Abstracts

A low phase noise silicon 9 GHz VCO and an 18 GHz push-push oscillator

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The design and measurement of a Voltage Controlled Oscillator (VCO) at 9 GHz and a push-push oscillator at 18 GHz are described in this paper. Both oscillators use a packaged silicon transistor (Siemens BFP 540 F). The microstrip resonator is tuned with a GaAs varactor diode (M/A-COM ML46580). A 270 MHz tuning range is obtained with an output power varying from 3.2 to 8.7 dBm. The phase noise is below -109 dBc/Hz at 100 kHz offset and below -129 dBc/Hz at 1 MHz over the whole tuning bandwidth. The push-push oscillator shows a phase noise of -108 dBc/Hz at 100 kHz and below -124 dBc/Hz at 1 MHz from the carrier. These are, to our knowledge, one of the best phase noise from a silicon fixed or voltage-controlled oscillators using a packaged device at X to K-band frequencies.

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