ISDN

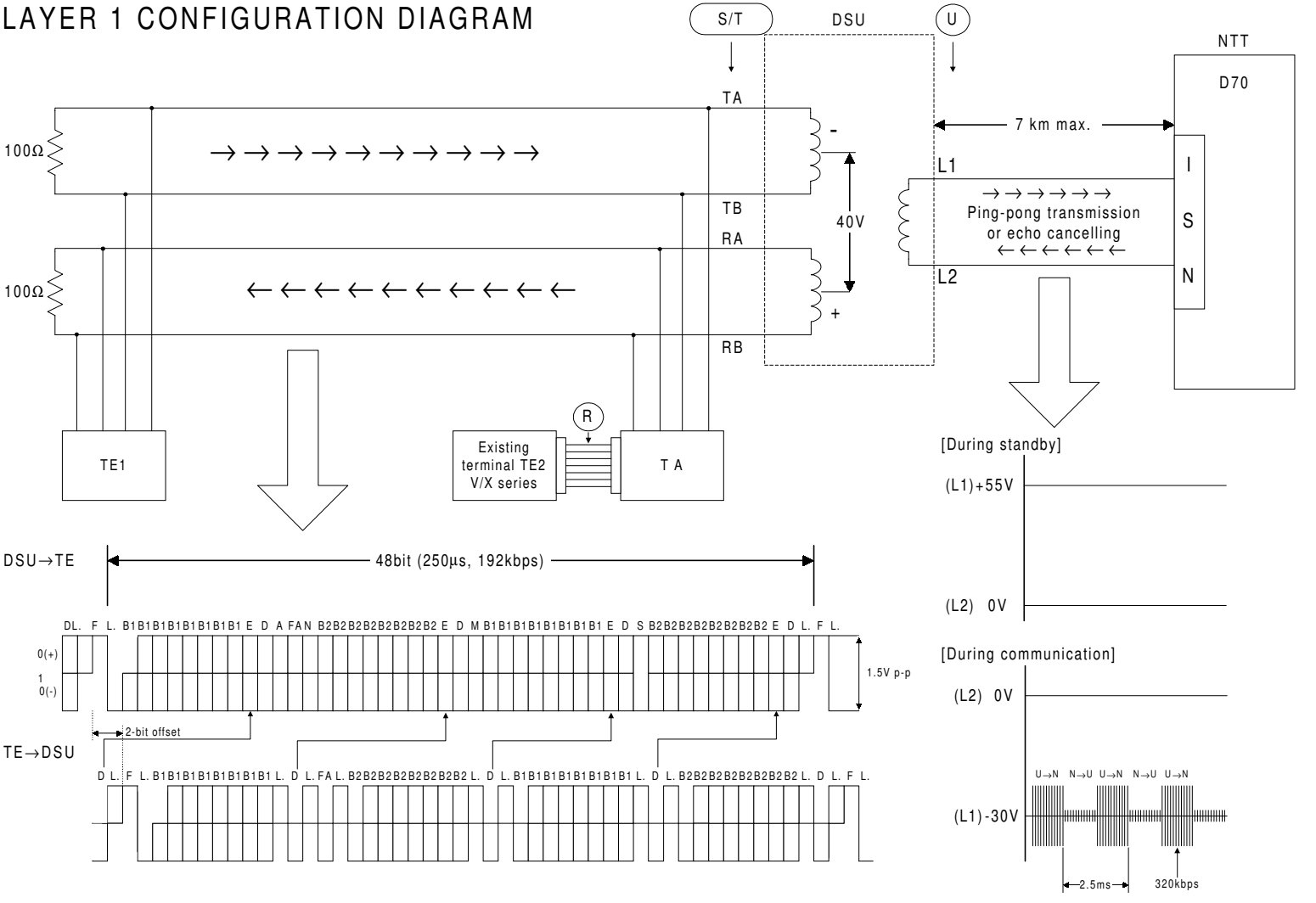
Protocol Handbook

Revised on September 20th, 1995

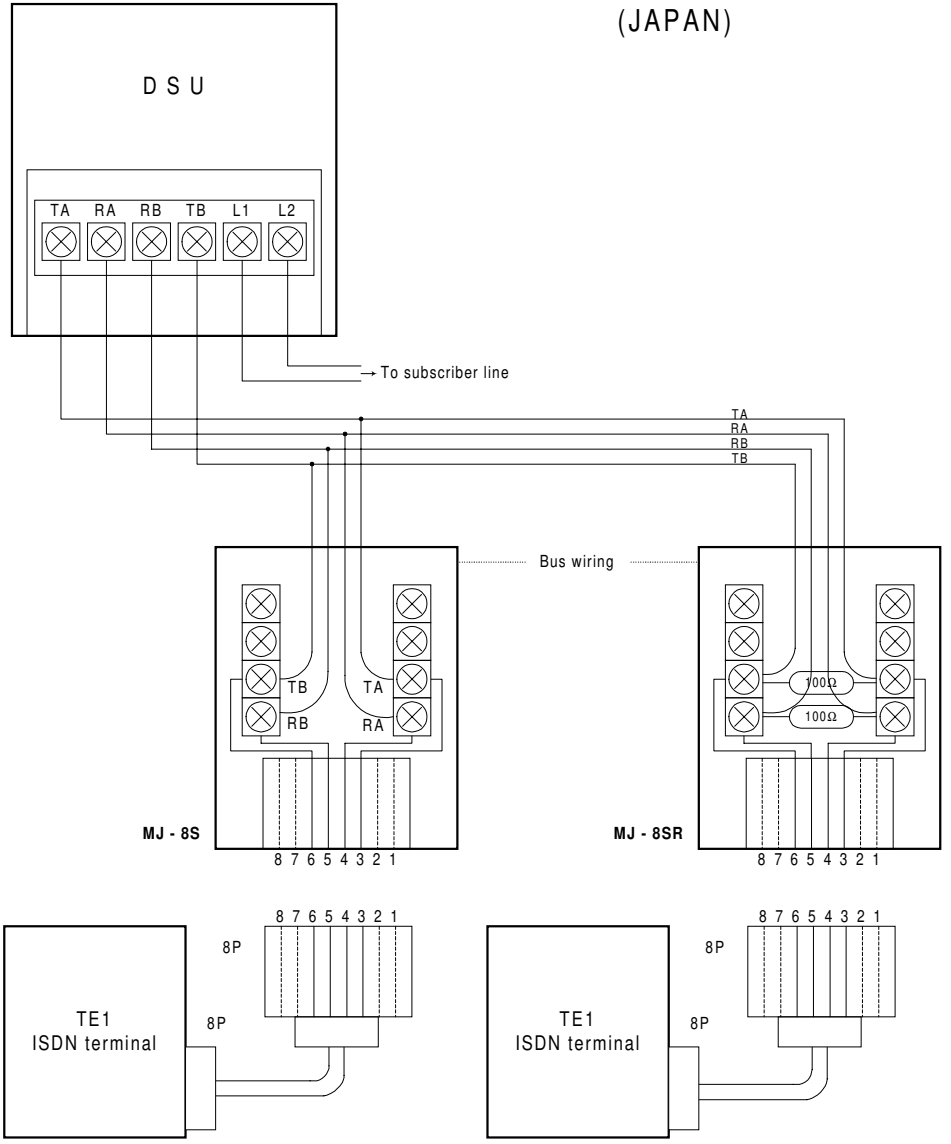
I. Layer 1

Note: Phantom power (40V). Ping-pong transmission may be different, depending on the network company.

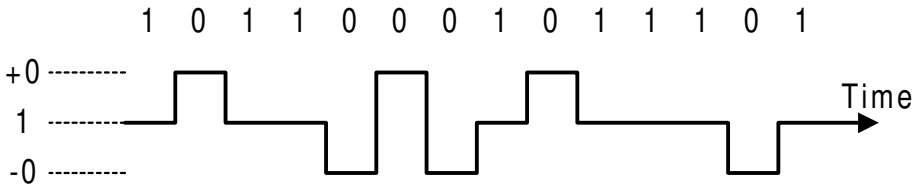
LAYER 1 CONFIGURATION DIAGRAM



DSU CONNECTION (JAPAN)



Example of pseudo-ternary signalling (AMI Code)



Layer 1 Status

The ITU-T I.430 recommendation (the basic user-network interface - Layer 1 specification) specifies layer 1 activation/deactivation procedures.

Before understanding the procedures, the status and INFO signals should be noted.

TE (Terminal Equipment) Status

Status	Description
F1	TE is turned off.
F2	TE is turned on, but no signal is exchanged.
F3	TE is stopped. No signal is exchanged between TE and NT.
F4	TE is waiting for the response to the INFO1 signal from NT.
F5	TE is checking if the signal from the NT is INFO2 or INFO4.
F6	TE is waiting for signals from NT after receiving the INFO2 signal.
F7	TE and NT are synchronized.
F8	TE has failed to synchronize with NT, and is waiting for the stop request from NT

NT (Network Termination) Status

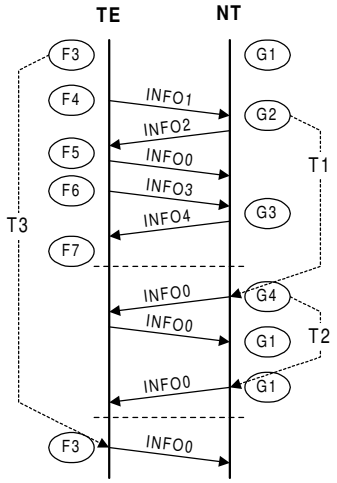
Status	Description
G1	NT has stopped.
G2	NT is sending INFO2.
G3	TE and NT are synchronized.
G4	NT is terminating itself.

INFO Signals

NT to TE Direction		TE to NT Direction	
INFO0	No signal	INFO0	No signal
INFO2	Activation signal in synchronized condition	INFO1	Activation signal in non-synchronized condition
INFO4	Synchronized frame	INFO3	Synchronized frame

Activation Procedure from the TE

In idle “F3” status, the TE sends the INFO1 signal to the NT and changes to “F4” status.
The NT then changes to “G2” status and sends the INFO2 signal to the TE.
The TE changes to “F5” status and stops sending signals to synchronize itself to the signal from the NT.
After the TE has synchronized to the signal, it sends the INFO3 signal to the NT and changes to the “F6” status.
The NT then changes to “G3” status and sends the INFO4 signal back to the TE to inform that a physical link has been established.
The timers T1, T2 and T3 are used to reset the TE or NT if a correct response has not been received before the timers expire.



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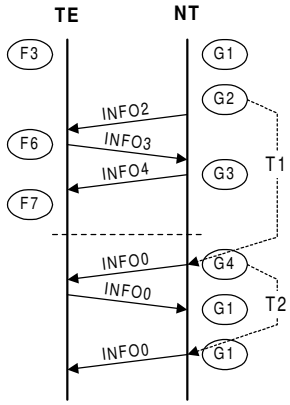
Activation Procedure from the NT

The procedure starts from the NT by sending the INFO2 signal to the TE.
After the TE has synchronized to the signal, it sends the INFO3 signal to the NT and changes to the “F6” status.
The NT then changes to “G3” status and sends the INFO4 signal back to the TE to inform that a physical link has been established.
The timers T1 and T2 are used to reset the NT if a correct response has not been received before the timers expire.



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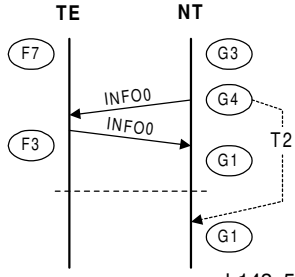
Termination Procedure from the NT

The termination procedure starts from synchronized status (“F7” status for the TE and “G3” status for the NT).
To terminate the physical connection, the NT just stops sending signals and changes to “G1” status. (The INFO0 signal means no signal is sent from the NT.) Then, the TE also stops sending signals and changes to “F3” status.



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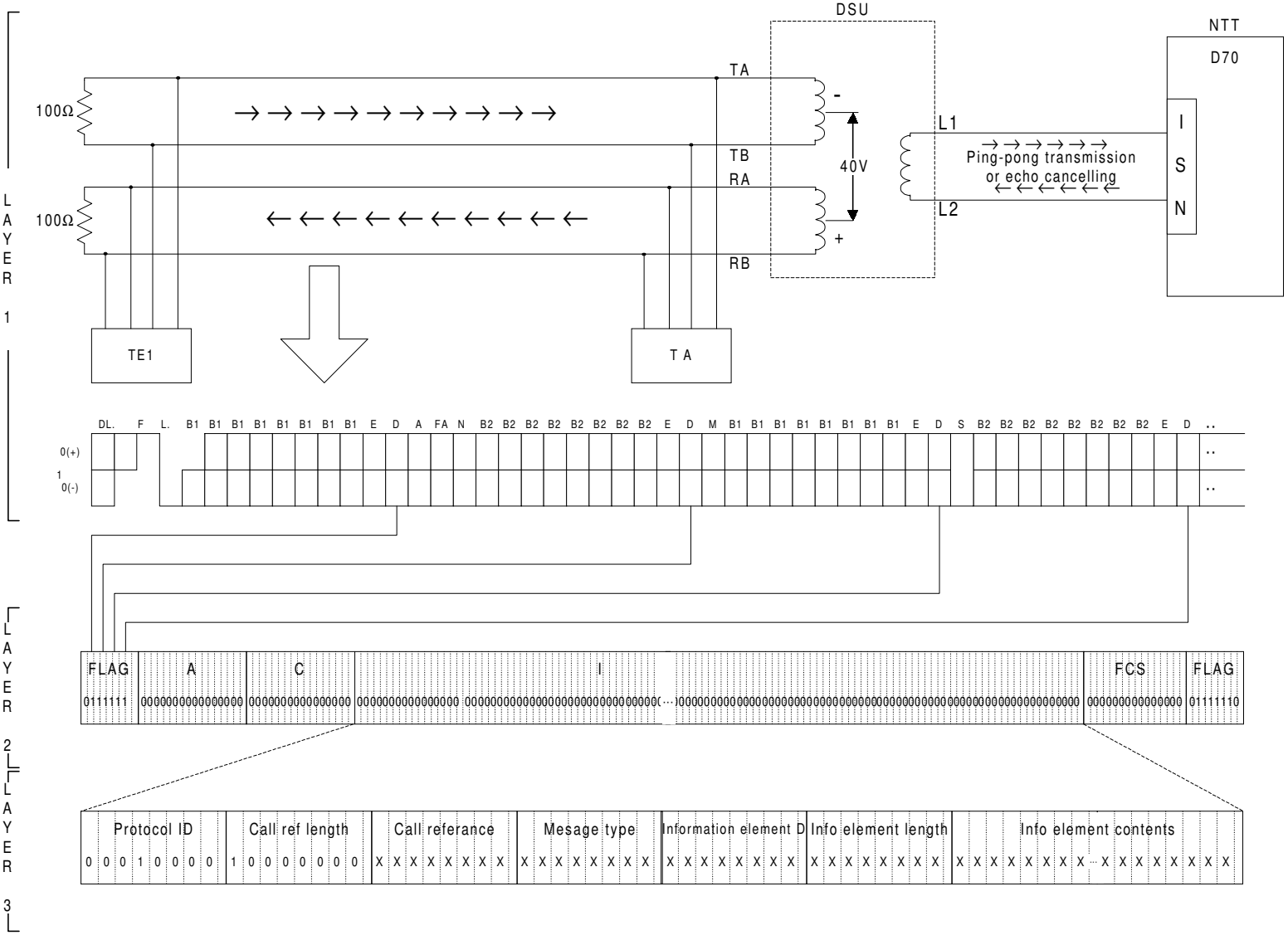
II. D Channel, Layer 2

Configuration of Dch layers 1 to 3



D channel, layer 2-1 (Q.921:I.441:LAPD)

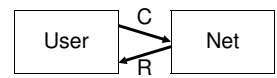
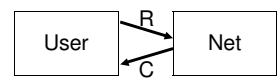
F 1 oct	A 2 oct	C 1 or 2 oct	I N oct	FCS 2 oct	F 1 oct

8	7	6	5	4	3	2	1
SAPI (Note 3)						**C/R** (Note 2)	**0 EA** (Note 1)
TEI (Note 4)							**1 EA** (Note 1)

Note 1. Meaning of the EA bit (Address field extension bit)

EA value	Meaning
0	Address field extension
1	Address field end

Note 2. Meaning of the C/R bit (Command/Response field bit)

C/R value	Definition	
0	U → N command N → U response	
1	N → U command U → N response	

Note 3. SAPI value assignment (Service Access Point Identifier)

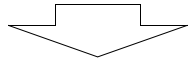
SAPI value	Related entity
0	Call control procedure
1	Reserved for packet communication using Q.931 call control procedure
16	Packet communication procedure (X.25 level 3)
63	Layer 2 management procedure
Other	Reserved for future use

Note 4. TEI value assignment (Terminal endpoint Idenifier)

TEI value	User terminal type
0 ~63	Non-automatic TEI setting user terminal
64~126	Automatic TEI setting user terminal
127	Broadcasting format data link connection TEI

D channel, layer 2-2 (Q.921:I.441:LAPD)

F 1 oct	A 2 oct	C 1 or 2 oct	I N oct	FCS 2 oct	F 1 oct



Format	Command	Response	Coding 8	7	6	5	4	3	2	1	oct
Information transfer (I)	(I) (Information)		N (S)							0	1
			N (R)							P	2
Supervisory	RR (Receive ready)	RR (Receive ready)	0	0	0	0	0	0	0	1	1
			N (R)							P/F	2
	RNR (Receive not ready)	RNR (Receive not ready)	0	0	0	0	0	1	0	1	1
			N (R)							P/F	2
	REJ (Re-transfer request)	REJ (Re-transfer request)	0	0	0	0	1	0	0	1	1
			N (R)							P/F	2
Unnumbered	SABME (Set asynchronous balanced mode extended)		0	1	1	P	1	1	1	1	1
		DM (Disconnect mode)	0	0	0	F	1	1	1	1	1
	UI (Unnumbered system information)		0	0	0	P	0	0	1	1	1
	DISC (Disconnect)		0	1	0	P	0	0	1	1	1
		UA (Unnumbered system acknowledgement)	0	1	1	F	0	0	1	1	1
		FRMR (Frame reject)	1	0	0	F	0	1	1	1	1
	XID (ID exchange)	XID (ID exchange)	1	0	1	P/F	1	1	1	1	1

∗ : P/F When sent as a command: (P) bit
When sent as a response: (F) bit

∗ : Provision of XID is not yet scheduled.

- TEI management procedure

  The TEI management procedure includes the following procedures:

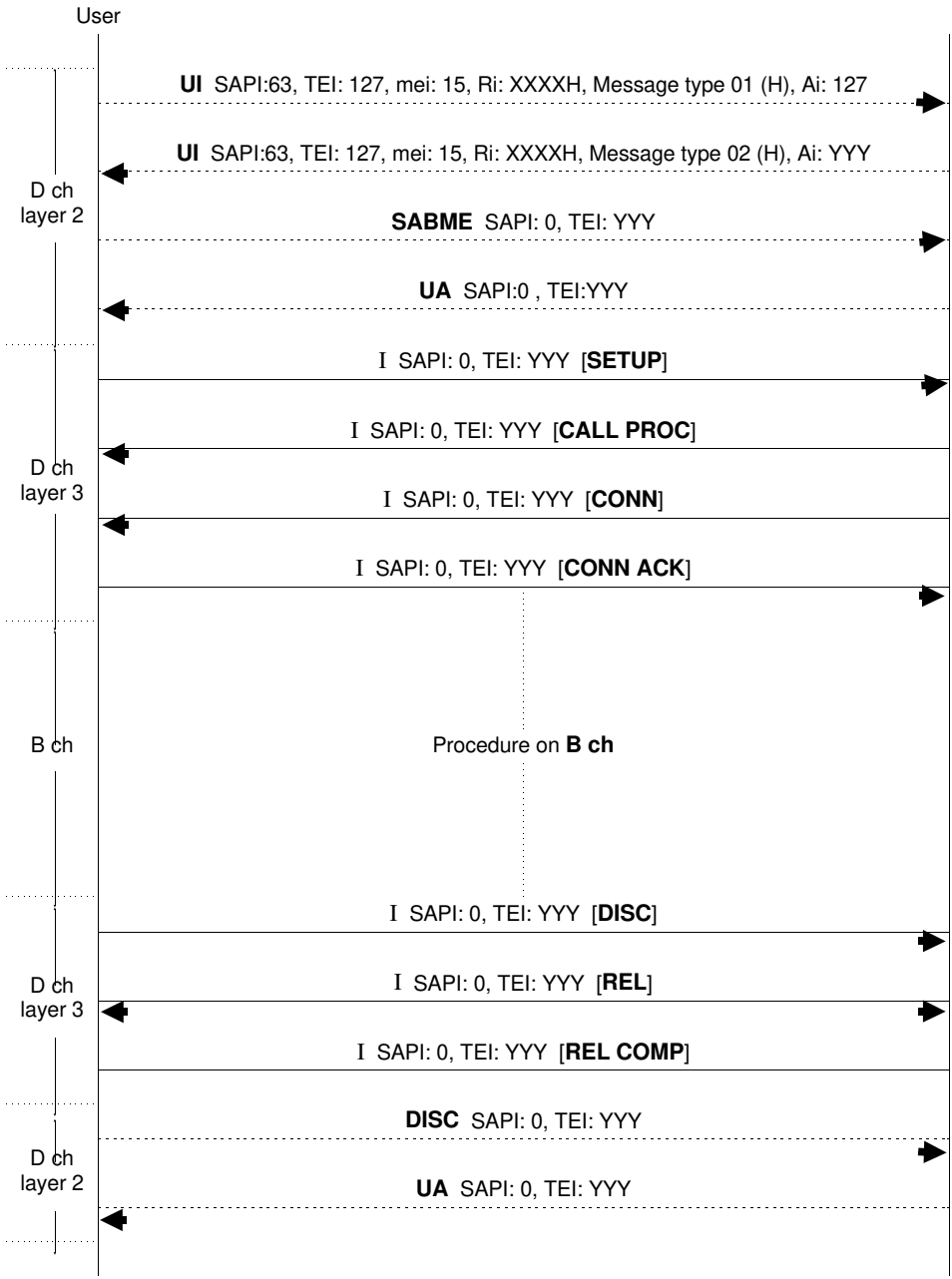
  . TEI assignment procedure
  . TEI check procedure
  . TEI clear procedure
  . TEI identifying procedure executed by the user as an option

  Conceptually, these procedures belong to the layer management entity.
  The network side layer management entity is referred to as Assignment Source Point (ASP). The TEI management procedure is performed by using the data link layer of a non-confirming type information transfer. SAPI is set to 63, and TEI is set to 127.
  The following shows the format of the messages transferred between layer management entities:

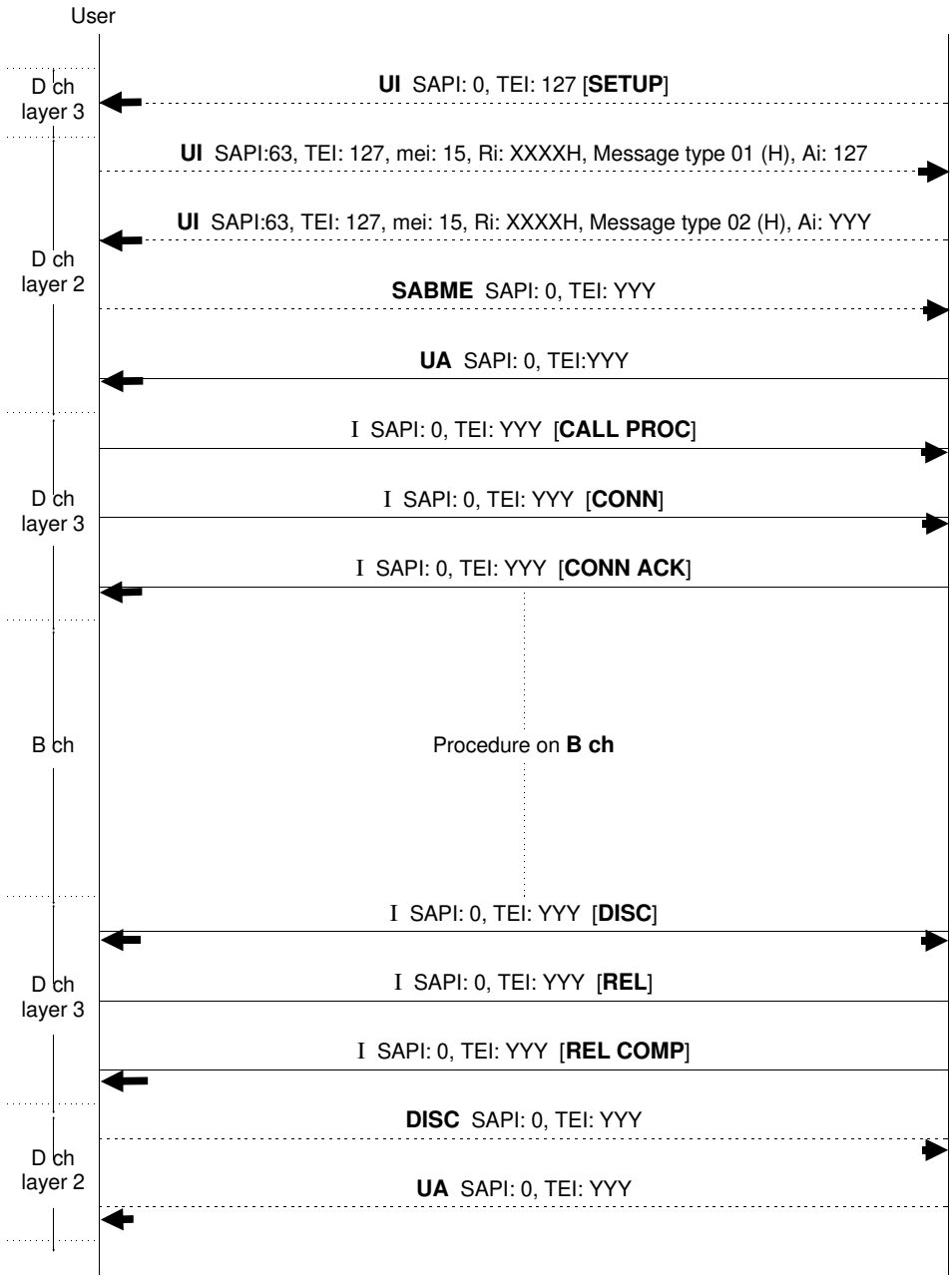
oct	8	7	6	5	4	3	2	1	
1	Management entity indentifier								- mei: 15 (0FH)
2	Reference number (Ri)								Ri: A value in a range of 0 to 65535 randomly generated by user equipment
3	Reference number (Ri)								
4	Message type								- XXH
5	Operation indication								Ai value E=1: End oct

Message name	Management entity identifier	Reference number	Message type	Operation indication Ai
ID request (User → Net)	00001111	0 ~ 65535	00000001	Ai=127: Any TEI is ready
ID assignment (User → Net)	00001111	0 ~ 65535	00000010	Ai=64 to 126: TEI is the assigned value
ID reject (Net → User)	00001111	0 ~ 65535	00000011	Ai=64 to 126: Request abnormal (Reject TEI) Ai=127: TEI assignment is not possible
ID check request (Net → User)	00001111	Not used (Code 0)	00000100	Ai=127: Check all TEI values Ai=0 to 126: TEI value to check
ID check response (User → Net)	00001111	0 ~ 65535	00000101	Ai=0 to 126: TEI value being used
ID clear (Net → User)	00001111	Not used (Code 0)	00000110	Ai=127: Request to clear all TEI values Ai=0 to 126: TEI value to clear
ID check (User → Net)	00001111	Not used (Code 0)	00000111	Ai=0 to 126: TEI value to check

- TEI assignment procedure (call from user)



- TEI assignment procedure (call from network)



III. D Channel, Layer 3

D channel, layer 3-1 (Q.931: I.451)

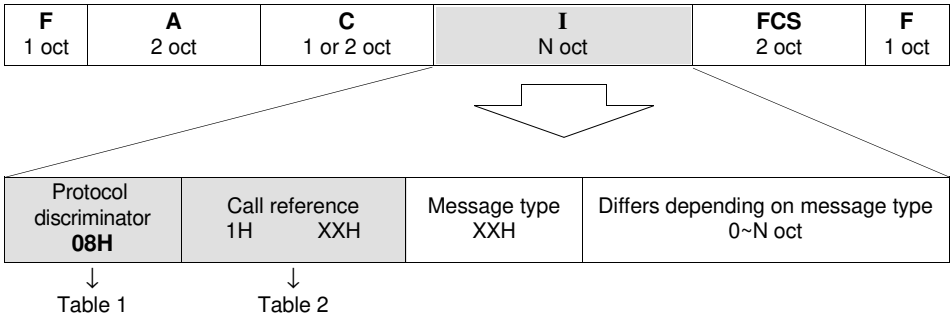


Table 1. Protocol Discriminator

8	7	6	5	4	3	2	1	
0	0	0	0	0	0	0	0	User's typical protocol identifier
0	0	0	0	0	0	0	1	OSI high layer protocol
0	0	0	0	0	0	1	0	Recommendation X.244
0	0	0	0	0	0	1	1	Reserved for system management converse function
0	0	0	0	0	1	0	0	A5 characters
0	0	0	0	0	1	1	1	Standard JT-V.120 speed compatibility
0	0	0	0	1	0	0	0	Standard JT-Q.931 user/network setting message
0	0	0	1	0	0	0	0	Reserved for other network layer or layer 3 protocol including standard JT-X.25
0	0	1	1	1	1	1	1	
0	1	0	0	0	0	0	0	National use
0	1	0	0	0	0	0	1	Recommendation X.208/X.209 (ASN.1: Abstract syntax descriptive method 1)
0	1	0	0	0	0	1	0	National use
0	1	0	0	1	1	1	1	
0	1	0	1	0	0	0	0	Reserved for other network layer or layer 3 protocol including standard JT-X.25
1	1	1	1	1	1	1	0	
Other than above								Reserved

Table 2. Call Reference

8	7	6	5	4	3	2	1
Reserved				Call reference length			
0	0	0	0	0	0	0	1
F	X	X	X	X	X	X	X

F=0: Calling side
F=1: Called side

D channel, layer 3-2 (Q.931:I.451)

F 1 oct	A 2 oct	C 1 or 2 oct	I N oct	FCS 2 oct	F 1 oct

Protocol discriminator **08H**	Call reference 01H XXH	Message type XXH	Differs depending on message type 0~N oct

↓
Table 3

Table 3. Message Type

8	7	6	5	4	3	2	1	HEX	Name	Full name	Function	Type
0	0	0	0	0	0	0	1	01	ALERT	ALERTING	Informs that receiving side user is being called	Call setting
	0	0	0	0	0	1	0	02	CALL PROC	CALL PROCEEDING	Informs that call set-up procedure is being executed	
	0	0	0	0	0	1	1	03	PROG	PROGRESS	Indicates call progress	
	0	0	0	0	1	0	1	05	SETUP	SETUP	Call set-up request	
	0	0	0	0	1	1	1	07	CONN	CONNECT	Called side response notification	
	0	0	0	1	1	0	1	0D	SETUP ACK	SETUP ACKNOWLEDGE	Acknowledgement of SETUP	
	0	0	0	1	1	1	1	0F	CONN ACK	CONNECT ACKNOWLEDGE	Acknowledgement of CONN	
	0	1	0	0	0	0	0	20	USER INFO	USER INFORMATION	User to user signal	During communication
	0	1	0	0	0	0	1	21	SUSP REJ	SUSPEND REJECT	Informs that temporary interruption is rejected	
	0	1	0	0	0	1	0	22	RES REJ	RESUME REJECT	Informs that interrupted call cannot be resumed	
	0	1	0	0	1	0	1	25	SUSP	SUSPEND	Call temporary interrupt request	
	0	1	0	0	1	1	0	26	RES	RESUME	Interrupted call resume request	
	0	1	0	1	1	0	1	2D	SUSP ACK	SUSPEND ACKNOWLEDGE	Temporary interruption complete notification	
	0	1	0	1	1	1	0	2E	RES ACK	RESUME ACKNOWLEDGE	Interrupted call resume complete notification	
	1	0	0	0	1	0	1	45	DISC	DISCONNECT	Call clear request	Call clear
	1	0	0	0	1	1	0	46	REST	RESTART	Initial setting request	
	1	0	0	1	1	0	1	4D	REL	RELEASE	Channel clear complete notification and call number clear request	
	1	0	0	1	1	1	0	4E	REST ACK	RESTART ACKNOWLEDGE	Initial setting complete notification	
	1	0	1	1	0	1	0	5A	REL COMP	RELEASE COMPLETE	Channel clear and call number clear complete notification	
	1	1	0	0	0	1	0	62	FAC	FACILITY	Additional service request and check	Others
	1	1	0	1	1	1	0	6E	NOTIFY	NOTIFY	Notification of call information	
	1	1	1	0	1	0	1	75	STAT ENQ	STATUS ENQUIRY	Party status inquiry	
	1	1	1	1	0	0	1	79	CONG CON	CONGESTION CONTROL	Additional call control, and other information	
	1	1	1	1	0	1	1	7B	INFO	INFORMATION	User/network status notification	
	1	1	1	1	1	0	1	7D	STAT	STATUS	Informs the status of the user and the network.	

Note: SETUP ACK, USER INFO, REST, REST ACK, FAC, and CONG CON not provided by NTT (as of July 1989)

D channel, layer 3-3 (Q.931:I.451)

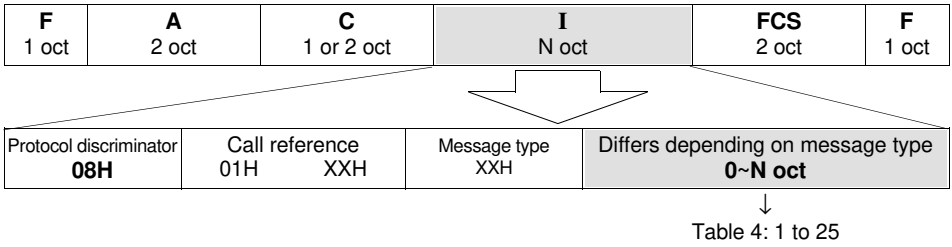


Table 4. Information Elements

1. SETUP (05)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	05	Mandatory	
Bearer capability	04	Mandatory	Table 5
Channel identifier	18	Optional	Table 6
Facilities	1C	Optional	Table 7
Progress identifier	1E	Optional	Table 8
Display	28	Optional	Table 9
Keypad	2C	Optional	Table 10
Signal	34	Optional	
Feature activation	38	Optional	Table 12
Feature indication	39	Optional	Table 13
Calling party address	6C	Optional	Table 14
Calling party subaddress	6D	Optional	Table 15
Called party address	70	Optional	Table 16
Called party subaddress	71	Optional	Table 17
Transit network selection	78	Optional	Table 18
Low layer compatibility	7C	Optional	Table 19
High layer compatibility	7D	Optional	Table 20
User to user	7E	Optional	Table 21

2. CALL PROC (02)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	02	Mandatory	Table 3
Channel identifier	18	Optional	Table 6
Progress identifier	1E	Optional	Table 8
Display	28	Optional	Table 9
Feature indication	39	Optional	Table 13

3. ALERT (01)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	01	Mandatory	Table 3
Channel identifier	18	Optional	Table 6
Facilities	1C	Optional	Table 7
Progress identifier	1E	Optional	Table 8
Display	28	Optional	Table 9
Signal	34	Optional	
Feature activation	38	Optional	Table 12
Feature indication	39	Optional	Table 13
User to user	7E	Optional	Table 21

4. PROG (03)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	03	Mandatory	Table 3
Cause	08	Optional	Table 22
Progress identifier	1E	Optional	Table 8
Indication	28	Optional	Table 9
User to user	7E	Optional	Table 21

5. CONN (07)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	07	Mandatory	Table 3
Channel identifier	18	Optional	Table 6
Facilities	1C	Optional	Table 7
Progress identifier	1E	Optional	Table 8
Display	28	Optional	Table 9
Signal	34	Optional	
Feature activation	38	Optional	Table 12
Feature indication	39	Optional	Table 13
Low layer compatibility	7C	Optional	Table 19
User to user	7E	Optional	Table 21

6. SETUP ACK (0D)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	0D	Mandatory	Table 3
Channel identifier	18	Optional	Table 6
Progress identifier	1E	Optional	Table 8

7. CONN ACK (0F)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	0F	Mandatory	Table 3
Channel identifier	18	Optional	Table 6
Display	28	Optional	Table 9
Signal	34	Optional	

8. USER INFO (20)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	21	Mandatory	Table 3
More data	08	Optional	Table 23
User to user	28	Optional	Table 21

9. SUSP REJ (21)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	21	Mandatory	Table 3
Cause indication	08	Optional	Table 22
Display	28	Optional	Table 9

10. RES REJ (22)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	22	Mandatory	Table 3
Cause	08	Optional	Table 22
Display	28	Optional	Table 9
Fixed shift procedure	96	Optional	Table 24
Charge notification	01	Optional	Table 25

11. SUSP (25)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	25	Mandatory	Table 3
Call identification	20	Optional	Table 26

12. RES (26)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	26	Mandatory	Table 3
Call identification	20	Optional	Table 26

13. SUSP ACK (2D)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	2D	Mandatory	Table 3
Display	28	Optional	Table 9

14. RES ACK (2E)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	2E	Mandatory	Table 3
Channel identifier	18	Optional	Table 6
Display	28	Optional	Table 9

15. DISC (45)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	45	Mandatory	Table 3
Cause	08	Optional	Table 22
Facilities	1C	Optional	Table 7
Progress identifier	1E	Optional	Table 8
Display	28	Optional	Table 9
Signal	34	Optional	Table 11
Feature indication	39	Optional	Table 13
User to user	7E	Optional	Table 21
Fixed shift procedure	96	Optional	Table 24
Charge notification	01	Optional	Table 25

16. REST (46)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	46	Mandatory	Table 3
Channel identifier	18	Optional	Table 6
Display	28	Optional	Table 9
Initial setting indication	79	Optional	Table 27

17. REL (4D)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	4D	Mandatory	Table 3
Cause	08	Optional	Table 22
Facilities	1C	Optional	Table 7
Display	28	Optional	Table 9
Signal	34	Optional	
Feature indication	39	Optional	Table 13
User to user	7E	Optional	Table 21
Fixed shift procedure	96	Optional	Table 24
Charge notification	01	Optional	Table 25

18. REST ACK (4E)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	4E	Mandatory	Table 3
Channel Identifier	18	Optional	Table 6
Display	28	Optional	Table 9
Initial setting indication	79	Mandatory	Table 27

19. REL COMP (5A)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	5A	Mandatory	Table 3
Cause	08	Optional	Table 22
Facilities	1C	Optional	Table 7
Display	28	Optional	Table 9
Signal	34	Optional	
Feature indication	39	Optional	Table 13
User to user	7E	Optional	Table 21
Fixed shift procedure	96	Optional	Table 24
Charge notification	01	Optional	Table 25

20. FAC (62)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	62	Mandatory	Table 3
Facilities	1C	Mandatory	Table 7
Display		Optional	Table 9

21. NOTIFY (6E)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	6E	Mandatory	Table 3
Transfer capability	04	Optional	Table 5
Notification identifier	27	Mandatory	Table 28
Display	28	Optional	Table 9

22. STAT ENQ (75)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	75	Mandatory	Table 3
Display	28	Optional	Table 9

23. CONG CON (79)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	79	Mandatory	Table 3
Congestion	BX	Mandatory	Table 29
Cause	08	Optional	Table 22
Display	28	Optional	Table 9

24. INFO (7B)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	7B	Mandatory	Table 3
Cause	08	Optional	Table 22
Display	28	Optional	Table 9
Keypad	2C	Optional	Table 10
Signal	34	Optional	
Feature activation	38	Optional	Table 12
Feature indication	39	Optional	Table 13

25. STAT (7D)

Information element	HEX	Type	Contents
Protocol discriminator	08	Mandatory	Table 1
Call reference	01XX	Mandatory	Table 2
Message type	7D	Mandatory	Table 3
Cause	08	Mandatory	Table 22
Call status	14	Mandatory	Table 30
Display	28	Optional	Table 9

Table 5. Bearer Capability (04)

8	7	6	5	4	3	2	1	oct
Information element identifier								1
0	0	0	0	0	1	0	0	
L I								2
Extension 1	Coding standard 00: CCITT standard 01: Other international standard 10: National standard 11: Standard specific to network		Information transfer capability 00000: Voice (speech) 01000: Unrestricted digital information 01001: Reserved 10000: 3.1 kHz audio 11000: Reserved Others: Already reserved					3
Extension 1/0	Transfer mode 00: Circuit-switched exchange 10: Packet exchange Others: Reserved		Information transfer rate 00000: Packet exchange 10010: Reserved 10000: 64 kbps 10011: 384 kbps 10101: 1536 kbps 10111: Reserved Others: Reserved					4
Extension 1/0	Structure 000: Default 001: 8 kHz integrity 100: Service data unit integrity 111: Reserved Others: Reserved			Configuration 00: Point to point Others: Reserved		Establishment 00: Immediate connection Others: Reserved		4a*
Extension 1	Mode 00: Bidirectional symmetric Others: Reserved		Information transfer rate (destination to origin) 00000: Packet exchange 10010: Reserved 10000: 64 kbps 10011: 384 kbps 10101: 1536 kbps 10111: Reserved Others: Reserved					4b*
Extension 1/0	Layer 1 identifier		User information layer 1 protocol 00001: CCITT speed compatibility (V.110/X.30): Indicates that 5a to 5d exist. 00010: Recommendation G.711 μ-law voice 00011: Recommendation G.711 A-law voice 01001: CCITT standard speed compatibility (JT-X.31): HDLC flag stuffing					5*
Extension 1/0	Synchronous/ asynchronous 0: Synchronous 1: Asynchronous	Inbound negotiation 0: Negotiation not possible 1: Negotiation possible	User speed 0111: 56 kbps Recommendation V.110 Others: Reserved					5a*
Unprovided								5b* | 5d*
Extension 1	Layer 2 identifier 1 0		User information layer 2 protocol 00010: TTC standard JT-Q.921 00110: TTC standard JT-X.25 link layer Others: Reserved					6*
Extension 1	Layer 3 identifier 1 0		User information layer 3 protocol 00010: TTC standard JT-Q.931 00110: TTC standard JT-X.25 packet layer Others: Reserved					7*

*: Option

Table 6. Channel Identifier (18)

8	7	6	5	4	3	2	1	oct
	Information element identifier							1
0	0	0	1	1	0	0	0	
L I								2
Exten-sion 1	Int id	Int type	Spare 0	Pre/ Excl	D ch ind	Information channel selection		3

00: No channel
01: B1 channel
10: B2 channel
11: Any channel

0: Specified channel is not channel D
1: Specified channel is channel D

0: Network can change channel specified by terminal
1: Network cannot change channel specified by terminal

0: Basic interface
1: Other interface (primary group interface, etc.)

0: Interface implicitly identified
1: Interface explicitly identified by 1 or more octets from oct 3.1

8	7	6	5	4	3	2	1	oct
Extension 1	Interface identifier							3.1*
Extension 1	Coding standard		Number/map	Channel type/map element type				3.2*
	00: CCITT/TTC standard 01: Reserved for international standards other than CCITT/TTC standard 10: National standard 11: Standard specific to network		0: Indicates to next oct by number 1: Indicates to next oct by slot	0011: Channel B unit 0110: Channel H0 unit 1001: Reserved Others: Reserved				
Channel number/slot map								3.3*

*: Option

Table 7. Facilities (1C)

8	7	6	5	4	3	2	1	oct
	Information element identifier							1
0	0	0	1	1	1	0	0	
L I								2
Extension 1	Reserved 0 0		Service identifier 10001: Additional service application Others: Already reserved					3
= Components =								4 . . .

Table 8. Progress Identifier (1E)

8	7	6	5	4	3	2	1	oct
	Information element identifier							1
0	0	0	1	1	1	1	0	
L I								2
Extension 1	Coding standard 00:CCITT standard 01:Other international standard 10:National standard 11:Standard specific to generation source indicated by bits 3 to 1 of oct 3		Reserved 0	Generation source 0000: User 0001: Private network accommodating local users (self side) 0010: Public network accommodating local users (self side) 0011: Relay network 0100: Public network accommodating remote users (other party side) 0100: Private network accommodating remote users (other party side) 0101: International network 0111: Interworking destination network 1010: Reserved				3
Extension 1	Progress description 0000001: Call is not end-to-end ISDN. Afterwards, progress information becomes inbound signal. 0000010: Non-ISDN destination 0000011: Non-ISDN originator 0000100: Returning call onto ISDN 0001000: Inbound signal or appropriate pattern can be used Others: Already reserved							4

Table 9. Display (28)

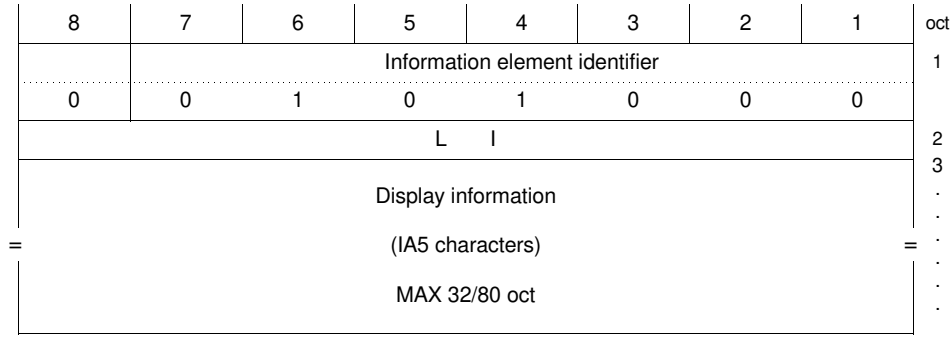


Table 10. Keypad Facility (2C)

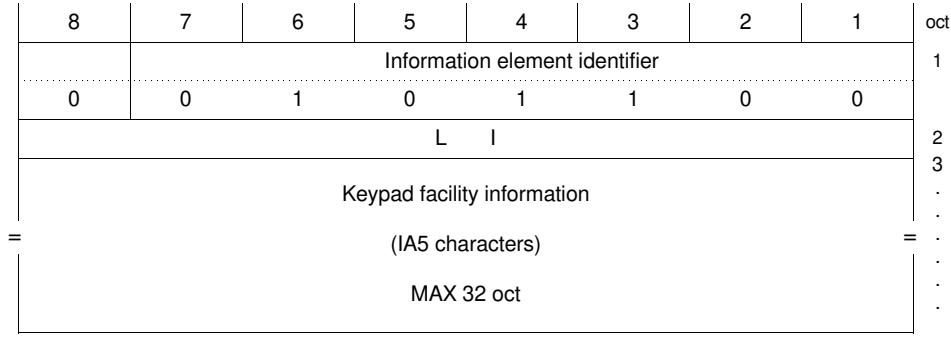


Table 11. Signal (34)

8	7	6	5	4	3	2	1	oct
	Information element identifier							1
0	0	1	1	0	1	0	0	
L I								2
0	0	0	0	0	0	0	1	
Signal value								3
00000000: Dial tone 00000001: Calling tone 00000010: Interrupt tone 00000011: Network tone ON 00000100: Busy tone ON 00000101: Check tone ON 00000111: Response tone ON 00001000: Off hook warning tone ON 00111111: Tone OFF 01000000: Calling ON pattern 0 01000001: Calling ON pattern 1 01000010: Calling ON pattern 2 01000011: Calling ON pattern 3 01000100: Calling ON pattern 4 01000101: Calling ON pattern 5 01000110: Calling ON pattern 6 01000111: Calling ON pattern 7 01001111: Calling OFF Others: Reserved				Method of use depends on the network				

Table 12. Feature Activation (38)

8	7	6	5	4	3	2	1	oct
	Information element identifier							1
0	0	1	1	1	0	0	0	
L I								2
Extension 1/0	Feature identifier number							3
Extension 1	Feature identifier number (continued from above)							3a

Table 13. Feature Indication (39)

8	7	6	5	4	3	2	1	oct
	Information element identifier							1
0	0	1	1	1	0	0	1	
L I								2
Extension 1/0	Feature identifier number							3
Extension 1	Feature identifier number (continued from above)							3a
Reserved				Feature status indication				4
0	0	0	0	Status / Meaning 0000: Inactive — Feature is in inactive condition 0001: Active — Feature is in active condition 0010: Prompt — Feature is in prompt condition 0011: Execution — Feature is in execution condition Other: Already reserved				

Table 14. Calling Party Address (6C)

8	7	6	5	4	3	2	1	oct
	Information element identifier							1
0	1	1	0	1	1	0	0	
L I								2
Extension 1/0	Number type 000: Undefined 001: International number 010: National number 011: Number specific to network 100: Local number 110: Short dial number 111: Reserved for expansion Others: Reserved			Numbering/addressing plan 0000: Undefined 0001: ISDN/phone numbering plan (recommendation E.164/E.163) 0011: Data numbering plan (recommendation X.121) 0100: Telex numbering plan (recommendation F.69) 1000: National numbering plan 1001: Private network numbering plan 1111: Reserved for expansion Others: Reserved				3
Extension 1	Indication identifier 00: Indication possible 01: Indication not possible 10: Mutual connection condition, and no number can be displayed 11: Reserved			Reserved 0 0 0			Network check identifier 00: Reserved 01: User insertion, network check made, successful 10: Reserved 11: Network insertion		3a
Reserved 0	Number digit (IA5 characters) MAX 32 oct							4 . . .

Table 15. Calling Party Subaddress (6D)

8	7	6	5	4	3	2	1	oct
	Information element identifier							1
0	1	1	0	1	1	0	1	
L I								2
Extension 1	Subaddress type			Odd/even indication	Reserved			3
	000: NSAP (X.213/ISO 8348 AD2) 010: Subaddress specific to user Others: Reserved			0: Number of address signals is even 1: Number of address signals is odd	0	0	0	
Format identification (AFI) [Indicates that subaddress is configured in IA5 characters]								4
0	1	0	1	0	0	0	0	
= Subaddress information (IA5 characters) MAX 19 oct =								5 . . .

Table 16. Called Party Address (70)

8	7	6	5	4	3	2	1	oct
	Information element identifier							1
0	1	1	1	0	0	0	0	
L I								2
Extension 1	Type of address			Numbering plan identifier				3
	000: Undefined 001: International number 010: National number 011: Network specific number 100: Local number 110: Short dial number 111: Reserved for expansion Others: Reserved			0000: Undefined 0001: ISDN/phone numbering plan (recommendation E.164/E.163) 0011: Data numbering plan (recommendation X.121) 0100: Telex numbering plan (recommendation F.69) 1000: National numbering plan 1001: Private network numbering plan 1111: Reserved for expansion Others: Reserved				
Reserved	Number digit (IA5 characters) MAX 19 oct							4 . . .
= 0 =								= . . .

Table 17. Called Party Subaddress (71)

8	7	6	5	4	3	2	1	oct
	Information element identifier							1
0	1	1	1	0	0	0	1	
L I								2
Extension 1	Subaddress type 000: NSAP (X.213/ISO 8348 AD2) 010: Subaddress specific to user Others: Reserved			Odd/even indication 0: Number of address signals is even 1: Number of address signals is odd	Reserved 0	0	0	3
Format identifier (AFI) [Indicates that subaddress is configured in IA5 characters]								4
0	1	0	1	0	0	0	0	
= Subaddress information (IA5 characters) MAX 19 oct =								5 . . .

Table 18. Transit Network Selection (78)

8	7	6	5	4	3	2	1	oct
	Information element identifier							1
0	1	1	1	1	0	0	0	
L I								2
Extension 1	Network identification type 000: User definition 010: National network 011: International network Others: Reserved			Network identification plan 0000: Undefined 0001: Carrier identification code 0011: Data network identification code (recommendation X.121) Others: Reserved				3
= =	Network identifier (IA5 characters) =							4 . . .

Table 19. Low Layer Compatibility (7C)

8	7	6	5	4	3	2	1	oct
	Information element identifier							1
0	1	1	1	1	1	0	0	2
	L I							
Extension 1/0	Coding standard 00: CCITT standard 01: Other international standard 10: National standard 11: Standard specific to network		Information transfer capability 00000: Voice (Speech) 01000: Unrestricted digital information 01001: Reserved 10000: 3.1 kHz audio 10001: Reserved 11000: Reserved Others: Already reserved					3
Extension 1	Negotiation specification 0: Outbound negotiation not possible 1: Outbound negotiation possible	Reserved 0	0	0	0	0	0	3a*
Extension 1/0	Transfer mode 00: Circuit-switched exchange 10: Packet exchange Others: Already reserved		Information transfer rate 00000: Packet exchange 10010: Reserved 10000: 64 kbps 10011: 384 kbps 10101: 1536 kbps 10111: Reserved Others: Reserved					4
Extension 1/0	Structure 000: Default 001: 8 kHz integrity 100: Service data unit integrity 111: Reserved Others: Reserved			Configuration 00: Point to point Others: Reserved		Establishment 00: Immediate connection Others: Reserved		4a
Extension 1	Mode 00: Bi-directional symmetric Others: Reserved		Information transfer rate (destination to origin) 00000: Packet exchange 10010: Reserved 10000: 64 kbps 10011: 384 kbps 10101: 1536 kbps 10111: Reserved Others: Reserved					4b
Extension 1/0	Layer 1 identifier 0 1		Layer 1 protocol identifier 00000: Undefined 00001: CCITT recommendation I.461 speed compatibility 00010: Recommendation G.711 μ-law speech 00011: Recommendation G.711 A-law speech 00100: Recommendation G.721 32 kbps-ADPCM and recommendation I.460 00110: Recommendation G.722 and 7 kHz-audio 00111: TTC non-standard speed compatibility (indicates use of 5a-5d) 01000: TTC standard JT-V.120 speed compatibility (indicates use of 5a-5d) 01001: TTC standard JT-X.31 speed compatibility (HDLC flag stuffing)					5*

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8	7	6	5	4	3	2	1	oct
Extension 1/0	Synchronous/ asynchronous		User speed					5a*
	0: Synchronous 1: Asynchronous	0: Negotiation not possible 1: Negotiation possible	00000: Speed is indicated by bit E of standard JT-I.460 00001: 0.6 kbps recommendations X.1 and V.6 00010: 1.2 kbps recommendation V.6 00011: 2.4 kbps recommendations X.1 and V.6 00100: 3.6 kbps recommendation V.6 00101: 4.8 kbps recommendations X.1 and V.6 00110: 7.2 kbps recommendation V.6 00111: 8 kbps standard I.460 01000: 9.6 kbps recommendations X.1 and V.6 01001: 14.4 kbps recommendation V.6 01010: 16 kbps standard I.460 01011: 19.2 kbps recommendation V.6 01100: 32 kbps standard JT-I.460 01100: 48 kbps recommendations X.1 and V.6 01111: 56 kbps recommendation V.6 10101: 0.1345 kbps recommendation X.1 10110: 0.100 kbps recommendation V.6 10111: 0.075 kbps (origin to destination)/1.2 kbps (origin to destination) recommendations V.6 and X.1 11000: 1.2 kbps (outgoing to incoming)/0.075 kbps (origin to destination) recommendations V.6 and X.1 11001: 0.050 kbps recommendations X.1 and V.6 11010: 0.075 kbps recommendations X.1 and V.6 11011: 0.110 kbps recommendations X.1 and V.6 11100: 0.150 kbps recommendations X.1 and V.6 11101: 0.200 kbps recommendations X.1 and V.6 11110: 0.300 kbps recommendations X.1 and V.6 11111: 1.2 kbps recommendation V.6 Others: Reserved				
Extension 1/0	Intermediate speed		Transmission NIC	Receive NIC	Transmission flow control	Receive flow control	Reserved	5b*
	00: Unused 01: 8 kbps 10: 16 kbps 11: 32 kbps		0: Data need not be transmitted with network's independent clock 1: Data must be transmitted with network's independent clock	0: Cannot be received with network's independent clock 1: Can be received with network's independent clock	0: Flow controlled transmission not necessary for data transmission 1: Flow controlled transmission necessary for data transmission	0: Flow controlled transmission data cannot be received 1: Flow controlled transmission data can be received	0	
Extension 1/0	Speed compatibility header	Multiplex frame support	Operation mode	Logic link identifier negotiation	Assign/assigned	Inbound/outbound negotiation	Reserved	5b*
	0: Speed compatibility header not included 1: Speed compatibility header included	0: Multiplex frame not supported (accepts UI only) 1: Multiplex frame supported	0: Bit transparent mode 1: Protocol sensitive mode	0: Default LLI=256 1: Complete protocol	0: Calling party default is assigned 1: Only assigned by calling party	0: Performed by user information on temporary signal connection 1: Performed inbound using logic link 0	0	

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8	7	6	5	4	3	2	1	oct
Extension 1/0	Number of stop bits 00: Unused 01: 1 bit 10: 1.5 bits 11: 2 bits		Number of data bits including parity 00: Unused 01: 5 bits 10: 7 bits 11: 8 bits		Parity information 000: Odd 010: Even 100: Forced to set to 0 101: Forced to set to 1 Others: Reserved			5c*
Extension 1	Duplex mode 0: Half-duplex 1: Full duplex		Modem type Coded in accordance with rules specific to network					5d*
Extension 1/0	Layer 2 identification 1	0	Layer 2 protocol identification 00001: ISO1745 basic mode 00010: TTC standard JT-Q.921 00110: TTC standard JT-X.25 link layer 00111: CCITT recommendation X.25 multi-link 01000: Extention LAPB; For half-duplexed (T.71) 01001: HDLC ARM (ISO4335) 01010: HDLC NRM (ISO4335) 01011: HDLC ABM (ISO4335) 01101: LAN logical layer control (ISO8802.2) 01101: Standard JT-X.75 single link procedure (SLP) Others: Reserved					6*
Extension 1	Optional layer 2 protocol information Undefined							6a*
Extension 1/0	Layer 3 identification 1	1	Layer 3 protocol identification 00000: Undefined 00010: TTC standard JT-Q.931 00110: TTC standard JT-X.25 packet layer 00111: ISO 8208 (X.25 packet layer protocol) 01000: ISO 8348 (Specific subset of ISO8208 and standard JT-X.25) 01001: ISO8473 (OSI connectionless service) 01010: CCITT recommendation T.70 minimum network layer					7*
Extension 1	Optional layer 3 protocol information Undefined							7a*

*: Option

Table 20. High Layer Compatibility (7D)

8	7	6	5	4	3	2	1	oct
	Information element identifier							1
0	1	1	1	1	1	0	1	
L I								2
Extension 1	Coding standard 00:CCITT standard 01:Other international standard 10:National standard 11:Standard specific to network		Interpretation method 100: First high layer characteristics identification Others: Reserved			Protocol profile expression method 01: High protocol profile (no group network attribute) Others: Reserved		3
Extension 1/0	High layer characteristics identification 0000001: Telephone (recommendation G.711) 0000100: G2/G3 facsimile (recommendation T.62) 0100001: Document application profile for G4 facsimile (class 1) (recommendation T.503) 0100100: Document application profile for formatted mixed mode (recommendation T.501) 0101000: Document application profile in format that can be processed (recommendation T.502) 0110001: Telex (recommendations T.62 and T.70) 0110010: Document application profile for interworking between videotex gateways (recommendation T.504) 0110101: Telex 0111000: Message handling system (MHS) (recommendation X.400 series) 1000001: OSI application (recommendation X.200 series) 1011110: Reserved for maintenance 1011111: Reserved for management Others : Reserved							4
Extension 1	Extension to high layer characteristics identification 0000001: Telephone (recommendation G.711) 0000100: G2/G3 facsimile (recommendation T.62) 0100001: Document application profile for G4 facsimile (class 1) (recommendation T.503) 0100100: Document application profile for formatted mixed mode (recommendation T.501) 0101000: Document application profile in format that can be processed (recommendation T.502) 0110001: Telex (recommendations T.62 and T.70) 0110010: Document application profile for interworking between videotex gateways (recommendation T.504) 0110101: Telex 0111000: Message handling system (MHS) (recommendation X.400 series) 1000001: OSI application (recommendation X.200 series) 1011110: Cannot be assigned 1011111: Cannot be assigned Others: Reserved							4a*

*: Option

Table 21. User-to-user Information (7E)

8	7	6	5	4	3	2	1	oct
	Information element identifier							1
0	1	1	1	1	1	1	0	
L I								2
Protocol identifier								3
00000000: User's own protocol 00000001: OSI high layer protocol 00000010: Recommendation X.244 00000011: Reserved for system management converse function 00000100: IA5 characters 00000111: Standard JT-V.120 speed compatibility 00001000: Standard JT-Q.931 user network call control message 00010000 to 00111111: Reserved for other layer 3 protocols including standard JT-X.25 01000000: National use 01000001: Recommendations X.208/X.209 (ASN.1: Abstract syntax descriptive method 1) 01000010 to 01001111: National use 01010000 to 11111110: Reserved for other layer 3 protocols including standard JT-X.25 Others: Reserved								
= User information (no coding rules) MAX 128 oct =								4 . . .

Table 22. Cause (08)

8	7	6	5	4	3	2	1	oct
	Information element identifier							1
0	0	0	0	1	0	0	0	
L I								2
Extension 1/0	Coding standard 00:CCITT standard 01:Other international standard 10:National standard 11:Standard specific to generation source indicated by bits 4 to 1 of oct 3		Reserved 0	Generation source 0000: User 0001: Private network directly connected to user 0010: National network directly connected to user 0011: Relay network 0100: National network directly connected to other party 0100: Private network directly connected to other party 0101: International network 0111: Interworking destination network 1010: Reserved				3
Extension 1	Recommendation 0000000:TTC standard JT-Q.931 0000011:X.21 0000100:TTC standard JT-X.25 Others: Reserved							3a*
Extension 1	Cause indication (class) 000: Normal event 001: Normal event 010: Network congestion 011: Service or option cannot be used 101: Invalid message 110: Protocol error 111: Interworking			Cause type (value) X	X	X	X	4
Diagnostic (if any)								5*

*: Option

Table 22-1. Cause Information Element (CPS Indication)

Class			Cause type value				Number	Cause	Diagnostic
7	6	5	4	3	2	1			
0	0	0							
0	0	1	X	X	X	X		Normal event class	
0	0	0	0	0	0	1	# 1	Unassigned number	
0	0	0	0	0	1	0	# 2	No route to specified transit network	Transit network identification
0	0	0	0	0	1	1	# 3	No route to other party	
0	0	0	0	1	1	0	# 6	Channel cannot be used	
0	0	0	0	1	1	1	# 7	Call came to already set channel	User provided information
0	0	1	0	0	0	0	# 16	Normal disconnect	
0	0	1	0	0	0	1	# 17	Other party busy	
0	0	1	0	0	1	0	# 18	No response from other party	
0	0	1	0	0	1	1	# 19	Calling party/no response	
0	0	1	0	1	0	1	# 21	Communication rejected	
0	0	1	0	1	1	0	# 22	Other party subscriber terminal number changed	New other party subscriber number
0	0	1	1	0	1	0	# 26	Wrong number; disconnection recovery	
0	0	1	1	0	1	1	# 27	Other party terminal out of order	
0	0	1	1	1	0	0	# 28	Invalid number format (incomplete number)	
0	0	1	1	1	0	1	# 29	Facility rejection	Facility identifier
0	0	1	1	1	1	0	# 30	Response to status enquiry	
0	0	1	1	1	1	1	# 31	Other normal class	
0	1	0	X	X	X	X		Resource unusable class	
0	1	0	0	0	1	0	# 34	No usable line/channel	
0	1	0	0	1	1	0	# 38	Network fault	
0	1	0	1	0	0	1	# 41	Temporary fault	
0	1	0	1	0	1	0	# 42	Network congestion	
0	1	0	1	0	1	1	# 43	Discarded information element identifier	Access information
0	1	0	1	1	0	0	# 44	Requested line/channel cannot be used	discarded
0	1	0	1	1	1	1	# 47	Other resources unusable class	
0	1	1	X	X	X	X		Service unusable class	
0	1	1	0	0	0	1	# 49	QOS cannot be used	Facility identifier
0	1	1	0	0	1	0	# 50	Requested facility not contracted	
0	1	1	1	0	0	1	# 57	Transfer capability not allowed	
0	1	1	1	0	1	0	# 58	Transfer capability not allowed at present	
0	1	1	1	1	1	1	# 63	Other unusable service or option class	

Class			Cause type value				Number	Cause	Diagnostic
7	6	5	4	3	2	1			
1	0	0	X	X	X	X		Service unprovided class	
1	0	0	0	0	0	1	# 65	Bearer service not implemented	
1	0	0	0	0	1	0	# 66	Channel type specification not implemented	Channel type
1	0	0	0	1	0	1	# 69	Facility request not implemented	Facility identifier
1	0	0	0	1	1	0	# 70	Only restricted digital information bearer capability available	
1	0	0	1	1	1	1	# 79	Other unprovided service or option class	
1	0	1	X	X	X	X		Invalid message class	
1	0	1	0	0	0	1	# 81	Invalid call reference value	
1	0	1	0	0	1	0	# 82	Invalid channel reference value	"Channel identifier"
1	0	1	0	0	1	1	# 83	Specified interrupted call identification number not used	
1	0	1	0	1	0	0	# 84	Interrupted call identification number being used	
1	0	1	0	1	0	1	# 85	No interrupted call	
1	0	1	0	1	1	0	# 86	Connection of specified interrupted call already restored	"Incompatible parameter"
1	0	1	1	0	0	0	# 88	Terminal attribute incompatible	
1	0	1	1	0	1	1	# 91	Transit network does not exist	
1	0	1	1	1	1	1	# 95	Other invalid message class	"Message type"
1	1	0	X	X	X	X		Procedure error class	
1	1	0	0	0	0	0	# 96	Mandatory information insufficient	Information element identifier
1	1	0	0	0	0	1	# 97	Message type undefined or unprovided	"Message type"
1	1	0	0	0	1	0	# 98	Call status and message not matched or message type undefined	"Message type"
1	1	0	0	0	1	1	# 99	Information element undefined	Information element identifier
1	1	0	0	1	0	0	# 100	Information element content invalid	Information element identifier
1	1	0	0	1	0	1	# 101	Recovery by timer time up	
1	1	0	0	1	1	0	# 102	Timer number	
1	1	0	1	1	1	1	# 111	Other procedure error class	
1	1	1	X	X	X	X		Interworking class	
1	1	1	1	1	1	1	# 127	Other interworking class	
Others								Already reserved	

Table 22-2. Diagnostic (Oct 5 of Cause)

For cause numbers #1, #3, #16, #21, and #49

8	7	6	5	4	3	2	1	oct
1	0	0	0	0	0	00: Undefined 01: Fixed 10: Temporary Others: Reserved		5*

For cause numbers #57, #58, and #65

8	7	6	5	4	3	2	1	oct
Extension 1/0	Attribute number 0110001: Information transfer capability 0110010: Information transfer mode 0110011: Information transfer rate 0110100: Structure 0110110: Call set-up method 0110111: Symmetry 0111000: Information transfer rate (destination to origin) 0111001: Layer identification							5*
Extension 1/0	Rejection attribute (information transfer capability)							5a*
	0	0	00000: Voice (Speech) 01000: Unrestricted digital information 01001: Reserved 10000: 3.1 kHz audio 10001: Reserved 11000: Reserved Others: Already reserved					
Extension 1/0	Rejection attribute (Information transfer mode)							5a*
	00: Circuit-switched exchange 10: Packet exchange Others: Already reserved		0	0	0	0	0	
Extension 1/0	Rejection attribute (Information transfer rate)							5a*
	0	0	00000: Packet exchange 10000: 64 kbps 10101: 1536 kbps Others: Reserved		10010: Reserved 10011: 384 kbps 10111: Reserved			
Extension 1/0	Rejection attribute (Structure)							5a*
	000: Default 001: 8 kHz integrity 100: Preserve service data unit integrity 111: Reserved Others: Reserved			0	0	0	0	

↓
Continued on the next page

=

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8	7	6	5	4	3	2	1	oct
Extension 1/0	Rejection attribute (Communication mode)							5a*
	0	0	0	00: Point to point Others: Reserved		0	0	
Extension 1/0	Rejection attribute (Call set-up procedure)							5a*
	0	0	0	0	0	00: Immediate connection Others: Reserved		
Extension 1/0	Rejection attribute (Asymmetrical characteristics)							5a*
	00: Bi-directional symmetric Others: Reserved		00000: Packet exchange 10010: Reserved 10000: 64 kbps 10011: 384 kbps 10101: 1536 kbps 10111: Reserved Others: Reserved					
Extension 1/0	Rejection attribute (Layer 1 identification)							5a*
	01: Layer 1		00001: CCITT speed compatibility (V.110/X.30) 00010: Recommendation G.711 μ-law voice 00011: Recommendation G.711 A-law voice 01001: TTC standard speed compatibility (JT-X.31):HDLC flag stuffing					
Extension 1/0	Rejection attribute (layer identification)							5a*
	10: Layer 2		00010: TTC standard JT-Q.921 00110: TTC standard JT-X.25 packet layer Others: Reserved					
Extension 1/0	Rejection attribute (layer identification)							5a*
	11: Layer 3		00010: TTC standard JT-Q.931 00110: TTC standard JT-X.25 packet layer Others: Reserved					
Extension 1	Usable attributes							5b*
	Same coding as oct 5a							

*: Option

*: oct 5a to oct 5b may be repeated

Table 23. More Data (A0)

8	7	6	5	4	3	2	1	oct
	Information element identifier							1
1	0	1	0	0	0	0	0	

Table 24. Fixed Shift Procedure (96) [Extension of Code Group]

- The following two code group shift procedures are available:
  1. Fixed shift procedure
  2. Temporary shift procedure

1. Fixed shift procedure
   The fixed shift procedure is used to indicate the code group newly selected. Once specified, the code group is maintained until a fixed shift information element which specifies the use of another code group appears.
   For the charge information notification service, "charge notification" information is sent by code group 6 using this procedure.

8	7	6	5	4	3	2	1	oct
	Shift identifier				Code group identifier			1
1	0	0	1	0	000: Cannot be used 001 ┐ Reserved 100 ┘ 101: Code group 5: Information element specific nationally 110: Code group 6: Information element specific to network 111: Code group 7: Information element specific to user			

2. Temporary shift procedure
   The temporary shift procedure is used when temporarily shifting to a certain code group. In the temporary shift procedure, a single-fixed-length information element is used to identify the code group of the information element which follows it. After analyzing the latter information element, the code group which was used before the temporary shift procedure was executed will again be used for analyzing the next information element.

8	7	6	5	4	3	2	1	oct
	Shift identifier				Code group identifier			1
1	0	0	1	0	000: Code group 0: TTC standard JT-Q.931 information element 001 ┐ Reserved 100 ┘ 101: Code group 5: Information element specific nationally 110: Code group 6: Information element specific to network 111: Code group 7: Information element specific to user			

Table 25. Charge Notification (01)

8	7	6	5	4	3	2	1	oct
	Information element identifier							1
0	0	0	0	0	0	0	1	
L I								2
Extension 1	Reserved			Charge type				3
	0	0	0	0010: Total charge Others: Reserved				
Charge indication (IA5 characters) 11 oct MAX (Note)								4 . . . .

Note:
- 11 digits max. (9 integer digits + decimal point + 1 fraction digit)
- However, if there is no decimal point or fraction, 11 digits are used for integer digits.
- The first octet is the highest octet.

Table 26. Call Identification (20)

8	7	6	5	4	3	2	1	oct
	Information element identifier							1
0	0	1	0	0	0	0	0	
L I								2
= Call identification (arbitrary bit pattern is possible) 8 oct max. =								3 . . .

Table 27. Initial Setting Indication (79)

8	7	6	5	4	3	2	1	oct
	Information element identifier							1
0	1	1	1	1	0	0	1	
L I								2
Extension	Reserved				Class			3
1	0	0	0	0	000: Indicated channel 110: One interface 111: All interfaces Others: Reserved			

Table 28. Notification Identifier (27)

8	7	6	5	4	3	2	1	oct
	Information element identifier							1
0	0	1	0	0	1	1	1	
L I								2
Extension	Notification type							3
1	0000000: User interruption 0000001: User resumption 0000010: Change of bearer service							

Table 29. Congestion Level (BX)

8	7	6	5	4	3	2	1	oct
1	Information element identifier			Congestion control level				1
	0	1	1	0000: RR (receive side can receive) 1111: RNR (receive side cannot receive) Others: Already reserved				

Table 30. Call Status (14)

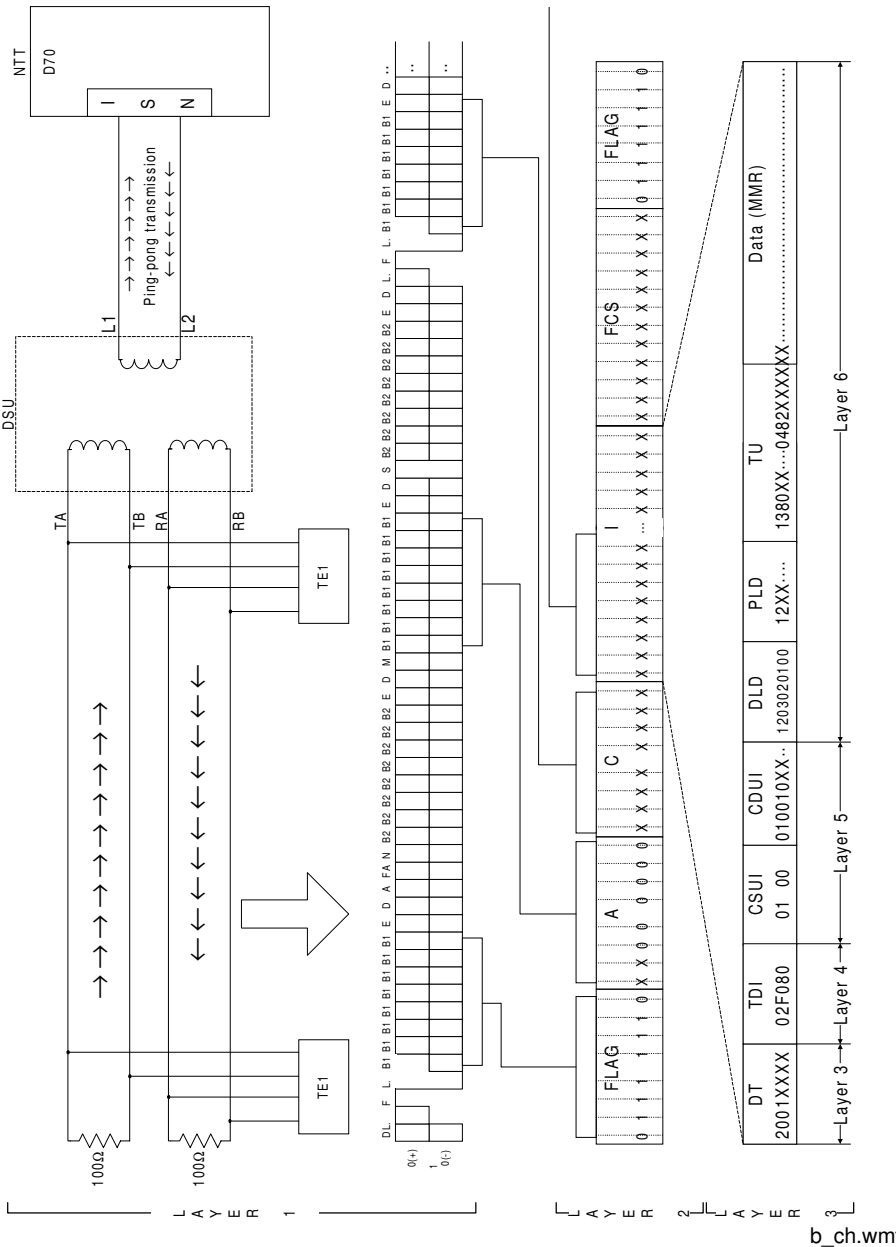
8	7	6	5	4	3	2	1	oct
	Information element identifier							1
0	0	0	1	0	1	0	0	
L I								2
Coding standard	Call status number							3

Coding standard	Call status number		
		Terminal side status	Network side status
00:CCITT standard 01:Other international standard 10:National standard 11:Standard specific to the network	0 0 0 0 0 0	U0 Available	N0 Available
	0 0 0 0 0 1	U1 Call	N1 Call
	0 0 0 0 1 1	U3 Call accept	N3 Call accept
	0 0 0 1 0 0	U4 Call notification	N4 Call notification
	0 0 0 1 1 0	U6 Incoming call	N6 Incoming call
	0 0 0 1 1 1	U7 Calling	N7 Calling
	0 0 1 0 0 0	U8 Response	N8 Response
	0 0 1 0 0 1	U9 Incoming call accept	N9 Incomming call accept
	0 0 1 0 1 0	U10 In communication	N10 In communication
	0 0 1 0 1 1	U11 Disconnect request	N11 Disconnect request
	0 0 1 1 0 0	U12 Disconnect notification	N12 Disconnect notification
	0 0 1 1 1 1	U15 Interrupt request	N15 Interrupt request
	0 1 0 0 0 1	U17 Resume request	N17 Resume request
	0 1 0 0 1 1	U19 Release request	N19 Release request
	0 1 0 1 1 0	Reserved	N22 Call discard
	O t h e r s	Reserved	Reserved

Global interface status value	
0 0 0 0 0 0	: Initial setting 0 - Available
1 1 1 1 0 1	: Initial setting 1 - Initial setting request
1 1 1 1 1 0	: Initial setting 2 - Initial setting
O t h e r s	: Reserved

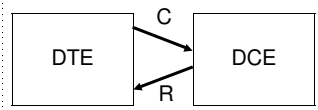
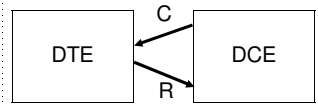
IV. B Channel, Layer 2

Configuration of B channel, layers 1 to 7



B channel, layer 2 (X.25 link level: LAPB)

F 1 oct	**A** 1 oct	**C** 1 oct	**I** N oct	**FCS** 2 oct	**F** 1 oct

Address field value (H)	Definition	
01	Command from DTE ⟶ DCE Response from DTE ⟵ DCE	
03	Command from DTE ⟵ DCE Response from DTE ⟶ DCE	

F 1 oct	**A** 1 oct	**C** 1 oct	**I** N oct	**FCS** 2 oct	**F** 1 oct

		8	7	6	5	4	3	2	1
Information (I) "data"		N (R) Receive order number			P	N (S) Transmission order number			0
Monitor (S) "Response to (I)"	RR (Receive ready)	N (R) Number that can be accepted			P/F	0	0	0	1
	RNR (Receive not ready)					0	1	0	1
	REJ (Retransmission request)					1	0	0	1
Unnumbered (U) "Adaptive link control"	SABM (Set asynchronous balanced mode)	0	0	1	P	1	1	1	1
	UA (Unnumbered acknowledgment)	0	1	1	F	0	0	1	1
	DISC (Disconnect)	0	1	1	P	0	0	1	1
	DM (Disconnect mode)	0	0	0	F	1	1	1	1
	FRMR (Frame reject)	1	0	0	F	0	1	1	1

- **Note:** P/F (poll/final) bit .... Indicates the final frame and requests a response from the other party.

——— Extended mode ... Modulo 128 format ———

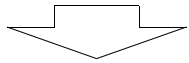
		16 ~ 10	9	8	7	6	5	4	3	2	1
Information (I) "data"		N (R) Receive order number	P	N (S) Transmission order number							0
Monitor (S) "Response to (I)"	RR (Receive ready)	N (R) Number that can be accepted	P/F	0	0	0	0	0	0	0	1
	RNR (Receive not ready)			0	0	0	0	0	1	0	1
	REJ (Retransmission request)			0	0	0	0	1	0	0	1
Unnumbered (U) "Adaptive link control"	SABM (Set asynchronous balanced mode)			0	1	1	P	1	1	1	1
	UA (Unnumbered acknowledgment)			0	1	1	F	0	0	1	1
	DISC (Disconnect)			0	1	0	P	0	0	1	1
	DM (Disconnect mode)			0	0	0	F	1	1	1	1
	FRMR (Frame reject)			1	0	0	F	0	1	1	1

Command (C)/Response (R)	C	R	Function	Information field
RR (Receive Ready) : Receive ready	O	O	• Information frame can be received. • Acknowledges information frames up to N(R) - 1.	None
RNR (Receive Not Ready) : Cannot receive	O	O	• Indicates busy state, and continuous incoming information frames cannot be accepted temporarily. • Busy state is released by outputting RR, REJ, SABM, or UA frame.	None
REJ (REJect) : Retransmission request	O	O	• Since information frames after frame number N(R) were not accepted, requests retransmission.	None
SABM (Set Asynchronous Balanced Mode) : Asynchronous balanced mode setting	O		• Sets up the Information transfer phase mode. • Used to set up the asynchronous balanced mode (ABM). (Every command/response control field length is 1 octet.)	None
SABME (SABM Extended) : Extended asynchronous balanced mode setting	O		• Sets up the Information transfer phase mode. • Used to set up the extended asynchronous balanced mode (ABM). (Control field length is 2 octets.)	None
UA (Unnumbered Acknowledgment) : Unnumbered acknowledgment)		O	• Acknowledgment for mode setting/disconnect	None
DISC (DISConnect) : Disconnect	O		• Ends the operation mode that has been set up. (Operation stopped state)	None
DM (Disconnect Mode) : Disconnect mode		O	• Notifies about logical disconnection from data link and that the terminal is currently in the disconnect phase. • Notifies that execution is not possible for mode setting.	None
FRMR (FRaMe Reject) : Frame reject		O	• Any error that cannot be corrected by retransmitting the same frame is informed by the information field.	Yes

V. B Channel, Layer 3

B channel, layer 3 (X.25 packet level)

F 1 oct	**A** 1 oct	**C** 1 oct	**I** N oct	**FCS** 2 oct	**F** 1 oct

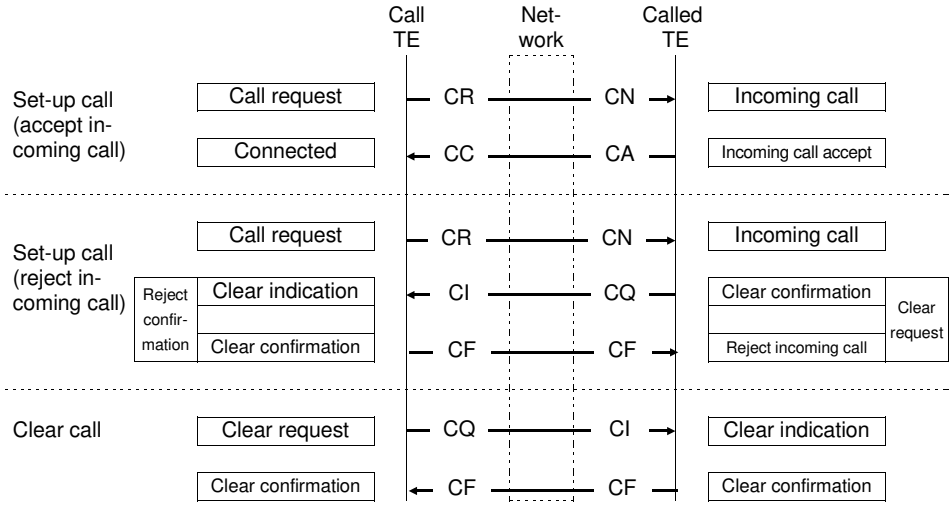


	Packet type identifier	Calling side		Called side	
		DTE → DCE	DTE ← DCE	DCE → DTE	DCE ← DTE
Call setting and release	0B	CR: Call Request		CN: Incoming Call	
	0F		CC: Call Connected		CA: Call Accepted
	13	CQ: Clear Request		CI: Clear Indication	
	17		CF: Clear Confirmation		CF: Clear Confirmation
Data and interrupt	XX	DT: Data			
	23	IT: Interrupt			
	27	IF: Interrupt Confirmation			
Flow control and reset	X1	RR: Receive Ready			
	X5	RNR: Receive Not Ready			
	X9	REJ: Reject			REJ: Reject
	1B	RQ: Reset Request		RI: Reset Indication	
	1F		RF: Reset Confirmation		RF: Reset Confirmation
Restart	FB	SQ: Restart Request		SI: Restart Indication	
	FF		SF: Restart Confirmation		SF: Restart Confirmation

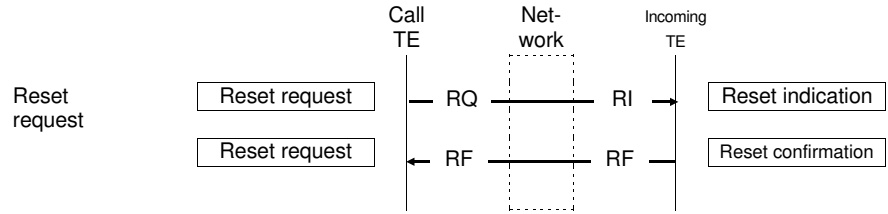
* Layer 3 connection and clearing procedure

Transparent transfer within network

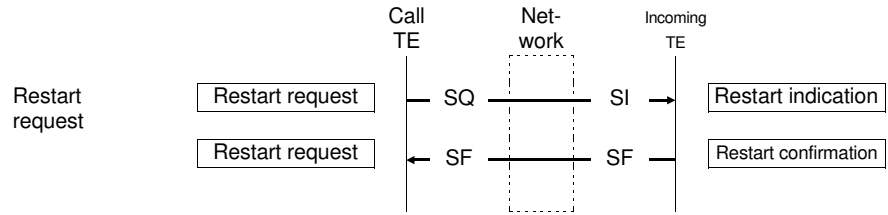
- Call and clear procedure



- Reset procedure



- Restart procedure



∗ Packet format

Signal name or status name, etc.	Definition
Call request CR packet [0B]	Packet used to request a call

oct	8	7	6	5	4	3	2	1
	General format identifier (GFI) 0 0 1 0				Logical channel group number (LCGN)			
2	Logical channel number (LCN)							
3	Packet type identifier (TYP) 0 0 0 0 1 0 1 1							
4	Calling side subscriber line number length (CLL)				Called side subscriber line number length (CDL)			
	Calling side subscriber line number (DA) A_1				B_1			
	C_1				D_1			
	E_1				F_1			
	G_1				0	0	0	0
	Called side subscriber line number (SA) A_2				B_2			
	C_2				D_2			
	E_2				F_2			
	G_2				0	0	0	0
	Facility length (FL)							
	Facility (packet size) 0 1 0 0 0 0 1 0							
	Called DTE packet size: Logarithmic, base 2 (e.g, if 8 is stored here, pakcet size is 128)							
	Calling DTE packet size: Logarithmic, base 2 (e.g, if 8 is stored here, pakcet size is 128)							
	Facility (window size) 0 1 0 0 0 0 1 1							
	Called DTE window size: Binary coded							
	Calling DTE window size: Binary coded							
	Call user data (DATA) field							

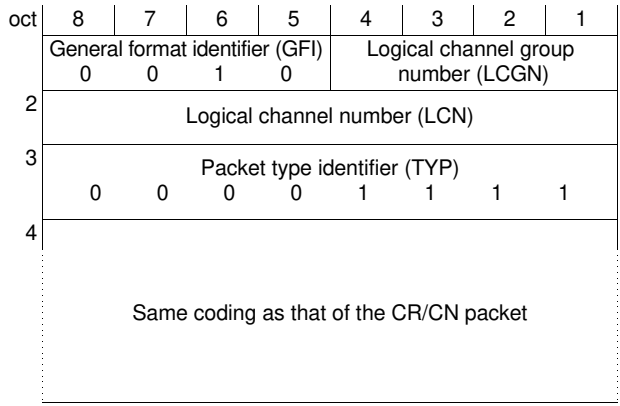
CR: Call-Request

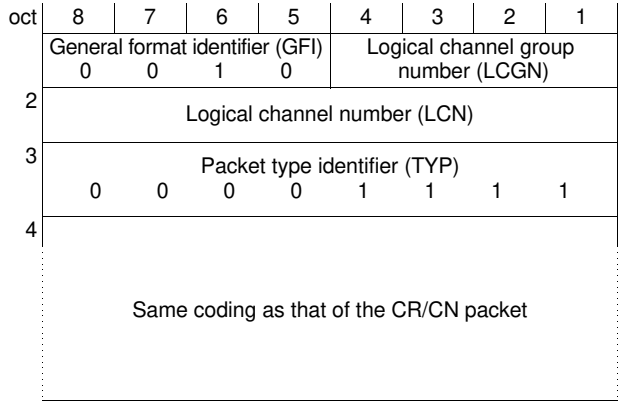
Signal name or status name, etc.	Definition
Incoming call request CN packet [0B]	Packet used to inform of an incoming call

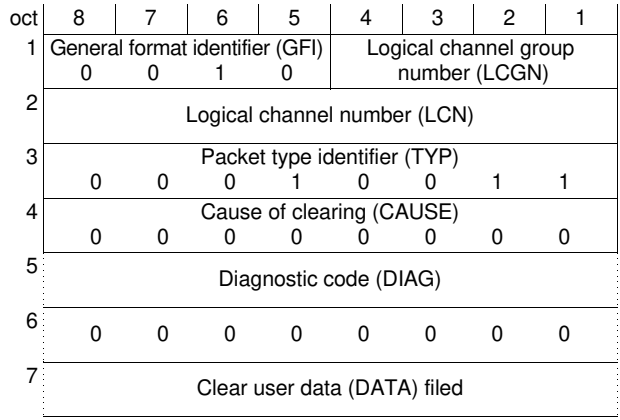
oct	8	7	6	5	4	3	2	1
	General format identifier (GFI)				Logical channel group number (LCGN)			
	0	0	1	0				
2	Logical channel number (LCN)							
3	Packet type identifier (TYP)							
	0	0	0	0	1	0	1	1
4	Calling side subscriber line number length (CLL)				Called side subscriber line number length (CDL)			
	Calling side subscriber line number (DA)							
	A_1				B_1			
	C_1				D_1			
	E_1				F_1			
	G_1				0	0	0	0
	Called side subscriber line number (SA)							
	A_2				B_2			
	C_2				D_2			
	E_2				F_2			
	G_2				0	0	0	0
	Facility length (FL)							
	Facility (packet size)							
	0	1	0	0	0	0	1	0
	Called DTE packet size: Logarithmic, base 2 (e.g., if 8 is stored here, packet size is 128)							
	Calling DTE packet size: Logarithmic, base 2 (e.g., if 8 is stored here, packet size is 128)							
	Facility (window size)							
	0	1	0	0	0	0	1	1
	Called DTE window size: Binary coded							
	Calling DTE window size: Binary coded							
	Call user data (DATA) field							

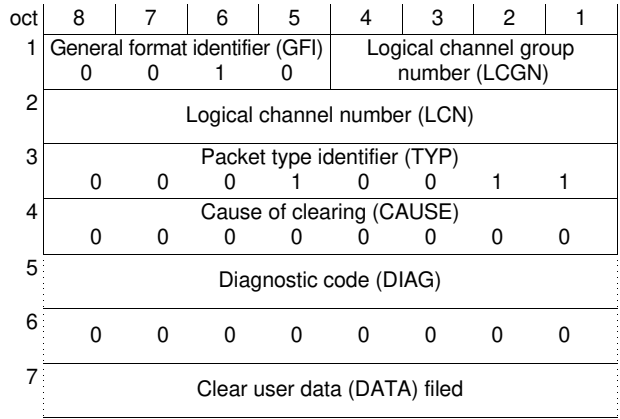
CN packet form

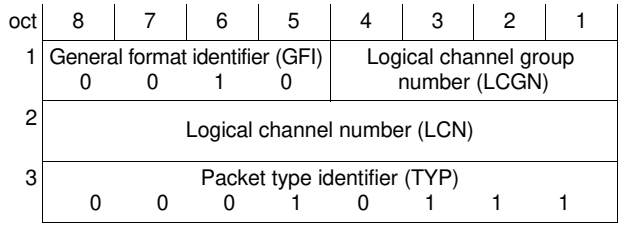
CN: Incoming Call

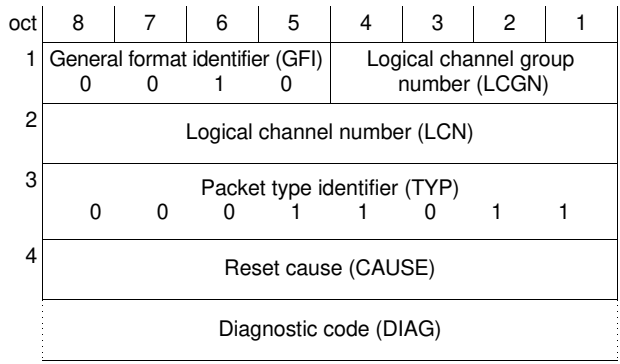
Signal name or status name, etc.	Definition
Incoming call request CA packet [0F]	Packet used to inform of incommng call acceptance  CA: Call Accept

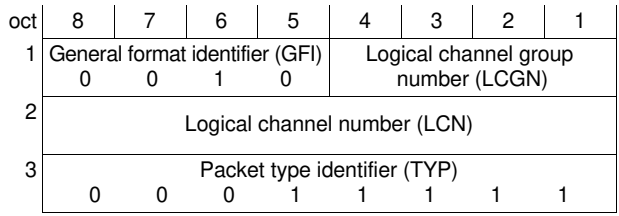
Signal name or status name, etc.	Definition
Connection complete CC packet [0F]	Packet used to inform that connection is complete  CC: Call Connected

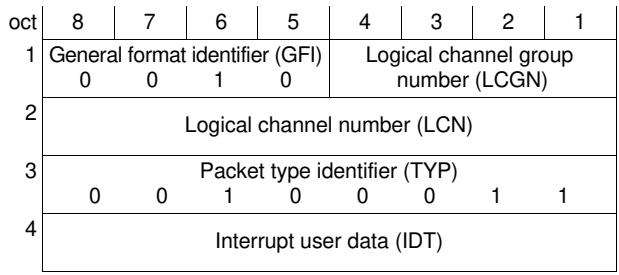
Signal name or status name, etc.	Definition
Clear request CQ packet [13]	Packet used by terminal equipment to reject the incoming call or to request to clear the call  CQ: Call Request

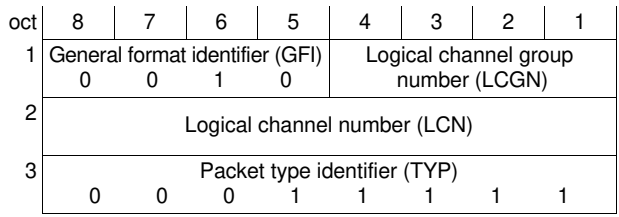
Signal name or status name, etc.	Definition
Clear request CI packet [13]	Packet used by line terminal equipment to request to clear the call  CI: Call Indication

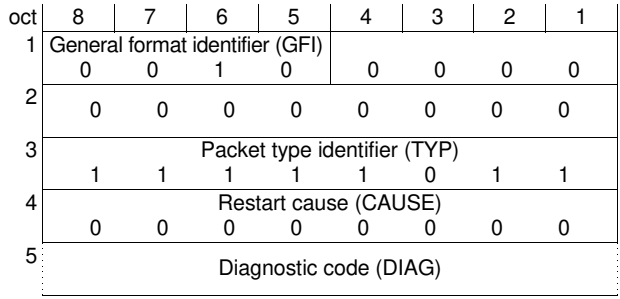
Signal name or status name, etc.	Definition
Clear confirmation CF packet [17]	Packet used by line terminal equipment to confirm the call clearance  CI: Call Confirmation
Clear confirmation CF packet	Packet used by terminal equipment to confirm the call clearance The format is the same as the clear confirmation (CF) packet format.

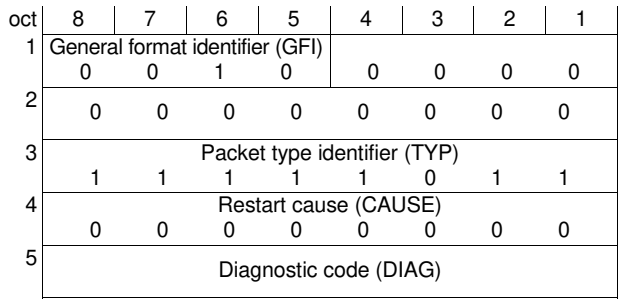
Signal name or status name, etc.	Definition
Reset request RQ packet [1B]	Packet used by terminal equipment to request resetting of the transmit/receive order number  RQ: Reset Request
Reset indication RI packet	Packet used by line terminal equipment to request resetting of the transmit/receive order number The format is the same as the reset request (RQ) packet format.

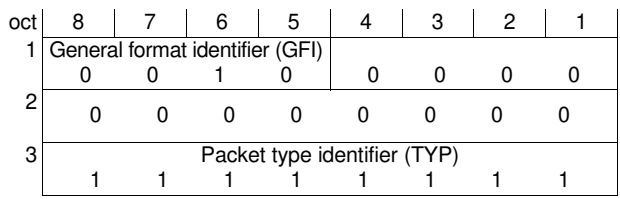
Signal name or status name, etc.	Definition
Reset confirmation RF packet [1F]	Packet used for confirming resetting of the transmit/receive order number  RF: Reset Confirmation

Signal name or status name, etc.	Definition
Interrupt IT packet [23]	Packet used for sending data when transmission is restricted (when RNR is received)  IT: Interrupt

Signal name or status name, etc.	Definition
Interrupt confirmation IF packet [27]	Packet used for confirming interrupt data  IF: Interrupt Confirmation

Signal name or status name, etc.	Definition
Restart request SQ packet [FB]	Packet used for requesting terminal equipment to clear all calls  SQ: Restart Request

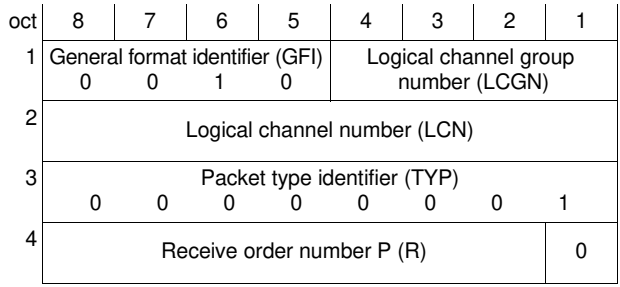
Signal name or status name, etc.	Definition
Restart indication SI packet [FB]	Packet used for indicating to line terminal equipment to clear all calls  SI: Restart Indication

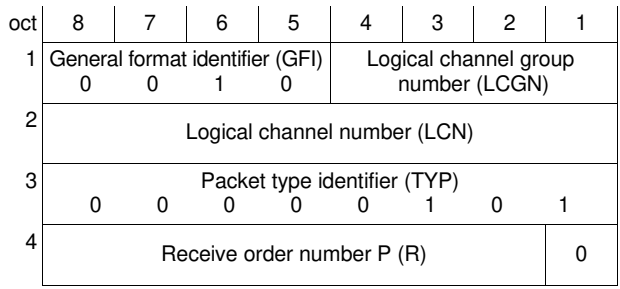
Signal name or status name, etc.	Definition
Restart confirmation SF packet [FF]	Packet used for confirming that all calls are cleared  SF: Restart Confirmation

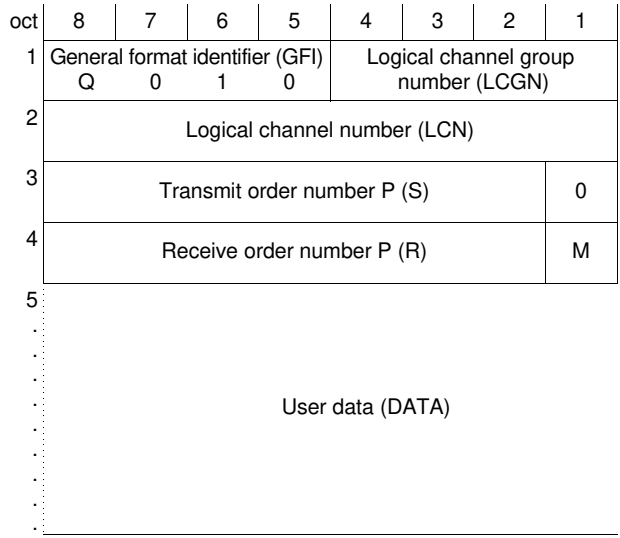
Signal name or status name, etc.	Definition
Facility request FQ packet [43]	Packet used for request to register/clear closed area connection service

oct	8	7	6	5	4	3	2	1
	General format identifier (GFI) 0 0 1 0				Logical channel group number (LCGN)			
2	Logical channel number (LCN)							
3	Packet type identifier (TYP) 0 1 0 0 0 0 1 1							
4	Calling side subscriber line number length (CLL)				Called side subscriber line number length (CDL)			
	Called side subscriber line number (DA) A_1				B_1			
	C_1				D_1			
	E_1				F_1			
	G_1				0	0	0	0
	Calling side subscriber line number (SA) A_2				B_2			
	C_2				D_2			
	E_2				F_2			
	G_2				0	0	0	0
	Facility length (FL) 0 0 0 0 0 0 1 1							
	Facility code (F) 0 1 0 0 0 0 0 0							
	Party specification number N_1				N_2			
	N_3				N_4			

FQ: Facility Request

Signal name or status name, etc.	Definition
Receive ready RR packet [01]	Packet used to indicate that data can be confirmed and received  RR: Receive Ready

Signal name or status name, etc.	Definition
Receive not ready RNR packet [05]	Packet used to indicate that data cannot be confirmed and received  RNR: Receive Not Ready

Signal name or status name, etc.	Definition
Data DT packet [XX]	Packet used to transfer data between subscribers  DT: Data Q: Qualifier bit M: More data indication

VI. B Channel, Layer 4

B channel, layer 4

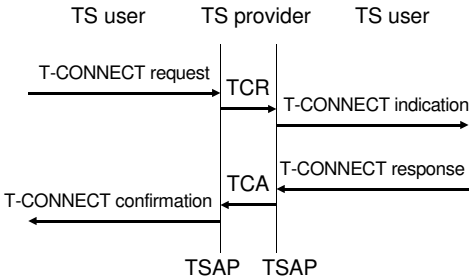
CCITT recommendation T.70

1. Transport layer control block

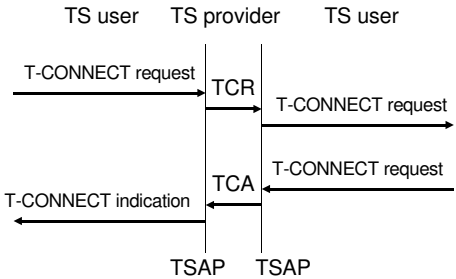
	Block		Block	
	Code H	Name	Code H	Name
Estab-lishment control	**EO**	**TCR** (T Connection Request) : Connection request	**D0**	TCA (T Connection Accept) : Connection accept
			80	TCC (T Connection Clear) : Connection clear
Information transfer	**F0**	TDT (T Data Block) : Data transfer		
Error notification	**70**	TBR (T Block Reject) : Error notification		

2. Transport service sequence

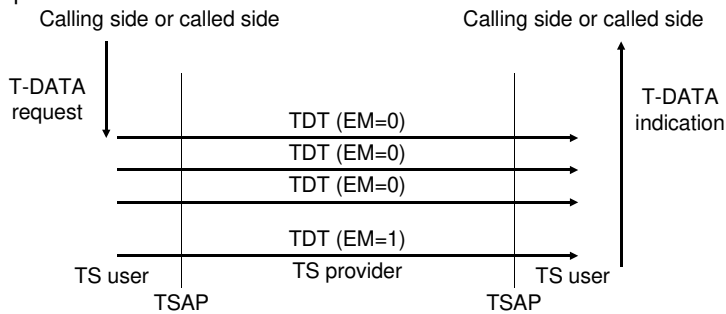
a) TC establishment successful



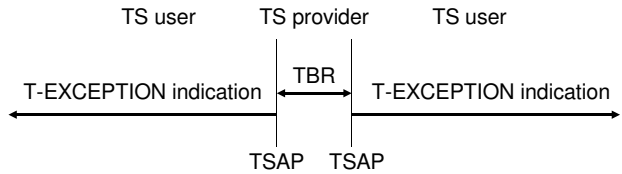
b) TC establishment failure



c) Transfer phase



d) Error notification



3. Transport layer block format

	Octet 1	Octet 2	Octet 3 Octet 4	Octet 5 Octet 6	Octet 7	Octet n
TCR	Length (127 max.)	E0	0 0 0 0 Unused	Transmission originator source reference information	0 0 Extended field	Parameter (See Notes 1-1 and 1-2) Only when requesting and confirming optional transport connection function

TCA	Length (127 max.)	DO	Destination reference information	Transmission source reference information	0 0 Extended field	Parameter (See Notes 1-1 and 1-2) Only when requesting and confirming optional transport connection function

Note 1-1: Parameter for address extension

Octet 1	Extended address parameter type	– C1H: Calling address
2	Parameter length indicator	C2H: Called address
3	IA5 digit ... 1 IA5 digit ... 2	
n	IA5 digit ... n	

Note 1-2: Parameter for TDT block

Octet 1	1 1 0 0 0 0 0 0
2	0 0 0 0 0 0 0 1
3	0 0 0 0 X X X X

XXXX
- 1011: 2048 octets
- 1010: 1024 octets
- 1001: 512 octets
- 1000: 256 octets
- 0111: 128 octets

length negotiation

TCC	Length (127 max.)	80	Destination reference information	Transmission source reference information	Cause of clearing Note 2	Parameter Used when sending optional additional clear information

Note 2: Cause of clearing
00H .... Cause is not indicated
01H .... Terminal is occupied
02H .... Terminal has a problem
03H .... Address not known

Parameter (Option)

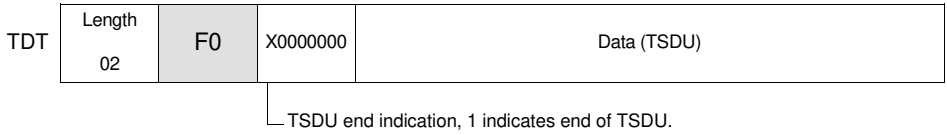
Octet 1	1 1 1 0 0 0 0 0
2	Parameter length identifier
3 n	Additional clear information

TBR	Length (127 max.)	70	Destination reference information	Reject cause Note 3	Parameter field Used to indicate bit pattern of block rejected including the octet which is the cause of rejection

Note 3: Cause of rejection
00H .... Cause is not indicated
01H .... Function is not implemented
02H .... Invalid block
03H .... Invalid parameter

Parameter (Mandatory)

Octet 1	1 1 0 0 0 0 0 1
2	Parameter length indicator
3 n	Rejected information



Note: The value of "Transmission or source reference information" is the local system's parameter. Received transmission or source reference information is used as the "destination reference information" for a response to the block.

VII. B Channel, Layer 5

B channel, layer 5

CCITT recommendation T.62

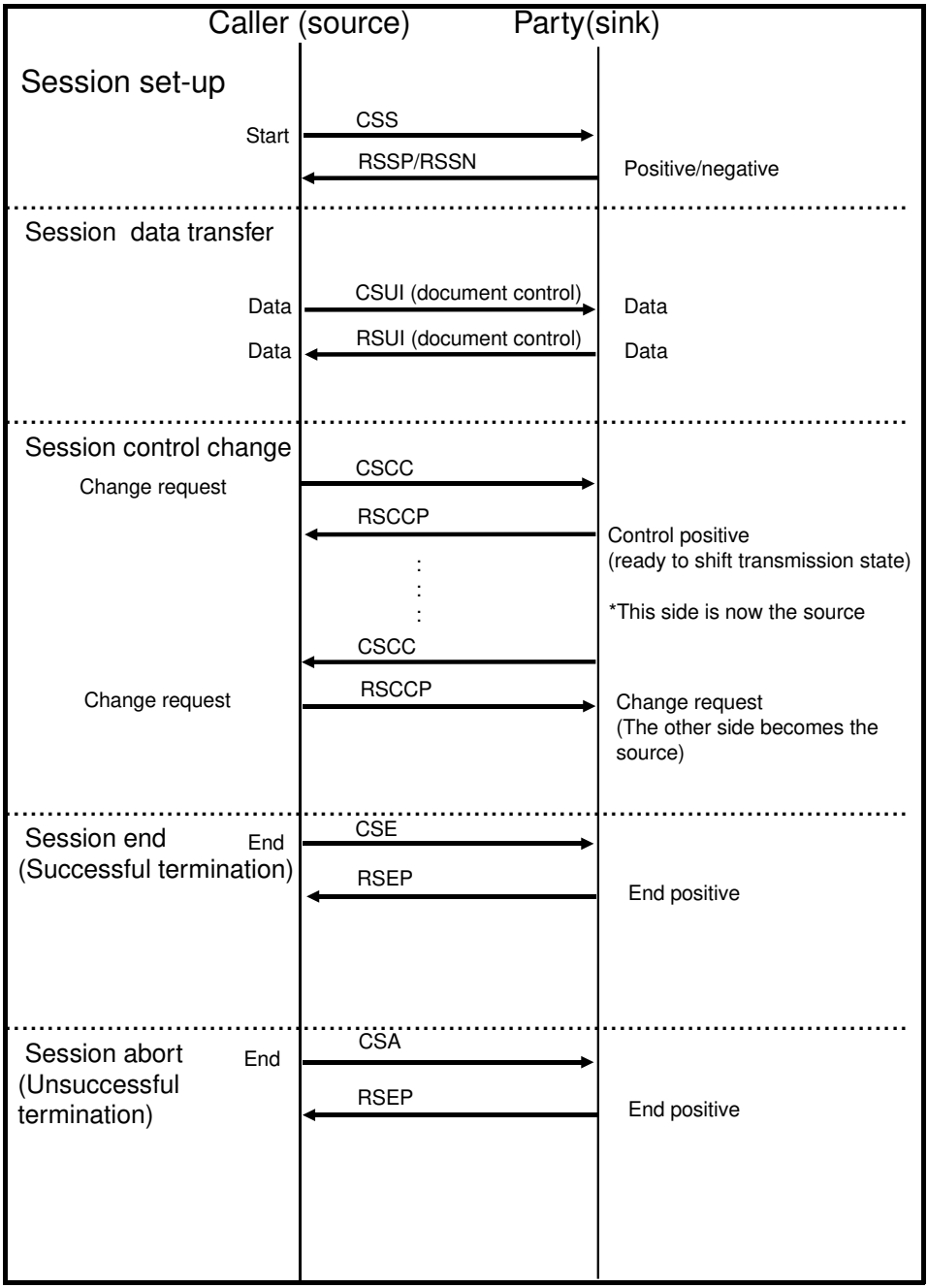
1. Session control commands/responses

Command		Response	
Code	**Name**	**Code**	**Name**
Session Set-up and release			
0D	CSS (Command Session Start): Starts the session	0E	RSSP(Response Session Start Positive): Acknowledges session start
		0C	RSSN(Response Session Start Negative): Denies session start
09	CSE(Command Session End): Ends the session	0A	RSEP(Response Session End Positive): Acknowledges session end
19	CSA(Command Session Abort): Aborts the session	1A	RSAP(Response Session Abort Positive): Acknowledges session abort
Information transfer			
01	CSUI(Command Session User Information): Session user information	02	RSUI(Response Session User Information): Session user information
Management			
15	CSCC(Command Session Change Control): Controls session change	16	RSCCP(Response Session Change Control Positive): Acknowledges session change control

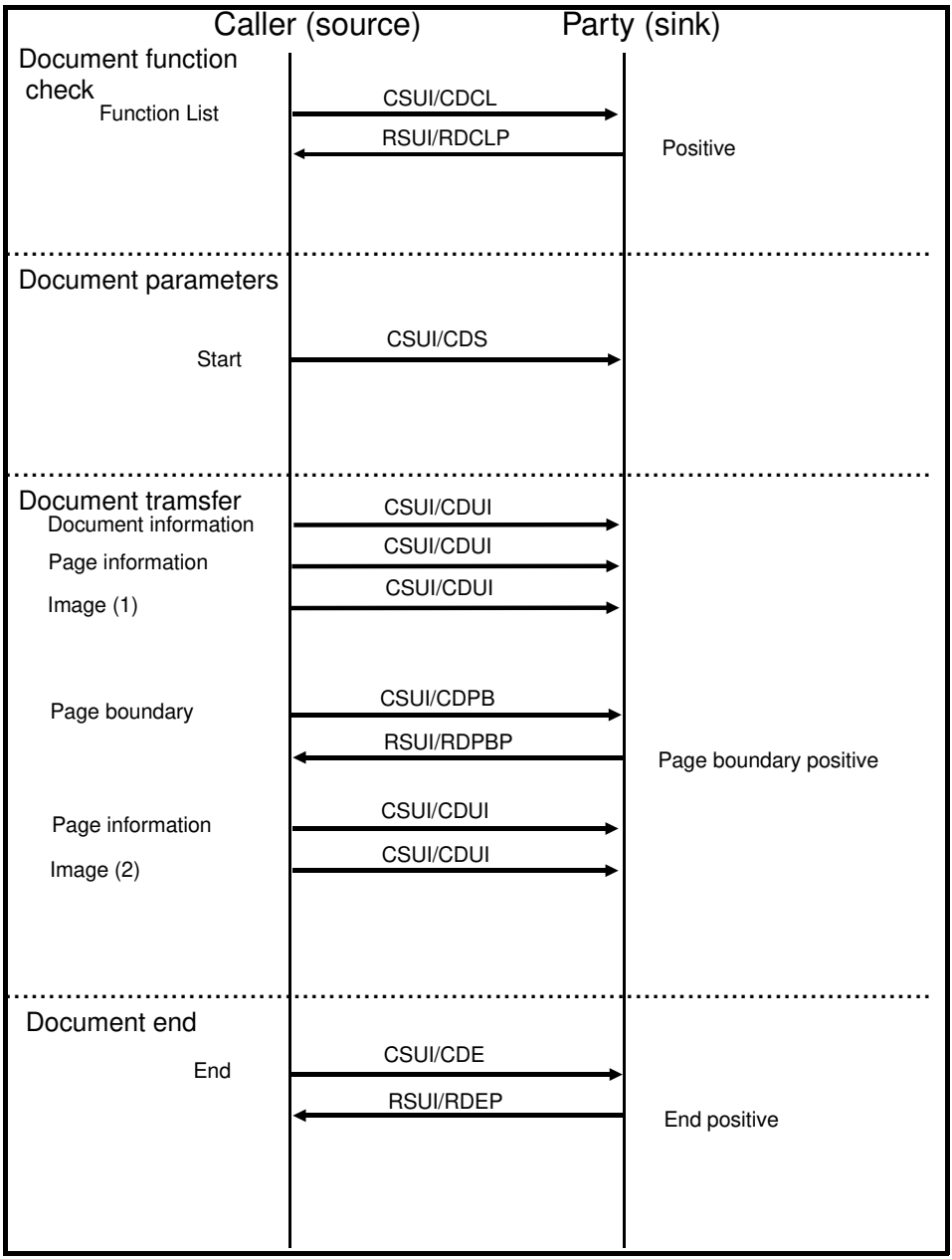
2. Document control commands/responses

Command		Response	
Code	**Name**	**Code**	**Name**
Document control			
2D	CDS(Command Document Start): Starts the document	3E	RDCLP(Response Document Capability List Positive): Acknowledges the document function list (Negative response for CDS or CDC uses RDGR)
1D	CDC(Command Document Continue): Continues the document		
3D	CDCL(Command Document Capability List): Lists document functions		
29	CDE(Command Document End): Ends the document	2A	RDEP(Response Document End Positive): Acknowledges document end (Negative response uses RDPBN)
39	CDD(Command Document Disuse): Discard the document	3A	RDDP(Responce Document Disuse Positive): Acknowledgement of CDD
19	CDR(Command Document Resynchoronize): Document resynchronization	1A	RDRP(Response Document Resynchronize Positive): Acknowledges document resynchronization
Information transter			
01	CDUI(Command Document User Information): Document user information		
Error recovery			
31	CDPB(Command Document Page Boundary): Document page boundary	32	RDPBP(Response Document Page Boundary Positive): Acknowledges document page boundary
		30	RDPBN(Response Document Page Boundary Negative): Denies document page boundary
		00	RDGR(Response Document General Reject): Denies general document use

Session operation mode



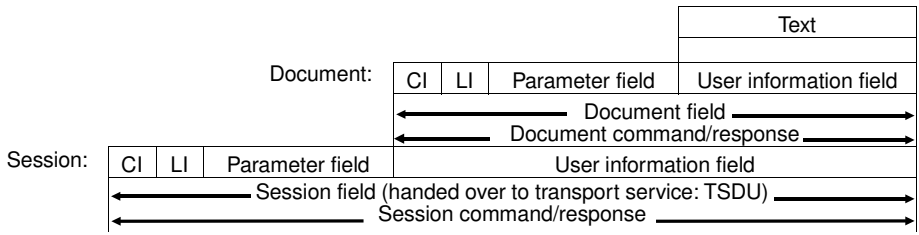
Document control procedure



CSUI and RSUI are session commands/responses

Session and document coding rules

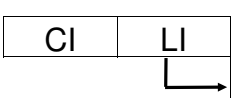
(1) Relationship between session control and document control



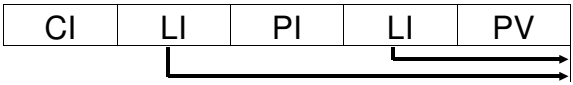
(2) Examples of command/response structure

CI/RI (identifier)	Header information to identify the command/response
LI (length indicator)	Indicates the number of octets
PGI (parameter group identifier)	Indicates which group of parameter identifiers
PI (parameter identifier)	Indicates the information type
PV (parameter value)	Indicates the value of the parameter identified by PI/PGI

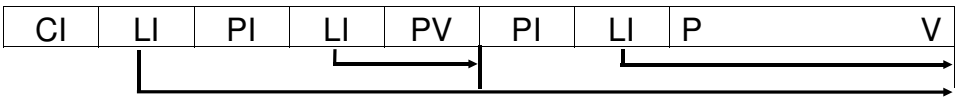
When the value of LI is 0 (that is, when there is no parameter field)



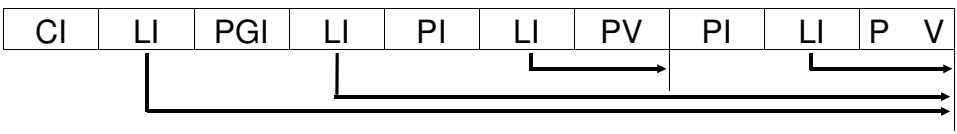
When there is only one parameter field consisting of a PV of 1 octet in length; from the left, values of the LIs from the left are 3 and 1.



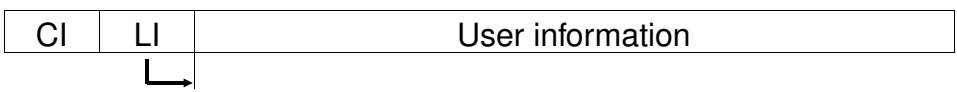
When there are two different parameter fields, one with a PV of 1 octet in length, and the other with a PV of 3 octets in length.
From the left, the values of the LIs are 8, 1, and 3.



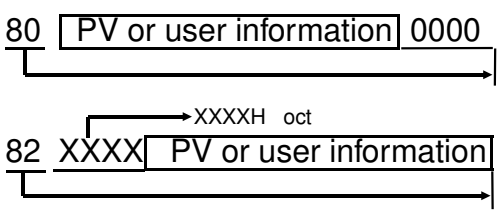
One PGI containing two PIs



The simplest example for carrying user information

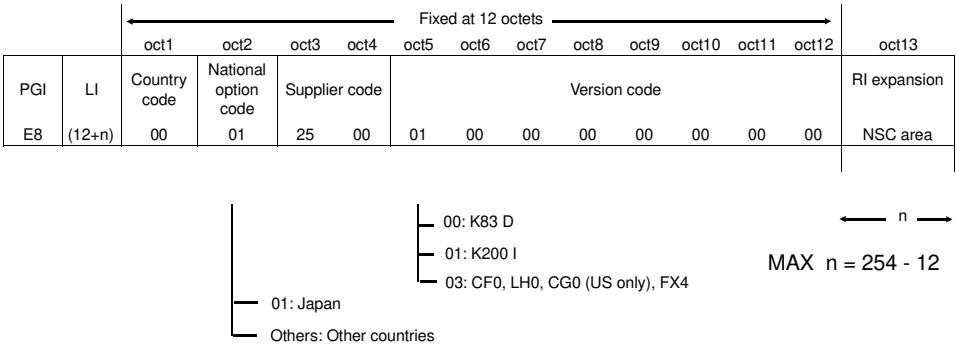


When LI is undefined (80 or 82)

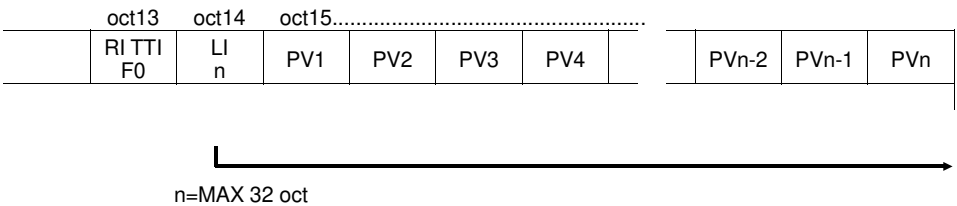


Non standard capability identifier (NSC) determination

1. NSC organization



2. TTI in Japanese for RI G4



Items in the above diagram are used only in CSS/RSSP

3. NSC and contents of SUD and DP

The SUD addition and judgment conditions are determined by the NSC check result as follows:

NSC check result			**Contents of SUD and DP**		
Country code	National option code	Supplier code	CCITT option	National option(Japan)	Manufacuturer option
Japan 00	01	Same in both terminals	o	o	o
		Different in both terminals	o	o	x
	00	Same in both terminals	o	x	o
		Different in both terminals	o	x	x
Other countries Other than 00	Undefined	Undefined	o	x	x

The manufacturer option is referred to as PUPR (Private Use Parameter RI) from K200 I. PUPR becomes effective only when bit 0 of oct 5 of the version code is 1.

Table 1-1: Session Layer Commands

CI/RI		PGI		PI		PV		A	Transmit Condition	B	Receive Condition
CSS	0D	Session reference	01	Calling terminal identifier	0A	JIS 8, 24 digits		O	PV is IA5	O	PV contents are arbitrary
				Date and time	0B	JIS 8, 14 digits		O		O	PV contents are arbitrary
		Non standard session capabilities	02	Window size	0E	1 to 255 in binary		O	01	O	PV value is ignored
				Service identifier	08	Telematic 01		O	01	O	Other than 0 indicates an error
		Session user data (SUD)	C1			Refer to Table 2-1 Refer to Table 3-1		O	Refer to Table 2-1	O	*1 Refer to Table 3-1
				Non standard capability identifier (NSC)	E8	No PI Fixed PV Length Case a: 6 oct Case b: 12 oct	Japan code 2500 National option code 00 or 01 Supplier code 2500 Version code xx00	O	00 - 01 - 25 - 00 xx - 00 - 00 - 00 00 - 00 - 00 - 00 xx = 00: K83D; 01: K200I; 02: CF0, LH0, CG0, FX4	Δ	Refer to 'NSC and the contents of SUD and DP' for details of the checking method *2
					RI Ext NSC	TTI	F0, L1, shift JIS after oct 13		oct15=PV1…PVn Shift JIS n=Max 32	Δ	Same as above (RI Ext NSC)
CSE	09			Session end parameter	11	Transport disconnect Terminal error Procedure error Undefined reason		O	01	Δ	PV value is ignored
CSA	19			Same as above		Same as above		O	09/05	Δ	PV value is ignored
CSCC	15										
CSUI	01										

Note concerning the "A" column
O: Must be transmitted
Δ: Sent depending on condition
X: Not sent

Note concerning the "B" column
O: Must be received. If not received, an error is generated and DISC is output.
Δ: Even if not received, the procedure is treated as normal.
X: When received, an error occurs and CSA is output.

Notes:

*1: - If there is no session user data, response is made with RSSN (for basic teletex).

*2: - The R: NSC save area must be separated from that of SSN (R: CSS/RSSP).
- If R:NSC exists for R: CDCL/RDCLP, it is treated in the same way as shown in 'NSC and the contents of SUD and DP'. If it does not exist, it is treated in the same way as SSN.

Table 1-2: Session Layer Responses

CI/RI		PGI		PI		PV						
									A	Transmit Condition	B	Receive Condition
RSSP		Session reference	01	Called terminal identifier	09	JIS 8, 24 digits			O	PV is IA5	O	PV contents are arbitrary
				Date and time	0B	JIS 8, 14 digits			O		O	PV contents are arbitrary
		Non standard session capabilities	02	Window size	0E	1 to 255 in binary			O	01	O	PV value is ignored
				Service identifier	08	Telematic 01			O	01	O	Other than 0 indicates an error
				Session request function	10	Transmit request b1=1			Δ	01 (When there is a document to send)	Δ	
	0E	Session user data (SUD)	C1			Refer to Table 2-1 Refer to Table 3-1			O	Refer to Table 2-1	O	*1 Refer to Table 3-1
				Non standard capability identifier (NSC)	E8	No PI Fixed PV length Case a : 6 oct Case b : 12 oct	Japan code 00 National option 00 or 01 Supplier code 2500 Version code xx00		O	00. 01. 25. 00 xx. 00. 00. 00 00. 00. 00. 00 xx = 00: K83D 01: K200I 02: CF0, LH0, CG0, FX4	Δ	Refer to 'NSC and the contents of SUD and DP' for details of the checking method *2
					RI Ext NSC	PI=F0H TTI	F0, LI, shift JIS after oct 13			oct 15=PV1…PVn Shift JIS n=Max 32	Δ	Same as above (RI Ext NSC)

CI/RI		PGI		PI		PV	A	Transmit Condition	B	Receive Condition
RSSN	0C	Session reference	01	Called terminal identifier	09	JIS 8, 24 digits	O		O	PV contents are arbitrary
				Date and time	0B	JIS 8, 14 digits	O	Sends back contents of CSS	O	PV contents are arbitrary
		Non standard session capability	02	Window size	0E	1 to 255 in binary	O	01	O	PV value is ignored
				Service identifier	08	Telematic 01	O	01	O	Other than 0 indicates an error
				Reason	32	Refer to (DD/CDR/RDPBN)	O	00	Δ	PV value is ignored
		Session user data (SUD)	C1			Refer to Table 2-1 (Refer to Table 3-1)	O	Refer to Table 2-1	O	(Refer to Table 3-1)
RSEP	0A									
RSAP	1A									
RSCCP	16									
RSUI	02			Session function request	10	Transmit request b1=1	Δ	01 (Where there is a document to send)	Δ	

Note concerning the "A" column
O: Must be transmitted
Δ: Sent depending on condition
X: Not sent

Note concerning the "B" column
O: Must be received. If not received, an error is generated and DISC is output.
Δ: Even if not received, the procedure is treated as normal.
X: When received, an error occurs and CSA is output.

Notes:

*1: - If there is no session user data, response is made with CSE (for basic teletex).

*2: - The R: NSC save area must be separated from that of SSN (R: CSS/RSSP).
- If R:NSC exists for R: CDCL/RDCLP, it is treated in the same way as shown in 'NSC and the contents of SUD and DP'. If it does not exist, it is treated in the same way as SSN.

Table 1-3: Document Layer Commands

CI/RI		PGI		PI		PV	A	Transmit Condition	B	Receive Condition
CDS	2D			Document reference number	29	JIS 8, decimal 3 digits	O	Fixed at 001 (except in batch transmission) In batch transmission, increments (+1) from 001	O	PV value is not checked
				Document type	30	01: Operator 02: Control 03: Monitor	X	Default = Normal document	X	
		Session user data (SUD)	C1			Refer to Table 2-1 Refer to Table 3-4	O	Refer to Table 2-1	O	Refer to Table 3-4
CDC	1D	Document linking	21	Called terminal identifier	09	JIS 8, 24 digits	X	CDC is not used		When receiving, process as a received CDS
				Calling terminal identifier	0A	JIS 8, 24 digits				
				Date and time	0B	JIS 8, 14 digits				
				Document reference number	29	JIS 8, decimal 3 digits				
				Checkpoint reference number	2A	JIS 8, decimal 3 digits				
				Document reference number (current)	29	JIS 8, decimal 3 digits				
		Session user data (SUD)	C1			Refer to Table 2-1 Refer to Table 3-4				Refer to Table 3-4
CDE	29			Checkpoint reference number	2A	JIS 8, decimal 3 digits	O	001~999 (Number of transmitted pages)	O	
CDR	19			Reason	32	03: Sequence 05: Terminal 06: Procedure 00: No reason	X	CDR is not used	Δ	When receiving, RDDP or CSA returned

CI/RI		PGI		PI		PV	A	Transmit Condition	B	Receive Condition
CDD	39			Reason	32	03: Sequence 05: Terminal 06: Procedure 00: No reason	X	CDR is not used	Δ	When receiving, RDDP or CSA returned
CDPB	31			Checkpoint reference number	2A	JIS 8, decimal 3 digits	O	001~999 (Number of transmitted pages)	O	
CDCL	3D	Session user data (SUD)	C1			Refer to Table 2-1	O	Refer to Table 2-1	Δ	*1 Refer to Table 3-2
				Non standard capability identifier (NSC)	E8	Same as CSS/RSSP (except RI Ext NSC)	O	Same as left	Δ	*2
CDUI	01	Document profile	A0			Refer to Table 2-1				

Note concerning the "A" column
O: Must be transmitted
Δ: Sent depending on condition
X: Not sent

Note concerning the "B" column
O: Must be received. If not received, an error is generated and DISC is output.
Δ: Even if not received, the procedure is treated as normal.
X: When received, an error occurs and CSA is output.

Notes:

*1: - CDCL is not always received.
- CDCL without session data may be received not to negotiate for the presentation function, but to negotiate other functions (timer, memory, etc.).

*2: - The R: NSC save area must be separated from that of SSN (R: CSS/RSSP).
- If R:NSC exists for R: CDCL/RDCLP, it is treated in the same way as shown in 'NSC and the contents of SUD and DP'. If it does not exist, it is treated in the same way as SSN.

Table 1-4: Document Layer Responses

CI/RI		PGI		PI		PV	A	Transmit Condition	B	Receive Condition
RDEP	2A			Checkpoint reference number	2A	JIS 8, decimal 3 digits	O	001~009 (Number of transmitted pages)	O	
RDRP	1A						Δ	Output when receiving CDR	X	
RDDR	3A						Δ	Output when receiving CDD	X	
RDPBP	32			Checkpoint reference number	2A	JIS 8, decimal 3 digits	O	001~009 (Number of transmitted pages)	O	
				Receive capability limit	2E	00: OK to continue 01: NG to continue	O		O	
RDPBN	30			Reason	32	03: Sequence 05: Terminal 06: Procedure 00: No reason	O	03. 05. 06. 00	Δ	S: CSA is returned
RDCLP *1	3E	Session user data (SUD)	C1			Refer to Table 2-1	O	Refer to Table 2-1	Δ	*2 Refer to Table 3-3
				Non standard capability identifier (NSC)	E8	Same as CSS/RSSP (except RI Ext NSC)	O	Same as left	Δ	*3
RDGR	00			Returned parameters	31	Pattern up to error byte	Δ		D	

Note concerning the "A" column
O: Must be transmitted
Δ: Sent depending on condition
X: Not sent

Note concerning the "B" column
O: Must be received. If not received, an error is generated and CSA is output.
Δ: Even if not received, the procedure is treated as normal.
X: When received, an error occurs and CSA is output.

Notes:

*1: - Must be always sent when CDCL is received, and must be always received when CDCL is sent.

*2: - RDCLP without session user data may be received.

*3: - The R: NSC save area must be separated from that of SSN (R: CSS/RSSP).
- If R:NSC exists for R: CDCL/RDCLP, it is treated in the same way as shown in 'NSC and the contents of SUD and DP'. If it does not exist, it is treated in the same way as SSN.

Table 2-1: Session User Data (SUD) Adaptive Method

PGI	PGI	PGI	PGI	PI	LI	PV	Adaptive Condition					Remarks
							CSS	RSSP	CDCL	RDCLP	CDS	
Presentation capability de-scriptor (A4) Note : Code for document profile (A2)				Basic terminal characteristics (80)	01	02	Must be attached					Facsimile
				Interchange format (81)	01	00	Must be attached					TIF.0
	Non basic terminal characteristics (A2)	Page size (A2)	Sequence (30)	Fixed measurement ratio (80)	02	26C0	X	X	◊	◊	Δ	ISO A4 (default)
				Variable measurement ratio (81)	02	36CE						
			Sequence (30)	Fixed measurement ratio (80)	02	2F6C	X	X	♦	♦	Δ	JIS B4 (old B4)
				Variable measurement ratio (81)	02	432C						
			Sequence (30)	Fixed measurement ratio (80)	02	2F6D	X	X	◊	◊	Δ	JIS B4 (Japanese equivalent of Legal size)
				Variable measurement ratio (81)	02	432C						
			Sequence (30)	Fixed measurement ratio (80)	02	36CE	X	X	◊	◊	Δ	ISO A3 RDCLP : With external printer
				Variable measurement ratio (81)	02	4D80						
			Sequence (30)	Fixed measurement ratio (80)	02	2E23	X	X	◊	◊	X	ISO B4
				Variable measurement ratio (81)	02	4125						
			Sequence (30)	Fixed measurement ratio (80)	02	27D8	X	X	X	◊	X	ISO North American A4 (Letter size)
				Variable measurement ratio (81)	02	3390						

PGI	PGI	PGI	PGI	PI	LI	PV	Adaptive Condition					Remarks
							CSS	RSSP	CDCL	RDCLP	CDS	
Presentation capability descriptor (A4) Note : Code for document profile (A2) (Continued)	Non basic terminal characteristics (A2) (Continued)	Coding characteristics (A3)		Compression (80)	01	01	X	X	X	X	X	Compression
		Presentation characteristics (A4)		Transfer picture element density (8B)	01	02	X	X	X	X	X	240 dpi
				Transfer picture element density (8B)	01	03	X	X	◊	◊	Δ	300 dpi (K200I Europe)
				Transfer picture element density (8B)	01	04	X	X	◊	◊	Δ	400 dpi
	Extended presentation characteristics (E4)	Extended coding attributes (E0)		Integer (02)	01	02	X	X	♦	♦	Δ	MH (National option)
				Integer (02)	01	03	X	X	♦	♦	Δ	MR (National option)
		Extended presentation attributes (E1)		Subscan line density (C0)	01	01	X	X	♦	♦	Δ	100 dpi (National option)
	National application profile (EA)	Refer to Table 2-2					X	X	O	O	O	Manufacturer option (PUPR) depending on R: NSC condition

◊ : (CCITT option) Attached when existing as self mode.
♦ : (Japan option) Attached when possible as national option in Japan and exists as self mode.
O : (Manufacturer option) Attached when possible as manufacturer option and exists as self mode.
Δ : Attached as a logical product (common capability) of S: CDCL (self function) and R: RDCLP (other party function).
X : Not attached.

Note:

*1: Page size for RDCLP is determined by the paper feed cassette (except North American Letter size [NA_Lt]).

Table 2-2: Adaptive Method of Extended Application Profile

PGI	PGI	PGI	PGI	PGI	PI	LI	PV	Adaptive Condition					Remarks (The underlined items are default settings.)
								CSS/ RSSP	CDCL	RDCLP	CDS	DP	
Extend-ed appli-caiton profile (EA) PUPR	Document application (E0)	Confidential application (C0/E0)			Function (C0)	01	00/01/02	X	X	O	X	X	00: None 01: Pending 02: OK
					Password (C1)	02	Octet String	X	X	X	X	O	00/FF: No password
		Password application (C1/E1) *1			(File ID: D7000) Password (C1)	02	Octet String	X	♦1 O	♦2 O	X	X	00/FF: No password
		Document content attribute (E2) ♦5			Density Type (C1)	01	00/01	X	X	X	X	O	00: mm system 01: inch system (*1)
	Commu-nication applica-tion (E1)	Transfer application (E0)			Function (C0)	01	00/01/02/04	X	X	O	X	X	00: None 01: Pending 02: OK
					Password (C1)	02	Octet String	X	X	O	X	O	00/FF: No password
			Origina-tor(C2/E2)	Sequence (30)	Dial ID (C0)	01	01/02	X	X	X	X	O	01: Analog 02: Digital 08: D•PS 04: D•CS
					Dial No. (C1)	≦16	Numeric String						30 to 39 and blank space (*2)
					Subaddress No. (C2)								
				Sequence (30)	Dial ID (C0)	01	01/02	X	X	X	X	O	01: Analog 02: Digital 08: D•PS 04: D•CS
					Dial No. (C1)	≦16	Numeric String						30 to 39 and blank space (*2)
					Subaddress No. (C2)								

PGI	PGI	PGI	PGI	PGI	PI	LI	PV	Adaptive Condition					Remarks (The underlined items are default settings.)
								CSS/ RSSP	CDCL	RDCLP	CDS	DP	
Extend-ed appli-caiton profile (EA) PUPR (Cont'd)	Commu-nication applica-tion (E1) (Cont'd)		Destina-tion (E3)	Sequence (30)	Dial ID (C0)	01	01/02	X	X	X	X	O	01: Analog 02: Digital 08: D•PS 04: D•CS
					Dial No. (C1) Subaddress No. (C2)	≦16	Numeric String						30 to 39 and blank space (*2)
				Sequence (30)	Dial ID (C0)	01	01/02	X	X	X	X	O	01: Analog 02: Digital 08: D•PS 04: D•CS
					Dial No. (C1) Subaddress No. (C2)	≦16	Numeric String						30 to 39 and blank space (*2)
				Sequence (30)	Dial ID (C0)	01	01/02	X	X	X	X	O	01: Analog 02: Digital 08: D•PS 04: D•CS
					Dial No. (C1) Subaddress No. (C2)	≦16	Numeric String						30 to 39 and blank space (*2)
				Sequence (30)	Dial ID (C0)	01	01/02	X	X	X	X	O	01: Analog 02: Digital 08: D•PS 04: D•CS
					Dial No. (C1) Subaddress No. (C2)	≦16	Numeric String						30 to 39 and blank space (*2)
		Transfer application (E0) (Continued)			Specific 2-stage attribute (C4)	01	00, 01 02, 03	X	X	X	X	O	00: No request 01: Reserved 02: 2-stage transfer 03: 2-stage transfer report
		Password application (E1) (*2)			Password (C1)	02	(Net ID: K200) Octet String	X	♦3 O	♦4 O	X	X	00/FF: No password (*3)
	RI extended terminal capability (E2)	Device characteristics (E1)			Engine type(C0)	01	00/01	X	O	O	X	X	00: mm 01: inch (*4)
					mm/inch conversion function (C1)	01	00/01	X	O	O	X	X	00: No function 01: Function provided (*4)

Notes

*1 to *4 are employed from K200I.

From K200I ♦1 is used as File ID, and ♦2 as General Net ID.

If two different codes are used for a PGI/PI, eg. document content attribute on page VIII-19,if the first code is used, this will be referred to as case a. Also, if the second code is used, this will be referred to as case b.

♦1: In case a, Net ID is stored at ♦1 (that is, the same value as at ♦3 is stored).

♦2: In case a, polling ID (Net ID or File ID) is stored at ♦2 (that is, the value at ♦4 determines the Net ID).

♦3: In case b, Net ID is stored at ♦3 (♦1 is unused).

♦4: In case b, Net ID is stored at ♦4 (or at ♦2 when using File ID).

♦5: In case a, ♦5 is not attached.

Table 3-1: CSS/RSSP Session User Data (SUD) Check Method

PGI	PGI	PGI	PGI	PI	LI	PV Attribute	Check Condition, etc.
Presentation capabilities descriptor (A4)				Basic terminal characteristics (80)	≧1	Octet string	02 (FAX) must exist in octet.
				Interchange format (81)	≧1	Octet string	00 (TIF.0) must exist in octet.
	Other than the above						Ignored
Other than the above							Ignored

Note:

*1: If presentation capabilities descriptor (A4), basic terminal characteristics (80), or interchange format (81) do not exist,

a) response is made by RSSN for CSS.

b) response is made by CSA for RSSP.•

- If 02 (FAX) or 00 (TIF.0) do not exist,

a) response is made by RSSP for CSS.

b) response is made by CSA for RSSP.

Table 3-2: CDCL Session User Data (SUD) Check Method

PGI	PGI	PGI	PGI	PI	LI	PV Attribute	Check Condition, etc.
Presentation capabilities descriptor (A4)				Basic terminal characteristecs (80)	≧1	Octet string	If no basic terminal characteristics (80) exists, the following items are ignored. If 02 (FAX) does not exist in the octet, the following items are ignored.
				Interchange format (81)	≧1	Octet string	If no interchange format (81) exists, the following items are ignored. If 00 (TIF.0) does not exist in the octet, the following items are ignored.
	Non basic terminal characteri-stics (A2)	Page size (A2)	Sequence (30)	Fixed measurement ratio (80)	≧1	Integer	If the format is correct, PV is ignored. Fixed measurement ratio is possible for the paper length.
				Variable measurement ratio (81)	≧1	Integer	
			Sequence (30)	Fixed measurement ratio (80)	≧1	Integer	
				Variable measurement ratio (81)	≧1	Integer	
			Sequence (30)	Fixed measurement ratio (80)	≧1	Integer	
				Variable measurement ratio (81)	≧1	Integer	
		Coding attributes (A3)		Compression (80)	≧1	Integer	If the format is correct, PV is ignored.
		Presentation attributes (A4)		Transfer picture element density (8B)	1	Integer	If the format is correct, PV is ignored.
				Transfer picture element density (8B)	1	Integer	
				Transfer picture element density (8B)	1	Integer	

PGI	PGI	PGI	PGI	PI	LI	PV Attribute	Check Condition, etc.
Presentation capabilities descriptor (A4) (Continued)	Extended terminal attributes (E4)	Extended coding attributes (E0)		Integer (02)	1	Integer	If the format is correct, PV is ignored.
				Integer (02)	1	Integer	
		Extended presentation attributes (E1)		Subscan line density (C0)	1	Integer	If the format is correct, PV is ignored.
				Subscan line density (C0)	1	Integer	
	Extended applicaiton profile (EA)	Document application (E0)	Password application (C1/E1)	Password (C1) *1	2	Octet string	Ignored if NSC country code and supplier code coincide. Case a : *1 is interpreted as Net ID Case b : *2 is used as Net ID (or, if *2 is not received, a method which uses *1 as Net ID is also possible)
		Communi-cation application (E1)	Password application (E1)	Password (C1) *2	2	Octet string	
Other than the above							Ignored

Note:

1. If two different codes are used for PGI/PI, (e.g., password application), if the first code is used, this will be referred to as case a. Also, if the second code is used, this will be referred to as case b.

*2. When there is a format error, CSA is used for the response.
Case a …R : NSC=RI and NSC oct5 bit0 = "0" (K83D)
Case b… R : NSC=RI and NSC oct5 bit0 ="1" (K200I)

Table 3-3: RDCLP Session User Data (SUD) Check Method

PGI	PGI	PGI	PGI	PI	LI	PV Attribute	Check Condition, etc.
Presentation capabilities descriptor (A4)				Basic terminal characteristics (80)	≧1	Octet string	If no basic terminal characteristics (80) exists, the following items are ignored. If 02 (FAX) does not exist in the octet, the following items are ignored.
				Interchange format (81)	≧1	Octet string	If no interchange format (81) exists, the following items are ignored. If 00 (TIF.0) does not exist in the octet, the following items are ignored.
	Non basic terminal characteristics (A2)	Page size (A2)	Sequence (30)	Fixed measurement ratio (80)	≧1	Integer	Stored if A4 or B4 exists. Otherwise, if format is correct, PV is ignored. Fixed measurement ratio is possible for the paper length.
				Variable measurement ratio (81)	≧1	Integer	
			Sequence (30)	Fixed measurement ratio (80)	≧1	Integer	
				Variable measurement ratio (81)	≧1	Integer	
			Sequence (30)	Fixed measurement ratio (80)	≧1	Integer	
				Variable measurement ratio (81)	≧1	Integer	
		Coding attributes (A3)		Compression (80)	≧1	Integer	If the format is correct, PV is ignored.
		Presentation attributes (A4)		Transfer picture element density (8B)	1	Integer	Stored if 01 : 200 dpi or 04 : 400 dpi exists. Otherwise, if the format is correct, PV is ignored.
				Transfer picture element density (8B)	1	Integer	
				Transfer picture element density (8B)	1	Integer	

PGI	PGI	PGI	PGI	PI	LI	PV Attribute	Check Condition, etc.
	Extended terminal attributes (E4)	Extended coding attributes (E0)		Integer (02)	1	Integer	Stored if Japan national option is specified for NSC and 00 : 200 dpi or 01 : 100 dpi exists. Otherwise, PV is ignored.
				Integer (02)	1	Integer	
		Extended presentation attributes (E1)		Subscan line density (C0)	1	Integer	Stored if Japan national option is specified for NSC and 00 : 200 dpi or 01 : 100 dpi exists. Otherwise, PV is ignored.
				Subscan line density (C0)	1	Integer	
	Extended application profile (EA)	Document application (E0)	Confidential application (C0/E0)	Function (C0)	1	Integer	Stored if manufacturer option is specified for NSC and a parameter for this exists. Otherwise, PV is ignored if the format is correct. Case a : *1 is used as polling ID (Net ID or File ID). Case b : *2 is used as Net ID, or *1 is used as File ID. (or, if *2 is not received, a method which uses *1 as the polling ID (Net ID or File ID) is also possible)
			Password application (CI/E1)	Password (C1) *1	2	Octet string	
		Communi-cation application (E1)	Transfer application (E0)	Function (C0)	1	Integer	
				Password (C1)	2	Octet string	
			Password application (E1)	Password (C1) *2	2	Octet string	
		RI extended terminal attributes (E2)	Device characteristics (E1)	Engine type (C0)	1	Integer	If this does not exist, the default is used (inch type)
				mm/inch conversion function (C1)	1	Integer	
Other than the above							Ignored

Notes:

1. If two different codes are used for a PGI/PI (e.g., password application), if the first code is used, this will be referred to as case a. Also, if the second code is used, this will be referred to as case b.
2. If there is a format error, CSA is used for the response.
   - Case a … R : NSC= RI and NSC oct5 bit0 = "0" (K83D)
   - Case b … R : NSC= RI and NSC oct5 bit0 = "1" (K200I)

Table 3-4: CDS Session User Data (SUD) Check Method

PGI	PGI	PGI	PGI	PI	LI	PV Attribute	Check Condition, etc.
Presentation capabilities descriptor (A4)				Basic terminal characteristics (80)	1	Octet string	If no standard terminal characteristics (80) exists, response is by CSA. Except when 02 (FAX) exists in the octet, response is by CSA.
				Interchange format (81)	1	Octet string	If no interchange format (81) exists, response is by CSA. Except when 00 (TIF.0) exists in the octet, response is by CSA.
	Non basic terminal characteri-stics (A2)	Page size (A2)	Sequence (30)	Fixed measurement ratio (80)	≧1	Integer	When it exists, it must coincide with self terminal capability. For other than the above condition, response is by CSA. Fixed measurement ratio is possible for the paper length.
				Variable measurement ratio (81)	≧1	Integer	
			Sequence (30)	Fixed measurement ratio (80)	≧1	Integer	
				Variable measurement ratio (81)	≧1	Integer	
			Sequence (30)	Fixed measurement ratio (80)	≧1	Integer	
				Variable measurement ratio (81)	≧1	Integer	
		Coding attributes (A3)		Compression (80)	1	Integer	If it exists, it must be 01 (compression); otherwise, response is by CSA.
		Presentaion attributes (A4)		Transfer picture element density (8B)	1	Integer	If it exists, it must be 01 (compression); otherwise, response is by CSA.
				Transfer picture element density (8B)	1	Integer	
				Transfer picture element density (8B)	1	Integer	

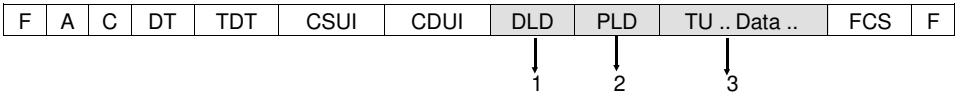
PGI	PGI	PGI	PGI	PI	LI	PV Attribute	Check Condition, etc.
	Extended terminal attributes (E4)	Extended coding attributes (E0)		Integer (02)	1	Integer	If the format is correct, PV is ignored.
				Integer (02)	1	Integer	
		Extended presentation attributes (E1)		Subscan line density (C0)	1	Integer	If the format is correct, PV is ignored.
				Subscan line density (C0)	1	Integer	
Other than the above							Ignored

Note:
If there is a format error, response is by CSA.

VIII. B Channel, Layers 6 & 7

VIII. B channel, layer 6.7

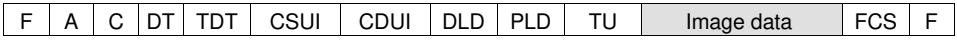
CCITT recommendations T. 73, T. 6



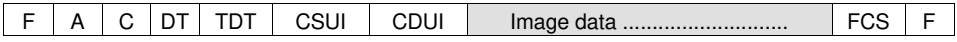
1. DLD (Document Layout Descriptor)..... Refer to Tables 1-1 and 2-1.
2. PLD (Page Layout Descriptor).....Refer to Tables 1-2 and 2-2.
3. TU (Text Unit).....Refer to Tables 1-3 and 2-3.

* Example: Sending 1 page in 3 blocks

Block 1 : Image data



Block 2



Block 3

Data (image data)
MMR, MR, or MH coded data

EOFB (End Of Facsimile Block)
EOL x 2
Format: 000000000001000000000001

PAD bits
Used to fit the data length to octet unit or block size
Format: Variable length string of zeroes

EOC (End Of Content)
Indicates the end of an undefined length content
Format: EOC (00H)
LI (00H)

Table 1-1. DLD (Document Layout Descriptor) Generation

Name	PGI PI	LI	PV	Description
Specific layout descriptor	A2	03	--	: :=Sequence
Layout object type	02	01	00	00 : Document 01 : Page set 02 : Page (default) 03 : Frame 04 : Block

Table 1-2. PLD (Page Layout Descriptor) Generation

Name	PGI PI	LI	PV	Description
Specific layout descriptor	A2	Variable	--	Sequence
Layout object type	02	01	02	02 (page)
Layout descriptor body	31	Variable	--	Set
Dimensions	A4	08	--	Sequence
Transfer width (fixed)	80	02	Integer	A4=26C0H (9920 BMU) A3=36CEH (14030 BMU) B4=2F6CH (12140 BMU)
Transfer length(variable)	81	02	Integer	A4=36CEH (14030 BMU) A3=4D80H (19840 BMU) B4=432CH (17196 BMU) A5=26C0H (9920 BMU)
Presentation attributes	A6	05	--	Set
Photographic attributes	A1	03	--	Set
Picture element transfer density	82	01	Integer	01=200 dpi 04=400 dpi (defalt=01)
Extended presentation attributes	E9	03	--	Set
Subscan line density	C0	01	01	01=100 dpi
Extended application profile (PUPR)	EA	Variable	Variable	Set
Extended sub-scan resolution	C1	01	01	01=400 dpi
Smoothing	C2	01	01	01=Disabled This is set to 01 when the transmitted page is scanned in halftone mode.

Table 1-3. TU (Text Unit) Generation

Name	PGI PI	LI	PV	Description
Text unit	A3	80	--	Sequence
Content portion attributes	31	Variable	--	Set
Extended coding type	C0	01	Integer	02=MH 03=MR (When not specified, MMR)
Coding attributes (T.6)	A2	Variable	--	Set
Number of picture elements per line	80	02	Integer	A4 A3 B4 200 dpi -- 0930H 0800H (2432) (2048) 400 dpi 0D80H 1300H 1000H (3456) (4864) (4096) (Not specified when A4 - 200 dpi)
Number of discarded picture elements	83	01 / 02	Integer	A4 A3 B4 200 dpi 25H 2FH 0CH (37) (47) (12) 400 dpi 4AH 5EH 18H (74) (94) (24)
Text information (T.6 column)	24	80	--	
Text information (primitive)	04	Variable	Image data	
:	:	:	:	:
Text information (primitive)	04	Variable	Image data	

Table 2-1. DLD (Document Layout Descriptor) Check

Name	PGI PI	LI	PV	Necessity	Check condition
Specific layout descriptor	A2	Variable	SEQ	Mandatory	Error if not specified
Layout object type	02	01	00	Mandatory	Error if other than 00 (document)
Layout descriptor body	31	Variable	SET	Selctive	If this exists, the two machines check values after this in the table.
Default value lists	A7	Variable	SEQ	Selective	If this exists, the two machines check values after this in the table. If this does not exist, the following defaults are used: Paper size = A4 (variable) Picture element density = 200 x 200 dpi Compression method = MMR
Page attributes	A2	Variable	SET	Selective	If this exists, the two machines check values after this in the table.
Dimensions	A1	Variable	SEQ	Selective	If this exists, the following values are analyzed and DPA is modified.
Transfer width (fixed)	80	02	Integer		A4 = 26C0H (9920 BMU) A3 = 36CEH (14030 BMU) B4 = 2F6CH (12140 BMU)
Transfer length (fixed/variable)	80 / 81	02	Integer		A4 = 36CEH (14030 BMU) A3 = 4D80H (19840 BMU) B4 = 432CH (17196 BMU) A5 = 26C0H (9920 BMU)
Presentation attributes	A3	Variable	SET	Selective	If this exists, the two machines check values after this in the table.
Photographic attributes	A1	Variable	SET	Selective	If this exists, the two machines check values after this in the table.
Picture element transfer density	82	01	Integer	Selective	If this exists: 01= 200 dpi 04= 400 dpi Anything other than these values is treated as an error or DPA is modified depending on the value.

Any PGI or PI other than the above is ignored.

Table 2-2. PLD (Page Layout Descriptor) Check

Any PGI or PI other than those in this table is ignored.

Name			PGI PI	LI	PV
Specific layout descriptor			A2	Variable	SEQ
Layout object type	02	01	02	Mand-atory	Error if other than 02 (document) Sets contents of DPA to CPA before checking the below listed items
Layout descriptor body	31	Variable	SET	Selec-tive	If this exists, the two machines check values after this in the table
Dimension	A4	Variable	SEQ	Selective	If this exists, the following values are analyzed and CPA is modified.
Transfer width (fixed)	80	02	Integer		A4=26C0H (9920 BMU) A3=36CEH (14030BMU) B4=2F6CH (12140BMU)
Transfer length (fixed/variable)	80 / 81	02	Integer		A4=36CEH (14030BMU) A3=4D80H (19840BMU) A5=26C0H (9920 BMU)
Presentation attributes	A6	Variable	SET	Selec-tive	If this exists, the two machines check values after this in the table
Content type	42	01	01	Selective	If this exists, error if other than 01=photographic
Photographic attributes	A1	Variable	SET	Selec-tive	If this exists, the two machines check values after this in the table (towards the right)
Pel direction	80	01	00	Selec-tive	If this exists,error if other than 00=0°
Line direction	81	01	03	Selec-tive	If this exists, error if other than 03=270° (downward direction)
Picture element transfer density	82	01	Integer	Selec-tive	If this exists: 01=200 dpi, 04=400 dpi Any value other than these is treated as an error. Or, CPA is modified depending on the value.
Extended presentation attributes	E9	Variable	SET	Selec-tive	If this exists, the two machines check values after this in the table
Subscan line density	C0	01	Integer	Selec-tive	If this exists: 00=No specification 01=100 dpi Any value other than these is treated as an error. Or, CPA is modified depending on the value.
Extended application profile (PUPR)	EA	Variable	Variable	Set	
Extended sub-scan resolution	C1	01	01	01=400 dpi	
Smoothing	C2	01	01	01=Disabled This is set to 01 when the transmitted page is scanned in halftone mode.	

Table 2-3. TU (Text Unit) Check

Name	PGI PI	LI	PV	Necessity	Check condition
Text unit	A3	Variable	SEQ	Mandatory	Error if does not exist
Content portion attribute	31	Variable	SET	Selective	If this exists, the two machines check values after this in the table.
Coding type	80	01	01	Selective	If this exists, error if other than 01=T.6
Extended coding method	C0	01	Integer	Selective	If this exists: 01=MMR 02=MH 03=MR Any value other than these is treated as an error. Or, CPA is modified depending on the value.
Coding attributes (T.6)	A2	Variable	SET	Selective	If this exists, the two machines check values after this in the table.
Number of picture elements per line	80	02	Integer	Selective	A4 A3 B4 200 dpi -- 0930H (2432) 0800H (2048) 400 dpi 0D80H (3456) 1300H (4864) 1000H (4096) Error if the value does not coincide with the contents of CPA
Compression	82	01	01	Selective	If this exists, error except for 01=compression
Text information (T.6 constructor)	24	Variable	SEQ	Mandatory	For a short sentence, text information may not contain the T6 constructor and only one primitive may appear.
Text information (primitive)	04	Variable	Image data		
:	:	:	:	:	
:	:	:	:	:	
Text information (primitive)	04	Variable	Image data		
Text information (T.6, 1 column)	14	Variable	Undefined	Unnecessary	Error if exists
	34	Variable	Undefined		

Any PGI or PI other than the above are ignored.

IX. Reference

Examples of D ch Normal Procedure

ISDN → ISDN G4/G3

L3	L2	L2	L3
	SABME		
		UA	
SETUP	I		
		RR	
		I	CALL PROC
	RR		
		I	CONN
	RR		
CONN ACK	I		
		RR	
Procedure on the B channel			
DISC	I		
		RR	
		I	REL
	RR		
REL COMP	I		
		RR	
	DISC		
		UA	

ISDN → ISDN TEL

L3	L2	L2	L3
	SABME		
		UA	
SETUP	I		
		RR	
		I	CALL PROC
	RR		
		I	ALERT
	RR		
		I	CONN
	RR		
CONN ACK	I		
		RR	
Procedure on the B channel			
DISC	I		
		RR	
		I	REL
	RR		
REL COMP	I		
		RR	
	DISC		
		UA	

ISDN → PSTN TEL/G3

L3	L2	L2	L3
	SABME		
		UA	
SETUP	I		
		RR	
		I	CALL PROC
	RR		
		I	PROG
	RR		
		I	CONN
	RR		
CONN ACK	I		
		RR	
Procedure on the B channel			
DISC	I		
		RR	
		I	REL
	RR		
REL COMP	I		
		RR	
	DISC		
		UA	

Example of B Channel Normal Procedure (G4 T.90)

- Normal communication for 1 page (image data is divided into 3 blocks)

* "RR" for L2 and L3 are omitted.

	TX						RX					
	L.6	L.5	L.5	L.4	L.3	L.2	L.2	L.3	L.4	L.5	L.5	L.6
1						SABM						
2							UA					
3					SQ(SI)	I						
4							I	SF				
5					CR(CN)	I						
6							I	CC(CA)				
7				TCR	DT	I						
8							I	DT	TCA			
9			CSS	TDT	DT	I						
10							I	DT	TDT	RSSP		
11		CDCL	CSUI	TDT	DT	I						
12							I	DT	TDT	RSUI	RDCLP	
13		CDS	CSUI	TDT	DT	I						
14	DLD. PLD TU data	CDUI	CSUI	TDT	DT	I						
15	Data	CDUI	CSUI	TDT	DT	I						
16	Data	CDUI	CSUI	TDT	DT	I						
17		CDE	CSUI	TDT	DT	I						
18							I	DT	TDT	RSUI	RDEP	
19			CSE	TDT	DT	I						
20							I	DT	TDT	RSEP		
21					CQ(CI)	I						
22							I	CF				
23					DISC							
24					DM							
25						UA						
26												
27												
28												
29												
30												
31												
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33												
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36												
37												
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39												
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41												
42												
43												

Example of B Channel Normal Procedure (G4 T.90)

- Normal communication for 2 pages (image data is divided into 3 blocks)

* "RR" for L2 and L3 are omitted.

	T X						R X					
	L.6	L.5	L.5	L.4	L.3	L.2	L.2	L.3	L.4	L.5	L.5	L.6
1						SABM						
2							UA					
3					SQ(SI)	I						
4							I	SF				
5					CR(CN)	I						
6							I	CC(CA)				
7				TCR	DT	I						
8							I	DT	TCA			
9			CSS	TDT	DT	I						
10							I	DT	TDT	RSSP		
11		CDCL	CSUI	TDT	DT	I						
12							I	DT	TDT	RSUI	RDCLP	
13		CDS	CSUI	TDT	DT	I						
14	DLD.PLD TU data	CDUI	CSUI	TDT	DT	I						
15	Data	CDUI	CSUI	TDT	DT	I						
16	Data	CDUI	CSUI	TDT	DT	I						
17		CDPB	CSUI	TDT	DT	I						
18							I	DT	TDT	RSUI	RDPBP	
19	PLD TU.data	CDUI	CSUI	TDT	DT	I						
20	Data	CDUI	CSUI	TDT	DT	I						
21	Data	CDUI	CSUI	TDT	DT	I						
22		CDE	CSUI	TDT	DT	I						
23							I	DT	TDT	RSUI	RDEP	
24			CSE	TDT	DT	I						
25							I	DT	TDT	RSEP		
26					CQ(CI)	I						
27							I	CF				
28						DISC						
29						DM						
30							UA					
31												
32												
33												
34												
35												
36												
37												
38												
39												
40												

Example of B Channel Normal Procedure (G4 T.90)

- Turnaround polling, normal communication (image data is divided into 3 blocks)

* "RR" for L2 and L3 are omitted.

	T X						R X					
	L.6	L.5	L.5	L.4	L.3	L.2	L.2	L.3	L.4	L.5	L.5	L.6
1						SABM						
2							UA					
3					SQ(SI)	I						
4							I	SF				
5					CR(CN)	I						
6							I	CC(CA)				
7				TCR	DT	I						
8							I	DT	TCA			
9			CSS	TDT	DT	I						
10							I	DT	TDT	RSSP		
11		CDCL	CSUI	TDT	DT	I						
12							I	DT	TDT	RSUI	RDCLP	
13		CDS	CSUI	TDT	DT	I						
14	DLD.PLD TU data	CDUI	CSUI	TDT	DT	I						
15	Data	CDUI	CSUI	TDT	DT	I						
16	Data	CDUI	CSUI	TDT	DT	I						
17		CDE	CSUI	TDT	DT	I						
18							I	DT	TDT	RSUI	RDEP	
19			CSCC	TDT	DT	I						
20							I	DT	TDT	RSCCP		
21							I	DT	TDT	CSUI	CDCL	
22		RDCLP	RSUI	TDT	DT	I						
23							I	DT	TDT	CSUI	CDS	
24							I	DT	TDT	CSUI	CDUI	DLD.PLD TU data
25							I	DT	TDT	CSUI	CDUI	Data
26							I	DT	TDT	CSUI	CDUI	Data
27							I	DT	TDT	CSUI	CDE	
28		RDEP	RSUI	TDT	DT	I						
29							I	DT	TDT	CSCC		
30			RSCCP	TDT	DT	I						
31			CSE	TDT	DT	I						
32							I	DT	TDT	RSEP		
33					CQ(CI)	I						
34							I	CF				
35						DISC						
36						DM						
37							UA					
38												
39												
40												

Example of B Channel Normal Procedure (G4 T.70-NULL)

- Normal communication for 1 page (image data is divided into 3 blocks)

* "RR" for L2 and L3 are omitted.

	T X						R X					
	L.6	L.5	L.5	L.4	L.3	L.2	L.2	L.3	L.4	L.5	L.5	L.6
1						SABM						
2							UA					
3				TCR	0100	I						
4							I	0100	TCA			
5			CSS	TDT	0100	I						
6							I	0100	TDT	RSSP		
7		CDCL	CSUI	TDT	0100	I						
8							I	0100	TDT	RSUI	RDCLP	
9		CDS	CSUI	TDT	0100	I						
10	DLD.PLD TU Data	CDUI	CSUI	TDT	0100	I						
11	Data	CDUI	CSUI	TDT	0100	I						
12	Data	CDUI	CSUI	TDT	0100	I						
13		CDE	SCUI	TDT	0100	I						
14							I	0100	TDT	RSUI	RDEP	
15			CSE	TDT	0100	I						
16							I	0100	TDT	RSEP		
17						DISC						
18						DM						
19							UA					
20												
21												
22												
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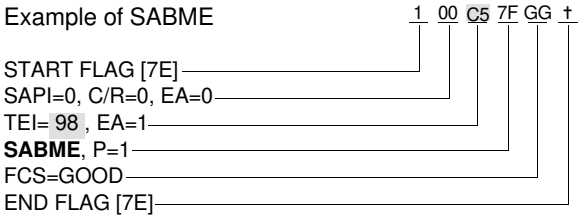
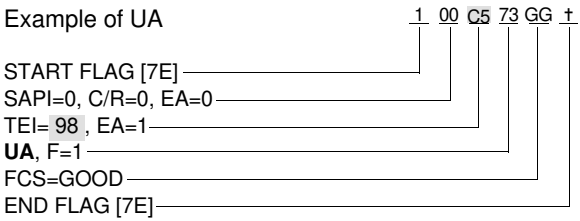
How to Read a Dump List (D Channel)

* [redacted] : Value depends on the terminal equipment.

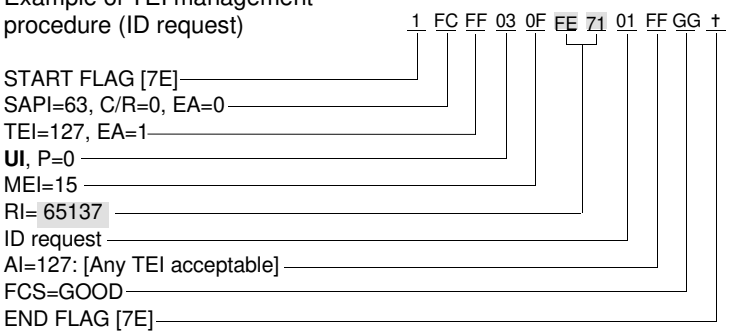
1. Example of SABME



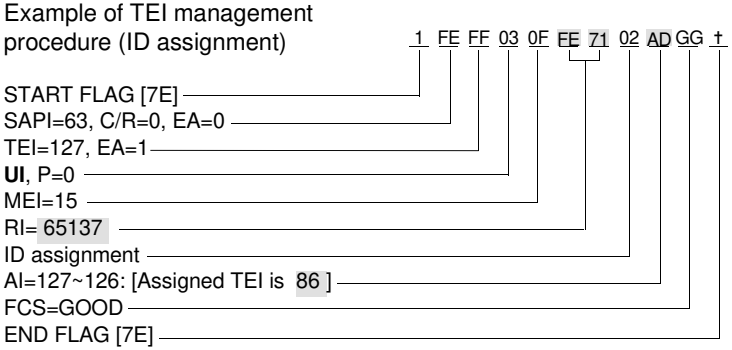
2. Example of UA



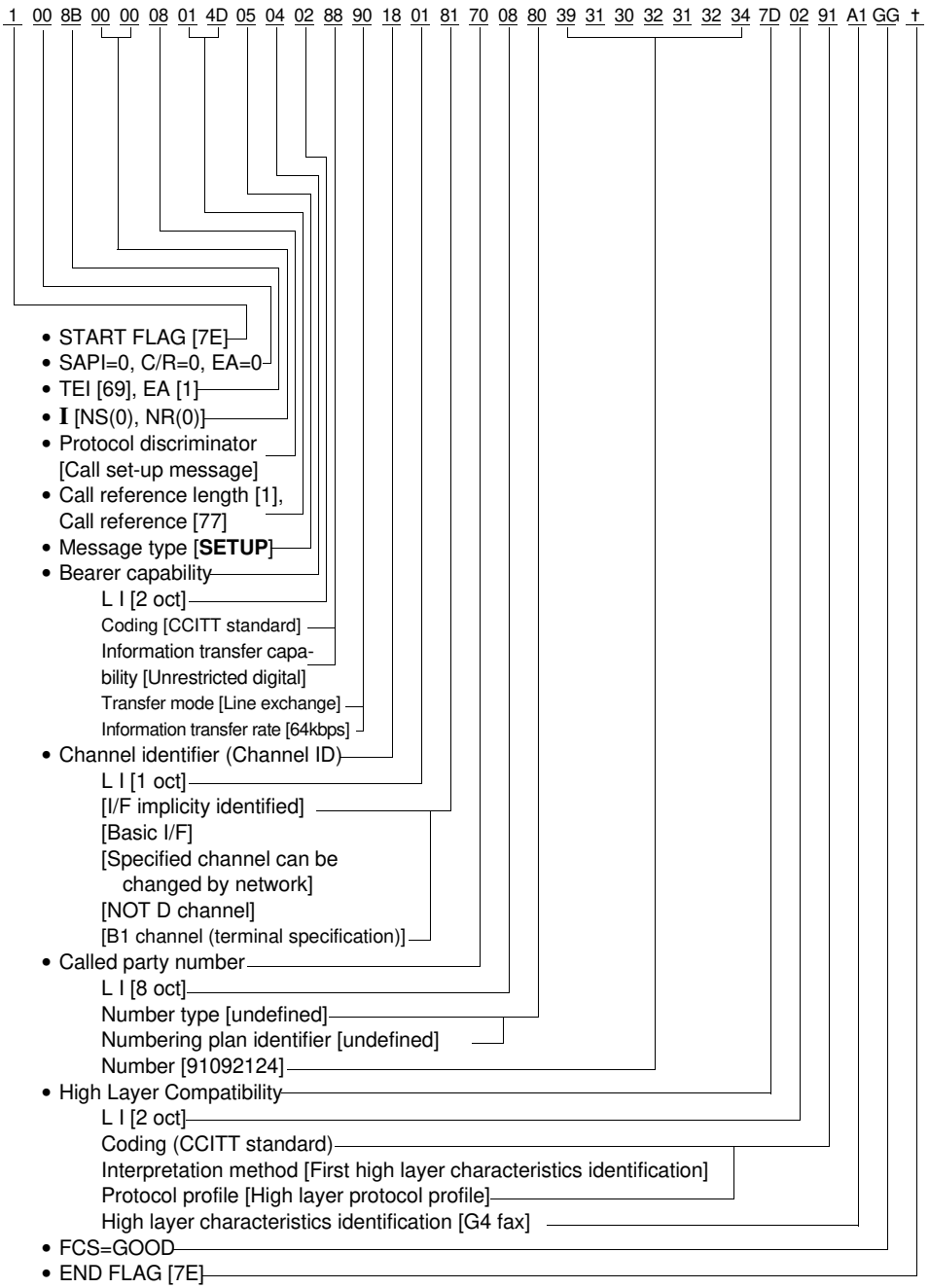
3. Example of TEI management procedure (ID request)



4. Example of TEI management procedure (ID assignment)



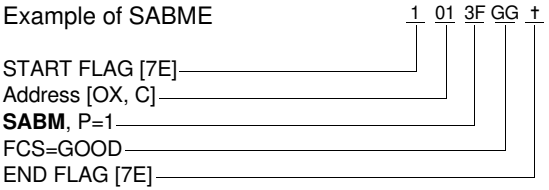
5. Example of SETUP



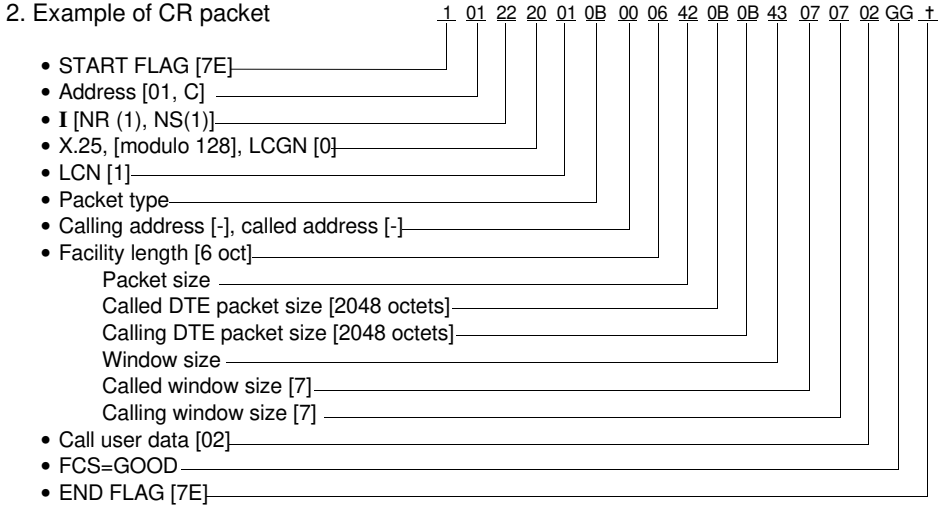
How to Read a Dump List (D Channel)

* LAPB: modulo 8
X.25: modulo 128

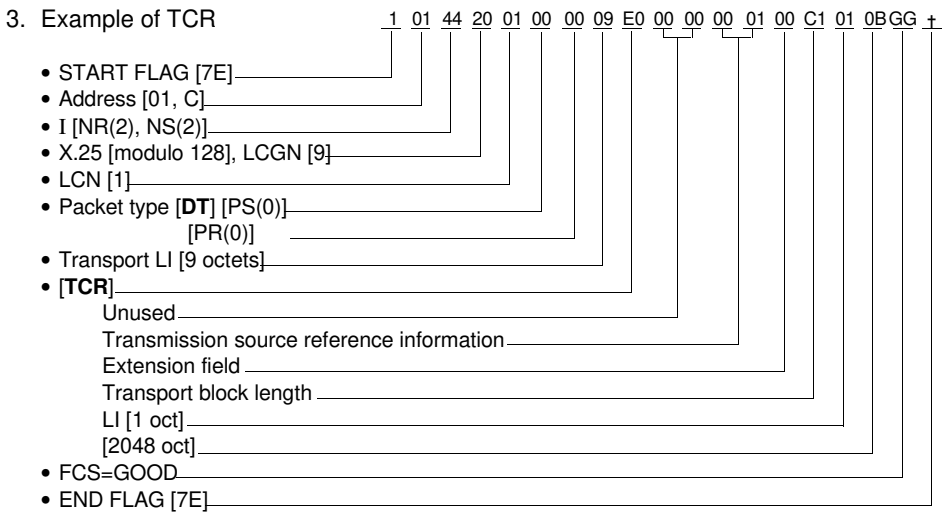
1. Example of SABME



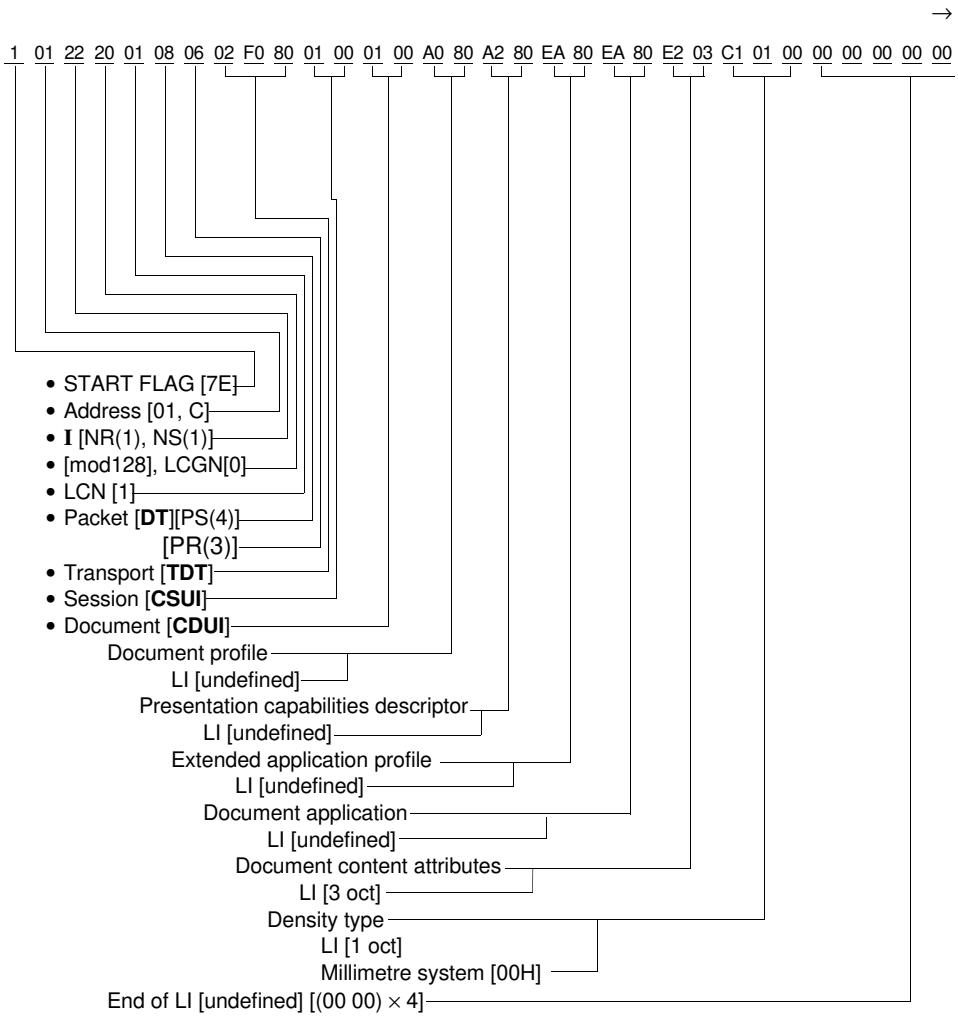
2. Example of CR packet

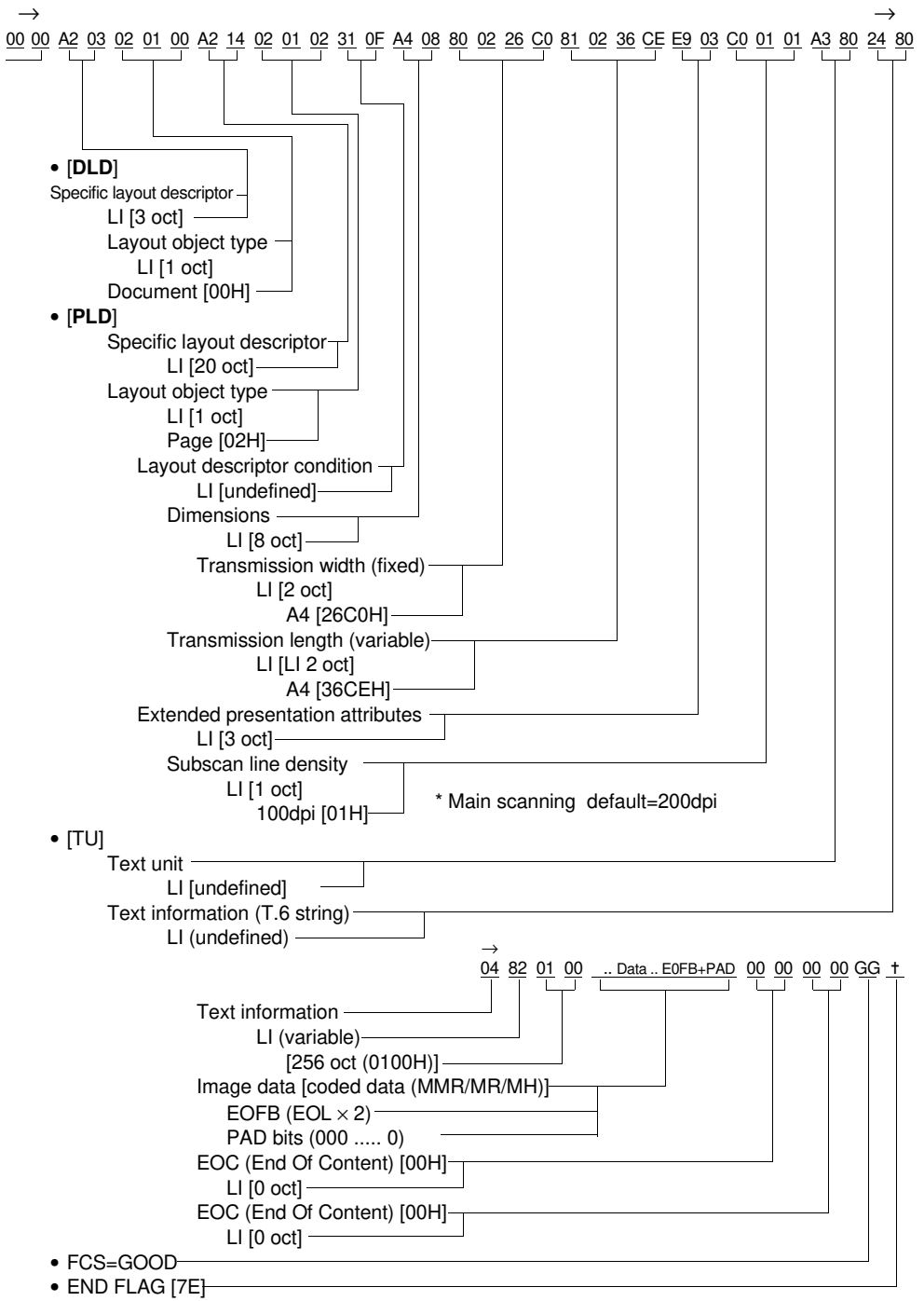


3. Example of TCR



4. Example of CDUI




→
00 00 A2 03 02 01 00 A2 14 02 01 02 31 0F A4 08 80 02 26 C0 81 02 36 CE E9 03 C0 01 01 A3 80 24 80
→
• [DLD]
Specific layout descriptor
LI [3 oct]
Layout object type
LI [1 oct]
Document [00H]
• [PLD]
Specific layout descriptor
LI [20 oct]
Layout object type
LI [1 oct]
Page [02H]
Layout descriptor condition
LI [undefined]
Dimensions
LI [8 oct]
Transmission width (fixed)
LI [2 oct]
A4 [26C0H]
Transmission length (variable)
LI [LI 2 oct]
A4 [36CEH]
Extended presentation attributes
LI [3 oct]
Subscan line density
LI [1 oct]
100dpi [01H]
* Main scanning default=200dpi
• [TU]
Text unit
LI [undefined]
Text information (T.6 string)
LI (undefined)
→
04 82 01 00 .. Data .. E0FB+PAD 00 00 00 00 GG †
Text information
LI (variable)
[256 oct (0100H)]
Image data [coded data (MMR/MR/MH)]
EOFB (EOL × 2)
PAD bits (000 ..... 0)
EOC (End Of Content) [00H]
LI [0 oct]
EOC (End Of Content) [00H]
LI [0 oct]
• FCS=GOOD
• END FLAG [7E]