

A SiGe Low Power RF Front-End Receiver for 5.8GHz Wireless Biomedical Application

Authors : Hyunwon Moon

Abstract : It is necessary to realize new biomedical wireless communication systems which send the signals collected from various bio sensors located at human body in order to monitor our health. Also, it should seamlessly connect to the existing wireless communication systems. A 5.8 GHz ISM band low power RF front-end receiver for a biomedical wireless communication system is implemented using a 0.5 μm SiGe BiCMOS process. To achieve low power RF front-end, the current optimization technique for selecting device size is utilized. The implemented low noise amplifier (LNA) shows a power gain of 9.8 dB, a noise figure (NF) of below 1.75 dB, and an IIP3 of higher than 7.5 dBm while current consumption is only 6 mA at supply voltage of 2.5 V. Also, the performance of a down-conversion mixer is measured as a conversion gain of 11 dB and SSB NF of 10 dB.

Keywords : biomedical, LNA, mixer, receiver, RF front-end, SiGe

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