

ABSTRACT

This research discuss about the design of MIMO antenna based on microstrip with U-slot and partially groundplane methods at 1.8 GHz frequency. As already known, multipath fading makes signal reception at the terminal is bad and become severe when the terminal is moving. So that, in order to overcome fading problem, one of the solutions is to apply MIMO antenna system at the terminal. MIMO antennas are able to utilize the existence of multipath to improve signal reception performance.

This research also provides an analysis of antenna with different feedline layout positioning. This objective is to know the relationship between correlation coefficient and the distance between antennas. The antenna is designed for user terminal (mobile). Therefore, antenna should have bandwidth which cover uplink and downlink communication. The shape of patch is rectangular with FR4 Epoxy ($\epsilon_r=4,6$) which is modified by adding a U-slot and partial groundplane. The objective of using U-slot technique in patch and groundplane modification (groundplane partial) is to increase bandwidth. For mutual coupling reduction, using opposite feedline position in the antenna configuration.

Realized antenna has been tested with -21.902 dB return loss, 1.174 VSWR, 140 MHz bandwidth, mutual coupling S12 is -37.451 dB and S21 is -36.494 dB. The radiation pattern is bidirectional and the polarization shape is ellipse. Designed antenna have dimensions of 14.93 cm x 7.2 cm.

Keyword: *MIMO Antenna, U-slot, Partially Groundplane, Correlation Coefficient*