

Civil Aviation Authority United Kingdom



TYPE-CERTIFICATE DATA SHEET

UK.TC.A.00090

for

EMBRAER EMB-500

Type Certificate Holder

EMBRAER S.A.

Av. Brigadeiro Faria Lima. 2170
12227-901 São Jose dos Campos - SP
Brazil

Model(s):	EMB-500
Issue:	2
Date of issue:	21 June 2024

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Section 1 General (All Models)

I. General

This Type-Certificate Data Sheet (TCDS) is the concise definition of the type-certificated product accepted and or approved by the CAA in the UK for the affected types and models.

This TCDS includes:

1. Details of the type design that affect the TCDS that have been approved or accepted by the UK CAA in the UK from 01 January 2021.
2. Details of the type design that affected the TCDS and were approved or accepted by EASA before 01 January 2021, and were incorporated into EASA TCDS EASA.IM.A.157 at Issue 7 dated 29 May 2017 and are therefore accepted by the UK under Article 15 of Annex 30 of the UK-EU Trade and Cooperation Agreement.

II. Marketing Designations

The EMB-500 is often referred to in Embraer marketing literature as the “PHENOM 100”, “PHENOM 100E” or “PHENOM 100EV”. These names are strictly marketing designation and are not part of the official model designation.

- PHENOM 100: EMB-500 equipped with PW617F-E engines and G1000 avionics system;
- PHENOM 100E: EMB-500 equipped with PW617F-E engines, G1000 avionics system and spoiler panels (for spoiler panels: Installed by SB 500-00-0009 or an equivalent factory modification);
- PHENOM 100EV: EMB-500 equipped with PW617F1-E engines, G3000 avionics system and spoiler panels (for spoiler panels: Installed by SB 500-00-0009 or an equivalent factory modification).

Section 2 EMB-500**I. General****1. Type / Variant / Model**

- a) Type: Embraer EMB-500
- b) Variant or Model: EMB-500

2. Airworthiness Category

CS-23 Normal Category.

3. Certifying Authority

Agência Nacional De Aviação Civil - ANAC
Gerência Geral de Certificação de Produtos Aeronáuticos
Rua Dr. Orlando Feirabend Filho, 230
Centro Empresarial Aquarius
Torre B Andares 14 a 18,
Parque Residencial Aquarius,
12246-190 - São José dos Campos – SP
Brazil

4. Manufacturer

Embraer S.A
Av. Brigadeiro Faria Lima 2170
12227-901 – São José dos Campos – SP
Brazil

Embraer Executive Aircraft Inc. (Note 7)
1205 General Aviation Drive
Melbourne, FL 32935-6309
United States of America

5. EASA Validation Application Date

30 June 2006 (this is the reference date for EASA and UK CAA validation)

6. ANAC Type Certification Date

09 December 2008

7. EASA Validation Date

24 April 2009

8. UK CAA Type Validation Application Date

UK CAA Type Validation Application Date Prior to 31 December 2020, application dates for type certification are covered by the EASA type validation application date, as per Section 5 above. New applications for UK CAA type validation received after 01 January 2021 will be recorded in this section. At the current issue of this UK CAA TCDS, no new applications for type validation have been received since 01 January 2021.

II. Certification Basis

1. Reference Date

1.1 For ANAC Certification

30 June 2006

1.2 For Operational Suitability Requirements

30 June 2006

2. ANAC (Certifying Authority) Type Certificate Data Sheet

ANAC Type Certificate Data Sheet No. EA-2008T09

3. ANAC (Certifying Authority) Certification Basis

RBHA 23 - Requisitos de Aeronavegabilidade. Aviões Categoria Normal, Utilidade, Acrobática e Transporte Regional (Airworthiness Standards. Normal, Utility, Acrobatic, and Commuter Category Airplanes), corresponding to U.S. 14 CFR Part 23 including amendments 23-1 through 23-55, as applicable to Normal Category Certification; and additional requirements as per ANAC FCAR HT-01.

4. EASA Airworthiness Requirements

Refer to EASA TCDS EASA.IM.A.157

5. UK CAA Airworthiness Requirements

CS 23 – “Normal, Utility, Aerobatic and Commuter Category Aeroplanes” of 14 November 2003, as applicable to Normal Category Certification; and additional requirements as per EASA CRI A-01 (see note 11).

CS-ACNS (Subpart D) - initial issue of 17 December 2013 (see note 12)

CS-ACNS (Subpart B) - initial issue of 17 December 2013 (see note 13)

6. Special Conditions:

The following Special Conditions have been applied.

B-01	Human Factors in Integrated Avionics Systems
B-02	CS-23 Subpart B (Performance).
B-52	Flight Handling Special Condition
B-53	Airspeed Calibration
B-55	Operating Limitations and Information.
C-52	Bird strike
C-57	Fuel tank Crashworthiness
C-60	Interaction of systems and structures
C-61	Non-pressurised areas
C-64	Sonic Fatigue
C-69	Yawing Manoeuvre
C-70	Round the clock gusts
D-03	Take off Configuration Warning
D-04	Landing Gear
D-05	Wheels and Tyres

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D-06	Brakes and Braking Systems
D-07	Nose wheel Steering
D-08	Doors
D-11	Belted Toilet Seat
D-12	Single Side Facing Seat
E-07	Negative Acceleration
E-08	Lines, fittings and components
E-51	Powerplant Fire Protection and Fuel Systems
E-56	Fire extinguishers fuselage mounted engines
E-58	FADEC integration
E-60	Hot Weather Operation
F-01	Protection from HIRF
F-02	Protection from the indirect effects of lightning strike.
F-56	Battery Endurance Requirements
F-90	Security Protection of Aircraft Systems and Networks
F-92	Data Link Services for the Single European Sky
F-93	Flight Recorders including Data Link Recording
O-04	Towbarless Towing

7. Exemptions

No exemptions have been granted.

8. Equivalent Safety Findings:

The following Equivalent Safety Findings have been granted:

B-56	Dynamic Stability
D-54	Ditching emergency exit for Passengers
E-54	Digital Fuel Quantity indications
E-55	Digital only display of Turbine spool speed N2, oil pressure, oil temperature and fuel flow
E-57	Control markings usable fuel capacity
F-55	LED Lights

9. Environmental Standards:

Prevention of intentional fuel venting:

ICAO Annex 16, Volume II, Part II, Chapter 2

Noise:

ICAO Annex 16, Volume I (see TCDSN UK.TC.A.00090 for details)

10. Operational Suitability Requirements

The UK CAA type certification basis with respect to Operational Suitability Data (OSD) is defined as follows:

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FCD: CS-FCD - Certification Specifications for Operational Suitability Data (OSD) Flight Crew Data CS-FCD, Initial issue dated 31 January 2014.

MMEL JAR-MMEL/MEL - Master Minimum Equipment List/ Minimum Equipment List Section 1, Subpart A and B, Amdt. 1, dated 01 August 2005, as defined in CRI A-MMEL.

There are no Special Conditions, Deviations, Exemptions or Equivalent Safety Findings for OSD.

III. Technical Characteristic and Operating Limitations

1. Design Standard

Defined by Report 500TDSD002 "Type Design Standard Document – EASA" at Revision Original or later approved revision.

2. Description

Low wing jet with a T-tail configuration, powered by two high bypass turbofan engines mounted on aft fuselage pylons.

The structure is conventional, with a predominant aluminum-alloy fuselage and wing. The landing gear is retractable tricycle type, and both main and nose landing gear are single wheeled.

3. Dimensions

Length	12.82 m (42 ft 1 in)
Span	12.3 m (40 ft 4.3 in)
Height	4.35 m (14 ft 2.6 in)
Wing Area	18.76 m ² (201.9 ft ²)

4. Engines

Two Pratt & Whitney Canada PW617F-E turbofans (TC/TCDS reference EASA.IM.E.125)

Two Pratt & Whitney Canada PW617F1-E turbofans (TC/TCDS reference EASA.IM.E.125) (see NOTE 14)

5. Fuel

Refer to applicable approved manuals

6. Oil

Refer to applicable approved manuals

7. Airspeeds

V_{MO} 275 KIAS, M_{MO} 0.7 (See Airplane Flight Manual)

8. Maximum Operating Altitude

12,497 m (41,000 ft) pressure altitude

9. Operational Capability

Single Pilot / Two Pilots

VFR Day and Night

IFR Day and Night

RVSM

Flight into Known Icing

Extended Over Water

10. Maximum Certified Weights

Takeoff:	4,750 kg (10,472 lb)
	4,800 kg (10,582 lb) (see note 9)
	4,855 kg (10,703 lb) (see note 14)
Landing:	4,430 kg (9,766 lb)
	4,480 kg (9,877 lb) (see note 9)
	4,535 kg (9,998 lb) (see note 14)
Zero Fuel:	3,830 kg (8,444 lb)
	3,980 kg (8,775 lb) (see note 8)
	3,880 kg (8,554 lb) (see note 9)
	4,030 kg (8,885 lb) (see note 10)
	4,115 kg (9,072 lb) (see note 14)
Ramp:	4,770 kg (10,516 lb)
	4,820 kg (10,626 lb) (see note 9)
	4,875 kg (10,747 lb) (see note 14)

11. Centre of Gravity

See Airplane Flight Manual

12. Datum

2.51 m (98.82 in) forward of the jig point (nose jack pad location).

13. Mean Aerodynamic Chord (MAC)

1.64 m (64.57 in.) (L.E. of MAC at + 5.32 m (209.65 in.) aft of datum)

14. Levelling Means

Located in the main door between frames 9 and 10 (see AMM for further information)

15. Minimum Flight Crew

(See note 5 for cockpit equipment /arrangement restrictions)

One pilot (in the left pilot seat) plus additional equipment as specified in the Limitations Section of the UK CAA Approved Airplane Flight Manual or

One pilot and one copilot.

16. Maximum Passenger Capacity

Maximum seven (7).

17. Baggage / Cargo Compartment

Forward baggage compartment	30 kg (66 lb)
AFT baggage compartment	160 kg (353 lb)
Wardrobe	30 kg (66 lb)
Lavatory Cabinet	15 kg (33 lb)

IV. Operating and Service Instructions

1. Airplane Flight Manual (AFM):

AFM-2657, revision original (or later revision approved or accepted by the UK CAA)

2. Airplane Maintenance Manual (AMM):

Airplane Maintenance Manual, part number AMM-2432 revision original (or later revision approved or accepted by the UK CAA). See Chapter 4, "Airworthiness Limitations" (Note 3). "Airworthiness Limitations" may not be changed without the approval of the UK CAA.

V. Operational Suitability Data

1. Master Minimum Equipment List

The Operational Suitability Data elements listed below were approved by the European Union Aviation Safety Agency under the EASA Type Certificate EASA.IM.A.157 as per Commission Regulation (EU) No. 748/2012 as amended by Commission Regulation (EU) No. 69/2014 and are therefore accepted by the UK under Article 15 of Annex 30 of the UK-EU Trade and Cooperation Agreement. MMEL-3667 revision 06, dated 22 May 2020 was in force as of 31 December 2020.

Following EU-exit, the updated Operational Suitability Data with a specific UK reference listed below is approved by the UK CAA under UK.MAJ.00385 acting in accordance with Assimilated Regulations (EU) 2018/1139 and (EU) No. 748/2012.

- a. The Master Minimum Equipment List has been approved as per the defined Operational Suitability Data Certification Basis recorded in CRI A-MMEL and as documented in EMB-500 UK CAA Master Minimum Equipment List MMEL-4677, Original Revision, dated 21 June 2024.
- b. Required for entry into service by UK operator.

2. Flight Crew Data

The Flight Crew Data revisions up to 31 December 2020 were approved by the European Union Aviation Safety Agency under the EASA Type Certificate EASA IM.A.157 as per Commission Regulation (EU) No. 748/2012 as amended by Commission Regulation (EU) No. 69/2014 and were accepted by the UK under Article 15 of Annex 30 of the UK-EU Trade and Cooperation Agreement. OSD-FCD report 500MSO97 Revision I (09 March 2020) was in force as of 31 December 2020.

Following EU-exit, the updated Operational Suitability Data with a specific UK reference listed below is approved by the UK CAA under UK.ADMIN.00131 acting in accordance with Assimilated Regulation (EU) 2018/1139 and (EU) No. 748/2012.

The Flight Crew Data is defined in 500MSO136 Revision A dated 12 December 2023 or later revisions approved by the UK CAA.

3. Cabin Crew Data

Not applicable;

4. SIM Data

Not applicable;

5. Maintenance Certifying Staff Data

Not applicable;

VI. Notes

NOTE 1 - Weight and balance

Current weight and balance report, including the list of equipment that are part of the certificated basic empty weight and loading instructions, must be provided for each aircraft at the time of original certification.

The certificated empty weight and corresponding center of gravity location must include:

Unusable fuel: 20 kg (44 lb) at + 5.81 m (228.90 in.) aft of datum

Full oil:* 8 kg (17.64 lb) at + 7.68 m (302.52 in) aft of datum*

Hydraulic Fluid: 6.29 kg (13.86 lb) at + 1.30 m (51.18 in.) aft of datum, considering density of 0.846 kg/l (7.06/gal).

*It is considered the oil from the engine installation (filters and lines)

NOTE 2 - Markings and placards

All marking and placards required by the applicable certification requirements (see certification basics) and by the operational requirements must be installed in the appropriated locations. Required placards and marking are listed in chapter Eleven (11) of the Aircraft Illustrated Parts Catalog (AIPC) and Airplane Maintenance Manual (AMM).

NOTE 3 - Continuing Airworthiness

See Maintenance Manual, Chapter Four (4), "Airworthiness Limitations" for Systems Airworthiness Limitations, Structure Airworthiness Limitations (ALI) and Life-Limited Items (LLI). The life limit for rotating parts on the PW617F-E engine is in the Airworthiness Limitations Manual of the Pratt & Whitney Canada Engine P/N 3072699, latest revision approved or accepted by the UK CAA.

NOTE 4

All replacement seats (crew and passenger), although they may comply with TSO C127, must also be demonstrated to comply with installation requirements into the aircraft listed in CS 23.2, 23.561, 23.562, and 23.785.

The foam cushion buildup of all seats (crew and passenger) may not be altered. Any deviation in the foam construction or stiffness must be demonstrated by test or analysis to comply with the CS 23.562 paragraph.

NOTE 5

Approval for operation with a minimum crew of one pilot (in the left pilot seat) is based upon the cockpit equipment installation and arrangement evaluated during ANAC certification testing. No significant changes may be made to the installed cockpit equipment or arrangement (EFIS, autopilot, avionics, etc.), except as permitted by the approved MMEL, without prior approval from the responsible Aircraft Certification Office.

NOTE 6

Deleted.

NOTE 7

Production Certificate No. 346CE. The manufacturer Embraer Executive Aircraft Inc. located in Melbourne, Florida, is licensed by Embraer S.A. to manufacture the Model Aircraft listed in this Type Certificate Data Sheet. S/N 50000255 and subsequent may be produced either by Embraer Executive Aircraft Inc. in Melbourne, Florida or Embraer S.A. in Brazil. The manufacturer can be confirmed by the aircraft data plate. Aircraft produced by Embraer Executive Aircraft Inc. in Melbourne, Florida with a S/N from 50000255 to 50000269 were produced under the Type Certificate.

NOTE 8

If post-mod SB 500-00-0005 or an equivalent factory modification is incorporated, and any other modification identified applicable by Embraer.

NOTE 9

If post-mod SB 500-00-0009 or SB 500-00-0018 or an equivalent factory modification is incorporated, and any other modification identified applicable by Embraer.

NOTE 10

If post-mod SB 500-00-0005 and SB 500-00-0009, or aircraft post-mod and SB 500-00-0018 or equivalent factory modifications are incorporated, and any other modification identified applicable by Embraer.

NOTE 11

Sections of CS-ACNS, as applicable, may be raised as part of the certification basis for avionic installations.

NOTE 12

If post-mod SB 500-34-0010 (for dual transponders installation of Garmin GTX 33 D (ES) and GTX 33 (ES) manufactured by Garmin); if post-mod SB 500-34-0012 (for single transponder installation of ACSS NXT-600); if aeroplane is equipped with G3000 avionics system (corresponding to commercial designation "PHENOM 100EV" (see also Section 1, II); or equivalent factory modifications are incorporated, and any other modification identified applicable by Embraer, and/or for installation of transponders.

NOTE 13

If aeroplane is equipped with G3000 avionics system (corresponding to commercial designation "PHENOM 100EV" (see Section 1, II) or equivalent factory modifications are incorporated, and any other modification identified applicable by Embraer.

NOTE 14

If weight increase approved with EASA approval 10061981 (reference DCA 0500-00-00032-2015/EASA) are incorporated by factory modifications and any other modification identified as applicable by Embraer.

Section 3 Administration**I. Acronyms and Abbreviations**

Acronym / Abbreviation	Definition
ACAS	Airborne Collision Avoidance System
AFM	Airplane Flight Manual
AMC	Acceptable Means of Compliance
ANAC	Agência Nacional De Aviação Civil (CAA Brazil)
APU	Auxiliary Power Unit
AWO	All Weather Operations
CAA	(United Kingdom) Civil Aviation Authority
CRI	Certification Review Item
CS	Certification Specification
EASA	European Union Aviation Safety Agency
EMB	EMBRAER
ERJ	Embraer Regional Jet
ES(F)	Equivalent Safety (Finding)
EWIS	Enhanced Wiring Interconnection System
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FSL	Fuel System Limitation
HIRF	High Intensity Radiated Field
ICA	Instructions for Continued Airworthiness
ICAO	International Civil Aviation Organization
JAR	Joint Aviation Requirements
LLI	Life Limited Item
MMEL	Master Minimum Equipment List
MRB	Maintenance Review Board
OSD	Operational Suitability Data
RVSM	Reduced Vertical Separation Minima
S/N	Serial Number
SB	Service Bulletin
SC	Special Condition
TC	Type Certificate
TCDS	Type Certificate Data Sheet
TCH	Type Certificate Holder
TSO	Technical Standards Order

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II. Type Certificate Holder Record

TCH Record	Period
EMBRAER S.A. Av. Brig. Faria Lima. 2170 12227-901 São Jose dos Campos – SP Brazil	Present

III. Amendment Record

TCDS Issue No.	TCDS Issue Date	Changes	TC Issue and Date
1	19 Dec 2023	The content of the initial issue of UK CAA TCDS was taken from EASA TCDS No. EASA.IM.A.157 Issue 7 dated 29 May 2017 which was the current EASA version at 31 December 2020 and therefore the version of the TCDS for the EMBRAER EMB-500 accepted by the UK under Article 15 of Annex 30 of the UK-EU Trade and Cooperation Agreement.	Issue 1 19 Dec 2023

The following general changes have been made to reflect EU-Exit as well as corrections:

- Where relevant “EASA” removed and replaced by “UK CAA”.
- General editorial corrections.
- Section 2, IV, 1 – Clarification added on AFM revision approved and accepted by UK CAA.
- Note 3 updated to reflect approval or acceptance by the UK CAA.
- Section 2, II, 9 – Environmental requirements corrected.
- Section 2, III, 9 – “Extended” over water added.
- Section 2, V, 1 – Update of MMEL reference.
- Section 1, II added (Marketing Designations) and note 6 deleted as content covered by Section 1, II.

Changes relating to UK.ADMIN.00131:

- Section 2, V, 2 – Clarification added on approved revisions of all OSD elements and addition of a new UK CAA OSD-FCD report reference.

2	21 June 2024	Changes relating to UK.MAJ.00255 / DCA 0500-046-00097-2020/CAA-UK Rev ‘-’ Flight Stream 510 (FS510) approved by the UK CAA on 12 April 2024 and UK.MAJ.00172 / DCA 0500-031-00053-2020/CAA-UK Rev ‘-’ EMB-500 G3000 Avionics Software Phase 2 additional features approved by the UK CAA on 26 February 2024.	Issue 1 19 Dec 2023
		• Section 2, II, 6 - Added EASA CRI F-90 (UK.MAJ.00255) • Section 2, V, 2 – Updated OSD report 500MSO136 to Revision A (UK.MAJ.00172)	
		Introduction of UK CAA MMEL (UK.MAJ.00385):	
		• Section 2, V, 1 – Update to replace EASA MMEL reference with UK CAA MMEL (MMEL-4677) • Section 2, V, 1, 2 - EASA TCDS reference corrected	

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TCDS Issue No.	TCDS Issue Date	Changes	TC Issue and Date
		Update to reference UK law which is now referenced as Assimilated law (long form).	

– END –