GPS Newsletter – Sensor

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Common Radio Problems

We often receive questions with regards to the radio data link... Why is it not working? What do I need to check? How can I improve the range of the data link? This newsletter aims to provide basic guidelines for good radio practice.

Always begin investigating radio problems with the rover within 10m of the ref (reference). This will greatly reduce the chance of the problem being due to jamming or interference (discussed later).

No Radio Link At All

As described in **Newsletter 2**, the blinking radio icon on the rover shows that the rover is receiving RT data. If the icon does not blink at all, then the rover for some reason is not receiving data. But why?

Are the reference and rover sensors configured correctly? Check in the **CONFIGURE\ Real-Time** panel (**CONFIG**, **4 Interfaces**, highlight **1 Real-Time** and press **F3 (EDIT)**).

Are they actually configured as a **Reference** and **Rover**? (Check quickly by looking at the radio icons). Is the **Data Format** (Leica, RTCM (version & messages), CMR...) correct and the same on both?

Check the **Port** settings. Is the correct port configured with the correct device? Is the radio connected to the assigned port?

Are the reference and rover radios operating on the same channels? Check in the **CONFIGURE\ Radio Channel** panel (**CONFIG**, **4 Interfaces**, highlight **1 Real-Time** and press **F5 (CTRL)**).

Remember that this panel is only used to **set** the channel on the radio. This panel does not necessarily show what channel the radio is **currently** set.

Imagine you have 2 radios, one set to channel 0 and the other to channel 8. Connect each of the radios to the sensor and access the **CONFIGURE\ Radio Channel** panel. The sensor will show the same channel for both radios (and not necessarily 0 or 8!)

To ensure that the ref and rover radios are on the same channels, enter the same channel number for ref and rover. Exit the **CONFIGURE\ Radio Channel** panel with **F1 (CONT)** to set the radio channel. The sensor will beep and display the message **Radio chan. switched to...** Note, this is also a good check that the correct radio is connected to the correct port.

Is the equipment set-up correctly? Are all radios and cables connected properly? Are the radio antennas attached? Is any cable damaged? Does the reference actually have power and is turned on? (It happens!)

Switch the ref to be a rover and the rover to be the ref. This may indicate if there is a problem with one radio being unable to transmit or receive. The radios would then need further investigation.

Intermittent Radio Link

If the radio icon blinks intermittently then this means you are receiving only some data. (Some data means that complete epochs of RT data is missing, NOT parts of each epoch. You can receive either only all or nothing of each RT data message).

In this case, the ref and rover sensors are configured correctly. The problem is more likely to be due to the radio or the radio link itself.

You can gain more information about how often RT data is being received in the **STATUS\ Real-Time Input** panel (**STATUS**, **1 Survey**, **1 Real-Time**).

Last recvd shows the time since the last RT message was

received. With a good radio link, this value should never be greater than the rate at which the data is sent from the ref (normally once per second). If this value continues to climb and then drop back to 01, then this shows that only occasional RTK data is being received. Why?

Again, begin investigations into an intermittent radio link with the rover close to the ref.

Is there interference or jamming of the radio signal? Change the channel of the ref and the rover (make it a large change in frequency – such as from channel 0 to 8). (Note, the actual frequencies to which your radio channels are set will depend on your country, the radio type and how the radio was initially programmed by the supplier)

To be continued...

Leica Geosystems