



Home TV/FM aerial distribution amplifiers



Purpose of this leaflet

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, or an extra 'booster' amplifier if one is being used.

A problem called 'breakthrough' can occur because 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 in allocated amateur radio bands. They are not allowed to transmit on any frequencies that 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 but they also cover a wide range of other frequencies, not only the TV and FM bands. This can cause problems as the amplifier 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.

Ofcom form Of 22 (see Question 4 below) states, "If you have an aerial amplifier, please first contact an aerial installer, who may be able to help. Amplifiers can be affected by nearby transmissions."

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

The following effects may occur on conventional analogue TV channels:

- Slight or severe patterning on the picture, usually on all channels.
- Light and dark horizontal bars across the picture.
- A blank screen.

The following effect may occur on terrestrial digital TV channels (not digital satellite):

- A blank screen.

If the source is an amateur radio transmitter, the above effects would only occur intermittently. Any problem that happens all the time is almost certainly not caused by amateur radio transmissions.

The cause could be identified by asking the radio amateur concerned to make a test transmission. Alternatively, you could write a list of dates and times when the problem occurs. The list could be compared with the 'log' which a radio amateur is required to keep under the terms of the amateur transmitting licence.

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?

Ofcom (formerly the Radiocommunications Agency) can be called to investigate problems with radio or TV reception. Details of this service are given in a leaflet 'Interference to TV and Radio Reception', ref. No. Of 22 (Feb 04). This can be obtained free of charge from:

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>

Anyone can report a suspected source of interference to Ofcom, who can check that the nominated transmitter is being operated within the terms of its licence. There is no charge for reporting a source but if a householder wants Ofcom to investigate a reception problem with terrestrial TV (analogue or digital), digital satellite TV, a video recorder or an FM or DAB radio, he or she must agree to pay Ofcom £50.

The charge is payable if the problem is caused by the householder's TV or radio installation or by the householder's own electrical equipment but not if interference is caused by an outside source such as an illegal radio transmission or someone else's faulty electrical equipment. In any case, there is no charge if the household is covered by a free TV licence.

Ofcom does not currently investigate problems with cable television or baby alarms, nor any equipment that is not intended to receive radio signals such as hi-fi systems, computer speakers or telephones.

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

The Ofcom service is not available to anyone who lives in a hotel, a block of flats or a housing estate with a shared aerial system. Such residents are advised to contact their landlord or managing agent who can ask Ofcom to investigate if required.

Some communal TV aerial systems may suffer breakthrough of amateur radio transmissions or other radio transmissions, particularly if the system distributes both FM radio and TV. This can be cured by fitting filters (see Question 3 above).

Technical Information

Fig. 1 shows the typical frequency 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 it is also wide open to picking up many 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 1984. Coverage of Band 1 serves no useful purpose in the UK and can cause problems by picking up nearby amateur transmissions in the 50 MHz 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 continuous patterning on the TV picture 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.

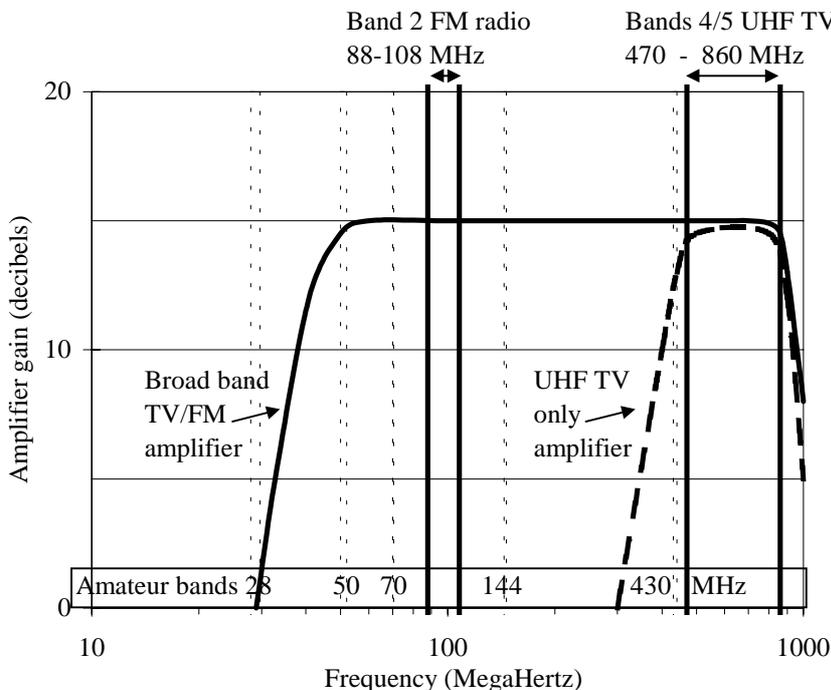


Fig. 1. The typical frequency response of two types of TV distribution amplifier.

The Radio Society of Great Britain represents amateur radio in the UK. This leaflet was produced by: RSGB EMC Committee, c/o 3 Abbey Court, Priory Business Park, Bedford MK44 3WH