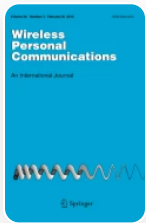


Compact Multiband MIMO Antenna for Sub-6 GHz 5G Applications

Research Published: 26 February 2025

(2025) Cite this article



Wireless Personal Communications

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Abstract

High-speed and low-loss compact antennas are in great demand due to their requirement in high-performance wireless communication systems. This paper presents a compact circularly polarized rectangular microstrip patch antenna for triple-band applications in the frequency band of the sub-8 GHz (3.1–7.6 GHz) range. The electrical length of the antenna is $0.64\lambda \times 0.54\lambda \times 0.02\lambda$, where λ is the free space wavelength at the first lower frequency (@3.1 GHz). The simulated and measured results are compared in this scope, and both the results agree with the fractional bandwidth (below -10 dB) of 30.5% (3.1–4.2 GHz @ 3.6 GHz), 19.6% (4.9–5.9 GHz @ 5.1 GHz), and 17% (6.4–7.6 GHz @ 7.2 GHz) at the sub-6 GHz 5G, WLAN, and Wi-Fi 6E band. Maximum isolation of 35 dB is observed at the 5G and WLAN bands and 22 dB at the 6E band with a peak gain of 6.15 dBi. The horizontal and vertical spacing between the edges of the horizontal and vertical patches