

Home TV/FM aerial distribution amplifiers

This leaflet is for the information of householders.

Home TV distribution amplifiers which feed TV aerial sockets in several rooms are becoming more common. Many of these amplifiers are 'broad band' types which can also pick up other radio signals such as amateur radio transmissions. This leaflet is intended to explain why this can happen and how the problem can be solved.

Q1. If a radio amateur's transmissions affect TV reception, why does this happen?

In most cases, there is nothing wrong with the radio amateur's transmitter or with the way it is being operated. In many cases the problem is caused by the design of the TV or video recorder, particularly if an extra 'booster' amplifier is being used.

A problem called 'breakthrough' can occur because the immunity of the affected equipment is not good enough. This means that the affected equipment is not sufficiently good at rejecting signals which it is not intended to receive.

All radio transmitters operate on allocated frequencies; radio amateurs transmit on frequencies in nationally or internationally allocated amateur radio bands. They are not allowed to transmit on any frequencies which are used for radio and TV broadcasts.

Many of the home TV distribution amplifiers sold by DIY chains and other retailers are 'broad band' types. These can be used for distributing signals from a TV aerial and FM radio aerial at the same time. This extra capability to distribute FM radio signals can also cause problems as the amplifier also covers a wide range of other frequencies, not only the TV and FM bands. This means that it can also pick up and boost radio signals from non-broadcast sources such as:

- Police, fire, ambulance, public utilities and radio paging base stations.
- Fixed and mobile transmitters operated by local authorities, motoring organisations and many small businesses such as taxi operators.
- Some amateur radio transmissions.

This can lead to breakthrough problems that only occur with a broad band distribution amplifier.

Q2 What effect does breakthrough have with a TV distribution amplifier?

In the UK the TV service has gone digital so that the traditional indications of interference to TV such as specific patterning on the picture are no longer relevant. The only evidence of breakthrough to a distribution amplifier will be break-up of picture or sound. In some cases there could be complete loss of either. This effect is not specific to interference but can be caused by anything which causes signal degradation.

If the source is an amateur radio transmitter, the above effect would only occur intermittently. Any problem that happens all the time is almost certainly not caused by amateur radio transmissions. This could be confirmed by asking the radio amateur concerned to make a test transmission. Alternatively, you could keep a list of dates and times when the problem occurs. The list could be compared with the log which almost all radio amateurs keep.

Q3. If a breakthrough problem occurs with a TV distribution amplifier, how can it be solved?

Breakthrough problems can normally be solved but this requires co-operation by all parties involved. In most cases, it is possible to solve the problem using a special filter. This should be plugged in where the TV or FM aerial goes into the distribution amplifier.

A radio amateur would normally be able to give advice on what sort of filter to use. A range of filters is available from various sources including the Radio Society of Great Britain.

In the case of breakthrough from an amateur radio station, the radio amateur may be prepared to provide a filter on loan but is not obliged to do so.

Q4. Can I call in the Authorities?

Anyone who knows or suspects a source of interference can report the source to OFCOM, though for domestic radio and TV the investigation is undertaken by the BBC. Information on this service can be found on the OFCOM web site or by telephoning OFCOM.

Ofcom Contact Centre
Ofcom
Riverside House
2a Southwark Bridge Road
London SE1 9HA
Tel: 0845 456 3000 or 020 7981 3040
Web site: <http://www.ofcom.org.uk>

If a visit by an engineer is requested a fee may be payable. Generally this is where the problem turns out to be in the complainant's own installation. The situation is not entirely clear as to exactly when a fee is applicable so it is advisable to enquire before requesting a visit.

Q5. What about communal TV aerial systems in blocks of flats?

Communal TV aerial systems in blocks of flats are normally installed professionally but breakthrough of amateur radio transmissions or other radio transmissions may occur, particularly if the system distributes FM radio signals as well as TV. The cure is to fit suitable filters as described in Question 3 above. If an OFCOM investigation is required, such systems would not normally be classed as 'domestic', so instead of the fixed fee, there would be an hourly charge for the time spent.

Technical Information

Fig. 1 shows the typical response of two types of TV distribution amplifier. The solid line shows a broad band TV/FM type and the dotted line shows a UHF TV only type. The FM and TV broadcast bands and some amateur radio bands are also shown.

The broad band amplifier not only amplifies the TV and FM bands but also a wide range of other frequencies in-between. These include the 144MHz amateur band. Most broad band TV/FM distribution amplifiers also cover frequencies below the FM band. These include the old UK 405 line TV 'Band 1 (40 - 70 MHz) that was closed down in the UK in 1984. Coverage of Band 1 serves no useful

purpose in the UK and can cause problems by picking up nearby amateur transmissions in the 50MHz amateur band.

Where the FM capability is used with a Band 2 FM aerial connected, it may not be easy to get the FM and TV signal levels correctly balanced and this can result in degradation of the TV signal or buzzing on the FM sound.

Most users do not use the FM capability at all, so an amplifier that only covers UHF TV would be a better choice as it is much less susceptible to picking up other unwanted radio signals. Where a broad band amplifier is already installed, a high pass filter is required at the input to block frequencies below the UHF TV band.

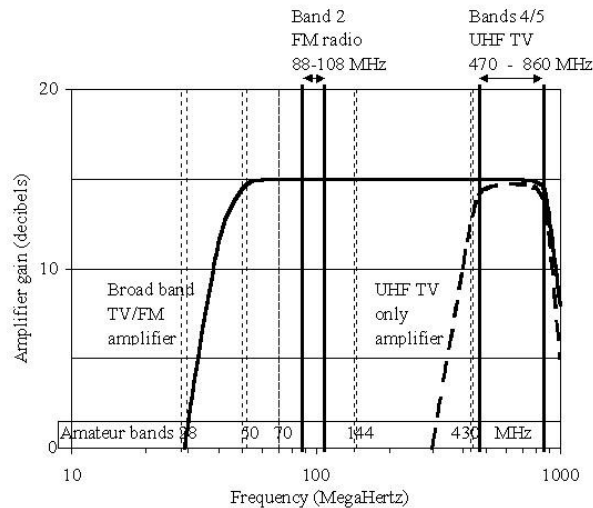


Fig. 1. The typical response of two types of TV distribution amplifier.

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