

Introduction To Ultra Wideband For Wireless Communications

[DOWNLOAD HERE](#)

1;Preface;6 2;Acknowledgements;9 3;Contents;10 4;About the Authors;14 5;1 Introduction;16 5.1;1.1 History of UWB;16 5.2;1.2 Preview of the Book;22 5.3;References;25 6;2 UWB For Wireless Communications;26 6.1;2.1 UWB Definition;27 6.2;2.2 FCC Mask;28 6.2.1;2.2.1 Hermite Pulses;34 6.2.2;2.2.2 Legendre Pulses;35 6.2.3;2.2.3 Prolate Spheroidal Functions;37 6.3;2.3 UWB Features;40 6.4;2.4 Summary;40 6.5;Problems;41 6.6;References;42 7;3 UWB Antennas;44 7.1;3.1 Antenna Requirements;46 7.2;3.2 Radiation Mechanism of the UWB Antennas;46 7.3;3.3 Link Budget for UWB System Taking into Account the UWB Antennas;47 7.4;3.4 Short Range Analysis of UWB Antennas;52 7.4.1;3.4.1 Phase Error;52 7.4.2;3.4.2 Antenna Mismatch;54 7.4.3;3.4.3 Re-radiation Between Antennas;54 7.5;3.5 Summary;55 7.6;Problems;55 7.7;References;56 8;4 Ultra Wide Band Wireless Channels;57 8.1;4.1 Impulse Response Modeling of UWB Wireless Channels;59 8.1.1;4.1.1 Distribution of Amplitude Fading;60 8.1.2;4.1.2 Distribution of Time of Arrival;64 8.1.3;4.1.3 Path Loss;67 8.1.4;4.1.4 Power-Delay Profiles;69 8.1.5;4.1.5 RMS Delay Spread;70 8.2;4.2 Modified Impulse Response Method;71 8.3;4.3 The IEEE UWB Channel Model;72 8.4;4.4 Frequency Modeling of UWB Channels;74 8.5;4.5 Comparison of Time and Frequency Models;76 8.6;4.6 Summary;76 8.7;Problems;76 8.8;References;78 9;5 UWB Interference;80 9.1;5.1 An Example: IEEE802-11.a Interference;81 9.2;5.2 General Method of Signal to Interference Ratio Calculation;83 9.3;5.3 Interference of UWB to Existing OFDM System;86 9.4;5.4 Interference of UWB to Narrowband Systems;93 9.5;5.5 Interference to WiMax;95 9.6;5.6 Interference Reduction;96 9.7;5.7 Interference Mitigation of Wideband System on UWB Using Multicarrier Templates;97 9.8;5.8 Summary;102 9.9;Problems;102 9.10;References;105 10;6 UWB Signal Processing;106 10.1;6.1 Modulation;106 10.2;6.2 BER of Modulation Schemes;113 10.3;6.3 Rake Receiver;117 10.4;6.4 Transmit-Reference (T-R) Technique;119 10.5;6.5 UWB Range- Data Rate Performance;121 10.6;6.6 UWB Channel Capacity;124 10.7;6.7 Summary;125 10.8;Problems;125 10.9;References;128 11;7 UWB Technologies;129 11.1;7.1 Impulse Radio;129 11.1.1;7.1.1 Complexity;131 11.1.2;7.1.2 Power Consumption;131 11.1.3;7.1.3 Security;131 11.1.4;7.1.4 IR Industry

