AC 101-2A-2(1)
9 June 2025

Civil Aviation Authority of Singapore

Advisory Circular

BROADCAST REMOTE IDENTIFICATION OF UNMANNED AIRCRAFT

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 requirements relating to broadcast remote identification (“B-RID”) of unmanned aircraft (“UA”) in Singapore.

APPLICABILITY
This AC is applicable to the person who operates or causes or permits an individual to operate a registrable UA under regulation 19F of the Air Navigation (101 – Unmanned Aircraft Operations) Regulations 2019 (“ANR-101”).

RELATED REGULATIONS
This AC relates specifically to Division 1 and 3 of Part 2A of ANR-101, which will come into effect from 1 December 2025. Refer to **Appendix 1** for details.

RELATED ADVISORY CIRCULARS
- AC 101-2A-1 Centralised Flight Management System

CANCELLATION
Revision (1) of this AC supersedes revision (0). In this revision, amendments were made to the pre-flight checks, and provide additional information regarding the Operator ID, with the FAQs updated.

EFFECTIVE DATE
Revision (1) of this AC is effective from 9 June 2025.

OTHER REFERENCES
Nil.

1 INFORMATION ON BROADCAST REMOTE IDENTIFICATION

1.1 Broadcast remote identification leverages Wi-Fi and Bluetooth technology to transmit information such as the UA's position and serial number, the location of the UA operator and the identification reference number of the operator. This allows UA in the skies to be identified for safety and security purposes.

1.2 This AC is intended to prepare UA users in complying with the B-RID requirements that will come into effect on 1 December 2025.

2 APPLICABILITY[1]

2.1 A UA user must ensure the UA being operated comply with B-RID requirements **unless**:

(a) the UA is not a registrable UA; or

(b) the UA is operated or intended to be operated indoors; or

(c) the UA and UA activity is conducted in compliance with Centralised Flight Management System (CFMS) requirements. Information on the CFMS is found in AC 101-2A-1 Centralised Flight Management System.

Note: Failure to comply could lead to a fine of up to $10,000, or imprisonment not exceeding 6 months, or both.

3 MEETING B-RID REQUIREMENTS

Step 1: Using B-RID capable devices

3.1 To comply with B-RID requirements, a UA user must ensure that the UA broadcast remote identification information through one of the following means:

(a) Built-in B-RID capability: B-RID capability has been integrated into the UA as part of its original design and manufacture; or

(b) Attached B-RID module: The UA is equipped with an external functioning B-RID module securely affixed to the UA.

3.2 The UA with B-RID capability or B-RID module will have to meet the B-RID technical requirements specified in **Appendix 2**. A UA user may refer to the CAAS website (https://go.gov.sg/caas-brid) for a list of UA models and B-RID modules that meet the B-RID technical standards and requirements in Singapore.

3.3 A UA user using any UA that is not equipped with B-RID capability would have to affix a functioning B-RID module prior to operating the UA.

[1] Refer to **Appendix 1** for applicable definitions of the terms used.

Step 2: Ensure that B-RID is functional

3.4 Besides having a UA or B-RID module that meets the B-RID technical standards, the UA user must ensure that the UA has functioning B-RID capability or is affixed with a functioning B-RID module. UA user is advised to:

(a) Check that the UA or B-RID module is not indicating any B-RID system error or fault, with reference to the user / operating manual provided by the UA manufacturer or B-RID module manufacturer. Refer to the pre-flight checks in **Appendix 3** for details.

(b) Should the manufacturer enable any B-RID setting to be editable by UA user, the UA user must ensure the correct setting as specified in **Appendix 2** is selected.

3.5 Pursuant to ANR-101 regulation 19F, a UA user is to ensure that the following B-RID information are being broadcasted by the UA or the B-RID module.

B-RID Information	Description
Operator ID	The unique identification reference number assigned to each UA user by CAAS. A UA user will be required to input their unique Operator ID into the UA operating interface, ground control station or that of the B-RID module. As the interface to input the Operator ID is dependent on the model of the UA and the B-RID modules used, please refer to the respective user manuals from manufacturers. Note: UA user may check for their unique Operator ID via the UA registration portal (https://esoms.caas.gov.sg/uaportal/index.html). Refer to **Appendix 4** for more details.
Unique serial number	(i) The serial number of the UA if the UA has B-RID capability; or (ii) The serial number of the B-RID module affixed to the UA, if the UA is affixed with a B-RID module.
Geographical position of UA	The geographical position of the UA and time stamp corresponding to that geographical position.
Height of UA operations	The height of the UA operation measured from the ground or from the take off point of the UA and time stamp corresponding to that height.
UA heading	The route course of the UA measured clockwise from true north.
Speed of UA	The ground speed of the UA.

B-RID Information	Description
Geographical position of pilot	The geographical position of the pilot or operator operating the UA, or if that information is not available, the geographical position of the take off point of the UA.

Note: It is an offence to intentionally broadcast any remote identification information that is false or misleading, and could face a fine of up to $10,000, or imprisonment not exceeding 6 months, or both.

APPENDIX 1 EXCERPTS OF B-RID RELATED REGULATIONS

1 Definitions extracted from the First Schedule of ANR-101

ANR-101
FIRST SCHEDULE
DEFINITIONS

"registrable unmanned aircraft" means an unmanned aircraft with a total mass exceeding 250 grams, but does not include an unmanned aircraft that is operated or intended to be operated solely for the conduct of light shows under a Class 1 activity permit.

"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.

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2 Forthcoming B-RID related regulations

The new Part 2A (covering Regulations 19A to 19F) of ANR-101 will come into effect on 1 December 2025. These regulations[2] are reproduced below for ease of reference for purpose of this AC.

PART 2A
REMOTE IDENTIFICATION

Division 1 — General

Purpose of this Part

19A. *The purpose of this Part is to enable the operation of unmanned aircraft in and over Singapore to be identified, monitored, and controlled for the safety of air navigation and for public safety.*

Definitions of this Part

19B. *In this Part, unless the context otherwise requires —*

"Broadcast Remote Identification capability" or "B-RID capability" means the capability built into an unmanned aircraft to broadcast remote identification information of the unmanned aircraft when the unmanned aircraft is in flight.

"Broadcast Remote Identification module" or "B-RID module" means a device affixed to an unmanned aircraft that is capable of broadcasting remote identification information of the unmanned aircraft when the unmanned aircraft is in flight.

[2] These are excerpts from Air Navigation (101 — Unmanned Aircraft Operations) (Amendment) Regulations 2025. Readers must consult the official published regulation for the authoritative version. The official regulations shall prevail in the event of any discrepancy.

"remote identification information", in relation to an unmanned aircraft, means —

(a) the identification number that the Authority has assigned to the person who registered the unmanned aircraft under regulation 45;

(b) the unique serial number of the following, whichever is applicable:

(i) in a case where the unmanned aircraft has functioning B-RID capability — the unmanned aircraft;

(ii) in any other case — the B-RID module affixed to the unmanned aircraft;

(c) the geographical position of the unmanned aircraft and the time stamp corresponding to that geographical position;

(d) the height of the unmanned aircraft measured from the ground or from the take-off point of the unmanned aircraft and the time stamp corresponding to that height;

(e) the route course of the unmanned aircraft measured clockwise from true north;

(f) the ground speed of the unmanned aircraft; and

(g) the geographical position of the remote pilot operating the unmanned aircraft, or if that information is not available, the geographical position of the take-off point of the unmanned aircraft.

Division 3 — Broadcast Remote Identification or B-RID

Non-application and waiver of regulation 19F to certain unmanned aircraft

19E. *—(1) Regulation 19F does not apply in relation to —*

(a) an unmanned aircraft that is not a registrable unmanned aircraft;

(b) an unmanned aircraft that is operated or intended to be operated indoors;

(c) an unmanned aircraft in relation to which the requirement in regulation 19D(1)(b) applies; or

(d) a flight of an unmanned aircraft in relation to which the requirement in regulation 19D(1)(b) applies.

(2) Where regulation 19F applies in relation to an unmanned aircraft, the Authority may waive the application of any provision in regulation 19F in relation to the unmanned aircraft or any flight of an unmanned aircraft if the Authority is satisfied that the design of the unmanned aircraft or the circumstances under which the flight of an unmanned aircraft is to take place (as the case may be) are such that the waiver —

(a) poses negligible risk to aviation safety or to public safety; or

(b) is necessary or desirable in the interest of national security.

Requirements relating to remote identification Information

19F. *—(1) A person must not operate, or cause or permit an individual to operate, an unmanned aircraft unless —*

(a) the unmanned aircraft has functioning B-RID capability or is affixed with a functioning B-RID module; and

(b) the unmanned aircraft or the B-RID module affixed to the unmanned aircraft is capable of broadcasting all remote identification information in relation to the unmanned aircraft in accordance with the requirements specified in the Aviation Specifications 10 — Broadcast Remote Identification issued by the Director-General of Civil Aviation when the unmanned aircraft is in flight.

(2) A person who operates, or causes or permits an individual to operate, an unmanned aircraft without functioning B-RID capability must ensure that the B-RID module affixed to the unmanned aircraft is switched on before the unmanned aircraft takes flight.

(3) A person must not intentionally broadcast any remote identification information that is false or misleading.

(4) A person who, without reasonable excuse, contravenes paragraph (1) or (2) shall be guilty of an offence and shall be liable on conviction to a fine not exceeding $10,000 or to imprisonment for a term not exceeding 6 months or to both.

(5) A person who contravenes paragraph (3) shall be guilty of an offence and shall be liable on conviction to a fine not exceeding $10,000 or to imprisonment for a term not exceeding 6 months or to both.

APPENDIX 2 B-RID TECHNICAL REQUIREMENTS

Technical Standards and Specifications

1 The broadcasting of remote identification information must be in accordance with the standard known as EN 4709-002 that is adopted by the European Committee for Standardization, and includes any amendment or revision to the standard made from time to time that is so adopted.

2 The remote identification information are to be broadcasted when the UA is in flight[3] in the settings stated below.

CATEGORY	ALLOWABLE SETTINGS
Broadcast Method(s)	• Bluetooth 5 Long Range; or • Wi-Fi NAN; or • Wi-Fi Beacon. Only 1 of the broadcast methods is required.
Broadcast Frequency and Minimum Power	• 2.4 GHz Bluetooth with at least +5 dBm; • 2.4 GHz Wi-Fi with at least +11 dBm; • 5.8 GHz Wi-Fi with at least +4 dBm.
Update and Transmission Rates	• For dynamic messages: at least once every 1 second (i.e. 1 Hz or higher). • For static messages: at least once every 3 seconds (i.e. 1/3 Hz or higher). • For maximum data age: no older than one second for dynamic messages.

[3] The remote identification information can optionally also be transmitted when the UA is on the ground (i.e. from switch-on to switch-off).

APPENDIX 3 B-RID PRE-FLIGHT CHECKS

This appendix outlines the procedures to check that your UA is properly setup and broadcasting correctly before flight. For detailed setup and verification instructions, consult your UA or B-RID module manufacturer's manual.

There are two sections to this document. Please refer to the right section of the document, depending on your UA's B-RID configuration:

Section 1	UA with built-in B-RID capability
Section 2	UA affixed with B-RID module

Section 1 – UA with Built-in B-RID Capability

1.1 Objectives

The objective of this pre-flight check is to ensure that the UA with built-in B-RID capability is properly setup to transmit B-RID information.

1.2 Equipment and Documentation Required

S/N	Description
1	UA and UAS support equipment and operating manual e.g., remote controller, landing system, where necessary.
2	Operator ID: Unique identification reference number assigned to each UA user by CAAS. UA user may check for their unique Operator ID via the UA registration portal (https://esoms.caas.gov.sg/uaportal/index.html).

1.3 Setup

(a) Refer to the CAAS website: (https://go.gov.sg/caas-brid), and check that your UA model is listed within the list of UA models that meets the B-RID technical standards and requirements for Singapore. If your UA is not listed, refer to the frequently asked questions in **Appendix 5**.

(b) Complete the UA setup procedures as per the UA user manual provided by the UA manufacturer. For B-RID setting that is editable, UA user must ensure the correct settings as stated in **Appendix 2** are selected.

1.4 Test Steps

Step	Description	Expected Result / Evaluation Criteria
1	Place your UA on a flat open area at your intended operating area.	NA
2	Switch on your UA and enter the Operator ID information into the UA.	Ensure that your Operator ID is successfully entered into the system.
3	Check that the UA is not indicating any B-RID system error or fault.	No B-RID system error or fault.

(a) In the event there is an unexpected result / observation from the procedure, UA user is to refer to the UA manual for instructions and contact the UA manufacturer if necessary.

(b) If the issue persists, do not proceed with the UA operations until the issue has been rectified.

Section 2 – UA Affixed with B-RID Module

2.1 Objectives

The objective of this pre-flight check is to ensure that:

(a) The B-RID module is affixed to the UA securely and do not affect the airworthiness of the UA.

(b) The B-RID module is properly setup to transmit B-RID information.

2.2 Equipment and Documentation Required

S/N	Description
1	UA and UAS support equipment and operating manual e.g., remote controller, landing system, where necessary.
2	B-RID module including all attachment equipment and devices.
3	Operator ID: Unique identification reference number assigned to each UA user by CAAS. UA user may check for their unique Operator ID via the UA registration portal (https://esoms.caas.gov.sg/uaportal/index.html).

2.3 Setup

(a) Refer to the CAAS website: (https://go.gov.sg/brid-products), and check that your B-RID module is listed within the list of modules that meets the B-RID technical standards and requirements for Singapore. If your module is not listed, refer to the frequently asked questions in **Appendix 5**.

(b) Complete the UA setup procedures as per the UA user manual provided by the UA manufacturer.

(c) Taking guidance from the B-RID module manual, determine a suitable location on the UA and attach the B-RID module on the UA. For B-RID setting that is editable, UA user must ensure the correct settings as stated in **Appendix 2** are selected.

Note: In general, the B-RID module should be attached firmly on the external upper surface of the UA, without hindering the movement of the propellers and any onboard sensors. Do make sure that the module is mounted securely to prevent the module from coming loose during the flight. To minimise impact to flight performance and safety, the module should also be installed as central to the UA body as possible.

2.4 Test Steps

Step	Description	Expected Result / Evaluation Criteria
1	With the B-RID module attached, shake the UA to ensure that the attachment is secure.	After shaking, module position on the UA is unchanged.

Step	Description	Expected Result / Evaluation Criteria
2	Locate the Centre of Gravity (CG) of your UA. You may refer to your UA's manual for the CG location. Place your fingertips under the UA at the specified CG point. Observe the balance of the UA.	The UA remained level without tipping forward or backward. The UA do not tilt to either side. Note: If the UA is not balanced, adjust the location of the B-RID module until the UA is level.
3	Switch on your UA and B-RID module. Enter the Operator ID information into the B-RID module.	Ensure that your Operator ID is successfully entered into the system.
4	Check that the B-RID module is not indicating any system error or fault.	No B-RID system error or fault.
5	Conduct a UA pre-flight check.	There is no abnormal UA system error or fault: • Command and control link is established and maintained without any interference from the B-RID module. • UA status and sensor data reported by the UA is valid.

(a) In the event there is an unexpected result/ observation from the procedure, UA user is to refer to the UA or B-RID module manual for instructions and contact the UA or B-RID module manufacturer if necessary.

(b) If the issue persists, do not proceed with the UA operations until the issue has been rectified.

Annex to Appendix 3

1. B-RID leverages Bluetooth and Wi-Fi technology to transmit UA's information, and the B-RID technical standards (EN 4709-002) adopted by EASA and Singapore specify the usage of at least 1 of the following broadcast methods:
   - Bluetooth 5 Long Range; or
   - Wi-Fi NAN; or
   - Wi-Fi Beacon.

2. Should UA user wish to view the B-RID information that is being broadcasted, you may do so by installing free-to-use B-RID receiver mobile applications on suitable mobile devices.

3. While the technology is selected to be compatible with commonly carried mobile devices, it is noted not all mobile devices are suitable. There are mobile devices that are unable to receive the B-RID information broadcasted via some or all of the B-RID broadcast methods[4].

4. If your mobile device can receive the B-RID information broadcasted, it would function as an additional means to verify that the B-RID information are being broadcasted correctly by the UA or the B-RID module.

5. It is not a requirement for your mobile device to receive the B-RID information broadcasted. If your mobile device is unable to do so, you may rely on the UA or B-RID module manual to verify that the B-RID is functional before operating your UA.

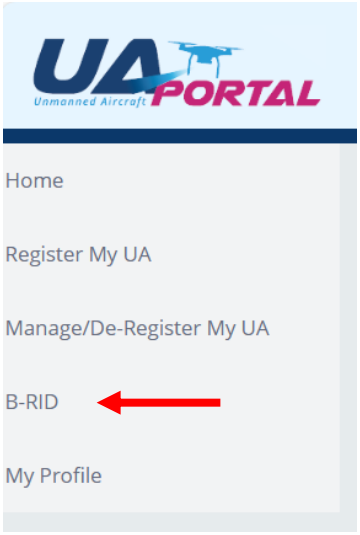
[4] For example, Apple iOS devices seem to be unable to receive B-RID signals broadcasted via Bluetooth 5, Wi-Fi NAN, and Wi-Fi Beacon.

APPENDIX 4 OPERATOR ID

The UA Operator Identification Number (Operator ID) assigned by CAAS is a unique identifier for each UA user and Organisation. It consists of two parts:

- Broadcasted Portion (e.g. SGPxxxxxxxxxxxx)
  - Transmitted by UA with B-RID capability or B-RID module
  - Enables identification of UA in the skies for safety and security purposes
- Private Secure Key (e.g. xxx)
  - Verifies the validity of the complete Operator ID
  - Never broadcasted

UA user can view their unique Operator ID via the UA registration portal (https://esoms.caas.gov.sg/uaportal/index.html).



For operation, user must input their complete Operator ID (both portions) into their UA operating interface, ground control station or B-RID module. The input method varies by UA model and B-RID module – please consult the manufacturer's user manual for specific instructions.

Note: When using a suitable mobile device to view the B-RID information that is being broadcasted, you will see that only the broadcasted portion of the Operator ID will be received and displayed by the B-RID receiver mobile application. The private secure key should neither be received nor displayed.

APPENDIX 5 FREQUENTLY ASKED QUESTIONS

S/N	Question	Answer
1	Who needs to comply with B-RID requirements?	UA weighing above 250 grams and operating outdoors under the following conditions must comply with B-RID requirements when: (a) Activities conducted for educational purposes using UA with total weight of up to 7 kilograms; or (b) Activities conducted for recreational purposes using UA with a total weight of up to 25 kilograms; or (c) Training and assessments conducted by UA training and assessment organisations (UATO); or (d) Activities conducted under the scope of the Operator Permit, and the activity granted a waiver by CAAS from the usage of the CFMS "FlyItSafe" mobile application. Note: B-RID is not required for activities conducted indoors.
2	I am only intending to fly my UA indoors. Do I need to comply with B-RID requirements?	No, UA operations conducted indoors will not be required to comply with B-RID requirements. Please refer to Appendix 1 for the definition of indoors.
3	If I intend to operate both outdoors and indoors / within enclosed environments, do I need to comply with B-RID requirements?	Yes, you will need to comply with B-RID requirements, as long as you operate your UA outdoors. To carry out any outdoor UA activities, you will need to operate a B-RID capable UA or a UA affixed with a B-RID module.
4	I am a UA Operator Permit holder. Do I need to comply with B-RID requirements?	B-RID is not required for UA activities conducted under the scope of the UA Operator Permit and Class 1 Activity Permit. However, you will need to comply with B-RID requirements if the UA activity has been granted a waiver by CAAS from the usage of the CFMS "FlyItSafe" mobile application.
5	I am a foreigner visiting Singapore and intend to operate my UA that already	The B-RID technical standards adopted by Singapore is the 'ASD-STAN EN 4709-002'. There

S/N	Question	Answer
	has built-in B-RID capabilities and is already compliant to my country's B-RID requirements. Do I still need to obtain a local B-RID module and Operator ID?	may also be a need for UA manufacturers to activate the B-RID functionality for usage in Singapore. You will be required to first register your UA with CAAS, and obtain an Operator ID from us. Please also refer to the Q&A on "*How do I know if my UA meets B-RID requirements?*"
6	How do I know if my UA or B-RID module meets the B-RID requirements?	You may refer to the CAAS website (https://go.gov.sg/caas-brid) for the list of UA models and B-RID modules that meet the B-RID technical standards and requirements, to determine if your UA is equipped with B-RID capability, or when purchasing a B-RID compliant module. If your UA is not listed, refer to the Q&A for "*What should I do if my UA or B-RID module is not listed in the list of UA models and B-RID modules?*"
7	What should I do if my UA or B-RID module is not listed in the list of UA models and B-RID modules?	The list is non-exhaustive. You may contact your UA or B-RID module manufacturer for clarification, and request for them to declare conformity to CAAS via "https://go.gov.sg/brid-declaration". Alternatively, you may affix a B-RID module that is listed within the list of modules that meets the B-RID technical standards and requirements.
8	Can I purchase any B-RID module from any OEM that fits my technical specification requirements?	UA and B-RID modules that are not aligned with the technical standards adopted by Singapore, 'ASD-STAN EN 4709-002', are not considered compliant with the B-RID requirements. To find out if the B-RID module you are intending to purchase is compliant, refer to the Q&A on "*How do I know if my UA or B-RID module meets the B-RID requirements?*"
9	If my UA is compliant with B-RID requirements, can I remove the UA registration label?	No, you are still required to register your UA, and affix the registration label on the UA.
10	Do I need to register my UA if it complies with B-RID requirements?	Yes, if your UA has a total weight exceeding 250 grams, you are required to register it before you fly.
11	I have registered my UA and complied with B-RID requirements. Do I still need to obtain permits and/or hold a UA Pilot License?	Yes, depending on the purpose of activity, the total weight of your UA, as well as the location and height at which you intend to fly your UA, you may still need to obtain a UA Basic Training Certificate, a UA

S/N	Question	Answer
		Pilot Licence, an Activity Permit and/or an Operator Permit.
12	How do I get my Operator ID?	The Operator ID is a unique identification reference number assigned to each UA registrant and Organisation by CAAS. You may log in to the UA registration portal (https://esoms.caas.gov.sg/uaportal/index.html) to check for your Operator ID.
13	Why do I not have an Operator ID?	You will have to register your UA with CAAS, before an Operator ID is assigned to you.
14	Can I share my Operator ID?	As the Operator ID serves as an identification reference number and is unique to you, you should not share your Operator ID and its private secure key to prevent misuse.
15	My friend wants to borrow my UA. Whose Operator ID should be used?	The UA owner's Operator ID must be used. To protect your private secure key when lending your drone, pre-load your Operator ID into the UA before authorising the use of the UA.
16	My company is not a UATO nor operate any unmanned aircraft for an education purpose. Why has my company been assigned an Operator ID? Is my company required to broadcast this Operator ID during drone operations?	CAAS assigns Operator ID to organisations as there might be instances where UA owned by your organisation is required to comply with B-RID requirements, such as UA used for recreational purposes by employees. You will need to broadcast the Operator ID if you are required to comply with the B-RID requirements. Please also refer to the Q&A on "*Who needs to comply with B-RID requirements?*"
17	How many B-RID modules do I need for my fleet of UA?	You do not need a module for every registrable UA in your fleet. As B-RID modules are transferrable between UA, the number of B-RID modules you require is dependent on the number of UA you intend to operate concurrently. Minimally, every registrable UA should be affixed with a B-RID module at the time of its operation. Note: UA with functioning built-in B-RID capability will not need to be affixed with a B-RID module.
18	Can I share or transfer my B-RID module to my friend to operate their UA?	Yes, while the B-RID modules are transferrable between UA, your friend will need to enter their own Operator ID to the B-RID module operating interface at the time of their UA operation as the UA owner's Operator ID must be used.

S/N	Question	Answer
19	How should I install the B-RID module to reduce the impact on the flight performance of my UA?	You should refer to the B-RID manual for instructions on how to mount/install the B-RID module securely. In general, the B-RID module should be attached firmly on the external upper surface of the UA, without hindering the movement of the propellers and any onboard sensors. Do make sure that the module is mounted securely to prevent the module from coming loose during the flight. To minimise impact to flight performance and safety, the module should also be installed as central to the UA body as possible.
20	What should I do if my UA or B-RID module indicates B-RID system errors or does not fulfil the pre-flight check criteria?	You should refer to the UA or B-RID module manual for instructions and contact the UA or B-RID module manufacturer if necessary. If the issue persists, do not proceed with the UA operations until the issue has been rectified.
21	Is it normal that the B-RID receiver application shows only part of my Operator ID, rather than the full ID entered?	Yes, only the broadcasted portion of the Operator ID will be received and displayed by the B-RID receiver mobile application. The private secure key should neither be received nor displayed.