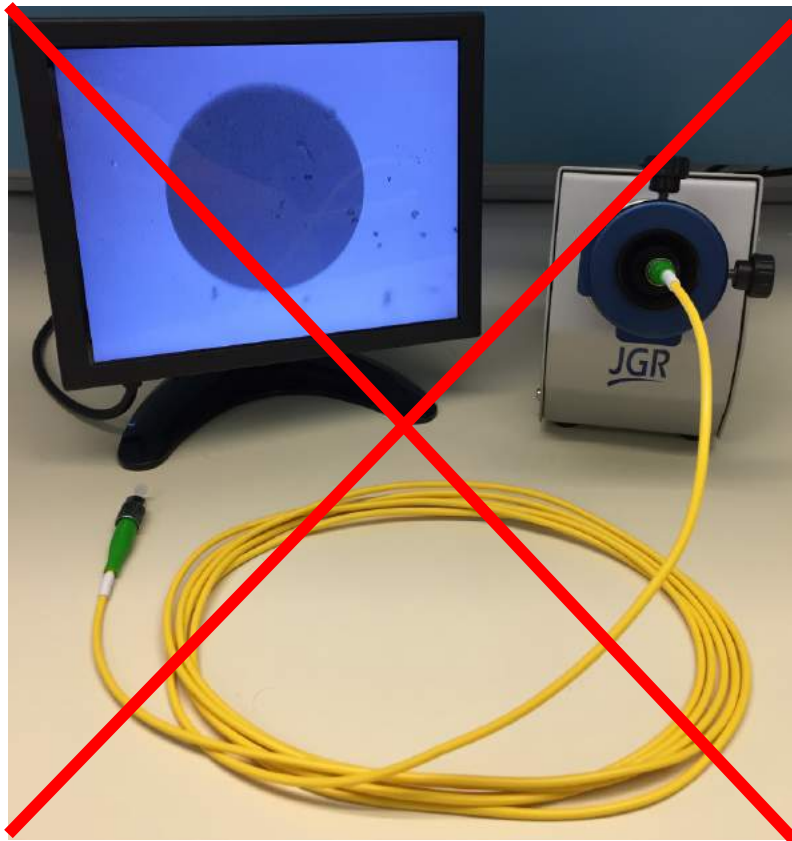


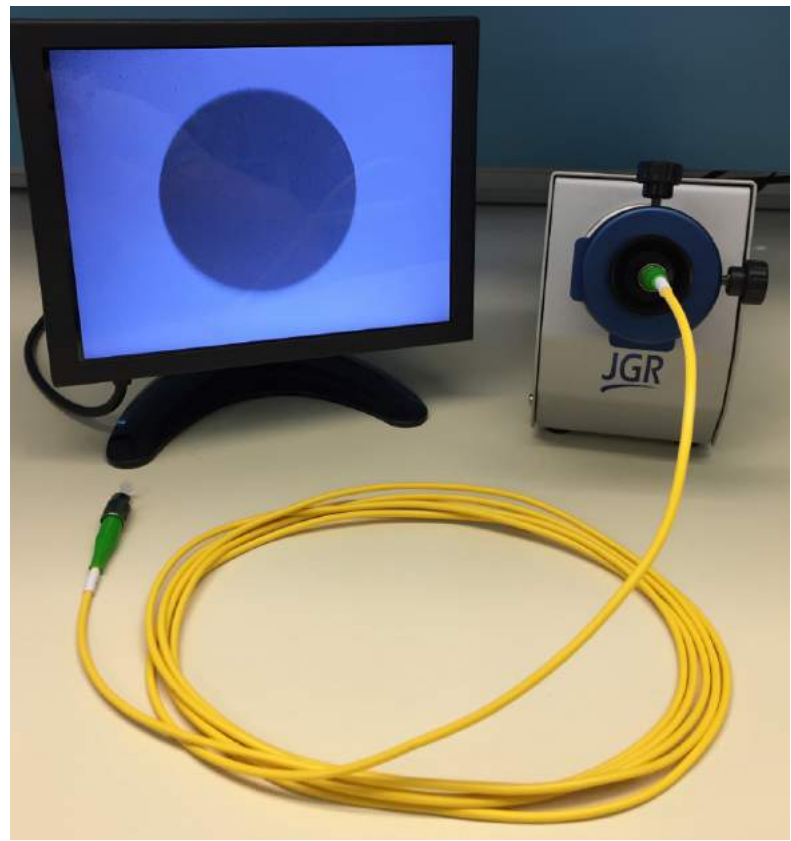
How to Reference and Measure BR – SM BR5

How to Reference Power and Test IL SM BR5

- When making any connections ensure that each connector is clean and free of contaminants.
- A CS400K scope with monitor as shown below is perfect for this.



NOT SAFE TO CONNECT. CLEAN FIRST!

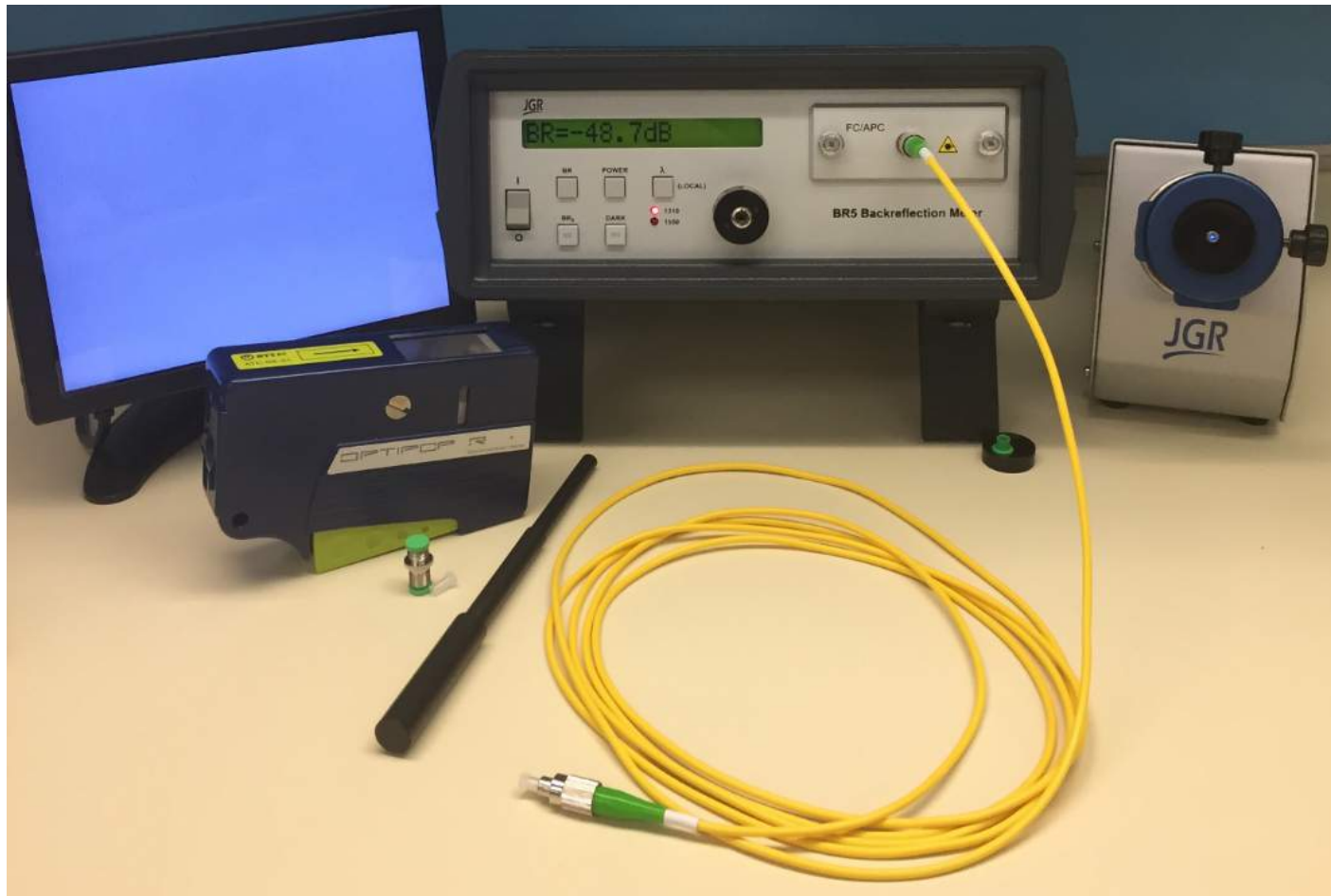


CLEAN. SAFE TO CONNECT.

How to Reference and Measure BR

SM BR5

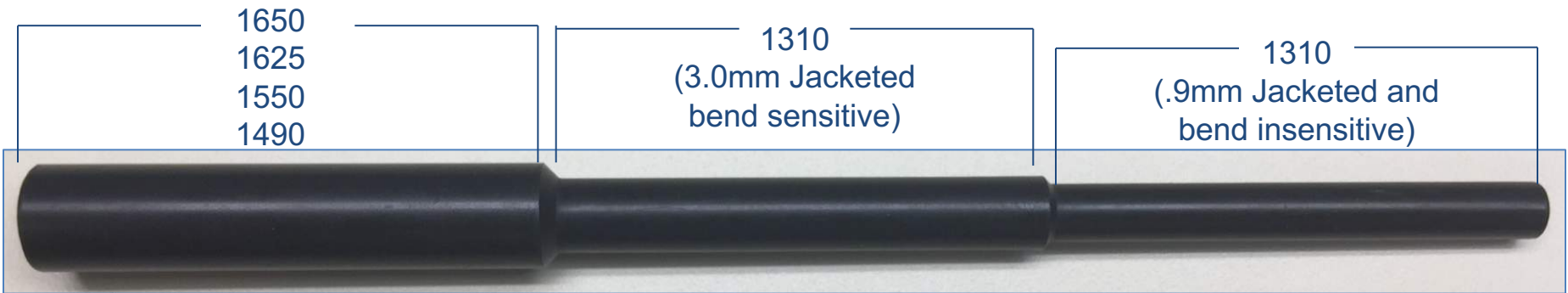
- Once all connectors are ensured to be clean a reference jumper can be connected to the BR5 output. This jumper will be used to set the BR_0 to allow the unit to measure an accurate BR down to -80dB .



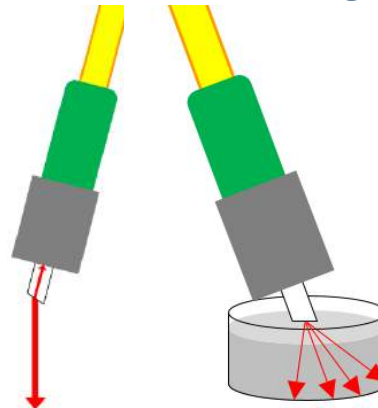
How to Reference and Measure BR

SM BR5

- To set the BR_0 a mandrel will need to be used. There are different diameters to be used with different wavelengths and fiber types.
- See Below for a guide to which wavelengths require which diameter.



- For bend insensitive fibers an index matching block works best.
- See below.



Effect of index matching block on reflections back into the fiber.

How to Reference and Measure BR

SM BR5

- Using the appropriate section of the mandrel, wrap the fiber just before the connector as shown below. (keep the wraps tight together)
- Wrap the fiber until the number no longer decreases regardless of added wraps. In the case as shown below for 1550nm the fiber was wrapped 7 times.



How to Reference and Measure BR

SM BR5

- Once the BR is at its lowest value, unwrap until the number starts to increase again.



Lowest Value (7 wraps)



Starts to increase again (3 wraps)

How to Reference and Measure BR SM BR5

- Add one more turn and press the BR₀ button on the unit.



One more wrap brings it back to its lowest value (4 wraps)

How to Reference and Measure BR

SM BR5

- Once the BR_0 is set the BR_0 button will be illuminated and the BR_0 will be set. Complete the same steps for every wavelength that will be tested.



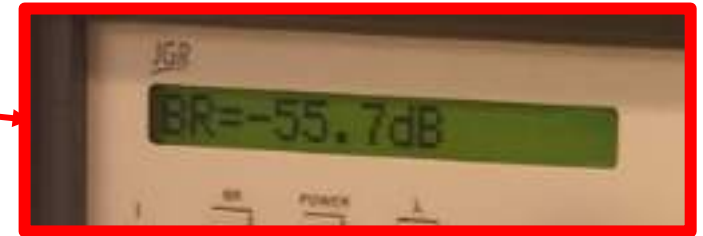
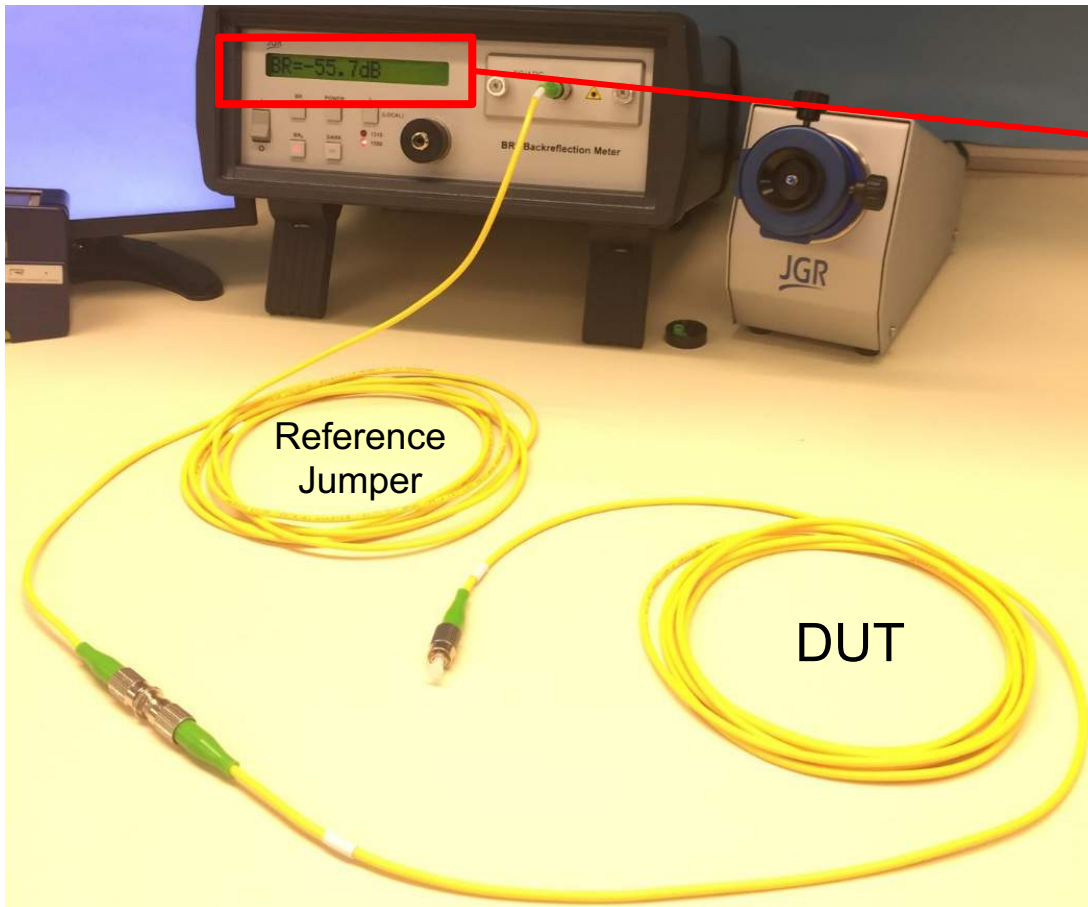
NOTE

If the same mandrel wrap is done in the same spot the unit will read $BR<-80.0dB$ since it cannot see any more reflections as these were referenced out when the BR_0 was set.

How to Reference and Measure BR

SM BR5

- The unit is now ready to test a DUT for BR.
- Clean and connect a DUT to the end of the reference jumper as shown below.



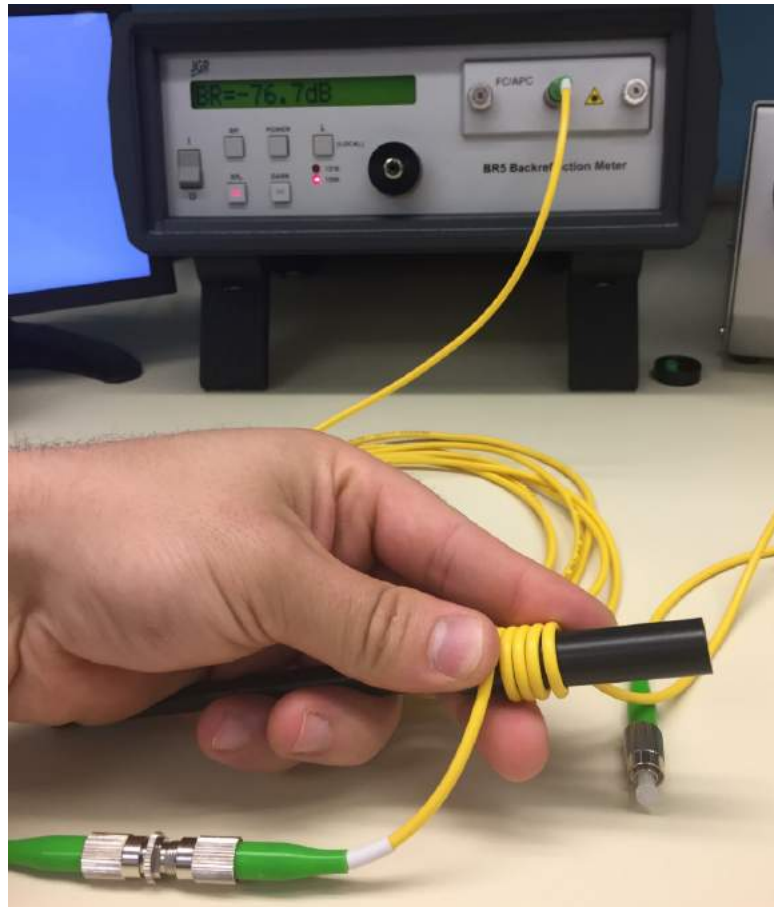
Notice how the unit reads a BR of -55.7dB . This is not the correct measurement value. Another mandrel wrap will need to be done.

See next slide.

How to Reference and Measure BR

SM BR5

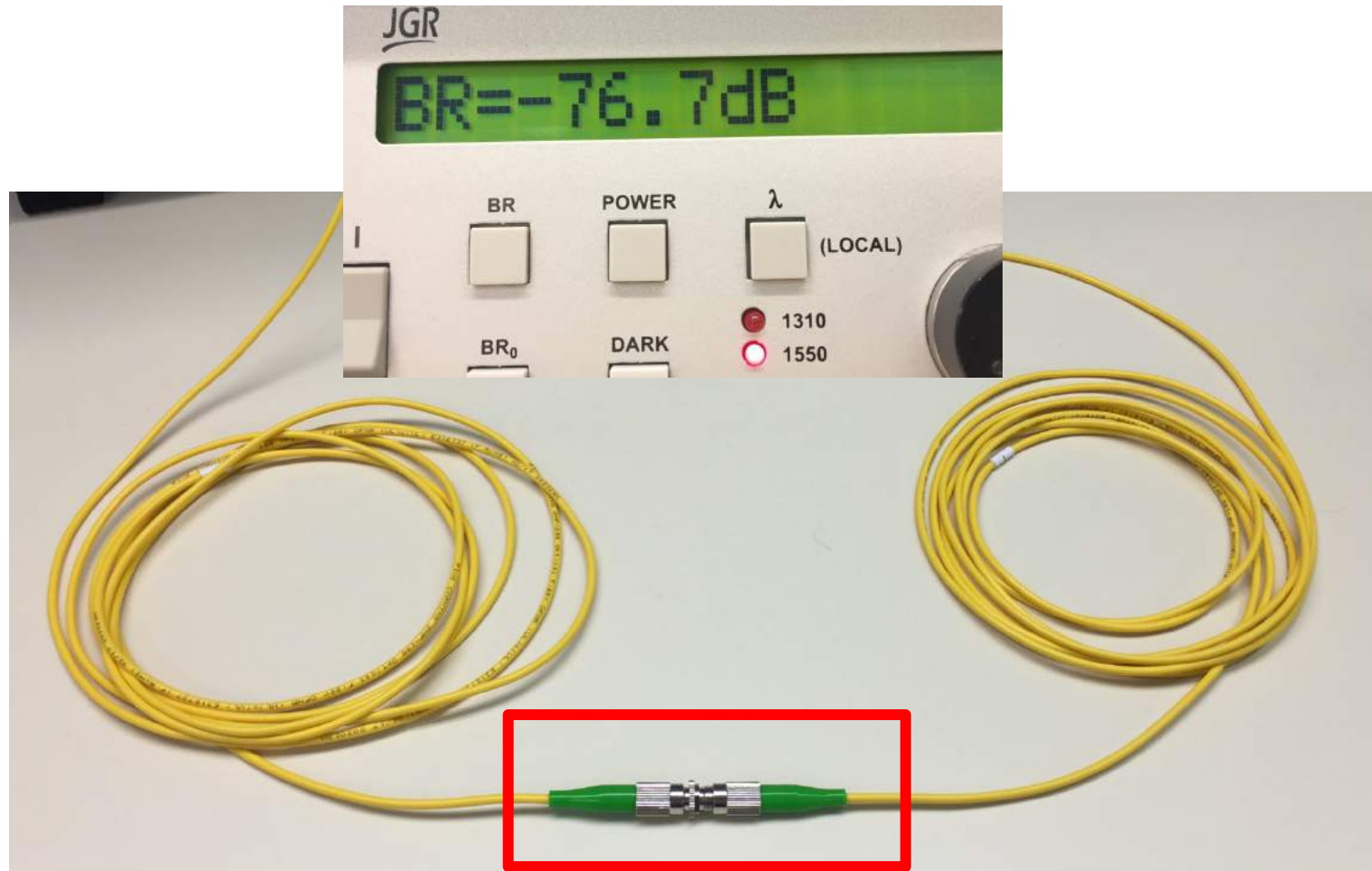
- In order to complete the most accurate measurement possible, complete the same number of wraps on the same section of the mandrel that was done to set the BR_0 .
(In this example it will be 4 wraps for 1550nm)



How to Reference and Measure BR

SM BR5

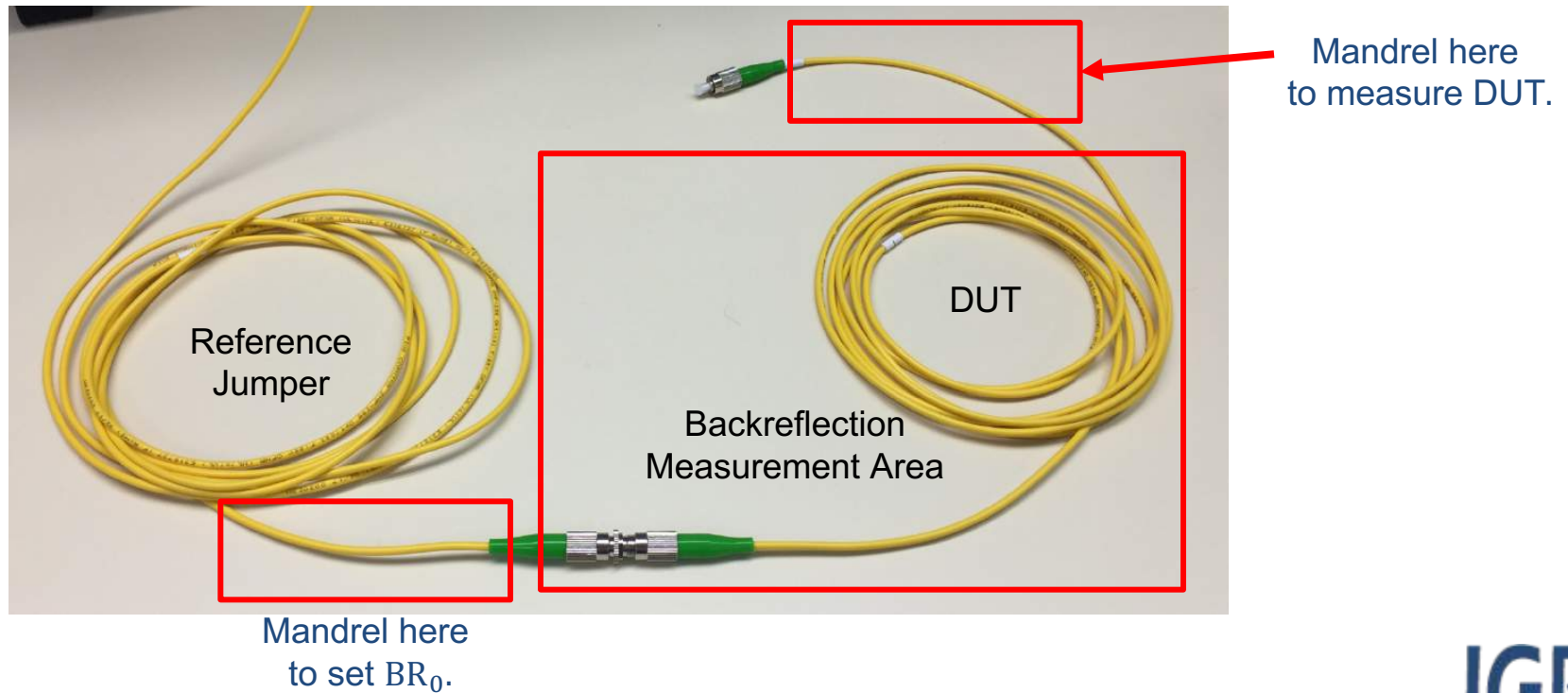
- Now the unit reads -76.7dB . This is the accurate measurement of the connection shown below.



How to Reference and Measure BR

SM BR5

- The section of the DUT that is going to be measured will depend on where the BR_0 is set. If just the one connection is under test complete the BR_0 an measurement as seen in the previous slides.
- If the entire cable is to be tested (connection and length of cable) then complete the BR_0 in the same place as before but complete the measurement mandrel at the other end of the DUT (see below.



How to Reference and Measure BR

SM BR5

- One more example is to measure a DUT excluding any connectors.
- To do this set your BR_0 after the connection point, and measure the BR before the last connector.

