

SS7 MTP-L3 and M3UA IETF ANSI T1.111-2001

Statement of Compliance

STATEM OF COMPLIANCE

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1 General

1.1 Introduction

This document describes to what extent the Ericsson SS7 MTPL3& M3UA IETF signaling component conforms with the standards [ANSI-1].

1.2 Acronyms and Abbreviations

ISDN	Integrated Services Digital Network.
ISDN-UP	ISDN User Part.
MTP	Message Transfer Part.
SCCP	Signaling Connection Control Part.
SLS	Signaling Link Selection.
TCA	Transfer-Cluster-Allowed signal
TCAP	Transaction Capabilities Application Part.
TRA	Transfer-Allowed.
TCP	Transfer-Cluster-Prohibited signal
TCR	Transfer-Cluster-Restricted signal
TRW	Traffic Restart Waiting.

There are three columns marked "C", "N" and "P" in the compliance list. An "X" for a referred chapter in each respective column means the following:

C	The Ericsson signaling component complies with the specified section in the standard. A dash ("-") in this column means that there is nothing to implement in the referred section
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.



1.3 References

- [ANSI-1]** American National Standard for Telecommunications, Specification of Signaling System No. 7 (SS7) - Message Transfer Part (MTP), ANSI T1.111 - 2001
- [General-1]** 19 073 54-CAA 901 0180 Uen, "Configuration Parameters Description MTP-L3 & M3UA IETF".



2 Compliance List

2.1 ANSI T1.111.4

Table 1

References	C	N	P	Comments
1 Scope, Purpose and Application	-			
1.1 General Characteristics of the Signaling Network Functions	-			
1.1.1	-			
1.1.2	-			
1.1.2A	-			
1.2 Signaling Message Handling	-			
1.2.1	X			
1.2.2	X			
1.2.3	X			
1.3 Signaling Network Management			X	Note 1 on Page 15, Note 2 on Page 15
2 Signaling Message Handling	-			
2.1 General	X			
2.2 Routing Label	X			
2.3 Message Routing Function	X			
2.3A Handling of Messages under Signaling Point or Signaling Transfer Point Congestion			X	Note 4 on Page 15, Note 6 on Page 15, Note 20 on Page 16
2.4 Message Discrimination and Distribution Functions	-			
2.4.1			X	Note 23 on Page 17
2.4.2	X			
2.4.3	X			
2.4.3A	X			
2.4.4		X		
3 Signaling Network Management	-			
3.1 General			X	Note 1 on Page 15
3.2 Status of Signaling Links	X			



Table 1

3.3 Procedures Used in Connection with Link Status Changes	-			
3.3.1 Signaling Link Failed	-			
3.3.1.1 Signaling Traffic Management	X			
3.3.1.2 Signaling Link Management	X			
3.3.1.3 Signaling Route Management	X			
3.3.2 Signaling Link Restored	-			
3.3.2.1 Signaling Traffic Management	X			
3.3.2.2 Signaling Link Management	X			
3.3.2.3 Signaling Route Management			X	Note 4 on Page 15
3.3.3 Signaling Link Deactivated	-			
3.3.3.1 Signaling Traffic Management	X			
3.3.3.2 Signaling Link Management	X			
3.3.3.3 Signaling Route Management	X			
3.3.4 Signaling Link Activated	-			
3.3.4.1 Signaling Traffic Management	X			
3.3.4.2 Signaling Link Management	X			
3.3.4.3 Signaling Route Management			X	Note 4 on Page 15
3.3.5 Signaling Link Blocked	-			
3.3.5.1 Signaling Traffic Management	X			
3.3.5.2 Signaling Route Management			X	Note 4 on Page 15
3.3.6 Signaling Link Unblocked	-			
3.3.6.1 Signaling Traffic Management	X			
3.3.6.2 Signaling Route Management			X	Note 4 on Page 15
3.3.7 Signaling Link Inhibited	-			



Table 1

3.3.7.1 Signaling Traffic Management	X			
3.3.7.2 Signaling Link Management	X			
3.3.8 Signaling Link Uninhibited	-			
3.3.8.1 Signaling Traffic Management	X			
3.3.8.2 Signaling Link Management	X			
3.3.8.3 Signaling Route Management			X	Note 4 on Page 15
3.4 Status of Signaling Routes	X			
3.5 Procedures Used in Connection with Route Status Changes	X			
3.6 Status of Signaling Points	X			
3.7 Procedures Used in Connection with Point Status Changes	-			
3.8 Signaling Network Congested	-			
3.8.1 General	X			
3.8.2 Congestion Status of Signaling Links			X	Note 5 on Page 15
3.8.3 Procedures Used in Connection with Link Congestion Status Changes	X			
3.8.4 Congestion Status of Signaling Route Sets	X			
3.8.5 Procedures Used in Connection with Route Set Congestion Status Changes	X			
3.8.6 Signaling Point/Signaling Transfer Point Message Handling Congestion			X	Note 4 on Page 15
3.9 Status of Local SCCP for Alias Point Code Routing		X		
3.A Procedures Used in Connection with Local SCCP Status Changes	X			
4 Signaling Traffic Management	-			
4.1 General	-			
4.2 Normal Routing Situation	X			
4.3 Signaling Link Unavailability	X			



Table 1

4.4 Signaling Link Availability	-			
4.4.1 No heading	X			
4.4.2 No heading			X	Note 20 on Page 16
4.4.3 No heading	X			
4.5 Signaling Route Unavailability	X			
4.6 Signaling Route Availability	X			
4.7 Signaling Route Restriction	X			
4.8 Signaling Point Availability	X			
5 Changeover	-			
5.1 General	X			
5.2 Network Configurations for Changeover	X			
5.3 Changeover Initiation and Actions	X			
5.4 Buffer Updating Procedure	X			
5.5 Retrieval and Diversion of Traffic	X			
5.6 Emergency Changeover Procedures	X			
5.7 Procedures in Abnormal Conditions	X			
6 Changeback	-			
6.1 General	-			
6.1.1	X			
6.1.2	X			
6.2 Changeback Initiation and Actions	-			
6.2.1	X			
6.2.2	X			
6.2.3			X	Note 4 on Page 15
6.2.4	X			
6.2.5	X			
6.3 Sequence Control Procedure	X			
6.4 Time-Controlled Diversion Procedure	X			



Table 1

6.5 Procedures in Abnormal Conditions	X			
7 Forced Rerouting	X			
8 Controlled Rerouting	X			
9 MTP Restart	X			
10 Management Inhibiting	X			
11 Signaling Traffic Flow Control	-			
11.1 General	X			
11.2 Flow Control Indications	X			
11.2.1	X			
11.2.2	X			
11.2.3 Signaling Route Set Congestion (International Signaling Network)	X			
11.2.4 Signaling Route Set Congestion (National Option with Congestion Priorities)	X			
11.2.5 Signaling Route Set Congestion (National Option without Congestion Priorities)	-			
11.2.6 Signaling Point/Signaling Transfer Point Congestion			X	Note 4 on Page 15
11.2.7 MTP User Flow Control	-			
11.2.7.1	X			
11.2.7.2	X			
11.2.7.3	X			
11.2.7.4	X			
11.2.7.5	X			
11.2.7.6	X			
11.2.7.7	X			
12 Signaling Link Management	-			
12.1 General	-			
12.2 Basic Signaling Link Management Procedures	-			
12.2.1 Signaling Link Activation	X			
12.2.2 Signaling Link Restoration	X			



Table 1

12.2.3 Signaling Link Deactivation	X			
12.2.4 Link Set Activation	-			
12.2.4.1 Link Set Normal Activation	X			
12.2.4.2 Link Set Emergency Restart			X	Note 22 on Page 17
12.2.4.3 Time-out Values	X			
12.3 Signaling Link Management Procedures Based on Automatic Allocation of Signaling Terminals		X		Note 1 on Page 15
12.4 Signaling Link Management Procedures Based on Automatic Allocation of Signaling Data Links and Signaling Terminals		X		Note 1 on Page 15
12.5 Automatic Allocation of Signaling Terminals		X		
12.6 Automatic Allocation of Signaling Data Links		X		
12.7 Different Signaling Link Management Procedures at the Two Ends of a Link Set	X			
13 Signaling Route Management	-			
13.1 General	-			
13.2 Transfer Prohibited			X	Note 6 on Page 15
13.2.1	X			
13.2.2			X	Note 12 on Page 16
13.2.2A		X		Note 12 on Page 16, Note 16 on Page 16
13.2.3	X			
13.2.4	X			
13.3 Transfer-Allowed	-			
13.3.1	X			
13.3.2			X	Note 13 on Page 16
13.3.2A		X		Note 6 on Page 15
13.3.3	X			
13.3.4	X			
13.4 Transfer-Restricted	-			



Table 1

13.4.1			X	Note 4 on Page 15, Note 6 on Page 15
13.4.2			X	Note 4 on Page 15, Note 6 on Page 15
13.4.2A		X		Note 6 on Page 15
13.4.3			X	Note 4 on Page 15, Note 6 on Page 15
13.4.4			X	Note 4 on Page 15, Note 6 on Page 15
13.4.5			X	Note 4 on Page 15, Note 6 on Page 15
13.4.5A		X		Note 6 on Page 15
13.5 Signaling-Route-Set-Test	-			
13.5.1			X	Note 19 on Page 16
13.5.2	X			
13.5.2A		X		Note 6 on Page 15
13.5.3	X			
13.5.4	X			
13.5.4A		X		Note 6 on Page 15
13.5.5	X			
13.6 Transfer-Controlled (International Network)	X			
13.7 Transfer-Controlled (U.S. Networks)	-			
13.7.1	X			
13.7.2			X	Note 20 on Page 16
13.7.3	X			
13.7.4	X			
13.7.5	X			
13.7.6	X			
13.7.7	-			
13.7.8	-			
13.8 Transfer-Controlled (National Option with Congestion Priorities)	-			
13.9 Signaling-Route-Set-Congestion-Test	X			

Table 1

14 Common Characteristics of MTP Level 3 Message Formats	-			
14.1 General	X			
14.2 Service Information Octet	-			
14.2.1 Service Indicator	X			
14.2.2 Subservice Field			X	Note 3 on Page 15
14.3 Label	X			
15 Format and Codes of Signaling Network Management Messages	-			
15.1 General	-			
15.1.1	X			
15.1.2	X			
15.1.2A	X			
15.2 Label	X			
15.3 Heading Code (H0)	X			
15.4 Changeover Messages	-			
15.4.1	X			
15.4.2	X			
15.4.3	X			
15.5 Changeback Messages	-			
15.5.1	X			
15.5.2	X			
15.5.3	X			
15.5.4	X			
15.6 Emergency Changeover Message	-			
15.6.1	X			
15.6.2	X			
15.6.3	X			
15.7 Transfer-Prohibited Message	-			
15.7.1	X			
15.7.2	X			
15.7.3			X	Note 6 on Page 15
15.7.4			X	Note 6 on Page 15



Table 1

15.8 Transfer-Allowed Message	-			
15.8.1	X			
15.8.2	X			
15.8.3			X	Note 6 on Page 15
15.8.4			X	Note 6 on Page 15
15.9 Transfer-Restricted Message	-			
15.9.1	X			
15.9.2	X			
15.9.3			X	Note 6 on Page 15
15.9.4			X	Note 6 on Page 15
15.10 Signaling-Route-Set-Test Message	-			
15.10.1	X			
15.10.2	X			
15.10.3			X	Note 6 on Page 15
15.10.4			X	Note 6 on Page 15
15.11 Management Inhibit Message	X			
15.12 Signaling-Data-Link-Connection-Order Message		X		
15.13 Signaling-Data-Link-Connection-Acknowledgement Message		X		
15.14 Transfer-Controlled Message	X			
15.15 Signaling-Route-Set-Congestion-Test Message	X			
15.16 Traffic Restart Message	X			
15.17 User Part Unavailable Message	-			
15.17.1	X			
15.17.2	X			
15.17.3	X			
15.17.4	X			
15.17.5	X			
15.18 Abbreviations Used in Table 1/T1.111.4	-			
16 State Transition Diagrams	-			

*Table 1*

16.1 General	-			
16.2 Drafting Conventions	-			
16.3 Signaling Message Handling	-			
16.4 Signaling Traffic Management	-			
16.5 Signaling Link Management	-			
16.6 Signaling Route Management	-			
16.7 Abbreviations and Timers used in Figures 23 to 46C/T1.111.4		X		Note 7 on Page 15



2.2 ANSI T1.111.5

Table 2

References	C	N	P	Comments
1. Scope, Purpose and Application	-			
2. Network Components	X			
3. Structural Independence of International and National Signaling Networks	X			
4. Consideration Common to Both International and National Signaling Networks	-			
4.1 Availability of the Network	X			
4.2 Message Transfer Delay	X			
4.3 Message Sequence Control	X			
4.4 Number of Signaling Links used in Load Sharing	X			
4.5 Satellite Working	X			
5. International Signaling Network	-			
6. Signaling Network for Cross-Border Traffic	-			
6A. Signaling Network for Inter-Network Traffic			X	Note 8 on Page 15
7. National Signaling Networks	-			
7.1 General	X			
7.2 Network Structure	-			
7.2.1 One Level Hierarchy	X			
7.2.2 Two Level Hierarchy	X			
7.2.3 Clustering		X		
7.2.4 Signaling Point Access	X			
7.3 Routing	-			
7.3.1 Routing in the Absence of Failures	-			
7.3.1.1 Load Sharing			X	Note 9 on Page 15, Note 10 on Page 16
7.3.1.2 Normal Routing	X			
7.3.2 Routing under Failure Conditions.	-			

*Table 2*

7.3.2.1 Alternative Routing of Traffic from Failed Link			X	Note 9 on Page 15
7.3.2.2 Alternative Routing of Traffic from Failed Linkset			X	Note 11 on Page 16
7.4 Address Structure			X	Note 14 on Page 16
8. Procedures to Prevent Unauthorized Use of an STP	-			
8.1 General	-			
8.2 Identifying Unauthorized SS7 Messages			X	Note 15 on Page 16
8.3 Treatment of Unauthorized SS7 Messages			X	Note 16 on Page 16
8.4 Measurements			X	Note 17 on Page 16
8. 5 Notification to Unauthorized User			X	Note 18 on Page 16



3 Notes and Comments

- Note 1** Automatic allocation or reconfiguration of signaling equipment is not supported.
- Note 2** See the notes for the individual signaling network management messages (section 15).
- Note 3** Standard compliant behavior is a configurable option. It is possible always to send the priority bits transparently to/from the User Part or to set to 00 if the node belongs to International network.
- Note 4** This module never initiates sending of TFR. Handling of incoming TFR is configurable. An incoming TFR may lead to TFRs being broadcasted.
- Note 5** When timer T31 expires (false link congestion), the link is considered as uncongested. According to 3.8.2.2 “an audit should trigger the link to be restarted”.
- Note 6** Cluster messages are partly supported:
- SS7SEP:**
- TCA and TCP reception supported. Never generated.
- TCR messages are received, but silently discarded. Never generated.
- STP:**
- Not supported. Will result in error log.
- Note 7** Timers T7, T11, T19 and T24 are not used.
- Note 8** A signaling point is able to both be involved in signaling of national and international traffic. However, a signaling point is not able to relay traffic between a national and an international network.
- Note 9** Load sharing of messages is done using 8-bit SLS codes and 5-bit rotation.

- Note 10** Usage of the least significant bit of the SLS field for Link Set selection ("Modified SLS Rotation"), is configurable as ON or OFF see [General-1].
- "Modified SLS Rotation" is implemented as described in chapter 7.3.1.1 [ANSI-1], and is only in use for SS7SEP:s with two routes, if all links in a combined link set are carrying traffic.
- Note 11** When a link set failure is detected, traffic is immediately diverted from the failed route, that is timer T11 is not used (see also Note 7 on Page 15).
- Note 12** TFPs are always broadcasted.
- Note 13** Broadcast of TFA to adjacent signaling points as a configurable option, is not supported.
- Note 14** 24-bit SPCs are supported, but not clustering (see also Note 6 on Page 15).
- Note 15** Only inhibition of messages is supported, and then only according to point 3, that is inhibit STP access by examination of OPC and DPC combination in the incoming STP message.
- Note 16** An STP is only able to discard unauthorized SS7 messages on a SPC basis, not on a per linkset basis. Furthermore, STPs only permit discard of all unauthorized SS7 messages or all STP messages outside designated ranges.
- Note 17** Only monitoring of unauthorized messages on SPC basis is supported (see Note 16 on Page 16).
- Note 18** Restriction of the number of violation reports is not supported.
- Note 19** Signaling-route-set-test can not be deactivated on a particular point code. It is, however, possible to set the priority of the RST/RSR-messages.
- Note 20** Although multiple signaling links are unavailable within a link set, a newly available link will only receive its normal traffic load. The load may therefore be spread unevenly during link recovery.
- Note 21** Congestion status is handled on route set level. Node internal congestion handling is not supported.

**Note 22**

The following emergency restart situations are supported:

- the local signaling point is performing MTP Restart.
- when it is not possible to communicate with the signaling point at the remote end of the link set.

Link Set Emergency restart is supported as a management command.

Note 23

Circular Route Detection Test procedure is not supported. An STP does not analyse if the OPC of a message is equal to its own point code, nor are messages over C links with OPC equal to adjacent STP rejected.