

## J94024B (24B) LOOP CHECKER

### GENERATOR TESTS

CONTENTS	PAGE
1. GENERAL . . . . .	1
2. APPARATUS . . . . .	1
3. PREPARATION . . . . .	2
4. METHOD . . . . .	3

#### 1. GENERAL

**1.01** This section describes a method for testing the output levels and frequency limits of the 24B loop checker generator.

**1.02** This section is reissued for the following reasons:

- (a) To combine tests A, B, C, and D into one overall test A
- (b) To add an optional test B for frequencies at ends of sweep
- (c) To revise test procedure.

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

**1.03** The following tests are covered:

**A. Output Power Levels:** This test checks power output levels as described below.

(a) **Flat Output Level:** The flat output of the 24B generator is checked at the FLAT OUT CAL jack.

(b) **Shaped Output Level:** The shaped output is checked at the line link, connector bank, or final frame appearance and at the GEN OUT CAL jack of the loop checker generator.

(c) **Output Power at 1000-Hz End of Sweep:**

The output power at the 1000-Hz end of the sweep is checked. Verification of this requirement also indicates that the frequency at the low end of the sweep is within acceptable limits of  $\pm 200$  Hz of the nominal 1000-Hz frequency.

(d) **Output Power at 3000-Hz End of Sweep:**

The output power at the 3000-Hz end of the sweep is checked. Verification of this requirement also indicates that the frequency at the high end of the sweep is within acceptable limits of  $\pm 200$  Hz of the nominal 3000-Hz frequency.

**B. Frequencies at Ends of Sweep (Optional):**

This optional test is included for those who wish to check directly the frequencies at the ends of the sweep.

**1.04** The tests covered by this section must be performed in the sequence given.

**1.05** If the requirements of the tests covered by this section cannot be met, refer to Section 103-343-701 for adjustment procedures.

**1.06** All tests should be made at 3-month intervals or whenever the loop checker generator is suspected of being in trouble.

#### 2. APPARATUS

**2.01** The following apparatus is required for performing Test A.

- (a) J94023A (23A) Transmission Measuring Set
- (b) 2P4C Patching Cord Assembly consisting of a P2B cord 6 feet long and two 310 plugs
- (c) 3P28A Patching Cord Assembly consisting of a P3U cord 7 feet long, one 310 plug, and one 351A plug

## SECTION 103-343-501

(d) 2W17C Testing Cord Assembly consisting of a W2W cord 10 feet long, one 310 plug, one 360B and one 360C tool

(e) Two KS-6278 Connecting Clips for use with 2W17C Testing Cord Assembly

(f) Blocking tool for use and application as covered in Section 069-020-801

**2.02** The following apparatus is required only if it is desired to perform the optional Test B for the direct measurement of the frequencies at both ends of the sweep.

(a) J64072A (72A) Frequency Meter, or other frequency measuring device, with at least 25,000 ohms input impedance and 0.5-volt sensitivity, capable of measuring frequencies

between 500 Hz and 3500 Hz to an accuracy of  $\pm 1.0$  percent

(b) 3P17A Patching Cord Assembly consisting of a P3N cord 3 feet long, one 310 plug, and one 241A plug

(c) 2P4C Patching Cord Assembly consisting of a P2B cord 6 feet long and two 310 plugs

(d) Testing cord, one end equipped with a 310 plug and the other end equipped as required for connection to a frequency measuring device other than the 72A frequency meter

(e) Multiple box consisting of three 238A jacks wired in parallel (tip to tip, ring to ring, sleeve to sleeve)

## 3. PREPARATION

STEP	ACTION	VERIFICATION
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### Test A and optional Test B

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|---|---|--|
| 1 | Calibrate the 23A TMS in accordance with Section 102-223-100. |  |
| 2 | Set the DIAL MEAS SLV key to MEAS.                            |  |
| 3 | Set the INPUT switch to 900.                                  |  |

### Optional Test B

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| 4 | Connect the 72A frequency meter power cord to the 115-volt ac supply. Operate the power switch to ON and allow a five-minute warmup period. |  |
| 5 | Calibrate the 72A frequency meter in accordance with Section 103-425-100.   |  |
| 6 | Set the CAL MEAS SEARCH switch to MEAS.   |  |

**Note:** If using other frequency measuring equipment, prepare equipment for use and allow necessary warmup period.

## 4. METHOD

## STEP

## ACTION

## VERIFICATION

## A. Output Power Levels

*Flat Output Level*

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|---|---|---|
| 4 | At the loop checker generator—<br>Observe that the FREQ CHK switch is in the OPR position.  |   |
| 5 | Connect the MEAS jack of the 23A TMS to the FLAT OUT CAL jack of the loop checker generator using a 2P4C cord assembly. Record the average reading. | 23A TMS should show an average reading of $-8.4 \pm 0.1$ dBm, or between $-8.3$ and $-8.5$ dBm. |
| 6 | Observe the meter of the TMS for at least 30 seconds.   | Deviation from average reading in Step 5 should be less than $\pm 0.1$ dB.                      |
| 7 | Remove the test cord from the FLAT OUT CAL jack.  |   |

*Shaped Output Level*

- |    |   |  |
|----|---|--|
| 8  | At the line link, connector bank, or final frame—<br>Connect the MEAS jack of the 23A TMS to the line link, connector bank, or final frame appearance of a test line per SD-98100-01 associated with the loop checker generator using a 3P28A or 2W17C cord assembly. |  |
| 9  | Block the OS relay of the test line being used operated.  |  |
|    | <b>Caution:</b> <i>It is important that only the OS relay associated with the test line being used is blocked operated.</i>   |  |
| 10 | Find the value of the office loss marked on the front panel of the loop checker generator. If it is missing, refer to Section 103-343-701 for method of determining office loss. Let this value be represented by X.  |  |

**Note:** The office loss X is always a positive number. For example, when the office loss is 0.7 dB,  $X = +0.7$ .

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| 11 | Operate and hold the LEV CHK switch of the loop checker generator until a TMS reading | 23A TMS should show an average reading of X dB higher than $-0.5$ dBm within limits of |
|----|---|--|

## SECTION 103-343-501

STEP	ACTION	VERIFICATION
	is obtained. Record the average reading.	$\pm 0.2$ dB. <b>Examples:</b> (1) If $X = 0.7$ dB, then $-0.5 + 0.7 = +0.2$ dBm. 23A TMS should read $+0.2 \pm 0.2$ dBm or between 0.0 and $+0.4$ dBm.  (2) If $X = 0.3$ dB, then $-0.5 + 0.3 = -0.2$ dBm; 23A TMS should read $-0.2 \pm 0.2$ dBm or between $-0.4$ and 0.0 dBm.
12	Remove test cord from test line appearance and from the MEAS jack of the TMS.	
13	Remove blocking tool from test line OS relay.	
14	At the loop checker generator— Connect the MEAS jack of the 23A TMS to the GEN OUT CAL jack of the loop checker generator using a 2P4C cord assembly.	
15	Operate and hold the LEV CHK switch of the loop checker generator until a TMS reading is obtained. Record the reading.	TMS should read up to 0.5 dB higher than average reading obtained in Step 11.

### ***Output Power at 1000-Hz End of Sweep***

16	Operate the FREQ CHK switch on the loop checker generator to 1000 ~.	
17	If there is a locking nut on the R74 control, remove and discard it. Turn the R74 control on the loop checker generator fully clockwise. Then <b>slowly</b> turn R74 in a counterclockwise direction until the TMS indicates a minimum (LEV CHK switch not operated). This is a critical adjustment and should be repeated several times to be sure that the true minimum is noted. After the test, R74 may be left in any position, since it is in the circuit only during this test.	TMS should read 5.5 to 6.1 dB less power than the reading recorded in Step 15.

### ***Output Power at 3000-Hz End of Sweep***

18	Operate the FREQ CHK switch on the loop checker generator to 3000 ~.	
19	Turn the R75 control on the loop checker generator fully counterclockwise. Then <b>slowly</b> turn R75 in a clockwise direction until the TMS indicates a maximum (LEV CHK switch not operated). This is a critical adjustment and should be repeated several	TMS should read 2.1 to 3.5 dB more power than the reading recorded in Step 15.

STEP	ACTION	VERIFICATION
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times to be sure that the true maximum is noted. After the test, R75 may be left in any position, since it is in the circuit only during this test.

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| 20 | Remove the test cord from the GEN OUT CAL jack of the loop checker generator.  |  |
| 21 | Restore the FREQ CHK switch on the loop checker generator to its OPR position. |  |

**B. Frequencies at Ends of Sweep (Optional)**

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|---|--|--|
| 7 | Connect the GEN OUT CAL jack of the 24B generator to one of the jacks of the multiple box using a 2P4C patching cord assembly.   |  |
| 8 | Connect the MEAS jack of the 23A TMS to the second jack of the multiple box using a 2P4C patching cord assembly.   |  |
| 9 | If the 72A frequency meter is used, connect the BRDG IN jack of the frequency meter to the third jack of the multiple box using a 3P17A patching cord assembly. Operate the controls of the 72A frequency meter to produce a deflection pattern approximately one inch square. |  |

**Note:** If other frequency measuring equipment is used, connect its input to the third jack of the multiple box.

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| 10 | Operate the FREQ CHK switch to its 1000 ~ position. |  |
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| 11 | Starting with the R74 control in its maximum clockwise position, adjust it for a minimum reading on the transmission measuring set. This is a critical adjustment and must be held as close to the minimum value as possible until a frequency measurement is determined with the frequency measuring equipment. After the test, R74 may be left in any position, since it is in the circuit only during this test. |  |
|----|---|--|

Frequency shall be  $1000 \pm 200$  Hz.

- |    |   |  |
|----|---|--|
| 12 | Operate the FREQ CHK switch to its 3000 ~ position. |  |
|----|---|--|

- |    |   |  |
|----|---|--|
| 13 | Starting with the R75 control in its maximum counterclockwise position, adjust it for a maximum reading on the transmission measuring |  |
|----|---|--|

Frequency shall be  $3000 \pm 200$  Hz.

## SECTION 103-343-501

STEP	ACTION	VERIFICATION
	set. This is a critical adjustment and must be held as close to the maximum value as possible until a frequency measurement is determined with the frequency measuring equipment. After the test, R75 may be left in any position, since it is in the circuit only during this test.	
14	Remove the test cord from the GEN OUT CAL jack of the 24B generator.	
15	Restore FREQ CHK switch on the 24B generator to its OPR position.	