



GHANA
CIVIL AVIATION AUTHORITY

ADVISORY CIRCULAR AC 28-003

Guidelines on Presentation of an RPAS Concept of Operations (CONOPS) to GCAA

SECTION 1 GENERAL

1.1 PURPOSE

The purpose of this Advisory Circular is to provide guidance to the RPAS Operator on development and presentation of an RPAS Concept of Operations (CONOPS) to the Ghana Civil Aviation Authority (GCAA).

1.2 STATUS OF THIS ADVISORY CIRCULAR

This AC is a second issue.

1.3 APPLICABILITY

This Advisory Circular is applicable to all Ghana Remotely Piloted Aircraft Systems (RPAS) Operator Certificate Holders as well as those Operators identified under the Ghana Assessment of Risk for RPAS Operators (ARRO) Methodology, i.e., operators involved in the following operations:

- Carriage, dropping and discharging of goods
- BVLOS and EVLOS
- RPAS with a max. take-off weight over 7kg
- Populous areas
- Restricted, danger, prohibited areas
- Cross border
- Hazardous, night, formation and racing flights

1.4 RELATED DIRECTIVES

The following Directives are directly applicable to the guidance contained in this advisory circular—

- Ghana Civil Aviation Directives Part 28
- Ghana Civil Aviation (Flight Standards) Directives Part 1
- Ghana Civil Aviation (Flight Standards) Directives Part 9

1.5 RELATED READING MATERIAL

- (1) ICAO Manual on Remotely Piloted Aircraft Systems (RPAS) (Doc 10019)
- (2) ICAO Annex 2

1.6 DEFINITIONS AND ABBREVIATIONS

Please refer to Ghana Civil Aviation Directives Part 28 and Part 1 for Standardized Terminology”

SECTION 2 OPERATIONAL INFORMATION

1. The following tables under this section should be completed to provide details of the operational setup.
2. The tables should be replicated and submitted under the seal or name of the organisation.

OPERATIONAL INFORMATION	
Organisational Overview	
0.1 State the name of organisation	
0.2 Organisation has a Registered Company Certificate issued by the Registrar General's Department of Ghana	Yes <input type="checkbox"/> If yes, please provide a copy No <input type="checkbox"/>
0.3 Describe the primary objectives and goals of the RPAS operation	
0.4 State the types of missions (e.g., surveillance, delivery, inspection, mapping)	
0.5 Describe the organisational structure for RPAS operations (attach a diagram to the description)	
0.6 State who has been assigned responsibility for the RPAS Operation in the organisation	
0.7 List approvals and authorizations organisation holds in relation to RPAS Operations	
0.8 Describe how management prioritizes RPAS safety in its operations	

OPERATIONAL INFORMATION	
Crew	
0.9 State the names of pilots and observers (Attach copies of their government issued photo IDs.)	
0.10 Pilots have a Remote Pilot Licence (Attach copies of their Remote Licence.)	YES <input type="checkbox"/> NO <input type="checkbox"/>
0.11 State ratings of pilots if licenced	
0.12 Indicate medical certifications of pilots if licenced (Attach copies of their Medical Certificate.)	CLASS ONE <input type="checkbox"/> CLASS THREE <input type="checkbox"/>
0.13 List the different types of RPAS that pilots can operate	
Other Position(s) and Other Information	
0.14 State additional positions in the organisation that relate to RPAS operations and their roles	
0.15 State the competencies required for these other positions relating to RPAS operations	
0.16 Describe how these positions interact with or impact the roles of RPAS pilots and support crew members	

SECTION 3 TECHNICAL INFORMATION

1. The following tables under this section should be completed to provide details of the technical characteristics of the operation.
2. The tables should be replicated and submitted under the seal or name of the organisation.

TECHNICAL INFORMATION	
RPA	
0.17 State the manufacturer or type certificate holder of the RPAS	
0.18 State the name of RPAS model	
0.19 State the serial number of RPA	
0.20 State the registration number of the RPA	
0.21 List the main materials used in the construction of the RPA	
0.22 Indicate the type of RPAS configuration	Fixed wing <input type="checkbox"/> Helicopter <input type="checkbox"/> Multirotor <input type="checkbox"/> Hybrid/VTOL <input type="checkbox"/> Lighter than air <input type="checkbox"/> Other, please specify: _____
0.23 RPAS is tethered during the operation	Yes <input type="checkbox"/> No <input type="checkbox"/>
0.24 State the maximum characteristic dimension	m
0.25 State the maximum take-off mass (MTOM) (indicated by the operator equal to or less than the manufacturer's specification)	kg
0.26 State the maximum operational speed	m/s
0.27 Indicate the type of propulsion system	Electric <input type="checkbox"/> Combustion <input type="checkbox"/> Hybrid <input type="checkbox"/> Other, please specify _____

TECHNICAL INFORMATION	
RPA Cont'd	
0.28 State the Type Certificate or Design Verification Report number (if available attach document)	
0.29 Certificate of airworthiness available (if available attach document)	Yes <input type="checkbox"/> No <input type="checkbox"/>
0.30 Noise certificate available (if available attach document)	Yes <input type="checkbox"/> No <input type="checkbox"/>
0.31 RPA is capable of transporting of goods	Yes <input type="checkbox"/> No <input type="checkbox"/>
0.32 Indicate the type of operation	Visual line of sight (VLOS) <input type="checkbox"/> Extended visual line of sight (EVLOS) <input type="checkbox"/> Beyond visual line of sight (BVLOS) <input type="checkbox"/>
0.33 State the Total System Error (BVLOS only)	
0.34 The remote pilot controls more than one RPA simultaneously	Yes <input type="checkbox"/> No <input type="checkbox"/>
0.35 The RPA is equipped with a Flight Termination System (FTS)	Yes <input type="checkbox"/> No <input type="checkbox"/>
0.36 If yes, describe the conditions for this FTS to be activated	
0.37 State the limitations of the RPA in relation to weather minimums, maximum wind speeds, visibility, etc.	
0.38 Describe the system used to broadcast the RPA position and heading, if applicable	
0.39 List the payload sensors on the RPA	
0.40 List the non-payload sensors on the RPA	

TECHNICAL INFORMATION	
C2 Link	
0.41 State the frequency of the C2 link for Radio Line of Sight (RLOS)	
0.42 State the maximum distance of RLOS	_____ m
0.43 State the frequency of the C2 link for Beyond Radio Line of Sight (BRLOS)	
0.44 State the name of the Service Provider for BRLOS	
0.45 Organisation has an agreement with the BRLOS Service Provider	Yes <input type="checkbox"/> If yes, please provide a copy No <input type="checkbox"/>
0.46 State the Quality of C2 Link Service required by RPAS (BRLOS only)	
0.47 State the Quality of C2 Link Service provided by the Service Provider (BRLOS only)	
0.48 Evidence exists that the Quality of C2 Link Service experienced along the flight path is greater than or equal to the Quality of C2 Link Service required by the RPAS is available (BRLOS only)	Yes <input type="checkbox"/> If yes, please provide a copy No <input type="checkbox"/>
0.49 Describe the RPA behaviour in a Lost C2 Link State	

TECHNICAL INFORMATION	
Operations	
0.50 State locations of the proposed operation	
0.51 List the geo coordinates if location specific (provide a minimum of four coordinates of the extreme edges of the location or the coordinates of the centre and the maximum radius about this centre)	
0.52 State the maximum intended height of operation (choose one unit of measurement)	_____ ft _____ m
0.53 There will be people or property <u>not</u> under organisation's control within the operational area	Yes <input type="checkbox"/> No <input type="checkbox"/>
0.54 If no, state the distance to the nearest structure or street <u>not</u> within organisation's control	_____ m
0.55 Describe the emergency response plan in place in the case of loss of control of the operation or an accident of or involving the RPA	

TECHNICAL INFORMATION	
Automation	
0.56 State the tasks that are handled by automated or autonomous systems during the flight	
0.57 Indicate the points in the flight at which the crew need to take control from the automated systems, if at all	
0.58 The crew can interrupt the flight at any point during the flight even if being controlled by automation	Yes <input type="checkbox"/> No <input type="checkbox"/>
0.59 If yes, state what actions are available at the crew's disposal	
Mitigation Measures	
0.60 Describe the in-built safety, mitigation and accident prevention systems of the RPAS	
0.61 If operating over people, the people are sheltered by a roof that provides protection from loss of control of the RPA, greater than that provided by an aluminium roofing sheet	Yes <input type="checkbox"/> No <input type="checkbox"/>
0.62 The operation is to be performed at those times that will ensure that there is a minimum number of people exposed (if yes, please provide details)	Yes <input type="checkbox"/> No <input type="checkbox"/>
0.63 The footprint of the area of operation is going to be actively observed to ensure that the number of people exposed is minimised (if yes, please provide details)	Yes <input type="checkbox"/> No <input type="checkbox"/>
0.64 The RPA is equipped with mitigation measures to reduce the effect of ground impact in the case of loss of control (if yes, please provide details)	Yes <input type="checkbox"/> No <input type="checkbox"/>

TECHNICAL INFORMATION	
Mitigation Measures Cont'd	
0.65 State other operational mitigations in place to reduce danger to people and property on ground	
0.66 Systems have been put in place to ensure the RPA does not leave the allocated airspace for the operation (if yes, please provide details)	Yes <input type="checkbox"/> No <input type="checkbox"/>
0.67 The operation is to be performed at those times that will ensure that the likelihood of uncoordinated encounters with manned aviation is unlikely (if yes, please provide details)	Yes <input type="checkbox"/> No <input type="checkbox"/>
0.68 Procedures and systems are in place to ensure that all manned aircraft operating in the vicinity of the RPAS operation are aware of the RPAS operation (if yes, please provide details)	Yes <input type="checkbox"/> No <input type="checkbox"/>
0.69 The RPAS operation is designed to reduce the time spent in a restricted, danger, no-fly zone or prohibited area (if yes, please provide details)	Yes <input type="checkbox"/> No <input type="checkbox"/>
0.70 State other operational mitigations in place to reduce the likelihood of uncoordinated encounters with manned aviation	

TECHNICAL INFORMATION	
Maintenance	
0.71 The RPAS is maintained by an approved organisation or person (provide copy of maintenance approval if answer is yes)	Yes <input type="checkbox"/> No <input type="checkbox"/>
0.72 The RPAS manufacturer provided a maintenance schedule (provide copy of maintenance schedule if answer is yes and evidence to show compliance with the maintenance schedule)	Yes <input type="checkbox"/> No <input type="checkbox"/>

End of Advisory Circular