

Radiation Characterization of DDR3 SDRAM and MRAM devices in the frame of the ESA study "Technology Assessment of DRAM and Advanced Memory Products" (TADAMP)

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The ESA study "Technology Assessment of DRAM and Advanced Memory Products" (TADAMP) under the contract number 4000104887/12/NL/RA was performed to characterize the radiation hardness and the reliability of state-of-the-art DRAM and nonvolatile MRAM in view of space applications. DRAM and MRAM compete with NAND Flash in some applications.

For the first part of the study, the radiation characterization was done for 4Gbit Nanya DDR3 devices. An insitu TID test and a heavyion SEE test was performed. The TID test showed a rapid idle current increase around 40 krad. In the SEE test, SEUs, stuck bits, row SEFIs, column SEFIs, and device SEFIs, but no SELs were observed.

For the second part of the study, 1Mbit and 16Mbit Everspin MRAM devices were tested in a heavyion SEE test. SEUs, SEFIs, and SELs, but no stuck bits were observed.