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

GB/T 44937.4-2024

**Integrated circuits - Measurement of electromagnetic emissions
- Part 4: Measurement of conducted emissions - 1??/150??
direct coupling method
(English Translation)**

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is part 4 of GB/T 44937 "Measurement of electromagnetic emissions of integrated circuits". GB/T 44937 has been published as follows part.

--- Part 4: Conducted emission measurement 1ohm/150ohm direct coupling method.

This document is equivalent to IEC 61967-4:2021 "Measurement of electromagnetic emissions from integrated circuits - Part 4: Conducted emission measurement 1ohm/150ohm Direct coupling method.

Introduction

To standardize the electromagnetic emission measurement of integrated circuits and provide different electromagnetic emission measurement methods for integrated circuit manufacturers and testing agencies.

GB/T 44937 "Measurement of electromagnetic emission of integrated circuits" specifies the general conditions, definitions and different measurement methods for electromagnetic emission measurement of integrated circuits.

The test procedures and test requirements of the measurement method are planned to

consist of 9 parts.

--- Part 1: General conditions and definitions. The purpose is to specify the general conditions and definitions for the measurement of electromagnetic emissions from integrated circuits.

--- Part 1-1. General conditions and definitions for near field scan data exchange format. The purpose is to specify near field scan data exchange format.

Format.

--- Part 2: TEM cell and broadband TEM cell method for radiated emission measurements. The purpose is to specify the TEM cell and broadband Test procedures and test requirements for TEM chamber method.

--- Part 3: Radiated emission measurement surface scanning method. The purpose is to specify the test procedures and test requirements of the surface scanning method.

--- Part 4: Conducted emission measurement 1ohm/150ohm direct coupling method. The purpose is to specify the 1ohm/150ohm direct coupling method Test procedures and test requirements.

--- Part 4-1. Guidelines for the application of the 1ohm/150ohm direct coupling method for conducted emission measurements.

Guidance on the application of coupling method.

--- Part 5: Conducted emission measurement bench Faraday cage method. The purpose is to specify the test procedure of the bench Faraday cage method and test requirements.

--- Part 6: Conducted emission measurement magnetic field probe method. The purpose is to specify the test procedures and test requirements of the magnetic field probe method.

--- Part 8: Radiated emission measurement IC stripline method. The purpose is to specify the test procedures and test requirements for the IC stripline method.

Integrated Circuit Electromagnetic Emission Measurement Part 4: Conducted emission measurements 1ohm/150ohm direct coupling method

1 Scope

This document specifies the measurement of radio frequency (RF) current directly using a 1ohm resistive probe and a 150ohm coupling network to measure RF voltage to measure integrated these methods ensure that EME measurements are highly repeatable and correlated.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document.

IEC 61000-4-6 Electromagnetic compatibility (EMC) Part 4-6. Testing and measurement techniques Immunity to conducted disturbances induced by radio-frequency fields Note.
GB/T 17626.6-2017 Electromagnetic compatibility test and measurement technology Radio frequency field induced conducted disturbance immunity (IEC 61000-4-6:2013, IDT) IEC 61967-1 Integrated circuits-Meas-

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in IEC 61967-1 apply.

4.1 Basic principles of measurement

The maximum acceptable emission level produced by an IC depends on the maximum emission level allowed by the electronic system that contains the IC and the immunity level of other parts within the subsystem (the so-called internal electromagnetic compatibility (EMC)). This emission level value is determined by the system and the specific application.

In order to characterize the IC, i.e. to provide a typical EME data sheet, a simple measurement procedure and the test arrangement is non-resonant to ensure a high degree of repeatability. The basic principle of the test procedure is described below.

IC emissions are caused by sufficiently rapid changes in voltage and current within the IC. These changes occur both internally and externally in the IC.

The conducted EME generated by the RF current mainly forms a conductive path on the printed circuit board (PCB) and cables through the IC pins.

These loops are considered as transmitting loop antennas. Compared with the size of these loops, the loops in the IC internal structure are small.

The amplitude, phase and spectral components of the RF current generated by the IC are different. Any RF current has a return path to the IC.

All loops return to the IC primarily through the ground and power supply lines. Figure 1 shows two loops formed with the ground.

Loop 1 represents the power supply circuit of the IC, and loop 2 represents the signal