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Foreword

This European Telecommunication Standard (ETS) has been prepared by the Signalling Protocols and Switching (SPS) Technical Committee of the European Telecommunications Standards Institute (ETSI).

In accordance with CCITT Recommendation I.130, the following three level structure is used to describe the telecommunication services as provided by European public telecommunications operators under the pan-European Integrated Services Digital Network (ISDN):

- Stage 1: is an overall service description, from the user's standpoint;

- Stage 2: identifies the functional capabilities and information flows needed to support the service described in stage 1; and,

- Stage 3: defines the signalling system protocols and switching functions needed to implement the service described in stage 1.

This ETS details the stage 2 aspects (functional capabilities and information flows) needed to support the telephony 7 kHz teleservice. The stage 1 and stage 3 aspects are detailed in ETS 300 263 (1994) and ETS 300 267-1 (1994), respectively.

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1 Scope

This ETS defines the stage two of the telephony 7 kHz teleservice for the pan-European Integrated Services Digital Network (ISDN) as provided by European public telecommunications operators. The stage two description identifies the functional capabilities and the information flows needed to support the service description. The stage two description also identifies user operations not directly associated with a call (see CCITT Recommendation I.130 [2]).

This ETS is specified according to the methodology specified in CCITT Recommendation Q.65 [3].

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

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

The telephony 7 kHz teleservice is a realtime teleservice in which speech (7 kHz or 3,1 kHz bandwidth) can be interchanged using one circuit-mode 64 kbit/s connection.

This ETS is applicable to the stage three standards for the ISDN telephony 7 kHz teleservice. The term "stage three" is also defined in CCITT Recommendation I.130 [2]. Where the text indicates the status of a requirement, i.e. as a strict command or prohibition, as authorisation leaving freedom, as a capability or possibility, this shall be reflected in the relevant stage three standards.

Furthermore, conformance to this ETS is met by conforming to the stage three standards with the field of application appropriate to the equipment being implemented. Therefore, no method of testing is provided for this ETS.

2 Normative references

This ETS incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] CCITT Recommendation I.112 (1988): "Vocabulary of terms for ISDNs".

[2] CCITT Recommendation I.130 (1988): "Method for the characterisation of telecommunication services supported by an ISDN and network capabilities of an ISDN".

[3] CCITT Recommendation Q.65 (1988): "Stage 2 of the method for the characterisation of services supported by an ISDN".

[4] CCITT Recommendation Q.71 (1988): "ISDN 64 kbit/s circuit mode switched bearer services".

[5] CCITT Recommendation Z.100 (1988): "Functional Specification and Description Language (SDL)".

[6] ETS 300 144: "Integrated Services Digital Network (ISDN); Audiovisual services; Frame structure for a 64 kbit/s to 1 920 kbit/s channel and associated syntax for inband signalling" (equivalent to ITU-T Recommendation H.221).

3 Definitions

For the purposes of this ETS, the following definitions apply:

3,1 kHz terminal: a terminal that supports only the telephony 3,1 kHz teleservice.

7 kHz terminal: a terminal that supports the telephony 7 kHz teleservice.

Connection: see CCITT Recommendation I.112 [1], § 2.3, definition 309.

Integrated Services Digital Network (ISDN): see CCITT Recommendation I.112 [1], § 2.3, definition 308.

Service; telecommunications service: see CCITT Recommendation I.112 [1], § 2.2, definition 201.

Teleservice: see CCITT Recommendation I.112 [1], § 2.2, definition 203.

4 Symbols and abbreviations

For the purposes of this ETS, the following abbreviations apply:

CC	Call Control
CCA	Call Control Agent
FE	Functional Entity
FEA	Functional Entity Action
SDL	Specification and Description Language

5 Description

The telephony 7 kHz teleservice enables the user to communicate with high quality speech or by interchanging sounds with higher quality than that provided by the telephony 3,1 kHz teleservice. The telephony 7 kHz teleservice provides speech communication with a frequency range from 50 to 7 000 Hz using one circuit-mode 64 kbit/s connection. The digital signal over the connection follows the internationally agreed encoding laws for high quality speech. Tones and announcements are provided by the network.

The telephony 3,1 kHz teleservice may be charged at a cheaper rate and users shall have the option of accessing either service. The calling user can indicate that fallback to the telephony 3,1 kHz teleservice is not allowed, in which case the call shall be offered to the called user at 7 kHz terminals. If the calling user has indicated that fallback is allowed the network shall offer the call to the called user at all 7 kHz terminals and 3,1 kHz terminals. The called user can accept the call at any terminal where the call is offered.

6 Derivation of the functional model

6.1 Functional model description

The functional model for the telephony 7 kHz teleservice is shown in figure 1.

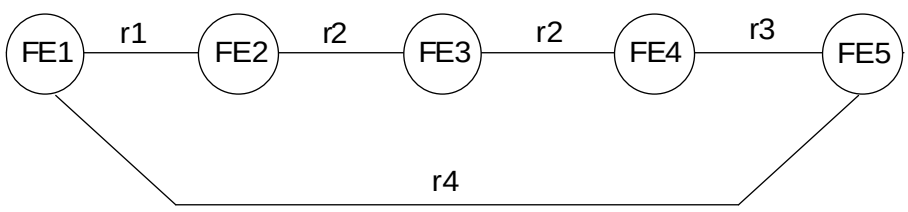


Figure 1: Functional model

6.2 Description of functional entities

The Functional Entities (FEs) required by the telephony 7 kHz teleservice are those of basic call and are as follows:

FE1: Originating Call Control Agent (CCA);
FE2: Call Control (CC);
FE3: Call control;
FE4: Call control;
FE5: Destination call control agent.

7 Information flows

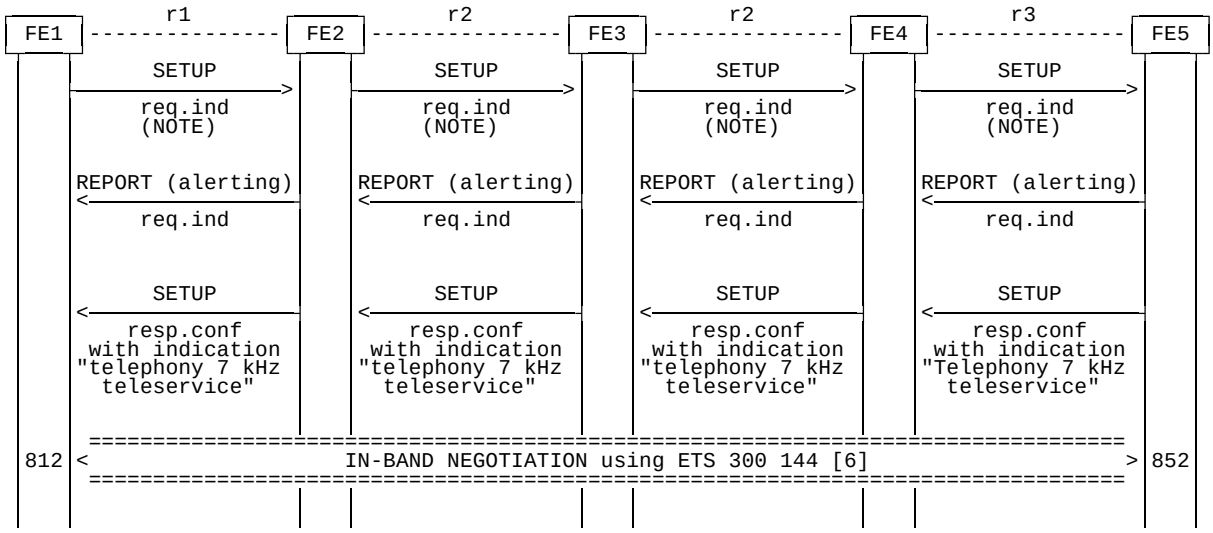
The following information flow diagrams contain only the information flows modified for the telephony 7 kHz teleservice. For the complete information flow diagrams, see CCITT Recommendation Q.71 [4]. Only the additional functional entity actions are mentioned in the flow diagrams.

7.1 Information flow diagrams

The information flows are shown in figures 2 and 3. The following information flows are depicted:

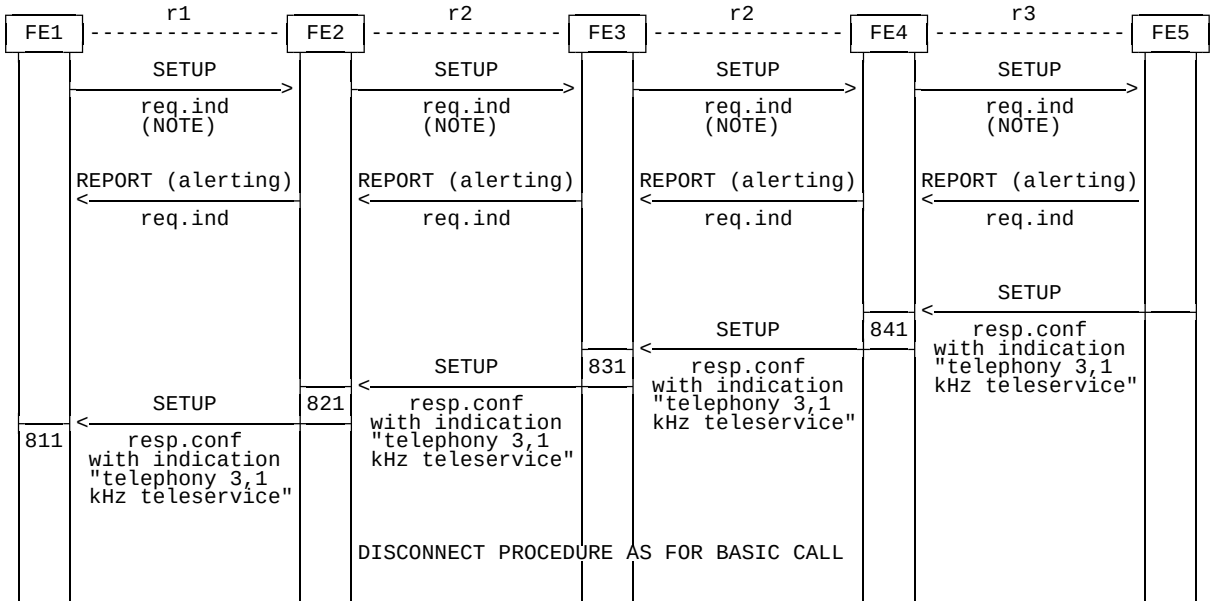
Figure 2: 7 kHz terminal to 7 kHz terminal call setup;

Figure 3: 7 kHz terminal to 3,1 kHz terminal call setup (the calling 7 kHz terminal allows fallback to the telephony 3,1 kHz teleservice).



NOTE: Call according to the telephony 7 kHz teleservice: compatibility information indicates telephony 7 kHz teleservice with fallback allowed to telephony 3,1 kHz teleservice.

Figure 2: 7 kHz terminal to 7 kHz terminal call setup



NOTE: Call according to the telephony 7kHz teleservice: compatibility information indicates telephony 7 kHz teleservice with fallback allowed to telephony 3,1 kHz teleservice.

Figure 3: 7 kHz terminal to 3,1 kHz terminal call setup (the calling 7 kHz terminal allows fallback to the telephony 3,1 kHz teleservice)

7.2 Definition of information flows

As described in CCITT Recommendation Q.71 [4].

In CCITT Recommendation Q.71 [4], § 2.2.2.5 (REPORT), amend the table as shown in table 1.

Table 1

Item	**Relationship**	**req.ind**
Alternative service (NOTE)	r1,r2	optional
Channel identity	r1,r2	optional
Connect request	r2	optional
Called line category	r2	mandatory
Called line status	r2	mandatory
Report type	r1,r2	mandatory
NOTE: For the telephony 7 kHz teleservice, this parameter is set to "telephony 3,1 kHz teleservice". If included, fallback has occurred.		

In CCITT Recommendation Q.71 [4], § 2.2.2.6 (SETUP), amend the table as shown in table 2.

Table 2

Use	Item	Relationship	req.ind	resp.conf
Protocol info	Connect request	r2	optional	optional
Service/bearer info	Service (NOTE 1)	r1,r2	mandatory	optional
Service/bearer info	Alternative service (NOTE 2)	r1,r2	optional	optional
Bearer info	Nature of transaction	r2	mandatory	
Bearer info	Channel identity	r1,r2	mandatory	optional
Routing info	Called number	r1,r2	mandatory	
Routing info	Transit network selection	r1,r2	optional	
Originating info	Calling line identity	r1,r2	optional	
Terminating info	Connected line identity	r2		mandatory
Access info	Additional compatibility	r1	optional (NOTE 3)	

NOTE 1: For the telephony 7 kHz teleservice, this parameter is set to "telephony 7 kHz teleservice".

NOTE 2: For the telephony 7 kHz teleservice, this parameter is set to "telephony 3,1 kHz teleservice". If included in the req.ind, fallback is allowed. If included in the resp.conf, fallback has occurred.

NOTE 3: If fallback is allowed (i.e. an alternative service is specified) this parameter shall not be included.

8 SDL diagrams for functional entities

The Specification and Description Language (SDL) diagrams are provided according to CCITT Recommendation Z.100 [5].

The call according to the telephony 7 kHz teleservice is established as defined in CCITT Recommendation Q.71 [4] but with some modifications and additional features. Figures 4 to 8 show only the CCITT Recommendation Q.71 [4] SDL diagram sheets modified for the call according to the telephony 7 kHz teleservice.

NOTE: All references to notes in figures 5 to 7 refer to the respective notes in CCITT Recommendation Q.71 [4].

The in-band negotiation between FE1 and FE5 using the relationship r4 is not specified in this ETS, it is described in ETS 300 144 [6].

8.1 SDL diagrams for FE1

The SDL diagrams for FE1 are shown in figure 4.

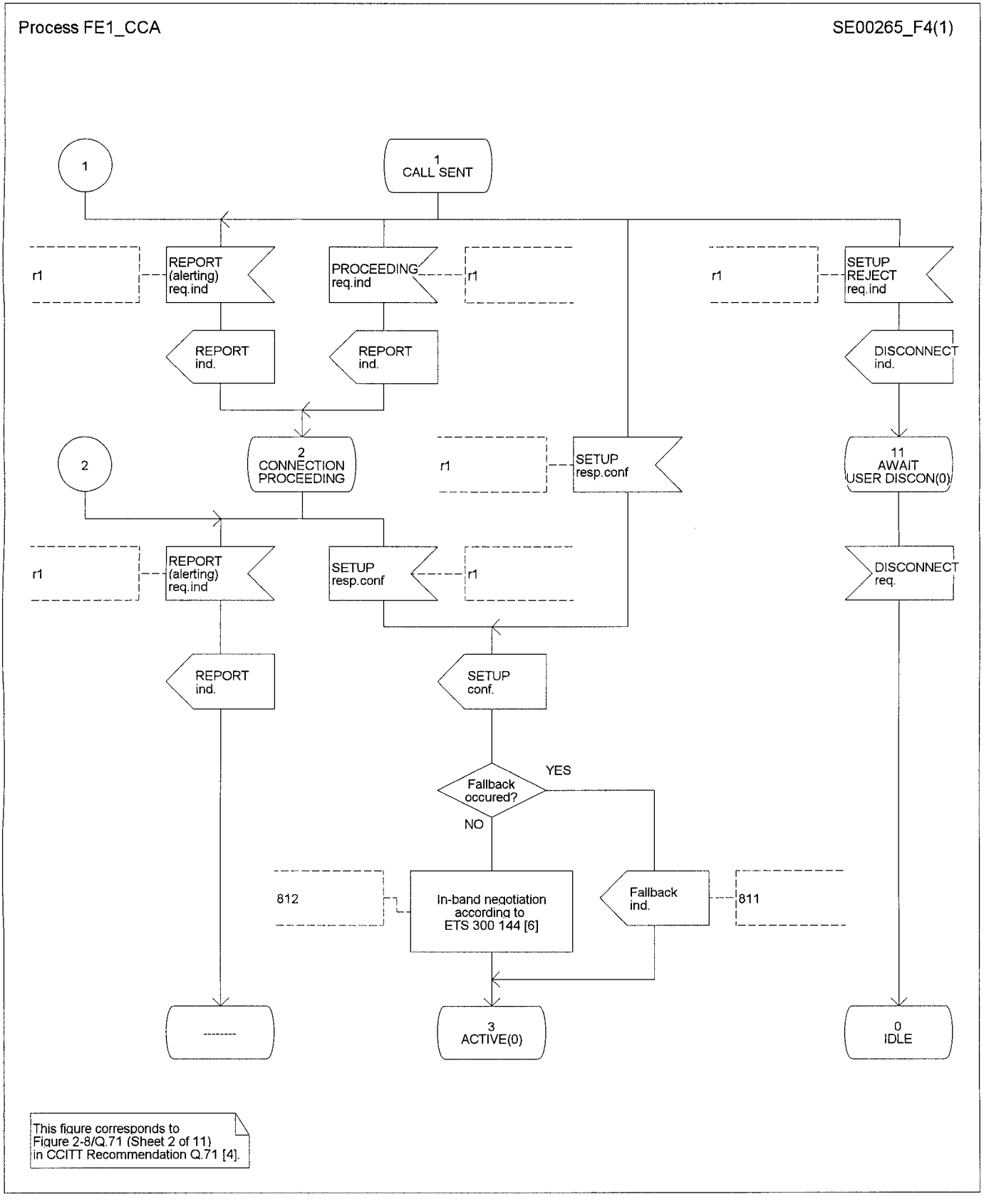


Figure 4

8.2 SDL diagrams for FE2

The SDL diagrams for FE2 are shown in figure 5.

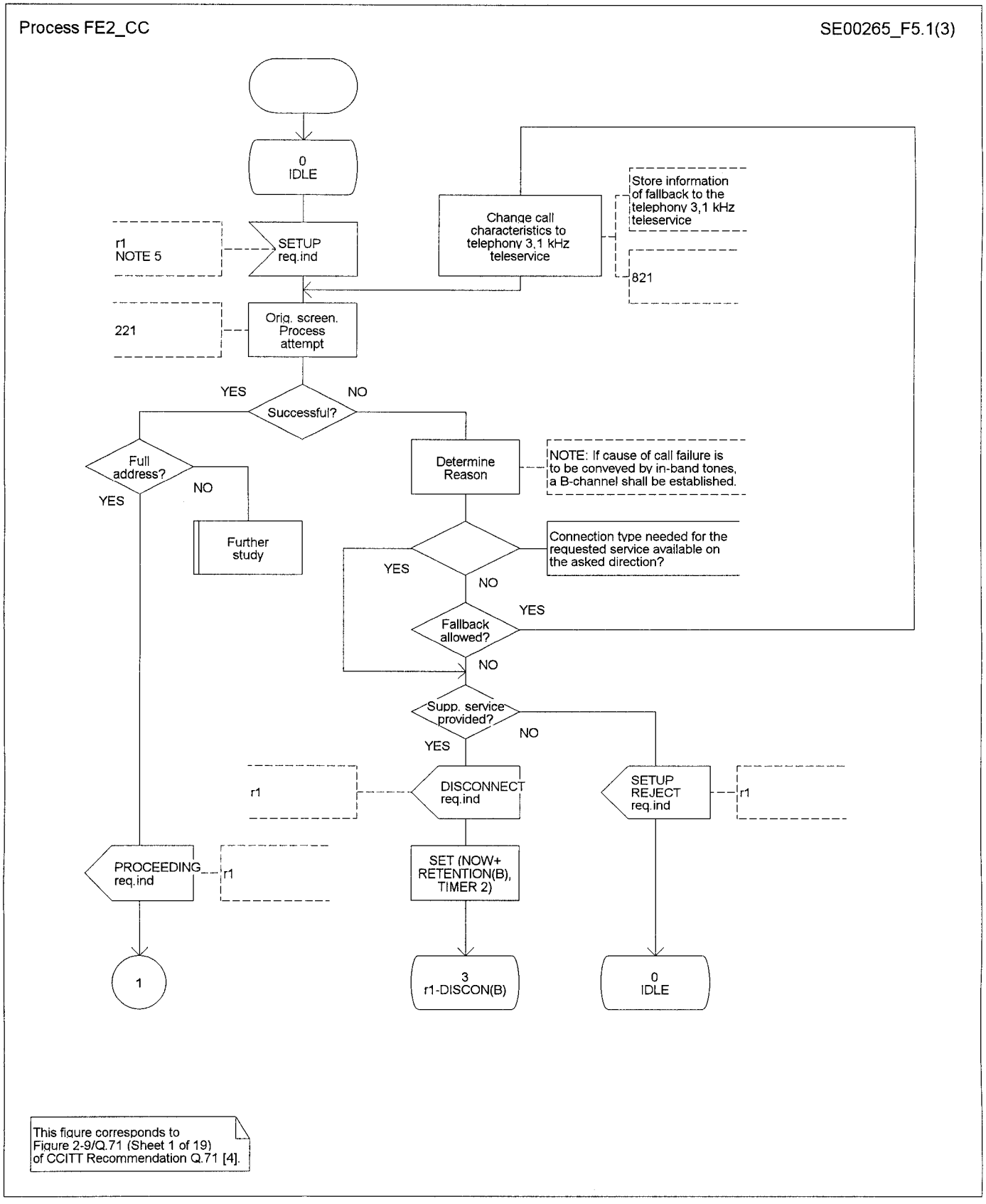


Figure 5.1

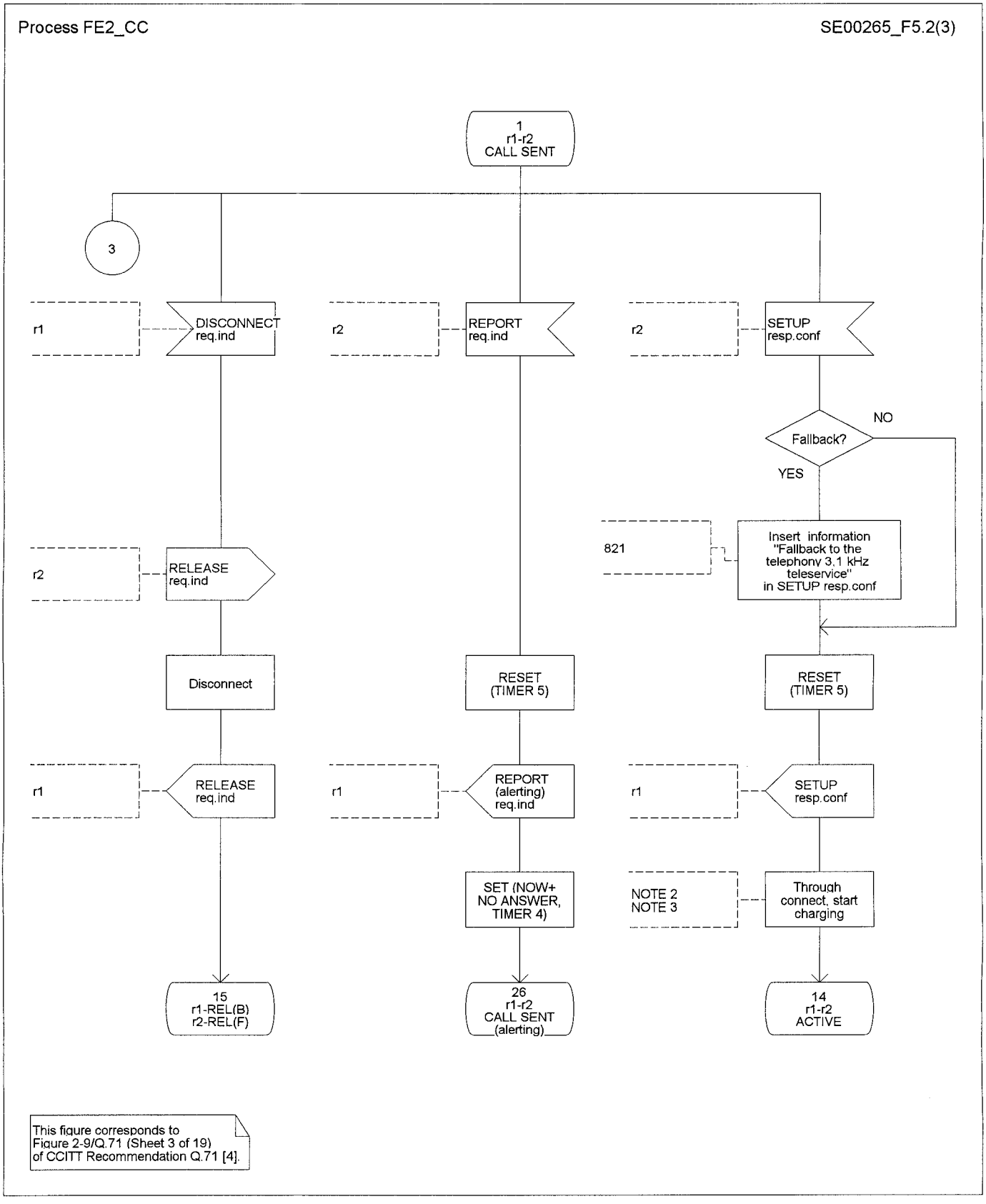

Process FE2_CC
SE00265_F5.2(3)
1
r1-r2
CALL SENT
3
r1
DISCONNECT
req.ind
r2
REPORT
req.ind
r2
SETUP
resp.conf
Fallback?
NO
YES
821
Insert information
"Fallback to the
telephony 3.1 kHz
teleservice"
in SETUP resp.conf
r2
RELEASE
req.ind
Disconnect
RESET
(TIMER 5)
RESET
(TIMER 5)
r1
RELEASE
req.ind
r1
REPORT
(alerting)
req.ind
r1
SETUP
resp.conf
SET (NOW+
NO ANSWER,
TIMER 4)
NOTE 2
NOTE 3
Through
connect, start
charging
15
r1-REL(B)
r2-REL(F)
26
r1-r2
CALL SENT
(alerting)
14
r1-r2
ACTIVE
This figure corresponds to
Figure 2-9/Q.71 (Sheet 3 of 19)
of CCITT Recommendation Q.71 [4].

Figure 5.2

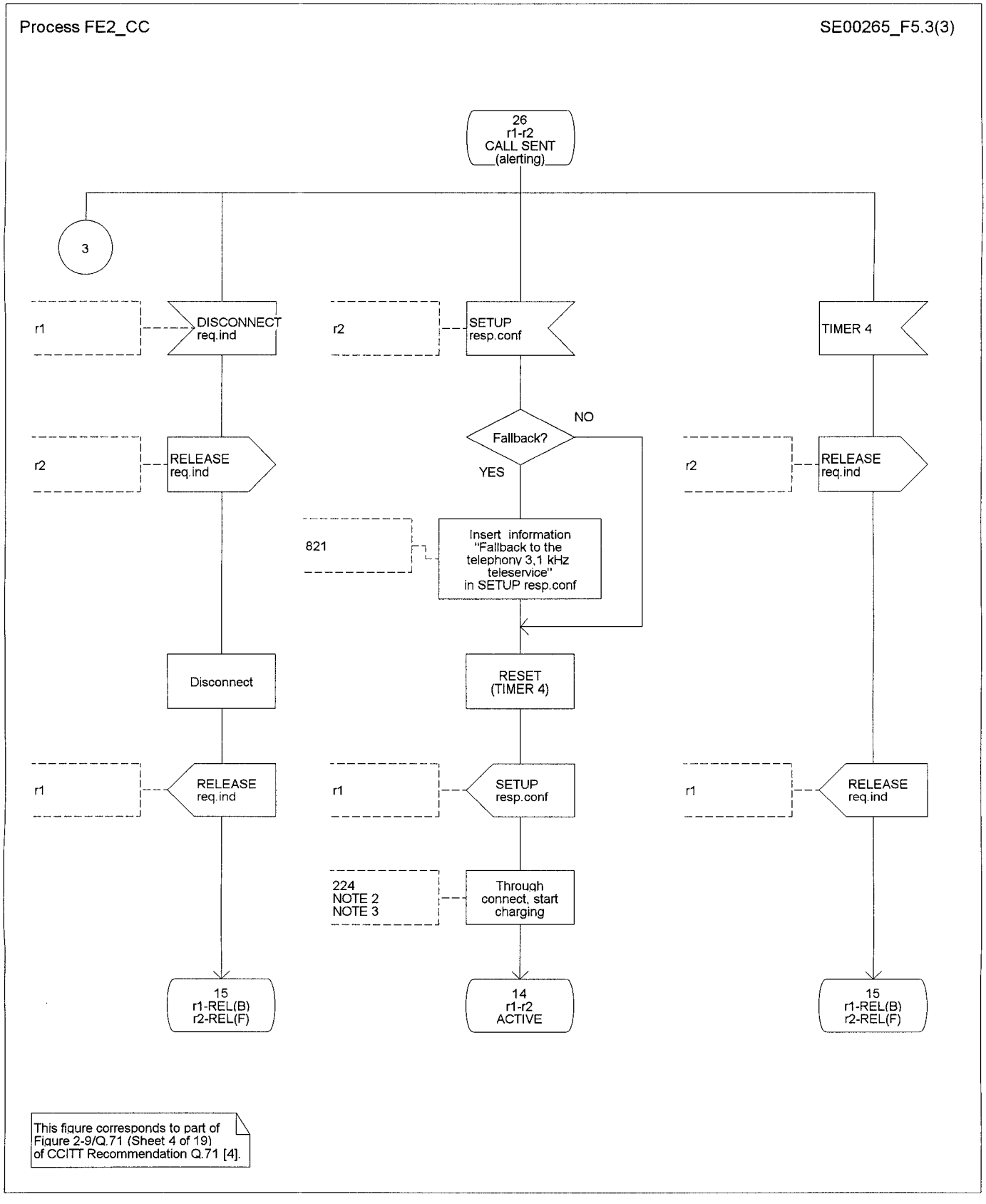

Process FE2_CC
SE00265_F5.3(3)
26
r1-r2
CALL SENT
(alerting)
3
r1
DISCONNECT
req.ind
r2
SETUP
resp.conf
TIMER 4
NO
Fallback?
YES
r2
RELEASE
req.ind
r2
RELEASE
req.ind
821
Insert information
"Fallback to the
telephony 3,1 kHz
teleservice"
in SETUP resp.conf
Disconnect
RESET
(TIMER 4)
r1
RELEASE
req.ind
r1
SETUP
resp.conf
r1
RELEASE
req.ind
224
NOTE 2
NOTE 3
Through
connect, start
charging
15
r1-REL(B)
r2-REL(F)
14
r1-r2
ACTIVE
15
r1-REL(B)
r2-REL(F)
This figure corresponds to part of
Figure 2-9/Q.71 (Sheet 4 of 19)
of CCITT Recommendation Q.71 [4].

Figure 5.3

8.3 SDL diagrams for FE3

The SDL diagrams for FE3 are shown in figure 6.

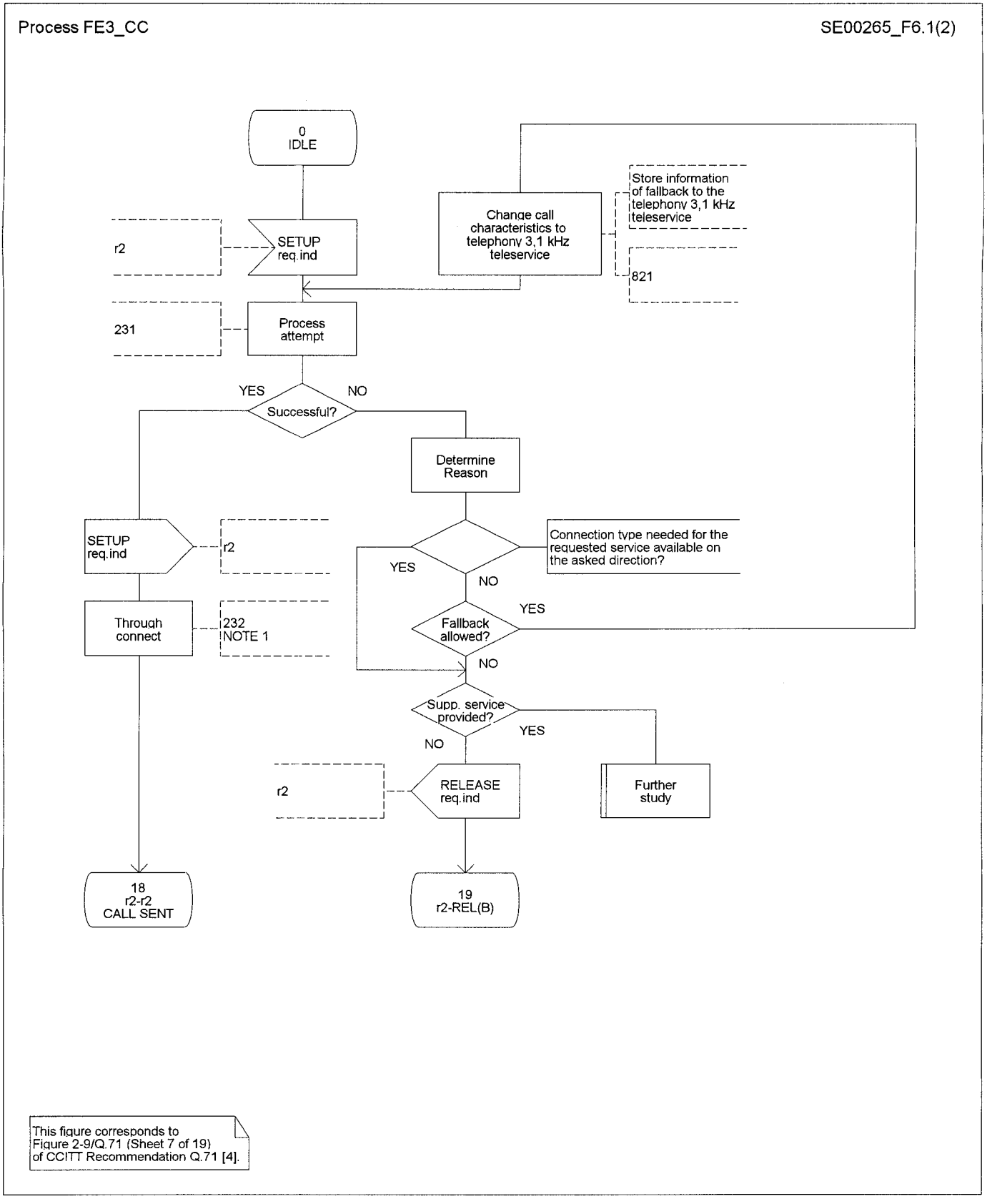
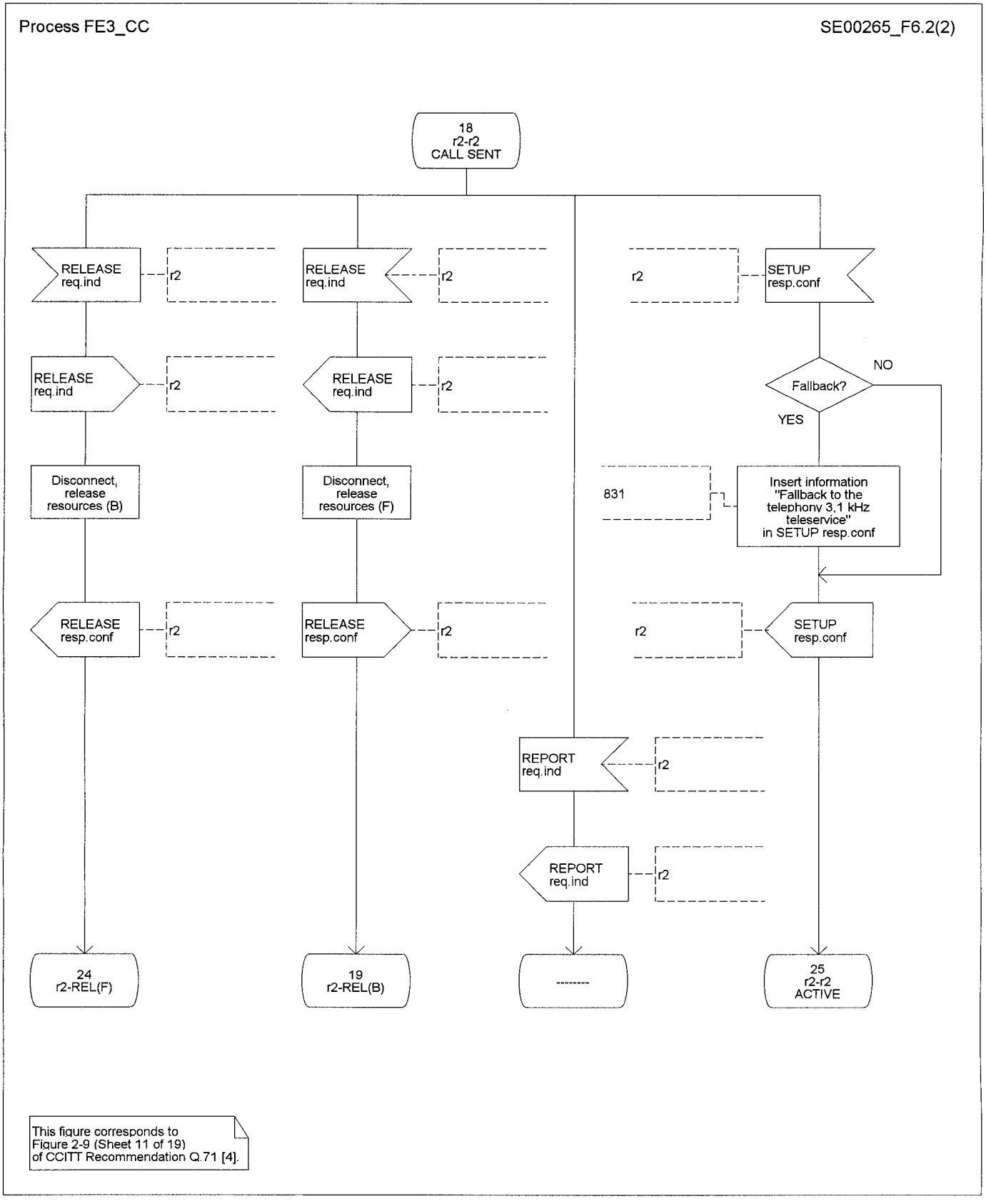


Figure 6.1


Process FE3_CC
SE00265_F6.2(2)
18
r2-r2
CALL SENT
RELEASE
req.ind
r2
RELEASE
req.ind
r2
r2
SETUP
resp.conf
RELEASE
req.ind
r2
RELEASE
req.ind
r2
Fallback?
NO
YES
Disconnect,
release
resources (B)
Disconnect,
release
resources (F)
831
Insert information
"Fallback to the
telephony 3,1 kHz
teleservice"
in SETUP resp.conf
RELEASE
resp.conf
r2
RELEASE
resp.conf
r2
r2
SETUP
resp.conf
REPORT
req.ind
r2
REPORT
req.ind
r2
24
r2-REL(F)
19
r2-REL(B)

25
r2-r2
ACTIVE
This figure corresponds to
Figure 2-9 (Sheet 11 of 19)
of CCITT Recommendation Q.71 [4].

Figure 6.2

8.4 SDL diagrams for FE4

The SDL diagrams for FE4 are shown in figure 7.

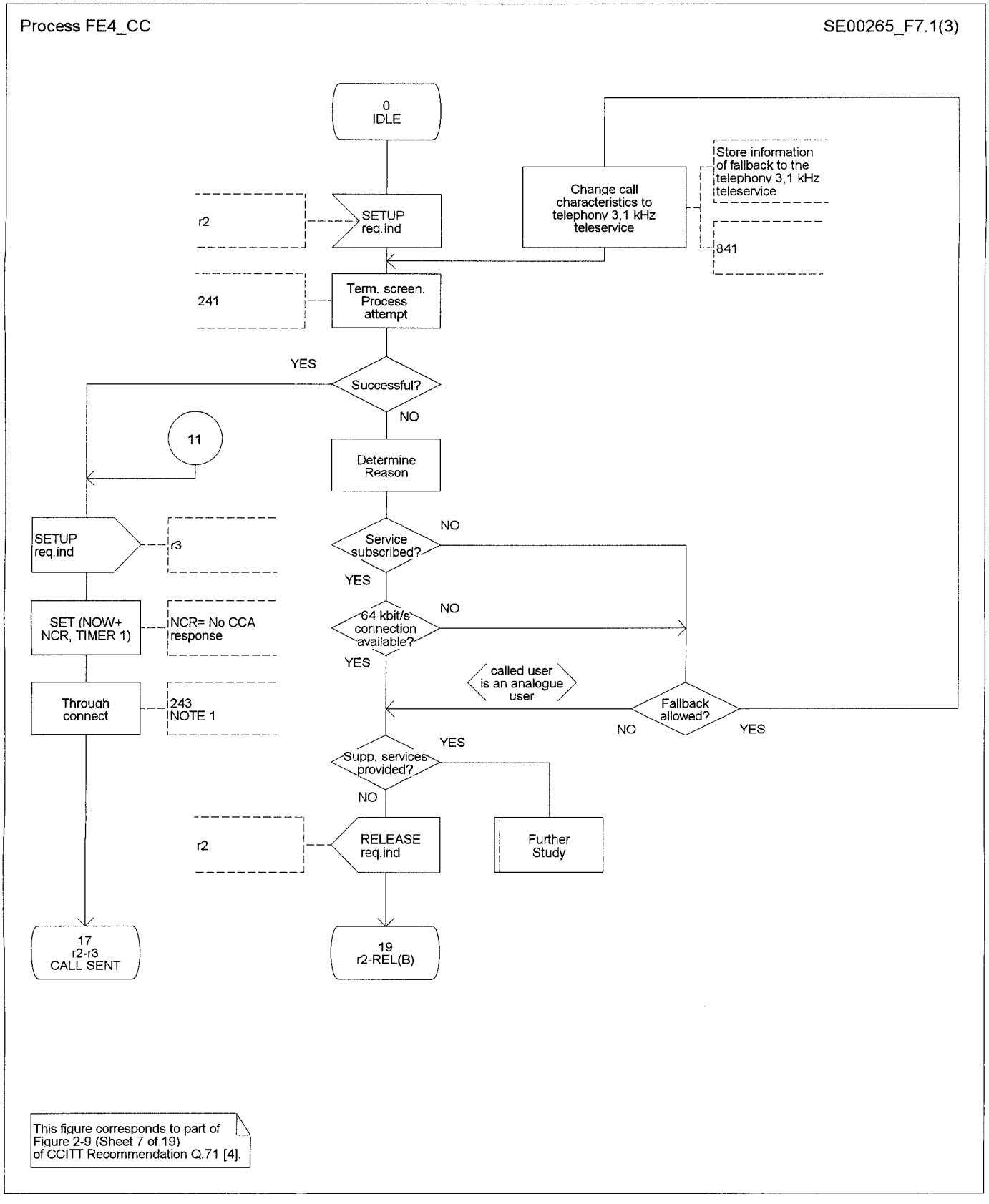


Figure 7.1

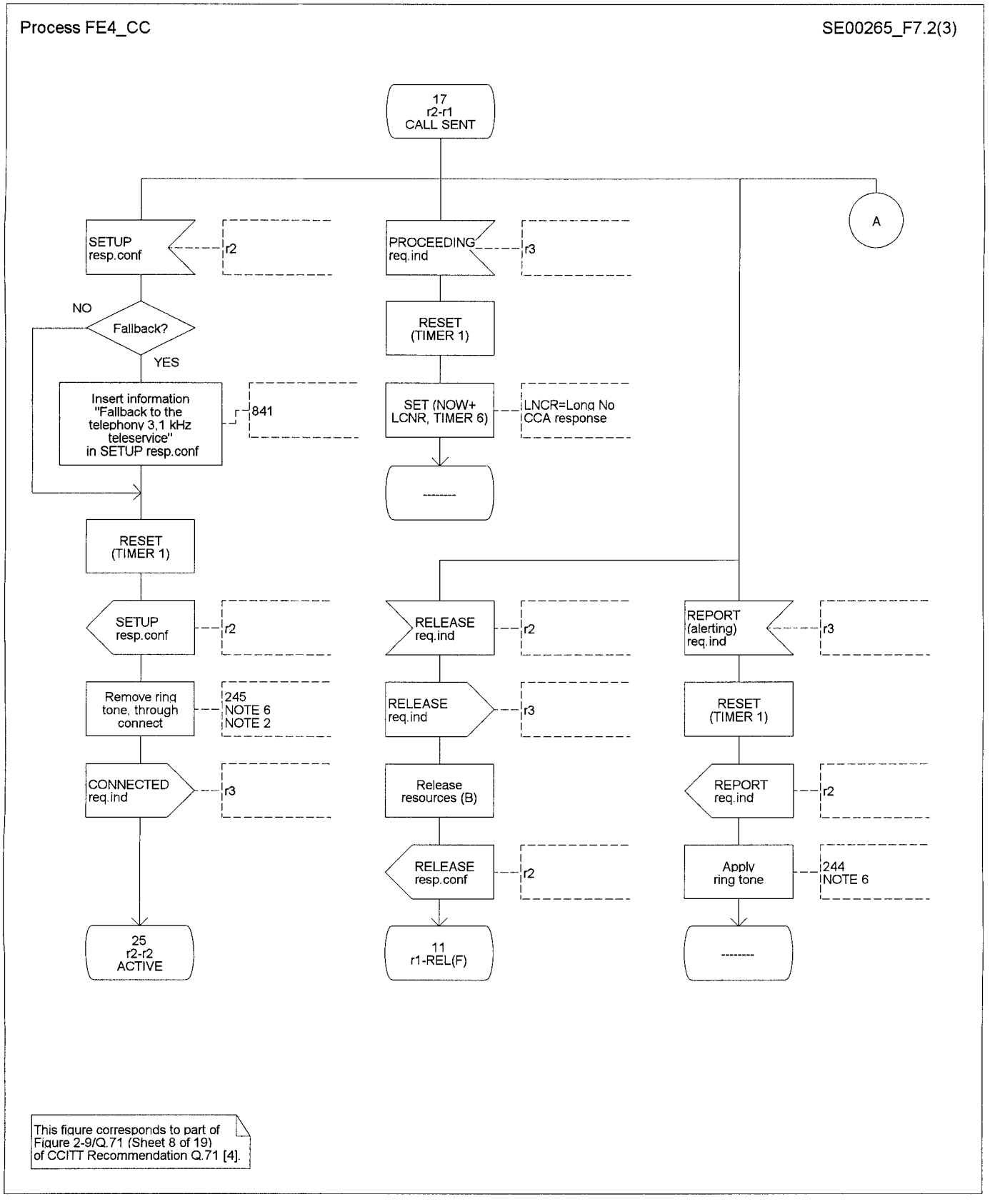
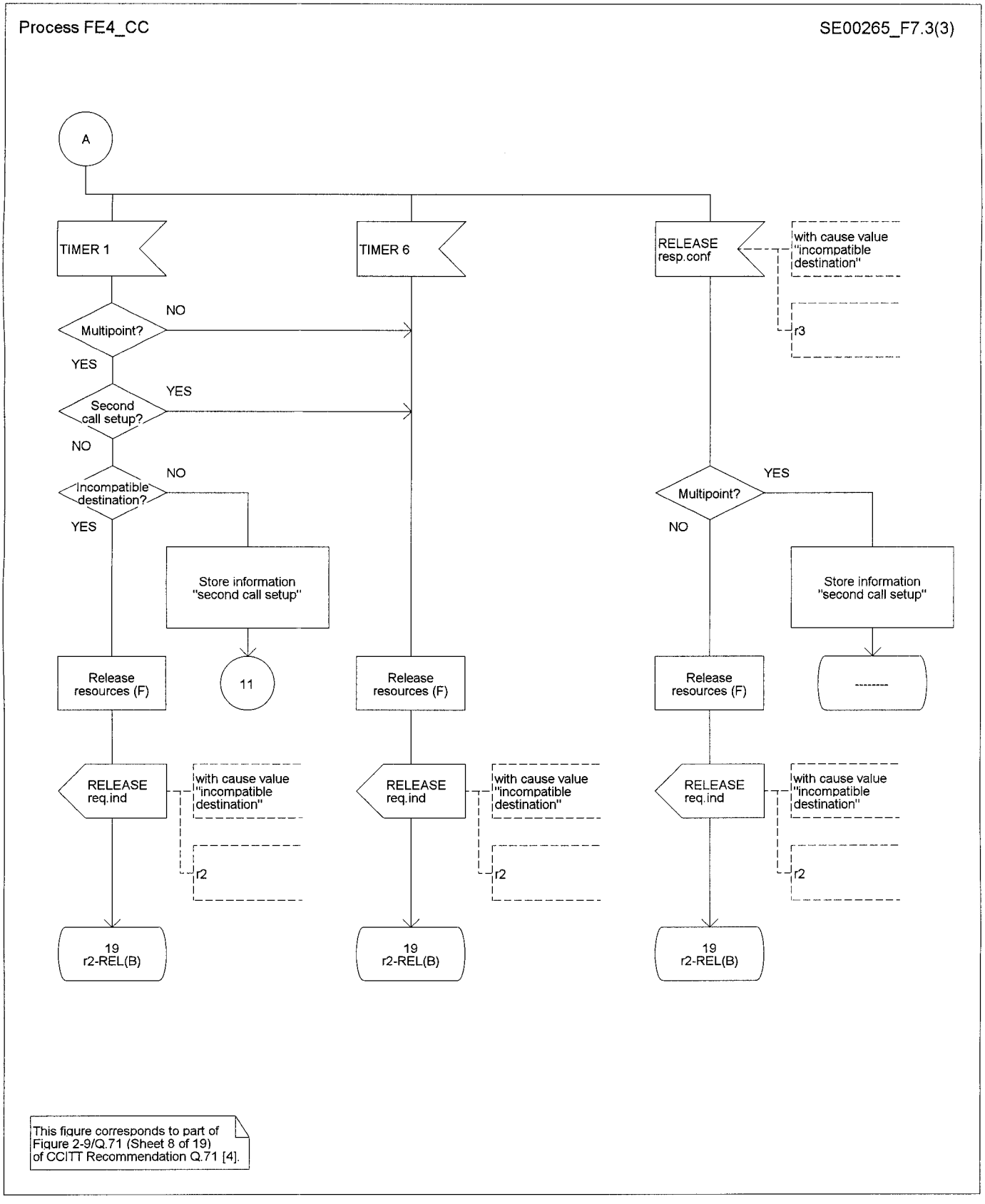

Process FE4_CC
SE00265_F7.2(3)
17
r2-r1
CALL SENT
A
SETUP
resp.conf
r2
PROCEEDING
req.ind
r3
NO
Fallback?
YES
RESET
(TIMER 1)
Insert information
"Fallback to the
telephony 3,1 kHz
teleservice"
in SETUP resp.conf
841
SET (NOW+
LCNR, TIMER 6)
LNCR=Long No
CCA response
RESET
(TIMER 1)
SETUP
resp.conf
r2
RELEASE
req.ind
r2
REPORT
(alerting)
req.ind
r3
Remove ring
tone, through
connect
245
NOTE 6
NOTE 2
RELEASE
req.ind
r3
RESET
(TIMER 1)
CONNECTED
req.ind
r3
Release
resources (B)
REPORT
req.ind
r2
RELEASE
resp.conf
r2
Apply
ring tone
244
NOTE 6
25
r2-r2
ACTIVE
11
r1-REL(F)
This figure corresponds to part of
Figure 2-9/Q.71 (Sheet 8 of 19)
of CCITT Recommendation Q.71 [4].

Figure 7.2


Process FE4_CC
SE00265_F7.3(3)
A
TIMER 1
TIMER 6
RELEASE resp.conf
with cause value "incompatible destination"
r3
Multipoint?
NO
YES
Second call setup?
YES
NO
Incompatible destination?
NO
YES
Store information "second call setup"
11
Release resources (F)
RELEASE req.ind
with cause value "incompatible destination"
r2
19 r2-REL(B)
Multipoint?
YES
NO
Store information "second call setup"

This figure corresponds to part of Figure 2-9/Q.71 (Sheet 8 of 19) of CCITT Recommendation Q.71 [4].

Figure 7.3

8.5 SDL diagrams for FE5

The SDL diagrams for FE5 are shown in figure 8.

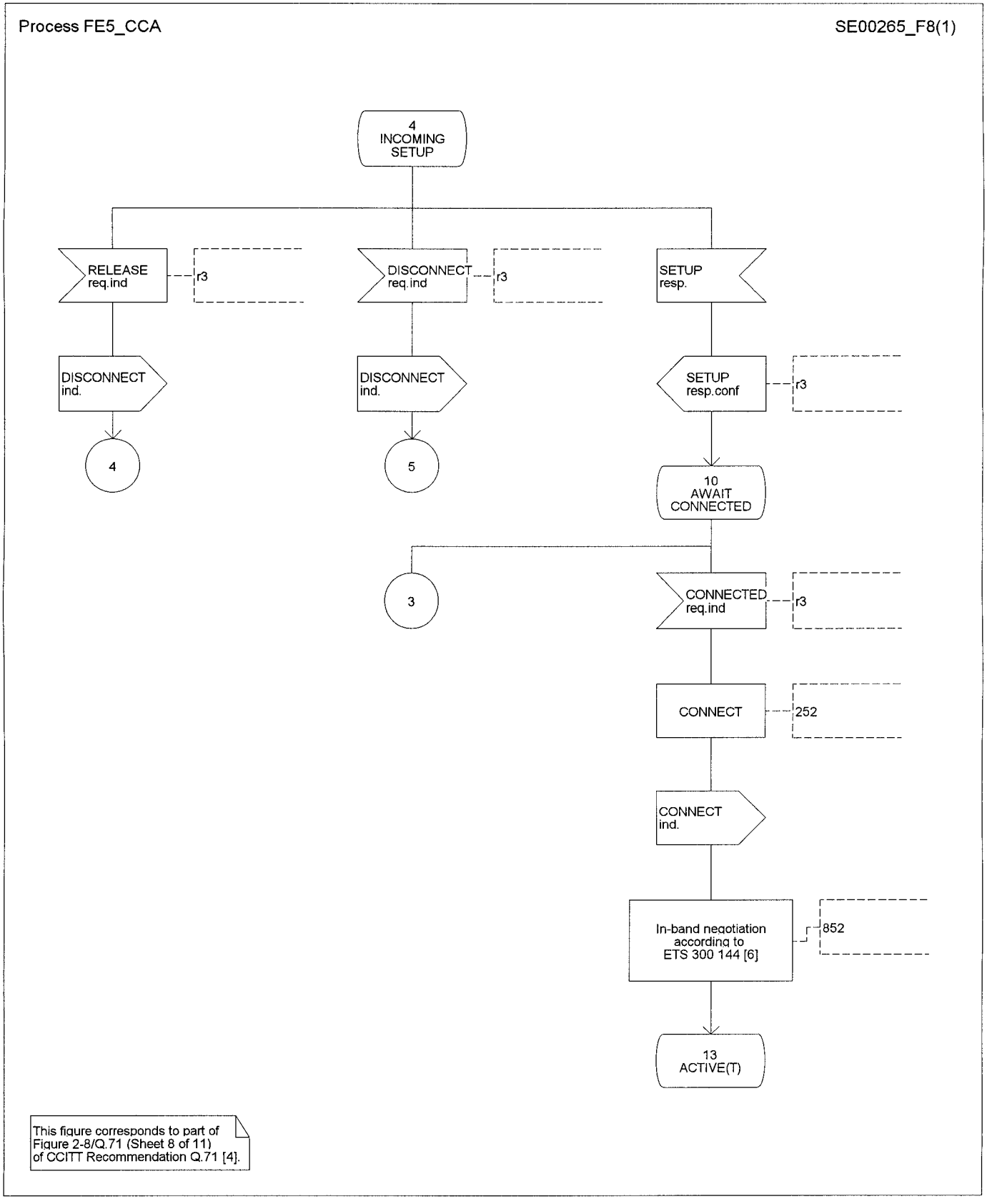


Figure 8

9 Functional Entity Actions (FEAs)

9.1 FEAs of FE1

In addition to the FEAs defined in CCITT Recommendation Q.71 [4]:

811: FE1 shall handle the fallback to the telephony 3,1 kHz teleservice if authorised by the calling user;

812: FE1 shall handle in-band negotiation as per ETS 300 144 [6].

9.2 FEAs of FE2

In addition to the FEAs defined in CCITT Recommendation Q.71 [4]:

821: FE2 shall handle the fallback to the telephony 3,1 kHz teleservice if authorised by the calling user.

9.3 FEAs of FE3

In addition to the FEAs defined in CCITT Recommendation Q.71 [4]:

831: FE3 shall handle the fallback to the telephony 3,1 kHz teleservice if authorised by the calling user.

9.4 FEAs of FE4

In addition to the FEAs defined in CCITT Recommendation Q.71 [4]:

841: FE4 shall handle the fallback to the telephony 3,1 kHz teleservice if authorised by the calling user.

9.5 FEAs of FE5

In addition to the FEAs defined in CCITT Recommendation Q.71 [4]:

852: FE5 shall handle in-band negotiation as per ETS 300 144 [6].

10 Network physical location scenarios

As described in CCITT Recommendation Q.71 [4], see table 2.

History

Document history	
February 1994	First Edition
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