



# MICRO LAMBDA WIRELESS, INC.

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## MLVS Series Synthesizer Security and Volatility Documentation.

### Product Declassification and Security.

#### Introduction:

This document describes product security features and the steps to declassify a product through memory sanitization.

#### Terms and Definitions:

##### Definitions:

**Clearing** – Clearing is the process of eradicating the data on media before reusing the media so that the data can no longer be retrieved using the standard interfaces of the product. Clearing is typically used when the product is to remain in an environment with an acceptable level of protection.

**Sanitization** – Sanitization is the process of removing or eradicating stored data so that the data cannot be recovered using any known technology. Product sanitization is typically required when a product is moved from a secure to a non-secure environment such as when it is returned to the factory for calibration (Note: This product does not require calibration). The product is declassified.

**Security erase** – Security erase is a term that is used to refer to either the clearing or sanitization features of Micro Lambda Wireless products.

**Product declassification** – A term that refers to procedures that must be undertaken before a product can be removed from a secure environment such as when the product is returned for calibration (Note: This product does not require calibration). Declassification procedures will include memory sanitization.

#### System Components:

Product/System includes the following components:

Microcontroller Internal (Flash + Ram) - S7G2 MCU  
Volatile Memory (Aux. External Ram) – MT48LC16M16A2B4  
Nonvolatile Memory (Aux. External Flash) – N25Q256A13EF840E  
Nonvolatile Memory (External FRAM) – FM25W256-G

Note: The MLVS product does not contain a battery.

#### Product Memory and Volatility Information:

The MLVS has several types of memory.

1. Microcontroller internal program flash memory, 64 KB. This is nonvolatile memory. It is used for firmware storage and is not accessible by the customer.
2. Microcontroller internal SRAM memory, 640 KB. This is volatile memory. It is used for calculations and program execution, it is not accessible by the customer. All information is erased and unrecoverable when power to the unit is turned off.
3. Aux. External SRAM memory, 256 MB. This is volatile memory. It is used for frequency list storage. All information is erased and unrecoverable when power to the unit is turned off.
4. Aux. External Flash, 256 MB this is nonvolatile memory. It is used for frequency list storage.
5. External FRAM, this is nonvolatile memory, 32 KB. It is used for storing the products configuration, frequency settings, user memory storage, and specification information.

## **Memory Clearing, Sanitization Procedures:**

This section explains how to clear and sanitize the memory in your product. This is for all memory that can be written to during normal operation and for which the clearing and sanitization procedure is more than trivial such as rebooting your product.

**The following process completely clears all user accessible memory** on the MLVS product.

Using USB or the SPI interface, send the following commands: (See MLVS User Manual for information on sending commands)

SP – This command resets the MLVS to factory settings. This clears the current frequency memory location to be the minimum frequency of the product and sets the unit to minimum frequency.

LIST:ERAS:FLASH (SCPI command) – This command resets the MLVS to factory settings. This clears the current frequency memory location, and sets the current frequency to be 10.0 GHz, Erases the entire Frequency Sweep List Table in FLASH, RAM and NOVO.

Power the unit OFF then ON. Set the unit to minimum frequency. While the unit is sitting at minimum frequency, send the MS0 through MS99 commands (100 commands). This will store the minimum frequency of the MLVS product into the 100 user saved frequency locations in nonvolatile FRAM memory, clearing any sensitive user saved frequency information from these locations. A programmatic technique is the preferred method for clearing this memory.

\*SAV 1 (SCPI command) – This will save the current state (Minimum frequency) in to user setting 1 location.

\*SAV 2 (SCPI command) – This will save the current state (Minimum frequency) in to user setting 2 location.

Resend the SP command.

The above process will completely erase the User Data nonvolatile memory information and reboot the product. When the reboot is completed, the product will be ready for normal operation, and clear of any past frequency setting information.