Solarcon / Antron A-99 on the HF bands – Martin Ehrenfried – G8JNJ

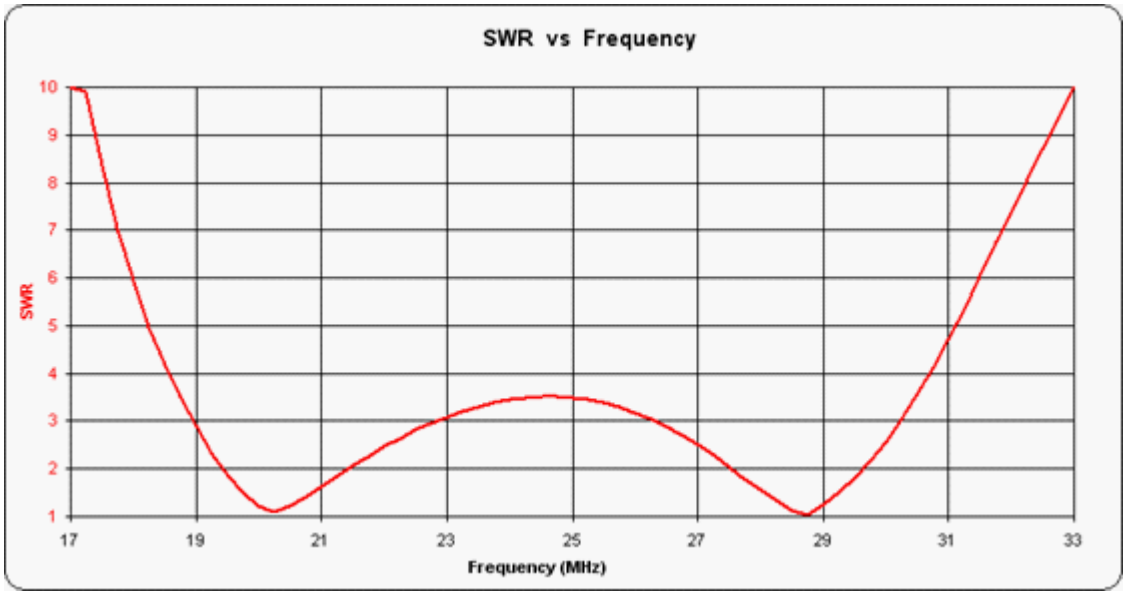
This project was a result of discussions on Eham Elmers forum (plus lots of others) regarding the use of the Solarcon / Antron A-99 on the HF bands.

Details and pictures of the inside of the antenna can be found here.

The antenna is intended for CB operation on 27MHz and has been reported to work well on other bands, so I decided to see how efficient it actually was by making some gain measurements on various HF bands.

The first stage was to ground mount the antenna set the matching rings correctly.

Here's the SWR curve as measured at the base of the antenna when fed against 16 mixed length buried radials.



Gain

As before all measurements made with the antennas ground mounted and fed against 16 mixed length buried radials.

In order to minimise any slight mismatch problems with the transceiver across the wide frequency range I fed all the antennas via a 3dB power attenuator at the base.

The A-99 was compared against 1/4 wave verticals cut for each band mounted in the same position.

All levels were measured with a spectrum analyser connected to a 1m diameter balanced loop with a 3dB attenuator at the feed point, and mounted approx. 10m away from the antenna under test.

Note that these gain figures should only be used as a guide, as these measurements were made in urban environment, not on a professional test range.

Small gain improvements on 18 & 14MHz could probably be made by using an external antenna tuner. However the internal matching network is likely to become increasingly less efficient at lower frequencies.

Frequency	Gain relative to 1/4 wave antenna	SWR
28MHz	+2dB	1.05:1
24MHz	+1dB	3.5:1
21MHz	0dB	1.8:1
18MHz	-3dB	5.8:1
14MHz	-10dB	27.0:1