



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

GB/T 17737.101-2018

**Coaxial communication cables -- Part 1-101: Electrical test
methods -- Test for conductor d.c. resistance of cable**

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Foreword

GB/T 17737 "Coax Cable" has been or is planned to release the following parts.

--- Part 1. General rules, definitions and requirements;

---Part 1-100. General requirements for electrical test methods;

--- Part 1-101. Electrical test method Conductor DC resistance test;

--- Part 1-102. Electrical test method cable dielectric insulation resistance test;

--- Part 1-1-3. Electrical test method for cable capacitance test;

--- Part 1-1-4. Electrical test method for the capacitance stability test of cables;

--- Part 1-105. Electrical test method for withstand voltage test of cable media;

---Parts 1-106. Electrical test method - Withstand voltage test for cable sheathing;

--- Part 1-107. Electrical test method cable trembling charge level (mechanical induction noise) test;

--- Part 1-108. Electrical test methods for characteristic impedance, phase delay, group delay, electrical length and propagation speed test;

- Part 1-110. Electrical test method continuity;
- Part 1-111. Stability test of phase constants of electrical test methods;
- Part 1-112. Electrical test method return loss (impedance consistency) test;
- Part 1-113. Electrical test method attenuation constant test;
- Part 1-114. Electrical test method inductance;
- Part 1-115. Electrical test method impedance uniformity (pulse/step function return loss) test;
- Part 1-161. Electrical test method TDR method to measure characteristic impedance;
- Part 1-119. Electrical test methods - RF rated power;
- Part 1-122. Electrical test method Crosstalk test between coaxial cables;

This part is part 1-101 of GB/T 17737.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This part uses the translation method equivalent to IEC 61196-1-101.2005 "Coaxial Communication Cables Part 1-101. Electrical Test Side

French conductor DC resistance test.

The documents of our country that have a consistent correspondence with the international documents referenced in this part are as follows.

Coaxial communication cables - Part 1 . General rules, definitions and requirements (IEC 61196-1.

2005, IDT).

This section has made the following editorial changes.

- For the convenience of use, give the formula number.

1 Scope

This part of GB/T 17737 applies to coaxial communication cables. It specifies the test method for determining the DC resistance of a coaxial cable conductor.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

Coaxial communication cables - Part 1. General specification, definitions and requirements
(Coaxial communication

cables-Part 1. Generic specification-General, definitions and requirements)

3 Terms and definitions

The terms and definitions defined in IEC 61196-1 apply to this document.

4.1 Test equipment

The DC resistance test shall use equipment with an accuracy of $\pm 0.5\%$ of the measured value. Bridge circuits or current sources and voltmeters should be used.

The bridge circuit can adopt a two-terminal or four-terminal method according to the magnitude of the DC resistance value. The test current density of the conductor should not exceed 1A/mm^2 to

Avoid causing a significant increase in temperature during the test.

4.2 Sample

The length of the cable under test (CUT) should be no less than 100m and the error should be no more than 1%. If the length of the cable under test is less than 100m, it should be tested.

Indicated in the test report. Both ends of the cable to be tested shall be prepared so that the current in the test can flow through all the components in the circuit under test and contact with electricity.

The effect of the resistance on the results is negligible. The tested cable should be pretreated in a normal temperature environment of $15^\circ\text{C} \sim 35^\circ\text{C}$ for a long enough time to make the sample temperature

Stable.

4.3 Test procedure

Measure the DC resistance between the connected leads when the bridge is shorted (the circuit itself is connected) and record this value as R_L .

Ensure that the end of one end of the bridge is well connected to the inner conductor at one end of the cable, and that the other end of the bridge is directly connected to the other end of the cable.

Inner conductor. The DC resistance at this time was measured and recorded as R_1 .

Take the same steps, connect one end of the bridge to the outer conductor at one end of

the cable, and connect the other end directly to the outer conductor at the other end of the cable.

Measure the DC resistance and record it as R2.

The current density flowing through the conductor must not exceed 1 A/mm² to avoid causing a significant increase in temperature during the test.

The ambient temperature should be recorded.

5.1 Calculation of loop resistance

$$R_{CC}=R_1-R_L \quad (1)$$

$$R_{OC}=R_2-R_L \quad (2)$$

$$R_{LOOP}=R_{CC} R_{OC} \quad (3)$$

In the formula.

R_{CC} --- DC resistance of the inner conductor in ohms (ohm);

R_{OC} --- DC resistance of the outer conductor in ohms (ohm);

R_{LOOP}---circuit DC resistance in ohms (ohm);

R_L --- DC resistance between leads, in ohms (ohm).

5.2 Normalization

The test results are normalized to a value at the base length N.

$$R=$$

$$R_m$$

$$L/N$$

$$(4)$$

In the formula.

R --- DC resistance of the reference length cable at test temperature, in ohms per reference length (ohm/N);

R_m---the measured resistance value of the tested cable, the unit is ohm (ohm);

L --- sample length in meters (m);

N --- reference length in meters (m).

5.3 Temperature correction