

# Test Procedure

**(Start Here)**

## **Equipment List**

- (1) Quantity (1); RF Optics FOS860A Standard Receiver / OMI Instrument.
- (2) Quantity (1); Applied Instruments Multi-Carrier Generator Model 5112 with 4 Channels or Equiv.
- (3) Quantity (1); Portable Digital Multi-meter.
- (4) Quantity (4); SCAPC to FC and SC, angle and flat polish, 2 meter patch cords.
- (5) FOS 860A "NODE TEST" DATA Tables.
- (6) Quantity (1); 75 ohm, BNC RF Terminator.
- (7) Quantity (1); 2 meter, 75 ohm BNC coaxial extension cable.
- (8) Quantity (1); 2 meter, 75 ohm Type F coaxial extension cable.

## **Pre - Test Procedure**

- (1) Identify Manufacturer, Node Platform, and Return Laser Type.
- (2) Set up the node test data chart for that particular laser.
- (3) Find and record from the node records:

- a) The optical power.
- b) Number of ports to test.
- c) Approximate dBmV drive levels for full load.
- d) Full load OMI settings for the laser.

- (4) Plug in the line cord to the FOS 860A and set the power switch to "ON".
- (5) Set the channels of the multi-channel source to 19 MHz, 25 MHz, 31 MHz, and 37 MHz.
- (6) On the FOS 860A:
  - a) Set the channel number to 4.
  - b) Set the wavelength to 1310 or 1550 as appropriate.
  - c) Set the Attenuator to MAX attenuation.
  - d) Ensure that BNC RF 75 ohm terminator is on the RF output.
- (7) Open the clam shell and gain access to the laser transmitters.

**(Repeat Location)**

- (8) Verify configuration of the RF return(s) driving each laser(s).
- (9) Identify the (-20 dB forward path output test port) that will be used to drive the laser with the multi-carrier source, and determine the levels required at the output of the multi-carrier source from the FOS 860A Node Test Data Table.

***(Note that it is very important to take into account all RF sources driving the laser so that proper RF***

***levels can be assigned to set optimum OMI using an equivalent single RF input to drive the laser. I.e., 1 return port driving 1 laser, or 2 return ports driving one laser (3dB per port), or 3 return ports driving one laser (4.8 dB per port), or 4 return ports driving 1 laser (6dB per port). Other combinations of lasers and returns can be assigned. )***

- (10) Connect an appropriate patch cord to the FOS 860A instrument.
- (11) Connect the 75 ohm F type extension cable to the multi-carrier source output.

## **Node Laser Test Procedure**

- (1) Disconnect the return laser transmitter optical connector from the return fiber.
- (2) Connect the optical patch cord from the FOS 860A Instrument to the output of the laser.
- (3) Adjust the variable attenuator on the FOS 860A instrument from MAX until the power level on the instrument reads in the +1 to -3 dBm range. (If possible, set to ~ 0 dBm).
- (4) Connect the preset multi-carrier source output F type 75 ohm cable to the selected test input port.
- (5) Read and record the per channel total OMI percentages.
- (6) If the reading does not correspond to the recorded reference chart value:
  - a) Verify configuration of node and adjust values if incorrect.

b) Verify RF level settings and adjust if incorrect.

c) Read and record total OMI

(7) If all configurations and input settings are correct; adjust pads, amplifier gains or other adjustment means to obtain the recommended full load OMI drive levels.

(8) Make certain that the power level and OMI values are properly recorded.

(9) Disconnect the multi-carrier source cable from the node.

(10) Disconnect the patch cord from the return laser and reconnect the laser to the return fiber.

(11) Repeat from "NODE LASER TEST PROCEDURE" step (1) for other used return ports with the same laser.

(12) If the node contains additional lasers, return to the repeat location above (Line (8) of the "PRELIMINARY PROCEDURE") and repeat all steps.

### **Forward Transmitter Test Procedure**

(at the node)

After all return laser testing is complete and before closing up the node:

(1) Disconnect the downstream fiber from the node receiver and connect it with the appropriate patch cord to the FOS 860A Instrument.

(2) Adjust the instrument attenuator to obtain +1 to -2 dBm (0 dBm nominal) input to the instrument.

(3) Read and record the OMI of the forward laser. This reading, when evaluated, will indicate if the forward laser is operating properly.

(4) Disconnect the patch cord and reconnect the forward fiber to the forward receiver. Repeat this procedure if more than one receiver is active in the node.

### **Post Test Procedure**

(1) Check that all connections, pads covers, etc, are tightened and secure.

(2) Check recording sheet to make sure all values have been recorded.

(3) Close up and seal the node.

(4) Turn all Test Equipment "OFF" and proceed to the next node and repeat full procedure.

***CAUTION: It is extremely important to note that all RF sources to a laser must be taken into account when setting the laser for optimum OMI. For example: if a node laser is driven by two return ports, each return path to the laser would normally be reduced by 3dB. Therefore when setting the OMI for the laser from each return individually, the test signal source level must be 3 dB greater than the anticipated operating port drive level.***

### **Other M2 Optics Inc. Products**

Fiber Lab Field Simulation Series Products

LGX Optical Switches      LGX Couplers

LGX CWDM      LGX Attenuators

Patch Cords      Build Out Attenuators

Optical Power Meters



Node

Laser

Optimization

Procedure

Using the

FOS 860A

Standard Optical Node

And

OMI Instrument

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