Design of Two-stage Fully-integrated CMOS Power Amplifier for K-band Applications

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***Abstract*—This paper presents a K-band power amplifier integrated circuit using Samsung 65 nm CMOS process. The power amplifier adopts two-stage configuration for high power gain. The input, output, and inter-stage transformers are integrated. By neutralizing gate-drain capacitance using cross-coupled capacitors, the power gain and stability were improved. Its chip size is 0.78 x 0.62 mm2. The implemented two-stage power amplifier showed a power gain of 19.6 dB, a saturated output power of 13.5 dBm, and an efficiency of 7.19 % with a supply voltage of 1.1 V at the frequency band of 24 GHz**

***(Pt9)Keyword*—Differential power amplifier, integrated circuit, CMOS power amplifier, K-band, Cross-coupled capacitor (CCC)**

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