Low power modulator for the application of capsule endoscope

ABSTRACT

This paper presents the radio frequency (RF) modulator for high data rate medical imaging for capsule endoscope. The RF modulator consists of a mixer and a ring oscillator. The ring oscillator provides carrier frequency of 433MHz and mix with the mixer to produce modulated signal. The modulator is designed using Silterra 0.13εm CMOS process. For supply voltage of 1.2 V, data rate of 3.5Mbps the mixer has current consumption of 594εA, IIP3 of 2dBm and at output power of -14.6 dBm. The ring oscillator consumes 740εA with phase noise of -81 dBc/Hz @ 160kHz offset.

Keyword: Mixer; Modulator; Low power; Capsule endoscope