CMP System Memory Clearing and Sanitization

About this Document

There are occasions where instruments are required to be used in a secured environment. In such use cases, test equipment may not leave the secured environment (e.g. calibration or maintenance) unless all memory settings are erased.

This document provides instructions for deleting files and data from the mA-3A01 AXIE Mass Storage Module of a VIAVI Configurable Modular Platform (CMP) System.

This document also identifies the types, and location, as well as recommended methods of sanitization for removing data from the memory devices found in the following CMP system hardware components:

- mA-1302/mA-1305 AXIe Chassis
- mA-3011 Mass Storage Module
- mA-6806 6 GHz Vector Signal Transceiver
- mA-6A30 6 GHz Vector Signal Transceiver w/ 30 GHz Downconverter

Refer to the following sections:

Memory Clearing Procedure

This procedure performs a sanitization procedure that deletes information from the mA-3A01 AXIe Mass Storage Module Solid State Drives (SSDs). The Storage Module Configuration utility described in this document performs a Purge operation using the "User Data Erase" command in compliance with the Flash Memory-Based Storage Device Sanitization methods outlined in *NIST Special Publication 800-88, Guidelines for Media Sanitization, Revision 1*. If a system contains more than one mA-3A01 module, this procedure must be performed on each module.

> **NOTE**
>
> Read this procedure in it's entirety before proceeding. If you have any questions regarding this procedure, contact VIAVI Customer Service with any questions **BEFORE** proceeding.

Procedure Password

cpuc (password is case sensitive, all lower case)

Preliminary Procedure

Back up all user files that are located on the mA-3A01 AXIe Mass Storage Module to a local storage device or network location.

> **CAUTION**
>
> This process erases all existing files and folders from the mA-3A01 AXIe Mass Storage Module. Any files that are not backed up will be deleted and non-recoverable upon completion of this procedure.

To Clear mA-3A01 Memory

1   Power on the CMP System.

2   Select the Storage Module Configuration button from the operating system UI. A window will be displayed that resembles Figure 1.

Figure 1 Storage Module Configuration Application Window
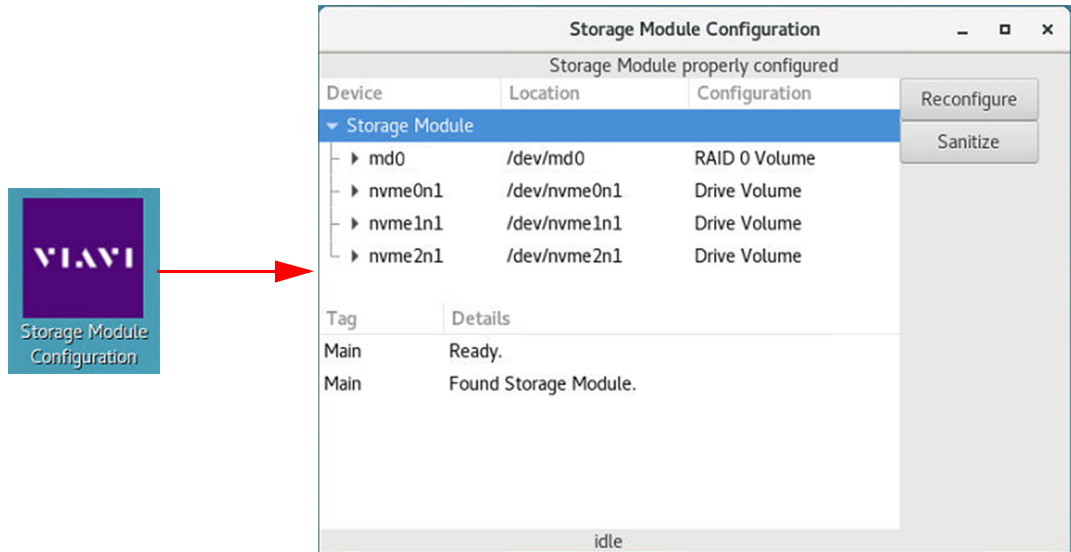
3   Verify that the following is indicated at the bottom of the application window:
–   Main: Ready
–   Main: Found Storage Module

Figure 2 Storage Module Configuration Application Window
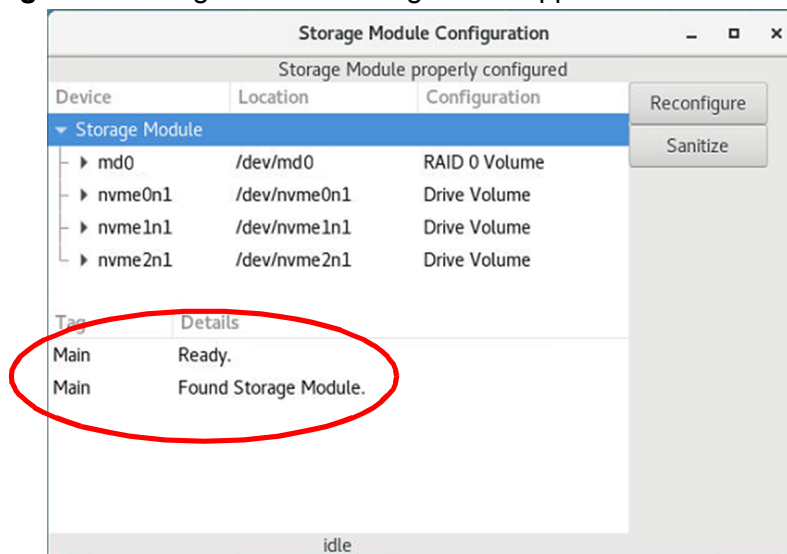
4   Select the Sanitize button (located on the right side of the window).

5 An Authentication Required dialog window will appear. Enter the password (see"Procedure Password" on page 2) in the field.

6 Select OK to continue.

7 Wait while the sanitization process is performed. When the sanitization process is finished, a message will be displayed indicating the process is complete.

To Verify Files Have Been Deleted

1 Open a File Manager window.

2 Navigate to the /mnt/md0p1 directory.

3 Verify the directory is empty.

> **NOTE**
>
> When the memory clearing procedure has been performed on an mA-3A01 AXIe Mass Storage Module, the module must be reconfigured in order to use the module.
>
> Refer to the mA-3A01 AXIe Mass Storage Module User's Guide for instructions to reconfigure an mA-3A01 AXIe Mass Storage Module for use.

System Memory Sanitization

This section provides a full description of each memory type, as well as the module and sub-assembly in which the memory device(s) is located. A brief description of the contents of the device is also provided as well as recommended method of sanitization.

The statement of volatility indicates where memory is maintained or lost during power-down.

The statement of accessibility indicates whether or not the contents of the memory can be accessed by the system or user.

The sanitization statement indicates the action required to sanitize the device's memory.

Table 1 mA-3011 Embedded Host Module (CPUC)

Description	M.2 SATA Solid State Drive, 512GB
Volatility	Non-Volatile
Contents	System OS, User applications, User Data
Accessibility	System Accessible: Yes User Accessible: Yes

Table 1 mA-3011 Embedded Host Module (CPUC)

Location	Secured to the CPU Carrier Board with screws. Accessible from bottom of AXIe module after removal from chassis.
Sanitization	Remove and Destroy

Description	Qty. 2 or 4 DDR3L SDRAM204-SODIMM, 4GB Optional: DDR3L SDRAM204-SODIMM, 8GB
Volatility	Volatile
Contents	Program execution, Program Data, Temporary User Data
Accessibility	System Accessible: Yes User Accessible: No
Location	Under heat-sink and heat spreader plate on COM Express Module, mounted to CPU Carrier Board.
Sanitization	Cycle Power

Description	Qty. 1 FLASH EEPROM – W25Q80 1M x 8, 8Mb
Volatility	Non-Volatile
Contents	PCIe Switch Configuration
Accessibility	System Accessible: Yes User Accessible: No
Location	CPU Carrier Board
Sanitization	None: Not user accessible, no user data.

Description	Qty. 1 Embedded FLASH Micro-controller– TM4C123, 256KB
Volatility	Non-Volatile
Contents	IPMI controller (Intelligent Platform Management Interface), Module Serial Number
Accessibility	System Accessible: Yes User Accessible: No
Location	CPU Carrier Board
Sanitization	None: Not user accessible, no user data.

Table 1 mA-3011 Embedded Host Module (CPUC)

Description	Any PCIe add-in card.
Volatility	See Card Manufacturer for details.
Contents	See Card Manufacturer for details.
Accessibility	See Card Manufacturer for details.
Location	PCIe Slot
Sanitization	See Card Manufacturer for details.

Table 2 mA-3A01 Mass Storage Module

Description	Qty. 1 FLASH EEPROM – W25Q80 1M x 8, 8Mb
Volatility	Non-Volatile
Contents	PCIe Switch Configuration
Accessibility	System Accessible: Yes User Accessible: No
Location	NVMe Storage Tray
Sanitization	None: Not user accessible, no user data.

Description	Qty. 1 Embedded FLASH Micro-controller– TM4C123, 256KB
Volatility	Non-Volatile
Contents	IPMI controller (Intelligent Platform Management Interface), Module Serial Number
Accessibility	System Accessible: Yes User Accessible: No
Location	NVMe Storage Tray
Sanitization	None: Not user accessible, no user data.

Table 2 mA-3A01 Mass Storage Module

Description	Qty. 3 or 4 FLASH SOLID STATE DRIVE (SSD) – U.2 form factor NVMe drive, Various Storage Capacity
Volatility	Non-Volatile
Contents	RAID Array of SSD user file system storage which contains the saved waveform captures and other user data files.
Accessibility	System Accessible: Yes User Accessible: Yes
Location	Secured to the NVMe Storage Tray with screws. Accessible from the bottom of the AXIe module after removal from the chassis.
Sanitization	Perform "Memory Clearing Procedure" on page 2.

Table 3 mA-1302/mA-1305 AXIe Chassis

Description	Qty. 1 FLASH EMMC – MTFC8GA, 64GB.
Volatility	Non-Volatile
Contents	Embedded Linux Operating System. System Module Serial Number Ethernet MAC Address.
Accessibility	System Accessible: Yes User Accessible: No Note: Operating software may be updated from a PC via the LAN or USB interface using the update software option in the web GUI. All other information is read-only or non-user accessible.
Location	Embedded System Module.
Sanitization	None: Not user accessible, no user data.

Description	Qty. 1 Embedded FLASH – PMBUS Voltage Regulator – TPS40422, 32Mb
Volatility	Non-Volatile
Contents	Voltage Regulator settings.
Accessibility	System Accessible: Yes. User Accessible: No
Location	Embedded System Module.
Sanitization	None: Not user accessible, no user data.

Table 3 mA-1302/mA-1305 AXIe Chassis

Description	Qty. 4 512M x 8 bit DDR3 Synchronous DRAM - K4B4G08461, 2GB.
Volatility	Volatile
Contents	Used by embedded Linux Operating System.
Accessibility	System Accessible: Yes User Accessible: No
Location	Embedded System Module.
Sanitization	Power Cycle

Description	Qty. 3 FLASH EEPROM – W25Q80 1M x 8, 8Mb
Volatility	Non-Volatile
Contents	PCIe Switch Configuration.
Accessibility	System Accessible: Yes User Accessible: No
Location	Embedded System Module
Sanitization	None: Not user accessible, no user data.

Description	Qty. 1 Embedded FLASH Micro-controller– TM4C123, 256KB
Volatility	Non-Volatile
Contents	IPMI controller (Intelligent Platform Management Interface), Backplane Serial Number.
Accessibility	System Accessible: Yes User Accessible: No IPMI software may be updated from a PC via the LAN or USB interface using the update software option in the web GUI. All other information is read-only or non-user accessible.
Location	Backplane
Sanitization	None: Not user accessible, no user data.

Table 3 mA-1302/mA-1305 AXIe Chassis

Description	Qty. 1 FLASH EEPROM – 25LC512, 512Kb
Volatility	Non-Volatile
Contents	USB Controller configuration
Accessibility	System Accessible: Yes User Accessible: No
Location	Rear Transition Module
Sanitization	None: Not user accessible, no user data.

Description	Qty. 1 Embedded FLASH SmartFusion2 FPGA – M2S005, 256KB
Volatility	Non-Volatile
Contents	Rear Transition Module FPGA Golden Image
Accessibility	System Accessible: Yes User Accessible: No
Location	Rear Transition Module (RTM)
Sanitization	None: Not user accessible, no user data.

Description	Qty. 2 Flash EEPROM -MT25QL256 32M x 8, 256Mb
Volatility	Non-Volatile
Contents	FPGA Fabric Golden Image / ARM Processor Golden Image.
Accessibility	System Accessible: Yes User Accessible: No
Location	Embedded System Module
Sanitization	None: Not user accessible, no user data.

Table 3 mA-1302/mA-1305 AXIe Chassis

Description	Qty. 1 Embedded FLASH Micro-controller - TM4C123, 256KB
Volatility	Non-Volatile
Contents	IPMI controller (Intelligent Platform Management Interface), Module Serial Number
Accessibility	System Accessible: Yes User Accessible: No
Location	Power Entry Module (PEM)
Sanitization	None: Not user accessible, no user data.

Table 4 mA-6806 6 GHz VST / mA-6A30 6 GHz VST w/ 30 GHz Downconverter

Description	Qty. 2 FLASH EEPROM – MT25QL256 32M x 8, 256Mb
Volatility	Non-Volatile
Contents	FPGA Fabric Golden Image / ARM Processor Golden Image
Accessibility	System Accessible: Yes User Accessible: No
Location	Instrument Carrier Module
Sanitization	None: Not user accessible, no user data.

Description	Qty. 1 FLASH EMMC - MTFC8GA, 8GB
Volatility	Non-Volatile
Contents	System OS; System applications
Accessibility	System Accessible: Yes User Accessible: No
Location	Instrument Carrier Module
Sanitization	None: Not user accessible, no user data.

Table 4 mA-6806 6 GHz VST / mA-6A30 6 GHz VST w/ 30 GHz Downconverter

Description	Qty. 8 512M x 8 bit DDR3 Synchronous DRAM - K4B4G018461, 4GB total
Volatility	Volatile
Contents	System OS; System applications, Waveform Data
Accessibility	System Accessible: Yes User Accessible: No
Location	Instrument Carrier Module
Sanitization	Cycle Power

Description	Qty. 1 Embedded FLASH Micro-controller - TM4C123, 256KB
Volatility	Non-Volatile
Contents	IPMI controller (Intelligent Platform Management Interface), Module Serial Number
Accessibility	System Accessible: Yes User Accessible: No
Location	Instrument Carrier Module
Sanitization	None: Not user accessible, no user data.

Description	Qty. 1 Embedded FLASH FPGA Configuration – M2S005, 512KB
Volatility	Non-Volatile
Contents	SmartFusion2 FPGA Configuration, Boot-loader, Operating System
Accessibility	System Accessible: Yes User Accessible: No
Location	RF Generator
Sanitization	None: Not user accessible, no user data.

Table 4 mA-6806 6 GHz VST / mA-6A30 6 GHz VST w/ 30 GHz Downconverter

Description	Qty. 1 Embedded SRAM – M2S005, 64 KB
Volatility	Volatile
Contents	Used by embedded Linux Operating System.
Accessibility	System Accessible: Yes User Accessible: No
Location	RF Generator
Sanitization	Power Cycle

Description	Qty. 1 FLASH EEPROM – AT25DF321, 32Mb
Volatility	Non-Volatile
Contents	SoC Operating System Update Image, FPGA Golden Image & Update Image, Boot-loader Update Image
Accessibility	System Accessible: Yes User Accessible: No
Location	RF Generator
Sanitization	None: Not user accessible, no user data.

Description	Qty. 1 SRAM – 23LC1024, 1 Mb
Volatility	Volatile
Contents	List mode entries
Accessibility	System Accessible: Yes User Accessible: No
Location	RF Generator
Sanitization	Cycle Power

Table 4 mA-6806 6 GHz VST / mA-6A30 6 GHz VST w/ 30 GHz Downconverter

Description	Qty. 1 Embedded FLASH FPGA Configuration – M2S005, 512KB
Volatility	Non-Volatile
Contents	SmartFusion2 FPGA Configuration, Boot-loader, Operating System
Accessibility	System Accessible: Yes User Accessible: No
Location	RF Receiver
Sanitization	None: Not user accessible, no user data.

Description	Qty. 1 Embedded SRAM – M2S005, 64KB
Volatility	Volatile
Contents	Used by embedded Linux Operating System.
Accessibility	System Accessible: Yes User Accessible: No
Location	RF Receiver
Sanitization	Power Cycle

Description	Qty. 1 FLASH EEPROM – AT25DF321, 32Mb
Volatility	Non-Volatile
Contents	SoC Operating System Update Image, FPGA Golden Image & Update Image, Boot-loader Update Image
Accessibility	System Accessible: Yes User Accessible: No
Location	RF Receiver
Sanitization	None: Not user accessible, no user data

Table 4 mA-6806 6 GHz VST / mA-6A30 6 GHz VST w/ 30 GHz Downconverter

Description	Qty. 1 SRAM – 23LC1024, 1 Mb
Volatility	Volatile
Contents	List mode entries
Accessibility	System Accessible: Yes User Accessible: No
Location	RF Receiver
Sanitization	Cycle Power

Description	Qty. 1 Embedded FLASH FPGA Configuration – M2S005, 512KB
Volatility	Non-Volatile
Contents	SmartFusion2 FPGA Configuration, Boot-loader, Operating System
Accessibility	System Accessible: Yes User Accessible: No
Location	RF Generator Synthesizer
Sanitization	None: Not user accessible, no user data

Description	Qty. 1 Embedded SRAM – M2S005, 64KB
Volatility	Volatile
Contents	Used by embedded Linux Operating System
Accessibility	System Accessible: Yes User Accessible: No
Location	RF Generator Synthesizer.
Sanitization	Power Cycle

Table 4 mA-6806 6 GHz VST / mA-6A30 6 GHz VST w/ 30 GHz Downconverter

Description	Qty. 1 FLASH EEPROM – AT25DF321, 32Mb
Volatility	Non-Volatile
Contents	SoC Operating System Update Image, FPGA Golden Image & Update Image, Boot-loader Update Image
Accessibility	System Accessible: Yes User Accessible: No
Location	RF Gen Synthesizer
Sanitization	None: Not user accessible, no user data

Description	Qty. 1 SRAM – 23LC1024, 1Mb
Volatility	Volatile
Contents	List mode entries
Accessibility	System Accessible: Yes User Accessible: No
Location	RF Generator Synthesizer
Sanitization	Cycle Power

Description	Qty. 1 Embedded FLASH FPGA Configuration – M2S005, 512KB
Volatility	Non-Volatile
Contents	SmartFusion2 FPGA Configuration, Boot-loader, Operating System
Accessibility	System Accessible: Yes User Accessible: No
Location	RF Receiver Synthesizer
Sanitization	None: Not user accessible, no user data.

Table 4 mA-6806 6 GHz VST / mA-6A30 6 GHz VST w/ 30 GHz Downconverter

Description	Qty. 1 Embedded SRAM – M2S005, 64 KB
Volatility	Volatile
Contents	Used by embedded Linux Operating System.
Accessibility	System Accessible: Yes User Accessible: No
Location	RF Receiver Synthesizer
Sanitization	Power Cycle

Description	Qty. 1 FLASH EEPROM – AT25DF321, 32Mb.
Volatility	Non-Volatile
Contents	SoC Operating System Update Image, FPGA Golden Image & Update Image, Boot-loader Update Image.
Accessibility	System Accessible: Yes User Accessible: No
Location	RF Receiver Synthesizer
Sanitization	None: Not user accessible, no user data.

Description	Qty. 1 SRAM – 23LC1024, 1 Mb
Volatility	Volatile
Contents	List mode entries
Accessibility	System Accessible: Yes User Accessible: No
Location	RF Receiver Synthesizer
Sanitization	Cycle Power

Terms and Definitions

Clear	As defined in *NIST Special Publication 800-88 Revision 1*, clearing "applies logical techniques to sanitize data in all user-addressable storage locations for protection against simple non-invasive data recovery techniques; typically applied through the standard Read and Write commands to the storage device, such as by rewriting with a new value or using a menu option to reset the device to the factory state (where rewriting is not supported)."
Cryptographic Erase (CE)	As defined in *NIST Special Publication 800-88 Revision 1*, "leverages the encryption of target data by enabling sanitization of the target data's encryption key. This leaves only the ciphertext remaining on the media, effectively sanitizing the data by preventing read-access...media sanitization is performed by sanitizing the cryptographic keys used to encrypt the data, as opposed to sanitizing the storage locations on media containing the encrypted data itself. "
Cycle Power	Power cycling is the act of turning the equipment off and disconnecting it from its source of power for a length of time sufficient for all internal electrical components to discharge, and then reconnecting it to its source of power and turning it back on again.
Destroy	As defined in *NIST Special Publication 800-88 Revision 1*, destroying "renders Target Data recovery infeasible using state of the art laboratory techniques and results in the subsequent inability to use the media for storage of data."
Non-Volatile Memory	Non-volatile memory is a type of memory that retains its contents even after power has been removed. When power is restored to this type of memory, the contents become accessible again.
Purge	As defined in *NIST Special Publication 800-88 Revision 1*, purging "applies to physical or logical techniques that render Target Data recovery infeasible using state of the art laboratory techniques."
Sanitize	As defined in *NIST Special Publication 800-88 Revision 1*, "media sanitization refers to a process that renders access to target data on the media infeasible for a given level of effort."
System Accessibility	System accessible memory is accessible (read and/or write) from the system host controller.
User Accessible	User accessible memory is accessible (read and/or write) in a way that allows the user to store arbitrary data to the memory component using normal user tools.

Volatile Memory	Volatile Memory is a type of memory that requires power to maintain the stored information. This type of memory retains its contents while powered on but quickly loses its contents when power is removed.

Technical Assistance

Contact Customer Service for technical support or with any questions regarding the information in this document.

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