

# NORWEGIAN ADVISORY NOTE

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Norwegian Advisory Note Number: NO 02R001

**Date:** 1998-06-02

**Subject:** Requirement regarding DC current and loop resistance

NOTE: The requirements in ES 01 and NO 02 are identical.

## **APPLICABILITY**

This note is applicable for Terminal Equipment intended for connection to the Norwegian Public Switched Telephone Networks, in addition to:

**"CTR 21" (When published).**

NOTE: Until CTR 21 is available, reference should be made to ETSI document TBR 21 (January 1998).

## **Appendix to this Advisory Note:**

A: Additional requirements and tests for attachment to the Norwegian 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 Norwegian Post and Telecommunications Authority advises the following:**

Terminal equipment connected to the Norwegian Public Switched Telephone Network must take from the network a current of at least 18,5 mA for proper inter-working.

TE approved to CTR 21 and intended for connection to the Norwegian Public Switched Telephone Network, shall, in addition to the requirements of CTR 21, comply with the requirements found in appendix A to this Norwegian Advisory Note.

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 Norwegian Public Switched Telephone Network specified in this Advisory Note.

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

# **NORWEGIAN ADVISORY NOTE**

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**Appendix A**

**to**

**Norwegian Advisory Note Number: NO 02R001**

**Date:** 1998-06-04

**Subject:** Requirement regarding DC current and loop resistance

## A.1 INTRODUCTION

Terminal equipment approved to CTR 21 may not work properly when connected to the Norwegian Public Switched Telephone Network, as the TE must drain a minimum current of 18,5 mA for proper inter-working.

This appendix specifies requirements to which a TE shall comply, in addition to the requirements of CTR 21, 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] CTR 21: "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 CTR 21. Until CTR 21 is available, reference should be made to TBR 21.

## A.3 REQUIREMENTS AND ASSOCIATED TESTS

NOTE: The following requirements are in addition to the requirements of CTR 21 subclause 4.7.1 and its associated tests in A.4.7.1.

### A.3.1 DC current and loop resistance (Requirement - Based on CTR 21 subclause 4.7.1)

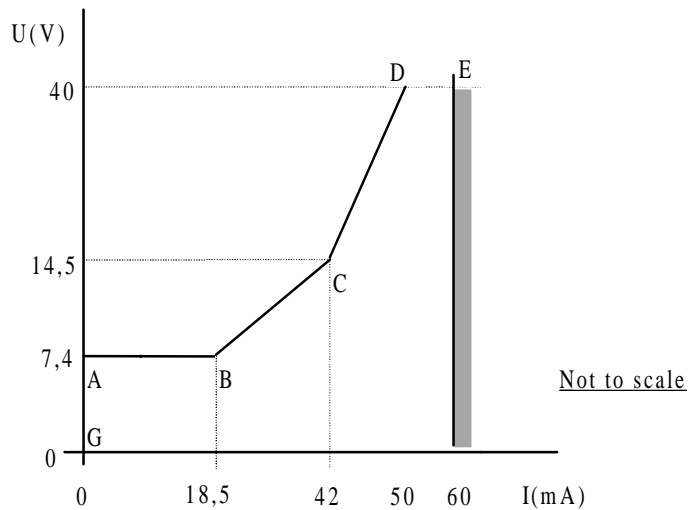
**Justification:** 91/263/EEC, Article 4f; inter-working with the European PSTN, some of which having different DC characteristics, requires a TE to present a sufficiently low DC resistance in loop state.

**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 NO 02.1 and shown in figure NO 02.1.

**Table NO 02.1 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 NO 02.1: TE voltage/current characteristics**

### A.3.2 DC current and loop resistance (Test - Based on CTR 21: subclause A.4.7.1)

Requirement: A.3.1

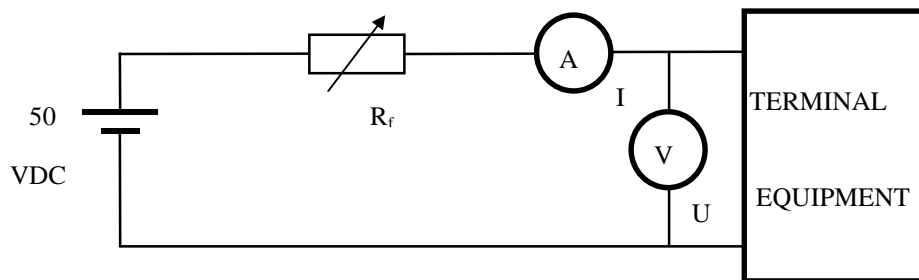
Purpose: To verify that the steady-state DC loop characteristics are within the limits given in table NO 02.1, and shown in figure NO 02.1. The test only applies to TE which are capable of reaching the loop state.

#### Measurement principle:

Preamble: Set the TE in quiescent state.

Test state: Loop state.

Test configuration:



**Figure NO 02.2**

DC feeding arrangements:

Feed voltage 50 V.

Feed resistance: each of the following: 230  $\Omega$ , 850  $\Omega$ , 2 050  $\Omega$  and 3 200  $\Omega$ .

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 stable to within  $\pm 0,5$  % 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 3 s. In this latter case a measurement accuracy improvement may be obtained by averaging several measurement readings made during the setting time.