

Abstract

A NEW WIDEBAND MONOLITHIC TUNABLE HIGH-Q NOTCH FILTER FOR IMAGE REJECTION IN RF APPLICATION

A notch filter with a high Q factor, which is integrated with a first and a second cascoded LNA, is totally contained on an integrated chip. The notch filter, comprising two Q-enhancement circuits, is coupled to the second differential LNA. The two Q-enhancement circuits are combined to generate sufficient negative impedance to compensate for the loss in the on-chip low Q inductors. To improve the image rejection of the notch filter in a wide frequency band, the notch filter uses an automatic current tuning circuit which consists of an analog multiplier and fixed and voltage controlled current sources. Furthermore, by modifying the connection and location of the tunable varactor, another wideband tunable notch filter is implemented. The notch filter can be applied in all current wireless receiver systems.

Fig. 2a