EUROPEAN TELECOMMUNICATION STANDARD

ETS 300 263

March 1994

Source: ETSI TC-NA

Reference: DE/NA-012232

ICS: 33.080

Key words: ISDN, telephony, teleservice

Integrated Services Digital Network (ISDN); Telephony 7 kHz teleservice Service description

ETSI

European Telecommunications Standards Institute

ETSI Secretariat

Postal address: F-06921 Sophia Antipolis CEDEX - FRANCE
Office address: 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE
X.400: c=fr, a=atlas, p=etsi, s=secretariat - **Internet:** secretariat@etsi.fr

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

Contents

Blank page

Foreword

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

In accordance with CCITT Recommendation I.130 [1], the following three level structure is used to describe the supplementary telecommunications services as provided by European public telecommunications operators under the pan-European Integrated Services Digital Network (ISDN):

- Stage 1: is an overall service description, from the user's standpoint;

- Stage 2: identifies the functional capabilities and information flows needed to support the service described in stage 1; and

- Stage 3: defines the signalling system protocols and switching functions needed to implement the service described in stage 1.

This ETS details the stage 1 aspects (overall service description) for the telephony 7 kHz teleservice. The stage 2 and stage 3 aspects are detailed in ETS 300 265 (1993) and ETS 300 267 (1993), respectively.

Blank page

1 Scope

This standard defines the stage one of the telephony 7 kHz teleservice for the pan-European Integrated Services Digital Network (ISDN) as provided by European public telecommunications operators. Stage one is an overall service description from the user's point of view (see CCITT Recommendation I.130 [1]), but does not deal with the details of the human interface itself.

This standard defines the interworking requirements of private ISDNs with the public ISDN.

In addition, this standard specifies the base functionality where the service is provided to the user via a private ISDN.

This standard does not specify the additional requirements where the service is provided to the user via a telecommunications network that is not an ISDN but does include interworking requirements of other networks with the public ISDN.

Charging principles are outside the scope of this standard.

The values of the general attributes are outside the scope of this standard.

The telephony 7 kHz teleservice is a real-time teleservice in which speech (7 kHz or 3,1 kHz bandwidth) can be interchanged using one circuit-mode 64 kbit/s connection.

This standard is applicable to the stage two and stage three standards for the ISDN telephony 7 kHz teleservice. The terms "stage two" and "stage three" are also defined in CCITT Recommendation I.130 [1]. Where the text indicates the status of a requirement (i.e. as strict command or prohibition, as authorisation leaving freedom, or as a capability or possibility), this shall be reflected in the text of the relevant stage two and stage three standards.

Furthermore, conformance to this standard is met by conforming to the stage three standard with the field of application appropriate to the equipment being implemented and by conforming to the standards on the end-to-end characteristics with the field of application appropriate to the equipment being implemented. Therefore, no method of testing is provided for this standard.

2 Normative references

This standard incorporates by dated or undated reference, provisions from other publications. These normative 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 standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] CCITT Recommendation I.130 (1988): "Method for the characterisation of telecommunication services supported by an ISDN and network capabilities of an ISDN".

[2] CCITT Recommendation I.112 (1988): "Vocabulary of terms for ISDNs".

[3] CCITT Recommendation I.210 (1988): "Principles of telecommunication services supported by an ISDN and the means to describe them".

[4] CCITT Recommendation G.711 (1988): "Pulse code modulation (PCM) of voice frequencies".

[5] CCITT Recommendation G.722 (1988): "7 kHz audio-coding within 64 kbit/s".

[6] CCITT Recommendation I.220 (1988): "Common dynamic description of basic telecommunication services".

[7] CCITT Recommendation I.221 (1988): "Common specific characteristics of services".

[8] prETS 300 143: "Integrated Services Digital Network (ISDN) and other digital communications networks; Audiovisual teleservices System for establishing communication between audiovisual terminals using digital channels up to 2048 kbit/s".

[9] prETS 300 144: "Integrated Services Digital Network (ISDN) and other digital telecommunications networks; Audiovisual teleservices Frame structure for a 64 to 1920 kbit/s channels in audiovisual service".

[10] ETS 300 111 (1992): "Integrated Services Digital Network (ISDN); Telephony 3,1 kHz teleservice Service description".

[11] CCITT Recommendation I.140 (1988): "Attribute technique for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".

[12] CCITT Recommendation E.164 (1991): "Numbering plan for the ISDN era".

[13] prETS 300 281: "Integrated Services Digital Network (ISDN); Telephony 7 kHz teleservice Terminal requirements necessary for end-to-end compatibility".

3 Definitions

For the purposes of this standard, the following definitions apply:

Integrated Services Digital Network (ISDN): see CCITT Recommendation I.112 [2], § 2.3, definition 308.

ISDN number: see CCITT Recommendation E.164 [12].

Service; telecommunications service: see CCITT Recommendation I.112 [2], § 2.2, definition 201.

Supplementary service: see CCITT Recommendation I.210 [3], § 2.4.

Teleservice: see CCITT Recommendation I.112 [2], § 2.2, definition 203.

7 kHz terminal: a terminal that supports the telephony 7 kHz teleservice.

3,1 kHz terminal: a terminal that supports only the telephony 3,1 kHz teleservice.

Videotelephone terminal: a terminal that supports the videotelephony teleservice.

Fall-back: the mechanism whereby a request for the telephony 7 kHz teleservice, which includes an indication that an alternative teleservice is acceptable, results in a call using the alternative teleservice. In the case of the telephony 7 kHz teleservice, the alternative is the telephony 3,1 kHz teleservice.

Network determined user busy: see CCITT Recommendation I.221 [7], § 3.1.4.

User determined user busy: see CCITT Recommendation I.221 [7], § 3.1.4.

Retention timer: this timer specifies the amount of time that the network retains all of the call information supplied by the calling user when the call encounters busy or is terminated. Implementation of this timer is a network option. The value of this timer shall be greater than 15 seconds.

4 Symbols and abbreviations

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

ISDN	Integrated Services Digital Network
PSTN	Public Switched Telephone Network

5 Description

The telephony 7 kHz teleservice is a real-time teleservice in which speech (7 kHz or 3,1 kHz bandwidth) can be interchanged using one circuit-mode 64 kbit/s connection. The audio bandwidth conforms to CCITT Recommendations G.722 [5] or G.711 [4].

User information shall be transferred over the B-channel, signalling shall be provided over the D-channel.

The network provides tones and/or announcements to support this teleservice. Tones and/or announcements can be used to indicate the progress (or lack of progress) of a call. The application and meaning of the tones and announcements is a national matter and outside the scope of this standard.

The telephony 7 kHz teleservice shall allow communication between:

- two users in a point-to-point configuration; and
- as a service provider option, three or more users in a multipoint configuration as invoked by some supplementary services.

6 Procedures

6.1 Provision and withdrawal

The telephony 7 kHz teleservice shall either be provided after prior arrangement with the service provider, or shall be generally available.

NOTE: As a service provider option, the telephony 7 kHz teleservice can be offered with several subscription options which apply separately to each ISDN number, all ISDN numbers, or a group of ISDN numbers on the interface. For each subscription option, only one value can be selected.

Subscription options for the interface are summarised in table 1.

Table 1: Subscription options for the interface

Subscription option	Value
Maximum number of information channels available	m, where m is not greater than the number of information channels on the interface
Maximum number of total calls present	n, where n is not greater than the number of information channels on the interface

The user can be identified by an ISDN number, or a group of ISDN numbers, or globally for all ISDN numbers on the interface.

More than one ISDN number can be associated with the interface as a part of a supplementary service such as the multiple subscriber number supplementary service. In the case of one ISDN number, the option given in table 1 for the number of calls can only exceed the number of information channels in association with a supplementary service (e.g. the call waiting supplementary service). As a service provider option, separate values may be specified for incoming and for outgoing calls, for either or both of the limits.

The telephony 7 kHz teleservice shall be withdrawn by the service provider upon the request of the subscriber, or for service provider reasons.

6.2 Normal procedures

The network shall provide out of band indications to indicate call progress. Network generated tones and/or announcements shall be provided for the telephony 7 kHz teleservice.

6.2.1 Originating the call (call establishment)

The telephony 7 kHz teleservice is originated by the originating user activating the terminal, performing service selection, if applicable from the originating terminal, and terminating selection. During this process, the originating user is given the appropriate indications as to the state of the call.

The end-to-end path is framed according to ETS 300 144 [9]. The in-band protocol shall be established according to ETS 300 143 [8].

Audio tones provided to the user shall be as for the telephony 3,1 kHz teleservice, given in ETS 300 111 [10].

6.2.2 Indications during call establishment

Indications during call establishment may include an indication that the network is ready to receive the network address information (proceed indication) and an indication that the call is progressing through the network. It shall be possible to have audible indications which may be accompanied by other indications.

Selection of the terminal shall be indicated to each user by appropriate indications, (call arrival indication and awaiting answer indication). The acceptance of the call by the terminating user, (answer), shall cause the indications to be removed and bidirectional communication paths to be provided.

6.2.3 Terminating the call

A request to terminate the telephony 7 kHz teleservice can be generated by either of the users. If one user terminates the call, the other user shall be given an appropriate indication as to the state of the call.

6.2.4 Change of communication mode

Depending on the terminal capabilities, it shall be possible to change between different communication modes according to ETS 300 281 [13].

6.3 Exceptional procedures

6.3.1 Situations at the calling user side

When the network receives an improper service request from a user, the network shall give that user the appropriate failure indication and the call establishment shall be ceased.

A user inputting a non-valid network number shall be given an appropriate failure indication by the network and the call establishment shall be ceased.

When the network receives an incorrect ISDN number from a user the network shall give that user the appropriate indication and the call establishment shall be ceased.

Users can input network address information subsequent to the service request (i.e. overlap sending). In this case, if the user fails to enter address information or subsequent parts of the address within network determined intervals, the network shall give that user the appropriate indication and the call establishment shall be ceased.

6.3.2 Situations at the called user side

A calling user attempting to establish a call to a user who is identified by the network to be busy (either network determined user busy or user determined user busy) shall be given the appropriate indication by the network.

A user attempting to establish a call to a user whose terminal equipment fails to respond shall be given the appropriate indication by the network and the call establishment shall be ceased.

On a call to a user whose terminal equipment has responded that the called user is being informed of the call, but has failed to establish the call within a defined period of time, the calling user attempting to establish the call shall be given the appropriate failure indication by the network and the call establishment shall be ceased.

6.3.3 Situations due to network conditions

A user attempting to establish a call but meeting problems due to network conditions (e.g. congestion) shall be given the appropriate failure indication by the network.

6.3.4 Retention of call information

If a user attempts to establish a call but meets problems due to network conditions (e.g. congestion) or called user state (e.g. network determined user busy or user determined user busy) then, according to a network option, the network shall retain all the information supplied by the calling user for the duration of the retention timer.

7 Intercommunication and interworking considerations

Intercommunication of telephone 7 kHz terminals with 3,1 kHz ISDN terminals, and interworking with the PSTN shall be provided.

The user of a 7 kHz terminal shall be able to establish calls to 3,1 kHz and videotelephone terminals connected to the ISDN and to telephone terminals connected to the PSTN.

7 kHz terminals shall be able to accept calls from 3,1 kHz and videotelephone terminals connected to the ISDN and from telephone terminals connected to the PSTN.

NOTE: As a terminal option, 7 kHz terminals may be pre-programmed to accept incoming telephony 7 kHz calls only. This function may be requested by users possessing, e.g. both a 7 kHz terminal and a 3,1 kHz terminal connected to the same access arrangement.

7.1 Fall-back procedures

7.1.1 Procedures

Fall-back to telephony 3,1 kHz teleservice shall be an inherent feature of the 7 kHz teleservice and shall be provided as a default procedure. However, if the calling user indicates that fall-back is not allowed when originating a call, fall-back procedures shall not apply.

NOTE 1: This situation may lead to an unsuccessful call attempt due to called user terminal capabilities.

If the calling user has not indicated that fall-back is not allowed, then the following procedure shall apply:

- the network shall offer the call to the called user at all 7 kHz terminals and 3,1 kHz terminals. The called user can accept the call either as a 7 kHz or 3,1 kHz telephony call at any terminal where the call is offered;

- the calling user shall be informed of the resultant telecommunications service i.e. the 7 kHz or 3,1 kHz telephony teleservice;

- if no terminal accepts the call, this shall be indicated to the calling user.

NOTE 2: Echo cancellation will be disabled for 7 kHz telephony calls. If fall-back occurs, re-enabling of echo cancellers is necessary. However, some networks may not support the corresponding signalling mechanisms.

NOTE 3: When fall-back is not implemented by the network, fall-back may be performed end-to-end by the calling 7 kHz terminal, by originating a new 3,1 kHz telephony call.

If the calling user has not indicated that fall-back is not allowed and the network does not support the fall-back procedure, the telephony 3,1 kHz teleservice shall be provided to the calling user.

7.1.2 Interworking with non-ISDNs

If the calling user has not indicated that fall-back is not allowed and interworking with the PSTN occurs, the telephony 3,1 kHz teleservice shall be provided. The calling user shall be informed of this situation.

If fall-back is not allowed for the call, the communication shall not be established.

7.2 Interworking with private ISDNs

If the calling user has not indicated that fall-back is not allowed and the calling user is connected to a private ISDN which supports the telephony 7 kHz teleservice, then, in situations where fall-back applies, the fall-back procedures shall be performed by the private ISDN.

The result of call presentation (the telephony 7 kHz teleservice or the telephony 3,1 kHz teleservice) within the private ISDN shall be indicated to the public ISDN.

In the case where the private ISDN does not support the fall-back procedures, then the telephony 3,1 kHz teleservice shall be provided. The calling user shall receive an indication from the public ISDN that fall-back to the telephony 3,1 kHz teleservice has occurred.

8 Applicability of supplementary services

Each supplementary service description identifies the applicability with the telephony 7 kHz teleservice.

If the in-band communication is interrupted by the network as a result of one user invoking a supplementary service (e.g. the call hold supplementary service, or the terminal portability supplementary service) then the network shall provide an appropriate indication (e.g. all ones or idle signal) in the B-channel.

Prior to invoking supplementary services which interrupt the in-band signalling communication (e.g. the call hold supplementary service), the in-band communication shall revert to mode 0, as described in ETS 300 281 [13].

Applicability of supplementary services is described in Annex B.

9 Static description of the service using attributes

The attributes are defined in CCITT Recommendation I.140 [11], Annex A, § A.1.1.

The values of the attributes are defined in CCITT Recommendation I.140 [11], Annex A, § A.2.

9.1 Low layer attributes

Information transfer attributes

The information transfer attributes of this teleservice are specified in table 2.

Table 2: Values for information transfer attributes

Attribute	**Possible values**
Information transfer mode	- circuit
Information transfer rate	- 64 kbit/s
Information transfer capability	- unrestricted digital information with tones and announcements - speech (see NOTE 1)
Structure	- 8 kHz integrity
Establishment of communication	- demand
Symmetry	- bidirectional symmetric
Communication configuration	- point-to-point - multipoint (see NOTE 2)

NOTE 1: In the case where fall-back to the telephony 3,1 kHz teleservice applies, the information transfer capability shall be speech.

NOTE 2: As a service provider option.

9.2 Access attributes

The access attributes of this teleservice are specified in table 3.

Table 3: Values of access attributes

Attribute	Possible values
Access channel and rate	User information - B (64 kbit/s) Signalling - D (16 kbit/s or 64 kbit/s)
Signalling access protocol, information	User information - ETS 300 143 [8], ETS 300 144 [9], ETS 300 011, ETS 300 012, CCITT Recommendations G.711 [4], G.722 [5] Signalling - ETS 300 011, ETS 300 012, ETS 300 125, ETS 300 102, ETS 300 267, ETS 300 281

9.3 High layer attributes

Type of user information: speech, data.

Layer 6 protocol functions: CCITT Recommendations G.722 [5], G.711 [4].

Other attributes are not applicable.

9.4 General attributes

This standard does not provide values for general attributes.

NOTE: The maximum transmission delay for the user information will be the same as is specified for the telephone network (see ITU-T Recommendation G.114).

10 Dynamic description

The dynamic description for this teleservice on demand basis shall be as specified in CCITT Recommendation I.220 [6].

Annex A (informative): Bibliography

ETS 300 011: "Integrated Services Digital Network (ISDN); Primary rate user-network interface Layer 1 specification and test principles".

ETS 300 012: "Integrated Services Digital Network (ISDN); Basic user-network interface Layer 1 specification and test principles".

ETS 300 102: "Integrated Services Digital Network (ISDN); User-network interface layer 3 Specifications for basic call control".

ETS 300 125: "Integrated Services Digital Network (ISDN); User-network interface data link layer specification Application of CCITT Recommendations Q.920/I.440 and Q.921/I.441".

ETS 300 267: "Integrated Services Digital Network (ISDN); Telephony 7 kHz and videotelephony teleservices Digital Subscriber Signalling System No. one (DSS1)".

ETS 300 281: "Integrated Services Digital Network (ISDN); 7 kHz telephony teleservice Terminal requirements necessary for end-to-end compatibility".

ITU-T Recommendation G.114: "Mean one-way propagation time".

Annex B (informative): Applicability of supplementary services to the telephony 7 kHz teleservice

There is no additional requirement in the application of the following supplementary services:

- the advice of charge services:
  - the advice of charge: charging information at call set-up time supplementary service;
  - the advice of charge: charging information during the call supplementary service;
  - the advice of charge: charging information at the end of a call supplementary service;
- the call waiting supplementary service;
- the number identification services:
  - the calling line identification presentation supplementary service;
  - the calling line identification restriction supplementary service;
  - the connected line identification presentation supplementary service;
  - the connected line identification restriction supplementary service;
- the completion of calls to busy subscribers supplementary service;
- the direct dialling-in supplementary service;
- the malicious call identification supplementary service;
- the multiple subscriber number supplementary service;
- the subaddressing supplementary service;
- the user-to-user signalling supplementary service.

Concerning the closed user group supplementary service, in order to ensure the integrity of the closed user group supplementary service, when fall-back occurs, the closed user group(s) subscribed-to for the telephony 7 kHz teleservice also apply(ies) to the fall-back communication.

For the call diversion supplementary services, the call will be diverted as a call using the telephony 7 kHz teleservice. If the calling user has not indicated that fall-back is not allowed, then the fall-back indication will be included when the diverted part of the call is originated. The calling user will be informed of fall-back when it occurs.

The indication that fall-back has occurred will be sent to the calling user independently of the value of the diverting user's subscription option that the calling user is informed that the call has been diverted.

Applicability of supplementary services not listed in this Annex is outside the scope of this standard.

History

Document history	
March 1994	First Edition
February 1996	Converted into Adobe Acrobat Portable Document Format (PDF)