

Exhibit 1: Experimental Description

Microsoft Corporation has been testing the potential for unlicensed white-space spectrum to be used for wide area, outdoor sensor networks to support precision agriculture and other applications that take advantage of the unique propagation characteristics of white-spaces spectrum. It has conducted these experiments under the call sign W12XTQ. This application seeks very similar experimental authority to that granted under previous experimental authorizations, making only minor changes to the list of sites, adjusting operational radii, and adding experimental operations in the 902-928 MHz ISM band. Additional information regarding the use of white-space devices to increase agricultural productivity while reducing costs is available at Microsoft Research, <https://www.microsoft.com/en-us/research/project/farmbeats-iot-agriculture/>

Microsoft's experimental sensors may operate in narrower bands than conventional whitespace devices, due to the necessity of improved frequency reuse, but lower bandwidth demands, of a sensor system consisting of a potentially large number of transmitters. For the purposes of these experiments, the sensors operating in white-spaces spectrum may not select frequencies according to the reported channel availability in the white-spaces database. In lieu of database control, Microsoft will coordinate with the Society of Broadcast Engineers to ensure that its experimental operations do not cause harmful interference to incumbent licensees.

Through these experiments, Microsoft intends to:

- Evaluate the suitability of white-spaces spectrum for narrowband sensor operations.
- Evaluate the efficacy of such sensor systems for precision agriculture applications.
- Develop hardware and software for the operation of white-spaces sensors.

This research is likely to advance the state of the art in both white-spaces technologies, as applied to sensor systems, as well as the use of advances sensor networks generally in precision agriculture applications to improve agricultural efficiency.