

Proposed Program of Experimental Research

The experimental setup of interest requires the frequency ranges as outlined in the license application. It is for the study of MIMO (Multiple Input Multiple Output) antenna multihop communication systems.

The three lower frequency radiators are requested for a proposed research platform named Hydra. Hydra is a cross-layer wireless communications research initiative at the University of Texas at Austin under the guidance of Professors Robert W. Heath, Jr. and Scott Nettles. One of our specific tasks is to better investigate multihop communication systems (such as in Mesh networks). Current research on multihop network design uses simplified models for wireless channel and environment characteristics. Implementing multihop network protocols/algorithms and intelligently validating the system performance will enable us to better benchmark performance and advance the science of multihop communication systems design.

The 60 GHz radiation is required to develop single chip, massive bandwidth short range communication nodes, intended to be used for enterprise and home communications systems. Mesh networks utilizing MIMO antennas are to be investigated in this millimeter wave regime as well. This work is directed by Prof Ted Rappaport and Prof Robert Heath, and advised by Lawrence Ragan.

To accomplish this research many nodes will be required (up to 100) because of the inherent hopping between locally separated nodes. Many of the important issues in such systems require that we are able to accurately validate situations of more than just a few nodes.

All the proposed research is to be conducted by the Wireless Networking and Communications Group (WNCG), part of the Department of Electrical and Computer Engineering at the University of Texas at Austin. See www.ece.utexas.edu/wncg/