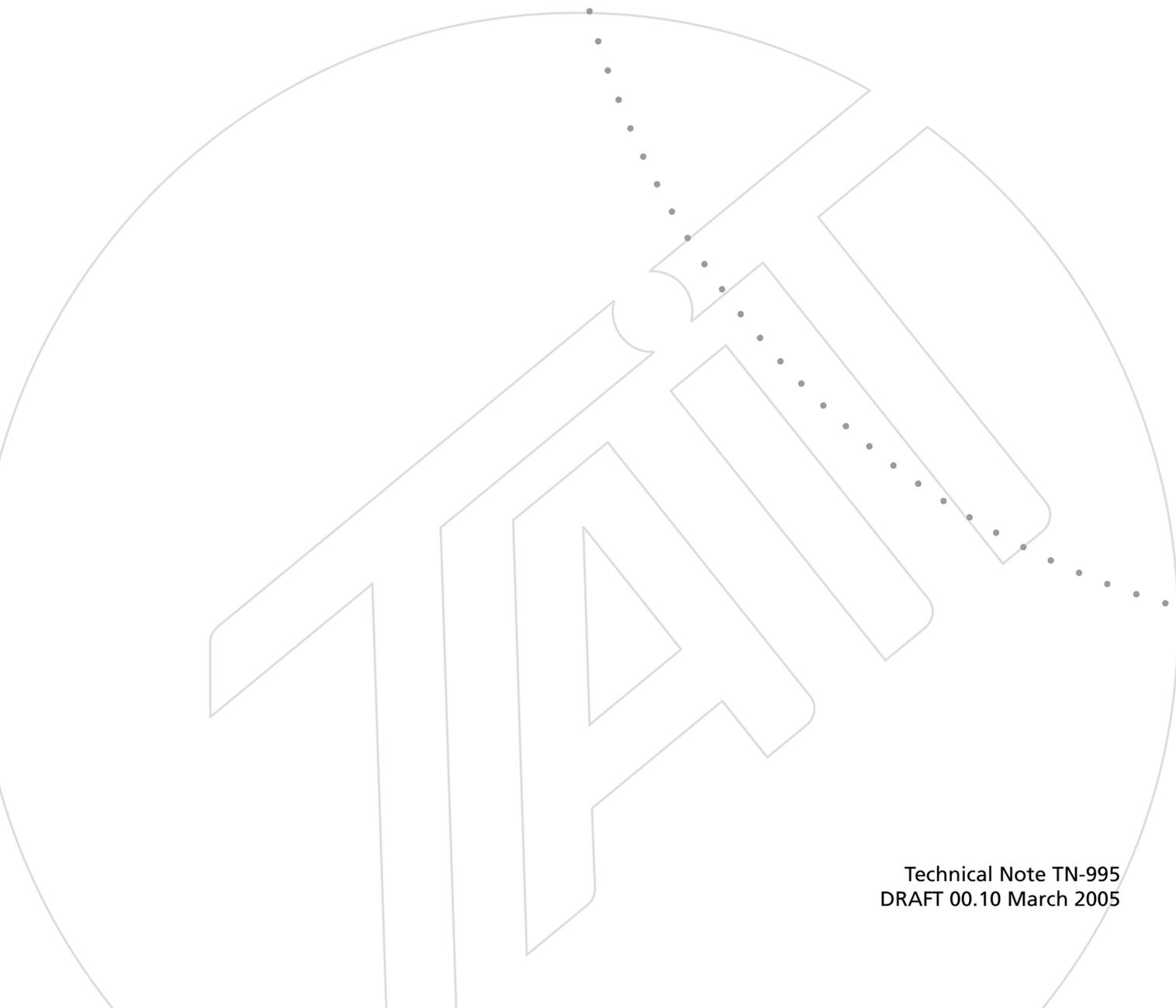


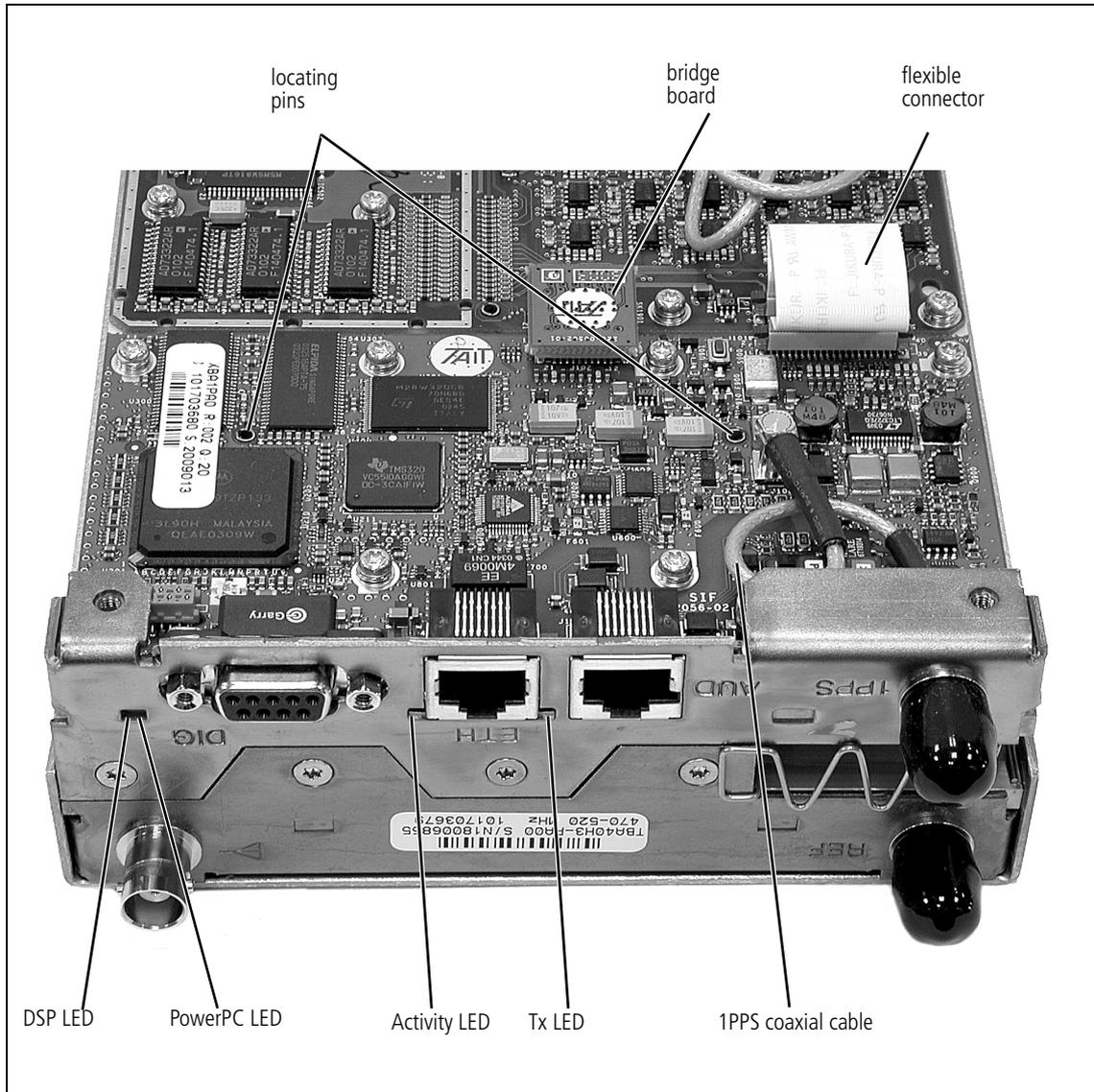
**TB9100** base station

# Replacing a Faulty Reciter Network Board



This technical note is intended for Tait-approved service centers. It presupposes familiarity with the documentation of the TB9100 base station. It describes how to troubleshoot and replace a faulty reciter network board. Servicing procedures for the reciter digital board and the reciter RF board are covered in the TB8100 Service Manual.

**Figure 1.1 Network Board**



## Equipment required

- Anti-static work environment
- PC with Ethernet cable.
- Torque screwdriver (4.5in-lbs) with Torx T-10 bit
- TB9100 subrack (PA not required)
- Power cable, PMU to reciter
- Ethernet switch or hub (if available)

# Troubleshooting

Before replacing the network board, carry out the following tests on the reciter to exclude other causes and to verify that the fault actually lies in the network board hardware.

1. Connect the reciter to the subrack via the I2C bus and the DC power cable. Apply power. This checks whether the digital board is working and receiving communications from the network board.
  - a. If no LEDs light on the control panel or rear panel, check that power is being supplied to the reciter.
  - b. If the control panel power LED comes on first, followed by the others, the digital board firmware is working.
  - c. If the control panel LEDs all remain on for more than 30 seconds, the digital board is not receiving communications from the network board.
2. Carry out a visual check of the LEDs on the rear of the reciter to check the network board's functional subsystems.
  - a. If all LEDs are off, open the reciter and check the flexible connector (it supplies power to the network board). Replace if faulty (see step 5. on page 6).
  - b. If the PowerPC LED is flashing quickly (2 Hz), the operating system kernel is running. If it is flashing slowly (0.5 Hz), only the bootloader is running.
  - c. If the orange LED is flashing, the DSP software in the network board is executing code. If the LED doesn't flash, open the reciter and check that the bridge board is connecting properly.
  - d. The green Ethernet LED should flash if the digital line is connected to an Ethernet switch. This indicates that the digital line is receiving activity pulse from the Ethernet switch.
3. Connect to the network board's serial port to test its functioning.
  - a. Connect your PC to the 9-pin serial connector on the back of the reciter.
  - b. Run a program such as HyperTerminal, Teraterm or minicom.
  - c. Select the following port settings: 57600 baud, 8 bits, no parity, 1 stop bit, no flow control.
  - d. Press the 'Enter' key. If a login prompt appears, the kernel is running. If the bootloader prompt (=>) appears, contact Tait for assistance with re-loading the kernel and application software.
  - e. Note down the reciter's IP address that is displayed at the login prompt and close the session.
4. Connect the PC to the network board over its digital Ethernet line.
  - a. Using the IP address you noted down, ping the reciter from the Windows command prompt. If there is a response, the network

- board's Ethernet interface circuitry is functioning in both directions. If there is no response, replace the board.
- b. Attempt to connect the CSS to the reciter. If this is successful, the network board application is running. Check the Alarm Status screen for reciter alarms. Carry out the control panel LED diagnostic test.
5. If there is no obvious hardware fault, replace the current firmware and/or kernel to see if this fixes the problem.
    - a. If possible, use the CSS to upload the firmware.
    - b. Otherwise, follow TN-997 to replace the kernel and/or the firmware using telnet and a TFTP server.
  6. Exclude the base station configuration as the source of problems by programming in a new configuration.
    - a. In the CSS, connect to the reciter.
    - b. Read the configuration and save it to file.
    - c. Select File > New.
    - d. Modify the new configuration as necessary.
    - e. Program the new configuration into the reciter, leaving its current IP address and netmask.
  7. If the network board fails some or all of the above tests, replace it as described below.

## Before you start

Make sure you have a backup of the current base station configuration. Obtain it from the customer or, if possible, use the CSS to connect to the reciter, read the configuration, and save it to a file.

## Removing the faulty board

1. Remove the M3 Torx screws securing the cover on the digital side of the reciter. Lift off the cover.
2. Remove the two M3 Torx screws that secure the rear panel on the digital side of the reciter.
3. Disconnect the coaxial cable from the network board and lift off the bridge board.
4. Disconnect the flexible connector by gently levering up the lugs on the ends of the latch. The flexible connector springs free.
5. Remove the eight M3 Torx screws that secure the network board to the heatsink.

- Carefully lift the network board off the locating pins and remove it from the heatsink.



**Important** Flexing the board may damage the PCB tracking or break solder joints.

If the board is a snug fit on the locating pins, you may have to very gently lever the board with a screwdriver, beginning at the right-hand side (as viewed in [Figure 1.1](#)), to get it to lift.

## Replacing the board



**Important** Be very careful to keep the replacement board scrupulously clean. The board is densely populated and the smallest particle of conductive dust can cause a short.



**Important** Make sure the insulator sheet is correctly positioned and flat on the heatsink. Although this sheet is an electrical insulator, it is also thermally conductive and must allow the PCB to sit as flat as possible to provide effective heatsinking.

**Operating the reciter without the insulator sheet in place will result in permanent damage to the digital or system interface PCBs.**

- Make sure that there is no debris on the underside of the network board.
- Position the replacement network board over the locating pins and press it down over them so that it is firmly seated against the insulator sheet on the heatsink.
- Replace the eight M3 Torx screws and tighten them to the correct torque.

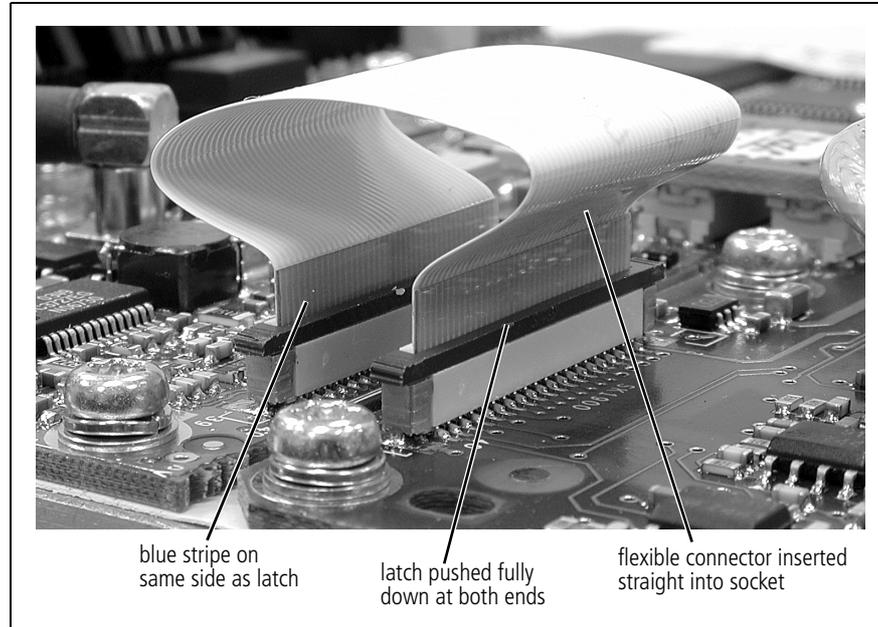


**Important** Do not exceed 4.5in-lbs of torque; greater torque settings may damage the PCB. Inadequately tight screws can affect the EMC properties of the board.

- Position the bridge board above the sockets and the right way round. Press it into place.

- Carefully reconnect the flexible connector as shown in [Figure 1.2](#). (If required, fit a new flexible cable. It must be correctly formed to prevent excessive stress on the cable or the connector.) Make sure that the cable is properly located before pressing the latch down.

**Figure 1.2 Reconnecting the Flexible Connector**



- Reconnect the 1 PPS coaxial cable.
- Replace the rear panel and the reciter cover. Tighten the Torx screws to the correct torque. Inadequately tight screws can affect the EMC properties of the board.
- Return the faulty board to Tait.

## Restoring the configuration

- Connect the CSS to the reciter using the correct IP address (network boards are given the IP address 192.168.1.2 in the factory.)
- Restore the base station's configuration, overwriting the IP address.
- Reset the reciter. On power-up, the reciter uses the new IP address.
- Use the procedures in the Troubleshooting section above to verify correct operation of the network board.



