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## **New Zealand's Digital future now!**

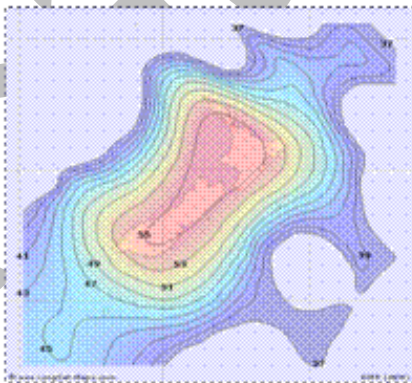
New Zealand has entered the digital age. World wide countries are beginning to migrate their analog television transmissions to digital transmissions. New Zealand is no exception, after extensive trials the Government decided that there would be two major distribution platforms. However the channel line up on Satellite is not the same as the channel line up on the Digital Terrestrial Television "DTT" service.

### **1: Optus D1 Satellite Free View Standard Definition "SD" broadcast**

Free View Satellite broadcasts are using the Australian owned Optus D1 satellite positioned at 160 degrees east to provide up to twenty channels using standard definition digital techniques to viewers living anywhere in New Zealand. This satellite is termed the New Zealand hot bird as apart from the "Free View" satellite platform Sky television also uses this satellite to distribute its Pay Television service to its nation wide subscribers. This means that any dish that is aligned to this satellite "ex Sky dishes "are capable of receiving "Free View"

**TVNZ transponder12 U frequency 12483/ 22500**

**Kordia transponder12L frequency 12456 /22500**



**Coverage of Optus D1 located 160 degrees east.**

#### **ADVERTISEMENT:**



**Add D2 to your 60cm dish for 40+ more channels**

**Click here for more details - <http://www.jayx.co.nz/ProductsandServices.html>**

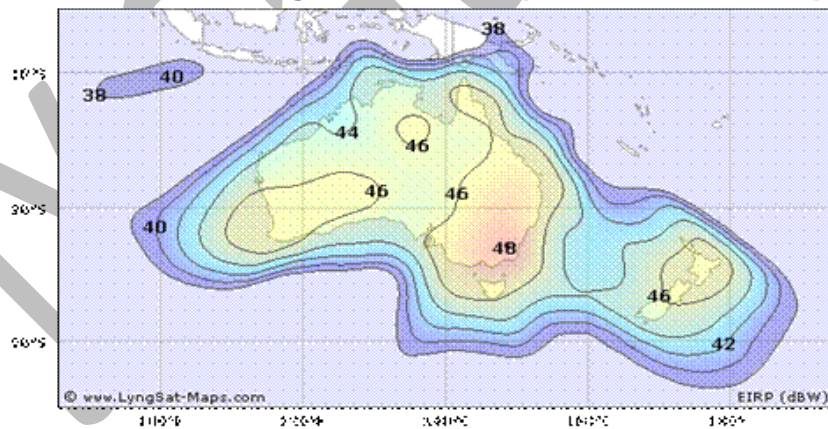
The Free View satellite package consists of the channel line up below.




(Only available on Free View satellite)

New Zealand's very own Christian television network, catering for all ages and stages of life. Documentaries, music, teaching, movies, chat shows, and entertainment shows from New Zealand and around the world

On the same satellite using a vertical transponder vertical transponder 7



12648 V tp 7	 <b>SBS Tasmania</b>	A	DVB	12600-5/6		
	<b>SBS One Tasmania</b>	A	F	897	161	81
	<b>SBS Two</b>	A	F	898	162	83
	<b>SBS One Tasmania</b>	A	HD	901	102	103
	<b>SBS Radio Tasmania AM</b>	A	F	910		201
	<b>SBS Radio Tasmania FM</b>	A	F	911		202

The standard size dish for reception of Free View is 65cm .This is the same size dish used for reception of sky TV NZ. These dish installations can be mounted on the roof or wall as long as there is an unobstructed field of view to 160 degrees east @46degrees elevation. JX uses the Azure shine 65cm offset dish for all its installations. We also use universal LNBF's from DMS which cater for both the lower 11.7 to 12.2 GHz and the upper 12.25 to 12.75 GHz bands

JX uses the Globo 4001C set top box for all its Free View installations. The 4001C is EMC approved but not free view certified.

**JX Satellite and communications is Free View Certified and our name and contact details appear on the free view site.**

## 2: Digital Terrestrial Television “DTT”

**Reception of New Zealand’s Digital Terrestrial Television “DTT” is not with out its challenges**

Reception of Free view television (DTV) via a compatible aerial is currently possible in the Auckland region outlined in the table below

Area	Site	TVNZ Channel	TV Works Channel	Kordia Channel
Auckland	Waiatarua	29H	33H	45H
	Pine hill	28H	32H	40H
	Remuera	28V	32V	40V
	Sky Tower	28V	32V	40V
	Auckland infill	28V	32V	40V

In some NZ regions, the DVB-T terrestrial digital television signal from more than one Free View transmitter may be received. (Auckland and Wellington)

This can cause Free View installation problems as the receiver may try to install the digital TV channels from more than one transmitter most have an auto scan facility.. The only way around this is to note the UHF DVB-T multiplex channel numbers for your preferred DTT transmitter as listed above and install them manually. Don't forget that a standard UHF aerial has a beam width of approximately 15 degrees. It is important that your reception antenna is pointing to the transmitter you are trying to receive.

Before buying a Free View receiver or set top box, be sure to check the likelihood of getting reception using the table above. There may be fringe areas which show poor digital terrestrial TV coverage which may be able to get reasonable DTT reception if a high gain digital compatible aerial is used. There are Twelve TV and Four radio terrestrial digital channels broadcast free to air (FTA) on Free View with TV Central available with in its coverage area

## Free view |HD (via UHF aerial)

TV 1, TV2, TV3, TV 3+1, C4, Maori Television, TVNZ 6, TVNZ 7, Prime, Parliament TV, TV Central, Radio New Zealand National, Radio New Zealand Concert, George FM and Base FM.

Free View allows you to access New Zealand's favorite television programs and national radio, in crystal clear digital quality for free. You'll have access to a wide range of channels (as illustrated) with more channels likely to launch in the future!

Broadcasters are able to choose whether to broadcast their channels on satellite and /or terrestrial so the channel offering may differ between the two platforms. The satellite platform is Mpeg 2 standard definition "SD" and the digital terrestrial platform Mpeg4 high definition "HD" when broadcast.

There are several transmitter sites that are proposed for the expansion of the Free View HD service to 87 percent coverage, but there are no definite plans for them broadcasting Free View HD

## Terrestrial Digital Terrestrial Television "DTT"



**NOTE.** You will see from the two channel line ups featured in this document that the satellite Free View service is only standard definition. Satellite features more New Zealand type programming, including "Shine" and Triangle "Stratos" and "Cue" from southland whilst DTT carries two Chinese channels "CTV8" and "NZ33" as well as TV1, TV2, TV3, C4, Prime, Maori TV, C42, TV3+1 and Parliament TV. Looking at both line ups from the charts above it is very easily seen what is being broadcast on what platform.

The Terrestrial Digital Television service provides TV1, TV2 and TV3 at HD quality. However TV1 and TV2 are broadcast in 720P whilst TV3 broadcasts using 1080i High definition television (HDTV) is the highest form of digital television. It has a 16:9 aspect ratio, which is similar in appearance to a movie theater screen. HDTV has a couple of striking advantages over the old analog TV format -- wide **screen and the resolution.**

**Resolution** is undoubtedly HD TVs biggest selling point. HDTV's resolutions are *(720p, TV1 & TV2) (1080i TV3)*. The number stands for the number of lines that create the image and the letter describes the type of scan used by the TV to display the picture. Resolution matters because the more lines mean a better picture.

### Which HDTV Format Is Better -- 720p or 1080i

To put the 720 or 1080 lines into perspective, televisions of the past had 480 lines. Since more lines means a better picture then that alone shows why the HDTV has a nicer picture than an analog. Progressive scan is better than interlaced because it processes the images twice as fast. This faster scan rate produces better clarity and color in the on-screen picture. The difference between 720p and 1080i is minimal but the TV industry is using 720p more than 1080i. So, buying a 720p HDTV is recommended over a 1080i HDTV.

Progressive scanning reduces the need to prevent flicker by filtering out fine details, so sharpness is much closer to 1080i than the number of scan lines would suggest. It is also easier to perform high-quality 50/60 Hz conversion and slow-motion replays with progressive video. In high-motion scenes, 720p has higher vertical resolution than 1080i; making it preferable for sporting events such as auto racing or any fast moving sport.

Digital television as broadcast is a lot more forgiving than the old analog system .It only requires a fraction of the signal that the old analogue system required to produce a perfect picture. Static Ghosts do not worry digital reception. However moving Ghosts can cause picture drop outs and loss of sound. The input for digital TV can range from 35DbuV to 70DbuV

That is almost from snow level, as illustrated below .a standard HDTV or set Top box will lock up and provide quality reception on signals approaching snow!

The old analogue system required signals better than 65DbuV to produce a noise and snow free picture. As a comparison 35DbuV would equate to an analogue picture which would be so bad that it would not be watchable and would be turning from snow to a blue screen. Tests conducted during the TVNZ digital trials proved that an analogue picture with a signal input of 35DbuV was totally snow whist a digital receiver receiving the same signal locked up and performed perfectly.

Below what 35DbuV would look like on an analog TV Set on the left and the resultant digital picture on the right.



1: To get the best Free View TV reception we recommend using **RG6u** satellite grade coaxial cable from your digital TV aerial which is tested up to 3GHz and used extensively

for satellite frequencies extending from 950 MHz to 2050 MHz. The New Zealand UHF frequency spectrum extends from 400 MHz to approximately 1000MHz so this cable type is ideal with approximately 6 db attenuation per 100m at 2050 MHz.

2: If you have pre-wired TV sockets in your rooms that were fitted when the house was built, it's worthwhile replacing the cable and sockets, especially if your Free View picture is breaking up regularly. Make sure all TV socket face plates are correctly wired using F connector sockets and use sky approved coaxial cable and ensure that the screen of the coaxial cable is connected to the F connector barrel.

3: If a property is surrounded by tall trees or where multi-path reception is experienced, it is not uncommon for Free View signal quality to go up and down as the trees or aerial move in high winds. This can cause a moving ghost which can cause the receiving circuits to get confused to which signal it is supposed to be receiving causing picture break up and sound loss or distortion.

Wet leaves attenuate UHF DVB-T multiplex signals even more. If you get a poor Free View TV signal and have tall trees directly in line to the transmitter, you may get problems with reception dropout under adverse weather conditions. Trees can attenuate the DTT signal considerably especially when leaves are wet.

The only way around this problem is to relocate the antenna to a position where there are no obstacles in the way of the transmission path. Movement in high winds will also affect the performance of the received digital signal and can cause pixilation as the signal strength rises and falls below the threshold level.

4: Before assuming that poor Free View signal quality is to blame for the missing channels, always try another re-installation of your Free View receiver or choose "add channels" from the installation menu to re-scan the UHF band for missing free to air digital TV channels.

- If you know the name and frequency of your local transmitter, you can identify the DTT multiplex. Once you have the UHF channel number for the missing DVB-T digital multiplex, you can then check Free View signal quality on that channel.
- If the Free View signal quality on one or more digital multiplexes is low, check that your aerial is pointed to the nearest operating transmitter. If you need a digital aerial upgrade for good Free View reception, check pricing and purchase online from JX Satellite. [www.jayx.co.nz](http://www.jayx.co.nz) as above.
- Although all the DTV transmissions are broadcast from the transmitter Some Free View channels may not be receivable in the Fringe reception areas of terrestrial digital TV transmitters due to layering which can occur randomly once

the reception location is deemed to be out of the primary or secondary broadcast coverage area .

If you have adhered to the advice provided, missing channels can sometimes be received by raising the aerial height and/or moving it side to side whilst observing the on-screen receiver signal quality menu. Check the signal quality of all channels to ensure readings are over 40%.

## Questions and Answers

### What is Free view?

Free View was established by New Zealand's leading broadcasters including TVNZ, Media Works (owners of TV3 and C4), Maori Television Service, and Radio New Zealand, to bring you New Zealand's favorite TV programs in crystal clear digital quality for free. A one off payment is required for a digital receiver and, if required, a satellite dish or UHF aerial.

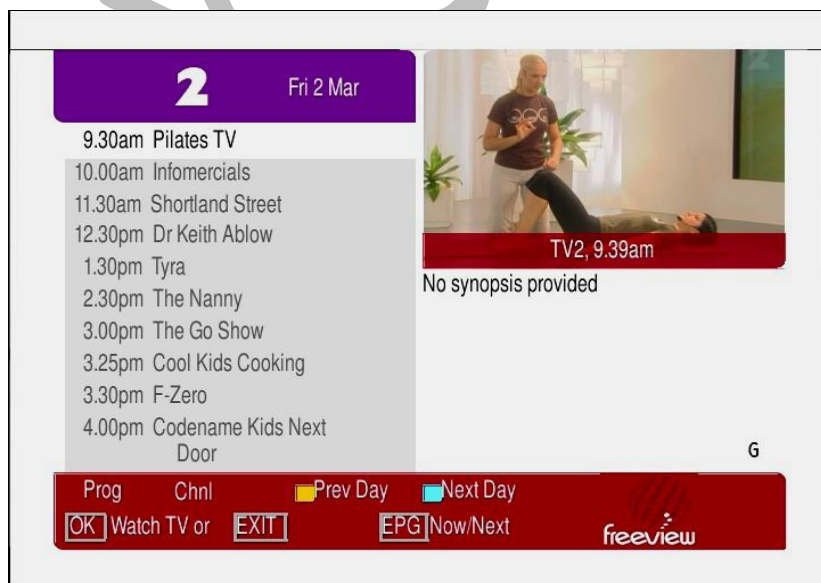
### What is Digital TV?

Digital TV is a change to the way our television signals are broadcast. Until now, the pictures on television seen by the majority of New Zealanders have been by virtue of analogue transmission. It's been this way since TV was first broadcast.

Digital signals use less bandwidth so more channels and better quality pictures and sound can be provided. This leads to an improved viewing experience.

As well as better reception you can look forward to more channels and services plus access to interactive TV content including a free, eight day Electronic Programme Guide known as the free view guide as illustrated below.

Following Image courtesy of Open Media - <http://www.openmedia.co.nz>



### **Will there be ongoing charges?**

No - this is one of the main differences between Free View and pay television - there are no sign up fees, no monthly fees and no contracts. You buy the hardware and the service is free.

All you need is a digital receiver and a satellite dish (for Free View satellite) OR UHF aerial (for Free View| HD®). Then, it's free forever!

### **Why are Free View and digital television being introduced?**

It is rumored that between 2012 to 2015 the current analogue services will be 'switched off'. Free View is being launched now to start the transition from analogue to digital broadcasting.

Digital television and radio is available around the world and Free View is here to ensure all New Zealanders have the opportunity to experience it.

### **Will Free View satellite® be broadcast in high definition (HD)?**

There are no plans at this stage to broadcast in HD via the satellite platform. This is due to bandwidth limitations and cost – HD requires a much larger amount of bandwidth and SKY TV have leased the majority of the suitable bandwidth on the Optus D1 satellite therefore there is not enough room for Free View Broadcasters to transmit HD.

If, in future years, Free View Broadcasters did manage to secure additional bandwidth viewers would need to replace their current satellite receiver with one that is capable of decoding an HD signal (much like Sky subscribers need to rent a new HD receiver for their HD service).

Free View |HD® is available to 75% of NZ homes. In the future coverage may expand to include a greater percentage. Check if you're in the current coverage area . As well as digital receivers you can now purchase integrated digital televisions (IDTVs) with the Free View |HD® built in.

### **Why should I switch to Free View?**

Sometime between 2012 and 2016 the analogue free-to-air TV signals in New Zealand will be switched off and viewers will only be able to view a digital signal.

Once the analogue signal has been turned off, the only way for Kiwis to continue to watch their favorite TV shows for free, is to switch from analogue to Free View digital television.

Digital uses improved technology that has benefits over the analogue system, including more channels, 8 day on screen programme guide, better picture and improved sound. And it's free, forever.

### **Will I get more channels?**

Yes, if you are watching analogue television you are likely to receive around 5 channels. By switching over to Free View digital television you will be able to receive the relevant channel line up depending on which service is being received.

Also, if you are in the Free View |HD® coverage area, you can watch some programmes in high definition.

By switching from analogue to Free View digital, you will enjoy some new digital only channels such as: TVNZ 6 for all day kids programming TVNZ 7 for those who like to keep up to date with all the news, current affairs and NZ documentaries. TV3+1 allows you watch all the programmes on TV3 one hour delayed in case you miss something you really want to watch. Te Reo for a Maori language channel Chinese TV8 for Mandarin and Cantonese news and programming from Mainland China. \*Channel line up will vary with Free View services and region availability.

### **I have a 4:3 (square) TV and the graphics or logos are cut off on the side of my screen. How do I fix this?**

Most TV content is now broadcast in a widescreen (16:9) format. While newer TV's are built to display a wide screen picture, many older TV's (4:3) need to be adjusted.



To ensure you get the full picture on your 4:3 TV you'll need to adjust the Aspect Ratio on your digital receiver. Please check your user guide for detailed information on how to do this.

### **The common 4:3 display options are:**

Centre Cut or Pan Scan - ensures that the picture fills the screen. You won't have any black bars around the picture but you will lose the edge of any graphics and miss the outer edges of any widescreen video.

Letter Box - This option will give you the entire picture that is broadcast so you won't miss anything. You will, however, notice black bars on the top and bottom of the picture - much like most DVD's. And, when older 4:3(non widescreen) content is broadcast, you'll notice a black boarder around the whole picture.

### **What do I do if my reception is poor?**

Please check that you've got your digital receiver connected properly. Sometimes all it takes is a 'factory reset' or 're-installation' - press the 'menu' button on the digital receiver remote and follow the menu options.

If you are still having a problem we suggest first call the manufacturer for assistance (the phone number should be in the packaging or on the product guide). If this does not solve the problem then call JX Satellite and Communications they will be able solve the problem If you have purchased a non-approved digital receiver JX satellite and communications install and repair most makes of digital reception equipment.

## Why are some of my channels missing?

Digital channels are broadcast in groups. 1 digital channel or frequency holds many individual channels. As of June 2010 on the Free View |HD® platform there are three digital channels. TVNZ, Media works and Kordia.

**TVNZ** – TV One, TV2, TVNZ 6 and TVNZ 7

**Media works** - TV3, C4, TV3 PLUS 1 and C42

**Kordia** - Maori Television, Prime, Parliament TV, Chinese TV8, Television 33 and Free View |HD® Demo channel

Each of the three digital channels has their own frequency and as such if there is a problem with your aerial or cable it's possible that you may not receive one entire group of channels. As is the nature of digital television you may have perfect picture on the other channels. Please contact Jayx satellite and Communications if you experience this.

### Types of UHF antennas for specific areas

#### UHF Antenna



#### Channels 27-69

**23 element wide band UHF aerial for use in high signal areas.**

#### Primary coverage areas

**Where clear line of site to the transmission tower exists.**



**43 element wide band UHF aerial for use in medium signal areas**

**Secondary or medium coverage area where signals are medium signal strength**



## 91 element wide band UHF aerial for use in low signal and fringe reception areas

**Low or fringe coverage area, used on its own or in conjunction with a mast amp.**

### **Trouble free terrestrial HD reception.**

To get the best results, the Free View receiver should be the first RF loop through device in any chain of equipment. This ensures that the Free View receiver gets the best signal quality. This avoids interference or added noise from other peripherals like video recorders or a Sky satellite receiver.

Most Free View receivers provide an on-screen method of checking signal quality and signal strength. Digital terrestrial TV signal quality is the most important of these parameters as very low signal quality reading will mean that your Free View receiver will be much more prone to domestic or outside interference leading to picture freezing, pixilation, break up and dropouts.

### **Single Television homes:**

In a single television home the integrated Digital / analogue television would be the most obvious choice. Now that all the networks are on the Free View platform there is no need to even think about using the analogue system.

The easiest route would be to pull down the VHF aerial as it is no longer required and run a single high quality RG6u cable from the UHF aerial directly to the television aerial input socket.

This does away with any chance of signal problems that can occur from such items as incorrect cable, Saddle and clamp splitters, rusting diplexers and incorrectly installed Mast head amplifiers

### **Multi Television homes:**

In multi television homes the normal structure would be several televisions receiving the off air signal from a splitter located somewhere in the attic space. These splitters could well distribute both VHF and UHF signals around the house and May also have extra channels combined from satellite receiver UHF outputs.

It would be very doubtful if this combination will provide stable UHF digital terrestrial signals. It has been proven that 99% of all DTT reception problems stem from 60,s to 90.s style reception installations.

Today's Digital installation requires a UHF aerial only. The older style VHF yagi's which have provided reception of **TV1** since its launch in 1964, through **TV2** in the seventies and **TV3** in the eighties has now had its day.

***JX Satellite and Communications*** advises the need for an independent antenna and cable run. If the signal is to be split to more than one location then new cable runs must be made from the splitter to each location where a Free View capable TV or set top box is to be installed.

The current reception antennas and mounting fixtures, unless very new should be discarded and a new UHF wide band antenna suitable for the specific area should be installed. This can be one of three models as illustrated above

JX Satellite