

Accurate parameters extraction of complementary split-ring resonators and its applications for design

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ABSTRACT

This paper presents an accurate design technique for a low-pass filter with complementary split-ring resonators (CSRR). We extract the complementary split-ring resonators (CSRR) equivalent circuit component values for designing filter. The CSRR not only can significantly increase the characteristic impedance of microstrip line, but also improve stopband performance by rejecting the higher order passband. For increasing efficiency and reducing the area of circuits, we usually utilize the defected ground structure, but the conventional design did not consider the parasitic effect of stub at high frequency. The parasitic effect may result in significant frequency deviation. In order to improve the accuracy of the low pass filter design with CSRR, an equation to find the parasitic inductance is suggested. This inductance is used to modify the frequency deviation of low pass filter.

Keywords : complementary split-ring resonators (CSRR)、low pass filter、parasitic effect

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