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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
