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Access to programme type digital leased circuits. Specification of the network side of the user-network interface

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Abstract : Specification of the network interface of a broadcast type of audio connection from point A to point B.

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1 Scope

This specification gives technical requirements for the network interface presentations of leased circuits used for the transmission of a broadcast type audio signal from point A to point B.

2 References

2.1 Normative references

- [1] IEC 60268-12 (1987-08) "Sound system equipment. Part 12: Application of connectors for broadcast and similar use.
- [2] EN 300 386-2:"Electromagnetic compatibility and Radio spectrum Matters (ERM); Telecommunication network equipment; Electromagnetic Compatibility (EMC) requirements; Part 2: Product family standard". V1.1.3 (1997-12).
- [3] EN 60950: "Safety of information technology equipment including electrical business equipment" (1992)
- [4] EN 41003: "Particular safety requirements for equipment to be connected to telecommunication networks" (1991-05)
- [5] ITU-T K31: "Bonding configurations and earthing of telecommunication installations inside a subscriber's building" (1993-03)
- [6] ITU-T K20: "Resistibility of telecommunication switching equipment to overvoltages and overcurrents" (1996-10)
- [7] ITU-T K15: "Protection of remote-feeding systems and line repeaters against lightning and interference from neighbouring electricity lines" (1988-11)
- [8] ITU-T K.21: Resistibility of subscribers' terminal to overvoltages and overcurrents" (1996-10)
- [9] EBU Tech. 3250 (1992): "Specification of the digital audio interface"
- [10] ITU-T Recommendation J.57 (1990-06): "Transmission of digital studio quality sound signals over H1 channels"

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2.2 Informative references

- [11] EG 201 147: "Equipment Engineering (EE); Interworking between Direct Current/Isolated (DC/I) and Direct Current/Common (DC/C) electrical power systems". V1.1.2 (1998-02)

3 Interfaces

3.1 Analogue interfaces

3.1.1 Analogue interfaces via fibre-optics

The analogue interfaces for audio-type leased circuits via fibre-optics are specified in Annex 1

3.2 Digital interfaces

3.2.1 Digital interfaces for audio signals transferred via fibre-optics

The digital interfaces for audio transferred via fibre are specified in Annex 2.

3.2.2 Analogue and digital interfaces for audio signals compressed in accordance with ETS 300 174

The digital interfaces for audio transferred via codecs based on ETS 300 174 [11] with Amendments ETS 300 174 A1 [12] are specified in Annex 3.

4 Safety, EMC, bonding and overvoltage requirements

4.1 Safety

Equipment connected to the interface shall be in accordance with [5] EN60950, and [6] EN 41003.

4.2 Overvoltage protection

Equipment connected to the interface shall be in accordance with [8] ITU-T K20 and [9] ITU-T K15.

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If the cables between the network termination point and the terminal equipment leave the building, protection of the terminal equipment may be required according to [10] ITU-T K21.

4.3 Electromagnetic Compatibility (EMC)

The EMC requirement for the equipment ports is given in [4] EN 300 386-2, subclause 5.2.3: “Other than telecommunication centres, ports for indoor signal lines”. This requirement shall be interpreted as valid for the interface ports formed by the input/output sockets.

4.4 Bonding configuration and earthing of equipment using the specified interface

Bonding configurations and earthing of telecommunication equipment connected to the interface shall be in accordance with [7] ITU-T K31.

Note:

As the outer coaxial conductor normally will be grounded in each end at the equipment ports, a connection between different ground levels and/or different current systems may be established. This may cause transmission noise and have a safety aspect in case of short-circuiting in one of the power feeding systems.

Guidelines to overcome those problems are given in [19] EG 201 147.

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ANNEX 1: Analogue interfaces for audio connections via fibre-optics and for digitized, non-compressed audio transferred via 140 Mbit/s G.703

A.1 Analogue interfaces

A.1.1 Audio interface

A.1.1.1 Audio connector

The connector for the audio interfaces will be a circular latching 3 pin connector described in IEC 60268-12 [3] (this type of connector is normally called “XLR”). The pin assignment for the connector will be complying with IEC 60268-12 [3].

A.1.1.2 Audio input impedance

The impedance of the audio input interface will be 600 ohms.

A.1.1.3 Audio output impedance

The impedance of the output interface will be low (i.e. < 20 ohms)

A.1.1.4 Audio bandwidth

The transferred bandwidth of the audio signal will be 40 Hz -15 kHz.

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ANNEX 2: Digital interfaces for audio signals transferred uncompressed via fibre-optics.

A.2 Digital interfaces

A.2.1 Audio interface

A.2.1.1 Audio connector

The connector for the audio interfaces will be a circular latching 3 pin connector described in IEC 60268-12 [3] (this type of connector is normally called “XLR”). The pin usage will be as described in EBU Tech 3250 [14]

A.2.1.2 Audio maximum input signal

The maximum input level will be as described in EBU Tech 3250 [14] chapter 6.3.2.

A.2.1.3 Audio minimum input signal

The minimum input level shall be as described in EBU Tech 3250 [14] chapter 6.3.3.

A.2.1.4 Audio input impedance

The receiver impedance of the audio input interface will be substantially resistive 110 ohms \pm 20 % to the interconnecting cable over the frequency band 0.1 to 6.0 MHz.

A.2.1.5 Audio output signal amplitude

The signal amplitude will be as described in EBU Tech 3250 [14] chapter 6.2.2.

A.2.1.6 Audio output impedance

The impedance of the output interface will be 110 ohms.

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Annex 3: Analogue and digital interfaces for audio signals compressed in accordance with ETS 300 174 (“ETSI-codec”)

A.3 General

The analogue and digital interfaces for audio signals transferred via codecs based on ETS 300 174 [11] with Amendments ETS 300 174 A1 [12] are specified in this annex.

A.3.1 Audio interface

A.3.1.1 Audio connector

The connector for the audio interfaces will be a circular latching 3 pin connector described in IEC 60268-12 [3] (this type of connector is normally called “XLR”). The pin usage will be as described in EBU Tech 3250 [14]

A.3.1.2 Audio maximum input signal

The maximum input level shall be as described in EBU Tech 3250 [14] chapter 6.3.2.

A.3.1.3 Audio minimum input signal

The minimum input level shall be as described in EBU Tech 3250 [14] chapter 6.3.3.

A.3.1.4 Audio input impedance

The receiver impedance of the audio input interface will be substantially resistive 110 ohms \pm 20 % to the interconnecting cable over the frequency band 0.1 to 6.0 MHz.

A.3.1.5 Audio output signal amplitude

The signal amplitude will be as described in EBU Tech 3250 [14] chapter 6.2.2.

A.3.1.6 Audio output impedance

The impedance of the output interface will be 110 ohms.

A.3.1.7 Transmission of audio signals

The transmission of the digital audio signal internally will be via a H1 channel as specified in ITU-T Recommendation J.57 (1990-06) [15].

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A.3.2 Ancillary signals

A.3.2.1 Audio interface

A.3.2.1.1 Audio connector

The connector for the audio interfaces will be a circular latching 3 pin connector described in IEC 60268-12 [3] (this type of connector is normally called “XLR”). The pin assignment for the connector will be complying with IEC 60268-12 [3].

A.3.2.1.2 Audio input impedance

The impedance of the audio input interface will be >12 kohms.

A.3.2.1.3 Audio output impedance

The impedance of the output interface will be low (i.e. < 20 ohms)

A.3.2.1.4 Audio bandwidth

The transferred bandwidth of the audio signal will be 40 Hz -15 kHz.