

Design of a Multiband Patch Antenna Using Split Ring Resonator for LTE, Wi-Fi and WLAN Applications

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Abstract: This paper presents the design and analysis of a compact multiband patch antenna integrated with Split Ring Resonator (SRR) technology for wireless communication systems, including LTE, Wi-Fi, and WLAN. The antenna is simulated using CADFEKO and exhibits multiple resonances at 2.46 GHz, 3.81 GHz, and 5.10 GHz, making it suitable for commonly used wireless frequency bands. The proposed antenna achieves a return loss better than -30 dB at 2.46 GHz and a VSWR of approximately 1.02, indicating excellent impedance matching. Surface current distribution and realized gain patterns are analyzed to evaluate the radiation characteristics. The design shows promising performance for compact and efficient multiband wireless systems

Keywords: Multiband antenna, SRR, patch antenna, CADFEKO, Wi-Fi, LTE, WLAN, Metamaterials

