

KITSAT-3 Solid State Recorders

Kyung In Kang, Hyon Sock Chang and Soon Dal Choi
Satellite Technology Research Center, KAIST

Seung Ho Ahn
Samsung Electronics CO., LTD

The KITSAT-3 is planned to be launched into a sun-synchronous orbit in 1997. The Earth Imaging System(EIS) which is one of the main payloads contains two solid state recorders. Many remote sensing spacecrafts have conventionally used magnetic tape recorders as mass storage devices. These electromechanical devices have several drawbacks such as insufficient operational flexibilities and high failure rate of moving mechanisms. We have developed solid state recoders instead of magnetic tape recoders to overcome these vulnerable problems. However, solid state recoder can be affected by the space radiation particles, and these effects are known as Single Event Upset(SEU) and Total Dose Effect(TDE), etc.. Radiation protection shielding and error correction capabilities are taken into consideration to reduce these effects on solid state devices and these effects will be monitored later through the ground radiation test and in space. Two solid state recorders consist of SRAM and Flash memory devices, these memory devices are stacked in cubes to reduce the physical memory space. This paper describes solid state recorder architectures, operational modes, and SEU results of SRAM devices obtained from KITSAT-2 spacecraft which was launched in September, 1993. KITSAT Solid State Recorders will be available for use in space in the near future.