
L MULTIPLEX TERMINALS
COMMON EQUIPMENT
SCANNER AND TEST AND ALARM CIRCUITS
CHECK OF GAIN MEASUREMENT AND END-OF-RANGE
ALARM FUNCTION OF 234B AMPLIFIER

The J68858 scanner circuit uses a 234B amplifier as a means of determining any deviation in gain of a group or supergroup amplifier. Two alarm outputs are provided by the 234B amplifier. One output lights the end-of-range (EOR) alarm lamp, and the second output activates a bay alarm circuit.

This section is reissued to include a note indicating possible interaction between the +DB ALM and -DB ALM control adjustments. Arrows identify the changes. *Equipment Test Lists are not affected.*

APPARATUS

KS-14510 Volt-Ohm-Milliammeter (VOM)

ED-50116-30 Range Alignment Termination

STEP

PROCEDURE

- 1 On the scanner control panel, operate the OFF/ON pushbutton to the OFF position.
Requirement: Red lamp lights.
- 2 Read the GROUP gain meter and SUPERGROUP gain meter indication.
Requirement: 0.0 dB
- 3 If the requirement of Step 2 is not met, adjust the mechanical zero of the appropriate meter.
Note: Access to the 234B group and supergroup range amplifier units is required when performing these tests.
- 4 Disengage the panel cover fasteners and remove the cover from the scanner ALM PNL.
- 5 Operate the OFF/ON pushbutton switch on the scanner control panel to the ON position (white lamp lighted).

STEP	PROCEDURE
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- 6 If the scanner circuit is used with LMX-2 terminal equipment, adjust the gain and balance functions of the 234B group and supergroup range amplifiers. Proceed to Part A. If the scanner circuit is used with LMX-1 terminal equipment, proceed directly to Part B.

A. Group Amplifier

Note: If the requirements for the group range amplifier cannot be met, replace the GR RANGE 234B amplifier unit.

Caution: *Service must be removed from the selected group before proceeding to Step 7. If possible, a spare group should be selected to eliminate the possibility of a patching error. If a spare group cannot be selected, service must be patched from a working group to a spare group in another bay.*

- 7 Set the BAY or MG, SG, and GRP rotary selector switches on the scanner control panel to the positions that correspond with the spare group amplifier.

- 8 Remove the selected spare group amplifier or 512A termination from its shelf position.

Note: In earlier installations of LMX-2, the scanner may have been strapped for fast scanning where a group or supergroup is not assigned to service. The fast scan option (SD-50184) has been manufacture discontinued and later installations will not be provided with this option.

- 9 Insert the range alignment termination in the vacated spare group amplifier position.

- 10 Set the selector switch on the range alignment termination to the GR GAIN 0 position.

- 11 Depress the SELECT pushbutton switch on the scanner control panel.

- 12 Read the GROUP GAIN meter.

Requirement: 0 dB

- 13 If the requirement of Step 12 is met, proceed to Step 17. If it is not met, adjust the BAL control on the 234B GR RANGE amplifier to meet the requirement.

Caution: *Do not make a mechanical meter adjustment in lieu of or in connection with the electrical adjustment.*

- 14 Condition VOM to measure -6 Vdc; make patches (1) and (2), Fig. 1.

- 15 Measure the voltage at test jack J1 (black) on the 234B GR RANGE amplifier.

Requirement: -6.0 volts dc

- 16 If the requirement of Step 15 is met, remove patches (1) and (2); proceed to Step 17. If it is not met, adjust the GAIN control on the 234B GR RANGE amplifier to meet the requirement; remove patches (1) and (2).

STEP	PROCEDURE
17	Set the selector switch on the range alignment termination to the GR GAIN +4 position.
18	Read the GROUP GAIN meter. Requirement: 4-dB HIGH GAIN
19	If the requirement of Step 18 is met, proceed to Step 20. If it is not met, adjust the +FS control on the 234B GR RANGE amplifier to meet the requirement.
20	Set the selector switch on the range alignment termination to the GR GAIN -4 position.
21	Read the GROUP GAIN meter. Requirement: 4-dB LOW GAIN
22	If the requirement of Step 21 is met, proceed to Step 23. If it is not met, adjust the -FS control on the 234B GR RANGE amplifier to meet the requirement.
23	Verify that the requirements in Steps 12, 18, and 21 are met. Repeat Steps 10 through 22, as necessary, to meet all requirements.
	End-of-Range
24	Remove the 234B SG RANGE amplifier from the regulator alarm panel (Fig. 1). Note: The EOR alarm lamp lights if <i>either</i> the group or supergroup 234B amplifier detects an end-of-range condition.
25	Set the selector switch on the range alignment termination to the GR GAIN +4 position.
26	Observe the EOR lamp on the group bank shelf containing the range alignment termination.
27	If the EOR lamp is extinguished, alternately press and release the EOR RST key on the jack and control panel and slowly turn the +DB ALM control on the 234B GR RANGE amplifier clockwise until the EOR lamp just lights. Note: The +DB ALM and -DB ALM controls do not have end stops.
28	If the EOR lamp is lighted, alternately press and release the EOR RST key on the jack and control panel and turn the +DB ALM control on the 234B GR RANGE amplifier counterclockwise to just extinguish the lamp. Then slowly turn the +DB ALM control clockwise until the lamp just lights.
29	Set the selector switch on the range alignment termination to the GR GAIN -4 position.
30	Observe the EOR lamp on the group bank shelf containing the range alignment termination.

STEP	PROCEDURE
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31 If the EOR lamp is extinguished, alternately press and release the EOR RST key on the jack and control panel and slowly turn the –DB ALM control on the 234B GR RANGE amplifier clockwise until the EOR lamp just lights. (See Note in Step 27.)

32 If the EOR lamp is lighted, alternately press and release the EOR RST key on the jack and control panel and turn the –DB ALM control on the 234B GR RANGE amplifier counterclockwise to just extinguish the lamp. Then slowly turn the –DB ALM control clockwise until the lamp just lights.

◆**Note:** There may be interaction between the +DB ALM and –DB ALM control adjustment; therefore, repeat Steps 25 through 32 as necessary to meet requirements.◆

33 Remove the range alignment termination from the group amplifier shelf position.

34 Restore the group amplifier or 512A termination (removed in Step 8) to the group amplifier shelf position.

35 Restore the 234B SG RANGE amplifier (removed in Step 24) to the regulator alarm panel.

B. Supergroup Amplifier

Note: If the requirements for the supergroup range amplifier cannot be met, replace the SG RANGE 234B amplifier unit.

Caution: *Service must be removed from the selected supergroup before proceeding to Step 36. If possible, a spare supergroup should be selected to eliminate the possibility of a patching error. If a spare supergroup cannot be selected, service must be patched from a working supergroup to a spare supergroup in another bay.*

36 Set the BAY or MG and SG rotary selector switches to the positions that correspond with the spare supergroup amplifier position.

37 Remove the spare regulated supergroup amplifier or 512B termination from its shelf position.

Note: If the selected supergroup is not in service and strapped for fast scanning, the strap must be removed prior to testing the supergroup range amplifier.

38 Insert the range alignment termination in the vacated spare supergroup amplifier position.

39 Set the selector switch on the range alignment termination to SG GAIN 0 position.

40 Depress the SELECT pushbutton switch.

41 Read the SUPERGROUP GAIN meter.

Requirement: 0 dB

42 If the requirement of Step 41 is met, proceed to Step 46. If it is not met, adjust the BAL control on the 234B SG RANGE amplifier to meet the requirement.

STEP	PROCEDURE
	Caution: <i>Do not make a mechanical meter adjustment in lieu of or in connection with the electrical adjustment.</i>
43	Condition VOM to measure -6 Vdc; make patches (2) and (3), Fig. 1.
44	Measure the voltage at test jack J1 (black) on the 234B SG RANGE amplifier. Requirement: -6.0 volts dc
45	If the requirement of Step 44 is met, remove patches (2) and (3); proceed to Step 46. If it is not met, adjust the GAIN control on the 234B SG RANGE (Fig. 1) amplifier to meet the requirement; remove patches (2) and (3).
46	Set the selector switch on the range alignment termination to the SG GAIN $+6$ position.
47	Read the SUPERGROUP GAIN meter. Requirement: 6-dB HIGH GAIN
48	If the requirement of Step 47 is met, proceed to Step 49. If it is not met, adjust the $+FS$ MTR control on the 234B SG RANGE amplifier to meet the requirement.
49	Set the selector switch on the range alignment termination to the SG GAIN -6 position.
50	Read the SUPERGROUP GAIN meter. Requirement: 6-dB LOW GAIN
51	If the requirement of Step 50 is met, proceed to Step 52. If it is not met, adjust the $-FS$ control on the 234B SG RANGE amplifier to meet the requirement.
52	Verify that the requirements in Steps 41, 47, and 50 are met. Repeat Steps 39 through 51, as necessary, to meet all requirements. End-of-Range
53	Set the selector switch on the range alignment termination to the SG GAIN $+6$ position.
54	Observe the EOR lamp on the supergroup bank shelf containing the range alignment termination.
55	If the EOR lamp is extinguished, alternately press and release the EOR RST key on the jack and control panel and slowly turn the $+DB$ ALM control on the 234B SG RANGE amplifier clockwise until the EOR lamp just lights. Note: The $+DB$ ALM and $-DB$ ALM controls do not have end stops.
56	If the EOR lamp is lighted, alternately press and release the EOR RST key on the jack and control panel and turn the $+DB$ ALM control on the 234B SG RANGE amplifier

STEP	PROCEDURE
	counterclockwise to just extinguish the lamp. Then slowly turn the +DB ALM control clockwise until the lamp just lights.
57	Set the selector switch on the range alignment termination to the SG GAIN -6 position.
58	Observe the EOR lamp on the supergroup bank shelf containing the range alignment termination.
59	If the EOR lamp is extinguished, alternately press and release the EOR RST key on the jack and control panel and slowly turn the -DB ALM control on the 234B SG RANGE amplifier clockwise until the EOR lamp just lights (see Note in Step 55).
60	If the EOR lamp is lighted, alternately press and release the EOR RST key on the jack and control panel and turn the -DB ALM control on the 234B SG RANGE amplifier counterclockwise to just extinguish the lamp. Then slowly turn the -DB ALM control clockwise until the lamp just lights.
	◆ Note: There may be interaction between the +DB ALM and -DB ALM control adjustment; therefore, repeat Steps 53 through 60 as necessary to meet requirements.◆
61	Remove the range alignment termination from the supergroup amplifier shelf position.
62	Restore the supergroup amplifier or 512B termination (removed in Step 37) to the amplifier shelf position.
63	Replace the scanner ALM PNL front cover and engage the two twist-lock panel cover fasteners.

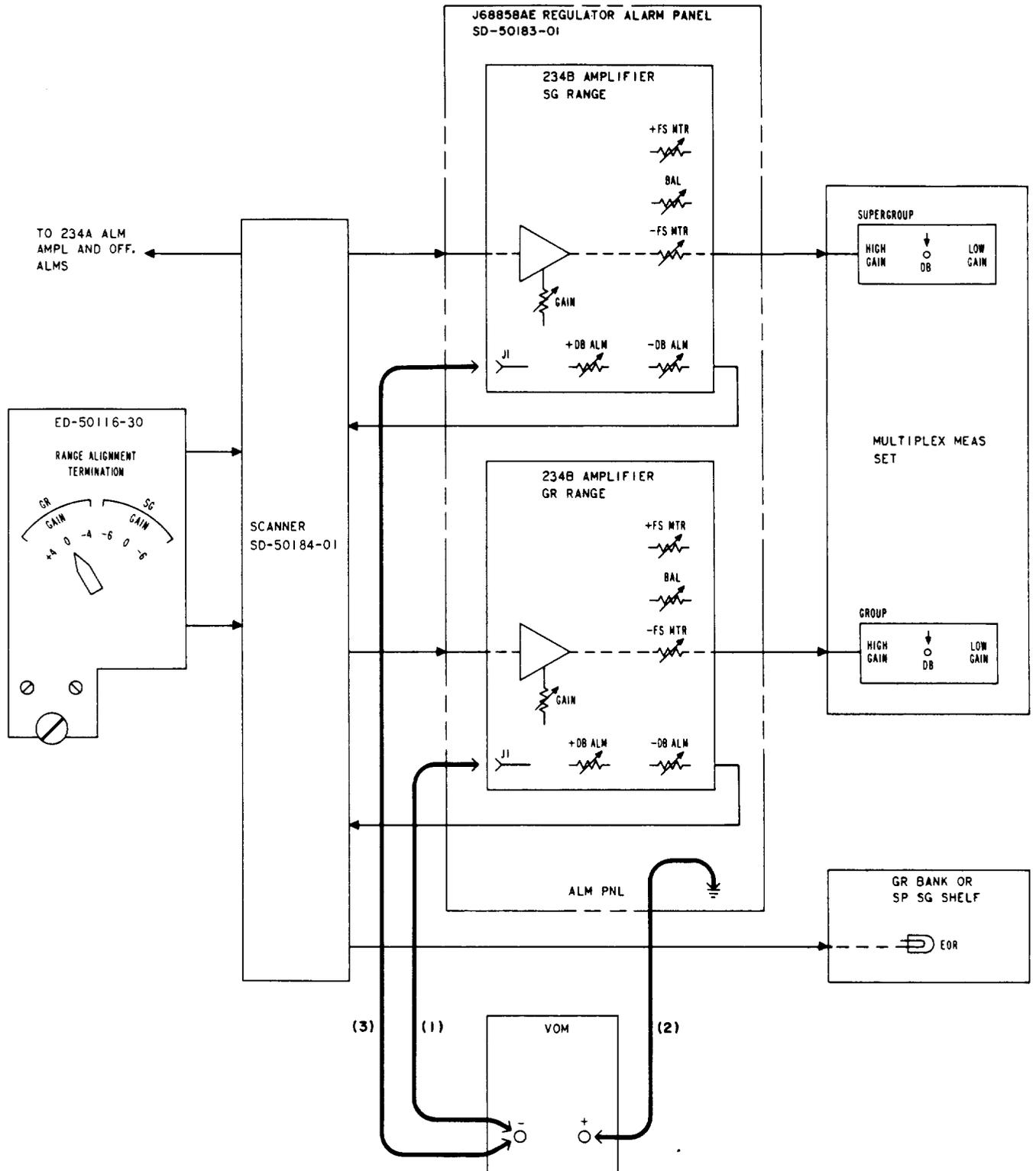


Fig. 1—Gain Adjustment and End-of-Range Alarm Tests—234B Amplifier