RADCOM USER REVIEW

Two Views of the SRW CobWebb

A five band HF Antenna

The *RadCom* team was lucky enough to have the opportunity of trying out one of these antennas. At the same time Alan Carpenter, G3RQT, sent in his user review, so we decided to combine efforts as follows.

1: Alan P Carpenter, G3RQT

MY ATTENTION was drawn to this aerial by a local amateur who had recently purchased one. On our Sunday morning net he told me what he had worked and how it generally performed. Having a very small garden not suited to full size beams for HF, I decided to obtain one myself.

A telephone call to Stephen Webb (G3TPW) of SRW produced several sheets of notes and information on the CobWebb. Some of the points raised in these notes were most interesting, as the specifications show.

PARTS SUPPLIED.

THE INDIVIDUAL parts supplied are shown in the photograph opposite, before assembly. More than enough screws are supplied (40 required, 50 supplied!), and the same applies to the tags for the element corners. Purchasers even receive two pieces of tubing, predrilled, to practise screwing together before tackling the aerial itself!

All that is needed is a vertical support (pole) and the feeder to the shack. It comes with a PL259 plug soldered to a short coax lead which is connected to the feedbox. An inline PL259 type connector is required to connect the feeder to the CobWebb.

UNPACKING AND ASSEMBLY

THE AERIAL KIT was supplied well packed in a generous covering of bubble wrap polythene. With the component parts laid out on the floor and sorted into various sizes. instruction sheets were read carefully and found to be clear. No problems were found during assembly, but it is recommended that this be done on a flat surface. The sequence given in the instructions was followed before clamping the spreaders to the baseplate.

Finally the wire elements were placed around the corner tags and the ends tied as shown in the photograph. Each band element forms a square, with cable ties used to hold the wires in place.

COBWEBB ON TEST

THE COBWEBB WAS secured to the top of a 6ft pole. The tuning can be checked while the aerial is at 6ft above ground, and changes can be made by folding back the ends of the element for a particular band. Guidelines are given in the instructions as to how much should be folded for a given frequency shift to keep the antenna resonant.

Each band was checked in turn for resonant frequency and was found to be initially resonant at the lower end of the CW portion. It was anticipated (correctly, as it turned out) that the resonant frequency would increase when the aerial was raised to it's final height - in my case 21ft (6.5m). S.R.W., I am told, will supply an antenna pre-resonated at the CW end on request. After raising the CobWebb to 21 feet, the resonant frequencies were again checked on each band and found to be as follows:

SWR	Frequency
1.15:1	14.095MHz
1.1:1	18.070MHz
1.1:1	21.100MHz
1.1:1	24.900MHz
1.1:1	28.400MHz

Raising the CobWebb to a reasonable height would increase the resonant frequencies slightly further, and some trimming might be necessary. As I use digital modes more than SSB, the resonant frequencies shown above suit me fine.

ON THE AIR

BEARING IN MIND the height of the CobWebb was only 21 feet, (any higher and I was possibly in need of planning permission), the following were worked:

20m numerous W's, ZS's, VO1, VK's, 9K2, CU, 9X5, TR8, ZL, HI8, FY0. Reports ranged from 5-3 to 5-9 plus 20dB.

17m ZL 5-1, W4 5-6/7, ZS5 5-8/9.

15m 8P9 5-5 report, W's 5-5 to 5-6.

12m Only Europeans worked 5-7 to 5-9.

10m VO1 5-5, and many Europeans.

These were worked during just one month in 1993 with only 100 watts output. Despite the rather spasmodic conditions during the month, it seemed a good spread of QSOs. Naturally a three-element beam at 40 feet will out-perform the CobWebb but listening to UK stations on 20m when conditions allowed and noting the signal reports they were giving out, there was an estimated 3-6 dB difference between their antennas and the CobWebb. This was after allowing for power differences and their aerial heights.

There was the occasion when the station they were working could not even be heard, but that UK station *was* using a six-element at a much greater height than the CobWebb!

CONCLUSIONS

THE COBWEBB PERFORMED very well and the short term results have been most satisfying.

MANUFACTURER'S SPECIFICATIONS

a) Covers five HF bands. Typical 2:1 SWR bandwidths are 250kHz on 14MHz and 500kHz on 28MHz.
b) Omnidirectional - no rotator required.
c) Horizontally polarized which vastly reduces EMC problems compared to verticals.
d) 50Ω coaxial feed.
e) Ferrite toroidal coaxial choke balun.
f) Feedbox and resonators all pre-assembled.
g) No tuning or resonating required.
h) Full size half wave dipole performance on each band.
i) Fibre glass construction. No corrosion or metal fatigue problems.
j) Total assembly is pre-drilled. No soldering required.
k) Size - 2.5 metres each side.
l) Weight - under 6kg (assembled).
m) Fixes to a mast up to 2in diameter. Fixing clamps and plate supplied.

Raising it up to 40 feet will of course improve the reports and probably by two S-points. For a QTH with a small garden and where high aerials are prohibited this should fit the bill. Although the CobWebb has only 8 foot sides it's

performance is excellent. It represents very good value for money and I would like to thank the Directors of SRW who have been most helpful.

2: *RadCom* Team

WORKING DX WITH an indoor antenna is not impossible, and the CobWebb was installed in the roof space of a second floor apartment at about 35ft (11 metres) high. As it turned out to be a particularly rainy Sunday afternoon, one of the few advantages of an indoor antenna soon became apparent!

DO-IT-YOURSELF RADIO

THE ANTENNA WAS supplied with a PL259 plug - an SO239 line socket would have been more useful for most purchasers, as line sockets are rather difficult to obtain. Assembly was straightforward using a screwdriver, 10mm spanner and pair of cutters. In fact, anyone with experience of Meccano and/or MFI furniture should have no problems! The fibreglass construction means that the main structure is lightweight. Having said this, the box containing the matching ferrite transformers is fairly heavy, and offset from the centre of the structure. Therefore a well secured mast is recommended for the antenna.

It took about two hours from opening the box, to final completion (excluding adjustments). This included one tea-break.

ELECTRICAL ADJUSTMENTS

PRIOR TO TRIMMING, some impedance measurements were carried out. The frequencies which gave the best 50Ω match were as follows: 13900, 18020, 20980, 24700 and 29500kHz.

Small adjustments to the length of each element were then made, and transmit tests carried out. After a couple of hours testing, optimum matching was obtained at the following frequencies (the 1.7:1 SWR bandwidth is shown in brackets): 14100 (90kHz), 18110 (100kHz), 21150 (120kHz), 24940 (130kHz) and 28450 (150kHz). It is important that any length adjustments are made to *both* elements for any particular band. Otherwise, it's possible to achieve resonance but incorrect matching, or a 50Ω match to a non-resonant antenna.

RESULTS AND OBSERVATIONS

CONSIDERING THE SMALL size of the antenna, good results were obtained on all five bands. Most tests were carried out on 20m as here the CobWebb could be compared with a 20m dipole used as a reference antenna.

Both antennas were fitted into the loft space, with the dipole just below the apex of the roof. As the CobWebb is about 2.5 metres square and horizontal, this had to be placed about 1.5 metres lower down, due to the slope of the roof.

The effects of this were twofold: Firstly, the CobWebb was closer to the house mains wiring and consequently the receive noise level was slightly higher. Secondly, the slight reduction in height may have resulted in marginally lower signal levels on both transmit and receive.

The CobWebb is claimed to be omni-directional and tests with European stations certainly confirmed this. For QSOs with stations to the east (eg Russia and Czech Republic), reports were about one S-point down compared with the dipole in it's best direction. To the south, however (eg Malta and southern Italy) the dipole is more-or-less 'end-on' and here the CobWebb performance equalled that of the dipole. For contacts at greater distances (North and South America), the dipole seemed to have a definite edge.

CONCLUSIONS

IF YOU'RE LOOKING for a compact five-band antenna, and can raise the CobWebb even a few feet clear of surrounding objects, at a reasonable height above ground, then the CobbWebb should give good results and worldwide QSOs under the right conditions. This could also be an excellent antenna for serious short wave listening.

The horizontal polarization is claimed to reduce the possibility of TVI, and certainly no problems were experienced during an intensive period of testing (yes, the TV antenna was also indoors!)

In fact the only disadvantage appears to be the bandwidth restriction, but this was not a problem on 12m or 17m, or for either SSB only or CW only operation in the relevant segments of the other bands. An ATU would extend the tuning range, if required.