

EUROPEAN
TELECOMMUNICATION
STANDARD

ETS 300 047-2

August 1992

Source: ETSI TC-TE

Reference: T/TE 04-33

ICS: 33.080

Key words: ISDN, basic access, safety, protection

**Integrated Services Digital Network (ISDN);
Basic access - safety and protection
Part 2: Interface I_a - safety**

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Contents

Foreword.....	5
1 Scope	7
2 Normative references	7
3 Definitions and abbreviations	7
3.1 Definitions	7
3.2 Abbreviations	7
4 Reference configuration	7
5 Safety requirements and tests.....	7
5.1 General	7
5.2 Test conditions.....	8
5.3 Touch current.....	8
5.3.1 Equipment without auxiliary interfaces	8
5.3.2 Equipment with auxiliary interfaces	9
5.4 Separation between interface I_a and user-accessible parts	10
History.....	12

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Terminal Equipment (TE) Technical Committee of the European Telecommunications Standards Institute (ETSI) in collaboration with members of the Business Telecommunications (BT) and Transmission and Multiplexing (TM) Technical Committees.

This ETS aims to meet the urgent requirements of network operators and equipment manufacturers who are designing equipment to operate with the Integrated Services Digital Network (ISDN) basic access interface.

This is the second part of a multipart ETS which comprises the following:

ETS 300 047: "Integrated Services Digital Network (ISDN); Basic access - safety and protection":

ETS 300 047-1 (Part 1): General.

ETS 300 047-2 (Part 2): Interface I_a - safety.

ETS 300 047-3 (Part 3): Interface I_a - protection.

ETS 300 047-4 (Part 4): Interface I_b - safety.

ETS 300 047-5 (Part 5): Interface I_b - protection.

Parts 2 to 5 of this ETS each cover one aspect of a specific equipment interface and are to be used in conjunction with Part 1 [1], which contains references and test circuits that are common to all parts of this ETS.

The corresponding ETS for ISDN primary rate access is ETS 300 046 ("Integrated Services Digital Network (ISDN); Primary rate access - safety and protection, Parts 1 to 5").

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1 Scope

See Clause 1 of ETS 300 047-1 [1].

This part of the ETS covers the safety requirements for interface I_a.

2 Normative references

This ETS incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 41003 [3] and EN 60950 [2] contain Special National Conditions and National A-deviations for some countries. Where these deviations apply to provisions that are referred to in this ETS, they shall apply to equipment complying with this ETS, intended for use in those countries.

- [1] ETS 300 047-1 (1992): "Integrated Services Digital Network (ISDN); Basic access - safety and protection - Part 1: General".
- [2] EN 60950 (1988 - including amendments 1 and 2): "Safety of information technology equipment, including electrically operated business machines".
- [3] EN 41003 (1991): "Particular electrical safety requirements for equipment to be connected to telecommunication networks".

3 Definitions and abbreviations

3.1 Definitions

For the purpose of this part of the ETS, the definitions given in subclause 3.1 of ETS 300 047-1 [1] apply.

However, for the purpose of this part of the ETS, the Equipment Under Test (EUT) is a Terminal Equipment (TE).

3.2 Abbreviations

For the purpose of this part of the ETS the abbreviations given in subclause 3.2 of ETS 300 047-1 [1] apply.

4 Reference configuration

See Clause 4 of ETS 300 047-1 [1].

5 Safety requirements and tests

5.1 General

This Clause contains requirements for aspects of safety associated with connection to the ISDN basic access user-network interface with which the EUT shall comply. The requirements are based on EN 60950 [2] and EN 41003 [3].

Interface I_a shall comply with the requirements for accessible parts of a Safety Extra Low Voltage (SELV) circuit, however, only two methods of separation from excessive voltages are permitted.

These methods are:

- a) double or reinforced insulation according to subclause 2.3.4 of EN 60950 [2], and
- b) basic insulation plus protective earth screen according to subclause 2.3.5 of EN 60950 [2].

Subclauses 4.4.2 and 4.5 of EN 41003 [3] do not apply to interface I_a (however, see subclause 5.4).

The transmit and receive pairs of interface I_a are indicated in the figures by "t" and "r" respectively.

If there are any Telecommunication Network Voltage (TNV) circuits in the EUT they shall comply with EN 41003 [3] in all respects.

5.2 Test conditions

See Clause 5 of ETS 300 047-1 [1].

In the figures of this part of the ETS, the required surge/test generators, coupling networks and terminating networks and the touch current measuring devices are shown in outline. The figure numbers in those outlines refer to the figures in annexes to ETS 300 047-1 [1], as follows:

- Annex C (normative): Coupling networks;
- Annex E (normative): Measuring device for touch current.

5.3 Touch current

5.3.1 Equipment without auxiliary interfaces

Test circuit: figure 1.

Test criterion: the weighted touch current measured across any single interface I_a shall not exceed 0,1 mA.

The switch S shall be operated to find the higher result.

NOTE: The coupling network, figure C.1, is used for functional matching purposes and to avoid a short circuit for d.c. current during this test.

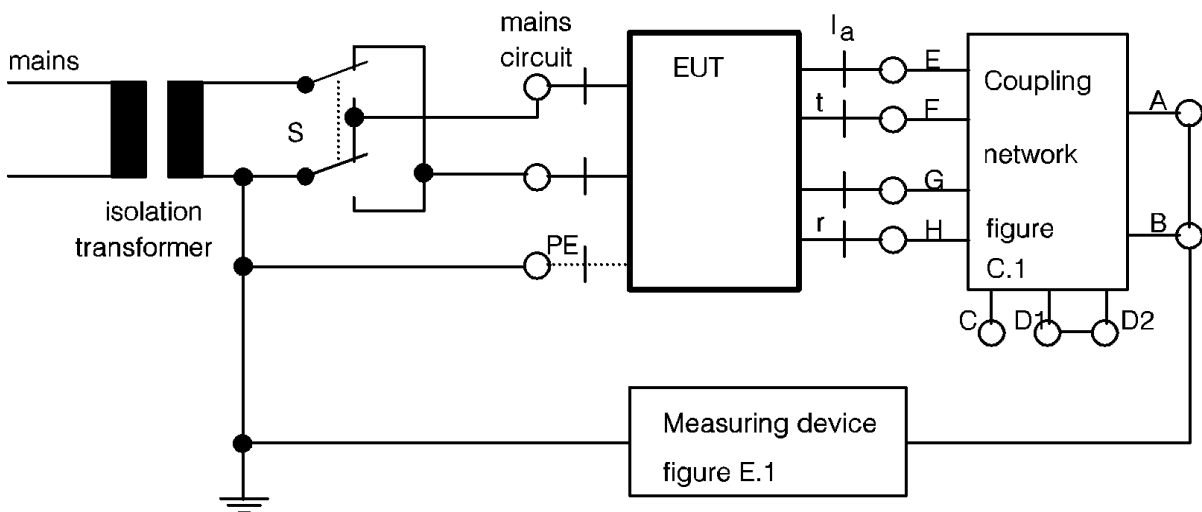


Figure 1: Touch current test circuit for mains powered equipment without auxiliary interfaces

5.3.2 Equipment with auxiliary interfaces

For the purpose of this subclause, any interfaces I_a other than the one on test shall be treated as auxiliary interfaces.

All pins, other than earthed pins, of each individual auxiliary interface shall be connected together in a manner appropriate to that interface, and then connected to the current limiting capacitor. Where it would be inappropriate to connect pins directly to each other, they shall be connected to individual capacitors which are in turn connected together; the total capacitance of such capacitors in parallel shall be the required 3,3 nF.

Test circuit: figure 2 or figure 3 as appropriate.

Test circuit switch S (figure 2 only): operated to find the higher result.

Test criterion: the weighted touch current measured across any single interface I_a shall not exceed 0,1 mA.

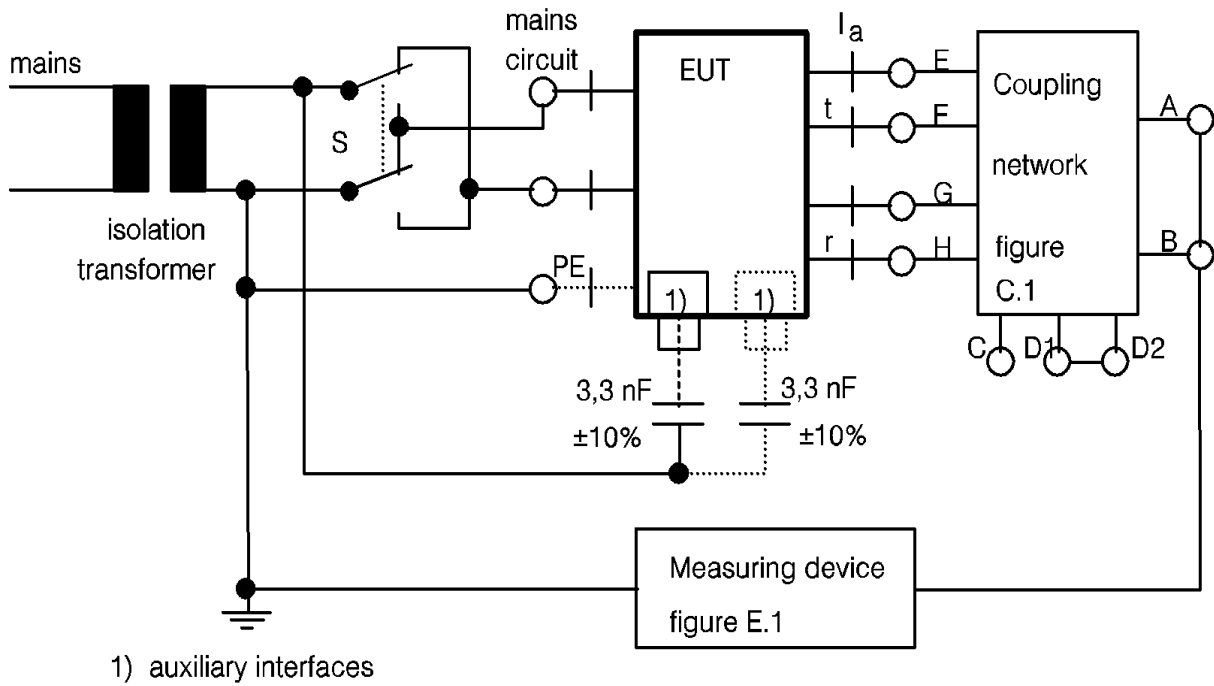
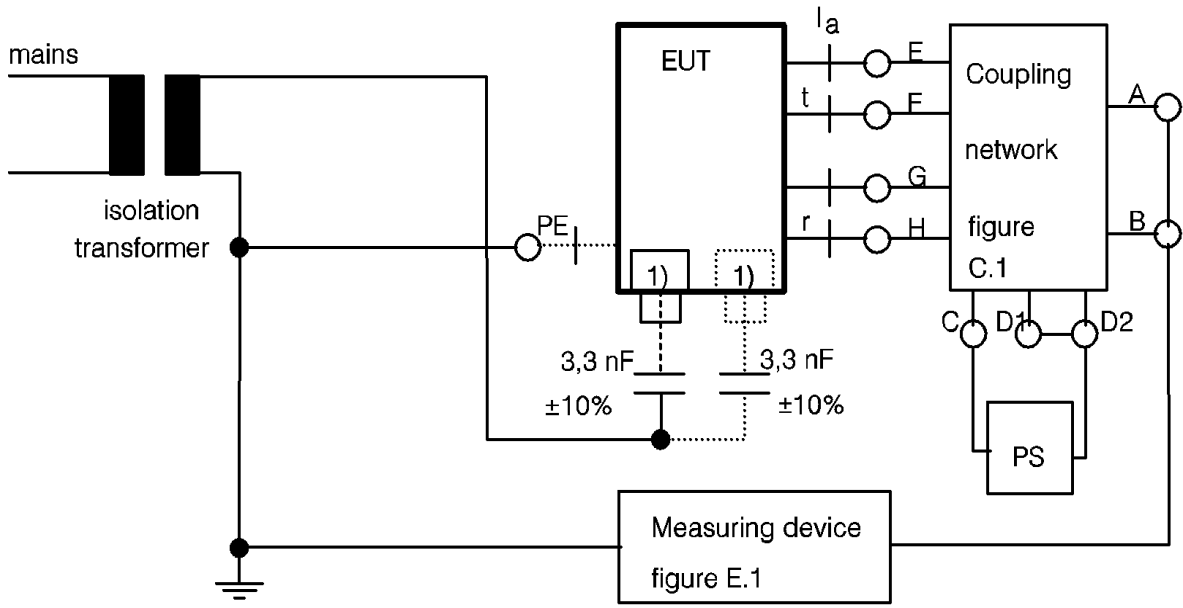


Figure 2: Touch current test circuit for mains powered equipment having auxiliary interfaces



1) auxiliary interfaces

Figure 3: Touch current test circuit for equipment having auxiliary interfaces, not mains powered

5.4 Separation between interface I_a and user-accessible parts

For the purpose of this test, if a protective earth is provided for the EUT, protective earth shall be treated as a user-accessible part. Auxiliary interfaces shall also be treated as if they were user-accessible. The required test for user-accessible parts, is as follows. With regard to auxiliary ports which exceed the limits for SELV circuits but comply with the definition of TNV circuits, the test requirements are defined in subclauses 4.2.1 and 4.2.2 of EN 41003 [3], and the following test does not apply.

Test circuit: figure 5.

Test voltage: $U_0 = 500 \text{ V r.m.s.}$

Test procedure: the test voltage U shall be applied as shown in figure 4.

Compliance criterion: no insulation breakdown shall occur.

Insulation breakdown has occurred when the current that flows as a result of the application of the test voltage rapidly increases in an uncontrolled manner. Corona discharge or a single momentary flashover that is not repeatable is not a breakdown.

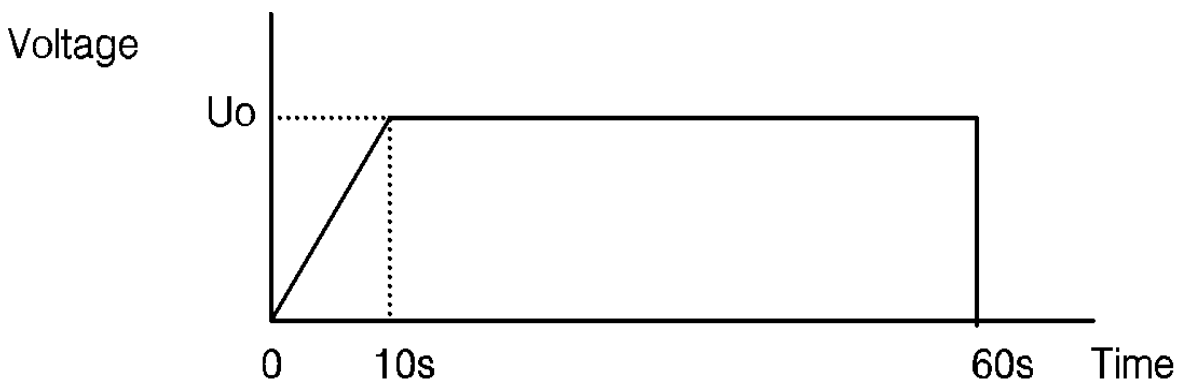


Figure 4: Typical test voltage time profile

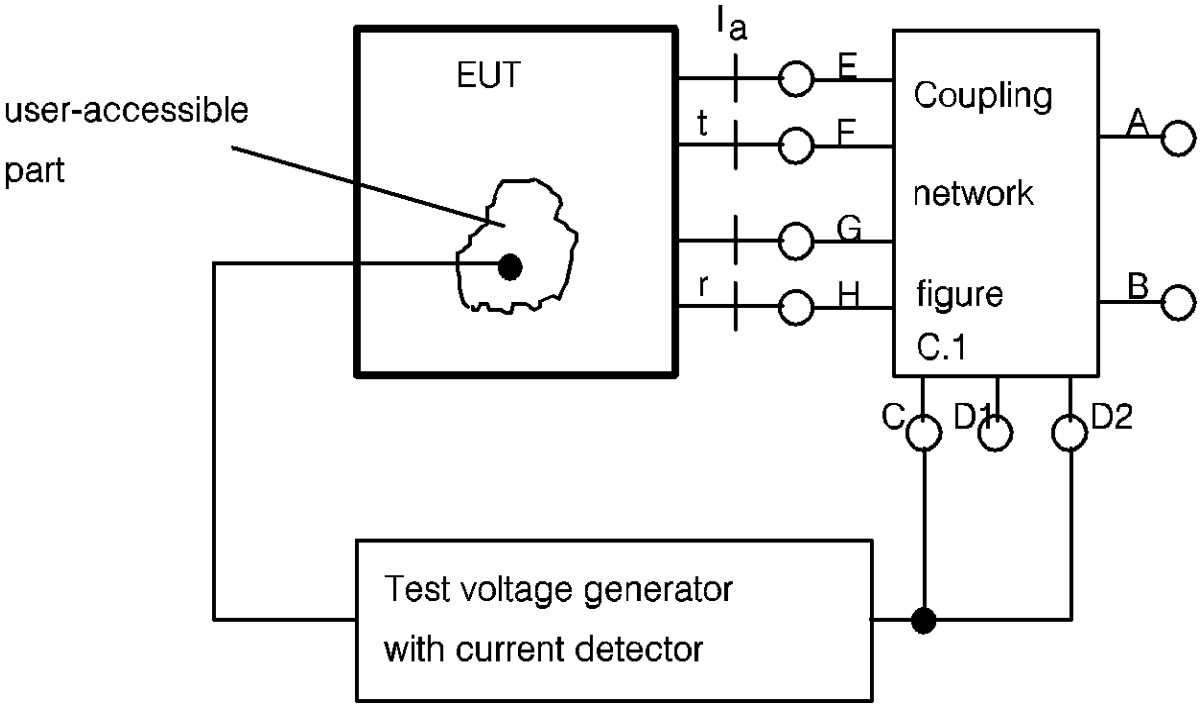


Figure 5: Test circuit for separation

History

Document history	
August 1992	First Edition
November 1995	Converted into Adobe Acrobat Portable Document Format (PDF)