This paper presents the extraction of component values for complementary split-ring resonators (CSRR) on ground plane. By using CSRR as a defected ground structure (DGS) of a microstrip line, all the component values are extracted by loss-pass filter formula. Base on a parallel LC circuit as equivalent model, the inductance and capacitance is extracted by anti-resonant frequency and 3dB bandwidth of a loss-pass filter (LPF). Parametric study and their related physical meanings are also presented. Finally, the results of $|S_{21}|$ are used to verify the equivalent circuit by comparing those results among measurement, full wave solver, and circuit solver.

Keywords: complementary split-ring resonators (CSRR), defected ground structure (DGS), loss-pass filter...