TABLE 1/Q.791

Monitoring and measurements for Signalling System No. 7 networks MTP – signalling link performance

Description of measurements	Units	Usage O A M	Duration of measurement	Level	Obligatory a)	Act. perm.	References
1.1 Duration of Link in the In–Service State	secs/SL b)	O A M	30 min.	2	Yes	perm.	
1.2 SL Failure–All Reasons	event/SL	M					

on occur.

2

Yes

1.3 SL Failure–Abnormal – FIBR/BSNR

event/SL

M

on occur.

2

No

perm.

Q.703, § 5.3

1.4 SL Failure–Excessive delay of ack.

event/SL

M

on occur.

2

No

Q.703, § 5.3.1

1.5 SL Failure–Excessive error rate

event/SL

M

on occur.

2

No

Q.703, § 11.2.2

1.6 SL Failure–Excessive duration of congestion

event/SL

M

on occur.

2

No

Q.703

1.7 SL alignment failure

events/SL

M

30 min.

2

No

Q.703, § 11.3

1.8 Number of Signal Units in error c)

events/SL

M

30 min.

2

Yes

perm.

Q.703, § 4

1.9 Number of negative ack. received

events/SL

M

30 min.

2

No

1.10 Local Automatic changeover

events/SL event/SL

O   M

30 min.
on occur.

3
3

No
No

Q.704, § 5

1.11 Local Automatic changeback

event/SL

O   M

on occur.

3

No

Q.704, § 6

1.12 SL Restoration

event/SL

M

on occur.

3

No

Q.703, § 3.2.3

a) See § 3.1.2 (applies to all tables).
b) SL = Signalling Link.
c) The interpretation of this count is implementation dependant.

TABLE 2/Q.791

**Monitoring and measurements for Signalling System No. 7
networks – MTP signalling link availability**

Description of measurements

Units

Usage

O   A M

Duration of measurement

Level

Obligatory a)

Act. perm.

References

2.1 Duration of SL unavailability (for any reason)

secs/SL

O   A M

30 min.

3

Yes

perm.

2.2–2.4 Deleted

2.5 Duration of SL inhibition due to local management actions

secs/SL

M

30 min.

3

No

Q.704, § 3.2.8

2.6 Duration of SL inhibition due to remote management actions

secs/SL

M

30 min.

3

No

Q.704, § 3.2.8

2.7 Duration of SL unavailability due to link failure

secs/SL

M

30 min.

3

No

Q.704, § 3.2.2

2.8 Deleted.

2.9 Duration of SL unavailability due to remote processor outage

secs/SL

O   M

30 min.

3

No

Q.704, § 3.2.6

2.10 Start of remote processor outage

event/SL

O   M

on occur.

3

No

Q.704, § 3.2.6

2.11 Stop of remote processor outage

event/SL

O   M

on occur.

3

No

Q.704, § 3.2.7

2.12 Deleted

2.13 Local Management Inhibit

events/SL events/SL

O   M

30 min.
5 min.

3
3

No
No

Q.704, § 10.2

2.14 Local Management Uninhibit

events/SL events/SL

O   M

30 min.
5 min.
3
3
No
No

Q.704, § 10.3

2.15 Duration of Local Busy

secs/SL

O

30 min.
2
No

Q.704, § 9.3

TABLE 3/Q.791

**Monitoring and measurements for Signalling System No. 7 networks
MTP signalling link utilization**

Description of measurements

Units

Usage

O   A M

Duration of measurement

Level

Obligatory a)

Act. perm.

References

3.1 Number of SIF and SIO octets transmitted

octets/SL

O   A M

30 min.

3/2

Yes

act.

Q.703, § 2.3.8

3.2 Octets retransmitted

octets/SL

A

30 min.

2

No

Q.703, § 5

3.3 Number of message signal units transmitted

MSUs/S

A

30 min.

3/2

No

3.4 Number of SIF and SIO octets received

octets/SL

O   A M

30 min.

3/2

Yes

act.

3.5 Number of message signal units received

MSUs/SL

A

30 min.

3/2

No

3.6 SL congestion indications

events/SL events/SL event/SL

O   A M

O

30 min.

5 min.

on occur.

No

No

No

Q.704, § 3.8

3.7 Cumulative duration of SL congestion

secs/SL

O   A M

30 min.

3

No

3.8 Deleted

3.9 Stop of SL congestion

event/SL

O

on occur.

3

No

3.10 MSUs discarded due to SL congestion

MSUs/SL

O

30 min.

3

Yes

perm.

3.11 Number of congestion events resulting in loss of MSUs

events/SL event/SL

O

30 min.
on occur.

3
3

No
No

TABLE 4/Q.791

Monitoring and measurements for Signalling System No. 7 networks
MTP signalling link set and route set availability

Description of measurements

Units

Usage

O   A M

Duration of measurement

Level

Obligatory a)

Act. perm.

References

4.1 Deleted

4.2 Duration of unavailability of signalling linkset

secs/linkset

O

30 min.

3

No

4.3 Start of linkset failure

event/linkset

O   M

on occur.

3

No

4.4 Stop of linkset failure

event/linkset

O   M

on occur.

3

No

4.5 Initiation of broadcast TFP due to failure of measured linkset a)

event/linkset

O   M

on occur.

3

No

Q.704, § 13

4.6 Initiation of broadcast TFA for recovery of measured linkset a)

event/linkset

O

on occur.

3

No

Q.704, § 13

4.7 – 4.8   Deleted

4.9 Unavailability of route set to a given destination of set of destinations

events/destina-tion(s)

O   A M

30 min.

3

b)

perm.

Q.704, § 11.2.1

4.10 Duration of unavailability in 4.9

secs/destination(s)

O   A M

30 min.

3

b)

perm.

Q.704, § 11.2.2

4.11 Start of unavailability in 4.9

event/destination(s)

O   M

on occur.

3

No

Q.704, § 11.2.1

4.12 Stop of unavailability in 4.9

event/destination(s)

O   M

on occur.

3

No

Q.704, § 11.2.2

a)
These measurements only apply to Signal Transfer Points.
b)
These measurements are only obligatory in the international network.

TABLE 5/Q.791

Monitoring and measurements for Signalling System No. 7 networks
MTP adjacent signalling point status accessibility

Description of measurements	Units	Usage O A M	Duration of measurement	Level	Obligatory a)	Act. perm.	References
5.1 Adjacent SP inaccessible	event/SP	O M	M	on occur. 30 min. 5 min.	3	Yes	perm.

5.2 Duration of adjacent SP inaccessible

events/SP

secs/SP

O

O

5 min.

30 min.

3

Yes

perm.

5.3 Deleted

M

5.4 Stop of adjacent SP inaccessible

event/SP

O   M

on occur.

3

No

5.5 MSU discarded due to a routing data
     error a)

MSUs/SP

A

O   M

30 min.
5 min.

Yes
No

perm.
perm.

Q.795

a)

The number of MSUs discarded can be used to trigger the MTP Route Verification Test (MVRT) described in Recommendation Q.795, § 2.3.

TABLE 6/Q.791

Monitoring and measurements for Signalling System No. 7 networks
MTP signalling link traffic distribution (Signalling route utilization)

Description of measurements

Units		
Usage		
O	A	M
Duration of measurement		
Level		
Obligatory a)		
Act. perm.		
References		
6.1 Number of SIF and SIO octets received with given OPC		
octets/OPC		
A		
30 min.		
3		
No		

6.2 Number of SIF and SIO octets transmitted with given DPC

octets/DPC

A

30 min.

3

No

6.3 Number of SIF and SIO octets handled with given SIO

octets/SIO

A

30 min.

3

No

6.4 Number of SIF and SIO octets received with given OPC and SIO

octets/SIO/OPC

A

30 min.

3

No

6.5 Number of SIF and SIO octets transmitted with given DPC and SIO

octets/SIO/DPC

A

30 min.

3

No

6.6 Number of SIF and SIO octets handled with given OPC, DPC and SIO

octets/SIO/
OPC/DPC

A

30 min.

3

No

Note 1 – Activation of these measurements is recommended on per point code or sets of point codes and/or SIO.

Note 2 – Some of these measurements may be of interest for accounting purposes.

TABLE 7/Q.791

**Monitoring and measurements for Signalling System No. 7 networks
SCCP performance**

Description of measurements	Units	Usage		Duration of measurement	Level	Obligatory a)	Act. perm.	References
		O A M						
7.1 Routing Failure – No translation for address of such nature a)	event msgs	O A M		on occur. 30 min.	SCCP SCCP	Yes	act. perm.	Q.714, § 2.4

7.2 Routing Failure – No translation for this specific address a)

event
msgs
O
A   M

on occur.
30 min.
SCCP
SCCP
Yes
act.
perm.
Q.714, § 2.4

7.3 Routing Failure – Network Failure (Point Code not available)

event
msgs
O
A   M

on occur.
30 min.
SCCP
SCCP
Yes
act.
perm.
Q.714, § 2.4

7.4 Routing Failure – Network Congestion

event
msgs
O
A   M

on occur.
30 min.
SCCP
SCCP

Yes

act.
perm.
Q.714, § 2.4

7.5 Routing Failure – Subsystem Failure (unavailable)

event
msgs
O
A   M

on occur.
30 min.
SCCP
SCCP

Yes

act.
perm.
Q.714, § 2.4

7.6 Routing Failure – Subsystem Congestion b)

event
msgs
O
A   M

on occur.
30 min.
SCCP
SCCP

Yes

act.
perm.
Q.714, § 2.4

7.7 Routing Failure – Unequipped user (Subsystem)

event
msgs
O
A   M

on occur.
30 min.
SCCP
SCCP
Yes
act.
perm.
Q.714, § 2.4

7.8 Syntax error detected

event
msgs
M
M

on occur.
30 min.
SCCP
SCCP
Yes
act.
perm.
Q.714, § 4.3

7.9 Routing Failure – Reason unknown

event
msgs
O
A   M

on occur.

30 min.

SCCP

SCCP

Yes

act.

perm.

Q.714, § 2.4

a)
These measurements only required at SCCP nodes with global title translation capabilities.
b)
For further study.

TABLE 8/Q.791

Monitoring and measurements for Signalling System No. 7 networks sub–system availability

Description of measurements

Units

Usage

O A

 M

Duration of measurement

Level

Obligatory a)

Act. perm.

References

8.1 Start of local SCCP unavailable failure a)

event

O

on occur.

SCCP

No

perm.

8.2 Start of local SCCP unavailable – maintenance made busy a)

event

O

on occur.
SCCP
No
perm.

8.3 Start of local SCCP unavailable – congestion a)

event

O

on occur.
SCCP
No
perm.

8.4 Stop of local SCCP unavailable – (all reasons) a)

event

O

on occur.
SCCP
No
perm.

8.5 Duration of local SCCP unavailable – (all reasons) a)

secs

A

30 min.
SCCP
No
perm.

8.6 Subsystem out–of–service request granted

event

M

on occur.
SCCP
b)
perm.
Q.714, § 5.3.5.3

8.7 Subsystem out–of–service request denied

event

M

on occur.
SCCP
b)
perm.
Q.714, § 5.3.5.3

a)
These measurements are system architecture dependent.
b)
These measurements are obligatory for replicated systems.

TABLE 9/Q.791

Monitoring and measurements for Signalling System No. 7 networks
SCCP – Utilization

Description of measurements	Units	Usage O A M	Duration of measurement	Level	Obligatory a)	Act. perm.	References
9.1 UDTS message sent	msgs	O A	30 min.	SCCP	No	perm.	Q.714, § 4.2
9.2 UDTS message received	msgs						

O   A

30 min.
SCCP
No
perm.
Q.714, § 4.2

9.3 Total messages handled (from local or remote subsystems)

msgs
A

30 min.
SCCP
No
perm.
Q.714, § 2.3

9.4 Total messages intended for local subsystems

msgs
A

30 min.
SCCP
No
perm.
Q.714, § 2.3

9.5 Messages requiring global title translation a)

msgs
A

30 min.

SCCP

No

perm.

Q.714, § 2.2

9.6 Total messages sent (for connectionless only) (by class 0, 1)

msgs/class

A

30 min.

SCCP

Yes

perm.

Q.714, § 1.1.2

9.7 Total messages received (for connectionless only) (by class 0, 1)

msgs/class

A

30 min.

SCCP

Yes

perm.

Q.714, § 1.1.2

9.8 Messages sent to a backup subsystem

msgs/SS

A

30 min.

SCCP

Note b)

perm.

Q.714, § 5.3.2

a)
This measurement is only required at SCCP nodes with global title translation capabilities.
b)
This measurement is obligatory for replicated systems.