

1. Record Nr.	UNINA9910786602603321
Titolo	Handbook of reflector antennas and feed systems . Volume 2 // Sudhakar Rao, Lottollah Shafai, Satish Sharma, editors ; Vicki Kane, cover design
Pubbl/distr/stampa	Boston, Massachusetts : , : Artech House, , 2013 ©2013
ISBN	1-5231-1726-5 1-60807-518-4
Descrizione fisica	1 online resource (381 p.)
Disciplina	621.38254
Soggetti	Antennas, Reflector - Design and construction Antennas, Reflector
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	""Handbook of Reflector Antennas and Feed Systems: Volume II Feed Systems""; ""Contents""; ""Preface""; ""Chapter 1 Introduction""; ""1.1 Introduction""; ""1.2 The Feed System""; ""1.3 Phase Center Determination""; ""1.4 Feed Efficiency""; ""1.5 Organization of the Book""; ""References""; ""Chapter 2 Numerical Methods""; ""2.1 Introduction""; ""2.2 Maxwell's Equations: Foundations of Electromagnetic Analysis ""; ""2.2.1 Green's Functions and Integral Representations""; ""2.3 Method of Moments (MoM)""; ""2.3.1 Integral Equation Formulation""; ""2.3.2 Geometry Representations and Meshing"" ""2.3.3 Basis Functions""""2.3.4 Construction of the Impedance Matrix Equation""; ""2.3.5 Direct and Iterative Solution Methods""; ""2.3.6 Examples""; ""2.4 Finite-Element Method (FEM)""; ""2.4.1 Functional Formalism and Discrete Formulation""; ""2.4.2 Material Modeling, Boundary Conditions, and Feed Modeling""; ""2.4.3 Discretization and Basis Functions""; ""2.4.4 Example""; ""2.5 Hybrid FE-BI and Domain Decomposition Techniques""; ""2.5.1 Hybrid Finite-Element-Boundary Integral (FE-BI) Formulation""; ""2.5.2 Example""; ""2.6 Fast Methods for Integral Equations""

""2.6.1 Fast Multipole Method (FMM)""""2.6.2 Examples""; ""2.6.3 Model Order Reduction for Fast Frequency Sweep""; ""2.6.4 Example""; ""2.7 High-Frequency Techniques""; ""2.7.1 Physical Optics (PO) and Geometrical Optics (GO)""; ""2.7.2 Example""; ""2.7.3 Geometrical Theory of Diffraction and Uniform Theory of Diffraction""; ""References""; ""Chapter 3 Electrically Small Feeds""; ""3.1 Introduction""; ""3.2 Design Requirements""; ""3.3 Waveguide Feeds""; ""3.3.1 Small Waveguide Feeds""; ""3.3.2 Small Coaxial Feeds""; ""3.3.3 Small Wide Angle Feeds""; ""3.3.4 Small Backfire Feeds"" ""3.4 Microstrip Feeds""""3.4.1 Single Patch Antenna as the Reflector Feed""; ""3.4.2 Planar Antenna Array Feeds""; ""3.5 Backfire Printed Dipole Feeds""; ""3.5.1 Design Approach""; ""3.5.2 Performance Results""; ""3.5.3 Printed Dipole Performance with a Reflector""; ""3.6 Asymmetric Feeds""; ""3.7 Feed Pattern Shaping by Superstrate Loading""; ""References""; ""Chapter 4 Smooth Wall Multimode Horns for High Aperture Efficiency""€?Theory, Design, and Applications""; ""4.1 Introduction""; ""4.2 Theory for High Aperture Efficiency""; ""4.3 Circular Aperture""; ""4.3.1 Realization of the Modes"" ""4.3.2 Circular Horn Design""""4.3.3 Three-Step Horn""; ""4.4 Square High-Efficiency Horn""; ""4.5 Multiflared High-Efficiency Horns""; ""4.6 Other High-Efficiency Horn Structures""; ""4.7 Applications""; ""4.7.1 In Direct Radiating Arrays""; ""4.7.2 In Multiple-Beam Reflectors""; ""4.8 Conclusions""; ""References""; ""Chapter 5 Profiled Horns and Feeds""; ""5.1 Introduction""; ""5.2 Basis of Optimum Horns""; ""5.2.1 Pattern Constraints""; ""5.2.2 Input Mismatch""; ""5.2.3 Aperture Efficiency""; ""5.2.4 Phase Center Stability"" ""5.2.5 Compactness and/or Physical Constraint Due to Existing Environment""

---

## Sommario/riassunto

This is the first truly comprehensive and most up-to-date handbook available on modern reflector antennas and feed sources for diversified space and ground applications. There has never been such an all-encompassing reflector handbook in print, and no currently available title offers coverage of such recent research developments. The Handbook consists of three volumes. Volume II focuses on feed sources. Reflector antennas are extraordinary devices that combine high gain with geometrical simplicity, and can operate in broad frequency bands. Their performance, however, depends on the electrical

---