Specification PTC 331

Telephone Network Interconnection using ITU-T No. 7 Signalling

PART B

TECHNICAL DEFINITION OF ITU-T SIGNALLING SYSTEM No.7 MESSAGE TRANSFER PART (MTP)

Issue 2: March 2001

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Introduction

1.　　This part details the Common Channel Signalling System No.7 specifications adopted for Telecom networks based on ITU-T 03/93 Recommendations Q.701 to Q.707.

2.　　For each paragraph in the recommendation, an appropriate letter is shown in the (A to D) columns indicating what facilities will be available to a network operator at Telecom Points of Interconnection (POI).

3.　　The letters A, B, C and D have the following meanings:

A.　Fully implemented in Telecom Point of Interconnect exchange or a referenced figure applies.

B.　Implemented in Telecom Point of Interconnect exchange but with comments to clarify the extent of implementation.

C.　Not Implemented in Telecom Point of Interconnect exchange.

D.　Title or descriptive text only.

4.　　Normally networks will connect signalling links only to Telecom's POI exchange (SP). However, by agreement, the interconnecting network may connect signalling links to Telecom's Signalling Transfer Points (STPs). This impacts which parts of the signalling protocol are relevant. This is indicated by identifying the two cases below and identifying the implementation for each.

[Case 1]　　Signalling links connected only to Telecom's SPs.

[Case 2]　　Signalling links connected to Telecom's STPs.

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Telephone Network Interconnection using ITU-T No. 7 Signalling

Part B

Recommendation Q.701

FUNCTIONAL DESCRIPTION

OF THE

MESSAGE TRANSFER PART (MTP)

FUNCTIONAL DESCRIPTION OF THE MESSAGE TRANSFER PART (MTP) OF SIGNALLING SYSTEM No.7

Q.701 Section	Remarks	A	B	C	D
1.	**Introduction**				D
1.1	General	A			
1.2	Objectives ISUP is the only applicable MTP user part.		B		
1.3	General characteristics				D
1.3.1	Method of description	A			
1.3.2	Primitives	A			
1.3.3	Peer-to-peer communication	A			
1.3.4	Contents of Recommendations Q.701 to Q.707 Series relating to the MTP				D
2.	**Signalling system structure**				D
2.1	Basic functional division	A			
2.2	Functional levels				D
2.2.1	General	A			
2.2.2	Signalling data link functions (level 1) The use of analogue links is not supported. 64 kbit/s links only are supported (see Section A para. 11.4)		B		
2.2.3	Signalling link functions (level 2)	A			
2.2.4	Signalling network functions (level 3)	A			
2.2.5	User Part functions (level 4) DUP and TUP are not supported.		B		
2.3	Signalling message	A			
2.4	Functional interface	A			
3.	**Message transfer part and the signalling network**				D
3.1	General				D
3.1.1	Signalling network components Signalling Link Groups are not supported.		B		
3.1.2	Signalling modes				

[Case 1]	Quasi-associated mode is not supported using Telecom STPs but Telecom can signal to STPs in other networks if required.		B		
[Case 2]		A			
3.1.3	Signalling point modes				D
3.1.4	Message labelling Standard routing label only is supported.		B		
3.2	Signalling message handling functions	A			

Q.701 Section	Remarks	A	B	C	D
3.2.1	Message routing Use of different routing plans for different User Parts is not applicable.		B		
3.2.2	Message distribution Service indicators 0, 1 and 5 only are supported		B		
3.2.3	Message discrimination				
[Case 1]	Transfer capability is not supported		B		
[Case 2]		A			
3.3	Signalling network management function	A			
3.3.1	Signalling traffic management	A			
3.3.2	Signalling link management Signalling link management function to initiate and control reconfigurations of terminal devices and signalling data links automatically is not supported.		B		
3.3.3	Signalling route management				
[Case 1]	Access to Telecom STPs is not available			C	
[Case 2]		A			
3.4	Testing and maintenance functions	A			
3.5	Use of the signalling network				D
3.5.1	Signalling network structure				
[Case 1]	Quasi-associated signalling using a Telecom STP is not supported		B		
[Case 2]		A			
3.5.2	Provision of signalling facilities		B		

		A	B	C	D
	- Redundancy in signalling data links			C	
	- Redundancy in signalling terminal devices			C	
	- Redundancy of signalling links within a link set (with load sharing)	A			
	- Redundancy in signalling routes may be negotiated		B		
	- Partitioning by means of service information			C	
3.5.3	Application of signalling network functions Application of the signalling system without using the level 3 element at all is not supported.		B		
4.	**Message transfer capability**				D
4.1	General	A			
4.2	User location in system structure	A			
4.3	Message content				D
4.3.1	Code transparency	A			
4.3.2	Service information	A			
4.3.3	Message label	A			

Q.701 Section	Remarks	A	B	C	D
4.3.4	Message length	A			
4.4	User accessibility				
[Case 1]	Quasi-associated signalling using a Telecom STP is not supported		B		
[Case 2]		A			
4.5	Transport service performance	A			
4.5.1	Message transfer delay	A			
4.5.2	Message transfer failures	A			
5.	**Differences from the Blue Book**				D
5.1	Processor Outage Telecom SP only nodes will take the link out of service upon the reception of SIPO from other end.		B		

5.2	Available of Adjacent signalling point		B		
	Signalling Point Restart procedure is not supported.				
	TRA message will be discarded.				
5.3	Handling of Level 3 messages		B		
	Telecom nodes assign SLC 0000 to the messages not related to a signalling link but can handle the messages with SLC not equal to zero.				
5.4	Transferred controlled messages				D
5.5	Load balancing during changeback				D
5.6	Time-controlled changeover	A			
5.7	Changeback		B		
	The time-controlled diversion procedure is used in Telecom SP only nodes for the changeback between linksets.				
5.8	MTP restart			C	
5.9	Signalling traffic flow control	A			
5.10	User part availability control		B		
	a. Telecom nodes only support UPU message with cause equal to 0001.				
	b.UPU procedure is not yet supported in ISUP layer. No action is taken when the indication is received from MTP.				
5.11	Signalling route management				D
6.	**Compatibility in the message transfer part**				D
6.1	Unreasonable information	A			
6.1.1	Messages containing an unallocated SIO value	A			
6.1.2	Messages containing an unallocated H0/H1 code	A			
6.1.3	Messages containing an unallocated value in a recognised field	A			
6.2	Treatment of spare fields	A			
6.3	Lack of acknowledgement	A			

Q.701 Section	Remarks	A	B	C	D
7.	**Interworking of Yellow, Red and Blue book MTP implementation**				D

7.1	Yellow Book to Red Book interworking Since Telecom exchanges implement MTP based on Blue Book version, interworking between Yellow book and Red Book is not applicable.			C	
7.1.1	Level 2 flow control			C	
7.1.2	Transfer restricted and transfer controlled procedures			C	
7.1.3	Transfer allowed/Transfer prohibited acknowledgements			C	
7.1.4	Management inhibiting procedure			C	
7.2	Red Book to Blue Book interworking Signalling Point Restart is not supported. For the above interworking, Red Book based interwork function will be implemented.		B		
7.2.1	Signalling Point Restart The Telecom exchange will ignore Traffic Restart Allowed messages if received.		B		
7.2.2	Q.703 and Q.704 timer values The timer values will be implemented based on Blue Book.		B		
7.2.3	User flow control The previous file release discarded User Part Unavailable messages.		B		
7.2.4	Management inhibit test procedure The management inhibit test procedure is supported, therefore any Red Book SP/STP which interworks with Telecom exchanges should ignore LLT and LRT messages if received. A report to local management should be made at the Red Book SP/STP side.		B		
7.2.5	SIF length increase Telecom exchanges implement 272 Octets SIF. Preventive action to prevent overlength messages for signalling links which only have a 62 octet SIF handling capability is not supported.			C	
7.2.6	SIF length increase (National networks option) The mechanism of SIF compatibility is not supported and Telecom exchanges are operated with up to 272 Octets SIF.			C	
7.3	Yellow Book to Blue Book interworking			C	
8.	**Primitives and Parameters of the Message Transfer Part** For DPC cause in MTP-STATUS, the following comments should be applied.		B		
	Signalling network congestion with Multiple signalling link states without congestion priorities are used.				
8.1	Transfer	A			
8.2	Pause	A			

8.3	Resume	A			
Q.701 Section	**Remarks**	**A**	**B**	**C**	**D**
8.4	Status Refer to compliance for Item 8. above		B		
8.5	Restart			C	

End of Q.701

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Part B

Recommendation Q.702

SIGNALLING DATA LINK

SIGNALLING DATA LINK

Q.702 Section	Remarks	A	B	C	D
1.	**General**				D
1.1	Signalling data link	A			
1.2	Functional configuration	A			
1.3	Digital signalling data link 2048 kbit/s only is supported.		B		
1.4	Analogue signalling data link			C	
1.5	Terrestrial and satellite transmission link	A			
1.6	Operational signalling data link	A			
1.7	Transmission link	A			
1.8	64 kbit/s digital signalling channels	A			
2.	**Signalling bit rate**				D
2.1	General				D
2.1.1	Standard bit rate: 64 kbit/s	A			
2.1.2	Lower bit rate			C	
2.1.3	Minimum signalling bit rate			C	
2.2	Use of bit rates lower than 64 kbit/s				D
2.2.1	National telephone call control application			C	
2.2.2	Direct international application			C	
2.2.3	National extension networks			C	
3.	**Error characteristics and availability**	A			
4.	**Interface specification points**				D
4.1	Interface requirement	A			
4.2	International application			C	

Q.702 Section	Remarks	A	B	C	D
4.3	International digital signalling data link			C	
4.4	International analogue signalling data link			C	
4.5	Implementation of interface equipment Interface at Point C only.			C	
4.6	Interface requirements for testing and maintenance	A			
5.	**Digital signalling data link**				D
5.1	Signalling data link derived from the 2048 kbit/s digital path	A			
Q.702 Section	**Remarks**	**A**	**B**	**C**	**D**
5.2	Signalling data link derived from the 8448 kbit/s digital path			C	
5.3	Signalling data link derived from the 1544 kbit/s digital path			C	
5.4	Signalling data link established over a digital path made up by digital sections based on different digital hierarchies			C	
5.5	Signalling data link established over data circuits			C	
6.	**Analogue signalling data link**				D
6.1	Signalling bit rate			C	
6.2	Interface requirements			C	

End of Q.702

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Telephone Network Interconnection using ITU-T No. 7 Signalling

Part B

Recommendation Q.703

Signalling Link

SIGNALLING LINK

Q.703 Section	Remarks	A	B	C	D
1.	**General**				D
1.1	Introduction				D
1.1.1	Description of Signalling Link	A			
1.1.2	Signalling link functions comprise:	A			
1.2	Signal unit delimitation and alignment	A			
1.3	Error detection	A			
1.4	Error correction				D
1.4.1	Two forms of error correction Both methods are provided but Telecom expects that basic error correction method only will be required.		B		
1.4.2	Basic method	A			
1.4.3	Preventive cyclic retransmission method	A			
1.5	Initial alignment	A			
1.6	Signalling link error monitoring	A			
1.7	Link state control functions	A			
1.8	Flow control	A			
2.	**Basic signal unit format**				D
2.1	General	A			
2.2	Signal unit format	A			
2.3	Function and codes of the signal unit fields				D
2.3.1	General	A			
2.3.2	Flag	A			
2.3.3	Length indicator	A			
2.3.4	Service information octet	A			
2.3.5	Sequence numbering	A			

2.3.6	Indicator bits	A			
2.3.7	Check bits	A			
2.3.8	Signalling information field	A			
2.3.9	Status field	A			
2.3.10	Spare field	A			
2.4	Order of bit transmission	A			
3.	**Signal unit delimitation**				D

Q.703 Section	Remarks	A	B	C	D
3.1	Flags	A			
3.2	Zero insertion and deletion	A			
4.	**Acceptance procedure**				D
4.1	Acceptance of alignment				D
4.1.1	Flag	A			
4.1.2	Seven or more consecutive 1s	A			
4.1.3	Deletion of the 0s inserted for transparency	A			
4.1.4	Octet counting mode	A			
4.2	Error detection	A			
5.	**Basic error correction method**				D
5.1	General	A			
5.2	Acknowledgements (positive and negative acknowledgements)				D
5.2.1	Sequence numbering	A			
5.2.2	Signal unit sequence control	A			
5.2.3	Positive acknowledgement	A			
5.2.4	Negative acknowledgement	A			
5.3	Retransmission				D

		A	B	C	D
5.3.1	Response to a positive acknowledgement	A			
5.3.2	Response to a negative acknowledgement	A			
5.3.3	Repetition of message signal unit			C	
6.	**Error correction by preventive cyclic retransmission** Telecom expects that the preventive cyclic retransmission error method will not be required.				D
6.1	General	A			
6.2	Acknowledgements				D
6.2.1	Sequence numbering	A			
6.2.2	Signal unit sequence control	A			
6.2.3	Positive acknowledgement	A			
6.3	Preventive cyclic retransmission				D
6.3.1	Response to positive acknowledgement	A			
6.3.2	Response to negative acknowledgement	A			
6.4	Forced retransmission	A			

Q.703 Section	Remarks	A	B	C	D
6.4.1	Forced retransmission procedure	A			
6.4.2	Limitation of the values N1 and N2	A			
7.	**Initial alignment procedure**				D
7.1	General	A			
7.2	Initial alignment status indications	A			
7.3	Initial alignment procedure	A			
7.4	Proving periods	A			
8.	Processor outage.				
[Case 1]	Telecom SP-only nodes will take the link out of service upon the reception of SIPO from other end		B		
[Case 2]	Telecom STP-only nodes will stop sending MSU and start sending FISU		B		

9.	**Level 2 flow control**				D
9.1	General	A			
9.2	Detection of congestion	A			
9.3	Procedure in the congestion situation	A			
9.4	Congestion abatement procedure	A			
10.	**Signalling link error monitoring**				D
10.1	General	A			
10.2	Signal unit error rate monitor				D
10.2.1	Signalling link fault condition	A			
10.2.2	Up/down counter	A			
10.2.3	Octet counting mode	A			
10.2.4	Monitor count	A			
10.2.5	Parameter values	A			
10.2.6	Random signal unit errors	A			
10.3	Alignment error rate monitor				D
10.3.1	Alignment error rate monitor	A			
10.3.2	Counter incrementing	A			
10.3.3	Counter thresholds for proving periods	A			
10.3.4	Threshold values for proving	A			
11.	**Level 2 codes and priorities**				D
11.1	Link status signal units				D
Q.703 Section	**Remarks**	**A**	**B**	**C**	**D**
11.1.1	Link status signal unit	A			
11.1.2	Format of the one octet status field	A			
11.1.3	Use of the link status indications	A			
11.2	Transmission priorities within level 2				D
11.2.1	Items to be transmitted	A			

11.2.2	Priorities for the basic error control method	A			
11.2.3	Priorities for the preventive cyclic transmission method.	A			
12.	**State transition diagrams and timers**	A			
12.1	Diagram summary				D
12.2	Abbreviations				D

End of Q.703

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Telephone Network Interconnection using ITU-T No. 7 Signalling

Part B

Recommendation Q.704

Signalling Network Functions And Messages

SIGNALLING NETWORK FUNCTIONS
AND MESSAGES

Q.704 Section	Remarks	A	B	C	D
1.	**Introduction**				D
1.1	General characteristics of the signalling network functions				D
1.1.1	Signalling network functions and procedures	A			
1.1.2	Signalling network functional categories	A			
1.2	Signalling message handling				D
1.2.1	Purpose of signalling message handling functions	A			
1.2.2	Label part for message handling functions	A			
1.2.3	Division of message handling functions				
[Case 1]	Signalling message transfer capability is not supported by the interconnect interface		B		
[Case 2]		A			
1.3	Signalling network management				D
1.3.1	Purpose of the signalling network management function The activation and alignment of new signalling links in order to restore the required signalling traffic capacity between two signalling points is not an automatic process.		B		
1.3.2	Signalling network management functions	A			
1.3.3	Procedures for signalling traffic management Signalling Point Restart is not supported.		B		
1.3.4	Procedures for signalling link management Automatic allocation is not supported.		B		

1.3.5	Procedures for signalling route management a. Transfer restricted is not supported. b. Signalling Route Set Congestion Test is not supported. c. Transfer controlled (national option without congestionpriorities) is supported. Generating user parts do not encode message priorities. Bits A&B of the MSU sub service field of the SIO are encoded 00 and are not used for congestion priority indication.		B		
1.3.6	Format characteristics				D

Q.704 Section	Remarks	A	B	C	D
1.3.7	Labelling, format and coding of the signalling network management messages				D
1.3.8	Description of signalling network functions				D
2.	**Signalling message handling**				D
2.1	General				D
2.1.1	Signalling message handling	A			
2.1.2	Message routing function	A			
2.1.3	Message discrimination function				
[Case 1]	Transfer capability is not supported		B		
[Case 2]		A			
2.1.4	Message distribution function	A			
2.1.5	Routing label	A			
2.1.6	Position and Coding of the Service Indicator	A			
2.1.7	Procedures to prevent unauthorised use of an STP				
[Case 1]	Not applicable since STP functionality not supported by Telecom at the interface			C	
[Case 2]		A			
2.2	Routing label				D

2.2.1	Routing label Modified label is not supported. The standard label specified in Q.704 should be used.		B		
2.2.2	Standard routing label	A			
2.2.3	Destination point code and originating point code	A			
2.2.4	Signalling link selection TUP and Data User Part are not supported		B		
2.2.5	Load sharing	A			
2.2.6	The modified label is not supported			C	
2.3	Message routing function				D
2.3.1	Message routing function Message routing by service indicator is not supported.		B		
2.3.2	Load sharing The maximum number of link sets in a combined link set is limited to two link sets. Traffic will be shared based on the signalling link selection field (SLS).		B		

Q.704 Section	Remarks	A	B	C	D
2.3.3	Updating of the routing information	A			
2.3.4	Handling of level 3 messages				D
2.3.4.1	Messages not related to a signalling link Telecom nodes assign SLC 0000 to the messages not related to a signalling link but can handle the messages with SLC not equal to zero	A			
2.3.4.2	Messages related to a signalling link	A			
2.3.5	Handling of messages under signalling link congestion				D
2.3.5.1	Congestion priority No MTP congestion priorities are supported.			C	

		A	B	C	D
2.3.5.2	National signalling networks using multiple congestion priorities Multiple congestion priorities are not supported. Bits A&B of the MSU sub service field of the SIO are encoded 00 and are not used for congestion priority indication. Values other than 00 in bits A&B will be treated as 00.			C	
2.4	Message discrimination and distribution functions	A			
2.4.1	Message discrimination function	A			
2.4.2	Message distribution function				
[Case 1]	Telecom nodes only support UPU message with cause equal to 0001. UPU procedure is not yet supported in ISUP layer. No action is taken when the indication is received from MTP.		B		
[Case 2]	User Part Unavailable procedure is not supported in Telecom's STPs. When receiving UPU message, Telecom exchanges will discard this message and report to management system.		B		
2.4.3	Network indicator National numbering scheme only is supported.		B		
3.	**Signalling network management**				D
3.1	General				D
3.1.1	Signalling network management	A			
3.1.2	Status of signalling link(s) and route(s).	A			

Q.704 Section	Remarks	A	B	C	D
3.1.3	Signalling traffic, link and route management Signalling Point Restart is not supported. Signalling-route-set-congestion-test procedure is not supported. Automatic allocation is not supported.		B		
3.1.4	Procedures relating to the different management functions				D
3.2	Status of signalling links				D

3.2.1	Available and unavailable states	A			
3.2.2	Signalling link failure	A			
3.2.3	Signalling link restoration	A			
3.2.4	Signalling link deactivation	A			
3.2.5	Signalling link activation	A			
3.2.6	Signalling link blocking				
[Case 1]				C	
[Case 2]		A			
3.2.7	Signalling link unblocking				
[Case 1]				C	
[Case 2]		A			
3.2.8	Signalling link inhibiting	A			
3.2.9	Signalling link uninhibiting	A			
3.3	Procedures used in connection with link status changes				D
3.3.1	Signalling link failed				D
3.3.1.1	Signalling traffic management	A			
3.3.1.2	Signalling link management "Activate another signalling link in the same link set" is not applicable as an automatic function.		B		
3.3.1.3	Signalling route management Telecom PSTN nodes implement only the procedure on reception of TFR message, will not send TFR to the adjacent nodes.		B		
3.3.2	Signalling link restored				D
3.3.2.1	Signalling traffic management	A			

Q.704 Section	Remarks	A	B	C	D
3.3.2.2	Signalling link management Not applicable - refer to section 12 of Q.704.			C	

3.3.2.3	Signalling route management				
[Case 1]	The transfer capability is not supported		B		
[Case 2]		A			
3.3.3	Signalling link deactivated				D
3.3.3.1	Signalling traffic management	A			
3.3.3.2	Signalling link management Not applicable - refer to section 12 of Q.704.			C	
3.3.3.3	Signalling route management See note to 3.3.1.3 above.		B		
3.3.4	Signalling link activated				D
3.3.4.1	Signalling traffic management	A			
3.3.4.2	Signalling link management Not applicable - refer to section 12 of Q.704.			C	
3.3.4.3	Signalling route management	A			
3.3.5	Signalling link blocked				D
3.3.5.1	Signalling traffic management	A			
3.3.5.2	Signalling route management See note to section 3.3.1.3 above		B		
3.3.6	Signalling link unblocked				D
3.3.6.1	Signalling traffic management	A			
3.3.6.2	Signalling route management				
[Case 1]	Transfer capability is not supported			C	
[Case 2]		A			
3.3.7	Signalling link inhibited				D
3.3.7.1	Signalling traffic management	A			
3.3.7.2	Signalling link management Not applicable - refer to section 12 of Q.704.			C	
3.3.8	Signalling link uninhibited				D

3.3.8.1	Signalling traffic management	A			

Q.704 Section	Remarks	A	B	C	D
3.3.8.2	Signalling link management Not applicable - refer to section 12 of Q.704.			C	
3.3.8.3	Signalling route management				
[Case 1]	Transfer capability is not supported			C	
[Case 2]		A			
3.4	Status of signalling routes	A			
3.4.1	Signalling route unavailability	A			
3.4.2	Signalling route availability	A			
3.4.3	Signalling route restricted	A			
3.5	Procedures used in connection with route status changes				
[Case 1]	Route restriction and STP functions not supported		B		
[Case 2]		A			
3.5.1	Signalling route unavailable				D
3.5.1.1	Signalling traffic management	A			
3.5.1.2	Signalling route management				
[Case 1]	Signalling route management functions at STPs are not supported		B		
[Case 2]	Telecom PSTN nodes implement only the procedure on reception of TFR message, will not send TFR to the adjacent nodes.		B		
3.5.2	Signalling route available				D
3.5.2.1	Signalling traffic management	A			
3.5.2.2	Signalling route management				
	Signalling route management functions at STPs are not supported		B		
		A			

3.5.3	Signalling route restricted				D
3.5.3.1	Signalling traffic management	A			
3.5.3.2	Signalling route management Telecom PSTN nodes implement only the procedure on reception of TFR message, will not send TFR to the adjacent nodes.		B		
3.6	Status of signalling points	A			
3.6.1	Signalling point unavailability				D

Q.704 Section	Remarks	A	B	C	D
3.6.1.1	Unavailability of a signalling point	A			
3.6.1.2	Unavailability of an adjacent signalling point	A			
3.6.2	Signalling point availability				D
3.6.2.1	Availability of signalling point	A			
3.6.2.2	Availability of an adjacent signalling point Signalling point restart is not supported.		B		
3.7	Procedures used in connection with point status changes				D
3.7.1	Signalling point unavailable	A			
3.7.2	Signalling point available				D
3.7.2.1	Signalling traffic management Signalling point restart procedure is not supported.			C	
3.7.2.2	Signalling link management Signalling point restart procedure is not supported.			C	
3.7.2.3	Signalling route management. Signalling point restart procedure is not supported. Transfer restricted is not supported.			C	
3.7.3	Signalling point congested See note to 11.2.6		B		
3.8	Signalling network congestion				D
3.8.1	General				D

3.8.2	Congestion status of signalling links				D
3.8.2.1	Congestion thresholds Telecom exchanges have the following implementation for congestion thresholds: a) Monitoring of buffer occupancy. b) N (1 ≤ N ≤ 3) separate multiple congestion thresholds are provided for detecting the onset of congestion. Also, separate N multiple thresholds are provided for monitoring the abatement of congestion.		B		
3.8.2.2	National signalling networks using multiple congestion thresholds			C	

Q.704 Section	Remarks	A	B	C	D
3.8.2.3	National signalling networks using multiple signalling link congestion states without congestion priorities. Telecom exchanges support multiple congestion levels and multiple on-set and abatement for each congestion level (Congestion level: 0 - 3). Refer to §11.2.5 below for more information.		B		
3.8.3	Procedures used in connection with link congestion status changes	A			
3.8.4	Congestion status of signalling route sets				D
	a) International signalling network			C	
	b) National signalling networks with multiple congestion levels.			C	
	c) National signalling networks using multiple congestion levels without congestion priority.	A			
3.8.5	Procedures used in connection with route set congestion status changes	A			
3.8.5.1	Signalling traffic management	A			
3.8.5.2	Signalling route management Signalling-route-set-congestion-test procedure is not supported.			C	
4.	**Signalling traffic management**				D
4.1	General				D

4.1.1	Signalling traffic management	A			
4.1.2	Procedures for signalling traffic management Signalling route restricted and signalling point restart procedure are not supported.		B		
4.1.3	Signalling traffic flow control procedure	A			
4.2	Normal routing situation				D
4.2.1	Load Sharing Telecom exchanges can support the following routing data configuration: a) Load sharing up to two link sets in a combined link set. b) Up to three priority orders of linksets can be assignedto a destination. c) There exists no priority between signalling links withina linkset.		B		

Q.704 Section	Remarks	A	B	C	D
4.2.2	Message Routing	A			
4.3	Signalling link unavailability				D
4.3.1	Signalling traffic transfer	A			
4.3.2	Signalling traffic transfer within a link set	A			
4.3.3	Signalling traffic transfer to alternative link set (combined link set)	A			
4.4	Signalling link availability				D
4.4.1	Signalling traffic transfer	A			
4.4.2	Signalling traffic transfer within the link set	A			
4.4.3	Signalling traffic transfer beyond the link set (combined link set)	A			
4.5	Signalling route unavailability	A			
4.6	Signalling route availability	A			
4.7	Signalling route restriction			C	

		A	B	C	D
4.8	Signalling point availability Signalling point restart procedure is not supported.			C	
5.	**Changeover**				D
5.1	General				D
5.1.1	Changeover procedure	A			
5.1.2	Procedures included in changeover	A			
5.2	Network configuration for changeover				D
5.2.1	Signalling traffic diversion	A			
5.2.2	Relationships between the new signalling link and the unavailable one	A			
5.3	Changeover initiation and actions				D
5.3.1	Changeover actions	A			
5.3.2	Case where there is no traffic to transfer	A			
5.3.3	Case where no alternative signalling link exists Transfer prohibited procedure at STP is not supported.		B		
5.3.4	Cases where failure or configuration prevents normal changeover	A			
5.4	Buffer updating procedure				D
5.4.1	Changeover order and acknowledgement	A			
5.4.2	Structure of changeover order and acknowledgement	A			

Q.704 Section	Remarks	A	B	C	D
5.4.3	Retransmission buffer update	A			
5.5	Retrieval and diversion of traffic	A			
5.6	Emergency changeover procedures				D
5.6.1	Recognition of need for emergency changeover	A			
5.6.2	Time controlled changeover	A			
5.6.3	Case where retrieval is impossible	A			

5.7	Procedures in abnormal conditions				D
5.7.1	Abnormal cases other than in 5.6	A			
5.7.2	Expiry of timer T2	A			
5.7.3	Changeover order or acknowledgement containing an unreasonable value of forward sequence number	A			
5.7.4	Reception of changeover acknowledgement where a changeover order was not previously sent	A			
5.7.5	Reception of changeover order after completion of changeover	A			
6.	**Changeback**				D
6.1	General				D
6.1.1	Objective of the changeback procedure	A			
6.1.2	Changeback procedures	A			
6.2	Changeback initiation and actions				D
6.2.1	Changeback initiation and actions	A			
6.2.2	Changeback with no traffic to transfer	A			
6.2.3	Changeback for destination made accessible				
[Case 1]	Transfer-restricted and transfer-allowed procedures at STPs are not supported		B		
[Case 2]		A			
6.2.4	Changeback for destination previously made restricted. Telecom PSTN nodes implement only the procedure on reception of TFR message, will not send TFR to the adjacent nodes.		B		

Q.704 Section	Remarks	A	B	C	D
6.2.5	Changeback for the link made available, at far end of which the signalling point is inaccessible. The method which is described in 6.5.3 (Q.704) is used to check the destination signalling point. After the expiration of Changeback Acknowledgement wait timing (T4 & T5) traffic will be diverted to this link.		B		

		A	B	C	D
6.3	Sequence control procedure				D
6.3.1	Sequence control procedure	A			
6.3.2	Receipt of a changeback acknowledgement	A			
6.3.3	Changeback declaration and changeback acknowledgement message.	A			
6.3.4	Changeback code assignment	A			
6.3.5	Changeback in parallel Reopening the recovered signalling link to traffic as soon as each changeback acknowledgement is received is not supported.		B		
6.4	Time-controlled diversion procedure				D
6.4.1	Signalling point restart is not supported			C	
6.4.2	Signalling point restart is not supported			C	
6.5	Procedures in abnormal conditions				D
6.5.1	Changeback acknowledgement received when no changeback declaration previously received	A			
6.5.2	Changeback declaration received after completion of changeback procedure	A			
6.5.3	No changeback acknowledgement received in response to changeback declaration	A			
7.	**Forced rerouting**				D
7.1	General				D
7.1.1	Objective of forced rerouting procedure	A			
7.1.2	Forced rerouting procedure	A			
7.2	Forced rerouting initiation and actions				D
7.2.1	Forced rerouting actions				
[Case 1]	Transfer prohibited procedure not supported		B		
[Case 2]		A			

Q.704 Section	Remarks	A	B	C	D

7.2.2	Case where no signalling traffic to be diverted Transfer-prohibited procedure at STP is not supported.				
[Case 1]	Transfer prohibited procedure not supported		B		
[Case 2]		A			
7.2.3	Case where no alternative route exists		B		
8.	**Controlled rerouting**				D
8.1	General				D
8.1.1	Objective of controlled rerouting	A			
8.1.2	Two cases of controlled rerouting:		B		
	a) Destination becomes available	A			
	b) Transfer-restricted procedure Telecom PSTN nodes implement only the procedure on reception of TFR message, will not send TFR to the adjacent nodes.		B		
8.2	Controlled rerouting initiation and actions				D
8.2.1	Initiation of controlled rerouting				
[Case 1]	Transfer-restricted and Transfer-allowed procedures are not supported		B		
[Case 2]		A			
8.2.2	Case where there is no signalling traffic to divert			C	
8.2.3	Case where destination is inaccessible or restricted	A			
[Case 1]	Transfer-restricted and Transfer-allowed procedures are not supported		B		
[Case 2]		A			
9.	**Signalling point restart** MTP Restart procedure is not supported. When receiving restart messages, Telecom exchanges will discard these messages and report to the management system.			C	
10.	**Management inhibiting**				D
10.1	General	A			

| 10.2 | Inhibiting initiation and actions | A | | | |
| 10.3 | Uninhibiting initiation and actions | A | | | |

Q.704 Section	Remarks	A	B	C	D
10.3.1	Management-initiated uninhibiting 1 second will be used as Timer T12 value.		B		
10.3.2	Signalling routing control initiated uninhibiting 1 second will be used as Timer T13 value.		B		
10.4	Receipt of unexpected management inhibition messages	A			
10.5	Management inhibited link status and processor recovery	A			
10.6	Inhibit test procedure	A			
10.6.1	Local inhibit test 5 minutes will be used as Timer T22 value		B		
10.6.2	Remote inhibit test 5 minutes will be used as Timer T23 value		B		
11.	**Signalling traffic flow control**				D
11.1	General				D
11.2	Flow control indications				D
11.2.1	Signalling route set unavailability	A			
11.2.2	Signalling route set availability	A			
11.2.3	Signalling route set congestion (International signalling network)			C	
11.2.3.1	Signalling route set congested See §11.2.5 below for description of interaction with ISUP.				
[Case 1]	STP functionality not supported		B		
[Case 2]		A			
11.2.3.2	Reception of transfer-controlled message	A			
11.2.3.3	Signalling route set uncongested	A			

| 11.2.4 | Signalling route set congestion

(National option with congestion priorities)

Telecom exchange does not support this procedure. During congestion MTP does not discard messages except in the case of system resource busy.

Message traffic control is performed at user part based on the congestion information from MTP.

Refer to §11.2.5 below. | | | C | |

Q.704 Section	Remarks	A	B	C	D
11.2.5	Signalling route set congestion (National option without congestion priorities) Telecom exchanges detect MTP congestion by monitoring the occupancy of No.7 link transmission buffers. Separate onset and abatement congestion levels may be set for each connected link. Three congestion levels plus level 0 (no congestion) are used. When advice of congestion is received from MTP layer by the local level 4 ISUP, in accordance with this recommendation, restriction is applied to traffic attempting to select circuits to the affected destination. Level 1 congestion causes 25% of attempts to be rejected, level 2 50% and level 3 100%. Onset timing is instantaneous from the issue of the initial congestion MTP primitive (level 1). Further increases to congestion are activated with 300ms delay. Abatement timing is approximately 5 seconds per congestion step.		B		
11.2.6	Signalling point/signalling transfer point congestion				
[Case 1]	STP functionality not supported		B		
[Case 2]		A			
11.2.7	MTP user flow control				
[Case 1]	Telecom nodes only support UPU message with cause equal to 0001. UPU procedure is not yet supported in ISUP layer. No action is taken when the indication is received from MTP.		B		
[Case 2]	User Part Unavailable procedure is not supported. When receiving UPU message, Telecom exchange will discard this message and report to management system		B		

11.2.8	User part congestion Further study item				D
12.	**Signalling link management**				D
12.1	General				D
12.1.1	Signalling link management function Basic set only of signalling management procedures is supported.		B		
12.1.2	Signalling link and link set		B		
	Automatic allocation of signalling terminals.			C	
	Automatic allocation of signalling data links and signalling terminals.			C	

Q.704 Section	**Remarks**	**A**	**B**	**C**	**D**
12.1.3	Signalling link activation and deactivation		B		
	Items b) and c) are excluded			C	
12.2	Basic signalling link management procedures				D
12.2.1	Signalling link activation				D
12.2.1.1	Link set in the absence of failures All signalling links in a link set are active in the absence of failures. All signalling links are assigned the same priority in active condition.		B		
12.2.1.2	Signalling link activation procedure	A			
12.2.2	Signalling link restoration	A			
12.2.3	Signalling link deactivation	A			
12.2.4	Link set activation	A			
12.2.4.1	Link set normal activation	A			
12.2.4.2	Link set emergency activation	A			
12.2.4.3	Time-out values	A			
12.3	Signalling link management procedures based on automatic allocation of signalling terminals			C	

		A	B	C	D
12.4	Signalling link management procedures based on automatic allocation of signalling data links and signalling terminals			C	
12.5	Automatic allocation of signalling terminals			C	
12.6	Automatic allocation of signalling data links			C	
12.7	Different signalling link management procedures at the two ends of a link set	A			
13.	**Signalling route management**				D
13.1	General Restriction is not implemented in Telecom exchanges.		B		
13.2	Transfer prohibited				D
13.2.1	Transfer-prohibited procedure.				
[Case 1]	Transfer-prohibited procedure is not supported		B		
[Case 2]		A			
13.2.2	Cases for transfer-prohibited message sending				
[Case 1]	Transfer-prohibited procedure is not supported		B		
[Case 2]	Signalling transfer point restart is not supported.		B		

Q.704 Section	Remarks	A	B	C	D
13.2.3	Reception of transfer-prohibited message	A			
13.2.4	Repeated transfer-prohibit message for non-existent route	A			
13.3	Transfer allowed				D
13.3.1	Transfer-allowed procedure				
[Case 1]	Transfer-prohibited procedure is not supported		B		
[Case 2]		A			
13.3.2	Cases for transfer-allowed message sending				
[Case 1]	Transfer-prohibited procedure is not supported		B		
[Case 2]		A			
13.3.3	Reception of transfer-allowed message	A			

13.3.4	Repeated transfer-allowed message for non-existent route	A			
13.4	Transfer-restricted				D
13.4.1	Transfer-restricted procedure Telecom nodes implement only the procedure on reception of TFR message, will not send TFR to the adjacent nodes.		B		
13.4.2	Cases for transfer-restricted message sending			C	
13.4.3	Reception of transfer-restricted message		B		
13.4.4	Repeated transfer-restricted message or the message relating to a non-existent route	A			
13.4.5	Transfer-restricted message updating a transfer-prohibited status	A			
13.5	Signalling-route-set-test	A			
13.6	Transfer controlled (International network) The procedure in section 13.8 applies.			C	
13.7	Transfer controlled (National option with congestion priorities) The procedure in section 13.8 applies.			C	
13.8	Transfer controlled (National option without congestion priorities) See Q.704 §11.2.5 for description of local interaction with ISUP.		B		

Q.704 Section	Remarks	A	B	C	D
13.9	Signalling-route-set-congestion-test (National option) Telecom node does not support this procedure. When receiving signalling-route-set-congestion-test message from other networks, no action is taken by Telecom node.			C	
14.	**Common characteristics of message signal unit formats**				D
14.1	General	A			
14.2	Service information octet	A			

14.2.1	Service indicator SI=0,1 and 5 only are applicable.		B		
14.2.2	Sub-service field Network Indicator of 2 only is applicable. Bits A&B are encoded 00 and are not used for congestion priority. Values other than 00 in bits A&B will be treated as 00.		B		
14.3	Label	A			
15.	**Formats and codes of signalling network management messages**				D
15.1	General				D
15.1.1	Configuration of service indicator (SI)	A			
15.1.2	Signalling information field	A			
15.2	Label	A			
15.3	Heading code (H0)	A			
15.4	Changeover message				D
15.4.1	Format of the changeover message	A			
15.4.2	Changeover message fields	A			
15.4.3	Changeover signal codes	A			
15.5	Changeback message				D
15.5.1	Format of the changeback message	A			
15.5.2	Changeback message fields	A			
15.5.3	Changeback signal codes	A			
15.5.4	Changeback code	A			
15.6	Emergency changeover message				D

Q.704 Section	Remarks	A	B	C	D
15.6.1	Format of the emergency changeover message	A			
15.6.2	Emergency changeover message fields	A			

15.6.3	Emergency changeover signal codes	A			
15.7	Transfer-prohibited message				D
15.7.1	Format of the transfer-prohibited message	A			
15.7.2	Transfer-prohibited message fields	A			
15.7.3	Transfer-prohibited signal code	A			
15.7.4	Transfer-prohibited destination field	A			
15.8	Transfer-allowed message				D
15.8.1	Format of the transfer-allowed message	A			
15.8.2	Transfer-allowed message fields	A			
15.8.3	Transfer-allowed signal code	A			
15.9	Transfer-restricted message (National option)			C	
15.10	Signalling-route-set-test message	A			
15.10.1	Format of the signalling-route-set-test message	A			
15.10.2	Signalling-route-set-test message fields	A			
15.10.3	Signalling-route-set-test signal codes	A			
15.11	Management inhibit message				D
15.11.1	Format of the management inhibit message	A			
15.11.2	Management inhibit message fields	A			
15.11.3	Management inhibit signal codes	A			
15.12	Traffic restart allowed message			C	
15.13	Signalling-data-link-connection-order message			C	
15.14	Signalling-data-link-connection-acknowledge message			C	
15.15	Transfer controlled message				D
15.15.1	Transfer controlled message format	A			
15.15.2	Transfer controlled message fields	A			
15.15.3	Transfer controlled message signal code	A			
15.15.4	Transfer controlled message destination field	A			

15.15.5	Transfer controlled message spare bits	A			
15.16	Signalling-route-set-congestion-test message (National option)			C	
15.17	User part unavailable message				D

Q.704 Section	Remarks	A	B	C	D
15.17.1	User Part unavailable message format				
[Case 1]		A			
[Case 2]				C	
15.17.2	User Part unavailable message fields				
[Case 1]		A			
[Case 2]				C	
15.17.3	User Part unavailable message signal codes				
[Case 1]		A			
[Case 2]				C	
15.17.4	User Part identity codes				
[Case 1]		A			
[Case 2]				C	
15.17.5	User part unavailability cause				
[Case 1]				C	
[Case 2]	Telecom nodes only support UPU message with cause equal to 0001.		B		
16.	**State transition diagrams**				D
16.1	General	A			
16.2	Drafting conventions				D
16.2.1	Major functions	A			
16.2.2	Functional blocks	A			
16.2.3	External inputs and outputs	A			

16.2.4	Control of time-outs	A			
16.2.5	Notations for national operations	A			
16.3	Signalling message handling	A			
16.4	Signalling traffic management	A			
16.5	Signalling link management	A			
16.6	Signalling route management	A			
16.7	Abbreviations used in Figures 23/Q.704 onwards	A			
16.8	Timers and timer values	A			

Table 1a/Q.704

Heading code allocation of signalling network management messages

Message Group	H0	H1															
		0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
	0000																
CHM	0001		COO	COA			CBD	CBA									
ECM	0010		ECO	ECA													
FCM	0011		RCT	TFC													
TFM	0100		TFP	*	TFR		TFA	*									
RSM	0101		RST	RSR													
MIM	0110		LIN	LUN	LIA	LUA	LID	LFU	LLT	LRT							
TRM	0111		TRA														
DLM	1000		DLC	CSS	CNS	CNP											
	1001																
UFC	1010		UPU														
	1011																
	1100																
	1101																
	1110																
	1111																

Note 1 – Values marked * should not be used (codes used in the Yellow Book for TFP and TFA acknowledgement).

Note 2 – Codes marked [   ] are not sent by Telecom nodes.

Table 1b/Q.704
List of Abbreviations

CBA   Changeback-acknowledgement signal
CBD   Changeback-declaration signal
CHM Changeover and changeback messages CNP
Connection-not-possible signal
CNS   Connection-not-successful signal
COA   Changeover-acknowledgement signal
COO   Changeover-order signal
CSS   Connection-successful signal
DLC   Signalling-data-link-connection-order signal
DLM   Signalling-data-link-connection-order message
ECA   Emergency-changeover-acknowledgement signal
ECM   Emergency-changeover message
ECO   Emergency-changeover-order signal
FCM   Signalling-traffic-flow-control messages
LFU   Link forced uninhibit signal
LIA   Link inhibit acknowledgement signal
LID   Link inhibit denied signal
LIN   Link inhibit signal
LLT   Link local inhibit test signal
LUA   Link uninhibit acknowledgement signal
LUN   Link uninhibit signal
LRT   Link remote inhibit test signal
MIM   Management inhibit messages
RCT   Signalling-route-set-congestion-test signal
RSM   Signalling-route-set-test message
RSR   Signalling-route-set-test signal for restricted destination (national option)
RST   Signalling-route-set-test signal for prohibited destination
TFA   Transfer-allowed signal
TFC   Transfer-controlled signal
TFM   Transfer-prohibited-transfer-allowed-transfer-restricted messages
TFP   Transfer-prohibited signal
TFR   Transfer-restricted signal (national option)
TRA   Traffic-restart-allowed signal
TRM   Traffic-restart-allowed message
UFC   User part flow control messages
UPU   User part unavailable signal

End of Q.704

Specification PTC 331

**Telephone Network
Interconnection using
ITU-T No. 7 Signalling**

Part B

Recommendation Q.705

Signalling Network Structure

SIGNALLING NETWORK STRUCTURE

Q.705 Section	Remarks	A	B	C	D
1.	**Introduction**				D
2.	**Network Components**				D
2.1	Signalling links	A			
2.2	Signalling points	A			
3.	**Structural independence of international and national signalling networks** National signalling network only is supported		B		
4.	**Considerations common to both international and national signalling networks**				D
4.1	Availability of the network Telecom cannot guarantee availability of links supplied partly by others		B		
4.2	Message transfer delay				D
4.3	Message sequence control	A			
4.4	Number of signalling links used in load sharing Load sharing of traffic is dependent on SLS random allocation. Load sharing depending on the bit rate of the signalling link is not supported.		B		
4.5	Satellite working	A			
5.	**International signalling network**			C	
6.	**Signalling network for cross-border traffic**			C	
7.	**National signalling network**	A			
8.	**Procedures to prevent unauthorized use of an STP (optional)**				D
8.1	General				D
8.2	Identifying unauthorized SS7 messages	A			
8.3	Treatment of unauthorized SS7 messages	A			

| 8.4 | Measurements | A | | | |
| 8.5 | Notification to unauthorized user | A | | | |

<div align="center">End of Q.705</div>

Specification PTC 331

Telephone Network Interconnection using ITU-T No. 7 Signalling

Part B

Recommendation Q.706

Signalling Performance

MESSAGE TRANSFER PART SIGNALLING PERFORMANCE

Q.706 Section	Remarks	A	B	C	D
1.	**Basic parameters related to Message Transfer Part signalling performance**				D
1.1	Unavailability of a signalling route set	A			
1.2	Unavoidable MTP malfunction	A			
1.3	Message transfer times	A			
1.4	Signalling traffic throughput capability Needs further study	A			
2.	**Signalling traffic characteristics**				D
2.1	Labelling potential	A			
2.2	Loading potential	A			
2.2.1	Queuing delay	A			
2.2.2	Security requirements	A			
2.2.3	Capacity of sequence numbering	A			
2.2.4	Signalling channels using lower bit rate			C	
2.3	Structure of signalling traffic	A			
3.	**Parameters related to transmission characteristics**				D
3.1	Application of Signalling System No.7 to 64 kbit/s links				D
3.2	Application of Signalling System No.7 to links using lower bit rates				D
3.3	Signalling link delays over terrestrial and satellite links				D
4.	**Parameters of influence on signalling performance**				D
4.1	Signalling network Refer to Q.701 3.1.2		B		
4.1.1	International signalling network (further study item)				D
4.1.2	National signalling network (further study item)				D

4.2	Queuing delays				D
4.2.1	Assumptions for derivation of formulas				D
4.2.2	Factors and parameters				D
4.2.3	Formulas				D
4.2.4	Examples				D
4.3	Message transfer times				D
4.3.1	Message transfer time components and functional reference points				D
4.3.2	Definitions				D
Q.706 Section	**Remarks**	**A**	**B**	**C**	**D**
4.3.2.1	Message transfer part sending time T_{ms}				D
4.3.2.2	Message transfer time at signalling transfer points T_{es}	A			
4.3.2.3	Message transfer part receiving time T_{mr}				D
4.3.2.4	Data channel propogation time T_p				D
4.3.3	Overall message transfer times				D
4.3.4	Estimates for message transfer times				D
4.4	Error control				
4.5	Security arrangements	A			
4.5.1	Types of security arrangements	A			
4.5.1.1	Security arrangements for the components of the signalling network	A			
4.5.1.2	Security arrangements for signalling relations Refer to Q.701 3.1.2		B		
4.5.2	Security requirements	A			
4.5.3	Time to initiate changeover	A			
4.5.4	Changeover performance times	A			
4.5.4.1	Failure response time	A			
4.5.4.2	Answer time to changeover order	A			
4.6	Failures				D

4.6.1	Link failures	A			
4.6.2	Failures in signalling points (needs further study)				D
4.7	Priorities The use of priorities by service indicator is not supported.		B		
5.	**Estimates for message transfer times**				D
5.1	Estimate for Tcs				D
5.2	Calculation for Tod				D
5.3	Estimate for STP processor handling time Tph				D
6.	**Performance under adverse conditions** Needs further study				D

End of Q.706

Specification PTC 331

Telephone Network Interconnection using ITU-T No. 7 Signalling

Part B

Recommendation Q.707

Testing And Maintenance

TESTING AND MAINTENANCE

Q.707 Section	Remarks	A	B	C	D
1.	**General**	A			
2.	**Testing**				D
2.1	Signalling data link test Only the signal unit error rate monitor and alignment error rate monitor will be provided for the detection of deterioration.		B		
2.2	Signalling link test	A			
3.	**Fault location (further study)**				D
4.	**Signalling network monitoring**				D
5.	**Formats and codes of signalling network testing and maintenance messages**				D
5.1	General	A			
5.2	Label	A			
5.3	Heading code H0	A			
5.4	Signalling link test messages	A			
5.5	Time out values and tolerances	A			
6.	**State transition diagrams**	A			

End of Q.707

Specification PTC 331

Telephone Network Interconnection using ITU-T No. 7 Signalling

Part B

Appendix 1

Telecom Specific Test Messages

APPENDIX 1 TELECOM SPECIFIC TEST MESSAGES

This appendix describes the Signalling Route Test Message (SRTM), Signalling Route Test Acknowledgement (SRTA) and Unallocated Signalling Point Number (USN) used by Telecom exchanges to test all routes to each specified DPC.

Note: these messages are Telecom specific and not defined by CCITT. Sending of the SRTM is initiated by MMI command in a Telecom exchange and SRTM could be sent to other networks. The SI value of these test messages is 0001.

1. Codings and Formats

The SRTM message may be sent with selected SLS value or all possible values, i.e. 16 SLS values. The Signalling Route Test (SRT) message test pattern and format are shown below:

Test Pattern	Length Indicator	Spare	Heading Code H1	Heading Code H0	Label	
0111011100010001	0010	0000	DCBA	0011	32 bits	First bit transmitted

The heading code H1 is specified as follows:

Bit   D C B A
      0 0 0 1   - signalling route test message (SRTM)
     0 0 1 0 - signalling route test acknowledgement message (SRTA) The USN message coding and format are shown below:

Spare	Unavailable DPC	Length Indicator	Spare	Heading Code H1	Heading Code H0	Label	
00	14 bits	0010	0000	0010	0100	32 bits	1st bit transmitted

2. Procedures

2.1   Sending of the SRTM message is initiated by MMI command at Telecom exchanges.

2.2   The test is considered successful if the destination SP at the end of the route under test returns a signalling route test acknowledgement (SRTA) message which contains a test pattern identical to that in the SRTM.

2.3   The test is considered unsuccessful if the destination SP at the end of the route under test returns a signalling route test acknowledgement (SRTA) message which contains a test pattern not identical to that in the SRTM or SRTA is not received within 10 seconds of sending a repeat SRTM message. In those cases, a report is made to the management system to indicate the test is not successful.

3.   Other network operators shall advise Telecom in advance in their compliance statement to this PTC of the response of their system to a STRM received from Telecom.

4.   Network operators shall advise Telecom in advance in their compliance statement to this PTC their response to the receipt of SRTM sent via their STP to a non-existent SP. Telecom would prefer USN as a response, but this is not mandatory.

5.   If other network operators wish to send any test messages such as the SRTM to Telecom exchanges, they shall advise Telecom in advance about the message type, format, sending frequency and other characteristics.

6.   If a Telecom exchange receives a test message destined to an unrecognised SP, it will respond with an Unallocated Signalling Point Number (USN) message containing the unallocated DPC.