1:4 CURRENT BALUN FOR HF AND LOW VHF

1:4 Current Balun for the upper HF bands from about 10MHz to the 6m band at 50 - 54MHz. 10 December 2025.

Requiring a balun to feed a balanced antenna from an un-balanced tuner or directly from a radio for the upper HF to low VHF bands, a 1:4 Guanella Current balun design using two FT140-61 ferrite toroid cores was selected. An impedance transformation balun may be required due the variations in impedances often encounter with multi-band balanced antenna system. The Guanella Current balun is a low loss, broadband balun that will ideally choke off common mode currents entering the radio room and importantly provide a transition from the un-balanced output of the tuner to the balanced antenna.

Construction

The 1:4 current balun is derived from two 1:1 current baluns with each consisting of a close double bifilar winding of 3.5 turns wound evenly spaced around the FT140-61 Ferrite Toroid Cores. The wire is PTFE (Polytetrafluoroethylene) silver plated copper wire, of 1.0mm diameter (AWG 18), and white for this project.

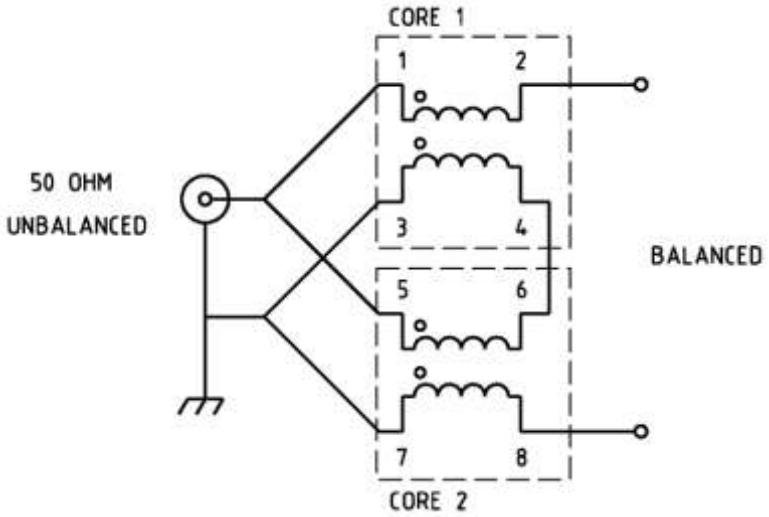

Figure 4 Schematic of the 1:4 Guanella Current balun .

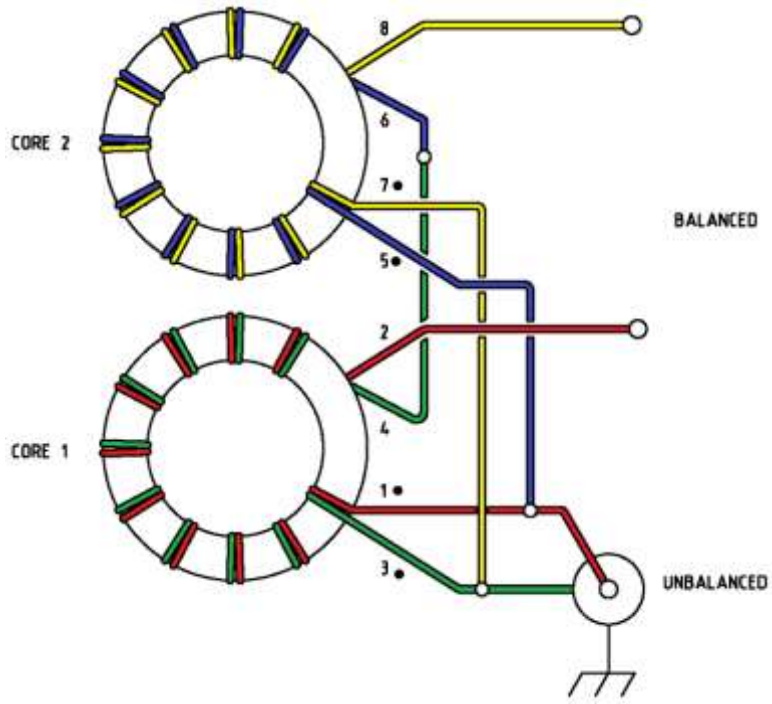

Figure 5 Wiring of the 1:4 Guanella Current balun.

Type	Impedance transformation
Ratio	1:4
Frequency Range	8.0 ~ 60MHz
Core Used	FT140-61 Ferrite Toroid Core x 2
Number of turns	Core 1 = 4.5 turns x 2, Core 2 = 4.5 turns x 2. PTFE silver plated copper wire, 1.0mm, AWG 18, White.
SWR	1.2:1 or less. Ref: Figure ?

Photo 1 1:4 balun assembled.