ETSI TS 102 418 V1.1.1 (2005-03)

Technical Specification

Access and Terminals (AT);
Simultaneous Voice and Text Announcements;
PSTN/ISDN;
Protocol Description

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

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Access and Terminals (AT).

1   Scope

The present document specifies the protocol used between information servers and terminals to allow to display text messages on terminals in parallel to voice announcements.

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 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.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

[1]   ETSI EN 300 659-2: "Access and Terminals (AT); Analogue access to the Public Switched Telephone Network (PSTN); Subscriber line protocol over the local loop for display (and related) services; Part 2: Off-hook data transmission".

[2]   ETSI ES 200 778-2 (V1.2.2): "Access and Terminals (AT); Analogue access to the Public Switched Telephone Network (PSTN); Protocol over the local loop for display and related services; Terminal Equipment requirements; Part 2: Off-hook data transmission".

3   Abbreviations

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

DTMF	Dual Tone Multi Frequency
FSK	Frequency-Shift Keying
TAS	Terminal equipment Alerting Signal
TE	Terminal Equipment
TE-ACK	Terminal Equipment-ACKnowkledge

4   Overview

With the current rise in vocal elements within the network, numerous voice servers send long messages, which are becoming more and more difficult to remember and understand by the customers. The "Simultaneous Voice and Text" function can overcome these problems.

The objective of the "Simultaneous Voice and Text" function is to be able to display textual information in parallel to the provision of voice announcements to the users. This textual information may be displayed either on the telephone screen or on a specific separate box screen without customer involvement.

The text presented to the user should be directly related to the voice announcement, but may not be reproduced word by word in order to present only the essential information.

To enable this function, voice messages can have an associated data frame. This data frame is sent just before transmission of the voice message begins, and is directly transmitted from the voice server to the terminal within the existing voice band connection. The network is not actively involved.

5   Physical layer

Every FSK signalling from the server to the terminal is done in the voice band using 1 200 Baud FSK modulation. The Physical layer requirements are described in EN 300 659-2 [1] for the FSK transmission function and in ES 200 778-2 [2] for the FSK receiving function.

6   Data link layer

6.1   Overview

After the connection to the server has been established, the server tests the terminal compatibility. During this compatibility test, the terminal indicates its support of the "Simultaneous Voice and Text Announcements" function as well as its characteristics (e.g. screen size, support of text formatting etc).

The behaviour of the server depends on the compatibility test result:

- If the terminal supports "Simultaneous Voice and Text Announcements" function, the server, just before emitting any vocal announcement, shall send out the related textual information which is displayed on the user's terminal.

- If the terminal does not support the "Simultaneous Voice and Text Announcements" function (i.e. if it does not respond to the compatibility test request of the server), the server shall not send textual information related to the voice announcement to the terminal in order not to disturb the user.

The terminal compatibility test is performed only once per connection. The text transmission is done every time before a new vocal information is sent to the user.

While sending DTMF messages and receiving FSK messages, the terminal shall mute the voice paths and deactivate any manual signalling facility.

The following diagram illustrates the signalling between the server and the terminal:
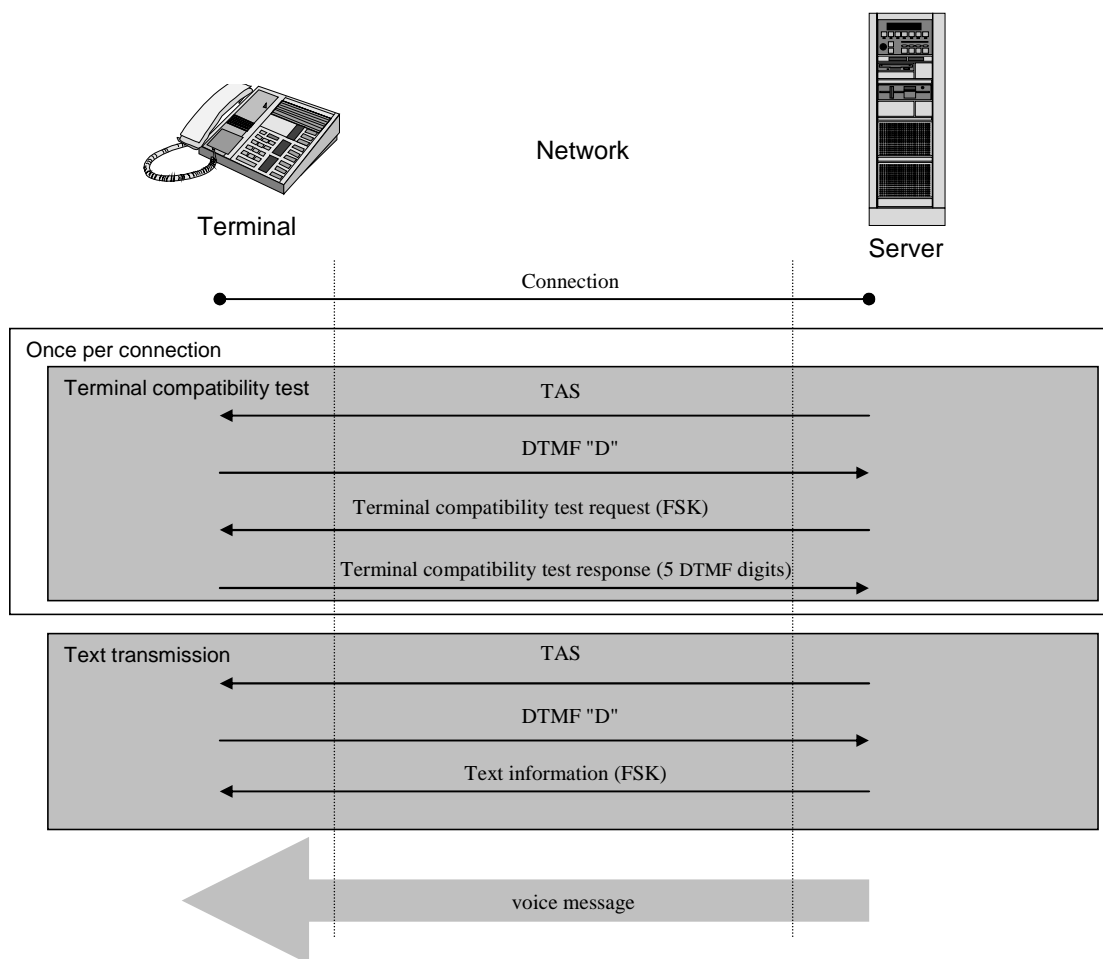

Figure 1: Communication between the server and the terminal

6.2 Terminal compatibility test

6.2.1 Description

The terminal compatibility test checks whether the terminal supports the "Simultaneous Voice and Text Announcements" function as well as its characteristics like screen size (i.e. the number of columns and lines), support of text formatting etc. The terminal compatibility test is performed only once per connection.

The test is performed as follows:

- The server shall send out Terminal Alerting Signal (TAS).

- When the TAS is received by the terminal, the terminal shall respond with a DTMF "D" (TE-ACK).

- When the server receives the DTMF "D" from the terminal, it shall send an FSK message containing a compatibility test request to the terminal (see table 1).

- The data transmission used for the compatibility test request is compliant to EN 300 659-2 [1].

Table 1: Compatibility test request message

Field	Value	Description
Message type	80H	"Call set-up"
Message length	04H	–
Parameter #1 type	40H	"Selection of terminal function"
Parameter #1 length	02H	–
Parameter #1 content (octet 1)	01H	"Connection type" indication
Parameter #1 content (octet 2)	07H	"Text call"

- If the terminal is compatible, it shall respond with a five-digit DTMF code. This code indicates the capabilities of the terminal (see clause 6.2.4 Compatibility test response coding).

Finally, the server analyses the terminal's response:

- If the terminal responds to the compatibility test request message with a valid five-digit DMTF combination, the server, just before emitting any vocal announcement, shall send out the related textual information to be displayed on the user's terminal. The textual information shall be tailored according to the capabilities the terminal has indicated by the five-digit DMTF combination.

- If the terminal does not respond to the compatibility test request message with a valid five-digit DTMF combination, the server shall transmit any vocal announcement without a preceding textual information.

- If the terminal does not respond to the TAS at all, the server shall not send out the compatibility test request message and consider the terminal incompatible, i.e. the server shall transmit any vocal announcement without a preceding textual information.

6.2.2 Compatibility test response coding

The five digit DTMF sequence is encoded as described in the following clauses. The general interpretation of the DTMF symbols is given in table 2.

Table 2: Compatibility test response coding

DTMF	Corresponding hexadecimal value	Corresponding binary value
"0" - "9"	0 - 9	0000 - 1001
"*"	A	1010
"#"	B	1011
"A"	C	1100
"B"	D	1101
"C"	E	1110
"D"	F	1111

6.2.2.1 First DTMF symbol

The first DTMF symbol is evaluated in binary representation according to table 2, where "Bit 1" is the least significant bit, "Bit 4" is the most significant bit.

Bit 1: **Bold** formatting. The bit is set to **1** if the terminal is able to display **bold** characters, **0** if not.

Bit 2: *Italic* formatting. The bit is set to **1** if the terminal is able to display *italic* characters, **0** if not.

Bit 3: <u>Underlined</u> formatting. The bit is set to **1** if the terminal is able to display <u>underlined</u> characters, **0** if not.

Bit 4: Reserved for future use. The bit is set to **0**.

EXAMPLE: The DTMF symbol "1" indicates support for bold only.

6.2.2.2   Second and third DTMF symbol

The second and third DTMF symbols are evaluated in hexadecimal representation according to table 2 and indicate the number of display lines. The second DTMF symbol represents the most significant part and the third DTMF symbol represents the least significant part.

EXAMPLE: The two DTMF symbols "1" "#" indicate 1B hex = 27 display lines.

6.2.2.3   Fourth and fifth DTMF symbol

The fourth and fifth DTMF symbols are evaluated in the same way as the second and third one and indicate the number of display columns.

EXAMPLE: The two DTMF symbols "1" "4" indicate 14 hex = 20 display columns.

6.2.2.4   Compatibility test response example

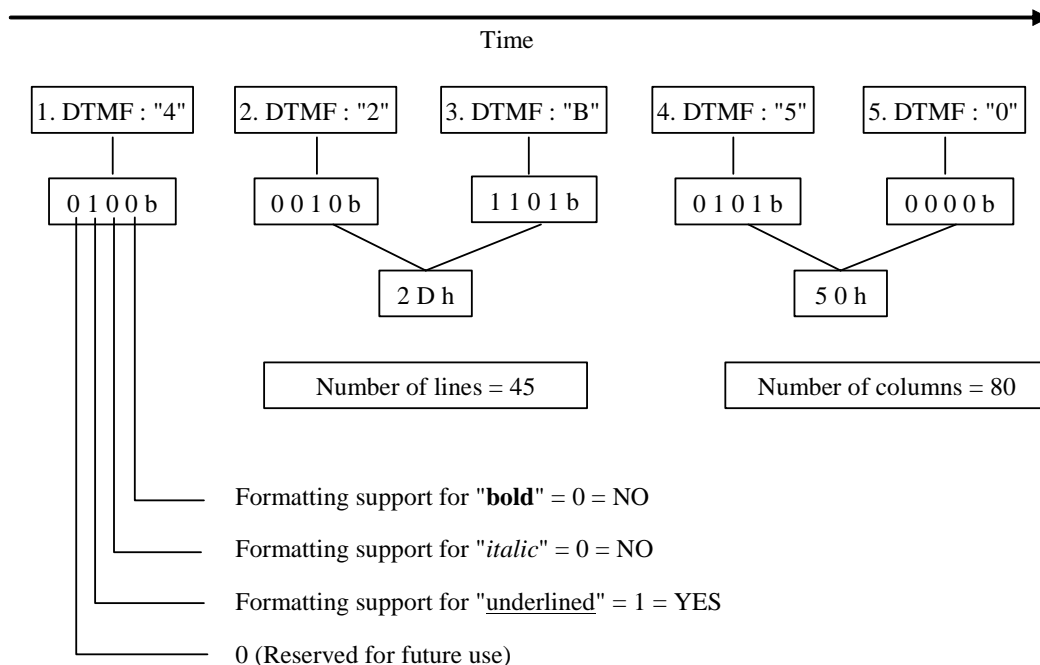The following compatibility test response DTMF sequence "4" "2" "B" "5" "0" indicates:

Figure 2: Compatibility test response example

6.3   Text transmission

The transmission of the textual information after a successful terminal compatibility test is performed as follows:

- The server shall send out Terminal Alerting Signal (TAS).

- When the TAS is received by the terminal, the terminal shall respond with a DTMF "D" (TE-ACK).

- When the server receives the DTMF "D" from the terminal, it shall send an FSK message containing the textual information to the terminal (see table 3). The FSK message used to transmit the textual information is compliant to EN 300 659-2 [1].

The textual information is displayed on the terminal's display as the user progresses within the voice server menus, and should not be stored permanently in the memory of the terminal in order not to exceed the terminal's memory capacity.

Table 3: Text transmission message

Field	Value	Description
Message type	80H	"Call set-up"
Message length	XXH	04 to 255
Parameter #1 type	50H	"Display information"
Parameter #1 length	XXH	02 to 253
Parameter #1 content (octet 1)	01H	"No stored information" indication
Parameter #1 content (octet 2 - n)	XXH	Text to be displayed (1 to 252 characters)

6.4 Character formatting

In case the terminal supports the handling of text formatting, the character strings <u>, </u>, <i>, </i>, , are used as formatting tags in analogy to HTML and are therefore not handled as characters.

The following codes can be found within the textual information within the content of the "Display Information" parameter:

<u>Underlined</u>: The text between <u> and </u> should be displayed in underlined text formatting.

<i>Italic</i>: The text between <i> and </i> should be displayed in italic text formatting.

Bold: The text between and should be displayed in bold text formatting.

Annex A (informative):
Bibliography

ETSI ES 201 235 (parts 1 to 4): "Access and Terminals (AT); Specification of Dual-Tone Multi-Frequency (DTMF) Transmitters and Receivers".

ETSI EN 300 659-3: "Access and Terminals (AT); Analogue acces to the Public Switched Telephone Network (PSTN); Subscriber line protocol over the local loop for display (and related) services; Part 3: Data link message and parameter codings".

History

Document history		
V1.1.1	March 2005	Publication