

1. Record Nr.	UNINA9910452627603321
Autore	Li Junyi <1969->
Titolo	OFDMA mobile broadband communications : a systems approach // Junyi Li, Qualcomm, Bridgewater, New Jersey, Xinzhou Wu, Qualcomm, Bridgewater, New Jersey, Rajiv Laroia, Sonus Networks [[electronic resource]]
Pubbl/distr/stampa	Cambridge : , : Cambridge University Press, , 2013
ISBN	1-139-62483-0 1-107-23401-8 1-139-60844-4 1-139-60995-5 0-511-73618-5 1-139-61181-X 1-139-61553-X 1-299-40568-1 1-139-62111-4
Descrizione fisica	1 online resource (xx, 519 pages) : digital, PDF file(s)
Disciplina	621.39/8
Soggetti	Orthogonal frequency division multiplexing
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Title from publisher's bibliographic system (viewed on 05 Oct 2015).
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Contents; Foreword; Robert Calderbank; Preface; Why we wrote this book; Who will benefit from this book?; Acknowledgments; Notation; Variables; Functions; Abbreviations; General; LTE-specific; 1 Introduction; 1.1 Evolution towards mobile broadband communications; 1.2 System design principles of wireless communications; 1.3 Why OFDMA for mobile broadband?; 1.4 Systems approach and outline of the book; 2 Elements of OFDMA; 2.1 OFDM; 2.1.1 Tone signals; 2.1.2 Cyclic prefix; 2.1.3 Time-frequency resource; 2.1.4 Block signal processing; 2.2 From OFDM to OFDMA; 2.2.1 Basic principles 2.2.2 Comparison: OFDMA, CDMA, and FDMA2.2.3 Inter-cell interference averaging: OFDMA versus CDMA; 2.2.4 Tone hopping: averaging versus peaking; 2.2.5 Time-frequency synchronization and control; 2.2.6 Block signal processing; 2.3 Peak-to-average power ratio

and SC-FDMA; 2.3.1 PAPR problem; 2.3.2 PAPR of OFDMA; 2.3.3 SC-FDMA and PAPR reduction; 2.3.4 Frequency domain equalization at the SC-FDMA receiver; 2.3.5 System aspects of SC-FDMA; 2.4 Real-world impairments; 2.4.1 Carrier frequency offset and Doppler effect; 2.4.2 Arrival time beyond the cyclic prefix; 2.4.3 Sampling rate mismatch Phase noise2.4.4 I/Q imbalance; 2.4.5 Power amplifier nonlinear distortion; 2.5 Cross interference and self-noise models; 2.5.1 Cross interference and self-noise due to ICI; 2.6 Self-noise due to imperfect channel estimation; 2.6.1 Self-noise measurement via null pilot; 2.7 Summary of key ideas; 3 System design principles; 3.1 System benefits of OFDMA; Fading channel mitigation and exploitation; 3.2.1 Fading mitigation; 3.2.2 Fading exploitation; 3.2.3 Mitigation or exploitation?; 3.3 Intra-cell user multiplexing; 3.4 Inter-cell interference management
3.4.1 Interference averaging and active control3.4.2 Universal versus fractional frequency reuse; 3.5 Multiple antenna techniques; 3.5.1 System benefits; 3.5.2 OFDMA advantages; 3.6 Scheduling; 3.7 Network architecture and airlink support; 3.7.1 Unplanned deployment of base stations; 3.7.2 Mobile IP-based handoff; Summary of key ideas: evolution of system design principles; 4 Mitigation and exploitation of multipath fading; 4.1 Multipath fading channel; 4.1.1 Impulse response model; 4.1.2 Amplitude statistics; 4.1.3 Channel variation in time; 4.1.4 Channel variation in frequency
4.1.5 Gaussian-Markov model4.2 Communications, fading channel: single-user case; 4.2.1 Performance penalty due to multipath fading; 4.2.2 Mitigation of fading via channel state feedback; 4.2.3 Mitigation of fading via diversity; 4.2.4 Feedback or diversity; 4.3 Communications, fading channel: multiuser case; 4.3.1 Fading channel and multiuser diversity; 4.3.2 Exploring multiuser diversity in frequency and space; 4.3.3 Multiuser or single-user diversity; 4.4 Summary of key ideas; 5 Intra-cell user multiplexing; 5.1 Orthogonal multiplexing; 5.1.1 Orthogonal multiplexing in the perfect model
5.1.2 Orthogonal multiplexing in the cross interference model

Sommario/riassunto

Written by the pioneers of Flash-OFDM, arguably the first commercially developed OFDMA-based mobile broadband system in the world, this book teaches OFDMA from first principles, enabling readers to understand mobile broadband as a whole. The book examines the key requirements for data-centric mobile; how OFDMA fits well with data networks; why mobile broadband needs to be IP-based; and how to bridge communications theory to real-world air interface design and make a good system choice between performance and complexity. It also explores the future of wireless technologies beyond conventional cellular architecture. One of the key challenges faced by newcomers to this field is how to apply the wireless communications theory and principles to the real world and how to understand sophisticated commercial systems such as LTE. The authors use their firsthand experience to help graduate students, researchers and professionals working on 4G to bridge the gap between theory and practice.
