

# ETSI EN 301 217-2 V1.1.3 (1999-09)

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*European Standard (Telecommunications series)*

**V interfaces at the digital Service Node (SN);  
Interfaces at the VB5.2 reference point for the support of  
broadband or combined narrowband  
and broadband Access Networks (ANs);  
Part 2: Protocol Implementation Conformance  
Statement (PICS) proforma specification**

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**Reference**

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**Keywords**

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# Contents

|                                                                          |           |
|--------------------------------------------------------------------------|-----------|
| Intellectual Property Rights .....                                       | 4         |
| Foreword .....                                                           | 5         |
| Introduction .....                                                       | 5         |
| 1 Scope .....                                                            | 6         |
| 2 References .....                                                       | 6         |
| 3 Definitions and abbreviations .....                                    | 7         |
| 3.1 Definitions .....                                                    | 7         |
| 3.2 Abbreviations .....                                                  | 8         |
| 4 Conformance to this PICS proforma specification .....                  | 9         |
| <b>Annex A (normative): Protocol ICS proforma for EN 301 217-1 .....</b> | <b>10</b> |
| A.1 Guidance for completing the PICS proforma .....                      | 10        |
| A.1.1 Purposes and structure .....                                       | 10        |
| A.1.2 Abbreviations and conventions .....                                | 10        |
| A.1.3 Instructions for completing the PICS proforma .....                | 12        |
| A.2 Identification of the implementation .....                           | 12        |
| A.2.1 Date of the statement .....                                        | 12        |
| A.2.2 Implementation Under Test (IUT) identification .....               | 12        |
| A.2.3 System Under Test (SUT) identification .....                       | 13        |
| A.2.4 Product supplier .....                                             | 13        |
| A.2.5 Client (if different from product supplier) .....                  | 14        |
| A.2.6 PICS contact person .....                                          | 14        |
| A.3 Identification of the protocol .....                                 | 15        |
| A.4 Global statement of conformance .....                                | 15        |
| A.5 Service Node .....                                                   | 15        |
| A.5.1 Main features .....                                                | 15        |
| A.5.1.1 General .....                                                    | 15        |
| A.5.1.2 ATM layer characteristics .....                                  | 16        |
| A.5.1.2.1 Broadband access network connection types .....                | 16        |
| A.5.1.2.2 ATM transfer characteristics .....                             | 16        |
| A.5.2 VB5.2 reference point .....                                        | 17        |
| A.5.2.1 Basic characteristics .....                                      | 17        |
| A.5.2.1.1 Support of a physical interface .....                          | 17        |
| A.5.2.1.2 Physical layer at the VB5.1 reference point .....              | 17        |
| A.5.2.2 ATM layer functions .....                                        | 18        |
| A.5.2.3 ATM adaptation layer .....                                       | 18        |
| A.5.2.3.1 AAL for the RTMC protocol .....                                | 18        |
| A.5.2.3.2 AAL for the B-BCC protocol .....                               | 18        |
| A.5.2.3.3 AAL for circuit emulation of 2 048 kbit/s signals .....        | 19        |
| A.5.2.4 RTMC function and protocol .....                                 | 19        |
| A.5.2.4.1 RTMC main features .....                                       | 19        |
| A.5.2.4.2 RTMC messages .....                                            | 19        |
| A.5.2.4.2.1 RTMC messages received by the Service Node .....             | 19        |
| A.5.2.4.2.2 RTMC messages transmitted by the Service Node .....          | 20        |
| A.5.2.4.3 Timers used in RTMC procedures .....                           | 20        |
| A.5.2.4.4 RTMC function specific information elements .....              | 20        |
| A.5.2.5 B-BCC function and protocol .....                                | 21        |
| A.5.2.5.1 B-BCC main features .....                                      | 21        |
| A.5.2.5.2 B-BCC messages .....                                           | 21        |
| A.5.2.5.2.1 B-BCC protocol messages received by the Service Node .....   | 21        |

|                               |                                                                     |           |
|-------------------------------|---------------------------------------------------------------------|-----------|
| A.5.2.5.2.2                   | B-BCC protocol messages transmitted by the Service Node .....       | 22        |
| A.5.2.5.3                     | Timers used in B-BCC procedures .....                               | 23        |
| A.5.2.5.4                     | B-BCC function specific information elements .....                  | 23        |
| A.5.2.5.5                     | B-BCC information elements based on ITU-T Recommendations .....     | 24        |
| A.5.2.5.6                     | B-BCC information elements supporting ATM-F UNI 4.0 equipment ..... | 25        |
| A.6                           | Access Network .....                                                | 25        |
| A.6.1                         | Main features .....                                                 | 25        |
| A.6.1.1                       | General .....                                                       | 25        |
| A.6.1.2                       | ATM layer characteristics .....                                     | 26        |
| A.6.1.2.1                     | Broadband access network connection types .....                     | 26        |
| A.6.1.2.2                     | ATM transfer characteristics .....                                  | 26        |
| A.6.2                         | Access types .....                                                  | 27        |
| A.6.2.1                       | Support of ATM based access types .....                             | 27        |
| A.6.2.1.1                     | Basic characteristics .....                                         | 27        |
| A.6.2.1.2                     | Physical layer .....                                                | 27        |
| A.6.2.1.3                     | ATM layer functions .....                                           | 28        |
| A.6.2.2                       | Support of non B-ISDN access types .....                            | 28        |
| A.6.2.3                       | Narrowband access types .....                                       | 28        |
| A.6.3                         | VB5.2 reference point .....                                         | 29        |
| A.6.3.1                       | Basic characteristics .....                                         | 29        |
| A.6.3.2                       | Support of a physical interface .....                               | 29        |
| A.6.3.3                       | Physical layer at the VB5.2 reference point .....                   | 29        |
| A.6.3.4                       | ATM layer functions .....                                           | 30        |
| A.6.3.5                       | ATM adaptation layer .....                                          | 30        |
| A.6.3.6                       | AAL for the RTMC protocol .....                                     | 30        |
| A.6.3.7                       | ATM adaptation layer .....                                          | 30        |
| A.6.3.7.1                     | AAL for the RTMC protocol .....                                     | 30        |
| A.6.3.7.2                     | AAL for the B-BCC protocol .....                                    | 31        |
| A.6.3.7.3                     | AAL for circuit emulation of 2 048 kbit/s signals .....             | 31        |
| A.6.3.8                       | RTMC function and protocol .....                                    | 31        |
| A.6.3.8.1                     | RTMC main features .....                                            | 31        |
| A.6.3.8.2                     | RTMC messages .....                                                 | 31        |
| A.6.3.8.2.1                   | RTMC messages received by the Access Network .....                  | 31        |
| A.6.3.8.2.2                   | RTMC messages transmitted by the Access Network .....               | 32        |
| A.6.3.8.3                     | Timers used in RTMC procedures .....                                | 32        |
| A.6.3.8.4                     | RTMC function specific information elements .....                   | 32        |
| A.6.3.9                       | B-BCC function and protocol .....                                   | 33        |
| A.6.3.9.1                     | B-BCC main features .....                                           | 33        |
| A.6.3.9.2                     | B-BCC messages .....                                                | 33        |
| A.6.3.9.2.1                   | B-BCC protocol messages received by the Access Network .....        | 33        |
| A.6.3.9.2.2                   | B-BCC protocol messages transmitted by the Access Network .....     | 34        |
| A.6.3.9.3                     | Timers used in B-BCC procedures .....                               | 35        |
| A.6.3.9.4                     | B-BCC function specific information elements .....                  | 35        |
| A.6.3.9.5                     | B-BCC information elements based on ITU-T Recommendations .....     | 35        |
| A.6.3.9.6                     | B-BCC information elements supporting ATM-F UNI 4.0 equipment ..... | 37        |
| <b>Annex B (informative):</b> | <b>Status of OAM functions based F4/F5 flows .....</b>              | <b>38</b> |
| B.1                           | OAM functions at service port (SN-side) .....                       | 38        |
| B.2                           | OAM functions at user port .....                                    | 39        |
| B.3                           | OAM functions at service port (AN-side) .....                       | 40        |
| <b>Annex C (informative):</b> | <b>Support of ATM transfer capabilities and QoS classes .....</b>   | <b>42</b> |
| C.1                           | ATM transfer capabilities .....                                     | 42        |
| C.2                           | QoS classes .....                                                   | 43        |
| History                       | .....                                                               | 44        |

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Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

## Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Signalling Protocol and Switching (SPS).

The present document is part 2 of a multi-part EN covering V interfaces at the digital Service Node (SN); Interfaces at the VB5.2 reference point for the support of broadband or combined narrowband and broadband Access Networks (ANs), as identified below:

Part 1: "Interface specification";

**Part 2: "Protocol Implementation Conformance Statement (PICS) proforma specification";**

Part 3: "Test Suite Structure and Test Purposes (TSS&TP)";

Part 4: "Abstract Test Suites (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT)".

| National transposition dates                                                           |                  |
|----------------------------------------------------------------------------------------|------------------|
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| Date of withdrawal of any conflicting National Standard (dow):                         | 30 June 2000     |

## Introduction

To evaluate conformance of a particular implementation, it is necessary to have a statement of which capabilities and options have been implemented for a telecommunication specification. Such a statement is called a Protocol Implementation Conformance Statement (PICS).

# 1 Scope

The present document provides the Protocol Implementation Conformance Statement (PICS) proforma for the V interfaces at the digital Service Node (SN) Interfaces at VB5.2 reference point for the support of broadband or combined narrowband and broadband Access Networks defined in EN 301 217-1 [4] in compliance with the relevant requirements, and in accordance with the relevant guidance given in ISO/IEC 9646-7 [6] and ETS 300 406 [2].

It details in tabular form the implementation options, i.e. the optional functions additional to those which are mandatory to implement.

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

- [1] ETS 300 404 (1997): "Broadband Integrated Services Digital Network (B-ISDN); B-ISDN Operation And Maintenance (OAM) principles and functions".
- [2] ETS 300 406 (1995): "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".
- [3] EN 301 005-1 (V1.1): "V interfaces at the digital Service Node (SN); Interface at the VB5.1 reference point for the support of broadband or combined narrowband and broadband Access Network (AN); Part 1: Interface specification".
- [4] EN 301 217-1 (V1.1): "V interfaces at the digital Service Node (SN); Interfaces at the VB5.2 reference point for the support of broadband or combined narrowband and broadband Access Networks (ANs); Part 1: Interface specification".
- [5] ISO/IEC 9646-1 (1994): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".
- [6] ISO/IEC 9646-7 (1995): "Information technology - Open Systems Interconnection -; Conformance testing methodology and framework - Part 7: Implementation Conformance Statements".
- [7] ITU-T Recommendation G.703: "Physical/electrical characteristics of hierarchical digital interfaces".
- [8] ITU-T Recommendation G.957: "Optical interfaces for equipments and systems relating to the synchronous digital hierarchy".
- [9] ITU-T Recommendation I.356 (1996): "B-ISDN ATM layer cell transfer performance".
- [10] ITU-T Recommendation I.371 (1996): "Traffic control and congestion control in B-ISDN".
- [11] ITU-T Recommendation I.610 (1995): "B-ISDN Operation and maintenance principles and functions abstracts".
- [12] ITU-T Recommendation I.732 (1996): "Functional characteristics of ATM equipment".
- [13] ITU-T Recommendation Q.967-1: "V-interfaces at the service node (SN): VB5.1 reference point specification".

- [14] ITU-T Recommendation Q.2931 (1995): "Broadband Integrated Services Digital Network (B-ISDN); Digital subscriber signalling system no. 2 (DSS 2) - User-network Interface (UNI); Layer 3 specification for basic call/connection control".
- [15] ITU-T Recommendation Q.2961.1 (1995): "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. 2 (DSS2); Additional traffic parameters: Additional signalling capabilities to support traffic parameters for the tagging option and the sustainable cell rate parameter set".
- [16] ITU-T Recommendation Q.2961.2 (1997): "Digital Subscriber Signalling System No. 2 (DSS 2) - Additional traffic parameters: Support of ATM Transfer capability in the broadband bearer capability information element.
- [17] ITU-T Recommendation Q.2961.3 (1997): "Digital Subscriber Signalling System No. 2 (DSS 2) - Additional traffic parameters: Signalling capabilities to support traffic parameters for the available bit rate (ABR) ATM transfer capability".
- [18] ITU-T Recommendation Q.2961.4 (1997): "Digital Subscriber Signalling System No. 2 (DSS 2) - Additional traffic parameters: Signalling capabilities to support traffic parameters for the ATM Block Transfer (ABT) ATM transfer capability".
- [19] ITU-T Recommendation Q.2961.5: "DSS2 cell delay variation tolerance indication".
- NOTE 1: Not yet published.
- [20] ITU-T Recommendation Q.2961.6: "Digital Subscriber Signalling System No. 2 (DSS 2) - Additional traffic parameters: Additional signalling procedures for the support of the SBR2 and SBR3 ATM transfer capabilities".
- NOTE 2: Not yet published.
- [21] ITU-T Recommendation Q.2962 (1998): "Digital Subscriber Signalling System No. 2 - Connection characteristics negotiation during call/connection establishment phase".
- [22] The ATM Forum af-tm-0056.000: "Traffic Management Specification 4.0".

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## 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

- terms defined in EN 301 217-1 [4] and EN 301 005-1 [3];
- terms defined in ISO/IEC 9646-1 [5] and in ISO/IEC 9646-7 [6].

In particular, the following terms defined in ISO/IEC 9646-1 [5] apply:

**Protocol Implementation Conformance Statement (PICS):** statement made by the supplier of an implementation or system claimed to conform to a given specification, stating which capabilities have been implemented. The ICS can take several forms: protocol ICS, profile ICS, profile specific ICS, information object ICS, etc

**ICS proforma:** document, in the form of a questionnaire, which when completed for an implementation or system becomes an ICS

**Protocol ICS (PICS):** ICS for an implementation or system claimed to conform to a given protocol specification

**Static conformance review:** review of the extent to which the static conformance requirements are met by the Implementation Under Test (IUT), accomplished by comparing the PICS with the static conformance requirements expressed in the relevant standard(s) (see ISO/IEC 9646-1 [5])

## 3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

|        |                                               |
|--------|-----------------------------------------------|
| AAL1   | ATM Adaptation Layer type 1                   |
| AAL5   | ATM Adaptation Layer type 5                   |
| ABR    | Available Bit Rate                            |
| ABT    | ATM Block Transfer                            |
| AIS    | Alarm Indication Signal                       |
| AN     | Access Network                                |
| ATC    | ATM Transfer Capability                       |
| ATM    | Asynchronous Transfer Mode                    |
| B-AN   | Broadband Access Network                      |
| B-BCC  | Broadband Bearer Connection Control           |
| B-ISDN | Broadband Integrated Services Digital Network |
| B-UNI  | Broadband User Network Interface              |
| CDVT   | Cell Delay Variation Tolerance                |
| DBR    | Deterministic Bit Rate                        |
| DT     | Delayed Transmission                          |
| EFCI   | Explicit Forward Congestion Indication        |
| GFC    | Generic Flow Control                          |
| ICS    | Implementation Conformance Statement          |
| ID     | Identification                                |
| IUT    | Implementation Under Test                     |
| LSP    | Logical Service Port                          |
| NNI    | Network-to-Network Interface                  |
| NPC    | Network Parameter Control                     |
| OAM    | Operations Administration and Maintenance     |
| PDH    | Plesiochronous Digital Hierarchy              |
| PICS   | Protocol Implementation Conformance Statement |
| ptm    | point to multipoint                           |
| ptp    | point to point                                |
| QoS    | Quality of Service                            |
| RDI    | Remote Defect Indication                      |
| RTMC   | Real Time Management Co-ordination (protocol) |
| SBR    | Statistical Bit Rate                          |
| SCS    | System Conformance Statement                  |
| SDH    | Synchronous Digital Hierarchy                 |
| SN     | Service Node                                  |
| SSCF   | Service Specific Co-ordination Function       |
| SSCOP  | Service Specific Connection Oriented Protocol |
| STM    | Synchronous Transport Module                  |
| SUT    | System Under Test                             |
| TC     | Termination Convergence                       |
| UNI    | User Network Interface                        |
| UPC    | Usage Parameter Control                       |
| VC     | Virtual Channel                               |
| VCCT   | Virtual Channel Connection Termination        |
| VCE    | Virtual Channel Entity                        |
| VCI    | Virtual Channel Identifier                    |
| VCME   | Virtual Channel Multiplex Entity              |
| VP     | Virtual Path                                  |
| VPC    | Virtual Path Connection                       |
| VPCI   | Virtual Path Connection Identifier            |
| VPCT   | Virtual Path Connection Termination           |
| VPE    | Virtual Path Entity                           |
| VPI    | Virtual Path Identifier                       |
| VPME   | Virtual Path Multiplex Entity                 |

---

## 4 Conformance to this PICS proforma specification

If it claims to conform to the present document the actual PICS proforma to be filled in by a supplier shall be technically equivalent to the text of the PICS proforma given in annex A, and shall preserve the numbering/naming and ordering of the proforma items.

An PICS which conforms to the present document shall be a conforming PICS proforma completed in accordance with the guidance for completion given in clause A.1.

## Annex A (normative): Protocol ICS proforma for EN 301 217-1

Notwithstanding the provisions of the copyright clause related to the text of the present document, ETSI grants that users of the present document may freely reproduce the PICS proforma in this annex so that it can be used for its intended purposes and may further publish the completed PICS.

### A.1 Guidance for completing the PICS proforma

#### A.1.1 Purposes and structure

The purpose of this PICS proforma is to provide a mechanism whereby a supplier of an implementation of the requirements defined in EN 301 217-1 [4] may provide information about the implementation in a standardized manner.

The PICS proforma is subdivided into subclauses for the following categories of information:

- guidance for completing the PICS proforma;
- identification of the implementation;
- identification of the protocol;
- global statement of conformance.

#### A.1.2 Abbreviations and conventions

The PICS proforma contained in this annex is comprised of information in tabular form in accordance with the guidelines presented in ISO/IEC 9646-7 [6].

##### **Item column**

The item column contains a number which identifies the item in the table.

##### **Item description column**

The item description column describes in free text each respective item (e.g. parameters, timers, etc.). It implicitly means "is <item description> supported by the implementation?".

##### **Status column**

The following notations, defined in ISO/IEC 9646-7 [6], are used for the status column:

|     |                                                                                                                                                                                                                                                                 |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| m   | mandatory - the capability is required to be supported.                                                                                                                                                                                                         |
| o   | optional - the capability may be supported or not.                                                                                                                                                                                                              |
| n/a | not applicable - in the given context, it is impossible to use the capability.                                                                                                                                                                                  |
| x   | prohibited (excluded) - there is a requirement not to use this capability in the given context.                                                                                                                                                                 |
| o.i | qualified optional - for mutually exclusive or selectable options from a set. "i" is an integer which identifies an unique group of related optional items and the logic of their selection which is defined immediately following the table.                   |
| ci  | conditional - the requirement on the capability ("m", "o", "x" or "n/a") depends on the support of other optional or conditional items. "i" is an integer identifying an unique conditional status expression which is defined immediately following the table. |

### Reference column

The reference column makes reference to EN 301 217-1 [4] and EN 301 005-1 [3], except where explicitly stated otherwise.

### Support column

The support column shall be filled in by the supplier of the implementation. The following common notations, defined in ISO/IEC 9646-7 [6], are used for the support column:

|               |                                                                                                              |
|---------------|--------------------------------------------------------------------------------------------------------------|
| Y or y        | supported by the implementation                                                                              |
| N or n        | not supported by the implementation                                                                          |
| N/A, n/a or - | no answer required (allowed only if the status is n/a, directly or after evaluation of a conditional status) |

If this PICS proforma is completed in order to describe a multiple-profile support in a system, it is necessary to be able to answer that a capability is supported for one profile and not supported for another. In that case, the supplier shall enter the unique reference to a conditional expression, preceded by "?" (e.g. ?3). This expression shall be given in the space for comments provided at the bottom of the table. It uses predicates defined in the SCS, each of which refers to a single profile and which takes the value TRUE if and only if that profile is to be used.

EXAMPLE 1: ?3: IF prof1 THEN Y ELSE N

It is also possible to provide a comment to an answer in the space provided at the bottom of the table.

NOTE: As stated in ISO/IEC 9646-7 [6], support for a received PDU requires the ability to parse all valid parameters of that PDU. Supporting a PDU while having no ability to parse a valid parameter is non-conformant. Support for a parameter on a PDU means that the semantics of that parameter are supported.

### References to items

For each possible item answer (answer in the support column) within the PICS proforma a unique reference exists, used, for example, in the conditional expressions. It is defined as the table identifier, followed by a solidus character "/", followed by the item number in the table. If there is more than one support column in a table, the columns are discriminated by letters (a, b, etc.), respectively.

EXAMPLE 2: A.5/4 is the reference to the answer of item 4 in table 5 of annex A.

EXAMPLE 3: A.6/3b is the reference to the second answer (i.e. in the second support column) of item 3 in table 6 of annex A.

### Values allowed column

The values allowed column contains the type, the list, the range, or the length of values allowed. The following notations are used:

- range of values: <min value> .. <max value>;

EXAMPLE 4: 5 .. 20.

- list of values: <value1>, <value2>, ....., <valueN>;

EXAMPLE 5: 2, 4, 6, 8, 9.

EXAMPLE 6: '1101'B, '1011'B, '1111'B.

EXAMPLE 7: '0A'H, '34'H, '2F'H.

- list of named values: <name1>(<val1>), <name2>(<val2>), ....., <nameN>(<valN>);

EXAMPLE 8: reject(1), accept(2).

- length: size (<min size> .. <max size>);

EXAMPLE 9: size (1 .. 8).

### Values supported column

The values supported column shall be filled in by the supplier of the implementation. In this column, the values or the ranges of values supported by the implementation shall be indicated.

### Prerequisite line

A prerequisite line takes the form: Prerequisite: <predicate>.

A prerequisite line after a clause or table title indicates that the whole clause or the whole table is not required to be completed if the predicate is FALSE.

## A.1.3 Instructions for completing the PICS proforma

The supplier of the implementation shall complete the PICS proforma in each of the spaces provided. In particular, an explicit answer shall be entered, in each of the support or supported column boxes provided, using the notation described in subclause A.1.2.

However, the tables containing in "AN role" subclause shall only be completed for user implementations, and the tables containing in "SN role" subclause shall only be completed for network implementations.

If necessary, the supplier may provide additional comments in space at the bottom of the tables, or separately on sheets of paper.

More detailed instructions are given at the beginning of the different subclauses of the PICS proforma.

---

## A.2 Identification of the implementation

Identification of the Implementation Under Test (IUT) and the system in which it resides (the System Under Test (SUT)) should be filled in so as to provide as much detail as possible regarding version numbers and configuration options.

The product supplier information and client information should both be filled in if they are different.

A person who can answer queries regarding information supplied in the PICS should be named as the contact person.

### A.2.1 Date of the statement

.....

### A.2.2 Implementation Under Test (IUT) identification

IUT name:

.....

.....

IUT version:

.....

## A.2.3 System Under Test (SUT) identification

SUT name:

.....  
.....

Hardware configuration:

.....  
.....  
.....

Operating system:

.....

## A.2.4 Product supplier

Name:

.....

Address:

.....  
.....  
.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....  
.....  
.....

## A.2.5 Client (if different from product supplier)

Name:

.....

Address:

.....

.....

.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....

.....

.....

## A.2.6 PICS contact person

(A person to contact if there are any queries concerning the content of the PICS)

Name:

.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....

.....

.....

## A.3 Identification of the protocol

This PICS proforma applies to the following standard:

EN 301 217-1 (V1.1): "V interfaces at the digital Service Node (SN); Interfaces at the VB5.2 reference point for the support of broadband or combined narrowband and broadband Access Networks (ANs); Part 1: Interface specification".

## A.4 Global statement of conformance

Are all mandatory capabilities implemented? (Yes/No) .....

NOTE: Answering "No" to this question indicates non-conformance to the protocol specification. Non-supported mandatory capabilities are to be identified in the PICS, with an explanation of why the implementation is non-conforming, on pages attached to the PICS proforma.

## A.5 Service Node

In the tables below only those functions have been specified as "mandatory" which have to be supported in order to ensure the proper operation of the VB5.2 interface. Functions marked as optional are not required by the VB5.2 interface itself but may be required by an AN- or SN-specification.

Subclauses shown in the "Reference" column of all following tables refer to EN 301 217-1 [4] if marked by [4] or to EN 301 005-1 [3] if marked by [3].

### A.5.1 Main features

#### A.5.1.1 General

**Table A.1: Main features**

| Item | Feature        | Reference | Status | Support |
|------|----------------|-----------|--------|---------|
| 1    | RTMC function  | 11.1 [3]  | m      |         |
| 2    | B-BCC function | 11.2 [4]  | m      |         |

**Table A.2: Service types**

| Item | Type                          | Reference | Status | Support |
|------|-------------------------------|-----------|--------|---------|
| 1    | B-ISDN services               | 7.1 [4]   | o.201  |         |
| 2    | Non B-ISDN ATM based services | 8.2 [4]   | o.201  |         |
| 3    | narrowband services via V5.1  | 8.3.2 [3] | o.201  |         |
| 4    | narrowband services via V5.2  | 8.3.2 [3] | o.201  |         |
| 5    | narrowband services via V3    | 8.3.2 [3] | o.201  |         |
| 6    | other non ATM based services  | 8.3.2 [3] | o.201  |         |

o.201: It is mandatory to support at least one of these items.

## A.5.1.2 ATM layer characteristics

### A.5.1.2.1 Broadband access network connection types

**Table A.3: B-AN connection types**

| Item | Connection type                   | Reference   | Status | Support |
|------|-----------------------------------|-------------|--------|---------|
| 1    | Type A VP- ptp connections        | 7.5.1.1 [3] | o      |         |
| 2    | Type A VC- ptp connections        | 7.5.1.1 [3] | o      |         |
| 3    | Type A VP- ptm connections        | 7.5.1.2 [3] | o      |         |
| 4    | Type A VC- ptm connections        | 7.5.1.2 [3] | o      |         |
| 5    | Type B VP- ptp connections (note) | 7.5.2 [3]   | m      |         |
| 6    | Type B VC- ptp connections (note) | 7.5.2 [3]   | m      |         |
| 7    | Type C VC- ptp connections        | 7.5.3.1 [4] | o      |         |
| 8    | Type C VC- ptm connections        | 7.5.3.1 [4] | o      |         |
| 9    | Type D VP- ptp connections        | 7.6.1 [3]   | o      |         |
| 10   | Type D VC- ptp connections        | 7.6.1 [3]   | o      |         |
| 11   | Type D VP- ptm connections        | 7.6.2 [3]   | o      |         |
| 12   | Type D VC- ptm connections        | 7.6.2 [3]   | o      |         |
| 13   | Type E VC- ptp connections        | 7.6.2 [3]   | o      |         |
| 14   | Type E VC- ptm connections        | 7.6.2 [3]   | o      |         |

NOTE: Mandatory because of RTMC and B-BCC channel.

### A.5.1.2.2 ATM transfer characteristics

**Table A.4: ATM transfer characteristics**

| Item | Characteristics                                               | Reference (subclause) | Status | Support |
|------|---------------------------------------------------------------|-----------------------|--------|---------|
| 1    | VP link interconnection function                              | 9.7 [3]               | c.401  |         |
| 2    | VC link interconnection function                              | 9.7 [3]               | c.402  |         |
| 3    | ATM transfer capabilities at the VP level (note 1)            | 5.1 [3]               | m      |         |
| 4    | QoS classes at the VP level (note 2)                          | 12.1 [3]              | m      |         |
| 5    | Association of ATCs with QoS classes at the VP level (note 5) | 5.1, 6.3, 12.1 [3]    | m      |         |
| 6    | ATM transfer capabilities at the VC level (note 3)            | 5.1 [3]               | m      |         |
| 7    | QoS classes at the VC level (note 4)                          | 12.1 [3]              | m      |         |
| 8    | Association of ATCs with QoS classes at the VC level (note 5) | 5.1, 6.3, 12.1 [3]    | m      |         |

NOTE 1: The support of ATM transfer capabilities is specified in annex C, table C.1-1.  
 NOTE 2: The support of QoS classes is specified in annex C, table C.2-1.  
 NOTE 3: The support of ATM transfer capabilities is specified in annex C, table C.1-2.  
 NOTE 4: The support of QoS classes is specified in annex C, table C.2-2.  
 NOTE 5: The association of QoS classes with ATM transfer capabilities is specified in ITU-T Recommendation I.356 [9].

c.401: IF A.3/1 OR A.3/3 OR A.3/7 OR A.3/9 OR A.3/11 OR A.3/13 THEN m ELSE n/a.

c.402: IF A.3/2 OR A.3/4 OR A.3/8 OR A.3/10 OR A.3/12 OR A.3/14 THEN m ELSE n/a.

## A.5.2 VB5.2 reference point

### A.5.2.1 Basic characteristics

**Table A.5: Basic characteristics of the VB5.2 interface**

| Item | Characteristic                                             | Reference | Status | Support |
|------|------------------------------------------------------------|-----------|--------|---------|
| 1    | one VB5.2 reference point via one TC function              | 6.2.2 [3] | o      |         |
| 2    | one VB5.2 reference point via multiple TC functions        | 6.2.2 [3] | o      |         |
| 3    | different VB5.2 reference points via common TC function(s) | 6.2.2 [3] | o      |         |

#### A.5.2.1.1 Support of a physical interface

**Table A.6: Physical interface at the VB5.2 reference point**

| Item | Characteristic                                     | Reference   | Status | Support |
|------|----------------------------------------------------|-------------|--------|---------|
| 1    | physical interface(s) at the VB5.2 reference point | 6.2.1 [3]   | o      |         |
| 2    | a transmission path identification method          | 6.2.4.5 [3] | c.601  |         |

c.601: IF A.6/1 THEN m ELSE n/a.

#### A.5.2.1.2 Physical layer at the VB5.1 reference point

**Table A.7: Physical layer at the VB5.1 reference point**

| Item                                                         | Physical layer options                    | Reference   | Status | Support |
|--------------------------------------------------------------|-------------------------------------------|-------------|--------|---------|
| 1                                                            | PDH/Electrical (G.703 [7])/E3             | Annex F [3] | c.701  |         |
| 2                                                            | SDH/Electrical (G.703 [7])/STM1           | Annex F [3] | c.701  |         |
| 3                                                            | SDH/Optical (G.957 [8] intra-office)/STM1 | Annex F [3] | c.701  |         |
| 4                                                            | SDH/Optical (G.957 [8] intra-office)/STM4 | Annex F [3] | c.701  |         |
| 5                                                            | SDH/Optical (G.957 [8] short haul)/STM1   | Annex F [3] | c.701  |         |
| 6                                                            | SDH/Optical (G.957 [8] short haul)/STM4   | Annex F [3] | c.701  |         |
| 7                                                            | other (note)                              |             | c.701  |         |
| NOTE: Other physical layer options can be added if required. |                                           |             |        |         |

c.701: IF A.6/1 THEN it is mandatory to support at least one of these items.

## A.5.2.2 ATM layer functions

**Table A.8: ATM layer at the VB5.1 reference point**

| Item                                                                                      | ATM layer characteristics                                                  | Reference (subclause) | Status | Support |
|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|-----------------------|--------|---------|
| 1                                                                                         | cell header format according to NNI specification                          | 6.3.1 [3]             | m      |         |
| 2                                                                                         | provision of VPI and VCI values for the RTMC channel and the B-BCC channel | 6.3.1 [3]             | m      |         |
| 3                                                                                         | Selective cell discard at VPME level                                       | 9.9.2 [3]             | o      |         |
| 4                                                                                         | VP NPC                                                                     | 9.9.2 [3]             | o      |         |
| 5                                                                                         | VP traffic shaping                                                         | 9.9.2 [3]             | o      |         |
| 6                                                                                         | VP resource management cells                                               | 9.9.2 [3]             | o      |         |
| 7                                                                                         | EFCI setting at VPE                                                        | 9.9.2 [3]             | o      |         |
| 8                                                                                         | F4 OAM cells insertion/extraction at VPE level (note 1)                    | 9.9.2 [3]             | m      |         |
| 9                                                                                         | F4 OAM non-intrusive monitoring at VPE level (note 1)                      | 9.9.2 [3]             | m      |         |
| 10                                                                                        | F4 OAM cells insertion/extraction at VPCT level (note 1)                   | 9.9.2 [3]             | m      |         |
| 11                                                                                        | Selective cell discard at VCME level                                       | 9.9.2 [3]             | o      |         |
| 12                                                                                        | VC UPC                                                                     | 9.9.2 [3]             | c.801  |         |
| 13                                                                                        | VC NPC                                                                     | 9.9.2 [3]             | o      |         |
| 14                                                                                        | VC traffic shaping                                                         | 9.9.2 [3]             | o      |         |
| 15                                                                                        | VC resource management cells                                               | 9.9.2 [3]             | o      |         |
| 16                                                                                        | EFCI setting at VCE                                                        | 9.9.2 [3]             | o      |         |
| 17                                                                                        | F5 OAM cells insertion/extraction at VCE level (note 2)                    | 9.9.2 [3]             | m      |         |
| 18                                                                                        | F5 OAM non-intrusive monitoring at VCE level (note 2)                      | 9.9.2 [3]             | m      |         |
| 19                                                                                        | F5 OAM cells insertion/extraction at VCCT level (note 2)                   | 9.9.2 [3]             | m      |         |
| NOTE 1: The status for the individual sub-functions is specified in annex B, table B.1-1. |                                                                            |                       |        |         |
| NOTE 2: The status for the individual sub-functions is specified in annex B, table B.1-2. |                                                                            |                       |        |         |

c.801: IF A.3/1 OR A.3/3 OR A.3/7 OR A.3/9 OR A.3/11 OR A.3/13 THEN m ELSE n/a.

## A.5.2.3 ATM adaptation layer

### A.5.2.3.1 AAL for the RTMC protocol

**Table A.9: AAL functions for the RTMC protocol**

| Item | Are the AAL functions for the RTMC protocol compliant with | Reference | Status | Support |
|------|------------------------------------------------------------|-----------|--------|---------|
| 1    | AAL5 specification                                         | 6.4.5 [3] | m      |         |
| 2    | SSCOP specification                                        | 6.4.5 [3] | m      |         |
| 3    | SSCF specification                                         | 6.4.5 [3] | m      |         |

### A.5.2.3.2 AAL for the B-BCC protocol

**Table A.10: AAL functions for the B-BCC protocol**

| Item | Are the AAL functions for the B-BCC protocol compliant with | Reference | Status | Support |
|------|-------------------------------------------------------------|-----------|--------|---------|
| 1    | AAL5 specification                                          | 6.4.6 [4] | m      |         |
| 2    | SSCOP specification                                         | 6.4.6 [4] | m      |         |
| 3    | SSCF specification                                          | 6.4.6 [4] | m      |         |

### A.5.2.3.3 AAL for circuit emulation of 2 048 kbit/s signals

**Table A.11: AAL functions for circuit emulation of 2 048 kbit/s signals**

| Item | AAL type                                           | Reference   | Status | Support |
|------|----------------------------------------------------|-------------|--------|---------|
| 1    | AAL1 for circuit emulation of 2 048 kbit/s signals | 8.3.2.2 [3] | c.1101 |         |

c.1101: IF A.2/3 OR A.2/4 OR A.2/5 THEN m ELSE o.

### A.5.2.4 RTMC function and protocol

#### A.5.2.4.1 RTMC main features

**Table A.12: RTMC procedures**

| Item | RTMC main features                  | Reference (clause) | Status | Support |
|------|-------------------------------------|--------------------|--------|---------|
| 1    | General error handling procedures   | 13.3.1.5 [3]       | m      |         |
| 2    | Block and Unblock procedures        | 13.3.2.1 [3]       | m      |         |
| 3    | Shutting down of resources          | 13.3.2.2 [3]       | m      |         |
| 4    | VPCI consistency check procedures   | 13.3.3 [3]         | o      |         |
| 5    | RTMC Start-up procedure             | 13.3.4.1 [3]       | m      |         |
| 6    | Verify LSP ID procedure             | 13.3.4.2 [3]       | m      |         |
| 7    | Reset complete LSP procedure        | 13.3.4.3 [3]       | m      |         |
| 8    | Reset VPC procedure                 | 13.3.4.4 [3]       | o      |         |
| 9    | Compatibility instruction procedure | 13.6.1.5.2 [3]     | m      |         |

#### A.5.2.4.2 RTMC messages

The tables in this subclause ask questions related to the supported RTMC messages in the service node role.

##### A.5.2.4.2.1 RTMC messages received by the Service Node

Indicating support for an item in table A.13 states that the implementation has the ability to recognize the messages listed in that item. Support for the receipt of a particular type of RTMC message means support for recognizing and acting upon all valid instances of that message type, including all valid message parameters, to the extent required by EN 301 005-1 [3].

**Table A.13: RTMC messages received by the Service node**

| Item | message              | Reference (clause) | Status | Support |
|------|----------------------|--------------------|--------|---------|
| 1    | BLOCK_RSC            | 14.2.1.2.1 [3]     | m      |         |
| 2    | AWAIT_CLEAR          | 14.2.1.2.3 [3]     | m      |         |
| 3    | AWAIT_CLEAR_COMP_ACK | 14.2.1.2.6 [3]     | m      |         |
| 4    | UNBLOCK_RSC          | 14.2.1.2.7 [3]     | m      |         |
| 5    | CONS_CHECK_REQ_ACK   | 14.2.1.3.2 [3]     | c.1301 |         |
| 6    | CONS_CHECK_END_ACK   | 14.2.1.3.4 [3]     | c.1301 |         |
| 7    | LSPID                | 14.2.1.4.1 [3]     | m      |         |
| 8    | REQ_LSPID            | 14.2.1.4.2 [3]     | m      |         |
| 9    | RESET_RSC            | 14.2.1.4.3 [3]     | m      |         |
| 10   | RESET_RSC_ACK        | 14.2.1.4.4 [3]     | m      |         |
| 11   | PROTOCOL_ERROR       | 14.2.1.4.5 [3]     | m      |         |

c.1301: IF A.12/4 THEN m ELSE n/a.

#### A.5.2.4.2.2 RTMC messages transmitted by the Service Node

Indicating support for an item in table A.14 states that the implementation has the ability to transmit the message listed in that item.

**Table A.14: RTMC messages transmitted by the Service Node**

| Item | message          | Reference (clause) | Status | Support |
|------|------------------|--------------------|--------|---------|
| 1    | BLOCK_RSC_ACK    | 14.2.1.2.2 [3]     | m      |         |
| 2    | AWAIT_CLEAR_ACK  | 14.2.1.2.4 [3]     | m      |         |
| 3    | AWAIT_CLEAR_COMP | 14.2.1.2.5 [3]     | m      |         |
| 4    | UNBLOCK_RSC_ACK  | 14.2.1.2.8 [3]     | m      |         |
| 5    | CONS_CHECK_REQ   | 14.2.1.3.1 [3]     | c.1401 |         |
| 6    | CONS_CHECK_END   | 14.2.1.3.3 [3]     | c.1401 |         |
| 7    | LSPID            | 14.2.1.4.1 [3]     | m      |         |
| 8    | REQ_LSPID        | 14.2.1.4.2 [3]     | m      |         |
| 9    | RESET_RSC        | 14.2.1.4.3 [3]     | m      |         |
| 10   | RESET_RSC_ACK    | 14.2.1.4.4 [3]     | m      |         |
| 11   | PROTOCOL_ERROR   | 14.2.1.4.5 [3]     | m      |         |

c.1401: IF A.12/4 THEN m ELSE n/a.

#### A.5.2.4.3 Timers used in RTMC procedures

**Table A.15: Timers used in RTMC procedures**

| Item | Timer      | Reference   | Status | Support | Value   |           | Tolerance |           |
|------|------------|-------------|--------|---------|---------|-----------|-----------|-----------|
|      |            |             |        |         | default | supported | default   | supported |
| 1    | T_start    | Annex A [3] | m      |         | 300s    |           | ±10 %     |           |
| 2    | T_acl      | Annex A [3] | m      |         | 1s      |           | ±10 %     |           |
| 3    | T_lspid    | Annex A [3] | m      |         | 1s      |           | ±10 %     |           |
| 4    | T_reset    | Annex A [3] | m      |         | 60s     |           | ±10 %     |           |
| 5    | T_consreq  | Annex A [3] | c.1501 |         | 10s     |           | ±10 %     |           |
| 6    | T_consensd | Annex A [3] | c.1501 |         | 10s     |           | ±10 %     |           |

c.1501: IF A.12/4 THEN m ELSE n/a.

#### A.5.2.4.4 RTMC function specific information elements

Table A.16 deals with the RTMC function specific information that may be transmitted or received in a RTMC message by the IUT in the service node role.

Indicating support for an item in table A.16 in this subclause states that the implementation has the ability:

- to process the information element when received in any of the RTMC messages for which the presence of this information element is specified;
- to generate and to transmit the information element in any of the RTMC messages for which the inclusion of this information element is specified.

**Table A.16: RTMC Information elements**

| Item | Information elements        | Reference (clause) | Status | Support |
|------|-----------------------------|--------------------|--------|---------|
| 1    | Blocked resource identifier | 14.2.2.2 [3]       | m      |         |
| 2    | Protocol error cause        | 14.2.2.3 [3]       | m      |         |
| 3    | Repeat indicator            | 14.2.2.4 [3]       | m      |         |
| 4    | Result indicator            | 14.2.2.5 [3]       | m      |         |
| 5    | Resource identifier         | 14.2.2.6 [3]       | m      |         |

## A.5.2.5 B-BCC function and protocol

### A.5.2.5.1 B-BCC main features

**Table A.17: B-BCC procedures**

| Item | Function                                                                         | Reference      | Status | Support |
|------|----------------------------------------------------------------------------------|----------------|--------|---------|
| 1    | General error handling                                                           | 13.6.1.5 [4]   | m      |         |
| 2    | Bearer connection establishment procedure                                        | 13.6.2.1 [4]   | m      |         |
| 3    | Bearer connection release procedure                                              | 13.6.2.2 [4]   | m      |         |
| 4    | Bearer connection modification procedure                                         | 13.6.2.3 [4]   | o      |         |
| 5    | Branch establishment procedure                                                   | 13.6.3.1 [4]   | o      |         |
| 6    | Branch release procedure                                                         | 13.6.3.2 [4]   | o      |         |
| 7    | B-BCC start-up procedure                                                         | 13.6.4.5 [4]   | m      |         |
| 8    | B-BCC reset procedure                                                            | 13.6.4.1 [4]   | m      |         |
| 9    | B-BCC restart procedure                                                          | 13.6.4.6 [4]   | m      |         |
| 10   | AN fault procedure                                                               | 13.6.4.2 [4]   | m      |         |
| 11   | automatic congestion control                                                     | 13.5.12 [4]    | o      |         |
| 12   | compatibility instruction procedure                                              | 13.6.1.5.2 [4] | m      |         |
| 13   | connections characteristic negotiation procedure during connection establishment | 13.5.4.3 [4]   | o      |         |
| 14   | ATM traffic descriptor modification with negotiation                             | 13.5.6 [4]     | o      |         |
| 15   | SAAL establishment procedure                                                     | 13.6.4.4 [4]   | m      |         |

### A.5.2.5.2 B-BCC messages

The tables in this subclause ask questions related to the supported B-BCC protocol messages in the service node role.

#### A.5.2.5.2.1 B-BCC protocol messages received by the Service Node

Indicating support for an item in table A.18 states that the implementation has the ability to recognize the messages listed in that item. Support for the receipt of a particular type of B-BCC protocol message means support for recognizing and acting upon all valid instances of that message type, including all valid message parameters, to the extent required by EN 301 217-1 [4].

**Table A.18: B-BCC protocol messages received by the Service Node**

| Item | message           | Reference<br>(clause) | Status | Support |
|------|-------------------|-----------------------|--------|---------|
| 1    | ALLOC_ACC         | 14.3.2.2 [4]          | m      |         |
| 2    | ALLOC_REJ         | 14.3.2.3 [4]          | m      |         |
| 3    | ALLOC_COMP_ACC    | 14.3.2.5 [4]          | m      |         |
| 4    | ALLOC_COMP_REJ    | 14.3.2.6 [4]          | m      |         |
| 5    | DEALLOC_ACC       | 14.3.2.8 [4]          | m      |         |
| 6    | BBCC_RESET_ACC    | 14.3.3.2 [4]          | m      |         |
| 7    | BBCC_RESET_REJ    | 14.3.3.3 [4]          | m      |         |
| 8    | BBCC_PRESYNC_ACC  | 14.3.3.5 [4]          | m      |         |
| 9    | BBCC_PRESYNC_REJ  | 14.3.3.6 [4]          | m      |         |
| 10   | AN_FAULT          | 14.3.3.7 [4]          | m      |         |
| 11   | PROTOCOL_ERROR    | 14.3.3.9 [4]          | m      |         |
| 12   | MODIFY_ACC        | 14.3.4.2 [4]          | c.1801 |         |
| 13   | MODIFY_REJ        | 14.3.4.3 [4]          | c.1801 |         |
| 14   | MODIFY_COMP_ACC   | 14.3.4.5 [4]          | c.1801 |         |
| 15   | MODIFY_COMP_REJ   | 14.3.4.6 [4]          | c.1801 |         |
| 16   | MODIFY_ABORT_ACC  | 14.3.4.8 [4]          | c.1801 |         |
| 17   | MODIFY_ABORT_REJ  | 14.3.4.9 [4]          | c.1801 |         |
| 18   | ADD_BRANCH_ACC    | 14.3.5.2 [4]          | c.1802 |         |
| 19   | ADD_BRANCH_REJ    | 14.3.5.3 [4]          | c.1802 |         |
| 20   | UPDATE_BRANCH_ACC | 14.3.5.5 [4]          | c.1802 |         |
| 21   | UPDATE_BRANCH_REJ | 14.3.5.6 [4]          | c.1802 |         |
| 22   | DROP_BRANCH_ACC   | 14.3.5.8 [4]          | c.1802 |         |
| 23   | DROP_BRANCH_REJ   | 14.3.5.9 [4]          | c.1802 |         |

c.1801: IF A.17/4 THEN m ELSE n/a.

c.1802: IF A.17/5 AND A.17/6 THEN m ELSE n/a.

#### A.5.2.5.2.2 B-BCC protocol messages transmitted by the Service Node

Indicating support for an item in table A.19 states that the implementation has the ability to transmit the message listed in that item.

**Table A.19: B-BCC protocol messages transmitted by the Service Node**

| Item | message        | Reference<br>(clause) | Status | Support |
|------|----------------|-----------------------|--------|---------|
| 1    | ALLOC          | 14.3.2.1 [4]          | m      |         |
| 2    | ALLOC_COMP     | 14.3.2.4 [4]          | m      |         |
| 3    | DEALLOC        | 14.3.2.7 [4]          | m      |         |
| 4    | BBCC_RESET     | 14.3.3.1 [4]          | m      |         |
| 5    | BBCC_PRESYNC   | 14.3.3.4 [4]          | m      |         |
| 6    | AM_FAULT_ACC   | 14.3.3.8 [4]          | m      |         |
| 7    | PROTOCOL_ERROR | 14.3.3.9 [4]          | m      |         |
| 8    | MODIFY         | 14.3.4.1 [4]          | c.1901 |         |
| 9    | MODIFY_COMP    | 14.3.4.4 [4]          | c.1901 |         |
| 10   | MODIFY_ABORT   | 14.3.4.7 [4]          | c.1901 |         |
| 11   | ADD_BRANCH     | 14.3.5.1 [4]          | c.1902 |         |
| 12   | UPDATE_BRANCH  | 14.3.5.4 [4]          | c.1902 |         |
| 13   | DROP_BRANCH    | 14.3.5.7 [4]          | c.1902 |         |

c.1901: IF A.17/4 THEN m ELSE n/a.

c.1902: IF A.17/5 AND A.17/6 THEN m ELSE n/a.

### A.5.2.5.3 Timers used in B-BCC procedures

**Table A.20: Timers used in B-BCC procedures**

| Item | Timer          | Reference    | Status | Support | Value   |           | Tolerance |           |
|------|----------------|--------------|--------|---------|---------|-----------|-----------|-----------|
|      |                |              |        |         | default | supported | default   | supported |
| 1    | T_Alloc        | 13.6.1.6 [4] | m      |         | 15 s    |           | ±10 %     |           |
| 2    | T_AllocComp    | 13.6.1.6 [4] | m      |         | 15 s    |           | ±10 %     |           |
| 3    | T_BbccReset    | 13.6.1.6 [4] | m      |         | 30 s    |           | ±10 %     |           |
| 4    | T_BbccPresync  | 13.6.1.6 [4] | m      |         | 15 s    |           | ±10 %     |           |
| 5    | T_Dealloc      | 13.6.1.6 [4] | m      |         | 30 s    |           | ±10 %     |           |
| 6    | T_Modify       | 13.6.1.6 [4] | c.2001 |         | 15 s    |           | ±10 %     |           |
| 7    | T_ModifyComp   | 13.6.1.6 [4] | c.2001 |         | 15 s    |           | ±10 %     |           |
| 8    | T_ModifyAbort  | 13.6.1.6 [4] | c.2001 |         | 15 s    |           | ±10 %     |           |
| 9    | T_AddBranch    | 13.6.1.6 [4] | c.2002 |         | 15 s    |           | ±10 %     |           |
| 10   | T_UpdateBranch | 13.6.1.6 [4] | c.2002 |         | 15 s    |           | ±10 %     |           |
| 11   | T_DropBranch   | 13.6.1.6 [4] | c.2002 |         | 30 s    |           | ±10 %     |           |
| 12   | T_BbccStartup  | 13.6.1.6 [4] | m      |         | 180 s   |           | ±10 %     |           |
| 13   | T_BbccRestart  | 13.6.1.6 [4] | m      |         | 180 s   |           | ±10 %     |           |

c.2001: IF A.17/4 THEN m ELSE n/a.

c.2002: IF A.17/5 AND A.17/6 THEN m ELSE n/a.

### A.5.2.5.4 B-BCC function specific information elements

Table A.53 deals with the B-BCC function specific information that may be transmitted or received in a B-BCC protocol message by the IUT in the service node role.

Indicating support for an item in table A.21 in this subclause states that the implementation has the ability:

- to process the information element when received in any of the B-BCC protocol messages for which the presence of this information element is specified;
- to generate and to transmit the information element in any of the B-BCC protocol messages for which the inclusion of this information element is specified.

**Table A.21: B-BCC protocol information elements**

| Item | Information elements               | Reference (clause) | Status | Support |
|------|------------------------------------|--------------------|--------|---------|
| 1    | Connection reference number        | 14.3.6.2 [4]       | m      |         |
| 2    | Connection reference number list   | 14.3.6.3 [4]       | m      |         |
| 3    | User port connection identifier    | 14.3.6.4 [4]       | m      |         |
| 4    | Service port connection identifier | 14.3.6.5 [4]       | m      |         |
| 5    | Alternative user port VPCI         | 14.3.6.6 [4]       | m      |         |
| 6    | Alternative service port VPCI      | 14.3.6.7 [4]       | m      |         |
| 7    | Automatic congestion level         | 14.3.6.8 [4]       | c.2101 |         |
| 8    | Reject cause                       | 14.3.6.9 [4]       | m      |         |
| 9    | Branch identifier                  | 14.3.6.10 [4]      | c.2102 |         |
| 10   | Branch identifier list             | 14.3.6.11 [4]      | c.2102 |         |

c.2101: IF A.17/11 THEN m ELSE n/a.

c.2102: IF A.17/5 AND A.17/6 THEN m ELSE n/a.

## A.5.2.5.5 B-BCC information elements based on ITU-T Recommendations

**Table A.22: ATM traffic descriptor**

| Item | coding according to           | Reference    | Status | Support |
|------|-------------------------------|--------------|--------|---------|
| 1    | subclause 4.5.6/Q.2931 [14]   | 14.3.7.1 [4] | m      |         |
| 2    | subclause 8.2.1/Q.2961-1 [15] | 14.3.7.1 [4] | o      |         |
| 3    | subclause 8.2.1/Q.2961-3 [17] | 14.3.7.1 [4] | o      |         |
| 4    | subclause 8.2.1/Q.2961-4 [18] | 14.3.7.1 [4] | o      |         |

**Table A.23: Broadband bearer capability**

| Item | coding according to           | Reference    | Status | Support |
|------|-------------------------------|--------------|--------|---------|
| 1    | subclause 2.6.1/Q.2961-2 [16] | 14.3.7.2 [4] | m      |         |
| 2    | subclause 8.2.3/Q.2961-3 [17] | 14.3.7.2 [4] | o      |         |
| 3    | subclause 8.2.2/Q.2961-4 [18] | 14.3.7.2 [4] | o      |         |
| 4    | subclause 8.2.2/Q.2961-6 [20] | 14.3.7.2 [4] | o      |         |

**Table A.24: OAM traffic descriptor**

| Item | coding according to          | Reference    | Status | Support |
|------|------------------------------|--------------|--------|---------|
| 1    | subclause 4.5.24/Q.2931 [14] | 14.3.7.3 [4] | m      |         |

**Table A.25: QoS parameter**

| Item | information element                              | Reference    | Status | Support |
|------|--------------------------------------------------|--------------|--------|---------|
| 1    | coding according to subclause 4.5.18/Q.2931 [14] | 14.3.7.4 [4] | m      |         |

**Table A.26: ABR set-up parameters**

| Item | coding according to           | Reference    | Status | Support |
|------|-------------------------------|--------------|--------|---------|
| 1    | subclause 8.2.2/Q.2961-3 [17] | 14.3.7.5 [4] | o      |         |

**Table A.27: End-to-End transit delay**

| Item | coding according to          | Reference    | Status | Support |
|------|------------------------------|--------------|--------|---------|
| 1    | subclause 4.5.17/Q.2931 [14] | 14.3.7.6 [4] | m      |         |

**Table A.28: Cell delay variation tolerance (CDVT)**

| Item | coding according to            | Reference    | Status | Support |
|------|--------------------------------|--------------|--------|---------|
| 1    | subclause 4.5.17/Q.2961-5 [19] | 14.3.7.7 [4] | o      |         |

**Table A.29: Alternative ATM traffic descriptor**

| Item | coding according to         | Reference    | Status | Support |
|------|-----------------------------|--------------|--------|---------|
| 1    | subclause 8.2.1/Q.2962 [21] | 14.3.7.8 [4] | o      |         |

**Table A.30: Minimum acceptable ATM traffic descriptor**

| Item | coding according to           | Reference    | Status | Support |
|------|-------------------------------|--------------|--------|---------|
| 1    | subclause 8.2.2/Q.2962 [21]   | 14.3.7.9 [4] | o      |         |
| 2    | subclause 8.2.4/Q.2961-3 [17] | 14.3.7.9 [4] | o      |         |
| 3    | subclause 8.2.4/Q.2961-4 [18] | 14.3.7.9 [4] | o      |         |

**Table A.31: Protocol error cause**

| Item | coding according to         | Reference     | Status | Support |
|------|-----------------------------|---------------|--------|---------|
| 1    | Recommendation Q.967-1 [13] | 14.3.7.10 [4] | m      |         |

#### A.5.2.5.6 B-BCC information elements supporting ATM-F UNI 4.0 equipment

**Table A.32: Modified information elements**

| Item | Information elements               | Reference (clause) | Status | Support |
|------|------------------------------------|--------------------|--------|---------|
| 1    | ATM Traffic Descriptor             | Clause B.3 [4]     | o      |         |
| 2    | Alternative ATM Traffic Descriptor | Clause B.3 [4]     | o      |         |

**Table A.33: Additional information elements**

| Item | Information elements      | Reference (clause)    | Status | Support |
|------|---------------------------|-----------------------|--------|---------|
| 1    | Extended QoS parameters   | Subclause B.5.4.2 [4] | o      |         |
| 2    | ABR Additional Parameters | Subclause B.5.4.3 [4] | o      |         |

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## A.6 Access Network

In the tables below only those functions have been specified as "mandatory" which have to be supported in order to ensure the proper operation of the VB5.2 interface. Functions marked as optional are not required by the VB5.2 interface itself but may be required by an AN- or SN-specification.

Subclauses shown in the "Reference" column of all following tables refer to EN 301 217-1 [4] if marked by [4] or to EN 301 005-1 [3] if marked by [3].

### A.6.1 Main features

#### A.6.1.1 General

**Table A.34: Main features**

| Item | Feature                            | Reference | Status | Support |
|------|------------------------------------|-----------|--------|---------|
| 1    | B-ISDN-Access types                | 7.1 [3]   | o      |         |
| 2    | Narrowband access                  | 7.6.3 [3] | o      |         |
| 3    | Non B-ISDN access, ATM-based       | 8.2 [3]   | o      |         |
| 4    | Non B-ISDN access, non ATM-based   | 8.2 [3]   | o      |         |
| 5    | on-demand connectivity at VC level | 5.4.3 [4] | m      |         |
| 6    | RTMC function                      | 11.1 [3]  | m      |         |
| 7    | B-BCC function                     | 11.2 [4]  | m      |         |
| 8    | multiple VB5.2 reference points    | 10.2 [3]  | o      |         |

## A.6.1.2 ATM layer characteristics

### A.6.1.2.1 Broadband access network connection types

**Table A.35: B-AN connection types**

| Item | Connection type                             | Reference   | Status | Support |
|------|---------------------------------------------|-------------|--------|---------|
| 1    | Type A VP- ptp connections                  | 7.5.1.1 [3] | o      |         |
| 2    | Type A VC- ptp connections                  | 7.5.1.1 [3] | o      |         |
| 3    | Type A VP- ptm connections                  | 7.5.1.2 [3] | o      |         |
| 4    | Type A VC- ptm connections                  | 7.5.1.2 [3] | o      |         |
| 5    | Type B VP- ptp connections (note)           | 7.5.2 [3]   | m      |         |
| 6    | Type B VC- ptp connections (note)           | 7.5.2 [3]   | m      |         |
| 7    | Type C VC- ptp connections                  | 7.5.3.1 [4] | o      |         |
| 8    | Type C VC- ptm connections (unidirectional) | 7.5.3.1 [4] | o      |         |
| 9    | Type D VP- ptp connections                  | 7.6.1 [3]   | o      |         |
| 10   | Type D VC- ptp connections                  | 7.6.1 [3]   | o      |         |
| 11   | Type D VP- ptm connections                  | 7.6.2 [3]   | o      |         |
| 12   | Type D VC- ptm connections                  | 7.6.2 [3]   | o      |         |
| 13   | Type E VC- ptp connections                  | 7.6.2 [4]   | o      |         |
| 14   | Type E VC- ptm connections                  | 7.6.2 [4]   | o      |         |

NOTE: Mandatory because of RTMC and B-BCC channel.

### A.6.1.2.2 ATM transfer characteristics

**Table A.36: ATM transfer characteristics**

| Item | Characteristics                                               | Reference (subclause) | Status | Support |
|------|---------------------------------------------------------------|-----------------------|--------|---------|
| 1    | VP link interconnection function                              | 9.7 [3]               | c.3601 |         |
| 2    | VC link interconnection function                              | 9.7 [3]               | c.3602 |         |
| 3    | ATM transfer capabilities at the VP level (note 1)            | 5.1 [3]               | m      |         |
| 4    | QoS classes at the VP level (note 2)                          | 12.1 [3]              | m      |         |
| 5    | Association of ATCs with QoS classes at the VP level (note 5) | 5.1, 6.3, 12.1 [3]    | m      |         |
| 6    | ATM transfer capabilities at the VC level (note 3)            | 5.1 [3]               | m      |         |
| 7    | QoS classes at the VC level (note 4)                          | 12.1 [3]              | m      |         |
| 8    | Association of ATCs with QoS classes at the VC level (note 5) | 5.1, 6.3, 12.1        | m      |         |

NOTE 1: The support of ATM transfer capabilities is specified in annex C, table C.1-1.  
 NOTE 2: The support of QoS classes is specified in annex C, table C.2-1.  
 NOTE 3: The support of ATM transfer capabilities is specified in annex C, table C.1-2.  
 NOTE 4: The support of QoS classes is specified in annex C, table C.2-2.  
 NOTE 5: The association of QoS classes with ATM transfer capabilities is specified in ITU-T Recommendation I.356 [9].

c.3601: IF A.35/1 OR A.35/3 OR A.35/7 OR A.35/9 OR A.35/11 OR A.35/13 THEN m ELSE n/a.

c.3602: IF A.35/2 OR A.35/4 OR A.35/8 OR A.35/10 OR A.35/12 OR A.35/14 THEN m ELSE n/a.

## A.6.2 Access types

### A.6.2.1 Support of ATM based access types

#### A.6.2.1.1 Basic characteristics

**Table A.37: Basic characteristics of the UNI**

| Item | Characteristic                      | Reference | Status | Support |
|------|-------------------------------------|-----------|--------|---------|
| 1    | UNIs based on a single TC function  | 6.2.1 [3] | c.3701 |         |
| 2    | UNIs based on multiple TC functions | 6.2.1 [3] | c.3702 |         |
| 3    | shared UNIs                         | 6.2.1 [3] | c.3703 |         |

c.3701: IF A.34/1 THEN m ELSE n/a.

c.3702: IF A.34/1 THEN o ELSE n/a.

c.3703: IF A.34/11 THEN o ELSE n/a.

#### A.6.2.1.2 Physical layer

**Table A.38: Physical layer of B-UNIs**

| Item                                                         | Physical layer             | Reference | Status | Support |
|--------------------------------------------------------------|----------------------------|-----------|--------|---------|
| 1                                                            | E1 (2,048 Mbit/s)          | 9.4 [3]   | c.3801 |         |
| 2                                                            | STM-1 (155,52 Mbit/s)      | 9.4 [3]   | c.3801 |         |
| 3                                                            | STM-4 (622,08 Mbit/s)      | 9.4 [3]   | c.3801 |         |
| 4                                                            | cell based (155,52 Mbit/s) | 9.4 [3]   | c.3801 |         |
| 5                                                            | cell based (622,08 Mbit/s) | 9.4 [3]   | c.3801 |         |
| 6                                                            | (25,600 Mbit/s)            | 1 [3]     | c.3801 |         |
| 7                                                            | (51,840 Mbit/s)            | 1 [3]     | c.3801 |         |
| 8                                                            | other (note)               |           | c.3801 |         |
| NOTE: Other physical layer options can be added if required. |                            |           |        |         |

c.3801: IF A.34/1 THEN it is mandatory to support at least one of these items.

## A.6.2.1.3 ATM layer functions

Table A.39: ATM Layer of B-UNIs

| Item                                                                                                                                      | Function                                                   | Reference (subclause) | Status | Support |
|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|-----------------------|--------|---------|
| 1                                                                                                                                         | Generic flow control (GFC) (note 1)                        | 9.4 [3]               | c.3901 |         |
| 2                                                                                                                                         | Selective cell discard at VPME level                       | 9.5.2 [3]             | o      |         |
| 3                                                                                                                                         | VP UPC                                                     | 9.5.2 [3]             | c.3902 |         |
| 4                                                                                                                                         | VP traffic shaping                                         | 9.5.2 [3]             | o      |         |
| 5                                                                                                                                         | VP resource management cells                               | 9.5.2 [3]             | c.3902 |         |
| 6                                                                                                                                         | EFCI setting at VPE level                                  | 9.5.2 [3]             | o      |         |
| 7                                                                                                                                         | F4 OAM cells insertion/extraction at VPE level (note 2)    | 9.5.2 [3]             | m      |         |
| 8                                                                                                                                         | F4 OAM non-intrusive monitoring at VPE level (note 2)      | 9.5.2 [3]             | m      |         |
| 9                                                                                                                                         | F4 OAM cells insertion/extraction at a VPCT level (note 2) | 9.5.2 [3]             | c.3903 |         |
| 10                                                                                                                                        | Selective cell discard at VCME level                       | 9.5.2 [3]             | c.2104 |         |
| 11                                                                                                                                        | VC UPC                                                     | 9.5.2 [3]             | c.3903 |         |
| 12                                                                                                                                        | VC traffic shaping                                         | 9.5.2 [3]             | c.3904 |         |
| 13                                                                                                                                        | VC resource management cells                               | 9.5.2 [3]             | c.3903 |         |
| 14                                                                                                                                        | EFCI setting at VCE level                                  | 9.5.2 [3]             | o      |         |
| 15                                                                                                                                        | F5 OAM cells insertion/extraction at VCE level (note 3)    | 9.5.2 [3]             | c.3904 |         |
| 16                                                                                                                                        | F5 OAM non-intrusive monitoring at VCE level (note 3)      | 9.5.2 [3]             | c.3903 |         |
| NOTE 1: According to EN 301 005-1 [3] only the "uncontrolled transmission" set of procedures shall be supported where the GFC is ignored. |                                                            |                       |        |         |
| NOTE 2: The status for the individual sub-functions is specified in annex B, table B.2-1.                                                 |                                                            |                       |        |         |
| NOTE 3: The status for the individual sub-functions is specified in annex B, table B.2-2.                                                 |                                                            |                       |        |         |

c.3901: IF A.34/1 THEN m ELSE n/a.

c.3902: IF A.35/1 OR A.35/3 OR A.35/7 OR A.35/9 OR A.35/11 OR A.35/13 THEN m ELSE n/a.

c.3903: IF A.35/2 OR A.35/4 OR A.35/8 OR A.35/10 OR A.35/12 OR A.35/14 THEN m ELSE n/a.

c.3904: IF A.35/2 OR A.35/4 OR A.35/8 OR A.35/10 OR A.35/12 OR A.35/14 THEN o ELSE n/a.

## A.6.2.2 Support of non B-ISDN access types

## A.6.2.3 Narrowband access types

Table A.40: Narrowband access types

| Item | Narrowband access type | Reference   | Status | Support |
|------|------------------------|-------------|--------|---------|
| 1    | via V5.1 interface     | 8.3.2.1 [3] | c.4001 |         |
| 2    | via V5.2 interface     | 8.3.2.1 [3] | c.4001 |         |
| 3    | via V3 interface       | 8.3.2.1 [3] | c.4001 |         |

c.4001: IF A.34/2 THEN it is mandatory to support at least one of these items.

## A.6.3 VB5.2 reference point

### A.6.3.1 Basic characteristics

**Table A.41: Basic characteristics of the VB5.2 interface**

| Item | Characteristic                                             | Reference | Status | Support |
|------|------------------------------------------------------------|-----------|--------|---------|
| 1    | one VB5.2 reference point via one TC function              | 6.2.2 [3] | o      |         |
| 2    | one VB5.2 reference point via multiple TC functions        | 6.2.2 [3] | o      |         |
| 3    | different VB5.2 reference points via common TC function(s) | 6.2.2 [3] | o      |         |

### A.6.3.2 Support of a physical interface

**Table A.42: Physical interface at the VB5.2 reference point**

| Item | Characteristic                                     | Reference   | Status | Support |
|------|----------------------------------------------------|-------------|--------|---------|
| 1    | physical interface(s) at the VB5.2 reference point | 6.2.1 [3]   | o      |         |
| 2    | a transmission path identification method          | 6.2.4.5 [3] | c.4201 |         |

c.4201: IF A.42/1 THEN m ELSE n/a.

### A.6.3.3 Physical layer at the VB5.2 reference point

**Table A.43: Physical layer at the VB5.2 reference point**

| Item | Physical layer options                    | Reference   | Status | Support |
|------|-------------------------------------------|-------------|--------|---------|
| 1    | PDH/Electrical (G.703 [7])/E3             | Annex F [3] | c.4301 |         |
| 2    | SDH/Electrical (G.703 [7])/STM1           | Annex F [3] | c.4301 |         |
| 3    | SDH/Optical (G.957 [8] intra-office)/STM1 | Annex F [3] | c.4301 |         |
| 4    | SDH/Optical (G.957 [8] intra-office)/STM4 | Annex F [3] | c.4301 |         |
| 5    | SDH/Optical (G.957 [8] short haul)/STM1   | Annex F [3] | c.4301 |         |
| 6    | SDH/Optical (G.957 [8] short haul)/STM4   | Annex F [3] | c.4301 |         |
| 7    | other                                     |             | c.4301 |         |

c.4301: IF A.42/1 THEN it is mandatory to support at least one of these items.

### A.6.3.4 ATM layer functions

**Table A.44: ATM layer at the VB5.2 reference point**

| Item                                                                                      | ATM layer characteristics                                | Reference (subclause) | Status | Support |
|-------------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------|--------|---------|
| 1                                                                                         | cell header format according to NNI specification        | 6.3.1 [3]             | m      |         |
| 2                                                                                         | provision of VPI and VCI values for the RTMC channel     | 6.3.1 [3]             | m      |         |
| 3                                                                                         | Selective cell discard at VPME level                     | 9.9.2 [3]             | o      |         |
| 4                                                                                         | VP NPC                                                   | 9.9.2 [3]             | o      |         |
| 5                                                                                         | VP traffic shaping                                       | 9.9.2 [3]             | o      |         |
| 6                                                                                         | VP resource management cells                             | 9.9.2 [3]             | o      |         |
| 7                                                                                         | EFCI setting at VPE                                      | 9.9.2 [3]             | o      |         |
| 8                                                                                         | F4 OAM cells insertion/extraction at VPE level (note 1)  | 9.9.2 [3]             | m      |         |
| 9                                                                                         | F4 OAM non-intrusive monitoring at VPE level (note 1)    | 9.9.2 [3]             | m      |         |
| 10                                                                                        | F4 OAM cells insertion/extraction at VPCT level (note 1) | 9.9.2 [3]             | m      |         |
| 11                                                                                        | Selective cell discard at VCME level                     | 9.9.2 [3]             | o      |         |
| 12                                                                                        | VC NPC                                                   | 9.9.2 [3]             | o      |         |
| 13                                                                                        | VC traffic shaping                                       | 9.9.2 [3]             | o      |         |
| 14                                                                                        | VC resource management cells                             | 9.9.2 [3]             | o      |         |
| 15                                                                                        | EFCI setting at VCE                                      | 9.9.2 [3]             | o      |         |
| 16                                                                                        | F5 OAM cells insertion/extraction at VCE level (note 2)  | 9.9.2 [3]             | m      |         |
| 17                                                                                        | F5 OAM non-intrusive monitoring at VCE level (note 2)    | 9.9.2 [3]             | m      |         |
| 18                                                                                        | F5 OAM cells insertion/extraction at VCCT level (note 2) | 9.9.2 [3]             | m      |         |
| NOTE 1: The status for the individual sub-functions is specified in annex B, table B.3-1. |                                                          |                       |        |         |
| NOTE 2: The status for the individual sub-functions is specified in annex B, table B.3-2. |                                                          |                       |        |         |

### A.6.3.5 ATM adaptation layer

### A.6.3.6 AAL for the RTMC protocol

**Table A.45: ATM layer at the VB5.2 reference point**

| Item | ATM layer characteristics                                                        | Reference | Status | Support |
|------|----------------------------------------------------------------------------------|-----------|--------|---------|
| 1    | cell header format according to NNI specification                                | 6.3.1 [3] | m      |         |
| 2    | provision of VPI value and VCI values for the RTMC channel and the B-BCC channel | 10.3 [4]  | m      |         |

### A.6.3.7 ATM adaptation layer

#### A.6.3.7.1 AAL for the RTMC protocol

**Table A.46: AAL functions for the RTMC protocol**

| Item | Are the AAL functions for the RTMC protocol compliant with | Reference   | Status | Support |
|------|------------------------------------------------------------|-------------|--------|---------|
| 1    | AAL5 specification                                         | 6.4.5.2 [3] | m      |         |
| 2    | SSCOP specification                                        | 6.4.5.3 [3] | m      |         |
| 3    | SSCF specification                                         | 6.4.5.4 [3] | m      |         |

### A.6.3.7.2 AAL for the B-BCC protocol

**Table A.47: AAL functions for the B-BCC protocol**

| Item | Are the AAL functions for the B-BCC protocol compliant with | Reference   | Status | Support |
|------|-------------------------------------------------------------|-------------|--------|---------|
| 1    | AAL5 specification                                          | 6.4.5.2 [4] | m      |         |
| 2    | SSCOP specification                                         | 6.4.5.3 [4] | m      |         |
| 3    | SSCF specification                                          | 6.4.5.4 [4] | m      |         |

### A.6.3.7.3 AAL for circuit emulation of 2 048 kbit/s signals

**Table A.48: AAL functions for circuit emulation of 2 048 kbit/s signals**

| Item | AAL type                                           | Reference   | Status | Support |
|------|----------------------------------------------------|-------------|--------|---------|
| 1    | AAL1 for circuit emulation of 2 048 kbit/s signals | 8.3.2.2 [3] | c.4801 |         |

c.4801: IF A.40/1 OR A.40/2 /OR A.40/3 THEN m ELSE o.

## A.6.3.8 RTMC function and protocol

### A.6.3.8.1 RTMC main features

**Table A.49: RTMC procedures**

| Item | RTMC procedures                     | Reference (clause) | Status | Support |
|------|-------------------------------------|--------------------|--------|---------|
| 1    | General error handling procedures   | 13.3.1.5 [3]       | m      |         |
| 2    | Block and Unblock procedures        | 13.3.2.1 [3]       | m      |         |
| 3    | Shutting down of resources          | 13.3.2.2 [3]       | m      |         |
| 4    | VPCI consistency check procedures   | 13.3.3 [3]         | o      |         |
| 5    | RTMC Start-up procedure             | 13.3.4.1 [3]       | m      |         |
| 6    | Verify LSP ID procedure             | 13.3.4.2 [3]       | m      |         |
| 7    | Reset complete LSP procedure        | 13.3.4.3 [3]       | m      |         |
| 8    | Reset VPC procedure                 | 13.3.4.4 [3]       | o      |         |
| 9    | Compatibility instruction procedure | 13.6.1.5.2 [3]     | m      |         |

### A.6.3.8.2 RTMC messages

The tables in this subclause ask questions related to the supported RTMC messages in the Access network role.

#### A.6.3.8.2.1 RTMC messages received by the Access Network

Indicating support for an item in table A.50 states that the implementation has the ability to recognize the messages listed in that item. Support for the receipt of a particular type of RTMC message means support for recognizing and acting upon all valid instances of that message type, including all valid message parameters, to the extent required by EN 301 005-1 [3].

**Table A.50: RTMC messages received by the Access Network**

| Item | message          | Reference (clause) | Status | Support |
|------|------------------|--------------------|--------|---------|
| 1    | BLOCK_RSC_ACK    | 14.2.1.2.2 [3]     | m      |         |
| 2    | AWAIT_CLEAR_ACK  | 14.2.1.2.4 [3]     | m      |         |
| 3    | AWAIT_CLEAR_COMP | 14.2.1.2.5 [3]     | m      |         |
| 4    | UNBLOCK_RSC_ACK  | 14.2.1.2.8 [3]     | m      |         |
| 5    | CONS_CHECK_REQ   | 14.2.1.3.1 [3]     | c.5001 |         |
| 6    | CONS_CHECK_END   | 14.2.1.3.3 [3]     | c.5001 |         |
| 7    | LSPID            | 14.2.1.4.1 [3]     | m      |         |
| 8    | REQ_LSPID        | 14.2.1.4.2 [3]     | m      |         |
| 9    | RESET_RSC        | 14.2.1.4.3 [3]     | m      |         |
| 10   | RESET_RSC_ACK    | 14.2.1.4.4 [3]     | m      |         |
| 11   | PROTOCOL_ERROR   | 14.2.1.4.5 [3]     | m      |         |

c.5001: IF A.49/4THEN m ELSE n/a.

#### A.6.3.8.2.2 RTMC messages transmitted by the Access Network

Indicating support for an item in table A.51 states that the implementation has the ability to transmit the message listed in that item.

**Table A.51: RTMC messages transmitted by the Access Network**

| Item | message              | Reference (clause) | Status | Support |
|------|----------------------|--------------------|--------|---------|
| 1    | BLOCK_RSC            | 14.2.1.2.1 [3]     | m      |         |
| 2    | AWAIT_CLEAR          | 14.2.1.2.3 [3]     | m      |         |
| 3    | AWAIT_CLEAR_COMP_ACK | 14.2.1.2.6 [3]     | m      |         |
| 4    | UNBLOCK_RSC          | 14.2.1.2.7 [3]     | m      |         |
| 5    | CONS_CHECK_REQ_ACK   | 14.2.1.3.2 [3]     | c.5101 |         |
| 6    | CONS_CHECK_END_ACK   | 14.2.1.3.4 [3]     | c.5101 |         |
| 7    | LSPID                | 14.2.1.4.1 [3]     | m      |         |
| 8    | REQ_LSPID            | 14.2.1.4.2 [3]     | m      |         |
| 9    | RESET_RSC            | 14.2.1.4.3 [3]     | m      |         |
| 10   | RESET_RSC_ACK        | 14.2.1.4.4 [3]     | m      |         |
| 11   | PROTOCOL_ERROR       | 14.2.1.4.5 [3]     | m      |         |

c.5101: IF A.49/4THEN m ELSE n/a.

#### A.6.3.8.3 Timers used in RTMC procedures

**Table A.52: Timers used in RTMC procedures**

| Item | Timer     | Reference   | Status | Support | Value   |           | Tolerance |           |
|------|-----------|-------------|--------|---------|---------|-----------|-----------|-----------|
|      |           |             |        |         | default | supported | default   | supported |
| 1    | T_start   | Annex A [3] | m      |         | 300 s   |           | ±10 %     |           |
| 2    | T_block   | Annex A [3] | m      |         | 1 s     |           | ±10 %     |           |
| 3    | T_unblock | Annex A [3] | m      |         | 1 s     |           | ±10 %     |           |
| 4    | T_acl     | Annex A [3] | m      |         | 1 s     |           | ±10 %     |           |
| 5    | T_lspid   | Annex A [3] | m      |         | 1 s     |           | ±10 %     |           |
| 6    | T_reset   | Annex A [3] | m      |         | 60 s    |           | ±10 %     |           |

#### A.6.3.8.4 RTMC function specific information elements

Table A.53 deals with the RTMC function specific information that may be transmitted or received in a RTMC message by the IUT in the access network role.

Indicating support for an item in table A.53 in this subclause states that the implementation has the ability:

- to process the information element when received in any of the RTMC messages for which the presence of this information element is specified;
- to generate and to transmit the information element in any of the RTMC messages for which the inclusion of this information element is specified.

**Table A.53: RTMC Information elements**

| Item | Information elements        | Reference (clause) | Status | Support |
|------|-----------------------------|--------------------|--------|---------|
| 1    | Blocked resource identifier | 14.2.2.2 [3]       | m      |         |
| 2    | Protocol error cause        | 14.2.2.3 [3]       | m      |         |
| 3    | Repeat indicator            | 14.2.2.4 [3]       | m      |         |
| 4    | Result indicator            | 14.2.2.5 [3]       | m      |         |
| 5    | Resource identifier         | 14.2.2.6 [3]       | m      |         |

### A.6.3.9 B-BCC function and protocol

#### A.6.3.9.1 B-BCC main features

**Table A.54: B-BCC procedures**

| Item | Function                                                                         | Reference      | Status | Support |
|------|----------------------------------------------------------------------------------|----------------|--------|---------|
| 1    | General error handling                                                           | 13.6.1.5 [4]   | m      |         |
| 2    | Bearer connection establishment procedure                                        | 13.6.2.1 [4]   | m      |         |
| 3    | Bearer connection release procedure                                              | 13.6.2.2 [4]   | m      |         |
| 4    | Bearer connection modification procedure                                         | 13.6.2.3 [4]   | o      |         |
| 5    | Branch establishment procedure                                                   | 13.6.3.1 [4]   | o      |         |
| 6    | Branch release procedure                                                         | 13.6.3.2 [4]   | o      |         |
| 7    | B-BCC reset procedure                                                            | 13.6.4.1 [4]   | m      |         |
| 8    | AN fault procedure                                                               | 13.6.4.2 [4]   | m      |         |
| 9    | Automatic congestion control                                                     | 13.5.12 [4]    | o      |         |
| 10   | Compatibility instruction procedure                                              | 13.6.1.5.2 [4] | m      |         |
| 11   | Connections characteristic negotiation procedure during connection establishment | 13.5.4.3 [4]   | o      |         |
| 12   | ATM traffic descriptor modification with negotiation                             | 13.5.6 [4]     | o      |         |
| 13   | SAAL establishment procedure                                                     | 13.6.4.4 [4]   | m      |         |
| 14   | B-BCC pre-synchronization procedure                                              | 13.6.4.3 [4]   | m      |         |

#### A.6.3.9.2 B-BCC messages

The tables in this subclause ask questions related to the supported B-BCC protocol messages in the access network role.

##### A.6.3.9.2.1 B-BCC protocol messages received by the Access Network

Indicating support for an item in table A.55 states that the implementation has the ability to recognize the messages listed in that item. Support for the receipt of a particular type of B-BCC protocol message means support for recognizing and acting upon all valid instances of that message type, including all valid message parameters, to the extent required by EN 301 217-1 [4].

**Table A.55: B-BCC protocol messages received by the Access Network**

| Item | message        | Reference (clause) | Status | Support |
|------|----------------|--------------------|--------|---------|
| 1    | ALLOC          | 14.3.2.1 [4]       | m      |         |
| 2    | ALLOC_COMP     | 14.3.2.4 [4]       | m      |         |
| 3    | DEALLOC        | 14.3.2.7 [4]       | m      |         |
| 4    | BBCC_RESET     | 14.3.3.1 [4]       | m      |         |
| 5    | BBCC_PRESYNC   | 14.3.3.4 [4]       | m      |         |
| 6    | AM_FAULT_ACC   | 14.3.3.8 [4]       | m      |         |
| 7    | PROTOCOL_ERROR | 14.3.3.9 [4]       | m      |         |
| 8    | MODIFY         | 14.3.4.1 [4]       | c.5501 |         |
| 9    | MODIFY_COMP    | 14.3.4.4 [4]       | c.5501 |         |
| 10   | MODIFY_ABORT   | 14.3.4.7 [4]       | c.5501 |         |
| 11   | ADD_BRANCH     | 14.3.5.1 [4]       | c.5502 |         |
| 12   | UPDATE_BRANCH  | 14.3.5.4 [4]       | c.5502 |         |
| 13   | DROP_BRANCH    | 14.3.5.7 [4]       | c.5502 |         |

c.5501: IF A.54/4 THEN m ELSE n/a.

c.5501: IF A.54/5 AND A.54/6 THEN m ELSE n/a.

#### A.6.3.9.2.2 B-BCC protocol messages transmitted by the Access Network

Indicating support for an item in table A.56 states that the implementation has the ability to transmit the message listed in that item.

**Table A.56: B-BCC protocol messages transmitted by the Access Network**

| Item | message           | Reference (clause) | Status | Support |
|------|-------------------|--------------------|--------|---------|
| 1    | ALLOC_ACC         | 14.3.2.2 [4]       | m      |         |
| 2    | ALLOC_REJ         | 14.3.2.3 [4]       | m      |         |
| 3    | ALLOC_COMP_ACC    | 14.3.2.5 [4]       | m      |         |
| 4    | ALLOC_COMP_REJ    | 14.3.2.6 [4]       | m      |         |
| 5    | DEALLOC_ACC       | 14.3.2.8 [4]       | m      |         |
| 6    | BBCC_RESET_ACC    | 14.3.3.2 [4]       | m      |         |
| 7    | BBCC_RESET_REJ    | 14.3.3.3 [4]       | m      |         |
| 8    | BBCC_PRESYNC_ACC  | 14.3.3.5 [4]       | m      |         |
| 9    | BBCC_PRESYNC_REJ  | 14.3.3.6 [4]       | m      |         |
| 10   | AN_FAULT          | 14.3.3.7 [4]       | m      |         |
| 11   | PROTOCOL_ERROR    | 14.3.3.9 [4]       | m      |         |
| 12   | MODIFY_ACC        | 14.3.4.2 [4]       | c.5601 |         |
| 13   | MODIFY_REJ        | 14.3.4.3 [4]       | c.5601 |         |
| 14   | MODIFY_COMP_ACC   | 14.3.4.5 [4]       | c.5601 |         |
| 15   | MODIFY_COMP_REJ   | 14.3.4.6 [4]       | c.5601 |         |
| 16   | MODIFY_ABORT_ACC  | 14.3.4.8 [4]       | c.5601 |         |
| 17   | MODIFY_ABORT_REJ  | 14.3.4.9 [4]       | c.5601 |         |
| 18   | ADD_BRANCH_ACC    | 14.3.5.2 [4]       | c.5602 |         |
| 19   | ADD_BRANCH_REJ    | 14.3.5.3 [4]       | c.5602 |         |
| 20   | UPDATE_BRANCH_ACC | 14.3.5.5 [4]       | c.5602 |         |
| 21   | UPDATE_BRANCH_REJ | 14.3.5.6 [4]       | c.5602 |         |
| 22   | DROP_BRANCH_ACC   | 14.3.5.8 [4]       | c.5602 |         |
| 23   | DROP_BRANCH_REJ   | 14.3.5.9 [4]       | c.5602 |         |

c.5601: IF A.54/4 THEN m ELSE n/a.

c.5601: IF A.54/5 AND A.54/6 THEN m ELSE n/a.

### A.6.3.9.3 Timers used in B-BCC procedures

**Table A.57: Timers used in B-BCC procedures**

| Item | Timer          | Reference    | Status | Support | Value   |           | Tolerance |           |
|------|----------------|--------------|--------|---------|---------|-----------|-----------|-----------|
|      |                |              |        |         | default | supported | default   | supported |
| 1    | T_AnFault      | 13.6.1.6 [4] | m      |         | 15 s    |           | ±10 %     |           |
| 2    | T_ConnEst      | 13.6.1.6 [4] | m      |         | 180 s   |           | ±10 %     |           |
| 3    | T_Modification | 13.6.1.6 [4] | c.5701 |         | 180 s   |           | ±10 %     |           |
| 4    | T_BranchEst    | 13.6.1.6 [4] | c.5702 |         | 185 s   |           | ±10 %     |           |

c.5701: IF A.54/4 THEN m ELSE n/a.

c.5701: IF A.54/5 AND A.54/6 THEN m ELSE n/a.

### A.6.3.9.4 B-BCC function specific information elements

Table A.58 deals with the B-BCC function specific information that may be transmitted or received in a B-BCC protocol message by the IUT in the access network role.

Indicating support for an item in table A.58 in this subclause states that the implementation has the ability:

- to process the information element when received in any of the B-BCC protocol messages for which the presence of this information element is specified;
- to generate and to transmit the information element in any of the B-BCC protocol messages for which the inclusion of this information element is specified.

**Table A.58: B-BCC protocol information elements**

| Item | Information elements               | Reference (clause) | Status | Support |
|------|------------------------------------|--------------------|--------|---------|
| 1    | Connection reference number        | 14.3.6.2 [4]       | m      |         |
| 2    | Connection reference number list   | 14.3.6.3 [4]       | m      |         |
| 3    | User port connection identifier    | 14.3.6.4 [4]       | m      |         |
| 4    | Service port connection identifier | 14.3.6.5 [4]       | m      |         |
| 5    | Alternative user port VPCI         | 14.3.6.6 [4]       | m      |         |
| 6    | Alternative service port VPCI      | 14.3.6.7 [4]       | m      |         |
| 7    | Automatic congestion level         | 14.3.6.8 [4]       | c.5801 |         |
| 8    | Reject cause                       | 14.3.6.9 [4]       | m      |         |
| 9    | Branch identifier                  | 14.3.6.10 [4]      | c.5802 |         |
| 10   | Branch identifier list             | 14.3.6.11 [4]      | c.5802 |         |

c.5801: IF A.54/9 THEN m ELSE n/a.

c.5801: IF A.54/5 AND A.54/6 THEN m ELSE n/a.

### A.6.3.9.5 B-BCC information elements based on ITU-T Recommendations

**Table A.59: ATM traffic descriptor**

| Item | coding according to           | Reference    | Status | Support |
|------|-------------------------------|--------------|--------|---------|
| 1    | subclause 4.5.6/Q.2931 [14]   | 14.3.7.1 [4] | m      |         |
| 2    | subclause 8.2.1/Q.2961-1 [15] | 14.3.7.1 [4] | o      |         |
| 3    | subclause 8.2.1/Q.2961-3 [17] | 14.3.7.1 [4] | o      |         |
| 4    | subclause 8.2.1/Q.2961-4 [18] | 14.3.7.1 [4] | o      |         |

**Table A.60: Broadband bearer capability**

| Item | coding according to           | Reference    | Status | Support |
|------|-------------------------------|--------------|--------|---------|
| 1    | subclause 2.6.1/Q.2961-2 [16] | 14.3.7.2 [4] | m      |         |
| 2    | subclause 8.2.3/Q.2961-3 [17] | 14.3.7.2 [4] | o      |         |
| 3    | subclause 8.2.2/Q.2961-4 [18] | 14.3.7.2 [4] | o      |         |
| 4    | subclause 8.2.2/Q.2961-6 [20] | 14.3.7.2 [4] | o      |         |

**Table A.61: OAM traffic descriptor**

| Item | coding according to          | Reference    | Status | Support |
|------|------------------------------|--------------|--------|---------|
| 1    | subclause 4.5.24/Q.2931 [14] | 14.3.7.3 [4] | m      |         |

**Table A.62: QoS parameter**

| Item | coding according to          | Reference    | Status | Support |
|------|------------------------------|--------------|--------|---------|
| 1    | subclause 4.5.18/Q.2931 [14] | 14.3.7.4 [4] | m      |         |

**Table A.63: ABR set-up parameters**

| Item | coding according to           | Reference    | Status | Support |
|------|-------------------------------|--------------|--------|---------|
| 1    | subclause 8.2.2/Q.2961-3 [17] | 14.3.7.5 [4] | o      |         |

**Table A.64: End-to-End transit delay**

| Item | coding according to          | Reference    | Status | Support |
|------|------------------------------|--------------|--------|---------|
| 1    | subclause 4.5.17/Q.2931 [14] | 14.3.7.6 [4] | m      |         |

**Table A.65: Cell delay variation tolerance (CDVT)**

| Item | coding according to            | Reference    | Status | Support |
|------|--------------------------------|--------------|--------|---------|
| 1    | subclause 4.5.17/Q.2961-5 [14] | 14.3.7.7 [4] | o      |         |

**Table A.66: Alternative ATM traffic descriptor**

| Item | coding according to         | Reference    | Status | Support |
|------|-----------------------------|--------------|--------|---------|
| 1    | subclause 8.2.1/Q.2962 [21] | 14.3.7.8 [4] | o      |         |

**Table A.67: Minimum acceptable ATM traffic descriptor**

| Item | coding according to           | Reference    | Status | Support |
|------|-------------------------------|--------------|--------|---------|
| 1    | subclause 8.2.2/Q.2962 [21]   | 14.3.7.9 [4] | o      |         |
| 2    | subclause 8.2.4/Q.2961-3 [17] | 14.3.7.9 [4] | o      |         |
| 3    | subclause 8.2.3/Q.2961-4 [18] | 14.3.7.9 [4] | o      |         |

**Table A.68: Protocol error cause**

| Item | coding according to         | Reference     | Status | Support |
|------|-----------------------------|---------------|--------|---------|
| 1    | Recommendation Q.967-1 [13] | 14.3.7.10 [4] | m      |         |

## A.6.3.9.6 B-BCC information elements supporting ATM-F UNI 4.0 equipment

**Table A.69: Modified information elements**

| Item | Information elements               | Reference (clause) | Status | Support |
|------|------------------------------------|--------------------|--------|---------|
| 1    | ATM Traffic Descriptor             | Clause B.3 [4]     | o      |         |
| 2    | Alternative ATM Traffic Descriptor | Clause B.3 [4]     | o      |         |

**Table A.70: Additional information elements**

| Item | Information elements      | Reference (clause)    | Status | Support |
|------|---------------------------|-----------------------|--------|---------|
| 1    | Extended QoS parameters   | Subclause B.5.4.2 [4] | o      |         |
| 2    | ABR Additional Parameters | Subclause B.5.4.3 [4] | o      |         |

## Annex B (informative): Status of OAM functions based F4/F5 flows

This annex provides information about the status of the individual sub-functions related to the application of OAM F4 and F5 flows.

The status of most of the F4/F5 OAM functions have been specified as "mandatory" within the relevant tables of the present document. However some of the individual sub-functions are considered as optional according to EN 301 005-1 [3] in conjunction with the ITU-T Recommendations I.610 [11] and I.732 [12]. In the tables below only those sub-functions have been specified as "mandatory" which are required to be supported in order to ensure the proper operation of the VB5.2 interface. Functions marked as optional are not required by the VB5.2 interface itself but may be required by an AN or SN specification.

In tables B.1.1/2, B.2.1/2, B.3.1/2 item 2 "continuity check non intrusive monitoring" would be "mandatory" according to ETS 300 404 [1], the ETSI version of ITU-T Recommendation I.610 [11]. However if the support of that capability is set to mandatory within the VB5 specification this would preclude the support of terminals which are not implemented according to the ETS 300 404 [1].

### B.1 OAM functions at service port (SN-side)

**Table B.1.1: F4 OAM functions at service port (SN-side)**

| Item                                                                                                                                                 | Function (note)                                 | Status                   |                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|--------------------------|-----------------------|
|                                                                                                                                                      |                                                 | VPE                      | VPCT                  |
|                                                                                                                                                      |                                                 | Table A.8:<br>items 8, 9 | Table A.8:<br>item 10 |
| <b>1</b>                                                                                                                                             | AIS/RDI non-intrusive monitoring                | m                        | n/a                   |
| <b>2</b>                                                                                                                                             | continuity check non-intrusive monitoring       | o                        | n/a                   |
| <b>3</b>                                                                                                                                             | performance monitoring non-intrusive monitoring | o                        | n/a                   |
| <b>4</b>                                                                                                                                             | VP AIS insertion                                | m                        | n/a                   |
| <b>5</b>                                                                                                                                             | VP RDI insertion                                | n/a                      | m                     |
| <b>6</b>                                                                                                                                             | VP AIS/RDI extraction                           | n/a                      | m                     |
| <b>7</b>                                                                                                                                             | end-to-end continuity check                     | n/a                      | o                     |
| <b>8</b>                                                                                                                                             | segment continuity check                        | o                        | n/a                   |
| <b>9</b>                                                                                                                                             | end-to-end performance monitoring               | n/a                      | o                     |
| <b>10</b>                                                                                                                                            | segment performance monitoring                  | o                        | n/a                   |
| <b>11</b>                                                                                                                                            | end-to-end loopback at a source point           | o                        | c.1-101               |
| <b>12</b>                                                                                                                                            | end-to-end loopback at a loopback point         | n/a                      | o                     |
| <b>13</b>                                                                                                                                            | segment loopback at a source point              | o                        | n/a                   |
| <b>14</b>                                                                                                                                            | segment loopback at a loopback point            | o                        | n/a                   |
| <b>15</b>                                                                                                                                            | end-to-end activation/deactivation              | n/a                      | o                     |
| <b>16</b>                                                                                                                                            | segment activation/deactivation                 | o                        | n/a                   |
| NOTE: Detailed description of the individual function listed in items 1 to 16 of this table is provided in ITU-T Recommendation I.732 [12] clause 5. |                                                 |                          |                       |

c.1-101: IF A.11/5 THEN m ELSE o.

**Table B.1.2: F5 OAM functions at service port (SN-side)**

| Item                                                                                                                                                  | Function (note)                                 | Status                     |                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|----------------------------|-----------------------|
|                                                                                                                                                       |                                                 | VCE                        | VCCT                  |
|                                                                                                                                                       |                                                 | Table A.8:<br>items 17, 18 | Table A.8:<br>item 19 |
| 1                                                                                                                                                     | AIS/RDI non-intrusive monitoring                | m                          | n/a                   |
| 2                                                                                                                                                     | continuity check non-intrusive monitoring       | o                          | n/a                   |
| 3                                                                                                                                                     | performance monitoring non-intrusive monitoring | o                          | n/a                   |
| 4                                                                                                                                                     | VC AIS insertion                                | m                          | n/a                   |
| 5                                                                                                                                                     | VC RDI insertion                                | n/a                        | m                     |
| 6                                                                                                                                                     | VC AIS/RDI extraction                           | n/a                        | m                     |
| 7                                                                                                                                                     | end-to-end continuity check                     | n/a                        | o                     |
| 8                                                                                                                                                     | segment continuity check                        | o                          | n/a                   |
| 9                                                                                                                                                     | end-to-end performance monitoring               | n/a                        | o                     |
| 10                                                                                                                                                    | segment performance monitoring                  | o                          | n/a                   |
| 11                                                                                                                                                    | end-to-end loopback at a source point           | o                          | o                     |
| 12                                                                                                                                                    | end-to-end loopback at a loopback point         | n/a                        | o                     |
| 13                                                                                                                                                    | segment loopback at a source point              | o                          | n/a                   |
| 14                                                                                                                                                    | segment loopback at a loopback point            | o                          | n/a                   |
| 15                                                                                                                                                    | end-to-end activation/deactivation              | n/a                        | o                     |
| 16                                                                                                                                                    | segment activation/deactivation                 | o                          | n/a                   |
| NOTE: Detailed description of the individual function listed in items 1 to 16 of this table is provided in ITU-T- Recommendation I.732 [12] clause 5. |                                                 |                            |                       |

## B.2 OAM functions at user port

**Table B.2.1: F4 OAM functions at user port**

| Item                                                                                                                                                  | Function (note)                                 | Status                    |                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|---------------------------|-----------------------|
|                                                                                                                                                       |                                                 | VPE                       | VPCT                  |
|                                                                                                                                                       |                                                 | Table A.39:<br>items 7, 8 | Table A.39:<br>item 9 |
| 1                                                                                                                                                     | AIS/RDI non-intrusive monitoring                | m                         | n/a                   |
| 2                                                                                                                                                     | continuity check non-intrusive monitoring       | o                         | n/a                   |
| 3                                                                                                                                                     | performance monitoring non-intrusive monitoring | o                         | n/a                   |
| 4                                                                                                                                                     | VP AIS insertion                                | m                         | n/a                   |
| 5                                                                                                                                                     | VP RDI insertion                                | n/a                       | m                     |
| 6                                                                                                                                                     | VP AIS/RDI extraction                           | n/a                       | m                     |
| 7                                                                                                                                                     | end-to-end continuity check                     | n/a                       | o                     |
| 8                                                                                                                                                     | segment continuity check                        | o                         | n/a                   |
| 9                                                                                                                                                     | end-to-end performance monitoring               | n/a                       | o                     |
| 10                                                                                                                                                    | segment performance monitoring                  | o                         | n/a                   |
| 11                                                                                                                                                    | end-to-end loopback at a source point           | o                         | o                     |
| 12                                                                                                                                                    | end-to-end loopback at a loopback point         | n/a                       | o                     |
| 13                                                                                                                                                    | segment loopback at a source point              | o                         | n/a                   |
| 14                                                                                                                                                    | segment loopback at a loopback point            | o                         | n/a                   |
| 15                                                                                                                                                    | end-to-end activation/deactivation              | n/a                       | o                     |
| 16                                                                                                                                                    | segment activation/deactivation                 | o                         | n/a                   |
| NOTE: Detailed description of the individual function listed in items 1 to 16 of this table is provided in ITU-T- Recommendation I.732 [12] clause 5. |                                                 |                           |                       |

**Table B.2.2: F5 OAM functions at user port**

| Item                                                                                                                                                  | Function (note)                                 | Status                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------|
|                                                                                                                                                       |                                                 | VCE                         |
|                                                                                                                                                       |                                                 | Table A.39:<br>items 15, 16 |
| <b>1</b>                                                                                                                                              | AIS/RDI non-intrusive monitoring                | m                           |
| <b>2</b>                                                                                                                                              | continuity check non-intrusive monitoring       | m                           |
| <b>3</b>                                                                                                                                              | performance monitoring non-intrusive monitoring | o                           |
| <b>4</b>                                                                                                                                              | VC AIS insertion                                | m                           |
| <b>5</b>                                                                                                                                              | VC RDI insertion                                | n/a                         |
| <b>6</b>                                                                                                                                              | VC AIS/RDI extraction                           | n/a                         |
| <b>7</b>                                                                                                                                              | end-to-end continuity check                     | n/a                         |
| <b>8</b>                                                                                                                                              | segment continuity check                        | o                           |
| <b>9</b>                                                                                                                                              | end-to-end performance monitoring               | n/a                         |
| <b>10</b>                                                                                                                                             | segment performance monitoring                  | o                           |
| <b>11</b>                                                                                                                                             | end-to-end loopback at a source point           | o                           |
| <b>12</b>                                                                                                                                             | end-to-end loopback at a loopback point         | n/a                         |
| <b>13</b>                                                                                                                                             | segment loopback at a source point              | o                           |
| <b>14</b>                                                                                                                                             | segment loopback at a loopback point            | o                           |
| <b>15</b>                                                                                                                                             | end-to-end activation/deactivation              | n/a                         |
| <b>16</b>                                                                                                                                             | segment activation/deactivation                 | o                           |
| NOTE: Detailed description of the individual function listed in items 1 to 16 of this table is provided in ITU-T- Recommendation I.732 [12] clause 5. |                                                 |                             |

## B.3 OAM functions at service port (AN-side)

**Table B.3.1: F4 OAM functions at service port (AN-side)**

| Item                                                                                                                                                  | Function (note)                                 | Status                    |                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|---------------------------|------------------------|
|                                                                                                                                                       |                                                 | VPE                       | VPCT                   |
|                                                                                                                                                       |                                                 | Table A.44:<br>items 8, 9 | Table A.44:<br>item 10 |
| <b>1</b>                                                                                                                                              | AIS/RDI non-intrusive monitoring                | m                         | n/a                    |
| <b>2</b>                                                                                                                                              | continuity check non-intrusive monitoring       | o                         | n/a                    |
| <b>3</b>                                                                                                                                              | performance monitoring non-intrusive monitoring | o                         | n/a                    |
| <b>4</b>                                                                                                                                              | VP AIS insertion                                | m                         | n/a                    |
| <b>5</b>                                                                                                                                              | VP RDI insertion                                | n/a                       | m                      |
| <b>6</b>                                                                                                                                              | VP AIS/RDI extraction                           | n/a                       | m                      |
| <b>7</b>                                                                                                                                              | end-to-end continuity check                     | n/a                       | o                      |
| <b>8</b>                                                                                                                                              | segment continuity check                        | o                         | n/a                    |
| <b>9</b>                                                                                                                                              | end-to-end performance monitoring               | n/a                       | o                      |
| <b>10</b>                                                                                                                                             | segment performance monitoring                  | o                         | n/a                    |
| <b>11</b>                                                                                                                                             | end-to-end loopback at a source point           | o                         | c.3-101                |
| <b>12</b>                                                                                                                                             | end-to-end loopback at a loopback point         | n/a                       | o                      |
| <b>13</b>                                                                                                                                             | segment loopback at a source point              | o                         | n/a                    |
| <b>14</b>                                                                                                                                             | segment loopback at a loopback point            | o                         | n/a                    |
| <b>15</b>                                                                                                                                             | end-to-end activation/deactivation              | n/a                       | o                      |
| <b>16</b>                                                                                                                                             | segment activation/deactivation                 | o                         | n/a                    |
| NOTE: Detailed description of the individual function listed in items 1 to 16 of this table is provided in ITU-T- Recommendation I.732 [12] clause 5. |                                                 |                           |                        |

c.3-101: IF A.11/5 THEN m ELSE o.

**Table B.3.2: F5 OAM functions at service port (AN-side)**

| Item                                                                                                                                                  | Function (note)                                 | Status                             |                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|------------------------------------|--------------------------------|
|                                                                                                                                                       |                                                 | VCE<br>Table A.44:<br>items 16, 17 | VCCT<br>Table A.44:<br>item 18 |
| <b>1</b>                                                                                                                                              | AIS/RDI non-intrusive monitoring                | m                                  | n/a                            |
| <b>2</b>                                                                                                                                              | continuity check non-intrusive monitoring       | o                                  | n/a                            |
| <b>3</b>                                                                                                                                              | performance monitoring non-intrusive monitoring | o                                  | n/a                            |
| <b>4</b>                                                                                                                                              | VC AIS insertion                                | m                                  | n/a                            |
| <b>5</b>                                                                                                                                              | VC RDI insertion                                | n/a                                | m                              |
| <b>6</b>                                                                                                                                              | VC AIS/RDI extraction                           | n/a                                | m                              |
| <b>7</b>                                                                                                                                              | end-to-end continuity check                     | n/a                                | o                              |
| <b>8</b>                                                                                                                                              | segment continuity check                        | o                                  | n/a                            |
| <b>9</b>                                                                                                                                              | end-to-end performance monitoring               | n/a                                | o                              |
| <b>10</b>                                                                                                                                             | segment performance monitoring                  | o                                  | n/a                            |
| <b>11</b>                                                                                                                                             | end-to-end loopback at a source point           | o                                  | o                              |
| <b>12</b>                                                                                                                                             | end-to-end loopback at a loopback point         | n/a                                | o                              |
| <b>13</b>                                                                                                                                             | segment loopback at a source point              | o                                  | n/a                            |
| <b>14</b>                                                                                                                                             | segment loopback at a loopback point            | o                                  | n/a                            |
| <b>15</b>                                                                                                                                             | end-to-end activation/deactivation              | n/a                                | o                              |
| <b>16</b>                                                                                                                                             | segment activation/deactivation                 | o                                  | n/a                            |
| NOTE: Detailed description of the individual function listed in items 1 to 16 of this table is provided in ITU-T- Recommendation I.732 [12] clause 5. |                                                 |                                    |                                |

## Annex C (informative): Support of ATM transfer capabilities and QoS classes

This annex provides information about the support of ITU-T Recommendation I.371 [10] ATM transfer capabilities and ITU-T Recommendation I.356 [9] QoS classes at the VP sublayer and VC sublayer.

### C.1 ATM transfer capabilities

**Table C.1.1: ATM transfer capabilities at the VP sublayer**

| Item                                                                                                                                     | ATC at the VP sublayer (note 1) | Reference (subclause) | Status |
|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-----------------------|--------|
| 1                                                                                                                                        | DBR                             | 5.1                   | o      |
| 2                                                                                                                                        | SBR1                            | 5.1                   | o      |
| 3                                                                                                                                        | SBR2                            | 5.1                   | o      |
| 4                                                                                                                                        | SBR3                            | 5.1                   | o      |
| 5                                                                                                                                        | ABR                             | 5.1                   | o      |
| 6                                                                                                                                        | ABT-DT                          | 5.1                   | o      |
| 7                                                                                                                                        | ABT-IT                          | 5.1                   | o      |
| 8                                                                                                                                        | others (note 2)                 |                       | o      |
| NOTE 1: Detailed description of the individual ATC listed in items 1 to 7 of this table is provided in ITU-T- Recommendation I.371 [10]. |                                 |                       |        |
| NOTE 2: This item may cover ATC as defined at ATM Forum traffic management specification (af-tm-0056.000) [22].                          |                                 |                       |        |

**Table C.1.2: ATM transfer capabilities at the VC sublayer**

| Item                                                                                                                                     | ATC at the VC sublayer (note 1) | Reference (subclause) | Status |
|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-----------------------|--------|
| 1                                                                                                                                        | DBR                             | 5.1                   | o      |
| 2                                                                                                                                        | SBR1                            | 5.1                   | o      |
| 3                                                                                                                                        | SBR2                            | 5.1                   | o      |
| 4                                                                                                                                        | SBR3                            | 5.1                   | o      |
| 5                                                                                                                                        | ABR                             | 5.1                   | o      |
| 6                                                                                                                                        | ABT-DT                          | 5.1                   | o      |
| 7                                                                                                                                        | ABT-IT                          | 5.1                   | o      |
| 8                                                                                                                                        | others (note 2)                 |                       | o      |
| NOTE 1: Detailed description of the individual ATC listed in items 1 to 7 of this table is provided in ITU-T- Recommendation I.371 [10]. |                                 |                       |        |
| NOTE 2: This item may cover ATC as defined at ATM Forum traffic management specification (af-tm-0056.000) [22].                          |                                 |                       |        |

## C.2 QoS classes

**Table C.2.1: QoS classes at the VP sublayer**

| Item                                                                                                                                          | QoS classes at the VP sublayer (note 1) | Reference (subclause) | Status |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-----------------------|--------|
| 1                                                                                                                                             | Class 1                                 | 12.1                  | 0      |
| 2                                                                                                                                             | Class 2                                 | 12.1                  | 0      |
| 3                                                                                                                                             | Class 3                                 | 12.1                  | 0      |
| 4                                                                                                                                             | U Class                                 | 12.1                  | 0      |
| 5                                                                                                                                             | others (note 2)                         |                       | 0      |
| NOTE 1: Detailed description of the individual QoS Class listed in items 1 to 4 of this table is provided in ITU-T- Recommendation I.356 [9]. |                                         |                       |        |
| NOTE 2: This item may cover QoS classes as defined at ATM Forum traffic management specification                                              |                                         |                       |        |

**Table C.2.2: QoS classes at the VC sublayer**

| Item                                                                                                                                          | Connection type (note 1) | Reference (subclause) | Status |
|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------------------|--------|
| 1                                                                                                                                             | Class 1                  | 12.1                  | 0      |
| 2                                                                                                                                             | Class 2                  | 12.1                  | 0      |
| 3                                                                                                                                             | Class 3                  | 12.1                  | 0      |
| 4                                                                                                                                             | U Class                  | 12.1                  | 0      |
| 5                                                                                                                                             | others (note 2)          |                       | 0      |
| NOTE 1: Detailed description of the individual QoS class listed in items 1 to 4 of this table is provided in ITU-T- Recommendation I.356 [9]. |                          |                       |        |
| NOTE 2: This item may cover QoS classes as defined at ATM Forum traffic management specification.                                             |                          |                       |        |

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## History

| Document history |                |                |          |                          |
|------------------|----------------|----------------|----------|--------------------------|
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