

Narrative Statement for #7

A. The applicant seeks an experimental license to operate a test network to measure the effects of the urban propagation environment on various types of modulation waveforms used for wireless sensor networks. Test transmitters will be deployed within a radius of the campus of the Georgia Institute of Technology at temporary fixed and portable locations. Receivers will be installed at fixed locations in the same area. Software Defined Radio (SDR) transmitters (Ettus Research B-200) will be used to generate test waveforms and then candidate waveforms will be programmed into prototype sensor transmitters. Test waveforms will be based on FSK with various types of spreading and forward error correct coding applied and will have occupied bandwidths between 100 Hz and 100 kHz. Data recorded by the receivers will be analyzed to evaluate the impact of multipath, interference and other propagation impairments.

B. Objectives of these tests are to 1) select an optimum waveform based on measurements of BER and power required; 2) evaluate the impact of the selected waveform on the range and battery life of inexpensive wireless sensor transmitters.

C. This experimental program will contribute to the state of the art in wireless sensor networks by developing techniques to reduce the cost and extend the battery life and range of wireless sensors.