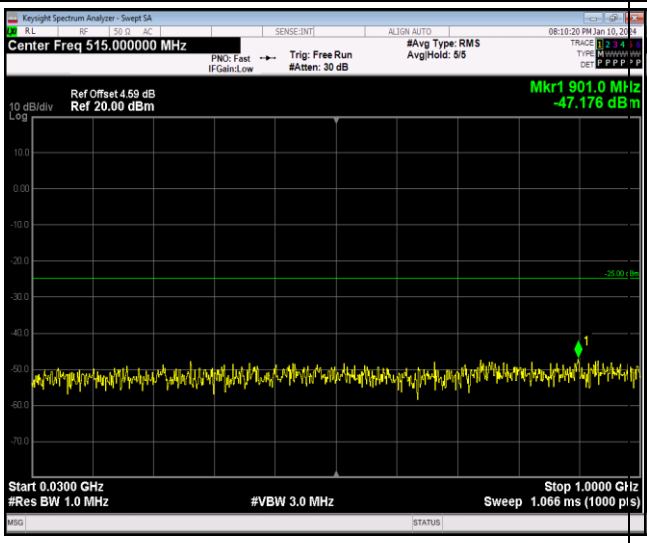
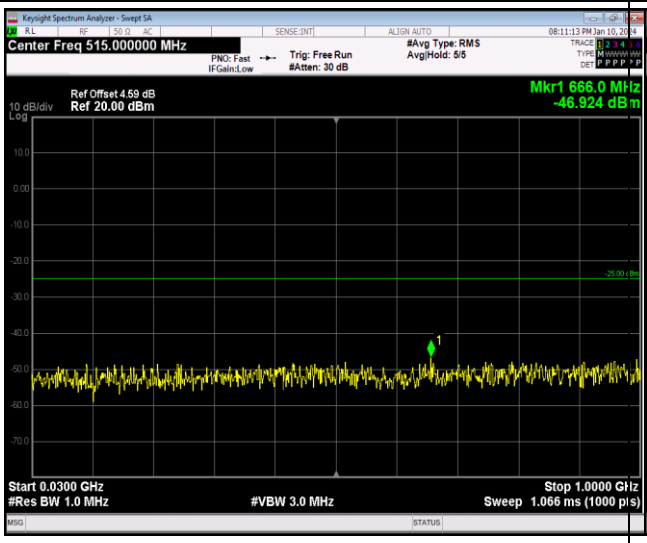
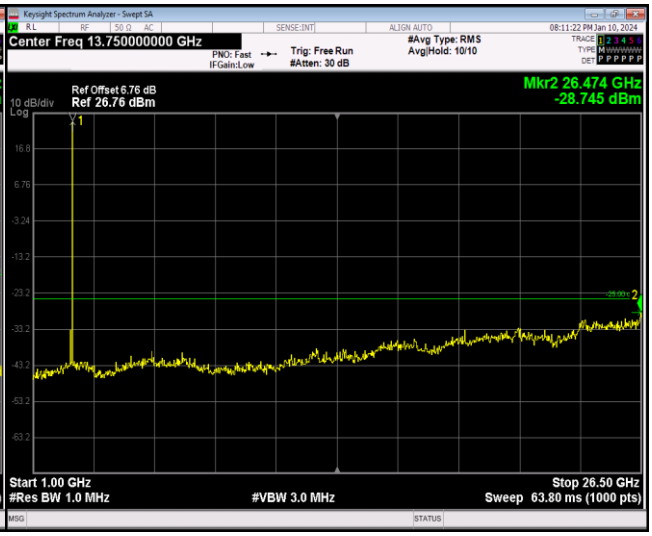
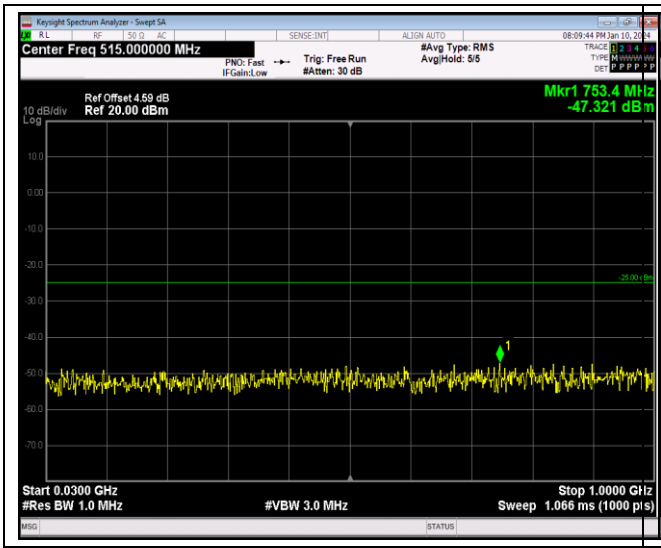
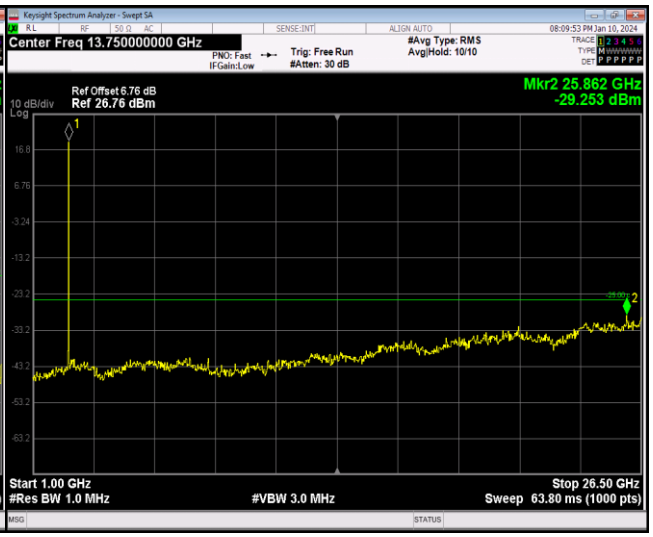
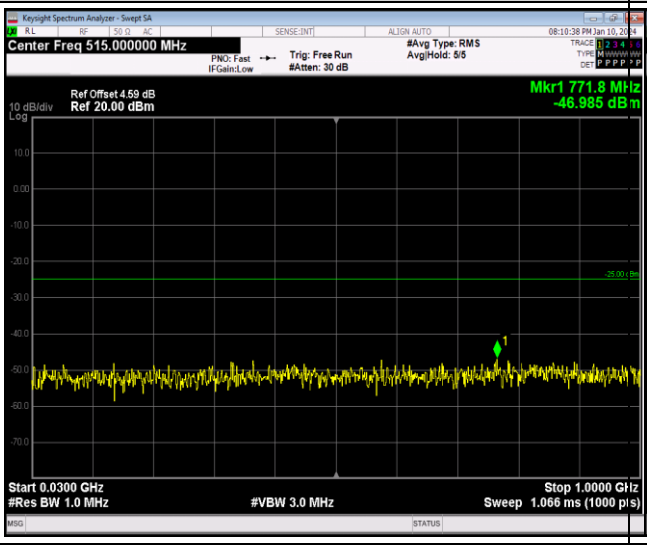
Band41-20MHz-16QAM-40620-1RB#0-Range1:30~1000MHz	Band41-20MHz-16QAM-40620-1RB#0-Range2:1000~26500MHz
	
Band41-20MHz-16QAM-41490-1RB#0-Range1:30~1000MHz	Band41-20MHz-16QAM-41490-1RB#0-Range2:1000~26500MHz
	
Band41-20MHz-64QAM-39750-1RB#0-Range1:30~1000MHz	Band41-20MHz-64QAM-39750-1RB#0-Range2:1000~26500MHz



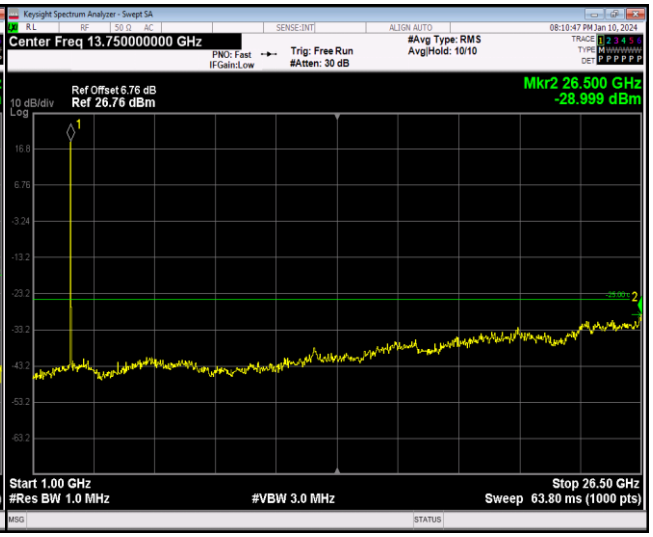
Band41-20MHz-64QAM-40620-1RB#0-Range1:30 ~1000MHz



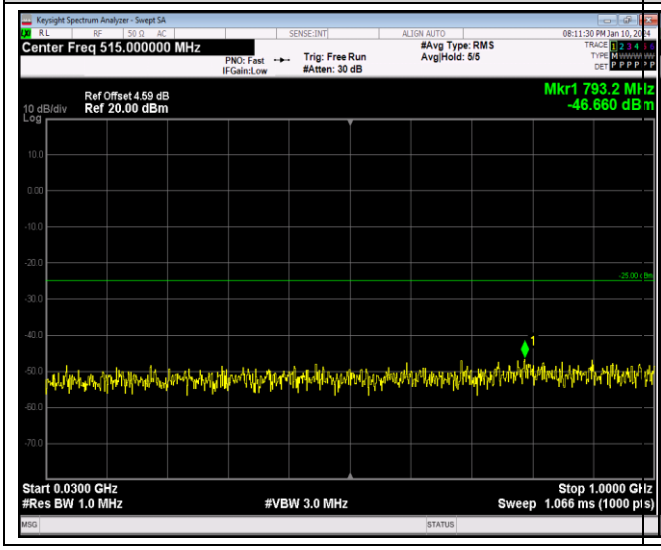
Band41-20MHz-64QAM-40620-1RB#0-Range2:1000~26500MHz

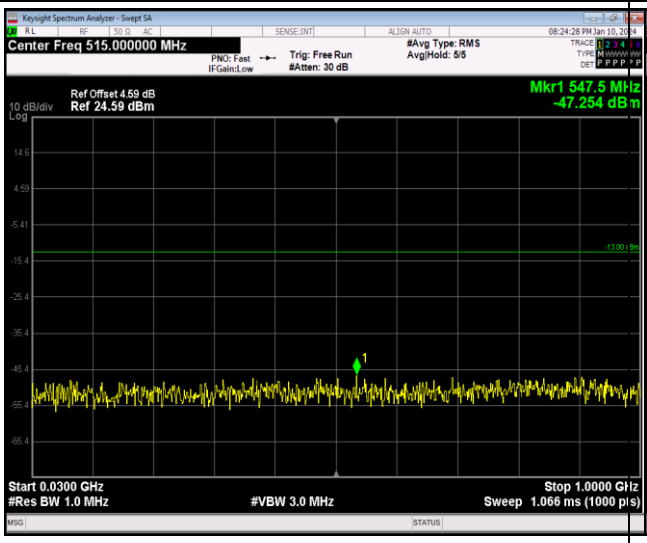
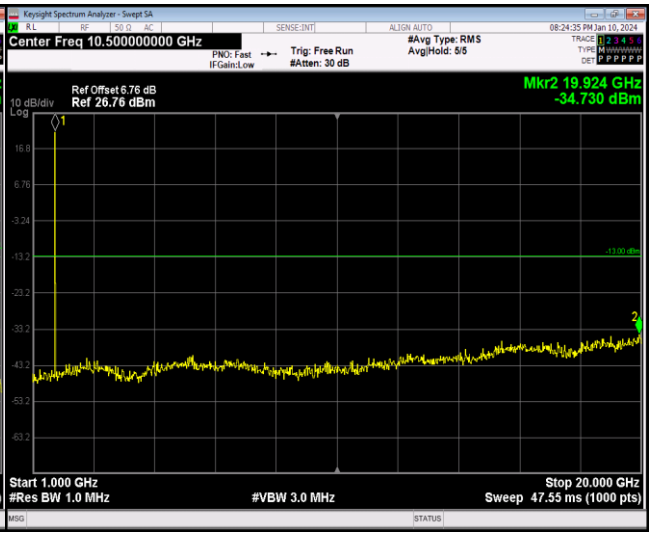
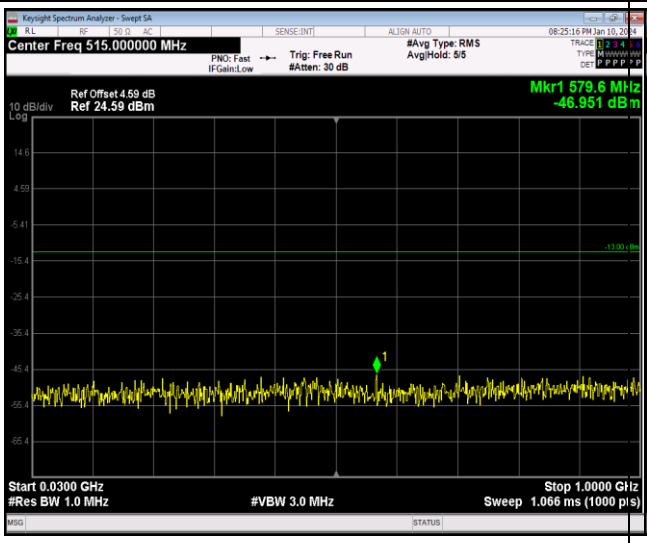
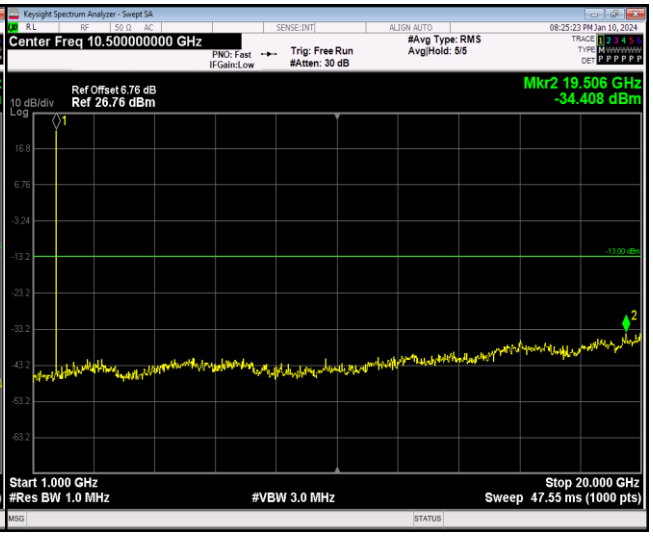


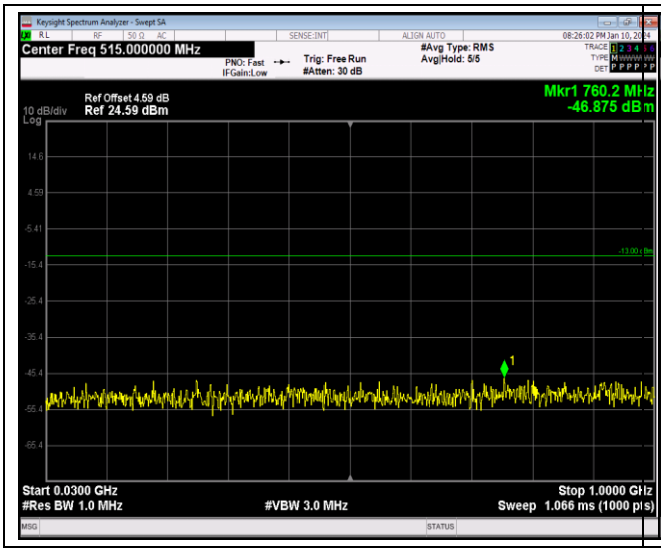
Band41-20MHz-64QAM-41490-1RB#0-Range1:30 ~1000MHz



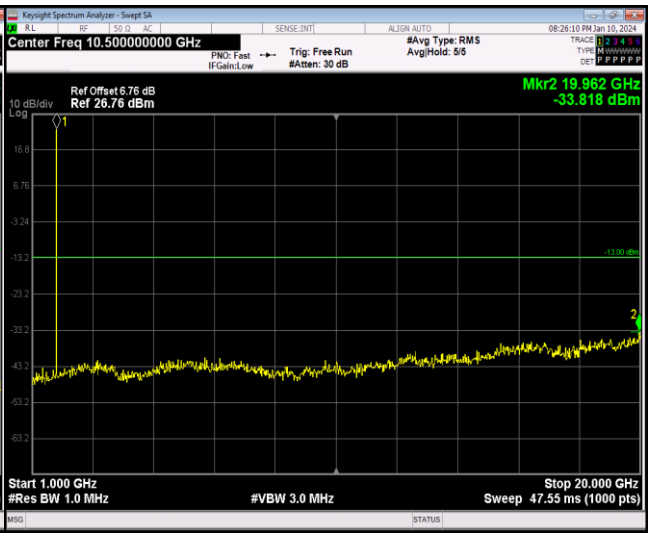
Band41-20MHz-64QAM-41490-1RB#0-Range2:1000~26500MHz



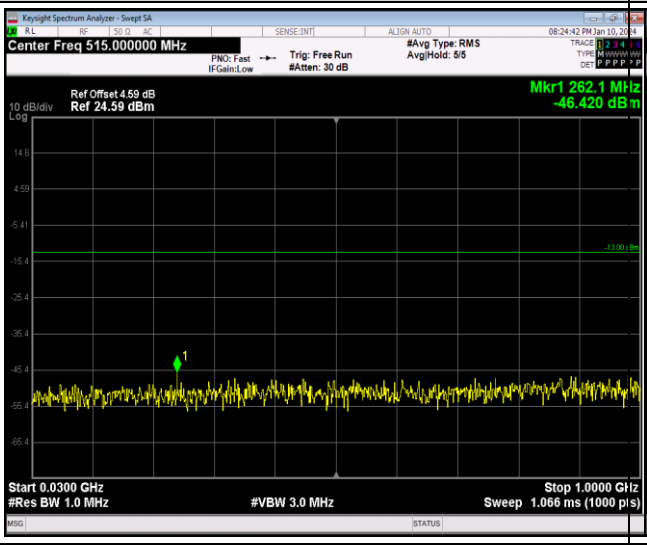
Band66-1.4MHz-QPSK-131979-1RB#0-Range1:30~1000MHz	Band66-1.4MHz-QPSK-131979-1RB#0-Range2:1000~20000MHz
	
Band66-1.4MHz-QPSK-132322-1RB#0-Range1:30~1000MHz	Band66-1.4MHz-QPSK-132322-1RB#0-Range2:1000~20000MHz
	
Band66-1.4MHz-QPSK-132665-1RB#0-Range1:30~1000MHz	Band66-1.4MHz-QPSK-132665-1RB#0-Range2:1000~20000MHz



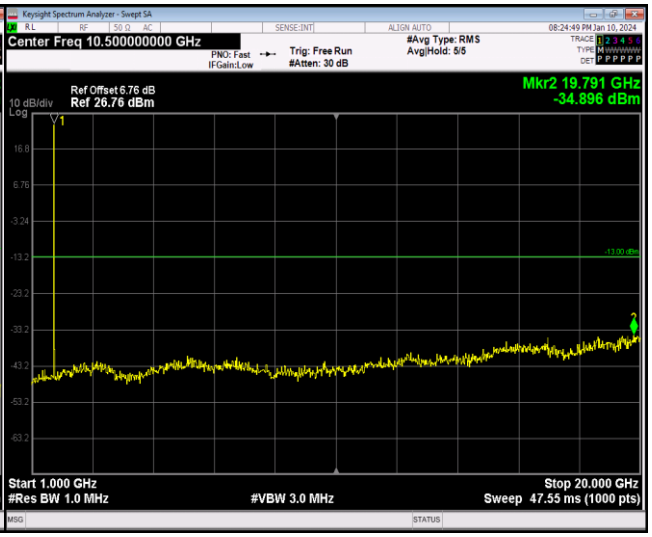
Band66-1.4MHz-16QAM-131979-1RB#0-Range1:30~1000MHz



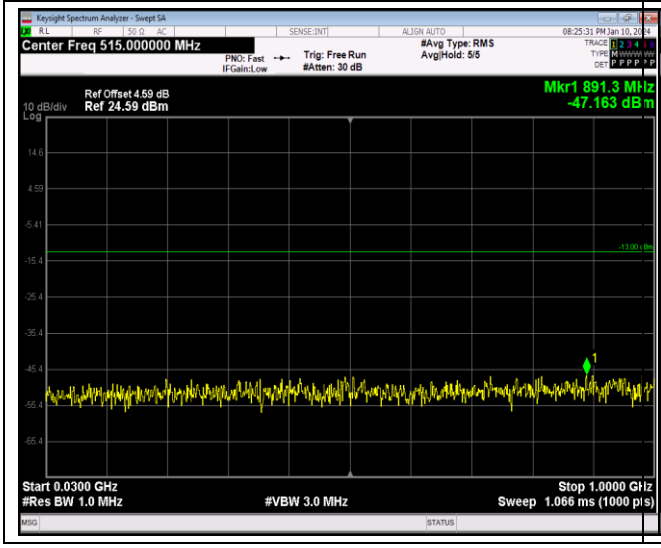
Band66-1.4MHz-16QAM-131979-1RB#0-Range2:1000~20000MHz

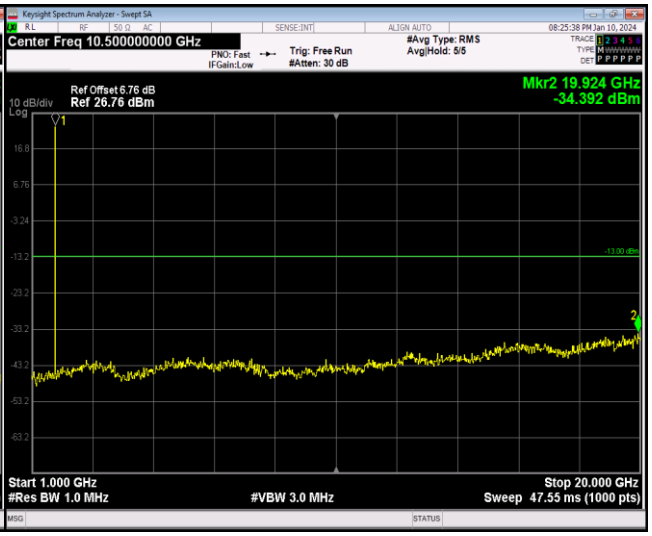


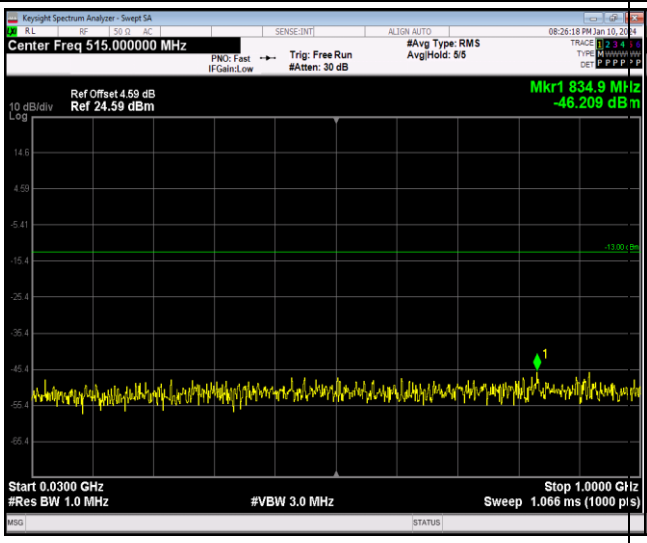
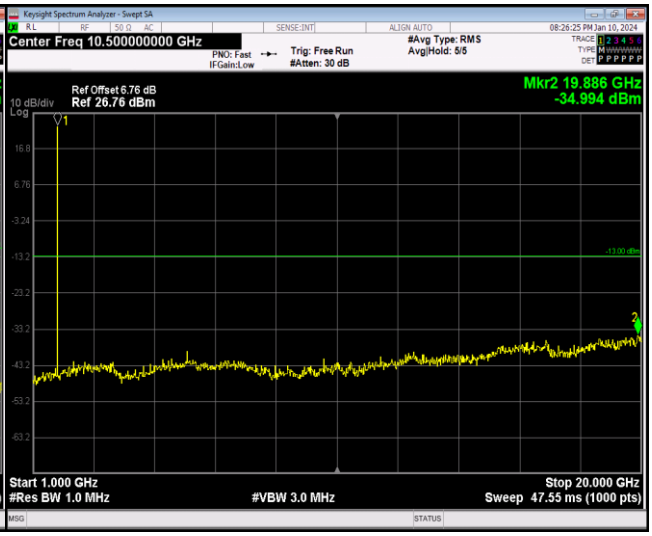
Band66-1.4MHz-16QAM-132322-1RB#0-Range1:30~1000MHz



Band66-1.4MHz-16QAM-132322-1RB#0-Range2:1000~20000MHz





Band66-1.4MHz-16QAM-132665-1RB#0-Range1:30~1000MHz	Band66-1.4MHz-16QAM-132665-1RB#0-Range2:1000~20000MHz
	
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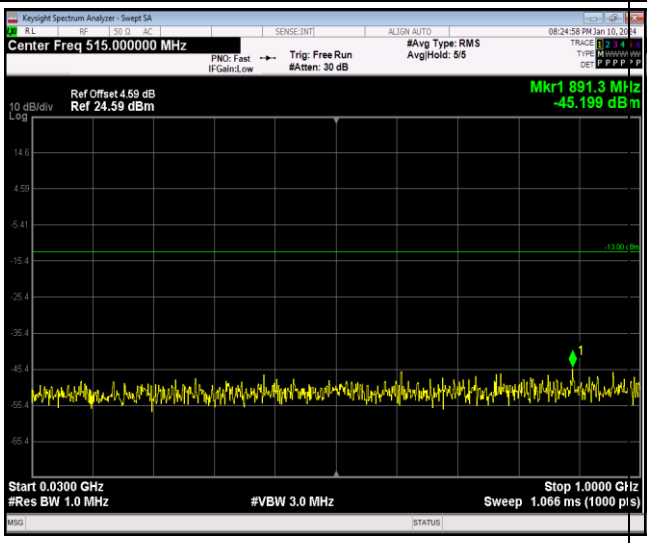
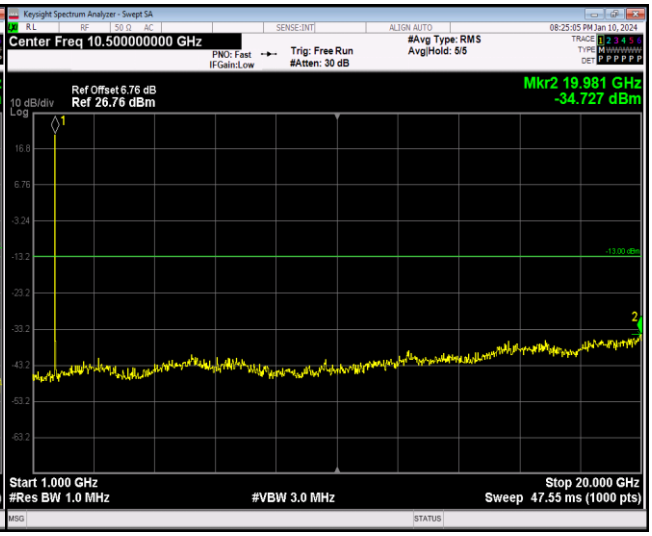
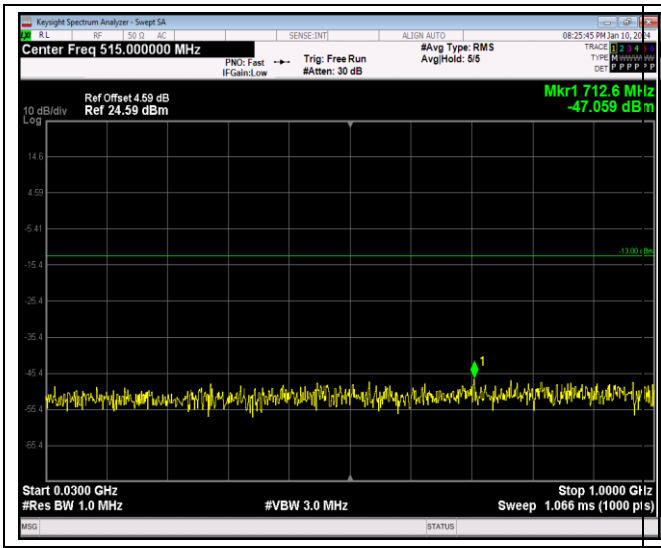
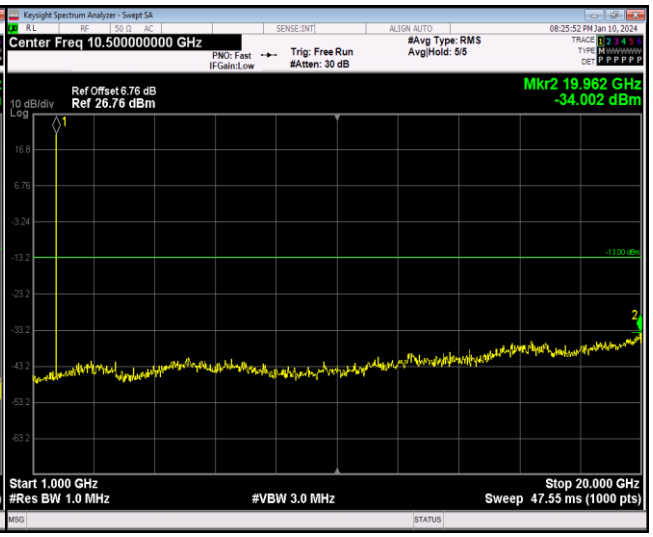
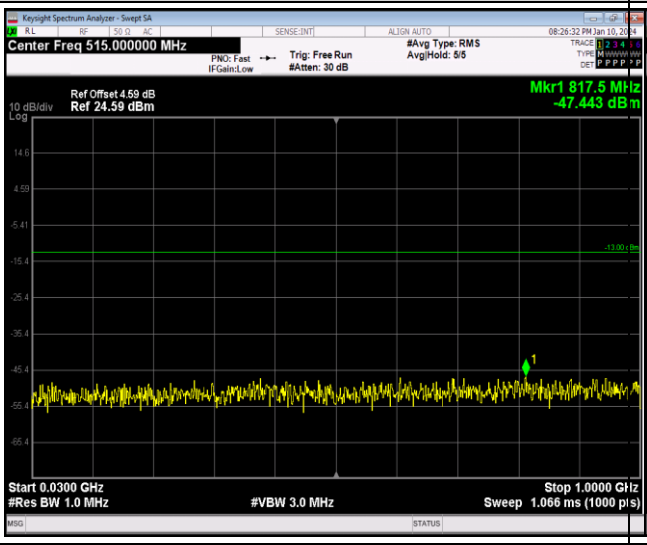
	
Band66-1.4MHz-64QAM-132322-1RB#0-Range1:30~1000MHz	Band66-1.4MHz-64QAM-132322-1RB#0-Range2:1000~20000MHz



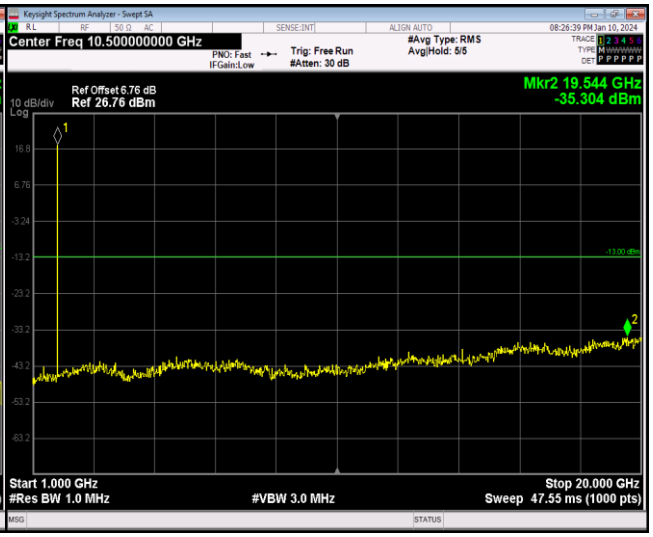
Band66-1.4MHz-64QAM-132665-1RB#0-Range1:30~1000MHz



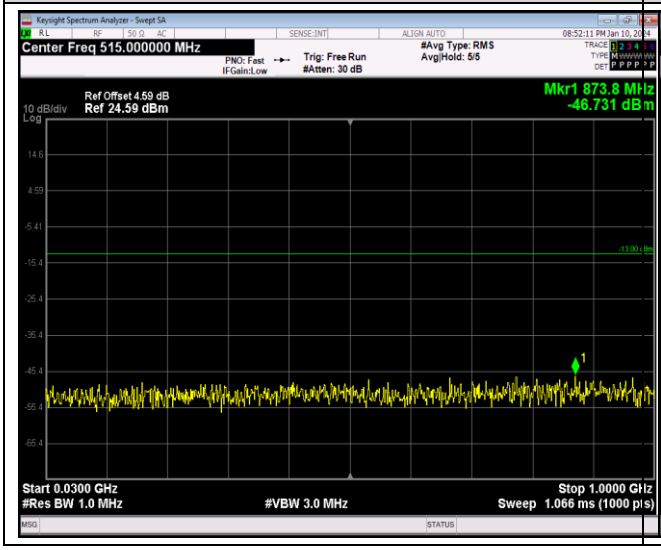
Band66-1.4MHz-64QAM-132665-1RB#0-Range2:1000~20000MHz

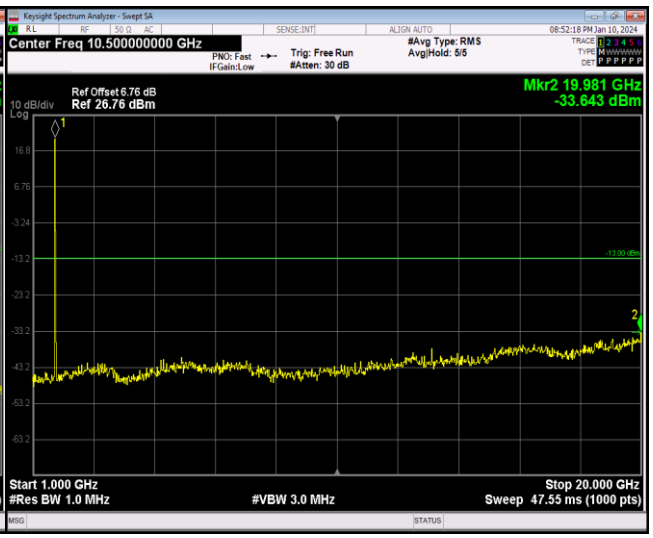


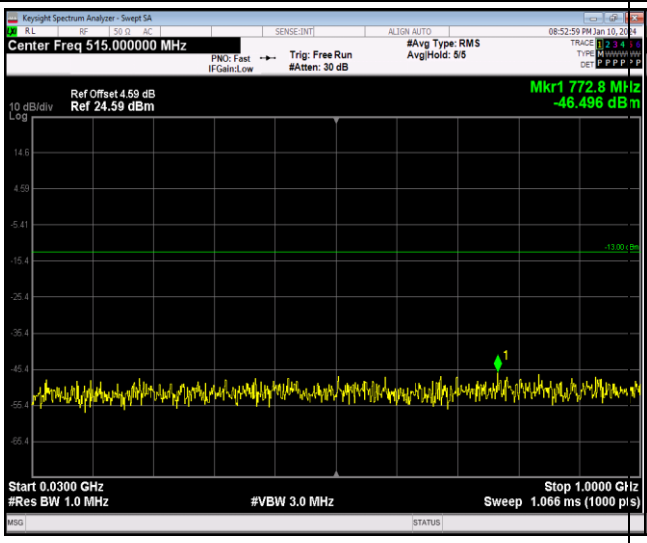
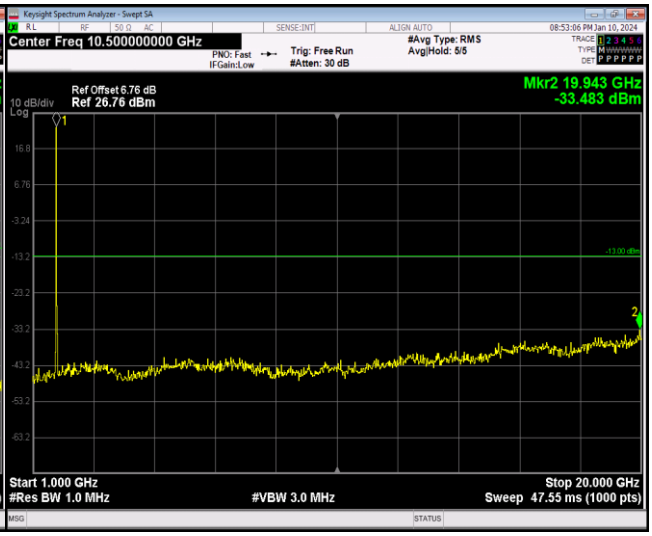
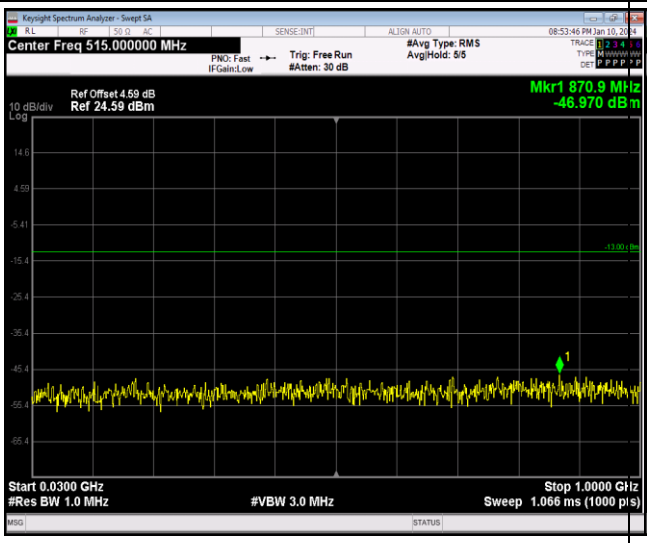
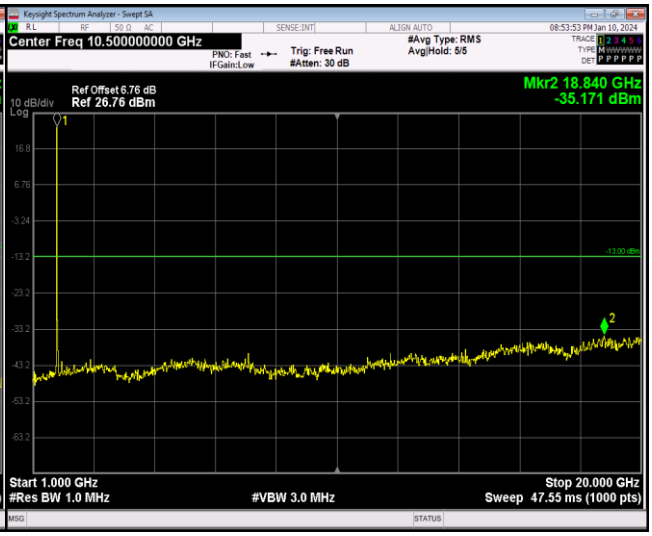
Band66-20MHz-QPSK-132072-1RB#0-Range1:30~1000MHz

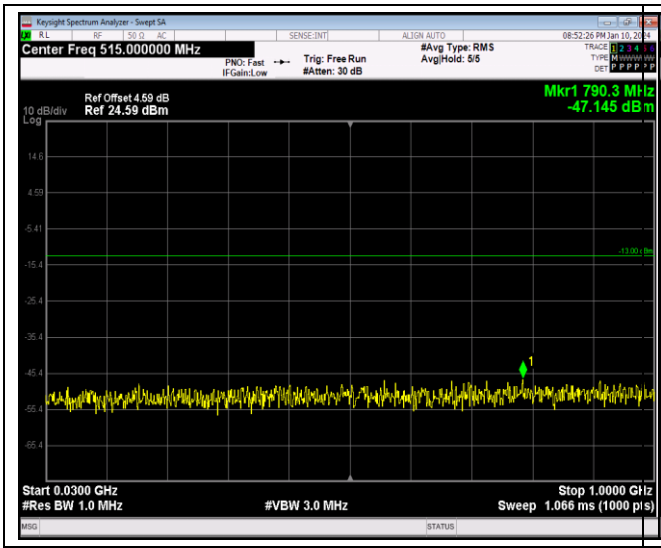


Band66-20MHz-QPSK-132072-1RB#0-Range2:1000~20000MHz

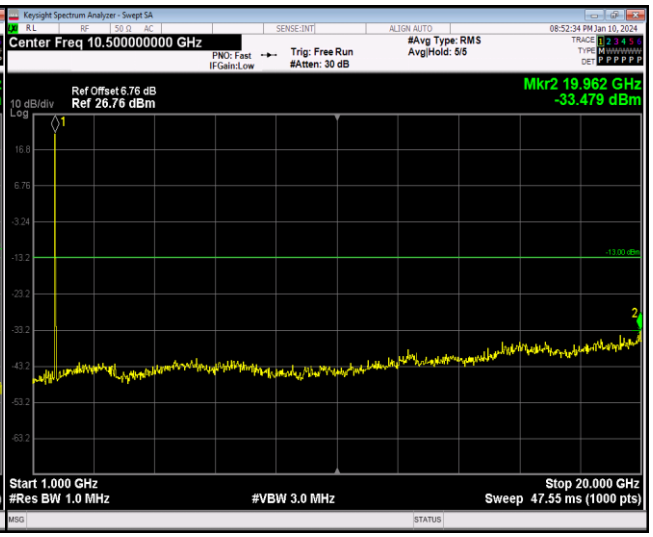




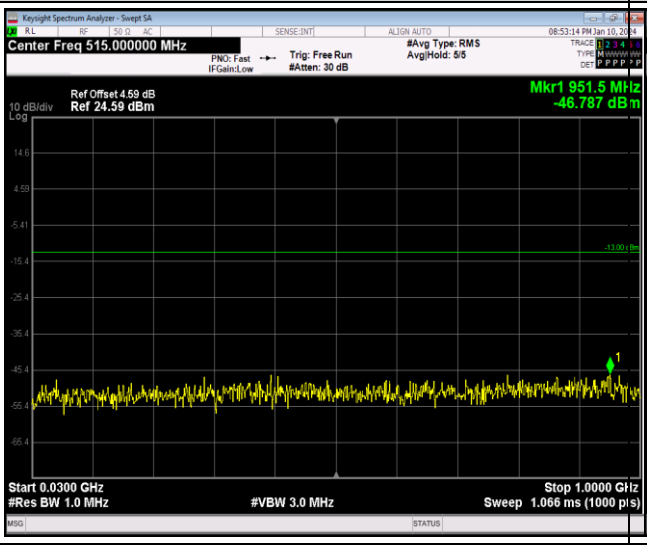
Band66-20MHz-QPSK-132322-1RB#0-Range1:30~1000MHz	Band66-20MHz-QPSK-132322-1RB#0-Range2:1000~20000MHz
	
Band66-20MHz-QPSK-132572-1RB#0-Range1:30~1000MHz	Band66-20MHz-QPSK-132572-1RB#0-Range2:1000~20000MHz
	
Band66-20MHz-16QAM-132072-1RB#0-Range1:30~1000MHz	Band66-20MHz-16QAM-132072-1RB#0-Range2:1000~20000MHz



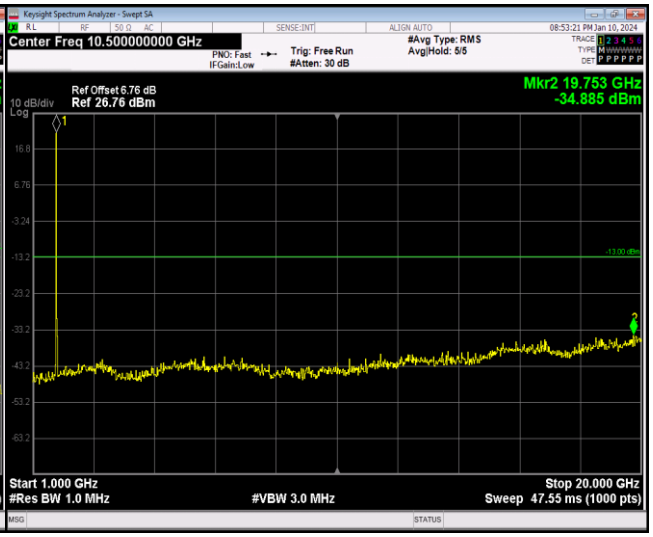
Band66-20MHz-16QAM-132322-1RB#0-Range1:30~1000MHz



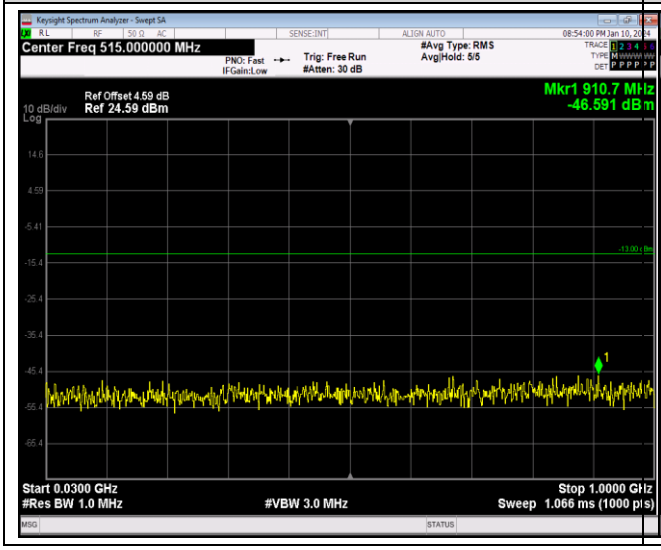
Band66-20MHz-16QAM-132322-1RB#0-Range2:1000~20000MHz

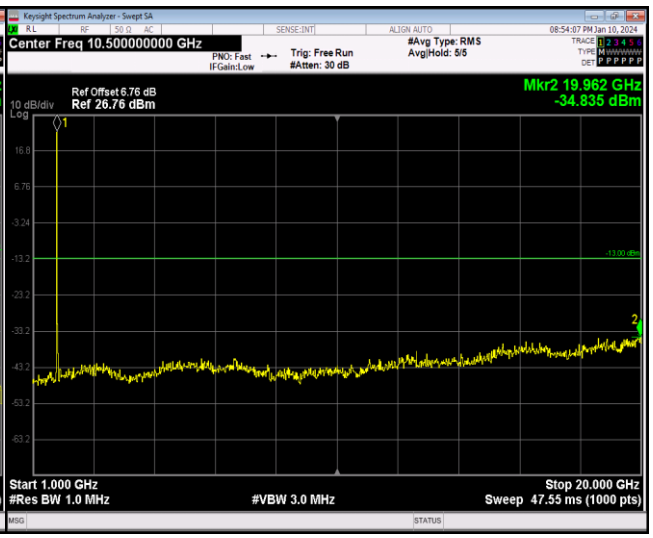


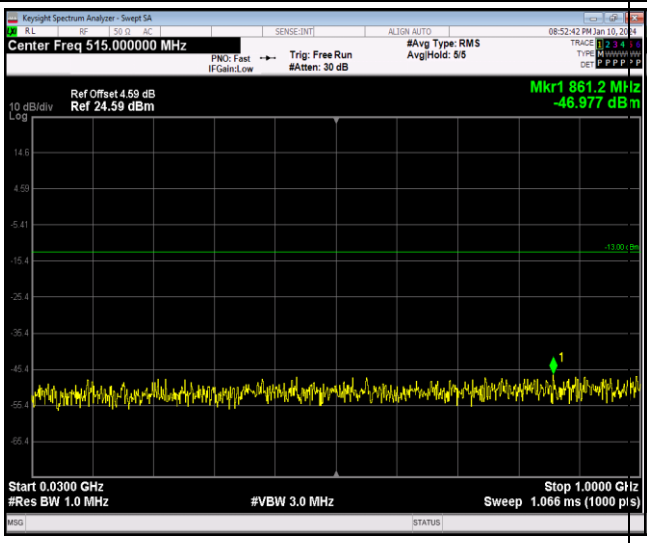
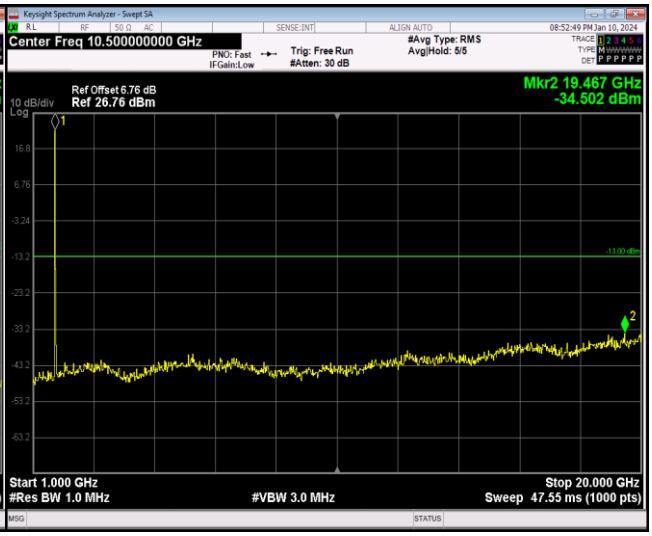
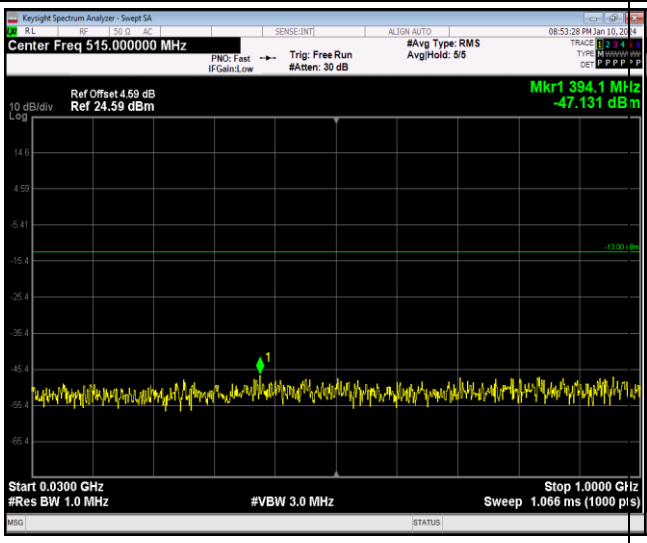
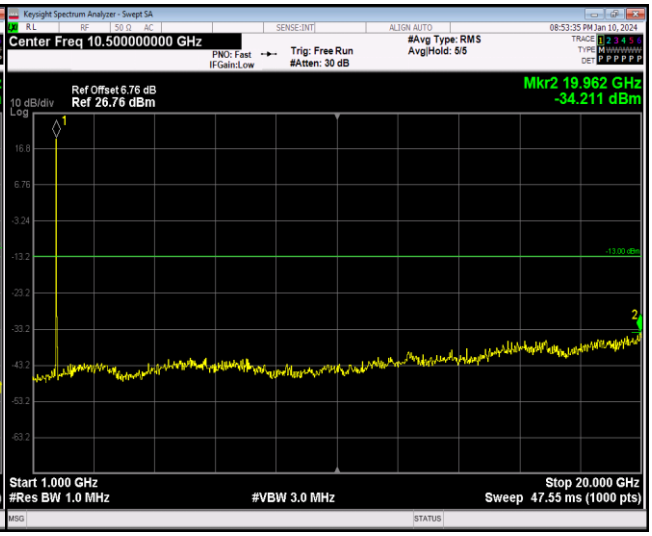
Band66-20MHz-16QAM-132572-1RB#0-Range1:30~1000MHz

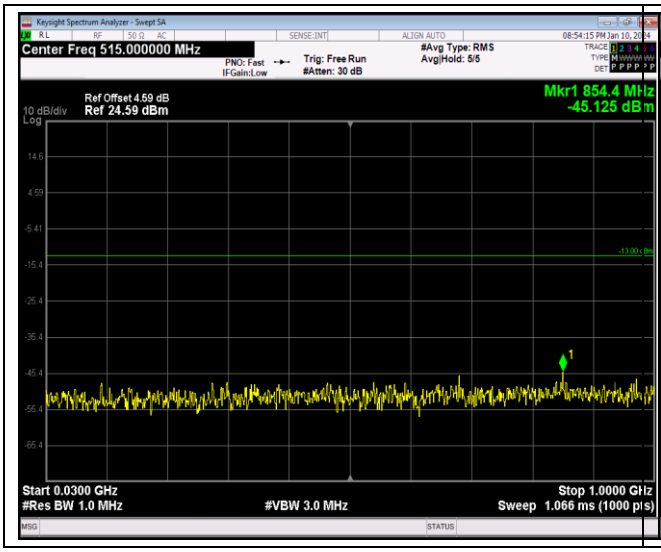


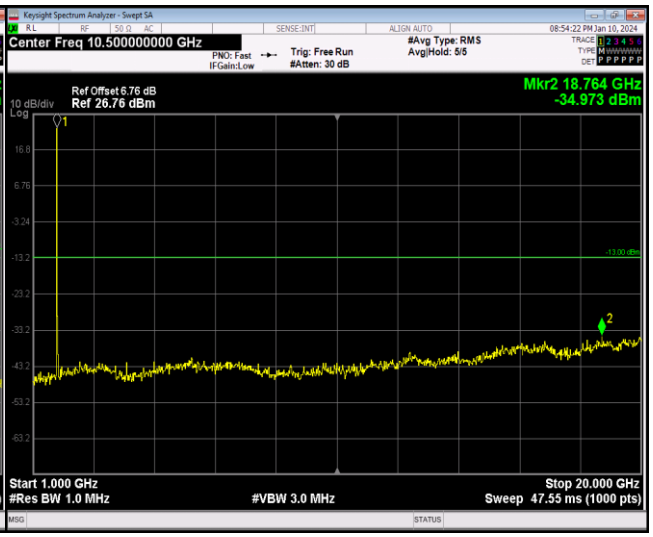
Band66-20MHz-16QAM-132572-1RB#0-Range2:1000~20000MHz





Band66-20MHz-64QAM-132072-1RB#0-Range1:30~1000MHz	Band66-20MHz-64QAM-132072-1RB#0-Range2:1000~20000MHz
	
Band66-20MHz-64QAM-132322-1RB#0-Range1:30~1000MHz	Band66-20MHz-64QAM-132322-1RB#0-Range2:1000~20000MHz
	
Band66-20MHz-64QAM-132572-1RB#0-Range1:30~1000MHz	Band66-20MHz-64QAM-132572-1RB#0-Range2:1000~20000MHz


Keysight Spectrum Analyzer - Swept SA
Center Freq 515.000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 5/5
Ref Offset 4.59 dB
10 dB/div
Ref 24.59 dBm
Mkr1 854.4 MHz
-45.125 dBm
Start 0.0300 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 1.0000 GHz
Sweep 1.066 ms (1000 pts)


Keysight Spectrum Analyzer - Swept SA
Center Freq 10.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 5/5
Ref Offset 6.76 dB
10 dB/div
Ref 26.76 dBm
Mkr2 18.764 GHz
-34.973 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 20.000 GHz
Sweep 47.55 ms (1000 pts)

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	-5.91	-0.003144	Within authorized band for Band 2	Pass
	-20	-7.10	-0.003777		
	-10	1.92	0.001021		
	0	3.03	0.001612		
	10	1.59	0.000846		
	20	4.13	0.002197		
	30	3.96	0.002106		
	40	4.16	0.002213		
	50	2.66	0.001415		
16QAM					
3.91	-30	10.47	0.005569	Within authorized band for Band 2	Pass
	-20	7.55	0.004016		
	-10	6.37	0.003388		
	0	2.65	0.001410		
	10	6.82	0.003628		
	20	6.48	0.003447		
	30	3.63	0.001931		
	40	8.08	0.004298		
	50	5.24	0.002787		
64QAM					
3.91	-30	4.92	0.002617	Within authorized band for Band 2	Pass
	-20	3.25	0.001729		
	-10	3.39	0.001803		
	0	5.11	0.002718		
	10	3.60	0.001915		
	20	2.43	0.001293		
	30	7.05	0.003750		
	40	4.78	0.002543		
	50	3.55	0.001888		

Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	-6.24	-0.003319	Within authorized band for Band 2	Pass
	3.91	-6.65	-0.003537		
	4.50	-6.24	-0.003319		
16QAM					
25	3.45	5.32	0.002830	Within authorized band for Band 2	Pass
	3.91	-2.83	-0.001505		
	4.50	2.25	0.001197		
64QAM					
25	3.45	8.01	0.004261	Within authorized band for Band 2	Pass
	3.91	5.01	0.002665		
	4.50	4.01	0.002133		
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	-3.78	-0.004519	±2.5	Pass
	-20	-2.90	-0.003467		
	-10	-5.81	-0.006946		
	0	-2.89	-0.003455		
	10	-3.58	-0.004280		
	20	-2.46	-0.002941		
	30	-2.86	-0.003419		
	40	-8.78	-0.010496		
	50	-4.23	-0.005057		
16QAM					
3.91	-30	-5.78	-0.006910	±2.5	Pass
	-20	-4.81	-0.005750		
	-10	-2.83	-0.003383		
	0	-2.26	-0.002702		
	10	-7.27	-0.008691		
	20	-6.91	-0.008261		
	30	-6.18	-0.007388		
	40	-5.87	-0.007017		
	50	-5.32	-0.006360		
64QAM					
3.91	-30	-4.81	-0.005750	±2.5	Pass
	-20	-5.15	-0.006157		
	-10	-4.31	-0.005152		
	0	-3.73	-0.004459		
	10	2.43	0.002905		
	20	-6.17	-0.007376		
	30	-6.52	-0.007794		
	40	3.48	0.004160		
	50	-3.40	-0.004065		

Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	-1.86	-0.002224	±2.5	Pass
	3.91	-3.49	-0.004172		
	4.50	-1.26	-0.001506		
16QAM					
25	3.45	-4.53	-0.005415	±2.5	Pass
	3.91	2.22	0.002654		
	4.50	-4.94	-0.005906		
64QAM					
25	3.45	-5.71	-0.006826	±2.5	Pass
	3.91	-4.39	-0.005248		
	4.50	-3.62	-0.004328		
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	-5.18	-0.002043	Within authorized band for Band 7	Pass
	-20	2.40	0.000947		
	-10	-8.25	-0.003254		
	0	-4.58	-0.001807		
	10	3.02	0.001191		
	20	-4.42	-0.001744		
	30	-5.52	-0.002178		
	40	-6.28	-0.002477		
	50	-5.15	-0.002032		
16QAM					
3.91	-30	3.58	0.001412	Within authorized band for Band 7	Pass
	-20	-4.15	-0.001637		
	-10	-4.68	-0.001846		
	0	3.40	0.001341		
	10	5.75	0.002268		
	20	2.22	0.000876		
	30	7.20	0.002840		
	40	8.58	0.003385		
	50	6.47	0.002552		
64QAM					
3.91	-30	-5.35	-0.002110	Within authorized band for Band 7	Pass
	-20	-10.56	-0.004166		
	-10	-4.06	-0.001602		
	0	-4.75	-0.001874		
	10	-6.57	-0.002592		
	20	-6.04	-0.002383		
	30	-5.12	-0.002020		
	40	-7.70	-0.003037		
	50	-3.60	-0.001420		

Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	-7.65	-0.003018	Within authorized band for Band 7	Pass
	3.91	-10.04	-0.003961		
	4.50	-4.23	-0.001669		
16QAM					
25	3.45	5.41	0.002134	Within authorized band for Band 7	Pass
	3.91	3.26	0.001286		
	4.50	4.66	0.001838		
64QAM					
25	3.45	-4.66	-0.001838	Within authorized band for Band 7	Pass
	3.91	3.03	0.001195		
	4.50	-3.91	-0.001542		
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					
3.91	-30	-2.90	-0.004099	Within authorized band for Band 12	Pass
	-20	5.12	0.007237		
	-10	-2.83	-0.004000		
	0	3.10	0.004382		
	10	1.89	0.002671		
	20	-2.56	-0.003618		
	30	3.15	0.004452		
	40	3.62	0.005117		
	50	4.53	0.006403		
16QAM					
3.91	-30	-3.42	-0.004834	Within authorized band for Band 12	Pass
	-20	2.55	0.003604		
	-10	1.85	0.002615		
	0	3.85	0.005442		
	10	-3.49	-0.004933		
	20	2.59	0.003661		
	30	3.76	0.005314		
	40	2.90	0.004099		
	50	1.69	0.002389		
64QAM					
3.91	-30	-4.76	-0.006728	Within authorized band for Band 12	Pass
	-20	-4.55	-0.006431		
	-10	2.63	0.003717		
	0	2.49	0.003519		
	10	3.81	0.005385		
	20	1.92	0.002714		
	30	3.73	0.005272		
	40	-2.02	-0.002855		
	50	3.60	0.005088		

Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	3.42	0.004834	Within authorized band for Band 12	Pass
	3.91	5.09	0.007194		
	4.50	2.09	0.002954		
16QAM					
25	3.45	-2.02	-0.002855	Within authorized band for Band 12	Pass
	3.91	3.15	0.004452		
	4.50	-5.84	-0.008254		
64QAM					
25	3.45	3.42	0.004834	Within authorized band for Band 12	Pass
	3.91	2.98	0.004212		
	4.50	3.12	0.004410		
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=40620 Frequency=2593.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.91	-30	-10.30	-0.003972	Within authorized band for Band 41	Pass
	-20	3.59	0.001384		
	-10	-4.94	-0.001905		
	0	5.32	0.002052		
	10	-6.49	-0.002503		
	20	-5.75	-0.002218		
	30	-3.23	-0.001246		
	40	-4.08	-0.001573		
	50	5.36	0.002067		
16QAM					
3.91	-30	-3.55	-0.001369	Within authorized band for Band 41	Pass
	-20	4.66	0.001797		
	-10	-3.36	-0.001296		
	0	5.21	0.002009		
	10	4.45	0.001716		
	20	-5.14	-0.001982		
	30	2.59	0.000999		
	40	4.81	0.001855		
	50	-2.76	-0.001064		
64QAM					
3.91	-30	-7.02	-0.002707	Within authorized band for Band 41	Pass
	-20	-3.58	-0.001381		
	-10	-5.45	-0.002102		
	0	-7.04	-0.002715		
	10	7.71	0.002973		
	20	-3.19	-0.001230		
	30	5.42	0.002090		
	40	5.11	0.001971		
	50	7.05	0.002719		

Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	-9.40	-0.003625	Within authorized band for Band 41	Pass
	3.91	-12.57	-0.004848		
	4.50	-5.14	-0.001982		
16QAM					
25	3.45	-5.11	-0.001971	Within authorized band for Band41	Pass
	3.91	-3.60	-0.001388		
	4.50	5.79	0.002233		
64QAM					
25	3.45	6.44	0.002484	Within authorized band for Band41	Pass
	3.91	4.25	0.001639		
	4.50	5.22	0.002013		
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					
3.91	-30	-2.52	-0.001444	Within authorized band for Band 66	Pass
	-20	-3.30	-0.001891		
	-10	1.67	0.000957		
	0	5.87	0.003364		
	10	-2.73	-0.001564		
	20	3.36	0.001926		
	30	3.42	0.001960		
	40	4.32	0.002476		
	50	3.16	0.001811		
16QAM					
3.91	-30	2.26	0.001295	Within authorized band for Band 66	Pass
	-20	2.06	0.001181		
	-10	3.16	0.001811		
	0	4.08	0.002338		
	10	2.82	0.001616		
	20	-5.74	-0.003289		
	30	2.79	0.001599		
	40	3.76	0.002155		
	50	-2.68	-0.001536		
64QAM					
3.91	-30	3.85	0.002206	Within authorized band for Band 66	Pass
	-20	3.66	0.002097		
	-10	-2.57	-0.001473		
	0	-2.32	-0.001330		
	10	-3.29	-0.001885		
	20	-2.80	-0.001605		
	30	2.02	0.001158		
	40	-2.83	-0.001622		
	50	-3.56	-0.002040		

Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	5.82	0.003335	Within authorized band for Band 66	Pass
	3.91	5.76	0.003301		
	4.50	5.38	0.003083		
16QAM					
25	3.45	-1.30	-0.000745	Within authorized band for Band 66	Pass
	3.91	2.86	0.001639		
	4.50	2.13	0.001221		
64QAM					
25	3.45	2.98	0.001708	Within authorized band for Band 66	Pass
	3.91	3.13	0.001794		
	4.50	3.25	0.001862		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

Appendix G: Modulation Characteristics

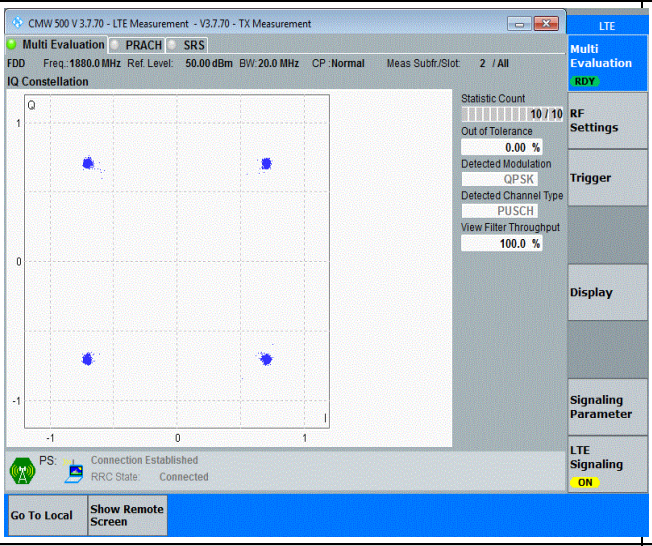
Test Result

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
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
Band12	10MHz	QPSK	23095	50RB#0	PASS	PASS
Band12	10MHz	16QAM	23095	50RB#0	PASS	PASS
Band12	10MHz	64QAM	23095	50RB#0	PASS	PASS
Band41	20MHz	QPSK	40620	100RB#0	PASS	PASS
Band41	20MHz	16QAM	40620	100RB#0	PASS	PASS
Band41	20MHz	64QAM	40620	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

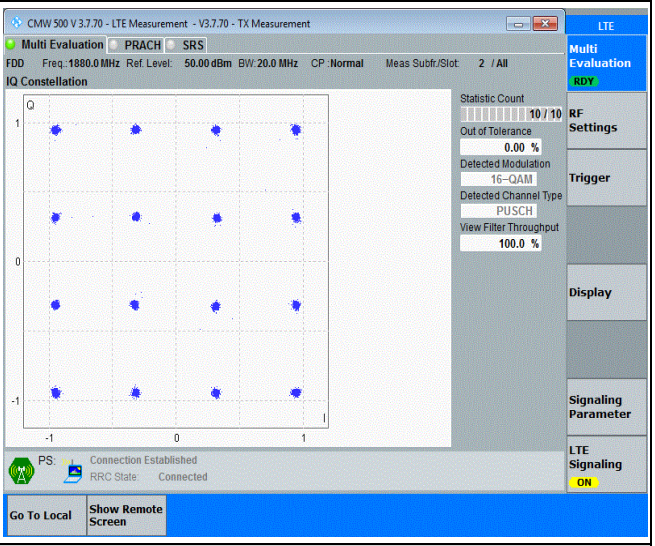
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.

Test Graphs

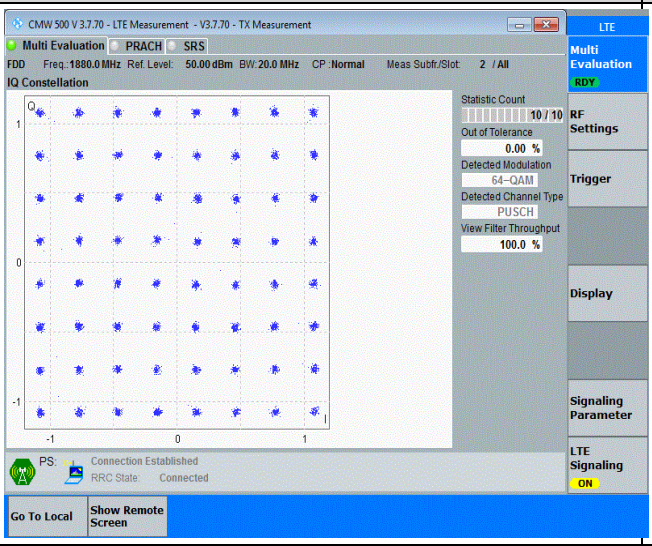
Band2-20MHz-QPSK-18900-100RB#0



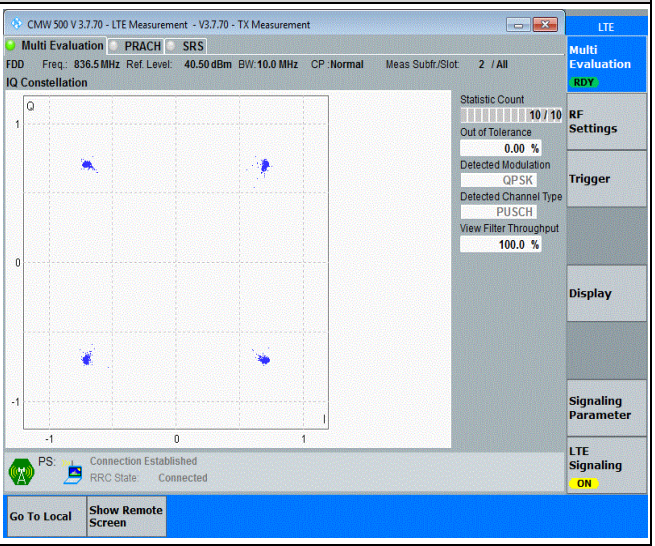
Band2-20MHz-16QAM-18900-100RB#0



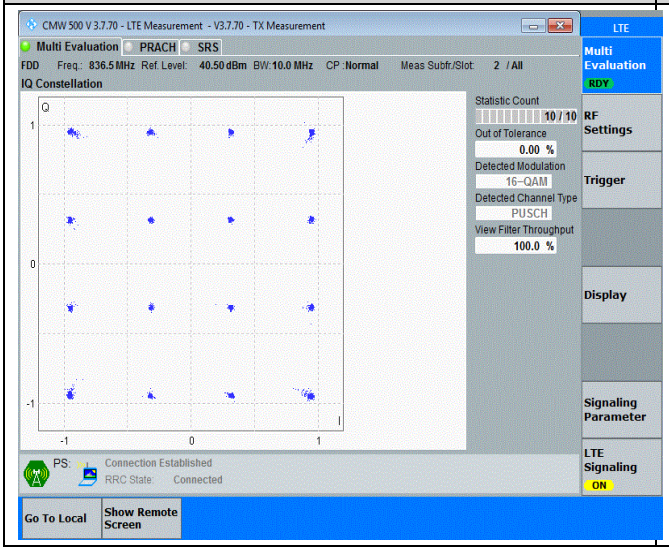
Band2-20MHz-64QAM-18900-100RB#0



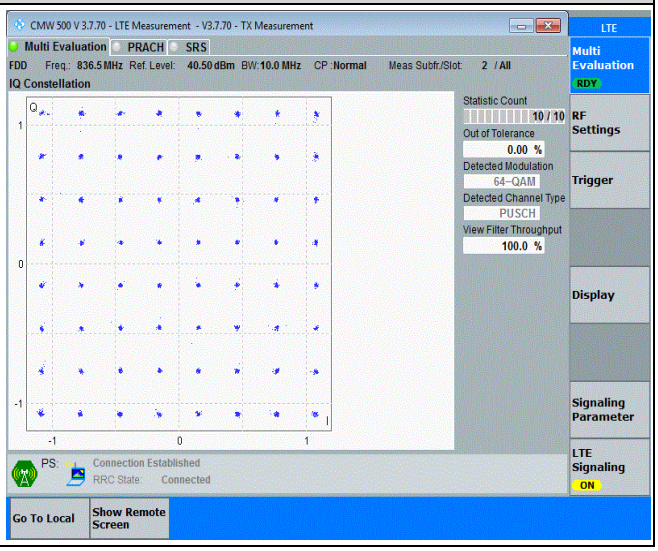
Band5-10MHz-QPSK-20525-50RB#0



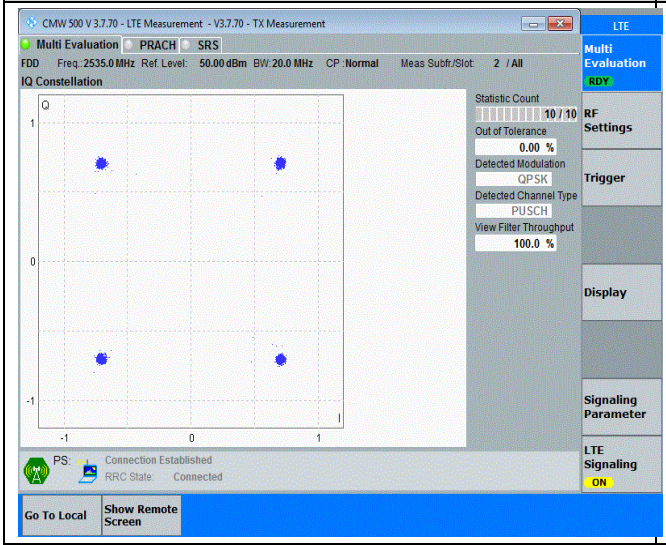
Band5-10MHz-16QAM-20525-50RB#0



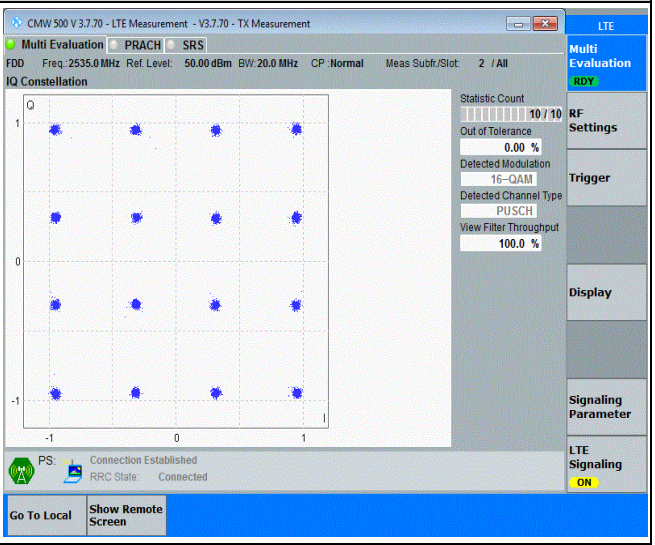
Band5-10MHz-64QAM-20525-50RB#0



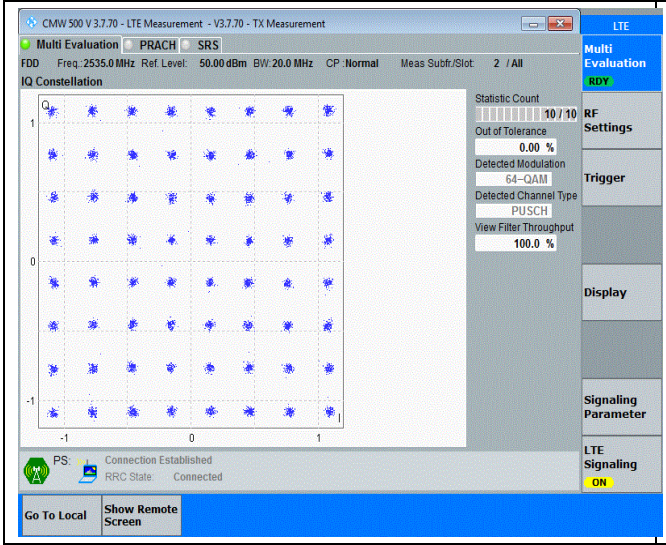
Band7-20MHz-QPSK-21100-100RB#0



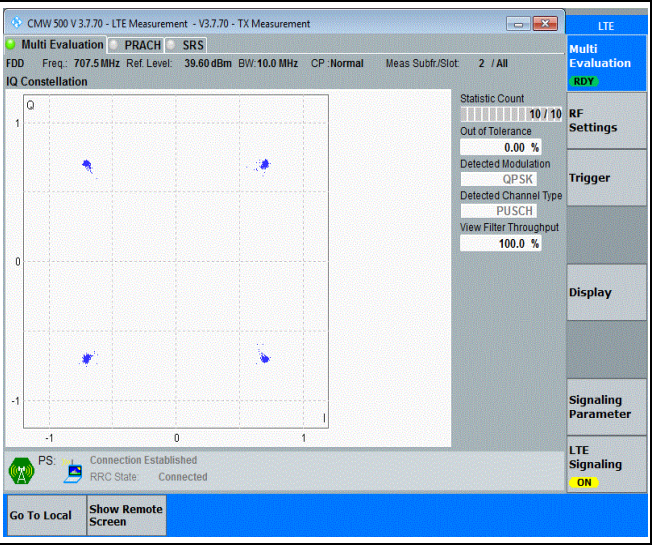
Band7-20MHz-16QAM-21100-100RB#0



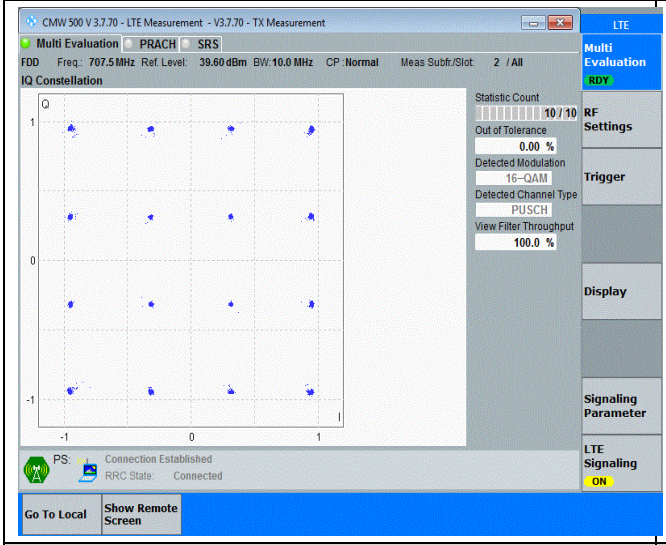
Band7-20MHz-64QAM-21100-100RB#0



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



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



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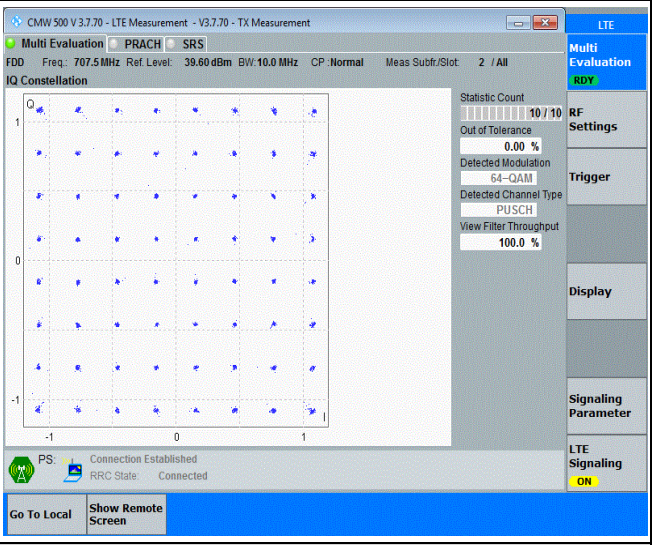

Band41-20MHz-QPSK-40620-100RB#0

Band41-20MHz-16QAM-40620-100RB#0