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Author Chi-Huang Lin
Author's Email Address No Public.
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Abstract
The purpose of this study is focused on the active antenna with miniaturization. In recent years, the technology of MIC&MMIC have been advanced, the products of wireless communication are gradually miniaturize as well. Due to those are requested to be as small as possible in nowadays, the antenna which is conformed this condition will have wide application in the future. Furthermore, the dimension of the antenna is confined by the different requirement of the products whose dimension and operation frequency. Therefore, it is a factor deserved to discuss how to display the highest efficiency at the least dimension of antenna.
In this research, we use an active antenna that combines microstrip antenna (MSA) with oscillator on the same substrate. As a result of it is made out of one-piece substrate, which can greatly reduce the loss of transmission line. First, in terms of the need of the operation frequency, we can calculate the dimension of MSA and the specification for the oscillating circuit by circuit theory. Moreover, we use the simulation software (Serenade) to prove its accuracy. The active antenna is constructed by using the process of manufacturing for printed circuit board (PCB). Then , we measured its characteristics at the chamber.
In addition, we aimed at the active antenna with miniaturization by transforming the configuration of oscillating circuit to reduce the area of the active antenna substantially. Finally, we made the two-sided compact active antenna with coplanar waveguide (CPW), so that the antenna is just completed by using the area of the active antenna and the radiation power is not decreased.
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