# Abstracts

## Some General Properties of Commensurate-Linelength Complementary and Pseudo-Complementary Microwave Filters (Correspondence)

A perfect match at the common port of a diplexer requires the component filters to be complementary.  Pseudo-complementary filters provide increased selectivity in comparison with complementary filters for a given number of sections by allowing a relatively small (and closely controlled) input-port mismatch. Design techniques for specific contiguous band multiplexer incorporating complementary or pseudo-complementary filters have been described in detail in recent publications.  These design techniques, however, have been restrictive in the physical form that could be utilized in realizing the component filters, and somewhat vague in predicting the performance that would be achieved in the general case.  The purpose of this correspondence is to present some general design techniques and specific theoretical results applicable to complementary and pseudo-complementary microwave filters.  The results to be presented apply to filters of arbitrary bandwidth that utilize any desired combination of LC ladder elements (designated m type) and unit elements (designated n type).  The techniques described are applicable to interdigital, parallel-coupled, general stub type, and many other related filter forms and are simply expendable to elliptic function type filters.  Although no optimum criteria for pseudo-complementary filters have been formulated, a nearly equal-ripple input VSWR characteristic has been obtained from analysis of many filters designed using the techniques to be described.  Because of these results, it is felt that the procedures described do result in near optimum performance.

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