DUAL BAND RECTANGULAR MICROSTRIP ANTENNA ARRAY FOR WIRELESS COMMUNICATION

Nsidibe-Emmanuel Nonye C.
Dept. of Electrical/Electronic and Computer Engineering, Univ. of Uyo
NIGERIA
nooemy2001@gmail.com

Udofia, Kufre M.
Dept. of Electrical/Electronic and Computer Engineering, Univ. of Uyo
NIGERIA
kmudofia@uniuyo.edu.ng

Obot, Akaninyene B.
Dept. of Electrical/Electronic and Computer Engineering, Univ. of Uyo
NIGERIA
akanobot2005@yahoo.co.uk

ABSTRACT

Two dual band rectangular microstrip antenna arrays with improved gain performance using inset feeding technique suitable for wireless communication devices are presented in this paper. The elements of the arrays were designed using transmission line equations and analysis was done using full wave model equations with the aid of Computer Simulation Technology (CST) Studio software. The antenna was designed at frequencies of 2.4 and 5.2 GHz using Flame Resistant (FR-4) substrate with a dielectric constant of 4.4 and a substrate thickness of 1.6 mm. The first antenna array configuration of 1 x 2 employed a patch for each resonating frequency while the second array configuration of 2 x 2 employed two patches for each resonating frequency. A gain of 6.06 dB and 7.56 dB was achieved by the 1 x 2 antenna array at 2.4 GHz and 5.2 GHz while 2 x 2 array antenna achieved a gain of 9.25 dB and 8.66 dB at 2.4 GHz and 5.2 GHz, respectively.

Keywords: Rectangular, Microstrip, array, improved gain, communication.