

T ELENOR

SPECIFICATION

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**Requirements for equipment to be
connected to the local loop in the
access network of Telenor.
HDSL equipment providing Nx64 kbit/s
digital transmission, full unbundled
access (service type D_{AF})**

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Index words : Access network, copper pairs, LLUB, equipment requirements, NX64 kbit/s

Abstract : Requirements for the equipment of an Operator leasing copper pairs in the access network of Telenor in order to provide Nx64 kbit/s digital transmission

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1 Scope

This specification gives requirements for equipment owned by Operator and intended for connection to local loop in the access network of Telenor. The requirements apply for HDSL equipment supplying Nx64 kbit/s bit stream on one copper pair. There are 3 classes of service and 3 different sets of requirements for:

- D1 ≤ 784 kbit/s
- D2 ≤ 1168 kbit/s
- D3 ≤ 2320 kbit/s

The Operator is responsible that the equipment is in conformance to this specification.

The formulary 'Statement of Compliance' in annex 2 shall be completed and forwarded to Telenor.

2 References

This specification incorporates by dated or undated references, provisions from other publications/standards. These normative references are cited at the appropriate places in the text and the references are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this specification only when incorporated in it by amendment or revision. For undated references, including amendments, the last edition of the document referred to applies.

2.1 Normative references

- [1] ETSI TS 101135 V1.5.3 (2000-09): *"Transmission and Multiplexing (TM); High bit-rate Digital Subscriber Line (HDSL) transmission system on metallic local lines; HDSL core specification and applications for 2 048 kbit/s based access digital sections."*
- [2] Telenor Specification OA 100: *"General requirements for equipment to be connected to the local loop in the access network of Telenor and/or material and equipment to be installed and operated in Telelosji"*

2.2 Informative references

- [3] Telenor Nett Specification A59 (2001-05): *"Access to copper pairs in the access network of Telenor. Specification of the network side of the user-network interface"*

3 Definitions and abbreviations

Telelosji	Colocation at the premises of Telenor
Operatøraksess	Operators' access to the access network of Telenor
HDSL	High bit rate Digital Subscriber Line
MDF	Main Distribution Frame

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NTP Network Termination Point

NTU Network Termination Unit

4 Application

This specification applies to equipment with similar transmission properties as defined for HDSL. The equipment is placed both in the vicinity of the MDF of Telenor and at the subscriber's premises (NTU), as shown in figure 1. A one pair transmission system shall be used.

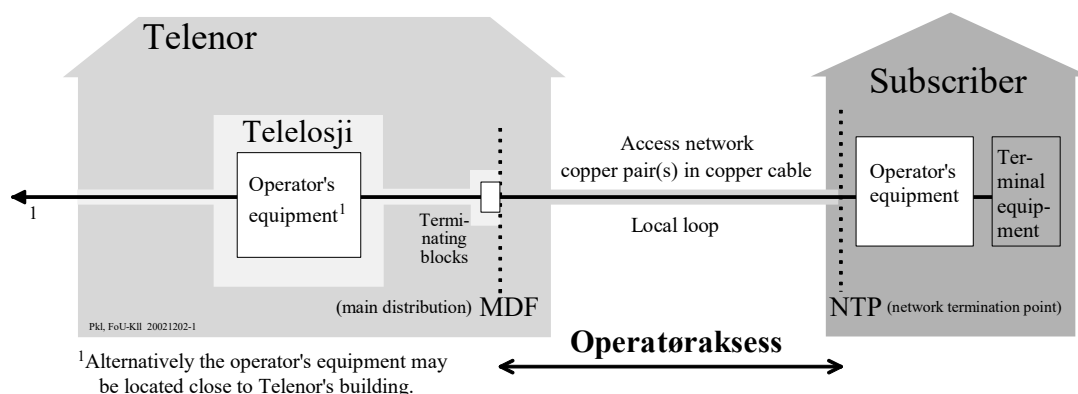


Figure 1 Configuration of the access network.

5 General requirements

All installed equipment operating in Telelosji or used for Operatøraksess shall fulfil requirements stated in Telenor Specification OA 100 [2] related to:

- safety
- environmental conditions
- documentation.

6 Transmission system

6.1 General

The transmission system utilizes echo canceller technique and requires one copper pair. Equipment for D1, D2 and D3 shall satisfy the relevant requirements in ETSI TS 101135 [1].

6.2 Line code

The line code shall be 2B1Q (two binary, one quaternary) in accordance with ETSI TS 101135 [1], subclause 5.3.6.

6.3 Line baud rate

The line baud rate of the transceiver shall be:

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D1	≤ 784 kbit/s
D2	≤ 1168 kbit/s
D3	≤ 2320 kbit/s

7 Electrical characteristics

7.1 Remote feeding

The feeding voltage shall not exceed -110 V. In this case the feeding voltage on both feeding leads shall be non-positive referred to ground potential.

Note! The feeding voltage may be symmetrical with ± 55 V referred to ground.

The feeding current shall not exceed 40 mA.

7.2 Transmitter/receiver impedance and return loss

D1

The nominal driving point impedance and the return loss shall be in accordance with the requirements for a 392 kbaud system given in ETSI TS 101135 [1], subclause 5.8.2 and figure 18.

D2

The nominal driving point impedance and the return loss shall be in accordance with the requirements for a 584 kbaud system given in ETSI TS 101135 [1], subclause 5.8.2 and figure 19.

D3

The nominal driving point impedance and the return loss shall be in accordance with the requirements for an 1160 kbaud system given in ETSI TS 101135 [1], subclause 5.8.2 and figure 20.

7.3 Transmitter output characteristics

Unless otherwise indicated, the following specifications apply with a resistive load impedance of 135 ohms.

7.3.1 Pulse amplitude

The nominal peak of the largest pulse shall be 2,64 V for D1 and D2 and 2,5 V for D3.

7.3.2 Pulse shape

The pulse shape shall have the shape specified in ETSI TS 101135 [1], subclause 5.8.4.2 and figure 21 for D1 and D2 and figure 22 for D3.

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7.3.3 Power spectral density

D1

The upper bound of the average power spectral density for the 392 kbaud system shall be in accordance with ETSI TS 101135 [1], subclause 5.8.4.3.1 and figure 23.

D2

The upper bound of the average power spectral density for the 584 kbaud system shall be in accordance with ETSI TS 101135 [1], subclause 5.8.4.3.2 and figure 24.

D3

The upper bound of the average power spectral density for the 1160 kbaud system shall be in accordance with ETSI TS 101135 [1], subclause 5.8.4.3.3 and figure 25.

7.3.4 Total power

The average power shall be in accordance with the requirements given in ETSI TS 101135 [1], subclause 5.8.4.4.

7.4 Unbalance about earth

7.4.1 Longitudinal conversion loss

D1

The unbalance about earth, measured as longitudinal conversion loss (LCL), shall be in accordance with the requirement for a 392 kbaud system given in ETSI TS 101135 [1], subclause 5.8.5.1 and figure 26.

D2

The unbalance about earth, measured as longitudinal conversion loss (LCL), shall be in accordance with the requirement for a 584 kbaud system given in ETSI TS 101135 [1], subclause 5.8.5.1 and figure 27.

D3

The unbalance about earth, measured as longitudinal conversion loss (LCL), shall be in accordance with the requirement for an 1160 kbaud system given in ETSI TS 101135 [1], subclause 5.8.5.1 and figure 28.

7.4.2 Longitudinal output voltage

The longitudinal component of the output signal shall be in accordance with ETSI TS 101135 [1], subclause 5.8.5.2.

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Annex 1: Document history

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5.3	31.10 2005	Kjell E. Sterten, TNO-FX-PT-I&P

STATEMENT OF COMPLIANCE

**TELENOR
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Annex 2

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Date:

Operator:

System identification (vendor, model, type):

Telelosji in Telenor's buildings

Equipment location: Located at subscriber's premises

Connection to the access network of Telenor: Yes (direct) Indirect (aux. equip.).....

The given information is valid. Date/Signature:

(sign.)

FC = Fully compliant NC = Non-compliance

Clause no.	Description	Statement of Compliance		Remarks and additional information	For internal use
		FC	NC		
1	Scope	<input type="checkbox"/>	<input type="checkbox"/>		
2	References				
2.1	Normative references	<input type="checkbox"/>	<input type="checkbox"/>		
2.2	Informative references	<input type="checkbox"/>	<input type="checkbox"/>		
3	Definitions and abbreviations	<input type="checkbox"/>	<input type="checkbox"/>		
4	Application	<input type="checkbox"/>	<input type="checkbox"/>		
5	General requirements	<input type="checkbox"/>	<input type="checkbox"/>		
6	Transmission system				
6.1	General	<input type="checkbox"/>	<input type="checkbox"/>		
6.2	Line code	<input type="checkbox"/>	<input type="checkbox"/>		
6.3	Line baud rate	<input type="checkbox"/>	<input type="checkbox"/>		
7	Electrical characteristics				
7.1	Remote feeding	<input type="checkbox"/>	<input type="checkbox"/>		
7.2	Transmitter/receiver impedance and return loss	<input type="checkbox"/>	<input type="checkbox"/>		
7.3	Transmitter output characteristics	<input type="checkbox"/>	<input type="checkbox"/>		
7.3.1	Pulse amplitude	<input type="checkbox"/>	<input type="checkbox"/>		
7.3.2	Pulse shape	<input type="checkbox"/>	<input type="checkbox"/>		
7.3.3	Power spectral density	<input type="checkbox"/>	<input type="checkbox"/>		
7.3.4	Total power	<input type="checkbox"/>	<input type="checkbox"/>		
7.4	Unbalance about earth				
7.4.1	Longitudinal conversion loss	<input type="checkbox"/>	<input type="checkbox"/>		
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