Narrative Statement

The requested license will support the development of technology for the purpose of detecting unmanned aerial systems (drones) being operated for malevolent purposes.

The U.S. government lacks a good solution to the increasing threat of unlawful and hostile drone activity. The threat is asymmetric: the adversary has the advantage due to the wide commercial availability of drones, their modest cost, and their rapid evolution in capabilities. Besides the threat in areas of conflict, drones have been used domestically to deliver dangerous contraband to prison yards, and have intruded into protected airspace around sensitive facilities. The small size of drones makes them difficult to detect, especially in urban and cluttered environments, and they can be lethal.

Common techniques for interdicting drones rely on the classic electronic warfare techniques of detecting and taking over command links. However, many drones now have the capability of flying using pre-programmed waypoints, which renders first-order electronic warfare ineffective.

AKELA's customer is a Government contractor doing Research, Development, Test, and Evaluation on counter drone applications that use a non-destructive method of forcing the drone to the ground. The customer wants to use AKELA's radar technology as part of its testing program. The radar, which will be airborne in the drone, will provide the customer with accurate range information to refine the intercept calculations.

The radar will use a stepped frequency CW waveform. The power spectrum is uniform across the operating band and zero outside. The nominal power level is 30 dBm (1 watt) ERP. The system will use 1 MHz spacing for the frequency hops and dwell times of 64 microseconds per frequency hop.

Total testing time over the license period will be approximately one week. The highest altitude of a drone carrying an operating radar will be 400 feet (122 meters) above ground level.

The application requests 3100-3300 MHz. If that range is not available, the applicant could use 2900-3100 MHz or 3300-3500 MHz instead.