

Program of Research and Experimentation

Xator Inc. requests an Experimental Radio License to conduct research, integration, and performance evaluation of the Vesper Unmanned Aircraft System (UAS) and its associated radio frequency communications equipment.

The purpose of this experimental program is to evaluate the operational performance, reliability, interoperability, and RF characteristics of the Vesper UAS under controlled and representative operating conditions. Testing will focus on assessing the performance of the aircraft's communications systems, including command-and-control links, telemetry, data communications, navigation-related functions, and associated RF characteristics.

The Vesper UAS is an existing unmanned aircraft system being evaluated by Xator Inc. as part of an experimental testing program. Xator Inc. will conduct controlled testing to collect engineering data and assess system performance, communications reliability, and operational capabilities.

Testing will be performed at authorized test locations by qualified personnel. Experimental operations may include ground and flight testing to evaluate RF performance across varying distances, operating conditions, and environments. All testing will be conducted in accordance with applicable FCC rules and procedures, and operations will cease if harmful interference occurs.

Equipment Description and Theory of Operation

The Vesper UAS is an unmanned aircraft system that utilizes wireless communications to support command and control, telemetry, and mission-related data exchange between the aircraft and associated ground control equipment.

The experimental evaluation will assess the performance of the system's radio frequency communications capabilities, including:

- Command-and-control link reliability
- Telemetry performance
- Data communications
- RF range and coverage characteristics

- Signal quality and stability
- System interoperability
- Operational performance during flight activities

Testing may include evaluation of communication performance, antenna configurations, operating parameters, and integration with supporting ground equipment.

Objectives

The objectives of this experimental program are to:

- Evaluate the RF performance of the Vesper UAS communications systems.
- Characterize command-and-control and telemetry link performance.
- Assess system reliability under various operating conditions.
- Collect engineering data to support system evaluation and future operational considerations.
- Improve understanding of UAS communication performance and RF characteristics.

Contribution to the Development of the Radio Art

The proposed experimentation will contribute to the advancement of unmanned aircraft system communication technologies by evaluating RF performance, communications reliability, and system integration characteristics in operational environments.

The data collected during testing will provide insight into wireless communication performance for unmanned aircraft systems and support continued advancement of reliable RF communication methods for UAS applications.