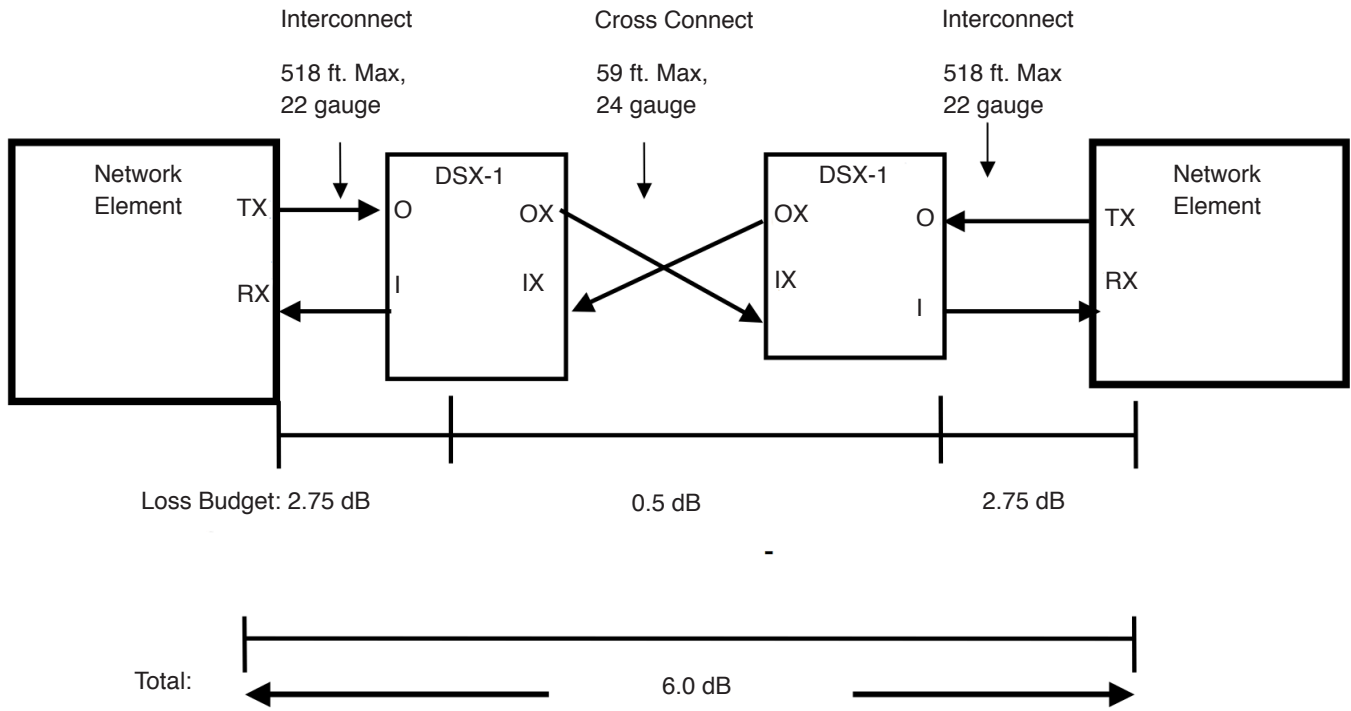


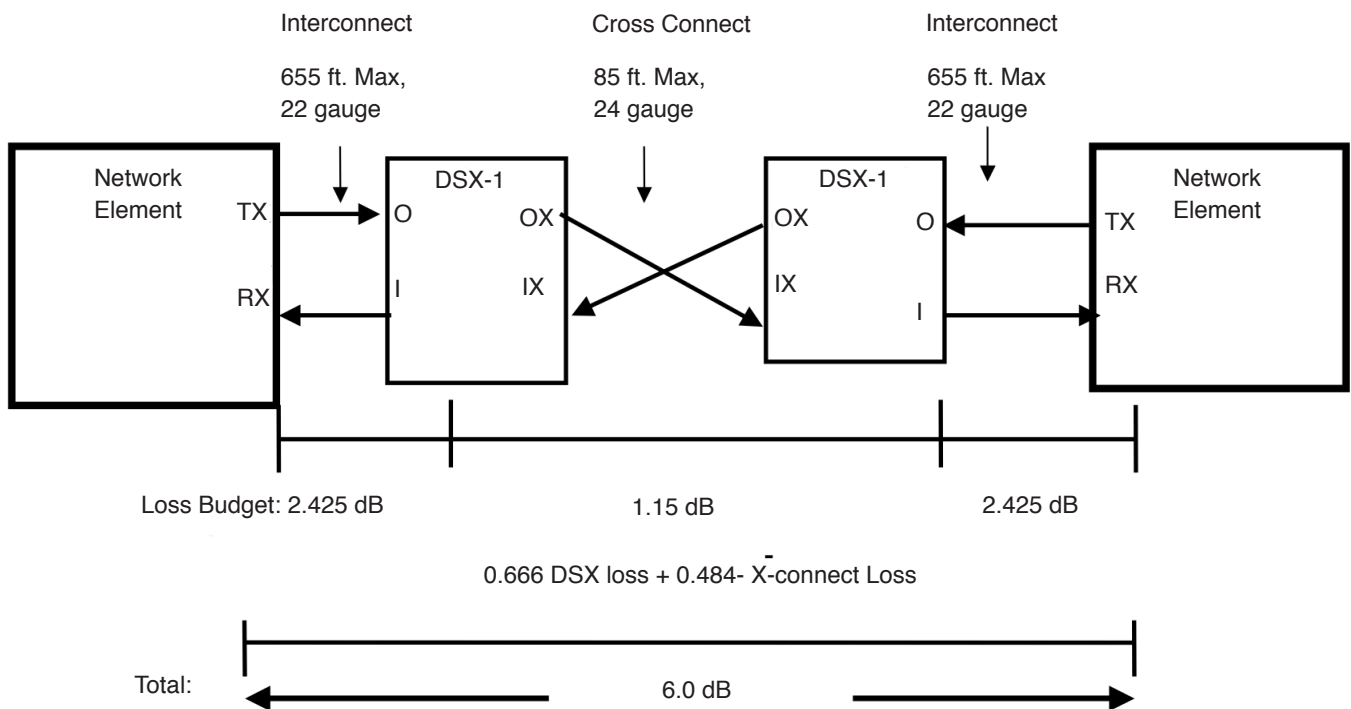
DSX-1 Trouble Isolation Guide

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E1 Cabling Specification



DS1 Cabling Specification



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PROCEDURE 1—TROUBLE ISOLATION WITHOUT TEST EQUIPMENT

This procedure loops equipment at the DSX jack to isolate trouble. See **Figure 1**.

Note: This procedure is based on complete failure of an In-service circuit. Some actions are of an intrusive nature.

STEP 1. Identify near end/far end /DSX circuit cross-connects by inserting a patch plug into the near MON jack. Observe the tracer lamp LEDs. Both LEDs will flash for approximately 30 seconds, and then remain lit.

STEP 2. Loop the near end equipment by inserting a patch cord or looping plug into the OUT and IN jacks of the Affected DSX circuit.

STEP 2a. Did near end equipment restore?

YES---network facility and network elements are in working order. Trouble is most likely associated with the far end.
Go to STEP 3.

NO---Either the near end network facility or network element is defective. Follow manufacturers trouble analysis procedure for network element equipment diagnostics and further identification of trouble source. If network equipment test OK, proceed to PROCEDURE 2.

STEP 3. Loop the far end equipment by inserting a patch cord or looping plug into the OUT and IN jacks of the affected DSX circuit.

STEP 3a. Did far end equipment restore?

YES---network facility and network elements are in working order. Trouble is most likely associated with the cross-connect jumpers. Go to STEP 4.

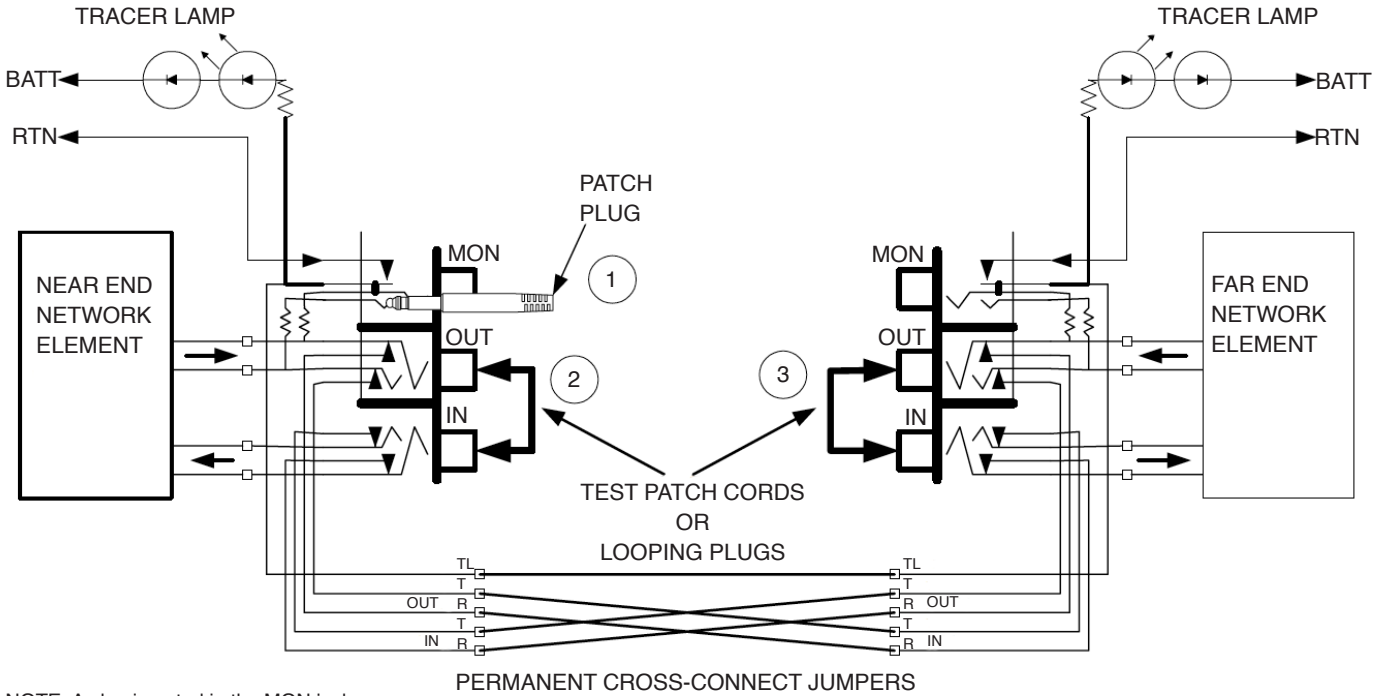
NO---Either the far end network facility or network element is defective. Follow manufacturers trouble analysis procedures for the network element diagnostics and further identification of trouble source. If Network equipment tests OK, proceed to PROCEDURE 2.

STEP 4. Visually inspect cross-connect jumper wiring. Inspect for broken wires, wiring clippings or shorted wire wrap pins. Verify that the OUT T&R connections of the near end network element are cross-connected to the IN T & R connections of the far end network element. Verify that the IN T & R connections of the near end network element are cross-connected to the OUT T & R connections of the far end Network element.

STEP 5. If the above STEPS 1 through 4 fail to resolve the problem, proceed to PROCEDURE 2.

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NOTE: A plug inserted in the MON jack causes contacts to make extending ground to both LED tracer lamps, which will flash for approximately 30seconds, and then remain lit. There is no service interruptions.

Figure 1. Trouble Isolation Without Test Equipment

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PROCEDURE 2—TROUBLE ISOLATION USING TEST EQUIPMENT

This procedure will isolate equipment trouble conditions using DSX-1 Signaling Test Equipment. See **Figure 2**.

Note: This procedure is based on complete failure of an IN-service circuit. Some actions are of an intrusive nature.

STEP 1. Verify proper operation of test equipment and test patch cords prior to performing trouble shooting procedures. Loop the T1 test equipment by inserting a test patch cord into the TRANSMIT and RECEIVE jacks on the test unit. Verify that the T1 test set is transmitting and receiving a proper signal without errors.

STEP 2. Identify the near end/far end DSX circuit cross-connects by inserting a patch plug into the near end DSX MON jack. Observe tracer lamp LEDs. Both LEDs will flash for approximately 30 seconds, and remain lit. NEAR END TEST

STEP 3. Set the test equipment receiver to the MON Termination mode. Insert the patch cord from the test equipment RECEIVE jack into the near end DSX MON jack. Verify near end equipment OUT signal.

STEP 3a. Is an error free signal received?

YES---the near end network element and network facility is transmitting the proper signal. Proceed to STEP 4.

NO---The possible troubles are either in the cabling, in near end equipment or in the DSX jack.
TESTING FOR REVERSED CABLING (REVERSED CABLE)

STEP 3b. Set the test equipment receive function to TERM mode, and insert the patch cord into the near end DSX IN Jack.
Is an error free signal received?

YES---the near end network element IN and OUT cabling is reversed. The network element is transmitting the digital signal to the DSX IN jack, it must be cabled to transmit the signal to the OUT jack. Perform visual inspection of cabling and terminations to determine where cabling reversal has occurred. Correct cabling reversal.

NO---the trouble is most likely associated with either a near end element transmit signal or network facility failure. Follow manufactures trouble analysis procedure for appropriate network equipment diagnostics and identification of trouble source.

If manufacturers network equipment tests OK, proceed to STEP 6.

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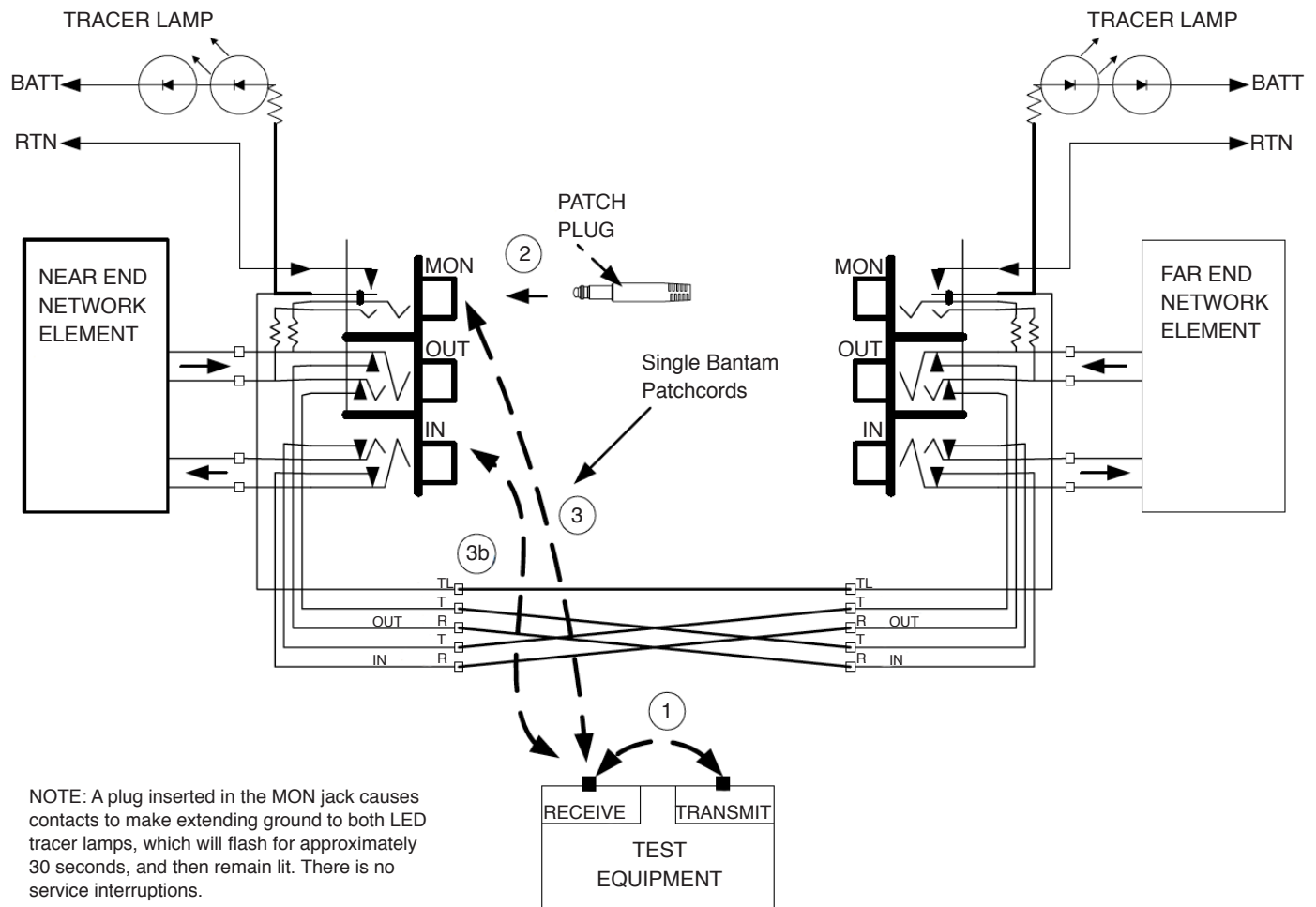


Figure 2. Trouble Isolation With Test Equipment

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PROCEDURE 2---TROUBLE ISOLATION USING TEST EQUIPMENT, continued

FAR END TEST. See Figure 3.

STEP 4. Set the test equipment receiver function to MON Termination Mode. Insert the RECEIVE test equipment patch cord into the far end DSX MON jack. Verify far end equipment OUT signal.

STEP 4a. Is an error free signal received?

YES—the far end network facility and network element are transmitting a proper signal. Proceed to STEP 5.

NO---the possible troubles are either in the cabling, far end equipment or DSX jack.

TESTING FOR REVERSED CABLING

STEP 4b. Set the test equipment receive function to TERM mode and insert patch cord into the far end DSX IN jack. Is an error free signal received?

YES---the far end network element IN and OUT cabling is reversed. The network element is transmitting the digital signal to the DSX IN jack, it must be cabled to transmit the signal to the OUT Jack. Perform visual inspection of cabling and terminations to determine where cabling reversal has occurred. Correct cabling reversal.

NO---the trouble is most likely associated with either a far end element transmit signal or network facility failure. Follow manufacturers trouble analysis procedure for appropriate network diagnostics and identification of trouble source. If manufacturers network equipment tests OK, proceed to STEP 6.

STEP 5. Visually inspect the cross-connect jumper wiring for broken wires, wire clippings, or shorted wire wrap pins at the cross-connect terminal block. Verify that T & R OUT connections of near end network element are cross-connected to the T & R IN connections of the far end network element.

Verify that the T & R OUT connections of the far end element are cross-connected to the T & R IN connections of the near end network element.

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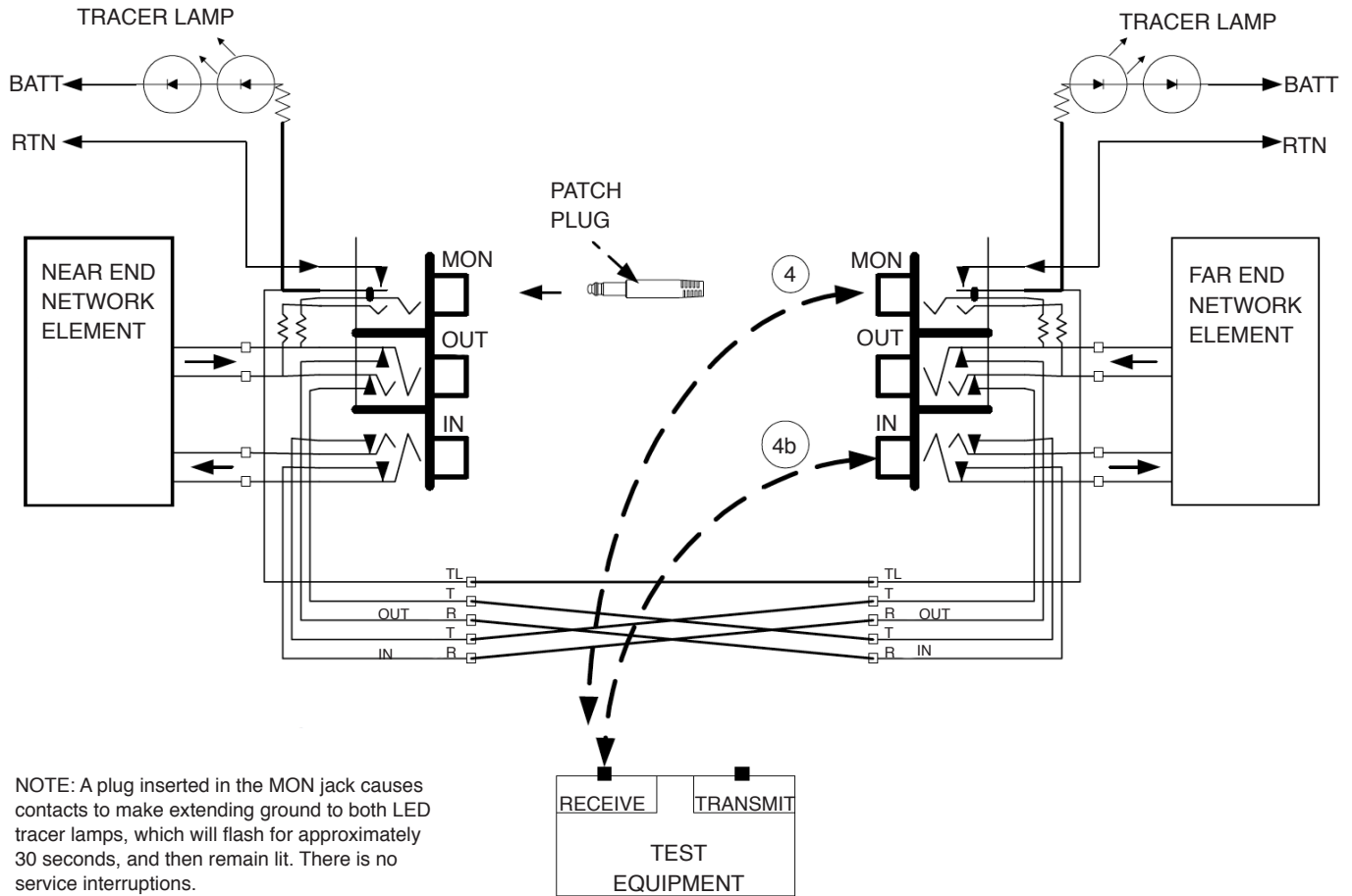


Figure 3. Trouble Isolation Far End Test

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PROCEDURE 2—TROUBLE ISOLATION USING TEST EQUIPMENT, continued

DSX MODULE VS CABLE/EQUIPMENT ISOLATION TEST. See figure 4.

STEP 6. Unwrap the appropriate (near end or far end) DSX IN and OUT cable pair wires that are terminated on the DSX termination block field.

Connect the network element OUT cable pair to the receive section of the transmission test set. (Receive section of transmission test set to TERM mode).

Connect the network element IN cable pair to the transmit section of the transmission test set. (Transmit set to send 0dB DS-1 signal).

Perform DS-1 Transmission Test.

STEP 6a. Is an error free signal received? (Receive section test).

YES---trouble is associated with the DSX jack.

NO---trouble is associated with the network element, network facility, or intra-office cabling. Repeat tests starting from Procedure 2. Trouble must be resolved before service can be restored.

STEP 6b. Network element restored to service from test set generated signals? (Transmit test).

YES---trouble is associated with the DSX jack.

NO---trouble is associated with the network element, network facility, or intra-office cabling. Repeat tests starting from Procedure 2. Trouble must be resolved before service can be restored.

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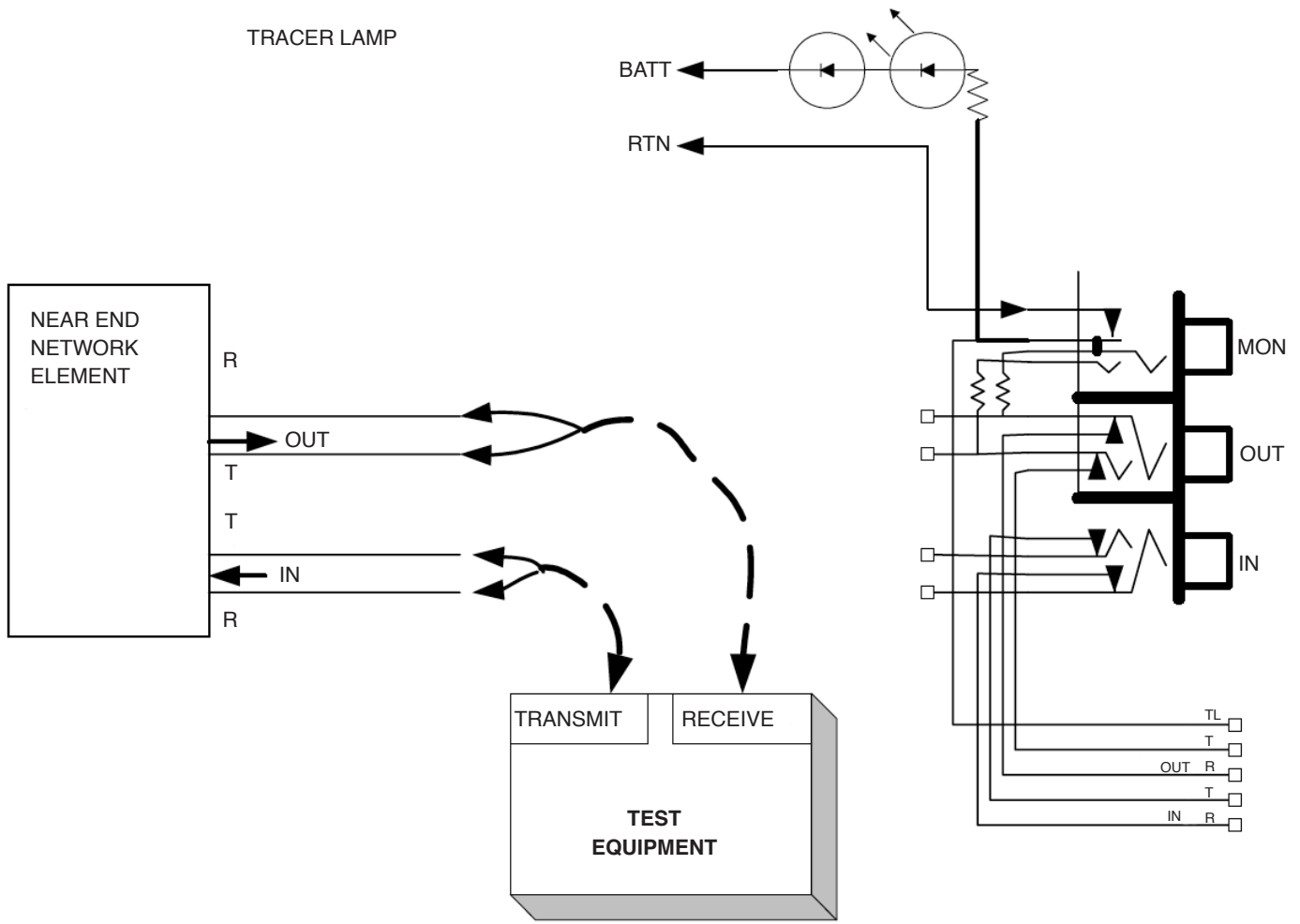


Figure 4. Trouble Isolation DSX Module VS Cable/Equipment In/out termination block