Software defined antenna for next generation wireless systems
(in collaboration with Prof. GP Li and Prof. Mark Bachman)

Low cost & Light weight
High performance
Scalable
Fully CMOS RFID passive tag and RF reader front end, for tracking and biomedical applications

- Fully functional for \( d \leq 5 \text{mm} \)
- Standard CMOS process
- Secure Link

**On-Chip Tag's Coil**

- \( L = 56.6 \text{nH} \)
- \( Q = 4.9 \)

**Fabricated Test Chip:**

- Width: 910 \( \mu \text{m} \)
- Height: 720 \( \mu \text{m} \)

**Generated dc voltage in the tag**

- Output dc Voltage (V)
- Reader-to-Tag Distance (mm)
- Resistances: 10MΩ, 1MΩ, 500KΩ, 200KΩ, 100KΩ
High Gain Leaky Wave antenna for 60 GHz and above
(In collaboration with Prof. Capolino)

The bandwidth must be increased using multiple cavity, or tunable elements within the cavity.