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OF ITU

# O.9

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SERIES O: SPECIFICATIONS OF MEASURING  
EQUIPMENT

General

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## Measuring arrangements to assess the degree of unbalance about earth

ITU-T Recommendation O.9

(Previously CCITT Recommendation)

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## ITU-T RECOMMENDATION 0.9

### MEASURING ARRANGEMENTS TO ASSESS THE DEGREE OF UNBALANCE ABOUT EARTH

#### Summary

This Recommendation provides procedures to assess the degree of unbalance about earth and defines the applicable measuring arrangements. Seven parameters, which are most relevant in practice, are covered. In addition, some basic requirements concerning the measurement of unbalance are given.

#### Source

ITU-T Recommendation O.9 was revised by ITU-T Study Group 4 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on the 26th of March 1999.

#### Keywords

Common-mode rejection, input longitudinal interference loss, longitudinal conversion loss, longitudinal conversion transfer loss, output signal balance, test bridges, transverse conversion loss, transverse conversion transfer loss, unbalance measuring arrangements

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**Recommendation O.9****MEASURING ARRANGEMENTS TO ASSESS  
THE DEGREE OF UNBALANCE ABOUT EARTH**

*(Geneva, 1972; amended at Malaga-Torremolinos, 1984; Melbourne, 1988;  
revised in 1999)*

**1 Scope**

This Recommendation describes arrangements for measuring the following parameters:

- longitudinal conversion loss;
- transverse conversion loss;
- longitudinal conversion transfer loss;
- transverse conversion transfer loss;
- input longitudinal interference loss;
- common-mode rejection;
- output signal balance.

In practice, the above parameters are the seven most significant unbalance parameters. Limits for these parameters, special considerations for terminating impedances and the measurement frequencies to be used are given in the relevant Recommendation for the item under test.

This Recommendation is in agreement with the principles, the nomenclature and the definitions, addressed in Recommendation G.117 [1], which considers the transmission aspects of unbalance about earth. References are made in the following clauses to the appropriate parts of Recommendation G.117 [1].

In clause 5, guidance is given regarding the construction of a test bridge along with values of the required components.

**2 References**

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; all users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

- [1] ITU-T Recommendation G.117 (1996), *Transmission aspects of unbalance about earth*.
- [2] CCITT Recommendation Q.45 (1984), *Transmission characteristics of an analogue international exchange*.
- [3] ITU-T Recommendation O.133 (1993), *Equipment for measuring the performance of PCM encoders and decoders*.