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## USRP™ E100 & E110 Certificate of Volatility

This document describes all memory types present on the Ettus Research USRP E100 series and how to remove all software from the device.

### Memory Types

This section contains information on the memory components used in the USRP E100 series, including details on the size, type, purpose, location, volatility, and the required sanitization procedure.

The device uses both volatile and non-volatile memory types. The volatile memory in the device does not have battery backup and therefore does not retain any information when power is removed. The backup battery at location U903 on the main board is for an RTC built into the removable Computer-On-Module (COM). On the other hand, the non-volatile memory requires specific sanitization procedures to clear it of any data.

The following reference table will provide a breakout of the memory types used on the USRP E100 series which currently includes both the USRP E100 and the USRP E110 embedded SDRs.

| Memory Type & Model  | Memory Size                      | Volatile             | Purpose/Contents  | Location  | Sanitization Procedure |
|--|----------------------------------|----------------------|---|-----------|------------------------|
| <b>FPGA - Xilinx</b><br><b>XC3SD1800A-4CSG484C (E100)</b><br>- Configuration Memory<br>- User Memory<br><b>XC3SD3400A-4CSG484C (E110)</b><br>- Configuration Memory<br>- User Memory | Mbits<br>Mbits<br>Mbits<br>Mbits | Yes                  | Configuration and Digital Signal Processing Data                            | U1        | 1                      |
| <b>EEPROM - Microchip</b><br>24AA02E48-I/SN or equivalent  | 2 kbits                          | No                   | Model & serial numbers. Contains no user data.                              | U901      | 2                      |
| <b>EEPROM - Microchip</b><br>93AA46A-I/SN or equivalent  | 1 kbits                          | No                   | MAC & IP addresses. Contains no user data.                                  | U1101     | 2                      |
| <b>COM - Gumstix</b><br>- Overo WaterSTORM COM<br>- Removable uSD card<br>- RAM<br>- NAND (unused)   | -<br>4GB<br>512MB<br>512MB       | -<br>No<br>Yes<br>No | Computer on module running Linux distribution stored on removable uSD card. | J70 & J71 | 3                      |

## **Sanitization Procedures**

This section contains information on sanitization procedures required to clear all software from the USRP N200 series devices.

### **Procedure 1**

Remove power to clear all volatile memory.

### **Procedure 2**

Although the onboard EEPROM can be cleared, it is not necessary as it does not contain any user data. However if desired, our technical support can provide a script that will clear the contents of the EEPROM making the device inoperable. The script file name is:

### **Procedure 3**

The module installed on connectors J70 and J71 is a device manufactured by Gumstix therefore we can only recommend the removal of the device to ensure all data is removed.

## **Recovery Procedure**

Please note that a JTAG programmer will be required to restore the USRP N2X0 to a functional state after executing procedure 2.

The default compiled FPGA image (.bin file) is available on [ettus.com](http://ettus.com) as part of the UHD driver distribution or on any computer where the appropriate version of the UHD driver is installed. The path to the .bin image file is:

Note: Ettus Research will not be held responsible for reprogramming USRP devices that have been cleared using this procedure.