2.4 GHz PANEL ANTENNA USING 4-ARRAYS Biquad MICROSTRIP

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ABSTRACT

Design, fabrication, and characterization of panel antenna using 4-arrays biquad microstrip has been conducted. FR4 with relative permittivity of 4.3 has been used as the substrate for fabricating the antenna which has dimensions of 33.5 cm x 29.5 cm x 2.12 cm. Characterization of physical parameters consist of Voltage Standing Wave Ratio (VSWR), coefficient of reflection, and Return Loss (RL). Characterization with Network Analyzer at operating frequency of 2.4 GHz yields VSWR of 1.1294, reflection coefficient of 0.0607, and RL of –24.3261 dB. Bandwidth of 825 MHz was measured in the range of frequencies from 2020 MHz to 2845 MHz. The horizontal radiation pattern yield gain of 23 dB with Half Power Beam Width (HPBW) around 45° and the vertical radiation pattern yield gain of 18 dB with HPBW around 35°. The measured VSWR value which is close to 1 at operating frequency shows that most of the input power is transmitted to the air and only a tiny fraction of it is reflected. The measured RL value which is less than –15 dB is acceptable value for two-way wifi communication.

Key words: panel antenna, 4-arrays biquad, microstrip, operating frequency of 2.4 GHz.