

**NP-000186**  
**N1-000166**

**3GPP/SMG Meeting #10**  
**Abiko, Japan, 11 - 14 January.2000**

**Document** N1-000064  
 e.g. for 3GPP use the format TP-99xxx  
 or for SMG, use the format P-99-xxx

<b>CHANGE REQUEST</b>		Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.	
<b>24.008</b>	<b>CR</b>	<b>097r1</b>	Current Version: <b>3.2.1</b>
GSM (AA.BB) or 3G (AA.BBB) specification number ↑		↑ CR number as allocated by MCC support team	
For submission to: <b>TSG_CN#7</b> <small>list expected approval meeting # here ↑</small>	for approval <input checked="" type="checkbox"/>	strategic <input type="checkbox"/>	(for SMG use only)
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**Proposed change affects:** (U)SIM  ME  UTRAN / Radio  Core Network   
(at least one should be marked with an X)

**Source:** Nokia **Date:** 2000-01-13

**Subject:** Changes to support a circuit switched multimedia call.  
 Changes since previous version N1-000064:  
 - UDI to 3.1 kHz fallback and its implications removed  
 - Compatibility checking in mobile terminating call added  
 - Clarifications on the BCIE(s) returned by the MS in CALL CONFIRMED  
 - Editorial corrections

**Work item:** Multimedia

<b>Category:</b>	F Correction <input type="checkbox"/> A Corresponds to a correction in an earlier release <input type="checkbox"/> B Addition of feature <input checked="" type="checkbox"/> C Functional modification of feature <input type="checkbox"/> D Editorial modification <input type="checkbox"/>	<b>Release:</b>	Phase 2 <input type="checkbox"/> Release 96 <input type="checkbox"/> Release 97 <input type="checkbox"/> Release 98 <input type="checkbox"/> Release 99 <input checked="" type="checkbox"/> Release 00 <input type="checkbox"/>
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(only one category shall be marked with an X)

**Reason for change:** Description of CS multimedia call setup, including fallback to '3.1 kHz audio' analog communication or to speech, if the attempted call mode can not be supported.

**Clauses affected:**

<b>Other specs affected:</b>	Other 3G core specifications <input checked="" type="checkbox"/> → List of CRs: 29.007, 27.001 Other GSM core specifications <input type="checkbox"/> → List of CRs: MS test specifications <input type="checkbox"/> → List of CRs: BSS test specifications <input type="checkbox"/> → List of CRs: O&M specifications <input type="checkbox"/> → List of CRs:
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**Other comments:**



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

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## 2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

- [1] GSM 01.02: "Digital cellular telecommunications system (Phase 2+); General description of a GSM Public Land Mobile Network (PLMN)".
- [2] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".
- [2a] 3G Vocabulary
- [3] TS 22.002: "Digital cellular telecommunications system (Phase 2+); Bearer Services (BS) supported by a GSM Public Land Mobile Network (PLMN)".
- [4] TS 22.003: "Teleservices supported by a GSM Public Land Mobile Network (PLMN)".
- [5] GSM 02.09: "Digital cellular telecommunications system (Phase 2+); Security aspects".
- [6] TS 22.011: "Digital cellular telecommunications system (Phase 2+); Service accessibility".
- [7] GSM 02.17: "Digital cellular telecommunications system (Phase 2+); Subscriber identity modules Functional characteristics".
- [8] GSM 02.40: "Digital cellular telecommunications system (Phase 2+); Procedures for call progress indications".
- [9] GSM 03.01: "Digital cellular telecommunications system (Phase 2+); Network functions".
- [10] TS 23.003: "Digital cellular telecommunications system (Phase 2+); Numbering, addressing and identification".
- [11] GSM 03.13: "Digital cellular telecommunications system (Phase 2+); Discontinuous Reception (DRX) in the GSM system".
- [12] TS 23.014: "Digital cellular telecommunications system (Phase 2+); Support of Dual Tone Multi-Frequency signalling (DTMF) via the GSM system".
- [12a] TS 23.071: "Digital cellular telecommunications system (Phase 2+); Location Services; Functional description – Stage 2".
- [13] GSM 03.20: "Digital cellular telecommunications system (Phase 2+); Security related network functions".
- [14] TS 23.122: "NAS Functions related to Mobile Station (MS) in idle mode".
- [15] GSM 04.02: "Digital cellular telecommunications system (Phase 2+); GSM Public Land Mobile Network (PLMN) access reference configuration".
- [16] GSM 04.03: "Digital cellular telecommunications system (Phase 2+); Mobile Station - Base Station System (MS - BSS) interface Channel structures and access capabilities".

- [17] GSM 04.04: "Digital cellular telecommunications system (Phase 2+); layer 1 General requirements".
- [18] GSM 04.05: "Digital cellular telecommunications system (Phase 2+); Data Link (DL) layer General aspects".
- [19] GSM 04.06: "Digital cellular telecommunications system (Phase 2+); Mobile Station - Base Station System (MS - BSS) interface Data Link (DL) layer specification".
- [20] TS 24.007: "Digital cellular telecommunications system (Phase 2+); Mobile radio interface signalling layer 3 General aspects".
- [21] TS 24.010: "Digital cellular telecommunications system ; Mobile radio interface layer 3 Supplementary services specification General aspects".
- [22] TS 24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".
- [23] TS 24.012: "Short Message Service Cell Broadcast (SMSCB) support on the mobile radio interface".
- [23a] TS 24.071: "Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 location services specification.
- [23b] GSM 04.31 "Digital cellular telecommunication system (Phase 2+); Location Services; Mobile Station (MS) – Serving Mobile Location Centre (SMLC); Radio Resource LCS Protocol (RRLP)".
- [24] TS 24.080: "Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 supplementary services specification Formats and coding".
- [25] TS 24.081: "Digital cellular telecommunications system (Phase 2+); Line identification supplementary services - Stage 3".
- [26] TS 24.082: "Digital cellular telecommunications system (Phase 2+); Call Forwarding (CF) supplementary services - Stage 3".
- [27] TS 24.083: "Digital cellular telecommunications system (Phase 2+); Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 3".
- [28] TS 24.084: "Digital cellular telecommunications system (Phase 2+); MultiParty (MPTY) supplementary services - Stage 3".
- [29] TS 24.085: "Digital cellular telecommunications system (Phase 2+); Closed User Group (CUG) supplementary services - Stage 3".
- [30] TS 24.086: "Digital cellular telecommunications system (Phase 2+); Advice of Charge (AoC) supplementary services - Stage 3".
- [31] TS 24.088: "Call Barring (CB) supplementary services - Stage 3".
- [32] GSM 05.02: "Digital cellular telecommunications system (Phase 2+); Multiplexing and multiple access on the radio path".
- [33] GSM 05.05: "Digital cellular telecommunications system (Phase 2+); Radio transmission and reception".
- [34] GSM 05.08: "Digital cellular telecommunications system (Phase 2+); Radio subsystem link control".
- [35] GSM 05.10: "Digital cellular telecommunications system (Phase 2+); Radio subsystem synchronization".
- [36] TS 27.001: "General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)".
- [37] TS 29.002: "Digital cellular telecommunications system (Phase 2+); Mobile Application Part (MAP) specification".

- [38] TS 29.007: "Digital cellular telecommunications system (Phase 2+); General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".
- [39] GSM 11.10: "Digital cellular telecommunications system (Phase 2+); Mobile Station (MS) conformity specification".
- [40] GSM 11.21: "Digital cellular telecommunications system (Phase 2); The GSM Base Station System (BSS) equipment specification".
- [41] ISO/IEC 646 (1991): "Information technology - ISO 7-bit coded character set for information interchange".
- [42] ISO/IEC 6429: "Information technology - Control functions for coded character sets".
- [43] ISO 8348 (1987): "Information processing systems - Data communications - Network service definition".
- [44] CCITT Recommendation E.163: "Numbering plan for the international telephone service".
- [45] CCITT Recommendation E.164: "Numbering plan for the ISDN era".
- [46] CCITT Recommendation E.212: "Identification plan for land mobile stations".
- [47] ITU-T Recommendation F.69 (1993): "Plan for telex destination codes".
- [48] CCITT Recommendation I.330: "ISDN numbering and addressing principles".
- [49] CCITT Recommendation I.440 (1989): "ISDN user-network interface data link layer - General aspects".
- [50] CCITT Recommendation I.450 (1989): "ISDN user-network interface layer 3 General aspects".
- [51] ITU-T Recommendation I.500 (1993): "General structure of the ISDN interworking recommendations".
- [52] CCITT Recommendation T.50: "International Alphabet No. 5".
- [53] ITU Recommendation Q.931: ISDN user-network interface layer 3 specification for basic control".
- [54] CCITT Recommendation V.21: "300 bits per second duplex modem standardized for use in the general switched telephone network".
- [55] CCITT Recommendation V.22: "1200 bits per second duplex modem standardized for use in the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits".
- [56] CCITT Recommendation V.22bis: "2400 bits per second duplex modem using the frequency division technique standardized for use on the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits".
- [57] CCITT Recommendation V.23: "600/1200-baud modem standardized for use in the general switched telephone network".
- [58] CCITT Recommendation V.26ter: "2400 bits per second duplex modem using the echo cancellation technique standardized for use on the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits".
- [59] CCITT Recommendation V.32: "A family of 2-wire, duplex modems operating at data signalling rates of up to 9600 bit/s for use on the general switched telephone network and on leased telephone-type circuits".
- [60] CCITT Recommendation V.110: "Support of data terminal equipments (DTEs) with V-Series interfaces by an integrated services digital network".
- [61] CCITT Recommendation V.120: "Support by an ISDN of data terminal equipment with V-Series type interfaces with provision for statistical multiplexing".

- [62] CCITT Recommendation X.21: "Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for synchronous operation on public data networks".
- [63] CCITT Recommendation X.25: "Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit".
- [64] CCITT Recommendation X.28: "DTE/DCE interface for a start-stop mode data terminal equipment accessing the packet assembly/disassembly facility (PAD) in a public data network situated in the same country".
- [65] CCITT Recommendation X.30: "Support of X.21, X.21 bis and X.20 bis based data terminal equipments (DTEs) by an integrated services digital network (ISDN)".
- [66] CCITT Recommendation X.31: "Support of packet mode terminal equipment by an ISDN".
- [67] CCITT Recommendation X.32: "Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for terminals operating in the packet mode and accessing a packet switched public data network through a public switched telephone network or an integrated services digital network or a circuit switched public data network".
- [68] CCITT Recommendation X.75 (1988): "Packet-switched signalling system between public networks providing data transmission services".
- [69] CCITT Recommendation X.121: "International numbering plan for public data networks".
- [70] ETS 300 102-1: "Integrated Services Digital Network (ISDN); User-network interface layer 3 Specifications for basic call control".
- [71] ETS 300 102-2: "Integrated Services Digital Network (ISDN); User-network interface layer 3 Specifications for basic call control".
- [72] ISO/IEC10646: "Universal Multiple-Octet Coded Character Set (UCS)"; UCS2, 16 bit coding.
- [73] TS 22.060: "General Packet Radio Service (GPRS); Service Description; Stage 1".
- [74] TS 23.060: "General Packet Radio Service (GPRS); Service Description; Stage 2".
- [75] GSM 03.64: "Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Overall description of the GPRS radio interface; Stage 2".
- [76] GSM 04.60: "Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Mobile Station - Base Station System (MS-BSS) interface; Radio Link Control and Medium Access Control (RLC/MAC) layer specification".
- [77] IETF RFC 1034: "Domain names - Concepts and Facilities " (STD 7).
- [78] GSM 04.65: "Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Subnetwork Dependent Convergence Protocol (SNDTCP)".
- [79] ITU Recommendation I.460: "Multiplexing, rate adaption and support of existing services".

[80] TS 26.111: "Codec for Circuit Switched Multimedia Telephony Service; Modifications to H.324"

## 5 Elementary procedures for circuit-switched Call Control

### 5.3 Signalling procedures during the "active" state

#### 5.3.6 Support of multimedia calls

##### 5.3.6.1 Service description

The GSM-UMTS circuit-switched multimedia call is based on the 3G-324M [26.111], which is a 3GPP-variant of the ITU-T H.324 recommendation. CS Multimedia telephony is a Bearer Service, which utilizes the Synchronous Transparent Data service (BS30) [3].

At the multimedia call setup the required call type, 3G-324M, is indicated, for the network to be able to invoke appropriate interworking functionality. In the peer end the H.324 information is used to invoke the terminal application. In addition to H.324 indication the terminal must select Information Transfer Capability (ITC) for the multimedia call. The 'correct' ITC depends on the peer end and the transporting networks: an all-ISDN call is a UDI/RDI call, and a call, which involves PSTN, is an analog '3.1 kHz audio' call.

For the case when the setup of a multimedia call is not successful, fallback to speech is specified. To improve the chance of a successful call setup various fallbacks are specified. A UDI/RDI call can fallback to 3.1kHz audio or to speech, and a 3.1kHz audio call can fallback to speech.

##### 5.3.6.2 Call establishment

For both mobile originating and mobile terminating calls, the normal call establishment procedures apply, with the exceptions specified in the following sections.

For further description of the function of MSC/IWF in the following sections, see TS 29.007 [38].

##### 5.3.6.2.1 Mobile originated- multimedia call establishment

At call setup the required call type, 3G-324M, is indicated by the originating mobile station in the SETUP message, with the ~~BCIE~~*bearer capability information element* parameter Other Rate Adaptation set to 'H.223 and H.245'. The support of a fallback to speech is requested by including also a ~~speech BCIE~~*speech bearer capability information element 2 with speech indication* in the SETUP message. ~~(after the multimedia BCIE).~~

MSC shall examine each mode described in the ~~BCIE~~*bearer capability information elements* included in the SETUP message by performing compatibility checking as defined in Annex B. If as a result of this compatibility checking the network decides to reject the call, then the network shall initiate call clearing as specified in section 5.4 with the following causes:

- a) #57 "bearer capability not authorized"
- b) #58 "bearer capability not presently available"
- c) #65 "bearer service not implemented"
- d) #70 "only restricted digital information bearer capability is available"

The originating user shall determine (possibly by pre-configuration of the terminal) whether a digital connection is required or if the call will be an analog modem call. ~~Digital connection can be supported if the peer terminal is an ISDN terminal, or a mobile terminal which supports digital connection, and if the interconnecting network supports digital connection.~~

If the call is expected to be digital all ISDN the ~~BCIE~~*bearer capability information element* parameter ITC is set to UDI/RDI.

In an analog call to/via PSTN the ~~BCIE~~*bearer capability information element* parameter ITC is set to '3.1kHz audio ex PLMN'. Additionally required modem type is indicated (Other Modem Type = V.34).

#### 5.3.6.2.1.1 Fallbacks to speech

~~In an UDI/RDI setup the MSC/IWF may during the proceeding call setup detect that the called end is a modem (V.34). To facilitate the 3.1kHz modem call MSC initiates the in-call modification procedure (see section 5.3.4.3) towards the calling mobile terminal to modify the ITC to traffic channel to match the lower user rate (FNUR) of the '3.1kHz audio' call mode. Depending on terminal capability and user intention the originating mobile station will either accept the modification or reject it, in which case the call will be terminated.~~

~~If the MSC/IWF fails to detect a modem in that the called end does not support a H.324 call (remark: because modem handshaking fails, or backwards progress indication indicates non-digital network or user, when UDI-connection was requested), then MSC initiates the in-call modification procedure (see section 5.3.4.3) towards the calling mobile terminal to modify the call mode to speech, if the calling terminal had included a speech BCIE bearer capability information element in the SETUP message.~~

#### 5.3.6.2.2 Mobile terminating multimedia call

~~At call setup the required call type, 3G-324M, is indicated by the MSC in the SETUP message, with the BCIE bearer capability information element parameter Other Rate Adaptation set to 'H.223 and H.245'. ITC is either '3.1kHz audio ex PLMN' or 'UDI/RDI'. The support of a fallback to speech is indicated by including also a speech BCIE bearer capability information element 2 with speech indication in the SETUP message (after the multimedia BCIE). BCIE The bearer capability information element(s) may (in the case of the single numbering scheme) be missing from the SETUP-message.~~

~~The destination mobile station shall perform the compatibility checking as defined in Annex B for the required mode(s) if indicated in the SETUP message. If as a result of compatibility checking the mobile station decides to reject the call, the mobile station shall initiate call clearing according to the procedures of section 5.4 with one of the following causes:~~

- a) #57 "bearer capability not authorized"
- b) #58 "bearer capability not presently available"
- c) #65 "bearer service not implemented"
- d) #88 "incompatible destination"

~~In this case the called mobile station shall indicate the supported call type(s) in the CALL\_CONFIRMED-message, which is the acknowledgement to SETUP. Depending on the capabilities of the called mobile station and/or the intentions of the called user, the mobile station has following options for the inclusion of BCIE bearer capability information element in the acknowledgement to SETUP, i.e. the CALL\_CONFIRMED message:~~

- ~~if the mobile station/user accepts the offered multimedia call, no BCIE will be included, and supports speech fallback both multimedia and speech bearer capability information elements shall be included~~
- ~~if the mobile station/user accepts the offered multimedia call, but does not support speech fallback only a multimedia bearer capability information element shall be included~~
- ~~if the mobile station/user wishes to start the call as a speech (only) call a speech bearer capability information element BCIE is included~~

#### 5.3.6.2.2.1 Fallbacks

~~MSC/IWF may during the call setup discover that the attempted call mode or ITC will not be possible in the call. The cases are:~~

~~In an UDI/RDI setup the peer terminal other end turns out to be analog. In this case the ITC will be modified to '3.1kHz audio ex PLMN'.~~

~~If modem handshaking fails (in a modem call) the call mode will be modified to speech. The modem signalling is inband, so the call must have reached the active state, when these conclusions about the presence of modems can be done. The call modifications are realized through the in-call modification procedure, by which MSC requests the mobile station to modify the call-traffic channel characteristics (see section 5.3.4.3).~~

## 9 Message functional definitions and contents

### 9.3.2 Call confirmed

This message is sent by the called mobile station to confirm an incoming call request.

See table 9.56/TS 24.008.

Message type: CALL CONFIRMED

Significance: local

Direction: mobile station to network

**Table 9.56/TS 24.008: CALL CONFIRMED message content**

IEI	Information element	Type / Reference	Presence	Format	Length
	Call control protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Transaction identifier	Transaction identifier 10.3.2	M	V	1/2
	Call confirmed message type	Message type 10.4	M	V	1
D-	Repeat Indicator	Repeat Indicator 10.5.4.22	C	TV	1
04	Bearer capability 1	Bearer capability 10.5.4.5	O	TLV	3-16
04	Bearer capability 2	Bearer capability 10.5.4.5	O	TLV	3-16
08	Cause	Cause 10.5.4.11	O	TLV	4-32
15	CC Capabilities	Call Control Capabilities 10.5.4.5a	O	TLV	3

#### 9.3.2.1 Repeat indicator

The *repeat indicator* information element shall be included if *bearer capability 1* information element and *bearer capability 2* IE are both included in the message.

#### 9.3.2.2 Bearer capability 1 and bearer capability 2

The *bearer capability 1* information element shall be included if and only if at least one of the following five cases holds:

- the mobile station wishes another bearer capability than that given by the *bearer capability 1* information element of the incoming SETUP message;
- the *bearer capability 1* information element is missing or not fully specified in the SETUP message;
- the *bearer capability 1* information element received in the SETUP message is accepted and the "radio channel requirement" of the mobile station is other than "full rate support only mobile station";

- the *bearer capability 1* information element received in the SETUP message indicates speech and is accepted and the mobile station supports other speech versions than GSM version 1;
- the *bearer capability 1* information element received in the SETUP message included the “fixed network user

When the *bearer capability 1* information element is followed by the *bearer capability 2* IE in the SETUP, the above rules apply to both *bearer capability 1* IE and *bearer capability 2* IE. Except those cases identified in TS 27.001, if either *bearer capability* needs to be included, both shall be included.

Furthermore, both *bearer capability* information elements may be present if the mobile station wishes to reverse the order of occurrence of the *bearer capability* information elements (which is referred to in the *repeat indicator* information element, see section 10.5.4.22) in cases identified in TS 27.001.

If the mobile station wishes to indicate capability for an alternative call mode, which can be entered during the call through in-call modification, this is indicated by adding a BCIE bearer capability information element (bearer capability) 2 element (see section 5.3.6).

### 9.3.2.3 Cause

This information element is included if the mobile station is compatible but the user is busy.

### 9.3.2.4 CC Capabilities

This information element may be included by the mobile station to indicate its call control capabilities.

## 9.3.23 Setup

### 9.3.23.1 Setup (mobile terminated call establishment)

This message is sent by the network to the mobile station to initiate a mobile terminated call establishment.

See table 9.70/TS 24.008.

Message type: SETUP

Significance: global

Direction: network to mobile station

**Table 9.70/TS 24.008: SETUP message content (network to mobile station direction)**

IEI	Information element	Type / Reference	Presence	Format	Length
	Call control protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Transaction identifier	Transaction identifier 10.3.2	M	V	1/2
	Setup message type	Message type 10.4	M	V	1
D-	BC repeat indicator	Repeat indicator 10.5.4.22	C	TV	1
04	Bearer capability 1	Bearer capability 10.5.4.5	O	TLV	3-16
04	Bearer capability 2	Bearer capability	O	TLV	3-16

		10.5.4.5			
1C	Facility	Facility 10.5.4.15	O	TLV	2-?
1E	Progress indicator	Progress indicator 10.5.4.21	O	TLV	4
34	Signal	Signal 10.5.4.23	O	TV	2
5C	Calling party BCD number	Calling party BCD num. 10.5.4.9	O	TLV	3-14
5D	Calling party sub-address	Calling party subaddr. 10.5.4.10	O	TLV	2-23
5E	Called party BCD number	Called party BCD num. 10.5.4.7	O	TLV	3-19
6D	Called party sub-address	Called party subaddr. 10.5.4.8	O	TLV	2-23
74	Redirecting party BCD number	Redirecting party BCD num. 10.5.4.21a	O	TLV	3-19
75	Redirecting party sub-address	Redirecting party subaddress. 10.5.4.21b	O	TLV	2-23
D-	LLC repeat indicator	Repeat indicator 10.5.4.22	O	TV	1
7C	Low layer compatibility I	Low layer comp. 10.5.4.18	O	TLV	2-18
7C	Low layer compatibility II	Low layer comp. 10.5.4.18	C	TLV	2-18
D-	HLC repeat indicator	Repeat indicator 10.5.4.22	O	TV	1
7D	High layer compatibility i	High layer comp. 10.5.4.16	O	TLV	2-5
7D	High layer compatibility ii	High layer comp. 10.5.4.16	C	TLV	2-5
7E	User-user	User-user 10.5.4.25	O	TLV	3-35
8-	Priority	Priority Level 10.5.1.11	O	TV	1
19	Alert	Alerting Pattern 10.5.4.26	O	TLV	3

### 9.3.23.1.1 BC repeat indicator

The *BC repeat indicator* information element is included if and only if *bearer capability 1* information element and *bearer capability 2* IE are both present in the message.

### 9.3.23.1.2 Bearer capability 1 and bearer capability 2

The *bearer capability 1* information element may be omitted in the case where the mobile subscriber is allocated only one directory number for all services (ref.: TS 29.007). The *bearer capability 2* IE is missing at least if the *bearer capability 1* IE is missing.

If the MSC wishes to indicate capability for an alternative call mode, which can be entered during the call through in-call modification, this is indicated by adding a *BCIE bearer capability information element (bearer capability) 2 element* (see section 5.3.6).

### 9.3.23.1.3 Facility

This information element may be included for functional operation of supplementary services.

### 9.3.23.1.4 Progress indicator

This information element is included by the network

- in order to pass information about the call in progress e.g. in the event of interworking and/or
- to make the MS attach the user connection for speech.

### 9.3.23.1.4a Called party BCD number

For all bands except for PCS1900, the maximum length of this IE sent by the network shall be 13 octets

### 9.3.23.1.5 Called party subaddress

Included in the Network-to-mobile station direction if the calling user includes a *called party subaddress* information element in the SETUP message.

### 9.3.23.1.6 LLC repeat indicator

The *LLC repeat indicator* information element is included if and only if both following conditions hold:

- The *BC repeat indicator* IE is contained in the message.
- The *low layer compatibility I* IE is contained in the message.

If included, the *LLC repeat indicator* shall specify the same repeat indication as the *BC repeat indicator* IE.

### 9.3.23.1.7 Low layer compatibility I

Included in the network-to-mobile station direction if the calling user specified a low layer compatibility.

### 9.3.23.1.8 Low layer compatibility II

Included if and only if the *LLC repeat indicator* information element is contained in the message.

### 9.3.23.1.9 HLC repeat indicator

The *HLC repeat indicator* information element is included if and only both following conditions hold:

- The *BC repeat indicator* IE is contained in the message.
- The *high layer compatibility i* IE is contained in the message.

If included, the *HLC repeat indicator* shall specify the same repeat indication as the *BC repeat indicator* IE.

**9.3.23.1.10 High layer compatibility i**

Included in the network-to-mobile station direction if the calling user specified a high layer compatibility.

**9.3.23.1.11 High layer compatibility ii**

Included if and only if the *HLC repeat indicator* information element is contained in the message.

**9.3.23.1.12 User-user**

May be included in the network to called mobile station direction when the calling remote user included a user-user information element in the SETUP message.

**9.3.23.1.13 Redirecting party BCD number**

May be included in the network to called mobile station direction when the call has been redirected.

**9.3.23.1.14 Redirecting party subaddress**

May be included in the network to called mobile station direction when the calling remote user included a called party subaddress in the SETUP message and the call has been redirected

**9.3.23.1.15 Priority**

May be included by the network to indicate the priority of the incoming call if eMLPP is used.

**9.3.23.1.16 Alert \$(Network Indication of Alerting in the MS )\$**

May be included by the network to give some indication about alerting (category or level). If supported in the MS, this optional indication is to be used by the MS as specified in GSM 02.07.

**9.3.23.2 Setup (mobile originating call establishment)**

This message is sent from the mobile station to the network to initiate a mobile originating call establishment.

See table 9.70a/TS 24.008.

Message type: SETUP

Significance: global

Direction: mobile station to network

**Table 9.70a/TS 24.008: SETUP message content (mobile station to network direction)**

IEI	Information element	Type / Reference	Presence	Format	Length
	Call control protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Transaction identifier	Transaction identifier 10.3.2	M	V	1/2
	Setup message type	Message type 10.4	M	V	1
D-	BC repeat indicator	Repeat indicator 10.5.4.22	C	TV	1
04	Bearer capability 1	Bearer capability	M	TLV	3-16

		10.5.4.5			
04	Bearer capability 2	Bearer capability 10.5.4.5	O	TLV	3-16
1C	Facility(simple recall alignment)	Facility 10.5.4.15	O	TLV	2-
5D	Calling party sub-address	Calling party subaddr. 10.5.4.10	O	TLV	2-23
5E	Called party BCD number	Called party BCD num. 10.5.4.7	M	TLV	3-43
6D	Called party sub-address	Called party subaddr. 10.5.4.8	O	TLV	2-23
D-	LLC repeat indicator	Repeat indicator 10.5.4.22	O	TV	1
7C	Low layer compatibility I	Low layer comp. 10.5.4.18	O	TLV	2-18
7C	Low layer compatibility II	Low layer comp. 10.5.4.18	O	TLV	2-18
D-	HLC repeat indicator	Repeat indicator 10.5.4.22	O	TV	1
7D	High layer compatibility i	High layer comp. 10.5.4.16	O	TLV	2-5
7D	High layer compatibility ii	High layer comp. 10.5.4.16	O	TLV	2-5
7E	User-user	User-user 10.5.4.25	O	TLV	3-35
7F	SS version	SS version indicator 10.5.4.24	O	TLV	2-3
A1	CLIR suppression	CLIR suppression 10.5.4.11a	C	T	1
A2	CLIR invocation	CLIR invocation 10.5.4.11b	C	T	1
15	CC capabilities	Call Control Capabilities 10.5.4.5a	O	TLV	3
1D	Facility \$(CCBS)\$ (advanced recall alignment)	Facility 10.5.4.15	O	TLV	2-?
1B	Facility (recall alignment Not essential) \$(CCBS)\$	Facility 10.5.4.15	O	TLV	2-?

#### 9.3.23.2.1 BC repeat indicator

The *BC repeat indicator* information element is included if and only if *bearer capability 1 IE* and *bearer capability 2 IE* are both present in the message.

#### 9.3.23.2.2 Facility

The information element may be included for functional operation of supplementary services.

Three different codings of this IE exist, for further details see 04.10.

#### 9.3.23.2.3 LLC repeat indicator

The *LLC repeat indicator* information element is included if and only if both following conditions hold:

- The *BC repeat indicator IE* is contained in the message.
- The *low layer compatibility I IE* is contained in the message.

If included, the *LLC repeat indicator* shall specify the same repeat indication as the *BC repeat indicator IE*.

#### 9.3.23.2.4 Low layer compatibility I

The information element is included in the MS-to-network direction when the calling MS wants to pass low layer compatibility information to the called user.

#### 9.3.23.2.5 Low layer compatibility II

Included if and only if the *LLC repeat indicator* information element is contained in the message.

#### 9.3.23.2.6 HLC repeat indicator

The *HLC repeat indicator* information element is included if and only if both following conditions hold:

- The *BC repeat indicator IE* is contained in the message.
- The *high layer compatibility i IE* is contained in the message.

If included, the *HLC repeat indicator* shall specify the same repeat indication as the *BC repeat indicator IE*.

#### 9.3.23.2.7 High layer compatibility i

The information element is included when the calling MS wants to pass high layer compatibility information to the called user.

#### 9.3.23.2.8 High layer compatibility ii

Included if and only if the *HLC repeat indicator* information element is contained in the message.

#### 9.3.23.2.9 User-user

The information element is included in the calling mobile station to network direction when the calling mobile station wants to pass user information to the called remote user.

#### 9.3.23.2.10 SS version

This information element shall not be included if the *facility* information element is not present in this message.

This information element shall be included or excluded as defined in TS 24.010. This information element should not be transmitted unless explicitly required by TS 24.010.

#### 9.3.23.2.11 CLIR suppression

The information element may be included by the MS (see TS 24.081). If this information element is included the *CLIR invocation* IE shall not be included.

#### 9.3.23.2.12 CLIR invocation

The information element may be included by the MS (see TS 24.081). If this information element is included the *CLIR suppression* IE shall not be included.

#### 9.3.23.2.13 CC Capabilities

This information element may be included by the mobile station to indicate its call control capabilities.

#### 9.3.23.2.14 Bearer capability 1 and bearer capability 2

If the mobile station wishes to indicate capability for an alternative call mode, which can be entered during the call through in-call modification, this is indicated by adding a *BCIE* bearer capability information element (bearer capability) 2 element (see section 5.3.6).