**Facilities, Equipment, and Other Resources**

Dr. Changzhi Li’s research group at Texas Tech University is located in a fully ESD-protected Microwave and Analog Circuits Laboratory. The following major equipment is available for use in this project:

* HP Agilent 8722ES Network Analyzer (40 GHz)
* HP 83630A Synthesized Sweeper (26.5 GHz)
* ZABER KT-NA08A50 Linear Actuator
* Rohde & Schwarz FSU26 Spectrum Analyzer (26 GHz)
* Rohde & Schwarz SMR20 Microwave Signal Generator (20 GHz, with B25 built-in upconverter for 40 MHz to 6 GHz digitally modulated IF signals option)
* Rohde & Schwarz AMIQ I/Q Modulation Generator
* Rohde & Schwarz CMU200 Universal Radio Communication Tester
* Agilent Technologies MSO9254A Mixed Signal Oscilloscope
* APS Dynamics Long-Stroke Shaker
* National Instruments PXI with PXIe-8133 Controller, PXIe-5663 Vector Signal Analyzer, PXIe-5673 Vector Signal Generator, PXIe-5630 Vector Network Analyzer
* National Instruments PXIe-8135 Controller, PXIe-5645R Vector Signal Transceiver, PXI-4130 Power SMU

The following major software will be used in the proposed project:

* AWR Microwave Office
* Cadence Virtuoso IC Design Tool
* Calibre DRC and LVS Tools
* Advanced Design System
* MATLAB
* LabVIEW

Texas Tech University and Dr. Li’s research group have licenses to access all of these software tools. The research group is part of the Electrical and Computer Engineering Department at the Texas Tech University. The infrastructure and equipment of the department (electronic shop, secretarial and accounting support) will be available for this project. Faculty and graduate students working on this project will be provided adequate office space. Dr. Li is a lead user of National Instruments, and receives continuous equipment donation and technical support from National Instruments and AWR.