A DESIGN AND AN EQUIVALENT CIRCUIT OF A QUAD BAND-NOTCHED ULTRA-WIDE BAND PATCH ANTENNA

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ABSTRACT

A proximity feed ultra-wide band (UWB) patch antenna with four notched bands is presented. The proposed antenna introduces UWB performance in the frequency range of 1.9 GHz to 10.3 GHz with omnidirectional radiation pattern. Slots etching techniques are utilized to provide four bands notches at frequencies of 2.3, 2.8, 3.5, and 5.5 GHz to avoid the interference with the existing wireless networks which occupy bands at these frequencies. Furthermore a curve fitting technique is applied to synthesize an equivalent electric circuit model to the proposed antenna. The analysis and design of the proposed antenna were carried out using the commercially available Ansoft high frequency structure simulator (HFSS). The antenna is fabricated and tested. The measured data of the fabricated antenna demonstrate very good agreement with the simulated results and the equivalent circuit results.

KEYWORDS: Circuit Modeling, Four Frequency-Band Notches, Patch Antenna, SPICE Equivalent Circuit, Ultra-Wide Band, Vector Fitting