



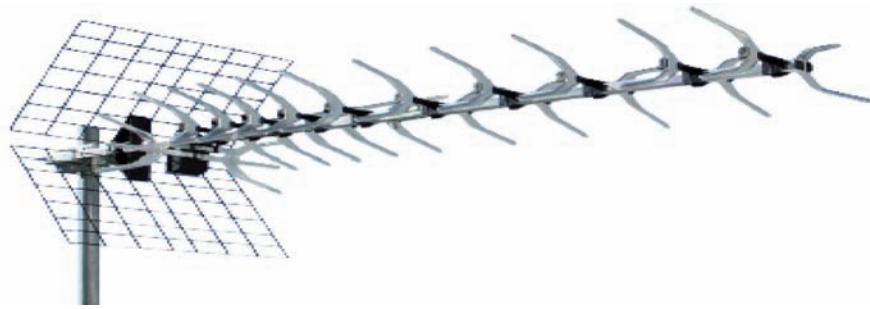
Australian Government
**Australian Communications
and Media Authority**

Australia's regulator for broadcasting, the internet, radiocommunications and telecommunications

www.acma.gov.au

For better TV reception... consider digital





The Australian Communications and Media Authority (ACMA) has produced the *Better Television and Radio Reception* booklet to provide advice on identifying and resolving analog TV reception problems. One solution that is not discussed in the booklet is digital free-to-air TV. Not only is digital the future of TV (with analog services expected to be switched off in coming years), but many analog TV reception problems can be solved right now, by going digital.



If your analog TV reception problems are interference or ghosting, then digital TV may help; but if the problem is a weak signal, that is, a snowy picture, then the digital TV signal is also likely to be weak. In that case, you may need to find ways to improve your signal strength to take full advantage of the excellent picture quality offered by digital TV.

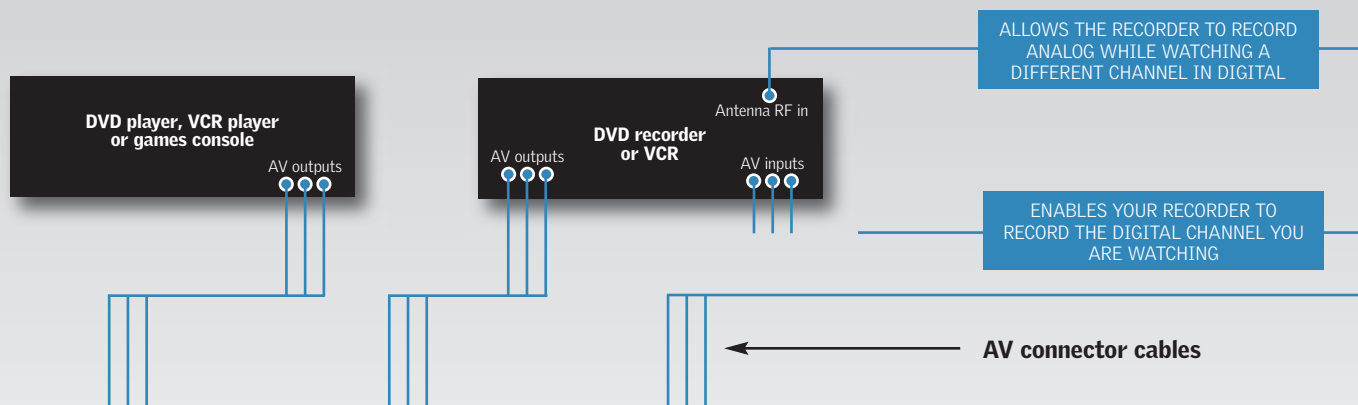
Low signal strength can occur if you are too far from a TV transmitter, or your line of sight to the transmitter is blocked by hills, tall buildings or trees. Often, a higher performance (high gain) antenna, mounted as high as possible off the ground, will improve your reception. It may also be as simple as re-pointing or re-positioning your existing antenna. Your local antenna installer should be able to advise you on the best digital solution for you.

Do I need to make the switch to digital?

Yes. Digital free-to-air TV will eventually replace your current analog TV service. The phase out of analog TV is likely to commence from 2010 onwards.

What is digital free-to-air TV?

Digital free-to-air TV is transmitted using the latest digital techniques to deliver free-to-air TV channels with generally better picture and sound quality than you currently receive from your analog TV service.



How can I connect my other entertainment equipment when I install a digital set top box?

Your set top box is likely to be one of a number of options including DVD recorders, DVD players, DVD recorders or VCRs, sound systems and video cameras that can be connected to your TV.

This diagram shows how to connect your AV equipment to your TV. If your TV does not have enough AV inputs to connect all your equipment, contact your retailer about an AV switcher to enable you to connect all your equipment to one AV input. You can also switch through a home theatre system.

However, it should be noted that connecting multiple pieces of equipment can be complicated. You might like to ask your retailer for advice or if they can recommend someone who can.

Digital free-to-air TV services are broadcast in both standard definition (SD) and high definition (HD) picture formats and are provided by free-to-air broadcasters in parallel with their existing analog broadcasts. Broadcasters are required to simultaneously transmit (simulcast) both analog and digital signals until analog TV is switched off.

What are the advantages of digital TV?

Standard definition digital TV is available 24 hours a day and provides all of the following features:

- Clearer, sharper, DVD-quality pictures—no more ‘ghosting’, interference or unwanted noise.
- CD-quality digital stereo sound.
- Widescreen pictures—when the broadcast is in widescreen format, you see more of the picture in its original version and not cropped to fit onto a regular analog TV screen.
- Multi-channel programming—multiple TV programs can potentially be broadcast at the same time. The ABC and SBS are currently permitted to multi-channel with some restrictions on the type of content. Commercial broadcasters will be allowed to multi-channel from 2008.

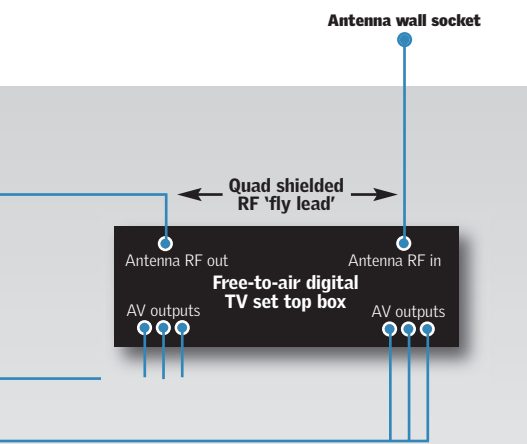
- Multi-view—multi-camera views of a program, such as a sporting event.
- Closed captioning for the hearing impaired—text of what is being spoken on a program is shown on the TV screen.

Many digital programs are broadcast in widescreen format with a width to height, or aspect ratio, of 16:9. This format is 1/3 wider than the 4:3 aspect ratio of regular analog TVs. Widescreen programs can be viewed on 4:3 TVs in a ‘letterbox’ mode with black bars at the top and bottom, or in a ‘centre cut’ mode that fills the screen but loses content on the left and right of the picture.

Selected programs are broadcast in high definition format. This format offers the very best viewing experience available today, providing cinema quality pictures and Dolby Digital surround sound. Broadcasters are required to provide, on average, at least 20 hours per week of programs made in HD format.

Is a digital service available in my area?

Digital TV commenced on 1 January 2001 in Sydney, Melbourne, Brisbane, Adelaide and Perth and has been progressively rolling out to regional areas. ACMA is considering options for



Environment Set top box?

of audio/video (AV) devices, such as VCRs,
n be connected to your TV.

Equipment when installing your set top box.
Connect all your equipment, ask your
Connect more than one device to a single
theatre amplifier.

Multiple pieces of equipment can be
if they can install the equipment for you,

commercial digital TV services in remote
areas.

Information on the planning and rollout of
digital TV services, including the digital
channel assignments in your area, can be
found on ACMA's website at
www.acma.gov.au.

ACMA recommends checking the
availability of digital services in your area
with neighbours, retailers, local
broadcasters or antenna installers before
purchasing a digital receiver or set top
box.

How do I receive digital TV?

Digital TV receivers can be:

- a set top box (STB), or a hard disk or DVD recorder with a digital tuner, that receives the digital service from the antenna and uses cables to transfer the signal to a display device, such as your existing analog TV;
- an integrated digital TV ('iDTV') that contains a digital tuner which allows the TV to receive analog and digital TV broadcasts without any additional equipment; and
- PC cards or devices, such as a USB tuner stick, that enable digital TV reception through a computer.

To enjoy the full benefits of HD TV, you will need either:

- a HD capable set top box, connected to a 'HD ready' TV or monitor; or
- a HD integrated digital TV (a TV with a HD tuner).

Will I need a new antenna?

In most cases, existing antennas that are in good condition and connected with good quality coaxial antenna cabling should provide adequate digital TV reception in good signal areas.

However, in some areas the channels used for digital TV services may be outside the channel range or bandwidth of antennas typically used in the area. You may need to replace your antenna to get good reception of all the digital TV channels being transmitted in your area. For example, many older antennas in mainland state capital cities need to be replaced if the reception of digital TV services on channels 11 and 12 is worse than other digital services on channels 6 and 8.



MATV SYSTEMS IN MULTI-UNIT DWELLINGS

If you live in a multi-unit dwelling such as a home unit, apartment, hotel, office block or retirement home, which shares a common antenna system, you will need to get the property manager to advise whether the master antenna TV (MATV) signal distribution system is suitable for distributing digital free-to-air signals. Many MATV systems were designed only for analog TV and will need a substantial upgrade of antenna and cabling equipment to provide digital TV reception.

What should good digital TV reception look like?

Good digital TV reception provides a perfect picture and sound all of the time. When digital TV reception fails, the picture becomes 'blocky' (like the blocky squares used to mask faces on news programs) and may freeze or go to a 'blue screen', and the sound may mute or 'break up'.

If your picture and sound quality is not perfect, or you have no picture, then you may be outside the coverage area for digital TV, experiencing some form of interference or have a problem with your reception equipment.

What if I have a problem with my digital TV reception?

It can be difficult to identify and resolve reception problems with digital TV as it fails in the same manner if there is too little signal, too much signal, or interference.

With analog TV, the signal strength reduces as you move further away from the broadcasting transmitter, and the picture steadily becomes noisier or snowier. With digital TV, the quality of the picture remains unaffected until, suddenly, the picture breaks up and then fails altogether. This failure point is sometimes referred to as the 'digital cliff' or 'threshold'.

It is important that the digital TV signal level should be well above the failure point, so that variations in signal level (due, for example, to the antenna moving in the wind, or due to foliage growing on trees between the antenna and the transmitter) do not cause the reception to break up.

Digital TV reception, particularly on channels 6 to 12 (the VHF band) may also break up because of 'impulse noise' interference. Impulse noise can be generated by the use of light switches, hairdryers, car engines, lawn mowers, and electrical motors in domestic



refrigerators, washing machines and airconditioners.

Impulse noise can also be generated by powerlines, usually during hot, dry or windy weather conditions. Salt build-up on insulators in coastal areas may also cause this type of interference. The interference often reduces after rain.

In some cases, powerline interference can be made worse by cracked or broken insulators. If the interference is continuous, this may indicate that a nearby powerline is faulty and you should report this to your local power authority.

How can I improve my digital TV reception?

Your local antenna installer should be able to advise you on the most suitable solution for your reception problems. Ask your installer for a site inspection and to check your antenna system. Even top quality antennas and cables gradually degrade with age; pollutants and salt air are particularly destructive.

Some installers offer a package that includes not only supply and installation of a digital set top box, but also a complete examination of your antenna system, a signal scan and retuning of your TV and video. Note that installers should have digital TV meters as old analog TV meters measure signal strength only and are not suitable for measuring digital signals.

If the antenna installer identifies that your reception problem is not the result of poor signal strength, then it is most likely caused by your reception equipment, such as your antenna, cables and connectors.

ANTENNAS

An antenna that is broken, corroded or in poor condition will affect reception quality. If you need to replace your antenna, you may want to consider antennas marketed as 'digital TV antennas'. These antennas have a number of design features that can significantly improve both analog and digital TV reception.

Changing the height of your antenna, or moving it to a different position on the roof, can result in significant changes in received signal levels. The relative signal levels of different services can also vary and, at some positions, one or more signal levels may be significantly higher or lower than the other signal levels. A position on the roof that provides adequate analog TV signal levels may not be ideal for digital TV reception. The only way to identify or resolve signal level problems is for an antenna installer with a suitable antenna and field strength meter to survey the roof to identify the optimum antenna location.

MASTHEAD AMPLIFIERS

Masthead amplifiers should only be used to boost weak signals. In general, they will not improve interference problems as the interference will be 'amplified' along with the TV signal, and the reception problem will be worse, rather than better. Masthead amplifiers should only be used if absolutely necessary and should be checked to ensure they are correctly configured and suitable for the digital TV channels in your area. If incorrectly set up, a masthead amplifier

can overload the receiver and cause digital reception problems.

CABLES AND CONNECTORS

If you have had your antenna checked and you still have digital TV reception problems, you may need to upgrade the cables, connectors, outlets and splitters between your antenna and your digital receiver to high quality quad shielded coaxial cable and 'F' connectors that ensure a better shielding from interference and a more reliable connection to the antenna cable.

Poor quality cabling and connectors can be highly susceptible to impulse noise. One of the simplest fixes for poor reception is to upgrade the connector cable from the wall outlet to the receiver with a quad shielded RG6 cable.

You should also check to see that your set top box and other equipment are connected properly and tuned to the correct channels.

About antenna installers

When problems with digital TV reception occur, the only way to effectively identify and resolve the reception problem is to use an antenna installer.

Antenna technician associations and other industry associations may also be useful sources of information. Further information about installers can be found on the Antenna Technicians Association website at www.tvantenna.com.au

While there is no accreditation scheme for antenna installers, the following

section provides a series of questions that may help you decide on the right antenna installer for you.

QUESTIONS TO ASK YOUR DIGITAL TV ANTENNA INSTALLER

When contacting antenna installers, there are a number of questions that you may consider asking to determine their competency in resolving digital TV reception problems:

- How long have they been in the business?
- Have they attended training courses on digital TV reception? Some antenna manufacturers run regular training courses which cover all the aspects of identifying and resolving reception problems.
- Do they have a digital signal meter? If the installer does not have a digital signal meter, they will not be able to identify problems in the signals, antenna or cabling or the optimum antenna location.
- Will they climb onto the roof to check the state of the current antenna and whether it should be relocated?
- Are they prepared to bring a digital TV set top box to your home to demonstrate that you will be able to receive digital TV?

If the installer has successfully resolved your digital TV reception problems, they should be able to demonstrate the improvement in reception. One way to do this is to provide you with a copy of their measurements.

Need more information?

Your local retailer should be able to give you the latest information on going digital and how to achieve the best performance from your digital TV equipment.

Further information about digital television can be found on the Australian Broadcasting Corporation (ABC) website at www.abc.net.au/reception.

The Australian Communications and Media Authority provides general information about digital TV at www.acma.gov.au.

General information may also be found at the Department of Broadband, Communications and the Digital Economy website at www.dbcde.gov.au.

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