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## **iRoC TECHNOLOGIES CONDUCTS SOFT ERROR TESTING FOR AVAGO TECHNOLOGIES ASIC PRODUCTS**

*Leading ASIC Supplier Continues Strategy to Proactively Measure Soft Error Impacts of  
Atmospheric Neutron and Alpha Particles to Assure Reliability*

**SANTA CLARA, CA, October 22nd , 2007** — iRoC Technologies Corp of Santa Clara, CA today announced that iRoC has performed soft error tests on recent Avago Technologies ASIC memory IP. Recent advances in semiconductor technology can result in devices having more vulnerability to atmospheric neutrons and alpha particle-induced upsets, a major concern industry-wide for designers of high-reliability systems such as medical, telecommunications, storage area networks, computer systems, and military and avionics systems. Ionizing radiation under normal use conditions can also pose a threat to the quality of high-volume consumer and automotive applications.

The testing of multiple variants of a chip design has been conducted at the Los Alamos Neutron Sciences Center (LANSCE) at Los Alamos National Laboratory in New Mexico utilizing the fast neutron beam line, and at iRoC Technologies laboratory in Grenoble, France for the Alpha particle campaign. By working with iRoC Technologies, customers benefit from the iRoC's expertise in testing the latest technology nodes, its most recent progress in tester and detection algorithm development, and its flexibility in scheduling test campaigns. Robust test algorithms have been implemented to detect SBU (Single Bit Upsets), MCU (Multi Cell Upsets), Latch up events, SEFI (Single Event Functional Interrupt), Snapback events and other device specific failure modes. The trend of the most recent technologies shows the potential for an increase in Multi-Bit-Upsets (MBU), due to MCU events, when the memory layout and error correction approaches are not adequately considered.

“iRoC Technologies’ test business unit is positioned as a totally independent test house which is leveraging its wide experience to provide its customers an accurate and reliable test methodology. During this test project, Avago benefited from our latest progress in detecting and understanding the Soft Error effects on a chip, while Avago Technologies helped us by providing

leading edge technology test vehicles for experiments.” said Olivier Lauzeral, President at iRoC Technologies Corporation. “Our high-quality testing methodology uses identical procedures for each device in a controlled environment, so tests are repeatable and results can be compared with confidence.”

“As a leading supplier of high performance ASICs, we believe an advanced understanding of our soft error performance is a competitive advantage for Avago Technologies,” said Ken Patterson of Avago Technologies’ ASIC products division. “By analyzing soft error test results early, Avago Technologies is able to optimize design and manufacturability so customers can achieve time to market goals without compromising product quality.”

### **Test Methodology and Results**

iRoC conducted a series of tests conditions including, and extending beyond the industry-prescribed JESD-89 standard test methodology, to determine the failure rate of the devices in different configurations.

When high-energy neutrons penetrate memory cells, it is probable that functional failure will occur, causing the device to operate in an unpredictable manner. This harmful effect can occur not only under high-altitude conditions, but also in ground-based applications.

Standard Error Correcting Code (ECC) solutions protect against single bit upsets (SBU) in memories, but more advanced solutions are required to address the evolving nature of MCU and SEFI. The most advanced companies in their fields are implementing solutions that address this growing challenge.

### **About iRoC Technologies**

iRoC Technologies Corporation is the leader of soft errors solutions. iRoC Technologies is headquartered in Grenoble, France and in Santa Clara, CA for US and Asia operations. It offers turn key Soft Error test solutions, Design Analysis services and software solutions. For more information about iRoC Technologies, visit [www.iroctech.com](http://www.iroctech.com).

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