

for servicing and maintained at maximum efficiency all the time. Tuning up or replacement is an easy job and raising it up to a reasonable working height will improve the performance. In short, the aerial system, which includes the mast or tower, can often be the weakest link in the chain and deserves as much consideration as the rig.

Having decided that the aerial has to go aloft on a mast or tower, the next thing to sort out is what would be the most practical height for your situation. In theory, the aerial should be in free space completely out of the influence of the earth, a situation that is physically impossible to the radio amateur. Unfortunately even the dream height of 100ft is not a practical or economical proposition for most of us and we have to set our sights a little lower, bearing in mind such things as the cost, our neighbours and last but not least, the local planning authority. So what can be achieved?

Before you rush out to get the tower you think you need, it is useful and cost effective to look a little more closely at the kind of effect the height of an aerial above ground will have upon its performance; this should help in choosing the most economic and practical height of mast or tower you buy.

Any aerial placed within a certain distance (height) of the earth (ground) will have its characteristics modified in some way. How much and what kind of effect the ground has on the aerial will of course depend on a number of factors, such as: operating frequency, the length of the aerial, its height above ground, its orientation and how good a conductor the ground (earth) is.

Radio waves leaving an aerial do so at any number of different angles with respect to the horizontal plane, some going off at angles above the horizontal while others are angled downwards below the horizontal eventually striking the ground. The earth acts like a large reflector to these downward angled waves bouncing many of them back up again in a very similar way to light being reflected off a mirror. Remember that like light waves, radiowaves are also electromagnetic radiations but of a very different wavelength. So, just as in the case of light, the angle of reflection of a

