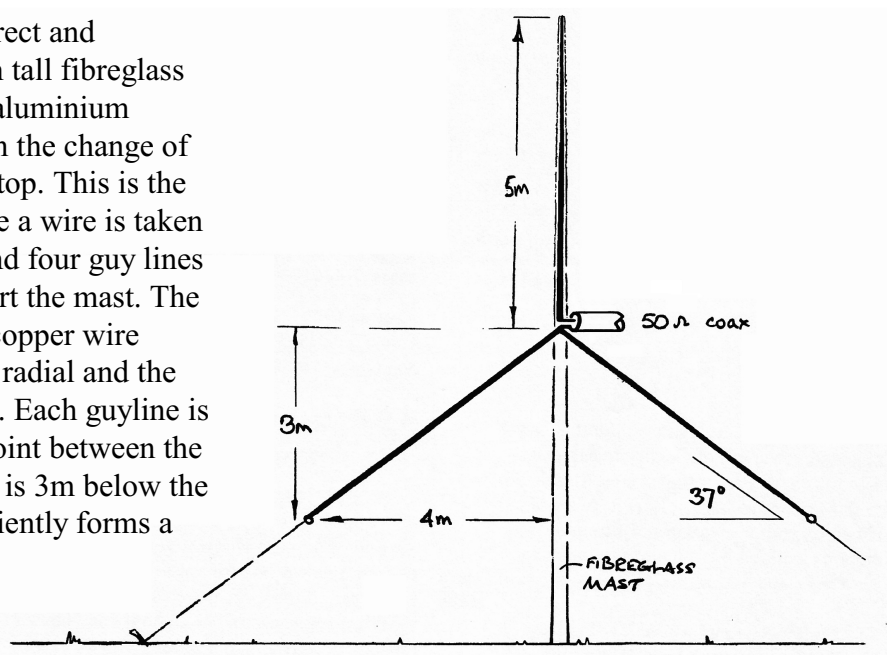


## Radio Scouting

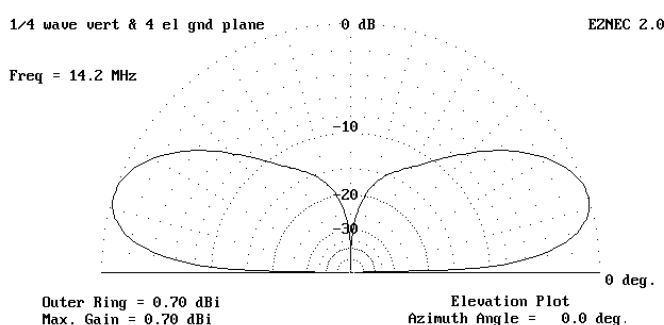
# 20m Vertical Aerial

This aerial is quick to erect and dismantle. It uses a 10m tall fibreglass pole. A hole is cut in a aluminium square which just sits on the change of diameter 5m below the top. This is the feed point and from here a wire is taken to the top of the mast and four guy lines are pegged out to support the mast. The first 5m of each guy is copper wire forming a ground plane radial and the remainder is nylon cord. Each guyline is pegged out so that the joint between the wire and the nylon cord is 3m below the feed point. This conveniently forms a 3-4-5 triangle.

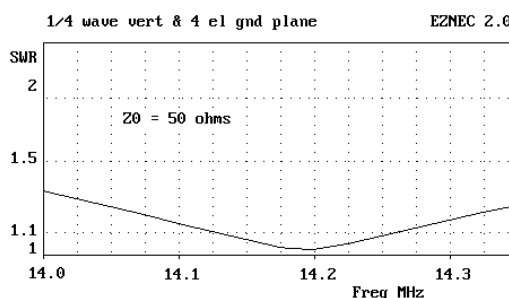


Quarter-wave vertical aerial with ground plane comprising four quarter-wave radials (only two of which are shown for clarity).

Assuming that the ground under the aerial is “typical”, the aerial analysis program EZNEC predicts that the main lobe will 0.7 dBi and 18° above the horizon. Even though there are only four radials EZNEC also predicts that aerial will be truly omni-directional.



The angle between the radials and the ground has a major influence on the drive point impedance and the angle used here (~37°) gives around 50Ω, which is ideal when coaxial feeder is used. The wires are cut to be resonant at 14.2 MHz and the impedance is then capacitive below this frequency and inductive above. However, the VSWR is less than 1.3 over the whole band.



First published in *Youlbury Scout and Guide Amateur Radio Station Newsletter*, Number 6, February 1999.