

IAF SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
Space Communications and Navigation Global Technical Session (8-GTS.3)

Author: Prof. Nobuyuki Kaya
Kobe University, Japan, kaya@kobe-u.ac.jp

SATELLITE RECEIVING TEST OF 3 DIMENSIONAL PHASED ARRAY ANTENNA AT THE
INUVIK SSATELLITE STATAION FACILITY IN CANADA OR IN JAPAN

Abstract

Many satellites are being launched to the low Earth orbit, for example, the SpaceX starlink satellites. All the satellites must be communicated with the ground stations for the control and data acquisition. The ground stations are required to communicate simultaneously with so many satellites. We are newly developing a ground receiving station using the 3 dimensional phased array antenna, which were reported at IAC in 2016, 2017 and 2018. The purpose of this study is to develop the 3 dimensional phased array antenna for the various applications including the ground antennas and the onboard ones. We have already built the first pilot models of the receiving antenna at the frequency of X and S-band and succeeded in receiving the signals from the satellites.

The Natural Resources Canada, which manages the satellites stations in Canada, fortunately has accepted our receiving tests of the Japanese satellites at the Inuvik Satellite Station Facility in Canada. We are now constructing several pole antennas for the 3 dimensional phased array antenna, which will be brought to Inuvik this June. We have many plans on the experiments to verify the performance of the 3 dimensional phased array antenna using satellites and drones with transmitters this summer. We postponed the receiving tests last year because of the COVID-19. We will try the receiving tests in Japan using the Japanese satellites when it is impossible to perform the receiving test in Canada. We will make a report on the experiments and demonstrations using the new 3 dimensional phased array antenna in Inuvik in my presentation.