

# Quad-band handset antenna operation for GSM900/DCS1800/PCS1900/UMTS

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## **Abstract:**

A novel compact quadband internal planar inverted-F antenna (PIFA) for handsets covering the bands GSM-900, DCS-1800, PCS-1900 and UMTS is presented. The proposed antenna consists of a planar antenna element suspended parallel above the dielectric of a single sided PCB. By etching a section of the conducting ground plane below the radiating element, the antenna gains the merits of a planar monopole and consequently a wider bandwidth. The antenna occupies a total volume of 38 mm /spl times/ 25 mm /spl times/ 6 mm and is well suited as internal antenna due to its low profile, small size, wide bandwidth and multi-band behavior. The antenna structure, simulation and measurements of return losses, radiation patterns and specific absorption rate (SAR) are also discussed.