TESTING DATA SET 208B-TYPE FROM FIELD LOCATIONS USING J1P005 AUTOMATIC DATA TEST SYSTEM (ADTS)

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1. GENERAL

1.01 This section provides self test and field test information for data set (DS) 208B-type. Remote and error run tests are provided using the J1P005 ADTS. These procedures are to be used when testing DS 208B-type on an initial installation or during a maintenance visit.

1.02 When this section is reissued, the reason for reissue will be presented in this paragraph.

1.03 The self tests require no external test equipment, and are included here for completeness.

1.04 This section contains information for testing DS 208B by means of DIVA (Digital Inquiry Voice Answer). DIVA requires a TOUCH-TONE® dial telephone, or a rotary dial telephone used with a KS-21799-L1 (or equivalent) portable TOUCH-TONE pad.

1.05 In this section, the term "user" refers to telephone company (telco) personnel at the data set responsible for interfacing the data set with the ADTS.

1.06 Test circuitry built into DS 208B-type permits the following self tests to be performed: lamp, analog loopback, end-to-end, and end-to-end start-up. Additional tests require the use of external test equipment such as a 921A data test set (DTS) and/or the ADTS.

A. Self Tests

1.07 General self-test information is presented in paragraphs 1.08 through 1.11. Detailed self test procedures are presented in paragraphs 4.02 through 4.07.

Lamp Test

1.08 The lamp test (LP) nonlocking switch, when depressed, lights the TR, MR, RS, CS, CO, and ER lamps to verify proper operation of these lamps. The LP switch can be depressed at any time, as it does not affect normal data set operation. On DS 208B-L1B, when the AL and ST switches are depressed, the LP switch circuit is reconfigured to introduce errors (spaces) for test purposes.

Analog Loopback Self Test

1.09 This test is initiated by depressing the analog loopback (AL) and self-test (ST) locking switches. Depressing the AL switch connects the data set transmitter to the data set receiver through an internal pad. Depressing the ST switch turns ***on*** the internal request-to-send (CA) lead, transmits a steady mark on the internal send-data (BA) lead, and conditions the ER lamp to indicate received errors. On DS 208B-L1B, depressing the LP switch causes steady spaces to be sent.

End-to-End Self Test

1.10 This test is initiated, after a call connection has been established, by depressing the ST locking switch at the transmitting end and the ST and RO (receive only) locking switches at the receiving end and then transferring to the data mode. This conditions the transmitting end to transmit steady marks. The ER lamp at the receiving end indicates any errors made in transmission. The direction of transmission can be reversed by releasing the RO switch at the receiving end (which now becomes the transmitting end) and depressing the RO switch at the transmitting end (which now becomes the receiving end). On DS 208B-L1B, depressing the LP switch causes steady spaces to be sent.

End-to-End Start-Up Self Test (DS 208B-L1A or -L1B)

1.11 This test is initiated, after a call connection has been established, by depressing the ST locking switch on the far-end data set and the ST and RO locking switches on the near-end data set and transferring to data mode. The ER lamp on the near end indicates any errors made in transmission. On DS 208B-L1B, depressing the LP switch causes steady spaces to be sent.

B. ADTS Tests

1.12 General ADTS test information is presented in paragraphs 5.01 through 5.26. Detailed ADTS test procedures are presented in paragraphs 5.27 through 5.63.

2. INSTALLATION TESTS

2.01 This part provides the sequence in which tests are to be performed following installation of the data set. This test sequence (Fig. 1) provides a method of verifying that the installation is satisfactory. Before proceeding with the tests, verify that the local loop meets the requirements specified in Section 314-205-501.

3. MAINTENANCE TESTS

3.01 This part provides the sequence in which tests are to be performed when clearing a trouble report and during a maintenance visit to the data station.

3.02 When a trouble report is received, a test center or ADTS is responsible for isolating the trouble to the data station or the transmission facility. The procedure for doing this is shown in Fig. 2.

3.03 If the trouble seems to be in the data station equipment, a telephone company (telco) employee must be dispatched to conduct more extensive tests at the data station. The following equipment should be taken on a trouble visit:

- 921A or 914-type DTS
- Maintenance kit

3.04 The maintenance kits consist of replacement circuit packs for DS 208-type. Circuit packs in the maintenance kits not used in DS 208B-type are used to support DS 208A-type. The available maintenance kits are as follows:

- D-180497 for DS 208B-L1

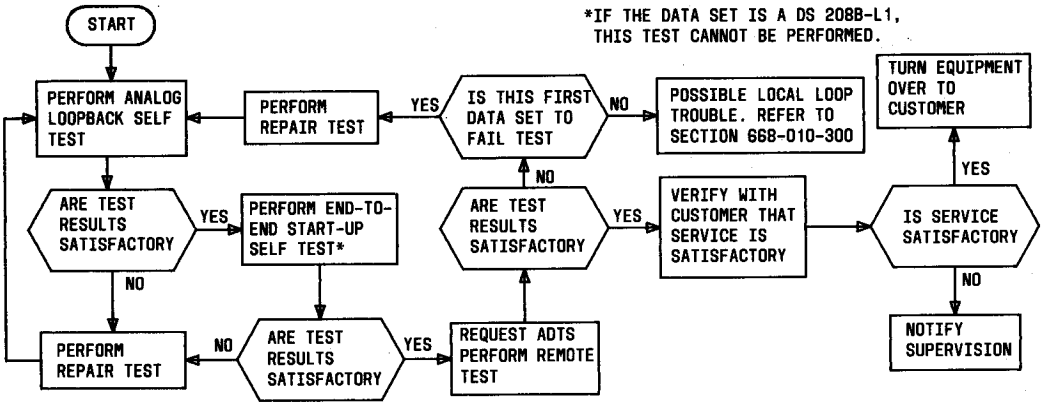


Fig. 1—Installation Test Sequence

- D-180657 for DS 208B-L1 or -L1A
- D-180718 for DS 208B-L1, -L1A, or -L1B

3.05 Troubleshooting is performed by the ADTS using the remote test or block error test. If the trouble is isolated to the data set, the repair test procedures in paragraphs 5.64 and 5.65 are to be performed to isolate the trouble to a circuit pack in the data set.

3.06 If a circuit pack is replaced, tag the defective circuit pack with a description of the trouble and carefully pack the circuit pack in the shipping carton supplied with the maintenance kit. Mark the carton with the data set code, circuit pack code, and date of manufacture. For example:

Data set 208B

HG11 IV 75

Send the properly packed and marked carton to the telco supplies operation group and notify that group in the normal manner that a replacement circuit pack is needed. The telco supplies operation group will place a requisition for a replacement circuit pack with the local Western Electric service center which will expedite the requisition to the Montgomery (ILL) merchandise organization to ensure its receipt within 24 hours. The Montgomery merchandise organization will ship the circuit pack (via fastest method) directly to the designated telco location within 24 hours after receiving the requisition.

3.07 If the trouble persists after the tests have been completed, proceed as follows:

(a) Check that options installed in data set agree with those specified on service order.

(b) Verify that customer-provided equipment (CPE) has been tested and is operating properly.

(c) Check for physical damage to data station equipment.

(d) Verify that all cords and connectors are properly connected.

(e) Check for intermittent trouble in station wiring.

(f) Verify that data set and CPE are connected to a common ground.

(g) If trouble persists, request help from immediate supervisor.

4. SELF TEST PROCEDURES

4.01 This part provides procedures for the installation and maintenance self tests.

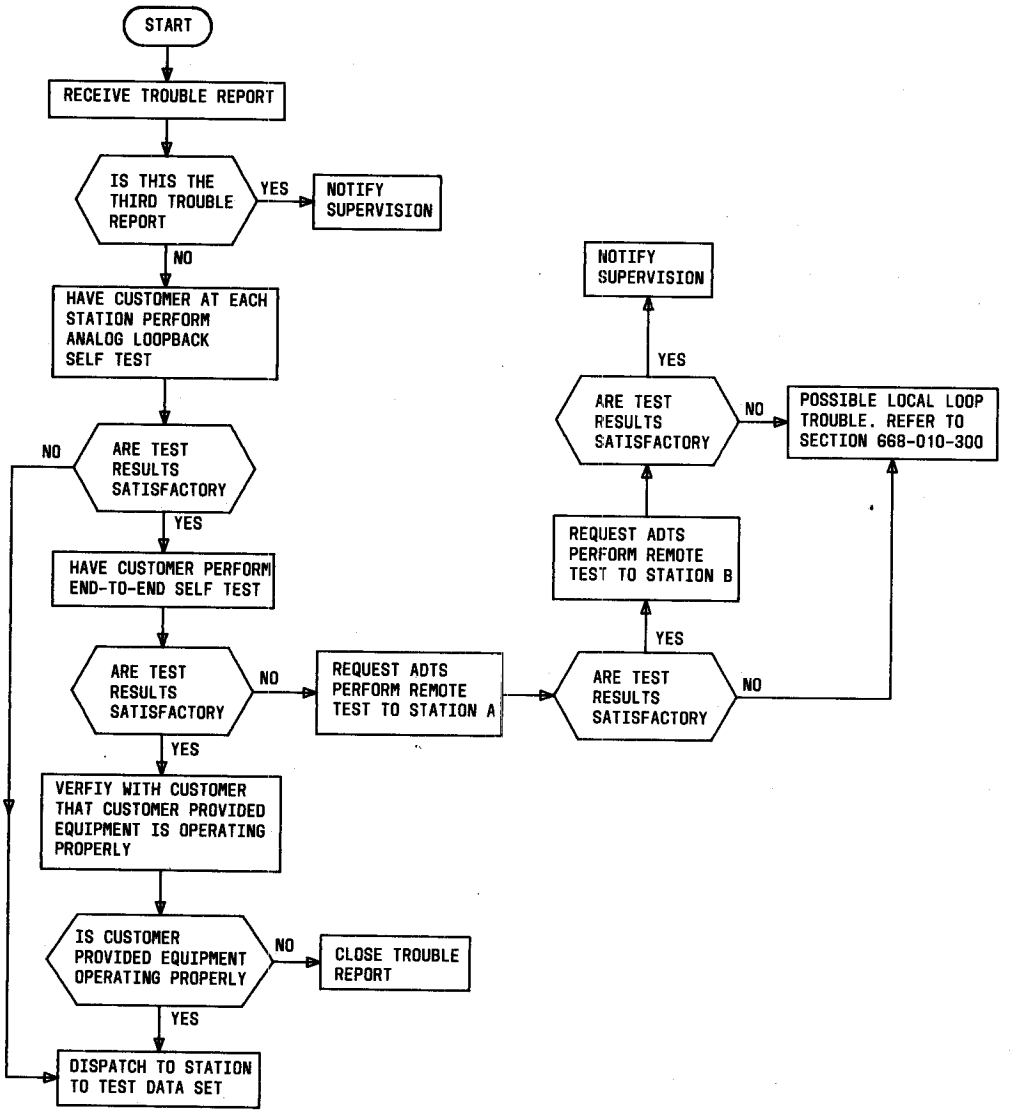


Fig. 2—Clearing Trouble Report

A. Analog Loopback Self Test

4.02 This test checks the data set transmitter and receiver. The customer interface is not checked.

4.03 Perform the test as follows:

(1) Ensure that data set is not transmitting or receiving data.

(2) Depress LP switch on data set.

Requirement: All lamps are lighted.

(3) Depress AL and ST switches on data set.

Requirements: ON, RS, CS, and CO lamps are lighted. ER and MR lamps are off. On DS 208B-L1 and -L1A, TR lamp may be lighted or off, depending on state of CD lead. On DS 208B-L1B, TR lamp is extinguished.

Note: ER lamp goes off immediately. If ER lamp is lighted or blinks, data set has failed analog loopback self test.

(4) Depress LP switch on data set (DS 208B-L1B).

Requirements: ER lamp lights. TR and MR lamps remain off.

(5) Release ST and AL switches on data set.

B. End-to-End Self Test

4.04 This test checks the transmitter and receiver of both data sets and the facilities connecting the data sets. The customer interfaces are not checked.

4.05 Perform the test as follows:

(1) Call far-end data set and arrange to conduct an end-to-end self test.

(2) Request ST switch on far-end data set be depressed, and far-end data set be transferred to data mode by depressing DATA button on associated telephone set.

Requirements: ON, RS, CS, and ER lamps on far-end data set are lighted. On DS 208B-L1 and -L1A, MR and CO lamps are off. TR lamp may be lighted or off, depending on state of CD lead. On DS 208B-L1B, TR and MR lamps are lighted.

(3) Depress ST and RO switches on near-end data set, and then transfer to data mode by depressing DATA button on associated telephone set.

Requirements: ON and CO lamps on near-end data set are lighted. RS, CS, MR, and ER lamps are off. On DS 208B-L1 and -L1A, TR lamp may be lighted or off, depending on state of CD lead. On DS 208B-L1B, TR and MR lamps are lighted.

(4) Observe ER lamp on near-end data set for ten 1-minute periods.

Requirement: ER lamp does not blink more than an average of three blinks per 1-minute period.

(5) At a prearranged time, have LP switch on far-end data set (DS 208B-L1B only) depressed.

Requirements: ER lamp lights on near-end data set. TR and MR lamps remain off at far-end data set.

(6) After a prearranged time, return to talk mode to discuss results of test. If test failed, terminate call, place a second call to involve a different connecting path, and repeat test.

(7) Request ST switch on far-end data set be released.

(8) Release RO and ST switches on near-end data set.

C. End-to-End Start-Up Self Test (DS 208B-L1A or -L1B)

4.06 This test checks start-up performance with the 4-dB and 8-dB slope compromise equalizers.

4.07 Perform the test as follows:

(1) Call far-end data set and arrange to conduct an end-to-end start-up self test. (Far-end data set should be one customer will normally call or receive calls from.)

(2) Request ST switch on far-end data set be depressed, and far-end data set be transferred to data mode by depressing DATA button on associated telephone set.

Requirements: ON, RS, CS, and ER lamps on far-end data set are lighted. On DS 208B-L1 and -L1A, MR and CO lamps are off. TR lamp may be lighted or off, depending on state of CD lead. On DS 208B-L1B, TR and MR lamps are lighted.

(3) Depress ST and RO switches on near-end data set, and then transfer to data mode by depressing DATA button on associated telephone set.

Requirements: ON and CO lamps on near-end data set are lighted. On DS 208B-L1 and -L1A, RS, CS, MR, and ER lamps are off. TR lamp may be lighted or off, depending on state of CD lead. On DS 208B-L1B, TR and MR lamps are lighted.

(4) Install 4-dB slope compromise equalizer option (S2B up; S2C up) in near-end data set.

(5) Request RO switch on far-end data set be depressed and released at 5-second intervals for 1 minute.

Requirements: On near-end data set, CO lamp lights and ER lamp goes off at same time. ER lamp does not flicker.

(6) If ER lamp flickers more than twice during 1-minute period, install 8-dB slope compromise equalizer option (S2B down; S2C up) in near-end data set and repeat Step (5).

(7) Install 4-dB slope compromise equalizer option (S2B up; S2C up) in near-end data set, unless 8-dB slope compromise equalizer option produced at least three fewer flickers of ER lamp.

(8) Request ST switch on far-end data set be released.

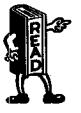
(9) Release RO and ST switches on near-end data set.

5. ADTS TEST PROCEDURES

A. General

5.01 This part provides instructions necessary for the proper operation of ADTS from field data sets. Included are instructions for entering and leaving the system and for performing installation and maintenance tests.

5.02 Operations involving ADTS require man/machine interaction. With DIVA, the information is entered into ADTS by tones from a TOUCH-TONE dial. The system outputs a message by a voice response unit, and the user receives the message via the telephone handset.



Every entry from a TOUCH-TONE dial must be followed by a TOUCH-TONE star (*) except when calling the DIVA port number. To avoid repetition, the star entry has not been included in the text but should be understood as included whenever an entry is mentioned.

5.03 The ADTS must be on-line and DIVA must be up to accept DIVA tests.

Functions Available Via DIVA (Table B)

5.04 The test functions available via DIVA initiate a static or dynamic test of a data set. When 3 is used as a prefix with a test function, a fast test is performed on the data set without review of the line card information and without receiving test instructions.

5.05 ***Test Function List:*** With an entry of 8, DIVA will respond with a message of all test functions that can be performed on DS 208B-type.

5.06 ***Remote Test:*** This function provides a remote test of DS 208B-type by the ADTS. The remote test is initiated by entering 78; the fast remote test by entering 378.

5.07 ***Error Run Test:*** This function provides an error run test between the data set and the ADTS in each direction (half duplex). A 921A or a 914-type DTS is required at the data set. Bit or block errors are automatically recorded for various combinations of pseudorandom data sequences and for various periods of time. The data sequences

and the periods of time are user specified. Use of the 921A or 914-type DTS requires an initial test setup as described in paragraphs 5.39 and 5.58, respectively. The error run test is initiated by entering 37; the fast error run test by entering 337.

5.08 ***Results:*** This function provides results of the most recent test of the data set. The results function is initiated by entering 7. In response to the results function entry, the ADTS gives the audible query WHAT IS THE TELEPHONE OR SPECIAL SERVICE CIRCUIT NUMBER? After receiving a number, the ADTS outputs the results in a format similar to the following:

THE TEST RESULTS ARE:

THE DATA SET CODE IS (data set code)

THE RECEIVED SIGNAL LEVEL IS OUT OF LIMITS

WHAT IS THE FUNCTION YOU WISH TO PERFORM?

5.09 ***Stop:*** This function stops the present function and requests a new function. The stop function is initiated by entering #73.

5.10 ***Off:*** This function stops the present function and disconnects the DIVA port. The off function is initiated by entering #63.

Accessing ADTS

5.11 Access to ADTS by DIVA is obtained by placing a call to a DIVA port number. Depending on the mode of ADTS and the mode of DIVA, one of four actions will occur:

(a) Busy signal; all DIVA ports are busy. Try again later.

(b) Call not answered; either ADTS is off-line or DIVA is in the down mode.

(c) Call answered; the user will hear a 1-second burst of answer tone. Following the answer tone will be the audible query: THIS IS THE AUTOMATIC DATA TEST SYSTEM. PLEASE ENTER THE PASSWORD. Once the password has been entered, the system responds with PLEASE ENTER THE FUNCTION YOU WISH TO PERFORM.

(d) Call answered; the user will hear the password query and then the following: THE ADTS IS OFF-LINE. PLEASE ENTER THE FUNCTION YOU WISH TO PERFORM. The ADTS must be put on-line by entering ONLIN to the function query on a terminal at the ADTS.

5.12 The user may shorten the password-function request formalities by inputting both the password and the desired function in one entry (no intervening *). If both the password and function are valid, ADTS begins executing the function immediately. To shorten the time required to set up a test, answers to familiar questions asked by DIVA may be given while the question is in progress.

5.13 Information is entered into ADTS by letters or numbers on the TOUCH-TONE dial. Numbers are entered into ADTS by depressing the desired digits on the TOUCH-TONE dial. Letters are entered into ADTS by using the following format:

(a) Depress #.

(b) Depress button with desired letter on it.

(c) Depress a number (1, 2, or 3) corresponding to the letter's position on the button [depressed in (b)].

5.14 In response to a YES or NO question, the following format is used:

(a) YES, enter one (1).

(b) NO, enter zero (0).

5.15 The user can again listen to the last spoken message, by entering #* (Table A).

Performing Tests

5.16 To start a test, the user enters the desired number code from Table B. The ADTS response is WHAT IS THE TELEPHONE OR SPECIAL SERVICE CIRCUIT NUMBER? After the number has been entered, the ADTS response is YOU HAVE ENTERED (telephone or special service circuit number). IS THAT CORRECT?

TABLE A

TOUCH-TONE CODES FOR DIVA

FUNCTION	DEPRESS BUTTON(S)	DESCRIPTION
1, 2, 3, . . .etc.	Appropriate button(s)	Digits
#	#	Prefix character.
*	*	TOUCH-TONE star. Used at end of all entries as EOL character.
A,B,C, . . .etc.	Depress number sign, button on which character appears, and digit corresponding to the relative position of the letter (1,2, or 3). Example: For the letter A #21	Alphabetic characters.
Yes	1*	Answer yes to a question.
No	0*	Answer no to a question.
Repeat	#*	Repeats last message spoken by the system.
Telephone Number	Example: 3115552368*	Enter telephone number in sequence followed by EOL.
Data Set Code	Example: 202#23* Example: 202#235* Example: 401#515*	202C 202C5 401J5
Data Set Transmit Level	Example: 12*	-12 dBm. Eliminate sign and units designation. Enter numerical value.

The user enters 1 for YES or 0 for NO. If the response is incorrect, ADTS repeats the original query.

5.17 If the response is correct, ADTS will attempt to find a line card file (LCF). If an LCF is found, ADTS will use the data set code to find the test program. If there is a test program for the data set code and test function entered, ADTS will continue. If no test program is found, ADTS will abort the test with the following message: THE ADTS CANNOT RUN SELECTED TEST ON THIS DATA SET. (Since there are test programs available for data set 208B-type—78 and 37—this response indicates that the wrong test code was entered.)

5.18 If both an LCF and test program are found, the LCF information is given to the user. The user is then given a chance to make any necessary changes.

5.19 If no LCF is found, the ADTS response is THE DATA SET IS NOT ON FILE. ENTER THE DATA SET CODE. The user must then answer this question and others to create an LCF. In this case the entry would be 208#22*. After entry of the data set code, ADTS checks for the test program.

TABLE B

FUNCTIONS AVAILABLE VIA DIVA

FUNCTION	DESCRIPTION	NORMAL	FAST
Test List	Lists valid test functions.	8*	
Remote Test	Dynamic test of a data set.	78*	378*
Error Run Test	Tests a data set with data test set connected.	37*	337*
Results	Outputs results of most recent test of a data set.	7*	
Stop	Stops present function and requests new function.	#73*	
Off	Stops present function and disconnects.	#63*	

5.20 After the LCF information has been given or after new line card information has been entered ADTS instructs the user TO CORRECT ERRORS ENTER ONE. IF NO ERRORS, ENTER ZERO. If a 1 is entered, ADTS repeats the line card information query.

5.21 If no corrections are made to the LCF, ADTS asks ARE YOU CALLING FROM THE DATA SET? If the user is calling from a data set, the user must hang up. ADTS will then call the data set for testing. After the test has been completed, ADTS calls the data set again to give the user the results of the test. The test instructions direct the user on this procedure.

5.22 The ADTS asks the user DO YOU WANT INSTRUCTIONS? If requested, ADTS will supply test instructions. These instructions are to prompt the user, not to replace the data set BSP instructions.

5.23 After the instructions, ADTS gives the following message: WHEN READY, ENTER ONE. Upon receipt of a 1, ADTS responds with a THANK YOU. A pause will follow the thank you message as ADTS attempts to seize the hardware needed for the test. If the test hardware is busy performing another test or a self test, ADTS gives the following message: The ADTS TEST EQUIPMENT IS BUSY, PLEASE WAIT. When the test hardware becomes available, ADTS outputs THE TEST IS READY TO START.

5.24 At completion of the test, the user receives a short message describing the test results. When the data set fails, the system gives the reason(s) for failure. After giving the results of the data set test, the system returns to the function query.

Leaving ADTS

5.25 ***Manual Abort:*** Whenever the system is expecting user input, the user can abort the operation by entering #73 (the letter S) or #63 (the letter O). The letter S, for STOP, causes ADTS to abort the operation and return to the function query. The letter O, for OFF, causes ADTS to abort the operation and the DIVA port to hang up.

5.26 ***Automatic Abort:*** The ADTS automatically performs the equivalent of a user OFF if the user does not respond to a system request. Thirty seconds without a user entry after the original function query, ADTS will repeat the query. Thirty seconds after the second query without a user entry, ADTS will repeat the query for the third time. Thirty seconds after the third query without a user entry, ADTS will abort the task and hang up. If incorrect or illogical entries are made three successive times, ADTS will perform the equivalent of an OFF. After each invalid entry, an appropriate error message such as THE NUMBER IS INVALID, PLEASE REENTER will be spoken. After a third invalid entry, ADTS will abort the task and hang up.

B. Remote Test

5.27 Call the DIVA port number of the serving ADTS, using a TOUCH-TONE (TT) dial or pad. A 1-second answer tone will be heard in the

handset. After the answer tone will be the following: THIS IS THE AUTOMATIC DATA TEST SYSTEM. PLEASE ENTER THE PASSWORD.

Note 1: If the above message is not heard, refer to paragraph 5.11.

Note 2: TOUCH-TONE stars are shown hereafter as required.

5.28 Enter the 4-character password, followed by a ✱, on the TT dial. ADTS will respond with PLEASE ENTER THE FUNCTION YOU WISH TO PERFORM.

5.29 Enter 78✱ on the TT dial. (The fast test, which omits line card review and test instructions, may be requested by entering 378✱.) ADTS will respond with WHAT IS THE TELEPHONE OR SPECIAL SERVICE CIRCUIT NUMBER?

5.30 Enter the data set telephone number, followed by ✱, on the TT dial. ADTS will respond with YOU HAVE ENTERED (telephone number). IS THAT CORRECT?

5.31 If the number is correct, enter 1✱ on the TT dial. If the number is incorrect, enter 0✱ on the TT dial.

5.32 If 0✱ was entered, the query in paragraph 5.29 will be repeated. If 1✱ was entered, ADTS will respond with THE DATA SET CODE IS 208B. ARE YOU CALLING FROM THE DATA SET? To respond "yes" enter one; to respond "no", enter zero.

5.33 ADTS continues: TO CORRECT ERRORS ENTER ONE. IF NO ERRORS ENTER ZERO. Enter 1✱ to change the data set code. Follow this with an entry of 208#22✱ to select data set 208B.

5.34 This question follows: DO YOU WANT INSTRUCTIONS? A 1✱ reply requests instructions, which are as follows:

(1) When ADTS is called from a telephone other than the data set: RELEASE ALL SWITCHES ON THE DATA SET TO THE OUT POSITION. DEPRESS THE RT SWITCH AND THE 50 SWITCH ON THE DATA SET. THE ADTS WILL CALL THE DATA SET. LEAVE THIS TELEPHONE OFF-HOOK TO RECEIVE THE TEST RESULTS AT THE COMPLETION OF THE TEST.

(2) When ADTS is called from the data set telephone: RELEASE ALL SWITCHES ON THE DATA SET TO THE OUT POSITION. ON THE TONE DEPRESS THE RT SWITCH AND THE 50 SWITCH ON THE DATA SET AND THEN HANG UP. THE ADTS WILL CALL THE DATA SET. WHEN THE TEST IS COMPLETED, THE ADTS WILL CALL THE DATA SET AGAIN TO REPORT THE TEST RESULTS.

The ADTS then gives the message WHEN READY ENTER ONE.

5.35 When the user is satisfied that the instructions are understood, enter one, to which the ADTS responds THANK YOU. THE TEST IS READY TO START.

5.36 On conclusion of the test the ADTS gives the results as follows:

THE TEST RESULTS ARE:

THE RECEIVED LEVEL IS -24 DBM.
THE NUMBER OF BLOCKS RECEIVED WAS 30.
THE NUMBER OF TRANSMITTER ERRORS WAS 0.
THE NUMBER OF RECEIVER ERRORS WAS 0.
THE DATA SET TESTS OK.

5.37 If the data set failed the test, one or more of the following messages is given:

- THE DDD CONNECTION WAS LOST. TEST ABORTED.
- CARRIER WAS NOT RECEIVED.
- THE CARRIER SIGNAL DID NOT GO OFF.
- THE RECEIVED SIGNAL LEVEL IS OUT OF LIMITS.
- THE NUMBER OF TRANSMITTER ERRORS WAS TOO HIGH.

- THE NUMBER OF RECEIVER ERRORS WAS TOO HIGH.
- THE DATA SET DID NOT SEND THE RECEIVER ERROR SIGNAL.
- THERE HAS BEEN AN ADTS TEST EQUIPMENT MALFUNCTION. TRY AGAIN LATER.
- THE RECEIVED SIGNAL WENT OFF DURING MEASUREMENT.
- THE DATA SET DID NOT RELEASE FROM THE TEST MODE.
- THE ANSWER TONE DID NOT GO OFF.
- THE RECEIVED LEVEL IS (negative number) DBM.
- THE NUMBER OF BLOCKS RECEIVED WAS (positive number).
- THE NUMBER OF TRANSMITTER ERRORS WAS (positive number).
- THE NUMBER OF RECEIVER ERRORS WAS (positive number).

5.38 The ADTS repeats the function query.

C. End-to-ADTS Error Run Test Using 921A DTS

Initial Test Setup for 921A DTS

5.39 Perform the initial test setup for the 921A DTS when used to test DS 208B-type as follows:

STEP	ACTION	VERIFICATION
1	Connect data set to DTS using interface cable and Electronic Industries Association (EIA) adapter cord provided with DTS. ***Note:*** The interface cable is equipped with two 37-pin connectors. The 6-inch adapter cord is equipped with a 37-pin female connector and a 25-pin male connector. Connect interface cable from DATA SET (DCE) connector on DTS to 37-pin connector on adapter cord. Insert 25-pin connector on adapter cord into customer interface connector on data set.	
2	Connect DTS to a 105- to 129-Vac 60-Hz power source.	
3	Apply power to data set.	Data set ON lamp lights.
4	On front of DTS, set POWER switch to ON.	POWER lamp lights.
5	Press RST on keyboard. ***Note:*** If RST is pressed during a test, the test is ended and the DTS recycles to this step.	Display reads (briefly) version number of DTS. DTS then performs self tests. If DTS is defective, display reads— TEST FAILED If DTS is satisfactory, display reads— DATA SET:
6	Remove EIA RS-232-C interface module from storage and ensure that all 25 interface module switches are in TERM position.	

STEP	ACTION	VERIFICATION
7	On right side of DTS, ensure that locking lever is in OPEN position.	
8	Insert interface module into slot.	
9	Move locking lever to CLOSE position.	
10	On front of DTS, ensure that all 37 DCE interface lead switches are in NORM position.	
11	Enter 71. ***Note:*** To delete a wrong entry on keyboard during any test, press back arrow (←).	Display reads— DATA SET: 71
12	Press GO.	Display reads— BIT RATE:
13	Enter 48.	Display reads— BIT RATE: 48
14	Press GO. ***Note:*** If GO or TST is pressed at an unauthorized point in a test, the test is ended and the DTS recycles to this step.	Display reads— TEST SEQ:

5.40 Call the DIVA port number of the serving ADTS, using a TOUCH-TONE (TT) dial or pad. A 1-second answer tone will be heard in the handset. After the answer tone will be the following: THIS IS THE AUTOMATIC DATA TEST SYSTEM. PLEASE ENTER THE PASSWORD.

Note: If the above message is not heard, refer to paragraph 5.11.

5.41 Enter the 4-character password, followed by a ✱, on the TT dial. ADTS will respond with PLEASE ENTER THE FUNCTION YOU WISH TO PERFORM.

5.42 Enter 37✱ on the TT dial. (The fast test, which omits line card review and test instructions, may be requested by entering 337✱.) ADTS will respond with WHAT IS THE TELEPHONE OR SPECIAL SERVICE CIRCUIT NUMBER?

5.43 Enter the data set telephone number, followed by ✱, on the TT dial. ADTS will respond with YOU HAVE ENTERED (telephone number). IS THAT CORRECT?

5.44 If the number is correct, enter 1✱ on the TT dial. If the number is incorrect, enter 0✱ on the TT dial.

5.45 If 0✱ was entered, the query in paragraph 5.42 will be repeated. If 1✱ was entered, ADTS will respond with THE DATA SET CODE IS 208B. ACCESS TYPE LAST USED WAS DDD, ADTS ORIGINATED. TO CORRECT ERRORS ENTER ONE. IF NO ERRORS ENTER ZERO.

5.46 Enter 1✱ to change the data set code. Follow this with an entry of 208#22✱ to select data set 208B.

5.47 Enter 1✱ to change the data set access type. The ADTS responds with ENTER THE DATA SET ACCESS TYPE.

1. DDD, ADTS ORIGINATED
2. DDD, DATA SET ORIGINATED
3. RTAU
4. RTS.

5.48 If there are no more corrections, the ADTS asks the following question: DO YOU WANT THE ADTS TO TRANSMIT TO THE DATA SET?

5.49 A "yes" or "no" answer is followed by the following question: DO YOU WANT TO USE THE STANDARD TEST PARAMETERS? (Standard test parameters are: test time, 1 minute; word bit length, 511; bit error count). A "yes" answer is followed by PLEASE WAIT; a "no" answer by the following: ENTER THE TEST TIME IN MINUTES. ENTER THE WORD BIT LENGTH: 15, 63, 511, OR 2047 BITS.

5.50 If the answer to the question in paragraph 5.49 was "no", the following message is given: DO YOU WANT TO DETECT BLOCK ERRORS? The response to a "yes" is ENTER THE BLOCK WORD LENGTH. An acceptable answer is 1, 2, 4, 8, or 16. If response is "no", a bit error count is made. With the proper answer, the ADTS responds PLEASE WAIT, then ARE YOU CALLING FROM THE DATA SET? A "yes" or "no" answer is acceptable.

5.51 A "yes" reply to the question DO YOU WANT INSTRUCTIONS? prompts the following message if the ADTS is originating the call and the call is not initiated from the data set: THE ADTS WILL CALL THE DATA SET AND START THE TEST AFTER THE DATA SET ANSWERS. LEAVE THIS TELPHONE OFF-HOOK TO RECEIVE THE TEST RESULTS. WHEN READY ENTER ONE.

5.52 When the call is from the data set the instructions are: ON THE TONE, HANG UP. THE ADTS WILL CALL AND TEST THE DATA SET. WHEN THE TEST IS COMPLETED, THE ADTS WILL CALL THE DATA SET TO REPORT THE TEST RESULTS OR YOU MAY CALL ADTS AND REQUEST THE TEST RESULTS.

ADTS Transmitting Data

5.53 If the ADTS is to transmit to the data set, this message follows: ADTS TEST DATA TRANSMISSION WILL BE PRECEDED BY 30 SECONDS OF GOOD DATA FOLLOWED BY THE INJECTION OF 10 BIT ERRORS.

5.54 During this initial period of data transmission, prepare the 921A data test set to receive the test data as indicated in the steps below. Receipt of bit errors is a positive indication that transmission is taking place. The time entered in Step 9 must be less than the time requested for the ADTS test, since erroneous errors will be produced if the 921A DTS looks for data when none is being transmitted.

STEP	ACTION	VERIFICATION
1	Ensure that 4-dB slope compromise equalizer option (S2B up; S2C up) is installed in data set.	
2	Ensure that initial test setup described in paragraph 5.39 has been performed.	Display reads— TEST SEQ:
3	Enter 54.	Display reads— TEST SEQ: 54
4	Press GO.	Display reads (briefly)— SELECT ERROR TEST Display then reads— D=DT 0=SP 1=MK 2=2047 5=511 6=63
5	Enter 5.	Display reads (briefly)— 511 BIT ERROR TEST Display then reads— 1=BIT ERRORS 2=BLOCK ERRORS

STEP	ACTION	VERIFICATION
6	Enter 2.	Display reads— ????? BITS IN A BLOCK
7	Enter 01024.	Display reads (briefly)— 01024 BITS IN A BLOCK Display then reads— ???? SECONDS
8	Place data set in data mode.	On DTS, DSR indicator lights (data set ready lead ***on***) Display continues to read— ???? SECONDS
9	Enter 0600.	Display reads (briefly)— 0600 SECONDS Display then reads— BLK RCVD=0000 ERR=0000 ***Note:*** From this point, display counts number of blocks received and number of blocks in error. If sync is lost during test, display flashes OSYN. If this occurs, test must be repeated by pressing A. At end of test, display reads TEST COMPLETE, total sync losses, total blocks received, and total blocks in error. ***Requirement:*** Total blocks in error are less than 30. Record block errors.

ADTS Receiving Data

5.55 If the ADTS is to receive data from the data set, perform the following steps at the transmitting station:

STEP	ACTION	VERIFICATION
1	Ensure that initial test setup described in paragraph 5.39 has been performed.	Display reads— TEST SEQ:
2	Enter 53.	Display reads— TEST SEQ: 53
3	Press GO.	Display reads (briefly)— SELECT ERROR TEST Display then reads— D=DT 0=SP 1=MK 2=2047 5=511 6=63

STEP	ACTION	VERIFICATION
4	Enter 5.	Display reads— 511 BIT ERROR TEST
5	Place data set in data mode.	On DTS, DSR indicator lights (data set ready lead ***on***) Display continues to read— 511 BIT ERROR TEST

5.56 After all instructions are performed and the test is complete, the ADTS gives this message: THE TEST RESULTS ARE (results). THE TEST TIME WAS (number of) MINUTES. DO YOU WANT TO RUN ANOTHER TEST?

5.57 The ADTS gives error message(s) as shown in paragraph 5.37 if the data set test was not performed successfully.

D. End-to-ADTS Error Run Test Using 914-Type DTS

Initial Test Setup for 914-Type DTS

5.58 Perform the initial test setup for the 914-type DTS when used to test DS 208B-type as shown in Fig. 3.

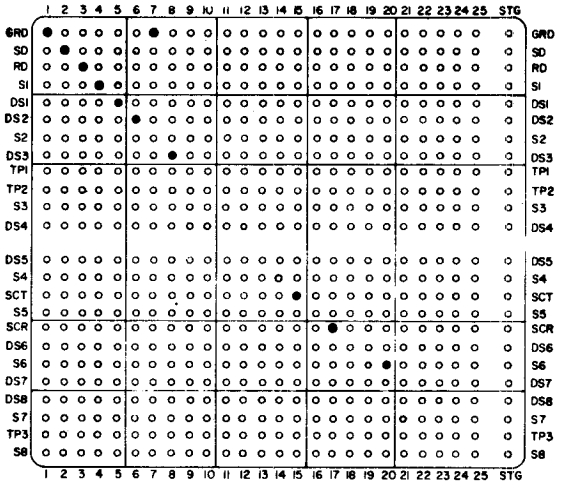
5.59 Repeat paragraphs 5.40 through 5.53 as for the error run test using the 921A DTS.

ADTS Transmitting Data

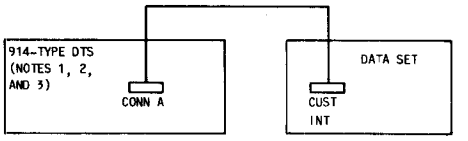
5.60 If the ADTS is to transmit to the data set, this message follows: ADTS TEST DATA TRANSMISSION WILL BE PRECEDED BY 30 SECONDS OF GOOD DATA FOLLOWED BY THE INJECTION OF 10 BIT ERRORS. Following this, the ADTS sends good data for the time specified.

5.61 During this initial period of data transmission, prepare the 914A data test set to receive the test data as indicated in the steps below. Receipt of bit errors is a positive indication that transmission is taking place. The time counter set in Step 8 must be shorter than the time requested for the ADTS test, since erroneous errors will be produced if the 914A DTS looks for data when none is being transmitted.

STEP	PROCEDURE
1	Remove programming pins from TP1-15 and TP2-2.
2	Insert programming pin at S3-20 and DS6-20.
3	Set COUNTER switch to BLOCK ERRORS 16 WL, (63-bit word) or 2 WL (511-bit word).
4	Apply power to the data set and then to the 914-type DTS.
5	Coordinate test procedure with transmitting end.
6	On the 914 DTS, move switch S3 (DTR) to ON.
7	Go to data mode.
8	Reset counter.



914-TYPE DTS MATRIX



NOTES:

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

SWITCH	SETTING
INTERFACE	
SELECTOR A	ALL DEPRESSED
INTERFACE MODE	VOLTAGE
TEST SET MODE	SER (914C) RCV SER (914B)
COUNTER	BLOCK ERRORS-2WL
FUNCTION	OFF
SAMPLE WIDTH	.5mS
RCV BIT RATE (914C)	EXT+
RCV WORD LENGTH (914C)	511
TRANSMIT BIT RATE (914C)	EXT+
TRANSMIT WORD LENGTH (914C)	511
SIG LEV (914C)	±4V
BIT RATE (914B)	EXT+
WORD LENGTH (914B)	511
SIGNAL LEVEL (914B)	±4V
S1	ON
S6	ON

2. INSERT RED PROGRAMMING PINS IN 914-TYPE DTS MATRIX IN POSITIONS INDICATED.
3. 914-TYPE SWITCHES CORRESPOND TO THE FOLLOWING INTERFACE LEADS:

SWITCH	LEAD	EIA
S1	REQUEST TO SEND (RS)	CA
S6	DATA TERMINAL READY (DTR)	CD

Fig. 3—End-to-ADTS Error Run Test Setup Using 914-Type DTS

STEP	PROCEDURE
9	Counter should count at least once and shortly thereafter the NO DATA lamp should illuminate.
10	Reset counter. The NO DATA lamp should extinguish.
11	Counter should record less than 30 counts (less than 30 block errors).
12	At end of 10-minute interval, go to talk mode and give results.
13	End of test. Return equipment to normal operating condition.

ADTS Receiving Data

5.62 If the ADTS is to receive data from the data set, perform the following steps at the transmitting station:

STEP	PROCEDURE
1	Remove programming pins from TP1-15, TP2-2, and RD-3.
2	Insert programming pin at SD-2, S3-20, and DS6-20.
3	Set TEST SET MODE to SER (914C) or TRMT SER (914B).
4	Apply power to the data set and then to the 914-type DTS.
5	Call the receiving end to coordinate test procedure.
6	On the 914 DTS, move switch S3 (DTR) to ON.
7	Go to data mode.
8	Set S1 (RS) to ON.
9	To verify equipment is operating properly, set switch S1 (RS) to OFF.
10	Set switch S1 (RS) to ON.
11	Conduct 10-minute error run.
12	At end of 10-minute interval, go to talk mode.
13	End of test. Return equipment to normal operating condition.

5.63 After all instructions are performed and the test is complete, the ADTS gives this message: THE TEST RESULTS ARE (results). THE TEST TIME WAS (number of) MINUTES. DO YOU WANT TO RUN ANOTHER TEST?

E. Repair Test

5.64 This test provides a method for isolating a data set trouble to a single circuit pack (CP). Table C lists the individual tests in the sequence in which they are to be performed, and also lists the associated CPs that might be defective if the test fails.

5.65 If the data set fails a test listed in Table C, proceed as follows:

(1) Refer to list of CPs associated with test that failed.

(2) Replace first CP in list and repeat test.

(3) If data set still fails test, restore original CP in data set.

(4) Continue replacing, testing, and restoring CPs in sequence in which they are listed until data set passes test. The last CP replaced is cause of trouble.

Note: If CP HG19, HG24, or HG25 is replaced, install correct options before proceeding.

TABLE C

REPAIR PROCEDURES

TEST	CP REPLACEMENT SEQUENCE		
	DS 208B-L1	DS 208B-L1A	DS 208B-L1B
Remote Test or End-to-ADTS Error Run Test	HG19 HG18 HG4 HG20 HG3 HG17 HG21 HG2 HG14 or HG14B HG22 HG15 or HG15B HG12 (No. 1) HG12 (No. 2) HG13 HG11 HG16 or HG16B HG5 HG6	HG24 HG18B HG4 HG20 HG3 HG17 HG21 HG2 HG14 or HG14B HG22 HG15 or HG15B HG12 (No. 1) HG12 (No. 2) HG13 HG11 HG16 or HG16B HG5 HG6	HG25 HG4 HG20 HG3 HG26 HG21 HG2 HG14B HG22 HG15B HG12 (No. 1) HG12 (No. 2) HG13 HG11 HG16B

(5) If all CPs have been replaced and cause of trouble has not been found, notify supervision.

6. REFERENCES

6.01 Additional information concerning the DS 208B-type and use of the ADTS is contained in the following publications:

SECTION	TITLE
107-101-100	914-Type Data Test Sets—Description and Operation
107-402-100	921A Data Test Set—Description and Operation
314-205-501	Data Systems—DATAPHONE® Service and Data Access Arrangements on Direct Distance Dialing Network—Test Requirements for Subscriber, Foreign Exchange, and Remote Exchange Lines
590-010-500	J1P005 Automatic Data Test System (ADTS)—Operation From Field Locations
592-030-100	Data Set 208B-Type Transmitter-Receiver—Description and Operation
592-030-150	Data Set 208B-Type Transmitter-Receiver—Supplementary Information
592-030-200	Data Set 208B-Type Transmitter-Receiver—Installation and Connections
592-030-500	Data Set 208B-Type Transmitter-Receiver—Test Procedures Using 914-Type Data Test Set
592-030-501	Data Set 208B-Type Transmitter-Receiver—Test Procedures Using 921A Data Test Set