3GPP TSG_CN#6 **NP-99434**
ETSI SMG3 Plenary Meeting #6,
Nice, France
13th – 15th December 1999

Agenda item: **5.3.3**

Source: **TSG_N WG3**

Title: **CRs to 3G Work Item Multimedia**

Introduction:

This document contains **“2”** CRs **on Work Item Multimedia** agreed by **TSG_N WG3** and forwarded to **TSG_N Plenary** meeting #6 for approval.

Tdoc	Spec	CR	Rev	CAT	Rel.	Old Ver	New Ver	Subject
N3-99502	27.001	007		B	R99	3.2.0	3.3.0	INTRODUCTION OF MULTIMEDIA
N3-99508	29.007	011		B	R99	3.2.0	3.3.0	INTERWORKING WITH H.324/I.

3GPP-N3/SMG3 WPD Meeting #7
Sophia Antipolis, France, 29 Nov-03 Dec 1999

***Document* N3-99502**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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27.001 CR 007 Current Version: 3.2.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ ↑ *CR number as allocated by MCC support team*

For submission to: CN#6
list expected approval meeting # here ↑

for approval	☒	strategic	☐	*(for SMG use only)*
for information	☐	non-strategic	☐	

Form: CR cover sheet, version 2 for 3GPP and SMG The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: (U)SIM ☐ ME ☒ UTRAN / Radio ☐ Core Network ☒
(at least one should be marked with an X)

Source: TSG_N3 **Date:** 02-12-1999

Subject: Introduction of multi media

Work item: Multi Media

Category:
(only one category shall be marked with an X)

F	Correction	☐
A	Corresponds to a correction in an earlier release	☐
B	Addition of feature	☒
C	Functional modification of feature	☐
D	Editorial modification	☐

Release:

Phase 2	☐
Release 96	☐
Release 97	☐
Release 98	☐
Release 99	☒
Release 00	☐

Reason for change: Necessary changes for introduction of 3G-H.324

Clauses affected:

Other specs affected:

Other 3G core specifications	☐	→ List of CRs:	29.007
Other GSM core specifications	☐	→ List of CRs:	
MS test specifications	☐	→ List of CRs:	
BSS test specifications	☐	→ List of CRs:	
O&M specifications	☐	→ List of CRs:	

Other comments:

First Change

Annex A (Informative): List of Bearer Capability Elements

This annex lists the GSM Bearer Capability Elements which need to be provided on the Dm channel to support Terminal adaptation function to Interworking control procedures.

Elements and their Values:

Information Transfer Capability:

This element is relevant between the IWF and the fixed network

Values:
- Speech
- Unrestricted Digital
- Group 3 Facsimile (note 1)
- 3.1 kHz Ex PLMN (note 2)
- Restricted Digital (note 3)

NOTE 1: Used for facsimile transmission, unrestricted digital between MT and IWF and 3.1 kHz audio from IWF towards the fixed network.

NOTE 2: unrestricted digital between MT and IWF and 3.1 kHz audio from IWF towards the fixed network.

NOTE 3: unrestricted digital between MT and IWF and restricted digital information from IWF towards the fixed network; this value is signalled in the “Other ITC” element, due to a lack of further code points in the “ITC” element.

Transfer Mode:

This element is relevant between MT and IWF

Values:
- Circuit
- Packet

Structure:

This element is relevant between MT and IWF.

Values:
- Service Data Unit Integrity (note 4)
- Unstructured (note 5)

NOTE 4: applicable for connection element "non transparent".

NOTE 5: applicable for connection element "transparent".

Configuration:

This element is relevant for a PLMN connection.

Values: - Point to point

Establishment:

This element is relevant for a PLMN connection.

Values: - Demand

Sync/Async:

This element is relevant between TE/TA and MT and between IWF and the fixed network.

Values:
- Synchronous
- Asynchronous

Negotiation:

This element is relevant between MT and IWF.

Values:
- In band negotiation not possible

User Rate:

This element is relevant between TE/TA and MT and between IWF and the fixed network, except in case the parameter FNUR is present..

Values:
- 0.3 kbit/s
- 1.2 kbit/s
- 1200/75 bit/s
- 2.4 kbit/s
- 4.8 kbit/s
- 9.6 kbit/s
- 19.2 kbit/s (see note 6)

NOTE 6: This value cannot be signalled between MT and IWF, but it can be used according to the rules in GSM 09.07 (Table 6A, 6B) for such connections.

Intermediate Rate:

This element is relevant between MT and BSS and BSS and IWF

Values:
- 8 kbit/s
- 16 kbit/s

Network Independent Clock on Tx:

This element is relevant between TE/TA and MT in the transmit direction.

Values:
- Not required
- Required

Network Independent Clock on Rx:

This element is relevant between TE/TA and MT in the receive direction.

Values:
- Not accepted
- accepted

Number of Stop Bits:

This element is relevant between the TE/TA and MT and between IWF and fixed network in case of asynchronous transmission.

Values:
- 1 bit
- 2 bit

Number of Data Bits Excluding Parity If Present:

This element is relevant between TE/TA and MT and between IWF and the fixed network in case of a character oriented mode of transmission.

Values: - 7 bit
- 8 bit

Parity Information:

This element is relevant between TE/TA and MT and between IWF and the fixed network for a character oriented mode of transmission.

Values: - Odd
- Even
- None
- Forced to 0
- Forced to 1

Duplex Mode:

This element is relevant between MT and IWF.

Values: - Full Duplex

Modem Type:

This element is relevant between the IWF and the fixed network in case of 3.1 kHz audio ex-PLMN information transfer capability.

Values: - V.21
- V.22
- V.22 bis
- V.23
- V.26 ter
- V.32
- autobauding type 1
- none

Radio Channel Requirement:

This element is relevant between MT and BSS

Values: - Full Rate support only Mobile Station
- Dual Rate support Mobile Station/Half Rate preferred
- Dual Rate support Mobile Station/Full Rate preferred

Connection Element:

This element is relevant between MT and IWF

Values: - Transparent
- Non Transparent
- both, Transparent preferred
- both, Non transparent preferred

User Information Layer 2 Protocol:

This element is relevant between TE/TA and MT and between IWF and the fixed network.

Values: - ISO 6429
- X.25
- X.75 layer 2 modified (CAPI)

- Character oriented Protocol with no Flow Control mechanism

Signalling Access Protocol:

This element is relevant between TE/TA and MT.

Values:
- I.440/450
- X.21
- X.28, dedicated PAD, individual NUI
- X.28, dedicated PAD, universal NUI
- X.28, non dedicated PAD
- X.32

Rate Adaptation:

This element is relevant between IWF and the fixed network.

Values:
- V.110/X.30
- X.31 flagstuffing
- no rate adaptation
- V.120 (note 7)
- H.223 and H.245 (note 7)

NOTE 7: - this value is signalled in the "Other Rate Adaption" element, due to a lack of further code points in the "Rate Adaption" element.

Next Change

Annex B (Normative): Setting of Bearer Capability, Low Layer Compatibility and High Layer Compatibility Information Element for GSM Bearer Services and GSM TeleServices

Table B.1: BC-Parameters subject to negotiation procedure

Mobile Originated Call:

	Message	
BC-parameter	SETUP	CALL PROC
NDB	requested value	as requested
NPB	requested value	as requested
NSB	requested value	as requested
CE	requested value (T/NT)	as requested
	"both" with the preferred value indicated (e.g. both NT)	selected value (T/NT)
UIL2P	requested value 2) or NAV 1)	as requested or NAV 4)
User Rate	requested value	as requested
DC	requested value 2)	as requested or "NO" 7)
FNUR	requested value	supported value
Other MT	requested value	supported value
UIMI	requested value	supported value

Mobile Terminated Call:

	Message	
BC-parameter	SETUP	CALL CONF
NDB	offered value	selected value (free choice)
NPB	offered value	selected value (free choice)
NSB	offered value	selected value (free choice)
CE	requested value (T/NT)	as requested or selected value (T/NT) (free choice) 3)
	“both” with the preferred value indicated (e.g. both NT)	selected value (T/NT)
Rate adaptation/Other rate adaptation	requested value	as requested or selected value 11)
UIL2P	offered value 2) or NAV 4)	selected or NAV 1)
User Rate	offered value	selected value 5)
DC	requested value 2)	as requested or “NO” 7)
FNUR	offered value	selected value 6)
Other MT	offered value	selected value 6)
UIMI	offered value	selected value 8)

1) for CE:T only or out-band flow control requested by the MS

2) not for CE:T

3) when the SETUP message contains no BC-IE (single numbering scheme)

4) "NAV" shall not be interpreted as an out-band flow control request by the MS

5) The modification of User Rate must be in conjunction with Modem Type and Intermediate Rate

6) The modification of the Fixed Network User Rate shall be in conjunction with the Modem Type and/or Other Modem Type.

7) In case of a Mobile Terminated Call, if the SETUP message does not contain a BC-IE, the MS shall behave as if the DC is set to "data compression not possible ".
In case of a MOC or a MTC where no BC-IE is included in the CALL PROCEEDING or CALL CONFIRMED message, respectively, the MS or the network shall behave as if the DC was set to "data compression not possible" or “data compression not allowed”, respectively.

8) ~~8)~~ less or equal to the offered value

11) For FTM, PIAFS and Multimedia, this parameter may be negotiated. See Table B.4f for details.

Next Change

Table B.4f: Negotiation of Rate adaption/Other rate adaptation

Mobile Terminated Call:

	BC-parameter Rate adaption/Other rate adaptation	
Bearer type	Message SETUP	Message CALL CONF
Multimedia	V.110, I.460 and X.30 3)	H.223 and H.245
	No rate adaptation 5)	H.223 and H.245

3) This negotiation is possible, only if ITC=UDI, FNUR=32 or 56 kbit/ and CE=T or "both" ~~must have been~~ is signalled in the SETUP message. The MS shall signal 3G-H.324/M as specified in B.1.3.1.7

5) This negotiation is possible, only if ITC=3.1 kHz, FNUR=28.8 kbit/s, MT=V.34 and CE=T or "both" ~~must have been~~is signalled in the SETUP message. The MS shall signal 3G-H.324/M as specified in B.1.3.2.3

Next Change

Table B.5: BC parameter setting (part 1)

Abbreviations for Parameters and Values:		default setting of field values (NA)	common setting of field values
ITC...Information Transfer Capability:	- Speech		
	- UDI..Unrestricted Digital		
	- FAX3..Group 3 Facsimile		
	- 3.1 kHz..3.1 kHz Ex PLMN		
	- RDI..Restricted Digital		
TM....Transfer Mode:	- ci..Circuit	X	X
S.....Structure:	- SDU..Service Data Unit Integrity		
	- Unstructured	X	
C.....Configuration:	- pp..Point to point	X	X
E.....Establishment:	- de..Demand	X	X
SA....Sync/Async:	- S..Synchronous		
	- A..Asynchronous		
N.....Negotiation	- ibn..in band negotiation not possible	X	X
UR....User Rate:	- 0.3..0.3 kbit/s		
	- 1.2..1.2 kbit/s		
	- 1.2/0.075..1200/75 bit/s		
	- 2.4..2.4 kbit/s		
	- 4.8..4.8 kbit/s		
	- 9.6..9.6 kbit/s		
IR....Intermediate Rate:	- 4.. 4 kbit/s		
	- 8.. 8 kbit/s		
	- 16.. 16 kbit/s		
	- not_used..not used	X	
NICT..Network Independent Clock on Tx:	- not_required.. Not required	X	X
	- required		
NICR..Network Independent Clock on Rx:	- not_accepted..not accepted	X	X
	- accepted		
NSB...Number of Stop Bits:	- 1..1 bit	X	
	- 2..2 bit		
NDB...Number of Data Bits Excluding Parity If Present:	- 7.. 7 bit		
	- 8.. 8 bit	X	
NPB...Parity Information:	- Odd		
	- Even		
	- None	X	
	- 0.. Forced to 0		
	- 1.. Forced to 1		
UIL1P.User Information Layer 1 Protocol	- def..default layer 1 protocol	X	X

Table B.5: BC parameter setting (part 2)

Abbreviations for Parameters and Values		default setting of field values (NA)	common setting of field values
DM....Duplex Mode:	-		
	- fd.. Full Duplex	X	X
MT....Modem Type:	- V.21		
	- V.22		
	- V.22 bis		
	- V.23		
	- V.26 ter		
	- V.32		
	- auto1.. autobauding type 1		
	- none	X	
RCR...Radio Channel Requirement:	- FR Full Rate support only Mobile Station		
	- dual HR Dual Rate support Mobile Station/ Half Rate preferred		
	- dual FR Dual Rate support Mobile Station/ Full Rate preferred		
CE....Connection Element:	- T.. Transparent		
	- NT.. Non Transparent		
	- bothT both transparent preferred		
	- bothNT both non Transparent preferred		
UIL2P.User Information Layer 2 Protocol:	- ISO6429..ISO6429,codeset 0,DC1/DC3		
	- X.25		
	- X.75..X.75 layer 2 modified (CAPI)		
	- COPnoFlCt..Character oriented protocol with no flow control mechanism		
SAP...Signalling Access Protocol:	- I.440.. I.440/450	X	
	- X.21		
	- X.28deIN.. X.28, dedicated PAD,individual NUI		
	- X.28deUN.. X.28, dedicated PAD,universal NUI		
	- X.28nond.. X.28, non dedicated PAD		
	- X.32		
RA....Rate Adaptation:	- V.110.. V.110/X.30		
	- X.31Flag.. X.31 flagstuffing		
	- NO.. no rate adaptation	X	
	- V.120		
	- H.223 and H.245		
CS....Coding Standard:	- GSM	X	X
NIRR..Negotiation of Intermediate Rate Requested:	NM..No Meaning associated with this value	X	
	6kbit/s..6kbit/s radio interface rate requested		
DC....Data Compression	- DC.. compression possible/allowed		
	- NO.. compression not possible/allowed		

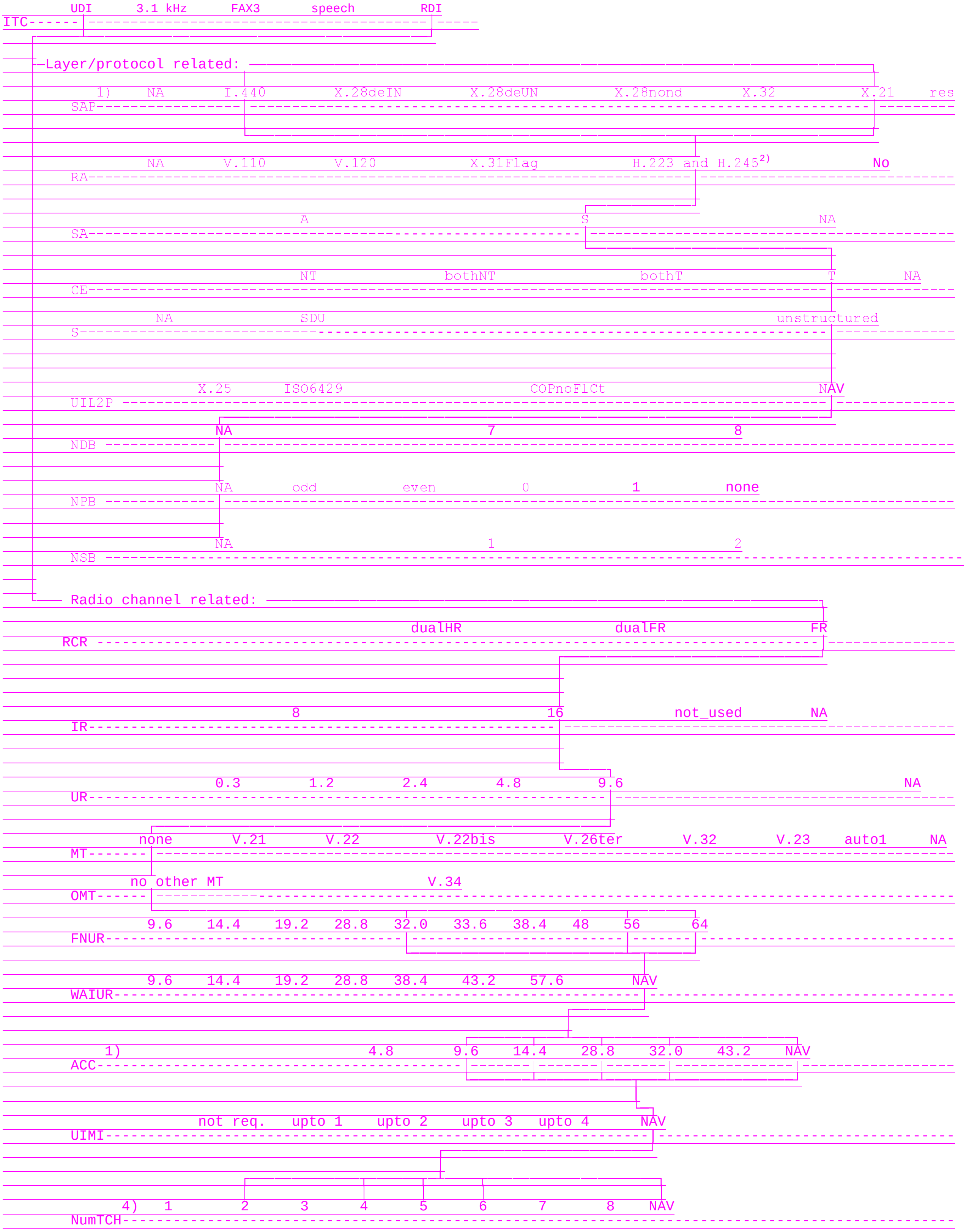
Next Change

Table B.5: BC parameter setting (part 3)

```
                                                   ────────────────────────────────────┐
                                               common setting of field values      ─────────────┐  │
Abbreviations for Parameters and Values            ──────────────────────────────┐  │  │
                                               default setting of field values (NA) ───────┐  │  │  │
─────────────────────────────────────────────────────────────────────────────────────────┐  v  │  v  │
                                                                                         │     │     │
FNUR...Fixed Network User Rate         - FNUR not applicable                             │     │     │

                                       - 9.6.. 9.6 kbit/s                                │     │     │
                                       - 14.4.. 14.4 kbit/s                              │     │     │
                                       - 19.2.. 19.2 kbit/s                              │     │     │
                                       - 28.8.. 28.8 kbit/s                              │     │     │
                                       - 32.0.. 32.0 kbit/s                              │     │     │
                                       - 33.6.. 33.6 kbit/s                              │     │     │
                                       - 38.4.. 38.4 kbit/s                              │     │     │
                                       - 48.0.. 48.0 kbit/s                              │     │     │
                                       - 56.0.. 56.0 kbit/s                              │     │     │
                                       - 64.0.. 64.0 kbit/s                              │     │     │
                                                                                         │     │     │
WAIUR...Wanted Air Interface User Rate - WAIUR not applicable                            │     │     │
                                       - 9.6.. 9.6 kbit/s                                │     │     │
                                       - 14.4.. 14.4 kbit/s                              │     │     │
                                       - 19.2.. 19.2 kbit/s                              │     │     │
                                       - 28.8.. 28.8 kbit/s                              │     │     │
                                       - 38.4.. 38.4 kbit/s                              │     │     │
                                       - 43.2.. 43.2 kbit/s                              │     │     │
                                       - 57.6.. 57.6 kbit/s                              │     │     │
                                       - int 38.4.. interpreted by the network as        │     │     │
                                                    38.4 kbit/s                          │     │     │
                                                                                         │     │     │
ACC.........Acceptable channel codings - 4.8.. TCH/F4.8 acceptable                       │     │     │
                                       - 9.6.. TCH/F9.6 acceptable                       │     │     │
                                       - 14.4..TCH/F14.4 acceptable                      │     │     │
                                       - 28.8..TCH/F28.8 acceptable
                                       - 32.0..TCH/F32.0 acceptable
                                       - 43.2..TCH/F28.8 acceptable


                                                                                         │     │     │
MaxNumTCH...Maximum Number of Traffic Channels                                           │     │     │
                                       - 1.. 1 TCH                                       │     │     │
                                       - 2.. 2 TCH                                       │     │     │
                                       - 3.. 3 TCH                                       │     │     │
                                       - 4.. 4 TCH                                       │     │     │
                                       - 5.. 5 TCH                                       │     │     │
                                       - 6.. 6 TCH                                       │     │     │
                                       - 7.. 7 TCH                                       │     │     │
                                       - 8.. 8 TCH                                       │     │     │
                                                                                         │     │     │
OMT...Other modem type                 - no other MT..  no other modem type              │     │     │
                                       - V.34..    V.34                                  │     │     │
                                                                                         │     │     │
User initiated modification indication  - not req..   user initiated modification not    │     │     │
                                                      required                           │     │     │
                                       - upto 1 TCH.. user initiated modification upto   │     │     │
                                                      1 TCH may be requested             │     │     │
                                       - upto 2 TCH.. user initiated modification upto   │     │     │
                                                      2 TCH may be requested             │     │     │
                                       - upto 3 TCH.. user initiated modification upto   │     │     │
                                                      3 TCH may be requested             │     │     │
                                       - upto 4 TCH.. user initiated modification upto   │     │     │
                                                      4 TCH may be requested             │     │     │

Asymmetry preference indication         - 00 no preference                               ¦     ¦     ¦
                                        - 01 up link biased asymmetry preferred          ¦     ¦     ¦
                                        - 10 down link biased asymmetry preferred        ¦     ¦     ¦
```

Next Change

B.1.3.1.7 3G-H.324/M Case



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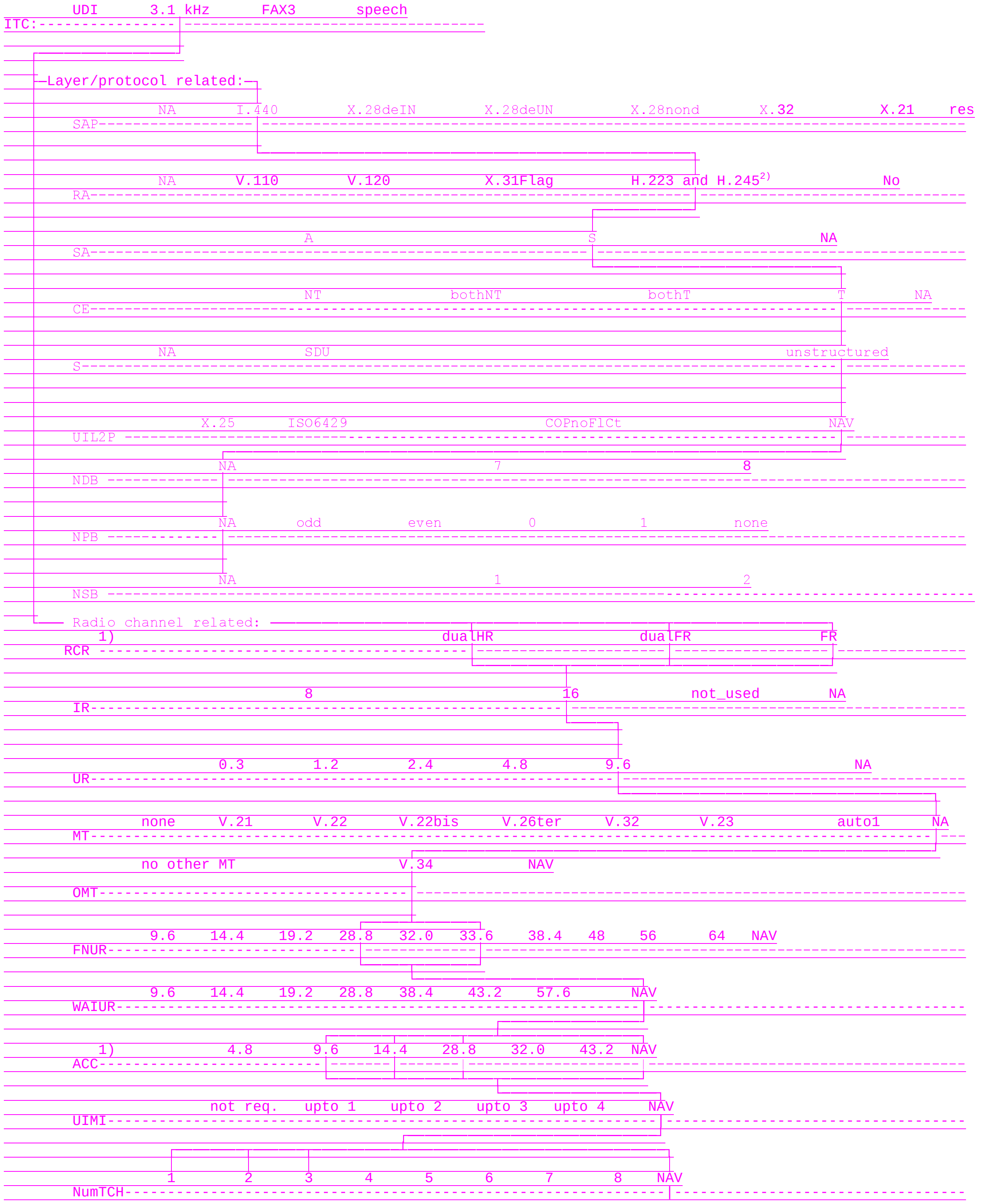
1) ACC may have several values simultaneously (bit map coding).

2) This value is interpreted as "No rate adaptation" in GSM

Next change

B.1.3.2.3 3G-H.324/M Case



1) ACC may have several values simultaneously (bit map coding).

2) This value is interpreted as "No rate adaptation" in GSM

Last change

B.2 Low Layer/High Layer Compatibility Information Element

B.2.3 LLC Bearer Service 31 ... 34

B.2.3.1 Unrestricted / restricted digital information transfer capability

Low layer compatibility information element:

Octet	Information element field	field value
3	Coding standard Information transfer capability	CCITT { digital unrestricted | restricted digital }
4	Transfer mode Information transfer rate	circuit mode 64 kbit/s
5	User information layer 1 protocol	{ V.110/X.30 | X.31 flag stuffing | V.120 | ~~}~~ H.223 and H.245 }
5a	Synchronous / asynchronous Negotiation User rate ~~User rate~~	synchronous in-band not possible { 0.3 | 1.2 | 2.4 | 4.8 | 9.6 | 1.2/0.075 | 14.4 | 19.2 | 28.8 | 32.0 | 38.4 | 48 | 56 } kbit/s ~~{ 1.2 | 2.4 | 4.8 | 9.6 |~~ ~~14.4 | 19.2 | 28.8 | 38.4 | 48 | 56 } kbit/s~~
5b 2)	Intermediate rate NIC on Tx NIC on Rx Flow control on Tx Flow control on Rx	{ 8 | 16 } kbit/s { not required | required } { not accepted | accepted } ----- -----
5b 3)	Rate adaption header / no header Multiple frame establishment support Mode of operation Assignor / assignee In-band / out-band negotiation	Rate adaption header included Multiple frame establishment supported Protocol sensitive mode of operation ----- -----
5c 1)	Number of stop bits Number of data bits Parity	not relevant but cannot be omitted in order to have octet 5d
5d 1)	Duplex mode Modem type	á[duplex] -----
6	User information layer 2 protocol	á[X.25]
7	User information layer 3 protocol	á[X.25]

1) If octet 5d is not specified, octet 5c may be omitted.
2) octet 5b for V.110/X.30
3) octet 5b for V.120

3GPP TSG-N WG3 #7
Sophia Antipolis, France 29 Nov – 03 Dec 1999

Document N3-99508
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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29.007 CR 011 Current Version: 3.2.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: TSG-N #6
list expected approval meeting # here ↑

for approval ☒
for information ☐

strategic ☐
non-strategic ☐
(for SMG use only)

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: (U)SIM ☐ ME ☒ UTRAN / Radio ☐ Core Network ☒
(at least one should be marked with an X)

Source: TSG_N3 **Date:** 04 Nov 1999

Subject: Multimedia call

Work item: Multimedia

Category:	F Correction	☐	**Release:** Phase 2	☐
	A Corresponds to a correction in an earlier release	☐	Release 96	☐
(only one category	B Addition of feature	☒	Release 97	☐
shall be marked	C Functional modification of feature	☐	Release 98	☐
with an X)	D Editorial modification	☐	Release 99	☒
			Release 00	☐

Reason for change: The existing “mapping of bearer capability values” and “multi numbering mechanism” are enhanced to provide 3G-H.324/M calls.

Clauses affected:

Other specs affected:	Other 3G core specifications	☒	→ List of CRs:	24.008, 27.001
	Other GSM core specifications	☐	→ List of CRs:	
	MS test specifications	☐	→ List of CRs:	
	BSS test specifications	☐	→ List of CRs:	
	O&M specifications	☐	→ List of CRs:	

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

First Paragraph Changed

9.2.2.1 Multi-numbering Scheme

In this scheme, the HPLMN will allocate a number of MSISDNs to a subscriber and associate with each of these numbers a Bearer Capability to identify a Bearer or a Teleservice. This Bearer Capability comprises a complete GSM Bearer Capability (GSM BC) information element with contents according to GSM 07.01 and coded as per GSM 04.08. In either case, when the HLR receives an interrogation relating to an incoming call (i.e. the MAP "Send Routing Information" procedure), it requests a roaming number (MSRN) from the VLR. This request will contain the GSM BC(s) reflecting the service associated with the called MSISDN, i.e. the GSM BC(s) are passed to the VLR within the MAP parameter "GSM Bearer Capability" of the message "Provide Roaming Number".

At the VMSC, when the incoming call arrives, the GSM BC associated with the MSRN are retrieved from the VLR and sent to the MS at call set-up.

Where the PLMN specific parameters "connection element" and "radio channel" requirements contained in the retrieved GSM BC-IE, indicate dual capabilities then the VMSC shall set them according to its capabilities/preferences. Additionally the parameters correlated to those mentioned above may have to be modified in accordance with GSM 07.01.

The same applies to the parameter modem type if "autobauding type 1" is indicated but the IWF does not support this feature. The parameter “data compression” may also be modified according to the capabilities of the IWF.

Where single capabilities are indicated then the VMSC shall use the requested values if it is able to support the service requested. If it is unable to support the requested service then it shall set them according to its capabilities/preferences.

Where the Compatibility Information is provided in a degree exhaustive to deduce a GSM Basic Service (see application rules in subclause 10.2.2), then the VMSC in providing the GSM BC IE in the setup message shall set the PLMN specific parameters to its capabilities/preferences.

On receipt of a Set-up message containing the compatibility information, the MS will analyse the contents to decide whether the service can be supported (with or without modification, see GSM 07.01) and the call will be accepted or rejected as appropriate.

These negotiable parameters in the GSM BC-IE are: Connection Element (Transparent\non-transparent), Data Compression, number of data bits, number of stop bits and parity as well as the correlated parameters Structure, Intermediate Rate, Modem Type and User Information Layer 2 Protocol. For multislot, 14.4kbit/s or EDGE--operations additionally the parameters Fixed Network User Rate, Other Modem Type and User Initiated Modification Indicator can be negotiated. For FTM, PIAFS and Multimedia, Rate adaption/Other rate adaption can be negotiated. For FTM and PIAFS, Synchronous/asynchronous can be negotiated.~~, see~~See GSM 07.01. This negotiation takes place by means of the MS reflecting back to the MSC a complete bearer capability information element in the call confirm message, with the relevant parameters changed. If this does not take place (i.e. if there is no GSM BC present in the call confirmed message), than the MSC will assume that the values originally transmitted to the MS are accepted.

In case the GSM-BC sent with the set-up message contained the “fixed network user rate”, “other modem type” and “user initiated modification parameter” parameters and no multislot, 14.4kbit/s, and/or EDGE--related parameters (refer to GSM 07.01) are received in the GSM-BC of the call confirmed message or no GSM-BC is received, the MSC shall discard the “fixed network user rate”, “other modem type” and “user initiated modification parameter” parameters - the MSC shall use the fall-back bearer service indicated by the remaining parameters of the GSM-BC on a singleslot configuration (refer to GSM 08.20 and GSM 04.21) on the MSC/IWF-BSS link.

On the other hand, if the GSM-BC received with the call confirmed message contain(s) multislot, 14.4kbit/s or EDGE--related parameters the MSC shall apply a singleslot configuration when the “maximum number of traffic channels” indicates ‘1 TCH’ and the “user initiated modification indicator” indicates either ‘user initiated modification not requested’ or ‘user initiated modification upto 1 TCH/F requested’, otherwise a multislot configuration (refer to GSM 08.20 and GSM 04.21) shall be used on the MSC/IWF-BSS link. In case the MS signals an ACC containing TCH/F4.8 only and the network does not support TCH/F4.8 channel coding, then the MSC may act as if TCH/F9.6 were included in the ACC.

In addition the MS may propose to the network to modify the User Rate as well as the correlated parameters Modem Type and Intermediate Rate in the CALL CONFIRMED message. The network may accept or release the call. For multislot, 14.4kbit/s or EDGE--operations, the MS may also propose to the network to modify the Fixed Network User Rate and Other Modem Type parameters (see GSM 07.01).

Next Paragraph Changed

9.4 3G-H.324/M calls over 3.1kHz audio

3G-H.324/M calls provide over 3.1kHz audio(e.g. 28.8kbit/s transparent data or 33.6kbit/s transparent data). In case of 3G-H.324/M calls over 3.1kHz audio, the modem function is used to provide the V.34 modem modulation and V.8 procedure. H.223 & H.245 flow is not terminated in the modem function.

If the V.8 procedure fails to detect V.34 modem, or the handshake and the establishment of the digital connection is not successful after a suitable period the modem function should disconnect the line. Fallback to speech or other modem remains for further study.

The performance of V.8bis by the modem function is FFS.

10.4 3G-H.324/M calls over UDI/RDI

3G-H.324/M calls provide UDI/RDI(e.g. 32kbit/s transparent data, 56kbit/s transparent data or 64kbit/s transparent data). H.223 & H.245 flow is not terminated in the MSC.

3G-H.324 calls over 64kbit/s transparent data and 56kbit/s transparent data can be connected to H.324/I calls over UDI/RDI. H.223 protocol is transparent to IWF.

In case of 3G-H.324M calls over 32kbit/s, IWF which performs rate adaptation between 64kbit/s and 32kbit/s is used. Rate adaptation is based on ITU-T I.460.

The support of IWF which transcodes the multiplexes and the content of control, audio, video and data in MSC is FFS.

Next Paragraph Changed

10.2.2.3 Functions in HLR

According to the contents of the Compatibility Information, i.e. the ISDN BC, LLC and HLC received, the HLR applies one of the following alternatives:

1) No ISDN BC is received, or one from which a GSM Basic Service cannot be deduced with the information Transfer Capability field set to "3,1 kHz audio" but without any associated modem type[1] in the ISDN BC and LLC, or without HLC indication of group 3 facsimile. Two cases have to be considered:

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[1] "Modem type" in connection with the ITC value "3.1 kHz audio" means hereafter that either an ISDN BC modem type value is present or the autobauding modem function is indicated (see note 16 of table 7B)

a) The called MSISDN has one or two corresponding GSM BC-IE(s) stored in the HLR (see option a) of 9.2.2); then the service attached to this number in the HLR tables is applicable and the corresponding GSM BC-IE(s) is passed to the VLR in "provide roaming number". See figure 6.

If two GSM BC-IE have to be sent to the VLR they are preceded by a repeat indicator information element according to 04.08. These three information elements shall be included within the MAP parameter "GSM Bearer Capability" of the message "Provide Roaming Number".

NOTE: For the case of two GSM BC-IEs see subclause 10.3.

b) The called MSISDN has no corresponding GSM BC-IE(s) stored in the HLR (see option b in 9.2.2). In this case no GSM BC is passed to the VLR in the "provide roaming number" message.

2) Compatibility Information is received from which a GSM Basic Service can be deduced, i.e. the ITC field in the ISDN BC received is "unrestricted digital" and the fields for the applicable user layer 1 protocol and user rate(except for the 64kbit/s case, see Note 22 Table 7B) are available (either in the ISDN BC or LLC), or the ITC field is "3,1 kHz audio", and a modem type, user rate, etc. is indicated but the HLC does not indicate "facsimile group 3". The received ISDN BC (and possibly LLC plus HLC) is then considered applicable regardless of the kind of MSISDN received (GSM BC associated or not) and either the equivalent GSM BC or the original ISDN BC/LLC is sent to the VLR. Additionally in both cases the originally received HLC may also be sent to the VLR, see figure 7.

In exception to this the BC stored in the HLR is regarded valid if one of the following cases applies:

- If ITC = UDI/RDI and User Rate = 32 kbit/s /56 kbit/s and User information layer 1 protocol = V.110, I.460/X.30 and the stored BC indicates FTM, PIAFS or Multimedia.
- If ITC = 3.1 kHz audio and User Rate = 28.8 kbit/s and Modem Type = V.34 and the stored BC indicates Multimedia.

When the HLR interworks with a phase 1 VPLMN (VLR/VMSC), then the HLR shall convert the ISDN BC to the equivalent GSM BC, and forward to the VLR. In this case however no LLC can be forwarded.

3) Compatibility Information is received from which the GSM Teleservice category Facsimile transmission can be deduced i.e. the ITC field in the ISDN BC received is "3,1kHz audio" and the HLC indicates "facsimile group 3" (see figure 7), the following two cases have to be considered:

a) The called MSISDN has a corresponding GSM BC stored in the HLR (either stating TS 61 or TS 62). In this case the service attached to the MSISDN in the HLR tables is applicable and the corresponding GSM BC is passed to the VLR in the "provide roaming number" message, see also subclause 10.3.1.3.

b) The called MSISDN has no corresponding GSM BC stored in the HLR. In this case the HLR shall forward the appropriate GSM BC to the VLR in line with the subscribers subscription to teleservice 61 or 62.

For TS 61 the value of the GSM BC-IE parameter "Information Transfer Capability" shall be set to "alternate speech/facsimile group 3, starting with speech"

In both cases the HLC IE should be passed to the VLR in the "provide roaming number" message.

Alternatively the HLR may forward the originally received ISDN/LLC/HLC, when interworking with a phase 2 VLR.

4) In the case where Compatibility Information received does not allow for deducing a GSM Bearer Service but an ISDN BC is received with the ITC field indicating "unrestricted digital", but without the fields indicating applicable "user layer 1 protocol", user rate, etc., neither in the ISDN BC or the ISDN LLC then the following shall apply. The call is managed as for an udi call according to subclause 9.2.2, i.e. either the "multi numbering" or "single numbering" scenario is applied depending on which capability is provided by home PLMN/HLR.

10.2.2.4 Functions in VMSC

At the VMSC, when the incoming call arrives, the LLC/HLC and the GSM or ISDN BC associated with the MSRN is retrieved from the VLR. LLC and HLC are sent with the GSM BC in general to the MS at call set-up. In particular, however the following rules apply:

1) If the Initial Address Message (IAM) contains no ISDN BC and there is no GSM or ISDN BC/LLC/HLC retrieved from the VLR, the call is handled as subclause 9.2.2 case b.

2) If there is no ISDN BC in the IAM but a GSM or ISDN BC/LLC/HLC was signalled in the "provide roaming number" message, the retrieved GSM or ISDN BC/LLC/HLC applies.

3) If there is an ISDN BC in the IAM with the ITC field set to "3,1 kHz audio" but without any associated modem type or indication of facsimile group 3 in the HLC, the GSM or ISDN BC/LLC/HLC retrieved from the VLR is considered as applicable when it exists. If no GSM or ISDN BC is retrieved from the VLR, the call is handled as in subclause 9.2.2 case b.

4) If the ISDN BC received in the IAM has the ITC field set to the value "unrestricted digital information" and the fields for the applicable "user layer 1 protocol" and "user rate" (except for the 64kbit/s case, see Note 22 Table 7B) are available (either in the ISDN BC or ISDN LLC), or if 3,1 kHz audio and a modem type is indicated, this ISDN BC is applicable regardless of what has been retrieved from the VLR. In this case the ISDN BC has to be mapped to an appropriate GSM BC (refer to table 7B).

   In exception to this the BC stored in the VLR is retrieved and send to the MS if one of the following cases applies:

   - If ITC = UDI/RDI and User Rate = 32 kbit/s /56 kbit/s and User information layer 1 protocol = V.110, I.460/X.30 and the stored BC indicates FTM, PIAFS or Multimedia.
   - If ITC = 3.1 kHz audio and User Rate = 28.8 kbit/s and Modem Type = V.34 and the stored BC indicates Multimedia.

5) If the ISDN BC received in the IAM has the ITC field set to the value "3,1kHz audio" and a HLC "facsimile group 3" is indicated, the GSM BC retrieved from the VLR is applicable when it exists. If a GSM BC-IE with the parameter "information transfer capability" set to "alternate speech/facsimile group 3, starting with speech" (stating TS61) is retrieved from the VLR, this shall be mapped to two GSM BC-IE preceded by a repeat indicator, one representing speech, the other representing facsimile group 3.

   When no GSM BC is retrieved from the VLR, either two GSM BCs preceded by a repeat indicator (stating teleservice 61), or a single GSM BC-IE (stating TS 62), are sent in the setup message, depending whether TS 61 or TS 62 is subscribed (see also subclause 10.3.1.3).

   In case of TS 61, the order in which the two GSM BC-IEs are sent towards the MS, in the setup message, is a network option.

6) If the ISDN BC received in the IAM has a ITC value "unrestricted digital information" but without applicable "user layer 1 protocol" and "user rate", etc. fields, neither in the ISDN BC nor ISDN LLC, then the GSM or ISDN BC/LLC retrieved from the VLR is applicable, if available otherwise subclause 9.2.2 case b applies.

   In case of an ISDN BC/LLC/HLC was attached to the MSRN this has to be mapped to an appropriate GSM BC (refer to table 7B). However in both cases (GSM or ISDN BC attached) the PLMN specific parameters of the GSM BC-IEs may be added/modified in line with procedures identified in subclause 9.2.2.

In all cases when no GSM or ISDN BC is retrieved from the VLR and no ISDN Compatibility information allowing deduction of a GSM Bearer Service is available, then no GSM BC is inserted by the VMSC and subclause 9.2.2 case b applies.

The mapping between GSM and ISDN BCs is shown in table 7.

10.2.2.6 Mapping Functions

The following tables (7A + 7B) show that only the ISDN BC is used for mapping (exceptions are indicated).

NOTE: The ISDN/GSM BC-IE mapping shall be performed as specified in tables 7A and 7B. This must be done to allow setup of a compatible end-to-end connection between two MSs or one MS and an ISDN terminal.

It has been acknowledged that octets 5a, 5b, 5c and 5d or a combination of them may also be sent and received in 3,1 kHz audio calls. Follow-up versions of ETS 300 102-1 (i.e. ETS 300 403-1), confirm this interpretation. This is especially important for MOC-ISDN terminating calls, where early Customer Premise Equipment (e.g. PABXs), may reject these calls.

In the following table the comparison is drawn between parameters in the GSM call set up request message and that of the ISDN call set up request message. In some cases no comparable values are available and these will be marked as such. In these cases reference will need to be made to the table of network interworking in GSM 09.07 to identify the appropriate choice. In some cases it is not necessary to support a particular option, and in this case those parameters will be annotated appropriately.

Table 7A: Comparable setting of parameters in GSM 04.08 and ETS 300 102-1 (ETSI ISDN user to network signalling) Mobile Originated

Octet	GSM 04.08 parameter value as in GSM 07.01	Octet	ETS 300 102-1 parameter value
1	**Bearer Capability IEI**	1	**Bearer Capability IEI**
2	**Length of BC contents**	2	**Length of BC contents**
3 #7..6	**Radio channel requirement** half rate channel full rate channel dual, full, rate preferred dual, half rate preferred		No comparable field
3 #4	**Coding Standard** GSM standard coding	3 #7..6	**Coding Standard** CCITT standardized coding
3 #4	**Transfer mode** circuit mode packet mode (note7)	4 #7..6	Transfer mode circuit mode packet mode
3 #3..1	**Information transfer capability** speech unrestricted digital 3,1 kHz audio ex PLMN facsimile group 3 (note 1) other ITC (see octet 5a)	3 #5..1	**Information transfer capability** speech unrestricted digital 3,1 kHz audio see table 4 in GSM 09.07 no comparable value
5a #7..6	**Other ITC** restricted digital		(note 18)
4 #7	**Compression** (note 14) data compression allowed data compression not allowed		No comparable field
4 #6..5	**Structure** SDU integrity unstructured	4a #7..5	**Structure** (note 4)
4 #4	**Duplex mode** half duplex full duplex	5d #7	**Duplex mode** half duplex full duplex
4 #3	**Configuration** point to point	4a #4..3	**Configuration** (note 4) point to point
4 #1	**Establishment** demand	4a #2..1	**Establishment** (note 4) demand
4	**NIRR** (note 12) meaning Data ≤ 4.8kbit/s, FR nt, 6kbit/s radio interface is requested		No comparable field

(continued)

Table 7A (continued): Comparable setting of parameters in GSM 04.08 and ETS 300 102-1 (ETSI ISDN user to network signalling) Mobile Originated

Octet	GSM 04.08 parameter value as in GSM 07.01	Octet	ETS 300 102-1 parameter value
5 #5..4	**Rate adaptation** no rate adaptation (note 2) V.110, I.460/X.30 rate adaptation CCITT X.31 flag stuffing No comparable value (note 11) No comparable value (note 11) No comparable value (note 11) other rate adaptation (see octet 5a)	5 #5..1	**User information layer 1 protocol** no comparable value CCITT standardized rate adaption V.110, I.460/X.30 CCITT standardized rate adaption X.31 flag stuffing Recommendation G.711 µ-law Recommendation G.711 A-law (note 3) Recommendation G.721 32 kbit/s ADPCM and I.460 No comparable value
5a #5..4	**Other rate adaptation** V.120 (note 17) H.223 & H.245		No comparable value H.223 & H.245(note 25)
5 #3..1	**Signalling access protocol** I.440/I.450 X.21 X.28, ded.PAD, indiv.NUI (note 24) X.28, ded PAD, univ.NUI (note 24) X.28, non-ded PAD (note 24) X.32		No comparable field
6 #1	**Synchronous/asynchronous** synchronous asynchronous	5a #7	**Synchronous/asynchronous** synchronous asynchronous
6 #5..2	**User info. layer 1 protocol** default layer 1 protocol	5 #5..1	**User info. layer 1 protocol** see section under rate adaptation for GSM 04.08 above
6a #7	**Number of stop bits** 1 bit 2 bits	5c #7..6	**Number of stop bits** 1 bit 2 bits
6a #6	**Negotiation** In band neg. not possible no comparable value	5a #6	**Negotiation** In band neg. not possible In band neg. possible (note 10)
6a #5	**Number of data bits** 7 bits 8 bits	5c #5..4	**Number of data bits excluding parity if present** 7 bits 8 bits
6a #4..1	**User rate** 0.3 kbit/s 1.2 kbit/s 2.4 kbit/s 4.8 kbit/s 9.6 kbit/s 12 kbit/s (note 7) 1.2 kbit/s / 75 bit/s (note 24) any value no comparable value	5a #5..1	**User rate** 0.3 kbit/s 1.2 kbit/s 2.4 kbit/s 4.8 kbit/s 9.6 kbit/s 12 kbit/s 75 bit/s / 1.2 kbit/s 19.2 kbit/s (note 14) Ebits or inband negotiation (note 10)

(continued)

Table 7A (continued): Comparable setting of parameters in GSM 04.08 and ETS 300 102-1 (ETSI ISDN user to network signalling) Mobile Originated

Octet	GSM 04.08 parameter value as in GSM 07.01	Octet	ETS 300 102-1 parameter value
6b #7..6	**Intermediate rate** 8 kbit/s 16 kbit/s any value	5b #7..6	**Intermediate rate** (note 13) 8 kbit/s or not used 16 kbit/s or not used 32 kbit/s or not used (note 14)
6b #5	**NIC on Tx** does not require requires (note7)	5b #5b	**NIC on Tx** does not require requires (note 8)
6b #4	**NIC on Rx** cannot accept can accept (note 7)	5b #4	**NIC on Rx** cannot accept can accept (note 8)
6b #3..1	**Parity information** odd even none forced to 0 forced to 1	5c #3..1	**Parity information** odd even none forced to 0 forced to 1
6c #7..6	**Connection element** transparent non-transparent (RLP) both, transp. preferred both, non-transp. preferred		No comparable field
6c #5..1	**Modem type** none V.21 V.22 V.22bis V.23 (note 24) V.26ter V.32 modem for undef. interface autobauding type 1	5d #6..1	**Modem type** (note 9) no comparable value (note 5) V.21 V.22 V.22bis V.23 V.26ter V.32 No comparable value (note 5) No comparable value (note 5, note 10)
7 #5..1	**User info. layer 2 protocol** X.25 link level ISO 6429, codeset 0 COPnoFlCt videotex profile 1 (note 7) X.75 layer 2 modified (CAPI)	6	**User info.layer 2 prot.** (note 6) X.25 link level no comparable value no comparable value no comparable value X.25 link level
6d #5..1	**Fixed network user rate** (note 15) FNUR not applicable (note 7) 9,6 kbit/s 12 kbit/s (note 7) 14,4 kbit/s 19,2 kbit/s 28,8 kbit/s 32.0 kbit/s 33.6kbit/s 38,4 kbit/s 48,0 kbit/s 56,0 kbit/s 64,0 kbit/s	5a #5..1	**User rate** no comparable value 9,6 kbit/s 12 kbit/s 14,4 kbit/s 19,2 kbit/s 28,8 kbit/s 32.0 kbit/s no comparable value 38,4 kbit/s 48,0 kbit/s 56,0 kbit/s no comparable value (note 16)

(continued)

Table 7A (concluded): Comparable setting of parameters in GSM 04.08 and ETS 300 102-1 (ETSI ISDN user to network signalling) Mobile Originated

Octet	GSM 04.08 parameter value as in GSM 07.01	Octet	ETS 300 102-1 parameter value
6e #3..1	**Maximum number of traffic channels** 1 TCH 2 TCH 3 TCH 4 TCH 5 TCH 6 TCH 7 TCH (note 7) 8 TCH (note 7)		No comparable field
6f #4..1	**Wanted air interface user rate (note 23)** air interface user rate not applicable (note 7) 9,6 kbit/s 14,4 kbit/s 19,2 kbit/s 28,8 kbit/s 38,4 kbit/s 43,2 kbit/s 57,6 kbit/s interpreted by the network as 38.4 kbit/s (note 7)		No comparable field
6d #7..6	**Other modem type** (note 15) No other modem type V.34	5d #6..1	**Modem type** no comparable value V.34
6e #7..4	**Acceptable channel coding(s)** TCH/F4.8 acceptable (note 19) TCH/F9.6 acceptable TCH/F14.4 acceptable		No comparable field
6f #7..5	**User initiated modification indicator (note 23)** User initiated modification not required User initiated modification upto 1 TCH/F may be requested User initiated modification upto 2 TCH/F may be requested User initiated modification upto 3 TCH/F may be requested User initiated modification upto 4 TCH/F may be requested		No comparable field
6g #7..5	**Acceptable channel coding(s) (note 20)** TCH/F28.8 acceptable TCH/F32.0 acceptable (note 21) TCH/F43.2 acceptable (note 22)		No comparable field
6g #4..3	**Asymmetry preference indication (Note 23)** no preference up link biased asymmetry preference down link biased asymmetry preference		No comparable field

The application rules for coding the information elements ISDN-BC/LLC/HLC as set out in ETR 018 and ETS 300 102-1 shall apply.

Other field values in the ISDN BC-IE of ETS 300 102-1 not supported in GSM 04.08 are:

Information transfer rate: In this case default 64 kbit/s is selected.

Symmetry: In this case default bi-directional symmetric is selected for all user data rates (note 5).

Flow control on transmission: This shall be selected if outband flow control applies.

Flow control on reception: This shall be selected if outband flow control applies.

NOTE: Outband flow control is indicated by the absence of the UIL2P parameter for non-transparent connections.

User information layer 3 protocol:
Octet 7 shall not be sent unless specific application rules are given for particular cases (to be defined by GSM).
End-to-end significant User Information layer 3 protocol shall be sent by LLC.

NOTE 1: In the case where GSM BC "Information Transfer Capability" indicates "Facsimile group 3" and only a single GSM BC is contained in the call set-up request then this shall be mapped to an ISDN BC with:

Coding standard:	CCITT
Information Transfer capability:	3,1 kHz audio
Transfer mode:	circuit
Information transfer rate:	64 kbit/s
User layer 1 protocol:	G711 A-law or µ-law (PCS-1900)

and

- If an HLC is not present, the network will insert a "Facsimile group 2/3" HLC.
- If an HLC element is present, the network will pass it through unmodified.

In the case where GSM BC "Information Transfer Capability" indicates "Facsimile group 3" and two GSM BCs are contained in the call set-up request, then the same ISDN BC as mentioned above is created. If the first GSM BC indicates "facsimile group 3" an HLC "facsimile group 2/3" will be inserted by the network (if not received from the MS). However if the first GSM BC indicates "speech", the network will not send a HLC, irrespective where a HLC was received from the MS or not.

NOTE 2: This value is present in combination with information transfer capability parameter value "3,1 kHz audio Ex PLMN" or "facsimile group 3" and will therefore be mapped to the value "CCITT Recommendation G.711 A-law or µ-law (PCS-1900)" of the ETS 300 102-1 parameter user layer 1 protocol (see note 3).

NOTE 3: The value "CCITT Recommendation G.711 A-law or µ-law (PCS-1900)" applies only when the ETS 300 102-1 parameter information transfer capability indicates "3,1 kHz audio" or "speech".

NOTE 4: Octets 4a and 4b shall not be included because default values apply.

NOTE 5: In this case octet 5d shall not be included.

NOTE 6: Octet 6 shall not be sent unless specific application rules are given for a particular case (GSM specified). End-to-end significant user information layer 2 protocol shall be sent by LLC.

NOTE 7: Not used for currently defined Bearer Services and Teleservices.

NOTE 8: These values will only be set if the "Information Transfer Capability" indicates "3,1 kHz audio", synchronous data transmission is used and octet 5b of the ISDN BC is present.

NOTE 9: The mapping of the modem type shall be according to Draft ETS 300 102-1/prA1.

NOTE 10: The GSM BC-IE parameter value "autobauding modem type 1" will be mapped to the ISDN BC-IE parameter values "inband negotiation possible" and "user rate indicated by E-bits specified in CCITT Rec I.460 or may be negotiated inband" (octet 5a of ISDN BC-IE). In case of data compression high speed modems, like V.32bis and/or V.34 may be used in the IWF.

NOTE 11: The ITC value of the GSM BC-IE "speech", "3,1 kHz audio Ex PLMN" will indicate these requirements.

NOTE 12: For the use of NIRR see GSM 07.01.

NOTE 13: The value of the Intermediate Rate field of the ISDN Bearer Capability information element shall only depend on the values of the User Rate and the Information Transfer Capability in the same information element. The correspondence is:

Intermediate Rate = not used if User Rate > than 19.2 kbit/s

Intermediate Rate = 32 kbit/s if User Rate = 19,2 kbit/s or 14.4 kbit/s

Intermediate Rate = 16 kbit/s if User Rate = 9,6 kbit/s

Intermediate Rate = 8 kbit/s otherwise.

In case of Audio calls the value of the Intermediate Rate may be set to "not used".

NOTE 14: If compression is supported by the MSC and "data compression allowed" is indicated, then the ISDN user rate for UDI calls shall be set as follows. If the parameter “FNUR” is present the ISDN user rate shall be set to this value. Otherwise the GSM user rate shall be mapped to an equal or any higher ISDN user rate value (in case of V.110 the highest ISDN user rate shall be 19.2 kbit/s). The Intermediate Rate shall be set to an appropriate value.(see subclause 10.2.4.11).

In case of "3,1 kHz audio" the modem must try to negotiate data compression and flow control (see subclause 9.2.4.11). In case of "autobauding type 1" high speed modems may be used (see note 10).

NOTE 15: User rate of the GSM-BC is overridden by the fixed network user rate of the GSM BC-IE if available. When the MT indicates „autobauding“, „modem for undefined interface“ or „none“, the other modem type shall be set to „no other modem type“; any other value of the modem type is overridden by the other modem type value (see GSM 07.01).

NOTE 16: The ISDN-BC will consist of the octets 1 to 4 only, coded:

Coding standard:	CCITT
Information Transfer capability:	UDI
Transfer mode:	circuit
Information transfer rate:	64 kbit/s

NOTE 17: V.120 interworking is selected.

If an LLC element is not present, the network will insert an LLC. If an LLC is present it may be modified. The GSM-BC parameters negotiated with the MS shall be mapped to the LLC parameters. The LLC parameter Rate Adaptation will be set to "V.120".

When interworking with unrestricted 64 kbit/s networks the ISDN BC shall be coded according to note 16.

NOTE 18: When the MSC is directly connected to a restricted 64 kbit/s network, the ISDN BC-IE is coded with an ITC = RDI (not applicable to ISDNs conforming to ETS 300 102-1).
When indirectly interworking with a restricted 64 kbit/s network the ISDN BC-IE shall be coded according to ETR 018, as shown below:

Coding standard:	CCITT
Information Transfer capability:	UDI
Transfer mode:	circuit
Information transfer rate:	64 kbit/s
User information layer 1 protocol:	V.110/X.30
Synchronous/Asynchronous:	synchronous
Negotiation:	In-band negotiation not possible
User rate:	56 kbit/s

If an LLC element is not present, the network will insert an LLC. If an LLC is present it may be modified. The GSM-BC parameters negotiated with the MS shall be mapped to the LLC parameters according to the rules in this table. The LLC parameter Information Transfer Capability will be set to „restricted digital“

NOTE 19: In case the MS signals an ACC containing TCH/F4.8 only and the network does not support TCH/F4.8 channel coding, then the MSC may act as if TCH/F9.6 were included in the ACC.

NOTE 20: Extension of the 'Acceptable channel codings' field in octet 6e in case EDGE channel codings are supported.

NOTE 21: Only applicable for bit transparent 56 and 64 kbit/s services.

NOTE 22: Only applicable for non-transparent services.

NOTE 23: This parameter has to be included if EDGE channel codings are indicated in ACC. In cases where this parameter would not otherwise be included, the value is set to 'Air interface user rate not applicable' or 'User initiated modification not requested' or 'No preference'.

NOTE 24: This value was used by services defined for former GSM releases and does not need to be supported.

NOTE 25: In the case FNUR=64 kbit/s the ISDN BC-IE shall be coded as follows:

Coding standard: ITU-T
Information Transfer capability: UDI
Transfer mode: circuit
Information transfer rate: 64 kbit/s
User information layer 1 protocol: H.223 and H.245

In the case FNUR=56 kbit/s the ISDN BC-IE shall be coded as in note 18.

In the case FNUR=32 kbit/s the ISDN BC-IE shall be coded as follows:

Coding standard: ITU-T
Information Transfer capability: UDI
Transfer mode: circuit
Information transfer rate: 64 kbit/s
User information layer 1 protocol: V.110, I.460 & X.30
Synchronous/Asynchronous: synchronous
Negotiation: In-band negotiation not possible
User rate: 32 kbit/s

In the case ITC=3.1 kHz Audio the ISDN BC-IE shall be coded as follows:

Coding standard: ITU-T
Information Transfer capability: 3.1 kHz Audio
Transfer mode: circuit
Information transfer rate: 64 kbit/s
User information layer 1 protocol: G.711 A-law or µ-law
Synchronous/Asynchronous: synchronous
Negotiation: In-band negotiation not possible
Modem type: V.34
User rate: 28.8 kbit/s or 33.6kbit/s

Table 7B: Comparability and Mapping of bearer capability parameter values according to ETS 300 102-1 and GSM 04.08 within the HLR for a mobile terminated Call

Octet	ETS 300 102-1 parameter value	Octet	GSM 04.08 parameter value
1	**Bearer Capability IEI**	1	**Bearer Capability IEI**
2	**Length of BC contents**	2	**Length of BC contents**
	no comparable field	3 #7..6	**Radio channel requirement** (note 1) half rate channel full rate channel both, half rate preferred both, full rate preferred
3 #7..6	**Coding standard** CCITT standardized coding	3 #5	**Coding standard** GSM standardized coding
3 #5..1	**Information transfer capability** speech unrestricted digital 3,1 kHz audio no comparable value no comparable value 7 kHz audio video	3 #3..1	**Information transfer capability** speech unrestricted digital 3,1 kHz audio ex PLMN (note2) facsimile group 3 (note 3) other ITC (see octet 5a) not supported not supported
	(note 23)	5a #7..6	**Other ITC** restricted digital
4 #7..6	**Transfer mode** circuit mode packet mode	3 #4	**Transfer mode** circuit mode circuit mode
4 #5..1	**Information transfer rate** 64 kbit/s		no comparable field
	No comparable field	4 #7	**Compression** (note 18) data compression possible data compression not possible
4a #7..5	**Structure** default 8 kHz integrity SDU integrity unstructured	(4) 4 #6..5	**Structure** no comparable value no comparable value SDU integrity (note 9) unstructured (note 5)
4a #4..3	**Configuration** point-to-point	4 #3	**Configuration** point-to-point (*)
	No comparable field	4 #2	**NIRR** (note 17) No meaning Data ≤ 4.8 kbit/s, FR nt, 6 kbit/s radio interface requested
4a #2..1	**Establishment** demand	4 #1	**Establishment** demand (*)
4b #7..6	**Symmetry** bi-directional symmetric		no comparable field
4b #5..1	**Information transfer rate (dest->orig.)** 64 kbit/s		no comparable field

(continued)

Table 7B (continued): Comparability and Mapping of bearer capability parameter values according to ETS 300 102-1 and GSM 04.08 within the HLR for a mobile terminated Call

Octet	ETS 300 102-1 parameter value	Octet	GSM 04.08 parameter value
5 #5..1	**User information layer 1 protocol** no comparable value CCITT V.110, I.460/ X.30 CCITT G.711 A-law CCITT X.31 flag stuffing no comparable value	5 #5..4	**Rate adaption** no rate adaption (note 11) V.110, I.460/X.30 rate adaption no comparable value CCITT X.31 flag stuffing other rate adaption (see octet 5a)
	No comparable value H.221 & H.242(note aa) H.223 & H.245	5a #5..4	**Other rate adaptation** V.120 (note 24) H.223 & H.245 H.223 & H.245
	no comparable field	5 #3..1	**Signalling access protocol** I.440/I.450 X.21 X.28, ded.PAD, indiv.NUI (note 26) X.28, ded.PAD, univ.NUI (note 26) X.28, non-ded.PAD (note 26) X.32
	see above	6 #5..2	**User information layer 1 protocol** default layer 1 protocol
5a #7	**Synchronous / asynchronous** synchronous asynchronous	6 #1	**Synchronous/asynchronous** synchronous asynchronous
5a #6	**Negotiation** not possible inband neg, possible (note 16)	6a #6	**Negotiation** not possible no comparable value

(continued)

Table 7B (continued): Comparability and Mapping of bearer capability parameter values according to ETS 300 102-1 and GSM 04.08 within the HLR for a mobile terminated Call

Octet	ETS 300 102-1 parameter value	Octet	GSM 04.08 parameter value
5a #5..1	**User rate**	6a #4..1	**User rate (note 18)**
	0,3 kbit/s		0,3 kbit/s
	1,2 kbit/s		1,2 kbit/s
	2,4 kbit/s		2,4 kbit/s
	4,8 kbit/s		4,8 kbit/s
	9,6 kbit/s		9,6 kbit/s
	12 kbit/s		12 kbit/s (note 13)
	rate is indicated by Ebit as specified in CCITT rec. I.460		**(**note 16)
	0,6 kbit/s		not supported
	3,6 kbit/s		not supported
	7,2 kbit/s		not supported
	8 kbit/s		not supported
	14,4 kbit/s		(note 20)
	16 kbit/s		not supported
	28.8 kbit/s		(note 20)
	32 kbit/s		(note 20)~~not supported~~
	38.4 kbit/s		(note 20)
	48 kbit/s		(note 20)
	56 kbit/s		(note 20)
	64 kbit/s		not supported
	0,1345 kbit/s		
	0,1 kbit/s		
	75 bit/s / 1,2 kbit/s		
	1,2 kbit/s / 75 bit/s		
	0,110 kbit/s		
	0,115 kbit/s		
	0,2 kbit/s		
5b #7..6	**Intermediate rate**	6b #7..6	**Intermediate rate** (note 6) (note 18)
	not used (note 19)		8 or 16 kbit/s
	8 kbit/s		8 kbit/s
	16 kbit/s		16 kbit/s
5b #5	**NIC on Tx** (note 14)	6b #5	**NIC on Tx**
	does not require		does not require
	requires		requires (note 13)
5b #4	**NIC on Rx** (note 14)	6b #4	**NIC on Rx**
	cannot accept		cannot accept
	can accept		can accept (note 13)
5b #3	**Flow control on Tx** (note 15)		no comparable field
	Not Required		
	Required		
5b #2	**Flow control on Rx** (note 15)		no comparable field
	Cannot Accept		
	Accept		
5c #7..6	**Number of stop bits**	6a #7	**Number of stop bits**
	1 bit		1 bit
	2 bits		2 bits
	not used		no comparable value
	1.5 bits		not supported

(continued)

Table 7B (continued): Comparability and Mapping of bearer capability parameter values according to ETS 300 102-1 and GSM 04.08 within the HLR for a mobile terminated Call

Octet	ETS 300 102-1 parameter value	Octet	GSM 04.08 parameter value
5c #5..4	**Number of data bits** 7 bits 8 bits not used 5 bits	6a #5	**Number of data bits** 7 bits 8 bits no comparable value not supported
5c #3..1	**Parity information** odd even none forced to 0 forced to 1	6b #3..1	**Parity information** odd even none forced to 0 forced to 1
	no comparable field	6c #7..6	**Connection element** (note 1) transparent non-transparent (RLP) both, transp. preferred both, non-transp preferred
5d #7	**Duplex mode** half duplex full duplex	4 #4	**Duplex mode** half duplex (note 13) full duplex (*)
5d #6..1	**Modem type** reserved V.21 V.22 V.22bis V.23 V.26ter V.32 V.26 V.26bis V.27 V.27bis V.29 V.35 no comparable value	6c #5..1	**Modem type** (note 12) none (note 7) V.21 V.22 V.22bis not supported V.26ter V.32 not supported autobauding type 1 (note 16)
5a #5..1	**User rate** no comparable value 9,6 kbit/s 14,4 kbit/s 19,2 kbit/s 28,8 kbit/s 32.0 kbit/s 38,4 kbit/s 48 kbit/s 56 kbit/s no comparable value	6d #5..1	**Fixed network user rate** (note 20) FNUR not applicable 9,6 kbit/s 14,4 kbit/s 19,2 kbit/s 28,8 kbit/s 32.0 kbit/s(note bb) 38,4 kbit/s 48,0 kbit/s 56,0 kbit/s 64,0 kbit/s (note 22)
	Modem type no comparable value (note 21) V.34	6d #7..6	**Other modem type** No other modem type V.34

(continued)

Table 7B (concluded): Comparability and Mapping of bearer capability parameter values according to ETS 300 102-1 and GSM 04.08 within the HLR for a mobile terminated Call

Octet	ETS 300 102-1 parameter value	Octet	GSM 04.08 parameter value
	No comparable field	6f #7..5	**User initiated modification indicator (note 1) (note 25)** User initiated modification not required User initiated modification upto 1 TCH/F may be requested User initiated modification upto 2 TCH/F may be requested User initiated modification upto 3 TCH/F may be requested User initiated modification upto 4 TCH/F may be requested
6 #5..1	**User information layer 2 protocol (note 10)** Q.921 (I.441) X.25, link level no comparable value	7	**User information layer 2 protocol (note 8)** no comparable value X.25, link level ISO 6429, codeset 0
7	**User information layer 3 protocol (note 10)** Q.931 (I.451) X.25, packet level		not supported

General notes:

1) Other ETS 300 102-1 parameter values than those listed in the table, if indicated in the BC-IE, will be rejected by clearing the call.

2) Only the GSM 04.08 parameter values listed in the table may be generated (comparable values) during a mobile-terminated call by mapping the ETS 300 102-1 parameter values, exception see (10).

3) According to ETS 300 102-1 and GSM 04.08, respectively, the octets are counted from 1 to n onwards; the bit position in a particular octet is indicated by #x..y, with {x,y} = 1..8 (bit 1 is the least and bit 8 the most significant bit).

4) If octets 5 to 5d of the ISDN BC are absent but present in the LLC, the LLC octets should apply for the mapping as indicated above. In the case of V.120 interworking (see note 24) these LLC octets shall apply.

5) If within the ISDN BC the parameters information transfer capability indicates "3,1 kHz audio" and user layer 1 protocol indicates "G711 A-law or µ-law (PCS-1900)" but no modem type is available and the HLC does not indicate "facsimile group 3", octets 5 to 5d of the LLC, if available, apply for the above mapping procedure.

6) The number of octets which shall be encoded for the GSM BC-IE must comply to encoding rules in GSM 04.08 and the combination of the different parameter values shall be in accordance to GSM 07.01.

NOTES regarding the mapping:

(*) This GSM 04.08 parameter value is inserted, if the comparable ETS 300 102-1 parameter value is missing.

1) This GSM 04.08 parameter value is inserted according to user rate requirements and network capabilities / preferences.

2) This GSM 04.08 parameter value is inserted, if the information transfer capability in ISDN BC is "3,1kHz audio" and a comparable modem type is specified.

3) This GSM 04.08 parameter value is inserted, if the information transfer capability is "3,1 kHz audio" and the content of the HLC-IE, if any, indicates "facsimile group 2/3", (for details refer to subclause 10.2.2 case 3 for HLR action and case 5 for VMSC action). Note that via MAP the value "alternate speech/facsimile group 3 - starting with speech" shall be used, when TS 61 applies.

4) If octet 4a is omitted the default condition according to ETS 300 102-1 applies.

5) The GSM 04.08 parameter value shall be set to "unstructured" where the network indicates connection element "transparent".

6) The value of the Intermediate Rate field of the GSM Bearer Capability information element shall only depend on the values of the user rate or the radio channel requirement in the same information element. If the connection element is "transparent“, the value is 16 kbit/s, if the user rate is 9.6 or 12 kbit/s, and 8 kbit/s otherwise. For any other connection element setting the value is 16 kbit/s, if the radio channel requirements are "full rate" or "dual, full rate preferred", or "dual, half rate preferred", and 8 kbit/s, if the radio channel requirements is "half rate".

7) This GSM 04.08 parameter value is inserted, if the GSM BC parameter "Information Transfer Capability" indicates "Unrestricted digital information", "facsimile group 3" or "alternate speech/facsimile group 3, starting with speech".

8) Where the network indicates "asynchronous" and connection elements "non-transparent", "both, transparent preferred" or "both, non-transparent preferred" , then the GSM BC should be forwarded without parameter user information layer 2 protocol, see also (10).

9) Where the network indicates connection elements "non transparent" "both, transparent preferred" or "both, non transparent preferred" the value of the parameter structure shall be set to "SDU Integrity".

10) Mapping of parameter values of this octet to GSM BC parameters and values are subject to specific application rules, i.e. unless otherwise explicitly stated in an appropriate TS mapping to GSM BC parameters shall not take place.

11) This value shall be used when the value of the GSM BC parameter "Information Transfer Capability" indicates the value "3,1 kHz audio ex PLMN", "facsimile group 3" or "alternate speech/facsimile group 3, starting with speech" which is reserved for MAP operations.

12) The modem encoding of both Draft ETS 300 102-1/prA1 and ETS 300 102-1 version 1 shall be accepted and mapped according to GSM 04.08.

13) Value not used for currently defined bearer services and Teleservices.

14) NIC is only supported for "3,1 kHz Ex PLMN audio" interworking with synchronous data transmission.

15) Because the required flow control mechanism can not be indicated to the MS (refer to GSM 07.01), the network shall check if the flow control mechanism selected by the MS and indicated in the CALL CONFIRMED message suits to the requirements requested by the ISDN terminal adaptor. In case of a mismatch the call shall be released in the IWF.

    Because an asymmetric flow control mechanism (with respect to transmitting and receiving side) is not supported in GSM PLMNs, the different values of the ISDN BC-IE parameters "flow control on Tx" and "flow control on Rx" shall be interpreted in the following way:

    - "Flow control on Rx" set to "accepted" matches with "outband flow control", irrespective of the value of the parameter "flow control on Tx"

    - "Flow control on Rx" set to "not accepted" and "flow control on Tx" set to "not required" matches with "inband flow control" and "no flow control"

    - where "Flow control on Rx" is set to "not accepted" and "flow control on Tx" to "required" the call shall be released by the IWF

16) If in case of 3,1 kHz audio interworking "inband negotiation possible" is indicated and the parameter user rate is set to "rate is indicated by E bits specified in Recommendation I.460 or may be negotiated inband" the user rate in the GSM BC-IE shall be set according to a network preferred value, whereas the preferred value of the Radio Channel Requirement shall be considered. If parameter ISDN-BC modem type is present, its value shall be ignored. The parameter GSM-BC modem shall be set according to the user rate in case of connection element "transparent" and to "autobauding type 1" in case of connection element "non transparent", "both, transparent preferred" or "both, non transparent preferred". In case of data compression high speed modems, like V.32bis and/or V.34 may be used in the IWF.

For unrestricted digital interworking the call shall be rejected if these values are indicated.
If the GSM-BC parameter modem type indicates "autobauding type 1" or "none", then the GSM-BC parameter other modem type shall be set to "no other modem type".

17) For the use of NIRR see GSM 07.01. The VMSC shall set this parameter dependent upon its capabilities and preferences.

18) If compression is supported by the MSC, the value "data compression possible" may be set. Depending on the capabilities of the MSC, the user rate value and the intermediate rate value is set to an appropriate value.

19) Only applicable if the parameter ISDN-BC ITC indicates "3.1 kHz audio" and for "UDI" calls if User Rate > "19.2 kbit/s".

20) The user rate of the GSM BC is set to the value for the fall-back bearer service. In case the mobile station does not support the fixed network user rate (i.e. the call confirmation message does not contain the fixed network user rate parameter), the network may release the call for a transparent connection element.

21) The modem type parameter of the GSM-BC is taken into account, only.

22) In case no LLC is received and the ISDN-BC received consists of octets 1 to 4 only, coded:

Coding standard: CCITT
Information Transfer capability: UDI
Transfer mode: circuit
Information transfer rate: 64kbit/s,

the following GSM-BC parameters~~, indicating a 64 kbit/s bit transparent service,~~ shall be set to:

fixed network user rate: 64 kbit/s
connection element: transparent
bothNT or bothT (If IWF supports FTM or PIAFS)

The other parameters of the GSM-BC shall be set to values indicating a fall-back service.

23) When the MSC is directly connected to a restricted 64 kbit/s network, the ISDN BC-IE is coded with an ITC = RDI (not applicable to ISDNs conforming to ETS 300 102-1).
An ISDN BC-IE, as specified in ETR 018 and shown below, shall be taken to indicate that interworking with an indirectly connected restricted 64 kbit/s network is required

Coding standard: CCITT
Information Transfer capability: UDI
Transfer mode: circuit
Information transfer rate: 64 kbit/s
User information layer 1 protocol: V.110/X.30
Synchronous/Asynchronous: synchronous
Negotiation: In-band negotiation not possible
User rate: 56 kbit/s

In this case the GSM BC parameter Information Transfer Capability is set to „Other ITC“ and Other ITC parameter is set to „restricted digital“. If ISDN LLC exists, all ~~All~~ the corresponding fields in the GSM BC shall be derived from the ISDN LLC. Otherwise, the corresponding fields in the UMTS BC shall be derived from the ISDN BC. In the above both case, Connection element is set as follows.

Connection element: transparent
bothNT or bothT (If IWF supports FTM)

24) V.120 interworking is required if the ISDN LLC parameter User Information Layer 1 Protocol is set to „V.120“. In this case the GSM BC parameter Rate Adaptation is set to „Other rate adaptation“ and Other Rate Adaptation parameter is set to „V.120“. All the corresponding fields in the GSM BC shall be derived from the ISDN LLC.

25) This parameter is only included in case of non-transparent multislot connections.

26) This value was used by services defined for former GSM releases and does not need to be supported.

aa) UIL1P is set to “H.221 & H.242” or “H.223 & H.245” by H.324/I. In the case where UIL1P is set to “H.221 & H.242”, this should be mapped to “H.223 & H.245”.

bb) Following UMTS-BC parameters in SETUP message shall be set to:

Fixed network user rate	32 kbit/s
Connection element	transparent
	bothNTor bothT (If IWF supports PIAFS)