

EVALUATING OFDM WITH LTE

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PREFACE

The Orthogonal Frequency-Division Multiplexing (OFDM) digital transmission technique has several advantages in broadcast and mobile communications applications. Therefore, the German Research Foundation (DFG) funded a so-called priority program “Techniques, Algorithms, and Concepts for Future OFDM Systems” (TakeOFDM), which started in 2004. The main objective of this research program is to study the specific research topics in a collaborative work between experts and young scientists from different universities. In broadcast applications like Digital Audio Broadcast (DAB), Digital Video broadcast (DVB-T), Digital Radio Mondiale (DRM), and single-cell WLAN systems, the OFDM transmission technique is already mature and operational for several years. However, in wireless and wireline communications there is still need for further research and optimization. The OFDM transmission technique has gained a lot of attention in research, and it has proven to be a suitable choice in the design of digital transmission concepts for mobile applications, such as the Long Term Evolution (LTE) standard, which is the system proposal for the fourth generation (4G) of mobile communication systems. The OFDM transmission method, specific medium access techniques, cellular networks with full coverage, and multiple antenna systems have been playing an important and ever-growing role in the 4G development. This book summarizes the main results and gives an overview of the combined research efforts which have been undertaken in the past years for the development of the communication systems.

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