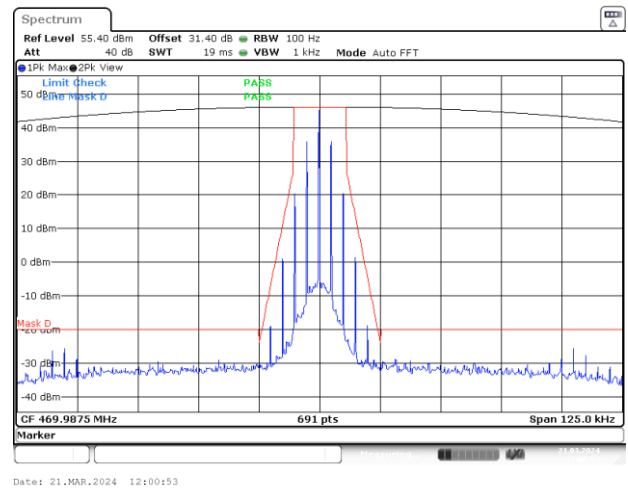
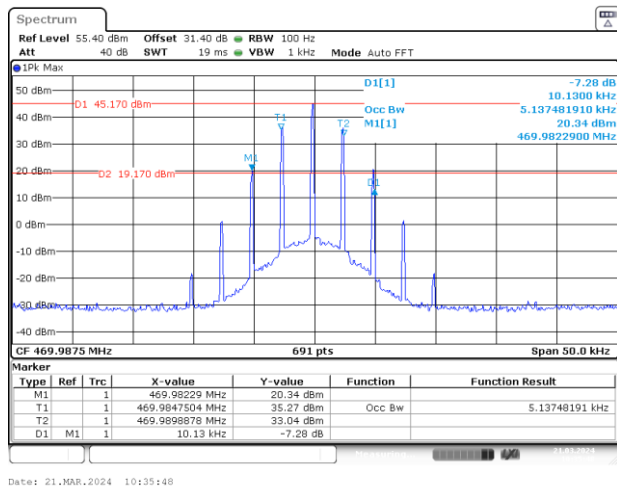
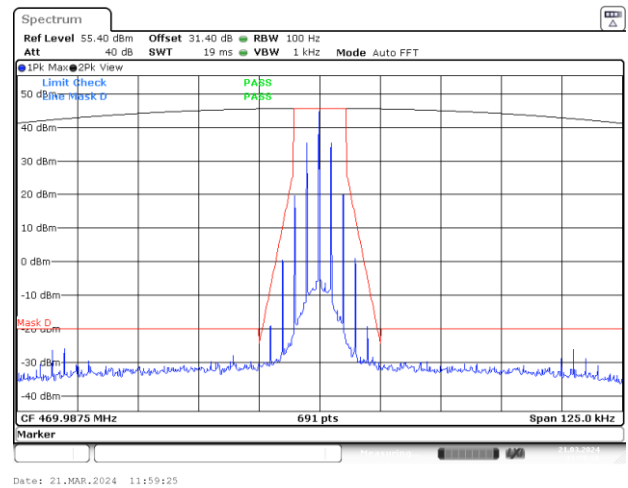
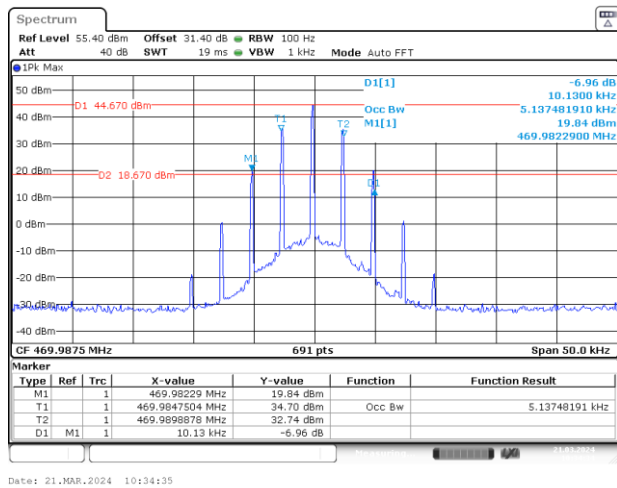


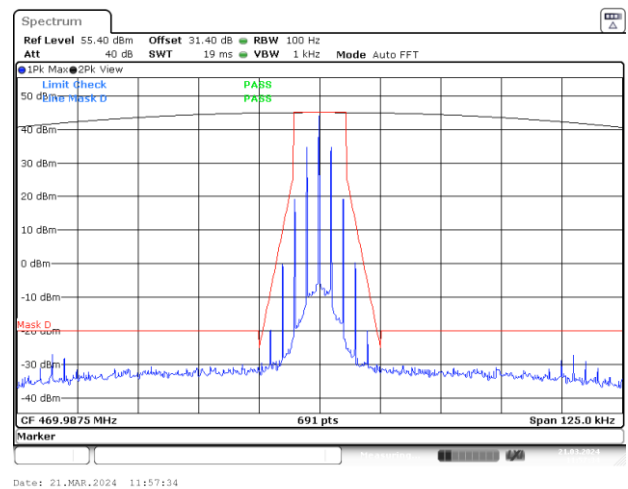
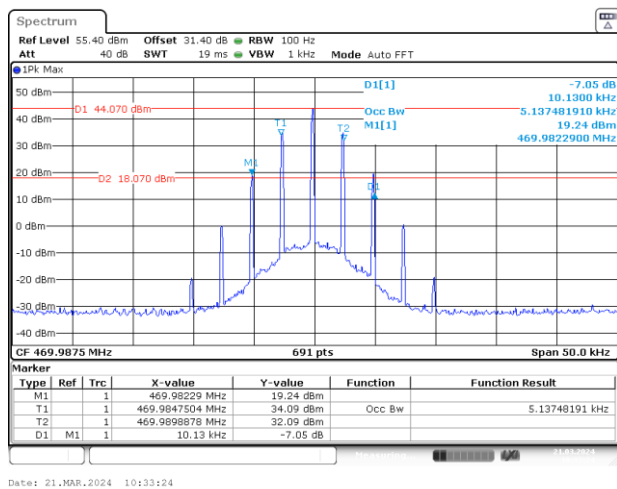
FM-12.5k-High-40W



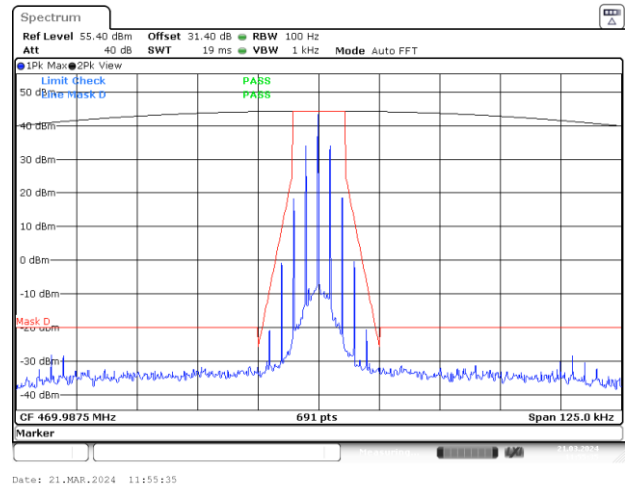
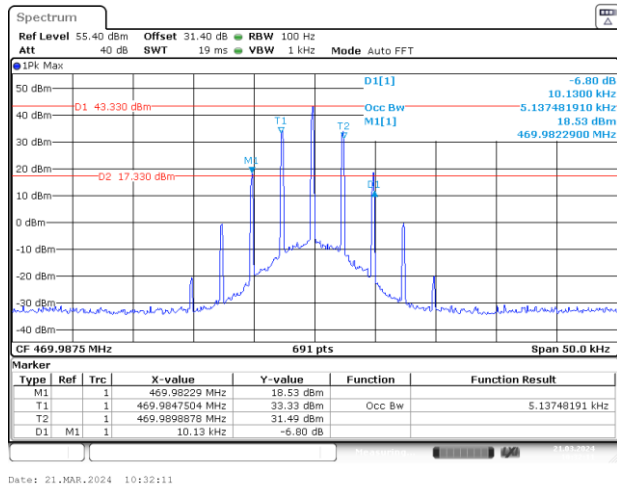
FM-12.5k-High-35W



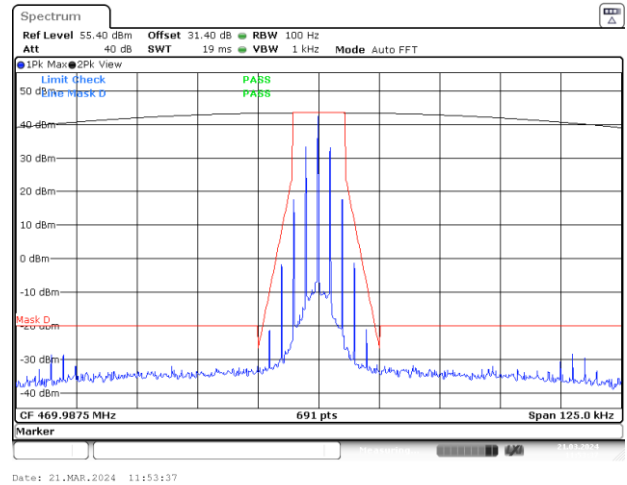
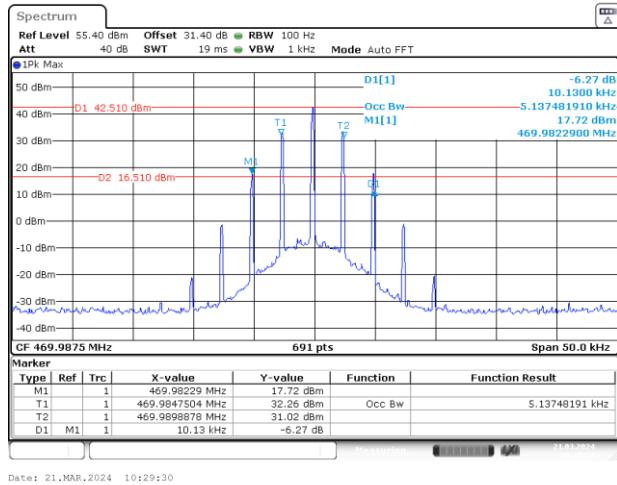
FM-12.5k-High-30W



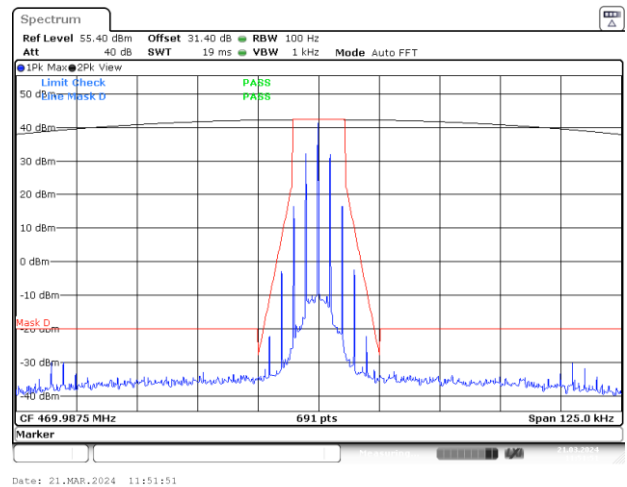
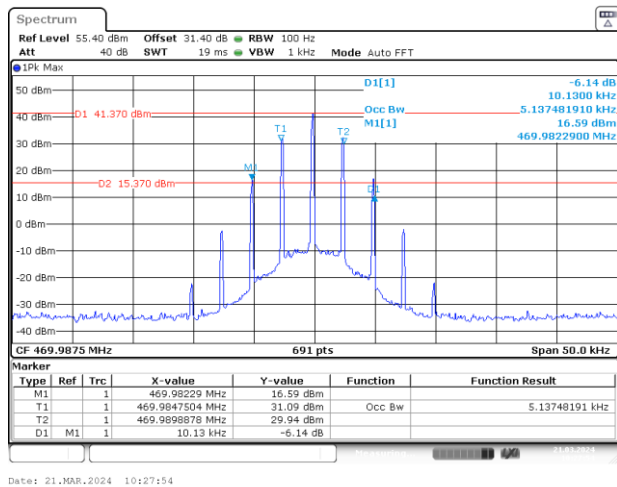
FM-12.5k-High-25W



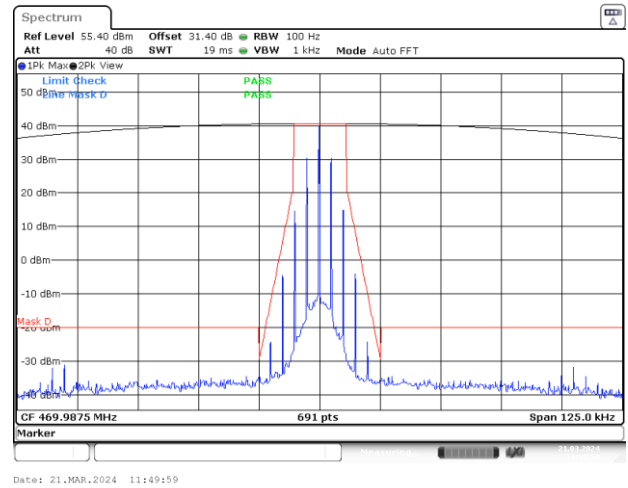
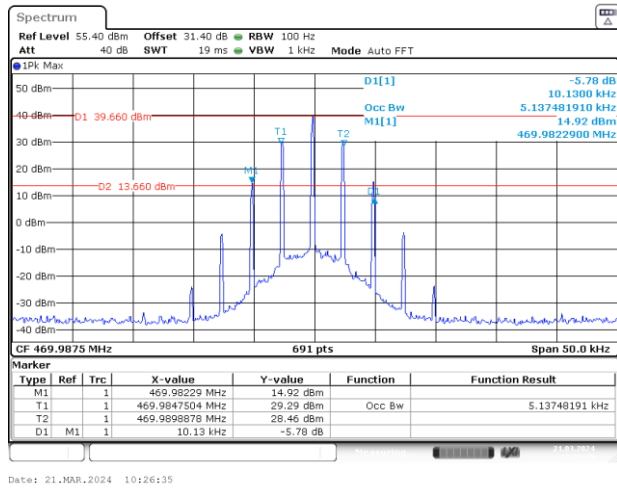
FM-12.5k-High-20W



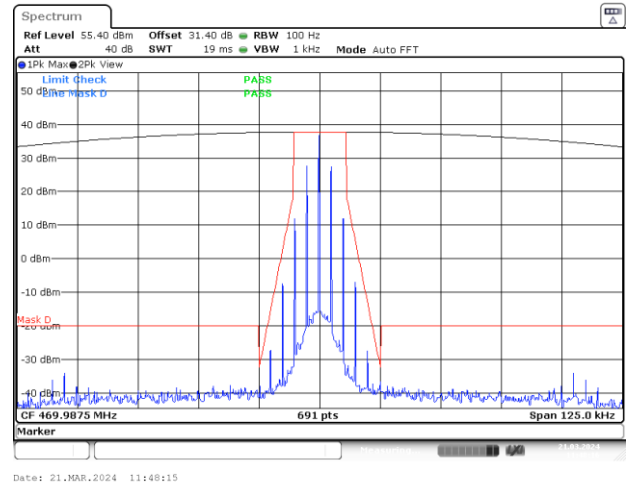
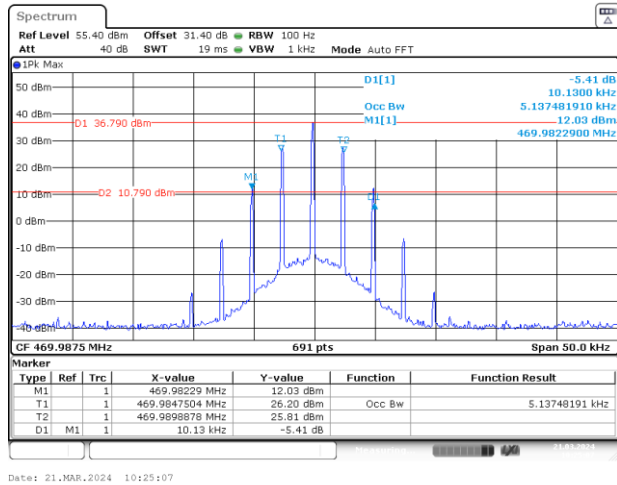
FM-12.5k-High-15W



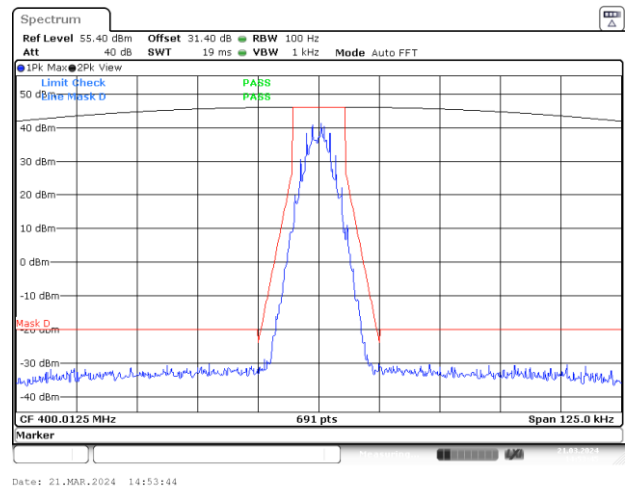
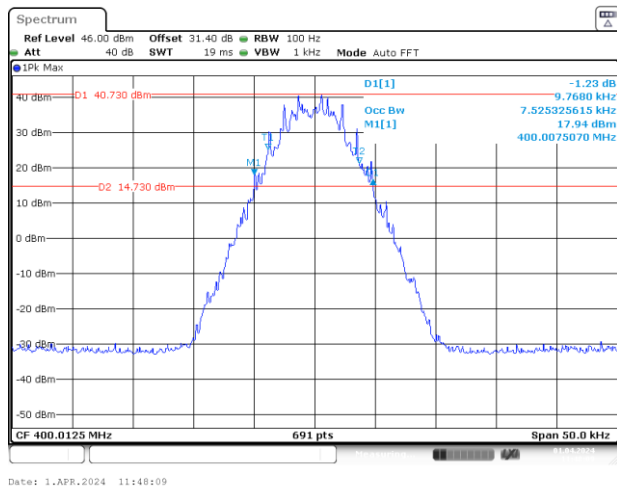
FM-12.5k-High-10W



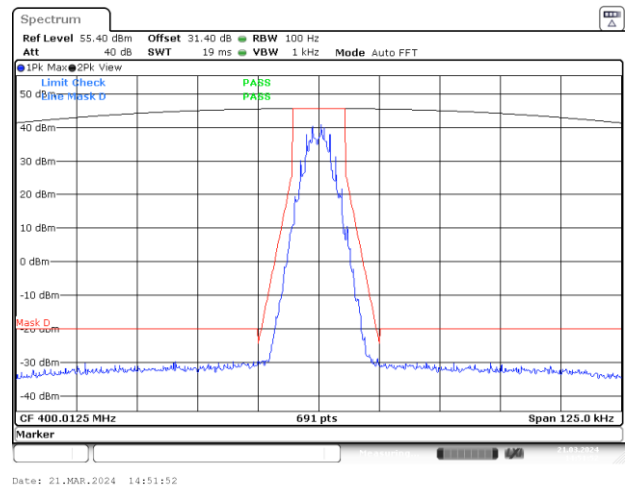
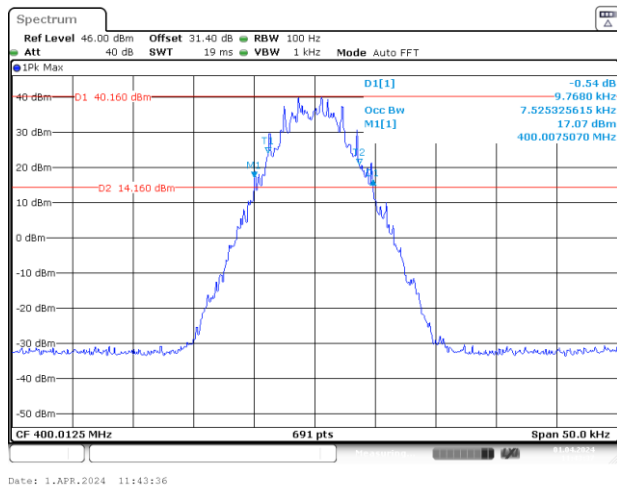
FM-12.5k-High-5W



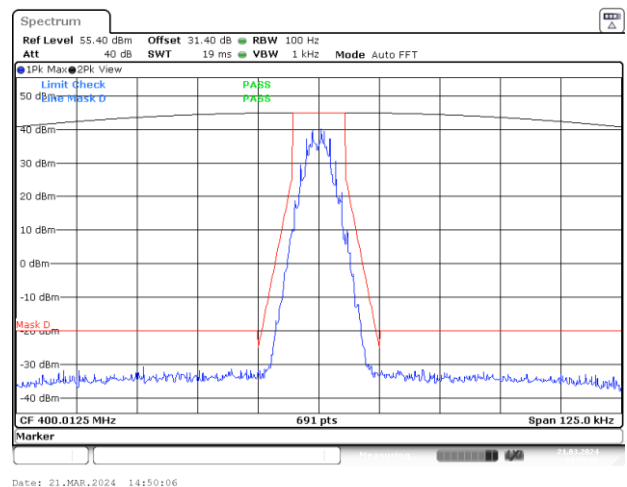
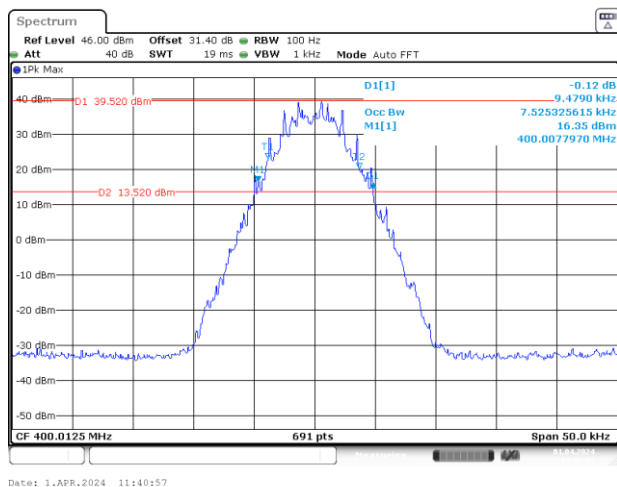
4FSK-12.5k-Low-40W



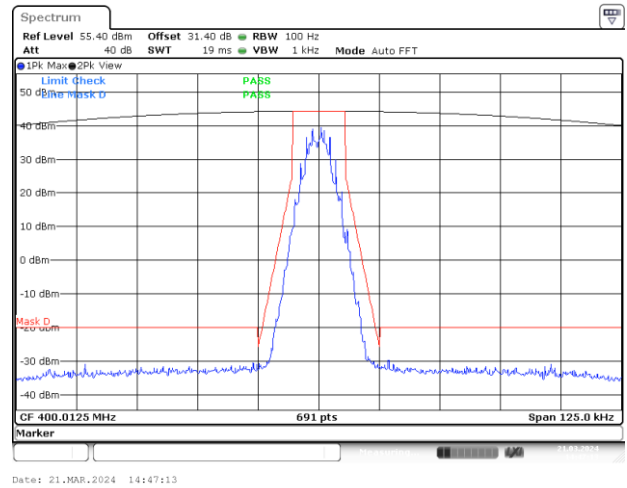
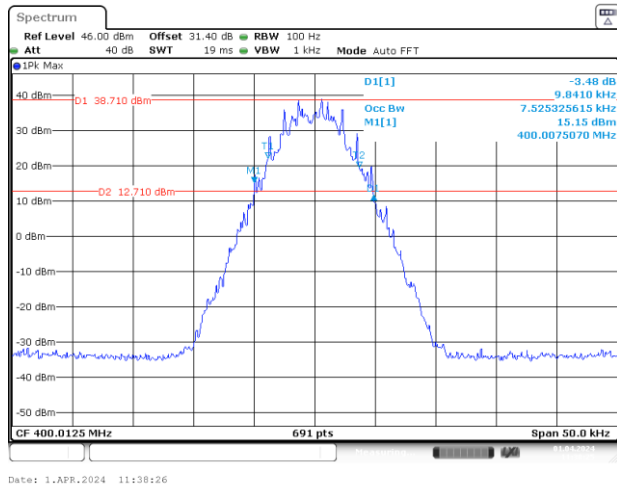
4FSK-12.5k-Low-35W



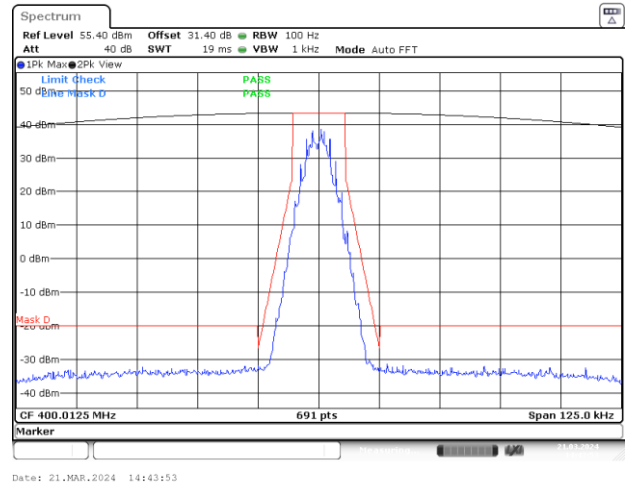
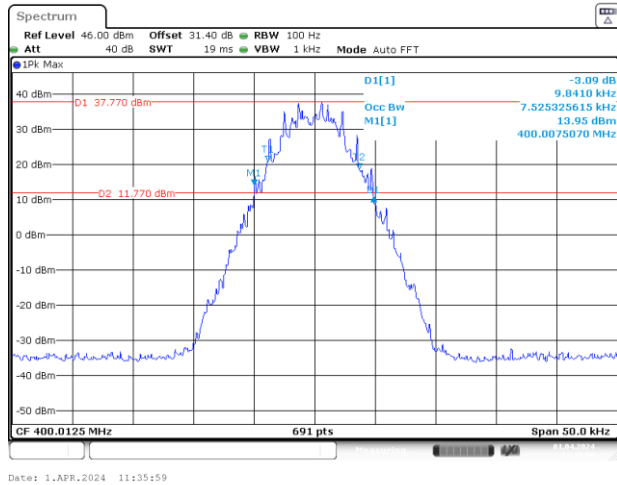
4FSK-12.5k-Low-30W



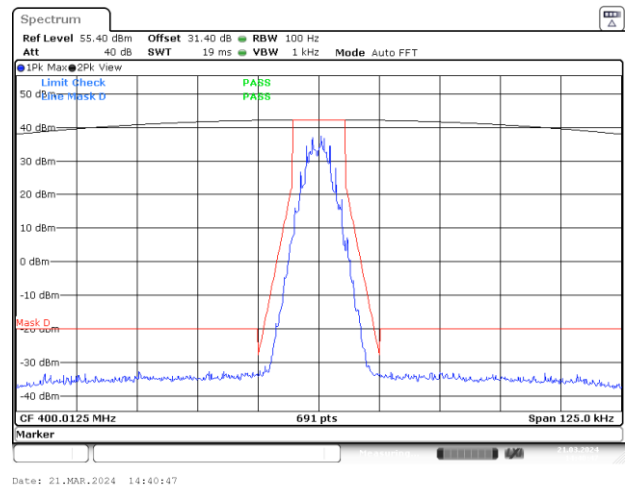
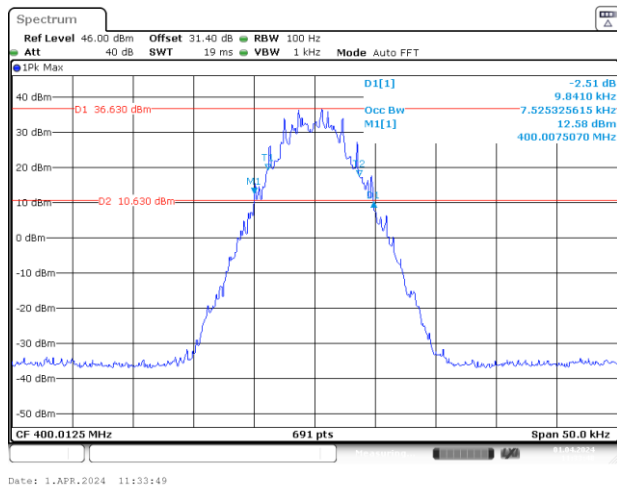
4FSK-12.5k-Low-25W



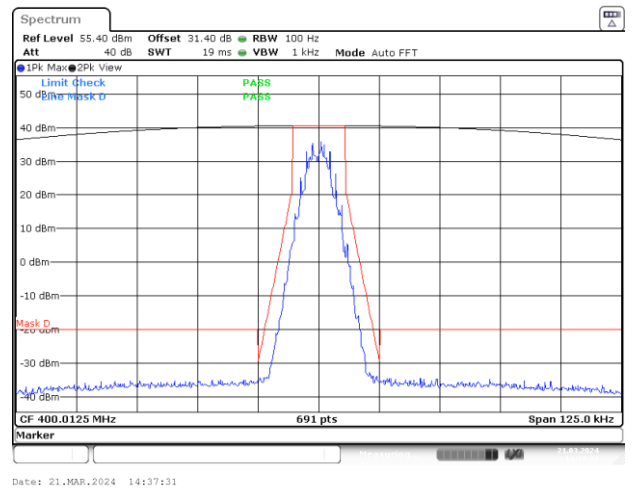
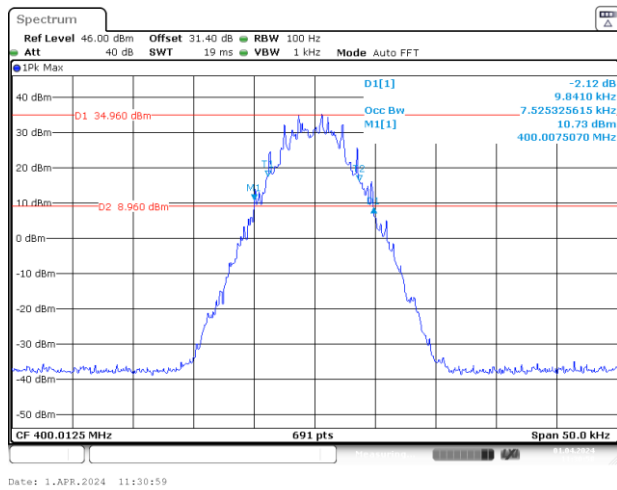
4FSK-12.5k-Low-20W



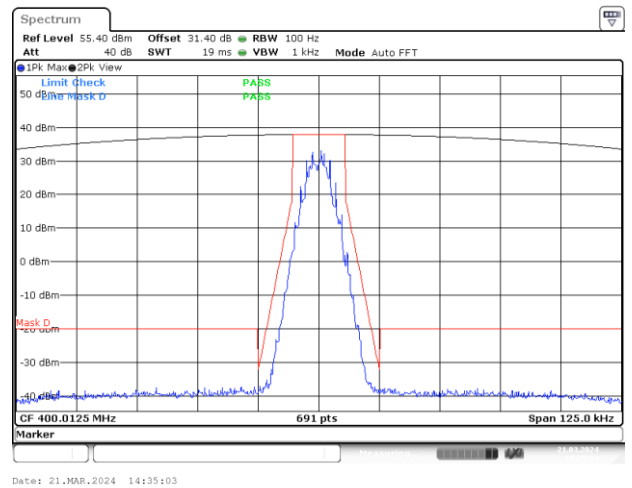
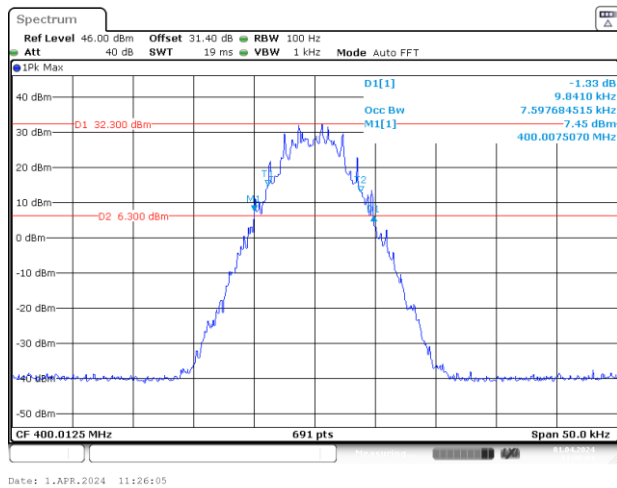
4FSK-12.5k-Low-15W



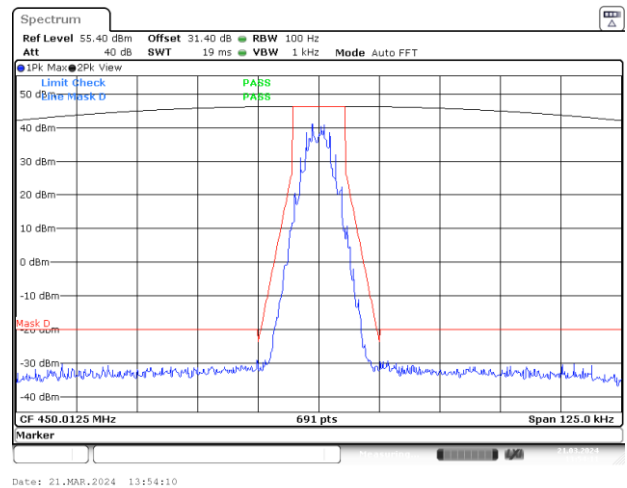
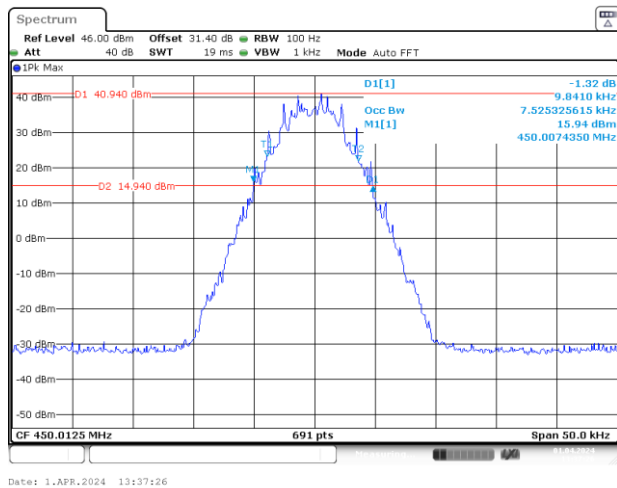
4FSK-12.5k-Low-10W



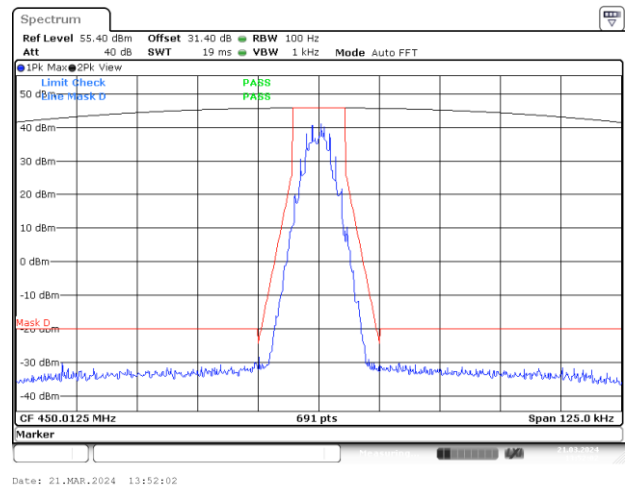
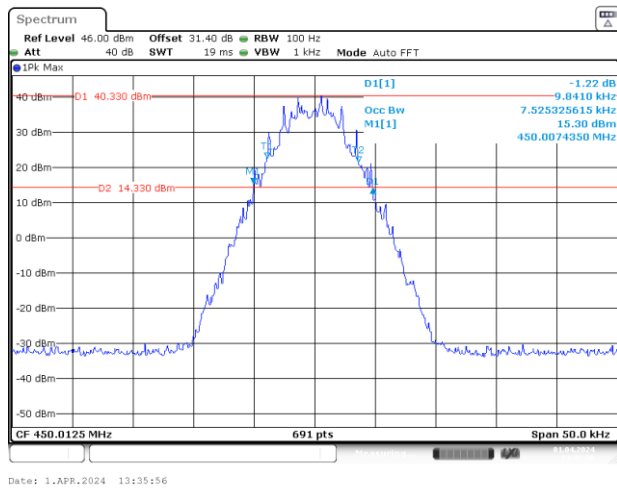
4FSK-12.5k-Low-5W



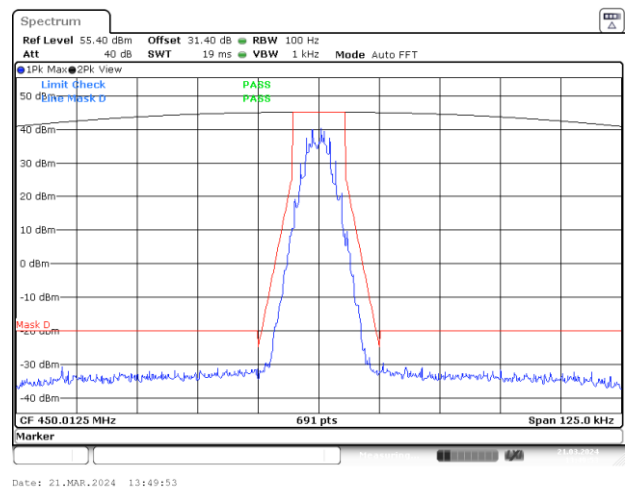
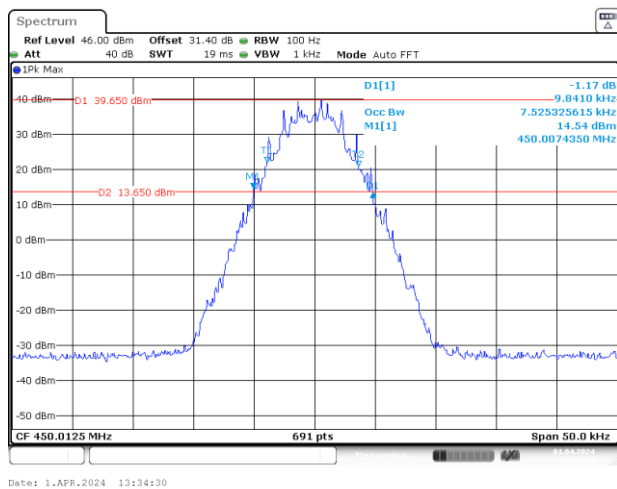
4FSK-12.5k-Middle-40W



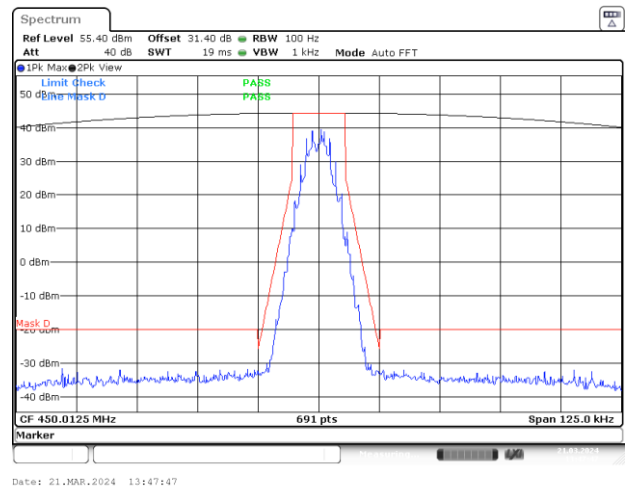
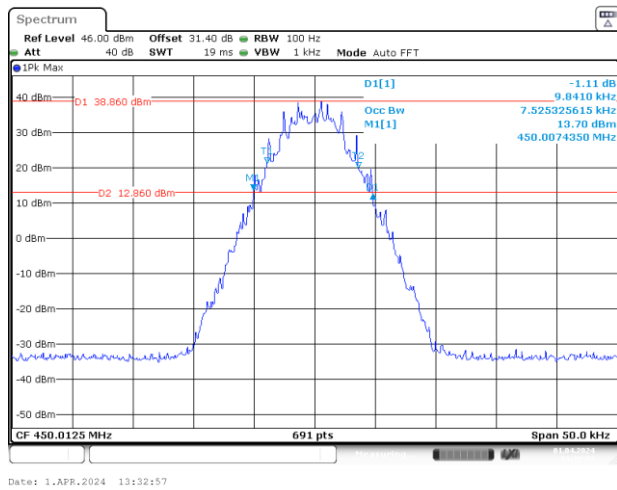
4FSK-12.5k-Middle-35W



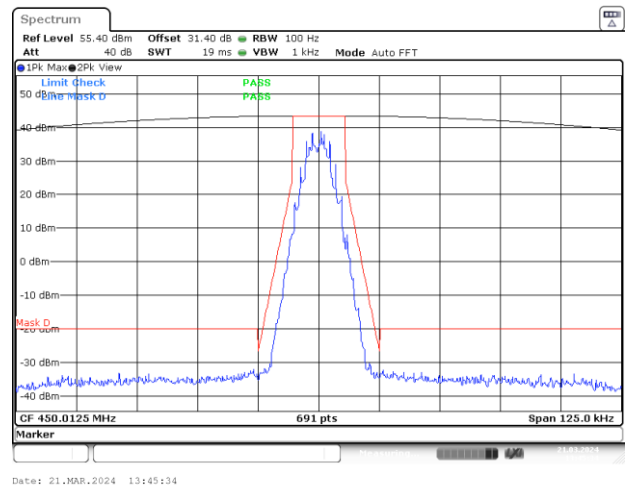
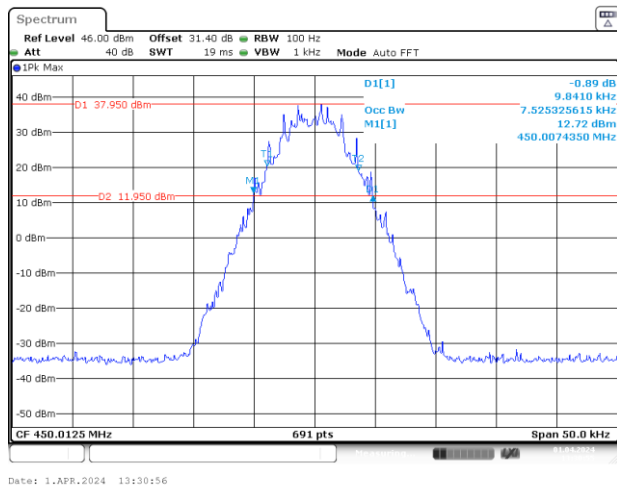
4FSK-12.5k-Middle-30W



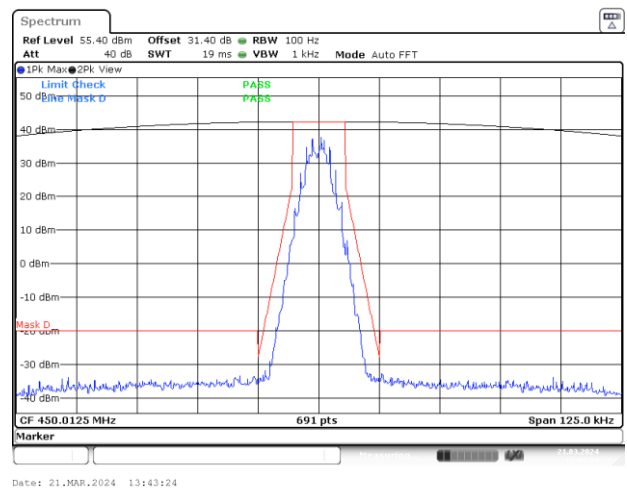
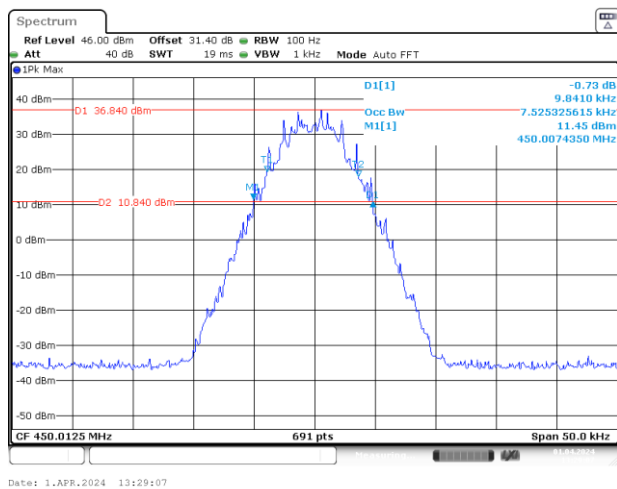
4FSK-12.5k-Middle-25W



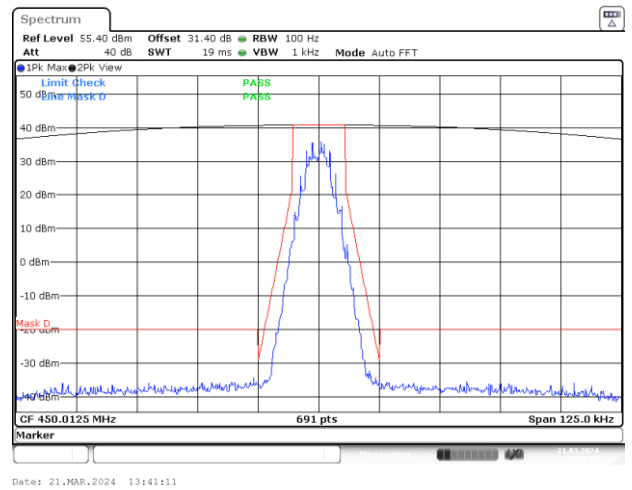
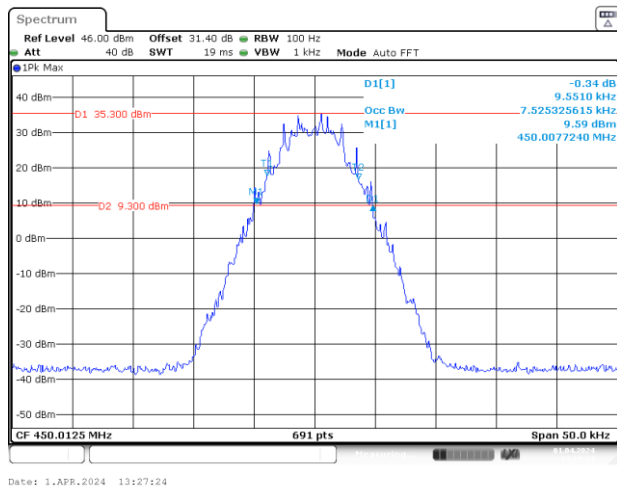
4FSK-12.5k-Middle-20W



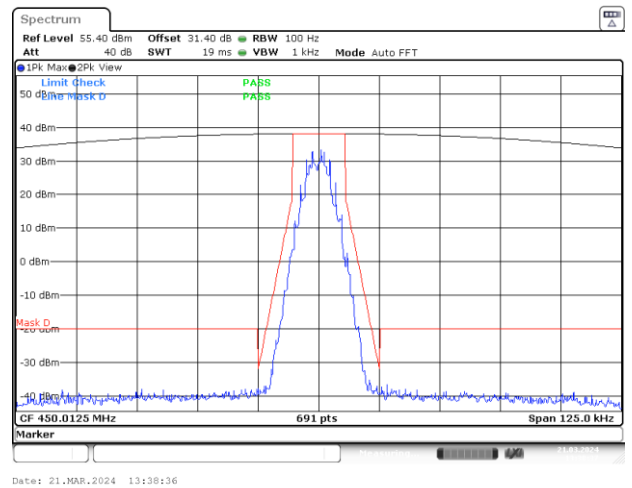
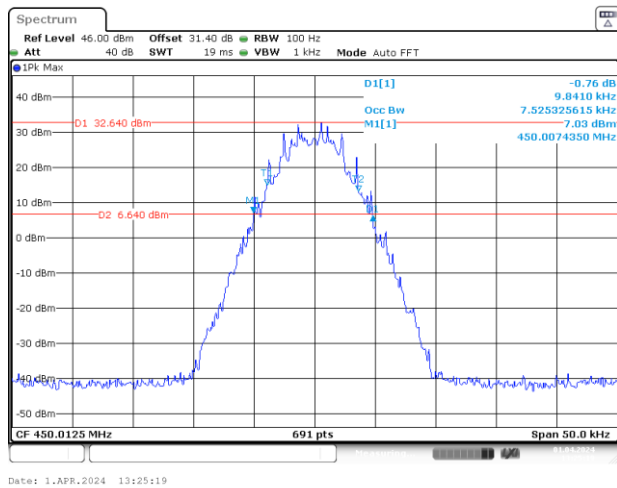
4FSK-12.5k-Middle-15W



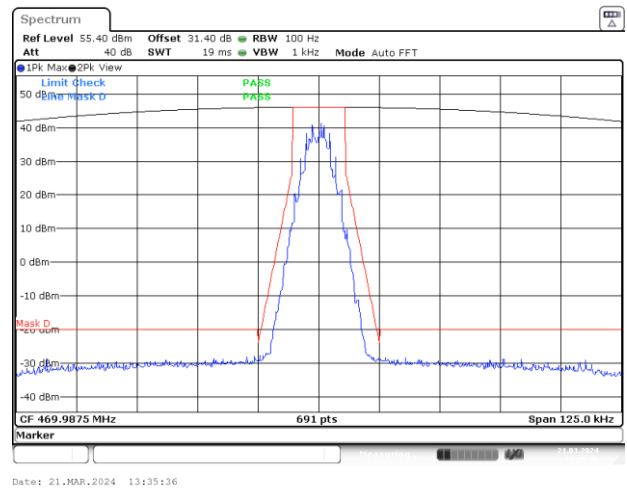
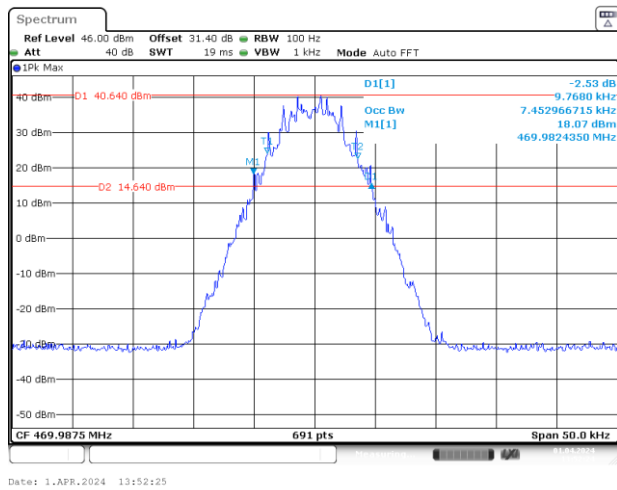
4FSK-12.5k-Middle-10W



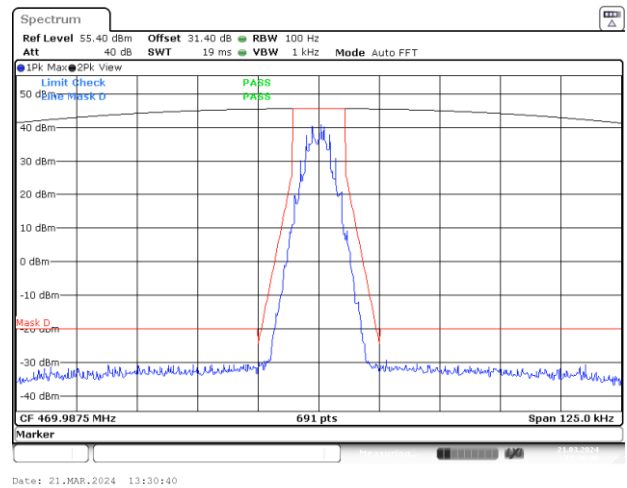
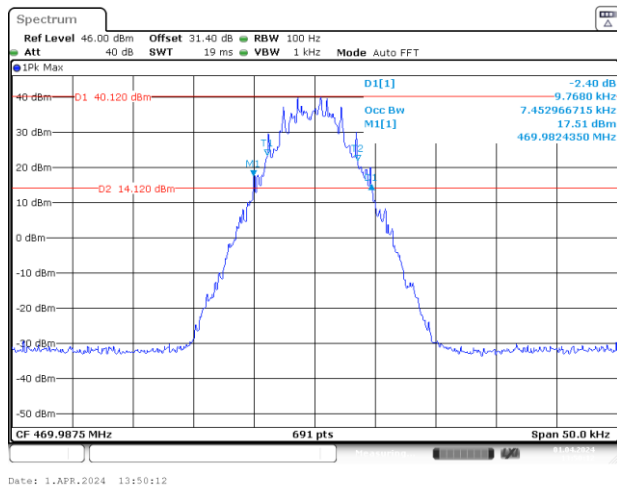
4FSK-12.5k-Middle-5W



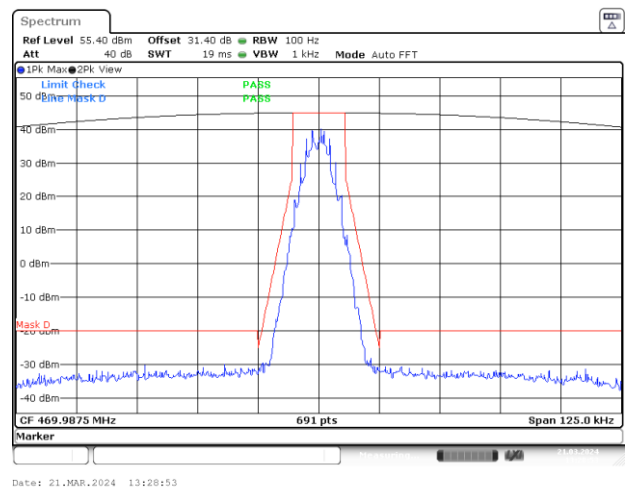
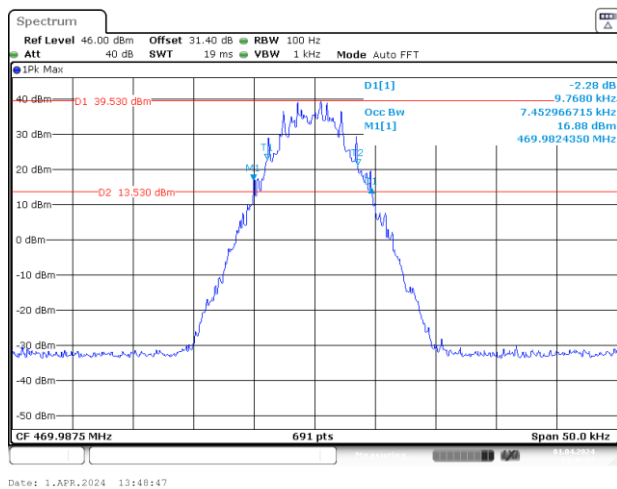
4FSK-12.5k-High-40W



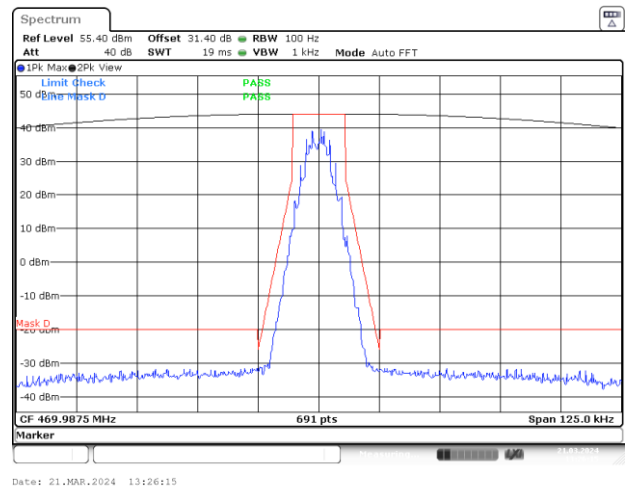
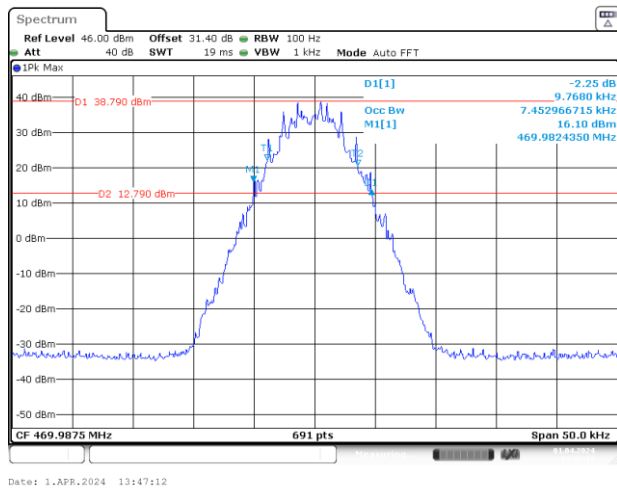
4FSK-12.5k-High-35W



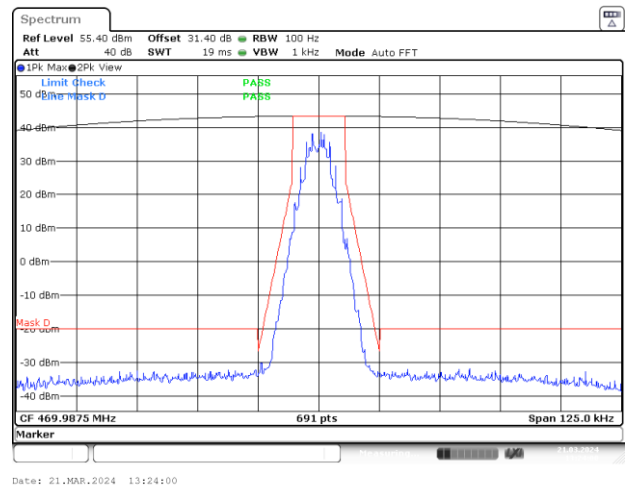
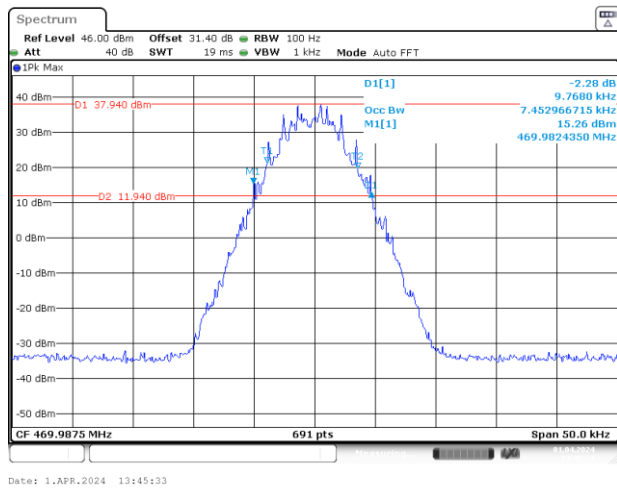
4FSK-12.5k-High-30W



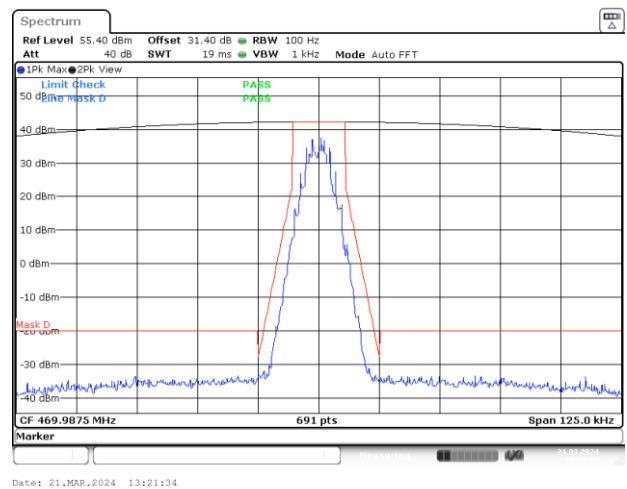
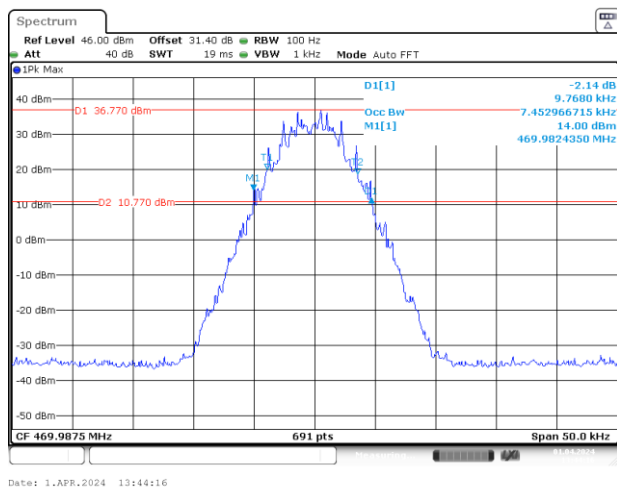
4FSK-12.5k-High-25W



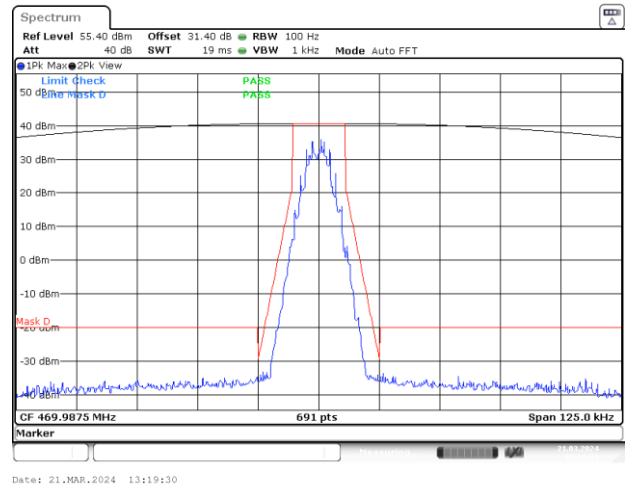
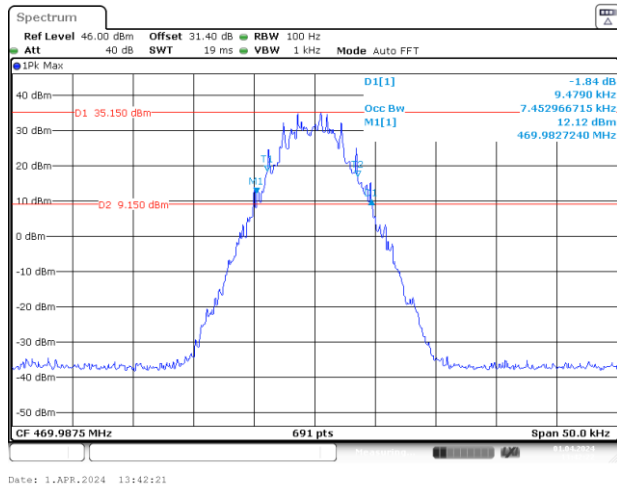
4FSK-12.5k-High-20W



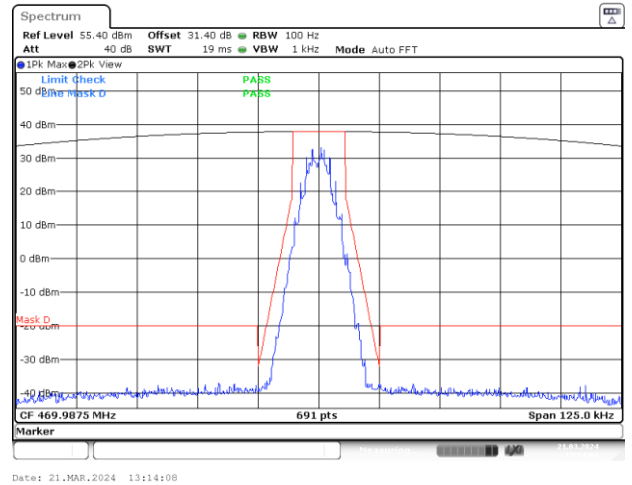
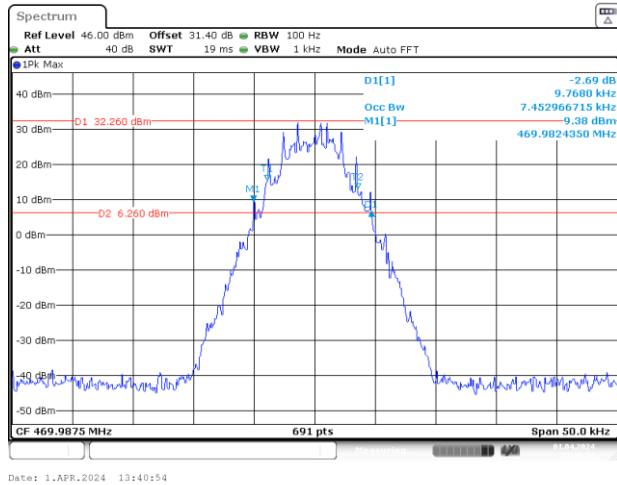
4FSK-12.5k-High-15W



4FSK-12.5k-High-10W



4FSK-12.5k-High-5W



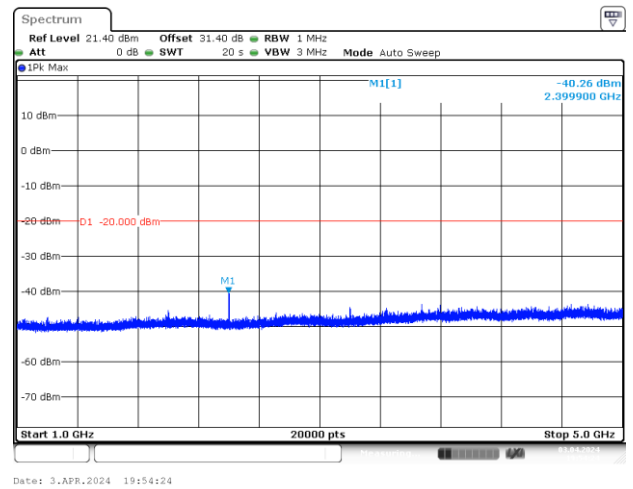
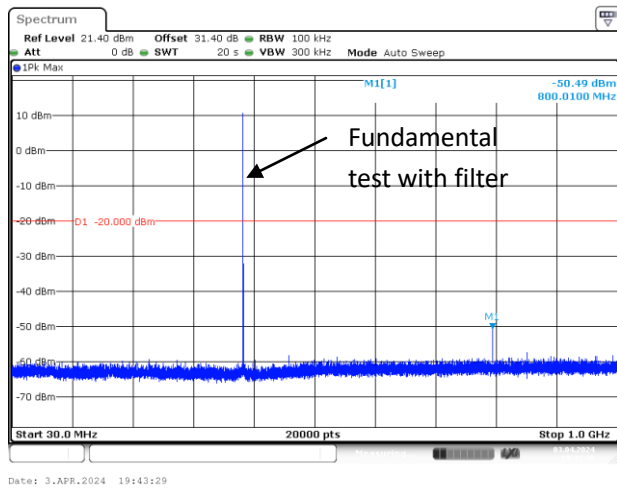
3.3.4 Spurious Emission at Antenna Terminal

Modulation	Channel Spacing (kHz)	Test Channel	Spurious Emission at Antenna Terminal Result	Limit	Verdict
FM	12.5	Low	Refer test plot	Refer test plot	Pass
		Middle	Refer test plot	Refer test plot	Pass
		High	Refer test plot	Refer test plot	Pass
4FSK	12.5	Low	Refer test plot	Refer test plot	Pass
		Middle	Refer test plot	Refer test plot	Pass
		High	Refer test plot	Refer test plot	Pass

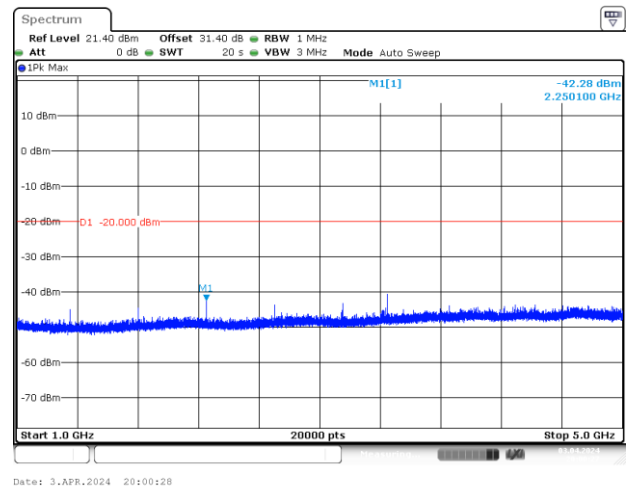
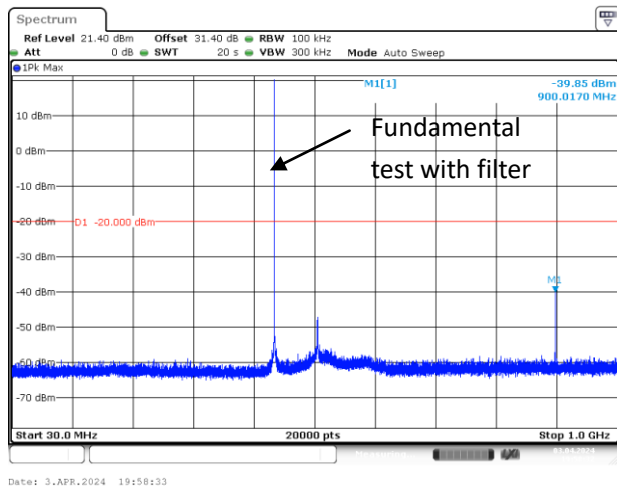
Note: the highest power level was tested.

Test Plots:

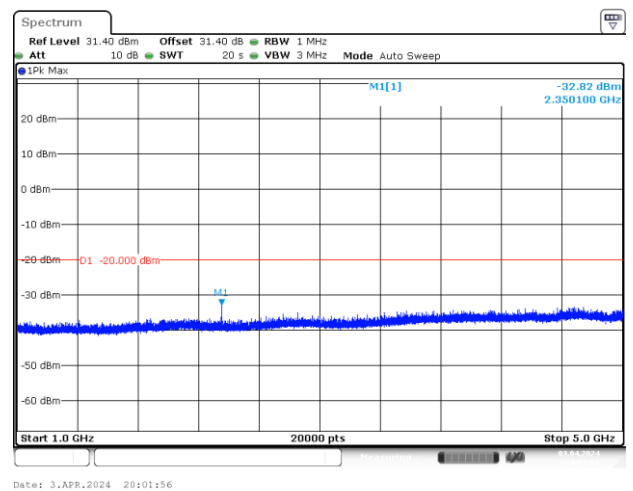
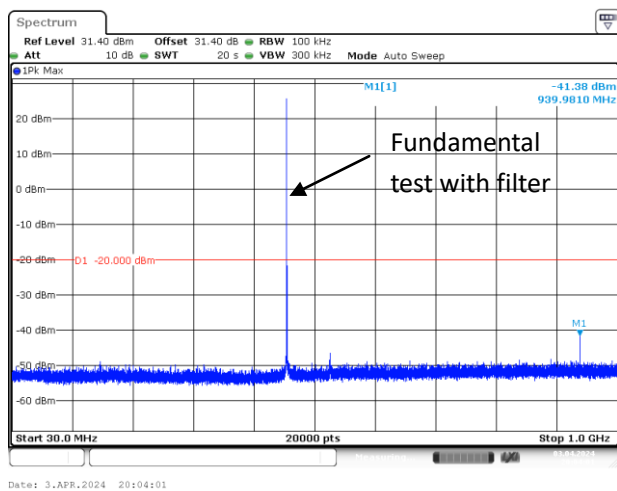
FM-12.5k-Low Channel



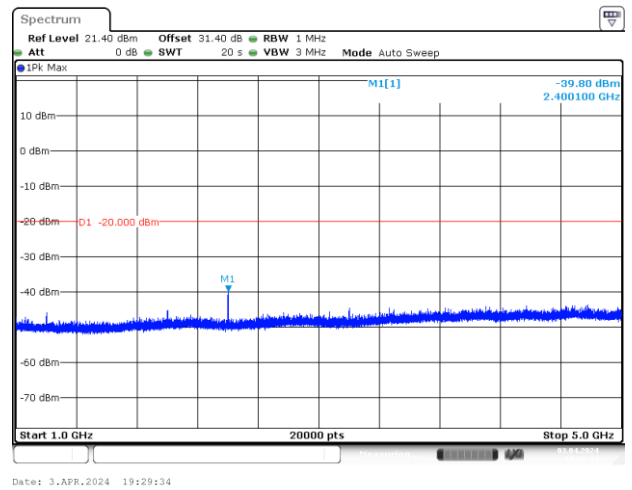
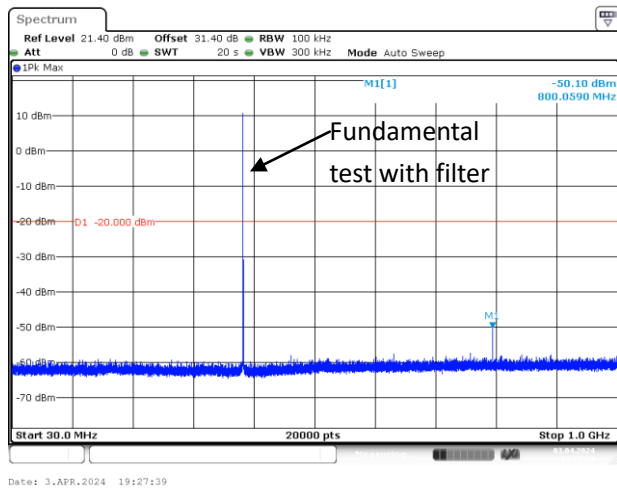
FM-12.5k-Middle Channel



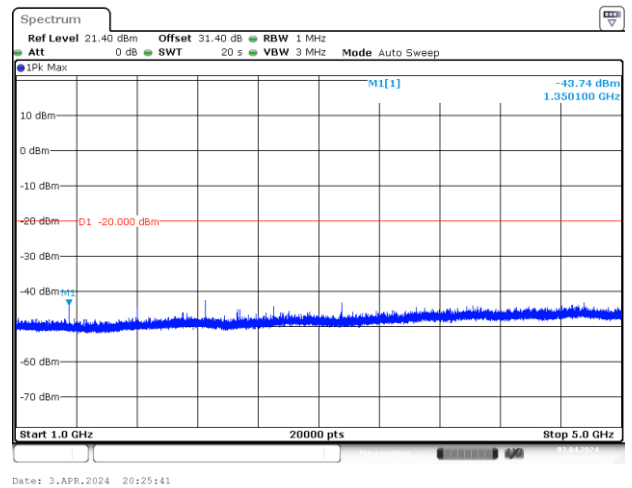
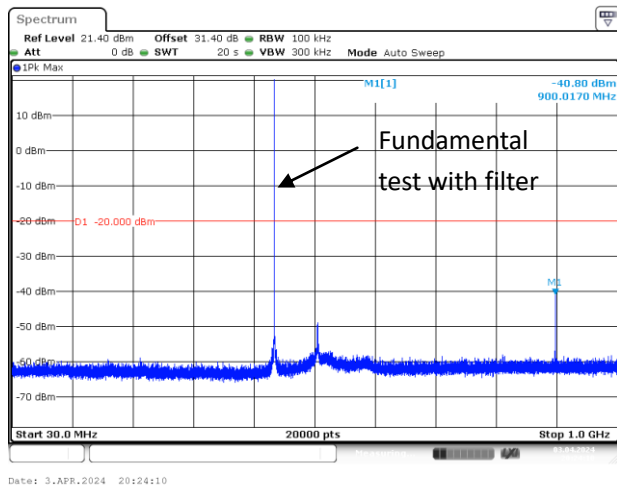
FM-12.5k-High Channel



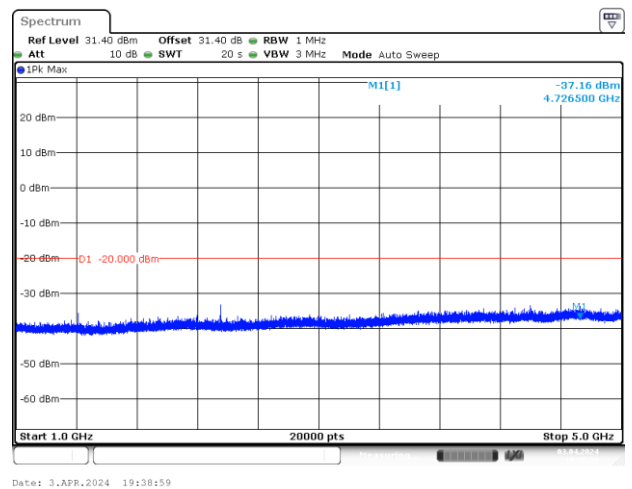
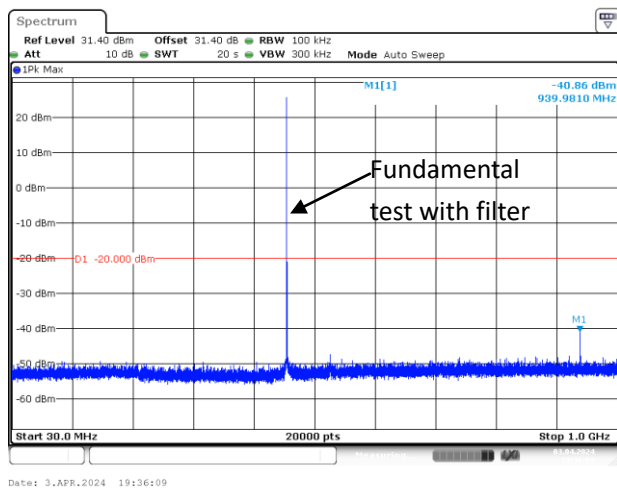
4FSK-12.5k-Low Channel



4FSK-12.5k-Middle Channel



4FSK-12.5k-High Channel



3.3.5 Frequency stability

Un-modulation, Reference Frequency: 450.0125MHz						
Test Item	Temperature (°C)	Voltage (Vdc)	Measured Frequency (MHz)	Frequency Error (ppm)	limit (ppm)	Verdict
Frequency Stability vs. Temperature & Voltage	-30	13.6	450.0128817	0.85	≤1.5	Pass
	-20	13.6	450.0127723	0.61	≤1.5	Pass
	-10	13.6	450.0127542	0.56	≤1.5	Pass
	0	13.6	450.0126895	0.42	≤1.5	Pass
	10	13.6	450.0127413	0.54	≤1.5	Pass
	20	13.6	450.0125528	0.12	≤1.5	Pass
	30	13.6	450.0126734	0.39	≤1.5	Pass
	40	13.6	450.0126356	0.30	≤1.5	Pass
	50	13.6	450.0126352	0.30	≤1.5	Pass
	20	11.56	450.0126612	0.36	≤1.5	Pass
	20	15.64	450.0126749	0.39	≤1.5	Pass

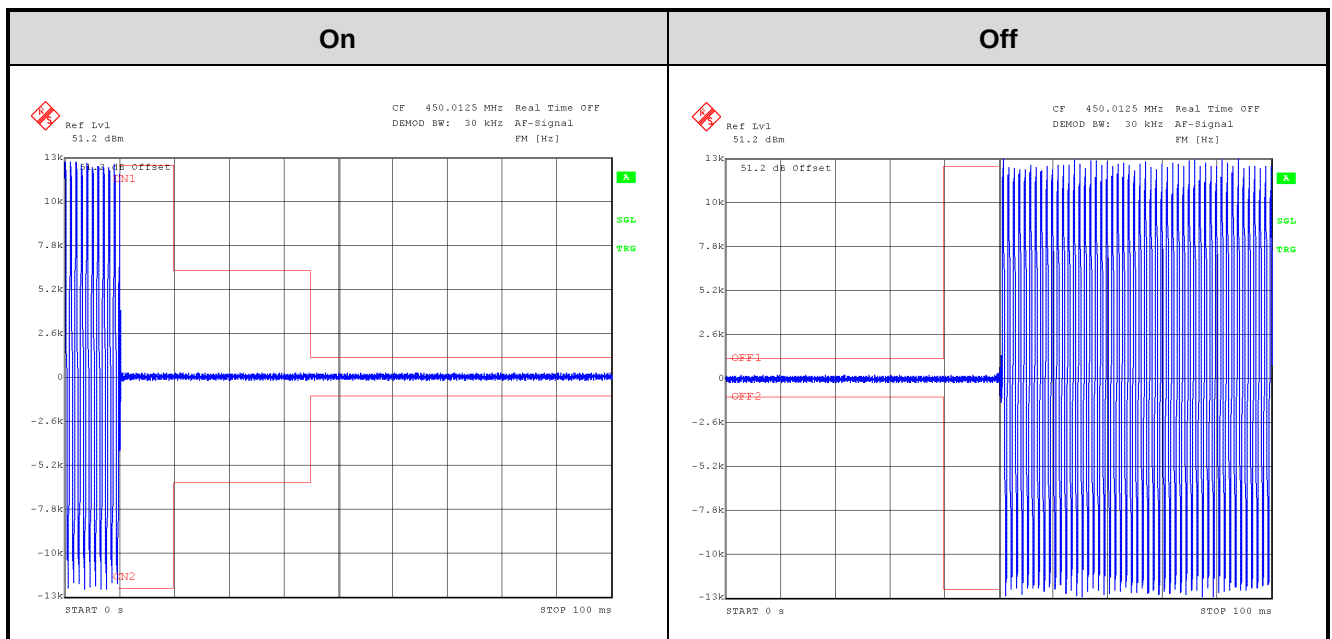
Un-modulation, Reference Frequency: 450.0125MHz						
Test Item	Temperature (°C)	Voltage (Vac)	Measured Frequency (MHz)	Frequency Error (ppm)	limit (ppm)	Verdict
Frequency Stability vs. Temperature & Voltage	-30	120	450.0124856	-0.03	≤1.5	Pass
	-20	120	450.0128637	0.81	≤1.5	Pass
	-10	120	450.0127203	0.49	≤1.5	Pass
	0	120	450.0124362	-0.14	≤1.5	Pass
	10	120	450.0126637	0.36	≤1.5	Pass
	20	120	450.0125423	0.09	≤1.5	Pass
	30	120	450.0124876	-0.03	≤1.5	Pass
	40	120	450.0129527	0.78	≤1.5	Pass
	50	120	450.0127749	0.61	≤1.5	Pass
	20	102	450.0123824	-0.26	≤1.5	Pass
	20	138	450.0125673	0.15	≤1.5	Pass

3.3.6 Transient Frequency Behavior

Channel Spacing (kHz)	Time intervals (ms)	Maximum frequency difference (kHz)	Verdict
12.5	10.0 (t1)	12.5	Pass
	25.0 (t2)	6.25	Pass
	10.0 (t3)	12.5	Pass

Note: During the time from the end of t2 to the beginning of t3, the frequency difference must not exceed the limits of Frequency stability: $450.0125\text{MHz} \times 1.5\text{ppm} = 0.675\text{kHz}$

Test Plots:



3.4 Radiated emission Test Data

Test Date:	2024-03-22	Test By:	Bard Huang
Environment condition:	Temperature: 21.2°C; Relative Humidity:61%; ATM Pressure: 101.0kPa		

Frequency (MHz)	Reading level (dBμV)	Polar (H/V)	Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	EIRP CF	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)	Remark
FM-12.5k-Low Channel									
800.025	15.57	horizontal	29.3	44.87	95.2	-50.33	-20	-30.33	Peak
1600.05	52.29	horizontal	-2.81	49.48	95.2	-45.72	-20	-25.72	Peak
2000.063	56.22	horizontal	-3.39	52.83	95.2	-42.37	-20	-22.37	Peak
2400.075	51.44	horizontal	-1.76	49.68	95.2	-45.52	-20	-25.52	Peak
2800.088	55.68	horizontal	-1.39	54.29	95.2	-40.91	-20	-20.91	Peak
3200.1	55.31	horizontal	-1.88	53.43	95.2	-41.77	-20	-21.77	Peak
800.025	12.83	vertical	29.3	42.13	95.2	-53.07	-20	-33.07	Peak
1600.05	53.52	vertical	-2.81	50.71	95.2	-44.49	-20	-24.49	Peak
2000.063	59.43	vertical	-3.39	56.04	95.2	-39.16	-20	-19.16	Peak
2400.075	53.48	vertical	-1.76	51.72	95.2	-43.48	-20	-23.48	Peak
2800.088	60.87	vertical	-1.39	59.48	95.2	-35.72	-20	-15.72	Peak
3200.1	55.48	vertical	-1.88	53.6	95.2	-41.6	-20	-21.6	Peak
FM-12.5k-Middle Channel									
900.025	11.84	horizontal	30.6	42.44	95.2	-52.76	-20	-32.76	Peak
1800.05	50.59	horizontal	-2.26	48.33	95.2	-46.87	-20	-26.87	Peak
2700.075	55.9	horizontal	-1.45	54.45	95.2	-40.75	-20	-20.75	Peak
3150.088	52.84	horizontal	-1.87	50.97	95.2	-44.23	-20	-24.23	Peak
4500.125	53.04	horizontal	-2.17	50.87	95.2	-44.33	-20	-24.33	Peak
900.025	12.34	vertical	30.6	42.94	95.2	-52.26	-20	-32.26	Peak
1800.05	51.29	vertical	-2.26	49.03	95.2	-46.17	-20	-26.17	Peak
2250.063	51.49	vertical	-1.85	49.64	95.2	-45.56	-20	-25.56	Peak
2700.075	55.58	vertical	-1.45	54.13	95.2	-41.07	-20	-21.07	Peak
3150.088	54.34	vertical	-1.87	52.47	95.2	-42.73	-20	-22.73	Peak
FM-12.5k-High Channel									
939.975	9.36	horizontal	30.88	40.24	95.2	-54.96	-20	-34.96	Peak
1879.95	54.14	horizontal	-2.33	51.81	95.2	-43.39	-20	-23.39	Peak
2349.938	52.71	horizontal	-1.76	50.95	95.2	-44.25	-20	-24.25	Peak
2819.925	54.56	horizontal	-1.42	53.14	95.2	-42.06	-20	-22.06	Peak
3289.913	55	horizontal	-1.84	53.16	95.2	-42.04	-20	-22.04	Peak

4229.888	53.84	horizontal	-2.19	51.65	95.2	-43.55	-20	-23.55	Peak
939.975	11.86	vertical	30.88	42.74	95.2	-52.46	-20	-32.46	Peak
1879.95	55.91	vertical	-2.33	53.58	95.2	-41.62	-20	-21.62	Peak
2349.938	54.34	vertical	-1.76	52.58	95.2	-42.62	-20	-22.62	Peak
2819.925	60.19	vertical	-1.42	58.77	95.2	-36.43	-20	-16.43	Peak
3289.913	56.8	vertical	-1.84	54.96	95.2	-40.24	-20	-20.24	Peak
4FSK-12.5k-Low Channel									
800.025	14.75	horizontal	29.3	44.05	95.2	-51.15	-20	-31.15	Peak
1600.05	52.07	horizontal	-2.81	49.26	95.2	-45.94	-20	-25.94	Peak
2000.063	54.93	horizontal	-3.39	51.54	95.2	-43.66	-20	-23.66	Peak
2400.075	52.38	horizontal	-1.76	50.62	95.2	-44.58	-20	-24.58	Peak
2800.088	54.94	horizontal	-1.39	53.55	95.2	-41.65	-20	-21.65	Peak
3200.1	53.91	horizontal	-1.88	52.03	95.2	-43.17	-20	-23.17	Peak
800.025	12.12	vertical	29.3	41.42	95.2	-53.78	-20	-33.78	Peak
2000.063	59.31	vertical	-3.39	55.92	95.2	-39.28	-20	-19.28	Peak
2400.075	53.39	vertical	-1.76	51.63	95.2	-43.57	-20	-23.57	Peak
2800.088	59.94	vertical	-1.39	58.55	95.2	-36.65	-20	-16.65	Peak
3200.1	54.83	vertical	-1.88	52.95	95.2	-42.25	-20	-22.25	Peak
4FSK-12.5k-Middle Channel									
900.025	9.14	horizontal	30.6	39.74	95.2	-55.46	-20	-35.46	Peak
2700.075	55.66	horizontal	-1.45	54.21	95.2	-40.99	-20	-20.99	Peak
3150.088	52.22	horizontal	-1.87	50.35	95.2	-44.85	-20	-24.85	Peak
4500.125	52.23	horizontal	-2.17	50.06	95.2	-45.14	-20	-25.14	Peak
900.025	10.46	vertical	30.6	41.06	95.2	-54.14	-20	-34.14	Peak
1800.05	51.39	vertical	-2.26	49.13	95.2	-46.07	-20	-26.07	Peak
2700.075	55.64	vertical	-1.45	54.19	95.2	-41.01	-20	-21.01	Peak
3150.088	54.19	vertical	-1.87	52.32	95.2	-42.88	-20	-22.88	Peak
4FSK-12.5k-High Channel									
939.975	9.63	horizontal	30.88	40.51	95.2	-54.69	-20	-34.69	Peak
1879.95	53.34	horizontal	-2.33	51.01	95.2	-44.19	-20	-24.19	Peak
2349.938	53.41	horizontal	-1.76	51.65	95.2	-43.55	-20	-23.55	Peak
2819.925	53.82	horizontal	-1.42	52.4	95.2	-42.8	-20	-22.8	Peak
3289.913	54.33	horizontal	-1.84	52.49	95.2	-42.71	-20	-22.71	Peak
4229.888	53.53	horizontal	-2.19	51.34	95.2	-43.86	-20	-23.86	Peak
939.975	9.39	vertical	30.88	40.27	95.2	-54.93	-20	-34.93	Peak
1879.95	56.09	vertical	-2.33	53.76	95.2	-41.44	-20	-21.44	Peak
2349.938	54.32	vertical	-1.76	52.56	95.2	-42.64	-20	-22.64	Peak

2819.925	60.06	vertical	-1.42	58.64	95.2	-36.56	-20	-16.56	Peak
3289.913	55.91	vertical	-1.84	54.07	95.2	-41.13	-20	-21.13	Peak

Remark:

Corrected Amplitude= Reading level + corrected Factor

Corrected Factor = Antenna factor + Cable loss – Amplifier gain

Margin = Result – Limit

According to ANSI C63.26-2.15 section 5.2.7:

$EIRP (dBm) = E (dB\mu V/m) + 20\log(D) - 104.8$; where D is the measurement distance (in the far field region) in m.

Test was performed on 3meters distance, so

Result = Corrected Amplitude + $20\log(3) - 104.8$

= Corrected Amplitude - 95.2

The emission levels of other frequencies that were lower than the limit 20dB, not show in test report.

4 Test Setup Photo

Please refer to the attachment RWAQ202400228 Test Setup photo.

5 E.U.T Photo

Please refer to the attachment RWAQ202400228 External photo and RWAQ202400228 Internal photo.

---End of Report---