

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

CERTIFICATE OF WAIVER OR AUTHORIZATION

ISSUED TO

Firefly Drone Shows
Responsible Person: Kyle Dorosz
Waiver Number: 107W-2019-02506

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 standard and special provisions contained in this certificate, and such other requirements of the Federal Aviation Regulations not specifically waived by this certificate.

OPERATIONS AUTHORIZED

Operation of multiple small unmanned aircraft systems (sUAS) at night.

LIST OF WAIVED REGULATIONS BY SECTION AND TITLE

14 CFR § 107.29 Daylight operation
14 CFR § 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 17, inclusive, are set forth on the attached pages.

This Certificate of Waiver is effective from June 19, 2019 to July 31, 2022 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
Firefly Drone Shows**

General.

This Certificate of Waiver is an amendment, which supersedes and replaces Waiver 107W-2018-12572 issued to Firefly Drone Shows for operations under 14 CFR 107. Waiver 107W-2018-12572 is no longer valid.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. The Administrator finds that the proposed sUAS 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 sUAS in the manner you described. Adherence to the provisions of this Waiver establishes the required level of safety within the national airspace system.

This Waiver may be canceled at any time by the Administrator, the person authorized to grant the Waiver, or the representative designated to monitor a specific operation. 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 may serve as justification for cancellation.

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

14 CFR § 107.29 Daylight operation is waived to allow sUAS operations during night.

14 CFR §107.35 Operation of multiple sUAS 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 such requests.

Common Provisions. The Responsible Person is directly responsible for safety of operations conducted under this Waiver and will ensure the remote Pilot in Command (PIC), manipulator of the controls, and Visual Observer (VO) complies 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 are informed on the terms and provisions of this waiver and the strict observance of the terms and provisions herein;
 - b. Must ensure the remote PIC, manipulators of the controls, and VO are informed and familiar with part 107 regulations not waived; and
 - c. 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 must not be combined with any other waiver(s), authorization(s), or exemption(s) without specific authorization from the FAA;

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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 available during sUAS 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 the Waiver holder's operations. 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 small unmanned aircraft (sUA) by registration number(s) used in the Waiver holder's operations. This list must be presented for inspection upon request from the Administrator or an authorized representative;

Night sUAS Operations Special Provisions. sUAS operations may be conducted at night, as defined in 14 CFR § 1.1, provided:

7. 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;
8. The sUA must be equipped with lighted anti-collision lighting visible from a distance of no less than 3 statute miles. The intensity of the anti-collision lighting may be reduced if, because of operating conditions, it would be in the interest of safety to do so;
9. The area of operation must be sufficiently illuminated to allow both the remote PIC and VO to identify people or obstacles on the ground, or a daytime site assessment must be performed prior to conducting operations that are the subject of this Waiver, noting any hazards or obstructions;

Operation of Multiple sUAS Special Provisions. sUAS operations with multiple sUA may be conducted, provided:

10. Prior to conducting operations under this Waiver, the operational area boundaries must be identified and restricted to access as described in the waiver application. During operations, the flight operations area must be monitored as described in the waiver application;

11. As described in the waiver application, the responsible person must ensure that an individual system failure does not interfere with the operation of other sUA or cause incidents, accidents, or loss of control involving other aircraft in the swarm;
12. Prior to conducting operations subject to this Waiver, simulation-based testing must be conducted as described in the waiver application;
13. As described in the waiver application, prior to operations subject to this waiver, a geofence must be set to contain all sUA within the planned operational area;
14. 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;
15. As described in the waiver application, operations of multiple sUA conducted under this Waiver are limited to 250 sUA operated simultaneously by a single PIC, at least one VO per 20 sUA being operated simultaneously, a maximum altitude of 400 feet above ground level (AGL), and 15 mph ground speed;
16. At least 72 hours prior to conducting operations that are the subject of this waiver, the responsible person must notify the local Flight Standards District Office manager. The notification must include:
 - a) The location of the planned sUAS operation,
 - b) The time or times 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/; and

17. Not less than 24 hours prior to conducting operations that are the subject 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, and number of sUA flying in the operating area.