WNTD WiFi Gateway – A (very) Quick Start Guide

Introduction

I usually avoid reading User Guides until something catches fire (after which I try and shift the blame to the supplier and/or manufacturer)

Now I'm the supplier and manufacturer, I have to write the guide, *and* somehow convince you to read it.

Shit.

Charging the Gateway

The Gateway comes bundled with a 12-volt Car Charger and 12-volt Wall Charger. Both attach to a small DC socket next to the power switch.

To charge the unit, plug one of the chargers in while the unit is off, **then turn the unit on.** **The unit must be switched on for the batteries to charge**. Turning the switch off completely isolates the batteries. A full charge from a completely empty pack will take up to six hours

The gateway cannot be used while charging is in progress - This is a safety feature, implemented (in part) due to paranoia after many years of cannabis abuse (also, exploding batteries give me a bit of a fright)

The current battery voltage is displayed using four **'Battery Voltage'** indicator LEDs – If the first LED is blinking, the battery pack is critically low and should be recharged immediately.

An animation will be displayed by the battery LEDs if the unit is currently charging. Once the battery is fully charged, all the LEDs will remain on solid. Ideally, you should place the unit on charge every couple of days to ensure little downtime.

Please follow all the precautions printed on the front panel of the unit for your own safety; Keep a spare pair of undies on-hand just in case.

Feel free to email Ahmad@UltraKeet.com.au for moral support if something explodes.

Performing a Self-Test

With the device unplugged from everything (including the WNTD antenna), switch it on.

If the following LEDs are on, the unit has passed its self-test and is ready for use:

- **Fuse OK** (Red or Pink, depending on how I felt at the time)
- **Power OK** (Green)
- **WiFi Ready** (Green)
- **Battery Voltage** (White, at least one should be on solid)

The 'USB Data' LED may also be on without a USB lead plugged in – As embarrassing as this is, I forgot to fix this issue before manufacture. It won't cause any harm, though.
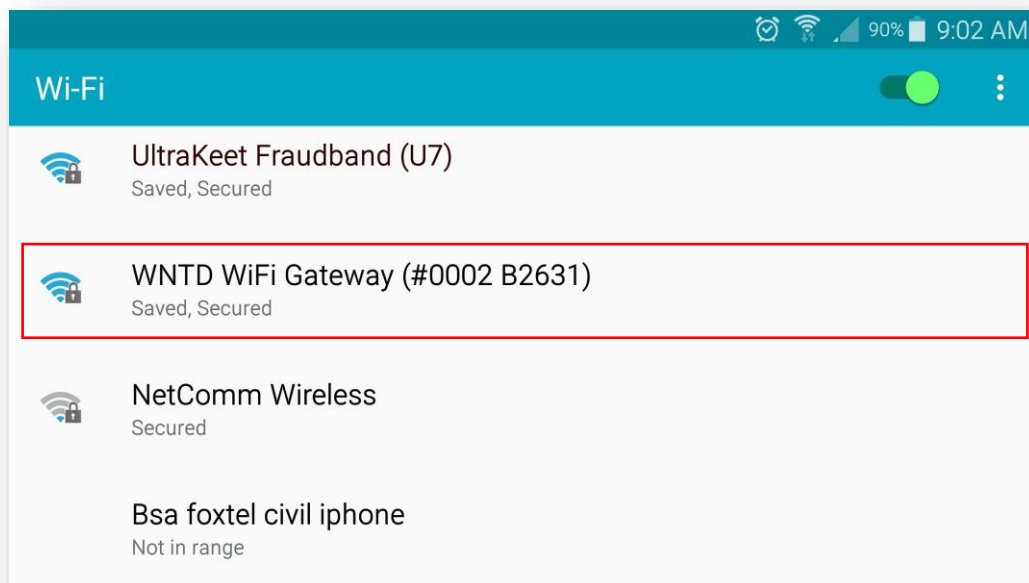
If any of the above LEDs are **not** on, please ~~abuse~~ email Ahmad@UltraKeet.com.au

Smartphone/Tablet connection (WiFi)

With the device still unplugged from everything, switch it on, and try and connect to it via WiFi using your Smartphone/Tablet.

You should see it in the list of your available WiFi access points. If you've pre-ordered the unit from us directly, the device ID will also contain your BSA technician code.

Conversely, if we were forced to build your device with zero notice, at gun-point, by *Glenn Brown* or *Rod Allen*, it'll just show the serial number:

Your WiFi Key is printed on an adhesive label, which is attached to the bottom of the Gateway. We tried to ensure the keys are secure while still being somewhat memorable:
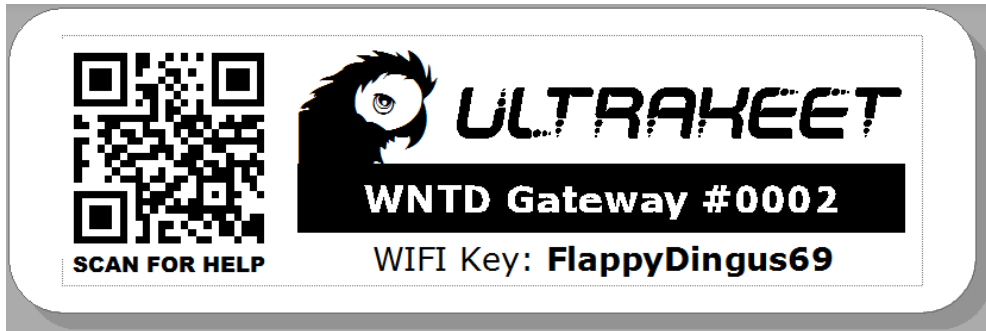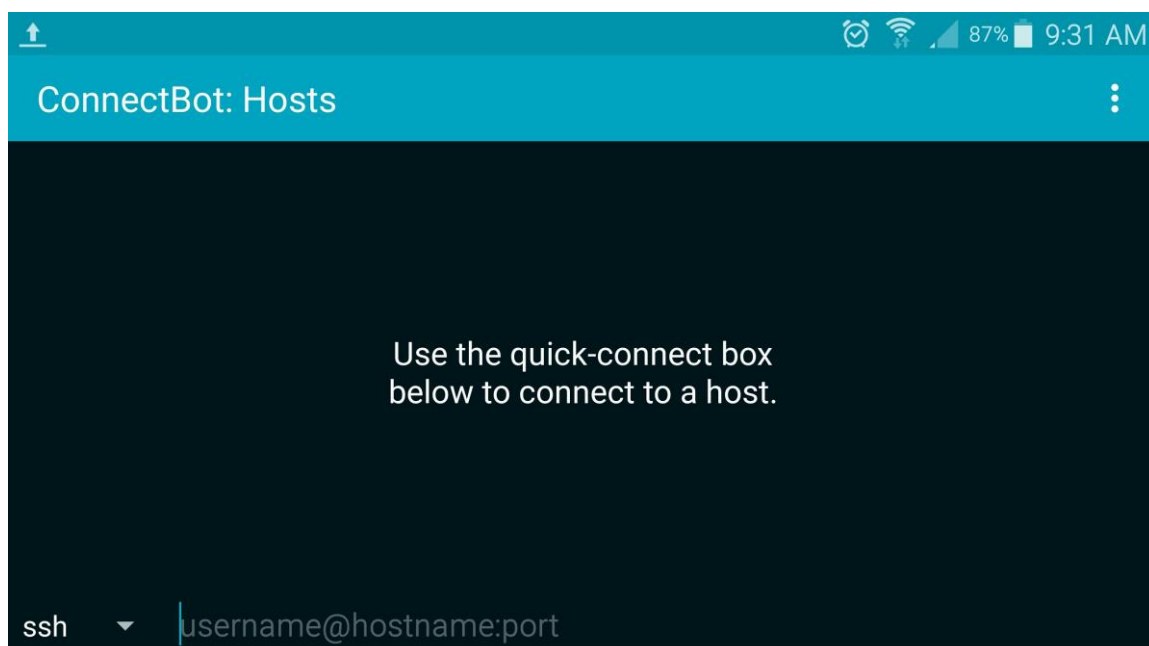

Once you're connected via WiFi, the **WiFi Link** LED on the front of your device should turn blue, and it's time to launch your favorite Terminal Emulator application. In practice, any application that supports Telnet and VT100 will work.

The examples below show **ConnectBot** for Android, which is freeware, and available on the Play Store. We've also tested the device using **vSSH** for IOS (Iphones/Ipads) which costs about ten aussie bucks.

We've tried reaching out to the creators of **vSSH** for help in writing a tutorial (potentially netting them *tens of dollars* in app purchases), but we've yet to hear back from them.
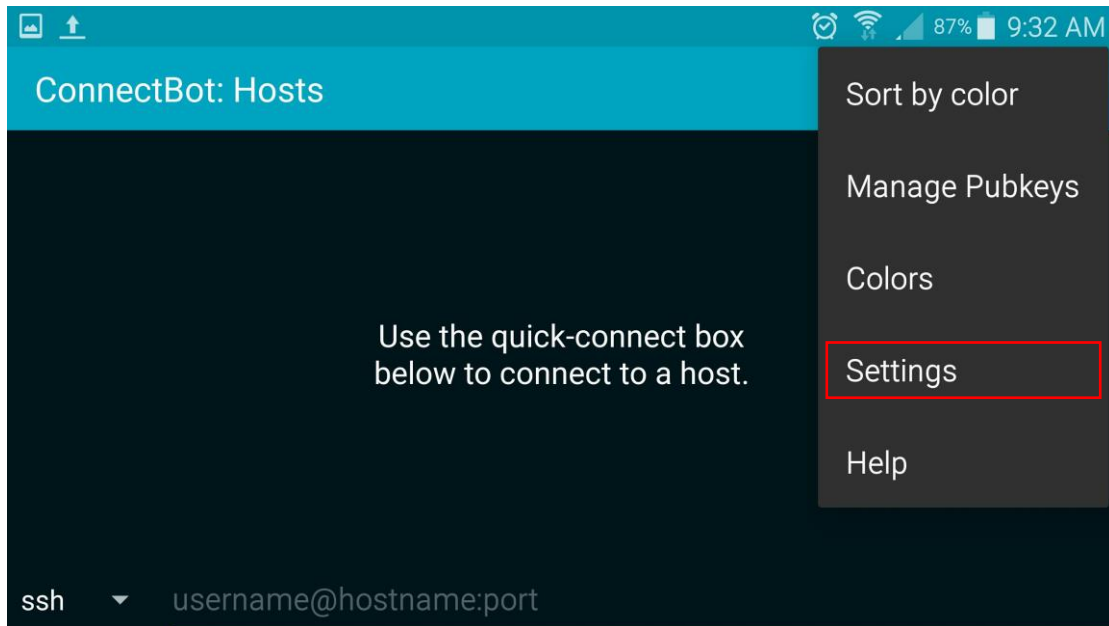
When your App is launched for the first time, you may need to adjust a few settings to ensure proper connection and display. Again, these examples are for **ConnectBot**, but should easily port to **vSSH** and other apps.

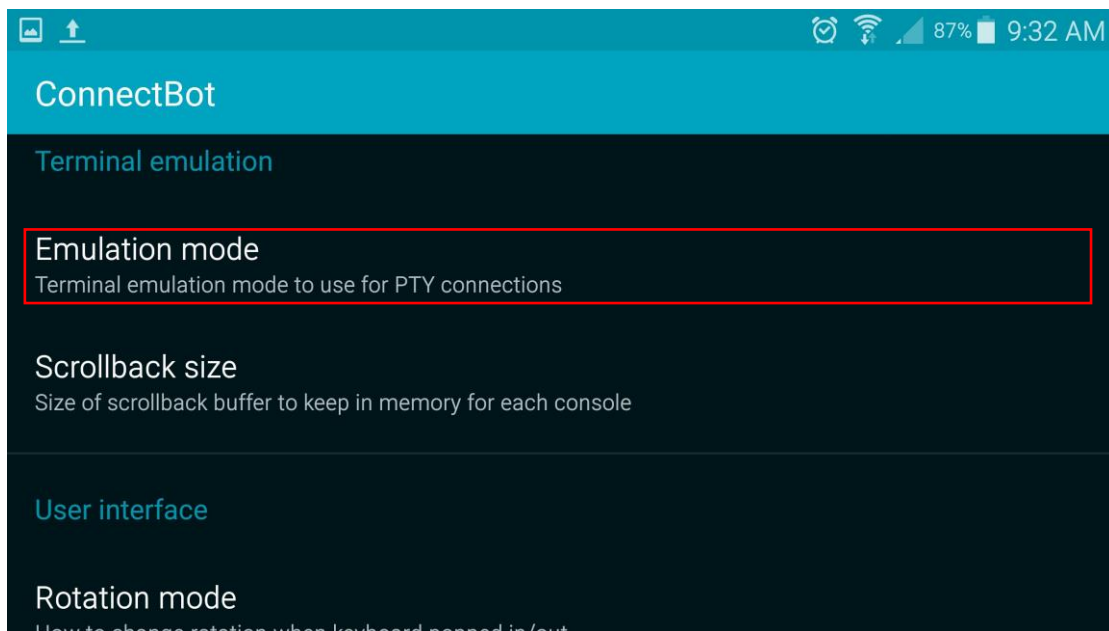Here is the start page of **ConnectBot**:

Click the three-dots to the top right, and tap **Settings** from the drop-down menu:

Scroll down to the **Terminal Emulation** section, and tap **Emulation Mode**:

Select **vt100** from the list of Emulation modes, this will ensure data is displayed correctly:
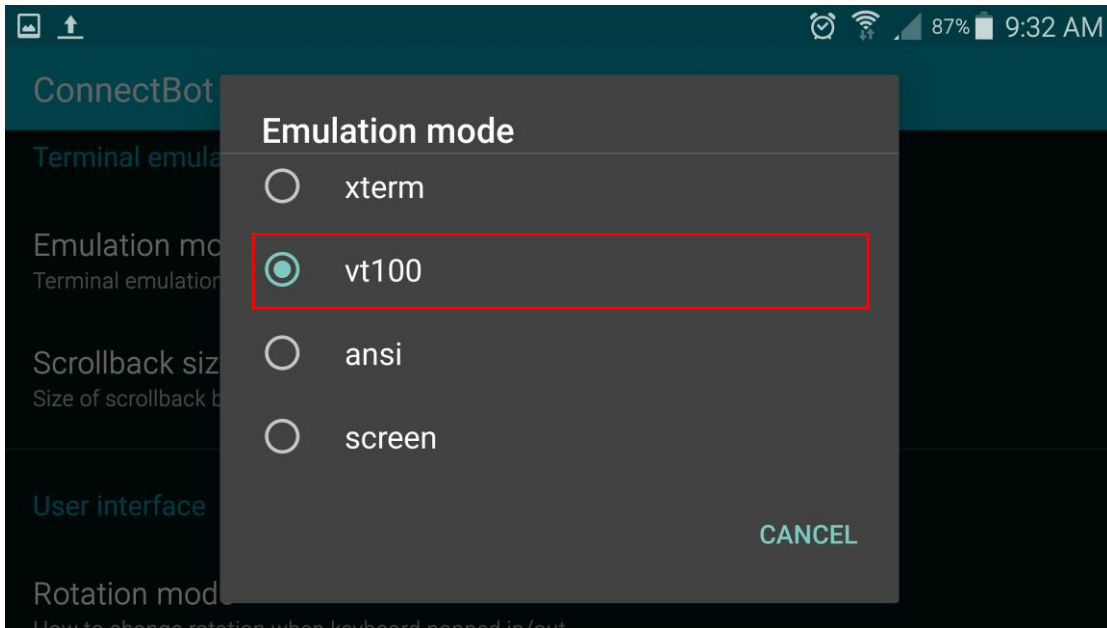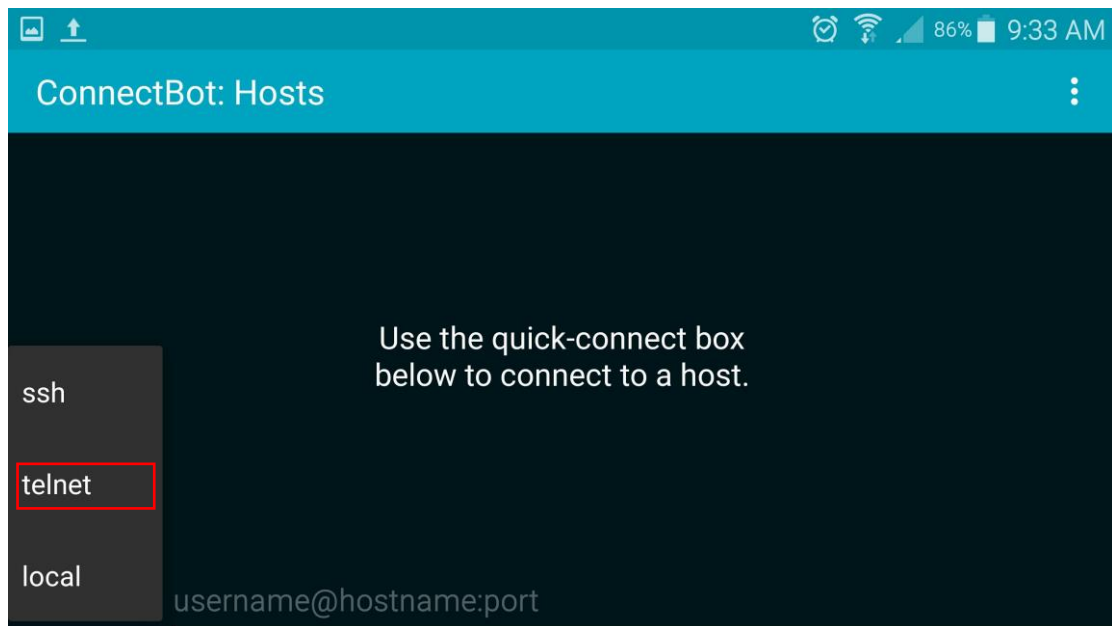

Note: If you have an option for **Width** and **Height** on the settings page in your app (**ConnectBot** doesn't, **vSSH** does), enter **80** for the width, and **25** for the height.

Press the **back** button on your device to exit, then tap **ssh** (bottom left):
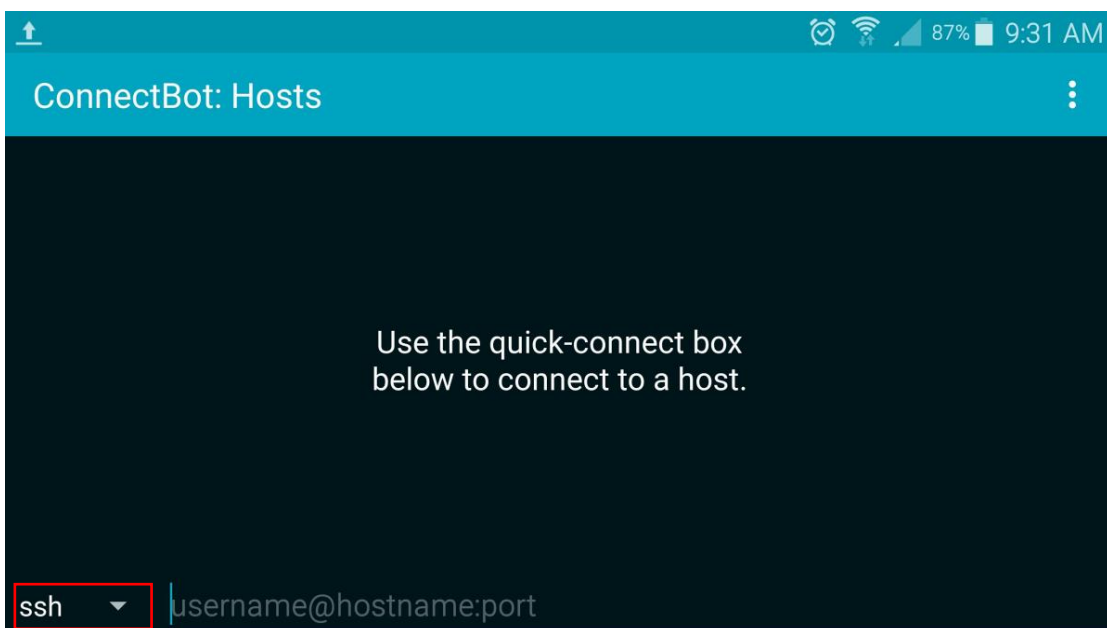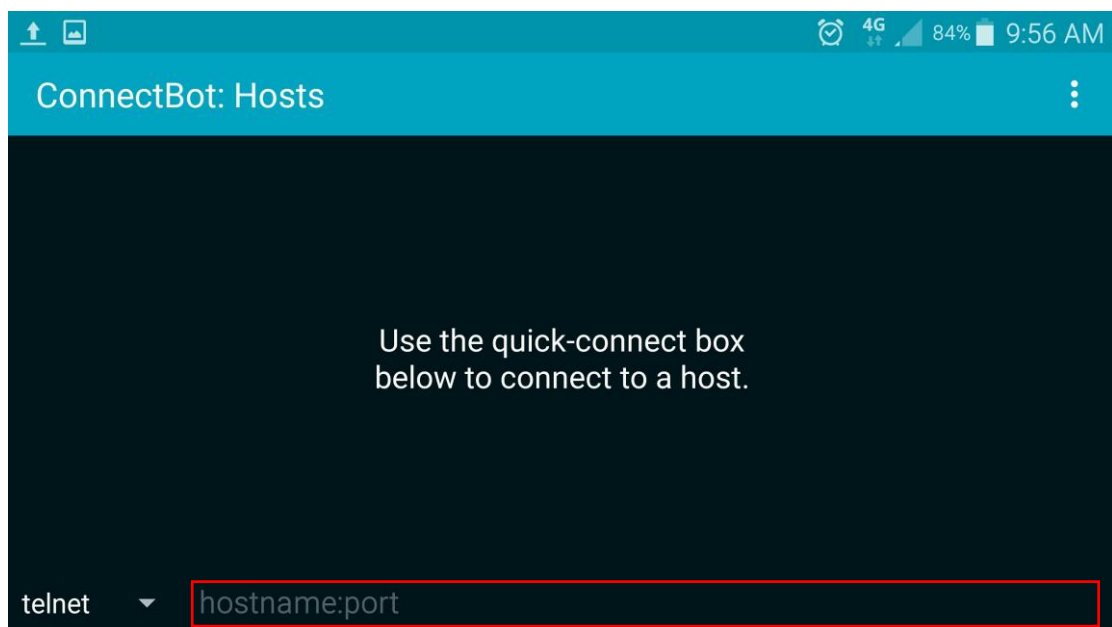
Tap on **telnet** from the list of protocols:

Tap on the **address bar** to open the address dialog:
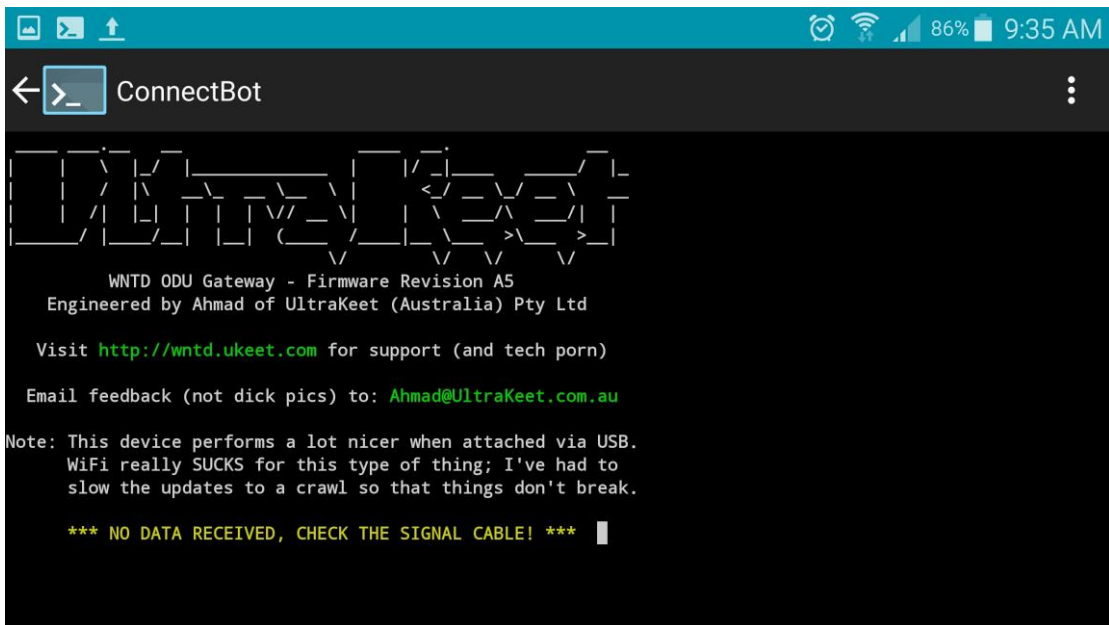
Enter the **IP Address** printed on your device (typically 10.0.0.1), then tap **DONE**:
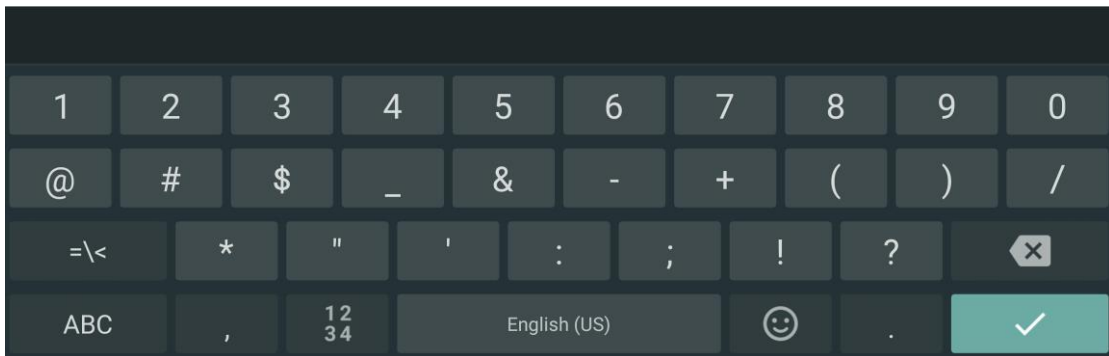
The App should connect to the Gateway, and display the following splash screen:

This page is usually displayed when the ODU cable is unplugged or faulty, or if the WNTD antenna hasn't sent any data for a while (or occasionally if you're in a no-signal area).

This page will also only appear when connected via WiFi and not via USB!

If the data on the page appears to be garbled (ie: not quite fitting on the screen, or wrapping onto multiple lines), you may have to adjust the display size.

In **vSSH** on IOS, this is done by changing the Width and Height parameters to **80** and **25** in the settings menu, as discussed previously.

In **ConnectBot**, simply tap on the menu (three dots to the top right), and tap **Force Size**:
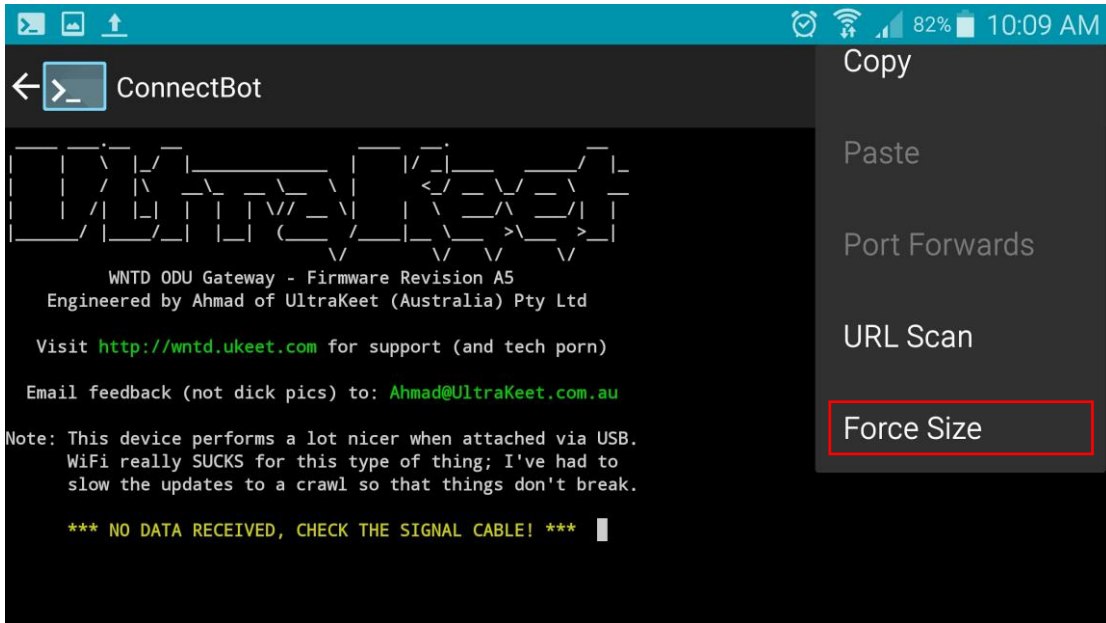
If you're asked for Width and Height numbers, enter **80** for the width and **25** for the height – These should already be the default settings.

You can now plug the WNTD antenna into the gateway, and after about a minute of boot-up garbage, the RF Qualification page will load:
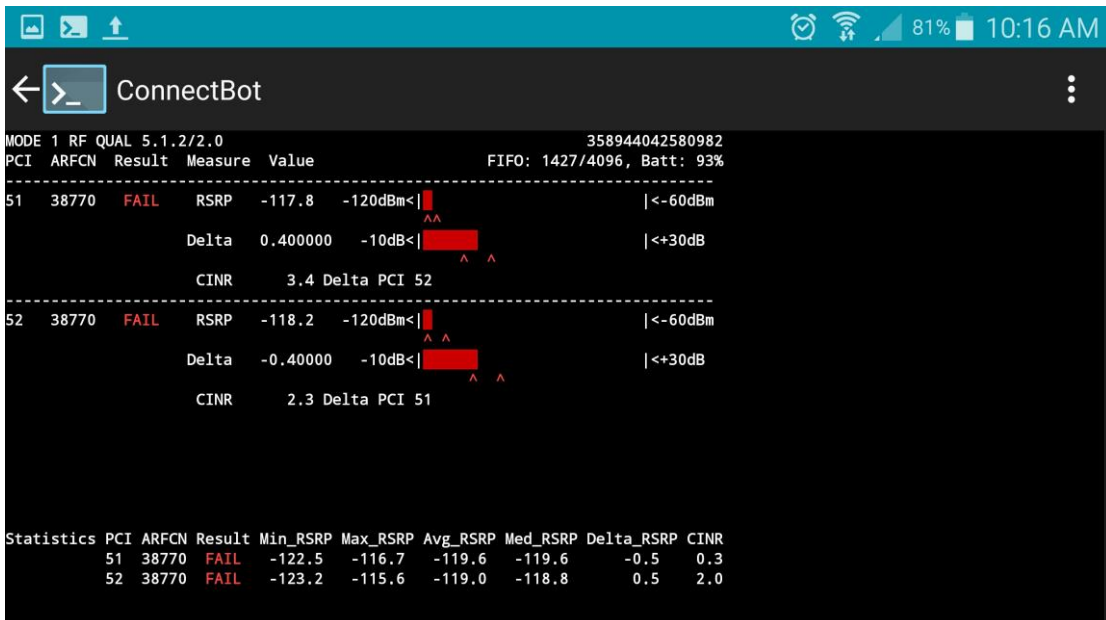
Smartphone/Tablet Troubleshooting

Occasionally, you may drift out of WiFi range, or receive interference from nearby signal sources (ie: the WNTD antenna itself, if you're standing in front of it)

If you start to see garbage data being displayed on the screen, or missing headings/text, move a little closer to the gateway, and simply wait approximately 20 seconds for the page to completely refresh. The gateway will try and recover from broken connections and buffer overflows on its own.

If you notice the page stops updating for more than ten seconds, check to see if the **WiFi Link** LED on the gateway is still blue. If not, you may need to disconnect and reconnect WiFi on your smartphone, then restart your App.

If the **WiFi Link** LED is blue and you're still not receiving page updates, you may just need to restart your smartphone application. Occasionally the apps shit themselves if too much data is received in a short period.

In the unlikely event the firmware on the gateway has crashed, simply rebooting (power off for ten seconds, then back on) will resolve the issue. The gateway will always revert to the splash screen within 30 seconds of data inactivity via WiFi, a good way to check for a crash is to unplug the WNTD antenna and wait for the splash page (this should be very rare)

Try a USB connection if all else fails. USB should always work, as the data shit out by the WNTD Antenna is essentially passed onto the USB port unmodified. Please email Ahmad@UltraKeet.com.au if you're able to connect via USB, but not WiFi.

The most common issue so far is the plastic 'key' on the RJ12 connector breaking, such that the connector doesn't lock into place and falls out of the WNTD antenna. We've done our best to have the unit gracefully recover from other issues.

USB/Laptop connection

The preferred means of connecting to the gateway is via **USB** – Data from the WNTD antenna is passed-through to the USB port unmodified, such that it should *always* work without issue (unless you have a Mac, in which case, sucked in)

Honestly though, the WiFi option only cost ~$20 extra in parts to implement. The majority of the unit cost is in the power supply and protection circuitry, followed by assembly labor (up to 5 hours per unit) and classy subscription porn.

The unit will appear as a virtual communications port in Windows/MacOS/Linux. Most modern operating systems have all the required software drivers built in. All you require is an application like TeraTerm (preferred) or Putty (also works)

The following examples will assume TeraTerm is being used, however the instructions should easily apply to other programs.

To connect via USB, plug the mini-USB cable (supplied) into both the USB port on the front of the gateway, and a free USB port on your laptop. **The WNTD antenna should not be plugged in at this point.**
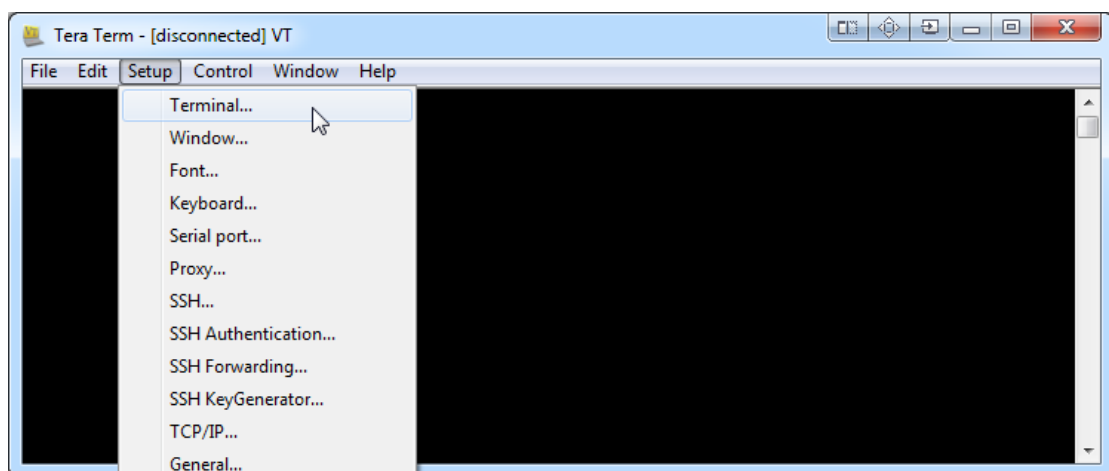
The **USB Link** LED on the front of the unit should be blue, and the **USB Data** LED may flicker yellow for a few moments.

Note: Try to use the same USB port on your laptop each time, otherwise the port numbers (explained later) will keep on changing.

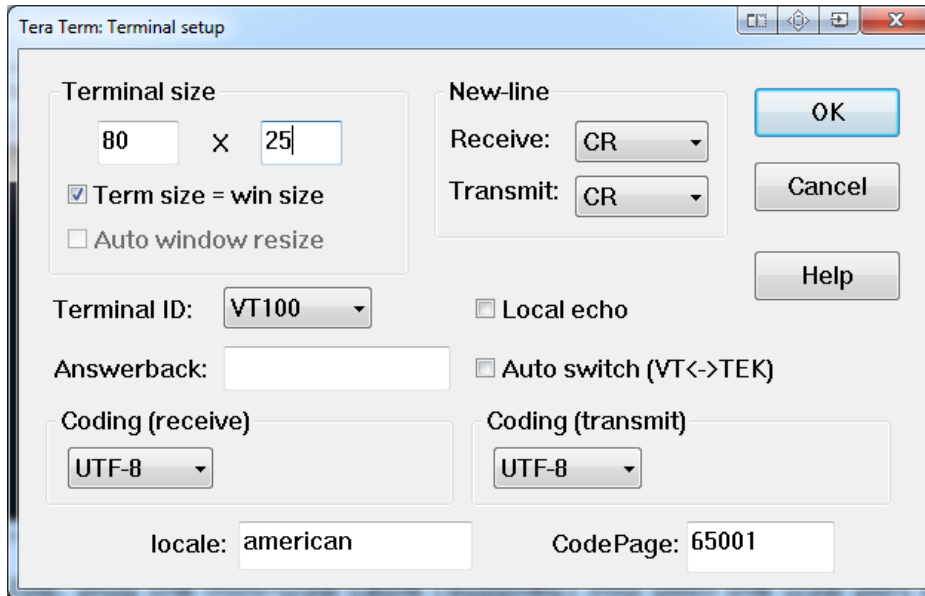Start your Windows Application (in this case, **TeraTerm**):
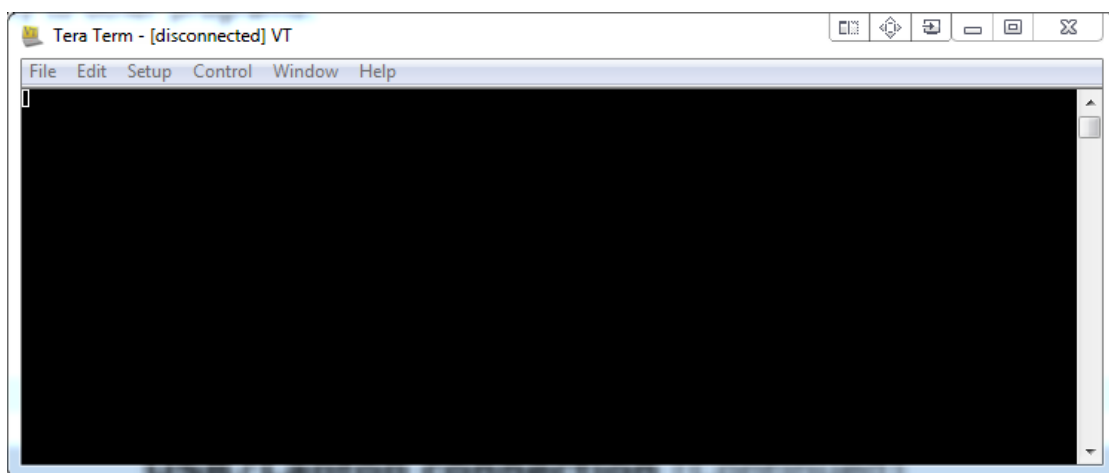
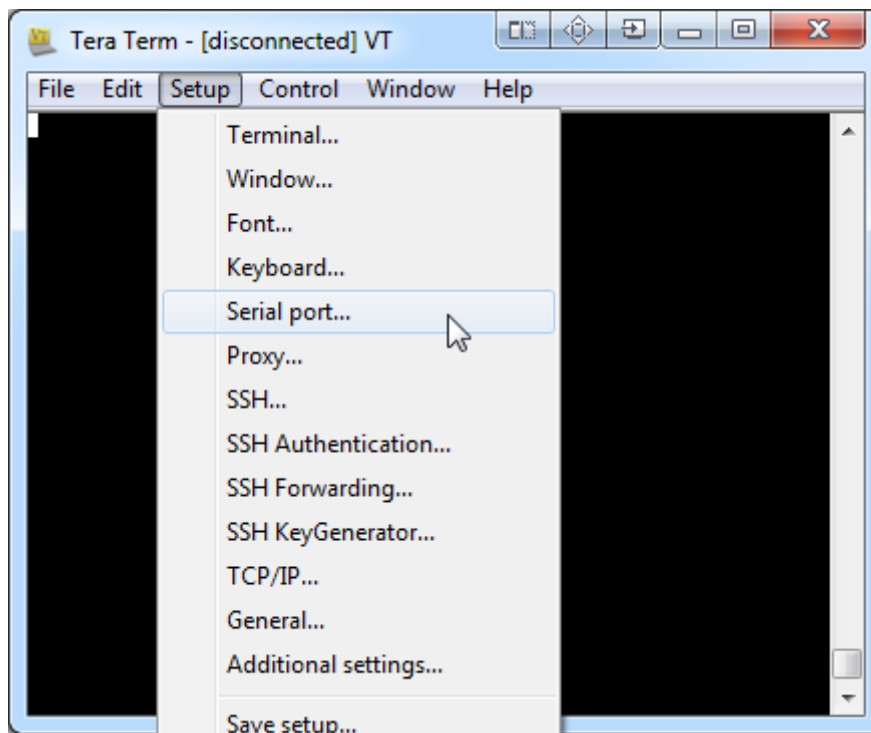Click on the **Setup** menu, then **Terminal**:

Ensure that your settings match the following screenshot, then click **OK:**
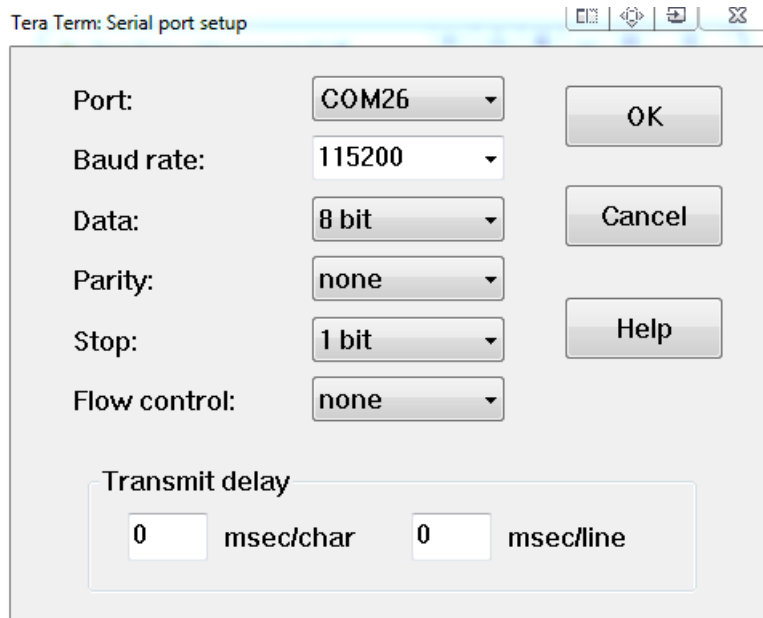

Now, click **Setup**, then **Serial Port:**

Select your **Port** from the drop-down list, ensure the remaining settings match the screenshot below, then click OK.

Your port number will likely be different to the one in the screenshot; If there's more than one port in the list, pick the highest number:

Plug the WNTD antenna into the RJ12 socket on the front of the gateway, and after about a minute of boot garbage, you should see the RF Qualification page:
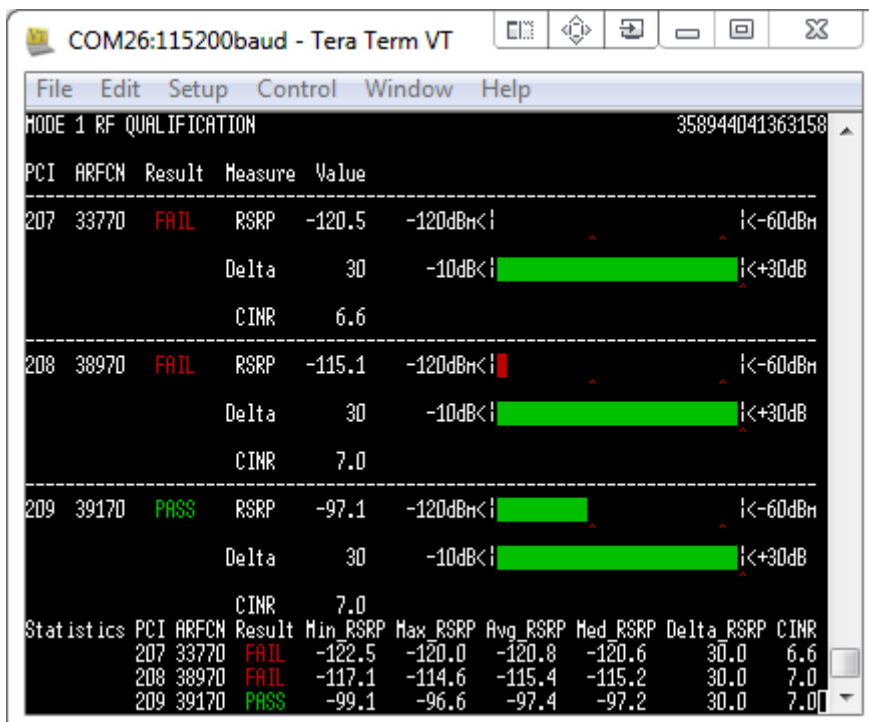
Depending on the font size, you may need to resize the window a little with your mouse to fit everything in.

USB/Laptop Troubleshooting

We've yet to experience any issues with USB – Please let us know if you experience any. At worst, we can help you set-up your gateway remotely using Remote Desktop.

General Troubleshooting

Symptom: The **Fuse OK** LED is not on

If the **Fuse OK** LED is no longer on, but all other LEDs act normally, the fuse is blown, possibly due to a faulty WNTD or interconnecting lead.

The fuse is manufactured by **LittelFuse** and sits in a small fuse holder. The current rating is 750mA (0.75A) with an 'F' rating (fast blow) - The fuse can be removed from the holder using tweezers, or needle-nose pliers:
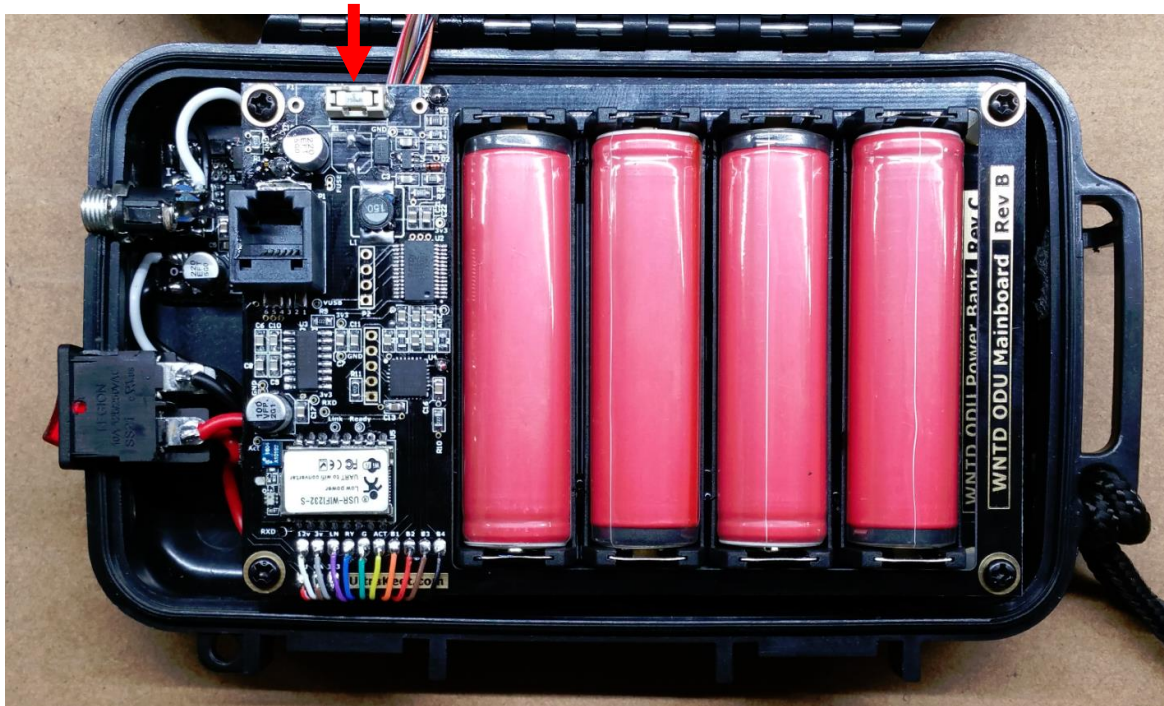
Email us to order a replacement ($2.50 plus shipping), or you can order one directly from Radio Spares in Smithfield (or other suppliers); The part number is 0154.750DR

Please do not try and short the fuse with a bit of wire.

Symptom: When the gateway is switched on without a WNTD antenna plugged in, only one Battery Voltage LED is lit, despite being fully charged.

This is a known issue, which I didn't pick up until releasing a few units from manufacture. The gateway is stuck in a loop waiting for the WNTD antenna to send its data. It's so busy, that it forgets to update the battery voltage LEDs (also, I'm shit)

Symptom: When connected via WiFi, the screen occasionally pauses for up to ten seconds without updating, before resuming as normal

Occasionally, something may interfere with your WiFi signal resulting in a momentary loss of reception. The software on the microprocessor within the gateway makes a copy of each RF Qualification page, and beams it over to your phone in small chunks, so as not to flood it with data.

If you happen to lose connectivity while receiving a chunk of data, the microprocessor will enter into a fail-safe mode, where it will wait up to ten seconds for your connection to stabilize, before trying to transmit the data again.

If all else fails, disconnecting and reconnecting WiFi usually does the trick.

Symptom: After the WNTD antenna boots, the RF qualification page is not displayed, only a page showing the battery percentage and **FIFO: 4096/4096** – without anything else at all

Ericsson have likely updated the firmware on the WNTD antennas to 'talk' at a higher speed on the console port. Try connecting via USB instead of WiFi momentarily.

If USB works as intended, please email Ahmad@UltraKeet.com.au urgently with a screenshot of the issue, as well as a screenshot of everything working via USB (such that the version number is showing in the qualification page)

More information will be on http://wntd.ultrakeet.com.au by the end of December, 2016