

Suppress Spurious Emissions from Spiral Inductors by Inserting Frequency Selective Surfaces

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ABSTRACT

In this thesis, we propose inserting a band-stop frequency selective surface (FSS) into a planar spiral inductor to suppress its spurious emissions, which are especially serious when the spiral inductor has a wide impedance-matching band. The inserted FSS is designed to reduce this bandwidth without sacrificing the spiral inductor's electrical performance in its working band, such as self-resonant frequency (SRF), series inductance, and quality factor (Q factor). Also, we propose a new band-stop FSS. The new FSS shows good ability of reducing impedance-matching bandwidth and suppressing spurious emissions of the spiral inductor. In addition, there is no any negative influence on electrical performance of the spiral inductor. Based on the experimental results, the new FSS may also have the potential of enhancing the Q factor of the spiral inductor.

Keywords : spiral inductor ; frequency selective surface ; spurious emissions ; band-stop structure

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