

1. Record Nr.	UNINA9910466840103321
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Titolo	Design and applications of active integrated antennas // Mohammad S. Sharawi, Oualid Hammi
Pubbl/distr/stampa	Norwood, Massachusetts : , : Artech House, , [2018] [Piscataway, New Jersey] : , : IEEE Xplore, , [2018]
ISBN	1-63081-527-6
Descrizione fisica	1 online resource (xv, 247 pages) : illustrations
Collana	Artech House antennas and electromagnetics analysis library
Disciplina	621.3824
Soggetti	Antennas (Electronics) - Design and construction Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Design and Applications of Active Integrated Antennas; Contents; Preface; Acknowledgments; Chapter 1 Introduction; 1.1 Review of Wireless Communication Technology Evolution; 1.2 Transmitter and Receiver Architectures; 1.2.1 RF Transmitter Architectures; 1.2.2 RF Receiver Architectures; 1.2.3 Digital IF RF Transceivers; 1.3 Technology Trends; 1.4 Conclusions; References; Chapter 2 Impedance Matching Methods; 2.1 Introduction to Impedance Matching; 2.2 Narrowband Matching; 2.2.1 Lumped Element Matching Using the L-Network; 2.2.2 Example on the Lumped Element L-Matching Method. 3.2.2 Noise Analysis in Amplifiers 3.2.3 Design Procedure; 3.2.4 Design Example; 3.3 Maximum Gain Amplifier Design; 3.3.1 Matching Requirements; 3.3.2 Design Procedure; 3.3.3 Design Example; 3.4 Amplifier Design for Gain-Noise Trade-Off; 3.4.1 Gain Circles; 3.4.2 Design Procedure; 3.4.3 Design Examples; 3.5 PA Design; 3.5.1 Load-Pull Analysis; 3.5.2 Design Procedure; 3.6 Conclusions; References; Chapter 4 Antenna Fundamentals; 4.1 Antenna Features and Metrics; 4.1.1 Input Impedance, Resonance, and Bandwidth; 4.1.2 Radiation Pattern, Efficiency, Polarization, Gain, and MEG; 4.2 Antenna Types. 4.2.1 Dipole Antennas 4.2.2 Monopole Antennas; 4.2.3 Patch Antennas; 4.2.4 Loop Antennas; 4.2.5 Slot Antennas; 4.3 Antenna Arrays; 4.3.1 Linear Antenna Arrays; 4.3.2 Planar Antenna Arrays; 4.3.3 Circular Antenna Arrays; 4.4 MIMO Antenna Systems; 4.4.1 Features of MIMO

Antennas and Systems; 4.4.2 Performance Metrics of MIMO Antenna Systems; 4.4.3 MIMO Antenna System Examples; 4.5 Computer-Aided Antenna Design; 4.5.1 Printed Monopole Antenna Modeling Example Using HFSS; 4.5.2 Printed PIFA Antenna Modeling Example Using CST; 4.6 Conclusions; References; Chapter 5 Active Integrated Antennas. 5.1 Performance Metrics of AIA 5.1.1 Frequency Bandwidth; 5.1.2 Power Gain; 5.1.3 Total Efficiency; 5.1.4 Stability; 5.1.5 Noise Performance; 5.1.6 Example; 5.2 Oscillator-Based AIA; 5.2.1 Design Outline; 5.2.2 Examples; 5.3 Amplifier-Based AIA; 5.3.1 Design Outline; 5.3.2 Examples; 5.4 Mixer-Based AIA; 5.4.1 Design Outline; 5.4.2 Examples; 5.5 Transceiver-Based AIA; 5.5.1 Design Outline; 5.5.2 Examples; 5.6 Other Types of AIAs; 5.6.1 Frequency, Polarization, and Pattern Reconfigurable Antennas; 5.6.2 On-Chip/On-Package Antennas; 5.6.3 Non-Foster Antennas; 5.7 Conclusions; References.

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## Sommario/riassunto

This comprehensive new resource guides professionals in the latest methods used when designing active integrated antennas (AIA) for wireless communication devices for various standards. This book provides complete design procedures for the various elements of such active integrated antennas such as the matching network, the amplifier/active element as well as the antenna. This book offers insight into how active integration and co-design between the active components (amplifier, oscillator, mixer, diodes) and the antenna can provide better power transfer, higher gains, increased efficiencies, switched beam patterns and smaller design footprints. It introduces the co-design approach of active integrated antennas and its superior performance over conventional methods. Complete design examples are given of active integrated antenna systems for narrow and wideband applications as well as for multiple-input-multiple-output (MIMO) systems. Readers find the latest design methods for narrow and broadband RF matching networks. This book provides a complete listing of performance metrics for active integrated antennas. The book serves as a complete reference and design guide in the area of AIA.

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