

1. Record Nr.	UNINA9910143689203321
Titolo	Spaceborne antennas for planetary exploration [[electronic resource] /] / edited by William A. Imbriale
Pubbl/distr/stampa	Hoboken, N.J., : Wiley-Interscience, c2006
ISBN	1-280-55171-2 9786610551712 0-470-05278-3 0-470-05277-5
Descrizione fisica	1 online resource (594 p.)
Collana	Deep-space communications and navigation series
Altri autori (Persone)	ImbrialeW. A (William A.)
Disciplina	629.4354
Soggetti	Space vehicles - Radio antennas Artificial satellites in telecommunication Electronic books. Outer space Exploration Equipment and supplies
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 and index.
Nota di contenuto	Spaceborne Antennas for Planetary Exploration; Table of Contents; Foreword; Preface; Acknowledgments; Contributors; Chapter 1: Introduction; 1.1 Technology Drivers; 1.1.1 Frequency Bands Allocated to Deep-Space Communications; 1.1.2 Frequency Bands Recommended for Proximity Links; 1.2 Analysis Techniques for Designing Reflector Antennas; 1.2.1 Radiation-Pattern Analysis; 1.2.2 Feed-Horn Analysis; 1.2.3 Spherical-Wave Analysis; 1.2.4 Dual-Reflector Shaping; 1.2.5 Dichroic Reflector Analysis; 1.2.6 Mesh Analysis; 1.3 Wire Antennas; 1.3.1 Theoretical Formulation 1.3.2 Arbitrarily Shaped Wires and Wire Junctions 1.4 Microstrip Antenna: Analysis, Design, and Application; 1.4.1 Introduction; 1.4.2 Technical Background; 1.4.3 Analysis, Design, and CAD Tools; 1.4.4 Spacecraft Applications; 1.4.5 Summary and Conclusion; 1.5 Antenna Measurements; 1.5.1 Far-Field Measurements; 1.5.2 Near-Field Measurements; 1.5.3 Conclusions; References; Chapter 2: The Early Years; 2.1 Explorer I; 2.2 Pioneers 3 and 4; 2.3 Project Ranger; 2.3.1 High-Gain Antenna System; 2.3.2 Omni Antennas; 2.4 Surveyor; 2.4.1

## Surveyor Radio Switching and Antenna System

2.4.2 The High-Gain Planar Antenna ArrayReferences; Chapter 3: The Planetary Flybys; 3.1 The Mariner Series; 3.1.1 Mariners 1 and 2; 3.1.2 Mariner 5; 3.1.3 Mariner 10; 3.2 Voyager Mission to the Outer Planets; 3.2.1 Voyager S-/X-Band Antenna Subsystem; 3.2.2 Requirements; 3.2.3 Voyager High-Gain Antenna; 3.2.4 Voyager S-Band Feed and Low-Gain Antenna Design; 3.2.5 Voyager Frequency Selective Surface (FSS) Subreflector; References; Chapter 4: The Mars Missions; 4.1 Overview of Missions to Mars; 4.2 NASA Mars OrbiterdLanders; 4.2.1 Mariners 3 and 4; 4.2.2 Mariners 6 and 7 4.2.3 Mariners 8 and 94.2.4 Viking; 4.2.5 Mars Observer; 4.2.6 Mars Global Surveyor; 4.2.7 Mars Climate Orbiter; 4.2.8 Mars Polar Lander; 4.2.9 Mars Odyssey; 4.3 Mars Rovers; 4.3.1 Mars Pathfinder; 4.3.2 Mars Exploration Rovers; 4.4 Continued Mars Exploration; References; Chapter 5: The Orbiters; 5.1 Magellan to Venus; 5.1.1 The Magellan Spacecraft; 5.1.2 The High-Gain Antenna Subsystem; 5.1.3 The Medium-Gain Antenna; 5.1.4 The Magellan Altimeter Antenna; 5.2 The Galileo Antenna System; 5.2.1 Mission Description; 5.2.2 Requirements; 5.2.3 High-Gain Antenna Trade-off Studies 5.2.4 Post-Challenger Modifications5.2.5 High-Gain Antenna Design Selected; 5.2.6 Radio Frequency System-High-Gain Antenna; 5.2.7 Low-Gain Antenna System; 5.2.8 Conclusions; 5.3 The Cassini High-Gain Antenna Subsystem; 5.3.1 High-Gain Antenna Requirements and Constraints; 5.3.2 Configuration Selection; 5.3.3 Antenna Modeling and Subsystems Design; 5.3.4 Antenna Performance at S-Band; 5.3.5 Antenna Performance at X-Band; 5.3.6 Antenna Performance at Ku-Band; 5.3.7 Antenna Performance at Ka-Band; 5.3.8 Conclusions; References; Chapter 6: Spaceborne SAR Antennas for Earth Science 6.1 Introduction

---

### Sommario/riassunto

JPL spacecraft antennas-from the first Explorer satellite in 1958 to current R & DSpaceborne Antennas for Planetary Exploration covers the development of Jet Propulsion Laboratory (JPL) spacecraft antennas, beginning with the first Explorer satellite in 1958 through current research and development activities aimed at future missions. Readers follow the evolution of all the new designs and technological innovations that were developed to meet the growing demands of deep space exploration. The book focuses on the radio frequency design and performance of antennas, but covers envi

---