INTERNATIONAL TELECOMMUNICATION UNION

ITU-T Q.87

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

(03/93)

GENERAL RECOMMENDATIONS ON TELEPHONE SWITCHING AND SIGNALLING

FUNCTIONS AND INFORMATION FLOWS FOR SERVICES IN THE ISDN

STAGE 2 DESCRIPTION FOR ADDITIONAL INFORMATION TRANSFER SUPPLEMENTARY SERVICES

CLAUSE 1 – USER-TO-USER SIGNALLING (UUS)

ITU-T Recommendation Q.87

(Previously "CCITT Recommendation")

FOREWORD

The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the International Telecommunication Union. 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, established the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

ITU-T Recommendation Q.87, clause 1 was revised by the ITU-T Study Group XI (1988-1993) and was approved by the WTSC (Helsinki, March 1-12, 1993).

NOTES

1 As a consequence of a reform process within the International Telecommunication Union (ITU), the CCITT ceased to exist as of 28 February 1993. In its place, the ITU Telecommunication Standardization Sector (ITU-T) was created as of 1 March 1993. Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.

In order not to delay publication of this Recommendation, no change has been made in the text to references containing the acronyms "CCITT, CCIR or IFRB" or their associated entities such as Plenary Assembly, Secretariat, etc. Future editions of this Recommendation will contain the proper terminology related to the new ITU structure.

2 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 describes the Stage 2 of the User-to-User Signalling supplementary service supported by an ISDN.

The Stage 2 descriptions are comprised of the switching functions and signalling information flows.

The User-to-User Signalling supplementary service allows an ISDN user to send/receive a limited amount of information to/from another ISDN user over the signalling channel in association with a call to the other ISDN user.

NOTE – These procedures are applicable to User-to-User Information Transfer in association with a circuit-switched telecommunication service only. Procedures to permit User-to-User Information transfer in association with other types of calls (e.g. packet bearer services) need to be investigated.

Recommendation Q.87

STAGE 2 DESCRIPTION FOR ADDITIONAL INFORMATION TRANSFER SUPPLEMENTARY SERVICES

(Melbourne, 1988; modified at Helsinki, 1993)

1 User-to-User Signalling (UUS)

1.1 Scope

This Recommendation defines the Stage 2 of the Integrated Services Digital Network (ISDN) as provided by the telecommunications operators for the User-to-User Signalling (UUS) supplementary services. Stage 2 identifies the functional capabilities and the information flows needed to support the service description. The Stage 2 description also identifies user operations not directly associated with a call (see Recommendation I.130 [1]).

This Recommendation is defined according to the methodology specified in Recommendation Q.65 [2].

This Recommendation does not formally describe the relationship between these supplementary services and the basic call but, where possible this information is included for guidance.

In addition this Recommendation does not specify the requirements where the service is provided to the user via a private ISDN. This Recommendation does not specify the requirements for the allocation of defined functional entities within a private ISDN; it does, however, define which functional entities may be allocated to a private ISDN.

This Recommendation does not specify the additional requirements where the service is provided to the user via a Telecommunications network that is not an ISDN.

The UUS supplementary service allows an ISDN user to send/receive a limited amount of information to/from another ISDN user over the signalling channel in association with a call to the other ISDN user.

NOTE – These procedures are applicable to user-to-user information (UUI) transfer in association with a circuit-switched telecommunication service only. Procedures to permit UUI transfer in association with other types of calls (e.g. packet bearer service) need to be investigated.

The UUS supplementary services are applicable to all telecommunication services.

This Recommendation is applicable to the Stage 3 Recommendation for the ISDN UUS supplementary services, as defined in Recommendation I.130 [1].

1.2 References

These references are cited at the appropriate places in the text and the publications are listed hereafter. Dated references, subsequent amendments to, or revisions of any of these publications apply to this Recommendation only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] CCITT Recommendation *Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN*, Rec. I.130, 1988.

[2] CCITT Recommendation *Stage 2 of the method for the characterization of services supported by an ISDN*, Rec. Q.65, 1988.

[3] CCITT Recommendation *Integrated Services Digital Network (ISDN); User-to-User Signalling (UUS) supplementary service; Service description*, Rec. I.257.1.

[4] CCITT Recommendation *Integrated Services Digital Network (ISDN); Basic call handling for Circuit Switched Bearer Services; Functional capabilities and information flows*, Rec. Q.71, 1972.

[5] CCITT Recommendation *Vocabulary of terms for ISDNs*, Rec. I.112, 1988.

[6] CCITT Recommendation *Principles of telecommunication services supported by an ISDN and the means to describe them*, Rec. I.210, 1988.

1.3 Definitions

For the purpose of this Recommendation, the following definitions apply:

Integrated Services Digital Network (ISDN): see 2.3/I.112 definition 308 [5].

Service: telecommunication service: see 2.2/I.112 definition 201 [5].

Supplementary service: see 2.4/I.210 [6].

1.4 Symbols and abbreviations

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

CC	Call Control
CCA	Call Control Agent
FE	Functional Entity
FEA	Functional Entity Action
ISDN	Integrated Services Digital Network
LE	Local Exchange
np	Not Provided
p	Provided
PNX	Private Network Exchange
re	Requested and Essential
rne	Requested but Not Essential
UUS1	User-to-User Signalling Service 1
UUS2	User-to-User Signalling Service 2
UUS3	User-to-User Signalling Service 3
TE	Terminal Equipment
UUI	User-to-User Information
UUM	User-to-User Message
UUS	User-to-User Signalling

1.5 Description

The general description of the UUS supplementary service is specified in Recommendation I.257.1 [3].

1.6 Derivation of the functional model

1.6.1 Functional model description

The model for the UUS supplementary service is shown in Figure 1-1.

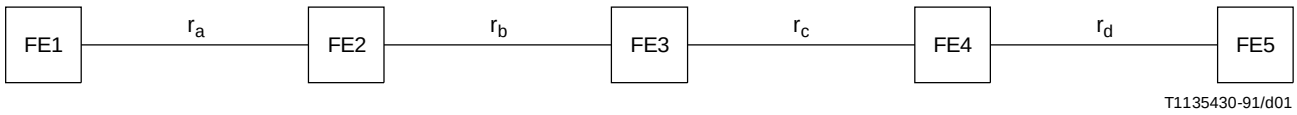


FIGURE 1-1/Q.87

Functional model

1.6.2 Description of the functional entities

The functional entities required by the UUS supplementary services in addition to those of the basic call as follows:

1.6.2.1 FE1

FE1 is the functional entity that serves the user and is responsible for initiating functional requests and interacting with network.

1.6.2.2 FE2

FE2 is the functional entity within the network that cooperate with their peers to provide the services requested by FE1 and FE5.

1.6.2.3 FE3

FE3 is the functional entity within the network that cooperate with their peers to provide the services requested by FE1 and FE5.

1.6.2.4 FE4

FE4 is the functional entity within the network that cooperate with their peers to provide the services requested by FE1 and FE5.

1.6.2.5 FE5

FE5 is the functional entity that serves the user and is responsible for initiating functional requests and interacting with network.

1.6.3 Relationship with a basic service

The relationship with a basic service is shown in Figure 1-2. The model for basic call handling is defined in Recommendation Q.71 [4].

Service 1 is carried across the network as part of Basic service. Services 2 and 3 allow additional messages to be accepted and processed from specific states in the basic service model. These messages do not alter the state but require an action to take place.

1.6.3.1 Description of the call control agent functional entity

The CCA functional entity supports the functionality to:

a) access the service-providing capabilities of the CC entities, using service requests to establish, manipulate and release a single call;

b) receive indications relating to the call from the CC entity and relay them to the user;

c) maintain call state information as perceived from this functional end-point of the service (i.e. a single-ended view of the call).

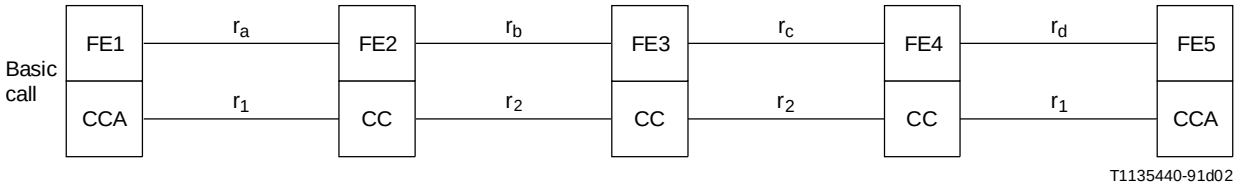


FIGURE 1-2/Q.87

Relationship of UUS with a basic service

1.6.3.2 Description of the call control (CC) functional entity

The CC functional entity supports the functionality to:

a) establish, manipulate and release a single call (upon request of the CCA entity);

b) associate and relate the CCA entities that are involved in a particular call and/or service;

c) manage the relationship between the CCA entities involved in a call (i.e. reconcile and maintain the overall perspective of the call and/or service).

1.7 Information flows

1.7.1 Information flow diagrams

Information flow diagrams for User-to-User Signalling service call setup, service usage and call release are shown in Figures 1-3 to 1-11.

– Figure 1-3 shows a successful use of UUS Service 1 in a point-to-point configuration;

– Figure 1-4 shows a successful use of UUS Service 1 in a point-to-multipoint configuration;

– Figure 1-5 shows a successful and an unsuccessful use of UUS Service 2 in a point-to-point configuration;

– Figure 1-6 shows an unsuccessful use of UUS Service 2 in a point-to-multipoint configuration;

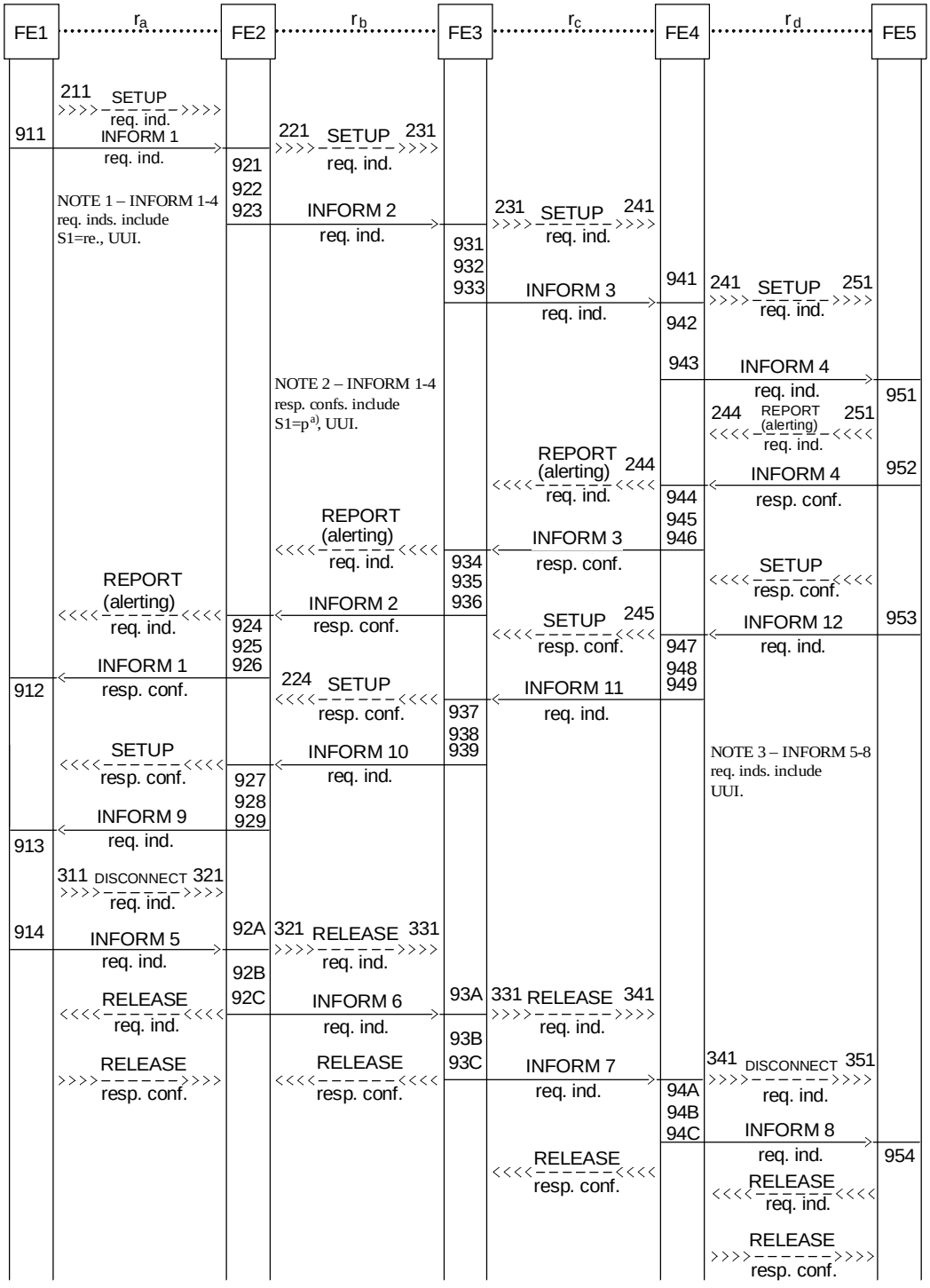
– Figure 1-7 shows a successful and an unsuccessful use of UUS Service 3 request and essential;

– Figure 1-8 shows a successful and an unsuccessful use of UUS Service 3 requested but not essential;

– Figure 1-9 shows a successful and an unsuccessful use of UUS Service 3 requested during the active phase by the calling party;

– Figure 1-10 shows a successful and an unsuccessful use of UUS Service 3 requested during the active phase by the called party;

– Figure 1-11 shows a UUS service requested in a point-to-multipoint configuration.



T1135450-91/d03

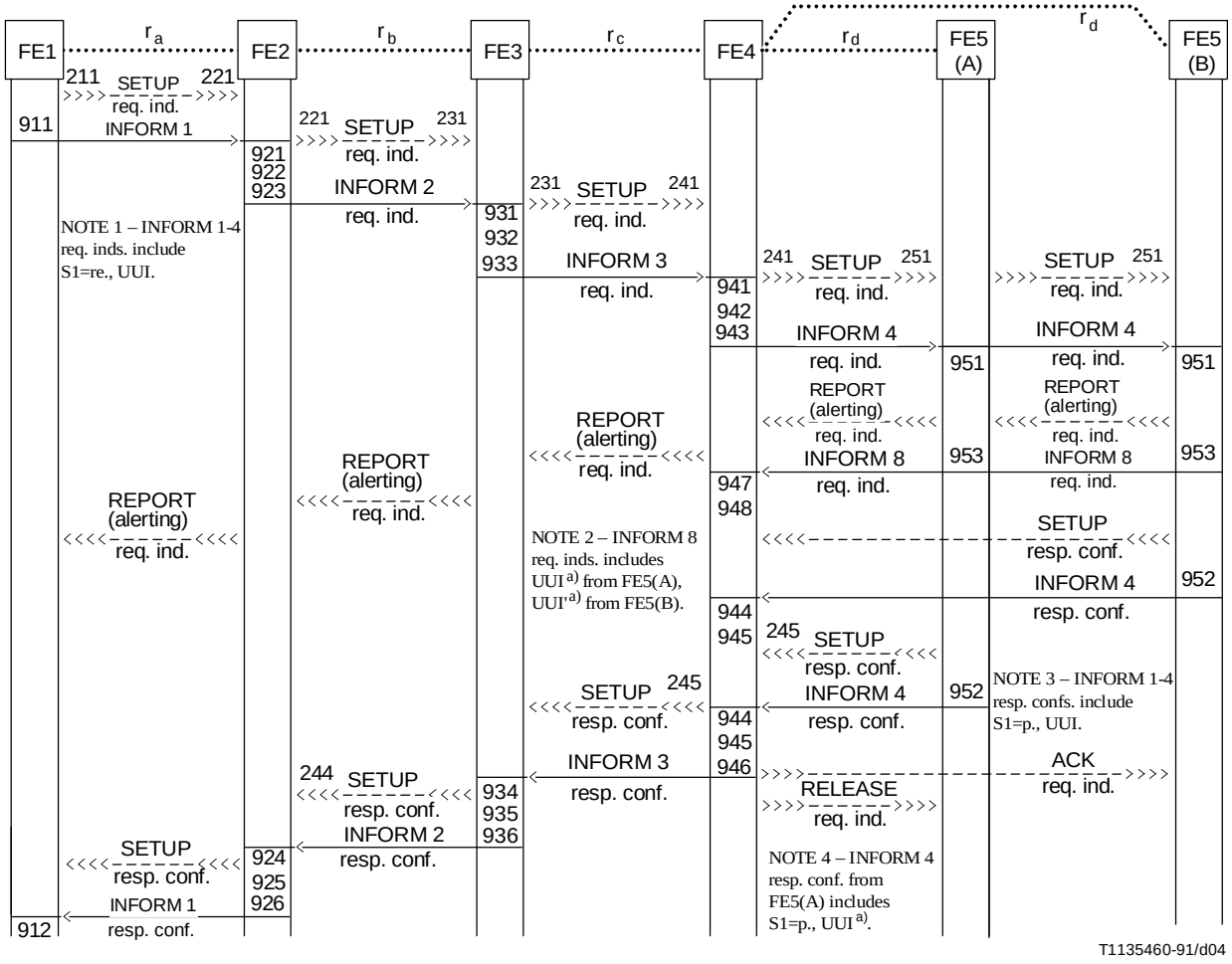
re. Requested and essential
p. Provided

[a] This indication may be included in INFORM 8 req. ind. (with SETUP resp. conf.).

NOTE – Although not shown in this figure, the calling user is allowed to request Service 1 as not essential (i.e. rne.).

FIGURE 1-3/Q.87

UUS Service 1 - Successful case
Called user is point-to-point

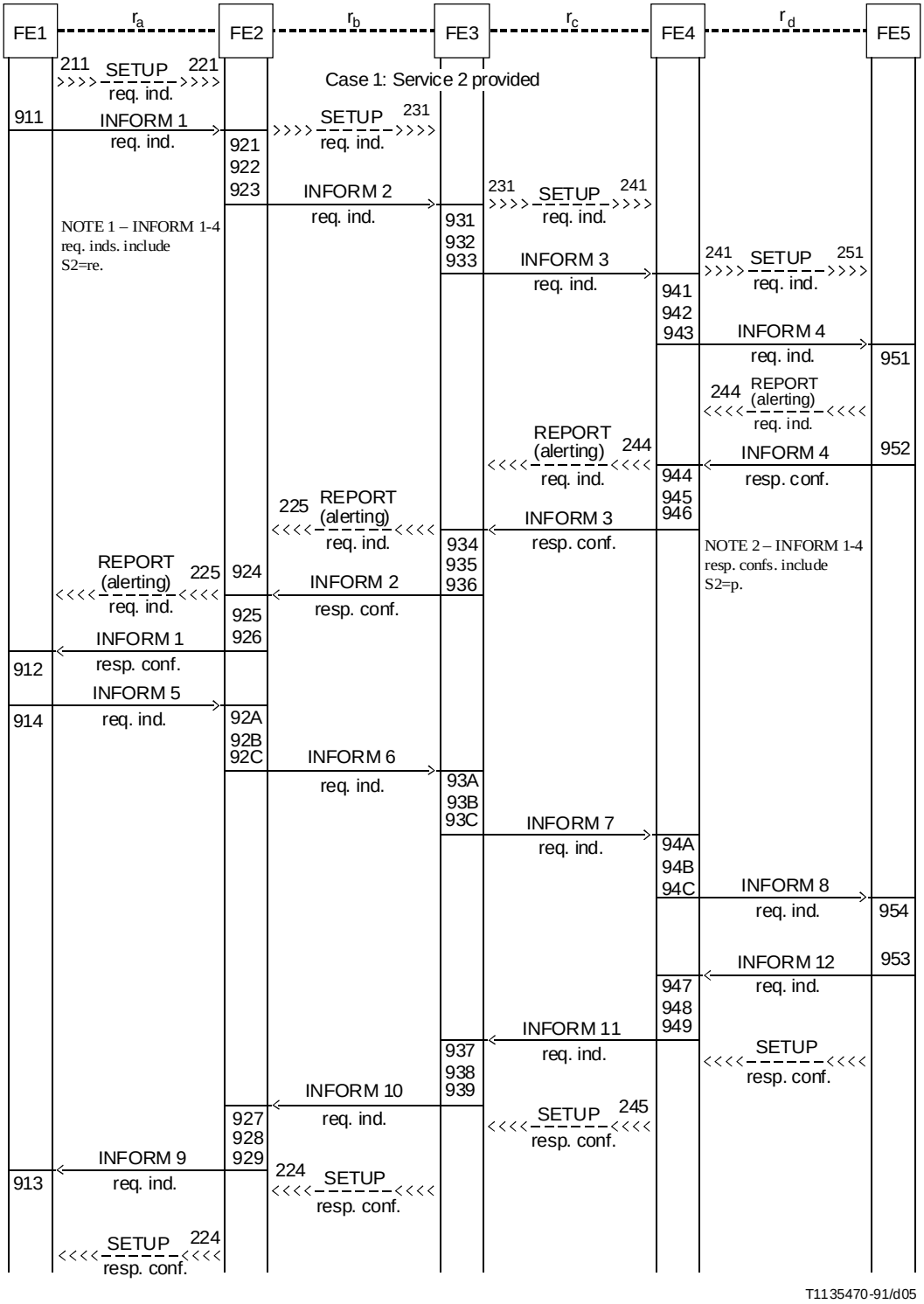


a) In the case of point-to-multipoint configuration, INFORM 8 (include UUI, UUI') and INFORM 4 (include UUI) from the not-selected FE5(A) are discarded at FE4.

NOTE – Potential contention causes that UUI cannot be held in the REPORT.

FIGURE 1-4/Q.87

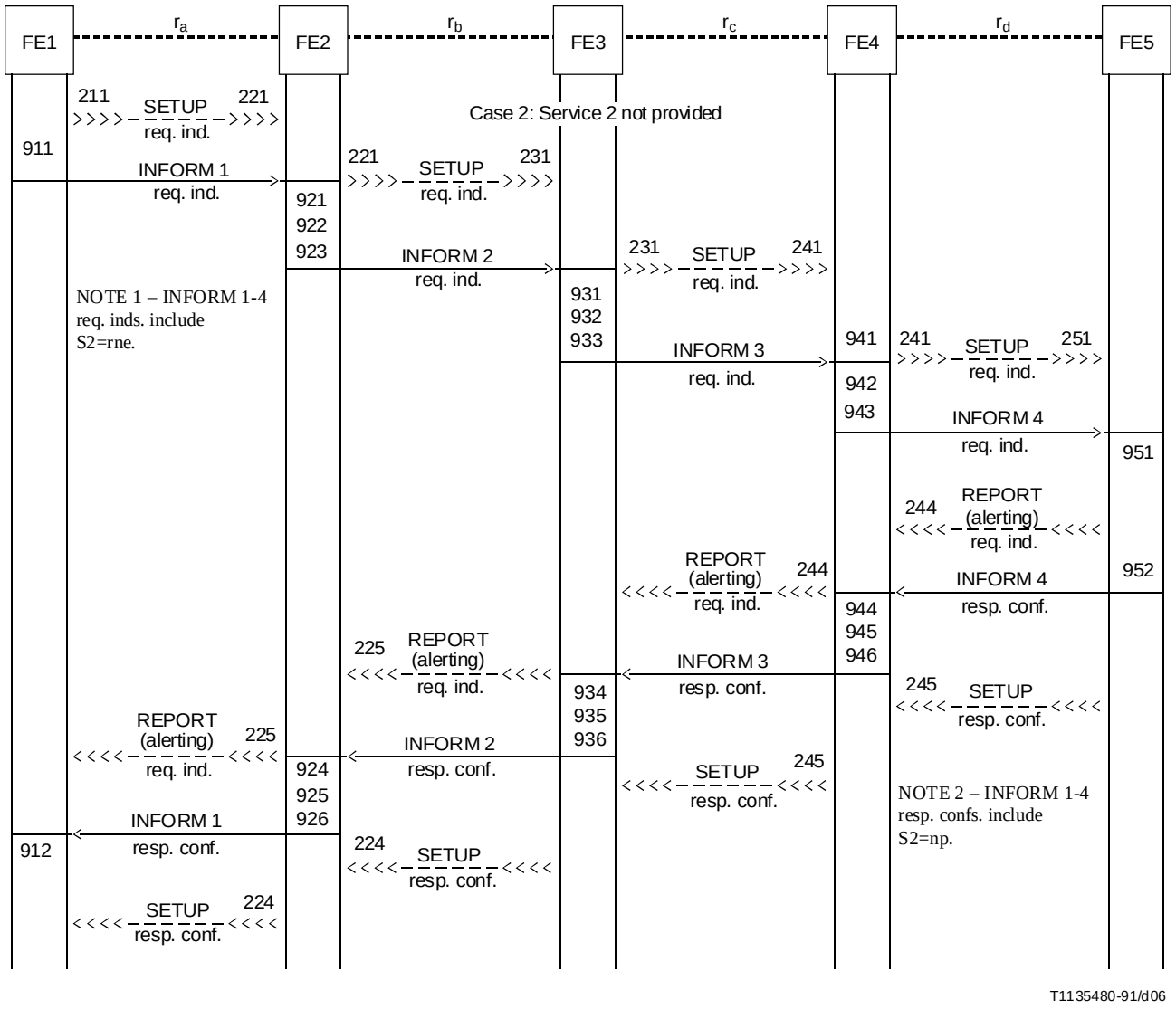
UUS Service 1
Called user is point-to-multipoint



re. Requested and essential
p. Provided

FIGURE 1-5/Q.87 (sheet 1 of 2)

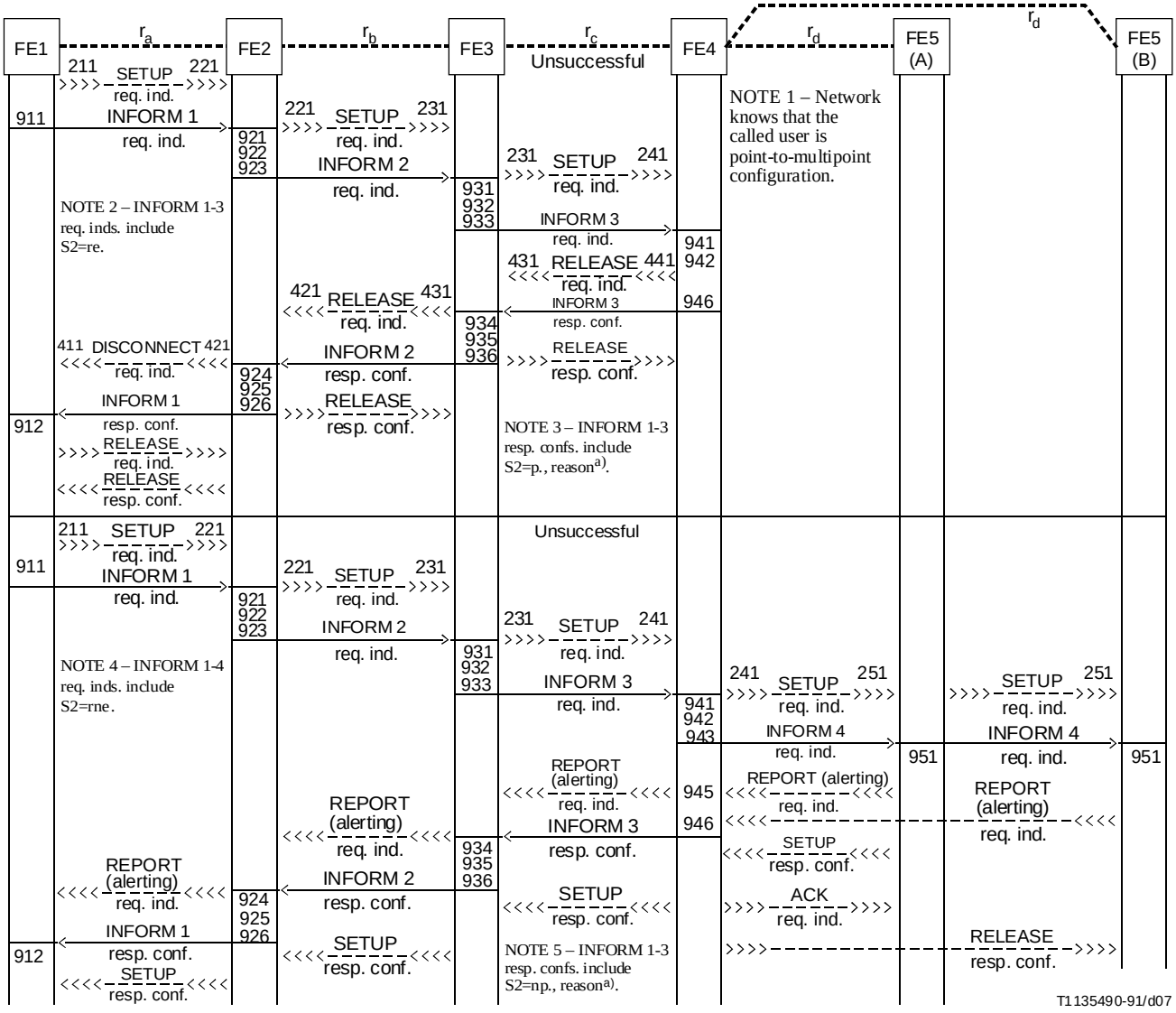
UUS Service 2
Called user is point-to-point



rne. Requested but not essential
np. Not provided

FIGURE 1-5/Q.87 (sheet 2 of 2)

UUS Service 2
Called user is point-to-point



[a] The reason is "UUS Service 2" cannot be provided because called party has point-to-multipoint configuration.

FIGURE 1-6/Q.87

UUS Service 2
Called user is point-to-multipoint

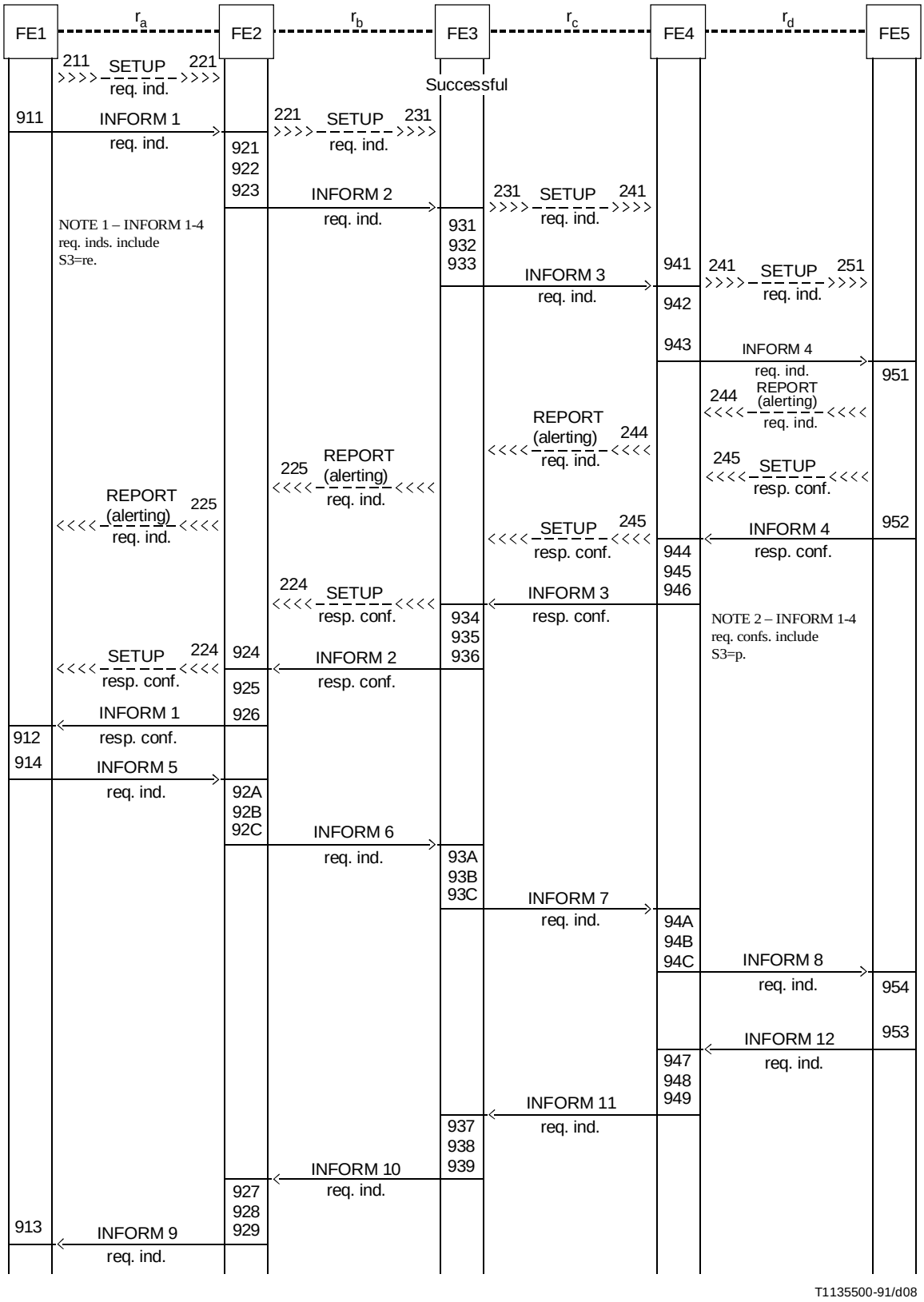
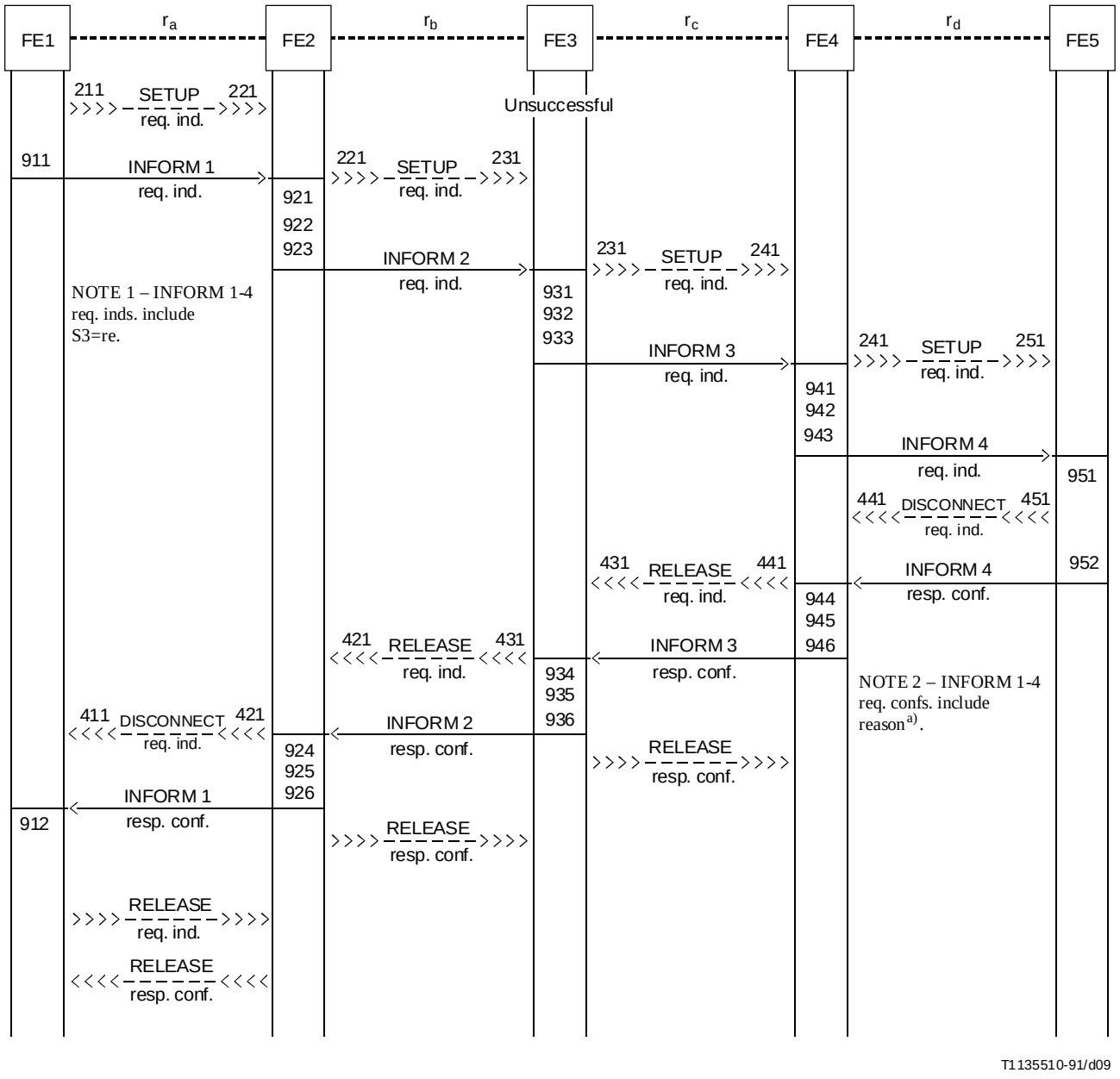


FIGURE 1-7/Q.87 (sheet 1 of 2)

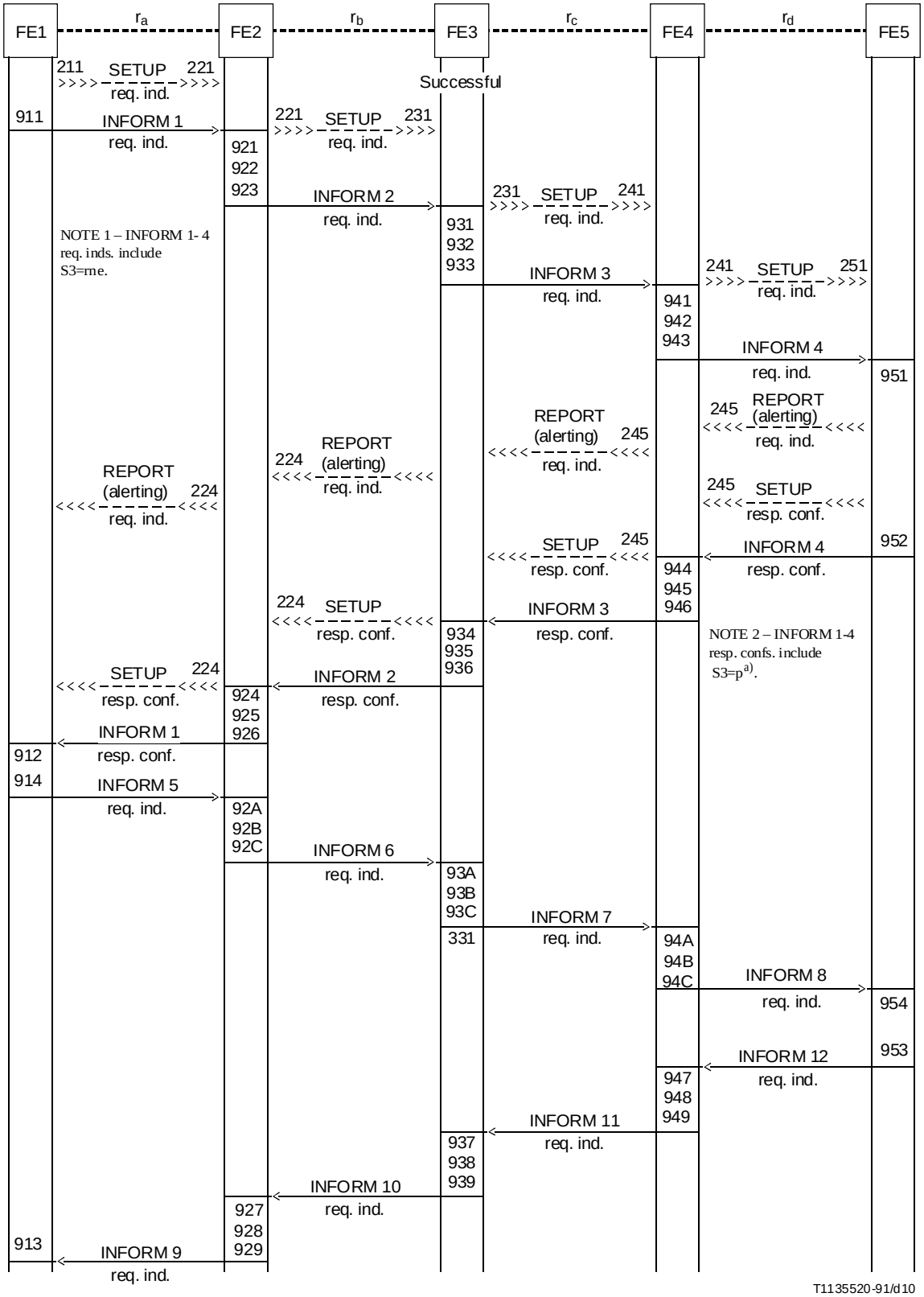
UUS Service 3
S3 requested and essential



a) The reason is "this service cannot be provided by the called user".

FIGURE 1-7/Q.87 (sheet 2 of 2)

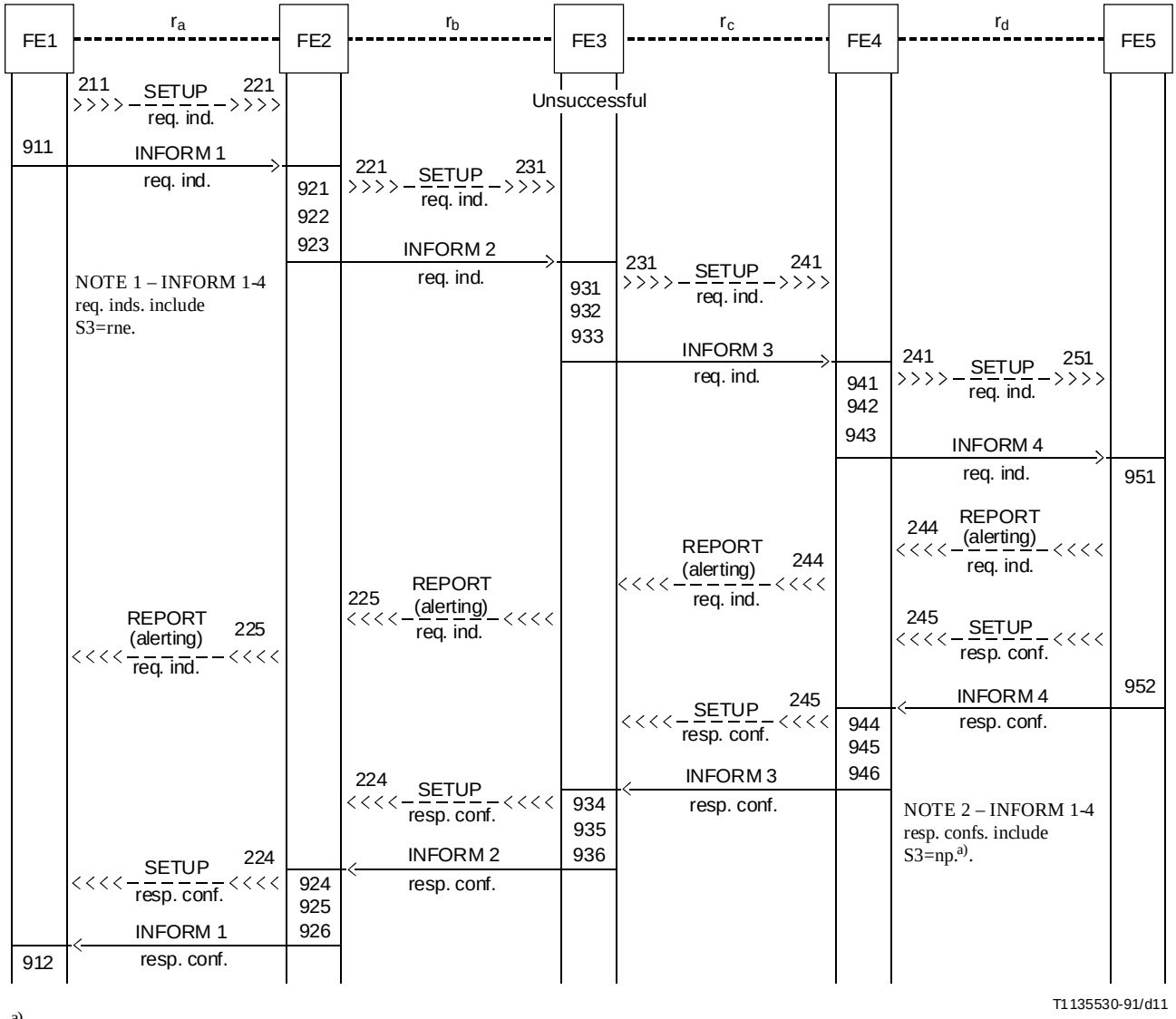
UUS Service 3
S3 requested and essential



[a] INFORM 1-4 resp. conf. could be sent in REPORT (alerting) req. ind. information flow.

FIGURE 1-8/Q.87 (sheet 1 of 2)

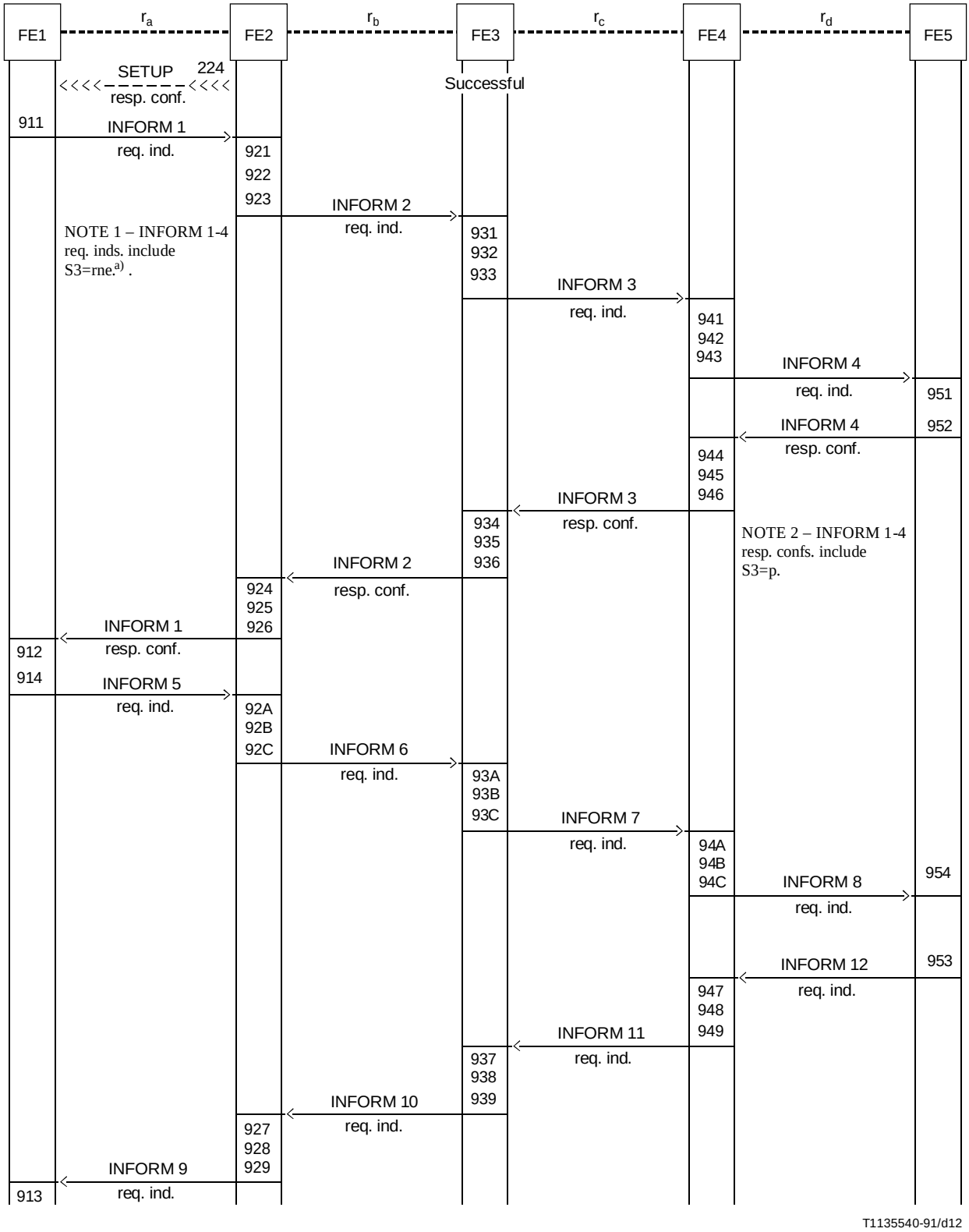
UUS Service 3
S3 requested and not essential



a) INFORM 1-4 resp. conf. could be sent in REPORT (alerting) req. ind. information flow.

FIGURE 1-8/Q.87 (sheet 2 of 2)

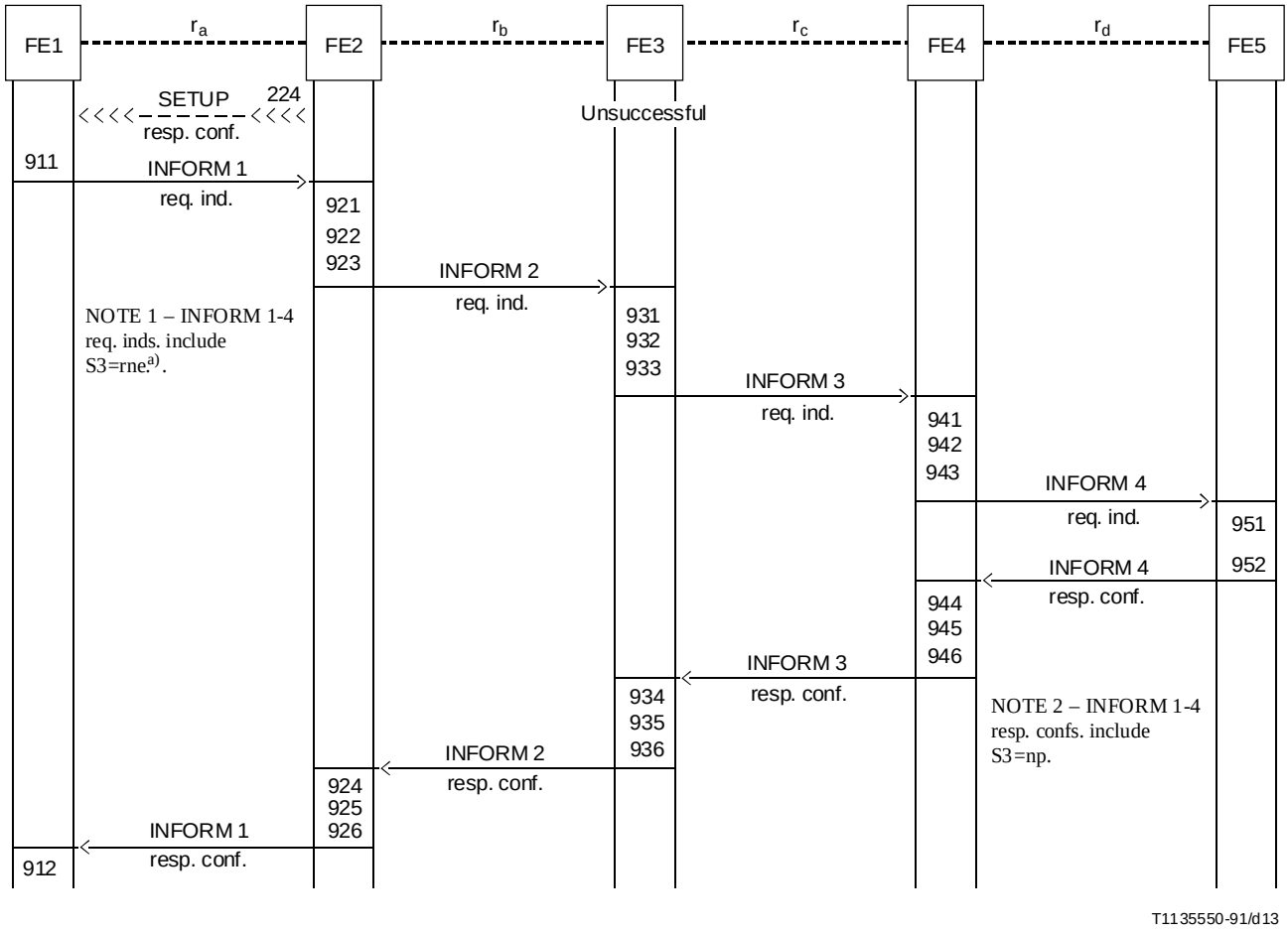
UUS Service 3
S3 requested but not essential



a) There are no essential requests during the active phase.

FIGURE 1-9/Q.87 (sheet 1 of 2)

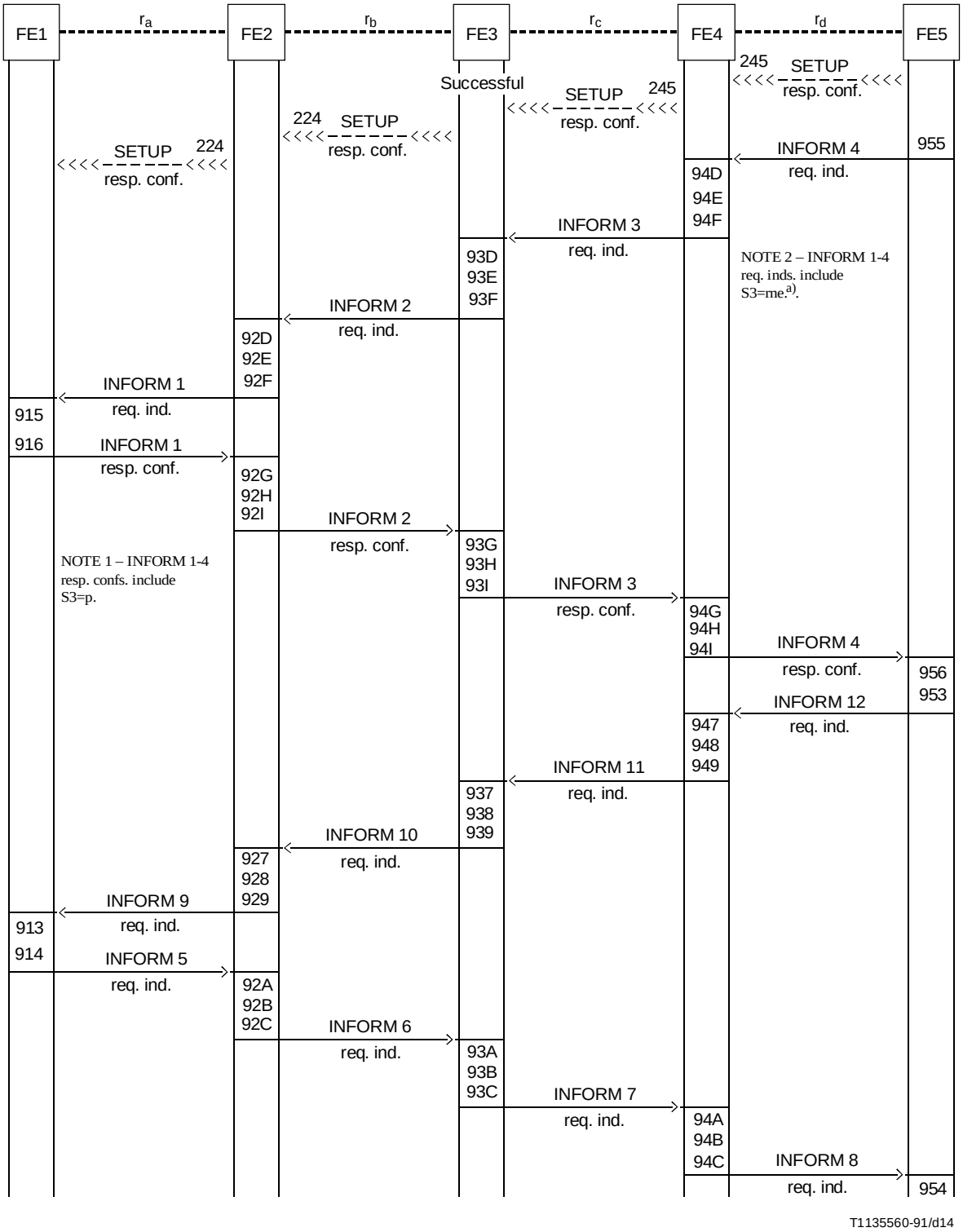
UUS Service 3
Requested during active phase (by calling party)
S3 requested but not essential



[a] There are no essential requests during the active phase.

FIGURE 1-9/Q.87 (sheet 2 of 2)

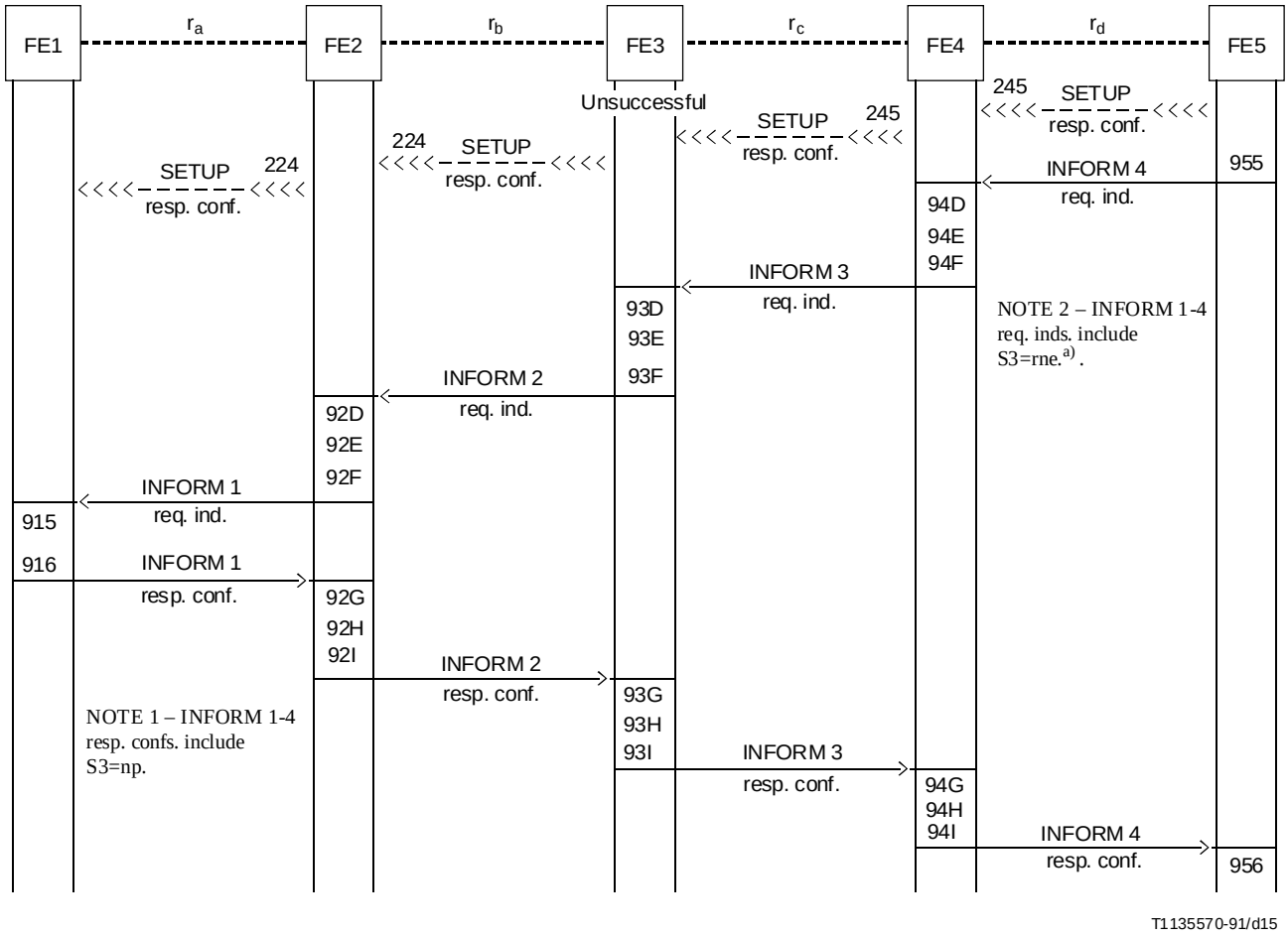
UUS Service 3
Requested during active phase (by calling party)
S3 requested but not essential



a) There are no essential requests during the active phase.

FIGURE 1-10/Q.87 (sheet 1 of 2)

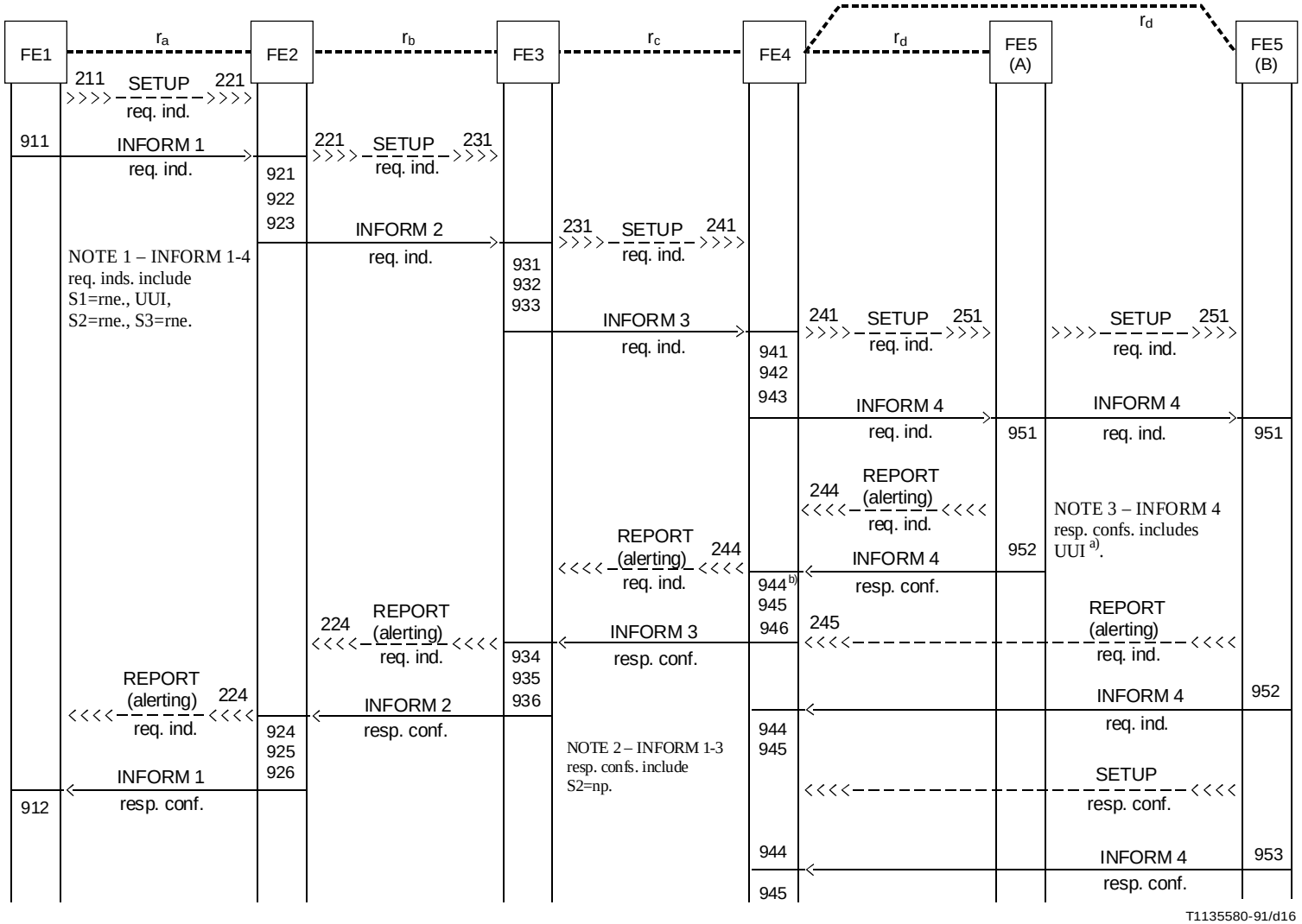
UUS Service 3
Requested during active phase (by called party)
S3 requested but not essential



a) There are no essential requests during the active phase.

FIGURE 1-10/Q.87 (sheet 2 of 2)

UUS Service 3
Requested during active phase (by called party)
S3 requested but not essential

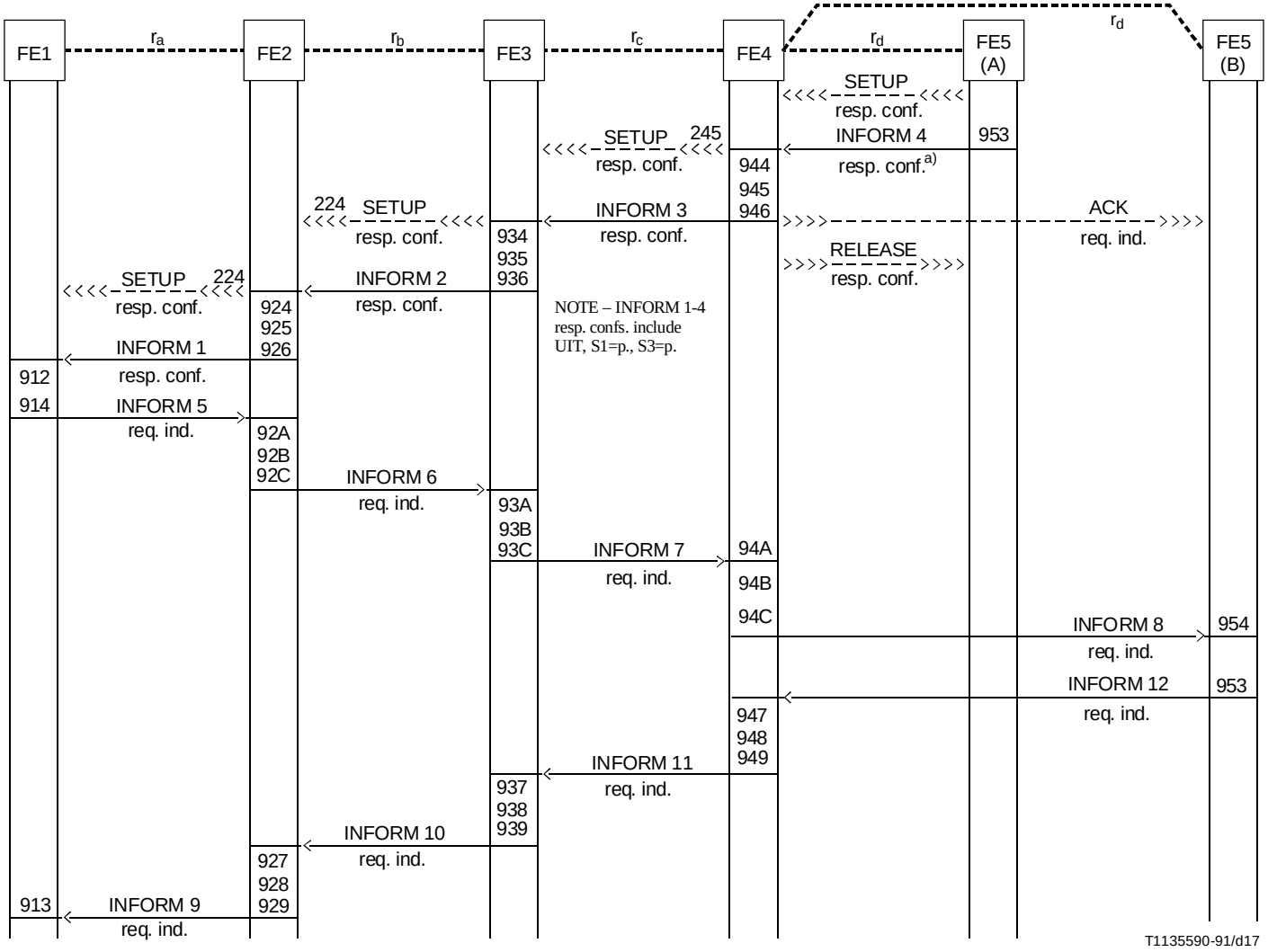


a) In the case of point-to-multipoint configuration, UUI in the REPORT (alerting) req. inds. [from FE5(A)or FE5(B)] and SETUP resp. conf. from not-selected FE5(A) are discarded at FE4.

b) Potential contention causes that UUI cannot be held in the REPORT.

FIGURE 1-11/Q.87 (sheet 1 of 2)

All the UUS Services 1, 2, 3 are requested
Called user is point-to-multipoint



[a)] In the case of point-to-multipoint configuration, UUI in the REPORT (alerting) req. inds. [from FE5(A)or FE5(B)] and SETUP resp. conf. from not-selected FE5(A) are discarded at FE4.

FIGURE 1-11/Q.87 (sheet 2 of 2)

All the UUS Services 1, 2, 3 are requested
Called user is point-to-multipoint

1.7.2 Definition of Individual Information Flows

1.7.2.1 Relationship r_a

1.7.2.1.1 Contents of INFORM 1 req. ind

The contents of INFORM 1 req. ind are shown in Table 1-1.

TABLE 1-1/Q.87

The contents of INFORM 1 req. ind.

Parameter	Allowed value	req. ind.
UUS Service request	S1 = re or rne S2 = re or rne S3 = re or rne	Mandatory
UUS Service Information	Maximum 127 octs	Optional

NOTES

1 re Requested and essential

rne Requested but not essential

2 At Service 3, there are no essential requests during the active phase.

1.7.2.1.2 Contents of INFORM 1 resp. conf

The contents of INFORM 1 resp. conf are shown in Table 1-2.

TABLE 1-2/Q.87

The contents of INFORM 1 resp. conf.

Parameter	Allowed value	resp. conf.
UUS Service result	S1 = p or np	Mandatory
	S2 = p or np reason	Optional
	S3 = p or np reason	Optional
UUS Service Information	Maximum 127 octs	Optional

NOTES

1 p provided

np not provided

2 The reason is “UUS Service 2 cannot be provided because called party has point-to-multipoint configuration” or “UUS Service 3 cannot be provided by the called user”.

1.7.2.1.3 Contents of INFORM 5 req. ind

The contents of INFORM 5 req. ind are shown in Table 1-3.

1.7.2.1.4 Contents of INFORM 9 req. ind

See 1.7.2.1.3.

TABLE 1-3/Q.87

The contents of INFORM 5 req. ind.

Parameter	Allowed value	req. ind
UUS Service Information	Maximum 127 octs	Mandatory

1.7.2.2 Relationship r_b

1.7.2.2.1 Contents of INFORM 2 req. ind

See 1.7.2.1.1.

1.7.2.2.2 Contents of INFORM 2 resp. conf

See 1.7.2.1.2.

1.7.2.2.3 Contents of INFORM 6 req. ind

See 1.7.2.1.3.

1.7.2.2.4 Contents of INFORM 10 req. ind

See 1.7.2.1.3.

1.7.2.3 Relationship r_c

1.7.2.3.1 Contents of INFORM 3 req. ind

See 1.7.2.1.1.

1.7.2.3.2 Contents of INFORM 3 resp. conf

See 1.7.2.1.2.

1.7.2.3.3 Contents of INFORM 7 req. ind

See 1.7.2.1.3.

1.7.2.3.4 Contents of INFORM 11 req. ind

See 1.7.2.1.3.

1.7.2.4 Relationship r_d

1.7.2.4.1 Contents of INFORM 4 req. ind

See 1.7.2.1.1.

1.7.2.4.2 Contents of INFORM 4 resp. conf

See 1.7.2.1.2.

1.7.2.4.3 Contents of INFORM 8 req. ind

See 1.7.2.1.3.

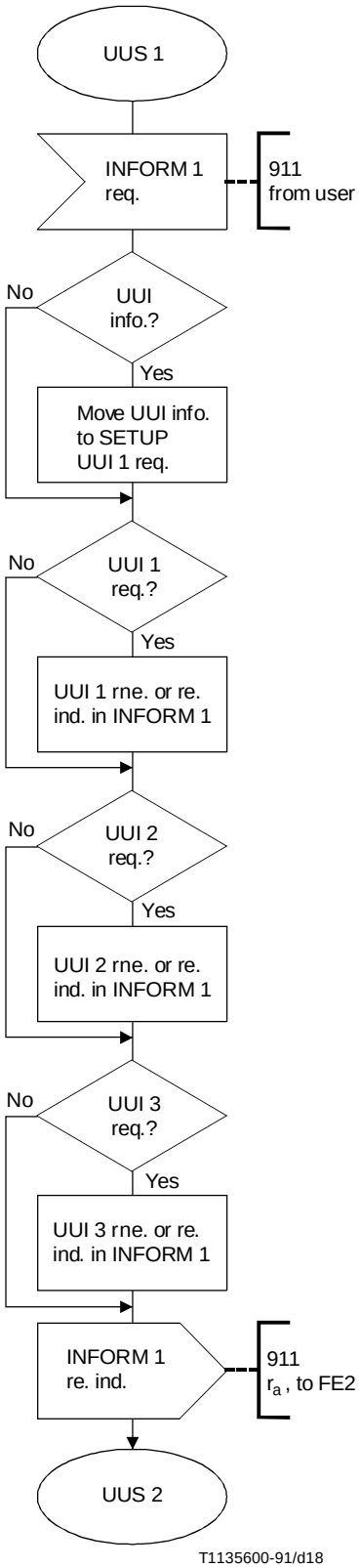
1.7.2.4.4 Contents of INFORM 12 req. ind

See 1.7.2.1.3.

1.8 SDL diagrams for functional entities

1.8.1 SDLs for FE1

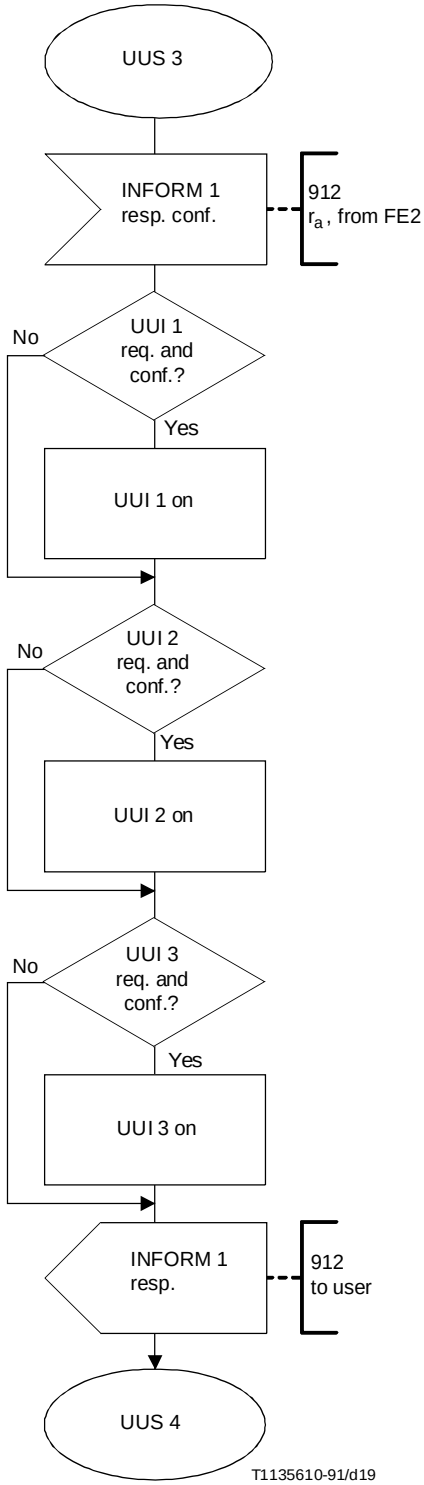
See Figures 1-12 to 1-17.



NOTE – UUS 1 and UUS 2 break the basic call between connectors S1/1 and S1/2.

FIGURE 1-12/Q.87

OCA additions to basic call for UUS
Process service request

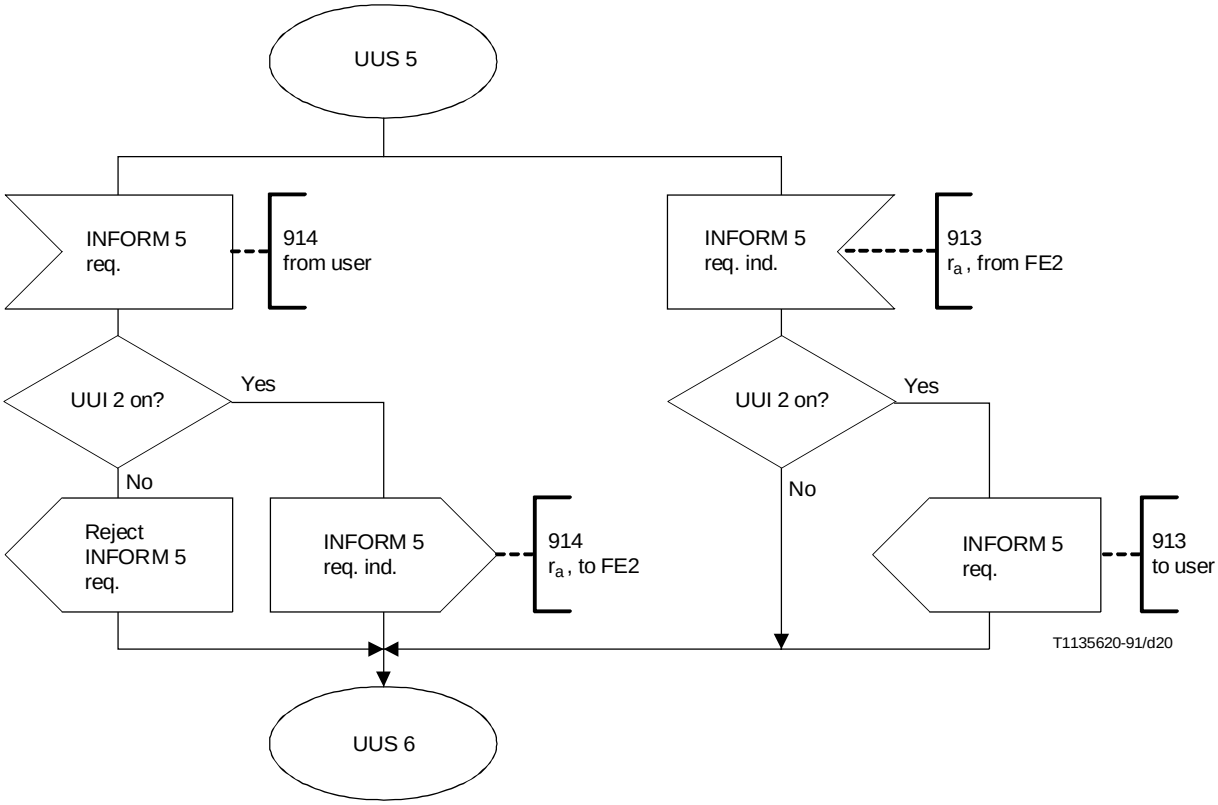


req. Requested
conf. Confirmed

NOTE – UUS 3 and UUS 4 break the basic call between connectors S1/3 and S1/4, between S1/21 and S1/22, between S1/UUS 3C and S1/UUS 4C.

FIGURE 1-13/Q.87

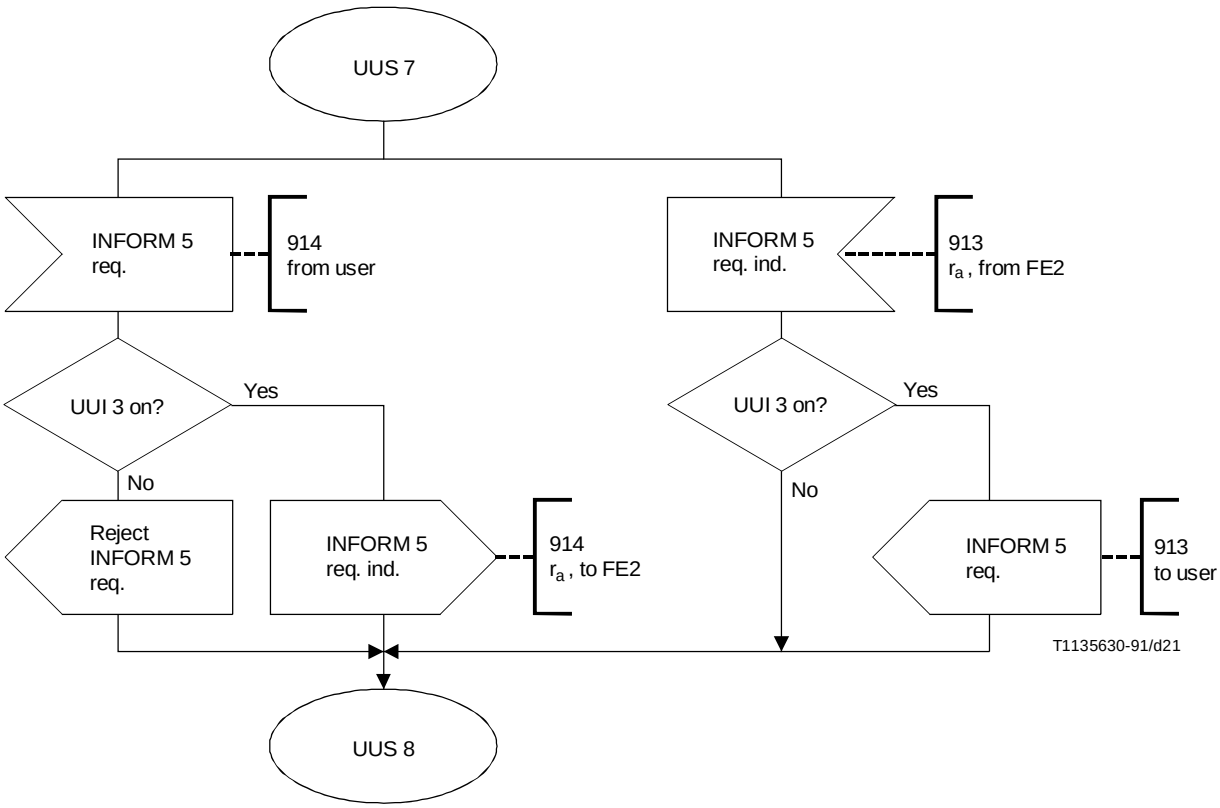
Report ind. or report (Alerting) ind.
Processing of parameters



NOTE – UUS 5 and UUS 6 break the basic call between connectors S1/3 and S1/4.

FIGURE 1-14/Q.87

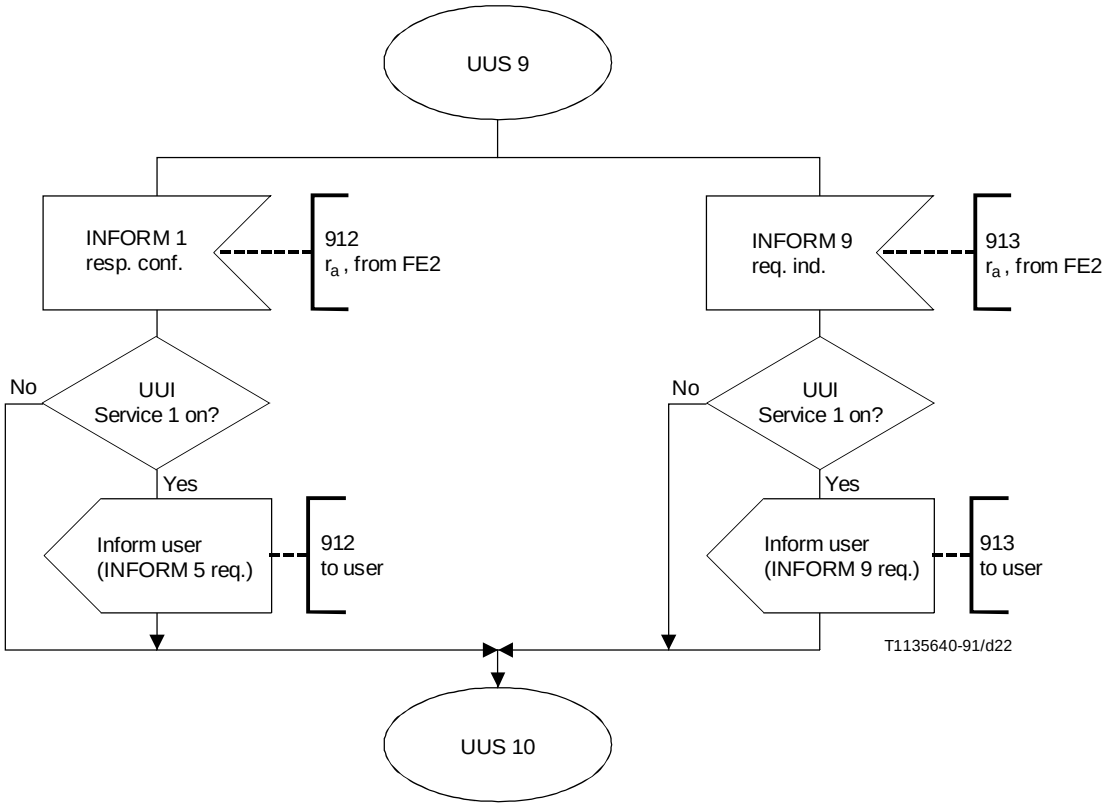
CCA r1-User INFORM 5 connection proceeding processing



NOTE – UUS 7 and UUS 8 break the basic call between S1/UUS 7 and S1/UUS 8.

FIGURE 1-15/Q.87

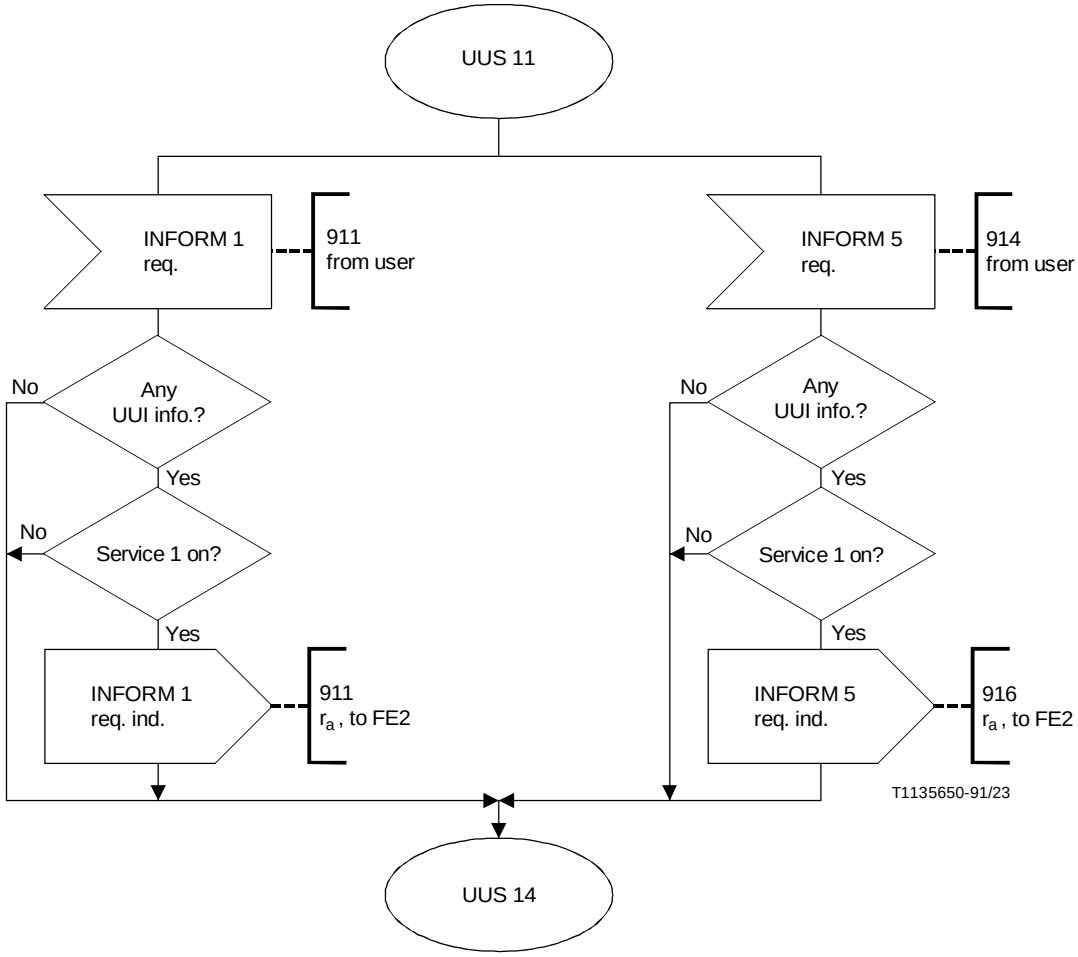
CCA r1-User INFORM 5 active processing



NOTE – UUS 9 and UUS 10 break the basic call between connectors S1/3 and S1/4, between connectors S1/21 and S1/22.

FIGURE 1-16/Q.87 (sheet 1 of 2)

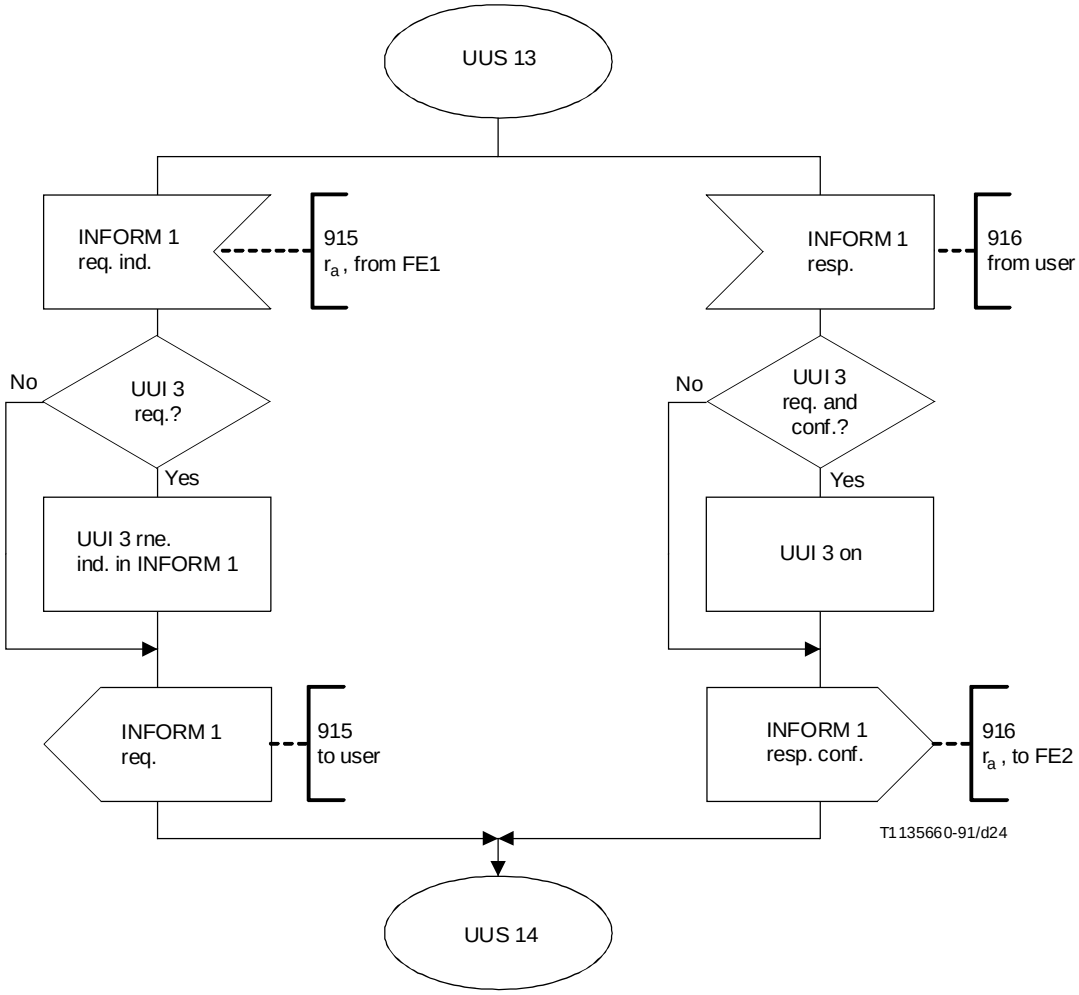
CCA r1-User UUS 1 processing
For call control message handling



NOTE – UUS 11 and UUS 12 break the basic call between connectors S1/1 and S1/2, between connectors S1/15 and S1/16.

FIGURE 1-16/Q.87 (sheet 2 of 2)

CCA r1-User UUS 1 processing
For call control message handling



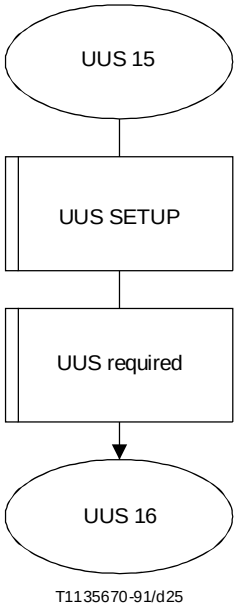
NOTE – UUS 13 and UUS 14 break the basic call between connectors S1/UUS 13 and S1/UUS 14.

FIGURE 1-17/Q.87

CCA r1-User INFORM 1 active processing as a service provider option

1.8.2 SDLs for FE2 “CC functional entity (r1-r1)”

See Figures 1-18 to 1-28.



NOTE – UUS 15 and UUS 16 break the basic call between connectors S2/1 and S2/2.

FIGURE 1-18/Q.87

Macrodefinition UUS originating screen

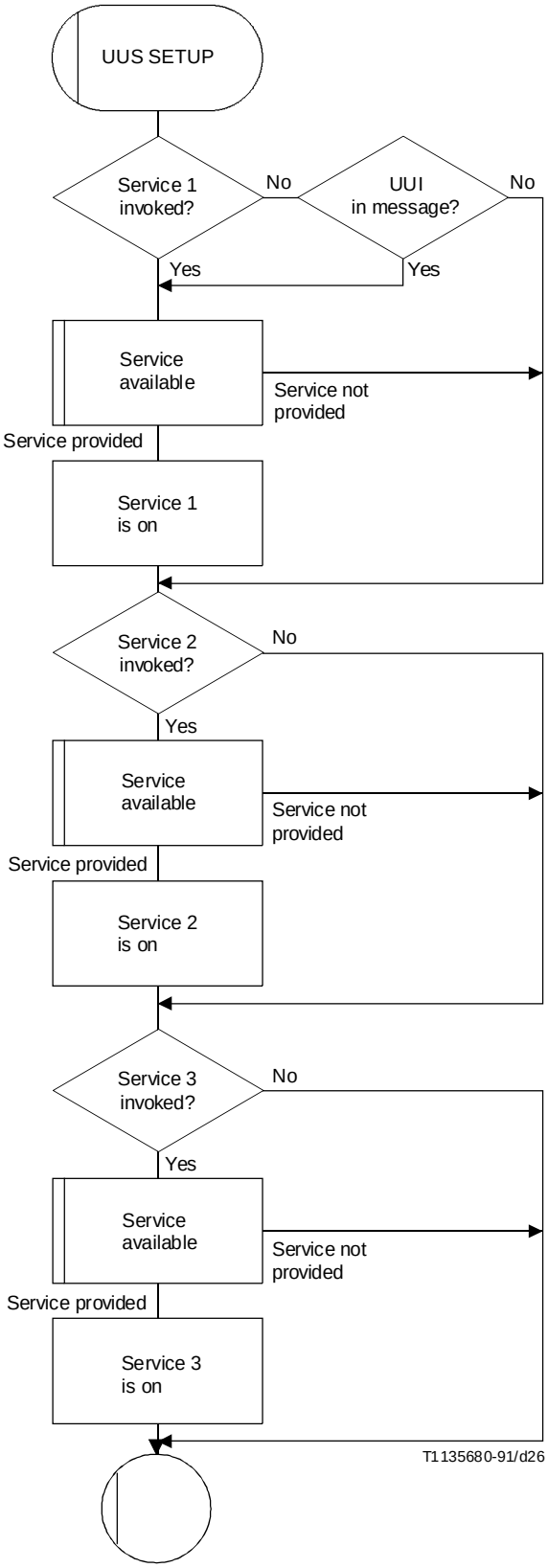


FIGURE 1-19/Q.87

Macrodefinition UUS SETUP, r1-r1

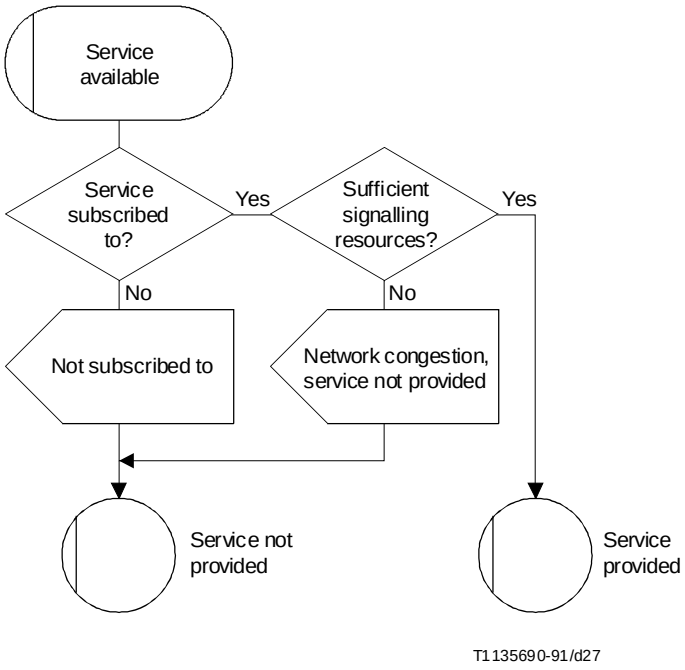


FIGURE 1-20/Q.87

Macrodefinition service available

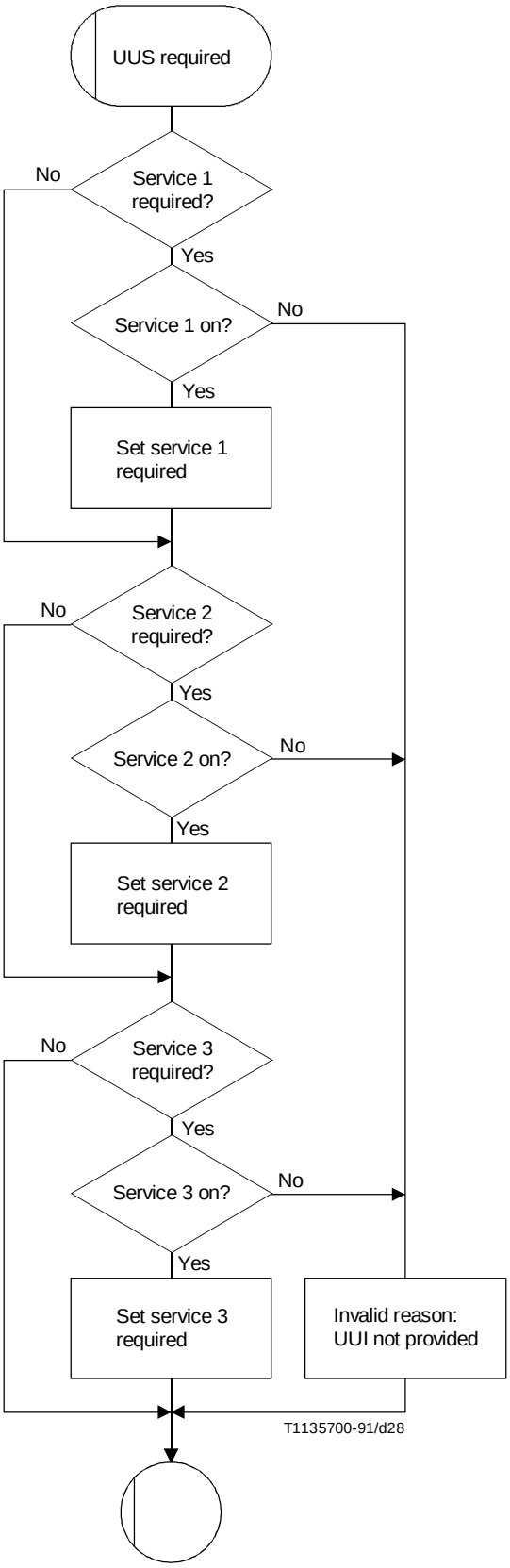
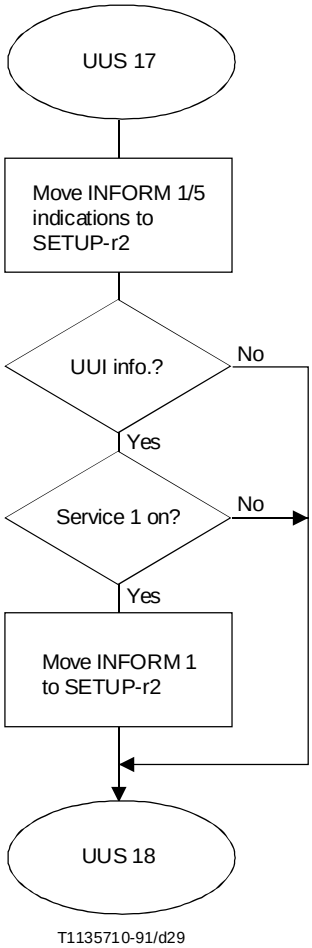


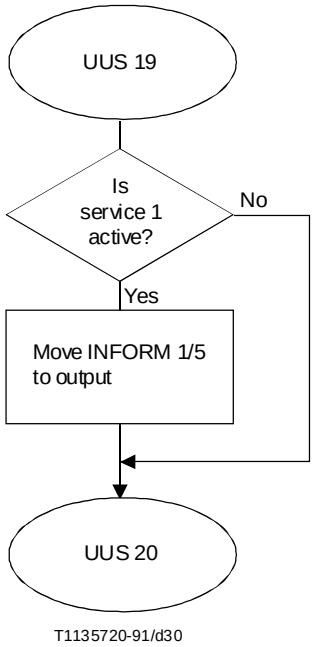
FIGURE 1-21/Q.87
Macrodefinition UUS required



NOTE – UUS 17 and UUS 18 break the basic call between connectors S2/1 and S2/2.

FIGURE 1-22/Q.87

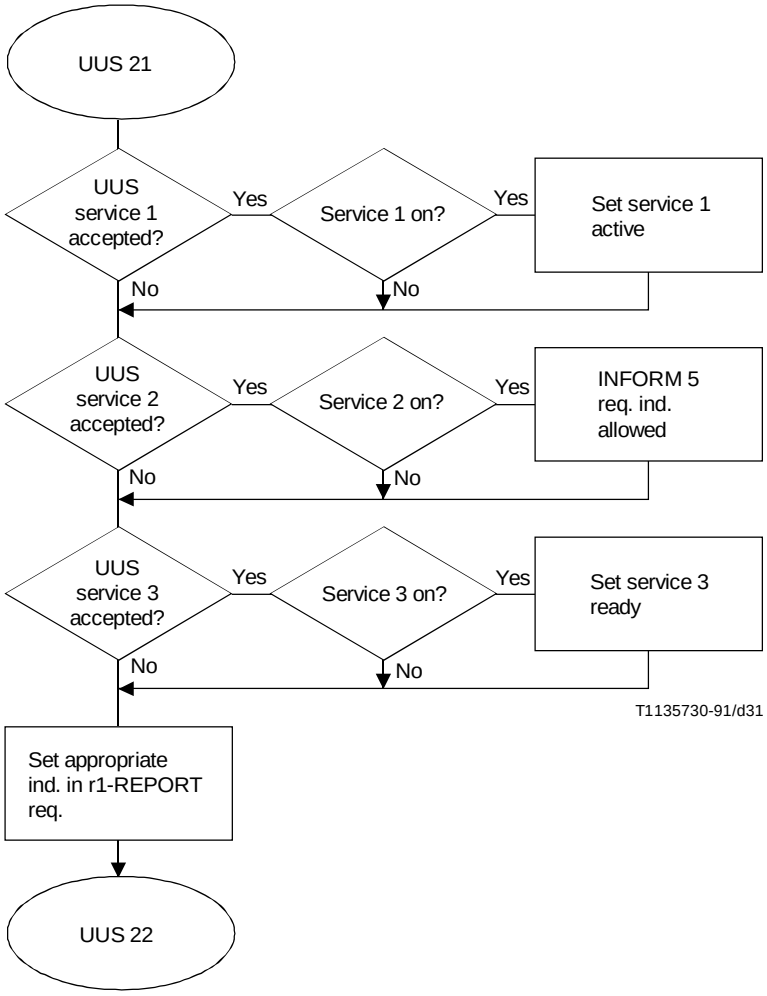
Macrodefinition UUS process



NOTE – UUS 19 and UUS 20 break the basic call between connectors S2/9 and S2/10.

FIGURE 1-23/Q.87

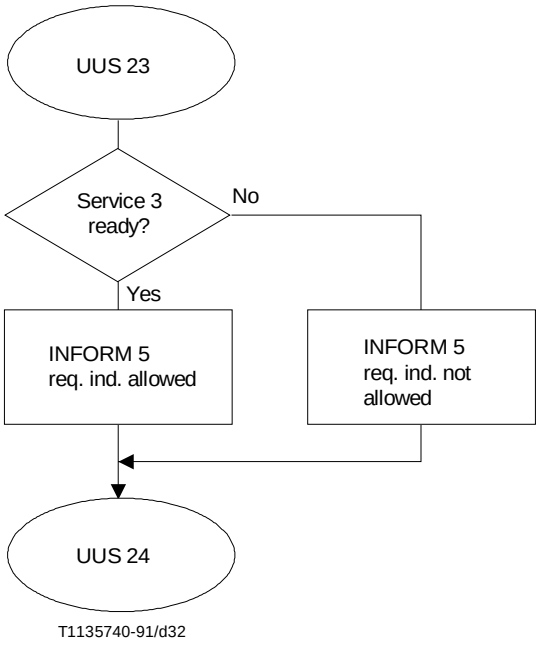
Macrodefinition UUI CMP



Note – UUS 21 and UUS 22 break the basic call between connectors S2/19 and S2/20.

FIGURE 1-24/Q.87

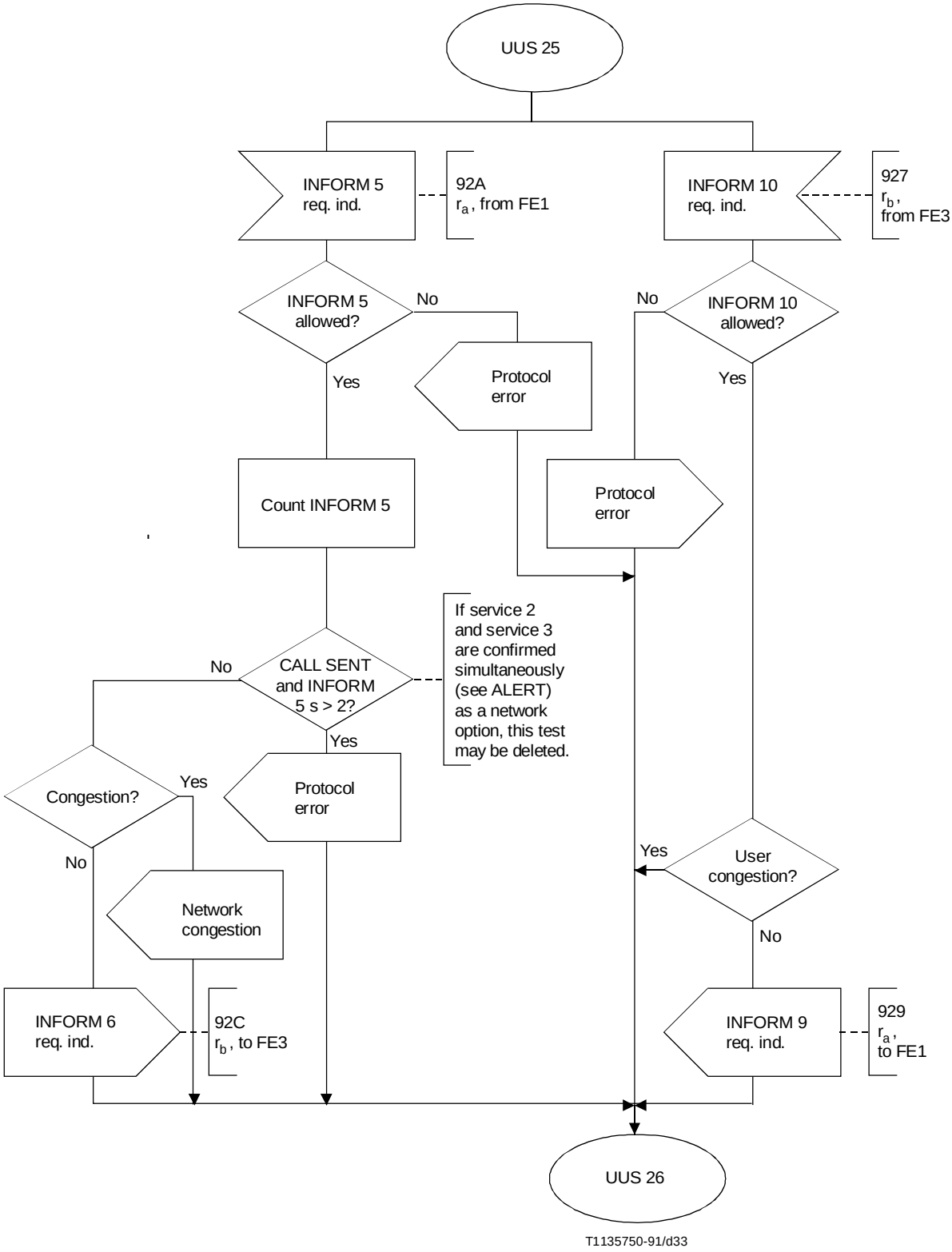
Macrodefinition UUI Alert



NOTE – UUS 23 and UUS 24 break the basic call between connectors S2/25, and S2/26.

FIGURE 1-25/Q.87

Macrodefinition UUI SC



NOTES

1 A limit may be introduced for service 2 SDL INFORM 7/8 handling also found in FE4.

2 UUS 25 and UUS 26 break the basic call between connectors S2/19 and S2/20, between connectors S2/UUS 25b and S2/UUS 26b.

FIGURE 1-26/Q.87

INFORM 5/6, 9/10 handling

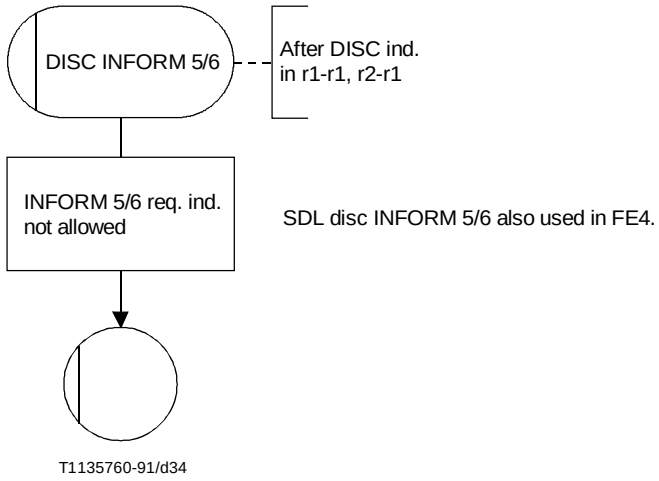
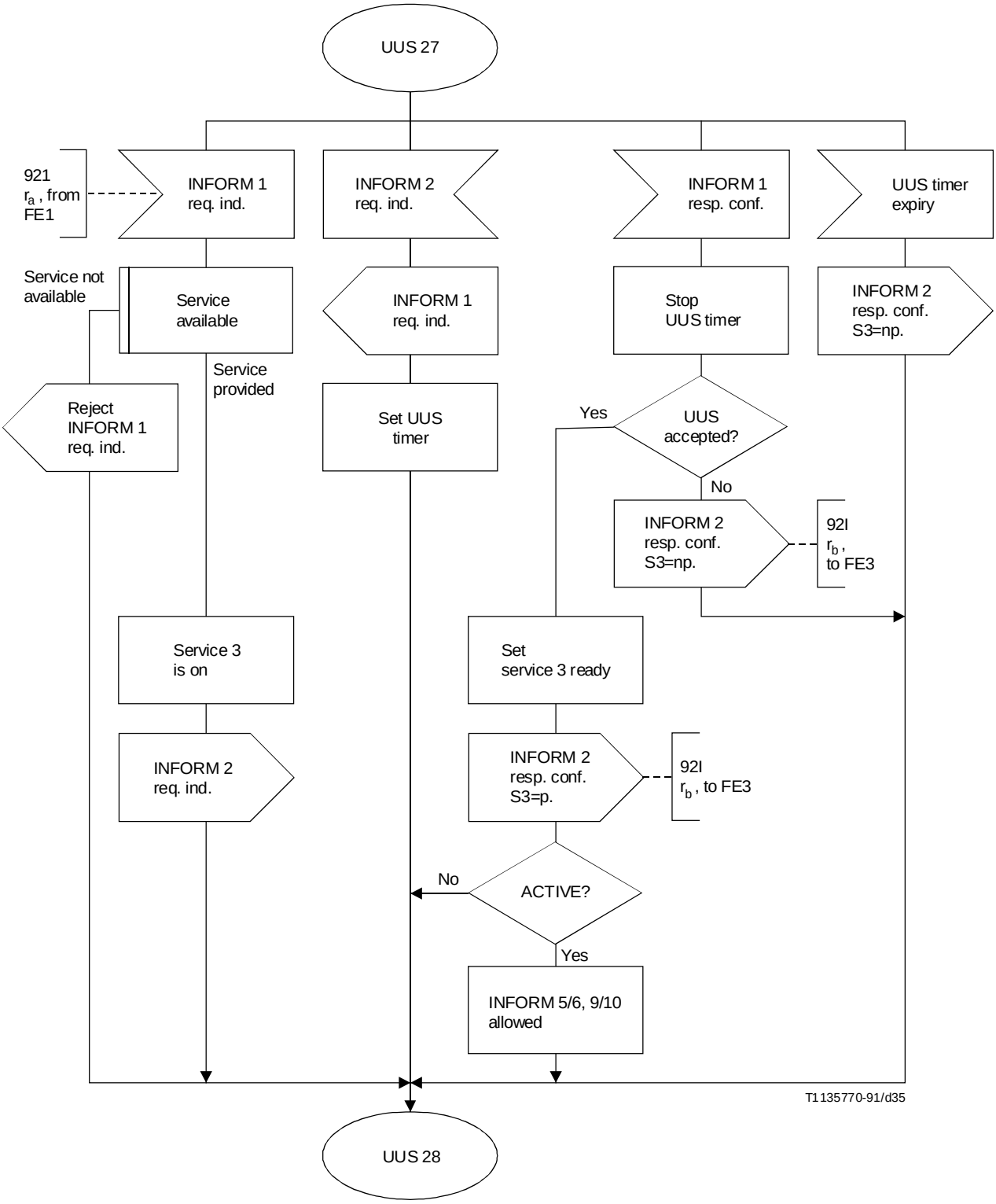


FIGURE 1-27/Q.87

Macrodefinition DISC INFORM 5/6

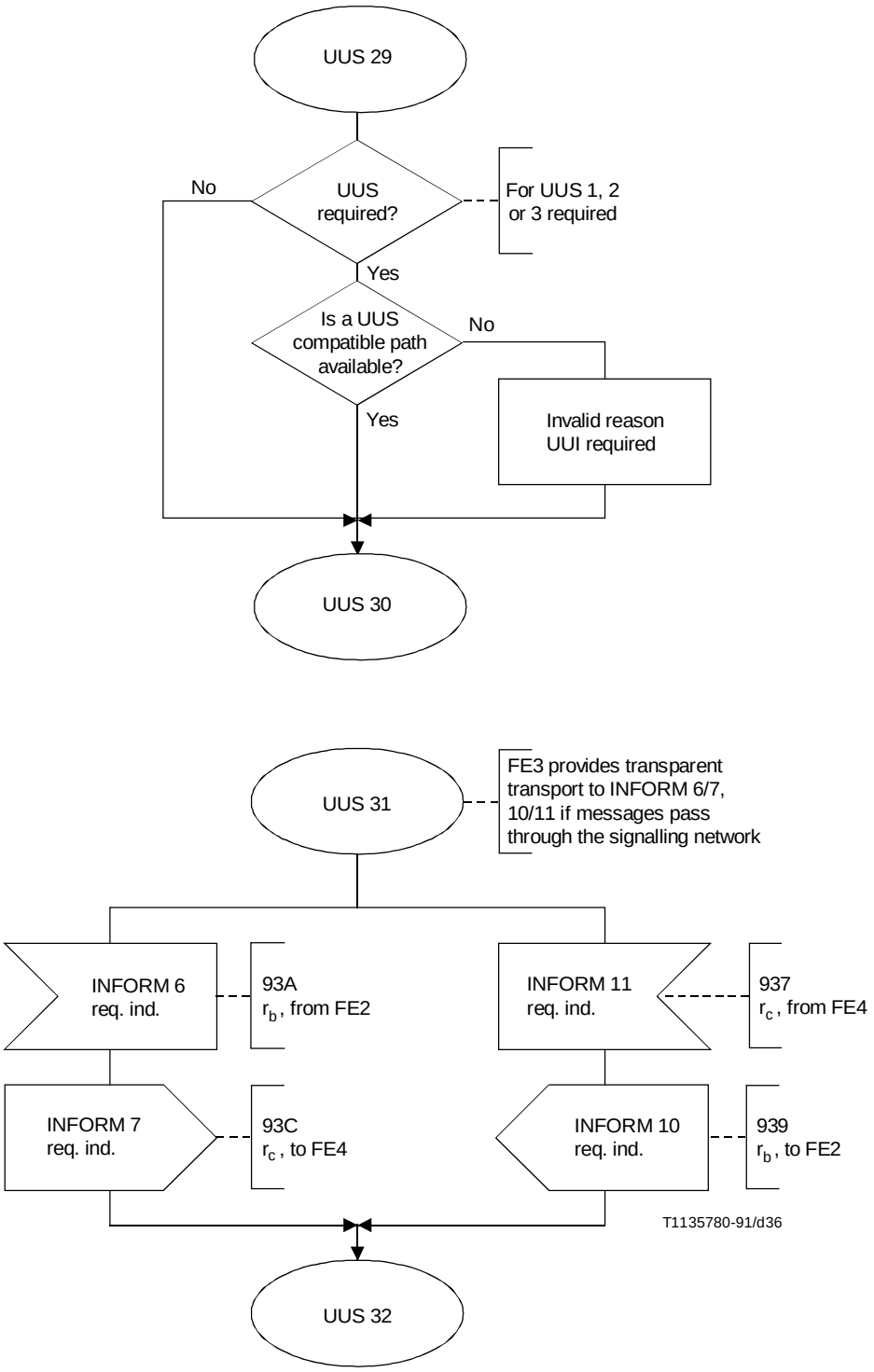


NOTE – UUS 27 and UUS 28 break the basic call between connectors S2/19 and S2/20, between connectors S2/UUS 27b and S2/UUS 28b.

FIGURE 1-28/Q.87

Late invocation r1-r1

1.8.3 SDLs for FE3



NOTES

1 UUS 29 and UUS 30 break the basic call between connectors S3/5 and S3/6, between connectors S3/UUS 29b and S3/UUS 30b.

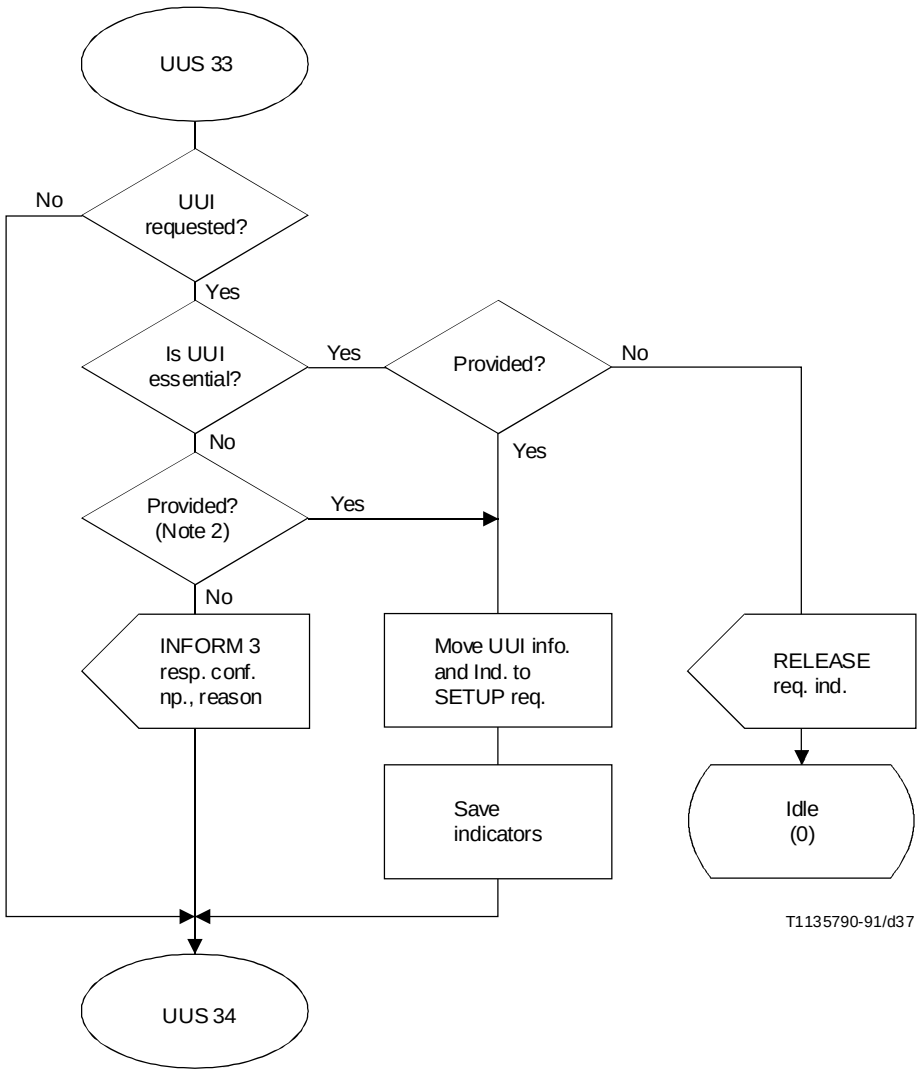
2 UUS 31 and UUS 32 break the basic call between connectors S3/UUS 31a and S3/UUS 32a, between connectors S3/UUS 31b and S3/UUS 32b.

FIGURE 1-29/Q.87

SDL additions to basic call for FE3 "C r2-r2" macrodefinition UUS REQ

1.8.4 SDLs for FE4

See Figures 1-30 to 1-33.



Info. Information
req. Request

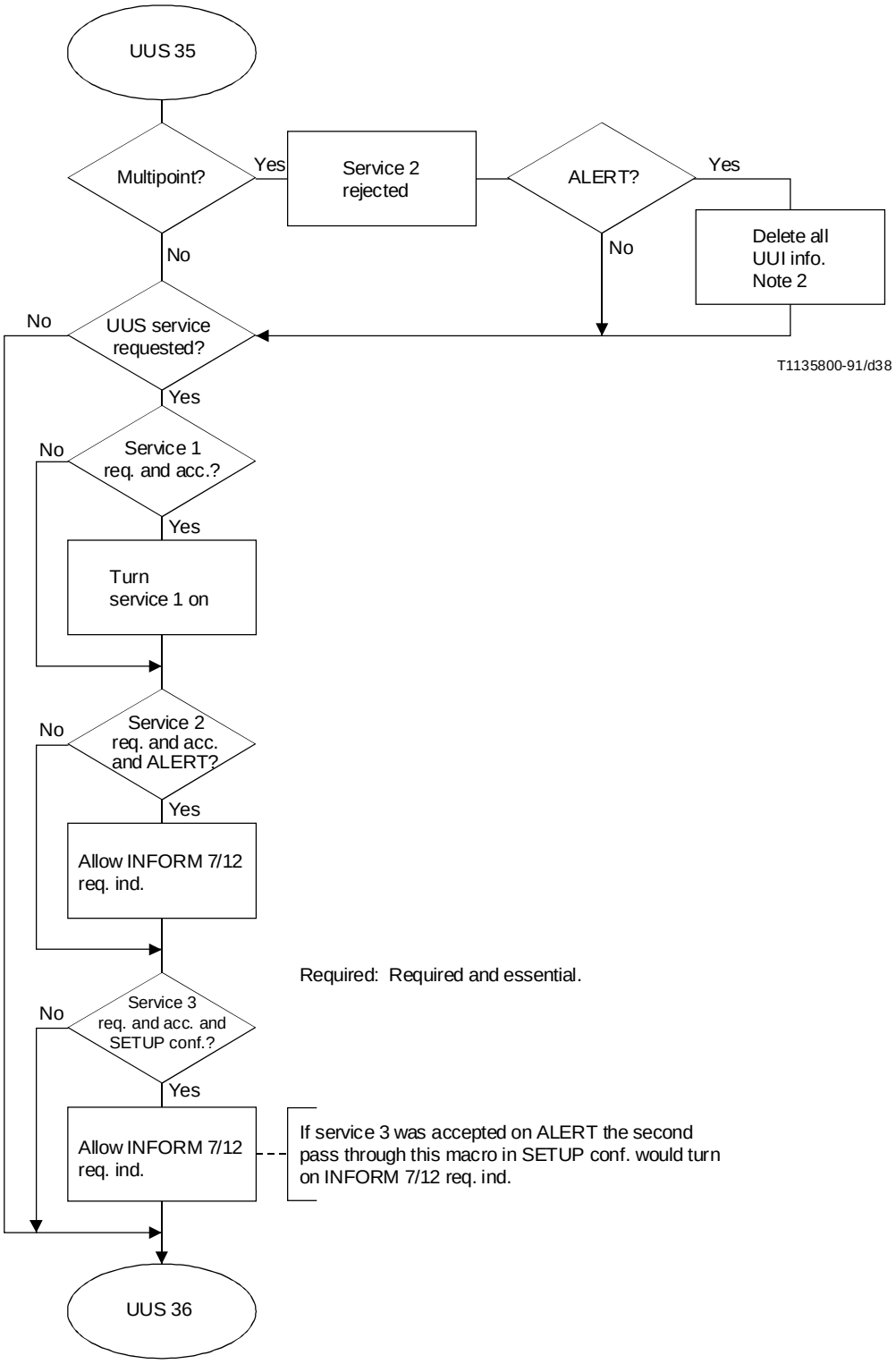
NOTES

1 UUS 33 and UUS 34 break the basic call between connectors S4/31 and S4/32.

2 On the case of the interworking with an ISDN network only supporting implicit request, if the remote user replies with UUI, FE4 select Yes. If the remote user does not reply with UUI, FE4 select No.

FIGURE 1-30/Q.87

Macrodefinition TERM SETUP FE4



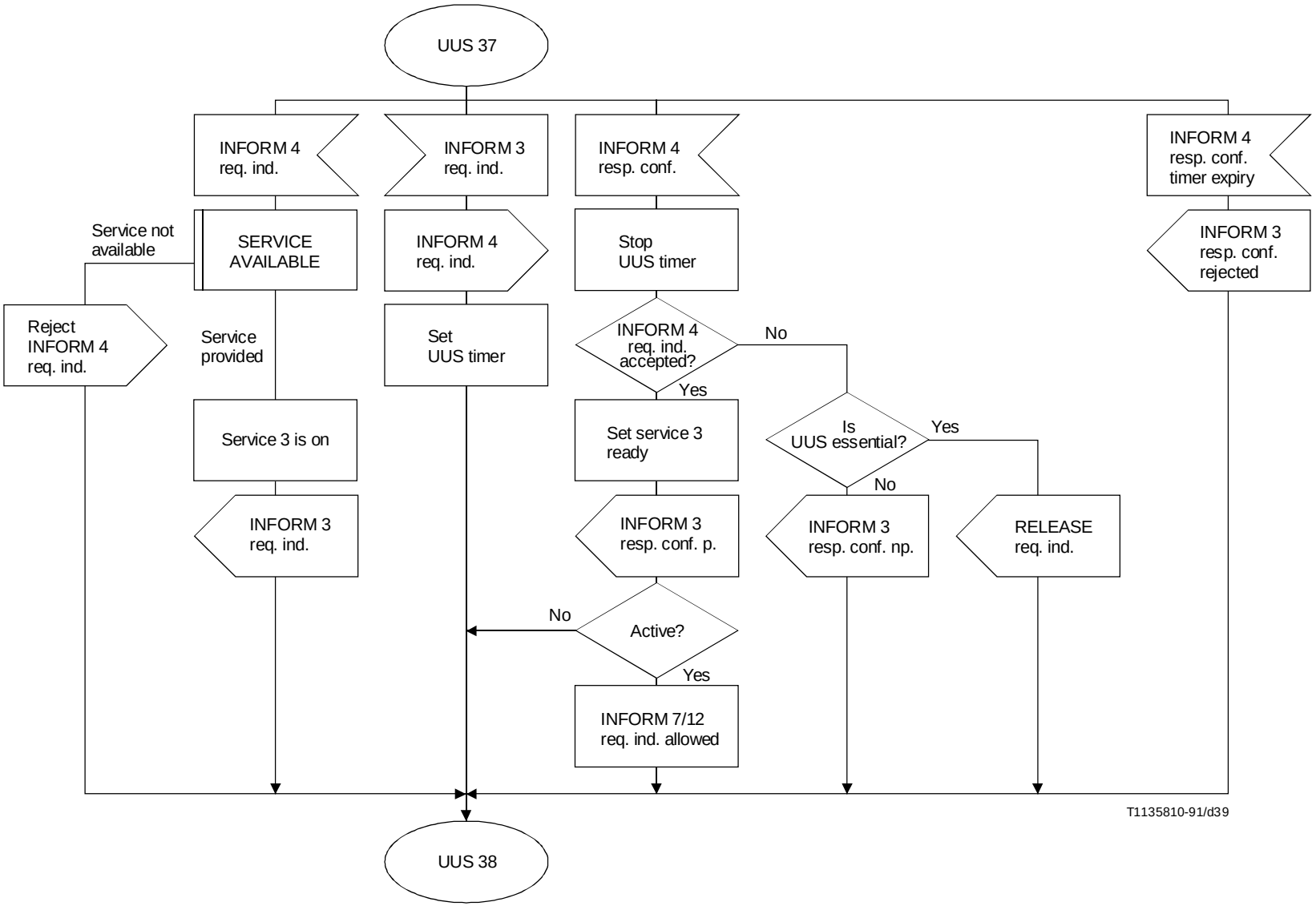
NOTES

1 UUS 35 and UUS 36 break the basic call between connectors S4/19 and S4/20, between connectors S4/5 and S4/6.

2 Potential contention causes UUI could not be held in the REPORT.

FIGURE 1-31/Q.87

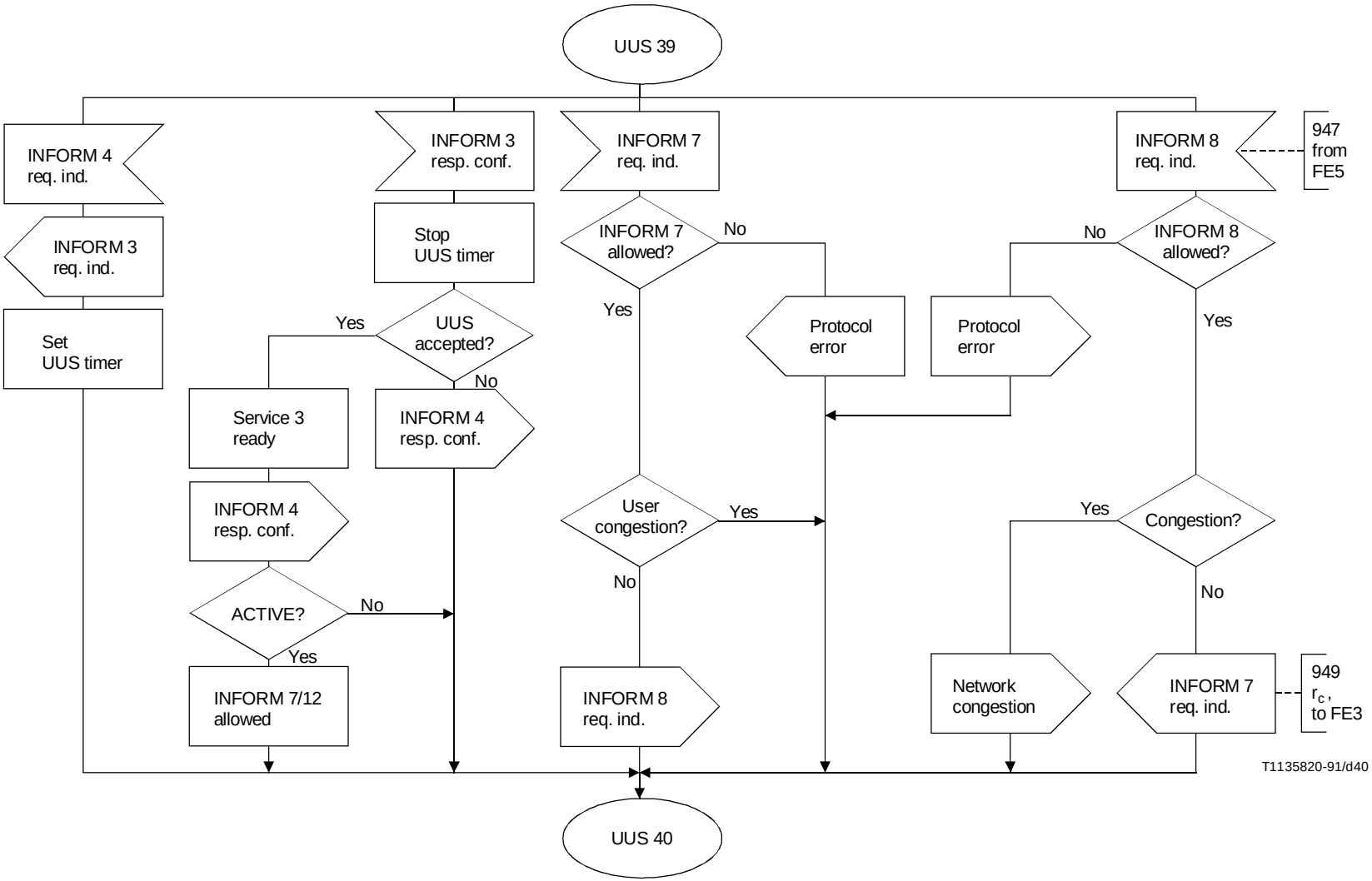
Macrodefinition TERM RESP FE4



NOTE – UUS 37 and UUS 38 break the basic call between connectors S4/5 and S4/6, between connectors S4/UUS 37b and S4/UUS 38b.

FIGURE 1-32/Q.87

Late invocation r2-r1



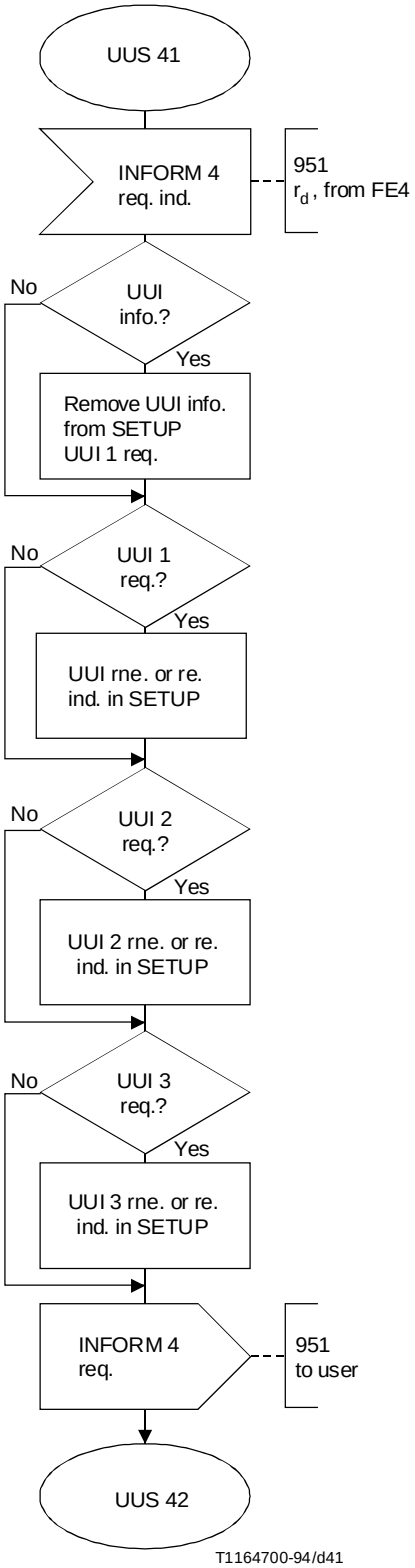
NOTE – UUS 39 and UUS 40 break the basic call between connectors S4/UUS39 and S4/UUS 40.

FIGURE 1-33/Q.87

UUM handling
Service provider option

1.8.5 SDLs for FES

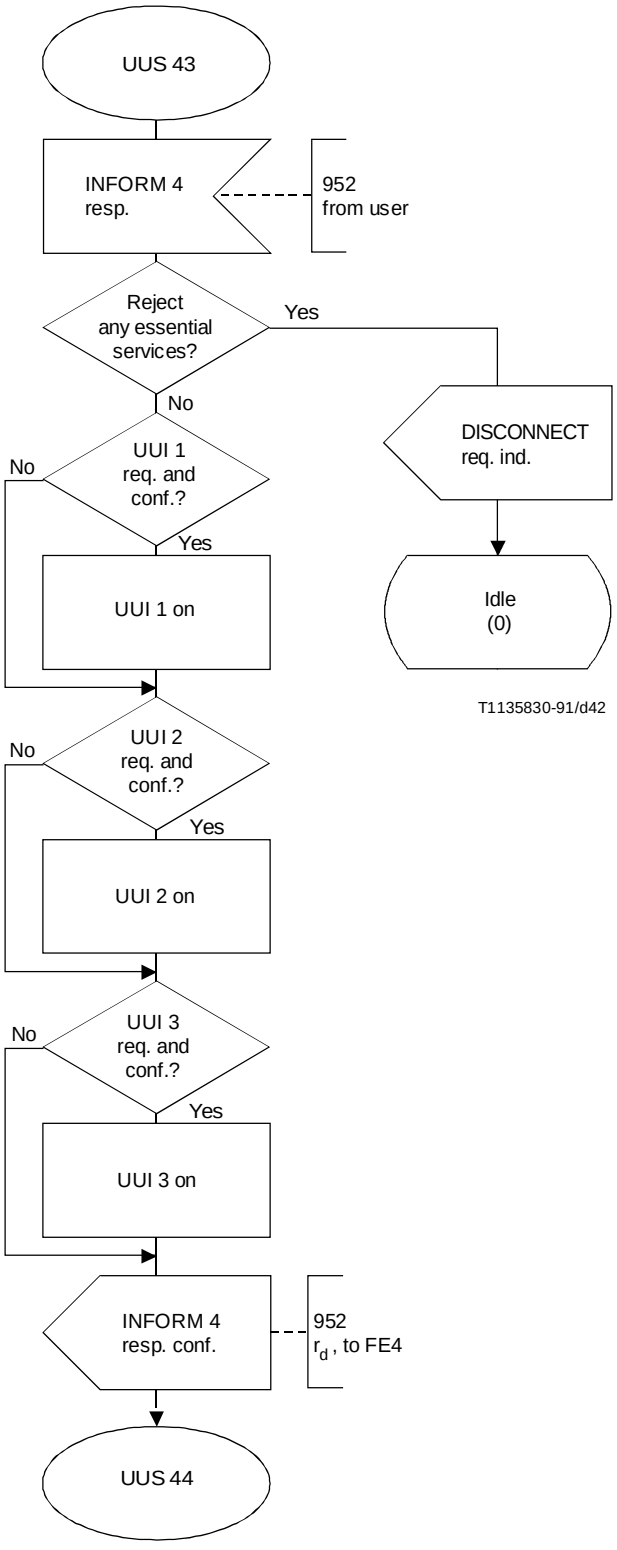
See Figures 1-34 to 1-39.



NOTE – UUS 41 and UUS 42 break the basic call between connectors S5/1 and S5/2.

FIGURE 1-34/Q.87

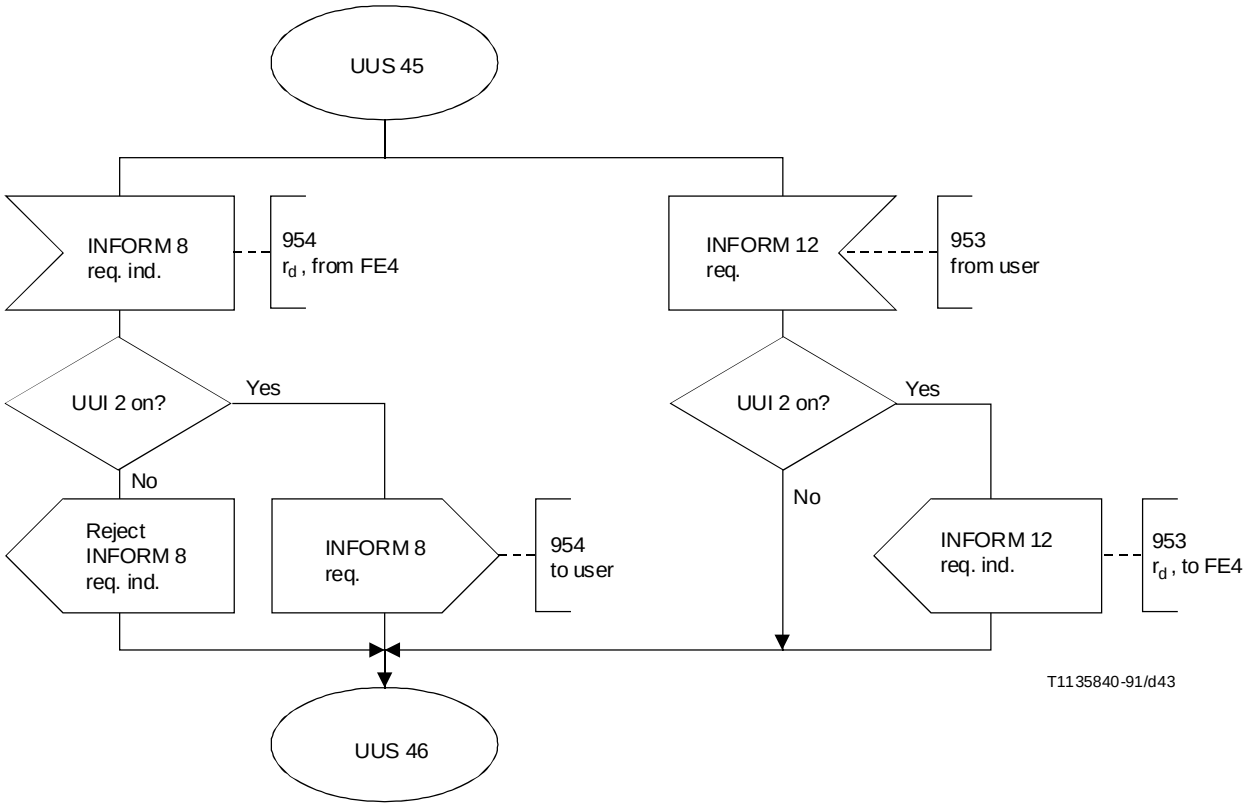
CCA additions to basic call for UUS
Process service request



NOTE – UUS 43 and UUS 44 break the basic call between connectors S5/UUS 43a and S5/UUS 44a, between connectors S5/4 and S5/5, between connectors S5/UUS 43c and S5/UUS 44.

FIGURE 1-35/Q.87

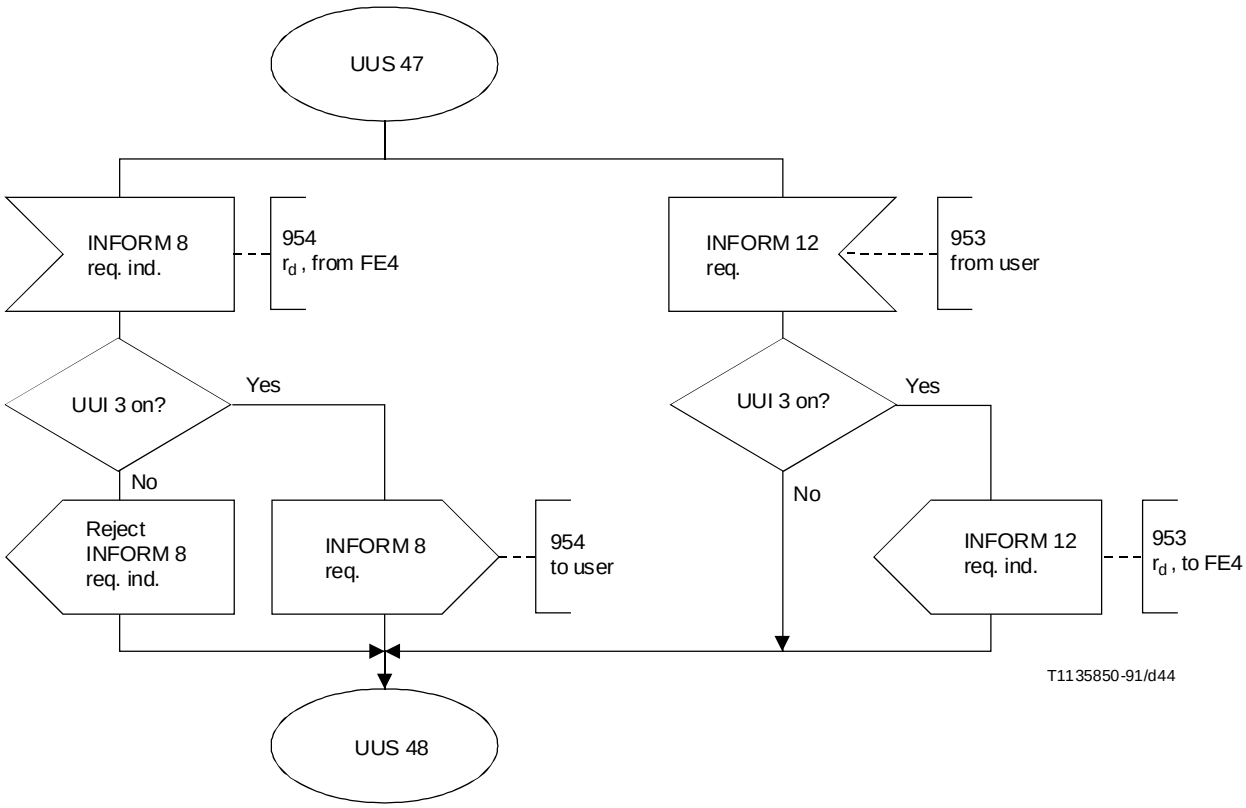
Report ind. or report (alerting) ind.
Processing of parameters



NOTE – UUS 45 and UUS 46 break the basic call between connectors S5/UUS 45 and S5/UUS 46.

FIGURE 1-36/Q.87

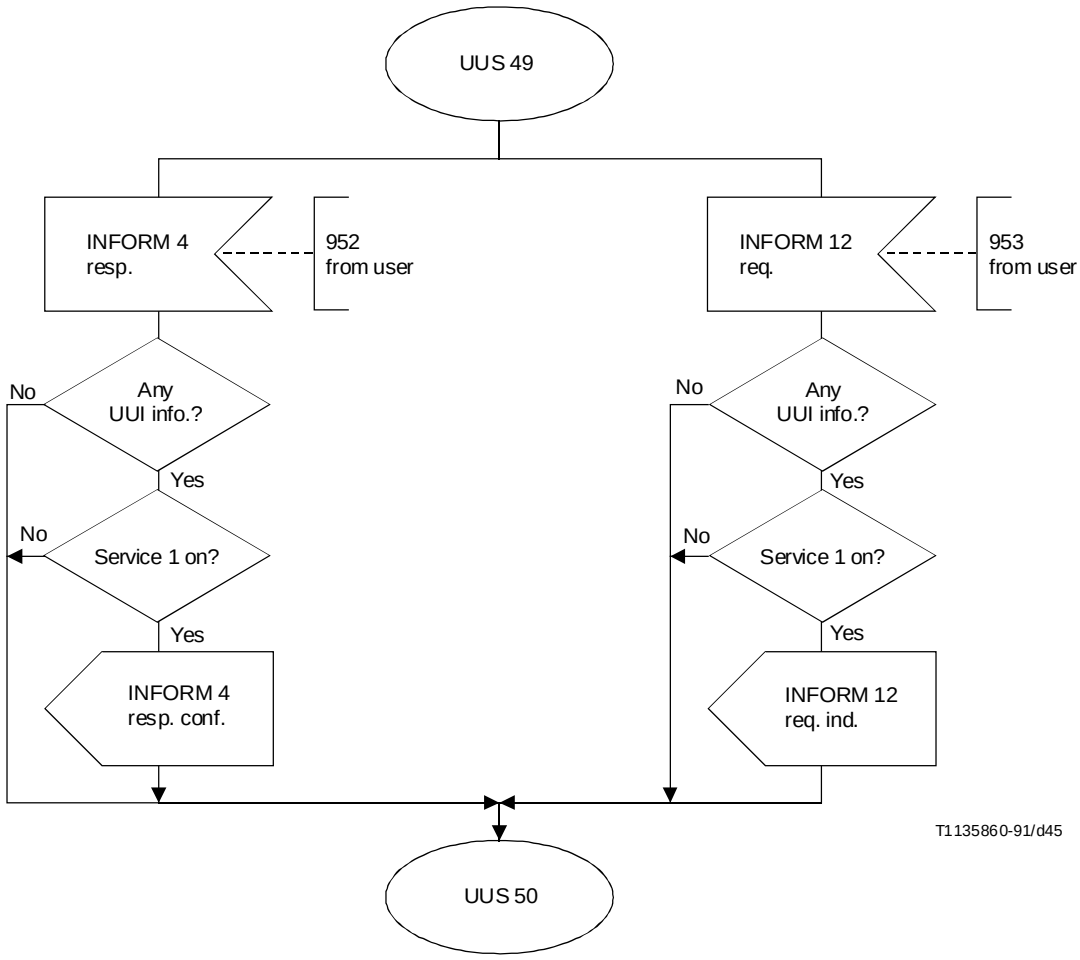
CCA r1-User INFORM 5 connection proceeding processing



NOTE – UUS 47 and UUS 48 break the basic call between connectors S5/UUS 47 and S5/UUS 48.

FIGURE 1-37/Q.87

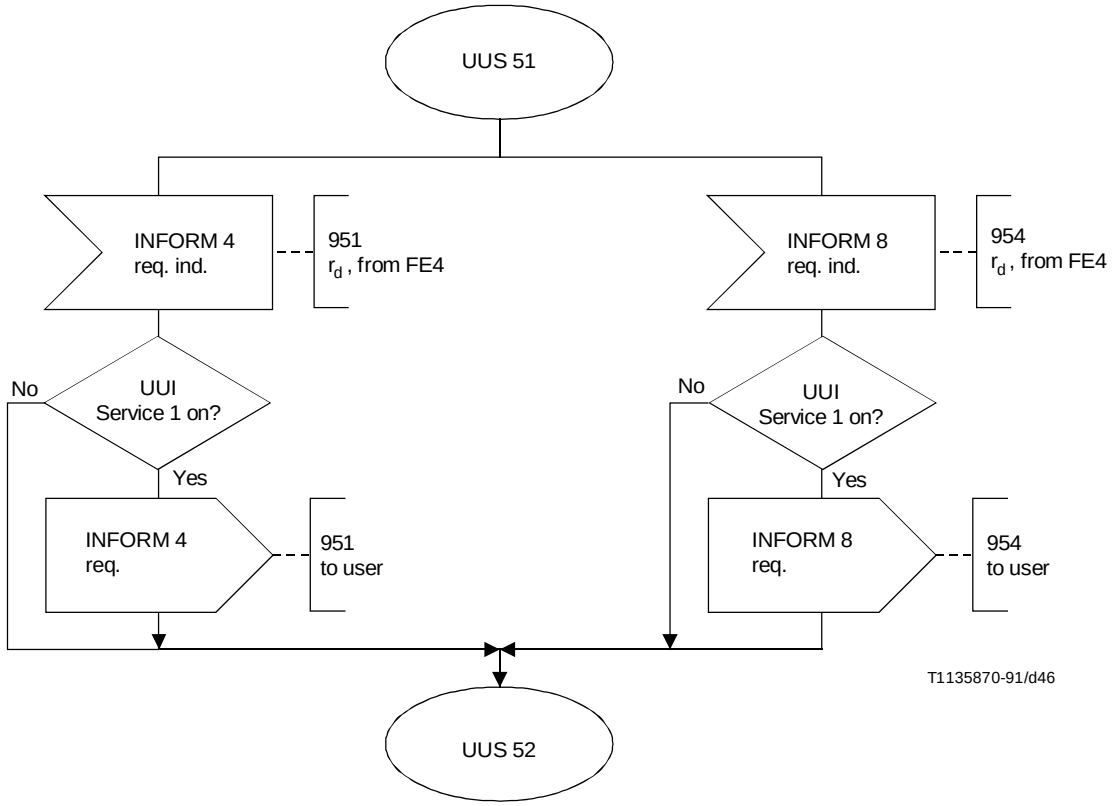
CCA r1-User INFORM 5 active processing



NOTE – UUS 49 and UUS 50 break the basic call between connectors S5/UUS 49a and S5/UUS 50a, between connectors S5/4 and S5/5.

FIGURE 1-38/Q.87 (sheet 1 of 2)

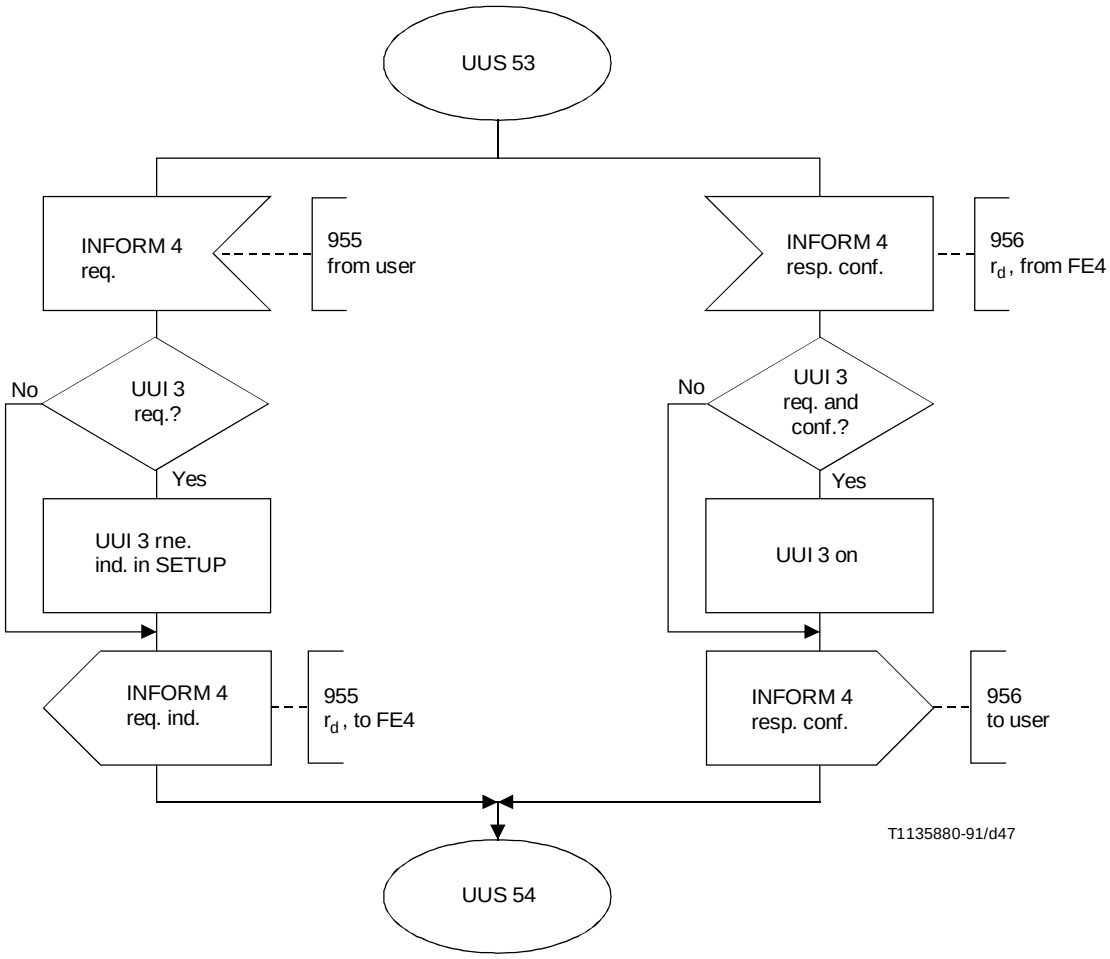
CCA r1-User UUS 1 processing
For call control message handling



NOTE – UUS 51 and UUS 52 break the basic call between connectors S5/1 and S5/2, between connectors S5/14 and S5/15.

FIGURE 1-38/Q.87 (sheet 2 of 2)

CCA r1-User UUS 1 processing
For call control message handling



NOTE – UUS 53 and UUS 54 break the basic call between connectors S5/UUS 53 and S5/UUS 54.

FIGURE 1-39/Q.87

CCA r1-User INFORM 4 active processing as a service provider option

1.9 Functional entity actions (FEAs)

1.9.1 FEAs for FE1

911 FE1 shall receive INFORM 1 req. (request for User-to-User Signalling services) from user and check UUS service request.

– If there is UUI 1 req., set UUI 1 rne. or re. ind. in SETUP.

– If there is UUI 2 req., set UUI 2 rne. or re. ind. in SETUP.

– If there is UUI 3 req., set UUI 3 rne. or re. ind. in SETUP.

Then, FE1 shall send INFORM 1 req. ind (request for User-to-User signalling Services) to FE2.

912 FE1 shall receive INFORM 1 resp. conf (response for User-to-User Signalling Services request) from FE2 and check which services are available to calling user.

– If FE1 send UUI 1 req. and receive UUI 1 conf., set UUI 1 on.

– If FE1 send UUI 2 req. and receive UUI 2 conf., set UUI 2 on.

– If FE1 send UUI 3 req. and receive UUI 3 conf., set UUI 3 on.

Then, FE1 shall inform calling user of provided services or not.

913 FE1 shall receive INFORM 5 req. ind (user-to-user information) from FE2 and check activation of the services available to calling user.

– Is there INFORM 5 req. ind?

– Is the appropriate service active?

– If INFORM 5 req. ind, is the network congested?

Then, FE1 shall inform calling user of UUI info.

914 FE1 shall receive INFORM 5 req (User-to-User information) from user and check activation of the services.

–- Is there INFORM 5 req. ind?

– Is the appropriate service active?

– If INFORM 5 req. ind, is the network congested?

Then, FE1 shall send INFORM 5 req. ind (user-to-user information) to FE2.

915 FE1 shall receive INFORM 1 req. ind (request for User-to-User Signalling services) from FE2 during the active phase as a service provider option and check UUS Service 3 request.

– If there is UUI 3 rne. in INFORM 1 req. ind, set UUI 3 req.

Then, FE1 shall send INFORM 1 req. (request for User-to-User Signalling services) to user.

916 FE5 shall receive INFORM 1 resp. (response for User-to-User information) from user during the active phase as a service provider option and check UUS response.

– If there is UUI 3 response, set UUI 3 on.

Then, FE1 shall send INFORM 1 resp. conf (response for User-to-User Signalling services) to FE2.

1.9.2 FEAs of FE2

921 FE2 shall receive INFORM 1 req. ind (request for User-to-User Signalling services) from FE1.

922 FE2 shall check UUS service request.

– Check for implicit Service 1 request.

– Check for explicit Service request.

– Determine any services are essential.

– Are services subscribed to?

– Are there sufficient signalling resources?

923 FE2 shall send INFORM 2 req. ind (request for User-to-User Signalling services) to FE3.

924 FE2 shall receive INFORM 2 resp. conf (response for User-to-User Signalling services) from FE3.

925 FE2 shall check which services are available to calling user.

– Which services were requested?

– Which services were confirmed by called user?

926 FE2 shall send INFORM 1 resp. conf (response for User-to-User Signalling services) to FE1.

927 FE2 shall receive INFORM 6 req. ind (user-to-user information) from FE3.

928 FE2 shall check which INFORM 2 resp. conf or INFORM 10 req. ind transfer is allowed.

– Is there INFORM 2 or INFORM 10?

– Is the appropriate service active?

– If there is INFORM 10, is the network congested?

929 FE2 shall send INFORM 9 req. ind (user-to-user information) to FE1.

92A FE2 shall receive INFORM 5 req. ind (user-to-user information) from FE1.

92B FE2 shall check which INFORM 5 req. ind transfer is allowed.

– Is there INFORM 5?

– Is the appropriate service active?

– If there is INFORM 5, is the network congested?

FE2 shall check and validate subscription option.

92C FE2 shall send INFORM 6 req. ind (user-to-user information) to FE3.

92D FE2 shall receive INFORM 2 req. ind (request for User-to-User Signalling services) from FE3 during the active phase as a service provider option.

92E FE2 shall check INFORM 2 to End user.

– Is INFORM 2 required?

– Is any UUI required?

– Is the calling user an ISDN user?

92F FE2 shall send INFORM 1 req. ind (request for User-to-User Signalling services) to FE1.

92G FE2 shall receive INFORM 1 resp. conf (response for User-to-User Signalling services) from FE1 as a service provider option.

92H FE2 shall check calling user response.

– Can user accept UUI Service 3?

92I FE2 shall send INFORM 2 resp. conf (response for User-to-User Signalling services) to FE3.

1.9.3 FEAs of FE3

931 FE3 shall receive INFORM 2 req. ind (request for User-to-User Signalling services) from FE2.

932 FE3 shall check INFORM 2 compatible path can be found.

– Is UUS required?

– If there is no compatible path, act appropriately.

933 FE3 shall send INFORM 3 req. ind (request for User-to-User Signalling services) to FE4.

934 FE3 shall receive INFORM 3 resp. conf (response for User-to-User Signalling services) from FE4.

935 FE3 shall check INFORM 3 resp. conf compatible path can be found.

– Is UUS required?

– If there is no compatible path, act appropriately.

936 FE3 shall send INFORM 2 resp. conf (response for User-to-User Signalling services) to FE2.

937 FE3 shall receive INFORM 7 req. ind (user-to-user information) from FE4.

938 FE3 shall check INFORM 7 compatible path can be found.

– Is UUS required?

– If there is no compatible path, act appropriately.

939 FE3 shall send INFORM 6 req. ind (user-to-user information) to FE2.

93A FE3 shall receive INFORM 6 req. ind (user-to-user information) from FE2.

93B FE3 shall check INFORM 2 or INFORM 6 compatible path can be found.

– Is UUS required?

– If there is no compatible path, act appropriately.

93C FE3 shall send INFORM 7 req. ind (user-to-user information) to FE4.

93D FE3 shall receive INFORM 3 req. ind (request for User-to-User Signalling services) from FE4 during the active phase as a service provider option.

93E FE3 shall check INFORM 3 compatible path can be found.

– Is UUS 3 required?

– If there is no compatible path, act appropriately.

93F FE3 shall send INFORM 2 req. ind (request for User-to-User Signalling services) to FE2.

93G FE3 shall receive INFORM 2 resp. conf (response for User-to-User Signalling services) from FE2 during the active phase as a service provider option.

93H FE3 shall check INFORM 2 compatible path can be found.

– Is UUS required?

– If there is no compatible path, act appropriately.

93I FE3 shall send INFORM 3 resp. conf (response for User-to-User Signalling services) to FE4.

1.9.4 FEAs of FE4

941 FE4 shall receive INFORM 3 req. ind (request for User-to-User Signalling services) from FE3.

942 FE4 shall check UUI to End user.

– Is UUS requested?

– Is any UUI required?

– Is the user an ISDN user?

943 FE4 shall send INFORM 4 req. ind (request for User-to-User Signalling services) to FE5.

944 FE4 shall receive INFORM 4 resp. conf (response for User-to-User Signalling services) from FE5.

945 FE4 shall check called user response.

– Is user multipoint?

– Can user accept UUI Service 2?

– Are all required services accepted?

– Potential contention causes that UUI can not be held in the REPORT

– If UUS is essential and UUS is not accepted, FE4 shall send RELEASE req. ind to FE3.

946 FE4 shall send INFORM 3 resp. conf (response for User-to-User Signalling services) to FE3.

947 FE4 shall receive INFORM 12 req. ind (user-to-user information) from FE5.

948 FE4 shall check that INFORM 12 transfer allowed.

– Is there INFORM 12?

– Is the appropriate service active?

– If INFORM 12, is the network congested?

FE4 shall check and validate subscription option as a network provider option.

949 FE4 shall send INFORM 11 req. ind (user-to-user information) to FE3.

94A FE4 shall receive INFORM 7 req. ind (user-to-user information) from FE3.

94B FE4 shall check that INFORM 7 transfer allowed.

– Is there INFORM 7?

– Is the appropriate service active?

– If INFORM 7, is the network congested?

94C FE4 shall send INFORM 8 req. ind (user-to-user information) to FE5.

94D FE4 shall receive INFORM 4 req. ind (request for User-to-User Signalling services) from FE5 during the active phase as a service provider option.

94E FE4 shall check UUS service request.

– Is UUS Service 3 required?

– Is there compatible path, act appropriately.

94F FE4 shall send INFORM 3 req. ind (request for User-to-User Signalling services) to FE3.

94G FE4 shall receive INFORM 3 resp. conf (response for User-to-User Signalling services) from FE3 during the active phase as a service provider option.

94H FE4 shall check service 3 is available to calling user.

– Which services are confirmed by calling user?

94I FE4 shall send INFORM 4 resp. conf (response for User-to-User Signalling service 3) to FE5.

1.9.5 FEAs of FE5

951 FE5 shall receive INFORM 4 req. ind (request for User-to-User Signalling services) from FE4 and check UUS Service request.

– If there is UUI 1 rne. or re. ind. in SETUP, set UUI 1 req.

– If there is UUI 2 rne. or re. ind. in SETUP, set UUI 2 req.

– If there is UUI 3 rne. or re. ind. in SETUP, set UUI 3 req.

Then, FE5 shall send INFORM 4 req. (request for User-to-User Signalling services) to user.

952 FE5 shall receive INFORM 4 resp. (response for User-to-User Signalling services) from user and check UUS response.

– If FE5 receive UUI 1 req. and receive UUI 1 conf., set UUI 1 on.

– If FE5 receive UUI 2 req. and receive UUI 2 conf., set UUI 2 on.

– If FE5 receive UUI 3 req. and receive UUI 3 conf., set UUI 3 on.

Then, FE5 shall send INFORM 4 resp. conf (response for User-to-User Signalling services) to FE4.

– If UUS is essential and UUS is not accepted, FE4 shall send DISCONNECT req. ind to FE4.

953 FE5 shall receive INFORM 8 req. (user-to-user information) from user and check activation of the services.

– Is there INFORM 8?

– Is the appropriate service active?

– If INFORM 8, is the network congested?

Then, FE5 shall send INFORM 8 req. ind (user-to-user information) to FE4.

954 FE5 shall receive INFORM 8 req. ind (user-to-user information) from FE4 and check activation of the services.

– Is there INFORM 8?

– Is the appropriate service active?

– If INFORM 8, is the network congested?

Then, FE5 shall inform called user of UUI information.

955 FE5 shall receive INFORM 4 req. (request for User-to-User Signalling service 3) from user during the active phase as a service provider option and check UUS service request.

– If there is UUI 3 req., set UUI 3 rne.

Then, FE5 shall send INFORM 4 req. ind (request for User-to-User Signalling service 3) to FE4.

956 FE5 shall receive INFORM 4 resp. conf (response for User-to-User Signalling services) from FE4 as a service provider option and check service 3 is available to called user.

– If FE5 send UUI 3 req. and receive UUI 3 conf., set UUI 3 on.

Then, FE5 shall inform called user of provided services or not.

1.10 Allocatio n of functional entities to physical locations

Only one instance of the service exists irrespective of the number of the network.

The allocations of functional entities for the User-to-User Signalling services are shown in Table 1-4.

TABLE 1-4/Q.87

Allocations of functional entities

Scenario	FE1	FE2	FE3	FE4	FE5
1	TE	LE	TR	LE	TE
2	PNX	LE	TR	LE	TE
3	TE	LE	TR	LE	PNX
4	PNX	LE	TR	LE	PNX
5	TE	PNX	TR	LE	TE
6	TE	LE	TR	PNX	TE
7	TE	PNX	TR	PNX	TE
8	TE	PNX	LE	LE	TE
9	TE	LE	LE	PNX	TE
10	TE	PNX	LE	PNX	TE