

ABSTRACT

Indonesian National Institute of Aeronautics and Space (LAPAN) recently successfully orbiting micro satellites, named LAPAN-A2 / ORARI. These satellites orbit at an altitude of 650 km from the Earth's surface and has three main missions, namely to monitor the waters of Indonesia using the Automatic Identification System (AIS), studying the Earth's surface using two cameras with high resolution, as well as establish communications with amateur radio in Indonesia for disaster management, using the Automatic Packet Reporting System (APRS) Repeater.

APRS Repeater on LAPAN-A2 satellite will send a signal that could contain location data, coordinates, maps, pictures, and sound through amateur radio frequencies (144-148 MHz) to anyone inside the network. One important component of the signal receiver APRS on Earth is the antenna, the antenna is required to have circular polarization and also has wide beam-width.

Quadrifilar Helical Antenna (QHA) is one type of antenna that is often used for satellite communications because of its characteristics as required, and also because AQH is a flexible antenna, the radiation pattern, polarization, impedance, and gain of antenna can be set based on the physical dimension of antenna. Thus, this study was designed Quadrifilar Helical Antenna working on APRS frequency, 145.825 MHz.

The radiation pattern of the QHA realization is uni-directional with HPBW 130° and 110° for azimuth and elevation respectively, and it has a circular polarization with beam-width $\geq 120^\circ$, and the value of its gain is 3.97 dB. The results show that the antenna meets the specifications to be used as an antenna for receiving an APRS signal of LAPAN-A2.

Key Words : *LAPAN-A2 , Automatic Packet Reporting System (APRS), Quadrifilar Helix Antenna, Beam-Width*