

Preface

The High Impedance Surface (HIS) is a preferred substrate for low profile antenna design, owing to its unique boundary conditions. Such substrates permit radiating elements to be printed on them, without any disturbance to the radiation characteristics. Moreover, HIS provides improved impedance matching, enhanced bandwidth, increased broadside directivity owing to total reflection from the reactive surface, and high input impedance. This book presents EM design and analysis of dipole antenna array over high impedance substrate. Different configurations of HIS such as array of metallic dogbones or square patches are considered for the array design on planar and nonplanar high-impedance surface. The HIS unit cell design consists of single and double layer of conductors over a PEC ground plane-backed dielectric substrate. The antenna elements are placed on a top surface of metamaterial/HIS consisting of tightly coupled metallic dogbones. The substrate is backed by a perfectly conducting ground plane. The antenna design consisting of a multi-layered substrate and PEC ground plane is limited within sub-wavelengths. This book presents the EM design and analysis of cylindrical dipole, printed dipole, and folded dipole over single and double layered square-patch based-HIS and dogbone-based HIS. The performance of array is analyzed in terms of return loss and radiation pattern. The overall design performance depends on both the radiating element and the HIS parameters. The array design is extended for nonplanar cylindrical HIS. This book helps reader to efficiently design arbitrary low profile antenna array over planar and nonplanar HIS based substrate.

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Low Profile Conformal Antenna Arrays on High
Impedance Substrate

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2016, XX, 56 p. 64 illus. in color., Softcover

ISBN: 978-981-287-762-8