



[bbc.co.uk/reception](http://bbc.co.uk/reception)

# Television aerials

## In this factsheet

Terrestrial TV	2
Types of aerial	2
Aerial location and alignment	3
Terrestrial TV channels and frequencies	4

## **IMPORTANT: Checking, repairing or installing an aerial**

We suggest that any work on your aerial is carried out by a professional installer, registered with the CAI (Confederation of Aerial Industries), [www.cai.org.uk](http://www.cai.org.uk), or a Registered Digital Installer, [www.rdi-lb.tv](http://www.rdi-lb.tv).

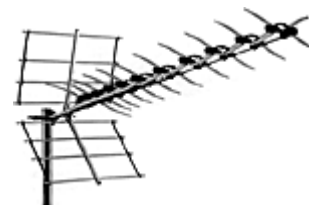
The BBC is not responsible for the content of external internet sites

# Terrestrial TV

Terrestrial TV is the traditional way of receiving television via an aerial. You can receive both analogue TV and digital TV (DTT, e.g. Freeview) this way. If you switch to DTT you may be able to continue using your existing aerial, but in some cases you may need to upgrade or replace it.

## Types of aerial

The standard type of aerial is the Yagi aerial, which has a reflector at the back and a main rod with a number of arms or elements. The more elements the aerial has, the better it will pick up the signal.



The Yagi type of aerial is directional, so it must be pointing towards the correct transmitter. It must also be placed in the same plane of polarisation as the transmitter.

- Main transmitters are horizontally polarised, so the elements should be horizontal.
- Relay transmitters are vertically polarised, so the elements should be vertical.

Typically, this type of aerial is designed to receive only one group of frequencies (see page 4).

## Wideband

Wideband aerials cover all the frequencies (see page 4). They do not provide as strong a signal as the single group type, but you may need a wideband aerial in order to receive digital.

## Aerials for digital terrestrial TV (DTT)

DTT transmissions use the same UHF channel numbers (21–68) as analogue TV, so you can usually use the same aerial. However, some new digital transmitters broadcast channel numbers from more than one group. In addition, when the digital switchover happens over the next few years, the channel numbers used by some transmitters may change. In either case, you may need to replace your existing aerial in order to receive DTT. We recommend the use of a CAI benchmarked wideband aerial.

If you are in a Freeview area where the signal strength is low, you may need a high-gain aerial for the best reception.

# Aerial location and alignment

Whether you have analogue or digital TV, it is important that your aerial is in the best place, is pointing in the right direction, and is in good condition.

## Outdoor aerials

TV signals travel in straight lines and so can be obstructed by hills and tall buildings. Ideally, your aerial should be mounted outside and as high as possible – preferably on the roof. It must be pointing in the direction of the transmitter covering your area.

Because an outdoor aerial is open to the elements, it can deteriorate and should be checked periodically. High winds or even birds can knock the aerial out of alignment, and cable connections inside the aerial junction box can become corroded. If you live near the sea, corrosion can happen quite quickly. Sunlight can make the cable become brittle, and water can also cause damage.

## Aerials in the loft

It is possible to get good reception with an aerial in the loft of your house. However, the incoming signal will be weakened by such things as roof tiles, loft insulation, water tanks, electrical cable and even the gables of the house. On the other hand, the aerial will be protected from atmospheric corrosion and so will not need to be checked as often as an outdoor aerial. A CAI-registered installer will be able to advise whether an aerial in the loft will be suitable.

Whatever type of aerial you use, it is recommended that you use ‘satellite’ grade coaxial cable – type CT100 – for your down-lead as this offers better reception.

## Amplifiers

In some circumstances you may need an amplifier to boost the signal coming to your aerial.

### Masthead amplifier

If you are in an area where the signal is weak, or you need a very long down-lead from the aerial to your TV, you may need a masthead amplifier. This is mounted near the aerial and, when fed power via the down-lead, it will boost the signal. However, if you are already experiencing ghosting or interference, boosting the signal will make these worse. Also, using a masthead amplifier to boost the signal from a distant transmitter in the presence of strong local signals may cause overloading. This is particularly likely if you are trying to boost digital signals.

### Distribution amplifier

If you want to connect two or more TVs to one aerial, you can do this with a simple passive signal splitter (which halves the signal to each TV) in the aerial down-lead, as long as the signal is strong enough. If it isn't, or if you want to connect more than two TVs to one aerial, you should use a distribution amplifier. This will split the signal and also amplify it to some extent to all of the TVs.

Distribution amplifiers are mains-powered (electricity consumption is minimal) and are designed to run continuously. Various types are available for domestic use and they can serve up to eight receivers. Some can also distribute FM radio. If you experience patterning interference when using a distribution amplifier, you may need filters. Please see the manufacturer's installation instructions.

# Terrestrial TV channels and frequencies

## Channels and groups

Terrestrial television channels are transmitted via UHF (ultra high frequency) frequencies between 470MHz and 854MHz. These frequencies are divided into 8MHz bandwidths (the amount required to transmit one analogue TV channel) and are numbered from 21 to 68.

To avoid channels interfering with each other, adjacent transmitters transmit them on different numbers. This is made possible by putting the channels into groups – one transmitter uses one group of numbers while a neighbouring transmitter uses another.

There are six channel groups: five of them cover different ranges of channels, while one – group W – covers all the channels. Standard TV aerials are designed to receive a single channel group. These aerials are generally colour-coded, as follows. (Note: some manufacturers use one colour for their entire range.) Wideband aerials are always group W.

Channels	Group	Colour
21–37	A	red
35–53	B	yellow
48–68	C / D	green
35–68	E	brown
21–48	K	grey
21–68	W	black

## Frequencies

Channels 21 to 38 are in band IV, while channels 39 and upwards are in band V. The frequencies for the channels are given below.

### UHF band IV

Channel number	Frequency (MHz)
21	471.25
22	479.25
23	487.25
24	495.25
25	503.25
26	511.25
27	519.25
28	527.25
29	535.25
30	543.25
31	551.25
32	559.25
33	567.25
34	575.25
35	583.25
36	591.25
37	599.25
38	607.25

## UHF band V

Channel number	Frequency (MHz)
39	615.25
40	623.25
41	631.25
42	639.25
43	647.25
44	655.25
45	663.25
46	671.25
47	679.25
48	687.25
49	695.25
50	703.25
51	711.25
52	719.25
53	727.25
54	735.25
55	743.25
56	751.25
57	759.25
58	767.25
59	775.25
60	783.25
61	791.25
62	799.25
63	807.25
64	815.25
65	823.25
66	831.25
67	839.25
68	847.25

The frequencies above are for the vision carrier (usual requirement).  
For the analogue sound carrier, add 5.9996 to the vision carrier.