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**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Airborne power supply system for portable electronic device
(English Translation)**

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard was proposed and interpreted by the Aircraft Airworthiness Certification Department of the Civil Aviation Administration of China.

This standard was approved by the Aircraft Airworthiness Certification Department of the Civil Aviation Administration of China.

This standard is under the jurisdiction of the China Academy of Civil Aviation Science and Technology.

The organization responsible for drafting this standard. Civil Aviation University of China, China Civil Aviation Science and Technology Research Institute, Chengdu Tangyin Technology Co., Ltd.

1 Scope

This standard specifies the terms and definitions, technical requirements, test methods, installed test methods, Inspection rules, identification, accompanying documents, packaging, transportation and storage.

This standard applies to the airborne power supply system of portable electronic equipment, the input power of the system is 115 V/200 V or 230 V/400 V, Airborne three-phase AC power with constant frequency (400 Hz)/narrow frequency conversion (360 Hz~650 Hz)/wide frequency conversion (360 Hz~800 Hz), output is 110 V/60 Hz or 220 V/50 Hz AC power supply and 5 V DC power supply.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article Pieces. For undated references, the latest version (including all amendments) applies to this document.

3 Terms and definitions

The following terms and definitions apply to this document.

Airborne constant frequency ac power the voltage used on the aircraft is 115 V/200 V or 230 V/400 V, constant frequency alternating current with a frequency of 400 Hz.

Airborne narrow variable frequency ac power the voltage used on the aircraft is 115 V/200 V or 230 V/400 V, and the frequency is 360 Hz to 650 Hz.

Airborne wide variable frequency ac power the voltage used on the aircraft is 115 V/200 V

or 230 V/400 V, and the frequency is 360 Hz to 800 Hz.

Airborne ac power

Airborne constant frequency AC power supply, airborne narrow frequency conversion AC power supply and airborne wide frequency conversion AC power supply are collectively referred to.

Convert airborne AC power to 110 V/60 Hz or 220 V/50 Hz power frequency AC and 5 V DC, which is portable for crew and passengers Power supply system for electronic equipment.

Note: The on-board power supply system of portable electronic equipment consists of a controller, power conversion components and power output sockets, with functions such as power management, control and protection.

Controller control unit After receiving the control signal, after power management, the airborne AC power is distributed to the control device of the power conversion component.

Note: The controller has the information interaction function and protection function with the aircraft cabin system.

Power conversion module A device that converts the airborne AC power output by the controller into 110 V/60 Hz or 220 V/50 Hz power frequency AC and 5 V DC.

Note: The power conversion components have automatic voltage regulation and protection functions.

Power output socket outlet Provide AC power and DC power output interfaces for portable electronic equipment.

Current leakage protection when the difference between the output current of the controller or power conversion component and the loop current is greater than the device leakage protection current value, the power supply is automatically cut off.

3.10

Total harmonic distortion Except for the fundamental wave component of the AC voltage or current waveform, the percentage of the second root value of the sum of the squares of the harmonics and the effective value of the fundamental wave is shown in formula (1).

3.11

Distortion

In an AC system, the root mean square value of the AC waveform except the fundamental component. In a DC system, the root mean square value of the AC component in the DC waveform.

3.12

Distortion factor

The ratio of the distortion to the effective value of the fundamental wave. The distortion coefficient is usually expressed as a percentage, see formula (2).

3.13

Electrical load analysis it is used to verify that the power system of the aircraft can safely provide the power capacity required for the normal use of the newly added load. The new increase the maximum load that the equipment may generate.

5.1.1.2 Working height

CU and PCM should be installed in the pressurized area. Carry out the working height test in accordance with 6.3.2, the maximum cabin height in normal operation should not be lower than 4 600 m (15 000 ft) MSL.

5.1.1.3 Temperature changes

Perform temperature change test in accordance with 6.3.3. After the test, CU and PCM should work normally.

5.1.1.4 Damp heat

Carry out damp heat test in accordance with 6.3.4. After the test, CU and PCM should work normally.

5.1.2.1 Insulation resistance

Conduct insulation resistance test according to 6.4.1. The insulation resistance of CU and PCM should not be less than 1 Mohm.

Carry out the insulation resistance test according to 6.4.1, the insulation resistance of OU should not be less than 5 Mohm, and the insulation resistance between AC and DC in OU should not be small at 5 Mohm.

5.1.2.2 Insulation strength

Conduct the insulation strength test in accordance with 6.4.2. CU, PCM and OU shall not show arc or insulation breakdown.

5.1.3.1 Job shock

Carry out the working impact test in accordance with 6.5.1. After the test, CU and PCM should work normally.