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Abstract
Aluminum Oxide (Al2O3) is used as the antenna substrates of the microwave devices in this research, and which exhibits the microwave dielectric characteristics of dielectric constant r = 9.8, quality value Q × f = 300000 GHz. Comparing to the microwave devices which used the FR4 substrate in the past, the dielectric constant and quality factor of Al2O3 are better than FR4 substrate. Therefore, it is suitable for the application of microwave devices and reveals better microwave characteristics.
In this study, we are trying to fabricate a microwave patch antenna with simple morphology and high –10 dB bandwidth on a microwave dielectric resonator. The microwave dielectric of Al2O3 with r = 9.8 is used as the substrate. One side of the Al2O3 substrate is used as ground panel, and that can be achieved by the mask of Au or Ag. The patch side has a 50 microstrip line and a square patch, which will radiate the signal, the microwave simulation software of HFSS is used to proceed the simulation process. We find that the resonant frequency and the –10 dB bandwidth can be controlled by the feeding depth of microstrip line and the length of stub.
Advisory Committee Cheng-Fu Yang - advisor

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