

Multimode APC Testing

Testing an APC–UPC Hybrid Cable with a Multimode System

To measure a hybrid MM DUT, setup the DUT Config as shown. Make sure to turn off the 'Mandrel Free' option.

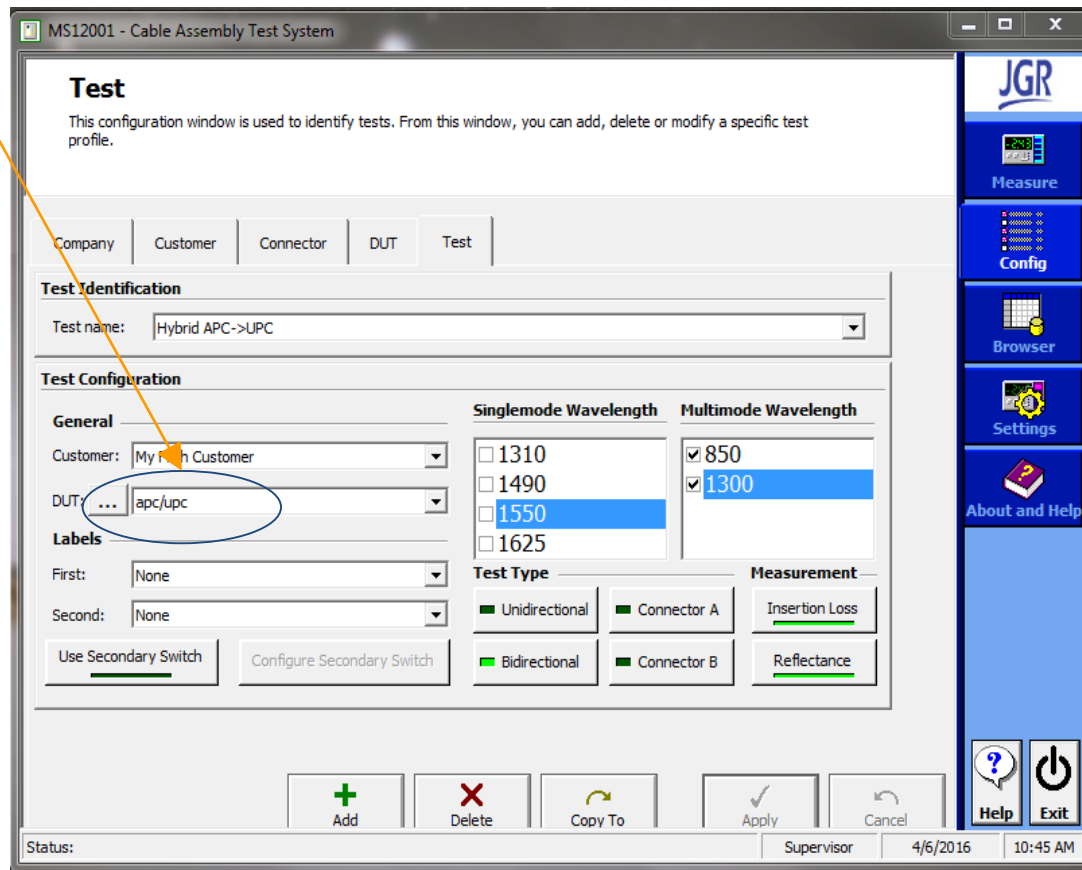
The screenshot shows the 'DUT' configuration window in the MS12001 Cable Assembly Test System. The window is titled 'DUT' and contains the following fields and options:

- DUT Identification:**
 - Part number:
 - Description:
 - Manufacturer:
 - Maximum fiber length (m):
 - Fiber type:
 - Assembly type:
 - Number of fibers:
 - Mandrel Free (highlighted with a blue circle and an orange arrow)
- DUT Configuration:**
 - End A:
 - End B:
 - IL limits: 0.5 dB (End A), 0.4 dB (End B)
 - Ref. limits: -65 dB (End A), -55 dB (End B)

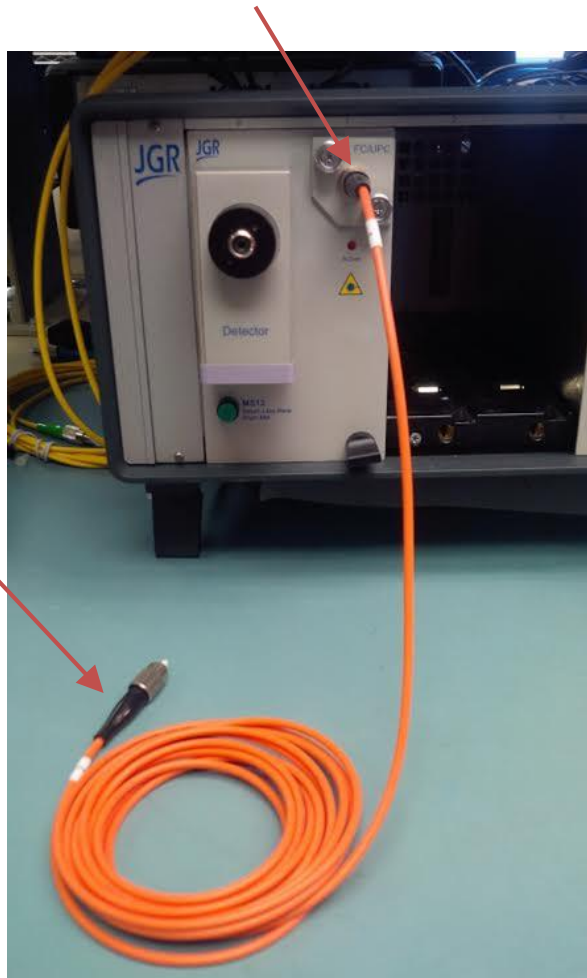
The interface includes a sidebar on the right with buttons for Measure, Config, Browser, Settings, and About and Help. At the bottom, there are buttons for Add, Delete, Copy To, Apply, and Cancel, along with a status bar showing 'Supervisor', '4/5/2016', and '04:37 PM'.

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Next set up a bidirectional test as shown using the DUT you created in the previous step.



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- First we will measure the UPC Connector (this will be End A).
- Connect a UPC-UPC MTJ to the MS12 output. Leave the end disconnected as shown.

Testing an APC–UPC Hybrid Cable with a Multimode System

MS12001 - Cable Assembly Test System

Setup Measurement Connections Switch Port(s) Configuration

P#	850nm	First Reference	1300nm	Len. (m)
1				

Device Status : Power indication

IL RL

850 -50.042 ---,---

Δ ---,---

1300 ---,--- ---,--- dB

MTJ1 Reference End A

Instructions:

1- Connect the MS12 OUT slot (1-1) to a master test jumper (MTJ) and make sure that it is disconnected from the power meter to produce a fiber-to-air interface.

2- Press Start

Connectors:

C1=FC/PC; C2=compatible FC/APC.

Module Connections

Measurement History

Monitoring

Fiber: 1

Wavelength: 850/1300

Stop Monitoring Start Monitoring

Serial Number

Hybrid Direction

First Direction

Second Direction

Auto Increment

Print Label/Next DUT

Print Label Next DUT

Acquisition

Reference

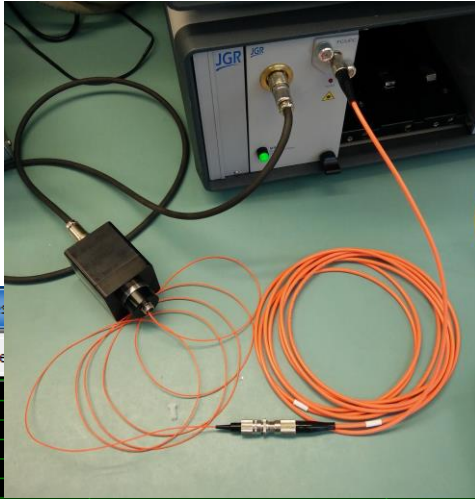
Measurement

Stop Start

Status : Current power monitoring Supervisor 20/11/2015 09:12 AM

Start part 1 of the reference with the UPC–UPC MTJ disconnected from the detector to produce a fiber-to-air interface (as shown on the previous page).

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- Once part 1 is done, the software will pause and ask you to connect the MTJ to the detector.

MS12001 - Cable Assembly Test

P#	Wavelength	Len. (m)
1	850nm	3.1

Device Status : Power indication

RL 850 **-50.084** dB

RL 1300 --- dB

MTJ1 Reference End A

Instructions:
1- Connect the MS12 OUT slot (1-1) to the MS12 IN slot (1-0) using a master test jumper (MTJ).
2- Press Start.
Connectors:
C1=FC/PC; C2=compatible FC/APC.

Module Connections

Measurement History

Monitoring

Fiber: 1

Wavelength: 850/1300

Stop Monitoring Start Monitoring

Serial Number

12345

Auto Increment

Hybrid Direction

First Direction

Second Direction

Print Label/Next DUT

Print Label Next DUT

Acquisition

Reference Stop

Measurement Start

Help Exit

Status : Current power monitoring Supervisor 20/11/2015 12:37 PM

- Do this. Then click 'Start' to complete part 2 of the reference.
- You are now able to connect the DUT as shown and complete the 'First direction' (End A) tests for a group of cables.
- Don't forget to assign a serial number and use the 'Autoincrement' function.

Testing an APC–UPC Hybrid Cable with a Multimode System

MS12001 - Cable Assembly Test System

Setup Measurement Connections Switch Port(s) Configuration

P#	850nm	1300nm	Len.(m)
1			3.1

Device Status : Power indication
RL 850 -50.084 dB
RL 1300 --- dB

MTJ1 Reference End A
Instructions:
1- Connect the MS12 OUT slot (1-1) to the MS12 IN slot (1-0) using a master test jumper (MTJ).
2- Press Start.
Connectors:
C1=FC/PC; C2=compatible FC/APC.

Module Connections
Measurement History

Monitoring
Fiber: 1
Wavelength: 850/1300
Stop Monitoring Start Monitoring

Serial Number

Hybrid Direction
 First Direction
 Second Direction
 Auto Increment

Print Label/Next DUT
Print Label Next DUT

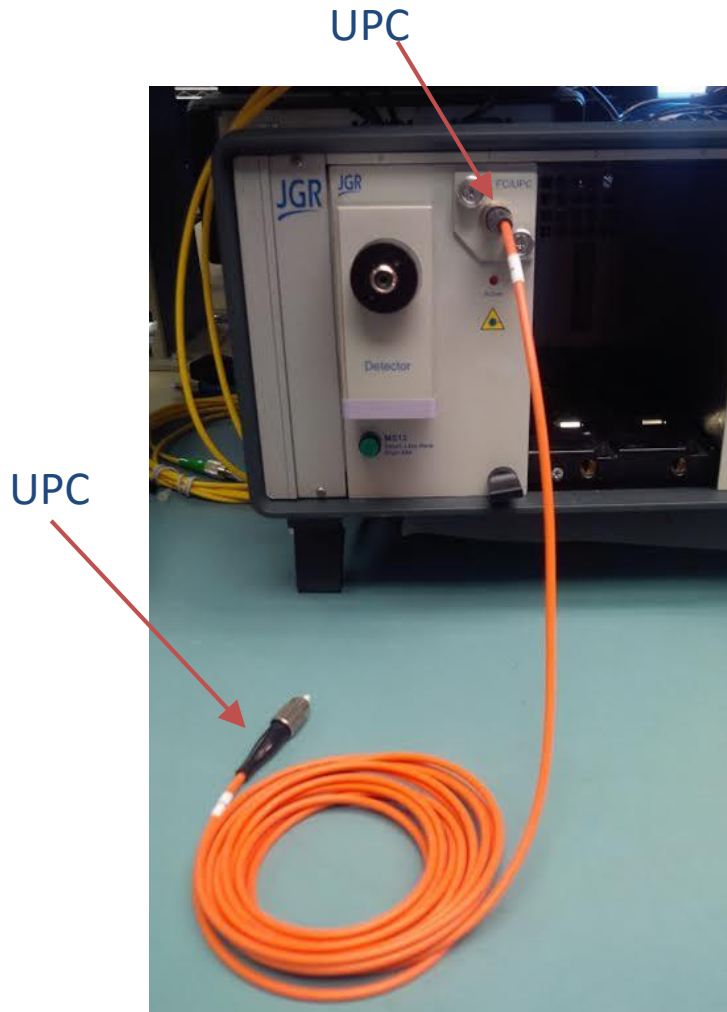
Acquisition
 Reference
 Measurement
Stop Start

Help Exit

Status : Current power monitoring Supervisor 20/11/2015 12:37 PM

- Once you have tested the UPC side of a batch of cables click 'Second Direction'.
- This will prompt you to perform a second reference in order to test the APC side of the cables. (See next slide for instructions).

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In order to measure the MM APC connector you must perform the first step of the reference with a **CLEAN** 3m UPC-UPC MTJ disconnected from the detector as shown.

Testing an APC–UPC Hybrid Cable with a Multimode System

P#	850nm	1300nm	Len.(m)
1			

Device Status : Power indication

Wavelength	Power (dB)	RL (dB)
850	-50.042	--.--- dB
1300	--.---	--.--- dB

MTJ1 Reference End A

Instructions:
1- Connect the MS12 OUT slot (1-1) to a master test jumper (MTJ) and make sure that it is disconnected from the power meter to produce a fiber-to-air interface.
2- Press Start.
Connectors:
C1=FC/PC; C2=compatible FC/APC.

Monitoring
Fiber: 1
Wavelength: 850/1300
Stop Monitoring Start Monitoring

Hybrid Direction
First Direction
Second Direction
Auto Increment

Print Label/Next DUT
Print Label Next DUT

Acquisition
Reference
Measurement
Stop Start

Status : Current power monitoring Supervisor 20/11/2015 09:12 AM

Start part 1 of the reference with the UPC–UPC MTJ disconnected from the detector to produce a fiber-to-air interface (as shown on the previous page).

Testing an APC–UPC Hybrid Cable with a Multimode System

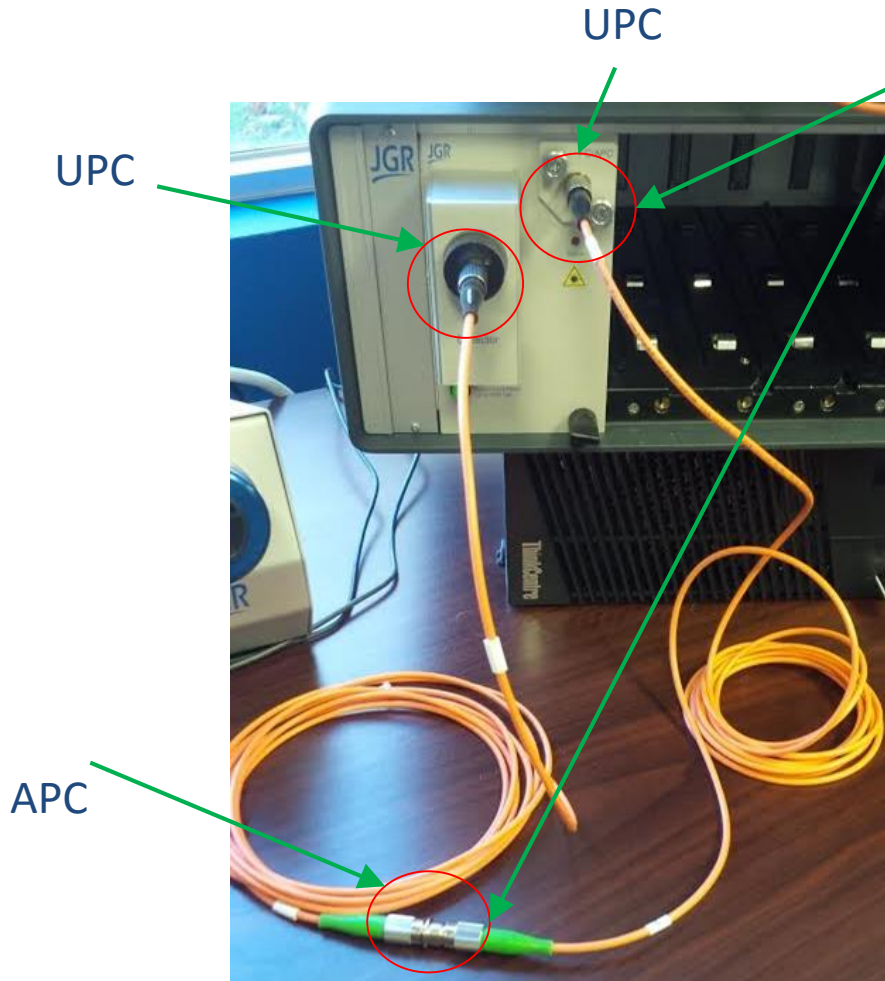
The screenshot shows the MS12001 - Cable Assembly Test System software interface. The 'Setup' tab is active, displaying a table with the following data:

P#	850nm	First Reference	1300nm	Len.(m)
1				3.1

The 'Measure' button is highlighted in blue. Below the table, the 'MTJ1 Reference End A B' section contains instructions: '1- Connect the MS12 OUT slot (1-1) to the MS12 IN slot (1-0) using a master test jumper (MTJ), 2- Press Start.' The 'Start' button is highlighted in green. The 'Acquisition' section shows 'Reference' and 'Measurement' checkboxes, with 'Reference' checked. The 'Start' button is also highlighted in green. The 'Print Label/Next DUT' section has 'Print Label' and 'Next DUT' buttons. The 'Hybrid Direction' section has 'First Direction' and 'Second Direction' checkboxes, with 'First Direction' checked. The 'Auto Increment' checkbox is also checked. The status bar at the bottom shows 'Supervisor', '20/11/2015', and '12:37 PM'. The photograph shows the physical hardware setup with an orange cable connected to the 'Detector' port of the MS12001 system. The cable is labeled 'APC' and 'UPC'. The 'Start' button in the software is circled in green, and the 'Start' button in the photograph is circled in red.

- Once part 1 is done, the software will pause and ask you to connect the MTJ to the detector.
- At this point, *disconnect* the entire UPC-UPC MTJ and **replace** it with a similar 3m UPC-**APC** MTJ connected as shown here.
- Ensure that the connections are **CLEAN**.
- Click 'Start' to complete part 2 of the reference.

Testing an APC–UPC Hybrid Cable with a Multimode System



- After the reference is complete you may now connect the APC end of your DUT to the MTJ and perform a measurement.
- The serial numbers will automatically decrement again so that you can match up all of the End B measurements with the correct End A measurement.
- Note that your DUT must be $>1.7\text{m}$.