ABSTRACT

Broadband Wireless Access (BWA) is a wireless service with a wide bandwidth. Based on its mobilization, BWA can be classified into several types, and one of them is Nomadic BWA. For practical uses, BWA applies a MIMO (multiple-input multiple-output) system to increase the canal capasity without increasing SNR (Signal to Noise Ratio) and bandwidth. When this antenna is applied to a mobile devices, it only needs a small antenna namely microstrip antenna.

The process of designing the antenna had several (four) stages. First, it started from selecting the model of microstrip antenna. Second, several simulations using CST MICROWAVE STUDIO® (CST MWS) software were carried out to obtain a similar result to the starting specification. Third, several simulations and measuring the antenna were conducted. When measuring the VSWR, impedance and S-parameter, each antenna ports were connected to network analyzer ports. However, when measuring the pattern of radiation, polarization and gain, only one measured port was connected to the spectrum analyzer.

The results of the experiment showed that the VSWR at 2.3-2.39 GHz,Port 1 had a value of 1.556 andPort 2 of 1.466. At 2.345 GHz, the value of Port 1 impedance was 43.121-0.050134j Ω *and Port 2 of 40.46-11.848j* Ω*. The value of S11 was -14.701 dB, S22 was -13.896 dB, S21 was -17.098 dB, and S12 was -17.05 dB. The gain value of Port 1 antenna was 2,656 dBi and Port 2 was 2,287*

dBi. The final dimensions of the MIMO antenna were 67.2 mm x 29.5 mm x 1.6 mm.

Keywords : microstrip antenna, circular microstrip antenna, MIMO system, isolation, correlation.