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Abstract:

The authors outline the advantages of building a mobile radio receiver using a direct downconversion architecture rather than the conventional heterodyne approach. Design problems particular to mobile radio direct-conversion receivers, such as achieving good sensitivity and dynamic range, are discussed and solutions proposed. The integrated approach taken to the design of the RF mixers, the subsequent low-frequency amplifier, and active filter is detailed. This allows low conversion loss and high output impedance mixers to be designed, amplifiers with low noise performance over the DC to BW/sub RF//2 bandwidth to be constructed, and filters that set selectivity without impacting the signal-to-noise ratio at their output to be specified. Design advantages that are a direct consequence of this choice of receiver architecture, such as high selectivity, small size, and lower power consumption, are detailed. Finally, the authors describe the receiver implementation and characterize its performance.< >

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