ALL OPERATORS LETTER (DG 042/20)

Ref: NCAA/DG/AIR/11/16/274

Date: 9th October, 2020

To: All UAS/RPAS/DRONE OPERATORS

From: Nigerian Civil Aviation Authority

Subject: GUIDELINES FOR THE OPERATIONS OF REMOTELY PILOTED AIRCRAFT SYSTEMS / UNMANNED AIRIAL VEHICLE (RPAS/UAV) IN NIGERIA

1. BACKGROUND

Flight by remotely piloted aircrafts (RPAs) in controlled airspace and over populated areas presents problems to the Authority in terms of ensuring the safety of other users of airspace and persons on the ground. In the past, safety assurance would normally have been in the form of a prohibition of such activities, however, improvements in the technology associated with RPAs means that the potential exists for the operators of RPAs to comply with any safety, security and privacy requirements imposed by the Authority, which will ensure an adequate level of safety. The penalties for the operator may be increased complexity, increased weight, reduced payload and increased cost. In most cases, these factors will render commercial operations non-viable, however, as costs reduce and miniaturization continues, builders of RPAs may soon be able to develop cost effective solutions to current constraints.

The Nig. CARs 2015, Parts 8.8.1.33 contains basic regulations related to the operation of Remotely Piloted Aircraft. The Authority has been working on a new set of regulations for UAS/RPAS/Drones that is more elaborate and has taken into consideration ICAO Standards and Recommended Practices and guidelines from JARUS (Joint Authorities for Rulemaking on Unmanned Systems). When completed, the regulations will be issued as Nig. CAR Part 21.

While the new regulations are still being awaited, the Authority has found it necessary to issue interim guidelines to promote the safe and orderly development of UAS operations within the Nigeria. These guidelines have been issued in the form of an Advisory Circular NCAA-GAD-AC-001 and it is largely based on the work done so far on the draft regulations for the UAS.

2. ACTION REQUIRED

1. All Unmanned Aircraft Systems (UAS)/Remotely Piloted Aircraft Systems (RPAS)/Drones operators are hereby required to use the Advisory Circular Ref: NCAA- GAD-AC-001 as guideline for UAS/RPAS/Drones Certification and Operations.
2. Provide feedback to the Authority on the AC that will be used as inputs to improve the final regulations before they are issued.

Please, be guided accordingly.

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GUIDELINES FOR THE OPERATIONS OF REMOTELY PILOTED AIRCRAFT SYSTEMS / UNMANNED AIRIAL VEHICLE (RPAS/UAV) IN NIGERIA

Date: 10th May, 2020

REVISION No: Revision 00

NOTE: This is a controlled publication. The latest revision of this publication is on NCAA website: www.ncaa.gov.ng

APPLICABILITY: ALL UAS/RPAS/DRONE OPERATORS

IMPORTANT NOTE: This advisory circular is an interim guideline issued to be used by UAS/RPAS/Drone Operators before final regulations are issued. Feedback received from the stakeholders will serve as vital inputs to the final regulations using this AC as a basis.
## PART 21 – REMOTELY PILOTED AIRCRAFT SYSTEMS (RPAS) ADVISORY CIRCULAR

### Part 21 – REMOTELY PILOTED AIRCRAFT SYSTEMS (RPAS) ADVISORY CIRCULAR

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0.1 PURPOSE

This Advisory Circular (AC) has been developed to provide guidance to operators of RPAS in the operation of RPAs and the means whereby they may safely and legally operate RPA systems. This document also provides guidance to NCAA staff on the processing of operators certificate and approvals for RPA operation. While this document prescribes a means of compliance with legislation, alternate procedures demonstrating an equivalent or greater level of safety may be considered on a case by case basis.

0.2 REFERENCES

a. Nig. CARs 2015, 8.8.1.33, IS 8.8.1.33
b. Advisory Circular (AC) – NCAA-GAD-AC-002
d. American Society for Testing Materials (ASTM) Standards
e. Standardization Agreement (STANAG) 4702/4703/4671

0.3 STATUS OF THIS AC

0.3.1 This AC is published on this subject in Nigeria and is subject to review as the need arises and the latest and controlled version can be found on NCAA website: www.ncaa.gov.ng.

0.4 BACKGROUND

0.4.1 Flight by remotely piloted aircrafts (RPAs) in controlled airspace and over populated areas presents problems to the Authority in terms of ensuring the safety of other users of airspace and persons on the ground. In the past, safety assurance would normally have been in the form of a prohibition of such activities, however, improvements in the technology associated with RPAs means that the potential exists for the operators of RPAs to comply with any safety, security and privacy requirements imposed by the Authority, which will ensure an adequate level of safety. The penalties for the operator may be increased complexity, increased weight, reduced payload and increased cost. In most cases, these factors will render commercial operations non-viable, however, as costs reduce and miniaturization continues, builders of RPAs may soon be able to develop cost effective solutions to current constraints.
0.4.2 Remotely Piloted Aircraft (RPA), autonomous aircraft and model aircraft are various subsets of unmanned aircraft. Unmanned aircraft system (UAS) is an aircraft and its associated elements, which are operated with no pilot onboard.

0.4.3 Remotely piloted aircraft (RPA) is an unmanned aircraft, which is piloted from a remote pilot station. A remotely piloted aircraft, its associated remote pilot station(s), command and control links and any other components forms a Remotely Piloted Aircraft System (RPAS).

0.4.4 The RPAS comprises not just the aircraft, it also consists of the RPA ground control system, communications/data-link system, the maintenance system and the operating personnel. Thus, when considering requests for RPA operating approval, the Authority will assess the RPA system as a whole. The guidance contained in this advisory circular should be considered during development of a RPA system.

0.4.5 This Advisory Circular (AC) is issued under the provisions of Nig.CARs part 8 and lays down requirements for obtaining Unique Identification Number (UIN), RPAS Operator Certificate (ROC) and other operational requirements for civil Remotely Piloted Aircraft System (RPAS).
INTRODUCTION

Part 21 of the Nigeria Civil Aviation Regulations sets forth the regulatory requirements for the certification, registration, operations, and surveillance of Remotely Piloted Aircraft Systems (RPAS) in Nigeria.

It incorporates relevant requirements governing the safe operation of RPAS as contained in the ICAO Annexes 1, 2 and 6 Part I & Part IV to the Chicago Convention and the principles of ICAO Docs 10019, 9668 and other relevant ICAO Documents.

21.1 GENERAL

(a) This part applies to Civil Remotely Piloted Aircraft Systems which are remotely piloted from Remote Pilot Stations.

21.1.1 Applicability

21.1.1.1 This part sets out:
   a. The classification of RPAS
   b. Security Requirements
   c. The registration and marking of RPAS
   d. The issuing, renewal and re-issue of RPAS personnel licences, ratings, authorisations and certificates
   e. RPAS Operating Requirements
   f. Requirement for ROC
   g. Requirement for Manufacturers
   h. Transport of Dangerous Goods

21.1.1.2 Nothing in this Part applies to;

   a) RPAS for non-commercial or recreational purposes.
   b) a control-line model aircraft (that is, a model aircraft that is constrained to fly in a circle, and is controlled in attitude and altitude, by means of inextensible wires attached to a handle held by the person operating the model); or
   c) a model aircraft indoors; or
   d) a remotely piloted airship indoors; or
e) a small balloon within 100 metres of a structure and not above the top of the structure; the operation of a remotely piloted balloon or a hot air balloon, or

f) remotely piloted tethered balloon that remains below 400 feet aboveground level; or

g) a firework rocket not capable of rising more than 400 feet above ground level.

21.1.1.3 a flight does not take place indoors in accordance with 21.1.1.2 of this Advisory Circular, if the building in which it takes place has the roof, or 1 or more walls, removed.

21.1.1.4 provided that all drones should be registered on the Nigerian Civil Aviation Authority UAV Registration portal.

21.1.2 Definitions

(a) For the purpose of this Advisory Circular, in addition to the definitions set forth in Part 1 of Nig. CARs, the following definitions should apply:

(1) Accident: An occurrence associated with the operation of any aircraft, including UAS, which, in the case of a manned aircraft, takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, or in the case of an unmanned aircraft, takes place between the time the aircraft is ready to move with the purpose of flight until such time as it comes to rest at the end of the flight and the primary propulsion system is shut down, in which—

   (i) A person is fatally or seriously injured as a result of—

      (A) Being in the aircraft, or

      (B) Direct contact with any part of the aircraft, including parts which have become detached from the aircraft, or

      (C) Direct exposure to jet blast, except when the injuries are from natural causes, self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew; or

   (ii) The aircraft sustains damage or structural failure which—

      (A) adversely affects the structural strength, performance or flight characteristics of the
aircraft, and

(B) would normally require major repair or replacement of the affected component, except for engine failure or damage, when the damage is limited to single engine, including its cowlings or accessories, to propellers, wing tips, antennas, probes, vanes, tires, brakes, wheels, fairings, panels, landing gear doors, windscreens, the aircraft skin, such as small dents or puncture holes, or for minor damages to main rotor blades, tail rotor blades, landing gear, and those resulting from hail or bird strike (including holes in the radome); or

(iii) the aircraft is missing or is completely inaccessible.

(2) Aerodrome: A defined area on land or water, including any buildings, installations and equipment intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.

(3) Aircraft: Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth’s surface.

(4) Air traffic: All aircraft in flight or operating on the manoeuvring area of an aerodrome (note 1).

(5) Air traffic control clearance: Authorization for an aircraft to proceed under conditions specified by an air traffic control unit (note 2).

(6) Appropriate authority—

(i) Regarding flight over the high seas: the relevant authority of the State of Registry.

(ii) Regarding flight other than over the high seas: the relevant authority of the State having sovereignty over the territory being overflown.

(7) Approval of area: A defined area as approved under 21.7.1.3(a).

(8) Authority: The Nigerian Civil Aviation Authority;

(9) Authorization: The formal permission granted to an applicant, from the Authority, allowing particular operations with limitations commensurate with the combined operational and system risk.

(10) Automatic Dependent Surveillance – Broadcast (ADS-B): One method by which aircraft, aerodrome vehicles and other objects can automatically transmit and/or receive data such as
identification, position and additional data, as appropriate, in a broadcast mode via a data link.

(11) **Basic operations**: Operations that are likely to fall under the lowest risk categories and likely require only registration of the UAS in addition to set restrictions for private use.

(12) **Beyond visual line-of-sight (BVLOS) operation**. Unmanned aircraft operations in which the remote pilot does not have to keep the unmanned aircraft within visual-line-of-sight at all times.

(13) **Beyond radio line-of-sight (BRLOS)**. Any C2 Link configuration in which the transmitters and receivers are not in radio line of sight. BRLOS thus includes all satellite systems and possibly any system where an RPS communicates with one or more ground stations via a terrestrial network which cannot complete transmissions in a timeframe comparable to that of an RLOS system.

(14) **Commercial operation of UAS**: Any UAS operations for hire, profit, gain, remuneration or earnings.

Note 1. — For convenience, the term "air traffic control clearance" is frequently abbreviated to "clearance" when used in appropriate contexts.

Note 2. — The abbreviated term "clearance" may be prefixed by the words "taxi", "take-off", "departure", "enroute", "approach" or "landing" to indicate the particular portion of flight to which the air traffic control clearance relates.

(15) **Conspicuity**: Quality of an aircraft (e.g. lighting or paint scheme) allowing it to be easily seen or noticed by others (e.g. by pilots, ATCOs, aerodrome personnel).

(16) **Continuing airworthiness**: The set of processes by which an aircraft, engine, propeller or part complies with the applicable airworthiness requirements and remains in a condition for safe operation throughout its operating life.

(17) **Control area**: A controlled airspace extending upwards from a specified limit above the earth.

(18) **Controlled airspace**: Airspace of defined dimensions within which air traffic control service is provided in accordance with the airspace classification (Note 3).

(19) **Controlled flight**: Any flight which is subject to an air traffic control clearance.

(20) **Control zone**: Controlled airspace extending upwards from the surface of the earth to a specified upper limit. **Data link Communications**: Form of communication intended for the exchange of messages via a data link.

(21) **Categories of operation**
(a) **Category A (low risk).** Provides operations that are conducted within defined limitations (e.g. Visual line-of-sight (VLOS) only, specifying distances from aerodromes and people, maximum height above ground level (AGL), etc.), flights can take place without the need for any authorization from the aviation authority.

(b) **Category B (medium risk/regulated lower risk).** This category of operation requires an operational authorization from the Authority prior to the flight(s) taking place; appropriate limitations/restrictions would be applied based on the type of operation, complexity of the UAS and the specific qualifications and experience of operating personnel. Approval for the operation would be based on analysis of a safety risk assessment and any mitigations employed to reduce any risks to an acceptable level. This category encompasses operations where the risk to persons being overflown is greater than what would be permitted in Category A, or involves sharing the airspace with other manned or unmanned aircraft, but is at a level below that where the 'classical aviation approach' would be warranted.

Note 3. — Controlled airspace is a generic term which covers ATS airspace Classes A, B, C, D and E as described in ICAO Annex 11, 2.6.

(c) **Category C (manned aviation approach).** This category utilizes the traditional method of regulating manned aviation when the aviation risks increase to an equivalent level. Operator certification, flight crew licensing and remotely piloted aircraft (RPA) certification will be required due to the higher associated risk. Operations in this category are primarily considered to be flown beyond visual line-of-sight (BVLOS), however portions of the flight (e.g. launch and recovery) may operate within VLOS (Note 4).

(22) **Combined vision system (CVS).** A system to display images from a combination of an enhanced vision system (EVS) and a synthetic vision system (SVS).

(23) **C2 link.** The data link between the remotely piloted aircraft and the remote pilot station for the purpose of managing the flight.

(24) **C2 Link Interruptions.** Temporary situations where the C2 Link is either unavailable, discontinuous, too slow, or lacks integrity; but where the Lost C2 Link Decision Time has not been exceeded such as to require the RPAS to enter the Lost
C2 Link State.

Note 4:- Considering the broad range of operations and types of UAS, the Authority has established three (3) categories of operations covering the whole range of possible operations and associated regulatory regime as outlined above.

(25) **Dangerous goods.** Articles or substances which are capable of posing a risk to health, safety, property or the environment and which are shown in the list of dangerous goods in the Technical Instructions (Doc. 9284) or which are classified according to those Instructions.

(26) **Detect and avoid.** The capability to see, sense or detect conflicting traffic or other hazards and take the appropriate action.

(27) **Drones** are more formally known as **unmanned** aerial vehicles (UAVs) or **unmanned** aircraft systems (UAS). Essentially, a **drone** is a flying robot that can be remotely controlled or fly autonomously through software-controlled flight plans in their embedded systems, working in conjunction with on-board sensors and GPS. Drones are for non-commercial activities.

(28) **Extended Visual Line of Sight.** EVLOS operations are operations, either within or beyond 500m / 400 ft, where the Remote Pilot is still able to comply with his collision avoidance responsibilities, but the requirement for the Remote Pilot to maintain direct visual contact with the UA is addressed via other methods or procedures. It is important to note, however, that collision avoidance is still achieved through 'visual observation' (by the Remote Pilot and/or RPA Observers).

(29) **Fatigue:** A physiological state of reduced mental or physical performance capability resulting from sleep loss or extended wakefulness, circadian phase, or workload (mental or physical activity) that can impair a crew member’s alertness and ability to safely operate an aircraft or perform safety-related duties.

(30) **First-person view device:** A device that generates and transmits a streaming video image to a control station display or monitor that gives the pilot of an unmanned aircraft the illusion of flying the aircraft from an on-board pilot's perspective.

(31) **Flight termination system:** A system that when activated, terminates the flight of an unmanned aircraft.

(32) **Fly-away:** In respect to a remotely piloted aircraft, an interruption or loss of the C2 link such that the remote pilot is no longer controlling the aircraft and the unmanned aircraft is not flying its preprogrammed procedures in the predicted manner.
(33) **Flight plan**: Specified information provided to air traffic services units, relative to an intended flight or portion of a flight of an aircraft.

(34) **Flight recorder**: Any type of recorder installed in the aircraft for the purpose of complementing accident/ incident investigation. In the case of unmanned aircraft system, it also includes any type of recorder installed in a remote pilot station for the purpose of complementing accident/incident investigation.

(35) **Flight time**: The total time from the moment an aircraft first moves for the purpose of taking off until the moment it finally comes to rest at the end of the flight. *(Note 5).*

Note 5. — Flight time as here defined is synonymous with the term “block to block” time or “chock to chock” time in general usage which is measured from the time an aircraft first moves for the purpose of taking off until it finally stops at the end of the flight.

(36) **Flight visibility**: The visibility forward from the cockpit of an aircraft in flight.

(37) **Geographical limitation**: A restricted airspace volume defined through electronic map data.

(38) **Flight termination system**: A system intended to terminate the flight and minimize the possibility of injury or damage to persons, property or other aircraft.

(39) **Handover**: The act of passing piloting control from one remote pilot station to another.

(40) **Geofencing**: Automatic function to limit the access of the UA to airspace areas or volumes provided as geographical limitations based on the UA position and navigation data.

(41) **Guidance Material (GM)**: Non-binding material developed by the Authority that helps to illustrate the meaning of a requirement or specification Circular and is used to support the interpretation of the Advisory, Standard Scenarios, and outlines additional Acceptable Means of Compliance.

(42) **Highly automated aircraft**: An unmanned aircraft that does allow minimal pilot(s)’ intervention in the management of the flight.

(43) **Highly automated operation**: An operation during which an unmanned aircraft system is operating with minimal pilot intervention in the management of the flight.

(44) **Human performance**: Human capabilities and limitations which have an impact on the safety and efficiency of aeronautical operations.
(45) Incident: An occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation (Note 6).

(46) Instrument Meteorological Conditions (IMC): meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling, less than the minima specified for visual meteorological conditions.

Note 6. — The types of incidents which are of interest for safety-related studies include the incidents listed in Annex 13, Attachment C.

(47) Landing area: That part of a movement area intended for the landing or take-off of aircraft.

(48) Lost C2 Link. A situation in which the RPA can no longer be controlled by the remote pilot due to the degradation or failure of the communication channel between the RPS and RPA.

(49) Lost C2 Link Decision Time. The maximum length of time, pre-coordinated with ATS, that the pilot and/or RPAS is allowed to wait while the C2 Link performance is not sufficient to allow the remote pilot to actively intervene in the management of the flight in a safe and timely manner appropriate to the airspace and operational conditions before declaring a Lost C2 Link.

(50) Lost C2 Link Decision State. The RPAS state in which the C2 Link performance is not sufficient to allow the pilot to actively intervene in the management of the flight in a safe and timely manner appropriate to the airspace and operational conditions but the remote pilot and/or RPAS have not initiated the Lost C2 Link state because not enough time (the amount of time is dependent on the operating scenario) has elapsed.

(51) Lost C2 Link State. The RPAS state in which the remote pilot is no longer able to actively manage the flight in a safe and timely manner, appropriate to the airspace and operational conditions, and the RPA is performing pre-programmed, pre-coordinated and predictable manoeuvres.

(52) Maintenance: The performance of tasks required to ensure the continuing airworthiness of an aircraft, including any one or combination of overhaul, inspection, replacement, defect rectification and the embodiment of a modification or repair.

(53) Maintenance organization’s procedures manual: A document which details the maintenance organization’s structure and management responsibilities, scope of work, description of facilities, maintenance procedures, and quality assurance, or inspection systems. This document is normally endorsed by the head of the maintenance organization.
(54) **Maintenance program**: A document which describes the specific scheduled maintenance tasks and their frequency of completion and related procedures, such as a reliability program, necessary for the safe operation of those aircraft to which it applies.

(55) **Manoeuvring area**: That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons.

(56) **Movement area**: That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, consisting of the manoeuvring area and the apron(s).

(57) **Nominal C2 Link State**: The RPAS state when the C2 Link performance is sufficient to allow the pilot to actively manage the flight in a safe and timely manner appropriate to the airspace and operational conditions.

(58) **Notice to Airmen, NOTAM**: A notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

(59) **Operator**: A person, organization or enterprise engaged in or offering to engage in an aircraft operation. Note—In the context of remotely piloted aircraft, an aircraft operation includes the remotely piloted aircraft system.

(60) **Radio Line of Sight (RLOS)**: The situation in which the C2 Link transmitter(s) and receiver(s) are within mutual radio link coverage and thus able to communicate directly or through a ground network provided that the remote transmitter has RLOS to the RPA and transmissions are completed in a comparable timeframe.

(61) **RLP**: Generic term for Required end to end C2 Link Performance

(62) **RLP availability (A)**: The required probability that an operational communication transaction can be initiated when needed.

(63) **RLP continuity (C)**: The minimum proportion of operational communication transactions to be completed within the specified RLP transaction time, given that the service was available at the start of the transaction.
(64) **RLP transaction time (TT)** The maximum time for the completion of a proportion of operational communication transactions after which the initiator should revert to an alternative procedure. Two values are specified:

(i) **RLP nominal time (TT 95%)**. The maximum nominal time within which 95% of operational communication transactions is required to be completed.

(ii) **RLP expiration time (ET)**. The maximum time for the completion of the operational communication transaction after which the initiator is required to revert to an alternative procedure.

(65) **RLP integrity (I)** The required probability that an operational communication transaction is completed with no undetected errors.

(66) **R-VLOS** Restricted visual line of sight. It means an operation within 500m of the RPA pilot and below the height of the highest obstacle within 300m of the RPA, in which the remote pilot maintains direct unaided.

(67) **RLTpx** The maximum time allocated to the summed critical transit times for a C2 message, allocated to system X.

(68) **RPL** Remote Pilot License

(69) **Remote flight crew member**. A licensed crew member charged with duties essential to the operation of a remotely piloted aircraft system during a remote flight duty period.

(70) **Remote flight duty period**. A period which commences when a remote flight crew member is required to report for duty that includes a flight or a series of flights and which finishes when the remote flight crew member’s duty ends.

(71) **Remote pilot**. A person charged by the operator with duties essential to the operation of a remotely piloted aircraft and who manipulates the flight controls, as appropriate, during flight time.

(72) **Remote pilot-in-command (RPIC)**. The remote pilot designated by the operator as being in command and charged with the safe conduct of a flight.

(73) **Remote pilot station (RPS)**. The component of the remotely piloted aircraft system containing the equipment used to pilot the remotely piloted aircraft.

(74) **Remotely piloted aircraft (RPA)**. An unmanned aircraft which is piloted from a remote pilot station.
(75) **Remotely piloted aircraft system (RPAS).** A remotely piloted aircraft, its associated remote pilot station(s), the required command and control links and any other components as specified in the type design.

(76) **Risk mitigation:** The process of incorporating defences or preventive controls to lower the severity and/or likelihood of a hazard’s projected consequence in an effort to meet safety performance, “Target Levels of Safety,” necessary for flight operations.

(77) **Rotorcraft:** A power-driven heavier-than-air aircraft supported in flight by the reactions of the air on one or more rotors.

(78) **RPAS crew member.** A person, other than a remote flight crew member, assigned by the operator, charged with duties regarded to the operation of a RPAS before, during and/or after a flight duty period.

(79) **RPAS Flight Manual.** A manual, associated with the certificate of airworthiness, containing limitations within which RPA is to be considered airworthy, and instructions and information necessary to the remote flight crew members for the safe operation of the RPAS.

(80) **RPAS operating manual.** A manual, acceptable to the State of the Operator, containing normal, abnormal and emergency procedures, checklists, limitations, performance information, details of the RPAS and other material relevant to the operation of the RPAS.

(81) **RPAS operator certificate (ROC).** A certificate authorizing an operator to carry out specified RPAS operations.

(82) **RPAS operations specifications.** The authorizations, conditions and limitations associated with the operator certificate and subject to the conditions in the operations manual.

(83) **RPAS recording system (RPAS RS).** The recording system installed in the remotely piloted aircraft system for the purpose of complementing accident/incident investigation. RPAS recording systems consists of the following:

(i) **RPA recording system (RPA RS).** Any type of recording system installed in the remotely piloted aircraft used to collect and record parameters that reflect the state and performance of an aircraft.

(ii) **RPS recording system (RPS RS).** Any type of recording
system installed in the RPS for the purpose of recording the activity of a remote pilot station.

(iii) **Synthetic vision system (SVS).** A system to display data-derived synthetic images of the external scene from the perspective of the flight deck.

(84) **Safety:** The state in which risks associated with aviation activities, related to, or in direct support of the operation of aircraft, are reduced and controlled to an acceptable level.

(85) **Safety Management System (SMS):** systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures.

(86) **Safety performance indicator:** Data-based safety parameter used for monitoring and assessing safety performance.

(87) **Safety risk:** The predicted probability and severity of the consequences or outcomes of a hazard.

(88) **Segregated airspace:** Airspace of specified dimensions allocated for exclusive use to a specific user(s).

(89) **Shielded operation:** means an operation of an aircraft within 100 m of, and below the top of, a natural or man-made object.

(90) **Standard Scenario:** A description of a type of operation included in a certification specification issued by the Authority, for which an operational risk assessment has been conducted and mitigations identified that can be applied to a variety of applicants in satisfying Target Levels of Safety for approval *(Note 7).*

(91) **State of Design:** The State having jurisdiction over the organization responsible for the type design.

(92) **State of Manufacture:** The State having jurisdiction over the organization responsible for the final assembly of the aircraft.

(93) **State of Registry:** The State on whose register the aircraft is entered.

(94) **State of the Operator:** The State in which the operator’s principal place of business is located or, if there is no such place of business, the operator’s permanent residence.

(95) **Target Level of Safety (TLS):** A generic term representing the
level of risk which is considered acceptable in particular circumstances.

(96) **Testing Site:** A specific geographical location designated by the Authority for UAS testing and flight operations, managed by the Nigerian Government or delegated entity such as a UAS Club.

(97) **Type certificate:** A document issued by a Contracting State to define the design of an aircraft type and to certify that this design meets the appropriate airworthiness requirements of that State.

*Note 8.* — Many unmanned aircraft systems (UAS) do not have, and according to current standards, are not able to be certificated. It is up to the operator to provide the proper mitigations to risk that enable higher risk operations in lieu of more robust and reliable system certification and to use industry best practice standards when available to achieve Alternate Means of Compliance (AMOC).

(98) **Unmanned free balloon:** Non-power-driven, unmanned, lighter-than-air aircraft in free flight.

(99) **Unmanned Aircraft (UA) observer:** A trained and competent person designated by the operator who, by visual observation of the unmanned aircraft system, assists the remote pilot in the safe conduct of the flight. **Unmanned Aircraft System:** An aircraft and its associated elements which are operated with no pilot on board.

(100) **VFR flight:** Flight conducted in accordance with the visual flight rules.

(101) **Visibility:** For aeronautical purposes is the greater of—

(i) The greatest distance at which a black object of suitable dimensions, situated near the ground, can be seen and recognized when observed against a bright background;

(ii) The greatest distance at which lights in the vicinity of 1000 candelas can be seen and identified against an unlit background.

(102) **Visual Line-of-Sight (VLOS) operation:** An operation in which the remote crew maintains direct unaided visual contact with the unmanned aircraft system to manage its flight.

(103) **Visual Meteorological Conditions (VMC):** Meteorological conditions expressed in terms of visibility, distance from clouds, and ceiling, equal to or better than specified minima.

(104) **Unmanned Aerial Vehicle (UAV):** is a type of aircraft that operates without a human pilot on-board. Recent technologies have allowed for the development of many different kinds of advanced unmanned aerial vehicles used for various purposes. An unmanned aerial vehicle is also known as a drone.

(105) **Unmanned Aircraft System (UAS):** means an unmanned aircraft...
and the equipment to control it remotely. Unmanned aircraft (UA) means any aircraft operating or designed to operate autonomously or to be piloted remotely without a pilot on board.

(106) **Visual line-of-sight (VLOS)** operation. An operation in which the remote pilot or RPA observer maintains direct unaided visual contact with the remotely piloted aircraft.
21.1.3 Abbreviations and Acronyms

(a) The following abbreviations and acronyms are used in this Part.

(1) AC Advisory Circular
(2) ATC Air Traffic Control
(3) BRLOS beyond radio line-of-sight
(4) BVLOS beyond visual line-of-sight
(5) C2 command and control
(6) CA collision avoidance
(7) CPA closest point of approach
(8) DAA detect and avoid
(9) FCC flight control computer
(10) FMS flight management system
(11) FRMS fatigue risk management system
(12) FSS fixed satellite service
(13) FSTD flight simulation training device
(14) HALE high-altitude, long-endurance
(15) HMI human-machine interface
(16) ICA instructions for continuing airworthiness
(17) IFR instrument flight rules
(18) IMC instrument meteorological conditions
(19) ITU/WRC International Telecommunication Union/World Radio communication Conference
(20) LIDAR light detection and ranging
(21) MA manoeuvre advisories
(22) MAC mid-air collision
(23) MAWS minimum altitude warning system
(24) MCM maintenance control manual
(25) METAR aerodrome routine meteorological report
(26) ACP Aeronautical Communications Panel
(27) ADS-B automatic dependent surveillance — broadcast
(28) AFIS aerodrome flight information service
(29) AGL above ground level
(30) ANC Air Navigation Commission
(31) ANSP air navigation service provider
(32) ATCO air traffic control officer
(33) ATPL airline transport pilot licence
(34) BRLOS beyond radio line-of-sight
(35) C2 command and control
(36) CA collision avoidance
(37) C of A certificate of airworthiness
(38) CPA closest point of approach
(39) CPDLC controller-pilot data link communications
(40) DAA detect and avoid
(41) EM electromagnetic
(42) EFBs Electronic Flight Bags
(43) ETA Equipment Type Approval
(44) FCC flight control computer
(45) FMS flight management system
(46) FRMS fatigue risk management system
(47) FSS fixed satellite service
(48) FSTD flight simulation training device
(49) GM Guidance Material
(50) GPWS ground proximity warning system
(51) HALE high-altitude, long-endurance
(52) HF high frequency
(53) HMI human-machine interface
(54) ICA instructions for continuing airworthiness
(55) IFR instrument flight rules
(56) IMC instrument meteorological conditions
(57) ITU/WRC International Telecommunication Union/World Radio communication Conference
(58) LIDAR light detection and ranging
(59) MA manoeuvre advisories
(60) MAC mid-air collision
(61) MAWS minimum altitude warning system
(62) MMEL master minimum equipment list
(63) MOR Meteorological Optical Range
(64) NOTAM notice to airmen
(65) MPL multi-crew pilot licence
(66) MTOM maximum take-off mass
(67) NM nautical mile
(68) NextGen next generation air transportation system
(69) NMAC near mid-air collision
(70) OEM Original Equipment Manufacturer
(71) PBN performance-based navigation
(72) PIC pilot-in-command
(73) PPL private pilot licence
(74) RAE recognised assessment entity
(75) RCP required communication performance
(76) RF radio frequency
(77) RLOS radio line-of-sight
(78) RPL Remote Pilot License
(79) RLP Required end to end C2 Link Performance
(80) ROC RPAS operator certificate
(81) RPA remotely piloted aircraft
(82) RPIA Remote Pilot Instructors Authorisation
(83) RPAS remotely piloted aircraft system(s)
(84) RPASP Remotely Piloted Aircraft Systems Panel
(85) RPASRS Remotely Piloted Aircraft Recording systems
(86) RPS remote pilot station(s)
(87) R-VLOS Restricted visual line of sight.
(88) RVSM reduced vertical separation minimum
(89) RWC remain-well-clear
(90) SARP s Standards and Recommended Practices
(91) SESAR single European Sky ATM research
(92) SATCOM satellite communication
(93) SIP structural integrity programme
(94) SLA service level agreement
21.1.4 Exemptions

(a) Exemptions under this Part are granted in accordance with Part 1.4 of this Advisory Circular.

21.2 Classification of RPAS

21.2.1 Applicability

(a) This sub-part applies to the Classification of RPAS.

21.2.2 Classification of RPA

(a) RPA may be classified according to their weight as follows:

(i) Small: Greater than 250 grams or but less than 25kg.

(ii) Medium: Greater than 25kg, but less than or equal to 150kg.

(iii) Large: Greater than 150kg.
(b) There are three (3) main operational risk categories of RPAS:

(i) Open – these present the lowest risk and do not require prior authorisation before operating the RPAS but must be registered.

(ii) Specific – these create a higher risk and require authorisation to operate the RPAs

(iii) Certified – these require the RPAS and its operator and pilot to be certified and generally treat RPAS like manned aircraft.

21.2.3 RPAS Operating and Performance Limitations

(a) No person may operate a RPAS that:

(1) Exceeds its designed performance limitations for any operation, as established by the State of Registry;

(2) Exceeds the operating limitations contained in the RPAS user manual, or its equivalent;

(3) Exceeds the mass limitations, if applicable.

21.3 REGISTRATION AND MARKING OF RPAS

21.3.1 Application for Registration

(a) Every person lawfully entitled to the possession of a RPA in Nigeria should register the RPA with a gross mass of 250grm and more stipulated by the Authority and hold a valid certificate of registration.

ref: ICAO Model Regulations Part 101.5 UAS

(b) An applicant for the registration of RPAS should access the registration portal at www.rpas.ncaa.gov.ng and complete the application form providing the following information:

(1) the individual or corporate owner of the RPA;

(2) the RPA manufacturer and manufacturer’s designation of RPA;

(3) the serial number of the RPA; and

(4) other relevant data as required by applicable legislation.
(b) Certificate of Registration should be generated at completion registration in accordance with IS 21.3.1

21.3.1.1 RPA MARKINGS / UNIQUE IDENTIFICATION NUMBER (UIN)

(a) All RPA are required to obtain UIN from the registration portal.
(b) UIN should be displayed on the RPA

21.3.1.2 RPAS/UAS REGISTRATION DATA BASE

(a) The Authority may establish and maintain a RPAS/UAS register containing the following particulars-
   (1) The number of the certificate;
   (2) The UIN assigned to unmanned aircraft system by the registration portal;
   (3) The name of the manufacturer and the manufacturer's designation of the unmanned aircraft system;
   (4) The serial number of the unmanned aircraft system;
   (5) The name and address of the owner
   (6) The use or conditions with regard to which unmanned aircraft system is registered.
   (7) Entry date,
   (8) Registration/deregistration date

21.3.1.3 DE-REGISTRATION OF RPAS

(a) The Authority may de-register or cancel the registration of a RPAS from the database under the following circumstances—
   (1) Upon application of the RPAS owner for purposes of registering the RPAS with another Authority;
   (2) Upon destruction of the RPAS or its permanent withdrawal from use; or
   (3) In the interest of national security

21.3.1.4 IMPORT/EXPORT OF RPAS

(a) No person should import/export a RPAS or a component thereof without the approval of the competent security agency(ies).

21.4 RPA PERSONNEL LICENCE.

21.4.1.1 APPLICABILITY
21.4.1.2 ELIGIBILITY FOR REMOTE PILOT LICENCE

(a) The Authority may issue a remote pilot licence to the applicant if he or she is 16 years of age and has passed:

(1) an aeronautical knowledge examination as specified by the Authority in Part 2.

(2) an aviation licence theory examination taken to be an equivalent requirement for the issuance of a remote pilot licence; or

(3) the theory component of a remote pilot training course; or

(4) the theory component of a course conducted in a foreign country which the Authority is satisfied is equivalent to the theory component of a remote pilot training course; and

(b) The Authority may issue a remote pilot licence to the applicant if he or she has completed:

(1) a remote pilot training course in the operation of a category of the RPA that he or she proposes to operate; or

(2) a training course in the operation of a category of RPA that he or she proposes to operate conducted by the RPA’s manufacturer or an agent of the manufacturer; or

(3) a flight test conducted by the Authority for the purposes of this subparagraph; and

(4) has demonstrated the competencies required for the safe operation of the applicable type of RPA and associated RPA control station, under standard RPA operating conditions.

(c) A person is taken to have satisfied the conditions in paragraph (a)(1) who holds or has held:

(1) a flight crew licence; or

(2) a military qualification equivalent to a flight crew licence; or

(3) an air traffic control licence or a military qualification equivalent to an air traffic control licence.
21.4.1.3 APPLICATION FOR A REMOTE PILOT LICENCE

(a) An individual may apply to the Authority, in writing, for a remote pilot licence to operate a RPA.

(b) An application for a remote pilot licence should be made in accordance with the process specified in Part 2.

21.4.1.4 CONDITIONS ON REMOTE PILOT LICENCE

(a) The Authority may place a condition on a remote pilot licence that would:

   (1) allow the person to operate RPA of only a specified make and model;

   (2) limit the areas where he or she may operate a RPA; or

   (3) allow him or her to operate a RPA only in VMC.

(b) It is a condition of a remote pilot licence that the licence holder should not operate a RPA above 120 m (400 ft) AGL or within 4 km of the movement area of an aerodrome, unless he or she holds at least one of the following qualifications:

   (1) an aeronautical radio operator certificate;

   (2) a flight crew licence;

   (3) an air traffic control licence;

   (4) a military qualification equivalent to a licence mentioned in paragraph (b) or (c);

   (5) a flight service licence.

(c) It is a condition of a remote pilot licence that a RPA should be operated within the visual line-of-sight of the licence holder unless he or she has passed:

   (1) an aeronautical knowledge examination within the meaning of Part 2 on certification of pilots for the issuance of an instrument rating under Part 2;
(2) an aviation licence theory examination that is taken to be an equivalent requirement for the issuance of an instrument rating;

(3) an approved examination; and either:

(i) holds both a RPAS operator certificate and an authorization under AC 1.4.1.4 to operate the RPA beyond the person’s visual line-of-sight; or

(ii) is a member of a RPA operator’s personnel and the RPA operator holds both a RPAS operator certificate and an authorization under AC 1.4.1.4 for the operator’s personnel to operate a RPA beyond their visual line-of-sight.

(d) It is a condition of a remote pilot licence that the licence holder should not operate more than one RPA at a time unless:

(1) he or she holds an approval to operate more than one RPA at a time; and

(2) the conditions imposed on the approval are complied with.

ref: ICAO Model Regulations Part 102.7 UAS

21.5 RPAS INSTRUMENT, DATA AND EQUIPMENT

21.5.1.1 GENERAL

(a) No person should operate an RPAS unless it is equipped with required instrument and navigation equipment appropriate to the type of operation and category of RPAS.

(b) RPAS should meet the performance and equipment carriage requirements for the specific airspace in which the flight is to operate.

21.5.1.2 C2 LINK

(a) RPAS should have C2 Link equipment that connects the RPS and the RPA and should support the following communication tasks:

(1) datacommands to modify the flight profile and the configuration of the RPA;
(2) telemetry data regarding the position, configuration and status of the RPA;

(3) data for communications with external entities, if applicable;

(4) data required for detect and avoid capability;

(5) flight data recording requirements, if applicable;

(6) data to support RPS handover, if applicable; and

(7) link health monitoring functions

(b) The C2 Link should comply with performance requirements as contained in IS:21.5.1.2

21.5.1.3 ATC COMMUNICATION

(a) ATC communication capabilities should meet the required communication performance (RCP), if an RCP is specified for the airspace in which the RPA is operating.

(b) RPAS pilots should ensure that ATC is made aware of any operation that should take place in areas which are likely to affect manned and controlled air traffic.

Note: The C2 link provide the connection between the remote pilot and the RPA control and may be considered functionally equivalent to, for example, the control wires or data bus between the cockpit and the control surfaces possibly via the FCC. The RPA should therefore use data links that can be assured to meet communication transaction time, continuity, availability and integrity levels appropriate for the airspace and operation. SARPs related to these parameters will be needed.

21.5.1.4 DETECT AND AVOID (DAA)

(a) DAA Operational Requirements

(1) Any RPAS operated in accordance with instrument flight rules should have a DAA capability which enables the remote flight crew to avoid conflicting traffic and other hazards.

(2) DAA should provide the remote flight crew with the capability of exercising vigilance for the purpose of detecting and avoiding potential collisions with other aircraft. The remote flight crew should exercise vigilance even when air traffic services are provided.

(3) When DAA is used to avoid hazards other than conflicting traffic, its use should cause no undue hazard to other aircraft or persons or property on the surface.
(4) DAA should provide the flight crew with the capability of ensuring appropriate action is taken when different hazards are present at the same time, irrespective of whether DAA is provided by one system or different systems.

(5) The remote pilot should be able to intervene in the management of automated hazard avoidance maneuvers except when the C2 link to the RPA is not available.

(6) RPAS controls, displays and alerting should be appropriate to enable the remote pilot to recognise when an action may be necessary to override the automated hazard avoidance maneuver.

(b) DAA equipment

(1) In approving the operational use of DAA equipment:

(i) The Authority should ensure that the DAA equipment meets the appropriate airworthiness requirements.

(ii) The Authority should ensure that the operator has carried out a safety risk assessment of the operations supported by the DAA equipment, including RPAS controls, displays and alerting related to DAA as noted above.

(iii) The Authority should ensure that the operator has established and documented the operational limitations, procedures for the use of, and training requirements for, the DAA equipment.

(c) Automated Collision Avoidance

(1) The RPA should be equipped with a DAA system that is capable of performing automated collision avoidance maneuvers, except where the collision avoidance responsibilities of the remote pilot can be adequately exercised otherwise.

(2) Notwithstanding the provisions in 1.5.1.4.(b), the Authority may approve RPAS operations without automated collision avoidance, based on the results of a specific safety risk assessment conducted by the operator which demonstrates how an equivalent level of safety will be maintained. The specific safety risk assessment should include at least the:

(i) reliability of the C2 Link;
(ii) diversity of multiple links, if installed; and  
(iii) reliability of other systems that are required to allow the remote pilot to exercise control of the RPA flight trajectory

21.5.1.5 NAVIGATION EQUIPMENT

(a) An RPAS should be provided with navigation equipment which will enable it to operate in accordance with the airspace requirements.

(b) For operations where a navigation specification for performance-based navigation (PBN) has been prescribed, an RPAS should, in addition to the requirements specified in 21.5.1.6 (a):

(1) be provided with navigation equipment which will enable it to operate in accordance with the prescribed navigation specification(s);

(2) have information relevant to the RPAS navigation specification capabilities listed in the flight manual or other RPAS documentation approved by the State of Design or State of Registry; and

(3) where the RPAS is operated in accordance with a MEL, have information relevant to the RPAS navigation specification capabilities included in the MEL.

(c) For flights in defined portions of airspace where, based on Regional Air Navigation Agreement, a reduced vertical separation minimum (RVSM) of 300m (1000ft) is applied, an RPAS should:

(1) be provided with equipment which is capable of:

   (1) indicating to the remote pilot the flight level being flown;

   (2) automatically maintaining a selected flight level;

   (3) providing an alert to the remote pilot when a deviation occurs from the selected flight level. The threshold for the alert should not exceed ±90 m (300ft); and

   (4) automatically reporting pressure-altitude;

(2) be authorized by the Authority for operation in the airspace; and
(3) demonstrate a vertical navigation performance in accordance with Nig. CARs Part 7.4.1.3.

(d) Prior to granting the RVSM approval required in accordance with 21.5.1.5 (c) (1), the Authority will be satisfied that:

(1) the vertical navigation performance capability of the RPAS satisfies the requirements specified in Nig. CARs Part 7.4.1.3.

(2) the operator has instituted appropriate procedures in respect of continued airworthiness (maintenance and repair) practices and programmes; and

(3) the operator has instituted appropriate remote flight crew procedures for operations in RVSM airspace.

(e) The Authority, in consultation with the State of Registry if appropriate, will ensure that, in respect of those RPAS mentioned in 1.6.1.5, adequate provisions exist for:

(1) receiving the reports of height-keeping performance issued by the monitoring agencies established in accordance with Annex 11, 3.3.5.1; and

(2) taking immediate corrective action for individual RPAS, or type of RPAS, identified in such reports as not complying with the height-keeping requirements for operation in airspace where RVSM is applied.

(f) The Authority, in consultation with the State of Registry if appropriate, that has issued an RVSM approval to an operator will establish a requirement which ensures that a minimum of two type of RPAS grouping of the operator have their height keeping performance monitored, at least once every two years or within intervals of 1,000 flight hours per RPAS, whichever period is longer. If an operator RPAS type grouping consists of a single RPAS, monitoring of that RPAS should be accomplished within the specified period.

(g) No Operator should operate an RPA in RVSM airspace without a valid RVSM approval.

(h) The operator should ensure that the RPAS is sufficiently provided with navigation equipment to ensure that, in the event of the failure of one item of equipment at any stage of the flight, the remaining equipment will enable the RPAS to navigate in accordance with 1.6.1.5 (a) and where applicable 1.6.1.5.(b) and 21.5.1.5 (c).
(i) On flights in which it is intended to execute an instrument approach and landing, an RPAS should be provided with a navigation capability providing sufficient performance and functionality to guide the RPA to landing or to allow the remote pilot to conduct a landing under VLOS or through indirect observation utilizing appropriately certified visual surveillance system or methodology.

(j) This capability should be available at each aerodrome at which it is intended to execute an instrument approach and landing, including at any designated alternate aerodromes.

(k) The operator should ensure that the RPA is provided with a navigation capability providing sufficient performance and functionality to guide the RPA to a designated point on the movement area, when the RPA is capable of conducting automated taxiing.

(l) Electronic Navigation Data Management

(m) The operator should not employ electronic navigation data products that have been processed for application in the air and on the ground unless the State of Operator has approved the operator’s procedures for ensuring that the process applied and the products delivered have met acceptable standards of integrity and that the products are compatible with the intended function of the equipment that will use them. The State of Operator should ensure that the operator continues to monitor both process and products.

(n) The operator should implement procedures that ensure the timely distribution and insertion of current and unaltered electronic navigation data to all RPAS that require it.

21.5.1.6 ATS SURVEILLANCE EQUIPMENT

(a) An RPAS should be provided with surveillance equipment which will enable it to operate in accordance with the requirements of air traffic services.

(b) All RPAS operating in BVLOS should be equipped with a Mode S pressure-altitude reporting transponder which operates in accordance with the relevant provisions of Annex 10, Volume IV.

ICAO Annex 6 Part IV Section III

21.6 SECURITY REQUIREMENTS FOR RPAS OPERATOR

21.6.1.1 SECURITY VETTING FOR RPAS OPERATOR

(a) An applicant for an ROC should undergo and obtained a
Security Clearance from the Office of National Security Office or any competent security agency(ies).

(b) The RPAS should be stored and prepared for flight to ensure protection against sabotage or other unlawful malicious interference.

(c) The RPAS should be protected in a manner that will prevent and detect tampering, hacking, spoofing and other forms of interference or malicious hijack and ensure the integrity of vital components.

(d) Personnel responsible for programming, preflight preparation and servicing as well as operating and remotely piloting the RPA should be security background checked.

(e) The RPAS operator should comply with any security directives or circulars issued by the Authority.

21.6.1.2 RPS ACCESS CONTROL

(a) Access to an RPS should be restricted, commensurate with the size and capability of the RPAS.

(b) Access to computer based hardware should be limited to persons identified and authenticated by the operator.

21.7 RPAS OPERATING REQUIREMENTS

21.7.1.1 FLIGHT PREPARATION

(a) The operator should develop procedures to ensure that a flight is not commenced unless:

(1) the RPA is airworthy, duly registered and that appropriate certificates with respect thereto are in possession of the RPA;

(2) the instruments and equipment installed in the RPAS are appropriate, taking into account the expected flight conditions;

(3) the RPS(s) used for the flight is (are) serviceable and compatible with the RPA used;

(4) a C2 link with the RPA is expected to be available for the duration of the flight and matches the performance criteria;

(5) any necessary maintenance has been performed

(6) the mass of the RPA and centre of gravity location are such that the flight can be conducted safely, taking into account the flight conditions expected;
(7) any load carried is properly distributed and safely secured; and 
(8) the RPA operating limitations, contained in the flight manual, or its equivalent, will not be exceeded.

21.7.1.2 MEANING OF STANDARD RPA OPERATING CONDITIONS

(a) A RPA is operated in **standard RPA operating conditions** if, during the operation:

(1) the RPA is operated within the visual line-of-sight of the person operating the RPA; and 
(2) the RPA is operated at or below 120m (400ft) above ground level (AGL) by day; and 
(3) the RPA is not operated within 30m of a person, measured horizontally, who is not directly associated with the operation of the RPA; and

(b) the RPA is not operated:

(1) in a prohibited area; or 
(2) in a restricted area; or 
(3) over a populated area; or 
(4) within 5 km of the movement area of a controlled aerodrome; and

(c) the RPA is not operated over an area where a fire, police or other public safety or emergency operation is being conducted without the approval of a person in charge of the operation; and

(d) the person operating the RPA operates only that RPA.

*ref: ICAO Model Regulations Part 101.7 UAS*

21.7.1.3 APPROVAL OF AREAS FOR OPERATION OF RPA

(a) A person may apply to the Authority for the approval of an area as an area for the operation of:

(1) RPA generally, or a particular category of RPA;
(i) An approval has effect from the time written notice is issued to the applicant, or a later day, or day and time stated in the approval.

(ii) An approval may be expressed to have effect for a particular period (including a period of less than 1 day) or indefinitely.

(2) The Authority may impose conditions on the approval in the interests of the safety of air navigation.

(3) If the Authority approves an area under (1), it should publish details of the approval (including any condition) in a NOTAM or on an aeronautical chart.

(b) The Authority may revoke the approval of an area, or change the conditions that apply to such an approval, in the interests of the safety of air navigation, but the Authority should publish details of any revocation or change in NOTAM or on an aeronautical chart.

(c) The Authority should also give written notice of the revocation or change:

(1) to the person who applied for the approval of the area; or

(2) if that person applied for that approval as an officer of an organization concerned with RPA and no longer holds that office, to the person who now holds the office.

ref: ICAO Model Regulations Part 101.9 UAS

21.7.1.4 SEGREGATED AIRSPACE

(a) A person should not operate a RPA within segregated airspace unless the person has approval to do so from the administering authority responsible for the segregated airspace area.

ref: ICAO Model Regulations Part 101.11 UAS

21.7.1.5 CONTROLLED AIRSPACE

(a) A person should not operate a RPA in controlled airspace without authorization from the ATC unit responsible for that airspace; and

(b) A person should not operate a RPA in controlled airspace unless he or she:

(1) holds a relevant qualification for the use of an aeronautical radio;
(2) maintains a listening watch on a specified frequency or frequencies specified in the direction; and

(3) makes broadcasts on a specified frequency or frequencies and/or maintains other ways of communication requested by the ATC unit at the specified interval giving the specified information in the direction.

(c) In paragraph (b), relevant qualification means any of the following qualifications:

(1) an aeronautical radio operator certificate;

(2) a remote pilot licence [or flight crew licence];

(3) an air traffic control licence;

(4) a military qualification equivalent to a licence mentioned in paragraph (c)(2) or (c) (3); or

(5) a flight service licence.

i. specified frequency for particular airspace means a frequency specified from time to time in AIP or by ATC as a frequency for use in the airspace.

ii. specified information for particular airspace means information specified from time to time in AIP or by ATC as information that must be broadcast in the airspace.

iii. specified interval for particular airspace means the interval specified from time to time in AIP or by ATC as the interval at which broadcasts must be made while in that airspace.

(d) The Authority may direct, in regard to a particular RPA or type of RPA, that a person must not operate the RPA, or a RPA of that type, unless he or she:

(1) holds a relevant qualification for the use of an aeronautical radio; and

(2) maintains a listening watch on a specified frequency or frequencies specified in the direction; and
(3) makes broadcasts on a specified frequency or frequencies and/or maintains other ways of communication requested by the ATC unit at the specified interval giving the specified information in the direction.

(e) In this regulation, the person must comply with all directions issued.

(f) ref: ICAO Model Regulations Part 101.13 UAS

21.7.1.6 AIRSPACE KNOWLEDGE

(a) This rule applies to a person who operates any of the following:

(1) a RPA.

(b) A person to whom this rule applies should:

(1) ensure that before each flight, the person is aware of the airspace designation under Part 14 and any applicable airspace restrictions in place in the area of intended operation; or

(2) conduct the operation under the direct supervision of a person who is aware of the airspace designation under Part 14 and any applicable airspace restrictions in place in the area of intended operation.

ref: ICAO Model Regulations Part 101.15 UAS

21.7.1.7 HAZARD AND RISK MINIMIZATION

(a) A person operating any of the following should take all practicable steps to minimize hazards to persons, property and other aircraft:

(1) a RPA.

ref: ICAO Model Regulations Part 101.17 UAS

21.7.1.8 DROPPING OF ARTICLES

(a) A person operating any of the following should not allow any object to be dropped in flight if such action creates a hazard to other persons or property:

(1) a RPA.

ref: ICAO Model Regulations Part 101.19 UAS
21.7.1.9 APPROVED PERSON (AP)

(a) In this section, an approved person (AP) means a person or organization having appropriate expertise in the design, construction or operation of a RPA, or appropriate knowledge of airspace designations and restrictions, and who has been approved by the Authority to perform one or more of the following specified functions:

1. issuing a remote pilot qualification for operating a RPA;
2. appointing persons to give instruction to operators of RPA;
3. authorizing a person to notify the air navigation service provider, for the issuance of a NOTAM, of a RPA operation;
4. authorizing the construction or modification of a RPA greater than 25kg;
5. inspecting and approving the construction of a RPA greater than 25kg; or
6. authorizing the operation of a RPA greater than 25kg.

ref: ICAO Model Regulations Part 101.21 UAS

21.7.1.10 AERODROMES

(a) A person should not operate a RPA on or within 5km of—

1. an uncontrolled aerodrome, unless:
   (i) the operation is undertaken in accordance with an agreement with the aerodrome operator; and
   (ii) each remote pilot has a RPA observer in attendance while the aircraft is in flight; and
   (iii) the RPA is not operated at a height of more than 120 m (400 ft) AGL unless the operator has been approved by the Authority to operate the RPA above 120 m (400 ft) AGL; and

2. a controlled aerodrome, unless it is operated in accordance with an authorization from the relevant air traffic control (ATC) unit; and

3. any aerodrome, unless the person:
   (i) is the holder of, or is under the direct supervision of the holder of, a remote pilot qualification issued
by an approved person or approved aviation organization; or

(ii) is under the direct supervision of a person appointed to give instruction in the operation of a RPA by an approved person or approved aviation organization; or

(iii) is the holder of a remote pilot licence issued under 1.3 of this AC.

(b) Paragraph (a) does not apply to an operation that is conducted:

(1) outside of the boundary of the aerodrome; and

(2) in airspace that is physically separated from the aerodrome by a barrier that is capable of arresting the flight of the RPA.

ref: ICAO Model Regulations Part 101.23 UAS

21.7.1.11 AIRSPACE

(a) A person operating a RPA should:

(1) unless operating in segregated airspace, not operate in airspace within 50m, measured horizontally, of a person who has not given consent for the RPA to operate over them;

(2) maintain observation of the surrounding airspace in which the aircraft is operating for other aircraft; and

(3) not operate the RPA at any height above 120 m (400 ft) AGL except in accordance with paragraph (c).

(b) Nothing in paragraph (a) requires a person to obtain consent from any person if operating:

(1) under the authority of an approved aviation organization; and

(2) in airspace used by that organization.

(c) A person operating a RPA more than 4 km from an aerodrome boundary and above 120 m (400 ft) AGL should ensure that the operation remains within Class G airspace (uncontrolled airspace) and should:

(1) operate in segregated airspace designated for that purpose; or
(2) ensure that at least 24 hours before the operation, a person authorized by an approved person or approved aviation organization, notifies the air navigation service provider (ANSP), for the issuance of a NOTAM, containing the following information:

(i) the name, address, and telephone number of the operator;

(ii) the location of the proposed operation;

(iii) the date, time and duration of the proposed operation;

(iv) the maximum height AGL proposed for the RPA operation.

ref: ICAO Model Regulations Part 101.25 UAS

21.7.1.12 VISUAL LINE-OF-SIGHT OPERATIONS

(a) This rule applies to the following types of aircraft:

(1) a RPA.

(b) A person should not operate a RPA to which this rule applies in:

(1) any area in which the person’s view of the surrounding airspace in which the RPA will operate is obstructed; or

(2) meteorological conditions that obstruct the person’s ability to maintain visual line-of-sight of the aircraft.

(c) A person who operates a RPA to which this rule applies should at all times:

(1) maintain visual line-of-sight with the RPA or be in direct communications with a RPA observer that maintains visual line-of-sight with the RPA; and

(2) be able to see the surrounding airspace in which the RPA is operating; and

(3) operate the RPA below any cloud base.

(d) For the purposes of this rule, visual line-of-sight means a straight line along which the remote pilot or RPA observer has a clear view and which may be achieved with the use of:

(1) spectacles, contact lenses, or a similar device used for vision correction of the user to no better than normal
vision but not the use of an electronic, mechanical, electromagnetic, optical, or electro-optical instrument; or

(2) a first person view system and a trained and competent RPA observer who maintains:

(i) visual line-of-sight of the RPA; and

(ii) sight of the surrounding airspace in which the RPA is operating; and

(iii) has direct communication with the person who is operating the RPA.

ref: ICAO Model Regulations Part 101.27 UAS

21.7.1.13 BEYOND VISUAL LINE-OF-SIGHT (BVLOS) OPERATIONS

(a) To conduct BVLOS operations, the operator should obtain Authorization from the Authority after conducting operation safety risk assessment.

(c) Prior to conducting a controlled BVLOS operation, coordination should be effected with the ATC unit involved regarding—

(1) Any operational performance limitations or restrictions unique to the RPAS (e.g. unable to perform standard rate turns);

(2) Any pre-programmed lost C2 link flight profile or flight termination procedures; and

(3) Direct telephone communication between the Remote Pilot Station (RPS) and the ATC unit for contingency use, unless otherwise approved by the ATC unit(s) involved.

(d) Communication between the Remote Pilot Station (RPS) and the ATC unit(s) should be as required for the class of airspace in which operations occur and should utilize standard ATC communications equipment and procedures, unless otherwise approved by the ATC unit involved.

(e) C2 link transaction time should be minimized so as not to inhibit the remote pilot’s ability to interface with the RPAS compared to that of a manned aircraft.

(f) RPAS operating BVLOS should only operate within Radio line of sight (RLOS). Operation beyond Radio line of sight should require special Authorization from the Authority after indicating all operational control functions and safety measures associated to the type of operation.

(g) Remote Pilot Station for RPAS operations BVLOS will be
designed in such way to match the performance of the type of C2 link (BRLOS/RLOS) with which they will be used.

(h) BVLOS operations should be conducted only when the following conditions are met—

1. The State of the Operator and the State in whose airspace operation occurs have approved the operation;
2. The PIC has a BVLOS qualification from a recognised training organisation.
3. The RPAS remains in VMC throughout the flight; and.
4. A Detect And Avoid (DAA) capability or other mitigation is used to assure the RPA remains well clear of all other traffic; or
5. The area is void of other traffic; or
6. The operation occurs in specifically delimited or segregated airspace.

(i) Operations BVLOS over heavily populated areas or over open air assemblies of people should require special considerations such as the following—

1. Altitudes for safe operation;
2. Consequences of uncontrolled landing;
3. Obstructions;
4. Proximity to airports/emergency landing fields;
5. Local restrictions regarding RPAS operations over heavily populated areas; and
6. The emergency termination of a RPA flight.

(j) Take-off/launch of RPAS BVLOS should be operated from established aerodromes/RPAS ports or from any other location depending on operational requirements and system configuration, design and performance.

(k) Take-off/launch from aerodromes for BVLOS operations from established aerodromes may be approved after ensuring that the safety of manned aircraft operations is not jeopardized, the remote pilot should consider the following—

1. Rules pertaining to RPAS operations on or near an aerodrome;
2. Complexity and density of air traffic;
(3) Ground operations (e.g. taxiway width, condition, other
    ground traffic);
(4) C2 link continuity;
(5) Payload considerations;
(6) Wake turbulence;
(7) Performance and capability related to take-off
distance/run available and minimum obstruction climb
requirements, departure procedures and any flight
restricting conditions associated with operations to or
from the aerodrome; and
(8) Availability of emergency recovery areas.

21.7.1.14 WEATHER AND DAY LIMITATIONS

(a) A person should not operate a RPA:
(1) in or into a cloud; or
(2) at night; or
(3) in conditions other than visual meteorological conditions (VMC):
  (i) unless permitted by another provision of this Part, or in
      accordance with an air traffic control clearance.

(b) 21.7.1.14 (a) does not apply if the person holds an authorization under
AC allowing these operations.

ref: ICAO Model Regulations Part 101.29 UAS

21.7.1.15 NIGHT OPERATIONS

(a) A person should not operate a RPA at night unless the operation
    is:
    (1) indoors; or
    (2) a shielded operation.

(b) 21.4.1.15(a) does not apply if the person holds an authorization
    under AC allowing these operations.

ref: ICAO Model Regulations Part 101.31 UAS

21.7.1.16 RIGHT-OF-WAY

A person who is operating a RPA should give way to and remain clear
of all manned aircraft on the ground and in flight.
21.7.1.17 OPERATION OVER AND NEAR PEOPLE

(a) No person should operate a RPA over a person unless that person is:

(1) Directly participating in the operation of the RPA; or

(2) Located under a covered structure or inside a stationary vehicle that can provide reasonable protection;

(3) Directly associated with the operation of the RPA or the RPA is operated no closer than 50m, measured horizontally from a second person not directly associated with the operation of the RPA.

(b) 21.7.1.17(a), do not apply if:

(1) the person has consented that the RPA is allowed to fly over or near him or her; and

(2) the RPA is operated no closer than 15m, measured horizontally, of him or her.

(c) Reporting of incidents

(1) The remote pilot-in-command should be responsible for:

(i) notifying the Authority by the quickest available means of any incident involving RPAS.

(ii) submitting a report in a form and manner acceptable to the Authority within 72 hours from the time of incident.

(2) Unlawful Interference. The PIC should submit a report to the local authorities and to the Authority, without delay, following an act of unlawful interference.

(d) Accident notification –

(1) If an emergency situation which endangers the safety of the RPA or persons necessitates the taking of action which involves a violation of local rules or procedures, the Remote PIC should—

(i) Notify the appropriate local Authority without delay;
(ii) Submit a report of the circumstances, if required by the State in which the incident occurs; and

(iii) Submit a copy of this report to the Authority.

(2) Each Remote PIC should submit reports specified in paragraph (1) above to the Authority within 72 hours in the form prescribed by the Authority.

21.7.1.18 TEMPORARY AUTHORIZATION OF RPAS ACTIVITIES

(a) The Authority may grant upon application a temporary Authorization(s) to person(s) intending to operate RPAS not registered in Nigeria—

(1) For a period of fourteen (14) days’ renewable once when the reason for renewal is genuine;

(2) Such application should be submitted to the Authority and processed within four (4) weeks.

21.7.1.19 FATIGUE MANAGEMENT

(a) The operator should establish and implement a fatigue management programme.

(b) The programme should address flight and duty times and be included in the operations manual.

(c) The operator should ensure all personnel involved in the operation and maintenance of RPAS receive fatigue management training.

(d) The operator should ensure all personnel involved in the operation and maintenance of RPAS do not carry out their duties while fatigued.

Note.— Guidance on fatigue management programmes can be found in the Oversight of Fatigue Management Approaches (Doc 9966).

21.7.1.20 RPAS MAINTENANCE AND INSPECTION REQUIREMENTS

(a) A registered owner or operator of an RPAS is responsible for maintaining of the RPAS in an airworthy condition.

(b) No person may operate an RPAS for the purpose of performing a flight unless a maintenance pre-flight check is carried out.

(c) No person may perform any maintenance, preventive maintenance or alteration on an RPAS without proper authorisation from Authority.
(d) No person may operate an RPAS for which a manufacturer's maintenance manual or instructions for continued airworthiness has been issued unless the mandatory replacement times, inspection intervals and related procedures are set forth in the Conditions and Limitations approved by the Authority under this Part for ROC holders.

21.7.1.21 ROC INSPECTION REQUIREMENTS

(a) The ROC Holder should ensure that no flight takes place unless:

(1) the RPA is maintained in an airworthy condition;
(2) the RPS is maintained and serviceable;
(3) the serviceability of the C2 Link has been verified;
(4) all the other necessary RPAS components are serviceable;
(5) any operational and emergency equipment fitted is correctly installed and serviceable or clearly identified as unserviceable; and
(6) the maintenance of the RPA and RPS are performed in accordance with manufacturer data.

(b) For each RPA type, the ROC holder should establish and implement a maintenance programme in accordance with the manufacturer’s manuals and considering the results of the operational risk assessment.

(c) The operator should not operate an RPAS above 25kg unless it is maintained and released to service by an approved maintenance organization or under an equivalent system, either of which should be acceptable to the Authority. When the Authority accepts an equivalent system, the person signing the maintenance release should be licensed in accordance with Part 1.4 of this Advisory Circular.

(d) Any persons signing a maintenance release should be authorized in accordance with the Maintenance Control Manual of the ROC holder.

(e) For each RPA and for each RPS, the operator should maintain a Technical Log including records of operating hours / cycles as relevant to the type of RPA and RPS.

21.8 RPAS OPERATORS CERTIFICATE (ROC)

21.8.1.1 REQUIREMENT FOR CERTIFICATE
(a) No person should operate an RPA other than in accordance with the terms of a valid ROC issued by the Authority under this AC.

ref: ICAO Model Regulations Part 102.15 UAS

21.8.1.2 APPLICATION FOR A RPAS OPERATOR CERTIFICATE

(a) An application for the issuance of an RPAS operator certificate should be in a prescribed form and submitted to the Authority with evidence of payment of the prescribed fee.

(b) The application should address the following matters, having regard to the nature, degree and risk of the intended operation:

(1) the identification of a person who will have primary responsibility for the operation;

(2) the identification of any person who is to have or is likely to have control over the exercise of the privileges under the certificate;

(3) details of the physical locations to be used in the operation;

(4) an operational risk assessment that:

   (i) identifies the known and likely consequences to hazards to people, property and other aircraft of the proposed operation;

   (ii) includes a description of the measures that will be implemented to mitigate or manage the risk;

(5) procedures for reporting information to the Authority including incidents and accidents;

(6) operating requirements for personnel licensing, qualifications, training and competency including remote pilot and remote flight crew qualifications, training or medical requirements;

(7) details of the number and specifications of the aircraft to be used, including any identification system used on the aircraft (for example color schemes, unique identification numbers, markings);

(8) details of the control system to be used to pilot the aircraft;

(9) procedures for the maintenance of aircraft and measures to ensure continued airworthiness;
(10) in flight procedures, including minimum distances from persons or property;

(11) procedures for handling cargo, including dangerous goods, or dropping items, if such operations are intended;

(12) the manufacturer’s Declaration of Compliance or approval from an AAO;

(13) procedures for controlling, amending and distributing the application; and

(14) any other approvals that are required to conduct the proposed operation.

(c) The Authority may require only those matters in paragraph (b) that the Authority considers are appropriate in the particular circumstances to be contained in the application.

21.8.1.3 ISSUANCE OF RPAS OPERATOR CERTIFICATE

(a) The Authority may issue an ROC to a person who has applied under this section 21.8.1.2

(b) When issuing an ROC under paragraph (a), the Authority may:

(1) impose requirements on the RPAS and may specify procedures to be followed by the operator of any RPA that are operated under the authority of the ROC;

(2) specify any additional conditions that the Authority considers necessary in the interest of aviation safety; and

(3) after considering the type of RPA to be used, determine that any RPA to be operated under the ROC should display identification markings in accordance with 21.3, if the Authority considers that it is necessary in the interest of aviation safety.

21.8.1.4 RPAS OPERATOR CERTIFICATE

(a) If the Authority issues a ROC, the certificate should be issued with an authorization containing the details described in paragraph (b).

(a) The ROC should consist of two documents – the Certificate and the Conditions and Limitations in accordance with IS: 21.8.

(c) Contents of the ROC
(1) The ROC should contain at least the following:

(i) the State of the Operator and issuing authority;

(ii) the ROC number and its expiration date;

(iii) the RPAS operator name, trading name (if different) and address of the principle place of business;

(iv) the date of issue and the name, signature and title of the authority representative;

(v) the location where the contact details of operational management can be found;

(vi) the description of the types of operations authorized;

(vii) the type(s) or model(s) of RPA authorized for use;

(viii) the models and locations of RPS authorized for use; and

(ix) the authorized areas of operation or routes.

(d) Duration of an ROC

(1) An ROC, or any portion of the ROC, issued by the Authority is effective and valid for a period of three (3) years unless—

(i) The Authority amends, suspends, revokes or otherwise terminates the certificate;

(ii) The ROC holder surrenders it to the Authority.

21.8.1.5 CONDITIONS FOR OPERATION FOR A RPAS OPERATOR CERTIFICATE

(a) The certificate holder is responsible for ensuring that any personnel involved in an operation conducted under the authority of the ROC are notified of and comply with the requirements of this AC.

21.8.1.6 RENEWAL OF CERTIFICATE

(a) A holder of a current ROC who wishes to continue to exercise the privileges of the operator certificate beyond its date of
expiration should apply for the renewal of the operator certificate by completing the application as prescribed by the Authority.

(b) Amendment of an ROC

(1) The Authority may amend any ROC if—

(i) The Authority determines that safety of operation and the public interest require the amendment; or.

(ii) The ROC holder applies for an amendment.

(2) An ROC holder may appeal the amendment, but should operate in accordance with Nig. CARs Part 1.10 unless it is subsequently withdrawn.

21.8.2 RECORD RETENTION OF RPAS OPERATOR CERTIFICATE

(a) Each holder of a ROC should maintain:

(1) A record containing the names of the remote pilots and other crew members involved in each flight, in respect of the system, the time of each flight or series of flights; and

(2) A record containing maintenance action, modification or repair performed on the system, including:

(i) name of person performing the work;

(ii) the dates work was performed;

(iii) in the case of modification, the manufacturer, model and description of parts or equipment modifying the system; and

(iv) if applicable, any instruction provided to complete the work.

(b) Each owner of a RPAS who transfers ownership to another person should, at the time of transfer, deliver to that person all records referred to in paragraph (a)(2).

(c) Each owner of a RPAS should ensure that the records referred to in subsection (a)(1) and (a)(2).

(1) are made available to the Authority on request and are retained for a period of:

(i) for the records referred to in paragraph (a)(1), 12 months after the day they are created;
(ii) for records referred to in paragraph (a)(2), 24 months after the day they are created.

ref: ICAO Model Regulations Part 102.39 UAS

21.8.2.1 DOCUMENTATION

(a) Each applicant for the issuance of an ROC should hold copies of all relevant equipment manuals, technical standards and practices, technical bulletins and instructions, legislation, and any other document that is necessary to establish procedures for their operations.

ref: ICAO Model Regulations Part 149.25 UAS

21.8.2.2 INSPECTION, TESTING, AND DEMONSTRATION OF COMPLIANCE.

(a) A remote pilot or person manipulating the flight controls of a RPA should, upon request, make available to the Authority:

(1) The remote pilot certificate; and

(2) Any other document, record, or report required to be kept under this part.

(3) The remote pilot, RPAS observer, owner, operator, or person manipulating the flight controls of a RPA should, upon request, allow the Authority to make any test or inspection of the RPAS, the remote pilot, the person manipulating the flight controls of a RPA, and, if applicable, the RPA observer to determine compliance with this section.

ref: ICAO Model Regulations Part 101.007 UAS

21.8.2.3 FLIGHT OPERATIONS MANUALS

(a) Operations Manual

(1) An RPAS operator must provide an operations manual for the use and guidance of the RPAS operations personnel concerned. The operations manual must be amended or revised as is necessary to ensure that the information contained therein is kept up to date. All such amendments or revisions must be issued to all personnel that are required to use this manual.

(2) The RPAS operator should provide a copy of the operations manual together with all amendments and/or revisions, for review and acceptance and/or approval, incorporating in the operations manual such mandatory material as may
require by the Authority.

(3) The operations manual, which may be issued in separate parts corresponding to specific aspects of operations, should be organized in the following structure:

(i) general;
(ii) RPAS operating information;
(iii) areas, routes and aerodromes; and
(iv) training.

(4) The operator should provide the remote flight crew with an RPAS flight manual for each RPA type operated, which includes each associated RPS model, containing the normal, abnormal and emergency procedures relating to the operation of all the relevant systems associated with the operation of each RPA and of the checklists to be used.

ICAO Doc. 10019

(b) Safety Management System

(1) A RPAS operator should have a system for safety management that includes:

(i) a safety policy on which the system for safety management is based;

(ii) a process for risk management that identifies hazards to aviation safety and that evaluates and manages the associated risks;

(iii) safety assurance measures that ensure:

(A) hazards, incidents and accidents are internally reported and analysed and action is taken to prevent recurrence;

(B) goals for the improvement of aviation safety are set and the attainment of these goals are measured;

(C) there is a safety management program that includes conducting internal audits and regular reviews of the system for safety management; and

(iv) training that ensures personnel are competent to fulfil their safety responsibilities.
(2) The operator should document all processes required to establish and maintain the system for safety management.

(3) The operator’s system for safety management should be commensurate with the size of the organization, the nature and complexity of the activities undertaken by the operator, and the hazards and associated risks inherent in the activities undertaken by the operator.

Ref: ICAO Model Regulations Part 102.49 UAS

21.9 REQUIREMENTS FOR MANUFACTURER

21.9.1.1 APPLICABILITY

This Part applies to any manufacturer who intends to declare the demonstrated capabilities of their RPA to the Authority for a specific operation(s).

Ref: ICAO Model Regulations Part 102.301 UAS

21.9.1.2 MEANS OF COMPLIANCE

(a) To meet the requirements for operations for a specific RPAS, the means of compliance should consist of data (tests, analysis, industry consensus standards) and the results or justification used to demonstrate that the RPAS meets the predetermined level of safety the Authority has established as acceptable.

(b) An applicant requesting Authority acceptance of a means of compliance should submit the following information to the Authority in a manner specified by the Authority:

(1) Detailed description of the means of compliance; and

(2) Justification, including any substantiating material, showing that the means of compliance establishes achievement of or equivalency to the predetermined safety level.

Ref: ICAO Model Regulations Part 102.305 UAS

21.9.1.3 MANUFACTURER DECLARATION

(a) For each model of RPAS that is intended to conduct any operation, the manufacturer should provide the Authority with a declaration in accordance with subsection (1).

(1) the manufacturer’s declaration should:

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1As described in the Introduction to the ICAO Model UAS Regulations, each State will need to establish minimum safety levels (design or technical) to which manufacturers must demonstrate compliance. It is recommended the minimum safety levels be provided in an advisory circular or other guidance document for ease of amendment.
(i) specify the manufacturer of the RPAS, the model of the system, the maximum take-off weight of the RPA, the operations that the RPA is intended to undertake and the category of RPA, such as fixed-wing aircraft, rotary-wing aircraft, hybrid aircraft or lighter-than-air aircraft; and

(ii) specify that the system meets the means of compliance applicable to the operations for which the declaration was made.

(b) The manufacturer’s declaration is invalid if:

(1) the Authority has determined that the model of the RPA does not meet the terms set out in the means of compliance, or

(2) the manufacturer has notified the Authority of an issue related to the design of the model under section.

ref: ICAO Model Regulations Part 102.307 UAS

21.9.1.4 NOTICE TO THE AUTHORITY

(a) A manufacturer that has made a declaration to the Authority under section 1.9.1.3 should notify the Authority of any issue related to the design of the model of the RPAS that results in the system no longer meeting the technical requirements set out in the means of compliance referred in subparagraph 21.9.1.2(b)(2), as soon as possible after the issue is identified.

ref: ICAO Model Regulations Part 102.309 UAS

21.9.1.5 DOCUMENTATION

(a) A manufacturer that has made a declaration to the Authority in respect of a model of a RPAS under section 21.9.1 should make available to each owner of that model of system:

(1) a maintenance program that includes:

(i) instructions related to the servicing and maintenance of the system; and

(ii) an inspection program to maintain system readiness;

(2) any mandatory actions the manufacturer issues in respect of the system;

(3) a RPAS operating manual that includes:
(i) a description of the system;
(ii) the ranges of weights and centers of gravity within which the system may be safely operated under normal and emergency conditions and, if a weight and center of gravity combination is considered safe only within certain loading limits, those load limits and the corresponding weight and center of gravity combinations;
(iii) with respect to each flight phase and mode of operation, the minimum and maximum altitudes and velocities within which the aircraft can be operated safely under normal and emergency conditions;
(iv) a description of the effects of foreseeable weather conditions or other environmental conditions on the performance of both the system and the RPA;
(v) the characteristics of the system that could result in severe injury to crew members during normal operations;
(vi) the design features of the system and their associated operations that are intended to protect against injury to persons not involved in the operations;
(vii) the warning information provided to the remote pilot in the event of a degradation in system performance that results in an unsafe system operating condition;
(viii) procedures for operating the system in normal and emergency conditions; and
(ix) assembly and adjustment instructions for the system.

ref: ICAO Model Regulations Part 102.311 UAS

21.9.1.6 RECORD RETENTION FOR MANUFACTURER

(a) A manufacturer that has made a declaration to the Authority in respect of a model of a RPAS under section 21.9.1.3 should keep, and make available to the Authority on request:

(1) a current record of all mandatory actions in respect of the system; and
(2) a current record of the results of and the reports related to the verifications that the manufacturer has undertaken to ensure that the model of the system meets the
technical requirements applicable to the operations for which the declaration was made.

(b) The manufacturer should keep the records referred to in subsection (a)(1) for the greater of:

(1) two years following the date that manufacturing of that model of RPAS permanently ceases, and

(2) the lifetime of the RPA that is an element of the model of system referred to in paragraph (a).

ref: ICAO Model Regulations Part 102.313 UAS

21.10 TRANSPORT OF DANGEROUS GOODS ON RPAS

(a) The Authority may grant an approval to permit the carriage of dangerous goods without complying with the requirements of ICAO Technical Instructions on transport of dangerous goods, when the Authority is satisfied with the operator’s safety risk assessment.

ICAO-U-AID Guidance Material

21.11 GENERAL PROVISIONS

21.11.1 INSURANCE

(a) No person should operate, or cause to be operated or commit any other person to operate RPAS unless there is in force a minimum insurance policy, commensurate with the risk of the operation conducted, in respect of third party risks and proof of insurance document submitted to the Authority.

(b) Notwithstanding the provisions of 21.11.1.1(a), the authority may dispense with requirement depending on the type of operation.

21.11.2 PRIVACY OF PERSONS AND PROPERTY

(a) Any person conducting operations using RPAS fitted with cameras should operate them in a responsible way to respect the privacy of others.

(b) No person should use a RPAS to do any of the following—

(1) conduct surveillance of—

(i) A person without the person’s consent.
(ii) Private real property without the consent of the owner.

(2) Photograph or film an individual, without the individual’s consent, for the purpose of publishing or otherwise publicly disseminating the photograph or film. This requirement should not apply to news gathering, or events or places to which the general public is invited.

(c) Infrared or other similar thermal imaging technology equipment fitted on RPAS should only be for the sole purpose of—

(1) Scientific investigation;
(2) Scientific research;
(3) Mapping and evaluating the earth’s surface, including terrain and surface water bodies and other features;
(4) Investigation or evaluation of crops, livestock, or farming operations;
(5) Investigation of forests and forest management;
(6) Other similar investigations of vegetation or wildlife;
(7) Border surveillance as approved by the Authority.

21.11.1.3 DISCHARGING OR DROPPING GOODS

(a) No person should cause things to be dropped or discharged from an RPAS in a way that creates a hazard to another aircraft, persons or property.

21.11.1.4 REPORTS OF VIOLATION

(a) Any RPAS Operator or employee of an operator, who knows of a violation under this Advisory Circular, should report it to the Authority.

(b) Any person who has a complaint of any operation of an RPAS should report to the Authority and the Authority will determine if additional investigation is required.
RPAS ADVISORY CIRCULAR
IMPLEMENTING STANDARDS (IS)
NIGERIAN CIVIL AVIATION AUTHORITY
AVIATION HOUSE
Nnamdi Azikiwe International Airport, Abuja Nigeria

RPA/UAS CERTIFICATE OF REGISTRATION

<table>
<thead>
<tr>
<th>Unique Identification Number:</th>
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<table>
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<tr>
<th>RPAS Name / Model</th>
<th>RPA Serial Number</th>
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Name of Registered Operator:

Address of Operator:

It is hereby certified that the above described RPA has been duly entered into the RPAS Database of the Nigerian Civil Aviation Authority (NCAA).

Date of Issue ____________ by Authority of the Nigeria Civil Aviation

Note: 1. This Certificate does entitle to the holder to operate commercially.

2. For commercially authorisation, you are required to proceed to Phase 3 (Document Evaluation).

3. This Certificate is not transferable.
**IS:21.5.1.2 DETERMINING RLP TYPE FOR A RPAS C2 FUNCTION**

**RPAS C2 function (x) component**
- Control mode category
- Message transmission protocol
- C2 system design

**Operational communication transaction # … (message transmission)**

**Determining RLP type**
- Define RPAS C2 function components
- Balance capabilities and performance required for communication, C2 system design and operational context
- Determine RLP type based on an assessment of operational communication transaction(s) to support the RPAS C2 function

**RPAS C2 function (x) context**

<table>
<thead>
<tr>
<th>Operational communication transaction (most stringent)</th>
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<tbody>
<tr>
<td>Send/receive message and/or request</td>
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Human/C2 System initiates transaction

RLP type [for RPAS C2 function (x)]

Human/C2 System is RLP type [for RPAS C2 function (x)]
Pursuant to the Nigeria Civil Aviation Regulations (Nig.CARs) being in force, the Nigerian Civil Aviation Authority hereby grants, subject to the Conditions and Limitations hereto, an RPAS Operators Certificate to:-

being satisfied that the said person/organization is competent to secure the safe operation of the following types of RPAs.

on flights for the purpose of Aerial work.

Type of Operation:-

This certificate should not be valid during the continuance of the breach of any condition thereof, provided that a breach of a condition which relates to only a particular type of RPAs should not render this certificate invalid in respect of any other RPA type.

The holder of this ROC must comply with all the requirements for the grant of an approval and the maintenance of an approval applicable to each of the Operations Specifications items specified as attached, which requirements are published by the Nigerian Civil Aviation Authority and for the time being in-force.

The approval is limited to the scope and is subject to the limitations specified in the attached Operations Specifications.

This certificate or a certified true copy along with the operations specifications should be carried on site each authorized/approved operation.

This certificate unless revoked, suspended or varied should remain in force until

Signed this _________________________ day of 20__________________________

Designation________________________Signature______________________________
14. **DIRECTOR GENERAL’S APPROVAL**

<table>
<thead>
<tr>
<th>Recommendation for approval Director, General Aviation Directorate</th>
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<tbody>
<tr>
<td>The above guidelines have been developed based on best industry practice, ICAO guidelines and Nig. CARs Part 8 to provide guidance to RPAS operators. It is hereby recommended for approval by the Director General.</td>
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<tr>
<th>Name:</th>
<th>Capt. Dele Sasegbon</th>
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<tr>
<td>Title:</td>
<td>Director, General Aviation Directorate</td>
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<td>Signature:</td>
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<td>Date</td>
<td>10th May, 2020</td>
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<th>Director General’s approval</th>
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<tr>
<td>These guidelines have been approved by the undersigned for use by the referenced service providers</td>
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<tr>
<th>Name :</th>
<th>Capt. Musa S. Nuhu</th>
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<tr>
<td>Title:</td>
<td>Director General / CEO</td>
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