

**Access and Terminals (AT);
Digital Access to Public Telephone Networks;
Applicability of ITAAB Advisory Notes to TBRs**



Reference

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Foreword

This Technical Report (TR) has been produced by ETSI Technical Committee Access and Terminals (AT).

Introduction

The present document is identical in content to TRAC permanent reference document IT.01 V27 [18], which it supersedes, with the addition of reference to TS 102 119 [19].

At its December 1993 meeting TRAC decided to set up an ad-hoc group, ISDN Type Approval Advisory Ad-Hoc Group, or ITAAAG, later to become the ISDN Type Approval Advisory Board, or ITAAB, to consider urgent problems derived from NET 3, NET 5 and NET 33, encountered during type approval or conformity assessment. Over subsequent year the scope of work for ITAAB was increased to cover all of the digital CTRs and bridging measures.

The objective of the advisory notes was to specify a common approach to the type-examination of Terminal Equipment according to these Type Approval specifications. Although the TBRs, which formed the technical content of the CTRs, are no longer used for type approval within the European Union, they are still widely used for this purpose outside of the European Union and for other purposes (e.g. conformance testing) within the European Union. Therefore it is felt that the advisory notes still have a role to play in ensuring a common approach to the application of the TBRs.

1 Scope

The present document details the relationship between the ITAAB advisory notes and the TBRs to which they relate. The present document supersedes TRAC permanent reference document IT.01 V27 [18].

In addition the relationship between advisory notes that are produced by ETSI TC AT and the TBRs are also defined within the present document.

The TBRs in question are TBR 1 [1], TBR 2 [2], TBR 3 [3], TBR 4 [5], TBR 8 [7], TBR 12 [8], TBR 13 [10], TBR 14 [11], TBR 24 [13], TBR 25 [14], TBR 33 [15], TBR 34 [16] and their published amendments. In addition EN 301 401 [17] is also covered by the present document as it was intended to supersede TBR 1 [1] and TBR 2 [2].

Annex A contains a listing of all advisory notes that have been withdrawn. This listing is maintained for historical reasons enabling readers to determine the usage of these advisory notes.

2 References

For the purposes of this Technical Report (TR) the following references apply:

- [1] ETSI TBR 1 (1995): "Terminal Equipment (TE); Attachment requirements for terminal equipment to be connected to circuit switched data networks and leased circuits using a CCITT Recommendation X.21 interface, or at an interface physically, functionally and electrically compatible with CCITT Recommendation X.21 but operating at any data signalling rate up to, and including, 1 984 kbit/s".
- [2] ETSI TBR 2 (1997): "Digital Terminals and Access (DTA); Attachment requirements for Data Terminal Equipment (DTE) to connect to Packet Switched Public Data Networks (PSPDNs) for CCITT Recommendation X.25 interfaces at data signalling rates up to 1 920 kbit/s utilizing interfaces derived from CCITT Recommendations X.21 and X.21 bis".
- [3] ETSI TBR 3 (1995): "Integrated Services Digital Network (ISDN); Attachment requirements for terminal equipment to connect to an ISDN using ISDN basic access".
- [4] ETSI TBR 3/A1 (1997): "Integrated Services Digital Network (ISDN); Attachment requirements for terminal equipment to connect to an ISDN using ISDN basic access".
- [5] ETSI TBR 4 (1995): "Integrated Services Digital Network (ISDN); Attachment requirements for terminal equipment to connect to an ISDN using ISDN primary rate access".
- [6] ETSI TBR 4/A1 (1997): "Integrated Services Digital Network (ISDN); Attachment requirements for terminal equipment to connect to an ISDN using ISDN primary rate access".
- [7] ETSI TBR 8 Ed 2 (1998): "Integrated Services Digital Network (ISDN); Telephony 3,1 kHz teleservice; Attachment requirements for handset terminals".
- [8] ETSI TBR 12 (1993): "Business Telecommunications (BT); Open Network Provision (ONP) technical requirements; 2 048 kbit/s digital unstructured leased line (D2048U) Attachment requirements for terminal equipment interface".
- [9] ETSI TBR 12/A1 (1996): "Business Telecommunications (BTC); Open Network Provision (ONP) technical requirements; 2 048 kbit/s digital unstructured leased line (D2048U); Attachment requirements for terminal equipment interface".
- [10] ETSI TBR 13 (1996): "Business Telecommunications (BTC); 2 048 kbit/s digital structured leased lines (D2048S); Attachment requirements for terminal equipment interface".
- [11] ETSI TBR 14 (1994): "Business Telecommunications (BTC); 64 kbit/s digital unrestricted leased line with octet integrity (D64U); Attachment requirements for terminal equipment interface".

- [12] ETSI TBR 14/A1 (1996): "Business TeleCommunications (BTC); 64 kbit/s digital unrestricted leased line with octet integrity (D64U); Attachment requirements for terminal equipment interface".
- [13] ETSI TBR 24 (1997): "Business TeleCommunications (BTC); 34 Mbit/s digital unstructured and structured leased lines (D34U and D34S); Attachment requirements for terminal equipment interface".
- [14] ETSI TBR 25 (1997): "Business TeleCommunications (BTC); 140 Mbit/s digital unstructured and structured leased lines (D140U and D140S); Attachment requirements for terminal equipment interface".
- [15] ETSI TBR 33 (1997): "Integrated Services Digital Network (ISDN); Attachment requirements for packet mode terminal equipment to connect to an ISDN using ISDN basic access".
- [16] ETSI TBR 34 (1997): "Integrated Services Digital Network (ISDN); Attachment requirements for packet mode terminal equipment to connect to an ISDN using ISDN primary rate access".
- [17] ETSI EN 301 401 (V1.2.6): "Attachment requirements for Data Terminal Equipment (DTE) to connect to public networks that have physical and electrical network presentations based upon the ITU-T V-series of Recommendations".
- [18] IT.01 V27 (ITAAB Permanent Reference Document): "Recommendations for the accredited testing and type approval of ISDN Terminal Equipment".
- [19] ETSI TS 102 119: "Access and Terminals (AT); Overvoltage protection requirements within TBRs".

3 Definitions and abbreviations

3.1 Definitions

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

advisory notes: individual documents published either by TRAC (produced by ITAAB) or ETSI (produced by TC AT) that detail a technical amendment to the TBR(s) referenced within that document

3.2 Abbreviations

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

CTR	Common Technical Regulation
IE	Information Element
ITAAB	ISDN Type Approval Advisory Board
IUT	Implementation Under Test
TBR	Technical Basis for Regulation
TE	Terminal Equipment
TRAC	Technical Regulations Application Committee

4 List of currently applicable advisory notes

4.1 Advisory notes applicable to TBR 1

The following advisory notes are applicable when using TBR 1 [1].

Table 1

Advisory note No.	Subject
090	Testing for X.21 circuits
091	Data Rates for testing
110	Incidental non-compliances and unexpected PDUs
111	Alternative means of connection for attachment to V-series interfaces

4.2 Advisory notes applicable to TBR 2

The following advisory notes are applicable when using TBR 2 [2].

Table 2

Advisory note No.	Subject
090	Testing for X.21 circuits
091	Data Rates for testing
092	TE with X.21 or X.21bis interfaces with one or more configurations which do not support X.25
095	Test description for Receiver effective shunt capacitance for ITU-T V.28 interchange circuits (7.5.2.1)
110	Incidental non-compliances and unexpected PDUs
111	Alternative means of connection for attachment to V-series interfaces

4.3 Advisory notes applicable to EN 301 401

There are no advisory notes that require consideration when using EN 301 401 [17].

4.4 Advisory notes applicable to TBR 3

The following advisory notes are applicable when using TBR 3 [3] including TBR 3 Amendment 1 [4].

Table 3

Advisory note No.	Subject
048 rev. 2	Handling of glitches when performing tests B.2.4 and B.2.6.1 of TBR 3 [3]
053 rev. 2	TTCN description of preamble PRE_F3_CP
054 rev. 4	Additional French attachment requirements for ISDN
055 rev. 1	Value of state used in STATUS message
060 rev. 2	Testing to be performed for Basic Access layer 1, including variations of Power Sources to be applied during testing of Electrical Characteristics
061 rev. 2	Problem with performing the electrical characteristics tests at Basic Access Layer 1 for TEs with an unstable state F3
066 rev. 3	Test case selection to be performed for Basic Access and for Primary Rate Access for layers 2 and 3
069 rev. 1	Basic Access Layer 1 tests with problems for unstable S4 at layer 2
071 rev. 1	Requirements to EURO-ISDN basic access terminal equipment capable of handling only incoming or only outgoing calls
076 rev. 1	Problem with performing the functional characteristics tests at Basic Access Layer 1 for TEs with an unstable state F3
080 rev. 1	Use of preferred/exclusive bit in the RESTART ACK PDU in TC19003
083 rev. 1	Layer 3 default DF69901
085 rev. 1	Information element checking in layer 3 TC20002
086 rev. 1	Layer 2 test case TC27031
087	Handling of IUTs supporting En-bloc sending without using the Sending Complete IE, or supporting more than one dialling mode
088 rev. 1	Postamble CHECK_F1
094	Timer TWAIT in the S ₀ Layer 1 Test suite
096	Categorizing of ISDN Terminals based on the possible physical configuration/operation and data link operation
098	System states for power feeding tests
102	Power consumption of Terminal Equipments
110	Incidental non-compliances and unexpected PDUs
116	Definition of timers T_APPLI1 and T_APPLI2
118	Error in TBR 3 [3] test cases TIF4info2 and TIF4 info4
TS 102 119 [19]	Overvoltage protection requirements within TBRs;
120	TBR 3 [3] Test Cases TIF7COMPDEACT1 and TIF8COMPDEACT1
123	Problems in layer 2 preambles for terminal equipment unstable in state 4
125	Correction of test case references
126	Power consumption of locally powered TE which draw power from the basic rate interface

4.5 Advisory notes applicable to TBR 4

The following advisory notes are applicable when using TBR 4 [5] including TBR 4 Amendment 1 [6].

Table 4

Advisory note No.	Subject
054 rev. 4	Additional French attachment requirements for ISDN
055 rev. 1	Value of state used in STATUS message
066 rev. 3	Test case selection to be performed for Basic Access and for Primary Rate Access for layers 2 and 3
067 rev. 1	Testing to be performed for Primary Rate Access layer 1
068 rev. 1	CRC processing and generation of CRC error reports: Monitoring contiguous E bits
070 rev. 1	CRC processing Test Procedure change
072 rev. 1	Requirements to EURO-ISDN primary rate access terminal equipment capable of handling only incoming or only outgoing calls
075 rev. 1	Approval of TEs capable of automatic inter-working between equipment with and without CRC-4 capability
080 rev. 1	Use of preferred/exclusive bit in the RESTART ACK PDU in TC19003
082 rev. 1	Connection of the simulator to the IUT
083 rev. 1	Layer 3 default DF69901
084 rev. 1	Layer 3 response time in layer 2 tests
085 rev. 1	Information element checking in layer 3 TC20002
086 rev. 1	Layer 2 test case TC27031
087	Handling of IUTs supporting En-bloc sending without using the Sending Complete IE, or supporting more than one dialling mode
105	Test method for TBR 4 [5], clause B.3.2 - Immunity to attenuation and reflections
107	CRC processing Test Procedure Change
110	Incidental non-compliances and unexpected PDUs
TS 102 119 [19]	Overvoltage protection requirements within TBRs
123	Problems in layer 2 preambles for terminal equipment unstable in state 4

4.6 Advisory notes applicable to TBR 8

The following advisory notes are applicable when using TBR 8 Edition 2 [7].

Table 5

Advisory note No.	Subject
101 rev. 1	Clarification on measurements on TEs with volume control
110	Incidental non-compliances and unexpected PDUs

4.7 Advisory notes applicable to TBR 12

The following advisory notes are applicable when using TBR 12 [8] including TBR 12 Amendment 1 [9].

Table 6

Advisory note No.	Subject
063 rev. 4	Output jitter test of TBR 12 [8] and TBR 13 [10]
110	Incidental non-compliances and unexpected PDUs
TS 102 119 [19]	Overvoltage protection requirements within TBRs

4.8 Advisory notes applicable to TBR 13

The following advisory notes are applicable when using TBR 13 [10].

Table 7

Advisory note No.	Subject
063 rev. 4	Output jitter test of TBR 12 [8] and TBR 13 [10]
107	CRC processing Test Procedure Change
110	Incidental non-compliances and unexpected PDUs
TS 102 119 [19]	Overvoltage protection requirements within TBRs

4.9 Advisory notes applicable to TBR 14

The following advisory notes are applicable when using TBR 14 [11] including TBR 14 Amendment 1 [12].

Table 8

Advisory note No.	Subject
110	Incidental non-compliances and unexpected PDUs
TS 102 119 [19]	Overvoltage protection requirements within TBRs

4.10 Advisory notes applicable to TBR 24

The following advisory notes are applicable when using TBR 24 [13].

Table 9

Advisory note No.	Subject
110	Incidental non-compliances and unexpected PDUs
TS 102 119 [19]	Overvoltage protection requirements within TBRs

4.11 Advisory notes applicable to TBR 25

The following advisory notes are applicable when using TBR 25 [14].

Table 10

Advisory note No.	Subject
110	Incidental non-compliances and unexpected PDUs
TS 102 119 [19]	Overvoltage protection requirements within TBRs

4.12 Advisory notes applicable to TBR 33

The following advisory notes are applicable when using TBR 33 [15].

Table 11

Advisory note No.	Subject
048 rev. 2	Handling of glitches when performing tests B.2.4 and B.2.6.1 of TBR 3 [3]
053 rev. 2	TTCN description of preamble PRE_F3_CP
054 rev. 4	Additional French attachment requirements for ISDN
061 rev. 2	Problem with performing the electrical characteristics tests at Basic Access Layer 1 for TEs with an unstable state F3
069 rev. 1	Basic Access Layer 1 tests with problems for unstable S4 at layer 2
076 rev. 1	Problem with performing the functional characteristics tests at Basic Access Layer 1 for TEs with an unstable state F3
080 rev. 1	Use of preferred/exclusive bit in the RESTART ACK PDU in TC19003
086 rev. 1	Layer 2 test case TC27031
088 rev. 1	Post amble CHECK_F1
094	Timer TWAIT in the S ₀ Layer 1 Test suite
097	Power Source 1 voltage to be supplied to a TE during testing
098	System states for power feeding tests
102	Power consumption of Terminal Equipments
103	Information element checking in TBR 33/34 [15]/[16] layer 3 TC20002
104	Test case selection to be performed for Basic Access for CTR 33 layers 2 and 3
106	Correction of editorial error in TBR 33 [15] layer 3 TC11101
110	Incidental non-compliances and unexpected PDUs
113 rev. 1	Errors in the Requirements table in annex A of TBR 33 [15] for on-demand layer 1 requirements
116	Definition of timers T_APPL1 and T_APPL2
118	Error in TBR 3 [3] test cases TIF4info2 and TIF4 info4
TS 102 119 [19]	Overvoltage protection requirements within TBRs;
120	TBR 3 [3] Test Cases TIF7COMPDEACT1 and TIF8COMPDEACT1
121	Error in the layer 2 Test Case Selection Expression Definition in TBR 33 [15]
122	Errors in layer 3 PDU Constraint Declarations in TBR 33 [15] and TBR 34 [16]
124	Use of Circuit Mode layer 1 test results for CTR 33 and CTR 34 approval respectively
125	Correction of test case references
126	Power consumption of locally powered TE which draw power from the basic rate interface

4.13 Advisory notes applicable to TBR 34

The following advisory notes are applicable when using TBR 34 [16].

Table 12

Advisory note No.	Subject
054 rev. 4	Additional French attachment requirements for ISDN
063 rev. 4	Output jitter test of TBR 12 [8] and TBR 13 [10]
068 rev. 1	CRC processing and generation of CRC error reports: monitoring contiguous E bits
070 rev. 1	CRC processing Test Procedure change
075 rev. 1	Approval of TEs capable of automatic inter-working between equipment with and without CRC-4 capability
080 rev. 1	Use of preferred/exclusive bit in the RESTART ACK PDU in TC19003
082 rev. 1	Connection of the simulator to the IUT
084 rev. 1	Layer 3 response time in layer 2 tests
086 rev. 1	Layer 2 test case TC27031
103	Information element checking in TBR 33/34 [15]/[16] layer 3 TC20002
105	Test method for TBR 4 [5], clause B.3.2 - Immunity to attenuation and reflections
107	CRC processing Test Procedure Change
110	Incidental non-compliances and unexpected PDUs
TS 102 119 [19]	Overvoltage protection requirements within TBRs;
122	Errors in layer 3 PDU Constraint Declarations in TBR 33 [15] and TBR 34 [16]
124	Use of Circuit Mode layer 1 test results for CTR 33 and CTR 34 approval respectively
125	Correction of test case references

Annex A: List of withdrawn advisory notes

The following annexes list those advisory that have been withdrawn. The reason for withdrawal is given along side the detail of the advisory note. In many cases the reason for withdrawal is that the content of the advisory note has been incorporated into a later edition of the standard to which it applied.

This text has been directly reproduced from the original TRAC document without change.

A.1 ISDN Basic and Primary Rate Access

Table A.1

Advisory note No.	Subject	Reason for withdrawal
001	SETUP message via point-to-point data link for TE in point-to-point configuration	Applied for NET 3 and "I-CTR 3"
002	Restart procedure for a TE in point-to-point configuration	Applied for NET 3
003	Compatibility checking to be performed by an NT2	Applied for NET 3 and "I-CTR 3"
004	Correction of editorial error in test 13.4.2 of ETS 300 104	Applied for NET 3, NET 5, "I-CTR 3" and "I-CTR 4"
005	Correction of editorial error in test 8.10 of ETS 300 104	Applied for NET 3 and NET 5
006	Correction of editorial error in test 11.1 of ETS 300 104	Applied for NET 3, NET 5, "I-CTR 3" and "I-CTR 4"
007	Test of Timer T303	Applied for NET 3 and NET 5
008	Definition of an undefined frame	Applied for NET 3 and NET 5
009	Receipt of modulo 8 frame during modulo 128 operation	Applied for NET 3 and NET 5
010	Correction of editorial error in test D.3.2.1 of ETS 300 012 concerning test state 46, Expiry of T3 in state F8	Applied for "I-CTR 3"
011	Testing to be performed for Basic Access layer 1, including variations of Power Sources to be applied during testing of Electrical Characteristics	Applied for NET 3 and "I-CTR 3"
012	Frame Alignment procedure	Applied for NET 3 and "I-CTR 3"
013	Current/time limitation for TE when connecting	Was superseded by AN 011
014	Voltage and current limitations under single fault conditions	Applied for NET 3 and NET 5
015	Test Environment	Applied for NET 3, NET 5, "I-CTR 3" and "I-CTR 4"
016	Correction of editorial errors in clause A.2.2.4 of ETS 300 156	Applied for NET 5 and "I-CTR 4"
017	Use of TEI values and TEI management procedures for Primary Rate Access	Applied for NET 5 and "I-CTR 4"
018	Safety and Protection requirements for "ISDN Bridging Measures"	Applied for "I-CTR 3" and "I-CTR 4"
019	References to TTCN Test Cases	Applied for "I-CTR 3", "I-CTR 4", CTR 3 and CTR 4
020	Capability to enter state F5 on detection of "Any Signal"	Applied for NET 3 and "I-CTR 3"
021	Connection Detector for TEs of the Automatic TEI assignment category	Applied for NET 3 and "I-CTR 3"
022	Packet mode Terminals (TEs using SAPI = 16)	Not needed after CTR 33 and CTR 34 in force
023	Handling of MPH-EI1 primitive	Applied for NET 3 and "I-CTR 3"
024	Connection arrangements and related visual inspection	Applied for NET 3 and "I-CTR 3"
025	Ambiguity in layer 2 test A.2.2.4.5	Applied for NET 5 and "I-CTR 4"
026	Precondition for test A.2.2.5.1	Applied for NET 3, NET 5, "I-CTR 3" and "I-CTR 4"

Advisory note No.	Subject	Reason for withdrawal
027	Correction of editorial error in test 13.8 of ETS 300 104	Applied for NET 3, NET 5, "I-CTR 3" and "I-CTR 4"
028	Use of TEI values and TEI management procedures for Basic Access	Applied for NET 3 and "I-CTR 3"
029	Upper Frequency for measurement of LCL	Applied for "I-CTR 3"
030	Measurement requirements and limits for Tolerable longitudinal voltage and Impedance to ground	Applied for "I-CTR 4"
031	CRC multiframe alignment	Applied for NET 5 and "I-CTR 4"
032	Time limits for Frame Alignment	Applied for NET 5 and "I-CTR 4"
033	Cause Information Element in DISCONNECT message from TE	Applied for NET 3, NET 5, "I-CTR 3" and "I-CTR 4"
034	Problem with test A.2.2.1.4 in ETS 300 153	Applied for NET 3, NET 5, "I-CTR 3" and "I-CTR 4"
035	Handling of test A.2.2.1.1 for a TE which is unstable in state 4	Applied for NET 3, NET 5, "I-CTR 3" and "I-CTR 4"
036	Layer 2 processing time	Applied for NET 3, NET 5, "I-CTR 3" and "I-CTR 4"
037	Problem with test A.2.2.3.1 in ETS 300 153	Applied for NET 3, NET 5, "I-CTR 3" and "I-CTR 4"
038	Timers T305 and T308	Applied for "I-CTR 3" and "I-CTR 4"
039	Testing to be performed for Basic Access layer 2	Applied for "I-CTR 3"
040	Testing to be performed for Primary Rate Access layer 2	Applied for "I-CTR 4"
041	Testing to be performed for Primary Rate Access layer 1	Applied for "I-CTR 4"
042	Testing to be performed for Basic Access layer 3	Applied for "I-CTR 3"
043	Testing to be performed for Primary Rate Access layer 3	Applied for "I-CTR 4"
044	CRC processing and generation of CRC error reports	Applied for "I-CTR 4"
045	I-frame acknowledgement	Applied for "I-CTR 3", "I-CTR 4", CTR 3 and CTR 4
046	Basic Access Layer 1 tests with problems for unstable S4 at layer 2	Applied for "I-CTR 3"
047	Connection for testing of a TE capable of having a standard ISDN basic access cord connected	Applied for "I-CTR 3"
049	TTCN description of postamble CHECK_F1	Applied for "I-CTR 3"
050	TTCN description of tests CPF6PHARa and CPF8PHARa	Applied for "I-CTR 3"
051	Description of PX_T_APPLI1 and PX_T_APPLI2	Applied for "I-CTR 3"
052	Active Connection	Applied for CTR 3
057	CRC processing and generation of CRC error reports	Applied for "I-CTR 4"
058	Value of the state used in STATUS message	Applied for "I-CTR 3" and "I-CTR 4"
062	Testing of Primary Rate Access Layer 1 State Matrix	Applied for "I-CTR 4"
064	Interframe (layer 2) time fill in the Belgium ISDN network provided by Belgacom	Applied for older versions of the Belgacom network
074	Tests for timers T305 and T308	Applied for CTR 3 and CTR 4
079	Total Delay in Terminal Equipment	Applied for CTR 8
081	Incidental non-compliances	Applied for "I-CTR 3", "I-CTR 4", CTR 3 CTR 4 and CTR 8
089	Value of Listener Side Tone Rating (LSTR)	Applied for CTR 8
093	Error in Layer 2 test case TC27040	Applied for CTR 3 and CTR 4
114	Clarification of the term "Mains Powered", used in the TBR-RTs for selection of Protection tests	Replaced by TS 102 119 [19]
115	Correction of editorial error in clause 5.7.3 of ETS 300 047-3	Included in AN 119 rev. 1
119	Overvoltage requirements	Replaced by TS 102 119 [19]

A.2 TE interface for ONP and digital leased lines

Table A.2

Advisory note No.	Subject	Reason for withdrawal
073 rev. 1	Connector Arrangement specified in TBR 12 [8] and TBR 14 [11]	Applied for CTR 12 and CTR 14
114	Clarification of the term "Mains Powered", used in the TBR-RTs for selection of Protection tests	Replaced by TS 102 119 [19]
119	Overvoltage requirements	Replaced by TS 102 119 [19]

Annex B: Bibliography

ITU-T Recommendation V.28: "Electrical characteristics for unbalanced double-current interchange circuits".

ITU-T Recommendation X.21: "Interface between Data Terminal Equipment and Data Circuit-terminating Equipment for synchronous operation on public data networks".

ITU-T Recommendation X.21bis: "Use on public data networks of Data Terminal Equipment (DTE) which is designed for interfacing to synchronous V-Series modems".

ITU-T Recommendation X.25: "Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit".

ETSI ETS 300 104: "Integrated Services Digital Network (ISDN); Attachment requirements for terminal equipment to connect to an ISDN using ISDN basic access Layer 3 aspects (Candidate NET 3, Part 2)".

ETSI ETS 300 012: "Integrated Services Digital Network (ISDN); Basic user-network interface; Layer 1 specification and test principles".

ETSI ETS 300 156: "Integrated Services Digital Network (ISDN); Attachment requirements for terminal equipment to connect to an ISDN using ISDN primary rate access (Candidate NET 5)".

ETSI ETS 300 153: "Integrated Services Digital Network (ISDN); Attachment requirements for terminal equipment to connect to an ISDN using ISDN basic access (Candidate NET 3 Part 1)".

ETSI ETS 300 047-3: "Integrated Services Digital Network (ISDN); Basic access - safety and protection; Part 3: Interface Ia - protection".

History

Document history		
V1.1.1	August 2001	Publication