

Abstract

This project is to design a balanced antenna using cross-type frequency selective surface (FSS). First, design a balanced dipole antenna, which proposes antenna band must meet the bands of GSM (880MHz-960MHz) and WLAN (2.4GHz-2.483GHz/5.15GHz-5.85GHz), and add a FSS at the bottom, in order not to lose the original impedance matching and can effectively increase the gain as the purpose. Three simple steps are used to design the proposed antenna. First, adjust the size and position of the cross-type FSS on the FR4 substrate in order to optimize the antenna gain. Second, optimize the antenna gain by adjusting the location of the FSS. Third, changing the medium from free space to FR4 to make the propose antenna more useful. After the introducing of the FSS, the antenna gain has been improved from 4.14 to 9.1 dB at 5 GHz, 5.76 to 10.97 dB at 5.5 GHz, and 5.35 to 9.37 dB at 6 GHz.

Abstract

This project is to design a balanced dipole antenna using frequency selective surface (FSS), whose band must meet the requirement of the short-range wireless communications including the bands of 0.8 to 1 GHz, 2 to 3 GHz, and 5 to 6 GHz. The introducing of the FSS is to increase the antenna gain at specific frequencies. Three simple steps are used to design the proposed antenna. First, adjust the size of the original balanced dipole antenna to do impedance matching. Second, optimize the antenna gain by adjusting the location of the FSS. Third, changing the medium from free space to FR4 to make the propose antenna more useful. After the introducing of the FSS, the antenna gain has been improved from 4.14 to 8.7 dB at 5 GHz, 5.95 to 9.6 dB at 5.5 GHz, and 5.76 to 8.9 dB at 6 GHz.

Abstract

This project is to design a balanced dipole antenna using frequency selective surface (FSS), whose band must meet the requirement of the short-range wireless communications including the bands of 0.8GHz to 1 GHz, 2GHz to 3 GHz, and 5GHz to 6 GHz. The introducing of the FSS is to increase the antenna gain at specific frequencies. Three simple steps are used to design the proposed antenna. First, adjust the size of the original balanced dipole antenna to do impedance matching. Second, optimize the antenna gain by adjusting the location of the FSS. Third, changing the medium from free space to FR4 to make the propose antenna more useful. After the introducing of the FSS, the antenna gain has been improved from 4.14 dB to 8.8 dB at 5 GHz, 5.95 dB to 10.5 dB at 5.5 GHz, and 5.76 dB to 8.9 dB at 6 GHz.