Technical Support
TECHNICAL NOTE

TECHNICAL NOTE TN-1152c-SR

TM8100 Firmware v2.12 and PC App v3.00

23 March 2006
(Updated 23 May 2006)

Applicability

This Technical Note applies to the TM8100 mobile radios.

1. Firmware changes

Firmware Changes

- Corrected an issue where TM8110 radios would have a blank display after a Firmware upgrade until a valid database had subsequently been programmed. The TM8110 now displays 'P', similar to 'Pr' on the TM8115, at this point. Raised as TIMS 34305.
- It was noted Trailing ANI was not sent if the user powered-down the radio using the front panel on/off before this process was complete. Now all current Transmit processes are completed before the radio shuts down. Raised as TIMS 18962.
- Corrected the Networks > Basic Settings > Receiver Monitoring Auto Quiet Timer function when changing between channels and if Monitor was set to disable Call Mutes. Raised as TIMS 20397 and 20399.
- The Programmable I/O page option Unmute Audio output Path set as Auxiliary Audio Path is now working correctly. This field determines which paths will open for received audio. Auxiliary Audio Path: opens an audio Tap-Out point on the receive path. Previously the Tap-Out would stay muted. Raised as TIMS 22950.
- THSD Lead-In Delay sets the period after the transmitter has keyed up, before any message block is sent. This applies to all transmissions while in THSD transparent mode, where the radio is not already keyed up. This is variable from 5 to 250 milliseconds. Default is 30ms. Raised as TIMS 29882.
- THSD Lead Out Delay sets the period for the radio to continue transmitting after the message block has been sent. This was previously hardcoded as 0 ms. This field is only available if the Transparent Mode Enabled and THSD Modem Enabled check boxes are selected and is variable between 0 (default) and 250 milliseconds. Raised as TIMS 25109.
- The Send Mic Audio To Spkr Programmable I/O option was not functioning if the transmitter had Leading ANI too. Corrected. Raised as TIMS 29208.
- The control of the PTT action in Selcall systems using Selcall Muting has been updated. A new field Networks > Basic Settings > Receiver Monitoring Monitor on (Tx) determines whether the user is allowed to PTT after initiating a Preset Selcall.
- The options available are Call Initiated or Auto-Ack Received. If set as Call Initiated the Monitor will open as soon as the Preset call is initiated. If set as Auto-Ack Received the Monitor will remain muted until the Preset call is acknowledged by the called radio.
  NOTE: Auto Acknowledge Type must be set to Sequence. Raised for TEU in TIMS 30945.

Firmware Changes (cont.)

- Software control in the RF power control loop now uses five DAC settings rather than one for more consistent control across the band for the PA drive current. Raised as TIMS 42566.

- The high VSWR (5:1) shutdown feature on the 25W TM8100 mobiles previously folded-back to Very Low Power (1W) but will now be Medium power (12W). The 40/50W High Powered Mobiles will continue to fold-back to Very Low Power (10W). Raised as TIMS 49087.

- It was noted the Auto Acknowledge Sequence programmed with variable status burst (V) did not return the emergency status with a Quiet Interrogation when radio was in emergency. This was previously incorrectly barred because the callout functionality was disabled. The callout is now no longer qualified in Emergency mode. Raised as TIMS 32904.

- CCDI DTMF dialing will now properly support gaps (-) in the dialed strings and also rejects as a parameter error characters 'E' and 'F' if entered. Raised as TIMS 53244.

- The Data > General > Output All Selcall Receptions has been corrected to output the following CCDI RING messages:
  - If ticked the radio will generate a RING message even if the message is not addressed to this radio. The intended recipient will be displayed as part of the message.
  - If unticked the radio will only generate a RING message if the message contains the radio's Selcall identity (Rx Decode 1 or Rx Decode 2).

  Raised as Focus 20982.

- Corrected the functionality of the CCDI Ring message to ensure it incorporates the destination identity of the call if it is an unknown call type. It did not do this correctly when the format was Caller ID first (CCC--RRR) or just RRRR's. Raised as Focus 24433.

- If Data > RF Modems FFSK Tone Blanking was enabled the TM8100 would not always unmute again after the last data transmission for normal speech. This could be corrected in previous Firmware by ensuring the Check Packet Length was enabled too. This issue has been resolved in this Firmware by forcing the timer to be re-enabled after every word received. Raised as Focus 22843.

Firmware v2.11

The release of v2.11 Firmware will replace TM8100 production radios built with v2.09.
Firmware v2.10 has been made available for the last month from the Taitworld website for TM8100 upgrades, however when TB7100 modules were first run through the manufacturing line an error appeared which stopped them completing ATE run-up. Firmware v2.11 was subsequently produced to repair the heap-memory pointer problem where the pointer was not being NULL'ed after memory de-allocation.

If TM8100 radios are to be upgraded from v2.09 or earlier Firmware they can be upgraded to v2.11.

There is no need to upgrade v2.10 to v2.11.

First Serial Number

The first production TM8100 mobile radio with Firmware v2.11 was serial number **19154810**.

Firmware v2.12

The release of v2.12 Firmware will replace TM8100 production radios built with v2.11.
Firmware v2.11 has been made available since the last update to this Release Note (11 May 2006) from the Taitworld website for TM8100 upgrades as detailed on the previous page, where it resolved another issue.

When the Firmware v2.11 TM8100's were run through ATE it was found the high VSWR protection feature would foldback the RF too early, especially with High Power radios, and investigation revealed arithmetic overflow which has now been corrected.

First Serial Number

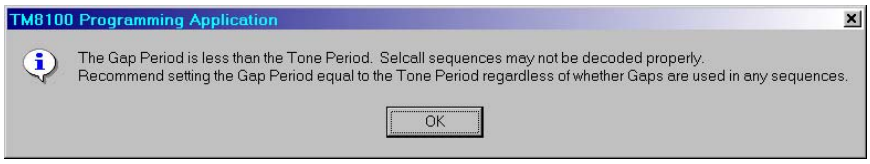
The first production TM8100 mobile radio with Firmware v2.12 was serial number **19161903**.

2. PC App Changes

V3.00

- As per the previous TM8200 PC App release v2.01, the TM8100 PC App v3.00 can now be resized (stretched) to suit the user.

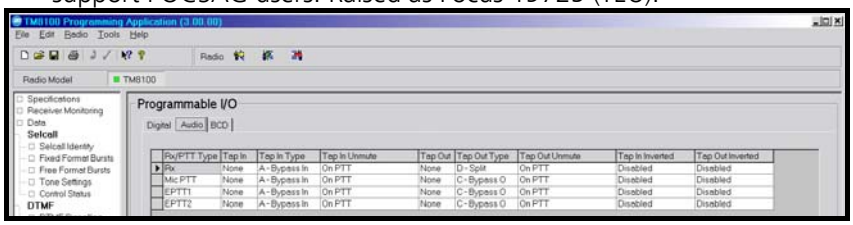
- An update to the Selcall decoding Gap Period vs Tone period issue noted in TN-1038c is the introduction of the following pop-up. This will appear if the user changes the Selcall Tone Period to a larger value. Raised as Focus 18678.



- The Selcall > Fixed Format Bursts > Tx Call Bursts capability has been extended to 100 enabling each channel to have a separate Channel Preset Call burst. Raised as Focus 21283.

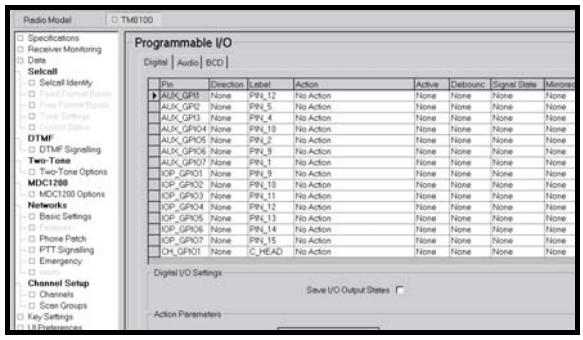
- If older Firmware radio databases with Selcall Tone Blanking enabled is read into the PC App the Tone Blanking 'periods' are automatically calculated into time values now used. Raised as Focus 20677.

- Two extra columns have been added to the Programmable I/O > Audio tab providing the ability for inversion of the audio Tap points to support POCSAG users. Raised as Focus 19725 (TEU).

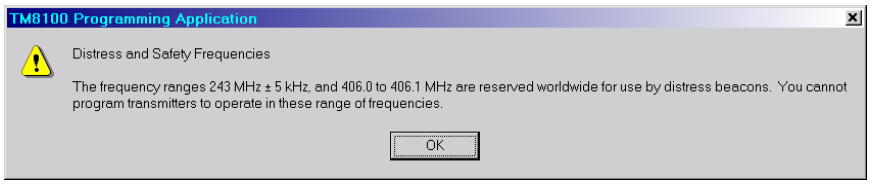


- The default Monitor function in Networks > Basic Settings > Receiver Monitoring > Monitor Overrides has been changed from All Mutes to Call Mute. This ensures the monitor function doesn't also override any Subaudible signalling on that channel.

- The Function Key status' and Control status' lines can now be saved at power-off for users who require these I/O state's persistence. Tick the Programmable I/O > Digital > Save I/O Output States. Raised as Focus 20093.



- The pop-up box for TM8100 VHF (B1) that appears reminding users of Marine Frequency channel use has been changed from an 'Alert' to 'Information' level in line with the TM8200 and TM9100 PC App. Raised as TIMS 52904.



- A new tickbox has been added to Data > General tab.
  Open Monitor on Dialled Calls sets whether the monitor is opens or not when CCDI dialled calls are made.
  - Selected: the monitor will unmute when a CCDI dialled call is made.
  - Cleared: the monitor will remain muted during a CCDI dialled call.

  Raised as Focus 19841.
- Corrected an issue found in coincidental testing where the lowest channel ID in a scan group could not be removed as it was automatically listed as the Preset Tx Channel, even though this was greyed-out with the Last Captured option.

3. Cal App Changes

V2.91

- To reduce the large amount of CPU processing that was used by the serial communications process, the TaitComms.lib now releases the CPU in the wait loop. Raised as TIMS 52537.
- The Raw Data > Receiver RSSIGainFactor value in TM8100 Firmware builds v1.01 and v2.00 was interpreted incorrectly and caused corruption with Cal App v2.73 hindering Firmware upgrade attempts. Corrected. Raised as Focus 22550.
- The Cal App v2.91 now also supports K5 (762 – 870 MHz) band due for release later in 2006.
- Resolved the "Comma vs Dot" issue with Frequencies noted when using non-English languages. Raised as TIMS 50703.
- The Calibration App now recognises the TMAB12-D1 along with hardware string options with '-AA'. Raised as TIMS 50434.

4. Enhancements

Economy Mode

Economy mode has been implemented in the TM8100 with the same functionality as the Orca 5000 portables.
Economy is automatically disabled on Scan Groups.
The Economy page contains the fields Economy Timer and Economy Duty Cycle. The timer defines the duration of inactivity before the radio goes into economy mode. Between 1 and 3600 seconds in 1-second steps. NOTE: The online help says '0' disables economy mode but this is not correct, it is only actually enabled when the economy mode is activated either by:

- A Function Key assigned as Economy to toggle on and off
- Enabling Start in Economy Mode on the Start-up page
- Defining a Programmable I/O as Economy where it can be enabled externally.

NOTE: The Programmable I/O and Function Key options are mutually exclusive.

The Economy Duty Cycle field sets the amount of time the radio is in standby mode before sampling activity on a channel. The options are:

- Low: 200 ms standby
- Medium: 500 ms standby
- High: 800 ms standby
- No Sampling: indefinite

If No Sampling is selected, the radio will remain in standby mode until there is an external trigger (PTT, GPIO etc.). This provides an Economy mode for TB7100 Transmitters or a deep sleep for remote data sites triggered by third-party equipment. Raised as Focus 20082.

TM8100 Economy Mode Testing	Average values of TMAB12-B100 Current **(mA)**
Backlighting On	
Normal Idle	**90**
Average at Low (200ms Standby)	**80**
Average at Medium (500ms Standby)	**65**
Average at High (800ms Standby)	**49**
No Sampling (Transmitter Only)	**39**
Backlighting Off (or TM8105)	
Normal Idle	**80**
Average at Low (200ms Standby)	**70**
Average at Medium (500ms Standby)	**56**
Average at High (800ms Standby)	**41**
No Sampling (Transmitter Only)	**31**

Use Channel for Data Tickbox

An enhancement to the current functionality of the Channels > Detailed > Use Channel For Data tickbox is that it now mutes all Receive audio from the front panel speaker and inhibits the front panel Mic port PTT. The external PTT's are not inhibited and provide data transmit input via the Tap-ins.
Raised as Focus 20882 (Mute Rx audio) and Focus 19694 (PTT Lockout).

Keypad Mic for Channel and DTMF

In Firmware v2.09 the TM8100 supported the use of the TMAA02-08 Keypad Mic to allow direct channel change capability. In Firmware v2.10 the Keypad Mic on the TM8100 can also support Free-Form DTMF.
To enable the use of the TMAA02-08 change Mic on the UI Preferences page to Keypad Mic.
NOTES: The audio gain from the Keypad Mic is slightly higher than the standard Mic, so it's best to lower the Control Head Mic Gain to Low.
When Keypad Mic has been enabled on the TM8100 it will need to be power-cycled when a subsequent PC App read or write is attempted - as the TM8200 does – as the data rate to the Mic is different.
This is the same operation as having FFSK data enabled on the Mic port

DTMF from the keypad can be utilized by the user in two ways:

- Defining a Function key as DTMF Dialling will toggle the operation from Channel to DTMF.
- Start-up > Keypad Mic Mode defines whether the keypad mic is Channel Control or DTMF Dialling when the radio is powered-up.

While the encoded DTMF duration is set by how long the user presses the keys, the Keypad Mic uses the Networks > Phone Patch > Tone settings values as minimums.

TIP: To enable DTMF sidetones tick the Audible Phone Patch Side Tones tickbox.

BCD

Binary Coded Decimal and BINary can now access all 100 channel ID's in the TM8100. Previously BCD was limited to the first 19 and in BINary to the first 31. This is achieved by the addition of the extra BCD lines in the Programmable I/O page (BCD 0 – 7).
To date BCD or BIN would 'look-up' the radio's Record Number. This meant the first channel in the list was BCD 0, next was 1, etc. This didn't make sense if the first channel in the user's ID list was 3 and the next 5, these were still 'BCD 0 and 1'.
An enhancement now also available is the field BCD Channel Selection which allows the user to define whether the radio associates the BCD input by Record Number (as used previously) or by Channel ID where it points to the exact ID in the Channel page.
Using Channel ID (only) BCD can also now point to Scan/Vote Groups allowing external inputs to change the radio to a group. This feature was previously unavailable.
Raised as Focus 15108 (100 BCD) and Focus 16835 (BCD to Groups).

2400 Baud Modem

The TM8100 internal modem now supports a FFSK over-the-air data rate of 2400bps. This is listed in the drop-down in Data > RF Modems > FFSK Data Rate.

Tx Inhibit in Selcall

A request of a TEU customer was that a radio with Selcall Muting enabled be barred from Transmitting until the called party has answered.
To achieve this a new field has been added to Networks > Basic Settings > Receiver Monitoring called Monitor on (Tx).
The options available are:

- Call Initiated - Monitor will open as soon as the call is initiated.
- Auto-Ack Received - Monitor will remain muted until the call is acknowledged by the called radio.

NOTE: Auto Acknowledge Type must be set to Sequence.
Previous Firmware would have behaved as the "Call Initiated" functionality.
Raised as TIMS 30945.

Raywood Channel Change

The TM8100 can now use the 'Raywood' MDT operation to perform channel changes.
NOTE: When enabled, CCDI functionality is disabled.
To enable Raywood channel change set Data > Customer Data > Global > Byte 4 to the value of 255.
Raised as Focus 16504.

Duplicate Outputs

Previously one output could only be assigned to one pin. This was enhanced in recent Firmware to enable up to two outputs for "Busy Status". In this Firmware this has been further enhanced and an output can be defined to any number of I/O pins simultaneously. Raised as Focus 19545.

Alarm Status

A new Programmable I/O output option is Alarm Status. When this is enabled the list of Alarms on the Programmable I/O page un-greys allowing these items when active to be provided externally. This functionality is primarily for the TB7100.

GPS Poll using CCDI

A CCDI Function can now retrieve the current GPS information from a GPS equipped TM8100 as the 'raw' NMEA data.
Further details are in the CCDI document included with the Third Party Developer's Kit (3DK) through your CSO. Raised as Focus 20961.

Compliance Issues

None.

CSO Instruction

Inform all service staff and dealers of the released information.

5. Issuing Authority

Name and Position of Issuing Officer

Graham Brenchley
Technical Support Engineer

Confidentiality

Distribution Level

Associate.

Document History

Original Release (v2.10)	23 March 2006	GCB
Updated to v2.11	24 April 2006	GCB
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