JOINT OVERSAMPLING FDM DEMULTIPLEXING AND PERFECTLY RECONSTRUCTING SBC FILTER BANK FOR TWO CHANNELS (WedAmPO2)

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Abstract :

Within modern satellite communication scenarios, different users demand different bandwidths. Hence, digital processors should allow for flexible processing of FDM−signals for meeting these requirements. In that scope, two mutually exclusive processor tasks are distinguished: i) mere demultiplexing of independent FDM−signals and ii) demultiplexing of wideband channel signals with subsequent perfect reconstruction. In this paper, we present a matrix description of the well−known FDMUX filter bank [1] for two channels based on directional filter cells with reduced computational burden. Furthermore, we extend the improved approach to a novel joint SBC−FDFMUX filter bank structure, which combines both demanded tasks without extra computation compared to [1].

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