Product Change Notification

PCN Number:	EMS-PS-0073	**Initiated By**:	Stephen T Johnston
SST Marketing Part #	ETT80-v2.0	**Date:**	02 March 2006

Description of Product:	Theseus Titanium 80 version 2.0	**Customer Part #:**	
ES Availability Date:	02 March 2006 for Production Samples		

Estimated Product Released Date:	02 March 2006 – pending inventory depletion of ETT80-v1.2 product or specific order for ETT80-v2.0.

Description of Change:

Silicon Changes

Improvements to the Theseus Titanium 80 silicon design have been incorporated to solve issues discussed in Errata 011 and the Theseus Titanium 80 v1.2 waiver.

- Modifications have been made to eliminate the electrical current spike following device Reset
- The range for triggering the Under-Temperature Security Detector has been adjusted to improve reliability and comply with the device specification
- The range for triggering the Over and Under-Frequency detector has been adjusted to improve reliability and comply with the device specification
- A 20K Ohm resistor option has been added on the physical I/O pin. This pull-up resistor allows the Operating System software to control the I/O pull-up as required in certain mobile equipment or card readers. Please refer to the Theseus Titanium 80 Product Reference Guide for further details on how to activate this feature

Firmware Changes

- Following Reset, the firmware executes at 20 MHz in order to comply with industry standards on maximum allowable electrical currents
- The original state of the SetSecurityAction SFR was to reset the device on a security fault. This behaviour has been changed such that the SetSecurityAction SFR now creates a software interrupt on a security fault. The user still has the ability to change this behaviour in the Operating System code, and has the option to make this change temporary or persistent. Please see the Product Reference Guide for further details

Boot-Loader Changes

The Second Derivative bootloader (SDBL) has been upgraded for the Theseus Titanium 80 and larger devices in the Theseus Titanium family. The upgraded bootloader is referred to as SXBL. The SXBL contains a core loader, a normal loader which uses the Emosyn proprietary (P/M/K) algorithm, an APDU loader, and an encryption option on the normal and APDU loaders.

- The APDU bootloader has been updated to be fully ISO 7816 compliant. The APDU bootloader now supports speed enhancement (PPS)
- The Answer To Reset (ATR) and the location of the SX Bootloader has been modified to accommodate these changes. The core, proprietary, and encryption loaders have not been modified. Please refer to the Product Reference Guide for further details

Transport Code Changes

- The transport code remains backwards compatible, and will continue to accept a 5-byte transport key
- The transport code can now accept an 8-byte transport key via an ISO 7816 compliant APDU exchange
- The Answer To Reset (ATR) of the transport code has changed to identify these additional features

Reason for change and potential effect on product performance, characteristics or reliability:

The above silicon improvements should have minimal impact on existing designs. The silicon modifications improve the conformance to industry standards and increase performance in extreme environments.

The inclusion of a pull-up resistor option should improve the performance of the device in certain handsets and card reader equipment. This feature is selectable, so existing designs do not need to select this option if a pull-up resistor is not needed.

Customers are encouraged to test the timing of operations using the Write UCM API in order to eliminate any timing discrepancies.

Operating systems using the SetSecurityAction SFR should be aware of the change of the default state. This will require existing designs to be modified.

Software developers should use the Output File Generator to create the GNG or APDU Script loading files.

Existing loading equipment software will need to be modified to recognize the new bootloader ATR. The SXBL is backwards compatible with previous GNG loading procedures, and is now also compliant with ISO 7816 loading mechanisms. Please refer to the SXBL reference guide for further details.

Existing loading equipment software will need to be modified to recognize the new transport code ATR.

The transport code can be removed by sending the 5-byte key in accordance with existing procedures. The transport code can also be removed by sending the 8-byte key through an APDU exchange. Both procedures will remove the transport code.

Means of distinguishing changed product (Top mark ID Code, Date Code):

Theseus Titanium 80 v2.0 can be recognized through several means.

- The packing slip and shipping label will identify the product as Theseus Titanium 80 v2.0
- The transport code ATR will identify the product as Theseus Titanium 80 v2.0
  The transport code ATR will be: 3Bh 05h 20h 02h 00h 80h 20h BCh, where BCh is the Checksum
- The bootloader ATR is unique and will identify the product as Theseus Titanium 80 v2.0. The bootloader ATR will be: 3Bh 99h 06h 00h E5h 00h 80h 00h 00h FFh FFh FFh FFh. The final 5 bytes are dynamic, and may change depending on error codes and CSPEC modifications

Please refer to the bootloader specification for details on the transport code and bootloader

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Customer Acknowledgement of Receipt:

If under a Supply Agreement with Emosyn, SST records indicate that you require written approval of this change.

Please use the acknowledgement below to either grant approval or request additional information. If SST does not receive acknowledgement within 30 days of this notice, it will be assumed that this change is acceptable.

CUSTOMER:	NAME/TITLE:	SIGNATURE APPROVAL	DATE

CUSTOMER COMMENTS:

Upon approval, please return this form to:	**Quality Department - Michael Herman** **Silicon Storage Technology, Inc.** **1171 Sonora Court, Sunnyvale, CA 94086 USA** **PH: +1.408.735.9110 FAX: +1.408.749.9658**