

ABSTRACT

Today, technological improvements, especially in the field of wireless technology are increasing rapidly, almost all devices have the ability to connect with internet connection to be monitored and controlled online from wherever and whenever. To be connected to the internet wireless antenna has a very important role. Vendors are required to be able to minimize as good as possible antenna size to be compatible with the device (not making the size of the device becomes larger). Planar Inverted-F Antenna (PIFA) is one of the most popular antenna types used on mobile phones [1]. It has advantages of small size, low profile, good performance, and easy in fabrication [2]. For that purpose the use of PIFA antenna is very appropriate to be applied to the device, thus the cost of production and antenna size can be minimized as well as possible.

In this final project has designed Planar Inverted-F Antenna (PIFA) antenna working at middle frequency 900 MHz, 1800 Mhz, 2400 Mhz. By using slot method on patch and groundplane, and addition of parasitic element. The antenna has a 68mm x 42mm groundplane dimension and a patch dimension of 47mm x 23mm with a 4.5mm antenna height. Using copper and epoxy FR-4 as substrate.

At 900 MHz frequency Return loss value is -15,5 dB, VSWR 1,4, gain 0.58 dB and bandwidth 25,75 MHz. At 1800 MHz frequency Return loss value -12.09 dB, VSWR 1,2, bandwidth 17 MHz and gain -0,63 dB. At 2400 MHz frequency, the Return loss value -28,34 dB, VSWR 1,4, 83 MHz bandwidth gain 0,52 dB. The radiation patterns generated by each antenna at a frequency of 900 MHz, 1800 MHz and 2400 MHz are omnidirectional. The polarization generated by each antenna at a frequency of 900 MHz, 1800 MHz and 2400 MHz is elliptical.

Keywords : Antenna, Planar, PIFA, Multiband, Slot, Parasitic