Spanish ADVISORY NOTE

Proposed
Spanish Advisory Note Number: ES01R001

Date: 1997-06-02

Subject: Requirement regarding DC current and loop resistance

Applicability

This note is applicable for approval in addition to :

X **"CTR21" (When published)**
 Note: Until CTR21 is available, reference should be made to ETSI document prTBR21 (June 1996) or, when it is available, to TBR21.

Annexes to this Advisory Note:

A: Additional requiremens and tests for attachment to the Spanish PSTN

In consideration of the following:

- Whenever a TE wants to establish a call, the network detects the establishment by increasing the current flow to the TE.

- It can be assured that the network will detect that increase of current flow whenever the current is greater than 18.5 mA.

- In order to maintain the call, the current flow must not be lower than 18,5 mA at any moment.

- The Spanish network has three characteristics that must be considered:
  1 - The DC voltage that the network delivers is 48 VDC (nominal value)
  2 - The maximum loop resistance is 2200Ω (feeding bridge included).
  3 - There is still a significant number of lines working on relays, which to be sure that will work properly in the worst conditions, will need 18,5 mA.

  $R = V \: / \: I = 48V \: / \: 0{,}0185A \cong 2.594\Omega$ (maximum loop resistance plus TE)

  $2.594\Omega - 2200\Omega = 394\Omega$ (accepted a value of 400Ω for TE resistance)
  _____

  If we consider the worst possible case of TE connected to a loop of 2200Ω and to a line that needs 18,5 mA : $\underline{V = 0{,}0185A \: x \: 400\Omega = 7{,}4V}$

The Spanish Regulatory Authority advises the following:

Terminal equipments connected to the Spanish Public Switched Telephone Network must take from the network a current of at least 18,5 mA for proper interworking.

TE approved to CTR21 and intended for connection to the Spanish Public Switched Telephone Network, shall, in addition to the requirements of CTR21, comply with the requirements found in Annex A to this Advisory Note.

Conformity to this additional requirements is subject to approval.

It is the responsibility of the supplier to provide information to users as to whether the Terminal Equipment complies with the additional requirements for the Spanish Public Switched Telephone Network specified in this Advisory Note.

Annex "A" also specifies the tests to assess compliance with this additional requirement.

Spanish Advisory Note

Annex "A" (Normative)

to

Proposed
Spanish Advisory Note number: ES01R001

Date: *1997-06-04*

Subject: Requirement regarding DC current and loop resistance

A.1   INTRODUCTION

Terminal equipment approved to CTR21 may not work properly when connected to the Spanish Public Switched Telephone Network, as the TE must drain a minimum current of 18,5 mA for proper interworking.

This annex specifies requirements to which a TE shall comply, in addition to the requirements of CTR21, in order to test that the current drained from the network is at any moment equal to or greater than 18,5 mA.

It also specifies the method to assess compliance with these additional requirements.

A.2   NORMATIVE REFERENCES

[1] CTR21: Terminal Equipment (TE). Attachment requirements for pan-European approval for connection to the analogue Public Switched Telephone Networks (PSTNs) of TE (excluding TE supporting the voice Telephony Service) in which network addressing, if provided, is by means of Dual Tone Multi-Frequency (DTMF) signalling.

NOTE: This document makes reference to CTR21. Until CTR21 is available, reference should be made to the base draft ETSI document prTBR21 (June 1996), or when it is available, to TBR21.

A.3   REQUIREMENTS AND ASSOCIATED TESTS

Note: The following requirements are in addition to the requirements of CTR21 Clause 4.7.1 and its associated tests in A.4.7.1.

A.3.1 DC current and loop resistance (Requirement - Based on CTR21 Clause   4.7.1)

Justification: 91/263/EEC, Article 4f; interworking with the European PSTN, some of which having different DC characteristics, is assured by requiring the TE to present a sufficiently low DC resistance in loop state.

Requirement: The DC voltage/current characteristics of the TE within the operating range as stated in subclause 4.7 shall not exceed the limits given in table A.3.1 and shown in figure A.3.1.

Table A.3.1 Voltage/current characteristics

Point	Voltage (V)	Current (mA)
A	7,4	0
B	7,4	18,5
C	14,5	42
D	40,0	50,0
E	40,0	60,0
F	0	60,0
G	0	0

Note: Limits for intermediate currents can be found by drawing a straight line between the break points on a linear voltage/current scale.
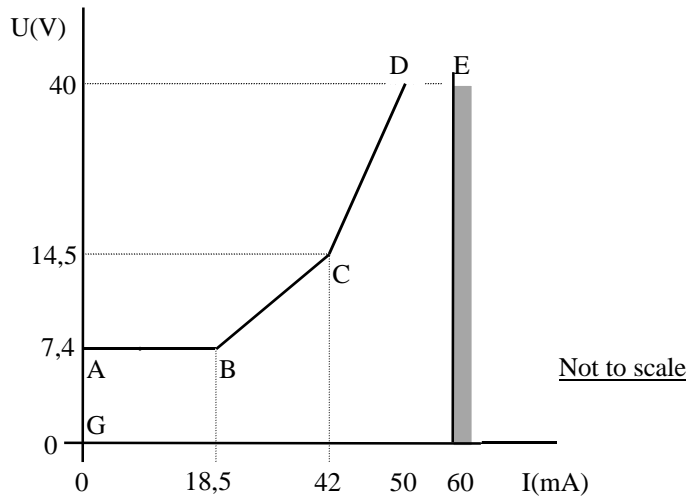
Figure A.3.1: TE voltage/current characteristics

A.3.2 DC current and loop resistance (Test - Based on CTR21:Clause A.4.7.1)

Requirement: A.3.1

Purpose: To verify that the steady-state DC loop characteristics are within the limits given in table A.3.1, and shown in figure A.3.1. The test only applies to TE which are capable of reaching the loop state.

Measurement principle:

Preamble: Set the TE in quiescent state.
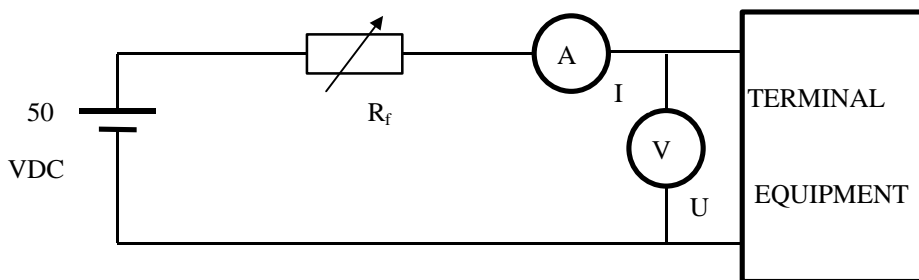
Test state: Loop state.

Test configuration:

Figure A.3.2:

DC feeding arrangements:

Feed voltage 50V. Feed resistance: each of the following: 230 W, 850 W, 2050 W and 3200 W. Polarity shall be switched between each feed resistance

Measurement execution:

In sequence, select a feed resistance value according to the DC feeding arrangement and then cause the TE to enter the loop state after making sure that the TE has been held at least 1 minute in quiescent state. When the terminal has been in the loop state for at least
1,2 s, measure the DC current drawn by the TE and the DC voltage across the TE for each of the feed conditions. Allow sufficient setting time, to a maximum of 3 s, to ensure that the measured value is satable to within +/_0,5% for at least 0,2 s. Then repeat the sequence for other measurement points, repeating each time a transition from quiescent state to loop state.

Formal processing: None

Verdict: If the DC voltage/current characteristics are within the limits given in table A.3.1 and shown in figure A.3.1 then Pass; else Fail.

Guidance: Allowing "sufficient setting time" is useful to ensure test repeatability and reproducibility. Nevertheless if the stated stability cannot be found, the setting time shall be limited to 3s. In this latter case a measurement accuracy improvement may be obtained by averaging several measurement readings made during the setting time.