香港特別行政區政府
民航處
**Civil Aviation Department**
**The Government of the Hong Kong Special Administrative Region**

**Small Unmanned Aircraft**
**Advisory Circular**
**No. AC-016**

Date: 26 January 2026

# Guidelines and Permission for Small Unmanned Aircraft Operations Using Unmanned Aircraft Docking Station

## 1. Background

1.1 The Small Unmanned Aircraft Order ("SUA Order"), Chapter 448G of the Laws of Hong Kong, took full effect on 1 December 2022. Under the SUA Order, small unmanned aircraft ("SUA") operations are regulated under a risk-based approach and be classified according to the weight of the SUA and the operational risk level.

1.2 In recent years, there has been growing demand for deployment of SUA using unmanned aircraft docking station to take-off, land, recharge (or swap batteries) and execute automatic operation. It applies to various aerial activities such as regular site patrol and monitoring, and routine SUA operations for surveillance, inspection or photography.

1.3 This Advisory Circular ("AC") aims to provide guidelines and set out the safety requirements for the conduct of SUA operations by the SUA operator ("operator") using unmanned aircraft docking station in Hong Kong from the aviation safety perspective. Should such operations be required in circumstances where the following operating requirements under the SUA Order cannot be met, a permission under section 37 of the SUA Order shall be obtained from the Civil Aviation Department ("CAD"):

- A visual line of sight is maintained with the aircraft in a specified way *[section 16(1)(b)]*[1]*;*
- The distance between the aircraft and any person who is not involved in the flight operation, measured horizontally and at any altitude, is not less than the specified distance *[section 16(1)(e)]*[2]; and

[1] The way in which a visual line of sight is to be maintained is specified in the Gazette Notice issued under section 17(2) of the SUA Order.
[2] The distance as specified in the Gazette Notice issued under section 17(2) of the SUA Order is 10 m for a Category A1 SUA, and 10 m (with the flying speed of the aircraft not exceeding 20 km/hr) or 30 m (with the flying speed of the aircraft exceeding 20 km/hr but not exceeding 50 km/hr) for a Category A2 SUA.

- The distance between the aircraft and any vehicle, vessel or structure that is not under the control of the remote pilot of the aircraft for the flight, measured horizontally and at any altitude, is not less than the specified distance *[section 16(1)(f)]*[3] .

## 2. Definition

2.1 **Automatic Operation** means an operation during which a SUA operates according to pre-determined flight routes before starting the flight. For this type of operation, it is essential for the remote pilot to take control of the SUA to intervene in unforeseen events for which the SUA has not been programmed.

2.2 **Autonomous Operation** means an operation during which a SUA operates without the remote pilot being able to intervene. The SUA is able to conduct a safe flight without the intervention of a remote pilot. It does so with the help of artificial intelligence, enabling it to cope with all kinds of unforeseen and unpredictable emergency scenarios.

2.3 **Detect and Avoid ("DAA")** means the capability to see, sense or detect conflicting traffic or other hazards, and take appropriate action.

2.4 **Unmanned Aircraft Docking Station** means a ground facility where SUA may normally take-off, land, recharge (or swap batteries), and execute automatic SUA operations.

2.5 **Flight Critical System ("FCS")** means a system, the failure of which could have a catastrophic effect on the SUA and/or affects the SUA ability to sustain its flight. Examples of flight critical system include flight control system (consisted of sensors, computers and all other elements of the SUA necessary to control the altitude, speed and trajectory of the SUA), propulsion system and navigation system.

2.6 **Involved Person** and **Uninvolved Person**

2.6.1 **Involved Person** means a person who takes part in or is well aware of the SUA operation, understands the risk, and is aware of the instructions and safety precautions in regard to the SUA operation. In practical terms, this means that an involved person must:

- be clearly notified about and aware of the SUA operations;
- understand the risks involved;
- have reasonable safeguards introduced for them by the venue manager or

[3] The distance as specified in the Gazette Notice issued under section 17(2) of the SUA Order is 10 m for a Category A1 SUA, and 10 m (with the flying speed of the aircraft not exceeding 20 km/hr) or 30 m (with the flying speed of the aircraft exceeding 20 km/hr but not exceeding 50 km/hr) for a Category A2 SUA.

the SUA operating crew during SUA operation; and

- be expected to follow the directions and safety precautions provided.

2.6.2 **Uninvolved Person** means any person other than involved person.

2.6.3 **Involved Vehicle/ Vessel/ Structure** and **Uninvolved Vehicle/ Vessel/ Structure** shall be construed accordingly.

2.7 **Visual Line of Sight, Extended Visual Line of Sight, and Beyond Visual Line of Sight**

2.7.1 A **Visual Line of Sight ("VLOS")** is direct and unaided (other than by way of corrective lenses and sunglasses) visual contact with the SUA and the surrounding airspace in which the SUA is operating. VLOS can be maintained by:

a) the remote pilot of the SUA, and/or
b) a visual observer ("VO"), chosen by the remote pilot, who is **at the same location as the remote pilot**, has good eyesight and is capable of communicating timely and effectively with the remote pilot of the SUA to avoid collision.

2.7.2 If an SUA is operated within **Extended Visual Line of Sight ("EVLOS")**, during the operation, VLOS is maintained by:

a) the remote pilot of the SUA, and/or
b) an VO, chosen by the remote pilot, who is **at the different location from the remote pilot**, has good eyesight and is capable of communicating timely and effectively with the remote pilot of the SUA to avoid collision.

2.7.3 **Beyond Visual Line of Sight ("BVLOS")** means operation of a SUA where the remote pilot or the VO is unable to maintain a visual line of sight of the SUA.

## 3. Interface with Other Legislation

3.1 It shall be the responsibility of the SUA responsible person and remote pilots to comply with all applicable regulatory requirements, put in place appropriate safety precautions and risk mitigating measures for the SUA operations, as well as to follow relevant requirements and/or guidelines set out by any authorities, Government Departments, land owners or other stakeholders where necessary to ensure the safe operations of the SUA at all times.

3.2 The operators and remote pilots shall also observe all such other requirements governed by other legislation in Hong Kong, such as the Telecommunications Ordinance and

Personal Data (Privacy) Ordinance, etc. and follow relevant requirements and/or guidelines such as telecommunication, privacy, cyber security, data security, etc. set out by any other Government bureaux / departments, regulatory authorities, land owners or other stakeholders where necessary to ensure the safe operations of the SUA at all times.

3.3 The operators and remote pilots shall take appropriate measures to address privacy and other relevant concerns (e.g. permission from land owners or other stakeholders where necessary) before the intended SUA operations. Relevant information is available on PCPD's website with the following link:

*https://www.pcpd.org.hk/english/resources_centre/publications/files/GN_CCTV_Drones_e.pdf*

3.4 For SUA operations using public mobile networks, the operator is reminded that according to requirements of the Office of the Communications Authority ("OFCA"), the operator shall coordinate with the relevant mobile network operator(s) to ensure mobile network coverage along the intended operating areas and/or flight routes. If a private radiocommunications network is adopted, the operator shall demonstrate its capability in terms of network infrastructure and radio coverage and its usage in compliance with the licensing requirements established by and to the satisfaction of OFCA. For any issue in relation to loss of communication with SUA, or loss of or poor GNSS signal, the operator is reminded to inform OFCA as soon as practicable. Detailed information is available on OFCA's website with the following link:

*https://www.ofca.gov.hk/en/industry_focus/industry_focus/uas_private_licence/index.html*

## 4. Guidelines for SUA Operations using Unmanned Aircraft Docking Station

4.1 Unless operational justifications with evidence can be provided to the satisfaction of the CAD, SUA operations using unmanned aircraft docking station shall be restricted to the locations away from the residential areas or densely populated areas.

4.2 The weight of the SUA including payload shall not exceed 25 kg at all times during the flight. In determining the weight of a SUA, everything installed in, carried by or attached to the SUA is to be taken into account.

*Note: For operations of Category C SUA, please refer to AC-014.*

4.3 Unmanned aircraft docking station shall not be installed in areas with strong signal interference. Assessment shall be conducted before installation to ascertain the signal strength and levels of interference during take-off, landing, and operation. Warning signs shall be posted near the unmanned aircraft docking station indicating that SUA operations are in progress.

4.4 The operator shall take appropriate measures to address relevant concerns (e.g. permission from land owners or other stakeholders (such as owners' corporation, building management companies, etc.), where necessary, before the operations.

4.5 The operator shall designate an alternative landing site in the vicinity of the unmanned aircraft docking station to ensure that the SUA can be landed at the alternative landing site in the event that unmanned aircraft docking station becomes unserviceable for landing. Warning signs shall be posted near the alternative landing site and entry or placement of objects jeopardising safety is prohibited.

4.6 The installation guidelines and maintenance schedule established by the SUA manufacturer shall be strictly complied with by the operator.

4.7 The operator shall develop appropriate security and safety measures, such as the installation of protective fencing or any alternative means, to restrict unauthorised access to the unmanned aircraft docking station and alternative landing site, and protect the SUA against possible interference.

4.8 The SUA model to be used shall be compatible with its unmanned aircraft docking station, as accepted by the SUA manufacturer. Also, the remote control and/or flight controlling software shall be compatible with the SUA and capable of effectively controlling it when operating via the unmanned aircraft docking station.

4.9 The remote pilot shall hold a valid rating granted by the CAD relevant to the type of SUA operation. In addition, the remote pilot, the VO (if applicable), supporting crew and/or other relevant personnel are required to complete OEM and/or internal training and assessment relevant to the duties and responsibilities and maintain currency by test flights, training flights and/or actual SUA operations using unmanned aircraft docking station.

4.10 Autonomous operation is not allowed. The remote pilot shall maintain situational awareness of the SUA and its surroundings in the air and on ground and shall be capable of regaining direct control of the SUA at any time during operations, even in cases of emergency scenarios where the SUA is pre-programmed for certain course of action, for instance returning to home position in case of loss of command and control link.

4.11 The remote pilot shall have the authority to cancel or delay any or all flight operations under the following conditions:

a) the safety of persons is jeopardised;

b) property on the ground is jeopardised;

c) other airspace users are in jeopardy; or

d) there is a violation of the conditions of the advanced operations permission or other relevant permission (if applicable).

4.12 The remote pilot of the SUA retains ultimate responsibility for ensuring the safe operation of the aircraft throughout the flight, regardless of whether the flight is conducted automatically or manually.

4.13 Prior to and during the operations, the meteorological conditions within the operating areas and/or flight routes shall be closely monitored. If the meteorological conditions deteriorate beyond the levels the SUA is designed for, the remote pilot shall cease the operations immediately.

4.14 Prior to take-off and/or landing, the operator shall:

a) ensure that the unmanned aircraft docking station cover surface is free of debris and that no unauthorised personnel who may interfere with the operations are present in the vicinity of the unmanned aircraft docking station;

b) ensure that the area along the take-off and landing flight route is free of obstacles that may cause a collision during automatic ascent and/or descent of the SUA;

c) set alternative and/or emergency landing point; and

d) be able to monitor weather conditions, including wind speed, visibility, and precipitation, etc., and ensure that prevailing weather conditions within the operating areas and/or flight routes are suitable for safe operations.

## 5. SUA Operations using Unmanned Aircraft Docking Station (Advanced VLOS or EVLOS Operations)

5.1. In addition to fulfilling the requirements prescribed in the preceding sections of this AC, the ensuing paragraphs in this section set out the additional requirements for compliance by the operator which intends to apply for a permission from the CAD to conduct advanced operations using unmanned aircraft docking station within Hong Kong.

5.2. Equipment Requirements

5.2.1 The SUA shall be equipped with the necessary safety system capable of performing the functions specified in section 13 of the SUA Order, i.e. flight log and geo-awareness functions. The information recorded by safety system shall be kept for six months and that information related to any advanced operation shall be accessible in Hong Kong.

5.2.2 The SUA shall be controlled effectively using compatible remote control and/or flight controlling software. The model of flight controlling software to be used shall be documented in the Operations Manual.

5.2.3 The SUA design shall be integrated with emergency recovery capability which shall consist of a flight termination system, procedure or function that allows the remote pilot to terminate the flight as soon as practicable; and/or an emergency recovery procedure that is implemented through the surveillance system (if applicable), the SUA controlling system (including ground station, remote controller, flight controlling software, etc.) or SUA (including automatic pre-programmed course of action to reach a pre-determined alternative and/or emergency landing site).

5.2.4 The SUA shall be equipped with **appropriate navigation lighting**[4]. The lighting must be **visible** to the remote pilot at all times during the flight and it must be **sufficient for the remote pilots and/or VOs to determine the orientation and direction of the SUA visually**.

5.2.5 **Strobe** or **anti-collision light system**, as well as **obstacle avoidance function** are also recommended for use during flight.

5.2.6 **Geo-fence** and **altitude limiting functions** shall be equipped to cage the SUA's manoeuvres within the intended area of operation. Real Time Kinematic (RTK) **positioning system** is recommended.

5.2.7 **Appropriate ground station, remote controller or flight controlling software** shall be in place to assist the remote pilot in identifying the SUA's position in real time. Before take-off, the ground station, remote controller or flight controlling software must indicate a positive satellite lock to be achieved by the SUA. Where the SUA manufacturer does not specify the number of satellites to gain lock, the SUA shall not fly with less than 7 satellites positively acquired.

5.2.8 All personnel and crew members involved including the remote pilot are recommended to be provided with highly visible protective devices (e.g. reflective apparel, safety vests, etc.).

5.3. Personnel Requirements

5.3.1 The remote pilot for the flight shall hold a valid remote pilot certificate and be assigned with Advanced Rating (A/B) issued under the SUA Order.

[4] Usually red lights on forward rotor arms and green lights on rear rotor arms, or red lights on left wing and green lights on right wing

5.3.2 Subject to the risks and complexity of the proposed operations, the remote pilot, VO (if applicable), supporting crew and/or other relevant personnel shall attend OEM training, if so required by the CAD and/or the SUA manufacturer.

5.3.3 For operations under EVLOS, the remote pilot shall choose an VO as competent for the advanced operations using unmanned aircraft docking station.

5.3.4 In addition to the VO, subject to the area of operation, to provide additional safety and observation support, **sufficient supporting crew** shall be positioned in the operation area to assess the SUA's position, maintain constant visual lookout for any uninvolved people/ vehicles/ vessels approaching the SUA, and take necessary actions maintaining ground safety.

5.3.5 If necessary, the remote pilot should be assisted by additional supporting crew to monitor the ground station, the remote controller or flight controlling software.

5.3.6 The training programme for the relevant personnel shall be documented in the operations manual. The training records shall be maintained and made available upon the request from the CAD.

5.4. Operating Requirements

5.4.1 Prior to the intended SUA operations, a thorough site and flight safety assessment covering the take-off and landing points, and areas along and surrounding the SUA flight routes shall be conducted in daylight hours to identify, record and address any hazards, restrictions and obstacles in the associated areas that might affect the operations. With circumstances permitting, arrangement of a recce flight(s) in daylight hours should be considered to assist in the site and flight safety assessment.

5.4.2 The operator and remote pilot shall determine suitable responses and fail-safe mechanism for emergency scenarios specific to the unmanned aircraft docking station operations, including but not limited to in-flight meteorological deterioration, emergency termination of take-off/landing procedures, and failure of unmanned aircraft docking station landing, etc. Demonstration of SUA's capability in response to emergency scenarios (e.g. sudden appearance of other flying objects, loss of or poor communication, Return-To-Home ("RTH") operations, battery failure, emergency termination of take-off/landing procedure) shall be arranged upon the request from the CAD.

5.4.3 For planning of the flight routes, the remote pilot shall, to the greatest extent possible, avoid overflying uninvolved people, vehicles, vessels, or structures. The operation area/ flight route must be carefully chosen with sufficient lateral separation from uninvolved people, vehicles, vessels or structures.

5.4.4 If overflying is unavoidable or sufficient lateral separation cannot be kept, the remote pilot **shall not maintain sustained flight** over any uninvolved people, vehicles, vessels or structures, in particular an assembly of people, and shall reduce as much as possible the time of overflying. **Overflying of highway, railway or strategic route shall be avoided**.

5.4.5 The take-off and landing (including alternative landing) points shall be equipped with **adequate lighting** to provide clear visibility, and also allow the remote pilot and/or the VO to visually see and avoid hazards and obstacles near the unmanned aircraft docking station for safe take-off and landing of the SUA.

5.4.6 The SUA shall be entirely confined within the operating areas and/or flight routes accepted by the CAD.

5.4.7 Once airborne, the remote pilot and/or the VO shall be able to clearly see the SUA and the surrounding airspace, continuously monitor the SUA's flight route and maintain operation clear of anything the SUA might collide with.

5.4.8 The remote pilot of the SUA has the ultimate responsibility to ensure collision avoidance and operation in a safe airspace during the flight.

5.4.9 During the flight, the remote pilot shall maintain direct and/or effective communication with the VO and/or supporting crew to continuously know and determine the position, altitude, attitude (orientation, turning angle, pitch, bank) and movement of the SUA, as well as the collision avoidance information for safe operation.

5.4.10 The VO shall not maintain VLOS with more than one SUA or for more than one remote pilot at any one time. They shall not be assigned other duties.

5.4.11 The flying speed of the SUA **shall not exceed 20 km/hr**.

5.4.12 The SUA shall not be operated within a restricted flying zone or carry any dangerous goods during flight, unless a relevant permission has been separately obtained.

5.4.13 The remote pilot shall comply with all other applicable operating requirements to the SUA, i.e. operating the SUA only in daylight hours, maintaining the flying altitude at 300ft AGL or below, not carrying any person or animal during flight, nothing being dropped from the SUA, the remote pilot operating no more than one SUA at the same time, the dimension of SUA not exceeding 1m during flight (except that longest distance between any two rotor blade tips can be up to 1.2 m), and that the flight is wholly within Hong Kong. More information about the requirements is available in the SRD published by the CAD.

5.4.14 Applications may be made for any one or more than one specific type of advanced operations; but in any one flight, only one type of advanced operations should be involved, unless otherwise specified by the CAD in the permission concerned.

## 6. SUA Operations using Unmanned Aircraft Docking Station (BVLOS Operations)

6.1. In addition to fulfilling the requirements prescribed in the preceding sections of this AC, the specific requirements set out in the ensuing paragraphs shall be met.

6.2. Operators

6.2.1. Applications to use unmanned aircraft docking station by operators possessing advanced operations permission with a proven track record on safely conducting BVLOS operations will be accorded higher priority.

6.2.2. The operator shall: -

a) develop appropriate policies and procedures for BVLOS operations, considering its specific requirements and scale of operations (including the areas over which the SUA is operated and any additional system or equipment demonstrating enhanced safety assurance);

b) establish the minimum number of remote pilot and supporting crew to ensure sufficient manpower for the safe operations. Each remote pilot and crew member shall be fully aware of their roles and responsibilities as well as the operational procedures, including emergency procedures;

c) ensure that the remote pilot and supporting crew are competent to perform their tasks and in sound physical and mental condition that will enable the safe operations of the SUA;

d) demonstrate capability for containment of SUA flyaway. As the main determinant of risk is dependent on the area of operations, the operator shall ensure that the SUA will be confined within the operating areas and/or flight routes accepted by the CAD at all times during the flight;

e) conduct a comprehensive safety risk assessment and establish mitigating strategy with reference to the specific equipment, personnel competency, types of operations, and environmental conditions of each operation. In identifying the risks of the intended BVLOS operations, the operator shall assess the severity and probability of two main risks associated with the operations (i.e. air risk and ground risk);

f) comply with the applicable requirements for the use of radio equipment and radio frequency spectrum;

g) develop appropriate security procedures to protect the SUA against unlawful interference; and unauthorised access to the take-off / landing sites, SUA staging areas and other preparation areas;

h) develop specific test cases to cover normal operations and emergency scenarios for the purpose of demonstrating the robustness of the BVLOS operations; and

i) include, in its Operations Manual, various supporting information / documentation specific to the BVLOS operations, and submit a flight plan, and a risk assessment identifying hazards specific to the BVLOS operations using unmanned aircraft docking station and the corresponding risk mitigating measures.

6.3. Subject to the risks and complexity of the proposed operations, the CAD may require the applicant to keep the SUA in VLOS during the take-off and landing of the SUA, unless the SUA movement is as a result of emergency flight termination.

6.4. Subject to the risks and complexity of the proposed operations, the CAD may require the remote pilot to conduct the proposed operation under VLOS/EVLOS within the operating areas and/or flight routes for a specific period accepted by the CAD, to ensure that the operator's capabilities are commensurate with its level of experience prior to BVLOS operations using unmanned aircraft docking station.

6.5. For other applicable regulatory requirements related to BVLOS operations (such as operating requirements, personnel qualifications and training, SUA system requirements, and SUA maintenance), please refer to AC-013.

## 7. Insurance

7.1 Pursuant to the SUA Order, a policy of insurance shall be in force during advanced SUA operations for the third-party liability (for bodily injury and/or death) arising out of or caused by the SUA operations. The insurance policy for advanced operations involving Category A/B SUA shall have a minimum coverage of HKD $10 million.

## 8. Records

8.1 The operator shall record and store operational information, including information related to the flights and associated systems (operational data, crew coordination, meteorological conditions, etc.), SUA and/or systems failures, inspections, repairs and maintenance, personnel training, assessments, shift handover records, accident /

incidents, etc. The above-mentioned information shall be provided to the CAD upon request.

8.2 Unless otherwise specified, all records shall be maintained for at least two (2) years. They shall be kept in either paper form or in electronic format or a combination of both and shall be made available to the CAD for inspection upon request.

## 9. Application Procedures

9.1 Applicants may apply to the CAD for permission to conduct SUA operations using unmanned aircraft docking station by following the requirements set out in AC-002.

9.2 Apart from the requirements prescribed in the AC-002, an applicant shall also include the following information/document specific to SUA operations using unmanned aircraft docking station as part of the application:

1) Technical specifications of the SUA/ Unmanned Aircraft Docking Station including their maximum characteristic dimension and maximum take-off weight taking into account everything installed in, carried by, or attached to the SUA;

2) Operations Manual shall include (See **Appendix A** for details):

- duties and responsibilities of all crew member(s) including remote pilot, VO and/or supporting crew;
- description of installation guideline and maintenance schedule of unmanned aircraft docking station;
- general and emergency procedures to conduct the SUA operations using unmanned aircraft docking station safely, including flight checks to be carried out and communication protocols between the remote pilot, VO and/or supporting crew; and
- description of qualifications requirements and training programme to ensure competency and currency for all personnel involved in the intended operations, including the supporting crew;

3) Flight Plan for the proposed operation; and

4) A risk assessment identifying hazards specific to SUA operations using unmanned aircraft docking station and the corresponding risk mitigating measures (See **Appendix B** for details).

9.3 Subject to the risks and complexity of the proposed operations, the applicant will be required to conduct a demonstration flight for each proposed type/model of SUA including ground station, remote control and/or flight controlling software for assessing its capabilities and performance for safe SUA operations. The applicant is responsible to make necessary arrangement for the flight, in particular:

i. The applicant shall be able to demonstrate the normal operations and emergency procedures; and

ii. The relevant equipment capabilities, particularly those which are being relied upon as safety mitigations, must be demonstrated.

9.4 As the time required for the processing of the application would depend on the **completeness** and **readiness** of the submission, applicants shall ensure that the submissions are in order to facilitate the processing of applications. The CAD can only process the application with all required information in place; whilst application with insufficient details may lengthen the application process.

9.5 The CAD may refuse to grant the permission if the applicant cannot demonstrate the compliance with the relevant requirements set out in this AC.

## 10. Enquiries

10.1 This document will be subject to review and update from time to time in the light of the advancement of technology and increasing popular use of SUA in different professional applications. It shall also be noted that the safety requirements provided above are not meant to be exhaustive. It shall be the responsibility of the operators and remote pilots to comply with all applicable regulatory requirements, put in place appropriate safety precautions and risk mitigating measures for the subject SUA operations, as well as to follow the requirements and guidelines set out by any authorities, Government Departments, land owners or other stakeholders where necessary to ensure the safe operations of the SUA at all times.

10.2 This document shall be read in conjunction with the SUA Order, SRD and other SUA related documents published by the CAD.

10.3 For enquiries, please contact the Unmanned Aircraft Office of the CAD at sua@cad.gov.hk.

## Appendix A – Guidance Notes for Operations Manual for Small Unmanned Aircraft Operations using Unmanned Aircraft Docking Station

The following structure serves as a framework for applicants to develop a comprehensive document for specific procedures and details necessary for safe execution of the proposed SUA operations using unmanned aircraft docking station. While the structure is not intended to be exhaustive or prescriptive, the aspects it contains shall be thoroughly considered and addressed in the manual as necessary.

For parts of general policies and procedures, please refer to the sample Operations Manual published on the CAD website (https://www.cad.gov.hk/english/sua_new.html).

### A. Personnel

A1. Roles and responsibilities

Specify the roles and responsibilities of each key position, including remote pilot, supporting crew, VO (if applicable), and etc.

A2. Competency of the personnel

Detail the qualification / experience / training requirements required for each position of personnel.

A3. Training programme

Detail the training programme (OEM and/or internal training, as well as initial and recurrent training) for SUA operations using unmanned aircraft docking station.

### B. Overview of the SUA/Unmanned Aircraft Dock station and Safety Equipment

B1. Brief technical description of the SUA/Unmanned Aircraft Docking Station

Provide information about the SUA/Unmanned Aircraft Docking Station such as:

(i) SUA registration number
(ii) Manufacturer name (as applicable)
(iii) Model name or model number (as applicable)
(iv) Model of flight controlling software (as applicable)
(v) Weight and size of SUA
(vi) Product description of unmanned aircraft docking station
(vii) Diagram(s) to illustrate the connection between SUA, unmanned aircraft docking station and the associated system such as server, router, remote control or additional unmanned aircraft docking station
(viii) Command and Control Link
(ix) Navigation and positioning system and fall-back design

(x) Sensing system and collision avoidance (such as DAA system adopted (or other alternative means of compliance))
(xi) Means to cage the SUA within intended area of operations
(xii) Fail-safe mechanism
(xiii) Other technical specifications including maximum take-off weight, maximum flying altitude, maximum speed, maximum operating time, wind speed limitation, other weather limitation etc.

Full technical specifications can be supplemented in the Appendix or as a separate technical manual.

B3. Emergency Response by the SUA/Unmanned Aircraft Docking Station

Provide brief description of SUA/Unmanned Aircraft Docking Station in response to the following:
(i) Intermittent / degraded / permanent loss of C2 link;
(ii) Navigation system failures, e.g. degradation or total loss of GNSS, sensors/ cameras;
(iii) Flight planning failures that could result in a loss of containment, i.e. incorrect setting of waypoints / RTH functions;
(iv) Low battery;
(v) Emergency termination of take-off/landing procedure;
(vi) Failure of unmanned aircraft docking station landing, etc.

B4. Brief description of unmanned aircraft docking station installation

Outline the criteria for selecting suitable location(s) for unmanned aircraft docking station installation.

B5. Maintenance

(i) Maintenance schedule
(ii) Maintenance personnel
(iii) Maintenance instruction/procedure
(iv) Record of defects and maintenance
(v) Test before returning to service

## C. Operational Control

C1. Monitoring of SUA operations

(i) Describe how the various operating parameters will be monitored by the remote pilot / operating crew. This shall include (but not be limited to) flight altitude, position, GNSS / GPS / RTK equipage, battery level, and geo-fencing, meteorological condition, etc; and

(ii) Provide safety measures to avoid collision with other aircraft (both manned and unmanned).

C2. Equipment Requirement and Operating Requirement

State the equipment requirement and operating requirement applicable to SUA operations using unmanned aircraft docking station.

C3. Emergency abort criteria

(i) State the abort conditions which, if reached, would lead to an immediate and safe termination of the operations; and

(ii) State who is responsible to make real-time decision to abort the operations.

## D. Operating Procedures

D1. Pre-flight Check

Develop procedures, checklist and items for pre-flight check applicable to SUA operations using unmanned aircraft docking station.

D2. Normal Operating Procedures

State the normal procedures covering all necessary matters including safety.

D3. Emergency Procedures

Specify the emergency procedures in response to at least the following situations:

(i) Inoperative motors / blades;
(ii) Intermittent / degraded / permanent loss of C2 link;
(iii) Partial or total failure of FCS, SUA controlling system (including ground station, remote controller, flight controlling software, etc.), surveillance system (if applicable), etc.;
(iv) Navigation system failures, e.g. degradation or total loss of GNSS, sensors/ cameras;
(v) Flight planning failures that could result in a loss of containment, i.e. incorrect setting of waypoints / RTH functions;
(vi) Flyaway, motor failures, other malfunctions, and other emergency scenarios that may arise specific to the proposed operations;
(vii) Fire;
(viii) Low battery;
(ix) In-flight meteorological deterioration;
(x) Emergency termination of take-off/landing procedure;
(xi) Failure of unmanned aircraft docking station landing, etc.

## E. Forms and records

E1. Include templates of forms and records used for maintenance, pre-flight check, post-flight check and etc.

**Appendix B – Guidance Notes for Safety Risk Assessment for Small Unmanned Aircraft Operation using Unmanned Aircraft Docking Station**

The applicant shall identify risks specific to the proposed SUA Operation using Unmanned Aircraft Docking Station and propose effective risk mitigating measures so that the risks are mitigated to an acceptable level. The following is an example of basic safety risk assessment for SUA Operation using Unmanned Aircraft Docking Station and some anticipated risks to be addressed. Applicant shall note that the list is not exhaustive. Any other risks associated with the proposed operation shall be identified and addressed. Subject to acceptance by the CAD, the applicant may adopt other risk assessment methodologies such as the Specific Operations Risk Assessment (SORA).

| **Risk No.** | **Identified Hazard** | **Associated Risk (What & How)** | **Existing Mitigation** | **Current Risk Rating** | **Further Mitigation** | **Revised Risk Rating** |
|---|---|---|---|---|---|---|
| ***1.*** | *Loss of communication with the SUA* | *The SUA cannot be effectively controlled and may collide with other aircraft, person or property* | *The path of flight is programmed in advance such that the SUA may continue the flight if GNSS signal is in place* | *4C* | *A surveillance system is in place to track the position of the SUA and flight parameters* | *2C* |
| ***2.*** | *Loss of or poor GNSS signal* | | | | | |
| ***3.*** | *SUA flyaway* | | | | | |
| ***4.*** | *Communication between remote pilot and supporting crew fails* | | | | | |
| ***5.*** | *Adverse weather conditions* | | | | | |
| ***6.*** | *Impact to other airspace users, manned aircraft* | | | | | |
| ***7.*** | *The SUA fail to land at the "home" position* | | | | | |
| ***8.*** | *(any other potential hazards identified by the operator)* | | | | | |

– END –