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# PREDICTION OF THE MICROVIBRATION FROM GROUND TEST AND ITS IN-ORBIT EVALUATION OF THE GEOSTATIONARY METEOROLOGICAL SATELLITE 'HIMAWARI-8'

**Abstract**

The geostationary meteorological satellite 'Himawari-8' was developed by Japan Meteorological agency (JMA) and was launched in 2014. The Advanced Himawari Imager (AHI), which is the visible and infrared radiometer, was installed on the satellite. The imager has several major excellent performances. One of major excellent performances is the special resolution. The resolution is twice as high as that of the previous imagers, and is 500m. One of the major problems in satisfying the requirement, is microvibration induced by Attitude and Orbit Control Subsystem (AOCS) components and actuators inside the mission sensors. It is necessary to evaluate the pointing error induced by microvibration before launch. As for AHI, it was difficult to measure the pointing error directly in the state that AHI was equipped on satellite bus system. Alternatively, the evaluation of the microvibration was executed by measuring the vibration of AHI surface mount. The microvibration is measured with several accelerometers and a angular rate sensor, which are installed on AHI surface mount, and are used to decide the attitude of AHI with high accuracy in low frequency region. The accelerometers are servo type, and their measurement bandwidth is from 0 Hz to 300 Hz. The angular rate sensor is a triaxial sensor, and the measurement bandwidth is 0 Hz to 1000 Hz. Those sensors have the high sensitivity, and it is possible to measure the microvibration in both ground test and orbit. However, the sampling frequency of both sensors on the satellite, is 512Hz. The prediction of the microvibration from Ground test was executed by the microvibration measurement data with the flight model of 'Himawari-8'. In the ground test, the microvibration data was acquired with disturbance sources driven. The disturbance sources were operating with the typical operating conditions. On the other hand, as for in-orbit evaluation, the microvibration date was acquired by the above sensors during the initial check out. In this paper, the valuable in-orbit microvibration data is introduced and, the results of the comparison between the prediction data and in-orbit evaluation data are described.