

Two Broadband Symmetrical Transformers for HF and VHF Bands

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Below there are described two broadband transformers with transformation ratio 1:5 and 1:10. First transformer could match 50 Ohm to 250 Ohm the second one could match 50 Ohm to 500 Ohm. The transformers may be used to feed different types of hi-ohmic antennas, for example, G5RV. The transformers provide symmetrical output. The transformers provide SWR 1.15 AT 144 MHz, 1.1 at 70- MHz, 1.0 at 50- MHz, 1.1 at 3.5- MHz and 1.15 at 1.9- MHz. The transformers do not overheat at 500- Watts power going through.

Figure 1 shows design of the transformer with ratio 1: 5 (50/250 Ohm). Main core of the transformer is a ferrite tube taken from an RFI filter that was placed on control wires of old CRT monitor. Such tube may have OD 18... 20- mm, ID 8... 9- mm, and length 25- 28- mm. Permeability of the core is near 800- 1000.

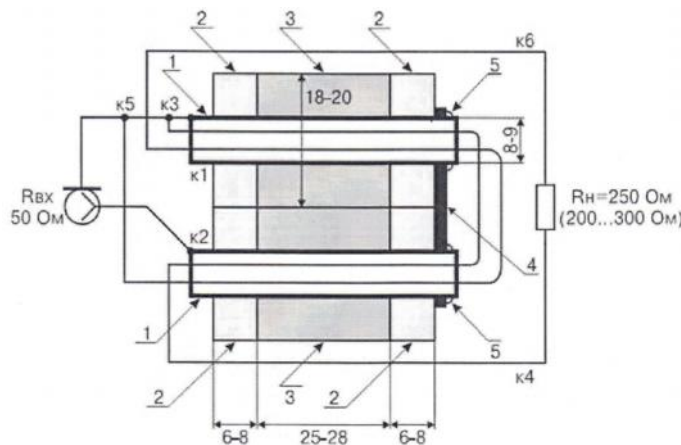


Figure 1 Design of the Transformer with Ratio 1: 5 (50/250 Ohm)

Length ferrite core for the transformer should be 37... 44- mm. So, two ferrite rings with equal to the tube OD and ID placed from the both sides of the core. First winding of the transformer (k1k2 at **Figure 1**) consist of two copper tubes (pos.1) that are inserted into the ferrite cores. The tubes should have a minimal gap between the cores. The tubes are shorted by a jumper (pos.4). The jumper made of a copper strip. The jumper is soldered (pos.5) to the copper tubes. Second winding (k3k4 + k5k6) made by teflon wire in diameter 1.5- 2.0 mm (15... 12 AWG).

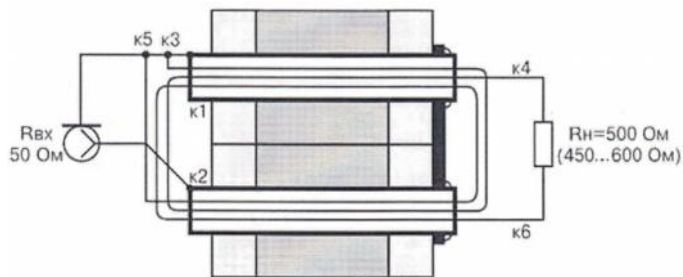


Figure 2 Design of the Transformer with Ratio 1: 10 (50/500 Ohm)

Figure 2 shows design of the transformer with ratio 1: 10 (50/500 Ohm). The transformer has design similar to the transformer with ratio 1: 5 (50/250 Ohm). Difference is only in the second winding that design is cleared from **Figure 2**.

Both transformers were tested at real antennas. They worked perfect at least much better the usual transformer made on a ferrite ring. The transformers have equal frequency parameters from 1.9 to 144 MHz that could not provide the usual transformers on ferrite ring.

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