

Performing a SM RL1 Self-calibration



Performing a SM RL1 Self-calibration

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

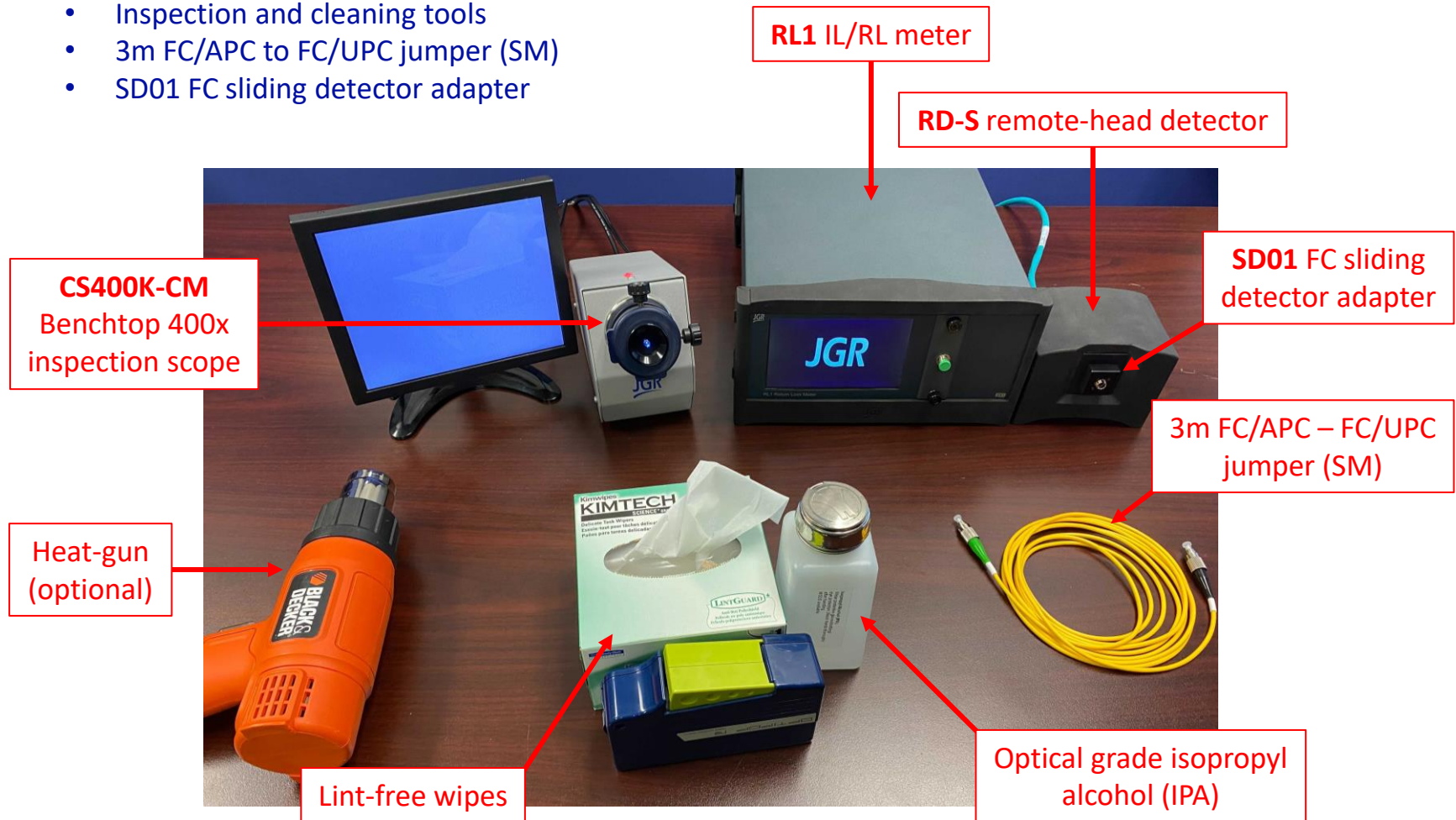
If you have any questions, please email support@jgroptics.com



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



Performing a SM RL1 Self-calibration

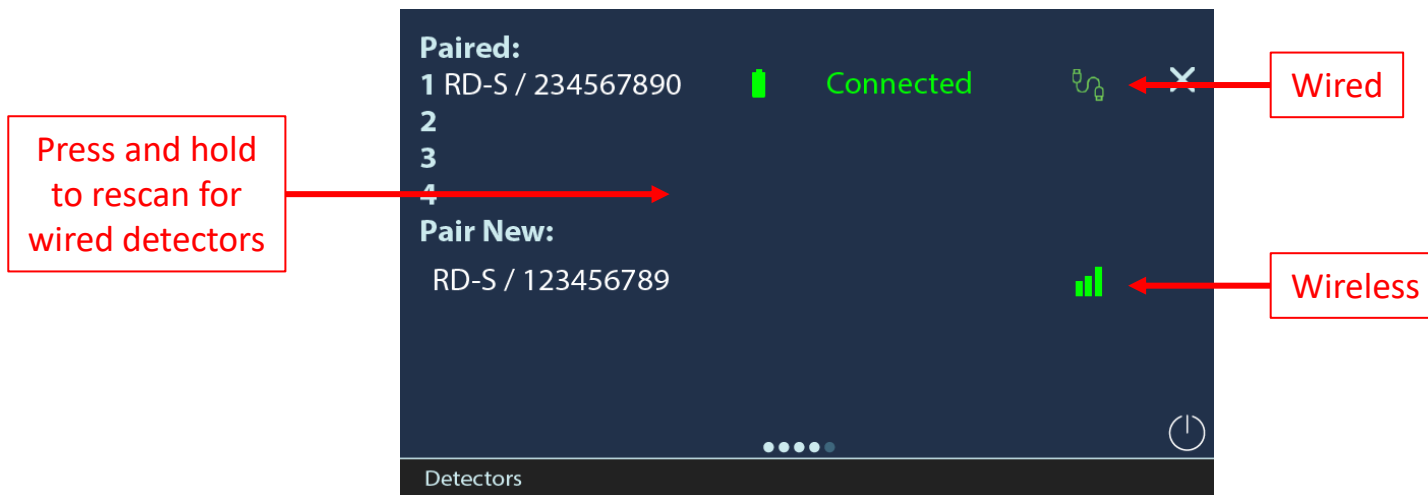
Proper inspection and cleaning is very important.



Performing a SM RL1 Self-calibration

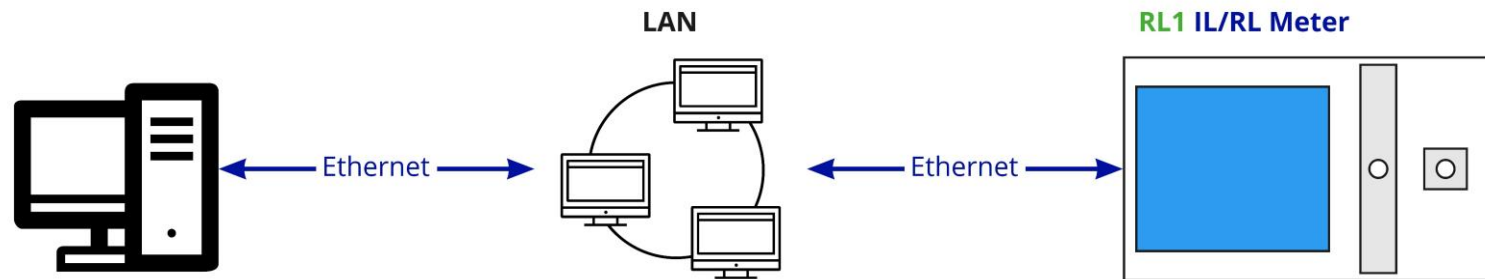
If using a remote-head RD-S detector:

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



Performing a SM RL1 Self-calibration

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



Performing a SM RL1 Self-calibration

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

The image shows the JGR RL1 Setup page on a mobile device and its corresponding web interface in a browser. A red box highlights the IP address 192.168.12.32 on the Setup page, with a red arrow pointing to the same address in the browser's address bar.

Setup Page Information:

- Network Status: **Connected**
- Device Name: JGR-RL1-00001932250
- IP: 192.168.12.32
- XN1 Location: 192.168.12.53:8083
- Fast Standard: **Touch** Auto
- < 40dB 40-85dB <100m <1500m <4000m

Web Interface Information:

Calibration: 2021-02-05 16:00(Factory)

Calibration Results: **Pass** Calibration Date: 2021-02-05

N/A: 2104350

Return Loss Accuracy

Wavelength (nm)	Reference (dB)	Specifications (±dB)	Results (dB)	Difference (dB)	Status
1310	55.1	1	55.1	0.04	Pass
1550	57.6	1	57.6	0.02	Pass

Wavelength (nm)	Reference (dB)	Specifications (±dB)	Results (dB)	Difference (dB)	Status
1310	61.5	1	61.4	0.06	Pass
1550	64.0	1	63.9	0.04	Pass

Wavelength (nm)	Reference (dB)	Specifications (±dB)	Results (dB)	Difference (dB)	Status
1310	74.6	1.3	74.6	0.03	Pass
1550	77.1	2.9	77.2	0.15	Pass

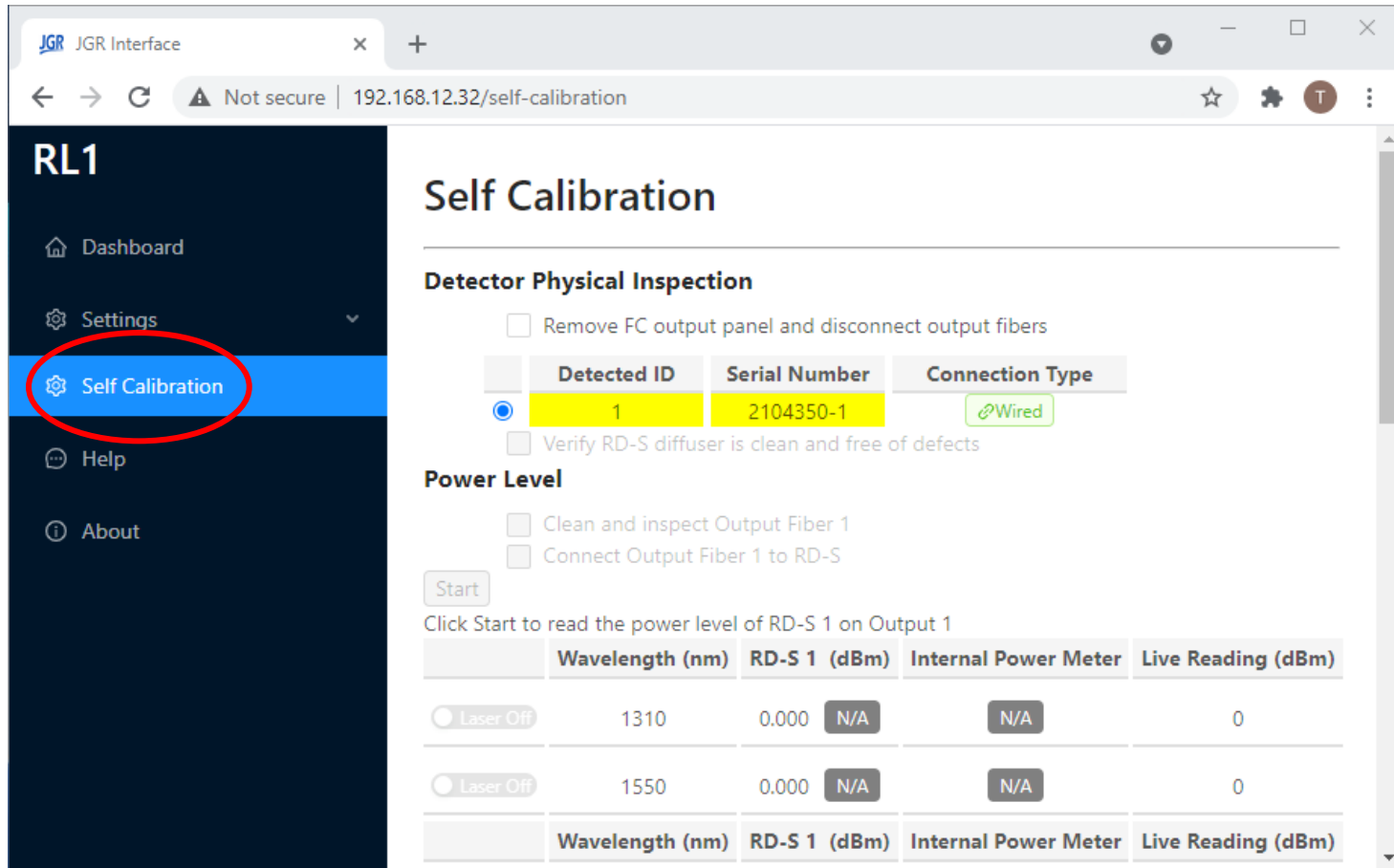
Hardware Validation

Remote Heads	RD-S1-2104350-1	Pass
Front Panel	Output	Pass
	Bulkhead	Pass
Internal	Firmware	Pass
	Electronics	Pass
	Optics	Pass

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Performing a SM RL1 Self-calibration

- Click on the *Self Calibration* tab



The screenshot shows the JGR Interface web application. The browser address bar indicates the URL is 192.168.12.32/self-calibration. The sidebar on the left contains the following menu items: RL1, Dashboard, Settings, Self Calibration (highlighted with a red circle), Help, and About. The main content area is titled "Self Calibration" and includes a "Detector Physical Inspection" section with checkboxes for "Remove FC output panel and disconnect output fibers" and "Verify RD-S diffuser is clean and free of defects". Below this is a "Power Level" section with checkboxes for "Clean and inspect Output Fiber 1" and "Connect Output Fiber 1 to RD-S", and a "Start" button. A table displays power level data for two wavelengths (1310 nm and 1550 nm), showing RD-S 1 (dBm), Internal Power Meter, and Live Reading (dBm). The table data is as follows:

	Wavelength (nm)	RD-S 1 (dBm)	Internal Power Meter	Live Reading (dBm)
Laser Off	1310	0.000 N/A	N/A	0
Laser Off	1550	0.000 N/A	N/A	0

Performing a SM RL1 Self-calibration

- Remove the output panel and disconnect the lead



JGR JGR Interface

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Self Calibration

Detector Physical Inspection

☒ Remove FC output panel and disconnect output fibers

Detected ID	Serial Number	Connection Type
1	2104350-1	Wired

☐ Verify RD-S diffuser is clean and free of defects

Power Level

☐ Clean and inspect Output Fiber 1
☐ Connect Output Fiber 1 to RD-S

Start

Click Start to read the power level of RD-S 1 on Output 1

	Wavelength (nm)	RD-S 1 (dBm)	Internal Power Meter	Live Reading (dBm)
Laser Off	1310	0.000 N/A	N/A	0
Laser Off	1550	0.000 N/A	N/A	0

	Wavelength (nm)	RD-S 1 (dBm)	Internal Power Meter	Live Reading (dBm)
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Performing a SM RL1 Self-calibration

- 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



JGR JGR Interface

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Self Calibration

Detector Physical Inspection

- ☒ Remove FC output panel and disconnect output fibers

Detected ID	Serial Number	Connection Type
1	2104350-1	Wired

- ☒ Verify RD-S diffuser is clean and free of defects

Power Level

- ☐ Clean and inspect Output Fiber 1
- ☐ Connect Output Fiber 1 to RD-S

Start

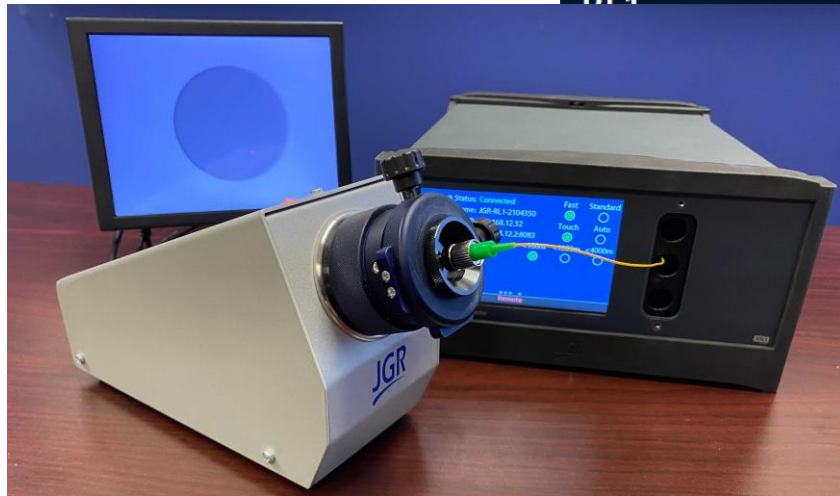
Click Start to read the power level of RD-S 1 on Output 1

	Wavelength (nm)	RD-S 1 (dBm)	Internal Power Meter	Live Reading (dBm)
Laser Off	1310	0.000 N/A	N/A	0
Laser Off	1550	0.000 N/A	N/A	0

	Wavelength (nm)	RD-S 1 (dBm)	Internal Power Meter	Live Reading (dBm)
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Performing a SM RL1 Self-calibration

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



JGR JGR Interface

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Self Calibration

Detector Physical Inspection

- ☒ Remove FC output panel and disconnect output fibers
- ☒ Verify RD-S diffuser is clean and free of defects

Detected ID	Serial Number	Connection Type
1	2104350-1	Wired

Power Level

- ☒ Clean and inspect Output Fiber 1
- ☐ Connect Output Fiber 1 to RD-S

Start

Click Start to read the power level of RD-S 1 on Output 1

	Wavelength (nm)	RD-S 1 (dBm)	Internal Power Meter	Live Reading (dBm)
Laser Off	1310	0.000 N/A	N/A	0
Laser Off	1550	0.000 N/A	N/A	0

	Wavelength (nm)	RD-S 1 (dBm)	Internal Power Meter	Live Reading (dBm)
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Performing a SM RL1 Self-calibration

- 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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RL1

Self Calibration

Detector Physical Inspection

- ☒ Remove FC output panel and disconnect output fibers
- ☒ Verify RD-S diffuser is clean and free of defects

Detected ID	Serial Number	Connection Type
1	2104350-1	Wired

Power Level

- ☒ Clean and inspect Output Fiber 1
- ☒ Connect Output Fiber 1 to RD-S

Start

Click Start to read the power level of RD-S 1 on Output 1

	Wavelength (nm)	RD-S 1 (dBm)	Internal Power Meter	Live Reading (dBm)
<input type="radio"/> Laser Off	1310	0.000 N/A	N/A	0
<input type="radio"/> Laser Off	1550	0.000 N/A	N/A	0

	Wavelength (nm)	RD-S 1 (dBm)	Internal Power Meter	Live Reading (dBm)
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Performing a SM RL1 Self-calibration

- Start the power level

The screenshot shows the JGR Interface web application in a browser window. The address bar indicates the URL is 192.168.12.32/self-calibration. The interface includes a sidebar with 'Help' and 'About' links. The main content area is titled 'Power Level' and contains a 'Start' button, which is circled in red. Below the button, there is a table with columns for Wavelength (nm), RD-S 1 (dBm), Internal Power Meter, and Live Reading (dBm). The table has two sections, each with two rows for 1310 nm and 1550 nm. The first section shows 'Pass' status for both wavelengths, while the second section shows 'N/A' status. Below the table, there are checkboxes for 'Reconnect the Output to the FC output panel' and 'Carefully attach the output panel to the RL1'. At the bottom, there is a 'Hardware Validation' section with a 'Start' button and the text 'Click Start to begin'.

Verify RD-S diffuser is clean and free of defects

Power Level

☒ Clean and inspect Output Fiber 1

☒ Connect Output Fiber 1 to RD-S

Start

Click Start to read the power level of RD-S 1 on Output 1

	Wavelength (nm)	RD-S 1 (dBm)	Internal Power Meter	Live Reading (dBm)
<input type="radio"/> Laser Off	1310	-5.019 Pass	Pass	0
<input type="radio"/> Laser Off	1550	-5.041 Pass	Pass	0
	Wavelength (nm)	RD-S 1 (dBm)	Internal Power Meter	Live Reading (dBm)
<input type="radio"/> Laser Off	1310	0.000 N/A	N/A	0
<input type="radio"/> Laser Off	1550	0.000 N/A	N/A	0

☐ Reconnect the Output to the FC output panel


☐ Carefully attach the output panel to the RL1

Hardware Validation

Start Click Start to begin

Performing a SM RL1 Self-calibration

- Reconnect the output lead to the output panel



The JGR RL1 device screen displays the following information:

- Network Status: Connected
- Device Name: JGR-RL1-2104350
- IP: 192.168.12.32
- XM1 Location: 192.168.12.28083
- Calibration Options: Fast (selected), Standard, Touch, Auto
- Range Indicators: <40dB, 40-80dB, <100m, <1500m, <4000m

The JGR Interface web page shows the self-calibration process:

	Wavelength (nm)	RD-S 1 (dBm)	Internal Power Meter	Live Reading (dBm)
<input type="radio"/> Laser Off	1550	-5.041	Pass	0
<input type="radio"/> Laser Off	1310	0.000	N/A	0
<input type="radio"/> Laser Off	1550	0.000	N/A	0

☒ Reconnect the Output to the FC output panel
☐ Carefully attach the output panel to the RL1

Hardware Validation

Click Start to begin

	Electronics	Firmware
	N/A	N/A


Return Loss Accuracy

Click Start to begin Return Loss Accuracy calibration

Wavelength (nm)	Results
1310	N/A
1550	N/A

Performing a SM RL1 Self-calibration

- 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



The photograph shows a person's hands carefully inserting a yellow optical fiber into the front panel of a JGR RL1 Return Loss Meter. The device's screen displays network status and various settings.

JGR JGR Interface

68.12.32/self-calibration

	Wavelength (nm)	RD-S 1 (dBm)	Internal Power Meter	Live Reading (dBm)
<input type="radio"/> Laser Off	1550	-5.041 Pass	Pass	0
<input type="radio"/> Laser Off	1310	0.000 N/A	N/A	0
<input type="radio"/> Laser Off	1550	0.000 N/A	N/A	0

☒ Reconnect the Output to the FC output panel
☒ Carefully attach the output panel to the RL1

Hardware Validation

Start Click Start to begin

	Electronics	Firmware
	N/A	N/A

Return Loss Accuracy

Start Click Start to begin Return Loss Accuracy calibration

Wavelength (nm)	Results
1310	N/A
1550	N/A

Performing a SM RL1 Self-calibration

- 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.



	Wavelength (nm)	RD-S 1 (dBm)	Internal Power Meter	Live Reading (dBm)
<input type="radio"/> Laser Off	1550	-5.041	Pass	0
<input type="radio"/> Laser Off	1310	0.000	N/A	0
<input type="radio"/> Laser Off	1550	0.000	N/A	0

☒ Reconnect the Output to the FC output panel
☒ Carefully attach the output panel to the RL1

Hardware Validation

Click Start to begin

Electronics

Firmware

Return Loss Accuracy

Click Start to begin Return Loss Accuracy calibration

Wavelength (nm)	Results
1310	N/A
1550	N/A

Performing a SM RL1 Self-calibration

- Start the return loss calibration

The screenshot shows the JGR Interface web application in a browser window. The address bar indicates the URL is 192.168.12.32/self-calibration. The page contains several sections for hardware and optical validation.

Hardware Validation

- ☒ Reconnect the Output to the FC output panel
- ☒ Carefully attach the output panel to the RL1

Return Loss Accuracy

The **Start** button for the Return Loss Accuracy calibration is circled in red. The text next to it says "Click Start to begin Return Loss Accuracy calibration".

Wavelength (nm)	Results
1310	Pass
1550	Pass

Optical Performance Validation


- ☐ Clean and connect a 3m FC/APC-FC/UPC test jumper to the Output
- ☐ Connect the test jumper to RD-S 1

Start Click Start to begin

Optics	Results
a. Output Connector	N/A

Performing a SM RL1 Self-calibration

- 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



The image shows a JGR RL1 device on a wooden desk. A yellow optical fiber cable is plugged into the front of the device. To the left is a computer monitor displaying a blue screen with a white circle. The JGR device has a small screen showing network status and a 'Start' button.

JGR Interface | 192.168.12.32/self-calibration

Return Loss Accuracy

Start Click Start to begin Return Loss Accuracy calibration

Wavelength (nm)	Results
1310	Pass
1550	Pass

Optical Performance Validation

☒ Clean and connect a 3m FC/APC-FC/UPC test jumper to the Output
Connect the test jumper to RD-S 1

Start Click Start to begin

Optics	Results
a. Output Connector	N/A
b. Internal Monitor	N/A
c. Dynamic Range	N/A

Save

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Performing a SM RL1 Self-calibration

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



JGR Interface

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Return Loss Accuracy

Start Click Start to begin Return Loss Accuracy calibration

Wavelength (nm)	Results
1310	Pass
1550	Pass

Optical Performance Validation

☒ Clean and connect a 3m FC/APC-FC/UPC test jumper to the Output

☒ Connect the test jumper to RD-S 1

Start Click Start to begin

Optics	Results
a. Output Connector	N/A
b. Internal Monitor	N/A
c. Dynamic Range	N/A

Save

English

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Performing a SM RL1 Self-calibration

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

The screenshot shows a web browser window titled "JGR Interface" with the address bar displaying "192.168.12.32/self-calibration". The page content includes two sections: "Return Loss Accuracy" and "Optical Performance Validation".

Return Loss Accuracy

Start Click Start to begin Return Loss Accuracy calibration

Wavelength (nm)	Results
1310	Pass
1550	Pass

Optical Performance Validation

☒ Clean and connect a 3m FC/APC-FC/UPC test jumper to the Output

☒ Connect the test jumper to RD-S 1

Start Click Start to begin

Optics	Results
a. Output Connector	Pass
b. Internal Monitor	Pass
c. Dynamic Range	Pass

Save

English

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Performing a SM RL1 Self-calibration

- If all steps passed, save the report

The screenshot shows the JGR Interface in a web browser. The address bar indicates the URL is 192.168.12.32/self-calibration. The page is titled 'Return Loss Accuracy' and features a 'Start' button. A notification box with a green checkmark and the text 'User Calibration Saved' is displayed. Below this, a table shows the results of the calibration:

Wavelength (nm)	Results
1310	Pass
1550	Pass

Below the table, the 'Optical Performance Validation' section is visible, with two checked items: 'Clean and connect a 3m FC/APC-FC/UPC test jumper to the Output' and 'Connect the test jumper to RD-S 1'. A 'Start' button is present. Below this, another table shows the results of the validation:

Optics	Results
a. Output Connector	Pass
b. Internal Monitor	Pass
c. Dynamic Range	Pass

A red circle highlights the 'Save' button at the bottom of the page. The footer includes a globe icon, the text 'English', and the copyright notice '© 2018 JGR Optics. All Rights Reserved'.

Performing a SM RL1 Self-calibration

- 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

Calibration: 2021-04-07 15:22

Calibration Results: ✓ Pass Calibration Date: 2021-04-07

N/A: 2104350

Return Loss Accuracy

Wavelength (nm)	Reference (dB)	Specifications (\pm dB)	Results (dB)	Difference (dB)	Status
1310	55.1	1	55.1	0.00	Pass
1550	57.6	1	57.5	0.06	Pass

Wavelength (nm)	Reference (dB)	Specifications (\pm dB)	Results (dB)	Difference (dB)	Status
1310	61.5	1	61.5	0.01	Pass
1550	64.0	1	63.9	0.08	Pass

Wavelength (nm)	Reference (dB)	Specifications (\pm dB)	Results (dB)	Difference (dB)	Status
1310	74.6	1.3	74.6	0.00	Pass
1550	77.1	2.9	77.0	0.06	Pass

Hardware Validation

Remote Heads	RD-S1-2104350-1	Pass
Front Panel	Output	Pass
	Bulkhead	Pass
Internal	Firmware	Pass
	Electronics	Pass
	Optics	Pass

English

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Performing a SM RL1 Self-calibration

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