

ABSTRACT

Satellite communications technology is evolving rapidly as time goes by. Where its use facilitates wireless communication between remote users (up to thousands of km) with guaranteed and real time communication quality. The use of parabolic antennas on the ground station, serves as a transceiver on satellite communications. However, the large dimensions of the antenna and the considerable maintenance cost are considered to be the use and fabrication of a satellite communication network. For this reason this study.

In this research, miniaturization of parabolic antenna will be done by designing microstrip antenna in place of parabolic antenna at ground station. Microstrip antenna as a supporter of wireless communication, which is the development of conventional antenna, has many advantages over its predecessor, one of which has patch that can be modified as per user's desire. In this final project, microstrip antenna design of Log Periodic Dipole Array with Defected Ground Structure works on 12-18 GHz (Ku-Band) frequency using slot using microstrip line feeding technique. The desired specifications are; gain ≥ 6 dBi, VSWR < 2 , as well as 6 GHz bandwidth, with unidirectional radiation pattern and linear polarization. Substrate materials used in design are Roger 5880 Duroid with a relative permittivity of 2.2 and a dielectric thickness of 1.57mm.

Measurement results on the realization of this tool; return loss on each of the 12, 15, 18 GHz frequency markers of -25,457 dB, -12,939 dB, and -11.004 dB; with the value of VSWR 1.112, 1.593, 1.786. Impedance of 44,988 Ω , 34,129 Ω , 27,792 Ω . Gain respectively of 8.907 dB, 8.931 dB, 8.774 dB. Bandwidth 6 GHz. Unidirectional radiation pattern and elliptical polarization.

Keywords: *Ku-Band, microstrip, wideband, log periodic dipole array, satellite communication, defected ground structure*