



SLOVENSKI STANDARD
SIST ETS 300 461-1 E1:2003

01-december-2003

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Transmission and Multiplexing (TM); Flexible Multiplexer (FM) equipment; Part 1: Core functions, 2 048 kbit/s aggregate interface functions, tributary interface functions and special functions

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Ta slovenski standard je istoveten z: ETS 300 461-1 Edition 1

ICS:

33.040.20 Prenosni sistem Transmission systems

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EUROPEAN
TELECOMMUNICATION
STANDARD

ETS 300 461-1

October 1996

Source: ETSI TC-TM

Reference: DE/TM-01013-1

ICS: 33.040.20

Key words: Interface, transmission, MUX

**Transmission and Multiplexing (TM);
Flexible Multiplexer (FM) equipment;
Part 1: Core functions, 2 048 kbit/s aggregate interface
functions, tributary interface functions and special functions**

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<https://doi.org/10.31007/6053-406-913d>
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Foreword

This European Telecommunication Standard (ETS) has been produced by the Transmission and Multiplexing (TM) Technical Committee of the European Telecommunications Standards Institute (ETSI).

This European Telecommunication Standard (ETS) has been produced in order to meet the requirements of network operators and equipment manufacturers for the deployment and design of Flexible Multiplexers to be used in leased line and public network applications.

This ETS consists of 2 parts as follows:

Part 1: "Core functions, 2 048 kbit/s aggregate interface functions, tributary interface functions and special functions".

Part 2: "Management and control functions" (ETS 300 461-2).

Transposition dates	
Date of adoption of this ETS:	4 October 1996
Date of latest announcement of this ETS (doa):	31 January 1997
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	31 July 1997
Date of withdrawal of any conflicting National Standard (dow):	31 July 1997

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1 Scope

This European Telecommunication Standard (ETS) gives the characteristics of a Flexible Multiplexer (FM) equipment; the related functions able to handle a variety of services with transparency for the service provider, allowing enhanced management capabilities to be used in the access network. The services considered in this ETS are related to digital leased line networks and transparent transfer of 2 048 kbit/s signals in applications such as Integrated Services Digital Network (ISDN) primary rate and access or 2 048 kbit/s ONP leased line. ISDN basic access and Public Switched Telephone Network (PSTN) may be subject to further consideration according to V5 interface standards. Tributaries of this multiplexer provide interfaces related to the services to which it is connected. Internal mapping functions are based on 64 kbit/s and $n \times 64$ kbit/s signals. The handling of sub 64 kbit/s signals is not precluded and is considered as an option to the equipment. Also covered are the characteristics of 2 048 kbit/s aggregate frames based on CCITT Recommendation G.704 [4] and on ETS 300 167 [32] with optional path protection and 2 048 kbit/s aggregate termination based on CCITT Recommendation G.703 [3] and on ETS 300 166 [31] with optional section protection. Each aggregate frame based on CCITT Recommendation G.704 [4] and on ETS 300 167 [32] may contain multiple services.

The requirements contained in this ETS are only for the purpose of describing the functions of the multiplexer and are not intended to represent actual implementations.

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.

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- [26] CCITT Recommendation X.150 (1988): "Principles of maintenance testing for public data networks using data terminal equipment (DTE) and data circuit-terminating equipment (DCE) test loops".
- [27] CCITT Recommendation X.21 (1988): "Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for synchronous operation on public data networks".
- [28] CCITT Recommendation X.24 (1988): "List of definitions for interchange circuits between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) on public data networks".
- [29] CCITT Recommendation X.27 (1988): "Electrical characteristics for balanced double-current interchange circuits for general use with integrated circuit equipment in the field of data communications".
- [30] ETS 300 132 (1994): "Equipment Engineering (EE); Power supply interface at the input to telecommunications equipment".

- [31] ETS 300 166 (1993): "Transmission and Multiplexing (TM); Physical and electrical characteristics of hierarchical digital interfaces for equipment using the 2 048 kbit/s - based plesiochronous or synchronous digital hierarchies".
- [32] ETS 300 167 (1993): "Transmission and Multiplexing (TM); Functional characteristics of 2 048 kbit/s interfaces".
- [33] ETR 135 (1994): "Transmission and Multiplexing (TM); Network aspects and applications for a 4 (and n x 4) kbit/s data link in a 2 048 kbit/s frame".
- [34] ISO 4903 (1980): "Information Technology - Data communication - 15-pole DTE/DCE interface connector and contact number assignments".
- [35] ETS 300 461-2 (1996): "Transmission and Multiplexing (TM); Flexible Multiplexer (FM) equipment; Part 2: Management and control functions".

3 Definitions

For the purposes of this ETS, the following definitions apply.

aggregate interface: The aggregate interface supports signal transmitted over a common multiplex channel.

blocking factor: The existence of connections in a mapping function can block the establishment of any new connections. The blocking factor is the probability that a new connection cannot be made, expressed as a decimal fraction of 1.

channel associated signalling cross connection capacity: This consists in the maximum number of equivalent channels at 4 x 500 bit/s supported by the TS 16 Channel Associated Signalling (CAS) multiframe which can be cross connected within the equipment.

cross connection capacity: This consists in the maximum number of equivalent channels at 64 kbit/s which can be cross connected within the equipment.

NOTE: Cross connection of Time Slot 0 (TS 0) (or bits 1 to 8 of 2 048 kbit/s CCITT Recommendation G.704 [4] frame) or TS 16 information according to CCITT Recommendation G.704 [4] should be considered as equivalent to a 64 kbit/s channel.

Flexible Multiplexer (FM): A device that provides time division multiplexing and demultiplexing of signals supporting a variety of user services. In addition the device provides enhanced management capabilities.

leased line: A transparent connection leased from a public telecommunications carrier and which is not part of the PSTN.

octet sequence integrity: The property of a digital connection that permits a digital signal to be conveyed over it without change to the order of the octets.

receiver: The part of the equipment which terminates an input to the equipment.

synchronization signal: A clock control signal obtained from a synchronization network.

transmitter: The part of the equipment which generates an output from the equipment.

tributary interface: The tributary interface supports an individual input channel to a multiplexer.