



**MINISTRY OF TRANSPORT OF THE RUSSIAN FEDERATION
FEDERAL AIR TRANSPORT AGENCY**

**TYPE CERTIFICATE
DATA SHEET**

№ FATA-01034A

**Aircraft:
Embraer EMB-500**

Issue 01

23 January 2019

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1. General Data

1.1. Developer and Manufacturer	Embraer S.A. Av. Brigadeiro Faria Lima, 2.170 12 227-901-S.J. dos Campos-SP Brazil
1.2. Brief Aircraft Description	Low wing monoplane with T-shape empennage, equipped with two high bypass ratio turbofan engines installed on pylons in rear part of fuselage
1.3. Serial Numbers	50000005 and on
1.4. Category	Normal category passenger airplane
1.5. State of Design Certification Date	Type Certificate No 2008T09 issued by ANAC on 09.12.2008
1.6. Date of Initial Certification in the Russian Federation	23.01.2019
1.7. Certification Basis	<p data-bbox="582 1019 981 1064"><u>Airworthiness Requirements</u></p> <p data-bbox="582 1064 1522 1164">Aviation Regulations, Part 23 (AP-23), Airworthiness Standards: Normal, Utility, Acrobatic and Commuter Category Airplanes, Admt. 23-4.</p> <p data-bbox="582 1198 837 1243"><u>Special Conditions:</u></p> <ul data-bbox="582 1243 1522 2045" style="list-style-type: none"> <li data-bbox="582 1243 1522 1355">• EV-04 – Special Condition for Subpart G (Operating Limitations and Information) – EMB-500 - according to ANAC resolution No. 39, dated August 15th, 2008; <li data-bbox="582 1388 1522 1500">• SE-02 – High Intensity Radiated Fields (HIRF) Protection - EMB-500 – according to ANAC resolution No 43, dated August 15th, 2008; <li data-bbox="582 1534 1522 1612">• PR-09 – Hot Weather Operation – EMB-500 - according to ANAC resolution No. 44, dated August 18th, 2008; <li data-bbox="582 1646 1522 1758">• PR-03 – Fire Extinguishing for Aft Fuselage Mounted Engines – EMB-500 - according to ANAC resolution No. 45, dated August 18th, 2008; <li data-bbox="582 1792 1522 1870">• PR-07 – Special Condition for FADEC – EMB-500 - according to ANAC resolution No. 46, August 18th, 2008; <li data-bbox="582 1904 1522 1982">• SM-02 – Brakes, Designation of Applicable Regulations – EMB-500 - according to ANAC resolution No. 47, dated August 18th, 2008; <li data-bbox="582 2016 1522 2045">• EV-02 – Airspeed Indicating System – EMB-500 - according to

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ANAC resolution No. 56, dated October 09th, 2008;

- EV-01 – Special Condition for Performance and Flight Characteristics – EMB-500 – according to ANAC resolution No. 66, dated November 26th, 2008;
- EI-05 and EI-07 - Dynamic Test Requirements for Single Place Side Facing Seat – EMB-500 – according to ANAC resolution No. 177, dated December 14th, 2010

Equivalent Level of Safety:

- PR-05 – RBHA/14 CFR 23.1555(d)(1), Control Markings – Usable Fuel Capacity – EMB-500 – according to ANAC resolution 302, dated August 18th, 2008;
- EI-03 – RBHA/14 CFR 23.807(e)(2), Ditching Emergency Exit for Passengers – EMB-500 – according to ANAC resolution 306, dated August 18th, 2008;
- PR-11 – RBHA/14 CFR 23.1553, Digital Fuel Quantity Indication – EMB-500 – according to ANAC resolution 381, dated September 24th, 2008;
- PR-13 – RBHA/14 CFR 23.1305 and 23.1549, Digital Only Display of Turbine Engine High Pressure Rotor Speed (N2), Oil Pressure, Oil Temperature and Fuel Flow – EMB-500 – according to ANAC resolution 3.676, dated December 13th, 2016

Environmental protection:

Noise Requirements

Aviation Regulations, Part 36 (AP-36) "Aircraft External Noise Certification" and Annex 16 ICAO "Environmental Protection", Volume 1, "Aircraft Noise", Chapter 4

Emission Requirements

Aviation Regulations, Part 34, (AP-34)

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2. Technical Data and Operational Limitations

2.1.Type Design Definition

FATA Type Certificate № FATA-01034A is applicable to EMB-500 aircraft which Type Design is defined by:

1. ANAC Type Certificate Data Sheet № EA-2008T09;
2. Document “REPORT No.: 500TDSD004 TYPE DESIGN STANDARD DOCUMENT AR RF/FATA”, Issue 01 and subsequent approved issues;
3. EMB-500 operational documentation:
 - Airplane Flight Manual (AFM-2655) with Supplement 12 “Russian Certification”, approved by ANAC;
 - Airworthiness Limitations Section (ALS), doc. Ref. AMM-2432, Part II, Chapter 4 approved by ANAC;
 - Maintenance Planning Document (MPD), doc. Ref. AMM-2432, Part III;
 - Flight Crew Operating Manual (FCOM), doc. Ref. POH-2761-24;
 - Maintenance Manual (AMM), doc. Ref. AMM-2432;
 - Master Minimum Equipment List (MMEL), doc. Ref. MMEL-2909

2.2.Engines

Two Pratt&Whitney Canada PW617F-E turbofans for PHENOM 100 and PHENOM 100E (see Note 4)

Two Pratt&Whitney Canada PW617F1-E turbofans for PHENOM 100EV (see Note 4)

Type Certificate No. FATA-01038E

2.2.1. Engine Limits

Static thrust limits, standard day, sea level:

For PW617F-E engine:

	Standard takeoff thrust	Enhanced takeoff thrust
Takeoff (5 min)	753.9 daN (1 695 lb)	753.9 daN (1 695 lb)
ATR (10 min)	765.1 daN (1 720 lb)	809.6 daN (1 820 lb)

Max. permissible engine rotor operating speeds (Takeoff and Maximum Continuous):

N1 (Fan)	100% (100% = 19 845 rpm)
N1 Transient (operation 20 sec)	101 % (101 % = 20 043 rpm)
N2 (Gas Gen.)	100.4% (100.4% = 40 200 rpm)
N2 Transient (operation 20 sec)	102% (102% = 40 840 rpm)

Max. permissible interturbine gas temperatures:

Takeoff (5 min)	830°C
ATR (10 min)	845°C
Max. continuous	830°C
Transient (starting 5 sec)	892°C (950°C) (see NOTE 5)
Transient (operation 20 sec)	862 °C

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For PW617F1 -E engine:

Takeoff (5 min)	768.6 daN (1 728 lb)
ATR (10 min)	841.1 daN (1 891 lb)

Max. permissible engine rotor operating speeds (Takeoff and Maximum Continuous):

N1 (Fan)	100% (100% = 19 845 rpm)
N1 Transient (operation 20 sec)	101 % (101 % = 20 043 rpm)
N2 (Gas Gen.)	101.6% (101.6% = 40 676 rpm)
N2 Transient (operation 20 se	103.2% (103.2% = 41 316 rpm)

Max. permissible interturbine gas temperatures:

Takeoff (5 min)	830°C
ATR (10 min)	845°C
Max. Continuous	830°C
Transient (starting 5 sec)	950°C
Transient (operation 20 sec)	862°C

2.3.Fuel

Brazilian Specification ANP No. 1/2006, QAV-1.
Specification ASTM-D1655, type Jet A, Jet A-1.
Specification MIL-DTL-83133, type JP-8.
Chinese Specification GB6537-2006 № 3 Jet Fuel

Note: Russian specification fuel don't approved for use, more detail see AFM-2655 with Supplement 12

2.4.Fuel Quantity

Total usable fuel 1272 kg (2806 lb). Two wing tanks with 636.4 kg (1403 lb) usable each, considering density of 0.803 kg/l (6.70 lb/US gal)

2.5. Oil Capacity

Tank mounted on each engine: 4 quarts (3.79 liters) total each engine

2.6. Hydraulic fluid capacity

1.4 kg (3.09 lb.), considering density of 0.846 kg/l (7.06 lb/gal);
6.29 kg (13.86 lb), considering density of 0.846 kg/l (7.06/gal) -for aircraft with Second Hydraulic Power Source installed.

2.7.Minimum Flight Crew

Crew for all flights (see NOTE 5 for cockpit equipment/ arrangement restrictions):

- Two pilots (one pilot and one co-pilot);
- One pilot (in the left pilot seat) plus additional equipment, as specified in the Kinds of Operations Equipment List (KOEL) in the Limitations Section of the ANAC Approved Airplane Manual.

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2.8. Maximum number of occupants

Maximum eight (two crew plus six passengers or one crew plus six passengers). Refer to the Airplane Flight Manual (AFM-2655), Section 6 Weight & Balance, for seat configurations.

2.9. Maximum Weight

Takeoff:	4750 kg (10472 lb) 4 800 kg (10582 lb) ⁽²⁾ 4 855 kg (10703 lb) ⁽⁴⁾
Landing:	4430 kg (9766 lb) 4480 kg (9877 lb) ⁽²⁾ 4535 kg (9998 lb) ⁽⁴⁾
Zero Fuel:	3830 kg (8444 lb) 3980 kg (8775 lb) ⁽¹⁾ 3880 kg (8554 lb) ⁽²⁾ 4030 kg (8885 lb) ⁽³⁾ 4115 kg (9072 lb) ⁽⁴⁾
Ramp:	4770 kg (10516 lb) 4820 kg (10626 lb) ⁽²⁾ 4875 kg (10747 lb) ⁽⁴⁾

Notes:

(1) for aircraft post-mod SB 500-00-0005 OR with an equivalent modification factory-incorporated.

(2) for aircraft post-mod SB 500-00-0009 or SB 500-00-0018 OR with an equivalent modification factory-incorporated.

(3) for aircraft post-mod SB 500-00-0005 and SB 500-00-0009 or aircraft post-mod SB 500-00-0005 and SB 500-00-0018 OR with the equivalent modifications factory-incorporated.

(4) for PHENOM 100EV aircraft (see NOTE 4).

2.10. Maximum baggage and cargo weight

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)

2.11. Speed Limits (IAS)

	km/h (knots)	Mach
Maximum operating (V_{MO}): Sea level to 28 000 ft.	509.3 (275)	0.70
Maximum operating (M_{MO}): Above 28 000 ft.	---	0.70
Maneuvering (V_A) - sea level:	345.0 (186)	---
Flaps extended (V_{FE})		
10° (takeoff):	370.4 (200)	---
26° (takeoff and landing):	296.3 (160)	---
36° (landing):	268.5 (145)	---
Minimum control speed - Air (V_{MC}): Takeoff	180 (97)	
Maximum tire ground speed:	257.4 (139)	---
L. G. operation - extend (V_{LO}):	333.4 (180)	---
L. G. operation - retract (V_{LO}):	333.4 (180)	---
L. G. extended (V_{LE}):	509.3 (275)	---

Note: The values presented above refer to the maximum V_{MC} for the aircraft envelope (the values can change according to the temperature and altitude).

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- 2.12. Center of gravity range** See the EMB-500 Flight Manual approved by ANAC
- 2.13. Maximum operating altitude** 12 97 m (41 000 ft)
- 2.14. Ambient air temperature limits near the ground for take-off and landing** Maximum 52 °C
Minimum minus 40°C
- 2.15. Airworthiness Limitations** See the Maintenance Manual, Chapter 4 "Airworthiness Limitations", for Systems Airworthiness Limitations (CMR), Structure Airworthiness Limitations (ALI) and Life-Limited Items (LLI).
The life limit for rotating parts on the PW617F-E and the PW617F1-E engines is in the Airworthiness Limitations Manual of the Pratt & Whitney Canada Engine P/N 3072699, latest revision.
- 2.16. Required Equipment**
1. All mandatory modifications listed in the document “REPORT No.: 500TDS004 TYPE DESIGN STANDARD DOCUMENT AR RF/FATA”, Issue 01, shall be embodied.
 2. All marking and placards required by the applicable certification requirements (see Certification Basis) must be installed.
Required placards and marking are listed in the Chapter 11 of the Aircraft Illustrated Parts Catalog (AIPC) and in the Airplane Maintenance Manual (AMM).
 3. All inscriptions and placards related to rescue equipment and addressed to passengers must be bilingual: in English and in Russian.
 4. The following equipment is mandatory for Operation in the Russian Federation:
 - Radio Altimeter;
 - ADF;
 - Weather Radar;
 - Life Vests;
 - Crew PBE;
 - Smoke Goggles;
 - Portable ELT (provisions are due Embraer and ELT due Operator)

Note: Document “REPORT No.: 500TDS004 TYPE DESIGN STANDARD DOCUMENT AR RF/FATA” shall be provided by the Embraer S.A. to each Operator together with a set of operational documentation listed in § 4.

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2.17. Operational Limitations

1. Any changes and additions to operational documentation developed by Embraer S.A. based on request from Operator may be incorporated only upon FATA approval.
2. For other limitations see EMB-500 Airplane Flight Manual (AFM-2655) with Supplement 12 “Russian Certification”, approved by ANAC.

2.18. 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.

Note 2

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

Note 3

Approval for operation with a minimum crew of one pilot is based upon the cockpit equipment installation and arrangement evaluated during 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 Civil Aviation Authority.

Note 4

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; and
- PHENOM 100EV: EMB-500 equipped with PW617F1-E engines, G3000 avionics system and spoiler panels.

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2.19.

Note 5

Increase in the Maximum ITT is an optional item available through SB 500-73-0001 for aircraft with serial number 50000006 and 50000008 thru 50000024. For aircraft with serial number 50000005, 50000007, 50000025 and on, there is an equivalent modification factory-incorporated

3. Additional information

3.1. TCDS revisions list

TCDS issue	Date	Description	Applicability
01	23.01.2019	Initial Issue	EMB-500

Original copy in Russian language signed by A.A. Novgorodov, Deputy Director General