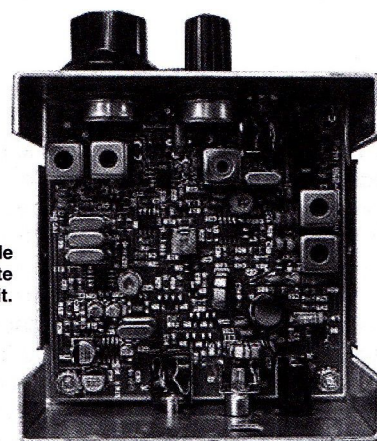


Receivers

THE RECEIVER MUST pick up the weak radio signals, select the right signal from the thousands of different transmitters located all over the world, amplify it to a suitable level, extract the audio (or data or picture) from the modulated waveform and then present it to us in a suitable form.



Outside and inside the MFJ Cub, a complete transceiver that you build from a kit.



Simple receiver

The block diagram of a receiver is shown in Fig 12.

1. Tuning and RF amplifier
2. Detection
3. Audio amplifier
4. Loudspeaker

The radio signal is picked up by the antenna, now converting a radio wave into electrical signals on the feeder, and fed along the feeder to the input of the receiver, box 1.

Box 1 contains the tuning, which selects the wanted signal from all the hundreds of signals picked up by the antenna, and RF amplification which amplifies the wanted signal to bring it up to a suitable level to be used by box 2.

Box 2 contains the detector, which recovers the original modulating signal. It extracts the original audio signal from the modulated signal, as the carrier is no longer required. Detection is often also called de-modulation.

Box 3 contains an audio amplifier, which ensures the audio signal is powerful enough to drive the loudspeaker or headphones.

The wanted radio signal is selected by tuning the receiver to the correct frequency. You will learn how 'tuned circuits' achieve this in the Intermediate training course. You will also cover how a transistor can amplify the signal, making it strong enough to use. For now it is sufficient to know that the circuits in the receiver shown in Box 1 perform those functions.

Detector

THE TYPE OF detector used must be suitable for the method of modulation being used at the transmitter. This can be demonstrated using an amateur radio receiver by setting the 'mode' switch to the wrong type of modulation.

The mode switch is discussed in more detail in the section on operating and during the practical training. The cor-

rect mode needs to be chosen to correctly recover the original audio signal. The technical details of other types of modulation are covered in the Intermediate and Advanced courses.

If it was a data signal sent at the transmitter then again a suitable detector is needed and the selection of the correct mode (eg upper or lower sideband or FM) is just as important but might be harder to determine by ear. The operating chapter has more details.

For the exam, questions on receivers will assume a loudspeaker is being used as shown in Fig 12.

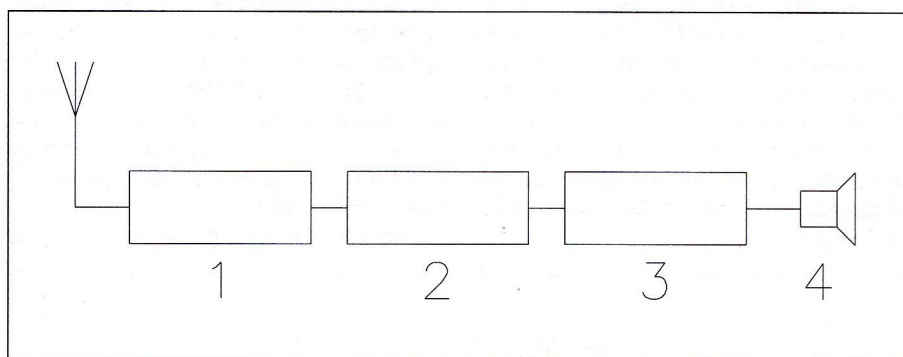


Fig 12: Block diagram of a simple receiver.

