FCC Form 442, Question 6

a. A description of the nature of the research project being conducted

The research project is an investigation into the construction and operation of a fully programmable mobile network testbed, suitable for experiments with state-of-the-art packet based mobile networks. We aim to support researchers operating practical implementations of new mobile network designs.

An overview of the project is available from:

`http://www.flux.utah.edu/project/phantomnet`

b. A showing that the communications facilities requested are necessary for the research project

Our work involves investigating the behavior of wireless networks of mobile devices, and full duplex communication between stations is an essential requirement for conducting measurements of the system and testing our implementation. In particular, we wish to operate multiple mobile stations to allow end-to-end communication between mobile endpoints across wired infrastructure, and multiple fixed stations so that handoffs between them are possible.

In the past several months, we have operated our network under Experimental Special Temporary Authorization (call sign WH9XBS) as a pilot study to demonstrate the feasibility of our approach. We are now ready to move our facility to operational status.

c. A showing that existing communications facilities are inadequate

The only existing communcations facilities we have access to are 47 CFR Part 15 and Part 18 devices. These facilities are inadequate, because in order to obtain results relevant to current commercial mobile networks, we need to operate contemporary commercial off-the-shelf equipment (such as devices transmitting in the AWS band, as included in this application).