Performing a SM RL1 Self-calibration

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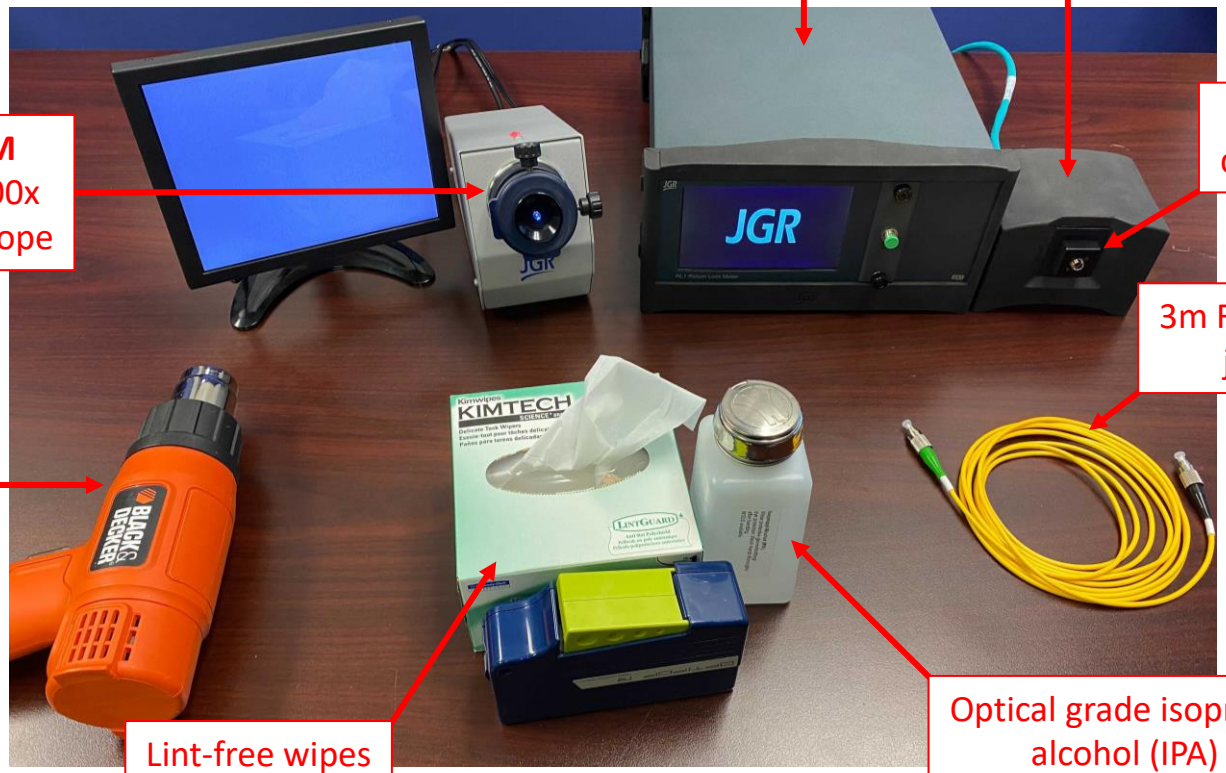
This document will show step-by-step instructions on how to perform a SM RL1 self-calibration.

If you have any questions, please email *support@jgroptics.com*

Performing a SM RL1 Self-calibration

The following items are required:

- Inspection and cleaning tools
- 3m FC/APC to FC/UPC jumper (SM)
- SD01 FC sliding detector adapter



RL1 IL/RL meter

RD-S remote-head detector

SD01 FC sliding detector adapter

CS400K-CM Benchtop 400x inspection scope

3m FC/APC – FC/UPC jumper (SM)

Heat-gun (optional)

Lint-free wipes

Optical grade isopropyl alcohol (IPA)

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Proper inspection and cleaning is very important.

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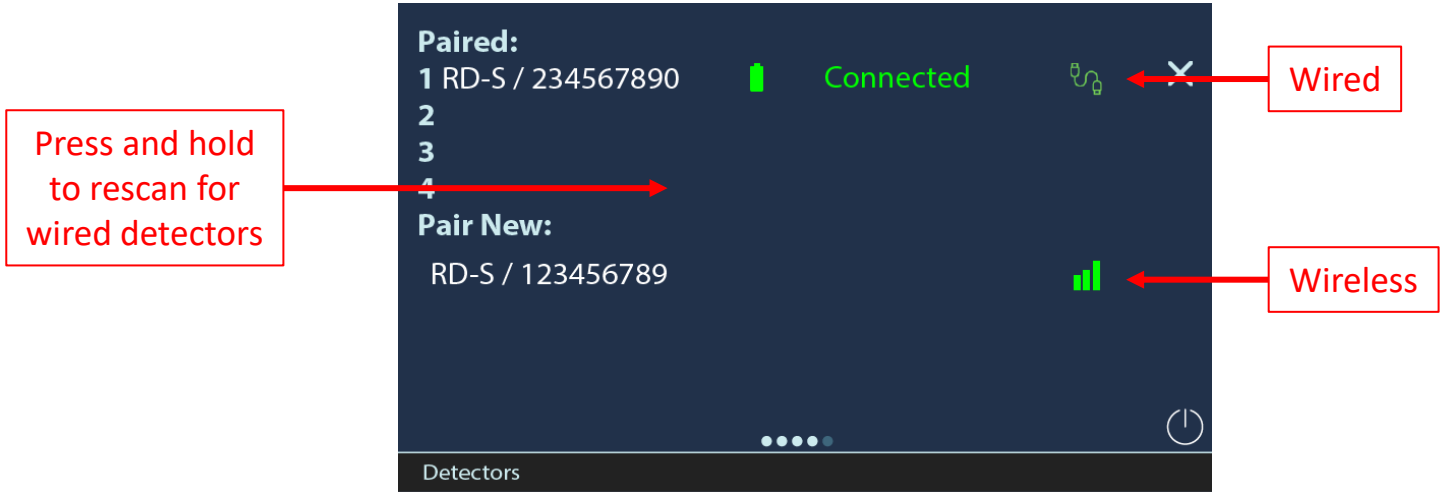
If using a remote-head RD-S detector:

- Connect the RD-S to the RL1 using the blue M12 cable
- Swipe to the *Detectors* page to confirm a wired connection is established



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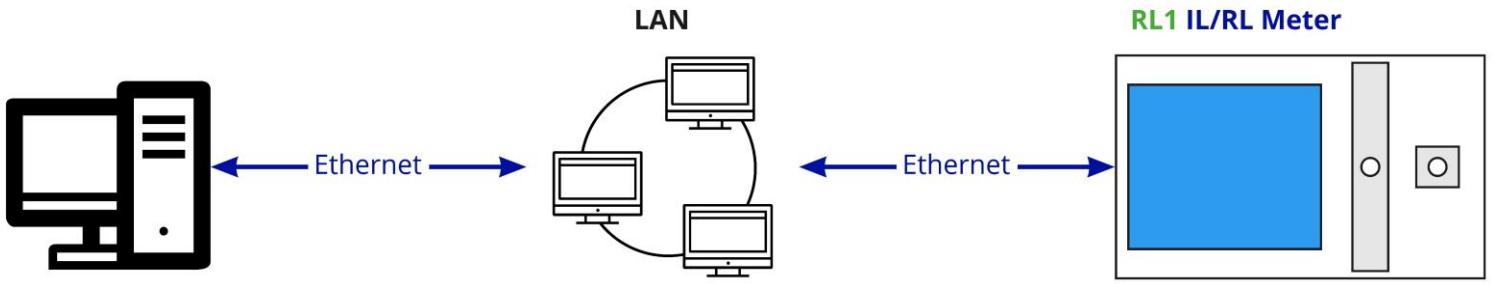
- Connect the RL1 via Ethernet to the same LAN as the controlling PC or tablet



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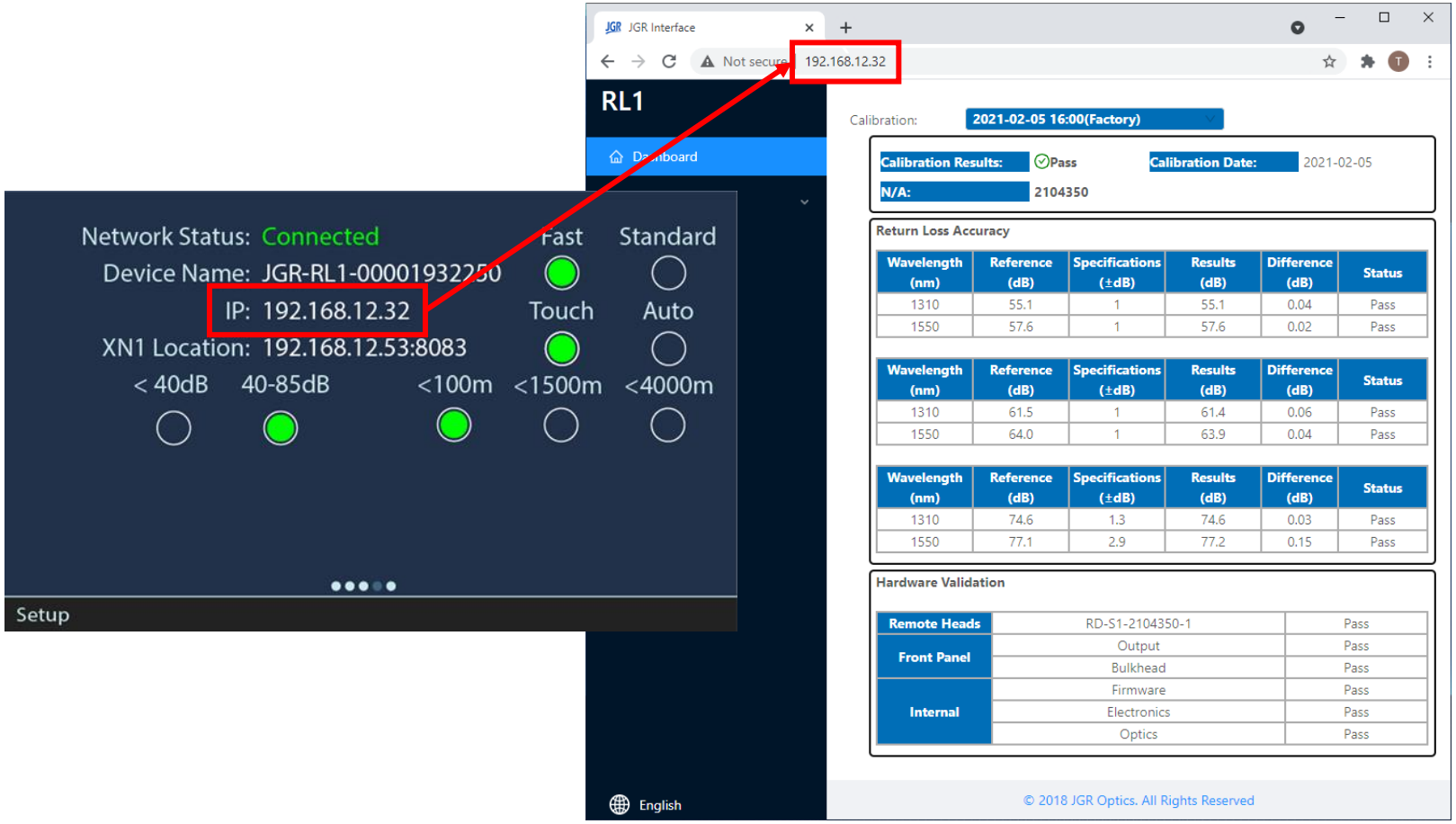
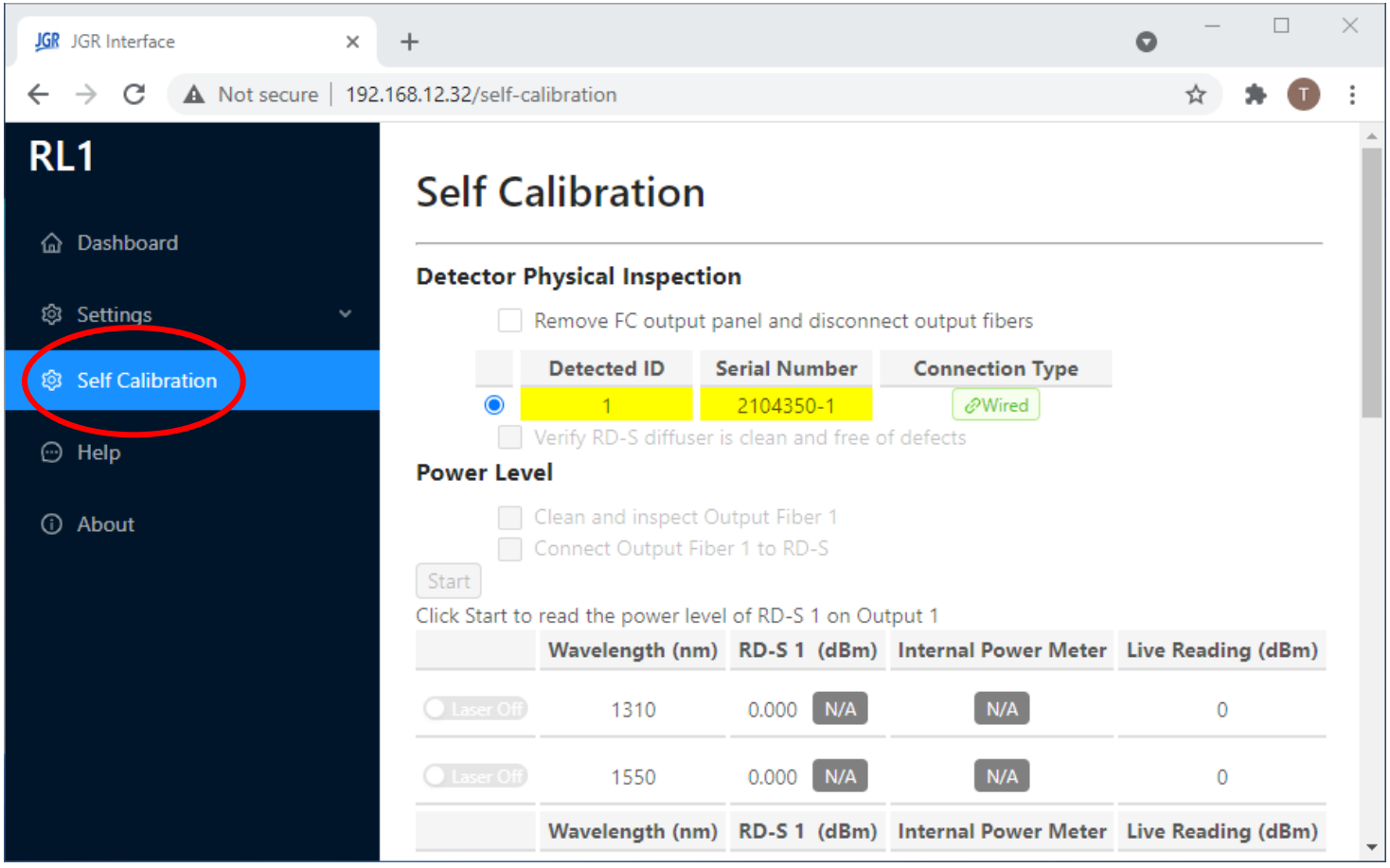
- Swipe to the *Setup* page to get the RL1's IP address
- Enter the IP address into a web browser (recommended: *Google Chrome*)



Performing a SM RL1 Self-calibration

- Click on the *Self Calibration* tab



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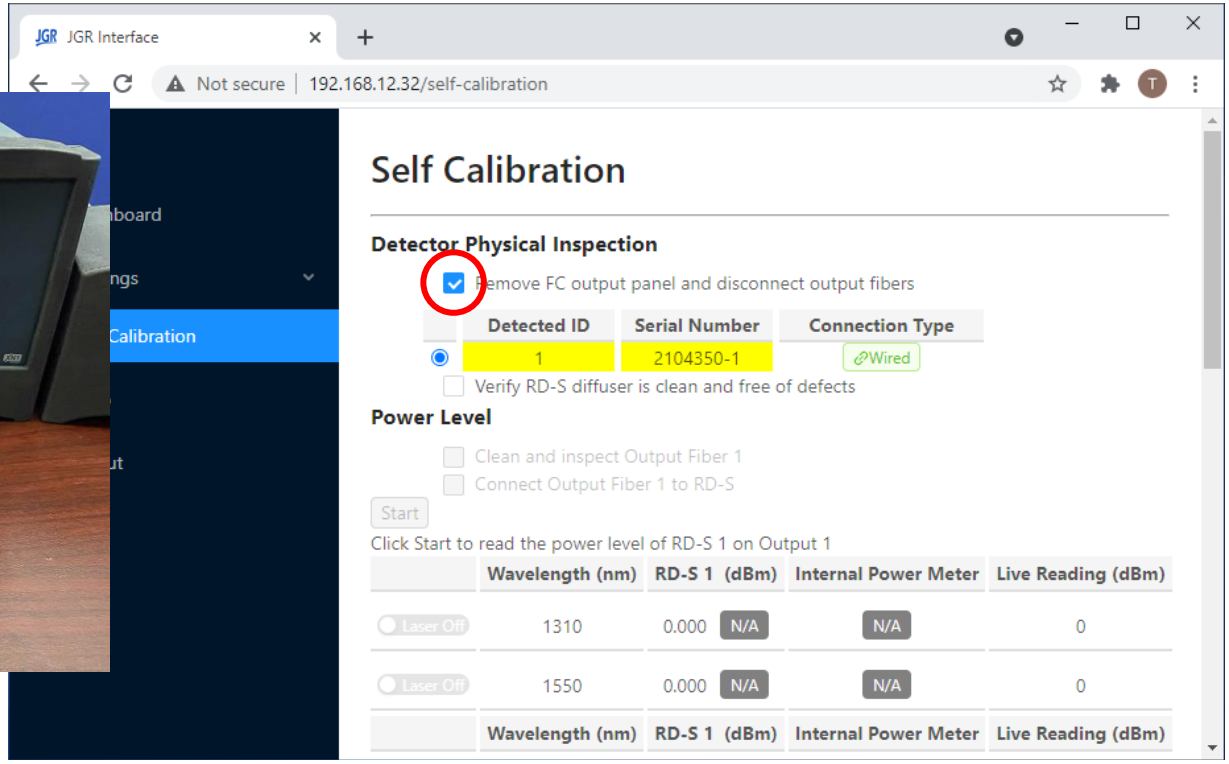
- Remove the output panel and disconnect the lead



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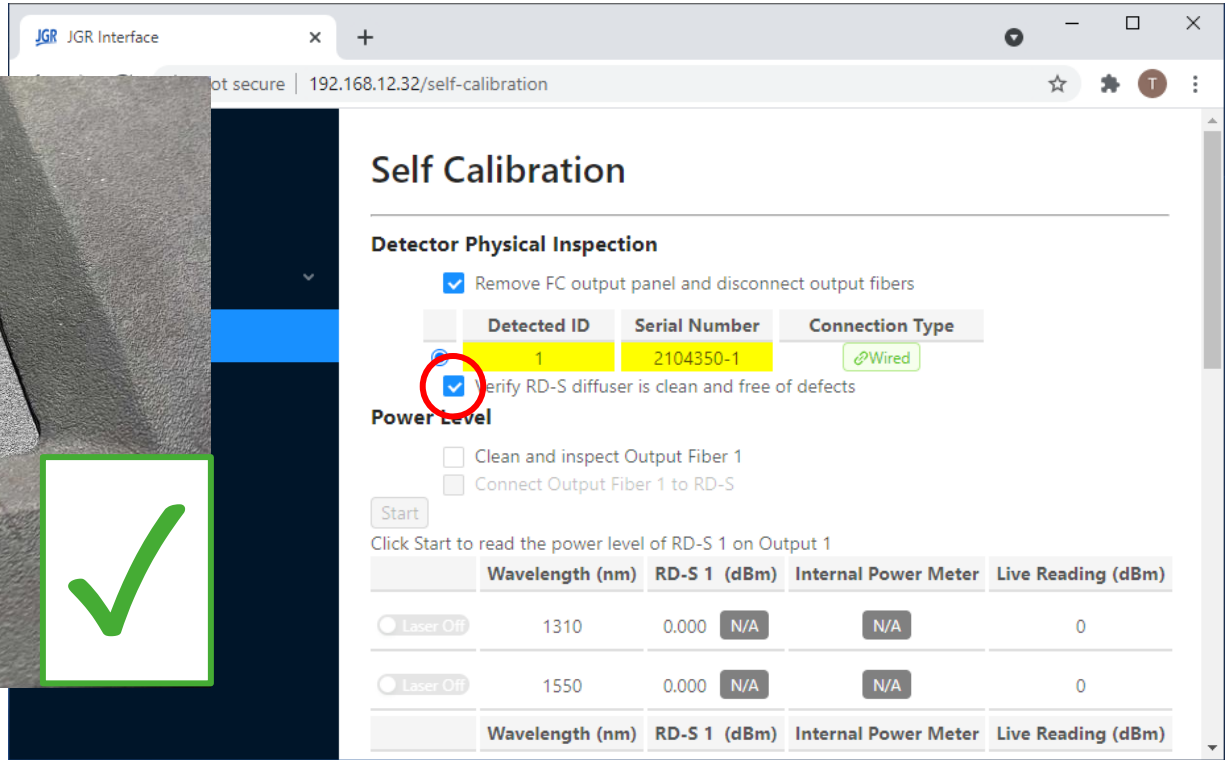
- Verify the detector diffuser glass is clean and free of defects
  - If the diffuser is dirty, gently use a lint free wipe or swab
  - IPA and low pressure compressed air can be used on the diffuser plate
  - If it is scratched and cannot be cleaned, please contact *support@jgroptics.com*



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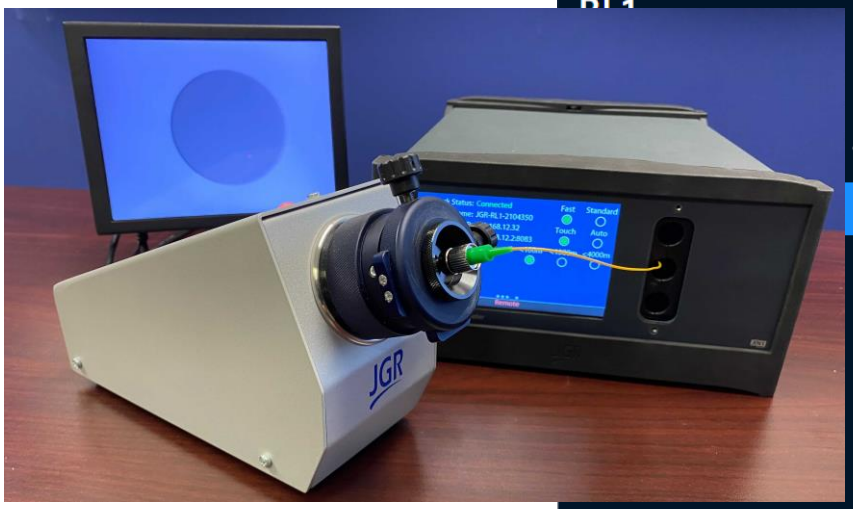
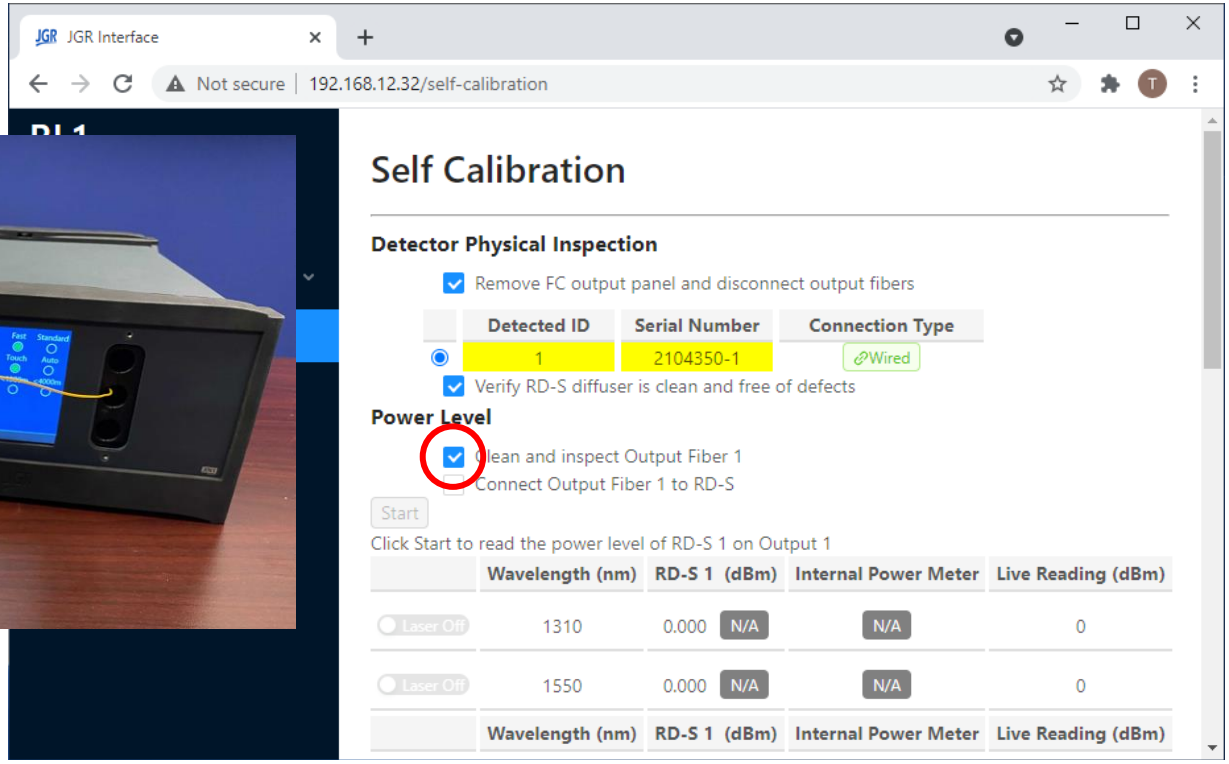
- Clean and inspect the output lead connector
  - Position the scope so that the fiber is not under tension and there are no sharp bends





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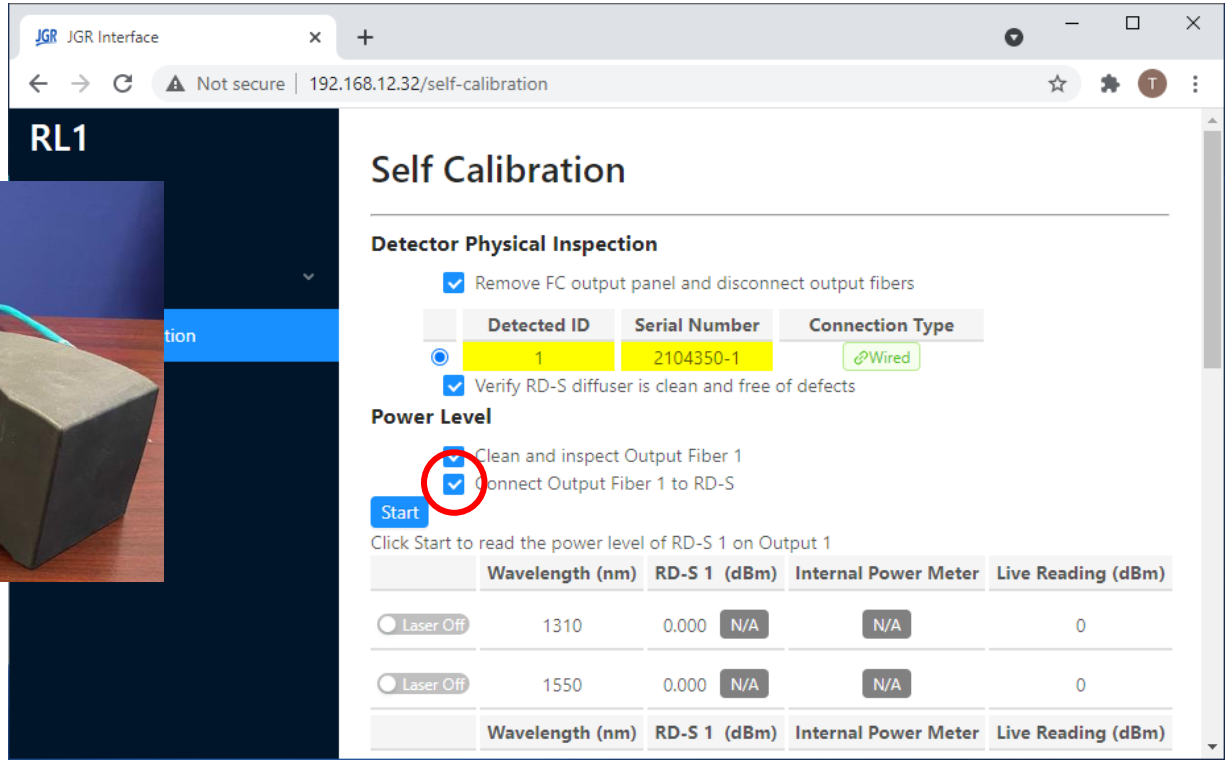
- Connect the output lead to the detector
  - Make sure that the fiber is not under tension and there are no sharp bends



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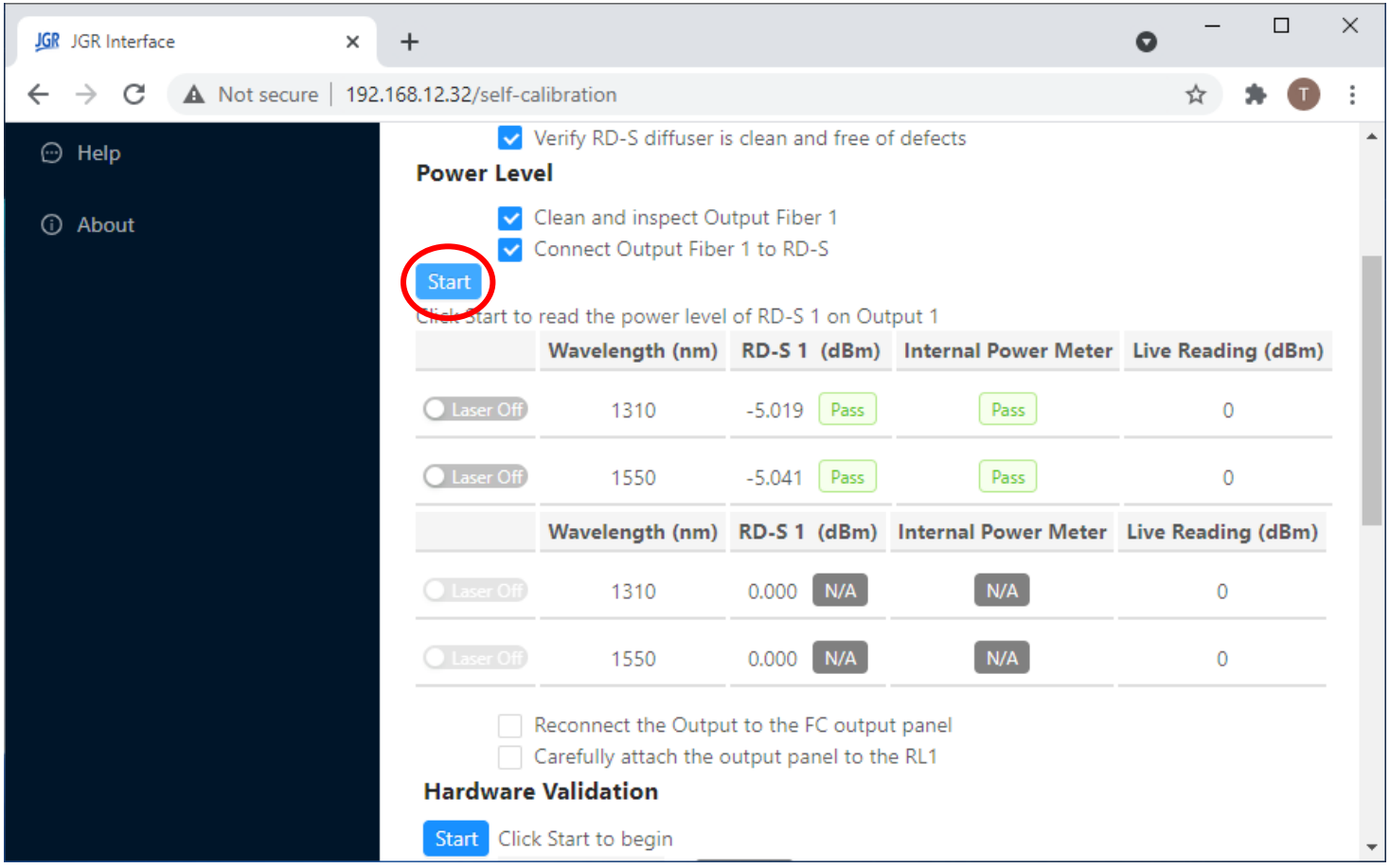
- Start the power level



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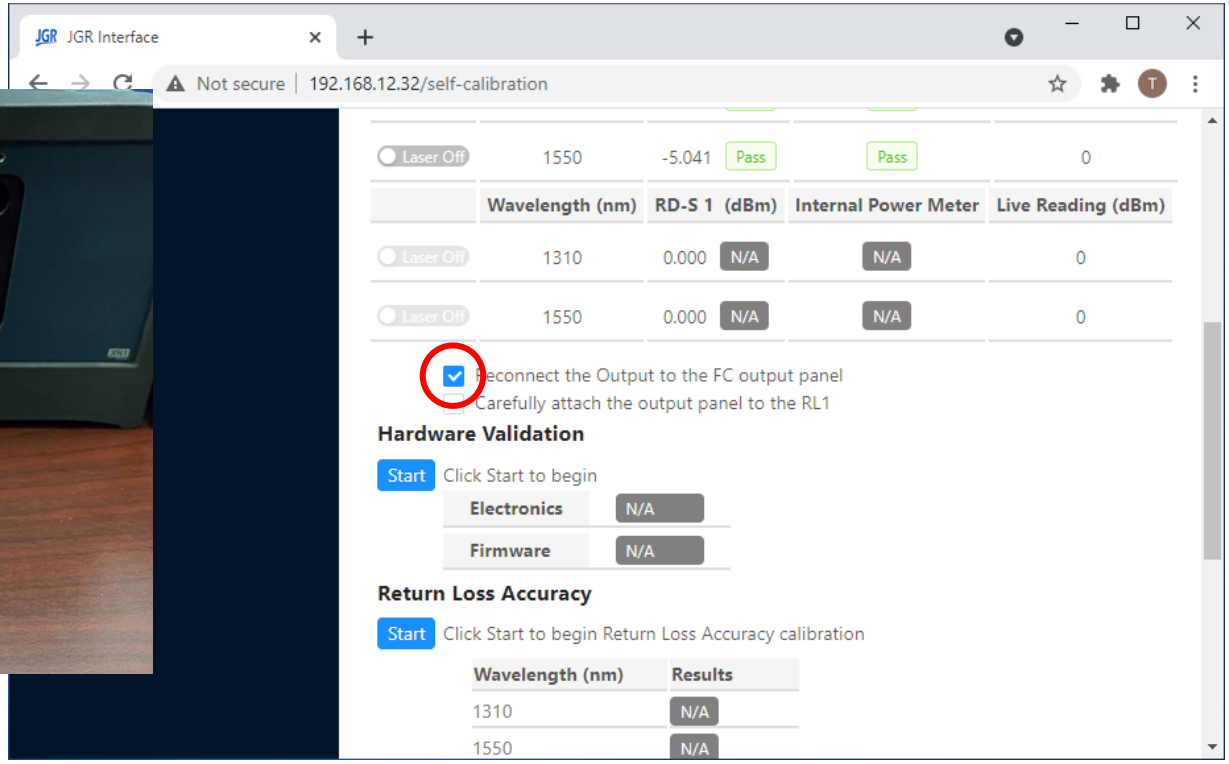
- Reconnect the output lead to the output panel



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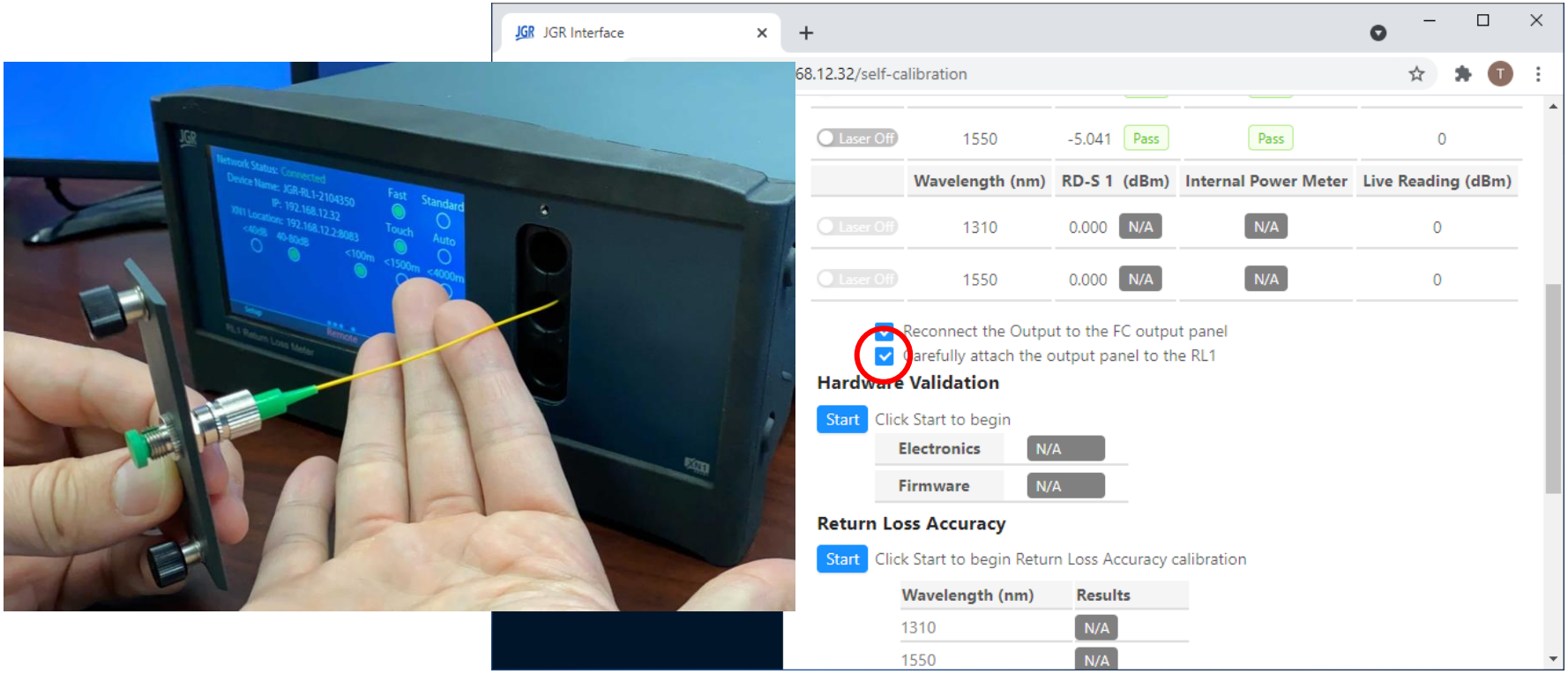
- Carefully reattach the output panel to the RL1
  - Use your free hand to help guide the fiber back in, avoiding any twists or bends
  - If you feel any resistance, stop, pull out slowly then try again



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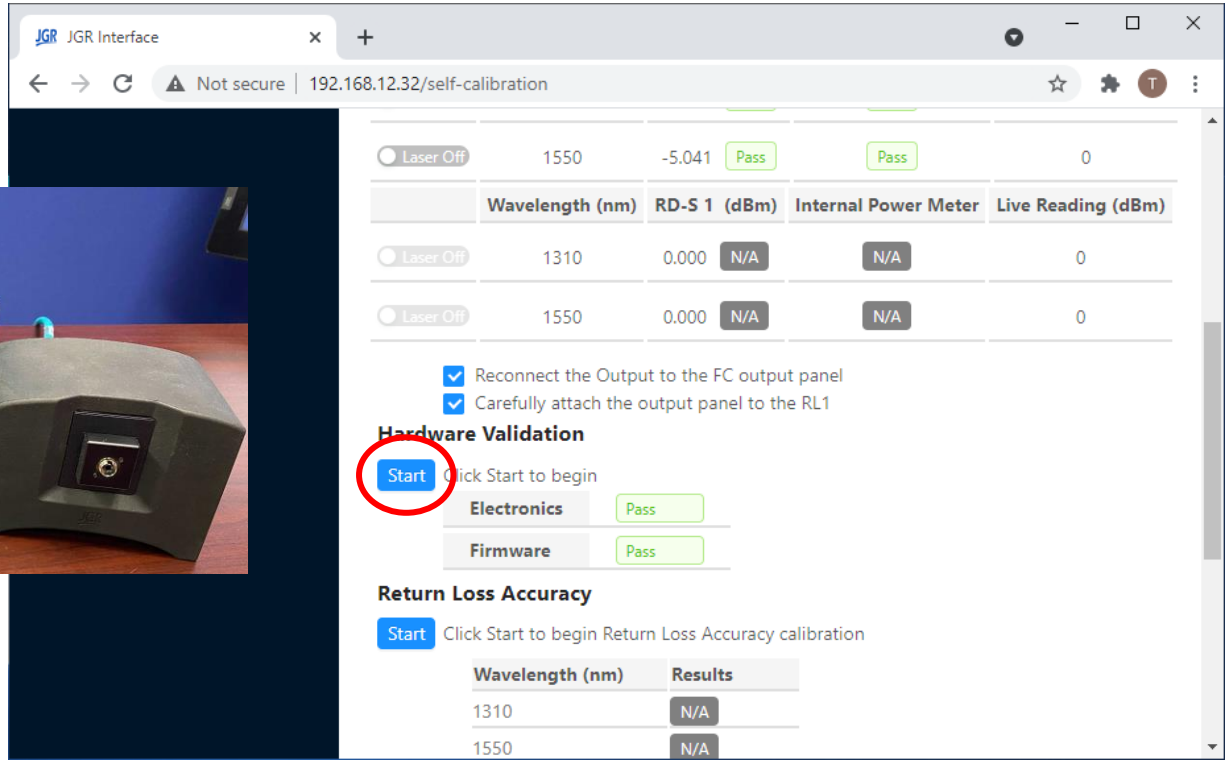
- Start the hardware validation
  - If the electronics fail, it's possible the APD is not sufficiently warmed up. Leave the unit on then try again. Depending on the environment, this could take up to 30 min.



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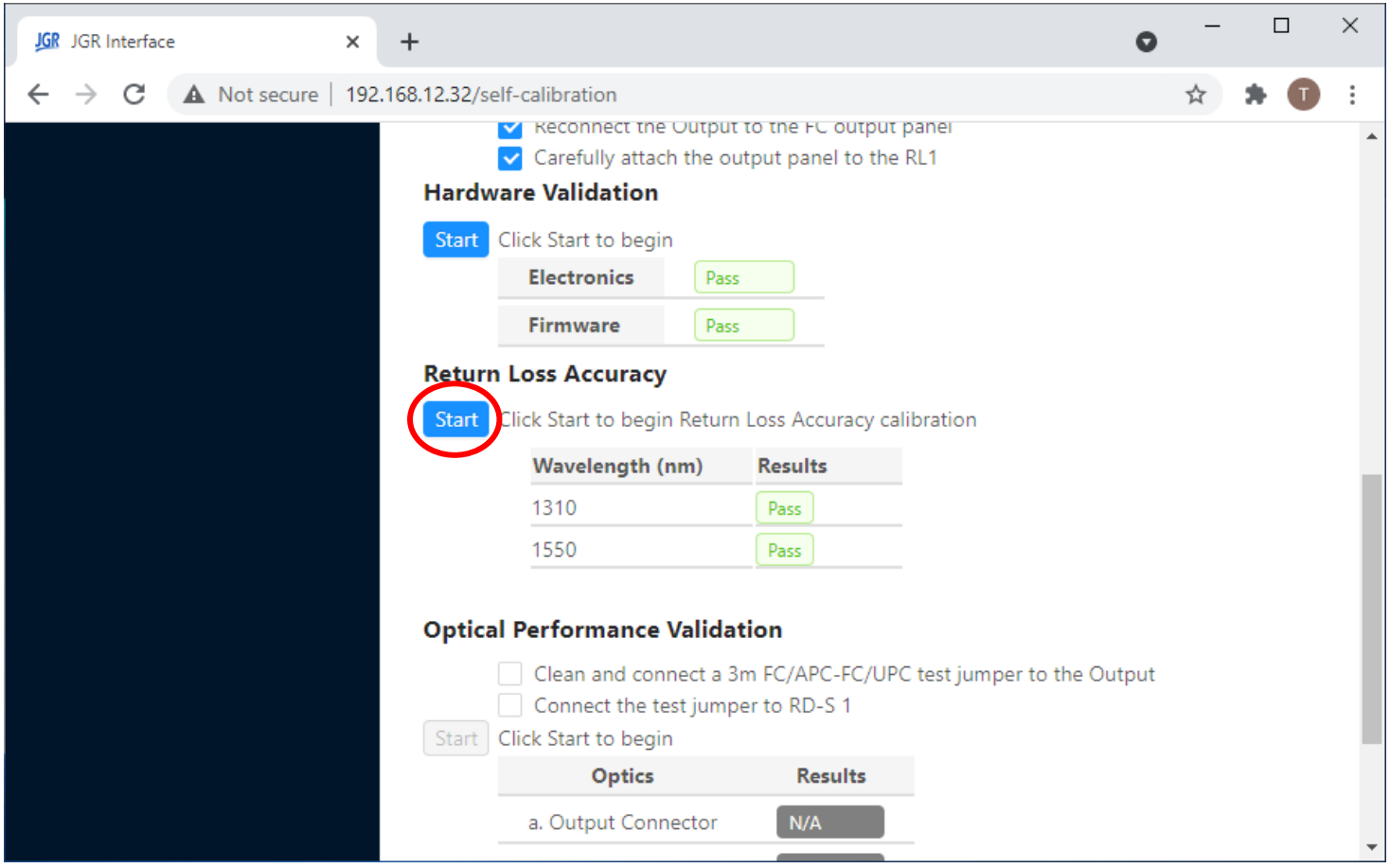
- Start the return loss calibration



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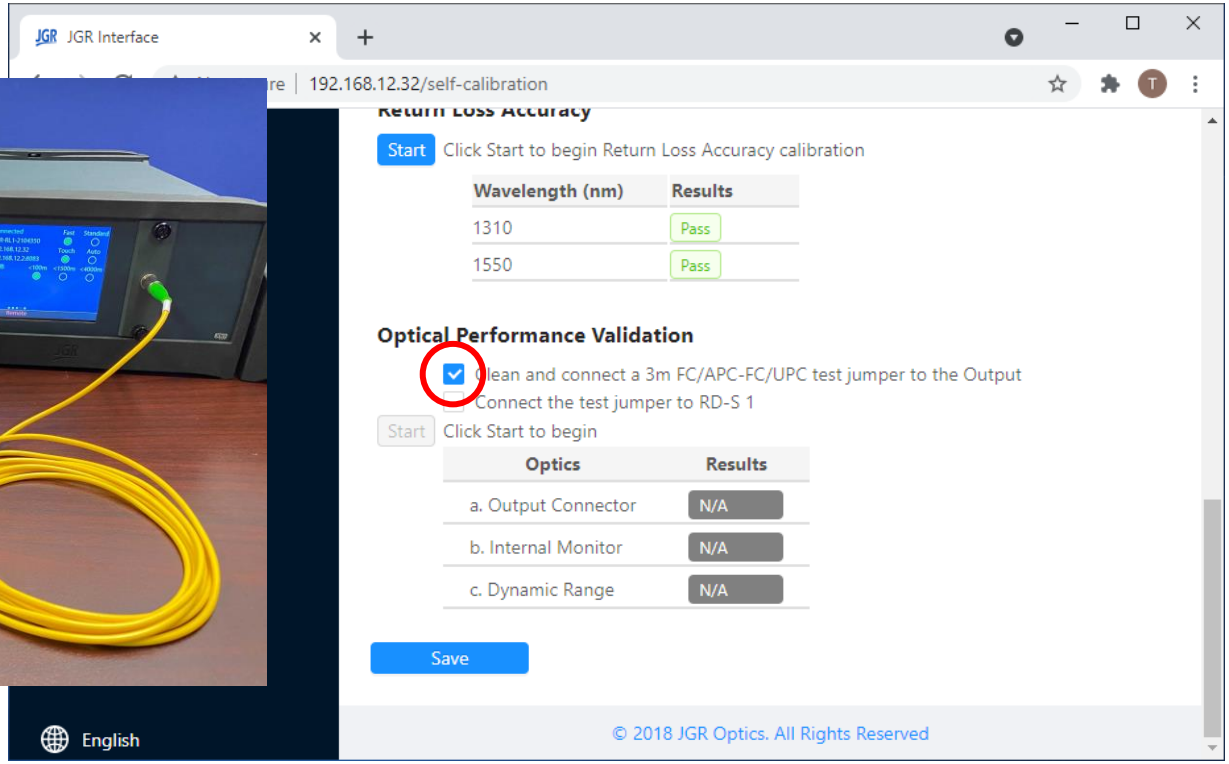
- Inspect and connect a 3m FC/APC to FC/UPC SM jumper to the RL1 output
  - Always inspect both ends before making an optical connection



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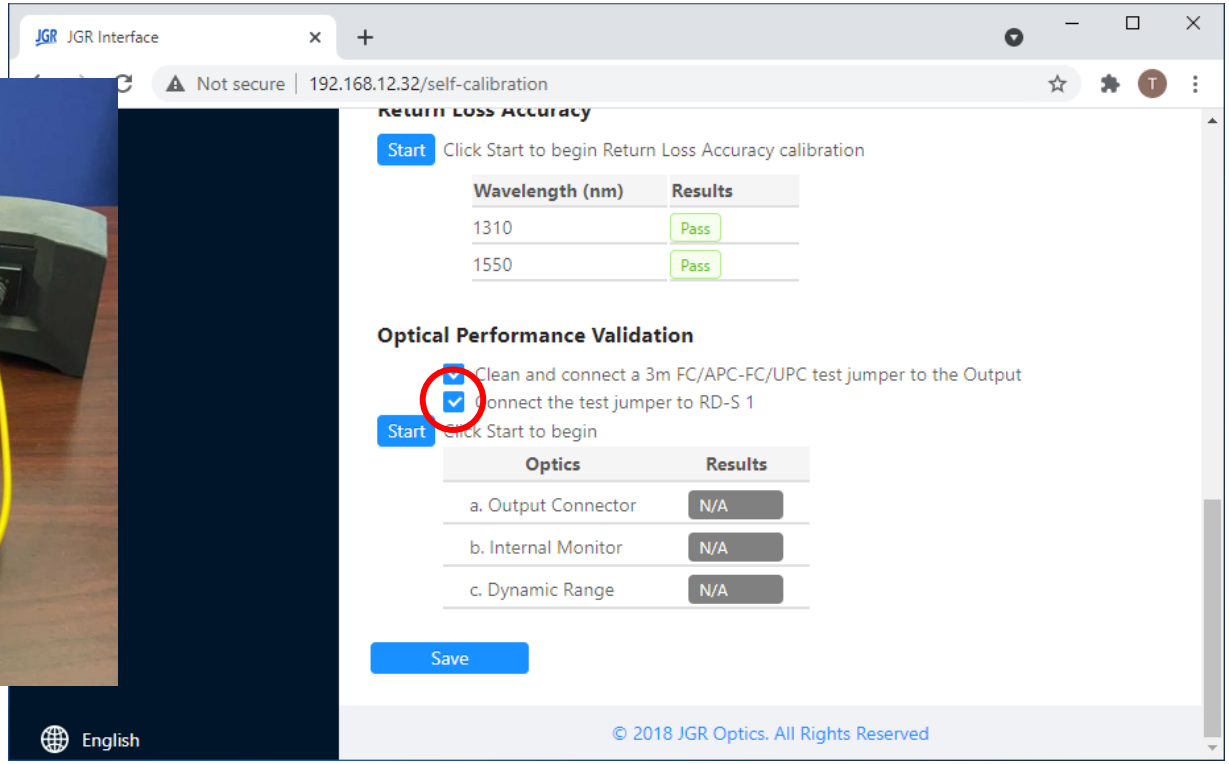
- Connect the jumper to the detector
  - Make sure the jumper is well managed on the table without any twists or sharp bends



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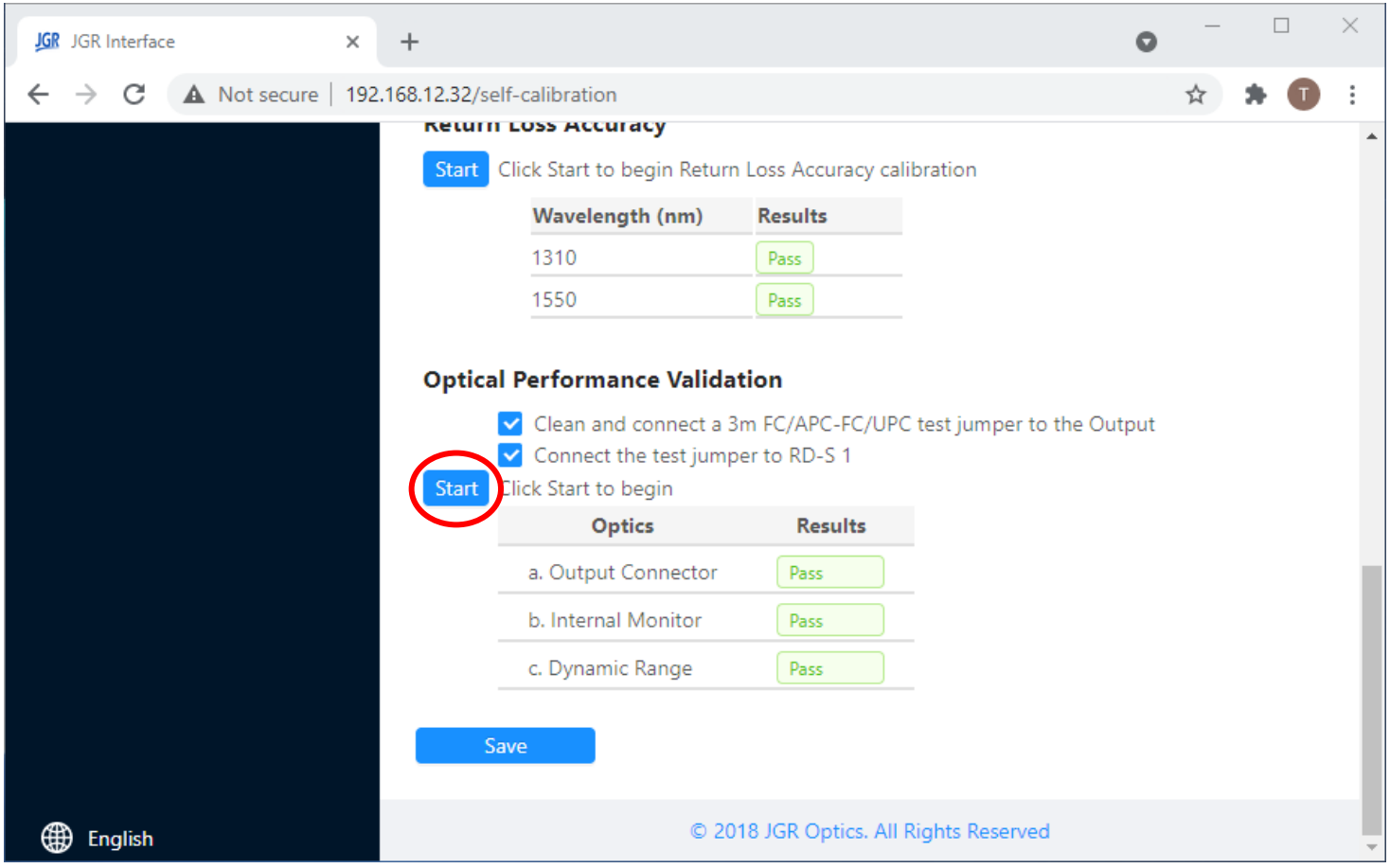
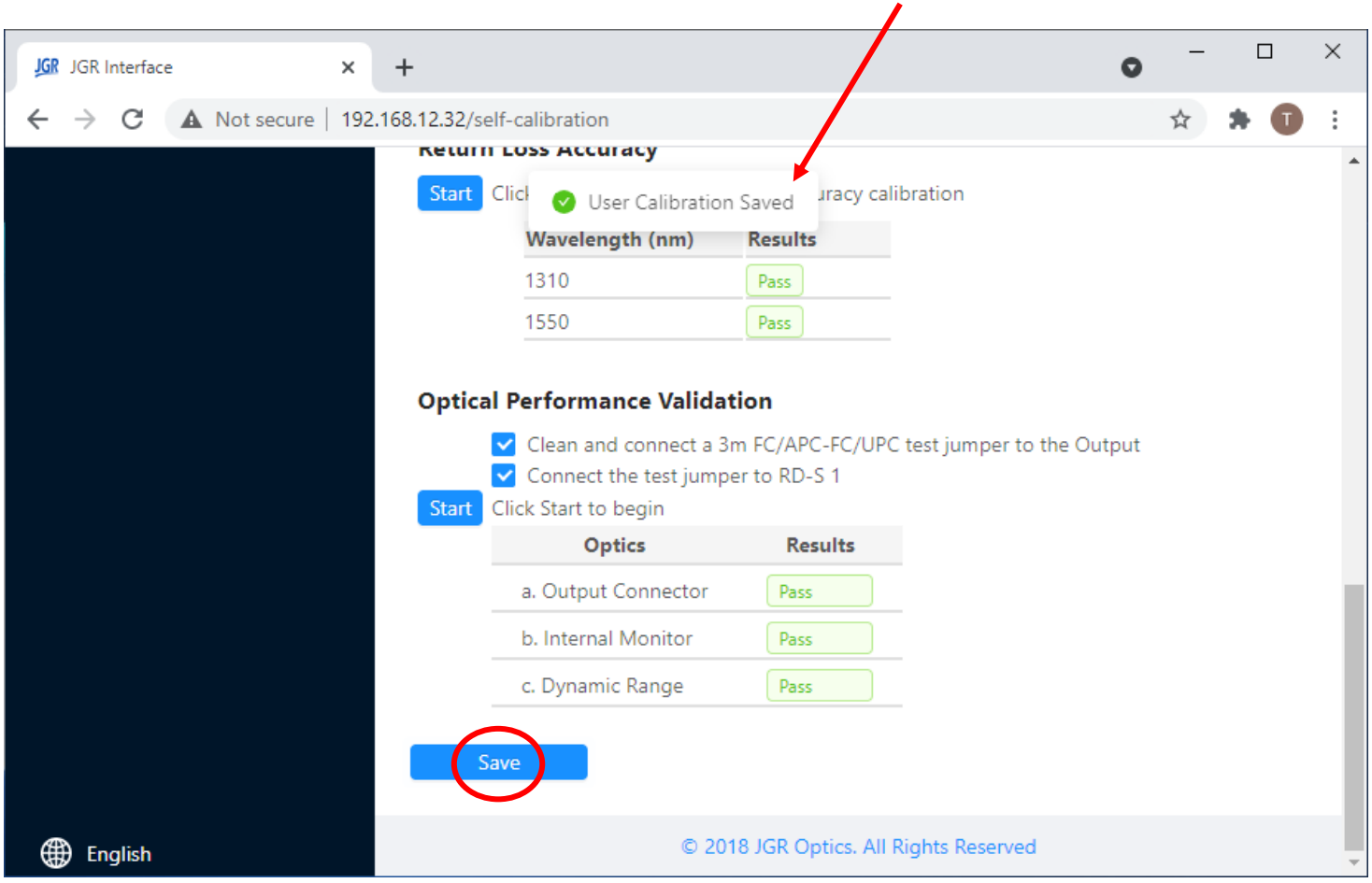
- Start the optical performance validation
  - This step may take several minutes



Performing a SM RL1 Self-calibration

- If all steps passed, save the report



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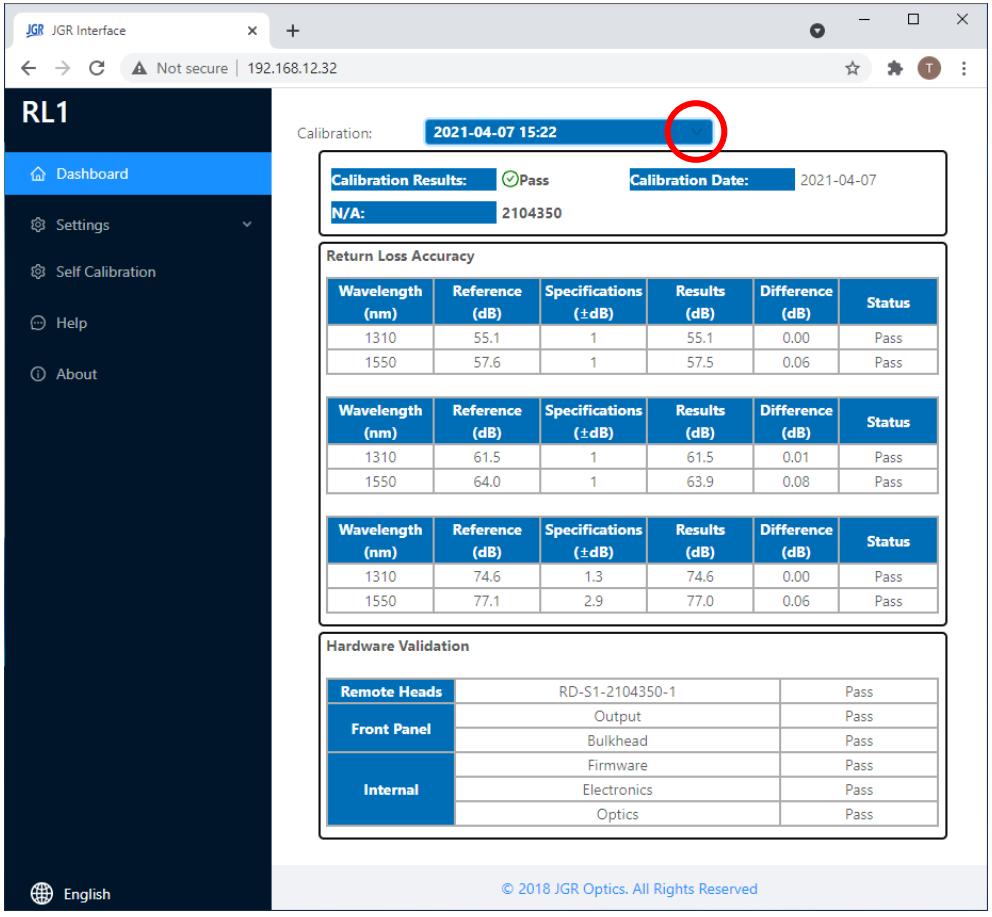
- The report is saved on the meter and is accessible via the webpage dashboard
- Click on the dropdown menu: up to 3 self-calibration reports can be stored on the RL1



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Common issues which can result in a failed step of the self-calibration:

- **Connector contamination**
  - microscopic airborne dust, chemical residuals or contact with surfaces are common sources of connector end-face contamination
  - inspect and clean **both ends** before **every mating**
  - if using a lint free wipe is not sufficient, try using IPA and remember to use a dry lint free wipe after applying the IPA to remove any residue

- **Poor fiber management**
  - bends and twists of the output lead or test jumper can affect the stability of the unit
  - use a heat-gun to relax the fiber's plastic jacket and smooth out any kinks

- **Microcracks**
  - fiber mishandling can cause microcracks in fiber causing instability
  - if there is no connector contamination and the fiber management is good but you still have issues, try replacing the test jumper
  - poor handling of the output lead can cause microcracks – if this happens, the unit will need to be shipped back to JGR or one of its approved service centers, please email *support@jgroptics.com* for additional instructions