

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

ISSUED TO

Firefly Drone Shows
Responsible Person: Kyle Dorosz
Waiver Number: 107W-2024-00242

ADDRESS—

2677 Aubrey Dr
Lake Orion, MI 48360

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

Night small unmanned aircraft system (sUAS) operations; Acting as a remote pilot in command (PIC) or visual observer (VO) in the operation of more than one small unmanned aircraft (sUA) at the same time, and pursuant to 14CFR § 89.105 to operate its UA in the National Airspace System (NAS) without broadcasting Remote Identification (RID) subject to the the conditions of this waiver.

LIST OF WAIVED REGULATIONS BY SECTION AND TITLE

14 CFR §§ 107.29(a)(2) & (b)—Anti-collision light requirement for operations at night and during periods of civil twilight, and
107.35—Operation of multiple small unmanned aircraft systems

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 representative 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 31, inclusive, are set forth on the attached pages.

This Certificate of Waiver is effective from April 8, 2024, to July 31, 2026, and is subject to cancellation at any time upon notice by the Administrator or an authorized representative.

BY DIRECTION OF THE ADMINISTRATOR

Emerging Technologies Division, AFS-700

SPECIAL PROVISIONS ISSUED TO Firefly Drone Shows

General.

This Certificate of Waiver is an amendment which supersedes and replaces Waiver 107W-2023-02976 issued to Firefly Drone Shows for operations under 14 CFR 107. Waiver 107W-2023-02976 is no longer valid.

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 § 107.29(a)(2) & (b), Operation at night, is waived to allow sUAS operations at night with alternate means of compliance for anti-collision light requirements;

14 CFR § 107.35, Operation of multiple small unmanned aircraft systems, is waived to allow a person to act as the remote Pilot in Command (PIC) or visual observer (VO) to operate multiple small UAS simultaneously.

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;

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.

2. This Waiver may not be combined with any other waiver(s), authorizations(s), or exemption(s) without specific authorization from the FAA;
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;

Operations as defined in 14 CFR § 1.1, Specific Special Provisions. sUAS operations may be conducted under this waiver provided:

OPERATIONAL PROVISIONS

8. All operations under this Waiver must use one or more VO as described in the waiver application;
9. All operations must use the lighting system and procedures as described in the waiver application in a manner sufficient to alert approaching aircraft as described in the waiver application;
10. All operations, that are the subject of this waiver, are authorized without the use of RID, as required in Part 14 CFR § 89.105; The authorization is not transferable and only applies when the operator is conducting Part 107 Drone Light Show Operations. This authorization provides relief from the operating provision in 14 CFR § 89.105 only. It does not provide relief from the production requirements in 14 CFR § 89.515, which requires unmanned aircraft produced after September 16, 2022, to have Standard Remote Identification, unless excepted under § 89.501(c). In order to produce UA without Remote Identification to be operated pursuant to this authorization, an exemption from 14 CFR § 89.515 may be needed.
11. Prior to conducting operations that are the subject of this Waiver, the remote PIC and VO must be trained, as described in the Waiver application, to recognize and overcome visual illusions caused by darkness, and understand physiological conditions which may degrade night vision. This training must be documented and must be presented for inspection upon request from the Administrator or an authorized representative;
12. Prior to conducting operations under this Waiver, the operational and restricted area boundaries must be calculated, identified, restricted to access, and monitored as described in the waiver application;

13. At least 72 hours prior to conducting operations that are subject to this waiver, the responsible person or RPIC must notify the local Flight Standards District Office manager. The notification must include:
 - a) The location of the planned sUAS operation,
 - b) The time(s) of the planned sUAS operations,
 - c) A copy of this Waiver, and
 - d) A copy of the airspace authorization, per § 107.41, if required for the location and altitude of the sUAS operation;
 The locations of local Flight Standard District Offices and contact information can be located at https://www.faa.gov/about/office_org/field_offices/fsdo/;
14. The Responsible Person or RPIC must file a Notice to Air Mission (NOTAM) no more than 72 hours and no less than 24 hours prior to operating under this waiver. A NOTAM can be filed by calling 1-877-487-6867 (1-877-4-US-NTMS) or online at <https://www.1800wxbrief.com/Website/login#!/>, and must include the location and/or operating area, altitude, and time and nature of the activity. The NOTAM must indicate that the unmanned aircraft will not have Remote Identification pursuant to this authorization. The Responsible Person must verify the NOTAM has been issued prior to conducting waived operations;
15. Communication between the remote PIC and VO must allow for the remote PIC to light the sUA and/or ground the sUA with sufficient time to yield right-of-way in accordance with §107.37 as described in the waiver application;
16. The remote PIC may conduct operations with the makes, models specified in the application, equipped with redundant flight control and transmission systems, and must ensure adequate simultaneous control of the sUA so they remain inside the area of operation, as described in the waiver application;
17. The RPIC may operate up to the maximum number of sUA specified in the application;
18. Multiple sUA operations may only occur in areas in which access is restricted to people who are directly participating in the operation;
19. The remote PIC, the person manipulating the controls, and the dedicated VO must be able to determine the position, attitude, altitude, and direction of flight of each sUA relative to any other aircraft, persons, property, and obstructions during waived operations. Communication must be adequate for any person directly participating in the operation to halt operations when an unsafe condition occurs;
20. Prior to conducting operations under this Waiver, operational area obstacles and boundaries must be identified and located so as to avoid collision with, or damage to property and non-participating persons, as described in the waiver application;

TECHNICAL PROVISIONS

21. As described in the waiver application, prior to operations subject to this waiver, a two-layer geo fence must be set to contain all sUA within the planned operational area;
22. Prior to conducting operations under this Waiver, the Responsible Person must ensure that the two-layer geo-fence system and its associated flight control system operate properly and function as described in the waiver application;

23. The remote PIC must ensure that an individual system failure must not interfere with the operation of any other sUA or cause incidents, accidents, or loss of control involving any other sUA that are subject to this Waiver;
24. The sUAS must be equipped with the flight termination system described in the waiver application. Prior to operations subject to this waiver, the flight termination system must be tested and verified to operate as described in the waiver application;
25. As described in the waiver application, prior to conducting operations that are the subject of this Waiver, the flight controller and the associated flight control system capability for each aircraft, operate properly;
26. Prior to conducting operations, testing must be conducted as described in the waiver application;
27. The ground control station must audibly and visually notify the remote PIC of an sUA malfunction;
28. At all times during operations, the emergency sUA commands described in the waiver application, must be available to the remote PIC;
29. ADS-B out (1090/978 MHz) may not be transmitted from the sUAS when operating pursuant to this Waiver;
30. 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; and

ENVIRONMENTAL PROVISIONS

31. Operations conducted under this Waiver may occur at locations meeting the performance based criteria contained in the waiver application.