

# Abstracts

## A simplified normalization FDTD formula and its application to VIP combine bandpass filters

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C.-D. Zhao. "A simplified normalization FDTD formula and its application to VIP combine bandpass filters." 1998 *Microwave and Guided Wave Letters* 8.3 (Mar. 1998 [MGWL]): 118-120.

In this work new studies on the normalized finite-difference time-domain (FDTD) formula show that its time-domain iteration is done with an expanded dimension. A simple formula is derived to show the resulting variations in the frequency domain. A practical application to the vertical installed planar (VIP) BPF is given, a novel improvement to which includes applying planar fins and fine through-holes to reduce the requirement on an ideal ground circuit. The excellent properties of the modified combine BPF have been shown by the FDTD design as well as the measured ones.

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