16QAM					
3.85	-30	-14.03	-0.005386	Within authorized band for Band 41	Pass
	-20	-13.80	-0.005298		
	-10	-32.69	-0.012549		
	0	-31.67	-0.012157		
	10	-27.98	-0.010741		
	20	-3.65	-0.001401		
	30	37.08	0.014234		
	40	40.68	0.015616		
	50	-11.52	-0.004422		
Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-8.14	-0.003125	Within authorized band for Band 41	Pass
	3.85	-25.94	-0.009958		
	4.20	-13.56	-0.005205		
16QAM					
25	3.50	-37.42	-0.014365	Within authorized band for Band41	Pass
	3.85	-53.93	-0.020702		
	4.20	-13.98	-0.005367		
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 (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-43.95	-0.025186	Within authorized band for Band 66	Pass
	-20	-43.17	-0.024739		
	-10	-41.99	-0.024063		
	0	-42.80	-0.024527		
	10	-39.47	-0.022619		
	20	-42.20	-0.024183		
	30	-39.93	-0.022883		
	40	-41.06	-0.023530		
	50	-41.61	-0.023845		
16QAM					
3.85	-30	-17.60	-0.010086	Within authorized band for Band 66	Pass
	-20	-23.02	-0.013192		
	-10	-26.84	-0.015381		
	0	-32.82	-0.018808		
	10	-36.68	-0.021020		
	20	-39.67	-0.022734		
	30	-43.07	-0.024682		
	40	-45.91	-0.026309		
	50	-44.69	-0.025610		
Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-28.07	-0.016086	Within authorized band for Band 66	Pass
	3.85	4.02	0.002304		
	4.20	-42.44	-0.024321		
16QAM					
25	3.50	-41.69	-0.023891	Within authorized band for Band 66	Pass
	3.85	-42.54	-0.024378		
	4.20	-8.03	-0.004602		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 71 part:

Reference Frequency: LTE Band 71 (10MHz) Middle channel=133297 Frequency=680.5MHz					
Temperature					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	2.53	0.003718	Within authorized band for Band 71	Pass
	-20	5.02	0.007377		
	-10	7.70	0.011315		
	0	10.40	0.015283		
	10	12.07	0.017737		
	20	12.69	0.018648		
	30	14.29	0.020999		
	40	15.61	0.022939		
	50	16.65	0.024467		
16QAM					
3.85	-30	17.48	0.025687	Within authorized band for Band 71	Pass
	-20	15.31	0.022498		
	-10	14.36	0.021102		
	0	12.72	0.018692		
	10	12.63	0.018560		
	20	10.94	0.016076		
	30	11.37	0.016708		
	40	11.34	0.016664		
	50	10.99	0.016150		
Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-4.36	-0.006407	Within authorized band for Band 71	Pass
	3.85	1.75	0.002572		
	4.20	-4.41	-0.006481		
16QAM					
25	3.50	18.17	0.026701	Within authorized band for Band 71	Pass
	3.85	17.48	0.025687		
	4.20	18.94	0.027832		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

Appendix G: Modulation Characteristics

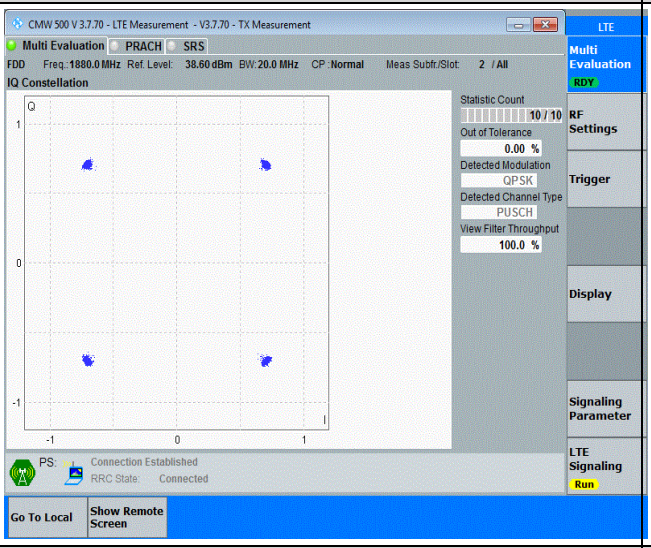
Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result	Verdict
Band2	20MHz	QPSK	18900	100RB#0	PASS	PASS
Band2	20MHz	16QAM	18900	100RB#0	PASS	PASS
Band5	10MHz	QPSK	20525	50RB#0	PASS	PASS
Band5	10MHz	16QAM	20525	50RB#0	PASS	PASS
Band12	10MHz	QPSK	23095	50RB#0	PASS	PASS
Band12	10MHz	16QAM	23095	50RB#0	PASS	PASS
Band17	10MHz	QPSK	23790	50RB#0	PASS	PASS
Band17	10MHz	16QAM	23790	50RB#0	PASS	PASS
Band41	20MHz	QPSK	40740	100RB#0	PASS	PASS
Band41	20MHz	16QAM	40740	100RB#0	PASS	PASS
Band66	20MHz	QPSK	132322	100RB#0	PASS	PASS
Band66	20MHz	16QAM	132322	100RB#0	PASS	PASS
Band71	20MHz	QPSK	133322	100RB#0	PASS	PASS
Band71	20MHz	16QAM	133322	100RB#0	PASS	PASS

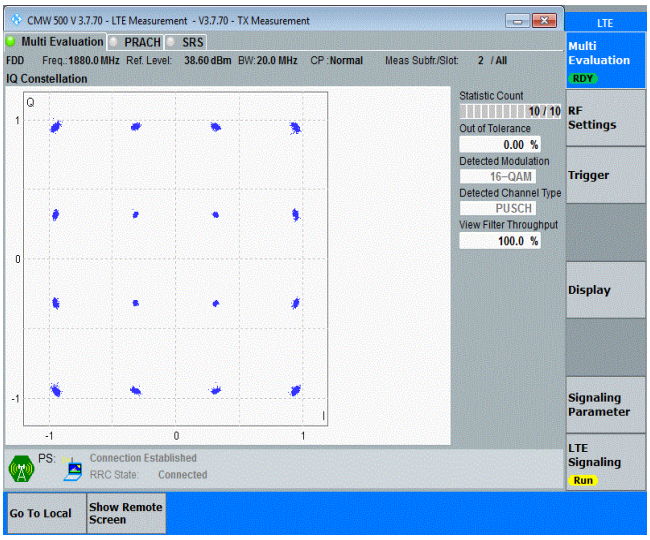
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.

Test Graphs

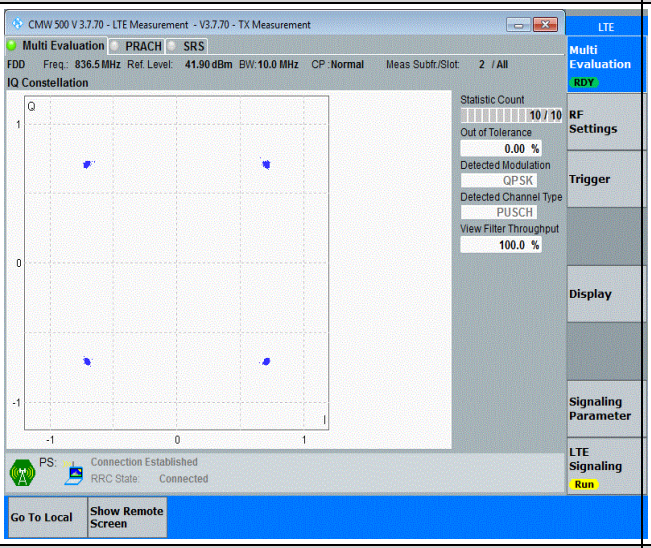
Band2-20MHz-QPSK-18900-100RB#0



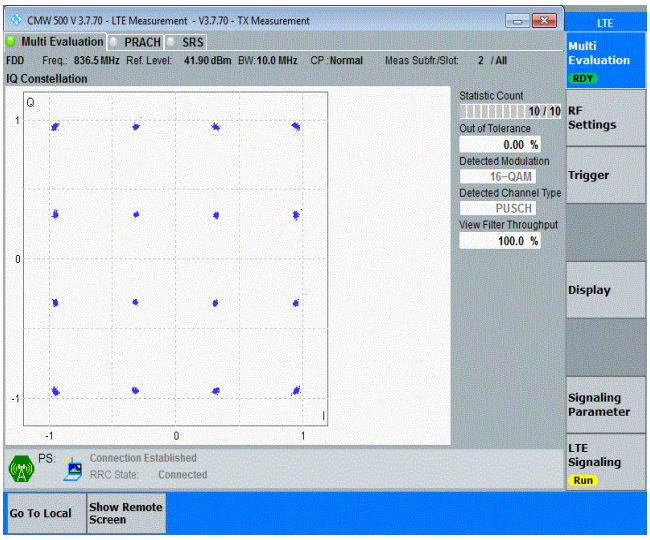
Band2-20MHz-16QAM-18900-100RB#0



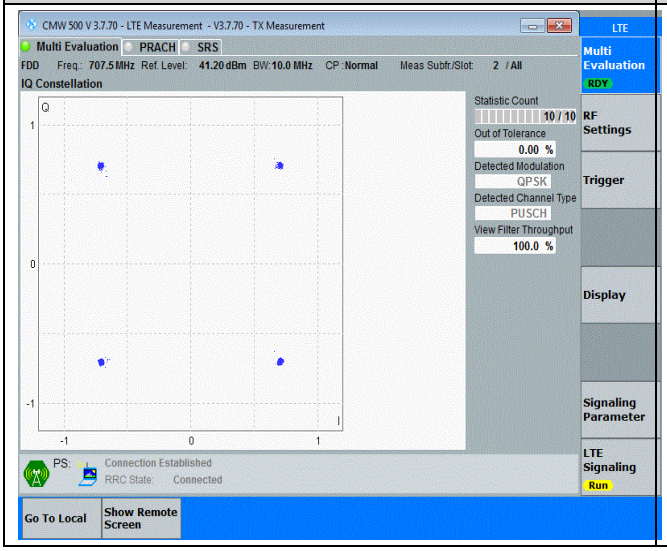
Band5-10MHz-QPSK-20525-50RB#0



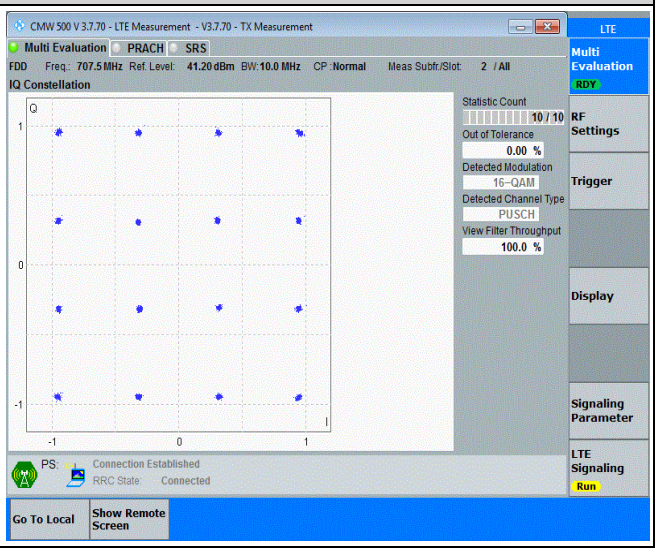
Band5-10MHz-16QAM-20525-50RB#0



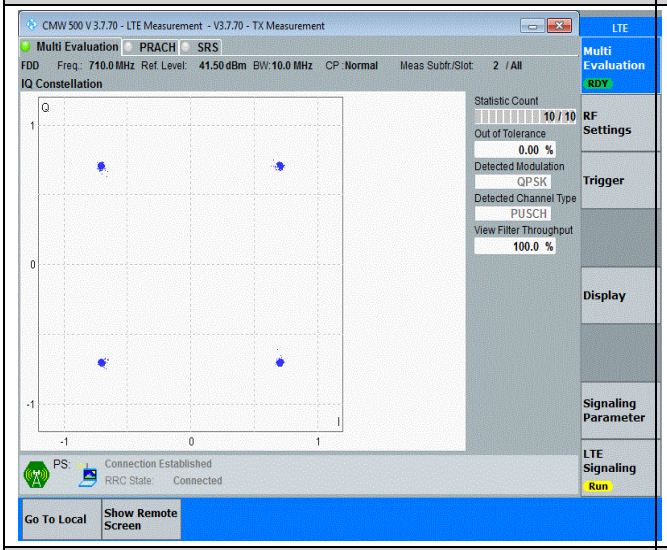
Band12-10MHz-QPSK-23095-50RB#0



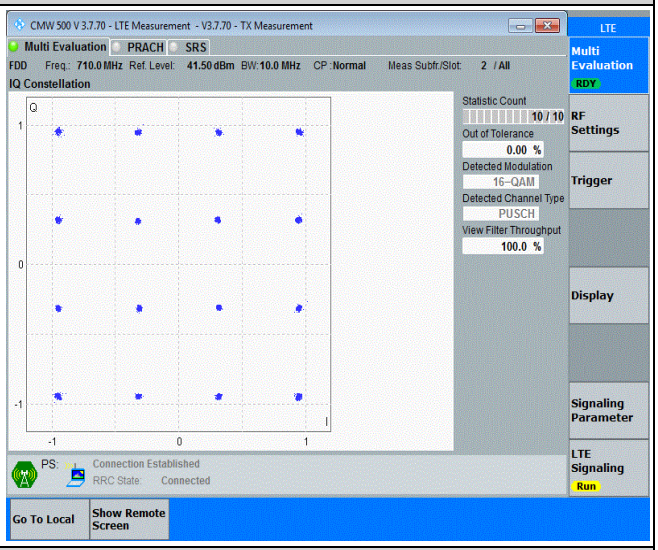
Band12-10MHz-16QAM-23095-50RB#0



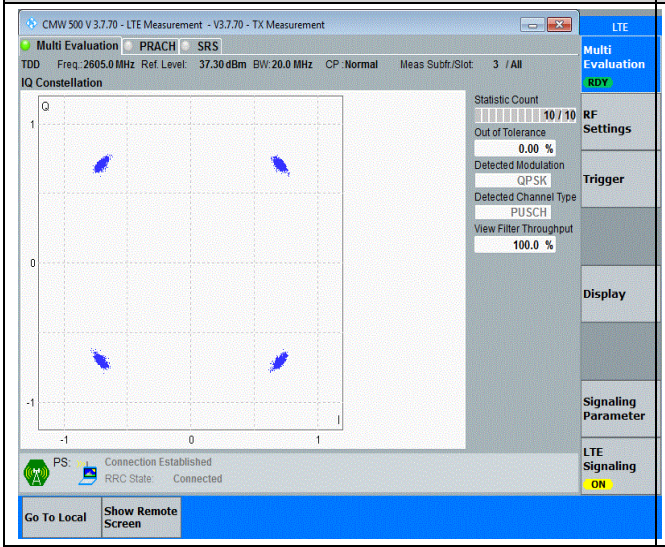
Band17-10MHz-QPSK-23790-50RB#0



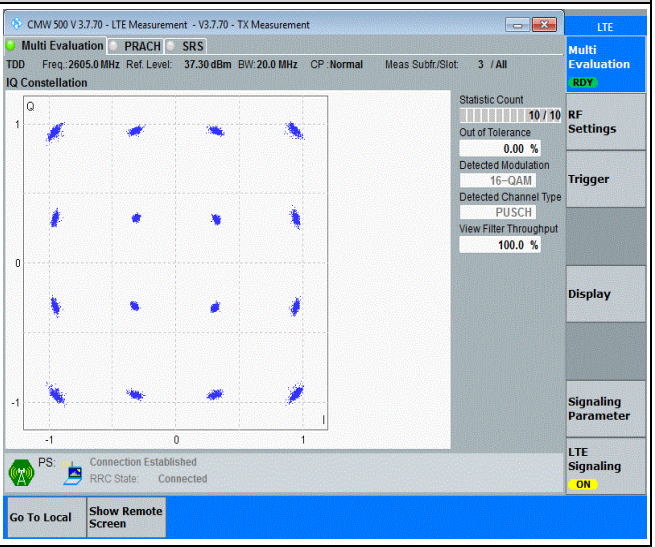
Band17-10MHz-16QAM-23790-50RB#0



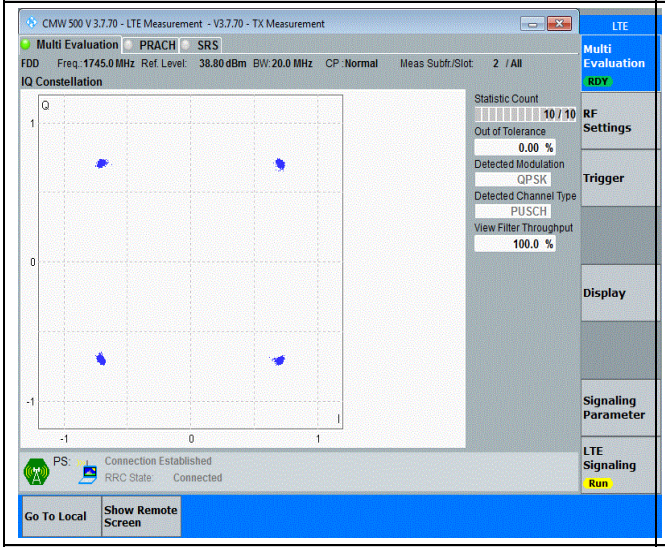
Band41-20MHz-QPSK-40740-100RB#0



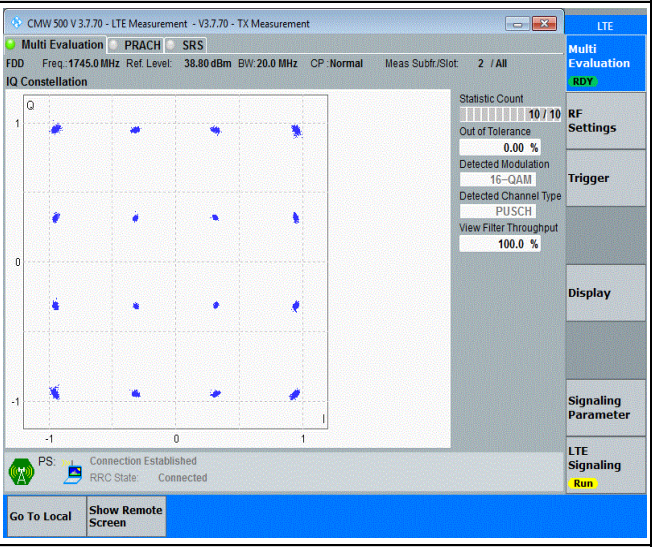
Band41-20MHz-16QAM-40740-100RB#0



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

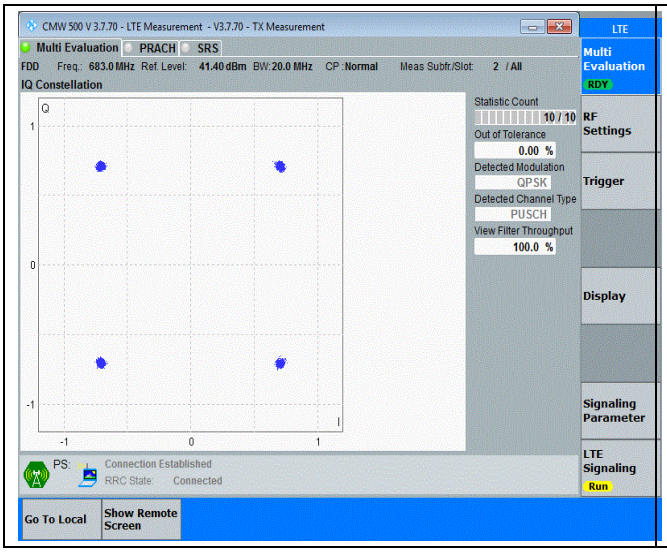


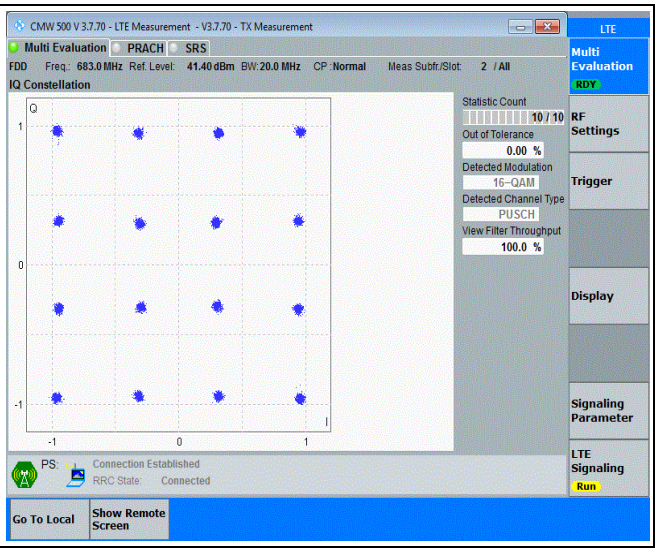
Band66-20MHz-16QAM-132322-100RB#0



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

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


CMW 500 V 3.7.70 - LTE Measurement - V3.7.70 - TX Measurement
Multi Evaluation
PRACH
SRS
FDD Freq.: 683.0 MHz Ref. Level: 41.40 dBm BW: 20.0 MHz CP: Normal Meas Subfr./Slot: 2 / All
IQ Constellation
Statistic Count
10 / 10
Out of Tolerance
0.00 %
Detected Modulation
QPSK
Detected Channel Type
PUSCH
View Filter Throughput
100.0 %
LTE
Multi Evaluation
RDY
RF Settings
Trigger
Display
Signaling Parameter
LTE Signaling
Run
PS:
Connection Established
RRC State: Connected
Go To Local
Show Remote Screen


CMW 500 V 3.7.70 - LTE Measurement - V3.7.70 - TX Measurement
Multi Evaluation
PRACH
SRS
FDD Freq.: 683.0 MHz Ref. Level: 41.40 dBm BW: 20.0 MHz CP: Normal Meas Subfr./Slot: 2 / All
IQ Constellation
Statistic Count
10 / 10
Out of Tolerance
0.00 %
Detected Modulation
16-QAM
Detected Channel Type
PUSCH
View Filter Throughput
100.0 %
LTE
Multi Evaluation
RDY
RF Settings
Trigger
Display
Signaling Parameter
LTE Signaling
Run
PS:
Connection Established
RRC State: Connected
Go To Local
Show Remote Screen