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Access to the fibre-optic part of a Cable-TV type of leased circuits. Specification of the network side of the user-network interface.

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Abstract : Specification of the network interface of a Cable-TV type leased circuit.

Telenor Nett AS
P.O. Box 6701, St. Olavs plass N-0130 Oslo, Norway
Telephone: + 47 23 25 11 01, Fax: + 47 23 25 10 69
vigdis-helene.bergersen@telenor.com

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1 Scope

This specification gives technical requirements for the network interface presentations of leased circuits used for the fibre-optic part of a Cable-TV type of circuit. The return path in this specification is also assumed to be fibre-optic.

2 References

2.1 Normative references

- [1] IEC 60169-2 (1965-01) “Radio-frequency connectors. Part 2: Coaxial unmatched connector”

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- [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)

2.2 Informative references

- [9] 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 Definitions and abbreviations

CTB – Composite Triple Beat

CSO – Composite Second Order

4 Interface

4.1 Forward direction

4.1.1 Electrical interface

The electrical interface for forward direction will be a broadband electrical signal in the frequency range 47-860 MHz. The amplitude-frequency response will be ± 1 dB referred to nominal level.

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4.1.2 Signal input level

The level of the input signal to the optical transmitter shall be in the range 97-102 dB μ V.

4.1.2 Signal output level

The level of the output signal from the optical receiver will be > 90 dB μ V. This output level will be delivered under the assumption that input level from the user is at least 85 dB μ V .

4.1.3 Connector

The connector for the Cable-TV signal will be complying with IEC 60169-2 [1].

4.1.4 Impedance

The impedance of the Cable-TV signal interface will be 75 ohms.

4.1.5 Return loss

The interface will have a return loss of at least 20 dB at 100 MHz.

4.1.6 C/N ratio

The C/N ratio will be 51 dB (measured with 4,75 MHz bandwidth).

4.1.6 CTB

The CTB will be < 65 dB.

4.1.7 CTB

The CSO will be < 60 dB.

4.2 Return path

4.2.1 Electrical interface

The electrical interface will be a broadband electrical signal in the frequency range 5-50 MHz. The amplitude-frequency response will be ± 2 dB referred to nominal level.

4.2.2 Signal input level

The level of the input signal to the optical transmitter in the return path shall be in the range 68-103 dB μ V.

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5 Safety, EMC, bonding and overvoltage requirements

5.1 Safety

Equipment connected to the interface shall be in accordance with [3] EN60950, and [4] EN 41003.

5.2 Overvoltage protection

Equipment connected to the interface shall be in accordance with [6] ITU-T K20 and [7] ITU-T K15.

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 [8] ITU-T K21.

5.3 Electromagnetic Compatibility (EMC)

The EMC requirement for the equipment ports is given in [2] 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.

5.4 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 [5] 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 [9] EG 201 147.



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P.O. Box 6701, St. Olavs plass N-0130 Oslo, Norway
 Telephone: + 47 23 25 11 02, Fax: + 47 23 25 10 69
vigdis-helene.bergersen@telenor.com