

IAF SPACE POWER SYMPOSIUM (C3)
Wireless Power Transmission Technologies and Application (2)

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MISSION DESIGN FOR ON-ORBIT PRECISE MICROWAVE BEAM CONTROL EXPERIMENTS OF
WIRELESS POWER TRANSMISSION TECHNOLOGY

Abstract

Ministry of Economy, Trade, and Industry (METI) has started a space demonstration project on wireless power transmission (WPT) technology in low-earth orbit with the aim of applying it to future lunar energy systems. A Requirement of this project is to confirm the feasibility of long-distant WPT using phased array antenna system to establish an energy system powering lunar facility from lunar orbit. 5.8GHz in the C-band is recommended as the experimental frequency for space experiments in or from low-Earth orbit because of its low atmospheric influence on beam control experiments. We are considering the following mission using a small satellite. Confirmation of basic technology for on-orbit construction of phased array antennas for long-distance WPT Evaluation of the precise microwave beam control system Demonstration of power transmission from space to the ground or spacecraft to spacecraft. In addition, we are planning to monitor the effects of high-power microwaves on the ionospheric plasma in order to evaluate the beam control accuracy. We will introduce an outline of our mission plan.