Meiyu Li

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Summary: Two years' hands-on experience on RF transceiver design, 5.8 GHz and 24 GHz vital sign detection radar system design and test, antenna design with 3D full wave simulation, 5.8 GHz Bi-HEMT LNA design, and co-simulation of on chip class AB PA and off chip matching networks.

EDUCATION

Ph.D program in Electrical and Computer Engineering 01/2014-present

University of Florida, Gainesville, FL, USA GPA: 4.0/4.0 Advisor: Dr. Jenshan Lin

Master of Science in Electrical and Computer Engineering 08/2012-12/2014

University of Florida, Gainesville, FL, USA GPA: 3.8/4.0 Advisor: Dr. Jenshan Lin

Master and Bachelor of Science in Photoelectric Engineering 08/2005-6/2011

Harbin Institute of Technology, Harbin, Heilongjiang, China

RESEARCH AND TEACHING EXPERIENCE

Design and test a 5.8 GHz intelligent non-contact wireless vital sign Doppler radar, which is the prototype of iBaby monitor by Structured Monitoring Products, LLC 05/2013-09/2014

- Developed a design methodology for resonant frequency accurately controlled patch array antenna using 3D full wave simulation on individual antenna and co-simulation with power divider. The resonant frequency difference between simulated and fabricated antennas is reduced from 1.7% to 0.09%. Antennas resonating at optimal frequency of radar system increases gain of system by 2.5 dB (about 2% less power consumption).
- Designed a miniaturized robust direct conversion transceiver system without null detecting point issue, with well heat dissipation ability and 10% reduced area. Order the commercial components and assemble the radar system. Perform RF device calibration and validation. Optimize software for weak respiration and low respiratory rate alarm.
- Developed a wavelet transform based algorithm for two subjects' vital signs extraction using the same hardware implementation. The cost for twins monitoring is reduced by 100%.
- Designed a 24 GHz vital sign sensor for small vibration detection. Series fed antenna array is designed to reduce the overall size of sensor. Entire system is 30 cm^2, which is only 35% of 5.8 GHz sensor.
- Debugged an integrated power supply for all the radar system in the lab ranging from 2.4 GHz to 60 GHz, which simplifies the measuring procedure.
- High sensitivity mobile radar design. Radar system can detect 0.25 mm vibration at 1 m away in real time and transmitted baseband signal into PC system with customized Bluetooth system. The whole system is 6 grams and smaller than a name card. (**Rank 3rd on a worldwide competition of IEEE International Microwave Symposium in 2014**)

5.8 GHz LNA and broadband PA in Bi-HEMT technology for vital sign detection 05/2014-present

- Design a cascode LNA with source degeneration. First design has the gain of 38 dB and NF of 2 dB, and second design targets at 1 dB NF using updated scalable transistor model.
- Develop a co-simulation methodology of off chip matching networks and on chip class AB PA. Bond wires and discrete components are modeled in HFSS.
- Designed a 2.3 nH printed spiral inductor to handle large current as RF choke of PA, self-resonant frequency is 16.3 GHz, quality factor is 57, DC resistance is 0.16 ohm and the overall size is 1.2 mm^2.

1-Gb/s wireless link at 5 GHz (RF system course project) 03/2013-05/2013

- Built heterodyne TX (QPSK modulation) and RX using commercial components.
- Simulated EVM, BER, spectrum, constellation diagrams and RX sensitivity in ADS. EVM was better than 2%.

Design 2.4 – 2.48 GHz LNA in 0.35 um CMOS technology (Microwave IC course project) 03/2014-05/2014

- Implemented Cascode topology to achieve minimum NF and maximum gain simultaneously.
- Achieved 1.5 dB NF, 17 dB gain and 15 mW power consumption.

Lab Manager of 67 GHz RF measurement lab in University of Florida 5/2014-present

- Define measurement procedure of network analyzer and train graduate students in entire Electrical and Computer Engineering Department at UF.

Teaching assistant of experimental physics at University of Massachusetts Lowell 09/2011-05/2012

- Conducted more than 80 lectures of fundamental experiments of physics. Made up pre-lab quizzes, demonstrated experiments, and graded lab reports.

EQUIPMENT & TECHNIQUE PROFICIENCIES

- **Modeling tools:** Ansoft HFSS/Designer, Agilent ADS, LTspice
- **Layout tools:** Cadence, Altium Designer
- **Programming tools:** Matlab, Labview (CLAD certification)
- **Measurement equipments:** Vector Network Analyzer, Spectrum Analyzer, Signal Generator, Oscilloscope

HORNORS

- 3rd place winner in IMS 2014 High Sensitivity Radar Student Design Competition 06/2014
- IMS and RFIC Ph.D Student Sponsorship Initiative 06/2014
- Achievement Award Scholarship at UF 08/2012-12/2013
- Special Summer Stipend at UML 05/2012