DATA SET 113D-L1/2
TRANSMITTER-RECEIVER
TEST PROCEDURES

CONTENTS PAGE

1. GENERAL

1.01 This section contains procedures to be used when testing data set (DS) 113D-L1/2 on an initial installation or during a maintenance visit.

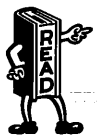
1.02 Whenever this section is reissued, the reason for reissue will be given in this paragraph.

1.03 Before proceeding with any tests of the data set, verify the following:

(a) That the data loop has been tested and meets requirements specified in the section entitled Data Systems—DATA-PHONE® Service and Data Access Arrangement on Direct Distance Dialing Network— Test Requirements for Subscriber, Foreign Exchange, and Remote Exchange Lines (314-205-501)

(b) That the telephone portion of the installation meets standard dc talk, signaling, and supervision requirements

(c) That the data set options agree with the service order.



Take necessary steps to ensure customer is not billed for test calls. Refer to the section entitled Crediting Charges on Test Calls (010-250-001).

1.04 This section is divided into five parts. Part 2, TEST CAPABILITIES, provides information on and procedures for all the tests associated with DS 113D-L1/2. This includes both tests which require no test equipment and those requiring such equipment as the 914C data test set (DTS). Parts 3, INSTALLATION TESTS, and 4, MAINTENANCE

TESTS, provide the recommended sequence in which to perform the various tests when installing DS 113D-L1/2 or investigating a trouble report. Part 5, SUPPLEMENTARY TESTS, is provided as an aid to troubleshooting for the experienced craft employee.

Caution: If the data set is removed from the mounting, it should be handled by the nonconductive surfaces only. Otherwise, certain circuit components may be damaged.

Note: When inserting data set back into the mounting, push it all the way in to ensure proper contact with the connectors in the rear of the mounting.

2. TEST CAPABILITIES

2.01 The test circuitry built into DS 113D-L1/2 permits the following tests to be performed.

A. Analog Loop-Back Test

2.02 This test can be initiated by either of two methods:

- The AL button is operated.
- CPE applies an ***on*** condition to the CN lead.

Note: If option K (fail-safe state of CN circuit—ON) is installed, a zero-volt or open circuit state on the CN lead conditions the data set for the analog loop-back test mode.

2.03 In the analog loop-back test mode (Fig. 1), the data set is isolated from the telephone line, with the exception of the ring detector circuit. During this test the data set circuits are modified so that the transmitter operates in the f_1 mode. The output of the transmitter is looped via an attenuating circuit to the receiver.

2.04 If a make-busy option is installed, the telephone line is made busy. If not, in response to ringing the data set ring detector turns ***on*** the CE lead and lights the associated line key lamp in the normal way. Automatic answer is

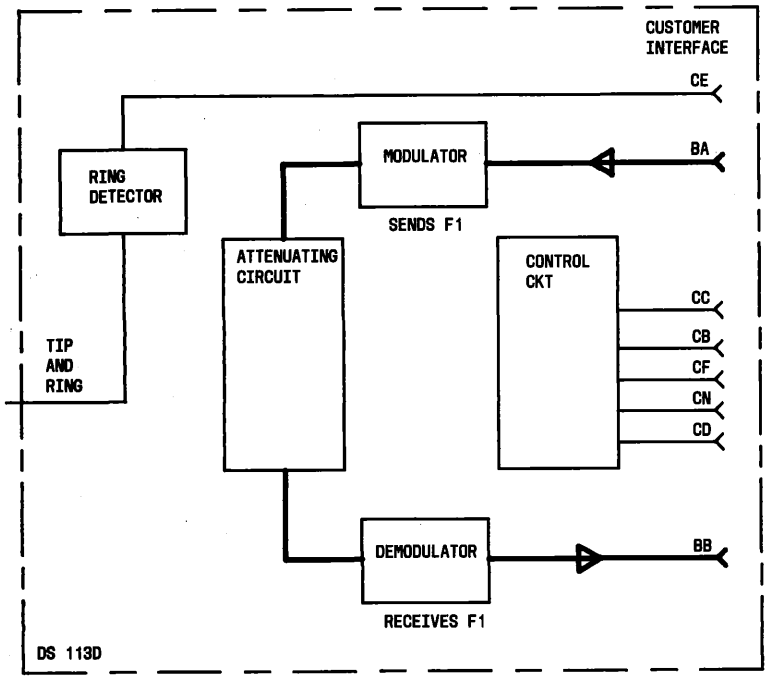


Fig. 1—Analog Loop-Back Test Mode—Simplified Block Diagram

inhibited during this test; the telephone set and telephone ringer remain functional.

2.05 The test is performed in the following manner.

(a) The AL button is depressed or the CN lead is turned ***on*** by the CPE. The MB lamp lights, indicating that the data set is in the AL test mode. The TM lamp is also lighted if the AL test button is depressed. The SD lamp is off if the BA lead is marking. If the CD lead is ***off,*** the MC lamp remains lighted.

(b) When the CD lead is turned ***on,*** the data set goes through the handshaking sequence. TR and MR lamps are lighted, and after a slight delay, the MC lamp goes off and the CB and CF leads are turned ***on.***

Note: If option ZE is installed, the CC lead remains ***off*** for the duration of the test. If option ZF is installed, the CC lead is turned ***on.*** Some terminals require the CC ***on*** indication to be able to proceed with this test.

(c) The CPE can now send data signals which will be modulated by the transmitter, looped back to the receiver, demodulated, and presented to the CPE via the BB lead. In this way the CPE, in a full-duplex mode, can test the complete operation of the data set and its own capability to generate and read data signals. The data signals may be observed at the SD and RD lamps.

Note: The CPE should not send steady space if the receive space disconnect —YES option (V) is installed in the data set. Each time the handshaking sequence is completed, the data set cycles through the disconnect sequence upon detection of the steady space signal. The MR and MC lamps alternately light and go off when CPE sends steady space.

(d) Release of the AL button and/or turning ***off*** of the CN lead restores the station and lamps to the normal idle condition.

B. Local Self Test

2.06 Depressing the ST and AL buttons on the front of the data set initiates the local self test.

2.07 Depressing the AL button causes the data set to go into the analog loop-back mode. The data set is conditioned as described in Part 2A.

2.08 Depressing the ST button causes the following to occur (Fig. 2):

- Turns ***off*** the CB, CC, and CF leads
- Opens the BA and BB leads
- Arranges DS 113D-L1/2 to ignore the CN and CD leads
- Simulates ***on*** condition of CD circuit
- Connects an approximate 300-baud signal generator to the transmitting circuit and connects a bias detector to the output of the receiver.

2.09 In the local self test (Fig. 3), the data set goes through the handshaking sequence. The square wave signal is applied to the transmitter, looped through an attenuating circuit to the receiver, and the demodulated signal is checked by the bias detector. In this way, most of the circuits of the data set are checked. The MC lamp goes off after a short delay if the bias of the received data signal is under 20 percent. All other lamps except TR are lighted, indicating proper operation of the set. The TR lamp is lighted if the CPE has the CD lead turned ***on.***

C. End-to-End Self Test

2.10 To perform an end-to-end self test (Fig. 2), a call is set up to another DS 100-type equipped with a self-test button. The ST buttons are operated at both ends, and the data mode is entered in the normal way. The test can be performed with or without a terminal connected to the data set. The following lamp pattern should occur:

- The TR lamp may be ignored.
- The TM and SD lamps are lighted.
- The MR lamp lights when entering the data mode.

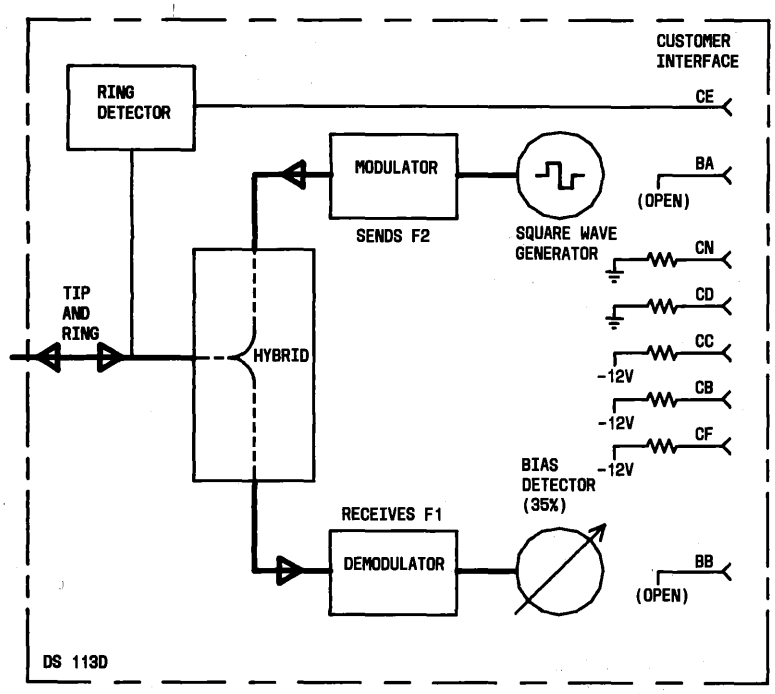


Fig. 2—Self Test Mode—Simplified Block Diagram

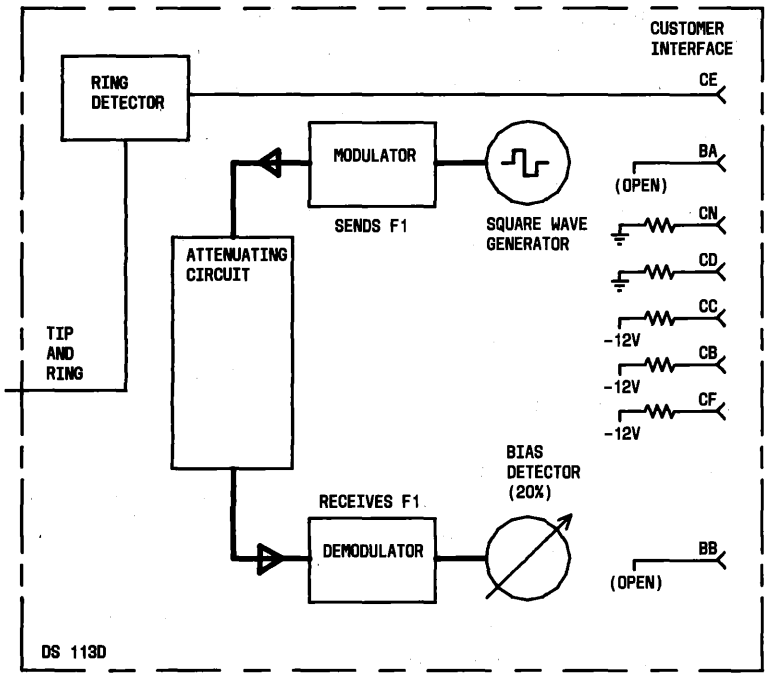


Fig. 3—Local Self Test Mode—Simplified Block Diagram

- The RD lamp lights when data is received from the far-end data set.

- The MC lamp is lighted initially, but goes off if the signal from the far end is received with less than 35-percent distortion. The off condition of the MC lamp at the far-end data set indicates the proper reception of the 300-baud signal generated by the near-end data set.

Note: On noisy connections, the MC lamp may go off but flash occasionally, indicating a "hit" or error.

D. Digital Loop-Back Test

2.11 A digital loop-back test is usually set up at the request of the test center and provides a means whereby the test center can measure round-trip distortion. The digital loop-back test is initiated by operating the DL button on the data set and entering the data mode in the normal manner.

2.12 Entering the digital loop-back test mode (Fig. 4) causes the data set internally to loop BB (receive data) to BA (send data) and simulate an ***on*** condition of the CD (data terminal ready) circuit. In addition, this causes the following to occur:

- Turns ***off*** CB, CC, and CF leads.

- Clamps BB lead marking.

- Arranges the data set to ignore BA and CD leads.

- Turns off MB and RD lamps, if lighted.

- Lights MR and TM lamps.

- TR and SD lamps may be ignored.

- Turns off MC lamp when carrier from DTC is received.

Note: To restore the data set to normal, the DL button must be depressed and the call terminated in the normal manner.

E. Digital Loop-Back From Far-End Data Set and Local Self Test at Near-End Data Set

2.13 If the far-end data set does not have a self test button but is provided with a digital loop-back feature, it is still possible to perform an end-to-end self test, but the results may be ambiguous. Have the far-end data set placed in the digital loop-back mode. Depress the ST button on the near-end DS 113D-L1/2 and enter the data mode in the normal manner. The square wave generated by the near-end DS 113D-L1/2 makes one complete round trip. The signal detector of DS 113D-L1/2 checks if the round-trip distortion exceeds 35 percent. If the MC lamp goes off, there is a very strong indication that both data sets and the line facilities are satisfactory.

Note: There is a slight possibility that the bias may be excessive in at least one direction, but that this bias is compensated for by bias of the opposite polarity in the other direction.

A successful test indicates that all circuits of both data sets seem to be working. If the MC lamp does not go off, the only conclusion that can be drawn is that the round-trip distortion exceeds 35 percent. As the bias distortion in the two directions of transmission may be additive, no conclusion about the proper operability of the sets and the line facilities can be drawn.

F. Interface Test From 904-Type Data Test Center

2.14 The interface test verifies that valid signals sent by a 904-type DTC are received and are available to the customer at the DS 113D customer interface. The interface test also verifies that valid signals are sent to the 904-type DTC from DS 113D and that all optional features used are functional.

2.15 The following equipment is required for the interface test:

- 914C DTS

- 904-type DTC.

2.16 Perform the test as follows:

(1) At 914C DTS, program matrix, set switches, and connect data set as shown in Fig. 5.

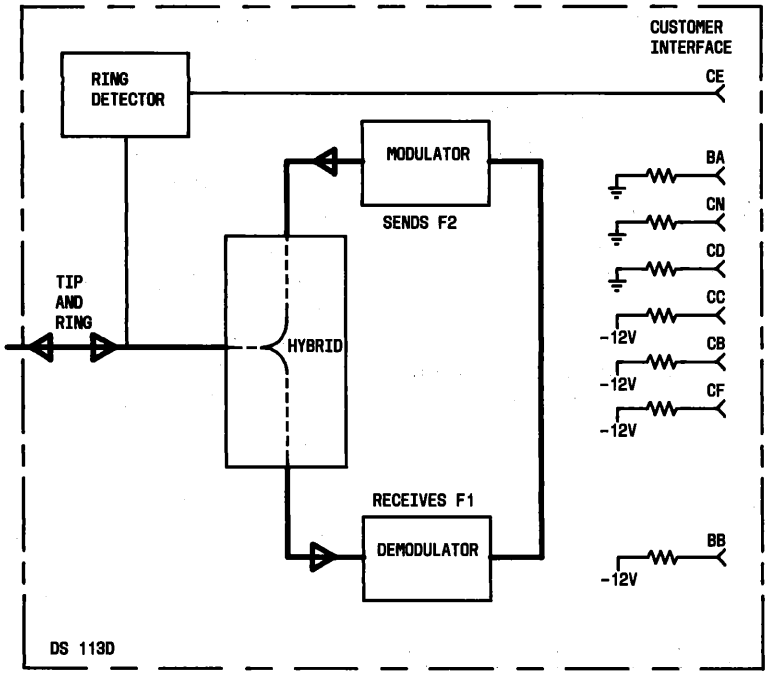


Fig. 4—Digital Loop-Back Test Mode—Simplified Block Diagram

(2) If receive space disconnect—YES option (V) is installed in DS 113D, remove and install option Y.

(3) At DS 113D release AL, ST, and DL test buttons and connect power plug to ac receptacle.

(4) At 914C DTS, operate POWER switch to ON.

(5) At 914C DTS, operate switch S7 to ON.

Requirement: TR lamp lights.

Note: Interface lead CD is in the ***on*** condition.

(6) At DTS, set FUNCTION switch to VOLT INT.

(7) Set RANGE switch to DCV-10.

Requirement: DTC meter indicates between 5.0 and 8.0 Vdc.

Note: Interface lead BB is in mark condition (mark hold).

(8) At DTS, set FUNCTION switch to OFF.

(9) Set VERTICAL MONITOR switch to 22.

(10) Set FUNCTION switch to VOLT INT.

Requirement: Meter indicates between 5.0 and 8.0 Vdc.

Note: Interface lead CE is in ***off*** condition.

(11) Set FUNCTION switch to OFF.

(12) Set VERTICAL MONITOR switch to 8.

(13) Set FUNCTION switch to VOLT INT.

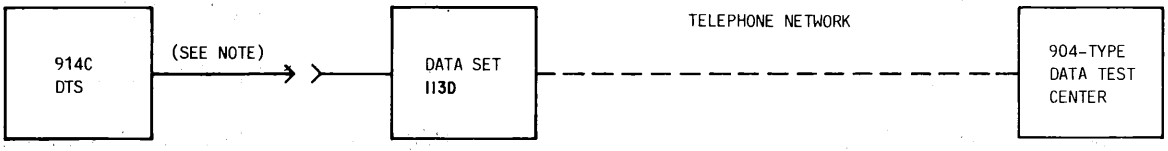
Requirement: Meter indicates between 5.0 and 8.0 Vdc.

Note: Interface lead CF is in the ***off*** condition.

(14) Set FUNCTION switch to OFF.

(15) Set VERTICAL MONITOR switch to 5.

(16) Set FUNCTION switch to VOLT INT.



NOTES:
1. CONNECT CORD FURNISHED WITH 914C DTS BETWEEN CUSTOMER CONNECTOR OF DS 113D AND CONNECTOR A ON 914C DTS
2. SET SWITCHES AS SPECIFIED IN TEXT. INITIALLY SET SWITCHES AND PROGRAM MATRIX AS FOLLOWS:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	STG	
GRD	●	o	o	o	o	o	●	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	GRD
SD	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	SD
RD	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	RD
SI	o	●	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	SI
DSI	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	DSI
DS2	o	o	●	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	DS2
S2	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	S2
DS3	o	o	o	o	●	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	DS3
TPI	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	TPI
TP2	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	TP2
S3	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	S3
DS4	o	o	o	o	o	●	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	DS4
DS5	o	o	o	o	o	o	o	●	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	DS5
S4	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	S4
SCT	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	SCT
S5	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	S5
SCR	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	SCR
DS6	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	DS6
S6	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	●	o	S6
DS7	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	DS7
DS8	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	●	o	o	o	o	DS8
S7	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	●	o	o	o	o	o	o	o	S7
TP3	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	TP3
S8	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	S8
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	STG	

SWITCH	SETTING
POWER	ON
SELECTOR A	ALL DEPRESSED
S1-S8	ALL OFF
INTERFACE MODE	VOLTAGE
VERTICAL MONITOR	3
POLARITY	REV
FUNCTION	OFF
RANGE	DCV-30

Fig. 5—Interface Test—904 Data Test Center

Requirement: Meter indicates between 5.0 and 8.0 Vdc.

Note: Interface lead CB is in the ***off*** condition.

(17) Set FUNCTION switch to OFF.

(18) Set VERTICAL MONITOR switch to 6.

(19) Set FUNCTION switch to VOLT INT.

Requirement: Meter indicates between 5.0 and 8.0 Vdc.

Note: Interface lead CC is in the ***off*** condition.

(20) Set FUNCTION switch to OFF.

(21) At associated telephone set, lift handset, depress red DATA key, and then hang up handset.

Requirement: Line key lamp lights and remains lighted after handset is placed on-hook. DS4 lamp lights.

Note: Interface lead CC is in the ***on*** condition.

(22) Approximately 14 seconds after lamp lights, data set disconnects.

Requirement: Line key lamp goes off. DS4 lamp goes off.

Note: This checks the automatic abort feature.

(23) Operate S7 to OFF.

(24) Operate S6 to ON.

Requirement: On data set, MB lamp lights.

(25) At associated telephone set, lift handset.

Requirement: Dial tone is heard.

(26) Replace handset.

(27) Operate S6 to OFF.

Requirement: On data set, MB lamp goes off.

(28) At DTS, open SELECTOR A-25 switch.

Requirement: If option K is installed in DS 113D, MB lamp lights. If option J is installed in DS 113D, MB lamp does not light.

(29) At DTS, close SELECTOR A-25 switch.

Requirement: MB lamp goes off or remains off.

(30) Operate S7 to ON.

(31) Call the DTC and request continuous f_1 (1270 Hz) mark be sent, after first receiving f_2 mark (2225 Hz) from DS 113D. Also instruct DTC to send f_1 space (1070 Hz) upon receiving f_2 space (2025 Hz) from DS 113D.

(32) Depress DATA key and place handset on-hook.

Requirement: The associated line key lamp lights.

(33) Set VERTICAL MONITOR switch to 3.

(34) Set FUNCTION switch to VOLT INT.

Requirement: Meter indicates between 5.0 and 8.0 Vdc.

Note: Interface lead BB is in the mark condition.

(35) Set FUNCTION switch to OFF.

(36) Set VERTICAL MONITOR swtich to 5.

(37) Set METER POLARITY switch to NOR.

(38) Set FUNCTION switch to VOLT INT.

Requirement: Meter indicates between 5.0 and 7.0 Vdc. DS3 lamp lights.

Note: Interface lead CB is in the ***on*** condition.

(39) Set FUNCTION switch to OFF.

(40) Set VERTICAL MONITOR switch to 8.

(41) Set FUNCTION switch to VOLT INT.

Requirement: Meter indicates between 5.0 and 7.0 Vdc. DS5 lamp lights.

Note: Interface lead CF is in the ***on*** condition.

(42) Set FUNCTION switch to OFF.

(43) Set VERTICAL MONITOR switch to 6.

(44) Set FUNCTION switch to VOLT INT.

Requirement: Meter indicates between 5.0 and 7.0 Vdc. DS4 lamp lights.

Note: Interface lead CC is in the ***on*** condition.

(45) Set FUNCTION switch to OFF.

(46) At DTS, set switch S1 to ON.

Note: Transmitter sends f_2 space to DTC.

(47) At DTS, set VERTICAL MONITOR switch to 3.

(48) Set FUNCTION switch to VOLT INT.

Requirement: Meter indicates between 5.0 and 7.0 Vdc.

Note: Interface lead BB is in the space condition.

(49) Set FUNCTION switch to OFF.

(50) At the associated telephone set, lift handset and depress line key.

Requirement: Data set disconnects.

(51) If loss of carrier disconnect—YES option (S) is provided, request the DTC is send f_1 mark when the data set responds with f_2 mark, and then remove the f_1 mark.

(52) Operate DATA key.

Requirement: When DTC removes f_2 mark, data set drops call.

(53) Terminate call to DTC.

(54) At data set, disconnect power plug from ac receptacle.

(55) If option V was removed in Step 2, install in data set.

(56) Ensure that all the correct options are installed in the data set.

(57) Connect power plug to ac receptacle. If receive space disconnect—NO option (Y) is provided, omit (58) and (59).

(58) Call DTC and request the test center to send f_1 mark. When data set first sends f_2 mark, sweep to f_1 space.

(59) Operate DATA key.

Requirement: When DTC sweeps to f_2 space, data set drops call.

(60) At DTS, set switch S7 to OFF.

(61) Set VERTICAL MONITOR to 22.

(62) Call DTC and request a call to the data set.

(63) During ringing intervals, set FUNCTION switch to VOLT INT.

Requirement: During ringing intervals, meter indicates between 5.0 and 7.0 Vdc. DS8 and line key lamps light during ringing intervals, go off during silent intervals.

Note: Interface lead CE is in ***on*** condition.

(64) Set FUNCTION switch to OFF.

(65) Manually answer the call. Inform DTC that call will be disconnected by the data set. DTC should receive f_2 space for 3 seconds prior to disconnect of DS 113D.

(66) Request DTC to send f_1 upon receipt of f_2 mark.

(67) Operate switch S7 to ON.

(68) Depress the DATA key when f_1 mark is heard.

Requirement: DATA lamp lights. DS4 lamp lights.

Note: Interface lead CC is in the ***on*** condition.

DS5 lamp lights.

Note: Interface lead CF is in the ***on*** condition.

DS3 lamp lights.

Note: Interface lead CB is in the ***on*** condition.

DS2 lamp remains off.

Note: Interface lead BB is in the mark condition.

(69) Operate S7 to OFF.

Requirement: Data set disconnects. DS3, DS4, and DS5 lamps go off. If send space disconnect—YES option (T) is provided, the line key lamps remains lighted for 3 seconds, then goes off. If send space disconnect—NO option (U) is provided, line key lamp goes off immediately.

(70) At DS 113D, disconnect power plug from ac receptacle.

(71) Disconnect DTS from data set connector J8 and restore normal connection.

(72) At DS 113D, connect power plug to ac receptacle.

3. INSTALLATION TESTS

3.01 This part provides the sequence in which tests are to be performed at the time of

installation, to verify that the data set is operating properly. These procedures utilize built-in test features and do not require any external test equipment. When a data station trouble is experienced, these procedures should also be performed prior to performing maintenance tests to aid in localizing data station trouble. If DS 113D-L1/2 is suspected as the cause of the trouble, replace it and repeat tests before turning the equipment back to the customer.

A. Local Self Test

3.02 Perform the local self test. Refer to 2.06 through 2.09.

B. Transfer From Talk to Data Mode

3.03 This test checks the ability of the data set to transfer from the talk mode to the data mode.

The data set automatically drops the call approximately 14 seconds after the red DATA key is depressed.

3.04 Perform the test as follows:

(1) Disconnect the CPE.

(2) Observe that only the MC lamp is lighted.

(3) Depress line key, lift handset, and depress DL key.

Requirement: TM lamp lights.

(4) Depress red DATA key.

Requirement: MR lamp and associated line key lamp light.

(5) Release DL key.

C. Transfer From Data to Talk Mode

3.05 This test checks the ability of the data set to transfer from the data mode to the talk mode.

3.06 Perform the test as follows:

(1) Disconnect the CPE.

(2) Observe that only the MC lamp is lighted.

(3) Enter the data mode by lifting the handset, depressing the DL key, and depressing the associated line key and then the red DATA key.

Requirement: TM and MR lamps and associated line key lamp light.

Note: Timing is important. The next step must be performed before 14 seconds have expired, or the data set will automatically drop the call.

(4) Lift handset and depress the associated line key.

Requirement: MR lamp and associated line key lamp go off.

(5) Release DL key. Connect the CPE.

D. Automatic Answer Test

3.07 This test verifies that the data set automatically answers when the automatic answer—YES option (ZH) is installed and does not automatically answer when the automatic answer—NO option (ZG) is installed.

3.08 Verify that AL, ST, and DL keys are released and only MC lamp is lighted.

3.09 With CPE disconnected, perform the test as follows:

(1) Have call made to the data set under test.

Requirement: Telephone rings, associated line key lamp flashes. Data set does not answer.

(2) Depress DL key.

Requirement: If option ZG is installed, data set does not answer. If option ZH is installed, the following occurs: Data set automatically answers call. The line key lamp lights, MR lamp lights, and f_2 mark signal is sent to calling telephone. Data set automatically aborts (drops call) after 14 seconds; did not complete handshaking.

(3) Release DL key.

3.10 If the CPE is connected, perform the test as follows:

(1) Have CPE turn CD (data terminal ready) lead ***off*** (TR lamp off).

(2) Have a call made to the data set under test.

Requirements: Telephone rings and associated line key lamp flashes. Data set does not answer.

(3) Have CPE turn CD lead ***on*** (TR lamp lights).

Requirement: If option ZG is installed, data set does not answer. If option ZH is installed, the following occurs: Data set automatically answers call. The DATA lamp lights, MR lamp lights, and f_2 mark signal is sent to calling telephone. Data set automatically aborts (drops call) after 14 seconds, did not complete handshaking.

4. MAINTENANCE TESTS

4.01 The procedure given in Fig. 6 should be used as an aid in sectionalizing trouble. This information, usually provided to the DTC, is included here for use by those locations where the trouble is reported to and investigated by the local repair force.

4.02 When dispatched to customer location to investigate a trouble report, proceed as follows.

(1) Upon arrival at the customer location, the telco employee should make a quick visual inspection of the data set. Verify that power is applied. Check also for other possible causes of trouble, such as cable and connector defects.

(2) If this initial check does not reveal a trouble condition, proceed as indicated in Fig. 7.

5. SUPPLEMENTARY TESTS

5.01 These tests can be used as an aid in isolating a trouble condition.

A. End-to-End Self Test

5.02 The performance of the data channel is quickly tested by the end-to-end self test. This test simultaneously checks the transmitter and receiver of both data sets and the two directions of transmission of the connecting facility. The customer interface circuits are not tested by the end-to-end self test. Follow the procedure specified in 2.10 to perform an end-to-end self test. If the data sets pass the local self test and the digital loop-back test, but fail the end-to-end test, the probable cause is either excessive channel loss or noise.

B. Customer Interface Loop-Back

5.03 A loop-back can be effected by replacing the customer interface connector with the test mode connector (TM 840128748). When the test mode connector is installed, the following occurs:

(1) Transmit data is looped back via receive data.

(2) Data terminal ready (CD) lead is turned ***on.***

(3) The CN lead is turned ***off*** so that the data set is not made busy.

5.04 The advantages of the customer loop-back test over the digital loop-back test are as follows:

- The EIA interface circuits function normally. They are not clamped as in the digital loop-back mode.
- The BA, CD, and CN terminating circuits, including the connection to the EIA connector, are checked.
- The BB driving circuit, including the connection to the EIA connector, is checked.

5.05 If the data set passes the digital loop-back test and fails the customer loop-back test, the probable cause is a defective data set EIA interface connector.

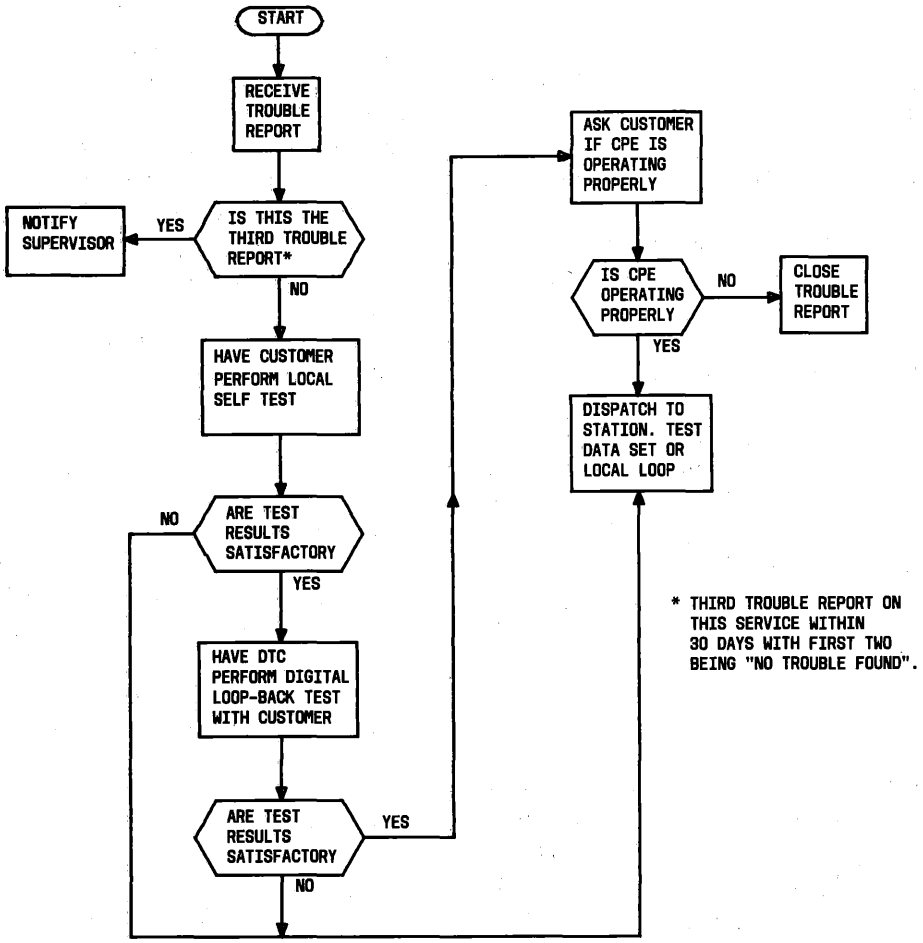


Fig. 6—Maintenance Test Sequence—DS 113D-L1/2

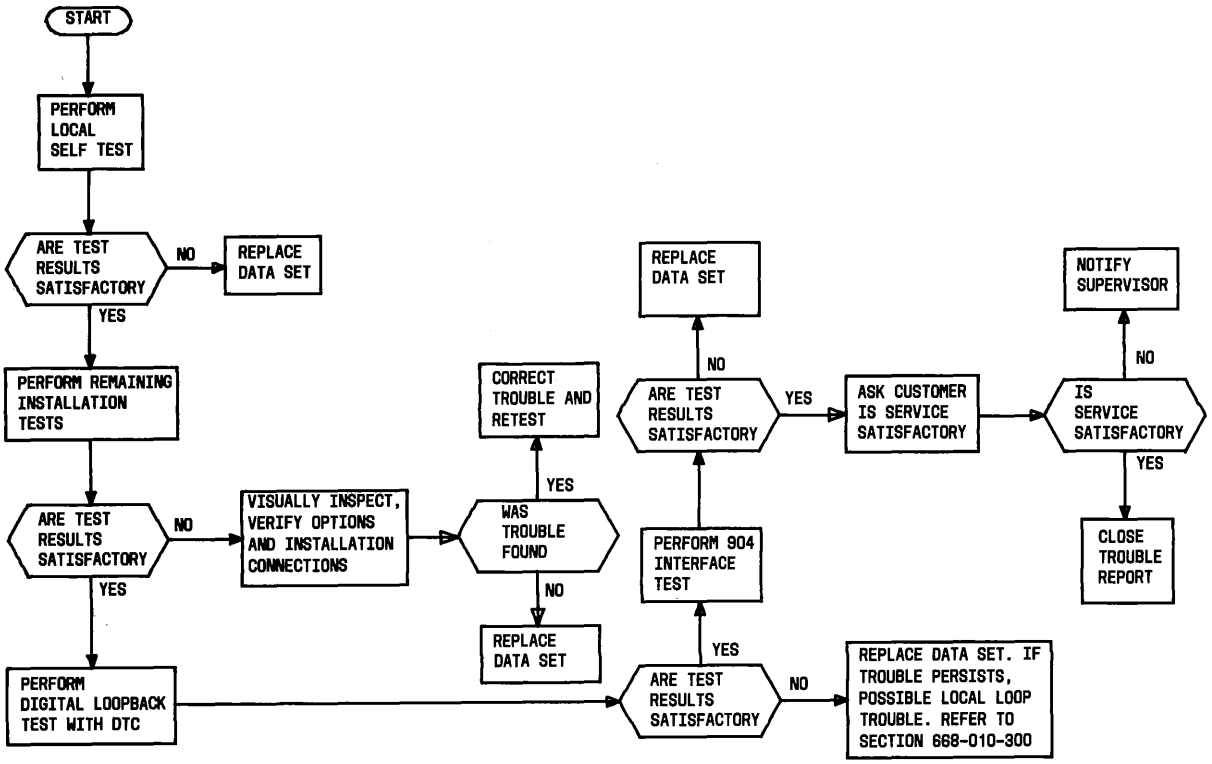


Fig. 7—Station Test Sequence—DS 113D-L1/2