

TN130 Audio Processor Tuning Procedures

Transmitter FM Audio Processor Pre-Emphasis (43-911918 through 43-911923)

These tuning procedures are for setting pre-emphasis audio settings on transmitter audio processors with circuit board numbers (PCB#) 43-911918 through 43-911923. Visual inspection of the circuit board while comparing to the component layout in Figure 1 is one way to determine circuit board number. If the transmitter uses dual port modulation, a small sticker will be attached to the synthesizer lid that says "dual port modulation" and a wire jumper will be soldered to the audio processor board, as shown in Figure 2. Figure 2 shows the difference between an old and a new dual port modulation connection (3rd quarter 2005). Some tuning steps have multiple options depending on dual port modualtion and/or circuit board number.

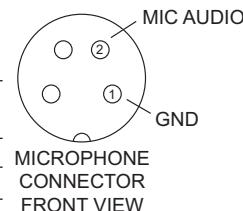
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- Step 1 - Turn R31 (Balanced Input Level Control), R29 (Deviation Control), R38 (Compression Control), R42 (Subtone 1 Input Level Control), and R2 (Microphone Input Level Control) fully clockwise.
 Turn R36 (TCXO Modulation Level) fully counter-clockwise for 2-port modulated synthesizers.
 Turn R63 (Microphone Compression Control) fully clockwise on circuit boards 43-911922 & 43-911923.
 Fully clockwise or counter-clockwise is approximately 20 turns.
 Turn the AF filter on the communications analyzer to "low pass 15 KHz" or "off".
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Balanced Input and Subtone Input Audio Setup

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- Step 2 - Apply a 1.8 KHz tone @ +10 dBm (2.45 V) to the transmitter balanced input.
 Step 3a - (PCB #43-911923) Adjust R29 (Deviation Control) for a deviation of ± 4.4 KHz (WB), ± 2.2 KHz (NB).
 Step 3b - (PCB #43-911918) Adjust R29 (Deviation Control) for a deviation of ± 4.8 KHz (WB), ± 2.4 KHz (NB).
 Step 4a - (2-port synthesizers) Apply a 1.0 KHz tone @ -18 dBm (98 mV) to subtone 1 input.
 Step 4b - (all other synthesizers & crystal oscillators) Apply a 100 Hz tone @ -18 dBm (98 mV) to subtone 1 input.
 Step 5 - Adjust R42 (Subtone 1 Input Level Control) for a deviation of ± 500 Hz (WB), ± 350 Hz (NB).
 Step 6a - (new 2-port synthesizers - see Page 4) Apply a 40 Hz tone @ -18 dBm (98 mV) to subtone 1 input.
 Step 6b - (old 2-port VHF synthesizers - see Page 4) Apply a 300 Hz tone @ -18 dBm (98 mV) to subtone 1 input.
 Step 6c - (old 2-port UHF synthesizers - see Page 4) Apply a 100 Hz tone @ -18 dBm (98 mV) to subtone 1 input.
 Step 6d - (all other synthesizers & crystal oscillators) Go to Step 9.
 Step 7 - (all 2-port synthesizers) Adjust R36 (TCXO Mod) for a deviation of ± 500 Hz (WB), ± 350 Hz (NB).
 Step 8 - (all 2-port modulated synthesizers) Repeat Steps 4 - 7 and confirm settings.
 Step 9 - Apply a 1.0 KHz tone @ +10 dBm (2.45 V) to the transmitter balanced input.
 Step 10 - Adjust R38 (Compression Control) for 4% transmitter distortion.
 Step 11 - Apply a 1.0 KHz tone @ -8 dBm (308 mV) to the transmitter balanced input.
 Step 12 - Adjust R31 (Balanced Input Level Control) for a deviation of ± 3.0 KHz (WB), ± 1.5 KHz (NB).
 Step 13 - Apply a 1.0 KHz tone @ -18 dBm (98 mV) to the transmitter balanced input.
 Step 14 - Measure and confirm the deviation is ± 1.0 KHz (WB), ± 0.5 KHz (NB) with ± 50 Hz tolerance.
 If the tolerance is not met, then return to Step 9 for PCB # 43-911918. For PCB #43-911923, adjust R31 fully clockwise, then return to Step 9, and increase the distortion point in Step 10 by 2% each time until tolerance is met.
 Step 15 - Sweep AF Generator frequency from 300 Hz to 2.5 KHz @ +10 dBm (2.45 V) at the transmitter balanced input.
 Step 16 - Measure and confirm the deviation does not exceed ± 5.0 KHz (WB), ± 2.5 KHz (NB).
 If transmitter deviation exceeds maximum then return to Step 2.
 Step 17 - (UHF transmitter with audio processor PCB# 43-911918 only) Measure and confirm the transmitter carrier is on frequency. If not, adjust TCXO pot on the synthesizer. If zero offset is unattainable, adjust R75 (DC Level Adjust) on the audio processor for zero offset.
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Microphone Input Audio Setup

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- Step 1 - (PCB# 43-911922 & 43-911923 only) Apply a 1.0 KHz tone @ +5 dBm (1.375 V) to the microphone input (Pin 2 on microphone connector).
 Step 2 - (PCB# 43-911922 & 43-911923 only) Adjust R63 (Microphone Compression Control) for 4% transmitter distortion.
 Step 3 - Apply a 1.0 KHz tone @ -10 dBm (245 mV) to the microphone input (Pin 2 on mic connector).
 Step 4 - Adjust R2 (Microphone Input Level Control) for a deviation of ± 3.0 KHz (WB), ± 1.5 KHz (NB).
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This product has been discontinued and is no longer manufactured by Codan Radio Communications

TN130 Audio Processor Tuning Procedures

Transmitter FM Audio Processor Pre-Emphasis (43-911916 and earlier versions)

These tuning procedures are for setting pre-emphasis audio settings on transmitters with audio processors with circuit board numbers (PCB#) 43-911916 and earlier. Visual inspection of the circuit board while comparing to the component layout in Figure 1 is one way to determine circuit board number.

Step 1 - Turn R31 (Balanced Input Level Control), R29 (Deviation Control), R38 (Compression Control), R2 (Microphone Input Level Control), R8 (Microphone Compression Control) and R42 (Subtone 1 Input Level Control) fully clockwise (approximately 20 turns).

Balanced Input Audio Setup

Step 2 - Apply a 2.4 KHz tone @ -8 dBm (308 mV) to the transmitter balanced input.

Step 3 - Adjust R29 (Deviation Control) for a deviation of ± 4.8 KHz (WB), ± 2.4 KHz (NB).

Step 4 - Apply a 1.0 KHz tone @ -8 dBm (308 mV) to the transmitter balanced input.

Step 5 - Adjust R38 (Compression Control) for a deviation of ± 3.0 KHz (WB), ± 1.5 KHz (NB).

Step 6 - Apply a 1.0 KHz tone @ -18 dBm (98 mV) to the transmitter balanced input.

Step 7 - Adjust R31 (Balanced Input Level Control) for a deviation of ± 1.0 KHz (WB), ± 0.5 KHz (NB).

Step 8 - Apply a 1.0 KHz tone @ -8 dBm (308 mV) to the transmitter balanced input.

Step 9 - Measure and confirm the deviation is ± 3.0 KHz (WB), ± 1.5 KHz (NB) with ± 50 Hz tolerance.

If deviation does not meet tolerance return to Step 4.

Step 10 - Apply a 1.0 KHz tone @ -18 dBm (98 mV) to the transmitter balanced input.

Step 11 - Measure and confirm the deviation is ± 1.0 KHz (WB), ± 0.5 KHz (NB) with ± 50 Hz tolerance.

If deviation does not meet tolerance, return to Step 4.

Step 12 - Apply a 2.4 KHz tone @ -8 dBm (308 mV) to the transmitter balanced input.

Step 13 - Measure and confirm the deviation does not exceed ± 5.0 KHz (WB), ± 2.5 KHz (NB).

If transmitter deviation exceeds maximum, then return to Step 2.

Microphone Input Audio Setup

Step 1 - Apply a 1.0 KHz tone @ -8 dBm (308 mV) to the microphone input (Pin 2 on microphone connector).

Step 2 - Adjust R2 (Microphone Input Level Control) for a deviation of ± 3.0 KHz (WB), ± 1.5 KHz (NB).

Step 3 - (PCB# 43-911916) Apply a 1.0 KHz tone @ -18 dBm (98 mV) to the microphone input (Pin 2 on microphone connector).

Step 4 - (PCB# 43-911916) Adjust R8 (Microphone Compression Control) for a deviation of ± 1.0 KHz (WB), ± 0.5 KHz (NB).

Step 5 - Apply a 1.0 KHz tone @ -8 dBm (308 mV) to the microphone input (Pin 2 on mic connector).

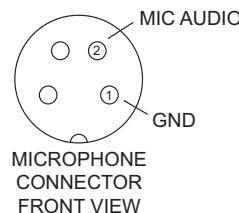
Step 6 - Measure and confirm the deviation is ± 3.0 KHz (WB), ± 1.5 KHz (NB) with ± 50 Hz tolerance.

If deviation does not meet tolerance, return to Step 1.

Step 7 - Apply a 1.0 KHz tone @ -18 dBm (98 mV) to the transmitter balanced input.

Step 8 - Measure and confirm the deviation is ± 1.0 KHz (WB), ± 0.5 KHz (NB) with ± 50 Hz tolerance.

If deviation does not meet tolerance, return to Step 1.



The adjustments made to the microphone balanced input level may affect the balanced input level.

Steps 9 and 10 may be necessary to compensate the balanced input level.

Step 9 - Apply a 1.0 KHz tone @ -8 dBm (308 mV) to the transmitter balanced input.

Step 10 - Adjust R31 (Balanced Input Level Control) for a deviation of ± 3.0 KHz (WB), ± 1.5 KHz (NB).

Subtone Input Audio Setup

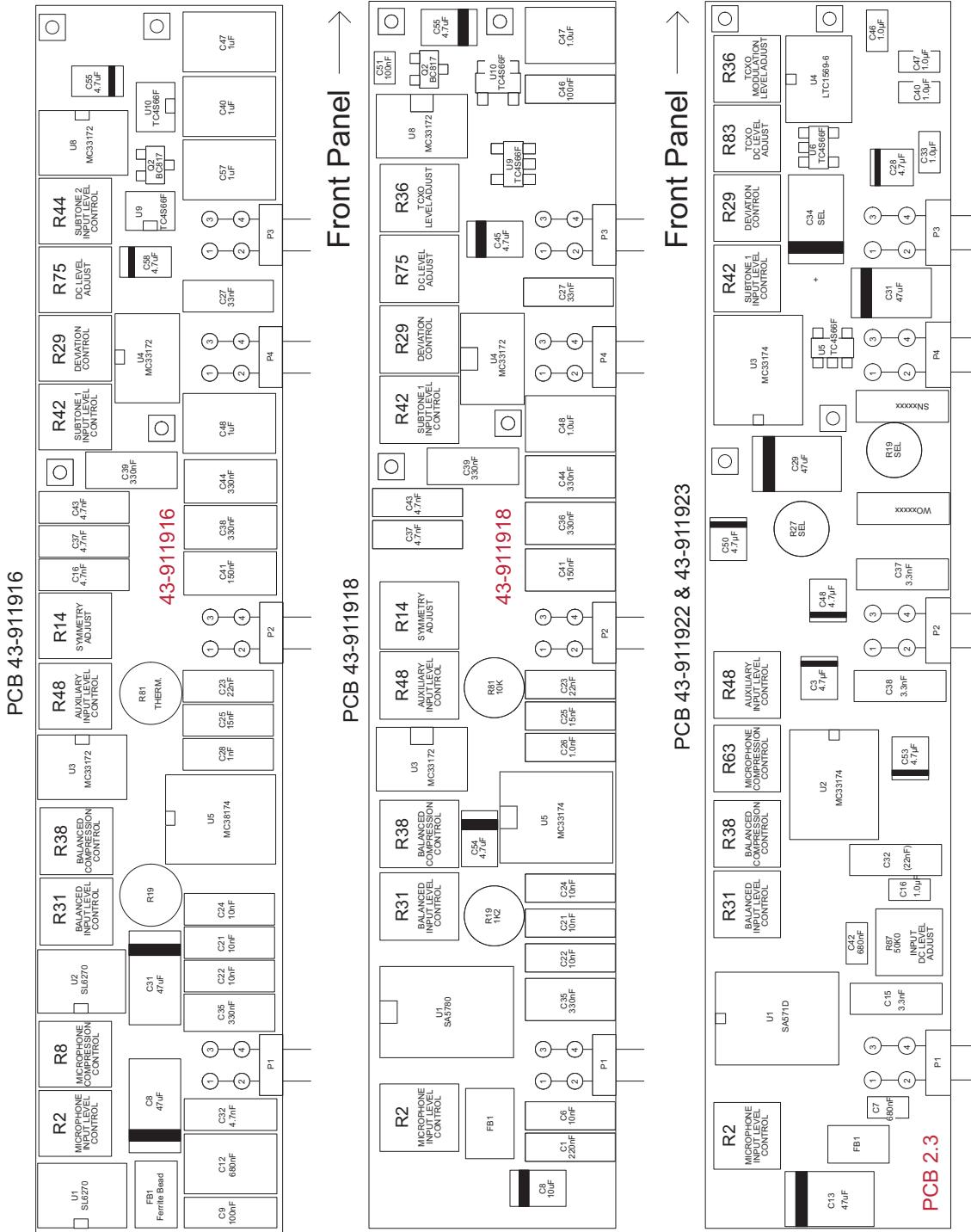
Step 1 - Apply a 100 Hz tone @ -18 dBm (98 mV) to the subtone 1 input.

Step 2 - Adjust R42 (Subtone 1 Input Level Control) for a deviation of ± 500 Hz (WB), ± 350 Hz (NB).

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TN130 Audio Processor Tuning Procedures

Audio Processor Component Layout Diagrams



TN130 Audio Processor Tuning Procedures

Audio Processor Component Layout Diagrams

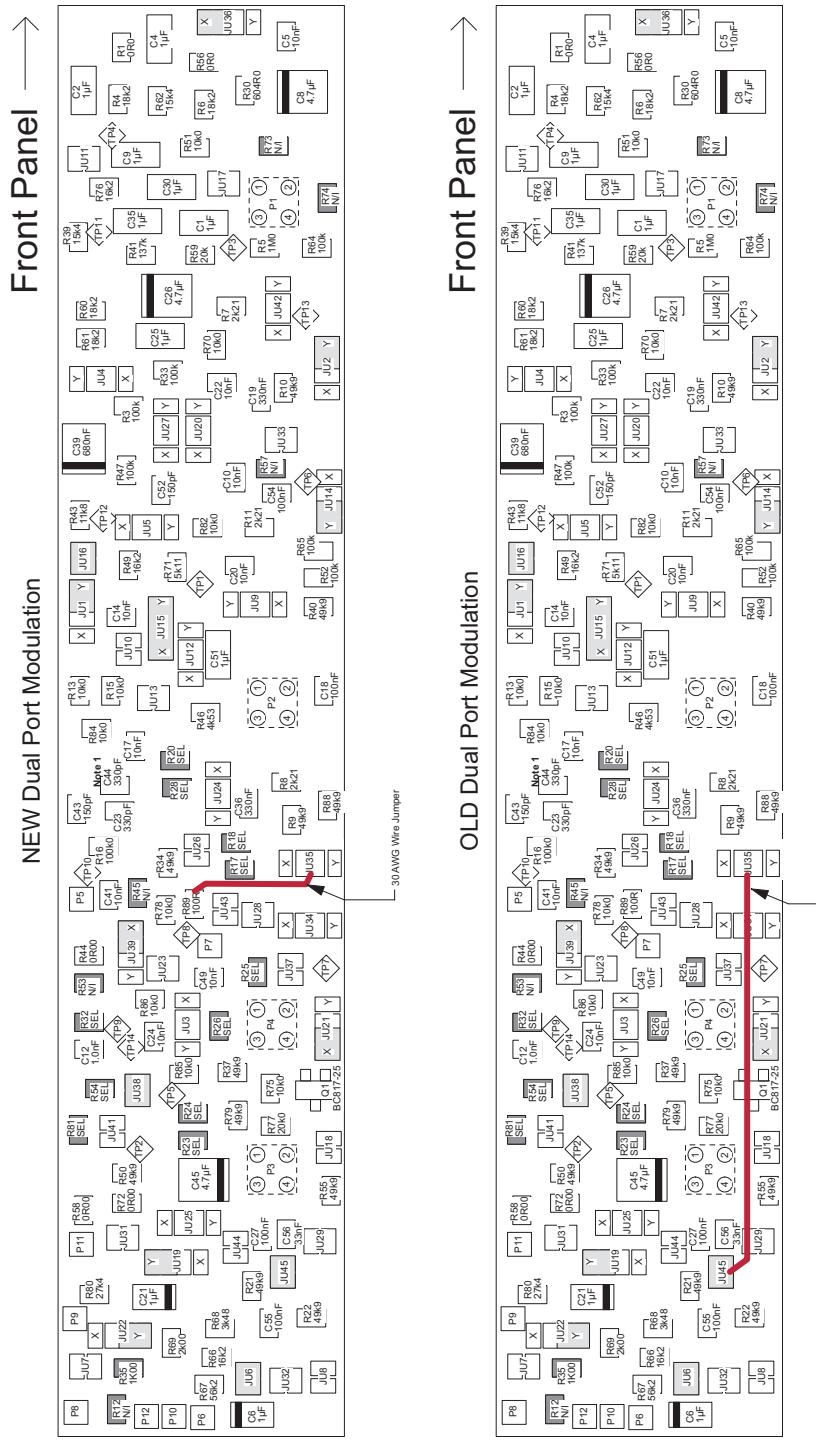


Figure 2: Audio Processor Dual Port Wire Jumper Layout

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