28 GHz Upconversion Mixer
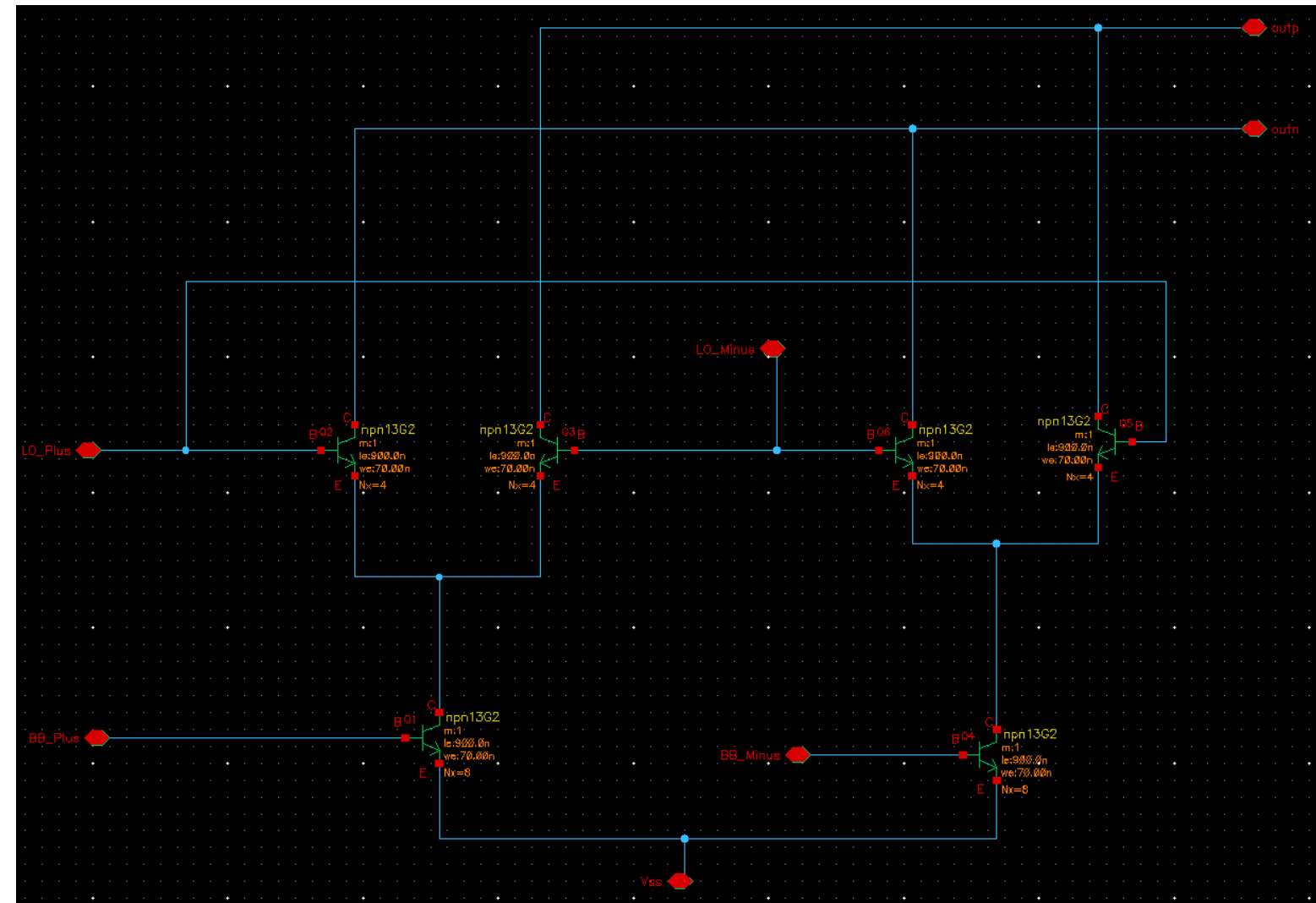
Martin Rellmann

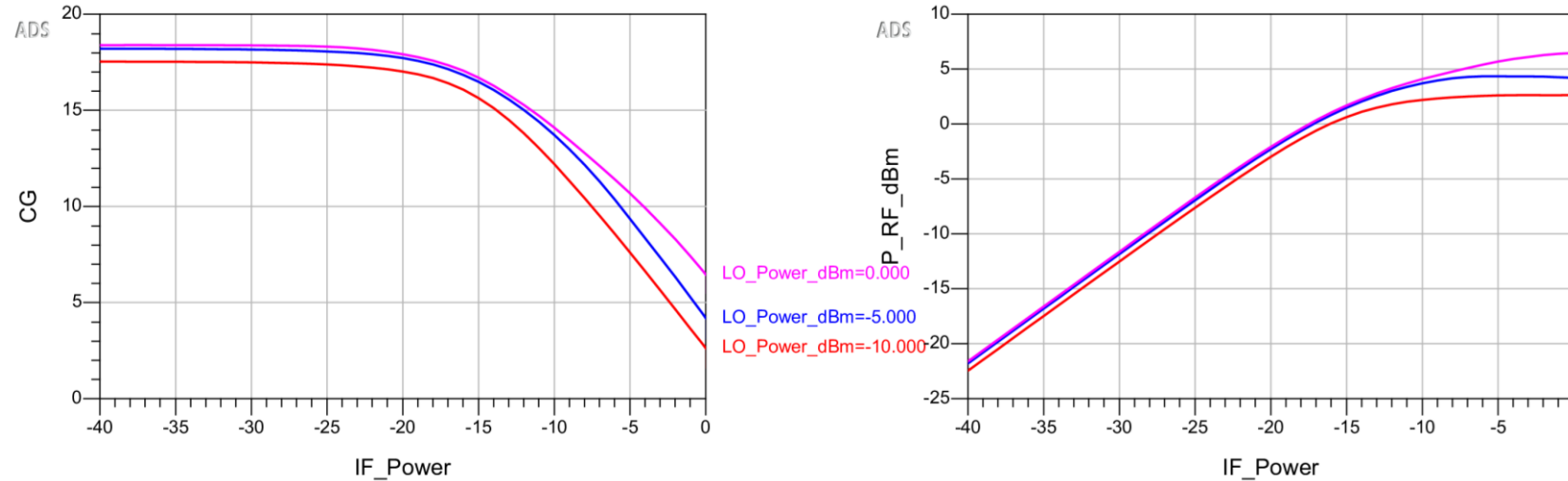# Content

- Schematic
- Simulation Results
- Layout

May 14, 2024

Institute of Radio Frequency Engineering
and Electronics

Schematic

- **Design Goals**
  - Conversion Gain: 10 dB or more
  - Saturation Power: 0 dBm or more

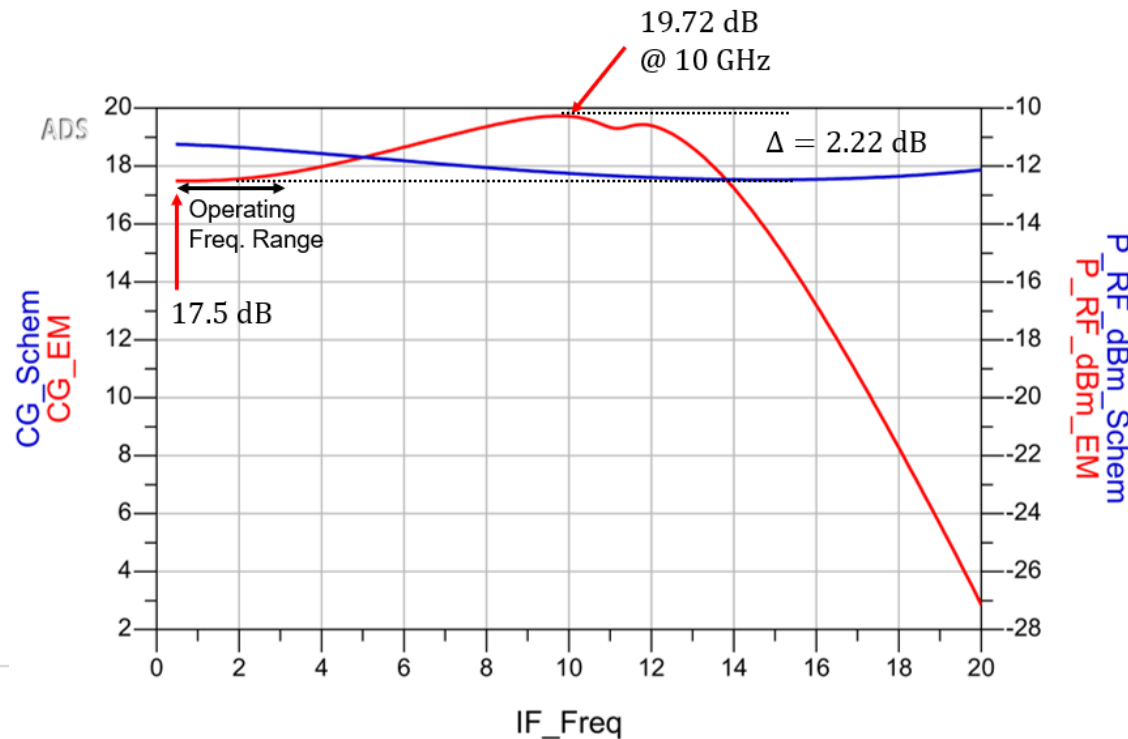Institute of Radio Frequency Engineering and Electronics
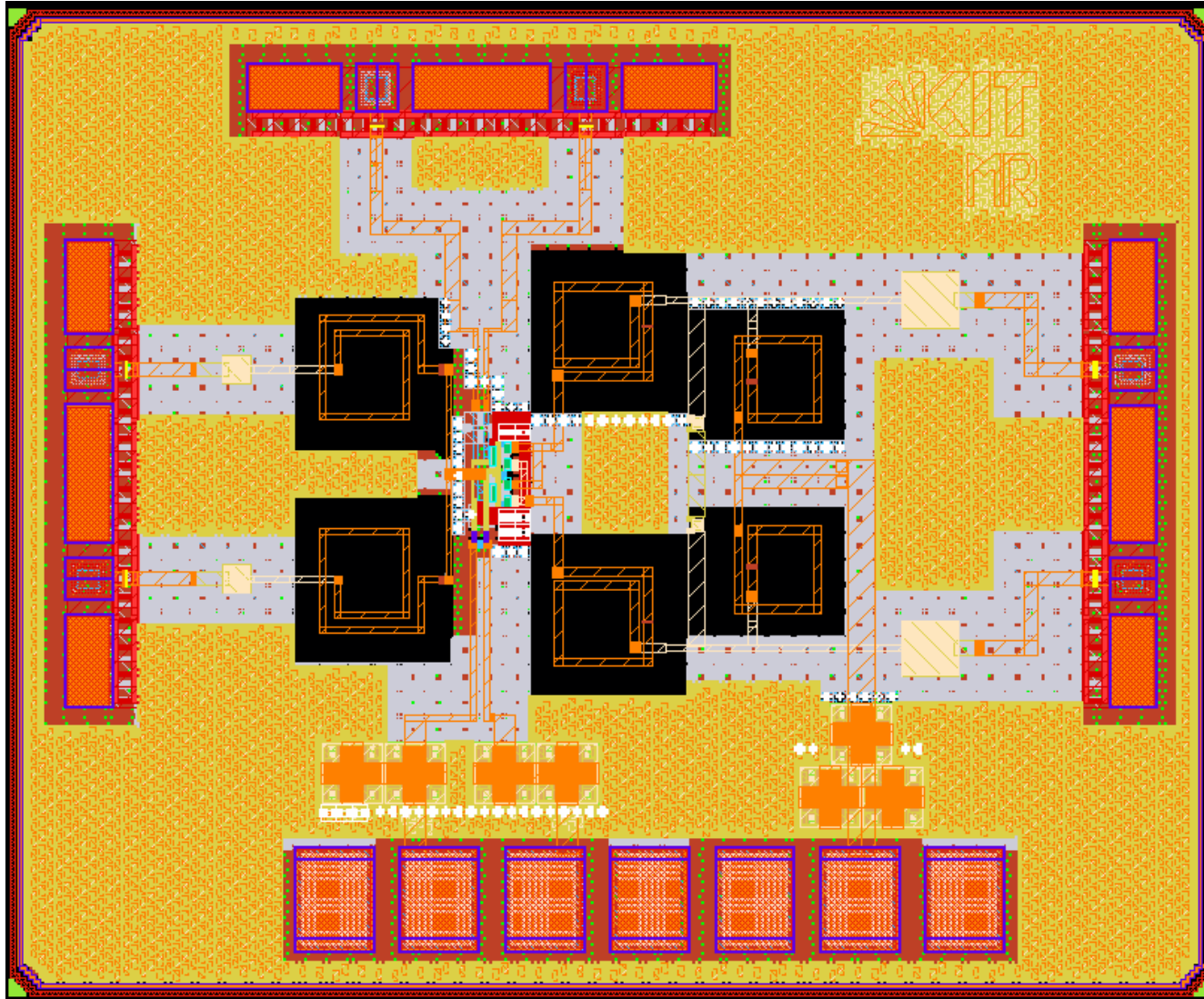
Simulation Results

CG vs IF Power

- IF: 1 GHz
- LO: 28 GHz; -10, -5, 0 dBm

CG vs Frequency

- IF: -30 dBm
- LO: 28 GHz, -10 dBm
  Blue: Schematic simulation,
  Red: EM simulation of layout

Layout

- Total chip size:1040x845 µm^2
- Mixer size: 800x500 µm^2

Institute of Radio Frequency Engineering
and Electronics