

Design method for analog very high frequency filters using lumped elements

Keywords: analog filter, VHF, radio, anti-aliasing, parametric optimization.

Abstract

This thesis presents a method for the analog filter design in the very high frequency range using lumped non-tunable elements (inductors and capacitors) manufactured by the industry. It takes into account the parasitic parameters influence of the components, the deviation of the nominal values, and the topology of the printed circuit board. The method allows significantly improves the accuracy of simulation results in comparison with the results obtained by the widely used approximation method. In addition to the schematic circuit and nominal values of the components, output data contain part numbers with the tolerance on its nominal value, the topology and the parameters of the printed circuit board, S-parameters of the filter. The last chapter of the work contains examples of several filters that were designed by the proposed method, simulation results, and experimentally obtained characteristics.