A Design Procedure for Bandpass Channel Multiplexers Connected at a Common Junction

A new general design procedure is presented for multiplexers having any number of Chebyshev channel filters, with arbitrary degrees, bandwidths, and interchannel spacings. The design procedure is developed for bandpass channel filters connected in series at a common junction for narrow-band applications. Commencing with the closed-form expressions for element values in Chebyshev filters, the multiplexer design process modifies all of the elements in each channel filter and preserves a match at the two points of perfect transmission closest to the band edges of each channel filter, while taking into account the frequency dependence across each channel. Examples of several multiplexer are given indicating that the design process is valid for most combinations of contiguous and noncontiguous channels.

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