

The “Grey Nomad’s” Guide to Australian TV Reception.

Compiled and written by

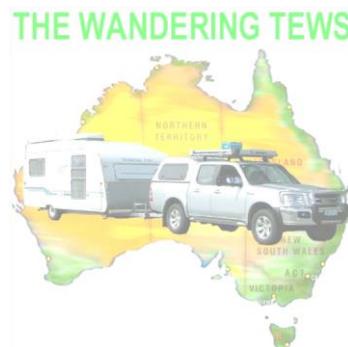
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About this Document.

It is the intention that this document be a rough guide only to hopefully give the Grey Nomad, and other caravanners, an insight into TV aerials, configuration set-ups and some problems associated with them. My intention is not to give exact technical details with this document, and it is hopeful that I may be able to provide some URL's for web sites that can provide the detailed information if anybody requires it.

About Me.

As of beginning to compile this document my wife, Linda, and I have been among the many 'Grey Nomads' permanently touring this great land of ours in a caravan for several years. In this period I have discovered that there are many varied configurations of TV transmissions in different areas of the country. I have also noticed that there are a lot of fellow travellers out there that do not have a very good perception of these transmission configurations and put up with some very poor reception in some areas.

It has become very apparent to me that with the upcoming turning off of the analogue system, forcing everybody to start using the new digital system, TV reception could be a bigger bugbear for many if they do not receive some perception of reception principals. Therefore, it is hopeful that this document may be of some assistance to many of those fellow travellers.

My background.

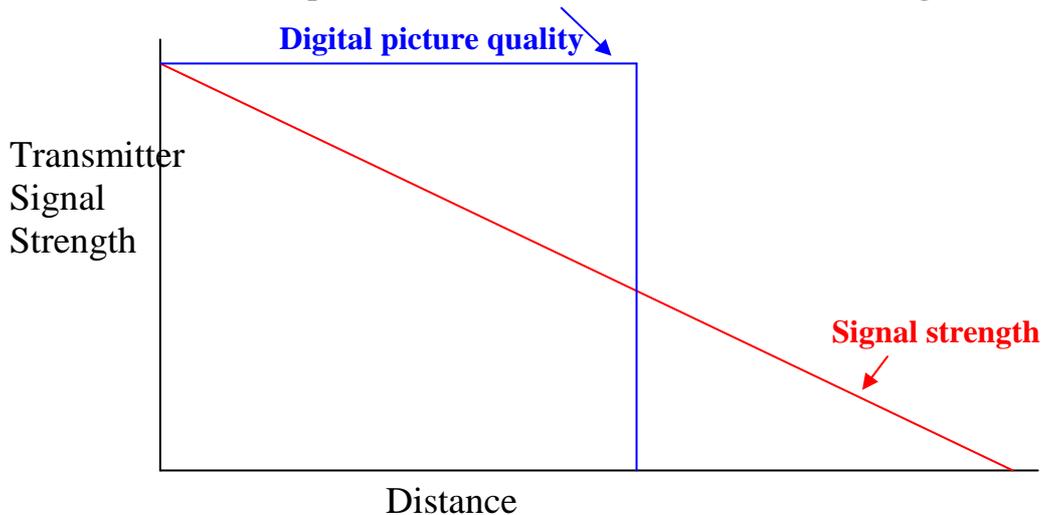
During the 35 years prior to our travelling I was employed by Telstra (Australia), giving me a fair range of experience in the electrical and electronic fields. Over these years, I received training and knowledge in many and varied fields including TV transmission and reception principles. Although much of my learning in the TV area was of a theoretical nature I didn't have a great deal of practical experience until we started our travels.

It didn't take me long to realise that if I wanted to get a good reception I would have to experiment with different aerial configurations with the equipment I had on hand, and transmission information I managed to download from the internet. My wife will readily relate her stories of how I would be persistently fiddling with our aerials and their configurations to obtain a better picture.

Then came along digital reception by the installation of a Set Top Box and I could see this could create more problems for those who have limited, or very little knowledge, on this subject.

My Transmission Theories.

Below is an explanation of how aerials can affect analogue and digital reception.



The left-hand line represents the transmitter signal strength.

The bottom line represents the distance one is from the transmitter.

The **red line** represents signal strength, analogue and digital, received and consequently the analogue picture quality. As one can see the further one is from the transmitter, the lower the received signal strength is, hence the lower the quality of an analogue picture.

The **blue line** represents the resultant picture quality of a digital signal. One can see that the resultant picture quality is at a maximum until one is at a distance when the signal strength, or quality, becomes too low for the Digital tuner to recognise. When at or beyond this distance there will be no resultant picture at all.

There are basically three things with aerials, apart from faults and trees, that will effect signal reception, if **one or more** of these things are incorrect the result is to effectively increase the distance one is from the transmitter. If it is analogue one is receiving, then the picture quality will be reduced. If it is digital that one is receiving, then the result could be to effectively take one beyond the distance of good signal strength, hence no picture reception at all.

The three things are:

1. Aerial Type
 - a. VHF aerial.
 - b. UHF aerial.
2. Aerial polarization.
 - a. Horizontal.
 - b. Vertical.
3. Pointing aerial at Transmitter.

For an explanation of these and other things refer to terminologies at rear of book.

TV aerials and configurations.

The issue of being able to receive a good picture in all, or most, areas where the 'Grey Nomad' might travel is a very complex one, so I am hopeful this explanation may be helpful.

Let's start by trying to explain why there is trouble receiving good pictures in different areas: *Let it be noted that some VHF aerials may not pick up UHF channels and vice-versa, and aerials in Horizontal Polarization may not pick up Vertical signals, and vice-versa.*

TV transmissions in different areas can be of many different configurations, and if you do not have an aerial system that is variable to suit these different configurations it stands to reason that you will not get good reception on all available channels in some areas.

Some of the configurations are:

- All channels being transmitted in the **VHF** range with **horizontal** Polarization.
- All channels being transmitted in the **UHF** range with **horizontal** Polarization.
- All channels being transmitted in the **VHF** range with **vertical** Polarization.
- All channels being transmitted in the **UHF** range with **vertical** Polarization. **In some remote areas, some of the following configurations can exist.**
- Some channels being transmitted in **VHF** range with **horizontal** Polarization, and some channels being transmitted in **UHF** range with **horizontal** Polarization.
- Some channels being transmitted in **VHF** range with **vertical** Polarization, and some channels being transmitted in **UHF** range with **vertical** Polarization.
- Some channels being transmitted in **VHF** range with **vertical** Polarization, and some channels being transmitted in **UHF** range with **horizontal** Polarization.

As you can see so far there are many different configurations, and there are more than are listed above.

Now that the restacking process has been completed the combination of configurations are a lot simpler, e.g. most areas now are a combination of only **VHF** or **UHF**, and either **horizontal** or **vertical** not both as previously in some areas.

With reference to my Transmission theories on page 3 it will be seen that in some areas it **will be essential** to be able to achieve these varied aerial configurations to get a good signal level so we can receive all channels.

The required configuration for different areas, and direction of transmitters, can be found in other documents on this web site www.wanderingtews.com on the TV Reception page.

Tuning meters.

1. There are several meters on the market one can use for pointing the aerial in the correct direction. If the aerial cable is unplugged from the rear of the TV and plugged into the meter, a signal strength indication will be given on the meter depending on the direction of the aerial.

2. Most TV's or STB's will have signal strength meters included in the menu software, all one has to do is find them and use these for tuning the aerial, if the meter works satisfactorily.

Wine guard aerials supplied with most earlier model RV's and caravans are a VHF aerial and the built-in booster makes them *reasonable only* for UHF, **but they are Horizontal only and won't pick up Vertical signals in some areas.** Wine guard have come up with a new aerial to overcome this, but talking to people using them it seems that they may not be very effective in **VHF** areas, and are reasonable in UHF areas both vertical and horizontal.

What type aerials do I use?

Now that the retuning of channel transmission phase (restacking) is complete I am now using a new aerial that is a lot simpler to use. The aerial is a **Fracarro LPV345F**, this aerial is one of those with multiple rods on each side of two parallel bars and pointing at 45 degrees from the bars. Not to be confused with the ones that the bars are at right angles. To my ideas this aerial is very suitable for bands 3 and 4 now used for digital transmission, and considering that there will no longer be a combination of horizontal and vertical, except outback

Queensland, it should be totally suitable for most areas throughout Australia. With this aerial I consider now that if I am in an area with a complicated configuration I will have to bear the difficulties or use satellite. These areas are now very few only, like Winton and Longreach area Queensland.

This aerial can be mounted either horizontally or vertically.

This aerial can be purchased from the following retailers, and possibly more:

[Academy tv](#) based in Geelong Victoria,

[Laceys.tv](#) several locations around Australia.

I also use a booster mounted inside the caravan, **not up the pole**, and with pluggable connections so it can be removed when not required.

I must mention here that some aerials have a built-in booster so be careful not to use one of these as well as any other booster, **if you do have two boosters the chances are that you will not get any reception at all** because one of the boosters will not receive any power so therefore it will not allow any signal through.

I should also mention here that **all** aerial cabling should be of 'Quad Shield' type.

Recommendations.

For all information needed for TV reception on an address basis is [myswitch](#). This can be accessed by doing a search on the same name. There used to be a phone app of the same name, but it is not available for download any more, if you already have it downloaded it does still work. The site also gives satellite setup figures, highly recommended.

It is my recommendation that if you are often in areas of poor reception, then the best option is to get satellite reception using the VAST system, and connection as a traveller. Information on this can also be found on my web site www.wanderingtews.com on the TV reception page.

At this stage I will give you some web addresses. Bear in mind the information available on these web sites will only be of any use if you understand it all, good luck.

All nationwide transmitter details <http://www.acma.gov.au> and do a search on “Licensed Broadcasting Transmitters”.

My site: For details of channels and Polarisation.

<http://wanderingtews.com> I have compiled booklets of reception details for all areas, for each state, and are available for free download on this web site. See the TV Reception page.

Some Transmission Theories and terminologies.

Note: The following terms are meant to be general only, for simplicity, and do not necessarily reflect genuine truisms.

1. VHF. (Very High Frequency)
 - This is the transmission on channels within the *lower* spectrum of the frequency range, consisting of bands 1-3.
 - Aerials for reception of this range need a bar, or several bars, of a length varying between something like 1-2 metres, generally the middle of the range will suffice.
2. UHF. (Ultra-High Frequency)
 - This is the transmission on channels within the *upper* spectrum of the frequency range, consisting of bands 4 & 5.
 - Aerials for reception of this range need a bar, or several bars, of a length varying between something like 15-30 centimetres, generally about the middle of the range will suffice.
3. Horizontal Polarization transmission.
 - This requires the bars of the aerial to be laying in a horizontal position for best reception.
4. Vertical Polarization transmission.
 - This requires the bars of the aerial to be laying in a vertical position for best reception.
5. Digital transmission.
 - This is the new method of transmission and uses the same channel range as analogue. It gives a perfect picture. (Started a few years ago, and now working in most major populated areas, but will be a little while in remote areas)
6. Aerial Signal Booster.
 - This is a signal amplifier placed either on the aerial masthead or inside close to the TV receiver. Some aerials (e.g. Phaselink and roof mounted (Wineguard and similar) aerials) can have a booster installed inside the actual aerial.

- My suggestion is to have the booster mounted inside the caravan with pluggable connections, so it can be removed if not required. A booster can over amplify a digital signal, if already close to a transmitter, and destroy it resulting in no reception at all, so the booster must then be removed or an attenuator inserted.
- It is important to note at this stage that these boosters also require a power injector, mounted inside the caravan, consisting of a power supply (from 240V) connected to a small box that the aerial fly leads connect to.

7. Attenuator.

- This is a device for reducing a signal level. Can be placed in the aerial lead if the digital signal is too strong. If a booster is permanently installed in an aerial lead it can result in destroying a digital signal if one is too close to the transmitter.

8. Aerial Fly Leads.

- These are the aerial leads that connect from the inside wall socket, via the power injector if installed, and the TV reception equipment.
- It is important to note at this time that I have proved that some shop purchased, prefabricated, fly leads are not of a good enough construction for digital signals, and if used will reduce signal quality by up to 10-15%. It is my recommendation that all fly leads be self-constructed of the same quality cable, 'Quad Shield', that one would use externally from the aerial to the wall socket.

9. STB (Set Top Box).

- This is the unit required to receive the digital signals and convert them to a signal that can be played on an existing TV receiver. The other option is to purchase a new digital TV receiver.

10. Bands 1-5. (Bands of channel transmission)

- There are 5 groups of channels in the VHF and UHF frequency spectrum, each listed as a Band. Some of these bands are not used in the existing analogue system, and likewise some are not used in the new digital system.
 - a. Band 1 is Channels 0-2 in the VHF spectrum. (Not used in digital system)
 - b. Band 2 is Channels 3-5A in the VHF spectrum. (Not used in digital system)
 - c. Band 3 is Channels 6-12 in the VHF spectrum. (11 & 12 Not used in analogue system)
 - d. Band 4 is channels 28- 51 (or so) in the UHF spectrum.
 - e. Band 5 is channels 52- 69 (or so) in the UHF spectrum.
- After the Channel restacking is complete in 2014 Band 3 (VHF) and 4(UHF) will be the only ones used in Australia.

11. HDTV (High Definition Television)

- This is a digital transmission channel that is of a higher resolution and quality than normal digital transmission. The HD channels will be received by all STB's, but requires a HD compatible television and Set Top Box to be able to watch them.

12. EPG (Electronic Programme Guide)

- EPG is a facility with Set Top Boxes and digital TV's that with a push of the EPG button one can view details of the programme presently running, and what programme is coming up next, and even for the following week, depending on the unit used.

13. LCN. (Logical Channel Numbering)

- All digital channels are allocated a number (LCN) when tuned in, if LCN is turned on in the STB (which is generally defaulted to on). This number can be seen on the left of the channel list, and is basically a programme number allocated so one can select each channel by the numeric pad on the remote control by entering the appropriate LCN. This can be related to the programme numbers that analogue channels are stored on the TV at present. The LCN numbers are always the same for respective channels at whatever location one is at. Below is a chart listing the LCN numbering system, column 2 shows the LCN's for the basic channels, and then there are some miscellaneous channels transmitted by each broadcaster with nonstandard numbers. Seven country, for example, is the equivalent channel for Seven one tunes in when in a country district, e.g. NBN or PRIME, and the same applies for Nine and Ten.

Channel	LCN	2 nd Channel	Misc. Channels
ABC	2	ABC two 22	21>
SBS	3	SBS two 32	31>
Seven Country	6		61>
Seven Cap City	7		71>
Nine Country	8		81>
Nine Cap City	9		91>
Ten Country	5		51>
Ten Cap. City	10	1 HD (SD) 12	11>

14. MUX. (Multiplexer)

- COMPUTING device for routing data: a device for sending several different data streams down a single communications line.

I feel another analogue comparison happening: With analogue, when TV broadcasts are received they are each received on a particular channel. With digital the reception from each broadcaster is still received on a particular channel, but in this case the channel is referred to as a MUX as each broadcaster can, and do, transmit numerous channel (data) streams within the one channel.