

Abstract: A new approach for designing digitally programmable CMOS integrated baseband filters is presented. The proposed technique provides a systematic method for designing filters exhibiting high linearity and low power. A sixth-order Butterworth low-pass filter with 14-bit bandwidth tuning range is designed for implementing the baseband channel-select filter in an integrated multistandard wireless receiver. The filter consumes a current of 2.25 mA from a 2.7-V supply and occupies an area of 1.25 mm² in a 0.5- μ m chip. The proposed filter design achieves high spurious free dynamic ranges (SFDRs) of 92 dB for PDC (IS-54), 89 dB for GSM, 84 dB for IS-95, and 80 dB for WCDMA.