TECHNISCHE UNIVERSITÄT WIEN
Vienna University of Technology

Microwave Engineering Group

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Microwave Engineering Group

About myself and the Microwave Engineering Group

- **ABOUT MYSELF…**
  - Dipl.-Ing. and Dr.techn. degree from Vienna University of Technology
  - RF- and signal processing background
  - Main research areas:
    - High efficiency, high linearity RF power amplifiers
    - Load/Source-Pull Measurement Systems

- **…ABOUT MY GROUP…**
  - Group size: 11 people (~7.5 full-time equivalent)
  - Staff is paid by: ~20:80 (TU Vienna : third-party funds)
  - Projects: 9 active (EUR 1,170k), 2 in application phase
  - Students: 6 active Diploma Students, 2 active Ph.D. Students

- **…ABOUT ONGOING RESEARCH PROJECTS**
  - PWM-based transmitter for green base-station
  - X-Band Micrwoave based 3D Grain angle measurement in Timber
  - Quality Control of high speed LVDS-Links
  - Improvements to Backscatter Modulation Systems
  - Capacitive Near Field Communication for Access Control Systems
  - Scanning Microwave Microscopy Probe-Tip EM-Simulation and Verification
  - High linearity radio system for next generation digital airborne communication

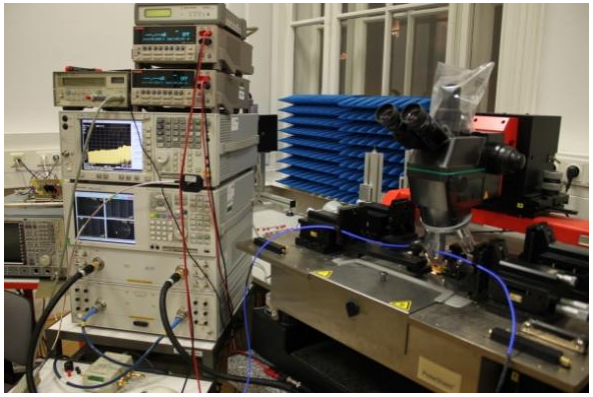
- **GROUP GENERAL RESEARCH INTERESTS**
  - High Efficiency and High Linearity RF Power Amplifiers
    - Switched Mode Operation, Harmonic Controlled Amplifiers
    - Linearization and Modeling (Feedforward, Predistortion, …)
  - Advanced Topics in Load Pull Characterization
    - Broadband Active Loads, Active PWM-loads
    - Full IF Calibration
    - LSNA- Large Signal Analyzer
  - RFID-Systems: UHF and DSRC (Channel Emulation, Localization, Advanced Readers)
  - X-Band (12 GHz) Material Characterization
  - 2.5D(stacked 2D) and full 3D electromagnetic field simulation
  - Scanning microwave microscopy
  - Microwave System Design (X-Band, 5.8 GHz DSRC, 868/915 MHz RFID)
  - High Reliability Airborne Digital Radio Communication Systems

<u>Upcoming topics:</u>

- Antenna design and measurement
- Microwave Sensors

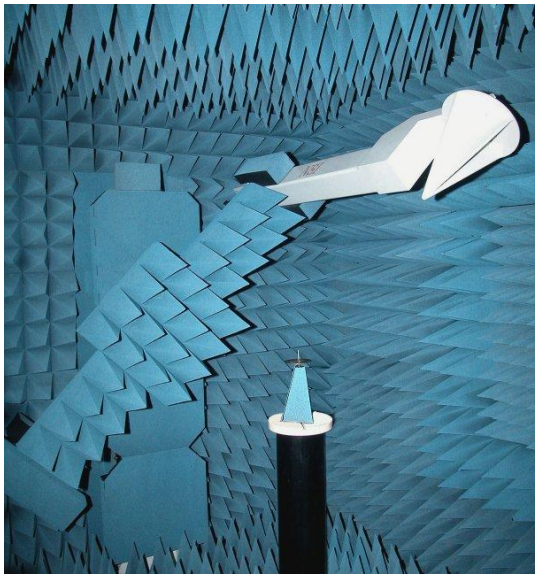
Measurement Capabilites

- **STATE OF THE ART MICROWAVE LAB**
  - Linear Vector Network Analysis: 50 GHz/4-port
  - Signal Sources and Spectrum Analyzers: 44 GHz
  - RF Wafer-Prober with Thermo-chuck
  - Wedge-Wedge Bonder
  - Pulsed measurements
  - Nonlinear Measurements
  - LSNA (Large Signal Network Analyzer): 20 GHz
  - Harmonic Load pull (active/passive): 18 GHz
  - Oscilloscopes/Eye-Analysis: 20 GHz+
  - Noise Figure Measurement: 18 GHz



additional equipment (on shared basis with in-house groups)

  - Bit/Pattern-Generators: 40 GHz+
  - Oscilloscopes/Eye-Analysis: 70 GHz+
  - EMC tests with GTEM-cell: 4 GHz
  - Anechoic Chamber, Antenna Measurements: 40 GHz



- **SOFTWARE**
  - Circuit & System Design: MWO, ADS
  - 3D Field Simulators: HFSS, EMPRO, COMSOL
  - 2.5D Field Simulators: SONNET, AXIEM