

Abstract: A CMOS low-power baseband analog front end (BAFE) for an integrated bluetooth receiver is presented. The BAFE is designed using a new fully differential buffer (FDB) circuit that can effectively implement filters with gain/filtering interleaved operations. The BAFE utilizes five FDB circuits to implement a sixth-order low noise high linear prefilter, a sixth-order MOS-C tunable filter and a-variable gain amplifier (VGA). The distribution of gain and filtering between the various blocks simplifies the design of the VGA stages and allows a good compromise between the input referred noise and the overall linearity. The analog front end is fabricated using a regular 1.2- μm CMOS process and occupies an area,of 1.7 mm x 1.7 mm. Measurements results indicate that-the total standby current consumption is less than 2.4 mA while providing a gain control range from 12-30 dB in 6-dB step. The input referred noise is less than 42 nV/rootHz and the out-of-band IIP3 of more than 12 dBm.