

ABSTRACT

Directional antennas in earth station is one of the important components of satellite communication system because it has a function as the sender and the receiver between the repeater and the earth station. To improve the quality of the signal received and transmitted by the earth station, antenna is aligned towards the satellite earth station with the appropriate reliability resulting in optimal communication.

Directional antennas at ground stations should follow the motion of the Tel-U Sat automatically. This action requires appropriate hardware and software. Software is used to determine the position and the satellite orbit while the hardware is used to drive the antenna. The position and orbit of a satellite is a reference system used to drive the antenna through the drive. Positioning and Tel-U Sat orbit and orbital elements require the data processed in JAVA. The results of the software is the position of the satellite elevation and azimuth angles of the latitude and longitude are used to move the antenna position. This software is run through the computer and connected hardware to a minimum system microcontroller via a serial port. The accuracy and precision of movement using CMPS10 which will be give a feedback to the microcontroller. The results of this design will be used for Telkom university earth station antenna system.

The results of both the antenna beamwidth will provide optimal and appropriate reinforcement that produces good quality on signal reception. The results of the implementation of the antenna steering system Tel-U Sat the tests on the NOAA 19 satellite which generates accessible guidance error of 2.6° and get the average signal power of -107 dbm.

Keywords: elevation, azimuth, latitude, longitude, microcontroller, JAVA.