



Specification

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Title

Specification for the network side of the user-network interface: Distributed filter (PSTN)

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1. Scope

This specification describes the network side of ADSL access to the network of Telenor as prescribed in Article 4.2 of RTT&E-directive [12]. The requirements in Telenor Networks Specification OA 100 [1] also apply.

With the remote splitter the ATU-R can coexist on the same access line as a connection to the PSTN network. With the addition of one or more distributed filters other configurations may be served. The operation of PSTN in combination with an ADSL modem is made possible by the use of a non-overlapping frequency plan.

Distributed filters are not compatible with ISDN basic access and shall not be connected to access lines carrying ISDN basic access.

The objective is to ensure full interoperability between equipment from different vendors.

Requirements for the ADSL modem (ATU-R) are given in the

Telenor Networks Specification A81: Specification for the network side of the user-network interface: ADSL modem (ATU-R) 0.

Requirements for the remote splitter is given in the Telenor Networks Specification A82: *Specification for the network side of the user-network interface: Remote splitter (PSTN/ISDN basic access)* [3].

2. References

In case of any discrepancies between this specification and other specifications/standards referred to, this specification applies.

2.1 Normative 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.

- [1] Telenor Networks Specification OA 100, *General requirements for equipment to be connected to the local loop in the access network of Telenor and/or for equipment to be installed and operated in Telelosji*
<http://www.jara.no>
- [2] Telenor Networks Specification A81: Specification for the network side of the user-network interface: ADSL modem (ATU-R)
- [3] Telenor Networks Specification A82: *Specification for the network side of the user-network interface: Remote splitter (PSTN/ISDN basic access)*
- [4] ETSI TS 101952-1-5 V1.1.1 (2003-05), *Access network xDSL transmission filters; Part 1: ADSL splitters for European deployment; Sub-part 5: Specification for ADSL over POTS distributed filters*
- [5] CENELEC EN 60603-7:1996, *Connectors for frequencies below 3 MHz for use with printed boards – Part 7: Detail specification for connectors, 8 way, including fixed and free connectors with common mating features (IEC 60603-7:1996)*

[6] CENELEC EN 60950 *Safety of information technology equipment* (IEC 60950)

2.2 Informative references

- [7] ITU-T K.21 *Resistibility of telecommunication equipment installed in customer's premises to overvoltages and overcurrents*
- [8] ETSI EN 300 019-1-1: *Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 1-1: Classification of environmental conditions; Storage*
- [9] ETSI EN 300 019-1-2: *Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 1-2: Classification of environmental conditions; Transportation*
- [10] ETSI EN 300 019-1-3: *Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 1-3: Classification of environmental conditions; Stationary use at weatherprotected locations*
- [11] Directive EMC 89/336/EEC etc.: http://ec.europa.eu/enterprise/policies/european-standards/documents/harmonised-standards-legislation/list-references/electromagnetic-compatibility/index_en.htm
- [12] Directive R&TTE 1999/05/EC: (The Radio Equipment and Telecommunications Terminal Equipment)
http://ec.europa.eu/enterprise/sectors/rtte/documents/guidance/index_en.htm
- [13] Norwegian regulations: <http://www.lovddata.no/for/sf/sd/sd-20000620-0628.html>

3. Definitions and abbreviations

3.1 Abbreviations

ADSL	Asymmetric Digital Subscriber Line
ATM	Asynchronous Transfer Mode
ATU	ADSL Transceiver Unit
ATU-C	ATU at the central office end (i.e network operator)
ATU-R	ATU at the remote terminal end (i.e Customer Premises)
DSLAM	Digital Subscriber Line Access Multiplexer (usually housing ATU-C)
DTE	Data Terminal Equipment
EMC	Electromagnetic compatibility
ISDN	Integrated Services Digital Network
LAN	Local area network
PSTN	Public Switched Telephone Network
TE	Terminal Equipment

4. Requirements

4.1 General

Requirements in order to obtain interoperability are considered to be mandatory. The equipment is compliant to this specification if all mandatory requirements are fully compliant.

Some statements may be considered optional or recommended if stated in the heading. Non-compliance to statements indicated as 'optional' or 'recommended' does not exclude compliance to this specification.

The distributed filter(s) shall comply with the generic specification, Telenor Networks Specification OA 100 [1].

The remote splitter terminates the subscriber line and connects to an ADSL modem (ATU-R) and to the telephone apparatus as depicted in figure 1. At an outlet still present on the U-R₀ interface it is possible to insert a distributed filter and a termination of one or more PSTN apparatus.

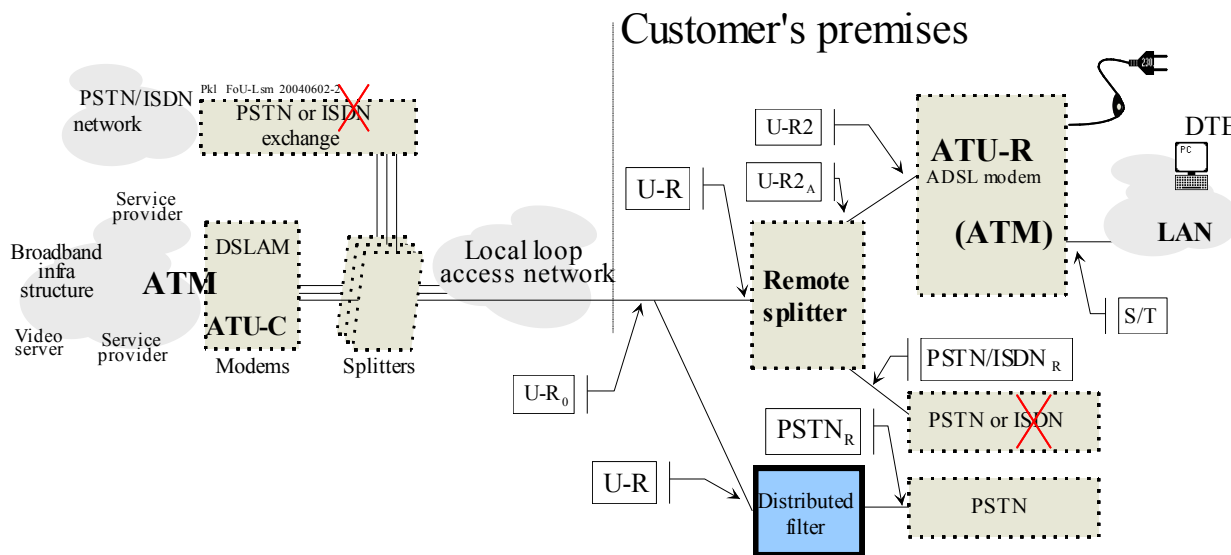


Figure 1 Configuration of equipment

For PSTN applications a telephone apparatus may be attached to the U-R₀ interface, provided that a distributed filter is inserted as depicted in figure 1. The presence of such a distributed filter does not influence on the requirements of the splitter.

4.2 Electrical requirements

The distributed filter(s) shall preserve polarity independency and shall not include any signature networks.

The distributed filter(s) shall comply with ETSI TS 101952-1-5 [4].

4.3 Physical requirements and interfaces

Electrical connections to the distributed filter are performed by two electrical interfaces, each associated with a socket (outlet) or twin lead connections. The location of the two interfaces, denoted: “U-R” (line port) and “PSTN_R” (tele port) are depicted in figure 1.

4.3.1 Customer premise’s interface, U-R₀

A cord connecting the distributed filter to the access network shall be fitted with a plug mating a socket according to EN 60603-7 [5] (RJ45).

The wall socket (or equivalent female connector) complies with EN 60603-7 [5] (RJ45). Signals are present on pins 4 and 5.

4.3.2 Tele port, PSTN_R

The socket shall be according to EN 60603-7 [5] (RJ45). The only contact pins provided shall be pins 4 and 5.

A distributed filter optimised for fixed wiring may use termination screws or insulation displacement connections.

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4.3.3 Line port, U-R (recommendations)

Vendor's preference.

With RJ45 connectors on all or most of the interfaces (U-R, U-R2_A, U-R0, PSTN/ISDN_R and PSTN_R), it is more convenient to adapt different lengths of relevant interconnecting cords. In this case pins 4 and 5 may be used.

4.3.4 External adaptor for one pair connections (optional)

The connecting hardware at customer's premises with old wiring is the three-pin Norwegian/Finish type. In such cases an adapter (as illustrated) with socket according to EN 60603-7 [5] (RJ-45) may as well be supplied.

Signals are present on pins 4 and 5.

4.4 Environmental requirements

4.4.1 CE-marking

Equipment shall comply with requirements specified in order to obtain the CE marking.

4.4.2 EMC

The EU directives concerning EMC are in force and conformance to these EU directives is mandatory. The EU directives are made legal also in Norway (1989/366/EØF, 1991/263/EØF, 1993/97/EØF, 1992/31/EØF, 1993/68/EØF, R&TTE Directive 1999/5/EC).

For requirements in Norwegian regulations, see the relevant EEC directives:

http://ec.europa.eu/enterprise/policies/european-standards/documents/harmonised-standards-legislation/list-references/rtte/index_en.htm

4.4.3 Resistibility

4.4.3.1 The use of gas discharge tubes

The *provision* of gas discharge tubes is not mandatory. If gas discharge tubes are provided, the requirements in Telenor Networks Specification OA 100 [1] shall apply.

4.4.3.2 Protection

The major power distribution system in Norway is the IT-system, which is more susceptible for electromagnetic disturbances. It is recommended that equipment connected to both telecommunication lines and to mains shall resist lightning pulses of 10 kV (enhanced test levels in K.21 [7]).

4.4.4 Climatic and mechanical recommendations

The distributed filters will typically be ordered in large quantities and distributed by one and one unit by public transportation.

4.4.4.1 Storage (recommendations)

Requirements in EN 300019-1-1 class 1.2 [8] apply for storage. Humidity is normally not controlled.

4.4.4.2 Transportation (recommendations)

Requirements in EN 300019-1-2 class 2.3 [9] apply for public transportation.

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4.4.4.3 Operational (recommendations)

Requirements in EN 300019-1-3 class 3.2 [10] apply for stationary use at weather-protected locations. Equipment may be exposed to direct sunshine and humidity is normally not controlled. It is recommended that the equipment may operate over the temperature range of +5°C to +55°C.

4.5 Electrical safety

Requirements in CENELEC EN 60950 [6] apply in general.

Requirements in Norwegian regulations [13]: <http://www.lovdatab.no/cgi-wift/ldles?doc=/sf/sf/sf-20000620-0628.html>