Transformers for the End Fed Half Wave (EFHW) Antenna

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High turns-ratio RF transformers and L-networks are often used to transform the high impedance of an EFHW antenna to 50 Ohms.   Many Do-It-Yourself articles are on the Internet about building these transformers. The discussions I've seen have not included measurements on these transformers.   Specifically, what is the loss?   Many of the presentations do, however, include plots of VSWR versus frequency.   This site investigates these transformers with emphasis on measurements.

Several transformers were built and evaluated for wideband impedance match and for loss.   Transformers built with -61 ferrite material had significantly lower loss than those using the popular -43 ferrite mix. Both were suitable for QRP applications, but the -43 material is not recommended.   Here are the results:

Transformer	Turns	Load	Frequency	Loss	
FT-114-61	3:27	4.4K	14 MHz	0.21 dB	
	3:27	4.4K	7	0.1	
FT-114A-61	3:33	6.8K	14	0.4	
	3:33	6.8K	7	0.1	
FT-114-43	3:27	4.4K	14	1.3	
	3:27	4.4K	7	1.3	
L-network	----	4.4K	7	0.22	(10.6 uH on T106-2, 20.6 inches of RG-58/U open end as capacitor.)

Loss values were measured with an L-network connected to the transformer.   The transformer moved the impedance from 50 Ohms up to the load values shown in the table.   The L-network then returned the high impedance to 50 Ohms.   The L-network was tunable and absorbed reactive mismatch generated by the transformer.   The unloaded Q values of all components used in the L-network were measured, allowing the insertion loss of that part of the overall network to be determined and subtracted from the overall loss of the cascade.