



**SLOVENSKI STANDARD**  
**SIST-V ETSI/EG 201 299-2 V2.1.1:2003**  
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**Digitalno omrežje z integriranimi storitvami (ISDN) - Preskušanje integriranosti omrežja (NIT) - Preskušanje ISDN od konca do konca - 2. del: Abstraktni preskuševalni niz (ATS) in delna dodatna informacija za preskušanje izvedbe protokola (PIXIT) - Proforma specifikacije za omrežje**

Integrated Services Digital Network (ISDN) - Network Integration Testing (NIT) - ISDN End-to-end testing - Part 2: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for the network

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**ICS:**

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|--------|---|--|
| 33.080 | Digitalno omrežje z integriranimi storitvami (ISDN) | Integrated Services Digital Network (ISDN) |
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# ETSI EG 201 299-2 V2.1.1 (2000-03)

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*ETSI Guide*

**Integrated Services Digital Network (ISDN);  
Network Integration Testing (NIT);  
ISDN End-to-end testing;  
Part 2: Abstract Test Suite (ATS) and  
partial Protocol Implementation eXtra Information  
for Testing (PIXIT) proforma for the network**

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## Foreword

This ETSI Guide (EG) has been produced by ETSI Technical Committee Services and Protocols for Advanced Networks (SPAN).

The present document is part 1 of a multi-part EG covering Integrated Services Digital Network (ISDN); Network Integration Testing (NIT); ISDN/PSTN end-to-end testing, as identified below:

Part 1: "Test Suite Structure and Test Purposes (TSS&TP) specification";

Part 2: "**Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for the network**".

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## Introduction

The present document contains the Abstract Test Suite (ATS), Implementation Conformance Statement (ICS) and Implementation eXtra Information for Testing (IXIT) list developed in the EURESCOM project P613 "Methodology and tools for ISDN Network Integration and Traffic Route Testing" for testing the international European ISDN, covering Network Integration Testing (NIT) between ISDN-ISDN, ISDN-PSTN and PSTN-ISDN networks. The objective is to verify the level of international end-to-end support of ISDN services. Both bearer services (and associated teleservices) and supplementary services are checked for interworking capability and compatibility, in the international European ISDN.

The European ISDN is made up by connecting the different national networks and End-to-end NIT covers all the testing activities necessary to assess the correct behaviour of the interconnected network from the point of view of access interfaces, network side.

## 1 Scope

The present document specifies the Abstract Test Suite (ATS), the Implementation Conformance Statement (ICS) and the partial Implementation eXtra Information for Testing (IXIT) proformas for the network side of the T reference point or coincident S and T reference point for the pan-European Integrated Services Digital Network (ISDN) as provided by European public telecommunications operators by means of the Digital Subscriber Signalling System No. one (DSS1) protocol, for Network Integration Testing (NIT) covering the end-to-end support of ISDN services.

## 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] ETSI EN 300 403-1: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit-mode basic call control; Part 1: Protocol specification [ITU-T Recommendation Q.931 (1993), modified]".
- [2] ETSI ETS 300 103: "Integrated Services Digital Network (ISDN); Support of CCITT Recommendation X.21, X.21 bis and X.20 bis based Data Terminal Equipments (DTEs) by an ISDN Synchronous and asynchronous terminal adaptation functions".  
<https://standards.iteh.ai/catalog/standards/sist/061c8824-b17e-4169-899f-013240922000>
- [3] CCITT Recommendation O.152 (1988): "Error performance measuring equipment for 64 kbit/s paths".
- [4] CCITT Recommendation I.112 (1988): "Vocabulary and terms for ISDNs".
- [5] CCITT Recommendation I.210 (1988): "Principles of the telecommunication services supported by an ISDN and the means to describe them".
- [6] CCITT Recommendation E.164 (1988): "Numbering plan for the ISDN era".
- [7] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General Concepts".
- [8] ISO/IEC 9646-2: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract Test Suite Specification".
- [9] ISO/IEC 9646-3: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 3: The Tree and Tabular Combined Notation".
- [10] ITU-T Recommendation G.711: "Pulse code modulation (PCM) of voice frequencies".
- [11] ITU-T Recommendation H.221: "Frame structure for a 64 to 1920 kbit/s channel in audio-visual teleservices".
- [12] ITU-T Recommendation H.242: "System for establishing communication between audio-visual terminals using digital channels up to 2 Mbit/s".
- [13] ITU-T Recommendation F.721: "Videotelephony teleservice for ISDN".
- [14] ITU-T Recommendation F.182: "Guidelines for the support of the communication of documents using Group 3 facsimile between user terminals via public networks".



- [15] ISO/IEC 7776: "Information technology - Telecommunications and information exchange between systems - High-level data link control procedures - Description of the X.25 LAPB-compatible DTE data link procedures".
- [16] ISO/IEC 8208: "Information technology - Data communications - X.25 Packet Layer Protocol for Data Terminal Equipment".
- [17] ISO/IEC 9646-7: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statements".
- [18] ISO/IEC 9646-4: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 4: Test realization".
- [19] ETSI EN 300 102: "Private Integrated Services Network (PISN); Mapping functions for the employment of a circuit mode basic service and the supplementary service user-to-user signalling as a pair of on-demand inter-PINX connections (Mapping/UUS)".
- [20] ETSI EN 300 065-1: "Integrated Services Digital Network (ISDN); Completion of Calls on No Reply (CCNR) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [21] ITU-T Recommendation Q.931: "ISDN user-network interface layer 3 specification for basic call control".
- [22] ETSI ETS 300 557: "Digital cellular telecommunications system (Phase 2); Mobile radio interface; Layer 3 specification (GSM 04.08 version 4.23.1)".
- [23] ETSI ETS 300 012: "Integrated Services Digital Network (ISDN); Basic user-network interface; Layer 1 specification and test principles".
- [24] ETSI ETS 300 011: "Integrated Services Digital Network (ISDN); Primary rate user-network interface; Layer 1 specification and test principles".
- [25] ETSI ETS 300 402-1: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Data link layer; Part 1: General aspects [ITU-T Recommendation Q.920 (1993), modified]".
- [26] ETSI ETS 300 125: "Integrated Services Digital Network (ISDN); User-network interface data link layer specification; Application of CCITT Recommendations Q.920/I.440 and Q.921/I.441".
- [27] ETSI EN 300 356-1: "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 1: Basic services [ITU-T Recommendations Q.761 to Q.764 (1997), modified]".
- [28] ETSI EN 300 267-1: "Integrated Services Digital Network (ISDN); Telephony 7 kHz, videotelephony, audiographic conference and videoconference teleservices; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [29] ETSI ETS 300 388: "Integrated Services Digital Network (ISDN); File Transfer, Access and Management (FTAM) over ISDN based on simple file transfer profile".
- [30] ETSI ETS 300 383: "Integrated Services Digital Network (ISDN); File transfer over the ISDN EUROFILE transfer profile".
- [31] ETSI EN 300 092-1: "Integrated Services Digital Network (ISDN); Calling Line Identification Presentation (CLIP) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [32] ETSI EN 300 093-1: "Integrated Services Digital Network (ISDN); Calling Line Identification Restriction (CLIR) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

- [33] ETSI EN 300 097-1: "Integrated Services Digital Network (ISDN); Connected Line Identification Presentation (COLP) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [34] ETSI EN 300 098-1: "Integrated Services Digital Network (ISDN); Connected Line Identification Restriction (COLR) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [35] ETSI EN 300 138-1: "Integrated Services Digital Network (ISDN); Closed User Group (CUG) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [36] ETSI EN 300 061-1: "Integrated Services Digital Network (ISDN); Subaddressing (SUB) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [37] ETSI EN 300 055-1: "Integrated Services Digital Network (ISDN); Terminal Portability (TP) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [38] ETSI EN 300 286-1: "Integrated Services Digital Network (ISDN); User-to-User Signalling (UUS) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [39] ETSI EN 300 185-1: "Integrated Services Digital Network (ISDN); Conference call, add-on (CONF) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [40] ETSI EN 300 207-1: "Integrated Services Digital Network (ISDN); Diversion supplementary services; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [41] ETSI EN 300 210-1: "Integrated Services Digital Network (ISDN); Freephone (FPH) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [42] ETSI EN 300 130-1: "Integrated Services Digital Network (ISDN); Malicious Call Identification (MCID) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [43] ETSI EN 300 188-1: "Integrated Services Digital Network (ISDN); Three-Party (3PTY) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [44] ETSI EN 300 141-1: "Integrated Services Digital Network (ISDN); Call Hold (HOLD) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [45] ETSI EN 300 058-1: "Integrated Services Digital Network (ISDN); Call Waiting (CW) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [46] ETSI EN 300 369-1: "Integrated Services Digital Network (ISDN); Explicit Call Transfer (ECT) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [47] ETSI EN 300 359-1: "Integrated Services Digital Network (ISDN); Completion of Calls to Busy Subscriber (CCBS) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [48] ETSI ETR 299-2: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Network Integration Testing (NIT); ISDN end-to-end testing; Part 2: Implementation Conformance Statement (ICS) proforma, Abstract Test Suite (ATS) and partial Implementation eXtra Information for Testing (IXIT) proforma specification".

## 3 Definitions

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

### 3.1 Definitions related to conformance testing

**Abstract Test Suite:** refer to ISO/IEC 9646-1 [7]

**Implementation Under Test:** refer to ISO/IEC 9646-1 [7]

**Lower Tester:** refer to ISO/IEC 9646-1 [7]

**Implementation Conformance Statement (ICS) proforma:** refer to ISO/IEC 9646-1 [7]

**Implementation eXtra Information for Testing (IXIT) proforma:** refer to ISO/IEC 9646-1 [7]

**Point of Control and Observation:** refer to ISO/IEC 9646-1 [7]

**Protocol Implementation Conformance Statement:** refer to ISO/IEC 9646-1 [7]

**Protocol Implementation eXtra Information for Testing:** refer to ISO/IEC 9646-1 [7]

**System Under Test:** refer to ISO/IEC 9646-1 [7]

**Test Purpose:** refer to ISO/IEC 9646-1 [7]

### 3.2 Definitions related to EN 300 403-1

**user:** DSS1 protocol entity at the User side of the user-network interface where a T reference point or coincident S and T reference point applies

**user (S/T):** DSS1 protocol entity at the User side of the user-network interface where a coincident S and T reference point applies

**user (T):** DSS1 protocol entity at the User side of the user-network interface where a T reference point applies (User is the Private ISDN)

**Integrated Services Digital Network (ISDN):** see CCITT Recommendation I.112 [4], § 2.2 definition 308

**service: telecommunications service:** see CCITT Recommendation I.112 [4], § 2.2 definition 201

**supplementary service:** see CCITT Recommendation I.210 [5], § 2.4

**ISDN number:** number conforming to the numbering and structure specified in CCITT Recommendation E.164 [6]

### 3.3 Definitions related to test purpose descriptions

**BC = speech:** bearer capability information element with its information transfer capability field set to "speech" and its user information layer one protocol field set to "G.711 [10] A-law"

**BC = 3,1 kHz audio:** bearer capability information element with its information transfer capability field set to "3,1 kHz Audio" and its user information layer one protocol field set to "G.711 [10] A-law"

**BC = UDI:** bearer capability information element with its information transfer capability set to "unrestricted digital information"

**BC = UDI/TA:** bearer capability information element with its information transfer capability set to "unrestricted digital information with tones/announcements" and its user information layer one protocol field set to "ITU-T Recommendations H.221 [11] and H.242 [12]"

**BC** = ITU-T Recommendation V110 / ITU-T Recommendation X30: a Bearer capability information element with its information transfer capability set to "unrestricted digital information" and its user information layer 1 field set to "CCITT standardized rate adaption ITU-T Recommendation V110 / ITU-T Recommendation X30", including sync/async and user rate values

**HLC = telephony**: high layer compatibility information element with its high layer characteristics identification field set to "telephony"

**HLC = videotelephony\_ic**: high layer compatibility information element with its high layer characteristics identification field set to "videotelephony (Rec. F.721 [13])" and its extended audio-visual characteristics field set to "capability set of initial channel of Rec. H.221 [11]"

**HLC = facsimile group 2/3**: high layer compatibility information element with its high layer characteristics identification field set to "facsimile group 2/3 (Rec. F.182 [14])"

**HLC = facsimile group 4**: high layer compatibility information element with its high layer characteristics identification field set to "facsimile group 4 class 1"

**HLC = telex**: high layer compatibility information element with its high layer characteristics identification field set to "telex"

**LLC = telematic\_term**: low layer compatibility information element with its user information layer 2 field indicating "ISO/IEC 7776 [15] operation" and user information layer 3 field indicating "ISO/IEC 8208 [16]"

**LLC = voice band data via modem**: low layer compatibility information element with its user information layer 1 field indicating a "modem type" coding

**LLC** = ITU-T Recommendation V110 / ITU-T Recommendation X30: low layer compatibility information element with its user information layer 1 field indicating "CCITT standardized rate adaption ITU-T Recommendation V110 / ITU-T Recommendation X30" and including sync/async and user rate values

**telephony 7 kHz fallback not allowed SETUP message**: SETUP message containing a single BC = UDI/TA and a HLC = telephony

**videotelephony fallback not allowed SETUP message**: SETUP message containing a single BC = UDI/TA and a single HLC = videotelephony\_ic

**SI = UPVP**: screening Indicator forwarded to the served user coded as "User-provided, verified and passed"

**SI = NP**: screening Indicator forwarded to the served user coded as "Network provided"

**PI = PR**: presentation Indicator forwarded to the served user coded as "Presentation restricted".

**TON = international**: type of number forwarded to the served user coded as "international"

**TON = unknown**: type of number forwarded to the served user coded as "unknown"

**NPI = unknown**: numbering plan identification forwarded to the served user coded as "unknown"

**CUG default request**: calling user does not include in the outgoing SETUP message an explicit request for the CUG supplementary service

**UI length = 32**: length of the User information field of the User-user information element is 32 octets.

**CF active**: call forwarding (U, B or NR) supplementary service is already activated with the address of user C

**unavailability period**: period of time beginning at the first of 10 consecutive severely erroded seconds and ending immediately before the first following period of 10 consecutive seconds none of which are severely erroded

**erroded second**: second with one or more bit errors

**severely erroded second**: second where at least 0,1% of the bits are erroded (corresponds to a one-second interval with a bit-error ratio worse than  $1 \times 10^{-3}$ )

**slip**: one or more extra or missing consecutive unit intervals in the bit stream

**octet slip:** slip of one complete octet

**Erroded Seconds Ratio:** ratio of erroded seconds over all seconds within a specified measuring period, where neither are counted during unavailability periods

**Severely Erroded Seconds:** ratio of severely erroded seconds over all seconds within a specified measuring period, where neither are counted during unavailability periods

**PRBS =  $2^{11}-1$ :** pseudo random binary sequence according to ITU-T Recommendation O.152 [3] transmitted for two consecutive periods of 24 hours. If an unavailability period of more than one hour occurred during the measuring period, it shall be extended accordingly

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