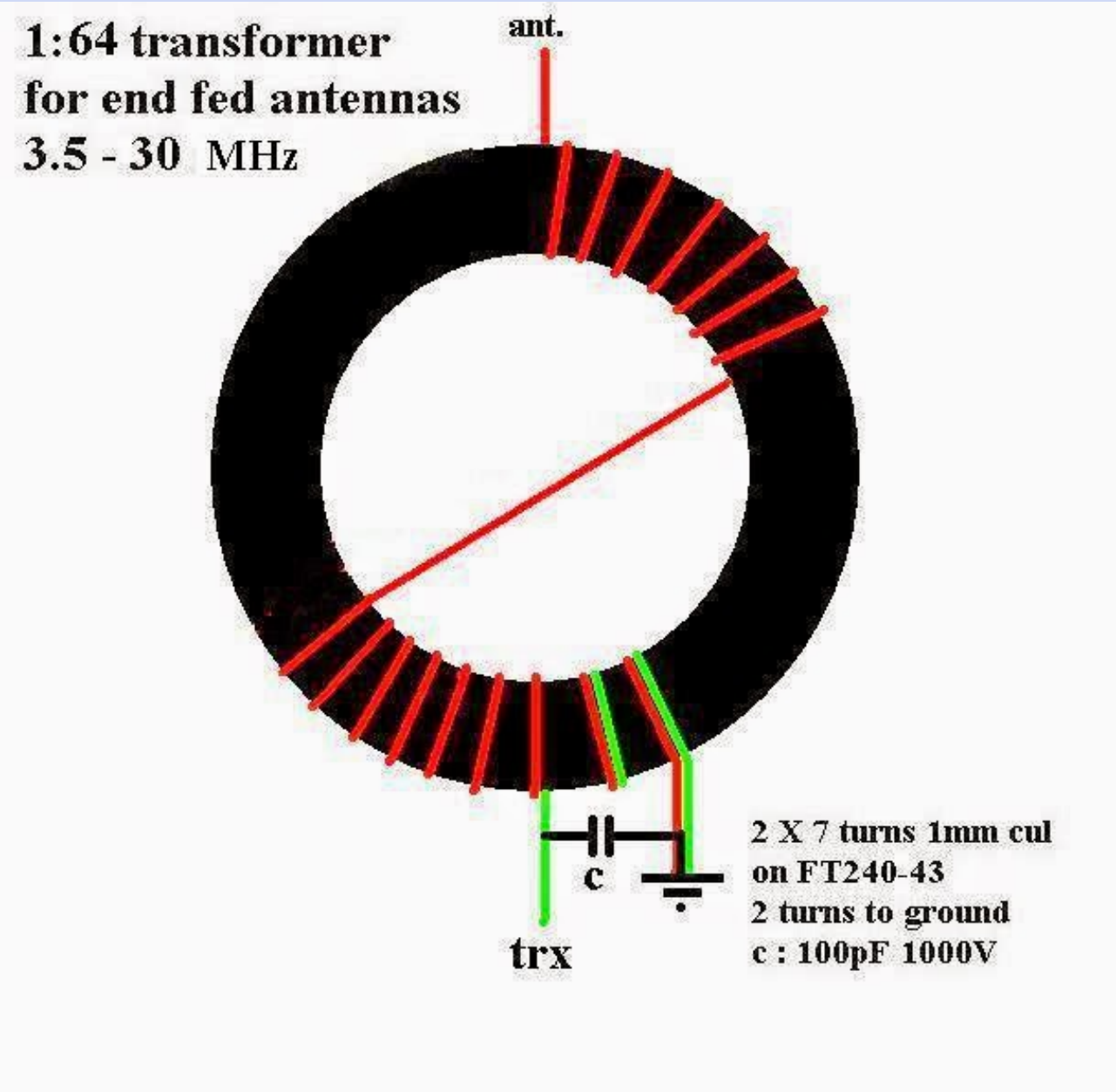
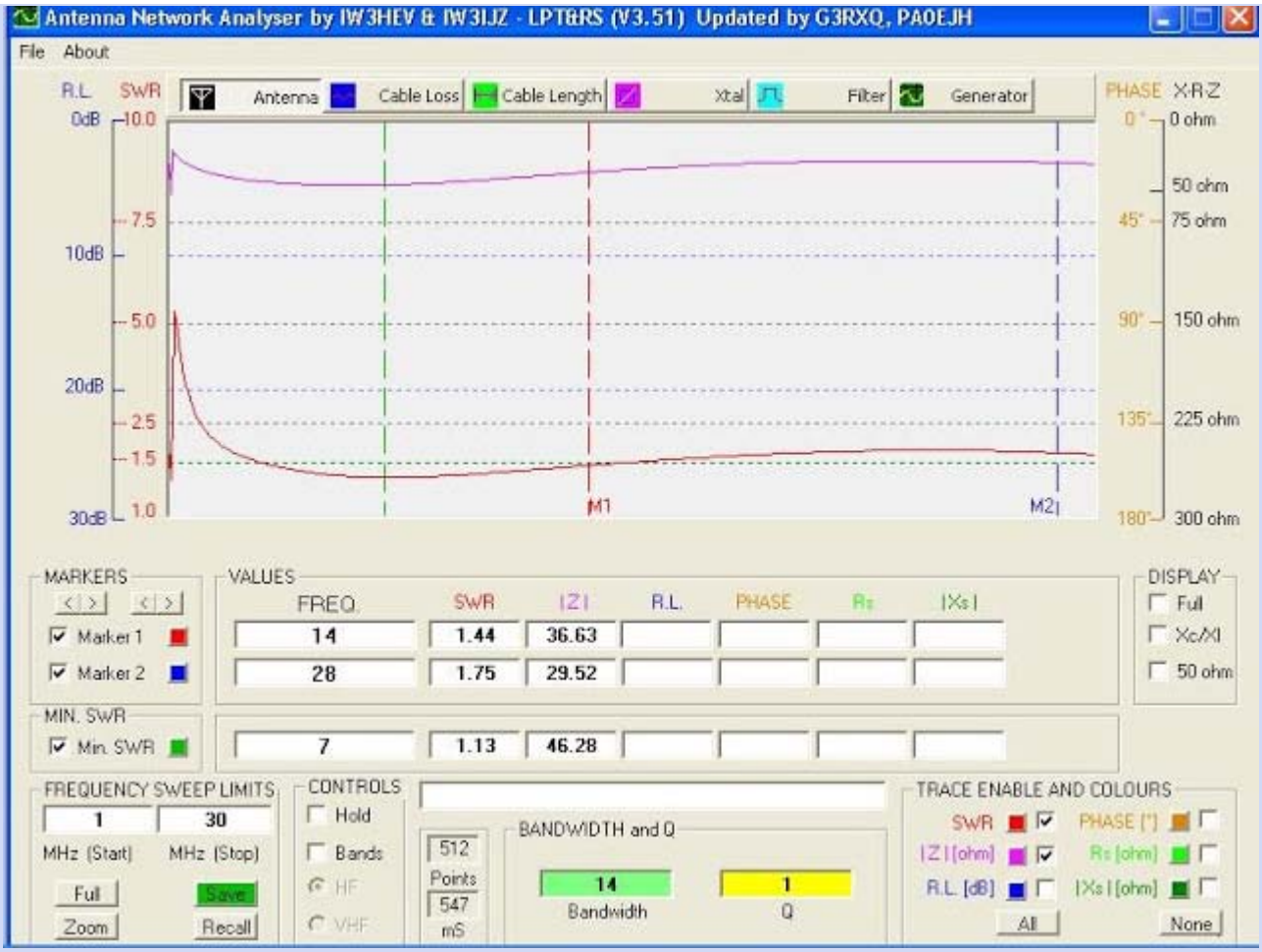
This is a updated collection of easy projects for radioamateurs and swl's. See all of my projects at OLDER POSTS down on this blog. Enjoy,73 John

Thursday, April 19, 2012

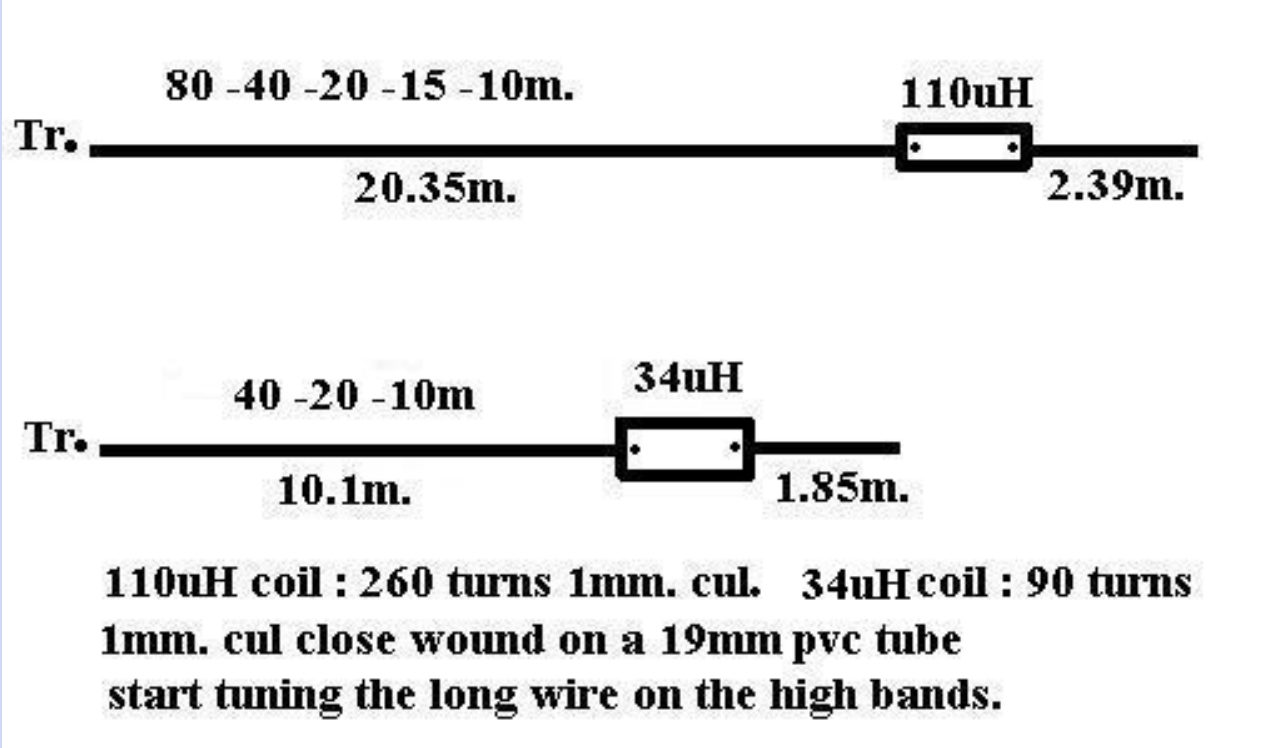
Multiband end fed antennas 3.5 - 30mHz

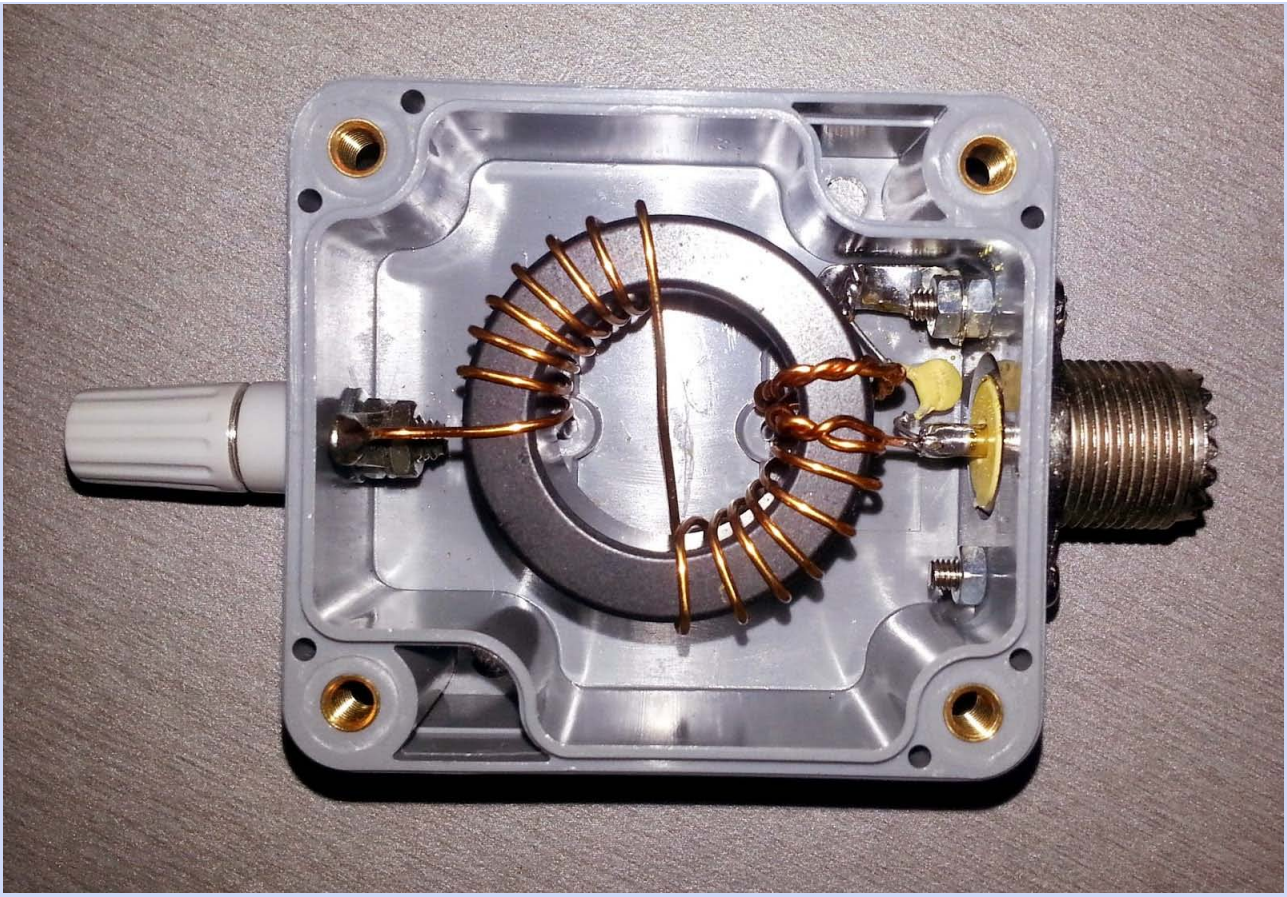


This is a 200 Watt PEP step up transformer for end fed full and half wave antennas without radials, designed as a 200 Watt PEP upgrade by PA0EJH for the originaly Par Electronics designed 25 Watt HF endfedz multiband end fed antenna.
The original design has a 27/3 turn ratio (1: 81) on a small 43 material toroid, but the larger toroid has more wire so the nr of turns had to be reduced for max.efficiency on 10m. The coil now has a 16/2 ratio (1: 64) For max. performance the 2 turns to ground must be twisted . The 100-150pF capacitor gives a better match on 10m.and both windings start at the ground side of the coil .Don't try to stack toroids for more power for this will increase overall inductance . This makes it impossible to tune the high bands. The best results are obtained with a small toroid.....The 3 band antenna has a length of aprox. 10.1m. followed by a coil of about 34 uH (90 turns 1mm transformer wire on a 19mm pvc tube) and a endpiece of about 1.85m , offering you a perfect vertical or horizontal antenna for fieldwork at 40 -20 and 10m. There is also a 5 band version with aprox. 20.35m wire followed by a 110 - 120uH coil (about 260 turns 1 mm transformer wire on a 19mm pvc tube) and a aprox. 2.39m. endpiece. Use a longer wire for testing for surrounding objects can interact .
*** Start tuning the antenna by tuning the long wire at the high bands with the coil and the endpiece attached, for the coil interacts. Many people do this the wrong way ! Don't use an other type of toroid like the nr 2 or 6 mix for the AL value of these toroids is far to low and will result in heavy losses. ***
This antenna works on 80 - 40 - 20 -15 and 10m.without radials and has a verry low swr combined with a low noise level. Keep in mind that every end fed / vertical needs some kind of counterpoise to push against and in this case that's the coax , so don't forget a line choke near to your transceiver. Cul = transformer wire.



Tranformer with 150pF and 3K3 resistor to ground





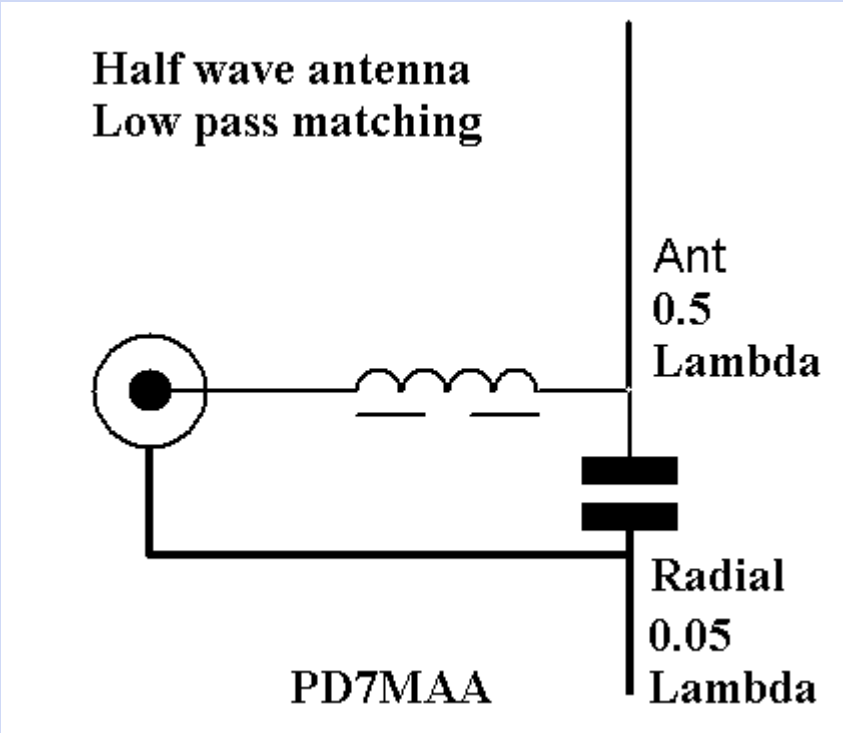
Transformer on a smaller FT140-43 toroid for max. 100 Watt pep

Update 2014-03-21

I live in a apartment on the first floor so you can imagine my antenna problems....
My balcony however is 10m. long ,so i mounted a horizontal endfed antenna without the coil, for 20-10m on the wooden windowframe . Because of the capacity of the wood and the paint overall length was reduced to aprox. 9m.. but provided a near 1:1 swr on 20 and 10m.
First contact on 10m. was with 5B4AHL (5-9) on cyprus folowed by 9K2QA (5-9) in Kuwait and 4S7VG (5-8) in SRI Lanka despite of a huge pile-up. This antenna is going to stay HI.

MONO BAND HIGH EFFICIENCY HALF WAVE ANTENNA

If a high efficiency antenna is needed here are the data. Use thin 50 Ohm Teflon coax wire for the capacitor (one side open) . 1 cm coax is aprox. 1 pF.



Impedance antenna 3300 Ohm Reactance coil 403 Ohm Reactance capacitor 409 Ohm
Impedance feedline 50 Ohm
Toroid used : T130-2 for 150 Watt pep with 1.2 mm magnet wire

Frequency	band (m)	coil (uH)	turns on T130-2 toroid	capacitor (pF)
70.250	4	0.9	6	5.6
50.110	6	1.3	11	7.8
28.500	10	2.2	14	13.7
27.125	11	2.4	15	14.4
24.965	12	2.6	15	15.6
21.300	15	3.0	17	18.3
18.144	17	3.6	18	21.5
14.200	20	4.5	20	27.4
10.125	30	6.4	24	38.4
7.100	40	9.0	29	54.8
3.600	80	17.8	40	108.0

Tuning without the antenna : connect a 3300 Ohm resistor fom the coil end to the ground of the coax connector. cut the coax-capacitor carefully for lowest SWR . Connect the antenne and cut the antenna wire for best SWR .
Calculate L and C for your own matching unit: http://www.daycounter.com/Calculators/L-Matching-Network-Calculator.phtml
Reactance L and C : http://www.daycounter.com/Calculators/Reactance-Calculator.phtml

Geplaatst door PD7MAA op 11:11 AM

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