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## ABSTRACT

The development of mobile communication technology for wireless multimedia services with high quality requires a broadband networks with a reliable system performance. Then developed wireless technology generation cellular 3G and 4G. These technologies including UMTS, HSDPA (3.5G), EDGE, WLAN, WiMAX is applied using a multicarrier transmission techniques or MIMO system. Technology standards that have operating frequencies different, such as EDGE (1710-1880 MHz), HSDPA (1850-1990 MHz), UMTS (1920-2170 MHz), WLAN at 2.4 GHz frequency band 2400-2483.5 MHz, and 2.3 GHz WIMAX in 2300-2390 MHz frequency band.

Therefore needed an antenna to the receiver who is able to meet the various needs of these different communication. One of them is Dual Patch Microstrip antenna Rectangular Vertical Flats with EMC ration for Cellular Mobile Applications Wireless 1.7 GHz Frequency Region-2, 5GHz. Microstrip antenna has a simple dimensional (compact) and the characteristics that can be developed into a technique ration bandwidth couple electromagnetic (EMC). Multi-patch technique is used to improve and gain wide-bandwidth microstrip antenna and the vertical stacking to minimize the antenna dimensions. In this antenna were modified to obtain the operating frequency in accordance with the operating frequency wireless mobile communication system UMTS, HSDPA, EDGE, WIMAX-2.3, WLAN-2.4 with the help of software Ansoft HFSS 9.2. This simulator software antenna analysis using Finite Element method (FEM) and the results can be obtained that the operating frequency multiband ration by using EMC and using the ground plane can be modified to meet the work area at the desired frequency.

Prototype that has been made in accordance with the design and simulation. Test results obtained at the operating frequency EDGE technology, HSDPA, UMTS, WLAN, and WIMAX (1700-2500 MHz) VSWR value close to unity. Or in other words the bandwidth obtained in  $SWR \leq 1.5$  are for the 1120 MHz frequency bands 1400-2500 MHz, this is in accordance with the initial specifications that require bandwidth of 800 MHz in the frequency range (1700-2500) MHz. Obtained impedance is 50.01  $\Omega$ , and that happens impedance matching is needed is 50  $\Omega$ . Other specifications for the antenna radiation pattern is desired unidireksional and gain are obtained by averaging 4 dBi.

**Keywords: microstrip, EMC, vertical, dual patch, rectangular, mobile wireless.**

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