



TYPE-CERTIFICATE DATA SHEET

NO. EASA.IM.A. 158

for
EMBRAER EMB-505

Type Certificate Holder
EMBRAER

Av. Brig. Faria Lima. 2170
12227-901 São Jose dos Campos SP
Brasil

For models: EMB-505



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SECTION A: EMB-505

A.I. General

1. Data Sheet No:

EASA IM.A.158

2. Aeroplane

EMB-505

3. Airworthiness Category

CS-23 Commuter Category

4. Manufacturer

Embraer S.A

Av. Brigadeiro Faria Lima 2170

12227-901 São Jose dos Campos - SP

Brazil

Embraer Executive Aircraft Inc. (note 9)

1205 General Aviation Drive

Melbourne, FL 32935-6309

United States of America

5. State of Design 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

6. State of Design Authority Type Certificate Date

03 December 2009

7. EASA Type Certification Application Date

30 June 2007

8. EASA Type Certificate Date

29 April 2010



A.II. Certification Basis

1. Reference Date

1.2 For ANAC Certification

28 Feb 2007

1.3 For Operational Suitability Requirements

28 Feb 2007

2. State of Design Authority Type Certificate No.

EA-2009T12

3. ANAC 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 23-57; and additional requirements as per ANAC FCAR HT-01, additionally:

For aircraft equipped with Autothrust System (Current Speed Control – CSC or Autothrottle – AT), for the components and areas affected by the system installation:

RBAC 23 (“Requisitos de Aeronavegabilidade: Aviões Categoria Normal”), which is equivalent to 14 CFR Part 23, amendment:

[23-]64 (23.2010, 23.2500(b), 23.2510, 23.2600(b) and 23.2605(b) and (c)).

4. EASA Airworthiness Requirements (see note 11)

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

CS-ACNS (Subpart D, section 4) - initial issue of 17/12/2013 (see note 10)

Additionally, for aircraft equipped with Autothrust System (Current Speed Control – CSC), for the components and areas affected by the system installation the following additional regulations apply:

CS 23 at amendment 5 (23.2010, 23.2500(b), 23.2510, 23.2600(b) and 23.2605(b) and (c))

5. EASA Special Conditions

B-01	Part 23 Jets - Handling and Performance Requirements
B-02	High Speed Characteristics
B-03	Part 23 Jets - Stall Speed Determination
B-52	Human Factors - Integrated Avionics System
B-102	Performance Credit for APR during Go-Around
C-01	Sonic Fatigue
C-02	Pressurization into Non-Pressurized Areas
C-03	Speed Margins
C-04	Yawing Maneuver
C-05	Dynamic Response
C-06	Out of Trim Characteristics (Structures)



D-01	Take-Off Warning System
D-02	Extension and Retraction System
D-03	Wheels
D-04	Brakes and Braking Systems
D-05	Doors
D-06	Bird Strike
D-08	Steering Systems
D-09	Operation above 41.000 ft
D-103	Belted Toilet Seat – Single Place Side facing Seat (for applicable areas affected by DCA 0505-025-00077-2010/EASA when embodied in the aircraft)
D-104	Sideward Seating Arrangement (for applicable areas affected by DCA 0505-025-01013-2010/EASA when embodied in the aircraft)
D-105	Inflatable Restraints (for applicable areas affected by DCA 0505-025-01013-2010/EASA when embodied in the aircraft)
E-01	Fuel Tank Crashworthiness
E-02	Fuel System Hot Weather Operation, Turbine Fuel
E-04	Lines, Fittings and Components
E-06	Powerplant Fire Extinguishing Systems
E-07	Negative Acceleration
E-10	Fuel Tank Ignition Prevention
E-11	Cold Soaked Fuel
F-01	Battery Endurance Requirement (High Altitude)
F-02	Hydraulic Systems
F-03	Interaction of Systems and Structures
F-52	Protection from effect of HIRF
F-56	FADEC Integration
F-58	Lithium Battery Installations
F-63	Ice Protection, Special Condition for Auto-Activated Anti-ice Systems
F-90	Security Protection of Aircraft System and Networks (for applicable areas affected by DCA 0505-046-00212-2019/EASA when embodied in the aircraft)
F-92	Data link services for single European Sky. (for applicable areas affected by DCA 0505-023-00059-2011/EASA or 0505-023-00060-2011/EASA when embodied in the aircraft)
F-93	Flight recorders including data link recording. (for applicable areas affected by DCA 0505-023-00059-2011/EASA or 0505-023-00060-2011/EASA when embodied in the aircraft)
F-105	Flight Guidance System – Autothrottle under Part 23 (for applicable areas affected by DCA 0505-022-00111-2017/EASA when embodied in the aircraft).
N-02	Effects Reference take-off speed for part 23 jets noise certification
O-01	Steep Approach and Landing (for applicable areas affected by DCA 0505-000-00057-2011/EASA when embodied in the aircraft).
O-04	Towbar less towing (for applicable areas affected by DCA 0505-032-00051-2012/EASA when embodied in the aircraft).

6. EASA Exemptions

N/A



7. EASA Equivalent Safety Findings

D-101	Motion and Effect of Cockpit Controls (for applicable areas affected by DCA 0505-025-00124-2017/EASA when embodied in the aircraft)
D-102	Ditching emergency exit for passenger
D-106	Video Monitors Deployed from Aisle Ceiling (for applicable areas affected by DCA 0505-000-00057-2011/EASA when embodied in the aircraft).
E-102	Digital only N2 and Fuel Flow
E-103	Usable Fuel Quantity Markings
E-104	ELOS ATR/ APR
F-57	Use of LED for Navigation Lights and Anti-Collision Lights
G-101	Powerplant Instruments – Normal Operation Range Color
G-102	Powerplant Instruments - Normal Operating Range Color and CSC Authority Indication (for applicable areas affected by DCA 0505-022-00075-2020/EASA when embodied in the aircraft)

8. EASA Environmental Standards

CS 34 - Aircraft Engine Emissions and Fuel Venting, of 17 October 2003

CS 36 - Aircraft Noise, of 17 October 2003

9. EASA Operational Suitability Requirements

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

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

9.2 Special conditions for OSD

None

9.3 Exemptions for OSD

None

9.4 Deviations for OSD

None

9.5 Equivalent Safety for OSD

None



A.III. Technical Characteristics and Operational Limitations

1. Type Design Definition

Defined by Report 505TDSD002 "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 aluminium-alloy fuselage and wing. The landing gear is retractable tricycle type, and both main and nose landing gears are single wheeled.

3. Dimensions

Length	15.64 m	(51 ft 3.74 in)
Span	15.91 m	(52 ft 2.38 in)
Height	5.10 m	(16 ft 8.78 in)
Wing Area	28.5 m ²	(306.77 ft ²)

4. Engine

Two Pratt & Whitney Canada PW535E or PW535E1 turbofans (TC/TCDS reference IM.E.048)

5. Fluids

Fuel:

Refer to applicable approved manuals.

Oil:

Refer to applicable approved manuals.

6. Air speeds

V_{MO} 320 K_{IAS}, M_{MO} 0.78 (See Airplane Flight Manual)

V_{MO} 320 K_{IAS}, M_{MO} 0.80 (See Airplane Flight Manual) (see note 12)

7. Maximum Operation Altitude

13,716 m (45,000 ft) pressure altitude.

8. Operational Capability

Single Pilot / Two Pilots

VFR Day and Night

IFR Day and Night

RVSM

Flight into Known Icing

Extended Over Water



9. Maximum Certified Weights

Takeoff:	8150 kg (17968 lb)
	8340 kg (18387 lb) (see note 8)
	8415 kg (18551 lb) (see note 12)
Landing:	7650 kg (16865 lb)
	7730 kg (17042 lb) (see note 8)
	7835 kg (17272 lb) (see note 12)
Zero Fuel:	6350 kg (13999 lb)
	6450 kg (14220 lb) (see note 8)
	6470 kg (14263 lb) (see note 12)
	6550 kg (14440 lb) (see note 13)
	6570 kg (14484 lb) (see note 14)
Ramp:	8200 kg (18078 lb)
	8390 kg (18497 lb) (see note 8)
	8455 kg (18617 lb) (see note 12)

10. Centre of Gravity

See Airplane Flight Manual.

11. Datum

2.286 m (90 in) forward and 0.154 m (6.06 in) leftward of the jig point (nose jack pad location).

12. Mean Aerodynamic Chord (MAC)

2.05 m (80.71 in.) (L.E. of MAC at + 6.72 m (264.51 in.))

13. Levelling Means

Located in the main door region on the omega beam between frames 11 and 12 (see AMM for further information).

14. 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 EASA Approved Airplane Flight Manual or

One pilot and one copilot.

15. Maximum Passenger Capacity

Maximum 11 occupants (two crew plus nine passenger seats) (see note 7).

16. Baggage / Cargo Compartment

LH Forward Cabinet 20 kg (44 lb)

Lavatory Cabinet 15 kg (33 lb)

Aft Baggage Compartment 210 kg (463 lb)

Forward Baggage Compartment 50 kg (110 lb)

Refreshment Center 32 kg (71lb)



Note: Some airplanes have stowage compartments, LH Forward Cabinet, Lavatory Cabinet, Refreshment Center and Aft Baggage Compartment with higher load capacities. Refer to their respective placards and Flight Manual to find this information.

A.IV. Operating and Service Instructions

1. Airplane Flight Manual (AFM):

Airplanes must be operated according to the EASA approved AFM, part number AFM-2666, revision original (or later approved revision).

2. Airplane Maintenance Manual (AMM):

Airplane Maintenance Manuals, part number AMM-2757 or AMM-4610 revision original (or later approved revision). See Chapter 4, "Airworthiness Limitations" (Note 3). "Airworthiness Limitations" may not be changed without the approval of EASA.

A.V. Operating and Service Instructions

The Operational Suitability Data elements listed below are approved by the European Aviation Safety Agency under the EASA Type Certificate EASA.IM.A.158 as per Commission Regulation (EU) 748/2012 as amended by Commission Regulation (EU) No 69/2014.

1. Master Minimum Equipment List

The MMEL is defined in document MMEL-3849 revision 3, dated 14 Dec 2015 or later approved revisions.

2. Flight Crew Data

The Flight Crew Data is defined in 500MSO097 revision A dated 07 Dec 2015 or later approved revisions.

3. Cabin Crew Data

Not applicable.

4. SIM Data

Not applicable.

5. Maintenance Certifying Staff Data

Not applicable.



A.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: 22.8 kg (50.26 lb) at + 6.51 m (256.22 in.) aft of datum

Full engine oil: 16 kg (35.27 lb) at + 9.83 m (386.85 in) aft of datum*

Hydraulic Fluid: 8.8 kg (19.40 lb) at + 7.96 m (313.50 in) aft of datum

*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 PW535E and PW535E1 engines are in the Airworthiness Limitations Section of the Pratt & Whitney Canada Engine Maintenance Manual P/N 3072702, latest revision.

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 - The EMB-505 is often referred to in Embraer marketing literature as the "PHENOM 300" and "Phenom 300E". These names are strictly marketing designation and are not part of the official model designation.

NOTE 7 – Refer to AFM-2666 for seat configurations and moment arms.

NOTE 8 - If post-mod SB 505-00-0008. or with an equivalent modification factory incorporated.

NOTE 9 – Production Certificate 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 50500118 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 50500118 and 50500122 were produced under the Type Certificate.

NOTE 10 – if post-mod SB 505-34-0011 (G3000 avionics) or post-mod SB 505-34-0010 (G1000 avionics), (for single transponder installation of NXT-600 Mode S/ADS-B manufactured by ACSS) for transponder installation of or equivalent factory modifications are incorporated, and any other modification identified applicable by Embraer, and/or for installation of transponders.

NOTE 11 – Sections of CS-ACNS, as applicable, may be raised as part of the certification basis for avionic installations.

NOTE 12 – For aircraft equipped with PW535E1 engines.

NOTE 13 – For aircraft equipped with PW535E engines post-mod SB 505-00-0030 or equivalent modification factory incorporated.

NOTE 14 – For aircraft equipped with PW535E1 engines post-mod SB 505-00-0030 or equivalent modification factory incorporated.



SECTION ADMINISTRATIVE

I. Acronyms & Abbreviations

A.C.	Advisory Circular
A.D.	Airworthiness Directives
AFM	Airplane Flight Manual
C.G.	Centre of Gravity
CFR	Code of Federal Regulations
CRI	Certification Review Items
CS	Certification Specifications
EASA	European Aviation Safety Agency
EFIS	Electronic Flight Information System
EU	European Union
F.S.	Frame Status
FAA	Federal Aviation Administration
FADEC	Full Authority Digital Engine Control
FT	Feet
GAL	Gallons
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
KCAS	Knots Calibrated Air Speed
KG	Kilo Grams
KIAS	Knots Indicated Air Speed
LBS	Pounds
MIL	Military Standard
MMEL	Master Minimum Equipment List
N.A.A.	National Aviation Authority
RVSM	Reduced Vertical Separation Minimum
S.B.	Service Bulletin
T.O.	Take Off
TC	Type Certificate
TCDS	Type Certificate Data Sheet
TCDSN	Type Certificate Data Sheet - Noise.
TSO	Technical Standards Order
VFR	Visual Flight Rules



II. Type Certificate Holder Record

Date:

19 Nov 2010

Type Certificate Holder:

Embraer S.A.

Av. Brigadeiro Faria Lima 2170

12227-901 São Jose dos Campos - SP

Brazil

III. Change Record

Issue	Date	Changes
Issue 1	29 April 2010	
Issue 2	4 Oct 2011	Adding SC D-103, various corrections
Issue 3	22 May 2012	Adding SC D-104, D-105, max passenger, change record update
Issue 4	30 April 2013	Included the new Maximum Operating Weights values Included the Production Certificate and new manufacturing site
Issue 5	12 March 2015	ANAC Certifying Authority address updated. Removed "Normal Category Certification" from ANAC Certification Basis. New Special Condition CRI's Added F-92, F-93, O-01, O-04. Baggage compartment weights amended and note added. AMM-4610 added to approved Manuals. Note 1 "Hydraulic fluid" arm in meters corrected to align with AFM-2666.
Issue 6	16 December 2015	OSD elements are added;
Issue 7	09 December 2016	Added note 10 and 11. Corrected revision date of MMEL
Issue 8	16 February 2018	Added ELoS CRI D-106 for video monitors introduced in DCA 0505-025-00124-2017-EASA and referencing ANAC FCAR EI-18.
Issue 9	14 May 2020	Updated information in Cover Sheet, sections A.III "Technical Characteristics and Operational Limitations" and A.VI "Notes" Update of fields "Engines", "Airspeeds", "Maximum Certified Weights", "NOTE 3" and addition of "Note 12" were motivated by modification introduced by DCA 0505-000-00110-2018-EASA. Update of field "Note 6" included "Phenom 300E" commercial name that was adopted before but was missing update in TCDS. Cover sheet was changed to update current Embraer S.A. address
Issue 10	08 Aug 2024	Manufacturer Address Update (Cover Page, Section A – A.I General, Item 4, Section Administrative Item 2). State of Design Authority Address Update (Section A – A.I General, Item 5). Correction of EASA Type Certification Application Date. Item 3 "ANAC certification basis" field update in Section A – A.II Certification basis. Item 4 "EASA Airworthiness requirements" field update in Section A – A.II Certification basis according to following details:



		<p>1 - Regulations 23.2010, 23.2500(b), 23.2510, 23.2600(b) and 23.2605(b) and (c) as published in CS 23 issue 05 plus 2 additional ESF “D-101 Motion and Effect of Cockpit Controls” and “G-102 Powerplant Instruments - Normal Operating Range Color and CSC Authority Indication” included in the certification basis due to the introduction of Current Speed Control System in the aircraft;</p> <p>2 - Special Condition “F-90 Security Protection of Aircraft Systems and Networks” included in the certification basis due to the introduction of Flight Stream 510 (FS510) in the aircraft;</p> <p>3 - Special Condition “F-105 Flight Guidance System – Autothrottle under Part 23” included in the certification basis due to the introduction of Autothrottle System in the aircraft;</p> <p>4 - ESF “G-101 Powerplant Instruments – Normal Operation Range Color” included in the certification basis applicable to the fleet;</p> <p>5 - Added References to modifications that involve the Special Conditions D-103, D-104, D-105 F-92, F-93, O-01, O-04 and ESF D-101 and D-106.</p> <p>Item 15 “Maximum Passenger Capacity” field and correspondent Note 7 wording improvement in Section A.III. Technical Characteristics and Operational Limitations.</p>
Issue 11	29 Aug 2024	Addition of new values of MZFW for aircraft that incorporated SB 505-00-0030 or equivalent modification factory incorporated and inclusion of Notes 13 and 14 referring to the service bulletin and engine installed.

-END-

