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

MH/T 9010.3-2018

**Ground-air high-speed data link technical specifications based
on LET technology. Part 3: Airborne antenna 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 3 of MH/T 9010.

This part 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.

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

Drafting organizations of this section. Shenzhen Institute of Avionics Technology, Shenzhen Donica Avionics Co., Ltd.

1 Scope

This part of MH/T 9010 specifies the airborne antenna of civil aviation ground-to-air high-speed data link based on LTE technology (hereinafter referred to as ATG system) the basic requirements, functions, interfaces, safety and reliability, environmental and electromagnetic compatibility test requirements.

This section applies to the design, development, testing, installation and acceptance of ATG system airborne antennas 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 terms and definitions defined in MH/T 9010.1 apply to this document.

4 Abbreviations

The following abbreviations apply to this document.

ATG. Ground-to-air communication system
CCAR. China Civil Aviation Regulations
RTCA. Aviation Radio Association

5 Working principle of ATG airborne antenna

The ATG airborne antenna is the transmitting and receiving component of the wireless signal of the airborne ATG system. It is installed outside the aircraft body and is responsible

for the communication between the aircraft and the ground.

ATG wireless signal reception and transmission.

The ATG airborne antenna uses the internal antenna oscillator to receive the electromagnetic wave signal emitted by the ground ATG base station into the air and convert it into a radio frequency signal.

It is transmitted to the ATG airborne terminal for processing through the radio frequency cable.

The ATG airborne antenna uses the internal antenna oscillator to receive the radio frequency signal of the ATG airborne terminal through the radio frequency cable and convert it into electromagnetic wave the number is radiated from the air and received by the ground ATG base station.

6.1 Dimensions

According to different frequencies and different antenna dimensions, the antenna should adopt a streamlined design.

6.2 Materials

Should meet RTCA/DO-160G requirements for flame retardancy.

6.3 Quality

The quality should not exceed 1kg.

6.4 Interchangeability requirements

The interface and mounting hole position should meet the interchangeability requirements.

6.5 Marking

The marking information should contain at least.

- The name, trademark or code of the manufacturer;
- Set the model, part number, and serial number of the equipment.

7.1 Support frequency

The electromagnetic wave frequency supported by the transmission and the electromagnetic wave frequency received meet the relevant requirements in MH/T 9010.1.

7.2 Power tolerance

The antenna power tolerance should be greater than the maximum RF transmit power of the ATG airborne terminal.

7.3 VSWR

The passive standing wave ratio VSWR should be less than 2.0.

7.4 Antenna gain

It is specified by the network design of the actual ATG system.

7.5 Direction map

It is specified by the network design of the actual ATG system.

7.6 Polarization method

It is specified by the network design of the actual ATG system.

7.7 Number of antennas

According to the actual application requirements of the ATG airborne terminal, one or more antennas can be used to adapt to the airborne ATG terminal.

7.8 Antenna type

Support multiple antenna forms such as passive or active.

8 Ports

At least one radio frequency interface should be provided, and the interface type should match the radio frequency interface of the ATG airborne terminal.

9 Environmental test

The environmental test of the antenna shall meet the relevant requirements of RTCA/DO-160G.