IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Interactive Presentations - IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (IP)

Author: Mr. Jorge Rubén Casir Ricaño
Kyushu Institute of Technology, Japan

Mr. Yudai Etsunaga
Kyushu Institue of Technology, Japan
Mr. Tasuku Matsui
Kyushu Institue of Technology, Japan
Mr. Guillaume Berson
Kyushu Institute of Technology, France
Mr. Rintaro Nakao
Kyushu Institue of Technology, Japan
Mr. Eladio Javier Ferrer Torres
Kyushu Institute of Technology, Japan
Mr. Sirash Sayanju
Kyushu Institute of Technology, Japan
Mr. Ndukayo Zamba Leonel
Kyushu Institue of Technology, Japan
Mr. Souta Miyajima
Kyushu Institue of Technology, Japan
Dr. Pooja Lepcha
Kyushu Institue of Technology, Japan
Mr. Tharindu Dayarathna
Arthur C. Clarke Institute for Modern Technologies, Sri Lanka
Dr. Takashi Yamauchi
Kyushu Institute of Technology, Japan
Dr. Hirokazu Masui
Kyushu Institute of Technology, Japan
Prof. Tetsuhito Fuse
Kyushu Institue of Technology, Japan
Prof. MENGU CHO
Kyushu Institute of Technology, Japan

CONNECTING THE GLOBE: GROUND TERMINAL COMPETITION FOR APRS SATELLITE COMMUNICATION AND LESSONS LEARNED.

Abstract

This study presents the BIRDS-X Ground Terminal Competition, a dynamic initiative encompassing outreach to the radio amateur community and fostering communication with the Dragonfly satellite. Aligned with the objectives set by the Amateur Radio Digital Communications (ARDC), this competition engages amateur radio enthusiasts and rigorously tests the APRS ground terminals (GT) under diverse conditions. Comprising three phases—inscription, communication, and evaluation—the competition organizes regional communication schedules to optimize the satellite's power budget. During the second

phase, participants engage in a week-long window to establish contact with the satellite, providing log files, elevation data, and power output as evidence. The comprehensive evaluation in the final phase employs a grading system incentivizing compact, versatile, and affordable hardware, promoting accessibility to APRS technology. The established multipliers consider factors such as antenna type, station type, elevation angle, and cost. Moreover, two Reference Ground Terminals developed at Kyutech serve dual roles: facilitating performance evaluation for the APRS payload competition and offering technical insights for the Ground Terminal competition parameters. This paper highlights the significance of this competition in advancing the accessibility and performance of APRS technology in satellite communication.