

ABSTRACT

Through the rolling time, technology is just follow the evolution stage. There are so many new found technologies had been discover lately. One of the new found technologies is Mobile WiMAX. By the reason, still needs some supported device to support the development of Mobile WiMAX in Indonesia.

In Indonesia, there are many devices that are less in favor of the development of Mobile WiMAX applications. One such device is the antenna user terminal. The antenna is made in this study is a microstrip antenna by using fractal Sierpinski carpet as a compiled patch array. These antennas are made in the frequency range 3300-3400 MHz with $VSWR \leq 1.5$ for Mobile WiMAX applications with unidirectional radiation pattern. The problem is generally possessed a microstrip antenna bandwidth is narrow so it can not be used for mobile WiMAX applications that have a wide bandwidth of 100 MHz at $VSWR \leq 1.5$. To overcome this problem the authors use a particular rationing techniques that EMC (Electromagnetically Coupled) which has a wider bandwidth. The author did use a software simulator antenna design CST 2010.

From the measurement results, obtained VSWR value of 1.430 at a frequency of work, which is 3350 MHz. Gain obtained from the measurements, which amounted to 4.087 dBi. Realized antenna has a pattern of unidirectional transmission and polarized ellipse. The resulting coupling of antenna is not purely a magnetic coupling, but there is an electric coupling that connects the probe due to patch the transmission line. However, the existence of this electric coupling does not eliminate the magnetic coupling effects from the use of two pieces of this substrate.

Keywords : Microstrip antenna, Fractal Sierpinski Carpet, EMC, Mobile WiMAX