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INTERWORKING OF SIGNALLING SYSTEMS

INTERWORKING OF SIGNALLING SYSTEMS – LISTS AND MEANINGS OF FITEs, BITEs AND SPITEs – REPRESENTATION OF INFORMATION CONTENTS OF SIGNALS OF THE SIGNALLING SYSTEMS

Annex A to ITU-T Recommendations Q.601 to Q.695

(Previously "CCITT Recommendation")

FOREWORD

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

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

Annex A to ITU-T Recommendations Q.601-Q.695 was revised by the ITU-T Study Group XI (1988-1993) and was approved by the WTSC (Helsinki, March 1-12, 1993).

NOTES

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 Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.

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

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

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Annex A

Interworking of Signalling Systems – Lists and meanings of FITEs, BITEs and SPITEs – Representation of information contents of signals of the Signalling Systems

(Geneva, 1980; modified at Helsinki, 1993)

(This annex forms an integral part of Recommendations Q.601-Q.695)

TABLE A.1/Q.601-Q.695[1)]

List of Forward Interworking Telephone Events (FITEs)

No.	Forward interworking telephone events	Equivalent with signal of signalling system						
		No. 4	No. 5	No. 6	No. 7 (TUP)	R1	R2	No. 7 (ISUP)
1	Digit 1, 2, ... 9 or 0, code 11 or 12, end-of-pulsing (ST) signal	1	1	1	1	1	1	a)
2	Country-code indicator, country code not included	8	8	2	2		18	a)
3	Country-code indicator, country code included	9	9	3	3			a)
4	Echo-suppressor indicator, outgoing half-echo suppressor not included, incoming half-echo suppressor not required			6	6		19	a)
5	Echo-suppressor indicator, outgoing half-echo suppressor included, incoming half-echo suppressor required	10		7	7		11	a)
6	Country-code indicator, country code included; echo-suppressor indicator, outgoing half-echo suppressor not included, outgoing half-echo suppressor required						8	
7	Country-code indicator, country code included; echo-suppressor indicator, outgoing half-echo suppressor not included, no echo suppressor required						9	
8	Country-code indicator, country code included; echo-suppressor indicator, outgoing half-echo suppressor included, incoming half-echo suppressor required						10	
9	Calling-party's-category indicator, operator, language French	2	2	8	8		2	a)
10	Calling-party's-category indicator, operator, language English	3	3	9	9		3	a)

1) Explanatory notes to this table will be found in subclauses A.1 to A.1.12.

TABLE A.1/Q.601-Q.695[1] *(continued)*

List of Forward Interworking Telephone Events (FITEs)

No.	Forward interworking telephone events	Equivalent with signal of signalling system						
		No. 4	No. 5	No. 6	No. 7 (TUP)	R1	R2	No. 7 (ISUP)
11	Calling-party's-category indicator, operator, language German	4	4	10	10		4	a)
12	Calling-party's-category indicator, operator, language Russian	5	5	11	11		5	a)
13	Calling-party's-category indicator, operator, language Spanish	6	6	12	12		6	a)
14	Calling-party's-category indicator, operator, with forward-transfer facility						15	
15	Calling-party's-category indicator, subscriber						7	
16	Calling-party's-category indicator, subscriber or operator without forward-transfer facility						12	
17	Calling-party's-category indicator, subscriber, ordinary call	7	7	13	13			a)
18	Calling-party's-category indicator, subscriber, call with priority			14	14		14	a)
19	Calling-party's-category indicator, data call			15	15		13	a)
20	Nature-of-circuit indicator, no satellite circuit in the connection			4	4			a)
21	Nature-of-circuit indicator, one satellite circuit in the connection			5	5			a)
22	Clear-forward	11	10	16	16	3	16	
23	Forward-transfer	12	11	17	17	2		a)
24	Continuity			18	18			a)
25	Continuity-check indicator, continuity check not required				21			a)
26	Continuity-check indicator, continuity check required on this circuit				20			a)
27	Continuity-check indicator, continuity check being done on previous circuit				22			a)
28								
29	Spare							
30	Service information				23			a)
31	General set-up message (GSM)				24			

1) Explanatory notes to this table will be found in subclauses A.1 to A.1.12.

TABLE A.1/Q.601-Q.695[1] *(end)*

List of Forward Interworking Telephone Events (FITEs)

No.	Forward interworking telephone events	Equivalent with signal of signalling system						
		No. 4	No. 5	No. 6	No. 7 (TUP)	R1	R2	No. 7 (ISUP)
32	Information message (INF)							
33	Delayed release (DRS)							
34	Suspend							a)
35	Resume							a)
36	Pass along message (PAM)							
37	Call modification request (CMR)							
38	Call modification completed (CMC)							
39	Call modification reject (CMRJ)							
A	Call set-up information (IAM)							a)
Z	Release							a)

a) Information exists.

A.1 Explanatory notes on the meanings and uses of FITEs (see Table A.1)

These are Forward Interworking Telephone Events sent from an incoming procedure to an interworking procedure, or from an interworking procedure to an outgoing procedure.

A.1.1 FITE 1 means one of the digits 1-9, 0, code 11, code 12 and code 15 (ST), when used as an *address signal* (i.e. not including their use for other information, e.g. language digits). Each FITE 1 represents one digit only and that digits value is implicit in the signal.

A.1.2 FITEs 2, 3, 6, 7 and 8 are events representing *country code indicators*. These signals are not sent from the incoming procedure to the interworking procedure, since the country code indicator is a link dependent signal and is used by the incoming procedure as part of the input information to the digit analysis. These FITEs are generated in the interworking procedure by the use of SPITE 22 (see Table A.3).

A.1.3 FITEs 4-8 are events representing *echo-suppressor indicators*. These signals are not sent from the incoming procedure to the interworking procedure, since the echo-suppressor indicator is a link dependent signal and is used by the incoming procedure as part of the input information to the digit analysis. These FITEs are generated in the interworking procedure by the use of SPITE 21 (see Table A.3).

A.1.4 FITEs 9-19 are events representing *calling-party's category indicators* and include telephone events derived from language digits, discriminating digits and calling-party's-category signals.

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1) Explanatory notes to this table will be found in subclauses A.1 to A.1.12.

A.1.5 FITEs 20 and 21 are events representing *nature-of-circuit indicators*. These signals are not sent from the incoming procedure to the interworking procedure, but the nature-of-circuit indicator is used by the incoming procedure as part of the input information to the digit analysis. These FITEs are generated in the interworking procedure by the use of SPITE 20 (see Table A.3). These signals are not completely link dependent, since if the nature-of-circuit indicator on the incoming circuit implies one satellite in the connection, the same signal (FITE 21) will be sent to the outgoing procedure.

A.1.6 FITE 22 is an event representing the *clear-forward signal* and overrides all other procedures. It should therefore be shown as an input in all call states except idle, even though the waiting state might not appear to be capable of receiving FITE 22.

A.1.7 FITE 23 is an event representing the *forward-transfer signal* and is assumed to be capable of reception after the state *Address-complete* when the register function is deactivated and the speech condition is set up.

A.1.8 FITE 24 is an event representing the *continuity signal* in common channel signalling systems. When interworking from a channel associated signalling system to a common channel signalling system, FITE 24 must be generated by the interworking procedure.

A.1.9 FITEs 25, 26, 27 are events which define the continuity check requirements on outgoing circuits for common channel systems.

A.1.10 FITE 30 is an event which defines the Services which have been requested and can be provided e.g., Speech, Closed User Group, Digital Connectivity, etc.

A.1.11 FITE 31 is an event which defines the information to be carried by the General Set-up Message (GSM).

A.1.12 FITE A contains all the information elements which can be carried by the Initial Address Message (IAM) of Signalling System No. 7 ISUP.

TABLE A.2/Q.601-Q.695[2)]

List of Backward Interworking Telephone Events (BITEs)

No.	Backward interworking telephone events	Equivalent with signal of signalling system						
		No. 4	No. 5	No. 6	No. 7 (TUP)	R1	R2	No. 7 (ISUP)
1	Spare							
2	Address-complete, charge	1		1	1		2	a)
3	Address-complete, no charge			2	2			a)
4	Address-complete, coin box			3	3			a)
5	Address-complete, subscriber free, charge			4	4		8 & 13	a)
6	Address-complete, subscriber free, no charge			5	5		9	a)
7	Address-complete, subscriber free, coin box			6	6			a)
8	Call unsuccessful	2	1					
9	Call unsuccessful, switching-equipment congestion			7	7			a)

2) Explanatory notes to this table will be found in subclauses A.2 to A.2.16.

TABLE A.2/Q.601-Q.695[2] *(continued)*

List of Backward Interworking Telephone Events (BITEs)

No.	Backward interworking telephone events	Equivalent with signal of signalling system						
		No. 4	No. 5	No. 6	No. 7 (TUP)	R1	R2	No. 7 (ISUP)
12	Call unsuccessful, national-network congestion			9	9		1	
13	Call unsuccessful, address-complete, national network congestion						6 & 15	
14	Call unsuccessful, address incomplete			10	10			a)
15	Call unsuccessful (address-complete), unallocated number			11	11		7 & 14	a)
16	Call unsuccessful, address-complete, subscriber busy (elec.)			12	12		5	a)
17	Call unsuccessful, address-complete, line out-of-service			13	13		10	a)
18	Spare							
19	Call unsuccessful, call-failure			15	15			a)
20	Call unsuccessful, send special information tone			14	14		4 & 14	a)
21	Answer, subscriber free						11	
22	Answer, subscriber free, charge	3	2	16	16	1		a)
23	Answer, subscriber free, no charge			17	17			a)
24	Answer, re-answer			18	18			
25	Clear-back	4	3	19	19	2	12	
26	Artificial address-complete may be sent (Note)		4			3		
27	Sending-finished; set up speech condition (Note)		5			4		
28	Deactivate register function (Note)							
29	Release incoming side (Note)							
30	Switchthrough may be completed (Note)							
31	General request message (GRQ)				20			
32	Information request message (INR)							a)
33	Release (normal call clearing)							a)

2) Explanatory notes to this table will be found in subclauses A.2 to A.2.16.

TABLE A.2/Q.601-Q.695[2] *(end)*

List of Backward Interworking Telephone Events (BITEs)

No.	Backward interworking telephone events	Equivalent with signal of signalling system						
		No. 4	No. 5	No. 6	No. 7 (TUP)	R1	R2	No. 7 (ISUP)
36	Call unsuccessful, digital patch not provided				22			
37	Delayed release (DRS)							a)
38	Suspend (user)							a)
39	Resume (user)							a)
40	Pass along message (PAM)							
41	Call modification request (CMR)							
42	Call modification completed (CMC)							
43	Call modification reject (CMRJ)							
44	ACM call forwarded							
45	ACM call not forwarded							
46	ACM redirection prohibited							
47	Call progress message (CPG)							a)
48	Connect message (CON)							a)
49	Bearer capability not provided							
X	Address complete (ACM)							a)
Y	Answer (ANM)							a)
Z	Release message							a)

a) Information exists.

NOTE – These signals do not necessarily correspond to a backward but correspond to logic events.

A.2 Explanatory notes on the meanings and uses of BITEs (see Table A.2)

These are Backward Interworking Telephone Events sent from an outgoing procedure to an interworking procedure, or from an interworking procedure to an incoming procedure.

2) Explanatory notes to this table will be found in subclauses A.2 to A.2.16.

A.2.1 BITE 2 is an *address-complete event* which may be originated either by the receipt of an address complete signal or by the simulation of the address complete condition from a signalling system not employing address complete signals. This latter event is designated BITE 26, when signalling from the outgoing procedure to the interworking procedure. Since in most cases the forward signalling continues beyond the time that the address-complete is simulated, BITE 2 does not cause register deactivation in the incoming logic in the way that BITEs 3-7 do. The incoming procedure must wait for the subsequent reception of BITE 27 or BITE 28 (see A.2.7 and A.2.8).

A.2.2 BITEs 3-7 are *address-complete events* which cause the speech condition to be set up and the register function to be deactivated.

A.2.3 BITEs 8-17, 19, 20 are *call unsuccessful events* which cause the return of a corresponding event to the incoming procedure where the register function will be deactivated. They are separated according to the reasons of an unsuccessful call.

A.2.4 BITEs 21-24 are *answer events*, differentiated where possible.

A.2.5 BITE 25 is the event representing the *clear-back signal*.

A.2.6 BITE 26 is an event signalling the *simulation of address-complete* condition by an outgoing signalling system which does not employ address-complete signals (e.g. No. 5 or R1). If the incoming signalling system uses address-complete signals, BITE 26 is translated to BITE 2 in the interworking procedures, in other cases it is discarded.

A.2.7 BITE 27 means that an outgoing signalling system which does not employ address-complete signals has *completed forward signalling* (e.g. ST has been sent) and the *speech condition should be set up*. When used, it will follow after BITE 26.

For incoming signalling systems employing address-complete signals, BITE 27 will always be expected after BITE 2. Therefore when both interworking systems employ address-complete signals, the interworking procedure must translate BITE 2 to BITE 2 + BITE 27.

A.2.8 BITE 28 is used only from an interworking procedure to an incoming procedure in the case where a BITE is received from the outgoing procedure which has no corresponding BITE in the incoming procedure. A tone will be returned by the use of SPITE 6 in the interworking procedure, and BITE 28 is used solely to deactivate the register function in the incoming procedure.

A.2.9 BITE 29 *release incoming side*, is used from an interworking procedure to an incoming procedure for incoming systems where release procedures may be initiated in the backward direction (e.g. the INMARSAT signalling system).

A.2.10 BITE 30 *switchthrough may be completed* is used to signal from an outgoing procedure to an incoming procedure via the relevant interworking, that the speech path may be connected through.

A.2.11 BITE 31 is an event which requests the information asked for by the General Request Message (GRQ).

A.2.12 BITE 35 is a call unsuccessful event corresponding to the receipt of the Access Barred Signal (ACB). This BITE is used e.g. in Closed User Group calls.

A.2.13 BITE 36 is a call unsuccessful event that occurs when a digital path cannot be provided.

NOTE – BITEs 35 and 36 are only used in No. 7 originated calls.

A.2.14 BITE X contains all the information elements which can be carried by the Address Complete Message (ACM) of Signalling System No. 7 ISUP.

A.2.15 BITE Y contains all the information elements which can be carried by the Answer Message (ANM) of Signalling System No. 7 ISUP.

A.2.16 BITE Z contains all the information elements which can be carried by the Backward Release Message (REL) of Signalling System No. 7 ISUP.

TABLE A.3/Q.601-Q.695[3)]

List of Switching Processing Interface Telephone Events (SPITEs)

No.	Designation	Symbol
1	Activate register function (physical register or equivalent function)	Task
2	Register function activated	Internal input
3	Deactivate register function	Task
4	Set up speech condition	Task
4A	Speech path may be set up	Task
5	Release speech condition (of the speech part in the exchange)	Task
6	Return appropriate tone	Task
7	Disconnect tone	Task
8	Release all equipment (covers also disconnection of tones; exclusively used at the incoming procedures)	Task
9	Spare	
10	Spare	
11	Shall digit analysis be started?	Decision
12	Perform digit analysis	Task
13	Digit analysis cannot be completed (covers insufficient information, waiting for enough digits for routing, etc.)	Internal input
14	Routing information	Internal input
15	Unallocated number	Internal input
16	Unprovided routing (e.g. transit connection received at an exchange handling termination traffic only)	Internal input
17	Barred routing	Internal input
18	Switching equipment congestion	Internal input
19	Circuit group congestion	Internal input
20	Satellite link included?	Decision
21	Incoming half-echo suppressor to be included at distant end?	Decision
22	Transit connection following? (otherwise a terminal connection is following)	Decision
23	Has Z-digit been received?	Decision
24	Is this the Z-digit?	Decision
25 to 30	Spare	
31	Perform continuity check at the outgoing end (covers all necessary switching procedures: – connecting of the transceiver – disabling of echo suppressors – sending check tone – automatic re-attempts, where applicable)	Task
32	Insert check loop at the incoming end (including disabling of echo suppressors)	Task
33	Continuity check OK (covers also recieving of checktone and removal of the transceiver)	Internal input
34	Remove check loop at the incoming end (including enabling of echo suppressors)	Task
35	Ignore further register signals	Task
36	Is continuity check required on outgoing circuit?	Decision
37	Analyse and store service requests (applicable for GSM and INF)	Task
38	Access barred/call rejected	Internal input
39	64 kbit/s digital path not possible/available	Internal input
40	Store services provided	Task
41	Service information	Internal output
42	Additional information required	Internal input

3) Explanatory notes to this table will be found in subclauses A.3 to A.3.32.

TABLE A.3/Q.601-Q.695[3] *(continued)*

List of Switching Processing Interface Telephone Events (SPITEs)

No.	Designation	Symbol
43	Set IAM fields as defined by services	Task
44	Analyse information requested (applicable to GRO and INR)	Task
45	Is service allowed? (also covers if backward PAM has been received)	Decision
46	Is information available?	Decision
47	Construct request message (applicable to GRO and INR)	Task
48	Construct information message (applicable to GSM and INF)	Task
49	Make changes for in-call modification	Task
50	Have the modifications been correctly made?	Decision
51	CUG not provided	Internal input
52	Analyse call set up information and construct call set up message	Task
53	Analyse information received and generate appropriate BITE or FITE	Task
54	Construct REL message	Task
55	Bearer capability not provided	Internal input
56	Assemble address complete	Task

A.3 Explanatory notes on the meanings and uses of SPITEs (see Table A.3)

SPITEs are Switching Processing Interface Telephone Events used in all three procedures. For convenience the three signalling procedures are considered to be processes within a larger switching process and all SPITEs are considered to be *internal to the signalling procedures* but having, where necessary, full access to any switching information provided by other signalling procedures. For example digit analysis is initiated by the incoming procedure, but the results are available to both the interworking and outgoing procedures, where necessary. By contrast all FITEs, BITEs and telephone signals are external signals. The SPITEs are grouped into three categories:

a) SPITEs 1-10 are allocated or reserved for *switching SPITEs*;

b) SPITEs 11-30 are allocated or reserved for *digit analysis SPITEs;*

c) SPITEs 31-40 are allocated or reserved for SPITEs used by a *restricted number of signalling systems*.

A.3.1 SPITE 1 *activate register function* is used in the incoming procedure to activate the register function following the receipt of the seizing signal or the initial address message. The register function keeps a memory of all received signals.

A.3.2 SPITE 2 *register function activated* is used following SPITE 1 where a proceed to send signal must be sent.

A.3.3 SPITE 3 *deactivate register function* is used in the incoming procedure to deactivate the register function. It is used after one of the following events:

– clear-forward;

– register timeout;

– SPITEs 15-19 (reasons of unsuccessful calls);

– BITEs 3-17, 19, 20, 27, 28 or any other error condition indicating an unsuccessful call.

A.3.4 SPITE 4 *set-up speech condition* is used in the incoming procedure to set up the speech condition at the end of the register phase. It is therefore used in conjunction with SPITE 3 after reception of BITEs 3-7 and 27.

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[3] Explanatory notes to this table will be found in subclauses A.3 to A.3.32.

A.3.4(a) SPITE 4A *speech path may be set up*, is used in the incoming procedure on calls where a BITE 30, has been received in order to allow early switchthrough of the speech circuits.

A.3.5 SPITE 5 *release speech condition* is used in the incoming or interworking procedure where a call unsuccessful BITE is received after SPITE 4. If the BITE is returned to the incoming procedure, SPITE 5 is used there but if the BITE is translated to a tone in the interworking procedure using SPITE 6, then SPITE 5 is used in the interworking procedure.

A.3.6 SPITE 6 *return appropriate tone* is used in the incoming procedure where no electrical signal corresponds to SPITEs 15-19, and also in the interworking procedure when a BITE is received for which no corresponding BITE exists in the incoming procedure.

A.3.7 SPITE 7 *disconnect tone*, is used to disconnect a tone at a point in the logic procedures other than the release of the call, i.e. when SPITE 8 is not appropriate. An example is the disconnection of ringing tone in the outgoing INMARSAT procedures.

A.3.8 SPITE 8 *release all equipment* is used in the incoming procedure when a clear-forward signal is received after the register phase.

A.3.9 SPITE 11 *shall digit analysis be started?* is used in the incoming procedure to determine, when sufficient digits have been received, that digit analysis may begin.

A.3.10 SPITE 12 *perform digit analysis* is used in the incoming procedure to perform digit analysis. The analysis takes into account the following information, where available:

- address information;
- Z-digit (L- or D-digit);
- country-code indicator;
- echo-suppressor indicator;
- nature-of-circuit indicator;
- calling-party's-category;
- service requested.

SPITE 12 will be followed by one of the SPITEs 13-19 which indicate the result of the analysis, and are only used in the incoming procedure.

A.3.11 SPITE 13 *digit analysis cannot be completed* indicates that insufficient address information is available to complete the digit analysis.

A.3.12 SPITE 14 *routing information and service provided* indicates that digit analysis has been completed and the following information determined:

- type of outgoing signalling system;
- transit or terminal connection;
- echo-suppressor indicator;
- nature-of-circuit indicator;
- position of Z-digit;
- service provided.

SPITEs 15-19 are results of digit analysis.

A.3.13 SPITE 15 *unallocated number* indicates that the received address digits represent an unallocated number (country code, area code, etc.).

A.3.14 SPITE 16 *unprovided routing* indicates that the received address digits represent a valid code but that the required destination cannot be reached via this exchange.

A.3.15 SPITE 17 *barred routing* indicates that the received address digits represent a valid code but that access to it is barred by reason of, for example:

– wrong calling party's category;

– prohibited route-route combination.

A.3.16 SPITE 18 *switching equipment congestion* indicates that the switching attempt to the outgoing circuit met switching equipment congestion.

A.3.17 SPITE 19 *circuit group congestion* indicates that all circuit groups to the required destination were congested.

SPITEs 20-24 ask for information from the results of digit analysis.

A.3.18 SPITE 20 *satellite link included?* is used in the interworking procedure to determine the required nature of circuit indicator that should be transmitted. This information is available from the results of digit analysis.

A.3.19 SPITE 21 *incoming half-echo-suppressor to be included at distant end?* is used in the interworking procedure to determine the required echo suppressor indicator that should be transmitted. This information is available from the results of digit analysis.

A.3.20 SPITE 22 *transit connection following?* is used in the interworking procedure to determine the required country code indicator that should be transmitted. This information is available from the results of digit analysis.

A.3.21 SPITE 23 *has Z-digit been received?* is used in the incoming procedure following digit analysis to decide whether the Z-digit has already been received. The position of the Z-digit is determined as part of the digit analysis.

A.3.22 SPITE 24 *is this the Z-digit?* is used in the incoming procedure to decide whether a received register signal is the Z-digit or an address digit. This can be determined, since the position of the Z-digit is known after digit analysis.

A.3.23 SPITE 31 *perform continuity check* is used in the outgoing procedure of common channel signalling systems to perform the continuity check including all necessary switching procedures.

A.3.24 SPITE 32 *insert check loop* is used in the incoming procedure of common channel signalling systems to insert the continuity check loop.

A.3.25 SPITE 33 *continuity check O.K.* is used in the outgoing procedure of common channel signalling systems to indicate a successful continuity check.

A.3.26 SPITE 34 *remove check loop* is used in the incoming procedure of common channel signalling systems to remove the continuity check loop.

A.3.27 SPITE 35 *ignore further register signals* is used in the incoming procedure of Signalling System No. 5 and R1 following the receipt of the ST signal to indicate that all further register signals should be ignored.

A.3.28 SPITE 36 *is continuity check required on outgoing circuit?* is used in conjunction with information received on the incoming link to determine the continuity check indicator required on the outgoing link.

A.3.29 SPITE 37 *analyze and store information* is used in the incoming procedure on receipt of a General Set-up information Message (GSM).

A.3.30 SPITE 38 *access barred* indicates that a requested service cannot be completed (e.g. closed user group).

A.3.31 SPITE 39 *digital path not possible* indicates that a digital path cannot be provided.

A.3.32 SPITE 42 *additional information required* indicates that the I/C procedure must send a GRQ message.

TABLE A.4/Q.601-Q.695

Representation of the information contents – forward signals of Signalling System No. 5

Information elements / Signals of Signalling System No. 5	Address signals	Language digit 1: French	Language digit 2: English	Language digit 3: German	Language digit 4: Russian	Language digit 5: Spanish	Discriminating digit 0	Start-of-pulsing signal KP1	Start-of-pulsing signal KP2	Clear-forward signal	Forward-transfer signal													
Signal No.	1	2	3	4	5	6	7	8	9	10	11													
Digit 1, 2, ... 9 or 0, code 11 or 12,	X																							
end-of-pulsing (ST) signal	X																							
Country-code indicator								X	X															
Country-code not included								X																
Country-code included									X															
Nature-of-circuit indicator																								
No satellite circuit in the connection																								
One satellite circuit in the connection																								
Echo-suppressor indicator																								
Outgoing half-echo suppressor not included																								
Outgoing half-echo suppressor included																								
Outgoing half-echo suppressor required																								
No echo-suppressor required																								
Incoming half-echo suppressor required																								
Calling party's category indicator		X	X	X	X	X	X																	
Operator		X	X	X	X	X																		
Subscriber							X																	
Data call																								

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Ordinary call								×																		
Call with priority																										
Forward-transfer facility																										
No forward-transfer facility																										
Language: French		×																								
Language: English			×																							
Language: German				×																						
Language: Russian					×																					
Language: Spanish						×																				
Clear-forward											×															
Forward-transfer												×														
Continuity check indicator																										
Continuity check required on this circuit																										
Continuity check not required on this circuit																										
Continuity check performed on previous circuit																										
Continuity																										
General setup information elements																										
Service information elements																										
Corresponds to signal No. ... of Signalling System	No. 4	1	2	3	4	5	6	7	8	9	11	12														
	No. 6	1	8	9	10	11	12	13	2	3	16	17														
	No. 7 (TUP)	1	8	9	10	11	12	13	2	3	16	17														
	R2	1	2	3	4	5	6	(7)	18	[8, 9 or 10]	16	17														
	R1	1	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	3	2														

⊗ No equivalent signal

(No.) Loss of information

[No.] Additional information or change of information

No. Identical meaning of signals

T1 164760-94/d02

TABLE A.5/Q.601-Q.695

Representation of the information contents – forward signals of Signalling System No. 6

Information elements / Signals of Signalling System No. 6	Address signals	Country-code indicator, country-code not included	Country-code indicator, country-code included	Nature of circuit indicator, no satellite circuit in the connection	Nature of circuit indicator, one satellite circuit in the connection	Echo-suppressor indicator, outgoing half-echo suppressor not included	Echo-suppressor indicator, outgoing half-echo suppressor included	Calling party's category indicator, operator, language French	Calling party's category indicator, operator, language English	Calling party's category indicator, operator, language German	Calling party's category indicator, operator, language Russian	Calling party's category indicator, operator, language Spanish	Calling party's category indicator, ordinary calling subscriber	Calling party's category indicator, calling subscriber with priority										
Signal No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18						
Digit 1, 2, ... 9 or 0, code 11 or 12,	X																							
end-of-pulsing (ST) signal	X																							
Country-code indicator		X	X																					
Country-code not included		X																						
Country-code included			X																					
Nature-of-circuit indicator				X	X																			
No satellite circuit in the connection				X																				
One satellite circuit in the connection					X																			
Echo-suppressor indicator						X	X																	
Outgoing half-echo suppressor not included						X																		
Outgoing half-echo suppressor included							X																	
Outgoing half-echo suppressor required																								
No echo-suppressor required																								
Incoming half-echo suppressor required							X																	
Calling party's category indicator								X	X	X	X	X	X	X	X									
Operator								X	X	X	X	X												
Subscriber													X	X										
Data call															X									
Ordinary call													X											

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Call with priority															X										
Forward-transfer facility																									
No forward-transfer facility																									
Language: French								X																	
Language: English									X																
Language: German										X															
Language: Russian											X														
Language: Spanish												X													
Clear-forward																	X								
Forward-transfer																		X							
Continuity check indicator																									
Continuity check required on this circuit																									
Continuity check not required on this circuit																									
Continuity check performed on previous circuit																									
Continuity																			X						
General setup information elements																									
Service information elements																									
Corresponds to signal No. ... of Signalling System	No. 4	1	8	9	⊗	⊗	⊗	10 [a]	2	3	4	5	6	7	⊗	⊗	11	12	⊗						
	No. 5	1	8	9	⊗	⊗	⊗	⊗	2	3	4	5	6	7	⊗	⊗	10	11	⊗						
	No. 7	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18						
	R2	1	18	[8, 9 or 10]	20	21	19	11	2	3	4	5	6	[12]	14	13	16	17	⊗						
	R1	1	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	3	2	⊗						

[a] Signal code 14 is available for use upon multi-lateral or bilateral agreement for echo-suppressor control.

⊗ No equivalent signal

(No.) Loss of information

[No.] Additional information or change of information

No. Identical meaning of signals

T1164770-94/d04

TABLE A.5 *bis*/Q.601-Q.695

Representation of the information contents – forward signals of Signalling System No. 7 (TUP)

Information elements / Signals of Signalling System No. 7 (TUP)	Address signals	Nature of address indicator National significant number	Nature of address indicator International number	Nature of circuit indicator, no satellite in the connection	Nature of circuit indicator, one satellite in the connection	Echo-suppressor indicator, outgoing half-echo suppressor not included	Echo-suppressor indicator, outgoing half-echo suppressor included	Calling party's category indicator, operator, language French	Calling party's category indicator, operator, language English	Calling party's category indicator, operator, language German	Calling party's category indicator, operator, language Russian	Calling party's category indicator, operator, language Spanish	Calling party's category indicator, ordinary calling subscriber	Calling party's category indicator, calling subscriber with priority	Calling party's category indicator, data call	Clear-forward signal	Forward-transfer signal	Continuity proved	Continuity check failure[a]	Continuity check required on this circuit	Continuity check not required on this circuit	Continuity check performed on previous circuit	Service information	General setup message
Signal No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Digit 1, 2, ... 0, code 11, code 12,	X																							
end pulsing	X																							
Country-code indicator		X	X																					
Country-code not included		X																						
Country-code included			X																					
Nature-of-circuit indicator				X	X																			
No satellite circuit in the connection				X																				
One satellite circuit in the connection					X																			
Echo-suppressor indicator						X	X																	
Outgoing half-echo suppressor not included						X																		
Outgoing half-echo suppressor included							X																	
Outgoing half-echo suppressor required																								
No echo-suppressor required						X																		
Incoming half-echo suppressor required							X																	
Calling party's category indicator								X	X	X	X	X	X	X	X									

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Operator								X	X	X	X	X													
Subscriber													X	X											
Data call															X										
Ordinary call													X												
Call with priority														X											
Language: French								X																	
Language: English									X																
Language: German										X															
Language: Russian											X														
Language: Spanish												X													
Clear-forward																X			X						
Forward-transfer																	X								
Continuity check indicator																				X	X	X			
Continuity check required on this circuit																				X					
Continuity check not required on this circuit																					X				
Continuity check performed on previous circuit																						X			
Continuity																		X							
General setup information elements																									X
Service information elements																								X	
Corresponding signals	No. 4	1	8	9	⊗	⊗	⊗	10 [b]	2	3	4	5	6	7	⊗	⊗	11	12	⊗	⊗	⊗	⊗	⊗	⊗	⊗
	No. 5	1	8	9	⊗	⊗	⊗	⊗	2	3	4	5	6	7	⊗	⊗	10	11	⊗	⊗	⊗	⊗	⊗	⊗	⊗
	No. 6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	⊗	⊗	⊗	⊗	⊗	⊗
	R1	1	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	3	2	⊗	⊗	⊗	⊗	⊗	⊗	⊗
	R2	1		8, 9 or 10	20	21	19	11	2	3	4	5	6	[12]		13	16	17	⊗	⊗	⊗	⊗	⊗	⊗	⊗

[a] For the purposes of interworking, the continuity check failure signal is equivalent to a clear forward (7.3/Q.724). No specific continuity check failure information element has therefore been included.

[b] Signal code 14 is available for use upon multilateral or bilateral agreement for echo-suppressor control.

⊗ No equivalent information

(No.) Loss of information

[No.] Additional information or change of information

T1164780-94/d06

TABLE A.6/Q.601-Q.695

Representation of the information contents – forward signals of Signalling System R1

Information elements \ Signals of Signalling System R1	Address signals	Ring-forward (forward-transfer)	Clear-forward																								
Signal No.	1	2	3																								
Digit 1, 2, ... 9 or 0, ST signal	×																										
Country-code indicator																											
Country-code not included																											
Country-code included																											
Nature-of-circuit indicator																											
No satellite circuit in the connection																											
One satellite circuit in the connection																											
Echo-suppressor indicator																											
Outgoing half-echo suppressor not included																											
Outgoing half-echo suppressor included																											
Outgoing half-echo suppressor required																											
No echo-suppressor required																											
Incoming half-echo suppressor required																											
Calling party's category indicator																											
Operator																											

T1 157330-93/d07

Subscriber																									
Data call																									
Ordinary call																									
Call with priority																									
Forward-transfer facility																									
No forward-transfer facility																									
Language: French																									
Language: English																									
Language: German																									
Language: Russian																									
Language: Spanish																									
Clear-forward			×																						
Forward-transfer		×																							
Continuity check indicator																									
Continuity check required on this circuit																									
Continuity check not required on this circuit																									
Continuity check performed on previous circuit																									
Continuity																									
General setup information elements																									
Service information elements																									
Corresponds to signal No. ... of Signalling System	No. 5	1	11	10																					
	No. 6	1	17	16																					
	No. 7 (TUP)	1	17	16																					
	R2	1	17	16																					

T1164790-94/D08

TABLE A.7/Q.601-Q.695

Representation of the information contents – forward signals of Signalling System R2

Information elements / Signals of Signalling System R2	Address signals	I-1: Language digit: French	I-2: Language digit: English	I-3: Language digit: German	I-4: Language digit: Russian	I-5: Language digit: Spanish	I-10: Discriminating digit	I-11: Country-code indicator, outgoing half-echo suppressor required	I-12: Country-code indicator, no echo suppressor required	I-13: Country-code indicator, incoming half-echo suppressor required[e)]	I-14: Incoming half-echo suppressor required[e)]	II-7: Calling party's category, subscriber or operator without forward-transfer facility	II-8: Calling party's category, data transmission control	II-9: Calling party's category, subscriber with priority	II-10: Calling party's category operator with forward-transfer facility	Clear-forward signal	Forward-transfer signal[a)]	First digit I-1, I-2, ... I-10	Reply to A-14, I-1, ... I-10[c)]	Reply to first A-13, I-13	Reply to first A-13, I-14			
Signal No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21			
Digit 1, 2, ... 9 or 0, code 11 or 12,	X																		X					
end-of-pulsing (ST) signal	X																							
Country-code indicator								X	X	X								X						
Country-code not included																		X						
Country-code included								X	X	X														
Nature-of-circuit indicator																				X	X			
No satellite circuit in the connection																				X				
One satellite circuit in the connection																					X			
Echo-suppressor indicator								X	X	X	X													
Outgoing half-echo suppressor not included								X	X															
Outgoing half-echo suppressor included										X	X													
Outgoing half-echo suppressor required								X																
No echo-suppressor required									X															
Incoming half-echo suppressor required										X	X													
Calling party's category indicator		X	X	X	X	X	X					X	X	X	X									
Operator		X	X	X	X	X						X (or)			X									
Subscriber							X					X		X										
Data call													X											
Ordinary call												X												

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Call with priority															×										
Forward-transfer facility																×									
No forward-transfer facility													×												
Language: French			×																						
Language: English				×																					
Language: German					×																				
Language: Russian						×																			
Language: Spanish							×																		
Clear-forward																	×								
Forward-transfer																		×							
Continuity check indicator																									
Continuity check required on this circuit																									
Continuity check not required on this circuit																									
Continuity check performed on previous circuit																									
Continuity																									
General setup information elements																									
Service information elements																									
Corresponds to signal No. ... of Signalling System	No. 4	1	2	3	4	5	6	[7]	10 c) +9 d)	(9)	10 d) +9	10	7	⊗	⊗	[7 f)]	11	12	8	⊗	⊗	⊗			
	No. 5	1	2	3	4	5	6	[7]	⊗	(9)	⊗	⊗	7	⊗	⊗	[7 f)]	10	11	8	⊗	⊗	⊗			
	No. 6	1	8	9	10	11	12	b)	3 7 c)	3 +6	3 +7	7	13	15	14	[13 f)]	16	17	2	6	4	5			
	No. 7	1	8	9	10	11	12	b)	3 c) 8	3 6 c)	3 7	7	13	15	14	[13 f)]	16	17	2	6	4	5			
	R1	1	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	3	2	⊗	⊗	⊗	⊗			

[a] See 1.1.3/Q.400. A forward-transfer signal does not normally form part of Signalling System R2.

[b] See signals II-7, II-8 and II-9.

[c] Translation of signal I-11, succeeding circuit must be equipped with outgoing half-echo suppressor.

[d] Signal code 14 is available for use upon multilateral or bilateral agreement for echo-suppressor control.

[e] In reply to signal A-14.

[f] The 1/0 logic treats the signal II-10 as II-7, as long as no treatment of the forward-transfer signal is considered.

⊗ No equivalent signal

(No.) Loss of information

[No.] Additional information or change of information

No. Identical meaning of signals

T1164800-94/d10

TABLE A.8/Q.601-Q.695

Representation of the information contents – backward signals of Signalling System No. 5

Information elements / Signals of Signalling System No. 5	Busy-flash signal	Answer signal	Clear-back signal	Proceed-to-send signal	Inform that ST has been sent																				
Signal No.	1	2	3	4	5																				
Address-complete																									
Subscriber free		×																							
Coin box																									
Charge		×																							
No charge																									
Call unsuccessful	×																								
Switching-equipment congestion																									
Circuit-group congestion																									
National-network congestion																									
Address-incomplete																									
Unallocated number																									
Subscriber busy (elec.)																									

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Line-out-of-service																												
Send special-information tone																												
Call failure																												
Answer			X																									
Re-answer																												
Clear-back				X																								
Artificial address-complete					X																							
Sending-finished						X																						
General setup request elements																												
Access barred																												
Digital path not provided																												
Corresponds to signal No. ... of Signalling System	No. 4	2	3	4	⊗	⊗																						
	No. 6	[8]	or 16 18	19	⊗	⊗																						
	No. 7 (TUP)	[8]	or 16 18	19	⊗	⊗																						
	R2	(a)	(11)	12	⊗	⊗																						
	R1	(b)	1	2	3	4																						

[a] Busy tone.

[b] Appropriate tone or announcement.

⊗ No equivalent signal

(No.) Loss of information

[No.] Additional information or change of information

No. Identical meaning of signals

T1 164810-94/d12

TABLE A.9/Q.601-Q.695

Representation of the information contents – backward signals of Signalling System No. 6

Information elements / Signals of Signalling System No. 6	ADC: Address-complete, charge	ADN: Address-complete, no charge	ADX: Address-complete, coin box	AFC: Address-complete, subscriber free, charge	AFN: Address-complete, subscriber free, no charge	AFX: Address complete, subscriber free, coin box	SEC: Switching-equipment congestion	CGC: Circuit-group congestion	NNC: National-network congestion	ADI: Address-incomplete	UNN: Unallocated number	SSB: Subscriber busy (elec.)	LOS: Line-out-of-service	SST: Send special information tone	CFL: Call failure	ANC: Answer, charge	ANN: Answer, no charge	RAI-3: Re-answer No. 1-No. 3	CBI-3: Clear-back No. 1-No. 3					
Signal No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19					
Address-complete	X	X	X	X	X	X					X	X	X	X		(X) [c]	(X) [c]							
Subscriber free				X	X	X										X	X							
Coin box			X			X																		
Charge	X			X												X								
No charge		X			X												X							
Call unsuccessful							X	X	X	X	X	X	X	X	X									
Switching-equipment congestion							X																	
Circuit-group congestion								X																
National-network congestion									X															
Address-incomplete										X														
Unallocated number											X													

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Subscriber busy (elec.)													X													
Line-out-of-service														X												
Send special-information tone															X											
Call failure																X										
Answer																	X	X								
Re-answer																			X							
Clear-back																				X						
Artificial address-complete																										
Sending-finished																										
General setup request elements																										
Access barred																										
Digital path not provided																										
Corresponds to signal No. ... of Signalling System	No. 4	1	(1)	(1)	(1)	(1)	(1)	(2)	(2)	(2)	(b)	(b)	(2)	(b)	(b)	(2)	3	(3)	(3)	(4)						
	No. 6	⊗	⊗	⊗	⊗	⊗	⊗	(1)	(1)	(1)	(b)	(b)	(1)	(b)	(b)	(1)	2	(2)	(2)	(3)						
	No. 7 (TUP)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19						
	R2	[2]	[9]	2	8	9	[8]	(3)	(3 a))	(1 a))	(1)	7	5	10	4	(2 a))	(11)	(11)	(11)	12						
	R1	⊗	⊗	⊗	⊗	⊗	⊗	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	1	(1)	(1)	2						

a) Before an address-complete signal is sent; otherwise audible tone.

b) Appropriate tone and possibly announcement.

c) When received before address complete.

⊗ No equivalent signal

(No.) Loss of information

[No.] Additional information or change of information

No. Identical meaning of signals

T1164820-94/d14

TABLE A.9 *bis*/Q.601-Q.695

Representation of the information contents – backward signals of Signalling System No. 7 (TUP)

Information elements / Signals of Signalling System No. 7 TUP	Signal No.	Address-complete	Subscriber free	Coin box	Charge	No charge	Call unsuccessful	Switching-equipment congestion	Circuit-group congestion
ADC: Address-complete, charge [c]	1	×			×				
ADN: Address-complete, no charge	2	×				×			
ADX: Address-complete, coin box	3	×		×					
AFC: Address-complete, subscriber free, charge	4	×	×		×				
AFN: Address-complete, subscriber free, no charge	5	×	×			×			
AFX: Address-complete, subscriber free, coin box	6	×	×	×					
SEC: Switching-equipment congestion	7						×	×	
CGC: Circuit-group congestion	8						×		×
NNC: National-network congestion	9						×		
ADI: Address-incomplete	10						×		
UNN: Unallocated number	11	×					×		
SSB: Subscriber busy (elec.)	12	×					×		
LOS: Line-out-of-service	13	×					×		
SST: Send special information tone	14	×					×		
CFL: Call failure	15	×					×		
ANC: Answer, charge	16	×	×		×				
ANN: Answer, no charge	17	×	×			×			
RAN: Re-answer	18								
CLB: Clear-back	19								
GRQ: General request message	20								
ACB: Access barred signal	21								
DPN: Digital path not provided	22								

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National-network congestion										X																
Address-incomplete											X															
Unallocated number												X														
Subscriber busy (elec.)													X													
Line-out-of-service														X												
Send special-information tone															X											
Call failure																X										
Answer																	X	X								
Re-answer																			X							
Clear-back																				X						
Artificial address-complete																										
Sending-finished																										
General setup request elements																					X					
Access barred																						X				
Digital path not provided																							X			
Corresponding signals	No. 4	1	1	1	1	1	1	2	2	2	b)	2	b)	b)	b)	b)	3	3	3	4						
	No. 5							1	1	1	b)	1	b)	b)	b)	b)	2	2	2	3						
	No. 6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19						
	R1							b)	b)	b)	b)	b)	b)	b)	b)	b)	1	1	1	2						
	R2	2	9	2	8	9	9	3	3 a)	1 a)	1	7	5	10	4	2 a)	11	11	11	12						

Note – See legend in previous table.

T1164830-94/d16

TABLE A.10/Q.601-Q.695

Representation of the information contents – backward signals of Signalling System R1

Information elements / Signals of Signalling System R1	Answer signal	Clear-back (hang-up)	Circuit seized	Inform that ST has been sent																					
Signal No.	1	2	3	4																					
Address-complete																									
Subscriber free	×																								
Coin box																									
Charge	×																								
No charge																									
Call unsuccessful																									
Switching-equipment congestion																									
Circuit-group congestion																									
National-network congestion																									

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Address-incomplete																												
Unallocated number																												
Subscriber busy (elec.)																												
Line-out-of-service																												
Send special-information tone																												
Call failure																												
Answer		×																										
Re-answer																												
Clear-back			×																									
Artificial address-complete				×																								
Sending-finished					×																							
General setup request elements																												
Access barred																												
Digital path not provided																												
Corresponds to signal No. ... of Signalling System	No. 5	2	3	4	5																							
	No. 6	or 16 18	19	⊗	⊗																							
	No. 7 (TUP)	or 16 18	19	⊗	⊗																							
	R2	(11)	12	⊗	⊗																							

⊗ No equivalent signal

(No.) Loss of information

[No.] Additional information or change of information

No. Identical meaning of signals

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TABLE A.11/Q.601-Q.695

Representation of the information contents – backward signals of Signalling System R2

Information elements / Signals of Signalling System R2	A-4: Congestion on the national network	A-6: Address-complete, charge, setup speech conditions	A-15: Congestion in an international exchange or at its output	B-2: Send special-information tone	B-3: Subscriber line busy	B-4: Congestion (encountered after change-over from A-signals to B-signals)	B-5: Unallocated number	B-6: Subscriber line free, charge	B-7: Subscriber line free, no charge	B-8: Subscriber line out of order	Answer signal	Clear-back signal	B-1 – B-6: International, subscriber line free, charge	B-9 – B-10: International send special information tone	B-11 – B-15 = B-4								
Signal No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19				
Address-complete		×		(×)	×	×	(×)	×	×	×			×	(×)	×								
Subscriber free								×	×		×		×										
Coin box																							
Charge		×						×					×										
No charge									×														
Call unsuccessful	×		×	×	×	×	×			×				×	×								
Switching-equipment congestion			×																				
Circuit-group congestion			or ×																				
National-network congestion	×					×									×								
Address-incomplete																							
Unallocated number							×																

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Subscriber busy (elec.)						X																			
Line-out-of-service											X														
Send special-information tone					X										X										
Call failure																									
Answer												X													
Re-answer																									
Clear-back													X												
Artificial address-complete																									
Sending-finished																									
General setup request elements																									
Access barred																									
Digital path not provided																									
Corresponds to signals No. ... of Signalling System	No. 4	2	1	2	a)	2	2	a)	⊗	⊗	a)	3	4	⊗	a)	2									
	No. 5	1	⊗	1	a)	1	1	a)	⊗	⊗	a)	2	3	⊗	a)	1									
	No. 6	9	1	8	14	12	9	11	4	5	13	16,17 or 18	19	4	14	9									
	No. 7	9	1	8	14	12	9	11	4	5	13	16,17 or 18	19	4	14	9									
	R1	b)	⊗	b)	b)	b)	b)	b)	⊗	⊗	b)	1	2	⊗	b)	b)									

a) Special information tone.
b) Appropriate tone or announcement.

⊗ No equivalent signal

(No.) Loss of information

[No.] Additional information or change of information

No. Identical meaning of signals

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