

J99347 VF AMPLITUDE AND DELAY EQUALIZING EQUIPMENT, TEST PROCEDURES, AND MAINTENANCE

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1. GENERAL

1.01 This section provides test procedures and maintenance information for the J99347AA VF amplitude and delay equalizer (hereafter referred to as the J-board equalizer). Procedures are provided for the 1 kHz gain adjustment and for determining the transmission level point (TLP). The gain adjustment procedure of the J-board equalizer varies slightly depending on bay or shelf use. The maintenance information contains philosophy and troubleshooting aids.

1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph.

1.03 The J68914TA test extender is required to gain access to the lines when the plug-in

J-board equalizer is used in a bay arrangement. The J68914TA is not required whenever the shelf arrangement is equipped with a jack panel.

2. TEST EQUIPMENT

2.01 The following test equipment is required to establish a TLP and to perform the gain adjustment procedures:

- (a) 600 ohm oscillator
- (b) 600 ohm detector
- (c) Two cords with 310 plugs on one end and connector suitable for oscillator and detector at other end
- (d) Cord to connect oscillator and detector
- (e) One J68914TA test extender (required to access J99347B bay or the logic position of the 4A Echo Suppressor)—Fig. 1.

2.02 See Section 314-410-500, Table A for a list of test equipment that may be used, depending on the required function. For example, an oscillator function may be provided by a 21A TMS, 25B voiceband gain and delay set, Hewlett-Packard 3550B portable test set, or other test equipment equivalents.

3. TRANSMISSION LEVEL PROCEDURE

3.01 The following procedure is used to determine the *unknown* TLP of the facility where the J-board equalizer is inserted.

NOTICE

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Bell System except under written agreement

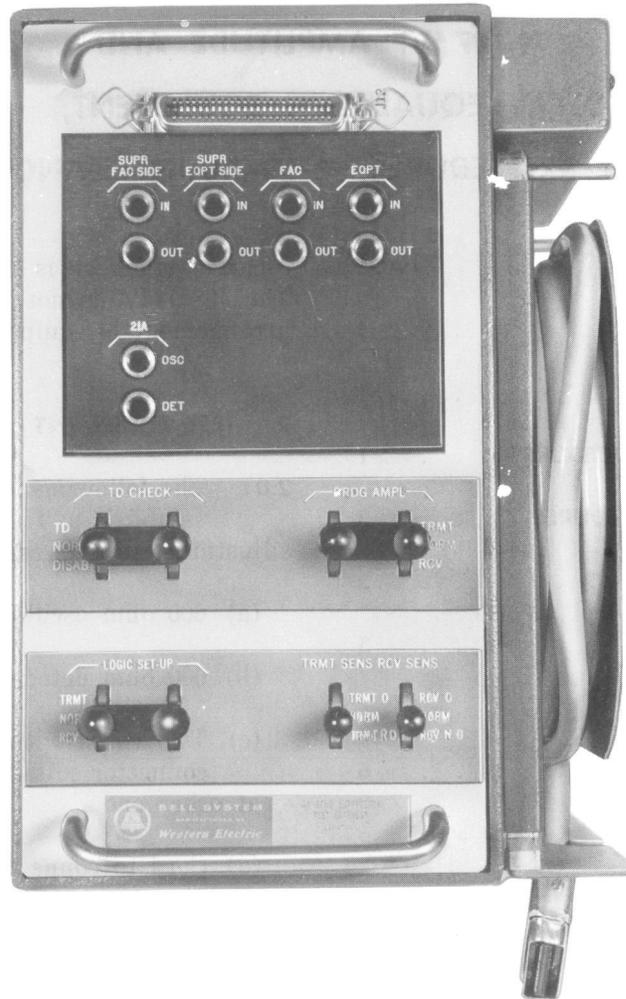


Fig. 1—J68914TA Test Extender

STEP

PROCEDURE

At Receive End

- 1 Determine J-board equalizer arrangement. If bay mounted, proceed with Step 2. If shelf mounted, proceed with Step 6.
- 2 Remove the J-board equalizer that is being adjusted from the bay.
- 3 Plug the J-board equalizer into the test extender.
- 4 Plug test extender cord into proper position of bay.
- 5 Insure that all key switches on the test extender are in the NORM position.

STEP	PROCEDURE
6	Insert detector in FAC OUT jack of J68914TA test extender or in EQPT FAC OUT jack of J99347C shelf. At Transmit End
7	Establish voice contact with receive end of facility.
8	Transmit signal of 1 kHz at 13 dB below the central office TLP. At Receive End
9	Measure level in dBm and add 13 dB to determine TLP. See example in Step 10.
10	Set level adjust switch (S1) to +7, -2, or -16 depending on which setting is nearest to total level in Step 9. Note: The following is an example of Steps 8, 9, and 10.

<u>TRANSMIT END</u>	<u>RECEIVE END</u>
C.O. TLP -16	—
Send level -29 dBm	Rec. level -6 dBm
—	C.O. TLP +7
—	Set switch S1 to +7

4. GAIN ADJUSTMENT PROCEDURES

4.01 The appropriate procedure in performing the 1 kHz gain adjustment is determined by using the J-board equalizer, either in the J99347B-L1 bay or J99347C-L1 shelf. The J-board shelf has a factory-wired jack panel which provides access to each position. The J-board bay requires use of a J68914TA test extender to provide appropriate access circuit jacks for an individual position.

4.02 Care should be used when testing the J-board equalizer with a J68914TA test extender. Test equipment should *not* be connected to the jacks labeled 21A OSC and 21A DET. All level switches must be in NORM position.

4.03 Before performing the gain adjustment, the following pretest items should be verified:

- The individual J-board equalizer to be adjusted
- The 950-type equalizer switch positions are in agreement with the circuit layout record card (CLRC)
- The level adjust switch and NORM/REV switch are properly positioned.

A. J99347B-L1 Bay (or logic position of 4A Echo Suppressor shelf or bay)—Using J68914TA Test Extender—Fig. 2

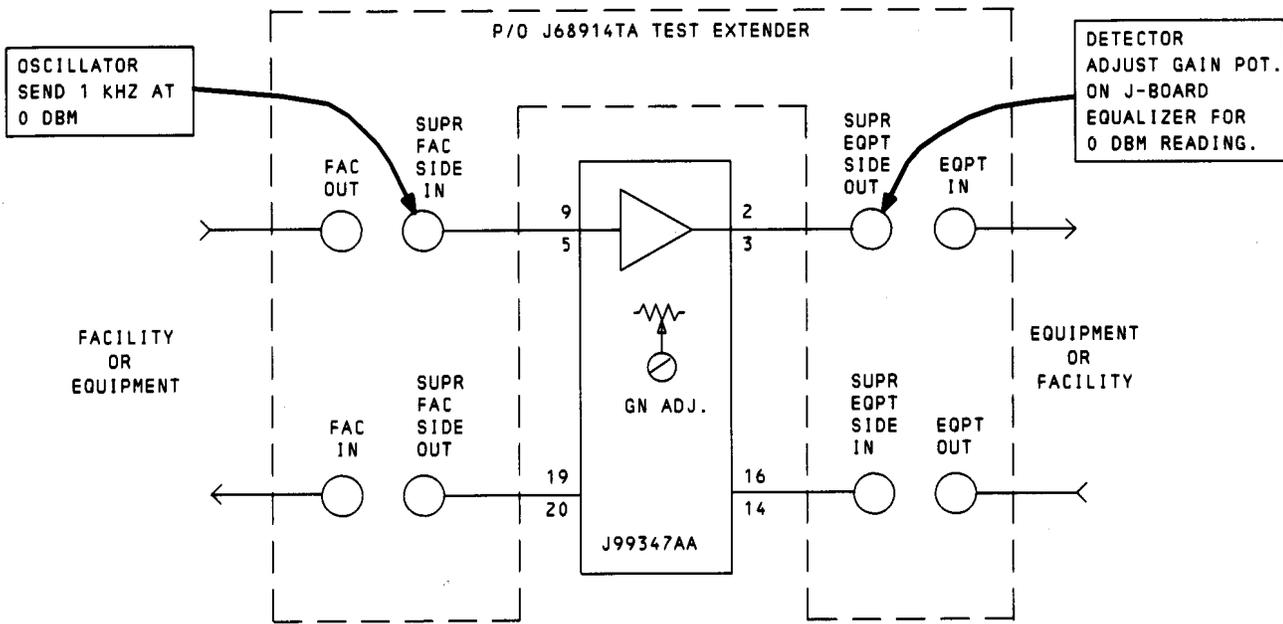


Fig. 2—Gain Adjustment Connections for J99347B Bay or Logic Position of 4A Echo Suppressor

STEP

PROCEDURE

- 1 Remove the J-board equalizer that is being adjusted from the bay.
- 2 Plug test extender cord into proper position of bay.
- 3 Insure that all key switches on the test extender are in the NORM position.
- 4 Plug the J-board equalizer into the test extender.
- 5 Set oscillator and detector for 600 ohm impedance operation.
- 6 Connect oscillator to detector.
- 7 Adjust oscillator at 1 kHz signal for a 0-dBm reading at the detector.
- 8 Connect oscillator to the SUPR FAC SIDE-IN jack.
- 9 Connect detector to the SUPR EQPT SIDE-OUT jack.
- 10 Adjust GN ADJ at front of unit to provide a 0-dBm reading at the detector.
- 11 When adjustment cannot be made, refer to Part 5, Maintenance.
- 12 Remove the test extender cord from the bay.
- 13 Insert the J-board equalizer into its proper bay position.

B. J99347C-L1 Shelf (equipped with jack panel)—Fig. 3

STEP	PROCEDURE
1	Remove the J-board equalizer from the shelf that is being adjusted.
2	Set oscillator and detector for 600 ohm impedance operation.
3	Connect oscillator to detector.
4	Adjust oscillator at 1 kHz signal for a 0-dBm reading at the detector.
5	Connect oscillator output cord to the EQL IN jack corresponding to the proper shelf position.
6	Connect detector to the EQL OUT jack.
7	Adjust GN ADJ at front of unit to provide a 0-dBm reading at the detector.
8	When adjustment cannot be made, refer to Part 5, Maintenance.
9	Remove test cords and insert the J-board equalizer into the proper shelf position.

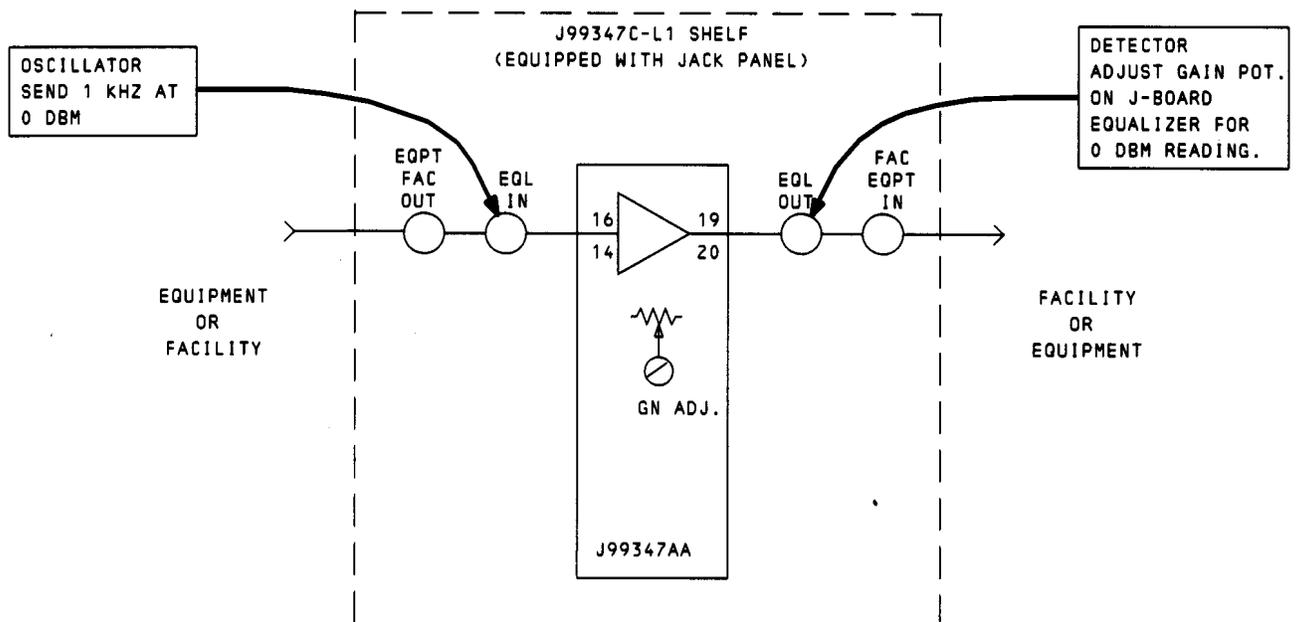


Fig. 3—Gain Adjustment Connections for J99347C Shelf

5. MAINTENANCE

A. Philosophy

5.01 No routine maintenance or realignment on the J-board equalizer, shelf, or bay is required.

5.02 Defective units may be located by successive substitution of good units. For example, begin substituting 950-type equalizers and then the J-board equalizer until the trouble disappears. The last unit substituted is defective and must be sent to the appropriate WE service center for repair.

B. Troubleshooting Aids

5.03 Troubles of a J-board equalizer are classified as a power failure or signal transmission failure. Signal failures are usually indicated by a customer complaint, and a power failure is indicated by a central office alarm or lamp. The lamp lights whenever a fuse blows. Fuses are located on the J99347C-L1 shelf for each J-board equalizer position. If the J99347B-L1 bay is utilized, a fuse is provided for each shelf but not for each J-board equalizer position.

5.04 Signal transmission failure is discussed as three distinct cases of trouble. Two cases pertain to troubles in properly adjusting the 1 kHz gain and are indicative of a defective J-board equalizer or 950-type equalizer. The third case arises when the overall circuit cannot meet the equalization requirements. The trouble may or may not involve the 950-type equalizers.

5.05 Verify that the test equipment is operating normally and is properly connected to the bay or shelf.

Case I: No signal is measured by detector when adjusting the 1 kHz gain.

Problem: An open circuit in the J-board equalizer or one of the 950-type equalizers.

Procedure: Remove the 950-type equalizers one at a time, beginning at the highest numbered position (5) until the signal appears at the detector. The last 950-type equalizer removed is defective. Replace with a good 950-type equalizer with exact switch settings. If all 950-type equalizers have been removed and the signal is still not present, the J-board equalizer is defective and should be replaced.

Case II: Unable to adjust the 1 kHz gain to 0 dB.

Problem: Improper operation of J-board equalizer or 950-type equalizer.

Procedure: Remove all 950-type equalizers from the J-board equalizer. Adjust the oscillator output for 0 dBm at 1 kHz. Check the range of adjustment using the J-board equalizer GN ADJ. Set the GN ADJ to the extreme counterclockwise position. The detector should read -4.0 ± 0.5 dB. Set the GN ADJ to the extreme clockwise position. The detector should now read $+3 \pm 0.5$ dB. If this range cannot be achieved, the J-board equalizer is defective and should be replaced. If the J-board equalizer generates the proper range, begin replacing the 950-type equalizers starting with the number 1 position. After the insertion of *each* 950-type equalizer, attempt to adjust the gain to 0 dB. If the adjustment can be made, proceed by inserting the next 950-type equalizer. If the adjustment cannot be made, the 950-type equalizer inserted last is defective and should be replaced.

Case III: Unable to meet the circuit equalization requirements.

Problem: Several possibilities exist which include:

- (a) Improperly aligned carrier facilities
- (b) Poor quality carrier or cable facilities
- (c) Cable makeup is different from that specified on circuit layout record card
- (d) Improper switch setting on 950-type equalizers
- (e) Defective J-board equalizer or 950-type equalizers.

Procedure: The control central office of the circuit should direct facility verification and trouble sectionalization. If the J-board equalizer equipped with the 950-type equalizers is suspected of malfunction, the 950-type equalizers should be investigated first. (The J-board equalizer should have virtually no effect on amplitude and envelope delay equalization.) The defective 950-type equalizers should be located by substituting with good 950-type equalizers into the J-board equalizer.