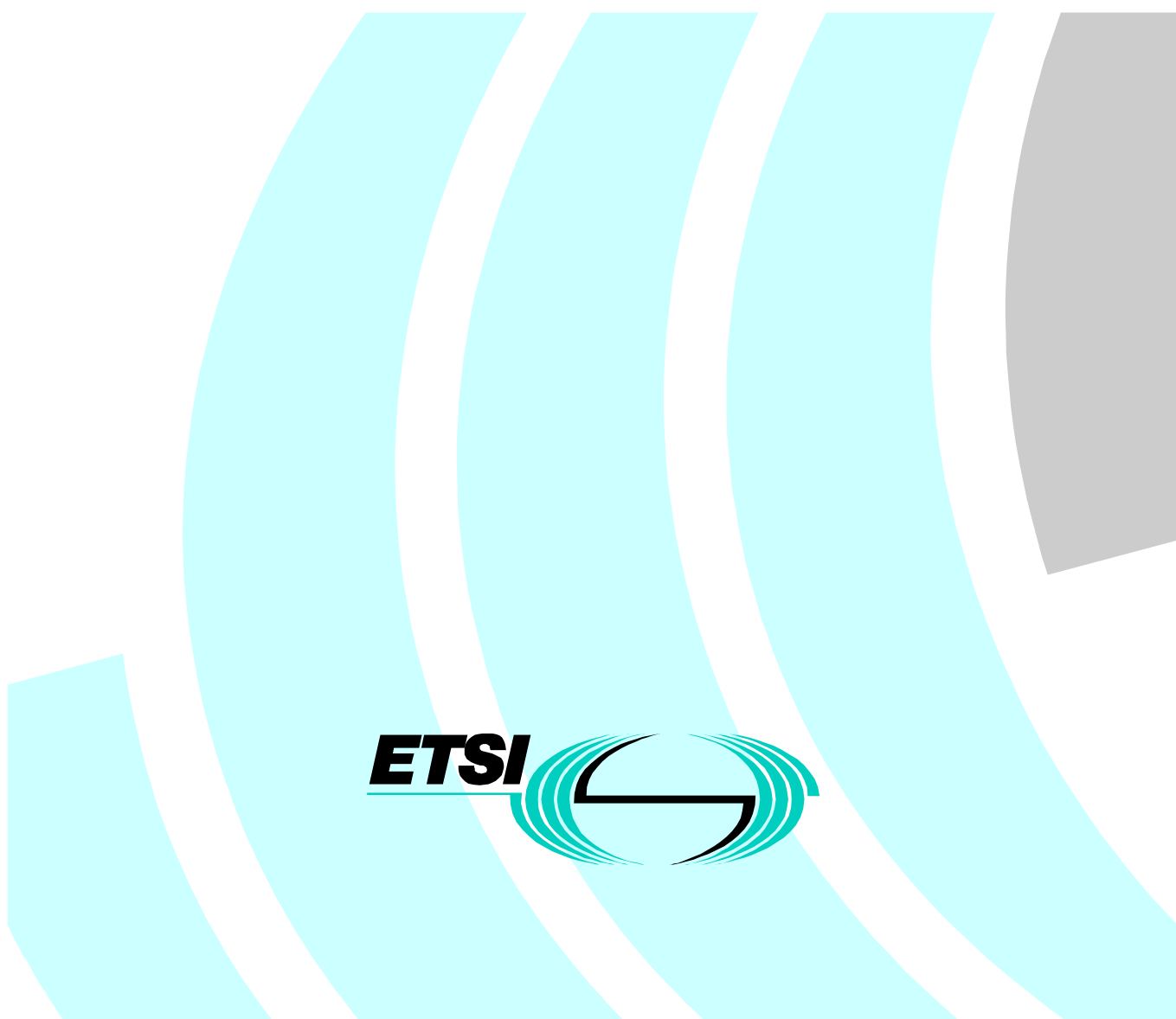


ETSI ES 201 235-1 V1.1.1 (2000-09)

ETSI Standard

Specification of Dual Tone Multi-Frequency (DTMF) Transmitters and Receivers; Part 1: General



Reference

DES/ATA-005076-1

Keywords

Signalling, DTMF, PSTN

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Important notice

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at <http://www.etsi.org/tb/status/>

If you find errors in the present document, send your comment to:
editor@etsi.fr

Copyright Notification

No part may be reproduced except as authorized by written permission.
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2000.
All rights reserved.

Contents

Intellectual Property Rights	4
Foreword.....	4
1 Scope	5
2 References	5
3 Definitions, symbols and abbreviations	5
3.1 Definitions	5
3.2 Symbols.....	5
3.3 Abbreviations	6
4 Signalling system principles and coding	6
4.1 General characteristics	6
4.2 Signal frequencies and codes.....	6
4.2.1 Signal frequencies.....	6
4.2.2 Signal format	6
4.2.3 Coding of the signals	6
History	7

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<http://www.etsi.org/ipr>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

This ETSI Standard (ES) has been produced by ETSI Technical Committee Speech processing, Transmission and Quality aspects (STQ).

The present document is part 1 of a multi-part ETSI Standard covering the Specification of Dual Tone Multi-Frequency (DTMF) Transmitters and Receivers, as identified below:

- Part 1: "General";**
- Part 2: "Transmitters";
- Part 3: "Receivers";
- Part 4: "Receivers for use in Terminal Equipment for end-to-end signalling".

1 Scope

The present document specifies the Dual Tone Multi-Frequency (DTMF) signalling system.

The various parts of ES 201 235 provide a complete set of requirements for all applications intending to use DTMF signalling.

The present document is intended to provide the level of detail that will enable manufacturers of telecommunications equipment incorporating DTMF signalling, to design the equipment such that it facilitates highly reliable signalling. This should not be taken to imply that any DTMF signalling system that fails to meet all the criteria described in the present document will not provide reliable signalling.

The present document is not intended to be used for the definition of regulated interfaces.

This Part 1 covers the general signalling system principles and coding requirements.

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] ITU-T Recommendation Q.23: "Technical features of push-button telephone sets".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

High group: signalling frequencies, which have nominal values of 1 209 Hz, 1 336 Hz, 1 477 Hz and 1 633 Hz

Low group: signalling frequencies , which have nominal values of 697 Hz, 770 Hz, 852 Hz and 941 Hz

3.2 Symbols

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

- * The Star on the standard 3x4 keypad array, also known as the asterisk.
- # The Square on the standard 3x4 keypad array, also known as the hash, sharp, or number sign ("pound" in the USA).

3.3 Abbreviations

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

DTMF	Dual Tone Multi-Frequency
PSTN	Public Switched Telephone Network
TE	Terminal Equipment

4 Signalling system principles and coding

4.1 General characteristics

The present part 1 of the standard deals with the general characteristics of the DTMF signalling system and conforms to ITU-T Recommendation Q.23 [1].

The specified system applies to DTMF signalling in the local access network, in which the transmission path between transmitter and receiver corresponds to a 2-wire analogue subscriber line, as well as to DTMF signalling over an end-to-end transmission path in the telecommunication network. For the latter case, special requirements apply to the receiver; the DTMF transmitter is defined independently of the transmission path applicable.

4.2 Signal frequencies and codes

4.2.1 Signal frequencies

The signal frequencies shall be selected from two separate groups, a low group and a high group, each group providing four signalling frequencies which nominal values are given in table 1.

4.2.2 Signal format

Each signal shall consist of two of the signalling frequencies; one frequency from each of the low and high groups. Both frequencies shall be applied simultaneously to the line.

4.2.3 Coding of the signals

The 16 discrete signals shall be allocated as shown in table 1:

Table 1: Assignment of signal codes (digits)

		High Group Frequencies (Hz)			
		1 209	1 336	1 477	1 633
Low Group Frequencies (Hz)	697	1	2	3	A
	770	4	5	6	B
	852	7	8	9	C
	941	*	0	#	D

Table 1 gives the full allocation of signal codes. Dependent on the application of the DTMF signalling, a subset of these codes may be applied, e.g. only the digits 0 to 9 may be applicable or the digits 0 to 9 plus the signal codes * and # are applicable.

History

Document history		
V1.1.1	May 2000	Membership Approval Procedure MV 20000728: 2000-05-30 to 2000-07-28
V1.1.1	September 2000	Publication