1

INSTITUTE OF TELECOMMUNICATIONS

TECHNICAL REQUIREMENTS

ENTATION OF CCITT SIGNALLING SYSTEM No. 7

I NATIONAL PUBLIC TELEPHONE/ISDN NETWORK

Contents

1. Introduction

1.1. Subject

These requirements specifies the version of CCITT Signalling System no. 7 (SS no. 7) to be implemented in digital telephone/ISDN exchanges installed in the Polish National Public Telephone/ISDN Network.

The requirements will be updated in the future, conforming to ETSI standards on ISUP version 2.

1.2. Scope

The specified version consists of Message Transfer Part and ISDN User Part. Other parts of SS no. 7 are excluded (see Fig. 1).

1.3. Field of application

The specified national version of SS no.7 will be applied between local, transit, combined and international digital exchanges on digital trunks. International interfaces should be established as specified in the next section.

1.4. General reference to CCITT Recommendations and ETSI standards

The international interface of CCITT Signalling System no.7 should be established conforming to ETSI standards ETS 300 008 (MTP) and ETS 300 121 (ISUP version 1). International interfaces which cannot be established on SS7 according to the ETSI standards need bilateral agreements.

The specified national version is a subset of elements specified in selected ETSI standards and CCITT Recommendations (see par. 2.1). A few necessary national elements are introduced only in permitted places, e.g. on national or spare bits. For detailed references see paragraph 4.

1.5. Interworking with different signalling systems

The digital exchange should provide interworking between SS no. 7 signalling and all signalling systems used in the environment of the exchange. Requirements for interworking with national versions of signalling system R2 and SS7 version 1/90 (MTP and TUP) are based on ETSI draft standard DE/SPS-6003 and are included in this document.

Note: The interworking with TUP (Polish version) is consdered only between ACMM in Warsaw and the transit S12 digital exchanges in Warsaw local network. It means that only for the Warsaw ACMM the interworking ISUP – TUP will be required if TUP is selected.

2. Basic references

1. CCITT Recommendations:
   Q.700, Q.701, Q.702, Q.703, Q.704, Q.761, Q.762, Q.763, Q.764, Q.766, Q.791 (Blue Book, UIT, Geneva 1989), Q.767 (Doc.COM XI-R 51-E).

3. ETSI standards:
    ETS 300 008 (T/S 43-01) CCITT signalling system number 7; Message
    Transfer Part (MTP) to support international interconnection.
    ETS 300 121 (T/S 43-14) Integrated Services Digital Network
    (ISDN); Application of the ISDN user part of CCITT Signalling
    System No. 7 for international ISDN interconnections; CCITT
    Recommendation Q.767 draft edition 3:1990 - modified (ISUP
    version 1).
    DE/SPS-6003 Signalling interworking specification.

4. Temporary technical requirements for implementation of CCITT
    signalling system no. 7 in Polish National Telephone Network,
    version 1/90A (MTP and TUP).

5. Technical Requirements for Digital Switching Systems in the
    Polish National Public Telecommunications Network. Basic
    Requirements. Institute of Telecommunications, Warsaw, January
    1991.
    (Wymagania techniczne na cyfrowe systemy komutacyjne w Polskiej
    krajowej publicznej sieci komutacyjnej. Wymagania podstawowe.
    Instytut Łączności, Warszawa, styczeń 1991).

3. General National Requirements

The system should comply to the indicated ETSI Standards and CCITT
Recommendations.

Note 1. The contents of this chapter is for general, introductory
information only. For detailed references to ETSI Standards and
CCITT Recommendations see par. 4.

Note 2. This requirements should be understood in the framework
of CCITT Recommendations Q.700 and Q.701.

3.1. Message Transfer Part

ETSI Standard ETS 300 008 (T/S 43-01) is used as a general guideline.
Detailed requirements are based on CCITT Recommendations Q.700, Q.701,
Q.702, Q.703 and Q.704 (Blue Book).

3.1.1. Signalling Data Link (Level 1)

The national system should comply to the CCITT Recommendation Q.702
(Blue Book) with the following deviations:

1. Digital data links derived from the 2048 kbit/s digital paths are
    applicable.
2. Only time slot 16 of 2048 kbit/s digital paths will be used for
    signalling data links.

3.1.2. Signalling Link (Level 2)

The national system should comply to the CCITT Recommendation Q.703
(Blue Book) with the following remarks taken into account:

1. Basic error correction method is required in national
    transmission links. PCR method could be required in particular
    international links.
2. One congestion threshold is used for level 2 flow control.

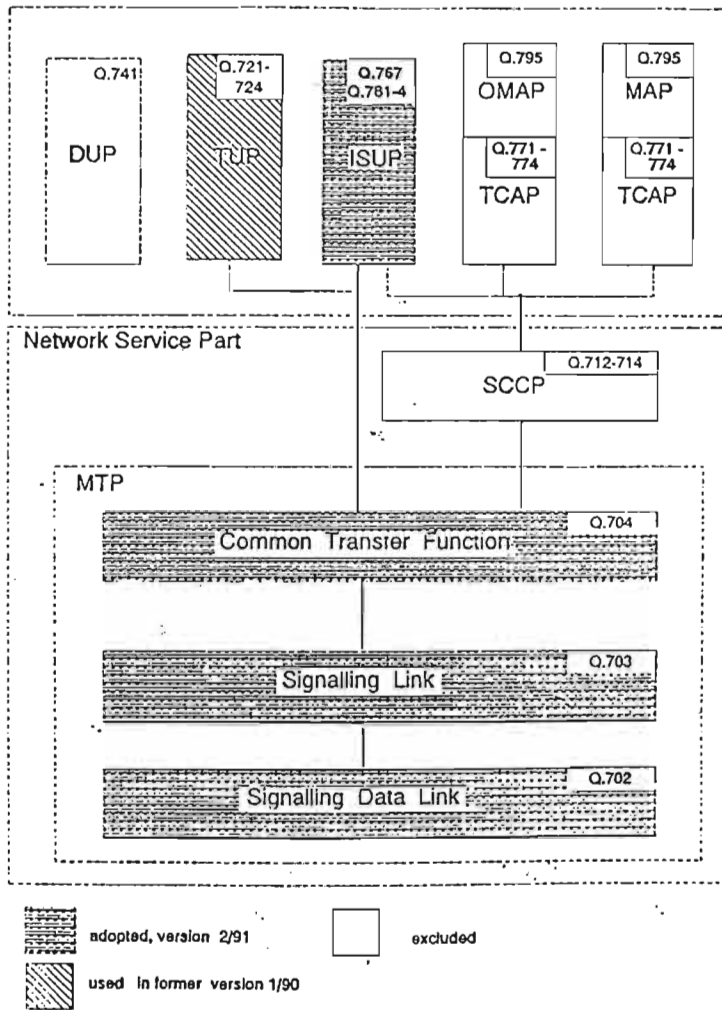| TECHNICAL REQUIREMENTS DIGITAL SWITCHING SYSTEMS Signalling system no. 7	IL - 94 - CF - A7
SS7 ANNEX 7	issue: 1 date : 01-02-1991

Fig. 1 National version of signalling system no 7 '91

3.1.3. Signalling Network (Common Transfer Functions – CTF, Level 3)

The national system should comply to the CCITT Recommendation Q.704 (Blue Book) with the following taken into account:

Requirements are based on CCITT Recommendation Q.704 (Blue Book).

1. Associated and quasi-associated signaling modes are to be provided, but separate STPs are not required.
2. Automatic allocation of signalling links and signalling terminals is not required.
3. The following national options are not required:
   - signalling route restricted,
   - transfer restricted,
   - signalling-route-set-congestion-test.
4. Only one congestion onset and one congestion abatement threshold is required.

Primitives and parameters of the MTP should be as recommended in CCITT Recommendation Q.701, subsections 1.3.2, 8 – 8.4; subsection 8.5 (Restart) is excluded.

3.2. ISDN User Part (version 1)

3.2.1. General

The national system should comply to ETSI Standard ETS 300 121 (T/S 43–14) (CCITT Recommendations Q.767 (Doc. COM XI-R 51-E)) with the following requirements taken into account:

1. The continuity check is not required in national section of the network.
2. For national calls the en block operation is used (for international calls the overlap operation may be used) – see 3.2.2; Nature of address indicator may be 'subscriber number', 'national (significant) number' or 'international number'.
3. Echo control procedures are not required in the national network.
4. Method 1 of preventive actions is required in the national network.
5. Charging information message is required and specified (see 4.4).

Note. It may be permitted for subnetworks (e.g. formed with exchanges from one supplier) in the Polish National Public Digital Network to provide additional services not required and specified by this document. In such cases outgoing gateway exchanges of the subnetworks have to provide proper screening. If proper screening is not feasible bilateral agreements are necessary with the provider of any incoming gateway exchange interconnected with the subnetwork. This would imply the necessity to add to section 4 a remark: "unrecognized messages and parameters can be expected from some incoming international and national signalling relations".

TECHNICAL REQUIREMENTS DIGITAL SWITCHING SYSTEMS Signalling system no. 7 SS7 ANNEX 7	IL – 94 – CF – A7 issue: 1 date : 01-02-1991

3.2.2. Called subscriber number sending methods

The called subscriber number should be sent:

- national call: by en-block method (interurban prefix 0 should not be sent);

- international call: by overlap method in two parts:
                       in IAM – first 6 digits (international prefix 00 not included),
                       in SAM – the rest of the digits and ST signal,
                       or by en-block method.

Note: Called subscriber number sending method in international calls is a subject of bilateral agreements (see Q.767, Table 5/Q.767, sheet 1).

3.2.3. Interworking of signalling systems

The interworking between the following inter-exchange signalling systems in the Polish network are specified in detail:
-    Signaling schemes using the register signalling system R2 (National Version – see par.2, point 5),
-    SS7 with TUP (National Version 1/90 – see par. 2, point 4),
-    SS7 with ISUP version 1 (conforming to this requirements).

Interworking of register signalling system R2 (National Version – see par.2 point 5) with SS no.7 (ISUP version 1) should be established for 'speech' and '3.1 kHz audio' bearer services conforming to guidelines given in Q.767, in ETSI draft standard DE/SPS-6003 (section 2 and 5) and requirements given in section 5 of this document.

Supplementary services requiring other information than available in R2 signalling are not supported.

The Calling subscriber number should be send in case of interworking from R2 to SS7 but the presentation indicator (§ 3.8) should be Presentation not allowed.

Interworking of signalling system No. 7 with TUP (National Version 1/90 – see par.2 point 4) with SS no.7 (ISUP version 1) should be established for '64 kbit/s unrestricted', 'speech' and '3.1 kHz audio' bearer services conform to guidelines given in Q.767, in ETSI draft standard DE/SPS-6003 (section 3 and 6) and requirements given in section 6 of this document.

Interworking of signalling system R2 (National Version – see par.2 point 5) with TUP (National Version 1/90) is specified in temporary requirements stated in par.2, point 4.

Interworking of signaling schemes using decadic dialling is limited to:
§ 3.7 e) Called party number = address digits;
§ 3.9   Calling party category = ordinary calling subscriber;
§ 3.20   Forward call indicator = call to be treated as national call;
§ 3.8 e) Calling party number = address not available.

4. References to ETSI Standards and CCITT Recommendations

4.1. Requirements on level 1

SIGNALLING DATA LINK

Conformity to CCITT Recommendation Q.702, version 1988 (Blue Book) and ETSI standard ETS 300 008 is required with following modifications and exceptions (the paragraph numbers refers to Q.702):

§ 1.3	Only signalling data links derived from the 2048 kbit/s digital paths are applicable.
§ 1.4	Not required.
§ 1.5	Only terrestrial links in the national network are used.
§ 2.1.2	Not required.
§ 2.1.3	Not required.
§ 2.2	Not required.
§ 4	As only digital signalling links derived from 2048 kbit/s exchange interface will be used, only point C is specified.
§ 4.4	Not required.
§ 4.5	Not required.
§ 4.6	(different implementations than above) – Not allowed.
§ 5.2	(Signalling data link derived from the 8448 kbit/s digital path) –Not required.
§ 5.3	Not used in the Polish network.
§ 5.5	Not used in the Polish network.
§ 6	(Analogue signalling data link) – Not required.

4.2. Requirements on level 2

SIGNALLING LINK

Conformity to CCITT Recommendation Q.703, version 1988 (Blue Book) and ETSI standard ETS 300 008 is required with the following modifications and exceptions (the paragraph numbers refers to Q.703):

§ 1	(General) – in the national network only basic method for error-correction is required. PCR method could be required in particular international links.
§ 2.3.8	The maximum possible length of signalling information field should be 272 octets.
§ 5.3.3	Not required.
§ 6	Not required.
§ 8	(Processor outage) – Use text from section 4 of ETS 300 008.

4.3. Requirements on level 3

SIGNALLING NETWORK FUNCTIONS AND MESSAGES

Conformity to CCITT Recommendation Q.704, version 1988 (Blue Book) and ETSI standard ETS 300 008 is required with the following modifications and exceptions (the paragraph numbers refers to Q.704):

§ 1.3.4 link set activation, automatic allocation (and Annex A) are not required.

§ 1.3.5 "transfer-restricted" and "signalling-route-set-congestion-test" are not required.

§ 2.2.1 Only the standard routing label should be used.

§ 2.3.2 Between signalling points only one link set should be used.

§ 2.3.5 Only one congestion priority should be used;
in § 2.3.5.1, in the first sentence, the word "international" is deleted; the second and third subparagraphs are deleted also;
§ 2.3.5.2 is not required.

§ 3.1.3 subparagraph (b): link set activation and automatic allocation of signalling terminals and signalling data links are not required.

§ 3.1.3 subparagraph (c): transfer restricted procedure and signalling-route-set congestion-test procedure are not required.

§ 3.4.3 (Signalling route restricted) – Not required.

§ 3.5.3 Not required.

§ 3.6 (Status of signalling points) – Only one congestion priority should be used; no congestion states exists.

§ 3.7 (Procedure used in connection with point status changes) – not required.

§ 3.8.2.1 subparagraph (b): only one congestion thresholds is used.

§ 3.8.2.2 Not required.

§ 3.8.2.3 Not required.

§ 3.8.4 (Congestion status of signalling route sets), subparagraph (b) (multiple levels) and (c) (multiple levels without priority) are not required.

§ 3.8.5.2 (signalling-route-set-congestion-test procedure) is not required.

§ 4.1.2 signalling route restricted is not required.

§ 4.7 (Signalling route restriction) – Not required.

§ 4.8 Not required.

§ 5.6.2 Add at the and of section 5.6.2 of Q.704 the proper text from section 4 of ETS 300 008.

§ 6.3.6 Add the Note from section 4 of ETS 300 008.

§ 9 (Signalling point restart) – Not required.

§ 11.2.3.1 Add at the and of section 1.2.3.1 of Q.704 the proper text of (ii)b) from section 4 of ETS 300 008.

§ 11.2.4 (Signalling route set congestion (National option with congestion priorities)) – Not required.

§ 11.2.5 (Signalling route set congestion (National options without congestion priorities) (multiple levels)) – Not required.

§ 11.2.6 (Signalling point/signalling transfer point congestion) – Not required.

§ 11.2.7 (MTP user flow control) – Not required.

§ 12.1.2 automatic allocation of signalling terminals and signalling data links are not required.

§ 12.3 (Signalling link management procedures based on automatic allocation of signalling terminals) – Not required.

§ 12.4 (Signalling link management procedures based on automatic allocation of signalling data links and signalling terminals) – Not required.

§ 12.5 (Automatic allocation of signalling terminals) – Not required.

§ 12.6 (Automatic allocation of signalling data links) – Not required.
§ 13.1 (General) transfer restricted is not required.
§ 13.4 (Transfer restricted) – Not required.
§ 13.7 (Transfer controlled (National Option with congestion priorities)) – Not required.
§ 13.8 (Transfer controlled (National option without congestion priorities)) – Not required.
§ 13.9 (Signalling route set congestion test (National option)) – Not required.
§ 15.9 (Transfer restricted message) – Not required.
§ 15.12 (Traffic restart allowed message) – Not required.
§ 15.13 (Signalling data link connection order message) – Not required.
§ 15.14 (Signalling data link connection acknowledgement message) – Not required.
§ 15.16 (Signalling route set congestion test) – Not required.
§ 15.17 (User part unavailable message) – Not required.

4.4. Requirements on level 4.

ISDN USER PART (version 1)

Conformity to ETSI standard ETS 300 121 (T/S 43-14) (equivalent to CCITT Recommendation Q.767 (Doc. COM XI-R 51-E)) is required for international interconnections between the Polish National digital Telephone/ISDN Public Network and other digital Telephone/ISDN networks (if this interconnections do not require different solutions).

For national interconnections between digital Telephone/ISDN exchanges to which this version of national requirements apply, the following modifications and exceptions are required.

ETS 300 121

In section 1 (Scope) any instance of the word 'international' should be deleted.

Recommendation Q.767.

In section 1 and 2 the word 'international' should be deleted.

In subsection 3.3 no remark is made concerning messages and parameters marked "for national use" in CCITT Recommendation Q.762. In this requirements such messages and parameters are marked "not used" with the following exception:

1.9 Charge information message (CRG) (national use).

Charge information message is used (as specified in Q.762) to send charge information from international gateway exchanges (and in future from special service centers) to outgoing exchange, responsible for call charging.

Continuity checks are not required in national section of the network. In a consequence, to table 2/Q.767 (sheet 1) two rows are added:

| 1.20 | COT | not used in the national network |
| 1.21 | CCR | not used in the national network |

and to table 2/Q.767 (sheet 2) also two rows are added:

| 2.30 | Continuity check indicator | not used in the national network |
| 2.31 | Continuity indicator | not used in the national network |

In Table 3/Q.767 (Sheet 1) an asterisk * at Nature of address should be deleted (see note to Annex C, point C.3.8).

In Table 3/Q.767 (Sheet 2) an asterisk * at Nature of address should be deleted (see note to Annex C, point C.3.14).

In subsection 3.4 the remark "not used" means that messages, parameters or indicators should not be generated at any exchange in national network.

Messages, parameters and parameter values marked "for national use" in CCITT Recommendation Q.763 are marked "not used" in this requirements with the following exception:

Charge information (format below) Code: 00110001.

In subsection 3.5 the word "international" should be deleted. Procedure marked "for national use" in CCITT Recommendation Q.764 should be marked "not used" in these requirements.

In section 3.6, in Figure 8/Q.767 (sheets 1 and 2) and 11/Q.767 the note in the frame should be deleted.

To section 4.1.6 (Continuity check) a note should be added: "in national section of digital connections continuity checks do not have to be performed" (it is assumed that fault indication and alarms should cover, and be passed through, the digital transmission facility connecting any pair of national digital telephone/ISDN exchanges).

Annex A (to Q.767)

Notes "(this section is not applicable to the international interface)" should be replaced by "(this section is not applicable)".

Annex B (to Q.767)

Notes "(this section/cause is not applicable to the international interface)" should be replaced by "(this section/cause is not applicable)".

In the introduction the word 'INTERNATIONAL' should be replaced by 'NATIONAL AND INTERNATIONAL'.

Subsection B.1.9 Charge information message (CRG) (national use) should read as specified in Q.762: Information sent in either direction for accounting and/or call charging purposes. In Table B-2/Q.767 row with "Charge information" should not be deleted.

Subsections B.1.20 (COT), B.1.21 (CCR), B.2.30, B.2.31 and B.2.34 are applicable to the international interface only.

In subsection B.2.35 the word 'may' should be replaced by 'must'.

Annex C (to Q.767)

All notes "(this section is not applicable to the international interface)" should be replaced by "(this section is not applicable)".

Subsection C.3.7 Called party number, point b). Nature of address indicator: code '0000001 subscriber number' will be used in national connections.

Subsection C.3.8 Calling party number, point b) Nature of address indicator: codes '0000001 subscriber number' and '0000011 national (significant) number' will be used in national connections.

Subsection C.3.14 Connected number, point b) Nature of address indicator: codes '0000001 subscriber number' and '0000011 national (significant) number' will be used in national connections.

TECHNICAL REQUIREMENTS DIGITAL SWITCHING SYSTEMS Signalling system no. 7 SS7 ANNEX 7	IL – 94 – CF – A7 issue: 1 date : 01-02-1991

In Table C-3/Q.767 row with "Charge information" should not be deleted and read:

Charge information   C-3.39 [PL]   00110001

New subsection (3.39 [PL]) should be added:

C.3.39 [PL] Charge information

The format of charging information parameter field is given in Fig. C-1 [PL].

	8	7	6	5	4	3	2	1
1	H	G	F	E	D	C	B	A
2	P	O	N	M	L	K	J	I

Fig. C-1 [PL]

The following codes are used in this parameter field:

Bits   B A: Tariff type indicator
       0 0 Charge free
       0 1 tariff number present in tariff code parameter (2)
       1 0 tariff code parameter (2) contains number of charging units
       1 1 spare
bits   C-H: Spare

Bits I-P indicate in binary form the tariff number or a number of charging units (bit I is the least significant bit).

In section 4 new message type definition should be added:

Message type: Charge information (for national use only)

Parameter	Reference	Type	Length (octets)
Message type	C-2.1	F	1
Charging information	C-3.39 [PL]	F	2

Table C-PL

Annex D (to Q.767)

Notes "(this section is not applicable to the international interface)" should be replaced by "(this section is not applicable)".

In subsection D.1.2 the word 'international' should be deleted.

§ D.2.1.1   For national calls the en block operation is used.
§ D.2.1.1   For international calls also the overlap operation can be used upon bilateral agreements.
§ D.2.1.1.1   In point b), the phrase 'On national connections, the address information may be the local number or the national (significant) number.' should be restored.

§ D.2.1.2.1   In point b), the phrase 'On national connections, the address information may be the local number or the national (significant) number.' should be restored.

§ D.2.1.6   (Information messages) Procedure specified in Q.764 applies for charging message (national options). This message should be sent before Answer message.

§ D.2.1.8   A continuity check of the circuit in the national network is not required.

§ D.2.8   Echo control procedures are not required in the national network.

§ D.2.10.1.3   (Preventive action) Method 1 is required in the national network.

§ D.2.1.11.2   Network charging messages (national option)[PL]
New text should be added:

In order to charge international calls, the international exchange should send a Charge information message with a two-digit tariff number to the originating exchange responsible for charging. This mesage will always be sent before the Address complete message is returned.

The originating exchange responsible for charging for the subordinated exchange should send Charge information message with number of charging units, accordingly to the analysis of called subscriber number or tariff number received from international exchange, periodically during the call, conform to the mode determined by network operator.

Annex E (to Q.767)

Notes "(this section is not applicable to the international interface)" should be replaced by "(this section is not applicable)".

In Figure E-16/Q.767 (sheets 1 and 2) and E-19/Q.767 the note in the frame should be deleted.

5. Interworking of SS7 (ISUP version 1) with R2 Register Signalling

In case of an incoming circuit with R2 register signalling and an outgoing circuit with SS No.7 signalling all the information required in the IAM message should be requested by R2 signalling before the IAM message should be send.

The information conversion should be done according to tables 1 and 2.

TECHNICAL REQUIREMENTS DIGITAL SWITCHING SYSTEMS	IL – 94 – CF – A7
Signalling system no. 7	issue: 1
SS7 ANNEX 7	date : 01-02-1991

Table 1

Forward register signals	
Signalling System no.7 - ISUP	Signalling System R2
Address signals /digits 1... 0/ § 3.7 e/ Called party number or § 3.8 g/ Calling party number	I-1..I-0 Address signals
§ 3.7 e/ Called party number Address signal ST	I-15 End of pulsing
§ 3.9 Calling party's category - ordinary calling subscriber § 3.20 Forward call indicator bit A=0; call to be treated as a national call	II-1 Subscriber without priority
§ 3.9 Calling party's category - ordinary calling subscriber § 3.20 Forward call indicator bit A=1; call to be treated as an international call	II-7 Subscriber /or operator/ without forward transfer facility in interna - tional network
§ 3.9 Calling party's category -calling subscriber with priority § 3.20 Forward call indicator bit A=0; call to be treated as a national call	II-2 Subscriber with priority
§ 3.9 Calling party's category -calling subscriber with priority § 3.20 Forward call indicator bit A=1; call to be treated as an international call	II-9 Subscriber with priority in international network
§ 3.9 Calling party's category -test call § 3.20 Forward call indicator bit A=0; call to be treated as a national call	II-3 Maintenance equipment
§ 3.9 Calling party's category -national operator [PL] code = 00001001 § 3.20 Forward call indicator bit A=0; call to be treated as a national call	II-5 Operator
§ 3.9 Calling party's category -operator, any language § 3.20 Forward call indicator bit A=1; call to be treated as an international call	II-10 Operator with forward transfer facility in international network

Table 1 (cnt.)

§ 3.9 Calling party's category -data call /voice band data/ § 3.20 Forward call indicator bit A=0; call to be treated as a national call	II-6 Data transmission
§ 3.9 Calling party's category -data call /voice band data/ § 3.20 Forward call indicator bit A=1; call to be treated as an international call	II-8 Data transmission in international network
§ 3.9 Calling party's category – payphone § 3.20 Forward call indicator bit A=0; call to be treated as a national call	II-11 Paypnone [PL]
§ 3.9 Calling party's category -ordinary calling subscriber § 3.20 Forward call indicator bit A=0; call to be treated as a national call Remark: this is a result of reception of II-12. On sending only II-1 is possible	II-12 Category unknown [PL]

Note 1: § no. refers to CCITT Rec. Q.763/Q.767

Note 2: [PL] marks national signals code in Polish Public Telephone Network

Table 2

Backward register signals	
Signalling System no.7 - ISUP	Signalling System R2

Cause value:
/27/ Destination out of order
/31/ Normal, unspecified
/34/ No circuit available
/38/ Network out of order
/41/ Temporary failure
/42/ Switching equipment
    congestion
/44/ Requested circuit /channel/
    not available
/65/ Bearer capability not
    implemented
	A-4/B-4 Congestion on the
	national network
	
	Note: When B-4 is received
	it has to be translated into
	cause value = 42

§ 2.1   Message address complete
§ 3.4 Backward call indicator = .
    BA = charge
    DC = no indication
	A-6 Address complete, charge,
	   set-up speech conditions

§ 1.9 Charge information message see p. C.3.39[PL] of this doc.	A-10 Changeover to group III and C signals C-1 to C-10 Tariff number digits [PL]
Only when B-1 received: § 2.1 Message address complete § 3.4 Backward call indicator: BA= charge; DC=subscriber free	B-1 Malicious call trace only when calling party number was not received [PL]

§ 3.10 Cause value =
    e/ Class 000 and 001
      /4/ Send special informa-
        tion tone
      /22/ Number changed
	B-2 Send special information
	tone
	Note: When B-2 is received
	it has to be translated into
	cause value = 4

§ 3.10 Cause value =
    e/ Class 000 and 001
      /17/ User busy
	B-3 Subscriber line busy

§ 3.10 Cause value =
    e/ Class 000 and 001
      /1/ Unallocated number
      /5/ Misdialled trunk
        prefix
  /28/ Address incomplete
	B-5 Unallocated number
	
	Note: when B-5 is received
	it has to be translated into
	cause value = 1

§ 2.1 Message address complete
§ 3.4 Backward call indicator =
    BA = charge
    DC = subscriber free
	B-6 Subscriber line free,
	   charge

cd. Table 2

§ 2.1 Message address complete § 3.4 Backward call indicator = BA = no charge DC = subscriber free	B-7 Subscriber line free, no charge
§ 3.10 Cause value = e/ Class 000 and 001 /27/ Destination out of order	B-8 Subscriber line out of order
§ 3.10 Cause value = e/ Class 000 and 001 /3/ No route to destination /21/ Call rejected /29/ Facility rejected	B-10 Access barred [PL] Note: when B-10 is received it has to be translated into cause value = 21

Note 1: § no. refers to CCITT Rec. Q.763/Q.767

Note 2: [PL] marks national signals code in Polish Public Telephone Network

TECHNICAL REQUIREMENTS DIGITAL SWITCHING SYSTEMS Signalling system no. 7 SS7 ANNEX 7	IL - 94 - CF - A7 issue: 1 date : 01-02-1991

6. Interworking of SS7 (ISUP version 1) with SS7 (TUP)

- Table 3

Forward register signals	
Signalling System no.7 – ISUP	Signalling System no.7 – TUP
Address signals /digits 1... 0/ § 3.7 e/ Called party number or § 3.8 g/ Calling party number	Address signals /digits 1...0/
§ 3.7 e/ Called party number Address signal ST	End of pulsing /ST/
§ 3.9 Calling party's category – ordinary calling subsciber § 3.20 Forward call indicator bit A=0; call to be treated as a national call	Ordinary calling subscriber
§ 3.9 Calling party's category – ordinary calling subscriber § 3.20 Forward call indicator bit A=1; call to be treated as an international call	Ordinary calling subscriber
§ 3.9 Calling party's category – calling subscriber with priority § 3.20 Forward call indicator bit A=0; call to be treated as a national call	Calling subscriber with priority
§ 3.9 Calling party's category – calling subscriber with priority § 3.20 Forward call indicator bit A=1; call to be treated as an international call	Calling subscriber with priority
§ 3.9 Calling party's category – test call § 3.20 Forward call indicator bit A=0; call to be treated as a national call	Test call
§ 3.9 Calling party's category –national operator [PL] code = 00001001 § 3.20 Forward call indicator bit A=0; call to be treated as a national call	National operator [PL]
§ 3.9 Calling party's category – operator, any language § 3.20 Forward call indicator bit A=1; call to be treated as an international call	Ordinary calling subscriber

Table 3 (cnt.)

§ 3.9 Calling party's category
   - data call /voice band data/
§ 3.20 Forward call indicator
   bit A=0; call to be treated
   as a national call
	Data call

§ 3.9 Calling party's category
   - data call /voice band data/
§ 3.20 Forward call indicator
   bit A=1; call to be treated
   as an international call
	Data call

§ 3.9 Calling party's category
   - payphone
§ 3.20 Forward call indicator
   bit A=0; call to be treated
   as a national call
	Payphone

§ 3.9 Calling party's category
   - ordinary calling subscriber
§ 3.20 Forward call indicator
   bit A=0; call to be treated
   as a national call
	Ordinary calling subscriber
	/see remark for ISUP/

Note 1:   § no. refers to CCITT Rec. Q.763/Q.767

Note 2:   [PL] marks national signals code in Polish Public Telephone Network

Backward register signals	
Signalling System no.7 – ISUP	Signalling System no.7 – TUP

Cause value:
/27/ Destination out of order
/31/ Normal, unspecified
 	
/34/ No circuit available
 	
/38/ Network out of order
/41/ Temporary failure
/42/ Switching equipment
     congestion
/44/ Requested circuit /channel/
     not available
/65/ Bearer capability not
     implemented
	LOS Line-out of service
	CFL Call failure
	┌ NNC National network
	─┤ congestion
	└ CGC Circuit group congestion
	NNC National network congestion
	CFL Call failure
	SEC Switching equipment
	    congestion
	NNC National network congestion
	
	DPN Digital path not provided

§ 2.1 Message address complete
§ 3.4 Backward call indicator =
       BA = charge
       DC = no indication
	Address complete, charge ADC

§ 1.9 Charge information message see p.C.3.39 [PL] of this doc.	discarded (no subject to interwork)
discarded (no subject to inter- work)	Malicious call identification GRQ

§ 3.10 Cause value =
       e/ Class 000 and 001
          /4/ Send special informa-
              tion tone
          /22/ Number changed
	Send special information
	tone SST

§ 3.10 Cause value =
       e/ Class 000 and 001
          /17/ User busy
	Subscriber busy SGB

§ 3.10 Cause value =
       e/ Class 000 and 001
          /1/ Unallocated number
          /5/ Misdialled trunk
              prefix
          /28/ Address incomplete
	Unallocated number UNN

§ 2.1 Message address complete
§ 3.4 Backward call indicator =
       BA = charge
       DC = subscriber free
	Address complete subscriber
	free, charge AFC

§ 2.1 Message address complete
§ 3.4 Backward call indicator =
       BA = no charge
       DC = subscriber free
	Address complete, subscriber
	free, no charge AFN

§ 3.10 Cause value =
   e/ Class 000 and 001
      /27/ Destination out of
           order
	Line out of service LOS

§ 3.10 Cause value =
   e/ Class 000 and 001
      /3/ No route to destination
      /21/ Call rejected
      /29/ Facility rejected
	Access barred ACB

Note 1:   § no. refers to CCITT Rec. Q.763/Q.767

Note 2:   [PL] marks national signals code in Polish Public Telephone Network
           ----

TECHNICAL REQUIREMENTS DIGITAL SWITCHING SYSTEMS Signalling system no. 7 SS7 ANNEX 7	IL - 94 - CF - A7 issue: 1 date : 01-02-1991	