SLOVENSKI STANDARD
SIST ETS 300 786:2000

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Prenos in multipleksiranje (TM) - Digitalni radiorelejni sistemi (DRRS) - Sub-STM-1 DRRS, ki deluje v frekvenļnih pasovih 13 GHz, 15 GHz in 18 GHz z okrog 28 MHz za enako polarizacijo in 14 MHz za krińno polarizacijo pri razmiku kanalov

Transmission and Multiplexing (TM); Digital Radio Relay Systems (DRRS); Sub-STM-1 DRRS operating in the 13 GHz, 15 GHz and 18 GHz frequency bands with about 14 MHz co-polar channel spacing

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Transmission and Multiplexing (TM); Digital Radio Relay Systems (DRRS); Sub-STM-1 DRRS operating in the 13 GHz, 15 GHz and 18 GHz frequency bands with about 14 MHz co-polar channel spacing

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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 ETS contains the minimum technical requirements to ensure compatibility of products and conformance with radio regulations across ETSI member states. Radio terminals from different manufacturers are not required to interwork at radio frequency (i.e. no common air interface).

This ETS defines the requirements of radio terminal and radio-relay equipment and associated interfaces. The requirements for multiplex, network management and antenna / feeder equipment may be addressed elsewhere.

Transposition dates	
Date of adoption of this ETS:	30 October 1998
Date of latest announcement of this ETS (doa):	31 January 1999
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	31 July 1999
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1 Scope

This ETS specifies the minimum performance parameters for terrestrial fixed services radiocommunications equipment, as given below, for operation in the 13 GHz (12,75 GHz to 13,25 GHz), 15 GHz (14,5 GHz to 15,35 GHz) and 18 GHz (17,7 GHz to 19,7 GHz) frequency bands.

This ETS covers equipment for the transmission of sub-STM-1 digital signals with a VC3 payload capacity. The standardization of sub-STM-1 radio systems for 13 GHz, 15 GHz and 18 GHz bands has been prepared to ensure the compatibility with the existing plesiochronous and the new synchronous systems concerning frequency plans and performance.

The application of these digital radio-relay systems is anticipated to be for point-to-point links in local, regional and national networks, mobile base station connections, customer and access links. Consideration has to be given to special requirements of the local and access network, e.g. simple towers with less space for antenna, different network structures with high density nodes.

The systems considered shall operate in these networks having regard for existing hop lengths, which mainly depend on the frequency band envisaged, the performance objectives set by relevant ITU-R Recommendations or national Network Operators requirements and existing propagation characteristics. The hop lengths are considered to be normally up to 37 km in the 13 GHz band, up to 30 km in the 15 GHz band and up to 20 km in the 18 GHz band.

The parameters to be specified fall into two categories:

a) Those that are required to provide compatibility between RF channels occupied by different sources of equipment on the same route connected either to:

   - separate antennas, or to
   - separate polarization of the same antenna.

   NOTE: Equipment supplied by different manufactures on the same path and using different polarizations shall operate on different frequencies.

b) Parameters defining the transmission quality of the proposed system.

The standardization deals with IF, RF and baseband characteristics relevant to Sub-STM-1 SDH transmission. Spurious emissions and EMC requirements are also included in the present document.

Safety regulations are outside the scope of this ETS.

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] ITU-R Recommendation F.750-3: "Architectures and functional aspects of radio-relay systems for SDH-based networks".

[2] ITU-R Recommendation F.751-2: "Transmission characteristics and performance requirements of radio-relay systems for SDH-based networks".

[3] ITU-R Recommendation F.634-4: "Error performance objectives for real digital radio-relay links forming part of the high-grade portion of international digital connections at a bit rate below the primary rate within an integrated services digital network".

[4] ITU-R Recommendation F.696-2: "Error performance and availability objectives for hypothetical reference digital sections forming part or all of the medium-grade portion of an ISDN connection at a bit rate below the primary rate utilizing digital radio-relay systems".

[5] ITU-R Recommendation F.697-2: "Error performance and availability objectives for the local-grade portion at each end of an ISDN connection at a bit rate below the primary rate utilizing digital radio-relay systems".

[6] ITU-T Recommendation G.821: "Error performance of an international digital connection operating at a bit rate below the primary rate and forming part of an integrated services digital network".

[7] ITU-T Recommendation G.826: "Error performance parameters and objectives for international, constant bit rate digital paths at or above the primary rate".

[8] ITU-R Recommendation F.497-5: "Radio-frequency channel arrangements for radio-relay systems operating in the 13 GHz frequency band".

[9] ITU-R Recommendation F.636-3: "Radio-frequency channel arrangements for radio-relay systems operating in the 15 GHz band".

[10] ITU-R Recommendation F.595-5: "Radio-frequency channel arrangements for radio-relay systems operating in the 18 GHz frequency band".

[11] ETS 300 019, Parts 1 and 2: "Equipment engineering; Environmental conditions and environmental tests for telecommunications equipment Parts 1 and 2".

[12] ETS 300 385: "Radio Equipment and Systems (RES); ElectroMagnetic Compatibility (EMC) standard for digital fixed radio links and ancillary equipment with data rates at around 2 Mbit/s and above".

[13] ETS 300 119: "Equipment engineering (EE); European telecommunication standard for equipment practice".

[14] ETS 300 132: "Equipment engineering (EE); Power supply interface at the input to telecommunications equipment".

[15] ITU-T Recommendation G.784: "Synchronous digital hierarchy (SDH) management".

[16] ITU-T Recommendation G.773: "Protocol suites for Q-interfaces for management of transmission systems".

[17] ITU-T Recommendation G.703: "Physical/electrical characteristics of hierarchical digital interfaces".

[18] ITU-T Recommendation G.707: "Network node interface for the synchronous digital hierarchy (SDH)".

[19] ITU-T Recommendation G.781: "Structure of Recommendations on equipment for the synchronous digital hierarchy (SDH)".

[20] ITU-T Recommendation G.782: "Types and general characteristics of synchronous digital hierarchy (SDH) equipment".

[21] ITU-T Recommendation G.783: "Characteristics of synchronous digital hierarchy (SDH) equipment functional blocks".

[22] ITU-T Recommendation G.957: "Optical interfaces for equipments and systems relating to the synchronous digital hierarchy".

[23] ETS 300 174: "Network Aspects (NA); Digital coding of component television signals for contribution quality applications in the range 34 - 45 Mbit/s".

[24] Void.

[25] ITU-R Recommendation F.695: "Availability objectives for real digital radio-relay links forming part of a high grade circuit within an integrated services digital network".

[26] ETS 300 833: "Transmission and Multiplexing (TM); Digital Radio Relay Systems (DRRS); Antennas used in point-to-point DRRS operating in the frequency band 3 to 60 GHz".

[27] Void.

[28] EN 301 390: "Transmission and Multiplexing (TM); Digital Radio Relay Systems (DRRS); Spurious emissions and receiver immunity at equipment antenna ports of DRRS".

[29] ITU-R Recommendation F.1092-1: "Error performance objectives for constant bit rate digital path at or above the primary rate carried by digital radio-relay systems which may form part of the international portion of the 27 500 km hypothetical reference path".

[30] ITU-R Recommendation F.1189-1: "Error performance objectives for constant bit rate digital paths at or above the primary rate carried by digital radio-relay systems which may form part or all of the national portion of the 27 500 km hypothetical reference path".

[31] Void.

[32] ETS 300 635: "Transmission and multiplexing(TM); Synchronous digital hierarchy (SDH); Radio specific functional blocks for transmission of M x STM-N".

[33] TR 101 035: "Transmission and Multiplexing (TM); Synchronous Digital Hierarchy (SDH) aspects regarding Digital Radio Relay Systems (DRRS)".

[34] Void.

[35] ETS 300 785: "Transmission and Multiplexing (TM); Synchronous Digital Hierarchy (SDH); Radio specific functional blocks for transmission of M x sub-STM-1".

[36] ITU-R Recommendation F.752-1: "Diversity Techniques for radio-relay systems".

[37] CEPT/ERC Recommendation T/R 12-02: "Harmonized radio frequency channel arrangements for analogue and digital terrestrial fixed systems operating in the band 12,75 GHz to 13,25 GHz".

[38] CEPT/ERC Recommendation T/R 12-07: "Harmonized radio frequency channel arrangements digital terrestrial fixed systems operating in the bands 14.5 GHz to 14.62 GHz paired with 15,23 GHz to 15,35 GHz".

[39] CEPT/ERC Recommendation T/R 12-03: "Harmonized radio frequency channel arrangements for digital terrestrial fixed systems operating in the band 17,7 GHz to 19,7 GHz".

[40] ITU-T G.861: "Principles and guidelines for the integration of satellite and radio systems in SDH transport networks".