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GLOBAL SYSTEM FOR  
MOBILE COMMUNICATIONS

## **Digital cellular telecommunications system (Phase 2+); enhanced Multi-Level Precedence and Pre-emption service (eMLPP) - Stage 2 (GSM 03.67)**

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## **Foreword**

This Global System for Mobile communications Technical Specification (GTS) has been produced by the Special Mobile Group (SMG) Technical Committee (TC) of the European Telecommunications Standards Institute (ETSI).

This GTS defines the stage 2 of the enhanced Multi-Level Precedence and Pre-emption Service (eMLPP) within the digital cellular telecommunications system (Phase 2/Phase 2+).

GTS are produced by TC-SMG to enable the GSM Phase 2+ specifications to become publicly available, prior to submission for the formal ETSI standards approval procedure to become European Telecommunications Standards (ETS). This ensures the earliest possible access to GSM Phase 2+ specifications for all Manufacturers, Network operators and implementors of the Global System for Mobile communications.

The contents of this GTS are subject to continuing work within TC-SMG and may change following formal TC-SMG approval. Should TC-SMG modify the contents of this GTS it will then be republished by ETSI with an identifying change of release date and an increase in version number as follows:

Version 5.x.y

where:

- y     the third digit is incremented when editorial only changes have been incorporated in the specification;
- x     the second digit is incremented for all other types of changes, i.e. technical enhancements, corrections, updates, etc.

Reference is made within this GTS to GSM-TSs (note).

NOTE:     TC-SMG has produced documents which give the technical specifications for the implementation of the digital cellular telecommunications system. Historically, these documents have been identified as GSM Technical Specifications (GSM-TSs). These TSs may have subsequently become I-ETTs (Phase 1), or ETs/ETSI Technical Reports (ETRs) (Phase 2). TC-SMG has also produced ETSI GSM TSs which give the technical specifications for the implementation of Phase 2+ enhancements of the digital cellular telecommunications system. These version 5.x.x GSM Technical Specifications may be referred to as GTs.

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## 1 Scope

This Global System for Mobile communications Technical Specification (GTS) specifies the stage 2 description of the enhanced Multi-Level Precedence and Pre-emption Service (eMLPP) which provides different call priorities in combination with fast call set-up and pre-emption for different applications according to GSM 02.67 [3].

## 2 Normative references

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

- [1] GSM 01.04 (ETR 100): "European digital cellular telecommunications system (Phase 2); Abbreviations and acronyms".
- [2] GSM 02.40 (ETS 300 512): "European digital cellular telecommunications system (Phase 2); Procedures for call progress indications".
- [3] GSM 02.67: "Digital cellular telecommunications system (Phase 2+); Enhanced Multi-Level Precedence and Pre-emption eMLPP stage 1".
- [4] GSM 03.68: "Digital cellular telecommunications system (Phase 2+); Voice Group Call Service (VGSC) stage 2".
- [5] GSM 03.69: "Digital cellular telecommunications system (Phase 2+); Voice Broadcast Service (VBS) stage 2".
- [6] GSM 08.08 (ETS 300 590): "European digital cellular telecommunications system (Phase 2); Mobile Switching Centre - Base Station System (MSC - BSS) interface Layer 3 specification".
- [7] ITU-T recommendation Q.85: "Stage 2 description for community of interest supplementary services (clause 3: Multi-Level Precedence and Pre-emption MLPP)".
- [8] ITU-T recommendation Q.735: "Stage 3 description for community of interest supplementary services using SS No. 7 (clause 3: Multi-Level Precedence and Pre-emption (MLPP))".

### 3 Definitions and abbreviations

#### 3.1 Definitions

Definitions used in this specification are also defined in GSM 02.67.

**resource pre-emption:** The termination of a call of a low priority user such that resources can be made available for a precedence call of higher priority. Resource pre-emption could be initiation resource pre-emption or handover resource pre-emption.

**called-party pre-emption:** Termination of a call to a particular user when a higher priority call is directed towards that specific user. Called party pre-emption is decided by the mobile station. In case of point-to-point calls, this shall be performed by Call Waiting with automatic acceptance of the waiting call by the mobile station.

**compatible mobile station:** Mobile stations which support eMLPP and therefore have precedence and pre-emption capabilities.

**non-compatible mobile station:** Mobile stations which do not support eMLPP.

#### 3.2 Abbreviations

Abbreviations used in this specification are listed in GSM 01.04 [1].

For the purpose of this specification, the following abbreviations apply:

eMLPP:	enhanced Multi-Level Precedence and Pre-emption
VBS:	Voice Broadcast Service
VGCS:	Voice Group Call Service.



## 4 Main concepts

The enhanced Multi-Level Precedence and Pre-emption service (eMLPP) provides different levels of precedence for call set-up and for call continuity in case of handover.

There are seven priority levels which are defined in TS GSM 02.67. The two highest levels are reserved for network internal use. These two levels can only be used locally, i.e. in the domain of one MSC. The other five priority levels are offered for subscription and can be applied globally, e.g. on inter switch trunks, if supported by all related network elements, and also for interworking with ISDN networks providing the MLPP service.

The seven priority levels are defined as follows:

A	(highest, for network internal use)
B	(for network internal use)
0	(for subscription)
1	(for subscription)
2	(for subscription)
3	(for subscription)
4	(lowest, for subscription).

Levels A and B shall be mapped to level 0 for priority treatment outside of the MSC area in which they are applied.

As a network specific configuration, the ability to pre-empt other calls of lower priority and the application of fast call set-up procedures can be assigned to each priority level. An example for an eMLPP configuration is given in TS GSM 02.67.

NOTE 1: The present specification defines the concepts for handling of priorities in the network including the indication whether pre-emption or fast call set-up procedures are to be applied. Note that the call set-up procedures themselves are specified in the corresponding stage 2 descriptions of the services where they are to be used. There is presently only a requirement for VBS and VGCS (TS GSM 03.69 and TS GSM 03.68, respectively).

NOTE 2: The network operator has to assure that the particular eMLPP configuration he applies and the subscriptions he issues are coordinated with the network planning (especially for blocking) and the implementation options applied (e.g. the use of OACSU) in order to guarantee the service performance for the subscriber.

[Remark: Guidance for this may be given in a report to be issued or annexed to an existing report.]

Considering aspects of priority handling, the following issues can be considered for each call:

- a) contention during the initial random access (no specific definitions apply for eMLPP. Delays due to access collision have to be managed by a corresponding planning of the network resources);
- b) contention in gaining radio resources during the call set-up phase and during handover (this item relates to the assignment of SDCCH and TCH for which queuing and pre-emption mechanisms are applied for eMLPP);

A pre-emption might already be performed as a network option on the basis of the establishment cause if a network specific eMLPP configuration assigns a certain priority level to a particular establishment cause.

- c) contention in gaining terrestrial resources inside the GSM network (this item relates to the assignment of terrestrial channels between the GSM network nodes. Priority actions shall be performed on basis of the MLPP service implementations. The eMLPP priority levels A and B shall be mapped to the MLPP priority level 0. No further specific definitions apply for eMLPP);
- d) contention in gaining terrestrial resources in external networks (this item relates to interworking with external networks which shall be performed on basis of the MLPP service if provided in the related external networks.);
- e) application of different call set-up procedures in relation to the priority levels and the network specific configuration (three classes of set-up performance are defined in TS GSM 02.67, one very fast class for VBS or VGCS emergency call services, one class for fast but normal set-up times and one class allowing some delay in the set-up. The application of the corresponding procedures shall be decided by the network on the basis of the requested priority level);
- f) automatic answering of calls if the incoming call is of or exceeds a defined priority level, respectively, or called party pre-emption (if the called GSM subscriber is engaged in communication of a lower priority);
- g) the means by which the called user is informed of priority issues and is able to make appropriate decisions if no called party pre-emption applies;
- h) the accommodation of non-compatible mobile stations.

The definitions in the present specification focus on the issues under item b), e), f), g) and h). Items c) and d) are related to the MLPP service implementation for the signalling system No. 7 according to ITU-T Recommendations Q.85 and Q.735.

For a call establishment, a subscriber shall be able to select any one of the priority levels he has subscribed to.

Priorities shall be treated in the network as defined in TS GSM 02.67. Priority treatment is different for point-to-point calls and voice broadcast calls or voice group calls, respectively:

- mobile originated point-to-point call:  
The priority level depends on the calling subscriber. If the user has no eMLPP subscription, the call shall have a default priority level defined in the network. If the user has an eMLPP subscription, the call shall have the priority level selected by the user at set-up or the priority level predefined by the subscriber as default priority level by registration.
- mobile terminated point-to-point calls:  
The priority level depends on the calling party. For this, interworking with the ISDN MLPP service is required. If the call is not an MLPP call, i.e. no priority level is defined, the call shall be treated in the mobile network with a default priority level. If the call is an MLPP call, the call shall be treated with the priority level provided by the interfacing network.
- mobile to mobile point-to-point calls:  
The priority shall be treated for the calling subscriber as for mobile originated calls and for the called subscriber as for mobile terminated calls. However, an interworking with MLPP is not required if both the calling subscriber and the called subscriber are located in the same MSC area.
- voice broadcast calls (VBS) and voice group calls (VGCS):  
The link on the voice broadcast call channel or voice group call channel shall have the priority level as defined in the corresponding registration for the related voice broadcast call or voice group call in the GCR. At the early stage of a voice broadcast call or voice group call establishment, before the GCR request is made and the voice broadcast call channel or voice group call channels are assigned, the procedure shall be the same as for point-to-point calls.

Queuing and resource pre-emption shall then be applied as appropriate according to the network service configuration. In addition, automatic answering or called party pre-emption shall be applied as appropriated according to the mobile station's internal service configuration.

The MSC shall maintain a record of the priority level of each call in progress in its area such that it can arbitrate over resources in a defined manner.

The priority level can be included in the CM\_SERVICE\_REQUEST message in the case that a user establishing a point-to-point call is using a compatible mobile station (see clause 6).

In case of a mobile station receiving a point-to-point call or if the subscriber has subscribed only to the lowest priority level or uses a non compatible mobile station (see clause 6), the priority level shall be assigned according to the respective VLR data.

The priority level of a call shall be determined by the MSC. Accordingly, the MSC shall request channel assignment with an indication of the priority level and the pre-emption capability of that call. For this the MSC shall use the priority message element as defined in TS GSM 08.08. Mapping of the priority information in this message element on the network specific eMLPP configuration shall be performed in the MSC. Queuing and resource pre-emption shall be performed accordingly if necessary.

In addition to the priority signalling, the requirement for a direct assignment of a TCH shall be included in the establishment cause of the CHAN\_REQ message in order to support a fast call set-up procedure in the BSC at the earliest possible stage of the call establishment for high priority calls if applicable.

Automatic answering or, if necessary, called-party pre-emption has to be performed by the mobile station as defined in the following:

- point-to-point calls:  
If the user is in idle mode, the mobile station shall automatically connect to an incoming call of a sufficient priority level. The priority level shall be included in the paging message. If the user is in dedicated mode and has a subscription to Call Waiting, a Call Waiting indication including the priority level of the call shall be given to the mobile station which automatically accepts the waiting call. There is no called party pre-emption for point-to-point calls without Call Waiting.
- voice group calls and voice broadcast calls:  
Notifications of paging for other voice group calls, voice broadcast calls or point-to-point calls shall be given to the mobile stations involved in on-going voice group calls or voice broadcast calls as defined in TS GSM 03.68 and TS GSM 03.69, respectively. The notifications include the related priority level of the call. In case of a notified call with higher priority where called-party pre-emption applies, the mobile station shall automatically leave the on-going voice group call or voice broadcast call and react according to the type of the notified call type (i.e. listen to the PCH in case of a notified voice group call or voice broadcast call or sending a random access in order to respond to the paging of a point-to-point call).

For both cases, the priority level applied shall be included, either in the paging message or Call Waiting indication, or in the notification message, in order to enable the mobile station to decide on an automatic reaction (automatic answering or called-party pre-emption) or to indicate the incoming, non pre-empting call to the user.

The priority information of the assignment request shall also be applied for BSS internal handover. For external handover, the MSC shall include the priority information in the handover request according to the definition in TS GSM 08.08 in the same way as for the assignment request.

## **5 General architecture**

No specific requirements are identified.

## 6 Compatibility issues

eMLPP cannot be applied with standard Phase 1 or Phase 2 mobile stations (non compatible mobile stations) with all service aspects. A dedicated mobile station (compatible mobile station) with eMLPP capability is required.

Specific functions a compatible mobile station shall provide are:

- priority selection via MMI for call establishment in case of an eMLPP subscription including priority levels above level 4;
- analysis of the priority level included in a paging message, Call Waiting indication or notification into a voice group call or voice broadcast call, respectively;
- automatic reaction on basis of the analyzed priority level in case of an incoming call while in dedicated mode or VBS or VGCS receive mode, respectively, according to the user defined mobile station configuration (for each subscribed priority level the user shall be able to configure the mobile station for automatic acceptance or indication or rejection of an incoming call);

NOTE 1: Functions related to notifications are only required for mobile stations providing VBS or VGCS functions as defined in TS GSM 03.69 and TS GSM 03.68, respectively.

However, if eMLPP is provided in a network, it can be applied to non compatible mobile stations in the following way:

- calls of subscribers which have no specific eMLPP subscription shall be treated for resource pre-emption with a default priority level.

NOTE 2: This shall also apply independent of the use of compatible or non compatible mobile stations;

- calls of eMLPP subscribers which use a non compatible mobile station shall be treated for resource pre-emption with the subscriber's default priority level;
- calls to eMLPP subscribers which use a non compatible mobile station shall be indicated to the user by Call Waiting as normal.

## 7 Transmission

No specific requirements are identified.

## 8 Information storage

### 8.1 Stored in the HLR

Information concerning the maximum priority level which a subscriber is entitled to use at call establishment shall be stored in the HLR.

If the maximum priority level is above level 4, one level shall be indicated as default level. This default level shall be used for mobile originated calls if no priority selection is performed by the user at call establishment.

The default selection can be performed by the subscriber by means of a registration procedure.

**NOTE** The priority levels in the subscription are related to point-to-point calls. VBS and VGCS calls are treated with the priority level defined in the GCR for a certain group ID in a certain service area which can be different to the priority levels explicitly defined in the eMLPP subscription. However, these levels are then implicitly defined with the subscribed group IDs.

### 8.2 Stored in the VLR

The information concerning the maximum priority level which a subscriber is entitled to use shall be brought forward from the HLR into the VLR along with the other subscriber information.

### 8.3 Stored in the MSC

The network specific service configuration of eMLPP defined by the network operator as specified in TS GSM 02.67 shall be stored within each MSC. This includes information on resource pre-emption actions for any given levels of incoming and on-going call priority. An example for a network specific service configuration is given in TS GSM 02.67.

### 8.4 Stored in the SIM

Each compatible mobile station shall be aware of the automatic answering actions for any given levels of priority so that when in idle mode or dedicated mode or voice group call receive mode or voice broadcast call receive mode, it can decide on the necessary reactions to be taken according to the priority information of the incoming call.

For this, the SIM shall store the following data:

Priority level	Subscription available	Automatic answering applies	Fast set-up actions <sup>1</sup>
A	yes/no	yes/no	yes/no
B	yes/no	yes/no	yes/no
0	yes/no	yes/no	yes/no
1	yes/no	yes/no	yes/no
2	yes/no	yes/no	yes/no
3	yes/no	yes/no	yes/no
4	yes/no	--	yes/no

**NOTE 1:** Fast set-up actions which shall be performed by the mobile stations if indicated in the SIM data are the use of the appropriate establishment cause and the reaction on the provisional grant of the MM connection by the network (see subclause 11.6).

The automatic reaction of the mobile station for automatic answering or called party pre-emption shall be predefined by the user via MMI. For each subscribed priority level the user shall be able to configure the mobile station for automatic acceptance or indication or rejection of an incoming call.

In addition, the mobile station shall verify a priority level selected by the user at call establishment against the priority levels stored on the SIM and act accordingly as defined in subclause 11.5.1.2.

The mobile station shall perform automatically the related functions for a fast call set-up if related with a selected priority.

## **8.5 Stored in the GCR**

In the network, specific service configurations for VBS and VGCS calls which are registered in the GCR, a priority level shall be assigned to each voice broadcast call or voice group call configuration, according to TS GSM 03.69 and TS GSM 03.68, respectively.

## **9 Identities**

No specific requirements are identified.

## **10 Operation and maintenance aspects**

NOTE: A list and short description of the operation and maintenance aspects will be given. This includes the options and parameters which can be set by the operator.

- handling of timers
- registration aspects etc.

## **11 Functions and information flow**

### **11.1 Subscription**

When the subscriber record is created in the HLR, the maximum priority level a subscriber is entitled to use shall be included.

### **11.2 Change of subscription**

The network operator can change the maximum priority level of any eMLPP subscriber at any time. A change of subscription shall not affect any on-going calls at the moment of change. The subscriber cannot change the maximum priority level via the MMI.

### **11.3 Call set-up**

#### **11.3.1 Mobile originated calls**

##### **11.3.1.1 Indication of priority**

The mobile station shall indicate the priority of each call initiated. If no priority is indicated by the user or a non-compatible mobile station is used then the default priority level shall be applied which is stored in the VLR. The selection of priority shall be an MMI function.

Mobile stations indicate the priority of their call in the signalling that takes place during the call establishment process.

No preferential treatment will be possible during this initial random access until the point at which the priority information is received by the network (CM\_SERV\_REQ message). Alternatively, a resource pre-emption might already take place on basis of an establishment cause.

Prior to the indication of the selected priority level in the CM\_SERV\_REQ message, the BSC shall decide on the assignment of an SDCCH or direct assignment of a TCH on the basis of the establishment cause in the CHAN\_REQ message. This allows the BSC to support a fast call set-up at the earliest stage of the call establishment. The establishment cause for emergency calls or a new establishment cause for 'immediate assignment of a TCH required' shall be able to trigger this fast call set-up support function.

#### **11.3.1.2 Subscription checking**

The mobile station shall verify the selected priority level against the priority levels stored in the SIM. If the selected priority is not allowed, then the priority of the call shall be modified to that of the nearest allowed priority level below the requested level.

The MSC shall request the VLR to verify if the subscriber is allowed to use the selected priority level.

#### **11.3.1.3 Authentication and ciphering**

The user or the network may wish to omit or postpone authentication and ciphering in order to provide for a faster call set-up.

If the network decides to omit or postpone authentication and ciphering for a call it can send a CM\_SERV\_ACC message in reply to the CM\_SERV\_REQ message.

[The network, however, may provisionally grant the MM connection by sending an MM\_GO\_ON message. It is then up to the mobile station to send the SETUP message immediately or to wait for the AUTH\_REQ message. The mobile station shall be able to decide this automatically on the basis of the data stored in the SIM as defined in subclause 8.4.

NOTE: The postponed authentication by sending a CM\_SERV\_ACC message is an application of an available function. The provisional grant of the MM connection by the MM\_GO\_ON message is a new function which is to be specified.]

#### **11.3.1.4 Indication of priority to the BSC**

The channel assignment request to the BSC shall also include the priority level and pre-emption capability of the connection as defined in TS GSM 08.08.

#### **11.3.1.5 Choice of radio channel**

If an appropriate radio channel is available the BSC shall assign it as normal. If no channels are available then the BSC shall perform queuing according to the priority levels. If the assignment request has a pre-emption capability indicator, pre-emption shall be performed.

In addition, the network related service configuration defines the set-up class in relation to a priority level and therefore the allowable delay of the call establishment (see TS GSM 02.67). By using this information, the MSC shall decide whether OACSU may be applied for a call or not.

### **11.3.2 Mobile terminated calls**

#### **11.3.2.1 Indication of priority**

For a mobile terminated call, the priority level is defined in the ISUP set-up message to the VMSC. The priority and pre-emption indications used in the ISUP shall follow the definitions of the MLPP service as defined in the ITU-T recommendations Q.85 and Q.735, respectively.

#### **11.3.2.2 Authentication and ciphering**

The network may wish to omit or postpone authentication and ciphering in order to provide for a faster call set-up according to the priority level to be applied for the call and the network specific service configuration stored in the MSC.

If the network decides to omit or postpone authentication and ciphering for a call it, can send the SETUP message immediately after reception of the PAG\_RSP message.

#### **11.3.2.3 Termination with called subscriber in idle mode**

In this case the mobile station shall be paged in the normal manner, but with the paging messages also containing the priority level of the call. The mobile station shall consult the internal service configuration list stored on the SIM to establish whether it should automatically connect the incoming call.

In the case where the called subscriber is using a non compatible mobile station, automatic answering is not possible.

#### **11.3.2.4 Termination with called subscriber in dedicated mode**

In the case where the called subscriber has a subscription for eMLPP and for Call Waiting and is using a compatible mobile station, the mobile station shall be informed of the priority of the new call together with the call waiting indication. The mobile station will then consult the internal service configuration list stored on the SIM to establish whether it should automatically accept the waiting call without consulting the user, or whether the call waiting facility will be used as normal.

In the case where the called subscriber has no subscription for Call Waiting, called party pre-emption is not possible.

In the case where the called subscriber is using a non compatible mobile station and has a subscription for Call Waiting, Call Waiting shall be performed as normal.

### **11.3.3 Voice group call or voice broadcast call**

#### **11.3.3.1 Indication of priority to the related MSC**

For each voice group call or voice broadcast call service configuration registered in the GCR as defined in TS GSM 03.68 and TS GSM 03.69, respectively, a priority level is assigned at registration of the GCR data by the service provider. The priority level will be provided by the GCR together with the call attributes.

#### **11.3.3.2 Authentication and ciphering**

[Authentication of the calling service subscriber shall be performed equivalent to the standard mobile originated call case as defined in subclause 11.5.1.3. The calling service subscriber shall be treated with his selected priority or with his default priority as known in the VLR as long as he has an own link with the network (see TS GSM 03.68 and TS GSM 03.69). The priority which applies to the voice group call channel or voice broadcast call channel is defined in the GCR.

Authentication of the calling service subscriber might therefore be performed, omitted or postponed (see subclause 11.3.1.3).

Ciphering of voice group calls and voice broadcast calls is under definition. Further inputs are required for this subject.]



### **11.3.3.3 Indication of priority to the called mobile stations**

The priority level shall be indicated together with the related paging messages or notification messages and treated in the mobile station as defined in TS GSM 03.68 and TS GSM 03.69, respectively.

## **11.4 Pre-emption**

### **11.4.1 Choice of communication to pre-empt**

For all resources where pre-emption may be required, namely radio channels, A-interface channels and inter switch trunks, the network specific service configuration stored within the MSC shall be used to determine whether pre-emption should occur, and if so, which communication to pre-empt. The MSC shall inform the BSS about priority and pre-emption by using the priority message element in the assignment request as defined in TS GSM 08.08. Mapping of the priority information in this message element on the network specific eMLPP configuration shall be performed in the MSC.

### **11.4.2 Release procedures**

Suitable messages shall be passed from the point at which the pre-emption is to occur, to other affected entities. In the case of fast call set-up, such pre-indication may need to be foregone to meet the required set-up time.

The indication to the pre-empted user shall be performed by an indication for congestion as defined in TS GSM 02.40.

## **11.5 Pre-emption at handover**

When an on-going call is handed over into a fully used cell, the BSC shall perform queuing and pre-emption if necessary according to the priority and pre-emption capability information received with the assignment request.

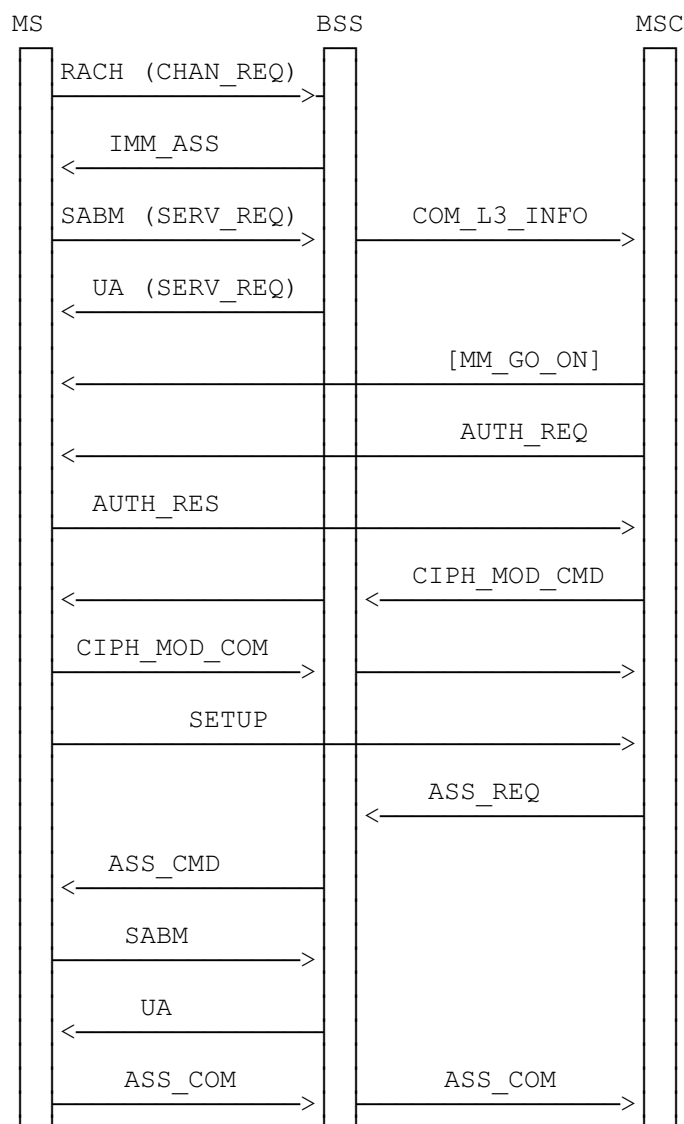
In case of BSS external handover, the priority and pre-emption capability information shall be included in the handover request as defined in TS GSM 08.08.

## **11.6 Overview of signalling**

In this overview, the message structure to implement the specified concept are identified, and brief details are given of each message.

A diagrammatic representation of the transport procedures to be used to carry the priority information in case of standard point-to-point calls are given in figures 1 to 6. The message flow is not represented completely.

The corresponding message flows in case of voice group calls or voice broadcast calls are given in TS GSM 03.68 and TS GSM 03.69, respectively.



**Figure 1: Signalling information required for the prioritisation at mobile originating call establishment without fast call setup**

**Initial RACH CHAN\_REQ:** Standard message.

**IMM\_ASS:** Standard message.

**SABM (SERV\_REQ):** Modified form of the current L3-MM CM SERVICE REQUEST where the priority level is provided in addition if a priority selection is performed by the user. In case of no priority selection or use of a non-compatible mobile station the mobile station shall send a standard service request message and the network shall apply a default priority to their request.

**UA (SERV\_REQ):** Standard message.

**COM\_L3\_INFO:** The MSC is provided with initial information about the requested service together with the selected priority level if applicable.

[**MM\_GO\_ON**: The network may provisional grant the MM connection by sending an MM\_GO\_ON message to the mobile station.]

In the case of no fast call setup required by the user, the mobile station ignores this message and proceeds as normal.]

**AUTH\_REQ**: Standard message.

**AUTH\_RES**: Standard message.

**CIPH\_MOD\_CMD**: Standard message.

**CIPH\_MOD\_COM**: Standard message.

**SETUP**: Standard message.

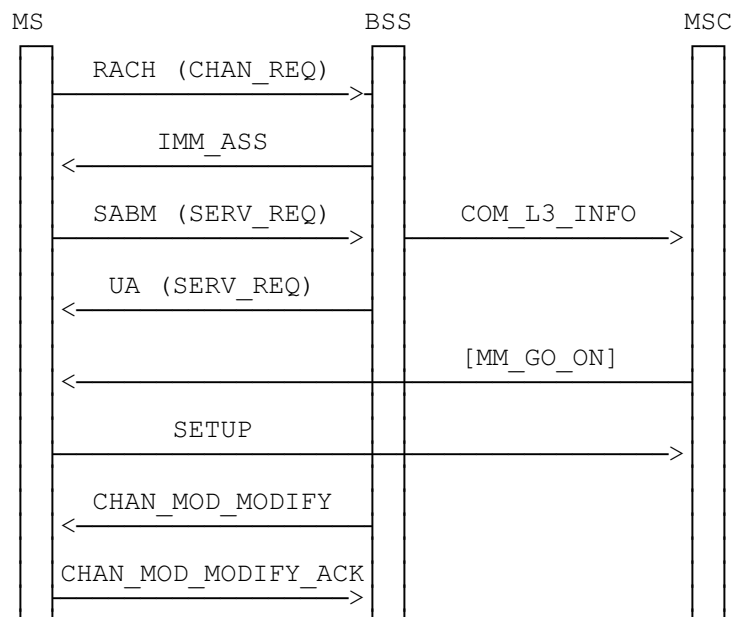
**ASS\_REQ**: This standard message is sent from the MSC to the BSC including the call priority and pre-emption capability to be applied as defined in TS GSM 08.08, according to the priority information the MSC has obtained from the service request or from the VLR data.

**ASS\_CMD**: Standard message.

**SABM**: Standard message.

**UA**: Standard message.

**ASS\_COM**: Standard message.



**Figure 2: Signalling information required for the prioritisation at mobile originating call establishment with fast call setup**

**Initial RACH CHAN\_REQ**: Standard message. A new establishment cause shall be provided to indicate the requirement for the direct assignment of a TCH (very early assignment) for the support of fast call setup procedure.

**IMM\_ASS**: Standard message.

**SABM (SERV\_REQ):** Modified form of the current L3-MM CM SERVICE REQUEST where the priority level is provided in addition if a priority selection is performed by the user.

**UA (SERV\_REQ):** Standard message.

**COM\_L3\_INFO:** The MSC is provided with initial information about the requested service together with the selected priority level if applicable.

**[MM\_GO\_ON:** The network may provisional grant the MM connection by sending an MM\_GO\_ON message to the mobile station.

For fast call set-up required by the user the mobile station shall immediately send a SETUP message to the network after reception of the MM\_GO\_ON message. Authentication and ciphering may not be performed or delayed by the network.

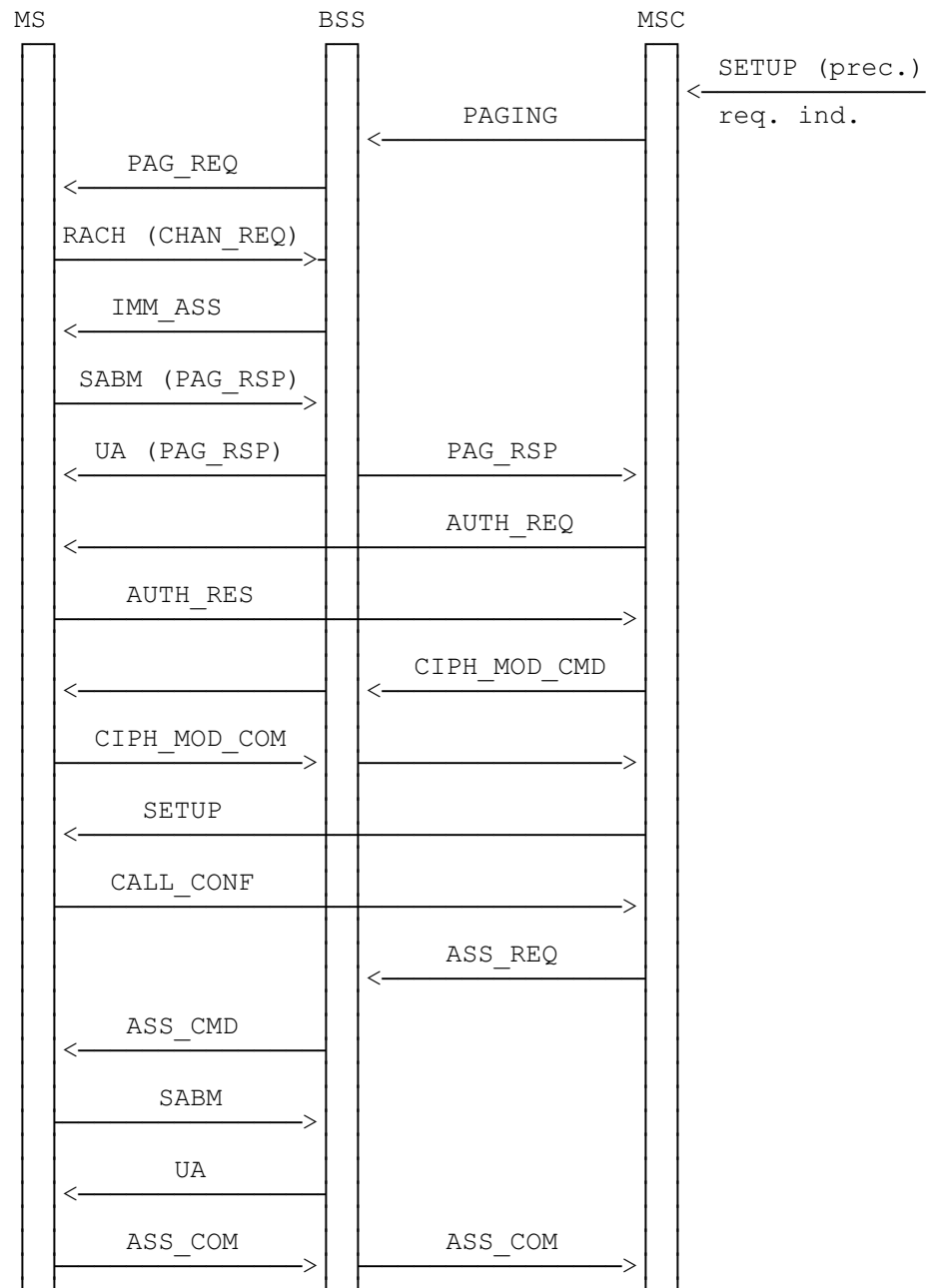
If the network itself decides not to perform authentication and ciphering, it shall send an CM\_SERV\_ACC message instead of an MM\_GO\_ON message.]

**SETUP:** Standard message.

**ASS\_REQ:** This standard message is sent from the MSC to the BSC including the call priority and pre-emption capability to be applied as defined in TS GSM 08.08, according to the priority information the MSC has obtained from the service request or from the VLR data.

**CHAN\_MOD\_MODIFY:** Standard message.

**CHAN\_MOD\_MODIFY\_ACK:** Standard message.



**Figure 3: Signalling information required for the prioritisation at mobile terminating call establishment without fast call setup and without called-party pre-emption.**

**SETUP (prec.) req. ind.:** In addition to the basic call requirements, the contents of the setup information flow shall contain the information on the requested MLPP priority level.

**PAGING:** Modified paging command including the priority level to be applied.

**PAG\_REQ:** Modified paging message including the related priority level.

**Initial RACH CHAN\_REQ:** Standard message.

**IMM\_ASS:** Standard message.

**SABM (PAG\_RSP):** Standard message.

**UA (PAG\_RSP):** Standard message.

**PAG\_RSP:** Standard message.

**AUTH\_REQ:** Standard message.

**AUTH\_RES:** Standard message.

**CIPH\_MOD\_CMD:** Standard message.

**CIPH\_MOD\_COM:** Standard message.

**SETUP:** Standard message.

**CALL\_CONF:** Standard message.

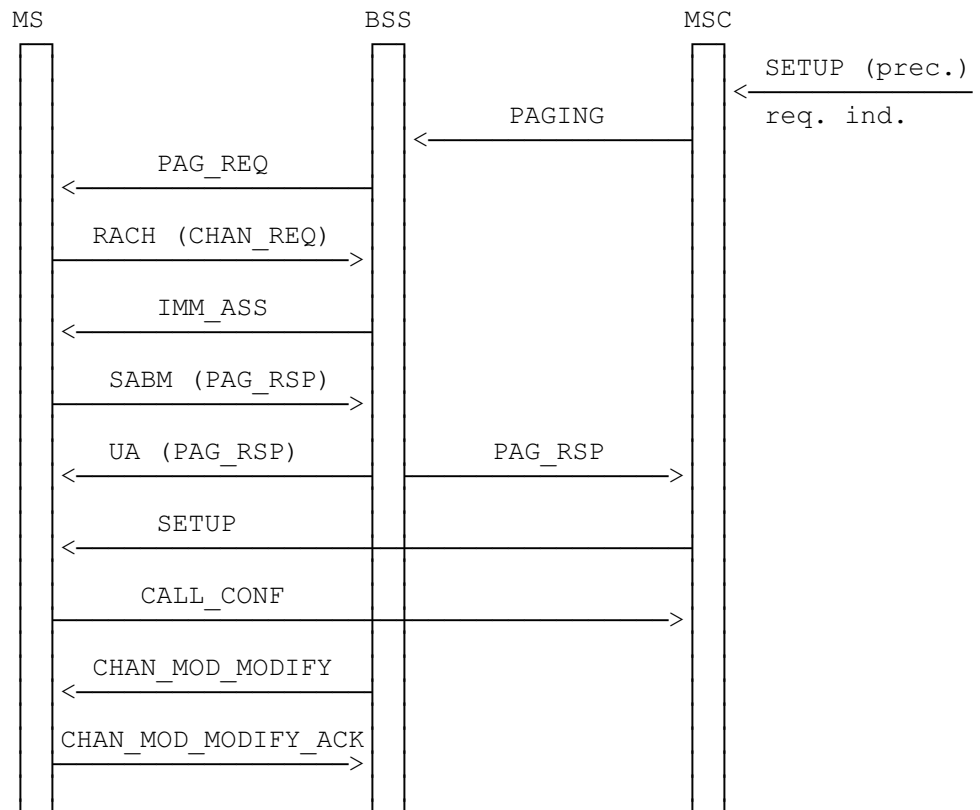
**ASS\_REQ:** This standard message is sent from the MSC to the BSC including the call priority and pre-emption capability to be applied as defined in TS GSM 08.08, according to the priority information the MSC has obtained from the incoming set-up message.

**ASS\_CMD:** Standard message.

**SABM:** Standard message.

**UA:** Standard message.

**ASS\_COM:** Standard message.



**Figure 4: Signalling information required for the prioritisation at mobile terminating call establishment with fast call setup and without called-party pre-emption.**

**SETUP (prec.) req. ind.:** In addition to the basic call requirements, the contents of the setup information flow shall contain the information on the requested MLPP priority level.

**PAGING:** Modified paging command including the priority level to be applied.

**PAG\_REQ:** Modified paging message including the related priority level.

**Initial RACH CHAN\_REQ:** Standard message. A new establishment cause shall be provided to indicate the requirement for the direct assignment of a TCH (very early assignment) for the support of fast call set-up procedure.

**IMM\_ASS:** Standard message.

**SABM (PAG\_RSP):** Standard message.

**UA (PAG\_RSP):** Standard message.

**PAG\_RSP:** Standard message.

For fast call set-up the network shall immediately send a SETUP message to the mobile station. Authentication and ciphering may not be performed or delayed by the network.]

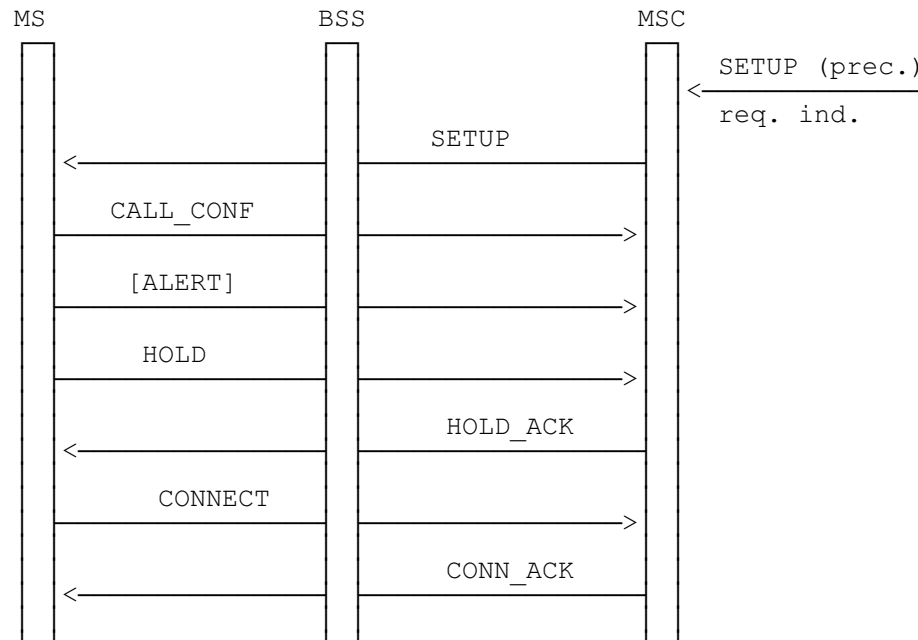
**SETUP:** Standard message.

**CALL\_CONF:** Standard message.

**ASS\_REQ:** This standard message is sent from the MSC to the BSC including the call priority and pre-emption capability to be applied as defined in TS GSM 08.08, according to the priority information the MSC has obtained from incoming set-up message.

**CHAN\_MOD\_MODIFY:** Standard message.

**CHAN\_MOD\_MODIFY\_ACK:** Standard message.



**Figure 5: Signalling information required for the called-party pre-emption in case of an existing telephony call**

Call Waiting should always be subscribed together with eMLPP. If not, no called party pre-emption is possible for point-to-point calls.

**SETUP (prec.) req. ind.:** In addition to the basic call requirements, the contents of the setup information flow shall contain the information on the requested MLPP priority level.

**SETUP:** Modified SETUP message with an indication of the priority level.

**CALL\_CONF:** Standard message with cause user busy.

On reception of the setup message a compatible mobile station decides on called party pre-emption. If called party pre-emption applies, the mobile station shall automatically accept the waiting call and put the other call on hold.

A non compatible mobile station shall not be harmed by the priority information and shall perform Call Waiting functions as normal.

**[ALERT:** Standard message. ALERTING might be omitted in case of called party pre-emption. To be discussed.]

**HOLD:** Standard message. A new cause for called party pre-emption shall be included.

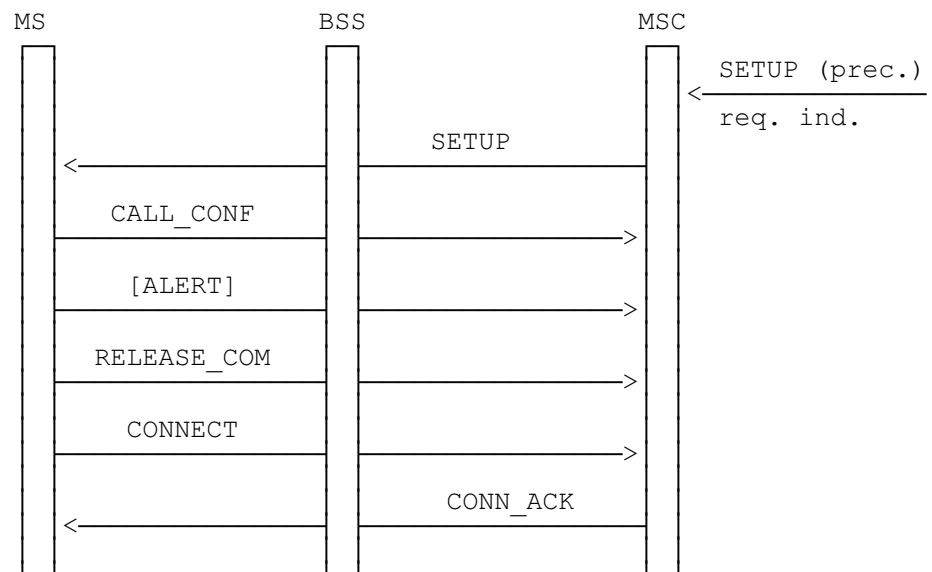
**HOLD\_ACK:** Standard message.

**CONNECT:** Standard message.

**CONN\_ACK:** Standard message.



NOTE: In case of an incoming data call a mode modify procedure has to be performed which is not included in figure 5.



**Figure 6: Signalling information required for the called-party pre-emption in case of point-to-point data calls**

Call Waiting should always be subscribed together with eMLPP. If not, no called party pre-emption is possible for point-to-point calls.

**SETUP (prec.) req. ind.:** In addition to the basic call requirements, the contents of the setup information flow shall contain the information on the requested MLPP priority level.

**SETUP:** Modified SETUP message with an indication of the priority level.

**CALL\_CONF:** Standard message with cause user busy.

On reception of the setup message a compatible mobile station decides on called party pre-emption. If called party pre-emption applies, the mobile station shall automatically accept the waiting call and clear the existing data call.

A non compatible mobile station shall not be harmed by the priority information and shall perform Call Waiting functions as normal.

**[ALERT:** Standard message. ALERTING might be omitted in case of called party pre-emption. To be discussed.]

**RELEASE\_COM:** Standard message which shall be send immediately after the ALERT with a new cause for called party pre-emption.

**CONNECT:** Standard message.

**CONN\_ACK:** Standard message.

## History

Status of Technical Specification GSM 03.67		
Date	Version	Remarks
		No phase 1 version
June 94	version 0.0.0	TS for info to SMG#11
July 95	version 4.0.0	TS approved by SMG#15
Oct 95	version 5.0.0	TS changed to Phase 2+ TS

Document history	
October 1995	Creation of Version 5.0.0
January 1996	Publication of Version 5.0.0