

NEWSLETTER ARCHIVES

A SIMPLE ANTENNA ANALYSER

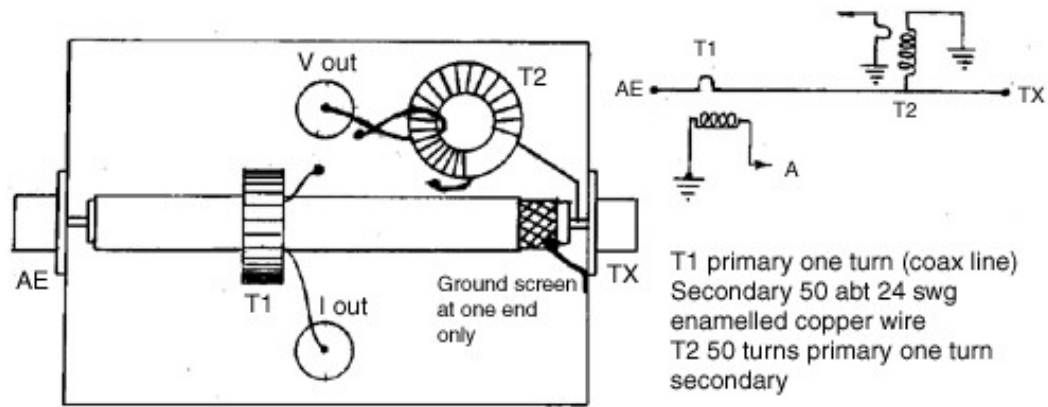
During attempts to tune and load the Decca antenna tower at Puckeridge using a SWR meter we were experiencing some difficulties. While Derek G3GRO and myself were scratching our heads, one of the operating team, Jim M0BMU dived into his bag and produced a small, 'Black Box'. This, he assured us would quickly solve our problems, preventing us from going (prematurely?) bald. And so it proved.

Jim got the idea from a Swedish ham whose name I regretfully don't remember. The concept is childishly simple but very clever and useful. It tells you at a glance whether the antenna is properly tuned and loaded. If the antenna is not perfectly matched the box tells you whether it is tuned too high or too low in frequency or whether feed impedance is too high or too low and by how much.

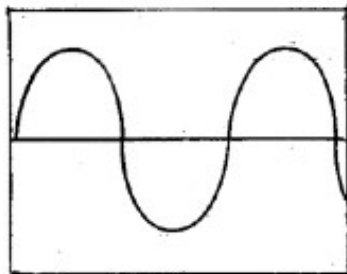
Jim took the lid of his 'black box' off and revealed the paucity of its content. There was a piece of 50ohms coax running through the box between two coax sockets marked 'Antenna' and 'TX'. One small toroid was threaded on the coax and another similar toroid was fixed flat to the bottom of the box. Two BNC sockets were fixed to the bottom of the box, labelled current and volts. About 3inches of hookup wire completed the count of parts. What could be simpler?

With Jim's permission I made a copy of the box and it works a treat! Jim kindly gave his permission to describe this magic in the CARC Newsletter. A double beam scope is required for making measurements. Scope is available in the club if you do not have one.

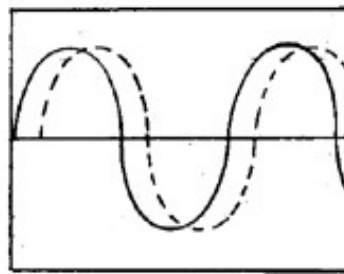
The sketches below should make things clear. Try it. de G3KAU



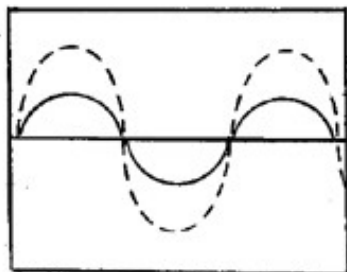
For 50w throughput into 50 ohm load, both outputs V & T 1 volt rms into scope
 50 ohm terminated probes. One volt output (V) represents 50 volts input.
 One volt output (I) represents 1 amp input



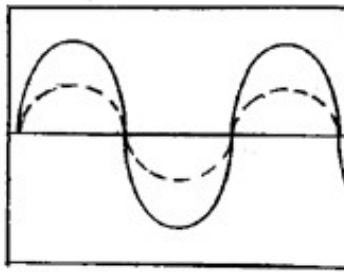
Perfect match only one trace discernable
 Antenna resonant feed impedance 50 ohm



Antenna off tune, inductive resonance
 (voltage leading current). Feed impedance 50 ohm



Antenna resonant but low feed impedance
 low. Voltage 25v current 1 amp 25 ohms



Antenna resonant but high feed impedance
 voltage 50v, current 0.5 amp 100 ohms

Lech G3KAU can be contacted [by email](#)

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