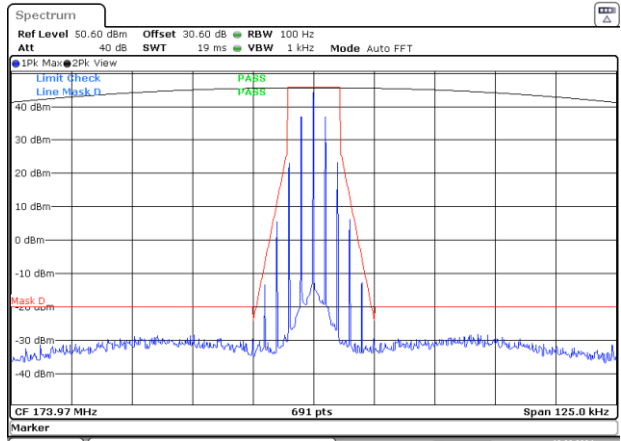
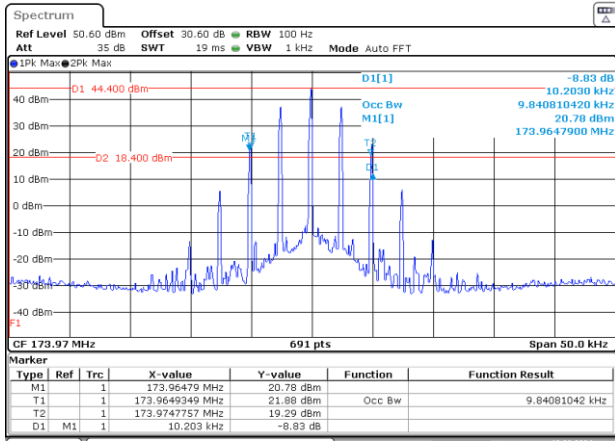
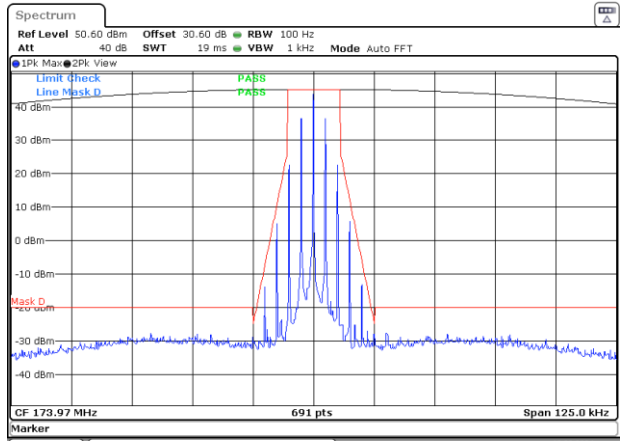
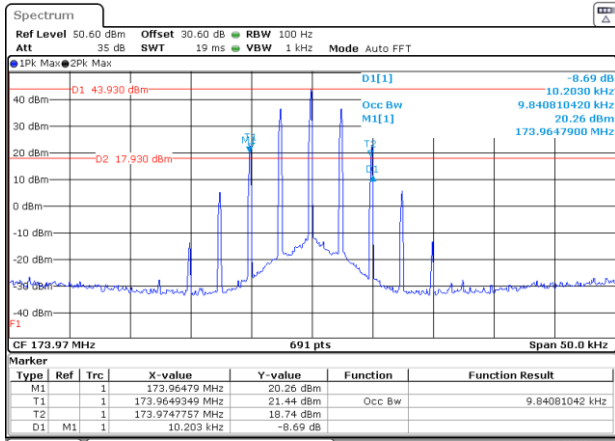


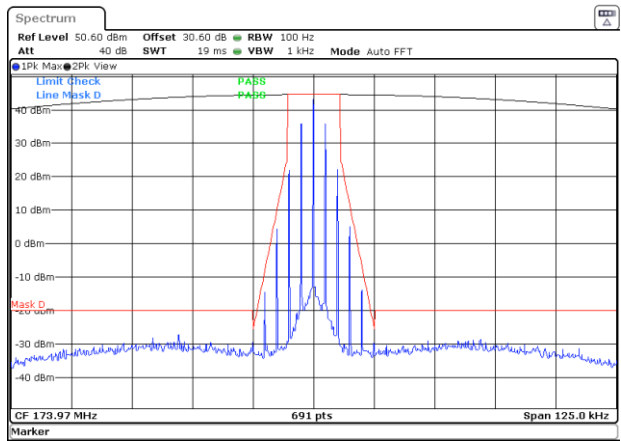
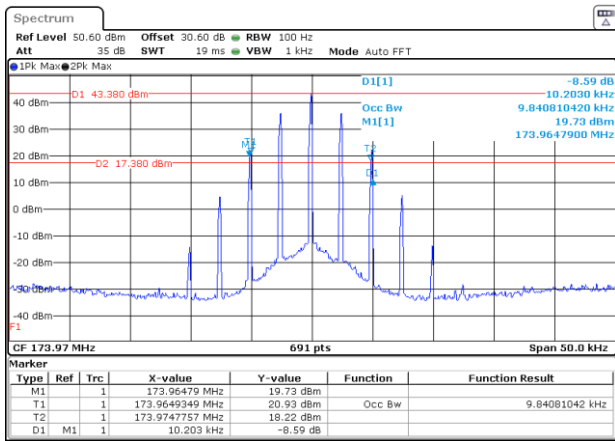
FM-12.5k-High-45W



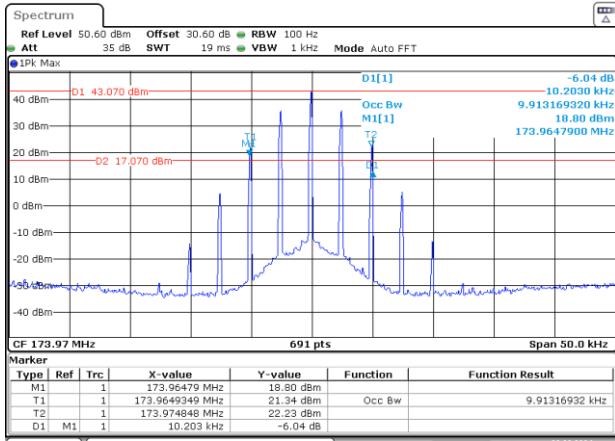
FM-12.5k-High-40W



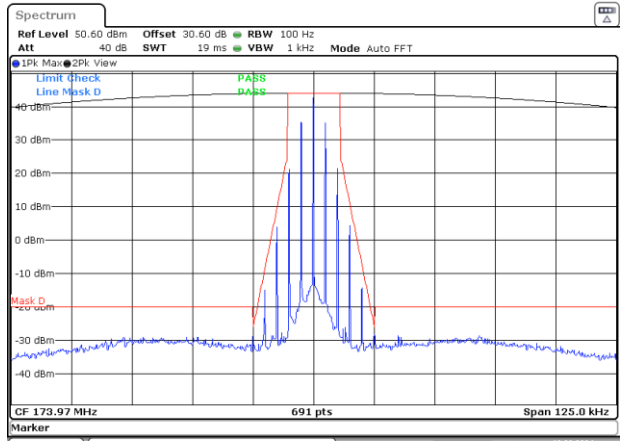
FM-12.5k-High-35W



FM-12.5k-High-30W

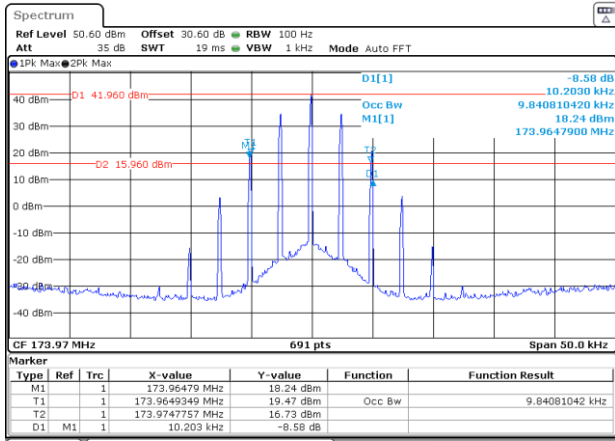


Date: 20.MAR.2024 18:01:08

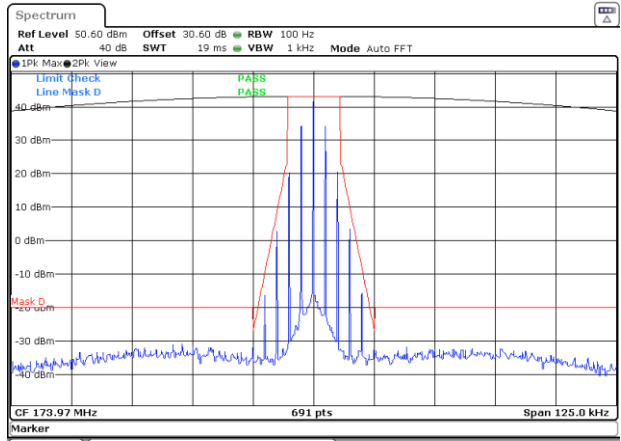


Date: 18.MAR.2024 11:56:34

FM-12.5k-High-25W

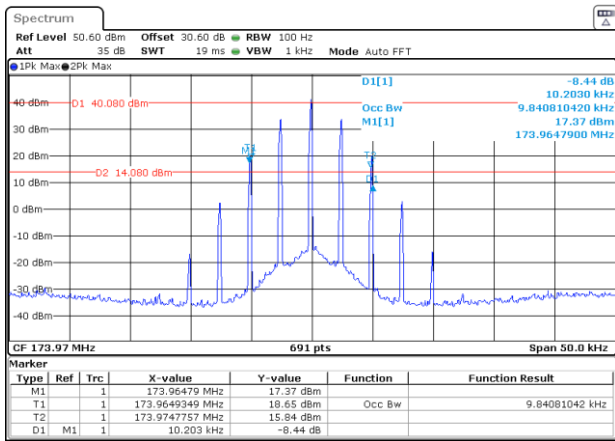


Date: 18.MAR.2024 16:33:28

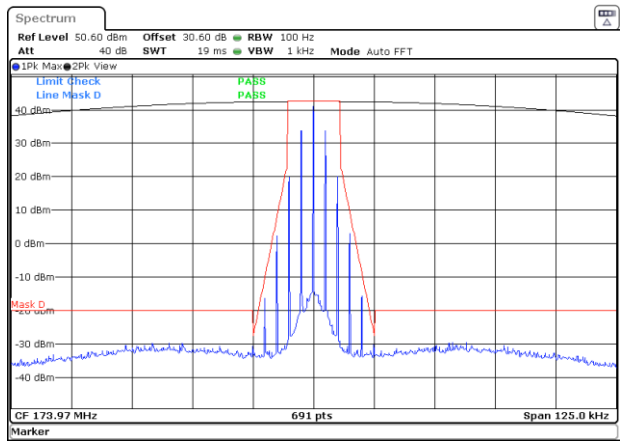


Date: 18.MAR.2024 13:38:07

FM-12.5k-High-20W

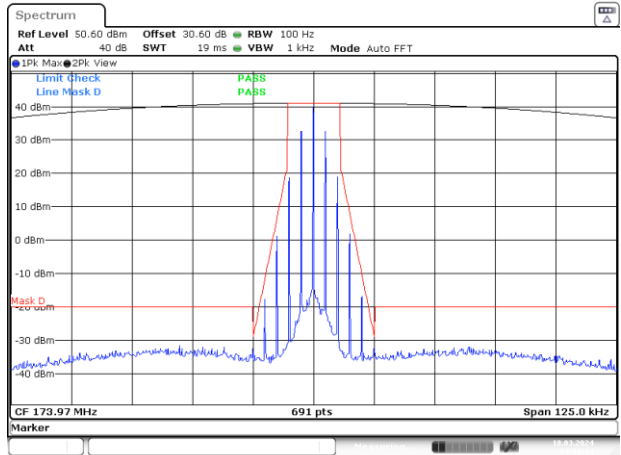
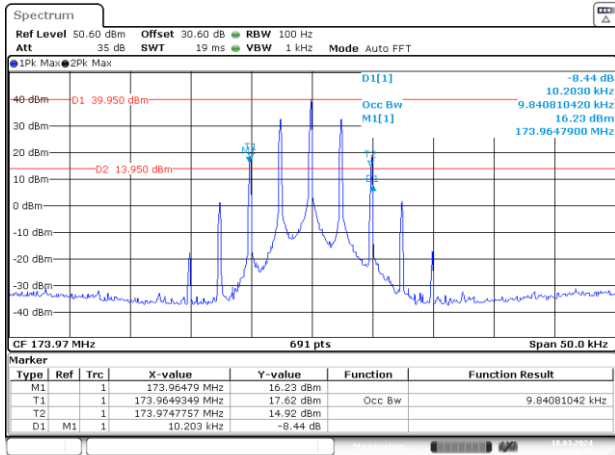


Date: 18.MAR.2024 16:31:54



Date: 18.MAR.2024 13:44:59

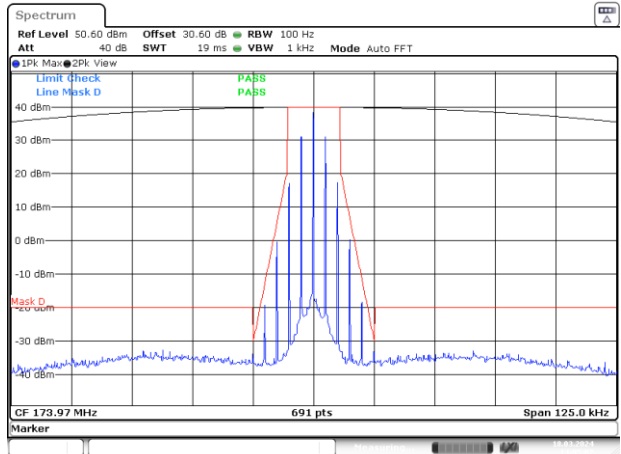
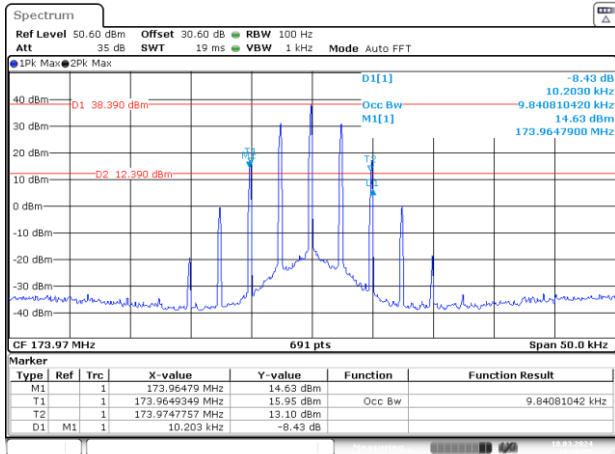
FM-12.5k-High-15W



Date: 18.MAR.2024 16:30:34

Date: 18.MAR.2024 14:01:14

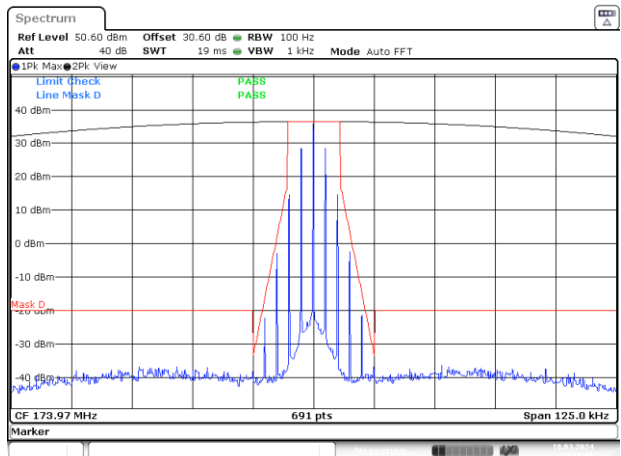
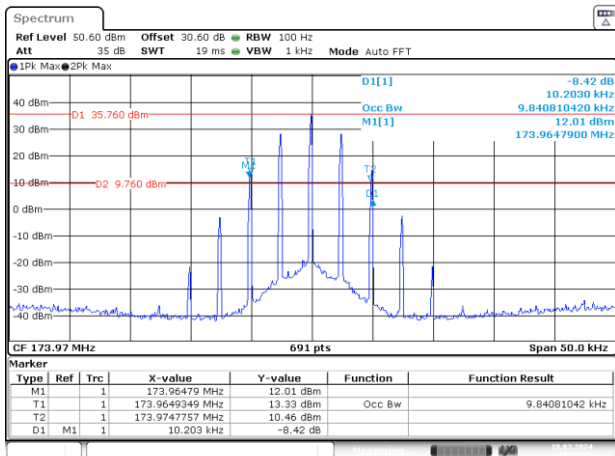
FM-12.5k-High-10W



Date: 18.MAR.2024 16:26:55

Date: 18.MAR.2024 14:05:07

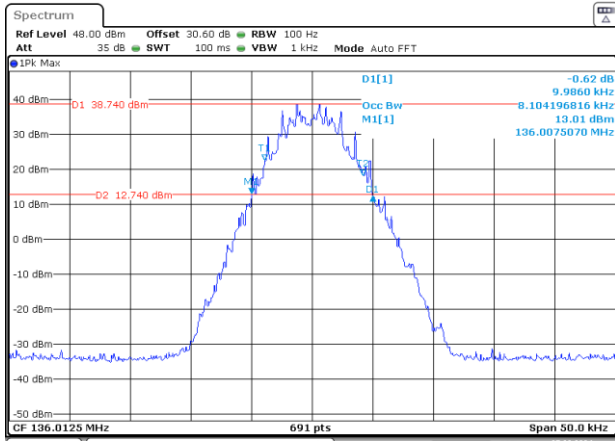
FM-12.5k-High-5W



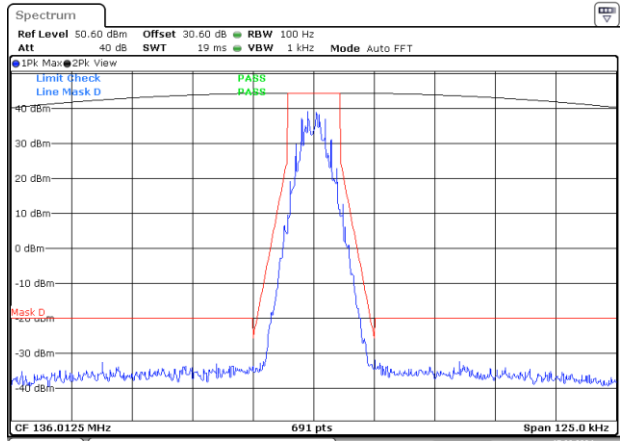
Date: 18.MAR.2024 16:25:26

Date: 18.MAR.2024 14:19:06

4FSK-12.5k-Low-30W

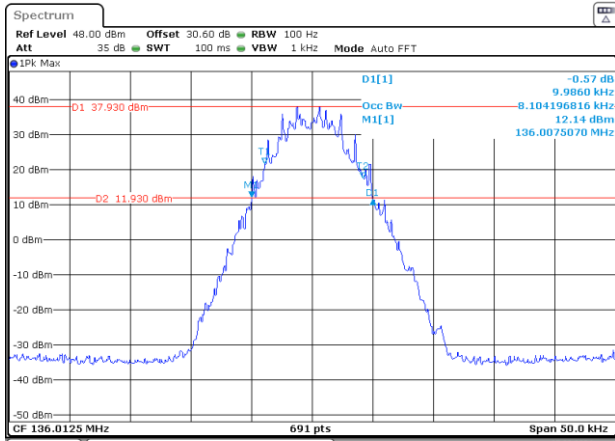


Date: 27_MAR.2024 10:33:58

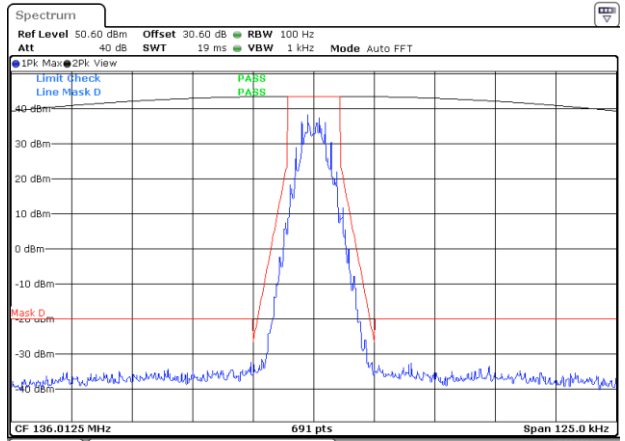


Date: 15_MAR.2024 19:49:21

4FSK-12.5k-Low-25W

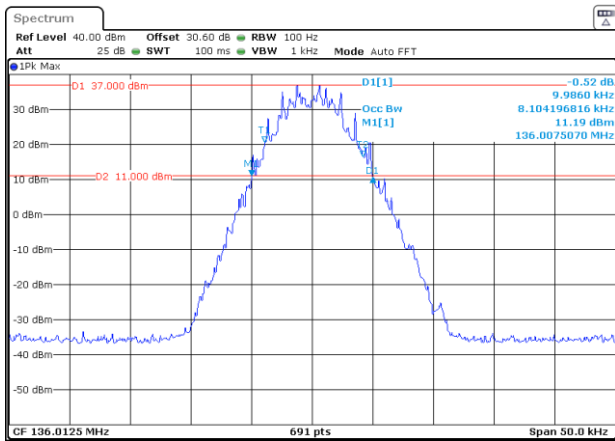


Date: 27_MAR.2024 10:32:30

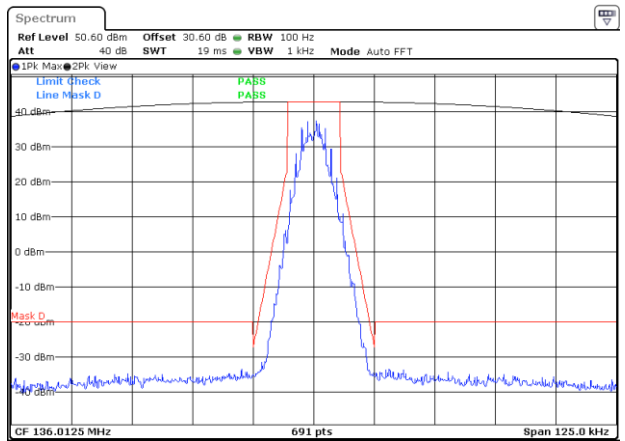


Date: 15_MAR.2024 19:57:45

4FSK-12.5k-Low-20W

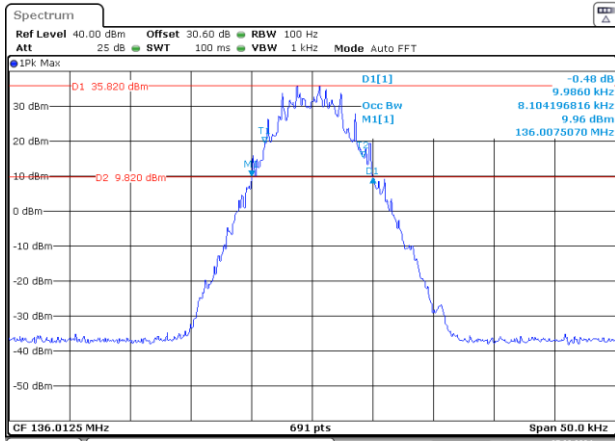


Date: 27_MAR.2024 10:30:42

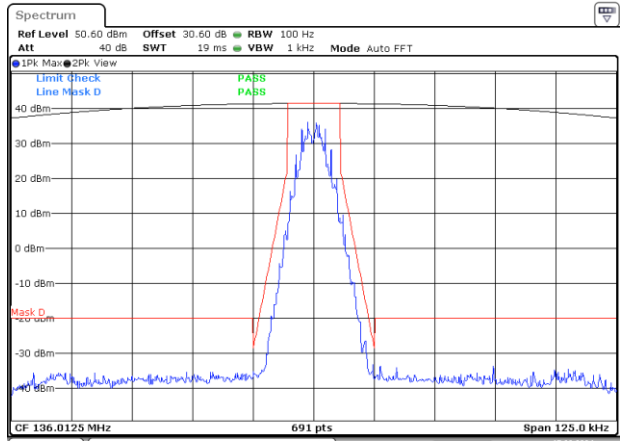


Date: 15_MAR.2024 20:18:18

4FSK-12.5k-Low-15W

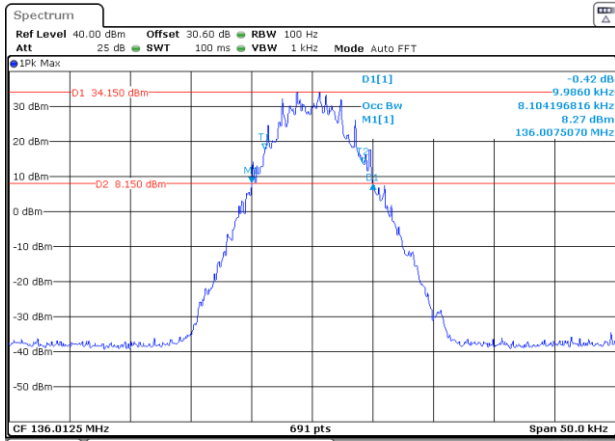


Date: 27_MAR.2024 10:29:03

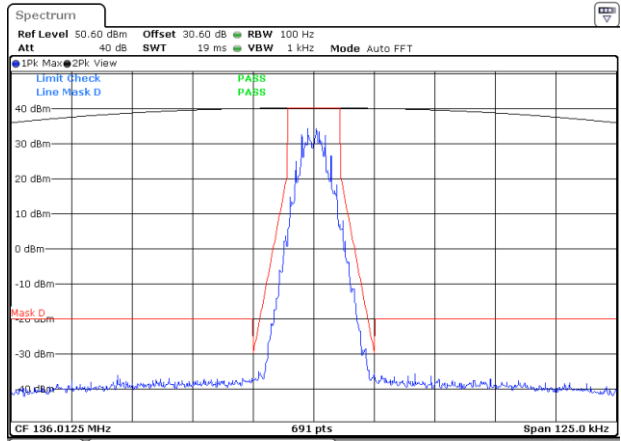


Date: 15_MAR.2024 20:21:20

4FSK-12.5k-Low-10W

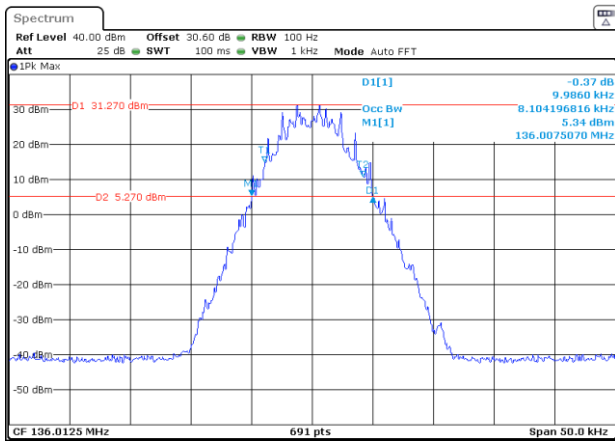


Date: 27_MAR.2024 10:12:41

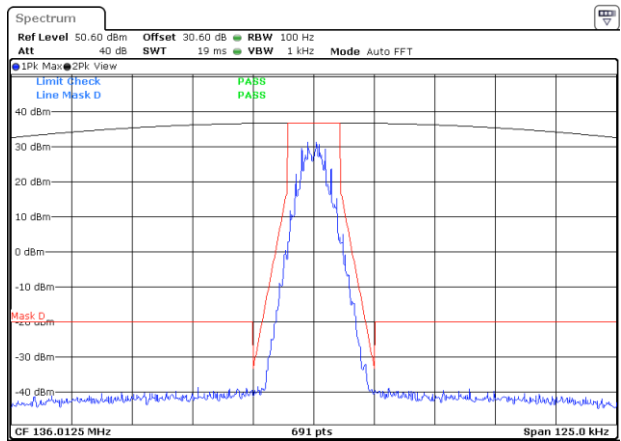


Date: 15_MAR.2024 20:32:10

4FSK-12.5k-Low-5W

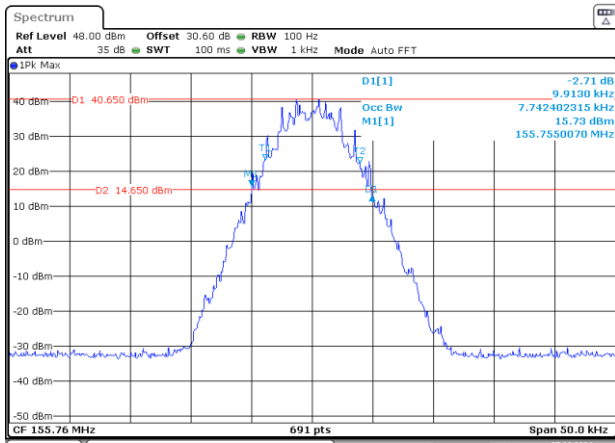


Date: 27_MAR.2024 10:12:12

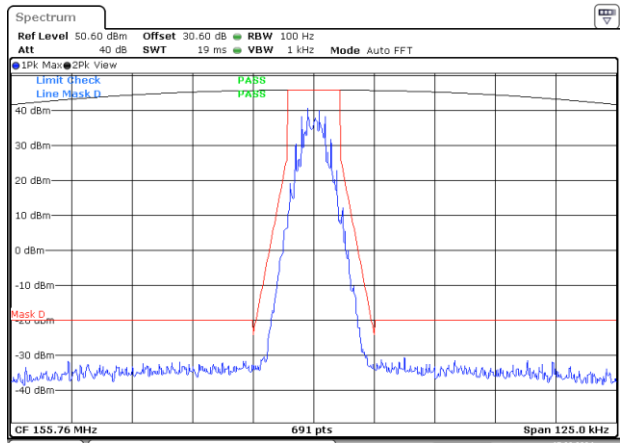


Date: 15_MAR.2024 20:35:48

4FSK-12.5k-Middle-45W

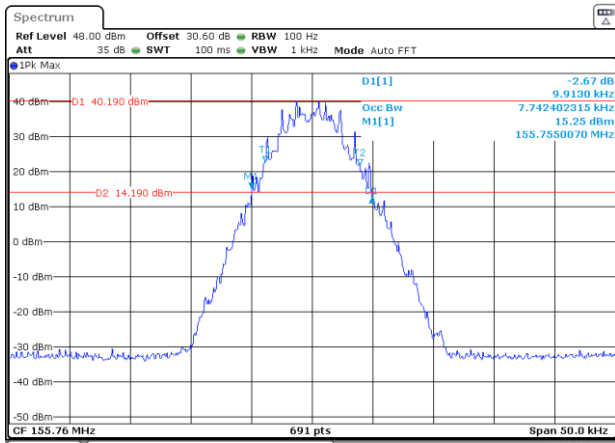


Date: 27_MAR.2024 11:15:38

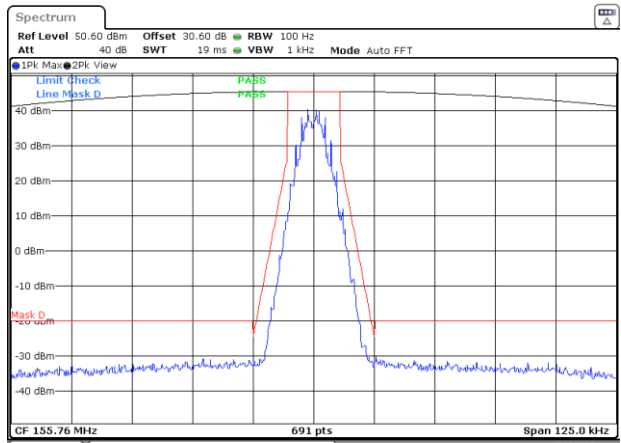


Date: 15_MAR.2024 14:50:26

4FSK-12.5k-Middle-40W

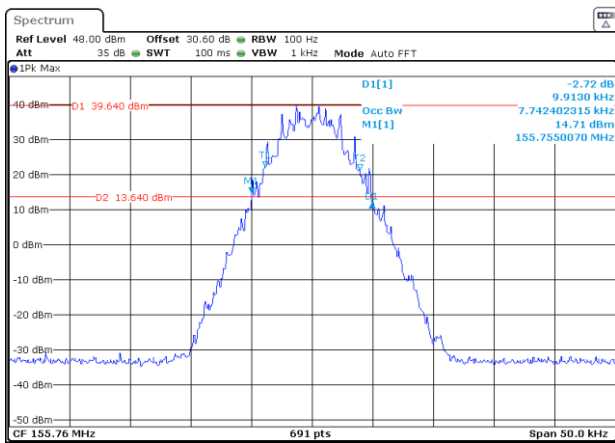


Date: 27_MAR.2024 11:14:18

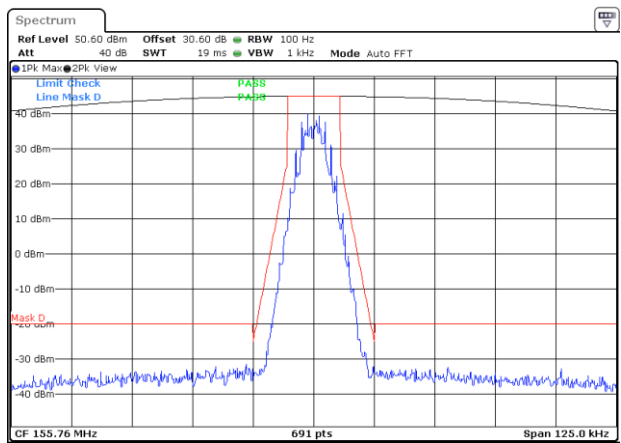


Date: 15_MAR.2024 16:05:21

4FSK-12.5k-Middle-35W

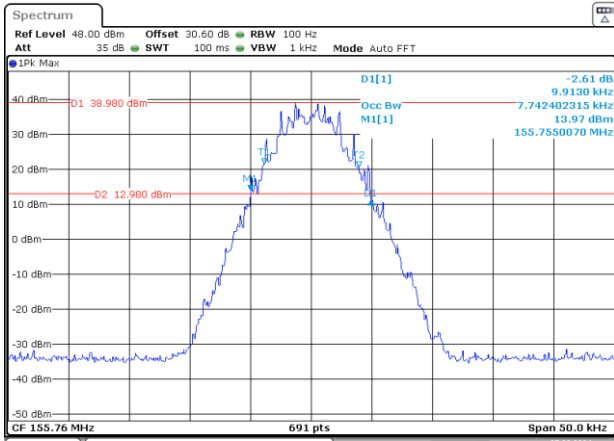


Date: 27_MAR.2024 11:12:31

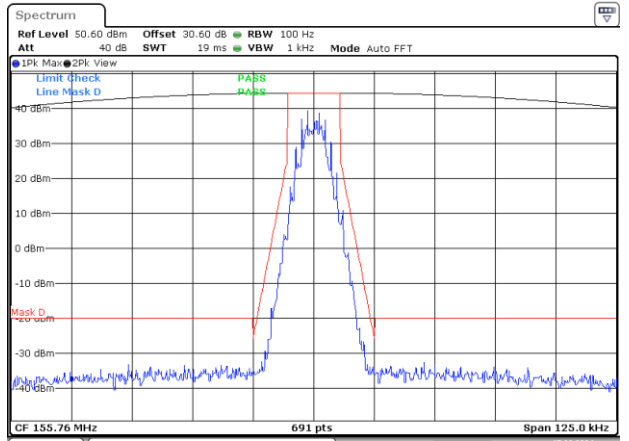


Date: 15_MAR.2024 19:45:29

4FSK-12.5k-Middle-30W

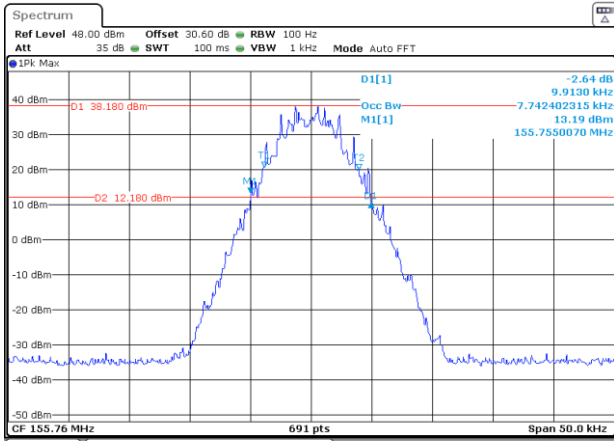


Date: 27_MAR.2024 11:10:40

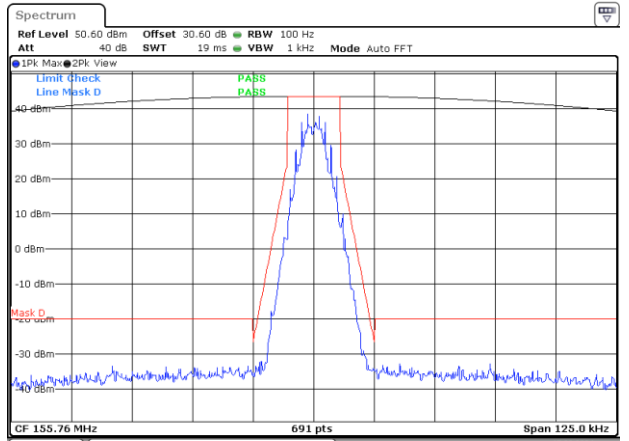


Date: 15_MAR.2024 19:51:54

4FSK-12.5k-Middle-25W

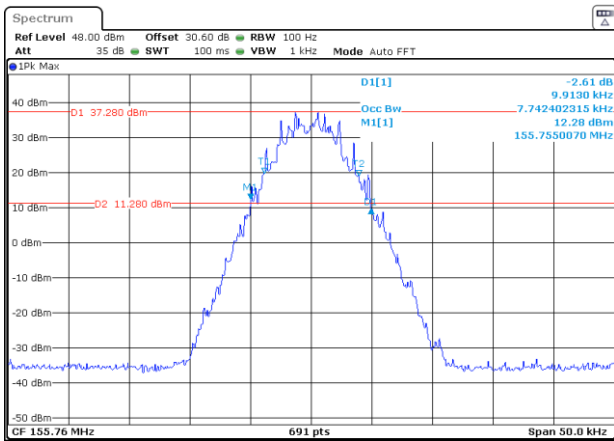


Date: 27_MAR.2024 11:09:22

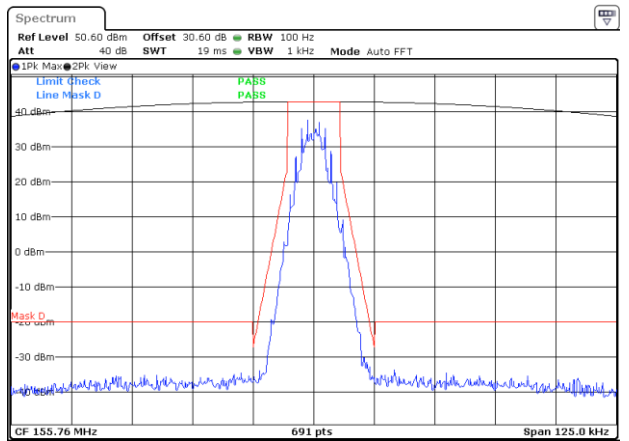


Date: 15_MAR.2024 19:59:58

4FSK-12.5k-Middle-20W

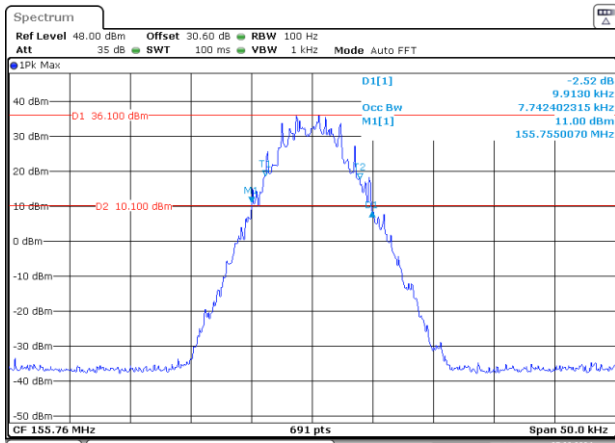


Date: 27_MAR.2024 11:07:54

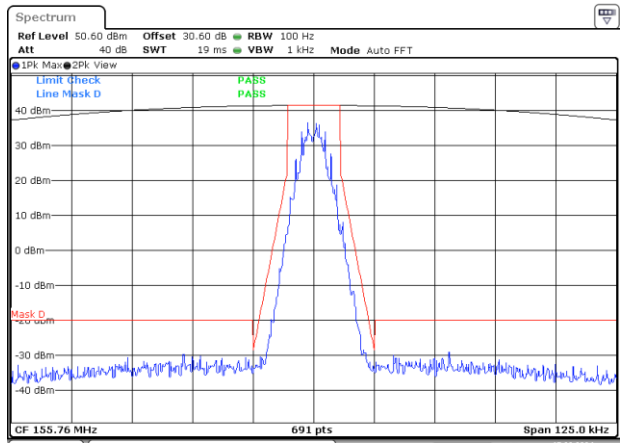


Date: 15_MAR.2024 20:06:41

4FSK-12.5k-Middle-15W

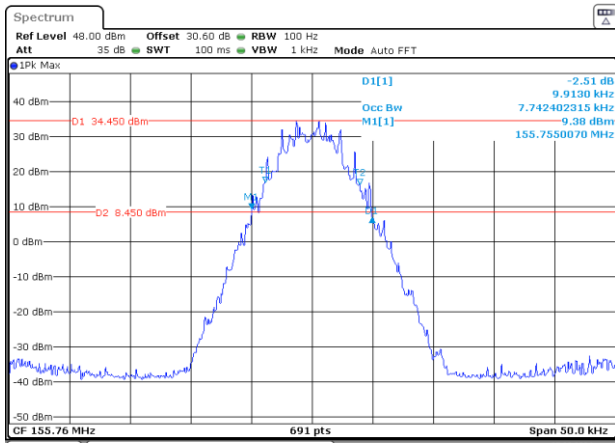


Date: 27_MAR.2024 11:06:25

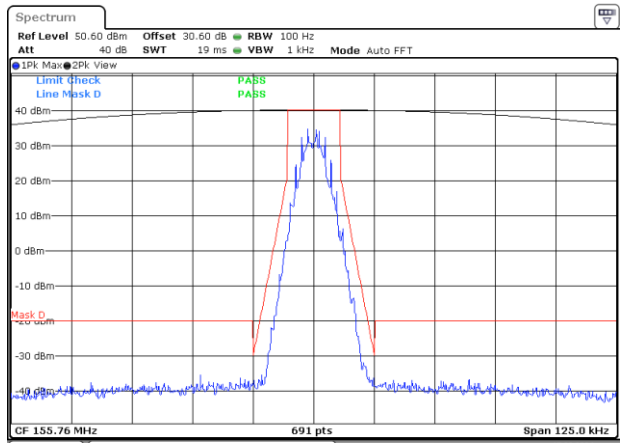


Date: 15_MAR.2024 20:23:38

4FSK-12.5k-Middle-10W

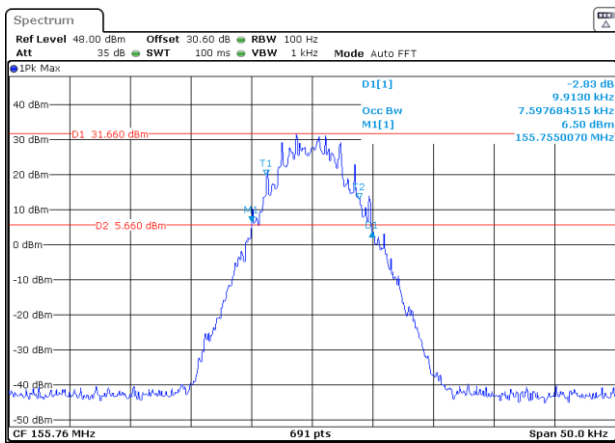


Date: 27_MAR.2024 11:04:08

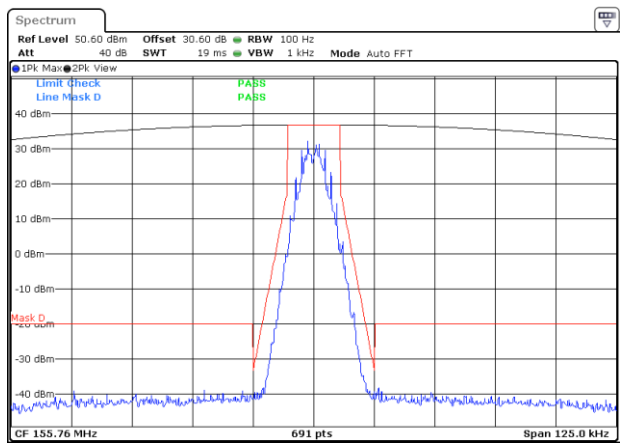


Date: 15_MAR.2024 20:29:03

4FSK-12.5k-Middle-5W

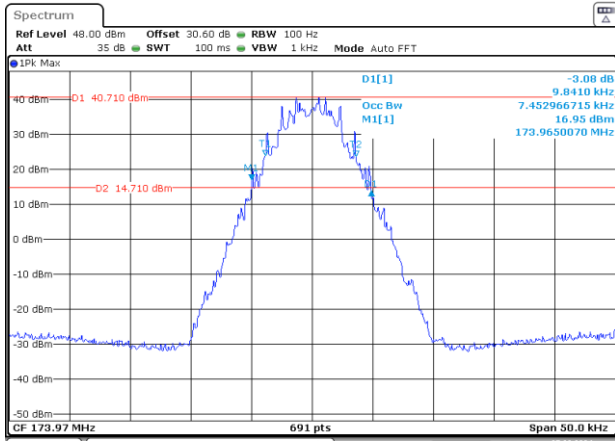


Date: 27_MAR.2024 11:01:58

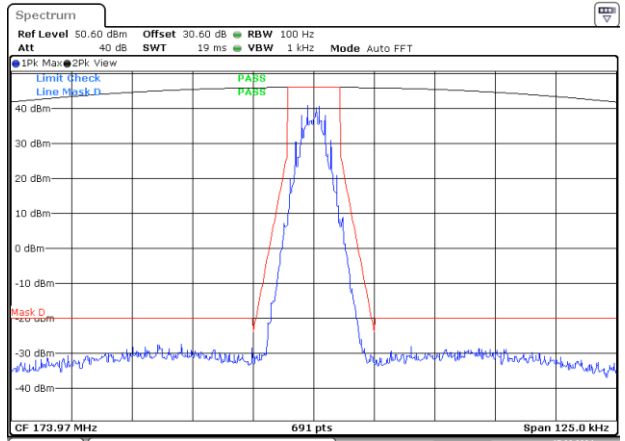


Date: 15_MAR.2024 20:39:17

4FSK-12.5k-High-45W

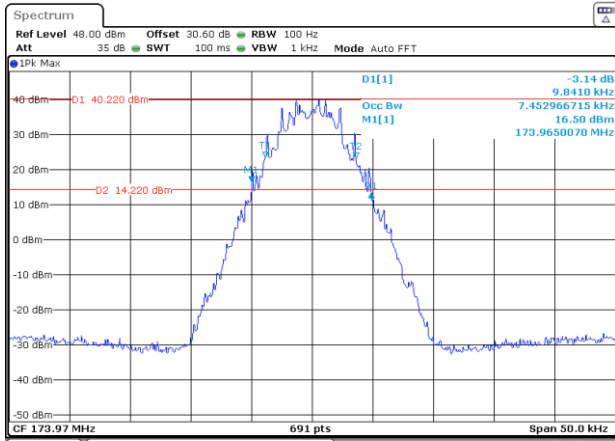


Date: 27_MAR_2024 11:33:51

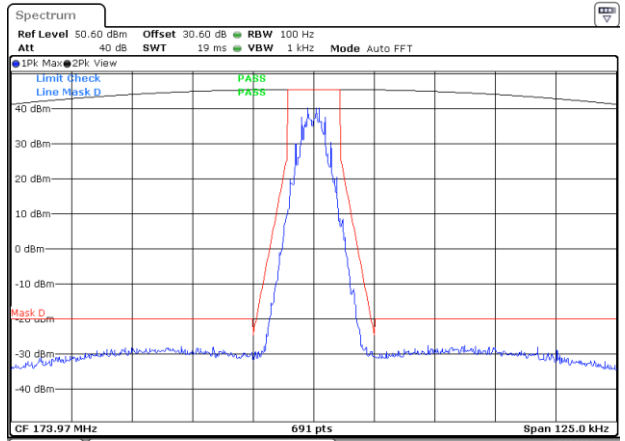


Date: 15_MAR_2024 15:14:05

4FSK-12.5k-High-40W

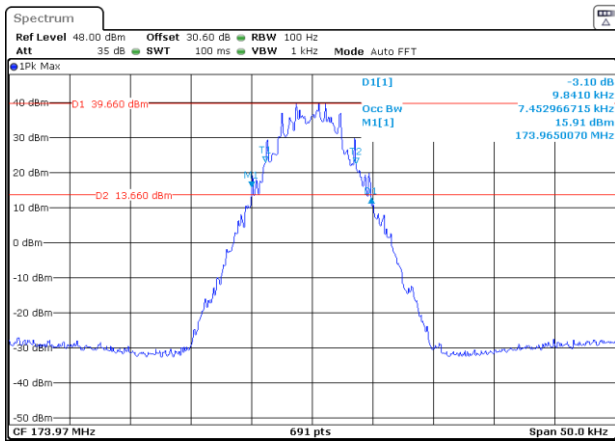


Date: 27_MAR_2024 11:32:28

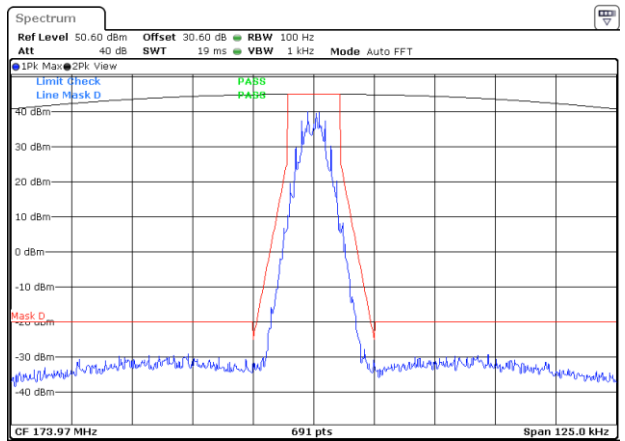


Date: 15_MAR_2024 15:18:04

4FSK-12.5k-High-35W

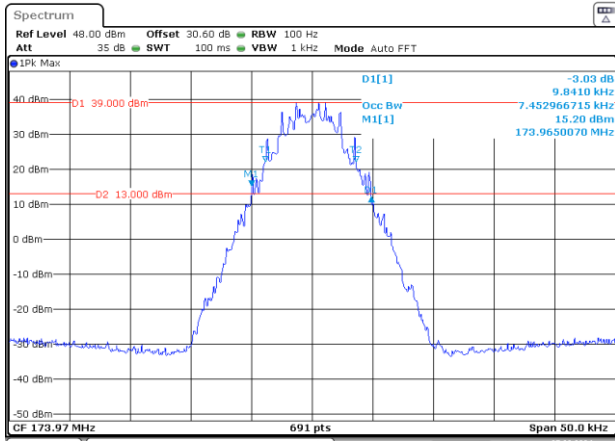


Date: 27_MAR_2024 11:31:07

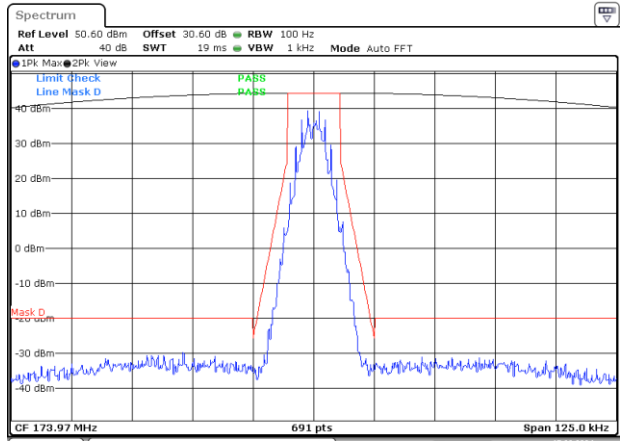


Date: 15_MAR_2024 19:44:24

4FSK-12.5k-High-30W

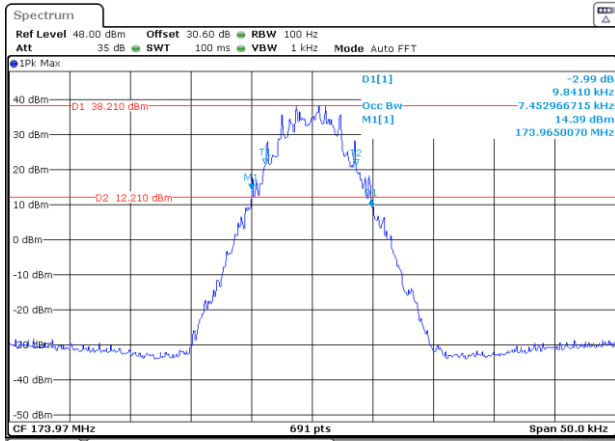


Date: 27_MAR.2024 11:28:55

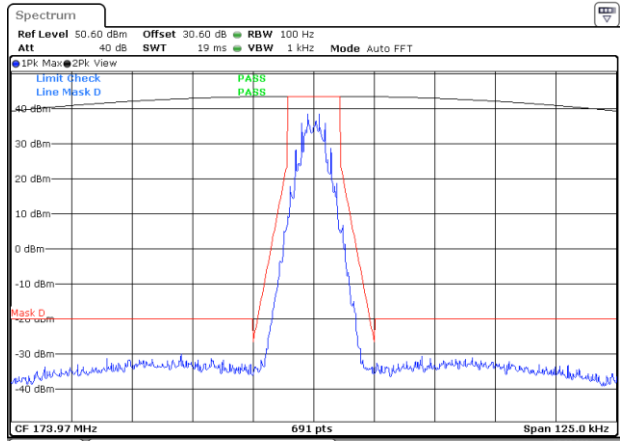


Date: 15_MAR.2024 19:53:04

4FSK-12.5k-High-25W

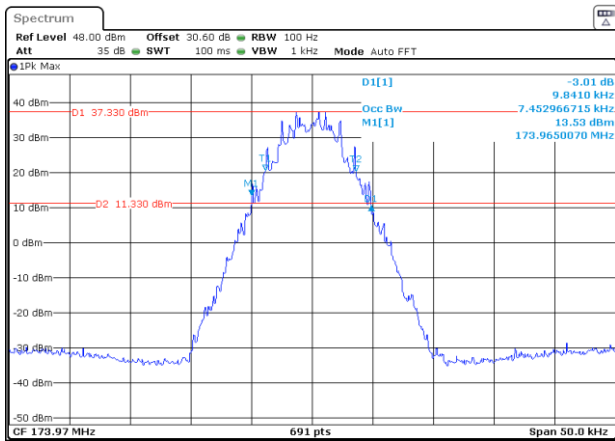


Date: 27_MAR.2024 11:27:00

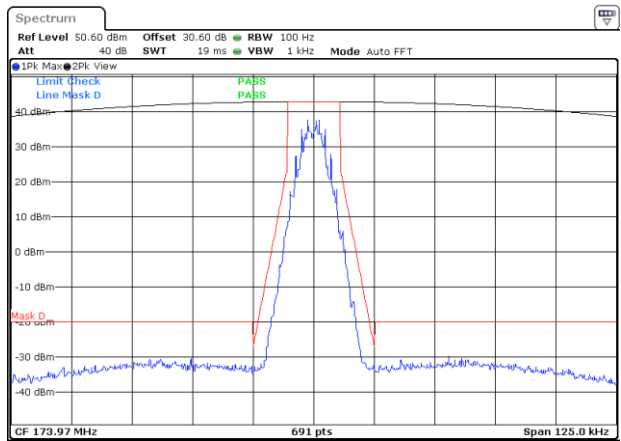


Date: 15_MAR.2024 20:01:00

4FSK-12.5k-High-20W

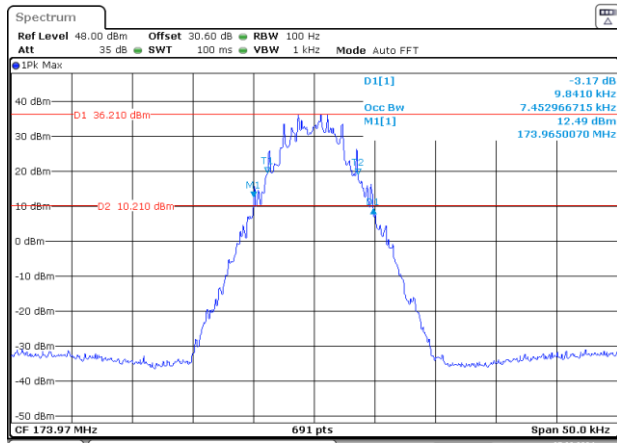


Date: 27_MAR.2024 11:24:52

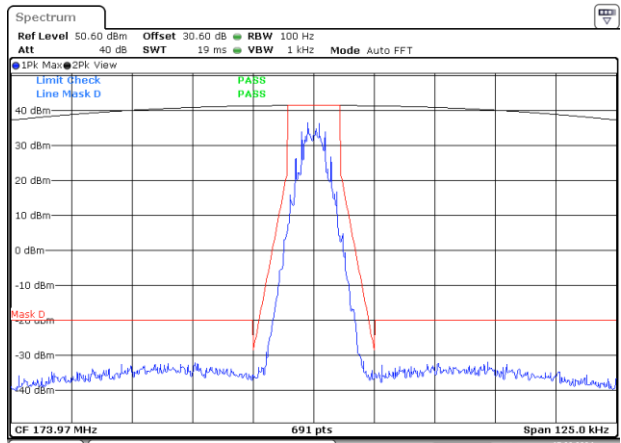


Date: 15_MAR.2024 20:05:30

4FSK-12.5k-High-15W

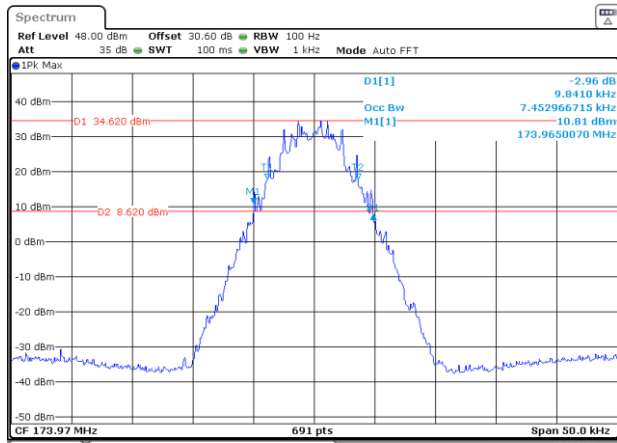


Date: 27_MAR.2024 11:39:13

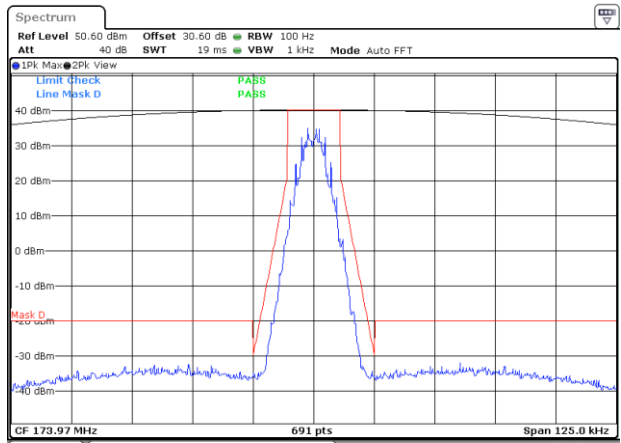


Date: 15_MAR.2024 20:24:39

4FSK-12.5k-High-10W

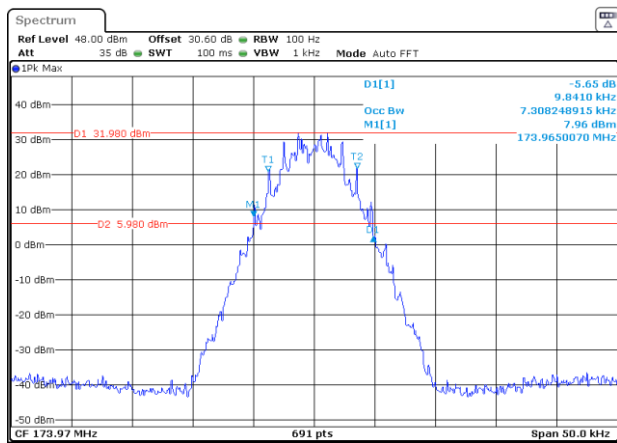


Date: 27_MAR.2024 11:19:33

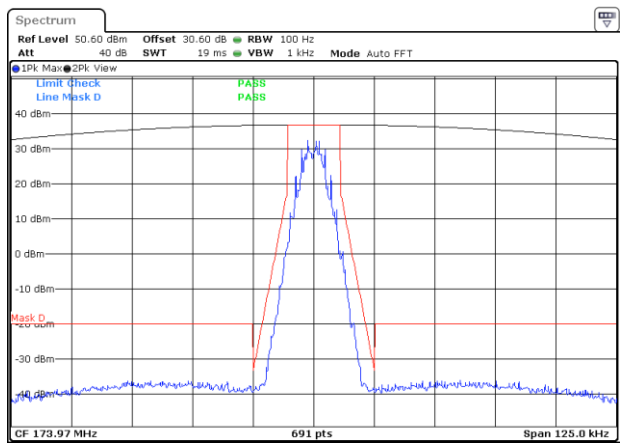


Date: 15_MAR.2024 20:28:03

4FSK-12.5k-High-5W



Date: 27_MAR.2024 11:17:35



Date: 15_MAR.2024 20:40:13

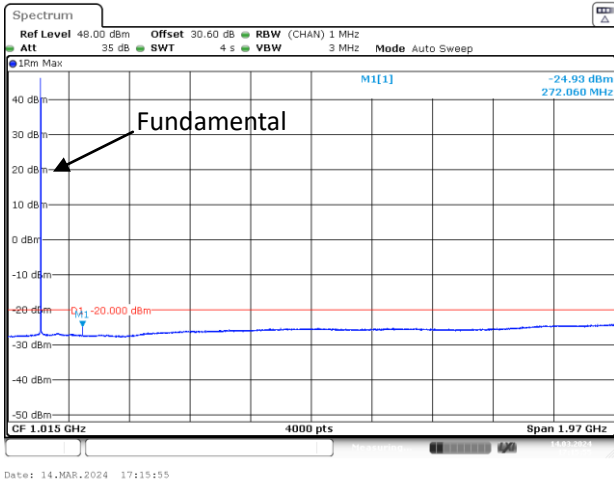
3.3.4 Spurious Emission at Antenna Terminal

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.

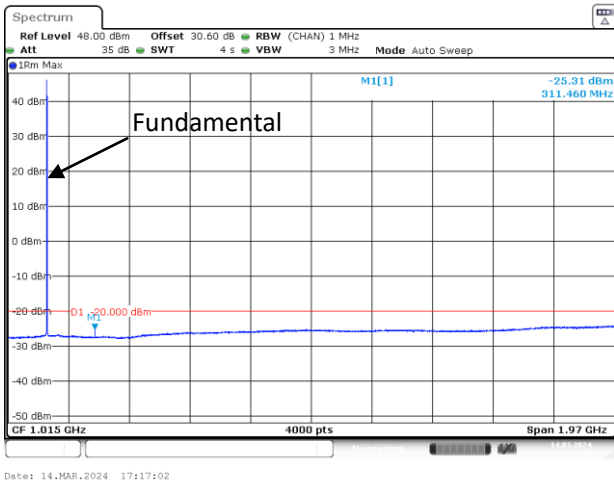
Test Plots:

FM-12.5k-Low Channel



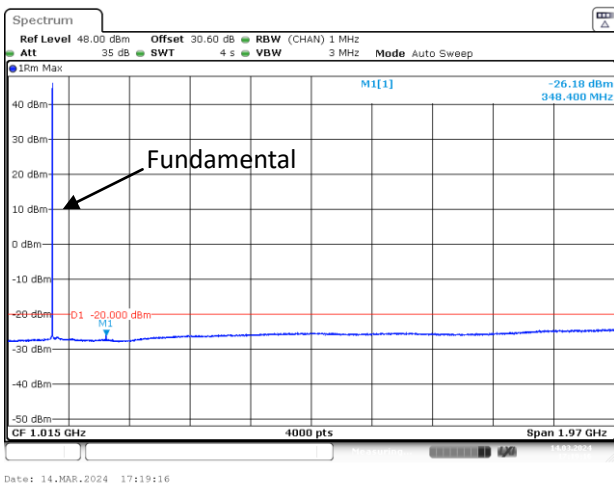
/

FM-12.5k-Middle Channel



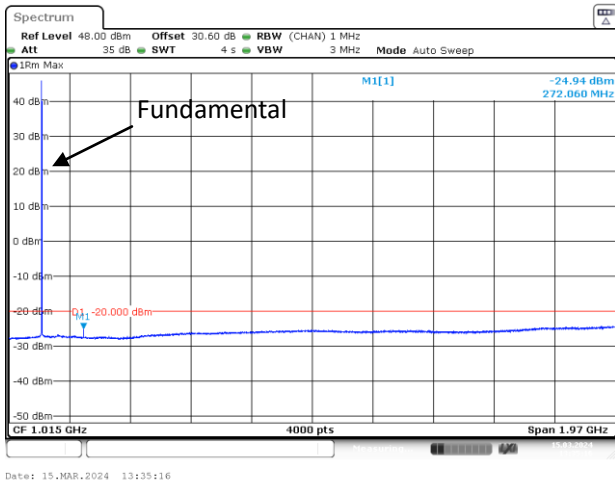
/

FM-12.5k-High Channel



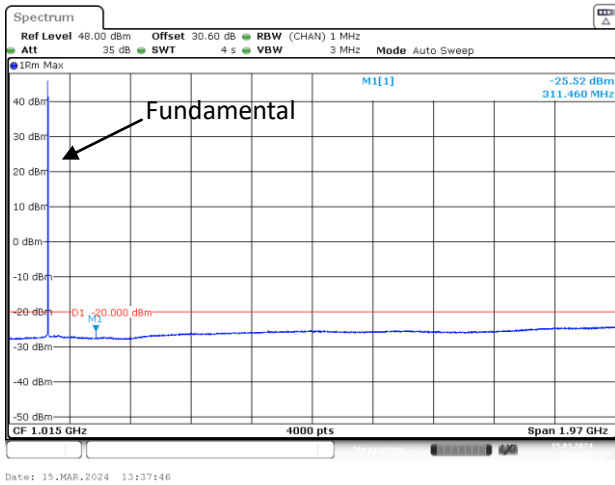
/

4FSK-12.5k-Low Channel



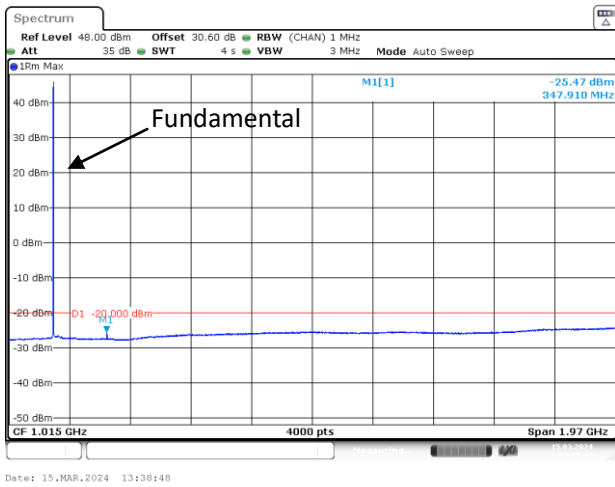
/

4FSK-12.5k-Middle Channel



/

4FSK-12.5k-High Channel



/

3.3.5 Frequency stability

Un-modulation, Reference Frequency: 155.76MHz						
Test Item	Temperature (°C)	Voltage (Vdc)	Measured Frequency (MHz)	Frequency Error (ppm)	limit (ppm)	Verdict
Frequency Stability vs. Temperature & Voltage	-30	13.6	155.759951	-0.32	≤2.5	Pass
	-20	13.6	155.759967	-0.21	≤2.5	Pass
	-10	13.6	155.759986	-0.09	≤2.5	Pass
	0	13.6	155.759919	-0.52	≤2.5	Pass
	10	13.6	155.759991	-0.06	≤2.5	Pass
	20	13.6	155.759905	-0.61	≤2.5	Pass
	30	13.6	155.759919	-0.52	≤2.5	Pass
	40	13.6	155.759921	-0.51	≤2.5	Pass
	50	13.6	155.759860	-0.90	≤2.5	Pass
	20	11.56	155.759999	-0.01	≤2.5	Pass
	20	15.64	155.759963	-0.24	≤2.5	Pass

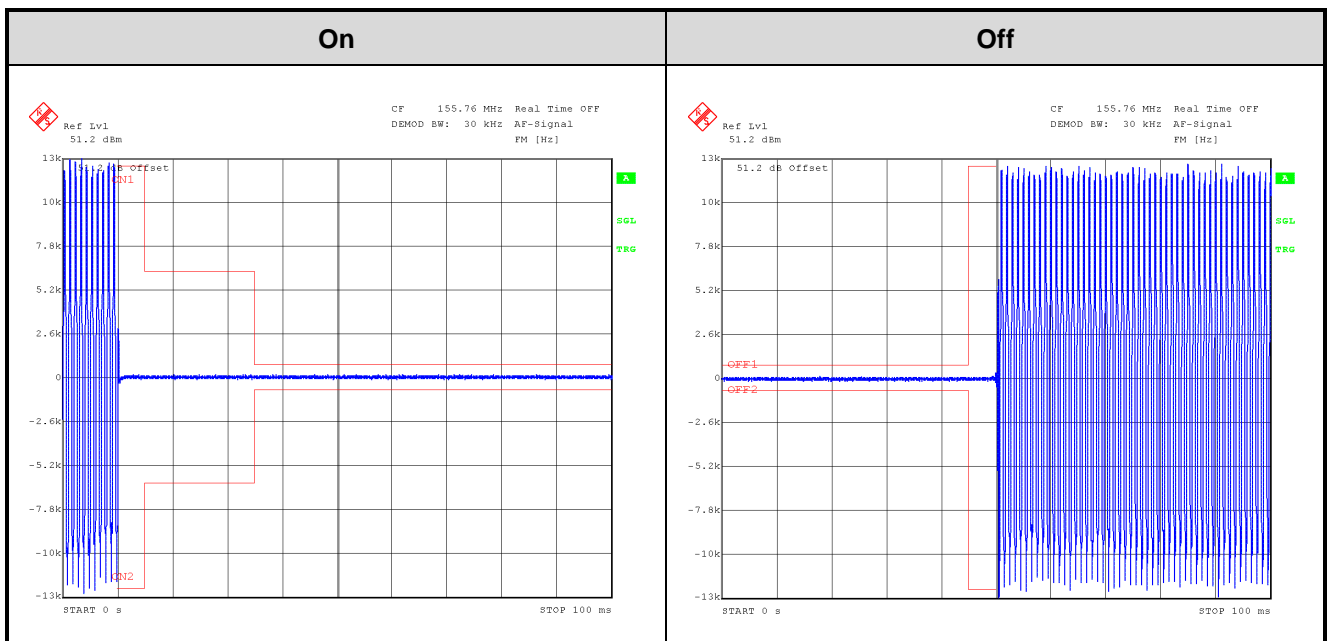
Un-modulation, Reference Frequency: 155.76MHz						
Test Item	Temperature (°C)	Voltage (Vac)	Measured Frequency (MHz)	Frequency Error (ppm)	limit (ppm)	Verdict
Frequency Stability vs. Temperature & Voltage	-30	120	155.759891	-0.70	≤2.5	Pass
	-20	120	155.759915	-0.55	≤2.5	Pass
	-10	120	155.759855	-0.93	≤2.5	Pass
	0	120	155.759870	-0.83	≤2.5	Pass
	10	120	155.759938	-0.40	≤2.5	Pass
	20	120	155.759912	-0.56	≤2.5	Pass
	30	120	155.759871	-0.83	≤2.5	Pass
	40	120	155.759992	-0.05	≤2.5	Pass
	50	120	155.759943	-0.37	≤2.5	Pass
	20	102	155.759931	-0.45	≤2.5	Pass
	20	138	155.759857	-0.92	≤2.5	Pass

3.3.6 Transient Frequency Behavior

Channel Spacing (kHz)	Time intervals (ms)	Maximum frequency difference (kHz)	Verdict
12.5	5.0 (t1)	12.5	Pass
	20.0 (t2)	6.25	Pass
	5.0 (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: $155.76\text{MHz} \times 2.5\text{ppm} = 0.389\text{kHz}$

Test Plots:



3.4 Radiated emission Test Data

Test Date:	2024-03-23	Test By:	Luke Li
Environment condition:	Temperature: 21.8°C; Relative Humidity:65%; ATM Pressure: 100.6kPa		

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									
680.063	23.42	horizontal	27.86	51.28	95.2	-43.92	-20	-23.92	Peak
1360.125	48.3	horizontal	-4.23	44.07	95.2	-51.13	-20	-31.13	Peak
680.063	24.36	vertical	27.86	52.22	95.2	-42.98	-20	-22.98	Peak
1360.125	48.73	vertical	-4.23	44.5	95.2	-50.7	-20	-30.7	Peak
FM-12.5k-Middle Channel									
623.04	10.37	horizontal	27.25	37.62	95.2	-57.58	-20	-37.58	Peak
1557.6	49.59	horizontal	-3.17	46.42	95.2	-48.78	-20	-28.78	Peak
623.04	9.72	vertical	27.25	36.97	95.2	-58.23	-20	-38.23	Peak
1557.6	50.13	vertical	-3.17	46.96	95.2	-48.24	-20	-28.24	Peak
FM-12.5k-High Channel									
347.94	18.23	horizontal	22.15	40.38	95.2	-54.82	-20	-34.82	Peak
695.88	14.25	horizontal	28.01	42.26	95.2	-52.94	-20	-32.94	Peak
1565.73	53.27	horizontal	-3.1	50.17	95.2	-45.03	-20	-25.03	Peak
347.94	21.27	vertical	22.15	43.42	95.2	-51.78	-20	-31.78	Peak
695.88	16.25	vertical	28.01	44.26	95.2	-50.94	-20	-30.94	Peak
1565.73	53.11	vertical	-3.1	50.01	95.2	-45.19	-20	-25.19	Peak
4FSK-12.5k-Low Channel									
680.063	21.3	horizontal	27.86	49.16	95.2	-46.04	-20	-26.04	Peak
1360.125	48.5	horizontal	-4.23	44.27	95.2	-50.93	-20	-30.93	Peak
680.063	24.28	vertical	27.86	52.14	95.2	-43.06	-20	-23.06	Peak
1360.125	49.42	vertical	-4.23	45.19	95.2	-50.01	-20	-30.01	Peak
4FSK-12.5k-Middle Channel									
623.04	10.55	horizontal	27.25	37.8	95.2	-57.4	-20	-37.4	Peak
1557.6	49.6	horizontal	-3.17	46.43	95.2	-48.77	-20	-28.77	Peak
623.04	10.33	vertical	27.25	37.58	95.2	-57.62	-20	-37.62	Peak

1557.6	49.57	vertical	-3.17	46.4	95.2	-48.8	-20	-28.8	Peak
4FSK-12.5k-High Channel									
347.94	17.77	horizontal	22.15	39.92	95.2	-55.28	-20	-35.28	Peak
695.88	13.97	horizontal	28.01	41.98	95.2	-53.22	-20	-33.22	Peak
1565.73	52.99	horizontal	-3.1	49.89	95.2	-45.31	-20	-25.31	Peak
347.94	21.85	vertical	22.15	44	95.2	-51.2	-20	-31.2	Peak
695.88	15.46	vertical	28.01	43.47	95.2	-51.73	-20	-31.73	Peak
1565.73	52.01	vertical	-3.1	48.91	95.2	-46.29	-20	-26.29	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:

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

Test was performed on 3meters distance, so

$$\begin{aligned} \text{Result} &= \text{Corrected Amplitude} + 20\log(3) - 104.8 \\ &= \text{Corrected Amplitude} - 95.2 \end{aligned}$$

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 RWAQ202400227 Test Setup photo.

5 E.U.T Photo

Please refer to the attachment RWAQ202400227 External photo and RWAQ202400227 Internal photo.

---End of Report---