Thermal Analysis of a Satellite for the Change of Thermal Orbit Environment by the Altercation of the Local Time of Ascending Node(LTAN)

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The change of external thermal environments of satellite in orbit is studied by the thermal analysis of a thermal model for altering the local time of ascending node (LTAN), which changes AM 10:50 to PM 1:30. The difference of an orbit element with respect to the Sun is important in the orbit thermal environment of a satellite. Because a satellite is considered with fixed solar arrays, it has the sate attitude relative to the Sun during the daytime, and the altercation of LTAN results in moving the relative location of a satellite from the left to right sides of the Sun. The incident heat rates of each panel are calculated by thermal analysis of a simple thermal model of satellite, and show that the movement of satellite's relative locations to the sun in an opposite side reverses the hot and cold sides of panels for incident thermal environment in orbit. Also, total incident heat rate to panels increases when the LTAN PM 1: 30. The thermal orbit environmental conditions of panels would be referred to the locations of unit boxes are determined which panels are proper for attaching those by considering the dissipation of boxes.