1. Record Nr. UNINA9910963580603321 Autore Dobkin Daniel Mark **Titolo** The RF in RFID: passive UHF RFID in practice // Daniel M. Dobkin Pubbl/distr/stampa Amsterdam; ; Boston, : Elsevier / Newnes, c2008 **ISBN** 9786611071523 9781281071521 1281071528 9780080554020 0080554024 Edizione [1st ed.] Descrizione fisica 1 online resource (505 p.) Collana Communications engineering series Disciplina 621.384 Soggetti Radio frequency identification systems Radio frequency Wireless communication systems Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Note generali Description based upon print version of record. Nota di bibliografia Includes bibliographical references and index. Front Cover; The RF in RFID; Copyright Page; Table of Contents; Nota di contenuto Chapter 1. Introduction; 1.1 What, When, and Where, Wirelessly; 1.2 Why Would You Read This Book?; 1.3 What Comes Next?; 1.4 Acknowledgments; 1.5 Further Reading; Chapter 2. History and Practice of RFID; 2.1 It All Started with IFF; 2.2 Making it Cheap; 2.3 Making and Selling: Tracking Big Stuff; 2.4 Tracking Small Stuff: AutoID and The Web of Things; 2.5 RFID Systems and Terminology; 2.6 Types of RFID; 2.7 The Internet of Things and UHF RFID; 2.8 Further Reading; 2.9 Exercises; Chapter 3. Radio Basics For UHF RFID 3.1 Electromagnetic Waves 3.2 Describing Signal Voltage and Power; 3.3 Information, Modulation, and Multiplexing; 3.4 Backscatter Radio Links; 3.5 Link Budgets; 3.6 Effect of Antenna Gain and Polarization on Range; 3.7 Propagation in the Real World; 3.8 Capsule Summary: Chapter 3; 3.9 Further Reading; 3.10 Exercises; Chapter 4. UHF RFID Readers: 4.1 A Radio's Days (and nights): 4.2 Radio Architectures: 4.3 Radio Components; 4.4 RFID Transmitters; 4.5 RFID Receivers; 4.6 Digital-Analog Conversion and Signal Processing: 4.7 Packaging and

Power; 4.8 Capsule Summary; 4.9 Further Reading

4.10 Exercises Chapter 5. UHF RFID Tags; 5.1 Power and Powerlessness: 5.2 RF to DC: 5.3 Getting Started, Getting Data: 5.4 Talking Back; 5.5 Tag IC Overall Design Challenges; 5.6 Packaging: No. Small Matter; 5.7 Other Ways; 5.8 Capsule Summary; 5.9 Further Reading; 5.10 Exercises; Chapter 6. Reader Antennas; 6.1 Not Just for Insects Anymore; 6.2 Current Events: Fundamentals of Antenna Operation; 6.3 Antennas for Fixed Readers; 6.4 Antennas for Handheld or Portable Readers; 6.5 Near-field Antennas; 6.6 Cables and Connectors: 6.7 Capsule Summary: 6.8 Afterword: An Electron's Evelash 6.9 Further Reading 6.10 Exercises; Chapter 7. Tag Antennas; 7.1 World to Tag, Tag to World; 7.2 Impedance Matching and Power Transfer; 7.3 Dipoles and Derivatives; 7.4 Tags and the (local) Environment; 7.5 Near-field and Hybrid Tag Antennas; 7.6 Capsule Summary; 7.7 Further Reading; 7.8 Exercises; Chapter 8. UHF RFID Protocols: 8.1 What a Protocol Droid Should Know: 8.2 Days of Yore: 8.3 EPCglobal Generation 1; 8.4 ISO 18000-6B (Intellitag); 8.5 ISO 18000-6C (EPCglobal Class 1 Generation 2); 8.6 Capsule Summary; 8.7 Further Reading: 8.8 Exercises: Afterword: Appendix 1. Radio Regulations

A1.1 Couldn't Wait for Global Warming A1.2 FCC PART 15; A1.3 European Standards; A1.4 Those Other Few Billion Folks; Appendix 2. Harmonic Functions; A2.1 Sines and Cosines; A2.2 Complex Numbers and Complex Exponentials; Appendix 3. Resistance, Impedance and Switching; A3.1 Electric Company Detective Sherlock Ohms; A3.2 Resistance is Useless?; A3.3 Switching; Appendix 4. Reflection and Matching; A4.1 Reflection Coefficients; A4.2 A Simple (But Relevant) Matching Example; Index

Sommario/riassunto

This book includes a survey of all RFID fundamentals and practices in the first part of the book while the second part focuses on UHF passive technology. This coverage of UHF technology and its components including tags, readers, and antennas is essential to commercial implementation in supply chain logistics and security. Dr. Dobkin is targeting an audience which has an electrical engineering background but has not yet dealt with RFID. To this end, he will be very careful to illustrate all concepts and detail his explanations meticulously. In this way he will bring the reader along or