ZITEC

I-3014-10

INSTALLATION

TEST PROCEDURE

FOR

EMS-1 LINE/LINEFINDER MODULE

800010

Approved: R. Merritt

Issue 1: 11/3/82
Issue 2: 11/6/85
Issue 2A: 1/6/86

TEST PROCEDURE

EMS LINE/LINEFINDER MODULE 800010

This ITEC EMS-1 Test Guide is intended to be used as a general test outline during installation. It may also be used as an acceptance test check list. Each step performed should be initialled by the person performing the test and verified by the person in charge. Return one signed copy of this procedure with acceptance form.

CONTENTS

Issue 2 provides information for Loop Detector Adjustment Procedure.

TEST PROCEDURE

EMS LINE/LINEFINDER MODULE 800010

A. INSTALLATION INSPECTION

1. All Installation shall be performed prior to start of testing.

	Inspector
a. All relay racks secure	_____
b. Equipment cages mounted per job specification	_____
c. Screws tight on all cages, fuse panels and terminal blocks	_____
d. Wire wrap terminals on MDF, CDF, IDF, OGT, backplanes and fuse panels tight, and have at least five (5) wraps	_____
e. All solder connection good	_____
f. All matrix cards installed	_____
g. All matrix cards strapped for position installed	_____
h. All flat (ribbon) cables installed	_____
j. Cable length for matrix cards long enough to permit cards to be pulled out from the front of cage	_____
k. Cables dressed	_____
l. Stenciling	_____
m. Grading cards completed	_____

Number of Modules Inspected _____

Verified by _____ Date _____

B. TEST PREPARATION

1. Preliminary Test Inspection

	(Inspection)
a. All circuit cards strapped per job specification	_____
b. All matrix card position strapping verified	_____
c. Line circuit 96 jumpered from line cage to Linefinder cage (Test Line Jack)	_____
d. Linefinder/Selector cross connection correct at IDF.	_____

2. Test Equipment Required

Hand test set with a 310 type plug.

Rotary dial or Tone dial telephone if tone dialing option equipped.

2000 ohm one (1) watt resistor.

Volt-ohmmeter

3. Bay Power & Alarm Tests

a. The Bay Fuse Panel shall be tested per Technical Instruction I-2149 prior to fusing Line/Linefinder Modules.

b. Fuse each line and linefinder cage with a 5 amp fuse.

c. Using a volt-ohmmeter or polarity sensing test light verify that power connections to the cage backplanes are the proper polarity before plugging in cards.

Number of Modules Inspected _____

Verified by _____ Date _____

C. LINE/LINEFINDER MODULE TESTING

1. Linefinder Rotation and Busy Test.

a. Plug in the Allotter, the Line Test Card, and Line Circuit Card number 12 into the Line Module.

1. Check for blown fuses.

2. Check for Allotter Card (LED) **AFB** to light.

b. Plug in Linefinder No. 1 and its associated 1st Selector (one pair only), with the OS Switches in the IN Service position.

1. Check for blown fuses.

2. Check for Allotter (LED) **AFB** to go out, and Linefinder (LED) **NEXT** to light.

c. Plug the hand test set into the Linefinder jack and seize the Selector circuit.

1. Check for dial tone.

2. Check for the Linefinder card (LEDs) **NEXT** to go out and Selector **BY** to light.

3. Check for the Allotter card (LED) **AFB** to light.

d. Remove the hand test set from the Linefinder jack.

1. Check for the Linefinder card (LEDs) **NEXT** to light and Selector **BY** to go out.

2. Check for the Allotter card (LED) **AFB** to go out.

e. Operate the OS switch on the Linefinder card to the Out of Service position.

1. Check for the Linefinder (LEDs) **OS** to light and **NEXT** to go out.

2. Check for the Allotter (LED) **AFB** to light.

2. All Linefinders Busy Test

Note: Line circuit #96, (Line card #12), is used for Test Card Test Jack.

a. Busy out all equipped Linefinder cards in the Line Module.

b. Plug the hand test set into the Test Line Jack (310 type jack).

c. Operate the seize switch on the hand test set.

1. Check the Line card (LEDs) **L8** to flash at 240 IPM and **REQ** to light.

d. Release the seize switch on the hand test set.

1. Check for the Line Card LEDs to go out.

3. Linefinder Seizure Test

a. Operate the MON switch on the Allotter card to light the Allotter display.

b. Operate the OS switch on the Linefinder card to the IN Service position.

1. Check for the Linefinder card (LEDs) **OS** to go out and **NEXT** to light.

2. Check for the Allotter (LED) **AFB** to go out.

c. **Operate the seize switch on the hand test set to the seize position.**

1. Check for the Line Card #12 (LEDs) **REQ** to flash once and **L8** to light.

2. Check for the Linefinder card (LEDs) **NEXT** to go out and **BY** to light.

3. Check for the Allotter Card Line Number display to light **96** and display the Linefinder No. being tested and the (LED) **AFB** to light.

4. Check for dial tone to be received from the 1st Selector.

d. **Release the seize switch on the hand test set and operate the Linefinder Card OS switch to the Out of Service position.**

1. Check for the Linefinder (LEDs) **OS** to light and **BY** to go out.

2. Check for the Line Card (LED) **L8** to go out.

e. **Repeat step c.1.b through c.3.d for each Linefinder Card equipped.**

4. Line Circuit Seizure Through Each Linefinder And Matrix Test

a. **Make all Linefinder/Selector combinations Out of Service** by operating the **OS** switches on the Linefinder cards to the Out of Service position.

1. Check for all Linefinder cards (LEDs) **OS** to light.

2. Check for the Allotter card (LED) **AFB** to light.

b. Plug all Line cards into the Line Module.

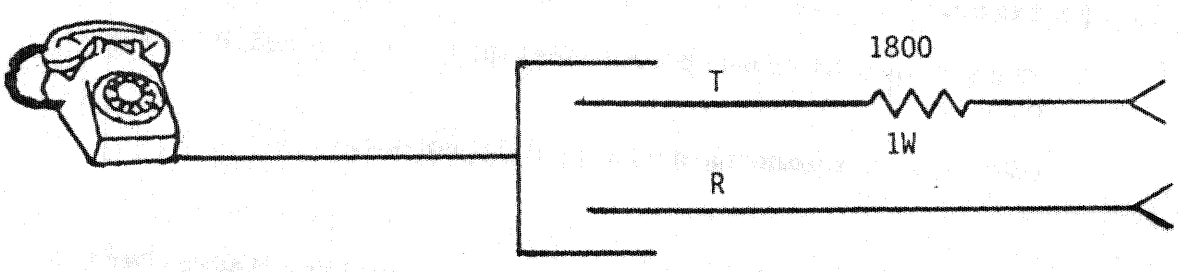
1. Check for blown fuses

2. Check for NO Line Card LEDs being on.

c. Connect the test telephone to the T&R terminals of the 1st equipped line circuit at the CDF or MDF (wire telephone per attached sketch using the 1800 ohm 1 watt resistor). **Seize the Line Circuit** by taking the test telephone receiver off hook.

1. Check for the Line Circuit (LEDs) **L1** to flash at 240 IPM and **REQ** to light.

TEST TELEPHONE



d. Move the test telephone to the next equipped line card, first Line Circuit, T&R terminals at the MDF.

1. Check for the Line circuit (LEDs) **L1** to flash at 240 IPM and **REQ** to light.

e. Repeat step d for each Line Card in the Module.

f. Return the test telephone to the 1st equipped line on the MDF, (normally 01) with the test telephone on hook, in preparation for testing each line through each Linefinder.

g. **Place one Linefinder/Selector combination in service,** by operating the OS switches to the IN Service position.

1. Check for the Linefinder card (LED) **OS** to go out.

2. Check for Linefinder (LED) **NEXT** to light.

3. Check for the Allotter (LED) **AFB** to go out.

h. **To test each line through each Finder, have only one (1) Finder available and sieze each line into that Finder.**

1. Listen for dial tone to insure that tone level is the same on each line. A line with a different level is possibly in trouble.

2. Check for Allotter display to indicate proper line number for all lines during one Linefinder Test.

j. **Repeat steps f through h once for each equipped Linefinder card in the Module.**

5. **Line Circuit CO (Cut-Off) Relay Test**

a. **Using a jumper wire with one end connected to ground, apply ground to the S (Sleeve) lead of each Line at the MDF terminal block, one line at a time.**

1. Check for the correct Line card (LED) **L_** to light.

6. **Lockout Line Circuits Test (If equipped)**

a. **Make all equipped Linefinder/Selector combinations in service.**

b. Seize one line circuit on each line card equipped.

Example: Line Circuits

01, 09, 17, 25, 33, 41,
49, 57, 65, 73, 81, 89

Seize as many lines as there are equipped Linefinders at one time.

Example: 9 Linefinders equipped, seize the first 9 lines. A second test will have to be made using the lines not tested.

c. When the line circuits go into lockout (seized Linefinder circuits release).

1. Check for the Line Card (LED) L_ to flash at 60 IPM.

2. Check for ground on the PS lead at the backplane, using the volt-ohmmeter.

d. After the timeout period (30 to 40 minutes).

1. Check for the **PS** LED to light.

2. Check for the **PS** alarm.

3. Check for ground on **DEL PS** lead at the backplane, using the volt-ohmmeter.

7. Tone Dialing Test (If equipped)

a. Busy out all but the 1st equipped Linefinder card in the Line Module, by operating the Linefinder card OS switches to the Out of Service position.

b. Connect a tone dial telephone to the T&R terminals of the 1st equipped line circuit on the MDF.

c. Seize the Linefinder by taking the test telephone receiver off hook.

1. Check for dial tone.

d. Dial each digit at least once.

1. Check for each digit to be repeated correctly at the associated Selector.

Note: Replace the receiver of the test telephone after dialing each digit and reseize the Linefinder before dialing of the next digit.

e. Check for 16 digit storage by dialing a total of sixteen (16) digits (use the same number, example digit 3) and Check for the sixteen (16) digits to be repeated correctly at the associated Selector.

f. Dial one or more digits and observe dial pulsing at the Selector. Push the # button and observe that no further digits dialed are outpulsed to the Selector.

g. Busy out the tested Linefinder and place in service the next card. Repeat steps c through f for each Linefinder equipped.

8. Load Test

A load test must be performed on all Line/Linefinder Modules to detect blockages or double seizures.

Ten lines seized at the same time should each seize a Finder (if 10 Linefinders are equipped), and none should be tied together. Also, observe that seizure is orderly and timely.

Use a load box if available, if not, wire ten lines (any ten) together in a manner that will allow all ten to be seized simultaneous. It is desirable to be able to release one line at a time.

9. Traffic Meter Operation

a. Operate the OS switch on all equipped Linefinders to Out of Service.

1. Check for the **ATB** meter to operate.

b. Seize a line circuit with the hand test set or a test telephone.

1. Check for the **REQ PEG** (if equipped) and **DEL CALL** (OF) meters to operate.

c. Remove the busy from a Linefinder.

1. Check for dial tone.

2. Check for the **TOTAL (PC)** meter to operate.

10. Alarm Operation Tests

a. Allotter Minor Alarm - Apply a 150 ohm ground (using the 150 ohm 5 watt resistor) to the Minor Alarm post on the Finder backplane.

1. Check for the correct office alarm signal.

b. **Allotter Major Alarm - Apply a 150 ohm ground to the Major Alarm post on the Finder backplane.**

1. Check for the correct office alarm signal.

c. **Fuse Alarm (FA) Test**

1. Insert a blown fuse into a **line card** and check for the bay **major alarm** to light on the fuse panel.

2. Remove the blown fuse from line card and insert it into the **Allotter** and check for the bay **major alarm** to light on the fuse panel.

3. Remove the blown fuse from the Allotter and insert it into a **Finder card.** Check for the bay **minor alarm** to light on the bay fuse panel.

NOTE: The FA buss on Linefinder cage is split, major for Allotter and minor for Finders.

Number of Modules Tested _____

Verified by _____ Date _____

D. LOOP DETECTOR ADJUSTMENT PROCEDURE

1. This procedure provides instruction for field test and adjustment of line circuit off-hook loop detection. Loop limits can be adjusted to other than the 2000 ohms specified herein at local options.

2. **Test Items Required**

   a. Card Extender 500803

   b. Cord with test clips on each end.

   c. Decade box or two resistors one 2000 ohms, one 2400 ohms.

   d. Small potentiometer screw driver.

   e. Test receiver

3. **Test Procedure**

   a. Pull dial tone on each line with a test receiver with a resistor in series for total of 2000 ohms resistance. Note, it is good practice to have a diode in the test receiver circuit to detect any pairs that may be reversed.

      Note any lines that do not seize.

   b. Change resistor so that test receiver circuit has 2400 ohms resistance. Try to pull dial tone on each line (none should seize).

      Note any lines that return dial tone.

4. **Adjustment Procedure**

   a. On line cards not passing the above operational test it will be necessary to adjust potentiometer R46 on 600110 cards or R45 on 600111 circuits.

   b. Put line card on extender board. Note: EMS line cards can be removed without cutting off lines that are busy.

   c. Seize each line with a 2000 ohm resistor, adjusting potentiometer as required. In turn, try to seize each line with 2400 ohms adjusting as required to prevent seizure. It is important to re-test all 8 lines on the card after any adjustment is made.

Number of Modules Tested_____

Verified by_____Date_____