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Exchange Based Splitter Specification for Use with Local Loop Unbundling Line Sharing Service

Issue 1

NICC DSL Task Group

Normative Information

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1. Foreword

This document has been produced by the NICC Task Group on Digital Subscriber Line (DSL). Network Operators, switch and terminal equipment manufacturers, test laboratories, DTI, and Ofcom participated in the Task Group.

2. Introduction

As part of the Local Loop Unbundling (LLU) project in the UK, BT published a technical specification [1] containing the specification of the splitter to be used at the exchange (MDF site) in association with the BT LLU Line Sharing service. Subsequent to this publication, there have been further developments in xDSL technology and ETSI have developed a technical specification for an exchange-based splitter [2].

The ETSI technical specification [2] is in multiple parts and multiple sub-parts. In November 2004 the ETSI technical specification is as follows:

> Part 1: "ADSL splitters for European deployment";
> > Sub-part 1: "Specification of the low pass part of ADSL/POTS splitters";
> > Sub-part 2: "Specification of the high pass part of ADSL/POTS splitters";
> > Sub-part 3: "Specification of ADSL/ISDN splitters";
> > Sub-part 4: "Specification for ADSL/'ISDN or POTS' universal splitters";
> > Sub-part 5: "Specification for ADSL/POTS distributed splitters".

> Part 2: "VDSL splitters for European deployment";
> > Sub-part 1: "Specification of the low pass part of VDSL/POTS splitters";
> > Sub-part 2: "Specification of the high pass part of VDSL/POTS splitters";
> > Sub-part 3: "Specification of VDSL/ISDN splitters";
> > Sub-part 4: "Specification of VDSL/"Other services" splitters".

3. Scope

This document defines the exchange-based splitter for use in association with LLU line sharing services in the UK based on the ETSI technical specification [2]. This specification does not preclude the use of splitters to the BT specification [1] for use with the BT LLU Line Sharing service.

This document shall only cover the low pass part of the DSL/POTS splitters.

The high pass part of the splitter shall not be specified in this document. The high pass part is left to the LLU operators to define.

DSL/ ISDN splitters shall not be specified in this document. Line Sharing DSL/ISDN is not available on BT loops.

Universal splitters shall not be specified in this document. Line Sharing DSL/ISDN is not available on BT loops.

4. General

The main purpose of the DSL over POTS splitter is to separate the transmission of POTS signals and DSL signals, enabling the simultaneous transmission of both services on the same twisted pair. The splitter also serves to protect POTS from interference due to egress (and ingress) from DSL signals. Equally it protects the DSL transmission from transients generated primarily during POTS signalling (dialling, ringing, ring trip, etc.), and it must also prevent interference to the DSL service due to fluctuations in impedance and linearity that occur when telephones change operational state (e.g. from off-hook to on-hook).

5. Specification for the low pass part of ADSL over POTS splitters

When using Line Sharing the ADSL/POTS splitters used on the Local Exchange side of the BT local loops for the low pass part this shall be compliant to either of the following two specifications:

(a)   BT technical specification [1]
(b)   ETSI technical specification [5]

5.1 Options to be used within the ETSI technical specification

5.1.1   Options for splitter requirements
The electrical requirements in the ETSI technical specification are divided into two categories, option A and option B. Option B is appropriate for networks that have one single reference impedance for all terminals and local exchanges. The following option will be used:

Option B.

5.1.2   Requirements relating to metering pulses at 12 kHz or 16 kHz (optional)
Neither 12kHz nor 16kHz subscriber private metering are used within the United Kingdom:

This requirement is not required.

5.1.3   Requirements for Common Mode rejection (optional).
A lack of common-mode rejection can lead to ADSL error performance issues due to mode conversion of common-mode transients passing through the splitters.

This requirement is not required.

6. Specification for the low pass part of VDSL over POTS splitters

When using Line Sharing the VDSL/POTS splitters used on the Local Exchange side of the BT local loops for the low pass part this shall be compliant to the following specification:

(c)   ETSI technical specification [6]

7. Abbreviations

ADSL	Asymmetric Digital Subscriber Line
BT	British Telecommunications plc
DSL	Digital Subscriber Line - any of the modem technologies that send high-speed data over metallic telephone pairs. A DSL line has a dedicated modem at each end of the physical wire pair; typically one of these is in the exchange
DSLAM	Digital Subscriber Line Access Multiplexer
DSL TG	Digital Subscriber Line Task Group A subcommittee of TSG under NICC
ETSI	European Telecommunications Standards Institute
ITU-T	International Telecommunication Union - Telecom Standardization
KCH	Kinston Communications (Hull) plc
LLU	Local Loop Unbundling
LLUO	Local Loop Unbundling Operators
MDF	Main Distribution Frame

NICC	Network Interoperability Consultative Committee
	- a committee of UK industry set up to advise Ofcom (and previously, Oftel) homepage: http://www.nicc.org.uk
POTS	Plain Ordinary Telephone Service - analogue voiceband telephony
xDSL	any variant of DSL modem e.g. ADSL, HDSL, SDSL or VDSL

8. References

[1]   Technical Specification for the BT Local Loop Unbundling Line Sharing Service. Issue: 3. Date: October 2001.   Section 4 "MDF Site Splitter".
http://www.btinterconnect.com/lineshare/line_share_tech_spec.pdf

[2]   ETSI Technical Specification TS 101 952. Access network xDSL transmission filters.

[3]   ETSI Technical Specification TS 101 952-1. Access network xDSL transmission filters; Part 1: ADSL splitters for European deployment.

[4]   ETSI Technical Specification TS 101 952-2. Access network xDSL transmission filters; Part 2: VDSL splitters for European deployment.

[5]   ETSI Technical Specification TS 101 952-1-1. Access network xDSL transmission filters; Part 1: ADSL splitters for European deployment; Sub-part 1: Specification of the low pass part of ADSL/POTS splitters. Version: 1.2.1. Date: 2004 December.

[6]   ETSI Technical Specification TS 101 952-2-1. Access network xDSL transmission filters; Part 2: VDSL splitters for European deployment; Sub-part 1: Specification of the low pass part of VDSL/POTS splitters. Version: Latest. Date: Latest.

9. History

Issue No.	Date	Comments
Issue 1	January 2005	First Issue

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