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Functional requirements for Dual Tone Multi-Frequency
(DTMF) type UPT access devices**

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Foreword

This ETSI Technical Report (ETR) has been produced by the Network Aspects (NA) Technical Committee of the European Telecommunications Standards Institute (ETSI).

ETRs are informative documents resulting from ETSI studies which are not appropriate for European Telecommunication Standard (ETS) or Interim European Telecommunication Standard (I-ETS) status. An ETR may be used to publish material which is either of an informative nature, relating to the use or the application of ETSs or I-ETSs, or which is immature and not yet suitable for formal adoption as an ETS or an I-ETS.

This ETR specifies functional requirements on one-way (sending) Universal Personal Telecommunication (UPT) Phase 1 access devices of Dual Tone Multi-Frequency (DTMF) type for in-band operation in the acoustic voice band.

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1 Scope

This ETSI Technical Report (ETR) specifies functional requirements on one-way (sending) Universal Personal Telecommunication (UPT) Phase 1 access devices of Dual Tone Multi-Frequency (DTMF) type for in-band operation in the acoustic voice band. An overview of the various types of UPT terminals and UPT access devices is given in ETR 055-5 [2].

2 References

This ETR incorporates by dated and undated reference, provisions from other publications. These references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETR only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- [1] ETS 300 001: "Attachments to the Public Switched Telephone Network (PSTN); General technical requirements for equipment connected to an analogue subscriber interface in the PSTN".
- [2] ETR 055-5: "Universal Personal Telecommunication (UPT); The service concept; UPT terminals and UPT access devices".
- [3] ETR 055-8: "Universal Personal Telecommunication (UPT); The service concept; Part 8: Man-machine interface aspects".
- [4] ETR 217: "Universal Personal Telecommunication (UPT); Phase 1 (restricted UPT service scenario); User procedures and user states".
- [5] ETR 218: "Universal Personal Telecommunication (UPT); Phase 1 (restricted UPT service scenario); Man-machine interface".
- [6] CCITT Recommendation Q.23 (1988): "Technical features of push-button telephone sets".

3 Abbreviations

For the purposes of this ETR, the following abbreviations apply:

| | |
|------|--------------------------------------|
| DTMF | Dual Tone Multi-Frequency |
| PIN | Personal Identification Number |
| PUI | Personal User Identity |
| UPT | Universal Personal Telecommunication |

4 General

UPT access devices are generally specified in order to facilitate the UPT user's interactions with the UPT service while ensuring an adequate level of security. UPT access devices would also permit users to operate UPT procedures from dial pulse telephones.

Simple and advanced one-way (sending) DTMF devices are envisaged as being necessary for Phase 1. The simple one-way (sending) DTMF type UPT access device is applicable to all voice networks, and simply emulates manual dialling in the user-to network direction. Whereas the advanced DTMF device is intended to provide a higher level of security and possible access to additional services.

The UPT access devices described in this ETR are intended for use with the type 1 elementary procedures, for the simple DTMF device, and type 1 procedures, for the advanced DTMF device, detailed in ETR 055-8 [3].

5 Interfaces

5.1 UPT access device to terminal interface

5.1.1 Physical interface

The physical interface between the UPT access device and the terminal shall conform to the specifications of DTMF signalling specified in CCITT Recommendation Q.23 [6].

5.1.2 Logical interface

The logical interface between the UPT access device and the terminal is one-way transmission in the UPT access device and the terminal is one-way transmission in the UPT access device-to-terminal direction, and includes the transmission of information specified ETR 217 [4] without acknowledgement.

Any responses from the network will be at the user level and do not impose requirements on the UPT access device.

5.2 UPT access device to user interface

The interface between the UPT user and the UPT access device should include manual dialling of inputs to the UPT access device on a key pad.

6 Functional requirements of portable DTMF UPT access devices

This clause considers attributes of portable DTMF-type UPT access devices. That is, a device a person might carry with them.

6.1 Key pad for user input

The UPT access device shall have a key pad for user input. This key pad shall as a minimum have the keys "0"- "9", "*" and "#".

6.2 Storage of UPT user related information

The information described below is active information i.e. information this is actively used during the UPT procedure.

6.2.1 Storage of permanent information

The UPT access device may have the possibility to store the following permanent information:

- the UPT user's UPT number and/or Personal User Identity (PUI) used for identification of the UPT user.

It is recommended that this information should be kept in memory permanently. This means that it could be set by the UPT service provider at subscription time and would not be modifiable by the UPT user.

6.2.2 Storage of default information

The UPT access device may have the possibility to store the following default information:

- the UPT access code used for accessing UPT facilities;
- the Personal Identification Number (PIN) relating to the UPT user.

This information may be kept in memory for indefinite duration. It should be capable of being set and modified by the UPT user.

If the PIN can be stored then it is recommended that:

- an option may be provided to allow a user definable code to be entered by the user in order to activate the UPT access device;
- the PIN should not be displayed to the user.

These actions would help minimise security problems associated with theft or the unauthorised use of the UPT access device.

6.2.3 Storage of temporary information

The UPT access device may have the possibility to store the following temporary information:

- the PIN related to the UPT user;
- any procedure related information as described in ETR 217 [4] and ETR 218 [5].

This information need only be stored for the duration of a UPT procedure. When the information has been successfully transmitted.

6.3 Send function

The UPT access device should transmit appropriate permanent, default or temporary information stored to the terminal on the activation of a SEND function. Seen by the UPT access device, this activation terminates a UPT procedure.

6.4 Deletion of temporary information

A mechanism should exist to automatically delete from memory any temporary information. Options could include:

- on/off switch;
- automatic power off after a fixed time period;
- an erase/delete function.

7 Physical requirements on portable DTMF UPT access devices

7.1 Size and weight

The UPT access device should have a size and weight such that it can be carried easily on the UPT user at most times. The size should ideally be comparable to the size of a credit card.

7.2 Handset coupling

The UPT access device should be designed to permit acoustic coupling with a wide range of telephone handsets.

8 Additional features

In the following a list of optional additional features that may be provided by a simple sending DTMF UPT access device is given. The list is non-exhaustive.

8.1 Display

The UPT access device may have a display to aid the UPT user.

8.2 Volume control

The UPT access device may have a volume control the level of the transmitted tones.

NOTE: Requirements may exist in regard to the maximum permitted signal level, see, for example, ETS 300 001 [1].

8.3 Storage of passive information

The UPT access device may have various editing functions to create, store and manipulate passive information, i.e. information that is not actively used during the UPT procedures, but which may be activated explicitly by the UPT user as default or temporary active information.

9 Advanced DTMF UPT access devices

An advanced implementation of a DTMF UPT access device is foreseen which would offer a higher level of security. The UPT access device would transmit user identity information e.g. PUI and PIN, to the network in an encoded form. The encoding algorithm would be present in the device and the decoding algorithm would be within the network.

NOTE: The exact operation of this device and the choice of coding algorithms may be UPT service provider dependent. However, it might be advantageous to recommend a preferred methodology. This aspect will need to be studied by the UPT security experts group(s) of ETSI.

History

| Document history | |
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