**File No. 0552-EX-PL-2010**
**AKELA Inc.**
**Form 442**

# Narrative Description

## Purpose of Operation

AKELA Inc. seeks to obtain an experimental license to conduct testing and demonstrations of a through-the-wall surveillance radar prototype in controlled field test environments. (The technology was originally developed for the military and is now being modified for state and local first responders.) Funded by the National Institute of Justice (NIJ), this development addresses law enforcement and fire-fighter situation awareness and personnel safety while providing a cost effective, stand-off through-the-wall surveillance device

AKELA expects the final version of the device will be able to identify and locate movement within a structure from a few tens of meters away. This will enable police, for example, to locate barricaded offenders, hostage-takers, and hostages while remaining a safe distance from the building, and will enable fire-fighters to locate victims prior to entry. The device also has potential to assist first responders in the search for signs of life through collapsed structures.

With approval of this application, AKELA will conduct field testing and evaluation of the device with the support of NIJ and the cooperation of local first responder agencies. AKELA will gather user feedback and deployment/operational data on the device to address situational requirements of first responder agencies, and identify areas of device improvement for operational application.

## Description of Device

The subject system will operate as a frequency-stepping radar device over the range 2900 to 3600 MHz. Current designs use a stepping interval of 3 MHz, with a dwell time on each frequency of 65 µsec. We expect to vary these values in the course of our experimentation. In no event, however, will the peak power (when locked on one frequency) exceed 252 mW (24.0 dBm) EIRP. Average power, measured with the frequency stepping running and an integration time of 100 msec, will not exceed 250 microwatts (–6.0 dBm) EIRP.

## Description of Experimentation

The experiments will support the determination of amplitude, frequency, and timing parameters as well as other data requirements for this through-the-wall radar. The testing is being performed in support of a NIJ AKELA grant to develop through-the-wall surveillance technology and verify first-responder operational application. A goal of the experiments is to evaluate the minimum field strengths, frequency ranges, and frequency sweep rates required to obtain the desired radar system performance. The experiments will also determine AKELA's device compliance with state and local first-responder requirements in operational environments, and identify possible improvements to radar system capability.