TB7100 base station

Release Notes

Technical Note TN-1201-SR
24 November 2006

This technical note contains information to accompany the August 2006 release of the TB7100 base station. This release comprises the following software versions:

- TB7100 Tx and Rx sub-assembly firmware version 2.13.00.00
- TB7100 programming application version 1.14.00.0000
- TB7100 calibration application version 1.11.00.0000

1 What's in This Release

This release of the TB7100 platform provides the following additional functionality:

- C0 band support

It also has other software fixes and enhancements as listed in "Issues Fixed" on page 6.

On the Product CD you will also find extensive product documentation, including:

- Installation and Operation Manual (MBB-00001-03)
- Specifications Manual (MBB-00002-04)
- Installation Guide (MBB-00003-03)
- Technical Notes

High power radios incorrectly entering High VSWR foldback

Reference: TIMS00056295 25W D1 TB7100 increasing the Tx power when power fold back occurs

25W D1 radios can enter VSWR foldback incorrectly, increasing output power when the radio is set to low or very low power.

This issue has been fixed in firmware V2.13.00.00

C0 band released

The C0 band has been released. Compliances have been obtained for: Europe.

For other regions or more information, please contact Technical Support (refer to "Tait Contact Information" on page 11).

THSD indicator

Reference: TIMS00054487 GPIO output which indicates "THSD being received"

GPIO output that can indicate whether the channel has THSD on it or is just busy because of noise is now available.

CWID - additional menu option

Reference: TIMS00054758 and TIMS00056612 CTCSS/DCS/PL/DPL with CWID

An option has been added to the CWID I.D menu to stop CTCSS/DCS/PL/DPL being broadcasted with the CWID.

This will stop users being subjected to the CWID when not required.

THSD lead in delay increased

Reference: TIMS00054858 Database: THSD lead in delay max value is too short

The lead in delay for THSD been increased from 250ms up to 5000ms, to reflect similar values of other lead in delays. This is especially useful when running in economy mode.

Lead-Out delays remain unaltered.

Coaxial Relay Option Added

Reference: TIMS00057050 and TIMS00057169 GPIO output for Coax Relay Control

A new database field / item has been added which allows the user to program in a Pre-Carrier indication time in milliseconds.

This is in order to allow early carrier warning on a GPIO output; required where external equipment needs to be switched prior to actual RF carrier being transmitted.

2 Compatibility

It is important that you read and understand the following general principles of compatibility:

- You should always use the same firmware in both TB7100 radio sub-assemblies.
- Although the TB7100 is based on the TM8100, you should **never** install TB7100 firmware into a TM8100, or install TM8100 firmware into a TB7100. Only install firmware into the equipment for which the associated firmware has been approved.
- The TB7100 PC applications will not allow you to read or program a TM8100 radio, and the TM8100 PC applications will not read a TB7100 radio.
- You should never use TM8100 radio assemblies in a TB7100 channel. Physical interferences with the TB7100 metalwork and various component sub-populations and value differences will inhibit features and performance. Component differences for some countries will also invalidate compliance approvals.

The following table specifies all compatible configurations of the TB7100 base station. A compatible configuration is a combination of radio sub-assembly hardware, radio sub-assembly firmware, programming application, and calibration application, where each part of the whole is compatible with all the other parts.

- Each row in the table identifies a compatible base station configuration.
- Each cell within a row contains the version number of the radio sub-assembly hardware, radio sub-assembly firmware, programming application, and calibration application that is compatible with the other versions in the row. If a cell contains more than one version number, more than one version is compatible.
- Table footnotes indicate any restrictions imposed on a particular combination by the version of hardware, firmware, programming application, or calibration application.
- Any other combination is not compatible and not supported.

Radio Sub-assembly Hardware	Radio Sub-assembly Firmware	Programming Application	Calibration Application
01.02	02.13.00.00	1.14.00.0000	1.11.00.0000
01.02	02.12.00.00	1.14.00.0000 1.12.00.0000	1.09.00.0001
01.02	02.11.00.00	1.14.00.0000 1.12.00.0000	1.09.00.0001
01.02	02.10.00.07	1.14.00.0000 1.12.00.0000 1.10.00.0001	1.09.00.0001
01.02	02.08.00.00[a]	1.14.00.0000 1.12.00.0000 1.10.00.0001 1.08.00.0000[b] 1.06.00.0000[c] 1.04.00.0001	1.09.00.0001 1.05.0000[b] 1.03.0003[c]

a. When upgrading B or G band mid-power sub-assemblies with versions older than V02.10.00.00, always perform a bias re-calibration. Refer to TN-1178, TIMS00034484 for more details.

b. Only use on A4 and D1.

c. All bands except A4 and D1.

3 Upgrading or Downgrading Firmware

To upgrade or downgrade the firmware of any base station module, carry out the procedures described in “Downloading new radio firmware” in the online help of the programming application.

Note We recommend you should always use the latest version of the programming application.

Note It is important when ever performing a firmware upgrade or downgrade to always perform the actions below. This ensures a working copy of the current configuration and calibration is saved in case an error occurs.

Note When upgrading firmware older than v2.10, the following MUST be performed:

1. The CAL & Radio data bases must FIRST be read and saved using the old firmware.

2. After the firmware upgrade, radios not in B or G band can simply be re-programmed with the CAL database and Radio database. The CAL App will store the old bias value into all five locations across the radio band.

3. In order to correctly CAL the B or G Band radio, the radio needs to run through the driver bias calibration procedure in the CAL App using the test setup required by the CAL

App. This will then store the correctly graded bias values into the associated B or G band radio.
Refer to TN-1178, TIMS00034484 for more details

Before you change any firmware:

1. Using the latest programming application, read and save the module's programming database.

2. Using the latest calibration application, read and save the module's calibration database.

After you have successfully changed the firmware:

- Re-program and re-calibrate the module using the files saved above.

4 Issues Fixed

The following is the full list of known issues or limitations from previous versions that have been fixed in this release.

Tait Reference	Headline
TIMS00054061	Single In Band Tone decoder gets started even if RSSI is too low
TIMS00054487	GPIO output which indicates "THSD being received"
TIMS00054542	Entering THSD mode in CCR
TIMS00054758	CTCSS/DCS/PL/DPL with CWID
TIMS00054858	Database: THSD lead in delay max value is too short
TIMS00054984	TB7100 Voice from MIC is transmitted before and after CWID without PTT
TIMS00057050	GPIO output for coax relay control
TIMS00055872	THSD resync after a predermined number of codewords / bits
TIMS00053995	Unable to switch to THSD Trans mode from FFSK Trans using a GPIO
TIMS00057073	BCD Lockout enhancement
TIMS00057169	Database: Coax Relay Control field (Pre-Carrier Indication Time)

Tait Reference	Headline
TIMS00056295	25W D1 TB7100 increasing the TX power when power fold back occurs
TIMS00056612	Database: Field for CTCSS/DCS/PL/DPL with CWID
TIMS00054573	Switching between THSD and voice affects voice deviation levels

If clarification on any of these issues is required please contact Technical Support (refer to "Tait Contact Information" on page 11).

5 Known Issues or Limitations

'TX duration Timing' not applicable for Data Tansmission

Reference: TIMS00055659
The transmit timeout timer does not operate when using FFSK or THSD data transmission.

Loss of more than 10% of characters in THSD

Reference: TIMS00047978 and TIMS00048244
During the testing of v2.08.00.00 of the TM8100/TB7100 firmware, it was observed that if the radios terminal rate is set to 9600 on a wide-band channel using THSD wide-band modem without FEC, then at least 10% of the received characters are lost when received on a trigger-base receiver. Transmission to another non-trigger-base mobile does not result in the data loss.

The following configuration can result in the loss of up to 10% of user data:

- the THSD setting of the radio terminal rate is 9600
- the channel bandwidth is wide band
- the THSD wide-band modem is used without FEC.

This fault is unique to this configuration.

This can be resolved by taking any one of the following actions:

- Change the terminal baud rate.
- Turn off the wide-band modem.
- Use FEC.
- Use narrow band (also refer to TIMS 38994).

THSD dropping characters on narrow-band channel

Reference: TIMS00038994 and TIMS00039264
It has been found that THSD can drop approximately 2% of its characters on a narrow-band channel (wide-band channels are not affected). For this reason, if 100% reliable communication is required, it is recommended that the end-user application include error detection, correction and/or retries in their application protocol. This effect is most noticeable on A4 band radios.

Calibration Application does not override the audio settings set by programming application

Reference: TIMS00044146
Settings configured by the programming application may impact the calibration application operation. For example, if the programming application sets the RX tap point to R7 and the type to “Splice”, the mute cannot be set as the audio is not passed through to the test set.

Technicans should consider this if experiencing problems using the calibration application and re-program the radio with a default configuration for calibration purposes using the programming application when appropriate.

Calibration Application: Instruction sequencing could be improved

Reference: TIMS00045505
When you are performing a re-calibration on the TB7100, it is important that after each step you advance both the ‘instruction’ prompt and the ‘calibration controls’ prompt. If both are not individually advanced by the end user, they can get out of sequence, resulting in instructions and tasks not relating to each other.

Reading and Programming in repeater mode causes Tx to key up

Reference: TIMS00046552
When the TB7100 is configured as a repeater and the receiver module is read or programmed, then each time a reset occurs (at start and end of process) it causes the transmitter to key up for half a second. Care should be exercised especially with a duplexer configuration, that this brief transmission does not cause any equipment damage.

Digital I/O LNK information messages

Reference: TIMS00047955
If the configuration of AUX_GPI2 (Emergency Mode) and AUX_GPI3 (Power Sense) is changed, the information messages referring to LNK settings can be ignored. The TB7100 module assemblies already have the associated LNK removed as standard. However, if the functionality associated with the LNK is indeed required, the LNK will need to be re-installed.

TB7100 PC applications that do not install or un-install

Reference: TIMS00048227
It is possible that the TB7100 Programming and Calibration applications will not install on a computer, with error messages indicating other Tait applications must be removed first. Tait has been updating its software platforms over the past year to allow multiple applications to exist together. If this message occurs, it indicates you have an old version of software on your machine that does not support multiple Tait applications on the one machine. You will need to un-install the old software version causing the problem, obtain a newer version, and re-install it if required. Once this is completed, you will be able to install the TB7100 application.

In general, Tait applications may not run, or could create problems when installing and un-installing other Tait applications, if they have version numbers lower than those listed below:

TB7100 Programming Application 1.04.00
TB7100 Calibration Application 1.03.00
TM8100 Programming Application 2.72.00.0002
TM8200 Programming Application 1.01.00
TM8000 Calibration Application 2.70.00.0019
TM9100 & TP9100 Programming Application 1.0.0.0
TM9100 & TP9100 Calibration Application 1.0.0.1

This is not just a TB7100 issue. This problem could be encountered for any new Tait software installation on a PC that has old Tait software already installed.

Software flow control

Reference: TIMS00048251
The TB7100 does not support flow control, even though both RF assemblies can be configured to use it. The architecture of the TB7100 requires that the SI microprocessor be fitted to support Software Flow control correctly. There are currently no plans to fit the SI microprocessor.

Hardware flow control (CTS) not working (Wideband THSD)

Reference: TIMS00049598
When using the hardware flow control line with wide-band THSD, the CTS line does not toggle to reflect the status of the radio's data buffer. It does operate correctly for narrow-band THSD when the SI PCB links are configured correctly.

Inconsistency in FFSK operation between FW 2.06 and 2.09

Reference: TIMS00050286, Focus 21811
If 9600-baud DTE serial port data rates are used with 1200-baud FFSK, errors in data transfers can occur when the data to transmit is greater than 100 bytes. This problem is not present in firmware 2.06 and appears in firmware 2.09. It has been found that increasing the FFSK lead-in delay to 300ms can resolve the data error. The reason for this is unknown.

CWID will only transmit once if transmission of string is longer than interval

Reference: TIMS00051100
If a CWID string is programmed into a TB7100 that will take longer than the interval time selected to transmit, the TB7100 will only send the CWID message once. For successful repeating CWID transmissions the interval period must always be set to a value that is greater than the time to transmit the CWID message.

Changing to DC in case of AC mains failure

Reference: TIMS00053079
For AC mains to external DC changeover to occur, the AC supply must fail completely. Low mains voltage (Brown out) may not be sufficient to enable a change to external DC input.

Not enough external channel select input lines

Reference: TIMS00054887
The TB7100 module firmware can now support up to 8 digital input lines to be used to select the active channel, however the TB7100 system connector does not support 8 lines. Only a maximum of 6 lines can be used on the TB7100 system connector. Different I/O signal types also mean pins 2, 3, 6 and 7 are routed to both Tx & Rx modules whilst others (pins 10, 12, 19 and 22) go to specific Tx or Rx modules; if the appropriate pins have been shorted together.

6 Issuing Authority

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7 Publication History

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