

VK6-Antenna 160m – 10m

- A Multiband Antenna

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In Ham Radio April 1984 page 76 Bill Orr W6SAI described how two Australian radio amateurs have experimented with an end-fed antenna, that: basically covers most of the high frequency spectrum from 160 m to 10 m.

The antenna is widely used in Australia by the amateurs there, but it is both large and heavy. It has the resemblance of a cage because it has four injectors with dimensions of 72" (183 cm) square of the four threads are stressed out, one in each corner of the square and a tree in the centre. Entire antenna is shared in a third of its length from the distal end. Between the two halves have been placed a coil with 6 x 1 W 2.2 kΩ resistors in parallel across the coil. The antenna is a total of 75 feet (22.57 m) long and is end-fed with the help of a matching transformer wound on an Amidon core.

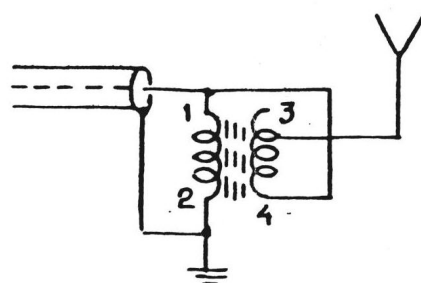
Thus you can drive a transceiver with 52-75 ohm output through a balun transformer with an end fed antenna in all bands without deterrent SWR ratio and using a matchbox and receive an SWR which is 1 : 1 without difficulty. The antenna should be looped or vertical when it seems to work better that way.

The antenna is known in Australia for VK6-broadband. The two constructors are VK6IM and VK6YX.

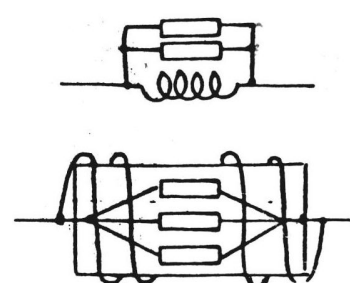
Well since I became interested in the antenna and found a solution that enabled me with my limited space, could get an end-fed antenna from my QTH, but without large squares, I decided to fabricate an antenna that only consisted of a single tree but with coil and transformer as described in the article in Ham Radio.

So I got myself an Amidon core T 200-2 and wrapped it as described in the article. Furthermore, I wound a coil and soldered it together with the 6 resistors. Then I took a plain green field cable and cut it to 22.57 m and shared it at a third of its length, and switched the coil between the two halves.

When the antenna was finished it was hung up in a birch tree about 10 feet above the ground at the far end and the other end hung up at the gutter on the house about 2.5 m above the ground.



Balun Transformer



Coil: 6 pcs 2.2 kΩ 1 W

Matching transformer was connected. Via about 10 – 12 m coaxial cable from the antenna to transceiver, it would be interesting to see how it all would work. The surprise was great and it was found to work satisfactorily. Without matchbox the SWR on 80m was 1.8 : 1 and even better in the other bands. So for my part worked out my antenna problem in a nice way. I have even tried to run the antenna on 160 m with very good results.

Here is a description of my antenna:

The entire antenna length from the transformer to the far end is 22.57 m same as article in Ham Radio. The coil is placed at a third of the antenna from the far end.

The length of the coaxial cable from the transceiver to the antenna is in my case about 10 – 12 m.

Amidon core is T 200-2. Isolate the core with electrical tape before bifilar winding.

The bifilar winding. Take 2 x 1.5 m long plastic insulated wire 1 mm diameter, preferably of different colours (e.g. red and white), and twist them to 2 turns per turn. When done, wrap the core with 24 turns and twist together 1 and 4 of the schedule. No. 2 is grounded. Then count 18 laps from the ground and cut the isolation there and solder a short piece of wire which is then connected to the antenna jack.

The box that I used for my transformer is an ordinary two-piece aluminium case A3. Amidon core is attached to a piece of Plexiglas and then screwed into the box. Coaxial connector is a regular SO-239 and a standard insulated banana plug for connecting the antenna. For even protect the barn from the weather, I have used a plastic bag of a slightly heavier type than usual. The connections to the connectors are shown in the diagram.

Coil. The coil is made by about 55 turns of 1 mm isolated wire wound on a PVC pipe (22mm). 6 pieces resistors 2.2 kΩ 1 W connected in parallel and placed inside the tube. The resistors are soldered together with the outer ends of the coil to a device. The entire coil can then be sealed to protect against the elements. So the tensile strength becomes sufficient in the coil.

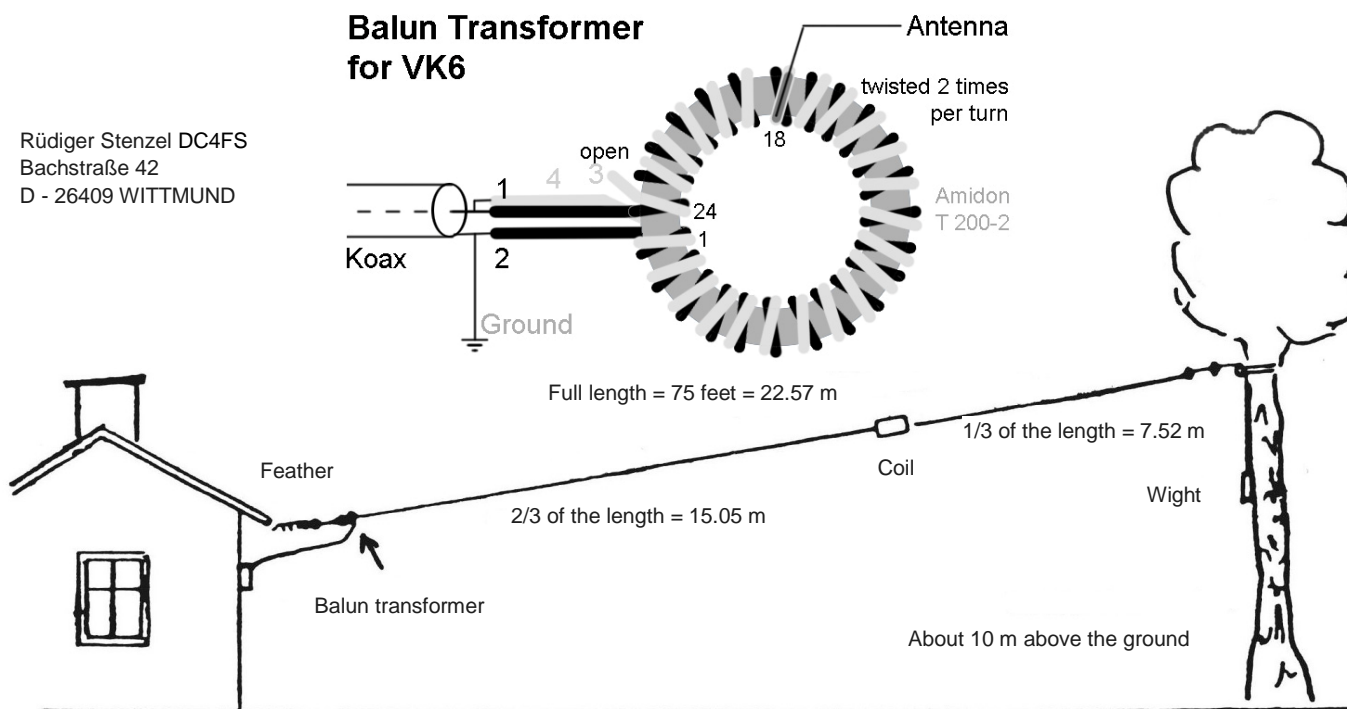
The power which the core and coil tolerates is about 100 W and enough for SSB and CW.

Good luck for those who are interested.

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PS. The Amidon core T 200-2 I was unable to get hold of here in Sweden but have to take it home from the United States. The price is about 10 dollar.

Translated by DC4FS



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