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**STABILIZER, SWITCH CONTROL, AND PRIMARY DISTRIBUTION BUS OUTPUT  
GROUP PILOT SUPPLIES J68857S AND J68857W  
GROUP AND SUPERGROUP PILOT SIGNALS  
ANALOG MULTIPLEX TERMINAL EQUIPMENT**

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This section provides test procedures:

- (a) To adjust the 104.08-kHz outputs of the stabilizer and switch control circuits
- (b) To measure the 104.08-kHz output signal at the primary distribution bus.

This section is reissued to correct errors and to expand the test procedure explanations. Arrows are used to indicate significant changes. **Equipment Test Lists are not affected.**

The 104.08-kHz pilot supply stabilizer and switch control circuits provide amplitude stabilization, protection, and distribution of the 104.08-kHz group pilot signal.

**Pilot Supply J68857W:** This pilot supply (Fig. 1), used primarily in LMX-1 applications, consists of an auxiliary frequency supply panel and a List 1 J68857S pilot supply. Two 4-kHz input signals are supplied to the auxiliary frequency supply. The 204-kHz and 100-kHz signals from the 4-kHz harmonic generators are filtered and applied to two identical pilot generators. The pilot generator divides and combines the incoming 204-kHz and 100-kHz signals to produce the 104.08-kHz pilot signal. The pilot signal is amplitude-stabilized and applied to an automatic protection switch which provides an automatic transfer to the standby generator in case the regular generator fails. The output signal from the switching circuit is supplied to a three-tap resistive primary distribution bus.

**Pilot Supply J68857S:** ♦This supply is used in LMX-2 applications and the operation is identical to the J68857W supply except for the 204-kHz and 100-kHz input signals. The input signals for a List 1 supply (Fig. 2) are obtained from the J68857D or J68857N intermediate frequency supply. The test jacks for the supply are located in carrier test panel J68857J (Fig. 3). The input signals for the J68857S List 3 supply (Fig. 4) are obtained from 104.08-kHz secondary distribution unit J68857V. This supply provides a higher output level from a hybrid-type primary distribution bus, a test jack for the primary bus, and test jacks for the 104.08-kHz stabilizer circuits located on the pilot supply panel.♦

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**NOTICE**

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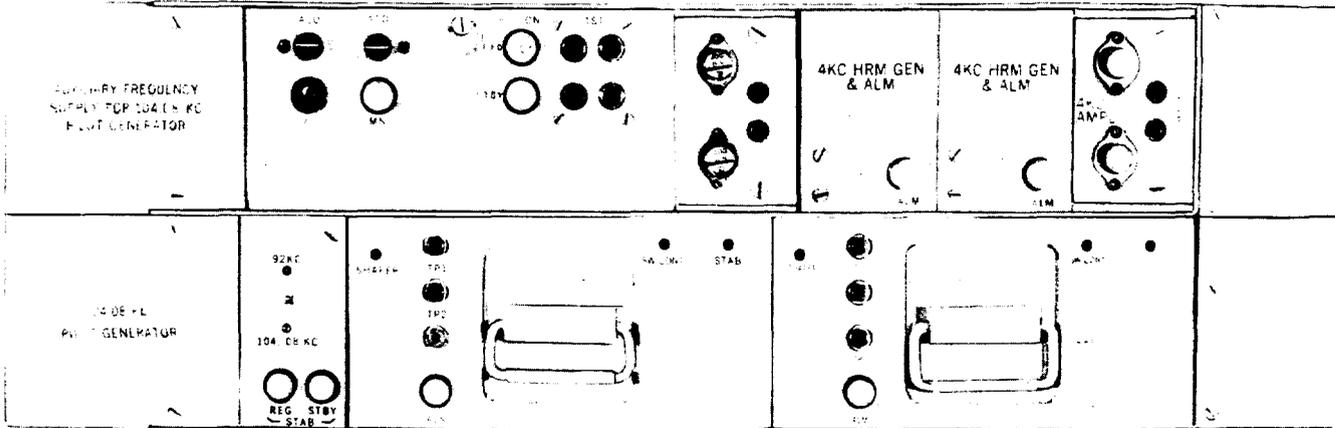


Fig. 1—104.08-kHz Pilot Supply J68857W

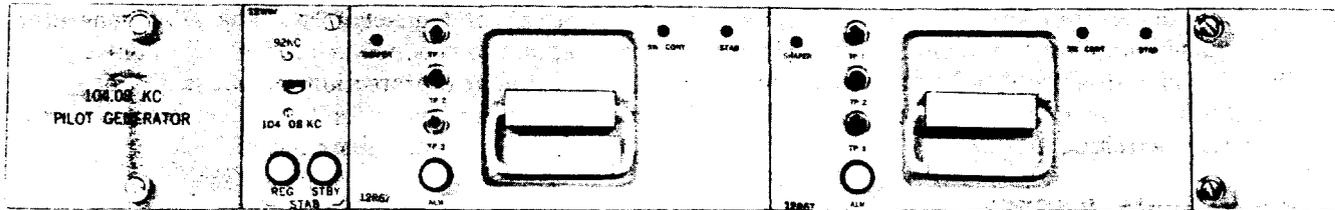


Fig. 2—104.08-kHz Pilot Supply J68857S List 1

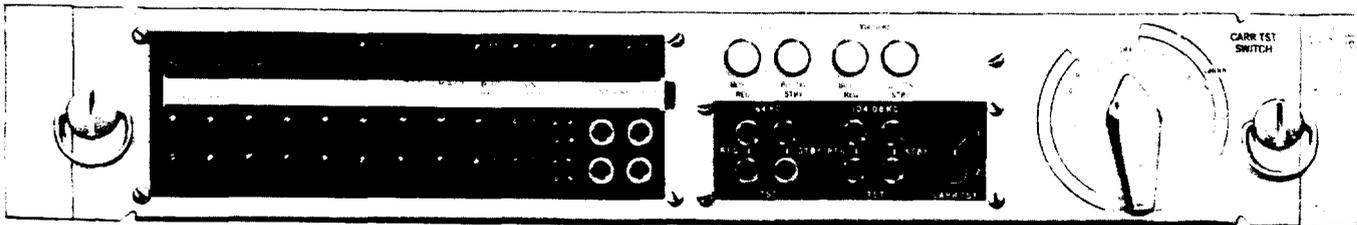


Fig. 3—Carrier Test Panel J68857J

**APPARATUS:**

The tests in this section require suitable transmission measuring equipment. Refer to Section 356-010-500 and select, from available equipment, units having the following capabilities:

**Receiving test equipment (RTE)** capable of detecting from 135-ohm circuits signals at 104.08 kHz at power between -20 and 0 dBm

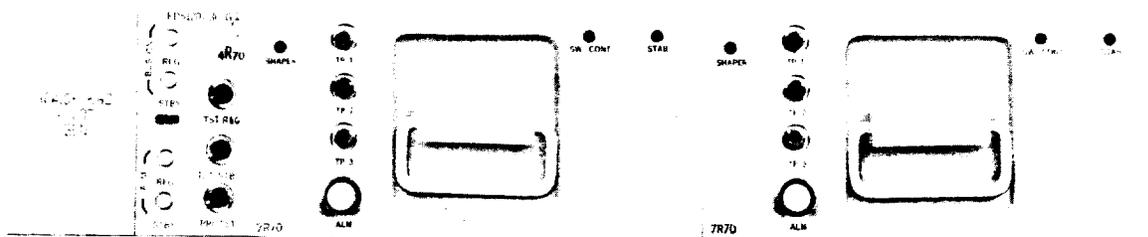
**Volt-Ohm-Milliammeter KS-14510 (VOM)** or other voltmeter with a sensitivity of at least 20,000 ohms per volt

**3P17B Cord**

**3P20B Cord.**

**CHART 1****TESTS FOR 104.08-KHZ PILOT SUPPLY J68857W**

STEP	PROCEDURE
<b>A. 104.08-kHz Stabilizer Output Measurement</b>	
	<b>Caution:</b> <i>Simultaneous removal of both pilot generator modules (Fig. 1) will cause interruption of the pilot signal.</i>
	<b>Note:</b> The SHAPER control is a factory adjustment. If the control is accidentally moved, a satisfactory adjustment may be made by positioning the SHAPER control to the mechanical midpoint.
	◆ <b>Check standby stabilizer output</b> ◆
1	Set up the RTE to measure a 104.08-kHz signal at 0 dBm.
2	Measure the pilot power at the TST STBY jack [patch (1), Fig. 5].
	<b>Requirement:</b> 0.0 dBm $\pm$ 0.1 dB.



**Fig. 4—◆104.08-kHz Pilot Supply J68857S List 3◆**

## CHART 1 (Contd)

STEP	PROCEDURE
3	◆Proceed to Step 8 if the requirement is met. Otherwise, proceed to Step 4.
4	Adjust the STAB control at upper right on the right-hand (standby) pilot generator module ED-50275 (Fig. 6) under test.
5	Replace circuit pack G2, on right inside the pilot generator module under test, if the requirement in Step 2 cannot be met by adjusting the STAB control.
6	Repeat Steps 2 through 5, as required.
7	Check the output power of the secondary distribution bus per Section 356-011-502 after the STAB control has been adjusted.◆
8	Remove patch (1), Fig. 5.  ◆ <b>Check regular stabilizer output</b> ◆
9	Make patch (2), Fig. 5.
10	◆Measure the pilot power at the TST REG jack on the auxiliary frequency supply panel.  <b>Requirement:</b> 0.0 dBm $\pm$ 0.1 dB.
11	Proceed to Step 16 if the requirement is met. Otherwise, proceed to Step 12.
12	Adjust the STAB control at upper right on the left-hand (regular) pilot generator module ED-50275 under test.
13	Replace circuit pack G2, on right inside the pilot generator module under test, if the requirement in Step 10 cannot be met by adjusting the STAB control.
14	Repeat Steps 10 through 13, as required.
15	Check the output power of the secondary distribution bus per Section 356-011-502 after the STAB control has been adjusted.◆
16	Remove patch (2), Fig. 5.  <b>B. 104.08-kHz Switch Control Output Measurement</b>  ◆ <b>Check regular switch control output</b> ◆
17	Measure the voltage at test points TP2 and TP3 on the left-hand (regular) pilot generator module ED-50275 under test [patch (1), Fig. 6].  <b>Requirement:</b> 8.3 $\pm$ 0.1 volts dc

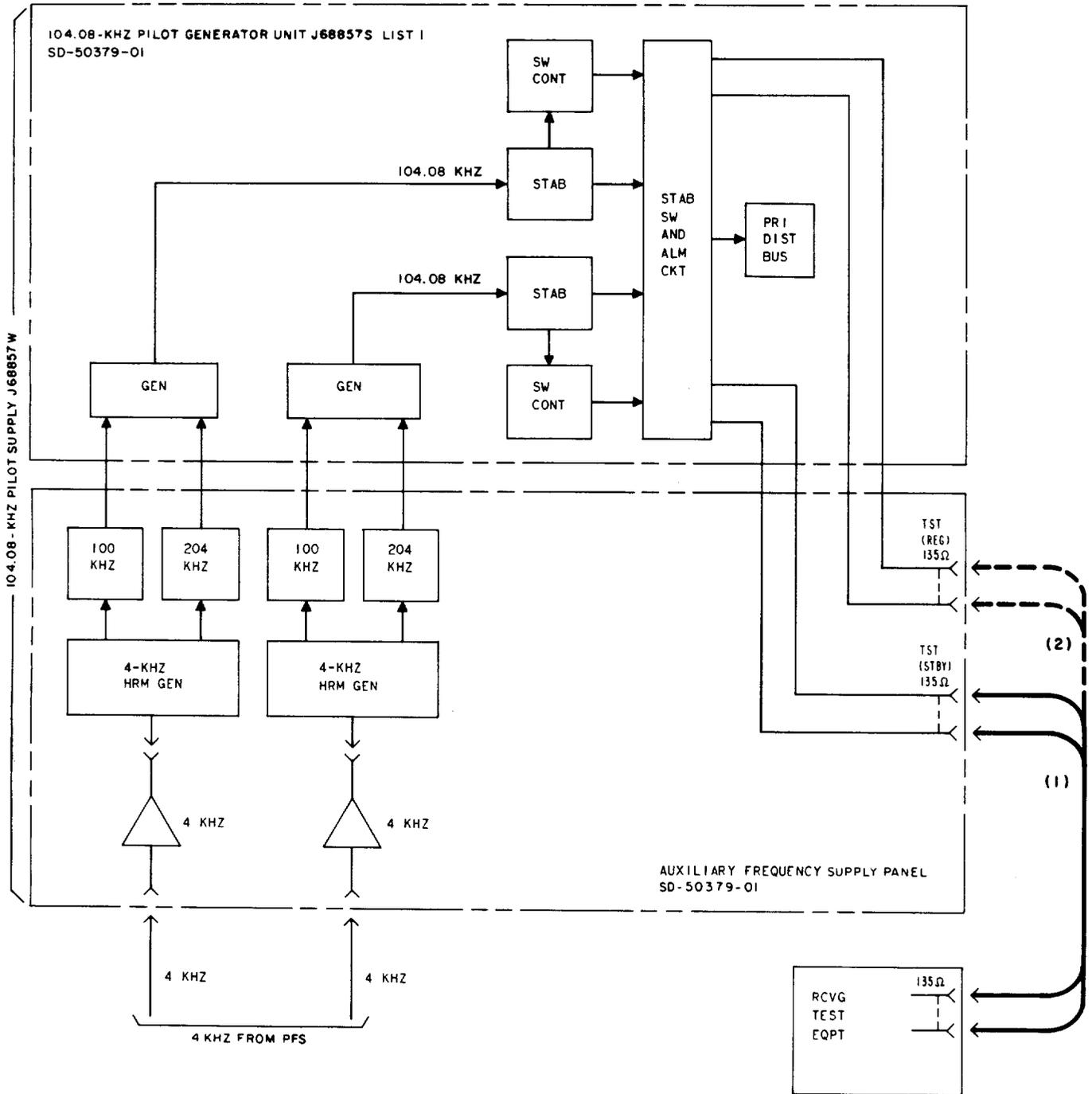


Fig. 5—Stabilizer Output Test for Pilot Supply J68857W

## CHART 1 (Contd)

STEP	PROCEDURE
18	◆Proceed to Step 22 if the requirement is met. Otherwise, proceed to Step 19.
19	Adjust the SW CONT control on the pilot generator module under test.
20	Replace circuit pack G1, on the right inside the pilot generator module under test, if the requirement in Step 17 cannot be met by adjusting the SW CONT control.
21	Repeat Steps 17 through 20, as required.

**Check standby switch control output**

22 Measure the voltage at test points TP2 and TP3 on the right-hand (standby) pilot generator module ED-50275 under test [patch (1), Fig. 6].

**Requirement:**  $8.3 \pm 0.1$  volts dc.

- 23 Proceed to Step 27 if the requirement is met. Otherwise, proceed to Step 24.
- 24 Adjust the SW CONT control on the pilot generator module under test.
- 25 Replace circuit pack G1, on the right inside the pilot generator module under test, if the requirement in Step 22 cannot be met by adjusting the SW CONT control.
- 26 Repeat Steps 22 through 25, as required.◆
- 27 Remove all patches.

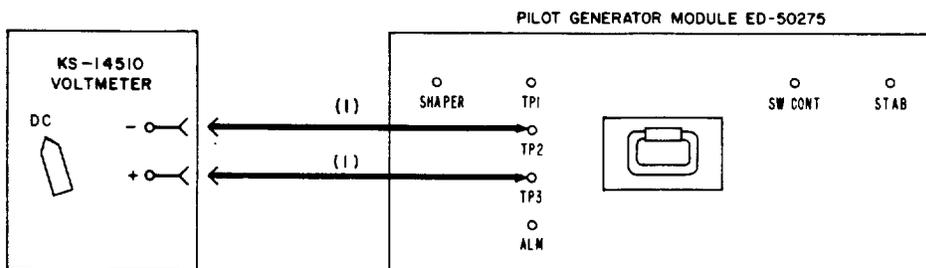


Fig. 6—104.08-kHz Switch Control Output Measurement

## CHART 2

## TESTS FOR 104.08-KHZ PILOT SUPPLY J68857S LIST 1

STEP	PROCEDURE
<b>A. 104.08-kHz Stabilizer Output Measurement</b>	
<b>Caution:</b> <i>Simultaneous removal of both pilot generator modules (Fig. 2) will cause interruption of the pilot signal.</i>	
<b>Note:</b> The SHAPER control is a factory adjustment. If the control is accidentally moved, a satisfactory adjustment may be made by positioning the SHAPER control to the mechanical midpoint.	
<b>◆Check standby stabilizer output◆</b>	
1	Set up the RTE to measure a 104.08-kHz signal at 0 dBm.
2	Measure the pilot power at the 104.08 KC TST STBY jack on carrier test panel J68857J [patch (1), Fig. 7].
<b>Requirement:</b> 0.0 dBm $\pm$ 0.1 dB.	
3	◆Proceed to Step 8 if the requirement is met. Otherwise, proceed to Step 4.
4	Adjust the STAB control at upper right on the right-hand (standby) pilot generator module ED-50275 (Fig. 6) under test.
5	Replace circuit pack G2, on right inside the pilot generator module under test, if the requirement in Step 2 cannot be met by adjusting the STAB control.
6	Repeat Steps 2 through 5, as required.
7	Check the output power of the secondary distribution bus per Section 356-011-502 after the STAB control has been adjusted.◆
8	Remove patch (1), Fig. 7.
<b>◆Check regular stabilizer output◆</b>	
9	Make [patch (2), Fig.7].
10	◆Measure the pilot power at the 104.08 KC TST REG jack on carrier test panel J68857J.
<b>Requirement:</b> 0.0 dBm $\pm$ 0.1 dB.	
11	Proceed to Step 16 if the requirement is met. Otherwise, proceed to Step 12.
12	Adjust the STAB control at upper right on the left-hand (regular) pilot generator module ED-50275 under test.

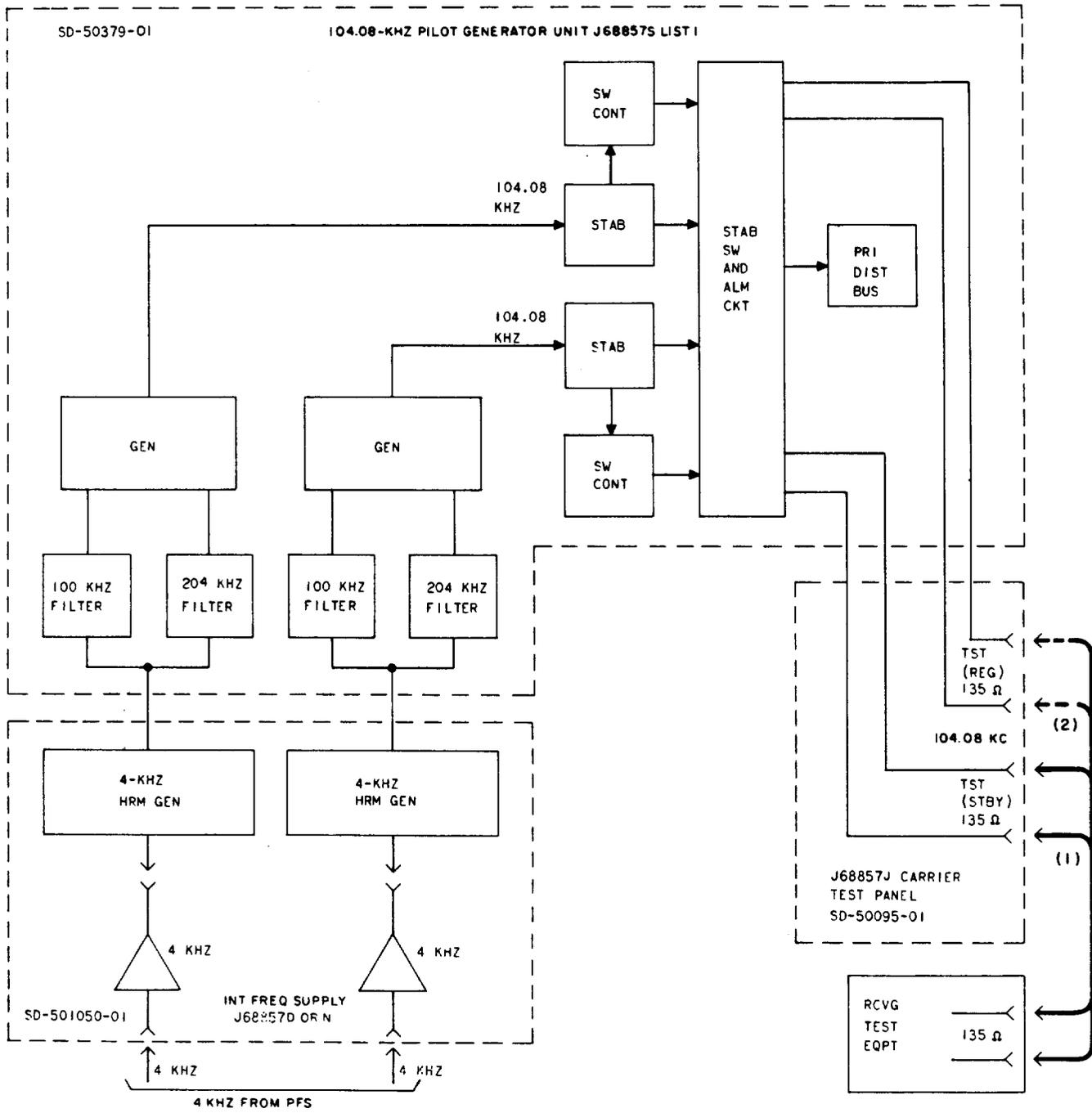


Fig. 7—Stabilizer Output Test for Pilot Supply J68857S List 1

## CHART 2 (Contd)

STEP	PROCEDURE
13	Replace circuit pack G2, on right inside the pilot generator module under test, if the requirement in Step 10 cannot be met by adjusting the STAB control.
14	Repeat Steps 10 through 13, as required.
15	Check the output power of the secondary distribution bus per Section 356-011-502 after the STAB control has been adjusted.♦
16	Remove patch (2), Fig. 7.
<b>B. 104.08-kHz Switch Control Output Measurement</b>	
<b>♦Check regular switch control output♦</b>	
17	Measure the voltage at test points TP2 and TP3 on the left-hand (regular) pilot generator module ED-50275 under test [patch (1), Fig. 6].
<b>Requirement:</b> 8.3 ±0.1 volts dc.	
18	♦Proceed to Step 22 if the requirement is met. Otherwise, proceed to Step 19.
19	Adjust the SW CONT control on the pilot generator module under test.
20	Replace circuit pack G1, on the right inside the pilot generator module under test, if the requirement in Step 17 cannot be met by adjusting the SW CONT control.
21	Repeat Steps 17 through 20, as required.
<b>Check standby switch control output</b>	
22	Measure the voltage at test points TP2 and TP3 on the right-hand (standby) pilot generator module ED-50275 under test [patch (1), Fig. 6].
<b>Requirement:</b> 8.3 ±0.1 volts dc.	
23	Proceed to Step 27 if the requirement is met. Otherwise, proceed to Step 24.
24	Adjust the SW CONT control on the pilot generator module under test.
25	Replace circuit pack G1, on the right inside the pilot generator module under test, if the requirement in Step 22 cannot be met by adjusting the SW CONT control.
26	Repeat Steps 22 through 25, as required.♦
27	Remove all patches.

## CHART 3

## TESTS FOR 104.08-KHZ PILOT SUPPLY J68857S LIST 3

STEP	PROCEDURE
<b>A. 104.08-kHz Stabilizer Output Measurement</b>	
<b>Caution:</b> <i>Simultaneous removal of both pilot generator modules (Fig. 4) will cause interruption of the pilot signal.</i>	
<b>Note:</b> The SHAPER control is a factory adjustment. If the control is accidentally moved, a satisfactory adjustment may be made by positioning the SHAPER control to the mechanical midpoint.	
<b>◆Check standby stabilizer output◆</b>	
1	Set up the RTE to measure a 104.08-kHz signal at 0 dBm.
2	Measure the pilot power at the TST STBY jack on the pilot supply panel [patch (1), Fig. 8].
<b>Requirement:</b> 0.0 dBm $\pm$ 0.1 dB.	
3	◆Proceed to Step 8 if the requirement is met. Otherwise, proceed to Step 4.
4	Adjust the STAB control at upper right on the right-hand (standby) pilot generator module ED-50275 (Fig. 6) under test.
5	Replace circuit pack G2, on right inside the pilot generator module under test, if the requirement in Step 2 cannot be met by adjusting the STAB control.
6	Repeat Steps 2 through 5, as required.
7	Check the output power of the secondary distribution bus per Section 356-011-502 after the STAB control has been adjusted.◆
8	Remove patch (1), Fig. 8.
<b>◆Check regular stabilizer output◆</b>	
9	Make patch (2), Fig. 8.
10	◆Measure the pilot power at the TST REG jack on the pilot supply panel.
<b>Requirement:</b> 0.0 dBm $\pm$ 0.1 dB.	
11	Proceed to Step 16 if the requirement is met. Otherwise, proceed to Step 12.
12	Adjust the STAB control at upper right on the left-hand (regular) pilot generator module ED-50275 under test.

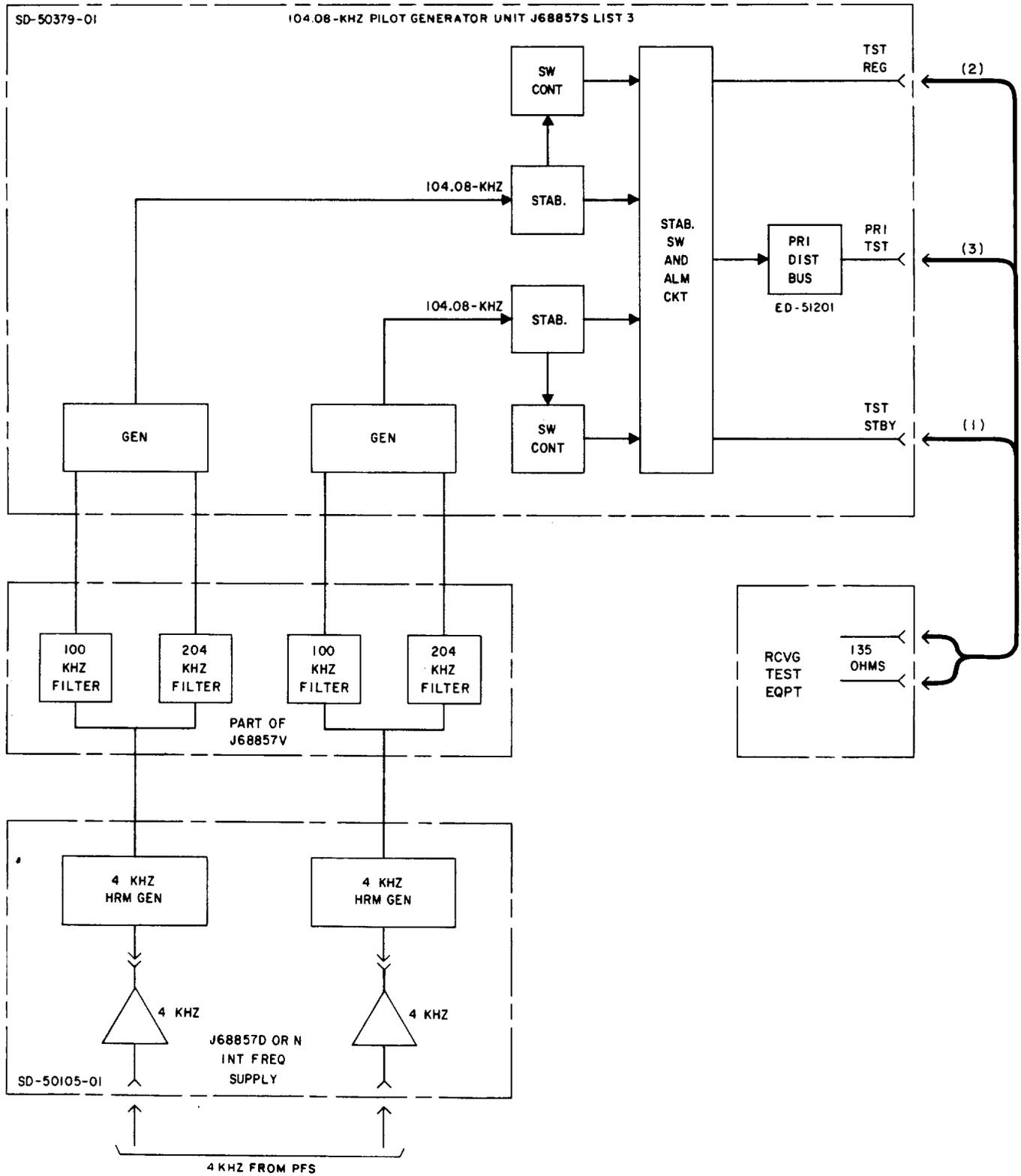


Fig. 8—Stabilizer Output and Primary Distribution Bus Tests for Pilot Supply J68857S List 3

## CHART 3 (Contd)

STEP	PROCEDURE
13	Replace circuit pack G2, on right inside the pilot generator module under test, if the requirement in Step 10 cannot be met by adjusting the STAB control.
14	Repeat Steps 10 through 13, as required.
15	Check the output of the secondary distribution bus per Section 356-011-502 after the STAB control has been adjusted.♦
16	Remove patch (2), Fig. 8.
<b>B. 104.08-kHz Switch Control Output Measurement</b>	
<b>♦Check regular switch control output♦</b>	
17	Measure the voltage at test points TP2 and TP3 on the left-hand (regular) pilot generator module ED-50275 under test [patch (1), Fig. 6].
<b>Requirement:</b> 8.3 ±0.1 volts dc.	
18	♦Proceed to Step 22 if the requirement is met. Otherwise, proceed to Step 19.
19	Adjust the SW CONT control on the pilot generator module under test.
20	Replace circuit pack G1, on the right inside the pilot generator module under test, if the requirement in Step 17 cannot be met by adjusting the SW CONT control.
21	Repeat Steps 17 through 20, as required.
<b>Check standby switch control output</b>	
22	Measure the voltage at test points TP2 and TP3 on the right-hand (standby) pilot generator module ED-50275 under test [patch (1), Fig. 6].
<b>Requirement:</b> 8.3 ±0.1 volts dc.	
23	Proceed to Step 27 if the requirement is met. Otherwise, proceed to Step 24.
24	Adjust the SW CONT control on the pilot generator module under test.
25	Replace circuit pack G1, on the right inside the pilot generator module under test, if the requirement in Step 22 cannot be met by adjusting the SW CONT control.
26	Repeat Steps 22 through 25, as required.♦
27	Remove all patches.

## CHART 3 (Contd)

STEP	PROCEDURE
<b>C. Primary Distribution Bus Measurement</b>	
28	Set up the RTE to measure a 104.08-kHz signal at -20 dBm.
29	Measure the pilot power at the PRI TST jack on the pilot supply panel [patch (3), Fig. 8].
<b>Requirement:</b> -20.00 dBm $\pm$ 0.25 dB.	
30	◆Proceed to Step 33 if the requirement is met. Otherwise, observe the <b>Caution</b> and proceed to Step 31.◆
<b>Caution: Removal of the ED-51201-30 module will interrupt the 104.08-kHz pilot signal to all circuits supplied by the pilot supply under test.</b>	
31	◆Replace the primary distribution bus module ED-51201.
32	Repeat Steps 29 through 31, as required.◆
33	Remove all patches.