

**INSTALLATION
TEST PROCEDURE
FOR
EMS-1 SELECTOR MODULE
800020**

Approved:

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TEST PROCEDURE

EMS SELECTOR MODULE 800020

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.

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TEST PROCEDURE

EMS SELECTOR MODULE 800020

A. INSTALLATION INSPECTION

1. All Installation shall be complete 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 connections good _____
- f. All matrix cards strapped for position number _____
- g. All matrix cards 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 Selector cards strapped per job specification _____
- b. Matrix card position strapping verified _____
- c. Linefinder/Selector cross connections correct at IDF, if module used as 1st Selector _____
- d. DTA grading completed _____
- e. Straps to connect tones installed on backplane _____

2. Test Equipment Required

- 1 - Hand test set with a 310 type plug
- 1 - Volt-ohmmeter
- 1 - Rotary dial telephone adjusted at 12 IPS
- 1 - 20,000 Ohm 1/4 watt min. resistor
- 1 - 3 MF cap. 60V min.
- 2 - 850 ohm one (1) watt resistor.
- 1 - 150 ohm five (5) watt resistor

3. Bay Power & Alarm Tests

- a. The Bay Fuse Panel shall be tested per Technical Instruction I-2149 prior to fusing Selector Module.
- b. Fuse each Selector 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. SELECTOR MODULE TEST

1. Selector Cage Tests

- a. The first steps to be performed when testing a module, are to ensure that all functions common to the circuits in that module are performing properly.
- b. The testing sequence for the module should be as follows.
 1. Test the cage itself for tones, sleeve grounds in unequipped positions, etc. before plugging in circuit cards.
 2. Install and check Selector Test Card.
 3. Install one Selector only and test that Selector, the test card and all levels before plugging in the remaining Selectors.
- c. **Shorting Talks** - Using a Volt-ohmmeter, test for the presence of ground on pin A30 of the Selector backplane at all ten (10) Selector card positions. Note: Pins A30 and B30 short together when cards are not plugged in to busy the position by grounding the sleeve.
- d. **Tones** - Using a test receiver, test at Selector position 10 for presence of fast busy tone on pin A8. On 1st Selectors also test for presence of dial tone on pin A6.
- e. Plug in the Selector Test Card.
 1. Check for blown fuses.
 2. Check for no lamps to light.
 3. Operate **STEP** switch and observe that display illuminates.
 4. Operate **STEP** switch repeatedly and observe **SEL** display advances with each operation.

Number of Modules Tested _____

Verified by _____ Date _____

D. SELECTOR CIRCUIT TESTING

1. Selector Busy Test

a. Plug in a Selector card, with the OS switch in the IN service position.

1. Check for blown fuses.
2. Check for NO LEDs to light.
3. With a Volt-ohmmeter test for NO ground on the Selector S (sleeve) terminal at the IDF or OGT block.

b. Operate the OS switch on the Selector to the Out of Service position.

1. Check for (LED) OS to light.
2. With a Volt-ohmmeter, test for ground on the Selector S terminal at the IDF or OGT block.

c. Operate the OS switch on the Selector to the IN service position.

1. Check for (LED) OS to go out.

2. Selector Seizure and Digit Receiving Test

a. Momentarily operate the Step toggle switch on the Selector Test Card until the SEL display lights the Selector number under test.

b. Plug the hand test set into the Selector T&R jack (310 type jack).

c. Seize the Selector by operating the seize switch on the hand test set.

1. Check for (LEDs) SZ and BY to light.
2. Check for dial tone, if this is a 1st Selector.

d. Dial a working code or digit per the office switching diagram or Selector strapping chart. (Idle outlet)

1. Check for (LED) SZ to flash with the dial pulses.
2. Check for dial tone to be removed after the 1st digit is dialed if this is a 1st Selector.
3. Check for (LEDs) SZ and BY to go out and CT to light.

Note: If the CT LED does not remain on, it indicates the matrix has released. Check for open Tip, Ring or Sleeve to the succeeding stage.

4. Check for Selector Test card Outlet display to light showing the outlet number.

Note: If the outlet selected is not connected to a circuit, the chosen outlet number will light momentarily then return to 00 in absence of ground searching system and CT will go out. In battery searching systems it will run to a high number before returning to 00 and busy tone will be returned.

5. If the outlet is connected to a circuit, check that the circuit is seized and holds by dialing an additional digit.

e. Release the Selector by releasing the hand test set seize switch.

1. Check for the Selector LEDs to go out.
2. Check for the Selector Test Card outlet display to return to 00.

f. Repeat steps d through f for each working office code or digit.

g. Busy out a level. If the outlets are connected to circuits, busy out all circuits in the group. If the outlets are not connected, and if the office is absence of ground searching, strap ground to the S terminals of all in the level outlets at the DTA.

h. Seize the Selector and dial the code or digit to access the busy outlet group.

1. Check for busy tone (120 IPM).
2. Check for the Selector (LED) BY to light.

j. Release the Selector by releasing the hand test set seize switch.

1. Check for all Selector LEDs to go out.

k. Remove the busy from the outlet group.

l. Seize the Selector and dial a blocked code or digit.

1. Check for busy tone (120 IPM).

m. Release the Selector and repeat step l for each blocked code or digit.

n. Seize the Selector and dial an intercept code or digit.

1. Check for the office intercept signal.

p. Release the Selector and repeat step n for each intercept code or digit.

q. Install and test remaining Selectors one at a time, repeating all steps in section D1 and D2 above for each Selector.

3. Outlet Force Testing

Note: Outlet force testing allows all outlets to be tested from each Selector, without busying the circuits to be accessed or dialing. See Selector Technical Information I-2120 section 4.0.E. for detailed information.

a. Plug the hand test set into the T&R jack of the Selector to be tested.

b. Momentarily operate the Step switch on the Selector Test Card until the SEL display lights display the position number of the Selector under test.

c. Set the Outlet Select switches on the test card to the outlet number to be accessed.

d. Seize the Selector by operating the hand test set seize switch.

e. Momentarily operate the toggle switch on the test card to the Force position.

1. Check for the Test Card Outlet display to light the tested outlet number.
2. Check for the Selector CT LED to light and the SZ and BY LEDs to extinguish.
3. If the outlet is connected to the circuit to be accessed, check for circuit seizure and holding.
4. If the outlet is not connected to the circuit to be accessed, the Selector will fall out on absence of ground systems or go to busy on battery testing systems.
5. If the outlet is busy, busy tone will be returned. The test card will not override a busy.

f. Access all equipped outlets.

g. Repeat steps c through f for each Selector equipped.

4. Trouble Timer Option Testing (If equipped)

Note: Each individual Selector has the timing generated internally. Therefore, each Selector must be timed. There is no way to speed up the timing during test.

a. With the hand test set, seize the Selector and wait for the time out period (1, 2, or 4 minutes) as strapped.

1. Check for the (LED) BY to go out.

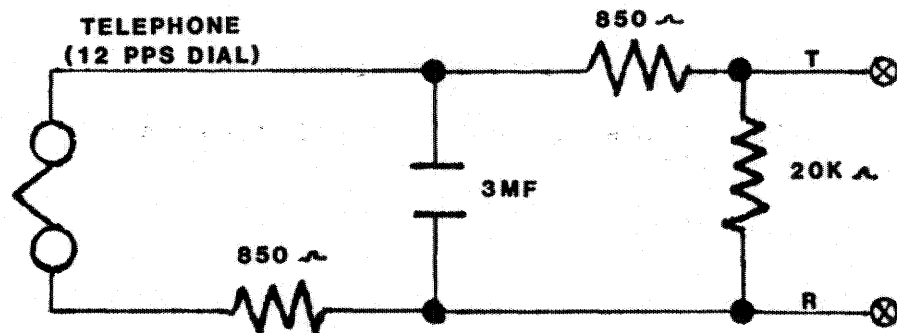
b. Release the Selector by releasing the hand test set seize switch.

1. Check for the (LED) SZ to go out.

c. Repeat steps 3 and 4 on each Selector equipped in the module.

5. Loop and Leak Seizure and Dialing Test

- a. Connect a rotary dial telephone adjusted at 12 IPS to the T&R terminals of the Selector under test at the IDF (Wire telephone per attached sketch using the two (2) 850 ohm resistors, 20,000 ohm resistor, and 3 MF cap.) or connect to a cord equipped with a 310 plug and plug into the test jack on the Selector faceplate.



- b. Seize the Selector by taking the test telephone receiver off hook.
1. Check for Selector (LEDs) SZ and BY to light.

- c. Dial two calls using a high and low working digit.

Note: Dial a "0" and a "1" for example.

1. Check for connection to the dialed outlet.

- d. Repeat step 5 for each Selector equipped in the module.

Note: Potentiometer R73 can be adjusted to change loop sensitivity if pulsing test fails. Do not turn pot more than 1/16th turn before rechecking pulsing. Use an extender card if available. Refer to Technical Information I-2120 for additional information.

6. Traffic Meter Test

a. Busy out all outlets in a level and dial the access code or digit.

1. Check for the Level overflow meter for that level to operate.

b. Remove the busy of the last tested outlet group, and repeat step 6 for each level metered.

c. If Selector peg Count meters are equipped,

1. Check for Sel PC meter to operate when Selectors cut-through to a working outlet.
2. Check each Selector.

7. Alarm Test

a. Insert a blown fuse into a Selector Card with the OS switch in the IN service position.

1. Check for FA LED on faceplate to light.
2. Check for the bay Minor Alarm lamp to light.
3. If optional fuse failure busy equipped, observe that BY LED lights.
4. If optional fuse failure busy equipped, repeat step 3 for each Selector in the module.

b. Remove the blown fuse from the Selector Card.

Number of Modules Tested _____

Verified by _____ Date _____

E. 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 2300 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 2300 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 2300 ohms adjusting as required to prevent seizure. It is important to re-test all 8 lines on the card after any adjustment is made.

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