

Useful Information about Radio Communications

The purpose of this document is to provide an insight into how radio communications can help your business and to give a brief outline of the various systems available, along with licensing information and a glossary of technical terms.

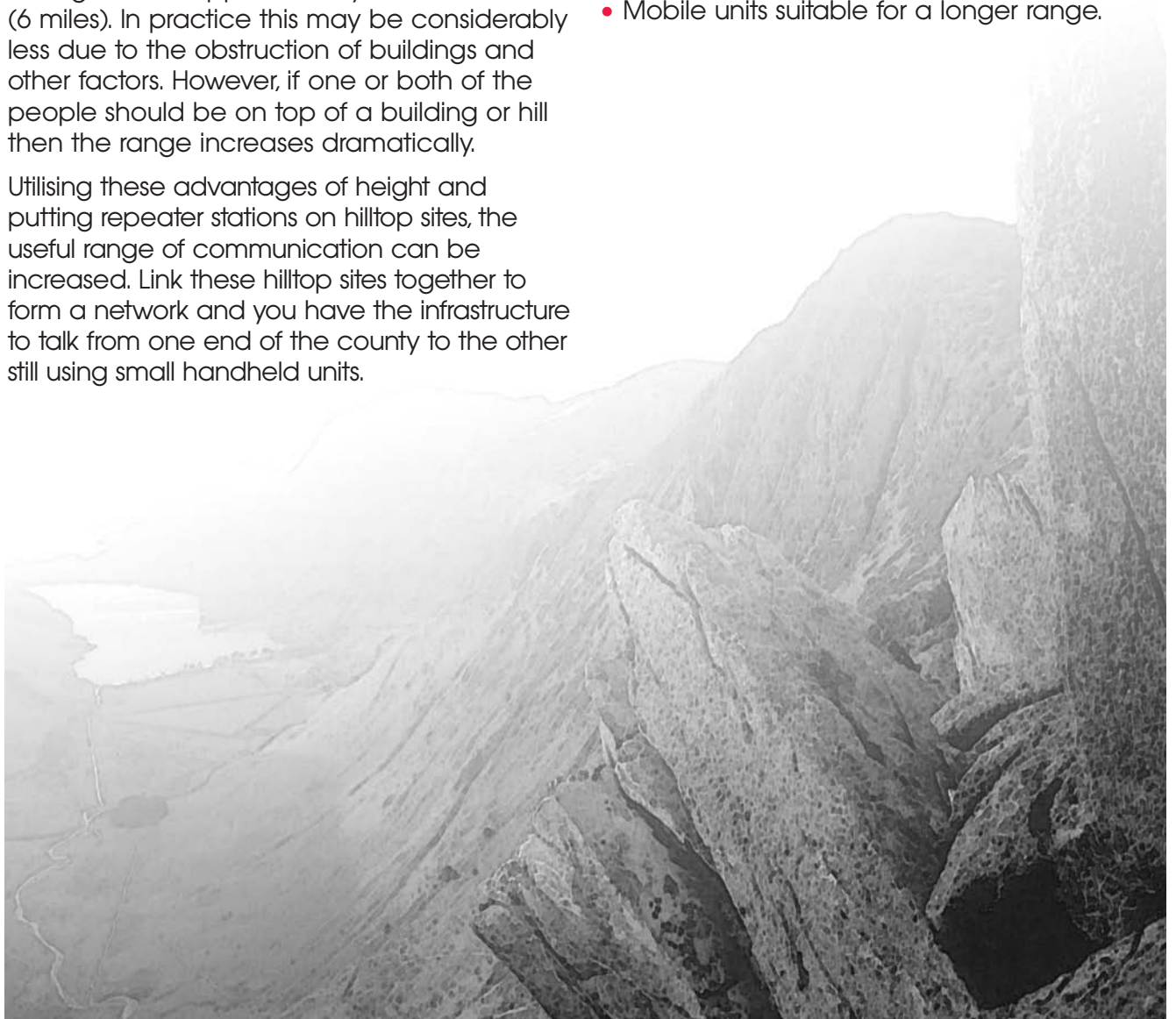
In its simplest form, VHF and UHF two-way radio is essentially a line-of-sight communication between two radios. The maximum line of sight path (range) for two handheld radios used by average height people over level ground is approximately 9,500 metres (6 miles). In practice this may be considerably less due to the obstruction of buildings and other factors. However, if one or both of the people should be on top of a building or hill then the range increases dramatically.

Utilising these advantages of height and putting repeater stations on hilltop sites, the useful range of communication can be increased. Link these hilltop sites together to form a network and you have the infrastructure to talk from one end of the county to the other still using small handheld units.

So, as with most things in life, it is a case of choosing the right system for you. If you require any help then please contact us by telephone or e-mail.

Do you require?

- Handheld units to talk around an office or school etc.
- Handheld units to talk around a larger factory or site.
- Mobile units suitable for taxi firms.
- Mobile units suitable for a longer range.



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The Choices

PMR

Private Mobile Radio (or Private Business Radio as it is sometimes referred to) has been with us since 1948 and forms the bulk of the two radio systems in use in the UK. Most taxis, farmers and local councils use this system. It is more powerful than PMR446, handportables are generally 5W and mobiles 25W but the range obtainable is terrain dependent. Greater ranges can be obtained by the use of a base station and a rooftop aerial or for the greatest range the base station may be located on a hilltop aerial site and remotely controlled via a landline. Because of these variations in siting, the service is licensed by the Radiocommunications Agency on an individual basis, the frequency being allocated by a computer prediction program based on the location information given in the licence application. CTCSS or DCS are used to reduce the interference heard by users, as overlapping coverage is inevitable. Typical ranges obtained in fairly level terrain are - between two handportables 5km, between two mobiles 10km, between a base station (with a rooftop aerial) and a mobile 20km and if a hilltop site is in use then 50km is possible. When a base station is in use, it is possible for two mobiles anywhere in the coverage area to communicate with each other by a system called talkthrough.

Uses and users - *A broad system essentially covering commercial types of users. It is more powerful and more flexible than PMR446 with ranges from 2 to 80km, depending on implementation.*

Advantages - *Higher power, longer range, less interference, little recurring cost*

Disadvantages - *Licence fee chargeable, equipment more expensive.*

PMR446

PMR446 came into use in April 1999. These handportable units have 8 channels in the 446MHz band plus CTCSS and DCS, thus making congestion less likely. The channels and tones are user-programmable although different manufacturers implement this in different ways and full functionality may require the use of a PC. The service is licence exempt and is available for personal as well as business use. The eight channels will eventually be available for use throughout Europe. It is essentially a low powered system (500mW).

Uses and Users

Essentially PMR446 is a short range service giving a range of a few hundred metres in built-up areas but much further in open country. Ideal for keeping in touch within offices, factories, schools or for hiking, cycling or other leisure uses.

Advantages - *off-the-shelf purchase, cheap, licence exempt, no recurring costs, available to all.*

Disadvantages - *Low range, busy channels, not suitable for safety uses, available to all.*

CBS

Community Base Station - this is essentially a shared PMR Base Station, situated on a high site and running on talkthrough as a repeater. It is usually owned by an independent operator who rents out airtime to users groups (businesses) who all use the facility on a time share basis. Only one user may transmit at any time and while people in his user group can all hear him - all other user groups are locked out. A time limit is imposed on how long a user group may talk before giving other user groups a turn, but no restriction applies to the total amount of airtime that can be used for the monthly airtime charge. You are able to talk mobile to office or mobile to mobile anywhere within the coverage of the CBS.

Uses and users - *A long range system (<80km) suitable for users that have an intermittent requirement for radio throughout the day (and thus can share the channel) but a high total airtime requirement and a need for up to 80kms range.*

Advantages - *Long range, no call charges, known monthly charges.*

Disadvantages - *Time shared, recurring costs.*

