

ENGINEER: Sonnichsen / Lerner

DATE: 02/15/2004

COMMENTS:

Testing was terminated after it was determined that the CISCO SFPs were not capable of sustaining operation when submersed in fluorinert. A ball lens in the SFP in front of the laser diode has an air gap which evidently filled with fluorinert, distrubing the optical balance.

Testing did prove that the electrical properties of the router were not disturbed by the fluorinert.

MARS

Org: WHOI

Engr: Fritz Sonnichsen

Date: 01/21/05

H02-Fluorinert - DCS Fluorinert Circuit Operability Test

Purpose of Test:

Insure that CISCO 3750 Equipment is capable of operation over full data throughput range while immersed in Fluorinert

Insure that NE FR-2U Equipment is capable of operation over full data throughput range while immersed in Fluorinert

Insure that Bookham EDFA 1AEC28 is capable of operation over full data throughput range while immersed in Fluorinert

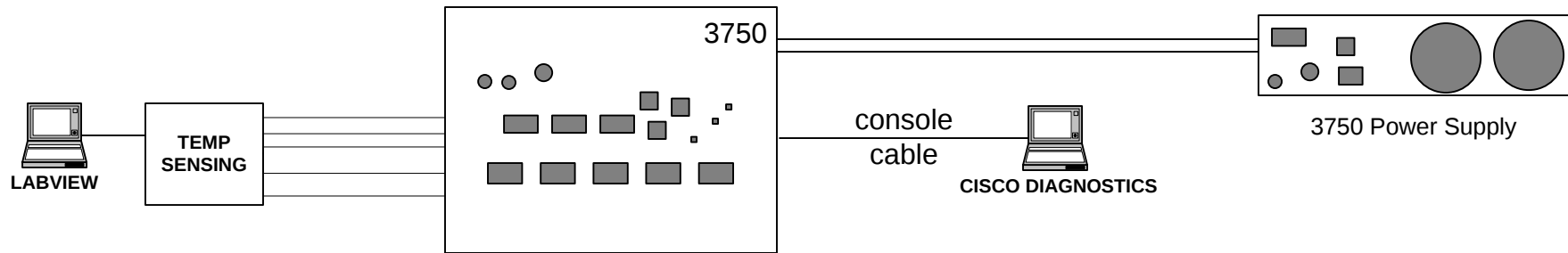
Required Equipment:

3750 switch, NE optical assembly including EDFA

Fluorinert test tank

Temperature sensing thermocouples

BERT tester



CISCO 3750

Control (Tare) with CISCO diagnostic software router fully assembled:

PURPOSE: Check native temperature profile and software operation plus baseline any error rate in router as shipped

Load CISCO diagnostic software onto router

Connect all loopback optical and Cu jumpers per CISCO

Remove cover

Connect temperature sensors to router via labview/temperature hardware card to key chips

Replace cover

Run diagnostic software for length of time specified by CISCO

Record temperature and any errors during test

Dry Test with Power supply removed:

PURPOSE: Check operation with power supply removed

Build up power supply extension cable

Remove cover

Remove power supply from router and connect via new cable

Position cooling fan(s) over pertinent areas

Repeat above test

Terminate test if temperatures of any one chip exceed prior values

Record temperature and any errors during test

WET Test with fluorinert immersion:

PURPOSE: Check operation of 3750 while immersed in Fluorinert

Move prior assembly to fume safe area

Place in Pelican case

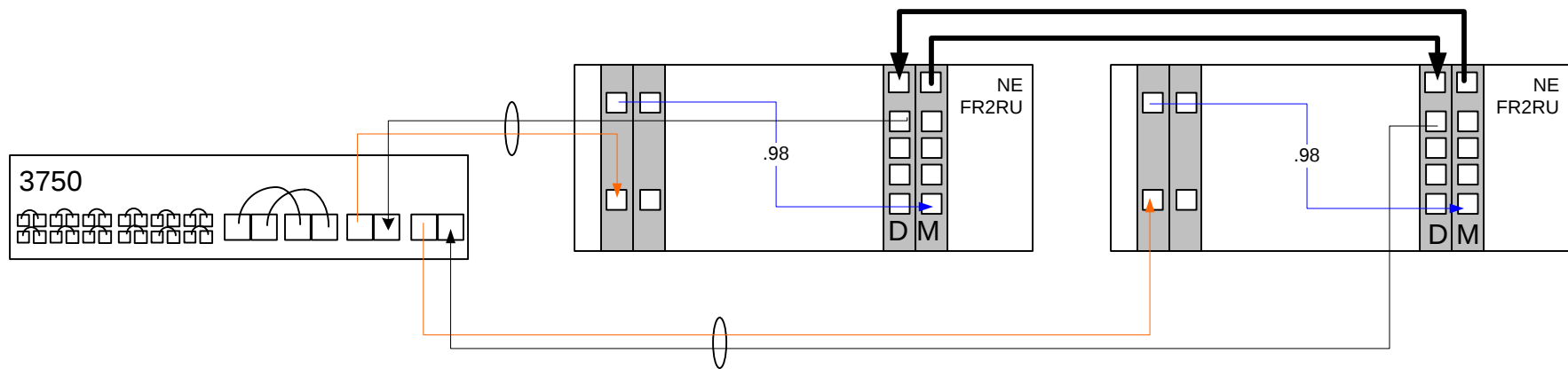
Replace Router cover

Pad case volume with ice filled vessels

Add Fluorinert to cover router

Repeat test

Record temperature and any errors during test



NETWORK ELECTRONICS FR-2RU

Control (Tare) done in free air;

PURPOSE: Baseline the operation of the NE Fr-2RU and it's pertinent cards during normal operation in air. CISCO stress testing software will be used.

- Load CISCO diagnostic software onto router
- Connect all Cu loopbacks per CISCO
- Connect first pair of GBICs with loopback fiber
- Connect second pair of GBICs as shown in diagram via NE equipment
- Pad NE Rx ports on MRTRd with LBO to place input in -6 to -21 dBm range (about 5dB attenuator)
- Use single mode fiber throughout
- Run diagnostic software for 1 hour
- Record any errors during test

WET Test with fluorinert immersion:

PURPOSE: Check operation of NE FR-2U while immersed in Fluorinert

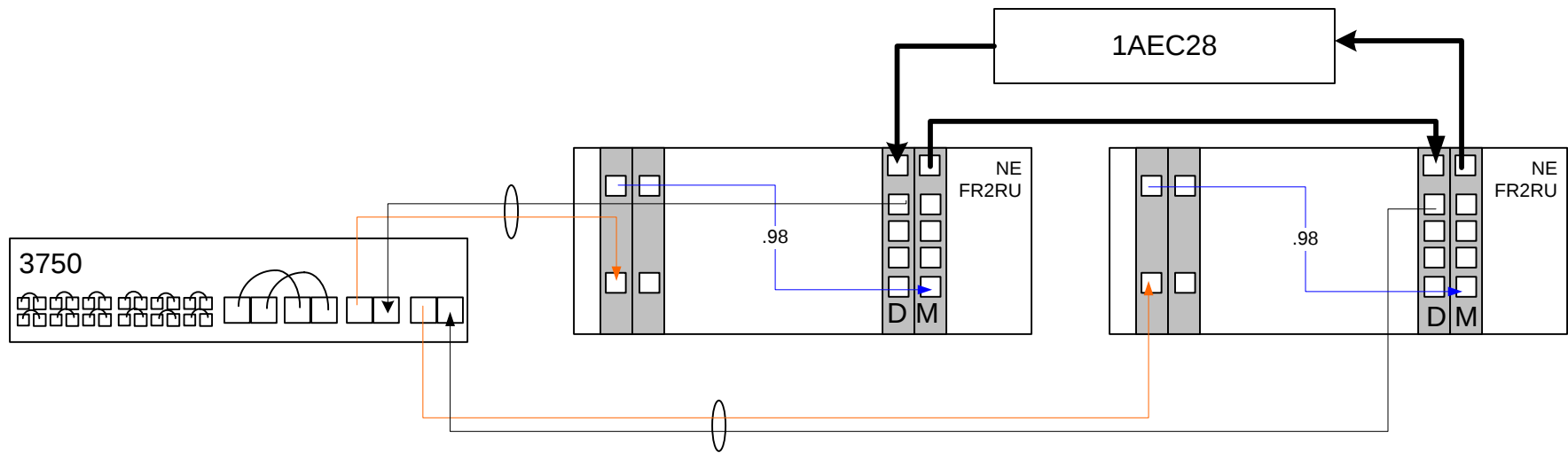
- Move prior assembly to fume safe area
- Place NE switch in Pelican case
- Pad case volume with ice filled vessels
- Add Fluorinert to cover switch
- Repeat test above
- Record temperature and any errors during test

●

●

●

●



BOOKHAM 1AEC28 EDFA

Control (Tare) done in free air;

PURPOSE: Baseline the operation of the Bookham 1AEC28 EDFA during normal operation in air. CISCO stress testing software will be used.

Load CISCO diagnostic software onto router

Connect all Cu loopbacks per CISCO

Connect first pair of GBICs with loopback fiber

Connect second pair of GBICs as shown in diagram via NE equipment with EDFA in place.

Attenuate EDFA output with 25dB LBO combination.

Attach and configure EDFA evaluation card and software

power up EDFA to 5V

Check power inputs into GBICs (>-3 dBm) and MRTRs (>-3 dBm)

Pad NE Rx ports on MRTRd with LBO to place input in -6 to -21 dBm range (about 5dB attenuator)

Use single mode fiber throughout

Run diagnostic software for 1 hour

Record any errors during test

WET Test with fluorinert immersion:

PURPOSE: Check operation of NE FR-2U while immersed in Fluorinert

Move prior assembly to fume safe area

Place NE switch in Pelican case

Pad case volume with ice filled vessels

Add Fluorinert to cover switch

Repeat test above

Record temperature and any errors during test

H-02 Fluorinert Test

RESULTS:

This test was terminated after determining that the CISCO SFPs would not function in fluorinert. The electrical functionality worked fine however. See additional report for the results