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

MH/T 9010.1-2018

**Ground-air high-speed data link technical specifications based
on LET technology. Part 1: General technical specifications
(English Translation)**

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Foreword

MH/T 9010 "Ground-to-air high-speed data link technical specifications based on LTE technology" is divided into the following four parts.

- Part 1: General technical specifications;
- Part 2: Airborne terminal specifications;
- Part 3: Airborne antenna specifications;
- Part 4: Installation and acceptance requirements;

This part is part 1 of MH/T 9010.

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

This part was proposed by the Aircraft Airworthiness Certification Department of the Civil Aviation Administration of China.

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1 Scope

This part of MH/T 9010 specifies the overall architecture of civil aviation ground-to-air high-speed data link based on LTE technology (hereinafter referred to as ATG system) Requirements for structure, system function, system performance, airborne system, and airworthiness of airborne system.

This section applies to the design, development, testing, installation and acceptance of ATG systems for civil transport aircraft (including business jets).

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 document.

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.

Ground-to-air high-speed data link system based on LTE technology() technical specification of high rate air-to-grounddata linkbased on long term evolution Utilizes a system based on LTE (Long Term Evolution) technology to provide high-bandwidth data communication services between aircraft and ground dedicated communication networks, Referred to as ATG system.

Airborne terminal

Installed on the aircraft, responsible for accessing the ground system of the ground-to-air high-speed data link system based on LTE technology, and provide the aircraft with ground-to-air high-speed data According to the channel's airborne communication equipment.

Airborne antenna

Installed on the outside of the aircraft body, connected to the on-board terminal through radio frequency cables, responsible for the transmission and reception of wireless electromagnetic signals.

5 Composition and functions of various parts of the ground ATG system

The ground ATG system is composed of ATG base stations, IP transmission networks, ATG core networks, ATG network management and business support systems.

ATG base station. set along the route, responsible for communicating with the aircraft's onboard ATG system through wireless signals.

IP transmission network. between ATG base stations, and between ATG base stations and ATG core network, as the communication channel of the IP transmission network.

ATG core network. Responsible for the mobility management of the ATG network, airborne terminal access management, signaling bearer, call management, switch routing management Wait.

ATG network management and business support system. responsible for ATG network operation and maintenance, daily monitoring, network security, user billing management, quality Network management and business support systems such as OoS management.

6 Overall architecture

The ATG system consists of the airborne ATG system (including the airborne terminal and the airborne antenna) and the ground ATG system. From the ground ATG base station and the aircraft the onboard ATG system performs two-way communication, and the ATG onboard system communicates with the onboard data application system through the data line.

The aircraft can seamlessly switch between multiple ground ATG base stations.

7.1 Business

It can support two-way communication based on IP data such as data, pictures, and videos.

7.2 Mobility

7.2.1

When the moving speed of the ATG airborne terminal supports 1.200 km/h, it can communicate normally in both directions.

7.2.2

The ATG system can effectively overcome the impact of Doppler shift caused by the aircraft's high-speed movement (at a ground speed of 1.200 km/h).

7.2.3

The ATG airborne terminal CPE can maintain normal communication when switching between ATG base stations, and the switching delay is not higher than 150 ms.

7.3 Network coverage

7.3.1

The farthest coverage radius of a single ATG base station supports 150 km, and the edge rate at this time is not less than 1 Mbps.

7.4 Transmission delay

When the wireless channel conditions are good, the maximum air interface delay for two-way data communication between the ATG airborne terminal CPE and the ground ATG base station does not exceed 50 ms.

7.5 Cell access capacity

The maximum number of ATG airborne terminal CPEs that an ATG base station can access in a single cell is not less than 16.