

1. Record Nr.	UNINA9910831056103321
Titolo	Ultra-wideband [[electronic resource] ] : antennas and propagation for communications, radar and imaging // edited by Ben Allen ... [et al.]
Pubbl/distr/stampa	Chichester, : John Wiley, c2007
ISBN	1-280-72126-X 9786610721269 0-470-05684-3 0-470-05682-7
Descrizione fisica	1 online resource (509 p.)
Altri autori (Persone)	AllenBen (Benjamin Hugh)
Disciplina	621.3824 621.38835
Soggetti	Ultra-wideband antennas Broadband communication systems
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	Ultra-Wideband Antennas and Propagation for Communications, Radar and Imaging; Contents; Editors; Prime Contributors; Preface; Acknowledgments; Abbreviations & Acronyms; 1 Introduction to UWB Signals and Systems; 1.1 History of UWB; 1.2 Motivation; 1.2.1 Large Absolute Bandwidth; 1.2.2 Large Relative Bandwidth; 1.3 UWB Signals and Systems; 1.3.1 Impulse Radio; 1.3.2 DS-CDMA; 1.3.3 OFDM; 1.3.4 Frequency Hopping; 1.3.5 RADAR; 1.3.6 Geolocation; 1.4 Frequency Regulation; 1.5 Applications, Operating Scenarios and Standardisation; 1.6 System Outlook; References; Part I Fundamentals Introduction to Part I2 Fundamental Electromagnetic Theory; 2.1 Introduction; 2.2 Maxwell's Equations; 2.2.1 Differential Formulation; 2.2.2 Interpretation; 2.2.3 Key to Antennas and Propagation; 2.2.4 Solving Maxwell's Equations; 2.2.5 Harmonic Representation; 2.3 Resulting Principles; References; 3 Basic Antenna Elements; 3.1 Introduction; 3.2 Hertzian Dipole; 3.2.1 Far-Field - Fraunhofer Region; 3.2.2 Near-Field - Fresnel Region; 3.3 Antenna Parameters and Terminology; 3.3.1 Polarisation; 3.3.2 Power Density; 3.3.3 Radiated Power; 3.3.4 Radiation Resistance; 3.3.5 Antenna Impedance

3.3.6 Equivalent Circuit; 3.3.7 Antenna Matching; 3.3.8 Effective Length and Area; 3.3.9 Friis' Transmission Formula; 3.3.10 Radiation Intensity; 3.3.11 Radiation Pattern; 3.3.12 (Antenna) Bandwidth; 3.3.13 Directive Gain, Directivity, Power Gain; 3.3.14 Radiation Efficiency; 3.4 Basic Antenna Elements; 3.4.1 Finite-Length Dipole; 3.4.2 Monopole; 3.4.3 Printed Antennas; 3.4.4 Wideband and Frequency-Independent Elements; References; 4 Antenna Arrays; 4.1 Introduction; 4.2 Point Sources; 4.2.1 Point Sources with Equal Amplitude and Phase; 4.2.2 Point Sources with Equal Amplitude and 180 Degrees Phase Difference; 4.2.3 Point Sources of Unequal Amplitude and Arbitrary Phase Difference; 4.3 The Principle of Pattern Multiplication; 4.4 Linear Arrays of n Elements; 4.5 Linear Broadside Arrays with Nonuniform Amplitude Distributions; 4.5.1 The Binomial Distribution; 4.5.2 The Dolph-Tschebyscheff Distribution; 4.6 Planar Arrays; 4.6.1 Rectangular Arrays; 4.6.2 Circular Arrays; 4.7 Design Considerations; 4.7.1 Mutual Coupling; 4.7.2 Array Gain; 4.8 Summary; References; 5 Beamforming; 5.1 Introduction; 5.1.1 Historical Aspects; 5.1.2 Concept of Spatial Signal Processing; 5.2 Antenna Arrays; 5.2.1 Linear Array; 5.2.2 Circular Array; 5.2.3 Planar Array; 5.2.4 Conformal Arrays; 5.3 Adaptive Array Systems; 5.3.1 Spatial Filtering; 5.3.2 Adaptive Antenna Arrays; 5.3.3 Mutual Coupling and Correlation; 5.4 Beamforming; 5.4.1 Adaptive Antenna Technology; 5.4.2 Beam Steering; 5.4.3 Grating Lobes; 5.4.4 Amplitude Weights; 5.4.5 Window Functions; 5.5 Summary; References; 6 Antenna Diversity Techniques; 6.1 Introduction; 6.2 A Review of Fading; 6.2.1 Signal Fading; 6.2.2 Channel Distribution; 6.3 Receive Diversity; 6.3.1 Single Branch without Diversity

---

Sommario/riassunto

Providing up-to-date material for UWB antennas and propagation as used in a wide variety of applications, "Ultra-wideband Antennas and Propagation for Communications, Radar and Imaging" includes fundamental theory, practical design information and extensive discussion of UWB applications from biomedical imaging, through to radar and wireless communications. An in-depth treatment of ultra-wideband signals in practical environments is given, including interference, coexistence and diversity considerations. The text includes antennas and propagation in biological media in addition to more co

---