DESCRIPTION

Orthogonal frequency-division multiplexing (OFDM) is a method of digital modulation in which a signal is split into several narrowband channels at different frequencies.

CDMA is a form of multiplexing, which allows numerous signals to occupy a single transmission channel, optimising the use of available bandwidth. Multiplexing is sending multiple signals or streams of information on a carrier at the same time in the form of a single, complex signal and then recovering the separate signals at the receiving end.

Multi-Carrier (MC) CDMA is a combined technique of Direct Sequence (DS) CDMA (Code Division Multiple Access) and OFDM techniques. It applies spreading sequences in the frequency domain.

Wireless communications has witnessed a tremendous growth during the past decade and further spectacular enabling technology advances are expected in an effort to render ubiquitous wireless connectivity a reality.

This technical in-depth book is unique in its detailed exposure of OFDM, MIMO-OFDM and MC-CDMA. A further attraction of the joint treatment of these topics is that it allows the reader to view their design trade-offs in a comparative context.

Divided into three main parts:

Part I provides a detailed exposure of OFDM designed for employment in various applications
Part II is another design alternative applicable in the context of OFDM systems where the channel quality fluctuations observed are averaged out with the aid of frequency-domain spreading codes, which leads to the concept of MC-CDMA.

Part III discusses how to employ multiple antennas at the base station for the sake of supporting multiple users in the uplink.

- Portrays the entire body of knowledge currently available on OFDM
- Provides the first complete treatment of OFDM, MIMO(Multiple Input Multiple Output)-OFDM and MC-CDMA
- Considers the benefits of channel coding and space time coding in the context of various application examples and features numerous complete system design examples
- Converts the lessons of Shannon’s information theory into design principles applicable to practical wireless systems
- Combines the benefits of a textbook with a research monograph where the depth of discussions progressively increase throughout the book

This all-encompassing self-contained treatment will appeal to researchers, postgraduate students and academics, practising research and development engineers working for wireless communications and computer networking companies and senior undergraduate students and technical managers.

ABOUT THE AUTHOR

Lajos Hanzo received his degree in electronics in 1976 and his doctorate in 1983. During his career in telecommunications he has held various research and academic posts in Hungary, Germany and the UK. Since 1986 he has been with the Department of Electronics and Computer Science, University of Southampton, UK, where he holds the chair in telecommunications. Lajos is also an IEEE Distinguished Lecturer of both the Communications as well as the Vehicular Technology Society and a Fellow of the IEE.

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