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GA

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

GA/T 1091-2019

**Specifications for evaluation of environmental adaptability of
integrated circuits on 13.56 MHz in electronic certificates**

基于13.56MHz的电子证件芯片环境适应性评测规范

(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 replaces GA 1091-2013 "13.56MHz-based electronic document chip environment adaptability evaluation specification", and GA 1091-2013 Compared with the main changes are as follows.

- Amended to a recommended standard.

- The unit that proposed the standard was changed to the Public Security Administration of the Ministry of Public Security (see the preface, the preface of the 2013 edition);

- Modified the normative reference document ISO/IEC 10373-6.:2016 (see Chapter 2, Chapter 2 of the 2013 edition);

- Modified the normative reference document ISO/IEC 14443-1.:2016 (see Chapter 2, Chapter 2 of the 2013 edition);

- The normative reference document ISO/IEC 14443-2.:2016 has been modified (see Chapter 2, Chapter 2 of the 2013 edition).

Please note that some elements of this document may involve patents. The issuer of this document is not responsible for identifying these patents.

This standard is proposed by the Public Security Administration of the Ministry of Public Security.

This standard is under the jurisdiction of the Computer and Information Processing Standardization Technical Committee of the Ministry of Public Security.

This standard was drafted. First Research Institute of the Ministry of Public Security.

1 Scope

This standard specifies the test items based on the compatibility of electrical, climatic, mechanical environment, and card-making processes for electronic certificate chips at 13.56MHz, Test methods and environmental adaptability evaluation rules.

This standard applies to the evaluation of electronic certificate chips using 13.56MHz RF operating mode.

2 Normative references

The following documents are essential for the application of this document. For dated references, only the dated version applies to this document.

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

document.

GB/T 2423.5-1995 Environmental test for electric and electronic products-Part 2. Test methods Test Ea and guidelines. Impact GB/T 2829-2002 Sampling procedures and tables for periodic inspection and counting (applicable to inspection of process stability) GB/T 17554.1-2006 Identification card test methods-Part 1. General characteristics test GJB 150.4A-2009 Environmental test methods for military equipment laboratories Part 4. Low temperature test GJB 548B-2005 Microelectronic device test methods and procedures ISO/IEC 10373-6.:2016 Identification card test methods-Part 6. Identification cards-Test methods-Part 6. Proximity cards) ISO/IEC 14443-1.:2016 Identification cards. Contactless integrated circuit cards. Proximity cards. Part 1. Physical characteristics cards-Contactless integrated circuit cards-Proximity cards -Part 1. Physical characteristics) ISO/IEC 14443-2.:2016 Identification cards. Contactless integrated circuit cards. Proximity cards. Part 2. RF power and signal interfaces (Identification cards-Contactless integrated circuit cards-Proximity cards -Part 2. Radio frequency power and signal interface)

3 Terms and definitions

The following terms and definitions apply to this document.

Sample

A component formed by encapsulating a chip with a specified material and process.

Sample card

A plastic card containing a sample and antenna coil and capable of communicating with an RF card reader.

TypeA chip TypeA integrated circuit the chip works with the Type A communication protocol defined in ISO/IEC 14443-2.:2016.

TypeB chip TypeB integrated circuit A chip that works with the Type B communication protocol defined in ISO/IEC 14443-2.:2016.

4 Symbols and acronyms

The following symbols and abbreviations apply to this document.

HvA. short side displacement of the card body.

HvB. Long side displacement of the card body.

. The twist angle of the card body.

RF. Radio Frequency.

5 General requirements

The general requirements are.

- a) Select the test items specified in this document according to the evaluation goals;
- b) The sample provider shall provide the transmission protocol for sample communication to the evaluation agency;
- c) The sample or sample card read and write function test described in this document means. first write data to the sample or sample card, then read the data, If the read data is consistent with the written data, the sample or sample card is read and written normally; otherwise, the sample or sample card is read and written.

Dysfunction

- d) When testing the sample, first connect the sample to the matching antenna coil, and then use the RF card reader to test;

When testing the sample card, directly use the RF card reader for testing;

- e) The failure of reading or writing test of the sample or sample card shall not include the failure of the antenna and the card body of the sample card.

6.1.1 Purpose

Determine the effect of the alternating magnetic field on the reading and writing functions of the sample.

6.1.2 Test requirements

The test requirements are.

- a) Encapsulate the sample into a sample card;
- b) frequency. 13.56 MHz;
- c) Magnetic field strength. average 10 A/m (rms), maximum 12 A/m (rms);
- d) Exposure time. 30 s.

6.1.3 Test method

After reading and writing according to the requirements of 4.4 in ISO/IEC 14443-1.:2016, the sample card is read and written.