Wireless and Microwave Devices, Systems and Applications @ RFLAB -UniPi

Security, Connectivity, Monitoring: Anywhere, Anytime

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Wireless Applications

Mobile personal devices

– Cell and smartphone

WiFi interfaces

– 60 GHz Wireless Gbit links

– WLAN

Domotic

Short Range Wireless

– RFID, smartcard, remote control

Microwave Sensing Applications

Health care

    - Vital function non invasive monitoring

    - Intrabody sensors and devices

Security

    - Anti-intrusion alarms

    - Body scanner

Automotive

    - SRR (Short Range RADAR) and LRR (Long Range RADAR)
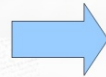
Localization (GPS)

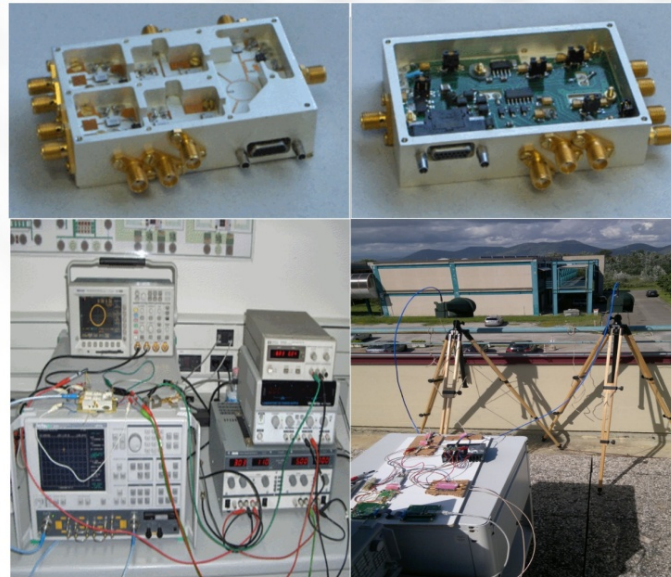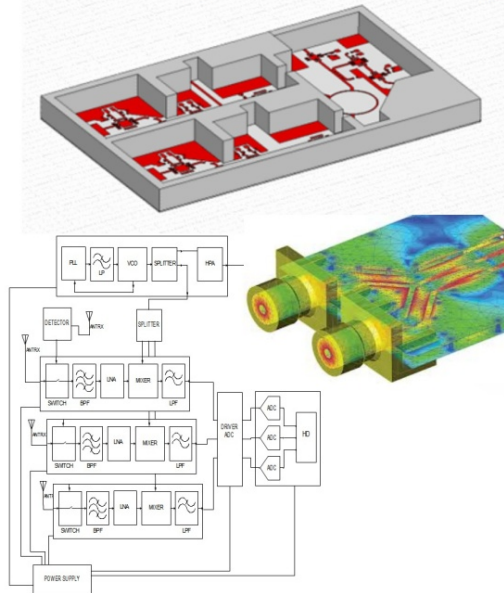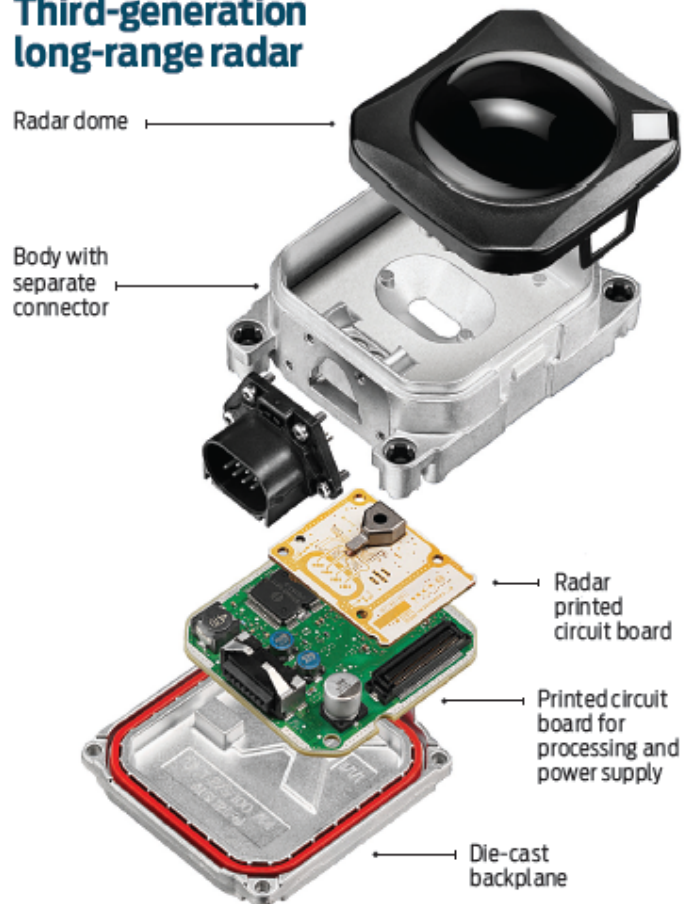# RFLAB Realization of a Low power/Low cost RADAR

Distributed Low Power Radar Network

– Distributed smart radar sensor for mobility in harbor area

– Maximum range   = 2 km

– Range Resolution = 1 m

– Power dissipation   = 5W

– Dimensions   =10X5X2 cm + Antenna

– Cost   < $1.000   !!!!!

Automotive RADAR

Third-generation long-range radar

- Radar dome
- Body with separate connector
- Radar printed circuit board
- Printed circuit board for processing and power supply
- Die-cast backplane

- Commercially available from Bosch based on SiGe Chipset (24 GHz, 77 GHz)

- 2 PCB boards, but Alternative versions with PCB or on-chip Integrated antennas

- FCMW modulation

- LRR 7dBm Pout, 4 channels, dielectric lens antenna provides high gain, Rmax 250m

- Power consumption in the order of Watts

Plenary Talk at IEEE RADARCON 2012

Q1 2014 Book from ARTECH,

S. Saponara, B. Neri, M. Greco, "Highly integrated and low power RADAR"
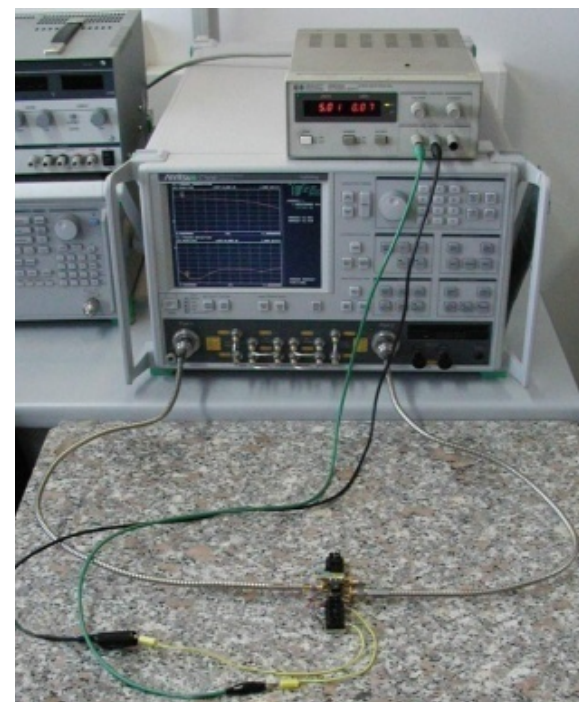
Design, realization and testing of RF/uW Devices
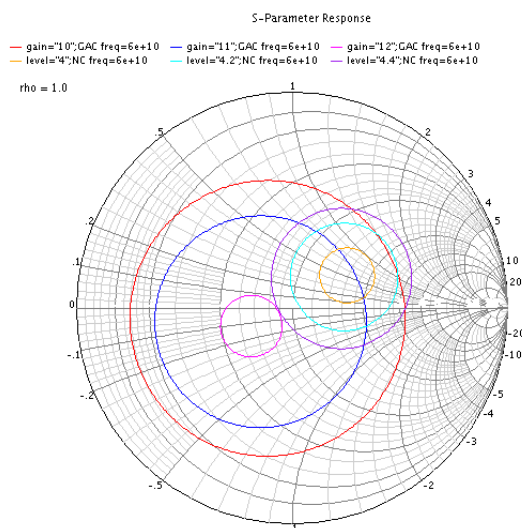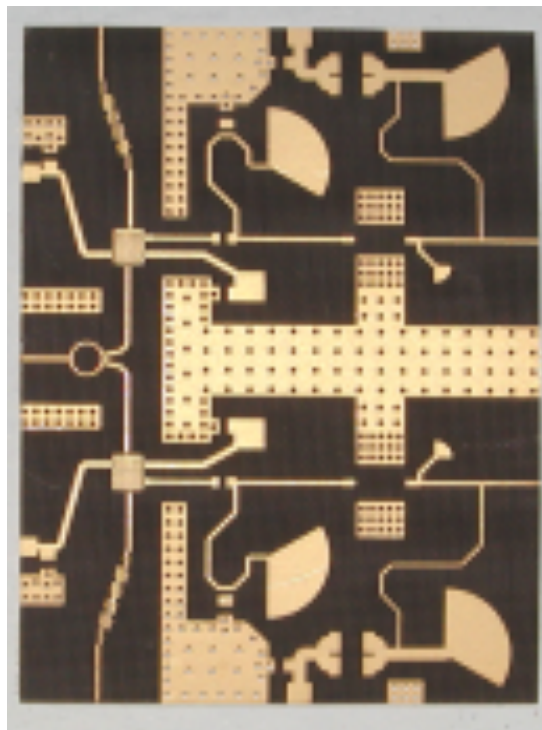
Design Realization Testing

Recent Projects and Collaborations

Radar Doppler (IDS)

Optical signal (10 GHz) equalizer (CNIT/Ericsson)

GPS integrated antenna (RICO srl)

Low Power RADAR (CNIT)

RFIC (STM)

 WI-NOC (60 GHz integrated antenna & transceivers for Wireless On-chip Networking in bulk and SOI FD-MOS technology)

RFLab : http://www.iet.unipi.it/rflab/