

GROUP, CHANNEL, AND PILOT SUPPLY

J2, K AND COMBINED J2 AND K

1. GENERAL

1.01 This addendum, Issue 2, replaces Issue 1 to Section E34.055, Issue 1, and covers the following:

(1) Changes in test procedures relating to the carrier supply for Type K terminals to cover the operation of as many as three carrier generator panels without tuning forks connected to generator panel with a 4 kc tuning fork. This was covered in Issue 1.

(2) Change in requirement for the pilot level adjustment for Type K terminals when the stabilized pilot channel supply is equipped for more than 11 but not exceeding 16 terminals. This was covered in Issue 1.

(3) A procedure has been added to cover the 4 kc carrier generator output test when a crystal oscillator is used in place of the tuning fork.

(4) Vacuum tube requirements have been added to cover the 4 kc carrier generator when the crystal oscillator is used.

(5) An improved procedure has been included covering use of the oscillograph in the synchronization of the carrier supply with the 4 kc reference frequency.

(6) Changes have been included to improve several of the test procedures.

2. TESTS AND ADJUSTMENTS OF VACUUM TUBES

Pages 4, 5, 6, 7 and 9, Tables I, II, III, IV and V Tube Test Requirements. The values given in the tables of the section for the Carrier Generator OSC tube 2 apply to the 4 kc tuning fork oscillator. For the 4 kc crystal type oscillator the following values apply. No other changes are necessary.

<u>Space-Millivolts</u>	<u>P2</u>
Min.	400
Max.	640

3. TESTS AND ADJUSTMENTS OF CARRIER SUPPLIES

(A) Switching of Regular and Emergency Carrier Supplies

Page 11 following Paragraph 3.01 add:

3.011 When one, two or three generator panels without tuning forks are connected to one generator panel with a 4 kc tuning fork, the procedures of Paragraphs 3.02, 3.03 and 3.04 apply only to the transfer circuit normally associated with the 4 kc fork. This will switch all the carrier supply circuits. The transfer circuits associated with the other carrier supplies should not be operated. The caution relating to the removal of the can cover, Item (2) Paragraph 3.04, does not apply to the carrier supplies which do not have a 4 kc fork associated directly with them since the red and green lamps do not operate from the common circuit.

Page 11 Paragraph 3.04 change first sentence of Item (2) to read:

(2) Thus, when making any adjustments on the regular carrier generator or the generator transfer circuit, the emergency supply must be locked in by operating the EMER key. (Remainder of Item (2) is the same as in the Section.)

Page 11 Paragraph 3.04 change first sentence of Item (4) to read:

(4) Before testing or adjusting the transfer circuit or removing the 24-volt filament or 130-volt plate battery fuses, the red EMER key should be operated causing the light on the transfer panel to light. (Remainder of Item (4) is the same as in the Section.)

Page 11, Paragraph 3.04 replace Item (5) with the following:

(5) When the tests are completed, remove the 217D plugs from the TST ODD and TST EVEN jacks of the regular generator and operate the RLS key to restore the transfer circuit to its normal condition.

Page 12, Paragraph 3.05. In order to correct an error in the section applying to regular operation change Item (3) to read:

(3) Before attempting to transfer back to the regular supply, the regular carrier generator and carrier supply amplifiers should be checked as described in Part 3(F) Carrier Supply Output at Test Jacks. If this test does not disclose the

trouble, the vacuum tubes should be tested as covered in Part 2(B) Vacuum Tube Tests - General.

Page 12. Following Paragraph 3.05 add the following to cover the case when one, two or three carrier generator panels without tuning forks are connected to one generator with a 4 kc fork.

3.051 The carrier supply whose generator is equipped with a 4 kc fork will be switched in the normal manner and this will also switch all the carrier supplies whose generators are connected to the common 4 kc fork. The carrier supplies directly associated with the unequipped carrier generators are automatically switched when their respective busbar levels decrease sufficiently to normally bring in a visual alarm. The lead normally connected to the visual alarm connects to the transfer circuit associated with the equipped carrier generator causing a transfer of all associated carrier supplies to their emergency carrier generators. Assuming the emergency generators and the amplifiers are working properly the only indication of this transfer will be the audible and visual alarm signals of the transfer alarm circuit associated with the carrier generator equipped with the 4 kc fork.

3.052 Procedure - To be Followed After an Automatic Switch to the Emergency Carrier Supply.

- (1) To silence the alarm operate the EMER key of the carrier supply which is normally associated with the 4 kc fork.
- (2) An automatic transfer to the emergency carrier supply indicates interruption or failure of any one of the regular carrier generators or any one of the regular carrier supply amplifiers or trouble in the wiring between panels.
- (3) To determine the cause of the transfer all regular carrier generators associated with the common 4 kc fork should be checked in accordance with Part 3(B) 4 kc Carrier Generator Output and Part 3(F) Carrier Supply Output at Test Jacks. It is necessary in making these tests that the 217D plugs be inserted in the TST ODD, TST EVEN and the TST jacks of the regular generators which are not equipped with 4 kc forks before 217D plugs are inserted in corresponding jacks of the generator equipped with the 4 kc fork. This procedure is necessary in order to prevent the regular and emergency generator feeding in multiple to the bus-bars associated with generators which are not equipped with 4 kc forks.
- (4) Should the emergency generators or their amplifiers not function properly when the carrier supplies are transferred to them, the audible alarm will sound and

the red CARR ALM lamp on the associated 120 kc alarm panel will light, indicating the particular emergency generator or amplifier which is in trouble.

(5) After the tests of Parts 3(B) and 3(F) are completed, the 217D plugs should be removed from the TST ODD, TST EVEN and TST jacks of the regular generator which is equipped with the 4 kc fork before the plugs are removed from the corresponding jacks of the generators which are not equipped with 4 kc forks.

(6) After the trouble in the regular carrier supply has been found and cleared, it should be restored to service by operating the RLS key on the carrier supply which is normally equipped with the 4 kc fork.

#### ↳ (B) 4 Kc Carrier Generator Output

Page 13 following Paragraph 3.10 add the following procedure to cover the 4 kc crystal type oscillator. The procedures of Paragraphs 3.09 and 3.10 of the section apply to the 4 kc tuning fork oscillator.

3.101 Procedure - Bridged Measurement at AMP T and AMP R Tubes Crystal Oscillator - See Fig. 1.1.

- (1) Lock-in the emergency carrier supply (See Part 3(A)) and test the regular carrier supply.
- (2) Make the vacuum tube test on the OSC and CON tubes as covered in Part 2(C) and replace the tubes if requirements are not met.
- (3) Insert 217D plugs (600 ohms) in the TST ODD and TST EVEN jacks whether J2, K or combined J2 & K carrier supply. In addition for J2, the TST jacks on the J2 carrier supply amplifiers of the carrier supply under test (regular or emergency) should be terminated in 600 ohms. For the K supply, insert a 217D plug in the TST 120 kc jacks on the 120 kc amplifier. For the combined J2 & K supply, insert 217D plugs in the TST jacks of each of the J2 carrier supply amplifiers and the TST 120 kc jacks on the 120 kc amplifier of the carrier supply under test.
- (4) Insert the plug of the 2W24A cord in the 600-ohm jacks of Coil 1 in the 30A set and patch from the 135-ohm jacks of Coil 1 to the 135-ohm TC jacks.
- (5) Connect the test clips of the 2W24A cord across the grid terminals of the AMP T and AMP R tubes and read the 30A set meter. No correction should be made for the transformer loss.

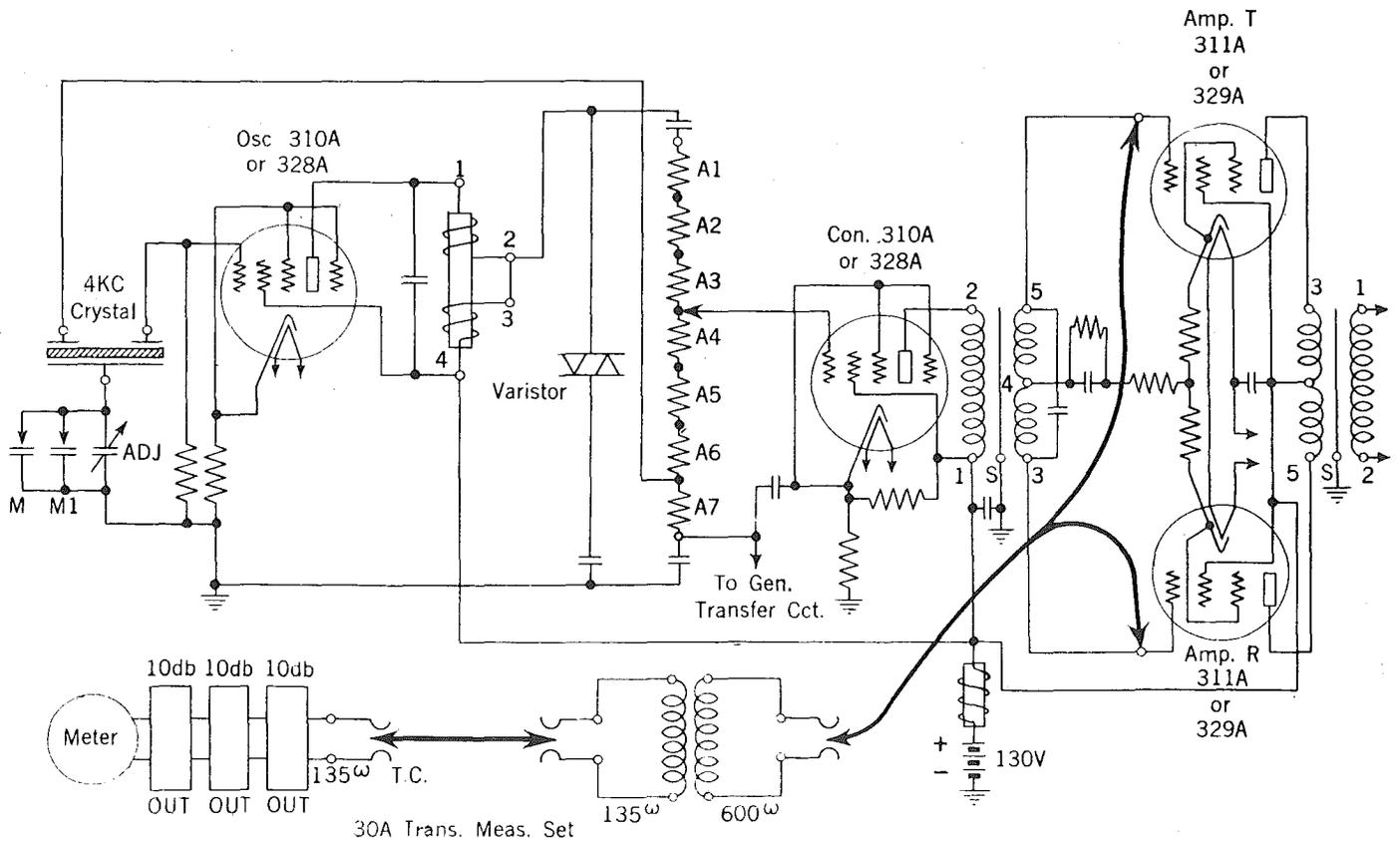


Fig. 1.1 - 4 Kc Carrier Generator Output - Crystal Oscillator

Requirements: Between -2.8 and -5.2 dbm.

(E) Synchronization of the Carrier Supply with 4 Kc Reference Frequency

(6) If requirements are not met, adjust the A2 to A6 resistances as required and repeat Step (5).

Page 18 following Paragraph 3.23 add the following:

(7) If the requirements are met after adjusting the A2 to A6 resistances, remove all the 217D plugs from the TST ODD, TST EVEN, and TST jacks on the carrier supply amplifiers and then restore the carrier supply to normal operation by operating the black RLS key.

3.231 Procedure for Type K or Combined J2 and K Supplies - Using the DuMont Type 208 Cathode Ray Oscillograph. In this procedure the 4 kc sweep is locked with the 4 kc reference frequency and 120 kc is applied from the 120 kc TST jacks to the Y-axis. The pattern in the screen is a single line sine wave of a little less than 30 cycles and moves across the screen. An indication is given instantly whether the frequency is off and with a little experience it can be determined about how much and in which direction the frequency is from the reference.

(8) Lock-in the regular carrier supply (See Part 3(A)) and repeat the above test for the emergency carrier supply.

(9) If the output is measurable but the output requirement of Item (5) cannot be met, replace the OSC tube regardless of the results of the tube tests and repeat the above procedure.

(1) Lock-in the emergency carrier supply (See Part 3(A)) when testing the regular carrier supply. Lock-in the regular carrier supply (See Part 3(A)) when testing the emergency carrier supply. See Note, Paragraph 2.13 Item (2) for preventing office alarms associated with stabilized pilot supply.

(10) If the requirement of Item (5) cannot be met after replacing the OSC tube, then replace the CON tube and repeat the above procedure.

(2) Insert 217D plugs (600 ohms) in the TST ODD and TST EVEN jacks. For the combined J2 & K supply, insert 217D plugs in the TST jacks on the J2 carrier supply amplifiers.

(3) Patch the 4 kc reference frequency to the 600-ohm jacks of Coil 1 in the 30A transmission measuring set and patch from the 135-ohm jacks of Coil 1 to the EXTERNAL SYNC SIGNAL and GROUND terminals of the oscillograph.

(4) Connect the SIGNAL INPUT of the Y-axis to the EXTERNAL SYNC SIGNAL terminal with the coil connected as covered in Item (3).

(5) Set the SYNC SIGNAL SELECTOR to EXTERNAL, set the COARSE FREQUENCY dial to 2-8 kc and set the SYNC SIGNAL AMPLITUDE dial to 0.

(6) Turn on the power and the beam and adjust the X-axis and Y-axis amplifiers to obtain a square or rectangle of convenient size.

(7) Adjust the FINE FREQUENCY control and the SYNC SIGNAL AMPLITUDE together until a stationary, single line sine wave of one complete cycle is obtained. The sweep circuit is now locked-in with the 4 kc reference frequency.

(8) Disconnect the Y-axis SIGNAL INPUT from the EXTERNAL SYNC SIGNAL terminal.

(9) Connect the TST 120 kc jacks of the 120 kc carrier supply amplifier to the SIGNAL INPUT and GROUND terminals of the Y-axis.

(10) Observe the single line, sine wave pattern of about 30 peaks. Motion to the right indicates too low a carrier frequency, too much tuning capacitance. Motion to the left indicates too high a carrier frequency, too little capacitance.

(11) Adjust the frequency of the carrier generator by means of the ADJ condenser and the M condenser.

Requirements:

(a) For circuit order tests 15 peaks or less per minute.

(b) For tests subsequent to the circuit order test 60 peaks or less per minute.

(12) After adjusting the frequency, make Test 3(B) 4 kc Carrier Generator Output.

(K) Pilot Level Adjustments of the K 64, 9, and 108 Kc Stabilized Pilots - K and Combined J2 and K Supplies Only

Page 31 following Requirements Item (c) add:

Requirements: When the pilot channel supply is equipped to handle more than 11 but not exceeding 16 terminals the following apply:

64 kc, -	55.1	±	.2 dbm
92 kc, -	55.8	±	.2 dbm
108 kc, -	56.3	±	.2 dbm

Note: The present requirements given in the section apply when not to exceed 11 terminals are connected to the pilot channel supply.