DATA SET 401J-TYPE

RECEIVER

TEST PROCEDURES

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1. GENERAL

1.01 This section describes test procedures for data set 401J-type. These tests are to be made at the time of installation and as a means of clearing routine trouble.

1.02 This section is reissued to provide the following:

(a) Information on the use of an Automatic Data Test System (ADTS) with data set 401J-type.

(b) A check of interface lead 23 (Data Set Ready or Line Status).

(c) A simplified Fig. 1.

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

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

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

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

(c) Data set options agree with service order information.

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 A letter a, b, c, etc, added to a step number in a test indicates an action which may or may not be required depending on local conditions. All steps 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.

1.05 Data sets 401J1 through 401J5 are rated Manufacture Discontinued. Test procedures for these data sets are included since the sets are still in use. Data sets designated 401J6 and 401J7 (rotary dial) and 401J8 and 401J9 (TOUCH-TONE®) are current standard models. These sets will employ a 3A3 control unit (replacing the 58A control unit), which is compatible with No. 1 Electronic Switching System (ESS) Central Office and Unigauge lines.

1.06 Tests contained in this section are divided into two parts. Part 2 contains tests to be performed at the time of installation and Part 3 contains tests to be performed during maintenance visits.

2. INSTALLATION TEST PROCEDURE

2.01 The remote test in this part should be performed immediately after the data set has been installed to ensure that the installation

is ready to be placed in service. If the data set fails to meet test requirements, replace the data set. In addition to this test, the telephone company (telco) employee should observe whenever possible that data can be transmitted and/or received using the customer provided equipment (CPE) and data sets at both the near-end and far-end data terminals.

2.02 Although the remote test is primarily for use at time of installation, consideration should be given to its use during maintenance visits if the nature of the trouble indicates that this type of test would be useful.

Data set 401J-type can be statically tested by an Automatic Data Test System (ADTS). For information on communicating with the automatic data test center, refer to the section entitled J1P005 Automatic Data Test System (ADTS)—Operation From Field Locations (590-010-500).

Remote Test

2.03 This test should be performed to assure that the data set is operating properly and is capable of being remotely tested from the data test center (DTC). The data set test circuits, automatic answer, and data channel bandwidths are checked by this procedure.

2.04 Perform the test as follows:

STEP	PROCEDURE
1	Using the data set telephone, call DTC and request a test of the data set.
2	When instructed by DTC, depress TEST button (TEST lamp comes on) and hang up. DTC also hangs up. ***Note:*** Data line will release, but data set will still be locked in test mode.
3	DTC now originates a call to the data set. The call is automatically answered and the DATA lamp lights. (Automatic answer is achieved in the test mode with or without unattended option.)
4	DTC now performs a programmed test of the data set.
5	At completion of test, DTC ends the call by transmitting a specific combination of frequencies to the data set. The data line and the data set return to normal. ***Note:*** The test circuit can be released by depressing the DATA button.
6	Verify with DTC that the data set meets the test requirements specified in the section entitled Data Test Center—904A- and 904C-Type—Test Procedures—Data Set 401J-Type—Loop-Back and End-To-DTC Interface Test (668-104-505).

3. MAINTENANCE TEST PROCEDURE

3.01 The test in this part is to be used as a troubleshooting aid during maintenance visits. Use of the end-to-DTC interface test should enable the telco employee to isolate the trouble to either the CPE or the data set.

3.02 Table A shows circuit packs which would be the most probable cause for failure to a particular frequency. Refer to the section entitled Data Set 401J-Type—Receiver—Maintenance (594-018-300) for procedures used to replace circuit packs. Data sets which are unrepairable by circuit pack replacement or otherwise found to be defective

should be returned to the Western Electric Company distributing houses for repair. Sets should be tagged to indicate the nature of the trouble.

End-to-DTC Interface Test

3.03 This test checks answer tone, answer-back, and data channels interface contact closures in response to data frequencies sent from the DTC.

3.04 Detailed test instructions are provided for telco employees in the left column. A summary of associated actions performed at the DTC is shown in the right column to provide coordination and to minimize testing time.

3.05 The following test equipment is required:

914-type data test set (DTS).

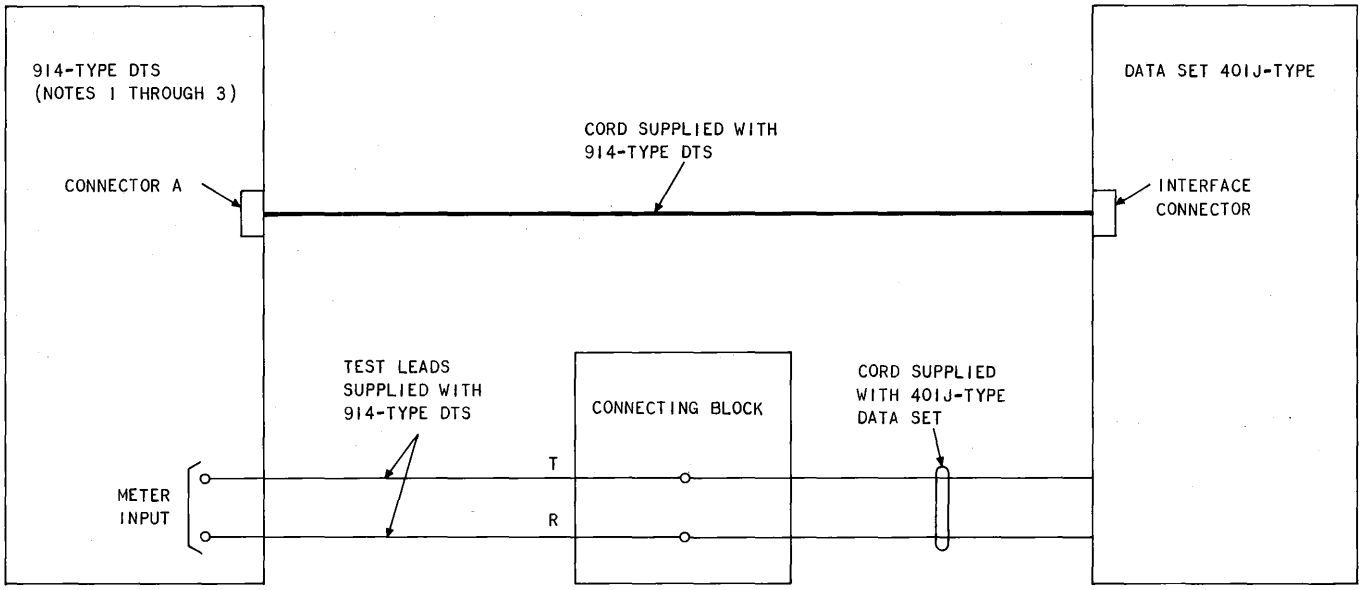
Test set switches not shown in the test equipment setup (Fig. 1) or not mentioned in text are not required for the test. Before making any test connections, ensure that all programming pins are removed from the DTS matrix. Insert only those pins shown in Fig. 1.

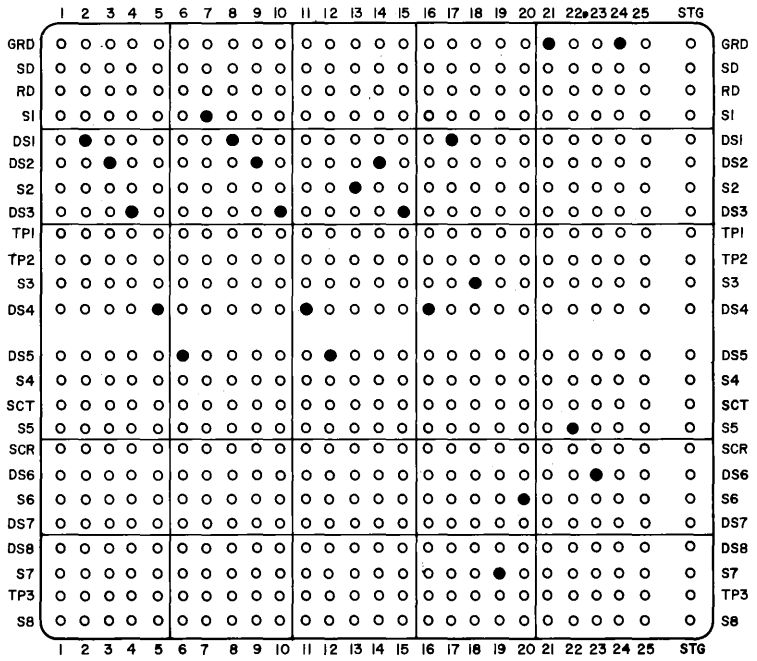
3.06 Perform the test as follows:

STEP	DATA STATION	DATA TEST CENTER
1	Establish test connections and switch settings as shown in Fig. 1.	

TABLE A

DATA CHANNEL FREQUENCY GROUPS	REFERENCE DESIGNATION	CIRCUIT PACK IDENTIFICATION	
		DATA SETS 401J2-9	DATA SET 401J1
600	CPS 3C	AS71 CP	1D120
697	CPS 3A	AS74 CP	1D114
A 770	CPS 3B	AS74 CP	1D115
852	CPS 3A	AS74 CP	1D114
941	CPS 3B	AS74 CP	1D115
1098	CPS 3F	AS76 CP	1D118
1209	CPS 3C	AS71 CP	1D120
B 1336	CPS 3D	AS75 CP	1D116
1477	CPS 3E	AS75 CP	1D117
1633	CPS 3D	AS75 CP	1D116
1950	CPS 3G	AS76 CP	1D119
C 2050	CPS 3F	AS76 CP	1D118
2150	CPS 3E	AS75 CP	1D117
2250	CPS 3G	AS76 CP	1D119
ANSWER-BACK FREQUENCIES			
1017	CPS 2	AS72 CP	1D121
1785	CPS 1	AS73 CP	1D122





NOTES:

1. SET SWITCHES ON 914-TYPE DTS AS FOLLOWS:

SWITCH	SETTING
A INTERFACE SELECTOR	ALL DEPRESSED
INTERFACE MODE	CONTACT
COUNTER	BIT ERRORS
FUNCTION	SPKR
RANGE	.01 DB
METER POLARITY	REV
S1-S3	OFF
S5-S7	OFF

2. 914-TYPE DTS LAMPS CORRESPOND TO THE FOLLOWING INTERFACE LEADS:

LAMP	FUNCTION
DS1	A0, B0, C0
DS2	A1, B1, C1
DS3	A2, B2, C2
DS4	A3, B3, C3
DS5	A4, B4
DS6	DATA SET READY (LINE STATUS)

3. 914-TYPE DTS SWITCHES CORRESPOND TO THE FOLLOWING INTERFACE LEADS:

SWITCH	FUNCTION
S1	A COMMON
S2	B COMMON
S3	C COMMON
S5	DATA TERMINAL READY (LINE CONTROL)
S6	ELECTRICAL ANSWER-BACK (1785 HZ)
S7	ELECTRICAL ANSWER-BACK (1017 HZ)

Fig. 1—Test Equipment Setup

STEP	DATA STATION	DATA TEST CENTER
2	Program the DTS matrix by inserting red programming pins (shorting) as shown in Fig. 1.	
3	Apply power to the data set and then to the DTS.	
4	Using the data set telephone, call DTC and request DTC to perform end-to-DTC interface test of the data set using Section 668-104-505. Inform DTC whether data station is arranged for attended or unattended operation.	
5	Hang up.	DTC operator conditions test equipment to perform test.
Answer Tone Test		
6a	If station is arranged for unattended operation—When station bell rings, set switch S5 to ON.	DTC calls data station under test and measures frequency of answer tone.
	Requirement:	
	Ringing tripped Data set DATA lamp lights DTS lamp DS6 lights 1.1-second silent interval 3 seconds of 2025-Hz answer tone transmitted (heard in DTS loudspeaker).	
7a	Depress TALK button and lift handset.	
	Requirement:	
	DATA lamp extinguishes. Voice communication satisfactory.	DTC reports results of answer tone test.
8b	If station is arranged for attended operation—When station bell rings, depress TALK button and lift handset.	
	Requirement:	
	Voice communication satisfactory.	
Answer-Back Test		
9	Depress DATA button.	
	Requirement:	
	DATA lamp lights.	DTC goes to test mode.

STEP	DATA STATION	DATA TEST CENTER
10	Set switch S6 to ON for 10 seconds.	
	Requirement:	
	1785-Hz answer-back heard in DTS loudspeaker.	DTC measures frequency of answer-back.
11	Set switch S6 to OFF.	
12	Set switch S7 to ON for 10 seconds.	
	Requirement:	
	1017-Hz answer-back heard in DTS loudspeaker.	DTC measures frequency of answer-back.
13	Set switch S7 to OFF.	
14	Depress TALK button.	DTC goes to talk mode and reports results of answer-back test.
Data Channels Test		
15	Inform DTC that data station is ready to test data frequencies.	
16	Depress DATA button.	DTC goes to test mode.
17	Set switch S1 to ON.	
	Requirement:	
	Lamps DS1 through DS5 light and extinguish in turn.	DTC sends group A frequencies.
18	Set switch S1 to OFF.	
19	Depress TALK button and inform DTC of group A test results (lamp indications).	DTC goes to talk mode and logs group A test results.
20	Depress DATA button.	DTC goes to test mode.
21	Set switch S2 to ON.	
	Requirement:	
	Lamps DS1 through DS5 light and extinguish in turn.	DTC sends group B frequencies.
22	Set switch S2 to OFF.	
23	Depress TALK button and inform DTC of group B test results (lamp indications).	DTC goes to talk mode and logs group B test results.

STEP	DATA STATION	DATA TEST CENTER
24	Depress DATA button.	DTC goes to test mode.
25	Set switch S3 to ON.	
	Requirement:	
	Lamps DS1 through DS4 light and extinguish in turn.	DTC sends group C frequencies.
26	Set switch S3 to OFF.	
27	Depress TALK button and inform DTC of group C test results (lamp indications).	DTC goes to talk mode and logs group C test results.
28a	Set switch S5 to OFF.	
29a	Depress DATA button.	
	Requirement:	
	Data set releases from line.	
30b	Hang up handset.	
	Requirement:	
	Data set releases from line.	
31	Disconnect DTS test leads from connecting block.	
32	Connect test lead from red INPUT terminal to interface selector switch A25.	
33	Connect test lead from black INPUT terminal to interface selector switch A24.	
34	Determine service option used by customer (W or X) and perform test as applicable.	
	Note: W option (ringing indication to customer)—strap between TB2-7 and TB2-8. X option (out-of-service control by customer)—strap between TB2-7 and TB2-6.	
W Option		
35a	Set FUNCTION switch to VOLT/OHM EXT and RANGE switch to X1.	
36a	Using an adjacent telephone, call the data set.	

STEP	DATA STATION	DATA TEST CENTER
	Requirement:	
	DTS meter pointer swings toward 0 ohms during ringing interval.	
X Option		
37b	Set RANGE switch to 30 DCV and FUNCTION switch to VOLT/OHM EXT.	
	Requirement:	
	DTS meter indicates 15.5 to 20.5 Vdc.	
38	If requirements in Steps 35a and 36a are not met, check or replace the 3A3 or 58A line control unit.	
39	Remove all test equipment and restore the data set to pretest condition.	