

In order to keep things simple I dispensed with the usual input transformer arrangement and used a pi-section attenuator to provide a reasonable match to the FT-817. I also used a simple low-pass pi-section output filter which provides greater than 45 dB of rejection at the third (and higher harmonics).

Construction mainly uses point-to-point wiring with the exception of a small piece of strip board on which D1, D2, TR1, RL1 (and associated components) are mounted. To facilitate good earthing and heat conduction, the base of the diecast enclosure was lined with a piece of double-sided copper laminate board suitably cut to size. TR2 is mounted on a TO220 extruded aluminium heatsink which, in turn, is bolted to the inner wall of the diecast enclosure.

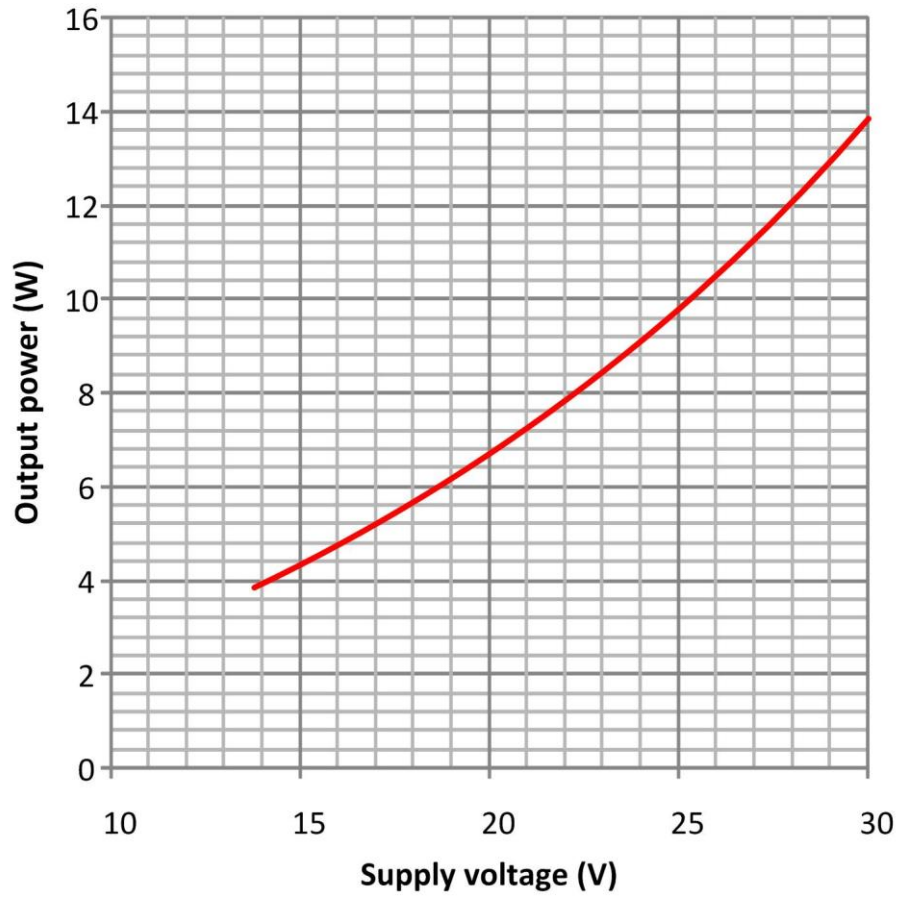
T1 consists of a 10 turn bifilar winding on a suitable grade 25 mm diameter ferrite toroid (N30 material, $A_L = 4620$ nH, or equivalent) whilst L1 consists of 8 turns of 1.5 mm diameter enamelled copper wire wound on a 25 mm length of ordinary ferrite rod. The voltage at TPB should be adjusted to $2.5 \text{ V} \pm 0.2\text{V}$ (using RV2) prior to testing the unit. When the FT-817 is connected and switched to transmit, the voltage at TPA should be $2.4 \text{ V} \pm 0.6\text{V}$. If desired, the T/R switching can be tested (without needing to apply RF) by connecting TPB to a DC source of between +3V and +9V. The 100 μA meter, M1, is adjusted (via RV1) to read full-scale when the supply current is 1A. Normal indications on M1 should be in the range 0.5 A to 0.7 A for output powers in the range 8 W to 11 W.

In order to minimise the battery drain as well (and also reduce the risk of any damage to the FT-817's finals when running full-carrier in data modes for prolonged periods) the FT-817 should be operated on the low power setting (i.e. L1 or L2).

During the initial design stage, the linear amplifier was modelled using 5Spice (www.5spice.com). Results of the AC analysis suggested that a maximum output power of 13W should be delivered to a 50 ohm load with a 26V DC supply. It was interesting to compare this with the measured performance of the prototype linear amplifier which was as follows (FT-817 set for low-power):

Power gain:	9.5 dB
Output power:	10 W
Harmonics:	better than -56 to -60 dB (relative to full output)
Input impedance:	50 ohm nominal
Supply current:	600 mA at 26 V DC

Since building, the amplifier has been successfully used in several of the recent 80m Club Championship contests and hopefully will help us gain a few extra points as the year progresses!



Input power = 1.2 W

Figure 2 *Variation of output power with supply voltage*