Abstracts

New microstrip "Wiggly-Line" filters with spurious passband suppression

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In this paper, we present a new parallel-coupled-line microstrip bandpass filter with suppressed spurious passband. Using a continuous perturbation of the width of the coupled lines following a sinusoidal law, the wave impedance is modulated so that the harmonic passband of the filter is rejected while the desired passband response is maintained virtually unaltered. This strip-width perturbation does not require the filter parameters to be recalculated and, this way, the classical design methodology for coupled-line microstrip filters can still be used. At the same time, the fabrication of the resulting filter layout does not involve more difficulties than those for typical coupled-line microstrip filters. To test this novel technique, 3rd-order Butterworth bandpass filters have been designed at 2.5 GHz, with a 10% fractional bandwidth and different values of the perturbation amplitude. It is shown that for a 47.5 % sinusoidal variation of the nominal strip width, a harmonic rejection of more than 40 dB is achieved in measurement while the passband at 2.5 GHz is almost unaltered.

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