

## Extending the Range of Your HT

For the uninitiated, your average 2M/70 cm HT has very limited range, and in the case of the 144-148 Mhz. band, extremely low penetration thru buildings. At 70 cm building penetration is less of a limiting factor. As you move above the 30 Mhz. break in the amateur spectrum, range begins to be 'line of sight' -- if you can visually see the antenna on the other end of the link; you can make contact.

Over the horizon contacts (generally in the 40 mile and up range) depend on help in the form of troposphere ducting, gain antenna(s), repeaters and other such 'range extenders'.

So, what to do ??

### Antenna --

Probably the first, least expensive step is the replacement of the stock, dummy load antenna that the unit came equipped with. Almost anything more should and will improve your range. Even a wet string, cut to the right length. The more gain in the antenna, the more cost for the antenna and the more the range is increased.

Replacing the 1/4 wave antenna with one of multiples of that length will also improve things. Even the addition of the so called 'tiger tail' - 1/4 wave length of wire on the ground side of the BNC antenna connector will improve your antenna radiation pattern.

### Dongle --

The Dongle or 'patch cable' is a short section of flexible coax that will allow you to connect from the BNC or SMA antenna connection on your HT to an external mag mount or fixed location antenna of the proper frequency and connector match. Thus, the older female BNC connector or the newer SMA connector on the body of the HT will connect through a short length of RG-58C/U (8262) or RG-174 flexible transmission line to a suitable female connector on the remote antenna feedline. Due to losses in the connections, gender changing adapters should be kept to a minimum.

### Height Above Terrain --

The most significant factor in antenna range is "Height Above Terrain". If you have a second or multiple story location, your range will improve markedly so. A multistory building location or elevated parking garage roof will also work wonders on your ability to be heard at greater distances. This is probably the single most important factor in the use of a suitable repeater, if it is available.

Holding your radio overhead, extended at arm's length, upright to keep the antenna vertical, and using a speaker mike may also enable additional success with communications when using the HT.

### Power --

Never underestimate the addition of RF Power output either. Make sure that you have your radio set to it's high power setting. To obtain the highest power out of your HT use a suitable battery of voltage and capacity that matches the maximum capacity of your HT.

Another possibility is the use of a small amplifier to boost the customary 5 watt HT up to the 30-35 watt power range.

CAVEAT -- Do not try to power your radio over the listed maximum voltage specified. If you 'let the smoke out' of your HT, it is definitely to your detriment.