



# SLOVENSKI STANDARD

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8 [[ ]HJb]`W] b]`hY`ca i b]`UW`g\_]`g]ghYa `fZuU&L`3`E`I dfUj `Ub`Y`ca fYy`UfBAŁE`&`  
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Digital cellular telecommunications system (Phase 2) (GSM); Network Management (NM); Part 2: Common aspects of GSM/DCS 1800 network management (GSM 12.01)

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**ICS:**

33.070.50	Globalni sistem za mobilno telekomunikacijo (GSM)	Global System for Mobile Communication (GSM)
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(GSM 12.01)**

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## Foreword

This European Telecommunication Standard (ETS) was produced by the Special Mobile Group (SMG) Technical Committee of the European Telecommunications Standards Institute (ETSI).

This ETS provides a survey of the GSM network management interfaces and describes the relevant protocol profiles for Q3 and Qx interfaces within the Digital cellular telecommunications system. This ETS corresponds to GSM technical specification, GSM 12.01, version 4.4.1 and is part 2 of a 2 part ETS as described below:

GSM 12.00                      ETS 300 612-1: "Digital cellular telecommunication system (Phase 2); Network Management (NM); Part 1: Objectives and structure of Network Management".

**GSM 12.01                      ETS 300 612-2: "Digital cellular telecommunication system (Phase 2); Network Management (NM); Part 2: Common aspects of GSM Network Management".**

NOTE: TC-SMG has produced documents which give technical specifications for the implementation of the Digital cellular telecommunications system. Historically, these documents have been identified as GSM Technical Specifications (GSM-TSS). These specifications may subsequently become I-ETSS (Phase 1), or European Telecommunication Standards (ETSS)(Phase 2), whilst others may become ETSI Technical Reports (ETRs). These ETSI-GSM Technical Specifications are, for editorial reasons, still referred to in this ETS.

Transposition dates	
Date of adoption of this ETS:	31 August 1996
Date of latest announcement of this ETS (doa):	30 November 1996
Date of latest publication of new National Standard or endorsement of this ETS (dope):	31 May 1997
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## 1 Scope

This European Telecommunication Standard (ETS) provides the survey of the GSM Network Management (NM) interfaces in accordance with the requirements in the GSM standards and with the architectural concept and methodology defined in GSM 12.00 (ETS 300 612-1) [80].

NOTE: The requirements for GSM covers the requirements for a DCS 1800 network as well.

The various possibilities for transfer of NM messages between the NM entities and Network Elements (NEs) are outlined in this standard, and the requirements are set up for an OSI protocol stack appropriate for a GSM TMN.

This ETS describes the relevant protocol profiles for Q3 and Qx interfaces.

## 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] CCITT M.3010 (1988): "Principles for a Telecommunications Management Network (TMN).
- [2] CCITT Draft Q.811 (1992): "Lower Layer Protocol Profiles for the Q3 Interface".
- [3] CCITT Draft Q.812 (1992): "Upper Layer Protocol Profiles for the Q3 Interface".
- [4] CCITT G.703 (1988): "Physical/Electrical Characteristics of Hierarchical Digital Interfaces".
- [5] ISO DIS 7498-3 (1987): "Information Processing Systems - Open Systems Interconnection - OSI Reference Model - Part 3: Naming and Addressing".
- [6] ISO DIS 7498-4 (1987): "Information Processing Systems - Open Systems Interconnection - OSI Reference Model - Part 4: Management Framework".(See also CCITT X.700)
- [7] ISO IS 8571-1: "Information Processing Systems - Open Systems Interconnection - File Transfer, Access and Management - Part 1: General Introduction".
- [8] ISO IS 8571-2: "Information Processing Systems - Open Systems Interconnection - File Transfer, Access and Management - Part 2: Virtual Filestore Definition".
- [9] ISO IS 8571-3: "Information Processing Systems - Open Systems Interconnection - File Transfer, Access and Management - Part 3: File Service Definition".
- [10] ISO IS 8571-4: "Information Processing Systems - Open Systems Interconnection - File Transfer, Access and Management - Part 4: File Protocol Specification".
- [11] ISO/IEC ISP 10607-1: "Information technology - International Standardized Profiles AFTnn - File Transfer, Access and Management - Part 1: Specification of ACSE, Presentation and Session Protocols for the use by FTAM".
- [12] ISO/IEC ISP 10607-2: "Information technology - International Standardized Profiles AFTnn - File Transfer, Access and Management - Part 2: Specification of Document Types, Constraint sets and Syntax's".

- [13] ISO/IEC ISP 10607-3: "Information technology - International Standardized Profiles AFTnn - File Transfer, Access and Management - Part 2: Specification of AFT 11 Simple File Transfer Service (Unstructured)".
- [14] ISO/IEC DISP 11183-1: "Information technology - International Standardized Profiles AOMnn.OSI Management - Management communication protocols - Part 1: Specification of ACSE, presentation and session protocols for the use by ROSE and CMISE".
- [15] ISO DIS 9545 (1988): "Information Processing Systems - Open Systems Interconnection - Application Layer Structure".
- [16] ISO IEC 9595 (1991): "Information technology - Open Systems Interconnection - Common Management Information Service Definition". (See also X.710)
- [17] ISO IEC 9596-1 (1991): "Information technology - Open Systems Interconnection - Common Management Information Protocol - Part 1 Specification". (See also X.711)
- [18] CCITT E.164 (1988): "Numbering Plan for the ISDN Era".
- [19] CCITT Q.700 (1988): "Introduction to CCITT Signalling System No.7".
- [20] CCITT Q.701 (1988): "Functional Description of the Message Transfer Part (MTP) of Signalling System No.7".
- [21] CCITT Q.702 (1988): "Signalling Data Link".
- [22] CCITT Q.703 (1988): "Signalling Link".
- [23] CCITT Q.704 (1988): "Signalling Network Functions and Messages".
- [24] CCITT Q.705 (1988): "Signalling Network Structure".  
<https://standards.iteh.ai/catalog/standards/sist/a96885f4-f615-43fd-8dd6-54d9c67025/sist-ets-300-612-e1-2003>
- [25] CCITT Q.706 (1988): "Message Transfer Part Signalling Performance".
- [26] CCITT Q.707 (1988): "Testing and Maintenance".
- [27] CCITT Q.708 (1988): "Numbering of International Signalling Point Codes".
- [28] CCITT Q.709 (1988): "Hypothetical Signalling Reference Connection".
- [29] CCITT Q.711 (1988): "Functional Description of the Signalling Connection Control Part".
- [30] CCITT Q.712 (1988): "Definition and Function of SCCP Messages".
- [31] CCITT Q.713 (1988): "SCCP Formats and Codes".
- [32] CCITT Q.714 (1988): "Signalling Connection Control Part Procedures".
- [33] CCITT Q.775 (1988): "Guidelines for Using Transaction Capabilities".
- [34] CCITT Q.795 (1988): "Operations, Maintenance and Administration Part (OMAP)".
- [35] CCITT X.31 (1988): "Support of Packet Mode Terminal Equipment by an ISDN"..
- [36] CCITT X.21: "Interface between data terminal equipment and data circuit-terminating equipment for synchronous operation on public data networks".

- [37] CCITT X.21 bis (1988): "Use on public data networks of data terminal equipment (DTE) which is designed for interfacing to synchronous V-Series modems".
- [38] CCITT X.25 (1988): "Interface between Data Terminal Equipment (DTE) and Data Circuit Terminating (DCE) for Terminals operating in the Packet Mode and connected to Public Data Networks by Dedicated Circuit".
- [39] CCITT X.121 (1988): "International Numbering Plan for Public Data Networks".
- [40] CCITT X.200 (1988): "Reference Model of Open Systems Interconnection for CCITT Applications". (see also ISO 7498)
- [41] CCITT X.208 (1988): "Specification of Abstract Syntax Notation One (ASN.1)". (see also ISO 8824 and ISO 8824-AD1)
- [42] CCITT X.209: "Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1)". (see also ISO 8825 and ISO 8825-AD1)
- [43] CCITT X.210 (1988): "Open Systems Interconnection (OSI) Layer Service Definition Conventions".
- [44] CCITT X.211 (1988): "Physical Layer Service Definition for Open System Interconnection (OSI) for CCITT applications".
- [45] CCITT X.212 (1988): "Data Link Service Definition for Open System Interconnection (OSI) for CCITT applications".
- [46] CCITT X.213 (1988): "Network Service Definition for Open System Interconnection (OSI) for CCITT applications". (see also ISO 8348, ISO 8348/AD2 and ISO 8348/AD3)
- [47] CCITT X.223 (1988): "Use of X.25 to provide the OSI Connection-mode network service for CCITT applications". (see also ISO 8878)
- [48] CCITT X.214: "Transport Service Definition for Open System Interconnection (OSI) for CCITT Applications". (see also ISO 8072)
- [49] CCITT X.224: "Transport Protocol Specification for Open System Interconnection (OSI) for CCITT Applications". (see also ISO 8073)
- [50] CCITT X.215 (1988): "Session Service Definition for Open System Interconnection (OSI) for CCITT Applications". (see also ISO 8326 and ISO 8326-AD2)
- [51] CCITT X.225 (1988): "Session Protocol Specification for Open System Interconnection (OSI) for CCITT Applications". (see also ISO 8327 and ISO 8327-AD2)
- [52] CCITT X.216 (1988): "Presentation Service Definition for Open System Interconnection (ISO) for CCITT Applications". (see also ISO 8822)
- [53] CCITT X.226 (1988): "Presentation Protocol Specification for Open System Interconnection (OSI) for CCITT Applications". (see also ISO 8823)
- [54] CCITT X.217 (1988): "Association Control Service Definition for OSI for CCITT Applications". (see also ISO 8649-2)
- [55] CCITT X.227 (1988): "Association Control Protocol Specification for OSI for CCITT Applications". (see also ISO 8650-2)

- [56] CCITT X.219 (1988): "Remote Operations: Model, Notation and Service Definition". (see also ISO 9072-1)
- [57] CCITT X.229 (1988): "Remote Operations: Protocol Specification". (see also ISO 9072-2)
- [58] CCITT X.290 (1988): "OSI Conformance Testing Methodology and Framework for Protocol Recommendations for CCITT Applications".
- [59] CCITT X.410 (1984): "Message Handling Systems: Remote Operations and Reliable Transfer Server".
- [60] CCITT I.430 (1988): "Basic User-Network Interface - Layer 1 Specification".
- [61] CCITT I.431 (1988): "Primary Rate User-Network Interface - Layer 1 Specification".
- [62] ISO 7776: "Information processing systems - Data communication - High-level data link control procedures - Description of the X.25 LAPB-compatible DTE data link procedures.
- [63] CCITT Q.921 (1988): "ISDN User-Network Interface - Data Link Layer Specification".
- [64] CCITT Q.931 (1988): "ISDN User-Network Interface Layer 3 Specification for Basic Call Control".
- [65] ISO 8208: "Information processing systems - Data communications - X.25 Packet Level Protocol for Data Terminal Equipment.
- [66] ISO 8878: "Information technology - Telecommunications and information exchange between systems - Use of X.25 to provide the OSI Connection-mode Network Service. [SIST ETS 300 612-2 E1:2003](https://standards.iteh.ai/catalog/standards/sist/a96885f4-f615-43fd-8dd6-1998/iso-8878-1988)  
<https://standards.iteh.ai/catalog/standards/sist/a96885f4-f615-43fd-8dd6-1998/iso-8878-1988>
- [67] CCITT I.320 (1988): "ISDN Protocol Reference Model".
- [68] CCITT X.612 (1992): "Information Technology - Provision of the OSI Connection-mode Network Service by Packet-mode Terminal Equipment Connected to an Integrated Services Digital Network (ISDN)". (See also ISO/IEC 9574).
- [69] ISO 8473: "Information Processing Systems - Local area networks - Protocol for providing the connectionless-mode network service.
- [70] ISO 8802-2: "Information Processing Systems - Local area networks -Part 2 - Logical link control.
- [71] ISO 8802-3: "Information Processing Systems - Local area networks -Part 3 - Carrier sense multiple access with collision detection - Access method and physical layer specifications.
- [72] GSM 08.04 (ETS 300 588): "Digital cellular telecommunication system (Phase 2); Base Station System - Mobile-services Switching Centre (BSS - MSC) interface Layer 1 specification".
- [73] GSM 08.06 (ETS 300 589): "Digital cellular telecommunication system (Phase 2); Signalling transport mechanism specification for the Base Station System - Mobile-services Switching Centre (BSS - MSC) interface".
- [74] GSM 08.08 (ETS 300 590): "Digital cellular telecommunication system (Phase 2); Mobile Switching Centre - Base Station System (MSC - BSS) interface Layer 3 specification".

- [75] GSM 08.52 (ETS 300 593): "Digital cellular telecommunication system (Phase 2); Base Station Controller - Base Transceiver Station (BSC - BTS) interface Interface principles".
- [76] GSM 08.54 (ETS 300 594): "Digital cellular telecommunication system (Phase 2); Base Station Controller - Base Transceiver Station (BSC - BTS) interface Layer 1 structure of physical circuits".
- [77] GSM 08.56 (ETS 300 595): "Digital cellular telecommunication system (Phase 2); Base Station Controller - Base Transceiver Station (BSC - BTS) interface Layer 2 specification".
- [78] GSM 08.58 (ETS 300 596): "Digital cellular telecommunication system (Phase 2); Base Station Controller - Base Transceiver Station (BSC - BTS) interface Layer 3 specification".
- [79] GSM 08.60 (ETS 300 597): "Digital cellular telecommunication system (Phase 2); Inband control of remote transcoders and rate adaptors".
- [80] GSM 12.00 (ETS 300 612-1): "Digital cellular telecommunication system (Phase 2); Objectives and structure of Network Management (NM)".
- [81] GSM 12.20 (ETS 300 622): "Digital cellular telecommunication system (Phase 2); Base Station System (BSS) Management Information".
- [82] GSM 12.21 (ETS 300 623): "Digital cellular telecommunication system (Phase 2); Network Management (NM) procedures and message on the A-bis interface".
- [83] GSM 12.22 (ETS 300 624): "Digital cellular telecommunication system (Phase 2); Interworking of GSM Network Management (NM) procedures and messages at the Base Station Controller (BSC)".

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An overview of the GSM NM ETS is given in GSM 12.00 (ETS 300 612-1)[80], Objectives and Structure of Network Management (NM). [54ebda67c35e/sist-ets-300-612-2-e1-2003](http://www.intel.com/standards/ets-300-612-2-e1-2003)