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

GB/T 31723.406-2026

Replacing GB/T 31723.406-2015

**Metallic cable and other passive components test methods -
Part 4-6: Electromagnetic compatibility (EMC) - Surface transfer
impedance - Line injection method**

金属电缆和其他无源元件试验方法 第4-6部分：电磁兼容 表面转移阻抗 线注入法
(English Translation)

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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 Parts 4-6 of GB/T 31723. GB/T 31723 has already published the following parts.

---Parts 4-5. Electromagnetic Compatibility Coupling or Shielding Attenuation Absorption Clamp Method;

---Parts 4-6. Electromagnetic Compatibility Surface Transfer Impedance Line Injection Method;

---Part 4-11. Electromagnetic Compatibility Patch Cords, Coaxial Cable Assemblies, Connectors, and Cable Coupling Attenuation or Shielding Attenuation Absorption Pliers;

---Part 4-12. Coupling attenuation or shielding attenuation absorption clamp method for electromagnetic compatibility connection hardware;

---Part 4-13. Coupling Attenuation Absorption Clamp Method for Electromagnetic Compatibility Links and Channels (Laboratory Conditions);

---Part 4-14. Coupling attenuation absorption clamp method for electromagnetic compatibility cable assemblies (field conditions).

This document replaces GB/T 31723.406-2015 "Metallic Communication Cables - Test Methods - Part 4-6. Electromagnetic Compatibility - Surface Transfer".

Compared with GB/T 31723.406-2015, the main technical changes in "Impedance Line Injection Method" are as follows, except for structural adjustments and editorial modifications.

- Added terms and definitions for "internal circuit," "external circuit," and "transfer impedance" (see 3.1~3.3);
- The physical context information has been changed (see Chapter 4, 4.2 of the 2015 edition);
- The device has been changed (see 5.2, version 5.2 of 2015);
- The impedance of the internal circuitry has been changed (see 5.4, 5.4.2 in the 2015 edition);
- The matching circuits for Z₂ 50ohm have been removed (see sections 5.4.3 and 5.4.4 in the 2015 edition);
- The overview of test sample preparation and sample length has been revised (see 6.1 and 6.2, 4.3 and 6.1 in the 2015 edition);
- The formula has been modified (see 7.3~7.5, 2015 version 7.3~7.5);
- The representation of test results has been changed (see 8.1, 2015 edition of 8.1);
- Added normalized shielding attenuation (see 8.2).

This document is equivalent to IEC 62153-4-6:2017 "Metallic cables and other passive components - Test methods - Part 4-6.Electromagnetic compatibility".

Surface transfer impedance line injection method.

The following minimal editorial changes have been made to this document.

- Correct "Lc" to "Lc" in Figures 1, 10 and 11 to be consistent with the index number description;
- In section 6.1, "see h1 and h2 in Figure 7" should be corrected to "see h1 and h2 in Figure 7" to maintain consistency with Figure 7;
- Correct "Ugenerator/Ureceiver" in 6.2 to "Ugen/Urec" to be consistent with formula (6).

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 Technical Committee on Standardization of High-Frequency Cables and Connectors for Electronic Equipment (SAC/TC190).

Introduction

To standardize electromagnetic compatibility measurements of metal communication cables, patch cords, and coaxial cable assemblies, and to provide a basis for the measurement of electromagnetic compatibility of metal communication cables, patch cords, and coaxial cables.

Component manufacturers and testing organizations offer various electromagnetic compatibility (EMC) measurement methods. GB/T 31723 specifies the EMC measurement methods for metallic communication cables.

Definition of measurement, limits, and test procedures and requirements for different measurement methods.

GB/T 31723 is proposed to consist of the following parts.

---Part 4-0.Recommended limits for the relationship between electromagnetic compatibility surface transfer impedance and shielding attenuation. The aim is to establish...

This relates to the relationship and recommended limits between surface transfer impedance and shielding attenuation in communication cables.

---Part 4-1.Introduction to Electromagnetic Compatibility Shielding Measurement. The purpose is to establish a measurement and testing method for the electromagnetic shielding of metallic communication cables.

General specifications for site, equipment, procedures and data processing.

---Part 4-2.Electromagnetic Compatibility Shielding and Coupling Attenuation Injection Clamp Method. The aim is to establish the shielding attenuation of metallic communication cables.

And an injection clamp test method for dynamic coupling attenuation of balanced shielded or unshielded data cables.

---Part 4-3.Electromagnetic Compatibility Surface Transfer Impedance Triaxial Method. The aim is to establish the surface transfer impedance of metallic communication cables.

A method for testing the resistance of three coaxial axes.

---Part 4-4.Electromagnetic Compatibility Shielding Attenuation Test Method for Shielding Attenuation α_S at Frequencies 3GHz and Above (Triaxial Method).

The key is to establish a three-coaxial test method for shield attenuation of metal communication cables.

---Parts 4-5.Electromagnetic Compatibility Coupling or Shielding Attenuation Absorption Clamp Method. The purpose is to establish the coupling or shielding of metallic communication cables.

Absorption clamp test method for masking attenuation.

---Parts 4-6.Electromagnetic Compatibility Surface Transfer Impedance Line Injection Method. The purpose is to establish the surface transfer impedance of metallic communication cables.

Anti-line injection test method.

---Parts 4-7.Test Procedures for Transfer Impedance ZT and Shielding Attenuation α_S or Coupling Attenuation α_C of Electromagnetic Compatibility Connectors and Components Method 3.Coaxial Tube-in-Tube Test. The purpose is to establish the tube-in-tube test for impedance transfer, coupling, or shielding attenuation in metallic communication cables.

method.

---Parts 4-8.Electromagnetic Compatibility Capacitive Coupling Admittance. The purpose is to establish the capacitive coupling admittance of metallic cables and other passive components.

The testing method for nano.

---Parts 4-9.Coupling Attenuation Triaxial Method for Electromagnetic Compatibility Shielded Balanced Cables. The aim is to establish the coupling attenuation method for shielded balanced cables.

A three-coaxial test method for coupling attenuation.

---Part 4-10.Electromagnetic Compatibility Feedthrough and Electromagnetic Pad Transfer Impedance and Shielding Attenuation Dual-Coaxial Method. The aim is to establish...

A dual coaxial test method for the transfer impedance and shielding attenuation of feedthrough devices and electromagnetic pads.

---Part 4-11.Electromagnetic Compatibility Patch Cords, Coaxial Cable Assemblies, Connector Cables, Coupling Attenuation or Shielding Attenuation Absorption Clamps the purpose of this method is to establish the absorption clamp test for cable coupling attenuation or shielding attenuation in patch cords, coaxial cable assemblies, and connectors.

method.

---Part 4-12.Coupling attenuation or shielding attenuation absorption clamp method for electromagnetic compatibility (EMC) connection hardware. The purpose is to establish the connection hardware...

Absorption clamp test method for component coupling attenuation or shielding attenuation.

---Part 4-13.Coupling Attenuation Absorption Clamp Method for Electromagnetic