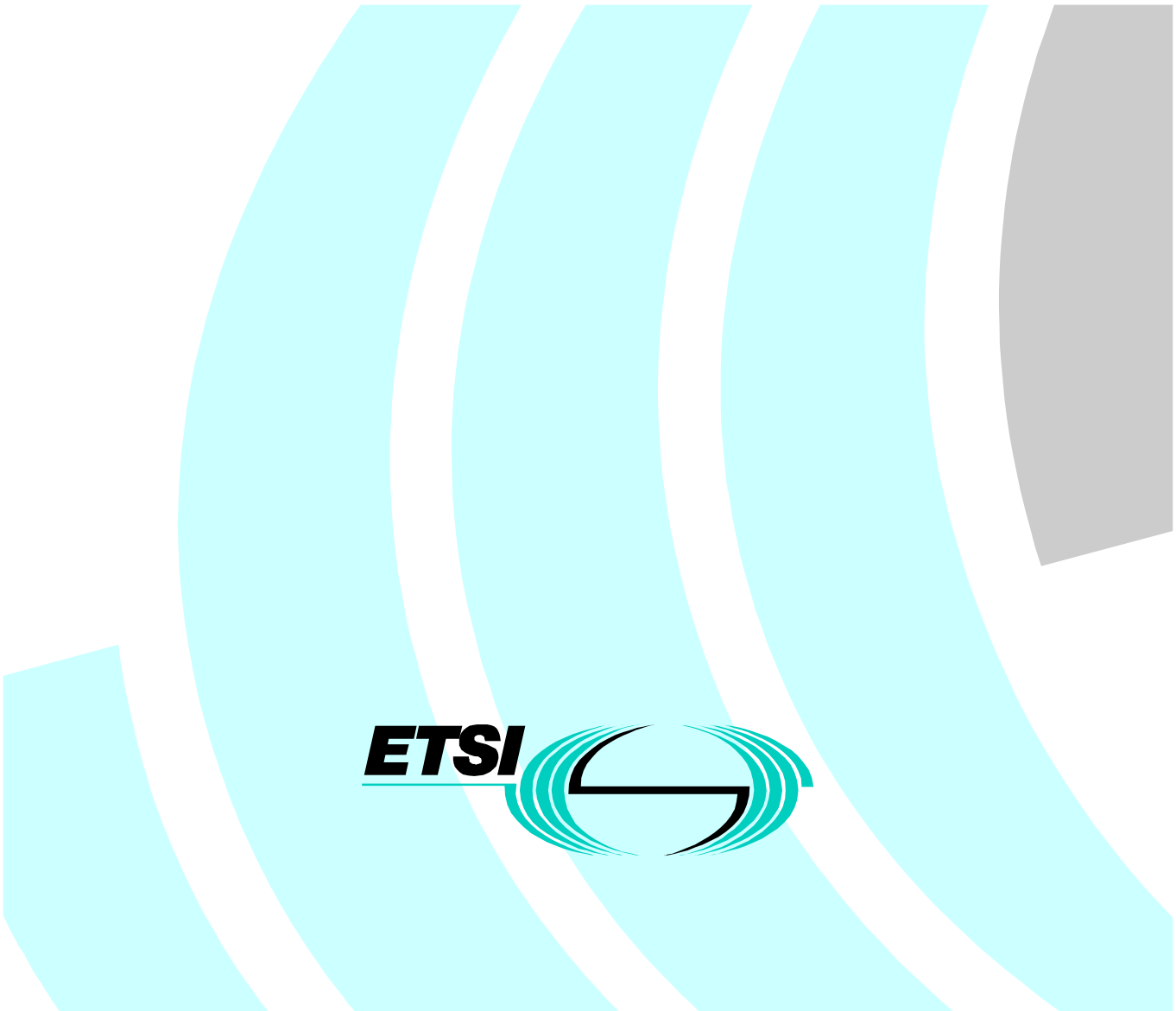
Draft ETSI ES 201 235-1 V1.1.1 (2000-05)

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
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Foreword

This ETSI Standard (ES) has been produced by ETSI Project Analogue Terminals and Access (ATA), and is now submitted for the ETSI standards Membership Approval Procedure.

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-Frenquency (DTMF) signalling system.

The various parts of the present document 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".

[2] ETSI TBR 21: "Terminal Equipment (TE); Attachment requirements for pan-European approval for connection to the analogue Public Switched Telephone Networks (PSTNs) of TE (excluding TE supporting the voice telephony service) in which network addressing, if provided, is by means of Dual Tone Multi-Frenquency (DTMF) signalling".

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).

dBV	Absolute voltage level expressed in decibels relative to 1 volt.
Z_R	Reference impedance of TBR 21 [2], subclause 3.1.1.

3.3 Abbreviations

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

DTMF	Dual Tone Multi-Frequency
PBX	Private Branch Exchange
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