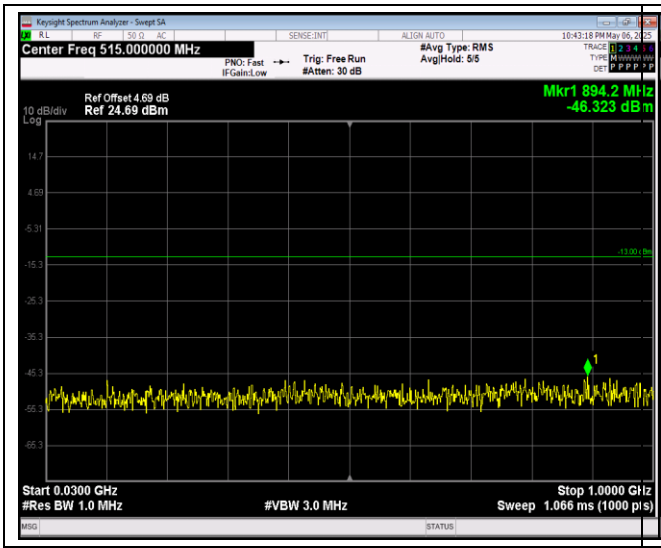
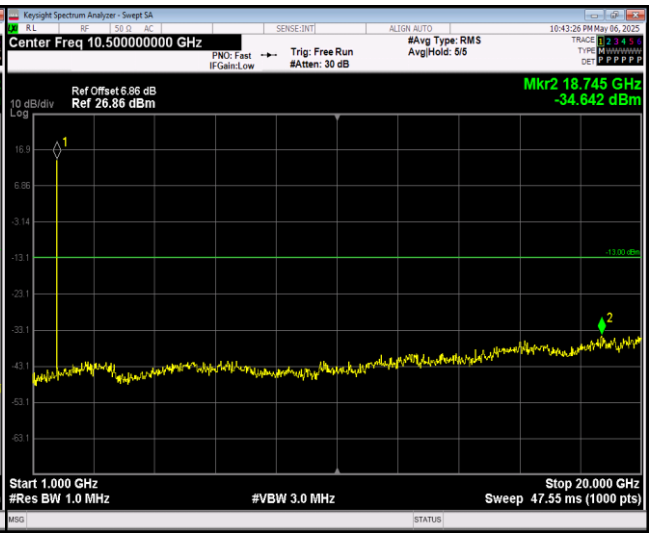
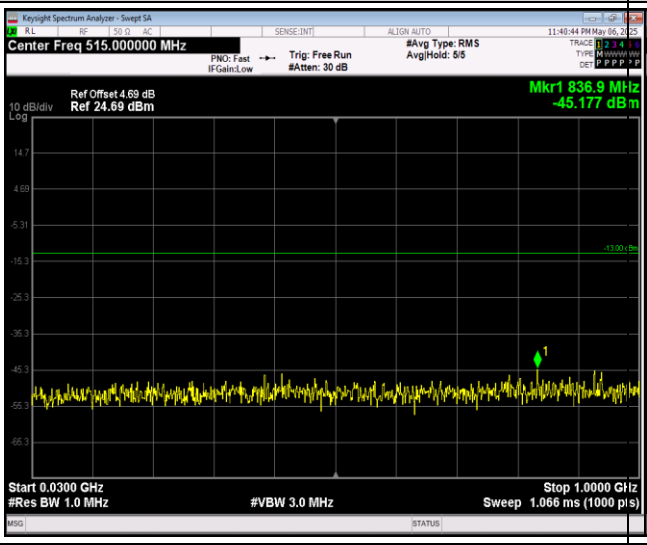


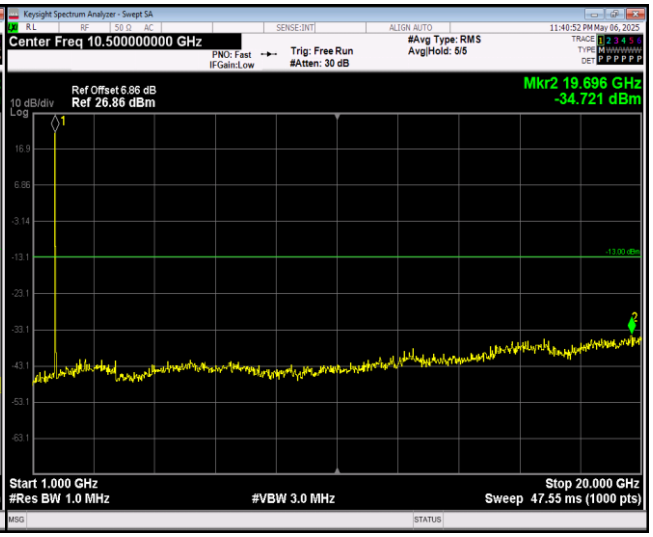
Band4-20MHz-QPSK-20050-1RB#0-Range1:30~1000MHz



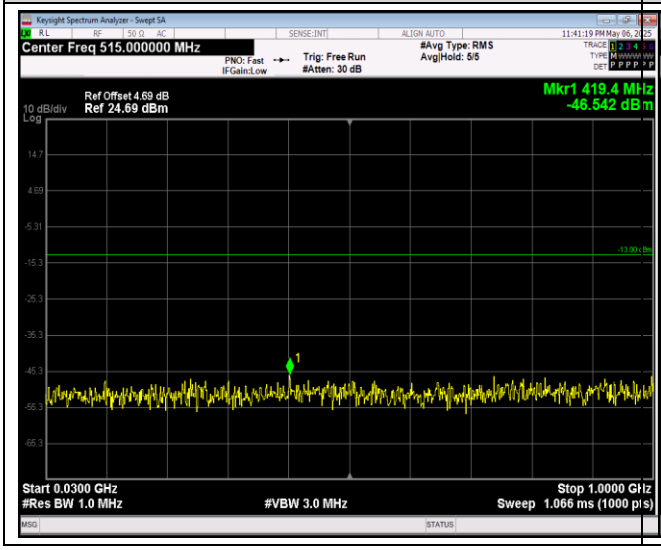
Band4-20MHz-QPSK-20050-1RB#0-Range2:1000~20000MHz

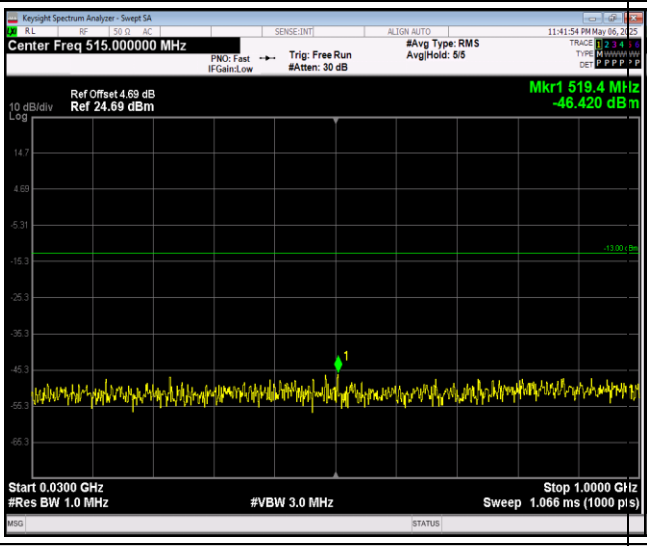
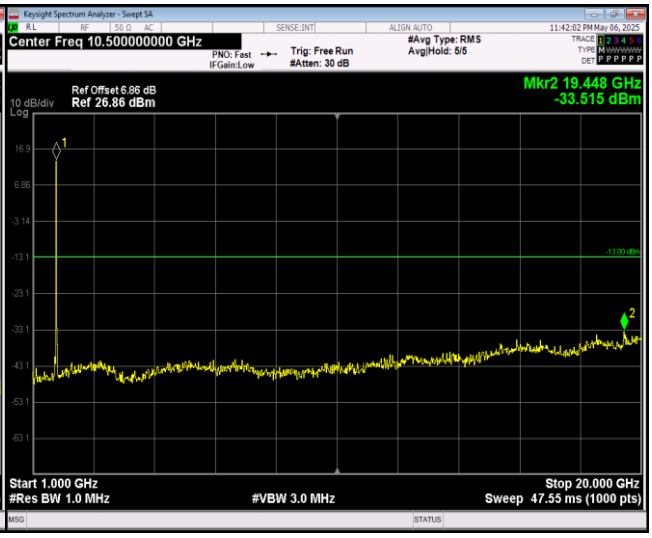
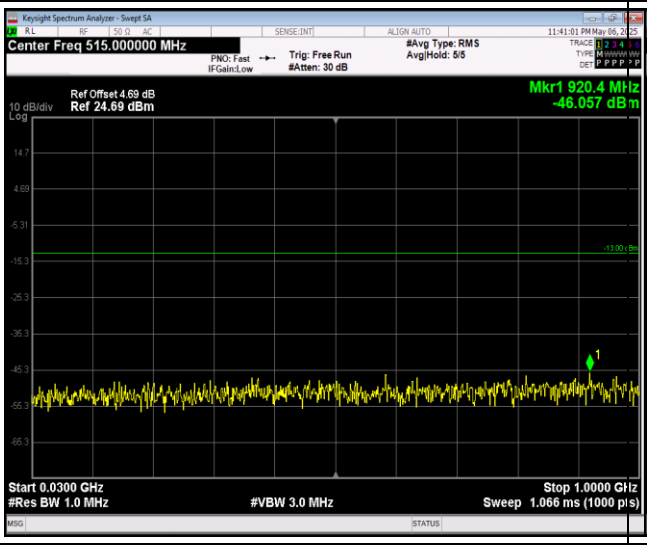
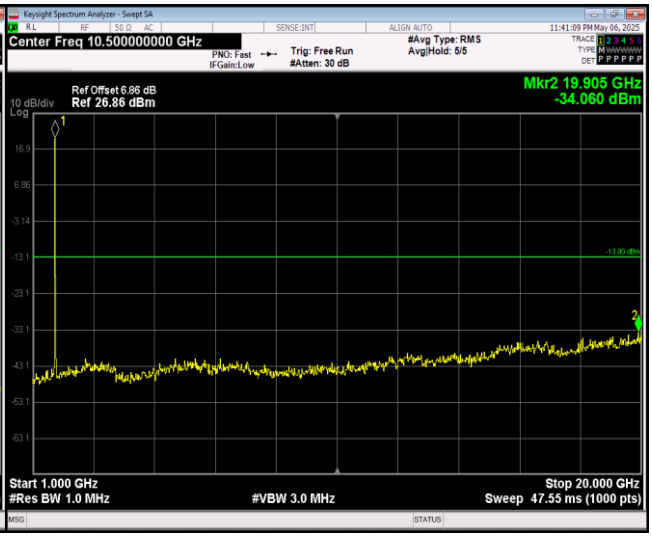


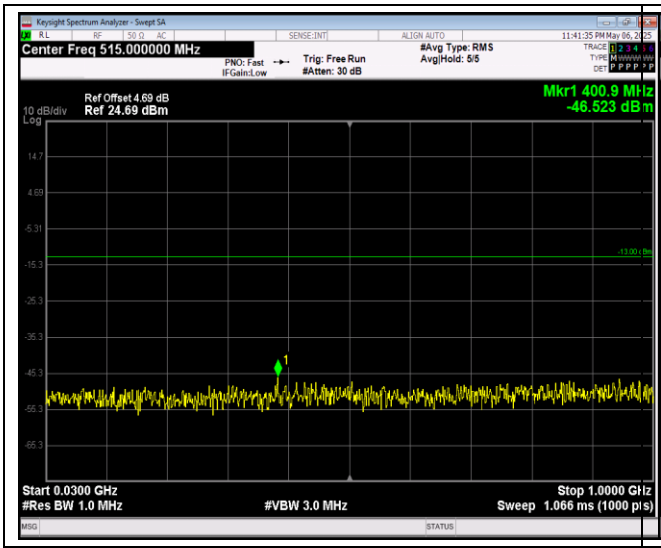
Band4-20MHz-QPSK-20175-1RB#0-Range1:30~1000MHz



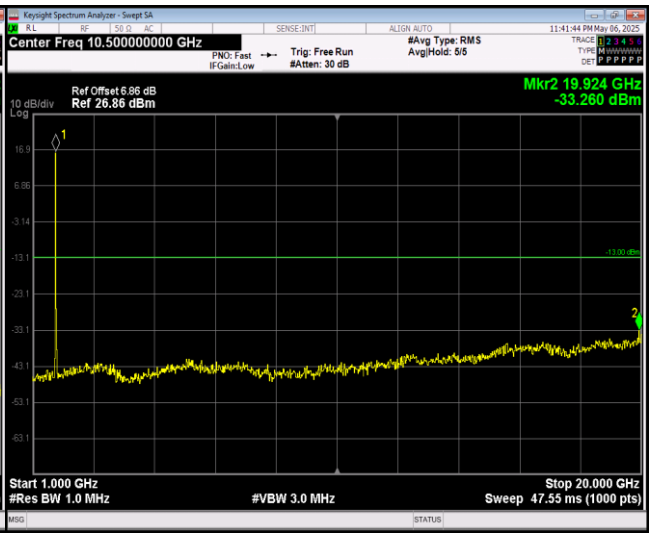
Band4-20MHz-QPSK-20175-1RB#0-Range2:1000~20000MHz



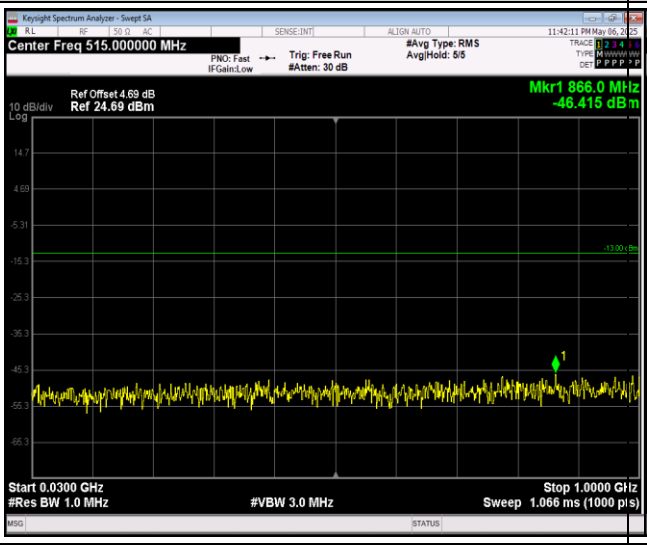
Band4-20MHz-QPSK-20300-1RB#0-Range1:30~1000MHz	Band4-20MHz-QPSK-20300-1RB#0-Range2:1000~20000MHz
	
Band4-20MHz-16QAM-20050-1RB#0-Range1:30~1000MHz	Band4-20MHz-16QAM-20050-1RB#0-Range2:1000~20000MHz
	
Band4-20MHz-16QAM-20175-1RB#0-Range1:30~1000MHz	Band4-20MHz-16QAM-20175-1RB#0-Range2:1000~20000MHz



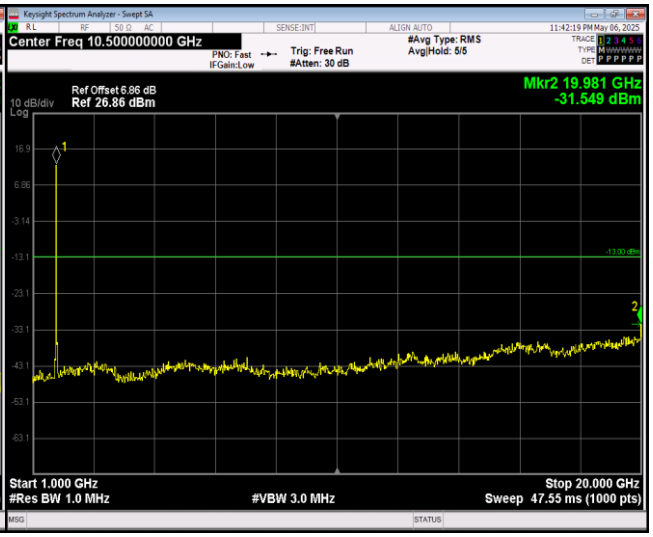
Band4-20MHz-16QAM-20300-1RB#0-Range1:30~1000MHz



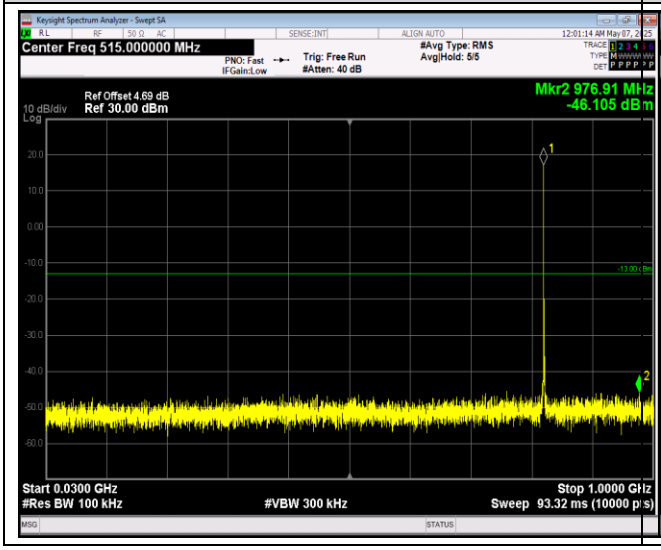
Band4-20MHz-16QAM-20300-1RB#0-Range2:1000~20000MHz

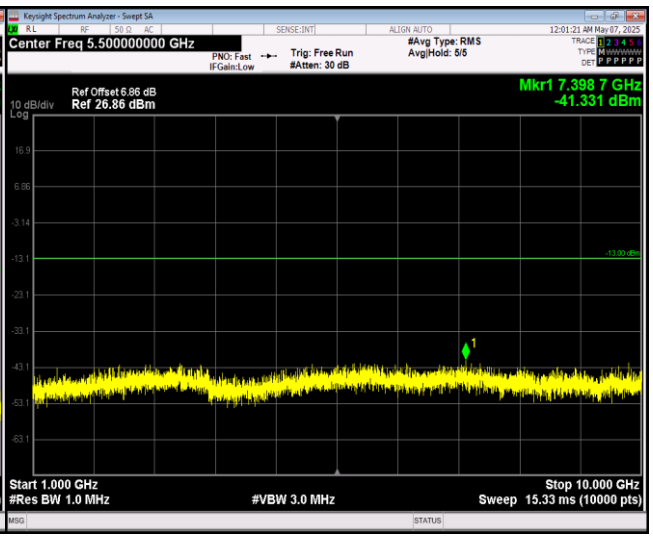


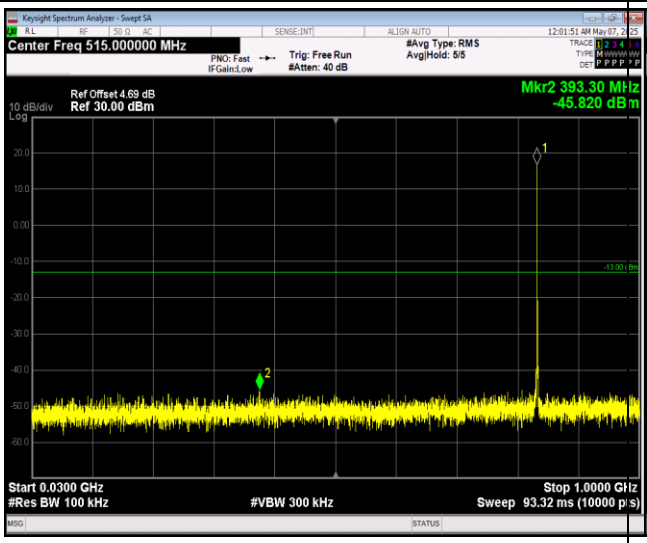
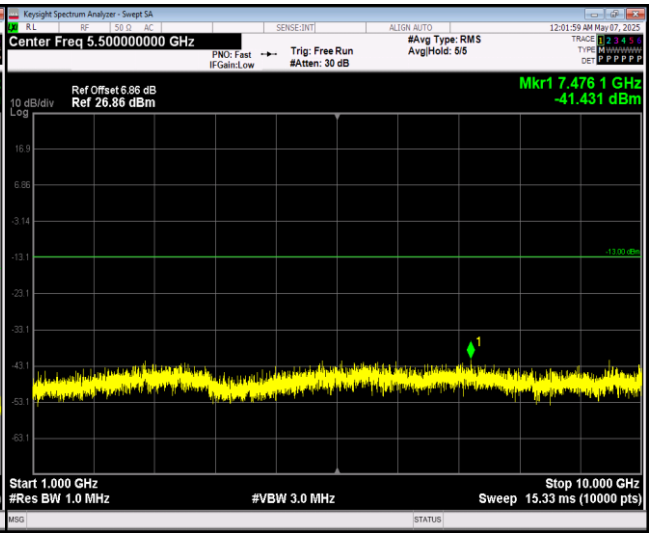
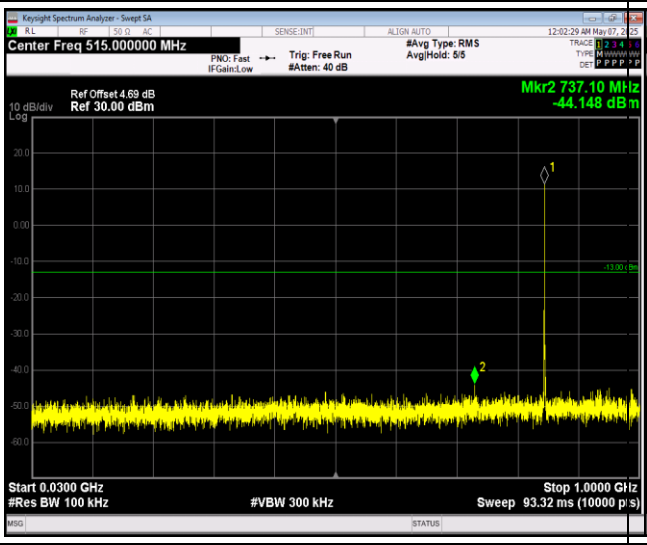
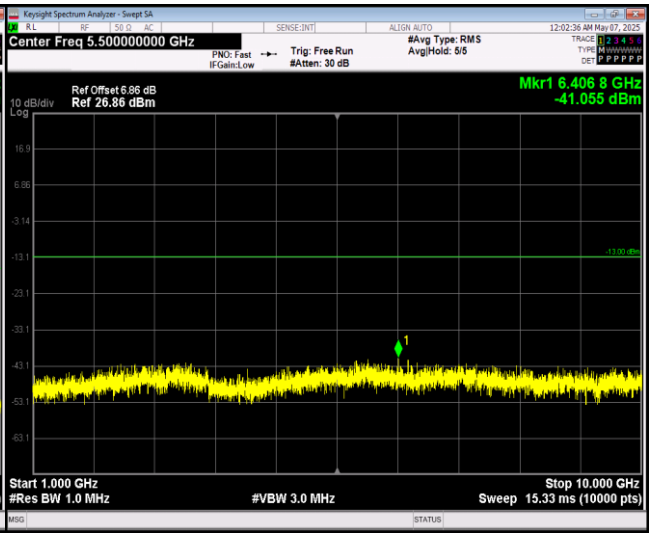
Band5-1.4MHz-QPSK-20407-1RB#0-Range1:30~1000MHz

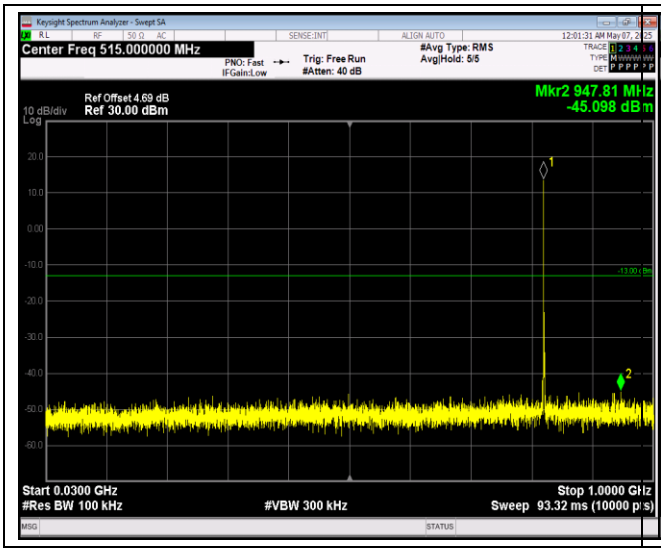


Band5-1.4MHz-QPSK-20407-1RB#0-Range2:1000~10000MHz

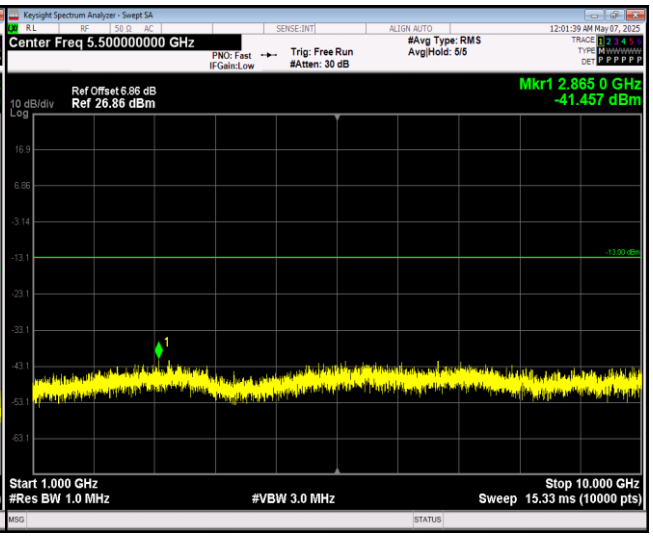




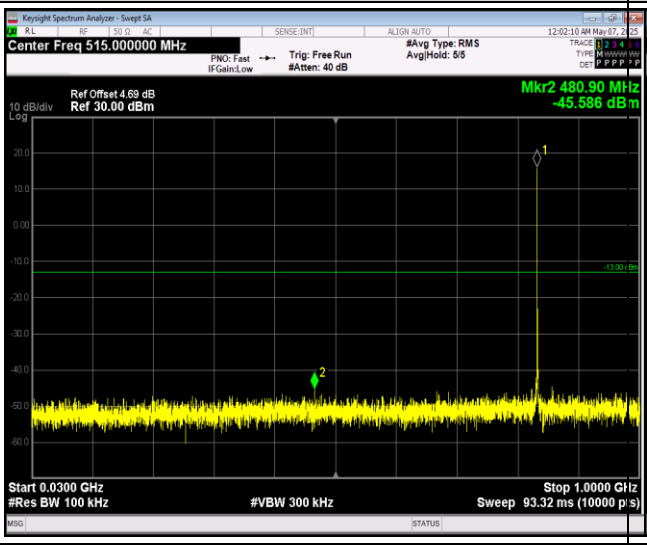
Band5-1.4MHz-QPSK-20525-1RB#0-Range1:30~1000MHz	Band5-1.4MHz-QPSK-20525-1RB#0-Range2:1000~10000MHz
	
Band5-1.4MHz-QPSK-20643-1RB#0-Range1:30~1000MHz	Band5-1.4MHz-QPSK-20643-1RB#0-Range2:1000~10000MHz
	
Band5-1.4MHz-16QAM-20407-1RB#0-Range1:30~1000MHz	Band5-1.4MHz-16QAM-20407-1RB#0-Range2:1000~10000MHz



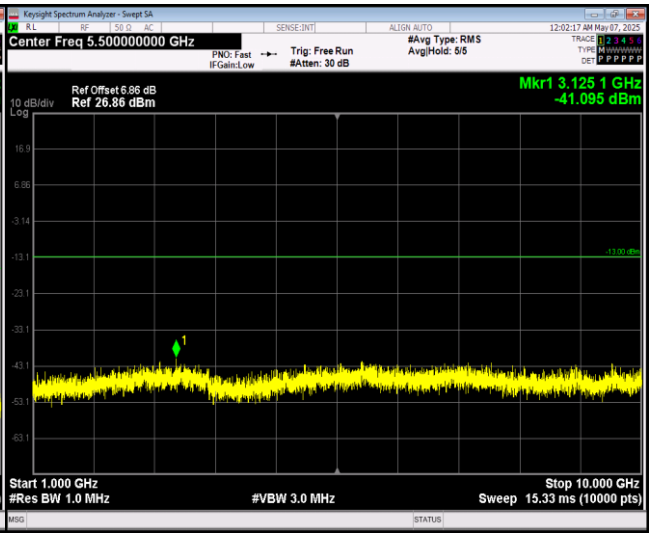
Band5-1.4MHz-16QAM-20525-1RB#0-Range1:30~1000MHz



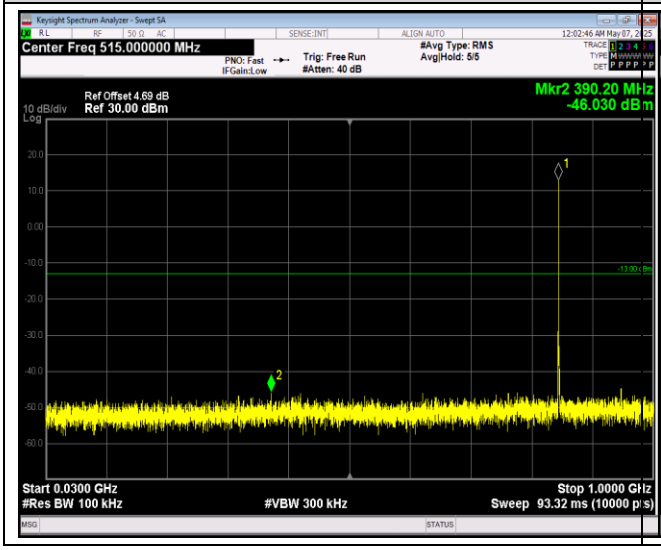
Band5-1.4MHz-16QAM-20525-1RB#0-Range2:1000~10000MHz

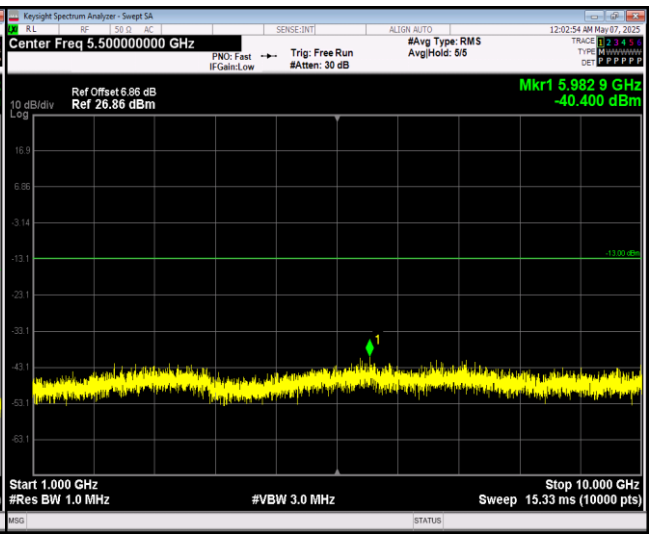


Band5-1.4MHz-16QAM-20643-1RB#0-Range1:30~1000MHz



Band5-1.4MHz-16QAM-20643-1RB#0-Range2:1000~10000MHz





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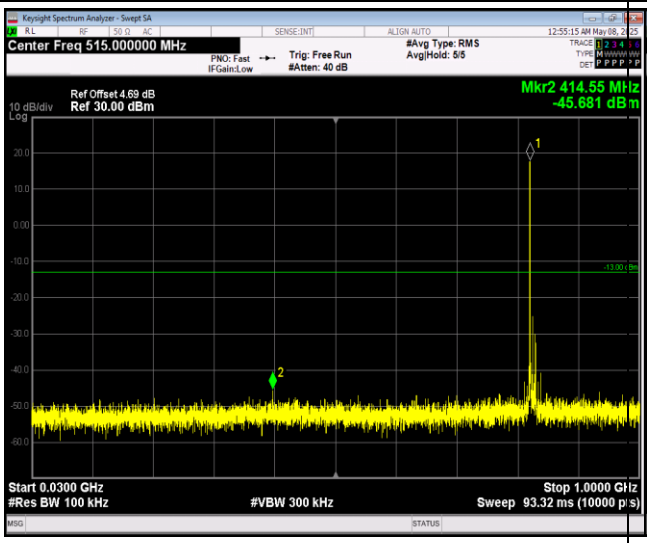	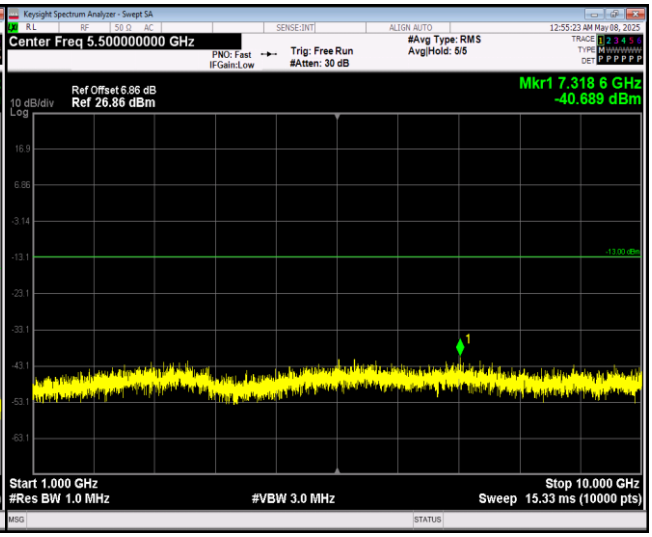
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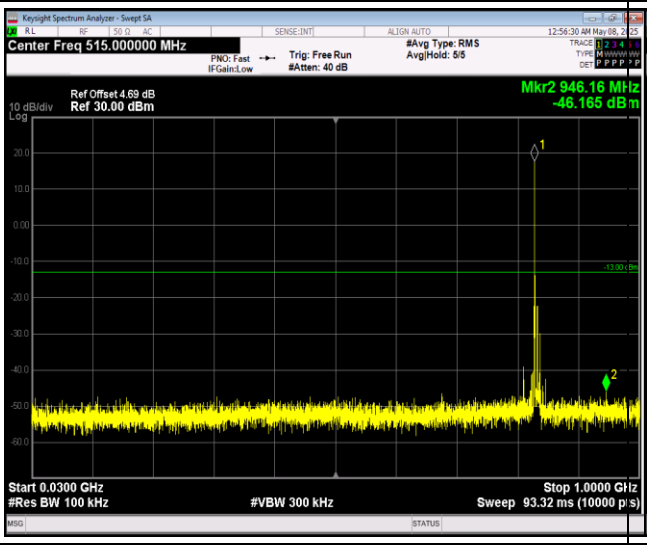	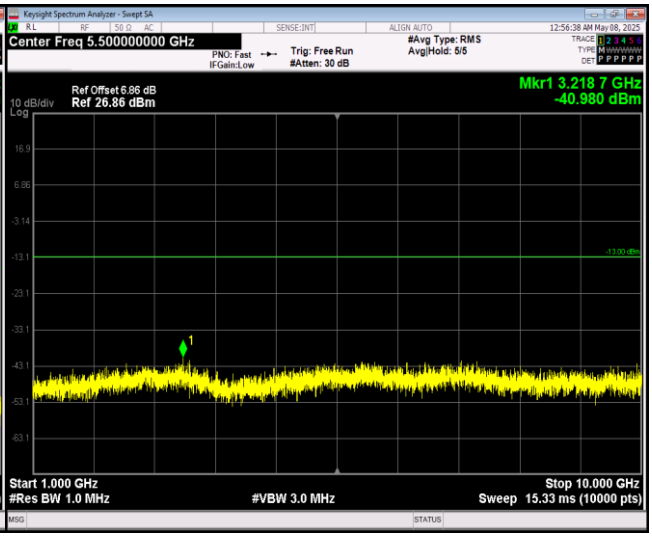
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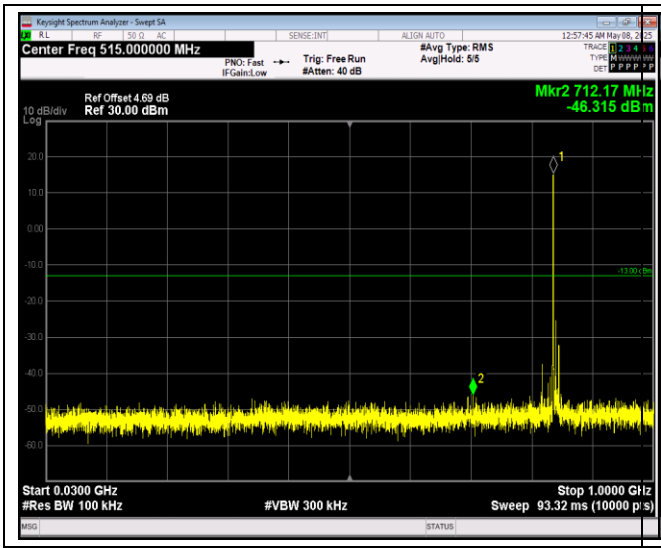
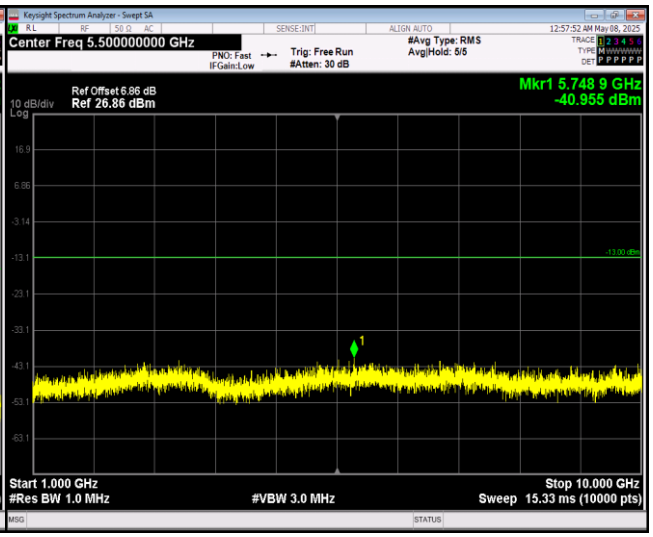
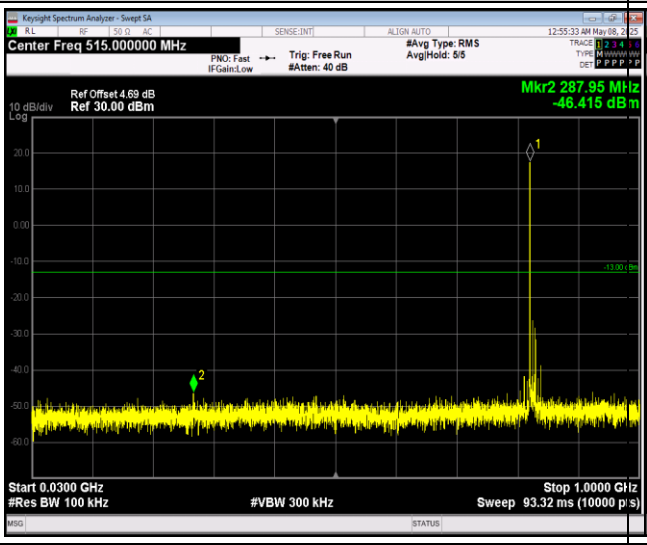


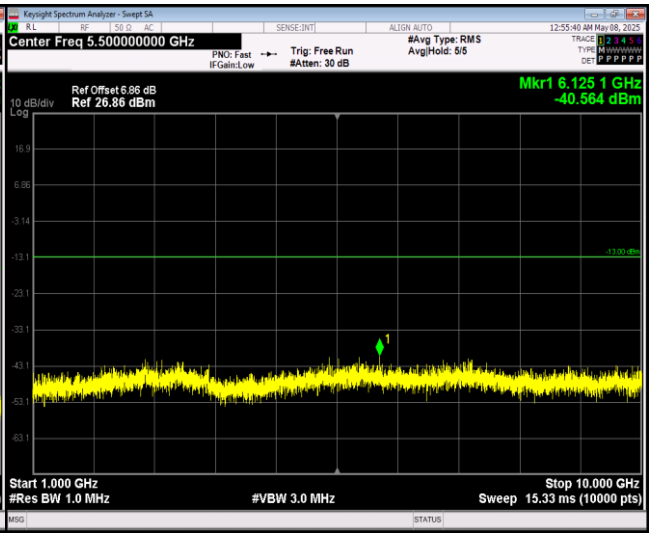
Band5-10MHz-16QAM-20450-1RB#0-Range1:30~1000MHz



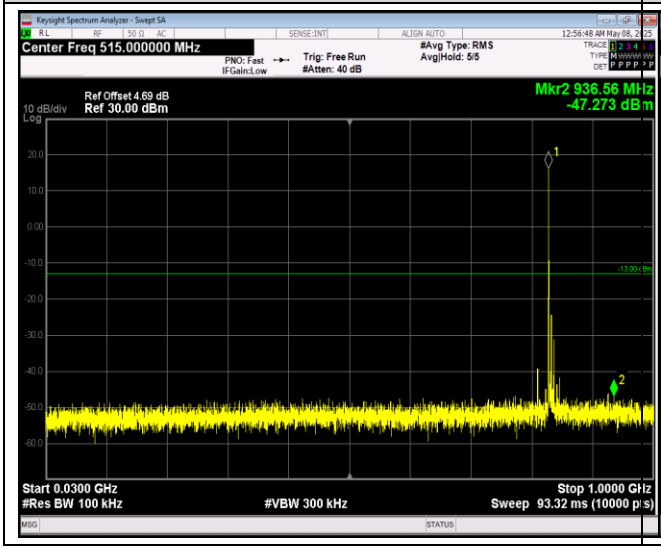
Band5-10MHz-16QAM-20450-1RB#0-Range2:1000~10000MHz

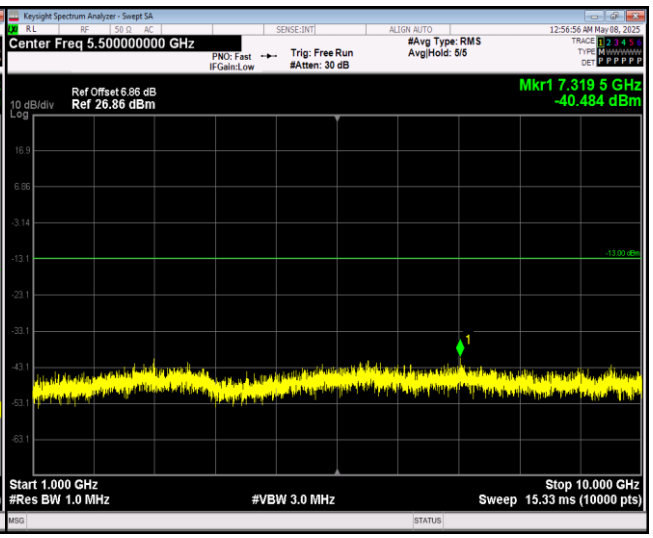


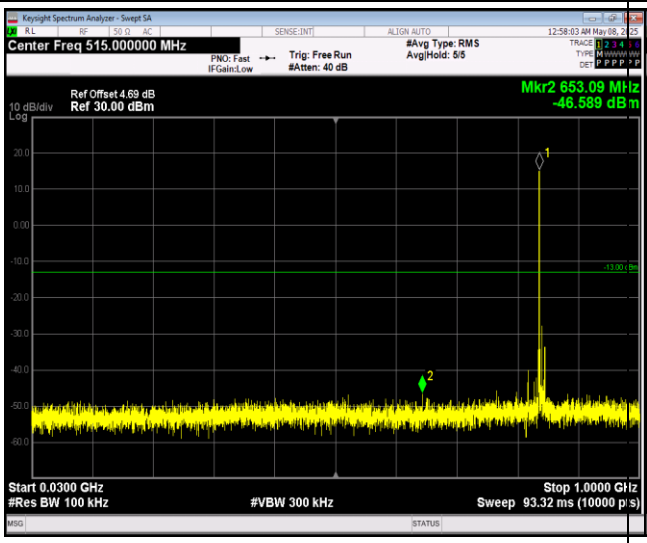
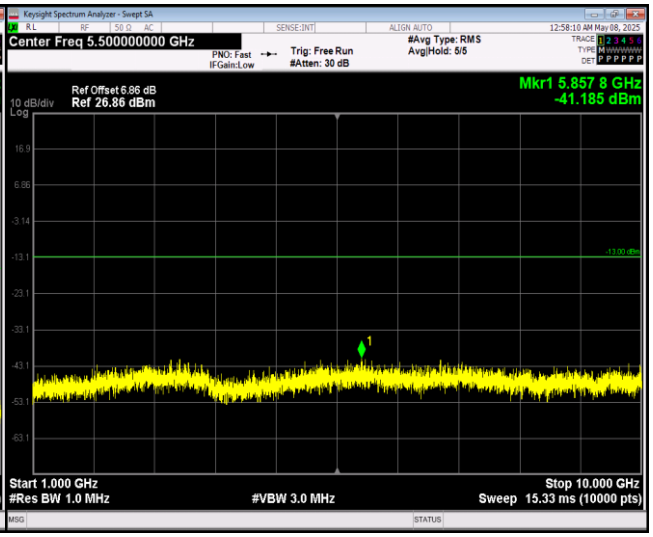
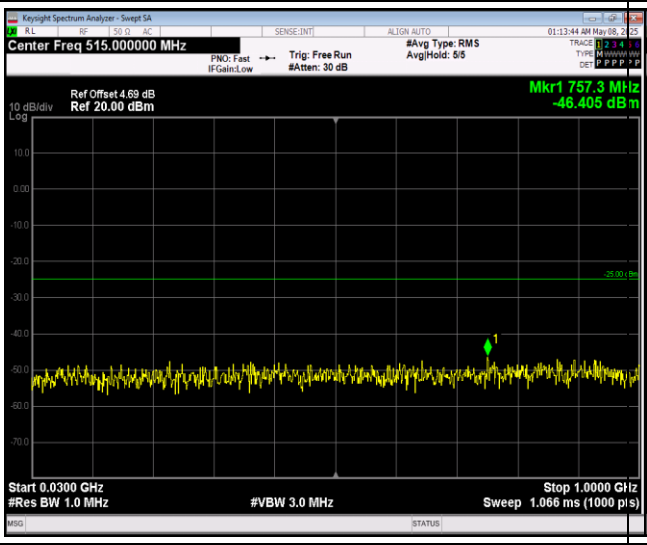
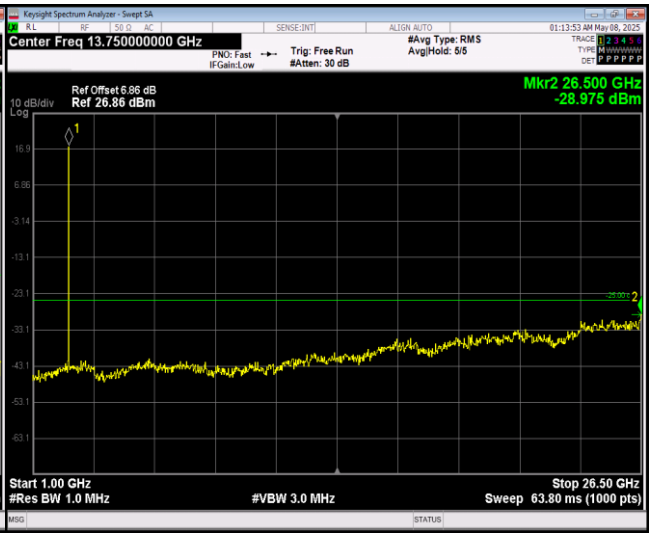
Band5-10MHz-16QAM-20525-1RB#0-Range1:30~1000MHz

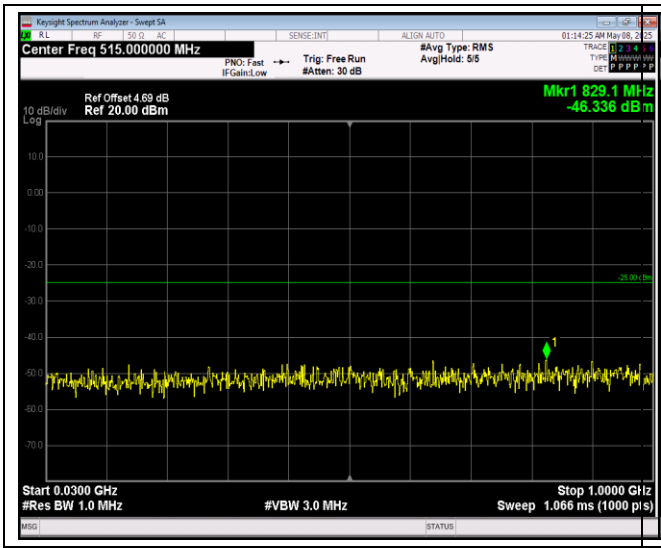


Band5-10MHz-16QAM-20525-1RB#0-Range2:1000~10000MHz

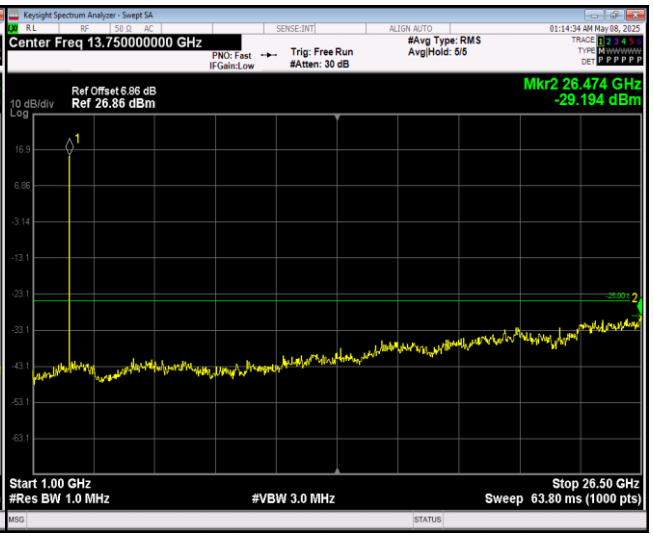




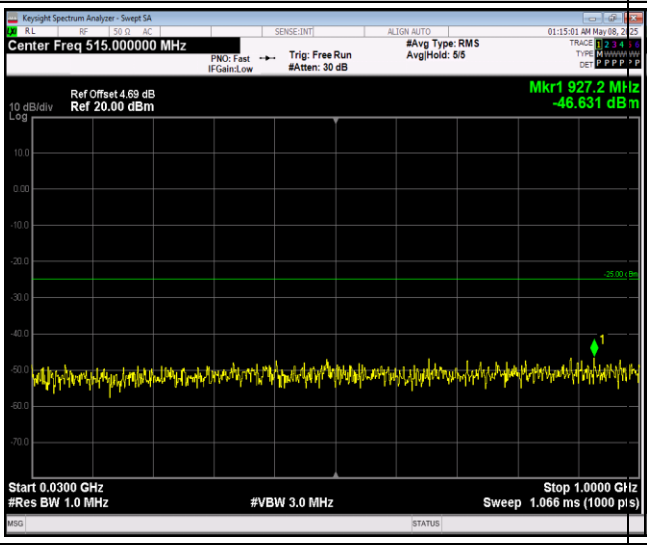
Band5-10MHz-16QAM-20600-1RB#0-Range1:30~1000MHz	Band5-10MHz-16QAM-20600-1RB#0-Range2:1000~10000MHz
	
Band7-5MHz-QPSK-20775-1RB#0-Range1:30~1000MHz	Band7-5MHz-QPSK-20775-1RB#0-Range2:1000~26500MHz
	
Band7-5MHz-QPSK-21100-1RB#0-Range1:30~1000MHz	Band7-5MHz-QPSK-21100-1RB#0-Range2:1000~26500MHz



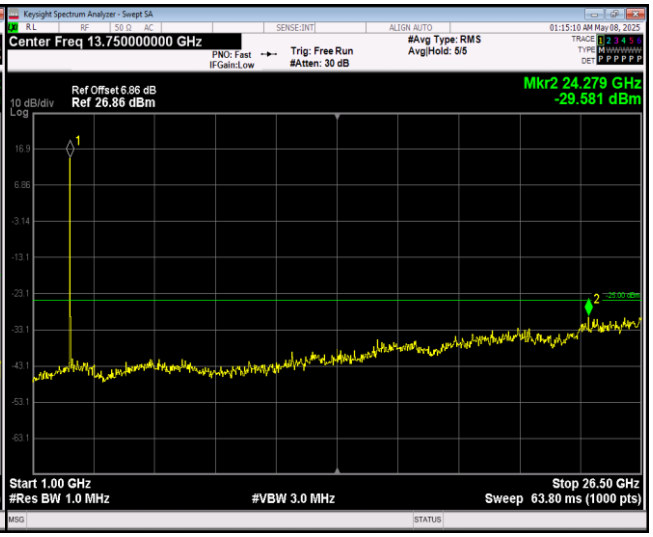
Band7-5MHz-QPSK-21425-1RB#0-Range1:30~1000MHz



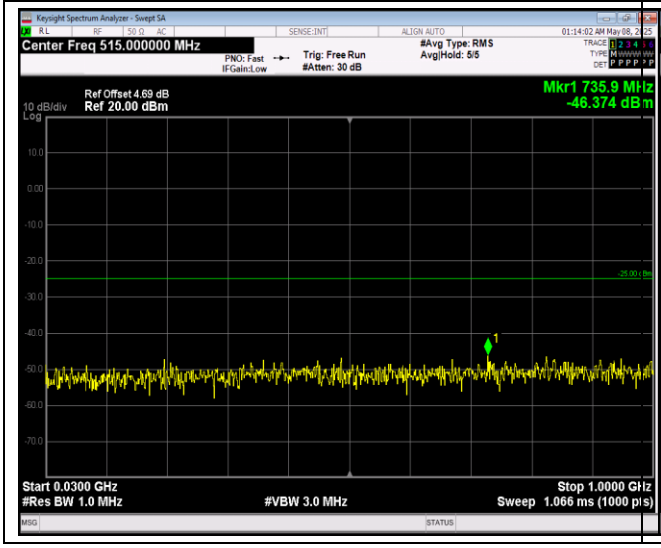
Band7-5MHz-QPSK-21425-1RB#0-Range2:1000~26500MHz

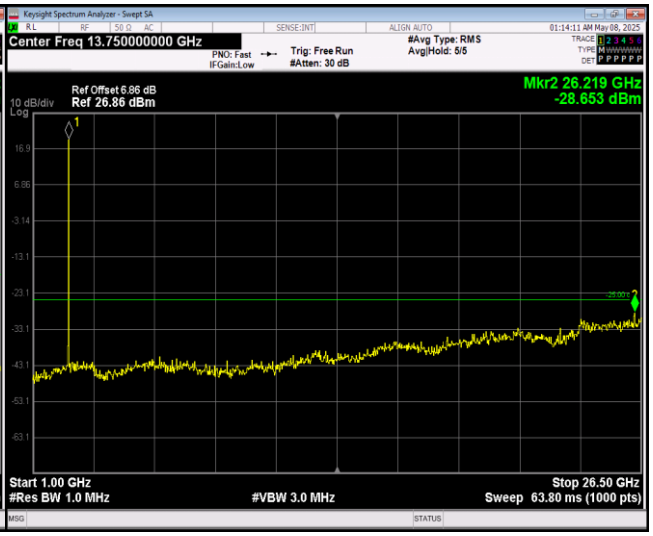


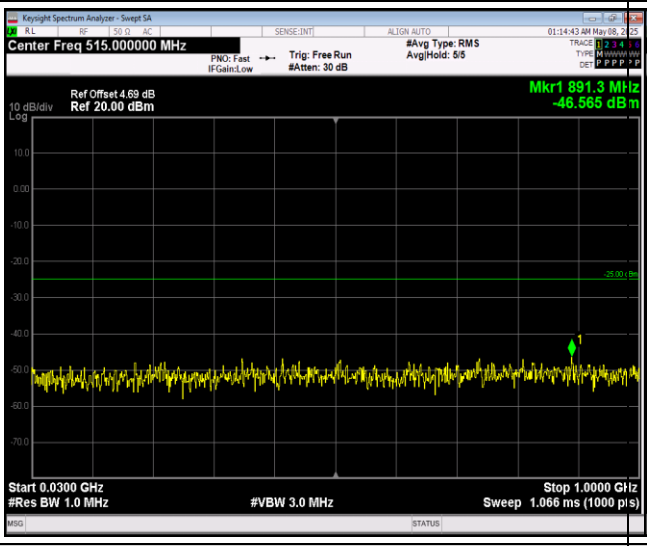
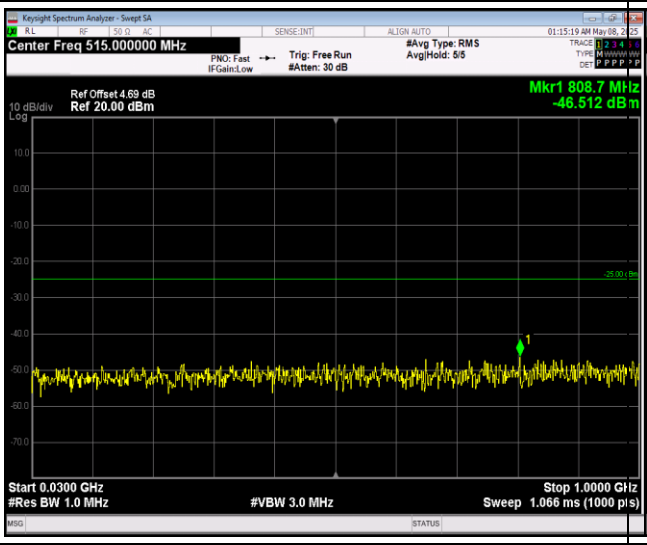
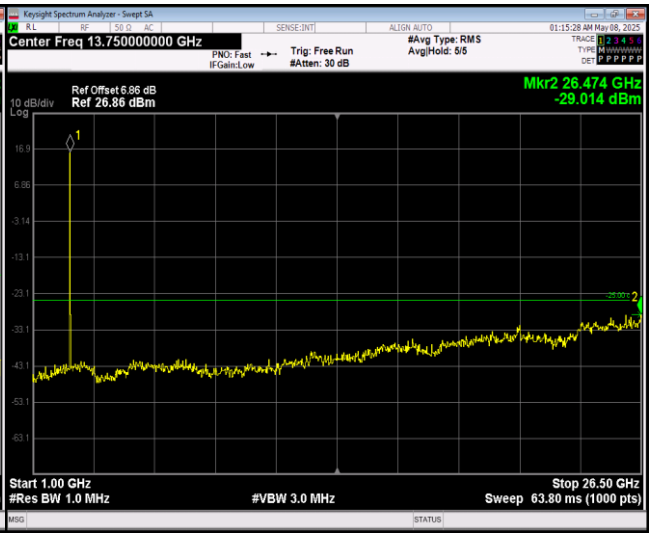
Band7-5MHz-16QAM-20775-1RB#0-Range1:30~1000MHz

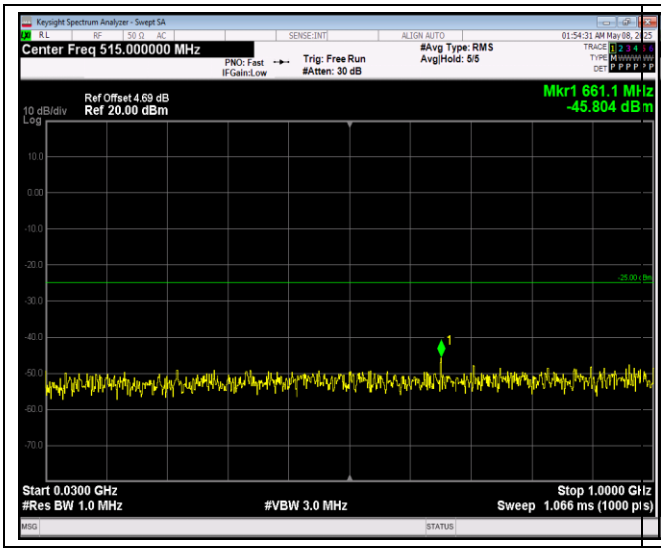


Band7-5MHz-16QAM-20775-1RB#0-Range2:1000~26500MHz

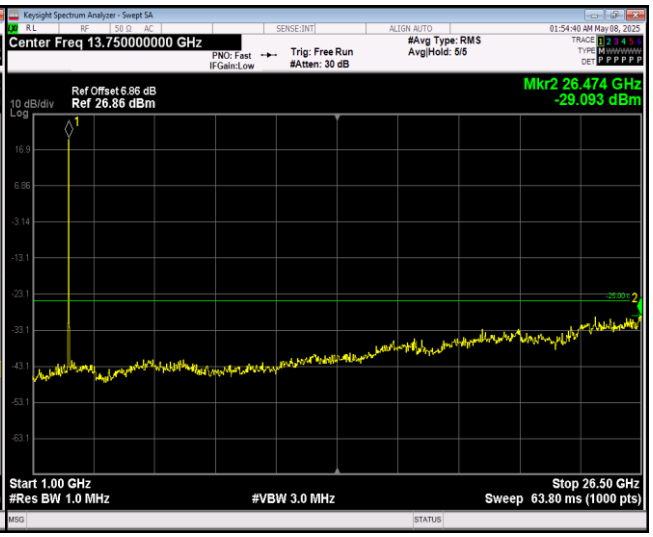




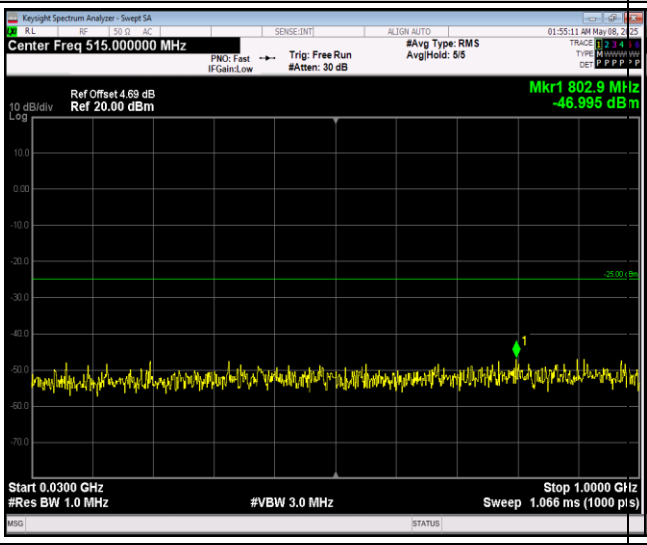
Band7-5MHz-16QAM-21100-1RB#0-Range1:30~1000MHz	Band7-5MHz-16QAM-21100-1RB#0-Range2:1000~26500MHz
	
Band7-5MHz-16QAM-21425-1RB#0-Range1:30~1000MHz	Band7-5MHz-16QAM-21425-1RB#0-Range2:1000~26500MHz
	
Band7-20MHz-QPSK-20850-1RB#0-Range1:30~1000MHz	Band7-20MHz-QPSK-20850-1RB#0-Range2:1000~26500MHz



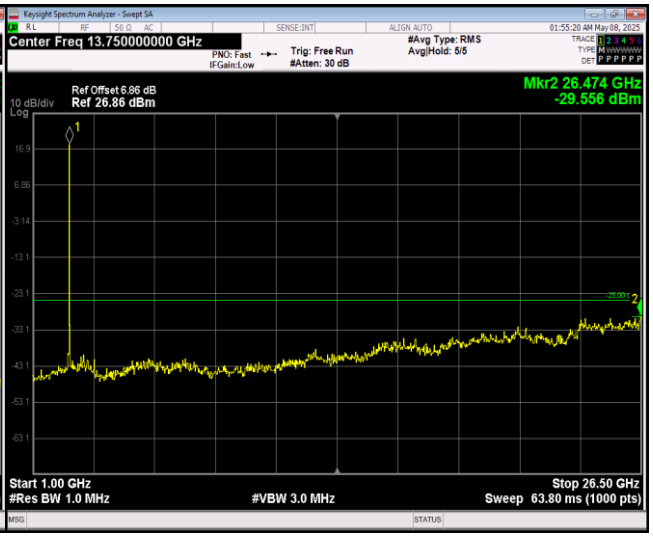
Band7-20MHz-QPSK-21100-1RB#0-Range1:30~1000MHz



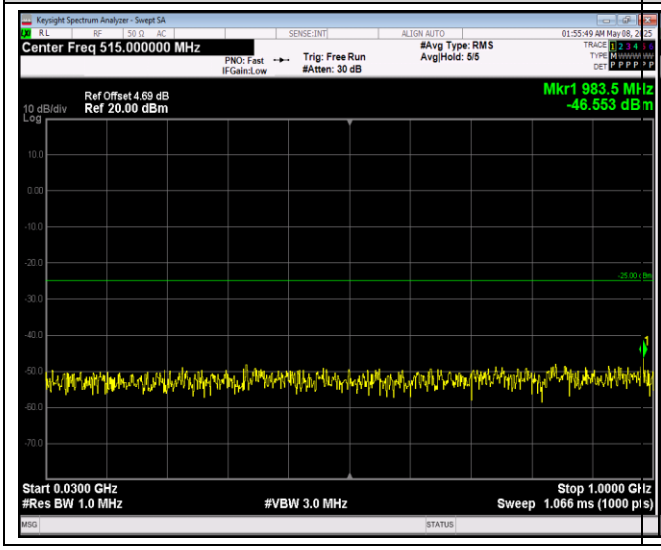
Band7-20MHz-QPSK-21100-1RB#0-Range2:1000~26500MHz

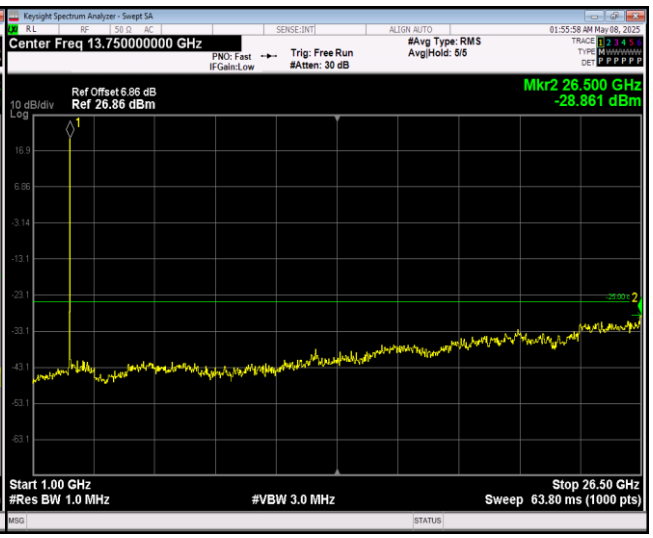


Band7-20MHz-QPSK-21350-1RB#0-Range1:30~1000MHz



Band7-20MHz-QPSK-21350-1RB#0-Range2:1000~26500MHz





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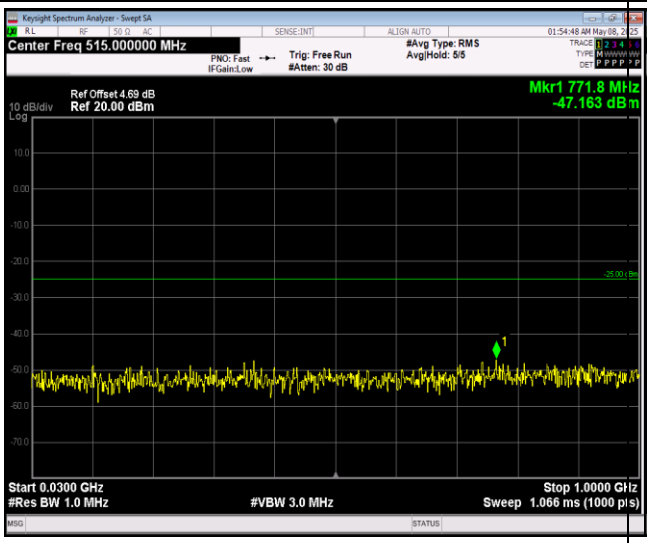	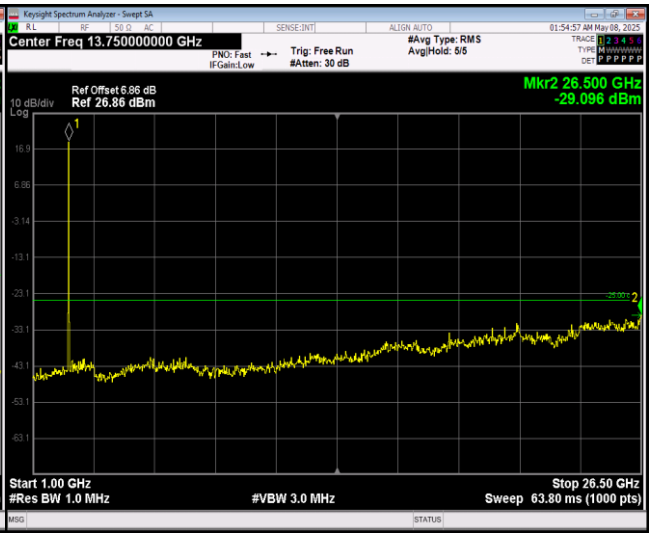
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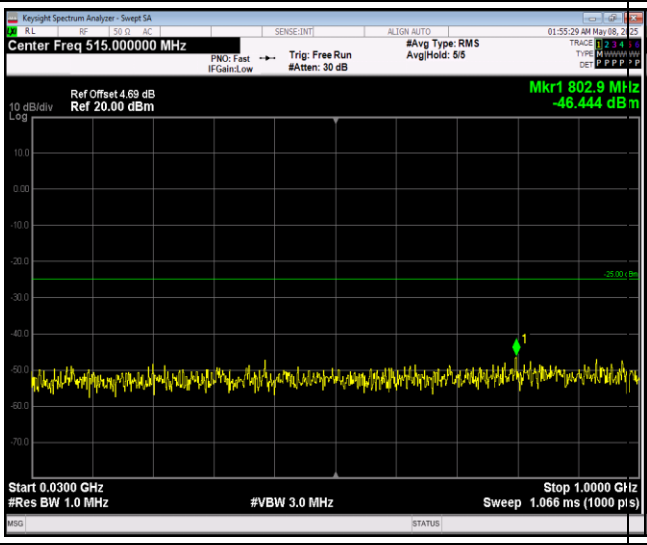
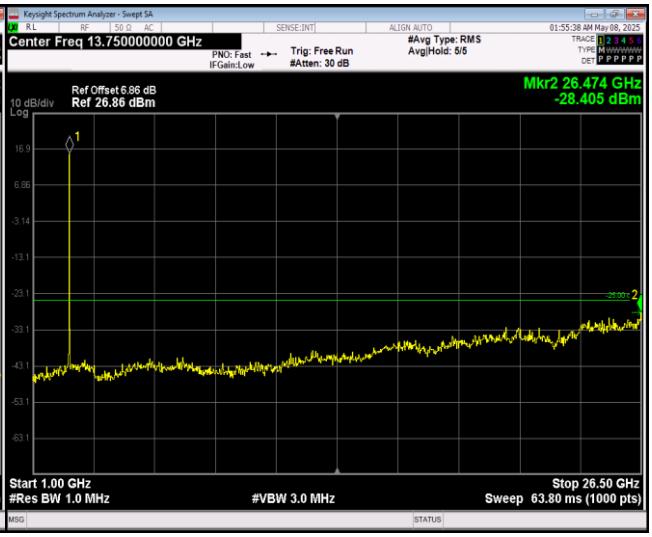
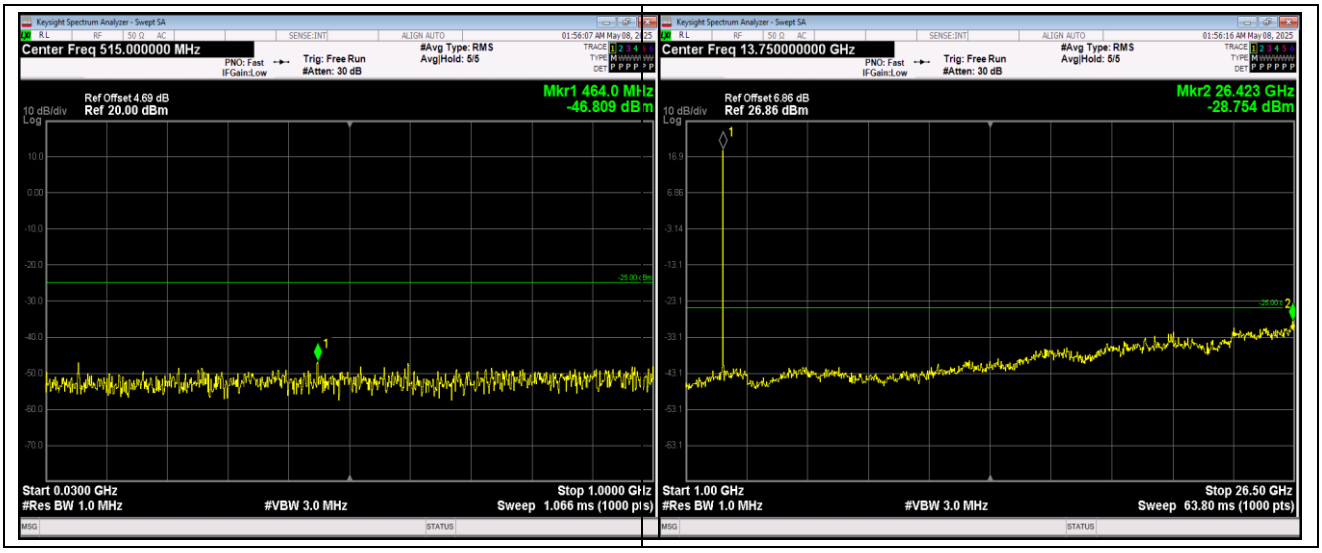
	
Band7-20MHz-16QAM-21350-1RB#0-Range1:30~1000MHz	Band7-20MHz-16QAM-21350-1RB#0-Range2:1000~26500MHz


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 4.69 dB
10 dB/div
Ref 20.00 dBm
Mkr1 464.0 MHz
-46.809 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 13.750000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 5/5
Ref Offset 6.86 dB
10 dB/div
Ref 26.86 dBm
Mkr2 26.423 GHz
-28.754 dBm
Start 1.00 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 26.50 GHz
Sweep 63.80 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					
3.70	-30	-39.31	-0.020910	Within authorized band for Band 2	Pass
	-20	41.10	0.021862		
	-10	37.98	0.020202		
	0	30.67	0.016314		
	10	-28.32	-0.015064		
	20	-24.82	-0.013202		
	30	-21.83	-0.011612		
	40	40.01	0.021282		
	50	63.79	0.033931		
16QAM					
3.70	-30	40.97	0.021793	Within authorized band for Band 2	Pass
	-20	24.09	0.012814		
	-10	-27.84	-0.014809		
	0	-16.71	-0.008888		
	10	-41.81	-0.022239		
	20	73.70	0.039202		
	30	28.37	0.015090		
	40	53.09	0.028239		
	50	-30.91	-0.016441		
Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.30	54.30	0.028883	Within authorized band for Band 2	Pass
	3.70	-36.51	-0.019420		
	4.25	20.60	0.010957		
16QAM					
25	3.30	-24.32	-0.012936	Within authorized band for Band 2	Pass
	3.70	-30.20	-0.016064		
	4.25	32.13	0.017090		
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					
3.70	-30	34.06	0.019659	Within authorized band for Band 4	Pass
	-20	-23.65	-0.013651		
	-10	-23.39	-0.013501		
	0	-27.37	-0.015798		
	10	42.04	0.024266		
	20	-20.51	-0.011838		
	30	-26.45	-0.015267		
	40	-22.30	-0.012872		
	50	31.49	0.018176		
16QAM					
3.70	-30	40.14	0.023169	Within authorized band for Band 4	Pass
	-20	20.47	0.011815		
	-10	32.03	0.018488		
	0	-42.27	-0.024398		
	10	43.64	0.025189		
	20	-25.28	-0.014592		
	30	-15.72	-0.009074		
	40	22.02	0.012710		
	50	26.66	0.015388		
Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.30	-19.84	-0.011452	Within authorized band for Band 4	Pass
	3.70	34.52	0.019925		
	4.25	-24.88	-0.014361		
16QAM					
25	3.30	-26.19	-0.015117	Within authorized band for Band 4	Pass
	3.70	-24.59	-0.014193		
	4.25	-56.83	-0.032802		
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					
3.70	-30	-17.41	-0.020813	±2.5	Pass
	-20	29.83	0.035660		
	-10	12.47	0.014907		
	0	18.48	0.022092		
	10	-15.92	-0.019032		
	20	20.57	0.024591		
	30	21.83	0.026097		
	40	29.17	0.034871		
	50	-27.08	-0.032373		
16QAM					
3.70	-30	-23.83	-0.028488	±2.5	Pass
	-20	-21.13	-0.025260		
	-10	5.62	0.006718		
	0	-16.79	-0.020072		
	10	-17.97	-0.021482		
	20	32.94	0.039378		
	30	-12.95	-0.015481		
	40	23.30	0.027854		
	50	20.69	0.024734		
Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.30	-15.13	-0.018087	±2.5	Pass
	3.70	17.37	0.020765		
	4.25	14.79	0.017681		
16QAM					
25	3.30	19.35	0.023132	±2.5	Pass
	3.70	26.16	0.031273		
	4.25	28.24	0.033760		
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					
3.70	-30	48.67	0.019199	Within authorized band for Band 7	Pass
	-20	-24.95	-0.009842		
	-10	-33.77	-0.013321		
	0	52.30	0.020631		
	10	-81.61	-0.032193		
	20	40.96	0.016158		
	30	-40.23	-0.015870		
	40	31.86	0.012568		
	50	-40.76	-0.016079		
16QAM					
3.70	-30	-44.02	-0.017365	Within authorized band for Band 7	Pass
	-20	-38.42	-0.015156		
	-10	-45.36	-0.017893		
	0	68.59	0.027057		
	10	46.45	0.018323		
	20	55.95	0.022071		
	30	-55.62	-0.021941		
	40	32.39	0.012777		
	50	-37.04	-0.014611		
Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.30	-55.12	-0.021744	Within authorized band for Band 7	Pass
	3.70	-56.43	-0.022260		
	4.25	-51.07	-0.020146		
16QAM					
25	3.30	63.61	0.025093	Within authorized band for Band 7	Pass
	3.70	73.08	0.028828		
	4.25	31.50	0.012426		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

Appendix G: Modulation Characteristics

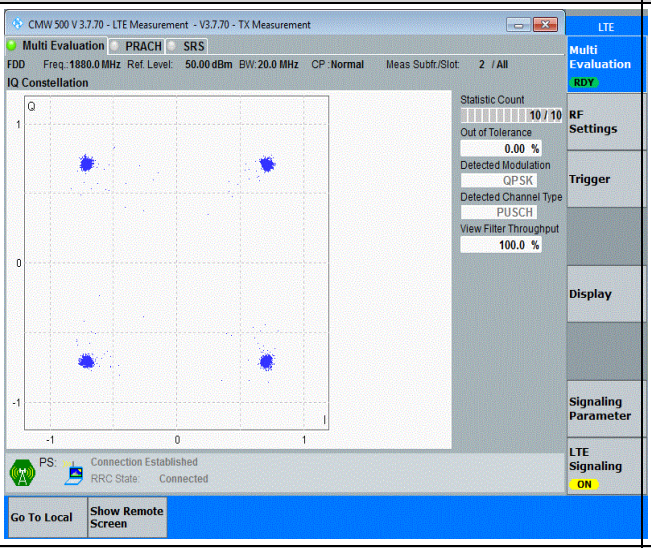
Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result	Verdict
Band2	20MHz	QPSK	18900	100RB#0	PASS	PASS
Band2	20MHz	16QAM	18900	27RB#0	PASS	PASS
Band4	20MHz	QPSK	20175	100RB#0	PASS	PASS
Band4	20MHz	16QAM	20175	27RB#0	PASS	PASS
Band5	10MHz	QPSK	20525	50RB#0	PASS	PASS
Band5	10MHz	16QAM	20525	27RB#0	PASS	PASS
Band7	20MHz	QPSK	21100	100RB#0	PASS	PASS
Band7	20MHz	16QAM	21100	27RB#0	PASS	PASS

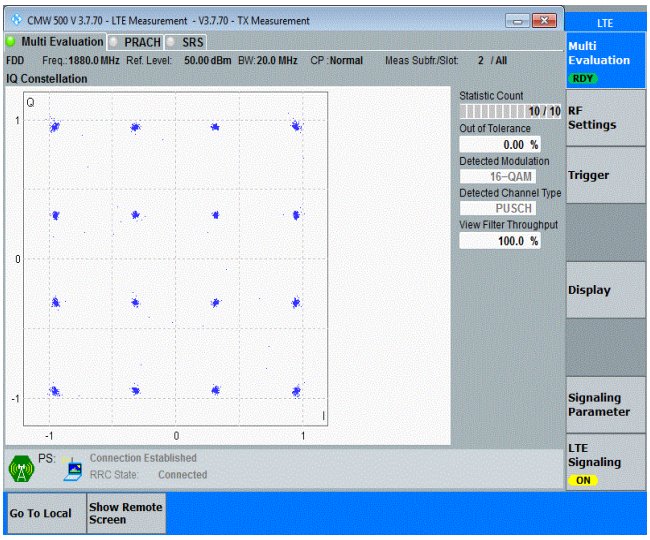
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.

Test Graphs

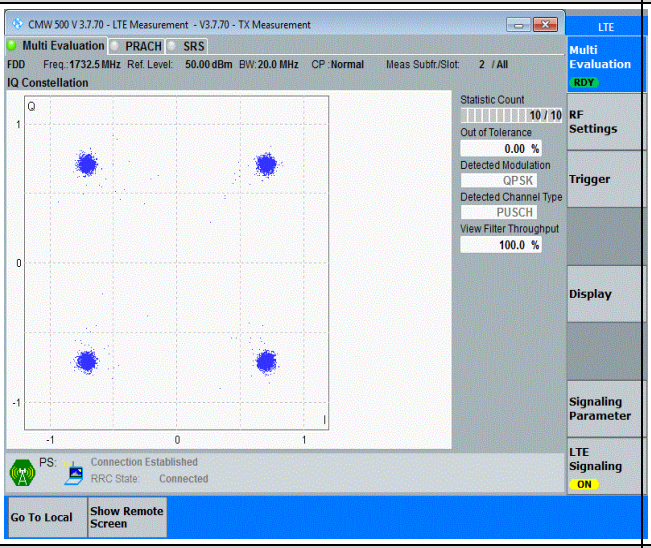
Band2-20MHz-QPSK-18900-100RB#0



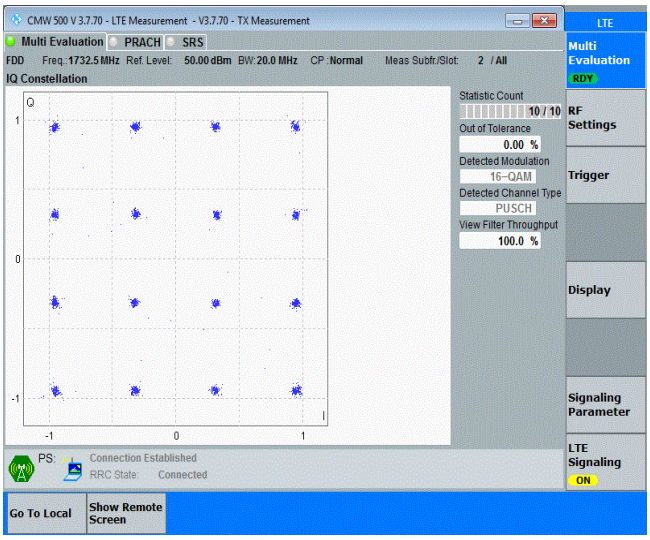
Band2-20MHz-16QAM-18900-27RB#0



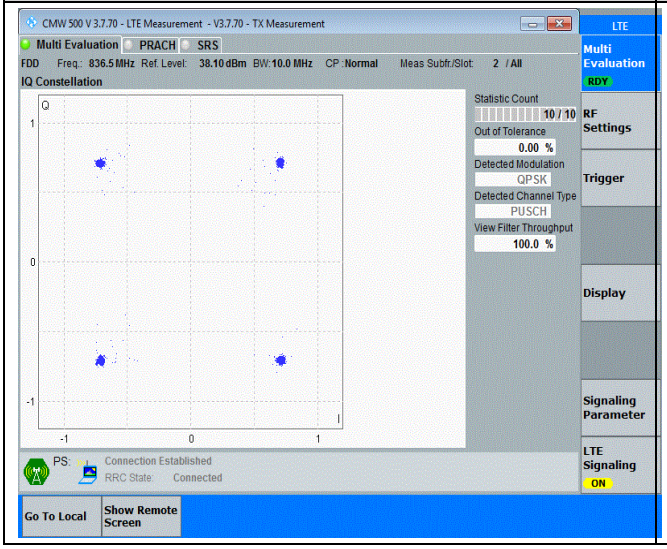
Band4-20MHz-QPSK-20175-100RB#0



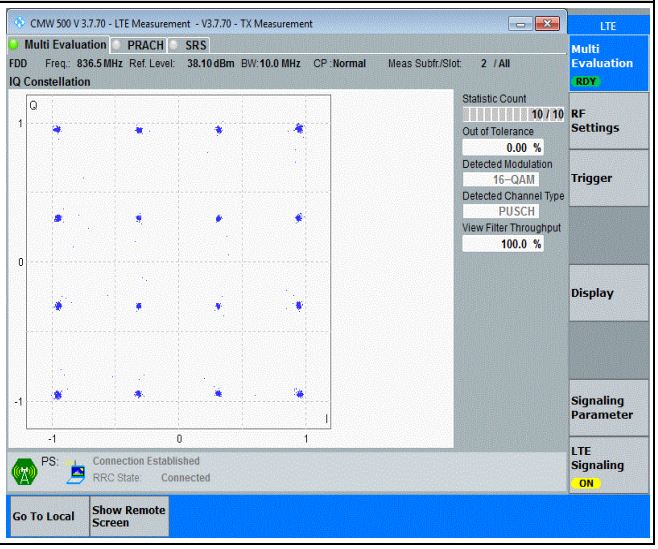
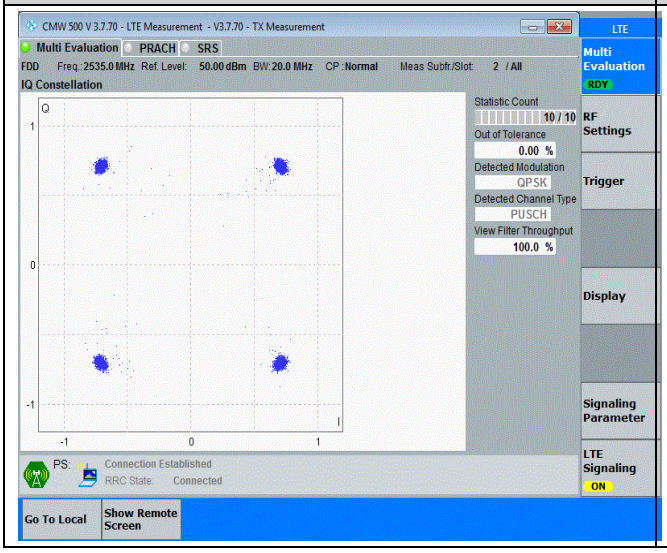
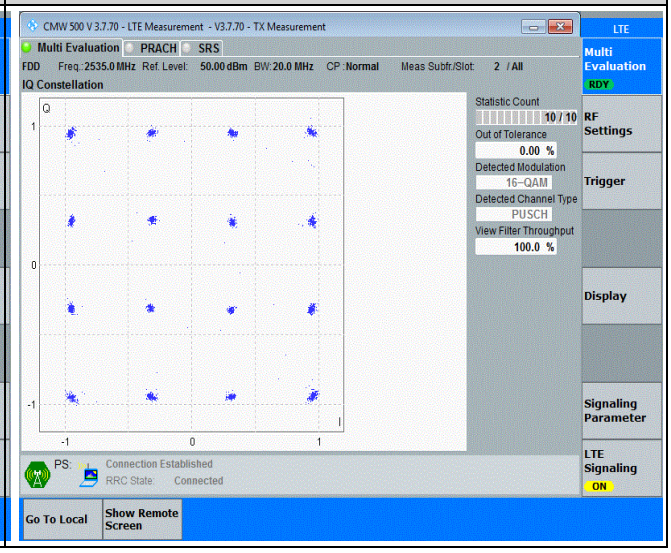
Band4-20MHz-16QAM-20175-27RB#0



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



Band5-10MHz-16QAM-20525-27RB#0



Band7-20MHz-QPSK-21100-100RB#0	Band7-20MHz-16QAM-21100-27RB#0