

**2600-HZ E3C OR E4C SINGLE-FREQUENCY SIGNALING CIRCUIT
OUT-OF-SERVICE TESTS USING TESTING CIRCUIT
SD-96519-01 OR SD-96519-02**

1. GENERAL	PAGE
<p>1.01 This section describes methods of making out-of-service tests of 2600-Hz single-frequency signaling circuits per SD-99767-01 using testing circuits per SD-96519-01 or SD-96519-02. It also describes methods of making potentiometer adjustments to correct for changes in the characteristics of some circuit elements. If the requirements of this section cannot be met after readjustment of potentiometers or relays, the units should be returned to a repair center, since special techniques are involved in testing and clearing trouble in some of the components.</p> <p><i>Note:</i> 303-type relays shall be maintained in an upright position for not less than one minute before any test is begun.</p> <p>1.02 This section is reissued to make corrections in Parts 3 and 4 of the section. This reissue does not affect the Equipment Test List.</p> <p>1.03 The tests covered are:</p>	
<p>A. Pulsing of Transmitter A Relay: This test checks that the A relay is properly following pulses and that the pulse corrector and cut circuit are functioning properly.</p>	6
<p>B. Hold of B Relay: This test checks the B relay release time.</p>	7
<p>C. Transmitted Tone Level: This test checks the level of the transmitted single-frequency tone.</p>	9
<p>D. Cut-Off Voltage of Q9 Transistor: This test checks that the Q9 transistor is not conducting when there is no signal input.</p>	9
<p>E. Test of 4-Wire Terminating Circuit, Gain of Receiver Voice Amplifier, Blocking of Amplifier, and Insertion of Band-Elimination Network: The following features are checked: (1) transmission loss from 2-wire to 4-wire transmit and adjustment of TRNS potentiometer (2) transmission loss from 4-wire receive to 2-wire and adjustment of RCV potentiometer (3) transhybrid loss from 4-wire receive to 4-wire transmit (4) blocking of the voice amplifier by the received signal frequency and insertion of band-elimination network.</p>	10
<p>F. Operate Sensitivity of Receiver Signaling Amplifier: This test checks the receiver sensitivity and describes its adjustment by means of the SS potentiometer.</p>	13
<p>G. Timing of Receiver R and RG Relays: This test checks the operate and release of the R and RG relays.</p>	15
<p>H. Receiver Guard Action: This test checks the receiver guard circuit in limiting operation by voice signals.</p>	16
<p>1.04 The 13A or the J94021A (21A) transmission measuring set is referred to in this section as the TMS.</p>	
<p>1.05 The dial switch on the 13A TMS or the DET INPUT switch on the 21A TMS is referred to in this section as the TMS attenuator switch. The specific settings of the TMS attenuator switch are not given in the procedure unless necessary to prevent overload and possible damage to the instrument. The proper setting will be that which results in an on-scale reading on the TMS meter and will depend upon whether the 13A or</p>	

SECTION 179-353-501

21A TMS is used and the specific value to be measured.

1.06 The 2B signaling test set is referred to in this section as 2B test set.

1.07 The J98613AY test panel (SD-96519-01 or SD-96519-02) is referred to in this section as test circuit. KEYERS switch 1 and RECEIVER switch 2 on this panel are referred to as SW1 and SW2, respectively. Jacks and keys mentioned in this practice are part of the test circuit unless otherwise specified.

1.08 Make percent break adjustments of the 2B test set slowly above 70 percent to prevent pulsing out incorrect values. Incorrect values will be obtained if the rate of vibration of the PERCENT BREAK meter pointer is not the same as that of the PULSES PER SECOND meter pointer. To restore correct percent break values, turn the ADJ % BK control counterclockwise until both pointers are vibrating at the same rate, turn the control slowly clockwise until the desired percent break value is obtained. It may also be necessary to change the coarse ADJ % BK control from S, M, or L setting to obtain the desired range on the PERCENT BREAK meter.

1.09 Lettered Steps: A letter a, b, c, etc, added to a step number in Part 3 or 4 of this section indicates an action which may or may not be required depending on local conditions. The condition under which a lettered step or a series of lettered steps should be made is given in the ACTION column, and 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.

1.10 A brief test may be used to check new or modified units prior to placing them in service. The brief test is to be used only when it is reasonably certain that units have not suffered damage. These limited tests are not extensive enough to assure that a unit will meet all requirements; however, they provide a reasonable degree of assurance of proper operation. If the unit fails to meet these test requirements, a complete test must be performed. Brief test steps in this section are designated with a bullet mark (●) preceding the steps in Tests A, E, F, G, and PREPARATION.

2. APPARATUS

2.01 The apparatus required for each test is shown in Table A. The details of each item are covered in the paragraph indicated by the number in parentheses.

TABLE A

APPARATUS	TESTS							
	A	B	C	D	E	F	G	H
Test Circuit (2.02)	1	1	1	1	1	1	1	1
2B Test Set (2.03)	1	1	-	1	-	-	1	-
TMS (2.04)	1	-	1	-	1	1	-	1
Cord (2.05)	1	1	-	-	-	-	1	-
Cord (2.06)	1	1	-	-	-	-	1	-
Cord (2.07)	-	-	-	1	-	-	-	-
Cord (2.08)	1	-	1	-	1	1	-	1
Cord (2.09)	1	-	-	-	-	-	-	-
258D (dummy) Plug	1	1	-	-	-	-	1	-
Screwdriver, R-8210	-	-	-	-	1	1	-	-
Tool (2.10)	1	1	1	1	1	1	1	1
Blocking Tool (2.11)	✓	-	-	-	✓	-	-	-

✓ As required

2.02 Test circuit, J98613AY (SD-96519-01 or SD-96519-02) including folding test fixture J98613AC.

2.03 2B test set, J64730B (SD-56134-02) W option or later includes power cords and patch cords for E and M leads (2P1D and 2P3B cords).

2.04 The 13A or the J94021A (21A) transmission measuring set (TMS). The 21A TMS must be used if the test circuit is mounted in a REVERTIVE-TERMINATING bay.

- 2.05** Patching cord, P2A cord, 6 feet long, equipped with two 347A plugs (2P1D cord). in a REVERTIVE-TERMINATING bay, two 3P17B cords are required.
- 2.06** Patching cord, P2A cord, 6 feet long, equipped with two 347B plugs (2P3B cord). **2.09** Testing cord, 2 feet long, equipped with 8-pin (male) Jones plug, KS-8585 L10 and 347 plug (P1P cord).
- 2.07** Patching cord, P3E cord, 6 feet long, equipped with two 310 plugs (3P7A cord). **2.10** 725A tool, used to gain mechanical advantage in prying loose the signaling units from connectors.
- 2.08** Testing cord for 13A TMS, W2DL cord, 6 feet long, equipped with a 310 plug and two 35 cord tips (2W42A cord); for 21A TMS, P3N cord, 6 feet long, equipped with a 241A plug and 310 plug (3P17B cord). If test circuit is mounted **2.11** Blocking and insulating tools, as required. Use tools and apply as covered in Section 069-020-801.

3. PREPARATION

STEP	ACTION	VERIFICATION
------	--------	--------------

All Tests

- 1 At test circuit—
Set all keys to normal position before starting any tests.

Note: The twist keys in the test circuit are operated when the white line is in the vertical position and normal when the white line is in the horizontal position.
- 2 Obtain release of signaling circuit in accordance with approved procedures.
- 3 Using 725A tool as shown in Fig. 1 or 2, remove signaling unit from its in-service position.
- 4 Plug signaling unit into folding test fixture.
- 5 Set SF key of testing circuit to 2600.
- 6 Operate 2-WIRE key.
- 7a If test circuit is mounted in a REVERTIVE-TERMINATING bay, J98613AP—
Turn CT key to operate position.

Tests A, C, E, F, and H

Note: The tip or ring of line transmit terminals must not be connected to ac or dc ground. See SD-99767-01.

STEP	ACTION	VERIFICATION
-------------	---------------	---------------------

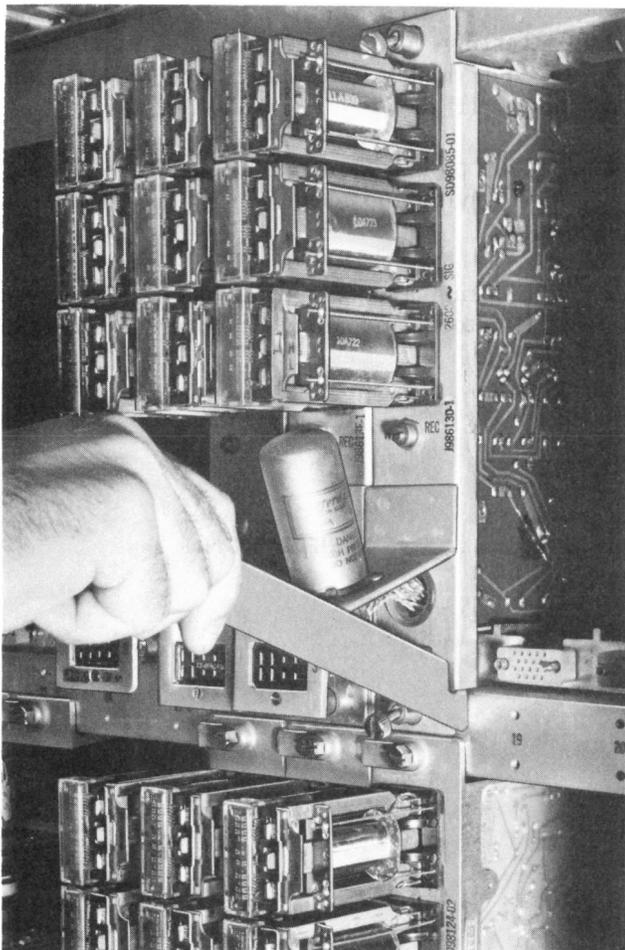


Fig. 1—Method of Removal of Fabricated Chassis

- | | | |
|------|---|---|
| ● 8 | Connect 2W42A cord to IN terminals of 13A TMS or 241A plug of 3P17B cord to DET IN jack of 21A TMS. | |
| ● 9 | TMS should be known to be correctly calibrated. | |
| ● 10 | Connect TMS cord to SF SUP jack of test circuit. | ▶TMS indicates between -14.6 and -16.1 dB.▶ |
| ● 11 | Set TMS attenuator switch to 0. | |
| ● 12 | Disconnect plug from SF SUP jack, connect to AMP OUT jack of test circuit. | |
| ● 13 | Set SW2 to position 2. | TMS indicates 0 dB.
See Step 14b. |

STEP	ACTION	VERIFICATION
------	--------	--------------

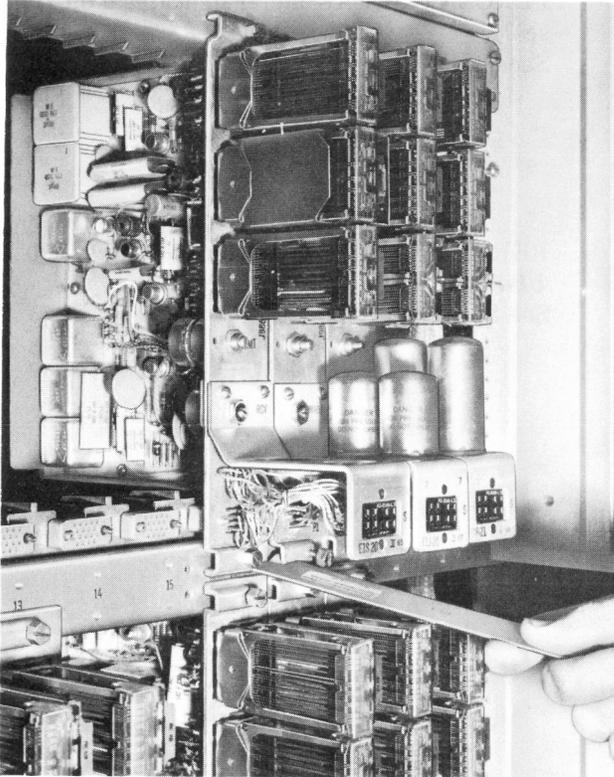


Fig. 2—Method of Removal of Die-Cast Chassis

- 14b If requirement of Step 13 is not met—
Adjust gain control of MON AMPL to give reading of exactly 0 dB.
- 15 Disconnect plug from AMP OUT jack, connect to TMS jack of test circuit.

Tests A, B, D, and G

- 16 Using 2P3B and 2P1D cords, patch E and M jacks of test circuit to E and M jacks of 2B test set.
 - 17 On 2B test set—
Set all keys to normal position.
 - 18 Set SCALE SEL switch to PPS.
 - 19 Plug power cords of 2B test set into A and B jacks of test circuit.
- After 1 minute, PULSES PER SECOND meter reads other than 0.

SECTION 179-353-501

STEP	ACTION	VERIFICATION
● 20	Operate CONT PLS key to DIAL PLS.	PERCENT BREAK meter indicates 0 on <i>black</i> scale. See Step 21c.
● 21c	If requirement of Step 20 is not met— Adjust pointer adjustment screw of PERCENT BREAK meter to obtain 0 reading.	
● 22	Insert 258D plug into P jack. <i>Note:</i> Repeat Steps 22, 23d, and 24 if test extends beyond 30 minutes.	PERCENT BREAK meter indicates 100 on <i>black</i> scale. See Step 23d.
● 23d	If requirement of Step 22 is not met— Unlock CAL % BK control, adjust to obtain reading of 100 on <i>black</i> scale of PERCENT BREAK meter and relock control taking care not to change 100 reading. <i>Note:</i> The proper performance of the test covered in this section depends upon the correct pulse-per-second calibration and the range of the 2B test set. See Section 100-263-501 for calibration if accuracy is not known.	
● 24	Remove 258D plug.	
● 25	Restore CONT PLS key to normal.	

4. METHOD

STEP	ACTION	VERIFICATION
A. Pulsing of Transmitter A Relay		
● 26	On 2B test set— Restore all keys to normal.	
● 27	On test circuit— Set SW1 to position 7, SW2 to position 1.	
● 28	On 2B test set— Adjust ADJ PPS control to 10 PPS on PULSES PER SECOND meter (0 to 20 scale).	
● 29	With coarse ADJ % BK switch on M— Adjust ADJ % BK control to 55 on <i>black</i> scale of PERCENT BREAK meter.	
● 30	Operate TWD L key to OFF HK, then PLS and MEAS % BK keys to LINE.	PERCENT BREAK meter indicates 55 on <i>black</i> scale. See Step 31e.

STEP	ACTION	VERIFICATION
● 31e	If requirement of Step 30 is not met— Adjust M potentiometer of testing circuit to 55 on black scale of PERCENT BREAK meter.	
● 32	Adjust ADJ % BK control to 45 on black scale of PERCENT BREAK meter.	
● 33	On test circuit— Set SW1 to position 2.	
● 34	Operate E1C 1 and E1C 2 keys.	
● 35	Press MIN LP key and hold.	A relay pulses, B relay is operated.
● 36	Simultaneously press TMS A and TMS B keys. Note: ♦The readings in verification depend upon the TRNS potentiometer for a -16 dBm TLP. See Test E, Steps 16 through 21.♦	♦For E3C units TMS indicates between -14 and -20 dB with pulsating swings. For E4C units TMS indicates between -26 and -31 dB with pulsating swings.♦
● 37	Release MIN LP, TMS A, and TMS B keys.	
38	Set SW1 to position 7.	
39	On 2B test set— Adjust ADJ % BK control to 70 on black scale of PERCENT BREAK meter.	
40	On test circuit— Set SW1 to position 2.	
41	Press MAX LP key and hold.	A relay pulses, B relay is operated.
42	Simultaneously press TMS A and TMS B keys.	♦For E3C units TMS indicates between -13 and -19 dB with pulsating swings. For E4C units TMS indicates between -25 and -30 dB with pulsating swings.♦
43	Release MAX LP, TMS A, and TMS B keys.	
44	Restore E1C 1 and E1C 2 keys.	
45	On 2B test set— Restore keys to normal.	

B. Hold of B Relay

- | | | |
|----|--|--|
| 26 | On test circuit—
Set SW1 and SW2 to position 1. | |
|----|--|--|

SECTION 179-353-501

STEP	ACTION	VERIFICATION
27	On 2B test set— Adjust ADJ PPS control to 3 pps on PULSES PER SECOND meter.	
28	With coarse ADJ % BK control on L— Adjust ADJ % BK control to 80 on <i>black</i> scale of PERCENT BREAK meter.	
29	Operate TWD L key to OFF HK; PLS and MEAS % BK keys to LINE.	
30	On test circuit— Operate E1C 1 and E1C 2 keys.	
31	Press MAX LP key.	A relay pulses while B relay remains operated. Observe that S lamp remains lighted. See Step 33e.
32	Release MAX LP key.	A and B relays are released. S lamp is extinguished. See Step 33e.
33e	If requirements of Steps 31 and 32 are not met— Mechanical and electrical requirements should be checked and Steps 27 through 32 repeated if any adjustments are made.	
34	On 2B test set— Restore PLS and MEAS % BK keys to normal.	
35	On test circuit— Press MAX LP key.	A and B relays are operated.
36	Release MAX LP key, observe A and B relays. <i>Note:</i> Steps 35 and 36 may be repeated in order to observe release time of B relay.	A relay is released. In less than 1 second— B relay should release. See Step 37f.
37f	If requirements of Step 36 are not met— Check requirements of B relay and repeat Steps 27 through 36 if any adjustments are made.	
38	On 2B test set— Restore TWD L key to normal.	
39	Adjust ADJ % BK control to 20 on <i>black</i> scale of PERCENT BREAK meter.	

STEP	ACTION	VERIFICATION
40	On test circuit— Restore E1C 1 and E1C 2 keys to normal.	
41g	If no other tests are to be made— Remove all cords, restore all keys to normal, and return signaling unit to service or spare position.	
C. Transmitted Tone Level		
16	On test circuit— Operate E1C 1 and E1C 2 keys.	
17	Set SW1 to position 3, SW2 to position 1.	
18	Simultaneously press TMS A and TMS B keys.	TMS indicates between -35 and -37 dB.
19	Release TMS A and TMS B keys.	
20	Set SW1 to position 4.	
21	Simultaneously press TMS A, TMS B, and MAX LP keys.	A and B relays operated. TMS indicates less power than -45 dBm.
22	Release TMS A, TMS B, and MAX LP keys.	
23	Set attenuator switch of TMS to 20.	
24	Simultaneously press TMS A and TMS B keys.	
25	◆ While TMS A and TMS B keys are still operated, manually operate B relay.◆	TMS indicates between -22 and -25 dB.
26	Release TMS A and TMS B keys and B relay.	
27	Restore E1C 1 and E1C 2 keys to normal.	
28c	If no other tests are to be made— Remove all cords, restore all keys to normal, and return signaling unit to service or spare position.	
D. Cut-Off Voltage of Q9 Transistor		
26	On test circuit— Set SW1 to position 5, SW2 to position 1.	
27	Using 3P7A cord, patch between SENS 1 jack and VM jack on 2B test set.	
28	On 2B test set— Set SCALE SEL switch to 20V.	VOLTS meter of 2B test set indicates no more than 0.8 volts.

SECTION 179-353-501

STEP	ACTION	VERIFICATION
29	Remove patch between SENS 1 jack and VM jack.	
30	On 2B test set— Set SCALE SEL switch to PPS.	
31e	If no other tests are to be made— Remove all cords, restore all keys to normal, and return signaling unit to service or spare position.	
E. Test of 4-Wire Terminating Circuit, Gain of Receiver Voice Amplifier, Blocking of Amplifier, and Insertion of Band-Elimination Network		
2-Wire to 4-Wire Loss		
● 16	Operate 1000~ A key.	
● 17	Set SW1 to position 5, SW2 to position 2.	
● 18	Operate BAT LP key to LP.	
● 19	Operate LP CUR 1 key.	A and B relays are operated.
● 20	Set attenuator switch of TMS to 10 or 15, as required, depending on specified value for signaling unit.	
● 21	On test circuit— Simultaneously press TMS A and TMS B keys.	TMS indicates specified value shown for signaling unit on trunk layout record minus 0.2 dB.
22	Adjust TRNS potentiometer of signaling unit fully counterclockwise.	TMS indicates -40 dBm or less power.
23	Set attenuator switch of TMS to 10.	
24	Adjust TRNS potentiometer of signaling unit fully clockwise.	TMS indicates -13 dBm or greater power.
25	Set attenuator switch of TMS to 10 or 15, as required, depending on specified value for signaling unit.	
26	Adjust TRNS potentiometer of signaling unit for specific 2-wire to 4-wire loss.	TMS indicates specified value shown for signaling unit on trunk layout record minus 0.2 dB.
27	While pressing TMS A and TMS B keys, restore LP CUR 1 key to normal.	A and B relays are released. TMS indicates -45 dBm or less power.

STEP	ACTION	VERIFICATION
● 28	Operate LP CUR 1 key.	A and B relays are operated.
● 29	Release TMS A and TMS B keys.	
● 30	Restore 1000~ A key to normal.	
4-Wire to 2-Wire Loss		
● 31	Set attenuator switch of TMS to 5 or 10.	
● 32	On test circuit— Operate 1000~ B key.	TMS indicates specified value shown for signaling unit on trunk layout record plus 0.2 dB.
	<i>Note:</i> Minor adjustments of RCV potentiometer of less than 1 dB may be made to meet overall trunk net loss requirements.	
33	Set RCV potentiometer of signaling unit fully counterclockwise.	TMS indicates -39 dBm or less power.
34	Set attenuator switch of TMS to 0 (red scale).	
35	Adjust RCV potentiometer to full clockwise position.	TMS indicates $+1$ dBm or greater power.
36	Adjust RCV potentiometer to obtain exactly 0 dB.	TMS indicates 0 dB.
37	Operate RG relay on signaling unit by hand.	TMS indication should not be less than -1.0 dB.
38	Release RG relay.	
39	On test circuit— Press TMS A and TMS B keys simultaneously.	TMS indication drops to between -11 and -18 dB.
40	◆Operate 2W TER key.◆	◆TMS indicates at least 15 dB less than indication shown in Step 39.◆
41	◆Restore 2W TER key to normal.◆	
42	Release TMS A and TMS B keys.	
43	Set attenuator switch of TMS to 0.	
44	On test circuit— Restore LP CUR 1 and 1000~ B keys to normal.	A and B relays are released.
45	Set SW1 to position 6, SW2 to position 4.	

SECTION 179-353-501

STEP	ACTION	VERIFICATION
46	Set ATT attenuator to 10.	TMS indicates 0 ± 0.2 dB. See Step 47e.
47e	◆If requirement of Step 46 is not met— Adjust gain potentiometer of TEST AMPL to obtain reading of 0 dB.◆	
48	Set SW1 to position 5, SW2 to position 3.	
49	Operate LP CUR 1 key.	A and B relays are operated.
50	Block RG relay of signaling unit nonoperated.	
51	On test circuit— Set SW1 to position 6.	TMS indicates -36 dBm or less power.
52	Remove blocking tool from RG relay.	◆RG relay is operated. See Step 53f.◆
53f	◆If RG relay does not operate— Perform Test F, then repeat Steps 45 through 52, before continuing with this test.◆	
54	On test circuit— Restore LP CUR 1 key to normal.	A and B relays are released. TMS indicates -30 dBm or less power.
55g	If the test circuit is in a REVERTIVE-TERMINATING bay and the CT key is operated (see Step 7a of PREPARATION), but the requirement of Step 54 is not met— A TMS reading of -28 dBm or less power is satisfactory.	
56h	◆If the requirement of Step 55g is not met— Adjust the oscillator of the 21A TMS to 2600 ± 10 Hz, at a level of -15.6 dBm, and connect it to the SF TST jack.◆	TMS indicates -30 dBm or less power.
57	Set SW1 to position 5, SW2 to position 2.	RG relay is released.
58	Set attenuator switch of TMS to 0.	
59	On test circuit— Operate LP CUR 1 key.	A and B relays are operated.
60	Operate 1000~B key.	TMS reads 0 dB.
61	Adjust RCV potentiometer of signaling unit for specific 4-wire to 2-wire loss.	TMS indicates specified value shown for signaling unit on trunk layout record plus 0.2 dB.

STEP	ACTION	VERIFICATION
	<i>Note:</i> Minor readjustments of RCV potentiometer of less than 1 dB may be made to meet overall trunk net loss requirements.	
62	On test circuit— Restore LP CUR 1 and 1000~B keys to normal, BAT LP key to BAT.	A and B relays are released.
63	Set SW2 to position 4.	
64i	If no other tests are to be made— Remove all cords, restore all keys to normal, and return signaling unit to service or spare position.	

F. Operate Sensitivity of Receiver Signaling Amplifier

● 16	Set attenuator switch of TMS to 0.	
● 17	On test circuit— Set SW1 to position 6, SW2 to position 4.	
● 18	Set ATT attenuator to 10.	TMS indicates 0 ± 0.2 dB. See Step 19c.
● 19c	If requirement of Step 18 is not met— Adjust gain control of TEST AMPL for 0 dB reading on TMS.	
● 20	Set ATT attenuator to 34.	
● 21	Change SW2 to position 3.	RG relay should not operate. See Step 22d.
22d	If RG relay does operate— Adjust SS potentiometer of signaling unit slightly counterclockwise until RG relay releases.	RG relay is released.
● 23	Set ATT attenuator to 32.	RG relay is operated. See Step 24e.
24e	If RG relay does not operate— Increase setting of SS potentiometer until it just operates.	
25e	Repeat Steps 20 through 23 until the requirements of Steps 21 and 23 are met, starting with SW2 in position 4.	
26	Set ATT attenuator to 40.	RG relay is released.
27	Set SW1 to position 5.	

SECTION 179-353-501

STEP	ACTION	VERIFICATION
-------------	---------------	---------------------

28f	If no other tests are to be made— Remove all cords, restore all keys to normal, and return signaling unit to service or spare position.	
-----	--	--

G. Timing of Receiver R and RG Relays

Note: Timing of R and RG relays depends upon proper adjustment of the SS potentiometer. Perform Test F first if the setting of the SS potentiometer is unknown.

- 26 On 2B test set—
Adjust ADJ PPS control to 10 PPS on PULSES PER SECOND meter (0 to 20 scale).
- 27 With coarse ADJ % BK switch on M—
Adjust ADJ % BK control for 55 on **black** scale of PERCENT BREAK meter.
- 28 On test circuit—
Set SW1 to position 7.
- 29 On 2B test set—
Operate TWD L key to OFF-HK; then PLS and MEAS % BK keys to LINE.
- 30e If requirement of Step 29 is not met—
Adjust M potentiometer of testing circuit to 55 on **black** scale of PERCENT BREAK meter.
- 31 Set ATT attenuator to 11.
- 32 On 2B test set—
Adjust ADJ % BK control to 40 on **black** scale of PERCENT BREAK meter.
- 33 Turn ADJ PPS control counterclockwise to 3 PPS on PULSES PER SECOND meter.
- 34 On test circuit—
Set SW1 to position 8, SW2 to position 3.

PERCENT BREAK meter indicates 55 on **black** scale.
See Step 30e.

RG relay should not pulse uniformly, but should pulse intermittently as indicated by intermittent readings of greater than 0 on PERCENT BREAK meter **red** scale.
See Step 35f.

Adjust OT

35f	If requirement of Step 34 is not met— On signaling unit— Turn OT potentiometer fully counterclockwise	
-----	---	--

Intermittent readings on PERCENT BREAK meter **red** scale of greater than 0.

STEP	ACTION	VERIFICATION
	and then turn clockwise until RG relay just pulses intermittently.	
	Note: ♦If this step was performed as a result of performing brief tests on new or modified E4C units, Steps 36 through 41g should also be performed due to the interaction between the OT and RT potentiometer settings.♦	
Adjust RT		
36	On test circuit— Set SW1 to position 7.	
37	On 2B test set— Adjust ADJ PPS control to 10 PPS on PULSES PER SECOND meter.	
38	Adjust ADJ % BK control very slowly to 80 on black scale of PERCENT BREAK meter.	
39	Turn ADJ PPS control counterclockwise to 3 PPS on PULSES PER SECOND meter.	
40	On test circuit— Set SW1 to position 8.	PERCENT BREAK meter indicates 20 to 26 on red scale. See Step 41g.
41g	If requirement of Step 40 is not met— On signaling unit, turn RT potentiometer fully counterclockwise then turn clockwise until 24 is obtained.	

Ringback Response

42	Set SW1 switch to position 7.	
43	On 2B test set— Adjust ADJ % BK control to 21 on black scale.	
43	On test circuit— Set SW1 switch to position 8.	PERCENT BREAK meter indicates more than 18 on red scale.
44	Set SW1 switch to position 7.	
45	On 2B test set— With coarse ADJ % BK control on L— Adjust ADJ % BK control to 39 on black scale.	

SECTION 179-353-501

STEP	ACTION	VERIFICATION
46	On test circuit— Set SW1 switch to position 8.	PERCENT BREAK meter indicates less than 42 on <i>red</i> scale.
47	◆On 2B test set Restore all keys to normal.◆	
48h	If no other tests are to be made on this unit— Restore all keys to normal and return signaling unit to service or spare position.	

H. Receiver Guard Action

16	On test circuit— Set SW1 to position 5, SW2 to position 6.	TMS indicates between -18.5 and -19.5 dB.
17	Set ATT attenuator to 26.	
18	Set SW2 to position 5.	RG relay remains released.
19	Set SW1 to position 6.	RG relay remains released.
20	Set SW1 to position 5.	
21	Change ATT attenuator to 19.	
22	Set SW1 to position 6.	RG relay is operated.
23	Set SW1 to position 5.	RG relay is released.
24	Restore all keys to normal and return signaling unit to service or spare position.	