

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
CERTIFICATE OF WAIVER

ISSUED TO

Zipline (Delivery Ops)
Responsible Person: Joseph Marshall
Waiver Number: 107W-2022-00359

ADDRESS—

2030 Kannapolis Parkway
Concord, NC 28027

This certificate is issued for the operations specifically described hereinafter. No person shall conduct any operation pursuant to the authority of this certificate except in accordance with the provisions contained in this certificate.

OPERATIONS AUTHORIZED

Small unmanned aircraft system (sUAS) operations beyond the visual line of sight of the remote pilot in command (PIC), in lieu of visual line of sight (VLOS), sUAS operations over human beings; and sUAS operations over moving vehicles.

LIST OF WAIVED REGULATIONS BY SECTION AND TITLE

14 CFR § 107.31—Visual line of sight aircraft operation,
14 CFR § 107.39—Operation over Human Beings, and
14 CFR § 107.145—Operation over Moving Vehicles

STANDARD PROVISIONS

1. A copy of the application made for this certificate shall be attached to and become a part hereof.
2. This certificate shall be presented for inspection upon the request of any authorized representatives of the Administrator of the Federal Aviation Administration, or of any State or municipal official charged with the duty of enforcing local laws or regulations.
3. The holder of this certificate shall be responsible for the strict observance of the terms and provisions contained herein.
4. This certificate is nontransferable.

NOTE—This certificate constitutes a waiver of those Federal rules or regulations specifically referred to above. It does not constitute a waiver of any State law or local ordinance.

SPECIAL PROVISIONS

Special Provisions Nos. 1 to 40, inclusive, are set forth on the attached pages.

This Certificate of Waiver is effective from March 25, 2022, to March 31, 2026, and is subject to cancellation at any time upon notice by the Administrator or an authorized representative.

BY DIRECTION OF THE ADMINISTRATOR

General Aviation and Commercial Division, AFS-800

SPECIAL PROVISIONS ISSUED TO Zipline (Delivery Ops)

General.

The FAA's Flight Standards Service has reviewed your application to ensure compliance with the requirements of 14 CFR § 107.200 and § 107.205. Pursuant to these authorities, the Administrator finds that the proposed small unmanned aircraft (sUA) operation can be conducted safely under the provisions of this Certificate of Waiver (Waiver) as listed below because you have established adequate mitigations for risks involved with operating your sUA in the manner you described. Adherence to the provisions of this Waiver establishes the required level of safety within the national airspace system.

The Administrator may cancel this Waiver at any time. As a general rule, this Waiver may be canceled when it is no longer required, there is an abuse of its provisions, or when unforeseen safety factors develop. Failure to comply with any provision listed below is a violation of the terms of this Waiver and will serve as justification for cancellation.

List of Regulations Waived by Section and Title. The following regulations are waived:

14 CFR § 107.31, Visual line of sight aircraft operation, is waived to allow operation of the small unmanned aircraft (sUA) beyond the direct visual line of sight of the remote pilot in command (PIC).

14 CFR § 107.39, Operations over human beings, is waived to allow sUA operations over human beings

14 CFR § 107.145, Operations over moving vehicles, is waived to allow sUA operations over moving vehicles.

No part of this waiver will function as an airspace authorization under 14 CFR § 107.41. The FAA's Air Traffic Organization responds directly to requests for such authorizations.

Common Special Provisions. The Responsible Person is directly responsible for safety of operations conducted under this Waiver and will ensure the Remote Pilot in Command (remote PIC), manipulator of the controls, and visual observer(s) (VO)¹ comply with all provisions of this Waiver.

1. The Responsible Person listed on the Waiver is responsible to the FAA for the safe conduct of the operations. Prior to conducting operations that are the subject of this Waiver, the Responsible Person:
 - a. Must ensure the remote PIC, manipulators of the controls, and VO(s) are informed of the terms and provisions of this Waiver and strictly observe the terms and provisions herein;
 - b. Must ensure the remote PIC, manipulators of the controls, and VO(s) are informed and familiar with part 107 regulations; and
 - c. Evidence of the above (a and b) must be documented and must be presented for inspection upon request from the Administrator or an authorized representative;
2. This Waiver may not be combined with any other waiver(s), authorization(s), or exemption(s) without specific authorization from the FAA;

¹ Title 14 CFR § 107.3 defines the term "visual observer." Any VO participating in operations conducted under this Waiver must meet the requirements listed in § 107.33 throughout the duration of flight operations.

3. The FAA has the authority to cancel or delay any or all flight operations if the safety of persons or property on the ground or in the air are in jeopardy or there is a violation of the terms of this Waiver;
4. A copy of this Waiver must be accessible and available to the remote PIC at the ground control station during sUA operations that are the subject of this Waiver;
5. The Responsible Person listed on this Waiver must maintain a current list of pilots by name and remote pilot certificate number used in operations under this Waiver. This list must be presented for inspection upon request from the Administrator or an authorized representative;
6. The Responsible Person listed on this Waiver must maintain a current list of sUA by registration number(s) used in operations under this Waiver. This list must be presented for inspection upon request from the Administrator or an authorized representative;
7. For the purposes of this Waiver, direct participants are the remote PICs, persons manipulating the controls, VOs, and any persons whose involvement is necessary for safety of the sUA operation. All other persons are considered non-participants;

Waiver Specific Special Provisions. sUAS operations may be conducted under this waiver, Beyond Visual Line of Sight (BVLOS) of the remote PIC, over Human Beings and over Moving Vehicles, provided:

OPERATIONAL PROVISIONS

8. Operations under this Waiver must utilize at least one VO;
9. Individuals directly participating in the operation of the sUAS must be easily identifiable visually (e.g., apparel, safety vests);
10. The remote PIC must ensure sufficient VO(s) are used to identify any non-participating aircraft prior to their entry into the planned operational area. For the purpose of this Waiver, sufficient VO(s) is defined as the minimum number of VO(s) required to continuously observe at least a 2 statute mile radius of airspace surrounding the sUA in flight. The remote PIC must confirm VO(s) are physically located such that the remote PIC receives sufficient notice to ensure the UA remains well clear of all other aircraft;
11. The Responsible Person must ensure an operations manual is made available to the Administrator. As described in the Waiver application, the Responsible Person must ensure all operations conducted under this Waiver follow the procedures as outlined in the operations manual. If a discrepancy exists between the provisions in this Waiver and the procedures outlined in the operations manual, the provisions of this Waiver take precedence and must be followed;

12. The operations manual developed by the Responsible Person contains at least the following items:
- a. Operator name, address, and telephone number,
 - b. Method of distribution and revision,
 - c. Certificate of Waiver. The operations manual must include a copy of the current Waiver(s),
 - d. Aircraft description and limitations list by aircraft type and model,
 - e. Method to ensure safety of non-participating persons and aircraft,
 - f. Safety briefing of Direct Participants,
 - g. Direct Participants Minimum Requirements. In accordance with this Waiver, the Responsible Person must specify the minimum requirements for all Direct Participants in the operating manual, and the method used by the Direct Participants to meet those minimum requirements,
 - h. Method of communications,
 - i. Normal operating procedures,
 - j. Abnormal operating procedures,
 - k. Emergency procedures,
 - l. Crew Resource Management,
 - m. Risk management, and
 - n. Accident Notification. The operations manual must contain procedures for notification and reporting of accidents in accordance with this Waiver;
13. The Responsible Person may update or revise its operations manual. The Responsible Person must track such revisions and present updated and revised documents to the Administrator or an authorized representative upon request. The Responsible Person must also present updated and revised documents if it applies for extension or amendment. If the Responsible Person determines that the intended operation differs from the purpose for which this waiver is granted, or if the intended operation would be contrary to or obviate a condition or limitation of this waiver, then the Responsible Person must apply for an amendment to this Waiver;
14. The Responsible Person must ensure a copy of the current operations manual is available to the remote PIC and all other direct participants during sUAS operations that are the subject of this Waiver. A definition of direct participant can be located in AC107-2A_Editorial_Update;
15. The Responsible Person listed on this Waiver must ensure each remote PIC is trained in a manner consistent with how the sUAS will be operated under this Waiver. All training and demonstration for any remote PIC and VO must be documented and made available upon request by the Administrator or an authorized representative. Unless conducted in the locations listed in provision 40 of this Waiver, training operations may only be conducted under the standard requirements of part 107 (without waiver). The training must include:
- a. sUA limitations,
 - b. sUA programming,
 - c. sUA operational procedures,
 - d. Abnormal and contingency procedures,
 - e. Evasive and emergency procedures,
 - f. Crew Resource Management,
 - g. sUA flight training, and
 - h. A demonstration of sUA ground and flight skills;

16. Prior to operations under this Waiver, all persons who will act as remote PIC and VO's must participate in a safety briefing that addresses at minimum, the following items:
 - a. Designated positions and responsibilities/Crew Resource Management,
 - b. Flight operating area,
 - c. Designated launch and recovery area,
 - d. Verification of geo-fence boundaries,
 - e. Return to Home (RTH) flight profile and course,
 - f. Normal procedures,
 - g. Abnormal procedures, and
 - h. Emergency procedures;
17. Communication between the remote PIC, and VO must allow for the remote PIC to maneuver the sUA with sufficient time to:
 - a. Give way to all other aircraft in accordance with § 107.37,
 - b. React to any unforeseen operational or mechanical failure without creating a hazard to other people, other aircraft, or property in the event of a loss of control of the sUA for any reason, and
 - c. Maintain compliance with this Waiver and unwaived provisions of part 107;
18. Operations subject to this waiver must cease as soon as possible in manner that does not jeopardize the safety of human beings, property or other aircraft, if, at any time:
 - a. Safety of human beings or property on the ground or in the air is in jeopardy,
 - b. Any failure to comply with the provisions of this Waiver exists,
 - c. Full-duplex or half-duplex communications as described in the waiver cannot be maintained between the remote PIC and any VO participating in the operation,
 - d. A non-participating aircraft enters the designated flight operating area,
 - e. GPS signal is lost, or
 - f. sUA GPS location information is degraded;
19. sUA flight under this waiver may not carry the property of another for compensation or hire;
20. Not less than 24 hours prior to conducting operations under the terms and conditions of this waiver, a Notice to Airmen (NOTAM) must be filed. The NOTAM must include location, altitude, and/or operating area, time and nature of the activity. A NOTAM does not need to be filed if the planned operation will comply with the standard provisions of 107.31;
21. The Responsible Person must establish and maintain a Safety Management System (SMS) appropriate for the size, scope, and complexity of the waived operation. Guidance on establishing and maintaining an SMS is available in FAA Advisory Circular 120-92B (or current revision). This program must be made available upon request by the Administrator;

22. Flight operations recordkeeping requirements. Records shall be retained for a period of 90 days after the expiration date of the Waiver. The Responsible Person shall keep at its principal business office or at other places approved by the Administrator or authorized representative, and shall make available for inspection by the Administrator or an authorized representative the following:
- a. For each sUA flight conducted under the terms of this waiver:
 - i. Date and location of operation
 - ii. Registration number of the sUA,
 - iii. Number of flights,
 - iv. Make and model of the sUA,
 - v. Name and certificate number of the remote PIC,
 - vi. Name and certificate number (if applicable) of the Visual Observer, and
 - vii. Duration of the sUA operation;
 - b. sUA equipment malfunctions. sUA equipment malfunctions include, but are not limited to, the following:
 - i. Onboard flight control system,
 - ii. Any portion of the navigation system to include GPS functionality,
 - iii. Power plant malfunction or failure,
 - iv. Battery malfunction or failure,
 - v. Electrical power system malfunction,
 - vi. Control station malfunction or failure, and
 - vii. Loss of control link within the sUAS;

TECHNICAL PROVISIONS

23. Operations conducted under this Waiver may only occur with the Sparrow sUAS described in the waiver application. Proposed operations of any other manufacturer, make or model of sUAS will require a new waiver application or an application to amend this Waiver;
24. All sUA operations conducted in accordance with this Waiver must comply with the Sparrow User Manual, and all manufacturer recommendations and limitations for the sUAS;
25. Any modification to the sUAS design is prohibited; repair and replacement of damaged components is allowed with a replacement part that is exactly the same as the original; no substitutions are allowed unless a new waiver application is submitted;
26. The Responsible Person must maintain each sUAS and its components in accordance with manufacturer's instructions and recommendations. sUA maintenance includes scheduled and unscheduled overhaul, repair, inspection, modification, replacement, and system software upgrades of the sUAS and its components necessary for flight. A log of all maintenance performed must be kept for each aircraft operated under this waiver. This log must be available to the remote PIC for review prior to conducting operations that are the subject of this waiver. Each sUA maintenance log must be presented to the Administrator when requested;

27. Any sUAS that has undergone maintenance must undergo a functional test flight prior to conducting operations under this Waiver. A log entry must be made for each functional test flight. The log entry must contain at minimum the:
 - a. Calendar date,
 - b. sUA registration number,
 - c. Remote PIC who performed the functional test flight,
 - d. Duration of the flight, and
 - e. The result of the functional flight test;
28. The functional test flight may only be conducted within visual line of sight of the RPIC and are authorized for the route as described in the waiver application;
29. The sUA must be equipped with high visibility markings and lighting to increase the conspicuity of the sUA to 3 statute miles;
30. All sUA operated under this Waiver must be capable of automatic operations;
31. The sUAS ground control station must display in real time, sUA altitude, sUA position, sUA direction of flight information, and sUA flight mode. This information must be available at all times to the remote PIC;
32. The sUAS ground control station must audibly or visually alert the remote PIC of degraded system performance, sUAS malfunction, and loss of Command and Control (C2) link with the sUA;
33. Launch and recovery areas for normal and abnormal operations must be pre-designated and monitored to keep any human being not a direct participant out of the areas prior to, during, and immediately following flight operations, and comply with the operational restrictions described in the waiver application;
34. Prior to operations that are the subject of this Waiver, the remote PIC must determine the Command and Control link with the sUA has performance capabilities that exceed the planned ranges for the proposed operation. At all times during normal operations that are the subject of this Waiver, the remote PIC must maintain C2 link with the sUA;
35. If the remote PIC loses command and control link with the sUA, the sUA must follow a predetermined route to immediately reestablish command and control link. If command and control link is not immediately reestablished and the remote PIC no longer has the ability to direct the sUAS to ensure compliance with applicable provisions of part 107, the sUA must cease as soon as possible in manner that does not jeopardize the safety of human beings, property or other aircraft;
36. If communication between the VO and the remote PIC is by use of an electronic device:
 - a. The device must be continuous full-duplex,
 - b. The remote PIC's device must be hands-free, and
 - c. There must be a reliable back-up communication method;

37. ADS-B out (1090/978 MHz) may not be transmitted from the sUAS when operating pursuant to this Waiver;
38. All emitters used in sUAS must be in compliance with all applicable FCC regulations and all provisions of the FCC authorization granted for the emitter. A FCC experimental authorization may not be used for sUAS operations under this Waiver;

ENVIRONMENTAL PROVISIONS

39. The sUA must not sustain flight over any non-participant human being or moving vehicle; and
40. The operation is limited to the location described in the waiver application.