

IEEE 802 Wireless Systems:



Protocols, Multi-Hop Mesh/Relaying, Performance and Spectrum Coexistence

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ISBN: 0-470-01439-3

Hardcover

368 pages

November 2006



IEEE 802 Wireless systems have become a serious competitor to cellular radio systems, for low cost nomadic Internet access, at least in offices, at home and in public hot spots. At the same time, the wireless communication sector has grown to an important industry providing a basis for our communications society. In the next decade, 802 wireless systems will become an integral part of fourth generation (4G) cellular communication systems, where the convergence of wireless and mobile networks will materialize through

support of interworking and seamless roaming across wireless and cellular radio access technologies. Besides that, peer-to-peer communication across wireless ad-hoc networks will evolve. Extremely high-data rates, driven by technology progress, under transmit power constraints transmitted in bands of 3.5 to 5 GHz will reduce the coverage range of Access Points (AP) in comparison to current systems, substantially. Multi-hop relaying will be required to trade the high capacity available at APs against range of radio coverage and wireless mesh networks will be needed to connect APs to the Internet.

Spectrum will become even more scarce forcing future high-density multi-hop networks to apply coexistence rules that will become an essential part of any wireless system standard, to ease systems co-operation on the same radio channel using distributed control. Cognitive radios and spectrum sharing will be key for the success of future wireless and mobile networks.

- A comprehensive overview and performance evaluation of IEEE 802.11, 802.15 and 802.16
- Includes tutorial like introduction to basics of wireless communication
- Discusses challenges in mesh/multi-hop relaying networks and provides profound solutions for their realization based on 802 systems
- Discusses spectrum sharing on different levels and provides solutions for enabling Coexistence, Cooperation and Interworking of 802 systems
- Includes a detailed overview on cognitive radio and spectrum sharing

This book is an essential text for advanced undergraduate students with a basic working knowledge of wireless communication, graduate students and engineers working in the field of wireless communications. Additionally, this book offers a reliable guide and the fundament for lectures on IEEE 802 standardized systems providing figures and tables ready for course presentation. 802 standardized systems providing figures and tables ready for course presentation.