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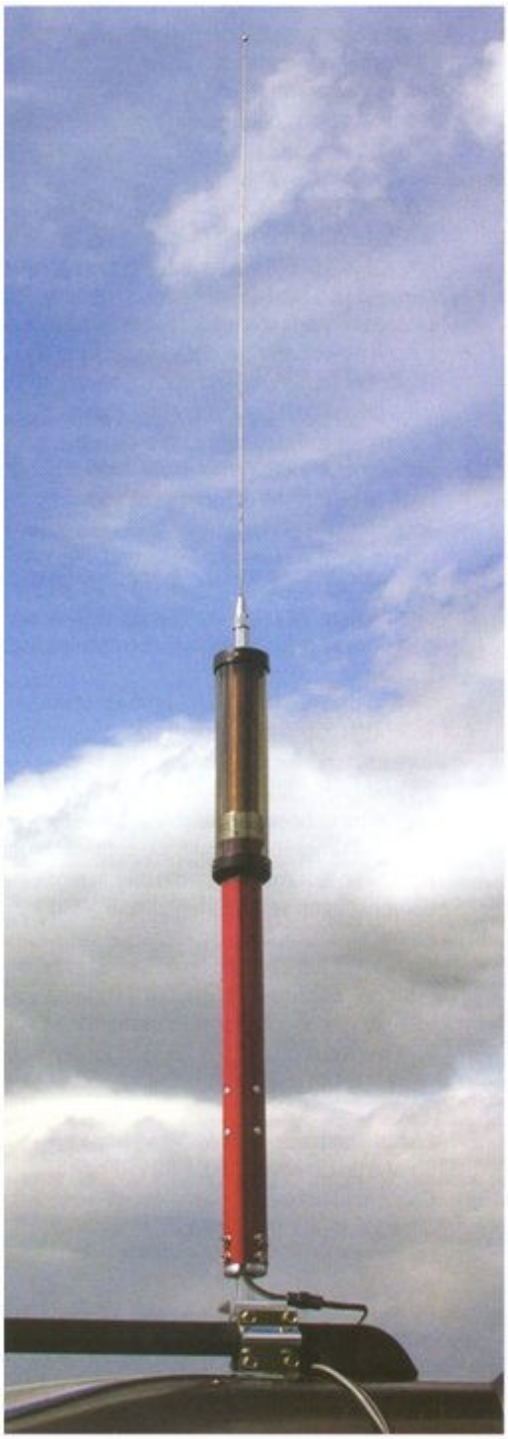
Little Tarheel II antenna

This mobile antenna promises continuous tuning from 80m-6m. But is it any good?



VARIABLE FEAST. Mobile antennas, particularly those for the lower HF bands, are always something of a compromise. For a start, they are generally far less efficient than their full-size counterparts. Secondly, the 2:1 SWR bandwidth tends to be pretty narrow — 20kHz on 80m is pretty good going. The Little Tarheel addresses the second issue by using a continuously variable loading coil and high quality materials and construction to try to reduce losses to the absolute minimum.

WHAT'S IN THE BOX? The review antenna consisted of a 32" (-81cm) stainless steel whip and a motorised loading coil section that was about 16" (-40cm) closed. The bottom of the loading coil is 3/8" stud mount. Also included were a 20ft (6m) control cable, a control switch, and a ferrite core. The control cable connects to the bottom of the antenna and leads to the switch that controls the position of the coil (and hence the aerial's operating frequency).

CONSTRUCTION & ASSEMBLY. The overall impression is that the motorised coil assembly is very well made. The lower part, which houses the motor, is made from aluminium, while the coil is visible through a clear plastic shroud. The whip screws in at the top.

At the bottom of the aerial, a short control cable emerges, terminating in a 4 pin Molex-type connector. The area from which the cable emerges is not sealed, which means that any moisture build-up in the bottom of the aerial will have an easy escape route.

Assembly posed no real challenge — it's simply a case of screwing the whip into the top of the loading coil assembly and fitting the supplied 3/8" stud to the bottom of the coil. Putting it on the vehicle is only slightly more involved than mounting a single band aerial. It is advisable to use a heavy-duty mount though because this is a relatively heavy aerial with a reasonably high windage — you do not want to find the aerial overtaking you when you brake heavily! No mount is supplied as standard. On my Land Rover Discovery, I used a simple roof bar mount that was mechanically strong and gave a decent electrical ground.

The next challenge was to fit the ferrite core to the motor control lead. The instruction manual recommends that the ferrite should be mounted as close to the antenna as possible so that it decouples the antenna from the control wire and reduces motor electrical noise during tuning. It also acts as a handy anchor for the cable when the antenna is off the car! The ferrite accepts several turns of the control cable, and clips together. I put a layer of insulating tape over it to provide some measure of weatherproofing.

The antenna requires a meaningful mounting bracket. The control cable ferrite core (foreground, left) is wrapped in insulating tape.

All that remained was to feed the control cable and co-ax into the vehicle and connect the supplied switch to the cable (again using Molex style connectors) and to a source of 12V. I must say I wasn't too impressed with the switch, which had a rather plasticky feel. However, it stood up well to use during the review period and performed faultlessly.

IN USE. I fired up my radio and tuned it to 3.755MHz. Next, I pressed the rocker switch to start the coil lengthening. The coil

The control switch is functional rather than elegant.

had to go almost its full length of travel, which took around 90 seconds, but as it approached the operating frequency there was a marked increase in receiver noise. Using a cross-needle VSWR meter, I was pleasantly surprised to discover that I had managed to tune the antenna to 1.5:1 VSWR by receiver noise alone. A quick press up and down of the control switch and I had soon achieved 1:1 VSWR.

Now, the sceptic in me thought that this low VSWR might mean that I'd just got a dummy load on a stick like some 80m mobile antennas I've tried before. However, I was again pleasantly surprised to discover that it actually works! I am a regular member of an 80m inter-G net whose members are spread over the country. I called in while driving near Bedford and was surprised to get an instant acknowledgement from the Net Controller who was within ground wave range. I soon also received 5/9 reports from two stations on the south coast and other favourable reports were soon received.

Propagation on 80m can be quite variable so I decided to use the antenna for a few days at different times to ascertain if I had just been lucky first time out. The results proved quite conclusively this was no dummy load. l was also surprised that there was no change in antenna resonance over a few hours regardless of my 100W RF output or heating by the sun. Changing frequency even by small amounts on 80m did require using the rocker switch to re-find the resonant point but I expected that.

Moving to 20m likewise provided excellent results, with the tuning being even less critical. However, most stations I worked assumed that I was /M parked on top of hill with a portable wire antenna, regardless of my protestations that I was actually driving! This says something for the efficiency of the antenna.

During the test period, I had another vehicle follow me around rural, trunk roads and motorways, keeping an eye on the aerial. The report was that it moved very little under any conditions. The whip moved about a bit, but this did not noticeably affect the resonant frequency. This mechanical stability was a testament to the quality of the antenna and the heavy duty mount I used. I do not think that the aerial would be happy on a lesser mount such as a light-duty boot lip mount. Small magmounts would definitely be inadequate.

SPECIFICATION AND OPTIONS. The lower assembly is $1^1/2$" diameter and 16' long in the closed position. The standard whip is 32", and the antenna varies between 48" and 54" (122cm to 137cm) total length depending on the band in use. Frequency coverage is continuous between 3.5 and 54MHz, and the transmit power rating is 200W PEP. The manual mentions that there is an auto-tune option planned, but this was not available for test. After the review was completed, the manufacturer informed us that an alternative 54" whip is available that they claim increases gain on the low bands although it precludes use on 6m.

CONCLUSION. This is a remarkably good antenna that offers full frequency coverage from 80m through to 6m. It radiates and

The quality of the construction can be gauged by the fact that the lower end cap is secured to the body by eight stainless steel screws of meaningful size.

receives well and is not too difficult to tune. I recommend a cross-needle VSWR meter for final tuning, but reasonable results can be obtained by simply tuning for maximum receiver noise. The tuning speed is a good compromise between accuracy and band-change speed.

The Little Tarheel II antenna is available for £279.95 from Moonraker, 01908 281705. Thanks to Moonraker for the loan of the review sample, and to G3NIE, G3MBM and G6HMF for assistance with testing.

The adjustable coil, seen here in the 80m position;, is well made of fairly heavy gauge copper wire and is protected by a transparent plastic sleeve..