

ICS 03.220.50

MH

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

MH/T 4040-2013

**Test method for civil aviation air traffic control voice
communication switch system
(English Translation)**

Issued on: October 5, 2013

Implemented on: January 8, 2013

Issued by: Civil Aviation Administration of China

Table of Contents

Foreword
1 Scope
2 Normative references
3 Terms, definitions and abbreviations
4 Test conditions and test instruments and devices
5 Function test
6 Performance and technical index test
7 Working environment test

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 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 organization of this standard. Shenyang Air Traffic Control Technology Development Co., Ltd.

1 Scope

This standard specifies the testing of civil aviation air traffic control voice communication exchange system (hereinafter referred to as air traffic control voice communication exchange system) Conditions and method requirements for testing instruments and devices, functional testing, performance testing, technical index testing and working environment testing.

This standard applies to the inspection of the air traffic control voice communication exchange system.

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. For undated references, the latest version (including all amendments) applies to this document.

GB 3380 telephone automatically exchanges network ring stream and signal tone GB 8898 Safety requirements for audio, video and similar electronic equipment GB/T 15279 Technical requirements for automatic telephones GB/T 16654 ISDN (2B D) NT1 user-network interface equipment technical requirements GB 19517 National Electrical Equipment Safety Technical Code GB/T 22727.1 Safety Limits and Test Methods of Hazardous Substances in Communication Products Part 1: Telecommunications Terminal Products MH/T 4027 Civil Aviation Air Traffic Control Voice Communication Exchange System Technical Specification YD/T 772 Technical requirements and testing methods for PBX network access YD/T 976 B-ISDN User Network Interface (UIN) physical layer specification YDN 034 ISDN network user-network interface specification Physical/electrical characteristics of ITU-T G.703 series of digital interfaces Pulse code modulation of ITU-T G.711 voice frequency Transmission performance characteristics of ITU-T G.712 pulse code modulation channel ITU-T G.728 16kbit/s speech coding using low-delay code excitation linear prediction ITU-T Q.400~Q.490 signaling system R2 specification ITU-T Q.611 incoming call No.5 signaling system logic program ITU-T Q.612 outgoing call No.5 signaling system logic program Technical characteristics of ITU-T Q.23 key phone Standardized 600/1200 Bd modem used in ITU-T V.23 public switched telephone network ECMA 142 Private Integrated Service Network-64K Circuit Basic Service ECMA 143 Private Integrated Service Network-Circuit Basic Service ECMA 165 Private Integrated Service Network-General Function Agreement ECMA 203 Private Integrated Service Network-Call Intrusion Supplementary Service ECMA 225 Private Integrated Services Network-Additional Network Features-Transmission Control ECMA 264 Private Integrated Services Network-Call Priority Control Supplementary Service ECMA 312 Private Integrated Services Network-A dedicated standard in ATS services ETSI 300 402-2 Integrated Services Digital Network, Digital Subscriber No. 1 Signaling System Protocol, Data Link Layer, General Protocol Specification

3.1 Terms and definitions

The following terms and definitions established in MH/T 4027 apply to this document.

3.1.1

System

The sum of equipment and man-machine interface.

3.1.2

Position terminal

The communication control panel that is assigned roles (such as controller, director on duty, system monitor, etc.) when working online.

3.1.3

Log

Records related operations such as system operation monitoring, configuration operations, date, time, users and actions (not limited to).

3.2 Abbreviations

The following abbreviations apply to this document.

ATS-QSIG Air Traffic Services Signalling at Q Reference Point) CO Central Office Switch (Central Office) DA uses a single preset button on the seat panel to directly dial the preset target number (Direct Access) DTMF Dual Tone Multi-Frequency ECMA European Computer Manufacturers Association (European Telecommunication Standards Institute) GPS Global Positioning System (Globe Positioning System) HF High Frequency IA dials the target number through the dial pad on the seat panel (Indirect Access) ISDN Integrated Services Digital Network (Integrated Services Digital Network) ITU-T International Telecommunications Union-T MFC Multi-Frequency Code PABX Private Automatic Exchange (Private Automatic) PCM pulse code modulation (Pulse Code Modulation) PSTN Public Switch Telephone Network (Public Switch Telephone Network) PTT button transmit, release and receive communication mode (Push-To-Talk) UHF Ultra High Frequency (Ultra High Frequency) VHF (Very High Frequency)

4.1 Test conditions

4.1.1

The test environment is.

- a) Temperature. 0 °C~40 °C;
- b) Relative humidity. 40%~90%, no condensation water in the machine;
- c) Air pressure. 86 kPa~106 kPa.

4.1.2

The power supply voltage is AC 220 V $\pm$ 22 V, and the frequency is 50 Hz $\pm$ 3 Hz.

4.2 Test instruments and devices

The test instrument used should be qualified and within the validity period, the error of the instrument should be less than one-third of the allowable error of the measured parameter.

Instrument used the devices and devices are as follows.

5.1.1.1 Test process

The system works normally.

At the same time start all available wireless communication, wired communication, monitoring and other tasks.

5.1.1.2 Qualification judgment

Multiple tasks should be able to work simultaneously without interfering with each other.

5.1.2.1 Test process

Make the system in normal working condition.

Configure wired telephone and wireless frequency communication resources to the seat terminal panel.

Allocate resources for individual test seats one by one.

All seats in the system start the configured wired tasks, wireless tasks, and monitoring tasks at the same time, making multiple tasks work in parallel.

Check the working status of each task.

5.1.2.2 Qualification judgment

In the case of a single test, each communication task of the system should work normally. Under multiple test conditions, the system's wired tasks and no Line tasks and monitoring tasks should also be able to work normally at the same time.

5.1.3.1 Test process

Make sure that the system is operating normally under full-featured capabilities, and the main and standby machines are working normally at the same time.

Turn off the host, can realize seamless switching, stand-by machine runs independently, and there is no flicker on the seat terminal interface.

Turn off the standby machine to achieve seamless switching, the host runs independently, and the seat terminal interface does not flicker.

Restore the active and standby machines at the same time.