



Dec 16, 2021

Letter of Volatility

To Whom It May Concern.

This letter is to provide clarification and identify all volatile and non-volatile memory contained in the **ADRV9009-ZU11EG** RF System on Module (SOM) Evaluation Board provided by Analog Devices, Inc. The **ADRV9009-ZU11EG** RF SOM is designed to be plugged into a carrier. This letter does not cover any devices which may be on the carrier.

Volatile

The following list of devices found on the **ADRV9009-ZU11EG** RF SOM contain registers or memory that is cleared or reset with a power cycle:

Part Number	Manufacturer	Description
AD9542BCPZ	ADI	Quad Input, Five-Output, Dual DPLL Synchronizer and Adaptive Clock Translator
ADM1177-1ARMZ	ADI	Hot Swap Controller and Digital Power Monitor with Soft Start Pin
ADRV9009BBCZ	ADI	Integrated Dual RF Tx, Rx, and Observation Rx
HMC7044LP10BE	ADI	High Performance, 3.2 GHz, 14-Output Jitter Attenuator with JESD204B
88E1512-A0-NNP2I000	MARVELL	INTEGRATED 10/100/1000MBPS ENERGY EFFICIENT ETHERNET TRANS
USB3320C-EZK	MICROCHIP	Highly Integrated Full Featured Hi-Speed USB 2.0 ULPI Transceiver
MT40A512M16LY-062E IT:E	MICRON	DDR4 SDRAM 8Gb: x8

Non-Volatile

The following parts contain non-volatile memory which does not clear on power cycle.

Part Number	Manufacturer	Description	Purpose
ADM1266-R	ADI	Cascadable Super Sequencer with Margin Control and Fault Recording	The ADM1266 Super Sequencer® is a configurable sequencing device that offers power supply monitoring and sequencing. A block of nonvolatile EEPROM is used to store device configuration information (to properly sequence supplies), hold fault records, or user-defined information.
24AA16-I/SN	MICROCHIP	I2C SERIAL EEPROM, 16K	The 24AA16 is a 16Kb I2C™ compatible serial EEPROM. It is normally used to store configuration, serial numbers and system level calibration information.
MT25QU512ABB1EW9-0SIT	MICRON TECHNOLOGY	SERIAL NOR FLASH	It is normally used to store boot configuration and device images.



		MEMORY, 512MB	
XCZU11EG-1FFVF1517I	XILINX	Zynq UltraScale+ MPSoC	The Zynq UltraScale+ MPSoC family includes PS and PL eFUSE settings, which are documented in https://www.xilinx.com/support/documentation/application_notes/xapp1319-zynq-usp-prog-nvm.pdf The Zynq also includes a small externally connected battery (BBRAM), which can be used for encryption keys. The Battery is NOT on the SOM, and is optionally on the carrier.
DM3CS-SF	HIROSE ELECTRIC	MICRO SD CARD HOLDER, HINGED TYPE	The ADRV9009-ZU11EG RF SOM contains a Micro SD card holder, which provides the ability for removeable non-volatile storage media. This media is user installed, and is not provided with the ADRV9009-ZU11EG RF System on Module.

The retained data in the ADM1266 can be examined by an ADI provided utility. The following tools are needed to read the ADM1266 Blackbox records:

- ADI Power Studio GUI Software
 - <https://www.analog.com/en/design-center/adi-power-studio.html>
- EVAL-ADP-I2C-USB I2C USB dongle.
 - <https://www.analog.com/en/design-center/evaluation-hardware-and-software/evaluation-boards-kits/EVAL-ADP-I2C-USB.html>

Care should be taken erasing the entire ADM1266 internal EEPROM, as it can cause the board not to boot (since none of the power supplies will turn on). Complete instructions can be found at:

https://wiki.analog.com/resources/eval/user-guides/adrv9009-zu11eg/hardware#power_monitoring

The data in the Zynq ZU11EG Battery Backed RAM can be cleared by unplugging the SOM from the carrier.

The some EFUSES can not be examined after programming. These are documented in:

<https://xilinx-wiki.atlassian.net/wiki/spaces/A/pages/18841763/Zynq+UltraScale+MPSoC+Secure+Boot>

The retained data in the MT25QU512ABB1EW9-0SIT Serial Flash can be examined and erased by using low level mtd-utils. When examining serial flash, it is useful to understand what (if any) file system is used on the device.

<http://www.linux-mtd.infradead.org/doc/general.html>

Retained data in the 24AA16-I/SN Serial EEPROM can be examined and erased by using the built in kernel driver described at:

<https://www.kernel.org/doc/html/latest/misc-devices/eeprom.html>

users can simply ``cat /sys/bus/i2c/devices/0-050/eeprom`` to read, or

``cat /dev/null > /sys/bus/i2c/devices/0-050/eeprom`` to erase.

If you require any further information, please feel free to contact your local ADI sales contact, or ask on the Linux software forums on ADI's Engineerzone:

<https://ez.analog.com/community/linux-device-drivers/linux-software-drivers>

Sincerely,

Robin Getz
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Systems Development Group