

# ETSI TS 102 624-1 V1.2.1 (2009-11)

Technical Specification

## Broadband Radio Access Networks (BRAN); HiperMAN; Conformance Testing for the Network layer of HiperMAN/WiMAX terminal devices; Part 1: Protocol Implementation Conformance Statement (PICS) proforma



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## Reference

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 RTS/BRAN-004T010-1
 

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## Keywords

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 HiperMAN, layer 3, PICS, terminal, testing
 

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## Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Broadband Radio Access Networks (BRAN).

The present document specifies the Protocol Implementation Conformance Statement (PICS) of the Network layer Release 1.5 for High Performance radio Metropolitan Area Network (HiperMAN) and WiMAX terminal devices.

The present document is part 1 of a multi-part deliverable covering HiperMAN; Conformance Testing for the Network Layer of HiperMAN/WiMAX terminal devices, as identified below:

**Part 1: "Protocol Implementation Conformance Statement (PICS) proforma";**

Part 2: "Test Suite Structure and Test Purposes (TSS&TP)";

Part 3: "Abstract Test Suite (ATS)";

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## 1 Scope

The present document specifies the Protocol Implementation Conformance Statement (PICS) proforma for WiMAX Network Layer Release 1.5 per ISO/IEC 9646-7 [23], ITU-T Recommendation X.296 [24] and EG 201 058 [i.4] for conformance of HiperMAN1.3.1/WiMAX compliant terminals.

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## 2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
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  - for informative references.

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### 2.1 Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

- [1] WiMAX Forum (Release 1.5): "WiMAX Forum Network Architecture, Stage 2: Architecture Tenets, Reference Model and Reference Points, Base Specification".

NOTE: Available at <http://www.wimaxforum.org/resources/documents/technical/release>

- [2] WiMAX Forum (Release 1.5): "WiMAX Forum Network Architecture, Stage 3: Detailed Protocols and Procedures", Base Specification.

NOTE: Available at <http://www.wimaxforum.org/resources/documents/technical/release>

- [3] IETF RFC 3484 (February 2003): "Default Address Selection for Internet Protocol version 6 (IPv6)".
- [4] IETF RFS 5281 (August 2008): "Extensible Authentication Protocol Tunneled Transport Layer Security Authenticated Protocol Version 0 (EAP-TTLSv0)".
- [5] IETF RFC 2131 (March 1997): "Dynamic Host Configuration Protocol".
- [6] IETF RFC 3748 (June 2004): "Extensible Authentication Protocol (EAP)".
- [7] IETF RFC 4941 (September 2007): "Privacy Extensions for Stateless Address Autoconfiguration in IPv6".
- [8] IETF RFC 2464 (December 1998): "Transmission of IPv6 Packets over Ethernet Networks".
- [9] IETF RFC 2759 (January 2000): "Microsoft PPP CHAP Extensions, Version 2".
- [10] IETF RFC 5216 (March 2008): "The EAP-TLS Authentication Protocol".

- [11] IETF RFC 3024 (January 2001): "Reverse Tunneling for Mobile IP, revised".
- [12] IETF RFC 3315 (July 2003): "Dynamic Host Configuration Protocol for IPv6 (DHCPv6)".
- [13] IETF RFC 3344 (August 2002): "IP Mobility Support for IPv4".
- [14] IETF RFC 3775 (June 2004): "Mobility Support in IPv6".
- [15] IETF RFC 3776 (June 2004): "Using IPsec to Protect Mobile IPv6 Signaling Between Mobile Nodes and Home Agents".
- [16] IETF RFC 4187 (January 2006): "Extensible Authentication Protocol Method for 3rd Generation Authentication and Key Agreement (EAP-AKA)".
- [17] IETF RFC 4282 (December 2005): "The Network Access Identifier".
- [18] IETF RFC 4862 (September 2007): "IPv6 Stateless Address Autoconfiguration".
- [19] IETF RFC 4285 (January 2006): "Authentication Protocol for Mobile IPv6".
- [20] IETF RFC 4294 (April 2006): "IPv6 Node Requirements".
- [21] Void.
- [22] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".
- [23] ISO/IEC 9646-7: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statements".
- [24] ITU-T Recommendation X.296: "OSI conformance testing methodology and framework for protocol Recommendations for ITU-T applications - Implementation conformance statements".
- [25] Void.
- [26] WiMAX Forum (Release 1.5): "WiMAX Forum Network Architecture; Stage 3: Architecture, detailed Protocols and Procedures: WiMAX Over-The-Air General Provisioning System Specification".
- NOTE: Available at <http://www.wimaxforum.org/resources/documents/technical/release>
- [27] WiMAX Forum (Release 1.5): "WiMAX Forum Network Architecture; Stage 3: Architecture, detailed Protocols and Procedures: Over-The-Air Provisioning & Activation Protocol based on TR-069 Specification".
- NOTE: Available at <http://www.wimaxforum.org/resources/documents/technical/release>
- [28] WiMAX Forum (Release 1.5): "WiMAX Forum Network Architecture; Stage 3: Architecture, detailed Protocols and Procedures; WiMAX Over-The-Air Provisioning & Activation Protocol based on OMA DM Specifications".
- NOTE: Available at <http://www.wimaxforum.org/resources/documents/technical/release>.
- [29] WiMAX Forum (Release 1.5): "WiMAX Forum Network Architecture; Stage 3: Architecture, detailed Protocols and Procedures; Emergency Services Support".
- NOTE: Available at <http://www.wimaxforum.org/resources/documents/technical/release>.
- [30] WiMAX Forum (Release 1.5): "WiMAX Forum Network Architecture; Stage 3: Architecture, detailed Protocols and Procedures; IP Multimedia Subsystem (IMS) Interworking".
- NOTE: Available at <http://www.wimaxforum.org/resources/documents/technical/release>
- [31] WiMAX Forum (Release 1.5): "WiMAX Forum Network Architecture; Protocol and Procedures for Location Based Services".
- NOTE: Available at <http://www.wimaxforum.org/resources/documents/technical/release>

- [32] WiMAX Forum (Release 1.5): "WiMAX Forum Network Architecture; Stage 3: System Requirements, Network Protocols and Architecture for Multi-cast Broad-cast Services".

NOTE: Available at <http://www.wimaxforum.org/resources/documents/technical/release>

- [33] Broadband Forum (December 2007, Issue 1 Amnd. 2): "TR-069; CPE WAN Management Protocol v1.1".
- [34] IETF RFC 5246 (August 2008): "The Transport Layer Security (TLS) Protocol Version 1.2".
- [35] IETF RFC 4279 (December 2005): "Pre-Shared Key Ciphersuites for Transport Layer Security (TLS)".
- [36] Open Mobile Alliance OMA-TS-ULP-V2-0-20080627-C (June 2008): "UserPlane Location Protocol".

## 2.2 Informative references

The following referenced documents are not essential to the use of the present document but they assist the user with regard to a particular subject area. For non-specific references, the latest version of the referenced document (including any amendments) applies.

- [i.1] IETF draft-ietf-mip6-hiopt-17 (May 2008): "DHCP Options for Home Information Discovery in MIPv6".
- [i.2] ETSI TS 102 624-2: "Broadband Radio Access Networks (BRAN); HiperMAN; Conformance Testing for the Network layer of HiperMAN/WiMAX terminal devices; Part 2: Test Suite Structure and Test Purposes (TSS&TP)".
- [i.3] ETSI TS 102 624-3: "Broadband Radio Access Networks (BRAN); HiperMAN; Conformance Testing for the Network layer of HiperMAN/WiMAX terminal devices; Part 3: Abstract Test Suite (ATS)".
- [i.4] ETSI EG 201 058: "Methods for Testing and Specification (MTS); Implementation Conformance Statement (ICS) proforma style guide".

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## 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of the present document, the terms and definitions given in ISO/IEC 9646-1 [22], WiMAX Forum Network Architecture Stage 2 [1], WiMAX Forum Network Architecture Stage 3 [2], and ISO/IEC 9646-7 [23] apply.

### 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in WiMAX Forum Network Architecture Stage 2 [1], WiMAX Forum Network Architecture Stage 3 [2], ISO/IEC 9646-1 [22] and the following apply:

AR	Access Router
ASN	Access Service Network
BS	Base Station
DAD	Duplicate Address Detection
DNS	Domain Name Service
IID	Interface Identifier
IUT	Implementation Under Test
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
MAC	Medium Access Control
MS	Mobile Station

MTU	Maximum Transmission Unit
NAI	Network Access Identifier
NAP	Network Access Provider
NSP	Network Service Provider
SUT	System Under Test

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## 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.

A 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.

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# Annex A (normative): Protocol ICS (PICS) for HiperMAN/WiMAX terminal devices Network layer

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.

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## A.1 Guidance for completing 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 defined in references [1] and [2] 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 and implementation;
- identification of the standard;
- global statement of conformance;
- Mobile Station (MS);
- List of messages;
- Message Fields.

### A.1.2 Abbreviations and conventions

#### Item column

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

#### Capability column

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

#### Reference column

- The reference column indicates the section of [1] and [2] from which the requirement for the capability is derived and in some cases also the referenced IETF RFCs referenced in the base standard.

### Status column

- The following notations, defined in ISO/IEC 9646-1 [22], are used in the status column.

m	Explicitly shown as mandatory in the standard. It is required to implement.
o	Explicitly mentioned as optional in the standard or is not explicitly mentioned but has capability negotiations. It may or may not be implemented.
oi	Qualified option - for mutually exclusive or selectable options from a set. One or more of the options from the set shall be supported.
IO-NNNN	Inter-operable Options: Item belongs to NNNN group of features for which it is requested to provide testing procedure and distinct labelling of BS equipment. More specifically: <ul style="list-style-type: none"> <li>the item is not required to get general "WiMAX certified" label; and</li> <li>is required to get distinct "WiMAX certified with NNNN capability" label.</li> </ul>

### Support column

- The support column shall be filled in by the supplier of the implementation. The following common notations, defined in ISO/IEC 9646-1 [22] are used for the support column.

Y or y	Supported by implementation.
N or n	Not supported by implementation.
N/A, n/a or -	No answer required (allowed only if the status is n/a either directly or after the evaluation of a conditional status).

### Values allowed column

- The values allowed column is only used when necessary in a table. It contains the type, the list, the range, or the length of values allowed. The following notations are used.

Range of values: Example:	<min value>..<max value> 5..20
List of values: EXAMPLE 1: EXAMPLE 2: EXAMPLE 3:	<value1>, <value2>, ..., <valueN> 2, 4, 6, 8, 9 1101b, 1011b, 1111b 0x0A, 0x34, 0x2F
List of named values: Example:	<name1>(<val1>), <name2>(<val2>), ..., <nameN>(<valN>) reject(1), accept(2)
Length: EXAMPLE:	Size (<min-size>..<max-size>) Size (1..8)

### Values supported column

- The values supported column is only present when the values allowed column is present. It shall be filled in by the supplier of the implementation. In this column, the value or the ranges of values supported by the implementation shall be indicated.

### Reference to items

- For each possible item answer in the support column within the PICS proforma a unique reference exists which may be used, for example, in conditional expressions. It is defined as the table identifier, followed by the "/" 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.).

EXAMPLE 1:	Table A.5/4 is the reference to the answer of item 4 in table A.5.
EXAMPLE 2:	Table A.6/3b is the reference to the second answer (i.e. in the second support column) of item 3 in table A.6.

### Prerequisite Line

- A prerequisite line takes the form: Prerequisite: <predicate>.
- A prerequisite line after a clause or table title indicates that the entire clause or the entire table is not required to be completed if the predicate is FALSE.