

Testing a Short DUT

Testing a Short DUT

This document will detail how to measure RL for a short DUT of length $< 1.7\text{m}$ with the MS12001 system.

To accurately measure RL, the reflection from the second connector must be blocked. This is done by terminating the connector by using one of the following:

- mandrel wrap
- index matching block
- index matching gel

In the example shown, a 1m long FC/UPC – FC/UPC jumper will be tested for both SM and MM.

Testing a Short DUT

Go to Config > Connector to configure your connector pass/fail limits.

The screenshot shows the 'MS12001 - Cable Assembly Test System' window. The title bar indicates the application name. The main window has a tabbed interface with 'Connector' selected. Below the tabs, there's a description: 'This configuration window is used to identify connectors. From this window, you can add, delete or modify a specific connector profile.'

The 'Connector Identification' section contains two text input fields: 'Connector name' and 'Connector type', both containing the text 'FC/UPC SM'.

The 'Connector Configuration' section is divided into two columns: 'Insertion Loss Limits' and 'Reflectance Limits'. Each column has two rows: 'Pass limit' and 'Warning limit'. The 'Pass limit' for both is set to '0.3 dB', and the 'Warning limit' for both is set to '-55 dB'.

On the right side of the window, there is a vertical toolbar with icons for 'Measure', 'Config', 'Browser', 'Settings', and 'About and Help'. The 'Config' icon is highlighted.

At the bottom of the window, there is a status bar with the text 'Status: Supervisor 06/11/2018 10:45 AM'. Above the status bar, there are five buttons: 'Add' (with a plus icon), 'Delete' (with a minus icon), 'Copy To' (with a circular arrow icon), 'Apply' (with a checkmark icon), and 'Cancel' (with a red X icon).

Testing a Short DUT

Configure your DUT.

Be sure to turn off “Mandrel Free”.

The screenshot shows the 'MS12001 - Cable Assembly Test System' window. The 'DUT' tab is active, displaying the 'DUT Identification' section. The 'Mandrel Free' checkbox is circled in red. The 'DUT Configuration' section shows 'End A' and 'End B' both set to 'FC/UPC SM'. The 'Polarity Type' section shows 'Defined Type' set to 'A'. The status bar at the bottom indicates 'Status: Supervisor 06/11/2018 10:45 AM'.

DUT
This configuration window is used to identify devices under test (DUT). From this window, you can add, delete or modify a specific DUT.

Company | Customer | Connector | **DUT** | Test | Polarity

DUT Identification

Part number: Short DUT SM

Description:

Manufacturer:

Maximum fiber length (m): 1

Fiber type: Singlemode - 9um

Assembly type: Simplex

Number of fibers: 1

☒ Mandrel Free

DUT Configuration

End A: FC/UPC SM

End B: FC/UPC SM

IL limits: 0.3 dB

Ref. limits: -55 dB

Polarity Type

Defined Type: A

+ Add | X Delete | Copy To | Apply | Cancel

Status: Supervisor 06/11/2018 10:45 AM

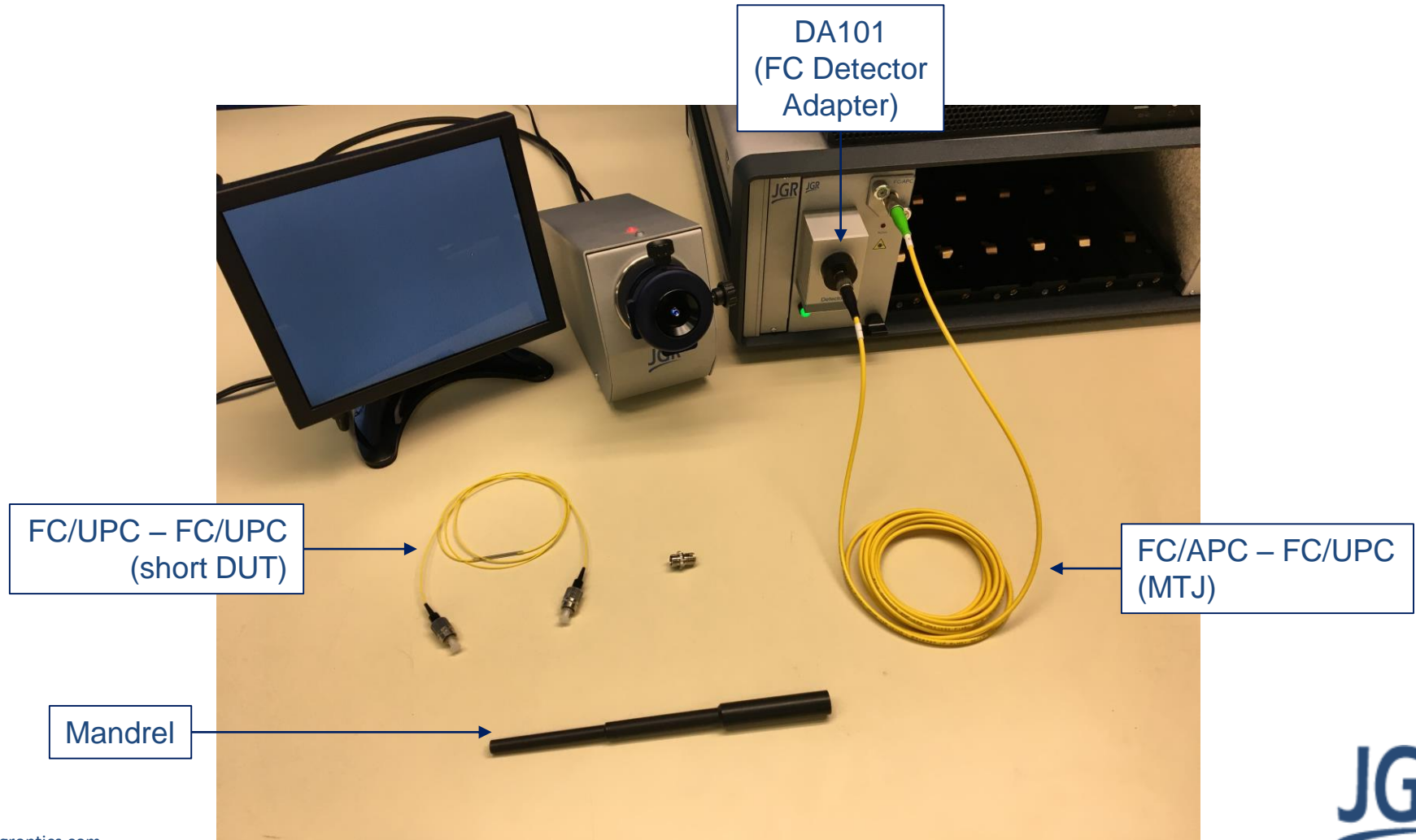
Testing a Short DUT

Setup a bidirectional test using the created DUT and desired parameters.

The screenshot displays the MS12001 - Cable Assembly Test System software interface. The 'Test Configuration' tab is active, showing various settings for a cable assembly test. The 'Test Identification' section includes a 'Test Name' dropdown and a 'Refresh' button. The 'Test Configuration' section is divided into several sub-sections: 'General' with fields for 'Customer' (None), 'DUT' (Short DUT SM), and 'Operator'; 'Labels' with 'First' and 'Second' dropdowns (both None); 'Hardware Type' with 'Standard' and 'High Throughput' options, and buttons for 'Use Secondary Switch' and 'Configure Secondary Switch'; 'Singlemode Wavelength' with checkboxes for 1310, 1490, 1550 (selected), and 1625; 'Multimode Wavelength' with checkboxes for 850 and 1300; 'Test Type' with 'Unidirectional' and 'Bidirectional' (selected) options, and 'Connector A' and 'Connector B' buttons; 'Measurement' with 'Insertion Loss', 'Reflectance', and 'Polarity' buttons; and 'Custom Fields' with three input fields. A 'Start' button is located at the bottom right. The status bar at the bottom shows 'Status:', 'Supervisor', '06/11/2018', and '09:43 AM'. The JGR logo is visible in the top right corner of the interface.

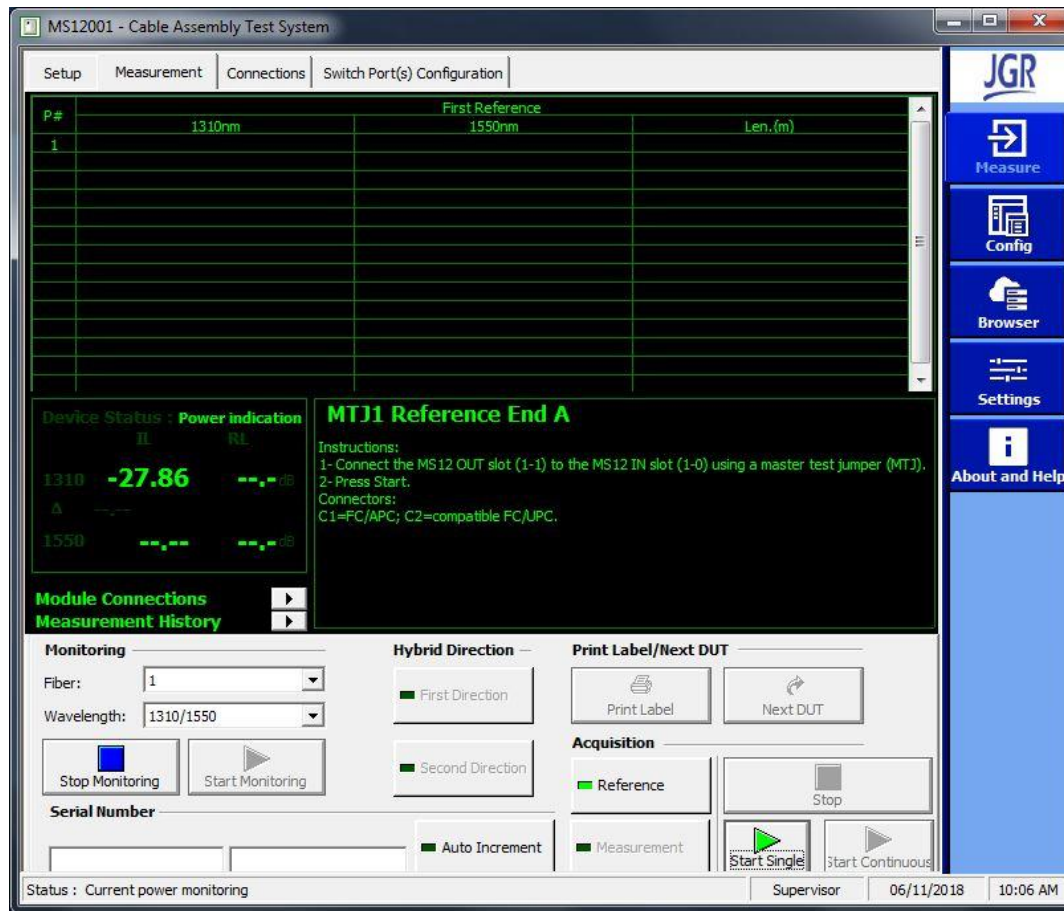
Testing a Short DUT

Connect your MTJ from the MS12 output to the detector.



Testing a Short DUT

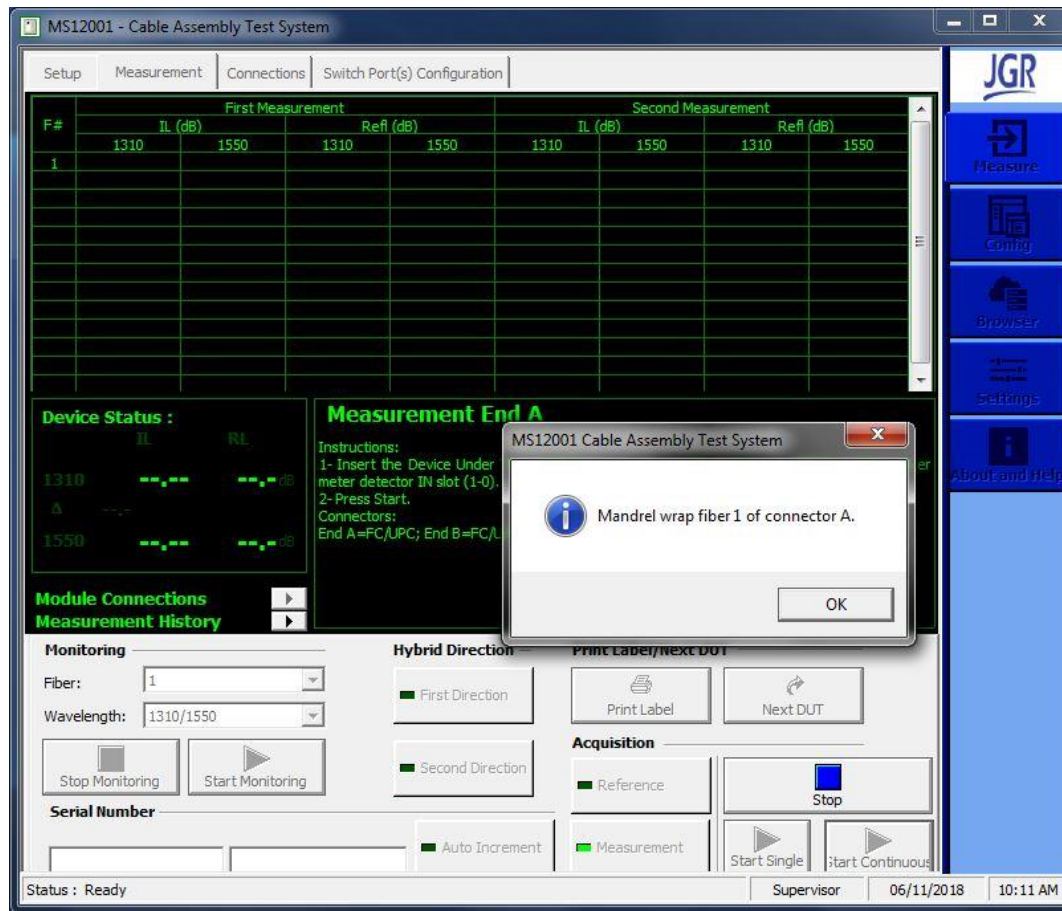
Select Reference Acquisition and click Start Single.



Testing a Short DUT

Connect the DUT and click Start Single.

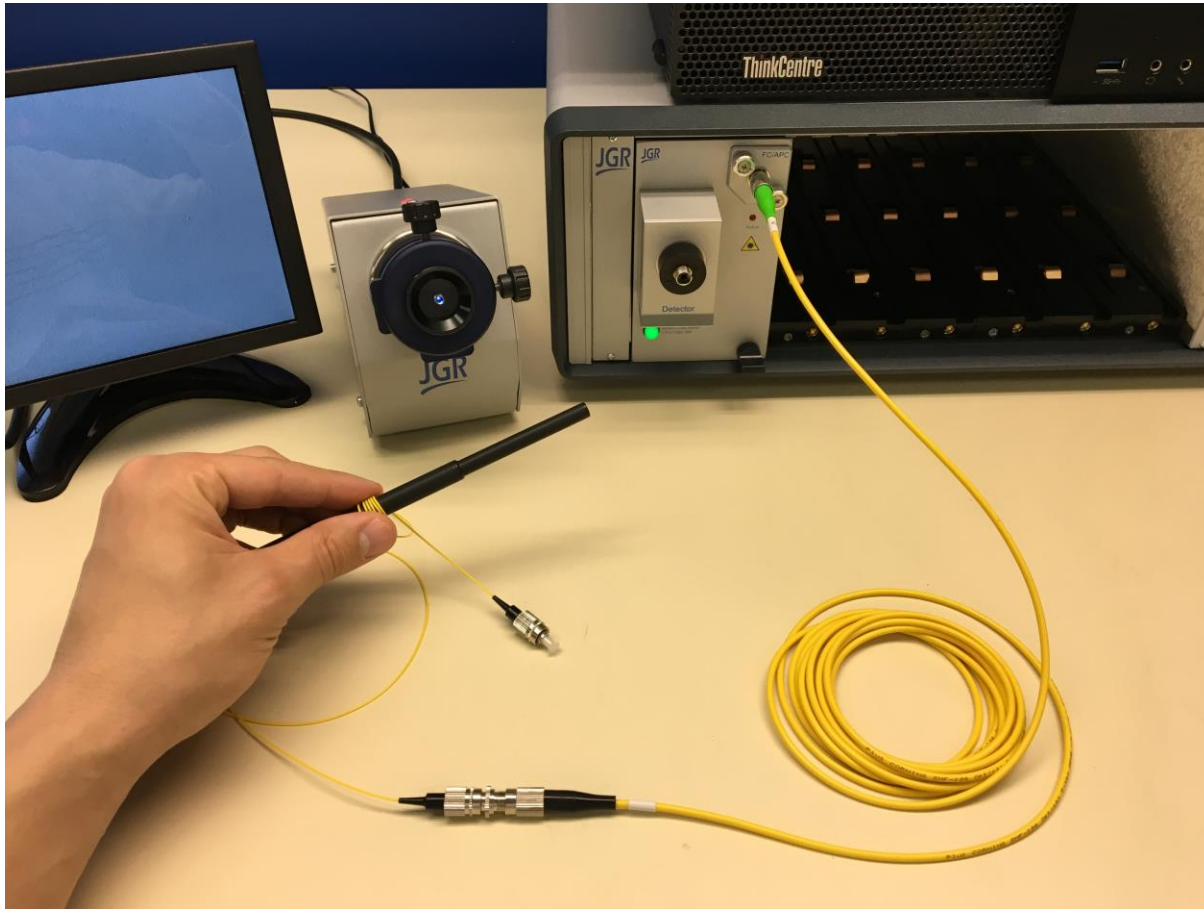
The software will pause to allow the operator to terminate the connector.



Testing a Short DUT

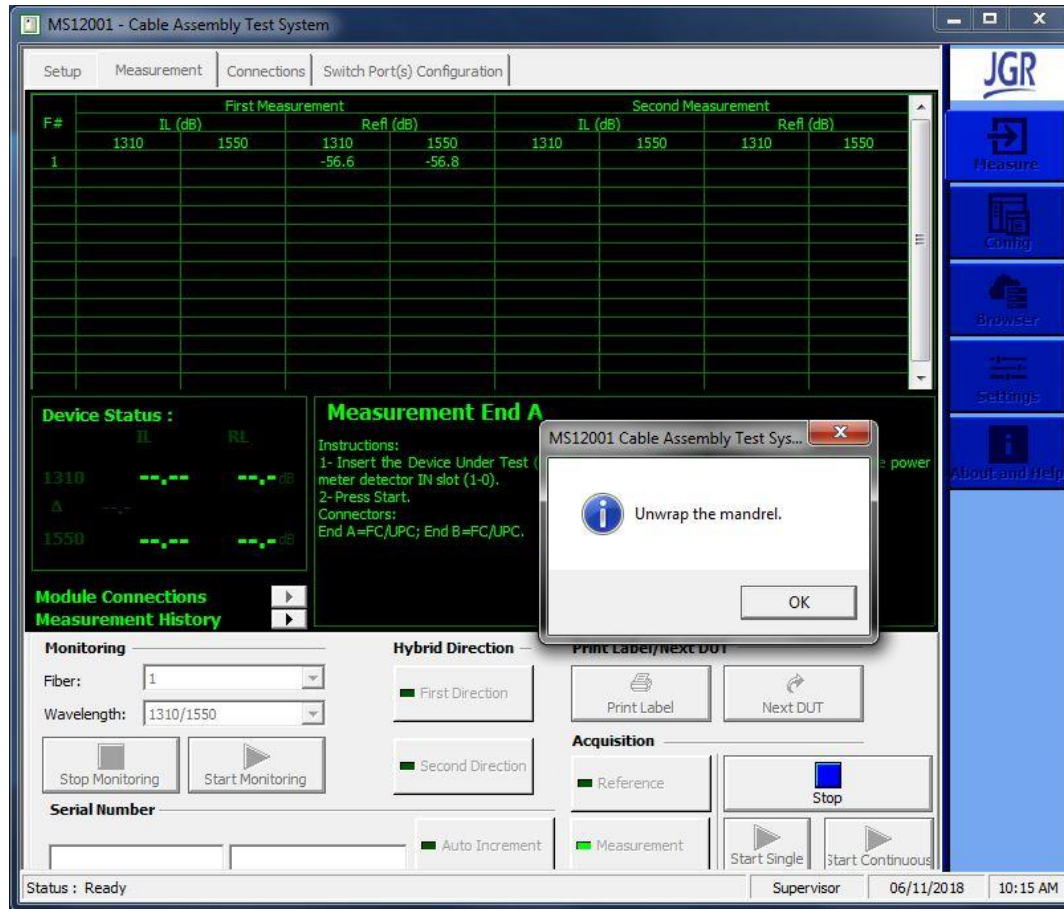
For SM, the preferred method is to mandrel wrap. If this is not possible, index matching the second connector (see MM case) is acceptable.

Click OK on the dialog box to measure RL of the first connector.



Testing a Short DUT

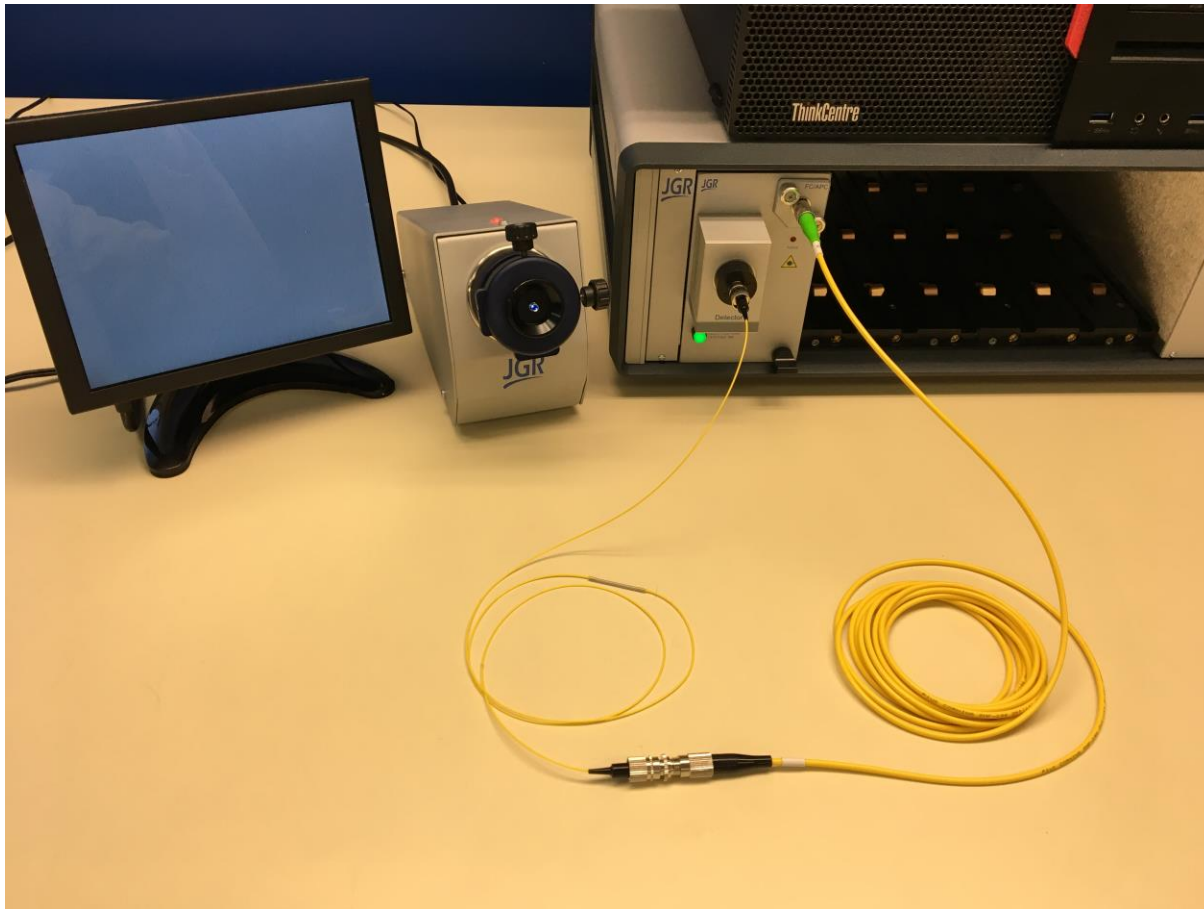
The software will pause a second time to allow the operator to unwrap the DUT and insert it into the detector adapter.



Testing a Short DUT

If the connector came into contact with an index matching block or gel, be sure to clean and inspect it before measuring.

Click OK on the dialog box to measure IL of the first connector.



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Once complete, enter a serial number and click Next DUT to save the results.



Testing a Short DUT

The same principle applies for MM with a few small differences.

Configure the connectors.

The screenshot shows the 'MS12001 - Cable Assembly Test System' window. The title bar indicates the application name. The main window has a 'Connector' tab selected, with a description: 'This configuration window is used to identify connectors. From this window, you can add, delete or modify a specific connector profile.' Below this is a tabbed interface with 'Company', 'Customer', 'Connector', 'DUT', 'Test', and 'Polarity' tabs. The 'Connector' tab is active, showing 'Connector Identification' and 'Connector Configuration' sections. The 'Connector Identification' section has two text boxes: 'Connector name: FC/UPC MM' and 'Connector type: FC/UPC MM'. The 'Connector Configuration' section has two columns: 'Insertion Loss Limits' and 'Reflectance Limits'. Under 'Insertion Loss Limits', 'Pass limit' is 0.3 dB and 'Warning limit' is 0.3 dB. Under 'Reflectance Limits', 'Pass limit' is -40 dB and 'Warning limit' is -40 dB. At the bottom, there are buttons for '+ Add', 'X Delete', 'Copy To', 'Apply', and 'Cancel'. The status bar at the bottom shows 'Status:', 'Supervisor', '06/11/2018', and '10:43 AM'. On the right side of the window, there is a vertical toolbar with icons for 'Measure', 'Config', 'Browser', 'Settings', and 'About and Help'.

Connector

This configuration window is used to identify connectors. From this window, you can add, delete or modify a specific connector profile.

Company Customer **Connector** DUT Test Polarity

Connector Identification

Connector name: FC/UPC MM

Connector type: FC/UPC MM

Connector Configuration

Insertion Loss Limits

Pass limit: 0.3 dB

Warning limit: 0.3 dB

Reflectance Limits

Pass limit: -40 dB

Warning limit: -40 dB

+ Add X Delete Copy To Apply Cancel

Status: Supervisor 06/11/2018 10:43 AM

JGR

Measure

Config

Browser

Settings

About and Help

Testing a Short DUT

Configure the DUT with “Mandrel Free” off.

The screenshot shows the 'MS12001 - Cable Assembly Test System' window. The 'DUT' tab is active, displaying the 'DUT Identification' section. The 'Part number' is 'Short DUT MM'. The 'Assembly type' is 'Simplex'. The 'Number of fibers' is '1'. The 'Mandrel Free' checkbox is checked and highlighted with a red circle. The 'DUT Configuration' section shows 'End A' and 'End B' both set to 'FC/UPC MM'. The 'Polarity Type' section shows 'Defined Type' set to 'A'. The status bar at the bottom indicates 'Status: Supervisor 06/11/2018 10:44 AM'.

DUT
This configuration window is used to identify devices under test (DUT). From this window, you can add, delete or modify a specific DUT.

Company Customer Connector **DUT** Test Polarity

DUT Identification

Part number: Short DUT MM

Description: Assembly type: Simplex

Manufacturer: Number of fibers: 1

Maximum fiber length (m): 1

Fiber type: Multimode - 50um

☒ Mandrel Free

DUT Configuration

End A: FC/UPC MM End B: FC/UPC MM

IL limits: 0.3 dB IL limits: 0.3 dB

Ref. limits: -40 dB Ref. limits: -40 dB

Polarity Type

Defined Type: A

+ Add X Delete ↺ Copy To ✓ Apply ↻ Cancel

Status: Supervisor 06/11/2018 10:44 AM

Testing a Short DUT

Setup a bidirectional test with the DUT and desired parameters.

The screenshot displays the 'MS12001 - Cable Assembly Test System' software interface. The 'Setup' tab is active, showing various configuration options. The 'Test Identification' section includes a 'Test Name' dropdown and a 'Refresh' button. The 'Test Configuration' section is divided into several sub-sections: 'General' with 'Customer' (None), 'DUT' (Short DUT MM), and 'Operator' fields; 'Labels' with 'First' and 'Second' dropdowns; 'Hardware Type' with 'Standard' and 'High Throughput' options; 'Singlemode Wavelength' with a list of wavelengths (1310, 1490, 1550, 1625) where 1310 is selected; 'Multimode Wavelength' with a list of wavelengths (850, 1300) where 1300 is selected; 'Test Type' with 'Unidirectional' and 'Bidirectional' options, where 'Bidirectional' is selected; 'Measurement' with 'Connector A', 'Connector B', 'Insertion Loss', 'Reflectance', and 'Polarity' options; and 'Custom Fields' with three input fields. A 'Start' button is located at the bottom right. The status bar at the bottom shows 'Status:', 'Supervisor', '06/11/2018', and '10:46 AM'. The JGR logo is visible in the top right corner of the interface.

MS12001 - Cable Assembly Test System

Setup | Measurement | Connections | Switch Port(s) Configuration

Test Identification

Test Name: [Dropdown] Refresh

Test Configuration

General

Customer: None

DUT: Short DUT MM

Operator: [Text]

Labels

First: None

Second: None

Hardware Type

Standard Use Secondary Switch

High Throughput Configure Secondary Switch

Singlemode Wavelength

☒ 1310
☐ 1490
☐ 1550
☐ 1625

Multimode Wavelength

☒ 850
☒ 1300

Test Type

☒ Unidirectional ☒ Bidirectional

Measurement

Connector A Connector B

Insertion Loss Reflectance Polarity

Custom Fields

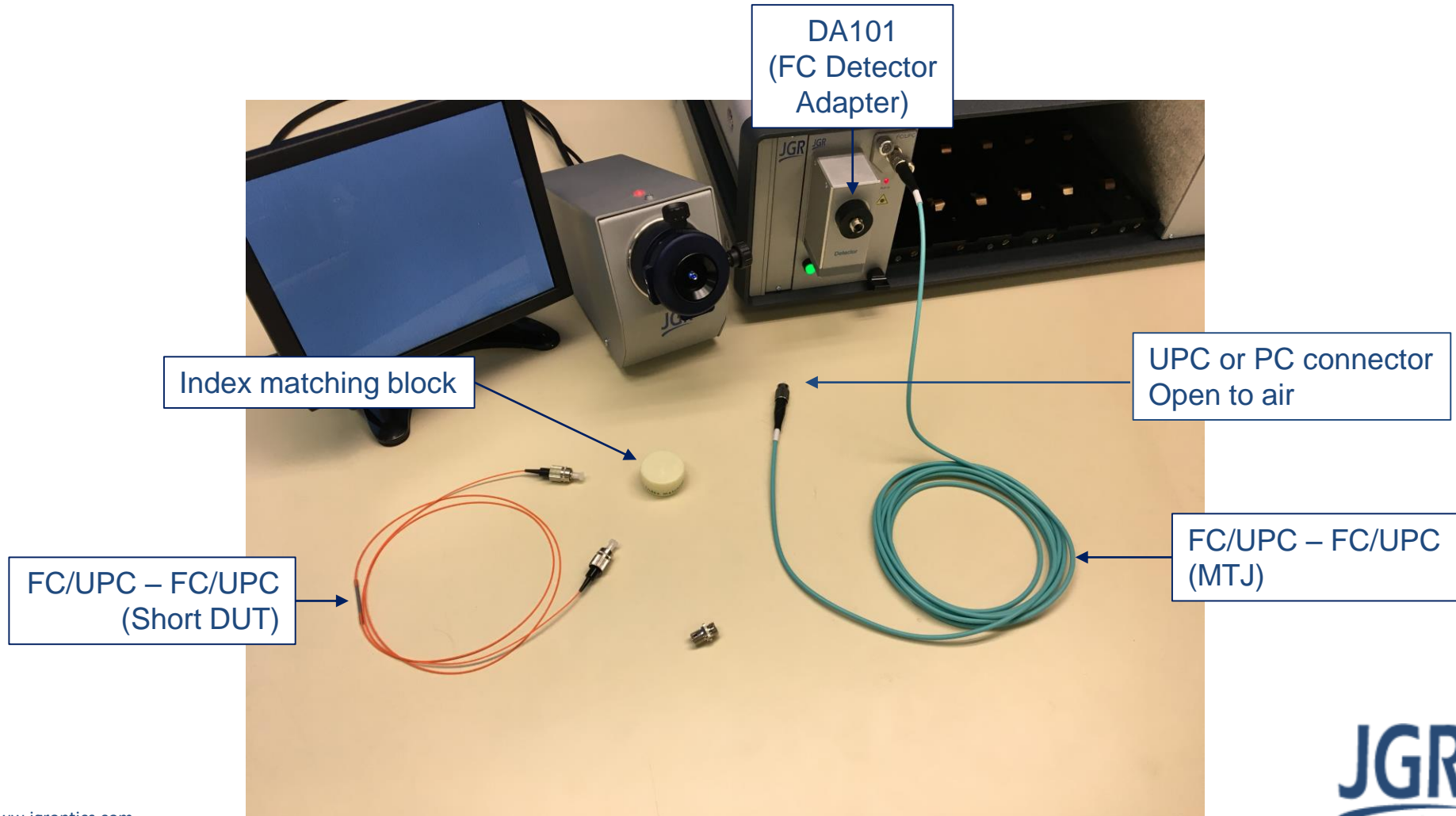
Custom 1 : [Text]
Custom 2 : [Text]
Custom 3 : [Text]

Start

Status: Supervisor 06/11/2018 10:46 AM

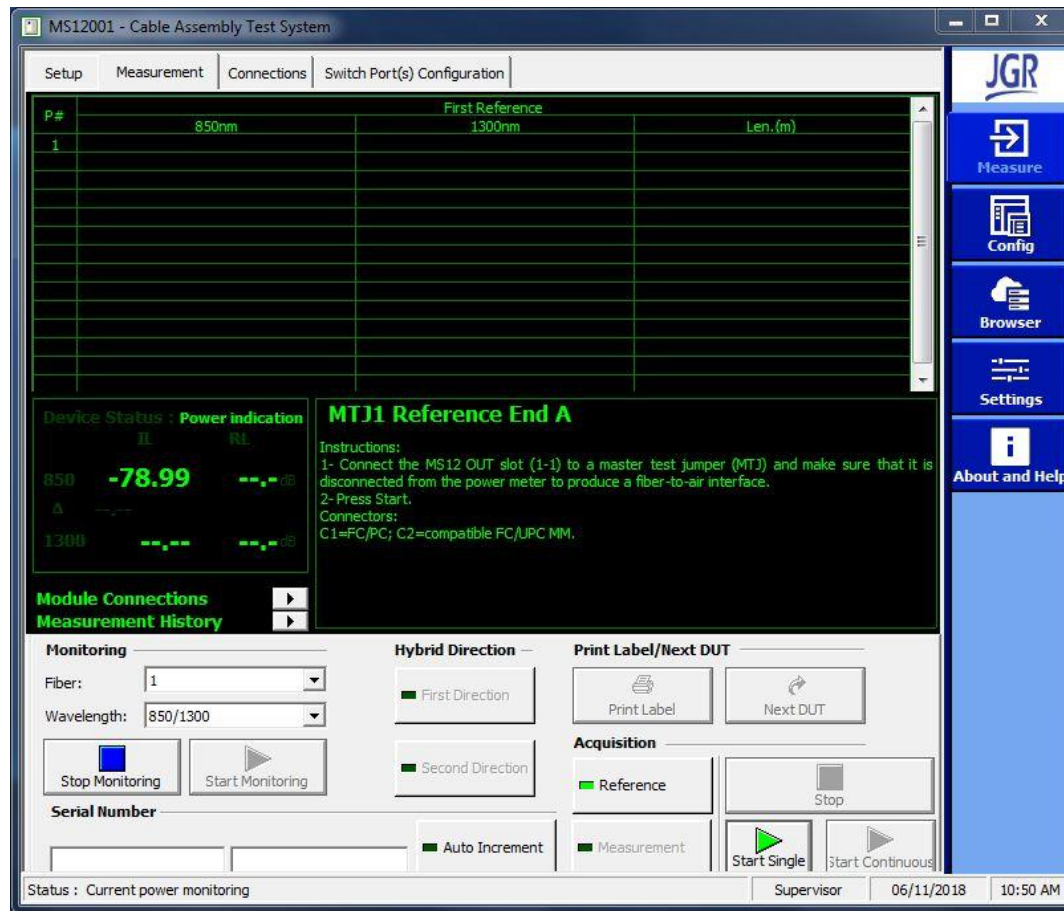
Testing a Short DUT

Connect the MTJ to the MS12 output and leave the PC connector open to air.



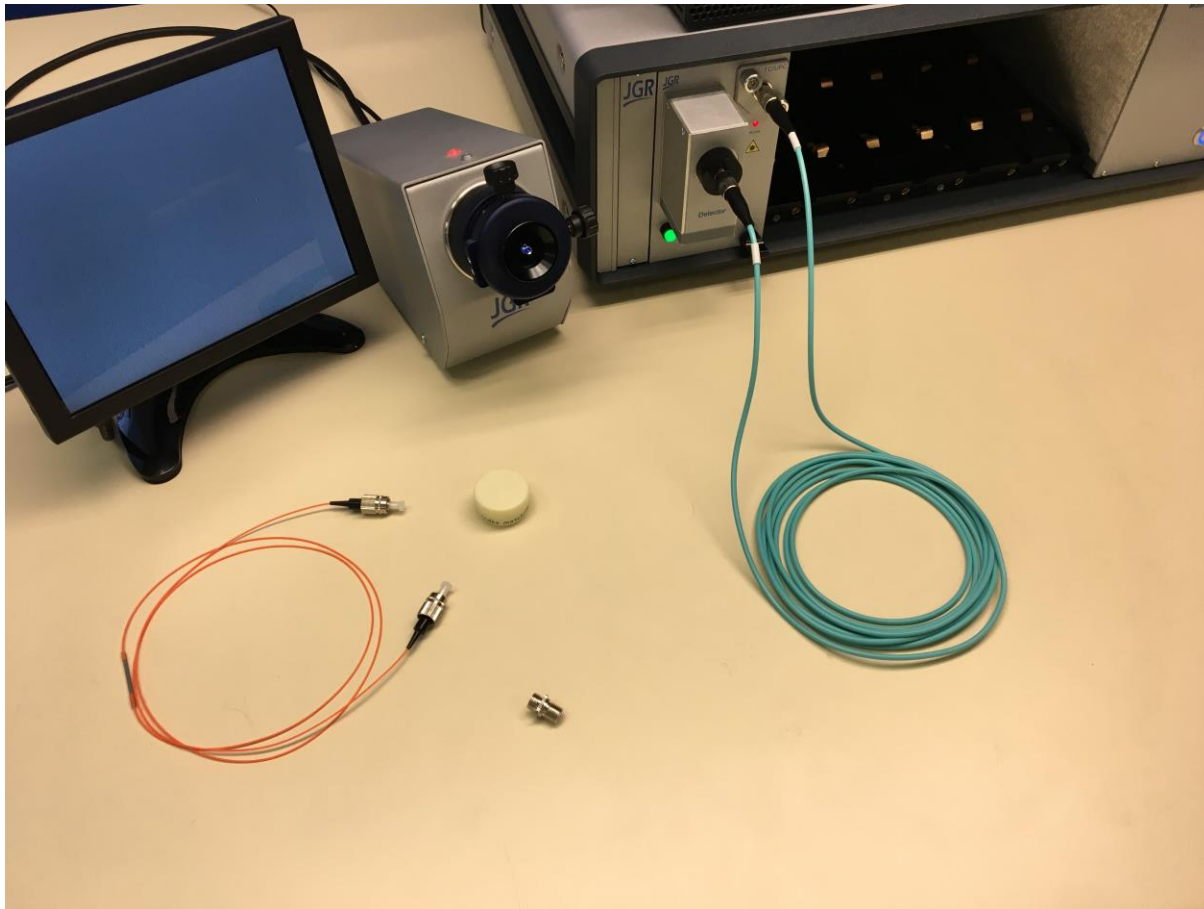
Testing a Short DUT

Select Reference Acquisition and click Start Single. This will initiate the first part of the reference for length and RL calibration.



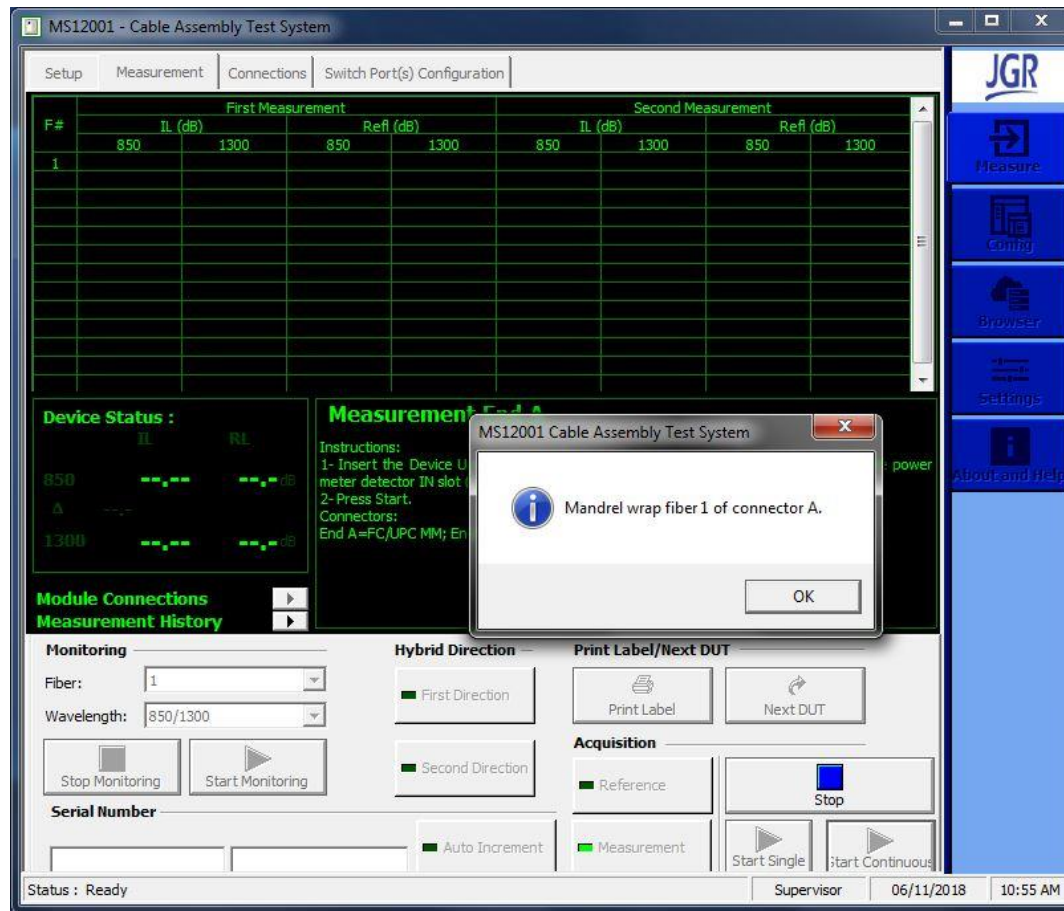
Testing a Short DUT

Insert the MTJ into the detector and click Start Single to initiate the second part of the reference for IL.



Testing a Short DUT

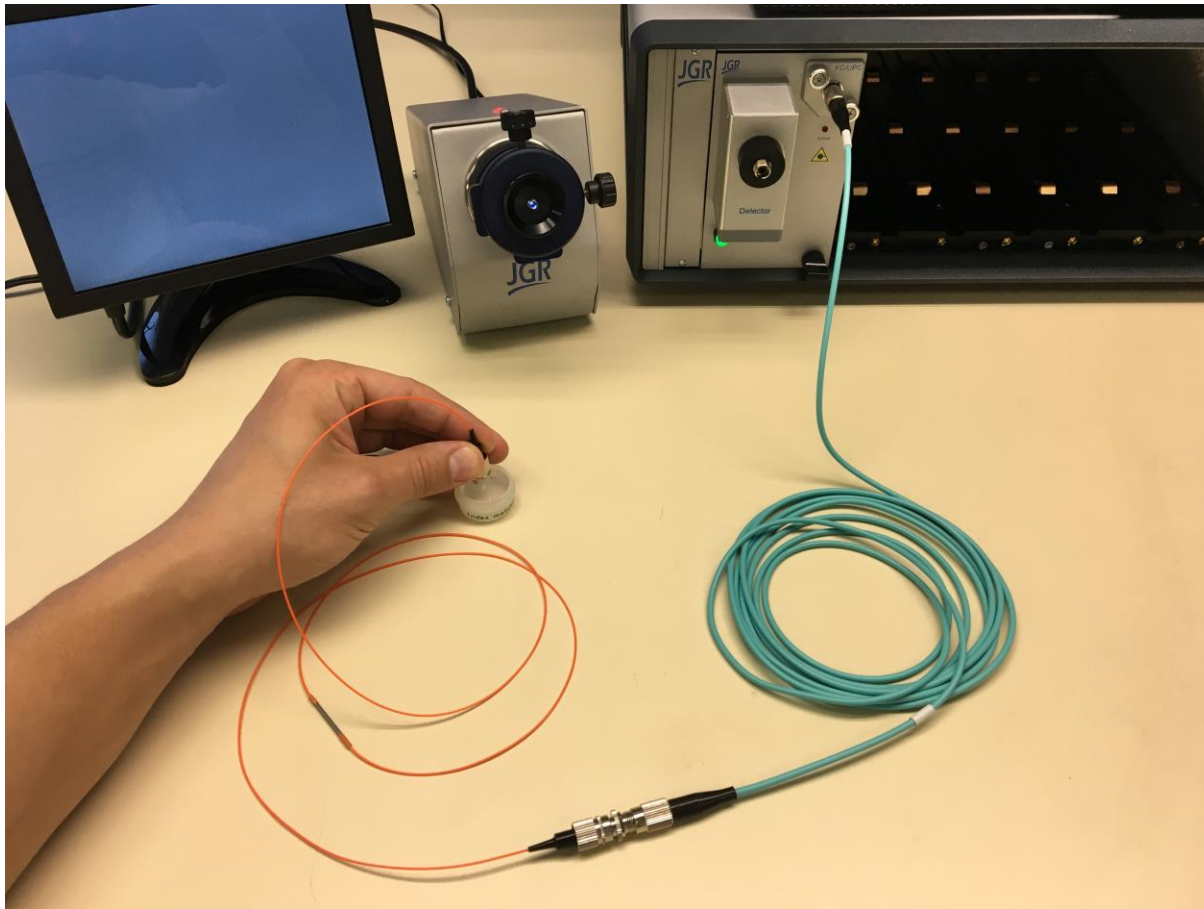
Connect the DUT and click Start Single. The software will pause to allow the operator to terminate the second connector.



Testing a Short DUT

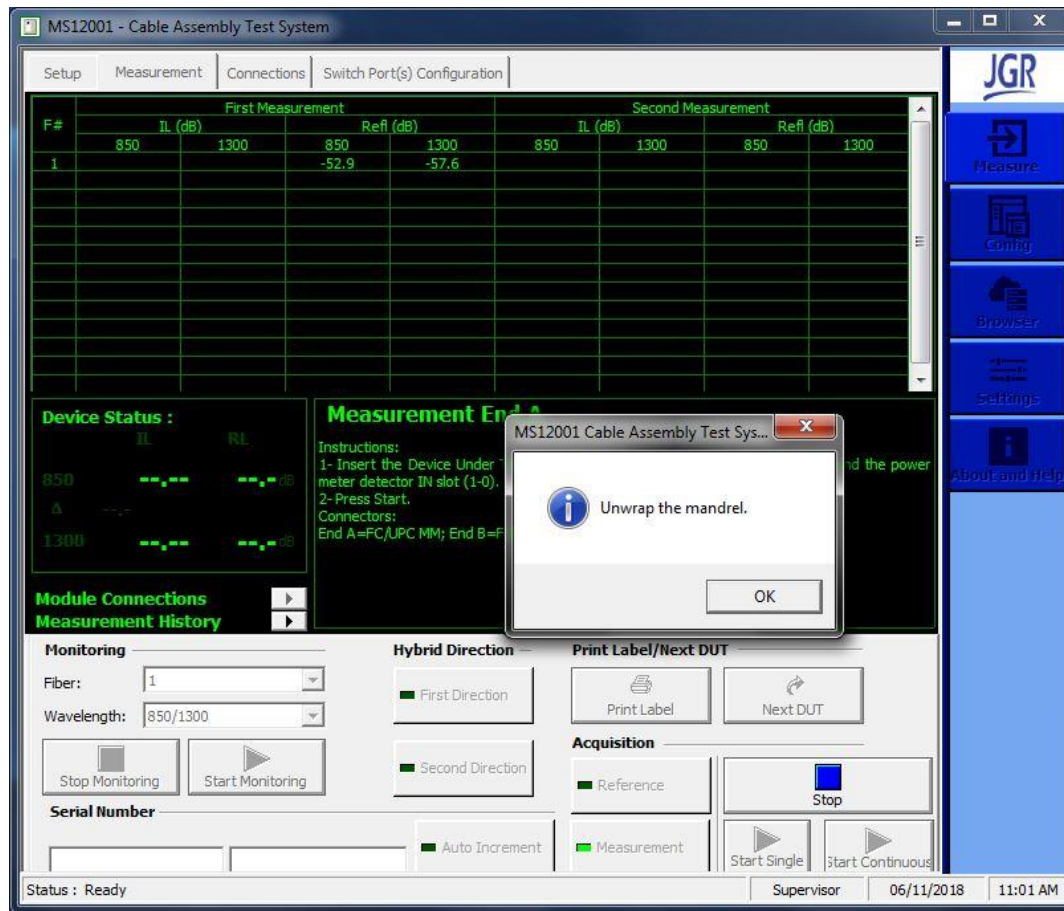
Place the second connector in the index matching block or gel. Click OK.

Note: mandrel wrapping does not work for MM.



Testing a Short DUT

After the RL acquisition, the software will pause again.



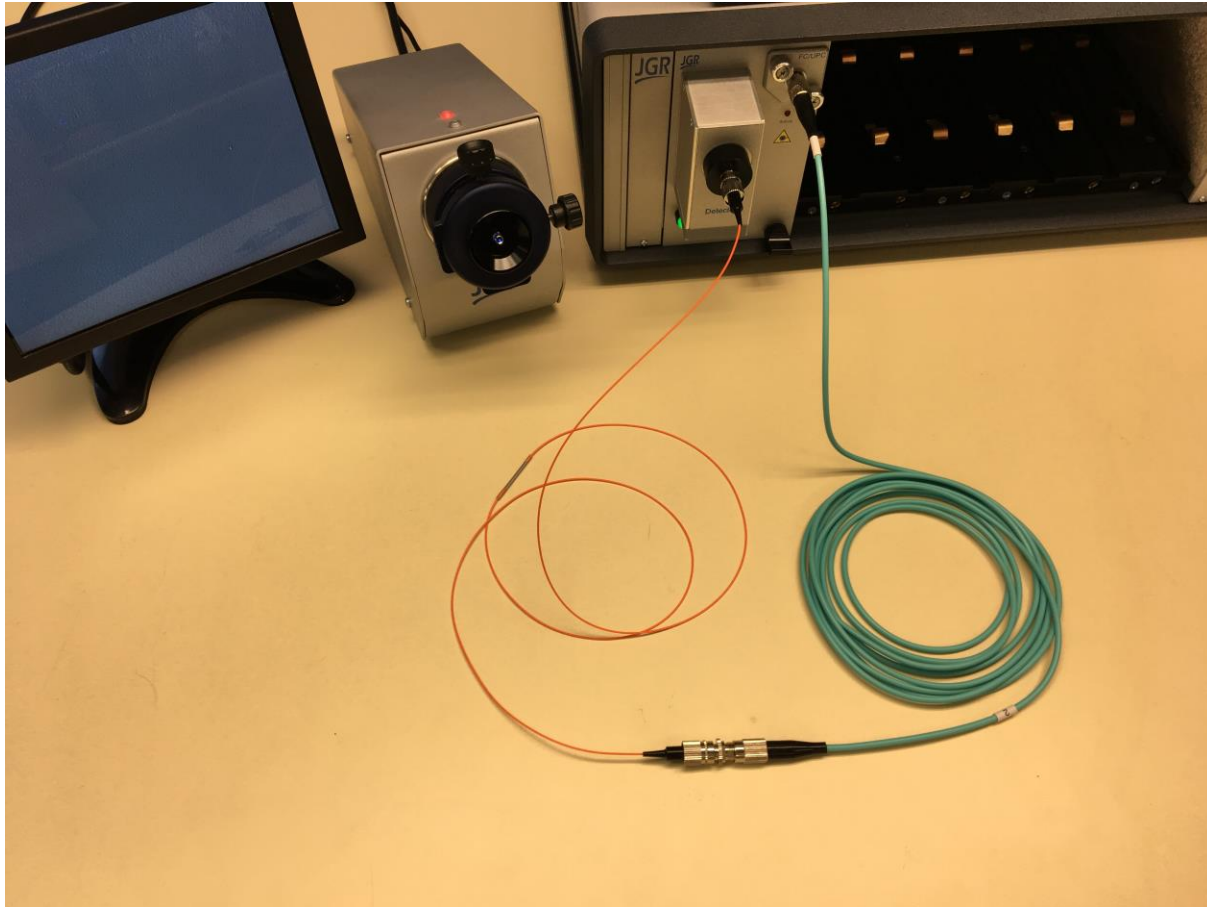
Testing a Short DUT

Clean and inspect the connector.



Testing a Short DUT

Insert it into the detector. Click OK to complete the IL measurement.



Testing a Short DUT

Flip the DUT and repeat to measure the second connector.

Once complete, enter a serial number and click Next DUT to save the results.

The screenshot displays the MS12001 - Cable Assembly Test System software interface. The main window is divided into several sections:

- Top Tabs:** Setup, Measurement, Connections, Switch Port(s) Configuration.
- Measurement Table:** A table showing measurement results for two measurements. The first measurement is for a device with a serial number of 850, and the second is for a device with a serial number of 1300. The table includes columns for IL (dB) and Refl (dB) for both directions.
- Device Status:** A section showing the current device status as "Pass". It includes a small graph showing the IL and RL curves for the device.
- Next DUT:** A section with instructions for the next step: "Click on Next DUT to save the measurements and proceed with the next DUT." and "Click on Print Label to save the measurements and print the specified label(s)."
- Module Connections:** A section showing the current module connections.
- Monitoring:** A section with controls for monitoring, including a "Fiber" dropdown (set to 1), a "Wavelength" dropdown (set to 850/1300), and buttons for "Stop Monitoring" and "Start Monitoring".
- Hybrid Direction:** A section with buttons for "First Direction" and "Second Direction".
- Print Label/Next DUT:** A section with buttons for "Print Label" and "Next DUT".
- Acquisition:** A section with buttons for "Reference", "Measurement", "Start Single", and "Start Continuous".
- Serial Number:** A section with a text input field for the serial number (set to "short_DUT-002") and a button for "Auto Increment".
- Status:** A section showing the current status as "Ready".

The interface also includes a sidebar on the right with buttons for Measure, Config, Browser, Settings, and About and Help.