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**INDUSTRY STANDARD OF THE
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**Civil aviation technical requirements for Ground. Based
Augmentation System ground equipment. Category I precision
approach**

(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 by the Air Traffic Control Industry Management Office 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.

Drafting organizations of this standard. Air Traffic Control Industry Management Office of Civil Aviation Administration of China, Second Research Institute of Civil Aviation Administration of China, China Electronics Division the 20th Research Institute of China National Technology Group Corporation, the Southwest Air Traffic Management Bureau of China Civil Aviation, and China Civil Aviation Science and Technology Research Institute.

1 Scope

This standard specifies the technical requirements for ground equipment of the ground-based augmentation system for civil aviation supporting Class I precision approach operations.

This standard applies to the design, development, inspection, and use of ground equipment for ground-based augmentation systems that support Class I precision approach operations by civil aviation.

use.

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.

GB 8702 Electromagnetic environment control limit

3.1 Terms and definitions

The following terms and definitions apply to this document.

3.1.1

Alarm

The system does not meet integrity/continuity requirements, or an indication that the service is unavailable.

3.1.2

Protection level

Envelope the actual error value with a certain degree of confidence.

3.1.3

Availability

The ability of the navigation system to provide the required functions and performance during the expected operation period.

3.1.4

Continuity

Ground equipment can provide horizontal and vertical guidance for class I precision approach services, or provide warning information for airborne systems within a 15 s period the average probability.

3.1.5

Signal in space integrity risk the ground equipment did not prompt the airborne system of the unavailable space signal information in time, resulting in the probability that the horizontal and vertical relative position error exceeded the tolerance limit.

rate.

3.1.6

Category I precision approach the minimum standard meets a precision approach with a

decision height not less than 60 m, visibility not less than 800 m, or runway visual range not less than 550 m.

3.1.7

Ground-Based Augmentation System the ground-based augmentation system consists of the space part, the ground part and the aircraft part. The space part consists of one or more satellite navigation constellations, the ground part is installed in or near the airport, and the satellite navigation enhancement information is sent directly from the ground-based transmitter to the aviation user, and the corresponding aircraft is equipped.

Equipment-carrying aircraft can obtain Class I precision approaches or even higher levels of service.

3.1.8

Pseudo-range

The distance obtained by the receiver by measuring the time interval between the local time of the arrival of the navigation signal and the time of the satellite transmitting the signal Distance, including the geometric distance and clock difference between the two.

3.1.9

B value

After deducting the broadcast pseudorange correction, the reference receiver measures the residual error of the pseudorange.

3.1.10

Glide path intercept point the intersection of the final approach path and the runway level.

3.2 Abbreviations

The following abbreviations apply to this document.

4.1 Composition

GB AS ground equipment consists of a reference receiving subsystem, a processing subsystem, a very high frequency data broadcasting (VDB) subsystem and a monitoring and maintenance subsystem and other composition.

4.2 General requirements

4.2.1

The electromagnetic radiation of the equipment shall meet the limit requirements of the electromagnetic radiation protection for personnel specified in GB 8702.

4.2.2

The reference receiving subsystem usually consists of 3 to 4 GNSS reference receivers; the transceiver unit and processing subsystem of the VDB subsystem the processing unit should adopt a dual redundant structure.

4.2.3

The location configuration data of GB AS ground equipment uses the WGS-84 coordinate system.

4.2.4

GB AS ground equipment should have the following functions.

- Provide local related pseudorange correction;
- Provide relevant data of GB AS station;
- Provide final approach segment data;
- Provide the availability forecast data of the ranging source;
- Provide GNSS ranging source integrity monitoring.

4.2.5

The maintainability requirements are.

- The MTBF of the equipment should be greater than 20 000 h;
- The MTTR of the field replaceable unit should not exceed 30 min.

4.2.6

The power supply shall meet the following requirements.

- a) The equipment should have both AC and DC power supply modes. Under normal circumstances, AC power is the main power supply; when the main power supply is cut off, it should be able to Automatically switch to the standby DC power supply without interruption; when the main power supply is restored, it should be able to automatically switch back to the AC power supply state;
- b) The AC power source used by the equipment should be single-phase 220 V $\pm$ 15%, 45 Hz~63 Hz;
- c) The rated voltage of the standby DC power supply (battery) used by the equipment should be 24 V, and the allowable range of variation is specified by the product specification;
- d) The AC power supply should float the standby DC power supply while supplying power to the equipment normally;
- e) Each power circuit should have protection circuits such as overcurrent and overvoltage;