

# Abstracts

## Formulas Useful for the Synthesis and Optimization of General, Uniform Contradirectional Couplers

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*F. Sellberg. "Formulas Useful for the Synthesis and Optimization of General, Uniform Contradirectional Couplers." 1990 Transactions on Microwave Theory and Techniques 38.8 (Aug. 1990 [T-MTT]): 1000-1010.*

Explicit formulas that allow the synthesis and optimization of general, uniform contradirectional couplers are derived. The well-known method of compensating for different phase velocities of the coupler modes with shunting capacitors is also mathematically formulated in a stringent form, so that a lossless coupler of the general class mentioned above can be made ideal at any chosen frequency. Only specialized cases have been treated in closed mathematical form previously. Finally, compensated and uncompensated microstrip coupler designs are compared under the influence of realistic losses. It is shown that a considerably better directivity is attainable with capacitive compensation, even over a frequency range as large as one octave. The value of the formulas is confirmed by application to previously published experimental results.

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