

K1 CARRIER TELEPHONE TERMINAL
CHANNEL AND GROUP EQUIPMENT

1. GENERAL

1.01 This addendum to Section E34.061, Issue 5, dated October 1942 provides additional test procedures for terminals which have been modified for tandem operation of K1 and K2 carrier sections without intervening channel or group equipment at the junction point. Corrections have also been made in some of the test procedures.

1.02 All the tests covered in the section apply to terminals modified for tandem operation except as follows.

- (1) The procedure of Part 3(C) Check of Suppression Filter Losses as given in the Section applies only to unmodified terminals.
- (2) The procedure of Part 3(N) Check of Carrier Leak and 64 kc Suppression Filter Loss as given in this addendum applies to modified terminals.
- (3) The procedure of Part 3(O) 60 kc Suppression Filter Loss as given in this addendum applies to modified terminals.

3. TESTS AND ADJUSTMENTS OF CHANNEL AND GROUP EQUIPMENT

(A) Transmitting Group Gain

Page 6 Paragraph 3.03 Item (8) Change Requirements to read:

Requirements: The gain at 63 kc, 87 kc and 107 kc should be between 49.8 and 52.1 db for group modulators with or without Pilot hybrid coils. This also applies to terminals which have been modified for tandem operation of K1 and K2 systems.

Note: If the channel bank associated with the group equipment being measured is not equipped with a switching hybrid, the transmitting group gain should be 3 db less than the above figures.

(D) Overall Transmitting Gain Adjustment, A1 or A2 Bank

Page 7 Paragraph 3.13 Preceding Item (1) add:

Note: The Terminal should be operating on the Regular Carrier Supply.

(G) Transmitting Stabilized Pilot Output of 12, 28, and 56 kc

Page 10 Paragraph 3.23 In Requirements Change ALT to read REG and REG to read ALT

(L) Overall Channel Transmission Characteristics

Page 18 Paragraph 3.46 In Item (4) Change GR DEM OUT to read DEM OUT of the Channel to be measured.

Page 18 after Paragraph 3.49 add the following:

(N) Check of Carrier Leak and 64Kc Suppression Filter Loss

3.50 The carrier leak suppression filter loss is checked at 92 and 108 kc by using the pilot supply frequencies obtained at the PC LEV M1 jacks. These frequencies appear at the EQ jacks as 28 and 12 kc respectively. The suppression filter loss at 64 kc appearing as 56 kc at the EQ jacks, is checked by supplying 64 kc from a 17B oscillator which has been adjusted to the pilot frequency by beating the oscillator with the 64 kc from the pilot supply. This procedure is necessary because at the low level of the 64 kc pilot, there is sufficient interference from other sources to cause inaccuracies in the measurement. A higher input test level is employed by supplying the test pilot frequency by means of the 17B oscillator.

3.51 Apparatus:

- 1 - 17B Oscillator
- 1 - 30A T.M.S.
- 1 - 31A or 42A T.M.S.
- 1 - 323A Plug
- 3 - 3P20B Cords

3.52 Procedure - 12 and 28 kc Pilots - See Fig. 12:

- (1) Operate the TRNS switch of the stabilized pilot channel supply to ALT position.
- (2) Patch from PC LEV M1 jacks to the GR MOD IN jacks.
- (3) Terminate the EQ jacks with a 323A plug and connect the cord of the 31A or 42A T.M.S. to the 323A plug.

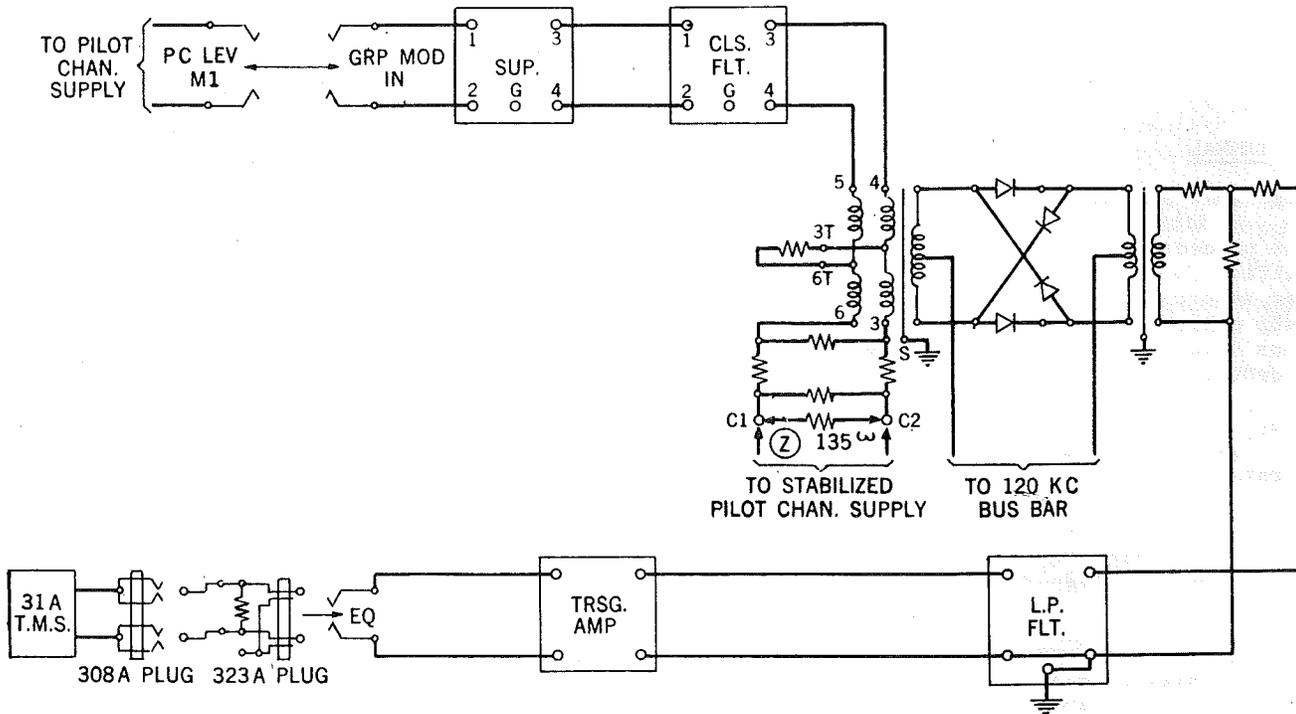


Fig. 12 - Carrier Leak Suppression Filter Loss

(4) Disconnect the leads from Terminals C1 and C2 on the group modulator panel and replace with a 135 ohm, 106A resistance (Z wiring Fig. 12).

(5) Tune the 31A or 42A T.M.S. and measure the output at 12 and 28 kc.

Requirement: The 12 and 28 kc output as measured should not be greater than -32 dbm.

(6) If the requirements at 12 and 28 kc are not met, the carrier leak suppression filter is defective provided the transmitting group gain meets requirements.

(7) Remove all patches but do not change the 135 ohm termination of Item (4).

3.53 Procedure - 56 Kc Pilot - 17B Oscillator Frequency Calibration. See Fig. 13:

(1) Patch from OUT or TST OSC OUT jacks of 17B oscillator to the POTENTIOMETER IN jacks of 30A T.M.S.

(2) Set the attenuator for 57 db loss and patch from the ATTENUATOR OUT jacks to the multiple jacks and from multiple jacks to PC LEV M1 jacks of pilot supply.

(3) Terminate the multiple jacks in a 323A plug and connect the cord of the 31A or 42A T.M.S. to the 323A plug.

(4) Set the 17B oscillator to 64 kc, operate the test key of the 30A set to COMPARE and adjust the output of the 17B oscillator to give a 0 db reading on the 30A T.M.S.

(5) With the 30A T.M.S. attenuator set for 57 db loss, operate the test key to the ADJUST position.

(6) Tune the 31A or 42A T.M.S. to the test frequency and adjust the test frequency of the 17B oscillator so that the beats observed on the 31A or 42A T.M.S. do not exceed one per second.

(7) Remove all patches except the patch from the OUT or TST OSC OUT jacks of the 17B oscillator to the POTENTIOMETER IN jacks of the 30A T.M.S.

3.54 Procedure - 56 Kc Pilot Measurement:

(1) The 135 ohm termination of Item (4) Paragraph 3.52 should remain in place.

(2) Patch from ATTENUATOR OUT jacks of 30A T.M.S. to GR MOD IN jacks.

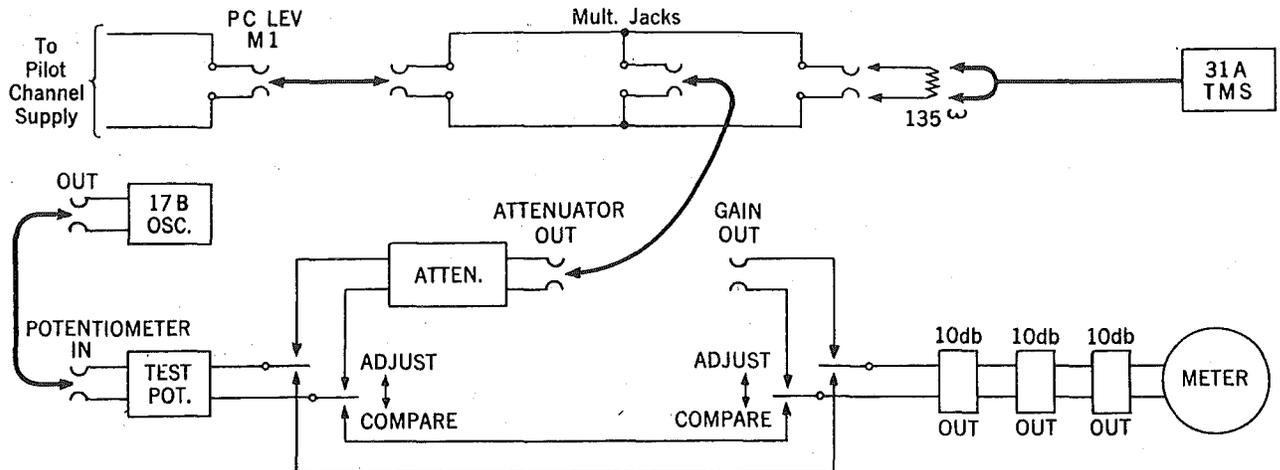


Fig. 13 - 17B Oscillator Frequency Calibration 56 Kc Pilot Measurement

- (3) Terminate the EQ jacks with a 323A plug and connect the 31A or 42A T.M.S. to the 323A plug.
- (4) With the oscillator frequency adjusted as covered in Paragraph 3.53 operate the test key of the 30A T.M.S. to COMPARE position and adjust the oscillator output to give a 0 db reading on the 30A T.M.S.
- (5) Set the attenuator for 27 db loss and operate the test key of the 30A T.M.S. to ADJUST position sending test power of -27 dbm into the group circuit.
- (6) Tune the 31A or 42A T.M.S. and measure the output at 56 kc.

Requirement: The output as measured should not be greater than -36 dbm.

- (7) If the requirement at 56 kc is not met, disconnect entirely the 64 kc suppression filter SUP, connecting the circuit through wire for wire.
- (8) Increase the attenuator setting 34 db making the total attenuator loss 61db. Remeasure the 56 kc pilot with the 31A or 42A T.M.S.

Requirement: The output as measured should not be greater than -32 dbm.

- (9) If this requirement is not met the CLS filter is defective provided the transmitting group gain meets requirements. If this requirement is met and the requirement of Item (6) is not met, the 64 kc suppression filter SUP is defective.

- (10) Remove all patches and restore to normal the wiring changes made in accordance with Item (4) Paragraph 3.52.
- (11) Operate the TRNS switch of the stabilized pilot channel supply to REG position.

(0) 60 Kc Suppression Filter Loss

3.55 The 60 kc suppression filter prevents the 60 kc pilot frequency which is present on the line from producing a 60 kc output frequency in the group demodulator. If transmission of this frequency through the group demodulator were permitted, a high amplitude 60 kc product would be transmitted to channel 12 demodulator and a strong 4 kc tone would be produced. The test makes use of the 60 kc pilot frequency generated in a K2 transmitting amplifier, but requires a change from the normal setting of its frequency adjustment in order to maintain the frequency at 60 kc. The reason for this is that the frequency generated by the K2 transmitting amplifier depends on the impedance terminating it, and for this test the termination is the group demodulator instead of the line. The purpose of Item (7) is to remove a beat which sometimes makes measurement difficult. It also reduces the loss by about 4 db. Items (1) through (5) set up a suitable test frequency for the filter measurement of Items (6) through (8).

3.56 If a K2 transmitting amplifier or Test Pilot Supply is not available for use as a 60 kc supply, substitute a 17B oscillator and adjust the output for +15 dbm at 60 kc and follow the same general procedure as given on the following page.

3.57 Apparatus:

- 1 - 31A or 42A T.M.S.
- 1 - 323A Plug
- 1 - 3P20B Cord

3.58 Procedure:

- (1) Patch from the EQ jacks at the output of the K2 transmitting amplifier to GR DEM IN jacks of the K1 terminal.
- (2) Terminate GR DEM OUT jacks of the K1 terminal with a 323A plug and connect the 31A or 42A T.M.S. to it.
- (3) Strap terminals 1 and 4 and terminals 2 and 3 of the 60 KCS filter.
- (4) Tune the 31A or 42A T.M.S. to 60 kc and observe the beat. If a beat of larger amplitude is desired, unbalance the demodulator by strapping terminals 1 and 2 of the D varistor on group demodulator panel.
- (5) Adjust the condenser of the 60 KC OSC network of the K2 transmitting amplifier until the beat is no faster than one per second.

(6) Remove the straps on the 60 KCS filter and the strap, if used, on the D varistor. These straps were placed in the procedure of Items (3) and (4).

(7) Strap terminals 3 and 5 of the DI repeating coil to the corresponding terminals of the DO repeating coil.

(8) Retune the 31A or 42A T.M.S. to 60 kc if necessary and measure the output.

Requirement: The 60 kc output should not exceed -40 dbm.

Note: This value applies after the GR DEMOD loss has been adjusted as required for use in service in Part 3(H) Receiving Group Loss.

(9) At the completion of the test, remove the straps of the DI and DO repeating coils placed in accordance with procedure of Item (7) and readjust the 60 kc frequency of the K2 transmitting amplifier as covered in E34.071 Part 3(D) 60 kc Pilot Frequency Adjustment.