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Harmonic Relations; 3.4.4 Complex Permittivity; 3.4.5 Boundary Conditions Again; 3.4.6 Notes on the Solution
3.4.7 The Complex Poynting Theorem
3.5 The Wave Equation; 3.5.1 Time Dependent Case; 3.5.2 Time Harmonic Case; 3.6 Uniform Plane Waves; 3.6.1 General Considerations; 3.6.2 Energy Considerations; 3.6.3 Group Velocity; 3.6.4 Summary; 3.6.5 General Representation of TEM Waves; 3.6.6 Plane Waves in Lossy Media; 3.6.7 Skin Effect; 3.6.8 Polarization of Plane Waves; 3.7 Reflection and Refraction (Transmission) of Plane Waves; 3.7.1 Normal Incidence on a Plane Interface; 3.7.2 Oblique Incidence; References; Problems; 4 Signal Waveform and Spectral Analysis; 4.1 Introduction
4.2 Classification of Signals
4.3 Energy Signals; 4.3.1 Definitions; 4.3.2 A Rectangular Pulse; 4.4 Power Signals; 4.4.1 Periodic Signals; 4.4.2 Trapezoidal Waveform; 4.5 Examples of Some Signals; References; Problems; 5 Transmission Lines; 5.1 Introduction; 5.2 Basic Discussion; 5.3 Transverse Electromagnetic (TEM) Transmission Lines; 5.4 Telegrapher's Equations: Quasi-Lumped Circuit Model; 5.5 Wave Equations; 5.6 Frequency Domain Analysis; 5.6.1 General Solution; 5.6.2 Further Discussion of Propagation Constant and Characteristic Impedance; 5.6.3 Voltage, Current, and Impedance Relations
5.7 Line Parameters
5.7.1 Coaxial Line; 5.7.2 Parallel Wire Line; 5.7.3 Parallel Plate Line; 5.7.4 Circular Wire above a Ground Plane; 5.7.5 Microstrip Line; 5.7.6 Stripline; 5.7.7 Comments; 5.8 Transients on Transmission Lines; 5.8.1 Initial and Final (Steady State) Values; 5.8.2 Transient Values; 5.9 Measurements; 5.9.1 Slotted Line Measurements; 5.9.2 Network Analyzer Measurement; References; Problems; 6 Antennas and Radiation; 6.1 Introduction; 6.2 Potential Functions; 6.3 Radiation from a Short Current Element; 6.3.1 Complete Fields; 6.3.2 Near Zone and Far Zone Considerations
6.3.3 Near Zone and Far Zone Fields

Sommario/riassunto

Applied Electromagnetics and Electromagnetic Compatibility deals with Radio Frequency Interference (RFI), which is the reception of undesired radio signals originating from digital electronics and electronic equipment. With today's rapid development of radio communication, these undesired signals as well as signals due to natural phenomena such as lightning, sparking, and others are becoming increasingly important in the general area of Electro Magnetic Compatibility (EMC). EMC can be defined as the capability of some electronic equipment or system to be operated at desired levels of performan
