

**P1 CARRIER TELEPHONE SYSTEM**  
**ADJUSTMENTS AND MAINTENANCE**  
**REMOTE TERMINAL TESTS — RECEIVING**

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**1.00 INTRODUCTION**

**1.01** This section specifies adjustments and tests required to prepare the receiving portion of a remote terminal for service. It also specifies tests required to locate trouble which has been isolated to this portion of a terminal by the trouble-locating procedures summarized in Section 363-101-509.

**1.02** To adjust a terminal, perform each adjustment in the order listed.

**1.03** To locate a trouble in the receiving portion of a remote terminal, perform all the steps in the order given. When requirements cannot be met, follow the procedure specified in Section 363-101-509.

**1.04** All test points marked with a yellow dot are ground points. Binding post numbers in parentheses are located on 386A apparatus case terminal block.

**1.05** Preparations made for each test or adjustment will remain in effect until the end of this section (Receiving) unless otherwise specified.

**2.00 ADJUSTMENT E — REGULATOR**

**2.01** Place 600-ohm resistor across VF test points on board A (7) and (8).

**2.02** On test set, turn SEND switch to MOD CARR position.

**2.03** Turn CARR OSC RANGE switch to position that covers the frequency of the receiving filter on board C1. This frequency is shown on the bottom of board C1.

**2.04** Turn CARR OSC FREQ knob until the KC dial indicates the frequency of the receiving filter on board C1.

**2.05** Turn DET SENS-db switch to 0 position.

**2.06** Operate and hold CAL OSC key.

**2.07** Turn CARR OSC OUTPUT knob to obtain reading of 0 on DECIBEL meter.

**2.08** Release CAL OSC key.


**2.09** Turn AUDIO OSC FREQ switch to 1000~ position.

**2.10** Turn DET SENS-db switch to -20 position.

**2.11** Operate and hold B and CAL OSC keys.

**2.12** Turn AUDIO OSC OUTPUT knob to obtain a reading of -6 on DECIBEL meter.

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- 2.13** Release B and CAL OSC keys.
- 2.14** Repeat 2.04 through 2.12 until both requirements are maintained without readjustment.
- 2.15** Turn REC switch to DET HI-IMP position.
- 2.16** Leave DET SENS-db switch on -20 position.
- 2.17** Turn left-hand ATTENUATOR switch to 20 position and right-hand ATTENUATOR switch to 7 position.
- 2.18** Connect send cord from SEND jack on test set to CARR test point on board A: white lead to CARR (14), two black leads to yellow dot (22).
- 2.19** Connect receive cord from REC jack on test set to REC test point on board A: red to REC (16 or 17), black to yellow dot (22).
-  *On some earlier models of 386A apparatus cases, the REC test point is binding post 16; on later models it is 17. To find out which binding post is the REC test point, measure the resistance between binding posts 2 and either 16 or 17. If the resistance measured is about 650 ohms, that binding post is the REC test point. If the resistance is 19,000 ohms, that binding post is the RING test point. Mark the 386A apparatus case terminal block binding posts 16 and 17 with the proper designation.*
- 2.20** DECIBEL meter should read as follows:  
12 to 48 kc: between -6.5 and -9.0.  
60 to 96 kc: between -6.5 and -10.0.
- Note:** If lower reading than required is measured (to left of -9.0), replace board C1. If DECIBEL meter reads higher than required (to right of -6.5), check for a faulty C1 or D board by replacing each in turn until requirement can be met.
- 2.21** Turn DET SENS-db switch to +10 position.
- 2.22** Remove receive cord from terminal.
- 2.23** Connect receive cord from REC jack on test set to IN test points on board F: red to left, black to right.
- 2.24** On board D, turn REC potentiometer to obtain a reading of -3 on DECIBEL meter. If reading cannot be obtained, replace board D and repeat Adjustment E.
- 2.25** Turn right-hand ATTENUATOR to 0 position.
- 2.26** DECIBEL meter should read between -1 and -3. If requirement cannot be met, replace board D and repeat Adjustment E.
- 2.27** Turn left-hand ATTENUATOR to 30 position and right-hand ATTENUATOR to 2 position.
- 2.28** DECIBEL meter should read between -2.5 and -4. If requirement cannot be met, replace board D and repeat Adjustment E.
- 2.29** Turn right-hand ATTENUATOR to 10 position.
- 2.30** DECIBEL meter should read between -8 and -12. If requirement cannot be met, replace board D and repeat Adjustment E.
- 3.00 ADJUSTMENT F - EXPANDOR**
- 3.01** Remove 600-ohm resistor from across VF test points on board A (7) and (8).
- 3.02** Remove receive cord from IN test points on board F and connect to VF test points on board A: red to left (7), black to right (8).
- 3.03** Turn REC switch to BAL 600Ω VF position.
- 3.04** Turn DET SENS-db switch to 0 position.
- 3.05** Turn left-hand ATTENUATOR to 20 position and right-hand ATTENUATOR to 7 position.

**3.06** On board F, adjust EXP potentiometer to obtain a reading of  $-5$  on DECIBEL meter. If reading cannot be obtained, refer to Section 363-101-509.

**3.07** Remove receive cord from terminal.

**4.00 TEST H — SIGNALING (Model C 804B Network)**

**4.01** Remove send cord from SEND jack on test set.

**4.02** On test set, turn SEND switch to MOD CARR position.

**4.03** Turn CARR OSC RANGE switch to position that covers the frequency of the receiving filter board C1. This frequency is shown on the bottom of board C1.

**4.04** Turn CARR OSC FREQ knob until the KC dial indicates the frequency of the receiving filter on board C1.

**4.05** Turn AUDIO OSC FREQ switch to 2500~ position.

**4.06** Operate and hold CAL OSC key.

**4.07** Turn CARR OSC OUTPUT knob to obtain reading of 0 on DECIBEL meter.

**4.08** Release CAL OSC key.

**4.09** Turn DET SENS-db switch to  $-30$  position.

**4.10** Operate and hold B and CAL OSC keys.

**4.11** Turn AUDIO OSC OUTPUT knob to obtain a reading of  $-2$  on DECIBEL meter.

**4.12** Release CAL OSC and B keys.

**4.13** Repeat 4.06 through 4.12 until both requirements are maintained without readjustment.

**4.14** Turn left-hand ATTENUATOR to 20 position and right-hand ATTENUATOR to 7 position.

**4.15** Clip 3900-ohm resistor across VF test points on board A or binding posts (7) and (8) on 386A apparatus case terminal block.

**4.16** On KS-14510 meter, turn selector to DC VOLTS, 300 position.

**4.17** Connect the positive lead of the KS-14510 meter to the left VF test point (7), and the negative lead to yellow dot test point (22).

**4.18** Reinsert send cord in SEND jack on test set.



*Measuring high voltage.*

**4.19** The KS-14510 meter should read more than 100 volts. If requirement cannot be met, refer to Section 363-101-509.

**4.20** Remove send cord from SEND jack on test set.

**4.21** Connect wire strap or clip lead between the ring test point, screw terminal 29 (16 or 17), and the signal battery, screw terminal 10 (1) on board A.

**Note:** Connect to ring test point first to avoid grounding the signal battery.

**4.22** On test set, turn AUDIO OSC FREQ switch to 1750~ position.

**4.23** Repeat 4.06 through 4.13.

**4.24** Connect the positive lead of the KS-14510 meter to the right VF test point (8) and the negative lead to the yellow dot test point (22). ←

**4.25** Reinsert send cord in SEND jack on test set.



*Measuring high voltage.*

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**4.26** The KS-14510 meter should read more than 100 volts. If requirement cannot be met, refer to Section 363-101-509.

→**4.27** Remove the strap or clip lead from signal battery screw terminal 10(1) on board A.

**4.28** Remove send cord from SEND jack on test set.

**4.29** Disconnect KS-14510 meter.

**Note:** Disregard 4.30 through 4.38 if position G in the 803A connector is equipped with an 803B network (for divided code ringing).

**4.30** Turn AUDIO OSC FREQ switch to 1150~ position.

**4.31** Repeat 4.06 through 4.13.

→**4.32** Connect the negative lead of the KS-14510 meter to the left VF test point (7) and the positive lead to the yellow dot test point (22).

↗**4.33** Reconnect wire strap or clip lead between the ring test point, screw terminal 29 (16 or 17), and the signal battery, screw terminal L10(1) on board A.

**4.34** Insert send cord in SEND jack on test set.

 *Measuring high voltage.*

**4.35** The KS-14510 meter should read more than 100 volts. If requirement cannot be met, refer to Section 363-101-509.

↗**4.36** Remove wire strap or clip lead between the ring test point, screw terminal 29 (16 or 17), and the signal battery, screw terminal L10 on board A.

**4.37** Remove send cord from terminal.

**4.38** Disconnect KS-14510 meter.

**4.39** Remove 3900-ohm resistor from VF test points (7) and (8).

**4.40** If no further tests or adjustments are to be made, refer to Section 363-101-507.

**5.00 TEST H — SIGNALING (Model D 804D Network)**

**5.01** Remove send cord from SEND jack on test set.

**5.02** On test set, turn SEND switch to MOD CARR position.

**5.03** Turn CARR OSC RANGE switch to position that covers the frequency of the receiving filter board C1. This frequency is shown on the bottom of board C1.

**5.04** Turn CARR OSC FREQ knob until the KC dial indicates the frequency of the receiving filter on board C1.

**5.05** Turn AUDIO OSC FREQ switch to 2500~ position.

**5.06** Operate and hold CAL OSC key.

**5.07** Turn CARR OSC OUTPUT knob to obtain reading of 0 on DECIBEL meter.

**5.08** Release CAL OSC key.

**5.09** Turn DET SENS-db switch to -30 position.

**5.10** Operate and hold B and CAL OSC keys.

**5.11** Turn AUDIO OSC OUTPUT knob to obtain a reading of -2 on DECIBEL meter.

**5.12** Release CAL OSC and B keys.

**5.13** Repeat 5.06 through 5.12 until both requirements are maintained without readjustment.

**5.14** Turn left-hand ATTENUATOR to 20 position and right-hand ATTENUATOR to 7 position.

**5.15** Clip 3900-ohm resistor across VF test points on board A or binding posts (7) and (8) on 386A apparatus case terminal block.

**5.16** Reinsert send cord in SEND jack on test set.

5.17 Observe that when the *R* relay (wire spring relay on left of network in J position) operates, the squeal from the 3-kc converter should be heard. If 386A apparatus case is closed, the sound of the relay operating and the 3-kc squeal should still be heard.

5.18 Remove send cord from SEND jack on test set.

**Note:** If position G is equipped with an 803B or 803AB network, proceed to 5.19. If position G in the 803A connector is equipped with an 803A or 803AA network, remove the *N* relay from the network in the J position and proceed to 5.19.

5.19 Using a lineman's test set (1011 or similar type) on MON position, connect one lead to the ring test point, screw terminal 29 (16 or 17), and the other lead to the signal battery, screw terminal 10(1) on board A.

5.20 On KS-14510 meter, turn selector to AC VOLTS, 300 position.

5.21 Connect negative lead of KS-14510 meter to the left VF test point (7) and the positive lead to yellow dot test point (22).

5.22 Switch lineman's test set (1011 or similar type) to TALK and dial zeros as fast as possible.

**Note:** Do not force the dial. Allow it to return at normal speed.

**THINK** → *Measuring high voltage.*

5.23 As the dial is returning to normal, the KS-14510 meter reading should build up to more than 120 volts.

5.24 Return lineman's test set to MON position.

5.25 On test set, turn AUDIO OSC FREQ switch to 1750~ position.

5.26 Repeat 5.06 through 5.13.

5.27 Move negative lead of KS-14510 meter to the right VF test point (8).

5.28 Insert send cord in SEND jack on test set.

5.29 Switch lineman's test set to TALK position and dial zeros as fast as possible.

**THINK** → *Measuring high voltage.*

5.30 As dial is returning to normal, the KS-14510 meter reading should build up to more than 120 volts.

5.31 Return lineman's test set to MON position.

**Note:** If position G of the 803A connector is equipped with an 803B or 803AB network, disregard 5.32 through 5.45. If position G is equipped with an 803A or 803AA network, replace the *N* relay in the network in J position and proceed with 5.32.

5.32 On KS-14510 meter, turn selector to DC VOLTS, 300 position.

5.33 Switch lineman's test set to TALK position and dial zeros as fast as possible.

**THINK** → *Measuring high voltage.*

5.34 As the dial is returning to normal, the KS-14510 meter reading should build up to more than 95 volts.

5.35 Return lineman's test set to MON position.

5.36 On test set, turn AUDIO OSC FREQ switch to 1150~ position.

5.37 Repeat 5.06 through 5.13.

5.38 Move the negative lead of the KS-14510 meter to the left VF test point (7).

5.39 Switch lineman's test set to TALK position and dial zeros as fast as possible.

**THINK** → *Measuring high voltage.*

5.40 As the dial is returning to normal, the KS-14510 meter reading should build up to more than 75 volts.

**Note:** Ignore the needle kick at the instant the dial returns to the normal position.

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- 5.41 Return the lineman's test set to MON position.
- 5.42 Remove send cord from SEND jack on test set.
- 5.43 Connect the negative lead of the KS-14510 meter to yellow dot test point (22) and the positive lead to the left VF test point (7).
- 5.44 Switch lineman's test set to TALK position and dial zeros as fast as possible.
- 5.45 As the dial returns to normal, the KS-14510 meter should read more than 95 volts.
- 5.46 Return lineman's test set to MON position.
- 5.47 Disconnect KS-14510 meter.
- 5.48 Disconnect lineman's test set.
- 5.49 Remove resistor from VF test points (7) and (8).
- 5.50 If no further tests or adjustments are to be made, refer to Section 363-101-507.

**THINK** → *Measuring high voltage.*