

SCCP ANSI/ITU/TTC/CHINESE ITU-T 07/96

STATEMENT OF COMPLIANCE

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1 General

1.1 Introduction

This document describes to what extent this version of the Ericsson SCCP signaling component complies with the standards Reference [1], Reference [2], Reference [3], Reference [4] and Reference [5] .

1.2 Terms

CREF	Connection Refused.
DPC	Destination Point Code.
GT	Global Title.
GTT	Global Title Translation.
ISDN	Integrated Services Digital Network.
ISDN-UP	Integrated Services Digital Network-User Part.
ITU	International Telecommunication Union.
ITU-T	Telecommunication Standardization sector of ITU.
LUDT	Long Unitdata message.
LUDTs	Long Unitdata Service message.
MTP	Message Transfer Part.
MTP-SAP	SAP to access the services provided by MTP.
NSDU	Network Service Data Unit.
PC	Point code.
SAP	Service Access Point
SCCP	Signaling Connection Control Part.
SCMG	SCCP Management.
SMI	Subsystem Multiplicity Indicator.
SOG	Subsystem Out of service Grant.
SOR	Subsystem Out of service Request.



SS7	Signaling Subsystem No.7.
SSN	SubSystem Number.
UDT	Unitdata message.
UDTS	Unitdata Service message.
XUDT	Extended Unitdata message.
XUDTS	Extended Unitdata Service message.

1.3 Concept

The terms that are used are:

C	The Ericsson signaling component complies with the specified section in the standard.
N	The Ericsson signaling component does not comply with the specified section in the standard.
P	The Ericsson signaling component complies partly with the specified section in the standard.
-	There is nothing to implement in the referred section (always placed in column C).



2 Compliance Lists

2.1 ITU-T Q.711, Functional Description of SCCP

Table 1 Functional Description of SCCP

References		C	N	P	Comments
1.	Scope and field of application	-			
2.	References	-			
2.1	Normative References	-			
2.2	Informative References	-			
3.	Definitions	-			
3.1		X			
3.2		X			
4.	Abbreviations and acronyms	-			
5.	General characteristic	-			
5.1	Technique of description	X			
5.2	Primitives	X			
5.3	Peer-to-peer communication	X			
5.4	Model of the connection-oriented network service	X			
5.5	Model of the connectionless network service	X			
5.6	Contents of the Q.71x - Series Recommendations	X			
6.	Services provided by the SCCP			X	Note 1
6.1	Connection-oriented services			X	Note 19
6.1.1	Temporary signaling connections	-			
6.1.1.1	Description	X			
6.1.1.1.1	Connection establishment phase			X	Note 11
6.1.1.1.2	Data transfer phase			X	Note 1

Table 1 Functional Description of SCCP

References		C	N	P	Comments
6.1.1.1.3	Connection release phase	X			
6.1.1.2	Network service primitives and parameters	-			
6.1.1.2.1	Overview			X	Note 2, Note 3
6.1.1.2.2	Connection establishment phase			X	Note 3
6.1.1.2.3	Data transfer phase			X	Note 2
6.1.1.2.4	Release phase	X			
6.1.1.3	Additional SCCP primitive and interface elements			X	Note 11
6.1.1.3.1	Notice service			X	Note 2, Note 45
6.1.1.3.2	Connection establishment interface elements		X		
6.1.2	Permanent signaling connections	-			
6.1.2.1	Description		X		
6.1.2.2	Primitives and parameters		X		
6.2	Connectionless services	X			
6.2.1	Description	X			
6.2.2	Primitives and parameters of the connectionless service	-			
6.2.2.1	Overview	X			
6.2.2.2	Parameters	-			
6.2.2.2.1	Address	X			
6.2.2.2.2	Sequence control	X			
6.2.2.2.3	Return option	X			
6.2.2.2.4	Reason for return	X			
6.2.2.2.5	User data	X			
6.2.2.2.6	Importance	X			
6.2.2.3	Primitives	-			
6.2.2.3.1	UNITDATA	X			
6.2.2.3.2	NOTICE	X			
6.2.3	State transition diagram	X			
6.3	SCCP management	-			



Table 1 Functional Description of SCCP

References		C	N	P	Comments
6.3.1	Description	X			
6.3.2	Primitives and parameters of the SCCP management	-			
6.3.2.1	Overview			X	Note 4, Note 28
6.3.2.2	Parameters	-			
6.3.2.2.1	Affected subsystem	X			
6.3.2.2.2	User status	X			
6.3.2.2.3	Subsystem multiplicity indicator			X	Note 5
6.3.2.2.4	Affected signaling point			X	Note 4, Note 29
6.3.2.2.5	signaling point status			X	Note 4, Note 34
6.3.2.2.6	Remote SCCP Status			X	Note 4, Note 35
6.3.2.2.7	Restricted Importance Level			X	Note 4, Note 36, Note 34, Note 35
6.3.2.3	Primitives	-			
6.3.2.3.1	COORD		X		
6.3.2.3.2	STATE			X	Note 28
6.3.2.3.3	PCSTATE			X	Note 4, Note 36
7.	Definition of the lower boundary of the SCCP	-			
7.1	MTP-SAP	X			
7.2	MTP Primitives and parameters	X			
7.2.1	TRANSFER	X			
7.2.2	PAUSE	X			
7.2.3	RESUME	X			
7.2.4	STATUS	X			
7.2.5	Notification of completion MTP Restart procedure	X			
7.3	State transition diagram	X			
8.	Functions provided by the SCCP	X			
8.1	Connection-oriented functions	-			

Table 1 Functional Description of SCCP

References		C	N	P	Comments
8.1.1	Functions for temporary signaling connections	-			
8.1.1.1	Connection establishment functions			X	Note 1
8.1.1.2	Data transfer phase function			X	Note 6
8.1.1.3	Release phase functions	X			
8.1.2	Functions for permanent signaling connections	-			
8.1.2.1	Connection establishment phase and connection release phase functions		X		
8.1.2.2	Data transfer phase functions		X		
8.2	Connectionless service functions	X			
8.3	Management functions			X	Note 7
8.4	Routing and translation functions	X			

2.2 ITU-T Q.712, Definition and Function of SCCP Messages

Table 2 Definition and Function of SCCP Messages

References		C	N	P	Comments
1.	Signaling connection control part messages	X			
1.1	Connection confirm (CC)	X			Note 32
1.2	Connection request (CR)	X			Note 32
1.3	Connection refused (CREF)	X			
1.4	Data acknowledgement (AK)		X		
1.5	Data form 1 (DT1)	X			
1.6	Data form 2 (DT2)		X		
1.7	Expedited data (ED)		X		
1.8	Expedited data acknowledgement (EA)		X		
1.9	Inactivity test (IT)	X			



Table 2 Definition and Function of SCCP Messages

References		C	N	P	Comments
1.10	Protocol data unit error (ERR)	X			
1.11	Released (RLSD)	X			
1.12	Release complete (RLC)	X			
1.13	Reset confirm (RSC)		X		
1.14	Reset request (RSR)		X		
1.15	Subsystem-allowed (SSA)	X			
1.16	Subsystem-out-of-service-grant (SOG)		X		
1.17	Subsystem-out-of-service-request (SOR)		X		
1.18	Subsystem-prohibited (SSP)	X			
1.19	Subsystem-status-test (SST)	X			
1.20	Unitdata (UDT)	X			
1.21	Unitdata service (UDTS)	X			
1.22	Extended unitdata (XUDT)	X			
1.23	Extended unitdata service (XUDTS)	X			
1.24	Subsystem congested (SSC)	X			
1.25	Long unitdata (LUDT)	X			Note 20
1.26	Long unitdata service (LUDTS)	X			
2.	SCCP parameter	-			
2.1	Affected point code	X			
2.2	Affected subsystem number	X			
2.3	Calling or called party address	X			
2.4	Credit			X	Note 10
2.5	Data	X			
2.6	Diagnostic	-			
2.7	Error cause	X			
2.8	End of optional parameters	X			
2.9	Local reference number (source and destination)	X			

Table 2 Definition and Function of SCCP Messages

References		C	N	P	Comments
2.10	Protocol class	X			
2.11	Receive sequence number		X		
2.12	Refusal cause	X			
2.13	Release cause	X			
2.14	Reset cause		X		
2.15	Return cause	X			
2.16	Segmenting/reassembling	X			
2.17	Sequencing/segmenting		X		
2.18	Subsystem multiplicity indicator	X			
2.19	Hop counter	X			
2.20	Segmentation	X			
2.21	Importance	X			
2.22	Congestion level	X			
2.23	Long data	X			
3.	Inclusion of fields in the messages			X	Note 31
4.	References	-			
4.1	Normative References	-			
4.2	Informative References	-			

2.3 ITU-T Q.713, SCCP Formats and Codes

Table 3 SCCP Formats and Codes

References		C	N	P	Comments
1.	General	X			
1.1	Message type code	X			
1.2	Formatting principles	X			
1.3	Mandatory fixed part	X			
1.4	Mandatory variable part	X			
1.5	Optional part	X			
1.6	End of optional parameters octet	X			



Table 3 SCCP Formats and Codes

References		C	N	P	Comments
1.7	Order of transmission	X			
1.8	Coding of spare bits	X			
1.9	National message types and parameters	X			
1.10	International message types and parameters	X			
2.	Coding of the general parts	-			
2.1	Coding of the message type			X	Note 1
2.2	Coding of the length indicator	X			
2.3	Coding of the pointers	X			
3.	SCCP parameters	-			
3.1	End of optional parameters	X			
3.2	Destination local reference	X			
3.3	Source local reference	X			
3.4	Called party address	X			
3.4.1	Address indicator	X			
3.4.2	Address	X			
3.4.2.1	Signaling point code	X			
3.4.2.2	Subsystem number	X			
3.4.2.3	Global title	X			
3.4.2.3.1	Global title indicator = 0001	X			Note 44
3.4.2.3.2	Global title indicator = 0010	X			Note 44
3.4.2.3.3	Global title indicator = 0011	X			Note 44
3.4.2.3.4	Global title indicator = 0100	X			Note 44
3.5	Calling party address	X			
3.6	Protocol class			X	Note 1
3.7	Segmenting and reassembling	X			
3.8	Receive sequence number		X		
3.9	Sequencing and segmenting		X		
3.10	Credit			X	Note 10
3.11	Release cause	X			
3.12	Return cause	X			

Table 3 SCCP Formats and Codes

References		C	N	P	Comments
3.13	Reset cause		X		
3.14	Error cause	X			
3.15	Refusal cause	X			
3.16	Data	X			
3.17	Segmentation	X			
3.18	Hop counter	X			
3.19	Importance	X			
3.20	Long data	X			
4.	SCCP messages and codes	-			
4.1	General	-			
4.1.1		-			
4.1.2		-			
4.1.3		-			
4.1.4		-			
4.2	Connection request (CR)	X			Note 32
4.3	Connection confirm (CC)	X			Note 32
4.4	Connection refused (CREF)	X			
4.5	Released (RLSD)	X			
4.6	Release complete (RLC)	X			
4.7	Data form 1 (DT1)	X			
4.8	Data form 2 (DT2)		X		
4.9	Data acknowledgement (AK)		X		
4.10	Unitdata (UDT)	X			
4.11	Unitdata service (UDTS)	X			
4.12	Expedited data (ED)		X		
4.13	Expedited data acknowledgement (EA)		X		
4.14	Reset request (RSR)		X		
4.15	Reset confirm (RSC)		X		
4.16	Protocol data unit error (ERR)	X			
4.17	Inactivity test (IT)	X			
4.18	Extended unitdata (XUDT)			X	Note 38



Table 3 SCCP Formats and Codes

References		C	N	P	Comments
4.19	Extended unitdata service (XUDTS)	X			
4.20	Long unitdata (LUDT)	X			Note 20
4.21	Long unitdata service (LUDTS)	X			
5.	SCCP Management messages and codes	-			
5.1	General	X			
5.1.1	SCMG format identifier			X	Note 8
5.1.2	Formatting principles	X			
5.2	SCMG message parameters	X			
5.2.1	Affected SSN	X			
5.2.2	Affected PC	X			
5.2.3	Subsystem multiplicity indicator	X			
5.2.4	SCCP congestion level	X			
5.3	SCMG messages	X			
6.	References	-			
6.1	Normative References	-			
6.2	Informative References	-			
Annex A		-			
A.1	Introduction			X	Note 2
A.2	Connection refusal	X			
A.3	Connection release	X			
A.4	Connection reset		X		
A.5	Return cause	X			
Annex B: International SCCP addressing and format specification		-			
B.1	Introduction	X			
B.2	Guidelines on using SCCP addressing information elements in the international network	X			
B.3	GT routing specification of international services			X	Note 11

Table 3 SCCP Formats and Codes

References		C	N	P	Comments
B.4	International GT routing specification	-			
B.4.1	Translation selector: TT=17, NP=1, NAI=4	X			
B4.1.1	Format of address indicator and address	X			
B4.1.2	Translation rules		X		
B4.2	Translation selector: TT=1, NP=0, NAI=4	X			
B4.2.1	Format of address indicator and address	X			
B4.2.2	Translation rules		X		
B4.3	Translation selector: TT=2, NP=2, NAI=4	X			
B4.3.1	Format of address indicator and address	X			
B4.3.2	Translation rules		X		
B4.4	Translation selector: TT=0, NP=1, NAI=4	X			
B4.4.1	Format of address indicator and address	X			
B4.4.2	Translation rules		X		
B4.5	Translation selector: TT=3, NP=1, NAI=4	X			
B4.5.1	Format of address indicator and address	X			
B4.5.2	Translation rules		X		

2.4 ITU-T Q.714, SCCP Procedures

Table 4 SCCP Procedures

References		C	N	P	Comments
1.	Introduction	-			
1.1	General characteristics of signaling connection control procedures	-			



Table 4 SCCP Procedures

References		C	N	P	Comments
1.1.1	Purpose	X			
1.1.2	Protocol classes			X	Note 1
1.1.2.1	Protocol class 0	X			
1.1.2.2	Protocol class 1	X			
1.1.2.3	Protocol class 2	X			
1.1.2.4	Protocol class 3		X		
1.1.3	Signaling connections			X	Note 30
1.1.4	Compatibility and handling of unrecognized information	-			
1.1.4.1	Rules for forward compatibility	X			
1.1.4.2	Handling of unrecognized messages or parameters	X			
1.1.4.3	Handling of non-mandatory, unsupported parameter values	X			
1.1.4.4	Treatment of spare fields	X			
1.1.4.5	Handling of gaps	X			
1.2	Overview of procedures for connection-oriented services	-			
1.2.1	Connection establishment			X	Note 30
1.2.2	Data transfer			X	Note 1
1.2.3	Connection release	X			
1.3	Overview of procedures for connectionless services	-			
1.3.1	General			X	Note 20
1.3.2	Segmentation and reassembly	X			
1.4	Structure of the SCCP and contents of specification			X	Note 2, Note 4, Note 1, Note 8
2.	Addressing and routing	-			
2.1	SCCP addressing	X			
2.2	SCCP routing principles	X			
2.2.1	Receipt of SCCP message transferred by a MTP	X			

Table 4 SCCP Procedures

References		C	N	P	Comments
2.2.2	Messages from connection-oriented or connectionless control to SCCP routing control	X			
2.2.2.1	DPC present	X			
2.2.2.2	DPC not present	X			
2.3	SCCP routing	X			
2.3.1	Receipt of SCCP message transferred by the MTP			X	Note 30
2.3.2	Messages from connectionless or connection-oriented control to SCCP routing control	X			
2.4	Global Title Translation	-			
2.4.1	General characteristics of the GTT	X			
2.4.2	Terminology definitions	-			
2.4.2.1	GT information	X			
2.4.2.2	Other definitions used in the GTT function	X			
2.4.3	Input of the GTT function	-			
2.4.3.1	Local information (mandatory input)	X			
2.4.3.2	GT information (mandatory input)	X			
2.4.3.3	SSN (mandatory input if present)	X			
2.4.3.4	Loadsharing information	X			
2.4.4	Output of the GTT function	X			
2.4.5	Global title translation function	X			
2.5	Compatibility test			X	Note 20,Note 21
2.6	Traffic limitation mechanism	-			
2.6.1	General	X			
2.6.2	Importance of a message			X	Note 37,Note 39



Table 4 SCCP Procedures

References		C	N	P	Comments
2.6.3	Handling of messages to a congested node			X	Note 2,Note 38,Note 40
2.7	Calling party address treatment	-			
2.7.1	Address indicator	X			
2.7.2	Calling party address in the international network	X			
2.7.3	Routing indicator	X			
2.7.4	Screening			X	Note 42
2.7.5	Inclusion of OPC in the calling party address	-			
2.7.5.1	LU DT or XU DT or UD T message	X			
2.7.5.2	CR message			X	Note 30
2.8	Routing failures	X			
2.8.1	No translation for an address of such nature	X			
2.8.2	No translation for this specific address	X			
2.8.3	MTP and SCCP and subsystem failure	X			
2.8.4	MTP and SCCP and system congestion	X			
2.8.5	Unequipped user	X			
2.8.6	Hop counter violation	X			
3.	Connection-oriented procedures	-			
3.1	Connection establishment	-			
3.1.1	General			X	Note 11
3.1.2	Local reference numbers	X			
3.1.3	Negotiation procedures	-			
3.1.3.1	Protocol class negotiation	X			
3.1.3.2	Flow control credit negotiation		X		

Table 4 SCCP Procedures

References		C	N	P	Comments
3.1.4	Actions at the origination node	-			
3.1.4.1	Initial actions			X	Note 1, Note 11
3.1.4.2	Subsequent actions			X	Note 1, Note 10
3.1.5	Actions at a relay node with coupling	-			
3.1.5.1	Initial actions			X	Note 1, Note 11
3.1.5.2	Subsequent actions			X	Note 1, Note 10
3.1.6	Actions at destination node	-			
3.1.6.1	Initial actions			X	Note 1, Note 11
3.1.6.2	Subsequent actions			X	Note 1, Note 10
3.2	Connection refusal	-			
3.2.1	Actions at node initiating connection refusal			X	Note 11
3.2.1.1	Initiating connection refusal at the destination node			X	Note 11 Note 46
3.2.1.2	Initiating connection refusal at the relay node			X	Note 11 Note 46
3.2.1.3	Initiating connection refusal at the originating node	X			
3.2.2	Actions at relay node not initiating connection refusal			X	Note 11 Note 46
3.2.3	Actions at the origination node not initiating connection refusal	X			
3.3	Connection release	-			
3.3.1	General	X			
3.3.2	Frozen reference	X			
3.3.3	Actions at an end node initiating connection release	-			
3.3.3.1	Initial actions	X			
3.3.3.2	Subsequent actions			X	Note 12
3.3.4	Actions at a relay node	X			



Table 4 SCCP Procedures

References		C	N	P	Comments
3.3.4.1	Initial actions			X	Note 11
3.3.4.2	Subsequent actions			X	Note 12
3.3.5	Actions at an end node not initiating connection release	X			
3.4	Inactivity control			X	Note 19
3.5	Data transfer	-			
3.5.1	General			X	Note 19
3.5.1.1	Actions at the originating node			X	Note 1
3.5.1.2	Actions at a relay node			X	Note 1
3.5.1.3	Actions at the destination node			X	Note 1
3.5.2	Flow control	-			
3.5.2.1	General		X		
3.5.2.2	Sequence numbering		X		
3.5.2.3	Flow control window		X		
3.5.2.4	Flow control procedures	-			
3.5.2.4.1	Transfer of DT2 messages		X		
3.5.2.4.2	Transfer of AK messages		X		
3.5.2.4.3	Reception of a Data or AK message		X		
3.5.3	Segmenting and reassembly	X			
3.6	Expedited data transfer	-			
3.6.1	General		X		
3.6.2	Actions at the originating node		X		
3.6.3	Actions at a relay node		X		
3.6.4	Actions at destination node		X		
3.7	Reset	-			
3.7.1	General		X		
3.7.2	Action at the initiating node	-			
3.7.2.1	Initial actions		X		
3.7.2.2	Subsequent actions		X		
3.7.3	Actions at a relay node	-			

Table 4 SCCP Procedures

References		C	N	P	Comments
3.7.3.1	Initial actions		X		
3.7.3.2	Subsequent actions		X		
3.7.4	Actions at an end node not initiating the reset procedure		X		
3.7.5	Handling of messages during the reset procedures		X		
3.8	Restart	-			
3.8.1	General	X			
3.8.2	Actions at the recovered node	-			
3.8.2.1	Initial actions			X	Note 19, Note 24
3.8.2.2	Subsequent actions	X			Note 24
3.8.3	Actions at the non-failed far end node	X			
3.8.3.1	Permanent signaling connections		X		
3.8.3.2	Abnormalities	-			
3.8.3.3	General	X			
3.8.4	Syntax error	X			
3.8.5	Action tables			X	Note 1
3.8.6	Actions upon the reception of an ERR message	X			
4.	Connectionless procedures			X	Note 20
4.1	Data transfer			X	Note 20
4.1.1	Segmentation/reassembly	-			
4.1.1.1	Segmentation	-			
4.1.1.1.1	General	X			
4.1.1.1.2	Normal procedures	X			
4.1.1.1.3	Message return procedure	X			
4.1.1.1.3.1	Segmentation not supported	X			
4.1.1.1.3.2	Segmentation failed	X			
4.1.1.2	Reassembly	-			
4.1.1.2.1	General	X			
4.1.1.2.2	Normal procedures	X			



Table 4 SCCP Procedures

References		C	N	P	Comments
4.1.1.2.3	Message return procedure	X			
4.1.1.2.3.1	Destination cannot perform reassembly	X			
4.1.1.2.3.2	Error in message transport	X			
4.1.1.2.3.3	Error in local processing	X			
4.1.1.2.3.4	No buffer space to perform reassembly	X			
4.1.2	Message change			X	Note 25
4.2	Message return procedure	X			
4.3	Syntax error	X			
5.	SCCP management procedures	-			
5.1	General	X			
5.2	Signaling point status management	-			
5.2.1	General	X			
5.2.2	Signaling point prohibited	X			
5.2.3	Signaling point allowed	X			Note 33
5.2.4	Signaling point congested	X			
5.2.5	Local MTP network availability	X			Note 33
5.2.6	Local MTP network unavailability	-			
5.2.7	SCCP reports of SCCP and nodal congestion	X			
5.2.7.1	Actions in the congested SCCP node	X			
5.2.7.2	Actions in a relay node or originating node	X			
5.2.8	Inter- and Intra- SCMG congestion reports procedure	X			Note 36
5.3	Subsystem status management	-			
5.3.1	General	X			
5.3.2	Subsystem prohibited	X			

Table 4 SCCP Procedures

References		C	N	P	Comments
5.3.2.1	Receipt of messages for a prohibited subsystem (response method)	X			
5.3.2.2	Receipt of subsystem prohibited message or N-STATE REQUEST primitive or local user failed			X	Note 28
5.3.3	Subsystem allowed			X	Note 28
5.3.4	Subsystem status test	-			
5.3.4.1	General	X			
5.3.4.2	Actions at the initiating node	X			
5.3.4.3	Actions at the receiving node	X			
5.3.5	Coordinated state change	-			
5.3.5.1	General		X		
5.3.5.2	Actions at the requesting node		X		
5.3.5.3	Actions at the requested node		X		
5.3.6	Local broadcast	-			
5.3.6.1	General	X			Note 27
5.3.6.2	User-out-of-service			X	Note 27, Note 28
5.3.6.3	User-in-service			X	Note 27, Note 28
5.3.6.4	Signaling point inaccessible			X	Note 27, Note 34, Note 35
5.3.6.5	Signaling point remote SCCP accessible			X	Note 27, Note 34, Note 35
5.3.6.6	Restricted importance level reporting			X	Note 27, Note 36
5.3.7	Broadcast	-			
5.3.7.1	General	X			
5.3.7.2	Subsystem prohibited			X	Note 28
5.3.7.3	Subsystem allowed			X	Note 28
5.4	MTP and SCMG restart	X			Note 33
6.	References	-			
6.1	Normative References	-			
6.2	Informative References	-			



Table 4 SCCP Procedures

References		C	N	P	Comments
Annex A		-			
A.1	Introduction	-			
A.2	Symbol definition of the state diagrams at the message interface	X			
A.3	Symbol definition of the state diagrams			X	Note 1, Note 11
Annex B		-			
B.1	Introduction	-			
B.2	Symbol definition of the action tables			X	Note 43
B.3	Table of contents			X	Note 1, Note 11
Annex C		-			
C.1	General	-			
C.2	Drafting conventions	-			
C.3	Figures	-			
C.4	Abbreviations and timers			X	Note 12
Annex D		-			
D.1	General	-			
D.2	Drafting conventions	-			
D.3	Figures	-			
D.4	Abbreviations and timers			X	Note 22

2.5 ITU-T Q.752, Monitoring and Measurements

Table 5 Monitoring and Measurements

References		C	N	P	Comments
1.	Introduction	-			
1.1	General	-			
1.1.1		X			
1.1.2			X		
1.2	Network view	-			
1.2.1		-			

Table 5 Monitoring and Measurements

References		C	N	P	Comments
1.3	Guidelines for uses of measurements	-			
1.3.1		-			
1.4	Grouping of measurements	-			
1.4.1				X	Note 13
1.4.2				X	Note 13
1.5	Collection of measurements	-			
1.6	Definition of terms	-			
1.6.1	Fault (F)			X	Note 14
1.6.2	Configuration (C)	X			
1.6.3	Performance (P)	X			
1.6.4	Accounting (A)	-			
1.6.5	Network planning and administration (N)	X			
1.6.6	Near real time measurements (R)	X			
1.7	Listing of measurements	-			
1.7.1	General	-			
1.7.1.1		-			
1.7.1.2		X			
1.7.1.3				X	Note 15
1.7.1.4		X			
1.7.1.5		X			
1.7.1.6			X		Note 16
1.7.1.7			X		Note 16
1.7.2	Intervals for measurements		X		Note 16
1.8	Techniques for filtering measurements	-			
1.8.1	Single faults giving rise to multiple error reports	X			
2.	MTP monitoring and measurements	-			
2.1	General				



Table 5 Monitoring and Measurements

References		C	N	P	Comments
3.	SCCP monitoring and measurements	-			
3.1	General	X			
3.2	Table 7	-			
3.2.1				X	Note 14
3.3	Table 8	-			
3.3.1			X		
3.3.2			X		Note 7
3.3.3			X		
3.3.4			X		
3.4	Table 9	-			
3.4.1		X			
3.4.2		X			
3.4.3		X			
3.4.4		X			
3.4.5		X			
3.4.6				X	Note 1, Note 14
3.5	Table 9 bis	-			
3.5.1				X	Note 1, Note 14
4.	ISDN-UP monitoring and measurements	-			
5.	TC monitoring and measurements	-			
6.	Uses of measurements	-			
6.1	Introduction	-			
6.1.1				X	Note 14
6.1.2				X	Note 14
6.2	Message transfer part (MTP)	-			
6.3	Signaling connection control part (SCCP)	-			
6.3.1	SCCP fault management	-			
6.3.1.1	Routing failures	X			
6.3.1.2	SCCP unavailability and congestion			X	Note 8

Table 5 Monitoring and Measurements

References		C	N	P	Comments
6.3.1.3	Connectionless SCCP segmentation and reassembly faults	X			
6.3.2	SCCP configuration management			X	Note 7
6.3.3	SCCP performance	-			
6.3.3.1	Utilization			X	Note 1
6.3.3.2	SCCP Quality of Service			X	Note 1
6.4	Integrated services digital network user part (ISDN-UP)	-			
6.5	Transaction Capabilities (TC)	-			
6.6	Preparation of traffic forecasts	-			
6.7	Network planning	-			
6.8	Evaluation of maintenance force effectiveness	-			
6.9	Near real time network control	-			
7.	Accounting of MTP and SCCP message traffic	-			
7.1	General	-			
7.1.1				X	Note 26
7.1.2				X	Note 26
7.1.3				X	Note 26
7.2	MTP traffic registration	-			
7.3	SCCP traffic registration			X	Note 26
7.3.1	Basic registration principles			X	Note 26
7.3.2	Limitations			X	Note 26
Table 1	MTP signaling Link Faults and Performance	-			
Table 2	MTP signaling Link Availability	-			
Table 3	MTP signaling Link Utilization	-			
Table 4	MTP signaling Link Set and Route Set Availability	-			



Table 5 Monitoring and Measurements

References		C	N	P	Comments
Table 5	MTP signaling Point Status	-			
Table 6	MTP signaling Traffic Distribution (signaling Route Utilization)	-			
Table 7	SCCP Error Performance	-			
Table 7.1	Routing Failure - No translation for address of such nature			X	Note 14
Table 7.2	Routing Failure - No translation for this specific address			X	Note 14
Table 7.3	Routing Failure - Network Failure (Point Code not available)			X	Note 14
Table 7.4	Routing Failure - Network Congestion			X	Note 14
Table 7.5	Routing Failure - Subsystem Failure (unavailable)			X	Note 14
Table 7.6	Routing Failure - Subsystem Congestion			X	Note 14
Table 7.7	Routing Failure - Unequipped user (Subsystem)			X	Note 14
Table 7.8	Syntax Error Detected		X		
Table 7.9	Routing Failure - Unqualified			X	Note 14
Table 7.10	Reassembly Error - Timer T(reass) expiry			X	Note 14
Table 7.11	Reassembly Error - Segment received out of sequence (inc. duplicates, recpt of non-first segment for which no reassembly process)			X	Note 14
Table 7.12	Reassembly Error - No reassembly space			X	Note 23
Table 7.13	Hop counter violation (XUDT, XUDTS, LUDT, LUDTS, CR)			X	Note 14
Table 7.14	Message too large for segmentation			X	Note 14
Table 7.15	Failure to release complete supervision			X	Note 23

Table 5 Monitoring and Measurements

References		C	N	P	Comments
Table 7.16	Timer T(iar) expiry			X	Note 23
Table 7.17	Provider initiated reset of a connection		X		
Table 7.18	Provider initiated release of a connection			X	Note 23
Table 7.19	Segmentation Error - Segmenting not supported			X	Note 14
Table 7.20	Segmentation Error - Segmentation failed			X	Note 23
Table 7.21	Reassembly Error - Reassembly failed		X		
Table 8	SCCP Subsystem Availability	-			
Table 8.1	Start of local SCCP unavailable - Failure		X		
Table 8.2	Start of local SCCP unavailable - Maintenance made busy		X		
Table 8.3	Start of local SCCP unavailable - Congestion		X		
Table 8.4	Stop of local SCCP unavailable - All reasons		X		
Table 8.5	Deleted		X		
Table 8.6	Subsystem out-of-service request granted		X		
Table 8.7	Subsystem out-of-service request denied T(coord) expiry		X		
Table 8.8	SCCP/subsystem congested message received			X	Note 14
Table 8.9	Start of local subsystem prohibited			X	Note 14
Table 8.10	Stop of local subsystem prohibited			X	Note 14
Table 8.11	Subsystem prohibited message received			X	Note 14
Table 8.12	Subsystem allowed message received			X	Note 14
Table 9	SCCP Utilization	-			



Table 5 Monitoring and Measurements

References		C	N	P	Comments
Table 9.1	UDTS message sent moved to 9 bis.2	-			
Table 9.2	UDTS message received moved to 9 bis.4	-			
Table 9.3	Total messages handled (from local or remote subsystems)		X		
Table 9.4	Total messages intended for local subsystem		X		
Table 9.5	Total messages requiring global title translation			X	Note 14
Table 9.6	Total messages originating (for connectionless classes 0,1 only) per source SSN			X	Note 17
Table 9.7	Total messages received (for connectionless classes 0,1 only) per sink SSN			X	Note 17
Table 9.8	Messages sent to backup subsystem		X		
Table 9.9	DT1 messages received from MTP per sink SSN			X	Note 14, Note 17
Table 9.10	DT1 messages sent to MTP per source SSN			X	Note 14, Note 17
Table 9.11	DT2 messages received from MTP per sink SSN		X		
Table 9.12	DT2 messages sent to MTP per source SSN		X		
Table 9.13	ED messages sent to MTP per source SSN		X		
Table 9.14	ED messages received from MTP per sink SSN		X		
Table 9 bis	SCCP Quality of Service	-			
Table 9 bis.1	UDT messages sent			X	Note 14
Table 9 bis.2	UDTS messages sent			X	Note 14
Table 9 bis.3	UDT messages received			X	Note 14

Table 5 Monitoring and Measurements

References		C	N	P	Comments
Table 9 bis.4	UDTS messages received			X	Note 14
Table 9 bis.5	CR messages sent to MTP plus ISDN-UP embedded CRs (ffs)			X	Note 14, Note 18
Table 9 bis.6	CREF messages sent to MTP			X	Note 14
Table 9 bis.7	CR messages received from MTP plus ISDN-UP embedded CRs (ffs)			X	Note 14, Note 18
Table 9 bis.8	CREF messages received from MTP			X	Note 14
Table 9 bis.9	RSR messages sent to MTP		X		
Table 9 bis.10	RSR messages received from MTP		X		
Table 9 bis.11	ERR messages sent to MTP			X	Note 14
Table 9 bis.12	ERR messages received from MTP			X	Note 14
Table 9 bis.13	XUDT messages sent (ffs)			X	Note 14
Table 9 bis.14	XUDTS messages sent (ffs)			X	Note 14
Table 9 bis.15	XUDT messages received (ffs)			X	Note 14
Table 9 bis.16	XUDTS messages received (ffs)			X	Note 14
Table 9 bis.17	LU DT messages sent (ffs)			X	
Table 9 bis.18	LU DTS messages sent (ffs)			X	Note 14
Table 9 bis.19	LU DT messages received (ffs)			X	Note 14
Table 9 bis.20	LU DTS messages received (ffs)			X	
Table 10	ISDN User Part Availability	-			
Table 11	ISDN User Part Utilization	-			



Table 5 Monitoring and Measurements

References		C	N	P	Comments
Table 12	ISDN User Part errors	-			
Table 13	Local TC Utilization	-			
Table 14	TC Fault Measurements	-			
Table 15	SS No. 7 MTP message accounting	-			
Table 16	SS No. 7 SCCP message accounting			X	Note 26
Table 16.1	Messages received			X	Note 26
Table 16.2	Octets received			X	Note 26
Table 16.3	Messages sent			X	Note 26
Table 16.4	Octets sent			X	Note 26
Annex A					





3 Notes

- Note 1** Class 3 not supported (flow controlled connection).
- Note 2** N-INFORM request, N-EXPEDITED-DATA and N-RESET not supported.
- Note 3** The parameter “Expedited data selection ” not supported.
- Note 4** N_COORD and N_PCSTATE are not supported. Parts of the N_PCSTATE functionality is implemented using the N-STATE Indication. For compliance refer to the following sub-clauses.
- Note 5** SMI is a configurable parameter in the SCCP configuration file. SMI is a reserved parameter international network and should be set to 0 in the configuration if the SCCP is configured for an international network.
- Note 6** The parameters: Flow control, NSDU delimiting, Expedited data, Missequence detection and Reset are not implemented.
- Note 7** Functions to permit coordinated state change of replicated SCCP subsystems are not supported.
- Note 8** The SCMG messages SOR and SOG are not supported.
- Note 10** Credit negotiation is not supported. If received, the credit parameter it is ignored.
- Note 11** ISDN-UP connections are not supported.
- Note 12** T(int) and T(repeat rel) not supported.
- Note 13** SCCP support most of the definition rules of the groups, but has not grouped them together.
- Note 14** Every fault is reported on occurrence by the module. No support for reporting faults at specific interval is supported. This functionality is to be supported by the SS7 management application.
- Note 15** See section 1.6 (Q.752) for details of the categories that are supported.
- Note 16** Timestamps on events reported on occurrence are not supported by the SCCP module; this functionality is to be supported by the SS7 management application.

Note 17	Not on a per SSN basis.
Note 18	No support for ISDN-UP embedded CRs.
Note 19	Permanent signaling connections are not supported.
Note 20	SCCP supports the transportation of up to 4065 octets of user data without invoking the segmentation procedures.
Note 21	A LUDTS message can be truncated.
Note 22	T(coord chg) and T(ignore SST) are not supported.
Note 23	Alarm reserved.
Note 24	The usage of the T(guard) timer is a configurable option. If T(guard) is used it will not be started if the functionality to set connection state upon node recovery is used. As a recommended alternative to the timer a restart counter has been implemented that assure that local reference numbers are not re-used after a node recovery. The restart counter does not have the time penalty inherent with T(guard) upon a node recovery.
Note 25	Supports the format conversion LUDT => XU DT, LUDTS => XU DTS.
Note 26	For detail see Reference [6].
Note 27	Concerned subsystems at remote SCCP signaling points are configured per local signaling point, hence all local subsystem at given local SCCP signaling point are considered to be concerned when the local broadcast procedure is initiated.
Note 28	The proprietary N_BIND_req and N_UNBIND_req used to implement behavior of N-STATE Request.
Note 29	The “Affected Point Code ”is included as a part of the N-STATE which is used instead of the PC-STATE for signaling point status and remote SCCP status. Refer to Note 34, Note 35 and Note 36.
Note 30	Connection oriented relay point without coupling is not supported.
Note 31	The SCCP are only compliant with Table 1 and Table 2 for supported messages and parameters according to this statement of compliance for clause 1 and 2 of Q.712.
Note 32	Credit negotiation is not supported. SCCP supports only the protocol class parameter 2.



- Note 33** It is a configurable option if all remote SSN shall be considered allowed at the reception of a MTP-RESUME indication or if the subsystem shall be marked prohibited and subsystem test procedure should be used to audit the remote subsystem state.
- Note 34** N_STATE with SSN=1 used instead of N_PCSTATE to inform the upper layer of the “Signaling Point Status”.
- Note 35** N_STATE with SSN=1 used instead of N_PCSTATE to inform the upper layer of the “Remote SCCP status”. The values remote SCCP unavailable, unequipped and inaccessible are all mapped to a “Restricted Importance Level” that is presented in the User Status parameter of the N_STATE primitive.
- Note 36** N_STATE with SSN=1 used instead of N_PCSTATE to inform the upper layer. The “Restricted Importance Level” is presented in the User status parameter of the N_STATE primitive to the upper layer. The “Restricted Importance Level” is determined using restriction level (RL). There is a configurable option that defines how many levels are used in N_STATE_ind.
- Note 37** Mapping between importance parameter in SCCP messages and message priority in SIO for gateway (relay point) between international and national networks are not supported. Only the priority field of the SIO is used. However mapping between SIO and Importance is implemented for relay between ITU and ANSI.
- Note 38** The importance parameter is not included in CL messages sent by the upper layer i.e. SCCP user. The value from SCCP user is recalculated to a priority value used in the SIO of the MTP-TRANSFER to lower layer.
- Note 39** Default values in Table 2 are only used for messages initiated by SCCP itself (e.g. RLSD, CREF, ERR, IT and UDT (SST, SSA, SSP, SSC)).
- Note 40** N_DISCONNECT_ind is used to inform the user at discarding CR messages.
- Note 42** Restrictions on GT subparts combinations are not included in International screening functionality.
- Note 43** When IT message is received on a connection with unassigned destination local reference number, it is answered with ERR message, but it is not discarded.
- This behavior complies to ITU-T Q.714 05/2001.



- Note 44** Current SCCP supports 1 - 18 digits in GT address information, where each digit is 0 - 9, A, B, C, D, E or F.
- Note 45** SCCP does not support "network service user failure" reason, "network service user congestion" reason and QOS-related reasons in N_INFORM indication.
- Note 46** When the first attempt to send CREF message is failed, SCCP uses the timer T(ConnRefused) and the hard-coded number of attempts (equal to 5) to resend CREF message.



Reference List

ITU Standards

- [1] Functional description of the signaling Connection Control Part., ITU-T Recommendation Q.711 (07/96)
- [2] Definition and Function of signaling connection control part messages., ITU-T Recommendation Q.712 (07/96)
- [3] Signaling Connection Control Part format and codes., IITU-T Recommendation Q.713 (07/96)
- [4] Signaling connection control part procedures, ITU-T Recommendation Q.714 (07/96)
- [5] Monitoring and measurements for signaling System No. 7 networks., ITU-T Recommendation Q.752 (06/97)

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- [6] Functional Specification SCCP ANSI/ITU/TTC/CHINESE, ITU-T 2001/ China 1994 / ETSI 2001 / ANSI 2001/TTC 97, 155 17-CAA 901 437 Uen