A CMOS Channel-Select Tunable Filter For 3G Wireless Receivers

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Summary

A new approach for designing digitally programmable CMOS integrated baseband filters is presented. It utilizes digitally controlled current followers and R-2R ladders to provide precise frequency characteristics that can be tuned over a wide range without components spreading. A 6-order Butterworth lowpass filter is designed for implementing the baseband channel select filter in an integrated multi-standard CMOS wireless receiver. Experimental results obtained from a 0.6/spl mu/m chip show a programmable frequency response accommodating PDC, IS-54, GSM, IS-95 and WCDMA wireless standards. The proposed filter design achieves dynamic ranges of 90dB for PDC (IS-54), 89dB for GSM, 84dB for IS-95 and 80dB for WCDMA.