# ND1011:2002/10

## PNO-ISC/SPEC/011

## ATM Transport For Interconnect

# PNO-ISC SPECIFICATION NUMBER 011
# ATM TRANSPORT FOR INTERCONNECT

NETWORK INTEROPERABILITY CONSULTATIVE COMMITTEE

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## 0.2   Normative Information

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## 0.3   Contents

## 0.4 History

| Revision | Date of Issue | Updated By | Description |
|----------|---------------|------------|-------------|
| Issue 1 | October 2002 | PNO-ISC | First published version |

## 0.5 Issue Control

| SECTION | ISSUE | DATE |
|---------|-------|------|
| All | Issue 1 | October 2002 |

## 0.6   References

### 0.6.1   Normative references

[1]   ITU-T Q.2150.1 (05/01) Signalling Transport Converter on MTP3 and MTP3b

[2]   ITU-T Q.2210 (07/96) Message Transfer Part level 3 functions and messages using the services of ITU-T Recommendation Q.2140

[3]   ITU-T Implementors' Guide (12/99) for Recommendation Q.2210 (07/96)

[4]   ITU-T Q.2140 (02/95) B-ISDN ATM Adaptation Layer - Service Specific Coordination Function for Support of Signalling at the Network Node Interface (SSCF at NNI)

[5]   ITU-T Implementors' Guide (03/99) for Recommendation Q.2140 (02/95)

[6]   ITU-T Q.2110 (07/94) B-ISDN ATM Adaptation Layer - Service Specific Connection Oriented Protocol (SSCOP)

[7]   ITU-T Implementors' Guide (09/97) for Recommendation Q.2110 (07/94)

[8]   ITU-T I.363.5 (08/96) B-ISDN ATM Adaptation Layer specification: Type 5 AAL

[9]   PD 6639 PNO-ISC/SPEC/005 Issue 3, C7 Interconnect Message Transfer Part (MTP)

[10]   ETSI EN 300 436-1 v1.2.1 (2000-09) B-ISDN; Signalling ATM Adaptation Layer (SAAL); Service Specific Connection Oriented Protocol (SSCOP); Part 1: Protocol specification

[11]   ITU-T Q.2144 (10/95) B-ISDN Signalling ATM Adaptation Layer (SAAL) – Layer Management for the SAAL at the Network Node Interface (NNI)

[12]   ITU-T Recommendations Q.701 (03/93)

[13]   ITU-T Implementors' Guide (07/01) for Q.701 (03/93)

[14]   ITU-T Recommendation Q.704 (07/96)

[15]   ITU-T Implementors' Guide (12/99) for Q.704 (07/96)

[16]   CCITT Blue Book Recommendations Q.707 (11/88)

### 0.6.2   Bibliography

[17]   ETSI EN 300 647-1 v1.1.2 (1998-11) B-ISDN; Signalling ATM Adaptation Layer (SAAL); Layer Management for the SAAL at the Network Node Interface (NNI); Part 1: SSCOP and SSCF

[18]   PD 6627 PNO-ISC/INFO/007 Issue 4 UK Interconnect use of SCCP and MTP

[19]   PD 6646 PNO-ISC/SPEC/001 Point Codes for Network Interconnect in the UK

[20]   NICC Doc. No. 99/024 UK ATM Access and Interconnect between Licensed Operators
       - Overview

[21]   NICC Doc No. 99/025 Interconnect between UK Licensed Operators
       - SAAL UNI Technical Recommendation

[22]   PNO-ISC/SPEC/012 Issue 1 IP Transport (M3UA) for UK Interconnect

[23]   PNO-ISC/INFO/0019 Issue 1 UK Interconnect use of Signalling for packet-based PSTN/ISDN

[24]   PNO-ISC/SPEC/010 Issue 1 Bearer Independent Call Control Protocol

## 0.7   Glossary of terms

### 0.7.1   Abbreviations

AAL     ATM Adaptation Layer

ATM     Asynchronous Transfer Mode

BICC    Bearer Independent Call Control

B-ISDN Broadband - Integrated Services Digital Network

| | |
|---|---|
| CI | Congestion Indication |
| CPCS | Common Part Convergence Sublayer |
| ETSI | European Telecommunications Standards Institute |
| FISU | Fill In Signal Unit |
| IG | Interworking Group |
| ISC | Interconnect Signalling Committee |
| ITU-T | International Telecommunications Union - Telecommunications standardization sector |
| LP | Loss Priority |
| LSSU | Link Status Signal Unit |
| ISDN | Integrated Services Digital Network |
| MTP | Message Transfer Part |
| NICC | Network Interoperability Consultative Committee |
| NNI | Network Network Interface |
| PDU | Protocol Data Unit |
| PNO | Public Network Operators |
| PSTN | Public Switched Telephone Network |
| SAAL | Signalling ATM Adaptation Layer |
| SAR | Segmentation and Reassembly (Sublayer) |
| SCCP | Signalling Connection Control Part |
| SDL | Specification and Description Language |
| SDU | Service Data Unit |
| SIF | Signalling Information Field |
| SIO | Signalling Information Octet |
| SI | Service Indicator |
| SSCF | Service Specific Coordination Function |
| SSCOP | Service Specific Connection Oriented Protocol |
| WP | Working Party |

### 0.7.2 Definitions

| | |
|---|---|
| Not required | It is not necessary for either the underlying functionality or signalling procedures associated with the service/feature to be supported by the implementation concerned for that implementation to qualify as conformant to the specification.  Refer to 0.9. |

Note 1:  Interconnected or communicating implementations that provide support of the service/feature/message/parameter identified will not be considered as non-conformant to the specification.

Note 2:  Implementations shall not rely on "not-required" features being disabled (or enabled).

Note 3:  The normal compatibility rules shall apply to the messages, parameters and codepoints needed to support the feature/service.

| | |
|---|---|
| Nodal Function: | The aspect referred to in the recommendations is not applicable to an interconnect specification.  A nodal function is considered to be purely internal behaviour. |
| Applies: | Identifies a paragraph, or group of sub-paragraphs that have no exception from the recommendations. |
| Cannot be used | A parameter that can only be conveyed by a message type that shall not be used. |
| Reason 1 | The underlying signalling link level is not according to ITU-T Q.703, therefore LSSUs indicating 'processor outage' or 'out of service' are not possible. |
| Reason 2 | Automatic allocation of signalling terminals is a nodal function that is not apparent to an interconnected signalling point. |

## 0.8  Scope

The purpose of PNO-ISC/SPEC/011 is to specify the requirements of the ATM signalling transport that are standardised for use across a UK national interconnect between Public Networks, in order to support new network technologies.

This specification was proposed by the PNO-ISC because a need was identified to support a packet-based PSTN/ISDN service within the UK.  It was the support of this service that defined the terms of reference for the specification.  See also reference /24/.

This specification is based on the relevant ETSI and ITU-T recommendations.  The specification currently satisfies the requirements of the UK packet-based PSTN/ISDN service, whilst being reasonably general.  The specification has been written in a form that allows future development as the need arises.  This results in a reduced level of functionality, equivalent to a subset of the ITU-T recommendations.  The term 'Not required' is used against an item if the item is irrelevant to the services defined for the specification to support, see 0.9.  Although nodal functions are not strictly relevant to interconnect agreements, they have been included for completeness, with the intention of giving a more useful document.  For example, reports to management are considered to be a nodal function.  Note that the nodal architecture assumed by the ITU-T in producing its recommendations is a specification model and is not intended to constrain any implementation's design architecture.  The behaviour within a node is considered to be implementation dependent, provided its external behaviour conforms to the specification.

Whilst there is no current obligation on any PNO to offer a UK ATM Transport interconnect, if any such interconnect is offered, then as a minimum the default configuration given in this specification shall be supported to ensure interoperability between UK networks.

It must also be noted that this specification might only form part of an agreement and support of further functionality over an interconnect may be as part of a bilateral agreement.

In the case that a set of sub-paragraphs would have the same qualification statement in common, then only the parent paragraph is referenced.  The single parent paragraph then carries the common qualification statement.

Be aware that although the comments in this document relating to SSCOP are against the text in reference /6/, it is the SDL of reference /6/ that is the definitive description of the procedures.  The text in this specification shall be aligned with the SDL of reference /6/ if any differences are found between the SDL and the textual part of reference /6/.

## 0.9   Treatment of Items 'Not Required' or 'Shall Not Be Sent'

The processing of received messages and/or parameters marked either as 'not required' or as 'shall not be sent' shall be according to the capabilities of the receiving node and may either be to discard them or to respond to them in a manner allowed by this specification.  For preference these events shall optionally be reported to management.

**END OF PNO-ISC/SPEC/011§0**

# 1   Signalling Transport Converter on MTP3 and MTP3b

Note that this section is equally appropriate for use with the protocol architecture standardised in reference /22/.

| | |
|---|---|
| Q.2150.1/1 | Applies. |
| Q.2150.1/2.1 | Applies. |
| Q.2150.1/2.2 | Applies. |
| Q.2150.1/3 | Applies. |
| Q.2150.1/4 | Applies. |
| Q.2150.1/5.1 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/5.2 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/5.3 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/6.1 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. Shall not be used, National option of 'Priority' parameter. |
| Q.2150.1/6.2 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/6.2.1.a) | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/6.2.1.b) | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/6.2.1.c) | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/6.2.1.d) | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. Shall not be used, National option with congestion priorities. |
| | Additional requirement, an implementation option, for a signalling application to send an unsolicited message, when it would normally only send messages in response to incoming messages.  This is in order to change the remote STC from 'Out of Service' to 'In Service'. |
| | This option shall be triggered if the underlying signalling transport is MTP3 or MTP3b and if the implementation is such that a UPU (User Part Unavailable) message has previously been sent. |
| | *\*\* Note that this is an open issue for ITU-T SG11 \*\*.* |
| Q.2150.1/6.2.2.a) | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/6.2.2.b) | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/6.2.2.c) | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/6.2.2.d) | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/6.2.2.e) | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |

| | |
|---|---|
| Q.2150.1/6.2.2.f) | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour.<br>Shall not be used, National option with congestion priorities. |
| Q.2150.1/6.2.2.g) | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/6.2.3 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/6.3 | Nodal function. |
| Q.2150.1/6.3.1 | Nodal function. |
| Q.2150.1/6.3.2 | Nodal function. |
| Q.2150.1/6.4 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/7.1.1 | Applies. |
| Q.2150.1/7.1.2 | Applies. |
| Q.2150.1/7.2 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/7.3.a) | Applies. |
| Q.2150.1/7.3.b) | Applies. |
| Q.2150.1/7.4 | Nodal function. |
| Q.2150.1/7.4.a) | Nodal function. |
| Q.2150.1/7.4.b) | Nodal function. |
| Q.2150.1/7.4.c) | Nodal function. |
| Q.2150.1/7.4.d) | Nodal function. |
| Q.2150.1/7.4.e) | Nodal function. |
| Q.2150.1/7.4.f) | Nodal function.<br>Shall not be used Max_Length value of "4096".  Shall be used Max_Length value of "272". |
| Q.2150.1/7.4.g) | Nodal function. |
| Q.2150.1/7.4.h) | Nodal function. |
| Q.2150.1/7.4.i) | Nodal function. |
| Q.2150.1/8 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/8.1 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/8.1.1 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/8.1.2 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/8.1.3 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/8.1.4 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/8.2.1 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |

| | |
|---|---|
| Q.2150.1/8.2.2.1 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour.<br>Shall not be used, National option of congestion priority indication. |
| Q.2150.1/8.2.2.2 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/8.2.3 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/8.2.4 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/8.2.4.1.1) | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/8.2.4.1.2) | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/8.2.4.1.3) | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/8.2.4.1.4) | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/8.2.4.1.5) | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/8.2.5 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/8.3 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2150.1/8.4 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour.<br>Shall not be used, National option 'Priority' parameter in the SIO field. |
| Q.2150.1/Appendix I | Not required. |

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# 2   MTP3b

| | |
|---|---|
| Q.2210/1 | Applies. |
| Q.2210/2.1 | Applies. |
| Q.2210/2.2 | Applies. |
| Q.2210/3 | Applies. |
| Q.2210/4 | Applies. |
| Q.2210/5 | Applies. |
| Q.2210/6.1 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2210/6.2 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour.<br>Shall not be used, National option with congestion priorities. |
| Q.2210/6.3 | Nodal function. |
| Q.2210/7 | Nodal function. |
| Q.2210/8 | Applies. |
| Q.2210/9 | Applies. |
| Q.2210/9.1 | Shall not be used, SDUs with user data larger than 272 octets. |
| Q.2210/9.2 | Applies. |
| Q.2210/9.3 | Shall not be used, criteria for generation of transfer controlled messages.  The criteria of reference /14/ apply, because the maximum message SIF length remains at 272 octets. |
| Q.2210/9.4 | Nodal function, automatic allocation of signalling terminals (*Reason 2*).<br>Not required, automatic allocation of signalling data links. |
| Q.2210/9.5 | Not required, the following Service Indicator (SI) values:<br>Broadband ISDN User Part, Satellite ISDN User Part, AAL type 2 Signalling Transport Converter on Broadband MTP and Gateway Control Protocol (H.248).<br>Required, User Parts as listed in reference /18/ and Bearer Independent Call Control (Q.1901), see reference /3/.<br>*\*\* Note that these SI allocations might eventually be documented in reference /23/ \*\**. |
| Q.2210/9.6 | Applies. |
| Q.2210/9.7 | Applies. |
| Q.2210/9.8 | Applies. |
| Q.2210/9.8.1 | Applies. |
| Q.2210/9.8.2 | Not required, the following Service Indicator (SI) values:<br>Broadband ISDN User Part, Satellite ISDN User Part, AAL type 2 Signalling Transport Converter on Broadband MTP and Gateway Control Protocol (H.248).<br>Required, User Parts as listed in reference /18/ and Bearer Independent Call Control (Q.1901), see reference /3/.<br>*\*\* Note that these SI allocations might eventually be documented in reference /23/ \*\**. |
| Q.2210/9.9 | Applies. |
| Q.2210/10 | Applies. |
| Q.2210/Appendix I | Not required. |

**END OF PNO-ISC/SPEC/011§2**

# 3   Functional Description of MTP

| | |
|---|---|
| Q.701/1.1 | Applies. |
| Q.701/1.2 | Required, User Parts as listed in reference /18/. |
| Q.701/1.3.1 | Applies. |
| Q.701/1.3.2 | Applies. |
| Q.701/1.3.3 | Applies. |
| Q.701/1.3.4 | Applies. |
| Q.701/2.1 | Applies. |
| Q.701/2.2.1 | Applies. |
| Q.701/2.2.2 | Does not apply, analogue signalling links (*Reason 1*). |
| Q.701/2.2.3 | Applies. |
| Q.701/2.2.4 | Applies. |
| Q.701/2.2.5 | Required, User Parts as listed in reference /18/ and Bearer Independent Call Control (Q.1901), see reference /3/. |
| Q.701/2.3 | Applies. |
| Q.701/2.4 | Applies. |
| Q.701/3.1 | Applies. |
| Q.701/3.1.1 | Applies. |
| Q.701/3.1.2 | With STP working: Applies.<br>Without STP working: Not required, quasi-associated mode. |
| Q.701/3.1.3 | With STP working: Applies.<br>Without STP working: Not required, signalling transfer point functions. |
| Q.701/3.1.4 | Shall not be used, National, modified label structures. |
| Q.701/3.2 | Applies. |
| Q.701/3.2.1 | Not required, Use of the Service Indicator for routing.<br>Shall not be used, Traffic distribution applied to links in different linksets.<br>Additional requirement, reference /19/, UK Point Code numbering scheme applies. |
| Q.701/3.2.2 | Applies. |
| Q.701/3.2.3 | With STP working: Applies.<br>Without STP working: Not required, transfer capability. |
| Q.701/3.3 | Applies. |
| Q.701/3.3.1 | With STP working: Applies.<br>Without STP working: Not required, procedures related to signalling route management function at a signalling transfer point. |
| Q.701/3.3.2 | Shall not be used, Automatic allocation of signalling data links. |
| Q.701/3.3.3 | With STP working: Applies.<br>Without STP working: Not required, signalling route management function. |
| Q.701/3.4 | Applies. |
| Q.701/3.5.1 | With STP working: Applies.<br>Without STP working: Not required, quasi-associated signalling. |
| Q.701/3.5.2 | Nodal function, Automatic allocation of signalling terminals (*Reason 2*).<br>Shall not be used, Automatic allocation of signalling data links. |

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| | |
|---|---|
| Q.701/3.5.3 | With STP working: Applies.<br>Without STP working: Not required, signalling transfer point. |
| Q.701/4.1 | Applies. |
| Q.701/4.2 | Required, User Parts as listed in reference /18/ and Bearer Independent Call Control (Q.1901), see reference /3/. |
| Q.701/4.3.1 | Applies. |
| Q.701/4.3.2 | Applies. |
| Q.701/4.3.3 | Applies. |
| Q.701/4.3.4 | Applies. |
| Q.701/4.4 | With STP working: Applies.<br>Without STP working: Not required, quasi-associated signalling mode. |
| Q.701/4.5 | Applies. |
| Q.701/4.5.1 | Applies. |
| Q.701/4.5.2 | Applies. |
| Q.701/5 | Applies. |
| Q.701/5.1 | Applies. |
| Q.701/5.2 | Applies. |
| Q.701/5.3 | Applies. |
| Q.701/5.4 | Applies. |
| Q.701/5.5 | Applies. |
| Q.701/5.6 | Applies. |
| Q.701/5.7 | Applies. |
| Q.701/5.8 | Applies. |
| Q.701/5.9 | Applies. |
| Q.701/5.10 | Applies. |
| Q.701/5.11 | Applies. |
| Q.701/6 | Applies. |
| Q.701/6.1.1 | Applies. |
| Q.701/6.1.2 | Applies. |
| Q.701/6.1.3 | Applies. |
| Q.701/6.2 | Addition required, spare bits not coded to zero and/or additional fields received in an otherwise recognisable, valid message should not affect its processing.<br>No attempt should be made to interpret or process such spare bits or additional fields. This does not apply to spare values of defined fields, nor remove the requirement that spare bits shall be coded to zero. |
| Q.701/6.3 | Applies. |
| Q.701/7.1 | Shall not be used, Yellow Book to Red Book interworking. |
| Q.701/7.2 | Shall not be used, Red Book to Blue Book interworking. |
| Q.701/7.3 | Shall not be used, Yellow Book to Blue Book interworking. |
| Q.701/7.4.1 | Applies. |
| Q.701/7.4.2 | Applies. |
| Q.701/7.5 | Shall not be used, Red Book to White Book interworking. |

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| Q.701/8 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| --- | --- |
| Q.701/8.1 | Applies. |
| Q.701/8.2 | Applies. |
| Q.701/8.3 | Applies. |
| Q.701/8.4 | Required, national option for multiple congestion states without priorities. |
| Q.701/8.5 | Interconnecting operators shall determine the requirements for MTP Restart. Note that the Blue Book SP Restart procedure is inadequate and shall not be referenced.  The requirement shall be either, that based on the Red Book National Option of §12.4.2.b) (text repeated below), or that in § 9 of ITU-T Recommendation Q.704 (1996) /14/. |

**END OF PNO-ISC/SPEC/011§3**

# 4   MTP Signalling Network Functions and Messages

| | |
|---|---|
| Q.704/1.1.1 | Applies. |
| Q.704/1.1.2 | With STP working: Applies.<br>Without STP working: Not required, delivery via signalling transfer points. |
| Q.704/1.2.1 | Applies. |
| Q.704/1.2.2 | Applies. |
| Q.704/1.2.3 | With STP working: Applies.<br>Without STP working: Not required, signalling message transfer capability. |
| Q.704/1.3.1 | Shall not be used, automatic activation and alignment of new signalling links in order to restore the required signalling capacity between two signalling points.<br>Without STP working: Not required, reconfiguration of the network in the case of failures in the signalling transfer point. |
| Q.704/1.3.2 | Applies. |
| Q.704/1.3.3 | Shall not be used, national options in signalling traffic flow control.<br>Interconnecting operators shall determine the requirements for MTP Restart.<br>Note that the Blue Book SP Restart procedure is inadequate and shall not be referenced.  The requirement shall be either, that based on the Red Book National Option of §12.4.2.b), or that in §9 of ITU-T Recommendation Q.704 (1996) /14/. |
| Q.704/1.3.4 | Shall not be used, automatic allocation of signalling data links.<br>Nodal function, automatic allocation of signalling terminals (*Reason 2*). |
| Q.704/1.3.5 | Shall not be used, national option for congestion priorities.<br>Shall not be used, transfer restricted procedures.<br>Without STP working: Not required, signalling route management. |
| Q.704/1.3.6 | Applies. |
| Q.704/1.3.7 | Applies. |
| Q.704/1.3.8 | Applies. |
| Q.704/2.1.1 | Applies. |
| Q.704/2.1.2 | Applies. |
| Q.704/2.1.3 | With STP working: Applies.<br>Without STP working: Not required, signalling message transfer capability. |
| Q.704/2.1.4 | Required, User Parts as listed in reference /18/ and Bearer Independent Call Control (Q.1901), see reference /3/. |
| Q.704/2.1.5 | Applies. |
| Q.704/2.1.6 | Applies. |
| Q.704/2.1.7 | Applies. |
| Q.704/2.2.1 | Shall not be used, national, modified label structures. |
| Q.704/2.2.2 | Applies. |
| Q.704/2.2.3 | Applies. |
| Q.704/2.2.4 | Applies. |
| Q.704/2.2.5 | Applies. |
| Q.704/2.2.6 | Shall not be used, national, modified label structures. |
| Q.704/2.3.1 | Not required, use of the Service Indicator for routing or the following Network Indicator values: International network, Spare (for international use) and Reserved for national use. |

| Q.704/2.3.2 | Not required, load sharing over linksets.  The ability to share traffic for a given destination point code over a number of linksets in a route set shall not be used between interconnecting operators, unless by specific agreement between the Operators concerned. |
| | Additional requirement, It shall be possible for a link set to comprise any number of signalling links up to and including 16.  The actual number for a particular interconnect will be determined by bi-lateral agreement. |
| | Additional requirement, The choice of a link within a link set on which a message will normally be transmitted shall depend on the value of the Signalling Link Selection (SLS) field, the number of links in the linkset, and the loadsharing algorithm employed.  Exceptionally it shall be possible to direct certain messages (including test messages) to particular links.  Unless bilaterally agreed otherwise, traffic shall be distributed evenly across the links in a linkset.  Any suitable algorithm that produces an even distribution of SLS field values, to available Signalling Links (SLCs), may be employed.  The difference in the number of SLS values allocated to any two available SLCs in a given linkset, shall not be greater than one. |
| Q.704/2.3.3 | With STP working: Additional requirement, if the configuration of the interconnect interfaces are such as to make circular routing of messages possible under route failure conditions, then a means of overcoming this problem shall be agreed between the interconnecting operators. |
| Q.704/2.3.4.1 | Applies. |
| Q.704/2.3.4.2 | Applies. |
| Q.704/2.3.5.1 | Shall not be used, international congestion handling procedures used nationally. |
| | Shall not be used, message congestion priorities. |
| Q.704/2.3.5.2 | Additional requirement, values other than 00 in bits A&B shall be treated as 00. |
| | Shall not be used, multiple congestion priorities. |
| Q.704/2.4.1 | With STP working: Applies. |
| | Without STP working: Not required, procedures pertaining to signalling point with transfer capability. |
| Q.704/2.4.2 | Applies. |
| Q.704/2.4.3 | Not required, use of the Network Indicator to determine label structure. |
| | Not required, numbering schemes other than National. |
| | Not required, different label structures. |
| Q.704/3.1.1 | With STP working: Applies. |
| | Without STP working: Not required, diversion of signalling traffic to other signalling points in the signalling network. |
| Q.704/3.1.2 | Shall not be used, restricted status. |
| Q.704/3.1.3.a) | Interconnecting operators shall determine the requirements for MTP Restart. |
| | Without STP working: Not required, procedures pertaining to the signalling route management function. |
| Q.704/3.1.3.b) | Shall not be used, automatic allocation of signalling data links. |
| | Nodal function, automatic allocation of signalling terminals (*Reason 2*). |
| Q.704/3.1.3.c) | Shall not be used, the signalling routeset congestion test procedure and the transfer restricted procedure. |
| Q.704/3.1.4 | Applies. |
| Q.704/3.2.1 | Applies. |
| Q.704/3.2.2.a) | Does not apply, list of link failure indication causes (*Reason 1*). |
| Q.704/3.2.2.b) | Applies. |
| Q.704/3.2.3 | Applies. |
| Q.704/3.2.4 | Applies. |

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| Q.704/3.2.5 | Applies. |
| Q.704/3.2.6 | Applies. |
| Q.704/3.2.7 | Applies. |
| Q.704/3.2.8 | Applies. |
| Q.704/3.2.9 | Applies. |
| Q.704/3.3 | Applies. |
| Q.704/3.3.1.1 | Applies. |
| Q.704/3.3.1.2 | Not required, inactive signalling links. |
| Q.704/3.3.1.3 | Shall not be used, the transfer restricted procedure. |
| Q.704/3.3.2.1 | Applies. |
| Q.704/3.3.2.2 | Not required, inactive signalling links. |
| Q.704/3.3.2.3 | Applies. |
| Q.704/3.3.3.1 | Applies. |
| Q.704/3.3.3.2 | Not required, the use of inactive signalling links. |
| Q.704/3.3.3.3 | Applies. |
| Q.704/3.3.4.1 | Applies. |
| Q.704/3.3.4.2 | Not required, the use of inactive signalling links. |
| Q.704/3.3.4.3 | Applies. |
| Q.704/3.3.5.1 | Does not apply, handling of processor outage (*Reason 1*) |
| Q.704/3.3.5.2 | Shall not be used, the transfer restricted procedure.<br>Without STP working: Not required, transfer capability. |
| Q.704/3.3.6.1 | Applies. |
| Q.704/3.3.6.2 | With STP working: Applies.<br>Without STP working: Not required, transfer capability. |
| Q.704/3.3.7.1 | Applies. |
| Q.704/3.3.7.2 | Not required, inactive signalling links. |
| Q.704/3.3.8.1 | Applies. |
| Q.704/3.3.8.2 | Not required, inactive signalling links. |
| Q.704/3.3.8.3 | Applies. |
| Q.704/3.4 | Shall not be used, signalling route restricted state. |
| Q.704/3.4.1 | Additional requirement, a signalling route shall also be considered unavailable if locally detected failures mean that signalling traffic to or towards the concerned destination cannot be transmitted over the concerned link set. |
| Q.704/3.4.2 | Additional requirement, a signalling route shall become available only when the signalling point becomes aware that all causes, locally or remotely detected, of its being unavailable have been removed. |
| Q.704/3.4.3 | Shall not be sent, TransFer Restricted (TFR) message type.<br>Additional requirement, TFR messages, if received, shall be treated as unrecognised messages. |
| Q.704/3.5 | Applies. |
| Q.704/3.5.1.1 | Applies. |

| Q.704/3.5.1.2 | With STP working: Applies.<br>Without STP working: Not required, signalling route management actions at STPs. |
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| Q.704/3.5.2.1 | Applies. |
| Q.704/3.5.2.2 | With STP working: Applies.<br>Without STP working: Not required, signalling route management actions at STPs. |
| Q.704/3.5.3.1 | Shall not be used, restricted status. |
| Q.704/3.5.3.2 | Shall not be used, restricted status. |
| Q.704/3.6 | Applies. |
| Q.704/3.6.1.1 | Applies. |
| Q.704/3.6.1.2 | With STP working: Applies.<br>Without STP working: Not required, quasi-associated signalling mode. |
| Q.704/3.6.2.1 | Applies. |
| Q.704/3.6.2.2 | Not required, reception TransFer Restricted (TFR) message type.<br>Without STP working: Not required, reception of TransFer Allowed (TFA) message type. |
| Q.704/3.7.1 | Applies. |
| Q.704/3.7.2.1 | Applies. |
| Q.704/3.7.2.2 | Applies. |
| Q.704/3.7.2.3 | Interconnecting operators shall determine the requirements for MTP Restart.<br>Shall not be used, transfer restricted. |
| Q.704/3.7.3 | Applies. |
| Q.704/3.8.1 | With STP working: Applies.<br>Without STP working: Not required, TransFer Controlled (TFC) message type. |
| Q.704/3.8.2.1.a) | Shall not be used, single congestion thresholds. |
| Q.704/3.8.2.1.b) | Implementation option, use of multiple congestion thresholds. |
| Q.704/3.8.2.2 | Shall not be used, use of multiple congestion thresholds without congestion discard threshold. |
| Q.704/3.8.2.3 | Implementation option, timing mechanism to determine the signalling link congestion status. |
| Q.704/3.8.3 | With STP working: Applies.<br>Without STP working: Not required, signalling route management. |
| Q.704/3.8.4.a) | Shall not be used, international signalling network routeset congestion status. |
| Q.704/3.8.4.b) | Shall not be used, national signalling network with multiple congestion levels routeset congestion status. |
| Q.704/3.8.4.c) | With STP working: Applies.  See also reference /18/ regarding advice on this clause.<br>Without STP working: Not required, reception of TransFer Controlled (TFC) message type. |
| Q.704/3.8.5.1 | Applies. |
| Q.704/3.8.5.2 | Shall not be used, the signalling routeset congestion test procedure. |
| Q.704/4.1.1 | With STP working: Applies.<br>Without STP working: Not required, diversion of signalling traffic from signalling routes. |
| Q.704/4.1.2 | Shall not be used, signalling traffic management procedures for signalling route restriction.<br>Without STP working: Not required, signalling traffic management procedures for the following: signalling point availability or signalling route unavailability or availability. |
| Q.704/4.1.3 | Applies. |

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| Q.704/4.2.1 | Shall not be used, load sharing over linksets.<br>Required, the following configurations: priority orders of linksets assigned to a destination and no priority between signalling links within a linkset.<br>Without STP working: Not required, quasi-associated signalling mode. |
| Q.704/4.2.2 | Applies, although asymmetrical routing paths are not recommended. |
| Q.704/4.3.1 | Applies. |
| Q.704/4.3.2 | Not required, active and unblocked.<br>Additional requirement, the loadsharing requirement specified against section §2.3.2 shall apply not only to normal operation, but also under conditions when changeover procedures have to be invoked.<br>See also reference /18/, which gives additional guidance on congestion procedures. |
| Q.704/4.3.3 | Shall not be used, combined linksets. |
| Q.704/4.4.1 | Applies. |
| Q.704/4.4.2 | Additional requirement, the loadsharing requirement specified against section §2.3.2 shall apply not only to normal operation, but also under conditions when changeback procedures have to be invoked.<br>See also reference /18/, which gives additional guidance on congestion procedures. |
| Q.704/4.4.3 | Shall not be used, combined linksets. |
| Q.704/4.5 | Applies. |
| Q.704/4.6 | Applies. |
| Q.704/4.7 | Shall not be used, restricted status. |
| Q.704/4.8 | Interconnecting operators shall determine the requirements for MTP Restart. |
| Q.704/5.1.1 | Applies. |
| Q.704/5.1.2 | Applies. |
| Q.704/5.2.1 | Applies. |
| Q.704/5.2.2 | With STP working: Applies.<br>Without STP working: Only required, changeover to a parallel signalling link. |
| Q.704/5.3.1 | With STP working: Does not apply, transmission of LSSUs or FISUs (*Reason 1*).<br>Without STP working: Does not apply, transmission of LSSUs or FISUs (*Reason 1*).<br>Not required, diversion of traffic to an alternative signalling link terminating in a STP. |
| Q.704/5.3.2 | Applies. |
| Q.704/5.3.3 | With STP working: Applies.<br>Without STP working: Not required, quasi-associated signalling mode and procedures related to the signalling route management function. |
| Q.704/5.3.4 | Applies. |
| Q.704/5.4.1 | Applies. |
| Q.704/5.4.2 | Applies. |
| Q.704/5.4.3 | Applies. |
| Q.704/5.5 | Applies. |
| Q.704/5.6.1 | Applies. |
| Q.704/5.6.2 | Does not apply, reception of processor outage indication (*Reason 1*). |
| Q.704/5.6.3 | Applies. |
| Q.704/5.7.1 | Applies. |
| Q.704/5.7.2 | Applies. |

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| Q.704/5.7.3 | Applies. |
| Q.704/5.7.4 | Applies. |
| Q.704/5.7.5 | Applies. |
| Q.704/6.1.1 | Applies. |
| Q.704/6.1.2 | Applies. |
| Q.704/6.2.1 | With STP working: Applies.<br>Without STP working: Not required, changeback procedures related to signalling transfer points. |
| Q.704/6.2.2 | Applies. |
| Q.704/6.2.3 | With STP working: Applies.<br>Without STP working: Not required, quasi-associated signalling mode and procedures related to the signalling route management function. |
| Q.704/6.2.4 | Shall not be used, the transfer restricted procedure. |
| Q.704/6.2.5 | Interconnecting operators shall determine the requirements for MTP Restart. |
| Q.704/6.3.1 | Applies. |
| Q.704/6.3.2 | Applies. |
| Q.704/6.3.3 | Applies. |
| Q.704/6.3.4 | Applies. |
| Q.704/6.3.5 | Applies. |
| Q.704/6.4.1 | Interconnecting operators shall determine the requirements for MTP Restart. |
| Q.704/6.4.2 | Interconnecting operators shall determine the requirements for MTP Restart. |
| Q.704/6.5.1 | Applies. |
| Q.704/6.5.2 | Applies. |
| Q.704/6.5.3 | Applies. |
| Q.704/7.1.1 | Applies. |
| Q.704/7.1.2 | Applies. |
| Q.704/7.2.1 | With STP working: Applies.<br>Without STP working: Not required, transfer prohibited procedure at an STP. |
| Q.704/7.2.2 | With STP working: Applies.<br>Without STP working: Not required, transfer prohibited procedure at an STP. |
| Q.704/7.2.3 | With STP working: Applies.<br>Without STP working: Not required, transfer prohibited procedure at an STP. |
| Q.704/8.1.1 | Applies. |
| Q.704/8.1.2 | Additional requirement, TransFer Restricted (TFR) messages, if received, shall be treated as unrecognised messages. |
| Q.704/8.2.1 | With STP working: Applies.<br>Without STP working: Not required.<br>Additional requirement, TransFer Restricted (TFR) messages, if received, shall be treated as unrecognised messages. |
| Q.704/8.2.2 | With STP working: Applies.<br>Without STP working: Not required. |
| Q.704/8.2.3 | Shall not be used, the transfer restricted procedure.<br>Without STP working: Not required, signalling route management procedures in the event that the destination was inaccessible. |

| Q.704/9 | Interconnecting operators shall determine the requirements for MTP Restart. Note that the Blue Book SP Restart procedure is inadequate and shall not be referenced. The requirement shall be either that in §9 of reference /14/ or that based on the Red Book National Option of §12.4.2.b) of CCITT Recommendation Q.704 (text quoted in 0.6.2). See also reference /18/, which gives additional guidance on MTP restart selection. |
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| Q.704/10 | Not required, signalling link management inhibiting. Signalling link management inhibiting may be supported subject to agreement between the Operators concerned. |
| Q.704/11.1 | Applies. |
| Q.704/11.2 | Applies. |
| Q.704/11.2.1 | Applies. |
| Q.704/11.2.2 | Applies. |
| Q.704/11.2.3.1 | Shall not be used, signalling routeset congestion (International signalling network) |
| Q.704/11.2.3.2 | Shall not be used, signalling routeset congestion (International signalling network) |
| Q.704/11.2.3.3 | Shall not be used, signalling routeset congestion (International signalling network) |
| Q.704/11.2.4 | Shall not be used, signalling routeset congestion (National option with congestion priorities). |
| Q.704/11.2.5 | With STP working: Additional requirement, if coding '00' is marked in the spare bits in a received TFC message, it shall be interpreted as indicating congestion at Level 2. Without STP working: Not required, signalling routeset congestion (National option without congestion priorities). |
| Q.704/11.2.6 | With STP working: Applies. Without STP working: Not required, the signalling point/signalling transfer point congestion procedure. |
| Q.704/11.2.7.1 | Applies. |
| Q.704/11.2.7.2 | Applies. |
| Q.704/11.2.7.3 | Applies. |
| Q.704/11.2.7.4 | Applies. |
| Q.704/11.2.7.5 | The UPU message User Part Identity codes of references /3/, /14/ and /15/ apply only to the International Signalling Network. For the UK National Interconnect Signalling Network the codes given in reference /18/ and the code for Bearer Independent Call Control (Q.1901) apply. Where the UPU message 'affected PC' field and Routing Label OPC differ, the message shall be discarded and a report made to management. |
| Q.704/11.2.7.6 | Applies. |
| Q.704/11.2.7.7 | Applies. |
| Q.704/11.2.8 | Applies. |
| Q.704/12.1.1 | Nodal function, automatic allocation of signalling terminals. Shall not be used, automatic allocation of signalling data links. |
| Q.704/12.1.2 | Shall not be used, different priorities of signalling links within a linkset or automatic allocation of signalling data links. |
| Q.704/12.1.3 | Nodal function, automatic allocation of signalling terminals. Shall not be used, automatic allocation of signalling data links. |
| Q.704/12.2.1.1 | Shall not be used, inactive signalling links. |
| Q.704/12.2.1.2 | Not required, inactive signalling links. Additional requirement, on activation of a signalling link, if the initial alignment procedure |

is successful, a Signalling Link Test (SLT) procedure shall be carried out on the signalling link, over which traffic is to be conveyed.  The test that shall be made in accordance with reference /16/, may be initiated automatically or manually.  This must be successful before signalling traffic is allowed onto the link.  If the procedure is not successful, then, in addition to a management system being informed,  the link shall be marked as out of service and put out of service.  This is to prevent the distant end from using the link, even if its own link test procedure is successful, and thus to avoid the possibility of a one way signalling relation.  The signalling link shall only be returned to service on instruction from system management.

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| Q.704/12.2.2 | Additional requirement, on restoration of a signalling link, if the initial alignment procedure is successful, a Signalling Link Test (SLT) procedure shall be carried out on the signalling link, over which traffic is to be conveyed.  The test that shall be made in accordance with reference /16/, may be initiated automatically or manually.  This must be successful before signalling traffic is allowed onto the link.  If the procedure is not successful, then, in addition to a management system being informed,  the link shall be marked as out of service and put out of service.  This is to prevent the distant end from using the link, even if its own link test procedure is successful, and thus to avoid the possibility of a one way signalling relation.  The signalling link shall only be returned to service on instruction from system management. |
| Q.704/12.2.3 | Applies. |
| Q.704/12.2.4 | Applies. |
| Q.704/12.2.4.1 | Applies. |
| Q.704/12.2.4.2 | Applies. |
| Q.704/12.2.4.3 | Applies. |
| Q.704/12.3 | Nodal function (*Reason 2*). |
| Q.704/12.4 | Nodal function, automatic allocation of signalling terminals (*Reason 2*). Shall not be used, automatic allocation of signalling data links. |
| Q.704/12.5 | Nodal function, automatic allocation of signalling terminals (*Reason 2*). |
| Q.704/12.6 | Shall not be used, automatic allocation of signalling data links. |
| Q.704/12.7 | Applies (*Reason 2*). |
| Q.704/13.1 | Not required, national option for congestion priorities. Not required, transfer restricted. Without STP working: Not required, signalling route management. |
| Q.704/13.2.1 | With STP working: Applies. Without STP working: Not required, transfer prohibited procedure. |
| Q.704/13.2.2 | With STP working: Shall not be used, the national option of NOT sending a TFP if the destination is not in the routing tables. Without STP working: Not required, TransFer Prohibited (TFP) message type. |
| Q.704/13.2.3 | With STP working: Applies. Without STP working: Not required, reception of TransFer Prohibited (TFP) message type. |
| Q.704/13.2.4 | With STP working: Applies. Without STP working: Not required, reception of TransFer Prohibited (TFP) message type. |
| Q.704/13.3.1 | With STP working: Applies. Without STP working: Not required, transfer allowed procedure. |
| Q.704/13.3.2 | With STP working: Applies. Without STP working: Not required, TransFer Allowed (TFA) message type. |
| Q.704/13.3.3 | With STP working: Applies. Without STP working: Not required, reception of TransFer Allowed (TFA) message type. |

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| Q.704/13.3.4 | With STP working: Applies.<br>Without STP working: Not required, reception of TransFer Allowed (TFA) message type. |
| Q.704/13.4.1 | Shall not be used, transfer restricted procedure. |
| Q.704/13.4.2 | Shall not be sent, TransFer Restricted (TFR) message type. |
| Q.704/13.4.3 | Additional requirement, TFR messages, if received, shall be treated as unrecognised messages. |
| Q.704/13.4.4 | Additional requirement, TFR messages, if received, shall be treated as unrecognised messages. |
| Q.704/13.4.5 | Additional requirement, TFR messages, if received, shall be treated as unrecognised messages. |
| Q.704/13.5.1 | Not required, the possibility of referring to a more general destination than a single signalling point.<br>Not required, the possibility of referring to a more restricted destination than a single signalling point. |
| Q.704/13.5.2 | Shall not be sent, signalling routeset test after receiving a TransFer Restricted (TFR) message. |
| Q.704/13.5.3 | Applies. |
| Q.704/13.5.4 | Not required, reception of a signalling routeset test referring to a restricted destination. |
| Q.704/13.5.5 | Applies. |
| Q.704/13.6 | Shall not be used, transfer controlled (international network). |
| Q.704/13.7 | Shall not be used, transfer controlled (national option with congestion priorities). |
| Q.704/13.8 | Additional requirement, In order to make the procedure compatible with earlier procedures, the coding '00' of the spare bits in the TFC shall not be used in transmitted TFC messages. |
| Q.704/13.9.1 | Shall not be used, signalling routeset congestion test (national option) procedure. |
| Q.704/13.9.2 | Shall not be sent, signalling Routeset Congestion Test (RCT) message type. |
| Q.704/13.9.3 | Shall not be used, signalling routeset congestion test (national option) procedure. |
| Q.704/13.9.4 | Shall not be sent, signalling Routeset Congestion Test (RCT) message type. |
| Q.704/13.9.5 | Applies. |
| Q.704/13.9.6 | Additional requirement, RCT messages, if received, shall be treated as unrecognised messages. |
| Q.704/14.1 | Applies. |
| Q.704/14.2 | Applies. |
| Q.704/14.2.1 | Required, Service Indicator (SI) code assignments as listed in reference /18/ and Bearer Independent Call Control (Q.1901), see reference /3/. |
| Q.704/14.2.2 | Not required, the following values of Network Indicator (NI): International network, Spare (for international use) and Reserved for national use. |
| Q.704/14.3 | Applies. |
| Q.704/15.1.1 | Applies. |
| Q.704/15.1.2 | Spare bits not coded to zero, and/or additional fields, received in an otherwise recognisable, valid message, shall not affect its processing.<br>No attempt should be made to interpret or process such spare bits or additional fields. This does not apply to spare values of defined fields, nor remove the requirement that spare bits shall be coded to zero. |
| Q.704/15.2 | Additional requirement, reference /19/, UK Point Code numbering scheme applies.<br>Additional requirement, each signalling link shall be allocated a signalling link code that |

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|  | is unique within a link set.  The signalling link code must be the same at both ends of a given signalling link. |
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| Q.704/15.3 | Shall not be sent, the following heading code: Signalling data link connection. Interconnecting operators shall determine the requirements for the following heading code: Traffic restart allowed |
| Q.704/15.4 | Shall not be used, changeover message. Additional requirement, extended changeover message as specified in reference /2/. |
| Q.704/15.5.1 | Applies. |
| Q.704/15.5.2 | Applies. |
| Q.704/15.5.3 | Applies. |
| Q.704/15.5.4 | Applies. |
| Q.704/15.6.1 | Applies. |
| Q.704/15.6.2 | Applies. |
| Q.704/15.6.3 | Applies. |
| Q.704/15.7.1 | With STP working: Applies. Without STP working: Not required, TransFer Prohibited (TFP) message type. |
| Q.704/15.8.1 | With STP working: Applies. Without STP working: Not required, TransFer Allowed (TFA) message type. |
| Q.704/15.9 | Shall not be sent, TransFer Restricted (TFR) message type. Additional requirement, TFR messages, if received, shall be treated as unrecognised messages. |
| Q.704/15.10.1 | Applies. |
| Q.704/15.10.2 | Applies. |
| Q.704/15.10.3 | Shall not be sent, routeset test (RST) message type for restricted destination. Additional requirement, RST messages for restricted destination, if received, shall be treated as unrecognised messages. |
| Q.704/15.11.1 | Applies. |
| Q.704/15.11.2 | Applies. |
| Q.704/15.11.3 | Applies. |
| Q.704/15.12.1 | Interconnecting operators shall determine the requirements for use of traffic restart allowed message. |
| Q.704/15.12.2 | Interconnecting operators shall determine the requirements for use of traffic restart allowed message. |
| Q.704/15.12.3 | Interconnecting operators shall determine the requirements for use of traffic restart allowed message. |
| Q.704/15.13 | Shall not be sent, signalling data link connection order (DLC) message type. Additional requirement, DLC messages, if received, shall be treated as unrecognised messages. |
| Q.704/15.14 | Shall not be sent, signalling data link connection acknowledgement (DLCA) message type. Additional requirement, DLCA messages, if received, shall be treated as unrecognised messages. |
| Q.704/15.15.1 | With STP working: Applies. Without STP working: Not required, TransFer Controlled (TFC) message type. |
| Q.704/15.15.2 | With STP working: Applies. Without STP working: Not required, TransFer Controlled (TFC) message type. |

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| Q.704/15.15.3 | With STP working: Applies.<br>Without STP working: Not required, TransFer Controlled (TFC) message type. |
| Q.704/15.15.4 | With STP working: Applies.<br>Without STP working: Not required, TransFer Controlled (TFC) message type. |
| Q.704/15.15.5 | With STP working: Additional requirement, it is required to indicate 3 levels of congestion in the Transfer Controlled Message.  In order to make the procedure compatible with earlier procedures, the coding '00' of the spare bits in the TFC shall not be used in transmitted TFC messages, and, if coding '00' is marked in a received TFC message, it shall be interpreted as indicating congestion at Level 2.  Hence, the TFC spare bits shall be coded as follows:<br>00    Not Used.  If received, read as Congestion Level 2<br>01    Congestion Level        1<br>10    "                    "        2<br>11    "                    "        3<br>Without STP working: Not required, TransFer Controlled (TFC) message type. |
| Q.704/15.16 | Shall not be sent, signalling routeset congestion test (RCT) message type (national option).<br>Additional requirement, RCT messages, if received, shall be treated as unrecognised messages. |
| Q.704/15.17.1 | Additional requirement, where the UPU message 'affected PC' field and Routing Label OPC differ, the message shall be discarded and a report made to management. |
| Q.704/15.17.2 | Applies. |
| Q.704/15.17.3 | Applies. |
| Q.704/15.17.4 | Additional requirement, for the UK National Interconnect Signalling Network, the codes given in reference /18/ and the code for Bearer Independent Call Control (Q.1901) apply, because the UPU message User Part Identity codes of references /3/, /14/ and /15/ apply only to the International Signalling Network. |
| Q.704/15.17.5 | Applies. |
| Q.704/16.1 | Applies. |
| Q.704/16.1.1 | Applies. |
| Q.704/16.2.1 | Applies. |
| Q.704/16.2.2 | Applies. |
| Q.704/16.2.3 | Applies. |
| Q.704/16.2.4 | Applies. |
| Q.704/16.2.5 | Applies. |
| Q.704/16.3 | Not required, Figure 26a.<br>Without STP working: Not required, message discrimination (HMDC). |
| Q.704/16.4 | Shall not be used, Figure 29a.<br>Interconnecting operators shall determine the requirements for Figure 34b. |
| Q.704/16.5 | Nodal function, Figure 41.<br>Shall not be used, Figure 42. |
| Q.704/16.6 | Shall not be used, Figures 46b and 46c.<br>Without STP working: Not required, Figures 43, 44, 45 and 46a. |
| Q.704/16.7 | Applies. |
| Q.704/16.8 | Additional requirement, it shall be possible to set the timeouts to values in the ranges specified in reference /14/, unless agreed otherwise by the interconnecting operators.<br>Interconnecting operators shall determine the requirements for T18, T19, T20 and T21.<br>Not required, the following timers: T7, T9, T11, T15, T16, T18, T19, T20 and T21.<br>Without STP working: Not required, the following timer: T8. |

SEE PAGE 2 FOR THE NORMATIVE INFORMATION

**END OF PNO-ISC/SPEC/011§4**

# 5   MTP Testing and Maintenance

| | |
|---|---|
| Q.707/1 | Applies. |
| Q.707/2.1 | Network operator responsibility. |
| Q.707/2.2 | Applies.<br>Note that the procedure may be initiated automatically or manually.<br>Additional requirement, if SLT applied on activation/restoration not successful, then the link shall be marked as out of service and put out of service.  This is to prevent the distant end from using the link, even if its own link test procedure is successful, and thus to avoid the possibility of a one way signalling relation.  The signalling link shall only be returned to service on instruction from management.<br>Nodal function, the action on failure of a periodic Signalling Link Test procedure. |
| Q.707/3 | Not required, tests requiring provision of messages. |
| Q.707/4 | Not required, monitoring and measurements based on Q.791 or Q.795.<br>Additional requirement, monitoring and measurements based on Q.752; details will be documented by the Network Operator concerned. |
| Q.707/5.1 | Applies. |
| Q.707/5.2 | Applies. |
| Q.707/5.3 | Applies. |
| Q.707/5.4 | Applies. |
| Q.707/5.5 | Additional requirement, it shall be possible to set the timeouts to values in the ranges specified in reference /16/, unless agreed otherwise by the interconnecting operators. |
| Q.707/6 | Applies. |

**END OF PNO-ISC/SPEC/011§5**

# 6 Service Specific Coordination Function (SSCF) for the Network Node Interface (NNI)

| | |
|---|---|
| Q.2140/1 | Applies. |
| Q.2140/2 | Applies. |
| Q.2140/3 | Applies. |
| Q.2140/4 | Applies. |
| Q.2140/5 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2140/6.1.1 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2140/6.1.2 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2140/6.1.3 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2140/6.1.4 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2140/6.1.5 | Nodal function. |
| Q.2140/6.2 | Applies. |
| Q.2140/6.3 | Nodal function. |
| Q.2140/7 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2140/8 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2140/9 | Nodal function. |
| Q.2140/10 | Applies. |

| | |
|---|---|
| Q.2140/11 | Shall not be used, satellite links. |
| | Additional requirement, the timer values shall have the following ranges: |

| | |
|---|---|
| Timer_CC | 180 to 380 ms. |
| Timer_POLL | 50 to 150 ms. |
| Timer_KEEP_ALIVE | 80 to 200ms |
| Timer_IDLE | 80 to 200ms |
| Timer_NO_RESPONSE | 0.5 to 2s |
| Timer_T1 | 3 to 6s |
| Timer_T2 | 20 to 50s |
| Timer_T3 | This is a derived value. |

See reference /23/ for guidance in choosing the value of 'Timer_T3' and for further information about all of the above timers.

| | |
|---|---|
| Q.2140/12 | Applies, Table 7/Q.2140 and table 8/Q.2140. |
| | Note that an implementation's design architecture is not constrained by Table 6/Q.2140 and the definitions of the state machine, because they specify only a functional behaviour. |
| Q.2140/Annex A | Not required. |
| Q.2140/Appendix I | Not required. |
| Q.2140/Appendix II | Not required. |

Q.2140/Appendix III     Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour.

**END OF PNO-ISC/SPEC/011§6**

# 7   Layer Management for the SSCF for the NNI

| | |
|---|---|
| Q.2144/1 | Applies. |
| Q.2144/2 | Applies. |
| Q.2144/2.1 | Applies. |
| Q.2144/2.2 | Applies. |
| Q.2144/3 | Applies. |
| Q.2144/4 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2144/5 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2144/5.1 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2144/5.2 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2144/6 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2144/7 | Nodal function. |
| Q.2144/8 | Not required. |
| Q.2144/9.1 | Nodal function. |
| Q.2144/9.1.1 | Not required, a standardised error-monitoring algorithm. |
| Q.2144/9.1.2 | Applies. |
| Q.2144/9.1.3 | Applies. |
| Q.2144/9.2 | Nodal function.  Note that details of monitoring and measurements requirements will be documented by the Network Operator concerned. |
| Q.2144/9.2.1 | Nodal function. |
| Q.2144/9.2.2 | Nodal function. |
| Q.2144/9.2.3 | Nodal function. |
| Q.2144/9.3 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2144/9.4 | Not required, the ability to force the mode of proving. |
| Q.2144/Annex A | Nodal function, the ability to manage timers and parameters. |
| Q.2144/Appendix I | Nodal function. |
| Q.2144/Appendix II.1 | Not required. |
| Q.2144/Appendix II.2 | Not required. |
| Q.2144/Appendix II.3 | Not required. |
| Q.2144/Appendix II.4 | Not required. |

**END OF PNO-ISC/SPEC/011§7**

# 8  Service Specific Connection Oriented Protocol (SSCOP)

| | |
|---|---|
| Q.2110/1 | Applies. |
| Q.2110/2 | Applies. |
| Q.2110/3 | Applies. |
| Q.2110/4 | Applies. |
| Q.2110/5 | Applies. |
| Q.2110/6 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2110/6.1 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2110/6.1.1 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2110/6.1.2 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2110/6.2 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2110/6.3 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| Q.2110/7.1 | Applies.<br>Optionally allowed, a STAT PDU may also be transmitted any time that the receiver needs to update the credit information.  In this case, the value of N(PS) transmitted in the STAT PDU shall be set to the value of VR(PS), which is the value of N(PS) of the last POLL PDU received.  Detailed reception status information may or may not be included. |
| Q.2110/7.2 | Applies. |
| Q.2110/7.2.1 | Applies. |
| Q.2110/7.2.2 | Applies. |
| Q.2110/7.2.3 | Shall not be used, functions other than 32 bit alignment. |
| Q.2110/7.2.4 | Applies.  The values of 'j' and 'k' shall be as specified in section 6 (SSCF for NNI). |
| Q.2110/7.2.5 | Applies. |
| Q.2110/7.3 | Applies. |
| Q.2110/7.4 | Applies, including 'Power up robustness enhancement', see reference /7/.<br>Optionally allowed the following two additional receiver state variables:<br>e) VR(PS) - Receiver Poll Sequence Number, which is the poll sequence number of the last POLL PDU received.<br>f) poll_received - Receiver Poll Received Indication, which records whether no not at least one POLL PDU has been received since connection establishment.  It shall be set to 'NO' on initialisation.  It shall be set to 'YES' when a POLL PDU is received.<br>Note that for modulo comparisons involving the state variables VT(S), VT(A) and VT(MS), the base for comparisons is VT(A).  For modulo comparisons involving the state variables VR(R), VR(H) and VR(MR), the base for comparisons is VR(R).  For modulo comparisons involving the state variables VT(PS) and VT(PA), the base for comparisons is VT(PA). |
| Q.2110/7.5 | Applies. |
| Q.2110/7.6 | Applies.  The SSCOP timer values shall be as specified in section 6 (SSCF for NNI). |

| Q.2110/7.7 | Applies. The SSCOP parameter values shall be as specified in section 6 (SSCF for NNI). |
|---|---|
| Q.2110/7.8.1 | Additional requirement, the size of the operating window of the protocols at the transmitter shall be upper bounded by the value 10 x Timer_POLL x u##, where 'u##' is the maximum allowed mean signalling cellrate.<br>Optionally allowed, the following methods to improve peer-to-peer flow control and performance:<br>i) After emptying the retransmission buffer, the transmitter may send a POLL PDU independently of Timer_POLL and the value of MaxPD.<br>j) The receiver may optionally transmit a STAT PDU when an immediate credit update seems opportune. |
| Q.2110/7.8.2 | Applies. |
| Q.2110/8 | Applies. |
| Q.2110/8.1 | Applies. |
| Q.2110/8.2 | Applies.<br>See reference /10/ for SDL diagram modifications complementary to the items that are optionally allowed in Q.2110/7.4 and Q.2110/7.8.1.<br>Also see reference /10/ for clarification of the application of modulo arithmetic. |
| Q.2110/Annex A | Nodal Function. |
| Q.2110/Annex B | Not required. |
| Q.2110/Appendix I | Not required. |
| Q.2110/Appendix II | Not required. |
| Q.2110/Appendix III | Not required. |
| Q.2110/Appendix IV | Not required. |

**END OF PNO-ISC/SPEC/011§8**

# 9  Type 5 ATM Adaptation Layer (AAL)

| | |
|---|---|
| I.363.5/1 | Applies. |
| I.363.5/2 | Applies. |
| I.363.5/3 | Applies. |
| I.363.5/4 | Applies. |
| I.363.5/5 | Applies. |
| I.363.5/6 | Not required, point-to-multipoint AAL connection. |
| I.363.5/7.1 | Not required, streaming mode service. |
| I.363.5/7.2 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| I.363.5/7.2.1 | Not required, 'More' parameter.<br>Not required, streaming mode service. |
| I.363.5/7.2.2 | Not required. |
| I.363.5/7.3 | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| I.363.5/7.3.1 | Not required, 'SAR-Loss Priority', 'More' and 'SAR-Congestion Indication' parameters. |
| I.363.5/8.1 | Nodal function. |
| I.363.5/8.2 | Nodal function. |
| I.363.5/9.1.1 | Not required, handling of congestion information and handling of cell loss priority information. |
| I.363.5/9.1.2 | Applies. |
| I.363.5/9.2.1 | Applies. |
| I.363.5/9.2.1.1 | Not required, streaming mode service.<br>Not required, optional corrupted data delivery. |
| I.363.5/9.2.1.2 | Not required, possible additional functions of the Congestion Indication field. |
| I.363.5/10 | Applies. |
| I.363.5/10.1 | Applies. |
| I.363.5/10.1.1 | Applies. |
| I.363.5/10.1.2 | Not required, 'Loss Priority', 'More' and 'Congestion Indication' parameters. |
| I.363.5/10.1.3 | Applies. |
| I.363.5/10.1.4 | Not required, 'Loss Priority', 'More' and 'Congestion Indication' parameters. |
| I.363.5/10.2 | Applies. |
| I.363.5/10.2.1 | Applies. |
| I.363.5/10.2.2 | Not required, 'More' parameter. |
| I.363.5/10.2.3 | Not required, 'rcv_LP' state variable. |
| I.363.5/10.2.4 | Not required, 'CPCS-LP', 'More' and 'CPCS-CI' parameters.<br>Not required, 'rcv_LP' state variable.<br>Not required, reassembly timer and other reassembly procedures<br>Not required, Max_SDU_Deliver_length greater than 282 octets (SIF up 272 octets + SIO of 1 octet + MTP routing label of 5 octets + SSCOP header of 4 octets). |
| I.363.5/10.3 | Not required. |

| I.363.5/10.4 | Not required, Max_SDU_Deliver_length greater than 282 octets (SIF up 272 octets + SIO of 1 octet + MTP routing label of 5 octets + SSCOP header of 4 octets)<br>Shall not be used, 'Corrupted SDU delivery'<br>Not required, use of re-assembly timer. If used, the choice of a value is outside the scope of this specification. |
| --- | --- |
| I.363.5/Annex A | Not required, streaming mode service. |
| I.363.5/Annex B | Applies. |
| I.363.5/Annex C | Note that an implementation's design architecture is not constrained by this because it specifies only a functional behaviour. |
| I.363.5/Annex D | Not required, streaming mode service.<br>Not required, optional corrupted data delivery. |
| I.363.5/Annex D.1 | Applies. |
| I.363.5/Annex D.1.1 | Applies.<br>Note that interactions with layer management are a nodal function. |
| I.363.5/Annex D.1.2 | Applies.<br>Note that interactions with layer management are a nodal function. |
| I.363.5/Annex D.2 | Applies. |
| I.363.5/Annex D.2.1 | Applies.<br>Note that interactions with layer management are a nodal function. |
| I.363.5/Annex D.2.2 | Not required, 'rcv_LP' state variable..<br>Note that interactions with layer management are a nodal function. |
| I.363.5/Annex E.1 | Not required. |
| I.363.5/Annex E.2 | Not required. |
| I.363.5/Annex E.3 | Not required. |
| I.363.5/Annex E.4 | Not required. |
| I.363.5/Annex E.5 | Not required. |
| I.363.5/Appendix I | Applies. |
| I.363.5/Appendix II | Not required. |

# END OF PNO-ISC/SPEC/011