

Appendix A: Effective (Isotropic) Radiated Power

Test Result

Test Band: LTE CatM1 B13 _ 5MHz Bandwidth												
Modulation	RB Allocation		Conducted Power (dBm)			Antenna gain		ERP(dBm)			Limit (dBm)	Verdict
	Size	Offset	LCH	MCH	HCH	(dBd)	(dBi)	LCH	MCH	HCH		
QPSK	1	0	21.61	21.22	21.05	-4.1	-1.95	17.51	17.12	16.95	34.77	PASS
	1	2	21.77	20.99	20.98	-4.1	-1.95	17.67	16.89	16.88	34.77	PASS
	1	5	21.54	20.89	20.83	-4.1	-1.95	17.44	16.79	16.73	34.77	PASS
	3	0	20.66	20.27	20.37	-4.1	-1.95	16.56	16.17	16.27	34.77	PASS
	3	2	20.72	20.18	20.37	-4.1	-1.95	16.62	16.08	16.27	34.77	PASS
	3	3	20.69	20.26	20.46	-4.1	-1.95	16.59	16.16	16.36	34.77	PASS
	6	0	20.81	20.26	20.03	-4.1	-1.95	16.71	16.16	15.93	34.77	PASS
16QAM	1	0	21.09	21.02	20.98	-4.1	-1.95	16.99	16.92	16.88	34.77	PASS
	1	2	20.83	20.77	20.66	-4.1	-1.95	16.73	16.67	16.56	34.77	PASS
	1	5	20.99	20.21	20.44	-4.1	-1.95	16.89	16.11	16.34	34.77	PASS
	3	0	20.47	20.27	20.22	-4.1	-1.95	16.37	16.17	16.12	34.77	PASS
	3	2	20.36	20.21	20.51	-4.1	-1.95	16.26	16.11	16.41	34.77	PASS
	3	3	20.62	20.15	20.27	-4.1	-1.95	16.52	16.05	16.17	34.77	PASS
	6	0	20.88	20.37	20.53	-4.1	-1.95	16.78	16.27	16.43	34.77	PASS

Test Band: LTE CatM1 B13 _ 10MHz Bandwidth												
Modulation	RB Allocation		Conducted Power (dBm)			Antenna gain		ERP(dBm)			Limit (dBm)	Verdict
	Size	Offset	LCH	MCH	HCH	(dBd)	(dBi)	LCH	MCH	HCH		
QPSK	1	0	NA	21.38	NA	-4.1	-1.95	NA	17.28	NA	34.77	PASS
	1	2	NA	20.56	NA	-4.1	-1.95	NA	16.46	NA	34.77	PASS
	1	5	NA	21.13	NA	-4.1	-1.95	NA	17.03	NA	34.77	PASS
	3	0	NA	20.37	NA	-4.1	-1.95	NA	16.27	NA	34.77	PASS
	3	2	NA	20.29	NA	-4.1	-1.95	NA	16.19	NA	34.77	PASS
	3	3	NA	20.26	NA	-4.1	-1.95	NA	16.16	NA	34.77	PASS
	6	0	NA	20.38	NA	-4.1	-1.95	NA	16.28	NA	34.77	PASS
16QAM	1	0	NA	20.47	NA	-4.1	-1.95	NA	16.37	NA	34.77	PASS
	1	2	NA	20.44	NA	-4.1	-1.95	NA	16.34	NA	34.77	PASS
	1	5	NA	20.38	NA	-4.1	-1.95	NA	16.28	NA	34.77	PASS
	3	0	NA	20.39	NA	-4.1	-1.95	NA	16.29	NA	34.77	PASS
	3	2	NA	19.97	NA	-4.1	-1.95	NA	15.87	NA	34.77	PASS
	3	3	NA	20.09	NA	-4.1	-1.95	NA	15.99	NA	34.77	PASS
	6	0	NA	20.37	NA	-4.1	-1.95	NA	16.27	NA	34.77	PASS

Note:

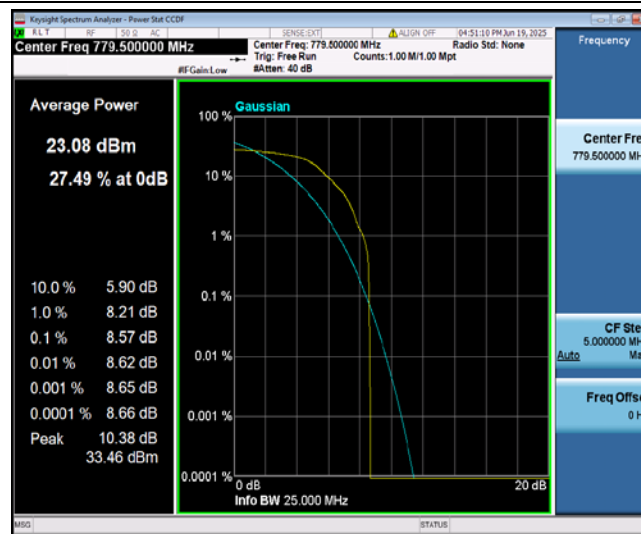
- 1) dBd = dBi - 2.15
- 2) EIRP = Conducted output power + Antenna gain (dBi)
- 3) ERP = Conducted output power + Antenna gain (dBd)

Appendix B: Peak-to-Average Ratio(CCDF)

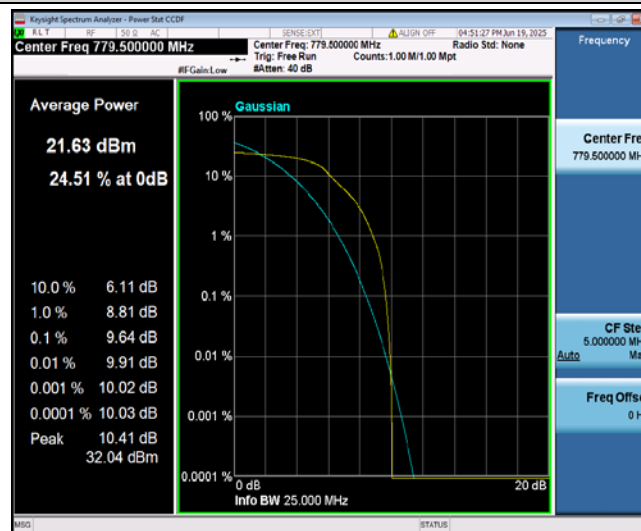
Test Result

Band	Bandwidth	Channel	Modulation	RB Size	RB Start	NBIndex	Result(dB)	Limit(dB)	Verdict
Band13	5MHz	23205	QPSK	1	0	Low	8.57	<=13	PASS
Band13	5MHz	23205	QPSK	6	0	Low	9.64	<=13	PASS
Band13	5MHz	23230	QPSK	1	0	Low	8.11	<=13	PASS
Band13	5MHz	23230	QPSK	6	0	Low	9.67	<=13	PASS
Band13	5MHz	23255	QPSK	1	0	High	8.34	<=13	PASS
Band13	5MHz	23255	QPSK	6	0	High	8.55	<=13	PASS
Band13	5MHz	23205	16QAM	1	0	Low	9.79	<=13	PASS
Band13	5MHz	23205	16QAM	6	0	Low	9.10	<=13	PASS
Band13	5MHz	23230	16QAM	1	0	Low	12.14	<=13	PASS
Band13	5MHz	23230	16QAM	6	0	Low	7.83	<=13	PASS
Band13	5MHz	23255	16QAM	1	0	High	8.83	<=13	PASS
Band13	5MHz	23255	16QAM	6	0	High	8.55	<=13	PASS
Band13	10MHz	23230	QPSK	1	0	Low	9.56	<=13	PASS
Band13	10MHz	23230	QPSK	6	0	Low	8.80	<=13	PASS
Band13	10MHz	23230	16QAM	1	0	Low	9.95	<=13	PASS
Band13	10MHz	23230	16QAM	6	0	Low	8.75	<=13	PASS

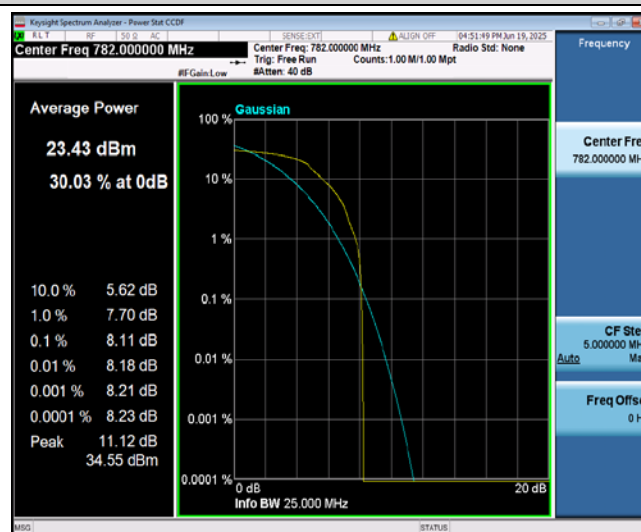
Test Graphs



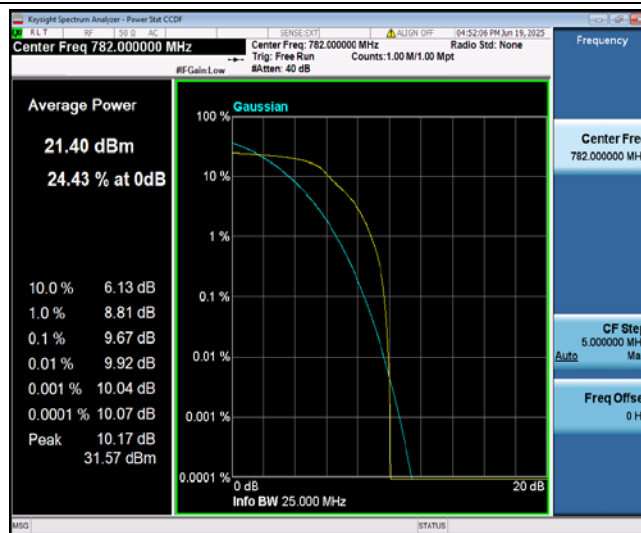
Band13-5MHz-QPSK-23205-1-0-Low-8.57-=<=13-PASS



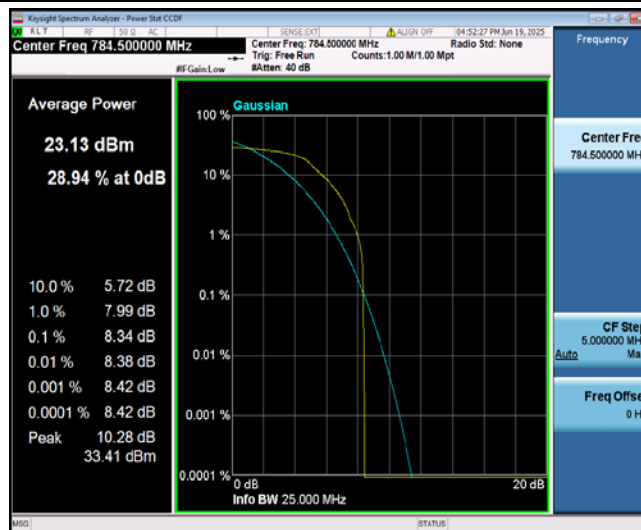
Band13-5MHz-QPSK-23205-6-0-Low-9.64-=<=13-PASS



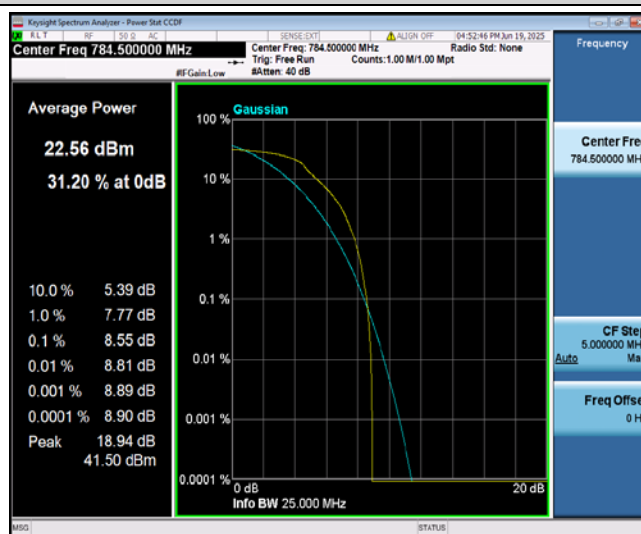
Band13-5MHz-QPSK-23230-1-0-Low-8.11-=<=13-PASS



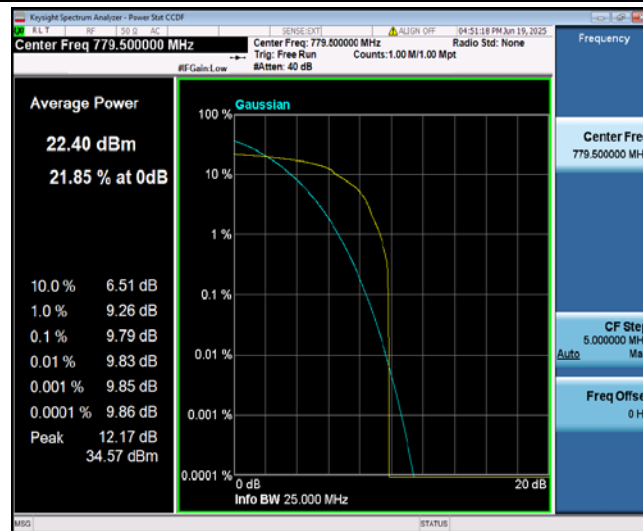
Band13-5MHz-QPSK-23230-6-0-Low-9.67-<=13-PASS



Band13-5MHz-QPSK-23255-1-0-High-8.34-<=13-PASS



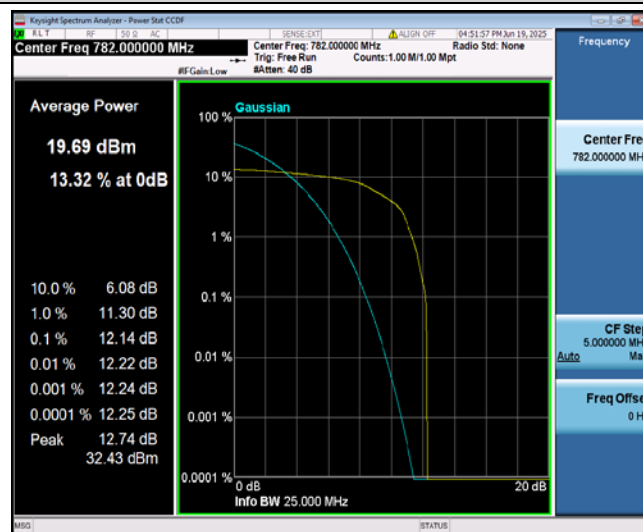
Band13-5MHz-QPSK-23255-6-0-High-8.55-<=13-PASS



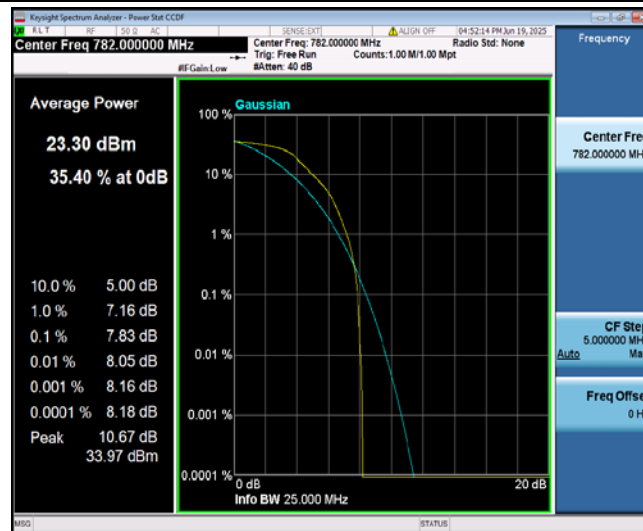
Band13-5MHz-16QAM-23205-1-0-Low-9.79-≤13-PASS



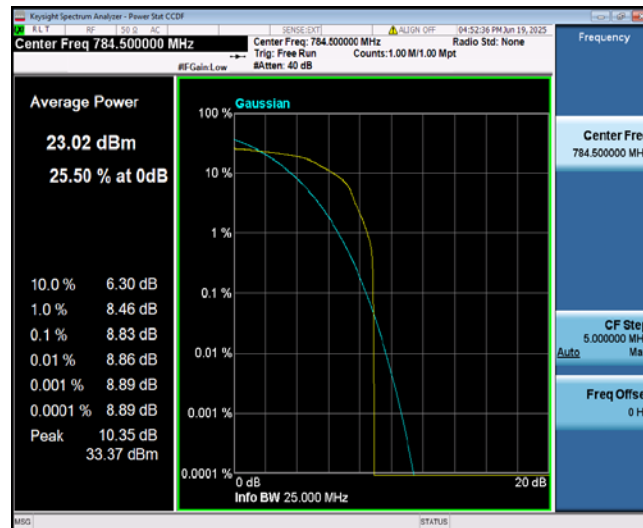
Band13-5MHz-16QAM-23205-6-0-Low-9.10-≤13-PASS



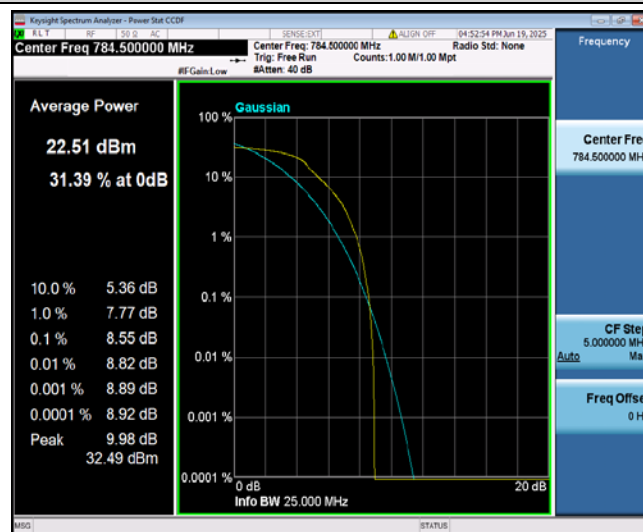
Band13-5MHz-16QAM-23230-1-0-Low-12.14-≤13-PASS



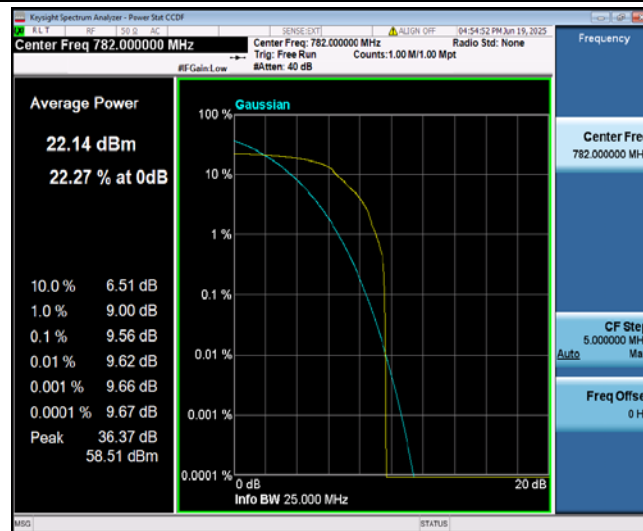
Band13-5MHz-16QAM-23230-6-0-Low-7.83-<=13-PASS



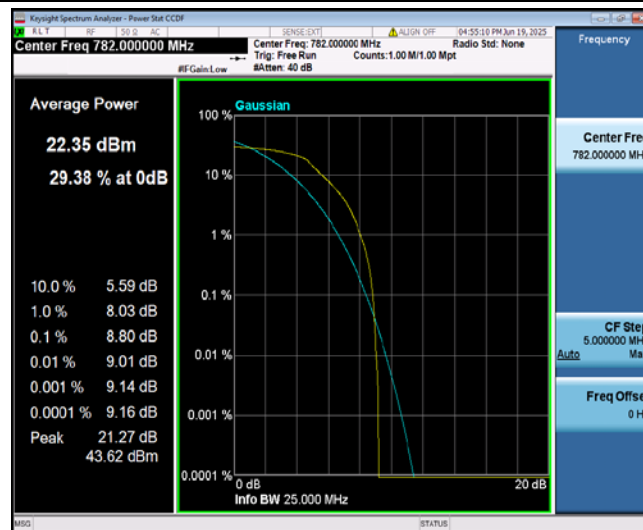
Band13-5MHz-16QAM-23255-1-0-High-8.83-<=13-PASS



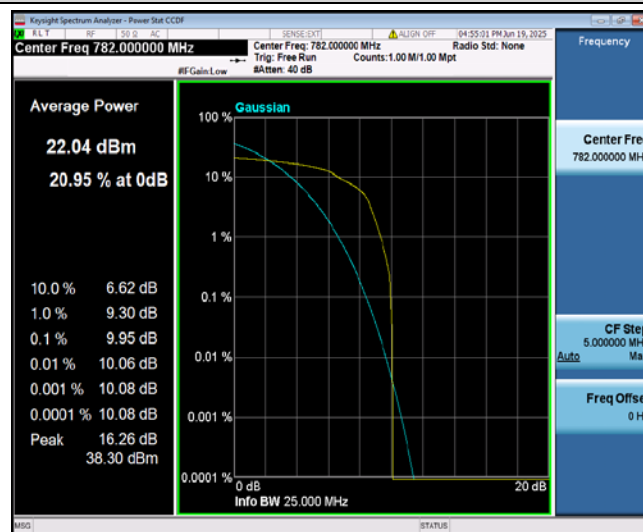
Band13-5MHz-16QAM-23255-6-0-High-8.55-<=13-PASS



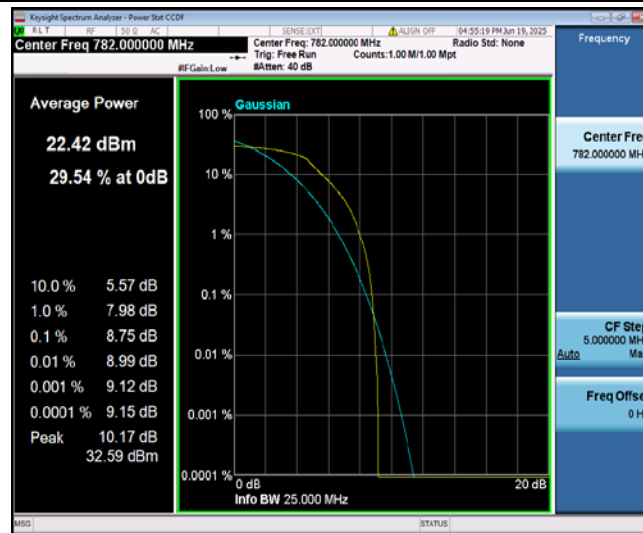
Band13-10MHz-QPSK-23230-1-0-Low-9.56-<=13-PASS



Band13-10MHz-QPSK-23230-6-0-Low-8.80-<=13-PASS



Band13-10MHz-16QAM-23230-1-0-Low-9.95-<=13-PASS



Band13-10MHz-16QAM-23230-6-0-Low-8.75-<=13-PASS

Appendix C: 26dB Bandwidth and Occupied Bandwidth

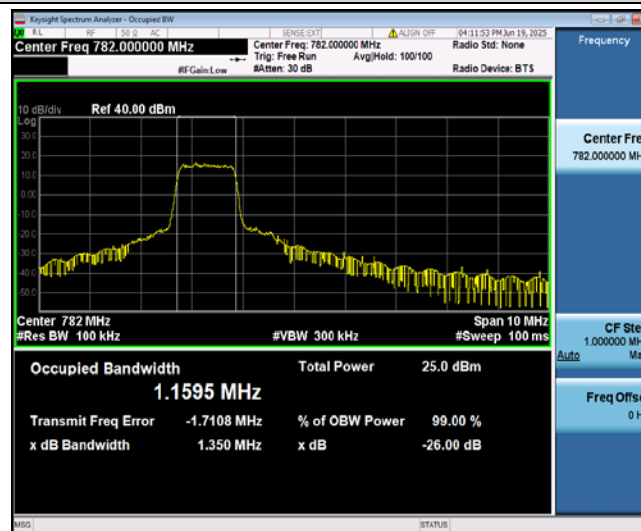
Test Result

Band	Bandwidth	Channel	Modulation	RB Size	RB Start	NB Index	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band13	5MHz	23205	QPSK	6	0	Low	1.1601	1.160	PASS
Band13	5MHz	23230	QPSK	6	0	Low	1.1595	1.159	PASS
Band13	5MHz	23255	QPSK	6	0	High	1.1689	1.169	PASS
Band13	5MHz	23205	16QAM	6	0	Low	1.1602	1.160	PASS
Band13	5MHz	23230	16QAM	6	0	Low	1.1604	1.160	PASS
Band13	5MHz	23255	16QAM	6	0	High	1.1698	1.170	PASS
Band13	10MHz	23230	QPSK	6	0	Low	1.2987	1.299	PASS
Band13	10MHz	23230	16QAM	6	0	Low	1.3004	1.300	PASS

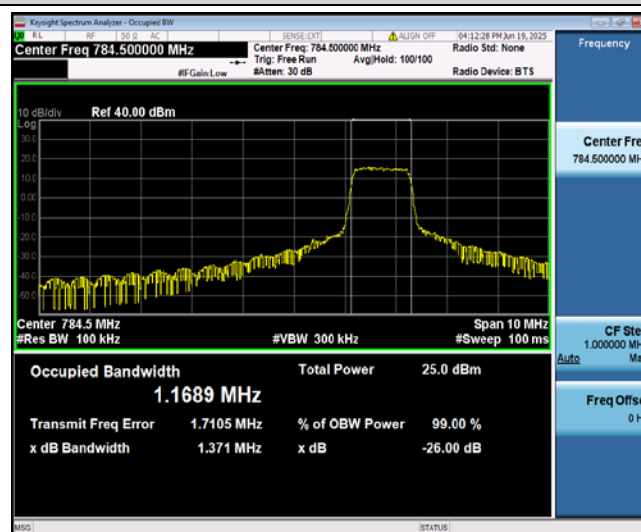
Test Graphs



Band13-5MHz-QPSK-23205-6-0-Low-1.1601-1.160-PASS



Band13-5MHz-QPSK-23230-6-0-Low-1.1595-1.159-PASS



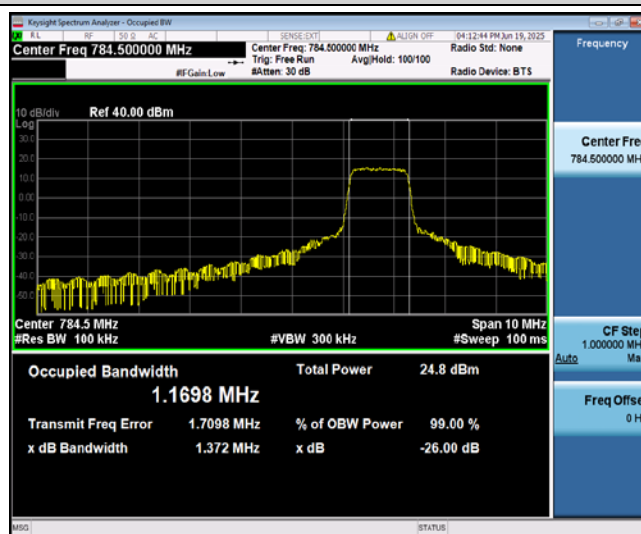
Band13-5MHz-QPSK-23255-6-0-High-1.1689-1.169-PASS



Band13-5MHz-16QAM-23205-6-0-Low-1.1602-1.160-PASS



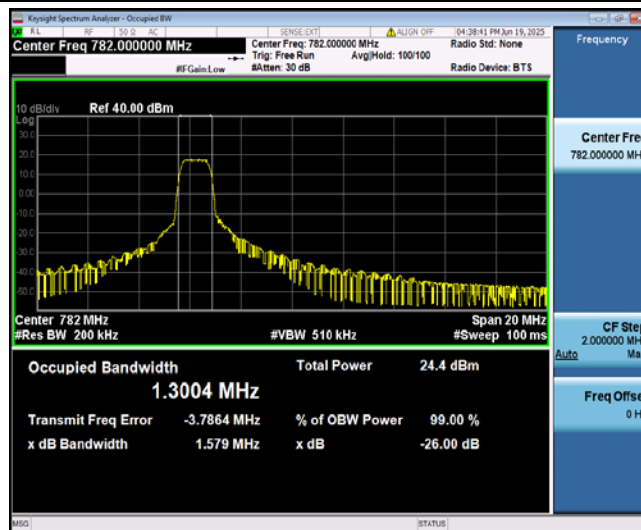
Band13-5MHz-16QAM-23230-6-0-Low-1.1604-1.160-PASS



Band13-5MHz-16QAM-23255-6-0-High-1.1698-1.170-PASS



Band13-10MHz-QPSK-23230-6-0-Low-1.2987-1.299-PASS



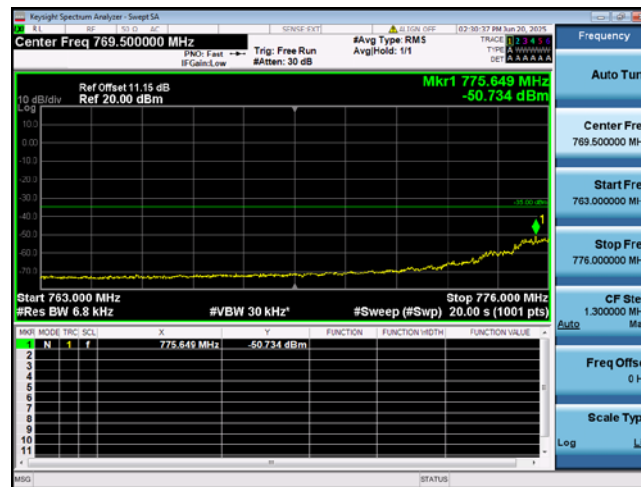
Band13-10MHz-16QAM-23230-6-0-Low-1.3004-1.300-PASS

Appendix D: Band Edge

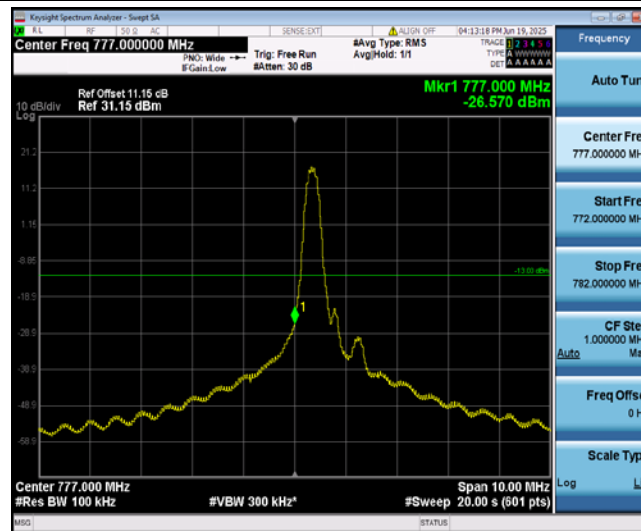
Test Result

Band	Bandwidth	Channel	Modulation	RB Size	RB Start	NB Index	Result(dBm)	Verdict
Band13	5MHz	23205	QPSK	1	0	Low	-26.57	PASS
Band13	5MHz	23205	QPSK	6	0	Low	-24.71	PASS
Band13	5MHz	23255	QPSK	1	0	High	-44.04	PASS
Band13	5MHz	23255	QPSK	6	0	High	-24.29	PASS
Band13	5MHz	23205	16QAM	1	0	Low	-26.77	PASS
Band13	5MHz	23205	16QAM	6	0	Low	-24.60	PASS
Band13	5MHz	23255	16QAM	1	0	High	-42.36	PASS
Band13	5MHz	23255	16QAM	6	0	High	-24.10	PASS

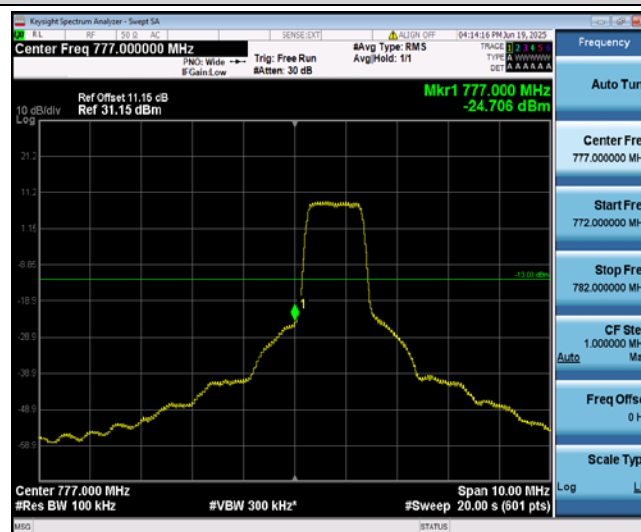
Test Graphs



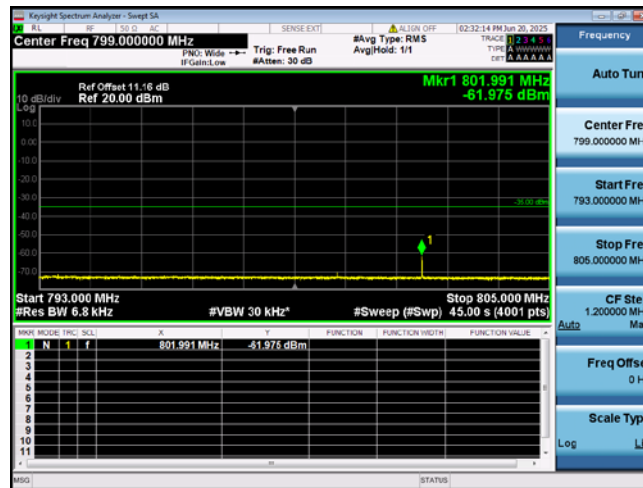
Band13-5MHz-QPSK-23205-1-0-Low--50.734-PASS



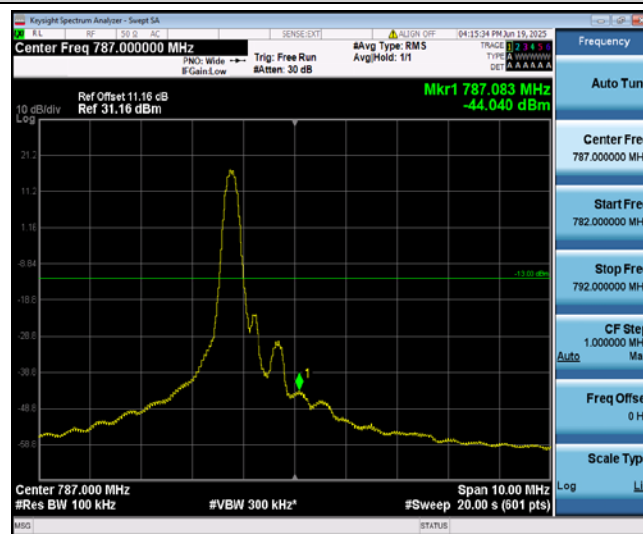
Band13-5MHz-QPSK-23205-1-0-Low--26.57-PASS



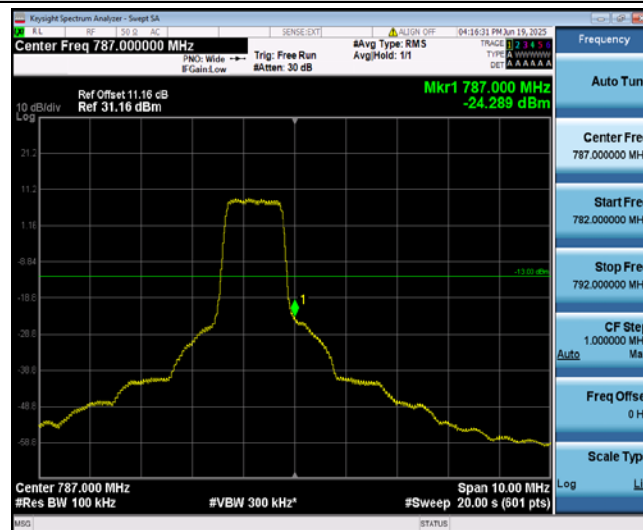
Band13-5MHz-QPSK-23205-6-0-Low--24.71-PASS



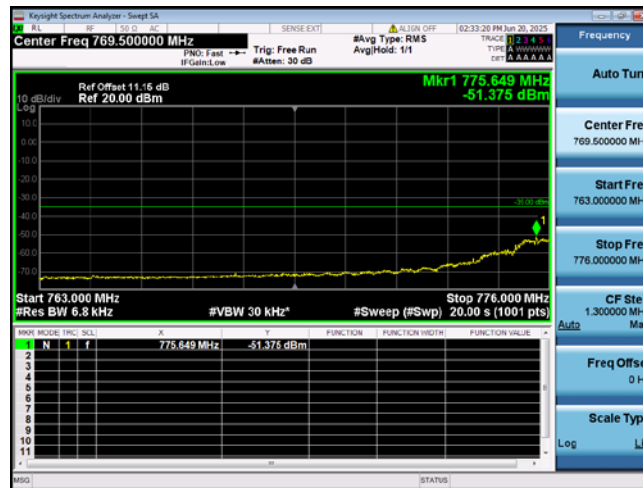
Band13-5MHz-QPSK-23255-1-0-High--61.975-PASS



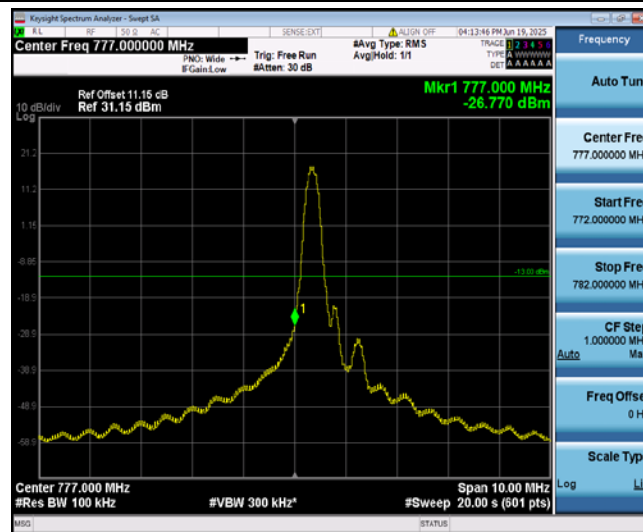
Band13-5MHz-QPSK-23255-1-0-High--44.04-PASS



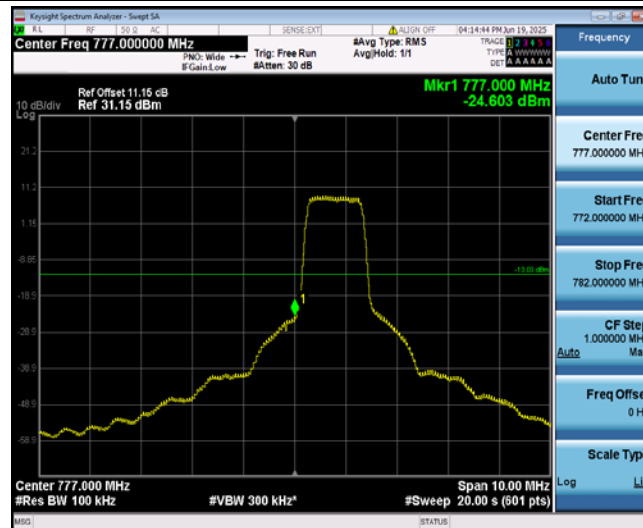
Band13-5MHz-QPSK-23255-6-0-High--24.29-PASS



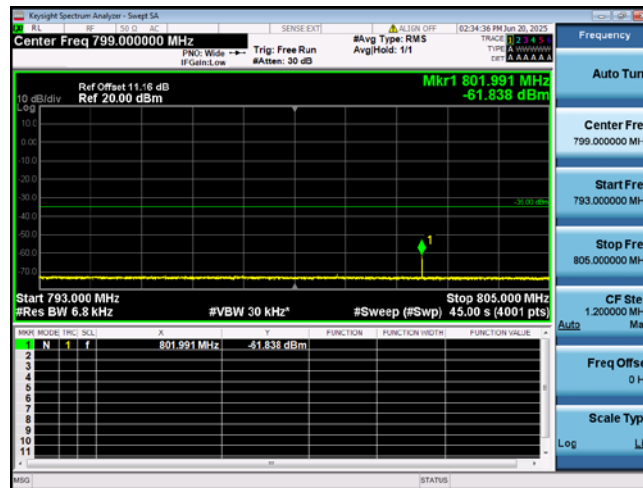
Band13-5MHz-16QAM-23205-1-0-Low--51.375-PASS



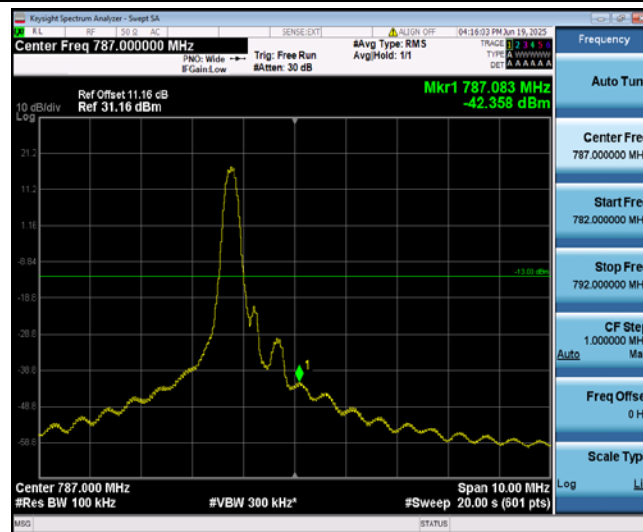
Band13-5MHz-16QAM-23205-1-0-Low--26.77-PASS



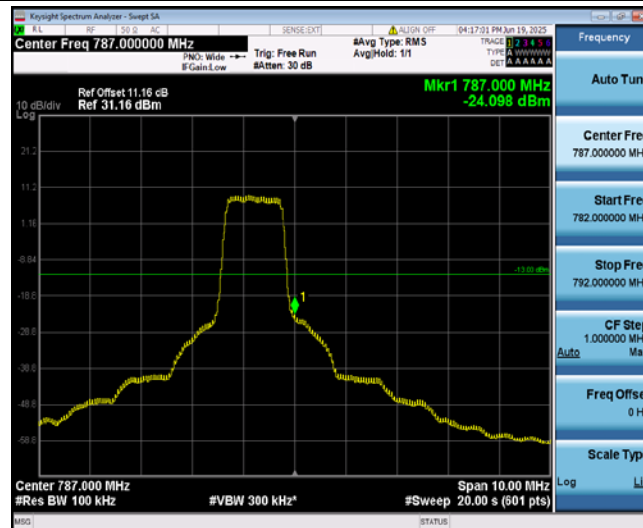
Band13-5MHz-16QAM-23205-6-0-Low--24.60-PASS



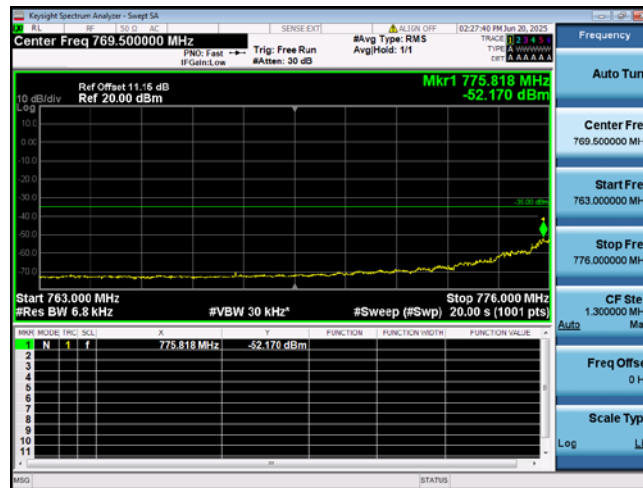
Band13-5MHz-16QAM-23255-1-0-High--61.838-PASS



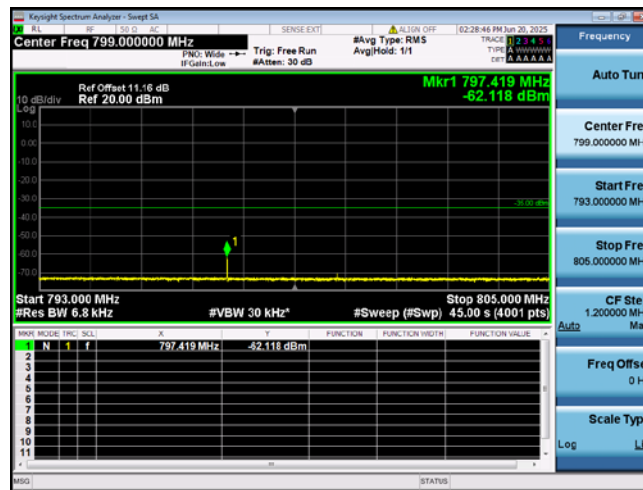
Band13-5MHz-16QAM-23255-1-0-High--42.36-PASS



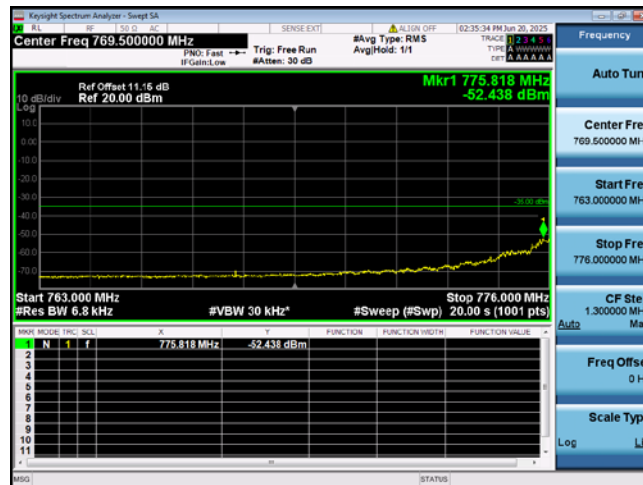
Band13-5MHz-16QAM-23255-6-0-High--24.10-PASS



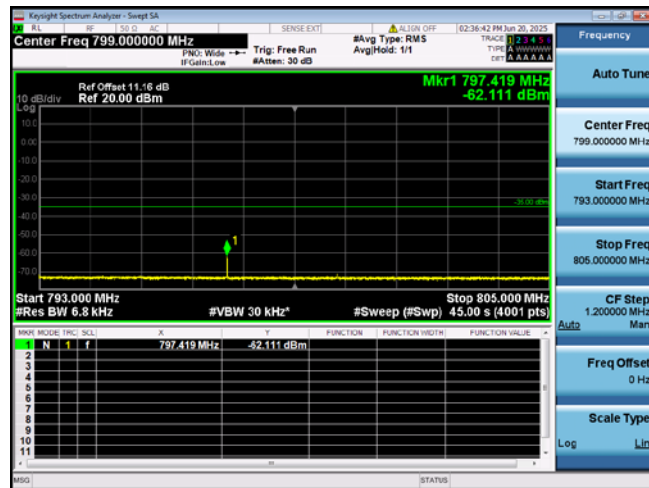
Band13-10MHz-QPSK-23230-1-0-Middle--52.170-PASS



Band13-10MHz-QPSK-23230-1-0-Middle--62.118-PASS



Band13-10MHz-16QAM-23230-1-0-Middle--52.438-PASS



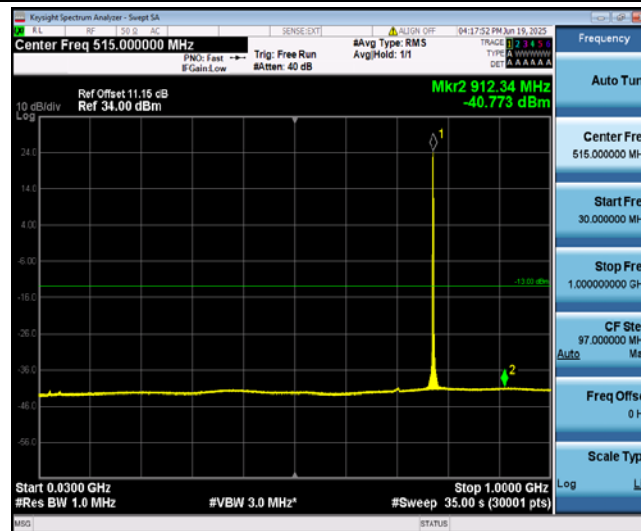
Band13-10MHz-16QAM-23230-1-0-Middle--62.111-PASS

Appendix E: Conducted Spurious Emission

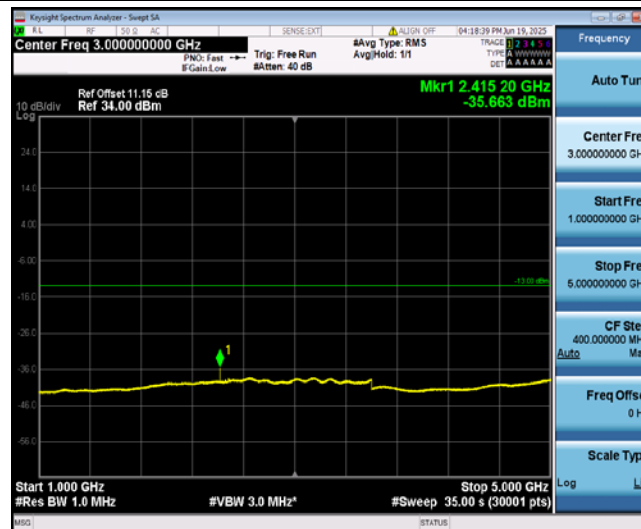
Test Result

Band	Bandwidth	Channel	Modulation	RB Size	RB Start	NB Index	Start Freq	Stop Freq	Result (dBm)	Verdict
Band13	5MHz	23205	QPSK	1	0	Low	30	1000	-40.77	PASS
Band13	5MHz	23205	QPSK	1	0	Low	1000	5000	-35.66	PASS
Band13	5MHz	23205	QPSK	1	0	Low	5000	12000	-37	PASS
Band13	5MHz	23205	QPSK	1	0	Low	12000	26500	-25.05	PASS
Band13	5MHz	23230	QPSK	1	0	Low	30	1000	-40.82	PASS
Band13	5MHz	23230	QPSK	1	0	Low	1000	5000	-32.44	PASS
Band13	5MHz	23230	QPSK	1	0	Low	5000	12000	-37.06	PASS
Band13	5MHz	23230	QPSK	1	0	Low	12000	26500	-25.12	PASS
Band13	5MHz	23255	QPSK	1	0	High	30	1000	-40.83	PASS
Band13	5MHz	23255	QPSK	1	0	High	1000	5000	-37.58	PASS
Band13	5MHz	23255	QPSK	1	0	High	5000	12000	-36.98	PASS
Band13	5MHz	23255	QPSK	1	0	High	12000	26500	-24.94	PASS
Band13	5MHz	23205	16QAM	1	0	Low	30	1000	-40.76	PASS
Band13	5MHz	23205	16QAM	1	0	Low	1000	5000	-37.14	PASS
Band13	5MHz	23205	16QAM	1	0	Low	5000	12000	-37.03	PASS
Band13	5MHz	23205	16QAM	1	0	Low	12000	26500	-25.11	PASS
Band13	5MHz	23230	16QAM	1	0	Low	30	1000	-40.78	PASS
Band13	5MHz	23230	16QAM	1	0	Low	1000	5000	-36.97	PASS
Band13	5MHz	23230	16QAM	1	0	Low	5000	12000	-37.05	PASS
Band13	5MHz	23230	16QAM	1	0	Low	12000	26500	-25.05	PASS
Band13	5MHz	23255	16QAM	1	0	High	30	1000	-40.86	PASS
Band13	5MHz	23255	16QAM	1	0	High	1000	5000	-32.36	PASS
Band13	5MHz	23255	16QAM	1	0	High	5000	12000	-37.07	PASS
Band13	5MHz	23255	16QAM	1	0	High	12000	26500	-25.12	PASS

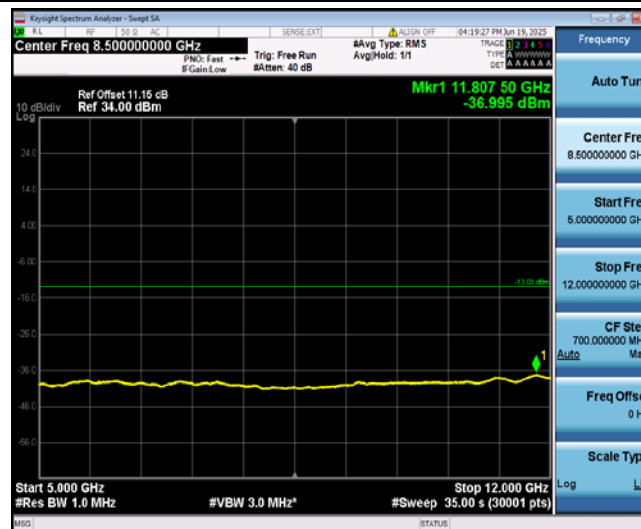
Test Graphs



Band13-5MHz-QPSK-23205-1-0-Low-30-1000--40.77-PASS



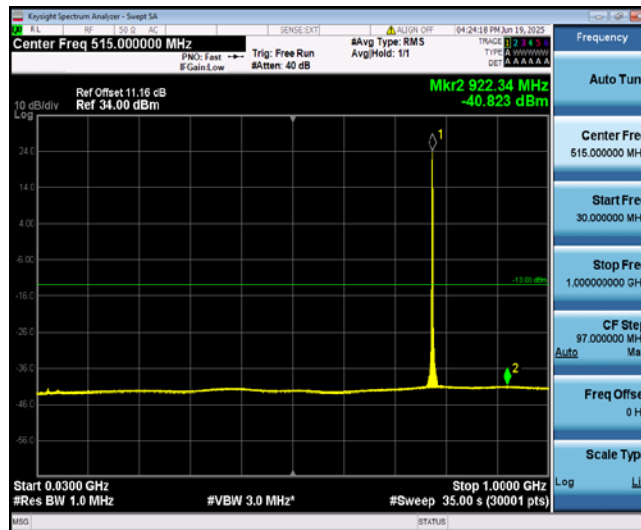
Band13-5MHz-QPSK-23205-1-0-Low-1000-5000--35.66-PASS



Band13-5MHz-QPSK-23205-1-0-Low-5000-12000--37-PASS



Band13-5MHz-QPSK-23205-1-0-Low-12000-26500--25.05-PASS



Band13-5MHz-QPSK-23230-1-0-Low-30-1000--40.82-PASS



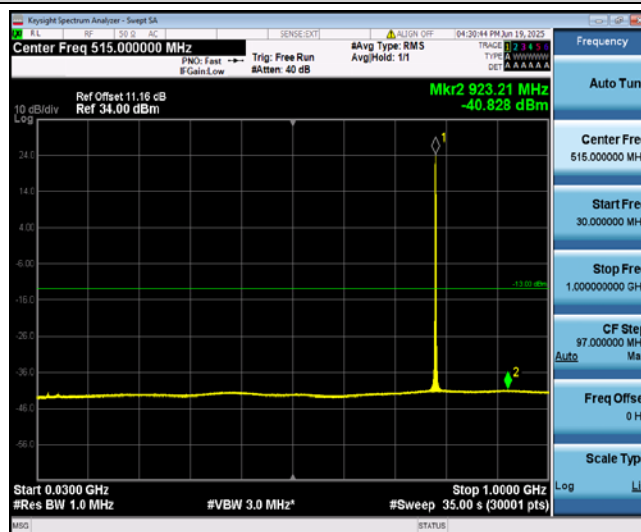
Band13-5MHz-QPSK-23230-1-0-Low-1000-5000--32.44-PASS



Band13-5MHz-QPSK-23230-1-0-Low-5000-12000--37.06-PASS



Band13-5MHz-QPSK-23230-1-0-Low-12000-26500--25.12-PASS



Band13-5MHz-QPSK-23255-1-0-High-30-1000--40.83-PASS



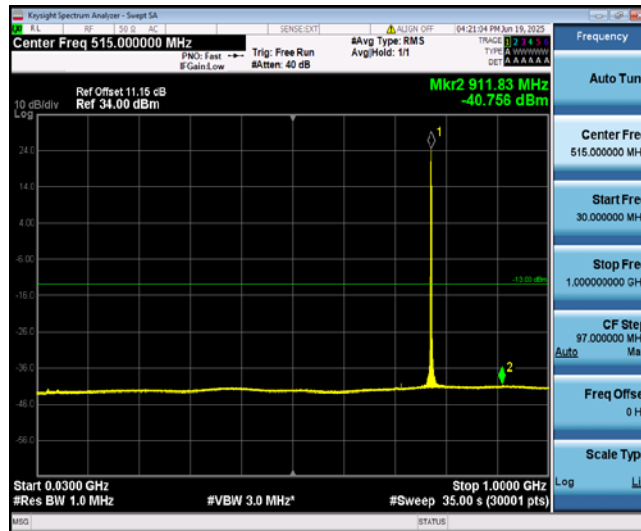
Band13-5MHz-QPSK-23255-1-0-High-1000-5000--37.58-PASS



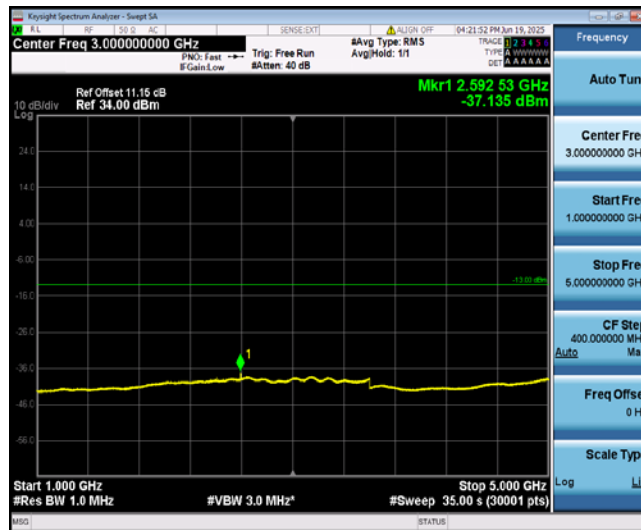
Band13-5MHz-QPSK-23255-1-0-High-5000-12000--36.98-PASS



Band13-5MHz-QPSK-23255-1-0-High-12000-26500--24.94-PASS



Band13-5MHz-16QAM-23205-1-0-Low-30-1000--40.76-PASS



Band13-5MHz-16QAM-23205-1-0-Low-1000-5000--37.14-PASS



Band13-5MHz-16QAM-23205-1-0-Low-5000-12000--37.03-PASS



Band13-5MHz-16QAM-23205-1-0-Low-12000-26500--25.11-PASS



Band13-5MHz-16QAM-23230-1-0-Low-30-1000--40.78-PASS



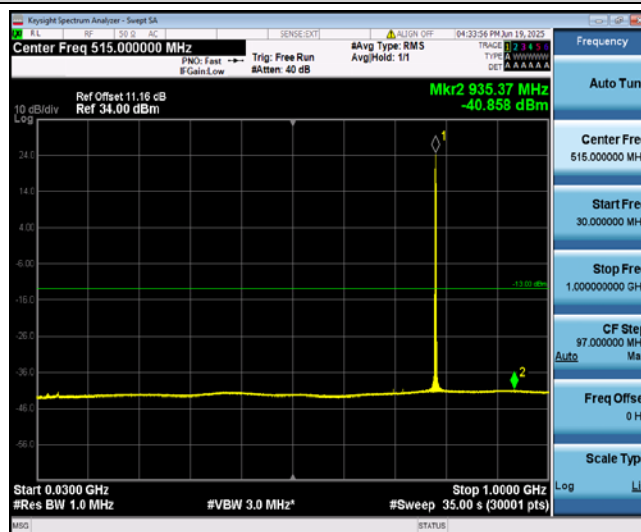
Band13-5MHz-16QAM-23230-1-0-Low-1000-5000--36.97-PASS



Band13-5MHz-16QAM-23230-1-0-Low-5000-12000--37.05-PASS



Band13-5MHz-16QAM-23230-1-0-Low-12000-26500--25.05-PASS



Band13-5MHz-16QAM-23255-1-0-High-30-1000--40.86-PASS



Band13-5MHz-16QAM-23255-1-0-High-1000-5000--32.36-PASS



Band13-5MHz-16QAM-23255-1-0-High-5000-12000--37.07-PASS



Band13-5MHz-16QAM-23255-1-0-High-12000-26500--25.12-PASS

Appendix F: Frequency stability

Frequency Error VS. Voltage

Test Band	Test mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
CatM1 band13	QPSK/ 10MHz	LCH	TN	VL	1.39	0.0018	PASS
				VN	-0.17	-0.0002	PASS
				VH	1.12	0.0014	PASS
		MCH	TN	VL	0.65	0.0008	PASS
				VN	0.77	0.0010	PASS
				VH	1.48	0.0019	PASS
		HCH	TN	VL	0.99	0.0013	PASS
				VN	1.22	0.0016	PASS
				VH	0.68	0.0009	PASS
	16QAM/ 10MHz	LCH	TN	VL	1.16	0.0015	PASS
				VN	1.09	0.0014	PASS
				VH	0.94	0.0012	PASS
		MCH	TN	VL	-0.64	-0.0008	PASS
				VN	-0.83	-0.0011	PASS
				VH	-0.07	-0.0001	PASS
		HCH	TN	VL	1.49	0.0019	PASS
				VN	1.53	0.0020	PASS
				VH	-1.09	-0.0014	PASS

Frequency Error VS. Temperature

Test Band	Test mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
CatM1 band13	QPSK/ 10MHz	LCH	VN	-30	-0.13	-0.0002	PASS
				-20	-0.08	-0.0001	PASS
				-10	0.01	0.0000	PASS
				0	0.34	0.0004	PASS
				10	-1.01	-0.0013	PASS
				20	-0.05	-0.0001	PASS
				30	-0.43	-0.0006	PASS
				40	0.02	0.0000	PASS
				50	0.21	0.0003	PASS
		MCH	VN	-30	0.02	0.0000	PASS
				-20	0.01	0.0000	PASS
				-10	-0.13	-0.0002	PASS
				0	-1.93	-0.0025	PASS
				10	-0.83	-0.0011	PASS
				20	-0.25	-0.0003	PASS
				30	-0.13	-0.0002	PASS
				40	0.22	0.0003	PASS
				50	0.17	0.0002	PASS
		HCH	VN	-30	0.44	0.0006	PASS
				-20	0.85	0.0011	PASS
				-10	1.02	0.0013	PASS
				0	0.49	0.0006	PASS
				10	-1.82	-0.0023	PASS
				20	-0.12	-0.0002	PASS
				30	1.25	0.0016	PASS
				40	-0.01	-0.0000	PASS
				50	0.95	0.0012	PASS

Test Band	Test mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
CatM1 band13	16QAM/ 10MHz	LCH	VN	-30	-0.04	-0.0001	PASS
				-20	-0.27	-0.0003	PASS
				-10	-0.01	-0.0000	PASS
				0	0.56	0.0007	PASS
				10	-0.52	-0.0007	PASS
				20	0.73	0.0009	PASS
				30	0.97	0.0012	PASS
				40	-0.05	-0.0001	PASS
				50	0.34	0.0004	PASS
		MCH	VN	-30	-0.06	-0.0001	PASS
				-20	-0.07	-0.0001	PASS
				-10	1.15	0.0015	PASS
				0	-1.42	-0.0018	PASS
				10	-0.81	-0.0010	PASS
				20	0.07	0.0001	PASS
				30	-0.15	-0.0002	PASS
				40	-1.1	-0.0014	PASS
				50	-1.71	-0.0022	PASS
		HCH	VN	-30	-0.5	-0.0006	PASS
				-20	-0.42	-0.0005	PASS
				-10	0.07	0.0001	PASS
				0	0.29	0.0004	PASS
				10	-1.66	-0.0021	PASS
				20	-0.02	-0.0000	PASS
				30	-0.61	-0.0008	PASS
				40	0.61	0.0008	PASS
				50	0.76	0.0010	PASS

Note: All modes have been tested and we only record the worst test result.