

Abstract

A new *concurrent* dual-band receiver architecture is introduced that is capable of *simultaneous* operation at two different frequency bands. The concurrent operation results in higher bandwidth, lower total power and most robustness. The architecture uses a novel *concurrent* dual-band LNA, combined with an elaborate frequency conversion scheme to reject the image bands. A general methodology for the design of concurrent LNAs is provided to achieve simultaneous narrow-band gain and matching at multiple frequencies. The methodology is demonstrated by a dual-band concurrent LNA using $0.35\mu\text{m}$ CMOS transistors. The LNA provides narrow-band gain and matching at 2.45GHz and 5.25GHz bands, simultaneously. It drains 4mA of current and achieves voltage gains of 14dB and 15.5dB, input return losses of 25dB and 15dB, and noise figures of 2.3dB and 4.5dB at these two bands, respectively.