



The space weather mission of the SmarSat program

M. Akioka(1), W. Miyake(1), T. Nagatsuma(1), K. Ohtaka(1), S. Kimura(1), T. Goka(2), H. Matsumoto(2), and H. Koshiishi(2)

(1) National Institute of Information and Communications Technology, (2) Japan Aerospace Exploration Agency (akioka@nict.go.jp, +81-29-265-9726)

We have proposed the L5 mission for space weather research and operational forecasting experiment. The spacecraft will be deployed at the L5 Point of the Sun - Earth system for remote sensing of the Sun and the interplanetary space and for in situ measurement of the solar wind plasma and high energy solar particle event. For the L5 mission, CRL and JAXA develop wide field imager for Coronal Mass Ejection (CME) tracking and advanced high energy particle sensor. CME is a most serious driver of space weather disturbances which is hazardous situation for space activity. We plan orbital demonstration in near earth orbit before the L5 mission as the SmartSat program. The Smart Sat is a small satellites about 200Kg, which is a collaborative program of government agency (CRL,JAXA) and private sector (MHI) in Japan. The space weather experiment of the SmartSat consists of Wide Field Imager for CME tracking (WCI), Space Environment Data Acquisition@Equipment (SEDA), and mission processor (MP). Both of the instruments will be principal components of the L5 mission. WCI is a imager to track CME as far as earth orbit. CME brightness near earth orbit is expected $10E-15$ solar brightness or 1/200 of zodiacal light brightness. To observe such a extreme faint target, we are developing wide field of view camera with very high sensitivity and large dynamic range. For space weather alert, not only high quality observation, but also sophisticated onboard data analysis, CME detection and some alert issue are required. We plan to carry high performance MP with COTS CPU and commercial real time OS, QNX for onboard data processing. These highly challenging experiment and demonstration will be implemented in SmartSat program. A@System level test by using structure thermal test model has almost completed. We hope to launch the SmartSat around 2008. We report instrument design, overview and current project status.