

:]_gb]fUX]g_]g]ghYa]E`CdfYa U]hdUlc _U]j Y `lc _E`8][]HJb]fUX]g_]g]ghYa]hdU
lc _U]j Y `lc _j`ZY_j Yb b]`dUgcj]`j`cVa c `cX`&(ž&); <n`Xc`&-ž); <nž_]`
i dcfUV`Uc`fUn`] bY`a YlcXY`XcglcdUE` "XY. `A YlcXY`g` Ugcj bc`dcfUnXY`Yb]a
gcXcglcdca `fH8 A 5Ł

Fixed Radio Systems; Point-to-multipoint equipment; Point-to-multipoint digital radio systems in frequency bands in the range 24,25 GHz to 29,5 GHz using different access methods; Part 3: Time Division Multiple Access (TDMA) methods

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European Standard (Telecommunications series)

**Fixed Radio Systems;
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Foreword

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

The present document 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).

The present document defines the requirements of radio terminal and radio-relay equipment and associated interfaces.

The present document is part 3 of a multipart deliverable covering the Point-to-multipoint equipment; Point-to-multipoint digital radio systems in frequency bands in the range 24,25 GHz to 29,5 GHz using different access methods, as identified below:

Part 1: "Basic parameters";

Part 2: "Frequency Division Multiple Access (FDMA) methods";

Part 3: "Time Division Multiple Access (TDMA) methods";

Part 4: "Direct Sequence Code Division Multiple Access (DS-CDMA) methods";

Part 5: "Multi-Carrier Time Division Multiple Access (MC-TDMA) methods".

The present version of the document takes into account that, with the final publication of EN 301 213-5 [4], information and requirements relative to multicarrier systems are now more organically reported there. Therefore similar information for multicarrier systems has been removed from the present document being redundant and superseded by EN 301 213-5 [4].

National transposition dates

| | |
|--|------------------|
| Date of adoption of this EN: | 8 February 2002 |
| Date of latest announcement of this EN (doa): | 31 May 2002 |
| Date of latest publication of new National Standard or endorsement of this EN (dop/e): | 30 November 2002 |
| Date of withdrawal of any conflicting National Standard (dow): | 30 November 2002 |

1 Scope

The present document describes the TDMA access method used in Point-to-Multipoint (P-MP) Radio Relay Systems. (P-MP) Radio Relay Systems may use different access methods. As some technical parameters are different for the various access methods, the standard is divided in four parts.

A basic description of the different access methods and a comparison among them is provided in TR 101 274 [2].

The present document (Time Division Multiple Access Methods, TDMA) is to be used in conjunction with EN 301 213-1 [1], describing the basic parameters common to all access methods.

The present document is related to characteristics of system operating with transmitters delivering to antenna port one single carrier; multicarrier systems (where more than one carrier is passed through the same final power amplifier or active antenna are considered in EN 301 213-5 [4]).

The present document specifies the minimum requirements for system parameters of Time Division Multiple Access (TDMA) Point-to-Multipoint (P-MP) Radio Systems in the terrestrial fixed services operating in the band 24,5 GHz to 29,5 GHz (see ERC/REC T/R 13-02 [3]). Only sections specific to TDMA are described in respect to the paragraphs stated in EN 301 213-1 [1].

Time Division Multiple Access (TDMA) is an alternative to FDMA and CDMA covered in other parts of the present document. In TDMA Point-to-Multipoint (P-MP) systems, a central station broadcasts information to terminal stations in a continuous Time Division Multiplex (TDM) or in a burst TDMA mode. The Terminal stations transmit in TDMA mode. The users may have access to the spectrum by sharing it through time multiplexing.

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2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

SIST EN 301 213-3 V1.4.1:2003

<https://standards.iteh.ai/catalog/standards/sist/3a62e385-80c3-49a6-a6c9-554ca3a5c085/sist-en-301-213-3-v1-4-1-2003>

- 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] ETSI EN 301 213-1: "Fixed Radio Systems; Point-to-multipoint equipment; Point-to-multipoint digital radio systems in frequency bands in the range 24,25 GHz to 29,5 GHz using different access methods; Part 1: Basic parameters".
- [2] ETSI TR 101 274: "Transmission and Multiplexing (TM); Digital Radio Relay Systems (DRRS); Point-to-multipoint DRRS in the access network: Overview of different access techniques".
- [3] ERC/REC T/R 13-02: "Preferred channel arrangements for the fixed services in the range 22,0 GHz to 29,5 GHz".
- [4] ETSI EN 301 213-5: "Fixed Radio Systems; Point-to-multipoint equipment; Point-to-multipoint digital radio systems in frequency bands in the range 24,25 GHz to 29,5 GHz using different access methods; Part 5: Multi-Carrier Time Division Multiple Access (MC-TDMA) methods".
- [5] ERC/REC 00-05: "Use of the band 24.5 - 26.5 GHz for fixed wireless access".
- [6] ERC/REC 01-03: "Use of parts of the band 27.5-29.5 GHz for Fixed Wireless Access (FWA)".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document the terms and definitions given in EN 301 213-1 [1] and the following apply:

gross bit rate: defined as the transmission bit rate over the air

NOTE: In the case of a transmitter working in burst mode, the gross bit rate is the instantaneous maximum bit rate during the burst. The gross bit rate has a unique relation to the symbol rate through the implemented modulation format.

3.2 Symbols

For the purposes of the present document the symbols given in EN 301 213-1 [1] apply.

3.3 Abbreviations

For the purposes of the present document the abbreviations defined in EN 301 213-1 [1] and the following apply:

CS_{min} minimum practical Channel Separation (for a given radio-frequency channel arrangement)

4 General characteristics

4.1 General system architecture

Refer to EN 301 213-1 [1], clause 4.1. <https://standards.iteh.ai/catalog/standards/sist/3a62e385-80c3-49a6-a6c9-334ca3a3c083/sist-en-301-213-3-v1-4-1-2003>

4.2 Frequency bands and channel arrangements

4.2.1 Channel plan

Bands allocated to the Fixed Service in the range 24,5 GHz to 29,5 GHz shall be used according to ERC/REC T/R 13-02 [3], annexes B and C.

Regulatory bodies may choose appropriate parts of the above mentioned frequency bands for the application for Point-to-Multipoint systems.

4.2.2 Channel arrangements

The system shall meet at least one or more of the channel arrangements listed in table 1.

Table 1: Channel arrangement

| Channel Spacing [MHz] | 3,5 MHz | 7 MHz | 14 MHz | 28 MHz | 56 MHz | 112 MHz |
|--|-----------|-----------|-----------|-----------|------------|------------|
| System Type A | | | | | | |
| Minimum CRS bit rate for transmission and reception (Mbit/s) | 4 Mbit/s | 8 Mbit/s | 16 Mbit/s | 32 Mbit/s | 64 Mbit/s | 128 Mbit/s |
| System Type B | | | | | | |
| Minimum CRS bit rate for transmission and reception (Mbit/s) | 8 Mbit/s | 16 Mbit/s | 32 Mbit/s | 64 Mbit/s | 128 Mbit/s | 256 Mbit/s |
| System Type C | | | | | | |
| Minimum CRS bit rate for transmission and reception (Mbit/s) | 12 Mbit/s | 24 Mbit/s | 48 Mbit/s | 96 Mbit/s | 192 Mbit/s | 384 Mbit/s |
| System Type HC | | | | | | |
| Minimum CRS bit rate for transmission and reception (Mbit/s) | 4 Mbit/s | 8 Mbit/s | 16 Mbit/s | 32 Mbit/s | 64 Mbit/s | 128 Mbit/s |
| <p>NOTE 1: The minimum bit rate for transmission and reception is defined as the gross bit rate, defined in clause 3.1. The manufacturer shall declare the actual system traffic carrying capacity, the gross bit rate and the System Type.</p> <p>NOTE 2: Systems may offer a combination of Type A, Type B, Type C and Type HC on a per Terminal Station basis, provided that such a system, when operating in mixed mode, complies with:</p> <ul style="list-style-type: none"> - the most stringent spectral mask for the types offered when co-ordination between different operators operating on first adjacent channels is envisaged; - with the mask declared by the manufacturer when block of channels are assigned according to ERC/REC 00-05 [5] and ERC/REC 01-03 [6]. <p>NOTE 3: The present document defines four System Types A, B C and HC. These systems represent different spectral efficiency in term of gross-bit-rate/Hz; the gross bit rate, defined in clause 3.1, has a unique relation to the symbol rate through the implemented modulation format as follows:</p> <ul style="list-style-type: none"> - A: lower complexity modulation formats (e.g. 4 states or equivalent); - HC: lower complexity modulation formats as System Type A (e.g. 4 states or equivalent), but with higher requirements for receiver sensitivity and tolerance to interference; - B: medium complexity modulation formats (e.g. 16 states or equivalent); - C: higher complexity modulation formats (e.g. 64 states or equivalent). <p>NOTE 4: For regulatory purposes in national procedures for licensing radio equipments according to the present document, the above system types shall be identified by the "system type codes" reported in annex A.</p> | | | | | | |

The CRS transmission, defined as the "downstream" direction, may be continuous, i.e. TDM (Time Division Multiplex). The CRS may transmit in the downstream direction even if there are no active calls, for the purpose of synchronization of the Terminal Stations.

The Terminal Stations (TS) may transmit only in timeslots allocated by control signals from the CS, or on a fixed basis. The TS transmission direction is defined as "upstream". TS may transmit in a TDMA basis. A TS may transmit control, bandwidth requests or signalling information even during the absent of users activities. TS transmissions consist of bursts of fixed or variable duration, usually an integer multiple of a fundamental timeslot duration.

4.3 Compatibility requirements

Refer to EN 301 213-1 [1], clause 4.3.

4.4 Environmental conditions

Refer to EN 301 213-1 [1], clause 4.4.

4.5 Power supply

Refer to EN 301 213-1 [1], clause 4.5.

4.6 Electromagnetic compatibility conditions

Refer to EN 301 213-1 [1], clause 4.6.

4.7 TMN interfaces

Refer to EN 301 213-1 [1], clause 4.7.

4.8 Synchronization of interface bit rates

Refer to EN 301 213-1 [1], clause 4.8.

4.9 Branching/feeder/antenna requirements

Refer to EN 301 213-1 [1], clause 4.9.

5 System parameters for TDMA P-MP systems

NOTE: Where a reference is made to the number of states of a modulation scheme or to the system type class, an equivalent modulation scheme may be applied, provided the system parameters are met.

5.1 System capacity

Refer to EN 301 213-1 [1], clause 5.1.

5.2 Round trip delay

Refer to EN 301 213-1 [1], clause 5.2.

5.3 Transparency

Refer to EN 301 213-1 [1], clause 5.3.

5.4 Voice coding methods

Refer to EN 301 213-1 [1], clause 5.4.

5.5 Transmitter characteristics

Refer to EN 301 213-1 [1], clause 5.5

5.5.1 Transmitter output power

Refer to EN 301 213-1 [1], clause 5.5.1.

The maximum mean transmitter output power (average, for CRS, RS and TS) for system type HC shall not exceed +27 dBm.