

Bachelor of Aviation Maintenance Engineering Technology

AVT 3413 Aviation Legislation

CLO 5
CAR 21 Aircraft Certification
10.5(a) General



SUBPART H - CERTIFICATES OF AIRWORTHINESS AND RESTRICTED CERTIFICATES OF AIRWORTHINESS

CAR 21.171 Scope

This Subpart establishes the procedural requirements for issuing airworthiness certificates.

CAR 21.172 Eligibility

Any natural or legal person under whose name an aircraft is registered or will be registered, or his representative, shall be eligible as an applicant for an airworthiness certificate for that aircraft under this Subpart.

CAR 21.173 Classification

- (a) A Certificate of Airworthiness is issued to aircraft that meet an approved type-certificate or type acceptance certificate under this regulation.
- (b) A **Restricted Certificate of Airworthiness** is issued to aircraft that either:
 - 1. Meet a restricted type-certificate or type acceptance certificate; or
 - 2. Meet specific airworthiness standards approved by the Authority to ensure safety.

CAR 21.174 Application

Application for Airworthiness Certificates:

- (a) As per CAR 21.172, applications must be submitted in the form and way set by the Authority.
- (b) The application for a Certificate of Airworthiness or a Restricted Certificate must include:
 - 1. The type of certificate being applied for.
 - 2. For new aircraft:
 - A statement of conformity:
 - Issued under CAR 21.163(b), or
 - Issued under CAR 21.130 and validated by the Authority, or
 - For imported aircraft, a statement from the exporting Authority confirming the aircraft meets the approved design.
 - A weight and balance report with a loading schedule.
 - The flight manual, if required by the certification rules.

3. For used aircraft:

- A **statement** from the Authority of the aircraft's previous registration country, showing its airworthiness status at the time of transfer.
- A weight and balance report with a loading schedule.
- The flight manual, if required.
- Historical records showing the aircraft's production, modifications, maintenance, and any restrictions.
- A recommendation for the issuance of the certificate after an airworthiness review in line with CAR M.

(c) Unless agreed otherwise, the statements mentioned in (b)(2)(i) and (b)(3) must be issued within 60 days before the aircraft is presented to the Authority.

CAR 21.175 Language

(a) The manuals, placards, listings, and instrument markings and other necessary information



required by applicable certification specifications shall be presented in English language.

CAR 21.177 Amendment or modification

An airworthiness certificate may be amended or modified only by the Authority.

CAR 21.179 Transferability A

- (a) Where the ownership of an aircraft has changed and if it remains on the register the certificate of airworthiness or restricted certificate of airworthiness conforming to restricted type certificate shall be transferred with the aircraft.
- (b) Where ownership of an aircraft has changed and the aircraft has a restricted certificate of airworthiness not conforming to a restricted type certificate as per CAR 21.173(b)(2) shall be transferred together with the aircraft provided the aircraft remains on the register.

CAR 21.180 Inspections

The holder of the airworthiness certificate shall provide access to the aircraft for which that airworthiness certificate has been issued upon request by the Authority.



CAR 21.181 Duration and continued validity

- (a) An airworthiness certificate shall be issued for an unlimited duration. It shall remain valid subject to:
 - 1. Compliance with the applicable type-design and continuing airworthiness requirements; and
 - 2. The airworthiness certificate stays valid only if the type-certificate, restricted type-certificate, or type acceptance certificate it is based on has not been invalidated under CAR 21.51 or CAR 21.76.
 - 3. The certificate not being surrendered or revoked.
 - 4. ARC remains valid.
- (b) Upon surrender or revocation, the certificate shall be returned to the Authority.

CAR 21.182 Aircraft identification

Each applicant for an airworthiness certificate under this Subpart shall demonstrate that his aircraft is identified in accordance with Subpart Q of this regulation.

CAR 21.183 Issue of certificates of airworthiness

The Authority shall issue a certificate of airworthiness for:

- 1. new aircraft:
 - (i) Upon presentation of the documentation required by CAR 21.174(b)(2).
 - (ii) When the aircraft conforms to an approved design and is in condition for safe operation. This may include inspections by the Authority.

2. used aircraft:

- (i) upon presentation of the documentation required by CAR 21.174(b)(3) demonstrating that:
 - the aircraft conforms to a type design approved under a type-certificate or type
 acceptance certificate and any supplemental type-certificate, change or repair
 approved in accordance with this Part, and to applicable airworthiness directives, and
 - the aircraft has been inspected in accordance with the applicable provisions of CAR
 M: and

(ii) when the aircraft conforms to an approved design and is in condition for safe operation. This may include inspections by the Authority.



CAR 21.184 Issue of restricted certificates of airworthiness

Limitations for use will be associated with restricted certificates of airworthiness including airspace restrictions as necessary to take account of deviations from essential requirements for airworthiness laid down in the Regulation

SUBPART P - PERMIT TO FLY

ACAR 21.701 Scope

Permits to fly shall be issued in accordance with this Subpart to aircraft that do not meet, or have not been shown to meet, applicable airworthiness requirements but are capable of safe flight under defined conditions and for the following purposes within scope of Subpart G and Subpart J of this Regulation:

- 1. development;
- 2. showing compliance with regulations or certification specifications;
- 3. design organizations or production organizations crew training;
- 4. production flight testing of new production aircraft;
- 5. flying aircraft under production between production facilities;
- 6. flying the aircraft for customer acceptance;
- 7. delivering or exporting the aircraft;
- 8. flying the aircraft for Authority acceptance;
- 9. market survey, including customer's crew training;
- 10. exhibition and air show;
- 11. flying the aircraft to a location where maintenance or airworthiness review are to be performed, or to a place of storage;
- 12. flying an aircraft at a weight in excess of its maximum certificated takeoff weight for flight beyond the normal range over water, or over land areas where adequate landing facilities or appropriate fuel is not available;
- 13. record breaking, air racing or similar competition;



- 14. flying aircraft meeting the applicable airworthiness requirements before conformity to the environmental requirements has been found;
- 15. for non-commercial flying activity on individual non-complex aircraft or types for which a certificate of airworthiness or restricted certificate of airworthiness is not appropriate.

The applicant for a permit to fly may be a person other than the registered owner of the aircraft. In particular, the organizations designing, modifying or maintaining the aircraft should normally be the holder of the associated permits to fly.

CERTIFICATE OF AIRWORTHINESS FOR EXPORT

GCAA CAR Part V Chapter 2 Sections 13 contains the requirements for the issue of a Certificate of Airworthiness for Export

The Certificate of Airworthiness for Export is not a statutory document, either internationally under ICAO or nationally under the UAE Federal Civil Aviation Law. When issued in the UAE, it signifies, as at the date of issue that, for those significant derogations from the requirements as defined in paragraph 13.2 below, the aircraft is such that UAE Certificate of Airworthiness could be issued or renewed, as appropriate, in accordance with the requirements. Certificate of Airworthiness for Export is only issued for complete aircraft.

DEROGATIONS FROM THE REQUIREMENTS A

The following will be listed on the reverse of the Certificate of Airworthiness for Export:

- (a) Significant deviations from the approved build standard;
- (b) Derogations from GCAA requirements, additional requirements, and special conditions;
- (c) Mandatory modifications and inspections with which compliance has not been shown; and
- (d) in respect of equipment installed on the aircraft:
 - (i). such equipment which is fitted but has not been approved by the GCAA; and
 - (ii). equipment appropriate to the certification category where this is not fitted.

APPLICATION

An application shall be submitted to the GCAA on the appropriate form accompanied by the fees published by the GCAA.

COMPLIANCE WITH REQUIREMENTS

When the GCAA is satisfied that this Section has been complied with, the Certificate of Airworthiness for Export will be issued.

Any additional requirements and/or special conditions prescribed by the responsible Authority shall be notified to the GCAA in writing.



REGISTRATION OF CIVIL AIRCRAFT

GENERAL

GCAA CAR Part V Chapter 1 Sections 1 contains the requirements to register and deregister aircraft in the United Arab Emirates. The following paragraphs summarize the essential information relating to the registration of aircraft in the United Arab Emirates.

Registration

An aircraft shall not be registered or continue to be registered in the United Arab Emirates, if it appears to the Authority that:

- a) the aircraft is registered outside the United Arab Emirates
- b) an unqualified person holds any legal or beneficial interest by way of ownership in the aircraft or any share therein
- c) the aircraft is lost, completely destroyed or withdrawn from use.
- d) It would not be practical or appropriate for the aircraft to be, or to stay, registered in the United Arab Emirates.
- e) if any of the requirements of SECTION 2 are violated.

NOTE: CAR Part V Chapter 1 Section 2 outlines the requirements for fixing and displaying Nationality and Registration marks on the airframe

Registration Qualifications and Procedures

The following persons or entities shall be qualified to hold legal or beneficial interest by way of ownership in an aircraft registered in United Arab Emirates or a share therein:

- a) Nationals of the United Arab Emirates
- b) Corporate bodies having their principal place of business in the United Arab Emirates
- c) Government departments of the United Arab Emirates.

For other persons residing or having a place of business in the United Arab Emirates and holding a legal or beneficial interest by way of ownership in an aircraft, or a share, the GCAA may register the aircraft in the United Arab Emirates.

If an aircraft is leased to a qualified person, the GCAA may register the aircraft in the United Arab Emirates in the name of the lessor for the duration of the lease agreement.



NOTE: The application process and required documentations for aircraft registration and de-registration are provided in *Civil Aviation Advisory Publication 58 (CAAP 58)*.

Certificate of Registration

Upon receiving an application for the registration of an aircraft in the United Arab Emirates and being satisfied that the aircraft may properly be so registered, the GCAA shall register the aircraft, wherever it may be, and shall include in the register the following:

- a) the nationality mark of the aircraft and the registration mark assigned to it by the GCAA
- the name of the designer of the aircraft and its designation as per the Type Certificate, if applicable
- c) the serial number of the aircraft
- d) the name and address of every person who is entitled as owner to a legal interest in the aircraft or share, or in the case of an aircraft which is the subject of a lease agreement or any other aircraft property related agreement, the name and address of the involved parties (e.g. lessor and the lessee)

The GCAA shall furnish to the person in whose name the aircraft is registered, or to his representative, a Certificate of Registration which shall include the previously mentioned information and the date on which the certificate was issued.



Figure 1. Certificate of Registration (Front)



TRANSFER OR CANCELLATION OF REGISTRATION OF AIRCRAFT I /we HEREBY CERTIFY that the ownership of the aircraft described in this Certificate of Registration has been * transferred cancelled as from	
who is of	nationality
the reason for cancertation being	
(Signature of Registered Owner)	(Date)
يل أو إلغاء تسجيل طا ئر ع د	تحور أشهد بأن ملكية الطائرة المبين أوصافها في هذه الشهادة في تحولث * الغيت اعتباراً من
(عنوان المالك الجديد)	(أسم المالك الجديد بحروف منفصلة)
الجنسية	الذي هو
	و سبب الالغاء
توقيع المالك المسجل	
توقيع المالك المسجل * (الرجاء الغاء في حال عدم التطبيق)	التاريخ

Figure 2. Certificate of Registration (Back)

If, after an aircraft is registered in the UAE, an unqualified person gains ownership or partownership, the aircraft's registration becomes invalid, and the registered owner must return the Certificate of Registration to the GCAA.



CAR Part V Chapter 1 Section 2

NATIONALITY AND REGISTRATION MARKS

GCAA CAR Part V Chapter 1Section 2 states the requirements for the fixing and display of Nationality and Registration marks for aircraft registered in the United Arab Emirates.

NATIONALITY MARKS

The nationality mark and registration mark of the aircraft shall consist of a group of characters without ornamentation. The UAE's nationality mark shall be the capital letter/numeral A6 in Roman/Arabic.

The registration mark of UAE registered aircraft shall:

- (a) Be assigned by the GCAA Aircraft Register; and
- (b) Be a group of three capital letters in Roman characters appearing after and separated from the nationality mark by a hyphen; and
- (c) Be formed by solid legible lines and painted on the aircraft or affixed thereto by any other means ensuring a similar degree of permanence; and
- (d) Be displayed to the best possible advantage considering the contrast in color with the background and having regard to the construction or features of the aircraft; and
- (e) Be kept clean and visible at all the times.



Figure 3. Example of Nationality and Reg 1

The nationality and registration marks shall also be inscribed on a fireproof metal plate or other fireproof material of suitable physical properties, affixed:

(a) in the case of an aeroplane having an empty weight not exceeding 150 kg, either in accordance with paragraph (b) or in a prominent position onto the wing



- (b) in the case of any other aircraft in a prominent position to the fuselage or car or basket, as the case may be, and near to the main entrance to the aircraft
- (c) in the case of an unmanned free balloon, affixed conspicuously to the exterior of the payload.

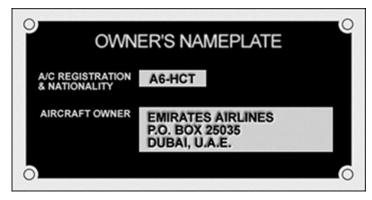


Figure 4. Owner's Nameplate (Registration 1)

Note: The identification plate shall be replaced whenever the aircraft registration changes.

Position of the Marks

For aircraft and gliders, the Nationality and Registration marks must be displayed on the horizontal and vertical surfaces of the wings or fuselage as follows:

Horizontal Markings

- a) On aircraft having a fixed wing surface, the marks shall appear on the lower surface of the wing structure, and shall be on the left half of the lower surface of the wing structure unless they extend across the whole surface of both wings. So far as possible the marks shall be located equidistant from the leading and trailing edges of the wings. The tops of the letters shall be towards the leading edge of the wing:
- b) On aircraft having no fixed wing surface the marks shall appear on the lower surface of the fuselage on the line of symmetry and shall be placed with the tops of the letters towards the nose.



Figure 5. Horizontal markings





Vertical Markings

- a) The marks shall also be on each side of the aircraft either on the fuselage or on the upper halves of the vertical tail surfaces.
- b) On aircraft having a fixed wing surface, the marks, if placed on the fuselage (or equivalent structure), shall be between the horizontal tail surfaces and the wing.
 - 1. When on a single vertical tail surface, the marks shall be on both sides.
 - 2. When there is more than one vertical tail surface, the marks shall be on the outer sides of the outboard vertical tail surfaces.





Figure 6. Vertical markings

Size of the Marks

For aircraft and gliders, the Nationality and Registration marks on the wings and fuselage must be the following sizes:

a) Wings;

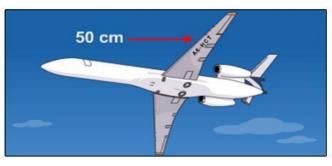
- 1. The letters constituting each group of marks shall be of equal height.
- 2. The height of the letters shall be at least 50 centimeters.

b) Fuselage or Vertical Tail Surfaces;

1. The marks on the fuselage shall not interfere with the visible outlines of the fuselage.



- 2. The marks on the vertical tail surfaces shall be such as to leave a margin of at least 5 centimeters along each side of the vertical tail surface.
- 3. The letters shall be of equal height.
- 4. The height of the letters constituting each group of marks shall be at least 30 centimeters.
- 5. Where marks are required to be carried on the lower surface of aircraft having no fixed wing surface, the height of the marks shall be at least 50 centimeters, provided that where owing to the structure of the aircraft, the appropriate height specified in this paragraph is not reasonably practicable, the height of the marks shall be the greatest height reasonably practicable under the circumstances.



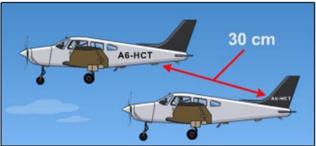


Figure 7. Size of Markings

For airships and free balloons, the Nationality and Registration marks must be the following sizes:

- a) The letters constituting each group of marks shall be of equal height.
- b) The height of the letters shall be at least 50 centimeters.

Width and Spacing of the Marks

The width and spacing of the letters of the Nationality and Registration marks must be the following sizes:

- a) The width of each letter (except the letter I) and the length of the hyphen between the Nationality mark and Registration marks shall be two-thirds of the height of a letter.
- b) The letters and hyphens shall be formed by solid lines and shall be of a color clearly contrasting with the background on which they appear.
- c) The thickness of the lines shall be one-sixth of the height of a letter.
- d) Each letter shall be separated from the letter which it immediately precedes or follows, by a space of not less than one-quarter of a letter width. A hyphen be regarded as a letter for this purpose.



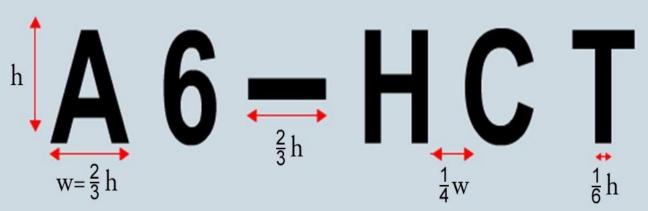


Figure 8. Width and Spacing of the Marks

SUBPART I - NOISE CERTIFICATES

CAR 21.201 Scope

This Subpart establishes the procedural requirements for issuing noise certificates for all aircraft registered in the United Arab Emirates.

Relationship to International Standards

ICAO Annex 16 - International Standards and Recommended Practices – Environmental Protection Volume 1 - Aircraft Noise, contains standards applicable to all aircraft for noise certification purposes where such aircraft are engaged in international air navigation.

The Annex requires that noise certification shall be granted on the basis of satisfactory evidence that the aircraft complies with national requirements which are at least equal to the applicable standards specified in the Annex.

Applicability

Noise certification is required for every UAE registered civil aircraft engaged in international air navigation which are classified under *ICAO Annex 16, Volume I, PART II* chapters 2 through 12.

CAR 21.203 Eligibility

Any natural or legal person under whose name an aircraft is registered or will be registered, or his representative, shall be eligible as an applicant for a noise certificate for that aircraft under this Subpart.

CAR 21.204 Application

- (a) Pursuant to CAR 21.203, an application for a noise certificate shall be made in a form and manner established by the Authority.
- (b) Each application shall include:

1. with regard to new aircraft:

- (i) A statement of conformity:
- (ii) The noise information determined in accordance with the applicable noise requirements.

3. with regard to used aircraft:

- (i) The noise information determined in accordance with the applicable noise requirements, and
- (ii) Historical records to establish the production, modification, and maintenance standard of the aircraft.
- (c) Unless otherwise agreed, the statements referred to in subparagraphs (b)(1) shall be issued no more than 60 days before presentation of the aircraft to the Authority.

CAR 21.205 Issue of noise certificates

The Authority shall issues a noise certificate upon presentation of the documents required by CAR 21.204(b) and in accordance with CAR V chapter 1 section 4.

CAR 21.207 Amendment or modification

A noise certificate may be amended or modified only by the Authority.

CAR 21.209 Transferability

Where ownership of an aircraft has changed the noise certificate shall be transferred together with the aircraft.

CAR 21.210 Inspections

The holder of the noise certificate shall provide access to the aircraft for which that noise certificate has been issued upon request by the Authority for inspection.

CAR 21.211 Duration and continued validity

- (a) A noise certificate shall be issued for an unlimited duration. It shall remain valid subject to:
 - 1. Compliance with the applicable type-design, environmental protection and continuing airworthiness requirements; and
 - 2. The type-certificate or restricted type-certificate under which it is issued not being previously invalidated under CAR 21.51.
 - 3. The certificate not being surrendered or revoked.
- (b) Upon surrender or revocation, the certificate shall be returned to the Authority.



SUB PART J.MASS AND BALANCE

CAR-OPS 1.605 General

- (a) An operator shall ensure that during any phase of operation, the loading, mass and center of gravity of the aeroplane complies with the limitations specified in the approved Aeroplane Flight Manual, or the Operations Manual if more restrictive.
- (b) An operator must establish the mass and the center of gravity of any aeroplane by actual weighing prior to initial entry into service and thereafter at intervals of 4 years if individual aeroplane masses are used and 9 years if fleet masses are used. The accumulated effects of modifications and repairs on the mass and balance must be accounted for and properly documented. Furthermore, aeroplanes must be reweighed if the effect of modifications on the mass and balance is not accurately known.
- (c) An operator must determine the mass of all operating items and crew members included in the aeroplane dry operating mass by weighing or by using standard masses. The influence of their position on the aeroplane center of gravity must be determined.
- (d) An operator must establish the mass of the traffic load, including any ballast, by actual weighing or determine the mass of the traffic load in accordance with standard passenger and baggage masses as specified in CAR–OPS 1.620.
- (e) An operator must determine the mass of the fuel load by using the actual density or, if not known, the density calculated in accordance with a method specified in the Operations Manual. (See IEM OPS 1.605(e).)
- (f) An aeroplane shall be operated, if applicable, within the mass limitations imposed by compliance with the applicable noise certification Standards in Annex 16, Volume I, unless otherwise authorized in exceptional circumstances for a certain aerodrome or a runway where there is no noise disturbance problem, by the competent authority of the State in which the aerodrome is situated.

NOTE: Appendix 1 to CAR–OPS 1.605 Mass and Balance – General contains the detailed requirements for determining the mass and balance of aircraft.

Mass and Balance of Aircraft

An operator shall specify, in the operations manual, the principles and methods involved in the loading and in the mass and balance system that meet the requirements of CAR-OPS 1.605. This system must cover all types of intended operations. Each weight change has to be recorded and registered in the weight and balance sheet of the aircraft. A scheduled aircraft weighing has to be established. For every flight a weight calculation (load sheet) must be performed and signed by the pilot.

GCAA CAR Part V Chapter 1 Section 6 states the following regarding the mass and balance of aircraft.

- Operators of aircraft operating under CAR-OPS 1 or 3 requirements as well as operators
 of aircraft exceeding 5700 Kg MTOM (Maximum Take-Off Mass) shall follow the
 requirements of CAR-OPS 1 or 3, Subpart J to establish the mass and the center of
 gravity.
- Operators of aircraft below 5700 KG MTOM not operating under CAR-OPS 1 or 3 shall carry out actual weighing of aircraft at the time of delivery and, thereafter at intervals not exceeding 5 years.
- All operators shall re-weigh aircraft at such times as required by the GCAA, responsible Design Organizations or Manufacturers as applicable.

Weight and Centre-of-Gravity Definitions

Basic Weight is the weight of the aircraft and all its basic equipment, plus that of the declared quantity of unusable fuel and unusable oil. In the case of turbine-engine aircraft the Maximum Total Weight Authorized of which does not exceed 5700 kg, it may also include the weight of usable oil.

Basic Equipment Basic Equipment is the inconsumable fluids, and the equipment which is common to all roles for which the Operator intends to use the aircraft.

Variable Load Variable Load is the weight of the crew, of items such as the crew's baggage, removable units, and other equipment, the carriage of which depends upon the role for which the Operator intends to use the aircraft for the particular flight.

Disposable Load Disposable Load is the weight of all persons and items of load, including fuel and other consumable fluids, carried in the aircraft, other than the Basic Equipment and Variable Load.

Maximum Total Weight Authorized (MTWA) – is the Maximum Total Weight Authorized for the aircraft and its contents, at which the aircraft may take off anywhere in the world, in the most favorable circumstances in accordance with the Certificate of Airworthiness or Flight Manual.

Reaction – is the load at each separate weighing point.

Weight and Centre-of-Gravity Schedule

A Weight and Centre-of-Gravity Schedule details the Basic Weight and c.g. position of the aircraft, the weight and lever arms of the various items of load including, fuel oil and other fluids.

The Schedule is normally divided into

Part A - Basic Weight,

Part B - Variable Loadand

Part C – Loading Information (Disposable Load).

- a) A Weight and Centre-of-Gravity Schedule shall be provided for each aircraft, the MTWA of which exceeds 2730 kg (6000 lb).
- b) For aircraft not exceeding 2730 kg (6000 lb) MTWA, either a Weight and Centre of-GravitySchedule shall be provided or alternatively, a Load and Distribution Schedule which complies with BCAR, Section A, Chapter A7–10 and Section B, Chapter B7–10.
- c) For new aircraft exceeding 2730 kg (6000 lb) MTWA, but not exceeding 5700 kg (12 500 lb) MTWA, the information contained in Parts B and C of the Schedule may be given as part of the Weight and Balance Report.



Radio Station License and Approval

CAR Part V Chapter 1 SECTION 5. RADIO AND RADIO NAVIGATION EQUIPMENT

5.1 APPLICATION FOR RADIO LICENCE

5.1.1 Licenses to operate a radio station in an aircraft are issued by the Telecommunication Regulatory Authority (TRA) of the UAE to whom application shall be made (Refer to TRA website: www.tra.gov.ae).

Note: Refer to CAR-OPS 1 and 3, Subpart L for radio and navigation equipment requirements.

Aircraft Radio Station License and Approval

The aircraft radio station license must be accessible and stored with other airworthiness certificates in the cockpit in accordance with CAR-OPS regulations.

The license authorizes the applicant to carry out the necessary ground and flight tests before a certificate is issued.

The Application for a **Certificate of Approval of Radio Installation** is defined under National regulations.

Aircraft without a C of A: Application is a routine matter after formal application for a C of A is made.

Aircraft with a C of A: If, after the issue of a C of A, a Certificate of Approval is desired,

Grant of Approval: This is based on a survey by the followed by ground and flight tests to prove satisfactory functioning.

Flight Test: In accordance with the GCAA requirements.

Operation of Installation: Shall not be operated, whether or not the aircraft is in flight, except in accordance with conditions of the license issued under the law of the country in which the aircraft is registered and by a person duly licensed or otherwise permitted to operate the station under that law. ANO Article 46(1)

Change of Ownership: A change of aircraft ownership invalidates the Radio Installation License.

The new owner shall apply to the Radio Communications Agency for a new license.