SLOVENSKI STANDARD
SIST EN 300 632 V1.2.2:2003

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Prenos in multipleksiranje (TM) ï Oprema fiksne radijske povezave za prenos analognih video signalov, ki deluje v frekvenļ nih pasovih od 24,25 GHz do 29,50 GHz in od 31,0 GHz do 31,8 GHz

Transmission and Multiplexing (TM); Fixed radio link equipment for the transmission of analogue video signals operating in the frequency bands 24,25 GHz to 29,50 GHz and 31,0 GHz to 31,8 GHz

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European Standard (Telecommunications series)

Transmission and Multiplexing (TM); Fixed radio link equipment for the transmission of analogue video signals operating in the frequency bands 24,25 GHz to 29,50 GHz and 31,0 GHz to 31,8 GHz

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Transmission and Multiplexing (TM).

This new version extends the present document to cover also the frequency bands in the range 31,0 GHz to 31,8 GHz. The specific antenna radiation patterns have been removed from the present document and replaced with a reference to the appropriate EN 300 833 [18] and EN 301 215-4 [19].

National transposition dates	
Date of latest announcement of this EN (doa):	30 September 2002
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 March 2003
Date of withdrawal of any conflicting National Standard (dow):	31 March 2003

1 Scope

The present document covers the minimum technical requirements for terrestrial analogue radio relay systems operating in bands in the frequency range 24,25 GHz to 29,5 GHz and 31,0 GHz to 31,8 GHz.

Such systems are intended to be used for Point-to-Point (P-P) connections and video distribution (Point-to-Multipoint (P-MP)).

Typical applications include:

a) TV of contribution quality;

b) TV of distribution quality;

c) TV of surveillance quality;

d) Radar signals remoting.

Use of the 31 GHz band is restricted to analogue security video systems in the present document.

Safety aspects are outside the mandate of ETSI and they will not be considered in the present document.

The requirements and limits given in the present document are relevant to all environmental conditions for the chosen climatic class.

The minimum performance parameters for digital radio relay equipment operating in the range 24,5 GHz to 29,5 GHz are set out in EN 300 431 [12], while those for systems operating in the range 31,0 GHz to 31,3 GHz and 31,5 GHz to 31,8 GHz are given in EN 300 197 [15].

The 31,0 GHz to 31,3 GHz band is available in some countries and included in CEPT Report 25 [17].

All emissions are prohibited in the band 31,3 GHz to 31,5 GHz (see footnote S5.340 in ITU Radio Regulations [20]). Therefore this band is not available for FS systems. The levels of unwanted emissions from FS systems falling into the band 31,3 GHz to 31,5 GHz are, at the time of writing, being discussed under Agenda item 1.8.2 of WRC 03.

It should be noted that the band 31,5 GHz to 31,8 GHz, available for FS in some Countries under the provision of footnote S5.546 of the ITU Radio Regulations [20], is also allocated to passive services, including the Earth Exploration Satellite Service (EESS passive).

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 and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

[1] CEPT Recommendation T/R 13-02: "Preferred channel arrangements for fixed services in the range 22,0 - 29,5 GHz".

[2] ITU-R Recommendation F.748: " Radio-frequency arrangements for systems of the fixed service operating in the 25, 26 and 28 GHz bands".

[3] ETSI ETS 300 019 (all parts): "Equipment Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment".

[4] ETSI EN 301 489-1: "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements".

[5] ETSI EN 301 489-4: "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 4: Specific conditions for fixed radio links and ancillary equipment and services".

[6] IEC 60154 (all parts): "Flanges for waveguides".

[7] ETSI ETS 300 132-1: "Equipment Engineering (EE); Power supply interface at the input to telecommunications equipment; Part 1: Operated by alternating current (ac) derived from direct current (dc) sources".

[8] ETSI EN 300 132-2: "Environmental Engineering (EE); Power supply interface at the input to telecommunications equipment; Part 2: Operated by direct current (dc)".

[9] ITU-T Recommendation J.61: "Transmission performance of television circuits designed for use in international connections".

[10] ITU-T Recommendation J.21: "Performance characteristics of 15 kHz-type sound-programme circuits - Circuits for high quality monophonic and stereophonic transmissions".

[11] ITU-R Recommendation F.403: "Intermediate-frequency characteristics for the interconnection of analogue radio-relay systems".

[12] ETSI EN 300 431: "Fixed Radio Systems; Point-to-point equipment; Parameters for radio system for the transmission of digital signals operating in the frequency range 24,50 GHz to 29,50 GHz".

[13] ITU-R Recommendation F.1191-1: "Bandwidths and unwanted emissions of digital radio-relay systems".

[14] CEPT/ERC Recommendation 74-01: "Spurious emissions".

[15] ETSI EN 300 197: "Fixed Radio Systems; Point-to-point equipment; Parameters for radio systems for the transmission of digital signals operating at 32 GHz and 38 GHz".

[16] ERC/DEC(00)09: "ERC Decision of 19 October 2000 on the use of the band 27.5 - 29.5 GHz by the fixed service and uncoordinated Earth stations of the fixed-satellite service (Earth-to-space)".

[17] ERC Report 25: "The European table of frequency allocations and utilisations covering the frequency range 9 kHz to 275 GHz".

[18] ETSI EN 300 833: "Fixed Radio Systems; Point-to-point Antennas; Antennas for point-to-point fixed radio systems operating in the frequency band 3 GHz to 60 GHz".

[19] Void.

[20] ITU Radio Regulations.

3 Symbols and abbreviations

3.1 Symbols

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

dB	deciBel
dBc	deciBel relative to mean carrier power
dBi	deciBel relative to an isotropic radiator
dBm	deciBel relative to 1 mW
dBW	deciBel relative to 1 W
GHz	GigaHertz

km	kilometre
Mbit/s	Mega-bits per second
MHz	MegaHertz
ppm	parts per million
ns	nanosecond
mW	milliWatt
W	Watt

3.2 Abbreviations

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

C/N	Carrier to Noise ratio
CW	Continuous Wave
IF	Intermediate Frequency
PAL	Phase Alternation Line
P-MP	Point-to-MultiPoint
P-P	Point-to-Point
RF	Radio Frequency
S/N	Signal to Noise ratio
XPD	Cross-Polar Discrimination

4 General characteristics

4.1 Frequency bands and channel arrangements

4.1.1 Channel plan

For the frequency range 24,25 GHz to 29,50 GHz, the channel arrangements shall align with those given in CEPT Recommendation T/R 13-02 [1] which is in accordance with ITU-R Recommendation F.748 [2]. Frequency assignment, in the 27,5 GHz to 29,5 GHz band, should be in accordance with the Decision ERC/DEC(00)09 [16].

The 31,0 GHz to 31,3 GHz band is available in some countries and included in CEPT Report 25 [17]. Moreover the band 31,5 GHz to 31,8 GHz may be used on a national basis (see footnote S5.546 of the Radio Regulations). Therefore, the present document covers also the bands 31,0 GHz to 31,3 GHz and 31,5 GHz to 31,8 GHz provided that the channel arrangement is based on 28 MHz channel spacing.

NOTE: Channel arrangements for the band 31,0 GHz to 31,3 GHz are currently under development within CEPT.

4.1.2 Co-polar channel spacing

Table 1

Video baseband	up to 10 MHz (31 GHz band only)	up to 10 MHz (standard frequency deviation) (31 GHz band excluded)	up to 10 MHz (wide frequency deviation) (31 GHz band excluded)
Channel spacing	28 MHz	35 MHz (see note)	42 MHz (see note)
NOTE: These channel spacing may be obtained, in the band 24,5 GHz to 29,5 GHz by aggregating 3,5/7 MHz channels, in agreement with the administration concerned.			

4.2 Compatibility requirements between systems

Equipment conforming to the present document is not guaranteed to operate together across the radio interface (mid-air compatibility) with similar equipment provided by another manufacturer.