



Wireless Microphones

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- The ultimate in mobility is afforded by the wireless (radio microphone) because with this there is no connecting cable and the user is free to move around over distance of several hundred meters.
- There are two basic types, one where the radio transmitter is contained within the casing of the actual microphone, and the other which takes the form of a slim pocket unit about the size of a wallet into which an ordinary microphone can be plugged.
- The integral microphone/transmitter unit, Fig. 1.21 is rather larger than a normal gun microphone as batteries must be accommodated as well as the transducer and transmitter.
- In order to obtain sufficient power for the transmitter, the batteries are at least 9V, but the size limits the capacity.
- The average life is three to five hours, but rechargeable batteries are often fitted to make the instrument more economic to run.
- With the separate pocket transmitter a lavalier or tie-clip microphone can be used to give complete freedom to the user.

- The aerial takes the form of a short flexible lead which trails from the microphone. Usual length is a quarter wavelength at the permitted frequencies of the carrier wave.
- There are fifteen frequencies allocated for wireless microphones and all units work on any one of these interference is no problem because of the short range, it being unlikely that another user will be operating on the same frequency within about half a kilometer.
- The frequencies are in four groups: firstly group with a wide bandwidth, 174.1, 174.5, 174.8 and 175.0 MHz.
- The second group is of narrow bandwidth, the frequencies being 174.6, 174.675, 174.77, 174.885, and 175.020 MHz.
- The third group is also of narrow bandwidth, being reserved for teaching deaf children in schools: these are 173.4, 173.465, 173.545 and 173.64 MHz.
- In addition, in certain circumstances, the frequencies of 174.6 and 174.95 MHz are allocated for communication on work sites. An ordinary E-M receiver will not pick up wireless microphone transmissions.

- The narrow bandwidth specification is for a deviation of +20 kHz and is suitable for most speech applications.
- The wide bandwidth allocations Aim- a deviation of +75 kHz and give the better quality reproduction required by stage and cabaret artists.
- The transmitter output power must not exceed 50 mW in the case of narrow band transmitters and 10 mW with the wide band units.
- Certain specifications also apply to the receiver. Signal to noise ratio must be better than 30 dB and selectivity such that a signal with a deviation of + 10 kHz, 70 kHz away from the wanted signal in the case of narrow band receiver, and with a deviation of +2.5 kHz, at 200 kHz away, from the wanted signal in the case of wide band receiver will not produce an increase of noise plus unwanted signal of more than 3 dB in the output.
- An interfering signal of 3mV should not give a signal in the output greater than 10 dB above noise level in the case of wideband receiver and 20 dB above with that of the narrow hand grit.
- It is possible for any receiver to generate and radiate a signal from the local oscillator which is part of the superheterodyne circuit universally used. The specification stipulates that cm) such signal radiated from the receiver's aerial should not exceed 2,5 μ W at any frequency.



Fig. 1.21 (a) VHF Wireless Microphone