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PSWF; 2.4.3 PSWF pulse generator; 2.5 Designing waveforms for specific spectral masks; 2.5.1 Introduction; 2.5.2 Multi-band modulation
2.6 Practical constraints and effects of imperfections
2.7 Summary; 3 Signal-processing techniques for UWB systems; 3.1 The effects of lossy medium on an UWB transmitted signal; 3.2 Time domain analysis; 3.2.1 Classification of signals; 3.2.2 Some useful functions; 3.2.3 Some useful operations; 3.2.4 Classification of systems; 3.2.5 Impulse response; 3.2.6 Distortionless transmission; 3.3 Frequency domain techniques; 3.3.1 Fourier transforms; 3.3.2 Frequency response approaches; 3.3.3 Transfer function; 3.3.4 Laplace transform; 3.3.5 z-Transform
3.3.6 The relationship between the Laplace transform, the Fourier transform, and the z-transform
3.4 UWB signal-processing issues and algorithms; 3.5 Detection and amplification; 3.6 Summary; 4 Ultra wideband channel modeling; 4.1 A simplified UWB multipath channel model; 4.1.1 Number of resolvable multipath components; 4.1.2 Multipath delay spread; 4.1.3 Multipath intensity profile; 4.1.4 Multipath amplitude-fading distribution; 4.1.5 Multipath arrival times; 4.2 Path loss model; 4.2.1 Free space loss; 4.2.2 Refraction; 4.2.3 Reflection; 4.2.4 Diffraction; 4.2.5 Wave clutter
4.2.6 Aperture-medium coupling loss
4.2.7 Absorption; 4.2.8 Example of free space path loss model; 4.3 Two-ray UWB propagation model; 4.3.1 Two-ray path loss; 4.3.2 Two-ray path loss model; 4.3.3 Impact of path loss frequency selectivity on UWB transmission; 4.4 Frequency domain autoregressive model; 4.4.1 Poles of the AR model; 4.5 Summary; 5 Ultra wideband communications; 5.1 Introduction; 5.2 UWB modulation methods; 5.2.1 Pulse position modulation; 5.2.2 Bi-phase modulation; 5.3 Other modulation methods; 5.3.1 Orthogonal pulse modulation; 5.3.2 Pulse amplitude modulation
5.3.3 On-off keying

Sommario/riassunto

Ultra Wideband (UWB) is the hot new topic in wireless communication engineering today. High-speed communication over short distances using sub-nanosecond pulses, rather than conventional sinusoidal waves, has paved the way for cheap wireless transceivers, capturing the imagination of both academics and engineers in industry alike. Ultra Wideband Signals and Systems in Communication Engineering focuses on the basic signal processing that underlies current and future ultra wideband systems ensuring this text will be essential reading even as UWB applications mature and change or regulatio
