SLOVENSKI STANDARD
SIST ETS 300 836-3 E1:2006

01-februar-2006

Širokopasovna radijska dostopovna omrežja (BRAN) – Zelo zmogljivo radijsko lokalno omrežje (HIPERLAN), tip 1 – Specifikacija za preskušanje skladnosti – 3. del: Zgradba preskušalnega niza in namen preskušanja (TSS&TP) – Specifikacija

Broadband Radio Access Networks (BRAN); HIgh PErformance Radio Local Area Network (HIPERLAN) Type 1; Conformance testing specification; Part 3: Test Suite Structure and Test Purposes (TSS&TP) specification

Ta slovenski standard je istoveten z: **ETS 300 836-3 Edition 1**

ICS:

33.060.01	Radijske komunikacije na splošno	Radiocommunications in general
35.110	Omreževanje	Networking

SIST ETS 300 836-3 E1:2006 **en**

EUROPEAN TELECOMMUNICATION STANDARD

ETS 300 836-3

May 1998

Source: BRAN

Reference: DE/BRAN-10-02B

ICS: 33.020

Key words: HIPERLAN, LAN, radio, testing

Broadband Radio Access Networks (BRAN); HIgh PErformance Radio Local Area Network (HIPERLAN) Type 1; Conformance testing specification; Part 3: Test Suite Structure and Test Purposes (TSS&TP) specification

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Foreword

This European Telecommunication Standard (ETS) has been produced by the ETSI Project Broadband Radio Access Networks (BRAN) of the European Telecommunications Standards Institute (ETSI).

This ETS consists of 4 parts:

Part 1: "Radio type approval and Radio Frequency (RF) conformance test specification";

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

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

Part 4: "Abstract Test Suite (ATS) specification".

Transposition dates	
Date of adoption of this ETS:	1 May 1998
Date of latest announcement of this ETS (doa):	31 August 1998
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	28 February 1999
Date of withdrawal of any conflicting National Standard (dow):	28 February 1999

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1 Scope

This European Telecommunication Standard (ETS) specifies the Test Suite Structure and Test Purposes (TSS&TP) for the Medium Access Control (MAC) and Channel Access Control (CAC) protocol parts of the HIgh PErformance Radio Local Area Network (HIPERLAN), Type 1 functional specification as specified in ETS 300 652 [1].

In this ETS, the term "HIPERLAN" is used to refer to HIPERLAN, Type 1.

2 Normative references

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

[1] ETS 300 652 (1996) and prA1 (1996): "Radio Equipment and Systems (RES); HIgh PErformance Radio Local Area Network (HIPERLAN); Type 1; Functional specification".

[2] ETS 300 836-2: "Radio Equipment and Systems (RES); HIgh PErformance Radio Local Area Network (HIPERLAN) Type 1; Conformance testing specification; Part 2: Protocol Implementation Conformance Statement (PICS)".

[3] ISO/IEC 9646-1 (1994): "Information technology - Open systems interconnection - Conformance testing methodology and framework - Part 1: General concepts".

[4] ISO/IEC 9646-2 (1994): "Information Technology - OSI Conformance Testing Methodology and Framework; Part 2: Abstract Test Suite Specification".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of this ETS, the following definitions apply, in addition to those given in ETS 300 652 [1]:

abstract test method: See ISO/IEC 9646-1 [3].

abstract test suite: See ISO/IEC 9646-1 [3].

implementation under test: See ISO/IEC 9646-1 [3].

test purpose: See ISO/IEC 9646-1 [3].

3.2 Symbols

For the purposes of this ETS, the symbols defined in ETS 300 652 [1] apply.

3.3 Abbreviations

For the purposes of this ETS, the following abbreviations apply, in addition to those given in ETS 300 652 [1]:

ATM	Abstract Test Method
ATS	Abstract Test Suite
CAC	Channel Access Control
HIPERLAN	HIgh PErformance Radio Local Area Network
IUT	Implementation Under Test
MAC	Medium Acces Control
MSAP	MAC Service Access Point
PICS	Protocol Implementation Conformance Statement
TP	Test Purpose
TSS	Test Suite Structure
TSS&TP	Test Suite Structure and Test Purposes

4 Test suite structure

The test suite structure is defined in table 1.

Table 1: Test suite structure

HIPERLAN	**MAC**	**LK**	Lookup function	**LKP**	
		RF	Routing and Forwarding	**FWD**	Forwarder
				NFD	Non-forwarder
				FNF	Forwarder & Non-forwarder
				MRD	Multipoint relay determination
				ALI	Aliasing
				FOR	Forwarding
				ROU	Routing
		PC	Power conservation function	**IPD**	Individual-attention pattern declaration
				IPR	Individual-attention pattern recording
				GPD	Group-attendance pattern declaration
				GPR	Group-attendance pattern recording
		DT	User data transfer function	**SAN**	Sanity check computation
				EDN	User data encryption-decryption
				QOS	HMQoS failure reporting
				UDA	User data acceptance
				UDD	User data delivery
		HT	HMPDU transfer function	**EXP**	Expired HMPDU removal
				SEL	HMPDU selection
				TRA	HMPDU transmission
				REC	HMPDU reception
				REM	Expired duplicate detection entry removal
		SE	Structure & encoding of HMPDUs	**VAR**	
	CAC	**EY**	Elimination-Yield Non pre-emptive Priority Multiple Access	**PRI**	Prioritization phase
				ELE	Elimination phase
				YIE	Yield phase
				TRP	Transmission phase
				CHA	Conditions for commencing channel access
				OPS	Operator parameter settings
		CH	Channel permission function	**CPD**	CP-HCPDU declaration
				CPR	CP-HCPDU recording
		DT	User data transfer function.	**UDT**	
		HT	HCPDU transfer function	**LBR**	LBR-part checksum computation
				HBR	HBR-part checksum computation
				HDA	Hashed address computation
				TRA	LBR-HBR HCPDU transmission
				REC	HCPDU reception
		SE	Structure & encoding of HCPDUs	**VAR**	

5 Test purpose structure

5.1 TP naming convention

Individual TPs are numbered, starting at 1, within groups. These groups are organized according to the fourth level of the TSS. Additional references are added to identify whether the TP relates to the MAC or CAC and its group. See table 2.

Table 2: TP Identifier naming convention scheme

Identifier:		<layer>_<group>_<nn>	
<layer>	=	sublayer of protocol (second level of TSS):	MAC or CAC
<group>	=	group (fourth level of TSS):	3 letter field representing group reference according to TSS
<nn>	=	sequential number:	(1-99)

5.2 TP structure

Generally each TP has been written in a manner which is consistent with all other TPs. The intention of this is to make the TPs more readable and checkable. A particular structure has been used and this is illustrated in table 3. This table should be read in conjunction with any TP i.e. use a TP as an example to fully understand the table. Due to the nature of the protocol some TPs may not fit exactly into this structure.

Table 3: Structure of a single TP for HIPERLAN

TP Part	Text	Example
Header (bold)	<Identifier> **tab** subclause <subclause number in ETS 300 652 [1]> **tab** <type of test> **tab** PICS: <PICS reference>	see table 2 **subclause 0.0.0** **valid, invalid** **PICS: MC 0**
Stimulus (normal)	Ensure that the IUT (<type of IUT>) <precondition> <trigger> **see below for PDU structure** **or** <goal>	 (a forwarder), (a non-forwarder) etc. having generated a ..., after receiving a ..., etc. on receipt of... in order to...
Reaction (indented)	<action> <conditions> **if the action is sending** **see below for PDU structure** <next action>, **etc.**	transmits, generates, does not transmit, etc. within the time T_{hr}, etc.
PDU structure	<PDU type> containing a **or** with **a)** <field name> encoded as **or** including <coding of the field> **or** **b)** <tuple name> with <tuple field> equal to <value of the tuple field> and **back to a) or b)**	HO-HMPDU, DT-HCPDU, etc. SA, ADA, etc. MSAP address of the IUT, etc. NT-Status, etc. T-Heard, etc.
NOTE:	Text in bold will not appear in TPs and text between <> is filled in for each TP and may differ from one TP to the next.	

6 Test purposes

6.1 TPs for MAC protocol

NOTE: In this clause the expression "(for the IUT)" is used to indicate that a DT-HMPDU received by the IUT contains a destination MAC Service Access Point (MSAP) address identifying the IUTs HMS user.

6.1.1 TPs for lookup function

MAC_LKP_1 subclause 6.2.1 valid PICS: MC 6

Ensure that the IUT, on receipt of a HM-LOOKUP request primitive:

- generates a HC-UNITDATA request primitive containing an LR-HMPDU, with:
  - HIPERLAN identifier parameter set to Any_HIPERLAN;
  - destination address parameter set to All_Neighbours.

MAC_LKP_2 subclauses 6.2.1, 6.2.3 valid PICS: MC 6

Ensure that the IUT, having generated an LR-HMPDU, on receipt of one and only one LC-HMPDU, before expiry of timer t_C:

- issues a HM-LOOKUP confirm service primitive containing HIPERLAN information with HIPERLAN name and HIPERLAN identifier as contained in the received LC-HMPDU.

MAC_LKP_3 subclauses 6.2.1, 6.2.3 valid PICS: MC 6

Ensure that the IUT, having generated an LR-HMPDU, on receipt of exactly two LC-HMPDUs, each containing different HIPERLAN name and HIPERLAN identifier, before expiry of timer t_C:

- issues a HM-LOOKUP confirm service primitive containing HIPERLAN information with HIPERLAN names and HIPERLAN identifiers as contained in the received LC-HMPDUs.

MAC_LKP_4 subclause 6.2.1 valid PICS: MC 6

Ensure that the IUT, having generated an LR-HMPDU, on receipt of no LC-HMPDUs, before expiry of timer t_C:

- issues a HM-LOOKUP confirm service primitive containing HIPERLAN information with no HIPERLAN names and HIPERLAN identifiers.

MAC_LKP_5 subclause 6.2.3 inopportune

Ensure that the IUT, not having generated an LR-HMPDU during a period of l_{LR} or an LC-HMPDU during a period of l_{LC}, on receipt of an LC-HMPDU:

- ignores the LC-HMPDU and does not issue a HM-LOOKUP confirm service primitive.

MAC_LKP_6 subclause 6.2.3 inopportune

Ensure that the IUT, not having generated an LR-HMPDU during a period of l_{LR}, and having generated but not yet transmitted an LC-HMPDU, on receipt of an LC-HMPDU containing the same HIPERLAN information as in the previously generated LC-HMPDU:

- cancels the transmission of the previously generated LC-HMPDU.

MAC_LKP_7 subclause 6.2.3 inopportune

Ensure that the IUT, not having generated an LR-HMPDU during a period of l_{LR}, and having generated but not yet transmitted an LC-HMPDU, on receipt of an LC-HMPDU containing the same HIPERLAN information as in the previously generated LC-HMPDU:

- does not issue a HM-LOOKUP confirm service primitive.

MAC_LKP_8 subclause 6.2.3 inopportune

Ensure that the IUT, not having generated an LR-HMPDU during a period of l_{LR}, and having generated but not yet transmitted an LC-HMPDU, on receipt of an LC-HMPDU containing the same HIPERLAN name and different HIPERLAN identifier as in the previously generated LC-HMPDU:

- proceeds with the transmission of the previously generated LC-HMPDU.

MAC_LKP_9 subclause 6.2.3 inopportune

Ensure that the IUT, not having generated an LR-HMPDU during a period of l_{LR}, and having generated but not yet transmitted an LC-HMPDU, on receipt of an LC-HMPDU containing the same HIPERLAN name and different HIPERLAN identifier as in the previously generated LC-HMPDU:

- does not issue a HM-LOOKUP confirm service primitive.

MAC_LKP_10 subclause 6.2.3 inopportune

Ensure that the IUT, not having generated an LR-HMPDU during a period of l_{LR}, and having generated but not yet transmitted an LC-HMPDU, on receipt of an LC-HMPDU containing the same HIPERLAN identifier and different HIPERLAN name as in the previously generated LC-HMPDU:

- proceeds with the transmission of the previously generated LC-HMPDU.

MAC_LKP_11 subclause 6.2.3 inopportune

Ensure that the IUT, not having generated an LR-HMPDU during a period of l_{LR}, and having generated but not yet transmitted an LC-HMPDU, on receipt of an LC-HMPDU containing the same HIPERLAN identifier and different HIPERLAN name as in the previously generated LC-HMPDU:

- does not issue a HM-LOOKUP confirm service primitive.

MAC_LKP_12 subclause 6.2.2 valid

Ensure that the IUT, on receipt of an LR-HMPDU:

- generates a HC-UNITDATA request primitive containing an LC-HMPDU, with HIPERLAN name and HIPERLAN identifier of the local HM-entitys HIPERLAN, with:

  - HIPERLAN identifier parameter set to Any_HIPERLAN;
  - destination address parameter set to All_Neighbours.

MAC_LKP_13 subclause 6.2.2 valid

Ensure that the IUT, having received an LR-HMPDU and having generated an LC-HMPDU in response, on receipt of a second LR-HMPDU prior to the transmission of the response to the first:

- ignores this second LR-HMPDU and does not generate an LC-HMPDU in response.