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Bibliography; Chapter 3 Electromagnetic Properties of Communications Systems; 3.1 Fundamental Communications System Electromagnetics; 3.1.1 Smith Chart; 3.1.2 Snell's Law of Reflection and Refraction; 3.2 Wave Generation and Propagation in Free Space; 3.2.1 Maxwell's Equations; 3.2.2 Wave Propagation; 3.2.3 Wave Polarization; 3.2.4 Fresnel Knife-Edge Diffraction; 3.2.5 Path Loss Prediction 3.3 Wave Generation and Propagation in the Terrestrial Atmosphere 3.3.1 Absorption and Scattering; 3.3.2 Wave Propagation in the Atmosphere; Selected Bibliography; Chapter 4 Electromagnetic Interference; 4.1 Electromagnetic Interference with Wave Propagation and Reception; 4.1.1 Additive White Gaussian Noise (AWGN); 4.1.2 Thermal Noise; 4.1.3 Shot Noise; 4.1.4 Flicker (1/f) Noise; 4.1.5 Burst Noise; 4.1.6 Noise Spectral Density; 4.1.7 Effective Input Noise Temperature; 4.2 Natural Sources of Electromagnetic Interference; 4.2.1 Lightning and Electrostatic Discharge 4.2.2 Multipath Effects Caused by Surface Feature Diffraction and Attenuation 4.2.3 Attenuation by Atmospheric Water; 4.2.4 Attenuation by Atmospheric Pollutants; 4.2.5 Sunspot Activity; 4.3 Manmade Sources of Electromagnetic Interference; 4.3.1 Commercial Radio and Telephone Communications; 4.3.2 Military Radio and Telephone Communications; 4.3.3 Commercial Radar Systems; 4.3.4 Industrial Sources; 4.3.5 Intentional Interference; Selected Bibliography; Chapter 5 Filter Interference Control; 5.1 Filters; 5.1.1 Lowpass Filter; 5.1.2 Highpass Filter; 5.1.3 Bandpass Filter; 5.1.4 Bandstop Filter

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## Sommario/riassunto

In recent years the protection of communication services operating in the same of adjacent channels has become more and more challenging. Communication systems need to be protected from natural and man-made interference. This practical reference provides a thorough understanding of how to protect communication systems from intentional and unintentional electromagnetic interference. Engineers learn how to overcome critical problems in both digital and analog communications. This unique resource shows how to shield equipment from electrical and magnetic fields, design TEM and GTEM-Cell, build capacitive coupling clamps for susceptibility tests, protect electronic equipment with filters, and calculate the measurement uncertainty. Professionals find numerous, well-illustrated examples that make challenging electromagnetics issues far easier to comprehend. CD-ROM Included! Contains time-saving software that helps engineers perform important calculations, including characteristic impedance of TEM-Cell, cut-off frequencies for higher order modes, and cut-off and resonant frequencies for GTEM-cell.

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