Technical Support

TECHNICAL NOTE

Technical Note TN-946-SR

TM8100 Mobile Radio Firmware v2.03 Upgrade Instructions

10 December 2004

Applicability

This Technical Note details the changes in the latest Firmware, PC Application and Calibration Applications and instructions on upgrading existing TM8100 radio Firmware to v02.03.00.07.

1. Information

Changes

The following changes have been made in Firmware v2.03 and PC Application version 2.72. The latest Calibration Application is version 2.71.

NOTE:
In order to make it easier to follow, the TM8100 Software versions are now only referred to by the Major and Minor numbers.
E.g.: The latest Firmware released, v02.03.00.07 is referred to simply as v2.03.
The first number is the Major version, the second number is the Minor version (this will increase each commercial release) the third number is the customer specific version (if a special patch needs to be provided) and the fourth number is the build.
The TM8115 2-digit control head can display the radio's Firmware version[1].
The LCD will display the Major, Minor and customer specific version numbers in sequence. This action has been slowed down from earlier Firmware versions to better decipher similar values.
E.g.: This Firmware will be displayed as '02. 03. 00.'

[1] From an off state, depress PTT, power-up the radio and release PTT.

Tait Electronics Limited
PO Box 1645, Christchurch, New Zealand
Telephone: +64–3–358–3399
Facsimile: +64–3–358–3903
support.taitworld.com

First Production Serial Numbers

From radio serial number **19030299** all radios built have Firmware v2.03.

Upgrading radios to v2.03

Do NOT upgrade Demo / Field Trial (DMABxx) radios with serial numbers prior to **19001450** to later Firmware, this will render the radio inoperable.

To upgrade existing TM8100 Firmware to v2.03:

- Upgrade the Calibration and PC Application versions to the latest versions. These are:
  - PC Application v2.72.00.04
  - Calibration Application v2.71.00.09
- Read and save the radio's personality (.m8p)
- Read and save the radio's calibration (.m8c)

In the PC application:

- Click on Tools > Download… > Download
- The radio will display "UP" and the Download Application will look for the saved location of the Firmware QMA1Fstd_02_03_00_07.s2
  NOTE: Firmware versions since v2.00 have also included the FPGA image, and this will be downloaded automatically during this upgrade process.
- The following pop-up dialog box will appear:

When the pop-up appears during a Firmware upgrade the following procedure will apply:

- **Remove** the DC supply to the radio
- Wait 5 seconds
- Re-apply the DC supply
- Power-up the radio with the control head on/off button (if it has not already powered-up)
- The pop-up box will then disappear and the upgrade process will continue.

Once the Firmware and FPGA download is complete the radio will return to "PR" mode

- Reprogram the saved personality back to the radio
- Reprogram the saved calibration back to the radio

The radio will now reset to normal operation.

Tait Electronics Limited Telephone: +64–3–358–3399
PO Box 1645, Christchurch, New Zealand Facsimile: +64–3–358–3903
support.taitworld.com

2. Firmware Changes

Resolved Issues

- An important issue raised by TOC-NZ from 5 dealers was the incidence of the TM8100 radio 'locking-up' where the symptoms were one or more of the following:
  - No U/I operation
  - No Tx audio
  - Constant Rx LED with no audio
  - No Rx audio

  Any of these would require removal of the DC supply to reset the radios into working order. A large amount of investigation into this issue pointed to the loss of synchronization between the microprocessor and the FPGA. This was subsequently traced to the fact the microphone hookswitch had no debounce by default and the microprocessor was being 'flooded' with hookswitch actions if the microphone rattled in the microphone clip. One of the outcomes was that this Firmware has a debounce added to the PTT implemented at 25ms. Raised as Focus 17814. SEE ALSO TN-926.
- Networks using Single In-Band Tone (SIBT) did not produce audible sidetones when required, either on PTT press or on Function key assignments. Raised as TIMS 37633.
- The "Backlighting Toggle" LED will now indicate active operation after power-up if assigned to a function key. Previously the function was active but the LED would not activate until the function was subsequently cycled.
- Corrected code to halt any Repeater Access Tone, if used, when the radio is operating in Repeater Talk Around mode. Raised as TIMS 37703.
- Implemented "wrap-around" on the AUX_GPIO *Increment Channel* and *Decrement Channel* functions. Previously, scrolling through channels this way was only a "stop-at-end" operation.

  NOTE: Ensure *List Operation Wrap Around* in the PC Application is enabled on *UI Preferences* > *Preferences* for this to work. Raised as Focus 14656.
- Fixed an issue found in testing where the SIBT would not be transmitted with the first PTT, if the radio was Scanning, but had not yet captured a valid channel. Raised as TIMS 36284.

Tait Electronics Limited Telephone: +64–3–358–3399
PO Box 1645, Christchurch, New Zealand Facsimile: +64–3–358–3903
support.taitworld.com

Resolved Issues (continued)

- If *Start-up* > *Start in Low Power Mode* is enabled and a Function key also defined for *Low Power Transmit*, then that function key's LED will now activate at start-up. Raised as TIMS 15588.
- Corrected an issue where Repeater Talk Around was enabled and a preset call is made on that channel, a repeater talk around deactivation beep and an activation beep is now no longer heard at the end of transmitting the preset call. Raised as TIMS 19797.
- FFSK Transmit deviation default values have been changed to similar values as the Signalling deviation settings. Raised as TIMS 33183.
- Resolved the problem of Emergency False Power Down not working if the network was DTMF. Raised as TIMS 33898.
- The following GPIO lines are now checked at start-up for their current state:
  - MUTE_AUDIO_OUTPUT_PATH
  - UNMUTE_AUDIO_OUTPUT_PATH
  - TOGGLE_TX_INHIBIT
  - PRESET_CHANNEL
  - GOTO_HOME_CHANNEL
  - TOGGLE_PTT_INHIBIT
  - ROUTE_MIC_AUDIO_TO_SPEAKER

  This ensures these functions respond to third-party operations or inputs. Previously external inputs would need to perform a change of state to be recognized. Raised as Focus 18216.
- Earlier versions of Firmware would produce a distorted "activated" tone when entering Scanning function. Resolved in this Firmware version. Raised as TIMS 33345.
- It was noted in data testing a change to the size of the UART buffer sizes would increase the reliability of data transfer in Transparent mode on a link that does not use software or hardware flow control. The TM8100 UART changes to buffer sizes are:
  CCDI: Rx buffer size = 512 bytes
  (Tx buffer size = 128 bytes unchanged).
  NMEA: Rx and Tx buffer size = 80 bytes.
  NULL: Rx and Tx buffer size = 16 bytes.
  Raised as TIMS 32889.
- BCD channel selection can now include channel '0'. Previously a selection of '0' BCD would be interpreted as a 'no channel change' operation. This was implemented after specific channel interface requirements of some users. Raised as TIMS 29199.

Tait Electronics Limited Telephone: +64–3–358–3399
PO Box 1645, Christchurch, New Zealand Facsimile: +64–3–358–3903
support.taitworld.com

Resolved Issues (continued)

- On testing the CCDI of the TM8100 it was observed that although the radio would generate the CTS signal correctly it would ignore the RTS signal and continue to output data. Corrected in this Firmware version. Raised as TIMS 35788.
- Resolved the issue found where a Transmit or Fully stunned radio should transmit its Auto_Ack when subsequently powered-up. This wasn't happening. Raised as TIMS 36528.
- Corrected the DCS Invalid Confirmation Delay operation. This was only operating at default value (20ms) regardless of the value entered in the field. Found in *Networks* > *Basic Settings* > *Subaudible Signalling* > *Invalid Confirmation Delay*. Raised as TIMS 36767.
- An issue was raised regarding 'click noises' when the fist microphone PTT was released. Investigation lead to changes of the debounce value timings. The PTT debounce for de-activation has been reduced from 25ms to 2ms. This ensures any background audio local to the microphone is not sent over-the-air with transmit shutdown. This decreases the 'clunk' noises heard by receiving radios. Raised as Focus 16810.

Tait Electronics Limited Telephone: +64–3–358–3399
PO Box 1645, Christchurch, New Zealand Facsimile: +64–3–358–3903
support.taitworld.com

3. PC Application

PC Application v2.72 Changes

- This release of TM8100 PC Application and Calibration Application will now install under the "Start > Programs > Tait Applications" PC menu structure as per current T2000 and Orca Applications. Please ensure previously installed TM8100 applications are removed fully before installing these versions.[2]
- Previous PC App versions would corrupt labels that were assigned to Programmable I/O's. If they were then either saved to disk or to the radio, and then read back, the labels would have moved row position. Raised as TIMS 36747.
- When large fonts were enabled in Windows® the text and 'OK' buttons on the *Help > About* box were moving out of view. Code was added that automatically realigns this 'OK' button when the box loads. Raised as Focus 18336.
- The Selcall signalling monitor label in PC App v2.68 has been changed from 'No Mute' back to 'Call Mute'. This field is found in *Networks > Basic Settings > Receiver Monitoring > Monitor Overrides*. Raised as Focus 18334.
- The Programmable I/O page now has the added input dropdown options of 'Send Network Preset Call x' where 'x' are the four possible Free Format Sequences found on the *Selcall > Free Format Bursts* page. Originally only 'Send Network Preset Call 1' was available. Raised as Focus 16465.
- It was noticed with previous versions of the Download Application the Firmware version was not correctly identified during a download process and appeared as 'HDR' instead. Corrected in Download Application v1.05.01.00.
- The Download Application will now program the FPGA file before the Firmware file. This ensures that if the user does not cycle the radio power correctly (see page 2) and the FPGA image cannot be downloaded then the Firmware image should not be downloaded either. This ensures the FPGA and Firmware images are synchronised in the radio and stop incompatibility.
- Corrected the Tait Focus URL address available from the *Help > Internet > Customer Service Form* Link.

[2] To remove PC Applications use "Add/Remove Programs" from the Windows Control Panel.

Tait Electronics Limited Telephone: +64–3–358–3399
PO Box 1645, Christchurch, New Zealand Facsimile: +64–3–358–3903
support.taitworld.com

4. Calibration Application

Calibration Application v2.71 Changes

- The TM8000 Calibration Application supports all TM8000 mobile radio models including the TM8100, TM8200 and High Power (40/50W) variants.
- Changed the label for 40/50W mobile radios. These models are now identified as High Power Mobiles. Previously they were labelled in the Calibration Application as Mid-Power Mobile.
  Raised as TIMS 35614.
- Resolved an issue first noted by French language users where the local separator used is a comma that that caused the Calibration Application to crash when setting decimal values. This fault was solved as a priority. Raised as Focus 18235.
- Added a new deviation field for Single In Band Tone (SIBT). This is set at 60% of system deviation as per other signalling defaults and can be found on the *Deviation/Squelch > Deviation Settings > Signalling* tab. Raised as TIMS 33184.

Compliance

None.

CSO Instruction

Please inform all technical staff and dealers of the updates to the PC Application, Calibration Application and radio Firmware available for the TM8100 mobile radio.

5. Issuing Authority

Name and Position of Issuing Officer

Graham Brenchley
Technical Support Engineer

Confidentiality

Distribution Level

Associate.

Document History

Original Release	10 Dec 2004	GCB
First Serial Number	31 Jan 2005	GCB

Tait Electronics Limited
PO Box 1645, Christchurch, New Zealand
Telephone: +64–3–358–3399
Facsimile: +64–3–358–3903
support.taitworld.com