ANALOG SIGNAL PROCESSING USING SURFACE WAVE AND CHARGE TRANSFER DEVICES

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Abstract

Two viable component technologies currently exist for implementing analog signal processing at VHF and UHF, namely, surface wave devices (SWD's) and charge transfer devices (CTD's). A review of each technology will be given along with relevant advantages, disadvantages, and ranges of important operating parameters for each. Under SWD's, primary emphasis will be given to the practical surface wave filters as well as to monolithic programmable matched filters using MOSFET detectors for surface wave taps on a silicon substrate, and the selectable bandpass filter in which programmable techniques are employed to obtain variable bandwidth and variable center frequency surface wave bandpass filters. The discussion of CTD's will include both charge coupled devices and bucket brigade devices (BBD's). Applications will be discussed for variable frequency bandpass filters, programmable matched filters, and variable tap weight transversal filters for adaptive filtering such as telephone channel equalization. A comparison of the present and projected advantages and also limitations of these two technologies will be discussed.