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Nota di contenuto	Intro -- Table of Contents -- List of Contributors -- Preface -- Acknowledgments -- Abbreviations -- 1 Introduction and Background -- 1.1 Why 5G? -- 1.2 Requirements and Targets -- 1.3 Technology Components and Design Considerations -- 2 Network Architecture and NR Radio Protocols -- 2.1 Architecture Overview -- 2.2 Core Network Architecture -- 2.3 Radio Access Network -- 2.4 NR Radio Interface Protocols -- 3 PHY Layer -- 3.1 Introduction (Mihai Enescu, Nokia Bell Labs, Finland) -- 3.2 NR Waveforms (Youngsoo Yuk, Nokia Bell Labs, Korea) 3.3 Antenna Architectures in 5G (Fred Vook, Nokia Bell Labs, USA) -- 3.4 Frame Structure and Resource Allocation (Karri Ranta-aho, Nokia Bell Labs, Finland) -- 3.5 Synchronization Signals and Broadcast Channels in NR Beam-Based System (Jorma Kaikkonen, Sami Hakola, Nokia Bell Labs, Finland) -- 3.6 Physical Random Access Channel (PRACH) (Emad Farag, Nokia Bell Labs, USA) -- 3.7 CSI-RS (Stephen Grant, Ericsson, USA) -- 3.8 PDSCH and PUSCH DM-RS, Qualcomm Technologies, Inc. (Alexandros Manolakos, Qualcomm Technologies, Inc, USA) -- 3.9 Phrase- Tracking RS (Youngsoo Yuk, Nokia Bell Labs, Korea) 3.10 SRS (Stephen Grant, Ericsson, USA) -- 3.11 Power Control (Mihai

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4.4 Radio Link Monitoring (Claes Tidestav, Ericsson, Sweden, Dawid Koziol, Nokia Bell Labs, Poland) -- 4.5 Radio Resource Management (RRM) and Mobility (Helka-Liina Maattanen, Ericsson, Finland, Dawid Koziol, Nokia Bell Labs, Poland, Claes Tidestav, Ericsson, Sweden) -- Note -- 5 Performance Characteristics of 5G New Radio -- 5.1 Introduction -- 5.2 Sub-6 GHz: Codebook-Based MIMO in NR -- 5.3 NR MIMO Performance in mmWave Bands -- 5.4 Concluding Remarks -- 6 UE Features -- 6.1 Reference Signals -- References -- Index -- End User License Agreement

Sommario/riassunto

"This book presents the newly 3GPP-specified 5G physical layer, focusing on the beam-based operation which is a new dimension in the radio system due to the millimeter wave deployments of 5G. The intention is to complement the 3GPP specification and connect the dots of key features. The expert authors, all contributors to creating the actual standard, will cover the physical layer aspects related to beam operation, such as initial access, details of reference signal design, beam management, DL and UL data channel transmission. The book will contain a brief overview of standardization efforts, IMT-2020 submission, 5G spectrum and will also contain performance analysis of 5G components. The book assumes a basic knowledge of multi-antenna technologies"--