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اتاق مجازی ۱

A 28GHz Harmonic Injection Doherty Power Amplifier

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In this paper a 28 GHz fully on chip Doherty power amplifier with harmonic injection is presented in 65 nm CMOS technology. In order to improve the linearity, two injection amplifier stages biased in class C are used. In this method, injection of the second harmonic compensates the gain compression phenomena, and improves the output P_{1dB} and PAE at P_{1dB} by more than 6.1dB and 9 %, respectively. Post-Layout EM (electromagnetic) simulation of PA illustrates maximum PAE of 19.6%, PAE of 14% at 6dB back-off, 6 dB gain, and 19 dBm saturated output power. The layout area is 0.445 mm².

A ka-band Power Amplifier with Linearization Technique in 0.18- μ m CMOS Process

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This paper presents a class AB power amplifier (PA) with a pre-distortion linearizer for 28GHz mobile communications in TSMC 0.18- μ m CMOS technology. To achieve a high linear output, a parasitic diode at the common source (CS) input is employed to reduce the variation of the input capacitance and improve the Pout characteristic. The simulation results show that the proposed PA consumes 163.36 mW, and the power gain (S₂₁) of 18 dB is achieved at 28 GHz. The PA achieves saturated power (P_{sat}) of 17.62 dBm and maximum PAE of about 21% with an output 1-dB compression point (OP_{1dB}) of 16.21 dBm. By pre-distortion linearization, the output power at the 1dB compression point is increased by 3.55dB, with an efficient gain compensation performance .

<p style="text-align: center;">Design of a 3-state Unit Cell for DMTL Phase Shifters</p> <p style="text-align: center;">سید مجید تیموری ، سید مهدی میر ابراهیمی، مسعود دوستی دانشگاه آزاد اسلامی واحد فیروزکوه</p> <p>A novel 3-state unit cell for distributed MEMS transmission line (DMTL) phase shifters is designed and simulated in this paper. The proposed structure consists of a coplanar waveguide transmission line, a MEMS and two-pair metal-air-metal bridges. The bridges are actuated respectively in three different modes which produce three different phase shifts. The structure is simulated using HFSS software. Based on the simulation results, the return loss in all 3 states is better than -10dB and the phase shift is in good agreement with ideal values. The designed unit cell is very suitable for 5-bit and 6-bit DMTL phase shifters.</p>	<p style="text-align: center;">سید مجید تیموری</p>
<p style="text-align: center;">Design of a Tunable Wideband Differential Amplifier Based on RF-MEMS Switches</p> <p style="text-align: center;">فاضل زیرک ساز، علی رضاحسن زاده دانشگاه شهید بهشتی</p> <p>This paper presents a reconfigurable differential amplifier for 26GHz and 28GHz frequencies. This research uses the RF-MEMS switches to adjust different frequencies. The proposed structure is capable of achieving an output power of 22dBm and about 2.9V output swing. Simulation results of the proposed Tunable Wideband Differential Amplifier (TWDA) in 180 nm TSMC-CMOS technology shows the attenuation of the second to fifth harmonics between -20.7dBm and -43.75dBm for the frequency of 26GHz, and between -21.11dBm and -46.96dBm for the frequency of 28GHz, which indicates the appropriate linearity of the structure. Electrical and mechanical simulations in the Advance Design System (ADS) and COMSOL simulation software indicate the proposed structure's ability to adjust different frequencies for TWDA using RF-MEMS switches.</p>	<p style="text-align: center;">فاضل زیرک ساز</p>
<p style="text-align: center;">A High-Performance CMOS Hybrid Envelope Tracking Power Amplifier Paper for Wideband High PAPR Applications</p> <p style="text-align: center;">مهرداد کریمی، مهدی احسانیان دانشگاه خواجه نصیرالدین طوسی</p> <p>A high-performance CMOS hybrid Envelope Tracking circuit is designed to improve the average efficiency and linearity of an RF power amplifier driven</p>	<p style="text-align: center;">مهرداد کریمی</p>

by high PAPR signals. A class AB PA at 0.9 GHz and a dynamic power supply for variable envelope signals are designed and simulated with 180nm CMOS technology with 3.3V supply voltage. The dynamic power supply is a hybrid parallel structure that a switching class D amplifier supplies most of the required current and a class AB linear amplifier covers high bandwidth requirements and also eliminates output ripples of the switching amplifier. The Efficiency of the envelope modulator for 20 MHz LTE signal with 6 dB PAPR at 24 dBm output power is 65%. The average efficiency of proposed ET PA compared with fixed supply class AB PA for 20 MHz LTE signal at 6dB back-off power is increased from 19% to 37%. By prevention of falling the supply voltage below 1V, the EVM of ETPA is decreased from 12% to 7%.

Design of high linear CMOS Mixer for 5G Applications

Mohammad Mohammadi, Mostafa Yargholi

In this paper we are going to design an ultra-wide band mixer for 5G applications. In this paper we have designed a 5G mixer that it has a noise figure (NF) between 10- 11dB and a gain of 15-17 dB in the operating frequency of 30 GHz. In this paper the proposed mixer is designed in TSMC 180nm. has a reversed Isolation of -47 dB in this frequency and it has a OP1dB of 30 dBm in the RF port of 20dBm. The IP3 of the proposed mixer is about 60dBm. The techniques that we have used for designing the proposed mixer is the current mirror PMOS transistors to enhance the gain and the inductive degeneration in RF transistors to increase the linearity.

محمد محمدی