A useful surplus buy is the Marconi D52 oscilloscope

feeder cables are made of four components — a central conductor of solid or standard copper wire, a dielectric of solid or foamed polythene, a braiding of wire and an outer mantle of polyvinylchloride (PVC). To achieve efficient transmission of RF we need low resistance in the metallic conductors and a non-glossy dielectric. In addition the jacket needs to protect the cable against abrasion and moisture, and a high density of braid is necessary to avoid radiation of the signal from the feeder.

Braid density is not readily visible (unless you strip the outer jacket) and many cables sold to undiscerning CB users have a hopelessly low braid density. The designation RG-8/U etc. is not in itself a guarantee of braid density, so don't be caught out in this way. The chemical composition of the outer jacket is important too, and again without specialist knowledge you might not suspect this. Vinyl in itself is a fairly stiff material and in order to make it flexible and workable various plasticisers are injected into the vinyl compound. Unfortunately some of these plasticisers gradually leach out of the vinyl and start to contaminate the braiding and dielectric. Exposure to the elements, particularly summer temperatures, hastens this effect and gradually the plasticiser migrates to the polythene, raising its dielectric constant and power factor and hence VSWR and attenuation. Having lost the plasticiser the outer vinyl starts to go brittle and cracks, allowing in moisture which corrodes the braid. Because of the skin effect this further attenuates the RF signal.

Does this start to sound familiar? After some 15 years many RF cables go brittle, the dielectric goes yellow and the braid is almost impossible to solder. Even if stored unused this type of cable is decidedly 'dodgy' and ends up on the surplus market! So be warned: cables with 'simple' numbers (no suffix) like RG-8/U and RG-58/U are definitely suspect and should be declined in favour of 'improved' cables like RG-8A/U and RG-58B/U. The A and B suffixes indicate 'safe' plasticisers and have a life expectancy in excess of 15 years. Spending £10 or £20 on GOOD cable is really a wise investment for your expensively produced signal.

Occasionally 'exotic' cables turn up at bargain prices, for instance *heliax* and hardline. Some of the hardline comes from cable TV schemes and is of 75 ohms impedance — this may prove difficult to match into your system. In any case the specialised connectors for these cables do not come cheap — prices start at £10 per connector and go up to £30; improvising by homebrew means may result in VSWR bumps and indifferent results. Cheap and nasty connectors can usually be judged by visual inspection: avoid any with dusty phenolic or yellowing polythene insulation and any with dull or corroded metal surfaces. Older BNC plugs will not have captive cable grips, and there are a lot of 75 ohm BNC and N type connectors looking deceptively like 50 ohm ones (until you get them home!).

Finally a word on surplus equipment of USA origin: most of this is of high quality and well worth buying. The abbreviations may look baffling but using the accompanying table you will be able to amaze your friends by identifying the gear's characteristics and purpose. Good hunting! ●

Further Reading:

The Government Surplus Wireless Equipment Handbook Price £7.50 + £1.50 post from Myers Electronics, 12/14 Harper Street, Leeds, LS2 7EA.