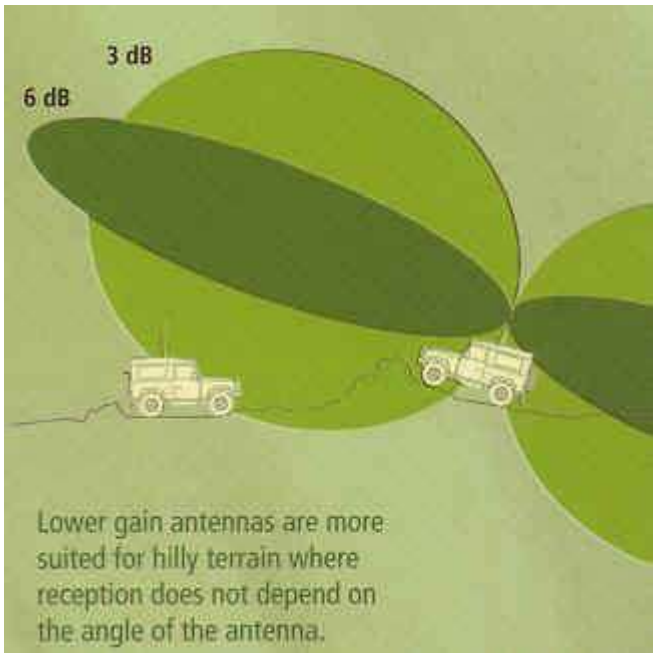
UHF Antennas

I thought the following may be useful. It has come from Autobarn (Christmas catalogue 2016), Telco Antennas (telcoantennas.com.au) and Radio Specialists (radiospecialists.com.au).

UHF antennas are not all the same and they need to be chosen with care. For off road work, a couple of things to consider are:

1. They need to be strong and able to stand up to the vibrations and oscillations experienced on corrugations and rough roads. The wire type antennas break (metal fatigue) very easily. Even fibreglass ones can break or vibrate undone. I tape the base of the antenna to provide extra support to help reduce breakages.
2. The mounting point needs to be chosen with care. It needs to be strong and stable. Some bull bars vibrate too much. A stable spring base to the antenna can help reduce breakages if you happen to run into vegetation. Mounting on the vehicle body is much more stable and gives a better ground plane (better signal). The best place is the middle of the roof.
3. The dB “gain” is important. “Gain” is the strength of the signal the antenna puts out measured in dB. The most suitable antenna depends on the area you're travelling through. A higher gain antenna means a stronger signal which is emitted in a flat circle with not much signal going up or down. It is most suited to flat country where it gives good distance. In hilly country the signal is often directed towards the sky or down into the ground missing other vehicles. A lower gain antenna (e.g. 3dB) emits a circular transmission pattern that is good in hilly areas because it transmits up and down (but not as far) and will capture the antenna of the other vehicle as illustrated in the drawing below. A 6dB antenna emits an elliptical transmission pattern to the side and above with close to twice the 3dB distance. Therefore it is better in flat country. A 9dB emits a narrow pattern to the side and above with triple the 3dB distance over flat terrain, but is less effective in hilly country. The best compromise is a 4.5dB antenna for all-round performance in hilly and flat country. Alternatively you could have 2 antennas – a 3dB and a 6 or 9dB and change them according to terrain (or have a switch).



John Kent, *Training Co-ordinator*