

Configuring Trimble TSC2/Survey Controller for RTK over internet – using Wi-Fi

This Technical Tip is intended for use in conjunction with the other three documents in this series on obtaining RTK GPS reference-station data via the internet (instead of from a radio modem) while using the Trimble TSC2 data collector running Survey Controller software.

This document shows the changes to make when using either a mobile phone that only provides Wi-Fi connection instead of the preferred Bluetooth Dialup Networking or a mobile Wi-Fi device such as the MiFi mobile hotspot. This document will use the term “mobile device” to refer to either of those types of Wi-Fi sources.

You can also do the same thing via the Wi-Fi access point used in your office’s wireless LAN, but due to Wi-Fi’s limited range that would not be useful for anything other than education (this document was prepared using office Wi-Fi instead of Wi-Fi from a mobile device) and experimentation.

If you use Wi-Fi instead of Bluetooth Dialup Networking, be aware that Wi-Fi consumes about six times as much power as Bluetooth. Also, the Trimble TSC2 only supports the older/slower IEEE 802.11b version of Wi-Fi.

The step numbers in this document are coordinated as closely as possible with the step numbers in the other three documents in this series. This document only shows the critical differences when using Wi-Fi instead of Bluetooth Dialup Networking.

The differences at the various steps -

1. Establishing a Wi-Fi connection between the TSC2 and the mobile device

Please consult with your mobile-device provider to learn how to enable the mobile device as a Wi-Fi access point (they may call it a “mobile hotspot” or some other such name).

<p>On the TSC2, tap on the Connectivity icon at the top of the display (the icon just to the left of the loudspeaker icon) to bring up the Connectivity window shown at right.</p>	
<p>Tap on the Wireless Manager button to open the screen that appears in the next row.</p>	
<p>If Wi-Fi is turned off, tap the Wi-Fi button to turn on Wi-Fi. Tap on the Menu button at bottom right, then tap on Wi-Fi Settings on the context menu that appears. That will bring up the screen in the next row.</p>	

The **Configure Wireless Networks** window is where you can see the available wireless networks and select the one to which you want to connect. The example at right shows that the TSC2 is already connected to the access point named **Paraguay**. Your display will naturally be different and you may need specific information from your mobile-device provider to get connected.

Also, note the change in the **Connectivity** icon at the top of the display.

If you are connected, tap the **OK** button at upper right.

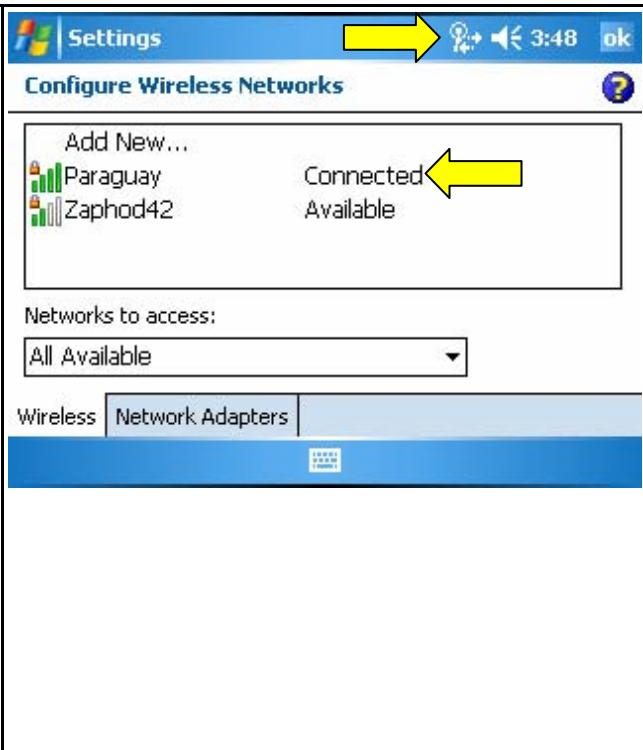
If you need to make any IP-related changes to connect to your mobile Wi-Fi device, click on the **Network Adapters** button and select the Wi-Fi adapter, which is the device named **Marvell CF8385N Wireless Card**.

If you make any changes to the network-adapter settings you will need to reset the TSC2 (press and hold the green power button until the countdown starts, release the green power button, tap the **Reset** button, and wait for the Windows Mobile desktop to appear) so the changes can take effect.

After you **OK** out of the **Configure Wireless Networks** screen in the row above, you will be back at the **Wireless Manager** screen shown at right.

Note that the Wi-Fi indicates connection to the **Paraguay** access point.

Tap the **Done** button at bottom left to close this window.



To test your Wi-Fi connection, launch the TSC2's Internet Explorer web browser and navigate to a web site of your choice. This basic benchmark of connectivity will confirm the TSC2 has an internet connection through the mobile device.

If you cannot reach a web site that can be reached by another computer, you should consult with the provider of the mobile device.

Once you can reach a web site you should have no problem connecting to a RTK GPS reference-station-data source unless the mobile device blocks specific IP ports.



If you are connecting directly to a GNSS receiver (not going through an NTRIP caster), you can use Internet Explorer to confirm access to the specified IP port as shown at right.

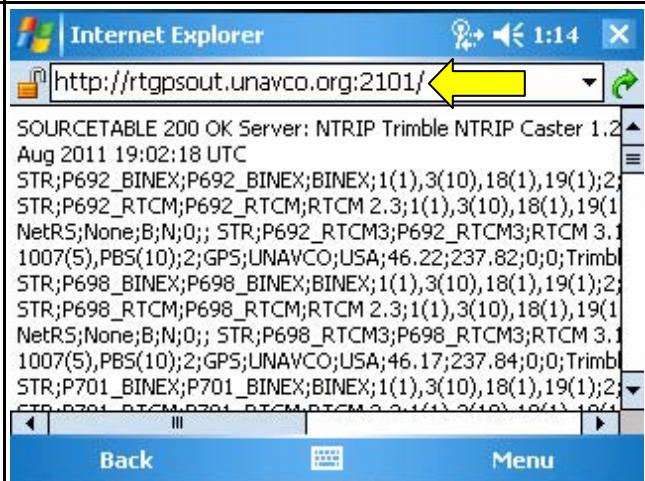
Simply enter http:// and the numerical IP address (or the hostname, as shown at right) followed by a colon and the IP-port number (which happened to be 5019 in this case – yours may be different) in the Internet Explorer address bar. If you can connect, the Internet Explorer screen will fill with a strange-looking mix of characters.

If you cannot receive a data stream that looks (somewhat) like the example shown at right, you should ask the provider of the mobile device if any IP ports are blocked by policy, design, or configuration.

Similarly, if you are connecting through an NTRIP caster (not connecting directly to a GNSS receiver) you may be able to use Internet Explorer to check connectivity.

As above, enter http:// and the numerical IP address (or the hostname as shown at right) followed by a colon and the IP-port number (which happened to be 2101 in this case – yours may be different) in the Internet Explorer address bar.

This particular NTRIP caster responded with its listing of data sources – the data at right begins with the word SOURCETABLE. Other NTRIP casters may respond differently.



2. Using a Wi-Fi connection to the internet instead of Bluetooth Dialup Networking

Tap on **Start**, and then tap on **Settings**.

The **Settings** window will open, tap on the **Connections** tab.

Under the **Connections** tab, tap the **Connections** icon.



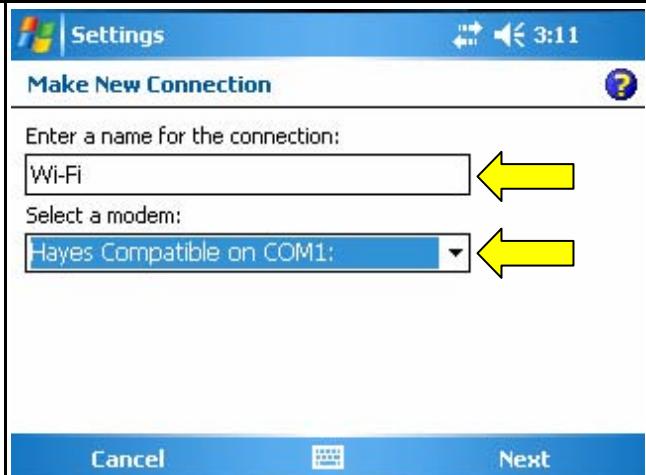
Tap on **Add a new modem connection** to open the dialog shown in the next row.



For purposes of this document, the new connection was named **Wi-Fi**, not particularly clever but that name will work.

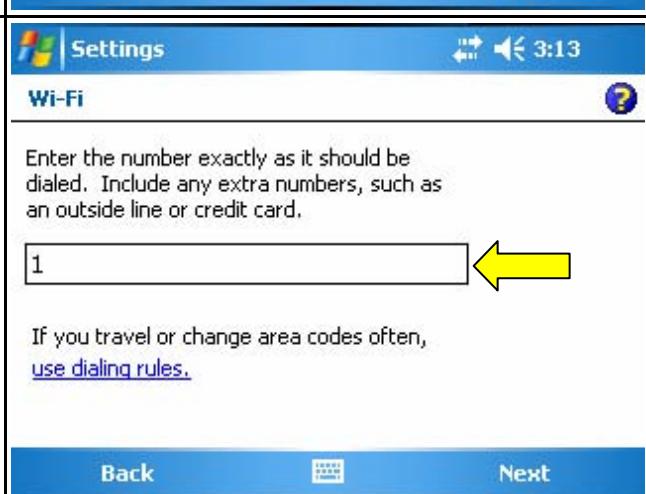
Select **Hayes Compatible on COM1** for the **Select a modem:** field.

Tap the **Next** button at bottom right.



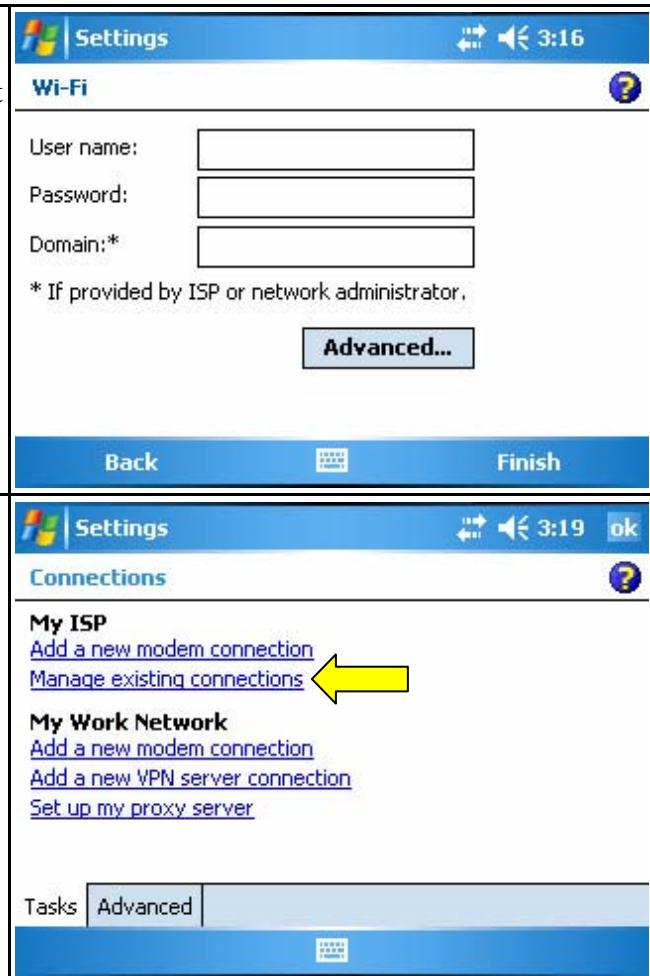
We cannot get past this dialog without entering a dialing number, so we can simply enter the numeral **1** (or probably any other character(s) you may prefer) as shown at right.

Tap the **Next** button at bottom right.



Leave blank all the fields in this dialog.

Tap the **Finish** button at bottom right and you will be back at the **Connections** window shown in the next row.



Tap on **Manage exiting connections** to bring up a list of available connections.

Our brand-new connection appears in the list.

There is not much reason to test this connection, as will become apparent in Step 5 below.

3. Creating a dial profile that will connect to the RTK data source via Wi-Fi

Proceed as per the instructions in the other documents in this series, but with the following differences –

For **Network connection**: select the Wi-Fi modem connection created in Step 2 of this document.

For **APN**: select **None**.

4. Creating a survey style to utilize Wi-Fi

Proceed as per the instructions in the other documents in this series, but with the following difference –

Under **Rover radio** at **Dial profile**: select the dial profile created in Step 3.

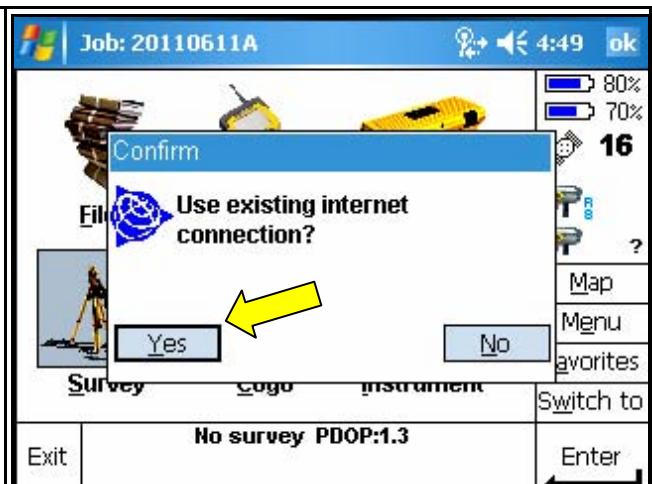
5. Using the survey style that uses the Wi-Fi connection

Make sure your Wi-Fi is connected - tap the **Connectivity** icon at the top of the display if you need to confirm.

Simply proceed as you normally would, select the survey style created in Step 4 above and then click **Start survey**.

Instead of establishing connection through the modem connection specified in the dial profile, Survey Controller will detect that the TSC2 already has an active internet connection via Wi-Fi and will display the dialog shown at right.

Tap on the **Yes** button, or simply press the TSC2's **Enter** key to accept that suggestion.



Now you will be getting your RTK GPS reference-station data over Wi-Fi, as indicated by the reference-data-from-network icon pointed by the yellow arrow at right.

Here again you may notice that the **Connectivity** icon shown is different than the one displayed when connected via Bluetooth Dialup Networking.



The astute reader will notice that we never actually used the modem connection we created in Step 2 above – that modem connection was only used as a “filler” to allow completion of the dial profile we created in Step 3 and selected in Step 4. The TSC2 “knew” it already had an internet connection and offered the option to use that internet connection.

To conserve batteries, remember to turn off the Wi-Fi (both on the TSC2 and the mobile device) whenever not actually using Wi-Fi.