DATA SET 401F

RECEIVER

TEST PROCEDURES

1. GENERAL

1.01 This section describes test procedures for Data Set 401F. These tests are to be made at time of installation and as a means of clearing routine trouble conditions.

1.02 This section is reissued for the following reasons:

(a) To provide an interface test with the data test center (DTC) using the 914B Data Test Set (DTS)

(b) To delete the local test (test without DTC).

Since this reissue constitutes a general revision, arrows ordinarily used to indicate changes have been omitted.

1.03 Before proceeding with the tests in this section, insure that the data loop has been tested and meets requirements as specified in the section entitled Data Systems—DATA-PHONE® Service on Direct Distance Dialing Networks—Test Requirements for Subscriber, Foreign Exchange, and Remote Exchange Lines (314-205-501). A check with the local DTC will verify whether the loop has been tested and whether it meets requirements.

1.04 The telephone portion of the installation should meet standard dc talk, signaling, and supervision requirements.

1.05 When test and demonstration calls are made, refer to the section entitled Crediting Charges on Test Calls (010-250-001) for the procedure to be used for crediting calls.

1.06 A letter a, b, c, etc, added to a step number in Part 3 of this section indicates an action which may or may not be required, depending upon local conditions. The condition under which a lettered step or series of lettered steps should be made is given in the PROCEDURE column, and all governed by the same condition are designated by the same letter within a test. Where a condition does not apply, all steps designated by that letter should be omitted.

2. TESTS AND EQUIPMENT REQUIRED

2.01 Test procedures and the required test facilities are provided in this section as follows:

- Test A—Test with DTC
- Test B—Interface test using 914B DTS, 1011-type handset, and DTC
- Test C—Power ground noise test using 6A impulse counter.

3. TEST PROCEDURES

3.01 The following procedure provides a method of conditioning Data Set 401F for a remote test using the DTC. The DTC conducts a remote test by simulating the frequencies normally generated by a transmitting data set. By sweeping over each frequency group and monitoring the response of the data set, the DTC can determine the bandwidth response and operating condition of the data set under test.

STEP	PROCEDURE
	TEST A
1a	If the data set is arranged for unattended operation— Call the DTC and request a test of the data set.
2a	When instructed by the DTC, turn test key to horizontal position, momentarily depress, and hang up. The test lamp should light. ***Note:*** The test center now places a call to the data set. The call will be automatically answered, and the data set will be tested as explained in 3.01. At the end of the test the DTC terminates the call, which releases the line, restores the data set to normal, and extinguishes the test lamp.
3a	When the test lamp extinguishes, restore the test key to the vertical position.
4b	If the data set is arranged for attended operation— Call the DTC and request a test of the data set within a prearranged time interval.
5b	When instructed by the DTC, turn test key to horizontal position, momentarily depress, then pull up the data key. ***Do not*** hang up. The test lamp should light. ***Note:*** The DTC can now test the data set as explained in 3.01.
6b	After the prearranged time interval has elapsed, restore the test key to the vertical position and the data key to the talk position. This re-establishes voice communication with the DTC. The DTC will advise the attendant of the test results.

3.02 The following procedure tests Data Set 401F using the 914B DTS. This test verifies the operation of the data set line control circuitry and checks for proper interface response to signals transmitted from the DTC. Test set switches not shown on the test connection diagram (Fig. 1) or not mentioned in text are not required for the test. Lamp indications are not pertinent to this test and may be disregarded.

Before making any test connections, insure that all programming pins are removed from the 914B matrix. Insert only those pins shown in test connection diagram (Fig. 1).

STEP	PROCEDURE
	TEST B
1	Establish test connections as shown in Fig. 1.
2	Program the 914B matrix by inserting shorting pins as shown in Fig. 1.

STEP	PROCEDURE
3	Operate (depress) all A interface selector switches on the 914B.
	Note: No commercial 60-Hz 120-volt power is required for the 914B DTS for this test.
4	Call the DTC and request a call to the data line.
5a	If the data set is arranged for unattended operation— When the bell in the telephone set rings, set S1 switch to ON. Ringing is tripped.
6a	Set S4 switch to ON. Answer tone (1785 Hz) is heard in the 1011-type handset receiver.
7b	If the data set is arranged for attended operation— When the bell in the telephone set rings, set S1 switch to ON and lift the handset from the switchhook. Ringing is tripped.
8b	Pull up the data set DATA key and set S4 switch to ON. Answer tone (1785 Hz) is heard in the 1011-type handset receiver.
9	Set S4 switch to OFF. Answer tone is removed.
10	Set 1011-type handset switch to TALK, and request the DTC to send a frequency of 600 Hz. Set S2 switch to ON.
	Note: For proper data set operation, the level of frequencies sent from the DTC must reach the data set at a level of approximately -30 dBm.
11	Set the 1011-type handset switch to MON. Repetitive alternate bursts of the test frequency and answer tone should be heard in the 1011-type handset receiver.
	Note: The presence of the on-off answer tone indicates that the data relay is furnishing a contact closure in response to the transmitted data frequency. (The 1785-Hz answer tone will be louder than the data frequency.)
12	Repeat Steps 10 and 11 for frequencies of 697, 770, 852, and 941 Hz to be sent from the DTC.
13	At the 914B, set S2 switch to OFF and S3 switch to ON.
14	Repeat Steps 10 and 11 for frequencies of 1098, 1209, 1336, 1477, and 1633 Hz to be sent from the DTC.
15	At the 914B, set S3 switch to OFF and S5 switch to ON.
16	Repeat Steps 10 and 11 for frequencies of 1950, 2050, 2150, and 2250 Hz to be sent from the DTC.
17	At the 914B, set S5 switch to OFF and S1 switch to OFF.

STEP	PROCEDURE
18a	If the data set is arranged for unattended operation— The data set will release the telephone line.
19b	If the data set is arranged for attended operation— The telephone set will retain control of the telephone line.
20	Remove all test connections and restore equipment to normal operating conditions.

3.03 The following procedure tests for noise in the power outlet ground source of Data Set 401F, using the 6A impulse counter.

STEP	PROCEDURE
	TEST C
1	Connect the business machine (data terminal equipment) ground to J2 on the 6A impulse counter.
2	Connect the data set ground to J3 on the 6A impulse counter. ***Note:*** Do not ground the 6A impulse counter for this test.
3	Set switches on the 6A impulse counter as follows: • (S1)—VOICEBAND • (S2)—ADD 30 • (S3)—60 • RESET—0000 (reading on counter).
4	Set timer to 15 MINUTES. If any counts are noted in a 15-minute period, it is an indication that the grounding arrangements are unsatisfactory. Refer to sections in the 460-100-ZZZ layers for method of providing approved grounds.
5	Remove all test connections, and restore equipment to normal operating conditions.

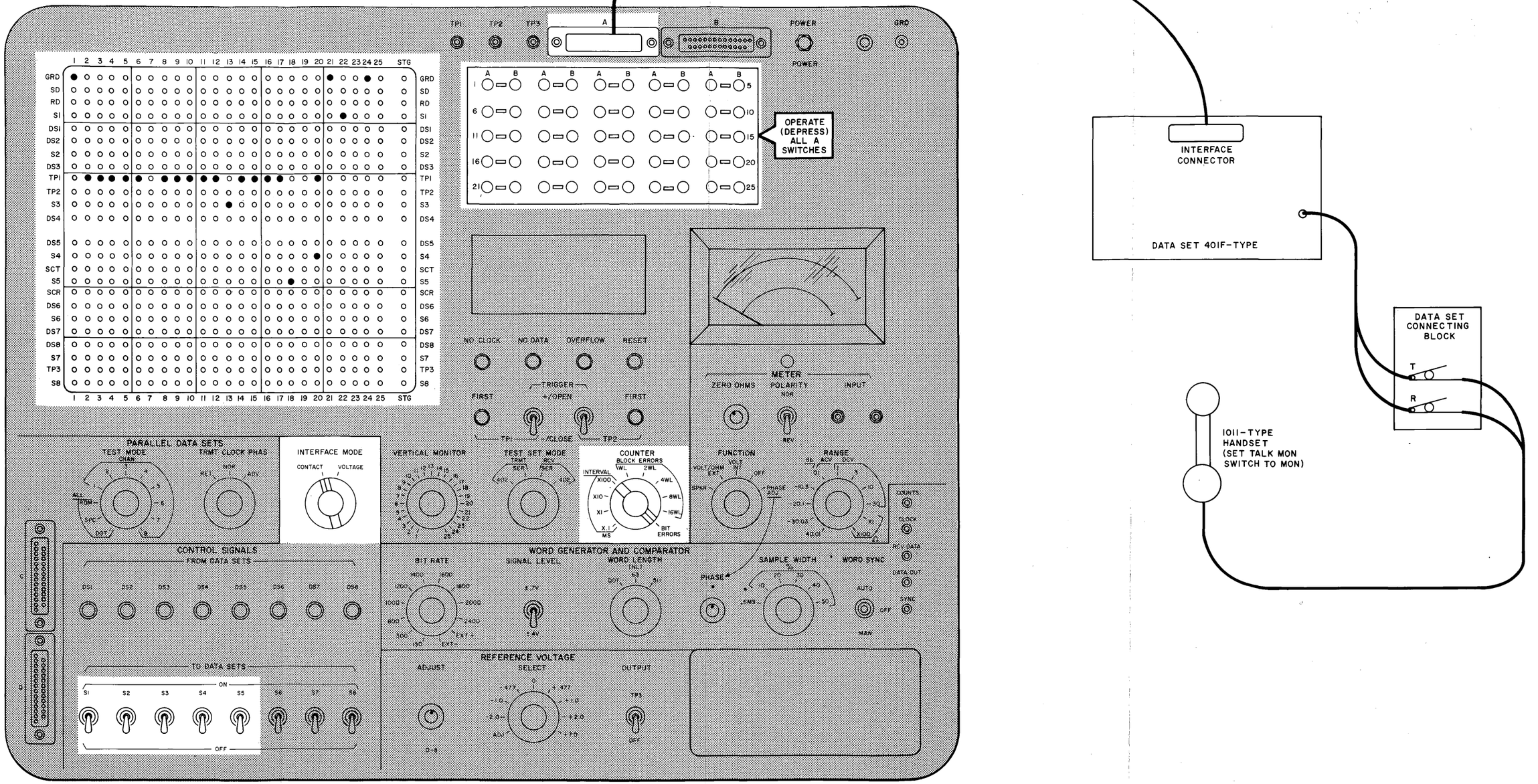

Fig. 1—Test Connection Diagram