HIGH SEAS AND OVERSEAS RADIO
B1 CHANNEL SHIFTER
TEST AND ALIGNMENT

This section contains the test and alignment procedures for the B1 channel shifter. The B1 channel shifter is part of the High Seas and Overseas Radio system. A B1 channel shifter is a device used in radio telephone single sideband twin-channel systems. The two functions of a B1 channel shifter are as follows: (1) to develop an output of two adjacent speech bands within 250 to 6000 Hz from an input of two separate speech bands, each approximately 250 to 3000 Hz wide, and (2) to develop and output of two separate speech bands, each approximately 250 to 3000 Hz wide from an input of two adjacent speech bands within 260 to 6000 Hz. For additional information about the B1 channel shifter, refer to Section 403-313-100.

The procedure in Chart 1 must be completed before the procedures in any of the remaining charts are performed.

APPARATUS:

1—Voltmeter, DC, Weston Model 280, 0-150V, or KS-14510 L1 Volt-Ohm-Milliammeter, or equivalent such as the Simpson Model 260

APPARATUS (Cont):

1—Voltmeter, AC, capable of measuring 7.5 volts and 1.75 volts, or Weston Model 697 Volt-Ohm-Milliammeter

1—40B Transmission Measuring Set, or 21A Transmission Measuring Set

1—3A Noise Measuring Set

1—72A1 Frequency Meter

1—754B Volume Indicator

3—Amplifiers, Audio Frequency, each with 20-dB gain

2—893 Cords equipped with 360A tools at each end

1—2W24A Cord equipped with 59 cord tips

1—528 Receiver equipped with 2W2A cord

2—411A Tools

2—364A Tools

1—Screwdriver, 4-inch

Multiple Jacks

3P14 Patch Cords

217D Plugs (600 ohms)

Clip Leads

A source of 1000-Hz and 4000-Hz reference frequencies

A source of 3250-Hz carrier frequency from an A3 or A5 primary

CHART 1

PRELIMINARY

The instructions in this chart must be complied with before any of the procedures in the remaining charts are performed.

STEP	PROCEDURE
1	Perform a visual inspection to ensure that all components are properly connected or seated. Give particular attention to the vacuum tubes and the filters.

CHART 1 (Cont)

STEP	PROCEDURE
2	Perform a visual inspection to ensure that there are no broken leads or short circuits on the terminal block.
3	Connect a dc voltmeter between battery and ground terminals to check the central office battery supply. ***Requirement:*** The dc voltmeter indicates between −45 and −52 volts.
4	All tests must be made with the channel shifter or the two associated control terminals ***removed from service.***

CHART 2

HEATER AND PLATE VOLTAGE

The purpose of this procedure is to check at the terminal strips in the channel shifter panels the filament and plate dc voltages that are used for the electron tubes.

STEP	PROCEDURE
1	Do not proceed unless the procedures in Chart 1 have been completed.
2	At a modulator and amplifier panel, connect a dc voltmeter between terminal 29 (positive) and terminal 32 (negative). ***Requirement:*** Meter indicates 19.7 to 20.3 volts. ***Note:*** If requirement is not met, use a screwdriver to adjust FIL potentiometer on rear of panel until specified indication is obtained.
3	Perform Step 2 at each remaining modulator and amplifier panel.
4	At a modulator and amplifier panel, connect a dc voltmeter between terminal 24 (positive) and terminal 16 (negative). ***Requirement:*** Meter indicates 125 to 135 volts.
5	Perform Step 4 at each remaining modulator and amplifier panel.
6	At the oscillator panel, connect a dc voltmeter between terminal 8 (positive) and terminal 3 (negative). ***Requirement:*** Meter indicates 125 to 135 volts.

CHART 3

OSCILLATOR FREQUENCY TEST

The purpose of this procedure is to check the frequency output of the 6250-Hz oscillator. If a frequency meter (or counter) is available, the standard procedure should be used. The alternate procedure is included for locations that do not have a frequency meter (or counter).

STEP	PROCEDURE
	STANDARD PROCEDURE
1	Do not proceed unless the procedures in Chart 1 have been completed.
2	Patch terminals 1 and 2 of the oscillator panel to the BRDG jacks of the frequency meter.
	Note: This procedure presumes the use of the 72A1 frequency meter. If a different frequency meter or a frequency counter is used, refer to the manufacturer's operating instructions.
3	Observe the 6250-Hz stationary pattern on the oscilloscope screen.
	Requirement: The rate of fluctuation should not exceed 2 hertz.
	Note: If this requirement is not met, the oscillator frequency is corrected by changing the strapping on capacitors G2 and G3 of the oscillator circuit as required.
	ALTERNATE PROCEDURE
1	Do not proceed unless the procedures in Chart 1 have been completed.
2	Patch from 4000-Hz source through test amplifiers to jacks CS IN CH GRP A or B of B1 shifter whose oscillator frequency is to be checked. Prepare to patch the resulting 2250-Hz output from jacks CS OUT CH A2 or B2 to multiple jacks.
3	On a second B1 channel shifter, unsolder incoming leads to terminals 7 and 8 on its high-low modulator and amplifier panel and clip the 1000-Hz source (through test amplifier if necessary) to these terminals.
4	Patch from 3250-Hz source through test amplifier to jacks CS IN CH GRP B or A of the second channel shifter. Prepare to patch the resulting reference 2250-Hz output from jacks CS OUT CH B2 or A2 to multiple jacks.
5	Plug volume indicator into multiple jacks. Patch each of the above two 2250-Hz sources in turn to the multiple jacks and adjust the volume in each case for the same convenient reading of the indicator.
6	Patch the head receiver and both sources to multiple jacks.

CHART 3 (Cont)

STEP	PROCEDURE
7	Observe indication on indicator and listen for beat note on head receiver. ***Requirement:*** Not more than one maximum indication or beat note in 4 seconds. ***Note:*** If requirement is not met, read Steps (a), (b), and (c) below for corrective action. (a) If the indicator reading varies slowly, the 6250-Hz oscillator frequency is corrected by changing the strapping on capacitor G3 (which has the smaller steps) and timing the indicator maximum readings. (b) If the indicator reading is steady and no beat note is heard in the receiver, the 6250-Hz oscillator may be in exact adjustment. To test this, temporarily alter the oscillator frequency slightly by using a clip lead to change the strapping of capacitor G3. If the indicator reading now varies and if a beat note is heard in the head receiver, the oscillator frequency was in exact adjustment. Remove the clip lead. (c) If the indicator reading is steady but a beat note is heard in the head receiver, the oscillator frequency is incorrect by more than 30 Hz (exceeding the response of the indicator). Change the strapping on capacitor G3 (and on G2, if necessary) to reduce beat note rate to less than 30 Hz. Then continue to adjust capacitor strapping until the indicator reading meets the requirement.
8	Remove test connections. Resolder leads to terminals 7 and 8 on the high-low modulator and amplifier panel of the second channel shifter.

CHART 4

CARRIER INPUT LEVEL TEST

The purpose of this test is to check the level of the 6250-Hz carrier frequency that is applied to the low-high and high-low modulators.

STEP	PROCEDURE
1	Do not proceed unless the procedures in Chart 1 have been completed.
2	Calibrate a transmission measuring set. ***Note:*** If a transmission measuring set is not available, use the 0 to 7.5V scale of an ac voltmeter.
3	Connect transmission measuring set (or ac voltmeter) with 2W24A test cord to terminals 7 and 8 of the terminal strip on the rear of the low-high modulator and amplifier panel.

CHART 4 (Cont)	
STEP	**PROCEDURE**
4	Measure the carrier frequency level (or the carrier frequency voltage). ***Requirement 1:*** When using the transmission measuring set, not less than +7.0 dBm. ***Requirement 2:*** When using the test voltmeter, not less than 1.74 Vac. ***Note:*** If either requirement is not met, test tube OSC and replace if necessary.
5	Disconnect test cord from terminals 7 and 8.
6	Connect test cord to terminals 7 and 8 of the terminal strip on the rear of the high-low modulator and amplifier panel.
7	Measure the carrier frequency level (or the carrier frequency voltage). ***Requirement 1:*** When using the transmission measuring set, not less than +7.0 dBm. ***Requirement 2:*** When using the test voltmeter, not less than 1.74 Vac. ***Note:*** If either requirement is not met, test tube OSC and replace if necessary.
8	Disconnect and remove all test connections.

CHART 5

CARRIER LEAK BALANCE TEST

The purpose of this procedure is to check the amount of carrier leak from each modulator and to indicate corrective procedures if the specified requirements are not obtained.

STEP	PROCEDURE
1	Do not proceed unless the procedures in Chart 1 have been completed.
2	Insert 600-ohm plug in jack CS IN CH A2 (or B2).
3	Patch from the NMS IN jack of a 3A noise measuring set (NMS) to the CS OUT CH GRP A (or B) jack.
4	On the rear of the modulator and amplifier panel, adjust potentiometer BAL with the screwdriver until the carrier leak indicated by the NMS is minimum. ***Requirement:*** Not more than 50 dBrn (dB above reference noise) using Program Weighting.

CHART 5 (Cont)

STEP	PROCEDURE
	Note 1: To convert dBrn to equivalent dBm (dB in reference to one milliwatt), subtract 90 from the dBrn indication. When using the 3A NMS, the accuracy is limited to $\pm$1.0 dB.
	Note 2: If the requirement is not met, change the strapping on adjustable 187A capacitor B or change its connection to the other side of the potentiometer.
5	Remove the 600-ohm plug and insert it in jack CS IN CH GRP A (or B).
6	Patch from the 3A NMS IN jack to CS OUT CH A2 (or B2).
7	On the rear of the modulator and amplifier panel, adjust potentiometer BAL with the screwdriver until the carrier leak indicated by the NMS is minimum.
	Requirement: Not more than 50 dBrn (dB above reference noise) using Program Weighting.
	Note: If the requirement is not met, change the strapping on adjustable 187A capacitor B or change its connection to the other side of the potentiometer.
8	Remove the 600-ohm plug and test connections.

CHART 6

INSERTION LOSS TEST

The purpose of this test is to check the insertion loss of the shifted channel against the loss of the unshifted channel of both the transmitting and the receiving sides of a B1 channel shifter. Procedures are the same for Group B as for Group A.

STEP	PROCEDURE
1	Do not proceed unless the procedures in Chart 1 have been completed.
	TRANSMITTING PATH
2	Set up patches between a transmission measuring set (TMS) and a channel shifter as follows: **FROM** — **TO** TMS SEND — CS IN CH A1 (or B1) CS OUT CH GRP A (or B) — TMS REC
3	Calibrate the TMS at 1000 Hz.

CHART 6 (Cont)

STEP	PROCEDURE
4	Send 1 mW of 1000-Hz tone and measure the loss of the ***transmitting unshifted*** path. ***Requirement:*** 0 dBm $\pm$0.2 dB. ***Note:*** If the requirement is not met, adjust potentiometer AMP 2 GAIN on V3 amplifier. If the requirement still cannot be met, substitute a spare V3 amplifier as AMP 2 or test the electron tube in AMP 2.
5	Set up patches as follows: FROM — TO TMS SEND — CS IN CH A2 (or B2) CS OUT CH GRP A (or B) — TMS REC
6	Calibrate the TMS at 5250 Hz.
7	Send 1 mW of 1000-Hz tone and measure the loss of the ***transmitting shifted*** channel. ***Requirement:*** Within $\pm$0.2 dB of the loss in the ***transmitting unshifted*** path as measured in Step 4. ***Note:*** If the requirement is not met, with the screwdriver adjust the ***low-high*** modulator screwhead AMP 1 GAIN. If still unable to meet requirements, test electron tube AMP 1.
8	Remove patches. **RECEIVING PATH**
9	Set up patches as follows: FROM — TO TMS SEND — CS IN CH GRP A (or B) CS OUT CH A1 (or B1) — TMS REC
10	Calibrate the TMS at 1000 Hz.
11	Send 1 mW of 1000-Hz tone and measure the loss of the ***receiving unshifted*** path. ***Requirement:*** 0 dBm $\pm$0.2 dB. ***Note:*** If the requirement is not met, adjust potentiometer AMP 2 GAIN on V3 amplifier. If requirement still cannot be met, substitute a spare V3 amplifier as AMP 2 or test electron tube in the AMP 2 V3 amplifier.
12	Set up patches as follows:

CHART 6 (Cont)

STEP	PROCEDURE
	FROM: TMS SEND; CS OUT CH A2 (or B2) — TO: CS IN CH GRP A (or B); TMS REC
13	Calibrate the TMS at 1000 Hz.
14	Send 1 mW of 5250-Hz tone and measure the loss in the ***receiving shifted*** path. ***Requirement:*** Within $\pm$0.2 dB of the loss in the ***receiving unshifted*** path as measured in Step 11. ***Note:*** If this requirement is not met, adjust the ***high-low*** modulator screwhead AMP 1 GAIN with the screwdriver. If the requirement is still not met, test electron tube in AMP 1.
15	Remove test connections.

CHART 7

LOSS-FREQUENCY CHARACTERISTIC TEST

The purpose of this test is to check the overall loss-frequency characteristics of four paths: transmitting unshifted and shifted; receiving unshifted and shifted.

STEP	PROCEDURE
1	Do not proceed unless the procedures in Chart 1 have been completed.
	TRANSMITTING UNSHIFTED PATH
2	Set up patches between a transmission measuring set and a channel shifter as follows: FROM: TMS SEND; CS OUT CH GRP A (or B) — TO: CS IN CH A1 (or B1); TMS REC
3	Calibrate the TMS at 1000 Hz.
4	Send 1 mW of 1000-Hz tone and adjust the loss (as measured at TMS REC) by means of the AMP 2 GAIN control to 0 dBm $\pm$0.2 dB.

CHART 7 (Cont)

STEP	PROCEDURE
5	Measure the losses and calculate the deviations at the frequencies indicated in Table A.

TABLE A

FREQUENCY SENT SAME AS FREQUENCY MEASURED	LOSS TOLERANCE (LOSS REFERRED TO 1000-HZ LOSS)
1000 Hz	0 dBm ± 0.2 dB
250 Hz	+1.2 to −0.4 dB
500 Hz	+0.6 to −0.4 dB
2000 Hz	+0.5 to −0.5 dB
2500 Hz	+0.6 to −0.4 dB
2750 Hz	+1.2 to −0.4 dB
3000 Hz	Not more than +3.5 dB

TRANSMITTING SHIFTED PATH

6 Set patches up as follows:

FROM	TO
TMS SEND	CS IN CH A2 (or B2)
CS OUT CH GRP A (or B)	TMS REC

7 Send 1 mW of tone at each of the send frequencies indicated in Table B. Measure the losses of the corresponding ***output*** frequencies. Calculate the deviations from the loss measured at 5250 Hz (sent at 1000 Hz).

TABLE B

FREQUENCY SENT	SHIFTED FREQUENCY MEASURED	LOSS TOLERANCE (LOSS REFERRED TO 5250-HZ OUT)
1000 Hz	5250 Hz	0 dBm ± 0.2 dB
250 Hz	6000 Hz	+1.5 to −2.5 dB
500 Hz	5750 Hz	+1.6 to −0.4 dB
750 Hz	5500 Hz	+0.7 to −0.7 dB
1500 Hz	4750 Hz	+0.7 to −0.7 dB
2000 Hz	4250 Hz	+0.8 to −0.6 dB
2250 Hz	4000 Hz	+0.8 to −0.6 dB
2500 Hz	3750 Hz	+0.9 to −0.5 dB
2750 Hz	3500 Hz	+1.6 to −0.4 dB
3000 Hz	3250 Hz	Not more than +3.5 dB

Note: If the requirements of Table B are not met, check related modulator carrier volumes and the low frequency equalization pad (resistors A and B and capacitor A of the associated modulator).

CHART 7 (Cont)

STEP	PROCEDURE
	RECEIVING UNSHIFTED PATH
8	Set patches up as follows: FROM: TMS SEND; CS OUT CH A1 (or B1) TO: CS IN CH GRP A (or B); TMS REC
9	Send 1 mW at 1000 Hz. Adjust the loss (as measured at TMS REC) by means of the AMP 1 GAIN control to 0 dBm $\pm$0.2 dB.
10	Measure the losses and calculate the deviations at each of the frequencies indicated in Table C. **TABLE C** FREQUENCY SENT SAME AS FREQUENCY MEASURED / LOSS TOLERANCE (LOSS REFERRED TO 1000-HZ LOSS) 1000 Hz: 0 dBm $\pm$ 0.2 dB 250 Hz: +1.2 to −0.4 dB 500 Hz: +0.6 to −0.4 dB 2000 Hz: +0.5 to −0.5 dB 2500 Hz: +0.6 to −0.4 dB 2750 Hz: +1.2 to −0.4 dB 3000 Hz: Not more than +3.5 dB
	RECEIVING SHIFTED PATH
11	Set patches up as follows: FROM: TMS SEND; CS OUT CH A2 (or B2) TO: CS IN CH GRP A (or B); TMS REC
12	Send 1 mW of tone at the frequencies indicated in Table D. Measure the losses at the corresponding ***output*** frequencies. Calculate the deviations from the loss measured at 5250 Hz (and sent at 1000 Hz).

CHART 7 (Cont)

STEP	PROCEDURE
	TABLE D

FREQUENCY SENT	SHIFTED FREQUENCY MEASURED	LOSS TOLERANCE (LOSS REFERRED TO 5250-HZ OUT)
1000 Hz	5250 Hz	0 dBm ± 0.2 dB
250 Hz	6000 Hz	+1.5 to −2.5 dB
500 Hz	5750 Hz	+1.6 to −0.4 dB
750 Hz	5500 Hz	+0.7 to −0.7 dB
1500 Hz	4750 Hz	+0.7 to −0.7 dB
2000 Hz	4250 Hz	+0.8 to −0.6 dB
2250 Hz	4000 Hz	+0.8 to −0.6 dB
2500 Hz	3750 Hz	+0.9 to −0.5 dB
2750 Hz	3500 Hz	+1.6 to −0.4 dB
3000 Hz	3250 Hz	Not more than +3.5 dB

	Note: If the requirements of Table D are not met, check the related modulator carrier volumes and the low frequency equalization pad (resistors A and B and capacitor A of the associated modulator).
13	Remove all test connections.

CHART 8

NOISE TEST

The purpose of this test is to check the noise at the output of both the transmitting and the receiving sides of the channel shifter.

STEP	PROCEDURE
1	Do not proceed unless the procedures in Chart 1 have been completed.
2	Insert 600-ohm plugs in the following jacks: CS IN CH A1 (or B1) CS IN CH A2 (or B2)
3	Patch as follows:

FROM	TO
CS OUT CH GRP A (or B)	NMS IN (function switch on 600 Nm)

CHART 8 (Cont)

STEP	PROCEDURE
4	Calibrate the NMS and measure the noise. Use C-Message Weighting. ***Requirement:*** Not more than 21 dBrnc (dB above reference noise). ***Note:*** If the requirement is not met, check the carrier balance, carrier leak, and electron tube.
5	Remove 600-ohm plugs and patch cord.
6	Insert 600-ohm plugs in the following jacks: CS IN CH GRP A (or B) CS OUT CH A1 (or B1)
7	Patch as follows: FROM: CS OUT CH A2 (or B2) — TO: NMS IN (function switch on 600 Nm)
8	Measure the noise using C-Message Weighting. ***Requirement:*** Not more than 29 dBrnc (dB above reference noise). ***Note 1:*** In this case, there is no band filter to reduce the amplifier noise. ***Note 2:*** If the requirement is not met, check the carrier balance, carrier leak, and electron tube.
9	Remove 600-ohm plugs and test connections.

CHART 9

CROSSTALK TEST

The purpose of this test is to measure the crosstalk between the shifted and unshifted channels of each modulator and amplifier panel.

STEP	PROCEDURE
1	Do not proceed unless the procedures in Chart 1 have been completed.

CHART 9 (Cont)

STEP	PROCEDURE
2	Set up patches as follows: FROM — TO TMS SEND — CS IN CH A2 (or B2) CS IN CH A1 (or B1) — NMS IN
3	Send 1 mW at 1000 Hz. Calibrate the NMS and measure the 1000-Hz crosstalk on the unshifted channel (from the shifted channel). ***Requirement:*** Not more than 30 dBrnc (30 dB above reference noise using C-Message Weighting).
4	Pull patches and set up as follows: FROM — TO TMS SEND — CS IN CH A1 (or B1) CS IN CH A2 (or B2) — NMS IN
5	Send 1 mW at 1000 Hz. Measure the crosstalk on the shifted channel (from the unshifted channel). ***Requirement:*** Not more than 30 dBrnc.
6	Pull patches and set up as follows: FROM — TO TMS SEND — CS IN CH GRP A (or B) CS OUT CH A1 (or B1) — NMS IN
7	Send 1 mW at 1000 Hz. Measure the crosstalk. ***Requirement:*** Not more than 30 dBrnc.
8	Pull patches and set up as follows: FROM — TO TMS SEND — CS IN CH GRP A (or B) CS OUT CH A2 (or B2) — NMS IN
9	Send 1 mW at 1000 Hz. Measure the crosstalk. ***Requirement:*** Not more than 30 dBrnc.
10	Remove all test connections.

CHART 10

FILTER TEST

The purpose of this test is to check the loss-frequency characteristics of the three types of filters used in the shifted path and the fourth type in the unshifted path. Normally, this test is performed only when a malfunction is traced to a filter.

STEP	PROCEDURE
1	Do not proceed unless the procedures in Chart 1 have been completed.
	Note: If any filter fails to meet the requirements, remove it and install a new one.
	207B LOW-PASS FILTER A
2	Disconnect the leads from terminals 1, 2, 3, and 4 of the 207B Filter A.
3	Patch from test oscillator out to terminals 1 and 2. Patch from filter terminals 3 and 4 to TMS IN.
4	Adjust the test oscillator for 1 mW at 1000 Hz. Measure the loss.
	Requirement: Not more than 0.3 dB.
5	Readjust the test oscillator for each of the frequencies indicated in Table E. Measure the loss of each frequency and calculate the deviation from the 1000-Hz loss.

TABLE E

FREQUENCY (HZ)	DEVIATION FROM 1000-HZ LOSS
1000	------
250	−0.5 to +0.5 dB
2750	Not more than +1.5 dB
3500	Not less than +24.0 dB
5000	Not less than +24.0 dB

	Requirement: As indicated in Table E.
6	Remove test leads. Reconnect leads to terminals 1, 2, 3, and 4 of the 207B Filter A.
	208G LOW-PASS FILTER B
7	Disconnect the leads from terminals 1, 2, 3, and 4 of the filter.
8	Patch from test oscillator out to terminals 1 and 2. Patch from filter terminals 3 and 4 to TMS IN.
9	Adjust the test oscillator for 1 mW at 1000 Hz. Measure the loss through the filter.

CHART 10 (Cont)

STEP	PROCEDURE
	Requirement: Not more than 0.3 dB.
10	Readjust the oscillator for each of the frequencies indicated in Table F. Measure the loss of each frequency and calculate the deviation from the 1000-Hz loss.

TABLE F

FREQUENCY (HZ)	DEVIATION FROM 1000-HZ LOSS
1000	0 to −0.3 dBm
250	+0.5 to −0.5 dB
5500	Not more than +1.5 dB
6400	Not less than +24.0 dB

	Requirement: As indicated in Table F.
11	Remove test leads. Reconnect normal leads to filter terminals 1, 2, 3, and 4 of the 208G low-pass filter B.
	209 BAND-PASS FILTER C
12	Disconnect the normal leads from filter terminals 1, 2, 3, and 4.
13	Patch from test oscillator out to terminals 1 and 2. Patch from filter terminals 3 and 4 to TMS IN.
14	Adjust the test oscillator for 1 mW at 5250 Hz. Measure the loss through the filter.
	Requirement: Not more than 2.0 dB.
15	Readjust the test oscillator for each of the frequencies indicated in Table G. Measure the loss of each frequency and calculate the deviation from the 5250-Hz loss.

TABLE G

FREQUENCY (HZ)	DEVIATION FROM 5250-HZ LOSS
5250	0 to −2.0 dBm
2900	Not less than +25 dB
3400	+2.5 to −0.5 dB
4000	+2.0 to 0.0 dB
6100	+1.2 to −1.8 dB
6600	Not less than +14.0 dB

	Requirement: As indicated in Table G.
16	Remove test clips. Reconnect leads to terminals 1, 2, 3, and 4 of the 209A band-pass filter C.

CHART 10 (Cont)

STEP	PROCEDURE
	209B LOW-PASS FILTER D
17	Disconnect the normal leads from filter terminals 1, 2, 3, and 4.
18	Patch from test oscillator out to terminals 1 and 2. Patch from filter terminals 3 and 4 to TMS IN.
19	Adjust the oscillator for 1 mW at 1000 Hz. Measure the loss. ***Requirement:*** Not more than 0.7 dB.
20	Readjust the oscillator for each of the frequencies indicated in Table H. Measure the loss of each frequency and calculate the deviation from the 1000-Hz loss. **TABLE H** **FREQUENCY (HZ)** / **DEVIATION FROM 1000-HZ LOSS** 1000 ------ 250 +0.5 to −0.7 dB 2000 +0.9 to −0.5 dB 2750 Not more than +2.5 dB 4500 Not less than +40.0 dB ***Requirement:*** As indicated in Table H.
21	Remove test leads. Reconnect normal leads to terminals 1, 2, 3, and 4 of the 209B low-pass filter D.