

# Advisory Circular

## CENTRALISED FLIGHT MANAGEMENT SYSTEM

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### GENERAL

Advisory Circulars (ACs) are issued by the Director-General of Civil Aviation (DGCA) from time to time to provide practical guidance or certainty in respect of the statutory requirements for aviation safety. ACs contain information about standards, practices and procedures acceptable to CAAS. An AC may be used, in accordance with section 11 of the Air Navigation Act 1966 (ANA), to show that compliance with a statutory requirement has been achieved. The revision number of the AC is indicated in parenthesis in the suffix of the AC number.

### PURPOSE

This Advisory Circular provides guidance for compliance with requirements relating to Centralised Flight Management System (CFMS) in Singapore.

### APPLICABILITY

This AC is applicable to persons whose activities necessitate applying and holding CAAS operator permits.

### RELATED REGULATIONS

This AC relates specifically to Part 2A of the Air Navigation (101 – Unmanned Aircraft Operations) Regulations (“ANR-101”).

### RELATED ADVISORY CIRCULARS

AC 101-2-1 Permits for Unmanned Aircraft Operations

### CANCELLATION

Nil.

### EFFECTIVE DATE

This AC is effective from 1 June 2022.

**OTHER REFERENCES**

Nil.

# 1 APPLICABILITY OF CENTRALISED FLIGHT MANAGEMENT SYSTEM REQUIREMENTS

1.1 Effective from 1 June 2022, an unmanned aircraft (UA) operator permit (OP)<sup>1</sup> holder must ensure compliance with the requirements specified in Part 2A of the ANR-101 when operating a UA under the authority of his UA OP (“relevant UA”). The key regulations are reproduced below:

Regulation	Requirement
19C(1)	A UA operator permit holder must — (a) subscribe to the Centralised Flight Management System service; and (b) remain a subscriber to the Centralised Flight Management System service at all times during the validity of the UA operator permit.
19D(1)	A UA operator permit holder must ensure that each unmanned aircraft operated under the authority of the UA operator permit is, at all times when so operated, in compliance with all of the following requirements: (a) where the unmanned aircraft has a total mass exceeding 250 g, the unmanned aircraft must be affixed with a tracking device, where the UA operator permit does not state that flight telemetry data of the unmanned aircraft can be transmitted without a tracking device affixed to the unmanned aircraft;  (b) the UA pilot flying the unmanned aircraft — (i) has, on his or her person, a mobile device on which the designated mobile application is installed and is in active use; or (ii) has in his or her presence another individual who has, on that individual’s person, a mobile device on which the designated mobile application is installed and is in active use;  (c) the UA pilot flying the unmanned aircraft complies with every instruction given by the Authority to the UA pilot through the designated mobile application mentioned in sub-paragraph (b).
19D(2)	A UA pilot flying an unmanned aircraft operated under the authority of a UA operator permit must, at all times when flying the unmanned aircraft — (a) have — (i) on his or her person, a mobile device on which the designated mobile application is installed and is in active use; or (ii) in his or her presence another individual who has, on that individual’s person, a mobile device on which the designated mobile application is installed and is in active use; and

1.2 The FlyItSafe mobile application is specified by CAAS as the “designated mobile application” referred to in ANR-101.

1.3 Based on these regulations, the UA OP holder can fly a UA without an attached UA tracker when:

<sup>1</sup> Refer to Advisory Circular AC 101-2-1 to ascertain if your operations require a UA OP.

- (a) the UA's total mass does not exceed 250 g; or
- (b) the UA OP indicates that the UA model, despite having with a total mass exceeding 250 g, is capable of transmitting flight telemetry data in accordance with CAAS' designated protocol, without using an attached UA tracker.

Note:

When the UA OP holder operates more than one UA simultaneously, each UA with a total mass exceeding 250 g must be attached with a UA tracker.

1.4 Regulation 19D of ANR-101 provides for CAAS to waive the requirements to use a tracker or to use the FlyItSafe application on a case-by-case basis. Some scenarios that the UA may be permitted to be operated without a tracker and/or active use of the FlyItSafe application include:

	Scenarios	Would the requirement to fly with an attached UA tracker <b>be waived?</b>	Would the requirement to fly with active use of the FlyItSafe application <b>be waived?</b>
(a)	UA OP holder carrying out tethered UA operations	Yes	No
(b)	UA OP holder operating large number of UA, eg for flying displays	Yes	No
(c)	UA OP holder operating UA within indoors <sup>2</sup> premises	Yes	Yes

## 2 INFORMATION ON THE CFMS

2.1 The CFMS is a system that serves to (i) monitor, on a real-time basis, the locations and activities of relevant unmanned aircraft; and (ii) provide notifications and instructions from the Authority to the operators of relevant unmanned aircraft.

2.2 One component of CFMS is the FlyItSafe mobile application. This is the main interface for UA OP holders. The following services are offered through the FlyItSafe mobile application:

- (a) A real time situation picture of their operations and those of other UA OP holders in the vicinity;
- (b) Alerts if their UA is approaching or has breached boundaries of the approved flight areas in their AP;
- (c) Alerts if they need to land their UA immediately due to emergency or security operations.

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<sup>2</sup> ANR-101 "indoors", in relation to any place, means any place that is enclosed at the top and on all sides (whether permanently or temporarily) so as to prevent the flight of any unmanned aircraft into or out of that place.

- 2.3 The UA tracker is another component of CFMS. The UA tracker to be attached to the UA being flown, provides more accurate flight telemetry data as compared to relying solely on the FlyItSafe mobile application.

### **3 USE OF THE FLYITSAFE MOBILE APPLICATION**

- 3.1 The FlyItSafe mobile application may be downloaded from the Apple App Store and Google Playstore. More information on the use of the FlyItSafe mobile application is found in **Appendix 1**.
- 3.2 As provided in Regulation 19D(2)(b) of ANR-101, a UA pilot must comply with every instruction given by the Authority to the UA pilot through the designated mobile application. The UA pilot should refer to the FlyItSafe user manual referred in **Appendix 1** for actions to be taken under different circumstances, including when the application functionalities cannot be accessed.

### **4 PURCHASE AND USE OF THE UA TRACKER**

- 4.1 The UA trackers are available for purchase. As UA trackers are linked to the UA OP and are non-transferable, UA OP holders are recommended to only purchase the quantity of UA trackers necessary for operations.
- 4.2 A ground verification check should be carried out when installing a UA tracker for the first time on a UA model that is not listed within the UA tracker user manual. If there are multiple UA of the same model, this check only needs to be done before the first flight of any one of the UA. The results of the ground verification check should be reported to CAAS. A UA model that is not listed in the UA tracker user manual should not be flown unless (i) it has satisfactorily completed the check or (ii) CAAS had waived the requirement<sup>3</sup> for it to be flown with an attached UA tracker.
- 4.3 UA OP holders should report to CAAS within 72 hours after the completion of the affected flight if the UA tracker is faulty. This will allow CAAS to collect more data for future product improvements. The UA OP holder should contact the original equipment manufacturer of the UA tracker for repair(s) at the earliest possible opportunity. Nevertheless, the UA OP holder may continue with the operations, using the FlyItSafe mobile application, if the fault is discovered just before or during a UA flight.
- 4.4 More information on purchase, collection, attachment and use of a UA tracker and reporting to CAAS is found in **Appendix 1** and **Appendix 2**.

### **5 UPDATES TO THE OPERATOR PERMIT, ACTIVITY PERMIT AND OPERATIONS PROCEDURES**

- 5.1 For UA OP holders intending to transmit flight telemetry data without an attached UA tracker, a request should be submitted via [CAAS\\_CFMS\\_Helpdesk@caas.gov.sg](mailto:CAAS_CFMS_Helpdesk@caas.gov.sg). The UA OP holder should apply for a variation to the authorisations/ limitations in the UA OP after the request has been approved.
- 5.2 For existing activity permits (APs) with activity dates valid beyond 1 June 2022, CAAS will reach out to the affected activity permit holder with further guidance.

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<sup>3</sup> A waiver is necessary for flights without UA trackers from 1 June 2022.

- 5.3 For new APs with activity dates starting from 1 June 2022. UA OP holders are advised to clearly indicate if their activities fall within the scope of Paragraph 1.3 and submit the necessary supporting information. CAAS will indicate within the issued APs if the UA may be flown without attached UA tracker and/or active use of the FlyItSafe mobile application.
- 5.4 Operations Procedures. The UA OP holder should update his or her Operations Procedures on the UA OP holder's responsibilities regarding CFMS, and include appropriate procedures for:
- (a) Requiring a UA pilot to confirm the attached UA tracker is operating satisfactorily before a UA is flown under the authority of the UA OP;
  - (b) Requiring for a UA pilot to have
    - (i) on his or her person, a mobile device on which the FlyItSafe mobile application is installed and in active use;
    - (ii) in his or her presence another individual who has, on that individual's person, a mobile device on which the FlyItSafe mobile application is installed and in active use;
  - (c) Requiring a UA pilot flying a UA under the authority of the UA OP to follow every instruction given by the Authority through the FlyItSafe mobile application; and
  - (d) Management of defective UA trackers, as described in Paragraph 4.3.

## **6 FEES**

- 6.1 A fee of \$200 will be charged:
- (a) for the initial grant of UA OP with validity starting on or after 1 June 2022; and
  - (b) for the renewal of a UA OP with validity starting on or after 1 June 2023.
- 6.2 There is a fee of \$265 (subject to prevailing goods and services tax) for the purchase of each UA tracker.

## APPENDIX 1 QUICK REFERENCES ON KEY INFORMATION

For information on	Quick references and links
FlyItSafe mobile application	
Downloading FlyItSafe mobile application	<p>For iOS users: <a href="https://go.gov.sg/y77ubc">https://go.gov.sg/y77ubc</a></p> <p>For Android users: <a href="https://go.gov.sg/spm7qd">https://go.gov.sg/spm7qd</a></p>
FlyItSafe user manual (containing instructions for login and pairing with the UA tracker)	<p>User manual:  <a href="https://www-caas-gov-sg-admin.cwp.sg/docs/default-source/docs---upr/user_manual-(flyitsafe).pdf">https://www-caas-gov-sg-admin.cwp.sg/docs/default-source/docs---upr/user_manual-(flyitsafe).pdf</a></p> <p>Note: (a) <u>For individual UA OP holders:</u> Select “Users without UEN” and input SingPass credentials.</p> <p>(b) <u>For UA pilots engaged by UA OP holders:</u> Select “Users with UEN” and input Singpass credentials after the e-service is assigned by the UA OP holder’s CorpPass Admin.</p>
Assignment of e-services	<p>User guide for account creation and assignment of digital services:  <a href="https://www.corppass.gov.sg/corppass/common/userguides">https://www.corppass.gov.sg/corppass/common/userguides</a></p>
UA tracker	
Purchasing and in-person collection of the UA tracker	<p>eSOMS guide:  <a href="https://www-caas-gov-sg-admin.cwp.sg/docs/default-source/docs---upr/a-guide-for-purchase-of-ua-tracker-(cfms).pdf">https://www-caas-gov-sg-admin.cwp.sg/docs/default-source/docs---upr/a-guide-for-purchase-of-ua-tracker-(cfms).pdf</a></p> <p>Note: Refer to the eSOMS notification email for steps to collect the UA tracker.</p>
UA tracker user manual (containing instructions for attaching the UA tracker and list of tested UA models)	<p>User manual:  <a href="https://www-caas-gov-sg-admin.cwp.sg/docs/default-source/docs---upr/mdf-ua-tracker-users-manual.pdf">https://www-caas-gov-sg-admin.cwp.sg/docs/default-source/docs---upr/mdf-ua-tracker-users-manual.pdf</a></p> <p>Reporting to CAAS when the UA tracker is faulty:  <a href="https://go.gov.sg/r4huwu">https://go.gov.sg/r4huwu</a></p>
Ground verification check (only applicable to UA models that are not listed in the UA tracker user manual)	<p>Instructions for the ground verification check:  <a href="https://www-caas-gov-sg-admin.cwp.sg/docs/default-source/docs---upr/caas-anr101-3-01---cfms-tracker-ground-verification-check.pdf">https://www-caas-gov-sg-admin.cwp.sg/docs/default-source/docs---upr/caas-anr101-3-01---cfms-tracker-ground-verification-check.pdf</a></p> <p>Reporting to CAAS after satisfactory completion:  <a href="https://go.gov.sg/jl09rz">https://go.gov.sg/jl09rz</a></p> <p>Reporting to CAAS if the check could not be completed:  <a href="mailto:CAAS_CFMS_Helpdesk@caas.gov.sg">CAAS_CFMS_Helpdesk@caas.gov.sg</a></p>
Request to transmit flight telemetry data without an attached UA tracker.	<p>Interested UA OP holders should submit a request via  <a href="mailto:CAAS_CFMS_Helpdesk@caas.gov.sg">CAAS_CFMS_Helpdesk@caas.gov.sg</a></p>





## **APPENDIX 2 DETAILS ON PURCHASE AND COLLECTION OF UA TRACKERS**

### **1 PROCUREMENT PROCESS**

- 1.1 The purchase of the UA trackers involves a 2 steps process:
  - (a) To apply and make payment for the trackers through eSOMS.
  - (b) To arrange for an appointment to collect the tracker in person at the designated collection point.
- 1.2 The expected lead time from point of application to in-person collection is 7 working days.

### **2 APPLICATION AND PAYMENT VIA ESOMS**

- 2.1 Only valid UA OP holders can submit an application to indicate the number of trackers they wish to purchase. A step-by-step guide on how to submit the application through eSOMS is included in Appendix 1.
- 2.2 On successful receipt of payment, an eSOMS confirmation email with detailed instructions on how to make an appointment for tracker collection will be provided.

### **3 UA TRACKER COLLECTION**

- 3.1 A second confirmation email will be sent after confirmation of the UA tracker collection appointment. This email should be presented at the designated collection point.
- 3.2 Upon collection, a basic functionality check of the UA tracker will be carried out. The person collecting will also need to login to the FlyItSafe mobile application for an on-the-spot verification of the UA tracker IMEI. Instructions on login to the FlyItSafe mobile application is provided in the FlyItSafe User Manual included in Appendix 1.