

Exhibit 1 – Question 7: Experimentation Description

1. The experimental procedure used in this study will be to conduct a set of measurements on a number of RF paths between a fixed transmitter and a fixed or mobile receiver, and to record measurements of received signal characteristics such as the measured path loss values for each path. The transmit site will consist of a Flex 5000 software-defined radio (SDR) controlled by the PowerSDR software package running on a laptop computer, or a similar radio transceiver. The transmit power level will be no more than 100 watts PEP. The transmit antenna will be one of
 - A Shakespeare 120-60 10 meter vertical whip antenna with 8 or more equally-spaced and radially-oriented ground wires; or
 - A temporarily-deployed antenna suitable for sky wave propagation, such as a dipole, sloping V, or rhombic antenna.

Where needed, an SGC model SG–230 antenna tuner will be used for antenna impedance matching.

Fixed receive sites will use an antenna similar to the transmit antennas listed above.

Mobile receive sites will use a 3 meter whip antenna mounted on a vehicle.

2. Various high-frequency (HF) sky wave and ground wave propagation models will be evaluated by comparing the models'

path-loss estimates with field measurements. In addition, measurements may be used to develop or refine models of other path characteristics such as path loss variation.

3. The resulting improvements in ground wave and sky wave channel estimation and modeling will contribute to more effective communications planning in HF radio networks, and to defining realistic scenarios for simulation studies of MANET protocols and cognitive radio techniques for use at HF.