GERMAN ADVISORY NOTE

German Advisory Note Number: DE 12

Subject: Improvement of Output signal balance for better DTMF signalling

APPLICABILITY

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

☒ " CTR 21" (When published)

NOTE: Until CTR 21 is available, reference should be made to ETSI document prTBR 21 (Sept 1997) or, when it is available, to TBR 21.

Appendix to this Advisory Note:

A: Additional requirements and tests for attachment to the German PSTN

In consideration of the following:

- Low output signal balance will lead to a bad signal to noise ratio.

- With bad signal to noise ratio the network is not able to detect proper DTMF-tones.

The German Regulatory Authority advises the following:

The output signal balance in Table 8 of paragraph 4.7.4.2 of prTBR 21 shall be modified as described in Appendix A of this Advisory Note.

To ensure inter-working with the German Public Switched Telephone Network, the TE shall, in addition to the requirements of CTR 21, comply with the requirements found in Appendix A of this Advisory Note.

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

Appendix A also specifies the method to assess compliance with the additional requirement, including reference to the additional tests to be performed to dynamically assess compliance with the additional requirements.

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Appendix A

to

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A.1 INTRODUCTION

Terminal equipment approved to CTR 21 may not interwork properly with the German Public Switched Telephone Network.

This Appendix specifies requirements to which a TE shall comply, in addition to the requirements of CTR 21 to ensure interworking with the German Public Switched Telephone Network. It also specifies the method to assess compliance with these additional requirements, including reference to additional tests to be performed to dynamically assess compliance with the additional requirements.

A.2 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 the base ETSI documents prTBR 21 (Sept 1997) or, when it is available, to TBR 21.

A.3 REQUIREMENTS and ASSOCIATED TESTS

A.3.1 General loop steady state requirements

NOTE: The following requirements are in addition to the requirements of CTR 21 Clause 4.7.4.2 and the associated tests in Clause A.4.7.4.2. The changes introduced by this Advisory Note complete the output signal balance-Table with increased values for DTMF dialling.

A.3.1.1 Output Signal Balance (Requirement - based on CTR 21: Clause 4.7.4.2)

Requirement: Where the supplier's instructions state that a connection to earth is intended, the Output Signal Balance when the AC termination of the TE is 600 W shall be at least the values given in table 8 and figure 8. This requirement only applies at frequencies where the unbalance level exceeds –70 dBV with the test method shown in clause A.4.7.4.2.

Table 8: Output Signal Balance and Longitudinal Conversion Loss, minimum values.

Frequency range	Minimum value
50 Hz to 300 Hz	30 dB
300 Hz to 600 Hz	46 dB
600 Hz to 3800 Hz	52 dB

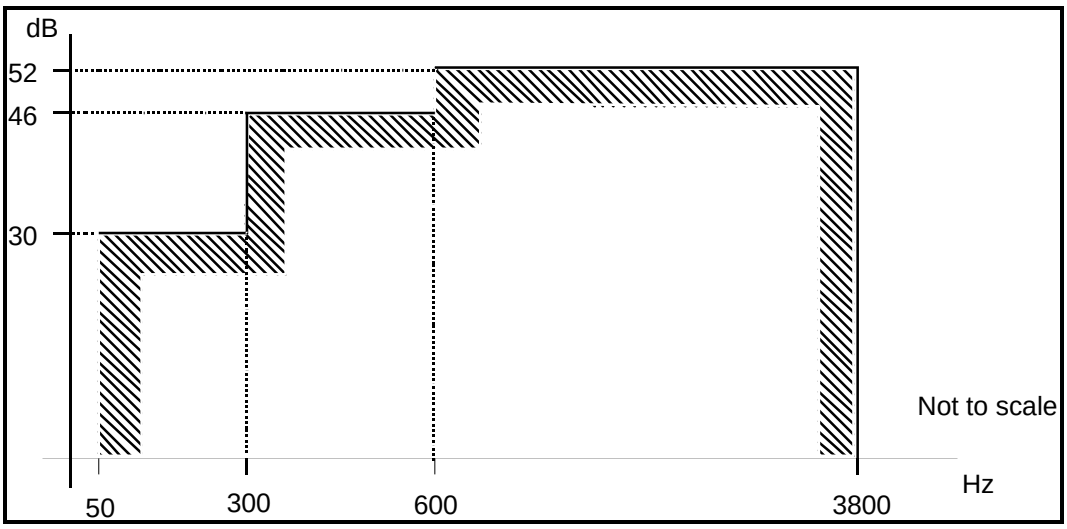

Figure 8: Output Signal Balance and Longitudinal Conversion Loss, minimum values.

Test: The test shall be conducted according to A.3.1.2.

A.3.1.2 Output Signal Balance (Test - based on CTR 21: Clause A.4.7.4.2)

Requirement: Subclause A.3.1.1

Purpose: To ensure that the impedance unbalance about earth, expressed as output signal balance, meets the requirements.

Measurement principle:

Preamble: Set the TE in loop state.

Test state: Loop state.

Test configuration:

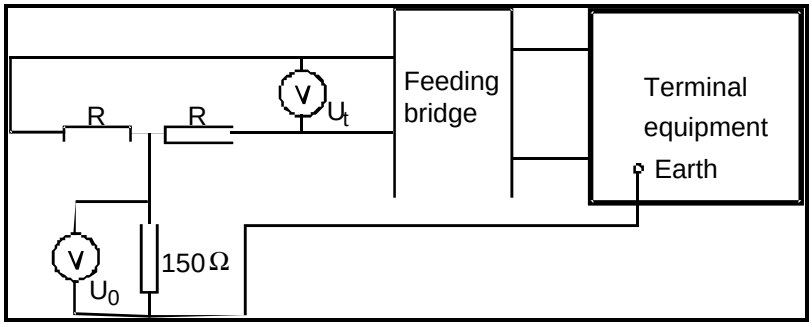

Figure A.19

DC feeding arrangement: Feed voltage: 50 V. Feed resistance: each of the following: 230 W, 850 W, 2 050 W and 3 200 W. Polarity shall be switched between each feed resistance.

Measurement points: The resistors R shall be 300 W.
Measurement of the voltages U_0 and U_t shall be performed with a suitable frequency selective voltage measuring instrument.

Measurement execution:

The TE is set in the loop state transmitting representative signals to line.

Formal processing: The measured values of U_0 and U_t are used to calculate the Output Signal Balance by using the following equation:

$$\text{Output Signal Balance} = 20\log_{10}\left|\frac{U_t}{U_o}\right| \text{dB}$$

For frequencies at which U_0 is less than –70 dBV the OSB is not calculated.

Verdict: If the Output Signal Balance is greater than the specified limit in table 8 and figure 8 then Pass; else Fail. For frequencies at which U_0 is less than –70 dBV there is no OSB requirement.

Guidance: The voltmeter input impedance should be greater than 100 kW.

A.3.1.3 Requirements Table (CTR-RT)

The requirements table of CTR 21, Annex B is still applicable.