

# IF YOUR TV PIXELATES AND CARRIES ON LIKE A PORK CHOP

**BRING IN THE RAZORBACKS  
FROM PINKTRONIX**

**No Quarter Given.  
No Mercy Shown.  
We Declare War on  
Bad TV Reception.**



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**TV Antennas, VAST, Religious & Ethnic Satellite, Home Theatre  
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*R.V. & Caravan - TV, Audio, Auto & Manual Satellite Systems,  
Solar & D.C. Reticulation, C.C.TV & Surveillance, C.B. Radio***



# TV RECEPTION FOR THE TRAVELLER.

## TRAVELLERS ANTENNAS EXPLAINED

If you do not already have a terrestrial antenna installed to your RV or caravan you are encouraged to make the price comparison between Free to Air Satellite and Free to Air Terrestrial before you buy.

It is more convenient to have both systems, but if the cost of a terrestrial antenna retro fit is significant, it's possible that you may wish to just add another two or three hundred dollars and have the guaranteed performance of a satellite system.

**You may not wish to hear it, but all travellers' TV antennas are a compromise regardless of cost, shape, ease of deployment or cosmetic tarding up to maximize sales.**



They have to be..... because although electrical performance is a major consideration, this parameter must be weighed up against portability, ease of deployment and the vagaries of travel. Although compact and storable these antenna designs can never compete with a dedicated static installation designed to maximise performance of a channel set out of a network of transmitters that vary in frequency, polarisation and strength relevant to the RV receiving antenna.

It is no accident that many static antennas are larger than the van antenna and that they are mounted much higher, many with powerful masthead preamplifiers.

**There seems to be a general misconception that RV and caravan**

**antenna performance is related to money spent and that somehow this money can change the laws of physics, but sadly this is not the case.**

*Even say, a ridiculous \$10,000 spent on a popular and well advertised compact van antenna, (for example, the ubiquitous Litchfield Leporidae...see full description in **Appendix 1**), could never hope to even come close to the performance of a \$500 static system correctly deployed in, for example, a near fringe area.*

At the end of the day the laws of physics dictate that you need the required tuned lengths of metal in the air and that those tuned lengths of metal have to be at height when at distance from the transmitter in order to intercept the maximum electrical energy for the best signal to noise ratio prior to amplifying with the booster. **(See Appendix 3. Understanding Signal to Noise Ratio.)**

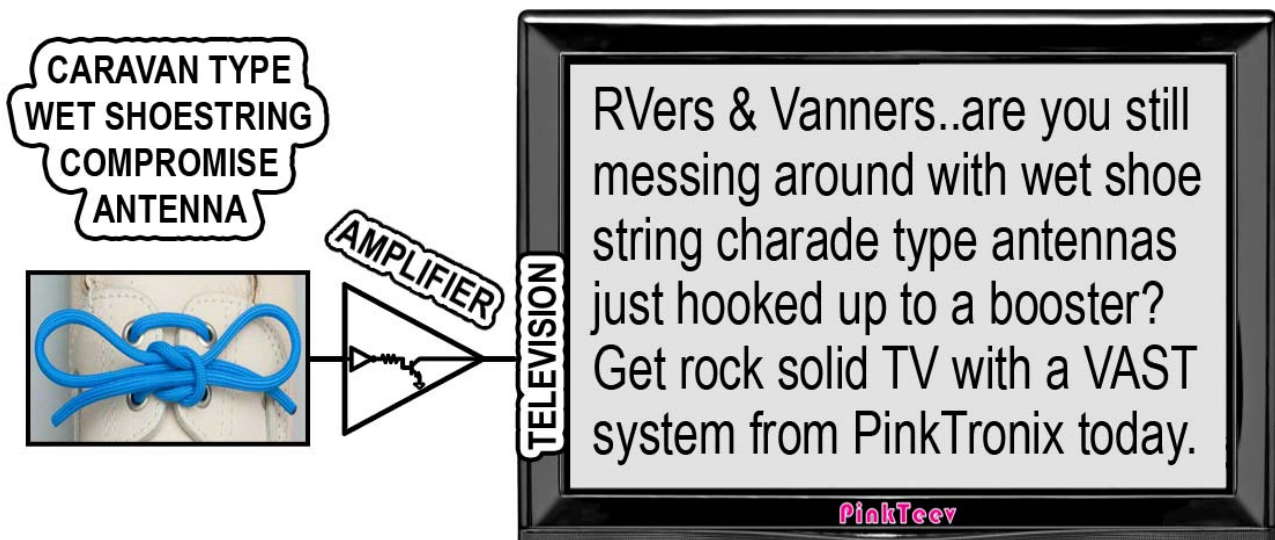
As previously mentioned, apart from signal strength there are three considerations required for the correct configuration and aiming of a directional television antenna.

They are as follows:

**(1) Polarisation:** The TV signal may be transmitted on either horizontal polarity, vertical polarity, or a combination of both.

**(2) Frequency:** The TV signal may be transmitted on either Very High Frequency or Ultra High Frequency or a combination of both.

**(3) The Direction and Distance to the Transmitter:** Many transmitters are not in the town where you are staying and can in fact have very directional beams and also be sited many tens of kilometres distant from your place of encampment.



Thus it can be appreciated that unless the traveller is “virtually being irradiated” with TV signal, establishing the set up for a good solid picture may not always be easy.

It is possible, however to put a little science into the deployment and at least be mentally prepared for success or failure. If you know the characteristics of the transmitter required and the characteristics of your TV antenna then at least you can deploy correctly and give yourself the best possible chance.

Unless you own one of the electrically superior, but more unwieldy, configurable traveller’s antennas (e.g. **Digimatch Explorer**) the only parameters you need to know is distance and direction to the transmitter as **most caravan antennas really are just “wet shoestrings” hooked up to a booster amplifier.**

**(See Technical Appendices for a little more in depth info.)**

## **FINDING THE STATION AND TUNING IN**

**Establish the location of the nearest TV transmitter.**

The web will help you with transmitter parameters and in fact the digital ready web site is perfect for this. Let’s hope it remains active after completion of switchover.

**Aim the antenna as best you can and start the tune with your DTV or set top box. If you are lucky enough to lock on to a channel in the first attempt, use this channel as a signal strength indicator to adjust the antenna orientation and then retune your DTV once re-aimed.**

A Standard Winegard Van Antenna with built in amplifier. A compromise antenna in every sense of the word.



**The DigiMatch Explorer. VHF elements to the rear UHF elements to the front. The element groups can be rotated 90 degrees with respect to one another to cater for opposite polarity transmissions. Very effective electrically but cumbersome.**

It's possible that having acquired the transmitter with the highest strength channel and then re-adjusted the antenna aim that some or all of the other channels may now be within the capture range of your DTV tuner.

**A portable TV signal finder will make this much easier.**

**A LITTLE BIT OF HONESTY**

**As previously stated most caravan antennas are just “wet shoestrings” hooked up to a**

**booster amplifier. (The DigiMatch Explorer is not.) Most of the compact models have minimal standalone gain and will in fact not work as an antenna at all without a booster amplifier fitted.**

As with all good TV antenna systems, the gain of the antenna, (typically 6 to 12 decibels) will be quoted separate to the gain of the booster, (Typically 24 to 48 decibels) so if the vendor of the travellers antenna is up front and completely honest, those gain figures should be published using the established protocol of supplying seperate figures.

However, in most cases they are not, **with the composite gain of antenna and booster being quoted to give the appearance of good performance.**

**THE VENERABLE HILLS CA16 VHF PHASED ARRAY.**

**AN OLDE FAVOURITE FOR FRINGE RECEPTION FROM THE VHF TRANSMITTERS AT MOUNT GOONANEMAN NEAR BIGGENDEN SERVICING THE WIDE BAY AREA AND PARTS OF THE COOLOOLA AND FRASER COAST.**

**Specifications**

**Electrical NOTE THE ANTENNA SPECIFICATION COMPLETE AND PROUDLY DISPLAYED.**

	Channels	Gain (dB)	F-B Ratio (dB)	VSWR (typical)
	VHF	VHF	VHF	VHF
CA16-F Type	6 - 12	10 - 12	11 - 19	2 : 1

**THIS ANTENNA IS AROUND ONE METRE BY TWO METRES BY HALF A METRE WHEN DEPLOYED AND MORE OFTEN THAN NOT IS USED WITH A POWERFUL BOOSTER AMPLIFIER.**

**DO YOU THINK A CARAVAN ANTENNA CAN COME EVEN CLOSE ON ELECTRICAL PERFORMANCE?**



## TRUTH UNDER THE RHETORIC



Remember also, that if you are considering satellite but baulk at the cost, it is worth noting that some “so called premium” RV antennas are not that far away in price from a complete satellite system, either fixed or mobile.

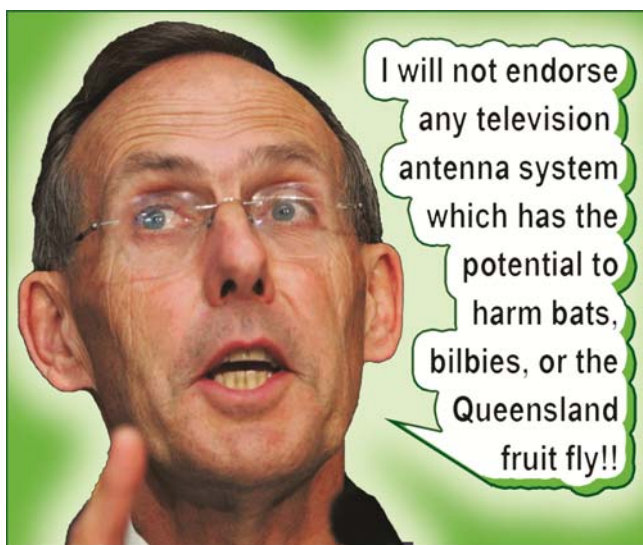
Sadly there are many RV antenna offerings fiendishly wrapped up in showy plastic that are more about being a fashion statement with all sorts of misleading claims in the advertising material. They are in fact more like a politicians promise than the result of sound mathematical engineering principles.

## CAVEAT EMPTOR...LET THE BUYER BEWARE.

Before you buy a caravan antenna ask the supplier to specify the antenna gain separate to the inbuilt booster gain. That there will not be many manufacturers who can do this, will give you an indication of the performance and utility of most traveller’s antenna. On electrical performance, they simply can never hope to compete with even the most frugal static installation.



## REALITY CHECK & DECISION TIME.



(1) If money and space was no object I would get both the satellite and terrestrial system.

(2) If money and space was an issue and your holiday destination almost always puts you near a good strong TV signal I would get, or stay with the terrestrial system only and learn how to use it.

(3) If money was an issue but space was not, and your holiday destinations for many occasions took you away from solid TV signal, I would get a satellite kit and learn how to use it. You will always

be assured of rock solid TV. It is also worth mentioning that there are now an increasing number of caravan parks offering cable reticulated signal from a Master Antenna TV system.

Properly wired vans will have an input for MATV.

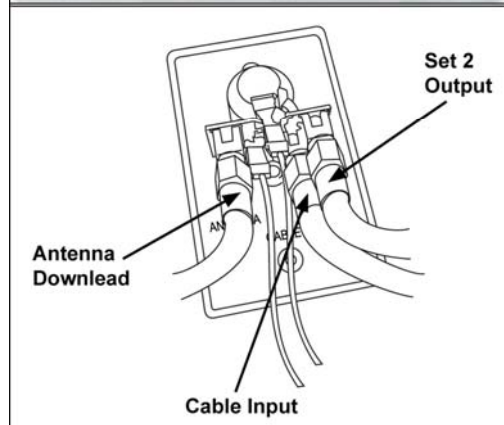
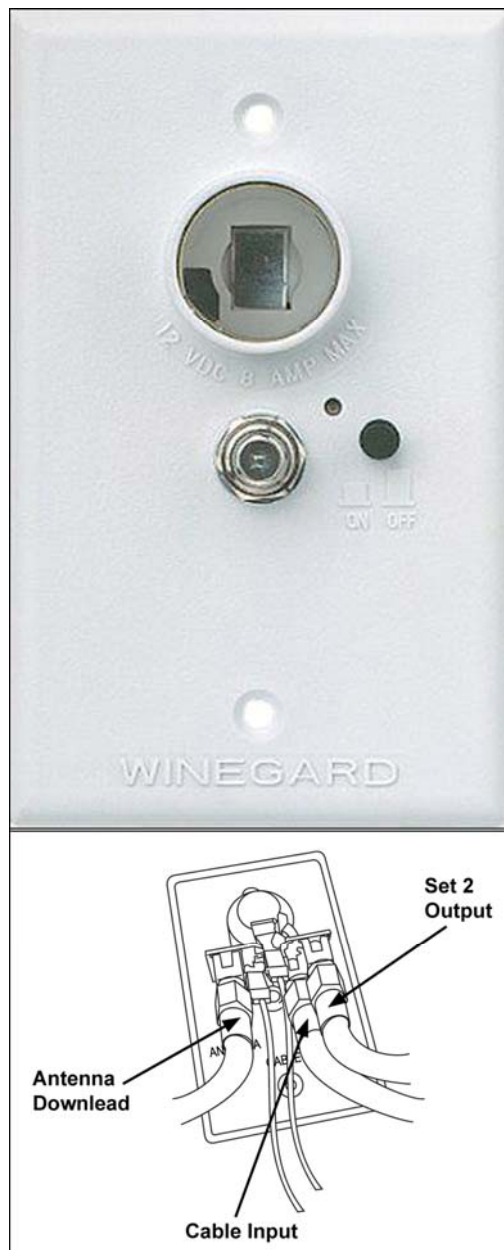
The standard Winegard wall plate is a splitter/combiner with provision for this at fit out. If you have two external antenna connectors on your van, chances are, the one under the annex is for the outdoor TV and the other is an input for an external antenna or a reticulated signal from the caravan park's Master Antenna TV system.

Some parks have even gone a step further by receiving a solid local DTV signal and retransmitting it around their facility, (on translated frequencies so as not to interfere with the main transmission) with their own dedicated private TV station. All the traveller has to do in this case is deploy their antenna and retune their TV.

### MAKING IT EASY

PinkTronix has developed an easy aim map to help in the deployment of traveller's terrestrial antennas and their satellite dish for Optus C1/D3, the VAST satellites. These maps can be found at several caravan parks and other businesses in the PinkTronix service area.

An example, showing the directions for TV signal whilst at Inskip Point is shown in Appendix 2.



NETWORK	FREQ(MHz)	CH	POL.
SEVEN	184.625	7	V
SIC TEN	198.625	9	V
ABC	205.625	9A	V
WIN	212.5	10	V
SBS	629.5	28	H

### APPENDICES

1. The Litchfield Leporidae Travellers Antenna.
2. PinkTronix Easy Aim Map for Inskip Point.
3. Understanding Signal to Noise Ratio
4. Antenna Performance and Specifications.
5. Effect of Multipath Propagation.



**Appendix 1      The Litchfield Leporidae Travellers' Antenna by PinkTronix.**

The Litchfield Leporidae by PinkTronix has been especially designed with outback travel in mind. **Use the antenna which allowed Crocodile Dundee to court and win young Sue Charlton!!** It's no secret that, apart from a good shower, a good deodorant and a separate place to store his crocodile skins, Croc Dundee would have needed at least a one fully operational modern convenience to woo his girl in that stinking tropical heat.



**The antenna....** is a high gain, dual polarity, dual band, multi signal, E-Plane, H-plane, energy sequestering device which **has the capability to cause a radio frequency void whenever deployed, such is its ability to suck even the smallest signal from the ether.**

The "LitchLep" does not have to be rotated for best signal, nor is it polarity sensitive, in fact **recent tests have shown that it does not even have to be deployed at all**, to secure solid reception in some cases. **For many consumers, secure in the knowledge that they had bought the best, it was found that they only had to imagine it worked.**

The Litchfield comes to you in a strong and stylish A.B.S. encapsulation bearing no resemblance at all to the equipment installed internally and **as a fashion statement it simply cannot be excelled.**



When it comes to one-upmanship, presentation and haute couture, the Litchfield Leporidae stands alongside the likes of quality brands such as Rolex ,Versace, Gucci, Chanel, and Yves Saint Laurent to name but a few.



While some of the early model Litchys have gone out of production and become collectors' items, it still possible to buy the contemporary, (and much improved), model at all good fashion accessory, duty free and collectables stores.

**PinkTronix has addressed the sensitivities of any potential customers by removing all traces of the country of origin and any other offensive material on the packaging.** Although the device is Australian designed and Australian made, PinkTronix accepts that displays of the Australian flag or goods bearing the Australian made logo **may have the purchaser branded as a hick, racist or bogan.**

Overseas travellers, please look for a store with the PinkTronix livery proudly displayed in your airport duty free area. **Typically, you will see the Litch stand out among the jumble of hand bags, perfumes, designer clothes and flash liquor.**





**UHF HORIZONTAL**  
SBS



**VHF VERTICAL**  
SEVEN, TEN, ABC, WIN



The Digimatch Explorer above, shows the correct configuration for the VHF / UHF dual polarity transmissions from the Mount Goonaneman towers.  
**Travelling?** These robust transmitters also service many regions of the Wide Bay and Burnett, as well as parts of the Cooloola and Fraser Coast.

**C1/D3 Parameters for Inskip Point**  
Magnetic Bearing 356  
Map Bearing 6.8  
Elevation 59  
LNB Skew +35

**VAST SATELLITES**  
OPTUS C1/D3  
PARKED ABOVE THE EQUATOR JUST EAST OF PNG

**LNB SKEW + 35 DEGREES**





**FRASER ISLAND**

**HOOK POINT**

**KAURI CREEK**

**INSKIP POINT**

**MT GOONANEMAN**

**TIN CAN BAY**

**COOLOOLA COVE**

**KURRAWA DRIVE**

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BUG EATER & PARTS  
CAMPING SUPPLIES  
SOLAR PRODUCTS  
BOAT & RV PARTS  
FIREWOOD & ICE

**PinkTronix - October 2012**

**MT GOONANEMAN (NEAR BIGGENDEN)**  
VHF BAND 3 VERT UHF BAND 4 HOR

NETWORK	FREQ(MHz)	CH	POL
SEVEN	184.625	7	V
SC TEN	198.625	9	V
ABC	205.625	9A	V
WIN	212.5	10	V
SBS	529.5	28	H

**TELEVISION RECEPTION AT INSKIP POINT**

The Cooloola Coast is served by television transmitters at Mount Goonaneman near Biggenden, (VHF Vertical & UHF Horizontal Polarity), Squire Street in Tin Can Bay, Reservoir Hill at Cooloola Cove, (UHF Vertical Polarity), and Kurrawa Drive at Rainbow Beach, (UHF Horizontal Polarity). **Mount Goonaneman is your best choice for Inskip North.** The towers are to the North West 104 kms away. You will require a VHF UHF dual polarity antenna above the trees so your built in antenna may not work or, you may wish to deploy a multi band, polarity configurable antenna such as the Digimatch Explorer. You will need a booster for satisfactory results. Cooloola Cove, Tin Can Bay and Rainbow require a band 5 UHF antenna and share the same frequency set. **Reception from Kurrawa Drive is achievable from the elevated areas in Inskip South.** Again, you will need to clear the trees to have any success. **A free to air V.A.S.T. satellite system** is by far and away the best solution for places like Inskip. You will have rock solid reception at most locations under most weather conditions. **The Inskip Point dish configuration for the V.A.S.T. satellites, Optus C1 / D3 is shown above.** Good luck!!



**RV TV SPECIALIST**

TERRESTRIAL & SATELLITE TELEVISION

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Oyster Auto Acquire Satellite Systems  
RFI Cellular, C.B. & Internet Antennas  
powertec Mobile Phone Repeaters  
PROVISION C.C.T.V. & Surveillance  
Neat-n-Tidy work at a location of your choice  
Supply-Instruction-System Installation

**R.V. TELEVISION PROBLEMS SOLVED**



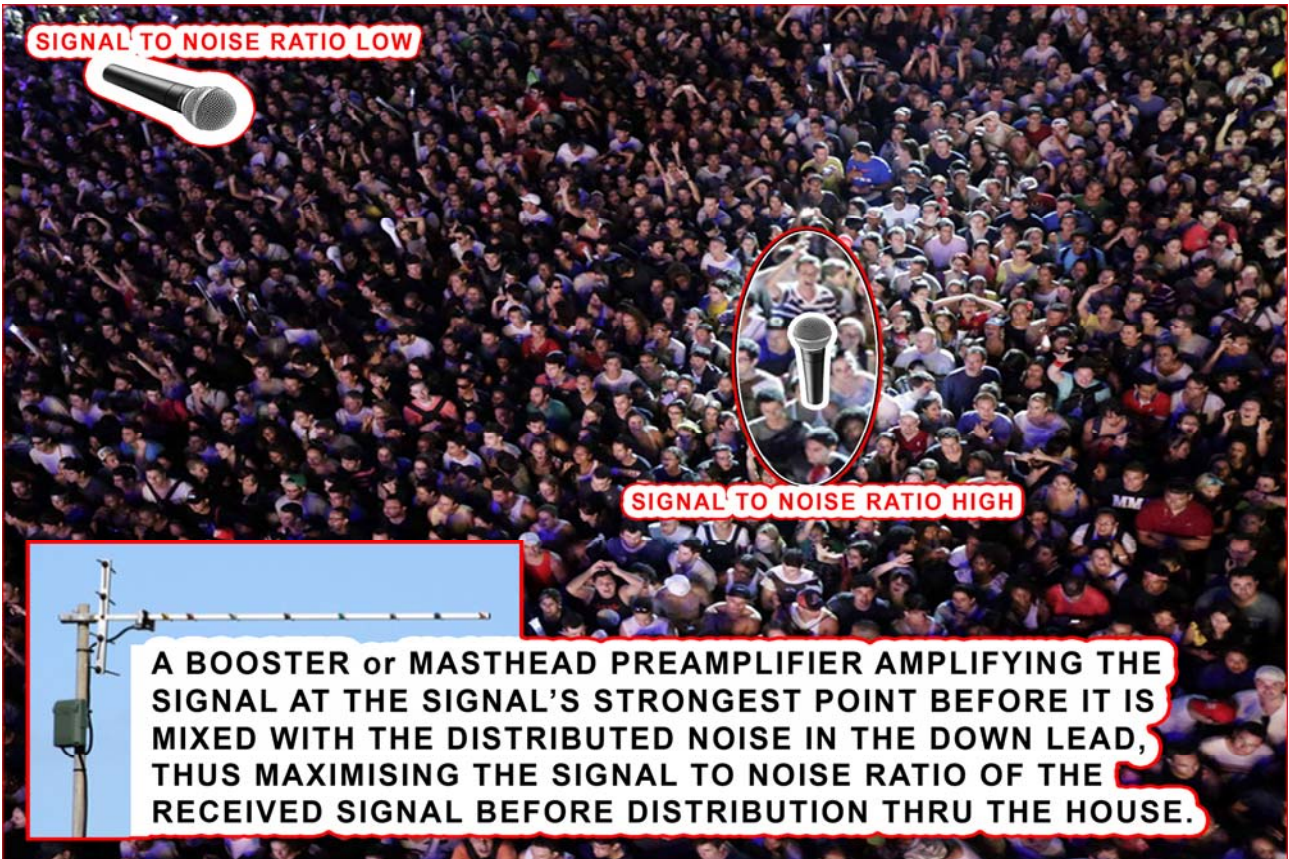
**TV For People On The Move!!**

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[www.mysattv.com.au/decoderrehit.aspx](http://www.mysattv.com.au/decoderrehit.aspx)  
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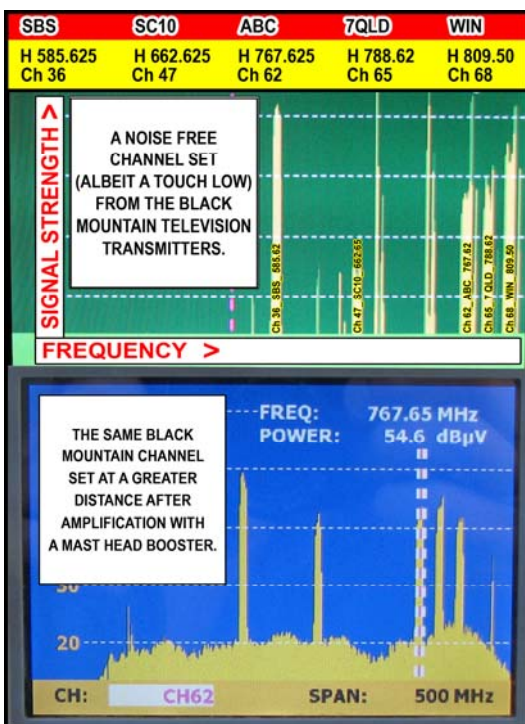


07 54834802 sales@pinktronix.com.au





**Signal to noise ratio in electronic circuits** can be understood by the comparison to an individual voice standing out against the hubbub from a crowd of people. The greater the voice or signal level is, relative to the background noise or, the closer the amplifying device is to the signal required, then the cleaner the amplified signal will be. The same applies to television signals boosted for distribution around a building.



If the television signal is weak relative to system noise before amplification, then essentially what you will finish up with is amplified poor signal riding on amplified system noise. The ratio of initial noise to initial signal will remain the same.

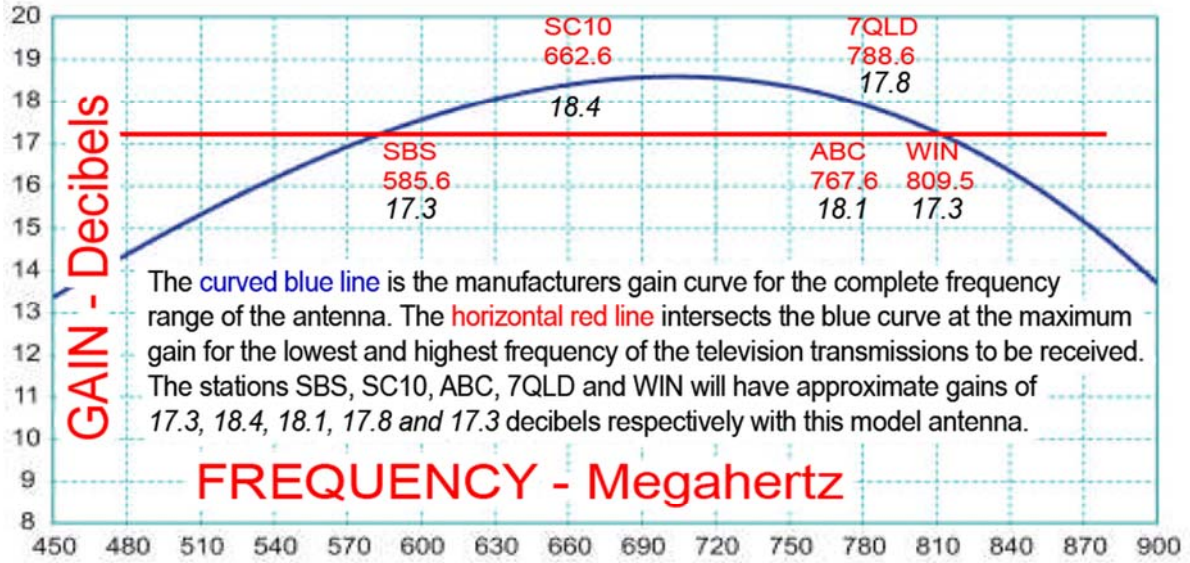
This is illustrated by the Black Mountain television transmitter spectrum analyser plots illustrated on the left; with the clean and noise free channel set shown above and for comparison a baseline of the amplified noise with the weak channel set illustrated below.

(A spectrum analyser plot is **simply a dynamic graph of a frequency band. It is a graph in real time of frequency versus signal strength** as the instrument receives the signal from the antenna, processes the data and plots it on a screen almost instantaneously.

If there is a signal present within the selected range, (spectrum), it will appear on the screen above the baseline as a vertical trace proportional to bandwidth and amplitude.)



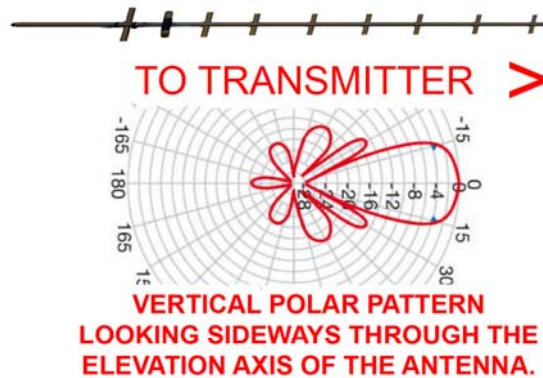
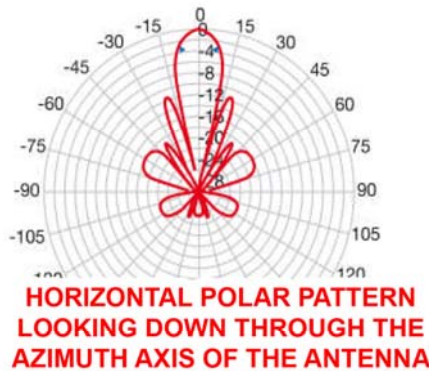
## ANTENNA PERFORMANCE AND SPECIFICATIONS



TO TRANSMITTER  $\blacktriangleright$



There are several specifications which describe the performance of an antenna, but the most common information required for TV work is **Antenna Gain Versus Frequency of Operation** and **Antenna Directivity**. The above graph shows the performance curve for a high gain antenna built to receive television signals in the Ultra High Frequency, (UHF), band. Antenna directivity is shown by horizontal and vertical polar patterns which are measured on an antenna range free of unwanted signals. A common Yagi antenna is shown to demonstrate the principles. Antenna directivity is analogous to optical telescope properties, the higher the magnification, (*antenna gain*), the less the field of view, (*antenna aperture*). Another parameter of directivity is **Front to Back Ratio**, with the perfect antenna receiving nothing from the back and little from the sides. Unfortunately antennas are far from perfect as the polar patterns show. High gain antennas must be carefully aimed and mounted on very solid masts for reliable operation under all weather conditions.



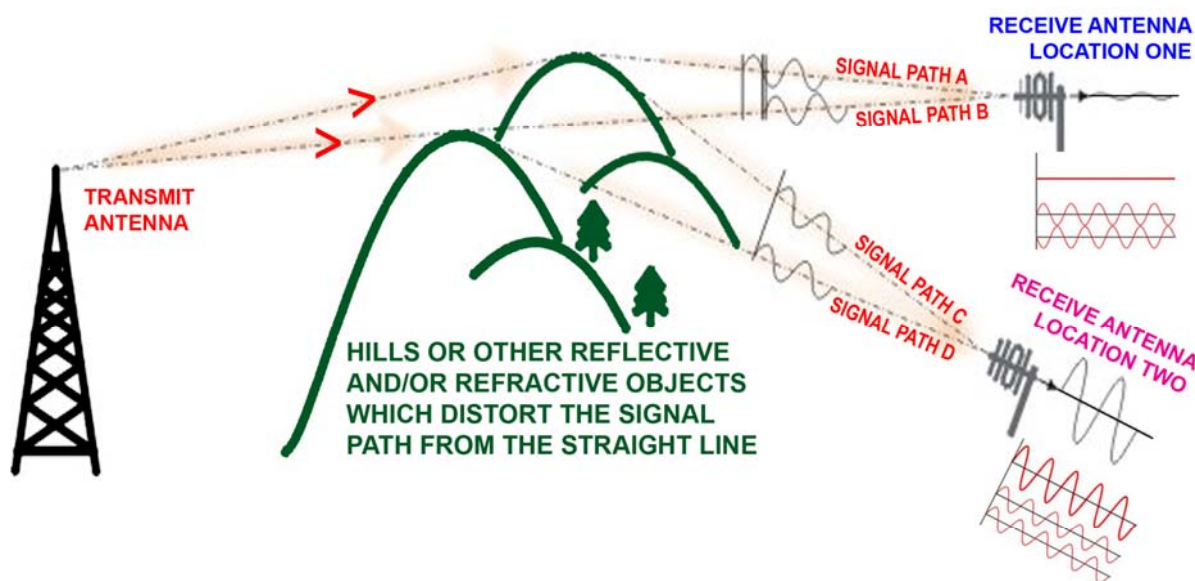
**PinkTronix** TERRESTRIAL AND SATELLITE TELEVISION  $\oplus$



## THE EFFECT OF MULTIPATH PROPAGATION ON SIGNAL STRENGTH AT THE RECEIVE ANTENNA.

The illustrations below plot the path of two rays of radio waves from a transmitter to two receive antennas in different locations and show the resultant signal at each antenna. The rays have been diffracted or reflected by objects in the propagation path. The graphs show how these multipath waves either add or subtract depending on the degree of phase shift or signal strength at the receive antenna.

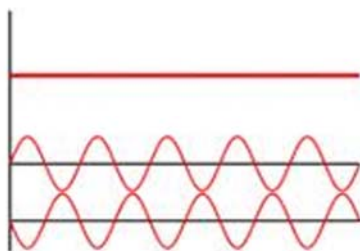
**These effects vary with antenna placement, antenna height, antenna type, frequency of the received signal and the degree of reflection or refraction caused by the objects in the signal propagation path.**



COMBINATION OF THE RADIO WAVES AT SIGNAL PATH A & SIGNAL PATH B

SIGNAL AT PATH A

SIGNAL AT PATH B



RECEIVE ANTENNA LOCATION ONE

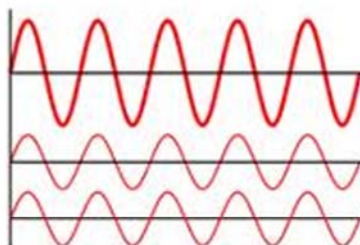
THE TWO RECEIVED SIGNALS COMBINE **IN SUBTRACTION** TO PRODUCE A SMALLER SIGNAL, OR; NO SIGNAL AT ALL IF PERFECTLY OUT OF PHASE.

THE TWO MULTIPATH SIGNALS ARE PERFECTLY **OUT OF PHASE**

COMBINATION OF THE RADIO WAVES AT SIGNAL PATH C & SIGNAL PATH D

SIGNAL AT PATH C

SIGNAL AT PATH D



RECEIVE ANTENNA LOCATION TWO

THE TWO RECEIVED SIGNALS COMBINE **IN ADDITION** TO PRODUCE A LARGER SIGNAL, OR; DOUBLE THE SIGNAL IF PERFECTLY IN PHASE.

THE TWO MULTIPATH SIGNALS ARE PERFECTLY **IN PHASE**