
SS#7 PROTOCOL SET (ANSI)

Reference Manual

IDACOM

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PACKARD**

SS#7 PROTOCOL SET (ANSI)

Reference Manual

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SUPPORTED PROTOCOL SETS

A number of SS#7 Protocol Sets are available to support all monitor and simulation tests. Currently supported are:

- 1988 CCITT Recommendations
- 1988 ANSI Standards
- 1988 Telecom Canada Standards
- 1988 Hong Kong Telecom Standards
- 1987 1 TR 7 Standards

Contact your IDACOM/HP sales representative to either purchase additional sets and/or update existing protocol sets.

The following table contains a complete list of all currently available protocol sets and the corresponding file names, version numbers, and release dates.

Protocol Set	Description	Release Date	Version #
CCITT_88	1988 CCITT Q.7xx Recommendations		
CCITT_LINK88.T	CCITT MTP Level 2, Q.703, 1988	November 1990	1.0
CCITT_NET88.T	CCITT MTP Level 3, Q.704, 1988	November 1990	1.0
CCITT_SCCP88.T	CCITT SCCP, Q.713, 1988	November 1990	1.0
CCITT_TUP88.T	CCITT TUP, Q.724, 1988	November 1990	1.0
CCITT_ISUP88.T	CCITT ISDN User Part, Q.763, 1988	November 1990	1.0
CCITT_TCAP88.T	CCITT TCAP/OMAP, Q.773/Q.795, 1988	November 1990	1.0
ANSI_88	1988 ANSI T1.11x Standards		
CCITT_LINK88.T	CCITT MTP Level 2, Q.703, 1988	November 1990	1.0
ANSI_NET88.T	ANSI MTP Level 3, T1.111.4-1988	November 1990	1.0
ANSI_SCCP88.T	ANSI SCCP, T.112-1988	November 1990	1.0
ANSI_ISUP88.T	ANSI ISDN User Part, T1.113-1988	November 1990	1.0
ANSI_TCAP88.T	ANSI TCAP, T1.114-1988	November 1990	1.0
TC_88	1988 Telecom Canada Standards		
CCITT_LINK88.T	CCITT MTP Level 2, Q.703, 1988	November 1990	1.0
ANSI_NET88.T	ANSI MTP Level 3, T1.111.4-1988	November 1990	1.0
TC_SCCP88.T	Telecom Canada SCCP, Issue 2, 1988 Telecom Canada SCCP (Issue 2) is a superset of the 1988 ANSI standards and includes the protocol extensions for 800, ACCS, and BNS described in the 88/09/26 Telecom Canada memorandum on service extensions.	November 1990	1.0
ANSI_ISUP88.T	ANSI ISDN User Part, T1.113-1988	November 1990	1.0
TC_TCAP88.T	Telecom Canada TCAP, Issue 1, 1988 Telecom Canada TCAP (Issue 1) is a superset of the 1988 ANSI standards and includes the protocol extensions for 800, ACCS, and BNS described in the 88/09/26 Telecom Canada memorandum on service extensions.	November 1990	1.0
HKT_88	1988 Hong Kong Telecom Standards		
CCITT_LINK88.T	CCITT MTP Level 2, Q.703, 1988	November 1990	1.0
CCITT_NET88.T	CCITT MTP Level 3, Q.704, 1988	November 1990	1.0
CCITT_SCCP88.T	CCITT SCCP, Q.713, 1988	November 1990	1.0
HKT_TUP88.T	Hong Kong Telecom TUP, Q.723, 1988	November 1990	1.0
CCITT_ISUP88.T	CCITT ISDN User Part, Q.763, 1988	November 1990	1.0
CCITT_TCAP88.T	CCITT TCAP/OMAP, Q.773/Q.795, 1988	November 1990	1.0
1TR7_87	1987 1 TR 7 Standards		
1TR7_LINK87.T	1 TR 7 MTP Level 2, Q.704, 1987	November 1990	1.0
1TR7_NET87.T	1 TR 7 MTP Level 3, Q.704, 1987	November 1990	1.0
1TR7_TF87.T	1 TR 7 TF, 1987	November 1990	1.0
163TR8_TUP87.T	163 TR 8 TUP+, Q.723+, 1987	November 1990	1.0
1TR7_ISUP87.T	1 TR 7 ISUP, 1987, Serie	November 1990	1.0
1TR7_ISDN87.T	1 TR 7 ISUP, 1987, Pilotprojekt	November 1990	1.0

PREFACE

This manual is intended to provide a list of tokens corresponding to message names, parameter names, and parameter fields for each of the SS#7 protocol levels.

This manual does not provide basic user instruction, but rather summarizes the type of protocol specific information which can be controlled or obtained using the Interactive Test Language (ITL). Some examples are provided in this manual; refer to the SS#7 Programmer's Manuals for more information and other examples. Refer to the SS#7 Monitor and Simulation User Manuals for instructions to load and operate the software, and the machine specific User Manual for a quick reference to the basic operation of the protocol tester.

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INTRODUCTION

The SS#7 Protocol contains unique words which can be used in ITL commands to reference protocol related information. Each of these words return a single unique value and are subsequently referred to as tokens. Tokens are identifiers for the basic lexical units of a protocol.

The SS#7 tokens identify the following structures in the protocol:

- The entire signal unit
- Each protocol level or functional part
- Messages within each functional part
- Parameters within each message
- Fields within each parameter
- Value instances within each field

Where appropriate, tokens are different for optional and mandatory parameters. Structures within the protocol are identified using more than one token when a single token is insufficient to perform the required functions.

**NOTE**

Although the TCAP nomenclature differs from other parts of SS#7, the concept of messages and parameters applies equally to TCAP transactions, components, and information elements.

The following sections provide some general information about tokens and examples illustrating the use of tokens. Refer to the SS#7 Programmer's Manual for more information and other examples.

Each of the remaining protocol sections in this manual contain:

- the unique protocol filename (eg. CCITT_LINK88.T);
- the protocol description (eg. CCITT MTP Level 2, Q.703, 1988);
- the version number (eg. 1.0); and
- token lists containing token names, usage symbols, and descriptions.

1.1 Loading Protocol Sets

The protocol set name for the protocols in this manual is ANSI_88. This name can be used with the SELECT_VAR command or the *Select* function key on the Protocol Set Selection Menu to select the 1988 ANSI T1.11x protocol set.

Example:

Load the entire 1988 ANSI SS#7 protocol set.

```
" ANSI_88" SELECT_VAR      ( selects the 1988 ANSI protocol set )  
LOAD_ALL                  ( loads all selected protocols )
```

In addition, individual protocols can be selected and then loaded using the protocol filenames with the LOAD_PROTOCOL_SET command.

Example:

Load levels 2 and 3 of the 1988 ANSI SS#7 protocol.

```
" CCITT_LINK88.T" " ANSI_NET88.T" 2 LOAD_PROTOCOL_SET
```

1.2 Using Tokens

Tokens are named using acronyms surrounded by angular brackets (eg. <CDPA>). Spare bits are often identified with a 0 appended to the associated token acronym (eg. <SLS0>).

Within each SS#7 functional part, tokens are divided into miscellaneous, message, and parameter groups. Within these groups, related tokens are listed in sub-groups. Tokens are listed alphabetically within each group and sub-group.

Specific instances of tokens are identified by separating the field name and the instance name with an equal sign (eg. <SSN=ISUP> identifies the ISDN User Part instance of the Subsystem Number field).

Token qualifications are identified by separating the qualifier and the token acronym with a period (eg. <CDPA.SSN> identifies the Subsystem Number in the Called Party Address).

Specific instances and qualifications can also be combined (eg. <CDPA.SSN=ISUP> identifies the ISDN User Part instance of the Subsystem Number within the Called Party Address).

No token is named in instances where the protocol element would provide only a small benefit (eg. the token for the 1 bit odd/even indicator field in the SCCP Called Party Address is <CDPA.OE>. The addition of instance names for each value of this field are not included).

Tokens can be used in SS#7 test scripts to:

- change display formats for protocol related information;
- set and reset filter and trigger information;
- test for the presence and error status of fields within a received message;
- access field values within a received message; and
- access constants associated with fields within the protocol.

Functional Parts

Tokens referring to entire functional parts (eg. <SU>, <MSU>, etc.) can be used with the HEADER_FORMAT and DETAIL_FORMAT commands to change display formats. These tokens can also be used with the F_RESET, T_RESET, and TF_RESET commands to reset filters and triggers. The following table shows the relationship between these commands and each functional part.

Protocol Level	Token	HEADER_FORMAT	DETAIL_FORMAT	Reset Commands
Link	<SU>	X		X
Network	<MSU>	X		X
SCCP	<SCCP>		X	X
TUP	<TUP>		X	X
ISUP	<ISUP>		X	X
TCAP/OMAP	<TCAP>		X	X

Example:

Reset the ISUP display filters.

```
R_FILTER
<ISUP> F_RESET
```

Test Manager

All tokens can be used with the ?RX_FRAME, ?RX_GOOD, and ?RX_ERROR test manager commands.

Example:

Perform an action (eg. increment a counter) on receipt of an SCCP message containing the ISDN Numbering Plan in the Called Party Address.

```
<CDPA.NPLAN=ISUP> ?RX_FRAME
ACTION{
  ( code specifying action taken if message received )
  1 COUNTER1 +!
}ACTION
```

Message Decoder

For decoding, tokens generally fall into one of two categories:

- Tokens refer to a protocol element with a value extracted by the message decoder. These tokens are identified with either the '?' or '@' usage symbols. When identified with '?' or '@', the <>L@ command returns the length (in bits) of the element. When identified with '?', the <>@ and <>@_ALL commands return the address of the extracted information's location. When identified with '@', the <>@ and <>@_ALL commands return the value of a 32 bit (or less) fixed length protocol element.
- Tokens refer to an instance of a protocol element. Tokens which are not identified with '?' or '@', can be used with the <># command to return the value of the instance. The '#' usage symbol marks an exception (i.e. the token can be used with commands from both categories).

 **NOTE**
Refer to Section 1.3 for the complete list of usage symbols and examples.

Example 1:

Store the value of the ISUP message type field into the ISUP_TYPE variable. <ISUPM> is the token for the message type field and is identified with the '@' usage symbol.

```
<ISUPM> <>@
IF
    ISUP_TYPE !
ENDIF
```

Example 2:

Store the contents of the Called Party Number address field into the DEST_STRING variable. <CDPN.ADDI> is the token for the address field and is identified with the '?' usage symbol.

```
<CDPN.ADDI> <>@
IF
    DEST_STRING
    <CDPN.ADDI> <>L@ 8 /
    CMOVE
ENDIF
```

Example 3:

Send an LSSU message of type SIO with no error.

```
CRC <SIO> <># SEND_LSSU
```

Filters and Triggers

Tokens can also be used to set filter and trigger conditions. These tokens are identified with the 'F', 'G', and 'V' usage symbols.

**NOTE**

Refer to Section 1.3 for the complete list of usage symbols and examples.

Tokens identified with a 'V':

- and a '?' (eg. variable length fields) can be used with the F_STRING and T_STRING commands.
- and a '@' can be used with the F_VALUE and T_VALUE commands. Tokens which are used with fields formatted with point codes can also be used with the F_PC_VALUE and T_PC_VALUE commands.

Tokens identified with a 'G' can be used with the F+ALL, F-ALL, T+ALL, and T-ALL commands. Tokens identified with an 'F' can be used with the F+, F-, F*, T+, and T- commands.

**NOTE**

In some cases, not all five of these commands are relevant. In general, parameter fields can be used with all of these commands, whereas message tokens and parameter instance tokens cannot be used with F.*

1.3 Usage Symbols

Usage Symbols	
@	Used with <>@ and <>@_ALL to return the value of a 32 bit (or less) fixed length protocol element, and <>L@ to return the length (in bits) of the field.
?	Used with <>@ and <>@_ALL to return the address of the extracted informations location, and <>L@ to return the length (in bits) of the field.
#	Marks exception cases; token can also be used with <># to return the value of an instance. All tokens not marked with '@' or '?' can also be used with <>#.
F	Used with F+, F-, F*, T+, and T-
G	Used with F+ALL, F-ALL, T+ALL, and T-ALL
V	Used with F_VALUE, T_VALUE, T_PC_VALUE, F_PC_VALUE, T_STRING and F_STRING. Used with use T_PC_VALUE and F_PC_VALUE for tokens related to point codes.

Example:

The following list was extracted from the SCCP protocol token list.

<UDT>	F	Unitdata Message
<CDPA>	? F #	Called Party Address
<CDPA.ADDI>	? V	Address Information
<CDPA.NPLAN>	@ G	Numbering Plan
<CDPA.NPLAN=ISDN>	F	ISDN Numbering
<CDPA.SPC>	@ V	Signalling Point Code
<CDPA.TT>	@ V	Translation Type

These tokens can be interpreted and used as follows:

- <UDT> refers to an SCCP message and can be used with <>#, F+, F-, T+, and T-.
- <CDPA> refers to an SCCP parameter and can be used with <>@, <>L@, <>#, F+, F-, F*, T+, and T-.
- <CDPA.ADDI> refers to the address field within the Called Party Address parameter and can be used with <>@, <>L@, F_STRING, and T_STRING.
- <CDPA.NPLAN> refers to the Numbering Plan field within the Called Party Address parameter and can be used with <>@, F+ALL, F-ALL, T+ALL, and T-ALL. This token can also be used with <>L@ to return the constant 4.
- <CDPA.NPLAN=ISDN> refers to the ISDN User Part instance of the Called Party Address parameter's Numbering Plan field and can be used with <>#, F+, F-, T+, and T-.
- <CDPA.SPC> refers to the Signalling Point Code field within the Called Party Address parameter and can be used with <>@, F_VALUE, T_VALUE, F_PC_VALUE, and T_PC_VALUE.
- <CDPA.TT> refers to the Translation Type field within the Called Party Address parameter and can be used with <>@, F_VALUE, and T_VALUE.

1.4 Notes

The following notes apply to specific tokens which are referenced in the token lists.

1. <xxx.DATA> is relevant only when the xxx functional part decoder is not loaded.

Example:

<ISUP.DATA> is relevant only when the ISUP decoder is not loaded.

2. <FIB> and <BIB> can be used in T+ and T- commands, but not F+ and F- commands.
3. The Network Indicator is not used to select a protocol variant. Therefore the specification installed is used to decode all messages, regardless of the Network Indicator value.
4. <PCODE> can be used to refer to Point Code structures at any functional part of the SS#7 protocol.

-
5. Tokens of the form <CDPA.xxx> have equivalent tokens of the form <CGPA.xxx> and <xxx>. All tokens of the form <CDPA.xxx=yyy> have equivalent tokens of the form <CGPA.xxx=yyy> and <xxx=yyy>.

Example:

Subsystem Number of the <CDPA.SSN> is the Called Party Address, Subsystem Number of the <CGPA.SSN> is the Calling Party Address, and <SSN> refers to any Subsystem Number. <CDPA.SSN=ISUP> is the ISUP instance of <CDPA.SSN>, <CGPA.SSN=ISUP> is the ISUP instance of <CGPA.SSN> and <SSN=ISUP> is the ISUP instance of <SSN>.

6. If the National/International Indicator in SCCP Addresses are set to "International" format, the address contents are not decoded.
7. SCCP tokens of the form <CDPA.NPLAN=xxx> and <CDPA.xxx> have an equivalent token of the form <DIGITS.NPLAN=xxx> and <TCGPA.xxx> respectively in TCAP.
8. Tokens of the form <CDPA.SSN=xxx> have an equivalent token of the form <ASSN.SSN=xxx>.
9. 'Return Cause' is named 'Diagnostics' in the specification.
10. Tokens of the form <INAI=xxx>, <ADDI>, <INPLAN=xxx>, and <PRES=xxx> have an equivalent token of a form corresponding to the type of number parameter decoded.

Example:

<INAI=NSN> is the National Subscriber Number instance of any number parameter.
<CDPN.INAI=NSN> is the same instance related to the Called Party Number exclusively.

11. The Backward Call Indicator subfields <EEM>, <IW>, <EEI>, and <ISUPI> also apply to the Forward Call Indicator parameter.
12. Rejected and Available Attributes are coded using the tokens <ITC>, <ITM>, <ITR1>, <STRUCT>, <CONFIG>, <ESTAB>, <SYM>, <ITR2>, and <LID> as described in the contents of the User Service Information parameter.

2**CCITT_LINK88.T**
CCITT MTP Level 2, Q.703, 1988
1.0

<DATA>	?	Any undecoded portion of a message
<MSU>	? F	Message signal unit (level 3 portion)
<MSU.DATA>	?	Undecoded MSU (level 3 portion) (note 1)
<SU>	? F	Signal Unit (level 2)

2.1 Messages

<FISU>	F	Fill In Signal Unit
<LSS2>	@ F G	2 byte Link Status Signal Unit
<LSS2.SIB>	F	"B" ("busy")
<LSS2.SIE>	F	"E" ("emergency alignment")
<LSS2.SIN>	F	"N" ("normal alignment")
<LSS2.SIO>	F	"O" ("out of alignment")
<LSS2.SIOS>	F	"OS" ("out of service")
<LSS2.SIPO>	F	"PO" ("processor outage")
<LSSU>	@ F G	1 byte Link Status Signal Unit
<LSSU.SIB>	F	"B" ("busy")
<LSSU.SIE>	F	"E" ("emergency alignment")
<LSSU.SIN>	F	"N" ("normal alignment")
<LSSU.SIO>	F	"O" ("out of alignment")
<LSSU.SIOS>	F	"OS" ("out of service")
<LSSU.SIPO>	F	"PO" ("processor outage")
<SIB>		"B" ("busy")
<SIE>		"E" ("emergency alignment")
<SIN>		"N" ("normal alignment")
<SIO>		"O" ("out of alignment")
<SIOS>		"OS" ("out of service")
<SIPO>		"PO" ("processor outage")

2.2 Parameters

<BIB>	@ F	Backward Indicator Bit (note 2)
<BSN>	@	Backward Sequence Number
<FIB>	@ F	Forward Indicator Bit (note 2)
<FSN>	@	Forward Sequence Number
	@	Length Indicator
<LI0>	@	Spare LI Bits
<SF>	@	Status Field of LSSU or LSS2
<SF0>	@	Spare SF bits in LSSU
<SF1>	@	Spare SF bits in LSS2

3**ANSI_NET88.T**

ANSI MTP Level 3, T1.111.4-1988

1.0

<DPC>	@	Destination Point Code
<H0>	@	Header 0
<H1>	@	Header 1
<MP>	@ F G	Message Priority
<P0>	F	<i>Message Priority 0</i>
<P1>	F	<i>Message Priority 1</i>
<P2>	F	<i>Message Priority 2</i>
<P3>	F	<i>Message Priority 3</i>
<MSU>	? F	Message Signal Unit
<NI>	@ F G	Network Indicator (note 3)
<NI=INS>	F	<i>Spare International</i>
<NI=INT>	F	<i>International Message</i>
<NI=NAS>	F	<i>Spare National</i>
<NI=NAT>	F	<i>National Network</i>
<OPC>	@	Originating Point Code
<PCODE>	@	Any Point Code (note 4)
<RL>	? F	Routing Label
<SI>	@	Service Indicator
<DUP1>	F	<i>Data User Part (Call and Circuit)</i>
<DUP1.DATA>	?	<i>Undecoded DUP1 message (note 1)</i>
<DUP2>	F	<i>Data User Part (Facility Registration & Cancel)</i>
<DUP2.DATA>	?	<i>Undecoded DUP2 message</i>
<ISUP>	F	<i>ISDN User Part</i>
<ISUP.DATA>	?	<i>Undecoded ISUP message</i>
<SCCP>	F	<i>Signalling Connection Control Part</i>
<SCCP.DATA>	?	<i>Undecoded SCCP message</i>
<SNMM>	F G	<i>Signalling Network Management Messages</i>
<SNTM>	F	<i>Signalling Network Test & Maintenance Messages</i>
<SNSM>	F	<i>Special Signalling Network Test & Maintenance Messages</i>
<TUP>	F	<i>Telephone User Part</i>
<TUP.DATA>	?	<i>Undecoded TUP message</i>
<SLS>	@	Signalling Link Selection
<SLS0>	@	Spare SLS bits

3.1 Management Messages

Changeover and Changeback Message

<CHM>	F G	Changeover and changeback message
<CBA>	F	<i>Changeback-acknowledgement signal</i>
<CBD>	F	<i>Changeback-declaration signal</i>
<COA>	F	<i>Changeover-acknowledgement signal</i>
<COO>	F	<i>Changeover-order signal</i>

Emergency Changeover Message

<ECM>	F G	Emergency-changeover message
<ECA>	F	<i>Emergency-changeover-acknowledgement signal</i>
<ECO>	F	<i>Emergency-changeover-order signal</i>

Management Inhibit Message

<MIM>	F G	Management inhibit message
<LFU>	F	<i>Link force uninhibit signal</i>
<LIA>	F	<i>Link inhibit acknowledgement signal</i>
<LID>	F	<i>Link inhibit denied signal</i>
<LIN>	F	<i>Link inhibit signal</i>
<LUA>	F	<i>Link uninhibited acknowledgement signal</i>
<LUN>	F	<i>Link uninhibit signal</i>

Signalling Data Link Connection Order Message

<DLM>	F G	Signalling-data-link-connect-order message
<CNP>	F	<i>Connection-not-possible signal</i>
<CNS>	F	<i>Connection-not-successful signal</i>
<CSS>	F	<i>Connection-successful signal</i>
<DLC>	F	<i>Sig-data-link-connection-order signal</i>

Signalling Route Set Test Message

<RSM>	F G	Signalling-route-set-test message
<RCP>	F	<i>Sig-route-set-test cluster prohibited signal</i>
<RCR>	F	<i>Sig-route-set-test cluster restricted signal</i>
<RSP>	F	<i>Sig-route-set-test prohibited signal</i>
<RSR>	F	<i>Sig-route-set-test restricted signal</i>

Signalling Traffic Flow Control Message

<FCM>	F G	Signalling-traffic-flow control message
<RCT>	F	<i>Signalling-route-set-congestion-test signal</i>
<TFC>	F	<i>Transfer-controlled signal</i>

Transfer Prohibit, Allowed, Restricted Messages

<TFM>	F G	Transfer-prohibit, -allow, -restrict message
<TCA>	F	<i>Transfer-cluster-allowed signal</i>
<TCP>	F	<i>Transfer-cluster-prohibited signal</i>
<TCR>	F	<i>Transfer-cluster-restricted signal</i>
<TFA>	F	<i>Transfer-allowed signal</i>
<TFP>	F	<i>Transfer-prohibited signal</i>
<TFR>	F	<i>Transfer-restricted signal</i>

3.2 Management Parameters

<CBC>	@	Changeback Code
<CBC0>	@	Spare CBC bits
<DEST>	@	Destination
<FSNL>	@	FSN of Last MSU
<FSNL0>	@	Spare FSNL bit(s)
<SDLI>	@	Signalling Data Link ID
<SDLI0>	@	Spare SDLI bits
<SLC>	@	Signalling link code
<SLC0>	@	Spare SLC bits
<STAT>	@	Status Code
<STAT0>	@	Spare STAT bits

3.3 Test and Maintenance Messages

<STM>	G	Special Test Message
<SSLTA>	F	<i>Special Signalling Link Test Acknowledge</i>
<SSLTM>	F	<i>Special Signalling Link Test Message</i>
<TM>	G	Test Message
<SLTA>	F	<i>Signalling Link Test Acknowledge</i>
<SLTM>	F	<i>Signalling Link Test Message</i>

3.4 Test and Maintenance Parameters

<TLI>	@	Test Length Indicator
<TMSG>	?	Test Pattern

4**ANSI_SCCP88.T**

ANSI SCCP, T1.112-1988

1.0

<SCCP>	F	Signalling Connection Control Part
<SCCPM>	@ G	SCCP Message
<S.DATA>	?	Undecoded SCCP connection-oriented message
<S.PL>	@	SCCP variable or optional parameter length
<S.PTR>	@	SCCP pointer
<ISUP-S>	? F	ISUP (via SCCP) message
<ISUP-S.DATA>	?	Undecoded ISUP (via SCCP) message (note 1)
<TCAP>	? F	TCAP message
<TCAP.DATA>	?	Undecoded TCAP message
<TUP-S>	? F	TUP (via SCCP) message
<TUP-S.DATA>	?	Undecoded TUP (via SCCP) message

4.1 Messages

<AK>	F	Data Acknowledgement
<CC>	F	Connection Confirm
<CR>	F	Connection Request
<CREF>	F	Connection Refused
<DT1>	F	Data Form 1
<DT2>	F	Data Form 2
<EA>	F	Expedited Data Acknowledgement
<ED>	F	Expedited Data
<ERR>	F	Protocol Data Unit Error
<IT>	F	Inactivity Test
<RLSD>	F	Released
<S.RLC>	F	Release Complete
<S.RSC>	F	Reset Confirmation
<S.RSR>	F	Reset Request
<UDT>	F	Unitdata
<UDTS>	F	Unitdata Service

4.2 Parameters

Called Party Address (note 5)

<CDPA>	? F	Called Party Address
<CDPA.ADDI>	? V	Address Information
<CDPA.ES>	@	Encoding Scheme
<CDPA.ES=BCDE>		<i>BCD, even number of digits</i>
<CDPA.ES=BCDO>		<i>BCD, odd number of digits</i>
<CDPA.ES=UNK>		<i>Unknown</i>
<CDPA.GTI>	@	Global Title Indicator
<CDPA.ICPA>	?	International formatted Called Party Address (note 6)
<CDPA.NPLAN>	@ G	Numbering Plan (note 7)
<CDPA.NPLAN=DATA>	F	<i>Data Numbering</i>
<CDPA.NPLAN=ISDN>	F	<i>ISDN Numbering</i>
<CDPA.NPLAN=LAND>	F	<i>Land Mobile Numbering</i>
<CDPA.NPLAN=MAR>	F	<i>Maritime Mobile Numbering</i>
<CDPA.NPLAN=SPAR>	F	<i>Spare</i>
<CDPA.NPLAN=TELE>	F	<i>Telephony Numbering</i>
<CDPA.NPLAN=TELEX>	F	<i>Telex Numbering</i>
<CDPA.NPLAN=UNK>	F	<i>Unknown or Not Applicable</i>
<CDPA.PCI>	@	Point Code Indicator
<CDPA.RI>	@	Routing Indicator
<CDPA.RI=DPC>		<i>Route on DPC/SSN</i>
<CDPA.RI=GT>		<i>Route on GT</i>
<CDPA.SPC>	@ V	Signalling Point Code
<CDPA.SSN>	@ G	Subsystem Number (note 8)
<CDPA.SSN=ISUP>	F	<i>ISDN User Part</i>
<CDPA.SSN=OA&M>	F	<i>OMAP</i>
<CDPA.SSN=RES>	F	<i>Reserved (value=255)</i>
<CDPA.SSN=SCMG>	F	<i>SCCP Management</i>
<CDPA.SSN=SPAR>	F	<i>Spare</i>
<CDPA.SSN=TUP>	F	<i>Telephone User Part</i>
<CDPA.SSN=UNK>	F	<i>SSN not known/not used</i>
<CDPA.SSNI>	@	SSN Indicator
<CDPA.TT>	@ V	Translation Type

Calling Party Address (note 5)

<CGPA>	? F	Calling Party Address
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Protocol Class

<OPT>	@	Connectionless Protocol Class Options
<OPT=NSO>		<i>No Special Options</i>
<OPT=RMOE>		<i>Return Message On Error</i>
<OPT=SPAR>		<i>Spare</i>
<PC>	@	Protocol Class Field
<PC0>	F	<i>Connectionless Protocol Class 0</i>
<PC1>	F	<i>Connectionless Protocol Class 1</i>
<PC2>	F	<i>Connection-Oriented Protocol Class 2</i>
<PC3>	F	<i>Connection-Oriented Protocol Class 3</i>
<PC4>	F	<i>Connection-Oriented Protocol Class 4</i>
<PCL>	@ G	Protocol Class Field
<PCL0>	@	Spare PCL bits (connection-oriented protocols)
<PCLX>	@ F	Protocol Class Parameter

Return Cause (note 9)

<RETC>	@ G	Return Cause Field
<RETC=NC>	F	<i>Network congestion</i>
<RETC=NF>	F	<i>Network failure</i>
<RETC=NTA>	F	<i>No translation for address of such nature</i>
<RETC=NTS>	F	<i>No translation for specific address</i>
<RETC=SPAR>	F	<i>Spare</i>
<RETC=SSC>	F	<i>Subsystem congestion</i>
<RETC=SSF>	F	<i>Subsystem failure</i>
<RETC=UU>	F	<i>Unequipped user</i>
<RETCX>	@ F	Return Cause Parameter

4.3 Management Messages

<SCMG>	? F	SCCP Management Message
<APC>	@ V	Affected Point Code
<ASSN.SSN>	@ G	Affected SSN (note 8)
<MTC>	@ G	SCMG Format ID
<MTC=SBR>	F	<i>Subsystem Backup Routing</i>
<MTC=SNR>	F	<i>Subsystem Normal Routing</i>
<MTC=SOG>	F	<i>Subsystem Out of Service Grant</i>
<MTC=SOR>	F	<i>Subsystem Out of Service Request</i>
<MTC=SRT>	F	<i>Subsystem Routing Status Test</i>
<MTC=SSA>	F	<i>Subsystem Allowed</i>
<MTC=SSP>	F	<i>Subsystem Prohibited</i>
<MTC=SST>	F	<i>Subsystem Status Test</i>
<SMI>	@	Subsystem Multiplicity Indicator

<SMI0>	@	Spare SMI Bits
<SMI=ASD>		<i>Affected subsystem is duplicated</i>
<SMI=ASS>		<i>Affected subsystem is solitary</i>
<SMI=ASU>		<i>Affected subsystem unknown</i>
<SMI=SPAR>		<i>Spare</i>

5

ANSI_ISUP88.T

ANSI ISDN User Part, T1.113-1988

1.0

<CIC>	@ V	Circuit ID field
<CICX>	@ F	Circuit ID parameter
<CIC0>	@	Spare CIC bits
<IPL>	@	Parameter Length
<IPNAM>	@	Parameter Name
<IPTR>	@	Parameter Pointer
<ISUP>	? F	ISUP Message (via MTP)
<ISUPM>	@ G	ISUP Message Name
<ISUP-S>	? F	ISUP Message (via SCCP)

5.1 Messages

<ACM>	F	Address Complete
<ANM>	F	Answer
<BLA>	F	Blocking Acknowledgement
<BLO>	F	Blocking
<CCR>	F	Continuity Check Request
<CGB>	F	Circuit Group Blocking
<CGBA>	F	Circuit Group Blocking Acknowledgement
<CGU>	F	Circuit Group Unblocking
<CGUA>	F	Circuit Group Unblocking Acknowledgement
<CMC>	F	Call Modification Completed
<CMR>	F	Call Modification Request
<CMRJ>	F	Call Modification Reject
<COT>	F	Continuity
<CQM>	F	Circuit Query
<CQR>	F	Circuit Query Response
<CSVR>	F	CUG Selection and Validation Request
<CSVS>	F	CUG Selection and Validation Response
<CVR>	F	Circuit Validation Response
<CVT>	F	Circuit Validation Test
<DRS>	F	Delayed Release
<EXM>	F	Exit
<FAA>	F	Facility Accepted
<FAD>	F	Facility Deactivated

<FAI>	F	Facility Information
<FAR>	F	Facility Request
<FOT>	F	Forward Transfer
<FRJ>	F	Facility Reject
<GRA>	F	Circuit Group Reset Acknowledgement
<GRS>	F	Circuit Group Reset
<IAM>	F	Initial Address
<INF>	F	Information
<INR>	F	Information Request
<LPA>	F	Loop Back Acknowledgement
<PAM>	F	Pass Along
<REL>	F	Release
<RES>	F	Resume
<RLC>	F	Release Complete
<RSC>	F	Reset Circuit
<SUS>	F	Suspend
<UBA>	F	Unblocking Acknowledgement
<UBL>	F	Unblocking
<UCIC>	F	Unequipped Circuit Identification Code

5.2 Parameters

<1>	@	1 spare bit
<2>	@	2 spare bits
<3>	@	3 spare bits
<4>	@	4 spare bits
<5>	@	5 spare bits
<6>	@	6 spare bits
<7>	@	7 spare bits
<ADDI>	?	Address Information
<CODING>	@	Coding Standard in USI or Cause parameters
<CODING=CCITT>		<i>CCITT Standard</i>
<CODING=NAT>		<i>National standard</i>
<EXT>	@	Extension
<INAI>	@	Nature of Address Indicator (note 10)
<INAI=CTC>		<i>Cut through call to carrier</i>
<INAI=IN>		<i>International Number</i>
<INAI=INOR>		<i>International number, operator requested</i>
<INAI=NNOR>		<i>National number, operator requested</i>
<INAI=NSN>		<i>National Significant Number</i>
<INAI=OR>		<i>No number present, operator requested</i>
<INAI=SN>		<i>Subscriber Number</i>
<INAI=SNOR>		<i>Subscriber number, operator requested</i>
<INAI=SPAR>		<i>Spare</i>
<INAI=TLTC>		<i>Test line test code</i>

<INPLAN>	@	Numbering Plan (note 10)
<INPLAN=ISDN>		<i>ISDN Numbering</i>
<INPLAN=SPAR>		<i>Spare</i>
<INPLAN=TELE>		<i>Telephony Numbering</i>
<INPLAN=UNK>		<i>Unknown</i>
<OE>	@	Odd/Even Indicator
<PRES>	@	Presentation Indicator (note 10)
<PRES=NO>		<i>Presentation not allowed</i>
<PRES=SPAR>		<i>Spare</i>
<PRES=YES>		<i>Presentation allowed</i>
Access Transport		
<ATP>	?	Access Transport
Backward Call Indicators		
<BCIB>	? #	Backward Call Indicators (optional part)
<BCI.3>	@	Spare Indicator bits
<CPCI>	@	Called Party Category
<CPCI=NIND>		<i>No indication</i>
<CPCI=ORD>		<i>Ordinary subscriber</i>
<CPCI=PAY>		<i>Payphone</i>
<CPCI=SPAR>		<i>Spare</i>
<CPS>	@	Called Party Status
<CPS=CON>		<i>Connect when free</i>
<CPS=FREE>		<i>Subscriber free</i>
<CPS=NIND>		<i>No indication</i>
<CPS=SPAR>		<i>Spare</i>
<CRGI>	@	Charge Indicator
<CRGI=NIND>		<i>No indication</i>
<CRGI=NO>		<i>No Charge</i>
<CRGI=SPAR>		<i>Spare</i>
<CRGI=YES>		<i>Charge</i>
<EEI>	@	End to End Information Available Indicator (note 11)
<EEM>	@	End to End Method (note 11)
<EEM=BOTH>		<i>Both pass along and SCCP available</i>
<EEM=NONE>		<i>No end-to-end method available</i>
<EEM=PASS>		<i>Pass along method available</i>
<EEM=SCCP>		<i>SCCP method available</i>
<HOLDR>	@	Holding Indicator
<ISDN TA>	@	Terminating ISDN Access Indicator
<ISUPI>	@	ISDN User Part Used Indicator (note 11)
<IW>	@	Interworking Encountered Indicator (note 11)

Call Modification Indicators

<CMIB>	? #	Call Modification Indicators (optional part)
<CMI.6>	@	Spare bits
<MODI>	@	Modification Indicator
<MODI=1>		<i>Modify to service 1 (voice to data)</i>
<MODI=2>		<i>Modify to service 2 (data to voice)</i>
<MODI=SPAR>		<i>Spare</i>

Call Reference

<CLRF>	? # F	Call Reference
<CLID>	@ V	Call Identity
<CLRF.PCODE>	@ V	Point Code

Called Party Number

<CDPN>	? # F	Called Party Number
<CDPN.1>	@	Spare bit
<CDPN.4>	@	Spare bits
<CDPN.ADDI>	? V	Address Information
<CDPN.INAI>	@ G	Nature of Address Indicator
<CDPN.INPLAN>	@ G	Numbering Plan
<CDPN.OE>	@	Odd/Even Indicator

Calling Party Number

<CGPN>	? # F	Calling Party Number
<CGPN.1>	@	Spare bit
<CGPN.2>	@	Spare bits
<CGPN.ADDI>	? V	Address Information
<CGPN.INAI>	@ G	Nature of Address Indicator
<CGPN.INPLAN>	@ G	Numbering Plan
<CGPN.OE>	@	Odd/Even Indicator
<CGPN.PRES>	@	Presentation Indicator

Calling Party's Category

<CPC>	@ G	Calling Party's Category Field
<CPC=DATA>	F	<i>Data call</i>
<CPC=ENG>	F	<i>Operator—English</i>
<CPC=FR>	F	<i>Operator—French</i>
<CPC=GER>	F	<i>Operator—German</i>
<CPC=NVT>	F	<i>Non—voice terminal</i>
<CPC=ORD>	F	<i>Ordinary calling subscriber</i>
<CPC=P2>	F	<i>Subscriber with precedence level 2</i>
<CPC=P3>	F	<i>Subscriber with precedence level 3</i>
<CPC=P4>	F	<i>Subscriber with precedence level 4</i>
<CPC=P5>	F	<i>Subscriber with precedence level 5</i>
<CPC=PAY>	F	<i>Payphone</i>
<CPC=PRIO>	F	<i>Calling subscriber with priority</i>
<CPC=RUS>	F	<i>Operator—Russian</i>
<CPC=SPA>	F	<i>Operator—Spanish</i>
<CPC=SPAR>	F	<i>Spare</i>
<CPC=TEST>	F	<i>Test call</i>
<CPC=UNK>	F	<i>Unknown</i>
<CPCB>	? #	Calling Party's Category (optional part)
<CPCX>	F	Calling Party's Category Parameter

Cause Indicators

<CAUS>	? # F	Cause Indicators
<ATTRN>	@	Attribute Number Diagnostic (note 12)
<ATTRN=CONF>		<i>Configuration</i>
<ATTRN=ESTAB>		<i>Establishment</i>
<ATTRN=ITC>		<i>Information Transfer Capability</i>
<ATTRN=ITM>		<i>Information Transfer Mode</i>
<ATTRN=ITR1>		<i>Information Transfer Rate</i>
<ATTRN=ITR2>		<i>Information Transfer Rate Dest—>Org</i>
<ATTRN=LID>		<i>Layer ID and user information</i>
<ATTRN=STRUCT>		<i>Structure</i>
<ATTRN=SYM>		<i>Symmetry</i>
<CAUS.1>	@	Spare bit in Octet 1
<CAUS.CODING>	@	Coding Standard
<CAUS.CODING=CCITT>		<i>CCITT Standard</i>
<CAUS.CODING=NAT>		<i>National standard</i>

<CAUSV>	@ G	Cause Value
<CAUSV=AI>	F	<i>Address incomplete</i>
<CAUSV=BCNAT>	F	<i>Bearer capability not authorized</i>
<CAUSV=BCNAV>	F	<i>Bearer capability not available</i>
<CAUSV=BCNI>	F	<i>Bearer capability not implemented</i>
<CAUSV=CR>	F	<i>Call rejected</i>
<CAUSV=DOO>	F	<i>Destination out of service</i>
<CAUSV=FR>	F	<i>Facility rejected</i>
<CAUSV=ICRV>	F	<i>Invalid call reference value</i>
<CAUSV=ID>	F	<i>Incompatible destination</i>
<CAUSV=IMU>	F	<i>Invalid message – unspecified</i>
<CAUSV=IPC>	F	<i>Invalid parameter contents</i>
<CAUSV=IWU>	F	<i>Interworking class – unspecified</i>
<CAUSV=MDT>	F	<i>Misdialled trunk prefix</i>
<CAUSV=MT>	F	<i>Message type non–existant</i>
<CAUSV=NC>	F	<i>Number changed</i>
<CAUSV=NCA>	F	<i>No circuit available</i>
<CAUSV=NOO>	F	<i>Network out of order</i>
<CAUSV=NORM>	F	<i>Normal call clearing</i>
<CAUSV=NRD>	F	<i>No route to destination</i>
<CAUSV=NRSTN>	F	<i>No route to specified transit network</i>
<CAUSV=NU>	F	<i>Normal – unspecified</i>
<CAUSV=NUR>	F	<i>No user responding</i>
<CAUSV=P–D>	F	<i>Parameter non–existant</i>
<CAUSV=PEU>	F	<i>Protocol error – unspecified</i>
<CAUSV=PREMT>	F	<i>Pre–emption</i>
<CAUSV=RCNA>	F	<i>Requested channel not available</i>
<CAUSV=RDIA>	F	<i>Only restricted digital information available</i>
<CAUSV=RFNS>	F	<i>Requested facility not subscribed</i>
<CAUSV=RUU>	F	<i>Resource unavailable –unspecified</i>
<CAUSV=SEC>	F	<i>Switching equipment congestion</i>
<CAUSV=SIU>	F	<i>Service unimplemented –unspecified</i>
<CAUSV=SPAR>	F	<i>Spare</i>
<CAUSV=SSIT>	F	<i>Send special information tone</i>
<CAUSV=SUU>	F	<i>Service unavailable –unspecified</i>
<CAUSV=TF>	F	<i>Temporary failure</i>
<CAUSV=UB>	F	<i>User busy</i>
<CAUSV=UID>	F	<i>User information discarded</i>
<CAUSV=UN>	F	<i>Unallocated (unassigned) number</i>

<LOC>	@ G	Location
<LOC=INT>	F	<i>International network</i>
<LOC=IW>	F	<i>Unknown</i>
<LOC=LIF>	F	<i>Local interface controlled by this link</i>
<LOC=PRIVL>	F	<i>Private network serving the local user</i>
<LOC=PRIVR>	F	<i>Private network serving the remote user</i>
<LOC=PUBL>	F	<i>Public network serving the local user</i>
<LOC=PUBR>	F	<i>Public network serving the remote user</i>
<LOC=RES>	F	<i>Reserved</i>
<LOC=TRANS>	F	<i>Transit network</i>
<LOC=USER>	F	<i>User</i>

Charge Number

<CHGN>	? # F	Charge Number
<CHGN.1>	@	Spare bit
<CHGN.4>	@	Spare bits
<CHGN.ADDI>	? V	Address Information
<CHGN.INPLAN>	@ G	Numbering Plan
<CHGN.OE>	@	Odd/Even Indicator
<CHGNAI>	@ G	Charge Number Nature of Address
<CHGNAI=CGSN>	F	<i>Calling party subscriber number</i>
<CHGNAI=NA>	F	<i>Not available or not provided</i>
<CHGNAI=CGNN>	F	<i>Calling party national number</i>
<CHGNAI=CDSN>	F	<i>Called party subscriber number</i>
<CHGNAI=CDNNP>	F	<i>Called party – no number present</i>
<CHGNAI=CDNN>	F	<i>Called party national number</i>
<CHGNAI=SPAR>	F	<i>Spare</i>

Circuit Group Characteristics Indicators

<CGCIB>	? #	Circuit Group Characteristics Indicators (optional)
<ACI>	@	Alarm Carrier Type
<ACI=HW>		<i>Hardware handled</i>
<ACI=SPAR>		<i>Spare</i>
<ACI=SW>		<i>Software handled</i>
<ACI=UNK>		<i>Unknown</i>
<CCRI>	@	Continuity Checks
<CCRI=NONE>		<i>Not Required</i>
<CCRI=PC>		<i>Required per call</i>
<CCRI=STAT>		<i>Required statistically</i>
<CCRI=UNK>		<i>Unknown requirements</i>

<CGTYP>	@	Carrier Type
<CGTYP=ANG>		<i>Analog</i>
<CGTYP=BOTH>		<i>Digital and analog</i>
<CGTYP=DIG>		<i>Digital</i>
<CGTYP=UNK>		<i>Unknown</i>
<DSC>	@	Double Seizing Control
<DSC=EVEN>		<i>Even CIC control</i>
<DSC=ODD>		<i>Odd CIC control</i>
<DSC=SPAR>		<i>Spare</i>
<DSC=UNK>		<i>Unknown</i>

Circuit Group Supervision Message Type Indicator

<CGIB>	? #	Circuit Group Supervision Msg Type (optional)
<CGI.6>	@	Spare bits
<TYPE>	@	Type
<TYPE=HW>		<i>Hardware failure oriented</i>
<TYPE=MAINT>		<i>Maintenance oriented</i>
<TYPE=SPAR>		<i>Spare</i>
<TYPE=SW>		<i>Software oriented</i>

Circuit Name Indicator

<CIN>	? #	Circuit Name
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Circuit State Indicator

<CSI>	? #	Circuit State Indicator
<CSTATE>	@	Circuit State
<CSTATE=ICB-LB>		<i>Incoming busy, local block</i>
<CSTATE=ICB-LRB>		<i>Incoming busy, local/remote block</i>
<CSTATE=ICB-NB>		<i>Incoming busy, no blocking</i>
<CSTATE=ICB-RB>		<i>Incoming busy, remote block</i>
<CSTATE=IDL-LB>		<i>Idle, local M block</i>
<CSTATE=IDL-LRB>		<i>Idle, local/remote M block</i>
<CSTATE=IDL-NB>		<i>Idle, no blocking</i>
<CSTATE=IDL-RB>		<i>Idle, remote M block</i>
<CSTATE=OGB-LB>		<i>Outgoing busy, local block</i>
<CSTATE=OGB-LRB>		<i>Outgoing busy, local/remote block</i>
<CSTATE=OGB-NB>		<i>Outgoing busy, no blocking</i>
<CSTATE=OGB-RB>		<i>Outgoing busy, remote block</i>
<CSTATE=SPAR>		<i>Spare</i>
<CSTATE=TRANS>		<i>Transient</i>
<CSTATE=UNEQP>		<i>Unequipped</i>

Circuit Validation Response Indicators

<CVRIB>	? #	Circuit Validation Response Indicators (Optional)
<CVRI>	@	Circuit Validation Response Indication
<CVRI=FAIL>		<i>Failure</i>
<CVRI=SPAR>		<i>Spare</i>
<CVRI=SUC>		<i>Successful</i>

Closed User Group Check Response Indicators

<CUGRB>	? #	CUG Check Response Indicators (optional)
<CUGA>	@	Access Indicator
<CUGC>	@	CUG Call Indicator
<CUGCC>	@	Check Successful Indicator
<CUGC=CUGC>		<i>CUG call</i>
<CUGC=NOGA>		<i>CUG call without outgoing access</i>
<CUGC=OGA>		<i>CUG call with outgoing access</i>
<CUGC=SPAR>		<i>Spare</i>
<CUGD>	@	Divergence Indicator
<CUGNC>	@	Normal Call Indicator
<CUGR.2>	@	Spare bits

Closed User Group Interlock Code

<CUGI>	? #	Closed User Group Interlock Code
<BCODE>	@	Binary Code
<NETID>	?	Network Identity

Common Language Location Identification Code

<CLLI>	? #	CLLI Code
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Connected Number

<CONN>	? #	Connected Number
<CONN.1>	@	Spare bit
<CONN.2>	@	Spare bits
<CONN.ADDI>	?	Address Information
<CONN.INAI>	@	Nature of Address Indicator
<CONN.INPLAN>	@	Numbering Plan
<CONN.OE>	@	Odd/Even Indicator
<CONN.PRES>	@	Presentation Indicator

Connection Request

<CONR>	? #	Connection Request
<CONR.PCODE>	@	Point Code
<CREDIT>	@	Credit
<LREF>	@	Local Reference
<PCLASS>	@	Protocol Class

Continuity Indicators

<COTIB>	? #	Continuity Indicators (optional part)
<COTI.7>	@	Spare indicator bits
<COTIND>	@	Continuity Indicator Field

Facility Indicator

<FACIB>	? #	Facility Indicator (optional part)
<FACI>	@	Facility Indicator
<FACI=B/F>		<i>Busy/free status information</i>
<FACI=CCBS>		<i>Completion of calls to busy subscribers</i>
<FACI=CCBS1>		<i>CCBS continue</i>
<FACI=SPAR>		<i>Spare</i>

Facility Information Indicators

<FAIIB>	? #	Facility Information Indicators (optional part)
<CPAN>	@	Calling Party Answer Indicator
<CPF>	@	Called Party Free Indicator
<FAI1.4>	@	Spare bits
<FRA>	@	Facility Request Active Indicator
<FRE>	@	Facility Request Enquiry Indicator

Forward Call Indicators (note 11)

<FCIB>	? #	Forward Call Indicators (optional part)
<FCI.7>	@	Spare bits J-P
<ISDNOA>	@	ISDN Access Indicator
<ISUPPREF>	@	ISUP Preference Indicator
<ISUPPREF=NO>		<i>ISUP not required all the way</i>
<ISUPPREF=REQ>		<i>ISUP required all the way</i>
<ISUPPREF=SPAR>		<i>Spare</i>
<ISUPPREF=YES>		<i>ISUP Preferred all the way</i>
<NIC>	@	National/International Call Indicator
<NIC=INT>		<i>Call treated as an international call</i>
<NIC=NAT>		<i>Call treated as a national call</i>

Index

<INDEX>	@	Index Field
<INDEXB>	? #	Index (optional part)

Information Indicators

<INFIB>	? #	Information Indicators (optional part)
<CNARS>	@	Connected Address Response Indicator
<CNARS=INCL>		<i>Included</i>
<CNARS=NOTA>		<i>Not available</i>
<CNARS=NOTI>		<i>Not included</i>
<CNARS=SPAR>		<i>Spare</i>
<CPARS>	@	Calling Party Address Response Indicator
<CPARS=INCL>		<i>Included, hold not provided</i>
<CPARS=INCLH>		<i>Included, hold provided</i>
<CPARS=NOTA>		<i>Not available</i>
<CPARS=NOTI>		<i>Not included</i>
<CPARS=SPAR>		<i>Spare</i>
<CPCRS>	@	Calling Party Category Response Indicator
<CRGRS>	@	Charge Information Response Indicator
<INFI.6>	@	Spare bits
<INXRS>	@	Index Response Indicator
<RDARS>	@	Redirecting Address Response Indicator
<RDARS=INCL>		<i>Included</i>
<RDARS=NOTA>		<i>Not available</i>
<RDARS=NOTI>		<i>Not included</i>
<RDARS=SPAR>		<i>Spare</i>

Information Request Indicators

<INRIB>	? #	Information Request Indicators (optional part)
<CNAR>	@	Connected Address Request Indicator
<CPAR>	@	Calling Party Address Request Indicator
<CPAR=NO>		<i>Not requested</i>
<CPAR=SPAR>		<i>Spare</i>
<CPAR=YES>		<i>Requested, no hold</i>
<CPAR=YESH>		<i>Requested, with hold</i>
<CPCR>	@	Calling Party Category Request Indicator
<CRGR>	@	Charge Information Request Indicator
<INRI.7>	@	Spare bits K-P
<INXR>	@	Index Request Indicator
<MCIR>	@	Malicious Call ID Request Indicator
<RDAR>	@	Redirecting Address Request Indicator

Nature of Connections Indicator

<NCIB>	? #	Nature of Connections Indicator (optional part)
<CCI>	@	Continuity Check Indicator
<CCI=NO>		<i>Check not required</i>
<CCI=PREV>		<i>Check performed on a previous circuit</i>
<CCI=SPAR>		<i>Spare</i>
<CCI=YES>		<i>Check required on this circuit</i>
<NCI.3>	@	Spare bits
<OECHO>	@	Echo Control Indicator
<SATI>	@	Satellite indicator

Optional Forward Call Indicators

<OFCI>	? #	Optional Forward Call Indicators
<CCBS>	@	CCBS Call Indicator
<CNAR>	@	Connected Address Request Indicator
<CNI>	@	Calling Party Number Incomplete Indicator
<CUGCI>	@	CUG Call Indicator
<CUGCI=CUG>		<i>CUG check successful</i>
<CUGCI=NOGA>		<i>CUG call without outgoing access</i>
<CUGCI=NONE>		<i>Ordinary (Non-CUG) call</i>
<CUGCI=OGA>		<i>CUG call with outgoing access</i>
<OFCI.1>	@	Spare bit F
<OFCI.2>	@	Spare bits CD

Originating Line Information

<OLI>	@ G	Originating Line Information Field
<OLI=AIOD>	F	<i>AIOD – listed DN sent</i>
<OLI=ANI>	F	<i>Identified line, no special treatment</i>
<OLI=ANIF>	F	<i>ANI failure</i>
<OLI=CL>	F	<i>Coinless, hospital, etc</i>
<OLI=COIN>	F	<i>Coin line</i>
<OLI=H>	F	<i>Hotel with room ID</i>
<OLI=IR>	F	<i>InterLATA restricted</i>
<OLI=IRCL>	F	<i>InterLATA restricted – coinless, etc</i>
<OLI=IRH>	F	<i>InterLATA restricted – hotel</i>
<OLI=ONI>	F	<i>ONI (multiparty)</i>
<OLI=SPAR>	F	<i>Spare</i>
<OLIX>	? F #	Originating Line Information Parameter

Outgoing Trunk Group Number

<OTGN>	? #	Outgoing Trunk Group Number
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Range and Status

<R&S>	? #	Range and Status
<RANGE>	@	Range
<STATUS>	?	Status

Redirecting Number

<RDGN>	? #	Redirecting Number
<RDGN.1>	@	Spare bit
<RDGN.2>	@	Spare bits
<RDGN.ADDI>	?	Address Information
<RDGN.INAI>	@	Nature of Address Indicator
<RDGN.INPLAN>	@	Number Plan
<RDGN.OE>	@	Odd/Even Indicator
<RDGN.PRES>	@	Presentation Indicator

Redirection Indicators

<RDI>	? #	Redirection Indicators
<ORRR>	@	Original Redirection Reason
<ORRR=NOREP>		<i>No reply</i>
<ORRR=SPAR>		<i>Spare</i>
<ORRR=UB>		<i>User busy</i>
<ORRR=UNC>		<i>Fixed (permanent)</i>
<ORRR=UNK>		<i>Unknown/not available</i>
<ORRR=VAR>		<i>Variable (unconditional)</i>
<RDGI>	@	Redirecting Indicator
<RDGI=F>		<i>Call forwarded</i>
<RDGI=FIR>		<i>Call forwarded, all information restricted</i>
<RDGI=NONE>		<i>No redirection</i>
<RDGI=R>		<i>Call rerouted</i>
<RDGI=RIR>		<i>Call rerouted, all information restricted</i>
<RDGI=SPAR>		<i>Spare</i>
<RDI.1>	@	Spare bit in octet 1

Redirection Number

<RDNN>	? #	Redirection Number
<RDNN.1>	@	Spare bit
<RDNN.2>	@	Spare bits
<RDNN.ADDI>	?	Address Information
<RDNN.INAI>	@	Nature of Address Indicator
<RDNN.INPLAN>	@	Numbering Plan
<RDNN.OE>	@	Odd/Even Indicator
<RDNN.PRES>	@	Presentation Indicator

Signalling Point Code

<ISPC> ? # Signalling Point Code Parameter
<ISPC.PCODE> @ Point Code

Suspend/Resume Indicators

<SRI> @ Suspend/Resume Indicator
 <SRI=ISDN> *ISDN subscriber initiated*
 <SRI=NET> *Network initiated*
 <SRIS.7> @ Spare bits
 <SRISB> ? # Suspend/Resume Indicator (optional part)

Transit Network Selection

<TNS> ? F # Transit Network Selection
 <NETPLAN> @ Network ID Plan (CCITT standardized)
 <NETPLAN=DNIC> *Public Data Network Id Code (DNIC)*
 <NETPLAN=MNIC> *Public Land Mobile Network Id Code (DNIC)*
 <NETPLAN=SPAR> *Spare*
 <NETPLAN=UNK> *Unknown*
 <NETTYPE> @ Type of Network ID
 <NNETPLAN> @ Network ID Plan (national)
 <NNETPLAN=CIC> *Carrier ID code with circuit code*
 <NNETPLAN=SPAR> *Spare*
 <NNETPLAN=UNK> *Unknown*
 <TNS.1> @ Spare bit in octet 1
 <TNS.ADDI> ? V Address Information

User Service Information

<USI> ? # User Service Information
 <CONFIG> @ Configuration
 <CONFIG=MULTI> *Multipoint*
 <CONFIG=POINT> *Point to point*
 <CONFIG=RES> *Reserved*
 <ESTAB> @ Establishment
 <ESTAB=DEMAND> *Demand*
 <ESTAB=RES> *Reserved*
 <ITC> @ Transfer Capability
 <ITC=AUDIO15> *15 kHz audio*
 <ITC=AUDIO3> *3.1 kHz audio*
 <ITC=AUDIO7> *7 kHz audio*
 <ITC=RES> *Reserved*
 <ITC=RESDIG> *Restricted digital information*
 <ITC=SPEECH> *Speech*
 <ITC=UNRESDIG> *Unrestricted digital information*
 <ITC=VIDEO> *Video*

<ITM>	@	Transfer Mode
<ITM=C>		<i>Circuit mode</i>
<ITM=P>		<i>Packet mode</i>
<ITM=RES>		<i>Reserved</i>
<ITR>	@	Transfer Rate (either ITR1 or ITR2)
<ITR=1536>		<i>1536 kbit/s</i>
<ITR=1920>		<i>1920 kbit/s</i>
<ITR=384>		<i>384 kbit/s</i>
<ITR=64>		<i>64 kbit/s</i>
<ITR=PACK>		<i>Channel size</i>
<ITR=RES>		<i>Reserved</i>
<ITR1.ITR>	@	Transfer Rate
<ITR1.ITR=1536>		<i>1536 kbit/s</i>
<ITR1.ITR=1920>		<i>1920 kbit/s</i>
<ITR1.ITR=384>		<i>384 kbit/s</i>
<ITR1.ITR=64>		<i>64 kbit/s</i>
<ITR1.ITR=PACK>		<i>Channel size</i>
<ITR1.ITR=RES>		<i>Reserved</i>
<ITR2.ITR>	@	Transfer Rate (Destination->Orgination)
<ITR2.ITR=1536>		<i>1536 kbit/s</i>
<ITR2.ITR=1920>		<i>1920 kbit/s</i>
<ITR2.ITR=384>		<i>384 kbit/s</i>
<ITR2.ITR=64>		<i>64 kbit/s</i>
<ITR2.ITR=PACK>		<i>Channel size</i>
<ITR2.ITR=RES>		<i>Reserved</i>
<LID>	@	Layer Identification
<STRUCT>	@	Structure
<STRUCT=8K>		<i>8 kHz integrity</i>
<STRUCT=DEF>		<i>Default</i>
<STRUCT=NONE>		<i>Unstructured</i>
<STRUCT=RES>		<i>Reserved</i>
<STRUCT=SDU>		<i>Service data unit integrity</i>
<SYM>	@	Symmetry
<SYM=BASYM>		<i>Bidirectional asymmetric</i>
<SYM=BSYM>		<i>Bidirectional symmetric</i>
<SYM=UNDO>		<i>Unidirectional (Destination->Orgination)</i>
<SYM=UNOD>		<i>Unidirectional (Orgination->Destination)</i>
<USI.CODING>	@	Coding Standard
<USI.CODING=CCITT>		<i>CCITT Standard</i>
<USI.CODING=NAT>		<i>National standard</i>

User Service Information Layer 1

<L1PROT.2>	@	Spare bits (octet 3)
<L1RATE>	@	User Rate
<L1RATE=1200>		<i>1.2 kbit/s</i>
<L1RATE=14400>		<i>14.4 kbit/s</i>
<L1RATE=16000>		<i>16.0 kbit/s</i>
<L1RATE=19200>		<i>19.2 kbit/s</i>
<L1RATE=2400>		<i>2.4 kbit/s</i>
<L1RATE=32000>		<i>32.0 kbit/s</i>
<L1RATE=3600>		<i>3.6 kbit/s</i>
<L1RATE=4800>		<i>4.8 kbit/s</i>
<L1RATE=48000>		<i>48.0 kbit/s</i>
<L1RATE=56000>		<i>56.0 kbit/s</i>
<L1RATE=600>		<i>0.6 kbit/s</i>
<L1RATE=7200>		<i>7.2 kbit/s</i>
<L1RATE=8000>		<i>8.0 kbit/s</i>
<L1RATE=9600>		<i>9.6 kbit/s</i>
<L1RATE=RES>		<i>Reserved</i>
<L1TYPE>	@	Protocol type
<L1TYPE=ADPCM>		<i>32 kbit/s ADPCM</i>
<L1TYPE=ALAW>		<i>A-Law</i>
<L1TYPE=I412>		<i>CCITT Rec I.412</i>
<L1TYPE=RES>		<i>Reserved</i>
<L1TYPE=ULAW>		<i>u-Law</i>
<L1TYPE=V110>		<i>V.110/X.30 rate adaption</i>

User Service Information Layer 2

<L2PROT>	@	Layer 2 Protocol
<L2PROT=Q710>		<i>Q.710</i>
<L2PROT=Q921>		<i>Q.921</i>
<L2PROT=RES>		<i>Reserved</i>
<L2PROT=UNDF>		<i>Undefined</i>
<L2PROT=X25>		<i>X.25 link level</i>

User Service Information Layer 3

<L3PROT>	@	Layer 3 Protocol
<L3PROT=Q931>		<i>Q.931</i>
<L3PROT=RES>		<i>Reserved</i>
<L3PROT=UNDF>		<i>Undefined</i>
<L3PROT=X25>		<i>X.25 packet layer</i>

User to User Information

<UI>	? #	User to User Information
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6**ANSI_TCAP88.T**

ANSI TCAP, T1.114-1988

1.0

<CLASS>	@	Class
<FORM>	@	Form
<LEN>	@	Tag Length
<TCAP>	? F	Transaction Capabilities

6.1 Transactions

<TPI>	G	Transaction Portion ID
<TTAG>	@	Message Type Identifier
<CWOP>	F	<i>Conversation Without Permission</i>
<CWP>	F	<i>Conversation With Permission</i>
<QWOP>	F	<i>Query Without Permission</i>
<QWP>	F	<i>Query With Permission</i>
<RESP>	F	<i>Response</i>
<UNI>	F	<i>Unidirectional</i>

6.2 Components

<COMPI>	G	Component Portion ID
<CTAG>	@	Component Type Identifier
<INK>	F	<i>Invoke (Not Last)</i>
<INKL>	F	<i>Invoke (Last)</i>
<REJ>	F	<i>Reject</i>
<RER>	F	<i>Return Error</i>
<RR>	F	<i>Return Result (Not Last)</i>
<RRL>	F	<i>Return Result (Last)</i>

6.3 Transaction and Component ID's

<CORID>	@	Correlation ID
<DESTID>	@	Destination (Responding) Transaction ID
<INKID>	@	Invoke ID
<ORGID>	@	Originating Transaction ID

6.4 Parameters

<CONTPARM>	?	Context Specific Parameter
<??PARM>	?	Unrecognized Parameter
<PTAG>	@	Parameter Identifier

Automatic Code Gap

<CCI>	@	Control Cause
<DUR>	@	Duration
<GAP>	@	Gap

Digits

<DIGITS>	? F	Digits Parameter
<DIGI>	? V	Digits (field)
<DIGITS.NPLAN>	@ G	Numbering Plan (note 7)
<ENCD>	@	Encoding
<NNUM>	@	Nature of Number
<NUMD>	@	Number of Digits
<TYDIG>	@ G	Type of Digits
<TYDIG=ANI>	F	<i>ANI (Calling)</i>
<TYDIG=BINUM>	F	<i>Billing number</i>
<TYDIG=CALL>	F	<i>Caller interaction</i>
<TYDIG=CAR>	F	<i>Carrier</i>
<TYDIG=DENUM>	F	<i>Destination number</i>
<TYDIG=DIAL>	F	<i>Dialled (Called)</i>
<TYDIG=LATA>	F	<i>LATA</i>
<TYDIG=NUS>	F	<i>Not used</i>
<TYDIG=PIN>	F	<i>PIN</i>
<TYDIG=RTNUM>	F	<i>Routing number</i>
<TYDIG=SPAR>	F	<i>Spare</i>

Error Code

<ERCO>	@ G	National Error Code Field
<ERCO=MISS>	F	<i>Missing customer record</i>
<ERCO=NUS>	F	<i>Not used</i>
<ERCO=REPY>	F	<i>Reply overdue</i>
<ERCO=SPAR>	F	<i>Spare</i>
<ERCO=UCSEQ>	F	<i>Unexpected component sequence</i>
<ERCO=UDATA>	F	<i>Unexpected data value</i>
<ERCO=UNAV>	F	<i>Data unavailable</i>
<ERCO=UNET>	F	<i>Unavailable network resource</i>
<ERCX>	@ F	National Error Code Parameter

Operation Code

<OPCO>	? F	National Operation Code Paramter
<OPFAM>	@	Operation Family
<OPREP>	@	Operation Reply Ind.
<OCC>	@ G #	Connection Control Operation Family
<OCC=CON>	F	<i>Connect</i>
<OCC=DIS>	F	<i>Disconnect</i>
<OCC=FOR>	F	<i>Forward disconnect</i>
<OCC=NUS>	F	<i>Not used</i>
<OCC=RES>	F	<i>Reserved</i>
<OCC=SPAR>	F	<i>Spare</i>
<OCC=TEMP>	F	<i>Temporary connect</i>
<OCHAR>	@ G #	Charging Operation Family
<OCHAR=BILL>	F	<i>Bill call</i>
<OCHAR=NUS>	F	<i>Not used</i>
<OCHAR=RES>	F	<i>Reserved</i>
<OCHAR=SPAR>	F	<i>Spare</i>
<OCI>	@ G #	Caller Interaction Operation Family
<OCI=ACOL>	F	<i>Play announcement & collect digits</i>
<OCI=ANN>	F	<i>Play announcement</i>
<OCI=NUS>	F	<i>Not used</i>
<OCI=RES>	F	<i>Reserved</i>
<OCI=SPAR>	F	<i>Spare</i>
<OMISC>	@ G #	Miscellaneous Operation Family
<OMISC=NUS>	F	<i>Not used</i>
<OMISC=RES>	F	<i>Reserved</i>
<OMISC=SPAR>	F	<i>Spare</i>
<ONET>	@ G #	Network Management Operation Family
<ONET=ACG>	F	<i>Automatic call gap</i>
<ONET=NUS>	F	<i>Not used</i>
<ONET=RES>	F	<i>Reserved</i>
<ONET=SPAR>	F	<i>Spare</i>

<ONUS>	@ G #	Not Used Operation Family
<ONUS=NUS>	F	<i>Not used</i>
<ONUS=RES>	F	<i>Reserved</i>
<ONUS=SPAR>	F	<i>Spare</i>
<OPAR>	@ G #	Parameter Operation Family
<OPAR=NUS>	F	<i>Not used</i>
<OPAR=PRO>	F	<i>Provide value</i>
<OPAR=RES>	F	<i>Reserved</i>
<OPAR=SET>	F	<i>Set value</i>
<OPAR=SPAR>	F	<i>Spare</i>
<OPRO>	@ G #	Procedural Operation Family
<OPRO=NUS>	F	<i>Not used</i>
<OPRO=RES>	F	<i>Reserved</i>
<OPRO=SPAR>	F	<i>Spare</i>
<OPRO=TEMP>	F	<i>Temporary handover</i>
<OPROV>	@ G #	Provide Instruction Operation Family
<OPROV=ASST>	F	<i>Assist</i>
<OPROV=NUS>	F	<i>Not used</i>
<OPROV=RES>	F	<i>Reserved</i>
<OPROV=SPAR>	F	<i>Spare</i>
<OPROV=STAT>	F	<i>Start</i>
<ORES>	@ G #	Reserved Operation Family
<ORES=NUS>	F	<i>Not used</i>
<ORES=RES>	F	<i>Reserved</i>
<ORES=SPAR>	F	<i>Spare</i>
<OSEND>	@ G #	Send Notification Operation Family
<OSEND=NUS>	F	<i>Not used</i>
<OSEND=RES>	F	<i>Reserved</i>
<OSEND=SPAR>	F	<i>Spare</i>
<OSPAR>	@ G	Spare Operation Family
<OSPAR=NUS>	F	<i>Not used</i>
<OSPAR=RES>	F	<i>Reserved</i>
<OSPAR=SPAR>	F	<i>Spare</i>
<POSPAR>	@	Private Operation Code

Problem Code

<PBCODE>	? F	Problem Code
<PTYPE>	@	Problem Type
<PGEN>	@ G #	General Problem
<PGEN=BAD>	F	<i>Badly Structured Component</i>
<PGEN=INCOR>	F	<i>Mistyped (incorrect) component</i>
<PGEN=NUS>	F	<i>Not used</i>
<PGEN=RES>	F	<i>Reserved</i>
<PGEN=SPAR>	F	<i>Spare</i>
<PGEN=UREC>	F	<i>Unrecognized component</i>

<PINK>	@ G #	Invoke Problem
<PINK=DUP>	F	<i>Duplicate invoke ID</i>
<PINK=INCOR>	F	<i>Mistyped (incorrect) parameter</i>
<PINK=NUS>	F	<i>Not used</i>
<PINK=RES>	F	<i>Reserved</i>
<PINK=SPAR>	F	<i>Spare</i>
<PINK=URCID>	F	<i>Unrecognized correlation ID</i>
<PINK=URECOP>	F	<i>Unrecognized operation</i>
<PNUS>	@ G #	Not Used Problem
<PNUS=NUS>	F	<i>Not used</i>
<PNUS=RES>	F	<i>Reserved</i>
<PNUS=SPAR>	F	<i>Spare</i>
<PRER>	@ G #	Return Error Problem
<PRER=INCOR>	F	<i>Mistyped (Incorrect) Parameter</i>
<PRER=NUS>	F	<i>Not used</i>
<PRER=RES>	F	<i>Reserved</i>
<PRER=SPAR>	F	<i>Spare</i>
<PRER=URCID>	F	<i>Unrecognized correlation ID</i>
<PRER=URERR>	F	<i>Unrecognized error</i>
<PRER=UXERR>	F	<i>Unexpected error</i>
<PRER=UXRER>	F	<i>Unexpected return error</i>
<PRR>	@ G #	Return Result Problem
<PRR=INCOR>	F	<i>Mistyped (incorrect) parameter</i>
<PRR=NUS>	F	<i>Not used</i>
<PRR=RES>	F	<i>Reserved</i>
<PRR=SPAR>	F	<i>Spare</i>
<PRR=URCID>	F	<i>Unrecognized correlation ID</i>
<PRR=UXRR>	F	<i>Unexpected return result</i>
<PSPAR>	@ G	Spare problem
<PSPAR=NUS>	F	<i>Not used</i>
<PSPAR=RES>	F	<i>Reserved</i>
<PSPAR=SPAR>	F	<i>Spare</i>
<PTRAN>	@ G #	Transaction Portion Problem
<PTRAN=BAD>	F	<i>Badly structured transaction portion</i>
<PTRAN=INCOR>	F	<i>Incorrect transaction portion</i>
<PTRAN=NUS>	F	<i>Not used</i>
<PTRAN=RES>	F	<i>Reserved</i>
<PTRAN=SPAR>	F	<i>Spare</i>
<PTRAN=URECPT>	F	<i>Unrecognized package type</i>
<PTRAN=URECTR>	F	<i>Unrecognized transaction ID</i>

Standard User Error Code

<SUEC>	@ G	Standard User Error Code Field
<SUEC=CABA>	F	<i>Caller abandon</i>
<SUEC=IMPRO>	F	<i>Improper call response</i>
<SUEC=NUS>	F	<i>Not used</i>
<SUEC=SPAR>	F	<i>Spare</i>
<SUECX>	? F #	Standard User Error Code Parameter

Other Parameters

<PCTY>	@ #	Package Type
<PDTA>	? #	Problem Data
<SKEY>		Service Key
<STA>	@ #	Standard Announcement
<TCGPA>	? F #	SCCP Calling Party Address (note 7)
<TRANSID>	@ #	Transaction ID