



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-010

Date: 18 July 2025

Guidelines and Permission for Drone Show Event

1. Background

- 1.1 The Small Unmanned Aircraft Order (“SUA Order”), Chapter 448G of the Laws of Hong Kong, came into operation on 1 June 2022. Under the SUA Order, small unmanned aircraft (“SUA”) operations are regulated under a risk-based approach and classified according to the weight of the SUA and the operational risk level. The SUA Order is a piece of subsidiary legislation made under the Civil Aviation Ordinance that aims to provide a flexible and forward-looking regime for the regulation and development of SUA operations in Hong Kong.
- 1.2 In recent years, “**drone (light) show**” has become a popular application of SUA both in Hong Kong and worldwide. Drone show is the display of multiple SUA controlled collectively by a dedicated flight management system in a coordinated manner. It involves the operations of more than one SUA at the same time and are normally operated outside daylight hours.
- 1.3 This Advisory Circular (“AC”) aims to provide guidance and set out some general requirements for the conduct of a drone show in Hong Kong from the aviation safety perspective. As drone show events will normally require the operations of SUA in circumstances where the following operating requirements under the SUA Order cannot be met, a permission under section 37 of the SUA Order will be required from the Civil Aviation Department (“CAD”) :
 - The aircraft is not operated for the flight at the specified hours of a day [*section 16(1)(a)¹*]; and

¹ The hours of a day as specified in the Gazette Notice issued under section 17(2) of the SUA Order are hours other than daylight hours. In this regard, daylight hours mean the time from half an hour before sunrise until half an hour after sunset (both points of time exclusive). Sunrise and sunset are determined at surface level.

- The remote pilot of the aircraft for the flight operates no more than the specified number of unmanned aircraft at the same time [section 16(1)(j)²].

2. Applicability

- 2.1 This AC applies to applicants who wish to apply for a permission from the CAD to conduct a drone show with SUA at a specific site within Hong Kong.
- 2.2 Drone show events often involve multiple parties. Applications may be made by the SUA operator or the organiser of the event. In either circumstance, a dedicated contact point shall be provided by the applicant to the CAD, who shall be responsible for the whole application process, and any necessary coordination and liaison among the SUA operator, the event organiser, and all relevant parties.

3. General Requirements and Responsibilities of the SUA Operator (“Drone Show Operator”)

- 3.1 The drone show operator must be a competent SUA operator which possesses competence and experiences in conducting drone shows which constitute a type of specialized SUA operations.
- 3.2 The drone show operator shall be responsible for setting up the flight management system and implementing any safeguarding mechanism and arrangements necessary for controlling the multiple SUA operations in a safe and coordinated manner, and for ensuring no person or property would be endangered by the SUA at all times.
- 3.3 The drone show operator must make available a team of supporting personnel and crew members and be satisfied that the team is competent and fit to support the conduct of the drone show safely.
- 3.4 Drone show operators may provide additional evidence to the CAD to demonstrate its previous experiences and expertise in the conduct of drone shows, including any authorisation obtained from their civil aviation authority to conduct multiple SUA operations in their respective origin location, to facilitate CAD’s consideration of the application.
- 3.5 The drone show operator shall observe all the safety and operating requirements set out in this AC. All relevant records shall be retained for a minimum of **two (2) years** after the date of event.

² The number of unmanned aircraft as specified in the Gazette Notice issued under section 17(2) of the SUA Order is “one”.

4. Operating Requirements

- 4.1 The drone show involving multiple SUA operation shall be conducted in accordance with the flight plan, flight procedures, emergency procedures, risk assessment and risk mitigating measures documented in the Operations Manual (“OM”) accepted by the CAD. Detailed requirements are provided in the ensuing paragraphs.
- 4.2 Unless otherwise specified, the applicable operating requirements under section 16 of the SUA Order, including but not limited to maintaining the flying altitude at 300 ft above ground level or below, maintaining lateral separation with any uninvolved person and vehicle, vessel or structure, the maximum dimension of SUA, and that the flight is wholly within Hong Kong, etc. shall be observed. Details about the applicable operating requirements are available in the Safety Requirements Document (“SRD”) published by the CAD.
- 4.3 The operation must be carried out within Visual Line of Sight (“VLOS”).
- 4.4 The operating site must be carefully chosen with sufficient segregation from uninvolved people, structures, vehicles or vessels.
- 4.5 The permission of the land / property owner on whose land / property the drone show is intended must be obtained.
- 4.6 The operation shall not involve any overflight of uninvolved people.
- 4.7 The operation shall not involve any carriage of dangerous goods by the SUA.
- 4.8 Nothing to be dropped from the SUA during the operation.
- 4.9 Other airspace users must be duly notified in advance.
- 4.10 A risk assessment must be conducted prior to the operation, and the risk mitigation and emergency procedures must be established and adhered to during operation.
- 4.11 A valid insurance policy must be in force that insures against third-party liability (for bodily injury and/or death) arising out of or caused by the operation.
- 4.12 The operation must comply with the regulations and directives set by Office of the Communications Authority (“OFCA”) on the use of telecommunications apparatus. The operator shall ensure that all necessary permission or licence from OFCA are obtained before conducting the operation and ensure that all relevant requirements are observed for the conduct of the drone show.

Note 1: Refer Schedule 2 of Telecommunications (Telecommunications Apparatus) (Exemption from Licensing) Order (Cap. 106Z) for the frequency band, limits on output level and limits on spurious emission level for which the telecommunication apparatus shall operate within which the exemption from licensing applies.

Note 2: Attention is drawn to provisions under the Telecommunications Ordinance (Cap. 106) against the usage of radio jammers to interfere or block radiocommunications by emitting radio waves at the same operating frequency as the targeted radio apparatus.

- 4.13 Depending on the scale and nature of the event, agreement / permission / license from relevant Government Bureaux / Departments (such as the Marine Department, Police, OFCA, Leisure and Cultural Services Department, Food and Environmental Hygiene Department) may be required. The applicant shall ensure that all necessary permission from relevant authorities are obtained before conducting the operation. The drone show event organiser must ensure that all relevant requirements by the relevant authorities are observed for the conduct of the drone show. Relevant contacts are listed as follows:

- a) Marine Department (MD) – email: mdenquiry@mardep.gov.hk
- b) Police – email: cip-3-kps-ops-meb@police.gov.hk
- c) OFCA – email: license.mis@ofca.gov.hk
- d) Leisure and Cultural Services Department (LCSD) – website: <https://www.lcsd.gov.hk/clpss/en/webApp/PhoneAddress.do>
- e) Food and Environmental Hygiene Department (FEHD) – website: https://www.fehd.gov.hk/english/forms/application_form_for_PPE_licence.html#
- f) Government Flying Service (GFS) – email: sua@gfs.gov.hk

5. Application Procedures for Permission

- 5.1 The application form can be downloaded from the electronic portal for small unmanned aircraft, “eSUA”, at <https://esua.cad.gov.hk/>. The completed form shall be submitted to the CAD by email to sua@cad.gov.hk, accompanied by relevant application fee.³
- 5.2 The applicant is required to submit the following documents **at least 28 calendar days** before the date of the drone show :
- a) A completed application form (available at <https://esua.cad.gov.hk/>);
 - b) A Flight Plan (see paragraph 5.8);
 - c) An OM (see paragraph 5.9 and **Appendix A**); and
 - d) A Safety Risk Assessment (see paragraph 5.10 and **Appendix B**).

³ The application fee relating to the permission will be waived until further notice.

- 5.3 As the time required for the processing of the application would depend on the **completeness** and **readiness** of the submission, applicants should ensure that the submissions are in order to facilitate the processing of applications. The CAD can only process the application with all required information; whilst application with insufficient details may lengthen the application process.
- 5.4 Subject to the complexity of the proposed operation, the CAD may require the applicant/drone show operator to perform a flight demonstration for assessing its capabilities in considering the application (see paragraph 5.11).
- 5.5 If the operation is within a Restricted Flying Zone (“RFZ”), a separate application for operations within RFZ shall be submitted simultaneously unless the relevant permission has already been obtained.
- 5.6 The CAD may refuse to grant the permission if the applicant cannot demonstrate the compliance with the requirements set out in this AC.
- 5.7 Exemption from Specific Requirements under the SUA Order
- 5.7.1 Noting the dedicated purpose of the SUA to be operated for a drone show and the number of SUA that may be involved in the operation, the applicant may also apply for an exemption from specific requirements for SUA registration and labelling, as well as remote pilot registration and rating for the type of operation under section 11 of the SUA Order as necessary, along with the application for permission for conducting drone show. The applicant shall indicate on the application form and provide justification and the required information.
- 5.7.2 For exemption from SUA registration and labelling, the applicant shall provide the SUA serial numbers. The operator will also be required to retain the flight log and all other documents required in this AC for a minimum of two (2) years after the date of event.
- 5.7.3 For exemption from remote pilot registration and/or remote pilot’s rating, justification and details of the competency of the remote pilot(s), including the qualification, experience and training records of the remote pilot(s), supported by documentary proof shall be provided to substantiate that the remote pilot(s) of the operations are competent.
- 5.7.4 The operation shall be conducted in accordance with the conditions stated in the exemption, as well as in the relevant permission for the drone show.
- 5.8 Flight Plan
- 5.8.1 The flight plan shall include (but not limited to) the following details. Any information that is subject to further changes should be clearly indicated.

- a) The flight path of the multiple SUA group(s) from take-off, travel, dispersal, display, return, to landing;
- b) The location and dimensions of the “flight volume” which encompass the multiple drones and its planned movement. All SUA must be confined within the flight volume by **geo-fencing**;
- c) The maximum height of the “flight volume” above ground level. The maximum altitude of the flight volume shall not be higher than **300 ft** above ground level.
- d) The location and dimensions of the “cordon-off area”;
- e) The positions of the “cordon lines” and the distance from the “flight volume”;
- f) The location of the ground control station;
- g) The location(s) of the visual observers and supporting staff, if applicable; and
- h) The location of any radio-communication equipment.

Note:

- “Flight volume” is the zone containing the planned operation, within which the SUA must remain for continued safe operation.
- “Cordoned-off area” is an area of the ground or water covered by the flight volume within which only people that are involved in the operation or permitted are allowed to access.
- “Cordon line” must be established outside of the cordoned-off area, and must not be less than **50 m** from the flight volume.

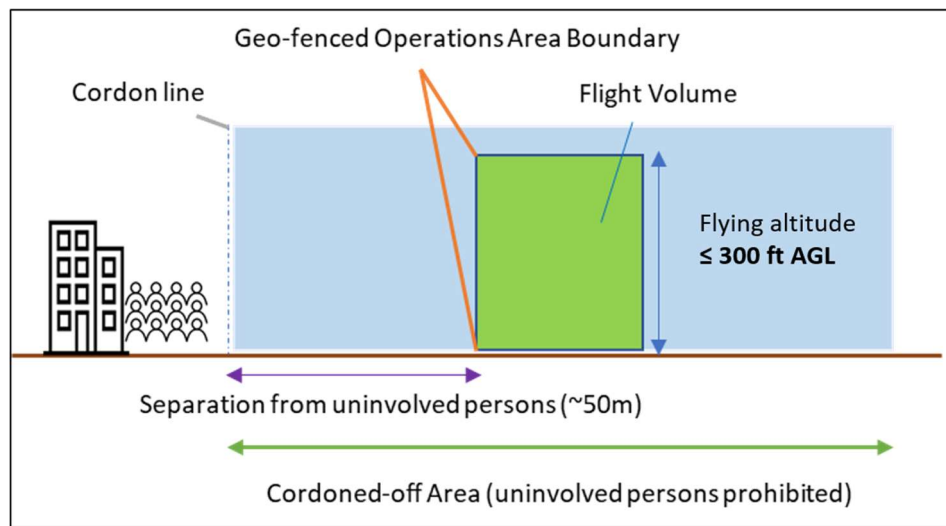


Figure 1 Side Elevation View of the Flight Volume and Cordon-off Area

5.9 Operations Manual

- 5.9.1 The application shall include an OM that consists of information and procedures necessary to enable the operator and all operating staff to perform their duties safely and

effectively, in accordance with the requirements of the SUA Order and in this AC. An outline of the OM is provided at **Appendix A**.

5.10 Safety Risk Assessment

5.10.1 The applicant must conduct and submit a Safety Risk Assessment with the application. The assessment should identify any hazards and failure modes, the associated safety risks as well as the mitigations to bring the risks to a tolerable or acceptable level.

5.10.2 The Safety Risk Assessment must include the following failure modes:

- a) The loss of C2 link due to interference/hacking;
- b) The loss of C2 link due to network capacity;
- c) The loss of GPS / GNSS due to interference;
- d) The SUA fail to identify the “home” position;
- e) The SUA fail to maintain minimal separation between each other;
- f) The SUA overshoot the geo-fence when travelling towards it at maximum speed;
- g) The battery falls below optimal level during operation;
- h) The SUA drop during operation; and
- i) Any other single points of failure.

A Safety Risk Assessment Template is provided at **Appendix B**.

5.11 Flight demonstration

During the application process, the drone show operator may be required to conduct a demonstration flight which will be observed by the CAD.

The applicant is responsible to make the necessary arrangement for the flight to satisfaction the following requirements:

- a) The flight must be carried out in a site permitted for SUA operation, in which the applicable separation from uninvolved people, structures, vehicles or vessels can be maintained;
- b) The drone show operator shall be able to demonstrate the normal operation and emergency procedures; and
- c) The relevant equipment capabilities, particularly those which are being relied upon as safety mitigations, must be demonstrated.

5.12 Permission for Conducting Repeated Drone Shows at a Specific Site

To expedite the application process for conducting repeated drone shows at a specific site, the CAD may consider granting a permission with a longer validity period. The drone show operator shall indicate on the application form and provide the required information (including the crew members and supporting personnel, SUA model,

operating procedures, safety risk assessment and risk mitigating measures) to demonstrate the compliance with the requirements set out in this AC.

6. Enquiries

- 6.1 This AC 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 should also be noted that the safety requirements provided above are not meant to be exhaustive. It shall be the responsibility of the drone show operator to comply with all applicable regulatory requirements, put in place appropriate safety precautions and risk mitigating measures for the subject SUA operation, as well as to follow the requirements and guidelines set out by any property owner and/or manager to ensure the safe operations of SUA at all times.
- 6.2 This AC should be read in conjunction with the SUA Order, SRD and other SUA related documents published by the CAD.
- 6.3 For enquiries, please contact the Unmanned Aircraft Office of the CAD at sua@cad.gov.hk.

7. Notes

- 7.1 This AC supersedes the version dated 14 February 2025.

Appendix A – Outline of Operations Manual for Drone Show

Table A.1 provides an outline of the areas and details that should be included in an Operations Manual (OM) for conducting a drone show. The template is not exhaustive and may be adjusted as necessary to suit the particular arrangements of an individual operator.

A sample OM for SUA advanced operations is also available on the CAD website (<https://esua.cad.gov.hk/>) for reference.

Table A.1 – Outline of an OM for Drone Show

Part A – Organisational Procedures		
1 Introduction		
1.1	Contents	Brief list of OM contents
1.2	Introductory statement and applicability	State the applicability of this OM to whom and when (rehearsal / setup of venue / final performance) the contents within this OM must be adhered to.
1.3	Definitions	Include any common acronyms, if necessary
1.4	Document control and amendment process	To ensure the OM remains in date that different versions are not being used. Amendments should be sent to the CAD. Suggest including a version number and date on the cover of the OM.
2 Organisation		
2.1	Structure of organisation and management lines	Organogram with brief description.
2.2	Key personnel and responsibilities	(i) State the accountable person for the operation. (ii) Specify the responsibilities of each key position, such as Operations Manager, Technical Manager, Chief Remote Pilot, Other Pilots, Communication Engineer(s).
2.3	Competency of the remote pilot(s)	(i) Detail the qualification / experience / training requirements for the remote pilot(s). (ii) Justify the remote pilot(s) assigned (or to be assigned) for the operation is competent enough, with the proof of competency including qualifications and experience supplemented in the Appendix. Note: (i) & (ii) are required to justify the application for exemption from the

		requirements of remote pilot registration and remote pilot's rating under the SUA Order.
2.4	Responsibilities and duties of supporting crew	List the composition of the supporting crew, which should include visual observers and other staff with supporting roles to ensure the operation is successful, such as checking of SUA battery level, position system and communication system.
2.5	Competency of the supporting crew	Detail any qualification, experience or training requirements for each of the supporting roles.
3 Overview of the SUA and communication protocol		
3.1	Brief technical description of the SUA	(i) Specify the SUA model to be used for the drone show and the basic technical features, including the size, take-off weight (payload inclusive), maximum flying altitude, speed, maximum operating time, illumination source of display lighting and intensity. (ii) Full technical specifications can be supplemented in the Appendix or a separate technical manual.
3.2	Command and control (C2) Link	(i) State the primary C2 link network, its frequency and maximum working distance. (ii) State how a C2 link between the SUA and the ground control station is established and maintained. (iii) Describe the technical mitigations to prevent the loss of the C2 link. Such as the use of secondary independent C2 link as redundancy.
3.3	C2 link signal latency	Describe the proof that the signal latency timing within the C2 link falls within the tolerable limit.
3.4	Navigation and positioning system	(i) Describe the navigation and positioning system. (ii) State the minimum number of satellites required for the operation. (iii) Explain the communication lines between the GPS / GNSS satellites, the SUA, the ground control station and the additional base station (if applicable).

		(iv) Describe the fallback design in case the GPS / GNSS signal to the SUA is lost / weak.
3.5	Collision avoidance and movement	Explain the collision avoidance and movement coordination technologies for the SUA within the group.
3.6	Geo-fencing	Describe how the geo-fence will be set and maintained to retain the multiple SUA within the flight volume during the operation.
3.7	Fail-safe mechanism	Explain the fail-safe mechanism which shall include flight termination function that could stop the operation in case of an emergency.
3.8	Operating limitations and conditions	(i) State the operating conditions, including operating within VLOS and the weather (wind, rain, temperature) limits. The maximum operating conditions must be based on information from the manufacturer. (ii) Explain how the weather will be monitored prior to and during the operation.
4 Operational Control		
4.1	Monitoring of SUA operation	(i) Describe how the various operating parameters will be monitored by the Remote Pilot. This should include (but not limited to) flight altitude, latitude & longitude, GNSS / GPS / RTK equipage, battery level, geo-fencing, C2 link between each SUA and the ground control station. (ii) Maintain a good lookout at all times and avoid collision with other aircraft (both manned and unmanned).
4.2	Management of cordon-off area	Describe how the cordoning measures are maintained and the access control is exercised.
4.3	Personnel and equipment Redundancy	Describe the arrangement for backup remote pilot(s) and ground control equipment as redundancy.
4.4	C2 Link	Explain how potential radio frequency interference is assessed prior to and during the operation.

4.5	GPS / GNSS signal	Explain how the number of satellites is monitored before and during the operation.
4.6	Crew health	A statement and any guidance to ensure that the crew are appropriately fit before conducting any operations.
4.7	Go / no-go criteria	(i) Define the go / no-go criteria for the operation. (ii) State who is responsible to make the decision and when the decision must be made (i.e. how many minutes prior to the operation).
4.8	Emergency abort criteria	(i) State the abort conditions which, if reached, would lead to an immediate and safe termination of the operation. (ii) State who is responsible to make real-time decision to abort the operation.
4.9	Records	(i) State the requirements for records of aircraft S/N, and flight log. (ii) Records shall be retained for a period of 2 years after the date of event. (iii) All the forms / checklists involved should be attached in the Appendix. Note: Aircraft S/N and flight log are required to justify for exemption (if applicable) from the requirements of SUA registration and labelling under the SUA Order.
4.10	Aerial Shooting during drone show	(i) State the conditions for any aerial shooting to be carried out during the drone show. (ii) Describe the necessary coordination to be established with the remote pilot(s) for the aerial shooting.
Part B - Operating Procedures		
1 Flight planning / preparation		
1.1	On-site survey and assessment	The followings should be identified: (i) if the operation would fall into the Restricted Flying Zone (RFZ); (ii) any other aircraft operations or other airspace users within the operating site; (iii) any potential hazards to operation due to activities nearby, such as live firing, fuel tank, high tension cables, high-intensity radio transmissions; (iv) any obstructions to operation and radio

		frequency transmission (wires, masts, buildings etc); (v) public access affected; (vi) mobile network signal coverage and capacity (Note: coordinate with OFCA if required); (vii) the takeoff, landing and recovery areas (if any) are sufficiently illuminated to ensure safe operation of SUA.
1.2	Safety risk management	Describe how the safety risk specific to the operation would be identified and mitigated to an acceptable level. Note: A safety risk assessment report must be submitted with the application (see Appendix B).
1.3	Liaison with other Government Bureaux / Department	State whether any additional permission / license / authorisation from other Government Bureaux / Departments is required and the timeline to obtain such permission / license / authorisation.
1.4	Cordoning measures	Explain how the cordon line(s) would be marked and the assess to the cordon-off area would be controlled to ensure no unauthorised entry into the operating area.
2 Pre-flight check		
2.1	Operating area	(i) No potential hazards or obstructions to the operation. (ii) The takeoff, landing and recovery areas (if any) are sufficiently illuminated to ensure safe operation of SUA.
2.2	Cordoning / security measures	The cordoning arrangement adheres to that depicted in the flight plan and the OM.
2.3	Weather checks	The operating conditions are fulfilled.
2.4	Battery management	The batteries in SUA and other remote control / mobile device are properly charged (to at least 85% or to the level specified).
2.5	Loading of equipment	All components and payload are secured.
2.6	SUA Conditions	(i) Assembled in accordance with the manufacturer's instructions. (ii) Propellers and propeller guards (if applicable) are properly assembled and secured.
2.7	C2 Link, SUA positioning system and calibration	(i) C2 link are established, and network is with sufficient strength.

		(ii) GPS / GNSS signals are received with the required number of satellites tracked.
2.8	Geo-fencing	Geo-fencing boundary is set in accordance with the flight plan.
2.9	Return-to-home position / maximum altitude	Return-to-home position and maximum altitude of operation are correctly set.
2.10	Pre-flight Checklist	(i) All the check items must be recorded in the pre-flight checklist, with the signatory of the authorised person. (ii) The go / no-go criteria and decision is documented.
3 Normal operating procedures		
3.1	Staging	These procedures may be contained in the operator's manual or equivalent but should cover all necessary matters including safety.
3.2	Take-off	
3.3	In flight	
3.4	Landing	
3.5	Shutdown	Critical information should be specified. This should include the minimum number of satellites tracked and the minimum battery level required before and during the operation. For example, the operation should be terminated if the number of satellites tracked dropped below the minimum number (e.g. eight satellites), or battery level dropped below the minimum level (e.g. 30% battery level), etc.
4 Emergency procedures		
4.1	Emergency procedures for different scenarios	Should specify the emergency procedures in response to situations: (i) SUA mechanical failure; (ii) Fire; (iii) Loss of C2 link; (iv) Loss of GPS / GNSS signal; (v) Low battery, etc. Must include the procedures for remote pilot to override the normal operating system.

5 Accident / incident reporting and investigation		
5.1	Accident or incident reporting timeframe	State the following reporting sequence: (i) Notify Police by phone immediately and an email notification to the CAD at sua@cad.gov.hk, if the operation has caused any damage to property or injury to person; (ii) Within <u>24 hours</u> of any incident or accident (whether or not there was damage to third party property or injury), provide full details of the circumstances in writing to the CAD by email to sua@cad.gov.hk. (iii) Within <u>3 calendar days</u>, provide additional details and/or investigation findings by email to sua@cad.gov.hk.
5.2	Investigation policy	Include the responsible person for conducting the investigation. The root cause must be identified.
Part C – Appendices		
1	Qualification of remote pilot(s)	Enclose evidence of qualification.
2	SUA technical specifications	Full technical specifications of the SUA.
3	Forms and records	Include, but not limited to, the followings: (i) On-site survey and assessment record; (ii) Pre-flight checklist; (iii) Post-flight checklist.

Appendix B – Safety Risk Assessment for Drone Show

The applicant shall identify risks specific to the proposed drone show event and propose effective risk mitigating measures so that the risks are mitigated to an acceptable level. A template of risk assessment is available in the sample of Operations Manual available at <https://esua.cad.gov.hk/>. The following is an example of safety risk assessment for a drone show event and some anticipated risks to be addressed. Applicant should note that the list is not exhaustive. Any other risks associated with the proposed operation shall be identified and addressed.

Risk No.	Identified Hazard	Associated Risk (What & How)	Existing Mitigation	Current Risk Rating	Further Mitigation	Revised Risk Rating
1.	<i>Loss of C2 link due to interference</i>	<i>The SUA cannot be effectively controlled</i>	<i>Closed 4G network is used (instead of wifi)</i>	<i>4B</i>	<i>Long range “LoRa” network is deployed</i>	<i>2B</i>
2.	<i>Loss of C2 link due to network capacity</i>					
3.	<i>Loss of or poor GPS / GNSS due to interference</i>					
4.	<i>The SUA fail to identify the “home” position</i>					
5.	<i>The SUA fail to maintain minimal separation between each other</i>					
6.	<i>The SUA overshoot the geo-fence when travelling towards it at maximum speed</i>					
7.	<i>The battery falls below optimal level during operation</i>					
8.	<i>The SUA drop during operation</i>					
9.	<i>Any other single points of failure</i>					

– END –