



Part 38

Aeroplane CO₂ Emissions Certification Standard

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SubPart A Definitions and Symbols

38. 1 Applicability

This Sub-Part is applicable to all civil aeroplane engaged in international air navigation that registered in Arab Republic of Egypt and contains definitions and abbreviations/symbols based on Volume III of Annex 16.

38. 3 Definitions

Cockpit crew zone. The part of the cabin that is exclusively designated for flight crew use.

Derived version of a non-CO₂-certified aeroplane. An individual aeroplane that conforms to an existing Type Certificate, but which is not certified to Annex 16 Volume III, and to which changes in type design are made prior to the issuance of the aeroplane's first certificate of airworthiness that increase its CO₂ emissions evaluation metric value by more than 1.5% or are considered to be significant CO₂ changes.

Derived version of a CO₂-certified aeroplane. An aeroplane which incorporates changes in type design that either increase its maximum take-off mass, or that increase its CO₂ emissions evaluation metric value by more than:

- (a) 1.35% at a maximum take-off mass of 5 700 kg, decreasing linearly to;
- (b) 0.75% at a maximum take-off mass of 60 000 kg, decreasing linearly to;
- (c) 0.70% at a maximum take-off mass of 600 000 kg; and
- (d) a constant 0.70% at maximum take-off masses greater than 600 000 kg.

Note: Where the certificating authority finds that the proposed change in design, configuration, power or mass is so extensive that a substantially new investigation of compliance with the applicable airworthiness regulations is required, the aeroplane will be considered to be a new type design rather than a derived version.

Equivalent procedure. A test or analysis procedure which, while differing from the one specified in this volume of Annex 16, in the technical judgement of the certificating authority yields effectively the same CO₂ emissions evaluation metric value as the specified procedure.

Maximum passenger seating capacity. The maximum certificated number of passengers for the aeroplane type design.

Maximum take-off mass. The highest of all take-off masses for the type design configuration.

Performance model. An analytical tool or method validated from corrected flight test data that can be used to determine the SAR values for calculating the CO₂ emissions evaluation metric value at the reference conditions.

Optimum conditions. The combinations of altitude and airspeed within the approved operating envelope defined in the aeroplane flight manual that provides the highest specific air range value at each reference aeroplane mass.

Reference geometric factor. An adjustment factor based on a measurement of aeroplane fuselage size derived from a two-dimensional projection of the fuselage.

Specific air range. The distance an aeroplane travels in the cruise flight phase per unit of fuel consumed.

State of design. The State having jurisdiction over the organization responsible for the type design.

Subsonic aeroplane. An aeroplane incapable of sustaining level flight at speeds exceeding a Mach number of 1.

Type Certificate. A document issued by a Contracting State to define the design of an aeroplane, engine or propeller type and to certify that this design meets the appropriate airworthiness requirements of that State.

Note: In some Contracting States a document equivalent to a type certificate may be issued for an engine or propeller type.

38. 5 Abbreviations

Where the following abbreviations/symbols are used in this ECAR Part 38, they have the meanings, and where applicable the units, ascribed to them below:

AVG	Average
CG	Centre of gravity
CO ₂	Carbon dioxide
g ₀	Standard acceleration due to gravity at sea level and a geodetic latitude of 45.5 degrees, 9.80665 (m s ²)
Hz	Hertz (cycles per second)
MTOM	Maximum take-off mass (kg)
OML	Outer mould line
RGF	Reference geometric factor
RSS	Root sum of squares
SAR	Specific air range (km kg)
TAS	True air speed (km h)
WF	Total aero plane fuel flow (kg h)
δ	Ratio of atmospheric pressure at a given altitude to the atmospheric pressure

SubPart (B)

Certification Standard For Aeroplane Co2 Emissions
Based On The Consumption Of Fuel
Chapter 1 : Administration

38. 21 Applicability

This Sub-Part is applicable to all civil aeroplane engaged in international air navigation that registered in Arab Republic of Egypt and contains Standards and Recommended Practices for certification of aeroplane CO2 emissions based on the consumption of fuel applicable to the classification of aeroplanes specified in Volume III of Annex 16 as amended.

Note 1: The use of equivalent procedures in lieu of the procedures specified in the Annex 16 Volume III Appendices shall be approved by the certifying authority.

Note2: Guidance material on the use of equivalent procedures is provided in the Environmental Technical Manual (Doc 9501), Volume III – Procedures for the CO2 Emissions Certification of Aeroplanes.

38. 23 Administration

- a) These provisions shall apply to all aero plane included in the classifications defined for CO2 emissions certification purposes in this part where such aero plane are engaged in international air navigation.
- b) CO2 emissions certification shall be granted - upon aero plane Type Certificate Validation by ECAA - as the State of Registry of an aero plane on the basis of satisfactory evidence that the aero plane complies with requirements that are at least equal to the applicable Standards specified in Annex 16 Volume III as amended.
- c) ECAA shall recognize as valid a CO2 emissions certification granted by another Contracting State (competent authority) provided that the requirements under which such certification was granted are at least equal to the applicable Standards specified in Annex 16 Volume III as amended.
- d) This Part shall be applicable on the date of submission to the Certifying Authority for either a Type Certificate in the case of a new type, approval of a change in type design in the case of a derived version, or under equivalent application procedures prescribed by the certifying authority of that Contracting State and should be accepted/validated by ECAA.
- e) Unless otherwise specified in this ECAR Part, the date to be used by ECAA in determining the applicability of the Standards in this Part be the date of the application for a Type Certificate was submitted to the State of Design, or the date of submission under an equivalent application procedure prescribed by the certifying authority of the State of Design and maybe accepted/validated by ECAA upon request, if it complies with the Standards in Annex 16 Volume III.
- f) An application shall be effective for the period specified in the airworthiness regulations appropriate to the aero plane type, except in special cases where the certifying authority grants an extension. When the period of effectively is extended the date to be used in determining the applicability of the Standards in this ECAR Part shall be the date of issue of the Type Certificate, or approval of the change in type design, or the date of issue of approval under an equivalent procedure prescribed by the State of Design, less the period of effectively.
- g) For derived versions of non-CO2-certified aero planes and derived versions of CO2-certified aero planes, the applicability provisions concerning the Standards of this ECAR Part refer to the date on which “the application for the certification of the change in type design” was made. The date to be used by Contracting States in determining the

applicability of the Standards in this ECAR Part shall be the date on which the application for the change in type design was submitted to the Contracting State that first certified the change in type design.

- h) Where the provisions governing the applicability of the Standards of this ECAR Part refer to the date on which the certificate of airworthiness was first issued to an individual aero plane, the date to be used by Contracting States in determining the applicability of the Standards in this ECAR Part shall be the date on which the first certificate of airworthiness was issued by any Contracting State.
- i) The certificating authority shall publish the certified CO₂ emissions evaluation metric value granted or validated by that authority.
- j) ECAA shall recognize valid aeroplane exemptions granted by an authority of another Contracting State responsible for production of the aeroplane provided that an acceptable process was used.

Note(1): Guidance on acceptable processes and criteria for granting exemptions is provided in the Environmental Technical Manual (Doc 9501), Volume III — Procedures for the CO₂ Emissions Certification of Aeroplanes.

Note(2): This ECAR Part maybe subject to any agreement between ECAA and the responsible Certificating Authority, if there is any request for Type Certificate Validation by ECAA from any Competent Certificating Authority.

- k) ECAA shall recognize valid aeroplane exemptions granted by an authority of another Contracting State responsible for production of the aeroplane provided that an acceptable process was used.

Note: Guidance on acceptable processes and criteria for granting exemptions is provided in the Environmental Technical Manual (Doc 9501), Volume III — Procedures for the CO₂ Emissions Certification of Aeroplanes.

SubPart (B)

**Certification Standard For Aeroplane Co2 Emissions
Based On The Consumption Of Fuel**

Chapter 2: Subsonic jet aeroplanes over 5700 kg & Propeller-driven aeroplanes over 8 618 kg

38. 25 Provision

- (a) The Standards of this Subpart shall, with the exception of amphibious aeroplanes, aeroplanes initially designed or modified and used for specialised operational requirements, aeroplanes designed with zero RGF, and those aeroplanes specifically designed or modified and used for fire-fighting purposes, be applicable to:
1. subsonic jet aeroplanes, including their derived versions, of greater than 5700 kg maximum take-off mass for which the application for a type certificate was submitted on or after 1 January 2020, except for those aeroplanes of less than or equal to 60000 kg maximum take-off mass with a maximum passenger seating capacity of 19 seats or less;
 2. subsonic jet aeroplanes, including their derived versions, of greater than 5700 kg and less than or equal to 60 000 kg maximum take-off mass with a maximum passenger seating capacity of 19 seats or less, for which the application for a type certificate was submitted on or after 1 January 2023;
 3. all propeller-driven aeroplanes, including their derived versions, of greater than 8618 kg maximum take-off mass, for which the application for a type certificate was submitted on or after 1 January 2020;
 4. derived versions of non-CO2-certified subsonic jet aeroplanes of greater than 5700kg maximum certificated take-off mass for which the application for certification of the change in type design was submitted on or after 1 January 2023;
 5. derived versions of non-CO2 certified propeller-driven aeroplanes of greater than 8618 kg maximum certificated take-off mass for which the application for certification of the change in type design was submitted on or after 1 January 2023;
 6. individual non-CO2-certified subsonic jet aeroplanes of greater than 5 700 kg maximum certificated take-off mass for which a certificate of airworthiness was first issued on or after 1 January 2028; and
 7. individual non-CO2-certified propeller-driven aeroplanes of greater than 8 618 kg maximum certificated take-off mass for which a certificate of airworthiness was first issued on or after 1 January 2028.

Note: Aeroplanes initially designed or modified and used for specialised operational requirements refer to aeroplane type configurations which, in the view of the certificating authority, have different design characteristics to meet specific operational needs compared to typical civil aeroplane types covered by the scope of this Volume III of Annex 16, and which may result in a very different CO2 emissions evaluation metric value.

- (b) Notwithstanding (a) , it may be recognized by ECAA that aeroplanes on its registry do not require demonstration of compliance with the provisions of the Standards of Annex 16, Volume III for time- limited engine changes. These changes in type design shall specify that the aeroplane may not be operated for a period of more than 90 days unless

compliance with the provisions of Annex 16, Volume III, is shown for that change in type design. This applies only to changes resulting from a required maintenance action.

- (c) The granting of an exemption for an aeroplane against applicability requirements specified in (a) shall be noted on the aeroplane statement of conformity issued by the certificating authority. Certificating authorities shall take into account the numbers of exempted aeroplanes that will be produced and their impact on the environment. Exemptions shall be reported by aeroplane serial number and made available via an official public register.

Note(1): Further guidance on issuing exemptions is provided in the Environmental Technical Manual (Doc 9501), Volume III — Procedures for the CO2 Emissions Certification of Aeroplanes.

Note(2) : Since Egypt is not a state of type design yet, so ECAA - while acting as as a validating authority - must ensure that the regulations of the certificating authority “state of type design” are NOT less restrictive than the Standard And Recommended Practices (SARPs) of the Annex 16 Volume III as amended during the process of Validation.

Note(3) : ICAO Annex 16 and ICAO Doc 9501 are available to all ECAA inspectors for more details of the certificating authority requirements, procedures and SARPs