

# Testing a Short Cassette

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Measuring RL on short DUTs (length < 1.7m) requires terminating the far end connector when using an OTDR based instrument (MS12). For cassettes, this is not always possible.

The most accurate method is therefore to measure BR of the whole DUT (for more information on the differences, please see the application note “*Backreflection vs Return Loss*”).

This document will explain the correct method in measuring IL and BR of a short cassette using a JGR MBR5.

Using JGR’s free software, GMS, the testing can be automated. Typically, the testing time for IL and BR at 2 wavelengths for 12 channels is < 30 seconds.

In this example, the DUT has the following properties:

- MM (50um)
- Side A: 24\*LC/UPC
- Side B: 2\*MPO/PC(M)
- Length = 0.2m

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In order to measure total BR of the DUT, it must be connected to a launch master test jumper (MTJ 1) and a receive master test jumper (MTJ 2).

The far end connector of MTJ 2 must be terminated. This can be done by using index matching gel/block or with an APC-to-air termination. Because the MBR5 uses OCWR technology, the length of MTJ 2 should be as short as possible (ideally < 1m).

In this example,

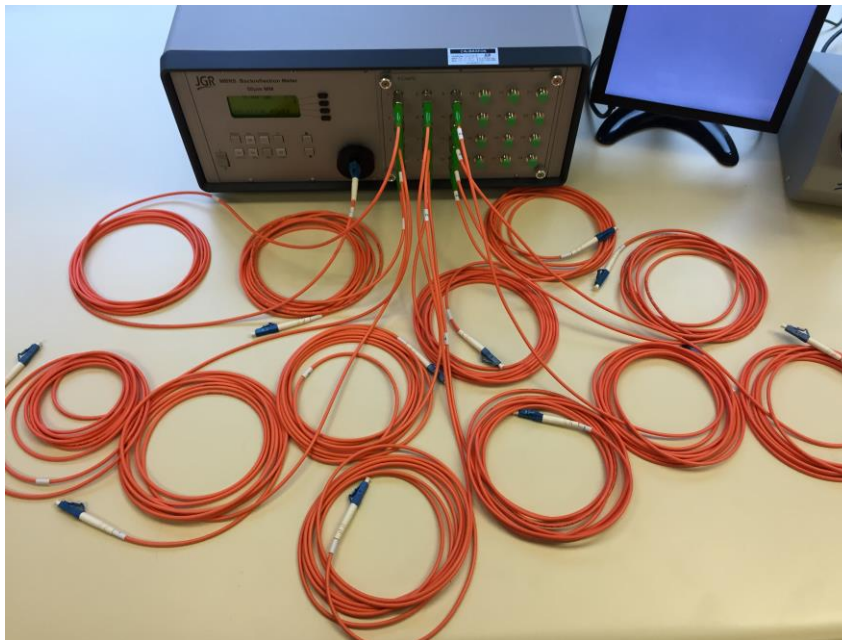
- MTJ 1 = 12\*FC/APC – LC/UPC
- MTJ 2 = MPO/PC(F) – MPO/APC
- Testing will be done in 2 sequences: fibres 1-12 then 13-24

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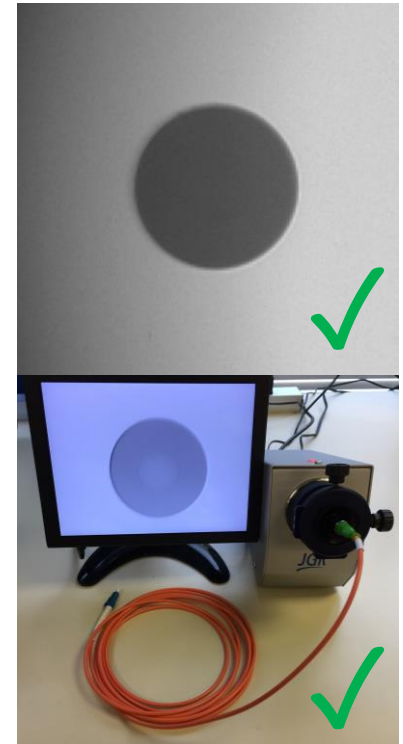
## Reference Procedure:

1. Connect the MTJ 1 to the MBR5. Remember to inspect both ends before connecting. This is especially important if connecting directly to the MBR5.

For maximum stability, use a heat gun to gently heat the fibres and avoid sharp bends. See below.



MBR5 bulkhead inspection using a handheld scope



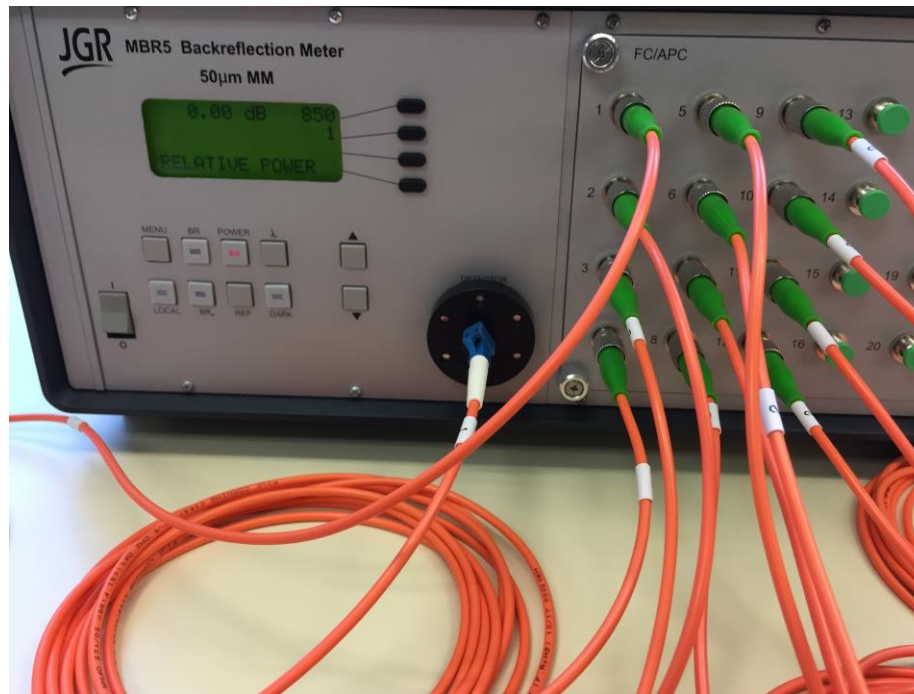
MTJ 1 connector inspection using a JGR CS400K-CM

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## Reference Procedure

2. Attach the appropriate detector adapter (in this example, a magnetic LC detector adapter is used: MDA118).

Inspect/clean MTJ 1 and connect to the MBR5 detector. Press *Ref* to take a power reference. Note: this can be done in *BR* or *Power* mode. Holding *Ref* for 2 sec will reference all wavelengths, holding it for 5 sec will reference all wavelengths and channels.



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## Reference Procedure

3. In *BR* mode, terminate the open MTJ 1 connector to take a  $BR_0$  measurement. Do this for each wavelength and channel.

If using index matching, be sure to clean the connector after the  $BR_0$  measurement.

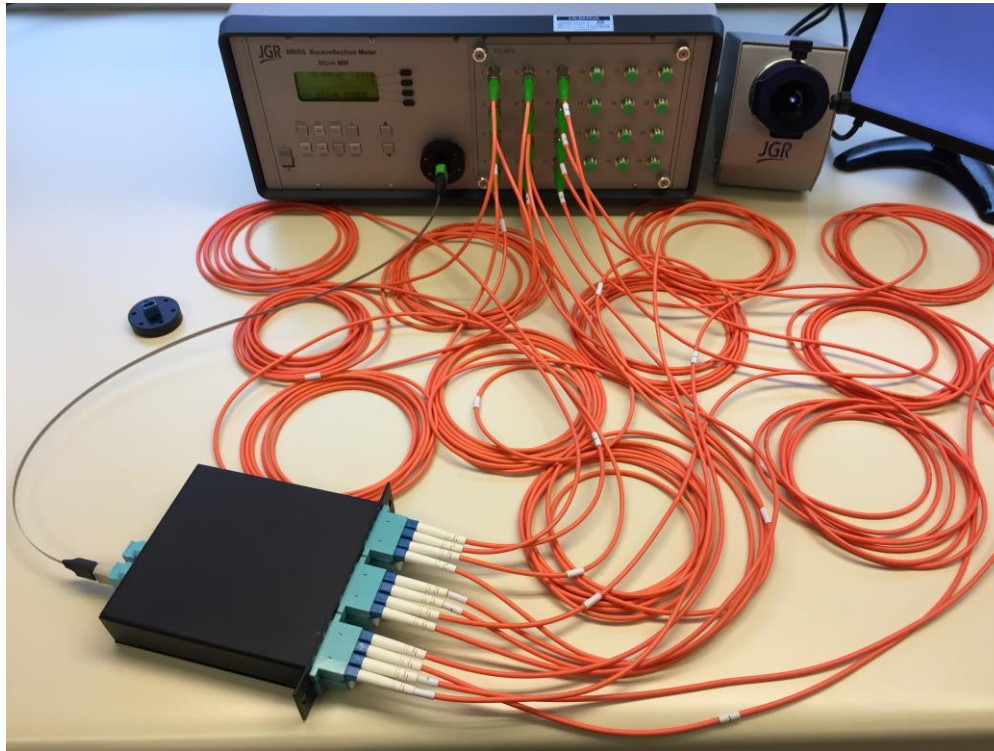
Note: it is critical to take an accurate  $BR_0$  measurement or there is a risk of false passes (a DUT that should fail might pass). Termination techniques can vary but index matching gel or block is typically the best. See the “*How to Reference and Measure BR – MM BR5*” tutorial for more information on how to correctly terminate using index matching block.



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## DUT Testing Procedure

1. Inspect/clean and connect the DUT side A and MTJ 1.
2. Inspect/clean and connect the DUT side B and MTJ 2.
3. Connect the MTJ 2 open connector to the MBR5 detector using the appropriate detector adapter (in this example, a magnetic MTP/MPO detector adapter is used: MDA117).



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## DUT Testing Procedure

4. *Power* mode will display the relative power of the DUT.

5. Go to *BR* mode and terminate the MTJ 2 open connector to display the BR of the DUT.

Note: if using APC-to-air termination, BR can be measured with the APC connector in the MBR5 detector.

This will add a small amount of reflection to the BR measurement. Since the displayed BR will be slightly worse, there is no risk of a false pass.

If a DUT fails but is close to the target specification, it is acceptable to take the APC connector out of the detector and re-measure. This is the true BR value.



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## GMS Testing Procedure

Using GMS and an APC-to-air termination, a 12 fibre DUT can be tested for IL and BR at 2 wavelengths in under 30 sec.

For example, choose the test parameters below and press *Insert*. Pauses can be added before select channels if using index matching for BR termination.

Instrument	1- MBR5	▼
Wavelengths	850, 1310	▼
Channels	1-12	▼
Test Types	IL,BR	▼
Detector	0	▼