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Half Mode Substrate Integrated Wave Guide of Band Pass Filter Based to Defected Ground Structure Cells

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Abstract : The Half mode SIW filter is treated by two softwares (HFSS (High Frequency Structure Simulator) and CST (Computer Simulation Technology)). The filter HMSIW has a very simple structure and a very compact size. The simulated results by CST are presented and compared with the results simulated by a high-frequency structure simulator. Good agreement between the simulated CST and simulated results by HFSS is observed. By cascading two of them according to design requirement, a X-band bandpass filter is designed and simulated to meet compact size, low insertion loss, good return loss as well as second harmonic suppression. As an example, we designed the proposed HMSIW filter at X band by HFSS. The filter has a pass-band from 7.3 GHz to 9.8 GHz, and its relative operating fraction bandwidth is 29.5 %. There are one transmission zeros are located at 14.4 GHz.

Keywords : substrate integrated waveguide, filter, HMSIW, defected ground structures (DGS), simulation BPF
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