A 380-MHz CMOS Linear-in-dB Signal-summing Variable Gain Amplifier with Gain Compensation Techniques for CDMA Systems

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Abstract

A linear-in-dB signal-summing VGA is fabricated in 0.25 μm CMOS technology. Two gain compensation techniques are proposed in order to compensate the gain deviations due to a MOSFET characteristic which has a square-law characteristic or a exponential-law characteristic determined by its current density. Temperature compensation techniques are also proposed. A gain range of 80 dB, a gain-error of within $\pm$3 dB, an NF of 11 dB were obtained at 380 MHz by measurement.