

IAF SPACE POWER SYMPOSIUM (C3)
Space Power System for Ambitious Missions (4)

Author: Dr. Koji Tanaka
Institute of Space and Astronautical Science (ISAS), Japan Aerospace Exploration Agency, Japan,
ktanaka@isas.jaxa.jp

Prof. Hirobumi Saito
Waseda University, Japan, saito.hirobumi@aoni.waseda.jp
Dr. Makoto Mita
Japan, mita.makoto@jaxa.jp
Dr. Koichi Ijichi
Japan Space Systems, Japan, Ijichi-Koichi@jspacesystems.or.jp
Mr. Hiromi Watanabe
Japan, hiwat@synspective.com
Mr. Masato Tanaka
Japan, (*email is not specified*)
Mr. Ichitaro Arisaka
Japan, icari@synspective.com
Mr. Koichi Fujihira
Japan Aerospace Exploration Agency (JAXA), Japan, fujihira.koichi@jaxa.jp
Dr. Toshihiro Obata
Japan, tooba@synspective.com

DEVELOPMENT OF LOW COST LIGHT WEIGHT SMALL SAR SATELLITE, STRIX SERIES

Abstract

Synspective Inc. and JAXA developed a light weight and low cost small SAR Satellites called Strix series, and successfully launched first satellite, Strix-alpha, on December 15 2020. Strix- α is a 100 kg class small satellite equipped with a X-band synthetic aperture radar (SAR) system that can be used for observations day and night and in any weather conditions. The size at launch is around 70 cm square and very compact. A deployable slot array antenna with a size of 4.9 m x 0.7 m is mounted on the satellite. Ground resolutions of the X-band SAR with a vv single polarization are 1 - 3 m, and swath widths are 10 - 30 km.

We have developed a high power system consisting of a fully solid state pulsed high power amplifier, a deployable antenna and a SAR electronics for such small satellite. Chirped transmitting signal with frequencies of 9.5-9.8 GHz, with the duty of 25

Operation of this satellite in orbit is going well, and the first SAR image successfully acquired. The second SAR satellite, Strix- β , will be launched in March 2022. Synspective aims to operate 6 constellations by 2023 and 30 constellations by the mid-2020s.

In this paper, we introduce a development and operational results of the Strix- α and β .