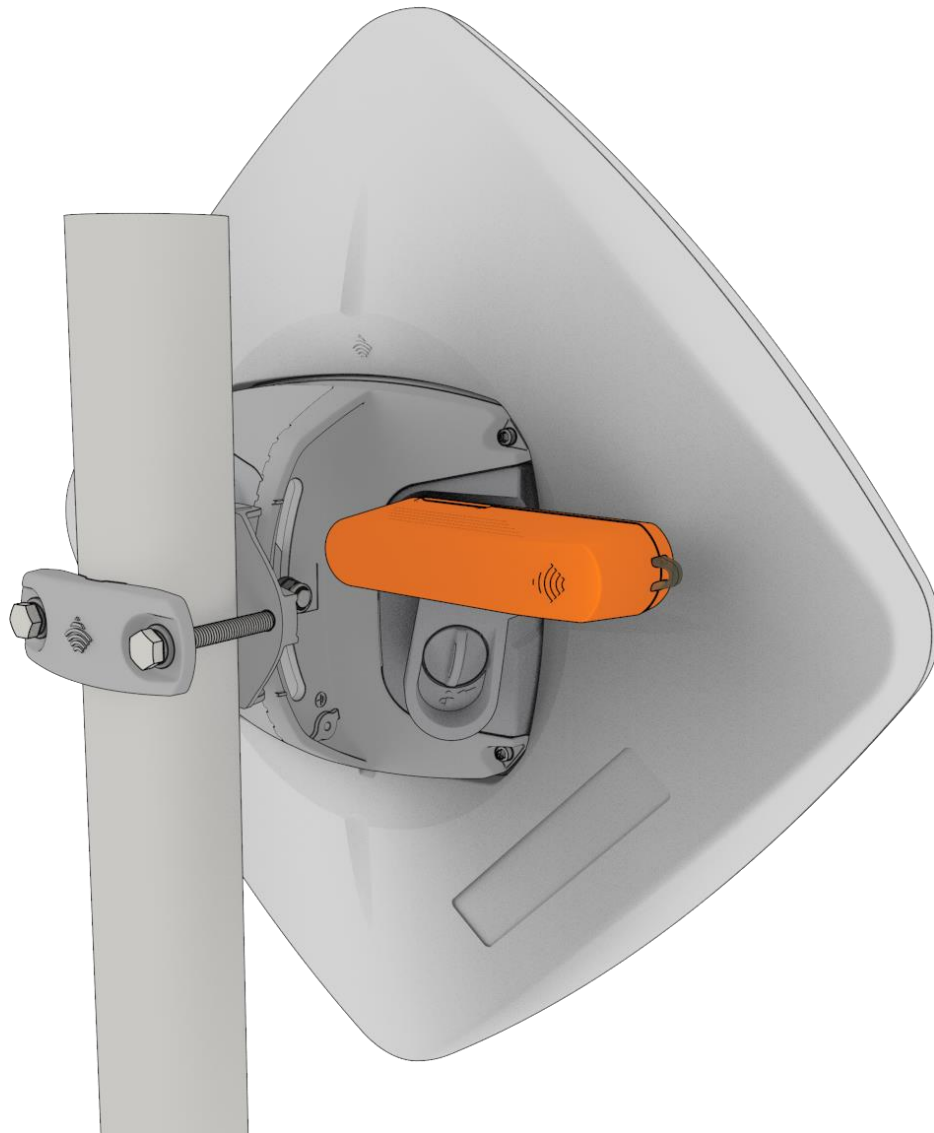


Fixed Wireless Antenna



Important notice

This device, like any wireless device, operates using radio signals which cannot guarantee the transmission and reception of data in all conditions. While the delay or loss of signal is rare, you should not rely solely on any wireless device for emergency communications or otherwise use the device in situations where the interruption of data connectivity could lead to death, personal injury, property damage, data loss, or other loss. Casa Systems accepts no responsibility for any loss or damage resulting from errors or delays in transmission or reception, or the failure of the Casa Systems CFW-2132 to transmit or receive such data.

Safety and hazards

**Warning** -

Do not connect or disconnect cables or devices to or from the USB port, SIM card tray, or Ethernet port in hazardous locations such as those in which flammable gases or vapours may be present, but normally are confined within closed systems; are prevented from accumulating by adequate ventilation; or the location is adjacent to a location from which ignitable concentrations might occasionally be communicated.

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Note - This document is subject to change without notice.

Document history

This document relates to the following product:

CFW-2132 - Fixed Wireless Antenna

Ver.	Document description	Date
v1.0	Initial release	10 July 2020
v1.01	Added "Using the Smart Antenna Tool" section	24 December 2020
v1.02	Various updates and corrections to screenshots	15 January 2021
v1.03	Added note on mounting orientation	23 March 2021
v1.04	Various corrections and updates	29 March 2021
v1.05	Correction to Smart Antenna Tool power button description	31 March 2021

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Overview

Introduction

This document provides you all the information you need to use the Smart Antenna Tool to set up, configure and deploy the Casa Systems CFW-2132 Fixed Wireless Antenna in a CBRS/SAS environment.

Target audience

This document is intended for experienced hardware installers who understand telecommunications terminology and concepts.

Prerequisites

Before continuing with the installation of the CFW-2132 Fixed Wireless Antenna, please confirm that you have:

- ▲ A WiFi-enabled device (laptop, tablet or smartphone) with the Google Chrome™ browser or the Safari® browser.
- ▲ read the entire Safety and product care section of this document and RF Exposure information.

You may also require other screws and fasteners depending on your circumstances.

Notation

The following symbols may be used in this document:



Note – This note contains useful information.



Important – This is important information that may require your attention.



Warning – This is a warning that may require immediate action in order to avoid damage or injury.

Product introduction

Product overview

Rural and regional homes and businesses, remote commercial sites and metropolitan fringe districts located beyond the reach of fixed line infrastructure rely on mobile networks to access broadband Internet.

Designed to optimise signal strength in weak signal areas, the Fixed Wireless Antenna is positioned on the exterior of the premises to overcome distance limitations and geographical obstructions and deliver high-speed LTE broadband connectivity to wired and wireless clients in the property via an indoor router.

Package contents

The CFW-2132 in-box contents include:

- ▲ 1 x CFW-2132 Fixed Wireless Antenna
- ▲ 1 x Mounting bracket kit (includes two-piece bracket, bolts, nuts and washers)

Accessories

The following accessories are used in this solution and are packaged separately:

- ▲ 1 x Antenna Power Supply (PoE-03) – used to power the antenna during normal operation.
- ▲ 1 x Smart Antenna Tool – used to power and provide a wireless interface to the antenna during installation.

If any of these items are missing or damaged, please contact your sales representative immediately.

Physical dimensions and interfaces

Physical dimensions

Below is a list of the physical dimensions of the CFW-2132.

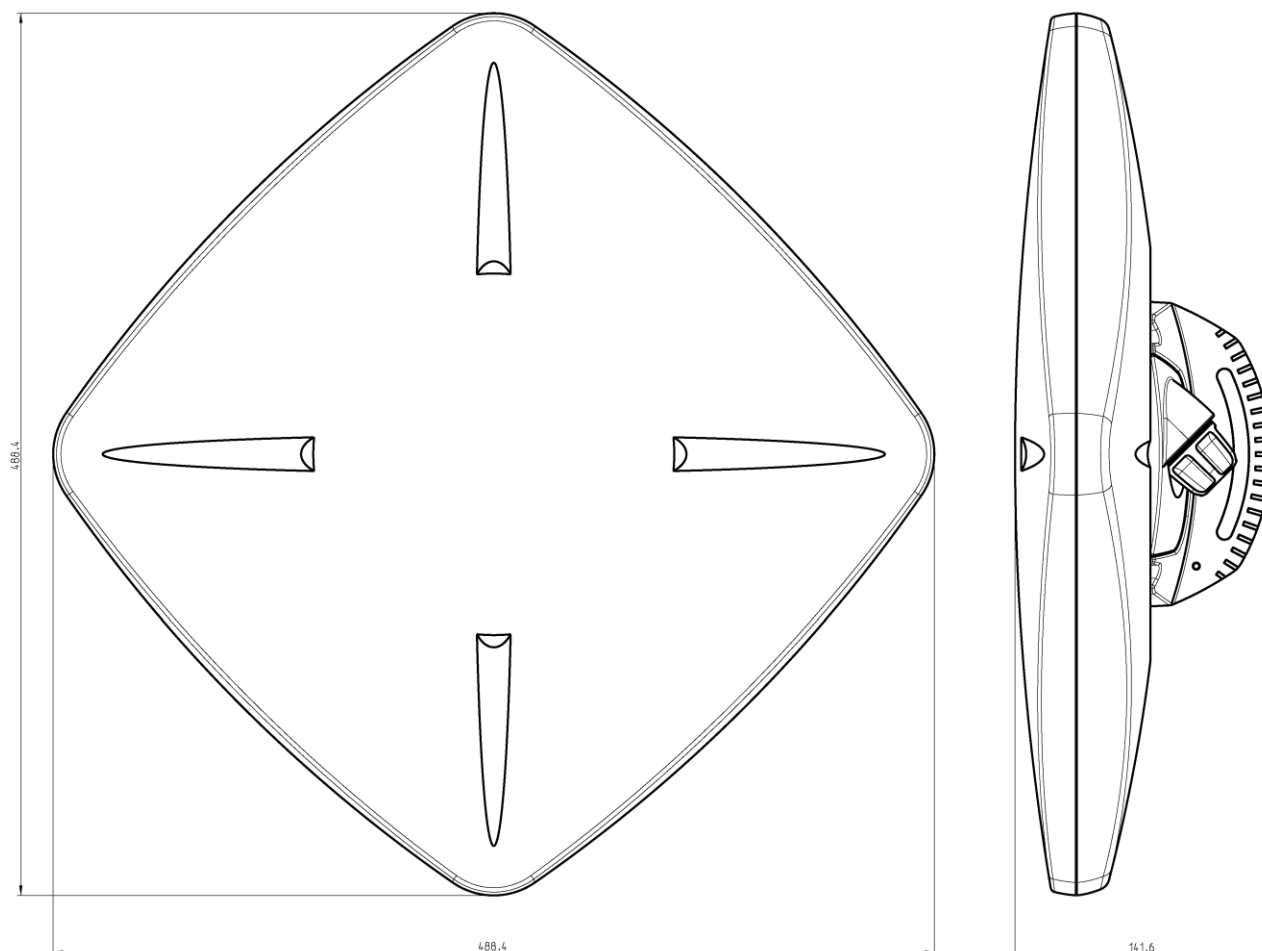


Figure 1 - CFW-2132 Fixed Wireless Antenna Dimensions

CFW-2132 Dimensions

Width	488.4 mm (19 ¼ in)
Height	488.4 mm (19 ¼ in)
Depth (with fixed elevation control)	141.6 mm (5 ½ in)
Weight	2.3kg / 5lb 1.13oz (Antenna, approx.) 270g / 9.5oz (Bracket, approx.)

Table 1 - Device Dimensions

Interfaces

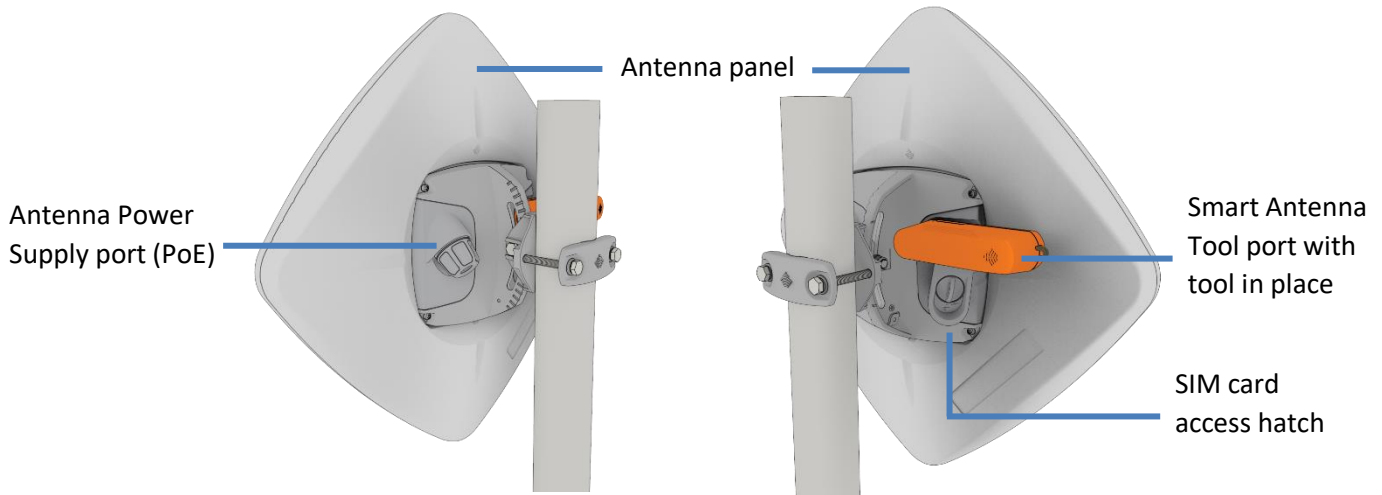


Figure 2 - Interfaces

Item	Description
Antenna panel	Includes 2 x pairs Cross polarised antennas and GPS antenna
Smart Antenna Tool port	Connect the Smart Antenna Tool here
SIM hatch	Open the hatch to insert SIM here
Antenna Power Supply port (PoE)	Provides power and data connectivity to the Fixed Wireless Antenna. with Ethernet cable

Table 2 - Interfaces

Installation considerations

As the Fixed Wireless Antenna is aligned specifically for each individual property, please take note of the following when installing the equipment:

- ▲ After alignment, do not move, place anything in front of, or adjust the position of the Fixed Wireless Antenna since this will likely have a negative impact on the signal quality and performance of the wireless service.
- ▲ Keep trees and branches away from the CFW-2132.
- ▲ The equipment must be protected from running water, steam and excessive heat and must be installed according to the guidelines in this document.
- ▲ The Antenna Power Supply (PoE-03) and Wi-Fi Gateway must be installed in a well-ventilated area and near a dedicated power outlet which allows an unobstructed view of the indicator lights.
- ▲ If construction work has been carried out on the exterior of the property, the antenna may need to be re-aligned to ensure the installation is still operating at peak performance.
- ▲ The Fixed Wireless Antenna's location is determined by radio frequency performance and it may not be possible to relocate the antenna when moving to a new property. It is advised that a site survey be conducted before initiating the installation process.
- ▲ Use a minimum of Cat5e Ethernet cable between the antenna and the PoE injector to complete the installation.
- ▲ Ensure that the antenna is mounted in the correct orientation so that the IP rating is maintained. See page 19 for more detail.

Installing the Intelligent Fixed Wireless Antenna

The image below illustrates a typical installation of the Fixed Wireless Antenna.

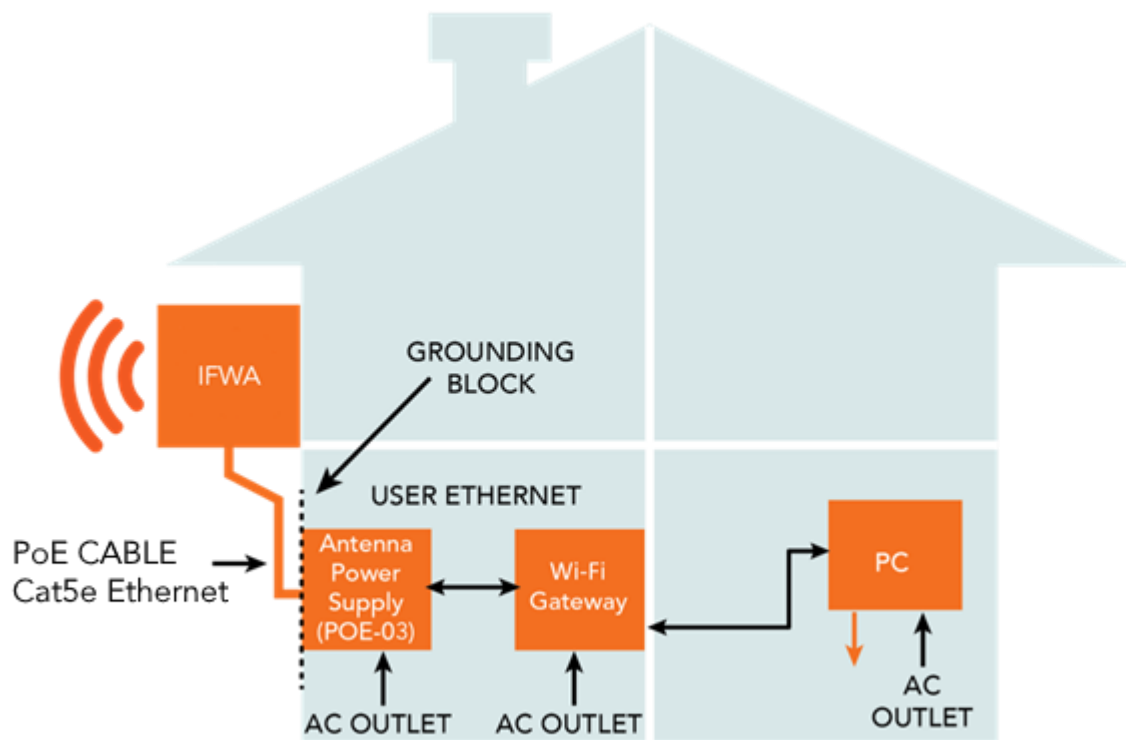


Figure 3 - Typical Fixed Wireless Antenna Installation

Determine the best location for the Fixed Wireless Antenna

Determining the best location for the Fixed Wireless Antenna involves:

- 1 Performing a survey of the site using the Smart Antenna Tool.
- 2 Consulting the customer about mounting location, grounding and cable routing based on results of the RF test, aesthetics and any planned renovations to the property.

When selecting a location to mount the Fixed Wireless Antenna, ensure that:

- ▲ lock of the desired cell and optimal signal level is achieved.
- ▲ the mounting position is unobtrusive and aesthetically pleasing where possible.
- ▲ the mount/antenna is not closer than three feet from other antenna equipment.
- ▲ the customer has obtained HOA approval for installation if required. This is the sole responsibility of the customer.

Where possible, avoid mounting the Fixed Wireless Antenna so that it is aimed back over the roof of the property.

Insert SIM card

The CFW-2132 accepts SIM cards in Mini-SIM (3FF) format. Follow the instructions below to insert a SIM card.

- 1 On the back of the Intelligent Fixed Wireless Antenna, locate the SIM hatch. Using a T10 screwdriver, unscrew the two screws on the SIM hatch then remove the cover to reveal the SIM card slot.



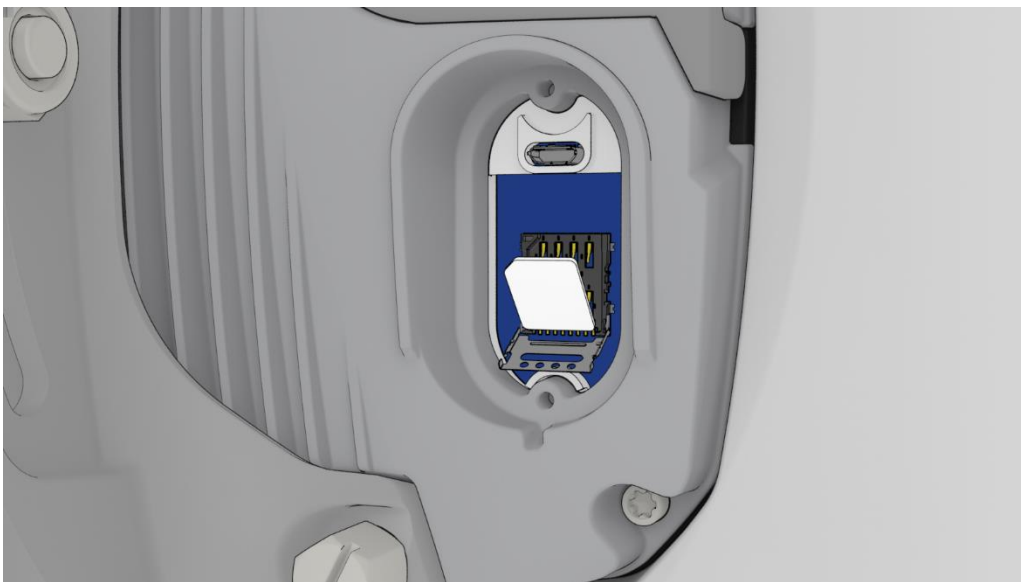
Figure 4 - Removing screws from the SIM hatch

- 2 Swing the SIM card locking mechanism down to allow insertion of the SIM card.



Figure 5 - Place SIM card onto the SIM card reader

- 3 Place the SIM card onto the SIM card reader as shown in the picture below.



- 4 While holding the SIM card onto the reader, swing the locking mechanism up and ensure that it clips into place to secure the SIM card.



Figure 6 - Lock SIM card in place

- 5 Replace the SIM hatch and seal, insert the two screws and firmly hand tighten them using a T10 screwdriver.



Figure 7 - Replace SIM hatch

Assemble and attach the mounting bracket

Overview of completed mounting

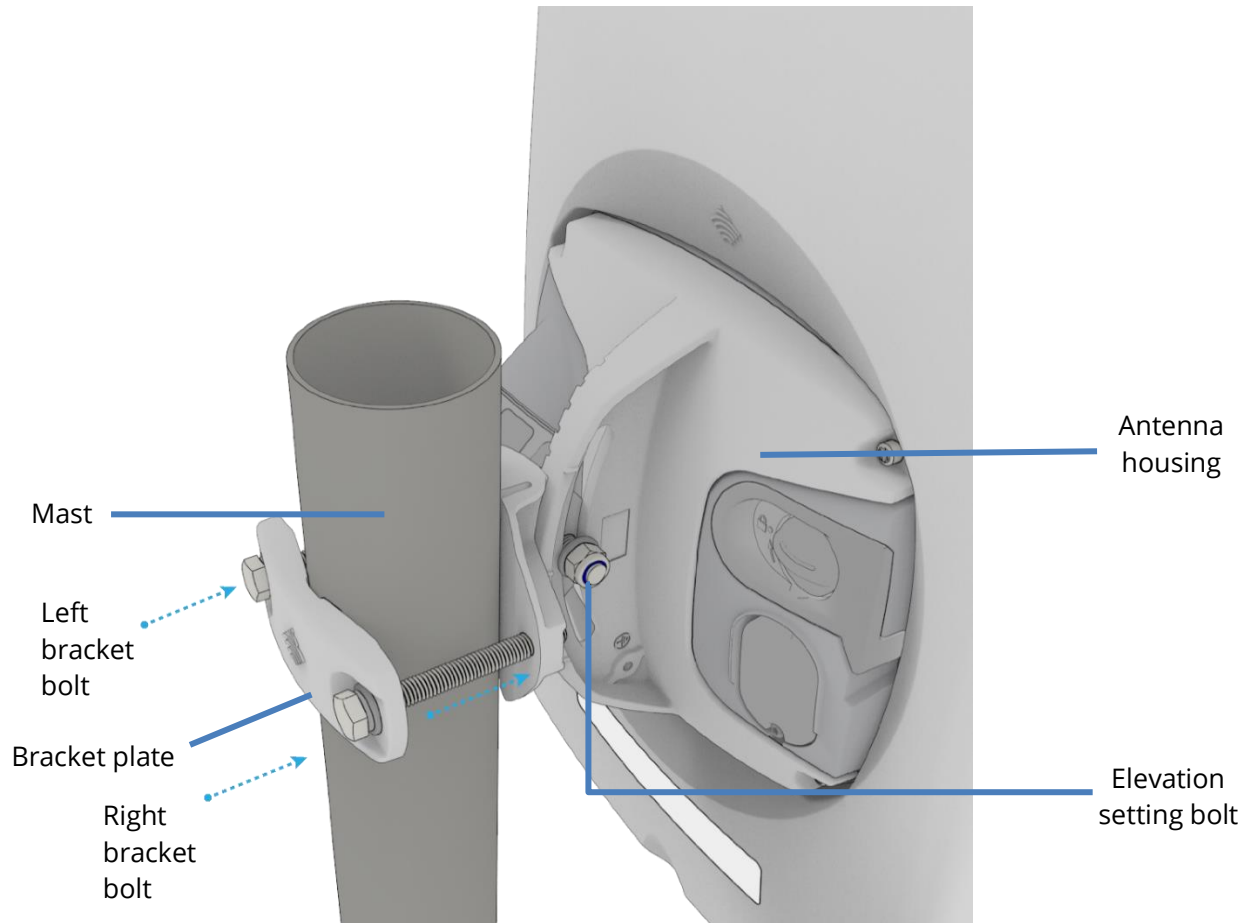


Figure 8 - CFW-2132 mounting bracket and bolts

Notes on mounting:

- ▲ Use a standard 13mm socket wrench for all bolts
- ▲ Tighten bolts to the following torque settings:
 - ▲ Elevation setting bolt: 7 Nm / 65 in-lbs
 - ▲ Bracket bolts: 7 Nm / 65 in-lbs
- ▲ Do not over-tighten bolts



Mounting bracket assembly instructions

- 1 Place the pipe bracket onto the radome mount bracket as shown below.

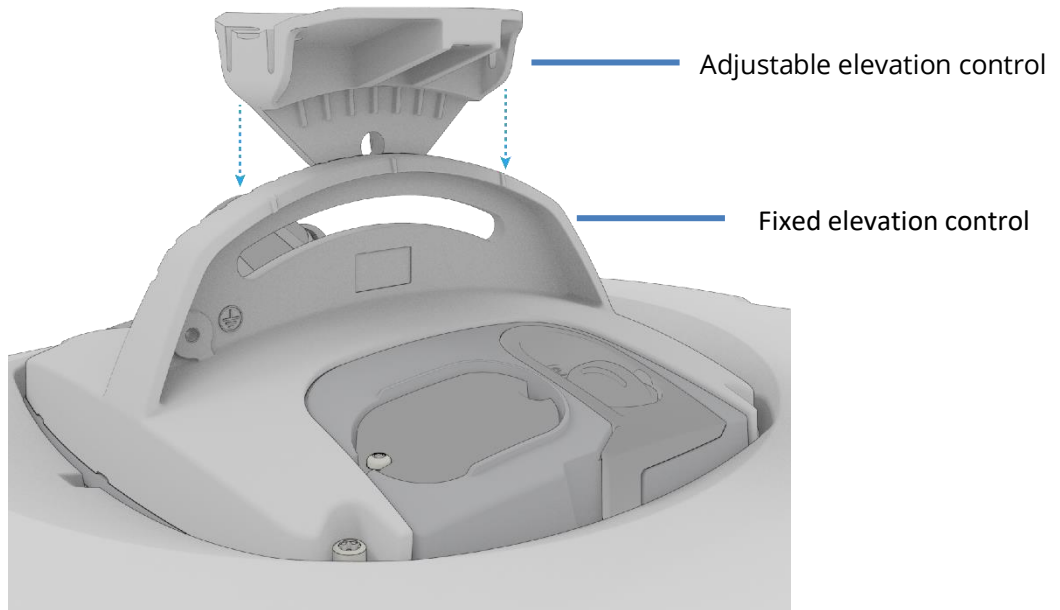


Figure 9 - Elevation control components

- 2 Insert the pivot bolt into the pipe clamp, then place the washer and nut over the pivot bolt as shown below.

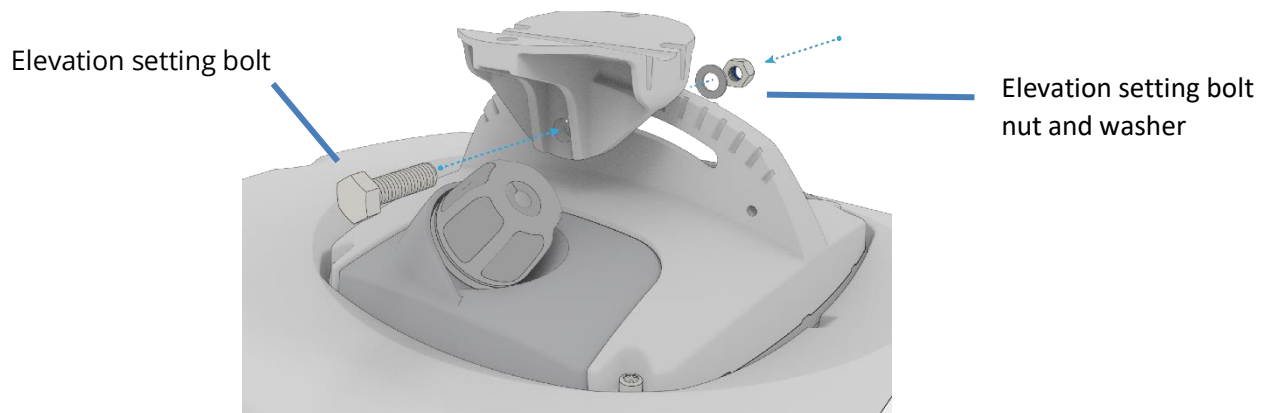


Figure 10 - Attaching the mounting bracket to the Fixed Wireless Antenna

- 3 Tighten the lock nut so that the pipe bracket and radome mount do not swivel easily. Do not overtighten the pivot bolt as some adjustment may be required later.



Figure 11 - Assembling pipe bracket to pole.

- 4 Alternately tighten the top and bottom pipe clamp bolts to maintain even pressure on the pipe, 7 Nm / 65 in-lb.

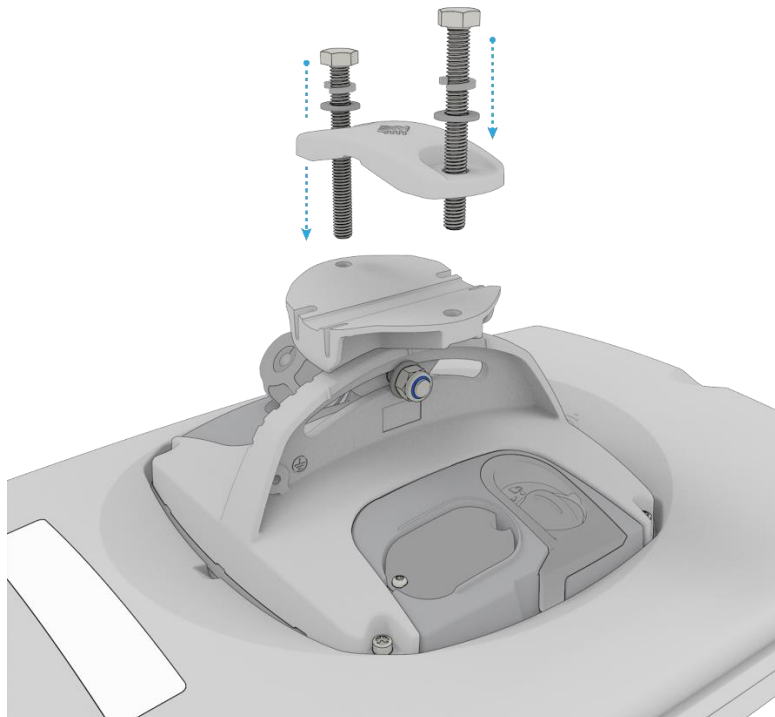


Figure 12 - Tightening pipe clamp bolts

Roof top mount

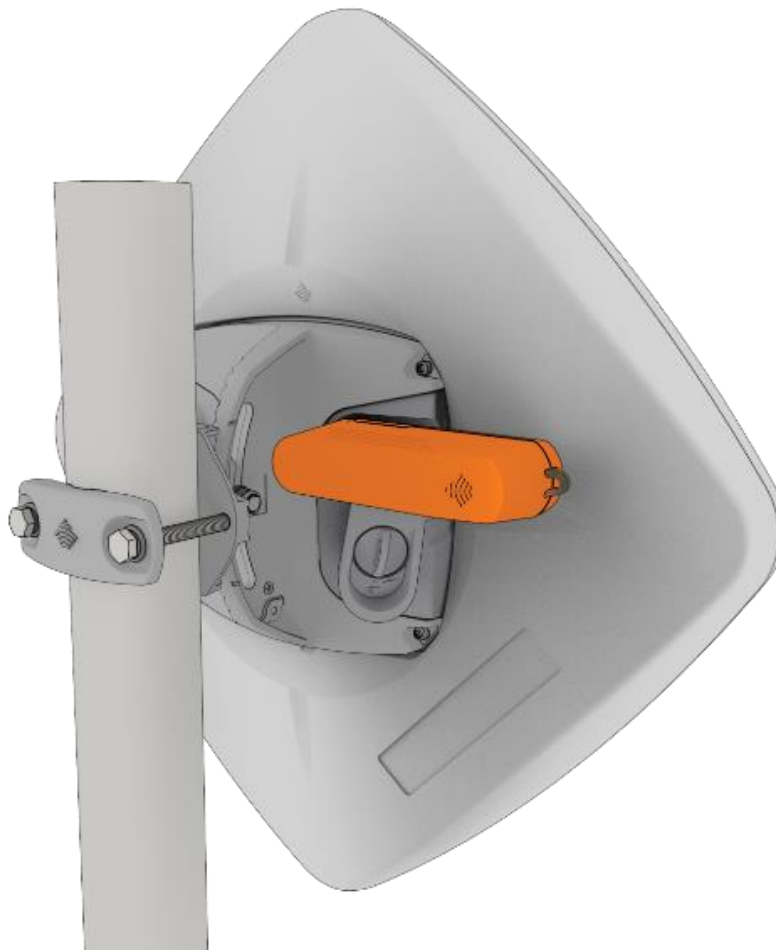
When you have found the best spot to install the Intelligent Fixed Wireless Antenna, install the mount on the roof using appropriate materials.

The appropriate mounting materials and configuration will vary depending on roof type, pitch, etc.

Place the antenna on the pole



Note: To ensure the antenna retains its IP rating, only mount the antenna in the orientation shown below.



- 1 Assemble the Pipe Bracket to pole, pointing bracket in desired antenna direction. Secure the two bracket bolts.

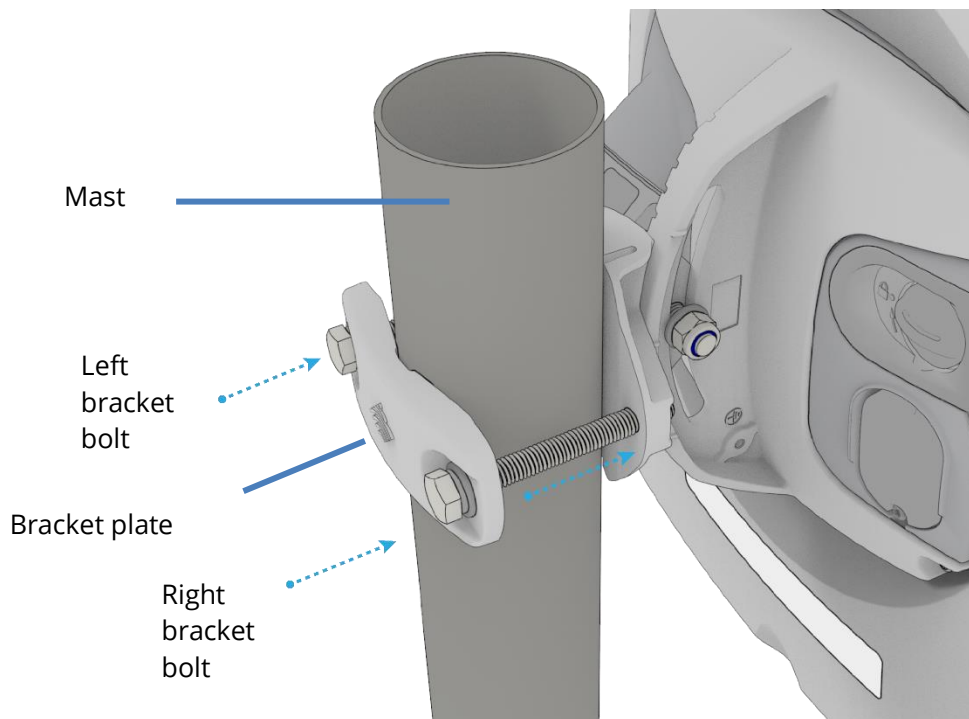


Figure 13 - Assembling pipe bracket to pole

- 2 Alternately tighten the left and right bolts to maintain an even gap, to 7 Nm / 65 in-lb. This would be approximately when the lock washer is flat, plus an additional 90-180 degrees turn. Try to ensure that the distance between A and B in the diagram below is even. Do not overtighten the bolts.

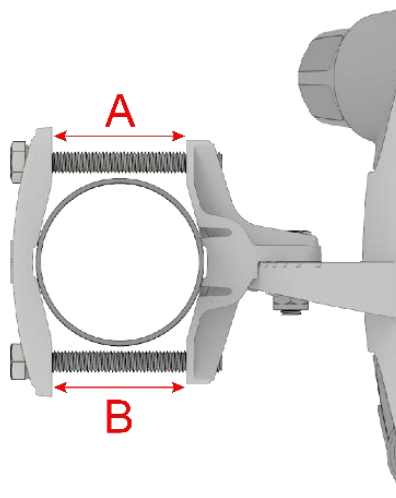


Figure 14 - Tightening pipe clamp bolts

Smart Antenna Tool

Use a fully charged Smart Antenna Tool to survey the site of the antenna installation for the best signal from a nearby cell tower.

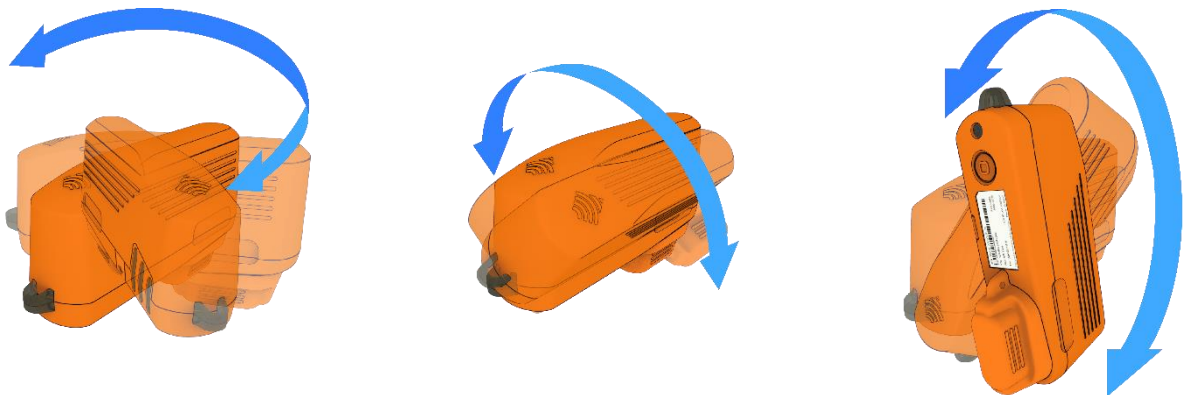
To turn on the Smart Antenna Tool, push and hold the power button down for three (3) seconds.



After a few seconds, the LEDs illuminate. On each start up, the Smart Antenna Tool LEDs flash both red and green twice a second, indicating that the compass requires calibrating.

Calibration

To calibrate the device, first isolate it from any magnetic field or metal structures (for example, vehicles, the antenna pole, power lines, etc) and then rotate the unit fully through all three axes. See the diagrams below.



The LEDs stop flashing when calibration has been performed successfully.

Connect Smart Antenna Tool to the Antenna

- 1 Turn the plug on the console port hatch counter-clockwise so that it is in the unlocked (horizontal) position as shown in the image below.



Figure 15 - Unlocking the console port hatch

- 2 Pull the plug out to reveal the console port.



Figure 16 - Console port

- 3 Remove the cap from the head of the Smart Antenna Tool and insert it into the console port as shown in the picture below.

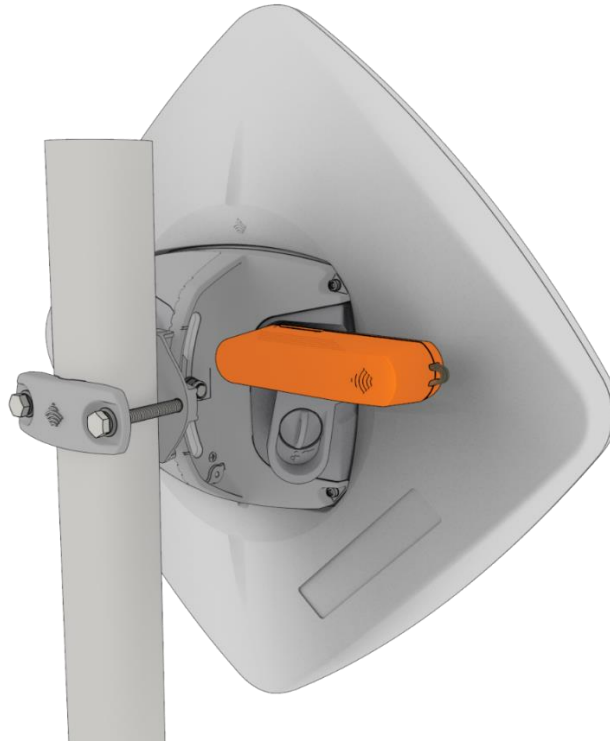



Figure 17 - Attached Smart Antenna Tool

Perform site survey

Scan for cell

When the Smart Antenna Tool is connected to the antenna, it enters cell scanning mode.

-  **Important** - The antenna's Ethernet power cable **SHOULD NOT BE CONNECTED** to the Antenna Power Supply (PoE-03) during this scanning process.
The power required during the scanning process will be supplied by the Smart Antenna Tool.
Ensure that the Smart Antenna Tool's battery is fully charged before commencing the scanning process.

During cell scanning mode, the LED indicators display as below, depending on the status.

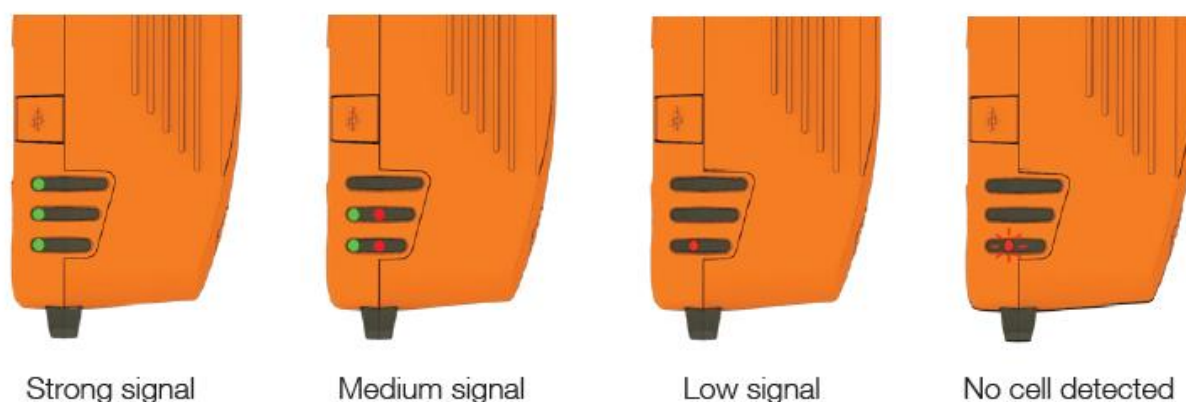



Figure 18 - Smart Antenna Tool LED statuses in cell scanning mode

Field usage

Access the Smart Antenna Tool's web interface

- 1 Connect your wireless device (e.g. laptop/tablet/smartphone) to the SSID of the Smart Antenna Tool. The SSID and password are printed on the Smart Antenna Tool's label.
- 2 In a web browser, go to <http://192.168.3.1> and use the Smart Antenna Tool to estimate the best position for the Intelligent Fixed Wireless Antenna while you are on the ground.

 **Note** – If the web user interface is not displayed, use http://192.168.3.1/data_entry.html

Perform a Category B install

- 3 Go to the **Data Entry** screen.
- 4 In the **Quick Fill** section, click the **Choose file** button to choose the XML file in the quick copy format with the installation details.



Note – Use of the **Quick Fill** file is optional. Some carriers may not supply it. If no **Quick Fill** file is available, enter details manually from the carrier's instructions.

- 5 Enter a call sign and User ID.
- 6 Click the **Apply** button.

Figure 19 – SAS client enabled Data Entry screen

7 Perform an outdoor survey to identify the best install location. If acceptable, the network scan screen shows for Cell Sectors entered:

- ▲ Serving Cell Indicator
- ▲ Minimum Allowable RSRP
- ▲ Measured RSRP Indicator
- ▲ Measured RSRQ

This screen generates a tone, related to the strongest signal. The installer can use the device speaker or headphones to hear the tone.

At the top of the page, **Bearing** and **Downtilt** of the current orientation are shown.

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Antenna Orientation

Bearing: 315° Downtilt: 3°

Network Scan

Install antenna pointing to the highest ranked cell site that meets its minimum RSRP threshold. Adjust both the azimuth and elevation for highest signal strength possible.

Cell sector ID	Serving Cell	Minimum RSRP	Measure	Value	Result
313330110080533		-98 (dBm)	RSRP (dBm)	-89.06	Good
			RSRQ (dB)	-7.5	
313330110080268		-98 (dBm)	RSRP (dBm)	-100.5	Bad
			RSRQ (dB)	-17	

Back Next Advanced Operations

Figure 20 – Network Scan results

- 8 When you have finished, select the **Next** button to go to the **CBRS Install Parameters** page.

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CBRS Install Parameters

Install Tool Values		Registration Parameters	
Latitude	32.31864367°	Latitude	<input type="text" value="32.31864373"/> °
Longitude	-96.00981717°	Longitude	<input type="text" value="-96.00981753"/> °
Height	133.7751159668 m	Height	<input type="text" value="133.7956237793"/> m
Height type	AMSL	Height type	AMSL ▾
Azimuth	317°	Azimuth	<input type="text" value="317"/> °
Downtilt	3°	Downtilt	<input type="text" value="3"/> °

[> Copy Tool data for Registration >](#)

CPI ID

CPI Name

Installer Credentials Credentials format is valid

Key File GOOG-000...4477298.p12

Passcode

Install Certification Time

Confirm all fields are accurate

Register only at the final install location.

Status < >

Guideline: Aim antenna and Register

CBRS Registration Status

Serving cell

Figure 21 – CBRS Install Parameters

- 9 If the Registration Parameters were included in the XML file, they will be pre-populated in the **Registration Parameters** section. Otherwise, manually enter the fields on this section. If the Smart

Antenna Tool is properly calibrated, the values under **Install Tool Values** are populated automatically. These can take up to 1 minute to appear. Select the **>Copy Tool data for Registration>** button to copy the values over to the right.

- 10 Select the **Confirm all fields are accurate** checkbox.
- 11 If not populated by the XML file, enter the **CPI ID**, **CPI Name** and **Install Certification Time**.
- 12 Click on the **Register** button.
- 13 The registration process can take up to two minutes. When the registration is complete, the **CBRS Registration Status** field is updated.
 - ▲ If successful, the **CBRS Registration Status** field displays: **Registered – Grant Authorized**
 - ▲ The **Serving cell** identifier will also be indicated.

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CBRS Install Parameters

Install Tool Values		Registration Parameters	
Latitude	32.31864367°	Latitude	<input type="text" value="32.31864373"/> °
Longitude	-96.00981717°	Longitude	<input type="text" value="-96.00981753"/> °
Height	133.7751159668 m	Height	<input type="text" value="133.7956237793"/> m
Height type	AMSL	Height type	<input type="text" value="AMSL"/>
Azimuth	317°	Azimuth	<input type="text" value="317"/> °
Downtilt	3°	Downtilt	<input type="text" value="3"/> °

[> Copy Tool data for Registration >](#)

CPI ID

CPI Name

Installer Credentials Credentials format is valid

Key File [Choose File](#)

Passcode

Install Certification Time

Confirm all fields are accurate

Register

Register only at the final install location.

Status < >

CBRS Registration Status Registered – Grant Authorized

Serving cell 313330110080533

[Back](#) [Next](#) [Move To New Location](#)

- 14 Click the **Next** button.
- 15 The **Speed Test** page will open showing only the **Run Speed Test** button and the navigation buttons at the bottom.



Note – The Speed Test is an optional step and may not be required by your service provider.
If it is not required, select the **Mount Installation** button

- 16 Click the **Run Speed Test** button if you want to perform a speed test.

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Speed Test

Test	Status	Progress	Speed
Download	completed (3 of 3)	<div style="width: 100%;"></div>	12.96 Mbps
Upload	completed (3 of 3)	<div style="width: 100%;"></div>	2.35 Mbps

Serving cell: 310410027447297
Test start time: Wed Jun 17 2020 12:52:46 GMT+1000 (Australian Eastern Standard Time)

Overall result: PASS

Run Speed Test

Click 'Finish Installation' to complete the installation OR 'Back' to go back to CBRS Install Parameters

Figure 22 - Console port

- 17 Wait for the speed test to complete as indicated by both **Progress** bars.
- 18 When it has completed, the following test result details are displayed: **Upload** and **Download Speeds**, **Serving cell** tested on and **Test start time**. Ensure that it receives an **Overall result: PASS** score before continuing.
- 19 Select the **Mount Installation** button (or select the **Finish Installation** button if you have already mounted the antenna).

20 The **Mount Installation** screen is displayed:

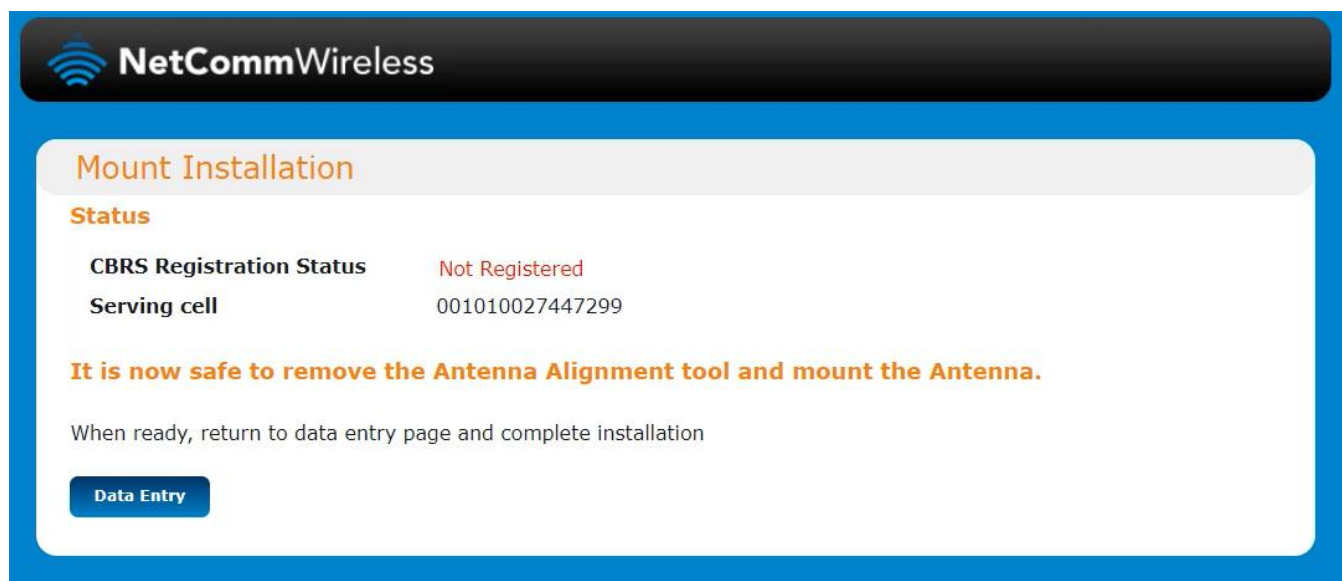
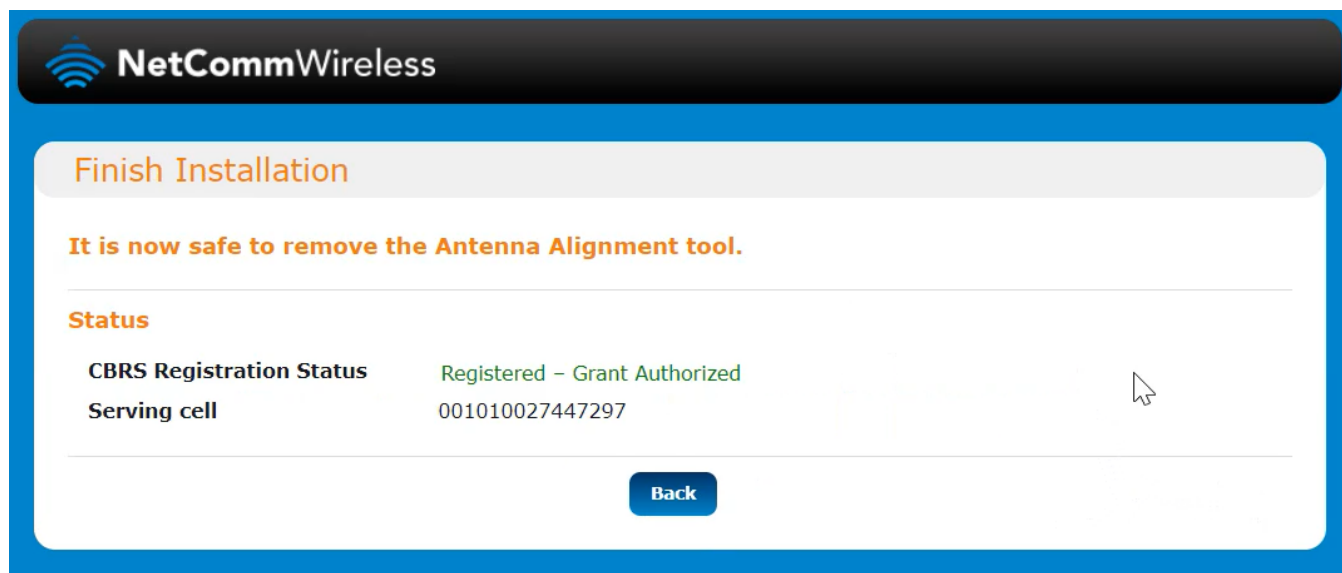


Figure 23 - Mount installation page

- 21 Mount the antenna (refer to the *Mounting bracket assembly* section) in the chosen location and then repeat the steps from the step 1.
- 22 If you choose the **Finish the installation** button, the following screen is displayed.



Speed test failure

If the **Speed Test** results in **Overall result: FAIL** then select the **Move to New Location** button at the bottom of the **Speed Test** page:

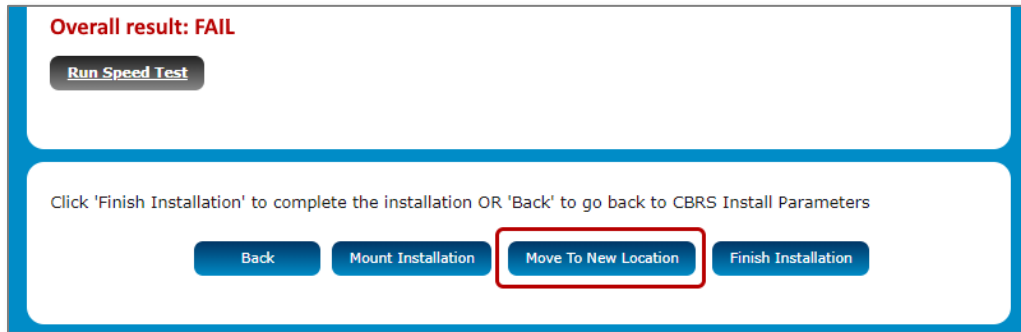


Figure 24 – Move to New Location button

The **Data Entry** information will be retained, but you will be returned to the **Data Entry** page and all information gathered past that point will be erased.

Click the **Apply** button on the **Data Entry** screen to start again from the site survey task.

Power the Antenna

Power over Ethernet (PoE) is a method of connecting network devices through Ethernet cable where power and data are passed along a single cable. It is therefore a convenient method of powering the antenna.



Note – The antenna power supply is packaged and supplied separately.

To power the antenna:

- 1 The Ethernet cable connected to the antenna should terminate into an Ethernet wall jack that the technician installs in the home interior, then a separate Ethernet jumper cable is needed to run from the Ethernet wall jack to the Ethernet port labelled “WALL” on the Power supply.
- 2 Use another Ethernet cable (not included in the package) to connect a wireless router or a PC to the “Router” port of the PoE-03.
- 3 Connect the power cable to the PoE-03 and then plug it in to an available wall socket.
- 4 Examine the **Power** and **ANTENNA** LEDs of the PoE-03 and compare them with the LED table below. When the **POWER** LED is red and **ANTENNA** LED is green, the antenna is correctly powered and connected.

PoE-03 LED indicators

The table below describes the status of the POWER and ANTENNA LEDs on the PoE injector.

LED	Status	Description
POWER	■ Solid red	Antenna power supply is connected to AC power.
ANTENNA	■ Solid green	Antenna power supply is connected to AC power and the PoE port is connected to the antenna.

Table 3 - PoE-03 LED indicators

Antenna power supply weather seal assembly and attachment

The Intelligent Fixed Wireless Antenna Power supply weather seal must be properly attached to prevent dust and water from entering the Intelligent Fixed Wireless Antenna's housing.

To connect Ethernet cable via the Power supply weather seal:

- 1 Unscrew the weather cap and remove the rubber gasket.
- 2 Separate the rubber seal and the ferrule.

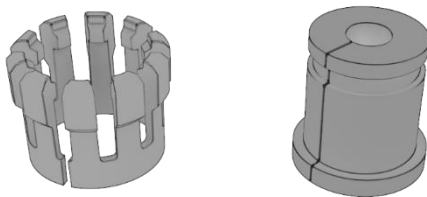


Figure 25 - Rubber seal and ferrule

- 3 Twist the neck for the seal counter-clockwise to remove it from the Fixed Wireless Antenna. You should now have 5 pieces of the weather seal.

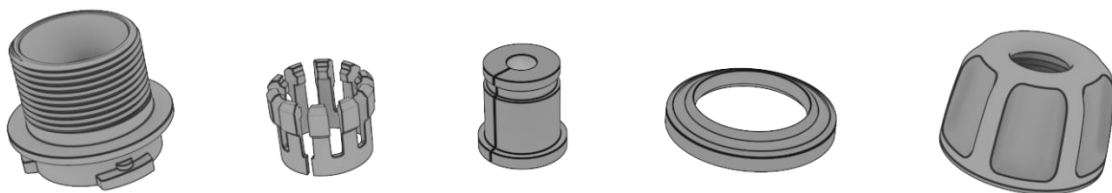


Figure 26 - Weather seal in five parts

- 4 Place the Ethernet cable through the nut first, as shown below.

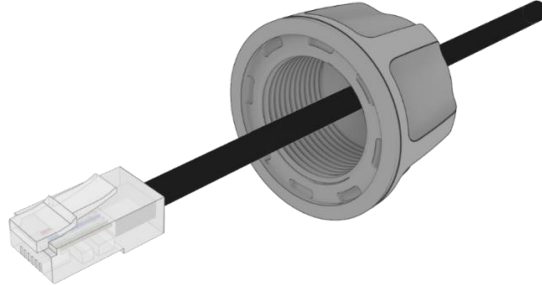


Figure 27 - Nut placed over Ethernet cable

- 5 Place the ferrule over the Ethernet cable as shown, making sure that the “teeth” are facing the nut.

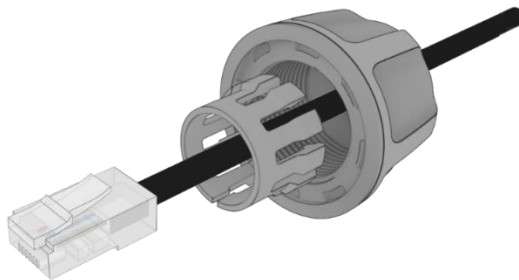


Figure 28 - Ferrule placed over Ethernet cable

- 6 Place the rubber seal over the Ethernet cable with the wide end toward the RJ45 plug. See the image below for the correct orientation.

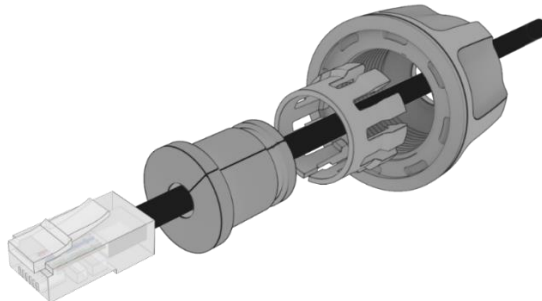


Figure 29 - Rubber seal placed over Ethernet cable

- 7 Push the ferrule over the rubber seal to prevent it from coming apart.

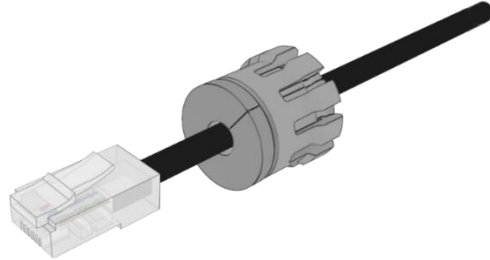


Figure 30 - Ferrule placed over rubber seal

- 8 Place the washer seal over the Ethernet cable as shown below. Ensure that the inside protruding lip is on the opposite side of the Ethernet plug.

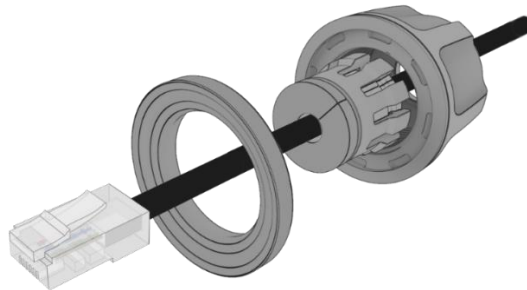


Figure 31 - Washer seal placed over Ethernet cable

- 9 Place the neck over the Ethernet cable as shown below.

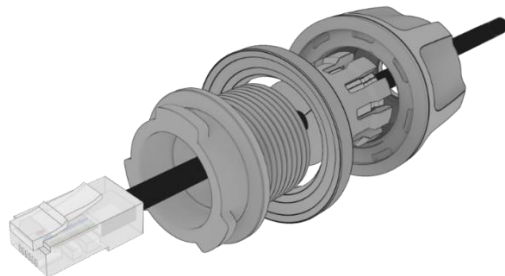


Figure 32 - Neck placed over Ethernet cable

- 10 Plug the Ethernet cable into the Ethernet port.

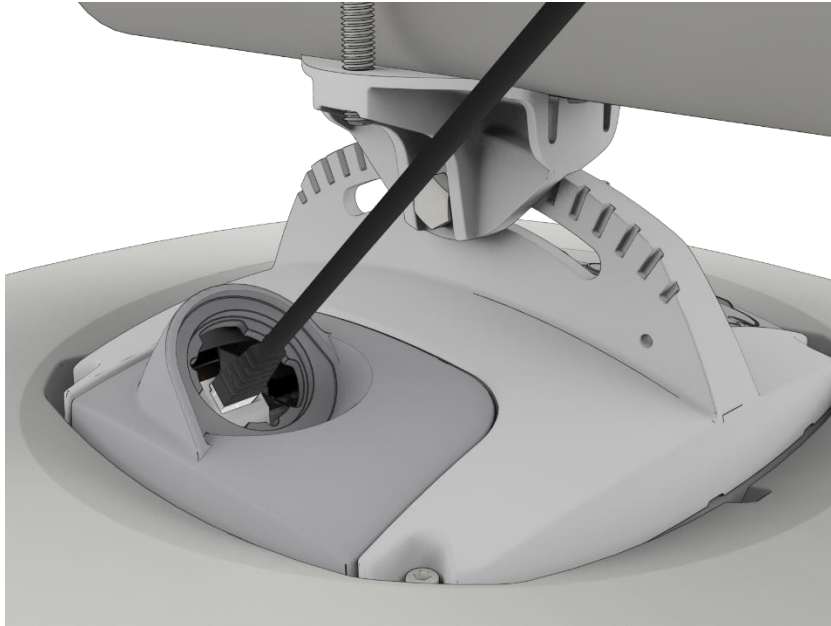


Figure 33 - Plugging in the Ethernet cable

- 11 Put the neck into the opening and turn the neck clockwise until it locks in place.
- 12 Push the rubber seal and ferrule into the neck then screw the nut on to the neck.

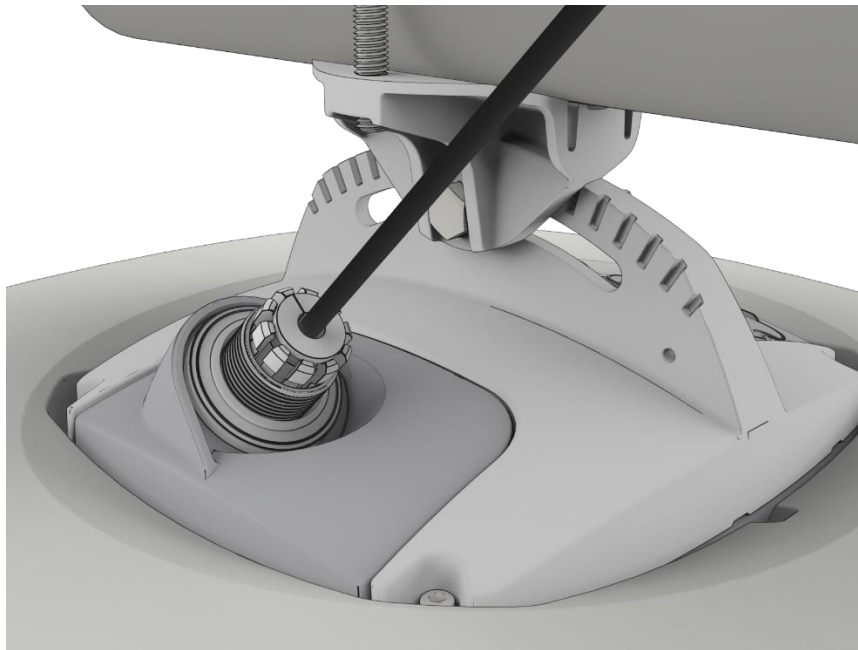


Figure 34 - Rubber seal and ferrule inserted into neck

- 13 Turn the nut clockwise to tighten it the washer seal against the housing. Continue turning the nut until completely assembled. This will allow the washer seal to grip the cable while also applying enough pressure to the washer seal to prevent dust and moisture entering the unit.

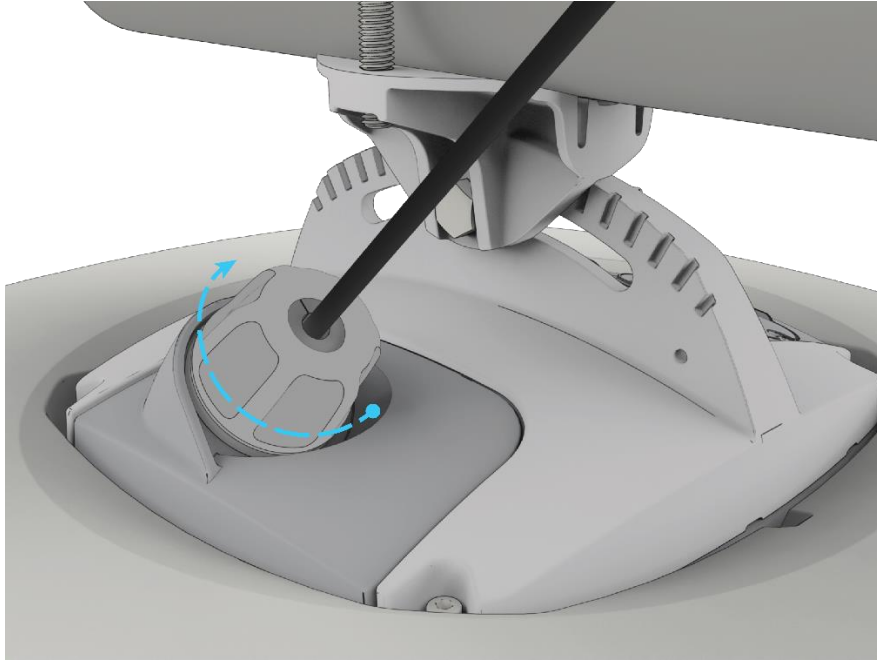


Figure 35 - Turning the nut clockwise

Advanced device configuration

Log in

For advanced configuration, log in to the web-based user interface of the antenna.

To log in to the web-based user interface:

- 1 Open a web browser (e.g., Internet Explorer, Firefox, Safari), type <https://192.168.7.1> or <https://192.168.1.1> into the address bar and press **Enter**. The web-based user interface **Log in** screen is displayed.

This screen may take a few minutes before it can be displayed if the antenna has just been powered on. Also note that some browsers may display a warning that the connection is not secure.

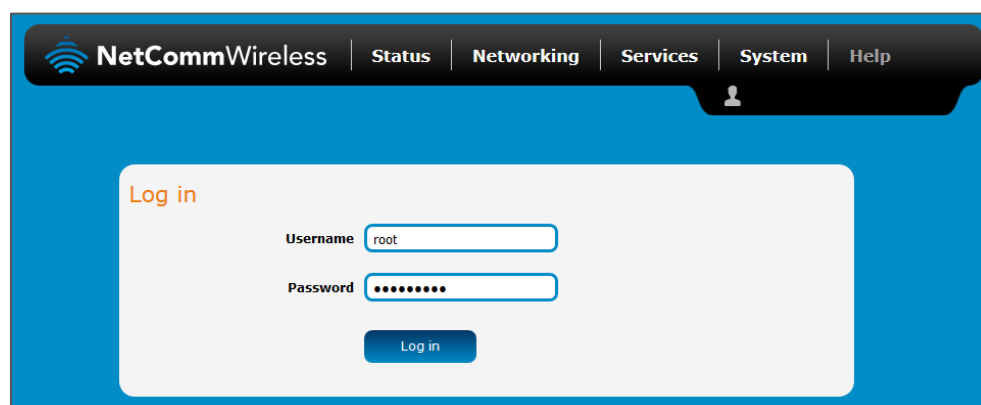


Figure 36 – Log in prompt for the web-based user interface

- 2 Enter the login **Username** and **Password**.

Admin manager account

Username	root
Password	admin

Table 4 - Management account login details - Admin manager

Configuration tool menus

Advanced configuration settings are arranged into three menu groups accessible by clicking the buttons which appear to the left of the **Status** button in the top tool bar: **Networking**, **Services** and **System**.

Click on one of the menu buttons and its corresponding menu will appear in the left margin.

Many of the menu items have submenus. Click the **▼** down arrow to expand the submenus.

The following diagram shows each expanded menu and its submenus with an arrow from its corresponding menu button:

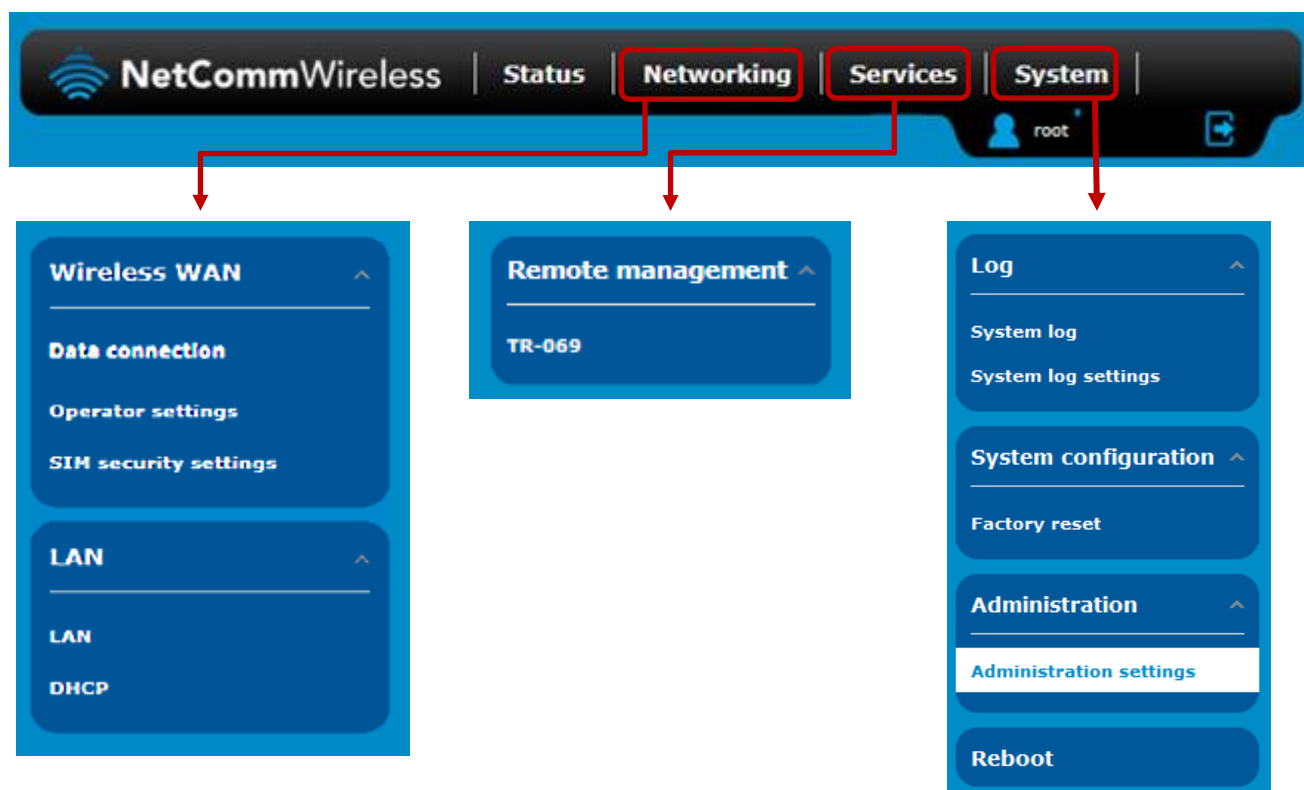


Figure 37 – Advanced configuration menu buttons and submenus

Each configuration tool group will be explained in the following sections.

Status

The **Status** page of the web interface provides system related information and is displayed when you log in to the antenna management console.

The status page shows **System information**, **Cellular connection status**, **WWAN connection status**, **Advanced status** details, **Cell information** and **LAN** details in separate collapsible sections.

Toggle the or buttons to show or hide their display.

The screenshot displays the NetCommWireless web interface. At the top, there is a navigation bar with the NetCommWireless logo and tabs for Status, Networking, Services, and System. The user is logged in as 'root'. The main content area is divided into two columns. The left column features a 'System information' section with a clock icon and the time '01:33:39'. It lists device details: Hardware version 1.4, Serial number 203628202600011, and Firmware version V1.1.29.10. The right column shows 'LAN' information: IP address 192.168.7.1 / 255.255.255.0, MAC address F8:CA:59:46:7E:E8, and Ethernet port status 'Up / 1000 Mbps / FDX'. Below these sections are four collapsible buttons: Cellular connection status, WWAN connection status, Advanced status, and Cell information.

Figure 38 - The Status page

System Information and LAN

Item	Definition
System information	
System up time	The current uptime of the antenna.
Hardware version	The hardware version of the antenna.
Serial Number	The serial number of the antenna.
Firmware version	The firmware version of the antenna
Model	The type of phone module and the firmware version of the module.
Module firmware	The firmware revision of the phone module.
IMEI	The International Mobile Station Equipment Identity number used to uniquely identify a mobile device.
Hardware	A hardware identifier.
LAN	
IP	The IP address and subnet mask of the antenna.
MAC address	The MAC address of the antenna.
Ethernet port status	Displays the current status of the Ethernet port and its operating speed.

Table 5 - Status > System information and LAN details

Cellular connection status

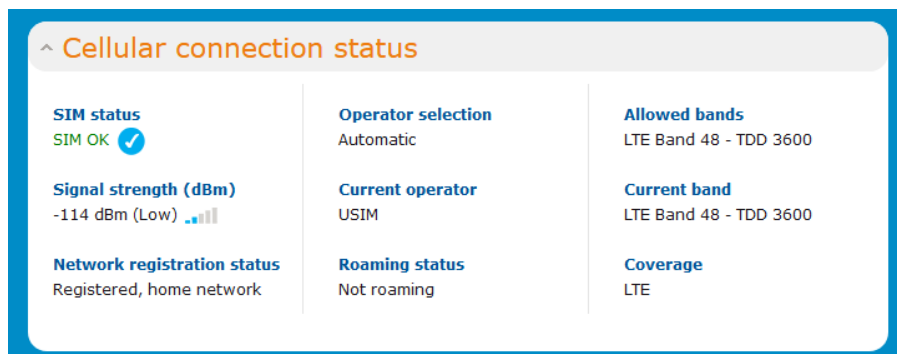


Figure 39 - Status > Cellular connection status section

Item	Definition
SIM Status	Displays the activation status of the antenna on the carrier network.
Signal strength (dBm)	The current signal strength measured in dBm
Network registration status	The status of the antenna's registration for the current network.

Item	Definition
Operator selection	The mode used to select an operator network.
Current operator	The current operator network in use.
Roaming status	The roaming status of the antenna.
Allowed bands	The bands to which the antenna may connect.
Current band	The current band being used by the antenna.
Coverage	The type of mobile coverage being received by the antenna.

Table 6 – Status > Cellular connection status section

WWAN connection status

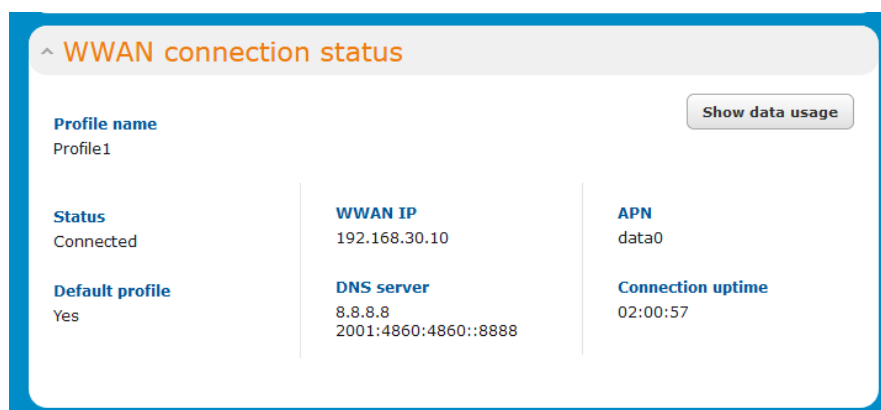


Figure 40 - Status > WWAN connection status section

Item	Definition
Profile name	The name of the active profile.
Status	The connection status of the active profile.
Default profile	Indicates whether the current profile in use is the default profile.
WWAN IP	The IP address assigned by the mobile broadband carrier network.
DNS server	The primary and secondary DNS servers for the WWAN connection.
APN	The Access Point Name currently in use.
Connection uptime	The length of time of the current mobile connection session.

Table 7 – Status > WWAN connection status section

Advanced status

^ Advanced status		
Mobile country code 001	Cell ID 27447297	Packet service status Attached
Mobile network code 01	Channel number (EARFCN) 56340	
SIM ICCID 89860000502000180722	Reference Signal Received Quality (RSRQ) -8 dB	
Tracking Area Code (TAC) 1	Reference Signal Received Power (RSRP) -114 dBm	
IMSI 001012345678901	Signal to Interference plus Noise Ratio (SINR) 6.2 dB	

Figure 41 - Status > Cell information section

Item	Definition
Mobile country code	The Mobile Country Code (MCC) of the mobile network operator.
Mobile network code	The Mobile Network Code (MNC) of the mobile network operator.
SIM ICCID	The Integrated Circuit Card Identifier of the SIM card used with the antenna, a unique number up to 19 digits in length.
Tracking Area Code (TAC)	Identifies a tracking area within a particular network.
IMSI	The International Mobile Subscriber Identity is a unique identifier of the user of a cellular network.
Cell ID	A unique code that identifies the base station from within the location area of the current mobile network signal.
Channel number	The number assigned to the frequency of the current cellular connection.
Reference Signal Received Quality (RSRQ)	RSRQ calculates signal quality taking into consideration the RSSI. It is calculated by $N \times RSRP / RSSI$ where N is the number of Physical Resources Blocks (PRBs) over which the RSSI is measured.
Reference Signal Received Power (RSRP)	A cell-specific reference signal used to determine RSRP.

Signal to Interference plus Noise Ratio (SINR)	The power of a certain signal of interest divided by the sum of the interference power (from all the other interfering signals) and the power of some background noise.
Packet service status	Displays whether the packet service is Attached or Detached . When APN or username/password is changed, the device detaches and reattaches to the network.

Table 8 – Status > Cell information section

Cell information

PCI	EARFCN	RSRP	RSRQ	Serving
1	56340	-113.8	-7.6	✓
2	56490	-122.2	-13.6	

Figure 42 - Status > Cell information section

Item	Definition
PCI	Physical Cell ID broadcast by the cell
EARFCN	LTE Frequency Number. Uniquely identifies the LTE Band and carrier frequency
RSRP	Received Power of the LTE Reference Signals
RSRQ	Quality metric for the Received LTE Reference Signals
Serving	The cell which direct all traffic to the CPE and which the CPE actively monitors

Table 9 - Status > Cell information details

Networking

The **Networking** section provides configuration options for **Wireless WAN**.

Wireless WAN

Data connection

The data connection page allows you to configure and enable/disable connection profiles. To access this page, click on the **Networking** menu, and under the **Wireless WAN** menu, select the **Data connection** item.

Each profile refers to a set of configuration items which are used by the antenna to activate a Packet Data (PDP) context. Under normal scenarios, you may have a single profile enabled. Multiple profiles can be used for simple fast-switching of PDP settings such as APN, or for advanced networking configuration where multiple simultaneous PDP contexts may be required.







Profile name				
	Default	Status	APN	Username
Profile1	<input checked="" type="radio"/>	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF	Blank	
Profile2	<input type="radio"/>	<input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF	ims	
Profile3	<input type="radio"/>	<input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF	SOS	
Profile4	<input type="radio"/>	<input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF	Blank	
Profile5	<input type="radio"/>	<input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF	Blank	
Profile6	<input type="radio"/>	<input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF	Blank	

Figure 43 – Data connection settings


Item	Definition
Profile name	Profile reference number. Click the  Edit button to change it to something meaningful.
Default	<input checked="" type="radio"/> Sets the corresponding profile to be the default gateway for all outbound traffic except traffic for which there are configured static route rules or profile routing settings.
Status	Toggles the corresponding profile ON and OFF . Only one profile may be turned on at any time.
APN	The APN configured for the corresponding profile.
Username	The username used to log on to the corresponding APN.

Table 10 - Data connection item details


Connecting to the mobile broadband network

The antenna supports the configuration of up to six APN profiles; these profiles allow you to configure the settings that the antenna will use to connect to the 4G/3G network and switch easily between different connection settings.

Please note that only one connection profile may be active at any time. Activating more than one profile can cause none of the profiles to connect, therefore, we recommend that you only activate one profile.

Manually configuring a connection profile

To manually configure a connection profile:

- 1 Click the  **Edit** button corresponding to the Profile that you wish to modify. The data connection profile settings page is displayed.

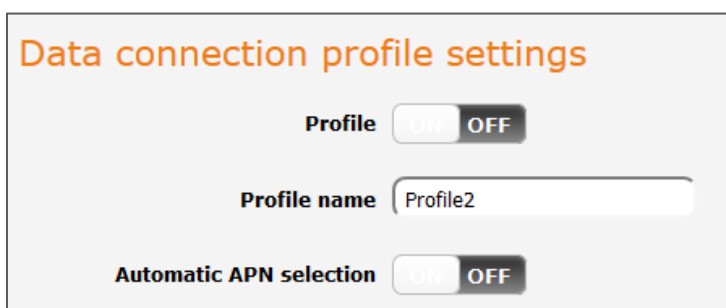


Figure 44 - Data connection profile settings

- 2 Click the **Profile** toggle key to turn the profile on.

Data connection profile settings

Profile ON OFF

Profile name

APN

Username

Password

Authentication type CHAP PAP None

PDP type IPv4 IPv6 IPv4v6

Reconnect delay (30-65535) seconds

Metric (0-65535)

MTU (1-2000)

NAT masquerading ON OFF

Profile routing settings

You may route only particular traffic via this connection profile by specifying the network address and mask below of the destination network. Blank values will route all traffic via this profile. Please leave these settings blank if you are unsure.

Network address . . .

Network mask . . .

Figure 45 - Data connection settings - Profile turned on

- 3 In the **Profile name** field, enter a name for the profile. This name is only used to identify the profile on the antenna.
- 4 In the **APN** field, enter the APN Name (Access Point Name) and if required, use the **Username** and **Password** fields to enter your login credentials (if required).
- 5 Next to **Authentication** type, select the either **CHAP**, **PAP** or **None** depending on the type of authentication used by your provider.

- 6 The **Reconnect delay** field specifies the number of seconds to wait between connection attempts. The default setting of 30 seconds is sufficient in most cases but you may modify it to wait up to 65535 seconds if you wish.
- 7 The **Metric** value is used by antenna to prioritise routes (if multiple are available) and is set to 25 by default. This value is sufficient in most cases but you may modify it if you are aware of the effect your changes will have on the service.
- 8 The **Maximum Transmission Unit (MTU)** is the maximum packet size for the connection profile. Contact your carrier for their preferred setting.
- 9 Use the **NAT masquerading** toggle key to turn NAT Masquerading on or off. NAT masquerading, also known simply as NAT is a common routing feature which allows multiple LAN devices to appear as a single WAN IP via network address translation. In this mode, the antenna modifies network traffic sent and received to inform remote computers on the internet that packets originating from a machine behind the antenna actually originated from the WAN IP address of the antenna's internal NAT IP address. This may be disabled if a framed route configuration is required and local devices require WAN IP addresses.
- 10 Click the **Save** button when you have finished entering the profile details.

Confirming a successful connection

After configuring the packet data session, and ensuring that it is enabled, click on the Status menu item at the top of the page to return to the Status page. When there is a mobile broadband connection, the **WWAN connection status** section is expanded showing the details of the connection and the Status field displays **Connected**. To see details on the connected session, you can click the **Show data usage** button.

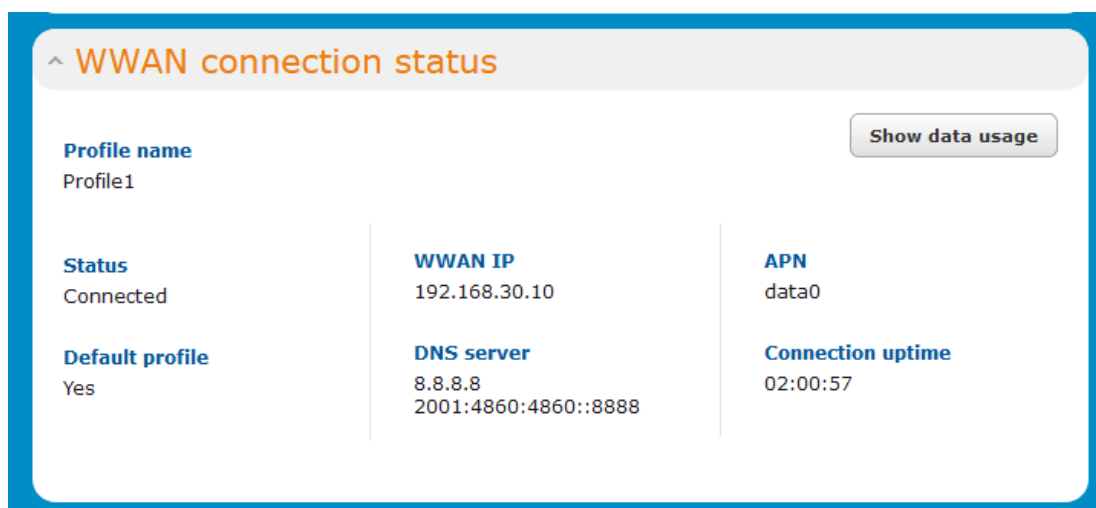


Figure 46 - WWAN connection status section

Checking data usage

On the Status page, each packet data connection profile has a **Show data usage** button which displays the amount of data received, sent and a total data usage figure.

To show the data use for a connected profile, click the **Show data usage** button. The data usage for the last 10 sessions is displayed in addition to the current session.

^ **WWAN connection status**

Profile name
Profile1

Status
Connected

Default profile
Yes

WWAN IP
10.101.128.120

DNS server
10.4.58.204
10.5.136.242

APN
XXXXXXXX

Connection uptime
00:09:03

Show duration

Session start	Session end time	Data received (bytes)	Data sent (bytes)	Total data (bytes)
02/07/2018 05:26:40	Current session	255,024	178,016	433,040
01/01/2000 00:17:08	01/01/2000 01:54:53	5,901,397	2,535,155	8,436,552
01/01/2000 00:01:59	01/01/2000 00:15:19	331,467	178,244	509,711
29/06/2018 01:12:58	29/06/2018 02:45:13	39,371,651	3,400,024	42,771,675
29/06/2018 00:21:53	29/06/2018 01:11:02	17,790,684	1,300,695	19,091,379

*Not for billing purposes

Figure 47 - Data usage

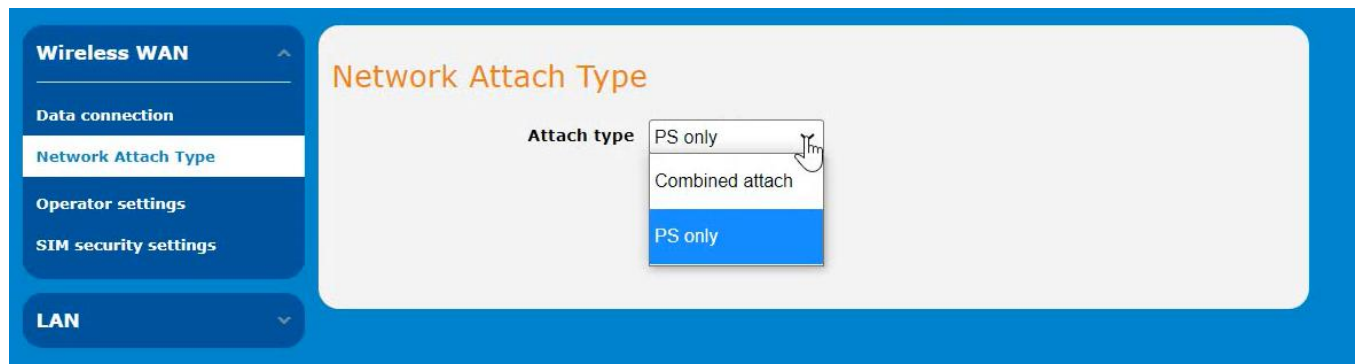
Click the **Show duration** link to toggle the display to show the duration of each session rather than the start and end times.

Session start	Session duration	Data received (bytes)	Data sent (bytes)	Total data (bytes)
02/07/2018 05:26:40	00:09:03	307,809	246,955	554,764
01/01/2000 00:17:08	01:37:45	5,901,397	2,535,155	8,436,552

Figure 48 - Data usage with connection duration

Network Attach Type

This page allows you to configure the network attachment type. Use the drop down menu to select between "Combined attach", which is circuit-switched + packet-switched, or "PS only", which means packet-switched only.



Operator settings

The Operator settings page enables you to select which frequency band you will use for your connection and enables you to scan for available network operators in your area.

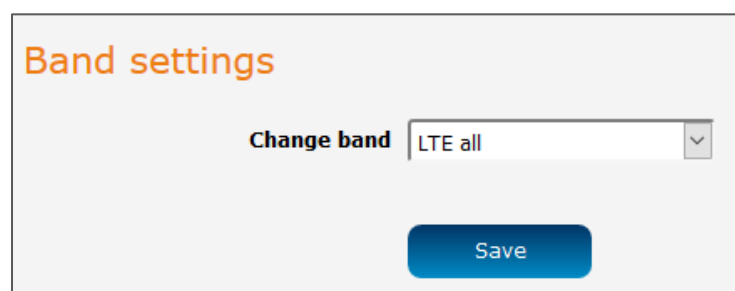


Figure 49 - Band settings

You may want to do this if you're using the antenna in a country with multiple frequency networks that may not all support LTE. You can select the antenna to only connect on the network frequencies that suit your requirements.

Use the **Change band** drop down list to select the band you wish to use.



Note – The change band option is not available on all models.

The following band settings options are available:

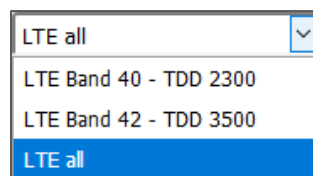


Figure 50 - Available bands

It is not necessary to change the default setting of **All bands** in most cases. In fact, locking to a particular band can cause connection difficulties if the device is moved to a location where the forced band selection is no longer available.

When **All bands** is selected, the antenna attempts to find the most suitable band based on the available networks for the inserted SIM card.

The “LTE all” option allows you to force the device to lock to those particular network technologies only.

Click the **Save** button to save and apply your selection.

Operator settings

The operator settings feature allows you to select whether to allow the antenna to automatically select a network or to manually scan for a network to which the antenna is locked.

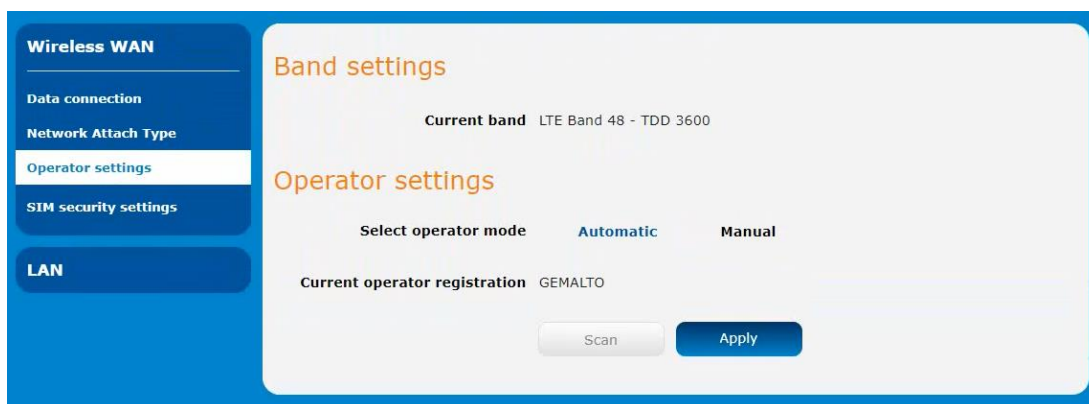


Figure 51 - Operator settings

To scan for available networks, set the **Select operator mode** from **Automatic** to **Manual** then click the scan button. This operation can take a few minutes and requires that the packet data session be disconnected prior to scanning.

A list of the detected service carriers in your area is displayed.

Operator name list	MCC	MNC	Operator status	Network type
<input checked="" type="radio"/> Telstra	505	01	Current	LTE (4G)
<input type="radio"/> Telstra	505	01	Available	UMTS (3G)
<input type="radio"/> vodafone AU	505	03	Forbidden	UMTS (3G)
<input type="radio"/> Optus AU	505	02	Forbidden	LTE (4G)
<input type="radio"/> Optus AU	505	02	Forbidden	UMTS (3G)
<input type="radio"/> vodafone AU	505	03	Forbidden	LTE (4G)

Figure 52 - Detected operator list

Select the most appropriate service from the list shown and click Apply.

When Select operator mode is set to Automatic, the antenna selects the most appropriate operator based on the inserted SIM card. This is the default option and is sufficient for most users.

SIM security settings

The SIM security settings page can be used for authenticating SIM cards that have been configured with a security PIN.

Unlocking a PIN locked SIM

If the SIM card is locked, you will receive a notice when you access the Status page after which you will be directed to the PIN settings page to enter the PIN. The PIN settings page lists the status of the SIM at the top of the page.

If you are not redirected to the PIN settings page, to unlock the SIM:

- 1 Click on the **Networking** menu from the top menu bar, and then click **SIM security settings**.

PIN settings

! SIM is PIN locked - remaining attempt(s) 3

Current PIN

Confirm current PIN

Remember PIN

Save

Figure 53 - SIM security settings - SIM PIN locked

- 2 Enter the PIN in the **Current PIN** field and then enter it again in the **Confirm current PIN** field to confirm the PIN.
- 3 If you are placing the antenna in a remote, unattended location, you may wish to check the **Remember PIN** option. This feature allows the antenna to automatically send the PIN to the SIM each time the SIM asks for it (usually at power up). This enables the SIM to be PIN locked (to prevent unauthorised re-use of the SIM elsewhere), while still allowing the antenna to connect to the cellular service.
- 4 When this feature is enabled, the PIN you enter when setting the **Remember PIN** feature is encrypted and stored locally on the antenna. The next time the SIM asks the antenna for the PIN, the antenna decrypts the PIN and automatically sends it to the SIM without user intervention.
- 5 When this feature is disabled and the SIM is PIN locked and the PIN must be manually entered via the antenna's configuration interface. In situations where the antenna will be unattended, this is not desirable.



Note – Select Remember PIN if you do not want to enter the PIN code each time the SIM is inserted.

- 6 Click the **Save** button. If successful, the antenna displays the following screen:

Success!

The SIM unlock was successful

PIN settings

SIM OK

Retries remaining: 0

PIN protection ON OFF

Change PIN

Current PIN

Confirm current PIN

Remember PIN

Save

Figure 54 - SIM security settings - SIM unlock successful

Enabling/Disabling SIM PIN protection

The security PIN protection can be turned on or off using the **PIN protection** toggle key.

PIN settings

SIM OK

PIN remembered

PIN protection ON OFF

Change PIN

Current PIN

Confirm current PIN

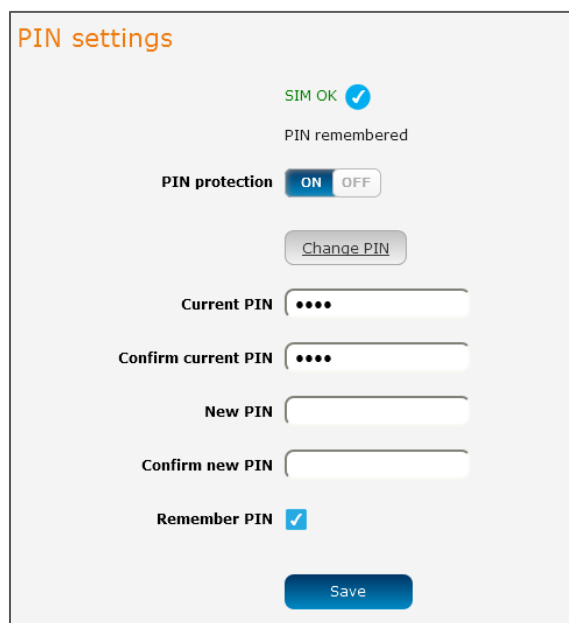
Remember PIN

Save

Figure 55 - PIN Settings

Changing the SIM PIN code

If you would like to change the PIN, click the **Change PIN** button and enter the current PIN into the **Current PIN** and **Confirm current PIN** fields, then enter the desired PIN into the **New PIN** and **Confirm new PIN** fields and click the **Save** button.



The screenshot shows the 'PIN settings' interface. At the top, it displays 'SIM OK' with a green checkmark and 'PIN remembered'. Below this is a 'PIN protection' toggle switch currently set to 'ON'. A 'Change PIN' button is visible. Underneath are four input fields: 'Current PIN' and 'Confirm current PIN' (both containing four black dots), 'New PIN', and 'Confirm new PIN'. At the bottom, there is a 'Remember PIN' toggle switch checked with a blue checkmark, and a blue 'Save' button.

Figure 56 - PIN settings - Change PIN

When the PIN has been changed successfully, the following screen is displayed:

Success!

Your settings have been changed successfully

PIN settings

SIM OK

PIN remembered

PIN protection ON OFF

Change PIN

Current PIN

Confirm current PIN

Remember PIN

Save

Figure 57 - SIM security settings – PIN unlock successful

Unlocking a PUK locked SIM

After three incorrect attempts at entering the PIN, the SIM card becomes PUK (Personal Unblocking Key) locked and you are requested to enter a PUK code to unlock it.



Note – To obtain the PUK unlock code, you must contact your service provider.


You will be issued a PUK to enable you to unlock the SIM and enter a new PIN. Enter the new PIN and PUK codes.

Click the **Save** button when you have finished entering the new PIN and PUK codes.

Oops, something went wrong...

Your SIM is PUK locked now. Please enter the PUK code to unlock. You have 10 remaining attempt(s).

PIN settings

 **SIM is PUK locked**

Current PIN

Confirm current PIN

PUK

Confirm PUK

Remember PIN

Figure 58 - SIM security - SIM PUK locked

LAN

LAN Configuration

The **LAN configuration** page is used to configure the LAN settings of the Fixed Wireless Antenna. To access the LAN configuration page, click on the Networking menu at the top of the screen, then click on the LAN menu on the left.

The default IP of the LAN port is 192.168.1.1 with subnet mask 255.255.255.0. To change the IP address or Subnet mask, enter the new IP Address and/or Subnet mask and click the **Save** button.



Note – If you change the IP address, remember to refresh the Ethernet interface of your device, or set an appropriate IP address range, then enter the new IP address into your browser address bar to access the Global 4G High-Gain Outdoor CPE.

The screenshot shows the LAN configuration interface. On the left, a sidebar contains 'Wireless WAN', 'LAN', and 'DHCP' with expandable arrows. The main area is titled 'LAN configuration' and includes the following fields:

- IP address:** 192 · 168 · 1 · 1
- Subnet mask:** 255 · 255 · 255 · 0
- Alias IP address:** 192 · 168 · 1 · 254
- Hostname:** my.router
- DNS masquerading:** OFF

A blue 'Save' button is located at the bottom of the configuration area.

Figure 59 - LAN configuration page

DHCP

DHCP configuration

You can manually set the start and end address range to be used to automatically assign to DHCP clients when they are connected and the lease time of the assigned addresses.

Wireless WAN ▾

LAN ▲

LAN

DHCP

DHCP configuration

DHCP ON

DHCP start range 192 · 168 · 1 · 100

DHCP end range 192 · 168 · 1 · 199

DHCP lease time(seconds) 120

Default domain name suffix

DNS server 1 IP address 8 · 8 · 8 · 8

DNS server 2 IP address 8 · 8 · 4 · 4

WINS server 1 IP address

WINS server 2 IP address

NTP server (Option 42)

TFTP server (Option 66)

DHCP option 150

DHCP option 160

Save

Address reservation list

+ Add

Save

Dynamic DHCP client list

Computer name	MAC address	IP address	Expiry time

Figure 60 - DHCP configuration page

Enter the desired DHCP options and click the **Save** button.

Services

Remote management

TR-069

To access the TR-069 configuration page, click the **Services** menu item, then select the **TR-069** menu item on the left.

The TR-069 (Technical Report 069) protocol is a technical specification also known as CPE WAN Management Protocol (CWMP). It is a framework for remote management and auto-configuration of end-user devices such as customer-premises equipment (CPE) and Auto Configuration Servers (ACS). It is particularly efficient in applying configuration updates across networks to multiple CPEs.

TR-069 uses a bi-directional SOAP/HTTP-based protocol based on the application layer protocol and provides several benefits for the maintenance of a field of CPEs:

- ▲ Simplifies the initial configuration of a device during installation
- ▲ Enables easy restoration of service after a factory reset or replacement of a faulty device
- ▲ Firmware and software version management
- ▲ Diagnostics and monitoring

TR-069 configuration

Enable TR-069

ACS URL

ACS username

ACS password

Verify ACS password

Connection request username

Connection request password

Verify connection request password

Enable periodic ACS informs

Inform period (30-2592000) secs

Randomise initial inform

Last inform status

Start at

End at

TR-069 DeviceInfo

Manufacturer NetComm Wireless Limited

ManufacturerOUI 18F145

ModelName ntc_ifwa631

Description NetComm NTC-IFWA631 Fixed Wireless 4G LTE Outdoor Unit

ProductClass IFWA631 Series

SerialNumber A6C9E5

Figure 61 - TR-069 configuration

Note –

You must have your own compatible ACS infrastructure to use TR-069. To access and configure the TR-069 settings, you must be logged into the antenna with the root account.

When a factory reset of the antenna is performed via TR-069, the TR-069 settings are preserved.

The antenna sends “inform” messages periodically to alert the ACS server that it is ready. These inform messages can also be configured to accept a connection request from the ACS server. When a connection is established, any tasks queued on the ACS server are executed. These tasks may be value retrieval or changes and firmware upgrades.

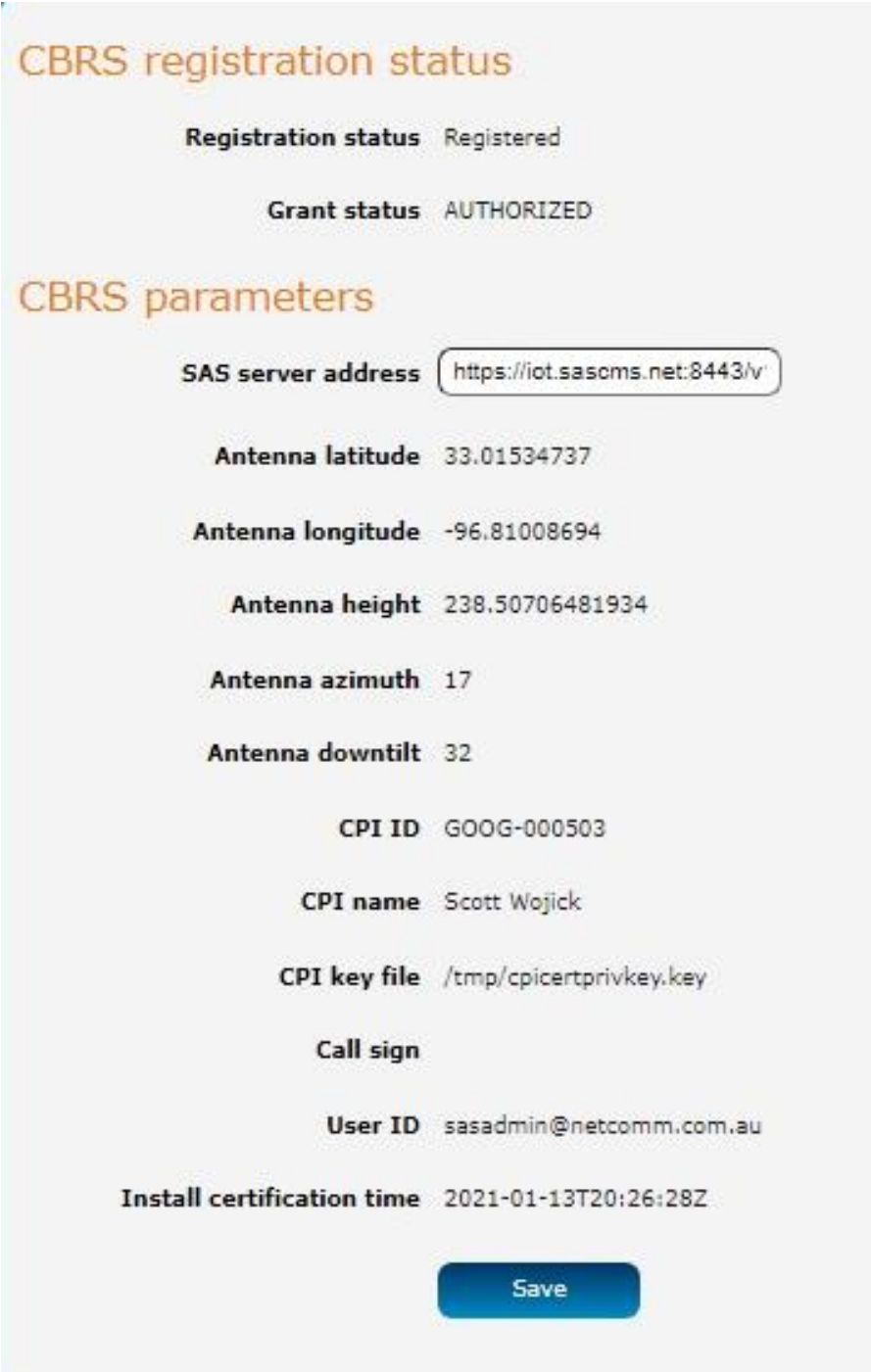
TR-069 configuration

To configure TR-069:

- 1 Click the **Enable TR-069** toggle key to switch it to the **ON** position.
- 2 In the **ACS URL** field, enter the Auto Configuration Server’s full domain name or IP address.
- 3 Use the **ACS username** field to specify the username used by the server to authenticate the CPE when it sends an “inform” message.
- 4 In the **ACS password** and **Verify ACS password** fields, enter the password used by the server to authenticate the CPE when it sends an “inform” message.
- 5 In the **Connection request username** field, enter the username that the CPE uses to authenticate the Auto Configuration Server during a connection request to the CPE.
- 6 In the **Connection request password** and **Verify password** fields, enter the password that the CPE uses to authenticate the Auto Configuration Server during a connection request to the CPE.
- 7 The inform message acts as a beacon to inform the ACS of the existence of the antenna. Click the **Enable periodic ACS informs** toggle key to turn on the periodic ACS inform messages.
- 8 In the **Inform Period** field, enter the number of seconds between the inform messages.
- 9 Click the **Save** button to save the settings.

SAS

CBRS parameters



The screenshot shows a web interface for configuring CBRS parameters. It is divided into two main sections: 'CBRS registration status' and 'CBRS parameters'. The registration status shows 'Registered' and 'AUTHORIZED'. The parameters section includes fields for SAS server address, antenna location (latitude, longitude, height, azimuth, downtilt), CPI ID, CPI name, CPI key file, Call sign, User ID, and Install certification time. A 'Save' button is located at the bottom.

CBRS registration status	
Registration status	Registered
Grant status	AUTHORIZED
CBRS parameters	
SAS server address	<input type="text" value="https://iot.sasoms.net:8443/v"/>
Antenna latitude	33.01534737
Antenna longitude	-96.81008694
Antenna height	238.50706481934
Antenna azimuth	17
Antenna downtilt	32
CPI ID	GOOG-000503
CPI name	Scott Wojick
CPI key file	/tmp/cpicertprivkey.key
Call sign	
User ID	sasadmin@netcomm.com.au
Install certification time	2021-01-13T20:26:28Z
<input type="button" value="Save"/>	

Figure 62 - SIM security - SIM PUK locked

Item	Description
CBRS registration status	
Registration status	Whether the device is Registered with the SAS. Status can be: Registering, Registered, Unregistered, Registered - Grant Pending Or Registered - Grant Authorized
Registration response message	A detailed message explaining the current Registration status , for example: No matching cpi user record of cpiID in encodedCpiSignedData.professionianaInstallerData
Registration request error code	Result of the last Registration Request message from the CPE to the SAS
Registration response code	If the last Registration was not successful, the error code sent from the SAS
Registration response data	If the last Registration was not successful, the response data sent from the SAS
Grant status	Whether the CPE has permission to transmit
Grant response message	Details regarding the current Grant Status , for example: grant failed
Grant response reason	Whether the grant was for a serving or neighbor cell.
Grant response data	Response data for the last grant failure.
CBRS parameters	
SAS server address	URL for SAS connection
Antenna latitude	Latitude used for the SAS Registration
Antennal longitude	Longitude used for the SAS Registration
Antenna height	Height used for the SAS Registration
Antenna azimuth	Azimuth used for the SAS Registration
Antenna downtilt	Downtilt used for the SAS Registration
CPI ID	Certified Professional Installer Identification number
CPI name	Certified Professional Installer name
Call sign	Call Sign for the SAS Registration
User ID	User ID for the SAS Registration
Install certification time	The time the SAS Registration occurred expressed in the format: YEAR-month-day and hour:minute:second
Save button	Click to save any changes you have made.

Table 11 - CBRS parameters table

Speed test

Speed test settings

You can change the download and upload servers that you use to perform the test.

Run speed test

FTP download server details

Server IP address/domain name:

User:

Password:

Remote file/path name:

Local file name:

FTP upload server details

Server IP address/domain name:

User:

Password:

Local file name:

Remote file/path name:

Figure 63 – Speed test parameters

The following details can be entered for either the download and upload FTP servers:

Item	Description
Server IP address/ domain name	Enter the IP address or domain name that the FTP server is running on.
User	If an account is required, enter the username here, otherwise leave this blank.
Password	If an account is required, enter the password here, otherwise leave this blank.

Item	Description
Remote file/path name	On the FTP download server – Enter the path to the file you want to download on the remote server. On the FTP upload server – Enter the path to the file you are uploading to the remote server.
Local file name	On the FTP download server – Enter a name to save the file as on the local device. On the FTP upload server – Enter a name to save the file as on the remote server.
Save button	Click to save the changes you have made. To apply the new details to a new test, click the Run speed test button.

Table 12 - Speed test parameter details

Test results

Click the **Run speed test** button to check the current speeds between the CFW-2182 and the download and upload servers.

A list of results will appear on the page:

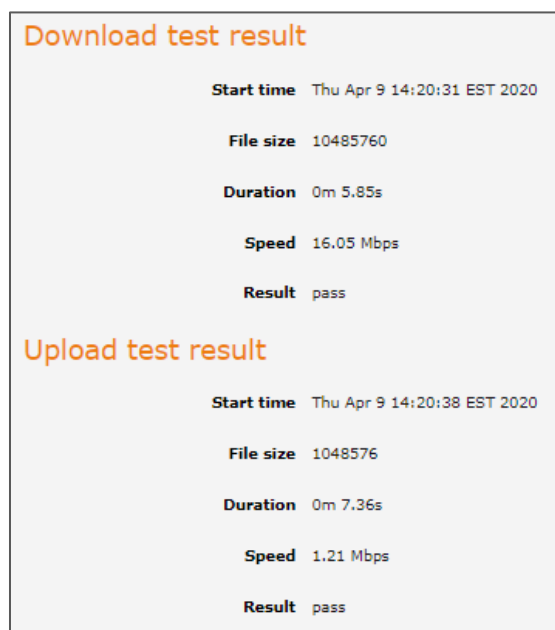


Figure 64 - Speed Test results display

The following detailed results will be provided for both the download and upload tests:

Item	Description
------	-------------

Start time	The date and exact time the download or upload part of the speed test began.
File size	The size of the file used to measure the speed.
Duration	Time in seconds taken to successfully transfer the full file.
Speed	The download or upload speed in Megabits per second (Mbps)
Result	The following results are possible: Pass – Signifies that the test was carried out and the file was fully transferred without errors. Fail – Indicates that the test did not complete correctly.

Table 13 – Speed Test results details

If the **Smart Antenna tool** is connected to the CFW-2182 you cannot connect to these setting through this interface.



Important –

Speed test is disabled

Please open a web browser at the connected install tool.

You must either disconnect the **Smart Antenna tool** or run the **Speed test** via the **Smart Antenna** tool's web interface.

System

Log

The Log pages are used to display or download the System log on the antenna.

System log

The **System Log** enables you to troubleshoot any issues you may be experiencing with your antenna.

To access the System Log page, click the **Services** menu item, open the **Log** submenu on the left and then select **System log**.

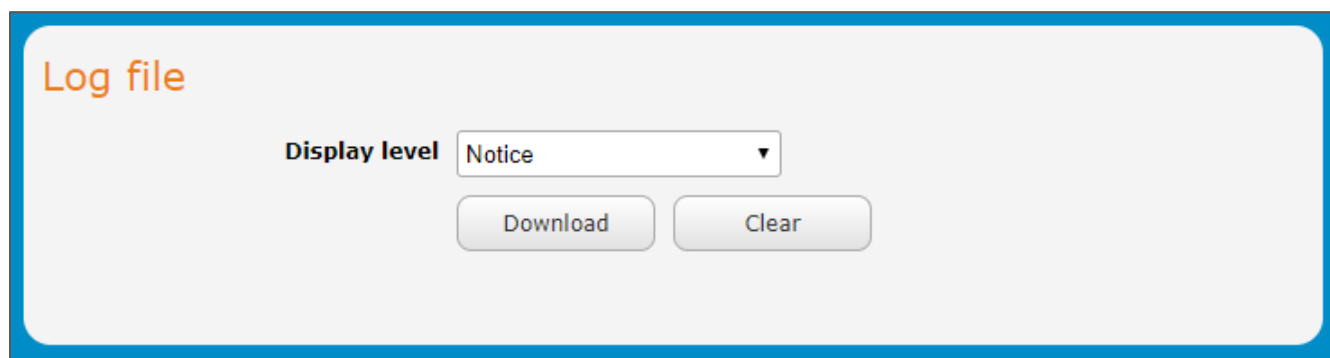


Figure 65 - System log file

Log file

Use the **Display level** drop-down list to select a message level to be displayed. The message levels are described in the table below.

Display level	Definition
Debug	Show extended system log messages with full debugging level details.
Info	Show informational messages only.
Notice	Show normal system logging information.
Warning	Show warning messages only.
Error	Show error condition messages only.

Table 14 - System log display levels

To download the System log for offline viewing, right-click the **Download** button and choose **Save as..** to save the file.

The downloaded log file is in Linux text format with carriage return (CR) only at the end of a line, therefore in order to be displayed correctly with new lines shown, it is recommended to use a text file viewer which displays this format correctly (e.g. Notepad++).

To clear the System log, click the **Clear** button.

System log settings

To access the System log settings page, click the **Services** menu item, open the **Log** submenu on the left and then select **System log settings**.

System log settings

The settings are applicable only to System logs and not to IPSec or Event notification

Log capture level

Log capture level

Non-volatile log

Log to non-volatile memory ON OFF

Remote syslog server

IP / Hostname [:PORT]

Save

Figure 66 - System log settings

Log capture level

The log capture level defines the amount of detail that the system log stores. This setting also affects the Display level setting on the System log page, for example, if this is set to a low level, such as “Error”, the System log will not be able to display higher log levels.

Log capture level	Definition
Debug	Show extended system log messages with full debugging level details.
Info	Show informational messages only.
Notice	Show normal system logging information.

Log capture level	Definition
Warning	Show warning messages only.
Error	Show error condition messages only.

Table 15 - System log capture levels

Non-volatile log

When the antenna is configured to log to non-volatile memory, the log data is stored in flash memory, making it accessible after a reboot of the antenna. You can specify the size of the logging data. Up to 10,000 KB (10 MB) of log data will be stored before it is overwritten by new log data. Flash memory has a finite number of program-erase operations that it may perform to the blocks of memory. While this number of program-erase operations is quite large, we recommend that you do not enable this option for anything other than debugging to avoid excessive wear on the memory.

Remote syslog server

The antenna can be configured to output log data to a remote syslog server. This is an application running on a remote computer which accepts and displays the log data. Most syslog servers can also save the log data to a file on the computer on which it is running allowing you to ensure that no log data is lost between reboots.

To configure the antenna to output log data to a remote syslog server:

- 1 Click the **System** menu from the top menu bar, open the **Log** submenu on the left and then select **System log settings**.
- 2 Under the **Remote syslog server** section, enter the **IP address** or **hostname** of the syslog server in the **IP / Hostname [PORT]** field. You can also specify the port number after the IP or hostname by entering a semi-colon and then the port number e.g. 192.168.1.102:514. If you do not specify a port number, the antenna will use the default UDP port 514.
- 3 Click the **Save** button to save the configuration.

Figure 67 - Remote syslog server configuration

Administration

Administration settings

To access the Administration Settings page, click on the **System** menu then the **Administration** menu on the left and then click on **Administration settings**.

The Administration settings page is used to control access to the **Web User Interface account**.

Figure 68 - Administration page

Item

Definition

Web User Interface account

Username	Use the drop-down list to select the root or user account to change its web user interface password.
Password	Enter the desired web user interface password. When logged in with the root account the password will display in clear text, otherwise the password is masked. Only the root account can view and change passwords.
Password strength	The CFW-2132 antenna includes algorithms to ensure that the password you enter is strong. Any password configured on the antenna must now meet the following criteria: <ul style="list-style-type: none"> • Be a minimum of eight characters and no more than 128 characters in length. • Contain at least one upper case, one lower case character and one number. • Contain at least one special character, such as: `~!@#\$\$%^&*()-_=[{}]\ ;:","<.>/?. Additionally, the password must also satisfy an algorithm which analyses the characters as you type them, searching for commonly used patterns, passwords, names and surnames according to US census data, popular English words from Wikipedia and US television and movies and other common patterns such as dates, repeated characters (aaa), sequences (abcd), keyboard patterns (qwertyuiop) and substitution of numbers for letters.

Item	Definition
Login attempt limit	Set the number of unsuccessful login attempts that are allowed before the login lock applies (see next item). You can choose 3, 4 or 5 login attempts. The default is 3.
Login lock duration	Set the time users must wait before they can attempt to login after reaching the login attempt limit, see previous item above. The duration can be set from one minute to ten minutes. The default is one minute.
Session timeout	Set the time in seconds that the system must remain idle before it automatically logs out. 1800 seconds (30 minutes) is the default. You can choose a time between 300 seconds (5 minutes) and 3600 seconds (one hour).

Table 16 - Administration configuration options

Reboot

The reboot option in the **System** section performs a soft reboot of the antenna. This can be useful if you have made configuration changes you want to implement.

To reboot the antenna:

- 1 Click the **System** menu item from the top menu bar.
- 2 Click the **Reboot** button from the menu on the left side of the screen.
- 3 The antenna displays a warning that you are about to perform a reboot.

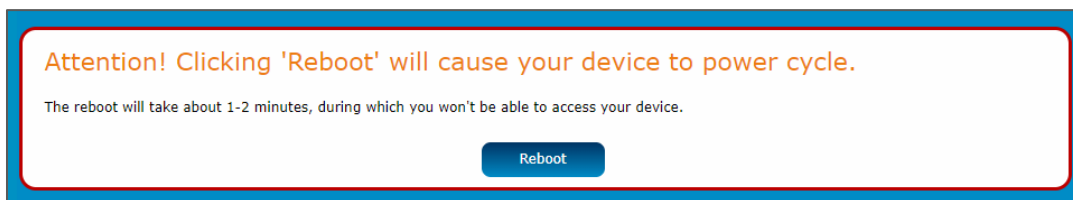



Figure 69 - Reboot confirmation

- 4 If you wish to proceed, click the **Reboot** button.



Note – It can take up to 2 minutes for the antenna to reboot.

Log out

To log out of the antenna, click the  icon at the top right corner of the web user interface.

Using the Smart Antenna Tool

When not connected to an antenna, you can access the web user interface of the Smart Antenna Tool to perform administrative tasks such as uploading and managing OWA firmware files, upgrading the firmware of the Smart Antenna Tool, managing configuration settings files and viewing system information and status details.

After powering on the Smart Antenna Tool and connecting to its SSID network, navigate to <http://192.168.3.1> in your web browser. The log in screen is displayed.

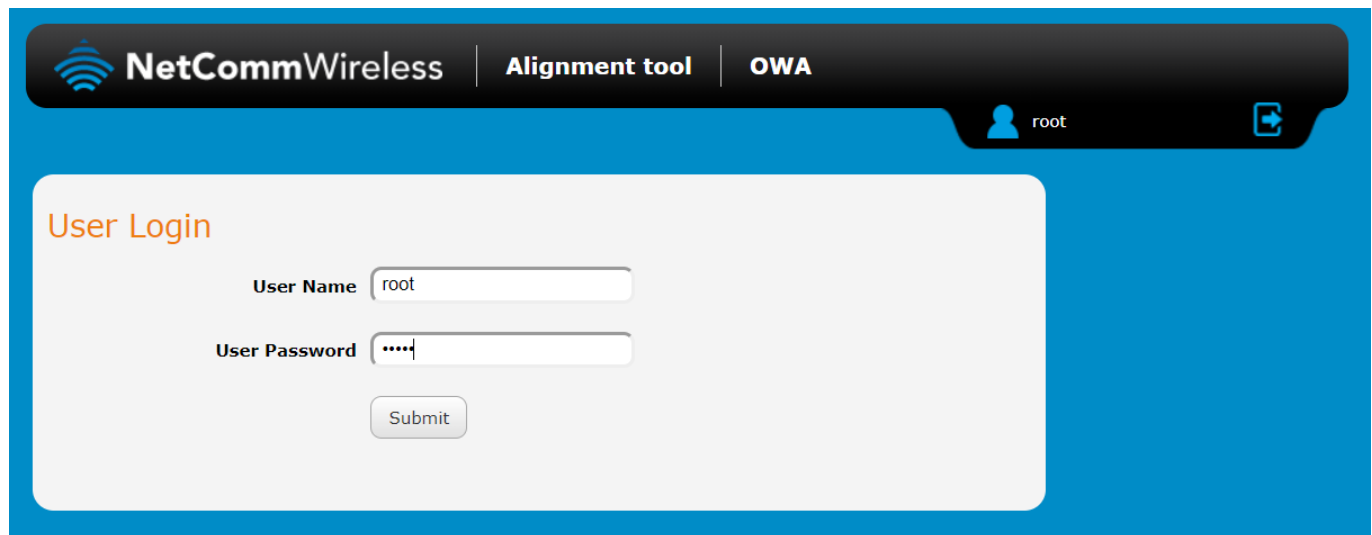


Figure 70 - Smart Antenna Tool log in screen

Log in with User Name “root” and User Password “admin”.

Uploading OWA firmware

From the top menu, select **OWA** and then **Upload firmware** from the left-side menu.

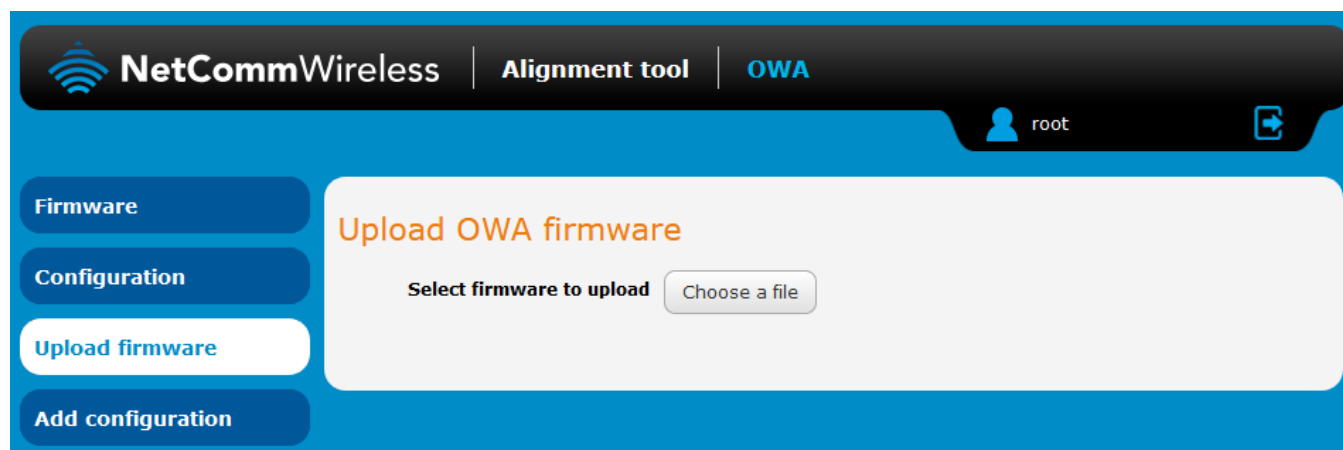


Figure 71 - OWA firmware upload screen

Select the **Choose a file** button then select the firmware file from your local machine. Select **Open**, then select the **Upload** button. The firmware is uploaded to the storage on the Smart Antenna Tool.

Viewing uploaded OWA firmware files

From the top menu, select **OWA** and then **Firmware** from the left-side menu. A list of uploaded OWA firmware files are displayed.

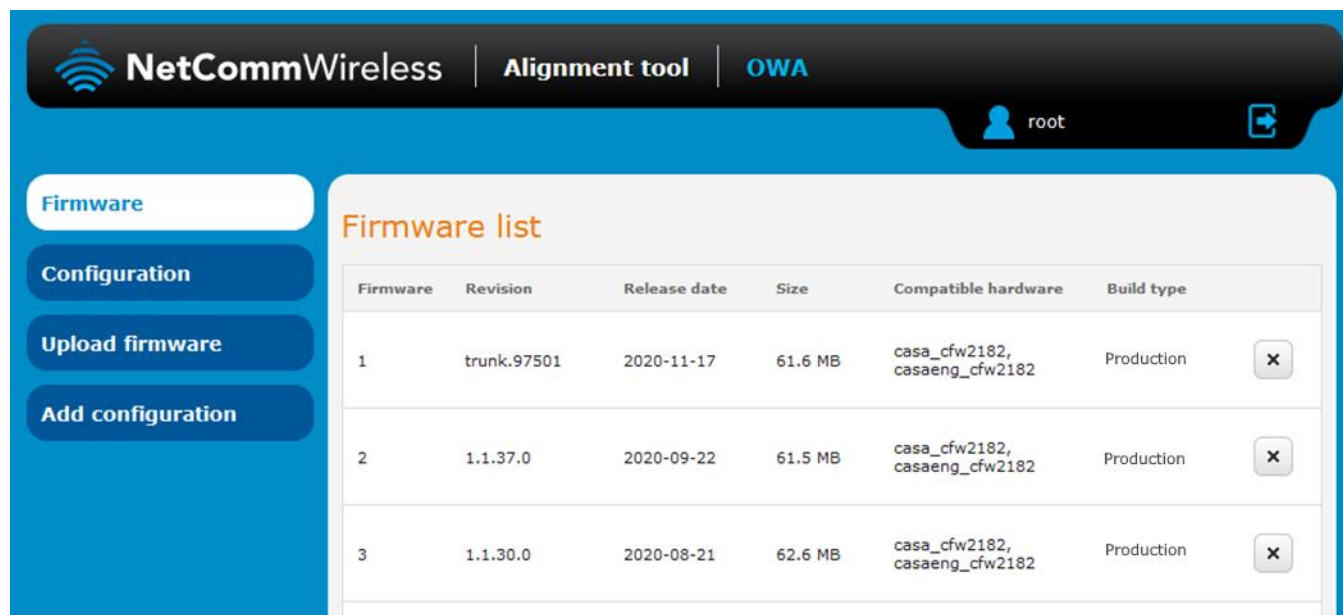


Figure 72 - OWA firmware file list

Updating the Antenna firmware

To update Antenna firmware without entering data into the Data Entry screen, first upload the firmware file to the Smart Antenna Tool as described [here](#), then connect the Smart Antenna Tool to the antenna.

To perform the firmware upgrade procedure:

- 1 Navigate to http://192.168.3.1/advanced_operations.html. A list of firmware files that exist on the Smart Antenna Tool is displayed.
- 2 Next to the firmware version you want to install, click the **Upgrade** button. A screen displays the installation progress as the OWA firmware is upgraded.

The device will update firmware in the following order:

- 3 OWA Firmware, to latest
- 4 OWA Screens, to latest compatible with the OWA firmware executing in the unit.

While the update is in progress there is a notice not to remove the Smart Antenna Tool until the update is complete.

When the firmware or screens are updated, the unit and/or screens will reboot and the initial screen will be refreshed on the installer device.

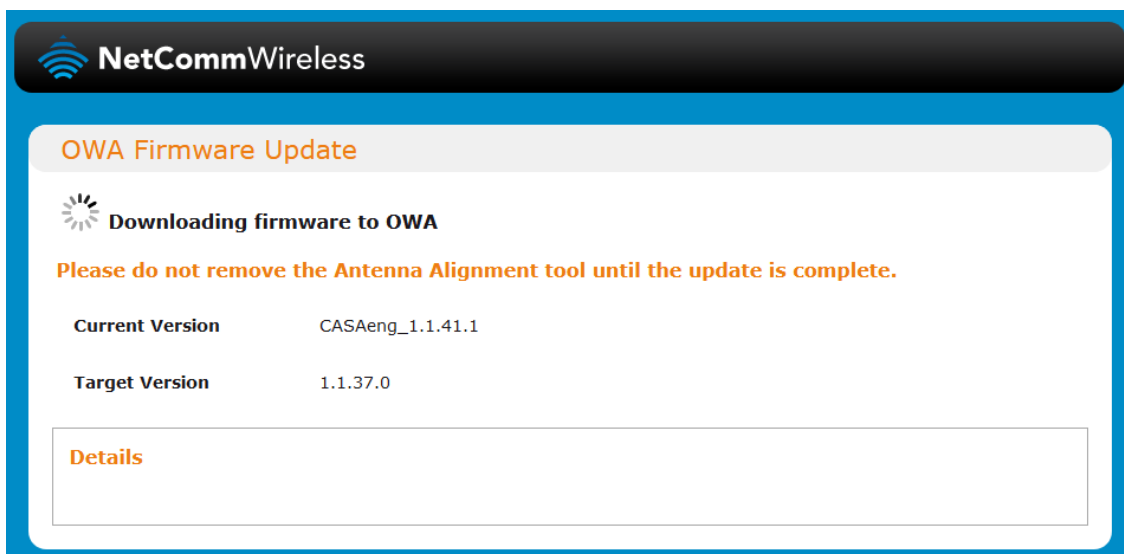


Figure 73 - OWA Update screen

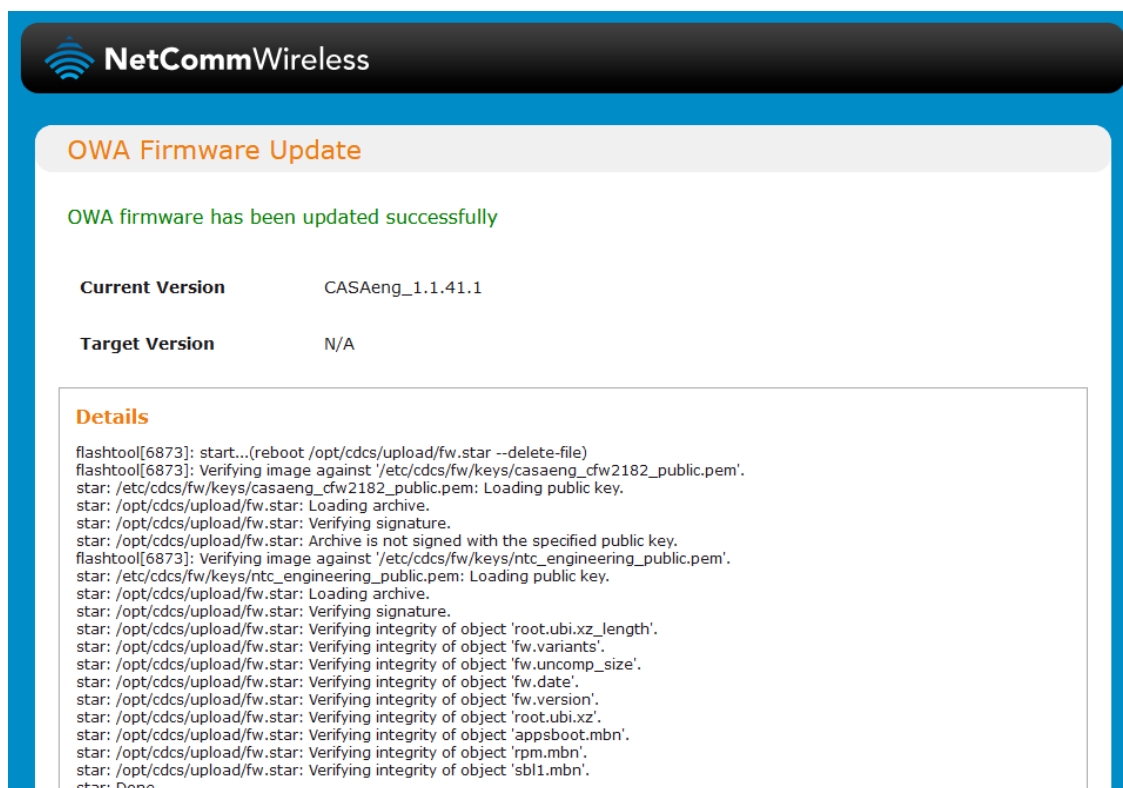


Figure 74 - OWA Update complete screen

Upgrading the Smart Antenna Tool firmware

Before proceeding to upgrade the Smart Antenna Tool firmware, ensure that it is not connected to the OWA.

From the top menu, select **Alignment tool** and then **Upgrade** from the left-side menu. Under the **Upgrade firmware** section, select the **Choose a file** button. Locate the Smart Antenna Tool firmware file on your computer, then select **Open**. Click on the **Upgrade** button. The Smart Antenna Tool's firmware is updated.

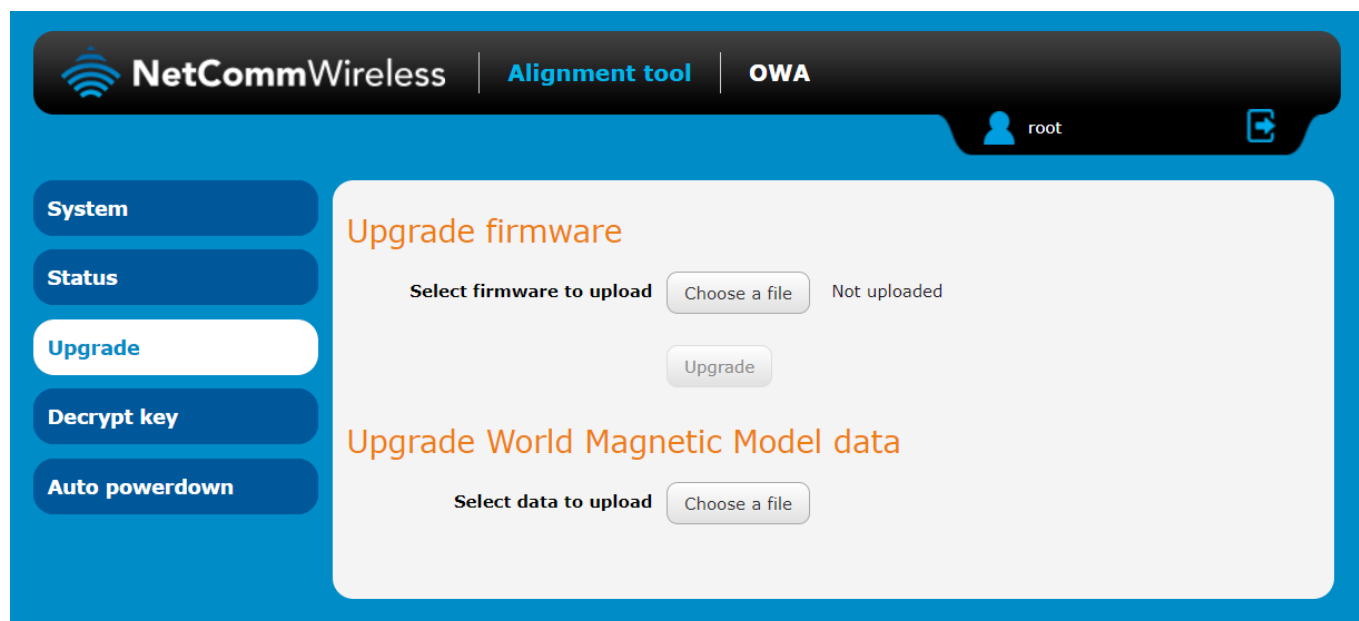


Figure 75 - Smart Antenna Tool firmware and Magnetic Model data upgrade screen

Upgrading the World Magnetic Model data

The World Magnetic Model data is used to calculate the offset from magnetic north to true north for the electronic compass to function correctly. This data is periodically updated by the National Oceanic and Atmospheric Administration and can be downloaded from <https://www.ngdc.noaa.gov/geomag/WMM/soft.shtml>

The Smart Antenna Tool will expect a coefficient file with a .COF extension, so files downloaded from the NOAA must be unarchived first.

To upgrade the World Magnetic Model data, under the **Upgrade World Magnetic Model data** section, select the **Choose a file** button, then locate the .COF file on your local machine and select **Open**.

Viewing System information

To view device-specific details about the Smart Antenna Tool, from the top menu, select **Alignment tool** and then **System** from the left-side menu.

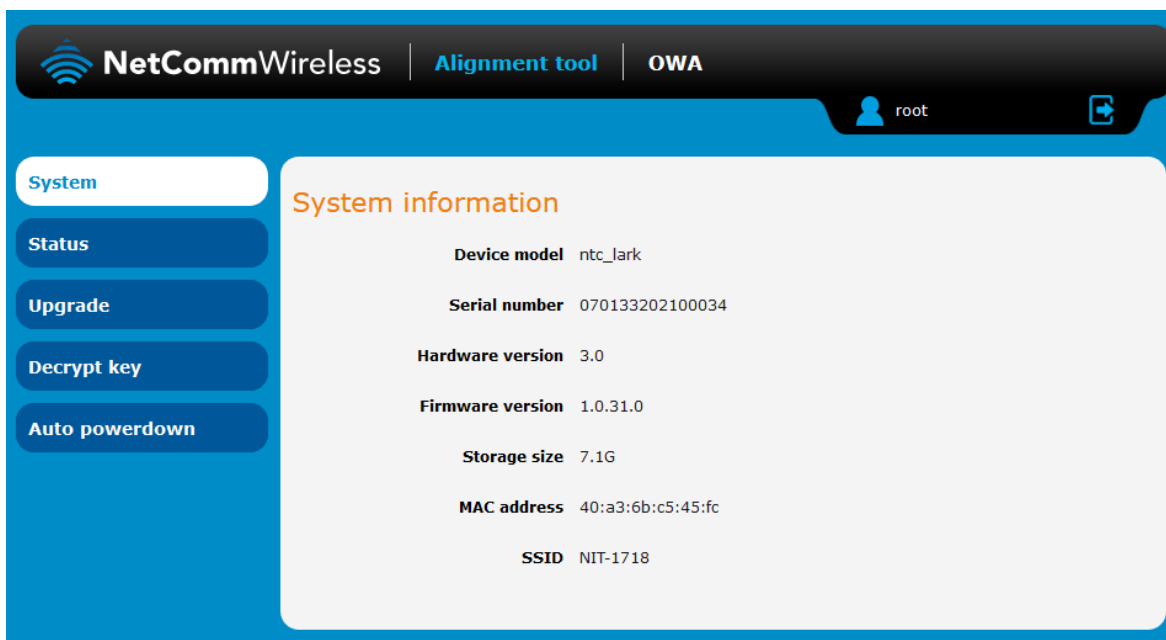


Figure 76 - System information screen

Viewing status

To view device status information, from the top menu, select **Alignment tool** and then **Status** from the left-side menu.

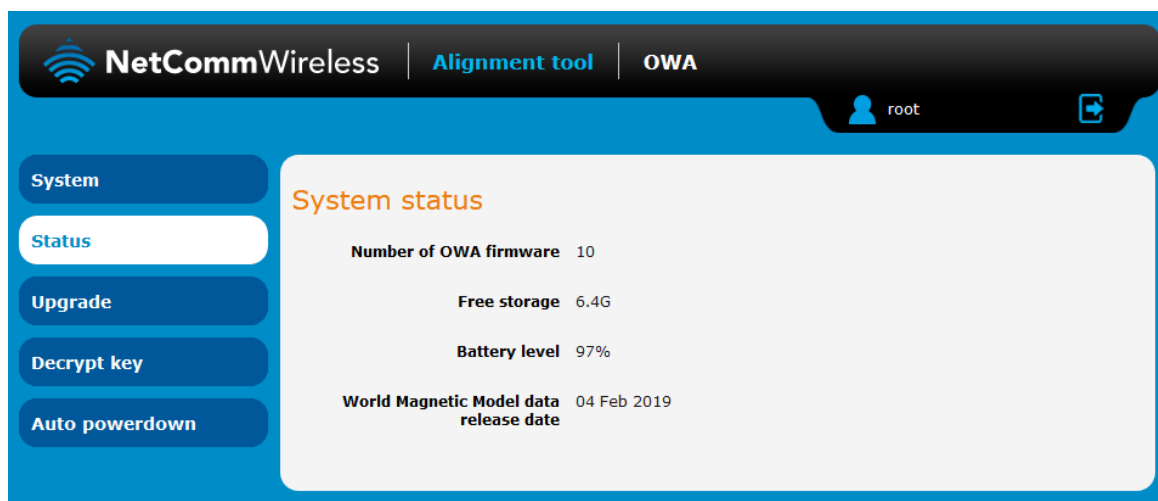


Figure 77 - Smart Antenna Tool Status screen

Configuring the automatic powerdown period

You can configure the time after which the Smart Antenna Tool automatically powers down to conserve battery. The Smart Antenna Tool will power down after the configured period of inactivity.

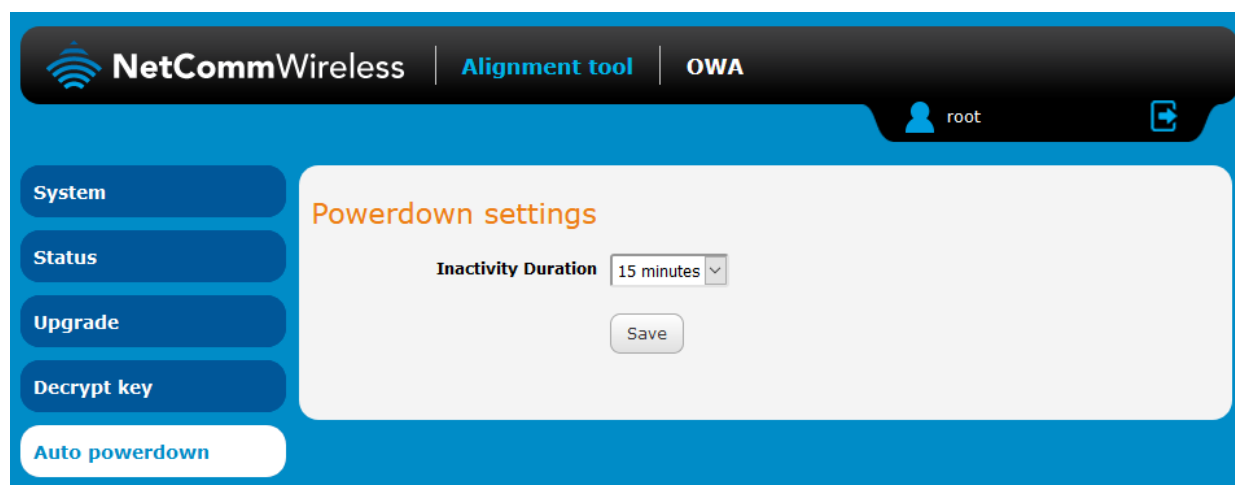


Figure 78 - Powerdown settings

Adding a custom configuration

To upload a configuration file:

- 1 Open up the Smart Antenna Tool user interface by navigating to <http://192.168.3.1>.
- 2 Select **OWA** from the top menu, then select **Add configuration** from the left menu.

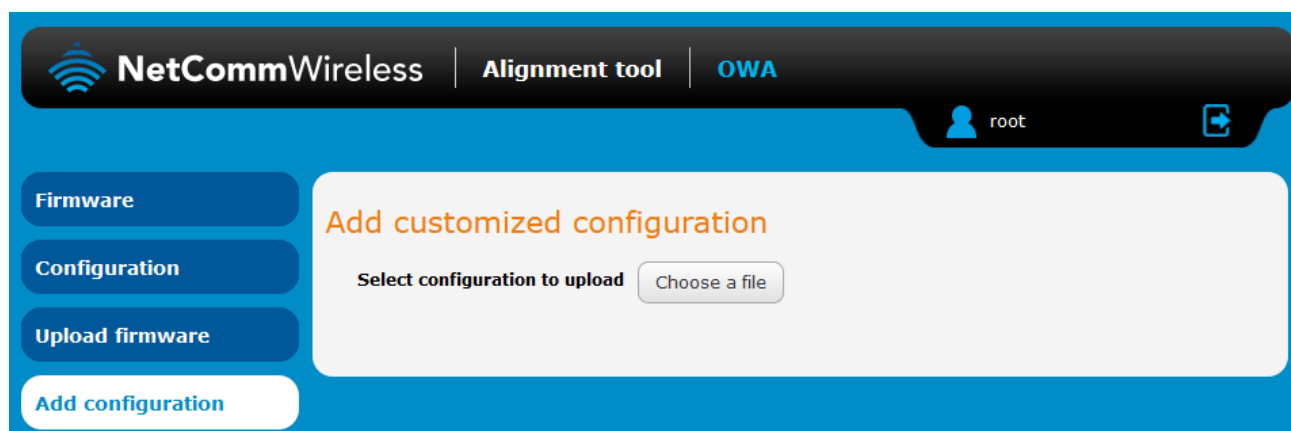


Figure 79 - Add customized configuration screen

- 3 Select the **Choose a file** button and locate the .star file on your PC. The file is processed and when it has finished, "Configuration uploaded." is displayed.

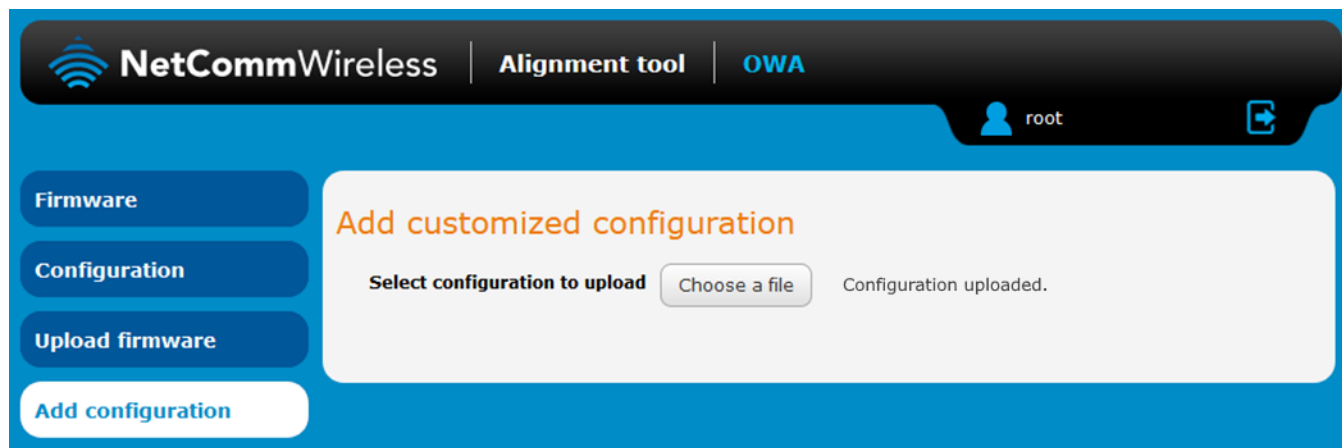


Figure 80 - Add customized configuration - configuration uploaded

- 4 Select the **Configuration** menu on the left side of the screen.

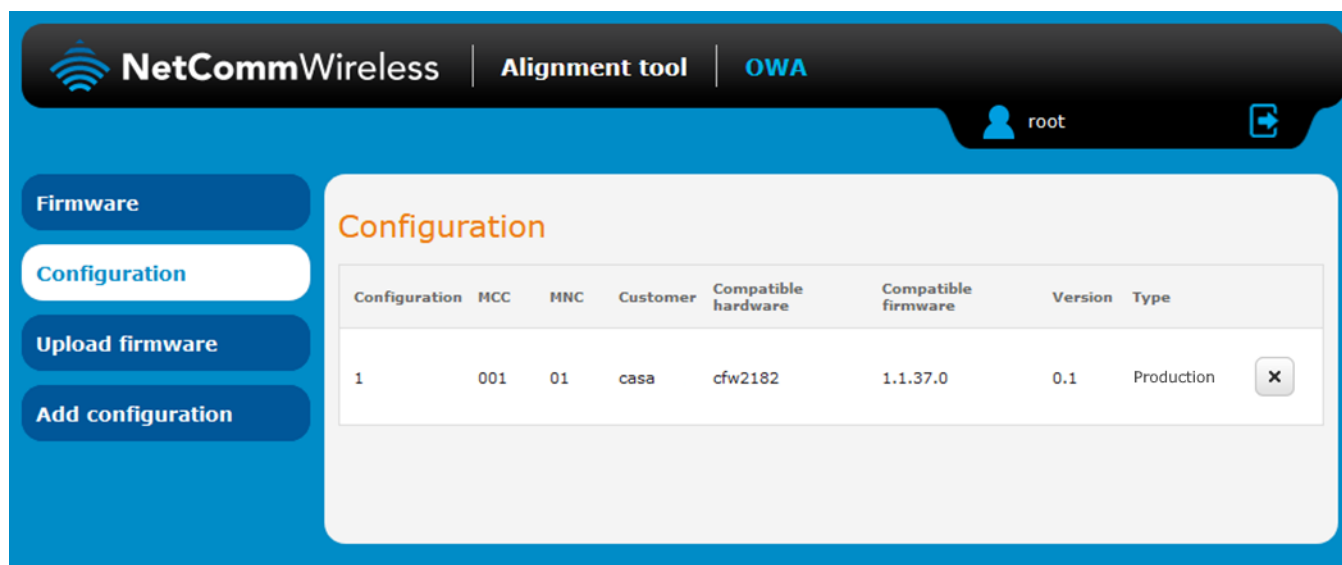


Figure 81 - Configuration screen

A summary of the configuration version uploaded is displayed.



Note -

Once a Smart Antenna tool (which has the configuration file loaded on it) is plugged into a device, it reads the SIM information which is specific to each carrier. When the SIM card matches the configuration information, the Smart Antenna Tool loads the configuration settings to the antenna. These configuration settings are loaded to the antenna automatically as the antenna is powered on and before the installation begins.

Appendix A – Safety and compliance

RF Exposure

Your device contains a transmitter and a receiver. When it is on, it receives and transmits RF energy. When you communicate with your device, the system handling your connection controls the power level at which your device transmits.

This device meets the government's requirements for exposure to radio waves.

This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government.

This equipment complies with radio frequency (RF) exposure limits adopted by the Federal Communications Commission for an uncontrolled environment. This equipment should be installed and operated with minimum distance 1 foot between the radiator & your body.

FCC Statement

This device must be professionally installed.

FCC compliance

Federal Communications Commission Notice (United States): Before a wireless device model is available for sale to the public, it must be tested and certified to the FCC that it does not exceed the limit established by the government-adopted requirement for safe exposure.

FCC regulations

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- ▲ Reorient or relocate the receiving antenna.
- ▲ Increase the separation between the equipment and receiver.
- ▲ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ▲ Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Company details

Casa Systems, Inc.

100 Old River Road, Andover, Massachusetts 01810 USA

www.netcomm.com/contact

Product details

Product: **CBRS 4G High Gain Outdoor CPE**

Model No: **CFW-2132**