INTRODUCTION OF SPACEWIRE APPLICATIONS FOR THE MMO SPACECRAFT IN BEPICOLOMBO MISSION

Session: SpaceWire missions and Applications

Short Paper

T. Takashima, H. Hayakawa and H. Ogawa

ISAS/JAXA 3-1-1 Yoshinoda, Sagamihara, Kanagawa 229-8510 Japan

Y. Kasaba

Tohoku Univ. 6-3, Aobadai, Aobaku, Sendai, Miyagi 980-8578 Japan

M. Koyama, K. Masukawa, M. Kawasaki, S. Ishii and Y. Kuroda

Nagoya Guidance and Propulsion Systems Works, MITSUBISHI Heavy Industries LTD., 1200 Higashi-Tanaka, Komaki, Aichi 485-8561

BepiColombo MMO Project Data-Handling team

NEC TOSHIBA Space Systems, Ltd., 10, Nisshin-cho 1-chome, Fuchu, Tokyo, Japan

NEC Soft, Ltd., 2-22 Wakaba-cho, Kashiwazaki, Niigata, Japan

e-SOL Co.Ltd., Harmony Tower 22,23,24F, 1-32-2 Honcho, Nakano-ku, Tokyo 164-8721

E-mail: ttakeshi@isas.jaxa.jp, hayakawa@isas.jaxa.jp, ogawa@isas.jaxa.jp, kasaba@pat.geophys.tohoku.ac.jp

ABSTRACT

The Mercury exploration BepiColombo mission is the joint planning of ESA/JAXA. The Mercury Magnetospheric Orbiter (MMO) is mostly dedicated to the first detailed study of magnetic field, waves, and particle environment of the planet Mercury. The MMO satellite is manufactured by Japan. They are expected to significantly advance comparative studies of the magnetic fields and magnetospheres of terrestrial planets: 1) Structure and origin of Mercury's magnetic field, 2)Structure, dynamics, and physical processes in Mercury's magnetosphere,3) Structure, variation, and origin of Mercury's exosphere, and 4) The inner solar system. The MMO payload selected by JAXA in 2005 consists of 5 instruments / instrument packages, wide-range observational capabilities for charged particles and energetic neutral atoms, magnetic field, electric field / plasma waves / radio waves, dust, and exospheric constituents. Those scientific payload groups are under unified and coordinated controls of the observational mode and time resolution by MDP (Mission Data Processor) provided

by JAXA and MHI, in order to fulfill the science objectives of this mission. These interfaces which control these observation equipments are defined by the SpaceWire with Remote Memory Access Protocol (RMAP).

It does introduction and a report about the SpaceWire with RMAP to have applied to both the observation equipment system and the bus systems of MMO.

.