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SERIES Q: SWITCHING AND SIGNALLING

Broadband ISDN – B-ISDN application protocols for access signalling

Digital subscriber signalling system No. 2 – Connection modification: Peak cell rate modification by the connection owner

ITU-T Recommendation Q.2963.1

(Formerly CCITT Recommendation)

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ITU-T Recommendation Q.2963.1

Digital subscriber signalling system No. 2 – Connection modification: Peak cell rate modification by the connection owner

Summary

This ITU-T Recommendation defines the operation of the Digital Subscriber Signalling System No. 2 (DSS2) for the handling of the Connection characteristics modification feature that may be supported, as a network option, at the T_B or at the coincident S_B and T_B reference point of the User-to-Network Interface of the Broadband Integrated Services Digital Network (B-ISDN). This edition of ITU-T Recommendation Q.2963.1 has been prepared to align the inconsistencies in ITU-T Recommendation Q.2963.1 (07/96), and to be consistent with ITU-T Recommendation Q.2931 by which the encoding of the Broadband report type information element is aligned in conjunction with Amendment 4/Q.2931.

Source

ITU-T Recommendation Q.2963.1 was revised by ITU-T Study Group 11 (1997-2000) and approved under the WTSC Resolution 1 procedure on 3 December 1999.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSC Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

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ITU-T Recommendation Q.2963.1

Digital subscriber signalling system No. 2 – Connection modification: Peak cell rate modification by the connection owner

1 Scope

This ITU-T Recommendation specifies the signalling protocol for peak cell rate modification for the Broadband Integrated Services Digital Network (B-ISDN) at the T_B reference point or coincident S_B and T_B reference point (as defined in ITU-T Recommendation I.413 [1]) by means of the Digital Subscriber Signalling System No. 2 (DSS2). It is the initial Recommendation in a family of Recommendations that concern the modification of ATM traffic parameters in B-ISDN connections.

In addition, this ITU-T Recommendation specifies the protocol requirements at the T_B reference point where the service is provided to the user via a private B-ISDN.

The capability described in this ITU-T Recommendation enables the connection owner to modify the peak cell rate for call/connections that have already been established.

Peak cell rate modification is applicable to all connection-oriented telecommunication services that are based on single point-to-point calls/connections. The peak cell rate modification for point-to-multipoint calls/connections is outside the scope of this ITU-T Recommendation.

This ITU-T Recommendation is applicable to equipment, supporting peak cell rate modification, to be attached at either side of a T_B reference point or coincident S_B and T_B reference point when used as an access to the public B-ISDN.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision, all users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

[1] ITU-T Recommendation I.413 (1993), *B-ISDN user-network interface*.

[2] ITU-T Recommendation Q.2931 (1995) plus Amd.1 (06/97), Amd.2 (03/99), Amd.3 (03/99), and Amd.4 (12/99), *Digital Subscriber Signalling System No. 2 – User-Network Interface (UNI) layer 3 specification for basic call/connection control*.

[3] ITU-T Recommendation Q.2961.1 (1995), *Additional signalling capabilities to support traffic parameters for the tagging option and the sustainable cell rate parameter set.*

3 Definitions

This ITU-T Recommendation defines the following terms:

3.1 addressed user: The end user involved in the call that is the recipient of the connection modification request.

3.2 connection modification: The alteration of the characteristics of an established connection with regard to its traffic parameters under the control of the user (connection owner).

3.3 connection owner: One who initiates a connection is the connection owner. There is only one connection owner per connection.

3.4 initiating user: The end user involved in the call that requests the modification of the connection.

3.5 terminating entity: An end user that terminates the modification procedure.

3.6 transit entity: An entity that does not terminate the modification procedure.

3.7 requesting entity: An entity that requests modification. A requesting entity may be a terminating entity or a transit entity.

3.8 responding entity: An entity that receives a modifications request. A responding entity may be a terminating entity or a transit entity.

4 Abbreviations

The abbreviations of Annex J/Q.2931 [2] apply. For the purposes of this ITU-T Recommendation, no new abbreviations are required in addition.

5 Description

The basic capabilities supported by this ITU-T Recommendation are applicable for:

1) In a given direction, all the specified traffic parameters must be requested to be modified either for increase or decrease. Increase of traffic parameters in one direction and decrease of traffic parameters in the other direction is possible within a single modification request.
2) Increasing the PCR.
3) Decreasing the PCR.
4) Modifying a point-to-point connection (Type 1).
5) Modifications may be initiated only by the connection owner for a call/connection that is already established (i.e. in the active state). Call/connections that are in the process of being established or cleared cannot be modified.

The following subclauses describe each capability in more detail.

5.1 Modifiable connections

Modification can only be requested by the connection owner for connections which are already established. Therefore, connections which are being established, modified, or cleared cannot be modified.

In the case where clearing is requested of a connection which is being modified, the clearing operation has priority. This results in termination of the modification procedure, i.e. no more messages related to the modification procedure are sent across the user-network interface.

Modification shall not be requested for emulated N-ISDN services; however, a transit entity shall not reject any request for this reason.

5.2 Modification of a point-to-point connection

This ITU-T Recommendation only supports the modification of the attributes of a point-to-point connection (Type 1).

5.3 Increasing or decreasing the Peak Cell Rate

In this ITU-T Recommendation, only the increase or decease of the Peak Cell Rate (PCR) is specified. When increasing or decreasing PCR, the following rule applies:

- the modification initiating user is prepared to receive based on an ATM traffic descriptor for which the backward parameters are the greater of the existing backward traffic parameters and of the requested modified backward traffic parameters; and
- the modification initiating user transmits based on an ATM traffic descriptor for which the forward traffic parameters are the lesser of the existing forward traffic parameters and of the requested modified forward traffic parameters.

In a given direction, the PCR for CLP = 0 and the PCR for CLP = 0 + 1 can be modified in the same modification request. In this case, the modified parameters in the given direction shall all be increased or all be decreased. In a given direction, a given parameter can only be modified if that parameter was specified for that direction during call establishment.

During the operation of modifying the ATM traffic parameters of a connection, the service application supported by the affected connection remains active.

NOTE – During the modification the connection remains usable for the application, with the above constraints.

When the OAM traffic descriptor information element is included at call/connection establishment, the allocation of bandwidth for OAM flows is based on the ATM traffic descriptor agreed. Since the OAM F5 flow allocation is bidirectional, the available user cell rate in one direction can be affected by modification of bandwidth in the other direction.

6 Operational requirements

The provision of the connection modification capability is a service provider option.

6.1 Provision and withdrawal

It is a user and a network option to provide the procedures described in this ITU-T Recommendation. If implemented, the procedures of this ITU-T Recommendation may be provided as a subscription option to the served user on the origination side.

6.2 Requirements on the originating network side

See 6.1 above.

6.3 Requirements on the destination network side

See 6.1 above.

7 Primitive and state definitions

7.1 Primitive definitions

Clause 8/Q.2931 [2] shall apply. No additional primitives between DSS2 layer 3 and the Signalling ATM Adaptation Layer are defined for the purpose of this ITU-T Recommendation.

7.2 State definitions

The call/connection states listed in 2.1/Q.2931 [2] shall apply with the following additions:

7.2.1 modify requested (U/N 13): A MODIFY REQUEST message has been sent to the other side of the interface.

7.2.2 modify received (U/N 14): A MODIFY REQUEST message has been received from the other side of the interface.

7.2.3 State values

The call state values listed in Table 4-11/Q.2931 [2] shall apply with the following additions:

Bit		
6 5 4 3 2 1	User state	Network state
0 0 1 1 0 1	U13-Modify requested	N13-Modify requested
0 0 1 1 1 0	U14-Modify received	N14-Modify received

8 Coding requirements

8.1 Messages

For the establishment/clearing of call/connections, the messages described in ITU-T Recommendation Q.2931 [2] as modified by ITU-T Recommendation Q.2961.1 [3] remain valid, and do not have to be enhanced. In order to support the modification of the connections, the following messages should be supported:

MODIFY REQUEST

MODIFY ACKNOWLEDGE

MODIFY REJECT

8.1.1 MODIFY REQUEST

This message is sent from the modification requesting entity to the modification responding entity to request modification of a single connection. See Table 8-1.

Table 8-1/Q.2963.1 – MODIFY REQUEST message content

Message type: MODIFY REQUEST
Significance: Global
Direction: Both

Information element	Reference	Direction	Type	Length
Protocol discriminator	4.2/Q.2931	Both	M	1
Call reference	4.3/Q.2931	Both	M	4
Message type	8.2.1/Q.2963.1	Both	M	2
Message length	4.4/Q.2931	Both	M	2
ATM traffic descriptor (Notes 3, 4)	4.5/Q.2931	Both	M	8-20 (Note 2)
Notification indicator	4.5/Q.2931	Both	O (Note 1)	4-*

NOTE 1 – This indicator may be present whenever notification is delivered.

NOTE 2 – All four peak cell rate parameters are optional but at least one shall be present.

NOTE 3 – In a given direction, the PCR for CLP = 0 and the PCR for CLP = 0 + 1 can be modified in the same modification request. In this case, the modified parameters in the given direction shall all be increased or all be decreased.

NOTE 4 – In a given direction, a given parameter can only be specified if that parameter was specified for that direction during call establishment.

8.1.2 MODIFY ACKNOWLEDGE

This message is sent by the modification responding entity to indicate that the modify request is accepted. See Table 8-2.

Table 8-2/Q.2963.1 – MODIFY ACKNOWLEDGE message content

Message type: MODIFY ACKNOWLEDGE Significance: Global Direction: Both				
Information element	**Reference**	**Direction**	**Type**	**Length**
Protocol discriminator	4.2/Q.2931	Both	M	1
Call reference	4.3/Q.2931	Both	M	4
Message type	8.2.1/Q.2963.1	Both	M	2
Message length	4.4/Q.2931	Both	M	2
Notification indicator	4.5/Q.2931	Both	O (Note 1)	4-*
Broadband report type	4.5.25/Q.2931	Both	O (Note 2)	5
NOTE 1 – This indicator may be present whenever notification is delivered. NOTE 2 – Included when the addressed user requires confirmation of the success of modification in the addressed user to initiating user direction.				

8.1.3 MODIFY REJECT

This message is sent by the modification responding entity to indicate that the modify connection request is rejected. See Table 8-3.

Table 8-3/Q.2963.1 – MODIFY REJECT message content

Message type: MODIFY REJECT Significance: Global Direction: Both				
Information element	**Reference**	**Direction**	**Type**	**Length**
Protocol discriminator	4.2/Q.2931	Both	M	1
Call reference	4.3/Q.2931	Both	M	4
Message type	8.2.1/Q.2963.1	Both	M	2
Message length	4.4/Q.2931	Both	M	2
Notification indicator	4.5/Q.2931	Both	O (Note)	4-*
Cause	4.5/Q.2931	Both	M	6-34
NOTE – This indicator may be present whenever notification is delivered.				

8.2 Coding of specific message types and specific information elements

8.2.1 Coding of specific message types

Table 8-4 shows message type (octet 1) code points for the messages defined in 8.1. These are in addition to the values shown in Table 4-4/Q.2931 [2].

Table 8-4/Q.2963.1 – Specific connection modification message types

Message type (octet 1)	
Bits	
8 7 6 5 4 3 2 1	
1 0 0 0 1 0 0 0	MODIFY REQUEST
1 0 0 0 1 0 0 1	MODIFY ACKNOWLEDGE
1 0 0 0 1 0 1 0	MODIFY REJECT

8.2.2 Coding of specific information elements

For the establishment/clearing of call/connections, the information elements described in ITU-T Recommendations Q.2931 [2] and Q.2961.1 [3] remain valid, and do not have to be enhanced.

9 Signalling procedures at the coincident S_B and T_B reference point

The procedures for modification of connection characteristics are specified between modification requesting and responding entities. A requesting entity or a responding entity may be a terminating entity (i.e. end user at the coincident S_B and T_B reference point) or a transit (i.e. network) entity.

These procedures are additional to those specified in ITU-T Recommendation Q.2931 [2].

An illustration of the resource reservation and allocation procedures is given in Appendix I.

9.1 Modification procedures at the requesting entity

9.1.1 Modification request

To request modification of a call/connection in the active state the entity shall:

– if a terminating entity:
  - reserve corresponding resources if increase of ATM traffic parameters is requested;
  - reduce the transmitting ATM traffic parameters when decrease is requested;
– if a transit entity:
  - reserve corresponding resources if increase of ATM traffic parameters is requested;
– send a MODIFY REQUEST message with the call reference of the active call/connection including an ATM traffic descriptor information element describing the requested connection characteristics;
– start Timer T360; and
– enter the modify requested state (U/N 13).

9.1.2 Modification acknowledgement

On reception of a MODIFY ACKNOWLEDGE message in the modify requested state, the requesting entity shall:

– if a terminating entity:
  - allocate corresponding resources (i.e. the connection defined by the requested ATM traffic descriptor is available for use);
  - send a CONNECTION AVAILABLE message if the MODIFY ACKNOWLEDGE message contains a broadband report type information element indicating that confirmation of modification is required;

– if a transit entity:
  - allocate corresponding resources;
  - change UPC according to the ATM traffic parameters;
  - forward the modify acknowledgement towards the initiating user;
– stop Timer T360; and
– enter the active state.

9.1.3 Indication of modification rejection

An entity receiving a MODIFY REJECT message while in the modify requested state shall:

– if a terminating entity:
  - cancel the reservation of resources (i.e. the ATM traffic parameters are as applied prior to the modification request);
– if a transit entity:
  - cancel the reservation of resources;
  - forward the modification rejection to the initiating user;
– stop Timer T360; and
– enter the active state.

9.1.4 Response to STATUS messages while in the modify request state

On reception of a STATUS message while in the modify requested state, the requesting entity shall:

– if the STATUS message indicates that the responding entity is in the active state and includes a cause value No. 97 "message type non-existent or not implemented" or No. 101 "message not compatible with call state" with a diagnostic indicating that the MODIFY REQUEST message was not understood;
  - if a terminating entity:
    – cancel the reservation of resources (i.e. the ATM traffic parameters are as applied prior to the modification request);
  - if a transit entity:
    – cancel the reservation of resources;
    – forward the modification rejection to the initiating user;
  - stop Timer T360;
  - enter the active state;
– if the STATUS message includes a cause value No. 97 or No. 101 without a diagnostic indicating that the MODIFY REQUEST message was not understood, send a STATUS ENQUIRY message to the responding entity;
– if a STATUS message is received in response to this STATUS ENQUIRY indicating the modify received state, the entity shall remain in the modify requested state;
– if a STATUS message is received in response to this STATUS ENQUIRY indicating that the responding entity is in the active state the entity shall:
  - if a terminating entity:
    – cancel the reservation of resources (i.e. the ATM traffic parameters are as applied prior to the modification request);

- if a transit entity:
  - cancel the reservation of resources;
  - forward the modification rejection to the initiating user;
- stop Timer T360; and
- enter the active state.

9.1.5 No response to modification request

On expiry of Timer T360 the call/connection shall be cleared with cause value No. 102 "recover on timer expiry".

9.2 Modification procedures at the responding entity

9.2.1 Modification indication

On receiving a MODIFY REQUEST message in the active state, the responding entity shall:

– if the responding entity is a transit entity and is able to support the modification request:
  - reserve corresponding resources if increase of ATM traffic parameters is requested;
  - change the forward UPC if decrease of forward ATM traffic parameters is requested;
  - progress the modification towards the remote user; and
  - enter the modified received (U/N 14) state.

9.2.2 Modification acceptance

If the responding entity is a transit entity, on receiving an indication that the modification has been accepted while in the Modify Received state:

– if confirmation of modification is not required in the indication, it shall:
  - allocate corresponding resources;
  - change forward UPC if increase of forward ATM traffic parameters is requested;
  - send a MODIFY ACKNOWLEDGE message; and
  - enter the active state;

– if confirmation of modification is required in the indication, it shall:
  - allocate corresponding resources;
  - change forward UPC if increase of forward ATM traffic parameters is requested;
  - send a MODIFY ACKNOWLEDGE message including a Broadband report type information element requesting confirmation;
  - start Timer T334; and
  - enter the active state.

On reception of a MODIFY REQUEST message in the active state a responding terminating entity shall, if the request for modification is to be accepted:

– if confirmation of modification is not required:
  - change the ATM traffic parameters as requested;
  - send a MODIFY ACKNOWLEDGE message; and
  - enter the active state;

– if confirmation of modification is required:
  - reduce the backward ATM traffic parameters when decrease is requested;
  - change the forward (i.e. receiving) ATM traffic parameters as requested;

- send a MODIFY ACKNOWLEDGE message including a broadband report type information element requesting confirmation;
- start Timer T361; and
- enter the active state.

9.2.3 Modification confirmation

If a CONNECTION AVAILABLE message is received by a terminating entity while Timer T361 is running, the entity shall:

– change ATM traffic parameters as requested (i.e. increase backward ATM traffic parameters);

– stop Timer T361; and

– remain in the active state.

If Timer T361 expires the entity shall:

– change ATM traffic parameters as requested (i.e. increase backward ATM traffic parameters); and

– remain in the active state.

9.2.4 Modification rejection

If the responding entity is a transit entity, on receiving an indication that the modification has been rejected while in the Modify Received state, it shall:

– cancel the reservation of resources and reinstate the policing policy that applied prior to the modification request;

– send a MODIFY REJECT message including the cause information element generated by the addressed entity; and

– enter the active state.

If the responding entity is a terminating entity, and receives a request for modification of emulated N-ISDN services, it shall:

– send a MODIFY REJECT message including a cause information element with cause value No. 29 "Facility reject"; and

– enter the active.

If the responding entity is a terminating entity, and the request of modification is to be rejected while in the modify received state, it shall:

– send a MODIFY REJECT message including a cause information element with an appropriate cause value; and

– enter the active state.

9.2.5 Exceptional procedures

If the responding entity receives the MODIFY REQUEST message in the active state with the ATM traffic parameters which are not according to the allowed combinations as specified in 8.1.1, it shall reject the request as specified in 9.2.4 with cause value No. 73 "unsupported combination of traffic parameters".

9.3 Transit entity conveyance of CONNECTION AVAILABLE messages

While Timer T334 is running in the active state, a transit entity receiving a CONNECTION AVAILABLE message shall stop Timer T334, transfer the CONNECTION AVAILABLE message transparently, and remain in the active state. If Timer T334 is not running, the CONNECTION AVAILABLE message shall be ignored.

10 Procedures at the T_B reference point for interworking with private B-ISDNs

The procedures of clause 9 shall apply at the T_B reference point.

11 Interworking with other networks

No interworking with other networks has been identified.

NOTE – It is anticipated that an interworking unit may perform the role of a responding entity in order to undertake the rejection of any modification request.

12 Interworking with supplementary services

No requirements for interworking with supplementary services have been identified.

13 Parameter values

The description of timers in the following tables provides the default values of the timers and a brief summary of their use. The precise detail is specified in clauses 9 and 10.

13.1 Timers at the requesting entity

The timers specified in Table 13-1 are used at the requesting entity.

Table 13-1/Q.2963.1 – Timers in the requesting entity defined in clauses 9 and 10

Timer number	Default time out value	Requesting entity state	Cause for start	Normal stop	At the first expiry	At the second expiry	Implementation
T360	20-30 s (Note)	Modify requested	MODIFY REQUEST sent	MODIFY ACKNOWLEDGE or MODIFY REJECT received	Release call	Timer is not restarted	Mandatory
NOTE – It is recommended that a terminating entity use a value of 30 s and that a transit entity use a value of 20 s.							

13.2 Timers at the responding entity

The timers specified in Table 13-2 are used at the responding entity.

Table 13-2/Q.2963.1 – Timers in the responding entity defined in clauses 9 and 10

Timer number	Default time out value	Respond-ing entity state	Cause for start	Normal stop	At the first expiry	At the second expiry	Implemen-tation
T361	20 s	Active	MODIFY ACKNOW-LEDGE sent with broadband report type indicating confirmation is required	CONNEC-TION AVAILABLE received	Commence sending in the user plane at the modified rate	Timer is not restarted	Mandatory if modification confirmation is requested (Note)
NOTE – Only applicable at a terminating entity.							

13.3 Timers at the transit entity

An additional cause of start is added to the network Timer T334 (see Table 13-3).

Table 13-3/Q.2963.1 – Timers in the network as a transit entity defined in clauses 9 and 10

Timer number	Default time out value	Respond-ing entity state	Cause for start	Normal stop	At the first expiry	At the second expiry	Implemen-tation
T334	1 s	Active	MODIFY ACKNOW-LEDGE sent with broadband report type indicating confirmation is required	CONNEC-TION AVAILABLE received	No action	Not applicable	Mandatory if modification confirmation is requested

14 Dynamic description SDLs

Detailed Specification and Description Language (SDL) diagrams for the procedures specified in clauses 9 and 10 are contained in this clause. When there is an ambiguity in the narrative text, the SDL diagrams should be used to resolve the conflict. Where the text and the SDL are in disagreement, the text should be used as the prime source.

The terminology and acronyms of Annex A/Q.2931 [2] shall apply in the SDLs in this clause. These SDLs extend the SDLs defined in Annex A/Q.2931 [2] and should be read in conjunction with the SDLs in Annex A/Q.2931 [2].

PROCESS Co-ord-N;

Q.2931 SDL - Network Side
(Q.2963 Extensions)

Signal lists

Signal for B-ISDN Calls

Primitives to/from Application Process

From AP	To AP
Modify-req	Modify-ind
Modify-resp	Modify-conf
Modify-reject-req	Modify-reject-ind
Connection-available-req	Connection-available-ind

Primitives to/from Q.2931-N

Signal Lists

CDtoON	ONtoCD
Modify-req	Modify-ind
Modify-resp	Modify-conf
Modify-reject-req	Modify-reject-ind
Connection-available-req	Connection-available-ind

Message to/from Q.2931-N for B-ISDN calls

Signal Lists

CDtoON	ONtoCD
MODIFY-REQUEST	MODIFY-REQUEST
MODIFY-ACKNOWLEDGE	MODIFY-ACKNOWLEDGE
MODIFY-REJECT	MODIFY-REJECT
CONNECTION-AVAILABLE	CONNECTION AVAILABLE

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Figure 14-1/Q.2963.1

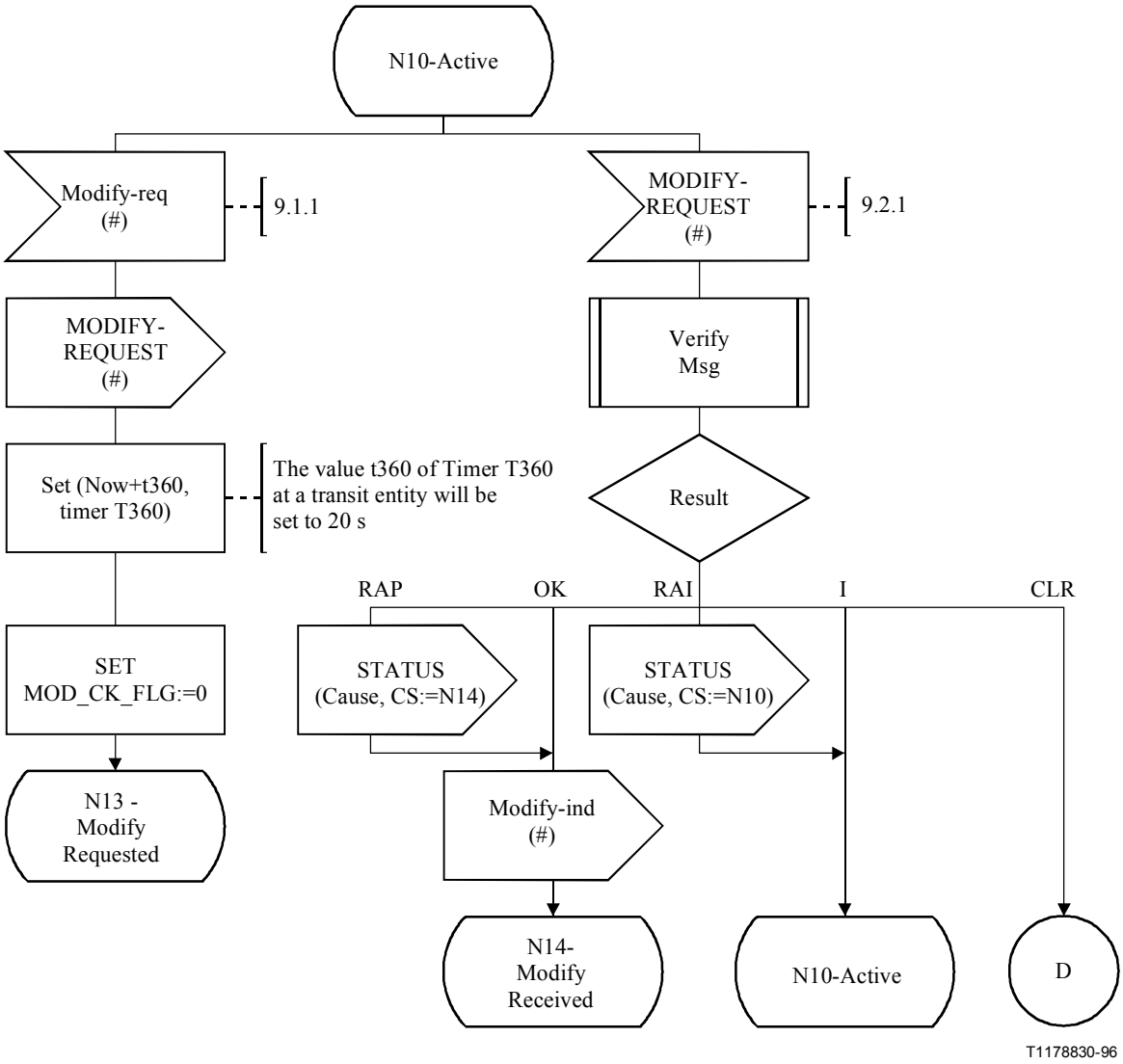


Figure 14-2/Q.2963.1 ***(sheet 1 of 7)***

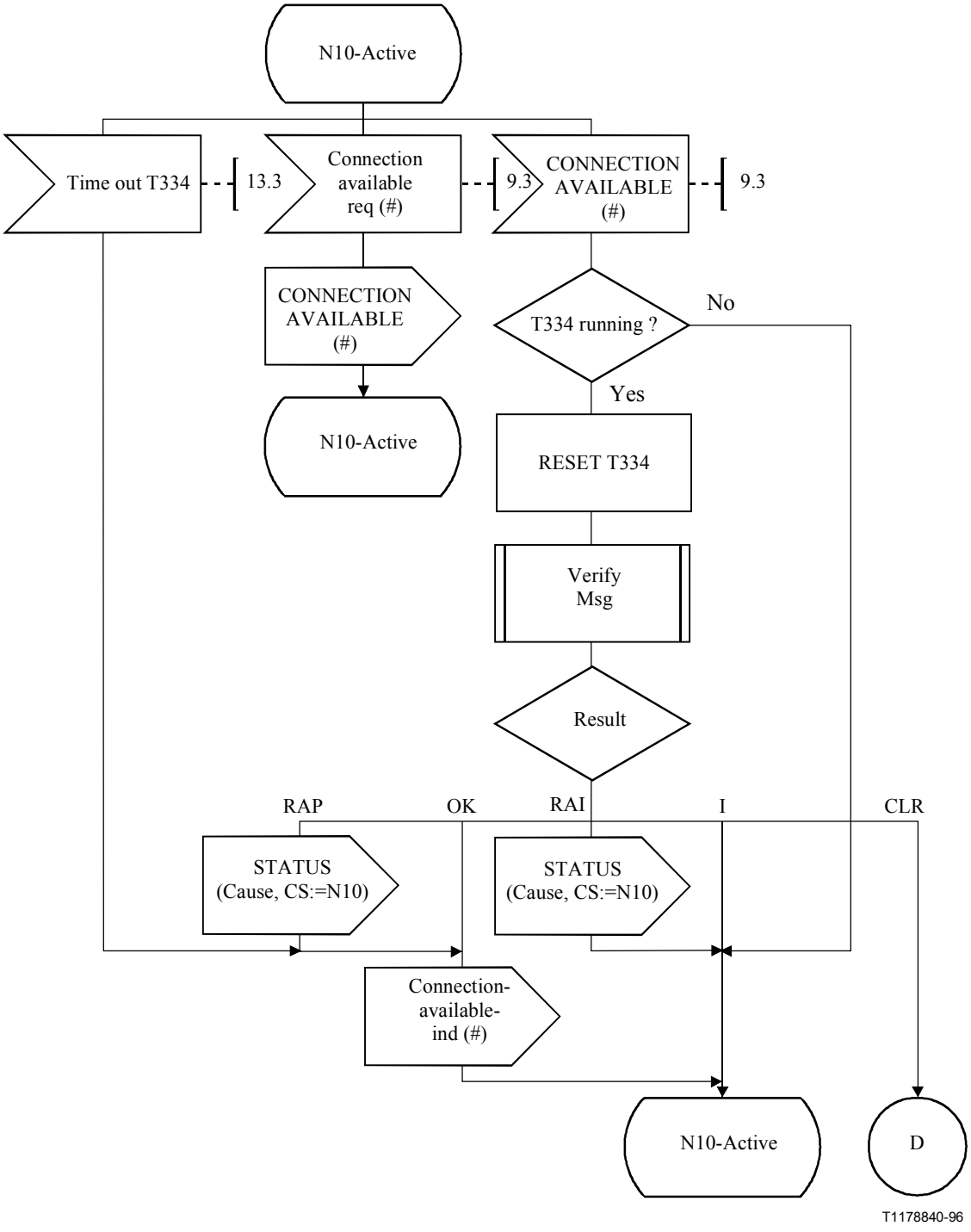


Figure 14-2/Q.2963.1 ***(sheet 2 of 7)***

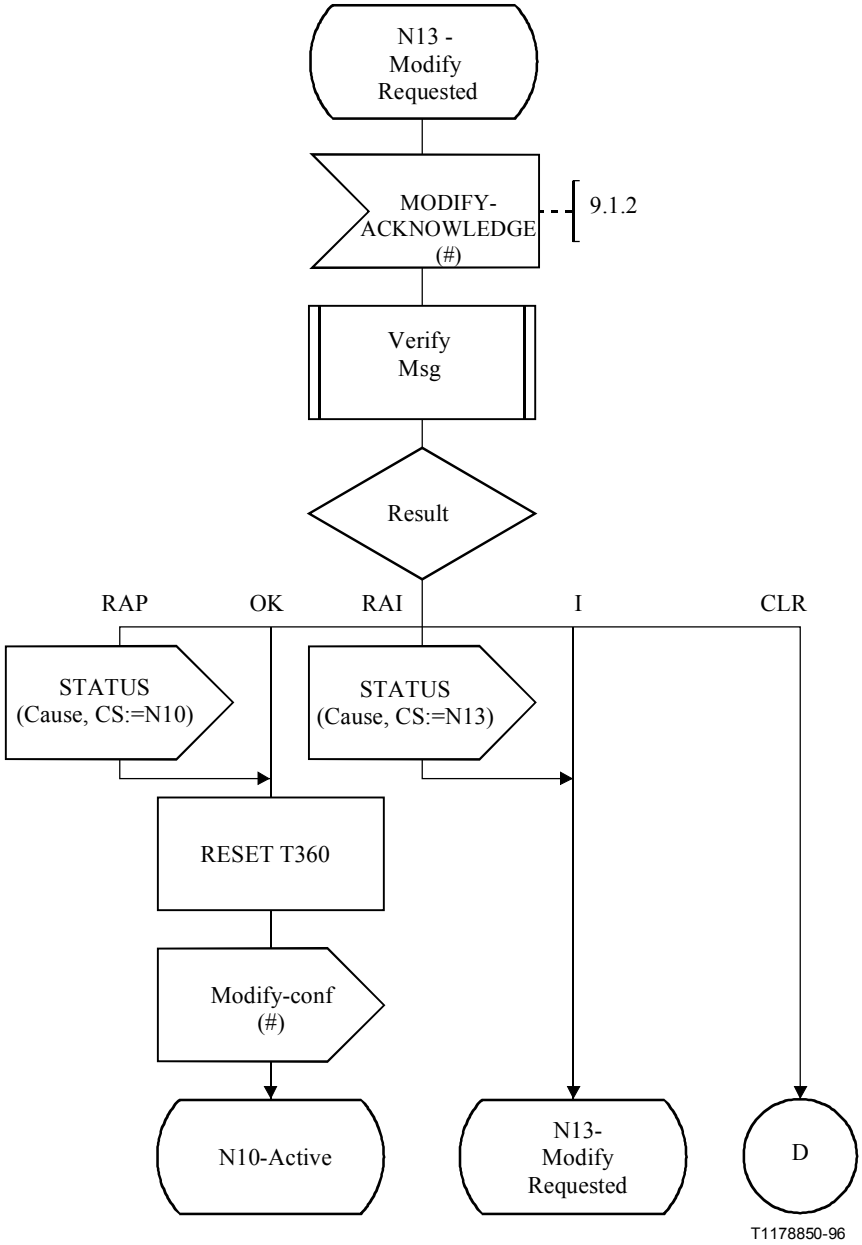


Figure 14-2/Q.2963.1 ***(sheet 3 of 7)***

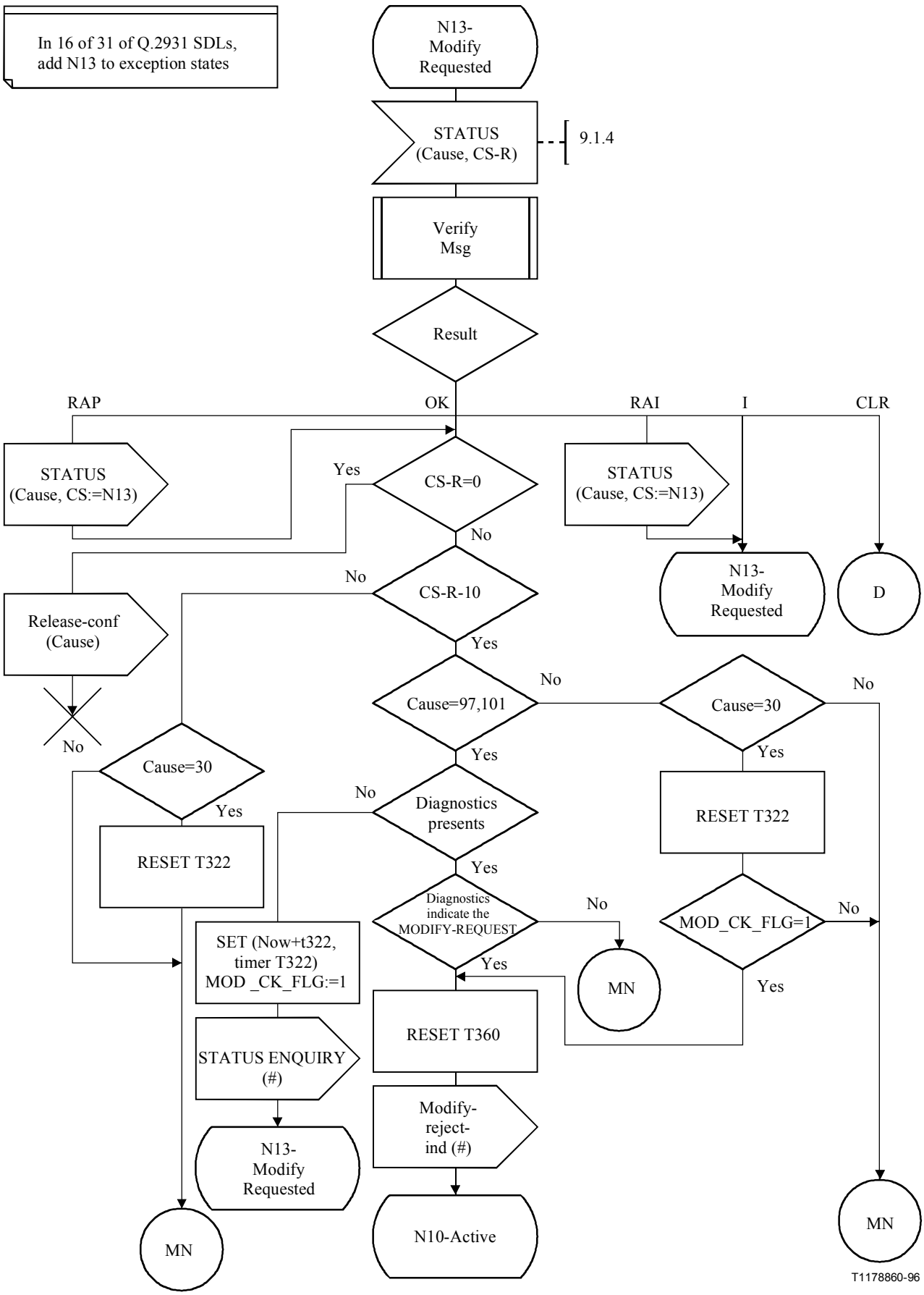


Figure 14-2/Q.2963.1 ***(sheet 4 of 7)***

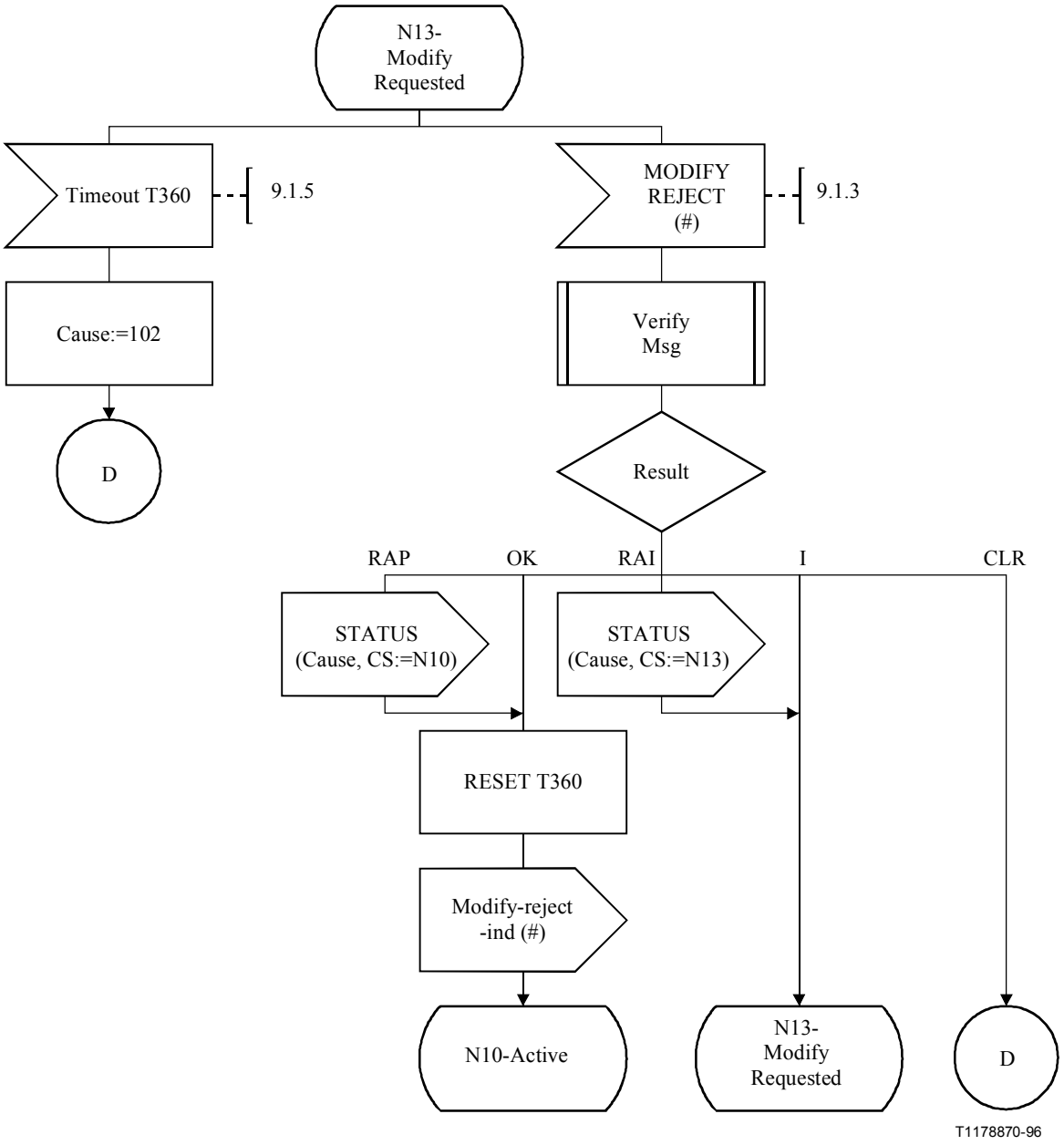


Figure 14-2/Q.2963.1 ***(sheet 5 of 7)***

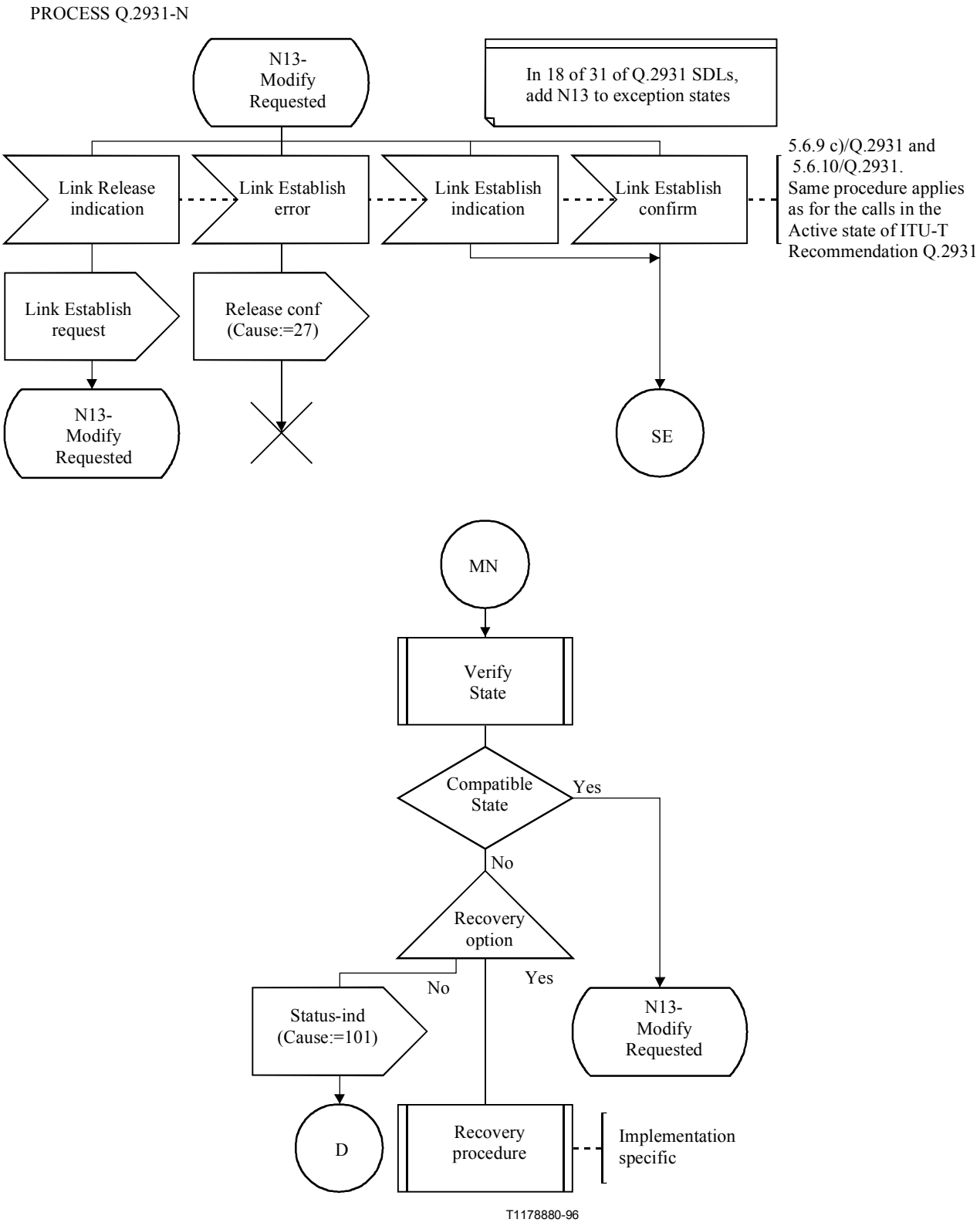
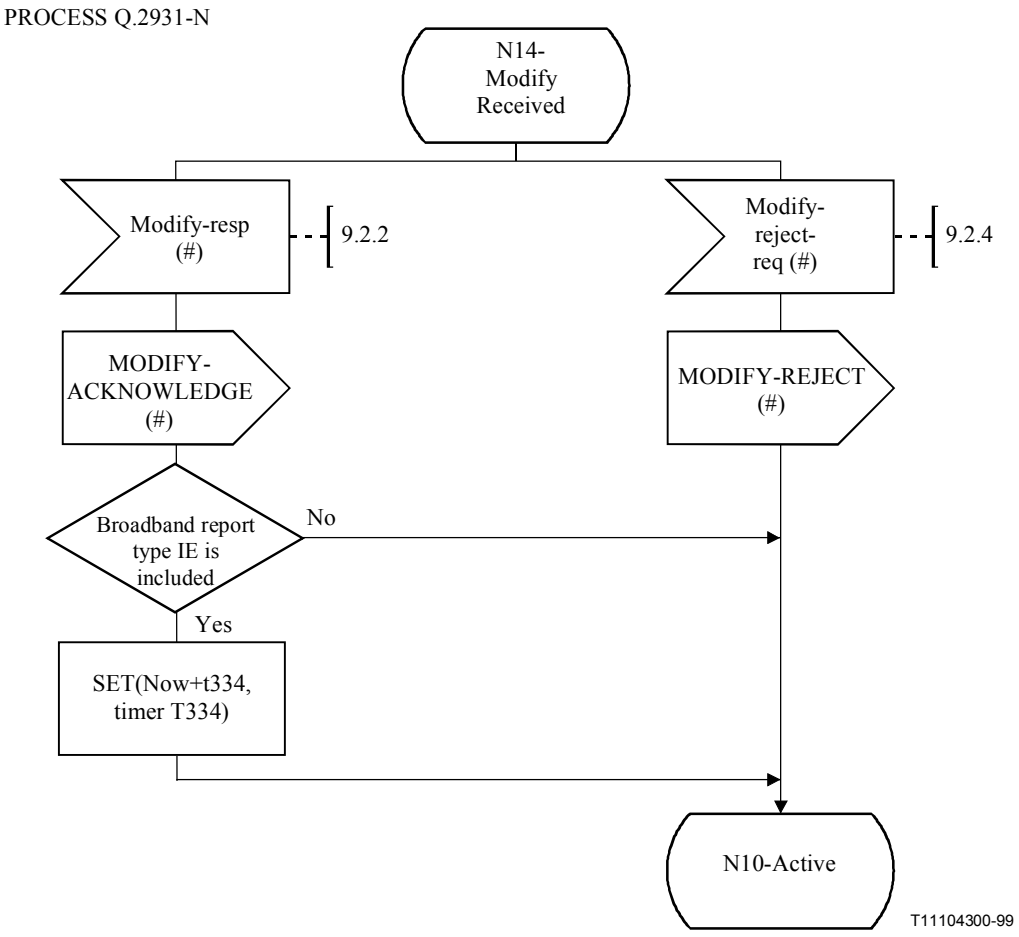


Figure 14-2/Q.2963.1 ***(sheet 6 of 7)***



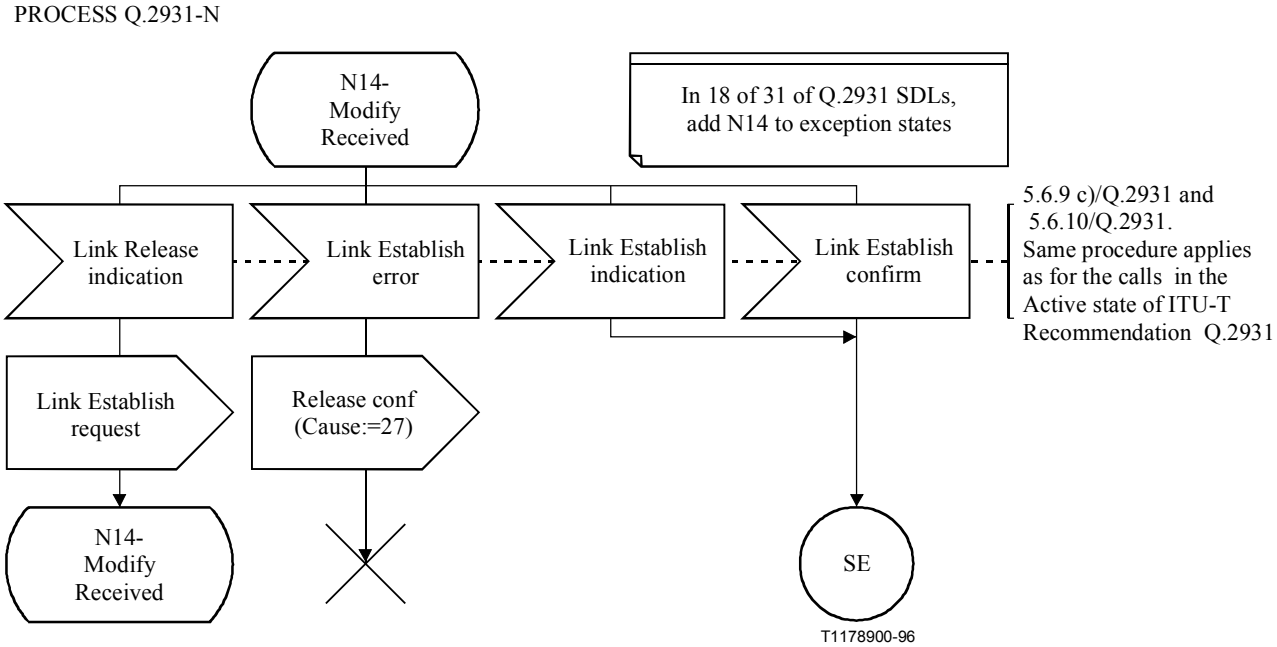


Figure 14-2/Q.2963.1 ***(sheet 7 of 7)***

PROCESS Co-ord-U;

Q.2931 SDL – User Side
(Q.2963 Extensions)

Signal lists

Signal for B-ISDN Calls

Primitives to/from Application Process

From AP	To AP
Modify-req	Modify-ind
Modify-resp	Modify-conf
Modify-reject-req	Modify-reject-ind
Connection-available-req	Connection-available-ind

Primitives to/from Q.2931-U

Signal Lists

CDtoOU	OUtoCD
Modify-req	Modify-ind
Modify-resp	Modify-conf
Modify-reject-req	Modify-reject-ind
Connection-available-req	Connection-available-ind

Message to/from Q.2931-U to B-ISDN calls

Signal Lists

CDtoOU	OUtoCD
MODIFY-REQUEST	MODIFY-REQUEST
MODIFY-ACKNOWLEDGE	MODIFY-ACKNOWLEDGE
MODIFY-REJECT	MODIFY-REJECT
CONNECTION-AVAILABLE	CONNECTION-AVAILABLE

T1178910-96

Figure 14-3/Q.2963.1

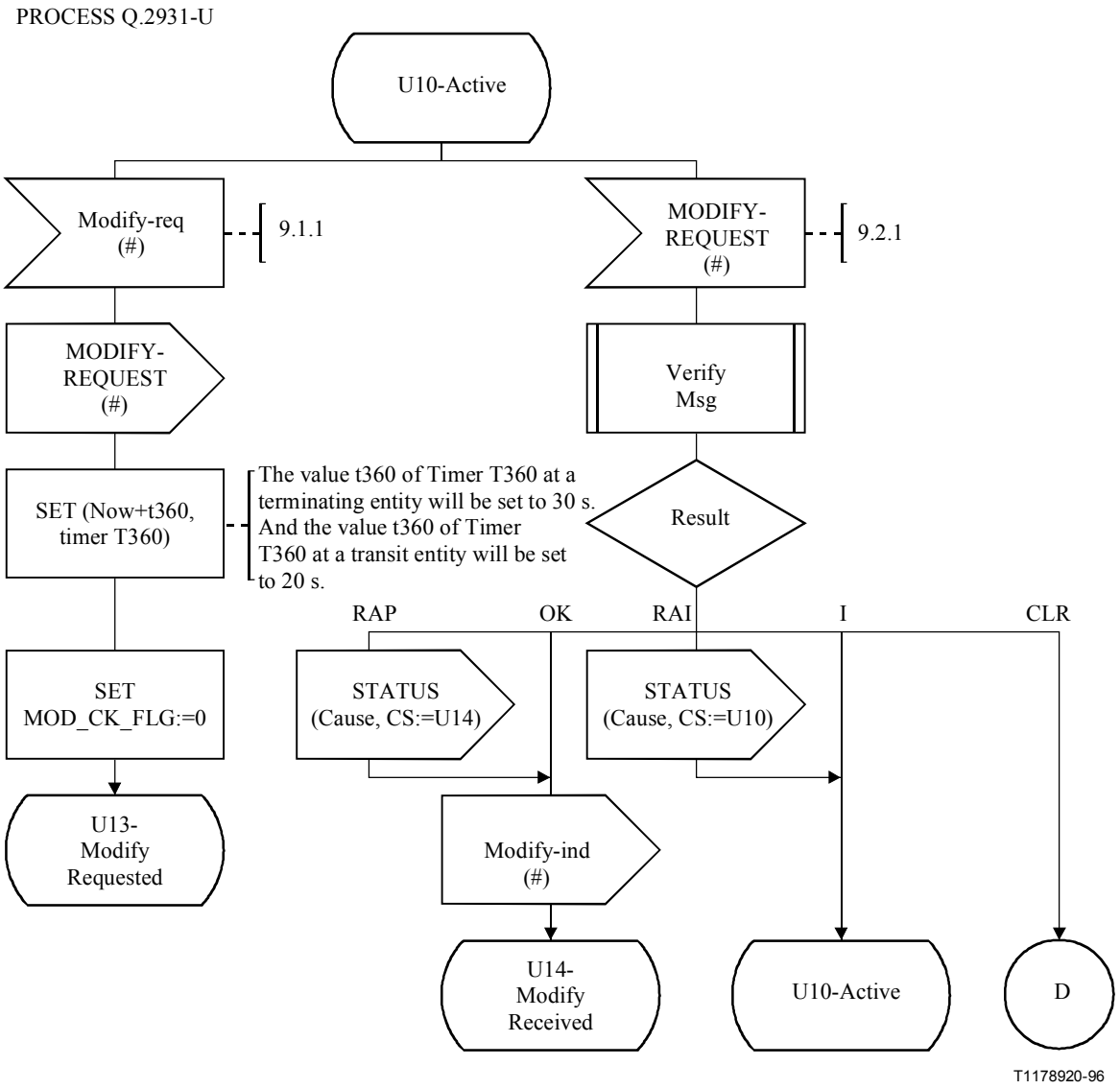


Figure 14-4/Q.2963.1 ***(sheet 1 of 7)***

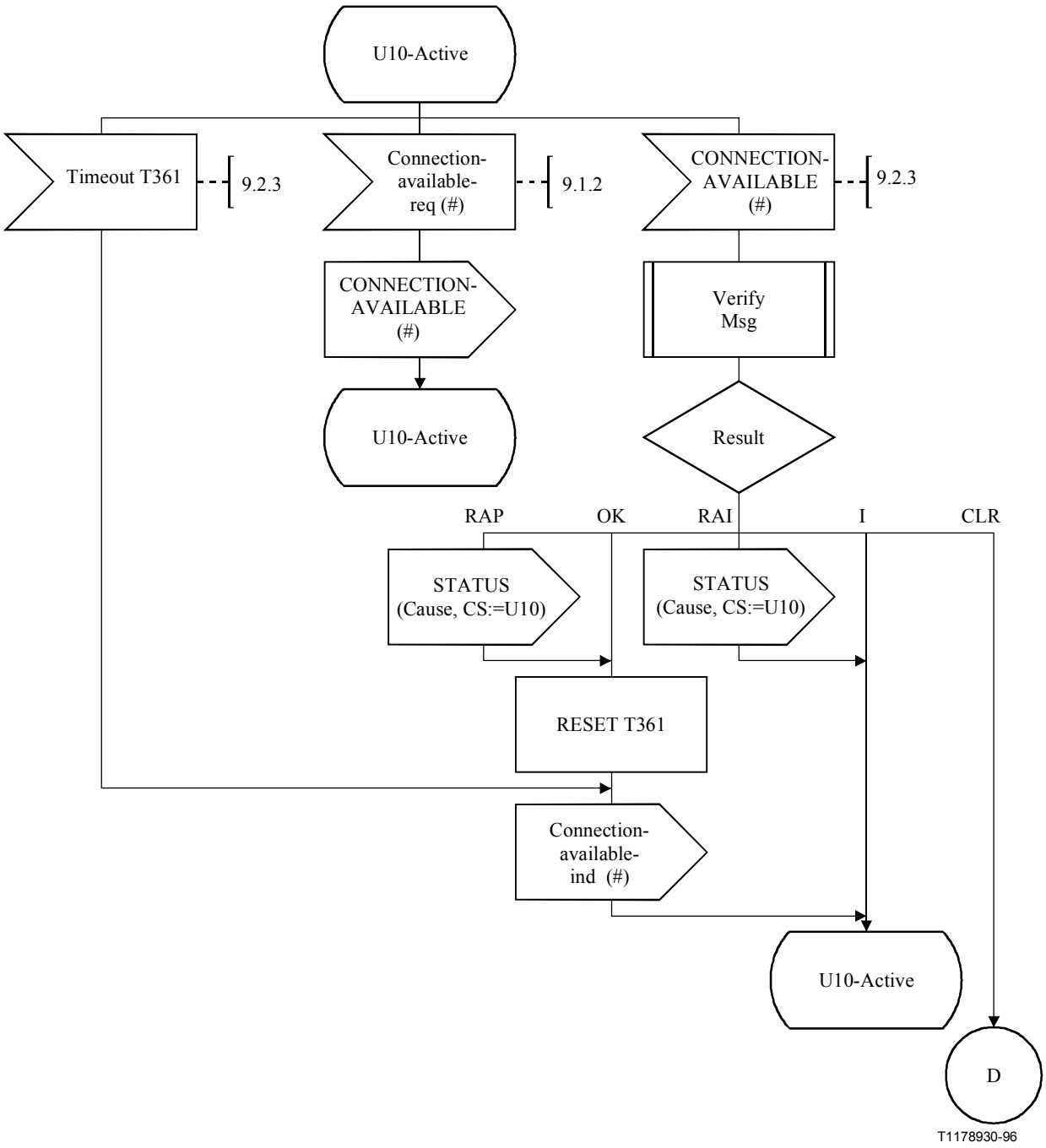


Figure 14-4/Q.2963.1 ***(sheet 2 of 7)***

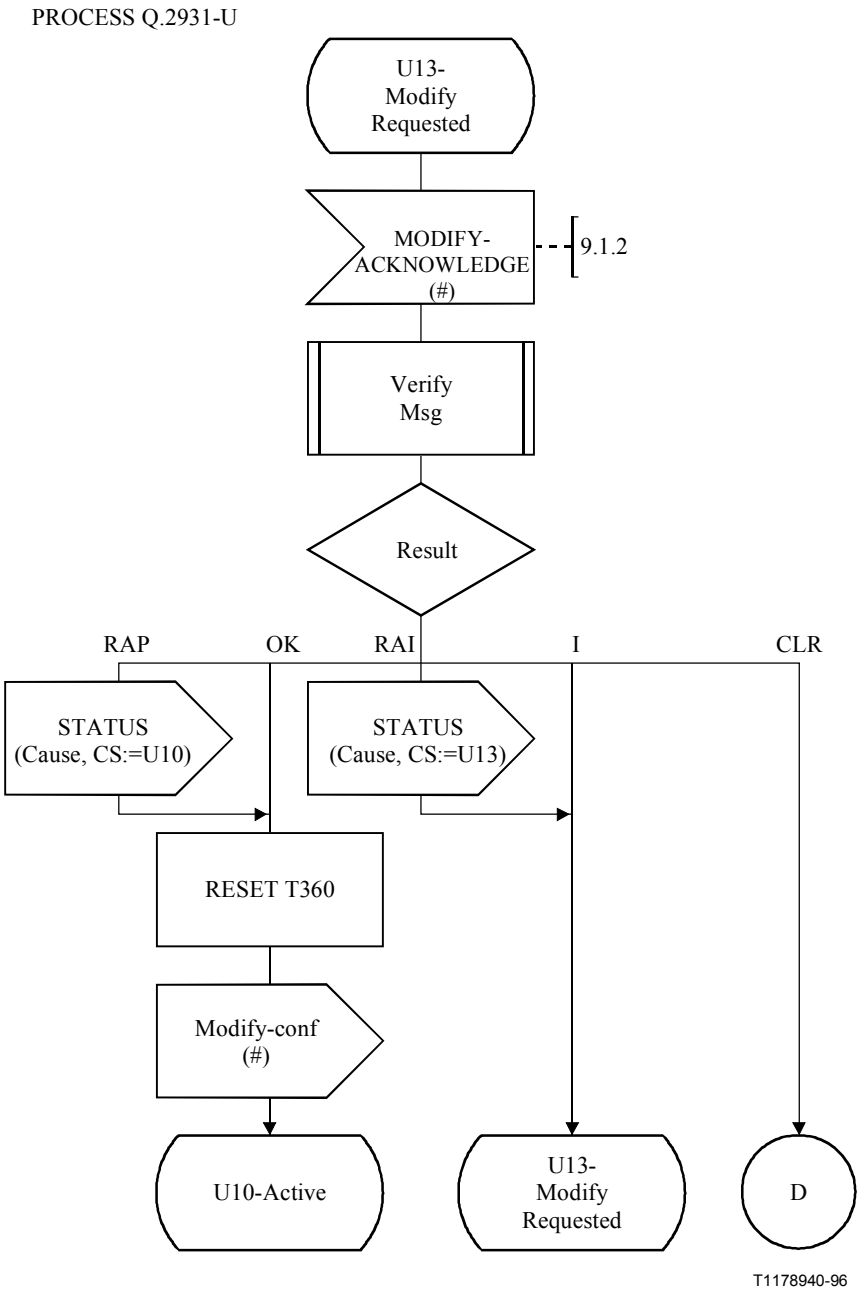


Figure 14-4/Q.2963.1 ***(sheet 3 of 7)***

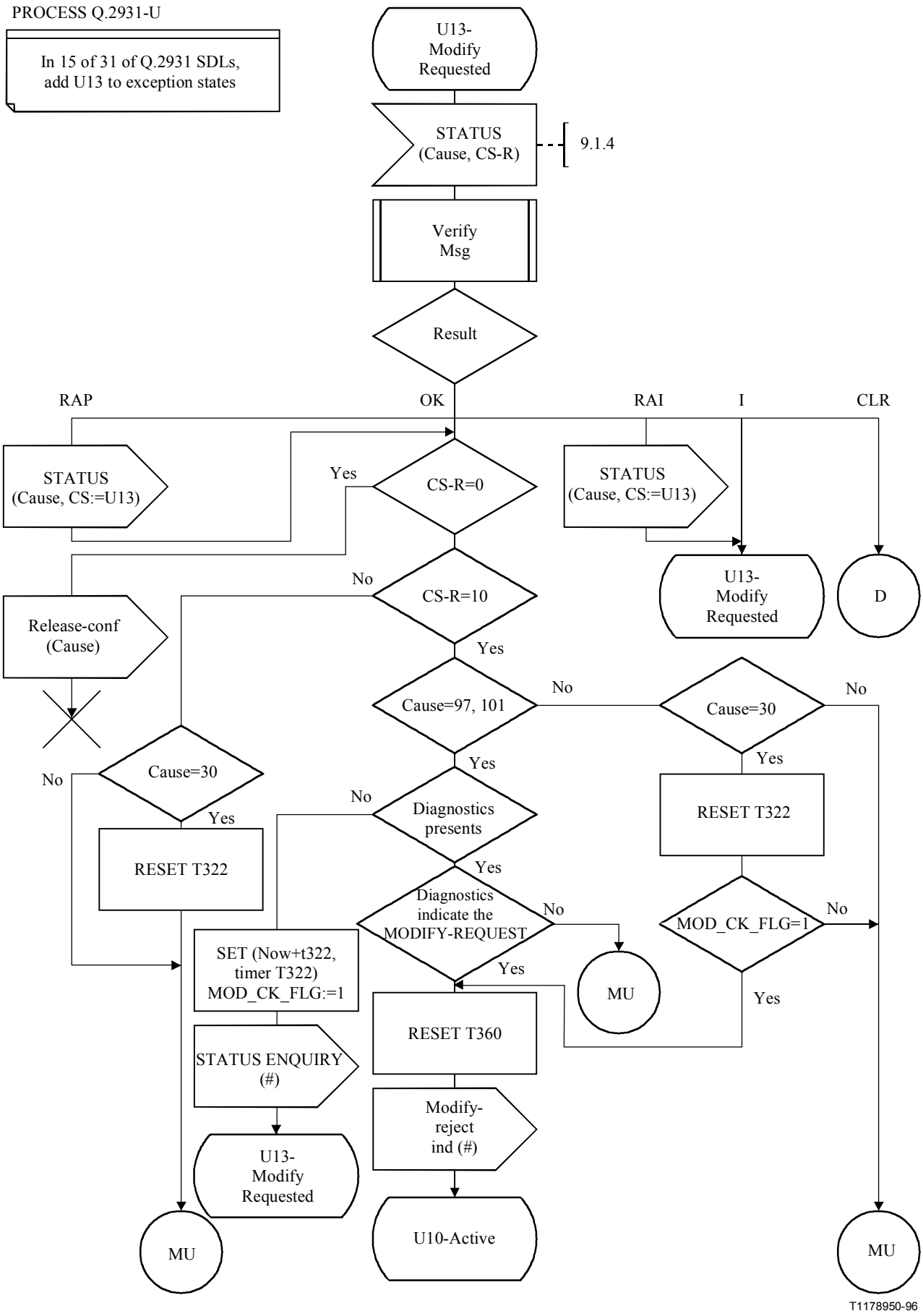


Figure 14-4/Q.2963.1 ***(sheet 4 of 7)***

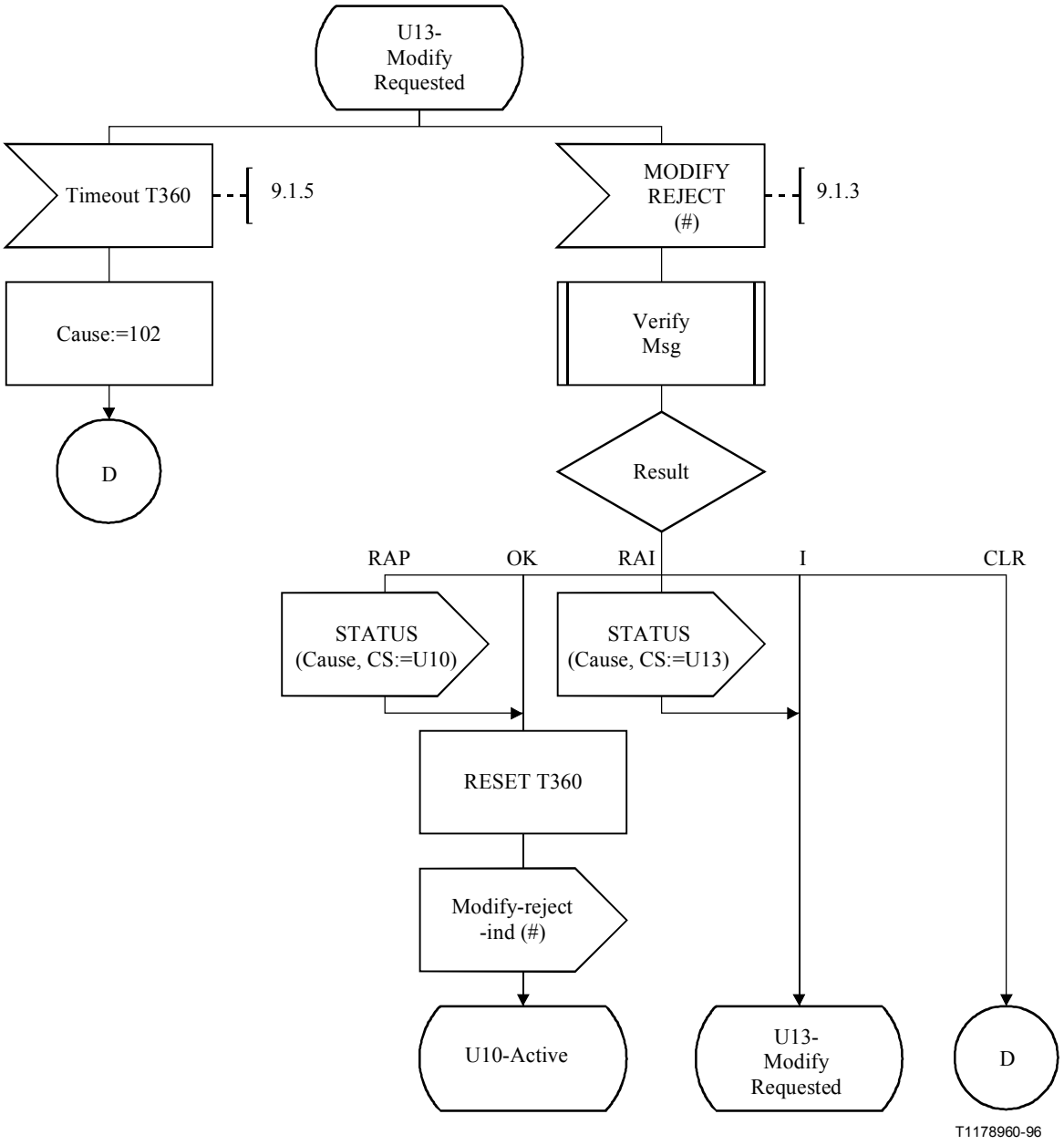


Figure 14-4/Q.2963.1 ***(sheet 5 of 7)***

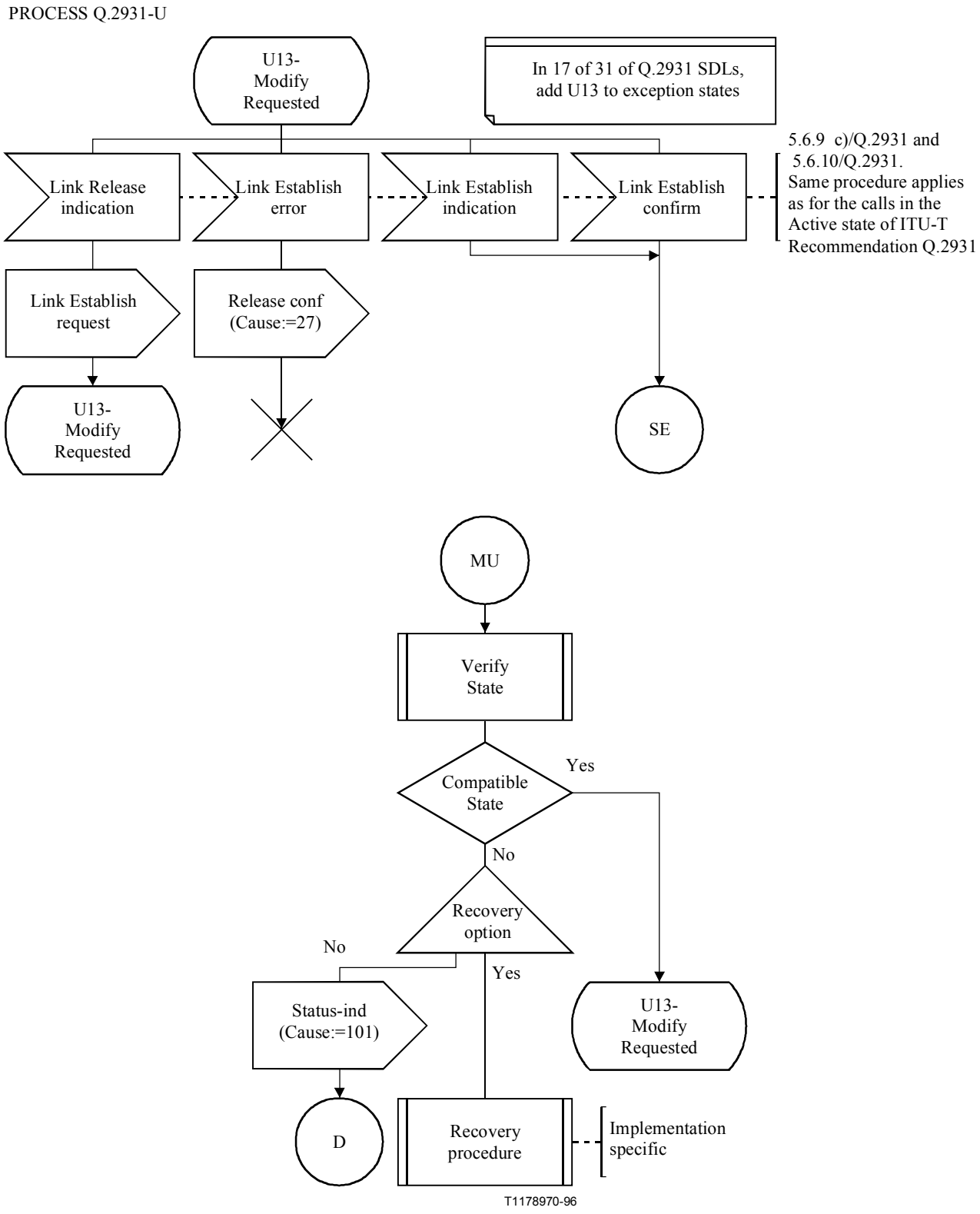
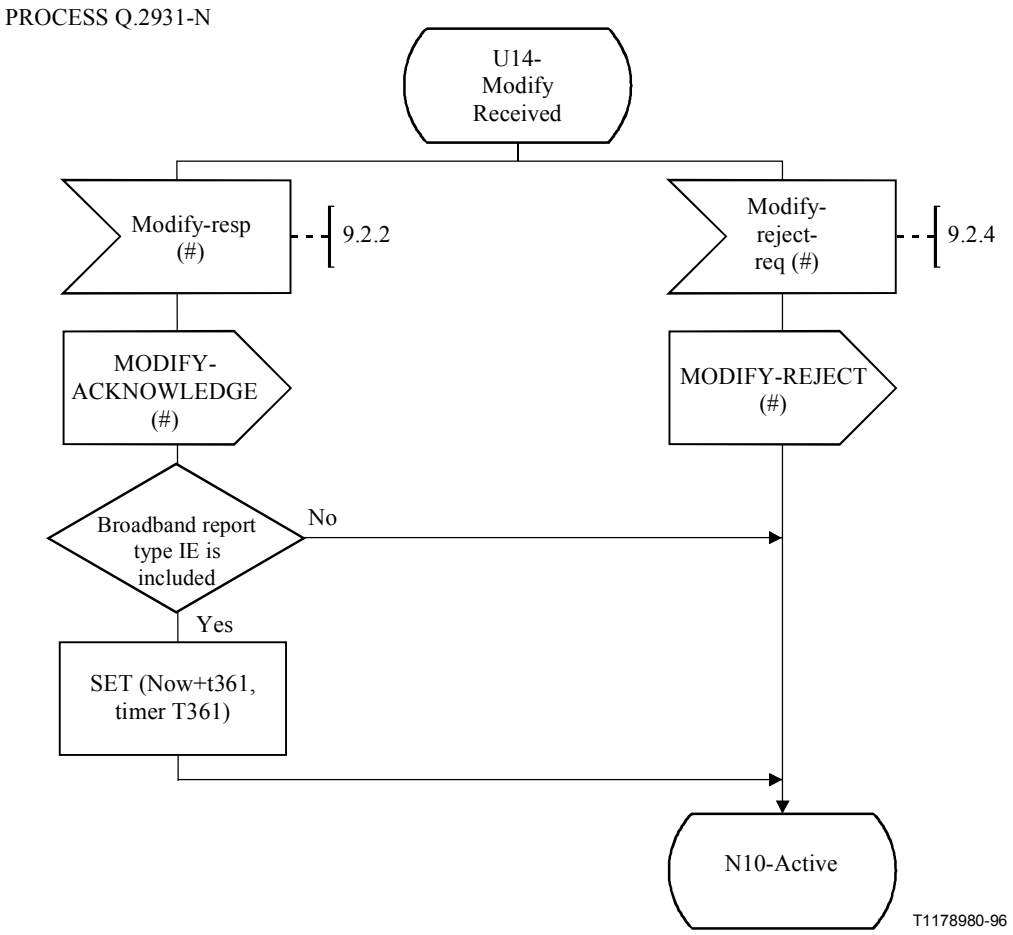


Figure 14-4/Q.2963.1 ***(sheet 6 of 7)***



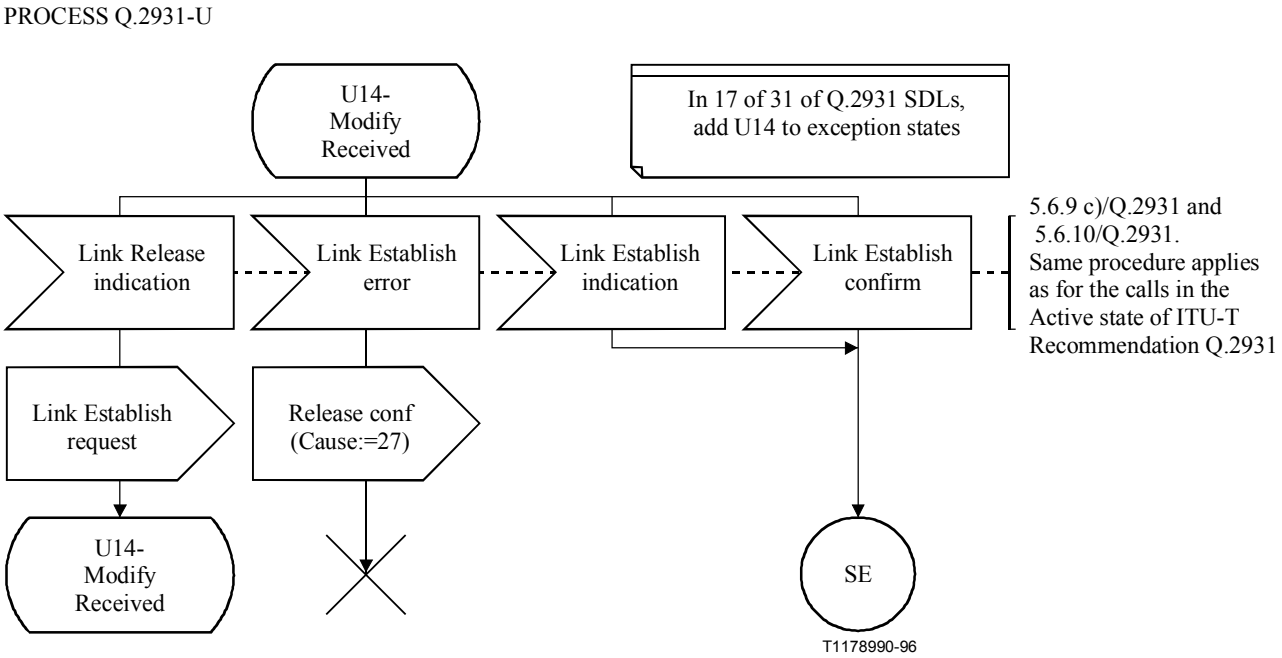
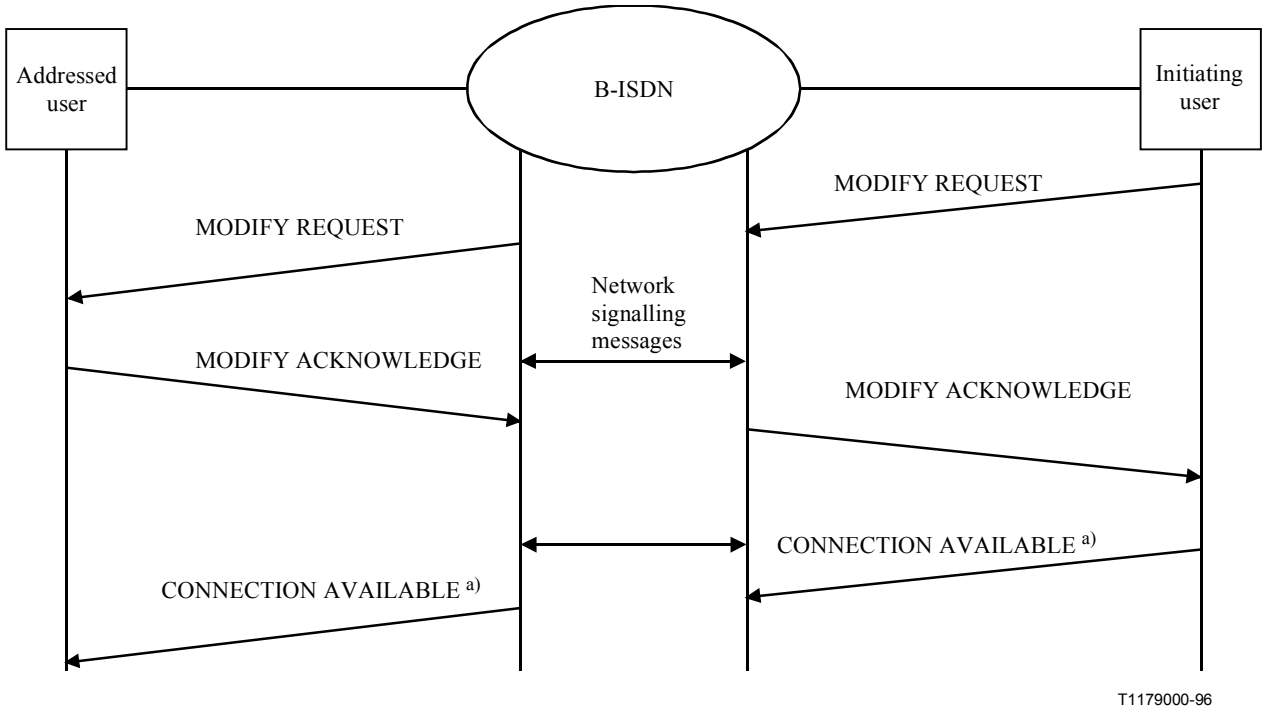


Figure 14-4/Q.2963.1 ***(sheet 7 of 7)***

ANNEX A

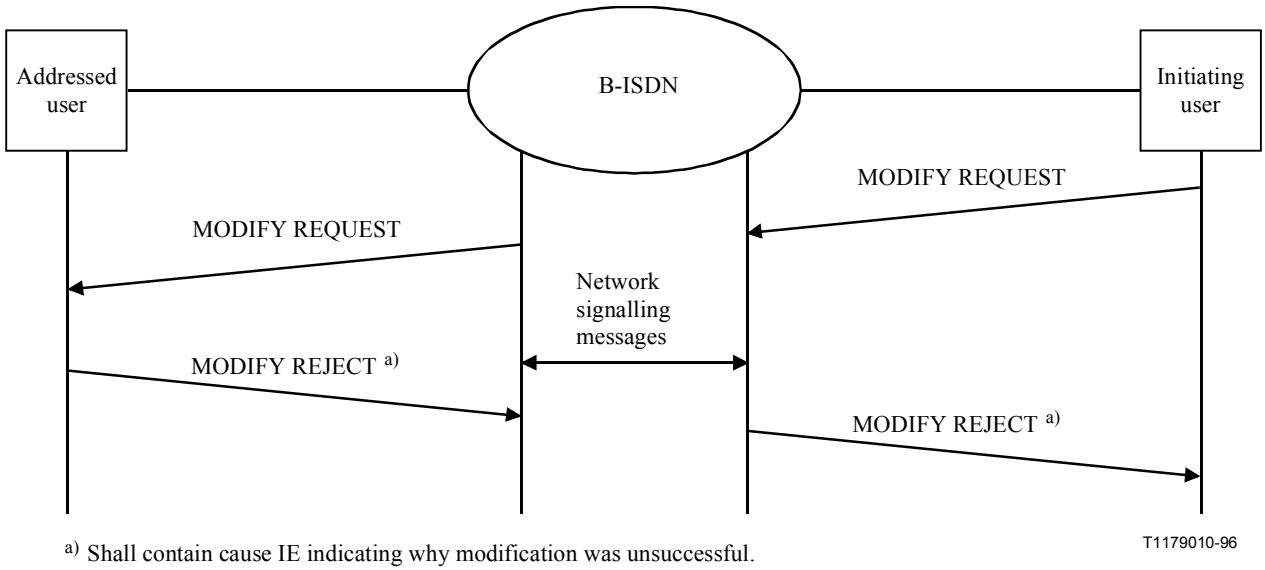
Message flow diagrams for modification

See Figures A.1 and A.2.



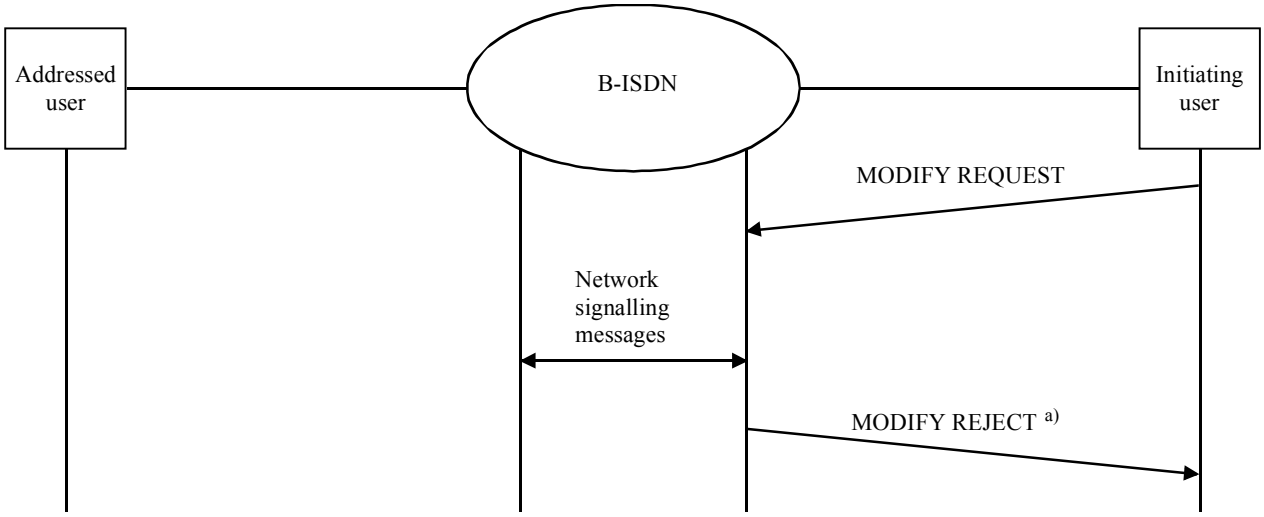
a) This message is sent only if requested by the addressed user by including a broadband report type information element in the MODIFY ACKNOWLEDGE message.

Figure A.1/Q.2963.1 – Successful modification



a) Shall contain cause IE indicating why modification was unsuccessful.

Figure A.2/Q.2963.1 – Unsuccessful modification *(sheet 1 of 2)*



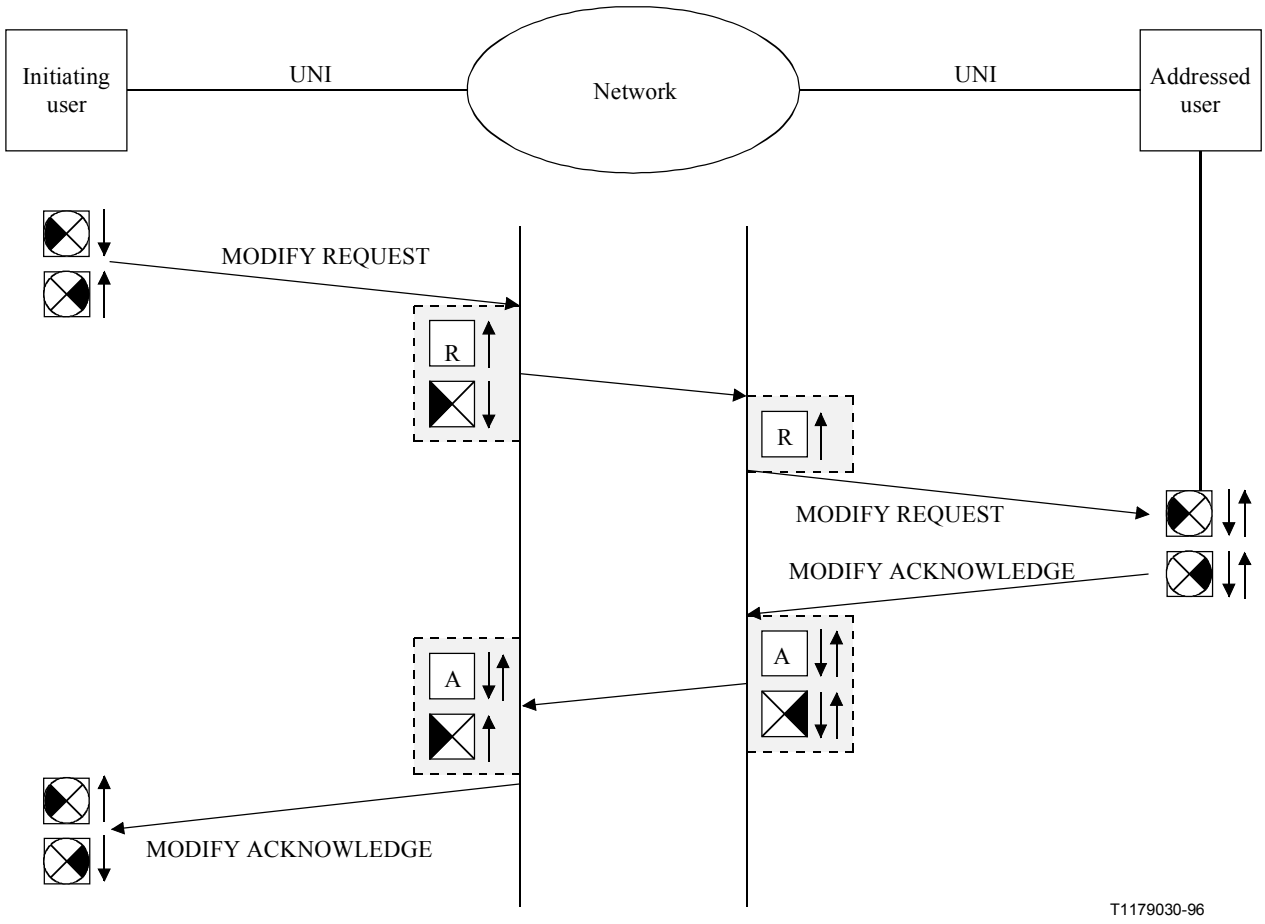
a) Shall contain cause IE indicating why modification was unsuccessful.

Figure A.2/Q.2963.1 – Unsuccessful modification *(sheet 2 of 2)*

APPENDIX I

Example configuration of user and network behaviour uring modification procedures

These examples (Figures I.1 and I.2) show the configuration in which both the initiating and the addressed users are terminating entities.



Forward UPC change

Backward UPC change

Change of applied forward ATM traffic parameters

Change of applied backward ATM traffic parameters

Increase

Decrease

CAC change
A Allocation of resources
R Reservation of resources

Figure I.1/Q.2963.1 – Procedure of modification without request of connection acknowledgement

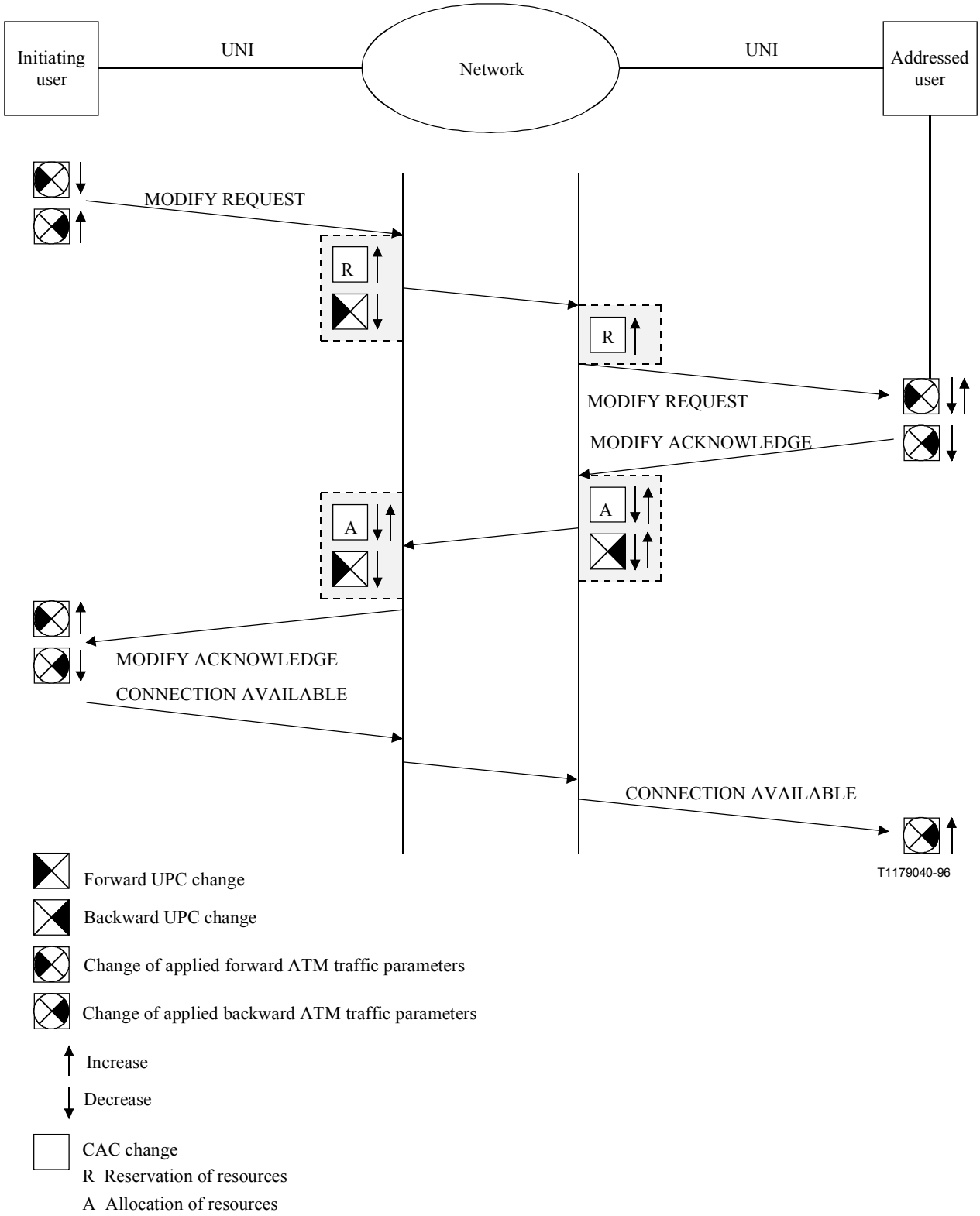


Figure I.2/Q.2963.1 – Procedure of modification with request of connection acknowledgement

APPENDIX II

Guidelines for the use of Instruction indicators

This appendix provides guidelines for the recommended use of the instruction indicator in the connection modification message (see Table II.1) and the Broadband report type information element (see Table II.2).

The following abbreviations have been used in the tables:

Used Follow explicit instructions

Not used Instruction field not significant

N Network

U User

Table II.1/Q.2963.1 – Recommended use of the Message action indicators for the connection modification messages

Message	Flag	Origin	Action indicator
MODIFY REQUEST	Not used	N & U	Not significant
MODIFY ACKNOWLEDGEMENT	Not used	N & U	Not significant
MODIFY REJECT	Not used	N & U	Not significant

Table II.2/Q.2963.1 – Recommended use of the Instruction indicators for the Broadband report type information element in the MODIFY ACKNOWLEDGE message

Information element	Flag	Origin	Action indicator
Broadband report type	Used	N & U	Discard information element and proceed

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Series H	Audiovisual and multimedia systems
Series I	Integrated services digital network
Series J	Transmission of television, sound programme and other multimedia signals
Series K	Protection against interference
Series L	Construction, installation and protection of cables and other elements of outside plant
Series M	TMN and network maintenance: international transmission systems, telephone circuits, telegraphy, facsimile and leased circuits
Series N	Maintenance: international sound programme and television transmission circuits
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