System for monitoring the electromagnetic environment in space

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Human activities in space cause disturbances of the electromagnetic environment. Plasma wave emissions reflect the status of disturbances since space plasmas are collisionless. Therefore, one of the useful methods for monitoring the electromagnetic environment in space is to observe plasma wave activities triggered by human activities. Therefore, we propose a new system for monitoring the electromagnetic environment in space. The system is a kind of a sensor network system, which consists of scattered monitor instruments and a central station collecting the data Requirements for the specifications of the monitor instrument are not so hard in the qualities and sensitivities of receivers, because they do not target the science data of the natural weak plasma wave phenomena. On the other hand, they should be compact and be easily treated in space, because they will be routinely distributed around the target space in order to make it possible to monitor in multiple points.

In the development of system for the electromagnetic environment monitor in space, we focus on two subjects. One is the development of the analog ASIC, which realizes the compact analogue circuit of the monitor instrument, and the other is the development of method for the location estimation of the monitor instrument. In the present paper, we will present the current status of our development in the above two subjects as well as introduce the system for monitoring the electromagnetic environment in space.