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Coaxial Communication Cables
– Part 1-101: Electrical Test Methods
– Test for Conductor D.C. Resistance of Cable
(IEC 61196-1-101:2005, IDT)

同轴通信电缆 第 1-101 部分：电气试验方法 导体直流电阻试验

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Foreword

GB/T 17737 *Coaxial Communication Cables* has been or plans to issue the following parts:

- Part 1: Generic Specification – General, Definitions, Requirements and Test Methods;
- Part 1-100: Electrical Test Methods – General Requirements;
- Part 1-101: Electrical Test Methods – Test for Conductor D.C. Resistance Cable;
- Part 1-102: Electrical Test Methods – Test for Insulation Resistance of Cable Dielectric;
- Part 1-103: Electrical Test Methods – Test for Capacitance of Cable;
- Part 1-104: Electrical Test Methods – Test for Capacitance Stability of Cable;
- Part 1-105: Electrical Test Methods – Test for Withstand Voltage of Cable Dielectric;
- Part 1-106: Electrical Test Methods – Test for Withstand Voltage of Cable Sheath;
- Part 1-107: Electrical Test Methods – Test for Cable Microphony Charge Level (Mechanical Induced Noise);
- Part 1-108: Electrical Test Methods – Test for Characteristics Impedance, Phase and Group Delay, Electrical Length and Propagation Velocity;
- Part 1-110: Electrical Test Methods – Continuity;
- Part 1-111: Electrical Test Methods – Phase Constant Stability Test;
- Part 1-112: Electrical Test Methods – Test for Return Loss (Uniformity of Impedance);
- Part 1-113: Electrical Test Methods – Attenuation Constant Test;
- Part 1-114: Electrical Test Methods – Inductance;
- Part 1-115: Electrical Test Methods – Test for Regularity of Impedance (Pulse/Step Function Return Loss);
- Part 1-116: Electrical Test Methods – Measuring Characteristic Impedance by TDR Method;

Coaxial Communication Cables

– Part 1-101: Electrical Test Methods

– Test for Conductor D.C. Resistance of Cable

1 Scope

This Part of GB/T 17737 is applicable to the coaxial communication cables. It specifies the test method for determining the D.C. resistance of a coaxial cable conductor.

2 Normative References

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this document.

IEC 61196-1 Coaxial Communication Cables – Part 1: Generic Specification – General, Definitions and Requirements

3 Terms and Definitions

The terms and definitions stipulated in IEC 61169-1 are applicable to this document.

4 Test Methods

4.1 Test equipment

The DC resistance test shall use the equipment with an accuracy of $\pm 0.5\%$ of the measured value. The bridge circuit or current source and voltmeter shall be used. According to the magnitude of the DC resistance value, the bridge circuit can adopt a two-terminal or four-terminal method. The test current density of the conductor shall not exceed $1\text{A}/\text{mm}^2$, so that avoid the significant temperature rise during the test.

4.2 Specimen

The length of the cable under test (CUT) shall be no less than 100m, its error shall be

The test results shall be normalized to a value at the base length of N .

$$R = \frac{R_m}{L} N \quad \dots\dots\dots (4)$$

Where:

R – DC resistance of the reference length cable at test temperature, in Ω/N ;

R_m – the actually-measured resistance value of the cable under test, in Ω ;

L – sample length, in m;

N – reference length, in m.

5.3 Temperature correction

The measured value shall be corrected to a value at a standard temperature of 20°C. The DC resistance value at the standard temperature shall be actually-measured value (R_{CC} , R_{OC}) multiplied by the factor k .

$$k = \frac{1}{1 + C_T(T - 20\text{ }^{\circ}\text{C})} \quad \dots\dots\dots (5)$$

Where:

T – test temperature of the cable under test, in $^{\circ}\text{C}$;

C_T – temperature coefficient on resistivity of conductor material.

Typical value of ($1/^{\circ}\text{C}$):

Copper (annealed state)	0.00385
Copper (hard-drawn state)	0.00393
Aluminum	0.00396
Copper clad aluminum	0.00413
Copper clad steel	0.00378

For other conductor materials, the Factor k or C_T shall be specified in the sub-specification or detailed specification.

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