



**Telecommunications Recommendation
extension "B"**

**SPECIFICATION FOR
COMMON CHANNEL SIGNALLING SYSTEM No. 7**

**ISDN User Part
for national ISDN connections
/ISUP-N/**

References:

- ITU-T Rec. Q.767 (1991): Application of the ISDN User Part of Signalling System No. 7 for International ISDN Interconnections
- ETS 300 121 V1 (September 1990): Application of the ISDN User Part of CCITT Signalling System No. 7 for International ISDN Interconnections
- ITU-T Rec. Q.761 (03/93): Functional Description of the ISDN User Part
- ITU-T Rec. Q.762 (03/93): General Function of Messages and Signals
- ITU-T Rec. Q.763 (03/93): Formats and Codes
- ITU-T Rec. Q.764 (03/93): Signalling Procedures
- CCITT Report COM XI-R 152-E Malicious Call Identification Supplementary Service
- ITU-T Handbook: Guidelines for Implementing a Signalling System No.7 Network (Geneva 1991)

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1. General

This specification describes the requirements for the National ISDN User Part (ISUP-N), applicable to the interface of the national transit and local exchanges. The ISDN User Part for international connections (ISUP-I) is specified in CCS 0411.

The objective of the specification is to provide a clear description of the ISDN User Part for the implementors and the staff involved in tests, operation and maintenance. The specification is written in English in order to align the description as close as possible to the terminology used in ETSI standards and ITU-T Recommendations.

The text of this specification is based on the ITU-T Recommendation Q.767. The relevant ETSI standard is ETS 300 121 (ISUP Version 1). Where discrepancy exists the requirements of this specification and any unreferenced part of the documents (e.g. SDLs) then these requirements shall be deemed to modify those sections of the documents.

As Recommendation Q.767 gives the exceptions to Blue Book ISUP Recommendations, this document specifies only the added exceptions and clarifications. If an item contains sub-items in the basic document (Q.767), and this specification refers only to the main item, then it is applicable to the sub-items also. E.g. if D.2.10.1. is accepted (Shall apply.), then D.2.10.1.1, D.2.10.1.2 and D.2.10.1.3, are also accepted.

- 2. Exceptions and Clarifications to the Sections 1 to 4 of Q.767**
- 1. Introduction**

The text is accepted.
- 2. Services supported**
 - 2.1 Bearer services**

Shall apply.
 - 2.2 Teleservices**

Shall apply.
 - 2.3 Supplementary services**

Shall apply.
 - 2.4 Interworking between ISDN and PSTN/IDN**

Shall apply.
- 3. Exceptions and Clarifications to the Blue Book ISUP Recommendations**
 - 3.1 General**

The text is accepted.
 - 3.2 Exceptions and clarifications to Recommendation Q.761**

The text and TABLE 1/Q.767 are accepted. For the details please refer to Chapter 3 of this document (Exceptions and clarifications to Annex A/Q.767).
 - 3.3 Exceptions and clarifications to Recommendation Q.762**

The text and TABLE 2/Q.767 are accepted. For the details please refer to Chapter 4 of this document (Exceptions and clarifications to Annex B/Q.767).
 - 3.4 Exceptions and clarifications to Recommendation Q.763**

The text, TABLE 3/Q.767 and TABLE 4/Q.767 are accepted. For the details please refer to Chapter 5 of this document (Exceptions and clarifications to Annex C/Q.767).
 - 3.5 Exceptions and clarifications to Recommendation Q.764**

The text, TABLE 5/Q.767 and TABLE 6/Q.767 are accepted. For the details please refer to Chapter 6 of this document (Exceptions and clarifications to Annex D/Q.767).
 - 3.6 Exceptions and clarifications to Recommendation Q.730**

The text and TABLE 7/Q.767 are accepted. For the details please refer to Chapter 7 of this document (Exceptions and clarifications to Annex E/Q.767).
- 4. Guidelines for ISDN international interconnections**

Clarification: This item also concerns to the national transit situations.

 - 4.1 Clarifications to ISUP basic call control procedures**
 - 4.1.1 Handling of unrecognized signalling information**
 - 4.1.1.1 In international ISUP transit situations**

Shall apply.

Clarification: Spare fields/bits and fields/bits marked as national use of unrecognized signalling information are passed on unchanged. "Ignore" values are passed on unchanged.
 - 4.1.1.2 In incoming/outgoing or in interworking situations**

Shall apply.

Clarification: "Ignore" values are passed on unchanged.
 - 4.1.1.3 Format errors**

Shall apply.
 - 4.1.2 Cause values**

Shall apply.
 - 4.1.3 Charging**

Shall apply.
 - 4.1.4 Operator services**

Shall apply.
 - 4.1.5 Test calls**

Shall apply.
 - 4.1.6 Continuity Check**

Shall apply.

4.1.7 Application of Recommendation Q.118 for suspend/resume (network)

Shall apply.

4.1.8 Terminal portability,

Shall apply.

4.1.9 Subaddress

Shall apply.

4.1.10 MTP pause/resume

Shall apply.

4.1.11 CIC allocation

Shall apply.

4.2 Clarifications to ISUP supplementary services

Shall apply.

4.3 Handling of access information

Shall apply.

Note: Access information is generated at the ISDN terminal, and transferred transparently via the network. In case of analogue subscribers connected to an ISDN local exchange, these parameters are not used.

4.4 Clarifications for practical interconnections

Shall apply.

3. Exceptions and Clarifications to Annex A/Q.767: Functional Description of the ISDN User Part

A.1 General

The text is accepted.

A.2 Services supported by the ISDN User Part

Shall apply.

A.3 Services assumed from the Message Transfer Part

Shall apply.

A.4 End-to-end signalling

The text is accepted. End-to-end signalling is not applicable.

A.5 Future enhancements

Shall apply.

4. Exceptions and Clarifications to Annex B/Q.767: General Functions of Messages and Signals

B.1 Signalling messages

Shall apply.

Additional items:

B.1.9 Charge information message (CRG): Information sent in backward direction for accounting or call charging purposes.

B.1.27 Information message (INF): A message sent to convey information in association with a call, which may have been requested in an Information Request message.

B.1.28 Information Request message (INR): A message sent by an exchange to request information in association with a call.

B.1.43 Trunk Offer message (TKO): A message sent in forward direction indicating an operator's request for trunk offering and other operator's activity associated with it.

B.2 Signalling information

Shall apply.

Additional Items:

B.2.12 Calling party address request indicator: Information sent in the backward direction indicating a request for the calling party address to be returned.

B.2.13 Calling party address response indicator: Information sent in response to a request for the calling party address, indicating whether the requested address is included, not available or incomplete.

B.2.16 Calling party's category request indicator: Information sent in the backward direction indicating a request for the calling party's category to be returned.

B.2.17 Calling party's category response indicator: Information sent in response to a request for the calling party's category, indicating whether or not the requested information is included in the response.

B.2.19. Charge band number: Information sent in backward direction to indicate the zone number to be used for charging the call.

B.2.34.A End of optional parameters: The end of optional parameters field indicates that there are no more optional parameters in the message.

B.2.51.A Malicious call identification request indicator: Information sent in the backward direction to request the identity of the calling party for the purpose of the malicious call identification.

B.2.51.B Malicious call identification response indicator: Information sent in the forward direction to respond of an MCID request, and indicating whether or not the MCID information is available.

**5. Exceptions and Clarifications to Annex C/Q.767:
 Format and Codes**

C.1 General
 Shall apply.

C.2 Parameter formats and codes

C.2.1 Message type codes
 Shall apply.

Clarification: The following additional message types and codes shall be supported:

Message type	Reference	Code
Charge information	AB/this doc.	0 0 1 1 0 0 0 1
Information	14/Q.763	0 0 0 0 0 1 0 0
Information request	15/Q.763	0 0 0 0 0 0 1 1
Trunk offer	AA/this doc.	1 1 1 1 1 1 1 1
		1

C.2.2 Coding of the length indicator
 Shall apply.

C.2.3 Coding of the pointers
 Shall apply.

C.3 ISDN User Part parameters
 Shall apply.

C.3.1 Parameter names
 Shall apply.

Clarification: The following parameters shall also apply: information indicators (15), information request indicators (14), Charge band number (255).

C.3.2 Access transport
 Shall apply.

C.3.3 Automatic congestion level
 Shall apply.

C.3.4 Backward call indicators
 Shall apply.

C.3.5 Call modification indicators
 The text is accepted. This parameter is not used.

C.3.6 Call reference
 The text is accepted. This parameter is not used.

C.3.7 Called party number
 Shall apply.

Clarification to item b): The subscriber number (1) shall also apply.

C.3.8 Calling party number
 Shall apply.

Clarification to item b): The national (significant) number (3) and the subscriber number (1) shall

also apply.

C.3.9 Calling party's category

Shall apply.

Clarification: National operator (9) shall also apply.

C.3.10 Cause indicators

Shall apply.

Clarification: The "private network serving the local user" (1) and "public network serving the local user" (2) values of the location indicator shall also apply.

C.3.11 Circuit group supervision message type indicator

Shall apply.

C.3.12 Circuit state indicator

The text is accepted. This parameter is not used.

C.3.13 Closed user group interlock code

Shall apply.

Clarification: Either national or international interlock codes shall be used.

C.3.14 Connected number

Shall apply.

Clarification to item b): The national (significant) number (3) and the subscriber number (1) shall also apply.

C.3.15 Connection request

The text is accepted. This parameter is not used.

C.3.16 Continuity indicators

Shall apply.

C.3.17 End of optional parameters indicator

Shall apply.

C.3.18 Event information

Shall apply.

C.3.19 Facility indicator

The text is accepted. This parameter is not used.

C.3.20 Forward call indicators

Shall apply.

C.3.21 Information indicators

The text is replaced by: The format of the information indicators parameter field is shown below:

bits BA: Calling party address response indicator

00 calling party address not included

01 calling party address not available

10 spare

11 calling party address included

bit C: Spare

bit D: Malicious call identification response indicator

0 malicious call identification not provided

1 malicious call identification provided

bit E: Spare

bit F: Calling party's category response indicator

0 calling party's category not included

1 calling party's category included

bit G: Spare

bit H: Solicited indicator

0 solicited

1 unsolicited bits I-P: Spare

C.3.22 Information request indicators

The text is replaced by: The format of the information request indicators parameter field is shown below:

bit A: Calling party address request indicator

0 calling party address not requested

1 calling party address requested

bits BC: Spare

bit D: Calling party's category request indicator

- 0 calling party's category not requested
 - 1 calling party's category requested
- bits E-G: Spare
- bit H: Malicious call identification request indicator
- 0 malicious call identification not requested
 - 1 malicious call identification requested
- bits I-P: Spare

C.3.23 Nature of connection indicators

Shall apply.

C.3.24 Optional backward call indicators

Shall apply.

C.3.25 Optional forward call indicators

Shall apply.

C.3.26 Original called number

The text is accepted. This parameter is not used.

C.3.27 Range and status

Shall apply.

C.3.28 Redirecting number

The text is accepted. This parameter is not used.

C.3.29 Redirection information

The text is accepted. This parameter is not used.

C.3.30 Redirection number

The text is accepted. This parameter is not used.

C.3.31 Signalling point code

The text is accepted. This parameter is not used.

C.3.32 Subsequent number

Shall apply.

C.3.33 Suspend/resume indicators

Shall apply.

C.3.34 Transit network selection

The text is accepted. This parameter is not used.

C.3.35 Transmission medium requirement

Shall apply.

C.3.36 User service information

Shall apply.

C.3.37 User-to-user indicators

Shall apply.

Additional parameter:

C.3.AA Charge band number

The format of the Charge band number parameter field is shown below:

bits A-H: Charge band number information (For further study)

- 0 No charge
- 1-58 Periodic pulse metering or multimetering in begin of the call
- 59-60 Spare
- 61-70 Initial multimetering followed by periodic pulse metering
- 71-80 Periodic multimetering
- 81-100 Spare
- 101-110 Initial multimetering
- 111-255 Spare

C.4 ISDN User Part messages and codes

Shall apply.

Clarification: The following additional messages shall apply:

TABLE 14/Q.763 Message type: **Information**

Parameter name	Reference	Type	Length
----------------	-----------	------	--------

Message type	C.2.1	F	1
Information indicators	C.3.21	F	2
Calling party's category	C.3.9	O	3
Calling party number	C.3.8	O	5-12
Access transport	C.3.2	O	4- ?
End of optional parameters	C.3.17	O	1

TABLE 15/Q.763 Message type: **Information request**

Parameter name	Reference	Type	Length
Message type	C.2.1	F	1
Information request indicators	C.3.22	F	2

TABLE AA Message type: **Trunk offer**

Parameter name	Reference	Type	Length
Message type	C.2.1	F	1

TABLE AB Message type: **Charge information**

Parameter name	Reference	Type	Length
Message type	C.2.1	F	1
Charge band number	C.3.AA	F	1

6. Exceptions and Clarifications to Annex D/Q.767: Signalling Procedures

D.1 General

D.1.1 Relationship with other Recommendations

Shall apply.

Clarification: This specification concerns to the national connections only.

D.1.2 Numbering

Shall apply.

D.1.3 Address signalling

Shall apply.

D.1.4 Basic procedures

Shall apply.

D.1.5 Signalling methods

Shall apply.

D.1.6 Layout of Annex D

The text is accepted.

D.1.7 Interworking with other signalling systems or user parts

The text is accepted.

Note: Interworking procedures between ISUP-N and the national version of Signalling System R2 is specified in document CCS 0461-3.

D.2 Basic call control and signalling procedures

In order to keep consistency with point i) in section D.2.3.1.b the return of RLC in response to the reception of REL shall be corrected in fig. D-6/Q.767 and D-7/Q.767.

Note: Section 4.1/Q.767 and the added exceptions shall also apply.

D.2.1 Successful call set-up

D.2.1.1 Forward address signalling - en-bloc operation

D.2.1.1.1 Actions required at originating exchange

Shall apply.

Clarification to item a): Routing information is stored at the originating exchange. The selection

of the outgoing route will also depend on the calling party's category.

Clarification to item b): On national connections, the address information may be the local number (in case of local call) or the national number (in case of national call) also.

Clarification to item e): Through connection of the transmission path will be completed in the forward direction after receiving the Answer or Connect Message.

Clarification to item f): The using of timer (T7) is mandatory in the originating exchange.

D.2.1.1.2 Actions required at an intermediate exchange

Shall apply.

D.2.1.1.3 Actions required at the destination exchange

Shall apply.

D.2.1.2 Forward address signalling - overlap operation

D.2.1.2.1 Actions required at originating exchange

Shall apply.

Clarifications: See D.2.1.1.1 of this document.

D.2.1.2.2 Actions required at an intermediate exchange

Shall apply.

D.2.1.2.3 Actions required at the destination exchange

Shall apply.

D.2.1.3 Calling party number

Clarification: The text is replaced by:

The calling party number can either be included in the initial address message or requested by the destination exchange. (If the number is available, it is preferred to be included in the IAM.) If the calling party number is required at the destination exchange but is not included in the initial address message, the destination exchange may request the calling party number. The destination exchange will investigate the presence/absence of the calling party number parameter to determine whether a request is useful or not.

Further it may be necessary to withhold the sending of the address complete message until the calling party number has been successfully delivered. In case of interworking with signalling systems not supporting the presentation restriction indication (e.g. R2), the presentation restriction indicator is set to "presentation restricted".

D.2.1.4 Address complete message, connect message and call progress message

Shall apply.

Clarification to item D.2.1.4.4.c): In case of test calls or calls from a national operator, the Awaiting Answer Timer (T9) is not started.

D.2.1.5 Call progress

Shall apply.

Clarification: The Call Progress message may be sent after the Address Complete message.

D.2.1.6 Information messages

Clarification: The text is replaced by:

D.2.1.6.1 Requesting information

An *Information request* message may be sent to any exchange in the backward call establishment direction after receiving an *IAM* during call set-up.

D.2.1.6.2 Sending information

On sending an *Information request* message a timer (T33) is started. No second *Information request* message may be sent in the same direction until a response *Information* message is received. If the timer (T33) expires before the response message is received, see D.2.10.7 of this document. The response information may be sent as follows:

i) if all the information requested is available locally, then an *information* message containing all the required information is sent in response;

ii) if all the information is not available locally, but may be available remotely, then an *Information request* message may be sent to a subsequent exchange in the connection in an attempt to extract the information not locally available. (This *Information request* message may be delayed if one has already been sent and the response not yet received.) On receipt of a response, all the information necessary to respond to the original *Information request* message is sent in an *Information* message;

iii) if all the information is not available locally or remotely, then an *Information* message containing only the available information is sent and the requested but not delivered information is indicated as "not available", using either the indication in the information indicator or an appropriate coding in the requested parameter.

D.2.1.6.3 Receiving an Information message

lower signalling point code will start the selection from the lowest CIC and the other exchange starts the selection from the highest CIC.

D.2.10.2 Transmission alarm handling for digital interexchange circuits

Shall apply.

D.2.10.3 Reset of circuits and circuit groups

Shall apply.

D.2.10.4 Failure in the blocking/unblocking sequence

Shall apply.

D.2.10.5 Receipt of unreasonable and unrecognized signalling information messages

Shall apply.

D.2.10.6 Failure to receive a "Release complete" message - timer T1 and T5

Shall apply.

D.2.10.7 Failure to receive a response to an information request message

The text is replaced by:

If a response is not received in response to an Information request message before timer (T33) expires, the exchange will release the connection and the maintenance system is informed.

D.2.10.8 Other failure conditions

D.2.10.8.1 Inability to release in response to a release message

Shall apply.

D.2.10.8.2 Call-failure

Shall apply.

D.2.10.8.3 Abnormal release conditions

Shall apply.

D.2.10.9 Temporary trunk blocking (TTB) (national use)

The text is accepted. These procedures are not used.

D.2.10.10 Temporary trunk blocking before release of call

The text is accepted. These procedures are not used.

D.2.11 ISDN user part signalling congestion control

Shall apply.

D.2.12 Automatic congestion control

Shall apply.

D.2.13 Unequipped circuit identification code (national option)

The text is accepted. These procedures are not used.

D.3 End-to-end signalling

The text is accepted. These procedures are not used.

TABLE D-1/Q.767: Timers used in annex D

Shall apply.

Note: Timer values shall be accurate to within + or - 5% of nominal values.

Clarification: $T_6 = 90$ sec (default value)

$T_9 = 90$ sec (default value)

Additional timer:

T33 12-15s local signification

Start: when send Information request message

Stop: on receipt Information message

At expiry: release the call

**7. Exceptions and Clarifications to Annex E/Q.767:
ISDN Supplementary Services**

E.1 General

The text is accepted.

E.2 User-to-User Signalling Service (UUS)

Shall apply.

E.3 Closed User Group (CUG)

Shall apply.

Clarification to E.3.1: The data for each CUG that a user belongs to, are stored at the local

exchange to which the user is connected.

E.4 Calling Line Identity Presentation and Restriction Service (CLIP/CLIR)

Shall apply.

Clarification to E.4.1.1.2 The CLI not included in the IAM: If CLIP applied and the IAM indicated that the CLI may be available, an *Information Request* message is sent towards the originating exchange with the Information Request Indicator Parameter field bit set to calling party address requested. When receiving the request for the calling party address and the CLI is available (fully or partially), the originating/interworking exchange sends an *Information* message containing the available CLI with the appropriate indications. If the CLI is not available or not allowed to be forwarded to, the response will be an *Information* message including the indicator CLI is not available. If the CLI is received in the destination exchange with indications that "presentation restricted", the received information is not sent to the called party. In case of override category, the Information Request message is sent with the indications "calling address requested" and "MCID requested".

E.5 Direct Dialling In (DDI)

This service is implicitly supported.

E.6 Call Forwarding services

The text is accepted. These services are not applicable.

E.7 Time-out table

The text is accepted. These procedures are not used.

ANNEX E-A: Signalling procedures for the explicit invocation of User-to-User Signalling services

The text is accepted. These procedures are not used.

E.8 Connected Line Identification Presentation and Restriction Service (COLP/COLR)

Shall apply.

8. Additional Supplementary Services

8.1 Malicious Call Identification (MCID)

Based on ITU-T Report COM XI-R 152-E

8.1.1 Definition

The text is accepted.

8.1.2 Description

8.1.2.1 General description

The text is accepted.

Clarification: The hold option shall not apply.

8.1.2.2 Specific terminology

The text is accepted.

Clarification: The definition of the Identification Request and Identification Response message is deleted. For these purposes the Information Request and Information messages are used respectively.

8.1.2.3 Qualification on the applicability to telecommunication services

The text is accepted.

8.1.2.4 State definitions

Shall not apply.

Clarification: For further information see D.2.1.6 of this document.

8.1.3 Operational requirements

The text is accepted.

8.1.4 Coding requirements

8.1.4.1 Messages

The item is replaced by:

Information message

Information request message

Please refer to Section C.4 of this document.

8.1.4.2 Parameters

The item is replaced by:

Information indicators

Information request indicators

Please refer to Section C.3 of this document.

8.1.5 Signalling requirements

Clarification: The Identification request and Identification response messages are changed to the Information request and Information messages respectively. The MCID request indicator is the bit H of the Information request indicators parameter. The MCID response indicator is the bit D of the information indicators parameter.

8.1.5.1 Activation/deactivation/registration

The text is accepted.

8.1.5.2 Invocation and operation

8.1.5.2.1 Actions at the originating local exchange

The text is accepted.

8.1.5.2.2 Actions at the transit exchange

Shall apply.

8.1.5.2.3 Actions at the outgoing international exchange

Shall not apply.

Note: The MCID supplementary service is not supported by the international network.

8.1.5.2.4 Actions at the incoming international exchange

8.1.5.2.4.1 Normal operation

The text is replaced by: The outgoing international exchange shall discard the received Information request message.

8.1.5.2.4.2 Exceptional procedures

The text is replaced by: No exceptional procedures are identified.

8.1.5.2.5 Actions at the destination local exchange

Shall apply.

8.1.6 Interaction with other Supplementary Services

Shall apply.

8.1.7 Interaction with other networks

Shall apply.

8.1.8 Signalling flows

Shall apply.

8.1.9 Parameter values (timers)

Shall apply.

Clarification: $T_{MCID} = T_{33} = 12 - 15 \text{ sec}$