

SPACE POWER SYMPOSIUM (C3)  
Wireless Power Transmission Technologies, Experiments and Demonstrations (2)

Author: Mr. Daisuke Goto  
JAXA, Japan, goto.daisuke@jaxa.jp

Mr. Daisuke Joudoi  
Japan Aerospace Exploration Agency (JAXA), Japan, joudoi.daisuke@jaxa.jp  
Mr. Katsumi Makino  
Japan, makino.katsumi@jaxa.jp  
Mr. Tatsuhito Fujita  
Japan Aerospace Exploration Agency (JAXA), Japan, fujita.tatsuhito@jaxa.jp  
Mr. Hiroyuki Yoshida  
Japan Aerospace Exploration Agency (JAXA), Japan, yoshida.hiroyuki@jaxa.jp  
Mr. Kazuo Ohashi  
Japan Aerospace Exploration Agency (JAXA), Japan, ohashi.kazuo@jaxa.jp

SSPS DEMONSTRATION MISSION CONCEPTS ON "KIBO"-EF, JAPANESE EXPERIMENT  
MODULE EXPOSED FACILITY

**Abstract**

In the Space Basic Plan, which is determined by Japanese central government on January 2013, the SSPS (Space Solar Power System) is described as one of the future space program candidates, which has potential of energy supply infrastructure, and it is also described that technological development programs of wireless energy transmission with Microwave or Laser have to be conducted. JAXA have been conducted the wireless energy transmission RD of both Microwave and Laser on the ground. As the next step of wireless energy transmission experiments, the three orbital demonstration mission concepts were constructed on the "Kibo", Japanese Experiment Module EF. (1)Laser Energy Transmission Demonstration The precise beam direction control ( $1\mu\text{rad}$ ) system and the 500W Fiber Laser ( $1.08\mu\text{m}$ , CW) module is the major technological issues. (2)Microwave Energy Transmission Demonstration The precise beam direction control (0.5 degree) system and the 4kW, 5.8GHz, CW microwave phased array antenna(2m diameter) is the major technological issues. (3)Ionosphere Plasma Disturbance Phenomena Observation by High Power Microwave The high power microwave transmitter (18kW, 5.8GHz, CW) is used to confirm the disturbance of the Ionosphere plasma.

Three mission concepts are compared from the technological point of view, and the future of wireless energy transmission technology in space will be discussed in this paper.