



SLOVENSKI STANDARD

SIST EN 301 751:2001

01-september-2001

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Fixed Radio Systems; Point-to-Point equipments and antennas; Generic harmonized standard for Point-to-Point digital fixed radio systems and antennas covering the essential requirements under article 3.2 of the 1999/5/EC Directive

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Ta slovenski standard je istoveten z: **EN 301 751 Version 1.1.1**

ICS:

33.060.30 Radiorelejni in fiksni satelitski komunikacijski sistemi Radio relay and fixed satellite communications systems

SIST EN 301 751:2001

en

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ETSI EN 301 751 V1.1.1 (2000-12)

Candidate Harmonized European Standard (Telecommunications series)

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Point-to-Point equipments and antennas;
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Reference

DEN/TM-04090

KeywordsDRRS, FWA, point-to-point, radio, regulation,
terminal, transmission**ETSI**

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Sous-Préfecture de Grasse (06) N° 7803/88

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Foreword

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

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 98/34/EC [30] laying down a procedure for the provision of information in the field of technical standards and regulations.

The present document is intended to become a Harmonized Standard, the reference of which will be published in the Official Journal of the European Communities referencing the Directive 1999/5/EC [1] of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity ("the R&TTE Directive").

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National transposition dates	
Date of adoption of this EN:	4 August 2000
Date of latest announcement of this EN (doa):	30 November 2000
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 May 2001
Date of withdrawal of any conflicting National Standard (dow):	31 May 2001

Introduction

Fixed Service Digital Radio systems, used in European countries, are presently referred to in a relatively large number of specific ETSI standards.

These ETS/ENs contain other requirements that even if not considered essential under the R&TTE Directive [1] are nevertheless applicable, on the ETSI commonly understood voluntary basis, to guarantee good performance and operability of FDRS.

These standards either for point-to-point or for point-to-multipoint systems, cover a very wide range of frequency bands of emission, traffic capacities, channel separations and modulation formats that, for the point-to-point systems subject of this EN, are typically summarized in table 1.

Table 1: Fixed Service Digital Radio System (FDRS) parameters

Parameter	Range
Frequency bands	below 1 GHz to 58 GHz
Traffic capacities	from 9,6 kbit/s to 622 Mbit/s
Channel separations	from 25 kHz to 112 MHz
Modulation formats	from 2 to 512 states (amplitude and/or phase and/or frequency states).
Typical applications	<u>POINT-TO-POINT (P-P) CONNECTIONS:</u> long haul (trunk), rural and urban low/medium/high capacity links <u>STAND ALONE ANTENNAS:</u> for all the above applications when integral antennas are not employed

Many of the standards are produced for similar systems which have different capacity and spectrum efficiency parameters for applications in the various radio frequency channel arrangements as shown in table 1. It is expected that other standards will be developed in the future to cover emerging technologies and / or new frequency bands.

All the systems are very similar in the "principles of parameters" but, besides a few common horizontal parameters, they differ in the "required numerical values".

The present document, for point-to-point systems contains only the phenomena relevant to the essential requirements of article 3.2 of the R&TTE Directive [1], giving the reference of the relevant clauses of the ETSI product standards which contain the actual numerical values and the relevant test methods for the declaration of conformity to the essential requirements.

Where appropriate some horizontal requirements are directly reported.

The selection of the phenomena relevant to the essential requirements has been based on the guidance given by EG 201 399 [27] and by the specific analysis applied to FDRS given in TR 101 506 [28].

The present document is part of a set of standards designed to fit in a modular structure to cover all radio and telecommunications terminal equipment under the R&TTE Directive [1]. Each standard is a module in the structure. The modular structure is shown in figure 1.

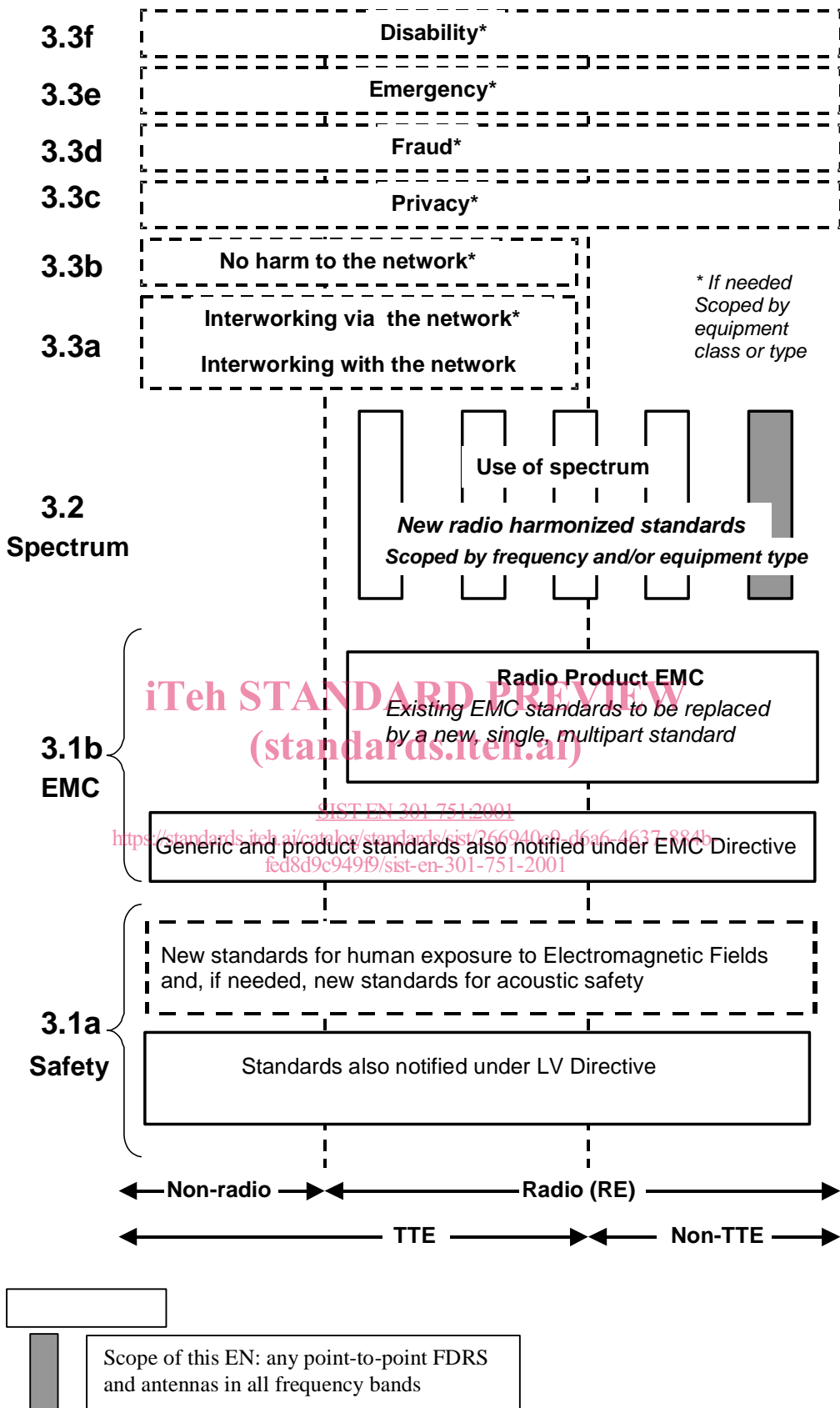


Figure 1: Modular structure for the various standards used under the R&TTE Directive [1]

The left hand edge of the figure 1 shows the different subclauses of Article 3 of the R&TTE Directive [1].

For article 3.3 various horizontal boxes are shown. Dotted lines indicate that at the time of publication of the present document essential requirements in these areas have to be adopted by the Commission. If such essential requirements are adopted, and as far and as long as they are applicable, they will justify individual standards whose scope is likely to be specified by function or interface type.

The vertical boxes show the standards under article 3.2 for the use of the radio spectrum by radio equipment. The scopes of these standards are specified either by frequency (normally in the case where frequency bands are harmonized) or by radio equipment type.

For article 3.1b the diagram shows the new single multipart product EMC standard for radio, and the existing collection of generic and product standards currently used under the EMC Directive [2]. The parts of this new standard will become available in the second half of 2000, and the existing separate product EMC standards will be used until it is available.

For article 3.1a the diagram shows the existing safety standards currently used under the LV Directive [3] and new standards covering human exposure to electromagnetic fields. New standards covering acoustic safety may also be required.

The bottom of the figure shows the relationship of the standards to radio equipment and telecommunications terminal equipment. A particular equipment may be radio equipment, telecommunications terminal equipment or both. A radio spectrum standard will apply if it is radio equipment. An article 3.3 standard will apply as well only if the relevant essential requirement under the R&TTE Directive [1] is adopted by the Commission and if the equipment in question is covered by the scope of the corresponding standard. Thus, depending on the nature of the equipment, the essential requirements under the R&TTE Directive [1] may be covered in a set of standards.

The modularity principle has been taken because:

- it minimizes the number of standards needed. Because equipment may, in fact, have multiple interfaces and functions it is not practicable to produce a single standard for each possible combination of functions that may occur in an equipment;
- it provides scope for standards to be added:
 - under article 3.2 when new frequency bands are agreed; or
 - under article 3.3 should the Commission take the necessary decisions;
 without requiring alteration of standards that are already published;
- it clarifies, simplifies and promotes the usage of Harmonized Standards as the relevant means of conformity assessment.

1 Scope

The present document applies to the following fixed service digital radio systems (FDRS) types:

- 1) Point-to-point systems intended for operation in frequency bands that require co-ordination;
- 2) Point-to-point systems intended for operation in frequency bands that do not require co-ordination;
- 3) Antennas for point-to-point FDRS.

The present document is intended to cover the provisions of Directive 1999/5/EC [1] (R&TTE Directive) Article 3.2 which states that "... radio equipment shall be so constructed that it effectively uses the spectrum allocated to terrestrial/space radio communications and orbital resources so as to avoid harmful interference".

In addition to the present document, other ENs that specify technical requirements in respect of essential requirements under other parts of Article 3 of the R&TTE Directive [1] may apply to equipment within the scope of the present document.

NOTE 1: A list of such ENs is included on the ETSI web site at <http://www.newapproach.org>.

Table 2 summarizes the ETSI standards applicable to point-to-point FDRS, from which the technical parameters within the present document have been extracted.

NOTE 2: The third digit of the EN version number is not considered essential for dated reference purposes because the ETSI Technical Working Procedures reserve this digit for editorially changed versions, thereby not affecting the technical parameters within that version.

Table 2: Applicability of the present document to the equipments in the scope of ETSI standards

Equipment standards				
ETSI Reference number	Version	SIST EN 301 751:2001	Fixed Service Frequency bands of operation (note 1)	Channels separation (MHz)
EN 300 197 [4]	V1.3.b	Parameters for radio relay systems for the transmission of digital signals and analogue video signals operating at 38 GHz	38 GHz	3,5 to 56
EN 300 198 [5]	V1.3.b	Parameters for radio relay systems for the transmission of digital signals and analogue video signals operating at 23 GHz	23 GHz	3,5 to 56
EN 300 407 [6]	V1.2.b	Parameters for radio-relay systems for the transmission of digital signals and analogue video signals operating around 55 GHz	55 GHz	14 to 140
EN 300 234 [7]	V1.2.b	High capacity digital radio-relay systems carrying 1 x STM-1 signals and operating in frequency bands with about 30 MHz channel spacing and alternated arrangements	any from the 4 GHz to the 15 GHz	28 to 30
EN 300 408 [8]	V1.2.b	Parameters for radio-relay systems for the transmission of digital signals and analogue video signals operating at around 58 GHz, which do not require frequency planning	58 GHz	50 and 100
EN 300 430 [9]	V1.2.b	Parameters for radio systems for the transmission of STM-1 digital signals operating at 18 GHz in either 55 or 27,5 MHz channel spacing	18 GHz	27,5 and 55
EN 300 431 [10]	V1.2.b	Digital fixed point-to-point radio link equipment operating in the frequency range 24,5 to 29,5 GHz	26 GHz and 28 GHz	3,5 to 56
EN 300 630 [11]	V1.2.b	Low capacity point to point digital radio relay systems in the 1,4 GHz band	1,4 GHz	0,025 to 3,5
EN 300 631 [12]	V1.2.b	Antennas for point-to-point radio links in band 1 to 3 GHz	any from 1 GHz to 3 GHz	N.A.
EN 300 633 [13]	V1.2.b	Low and medium capacity point-to-point digital radio relay systems operating in the 2,1 to 2,6 GHz frequency band	any from the 2,1 GHz to the 2,6 GHz	0,5 to 14

Equipment standards				
ETSI Reference number	Version	Title	Fixed Service Frequency bands of operation (note 1)	Channels separation (MHz)
EN 300 639 [14]	V1.2.b	Sub STM-1 digital radio relay systems (DRRS) operating in the 13 GHz, 15 GHz and 18 GHz frequency band with about 28 MHz co-polar and 14 MHz cross-polar channel spacing	13 GHz, 15 GHz and 18 GHz	14 and 28
EN 300 786 [15]	V1.2.b	Sub STM-1 digital radio relay systems in the 13, 15 and 18 GHz bands with about 14 MHz co-polar channel spacing	13 GHz, 15 GHz and 18 GHz	14
EN 300 833 [16]	V1.2.b	Antennas used in point-to-point radio relay systems operating in frequency bands from 3 to 60 GHz'	any from 3 GHz to 60 GHz	N.A.
EN 301 127 [17]	V1.1.b	High capacity DRRS carrying 2 x STM-1 in frequency bands with about 30 MHz channel spacings using co-channel dual-polarized (CCDP) operation	any from the 4 GHz to the 15 GHz	28 to 30
EN 301 128 [18]	V1.1.b	PDH low and medium capacity digital radio relay systems operating in the frequency bands 13, 15 and 18 GHz	13 GHz, 15 GHz and 18 GHz	1,75 to 28
EN 301 216 [19]	V1.1.b	PDH low and medium capacity and STM-0 digital radio relay systems operating in the frequency bands in the range 3 GHz to 11 GHz	any from 3 GHz to 11 GHz	1,75 to 30
EN 301 277 [20]	V1.1.b	High capacity DRRS transmitting STM-4 or 4 x STM-1 in a 40 MHz radio frequency channel using Co-Channel Dual Polarized (CCDP) operation	any from the 4 GHz to the 11 GHz	40
EN 301 387 [21]	V1.1.b	PDH low and medium capacity digital radio relay systems operating in the frequency band 48,5 to 50,2 GHz	50 GHz	3,5 to 28
EN 301 669 [22]	V1.1.b	High capacity DRRS carrying STM-4 in two 40 MHz channels or 2 x STM-1 in 40 MHz channel with alternate channel arrangement	any from the 4 GHz to the 11 GHz	40
EN 301 461 [23]	V1.1.b	High capacity DRRS carrying 2 x STM-1 in frequency bands with 40 MHz channel spacings using co-channel dual-polarized (CCDP) operation	any from the 4 GHz to the 11 GHz	40
Test methods for spurious emissions and receiver immunity standards that are relevant for the test and definition of essential requirements				
ETSI Reference number	Version	Title		
EN 301 126-1 [24]	V1.1.b	Fixed Radio Systems; Conformance testing; Part 1: Point-to-Point equipment - Definitions, general requirements and test procedures		
EN 301 126-3-1 [25]	V1.1.b	Fixed Radio Systems; Conformance testing; Part 3-1: Point-to-Point antennas - Definitions, general requirements and test procedures		
EN 301 390 [26]	V1.1.b	Spurious emissions and receiver immunity at equipment antenna port of DRRSs		
NOTE:	The frequency band identification is taken from the approximate centre frequency as commonly used in Fixed Service ITU-R Recommendations; it also includes national frequency bands that may slightly differ from each other but are commonly referred to by the same term.			

The provisions of the present document are valid for all point-to-point (P-P) FDRS (Fixed Service Digital Radio Systems) and related antennas also in the scope of the relevant ETSI standards summarized in table 1.

The present document is considered applicable to fixed radio systems products with integral antennas, for which all the technical requirements included in the present document apply. It also applies to fixed radio equipment without integral antennas and to separate antenna products, to which only the relevant technical requirements apply, and which will be therefore subject to separate declarations of conformity to the essential requirements of the R&TTE Directive [1].

Technical specifications relevant to the R&TTE Directive [1] are summarized in Annex A.

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, edition number, version number, etc.) or non-specific.
 - For a specific reference, subsequent revisions do not apply.
 - For a non-specific reference, the latest version applies.
 - A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.
- [1] Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity.
- [2] Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility (EMC Directive).
- [3] Council Directive 73/23/EEC of 19 February 1973 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits (LV Directive).
- [4] ETSI EN 300 197 (V1.3.1) (11/2000): "Fixed Radio Systems; Point-to-point equipment; Parameters for radio systems for the transmission of digital signals operating at 38 GHz".
- [5] ETSI EN 300 198 (V1.3.1) (11/2000): "Fixed Radio Systems; Point-to-point equipment; Parameters for radio systems for the transmission of digital signals operating at 23 GHz".
- [6] ETSI EN 300 407 (V1.2.1) (10/2000): "Fixed Radio Systems; Point-to-point equipment; Parameters for digital radio systems for the transmission of digital signals operating around 55 GHz".
- [7] ETSI EN 300 234 (V1.2.1) (10/1998): "Transmission and Multiplexing (TM); Digital Radio Relay Systems (DRRS); High capacity DRRS carrying 1 x STM-1 signals and operating in frequency bands with about 30 MHz channel spacing and alternated arrangements".
- [8] ETSI EN 300 408 (V1.2.1) (09/2000): "Fixed Radio Systems; Point-to-point equipment Parameters for digital radio systems for the transmission of digital signals and analogue video signals operating at around 58 GHz, which do not require co-ordinated frequency planning".
- [9] ETSI EN 300 430 (V1.2.1) (10/2000): "Fixed Radio Systems; Point-to-point equipment; Parameters for radio systems for the transmission of STM-1 digital signals operating in the 18 GHz frequency band with channel spacing of 55 MHz and 27,5 MHz".
- [10] ETSI EN 300 431 (V1.2.1) (11/2000): "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".
- [11] ETSI EN 300 630 (V1.2.1) (03/2000): "Fixed Radio Systems; Point-to-point equipment; Low capacity point-to-point digital radio systems operating in the 1,4 GHz frequency band".
- [12] ETSI EN 300 631 (V1.2.1) (12/1999): "Fixed Radio Systems; Point-to-Point Antennas; Antennas for Point-to-Point fixed radio systems in the 1 GHz to 3 GHz band".
- [13] ETSI EN 300 633 (V1.2.1) (03/2000): "Fixed Radio Systems; Point-to-point equipment; Low and medium capacity point-to-point digital radio systems operating in the frequency range 2,1 GHz to 2,6 GHz".