

FCC Experimental License Application

Form 442 Confirmation Number: **EL334477**

Form 442 File Number: **0611-EX-CN-2026**

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The purpose of this request is to enable transmission and evaluation of 4G and 5G waveforms, as well as other narrowband signals and unmodulated tones. This application is based on our previous FCC Experimental License with Callsign WK2XPN and File Number 0121-EX-CR-2024, which expired on 1/1/2026.

Our experimental research will follow a phased approach, beginning with controlled indoor testing and progressing to outdoor deployments using both fixed and portable nodes. These experiments will support research on waveform performance, propagation characteristics, interference behavior, and system integration across diverse frequency ranges.

All operations will take place in Starkville/Mississippi State, Mississippi (Oktibeha County), centered at 406 Hardy RD (NAD 83 coordinates: NL 33-27-09; WL 88-47-18), with a radius of operation of up to 5 km. The test environment spans Mississippi State University campus and North Farm, which provide representative research conditions with surrounding buildings, vegetation, and terrain that offer partial shielding and help mitigate interference and aeronautical exposure.

The system will utilize both fixed (FX) and mobile (MO) station classes. Mobile operations will include both ground-based platforms and airborne platforms. The airborne systems will consist of unmanned aerial vehicles (UAVs). UAV operations will be conducted at altitudes up to 400 feet above ground level. These aerial platforms enable controlled evaluation of air-to-ground and air-to-air wireless links.

Transmit power levels will vary depending on the experiment configuration, ranging from low-power (sub-Watt) mobile transmissions to fixed station operations up to 10 W. Omnidirectional antennas will be employed.

This application supports open, software-defined, and reproducible wireless research designed to accelerate the integration of unmanned aerial systems into the national airspace and to enable advanced wireless capabilities such as aerial base stations, adaptive spectrum use, and next-generation network experimentation. This research is supporting the Aerial Experimentation and Research Platform for Advanced Wireless (AERPAW) under the NSF-funded Platforms for Advanced Wireless Research (PAWR) program.