

基于传输矩阵的勒让德阻抗变换器设计方法

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摘要: 阻抗变换器是实现现代无线通信系统中宽带功率放大器设计的重要一环.提出了一种基于传输矩阵的勒让德阻抗变换器设计方法.该方法结合归一化的传输矩阵(A 参量矩阵)理论完成了勒让德阻抗变换器的公式推导和设计步骤.并结合 MATLAB, ADS(Advanced Design System)联合设计了阻抗变比为 4, 相对带宽高达 66.7% 的三阶勒让德阻抗变换器.该三阶勒让德阻抗变换器带内衰减量 L 小于 0.013 dB, 实际带宽为 2 GHz.

关键词: 勒让德, 多节阻抗变换器; 归一化传输矩阵

Design method of legendre impedance transformer

based on transmission matrix

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Abstract: An Impedance converter is an important part of the design of broadband power amplifiers in modern wireless communication systems. A design method of Legendre impedance transformer based on transmission matrix is proposed. This method combined with the normalized transfer matrix theory completes the formula derivation and design steps of the Legendre impedance transformer. Combined with MATLAB, ADS (Advanced Design System) jointly designed a three-order Legendre impedance transformer with an impedance ratio of 4 and a relative bandwidth of 66.7%. The third-order Legendre impedance converter has an in-band attenuation L of less than 0.013 dB and an actual bandwidth of 2 GHz.

Key words: Legendre; Multi-section impedance transformer; Normalized transfer matrix

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