A NEW SHARPENED CASCADED COMB−COSINE DECIMATION FILTER (WedAmOR7)

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Abstract :

This paper presents a new multistage comb−cosine decimation filter with the improved magnitude response. The proposed structure consists of a comb section followed by different cascaded comb and cosine prefilter sections, each down−sampled by a specific down−sampling factor. The number of sections depends on the decimation factor of the original comb decimator, and the number of cascaded filters can be different for different stages. The first section is realized in a non−recursive form. Using the polyphase decomposition, the subfilters of the first section can be operated at the lower rate. The magnitude response is improved by using cosine prefilters which can also be moved to a lower rate. The sharpening technique is applied to all but the first comb section. The resulting structure is multiplier−free, does not have any filtering at the high input rate, and the magnitude response has a low passband droop and high stopband attenuation.

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