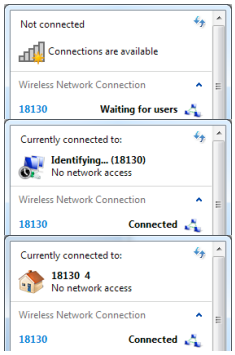
ASD Fieldspec manual for RSL measuring campaigns

Preparing the ASD Fieldspec

What you need to do on the measuring day

- ☐ Switch on the ASD first (warm-up time for the ASDs: at least 30 minutes) then the laptop.
- ☐ Start the RS^3 software (or 'Highcontrast RS^3')
- ☐ The ASD will connect to the laptop via wireless: On Windows XP the connection is pretty prompt.

On Windows 7 it can take up to 15 seconds till the laptop establishes a wireless connection to the ASD. Check the connection procedure as pictured on the right for your convenience.

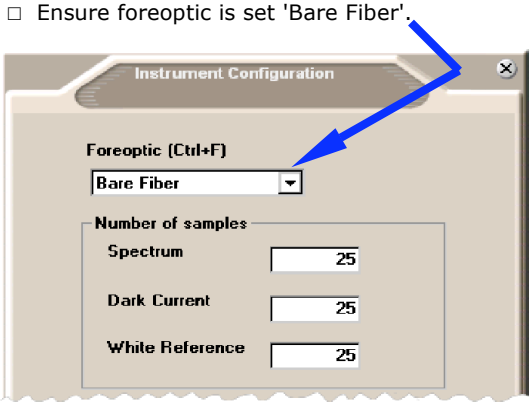


Note: On Windows 7 The wireless symbol on the bottom right will keep the yellow explanation mark as shown below:

This is because the ASD doesn't offer internet access per se, yet the connection to the ASD is established.

Configuring the instrument

- ☐ Number of internal averages for DC, white reference and spectrum: **25** (Shortcut: Alt-C,C)
  Menu: Control → Adjust Configuration
  and refer to the screenshot to the right.
- ☐ Ensure foreoptic is set 'Bare Fiber'.

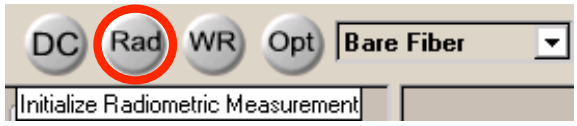


Measurement

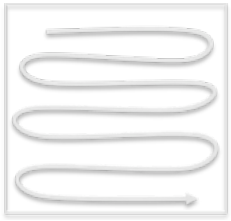
Measurement process for each target:

1. Setup of the spectrum save (Shortcut: Alt-C,S) (Menu: Control → Spectrum Save):
   a. Select the folder for the current test site. The root folder structure for the spectras are: **C:\Spectral Data**[year]****[campaign name]
   b. Set the base filename according to your nomenclature
   c. Set the number of files to save to 5
   d. Interval between saves: 0 seconds
   e. Ensure checkbox "Save As New File Format" checked.
2. **Optimise the instrument** over the white reference panel (unless your target is brighter than the WR, e.g. snow; optimise over the target in that case): Press **OPT button** in RS^3 GUI (Shortcut CTRL-O).

3. Switch to **Radiance mode** (this automatically carries out a DC): Press **RAD button** in RS^3 GUI.



4. Acquire **5 readings of the white reference panel** by pressing space once.
5. Set the number of files to save to 30 (Shortcut: Alt-C,S).
6. Acquire **30 readings of the target** by pressing SPACE once. During the sampling time, make sure to cover your square metre in a sampling pattern similar as shown below:



7. Set the number of files to save to 5 (Shortcut: Alt-C,S).
8. Acquire **5 readings of the white reference panel** by pressing space once.
9. Take a **picture** of the target, write down the file number.
10. Take a **GPS** reading of the target
11. Complete the Campaign Protocol Document of this site for the current target.

Automatic GPS

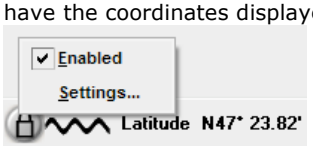
Alternatively to taking manual GPS readings of each target, it is possible to automatically record the GPS position while taking measurements.

<u>For the ASD Fieldspec 4:</u>

Take the black Bluetooth GPS device and switch it on.

blinking slow: searching for connection
blinking fast: connection to laptop established
steady: searching for satellites
blinking: satellite found and it gets a position

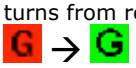
- ☐ In RS³ software: On the bottom left, right-click on the padlock, select 'Enabled'. It may take few seconds to have the coordinates displayed.



Note: The maximum recommended distance between the Bluetooth GPS Device and the laptop is 10 meters.

For the ASD Fieldspec 3:
Note: Only the Garmin 60CSx are configured to be used with the laptop.

- ☐ Switch on the GPS device; wait till it has the position.
- ☐ Connect the GPS device to the laptop using the USB cable.
- ☐ Ensure that the red G symbol on the icon task list turns from red to green; it may take a little while:



- ☐ In RS³ software: On the bottom left, right-click on the padlock, select 'Enabled'. It may take few seconds to have the coordinates displayed.

Note: When being two people in a campaign, the person handling the laptop must be as close as possible to the one operating the ASD.

Shutting down the equipment

!! IMPORTANT NOTE !!

- ☐ **When closing the RS³ software, wait till it closes completely** (takes a couple of seconds), then wait another 5 seconds and *only then switch off the ASD.*
  ➔ Failing to follow this procedure, the ASD's internal memory can go corrupt, since RS³ is writing a small log file onto the ASD upon closing the program.
- ☐ Alternatively, switch off the ASD first and then close the RS³ software. In this case, the software just skips writing the log file.

Charging the laptop battery

A note on recharging the battery of the Lenovo X230 laptop which are assigned to the ASD Fieldspec 4:

- ☐ The laptop has a secondary battery slice attached to the bottom and it has its own plug. The power supply must be connected to the bottom plug, so that both batteries (main and secondary) are being recharged at the same time.

Mini-Troubleshooting

Problem: The laptop cannot establish a wireless connection to the ASD.
Solution: Check the status of the wireless connection in the network settings and ensure that the wireless connection is enabled. Restart the computer when no connection is being established after 1 minute.
In case this doesn't help: Go to the network settings. For the Wireless Network connection, ensure the following settings are set:
Radio button "Use the following IP address" is selected.
IP address: 10.1.1.55
Subnet mask: 255.255.255.0
Default gateway: Empty
Radio button "Use the following DNS server addresses" is selected
Preferred and Alternate DNS server: Empty.
In case this doesn't help either: Under certain circumstances, the orientation between laptop and ASD causes the wireless connection to fail or there are interferences. In the lab, the magnetron of the plasma light source causes interferences when it's on for example.
Solution: In this case it's advisable to connect the ASD via Ethernet cable to the laptop. The cable is found in the back of meshed bottom pouch of the ASD backpack. Ensure that in the network settings the 'Local Area Connection'-settings are set the same as the Wireless Network Connection, except the IP-address, which must be: 10.1.1.22.
In case all of the above fails: Bring the equipment to Damien, the Technician.

Problem: The laptop established a wireless connection to the ASD successfully, all is fine, it says 'connected' on the symbol on the bottom right. However, after starting the RS³ software it fails to establish a communication with the ASD, returning an error message.
Solution: Close the RS³ software, wait for 20s, start the program again. If this doesn't help, restart the laptop.
In case this doesn't help: Bring the equipment to Damien, the Technician.

Problem: The G symbol on the icon task list stays red, even though the GPS device is connected and the device displays a position.
Solution: Disconnect the GPS device, switch it off and on again, and reconnect the GPS device. Wait for 1 minute (max) till the G symbol turns green. If it stays red, restart the computer.

Problem: The G symbol on the icon task list turns yellow instead of green.
Reason: This means that the GPS device is being detected by the laptop, however it doesn't have a position.
Solution: Ensure that the GPS device gets enough satellites to get a position. Only when the GPS device can display a lat/lon position the G symbol will turn green.