SLOTTED CIRCULAR PATCH UWB MONOPOLE ANTENNA WITH NOTCH-BAND CHARACTERISTICS

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ABSTRACT

This paper reports on the design of a UWB Planar Monopole Antenna with band notch characteristic at 5-6 Ghz frequency band to reduce inter-system interference with Wireless Local Area Network (WLAN) system. The antenna configuration is based on a pair of thin slots on the circular patch with the step on its feeding line and half ground plane. Antenna is fabricated on FR-4 substrate having ε_r= 4.3, h= 1.5 mm (thickness). The fabricated antenna yielded VSWR value lower than 2 from 3 to 10 Ghz frequency band, excluding the 5-6 Ghz region. The radiation properties of the antenna are also investigated throughout the UWB frequency band.

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CHAPTER 1

INTRODUCTION

1.1BACKGROUND OF STUDY

An antenna also called an aerial is an electrical device which converts electric currents into radio waves, and vice versa. It is usually used with a radio transmitter or radio receiver. In transmission, a radio transmitter applies an oscillating radio frequency electric current to the antenna's terminals, and the antenna radiates the energy from the current as electromagnetic waves (radio waves). Although there are many types of antenna, there are all operating according to the same basic principles. The basic behavior of antenna can be described by its wave field, polarization and direction of propagation [1].

With the development of communication technologies, several ultrawideband (UWB)antenna types have been developed as a result of major advances in communication and narrow pulse applications. Ultra wideband (also known as UWB or as digital pulse wireless) is a wireless technology for transmitting large amounts of digital data over a wide spectrum of frequency bands with very low power for a short distance. This technology spreads the information over a large bandwidth (>500MHz) or occupy a fractional bandwidth of 20% or greater, by use extremely short pulses for data transmission [2]. This makes Ultra Wideband differs from conventional narrowband radio frequency.