

Q.U.A.D. *Tuner Unit*

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 **ACOUSTICAL**

ACOUSTICAL Q.U.A.D. TUNER UNIT

**. . . . For the closest approach
to the original sound in
speech and music reproduction**

Introduction

This unit is primarily designed to receive local broadcast transmissions at a standard of reproduction limited only by the quality of the transmission itself.

It is in the nature of things that this quality can only be obtained if the geographical position of the receiver is favourably situated in relation to the transmitter. In the British Isles, the percentage of the population so situated for all three main programmes is very low.

Allowing for a very small degradation of quality, the range is considerably increased and something over half the population are in a position to receive at least two programmes at high quality level. For the remainder, a very severe cut in quality is essential in order to obtain usable reception.

The Q.U.A.D./R unit is suitable for those in the first two categories. It is not recommended for those in the third group.

With the aid of the data in the booklet, local engineers should be able to advise on the conditions prevailing in their local area.

Description

The unit is constructed on a die-cast panel in the same style and size as the control unit of the Q.U.A.D. amplifier. It is intended for facia board mounting, requiring only a single hole cut-out for fitting.

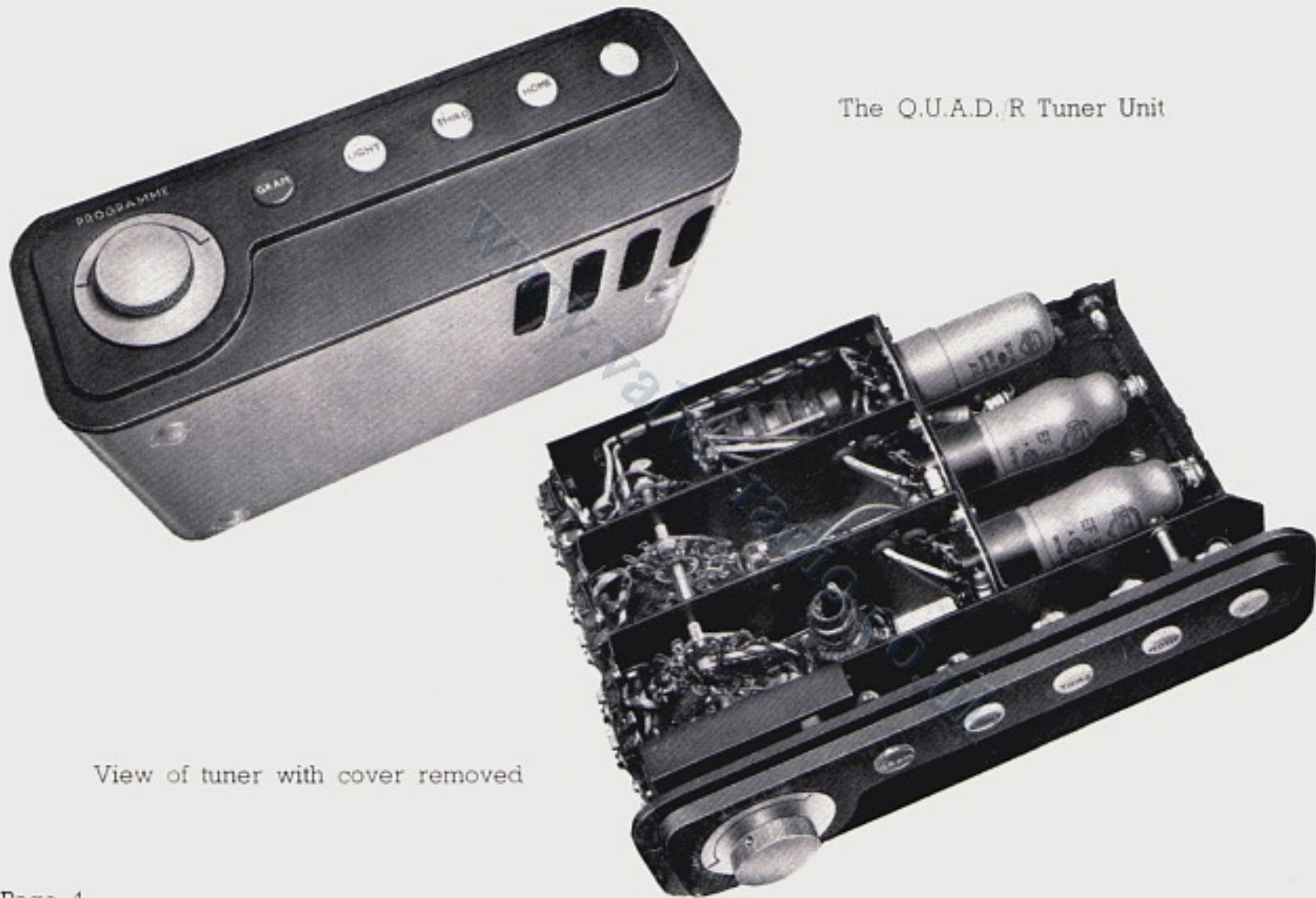
The panel incorporates a five position rotary switch together with five indicator lamps showing the programme selected. Three of the positions cover the medium wave-band, the fourth covering long wave requirements. The fifth is for gramophone reproduction.

Each of the four radio channels is separately tuned at the back and each one can be separately set for selectivity and sensitivity. Once set, therefore, it is only necessary to switch to the programme required and it will be received at the highest possible quality for that station in the area where the receiver is used (see introduction).

The very full instructions enable the equipment to be reset to new stations without difficulty, should this become necessary due to changes in wavelengths or a change of locality.

The receiver is supplied complete with plugs, etc. for direct connections to a Q.U.A.D. amplifier. In view of the distortionless detector which is used, the tuner unit is not normally suitable for use with other amplifiers because the output level is very much lower than conventional tuner units.

The Q.U.A.D./R Tuner Unit



View of tuner with cover removed

Circuit detail

The R.F. sections of the tuner unit consist of two stages of amplification with three tuned circuits.

Pre-selected tuning for a quality receiver is an obvious choice and the adoption of three tuned circuits is dictated by a number of factors. The staggered alignment of five circuits for example would require elaborate equipment and could not normally be reset by the user. Again, the possibility of small drifts in use would seriously affect quality. Three such circuits on the other hand are simple to align and drift errors can be reduced to negligible proportions.

The Q of the coils and the tuning arrangements are such that the whole frequency range as transmitted can be covered without attenuation. Since some 50% of the sidebands transmitted occupy the same R.F. frequencies as the sidebands of adjacent stations, it follows that this range can only be used in practice

when adjacent channel strength is at least 70db below the level of the wanted station.

With between 40db to 70db difference in strength, only the carrier of adjacent stations will cause effective interference and this can conveniently be removed with the audio filter facilities of the main amplifier.

Where less than 40db difference in level exists, it is of course necessary to remove the sidebands of the unwanted station and conditions are not suitable for the use of a local receiver.

At 20 Kcs off tune, the response will be 20-30db down. It follows that under conditions where the required signals are sufficiently strong to overcome adjacent channel sideband interference, it is unlikely that difficulty would be experienced from unwanted stations further removed in frequency.

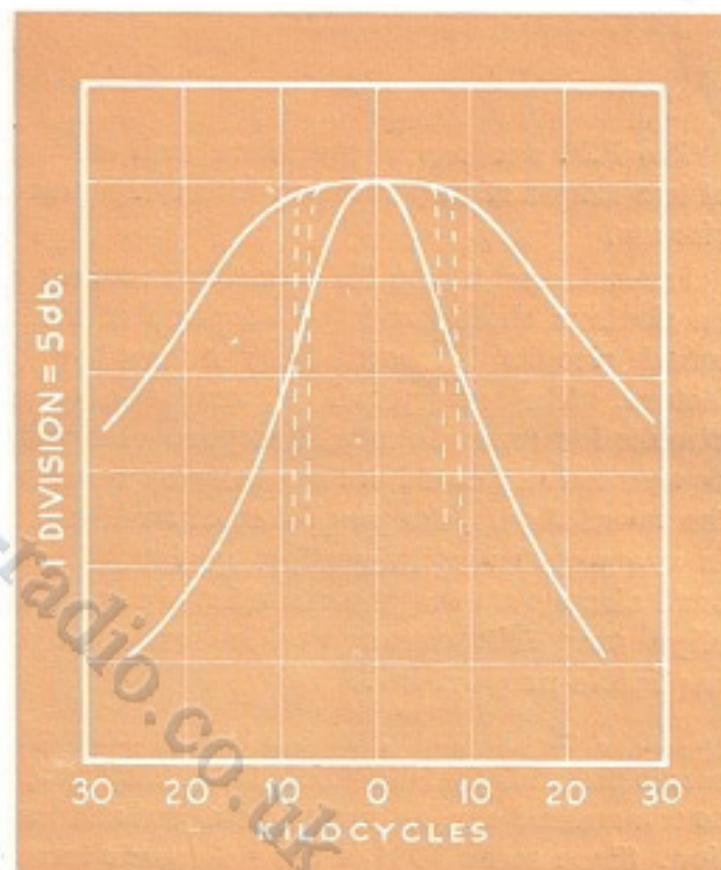
The detector is usually the weakest link in

a quality tuner. In this circuit a diode is operated at a high level with equal loading for the signal and the D.C. component. Used in this way, the distortion is lower than with any other form of detector. Its ability to handle carriers modulated to 100% is of particular importance since it is present practice to modulate up to 90-95%.

In obtaining the very low detector distortion, the output is greatly reduced to the order of 10-20 mV. This, however, together with the reduced impedance of 5,000 ohms, is a most convenient value for feeding through the coupling cable to the Q.U.A.D. amplifier.

The gramophone position of the selector switch transfers the amplifier inputs A and B to two jack sockets at the back of the tuner unit. Their characteristics are not modified in any way.

The tuner unit takes its supply from the main amplifier via the socket provided.



- R.F. Selectivity at 1 Mc/s
- - - Further Audio Filter Selectivity within R.F. Framework

Specification

Input sensitivity : $< 1\text{mv}$.

Tuning range of channels :

- | | |
|--------------------|------------------------|
| (1) 190-375 metres | (3) 280-550 metres |
| (2) 230-500 metres | (4) 1,000-2,000 metres |

Output : Directly connected by four foot cable to Q.U.A.D. amplifier (may be extended if required).

Consumption : 6.3 V, 1.2 A ; 300 V, 5 mA.

Valves : EF.37A, EF.37A, EB.34.

Weight : 7 lbs.

Finish : Steel chassis and all steel parts, Bonderised rust-proof processed and cellulosed.

Panel : Die-cast aluminium, steel grey finish, machine engraved.

Knob : Aluminium, frosted silver finish.

Programme indicators : Interchangeable printed cellulose caps.

The type number Q.U.A.D./R includes the tuner unit complete with cable, plugs and sockets and full instructions ready for use. Full circuit diagrams and service data are supplied with each tuner.

Price £18 plus £8 purchase tax.

Guarantee : The equipment, with the exception of valves, carries a fully comprehensive guarantee for a period of 12 months from date of purchase. Valves carry the makers' guarantee of three months.

