

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

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THE OUTLINE OF THE DEVELOPMENT OF THE POWER TRANSMISSION SYSTEM FOR THE
PROSPECTIVE SPACE EXPERIMENT AND OPERATION

Abstract

The outline of the current development project and the expected results regarding the power transmission system towards the prospective space experiment which follows current development project will be presented.

Japan Space Systems and organized team have been engaged in the Space Solar Power System (SSPS) for more than 30 years and have succeeded in the microwave power transmission test from the ground to the up in the air about 100 m above from the ground in the year 2019 according to the development road map established by Ministry of Economy, Trade and Industry (METI), which taking over the result of the successful horizontal power transmission experiment in the year 2014.

As the following development phase according to the road map, the power transmission system development project was started under METI. The project consisted of three major tasks. First one is to develop so called power generation and transmission panel whose size is about 50 cm square and 10 cm thick, and the target weight should be less than 9 kg. This panel is going to be a unit to consist the practical power generation and transmission system from the space both for the next step LEO satellite and also for the practical SSPS in the GEO as the goal. The second is to improve the efficiency of the RF power amplifier to exceed 60

All these three development and test activities including 1km distance vertical direction power transmission demonstration for prospective space experiment which is going to transmit power from the LEO satellite consisted of several meters square power generation and transmitting panels to the ground as the next step toward the final goal on the GEO operational SSPS.

The detailed system configuration and evaluation plan of the power generation and transmission panel, the amplifier efficiency improvement activity and the power transmission demonstration outline will be presented and discussed. The brief introduction of the result of the power transmission demonstration and evaluation test which have been completed in the previous project will be included also as the precursor understanding of our current project.