



24 GHz UWB,  
Direct Up & Down conversion in  
CMOS

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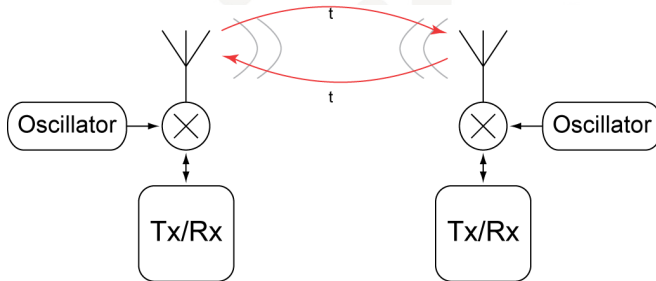
## My project, MixPos

- ▶ 4 years(Jan 2010 Jan 2014),IFI, Novelda, RCN
- ▶ >20 GHz UWB
- ▶ Front end components for Up & Down conversion

## Applications for $> 20$ GHz UWB

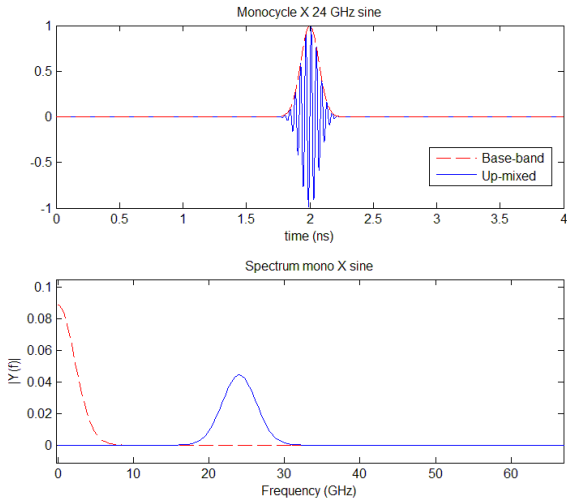
- ▶ 24 GHz SRR automotive radar (Monolithic CMOS  $\rightarrow$  reduce cost)
- ▶ WSN, Impulse radio and positioning systems (Small antenna size)

# Basic idea

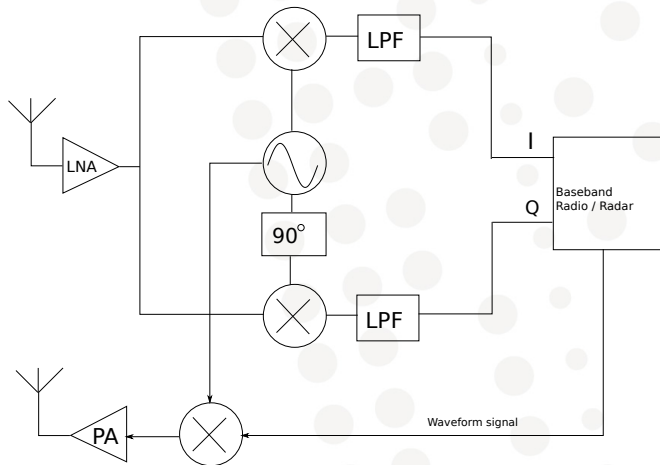


Figur: Basic system schematic

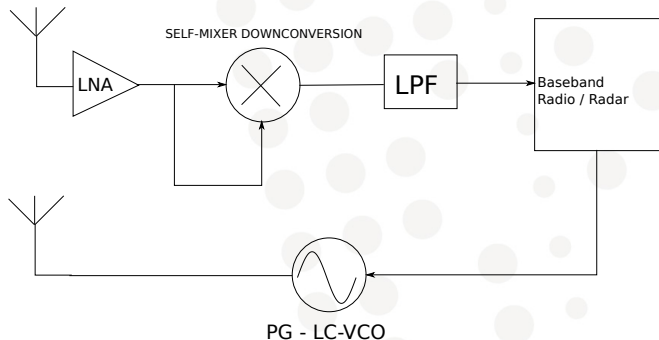
# Basic idea II



# Approach 1, I-Q sum



## Approach 2, Self-mixing



Figur: Self mixer front end

- ▶ Comments?
- ▶ Questions?

Thank you!