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

**GB/T 44937.5-2025**

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**Integrated circuits - Measurement of electromagnetic emissions  
- Part 5: Measurement of conducted emissions - Workbench  
Faraday cage method**

集成电路 电磁发射测量 第5部分：传导发射测量 工作台法拉第笼法

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## Table of Contents

|                                                               |    |
|---------------------------------------------------------------|----|
| 1.Scope .....                                                 | 1  |
| 2 Normative References .....                                  | 1  |
| 3.Terms and Definitions .....                                 | 1  |
| 4 General Rules .....                                         | 1  |
| 4.1 Measurement Principle .....                               | 1  |
| 4.2 Layout Principle .....                                    | 2  |
| 4.3 Workbench Method .....                                    | 2  |
| 5.Test conditions .....                                       | 2  |
| 6.Test equipment .....                                        | 2  |
| 7.Test Setup .....                                            | 3  |
| 7.1 General Rules .....                                       | 3  |
| 7.2 Shielding and Ambient Field Strength .....                | 3  |
| 7.3 Workbench Layout .....                                    | 3  |
| 7.4 PCB Connections .....                                     | 3  |
| 7.5 Common Mode Point .....                                   | 4  |
| 7.6 Launch Limits .....                                       | 4  |
| 7.7 Faraday Cage for Workbench - Implementation Details ..... | 4  |
| 7.8 Test PCB .....                                            | 5  |
| 8.Experimental Procedure .....                                | 5  |
| 9 Test Report .....                                           | 5  |
| 9.1 General Rules .....                                       | 5  |
| 9.2 Launch Criteria .....                                     | 5  |
| 14 Reference .....                                            | 15 |

## Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1.Structure and Drafting Rules of Standardization Documents". Drafting. This document is Part 5 of GB/T 44937 "Measurement of Electromagnetic Emissions of Integrated Circuits". GB/T 44937 has the following publications. part.

1.General Conditions and Definitions;

2. Radiation Emission Measurement TEM Cell and Broadband TEM Cell Method;

3. Surface Scanning Method for Radiation Emission Measurement;

4. Conducted emission measurement using the 10Ω/150Ω direct coupling method;

5. Conducted Emission Measurement Stand Faraday Cage Method;

6. Conducted Emission Measurement Magnetic Field Probe Method;

8. Radiated Emission Measurement IC Stripline Method Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed by the Ministry of Industry and Information Technology of the People's Republic of China. This document is under the jurisdiction of the National Integrated Circuit Standardization Technical Committee (SAC/TC599). This document was drafted by: China Electronics Technology Standardization Institute, Beijing Zhixin Microelectronics Technology Co., Ltd., Sun Yat-sen University, and Tianjin Advanced Technology Co., Ltd. Technology Research Institute, Xiamen Hainoda Scientific Instruments Co., Ltd., Qingdao Product Quality Inspection and Research Institute, Beijing National New Energy Vehicle Technology Innovation Center New Center Co., Ltd., Beijing University of Posts and Telecommunications, Beijing Institute of Radio Metrology and Testing, Jiangsu Provincial Institute of Metrology (Jiangsu Provincial Energy Metrology) Data centers), China Academy of Information and Communications Technology, Bodin Shihua (Beijing) Technology Co., Ltd., China Automotive Engineering Research Institute Co., Ltd. China National Accreditation Service for Conformity Assessment (CNAS), Changsha Xinlianxin Smart Systems Co., Ltd., China Household Electric Appliance Research Institute (Beijing) Testing and Certification Co., Ltd. Hebei University of Technology, Beijing Fuce Electronic Instruments Co., Ltd., and Suzhou Philipp Electromagnetic Technology Co., Ltd. The main drafters of this document are. Cui Qiang, Li Zhipeng, Fang Wenxiao, Wu Jianfei, Wang Peidong, Fu Jun, Zhao Yang, Zhu Sai, Liang Jiming, Lei Lili, and Shi Dan. Sun Meiqiu, Liu Xingxun, Zhou Lei, Wang Ziren, Liu Baodian, Tan Zeqiang, Liu Jia, Li Yanpeng, Xu Xin, Wang Mengjun, Lan Defu, Cui Peibin.

To standardize electromagnetic emission measurement for integrated circuits, and to provide different electromagnetic emission measurement methods for integrated circuit manufacturers and testing institutions. GB/T 44937, "Measurement of Electromagnetic Emissions of Integrated Circuits," specifies the general conditions, definitions, and different measurement methods for electromagnetic emission measurements of integrated circuits. The experimental procedures and requirements for quantitative methods are proposed to consist of nine parts.

1. General Conditions and Definitions. The purpose is to define the general conditions and definitions for electromagnetic emission measurements of integrated circuits.

1.General Conditions and Definitions of Near-Field Scanning Data Exchange Format. The purpose is to specify the near-field scanning data exchange format. Format.

2.Radiation Emission Measurement using TEM Cells and Broadband TEM Cells. The aim is to define the TEM cell and broadband TEM cell methods. Test procedures and requirements for the TEM chamber method.

3.Surface Scanning Method for Radiation Emission Measurement. The purpose is to specify the test procedures and requirements for the surface scanning method.

## 1 Scope

GB/T 44937.5-2025 is the Chinese national standard covering measuring what a chip puts back onto its power and signal pins - done inside a small Faraday cage on the bench, which isolates the device from everything else and makes the result about the silicon rather than about the board. Part 5 of the series, first edition, with GB/T 46894-2025 on automotive ICs. It was issued on 31 December 2025 and has been in force since 1 July 2026, as a first edition. The document is under the responsibility of the Ministry of Industry and Information Technology. This page is published from the official record of the 2025 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document describes the conductive properties of integrated circuits (ICs) mounted on a standardized test board or its final printed circuit board (PCB). Faraday cage method for magnetic emission measurement stage. This document applies to ICs that can perform "standalone" functions and are used on small physical test boards.

## 2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 2900.74 Electrical Engineering Terminology - Circuit Theory

GB/T 4365 Electromagnetic Compatibility (Electrical Engineering Terminology)

GB/T 44937.1-2025 Electromagnetic emission measurement of integrated circuits - Part

## 3 Terms and Definitions

The terms and definitions defined in GB/T 2900.74, GB/T 4365 and GB/T 44937.1-2025, as well as the following terms and definitions, apply to this document.

## 4 General Rules

4.1 Measurement Principle The workbench method originates from GB/T 17626.6-2017, as shown in Figure

1. The method described in this document assumes that both the power cable and signal cable... Connected to a test board with cable dimensions not exceeding  $\lambda/2$ , for example, 0.15m for 1GHz. These connecting cables become the primary... Antennas, therefore these "antennas" emit radio frequency signals. Connecting cables should have functions such as power supply, communication, and other signal interfaces, and these cables are typically connected to other cables in the same plane. Why did they take different paths? The antenna (common-mode) impedance of each port is normalized to 150 $\Omega$ . This impedance has different tolerances at different frequency bands, as detailed in Appendix A. The voltage or current across these common-mode impedances is measured to characterize the radio frequency transmission. The direct radiation generated by IC packaging is small and usually negligible compared to the radiation from the cables connected to the IC in practical applications. For IC packaging, GB/T 44937.2 can be used as an additional measurement method. Because power supply current and signal current flow through the PCB reference layer, therefore... This also allows for the establishment of indirect coupling between voltage and current through the IC package and the PCB. Based on the experimental principle, the benchtop method can demonstrate the test board layout, IC power supply decoupling, and the radio frequency performance of the discrete components used (capacitors, inductors). The impact of (RF) performance and the measures taken (e.g., on-chip decoupling, slope-controlled output buffers, etc.) on the IC. Different tested ICs Similar operating modes (via software or function) should be used for comparison. Furthermore, different operating modes of an IC can also be compared. Comparison, that is, determining the contribution of each block within the IC.