Abstracts

A simplified analysis for high power microwave bandpass filter structures

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A method for computing the peak resonator voltages inside a bandpass filter and multiplexer is introduced based on the general cross-coupled lumped element prototype network of a filter. In this method, the resonator voltages are computed based on the circuit model and are shown to be related to the peak filter cavity voltages through an appropriate scale factor. Being circuit theoretical the method is simple and is considerably faster than techniques based on rigorous field theoretic tools. The proposed method is verified using direct calculation of voltages by commercial FEM software. This voltage estimation procedure would considerably simplify multipaction and power handling studies of critical filter based structures.

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