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

GB/T 17737.112-2018

**Coaxial communication cables -- Part 1-112: Electrical test
methods -- Test for return loss (uniformity of impedance)**

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Foreword

GB/T 17737 "Coaxial Communication Cable" has or plans to issue the following parts.

- Part 1. General rules, definitions and requirements;
- Part 1-100. General requirements for electrical test methods;
- Part 1-101 . Electrical test methods Conductor direct current resistance test ;
- Part 1-102 . Electrical test methods ; Insulation resistance test of dielectrics for cables ;
- Part 1-103 . Electrical test methods Capacitance test of cables ;
- Part 1-104 . Electrical test methods ; Capacitance stability test of cables ;
- Part 1-105. Electrical test methods for withstand voltage test of cable dielectrics;
- Part 1-101 . Electrical test methods Voltage withstand test of cable sheathing ;
- Part 1-107 . Electrical test methods Vibrating cable charge level (mechanically induced noise) test;
- Part 1-108. Electrical test methods Characteristic impedance, phase delay, group delay, electrical length and propagation speed test;
- Part 1-110 . Electrical test method continuity ;
- Part 1-111 . Electrical test methods Stability test for phase constants ;
- Part 1-112. Electrical test methods Return Loss (Impedance Consistency) test;
- Part 1-113 . Electrical test method attenuation constant test ;
- Part 1-114 . Electrical test methods Inductors ;
- Part 1-115. Electrical test method impedance uniformity (pulse/step function return loss) test;

--- Part 1-116 . Electrical test methods TDR method measuring characteristic impedance ;

--- Part 1-119 . Electrical test methods RF power rating ;

--- Part 1-122. Electrical test methods - Cross-talk test between coaxial cables;

This part is part 1-112 of GB/T 17737.

This section was drafted in accordance with the rules given in GB/T 1.1-2009.

This section uses the translation method equivalent to the use of IEC 61196-1-112.2006 "coaxial communication cable Part 1-112. Electrical test methods

Return loss (impedance consistency test).

The Chinese documents that have a consistent correspondence with the normatively quoted international documents in this section are as follows.

---GB/T 17737.1-2013 "Coaxial telecommunication cable Part 1. General specification general rules, definitions and requirements" (IEC 61196-1.

2005, IDT).

This section made the following editorial changes.

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

1 Scope

This part of GB/T 17737 applies to coaxial communication cables. It specifies test methods for determining return loss (impedance consistency).

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 version (including all amendments) applies to this document.

IEC 61196-1 Coaxial Communication Cables Part 1. Generic Specification General, Definitions and Requirements (Coaxialcommunicationca-

bles-Part 1.GenericSpecification-General,definitionsandrequirements)

3 Terms and definitions

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

4 Principle

Return loss is used to quantitatively determine the amount of reflected signal on the coaxial cable. Return loss is a combination of the following two factors

The resulting reflection effect. deviates from the nominal impedance (eg 50ohm or 75ohm) and structural effects of the cable being tested. When the primary concern is system performance,

Specifies return loss.

When the network analyzer and S-parameter unit are calibrated relative to the reference impedance, the return loss is.

$$RL = -20 \lg |S_{11}| \quad (1)$$

$$S_{11} =$$

$$\frac{P_r}{P_i}$$

$$P_i$$

$$(2)$$

In the formula.

P_r ---reflected power;

P_i ---Input power.

When the impedance is specified, the return loss is given by.

$$RL = -20 \lg \left| \frac{Z_T - Z_R}{Z_T + Z_R} \right|$$

$$Z_T - Z_R$$

$$Z_T + Z_R$$

$$(3)$$

In the formula.

RL --- Return loss in decibels (dB);

Z_T --- The measured complex impedance is measured in ohms (ohms) by the termination of the cable at the end of the reference impedance Z_R ;

Z_R --- reference impedance (50ohm, 75ohm, or other applicable impedance) in ohms (ohm).