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

GB/T 17737.108-2018

**Coaxial communication cables -- Part 1-108: Electrical test
methods -- Test for characteristic impedance, phase and group
delay, electrical length and propagation velocity**

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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 1-108 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 61196-1-108.2011 "coaxial communication cable Part 1-108. Electrical test methods

Characteristic impedance, phase delay, group delay, electrical length, and propagation velocity test."

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

---GB/T 17737.103-2018 Coaxial communication cables Part 1-103. Electrical test methods Capacitance test of cables

(IEC 61196-1.2015, IDT).

This section made the following editorial changes.

--- Correct " $\tau_{\text{aug}}(f)$ --- group velocity at frequency f " to " $\tau_{\text{aug}}(f)$ --- group delay at frequency f " (see 6.2);

--- Correct " $\tau_{\text{aup}}(f)$ --- phase velocity at frequency f " to " $\tau_{\text{aup}}(f)$ --- phase delay at frequency f " (see 6.2);

--- Correct the "Distribution parameters R' , L' , G' , and L'' " of the transmission line to "Distribution parameters R' , L' , G' , and C' of the transmission line" (see Appendix A).

1 Scope

This part of GB/T 17737 applies to coaxial communication cables. It specifies the characteristic impedance and phase of the coaxial cable used in the communication network.

Test methods for bit delay, group delay, electrical length, and propagation speed.

Appendix A specifies the procedures for measuring the phase discretization of coaxial cables.

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.

GB/T 17737.1-2013 Coaxial telecommunication cable Part 1. General specifications General, definitions and requirements (IEC 61196-1.2005, IDT)

IEC 61196-1-103 Coaxial communication cables Part 1-103. Electrical test methods Capacitance test of cables (Coaxialcom- municationcables-Part 1-103.Electricaltestmethods-Testforcapacitanceofcable)

3 Terms and definitions

The terms and definitions defined in GB/T 17737.1-2013 apply to this document.

4 parameters

The following parameters can be derived from the phase constant β of the cable.

Group delay.

$T_{\text{aug}} =$

D_{β}

$D_{\omega} \sim$

$\Delta\beta$

$\Delta\omega$

(1)

Phase delay.

$T_{\text{ap}} = \beta\omega$

(2)

transmission speed.

$v =$

T_{ap}

(3)

Relative propagation speed.

$V_r =$

$c =$

T_{aupxc}

L_{mech}

L_e

(4)

Electric length.

$L_e = L_{mech} \times T_{aupxc}$ (5)

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