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## Digital cellular telecommunications system (Phase 2+); Operator Determined Barring (GSM 02.41 version 5.1.1)

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## Foreword

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

This GTS defines the network feature Operator Determined Barring (ODB) within the digital cellular telecommunications system (Phase 2/Phase 2+).

This GTS is a SMG approved GSM technical specification version 5, which contains GSM Phase 2+ enhancements/features to the version 4 GSM technical specification. The European Telecommunications Standard (ETS) from which this Phase 2+ GTS has evolved is Phase 2 GSM ETS 300 513 (GSM 02.41 version 4.5.2).

The contents of this GTS are subject to continuing work within SMG and may change following formal SMG approval. Should 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.

The specification from which this GTS has been derived was originally based on CEPT documentation, hence the presentation of this GTS may not be entirely in accordance with the ETSI rules.

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## 1 Scope

This Global System for Mobile communications Technical Specification (GTS) describes the network feature Operator Determined Barring (ODB).

This allows the network operator or service provider to regulate, by means of an exceptional procedure, access by the subscribers to GSM services, by the barring of certain categories of outgoing or incoming calls or of roaming. ODB shall take effect immediately and shall terminate ongoing calls and bar future calls.

The purpose of this network feature is to be able to limit the service provider's financial exposure to new subscribers, or to those who have not promptly paid their bills. It may only be applied to the service provider's own subscribers.

### 1.1 Normative references

This GTS incorporates by dated and undated reference, 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 GTS 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 350): "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".
- [2] GSM 02.88: "Digital cellular telecommunications system; Call Barring (CB) supplementary services - Stage 1".
- [3] CCITT Recommendation E.164 (1991): "Numbering plan for the ISDN era".
- [4] GSM 02.82: "Digital cellular telecommunication system; Call Forwarding (CF) supplementary services - Stage 1".

### 1.2 Definitions and abbreviations

In addition to the following definitions, abbreviations used in this specification are listed in GSM 01.04.

**premium rate call:** A telecommunications network, possibly but not necessarily a PLMN, may make available certain services, for which the tariff is comparable to, or may exceed, International Call rates. Examples of such premium rate services might be information and entertainment services. The exact definition of what constitutes a premium rate call is the responsibility of the VPLMN operator, possibly subject to inter-operator agreements.

## 2 Description

Application of Operator Determined Barring is controlled by the Service Provider, by administrative interaction with the HLR; this interface is not standardized.

With the exception of the barring of roaming, the HLR effects Operator Determined Barring in a similar manner to Service Provider - activated use of the Call Barring Supplementary service. Consequently, the VLR and MSC also execute the relevant Barring Conditions in similar manners. It is noted that there is no password usage. Roaming is barred by the HLR when the MS is in a PLMN other than the Home PLMN or not in the Home PLMN Country as applicable.

In addition to ensuring the barring integrity for future calls, the HLR, and consequently the MSC and VLR, shall provide means to terminate the calls of a user that have been established prior to the application of the ODB service and which are still ongoing.

### **3 Applicability to Basic Services (BS)**

This network feature is applied to all Teleservices and Bearer Services except as noted below. The Operator Determined Barring feature shall not be applied to Teleservice-Emergency Call. It is not possible to apply Operator Determined Barring independently to individual Basic Services.

### **4 Applicability to Supplementary Services (SS)**

Operator Determined Barring is a network feature and hence applies to Supplementary Service aspects of subscriptions.

Operator Determined Barring is applied independently from Supplementary Services. Nevertheless the following interactions occur:

#### **Call Barring:**

Calls will be denied if either Operator Determined Barring or Subscriber Controlled Barring determine that the call should be barred.

If a call is barred due to both Operator Determined Barring and Subscriber Controlled Barring, then the message or notification returned towards the caller will be the same as if the barring was due solely to Operator Determined Barring (see Section 5).

There is no other interaction.

#### **Call Forwarding:**

If a call forwarding programme is in contravention of an Operator Determined Barring Category, when the latter is activated, then the activation shall result in making call forwarding quiescent. If the subscriber attempts to activate a new call forwarding programme in contravention of an Operator Determined Barring Category, then the activation shall be denied, and the subscriber informed of the denial. There is no other interaction.

#### **Closed User Group:**

CUG restrictions must be met in addition to Operator Determined Barring restrictions for a call to proceed.

If a call is barred due to both Operator Determined Barring and CUG restrictions, then the message or notification returned towards the caller will be the same as if the barring was due solely to Operator Determined Barring (see Section 5).

There is no other interaction.

#### **Call Transfer:**

If the subscriber attempts to invoke a call transfer in contravention of an Operator Determined Barring category, then the invocation shall be denied, and the subscriber informed of the denial. There is no other interaction.

#### **Multi-Party, Advice of Charge, CLIP, CLIR, COLP, COLR, Call Transfer, Call Wait, Call Hold:**

There is no interaction.

#### **Call Completion to Busy Subscriber, User to User Signalling, Malicious Call Identification, Mobile Access Hunting:**

For further study.

The application of a Barring of Roaming category (see subclauses 3.1 and 3.2 below) will, if the Mobile Station is roaming appropriately, prevent the Mobile Subscriber from undertaking any form of Supplementary Service management.



## 5 Normal procedure

As described in the following categories, the Service Provider may at any time activate this feature and this shall terminate any relevant calls in progress, including forwarded calls, and bar future calls covered by the barring category:

Independently, one of:

- 1.1 Barring outgoing calls;
- or: 1.2 Barring outgoing international calls;
- or: 1.3 Barring outgoing international calls except those directed to the home PLMN country;
- or: 1.4 Barring of outgoing calls when roaming outside the home PLMN country;
- or: 1.5 Barring of outgoing inter-zonal calls;
- or: 1.6 Barring of outgoing inter-zonal calls except those directed to the home PLMN country;
- or: 1.7 Barring of outgoing international calls except those directed to the home PLMN country AND barring of outgoing inter-zonal calls.

and/or one of:

- 2.1 Barring incoming calls;
- or: 2.2 Barring incoming calls when roaming outside the home PLMN country;
- or: 2.3 Barring incoming calls when roaming outside the zone of the home PLMN country.

and/or one of:

- 3.1 Barring of Roaming outside the home PLMN;
- or: 3.2 Barring of Roaming outside the home PLMN country.

and/or one or both of:

- 4.1 Barring of outgoing Premium Rate Calls (Information);
- 4.2 Barring of outgoing Premium Rate Calls (Entertainment).

and/or one or more of:

- 5.1 When registered in the HPLMN, Operator Specific Barring (Type 1);
- or: 5.2 When registered in the HPLMN, Operator Specific Barring (Type 2);
- or: 5.3 When registered in the HPLMN, Operator Specific Barring (Type 3);
- or: 5.4 When registered in the HPLMN, Operator Specific Barring (Type 4).

and/or

- 6.1 Barring of Supplementary Services Management, which prevents user control of any supplementary service (registration, erasure, activation, deactivation, user invocation, interrogation, password registration and mobile initiated USSD). However, this does not prevent invocation by other action - e.g. an existing call forwarding or barring state will remain.

and/or one of:

- 7.1 Barring of registration of any call forwarded-to number;
- or: 7.2 Barring of registration of any international call forwarded-to number;
- or: 7.3 Barring or registration of any international call forwarded-to number except to a number within the HPLMN country;
- or: 7.4 Barring of registration of any inter-zone call forwarded-to number.
- or: 7.5 Barring of registration of any inter-zone call forwarded-to number except to a number within the HPLMN country;

NOTE: The definition of an international call is based on the equivalent definition of an international call in GSM 02.88 [2]. The principles for deciding whether a forwarded-to number is international or inter-zonal are the same as those given in GSM 02.82 [4] to determine the interactions between call forwarding and call barring.

and/or one of:

- 8.1 Barring of invocation of call transfer;
- or: 8.2 Barring of invocation of call transfer where at least one of the two calls is a call charged to the served subscriber; i.e. the call is either an outgoing call or an incoming call when the served subscriber roams outside the HPLMN;
- or: 8.3 Barring of invocation of call transfer where at least one of the two calls is a call charged to the served subscriber at international rates, i.e. the call is either an outgoing international call or an incoming call when the served subscriber roams outside the HPLMN country;
- or: 8.4 Barring of invocation of call transfer where at least one of the two calls is a call charged to the served subscriber at inter-zonal rates, i.e. the call is either an outgoing inter-zonal call or an incoming call when the served subscriber roams to a VPLMN in a different zone from the HPLMN.

and/or:

- 9 Barring of invocation of call transfer where both calls are calls charged to the served subscriber, i.e. both calls are either outgoing calls or incoming calls when the served subscriber roams outside the HPLMN;

and/or:

- 10 Barring of further invocation of call transfer if there is already one ongoing transferred call for the served subscriber in the serving MSC/VLR.

"User invocation", as it relates to ODB, consists of the following action:

- invocation of the call hold supplementary service.

"Zone" is as defined in CCITT Recommendation E.164 [3].

NOTE: For the purposes of this GTS, zone 3 and zone 4 are treated as one zone.

NOTE: If control of Supplementary Services Management is barred, then the control of call forward will be barred as a consequence, so explicit barring of call forward activation is not necessary.

If a mobile subscriber attempts to use a mobile initiated service which is barred as described above (categories 1, 4, 5, 6, 7, 8, 9, and 10), an appropriate message shall be returned to the Mobile Station or alternatively (categories 1, 4, and 5), if located in the HPLMN, the mobile subscriber can be automatically connected to a destination address determined by the HPLMN operator. It is necessary for the message to indicate that the barring is due to Operator Determined Barring. It is not necessary to indicate the categories which are barred. For ongoing, or transferred calls, that are terminated due to ODB, the network operator may give an appropriate indication to the barred party.

A notification (announcement or CCITT#7 cause value) may be returned to callers attempting to call a mobile subscriber who is appropriately barred incoming calls. It is not necessary to indicate to the called mobile station that an incoming call has been barred.

Only the HPLMN Operator can activate, change or deactivate application of this network feature.

In order to provide this feature securely when a subscriber roams to another network, the visited network needs to support the feature to ensure that the roaming subscriber cannot use a service which has been barred to him.

## **6 Exceptional procedures**

If a VPLMN does not support an operator determined barring category which an HPLMN requests it to apply, the VPLMN shall notify the HPLMN. The HPLMN may then request the VPLMN to apply a substitute operator determined barring category, or take any other action required by the HPLMN operator.

## **7      Alternate procedures**

None identified.

## **8      Interworking considerations**

None identified.

**Annex A (informative): Change history**

<b>Change history</b>					
<b>SMG No.</b>	<b>TDoc. No.</b>	<b>CR. No.</b>	<b>Section affected</b>	<b>New version</b>	<b>Subject/Comments</b>
SMG#14	235/95	Delta	0.1,4.0,5.0	5.0.0	
SMG#12	591/94	A001	0.1,2.0,5.0	5.0.0	
SMG#12	591/94	A002	0.2,5.0		
SMG#13	045/95	A003	5.0		
SMG#16	573/95	A004	5.0		
SMG#21	41/97 42/97	A006 A007	1.1, 5, 6 5	5.1.0	Introduction of omitted barring categories Addition of 2 OdB categories for ECT fraud prevention
SMG#24	975/97	A008	5	5.1.1	Clarification of the ODB Barring Categories for ECT: To allow the invocation of the requested category of ODB for ECT in the serving MSC/VLR the different barring categories are defined in more detail.

## History

Document history	
October 1995	Creation of Version 5.0.0
December 1995	Publication of Version 5.0.0
March 1997	Publication of Version 5.1.0
January 1998	Publication of Version 5.1.1