

# Keep in touch

**MICHAEL BIRD** examines communications on the golf course

**“O**K then Steve, tell me why you wouldn't recommend Citizens Band radio for on-course communications?”

Silence, while Steve Garrett composes an appropriate answer: “Let's put it like this,” he begins. “If I say that CB radio is the equivalent of a crazy golf course and Private Mobile Radio is the equivalent of St Andrews, then I think your readers will understand that there is a world of difference between what can only be described as amateur and professional wireless communications systems.” Mr Garrett ought to know. As sales manager for Cotswold Telecommunications Ltd. he is responsible for advising on and supplying two-way radio systems, cellular radio telephones and radiopaging systems to customers throughout southern England. The company secured the British Standards Institute's BS 5750 part 2 accreditation more than a year ago and is the largest privately-owned provider of mobile communications services in the region with additional sales and service centres at Newton Abbot and Truro.

“Don't think I'm out to knock CB radio,” continues Mr Garrett. “As a public access system, it has an accepted role to play as a low cost means for people on the move or on their own to keep in touch. However, if you want a private conversation with one or more of your staff without worrying about a complete stranger listening or butting in, then CB is not the answer. It has to be Private Mobile Radio, normally known as PMR.”

Why Private? Because each system is allocated a specific operating frequency by the Department of Trade and Industry enabling private communication between all equipment tuned to the same frequency. To prevent others 'tuning in', all equipment has to be pre-set by the supplier to the frequency given by the DTI to each licence holder for use on the assigned channel, with other users within a prescribed area – usually up to 40 miles radius – being 'locked out', preventing access to your designated frequency.

There are four principal frequency bands available to PMR users, each offering a different transmitting characteristic to suit the loca-



**Top:** Hand portables offer maximum flexibility but can be limited in their range in hilly or built-up areas. In these cases, a fixed base station or community repeater service can improve signal reception.

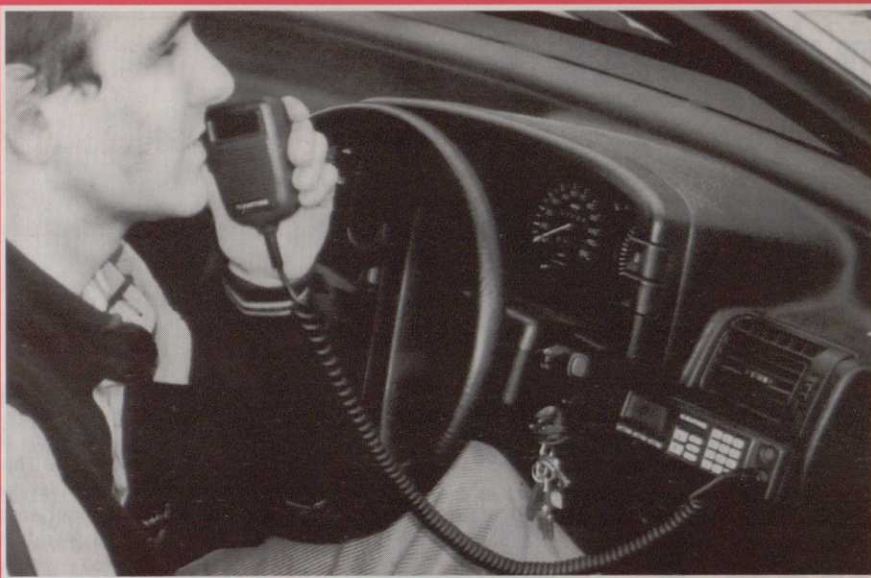
**Above:** A base station with appropriate amplifier and aerial can be used to communicate with mobile and portable radio sets over a radius of up to 25 miles.

tion, topography and density of buildings and other obstructions. The bands are VHF low, mid and high, and UHF, each with their own range of frequencies one of which is allocated to the user by the DTI. A preferred frequency band can be indicated on the licence application although if a specific channel is required, the reason must be given.

In London, because of the high demand for PMR during the late 1970s and early 1980s, no new frequencies have been allocated for more than five years, new users having to wait until someone else gives up an existing fre-

quency. Although the UHF band is geographically restricted, it is ideal in built-up areas due to its ability to penetrate steel and concrete better than VHF signals. On the other hand, radio waves produced on VHF low band hug the contours giving good coverage in hilly areas while VHF high band is able to travel long distances in a straight line, producing a high quality signal on open terrain.

These variations in signal characteristics make a thorough site survey the fundamental starting point for anyone considering installing a mobile radio communications system. Mr



Mobile radios are suitable for installing in most vehicles enabling two-way communication with other mobiles and a base station, according to the licence type.

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regional or local coverage at lower cost and this could be appropriate for a club within the M25 area where new PMR frequency allocations are restricted.

If two-way voice contact is not essential, then the most economical form of communication is the pager. Comprising a simple one-way system, it uses a similar national network of landlines and relay base stations to that used by National Band Three. The basic pager uses a 'bleep' signal to alert the carrier that he or she should make contact with base. On more sophisticated systems, a message can be displayed on the pager's screen while the most advanced offer one-way voice communication. The disadvantage with most pagers is that communication can be from the base only, eliminating the opportunity for a conversation between two handsets.

And what about cellular telephones? Steve Garrett reckons that he can dissuade anyone working in a fixed location from investing in a mobile telephone for routine or even emergency communications with fellow members of staff. "A mobile radio system can be installed and operated for a known monthly figure, with no call charges," he points out, "If you're always going to be talking to the same people, a mobile telephone will usually prove a far more costly alternative."

A final word of advice concerns after-sales service. "Don't assume that the equipment you choose is going to prove totally trouble-free," he comments. "Dust, water, vibration and knocks can upset even the best-protected electronic circuitry. Mobile radios also need re-tuning from time to time. Buy from a reputable company able to provide the level of service that you would expect from any other supplier of golf course equipment. There is no mandatory requirement for suppliers of communications equipment to be members of any industry association or governing body, so beware of shady operators who may not be around tomorrow."

27 ➤ Garrett points out that no-one wanting to do the job properly should attempt to do it themselves. "There is plenty of cheap equipment advertised, but once purchased, you could very well find yourself on your own," he says. "Although it is possible to apply for a licence and be up and running within a few days, users can find that they have selected the wrong equipment, the wrong frequency or even the wrong licence for their specific requirements."

There are two basic types of licence appropriate to golf course applications, both costing from £120 a year. The first is 'local area', permitting wireless communications within a 3km (1.9 mile) radius of a permanent base station transmitting at a maximum five watts power. This system can be used to link a base station in the office with mobile radios in vehicles and hand portables carried by staff. If all the work is carried out within the confines of the course, a local area licence may be appropriate for all one's needs, depending on the findings of the site survey.

If, however, there is a need to keep in touch with staff and management over a greater area, particularly when leaving the course to collect parts or to maintain other leisure facilities in the locality, then a 'wide area' licence is likely to be more suitable. This licence normally allows a maximum transmission signal strength of 25 watts from a permanent location, with coverage averaging about a mile per watt of output, depending on the lie of the land and any obstructions such as buildings.

The basic wide area service operates on a dual frequency basis, enabling the base station radio to talk to mobiles on one frequency and receive calls on another. It does not allow for direct mobile to mobile contact. For this, one needs to apply for a 'talk-through' facility, using the base station as a relay to enable one mobile or hand portable to connect directly to another. Here, aerial type, location and direction are vital for the optimum operation of the system. "A fixed base station with a permanently installed aerial at or close to the highest point on the course will produce a consistently better signal on undulating terrain than two hand portables with built-in aerials," points out Mr Garrett. "For that reason, where a site survey highlights variable signal strength, we

would advise routing all communications via the base station using a talk-through facility. "A further option is to use a 'connection' service via one of the community repeaters which have been installed by communications companies nationwide and available on a monthly air time rental of around £10 to £15 per mobile radio set, inclusive of the licence fee but not the equipment.

Cotswold Telecommunications, for example, has community repeaters located on masts on most of the highest hills from Worcestershire down to Cornwall. Consisting of an aerial and transceiver (combined transmitter and receiver), it enables subscribers to communicate with other mobile radios on the same frequency over the complete area covered by the community repeater's aerial - typically a 30 to 40 mile radius.

With a base trigger station in the office linked to an aerial pointing at the community repeater, all mobile and hand portable radios on the course should be able to communicate with each other, subject to the terrain, at considerably lower cost than attempting to overcome the problem using all one's own equipment. Indeed, there need be no capital outlay at all, as rental options are normally available for the full range of mobile telecommunications equipment available, irrespective of the licence type or system selected.

A further option which provides nationwide mobile radio coverage, yet is suitable also for those in cities where new frequency allocations are restricted, is National Band Three. Using a network of land lines and hilltop aerials, this service is used principally by distribution and haulage companies throughout Britain paying a monthly subscription per mobile set, with no call charges. National Band Three is available also with just



Mobile communications equipment will need servicing, repair and occasional retuning to the manufacturer's specifications. Ensure that your supplier has the facilities and expertise.