

# 'Gain' - what does it mean?



By Richard Henry

**Gain is defined in a basic dictionary as: to get, obtain or earn or to experience an increase.**

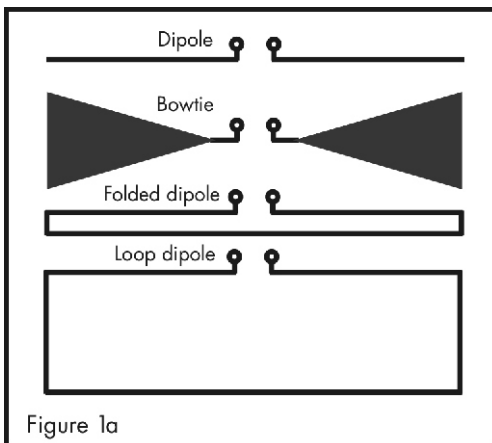
**With antennas we can define Gain as: a measure of how much signal the antenna will collect.**

With television reception there are two sources of gain.

Firstly we can get a gain from the antenna compared to a cable out the window.

The simplest form of antenna is a Dipole see figure 1a. Variations on the dipole are the bowtie, the folded dipole and the loop dipole.

All four have the same "gain". All gain figures for more advanced antenna are



quoted as an increase over this type of antenna in dB (decibels) and are sometimes exaggerated by the manufacturer.

The second way we can get a gain is by using an Amplifier or Booster. There are different types of amplifiers but for the caravaner the type used should be a mast head amplifier. This is mounted at or just under the antenna.

These devices can also come with different amounts of gain and are various qualities.

Some can be adjusted between different levels of gain for example between 16 to 30dB. So is a bigger amplifier gain better?

Put simply. No! The most important gain is the gain of the antenna. This is the amount of raw signal available. As it is this raw signal that is amplified by the booster (amplifier). An amplifier will amplify anything it gets from the antenna this includes noise. If there is insufficient raw signal from the antenna then all the amplifier will do is make more noise giving maybe a louder poorer picture, if any picture at all. This is like turning up the volume on your radio with the tuning off the station, you don't get a better clearer reception, just louder noise. So why have bigger amplifiers?

The higher gain on an amplifier is to be able to push the signal through long cables or to multiple points, such as in a house when you have TV in many rooms. In other words it is a question of distribution of the signal that the antenna has captured and overcoming any losses in the system that may be taking it's toll on picture quality.

So what is the ideal gain of an amplifier for a caravaner?

So what we are trying to achieve with an amplifier is to take the raw signal from the antenna and boost it to give a better picture, but without boosting the noise that is also in the signal, to a point where it swamps the picture. This is basically a ratio of Signal to Noise and is particularly important for digital transmission.

Experience says that this balancing act is best achieved with between 17 to 20dB. Obviously any steps taken in the design of the antenna and antenna components to reduce noise created by the system that collects the signal i.e. Antenna, cable connections, cable quality, material of components and matching of parts, all therefore play a big part in how effective "adding an amplifier" is going to be.



This is why the explorer range comes with all matched components, cable, antenna and amplifier, whilst connections are reduced and the necessary ones improved to reduce losses and noise generated by the system. This is why the explorer antenna system works so well with such low levels of signal.

It's much more than an antenna.

Ask your caravan dealer for the **explorer** antenna System - The one that works!

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