ABSTRACT

Satellites with lower orbits as NanoSatellite Tel U SAT have very high movement speed in the space. It cause the earth station antenna pattern should be able to adjust the radiation pattern to the direction of nanosatelit quickly to keep the signal of nanosatellite acceptance remains good . An alternative method for adjusting the direction of the radiation pattern in addition use antenna rotator is using smart antennas which has the advantage over flexible in aplication. Smart antennacan be realized with an phase array antenna regulated by controlling the signal phase of each element so that have ability to steer the beam towards the satellite to obtain beter signal power.

In this final project will be design and implement a variable phase shifter reflection type for phase control for beamsteering of smart antenna phase array 4 elements. This device works at the S - band frequency 2.4 GHz as the downlink of earth station TelU – SAT receiver. The phase shift adjustability is done by giving the value of the input DC voltage level on the device that will change the capacitance of certain components to obtain the phase shift respone.

From the result of this Phase shifter. We have archive the variable phase shifter with phase shift capability 0^0-180^0 at the frequency S-Band 2.4 to 2.45 GHz. The Maximum Insertion loss of this circuit is less than - 3dB and Maximum return loss is less than -9dB. With this results , phase array antenna with 4 elements and spaced 1/4λ of each elements will have the ability to steering the beam at the DOA 60^0- 120^0.

Key words **:***Smart Antenna, Beam Steering, Variable Phase Shifter, Variable Phase Shifter Reflection Type, DOA, Phase Array*