

## Antenna Gain... what does it mean ???

*a simplified explanation*

Received signal strength from an antenna with 3 dBi gain will be double that from an antenna which has 0 dBi gain, a 3 dBi increase in received signal strength is roughly equal to doubling the transmitter power output. Received signal strength and therefore range can be increased by raising the transmitter output or by using a higher gain antenna.

The maximum allowed 2.4 GHz LIPD Video Transmitter power output is 10 mW EIRP (in Australia) increasing transmitter power is illegal and therefore not an option.

However fitting a higher gain antenna to the receiver will produce results similar to increasing the transmitter power, in very simple terms a 3 dBi gain antenna is equivalent to raising transmit power from 10 mW to 20 mW, 5 dBi ~ 33 mW, 8 dBi ~ 66 mW, 12 dBi ~ 160 mW, 15 dBi ~ 320 mW, 18 dBi ~ 640 mW, 21 dBi ~ 1.28 Watts, 24 dBi ~ 2.56 Watts.

### SO:

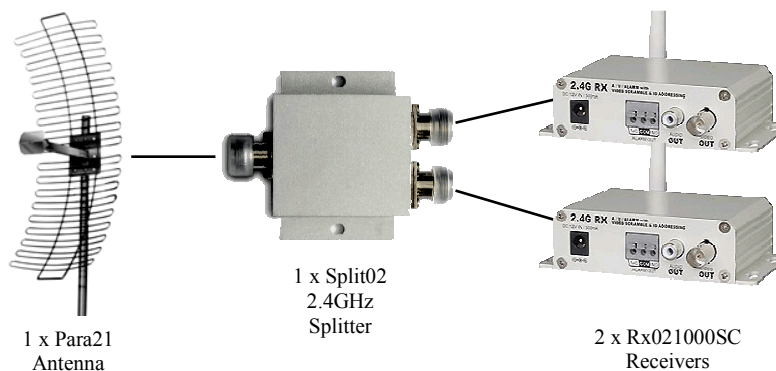
An example of a long range system would comprise of the following equipment:

- 1 x Tx1000SC High Power 1000mW Transmitter unit \$349
- 1 x Para27 27dBi High Gain Parabolic Antenna (For Transmitter) \$255
- 1 x Rx021000SC Receiver \$179
- 1 x Para27 27dBi High Gain Parabolic Antenna (For Receiver) \$255
- 2 x SMA to N Adapters (\$38)

Under ideal, line of sight conditions, this system should provide a range of up to 3,000 metres. (Please read information supplied on Tx1000SC page which relates to ACMA power output regulations in Australia)

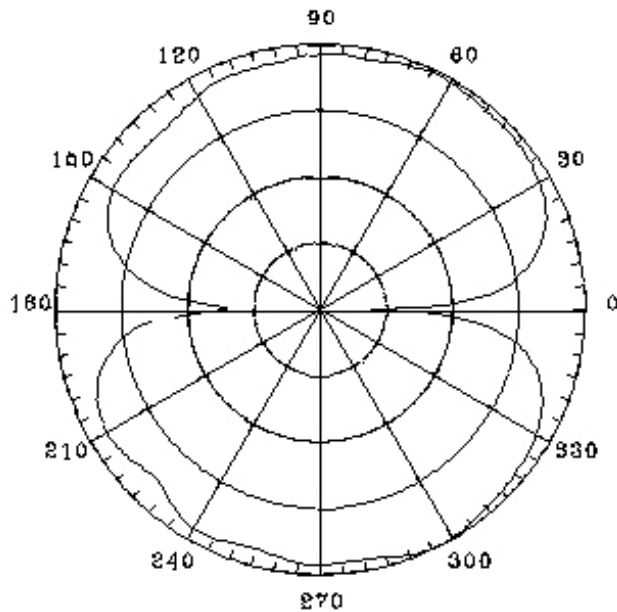
### Connecting Multiple Receivers to a Common Antenna

As done in every home with the TV antenna, a common antenna signal can be split so that multiple receivers can share it. This saves costs as a single antenna can be used instead of multiple antennas. The following diagrams illustrate this:



**Receiver Antenna Splitting**

# Omnidirectional vs Directional Antennas



**Omnidirectional Antennas**  
Omnidirectional antennas radiate a signal in all directions. They do however transmit in lobes which have certain dead zones (0 and 180 degree planes). This must be taken into account when setting up these types of antennas.

## Directional Antennas

As the name suggests, directional antennas radiate a signal in a one focused direction. These types of antennas usually offer significantly increased gain however the difficulty with these antennas is their narrow beamwidth. Our Para-27 antenna for example has a beamwidth of about 10 degrees which will pose alignment problems for the untrained installer.

