INTERNATIONAL TELECOMMUNICATION UNION

ITU-T Q.2660

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

(02/95)

COMMON ASPECTS OF B-ISDN APPLICATION PROTOCOLS FOR ACCESS SIGNALLING AND NETWORK SIGNALLING AND INTERWORKING

BROADBAND INTEGRATED SERVICES DIGITAL NETWORK (B-ISDN) – INTERWORKING BETWEEN SIGNALLING SYSTEM No. 7 – BROADBAND ISDN USER PART (B-ISUP) AND NARROW-BAND ISDN USER PART (N-ISUP)

ITU-T Recommendation Q.2660

(Previously “CCITT Recommendation”)

FOREWORD

The ITU-T (Telecommunication Standardization Sector) is a permanent organ of the International Telecommunication Union (ITU). The 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 their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1 (Helsinki, March 1-12, 1993).

ITU-T Recommendation Q.2660 was prepared by ITU-T Study Group 11 (1993-1996) and was approved under theWTSC Resolution No. 1 procedure on the 7th of February 1995.

NOTE

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

CONTENTS

SUMMARY

This Recommendation shows the mapping/interworking between B-ISUP and N-ISUP for the basic call and supplementary services.

BROADBAND INTEGRATED SERVICES DIGITAL NETWORK (B-ISDN) – INTERWORKING BETWEEN SIGNALLING SYSTEM No. 7 – BROADBAND ISDN USER PART (B-ISUP) AND NARROW-BAND ISDN USER PART (N-ISUP)

(Geneva, 1995)

1 Scope

This Recommendation specifies the interworking between Broadband ISDN User Part as used in the Broadband CS1 network and the Narrow-band ISDN User Part as defined in the 1992 Recommendations.

Interworking of the basic call and supplementary services applicable to the international interface are included.

Interworking is shown as arrow diagrams showing the message interworking, with tables being used to show the mapping of parameters.

When repeated information elements are contained in B-ISUP parameters, ascending order of priority is assumed.

The interworking diagrams and tables show the case of the broadband network being a transit network between two narrow-band networks. However, the information given is also relevant to the narrow-band/broadband and broadband/narrow-band interworking cases as indicated below. (See Figures 1 to 3.)

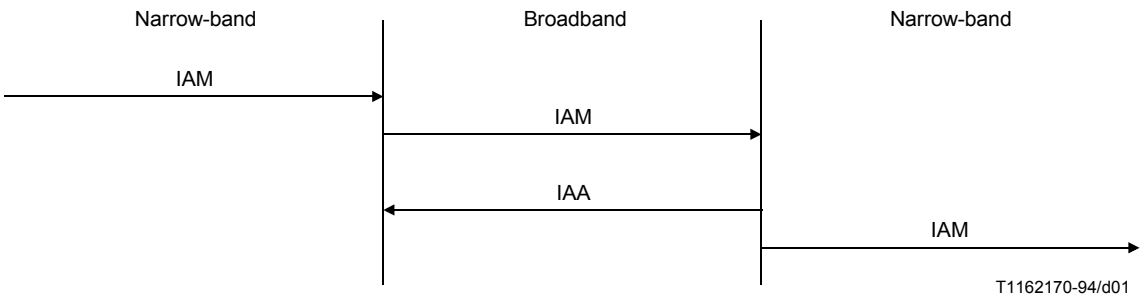


FIGURE 1/Q.2660

Broadband transit network

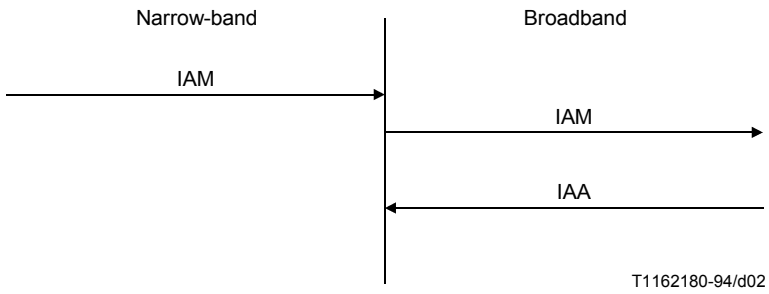


FIGURE 2/Q.2660

Narrow-band/broadband interworking

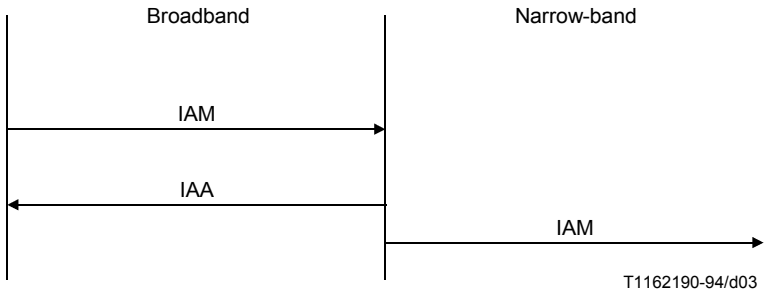


FIGURE 3/Q.2660

Broadband/narrow-band interworking

2 Abbreviations

For the purposes of this Recommendation, the following abbreviations are used:

ACM Address Complete Message

ANM Answer Message

CON Connect Message

COT Continuity Message

CPG Call Progress Message

FAA Facility Accept Message

FAR Facility Request Message

FRJ Facility Reject Message

FOT Forward Transfer Message

IAA Initial Address Acknowledgement Message

IAM Initial Address Message

IAR Initial Address Reject Message

NRM Network Resource Management Message

REL Release Message

RES Resume Message

SAM Subsequent Address Message

SGM Segmentation Message

SUS Suspend Message

USR User-To-User Information Message

3 General statements on interworking

No ATM specific parameters defined for B-ISUP will be carried in the N-ISUP.

All B-ISUP messages carry message compatibility information.

All B-ISUP parameters carry parameter compatibility information.

Forward and backward narrow-band interworking indicators carry narrow-band information unchanged through the broadband network.

When a call transfers from the N-ISDN to the B-ISDN, the broadband/narrow-band interworking indicator shall be set to "pass on" by the interworking exchange.

The Generic Notification indicator of N-ISUP is always mapped transparently to the Notification indicator of B-ISUP.

Segmentation is not supported on the international interface for B-ISUP, when the B-ISDN receives a message indicating that segmentation has occurred in the N-ISDN, the B-ISUP message is not generated until the second segment has arrived (or timer has expired) in N-ISUP.

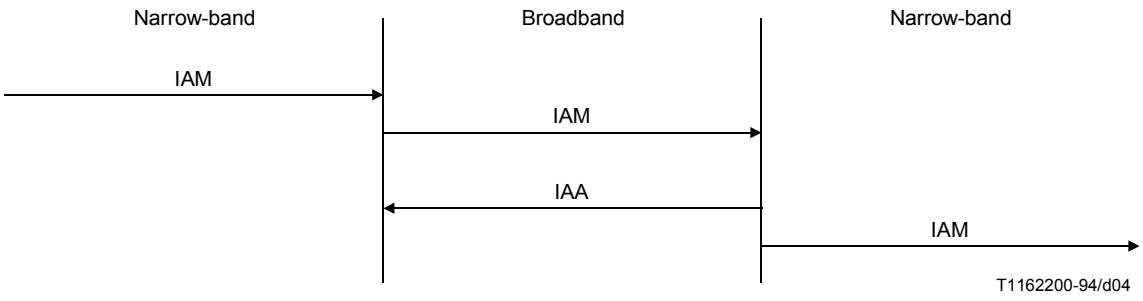
Through connection will be symmetrical and occur:

1) in the narrow-band outgoing exchange, immediately after the N-ISUP sends the Initial Address Message, or

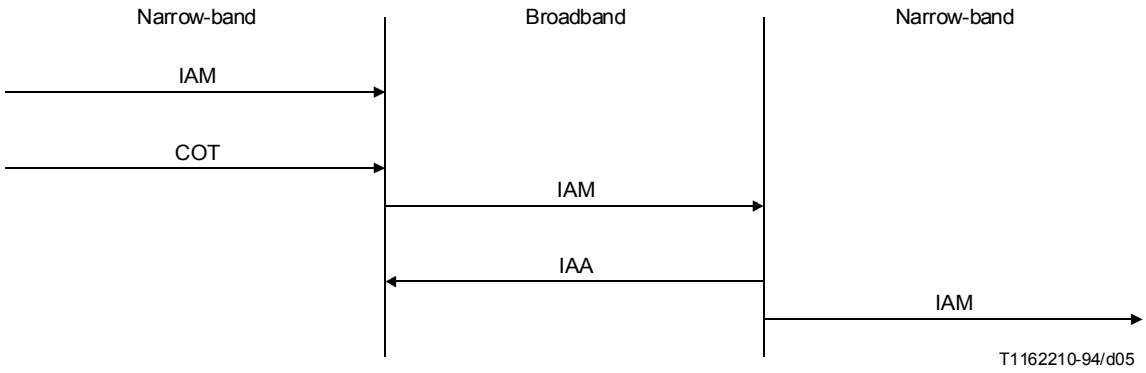
2) in the broadband outgoing exchange, immediately upon reception of the Initial Address Acknowledgement Message in B-ISUP.

4 Successful basic call

4.1 Mapping of the Initial Address Message



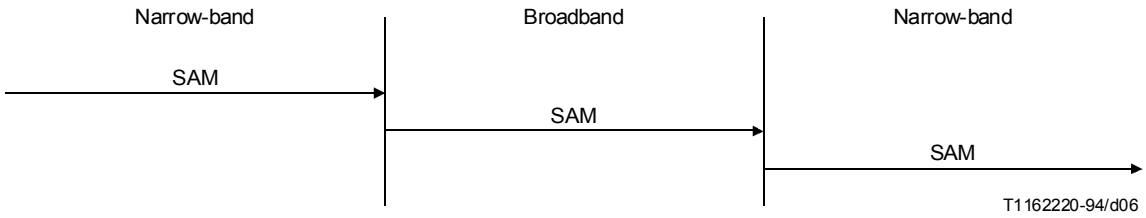
4.1.1 Mapping of the Initial Address Message when continuity check is applied in the incoming narrow-band network



Incoming narrow-band	Transit broadband	Outgoing narrow-band
Nature of connection indicators: Satellite indicator	Not carried	Nature of connection indicators: Satellite indicator set to integer result of propagation delay counter divided by 270 ms
Nature of connection indicators: Continuity check indicator	Not carried. If continuity check requested, loop is applied at interworking exchange. IAM is not generated unless continuity check (or check on a previous link) is successful	Nature of connection indicators: Continuity check indicator will only indicate "continuity check not required" or "continuity check required on this circuit"
Nature of connection indicators: Echo control device indicator	Echo control information: Outgoing half echo control device indicator	Nature of connection indicators: Echo control device indicator
Forward call indicators: National/international call indicator	National/international call indicator	Forward call indicators: National/international call indicator
Forward call indicators: End-to-end method indicator	Not carried	Forward call indicators: End-to-end method indicator set to "no end-to-end method available"
Forward call indicators: Interworking indicator	Forward narrow-band interworking indicators: Interworking indicator	Forward call indicators: Interworking indicator. If not received then no interworking is indicated
Forward call indicators: End-to-end information indicator	Not carried	Forward call indicators: End-to-end information indicator set to "no end-to-end information available"
Forward call indicators: ISDN user part indicator	Forward narrow-band interworking indicators: ISDN user part indicator	Forward call indicators: ISDN user part indicator. If not received, then ISDN user part used all the way is indicated
Forward call indicators: ISDN access indicator	Forward narrow-band interworking indicators: ISDN access indicator	Forward call indicators: ISDN access indicator. If not received, then ISDN access is indicated
Forward call indicators: SCCP method indicator	Not carried	Forward call indicators: SCCP method indicator set according to "no indication"

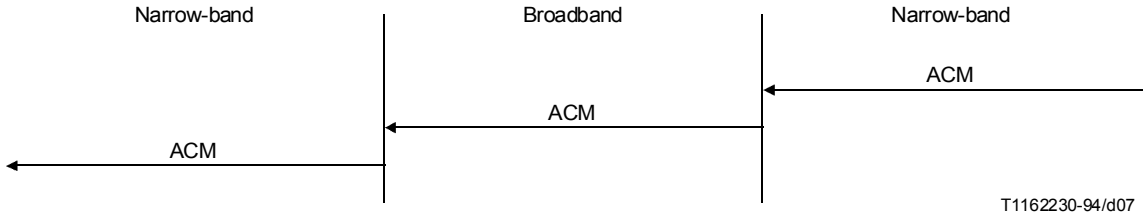
Incoming narrow-band	Transit broadband	Outgoing narrow-band
Calling party's category	Calling party's category	Calling party's category
Transmission medium requirement	Not carried. Narrow-band bearer capability derived from transmission medium requirement if user service information not available	Transmission medium requirement derived from narrow-band bearer capability first repetition or second repetition, if available. If no narrow-band bearer capability is received, the call/connection is released according to 6.4.1/Q.2931
Called party number	Called party number	Called party number
Optional forward call indicators: Simple segmentation	Not carried	Optional forward call indicators: Simple segmentation (if required)
Access transport	Narrow-band high layer compatibility (Note) Narrow-band low layer compatibility (Note) Progress indicator (Note)	Access transport
User service information	Narrow-band bearer capability (Note)	User service information
Propagation delay counter	Propagation delay counter (delays caused by the STM/ATM interworking function are added)	Propagation delay counter (delays caused by the ATM/STM interworking function are added)
User service information prime	Narrow-band bearer capability (Note)	User service information prime, generated from second repeated narrow-band bearer capability, if available
Origination ISC point code	Origination ISC point code	Origination ISC point code
User teleservice information	Not carried	User teleservice information. Generated from narrow-band high layer compatibility
Parameter compatibility information	All B-ISUP parameters include this information as part of the parameter header	Parameter compatibility information
Transmission medium requirement prime	Not carried	Transmission medium requirement prime derived from narrow-band bearer capability first repetition if second repetition available otherwise not generated
Location number	Location number	Location number
Not carried	ATM cell rate, generated with contents set according to DSS 2 to support 64 kbit/s circuit emulation	Not carried
Not carried	Broadband bearer capability, generated with contents set according to DSS 2 to support 64 kbit/s circuit emulation	Not carried
Not carried	Maximum end-to-end transit delay	Not carried
Not carried	AAL, generated with contents set according to DSS 2 to support 64 kbit/s circuit emulation	Not carried
NOTE – This parameter can contain repeated access information elements.		

4.2 Mapping of the Subsequent Address Message



Incoming narrow-band	Transit broadband	Outgoing narrow-band
Subsequent number	Subsequent number	Subsequent number

4.3 Mapping of the Address Complete Message



Incoming narrow-band	Transit broadband	Outgoing narrow-band
Backward call indicators: Charge indicator set to "charge" or "no charge"	Charge indicator	Backward call indicators: Charge indicator
Backward call indicators: Called party's status indicator	Called party's indicators: Called party's status indicator	Backward call indicators: Called party's status indicator
Backward call indicators: Called party's category indicator (Note 1)	Called party's indicators: Called party's category indicator (Note 1)	Backward call indicators: Called party's category indicator (Note 1)
Backward call indicators: End-to-end method indicator set to "no end-to-end method available"	Not carried	Backward call indicators: End-to-end method indicator

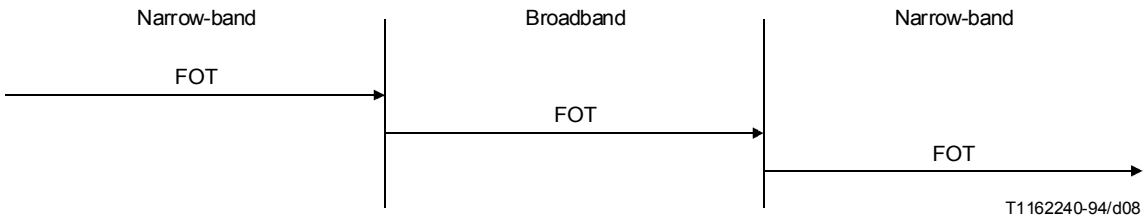
Incoming narrow-band	Transit broadband	Outgoing narrow-band
Backward call indicators: Interworking indicator. If not received, then no interworking is indicated	Backward narrow-band interworking indicators: Interworking indicator	Backward call indicators: Interworking indicator
Backward call indicators: End-to-end information indicator set to "no end-to-end information available"	Not carried	Backward call indicators: End-to-end information indicator
Backward call indicators: ISDN user part indicator. If not received, then ISDN user part used all the way is indicated	Backward narrow-band interworking indicators: ISDN user part indicator	Backward call indicators: ISDN user part indicator
Backward call indicators: ISDN access indicator. If not received, then ISDN access is indicated	Backward narrow-band interworking indicators: ISDN access indicator	Backward call indicators: ISDN access indicator
Backward call indicators: Echo control device indicator	Echo control information: Incoming half echo control device indicator	Backward call indicators: Echo control device indicator
Backward call indicators: SCCP method indicator set to "no indication"	Not carried	Backward call indicators: SCCP method indicator
Optional backward call indicators: In-band information indicator	In-band information indicator	Optional backward call indicators: In-band information indicator
Cause indicators. Any broadband unique cause values are translated to "unspecified" value in that class	Cause indicators	Cause indicators
Access transport	Narrow-band bearer capability (Note 2) Narrow-band high layer compatibility (Note 2) Progress indicator (Note 2)	Access transport
Transmission medium used derived from narrow-band bearer capability if available	Narrow-band bearer capability generated if not available from access transport parameter	Transmission medium used
Echo control information	Echo control information	Echo control information
Access delivery information	Access delivery information	Access delivery information
Parameter compatibility information	All B-ISUP parameters include this information as part of the parameter header	Parameter compatibility information

NOTES

1 Called party's status indicator value "alerting" in B-ISDN is mapped to value "subscriber free" in N-ISDN and vice versa.

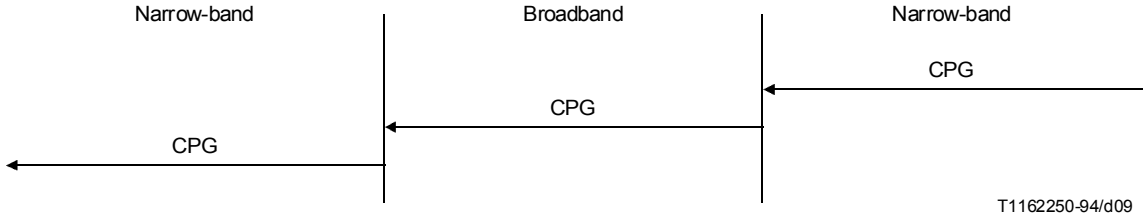
2 This parameter can contain repeated access information elements.

4.4 Mapping of the Forward Transfer Message



No parameters are carried by this message.

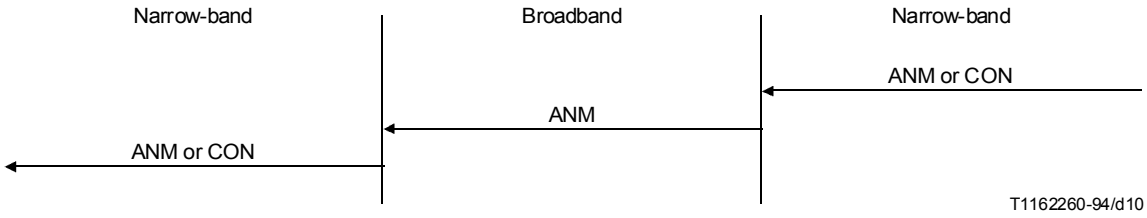
4.5 Mapping of the Call Progress Message



In addition to the mapping shown against the Address Complete Message, the following mapping is relevant.

Incoming narrow-band	Transit broadband	Outgoing narrow-band
Event information: Alerting	Called party's indicators: Called party's status indicator set to "alerting"	Event information: Alerting
Event information: Progress	Progress indicator (Note)	Event information: Progress
Event information: In-band information or an appropriate pattern is now available	In-band information indicator set to "In-band information or an appropriate pattern is now available"	Event information: In-band information or an appropriate pattern is now available
NOTE – This parameter can contain repeated access information elements, priority set to "no prioritized order".		

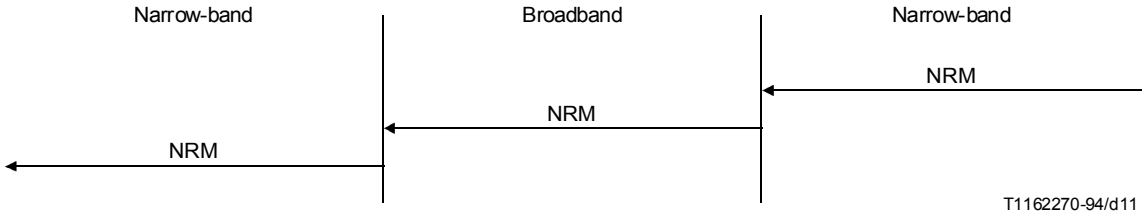
4.6 Mapping of the Answer and Connect Messages



In addition to the mapping shown against the Address Complete Message, the following mapping is relevant.

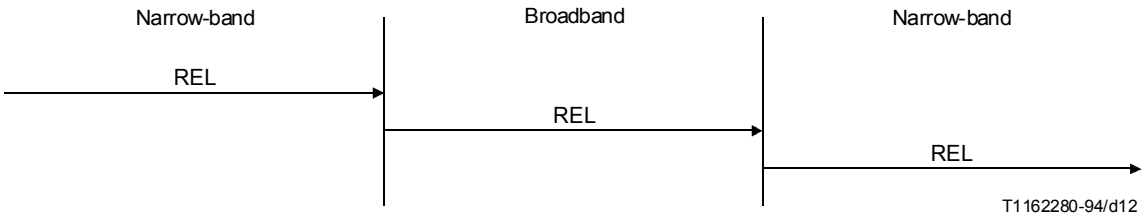
Incoming narrow-band	Transit broadband	Outgoing narrow-band
Backward call indicators: Called party status set to "no indication"	Not carried	Backward call indicators: Called party status
Call history information	Call history information	Call history information

4.7 Mapping of the Network Resource Management Message



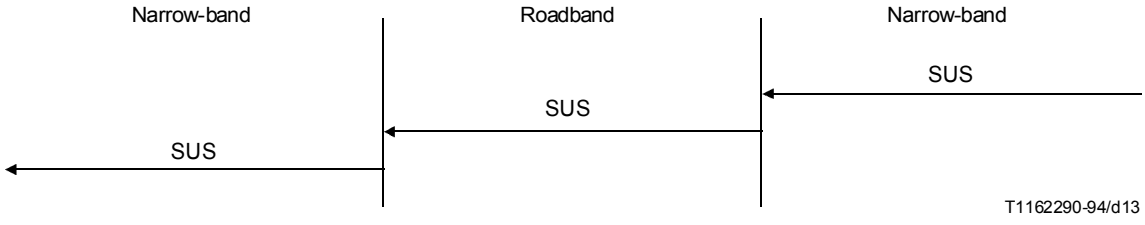
Incoming narrow-band	Transit broadband	Outgoing narrow-band
Message compatibility information	All B-ISUP messages include the message compatibility information parameter	Message compatibility information
Parameter compatibility information	All B-ISUP parameters include this information as part of the parameter header	Parameter compatibility information
Echo control information	Echo control information	Echo control information

4.8 Mapping of the Release Message



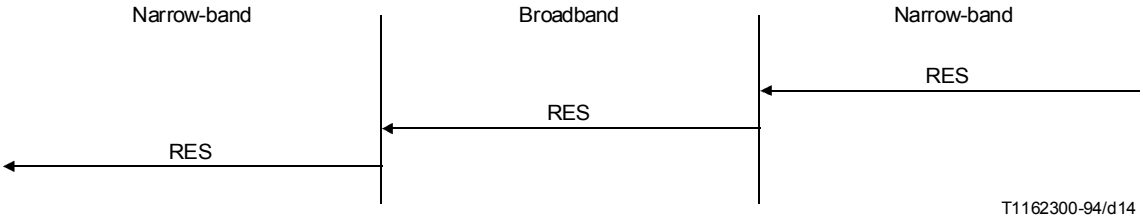
Incoming narrow-band	Transit broadband	Outgoing narrow-band
Cause indicators	Cause indicators	Cause indicators. Any broadband unique cause values are translated to "unspecified" value in that class
Access transport	Progress indicator	Access transport
Automatic congestion level (not transited)	Automatic congestion level (not transited)	Automatic congestion level (not transited)
Access delivery information	Access delivery information	Access delivery information
Parameter compatibility information	All B-ISUP parameters include this information as part of the parameter header	Parameter compatibility information

4.9 Network initiated suspend



Incoming narrow-band	Transit broadband	Outgoing narrow-band
Suspend/resume indicators: Network initiated	Suspend/resume indicators: Network initiated	Suspend/resume indicators: Network initiated

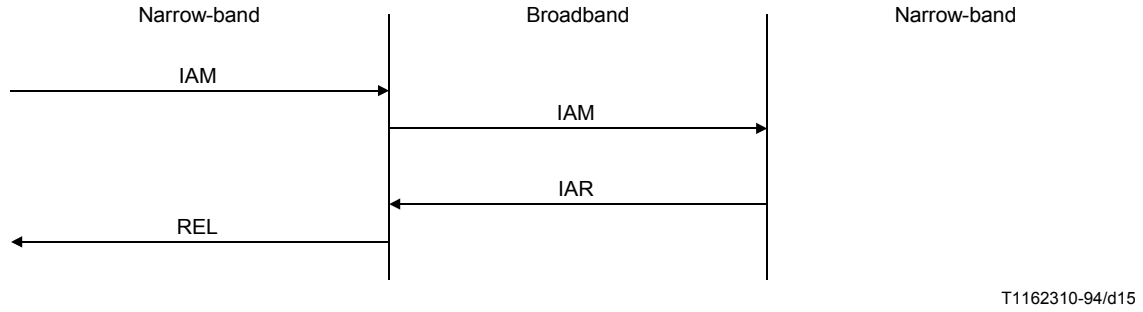
4.10 Network initiated resume



Incoming narrow-band	Transit broadband	Outgoing narrow-band
Suspend/resume indicators: Network initiated	Suspend/resume indicators: Network initiated	Suspend/resume indicators: Network initiated

5 Unsuccessful basic call

5.1 Mapping of the Initial Address Reject Message



Narrow-band, REL message	Broadband, IAR message
Automatic congestion level (not transited)	Automatic congestion level (not transited)
Cause indicators. Any broadband unique cause values are translated to “unspecified” value in that class	Cause indicators

5.2 Mapping of the Release Message

Refer to 4.8.

6 Supplementary services

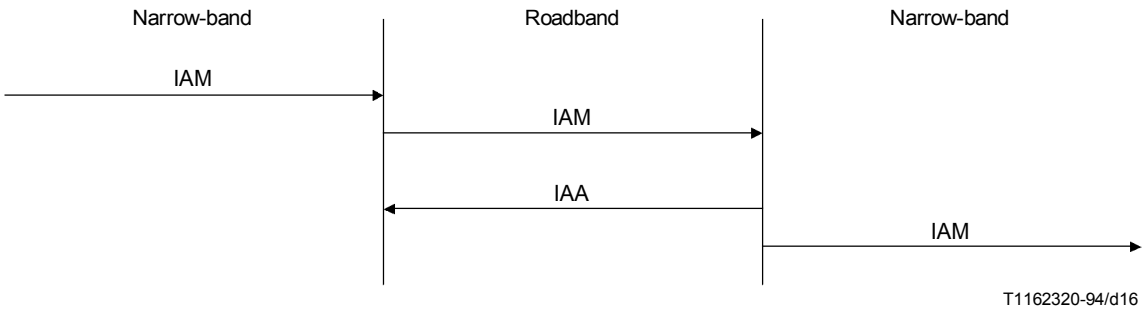
6.1 Direct Dialling-In (DDI)

Implicitly supported as part of the basic call procedure.

6.2 Multiple Subscriber Number (MSN)

Implicitly supported as part of the basic call procedure.

6.3 Calling Line Identification Presentation (CLIP)

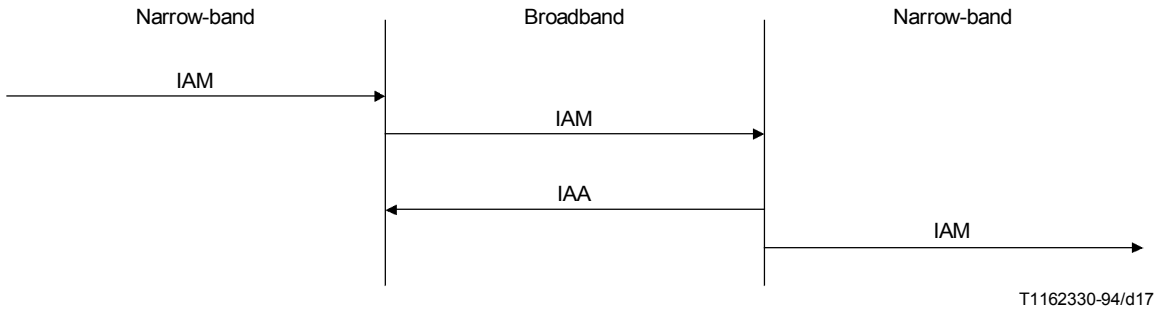


Incoming narrow-band	Transit broadband	Outgoing narrow-band
Calling party number	Calling party number	Calling party number
Access transport	Calling party sub-address	Access transport
Generic number	Additional calling party number	Generic number

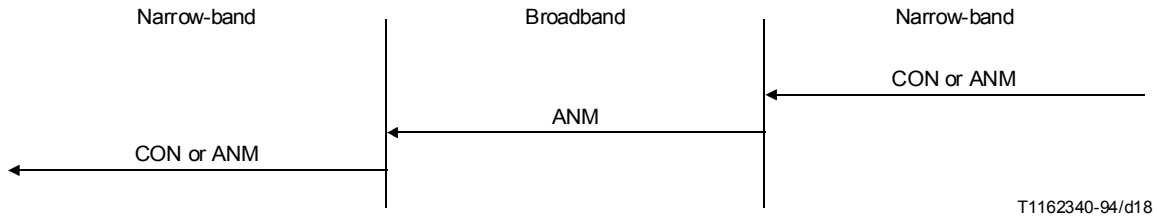
6.4 Calling Line Identification Restriction (CLIR)

Refer to 6.3.

6.5 Connected Line Identification Presentation (COLP)



Incoming narrow-band	Transit broadband	Outgoing narrow-band
Optional forward call indicators: Connected line identity request indicator	Connected line identity request indicator	Optional forward call indicators: Connected line identity request indicator



Incoming narrow-band	Transit broadband	Outgoing narrow-band
Connected number	Connected number	Connected number
Access transport	Connected sub-address	Access transport
Generic number	Additional connected number	Generic number

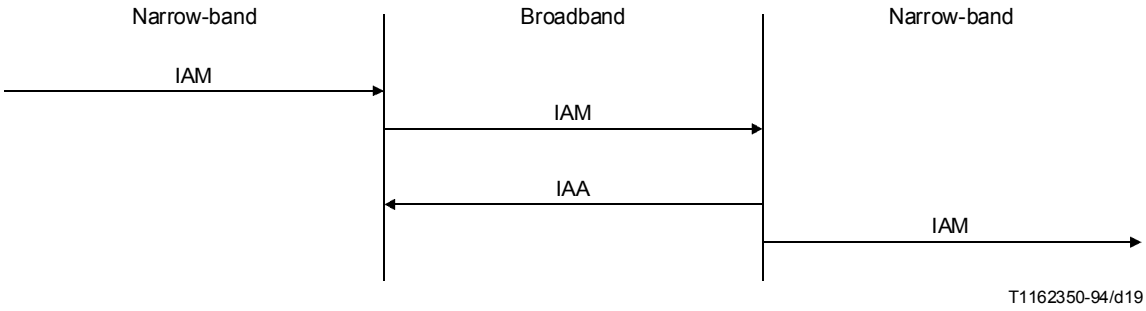
6.6 Connected Line Identification Restriction (COLR)

Refer to 6.5.

6.7 Malicious Call Identification (MCID)

Not defined in ISUP92.

6.8 Sub-addressing (SUB)

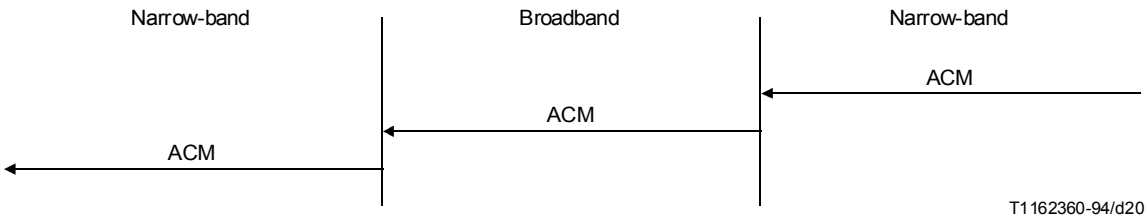


Incoming narrow-band	Transit broadband	Outgoing narrow-band
Access transport	Called party sub-address	Access transport

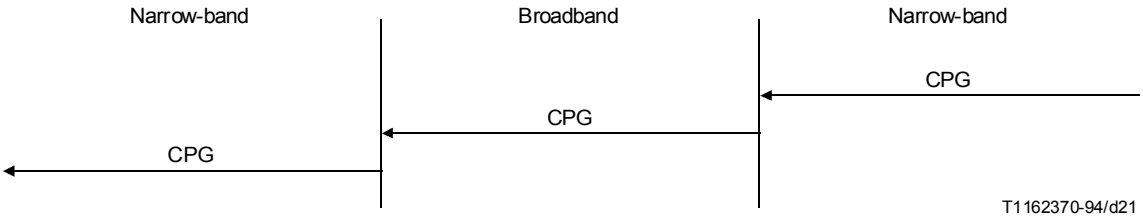
6.9 Call Transfer (CT)

Not defined in ISUP92.

6.10 Call Forwarding Busy (CFB)

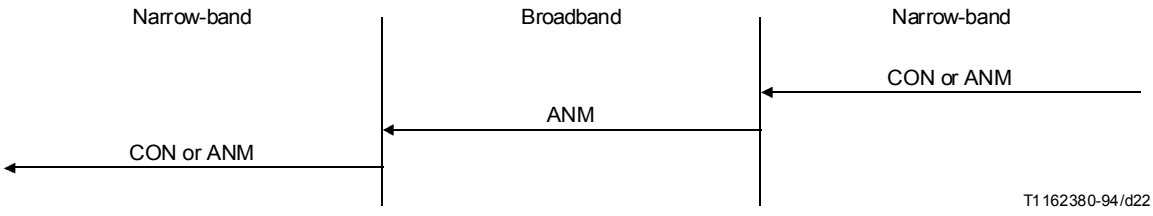


Incoming narrow-band	Transit broadband	Outgoing narrow-band
Optional backward call indicators: Call diversion may occur indicator	Call diversion may occur	Optional backward call indicators: Call diversion may occur
Generic notification	Notification	Generic notification
Redirection number	Redirection number	Redirection number
Redirection number restriction	Redirection number restriction	Redirection number restriction
Call diversion information	Call diversion information	Call diversion information

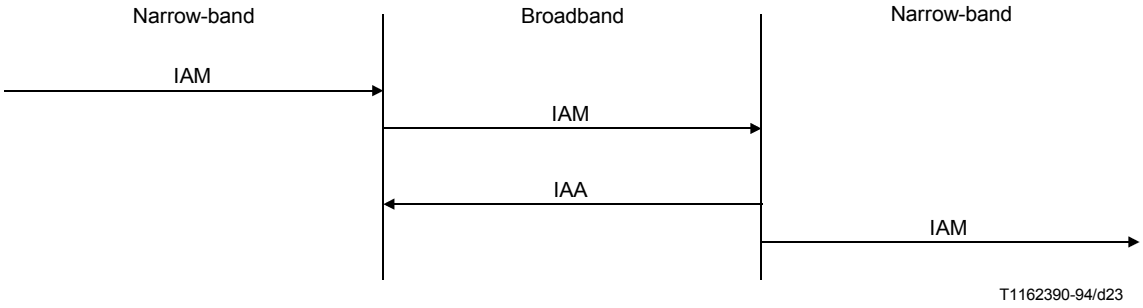


In addition to the mapping shown against the Address Complete Message, the following mapping is relevant.

Incoming narrow-band	Transit broadband	Outgoing narrow-band
Event information: Alerting	Called party's indicators: Called party's status indicator set to "alerting"	Event information: Alerting
Event information: Progress	Progress indicator (from access transport parameter if available)	Event information: Progress



Incoming narrow-band	Transit broadband	Outgoing narrow-band
Redirection number restriction	Redirection number restriction	Redirection number restriction



Incoming narrow-band	Transit broadband	Outgoing narrow-band
Redirecting number	Redirecting number	Redirecting number
Redirection information	Redirection information	Redirection information
Original called number	Original called number	Original called number

6.11 Call Forwarding No Reply (CFNR)

Refer to 6.10.

6.12 Call Forwarding Unconditional (CFU)

Refer to 6.10.

6.13 Call Deflection (CD)

Refer to 6.10.

6.14 Line Hunting (LH)

Not supported in ISUP 92.

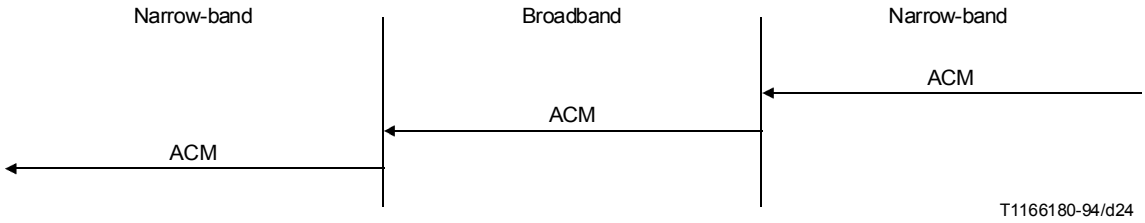
6.15 Explicit Call Transfer (ECT)

Not supported in ISUP 92.

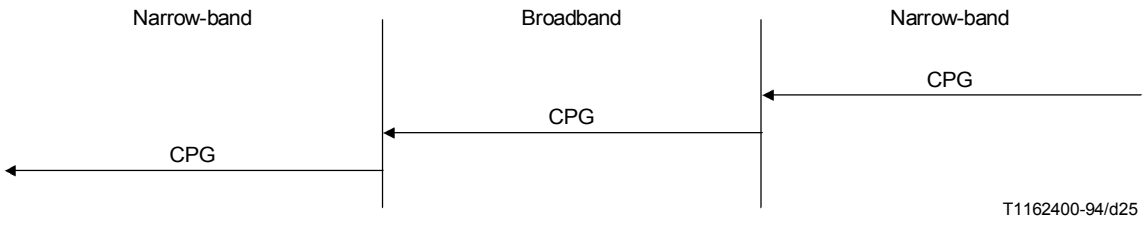
6.16 Single Step Call Transfer (SCT)

Not supported in ISUP 92.

6.17 Call Waiting (CW)



Incoming narrow-band	Transit broadband	Outgoing narrow-band
Generic notification	Notification	Generic notification



Incoming narrow-band	Transit broadband	Outgoing narrow-band
Event information set to “progress”	Not carried	Event information set to “progress”
Generic notification	Notification	Generic notification

6.18 Call Hold (HOLD)

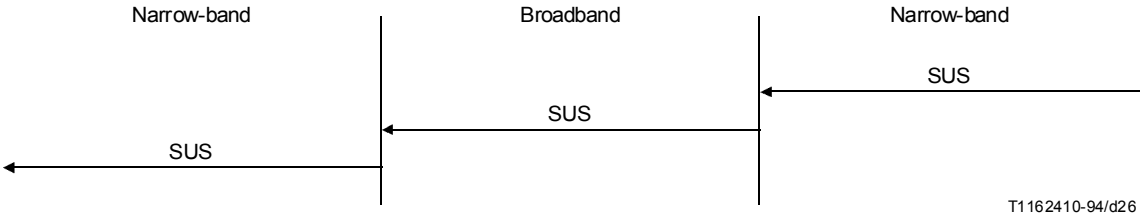
Refer to 6.17.

6.19 Completion of Calls to Busy Subscriber (CCBS)

Not defined in ISUP 92.

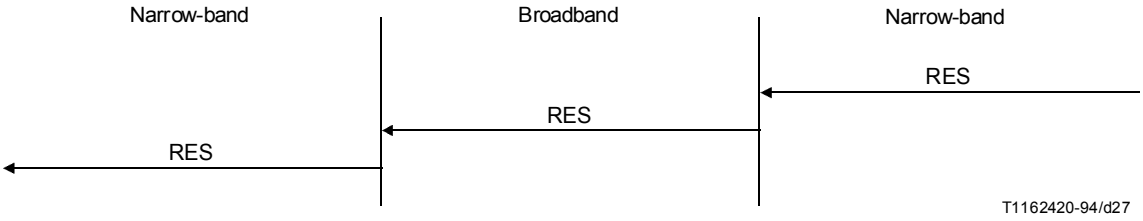
6.20 Terminal Portability (TP)

6.20.1 Suspend



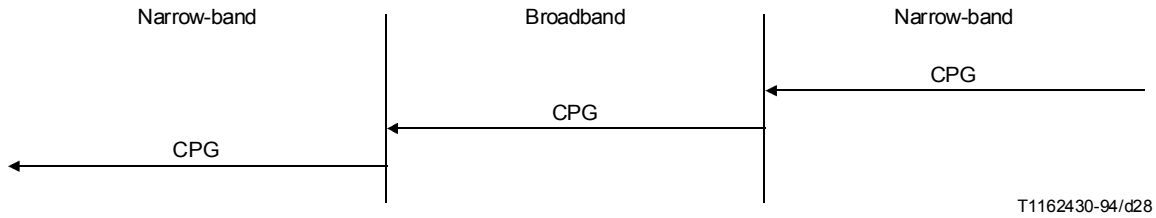
Incoming narrow-band	Transit broadband	Outgoing narrow-band
Suspend/resume indicators: ISDN subscriber initiated	Suspend/resume indicators: ISDN subscriber initiated	Suspend/resume indicators: ISDN subscriber initiated

6.20.2 Resume



Incoming narrow-band	Transit broadband	Outgoing narrow-band
Suspend/resume indicators: ISDN subscriber initiated	Suspend/resume indicators: ISDN subscriber initiated	Suspend/resume indicators: ISDN subscriber initiated

6.21 Conference Calling (CONF)

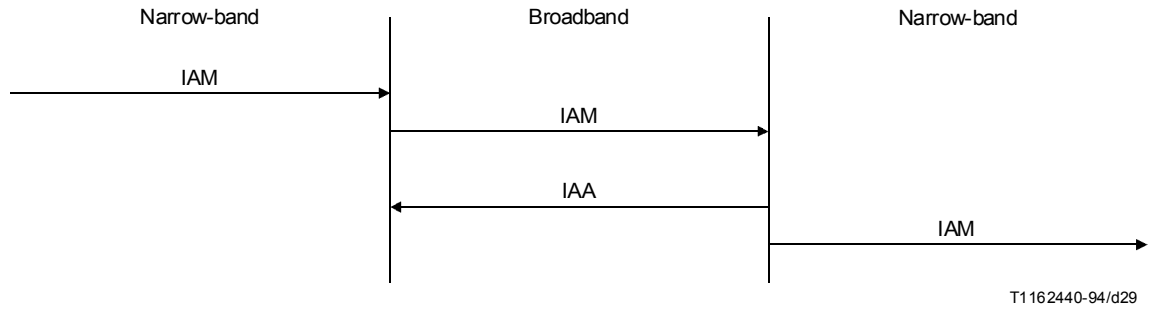


Incoming narrow-band	Transit broadband	Outgoing narrow-band
Event information set to "progress"	Not carried	Event information set to "progress"
Generic notification	Notification	Generic notification

6.22 Three-Party Service (3PTY)

Refer to 6.21.

6.23 Closed User Group (CUG)

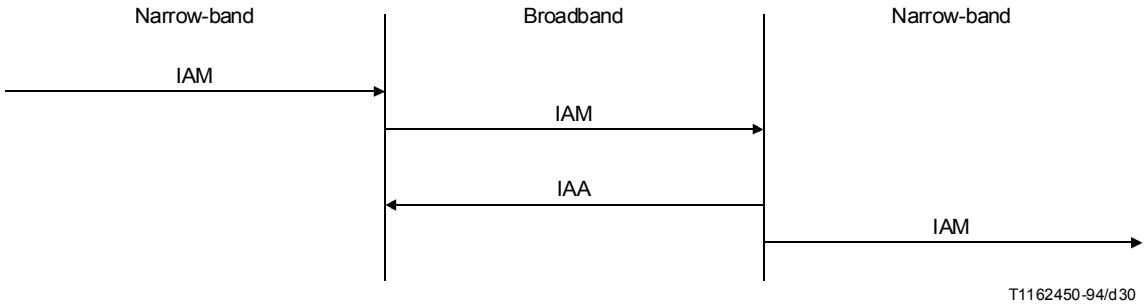


Incoming narrow-band	Transit broadband	Outgoing narrow-band
Optional forward call indicators: Closed user group call indicator	Closed user group information: Closed user group call indicator	Optional forward call indicators: Closed user group call indicator
Closed user group interlock code	Closed user group information: Closed user group interlock code	Closed user group interlock code

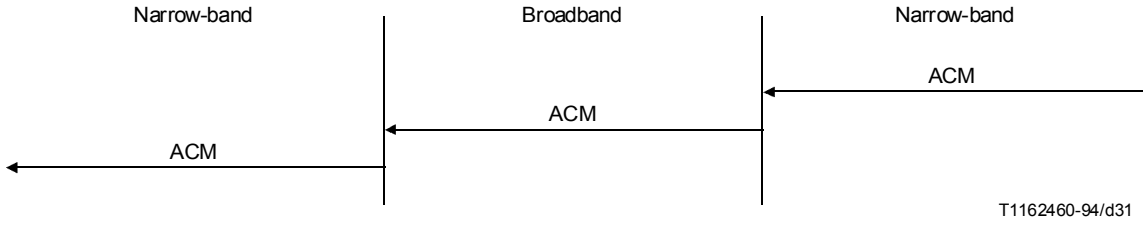
6.24 Private Numbering Plan (PNP)

Not defined in ISUP 92.

6.25 Multi-Level Precedence and Preemption (MLPP)



Incoming narrow-band	Transit broadband	Outgoing narrow-band
MLPP precedence	MLPP precedence	MLPP precedence



Incoming narrow-band	Transit broadband	Outgoing narrow-band
Optional backward call indicators: MLPP user indicator	MLPP user information	Optional backward call indicators: MLPP user indicator
Generic notification	Notification	Generic notification

6.26 International Telecommunication Charge Card

Not defined in ISUP 92.

6.27 Advice of Charge (AOC)

Not defined in ISUP 92.

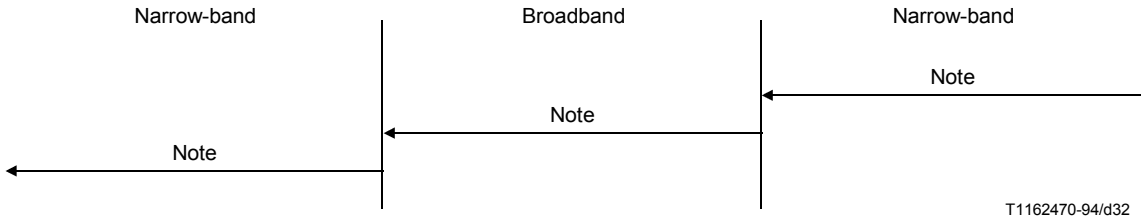
6.28 Reverse Charging (REV)

Not defined in ISUP 92.

6.29 User-to-User Signalling (UUS)

6.29.1 Service 1

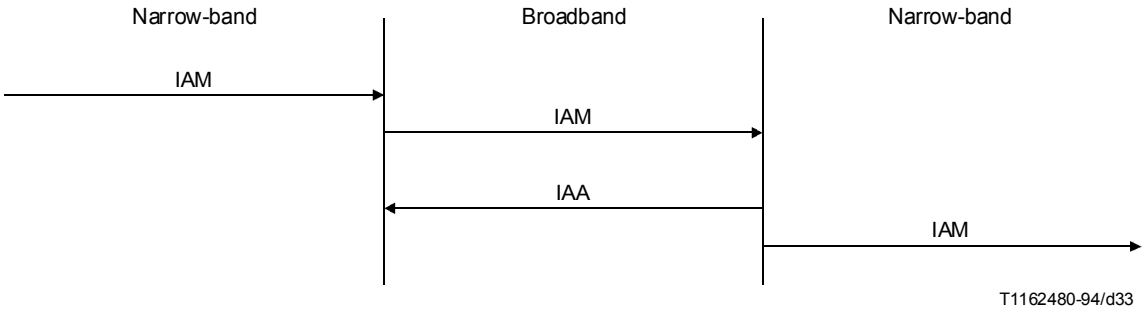
6.29.1.1 Implicit request, network discard of user-to-user information



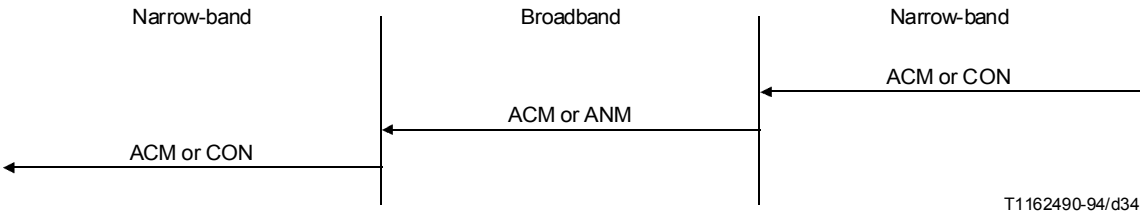
NOTE – Messages possible are:
– ACM;
– REL;
– ANM (applicable only to broadband);
– CON (applicable only to narrow-band).

Incoming narrow-band	Transit broadband	Outgoing narrow-band
User-to-user indicators	User-to-user indicators	User-to-user indicators

6.29.1.2 Explicit request

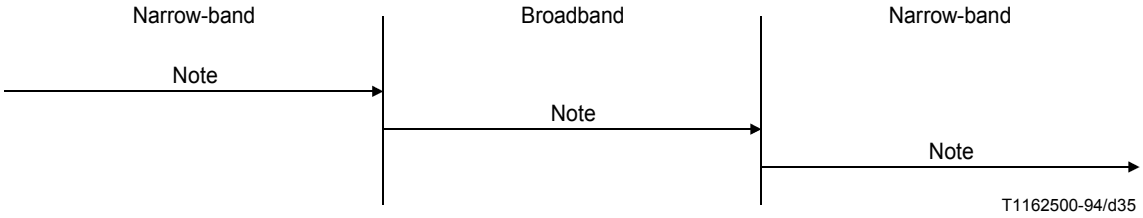


Incoming narrow-band	Transit broadband	Outgoing narrow-band
User-to-user indicators	User-to-user indicators	User-to-user indicators



Incoming narrow-band	Transit broadband	Outgoing narrow-band
User-to-user indicators	User-to-user indicators	User-to-user indicators

6.29.1.3 Passing of user-to-user signalling information



NOTE – Messages possible are:
– IAM;
– ACM;
– CPG;
– CON (applicable only to narrow-band);
– ANM;
– SCM (applicable only to narrow-band);
– REL.

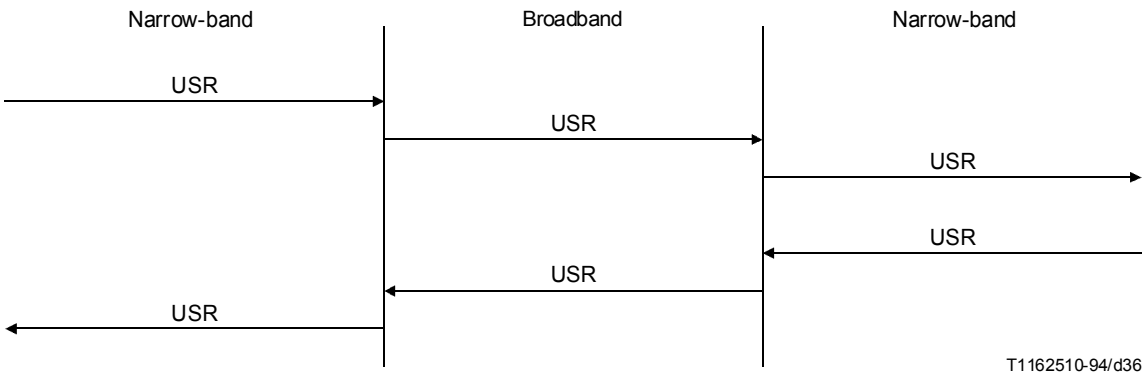
Incoming narrow-band	Transit broadband	Outgoing narrow-band
User-to-user information	User-to-user information	User-to-user information

6.29.2 Service 2

6.29.2.1 Request

Refer to 6.29.1.2.

6.29.2.2 Passing of user-to-user signalling information



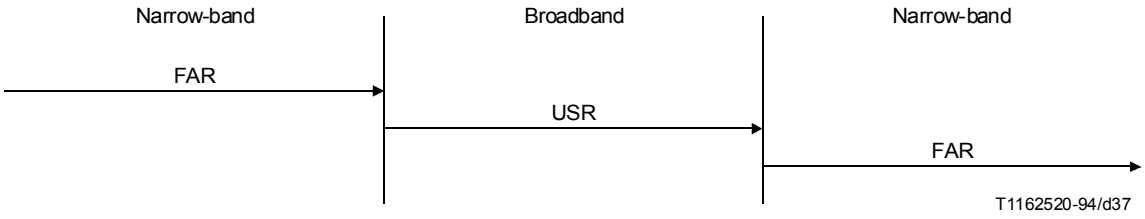
Incoming narrow-band	Transit broadband	Outgoing narrow-band
User-to-user information	User-to-user information User-to-user information	User-to-user information
Access transport	User-to-user information More data	Access transport

6.29.3 Service 3

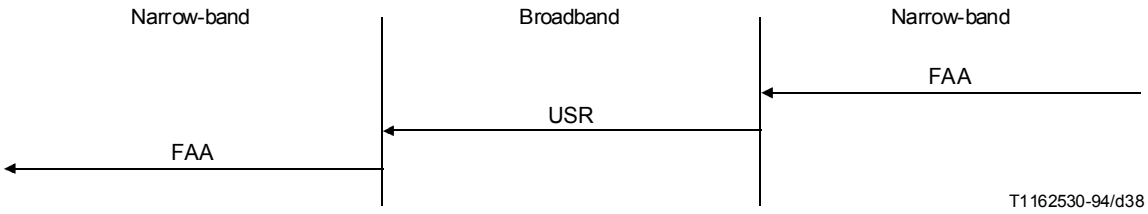
6.29.3.1 Request during call set-up

Refer to 6.29.1.2.

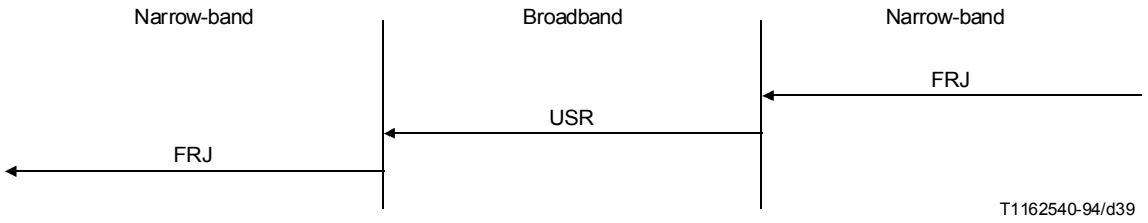
6.29.3.2 Request during the active phase



Incoming narrow-band	Transit broadband	Outgoing narrow-band
Facility indicator set to "user-to-user service"	Not carried	Facility indicator set to "user-to-user service"
User-to-user indicators	User-to-user indicators: Service 3 request	User-to-user indicators



Incoming narrow-band	Transit broadband	Outgoing narrow-band
Facility indicator set to "user-to-user service"	Not carried	Facility indicator set to "user-to-user service"
User-to-user indicators	User-to-user indicators: Service 3 response, provided	User-to-user indicators



Incoming narrow-band	Transit broadband	Outgoing narrow-band
Facility indicator set to "user-to-user service"	Not carried	Facility indicator set to "user-to-user service"
User-to-user indicators	User-to-user indicators: Service 3 response, not provided	User-to-user indicators

6.29.3.3 Passing of user-to-user signalling information

Refer to 6.29.2.2.

Printed in Switzerland

Geneva, 1995