

## **Appendix for NB-IOT Band 12**

Product Name: Remote Street Lighting Controller

Model No: AGIL LCU 302

## Appendix A: Average Power Output Data

### Test Result

Band	OpMode	SCS	BW	Modulation	Channel	Tones	Conducted POWER(dBm)	Verdict
Band 12	Stand-Al one	3.75kHz	NaN	BPSK	23011	1@0	21.05	PASS
Band 12	Stand-Al one	3.75kHz	NaN	BPSK	23011	1@47	20.94	PASS
Band 12	Stand-Al one	3.75kHz	NaN	BPSK	23095	1@0	20.01	PASS
Band 12	Stand-Al one	3.75kHz	NaN	BPSK	23095	1@47	20.72	PASS
Band 12	Stand-Al one	3.75kHz	NaN	BPSK	23179	1@0	20.86	PASS
Band 12	Stand-Al one	3.75kHz	NaN	BPSK	23179	1@47	20.82	PASS
Band 12	Stand-Al one	3.75kHz	NaN	QPSK	23011	1@0	21.12	PASS
Band 12	Stand-Al one	3.75kHz	NaN	QPSK	23011	1@47	21.04	PASS
Band 12	Stand-Al one	3.75kHz	NaN	QPSK	23095	1@0	20.84	PASS
Band 12	Stand-Al one	3.75kHz	NaN	QPSK	23095	1@47	20.77	PASS
Band 12	Stand-Al one	3.75kHz	NaN	QPSK	23179	1@0	20.93	PASS
Band 12	Stand-Al one	3.75kHz	NaN	QPSK	23179	1@47	20.82	PASS
Band 12	Stand-Al one	15kHz	NaN	BPSK	23011	1@0	21.21	PASS
Band 12	Stand-Al one	15kHz	NaN	BPSK	23011	1@11	21.07	PASS
Band 12	Stand-Al one	15kHz	NaN	BPSK	23095	1@0	20.94	PASS
Band 12	Stand-Al one	15kHz	NaN	BPSK	23095	1@11	20.92	PASS
Band 12	Stand-Al one	15kHz	NaN	BPSK	23179	1@0	21.06	PASS

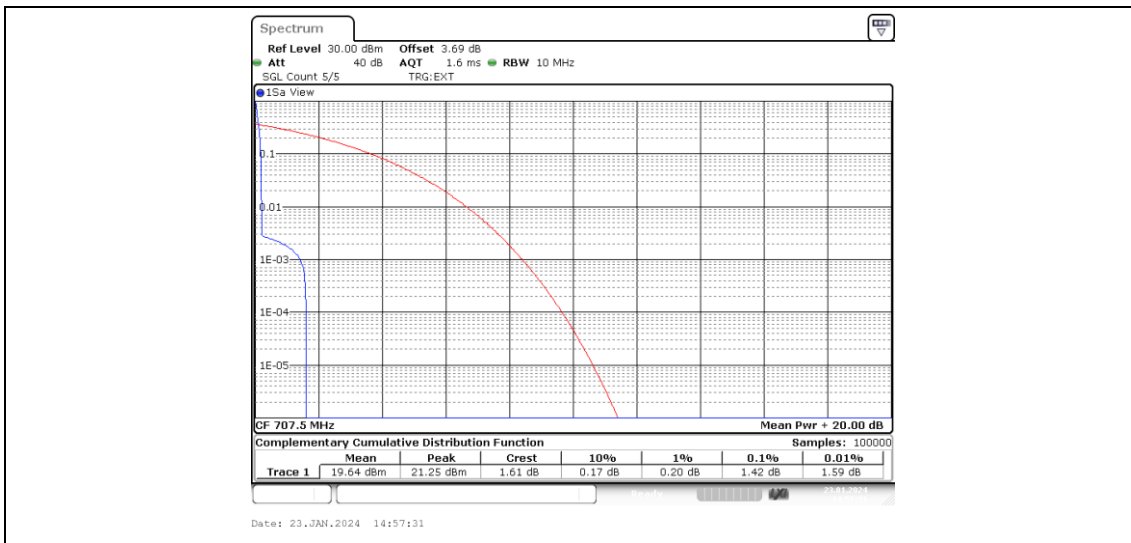
Band 12	Stand-Al one	15kHz	NaN	BPSK	23179	1@11	20.98	PASS
Band 12	Stand-Al one	15kHz	NaN	QPSK	23011	1@0	21.20	PASS
Band 12	Stand-Al one	15kHz	NaN	QPSK	23011	1@11	21.20	PASS
Band 12	Stand-Al one	15kHz	NaN	QPSK	23011	3@3	21.10	PASS
Band 12	Stand-Al one	15kHz	NaN	QPSK	23095	1@0	21.07	PASS
Band 12	Stand-Al one	15kHz	NaN	QPSK	23095	1@11	21.02	PASS
Band 12	Stand-Al one	15kHz	NaN	QPSK	23095	3@3	20.73	PASS
Band 12	Stand-Al one	15kHz	NaN	QPSK	23179	1@0	21.17	PASS
Band 12	Stand-Al one	15kHz	NaN	QPSK	23179	1@11	21.07	PASS
Band 12	Stand-Al one	15kHz	NaN	QPSK	23179	3@3	20.95	PASS

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

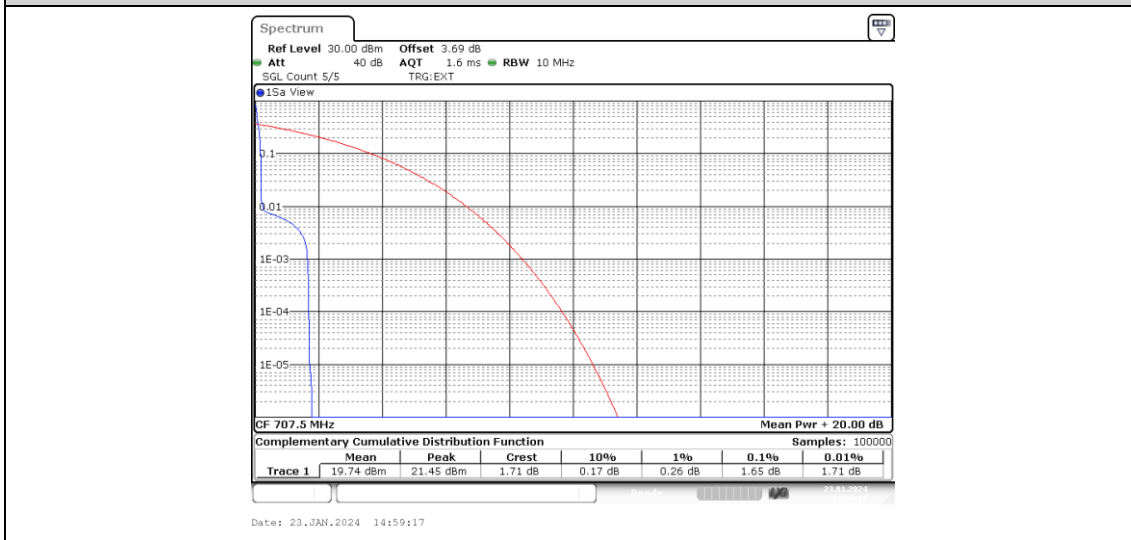
### Test Result

Band	OpMode	SCS	BW	Modu	Channel	Tones	Result (dBm)	Limit (dBm)	Verdict
Band12	Stand-Alone	3.75kHz	NaN	BPSK	23095	1@0	1.42	<=13	PASS
Band12	Stand-Alone	3.75kHz	NaN	BPSK	23095	1@47	1.65	<=13	PASS
Band12	Stand-Alone	3.75kHz	NaN	QPSK	23095	1@0	1.48	<=13	PASS
Band12	Stand-Alone	3.75kHz	NaN	QPSK	23095	1@47	1.36	<=13	PASS
Band12	Stand-Alone	15kHz	NaN	BPSK	23095	1@0	1.3	<=13	PASS
Band12	Stand-Alone	15kHz	NaN	BPSK	23095	1@11	1.42	<=13	PASS
Band12	Stand-Alone	15kHz	NaN	QPSK	23095	1@0	1.42	<=13	PASS
Band12	Stand-Alone	15kHz	NaN	QPSK	23095	1@11	1.45	<=13	PASS
Band12	Stand-Alone	15kHz	NaN	QPSK	23095	3@3	3.42	<=13	PASS

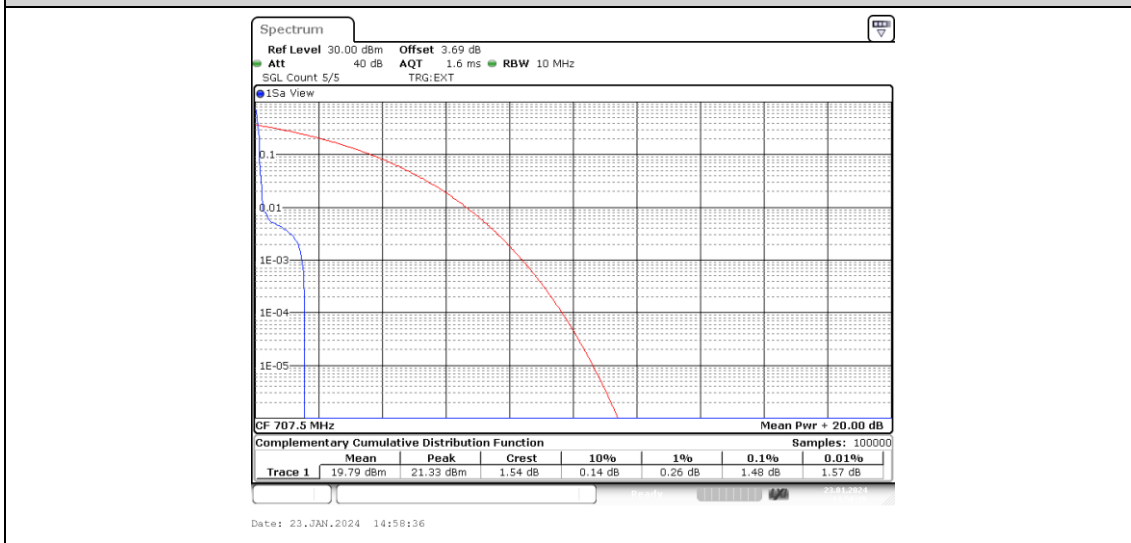
### Test Graphs



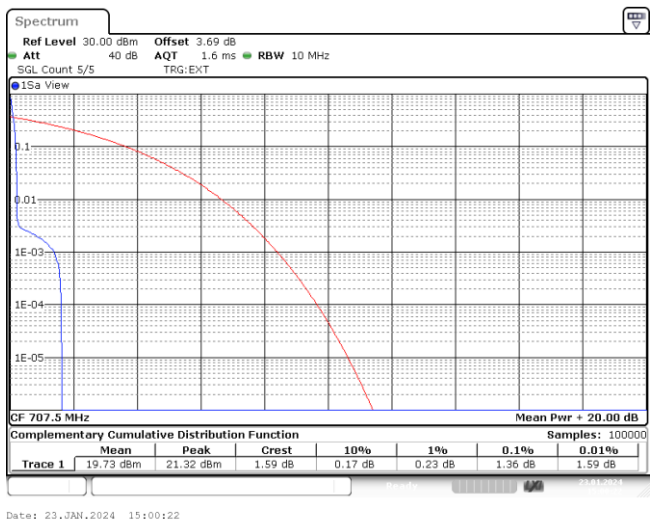
Band12-Stand-Alone-NaN-BPSK-23095-1 @0-3.75kHz-1.42-<=13-PASS



Band12-Stand-Alone-NaN-BPSK-23095-1 @47-3.75kHz-1.65-<=13-PASS

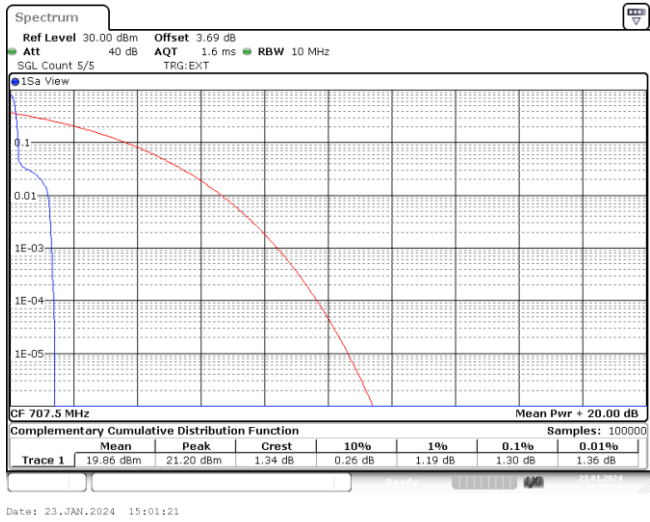


Band12-Stand-Alone-NaN-QPSK-23095-1 @0-3.75kHz-1.48-<=13-PASS



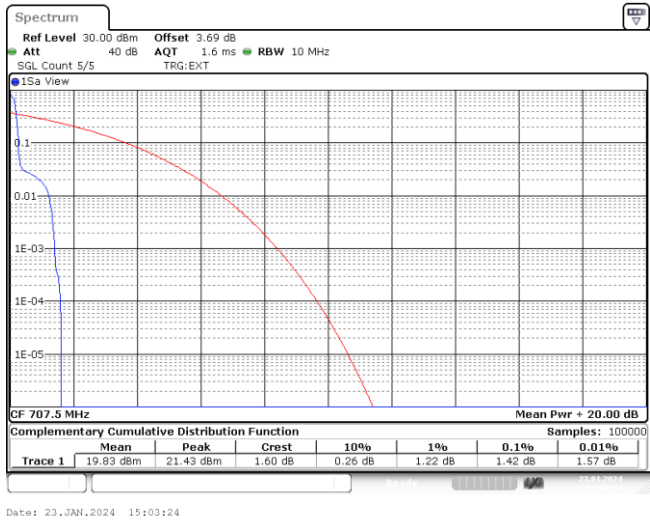
Date: 23.JAN.2024 15:00:22

Band12-Stand-Alone-NaN-QPSK-23095-1 @47-3.75kHz-1.36-<=13-PASS



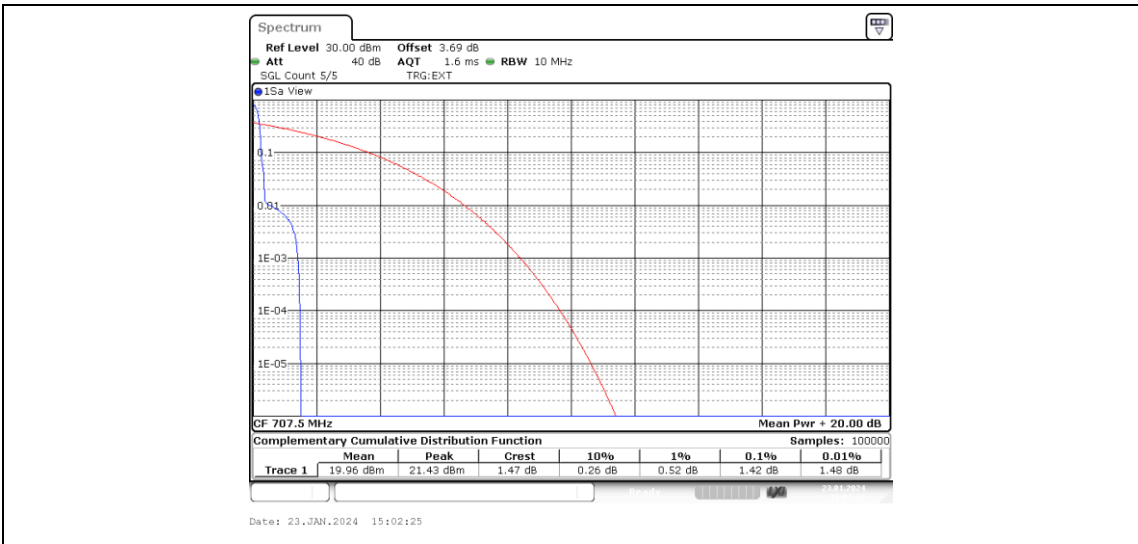
Date: 23.JAN.2024 15:01:21

Band12-Stand-Alone-NaN-BPSK-23095-1 @0-15kHz-1.3-<=13-PASS

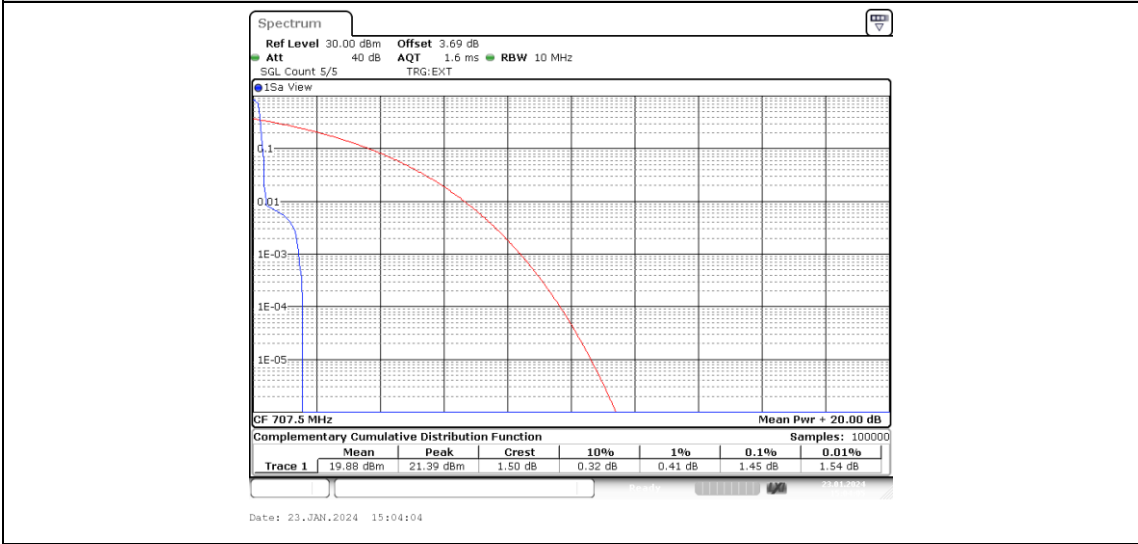


Date: 23.JAN.2024 15:03:24

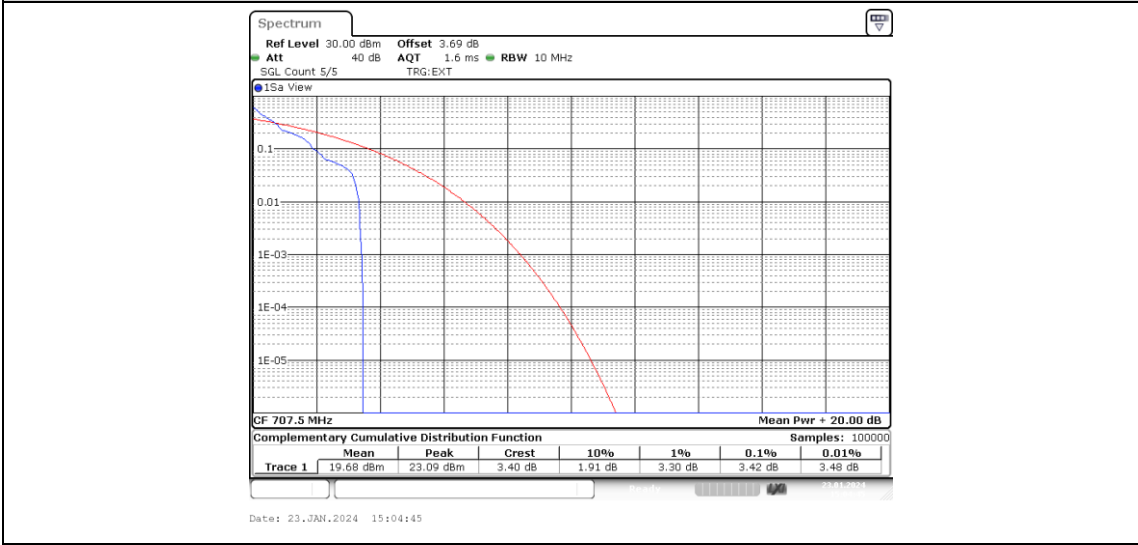
Band12-Stand-Alone-NaN-BPSK-23095-1 @11-15kHz-1.42-<=13-PASS



Band12-Stand-Alone-NaN-QPSK-23095-1@0-15kHz-1.42-<=13-PASS



Band12-Stand-Alone-NaN-QPSK-23095-1@11-15kHz-1.45-<=13-PASS



Band12-Stand-Alone-NaN-QPSK-23095-3@3-15kHz-3.42-<=13-PASS

## Appendix C: Emission Bandwidth

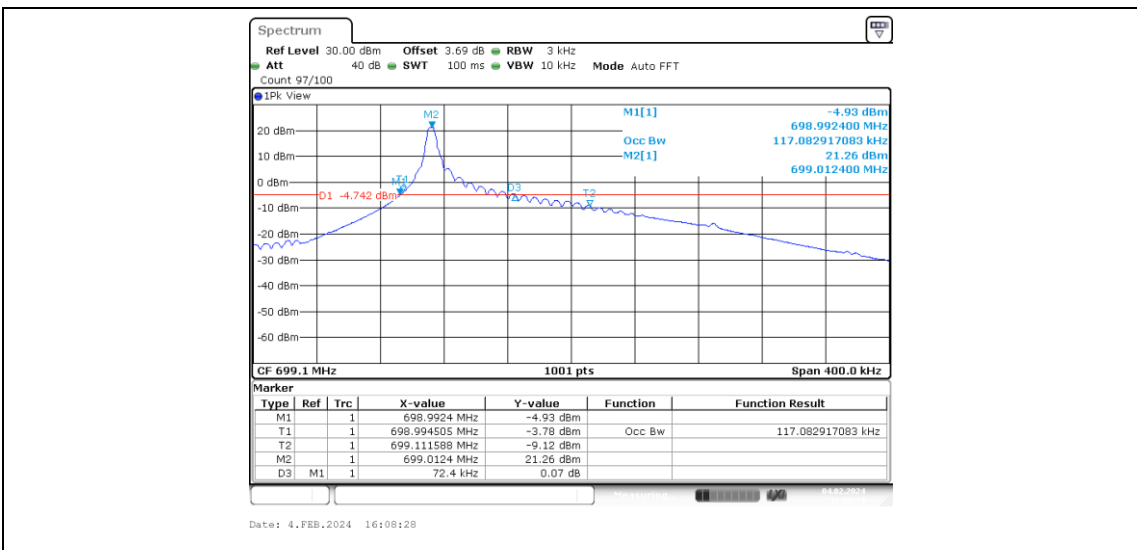
### Test Result

Band	OpMode	SCS	BW	Modu	Channel	Tones	OBW(MHz)	EBW(MHz)	Verdict
Band12	Stand-Alone	3.75kHz	NaN	BPSK	23011	1@0	0.117	0.072	PASS
Band12	Stand-Alone	3.75kHz	NaN	BPSK	23095	1@0	0.117	0.072	PASS
Band12	Stand-Alone	3.75kHz	NaN	BPSK	23179	1@0	0.073	0.053	PASS
Band12	Stand-Alone	3.75kHz	NaN	QPSK	23011	1@0	0.169	0.070	PASS
Band12	Stand-Alone	3.75kHz	NaN	QPSK	23095	1@0	0.188	0.070	PASS
Band12	Stand-Alone	3.75kHz	NaN	QPSK	23179	1@0	0.088	0.054	PASS
Band12	Stand-Alone	15kHz	NaN	BPSK	23011	1@0	0.111	0.124	PASS
Band12	Stand-Alone	15kHz	NaN	BPSK	23011	12@0	0.177	0.230	PASS
Band12	Stand-Alone	15kHz	NaN	BPSK	23095	1@0	0.111	0.124	PASS
Band12	Stand-Alone	15kHz	NaN	BPSK	23095	12@0	0.177	0.230	PASS
Band12	Stand-Alone	15kHz	NaN	BPSK	23179	1@0	0.111	0.124	PASS
Band12	Stand-Alone	15kHz	NaN	BPSK	23179	12@0	0.178	0.237	PASS
Band12	Stand-Alone	15kHz	NaN	QPSK	23011	1@0	0.133	0.161	PASS
Band12	Stand-Alone	15kHz	NaN	QPSK	23011	12@0	0.177	0.230	PASS
Band12	Stand-Alone	15kHz	NaN	QPSK	23095	1@0	0.133	0.161	PASS
Band12	Stand-Alone	15kHz	NaN	QPSK	23095	12@0	0.177	0.230	PASS
Band12	Stand-Alone	15kHz	NaN	QPSK	23179	1@0	0.135	0.161	PASS

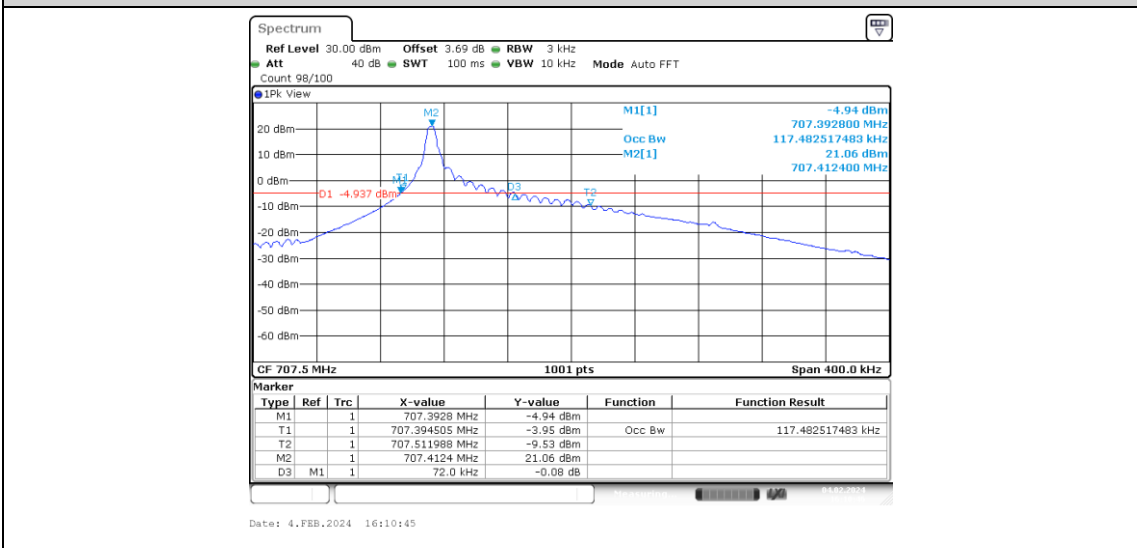


Band12	Stand-Al one	15kHz	NaN	QPSK	23179	12@0	0.178	0.237	PASS
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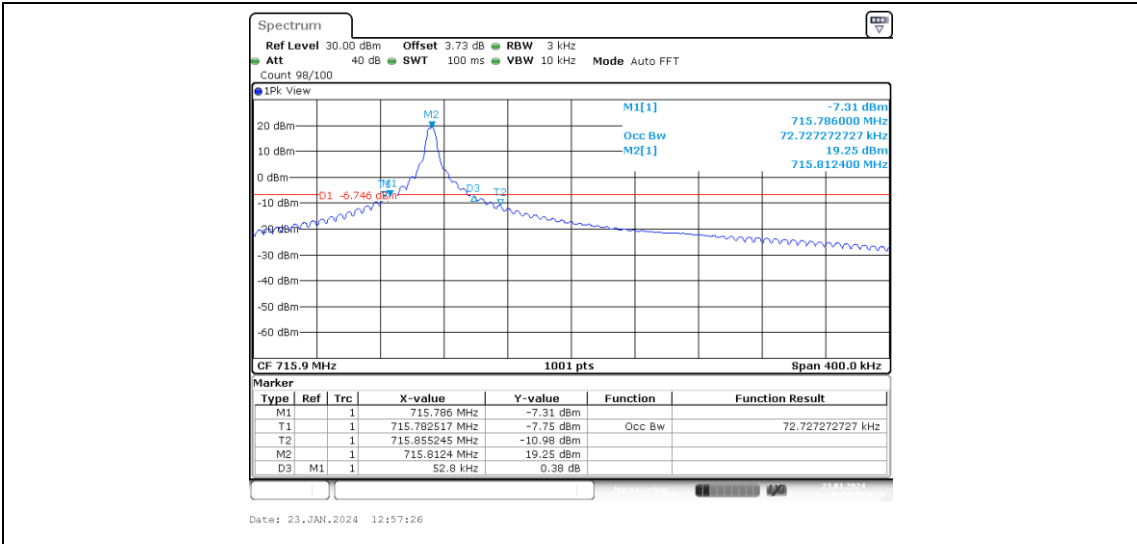
### Test Graphs



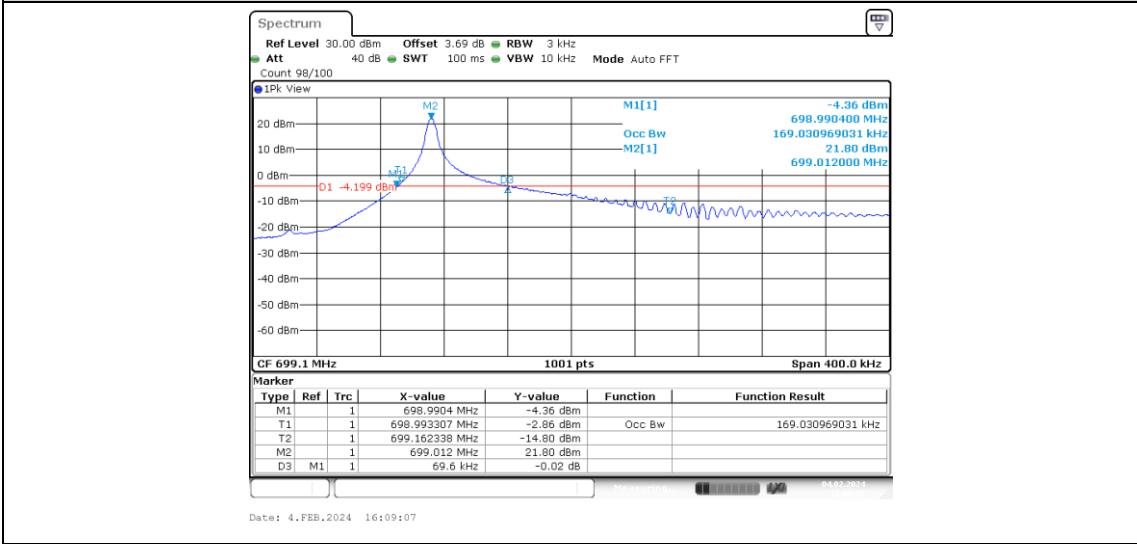
Band12-Stand-Alone-NaN-BPSK-23011-1@0-3.75kHz-0.072-0.117-PASS



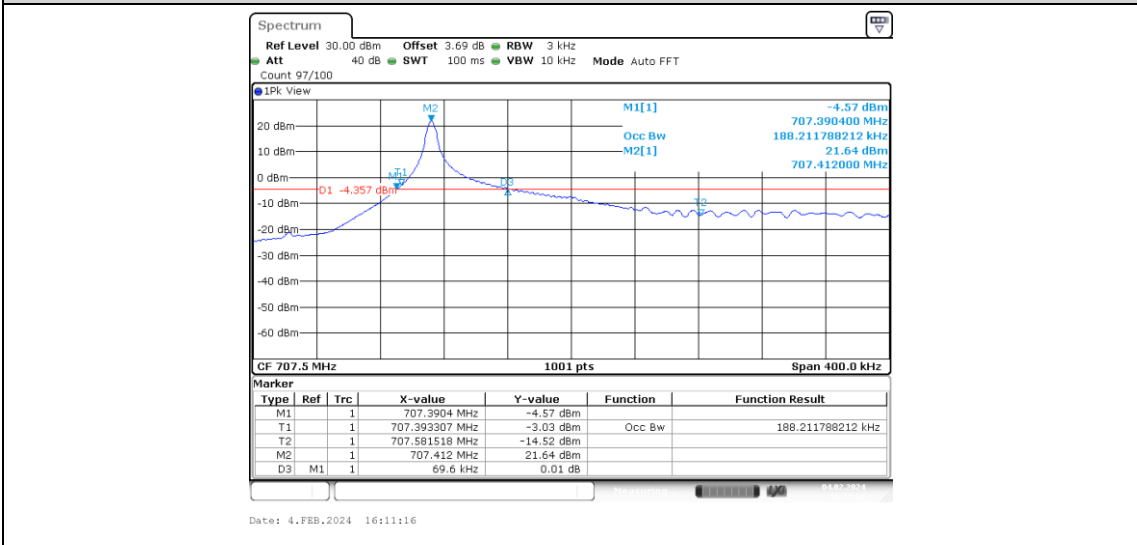
Band12-Stand-Alone-NaN-BPSK-23095-1@0-3.75kHz-0.072-0.117-PASS



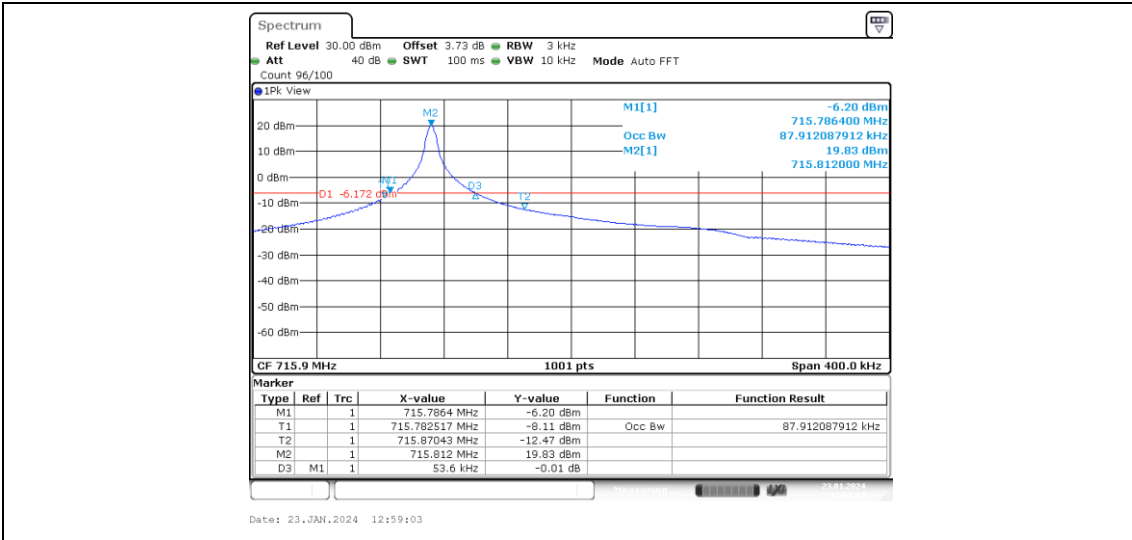
**Band12-Stand-Alone-NaN-BPSK-23179-1@0-3.75kHz-0.053-0.073-PASS**



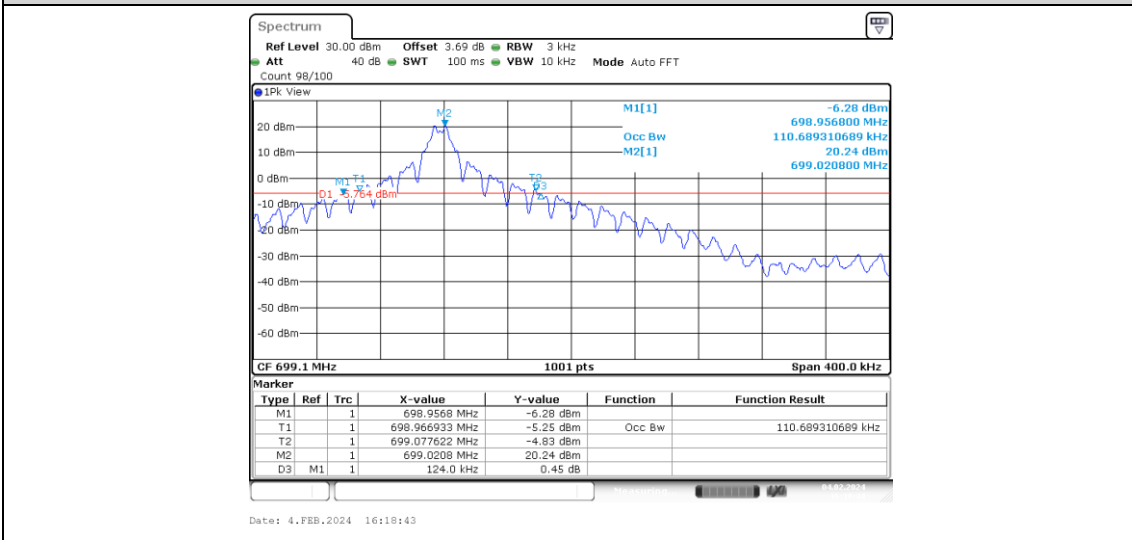
**Band12-Stand-Alone-NaN-QPSK-23011-1@0-3.75kHz-0.070-0.169-PASS**



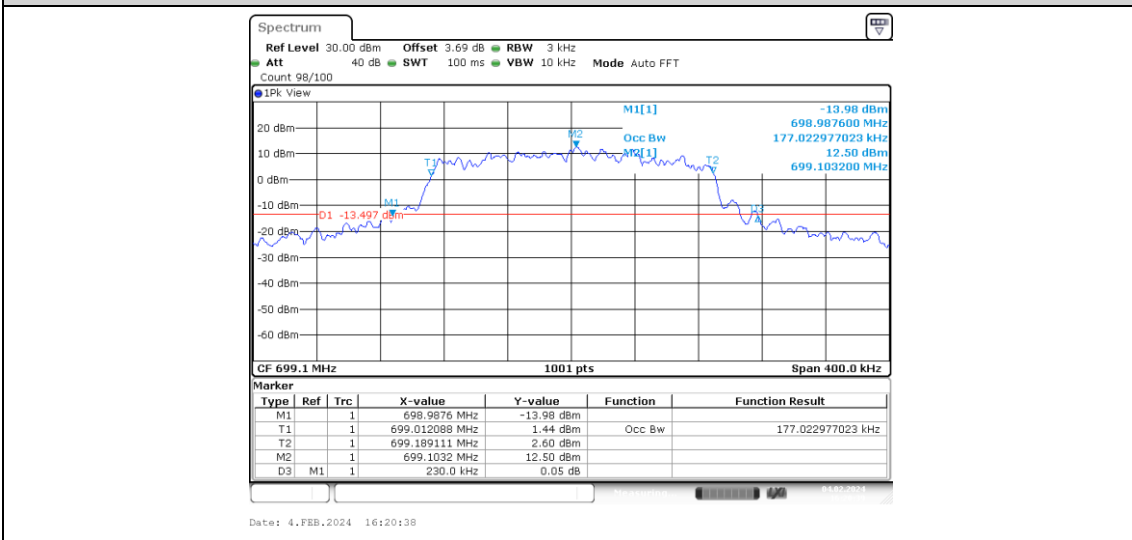
**Band12-Stand-Alone-NaN-QPSK-23095-1@0-3.75kHz-0.070-0.188-PASS**



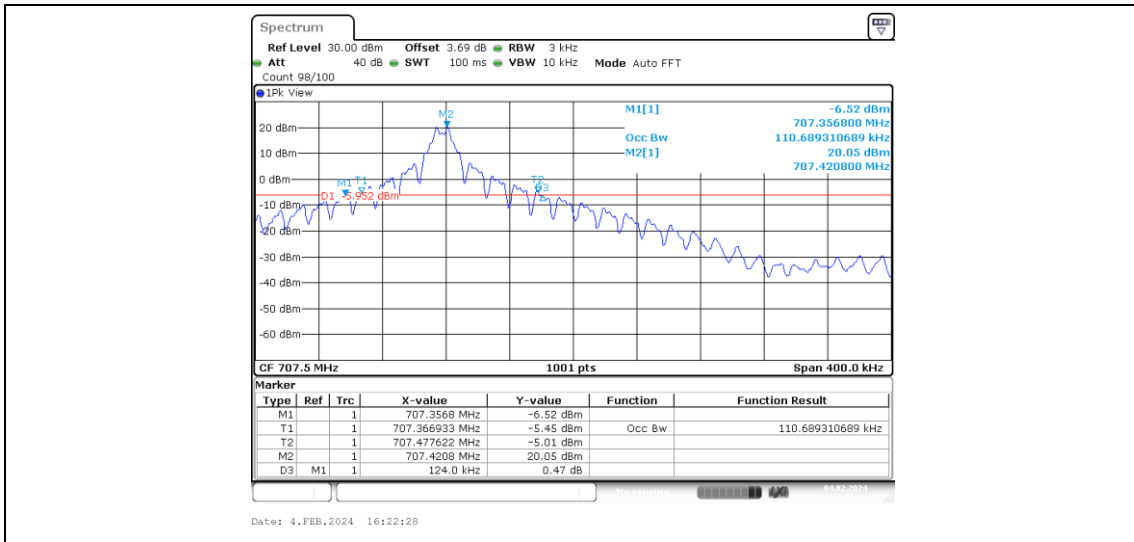
**Band12-Stand-Alone-NaN-QPSK-23179-1@0-3.75kHz-0.054-0.088-PASS**



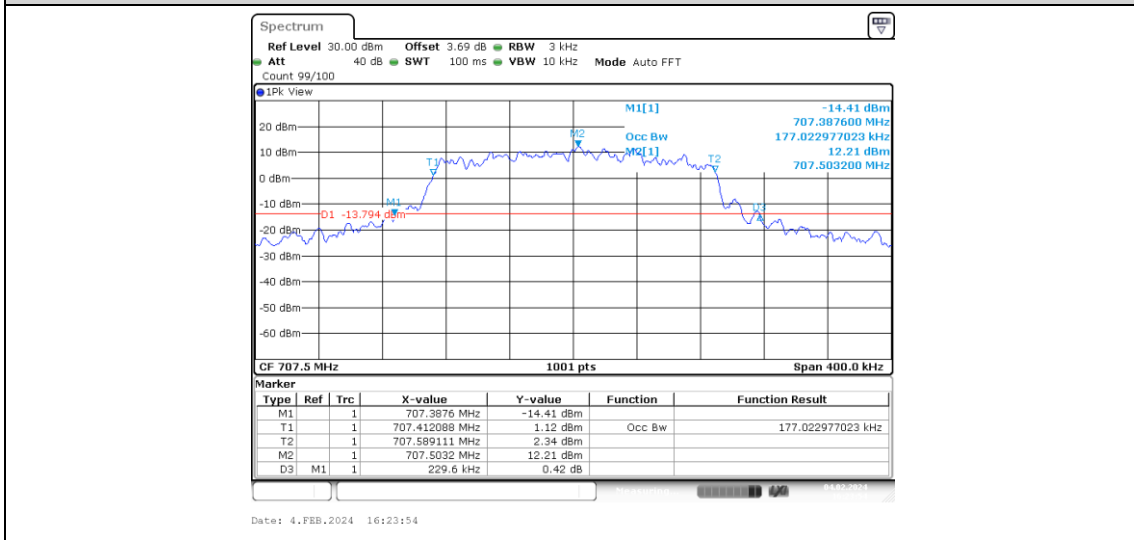
**Band12-Stand-Alone-NaN-BPSK-23011-1@0-15kHz-0.124-0.111-PASS**



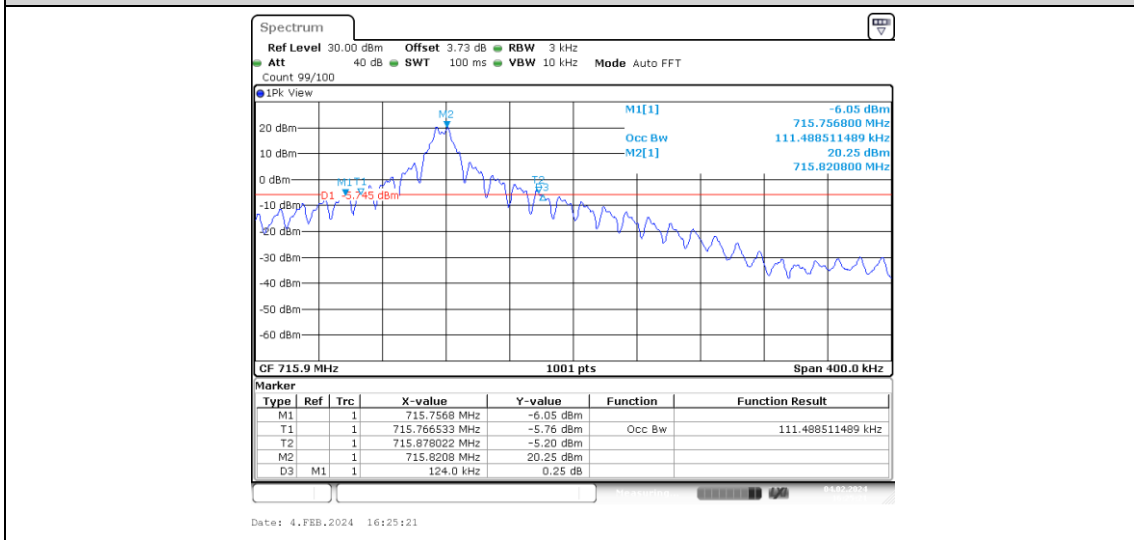
**Band12-Stand-Alone-NaN-BPSK-23011-12@0-15kHz-0.230-0.177-PASS**



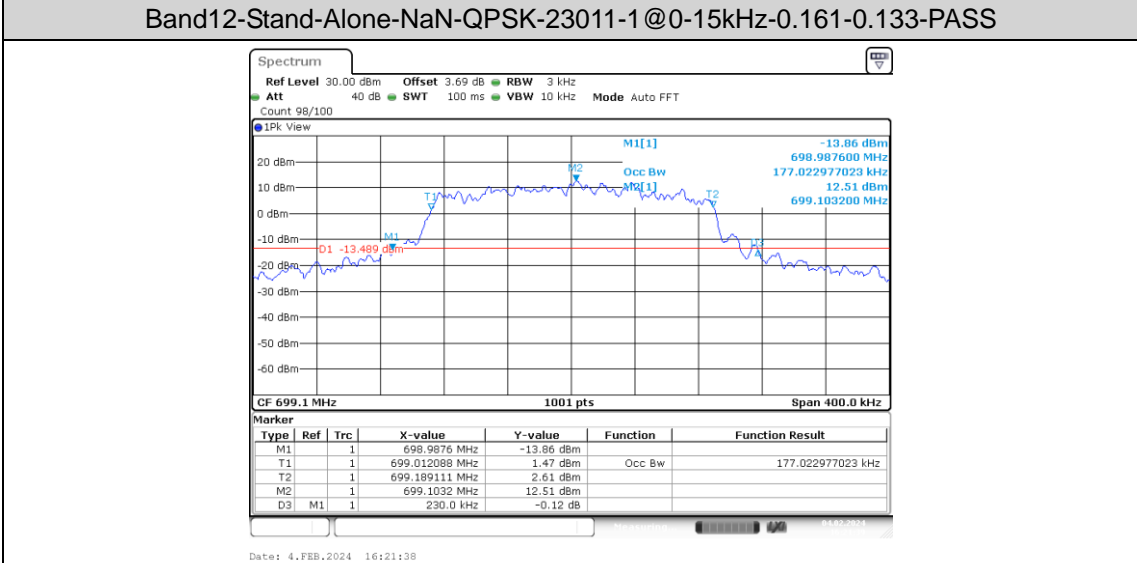
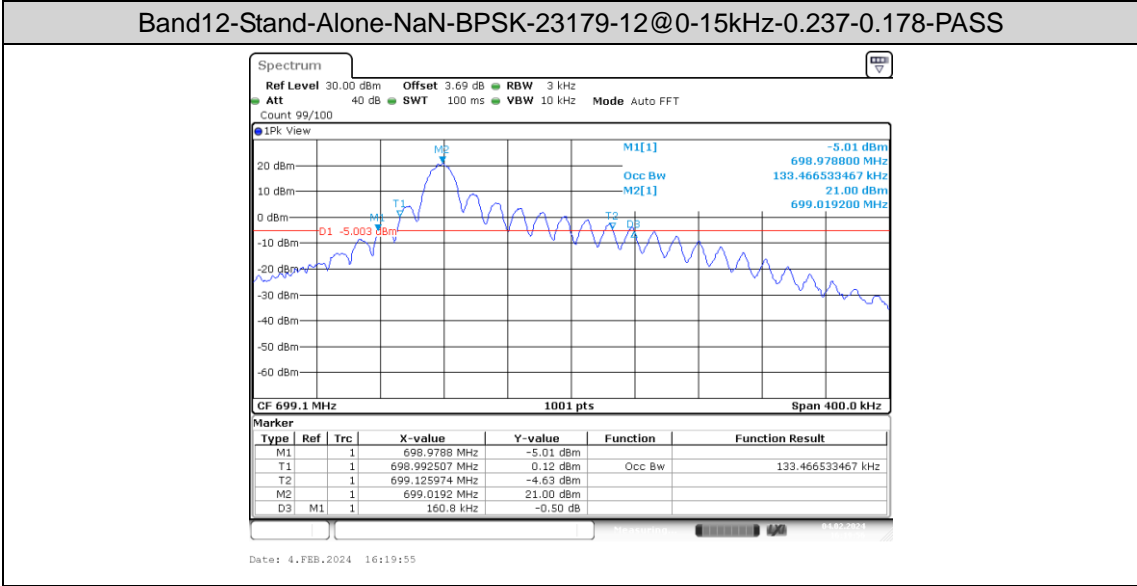
**Band12-Stand-Alone-NaN-BPSK-23095-1 @ 0-15kHz-0.124-0.111-PASS**

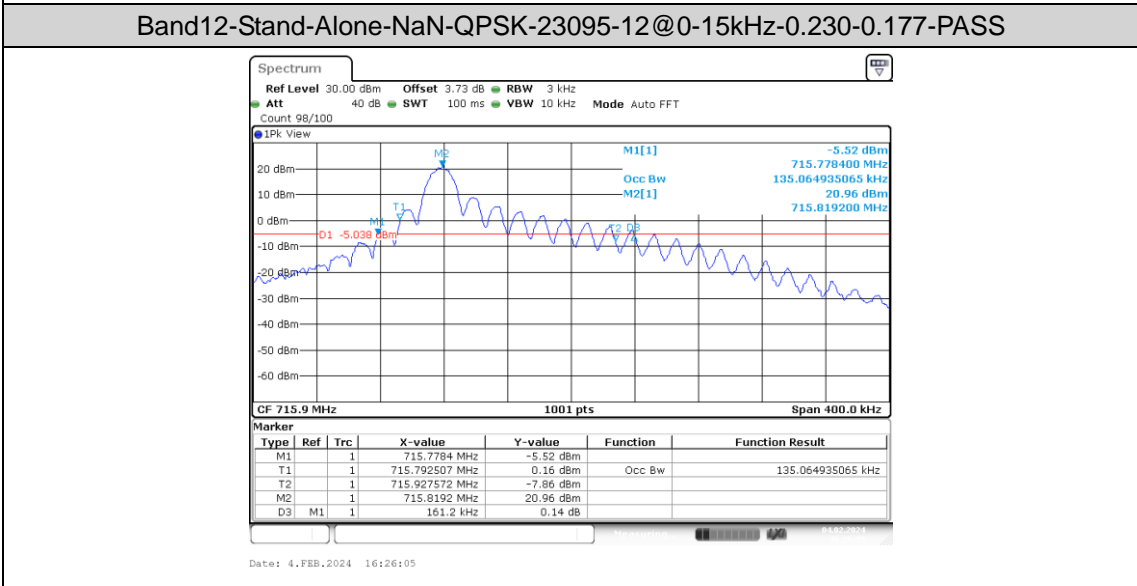
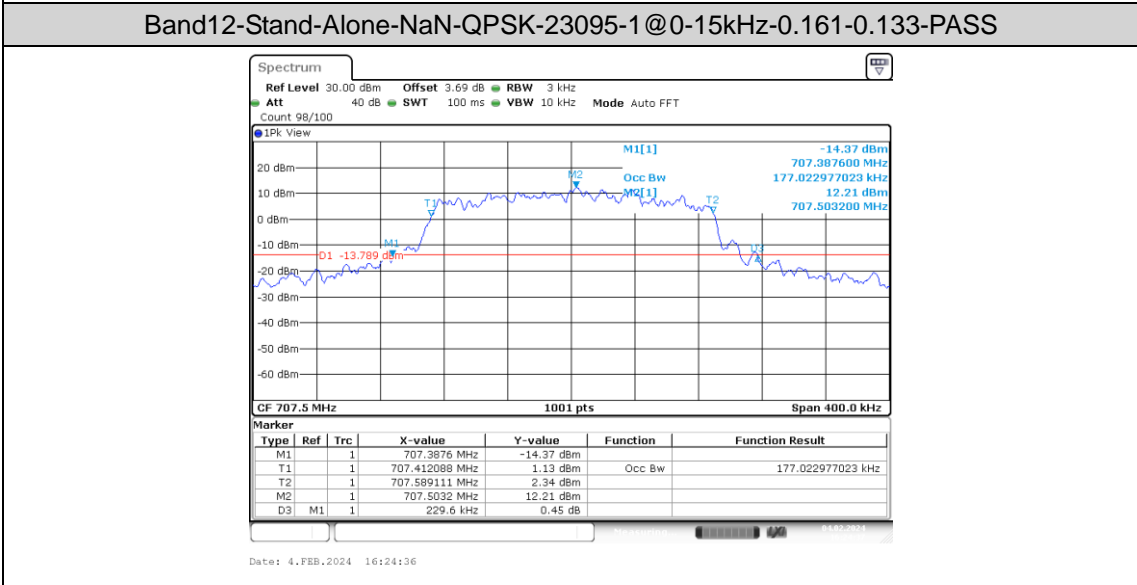
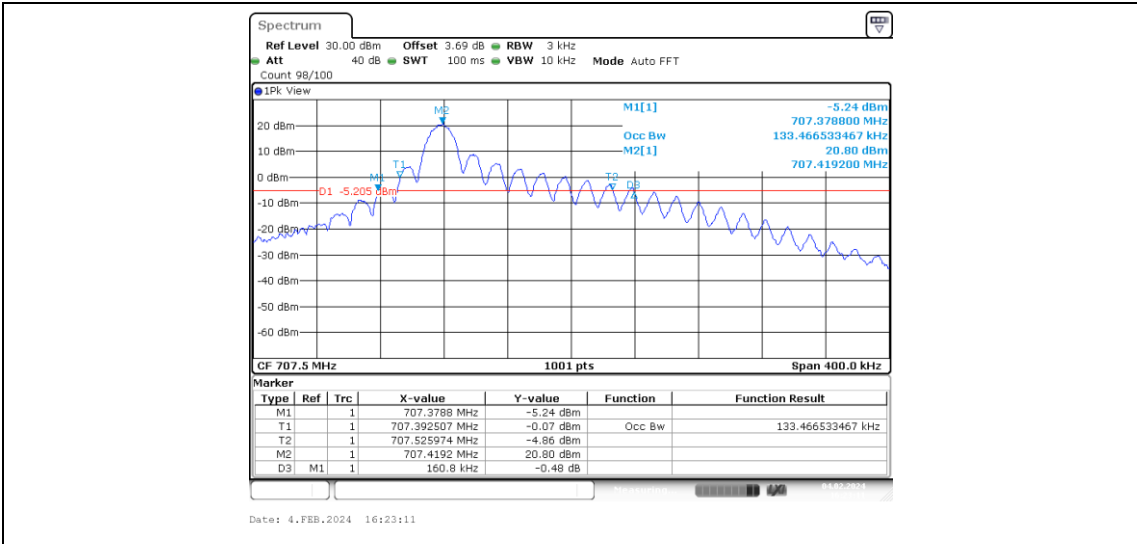


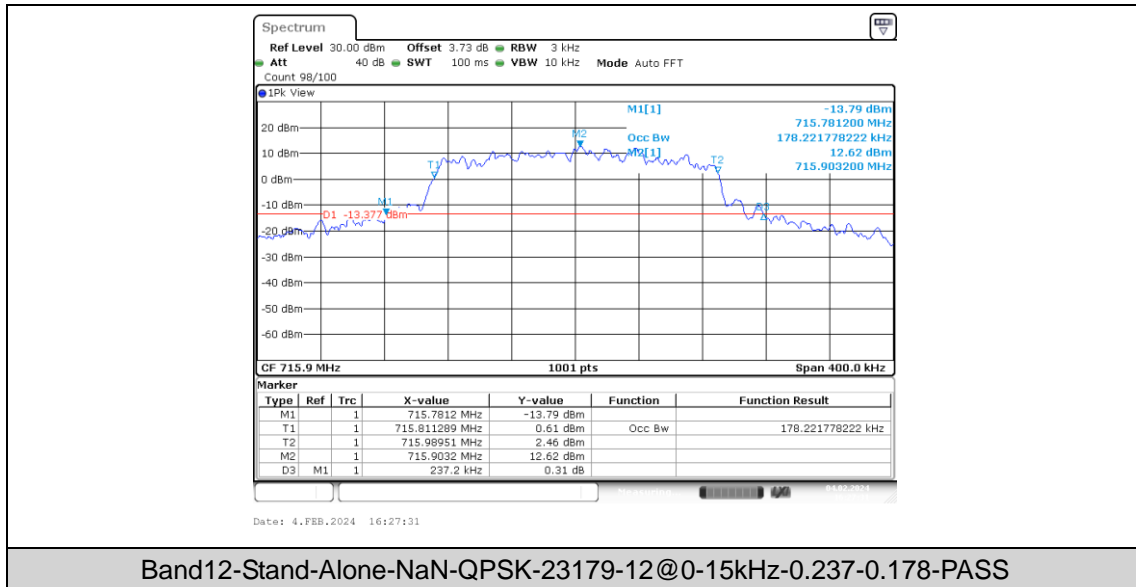
**Band12-Stand-Alone-NaN-BPSK-23095-12 @ 0-15kHz-0.230-0.177-PASS**



**Band12-Stand-Alone-NaN-BPSK-23179-1 @ 0-15kHz-0.124-0.111-PASS**







Band12-Stand-Alone-NaN-QPSK-23179-12@0-15kHz-0.237-0.178-PASS



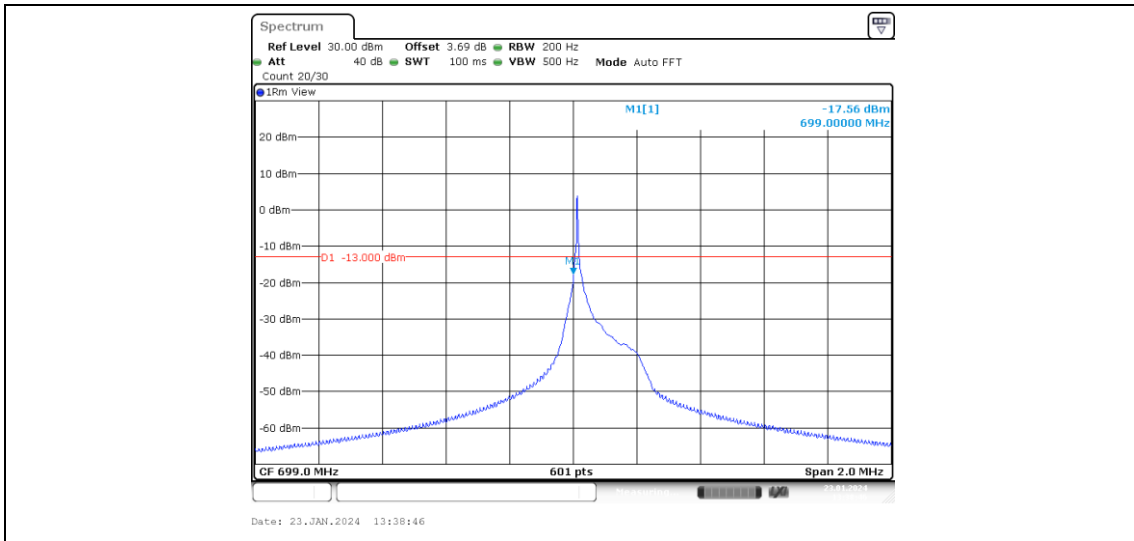
## Appendix D: Band Edge

### Test Result

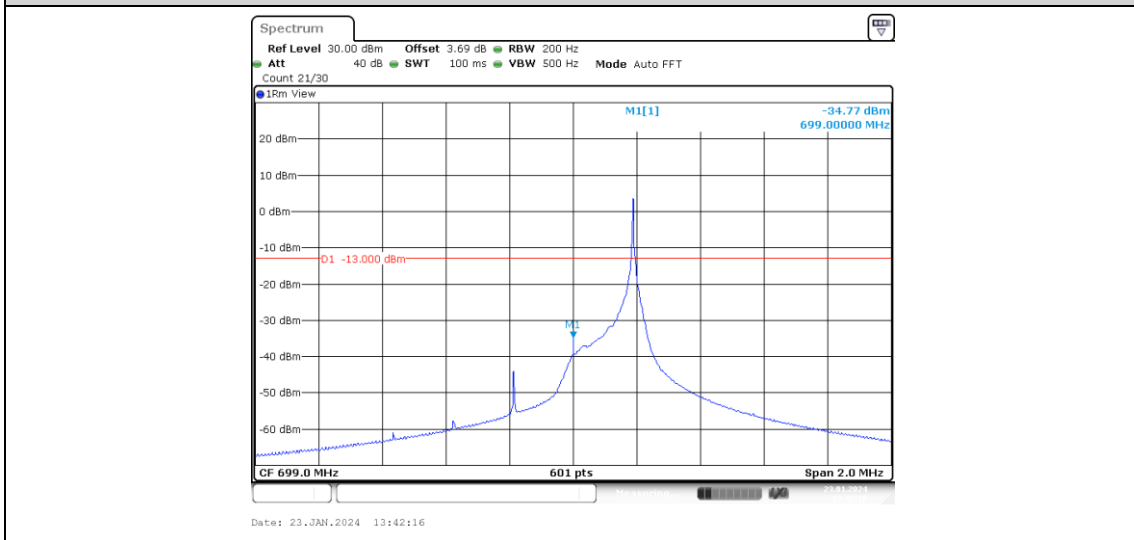
Band	OpMode	SCS	BW	Modu	Channel	Tones	Result (dBm)	Verdict
Band12	Stand-Alone	3.75kHz	NaN	BPSK	23011	1@0	-17.56	PASS
Band12	Stand-Alone	3.75kHz	NaN	BPSK	23011	1@47	-34.77	PASS
Band12	Stand-Alone	3.75kHz	NaN	BPSK	23179	1@0	-39.59	PASS
Band12	Stand-Alone	3.75kHz	NaN	BPSK	23179	1@47	-18.37	PASS
Band12	Stand-Alone	3.75kHz	NaN	QPSK	23011	1@0	-19.74	PASS
Band12	Stand-Alone	3.75kHz	NaN	QPSK	23011	1@47	-35.54	PASS
Band12	Stand-Alone	3.75kHz	NaN	QPSK	23179	1@0	-40.93	PASS
Band12	Stand-Alone	3.75kHz	NaN	QPSK	23179	1@47	-19.82	PASS
Band12	Stand-Alone	15kHz	NaN	BPSK	23011	1@0	-16.60	PASS
Band12	Stand-Alone	15kHz	NaN	BPSK	23011	1@11	-35.08	PASS
Band12	Stand-Alone	15kHz	NaN	BPSK	23011	12@0	-27.56	PASS
Band12	Stand-Alone	15kHz	NaN	BPSK	23179	1@0	-36.39	PASS
Band12	Stand-Alone	15kHz	NaN	BPSK	23179	1@11	-16.85	PASS
Band12	Stand-Alone	15kHz	NaN	BPSK	23179	12@0	-21.66	PASS
Band12	Stand-Alone	15kHz	NaN	QPSK	23011	1@0	-18.43	PASS
Band12	Stand-Alone	15kHz	NaN	QPSK	23011	1@11	-36.96	PASS
Band12	Stand-Alone	15kHz	NaN	QPSK	23011	12@0	-24.7	PASS

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Band12	Stand-Alone	15kHz	NaN	QPSK	23179	1@0	-36.9 2	PASS
Band12	Stand-Alone	15kHz	NaN	QPSK	23179	1@11	-18.4 9	PASS
Band12	Stand-Alone	15kHz	NaN	QPSK	23179	12@0	-22.9 5	PASS

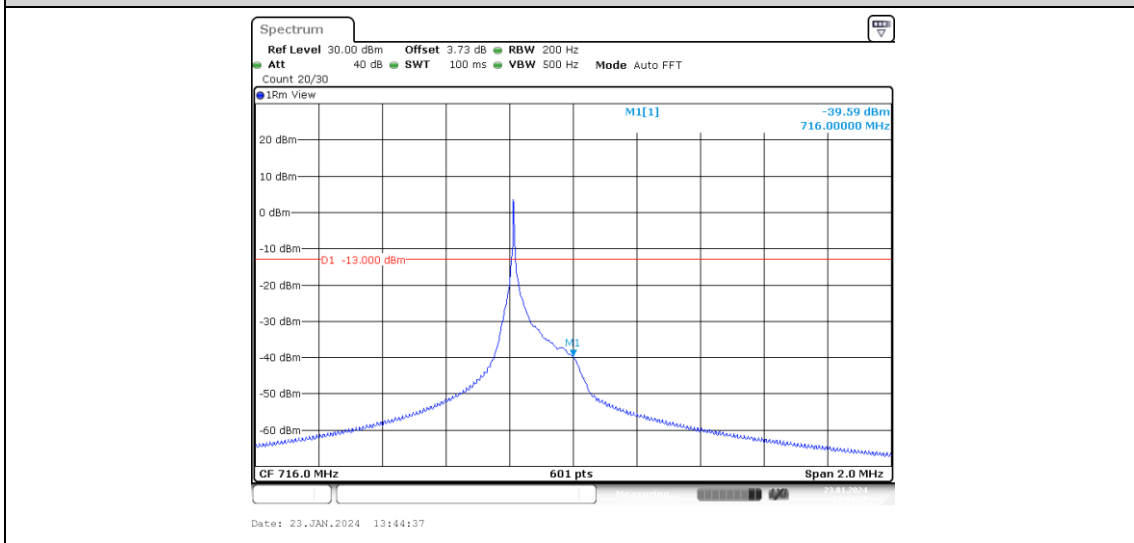
### Test Graphs



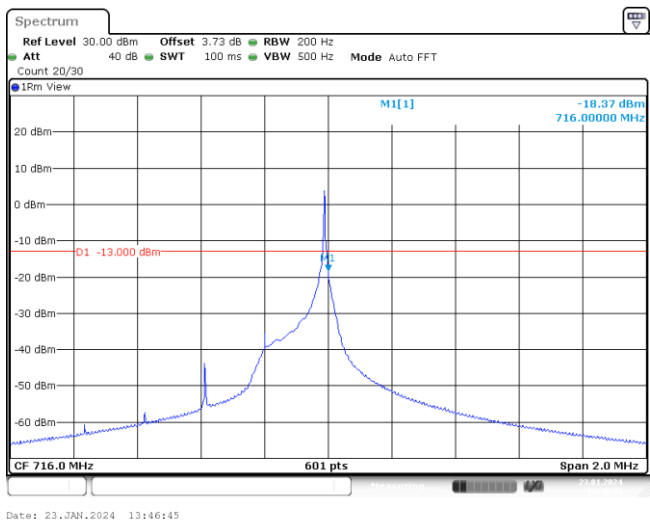
Band12-Stand-Alone-NaN-BPSK-23011-1 @0-3.75kHz--17.56-PASS



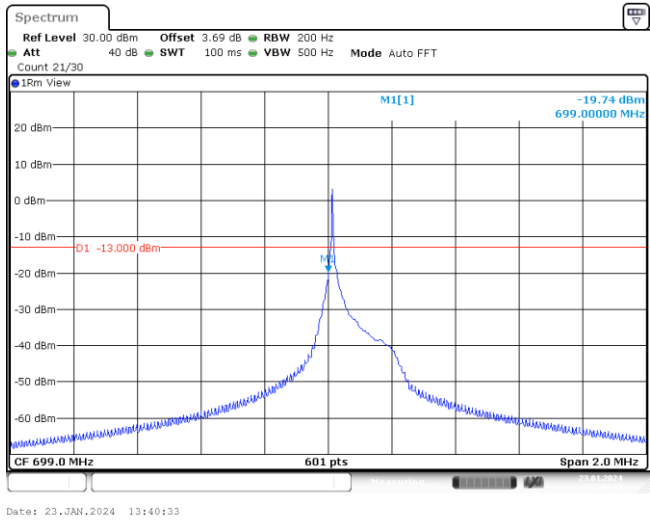
Band12-Stand-Alone-NaN-BPSK-23011-1 @47-3.75kHz--34.77-PASS



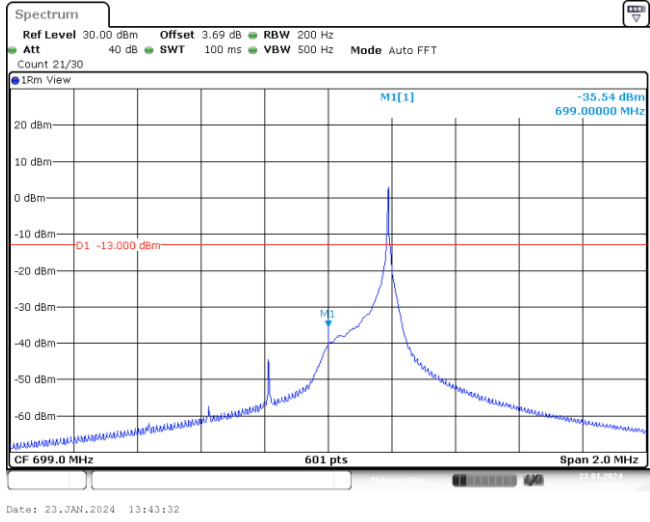
Band12-Stand-Alone-NaN-BPSK-23179-1@0-3.75kHz--39.59-PASS



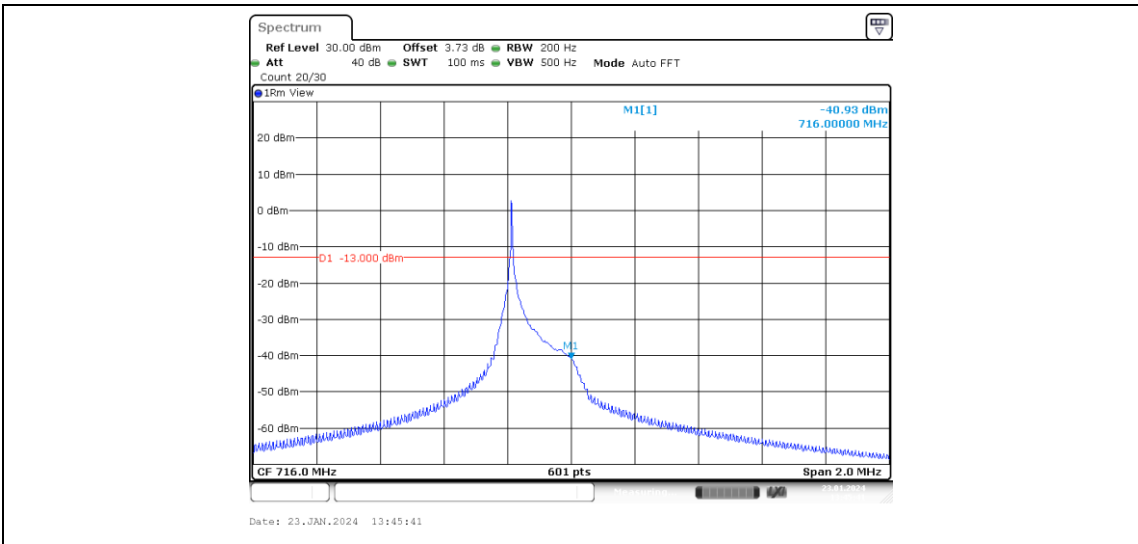
Band12-Stand-Alone-NaN-BPSK-23179-1@47-3.75kHz--18.37-PASS



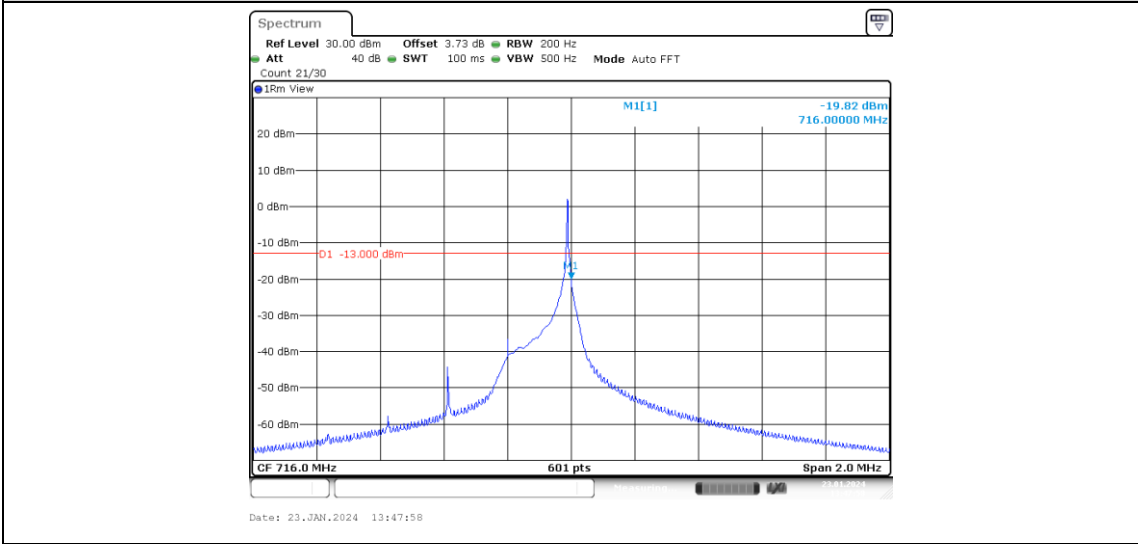
Band12-Stand-Alone-NaN-QPSK-23011-1@0-3.75kHz--19.74-PASS



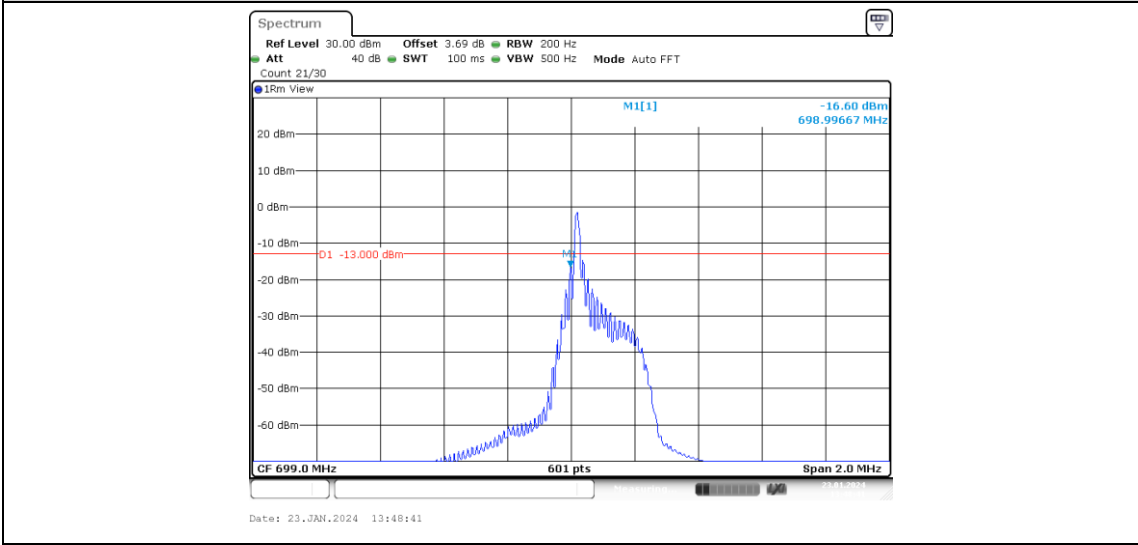
Band12-Stand-Alone-NaN-QPSK-23011-1@47-3.75kHz--35.54-PASS



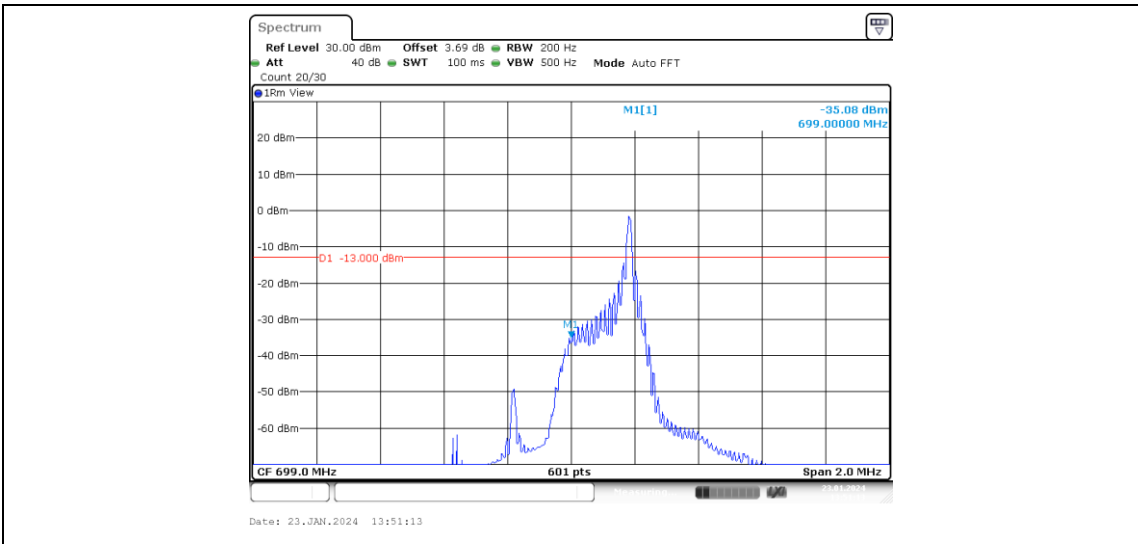
Band12-Stand-Alone-NaN-QPSK-23179-1@0-3.75kHz--40.93-PASS



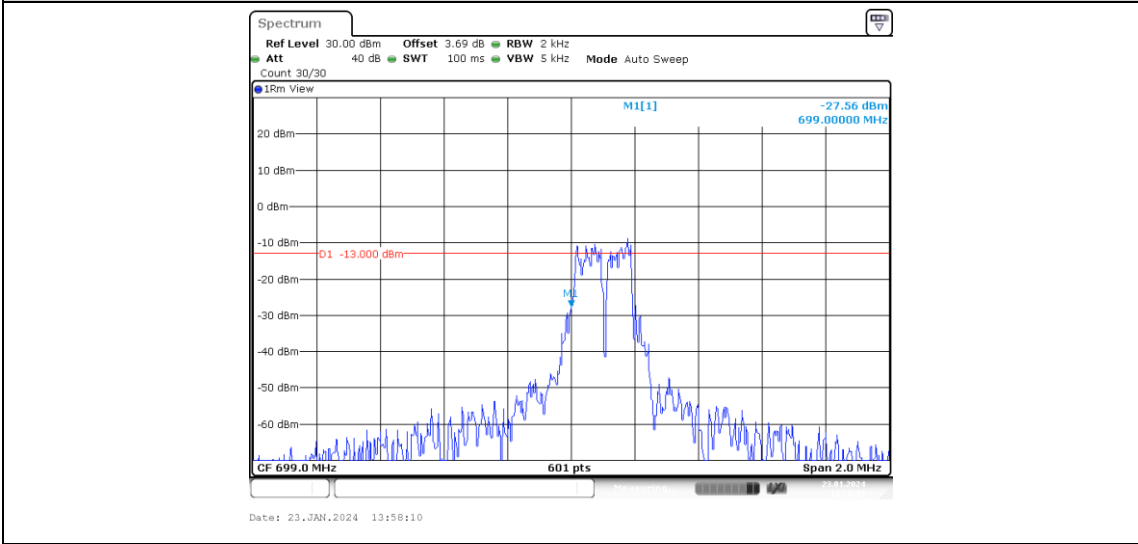
Band12-Stand-Alone-NaN-QPSK-23179-1@47-3.75kHz--19.82-PASS



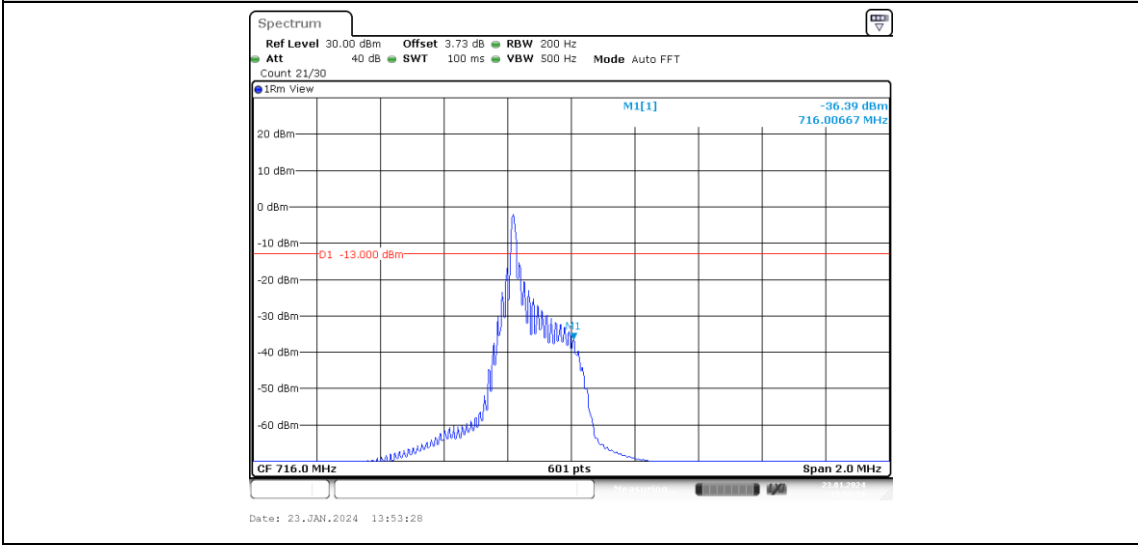
Band12-Stand-Alone-NaN-BPSK-23011-1@0-15kHz--16.60-PASS



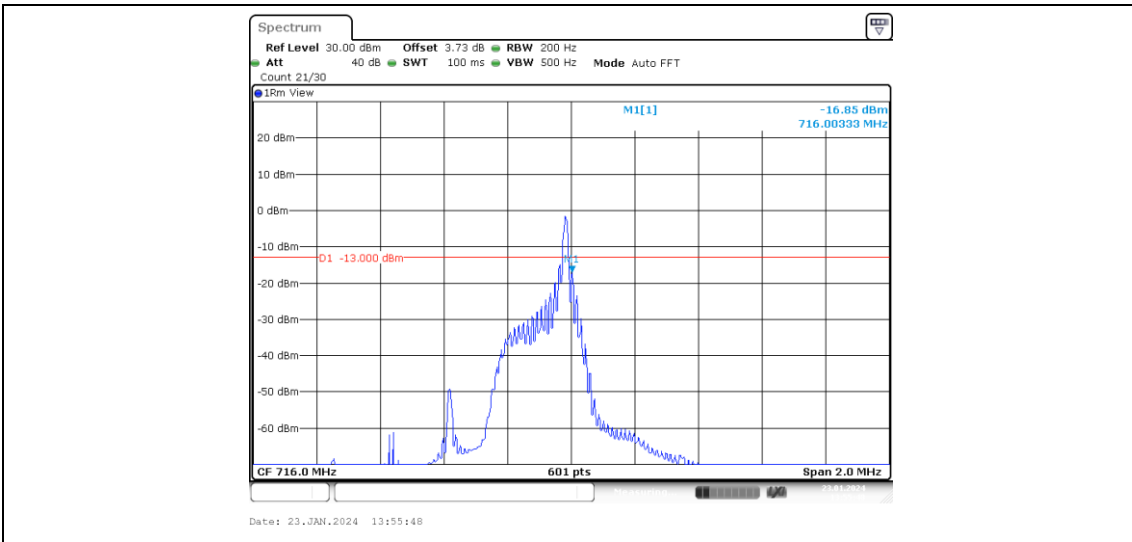
Band12-Stand-Alone-NaN-BPSK-23011-1 @ 11-15kHz--35.08-PASS



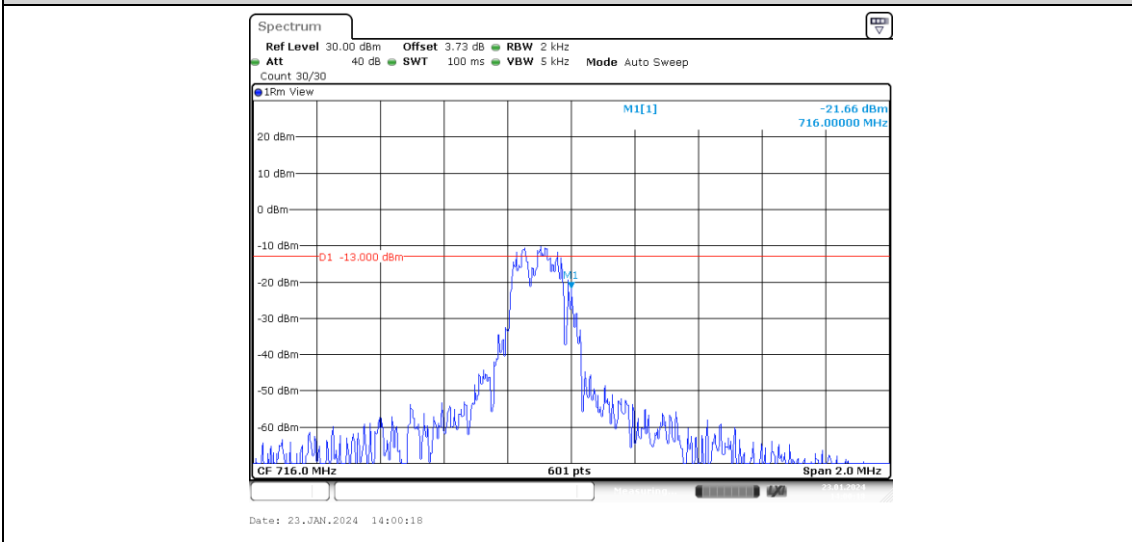
Band12-Stand-Alone-NaN-BPSK-23011-12 @ 0-15kHz--27.56-PASS



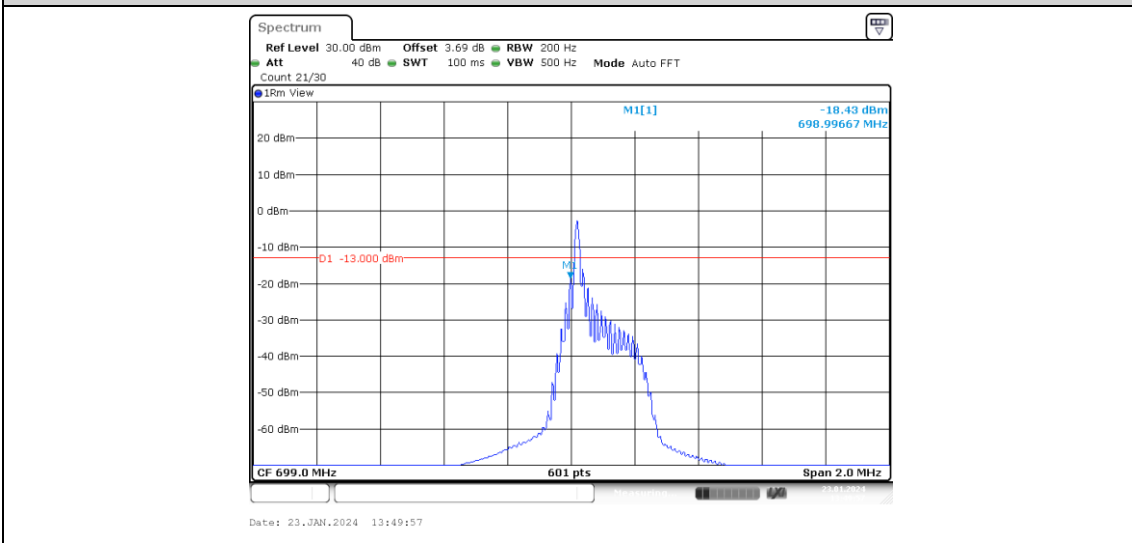
Band12-Stand-Alone-NaN-BPSK-23179-1 @ 0-15kHz--36.39-PASS



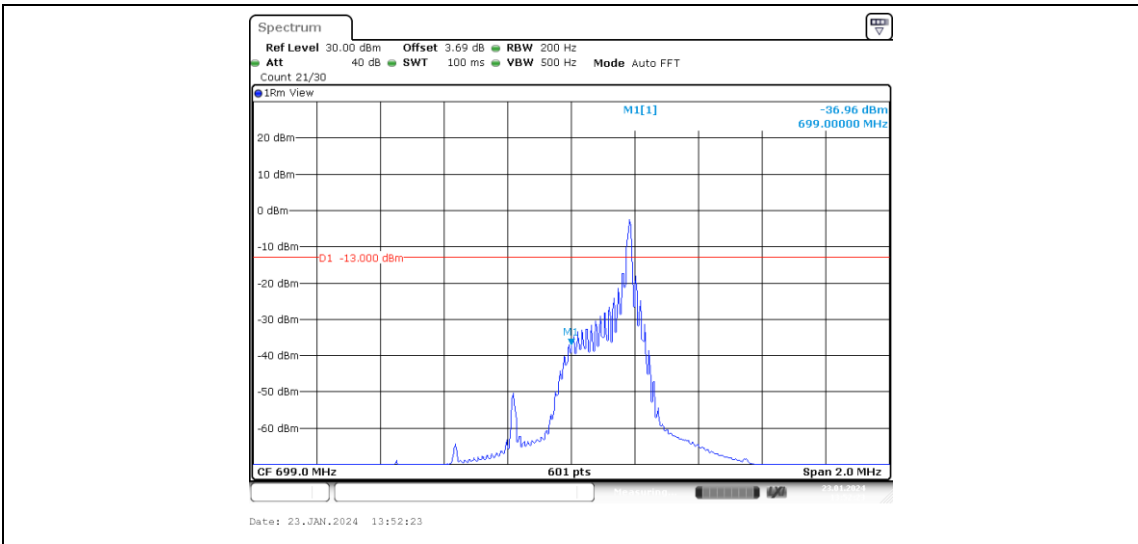
Band12-Stand-Alone-NaN-BPSK-23179-1 @ 11-15kHz--16.85-PASS



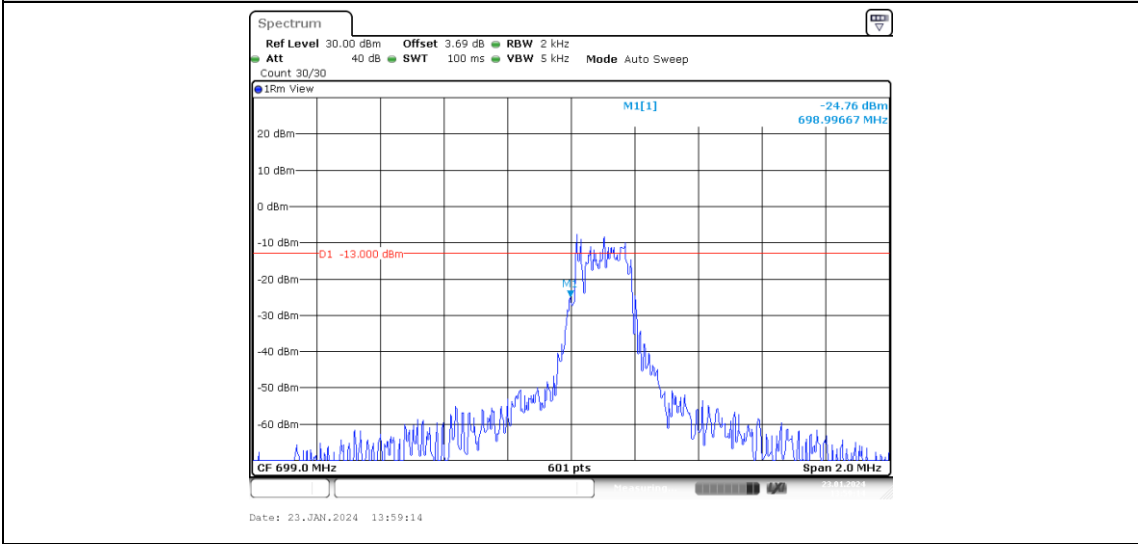
Band12-Stand-Alone-NaN-BPSK-23179-12 @ 0-15kHz--21.66-PASS



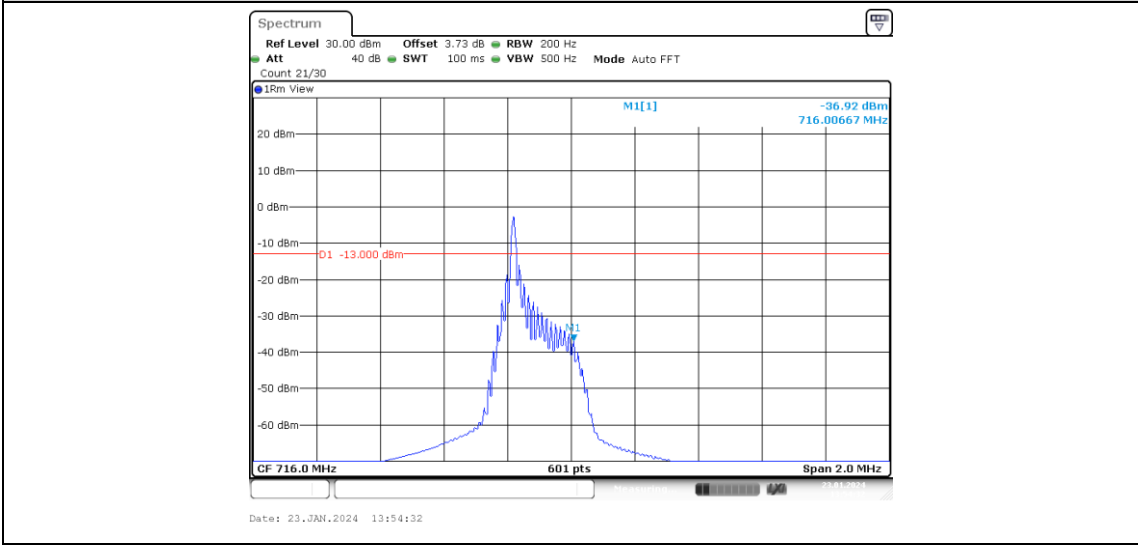
Band12-Stand-Alone-NaN-QPSK-23011-1 @ 0-15kHz--18.43-PASS



Band12-Stand-Alone-NaN-QPSK-23011-1 @ 11-15kHz--36.96-PASS

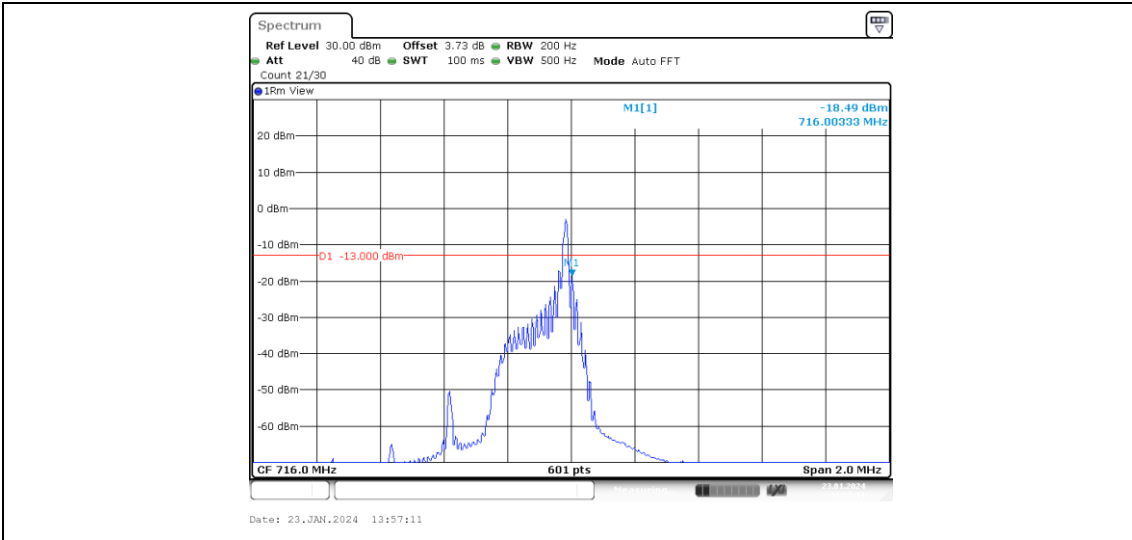


Band12-Stand-Alone-NaN-QPSK-23011-12 @ 0-15kHz--24.76-PASS

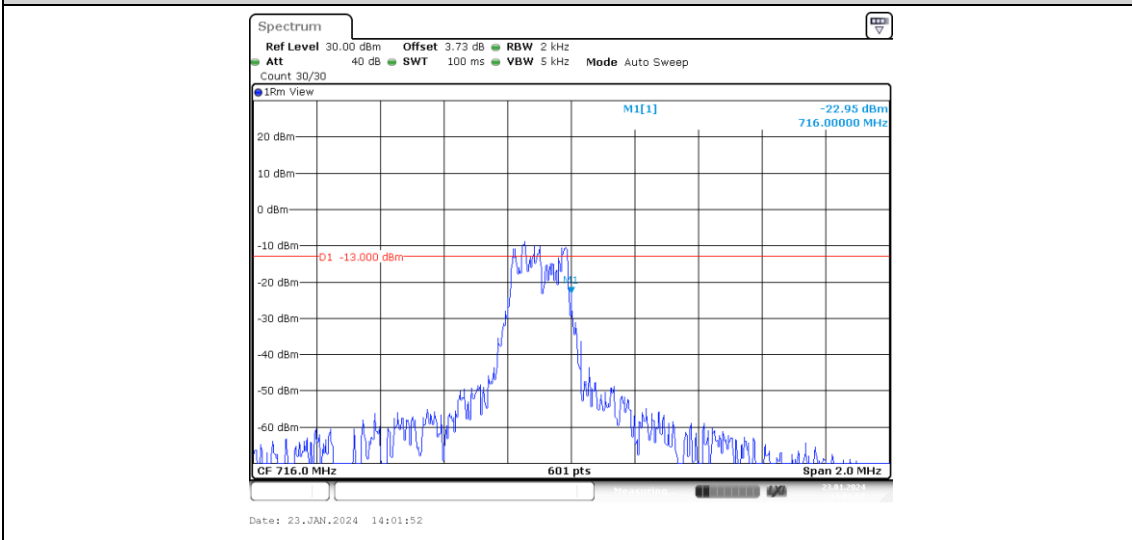


Band12-Stand-Alone-NaN-QPSK-23179-1 @ 0-15kHz--36.92-PASS





Band12-Stand-Alone-NaN-QPSK-23179-1@11-15kHz--18.49-PASS



Band12-Stand-Alone-NaN-QPSK-23179-12@0-15kHz--22.95-PASS

## Appendix E: Conducted Spurious Emission

### Test Result

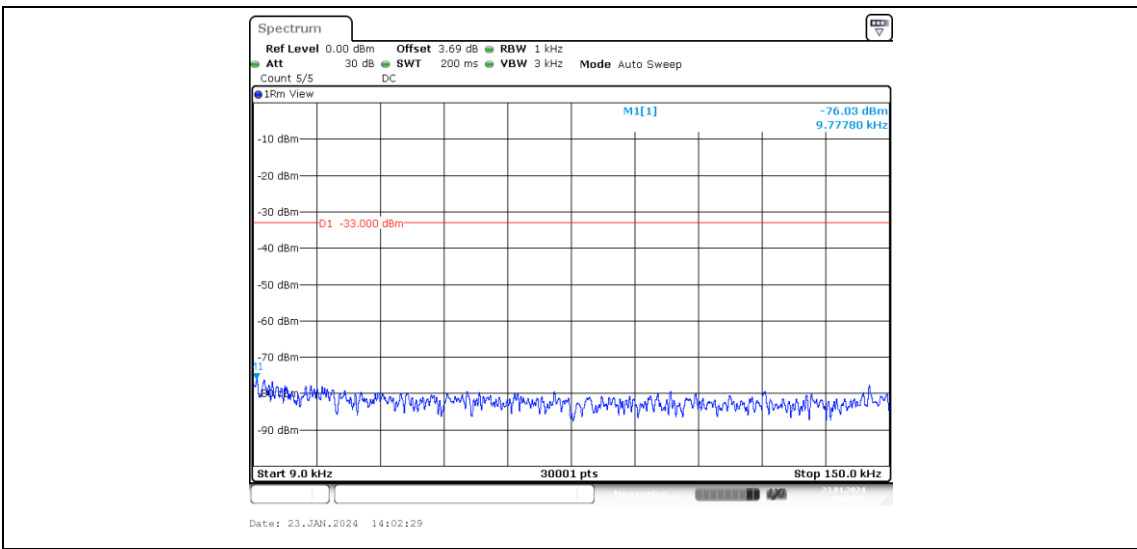
Band	OpMode	SCS	BW	Modu	Channel	Tones	Freq Start [MHz]	Freq Stop [MHz]	Result (dBm)	Limit (dBm)	Verdict
Band1 2	Stand-Alone	3.75kHz	NaN	QPSK	23011	1@0	0.009	0.15	-76.03	-33	PASS
Band1 2	Stand-Alone	3.75kHz	NaN	QPSK	23011	1@0	0.15	30	-74.38	-23	PASS
Band1 2	Stand-Alone	3.75kHz	NaN	QPSK	23011	1@0	30	1000	-64.02	-13	PASS
Band1 2	Stand-Alone	3.75kHz	NaN	QPSK	23011	1@0	1000	1000	-50.3	-13	PASS
Band1 2	Stand-Alone	3.75kHz	NaN	QPSK	23011	1@47	0.009	0.15	-76.99	-33	PASS
Band1 2	Stand-Alone	3.75kHz	NaN	QPSK	23011	1@47	0.15	30	-74.01	-23	PASS
Band1 2	Stand-Alone	3.75kHz	NaN	QPSK	23011	1@47	30	1000	-64.98	-13	PASS
Band1 2	Stand-Alone	3.75kHz	NaN	QPSK	23011	1@47	1000	1000	-48.81	-13	PASS
Band1 2	Stand-Alone	3.75kHz	NaN	QPSK	23095	1@0	0.009	0.15	-77.12	-33	PASS
Band1 2	Stand-Alone	3.75kHz	NaN	QPSK	23095	1@0	0.15	30	-70.94	-23	PASS
Band1 2	Stand-Alone	3.75kHz	NaN	QPSK	23095	1@0	30	1000	-65.16	-13	PASS
Band1 2	Stand-Alone	3.75kHz	NaN	QPSK	23095	1@0	1000	1000	-50.16	-13	PASS
Band1 2	Stand-Alone	3.75kHz	NaN	QPSK	23095	1@47	0.009	0.15	-74.2	-33	PASS
Band1 2	Stand-Alone	3.75kHz	NaN	QPSK	23095	1@47	0.15	30	-74.19	-23	PASS
Band1 2	Stand-Alone	3.75kHz	NaN	QPSK	23095	1@47	30	1000	-64.32	-13	PASS
Band1 2	Stand-Alone	3.75kHz	NaN	QPSK	23095	1@47	1000	1000	-50.21	-13	PASS
Band1 2	Stand-Alone	3.75kHz	NaN	QPSK	23179	1@0	0.009	0.15	-75.33	-33	PASS

Band1 2	Stand-Alon e	3.75kHz	NaN	QPSK	23179	1@0	0.15	30	-73.31	-23	PASS
Band1 2	Stand-Alon e	3.75kHz	NaN	QPSK	23179	1@0	30	1000	-65.03	-13	PASS
Band1 2	Stand-Alon e	3.75kHz	NaN	QPSK	23179	1@0	1000	1000 0	-50.66	-13	PASS
Band1 2	Stand-Alon e	3.75kHz	NaN	QPSK	23179	1@47	0.009	0.15	-76.81	-33	PASS
Band1 2	Stand-Alon e	3.75kHz	NaN	QPSK	23179	1@47	0.15	30	-71.64	-23	PASS
Band1 2	Stand-Alon e	3.75kHz	NaN	QPSK	23179	1@47	30	1000	-64.58	-13	PASS
Band1 2	Stand-Alon e	3.75kHz	NaN	QPSK	23179	1@47	1000	1000 0	-49.98	-13	PASS
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23011	1@0	0.009	0.15	-76.47	-33	PASS
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23011	1@0	0.15	30	-72.75	-23	PASS
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23011	1@0	30	1000	-64.2	-13	PASS
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23011	1@0	1000	1000 0	-49.05	-13	PASS
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23011	1@11	0.009	0.15	-75.63	-33	PASS
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23011	1@11	0.15	30	-70.23	-23	PASS
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23011	1@11	30	1000	-64.21	-13	PASS
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23011	1@11	1000	1000 0	-48.78	-13	PASS
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23095	1@0	0.009	0.15	-76.97	-33	PASS
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23095	1@0	0.15	30	-72.65	-23	PASS
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23095	1@0	30	1000	-63.07	-13	PASS
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23095	1@0	1000	1000 0	-48.85	-13	PASS
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23095	1@11	0.009	0.15	-76.71	-33	PASS
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23095	1@11	0.15	30	-68.14	-23	PASS
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23095	1@11	30	1000	-64.65	-13	PASS

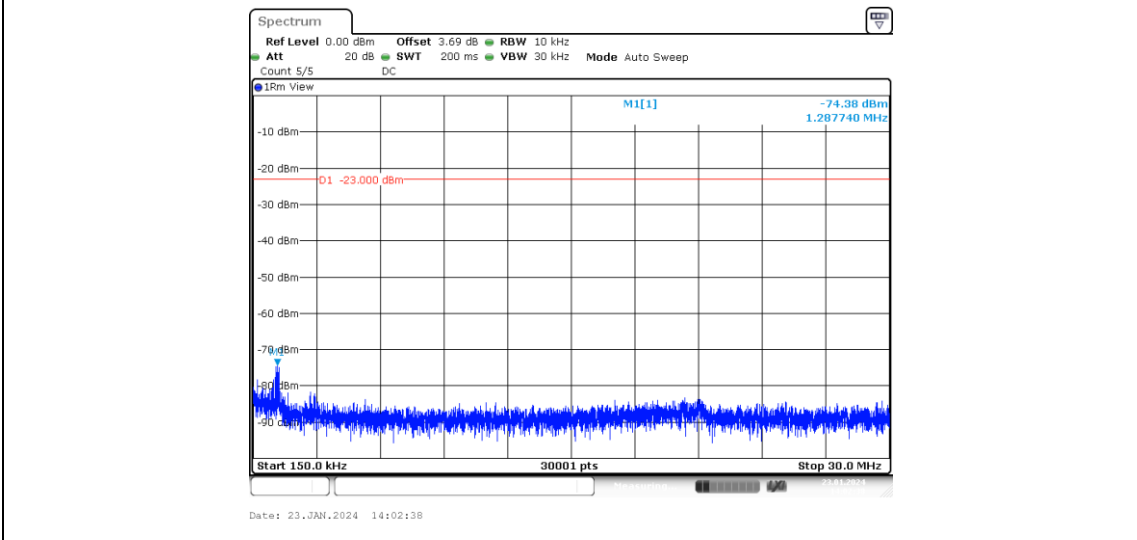
2	e										
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23095	1@11	1000	1000 0	-49.99	-13	PASS
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23179	1@0	0.009	0.15	-76.23	-33	PASS
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23179	1@0	0.15	30	-72.14	-23	PASS
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23179	1@0	30	1000	-65.03	-13	PASS
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23179	1@0	1000	1000 0	-50.06	-13	PASS
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23179	1@11	0.009	0.15	-74.98	-33	PASS
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23179	1@11	0.15	30	-72.71	-23	PASS
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23179	1@11	30	1000	-64.13	-13	PASS
Band1 2	Stand-Alon e	15kHz	NaN	BPSK	23179	1@11	1000	1000 0	-50.33	-13	PASS
Band1 2	Stand-Alon e	15kHz	NaN	QPSK	23011	12@0	0.009	0.15	-75.7	-33	PASS
Band1 2	Stand-Alon e	15kHz	NaN	QPSK	23011	12@0	0.15	30	-78.05	-23	PASS
Band1 2	Stand-Alon e	15kHz	NaN	QPSK	23011	12@0	30	1000	-65.22	-13	PASS
Band1 2	Stand-Alon e	15kHz	NaN	QPSK	23011	12@0	1000	1000 0	-50.23	-13	PASS
Band1 2	Stand-Alon e	15kHz	NaN	QPSK	23095	12@0	0.009	0.15	-75.88	-33	PASS
Band1 2	Stand-Alon e	15kHz	NaN	QPSK	23095	12@0	0.15	30	-76.33	-23	PASS
Band1 2	Stand-Alon e	15kHz	NaN	QPSK	23095	12@0	30	1000	-64.56	-13	PASS
Band1 2	Stand-Alon e	15kHz	NaN	QPSK	23095	12@0	1000	1000 0	-50.58	-13	PASS
Band1 2	Stand-Alon e	15kHz	NaN	QPSK	23179	12@0	0.009	0.15	-75.5	-33	PASS
Band1 2	Stand-Alon e	15kHz	NaN	QPSK	23179	12@0	0.15	30	-74.49	-23	PASS
Band1 2	Stand-Alon e	15kHz	NaN	QPSK	23179	12@0	30	1000	-65.16	-13	PASS
Band1 2	Stand-Alon e	15kHz	NaN	QPSK	23179	12@0	1000	1000 0	-50.4	-13	PASS



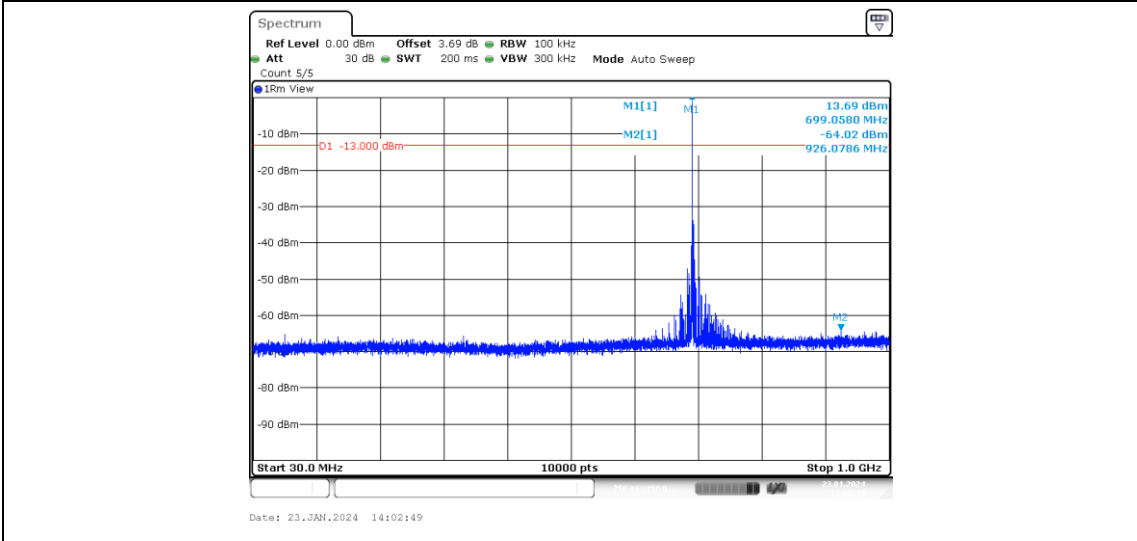
### Test Graphs



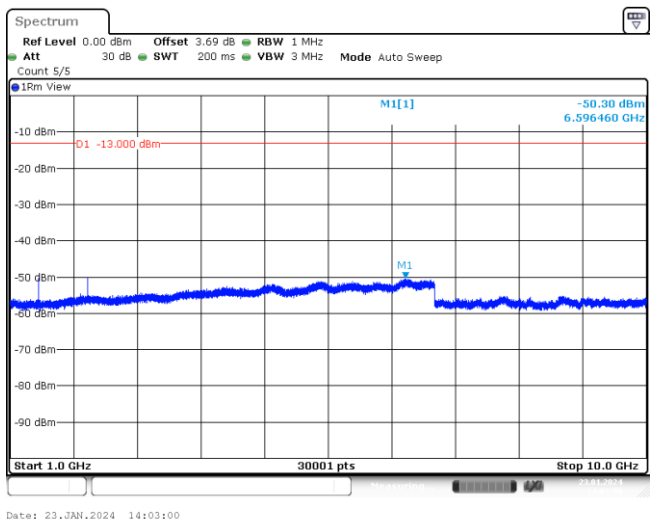
Band12-Stand-Alone-NaN-QPSK-23011-1@0-3.75kHz-0.009-0.15--76.03--33-PASS



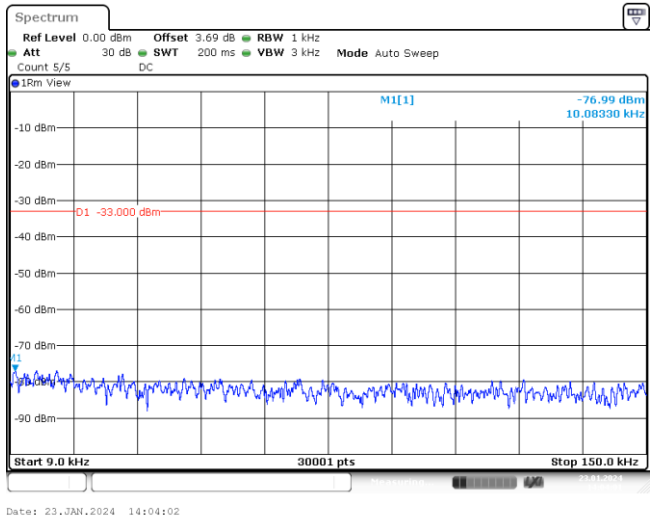
Band12-Stand-Alone-NaN-QPSK-23011-1@0-3.75kHz-0.15-30--74.38--23-PASS



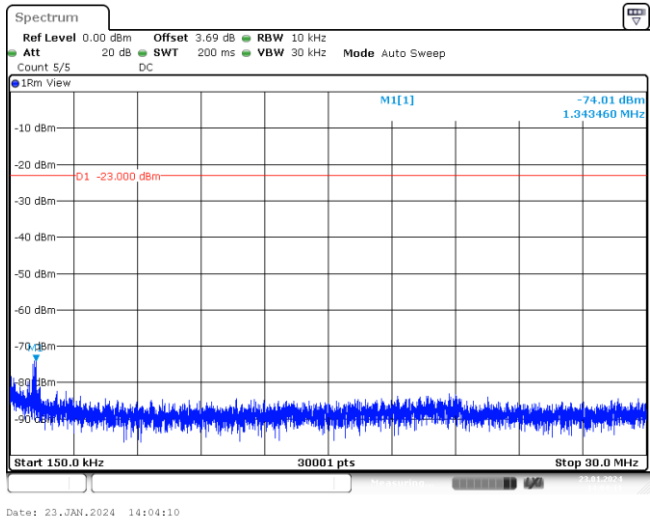
Band12-Stand-Alone-NaN-QPSK-23011-1@0-3.75kHz-30-1000--64.02--13-PASS



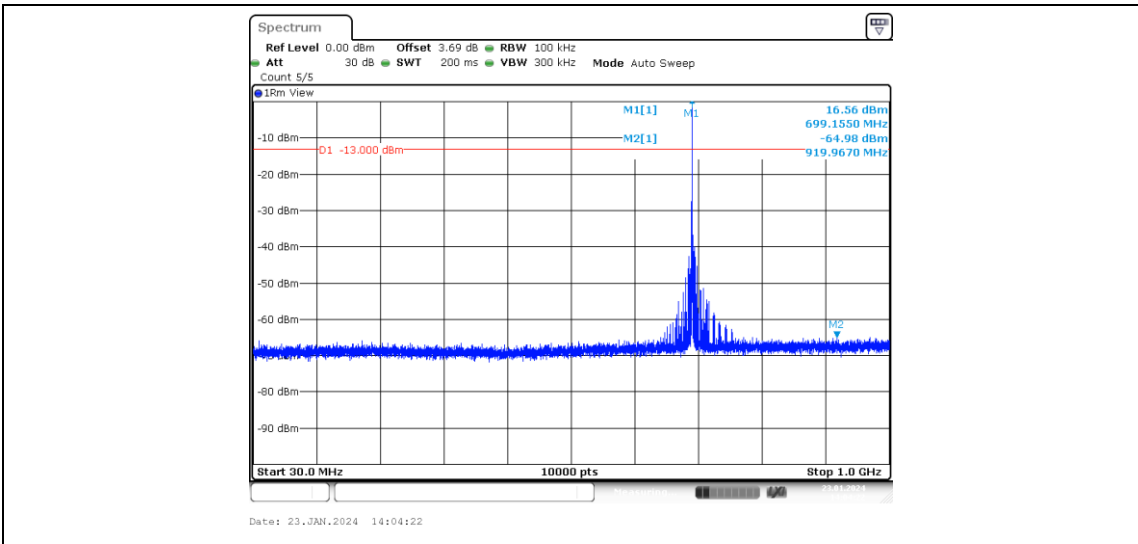
Band12-Stand-Alone-NaN-QPSK-23011-1@0-3.75kHz-1000-10000--50.3--13-PASS



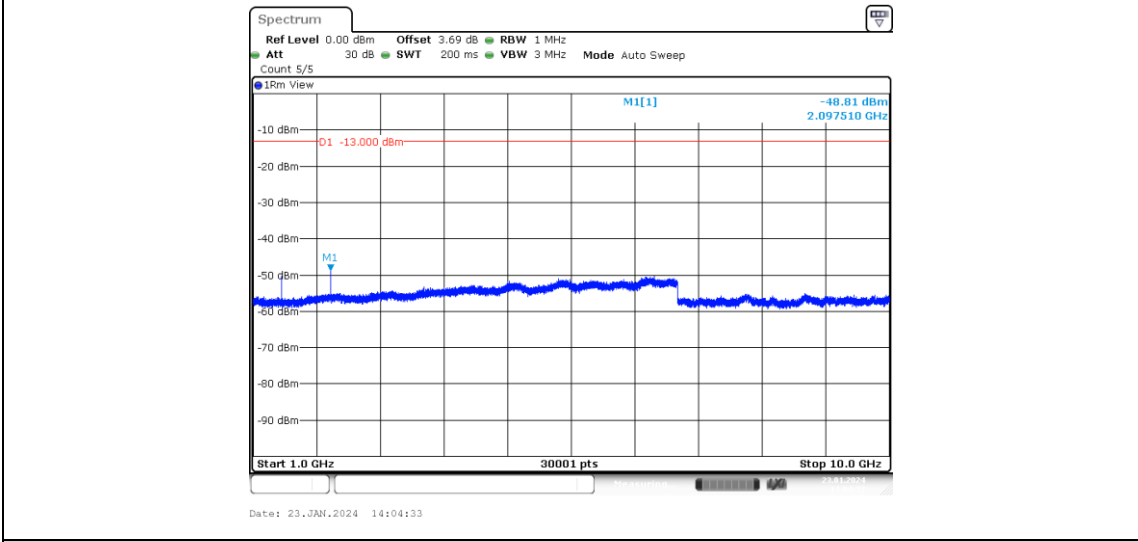
Band12-Stand-Alone-NaN-QPSK-23011-1@47-3.75kHz-0.009-0.15--76.99--33-PASS



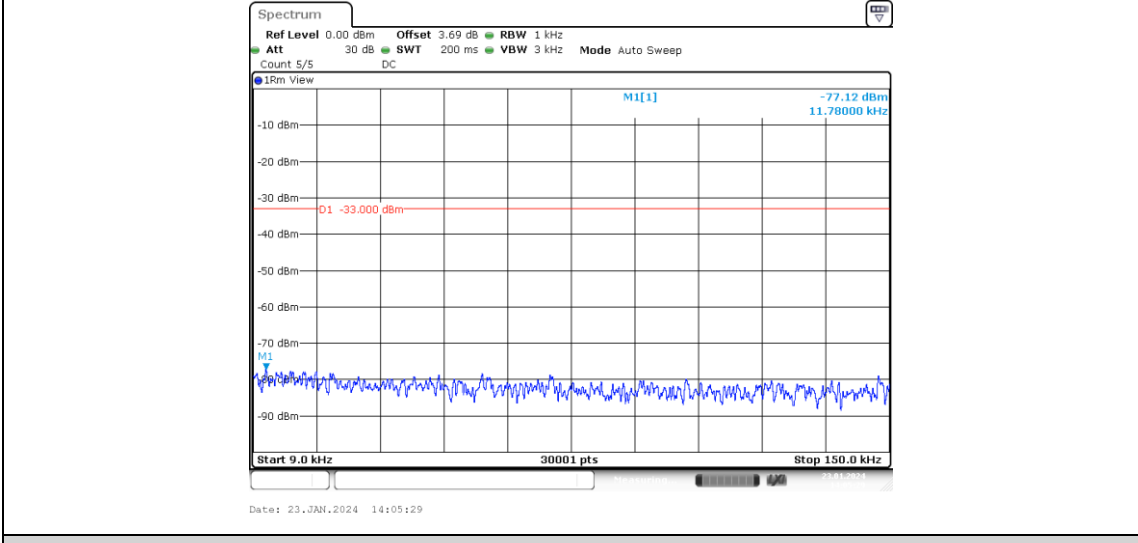
Band12-Stand-Alone-NaN-QPSK-23011-1@47-3.75kHz-0.15-30--74.01--23-PASS



Band12-Stand-Alone-NaN-QPSK-23011-1 @ 47-3.75kHz-30-1000--64.98--13-PASS

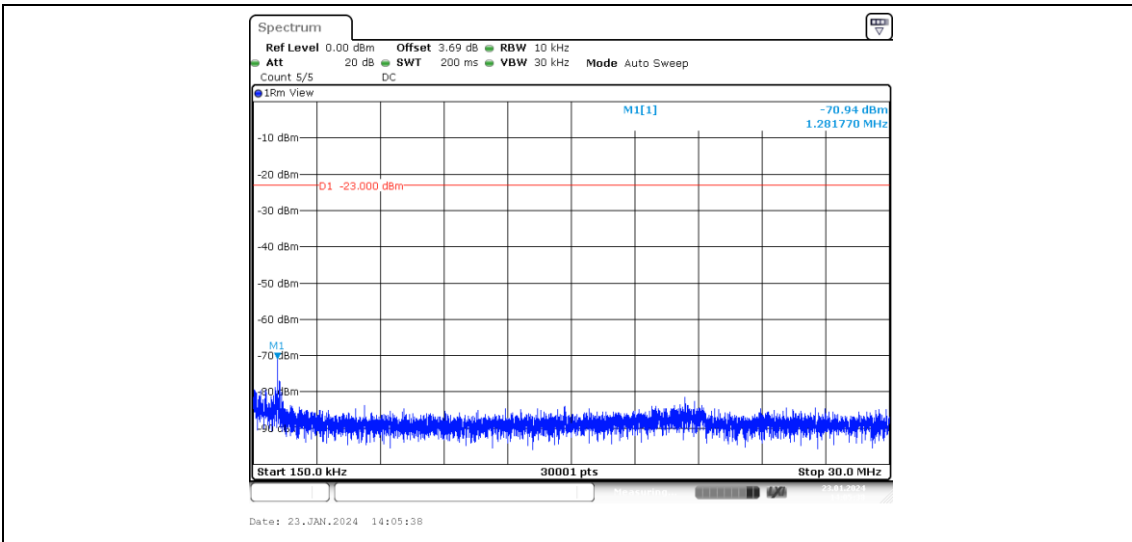


Band12-Stand-Alone-NaN-QPSK-23011-1 @ 47-3.75kHz-1000-10000--48.81--13-PASS

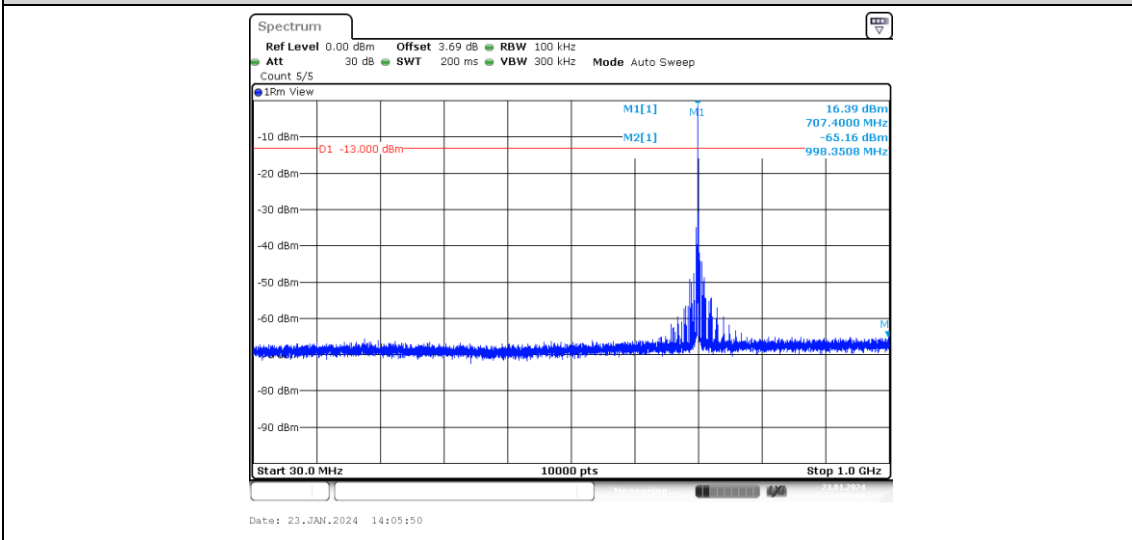


Band12-Stand-Alone-NaN-QPSK-23095-1 @ 0-3.75kHz-0.009-0.15--77.12--33-PASS

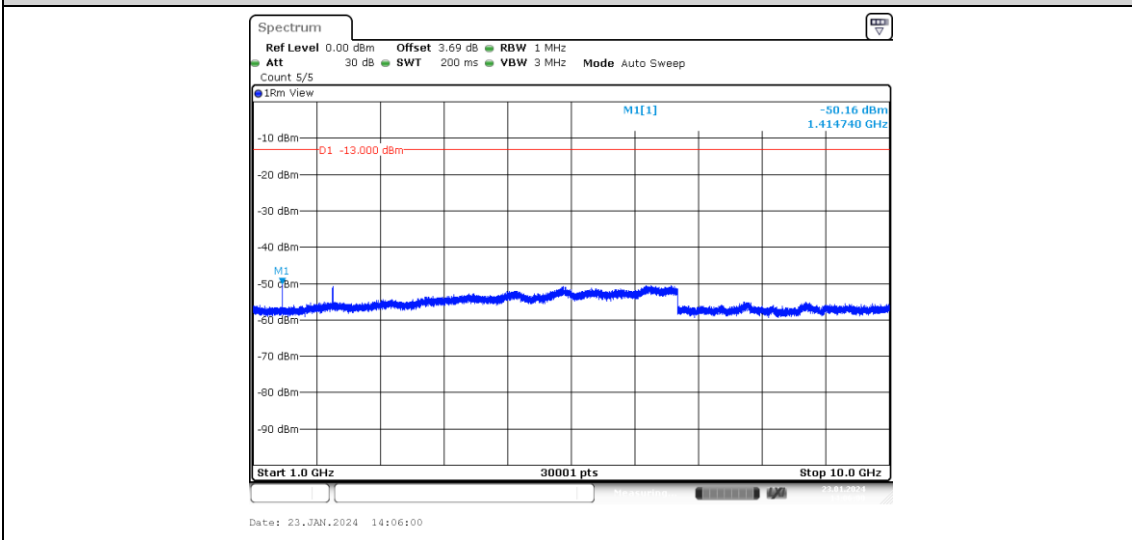




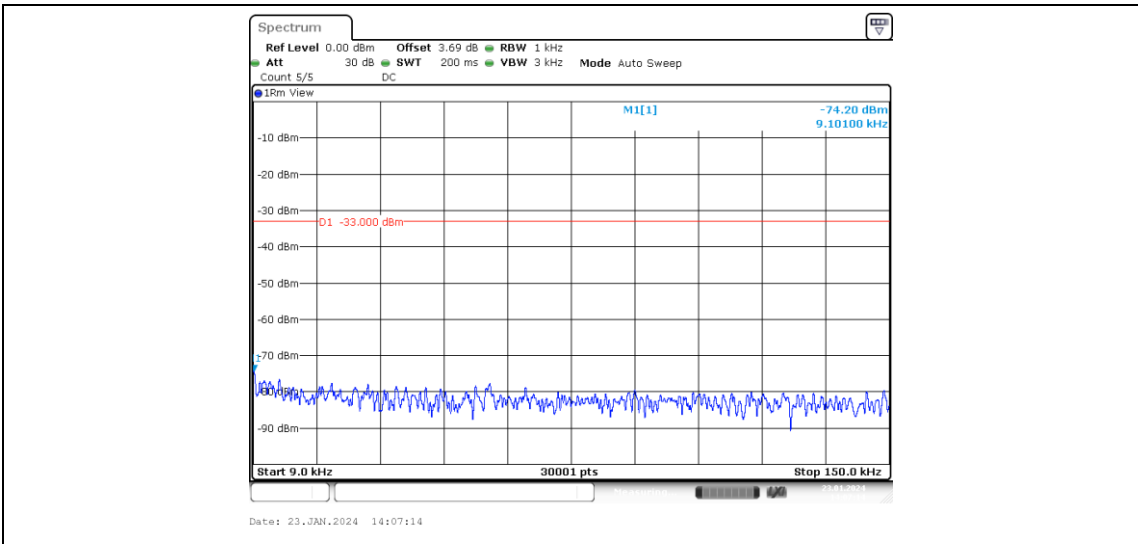
Band12-Stand-Alone-NaN-QPSK-23095-1 @0-3.75kHz-0.15-30--70.94--23-PASS



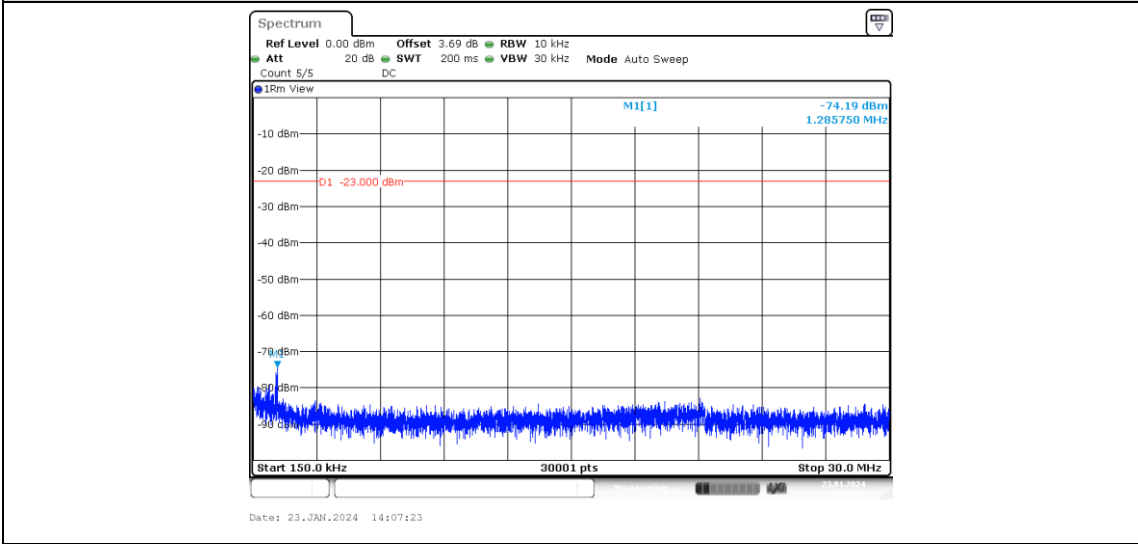
Band12-Stand-Alone-NaN-QPSK-23095-1 @0-3.75kHz-30-1000--65.16--13-PASS



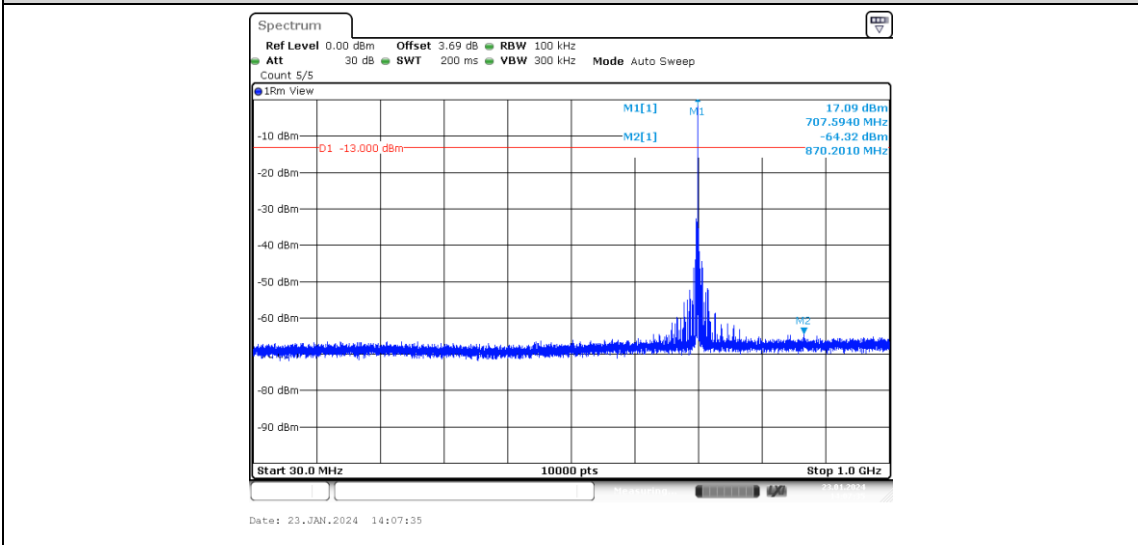
Band12-Stand-Alone-NaN-QPSK-23095-1 @0-3.75kHz-1000-10000--50.16--13-PASS



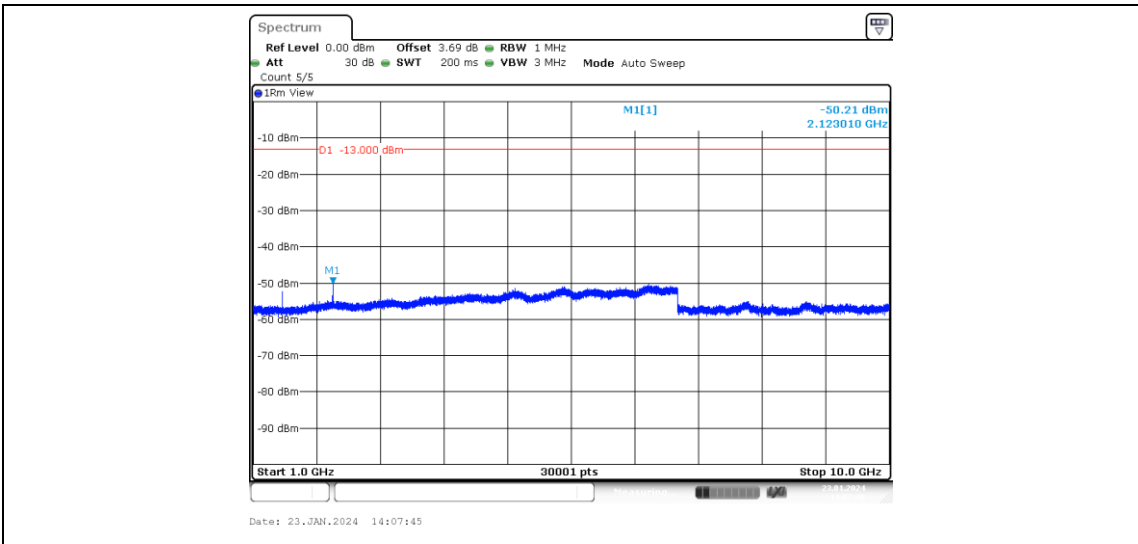
Band12-Stand-Alone-NaN-QPSK-23095-1 @47-3.75kHz-0.009-0.15--74.2--33-PASS



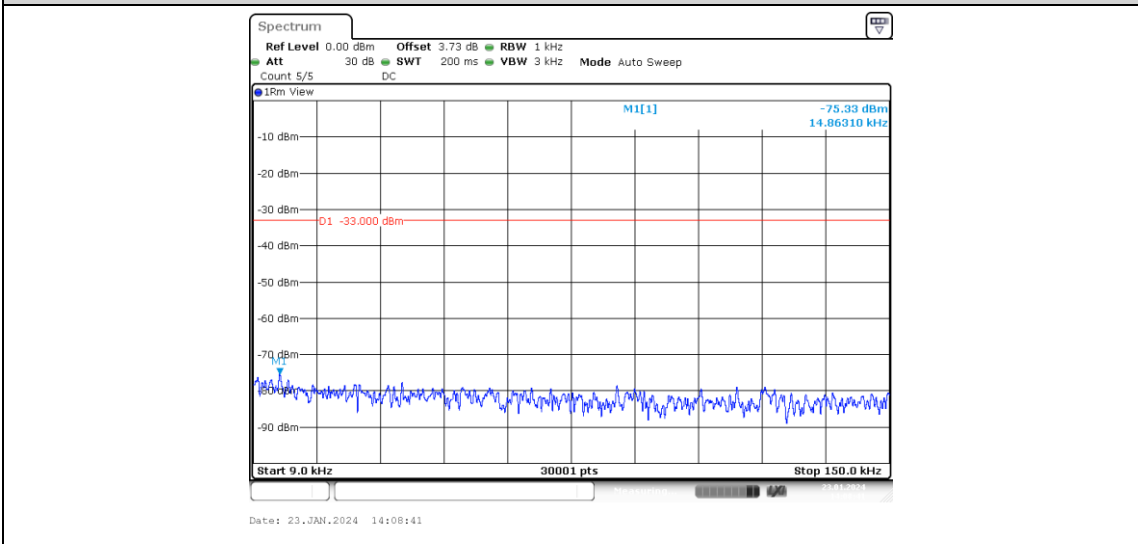
Band12-Stand-Alone-NaN-QPSK-23095-1 @47-3.75kHz-0.15-30--74.19--23-PASS



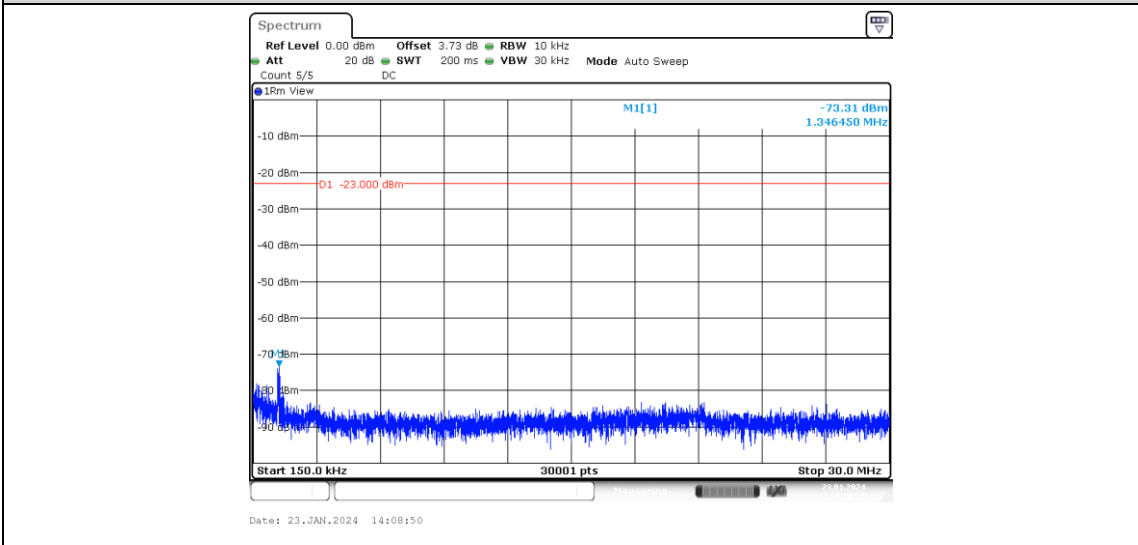
Band12-Stand-Alone-NaN-QPSK-23095-1 @47-3.75kHz-30-1000--64.32--13-PASS



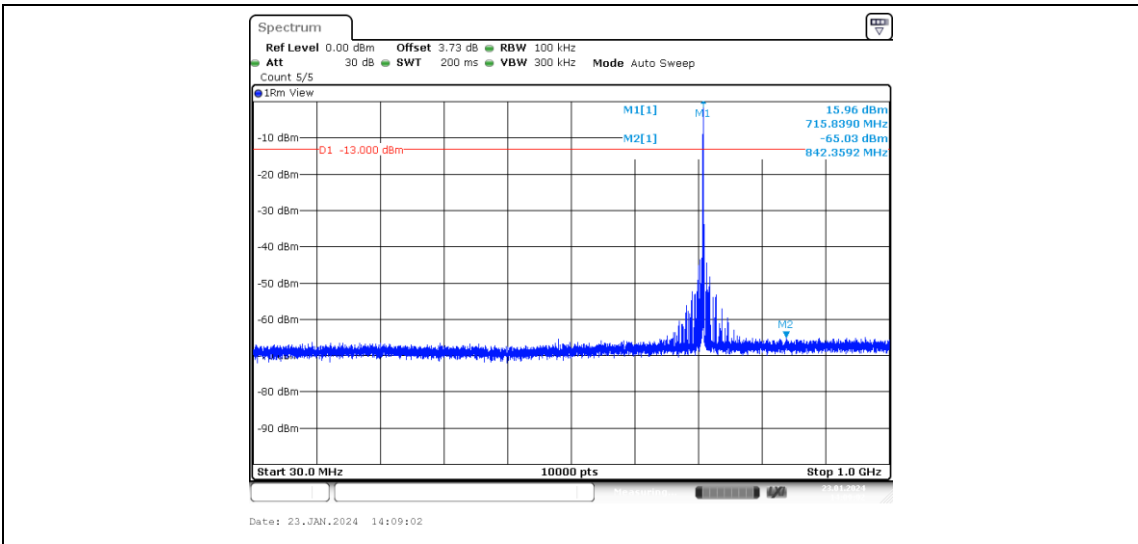
Band12-Stand-Alone-NaN-QPSK-23095-1 @ 47-3.75kHz-1000-10000--50.21--13-PASS



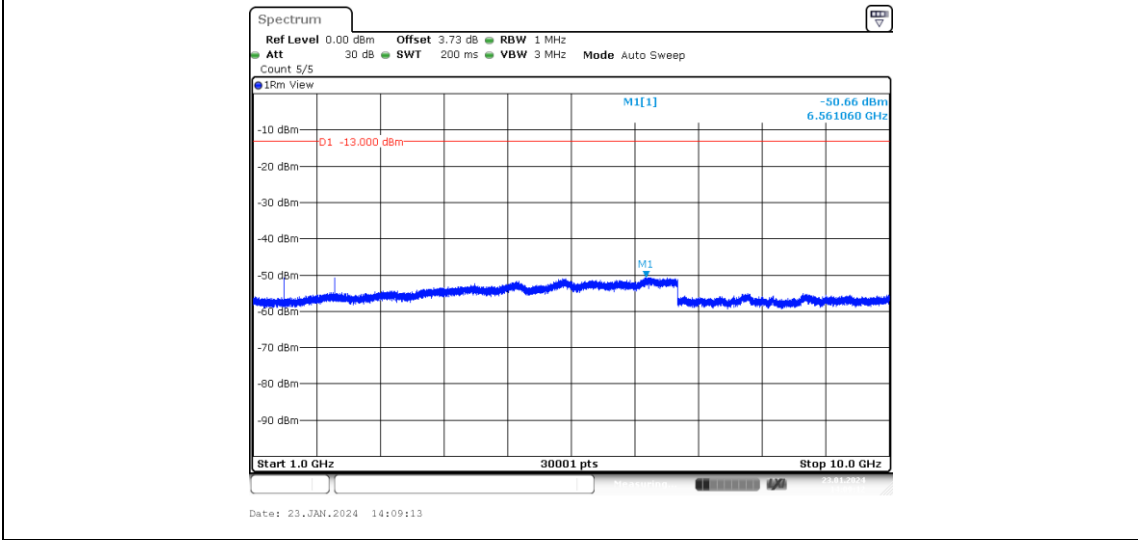
Band12-Stand-Alone-NaN-QPSK-23179-1 @ 0-3.75kHz-0.009-0.15--75.33--33-PASS



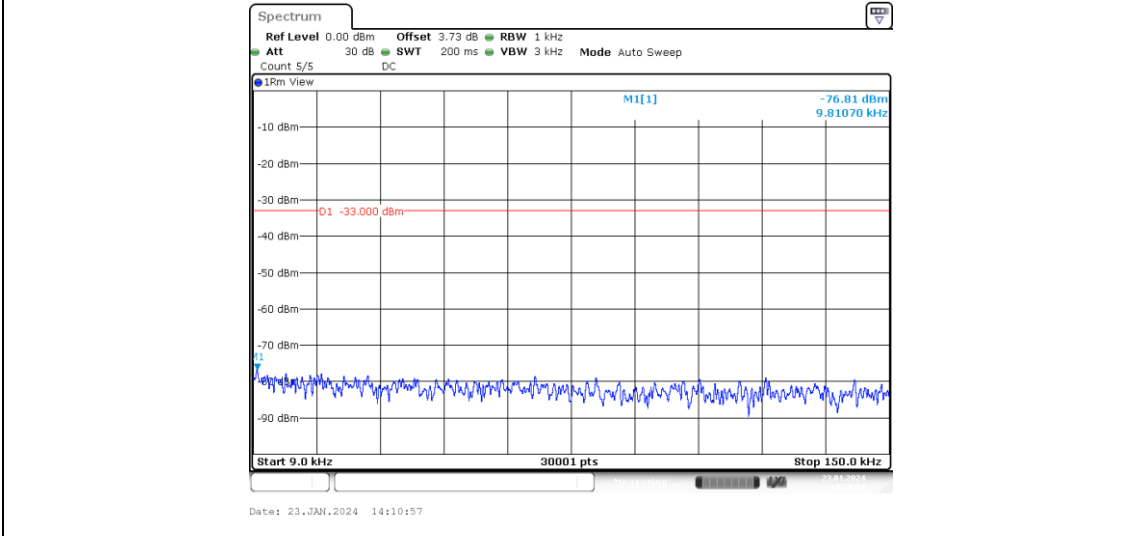
Band12-Stand-Alone-NaN-QPSK-23179-1 @ 0-3.75kHz-0.15-30--73.31--23-PASS



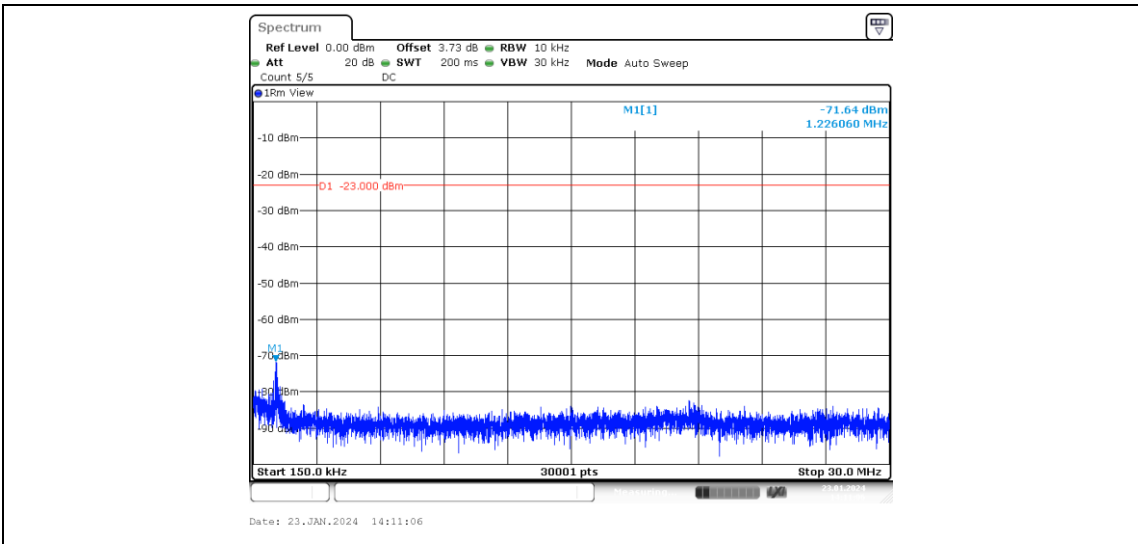
Band12-Stand-Alone-NaN-QPSK-23179-1@0-3.75kHz-30-1000--65.03--13-PASS



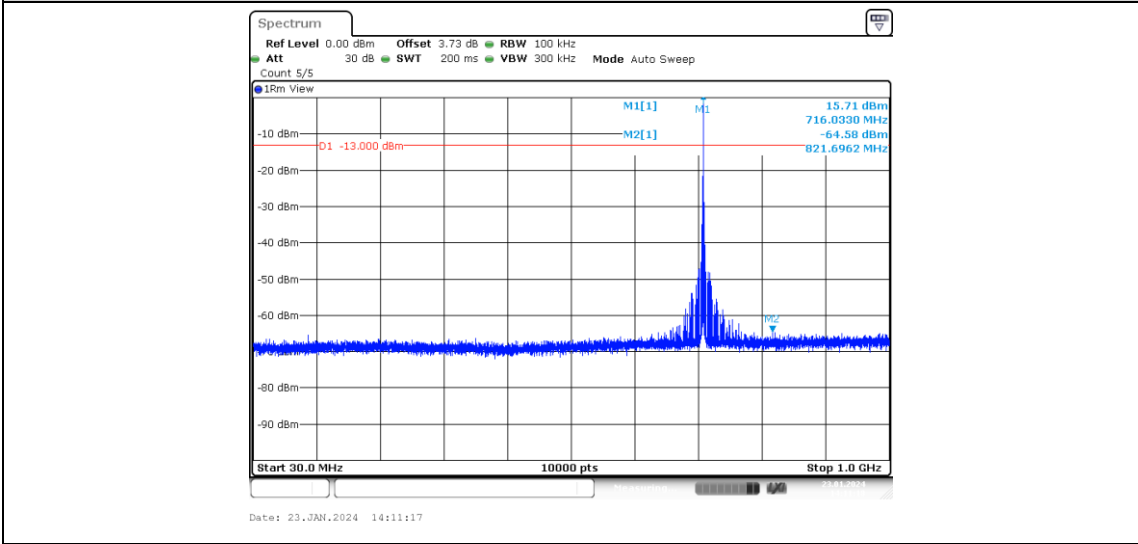
Band12-Stand-Alone-NaN-QPSK-23179-1@0-3.75kHz-1000-10000--50.66--13-PASS



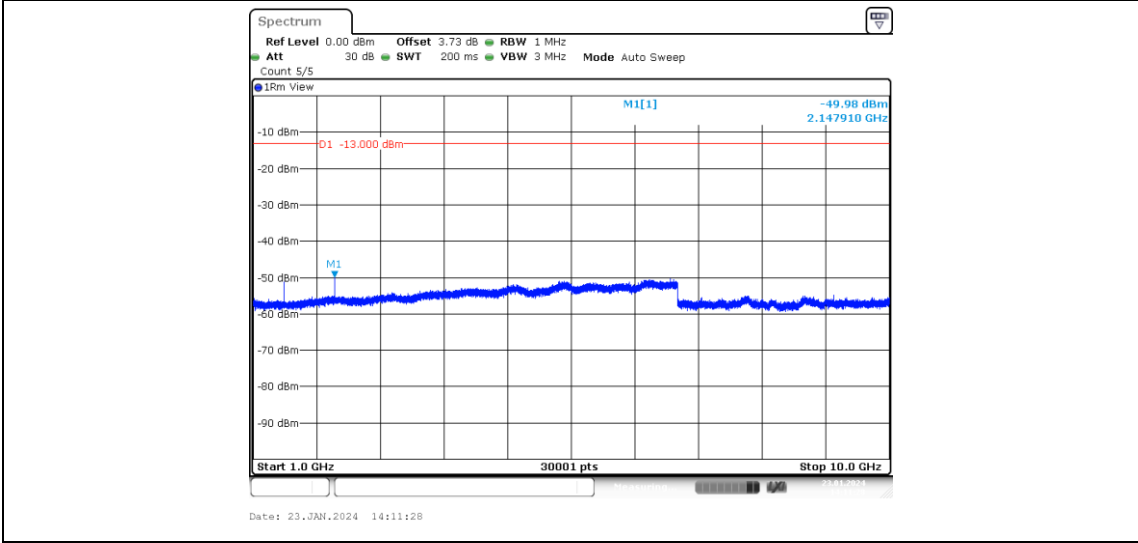
Band12-Stand-Alone-NaN-QPSK-23179-1@47-3.75kHz-0.009-0.15--76.81--33-PASS



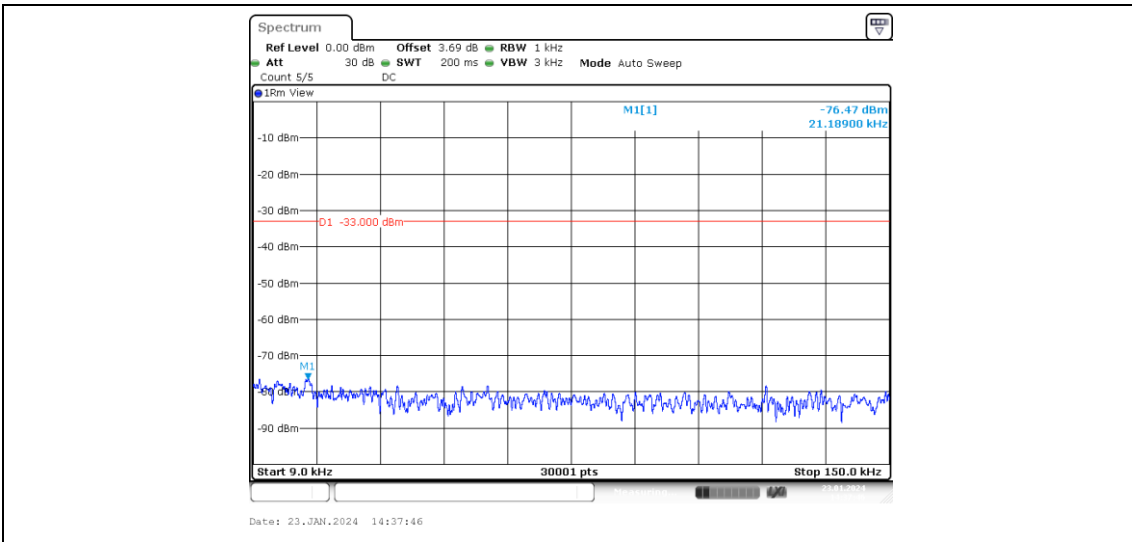
Band12-Stand-Alone-NaN-QPSK-23179-1@47-3.75kHz-0.15-30--71.64--23-PASS



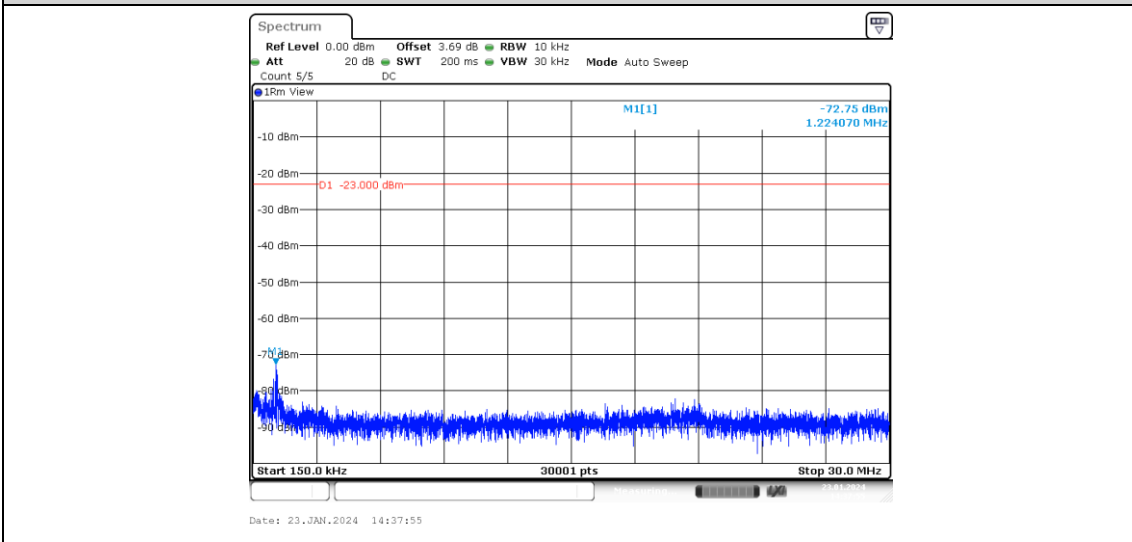
Band12-Stand-Alone-NaN-QPSK-23179-1@47-3.75kHz-30-1000--64.58--13-PASS



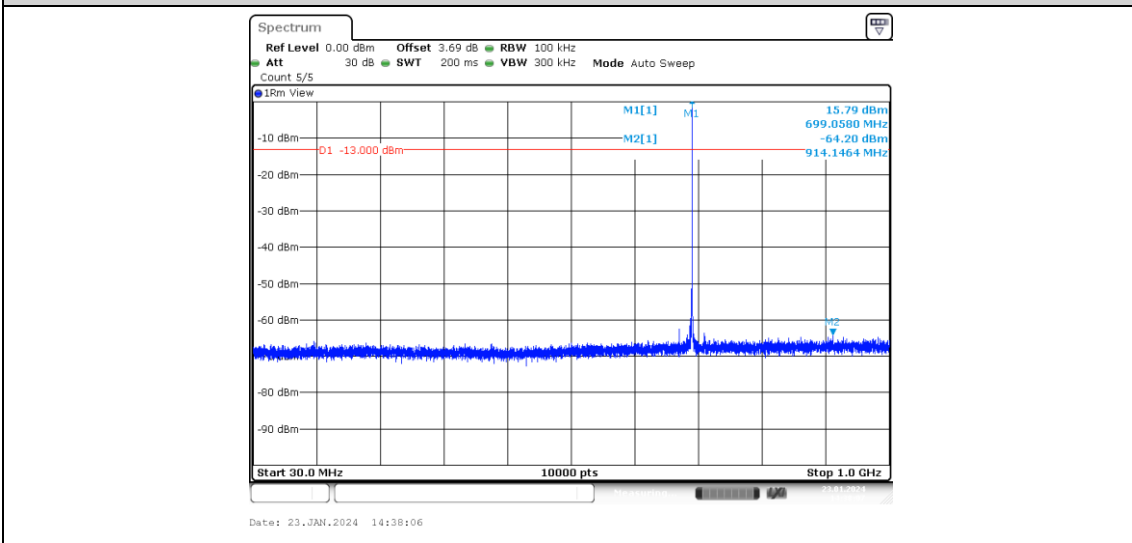
Band12-Stand-Alone-NaN-QPSK-23179-1@47-3.75kHz-1000-10000--49.98--13-PASS



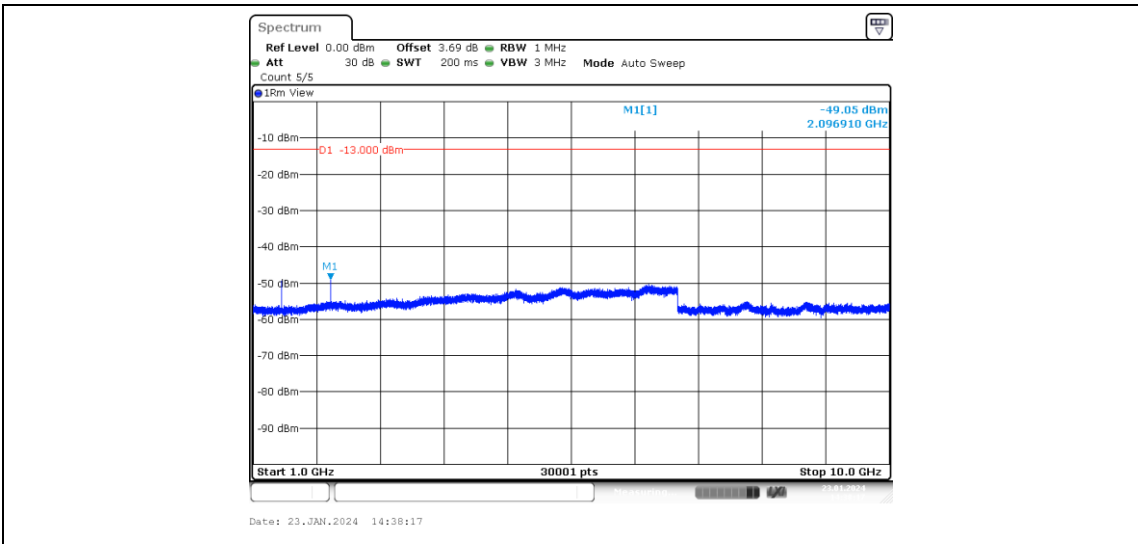
Band12-Stand-Alone-NaN-BPSK-23011-1@0-15kHz-0.009-0.15--76.47--33-PASS



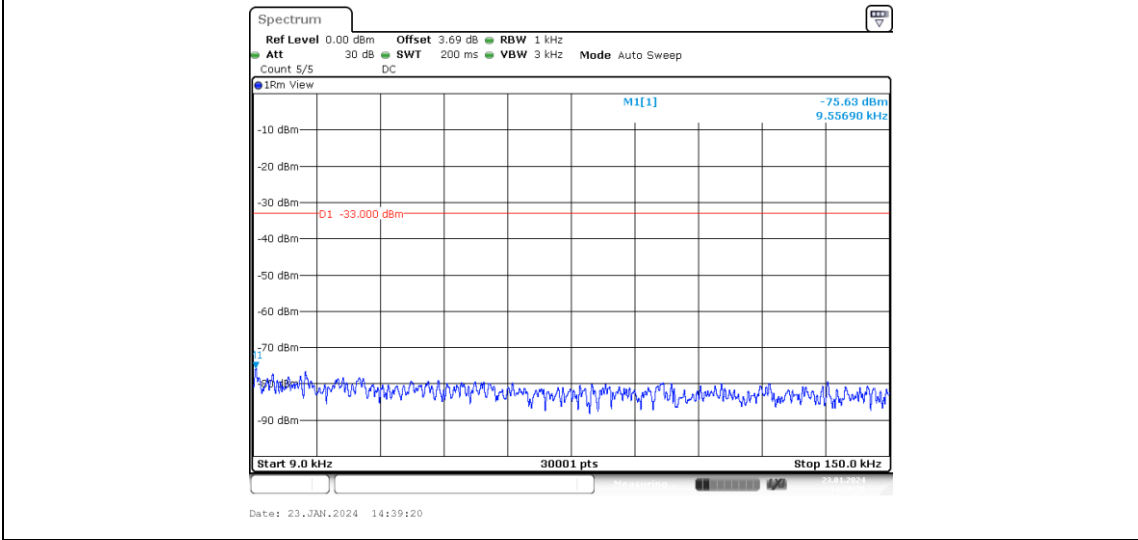
Band12-Stand-Alone-NaN-BPSK-23011-1@0-15kHz-0.15-30--72.75--23-PASS



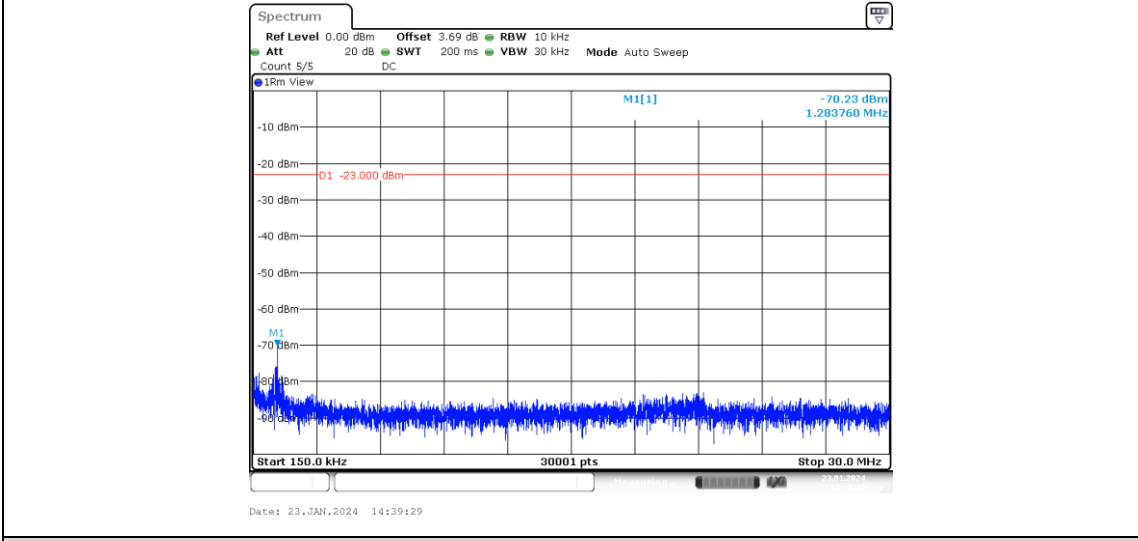
Band12-Stand-Alone-NaN-BPSK-23011-1@0-15kHz-30-1000--64.2--13-PASS



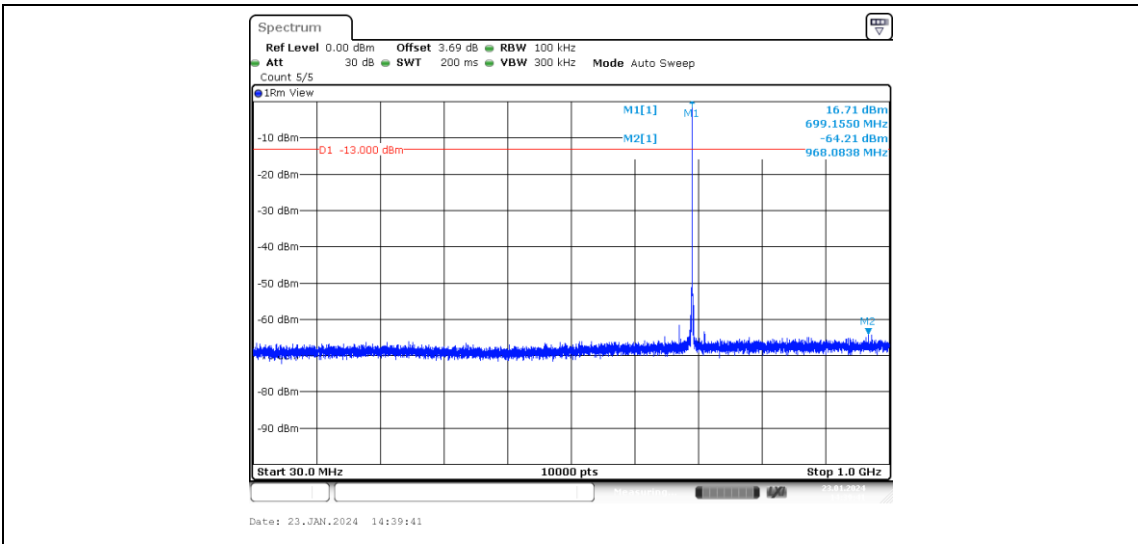
Band12-Stand-Alone-NaN-BPSK-23011-1 @0-15kHz-1000-10000--49.05--13-PASS



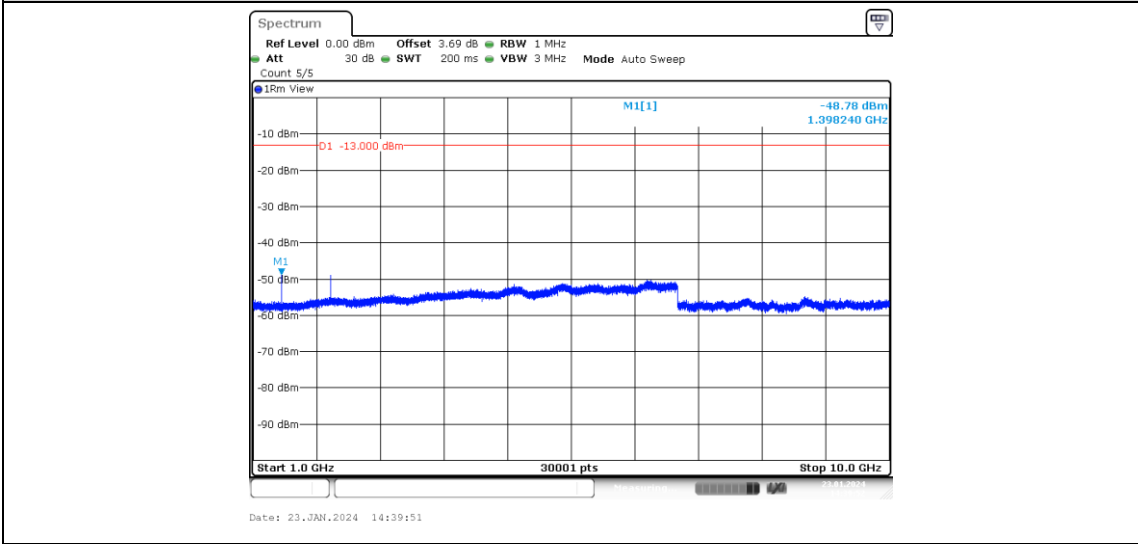
Band12-Stand-Alone-NaN-BPSK-23011-1 @11-15kHz-0.009-0.15--75.63--33-PASS



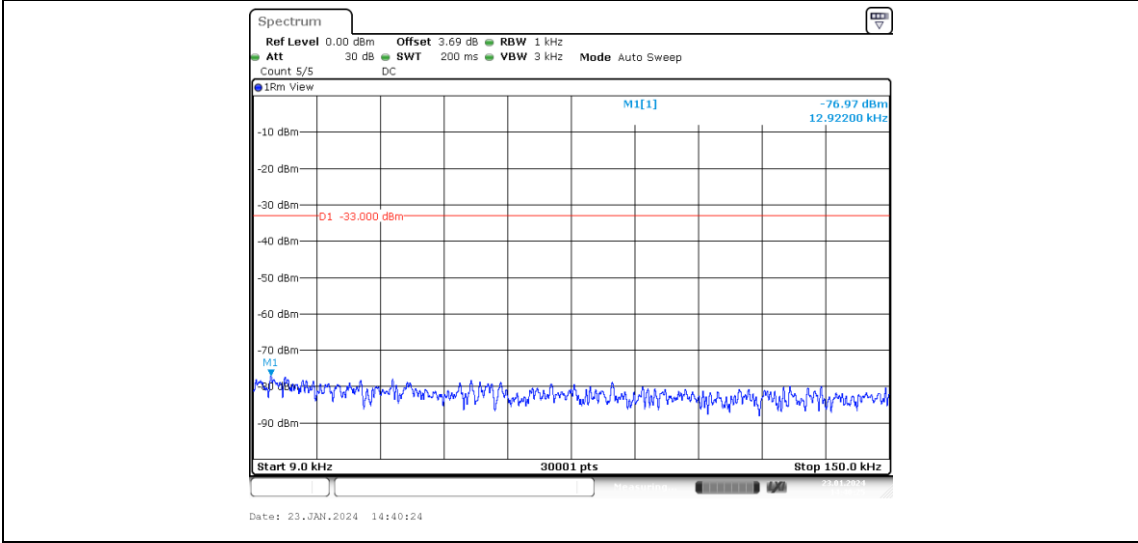
Band12-Stand-Alone-NaN-BPSK-23011-1 @11-15kHz-0.15-30--70.23--23-PASS



Band12-Stand-Alone-NaN-BPSK-23011-1 @ 11-15kHz-30-1000--64.21--13-PASS

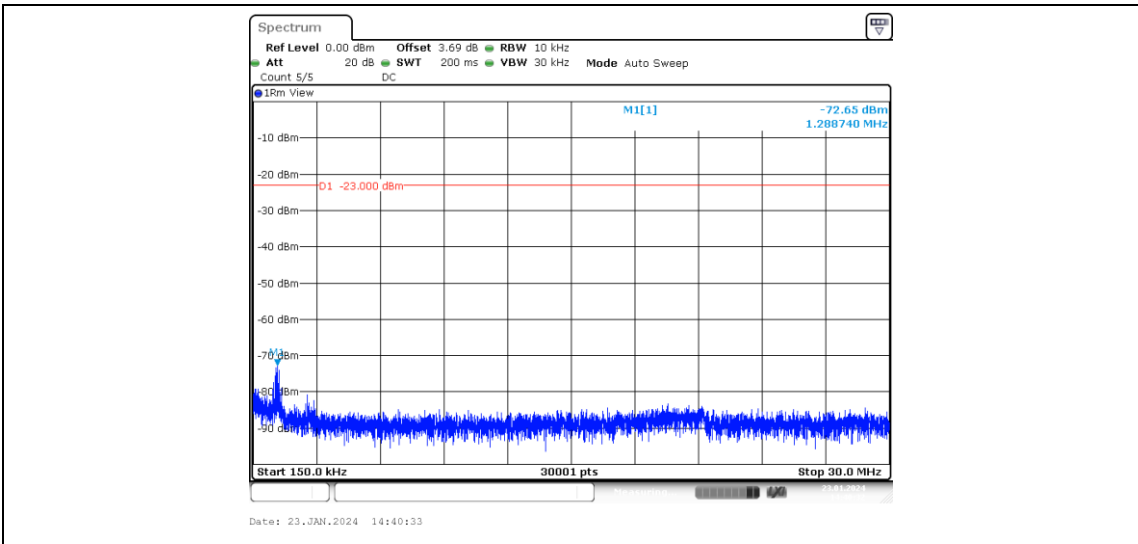


Band12-Stand-Alone-NaN-BPSK-23011-1 @ 11-15kHz-1000-10000--48.78--13-PASS

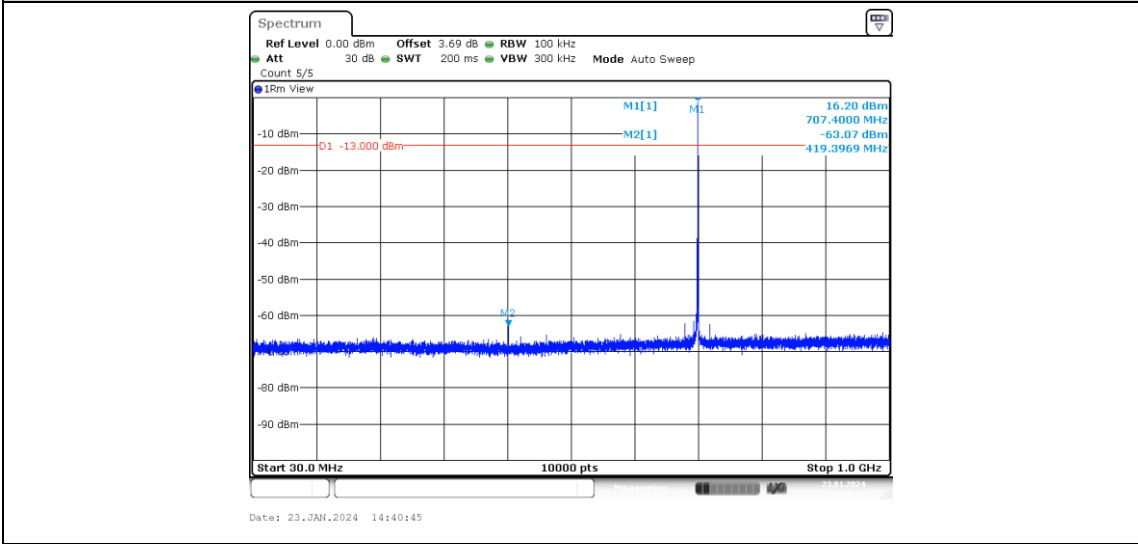


Band12-Stand-Alone-NaN-BPSK-23095-1 @ 0-15kHz-0.009-0.15--76.97--33-PASS

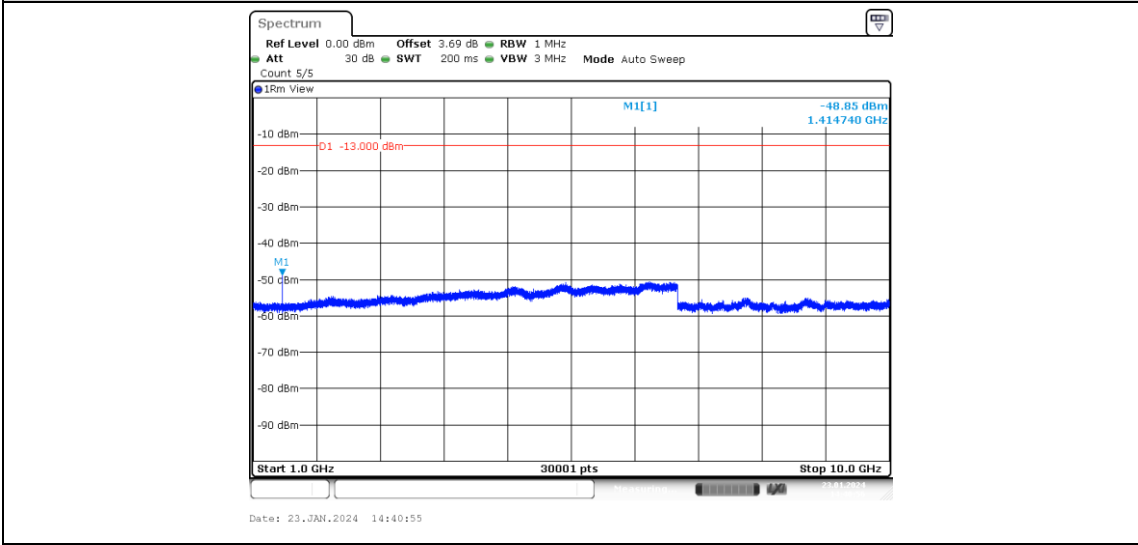




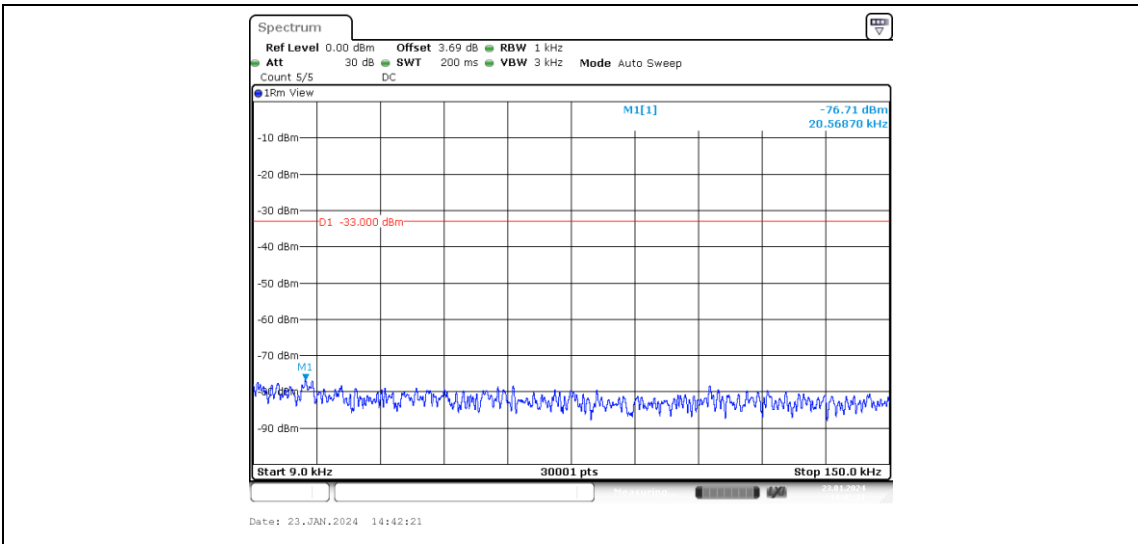
Band12-Stand-Alone-NaN-BPSK-23095-1 @0-15kHz-0.15-30--72.65--23-PASS



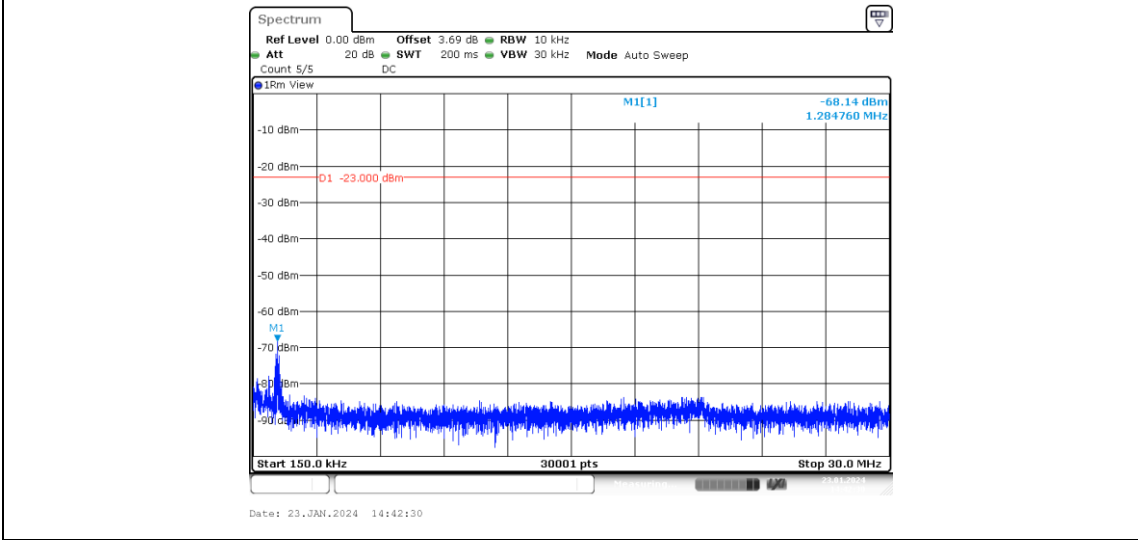
Band12-Stand-Alone-NaN-BPSK-23095-1 @0-15kHz-30-1000--63.07--13-PASS



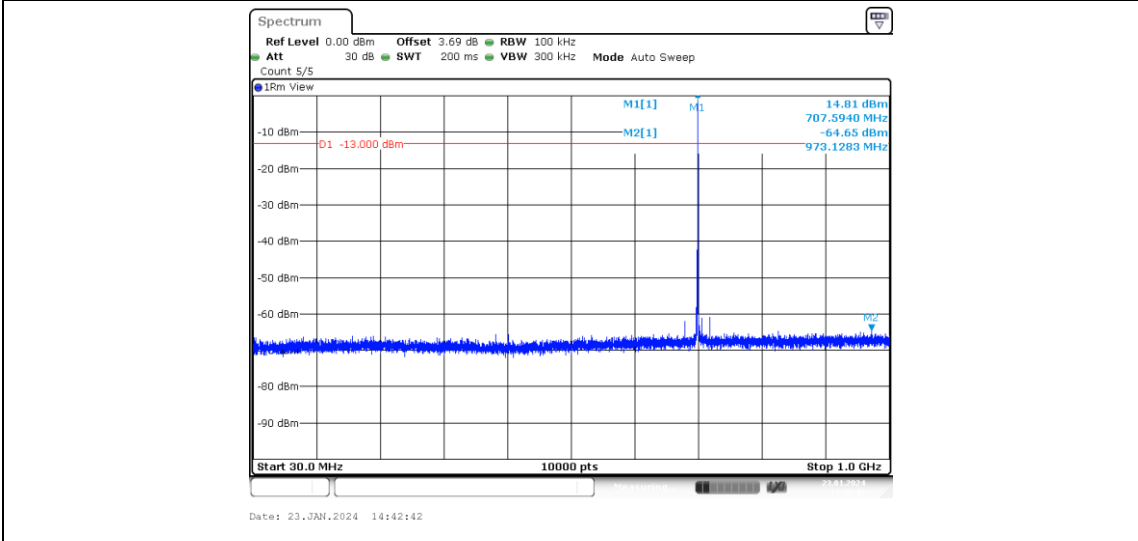
Band12-Stand-Alone-NaN-BPSK-23095-1 @0-15kHz-1000-10000--48.85--13-PASS



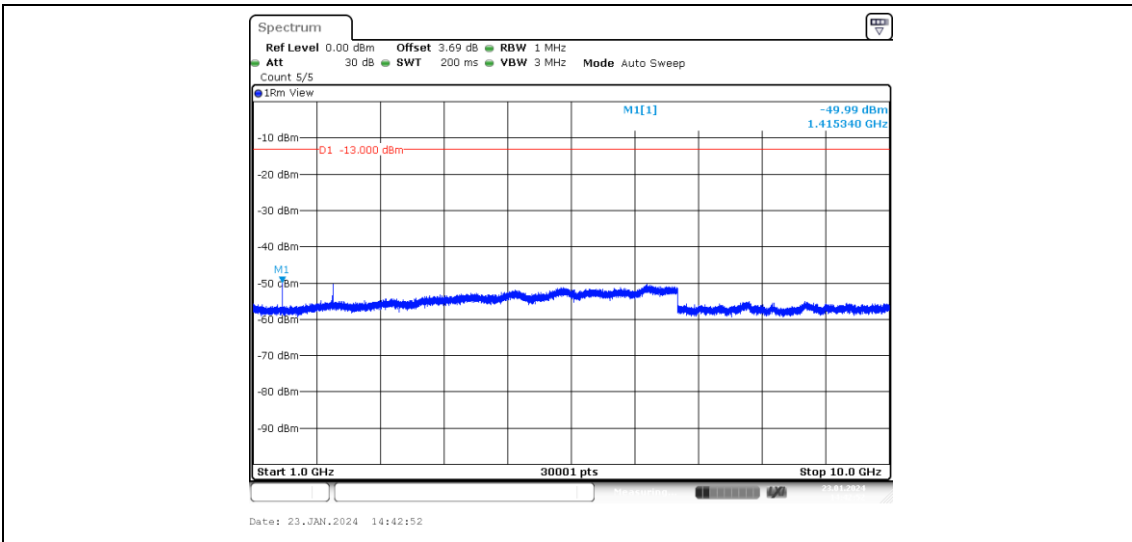
Band12-Stand-Alone-NaN-BPSK-23095-1 @ 11-15kHz-0.009-0.15--76.71--33-PASS



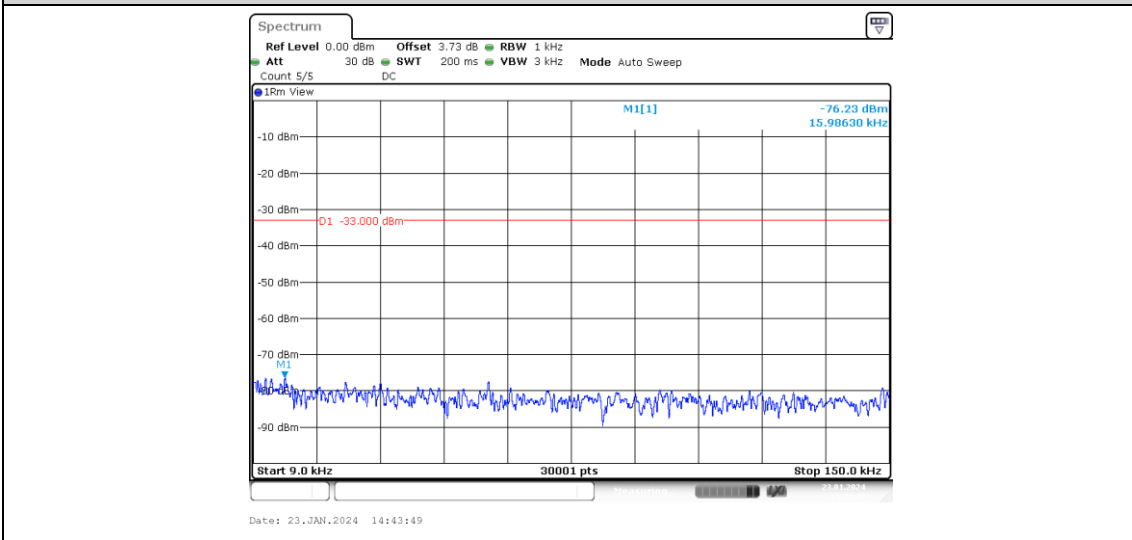
Band12-Stand-Alone-NaN-BPSK-23095-1 @ 11-15kHz-0.15-30--68.14--23-PASS



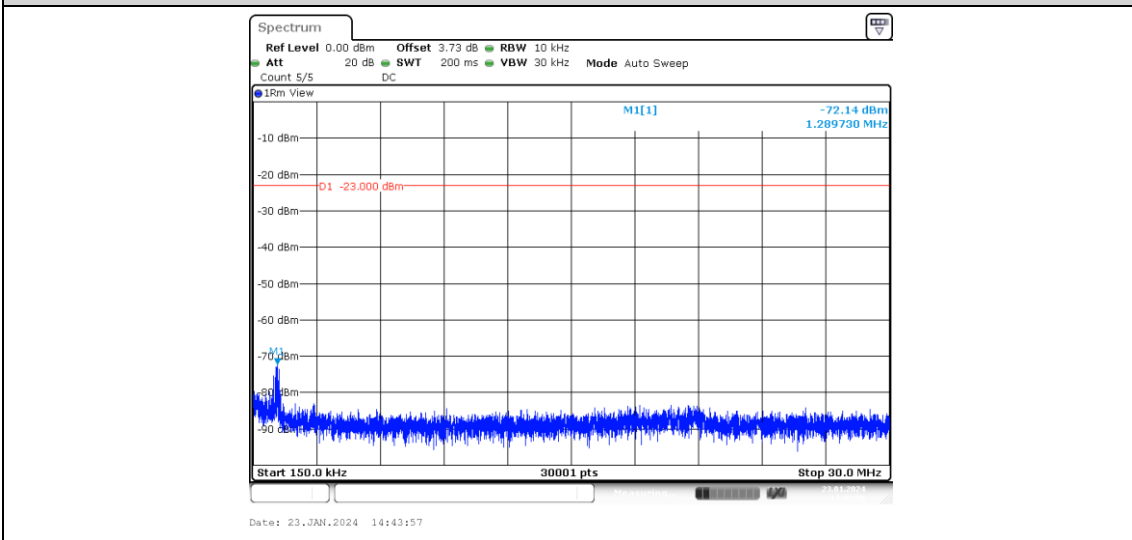
Band12-Stand-Alone-NaN-BPSK-23095-1 @ 11-15kHz-30-1000--64.65--13-PASS



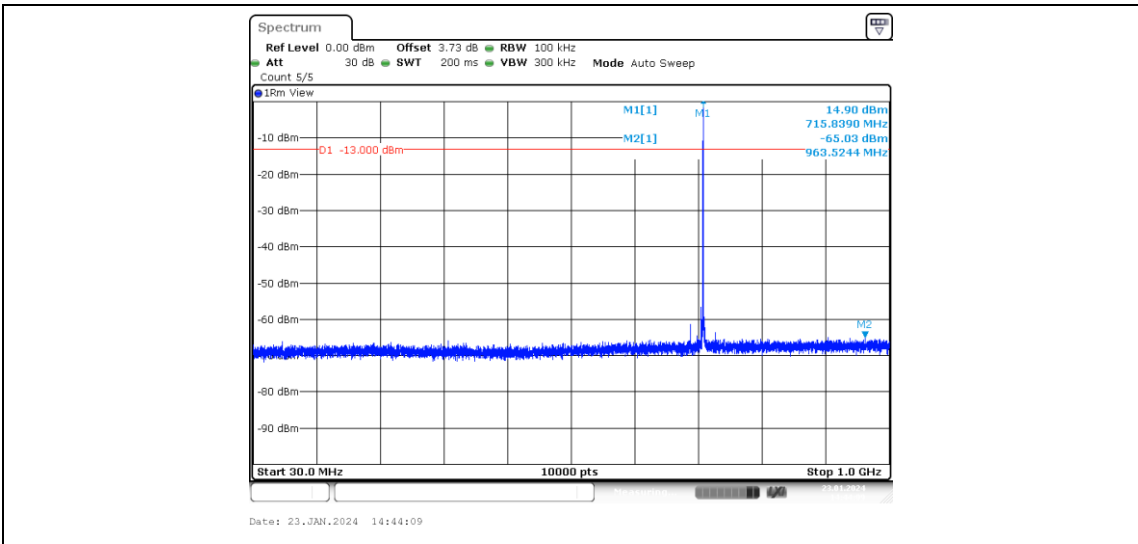
Band12-Stand-Alone-NaN-BPSK-23095-1 @ 11-15kHz-1000-10000--49.99--13-PASS



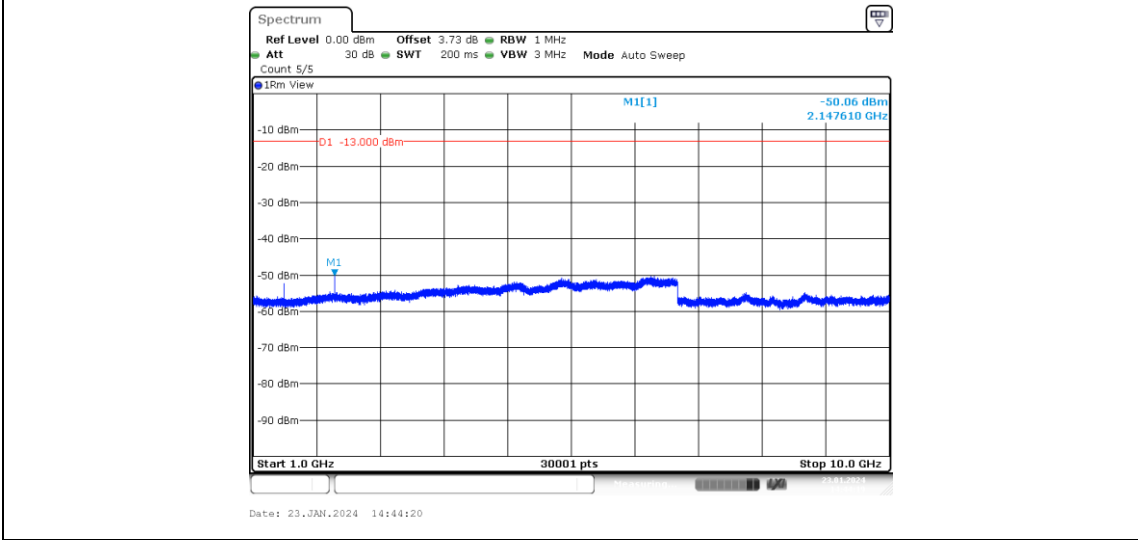
Band12-Stand-Alone-NaN-BPSK-23179-1 @ 0-15kHz-0.009-0.15--76.23--33-PASS



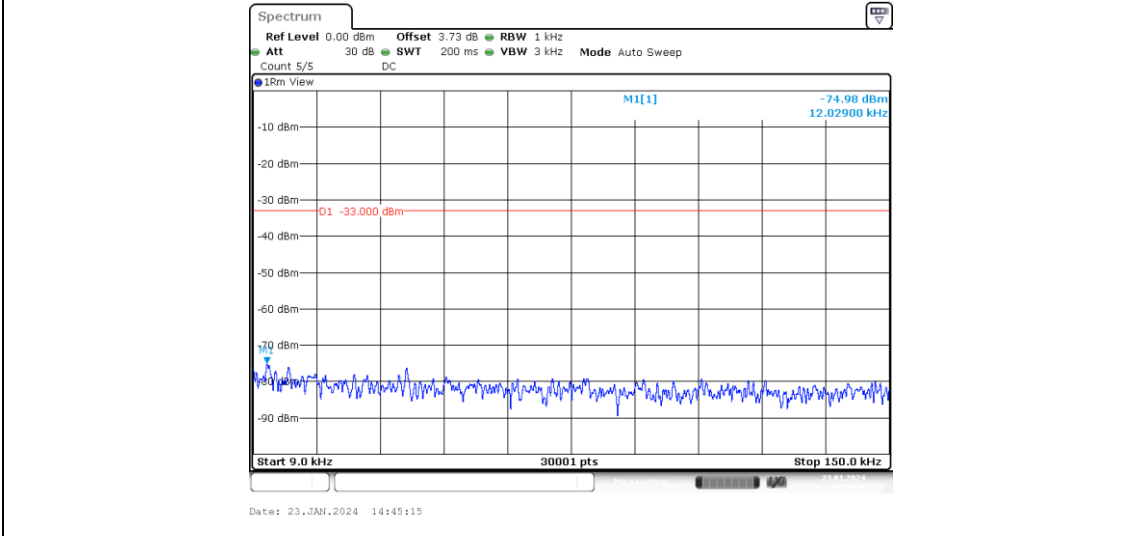
Band12-Stand-Alone-NaN-BPSK-23179-1 @ 0-15kHz-0.15-30--72.14--23-PASS



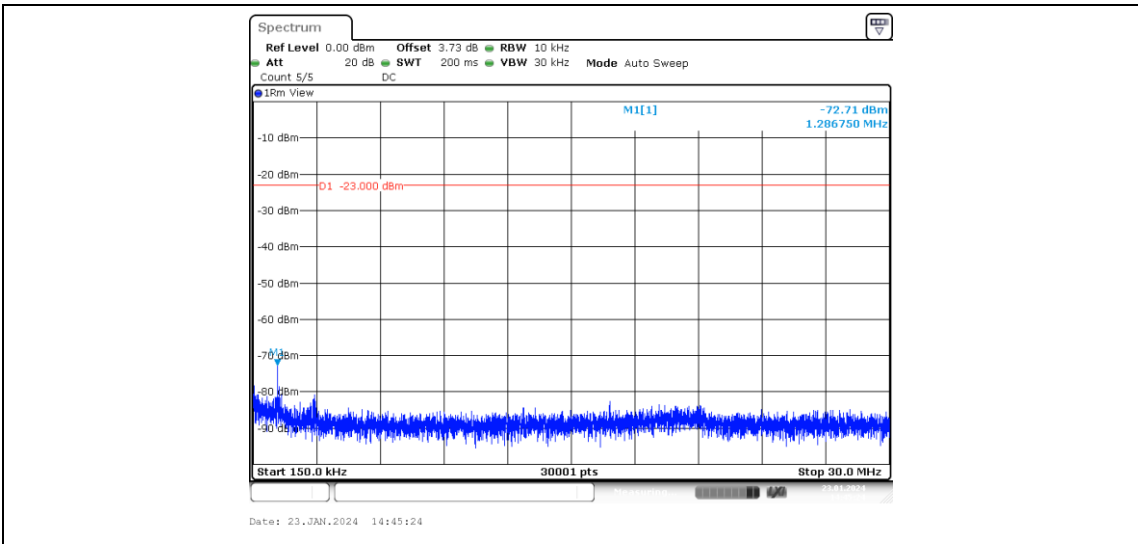
Band12-Stand-Alone-NaN-BPSK-23179-1 @0-15kHz-30-1000--65.03--13-PASS



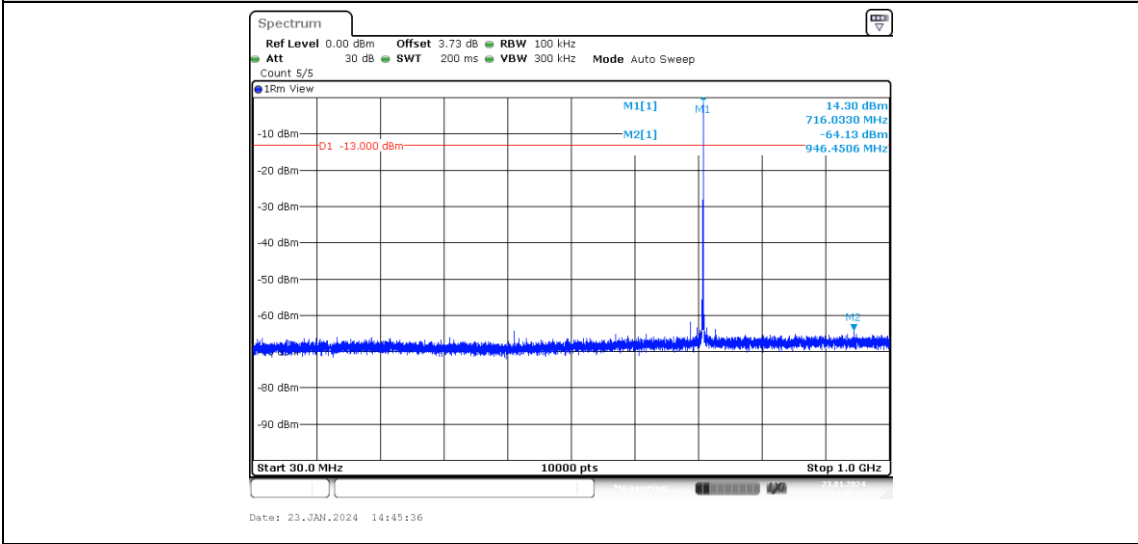
Band12-Stand-Alone-NaN-BPSK-23179-1 @0-15kHz-1000-10000--50.06--13-PASS



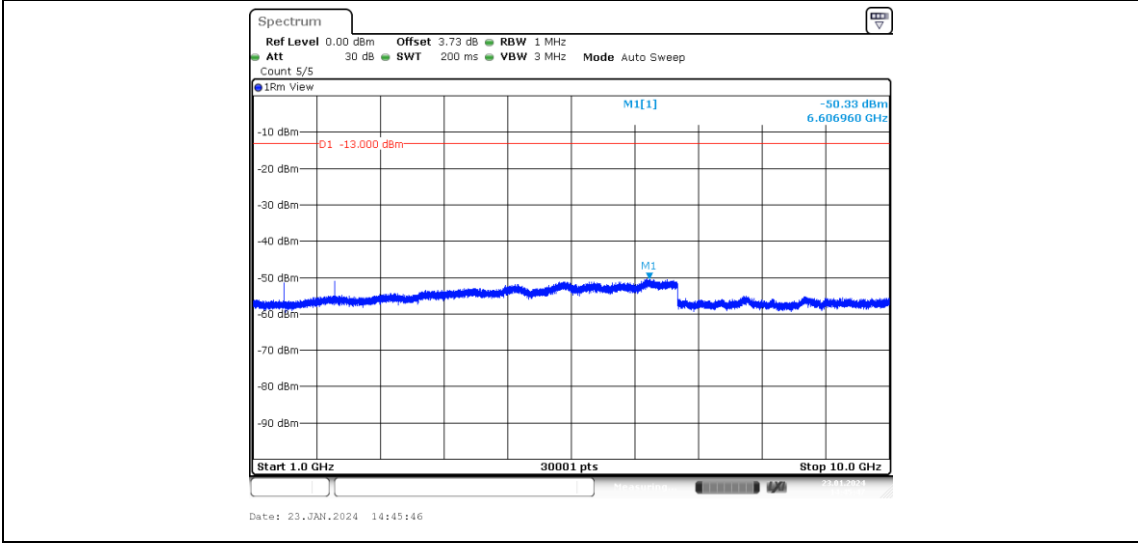
Band12-Stand-Alone-NaN-BPSK-23179-1 @ 11-15kHz-0.009-0.15--74.98--33-PASS



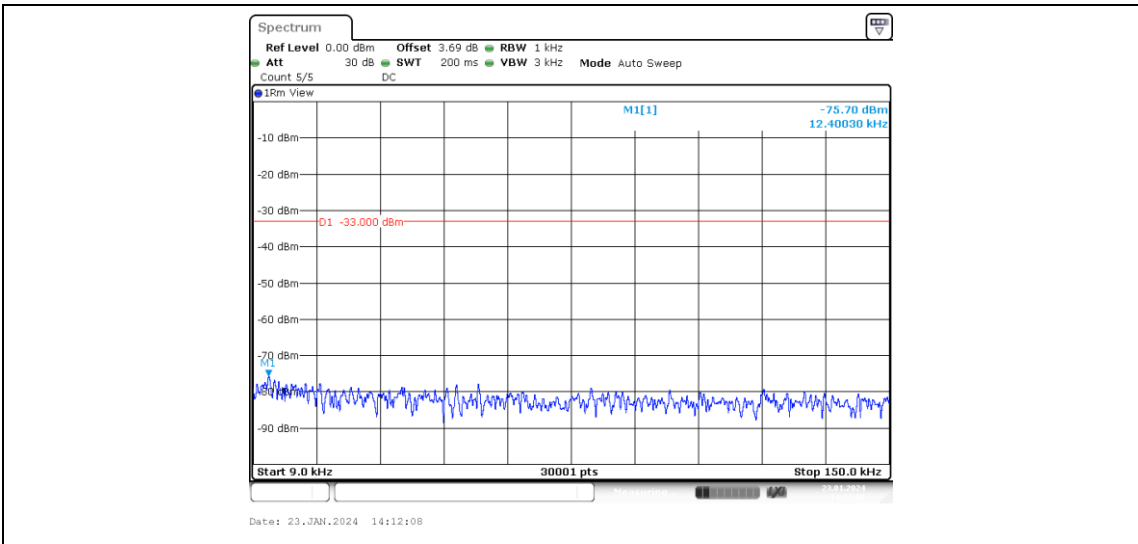
Band12-Stand-Alone-NaN-BPSK-23179-1 @ 11-15kHz-0.15-30--72.71--23-PASS



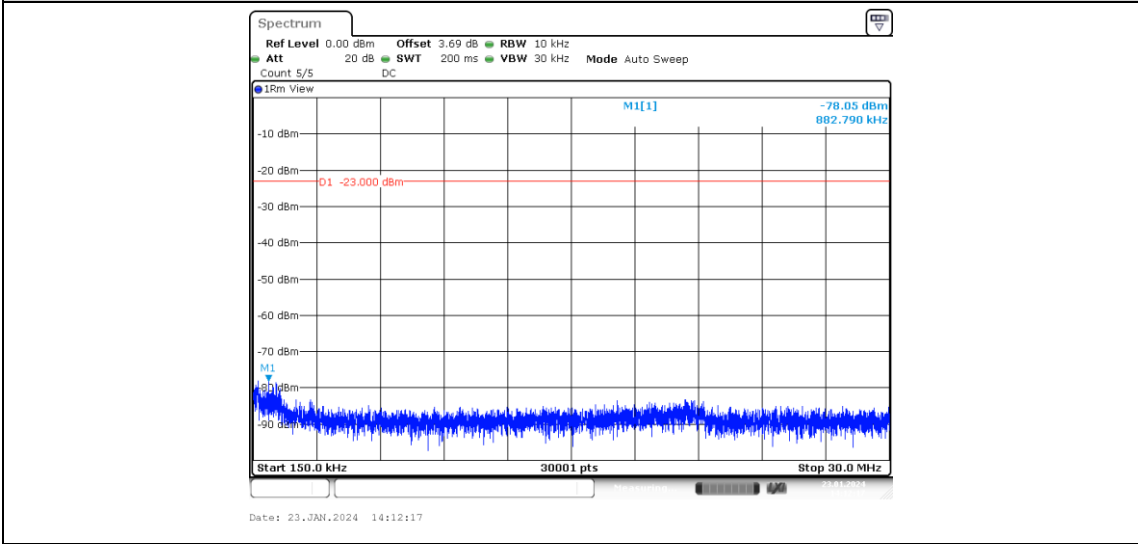
Band12-Stand-Alone-NaN-BPSK-23179-1 @ 11-15kHz-30-1000--64.13--13-PASS



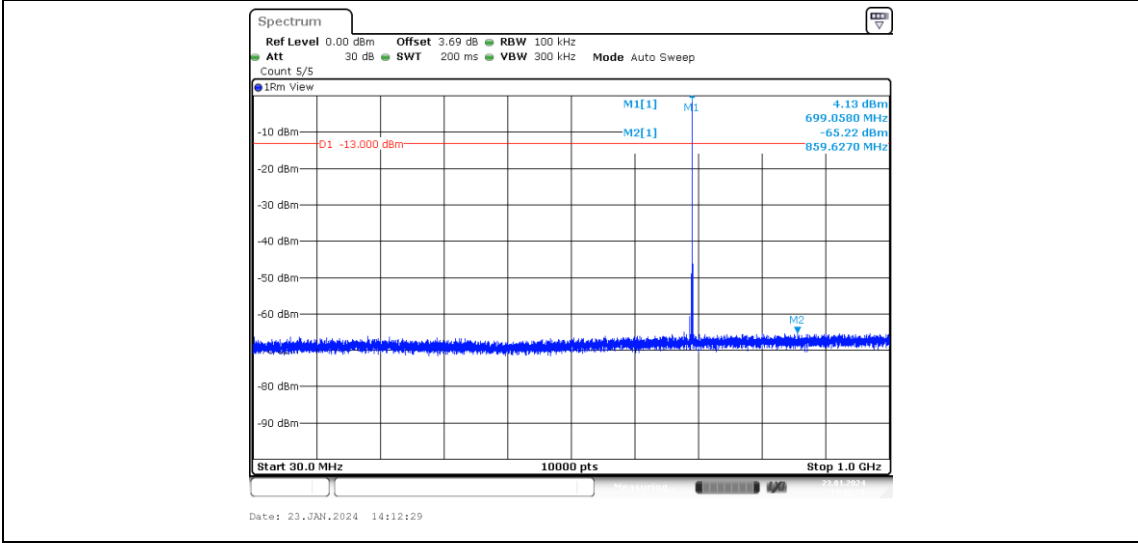
Band12-Stand-Alone-NaN-BPSK-23179-1 @ 11-15kHz-1000-10000--50.33--13-PASS



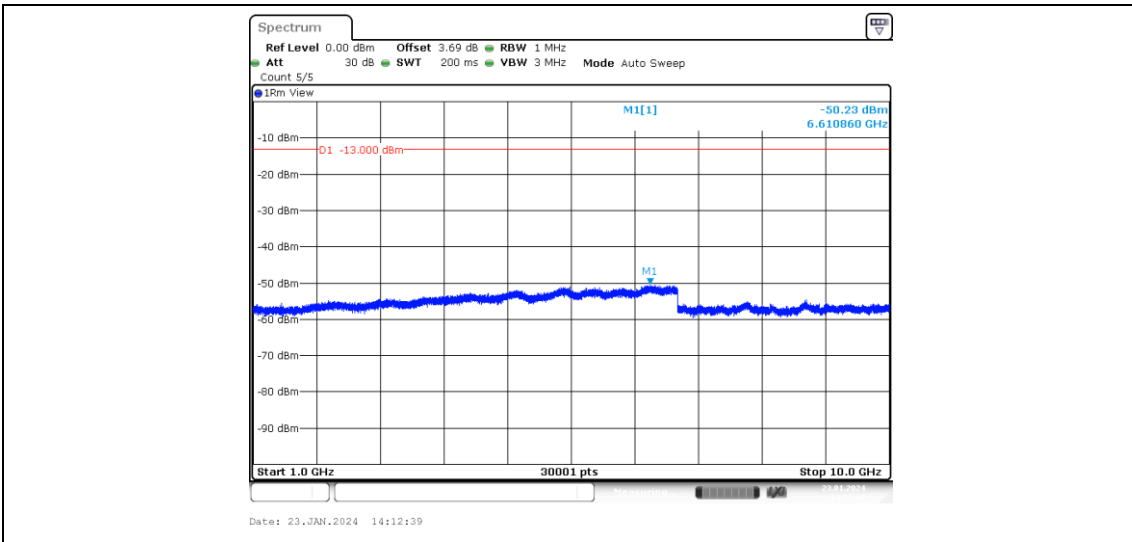
Band12-Stand-Alone-NaN-QPSK-23011-12@0-15kHz-0.009-0.15--75.7--33-PASS



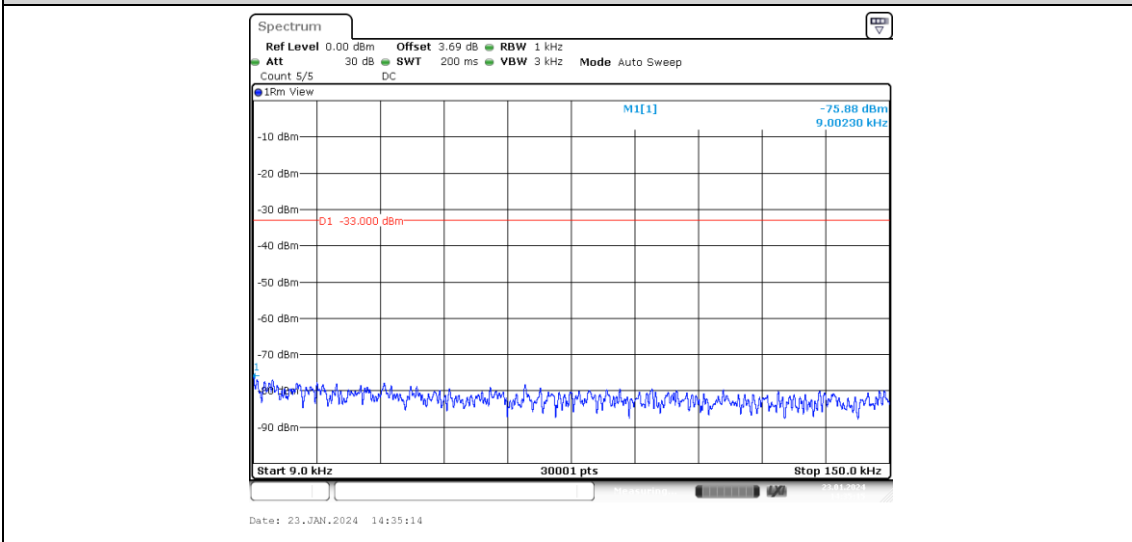
Band12-Stand-Alone-NaN-QPSK-23011-12@0-15kHz-0.15-30--78.05--23-PASS



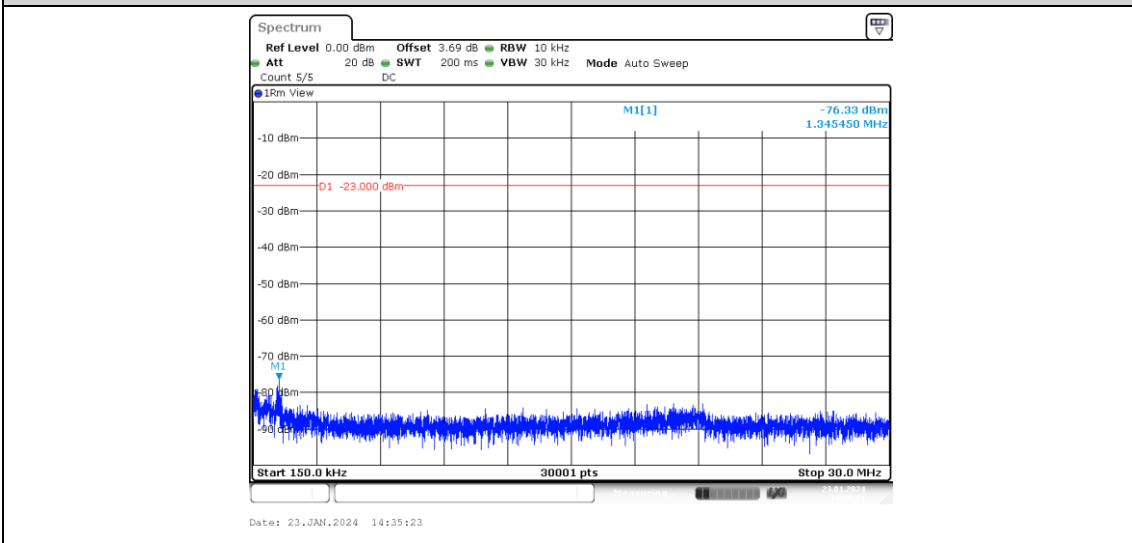
Band12-Stand-Alone-NaN-QPSK-23011-12@0-15kHz-30-1000--65.22--13-PASS



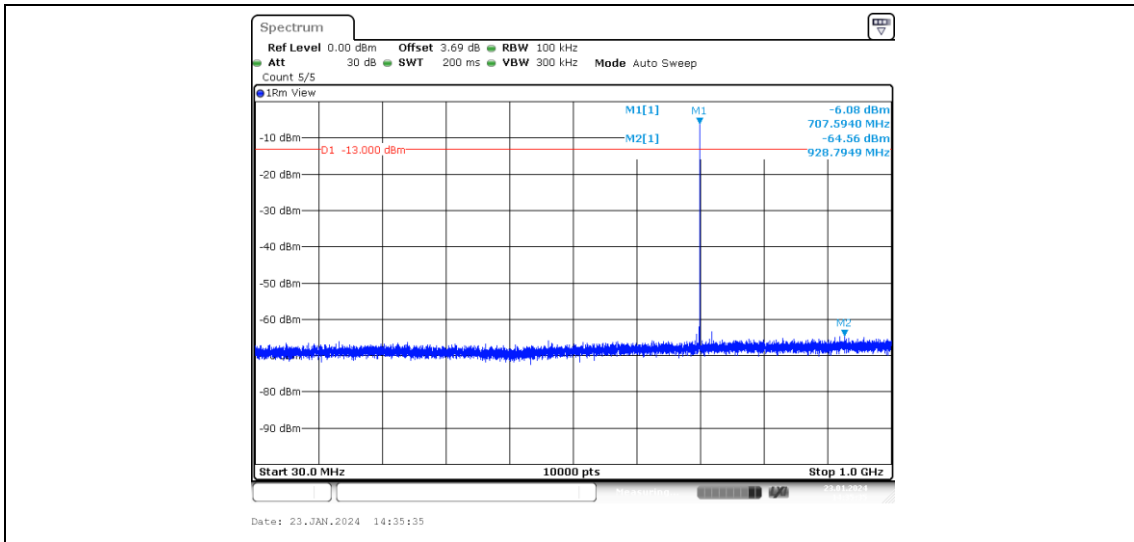
Band12-Stand-Alone-NaN-QPSK-23011-12@0-15kHz-1000-10000--50.23--13-PASS



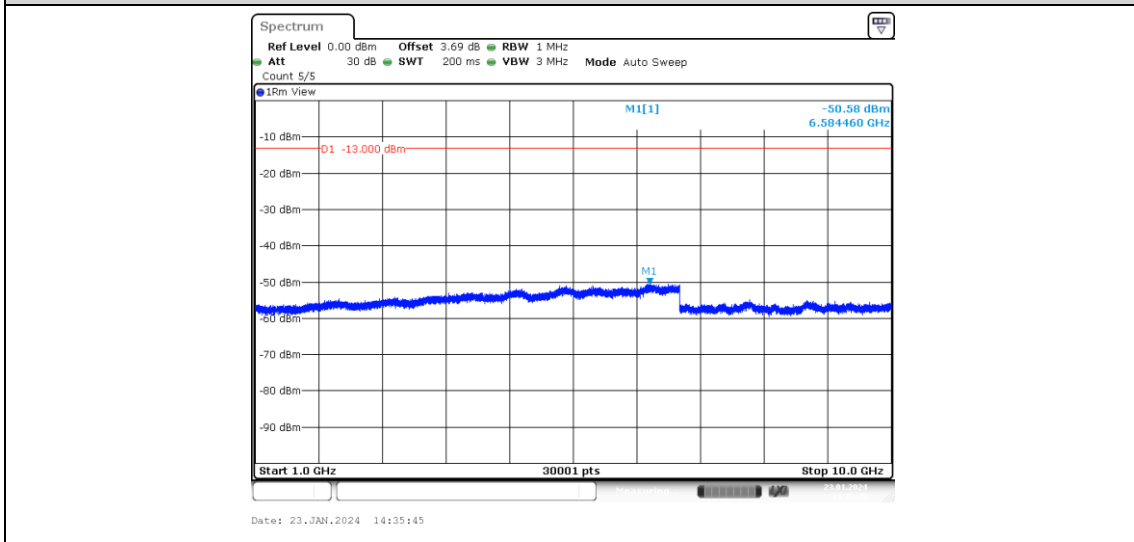
Band12-Stand-Alone-NaN-QPSK-23095-12@0-15kHz-0.009-0.15--75.88--33-PASS



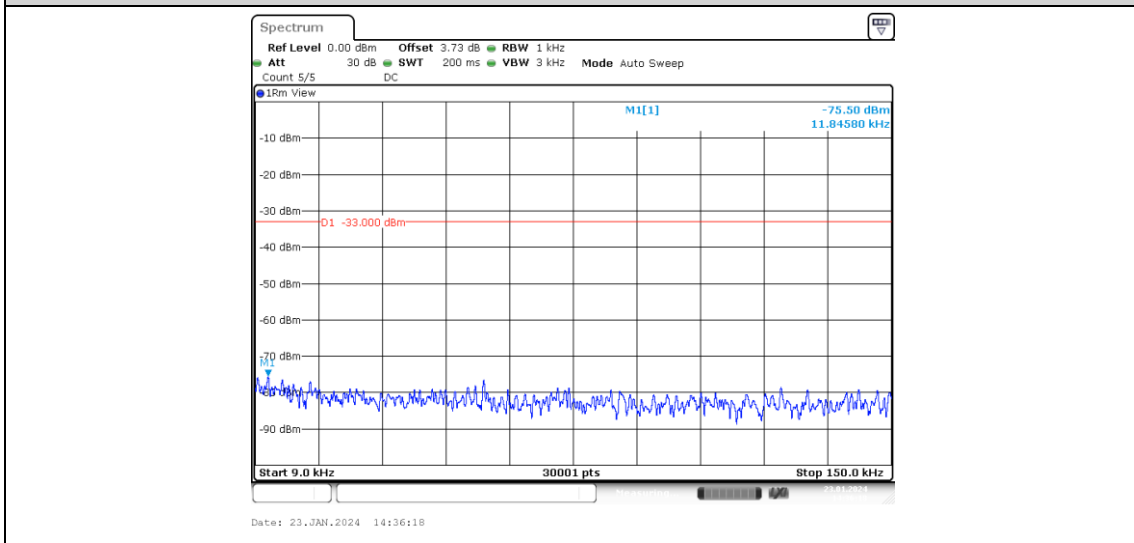
Band12-Stand-Alone-NaN-QPSK-23095-12@0-15kHz-0.15-30--76.33--23-PASS



Band12-Stand-Alone-NaN-QPSK-23095-12@0-15kHz-30-1000--64.56--13-PASS

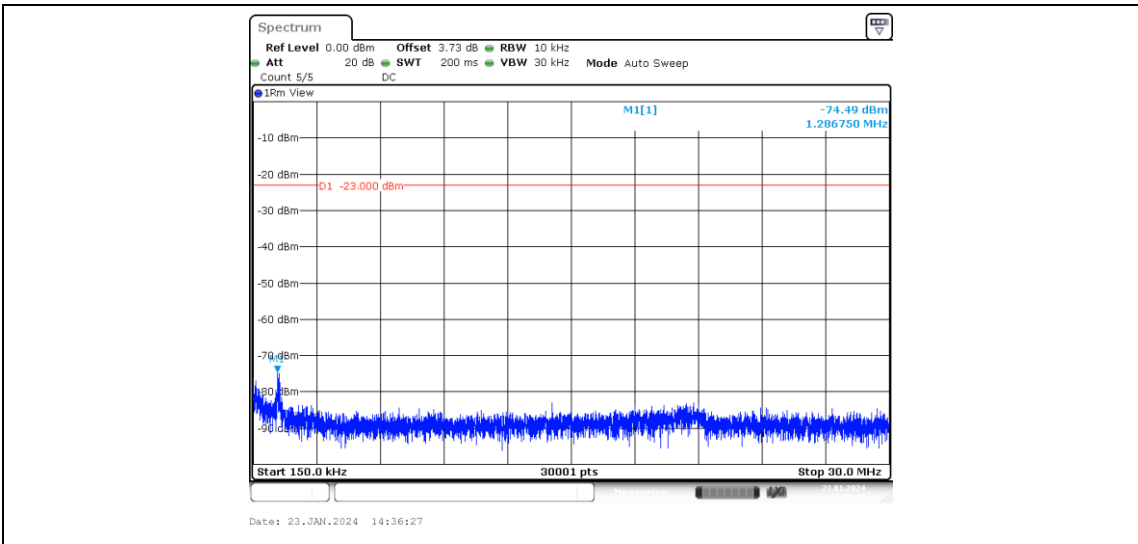


Band12-Stand-Alone-NaN-QPSK-23095-12@0-15kHz-1000-10000--50.58--13-PASS

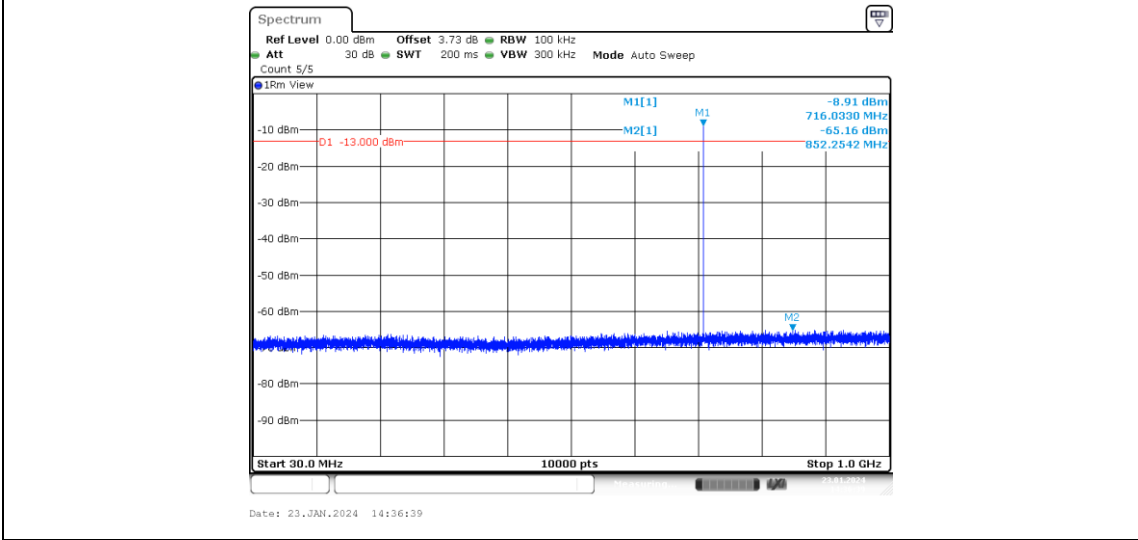


Band12-Stand-Alone-NaN-QPSK-23179-12@0-15kHz-0.009-0.15--75.5--33-PASS

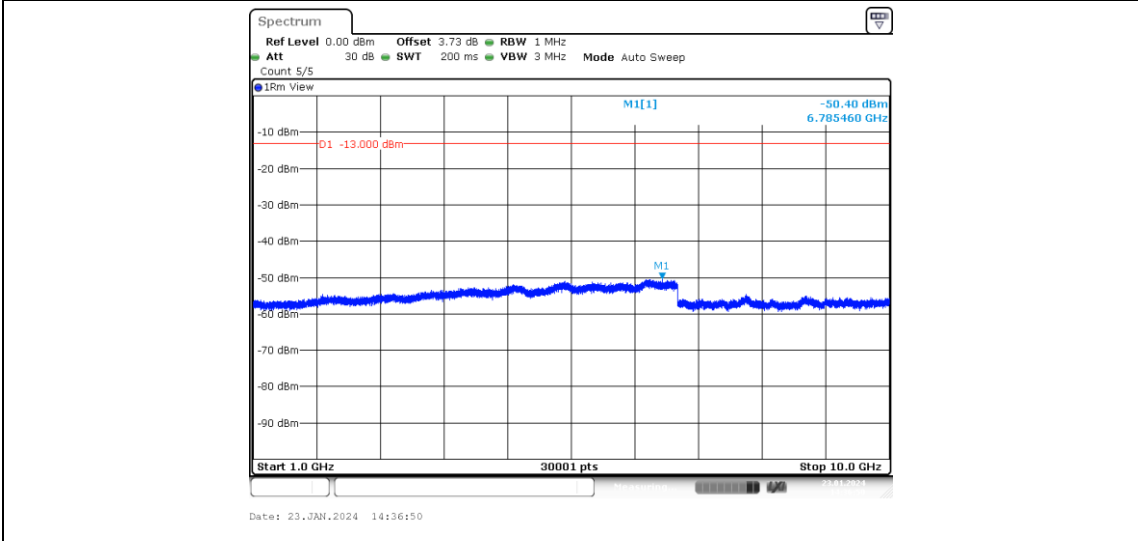




Band12-Stand-Alone-NaN-QPSK-23179-12@0-15kHz-0.15-30--74.49--23-PASS



Band12-Stand-Alone-NaN-QPSK-23179-12@0-15kHz-30-1000--65.16--13-PASS



Band12-Stand-Alone-NaN-QPSK-23179-12@0-15kHz-1000-10000--50.4--13-PASS

## Appendix F: Frequency Stability

### Test Result

Voltage												
Band	OpMode	SCS	Bandwidth	Modulation	Channel	Tones	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band12	Stand-Alone	3.75 kHz	NaN	QPSK	23095	1 @ 0	VH	NT	-7.58	-0.010714	±2.5	PASS
Band12	Stand-Alone	3.75 kHz	NaN	QPSK	23095	1 @ 0	VL	NT	-7.84	-0.011081	±2.5	PASS
Band12	Stand-Alone	3.75 kHz	NaN	QPSK	23095	1 @ 0	VN	NT	-8.20	-0.011590	±2.5	PASS
Band12	Stand-Alone	3.75 kHz	NaN	QPSK	23095	1 @ 47	VH	NT	-6.51	-0.009201	±2.5	PASS
Band12	Stand-Alone	3.75 kHz	NaN	QPSK	23095	1 @ 47	VL	NT	-7.35	-0.010389	±2.5	PASS
Band12	Stand-Alone	3.75 kHz	NaN	QPSK	23095	1 @ 47	VN	NT	-6.92	-0.009781	±2.5	PASS
Band12	Stand-Alone	15k Hz	NaN	QPSK	23095	1 @ 0	VH	NT	-8.73	-0.012339	±2.5	PASS
Band12	Stand-Alone	15k Hz	NaN	QPSK	23095	1 @ 0	VL	NT	-11.44	-0.016170	±2.5	PASS
Band12	Stand-Alone	15k Hz	NaN	QPSK	23095	1 @ 0	VN	NT	-9.34	-0.013201	±2.5	PASS
Band12	Stand-Alone	15k Hz	NaN	QPSK	23095	1 @ 11	VH	NT	-8.73	-0.012339	±2.5	PASS
Band12	Stand-Alone	15k Hz	NaN	QPSK	23095	1 @ 11	VL	NT	-7.05	-0.009965	±2.5	PASS
Band	Stand-	15k	NaN	QPS	230	1	VN	NT	-7.02	-0.00	±2.	PA

d12	Alone	Hz		K	95	@1 1				9922	5	SS
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Temperature												
Band	OpMod e	Band width	Modu lation	Cha nel	To ne s	SC S	Volt age [Vd c]	Tempe rature (°C)	Devi ation (Hz)	Devia tion (ppm )	Li mit (pp m)	Ver dict
Ban d12	Stand- Alone	3.75 kHz	NaN	QP SK	23 09 5	1 @ 0	NV	50	-5.78	-0.00 8170	±2. 5	PA SS
Ban d12	Stand- Alone	3.75 kHz	NaN	QP SK	23 09 5	1 @ 0	NV	-20	-7.41	-0.01 0473	±2. 5	PA SS
Ban d12	Stand- Alone	3.75 kHz	NaN	QP SK	23 09 5	1 @ 0	NV	-10	-5.89	-0.00 8325	±2. 5	PA SS
Ban d12	Stand- Alone	3.75 kHz	NaN	QP SK	23 09 5	1 @ 0	NV	0	-6.69	-0.00 9456	±2. 5	PA SS
Ban d12	Stand- Alone	3.75 kHz	NaN	QP SK	23 09 5	1 @ 0	NV	10	-6.71	-0.00 9484	±2. 5	PA SS
Ban d12	Stand- Alone	3.75 kHz	NaN	QP SK	23 09 5	1 @ 0	NV	20	-6.52	-0.00 9216	±2. 5	PA SS
Ban d12	Stand- Alone	3.75 kHz	NaN	QP SK	23 09 5	1 @ 0	NV	30	-6.67	-0.00 9428	±2. 5	PA SS
Ban d12	Stand- Alone	3.75 kHz	NaN	QP SK	23 09 5	1 @ 0	NV	40	-7.55	-0.01 0671	±2. 5	PA SS
Ban d12	Stand- Alone	3.75 kHz	NaN	QP SK	23 09 5	1 @ 0	NV	-30	-6.90	-0.00 9753	±2. 5	PA SS
Ban d12	Stand- Alone	3.75 kHz	NaN	QP SK	23 09 5	1 @ 47	NV	30	-4.99	-0.00 7053	±2. 5	PA SS
Ban d12	Stand- Alone	3.75 kHz	NaN	QP SK	23 09 5	1 @ 47	NV	20	-6.59	-0.00 9314	±2. 5	PA SS
Ban d12	Stand- Alone	3.75 kHz	NaN	QP SK	23 09 5	1 @ 47	NV	10	-6.28	-0.00 8876	±2. 5	PA SS

Ban d12	Stand- Alone	3.75 kHz	NaN	QP SK	23 09 5	1 @ 47	NV	0	-6.47	-0.00 9145	±2. 5	PA SS
Ban d12	Stand- Alone	3.75 kHz	NaN	QP SK	23 09 5	1 @ 47	NV	-10	-6.87	-0.00 9710	±2. 5	PA SS
Ban d12	Stand- Alone	3.75 kHz	NaN	QP SK	23 09 5	1 @ 47	NV	40	-6.14	-0.00 8678	±2. 5	PA SS
Ban d12	Stand- Alone	3.75 kHz	NaN	QP SK	23 09 5	1 @ 47	NV	-30	-7.18	-0.01 0148	±2. 5	PA SS
Ban d12	Stand- Alone	3.75 kHz	NaN	QP SK	23 09 5	1 @ 47	NV	50	-6.71	-0.00 9484	±2. 5	PA SS
Ban d12	Stand- Alone	3.75 kHz	NaN	QP SK	23 09 5	1 @ 47	NV	-20	-7.34	-0.01 0375	±2. 5	PA SS
Ban d12	Stand- Alone	15kHz	NaN	QP SK	23 09 5	1 @ 0	NV	50	-10.0 3	-0.01 4177	±2. 5	PA SS
Ban d12	Stand- Alone	15kHz	NaN	QP SK	23 09 5	1 @ 0	NV	-20	-10.1 6	-0.01 4360	±2. 5	PA SS
Ban d12	Stand- Alone	15kHz	NaN	QP SK	23 09 5	1 @ 0	NV	-10	-8.78	-0.01 2410	±2. 5	PA SS
Ban d12	Stand- Alone	15kHz	NaN	QP SK	23 09 5	1 @ 0	NV	0	-10.9 3	-0.01 5449	±2. 5	PA SS
Ban d12	Stand- Alone	15kHz	NaN	QP SK	23 09 5	1 @ 0	NV	10	-9.41	-0.01 3300	±2. 5	PA SS
Ban d12	Stand- Alone	15kHz	NaN	QP SK	23 09 5	1 @ 0	NV	20	-7.64	-0.01 0799	±2. 5	PA SS
Ban d12	Stand- Alone	15kHz	NaN	QP SK	23 09 5	1 @ 0	NV	30	-8.44	-0.01 1929	±2. 5	PA SS
Ban d12	Stand- Alone	15kHz	NaN	QP SK	23 09 5	1 @ 0	NV	40	-9.03	-0.01 2763	±2. 5	PA SS
Ban	Stand- Alone	15kHz	NaN	QP	23	1	NV	-30	-6.42	-0.00	±2.	PA

d12	Alone	z		SK	09 5	@ 0				9074	5	SS
Ban d12	Stand- Alone	15kH z	NaN	QP SK	23 09 5	1 @1 1	NV	40	-8.30	-0.01 1731	±2. 5	PA SS
Ban d12	Stand- Alone	15kH z	NaN	QP SK	23 09 5	1 @1 1	NV	30	-8.25	-0.01 1661	±2. 5	PA SS
Ban d12	Stand- Alone	15kH z	NaN	QP SK	23 09 5	1 @1 1	NV	20	-7.28	-0.01 0290	±2. 5	PA SS
Ban d12	Stand- Alone	15kH z	NaN	QP SK	23 09 5	1 @1 1	NV	10	-6.62	-0.00 9357	±2. 5	PA SS
Ban d12	Stand- Alone	15kH z	NaN	QP SK	23 09 5	1 @1 1	NV	0	-5.84	-0.00 8254	±2. 5	PA SS
Ban d12	Stand- Alone	15kH z	NaN	QP SK	23 09 5	1 @1 1	NV	-10	-8.27	-0.01 1689	±2. 5	PA SS
Ban d12	Stand- Alone	15kH z	NaN	QP SK	23 09 5	1 @1 1	NV	-30	-9.90	-0.01 3993	±2. 5	PA SS
Ban d12	Stand- Alone	15kH z	NaN	QP SK	23 09 5	1 @1 1	NV	50	-9.06	-0.01 2806	±2. 5	PA SS
Ban d12	Stand- Alone	15kH z	NaN	QP SK	23 09 5	1 @1 1	NV	-20	-7.62	-0.01 0770	±2. 5	PA SS