# A dual-mode mm-wave injection-locked frequency divider with greater than 18% locking range in 65nm CMOS

## WE3E: Frequency Conversion and Control Component IC's

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Time 13:20 - 14:40

Room: 207D

**Chair:** Brad Nelson, RFMD

**Co-Chair:** Bert Henderson, *Cobham Sensor Systems*

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**WE3E-2** **1:40 PM**

### A Dual-Mode mm-Wave Injection-Locked Frequency Divider with Greater than 18% Locking Range in 65nm CMOS

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A dual-mode mm-wave injection locked frequency divider operating at 39.5 and 59.5 GHz is presented. Achieving a locking range of 18% and 20% in divide-by-2 and 3 modes, it consumes 4 mW from a 0.8 V supply. Implemented in a bulk CMOS 65nm technology, it occupies a core area of 0.03mm$^2$. The dual-mode operation is enabled by differential direct injection and Miller capacitance de-tuning. Two new figure-of-merits for proper comparison of ILFDs are also presented.