

A 0.7V-to-1.0V 10.1 dBm-to-13.2 dBm 60-GHz Power Amplifier Using Digitally-Assisted LDO Considering HCI Issues

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A 60-GHz power amplifier (PA) with consideration of hot-carrier-induced (HCI) degradation is presented [1]. The supply voltage of the last stage of the PA (VPA) is dynamically controlled by an on-chip digitally-assisted low drop-out voltage regulator (LDO) to alleviate HCI effects. The PA is fabricated in a standard 65-nm CMOS process with a core area of 0.21mm², which provides a saturation power of 10.1 dBm to 13.2 dBm with a peak power-added efficiency (PAE) of 8.1% to 15.0% for VPA varying from 0.7 V to 1.0 V at 60 GHz, respectively.

[1] Rui Wu, Yuuki Tsukui, Ryo Minami, Kenichi Okada, and Akira Matsuzawa, "A 0.7V-to-1.0V 10.1 dBm-to-13.2 dBm 60-GHz Power Amplifier Using Digitally-Assisted LDO Considering HCI Issues," A-SSCC, Nov. 2012.

