PORTUGUESE ADVISORY NOTE

Portuguese Advisory Note Number: P 04

Subject: Requirements applicable to a terminal equipment with another port to connect a terminal equipment indirectly to the NTP in series/parallel with the terminal under test (Series Terminal Equipment).

APPLICABILITY

This note is applicable for Terminal Equipment intended for connection to the Portuguese 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 Portuguese PSTN.

In consideration of the following:

- As stated in Terminal Equipment Directive 91/263/EEC, terminal equipment must correctly interwork with the Portuguese PSTN and must also correctly inter-work via the Portuguese PSTN in case of a justified case service.

- The design of the telephone installation in the user premises allows more than one terminal equipment to be connected in series/parallel at the Network Termination Point.

- prTBR21, in its Introduction section, states that “In an arbitrary combination of parallel and/or series connections, the performance of each individual terminal will need to be better than required by this TBR, to ensure satisfactory inter-working with the network.

- prTBR 21 is applicable also to terminal equipment having another port for connection of a second TE (i.e. a telephone), as declared by the manufacturer, which then must inter-work properly with the Portuguese PSTN and even continue to guarantee inter-working between TEs in case of a justified telephony service.

- In a series connection where the terminal equipment directly connected to the NTP has a second port enabling the establishment of a telephony justified case service, it is necessary to guarantee that the terminal equipment directly connected shall not introduce

    1) an excessive series DC resistance therefore preventing the secondary port to provide the necessary feeding conditions to the TE connected at that port, thus disabling a justified case service to take place;

    2) an excessive delay in the provision of the necessary feeding conditions to the TE connected to the secondary port, in case the loop state is maintained by the associated TE;

    3) an excessive insertion loss for voice signals, therefore preventing the secondary port to provide a justified case service as declared by the manufacturer.

The Portuguese Regulatory Authority advises the following:

Terminal equipment having a secondary port to connect a second terminal equipment in series/parallel to the same NTP of the Portuguese PSTN shall, in addition to the requirements of CTR21, comply with the requirements found in Appendix A of this Advisory Note.

It is a supplier’s responsibility to provide information for users as to whether the Terminal Equipment complies with the additional requirements for the Portuguese PSTN specified in this Advisory Note.

Appendix A also specifies the tests to assess compliance with these additional requirements

PORTUGUESE ADVISORY NOTE

Appendix A

To

Portuguese Advisory Note Number: P 04

Subject: Requirements applicable to a terminal equipment with a secondary port to connect a terminal equipment indirectly to the NTP in series/parallel with the terminal under test (Series Terminal Equipment).

A.1 INTRODUCTION

Terminal equipment approved to CTR 21 may not inter-work properly with the Portuguese PSTN.

This Appendix specifies requirements to which a TE shall comply, in addition to the requirements of CTR 21 in order to ensure inter-working with the Portuguese PSTN. 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 DEFINITIONS

For the purpose of the requirements below, the following definitions apply:

Series Terminal Equipment (Series TE): a terminal equipment:

- directly connected to the Portuguese PSTN and with a secondary port for connection of a secondary terminal equipment;
- not enabled to maintain the loop state or the quiescent state in the NTP;
- designed to allow the loop state or the quiescent state in the NTP to be imposed and/or maintained by the secondary terminal equipment;
- considered in the loop state when the secondary TE is in the loop state;
- considered in the quiescent state when the secondary TE is in the quiescent state.

Insertion loss: The loss between the port connected to the NTP and the secondary port, for the frequencies in the voice frequency band.

A.3 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 the base ETSI documents prTBR 21 (Sept 1997) or, when it is available, to TBR 21.

A.4 REQUIREMENTS AND ASSOCIATED TESTS

A.4.1 Series DC resistance in loop state

NOTE: The following requirement is in addition to Clause 4.7 of CTR 21 and to the associated tests in Clause A.4.7.

Justification: 91/263/EEC, Article 4(f); Inter-working with the Portuguese PSTN is assured by requiring the Series TE to present a sufficient low DC series resistance in loop state.

Requirement: Series Terminal Equipment, when in the loop state, shall be responsible for the introduction of a DC resistance lower than 100 W.

Test: The test shall be conducted according to A.4.4.

A.4.2 Transition from quiescent to loop state

NOTE: The following requirement is in addition to Clause 4.6 of CTR 21 and to the associated tests in Clause A.4.6.

Justification: 91/263/EEC, Article 4(f); Inter-working with the Portuguese PSTN is assured by requiring the Series TE to present a sufficient low transition delay from quiescent to loop state.

Requirement: Series Terminal Equipment shall not introduce a delay higher than 100 ms in the transition from quiescent to loop state when the secondary TE changes from quiescent to loop state.

Test: The test shall be conducted according to A.4.5.

A.4.3 Insertion loss of a Series Terminal Equipment

NOTE: The following requirement is in addition to Clause 4.7 of CTR 21 and to the associated tests in Clause A.4.7.

Justification: 91/263/EEC, Article 4(f); Inter-working with the Portuguese PSTN is assured by requiring the Series TE to present a sufficient low insertion loss.

Requirement: Series Terminal Equipment in loop state shall not introduce an insertion loss worst than 1 dB for AC signals with 1,5 V rms in the frequency band of 300 Hz to 3400 Hz.

Test: The test shall be conducted according to A.4.6.

A.4.4 Series DC resistance in loop state (Test for A.4.1 requirement)

Requirement: Subclause A.4.1.

Purpose: To verify that the Series DC resistance of the Series Terminal Equipment, when in the loop state, shall be lower than 100 W.

Measurement principle:

Preamble: Set the TE in quiescent state.

Test state: Loop state.

Test configuration:

The original diagram was unusable; it will be replaced as soon as a good copy is available.

Figure A.3.1

DC feeding arrangement: Feed Voltage = 50 V DC. Feed resistance: each of the following 230 W, 850 W, 2 050 W and 3 200 W. Switch K is initially set to OFF. Polarity shall be changed between each feed resistance.

Measurement execution: Switch K is set to ON. Measure the voltage v1 in voltmeter V1, the voltage v2 in voltmeter V2 and the current I in instrument A.

Formal processing: The series DC resistance of the TE can be calculated using the formula:

$$(v1 + v2) / I$$

Verdict: If the series DC resistance is lower than 100 W, then “pass”; else “fail”.

A.4.5 Transition from quiescent to loop state (Test for A.4.2 requirement)

Requirement: Subclause A.4.2.

Purpose: To verify that the transition from quiescent to loop state is performed by the Series Terminal Equipment within a delay lower than 100 ms.

Measurement principle:

Preamble: Set the TE in quiescent state.

Test state: Loop state.

Test configuration: See Figure A.3.1.

DC feeding arrangement: Feed Voltage = 50 V DC. Feed resistance: each of the following 230 W, 850 W, 2 050 W and 3 200 W. Switch K is initially set to OFF. Polarity shall be changed between each feed resistance.

Measurement execution: Switch K is set to ON. Monitor the current I and the voltages v1 and v2. Measure the voltage v1 in voltmeter V1, the voltage v2 in voltmeter V2 and the current I in instrument A, 100 ms after having switched K to ON.

Formal processing: Calculate the series DC resistance of the TE using the formula:

(v1 + v2) / I

Verdict: If the series DC resistance is lower than 100 W, then “pass”; else “fail”.

A.4.6 Insertion loss of a Series Terminal Equipment (Test for A.4.3 requirement)

Requirement: Subclause A.4.3.

Purpose: To verify that the Series Terminal Equipment in loop state doesn’t introduce an insertion loss in the circuit worst than 1 dB, for AC signals with 1,5 V rms in the frequency band of 300 Hz to 3400 Hz.

Measurement principle:

Preamble: Set the TE in loop state.

Test state: Loop state.

Test configuration:

The original diagram was unusable; it will be replaced as soon as a good copy is available

Figure A.3.2

DC feeding arrangement: Feed Voltage = 50 V DC. Feed resistance: each of the following 230 W, 850 W, 2 050 W and 3 200 W. Switch K is initially set to OFF, as shown on Figure A.3.2.

Measurement points: U shall be a sinusoidal signal with a constant voltage of 1,5 V rms throughout the specified range frequency of 300 Hz to 3400 Hz. Measurement of the voltage v1 across the secondary port charge ZR shall be performed with a suitable frequency selective voltmeter V1.

Measurement execution:

With K set to OFF, measure voltage v1OFF at the voltmeter V1 on the frequency range specified. Allow sufficient setting time at each feed condition to ensure

stability of the measured value within ±0,5 % for at least 0,2 s. Then set K to the position ON. Measure the voltage v1ON at the voltmeter V1 on the frequency range specified, using the procedure above.

Formal processing: Calculate insertion loss using the formula

Insertion Loss = $20.\log_{10}| v1ON / v1OFF |$ (dB)

Verdict: If the calculated Insertion Loss is less than 1 dB in all the frequency range specified, then “pass”; else “fail”.