A Uniti Group Company

# Free-to-air TV troubleshooting guide

## Understanding Digital TV

OPTICOMM Networks

This document includes a brief introduction to understanding Digital TV as well as the steps you can take to check for potential issues.

After completing the troubleshooting steps outlined below below, if you believe you have a TV fault, cannot correct the issue on your own or via one of our service providers, please visit support at www.opticomm.com.au to lodge a fault ticket.

## Analogue versus Digital

It is important to understand the key difference between Analogue and Digital TV issues.

- **Analogue TV** – The picture could have a lot of snow or lines, but there will still be a picture.
- **Digital TV** - There is either a picture, or you have nothing.
    - Provided the TV set has enough digital information to build a picture, the picture will be near perfect.
    - If the TV set signal strength is too low, it will display a blank screen or ‘No Signal’. There may be a signal however it will be too low to build a picture.
- If the TV set signal is too high, it can overdrive the TV tuner, which creates distortion that blocks the digital signal. This will display a blank screen or 'No Signal'.

## What is the Optical Network Terminal (ONT) and ‘RF Receiver’?

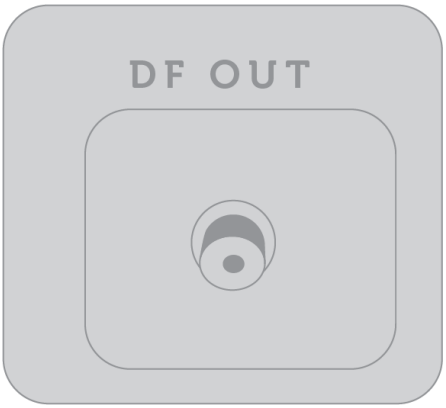
The Optical Network Terminal (ONT) or RF Receiver is Opticomm’s demarcation point in the network. Anything past the ONT or RF Receiver is within the consumer domain and thus the responsibility of the property owner.


- Due to constant upgrades in technology, we cannot list/ picture all devices. However, to the right is one example of a Kingray ONT:

It is important to note, that the RF Receiver has a fibre input connection into the unit and an RF output from the unit.

## TV signals in an Opticomm Estate

- In a traditional home you have an outdoor antenna on your roof which picks up the Free-to-air channels or a satellite dish to pick up Foxtel. In an Opticomm fibre connected community, these two services are delivered via a fibre optic network to the highest quality.




The TV signals are received at our exchange, where the signal is then modulated onto the fibre optic cable (which is immune to interference). From here it is delivered to your home where it’s converted by the Optical Network Terminal (ONT) into a traditional coaxial or RF interface, like that of an ordinary antenna. The picture to the right shows an RF interface on a type of ONT.

On leaving the Optical Network Terminal via the RF interface, each individual channel will have the same signal level which is perfectly tuned for the best quality reception. The root cause of the vast majority of picture quality issues reported in an Opticomm network occur because of poor home wiring or incorrectly configured distribution equipment which are installed after the ONT.

## RF Receiver estates

Some estates have an ONT for data and voice services, with a separate RF Receiver for television.

It is important that if you have both an ONT and RF Receiver, you troubleshoot on the correct device.

The below figures show an array of ONTs, while Figure 6 shows the RF Receiver as a standalone device.

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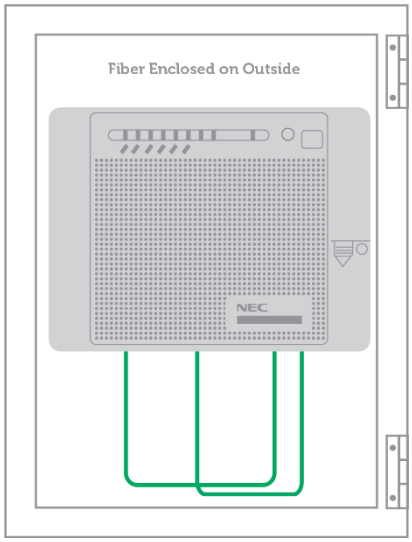



Figure 1- Outdoor installation used between 2009 and 2012

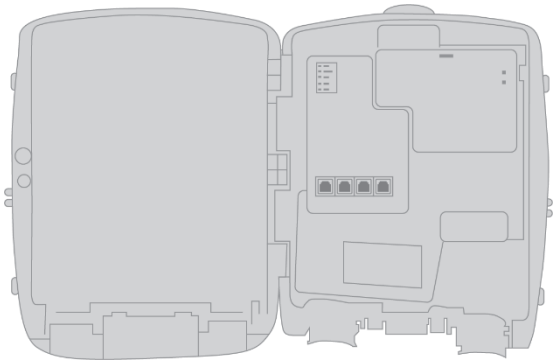


Figure 2 - Outdoor installation used since 2013

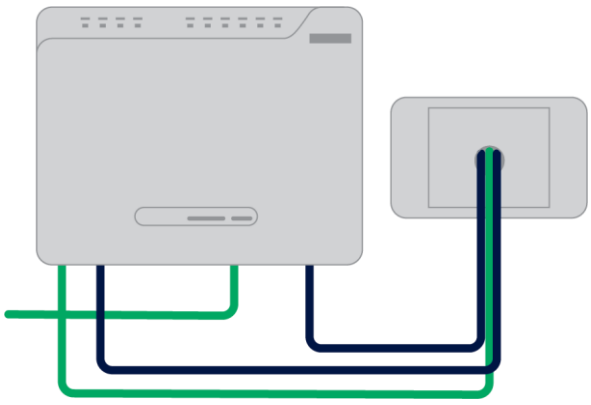


Figure 3 - Indoor installation used since 2013

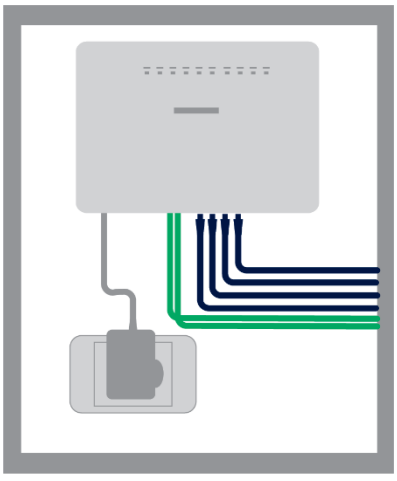


Figure 4 - Apartment installation since 2011

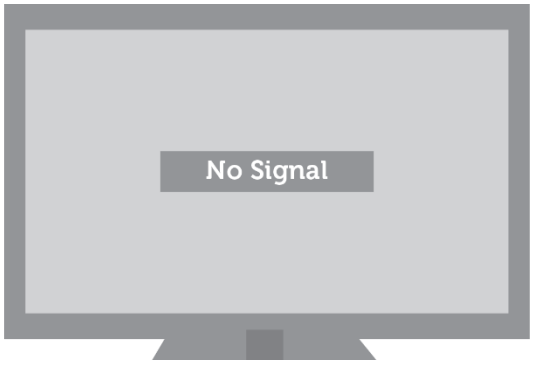

Figure 5 – HFC type install (Brighton, WA only)

Figure 6 – RF Receiver

## Troubleshooting Digital TV reception problems

The two key picture quality issues that are experienced with digital television are as follows:

**No Signal** – is where the receiver (be it the television or set top box) has a poor-quality input signal or a high level of interference, and it can no longer decode the signal information to display the audio or video image.




**Pixilation** – is where the video or audio image is distorted.

In the case of video, the image is distorted by the displaying of incomplete blocks of information frequently called artefacts.

In the case of audio, a listener will experience a variety of effects such as popping, squawking, or clipped audio.

Please follow the below troubleshooting steps if you are experiencing either of the above problems:

1. Ensure the power is on and the ONT or RF Receiver indicator light/s are GREEN. See the below for further details based on your device.

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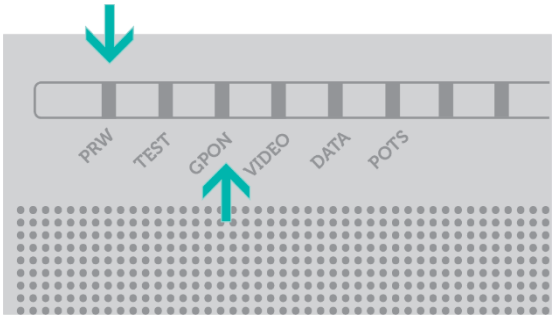
## Outdoor installation pre-2013

**Model: NEC T-4 91 ONT.**




Working as Intended: PWR, GPON & VIDEO indicator lights must be Green.

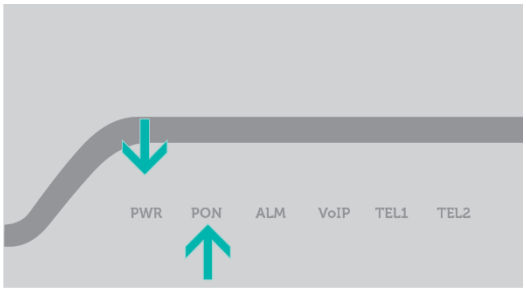
**Issue/s:**
If the PWR is GREEN but the GPON is RED it means you have no optical signal.

If the VIDEO is RED it means you have optical signal but no or low TV signal.

**Action:** Report a TV fault to the Opticomm Free-to-air TV support team.

## Indoor installation post-2013

**Model: Dasan H640GR ONT**



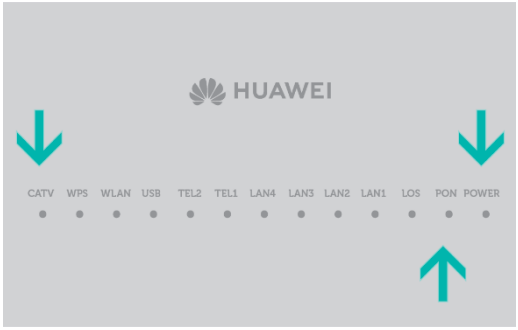

**Working as Intended:** PWR & PON indicator lights must be GREEN.

**Issue/s:** If either the PWR or PON indicator light is not GREEN.

**Action:** Report a TV fault to the Opticomm Free-to-air TV support team.

## Apartment installation

**Model: Huawei HG8247**




**Working as Intended:** PWR, PON & CATV indicator lights should be GREEN.

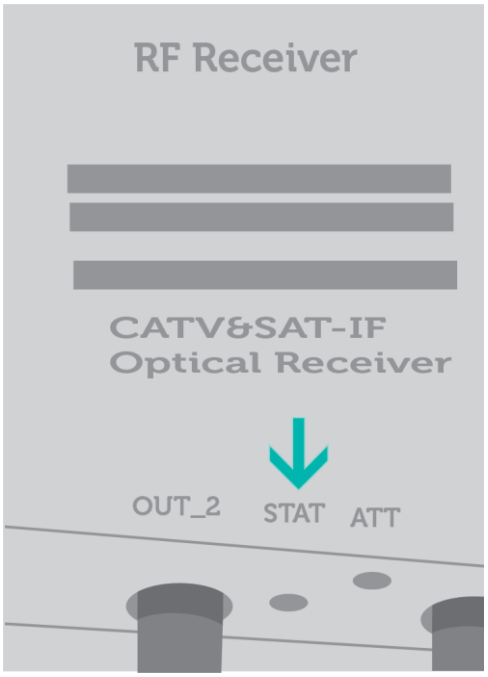
**Issue/s:** If either the PWR, PON or CATV indicator light is RED.

**Note:** In the event the light is RED and the device is working an isolation test will need to be completed.

**Action:** Report a TV fault to the Opticomm Free-to-air TV support team.

## RF Receiver

**Model: Various**




**Working as Intended:** STAT indicator light must be GREEN.

**Issue/s:**

- RED Light: Indicates a TV signal issue.

Please check the fibre is connected to the unit.

- NO Light: Indicates that power may not be ON at the receiver. Check power and cables.

**Action:** Report a TV fault to the Opticomm Free-to-air TV support team.

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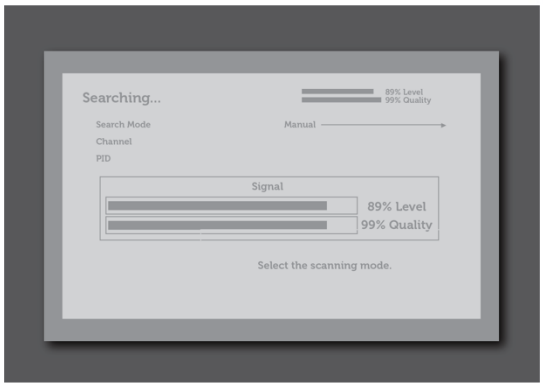
2. Upon verification that the ONT and/or RF Receiver has power, the signal levels and quality of each channel should be checked. Once you have accessed this feature, check the 2 reading levels as per the below:

   *Note: Most TV sets have a basic signal quality indicator feature, refer to the TV manual for instructions on how to access this feature. If your TV set does not have this feature please move to step 3.*

1. **Level** – which is the strength of the signal
2. The optimal level signal should be 70-80%
3. The level signal should never be 100% as this would be overdriving your device.




4. **Quality** – which is the quality or error rate of the signal.
    a. The quality should be 95% or more
    b. The quality signal should be as high as possible.

**Action:** If either of the above are out of the recommended levels, report a TV fault to the Opticomm Free-to-air TV support team

**NOTE:** this indicator is only a basic diagnostic tool. It is not definitive and it's not 100% accurate, it is only an indication of the signal

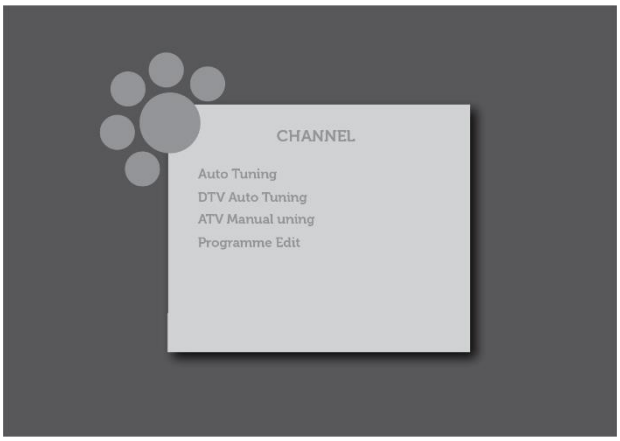
3. Provided the level and quality signals are within range, the next step is to tune your TV into the correct service area.

    *Note: Refer to the TV manual for instructions on how to access this feature.*

Select the Auto Scan or Auto Tune feature. This will take a few minutes to complete.

Once completed, check the channels.

Most modern TVs have an 'Auto Scan' or 'Auto Tune' feature which will search through all the Free-to-air channels and program up the TV correctly. This should be done before attempting anything else. If you are having difficulty tuning your channels, contact the manufacturer of the television or set top box.



Default the TV back to factory settings if it is not finding channels.

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4. Once the TV has been rescanned, if you are still missing channels, you should check cables and connectors etc.

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At the wall you should have an F-Type connector (as shown to the right).

All other connectors are not digital or Foxtel compatible and should not be used.

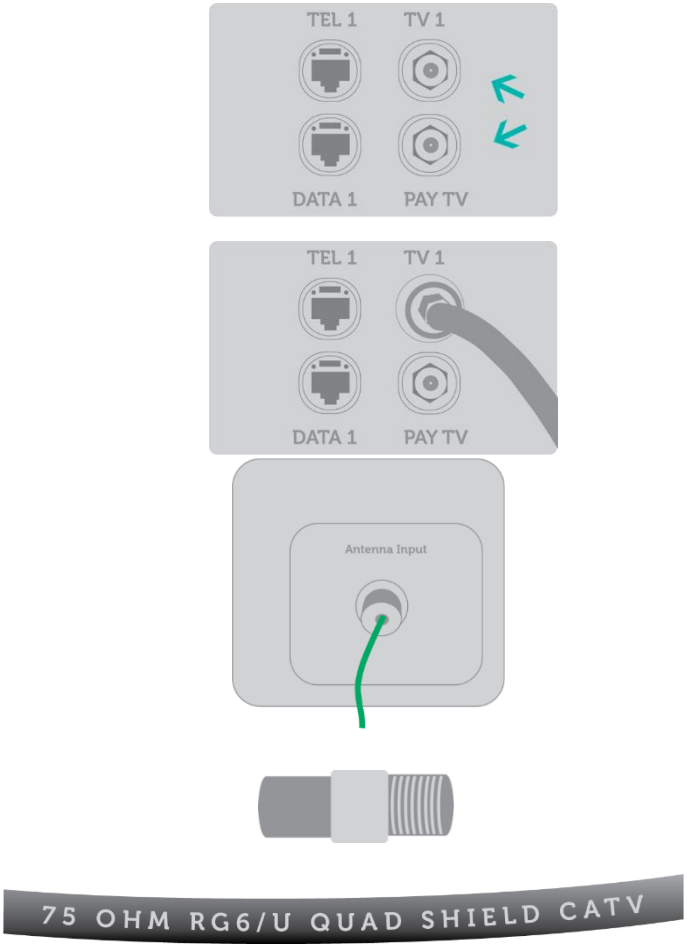
Should a different connector be in use and needs repair, an authorised cabler will be required.

Should your TV have a PAL connector, ensure the PAL to F-Type connector is secured at both ends of the connector.

**Note:** You may need to purchase a PAL to F-Type connector in order to complete the connection. Ensure this is secured as above.

Ensure the quality of the cable used is a Quad Shield RG6 75 Ohm.

Other types of cables may cause signal interference.

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5. Once all cables have been checked, re-scan the channels as per step 3.
   If the issue/s have been rectified, no further troubleshooting is required.
   If the issue/s are still present, please move to step 6.

6. The following steps cover some of the more complex checks.
   Noting that this may not apply to you if you do not have a SmartWired Home or have a Home Distribution Hub.

If you do not have a SmartWired Home or have a Home Distribution Hub, please contact Opticomm to lodge a fault.

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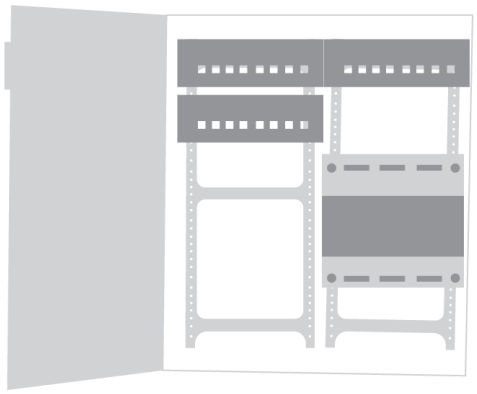
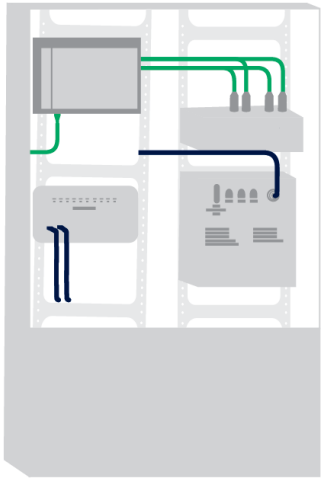
The Home Distribution Hub is most commonly located in a garage. If you do not have a garage, check your closet, walk in robe or laundry area.

There are different models of home hubs and while they look different, they perform the same function to distribute a single source to multiple points in the home. See 2 examples to the right.



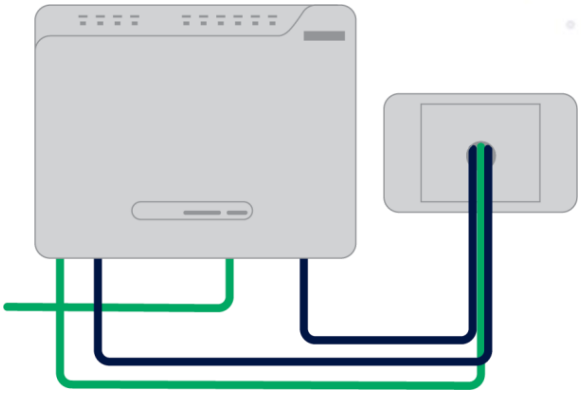
Clipsal Starserve Hub



Hills Home Hub

The ONT or RF Receiver can be located in 2 different areas:

- Outside: the cabling may be behind the unit or in the wall so you may not be able to check this.
- Inside: the black RG6 Quad Shield cable (as outlined in step 4) should be visible and can be checked as per the example on the right.

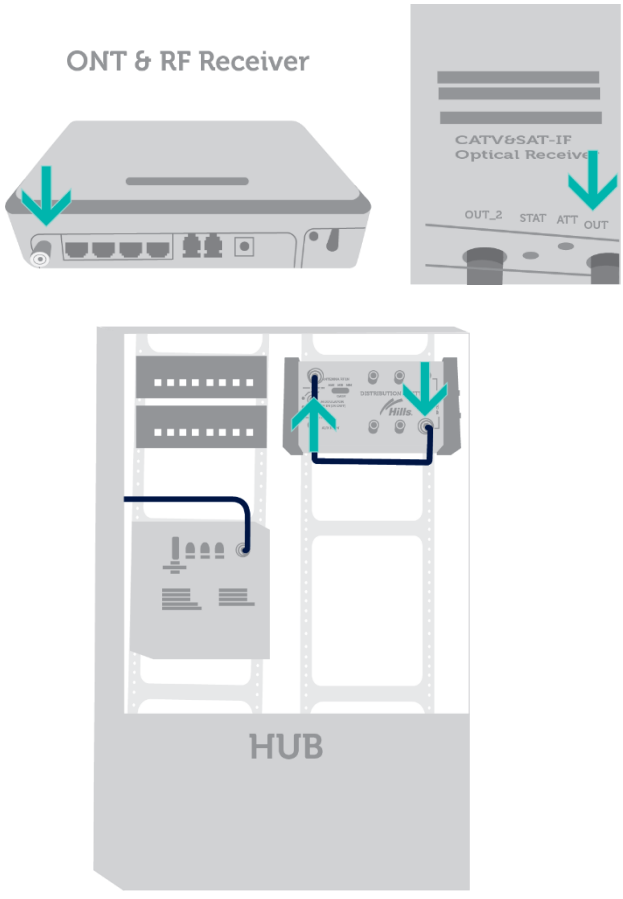


The black RG6 Quad Shield cable should run from your ONT or RF Receiver to a device inside the Home Distribution Unit called the TV distribution splitter.

The TV distribution spitter can be identified by the multiple black RG6 cables and F-Type connectors attached to the unit.

- The 'antenna' or 'RF In' port; originating from the ONT; and the 'RF Out' ports; leads to outlets within the home; connectors should be securely connected.

The cable connector on the ONT or RF Receiver should also be securely connected.

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7. The next step is to connect the TV directly to the Opticomm equipment and retune.

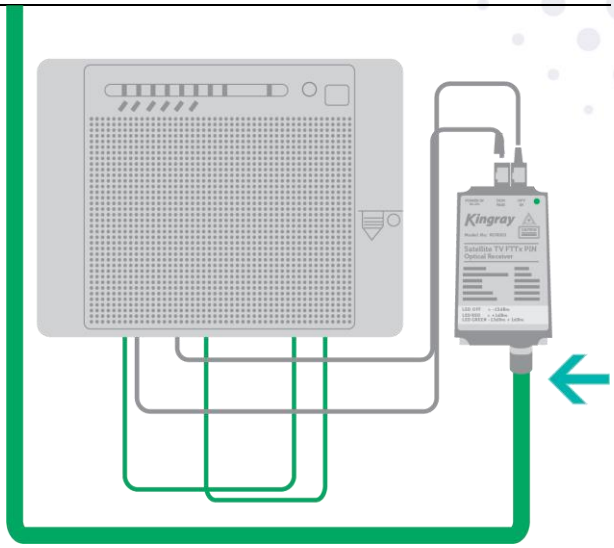
Using the Coaxial cable from the RF port (as shown in the picture) connect this to your TV.

Once connected, retune your TV as outlined in step 3.

You will have one of the following outcomes:

**Working correctly:** no further troubleshooting required.

**Not working correctly:** there may be an equipment fault. Please call Opticomm to lodge a fault.




8. The distribution splitter is typically used where you have 1 -> 6 TV outlets in the home. The amplified splitter is typically used where you have more than 6 outlets in the home.

Opticomm fibre is designed to provide a quality TV signal for up to 6 outlets.

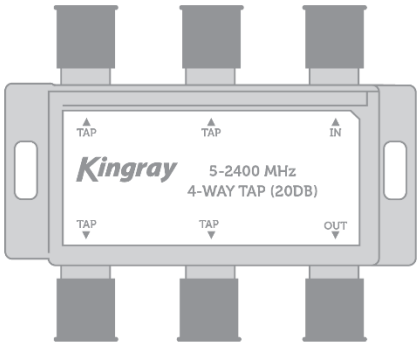
If you have a distribution or amplified splitter installed it is recommended that it meet the 2400MHz specification (as shown to the right).

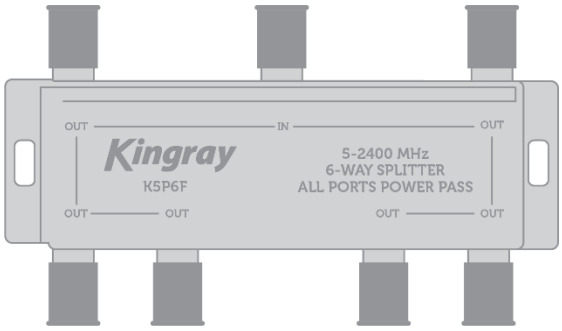
**Note:**

Foxtel IQ4 will require a 5-2400MHz splitter.

FTA, IQ2 & IQ3 will work on both 5-890MHz splitters and 5-2400MHz splitters

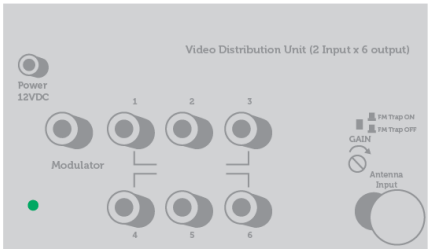
If your splitter does not meet the standard, please contact your builder/electrician.

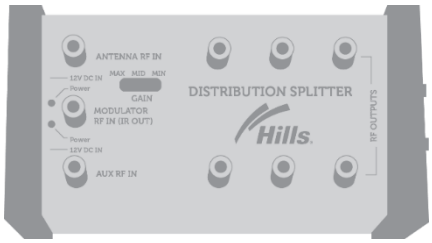



9. The following points deal with the basics of powered distribution amplifiers and making them work more efficiently for your type of installation. These are the devices which cause most Free-to-air and Foxtel reception problems. They are frequently set up incorrectly when first installed and this can cause the overdriving of the TV signal.

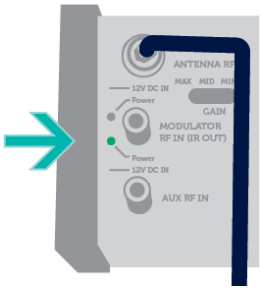
Depending on the make of home hub there are a variety of distribution splitters that could be used. The images to the right show the 2 most commonly used splitters.



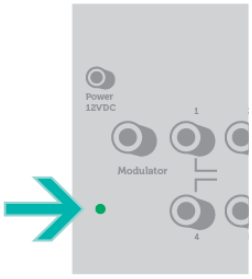




While these devices are perfect for a traditional outdoor TV antenna installation, they should not be used in a Fibre-to-the-home environment unless you have a very large home with more than 6 TV outlets.

Check the distribution splitter has power by confirming the green light is lit (as shown to the right).




**Light Off:** Check the power pack is plugged in securely. Switch the power off at the wall and unplug and re-plug at both ends. If this is not working you can replace the power pack with one of equal specifications.




**Light On:** The signal may be in overdrive or the device has frozen. Switch the distribution splitter off for 10 seconds, then power it back up.

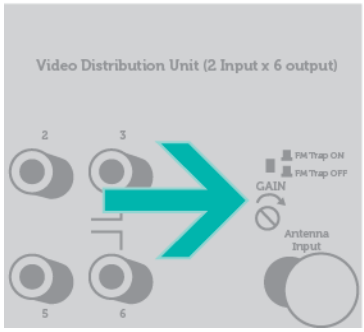
If the distribution splitter is working, no further trouble shooting is required.

If the distribution splitter is not working then move to the next step.

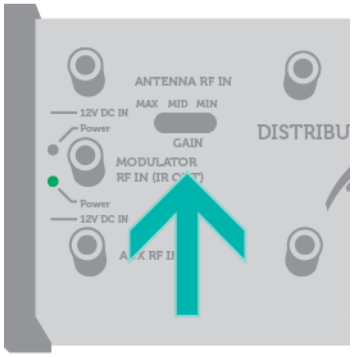
The Gain may need to be adjusted to boost the signal and reduce the overdrive on the receiver.

Adjusting the Gain can be done in one of two ways, depending on the distribution splitter model:

**Screw:** Using a small flathead screwdriver, turn the screw anti-clockwise to the lowest setting (opposite to the directional arrow in the first picture).




**Switch:** Of the 3 settings, Low/Min, Medium/Mid, High/Max, select the lowest setting (Low/Min) as shown in the second picture.




Once adjusted, check the TV signal to confirm if the pixilation has ceased.

If not, call Opticomm to lodge a fault ticket.

10. While most problems can be easily solved from the above, some are a little more detailed and difficult to explain, even for a trained TV technician.
    The following points are less likely to create problems with Free-to-air but are likely to create problems for Foxtel.

    Should you face any of these issues please contact Opticomm to lodge a fault.

Terminal resistors should be fitted to all empty output ports on the distribution splitter. Leaving ports ‘unterminated’ will cause ‘signal reflections’ which may degrade the quality of the TV signal and cause pixilation and momentary picture dropout.

If your signal is strong, missing terminating resisters will not cause too much of an issue, but if it is borderline, or you have a power amplifier (which will amplify the reflection) this will cause problems for some TVs and set top boxes. Best practice is to ensure all ports are terminated.

Crimped connectors can cause return loss issues which in turn create ‘signal reflections’ which may degrade the quality of the TV signal and cause pixilation and momentary picture dropout.

Crimped connectors are also not Foxtel approved and a Foxtel technician should replace any crimped connectors used for the PayTV during installation.

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## Getting a TV/Antenna technician to check out your home wiring

If you need assistance in the setup of your TV or repairs to in-home wiring, Opticomm recommends you engage a qualified TV/Antenna technician. Opticomm does not recommend using an electrician as they frequently do not have the required test equipment to conduct a proper analysis.

When a TV/Antenna technician attends your home; they should conduct the following assessment:

- Check each TV outlet in the home;
- Check all connectors and cabling for quality; and
- Provided 7 RF outlets are installed then adjust the gain on your powered distribution amplifier. Where 7 RF outlets are not installed an adjustment should not be made.

Upon completion they should provide to you, as a minimum, the information below recorded for each of the TV points in the home.

If the TV/Antenna technician believes there is an Opticomm fault/issue, have them provide the above information as sourced directly from the RF port on the ONT or from the RF receiver.

| Channel Name | Channel Frequency | MER | Signal Level |
|---|---|---|---|
| Seven | | | |
| Nine | | | |
| Ten | | | |
| SBS | | | |
| ABC | | | |

Opticomm will not investigate a report of poor signal levels recorded elsewhere in the home as this could be caused by internal home wiring. Opticomm is responsible for the TV signal quality up to the RF interface on the ONT or RF Receiver.

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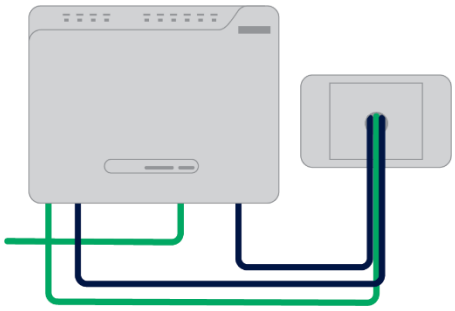
Opticomm fibre is designed to provide a quality TV signal for up to 6 outlets.

If you have a distribution or amplified splitter installed it is recommended that it should meet the 2400MHz specification (as shown to the right).



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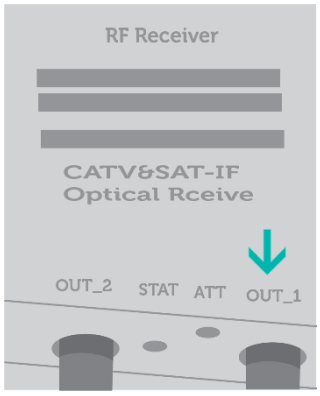


If your splitter does not meet the standard, please contact your builder/electrician.

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## Reporting a Foxtel fault/issue

The services provided by Foxtel are delivered over the Opticomm network through a wholesale agreement with Foxtel. You, as the customer of Foxtel, need to report any faults/issues directly to Foxtel and not via Opticomm.

Any faults/issues with the Opticomm network found by the onsite technician, will be reported by Foxtel to Opticomm via the agreed process and not by you, the customer.

Contacting Opticomm directly in this situation may cause undue frustration to you, the customer, as Opticomm cannot take any action unless the fault/issue is reported via the agreement with Foxtel.

## Warranty of Free-to-air service

Like any product or service, the installation of your fibre connection for reticulation of TV signals comes with a limited warranty. We offer a warranty period of twelve (12) months or twenty-four (24) months from the date of connection, as recorded by Opticomm.

We undertake that if, during the warranty period, the service fails to operate correctly due to either faulty workmanship or defective materials, we will repair the service free of charge on the following terms:

a. The owner (or their authorised representative) of the property must contact the Opticomm Free-to-air TV support centre upon becoming aware of a defect to the service;

b. Opticomm will not accept any report of fault or approval of charges from a tenant of the property;

c. Following consultation with Opticomm we will determine whether there is a defect, and if so, we agree to repair the service to good working order;

d. Opticomm's responsibility for the service is up to and including the Optical Network Terminal (ONT) and TV signals will only be tested at this point;

e. Opticomm's responsibility for the service does NOT include any defect with the internal wiring of the home including all components, such as but not limited to: amplifiers, splitters and connectors up to (but excluding) the Optical Network Terminal (ONT);

f. It does not include any service interruption caused by the failure to supply power to the Optical Network Terminal (ONT);

If it is found there is no defect with the Free-to-air service at the Optical Network Terminal (ONT) a call out fee of $270 will be charged as a cost recovery for the call out and time spent on site testing the service. This will be payable within **14 days,** or the Service will be suspended.

## Process after expiration of warranty period

After expiration of the 12 or 24 month warranty period (measured from the date of initial connection); or if the interruption has been caused by non-warrantable items as those mentioned above; the service fails to operate correctly we will repair the service and charge the property owner a call out fee of $97 plus any parts required.

The invoice for parts and labour required to restore the service will be raised after the work has been completed. The owner has **14 days** in which to make payment using the prescribed methods. Should the bill not be paid within the required time, the service will be suspended.