

SS7 MTP-L3 and M3UA IETF ITU-T 07/96

Statement of Compliance

STATEM OF COMPLIANCE

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1 GENERAL

1.1 Introduction

Ericsson SS7 MTPL3& M3UA IETF is compliant with the ITU-T standards Reference [1], Reference [2], Reference [3], Reference [4], Reference [5], and Reference [6] according to the tables in this document.

1.2 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.701

Table 1

| References | C | N | P | Comments |
|--|---|---|---|-------------------|
| 1. Introduction | - | | | |
| 2. Signaling system structure | - | | | |
| 3. Message Transfer Part and the signaling network | - | | | |
| 3.1 General | - | | | |
| 3.1.1 Signaling network components | | | X | Note 1 on Page 15 |
| 3.1.2 Signaling modes | X | | | |
| 3.1.3 Signaling point modes | X | | | |
| 3.1.4 Message labelling | X | | | |
| 3.2 Signaling message handling functions | X | | | |
| 3.3 Signaling network management functions | X | | | |
| 3.4 Testing and maintenance functions | X | | | |
| 3.5 Use of signaling network | X | | | |
| 4 Message transfer capability | X | | | |
| 5 Differences from Blue Book | - | | | See Reference [2] |
| 6 Compatibility in the Message Transfer Part | X | | | |
| 7 Interworking of yellow, red and blue MTP implementation | - | | | |
| 7.1 Yellow Book to Red Book interworking | | X | | |
| 7.1.1 Level 2 flow control | | X | | |
| 7.1.2 Transfer restricted and Transfer controlled procedures | | X | | |
| 7.1.3 Transfer allowed/Transfer prohibited acknowledgments | | X | | |
| 7.1.4 Management inhibiting procedure | | X | | |
| 7.2 Red Book to Blue Book interworking | | | | |
| 7.2.1 Signaling Point Restart | | X | | |
| 7.2.2 Q.703 and Q.704 timer values | X | | | |

Table 1

| References | C | N | P | Comments |
|--|---|---|---|----------|
| 7.2.3 User flow control | X | | | |
| 7.2.4 Management inhibit test procedure | | X | | |
| 7.2.5 SIF length increase | | X | | |
| 7.2.6 SIF length increase (National networks option) | | X | | |
| 7.2.7 Processor outage | | X | | |
| 7.3 Yellow Book to Blue Book interworking | | X | | |
| 7.4 Blue Book to the present version interworking | X | | | |
| 7.5 Red Book to the present version interworking | X | | | |
| 8 Primitives and parameters of the Message Transfer Part | X | | | |

2.2 ITU-T Q.704

Table 2

| References | C | N | P | Comments |
|--|---|---|---|-------------------|
| 1 Introduction | - | | | |
| 1.1 General characteristics of the signaling network functions | X | | | |
| 1.2 Signaling message handling | X | | | |
| 1.3 Signaling network management | | | X | Note 2 on Page 15 |
| 2 Signaling message handling | X | | | |
| 3 Signaling network management | - | | | |
| 3.1 General | | | X | Note 2 on Page 15 |
| 3.2 Status of signaling links | X | | | |
| 3.3 Procedures used in connection with link status changes | - | | | |
| 3.3.1 Signaling link failed | X | | | |
| 3.3.2 Signaling link restored | X | | | |
| 3.3.3 Signaling link deactivated | X | | | |
| 3.3.4 Signaling link activated | X | | | |



Table 2

| References | C | N | P | Comments |
|---|---|---|---|--------------------|
| 3.3.5 Signaling link blocked | | | X | Note 14 on Page 15 |
| 3.3.6 Signaling link unblocked | X | | | |
| 3.3.7 Signaling link inhibited | X | | | |
| 3.3.8 Signaling link uninhibited | X | | | |
| 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 | X | | | |
| 3.8 Signaling network congestion | X | | | |
| 4 Signaling traffic management | - | | | |
| 4.1 General | - | | | |
| 4.2 Normal routing situation | X | | | Note 16 on Page 15 |
| 4.3 Signaling link unavailability | X | | | |
| 4.4 Signaling link availability | 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 | Note 5 on Page 15 |
| 5.7 Procedures in abnormal conditions | X | | | |
| 6 Changeback | X | | | |
| 7 Forced rerouting | X | | | |
| 8 Controlled rerouting initiation and actions | X | | | |

Table 2

| References | C | N | P | Comments |
|---|---|---|---|--------------------|
| 9 MTP restart | X | | | Note 22 on Page 16 |
| 10 Management inhibiting | X | | | |
| 11 Signaling traffic flow control | X | | | |
| 12 Signaling link management | - | | | |
| 12.1 General | | | X | Note 2 on Page 15 |
| 12.2 Basic signaling link management procedures | X | | | |
| 12.3 Signaling link management procedures based on automatic allocation of signaling terminals | | X | | |
| 12.4 Signaling link management procedures based on automatic allocation of signaling data links | | X | | |
| 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 | X | | | |
| 13.2 Transfer prohibited | X | | | |
| 13.3 Transfer-allowed | X | | | |
| 13.4 Transfer-restricted (National option) | X | | | Note 4 on Page 15 |
| 13.5 Signaling-route-set-test | X | | | |
| 13.6 Transfer-controlled (International network) | X | | | |
| 13.7 Transfer-controlled (National option with congestion priorities) | X | | | |
| 13.8 Transfer-controlled (National option without congestion priorities) | X | | | |
| 13.9 Signaling-route-set-congestion-test (National Option) | X | | | |
| 14 Common characteristics of message signal unit formats | - | | | |



Table 2

| References | C | N | P | Comments |
|---|---|---|---|-------------------|
| 14.1 General | X | | | |
| 14.2 Service information octet | - | | | |
| 14.2.1 Service indicator | X | | | |
| 14.2.2 Sub-service field | | | X | Note 3 on Page 15 |
| 14.3 Label | - | | | |
| 15 Format and codes of signaling network management messages | - | | | |
| 15.1 General | X | | | |
| 15.2 Label | X | | | |
| 15.3 Heading code (H0) | X | | | |
| 15.4 Changeover message | X | | | |
| 15.5 Changeback message | X | | | |
| 15.6 Emergency changeover message | X | | | |
| 15.7 Transfer-prohibited message | X | | | |
| 15.8 Transfer-allowed message | X | | | |
| 15.9 Transfer-restricted message (national option) | X | | | |
| 15.10 Signaling-route-set-test message | X | | | |
| 15.11 Management inhibit message | X | | | |
| 15.12 Traffic restart allowed message | X | | | |
| 15.13 Signaling-data-link-connection-order message | | X | | |
| 15.14 Signaling-data-link-connection-acknowledgement message | | X | | |
| 15.15 Transfer-controlled message | X | | | |
| 15.16 Signaling-route-set-congestion-test message (national option) | X | | | |
| 15.17 User Part unavailable message | X | | | |
| 16 Static transition diagrams, abbreviations and timers | - | | | |
| 16.1 General | - | | | |
| 16.2 Drafting conventions | - | | | |
| 16.3 Signaling message handling | - | | | |
| 16.4 Signaling traffic management | - | | | |

Table 2

| References | C | N | P | Comments |
|---|---|---|---|-------------------|
| 16.5 Signaling link management | - | | | |
| 16.6 Signaling route management | - | | | |
| 16.7 Abbreviations used in Figures 23 onwards | - | | | |
| 16.8 Timers and timer values | | | X | Note 6 on Page 15 |

2.3 ITU-T Q.705

Table 3

| Reference | C | N | P | Comments |
|---|---|---|---|--------------------|
| 1. Introduction | - | | | |
| 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 | Note 6 on Page 15 |
| 5. International signaling network | X | | | |
| 6. Signaling network for cross-border traffic | - | | | |
| 6.1 General | X | | | |
| 6.2 Use of international hierarchical level | - | | | |
| 6.2.1 | X | | | |
| 6.2.2 | | X | | Note 17 on Page 16 |
| 6.2.3 | X | | | |
| 6.2.4 | - | | | |
| 6.3 Integrated numbering of national signaling networks | - | | | |



Table 3

| Reference | C | N | P | Comments |
|---|---|---|---|--------------------|
| 6.4 Interworking of national signaling networks | - | | | |
| 7. National signaling network | - | | | |
| 8. Procedures prevent unauthorized use of an STP (optional) | - | | | |
| 8.1 General | - | | | |
| 8.2 Identifying unauthorized SS No. 7 messages | X | | | Note 18 on Page 16 |
| 8.3 Treatment of unauthorized SS No. 7 messages | | | X | Note 19 on Page 16 |
| 8.4 Measurements | | | X | Note 20 on Page 16 |
| 8.5 Notification to unauthorized user | | | X | Note 21 on Page 16 |
| 9. SS No. 7 Planning Tools | - | | | |
| A.1. General | X | | | |
| A.2. Basic network structure (example) | X | | | |
| A.3. Routing | X | | | |
| A.4. Action relating to failure conditions | X | | | |
| A.5. Explanatory note from the implementors forum for clarification of load sharing | X | | | |

2.4 ITU-T Q.707

Table 4

| References | C | N | P | Comments |
|---|---|---|---|----------|
| 1 General | - | | | |
| 2 Testing | X | | | |
| 3 Fault location | - | | | |
| 4 Signaling network monitoring | - | | | |
| 5 Formats and codes of signaling network testing and maintenance messages | X | | | |
| 6 State transition diagrams | X | | | |

2.5 ITU-T Q.752

Table 5

| References | C | N | P | Comments |
|---|---|---|---|-------------------|
| 1 Introduction | - | | | |
| 1.1 General | - | | | |
| 1.2 Network view | - | | | |
| 1.3 Guidelines for uses of measurements | - | | | |
| 1.4 Grouping of measurements | - | | | |
| 1.5 Collection of measurements | - | | | |
| 1.6 Definition of terms | - | | | |
| 1.6.1 fault (F) | - | | | Note 7 on Page 15 |
| 1.6.2 configuration (C) | - | | | |
| 1.6.3 performance (P) | - | | | |
| 1.6.4 accounting (A) | - | | | |
| 1.6.5 network planning and administration (N) | - | | | |
| 1.6.6 near real time measurements (R) | - | | | |
| 1.7 Listing of measurements | - | | | |
| 1.7.1 General | - | | | |
| 1.7.1.1 | - | | | |
| 1.7.1.2 | - | | | |
| 1.7.1.3 | - | | | |
| 1.7.1.4 | - | | | |
| 1.7.1.5 | - | | | |
| 1.7.1.6 | | | X | Note 8 on Page 15 |
| 1.7.1.7 | | | X | Note 7 on Page 15 |
| 1.7.2 Intervals for measurements | - | | | |
| 1.8 Techniques for filtering measurements | - | | | |
| 1.8.1 Single faults giving rise to multiple error reports | | X | | |
| 2 MTP monitoring and measurements | - | | | |
| 3 SCCP monitoring and measurements | - | | | |
| 4 ISDN-UP monitoring and measurements | - | | | |



Table 5

| References | C | N | P | Comments |
|--|---|---|---|--------------------|
| 5 TC monitoring and measurements | - | | | |
| 6 Uses of measurements | - | | | |
| 7 Accounting of MTP and SCCP message traffic | - | | | |
| Table 1 MTP Signaling Link Faults and Performance | - | | | |
| Table 1.1 Duration of link in the In-service state | | | X | Note 9 on Page 15 |
| Table 1.2 SL failure - All reasons | X | | | |
| Table 1.3 SL failure - Abnormal FIBR/BSNR | | X | | |
| Table 1.4 SL failure - Excessive delay of ack. | | X | | |
| Table 1.5 SL failure - Excessive error rate | | X | | |
| Table 1.6 SL failure - Excessive duration of congestion | | X | | |
| Table 1.7 SL alignment or proving failure | | X | | |
| Table 1.8 Number of signal units received in error | | X | | Note 10 on Page 15 |
| Table 1.9 Number of negative ack. received | | X | | |
| Table 1.10 Local automatic changeover | | | X | Note 9 on Page 15 |
| Table 1.11 Local automatic changeback | | | X | Note 11 on Page 15 |
| Table 1.12 SL restoration | X | | | |
| Table 2 MTP Signaling Link Availability | - | | | |
| Table 2.1 Duration of SL unavailability (for any reason) | X | | | |
| Table 2.2 Deleted | - | | | |
| Table 2.3 Deleted | - | | | |
| Table 2.4 Deleted | - | | | |
| Table 2.5 Duration of SL inhibition due to local management actions | | | X | Note 9 on Page 15 |
| Table 2.6 Duration of SL inhibition due to remote management actions | | | X | Note 9 on Page 15 |
| Table 2.7 Duration of SL unavailability due to link failure | X | | | |

Table 5

| References | C | N | P | Comments |
|--|---|---|---|-------------------|
| Table 2.8 Deleted | - | | | |
| Table 2.9 Duration of SL unavailability due to remote processor outage | | | X | Note 9 on Page 15 |
| Table 2.10 Start of remote processor outage | X | | | |
| Table 2.11 Stop of remote processor outage | X | | | |
| Table 2.12 Deleted | - | | | |
| Table 2.13 Local management inhibit | | X | | |
| Table 2.14 Local management uninhibit | | X | | |
| Table 2.15 Duration of local busy | | X | | |
| Table 2.16 Start of local inhibition | X | | | |
| Table 2.17 End of local inhibition | X | | | |
| Table 2.18 Start of remote inhibition | X | | | |
| Table 2.19 End of remote inhibition | X | | | |
| Table 3 MTP Signaling Link Utilization | - | | | |
| Table 3.1 Number of SIF and SIO octets transmitted | | X | | |
| Table 3.2 Octets retransmitted | | X | | |
| Table 3.3 Number of message signal units transmitted | X | | | |
| Table 3.4 Number of SIF and SIO octets received | | X | | |
| Table 3.5 Number of message signal units received | X | | | |
| Table 3.6 SL congestion indication | | | X | Note 9 on Page 15 |
| Table 3.7 Cumulative duration of SL congestion | X | | | |
| Table 3.8 Deleted | - | | | |
| Table 3.9 Deleted | - | | | |
| Table 3.10 MSUs discarded due to SL congestion | | X | | |
| Table 3.11 Number of congestion events resulting in loss of MSUs | | X | | |



Table 5

| References | C | N | P | Comments |
|---|---|---|---|--------------------|
| Table 4 MTP Signaling Link Set and Route Set Availability | - | | | |
| Table 4.1 Deleted | - | | | |
| Table 4.2 Duration of unavailability of signaling linkset | | X | | |
| Table 4.3 Start of linkset failure | | | X | Note 15 on Page 15 |
| Table 4.4 Stop of linkset failure | | | X | Note 15 on Page 15 |
| Table 4.5 Init. of broadcast TFP due to failure of measured linkset | | | X | Note 15 on Page 15 |
| Table 4.6 Init. of broadcast TFA for recovery of measured linkset | | | X | Note 15 on Page 15 |
| Table 4.7 Deleted | - | | | |
| Table 4.8 Deleted | - | | | |
| Table 4.9 Unavailability of route set to a given destination or set of destinations | | | X | Note 9 on Page 15 |
| Table 4.10 Duration of unavailability in 4.9 | | | X | Note 9 on Page 15 |
| Table 4.11 Start of unavailability in 4.9 | X | | | |
| Table 4.12 Stop of unavailability in 4.9 | X | | | |
| Table 4.13 Change in linkset used to adjacent SP | | X | | |
| Table 5 MTP Signaling Point Status | - | | | |
| Table 5.1 Adjacent SP inaccessible | X | | | |
| Table 5.2 Duration of adjacent SP inaccessible | X | | | |
| Table 5.3 Deleted | - | | | |
| Table 5.4 Stop of adjacent SP inaccessible | | | X | Note 11 on Page 15 |
| Table 5.5 MSU discarded due to a routing data error | X | | | |
| Table 5.6 User Part Unavailable MSU transmitted | | | X | Note 11 on Page 15 |
| Table 5.7 User Part Unavailable MSU received | X | | | |
| Table 5.8 TFC received | | | X | Note 12 on Page 15 |



Table 5

| References | C | N | P | Comments |
|--|---|---|---|--------------------|
| Table 6 MTP Signaling Traffic Distribution (Signaling Route Utilization) | - | | | |
| Table 6.1 Number of SIF and SIO octets received with given OPC | | | X | Note 13 on Page 15 |
| Table 6.2 Number of SIF and SIO octets transmitted with given DPC | | | X | Note 13 on Page 15 |
| Table 6.3 Number of SIF and SIO octets handled with given SIO | | X | | |
| Table 6.4 Number of SIF and SIO octets received with given DPC and SIO | | X | | |
| Table 6.5 Number of SIF and SIO octets transmitted with given DPC and SIO | | X | | |
| Table 6.6 Number of SIF and SIO octets handled with given OPC, DPC and SIO | | X | | |
| Table 6.7 Number of MSUs handled with given OPC, DPC and SIO | | X | | |

2.6 ITU-T Q.2210

Ericsson M3-IETF is compliant with ITU-T Q.2210 except for the deviations from ITU-T Q.704 (see Section 2.2 on page 4).



3 Notes and Comments

| | |
|----------------|--|
| Note 1 | Link groups not supported. |
| Note 2 | Automatic allocation or reconfiguration of signaling equipment is not supported. |
| 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 | Since version CAA9011817R2Z module can be configured to behave compliant or partly compliant to ability of TFR sending (for configuration options see parameter "Route restriction handling" in Reference [8]). Before this version only partly compliant behavior takes place. In scope of partly compliant behavior, module never initiates sending of TFR, however, an incoming TFR may lead to TFRs being broadcasted. |
| Note 5 | No difference between long- and short-term processor outage. All emergency changeovers are treated as being initiated by a long-term processor outage. |
| Note 6 | The following timers are not implemented: T7, T9, T11, T24. |
| Note 7 | Every fault is only reported on occurrence. |
| Note 8 | Does not support timestamps for events that are reported on occurrence. |
| Note 9 | This module provides the necessary statistics/alarms to generate these measures but does not compute them directly. |
| Note 10 | To be measured/monitored by MTP L2. |
| Note 11 | The total number of this event is measured. |
| Note 12 | The Congestion Level is not part of the measurement. |
| Note 13 | The total number of octets are measured, however, not on a point code basis. |
| Note 14 | Timer T24 not used. Signaling traffic management commences without interruptions. |
| Note 15 | Provides for the notification of the event, but no counting. |



- Note 16** Priorities are not set on a per linkset basis, instead priorities are set on routes in routesets.
- Note 17** A signaling point is able to be involved in signaling of both national and international traffic. However, a signaling point is not able to relay traffic in between a national and international network.
- Note 18** Standard compliant behavior is a configurable option. M3-IETF is compliant with chapter 8.2 iii) that is inhibit/allow STP access by examination of OPC and DPC combination in the incoming STP message, if the feature "Forbid messages from unknown DPC" is enabled. Point 8.2 ii) is not applicable as according to Reference [7] Point 8.2 ii) shall not apply.
- Note 19** OPC and DPC combination in the incoming STP message. 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 (see Section 8.2 in Reference [3] and Note 18 on Page 16).
- Note 20** Only monitoring of unauthorized messages on a SPC basis is supported (see Note 9 on Page 15).
- Note 21** Restriction of the number of violation reports is not supported.
- Note 22** Blue book restart is supported according to Q.704 (1988).



Glossary

DPC

Destination Point Code

ISDN

Integrated Services Digital Network

ISDN-UP

ISDN User Part

M3-IETF

MTPL3&M3UA IETF

MSU

Message Signal Unit

MTP

Message Transfer Part

OPC

Originating Point Code

SCCP

Signaling Connection Control Part

SIF

Signaling Information Field

SIO

Service Information Octet

SL

Signaling Link

SPC

Signaling Point Code

STP

Signaling Transfer Point

TC

Transaction Capability

TFA

Transfer Allowed

TFC

Transfer Controlled

TFP

Transfer Prohibited

TFR

Transfer Restricted





Reference List

ITU Standards:

- [1] ITU-T Recommendation Q.701 Functional Description of the Message Transfer Part (MT) of Signaling System No. 7, 03/93
- [2] ITU-T Recommendation Q.704 Signaling System No. 7 - Signaling Network Functions and Messages, 07/96
- [3] ITU-T Recommendation Q.705 Signaling System No. 7 - Signaling Network Structure, 03/93
- [4] ITU-T Recommendation Q.707 Testing and Maintenance, 11/88
- [5] ITU-T Recommendation Q.752 Monitoring and Measurements for SS7 Networks, 06/97
- [6] ITU-T Recommendation Q.2210 MTP level 3 functions and messages using the services of ITU-T recommendation Q.2140, 07/96
- [7] ITU-T Implementors' guide (version 09/97) for Q.705, 03/93

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- [8] Configuration File Description for MTPL3 & M3UA IETF, 19073-CAA 901 1817 Uen