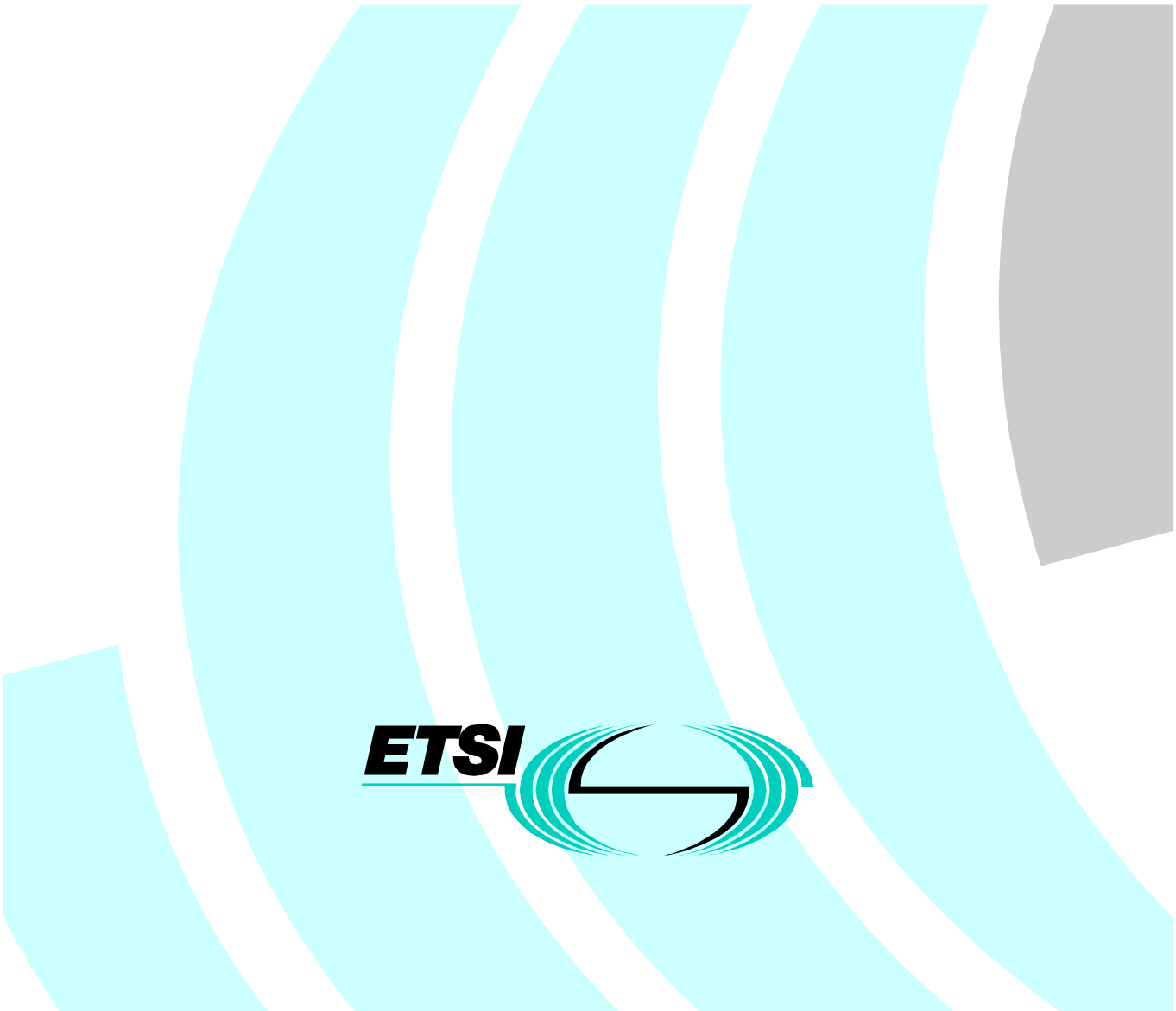
ETSI EN 301 460-2 V1.1.1 (2000-10)

European Standard (Telecommunications series)

Fixed Radio Systems; Point-to-multipoint equipment; Part 2: Point-to-multipoint digital radio systems below 1 GHz - Additional parameters for TDMA systems



Reference
DEN/TM-04055-2

Keywords
DRRS, FWA, multipoint, radio, RLL, TDMA

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

Contents

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Foreword

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

The present document is part 2 of a multi-part deliverable covering the Fixed Radio Systems; Point-to-multipoint equipment, as identified below:

Part 1: "Point-to-multipoint digital radio systems below 1 GHz - Common parameters";

Part 2: "Point-to-multipoint digital radio systems below 1 GHz - Additional parameters for TDMA systems";

Part 3: "Point-to-multipoint digital radio systems below 1 GHz - Additional parameters for FH-CDMA systems";

Part 4: "Point-to-multipoint digital radio systems below 1 GHz - Additional parameters for FDMA systems";

Part 5: "Point-to-multipoint digital radio systems below 1 GHz - Additional parameters for DS-CDMA systems".

National transposition dates	
Date of adoption of this EN:	13 October 2000
Date of latest announcement of this EN (doa):	31 January 2001
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 July 2001
Date of withdrawal of any conflicting National Standard (dow):	31 July 2001

1 Scope

1.1 Applications

Refer to EN 301 460-1 [1].

1.2 Frequencies

Refer to EN 301 460-1 [1].

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] ETSI EN 301 460-1: "Fixed Radio Systems Point-to-multipoint equipment;
Part 1: Point-to-multipoint digital radio systems below 1 GHz - Common parameters".

3 Definitions, symbols and abbreviations

3.1 Definitions

Refer to EN 301 460-1 [1].

3.2 Symbols

Refer to EN 301 460-1 [1].

3.3 Abbreviations

Refer to EN 301 460-1 [1].

4 General characteristics

4.1 General system architecture

Refer to EN 301 460-1 [1].

4.2 Frequency bands and channel arrangements

Refer to EN 301 460-1 [1].

4.2.1 Channel plan

Refer to EN 301 460-1 [1].

4.2.2 Duplex methods

Refer to EN 301 460-1 [1].

4.3 Compatibility requirements

Refer to EN 301 460-1 [1].

4.4 Transmission error performance

Refer to EN 301 460-1 [1].

4.5 Environmental conditions

Refer to EN 301 460-1 [1].

4.5.1 Equipment within weather protected locations (indoor locations)

Refer to EN 301 460-1 [1].

4.5.2 Equipment for non weather-protected locations (outdoor locations)

Refer to EN 301 460-1 [1].

4.6 Power supply

Refer to EN 301 460-1 [1].

4.7 Electromagnetic compatibility

Refer to EN 301 460-1 [1].

4.8 TMN interfaces

Refer to EN 301 460-1 [1].

4.9 Synchronization of interface bit rates

Refer to EN 301 460-1 [1].

4.10 Branching / feeder / antenna requirements

4.10.1 Antenna radiation pattern

Refer to EN 301 460-1 [1].

4.10.2 Antenna port characteristics

Refer to EN 301 460-1 [1].

5 System parameters

5.1 System capacity

Refer to EN 301 460-1 [1].

5.2 Round trip delay

Refer to EN 301 460-1 [1].

5.3 Transparency

Refer to EN 301 460-1 [1].

5.4 Voice coding methods

Refer to EN 301 460-1 [1].

5.5 Transmitter characteristics

Refer to EN 301 460-1 [1].

5.5.1 Transmitter output power

Refer to EN 301 460-1 [1].

5.5.2 Automatic Transmit Power Control (ATPC)

Refer to EN 301 460-1 [1].

5.5.3 Tx Local Oscillator (LO) frequency arrangements

Refer to EN 301 460-1 [1].

5.5.4 RF spectrum mask

The transmitted output power spectrum is defined as: the spectrum when modulated with a signal representing normal traffic, under all conditions of loading and services.

The spectrum measurement point C' of system block diagram shall be performed with the maximum hold and appropriate time gating function on the spectrum analyser selected.

The reference level of the output spectrum means that the 0 dB level is the top of the modulated spectrum, disregarding the residual carrier.

The mask does not include frequency tolerances.

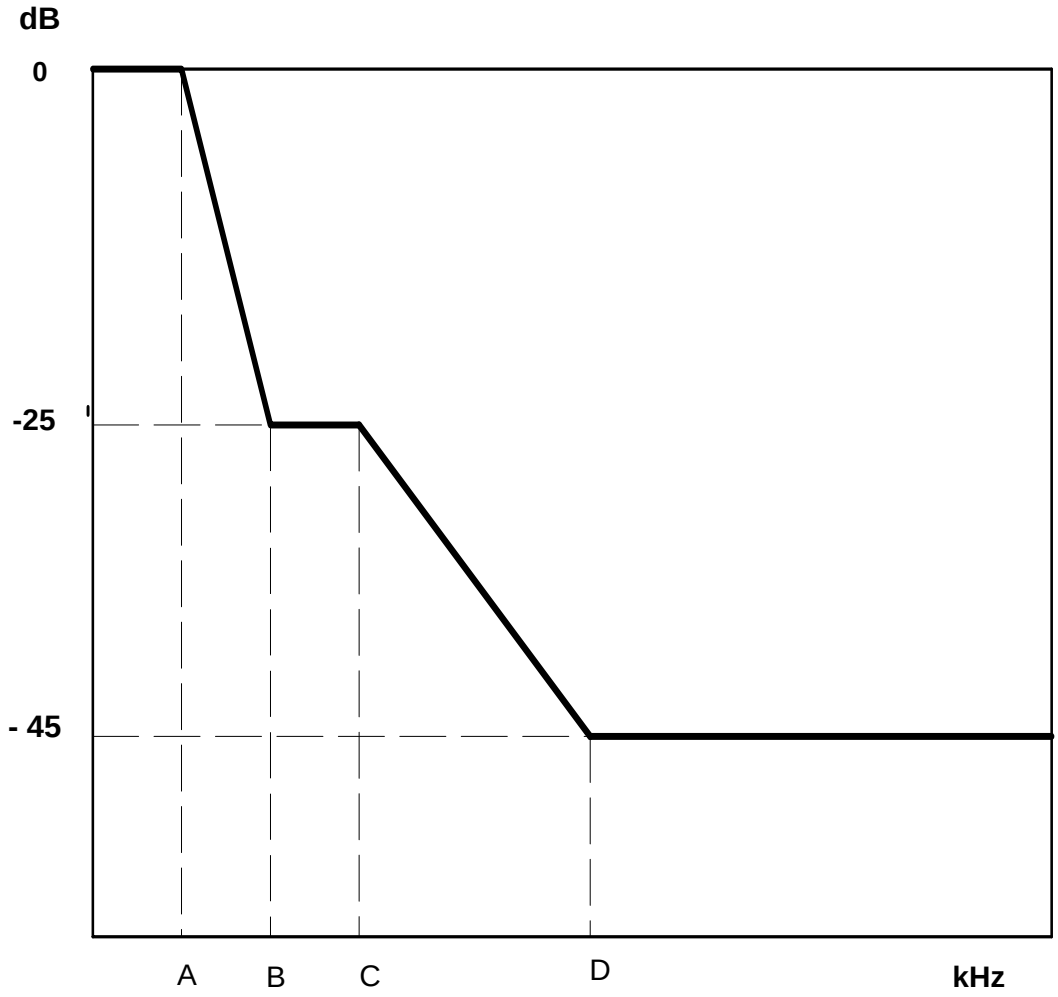

Figure 1: Power spectrum mask

Table 1: Frequency values for spectrum masks

RF channel bandwidth	Frequency offset from channel center (MHz)			
(MHz)	A	B	C	D
QPSK	0,5 × channel spacing	1,1 × channel spacing	1,2 × channel spacing	2,0 × channel spacing
1,2	0,60	1,32	1,44	2,40
GMSK	0,42 × channel spacing	0,75 × channel spacing	1,0 × channel spacing	1,33 × channel spacing
0,6	0,25	0,45	0,60	0,80
DQPSK	0,42 × channel spacing	0,75 × channel spacing	1,0 × channel spacing	2,0 × channel spacing
0,6	0,25	0,45	0,60	1,20

Table 2: Spectrum analyser settings

Res. BW	Video BW	Sweep time
30 KHz	300 Hz	10 s

5.5.5 Radio frequency tolerance

Refer to EN 301 460-1 [1].

5.5.6 Spurious emissions

Refer to EN 301 460-1 [1].

5.6 Receiver characteristics

5.6.1 Input level range

The input level range shall exceed 40 dB.

5.6.2 Spurious emissions

Refer to EN 301 460-1 [1].

5.7 System performance

5.7.1 Dynamic level range

For systems with ATPC, the overall dynamic level range shall be large enough to enable the system to maintain its performance under the entire range of path loss values the system is defined to cope with, the dynamic level range shall exceed 50 dB.

5.7.2 BER as a function of the RSL

For a TDMA signal, the receiver Bit Error Rate (BER) threshold shall be equal to or lower than the values of received signal level (RSL) given by:

RSL = x + 10 log (gross bit rate in Mbit/s)

Where x is as showed in table 3 and the RSL is referenced to point C in the system diagram (figure 2 of part 1), with no multipath signal distortion.

Table 3: BER vs receiver input signal level

BIT RATE	RSL FOR BER > 10^{-3}	RSL FOR BER = 10^{-6}
QPSK	x = -94	x = -89
2 048 kbit/s	-91 dBm	-86 dBm
GMSK	x = -86	x = -83
576 kbit/s	-88 dBm	-85 dBm
DQPSK	x = -89	x = -86
864 kbit/s	-90 dBm	-87 dBm

5.7.3 Interference sensitivity (external)

5.7.3.1 Co-channel interference

The limits of co-channel interference (external) shall be as in table 3a, giving minimum S/I values for 1 dB and 3 dB degradation of the 10^{-3} and 10^{-6} BER limits specified in subclause 5.7.2.

Table 3a: Co-channel interference sensitivity

BER	Degradation	Minimal S/I level		
		QPSK	GMSK	DQPSK
10^{-3}	1 dB	+20	+15	+15
10^{-3}	3 dB	+14	+13	+13
10^{-6}	1 dB	+19	+14	+14
10^{-6}	3 dB	+13	+12	+12

5.7.3.2 Adjacent channel interference

The limits of adjacent channel interference (external) shall be as given in table 4 for like modulated signals, giving minimum S/I values for 1 dB and 3 dB degradation of the 10^{-3} and 10^{-6} BER limits specified in subclause 5.7.2.

Table 4: Adjacent channel interference sensitivity

BER	Degradation	Minimal S/I level (dB)		
		QPSK	GMSK	DQPSK
10^{-3}	1 dB	+12	+12	+12
10^{-3}	3 dB	+10	+10	+10
10^{-6}	1 dB	+11	+11	+11
10^{-6}	3 dB	+9	+9	+9

5.7.4 Distortion sensitivity

Refer to EN 301 460-1 [1].

5.7.5 CW interference

Refer to EN 301 460-1 [1].

5.7.6 Two tone interference

Refer to EN 301 460-1 [1].

5.7.7 Impulsive interference

Refer to EN 301 460-1 [1].

6 Types of interfaces at the subscriber equipment and the network exchange

Refer to EN 301 460-1 [1].

History

Document history			
V1.1.1	January 2000	Public Enquiry	PE 200021: 2000-01-26 to 2000-05-26
V1.1.1	August 2000	Vote	V 20001013: 2000-08-14 to 2000-10-13
V1.1.1	October 2000	Publication	