Impact Analysis of the Metal Enclosure on RF Amplifier Circuit

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ABSTRACT

The advents of 3C products not only bring people more convenient life but also introduce complex electromagnetic (EM) noises. Electronic circuits not only introduce radiated interferences but they are also disturbed by the electromagnetic environment. Since interference may render electronic products malfunctioning and electronic devices should be designed not only to survival in noisy environment but also minimized interfering with the nearby devices. Analog circuits such as analog amplifier, signal transducer, and compensation circuit, are most sensitive to EM interferences. In order to reduce the influence of radiation interference, we shield the electronic products in metal box. This study will design a low noise amplifier and a power amplifier which can operate at 1GHz and 2GHz. Active components such as Infineon (Infineon Technologies AG) and Philips Company Secretary production transistors (BFP420) ,(BFG452W) ,(BFG21W) and high-frequency circuit design software (Advanced Design System 2004A) are needed in the design of the circuits. Impedance matching is facilitated using surface-mount device (SMD) lump elements. All circuits are implemented on FR4 printed circuit boards. The fabricated circuits were put into metallic boxes, whose effects on the circuit performance were analyzed and studied.

Keywords : Shield ; Low Noise Amplifier ; Power Amplifier ; Surface Mounted Device

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