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SERIES Q: SWITCHING AND SIGNALLING

Digital exchanges – Transmission characteristics

**Transmission characteristics at 4-wire analogue
interfaces of digital exchanges**

ITU-T Recommendation Q.553

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ITU-T Recommendation Q.553

Transmission characteristics at 4-wire analogue interfaces of digital exchanges

Summary

This Recommendation provides characteristics for 4-wire analogue interfaces, input and output connections with 4-wire analogue interfaces and half-connections with 4-wire analogue interfaces in digital transit and combined local and transit exchanges in accordance with definitions given in ITU-T Rec. Q.551.

This Recommendation is intended for switching connections that may be part of an international long-distance connection via 4-wire line circuits interconnected by 4-wire exchanges. Since 4-wire analogue interfaces on digital exchanges may connect with circuits which are used for both international and national traffic, the same values recommended for international connections may also be used for connections entirely within the national network.

Source

ITU-T Recommendation Q.553 was revised by ITU-T Study Group 15 (2001-2004) and approved under the WTSA Resolution 1 procedure on 29 November 2001.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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ITU-T Recommendation Q.553

Transmission characteristics at 4-wire analogue interfaces of digital exchanges

1 General

This Recommendation provides characteristics for:

- 4-wire analogue interfaces (Type C_{11} , C_{12} and C_{13});
- input and output connections with 4-wire analogue interfaces; and
- half connections with 4-wire analogue interfaces

in digital transit and combined local and transit exchanges, in accordance with the definitions given in ITU-T Rec. Q.551, particularly in Figures 1/Q.551 and 2/Q.551.

The characteristics of the input and output connections of a given interface are not necessarily the same. The characteristics of half connections are not necessarily identical for different types of interfaces.

This Recommendation is intended for switched connections that may be part of an international long-distance connection via 4-wire line circuits interconnected by 4-wire exchanges. Since 4-wire analogue interfaces of digital exchanges may connect with circuits which are used for both international and national traffic, the same values recommended for international connections may also be used for connections entirely within the national network.

2 Characteristics of interfaces

2.1 Characteristics common to all 4-wire analogue interfaces

2.1.1 Exchange impedance

2.1.1.1 Nominal value

The nominal impedance at the analogue input and output interfaces should be 600 ohms, balanced.

2.1.1.2 Return loss

The return loss at the equipment ports, measured against the nominal impedance, should not be less than 20 dB over the frequency range 300 Hz to 3400 Hz.

NOTE – For output measurement, the exchange test point T_1 must be driven by a PCM signal corresponding to the decoder output value number 0 for the μ -law or decoder output value number 1 for the A-law. (See 1.2.3.1/Q.551.)

2.1.2 Impedance unbalance about earth

The value for the Longitudinal Conversion Loss (LCL) at the equipment ports as defined in 4.1.3/G.117, with the circuit under test in the normal talking state, should exceed the minimum values of Figure 1, in accordance with ITU-T Rec. K.10.

NOTE 1 – A network operator may adopt other values and, in some cases, a wider bandwidth, depending upon actual conditions in its telephone network.

NOTE 2 – A limit may also be required for the Transverse Conversion Loss (TCL) as defined in 4.1.2/G.117, if the exchange termination is not reciprocal with respect to the transverse and longitudinal connections. A suitable limit would be 40 dB to ensure an adequate near-end crosstalk attenuation between interfaces.

