# 15-KHZ PROGRAM CHANNEL UNITS
# ALIGNMENT PROCEDURES
# D4 CHANNEL BANK
# DIGITAL TRANSMISSION SYSTEMS

This section contains the alignment procedures for the PG15T and PG15R channel units. Chart 1 is a procedure to align the PG15T channel unit equalizer and attenuator. Chart 2 is a procedure to align the PG15R channel unit attenuator.

## CHART 1

## PG15T CHANNEL UNIT EQUALIZER AND ATTENUATOR ALIGNMENT PROCEDURE

**APPARATUS:**

1 —HP3551A Transmission Test Set (TTS) or equivalent TTS with binding posts

1 —Test Cord — 3W9A type (COMCODE 101428738) or Pomona 2977-J type (COMCODE 402088306)

| STEP | PROCEDURE |
|---|---|
| 1 | Verify technician with signal generator is present at program circuit source point on customer premise. |
| 2 | Remove channel unit from bank. Verify that J301 is set for desired impedance option of 150 or 600 ohms and that all slots of J401 equalizer contain a plug (no equalization). Install channel unit into bank. |
| 3 | Insert 310 jack of test cord type available into TST jack on faceplate of PG15T channel unit. |
| 4 | Connect other end of test cord, depending on type, to TTS as follows:<br>A. Pomona 2977-J type - Green lead to ring post and lead with tab (marked GND) to tip post.<br>B. 3W9A type - Brown lead to ring post and black lead to tip post. |
| 5 | Set controls on TTS to measure incoming levels. |
| 6 | Have technician at customer location send 1004 Hz 0 dBm tone at the 0 dB TLP (+8 VU point) of the program source circuit. |

CHART 1 (Contd)

| STEP | PROCEDURE |
|---|---|
| 7 | Calculate difference between −8.0 dBm level and level received at PG15T channel unit. |
| 8 | Remove PG15T channel unit from bank and adjust attenuator to compensate for difference calculated in Step 7 so that −8.0 dBm level will be received. |
| 9 | Install PG15T channel unit into bank and verify −8.0 dBm level. If necessary, continue adjusting attenuator until −8.0 dBm level is received.<br><br>***Note:*** When adjusting equalizer in PG15T channel unit in second and/or subsequent tandem circuits, use 14.9 kHz instead of 15 kHz test tone. |
| 10 | Have technician at customer location send 15 kHz 0 dBm tone. |
| 11 | Calculate difference between −8.0 dBm level and level received for 15 kHz in Step 10. |
| 12 | Refer to Table A and determine equalizer setting based on difference calculated in Step 11. |
| 13 | Remove channel unit and set equalizer so that the sum of exposed numbers [position(s) not containing plug(s)] equals the equalizer setting determined in Step 12. Store any unused plugs in UNUSED PLUGS receptable on channel unit. |
| 14 | Install channel unit and have technician at customer location resend 1004 Hz tone. |
| 15 | Verify that received level is −8.0 dBm. If necessary, readjust attenuator until −8.0 dBm level is obtained.<br><br>***Note:*** When adjusting equalizer in PG15T channel unit in second and/or subsequent tandem circuits, use 14.9 kHz instead of 15 kHz test tone. |
| 16 | Have technician at customer location send 0 dBm 10 kHz, 12.5 kHz, and 15 kHz tones and verify that levels received for all tones are −8.0 ± 0.5 dBm. If levels are within tolerance, go to Step 18. If levels are not within tolerance, go to Step 17. |
| 17 | If any level received is too high, change equalizer setting one count less. If any level received is too low, add one count to equalizer setting. Repeat procedure at Step 16 unless level at one frequency is too high while level at another frequency is too low. In this case, discontinue procedure as external equalizer is required. |
| 18 | Remove all test connections. |

## TABLE A

## PG15T EQUALIZER SETTINGS

| DIFFERENCE BETWEEN −8.0 dBm AND 15 kHz LEVEL (dB) | EQUALIZER SETTING | DIFFERENCE BETWEEN −8.0 dBm AND 15 kHz LEVEL (dB) | EQUALIZER SETTING |
|---|---|---|---|
| 0.0 | 0 | 8.0 | 33 |
| 0.1 | 2 | 8.2 | 34 |
| 0.2 | 3 | 8.4 | 35 |
| 0.3 | 4 | 8.6 | 36 |
| 0.5 | 5 | 8.8 | 37 |
| 0.7 | 6 | 9.0 | 38 |
| 1.0 | 7 | 9.2 | 39 |
| 1.2 | 8 | 9.4 | 40 |
| 1.5 | 9 | 9.6 | 41 |
| 1.7 | 10 | 9.7 | 42 |
| 2.0 | 11 | 9.9 | 43 |
| 2.3 | 12 | 10.1 | 44 |
| 2.6 | 13 | 10.3 | 45 |
| 2.9 | 14 | 10.4 | 46 |
| 3.2 | 15 | 10.6 | 47 |
| 3.5 | 16 | 10.7 | 48 |
| 3.8 | 17 | 10.9 | 49 |
| 4.1 | 18 | 11.1 | 50 |
| 4.4 | 19 | 11.2 | 51 |
| 4.7 | 20 | 11.4 | 52 |
| 5.0 | 21 | 11.5 | 53 |
| 5.3 | 22 | 11.6 | 54 |
| 5.6 | 23 | 11.8 | 55 |
| 5.8 | 24 | 11.9 | 56 |
| 6.1 | 25 | 12.0 | 57 |
| 6.3 | 26 | 12.2 | 58 |
| 6.6 | 27 | 12.3 | 59 |
| 6.8 | 28 | 12.4 | 60 |
| 7.1 | 29 | 12.6 | 61 |
| 7.3 | 30 | 12.7 | 62 |
| 7.5 | 31 | 12.8 | 63 |
| 7.8 | 32 | | |

## CHART 2

## PG15R CHANNEL UNIT ATTENUATOR ALIGNMENT PROCEDURE

**APPARATUS:**

1 —HP3551A Transmission Test Set (TTS) or equivalent TTS with binding posts

1 —Test Cord — 3W9A type (COMCODE 101428738) or Pomona 2977-J type (COMCODE 402088306)

| STEP | PROCEDURE |
|---|---|
| 1 | Verify technician is present at program circuit termination point on customer premise. |
| 2 | Remove channel unit from bank and verify that J201 is set for desired impedance option of 150 or 600 ohms. Install channel unit into bank. |
| 3 | Insert 310 jack of the test cord type available into TST jack on faceplate of PG15R channel unit. |
| 4 | Connect other end of test cord, depending on type, to TTS as follows:<br>A. Pomona 2977-J type — Green lead to ring post and lead without tab to tip post<br>B. 3W9A type —Brown lead to ring post and white lead to tip post. |
| 5 | Set controls on TTS to send 1004 Hz −8.0 dBm tone. |
| 6 | Have technician on customer premise connect TTS at the 0 dB TLP (+8 VU point) of the program termination circuit and monitor incoming level. |
| 7 | Calculate difference between 0 dBm level and level received by technician. |
| 8 | Remove PG15R channel unit from bank and adjust attenuator to compensate for difference calculated in Step 7 so that technician will receive a 0 dBm level. |
| 9 | Install PG15R channel unit into bank and verify with technician that 0 dBm level is received. If necessary, continue adjusting attenuator until 0 dBm level is received at customer location. |
| 10 | Remove all test connections. |