Technical Note TN-769

Channel Audio Switch Modifications for the T1550 LTU, T1511 CCM and T1711 CMM

16 May 2003

Applicability　　This Technical Note is relevant to all T1550 LTUs, T1511 CCMs, and T1711 CMMs in systems where the "Pressel Message Gates Receiver Audio" feature (in Miscellaneous Control Byte C) in the MAX software has been enabled, and where line testing or call interception features are also required.

1.　Introduction

Description　　This document relates to three desirable features that can be implemented in each channel:

1.　Line testing (idle state)

- A loopback of intersite Tx to intersite Rx is used for intersite audio line verification.

2.　Call interception or discrete listening (local call state)

- Audio from local Rx is passed to intersite Tx for monitoring calls at the node.

3.　Pressel gating of audio (idle state)

- When the PTT button is released on the radio, the audio state at the channel returns to idle. When the PTT is pressed again, the audio state reverts to normal.

Note:　Either the line testing **or** the call interception feature can be implemented on all modules, but not both features together. The pressel gating feature can be implemented on each module with either of these features.

- This is a software change, which must be used with a hardware change to produce silence for local Tx in the idle state.

- In intersite or group intersite call state, intersite Rx must be passed to local Tx. This ensures that the local party can still hear the remote party.

Summary
This technical note describes how to modify the T1550 LTU, T1511 CCM and T1711 CMM to support the line testing or call interception and pressel gating features.

2. T1550 LTU Modifications (PCB 220-01265-0x)

Line testing   Already implemented.

- If Link 3 exists, connect pins 2 and 3 for 20dB attenuation.

Call Interception

- If link 3 exists, connect pins 1 and 2.

- If link 3 does not exist, cut a track between IC3 pins 1 and 5, and join pins 2 and 5 with wire.

Note: Either the line testing **or** the call interception feature can be implemented, but not both features together. The pressel gating feature can be implemented with either of these features.

Pressel gating of audio

The modification to enable the pressel gating of audio feature is described in the procedure below.

Components required:

- 20 mm of enamel coated wire approximately 0.5 mm thick.

Refer to Figure 1 below while performing this modification.

Procedure

1. Lift IC3 pin 12.

2. Join pins 12 and 15 of IC3 with the enamel coated wire.
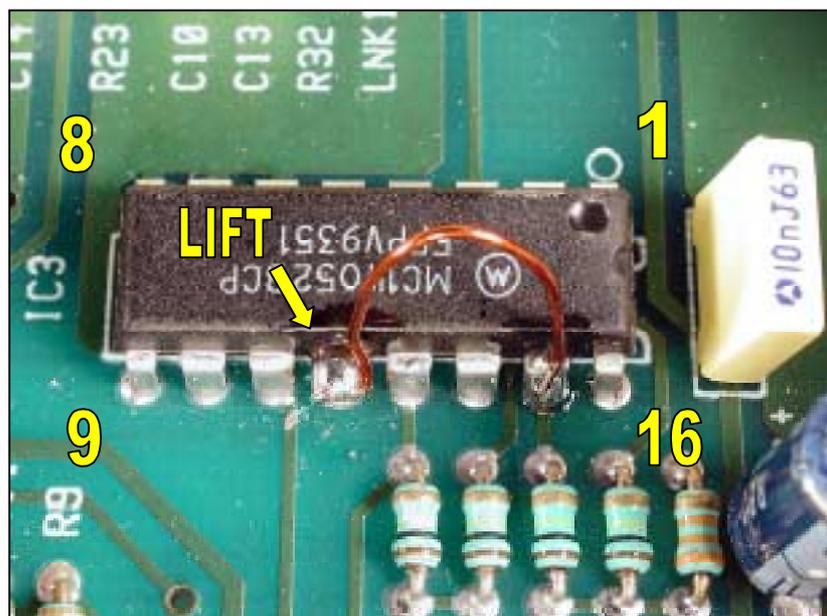
Figure 1: T1550 LTU PCB modification completed

3. T1511 CCM Modifications (PCB 220-01430-0x)

Line testing
- Already implemented. Connect pins 2 and 3 on Link 304 for 20dB attenuation.

Call interception
- Already implemented.

Note: Either the line testing **or** the call interception feature can be implemented, but not both features together. The pressel gating feature can be implemented with either of the these features.

Pressel gating of audio

The modification to enable the pressel gating of audio feature is described in the procedure below.

Components required:

- 20 mm of enamel coated wire approximately 0.5 mm thick.

Refer to Figure 2 below while performing this modification.

Procedure

1. Lift IC306 pin 12.
2. Join pins 13 and 15 of IC306 with the enamel coated wire.
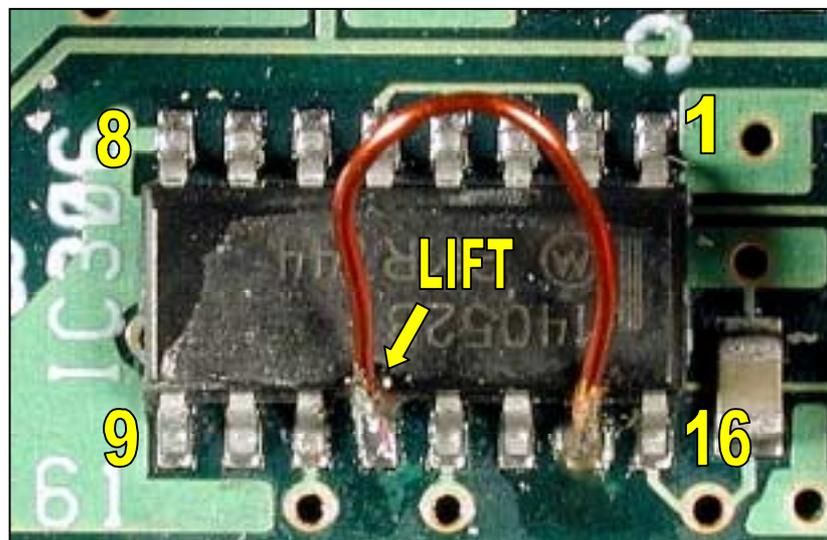
Figure 2: T1511 CCM PCB modification completed

4. T1711 CMM Modifications (PCB 220-01614-0x)

Line testing
- Implement steps 1 to 4 of the pressel gating of audio procedure (see below) for 20dB attenuation. This modification is also documented in TN-751.

Call interception
- Already implemented.

Note: Either the line testing **or** the call interception feature can be implemented, but not both features together. The pressel gating feature can be implemented with either of the these features.

Pressel gating of audio

The modification to enable the pressel gating of audio feature is described in the procedure below.

Components required:

- Item code: 030-56100-20
  Description: RES FLM 4X1.6 100K 5% 0.4W
  Quantity: 1

- Item code: 030-55100-20
  Description: RES FLM 4X1.6 10K 5% 0.4W
  Quantity: 1

- 20 mm of enamel coated wire approximately 0.5 mm thick

Steps 1 to 4 in the following procedure are required to enable the line testing feature (see above) and are also documented in TN-751.

Procedure

1. Lift IC302 pin 4.

2. Solder the 100K resistor from IC302 pin 14 to IC302 pin 4 (the pin that was lifted in step1).

3. Solder the 10K resistor from IC302 pin 4 to R327 mid rail point. (End furthest away from IC302). See Figure 3 below for an illustration of the finished modification.
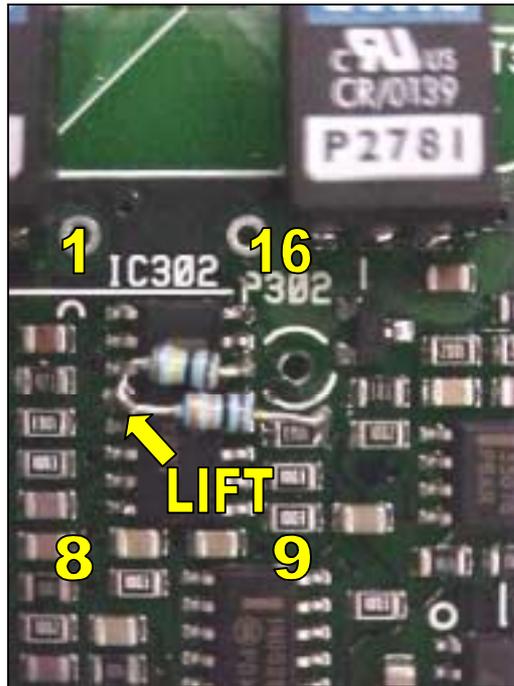
Figure 3: T1711 CMM resistor modifications completed

4. Use an ohmmeter to verify that IC302 pin 4 is lifted as follows:

   ▪ Confirm that the resistance between IC302 pin 14 and IC302 pin 4 is approximately 23K ohms. (If pin 4 is not lifted it will read short circuit.)

5. Join pins 11 and 14 of IC302 with the enamel coated wire (see Figure 4 below).
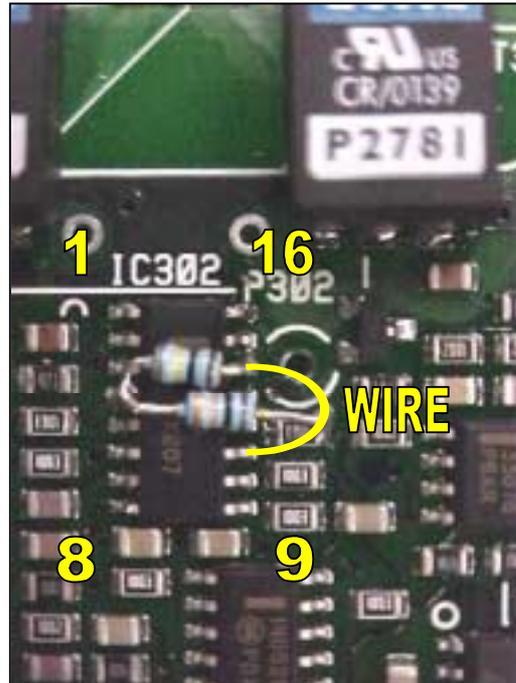

Figure 4: T1711 CMM wire modifications completed

5.   Issuing authority

Name and position of issuing officer	Graham Gregory Junior Design Engineer, Network Elements Group.