

Multiband PIFA Handset Antenna By Means of GroundPlane Design

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Mobile devices are in a constant state of evolution given the increasing features and frequencies available worldwide. Today, global handset functionality is becoming an important consideration influencing customer purchasing habits. Industry dynamics have increased the drive for smaller and multi-functional wireless devices. Antenna technology has played a key role in influencing the end form factor of these mobile devices because without the antenna the device is not wireless. The present paper shows a conventional design for dual-band operation (GSM900-DCS1800) and how it can be improved for a quad-band design (GSM850-GSM900-DCS1800-DCS1900) through the FracPlane® technique. This technique encapsulates both basic shaping of a groundplane to a more sophisticated space-filling and/or multilevel design for further size reduction and multi-band performance enhancement [Multilevel and space-filling ground-planes for miniature and multiband antennas, Patent WO03023900, September 2001],[Multilevel antennas, patent WO0122528, September 1999],[Space-filling miniature antennas, patent WO0154225, January 2000],[J. Anguera, “Fractal and Broadband Techniques on Miniature, Multifrequency, and High-Directivity Microstrip Patch Antennas”, Ph.D Dissertation at Universitat Politècnica de Catalunya, Barcelona – Spain 2003].

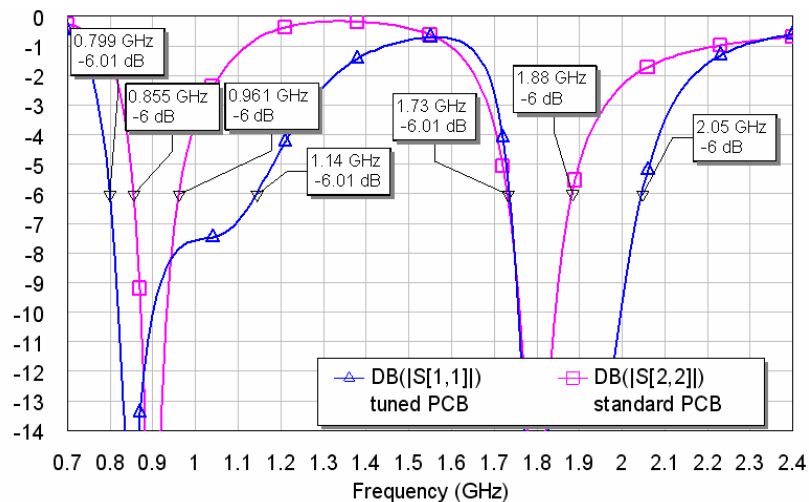


Fig. 1 Return loss for a multiband PIFA antenna without and with a FracPlane tuned PCB