ETSI TS 143 073 V9.0.0 (2010-02)

Technical Specification

Digital cellular telecommunications system (Phase 2+);
Support of Localised Service Area (SoLSA);
Stage 2
(3GPP TS 43.073 version 9.0.0 Release 9)

GLOBAL SYSTEM FOR
MOBILE COMMUNICATIONS

Reference
RTS/TSGC-0443073v900

Keywords
GSM

ETSI

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Contents

Foreword

This Technical Specification (TS) has been produced by the 3rd Generation Partnership Project (3GPP).

The present document specifies the stage 2 description of the SoLSA service within the 3GPP system.

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

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1 Scope

The present document specifies the stage 2 description of the SoLSA service, which gives the network operator the basis to offer subscribers or group of subscribers different services, different tariffs and different access rights depending on the geographical location of the subscriber, according to GSM 02.43.

2 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.
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2.1 Normative references

[1] 3GPP TS 22.043: "Support of Localised Service Area (SoLSA) - Stage 1".

[2] 3GPP TS 23.003: "Numbering, Addressing and Identification".

[3] 3GPP TS 23.022: "Functions Related to Mobile Station (MS) in Idle Mode".

[4] 3GPP TS 24.008: "Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3".

[5] 3GPP TS 44.060: "General Packet Radio Service (GPRS); Mobile Station (MS) – Base Station System (BSS) interface; Radio Link Control/ Medium Access Control (RLC/MAC) protocol (GPRS)".

[6] 3GPP TS 45.002: "Multiplexing and Multiple Access on the Radio Path".

[7] 3GPP TS 45.008: "Radio subsystem link control".

[8] 3GPP TS 48.008: "Mobile Switching Centre - Base Station System (MSC – BSS) interface - Layer 3 specification".

[9] 3GPP TS 48.018: "General Packet Radio Service (GPRS); Base Station System (BSS) – Serving GPRS Support Node (SGSN); BSS GPRS Protocol (BSSGP)".

[10] 3GPP TS 48.058: "BSC-BTS Interface – Layer 3 Specification".

[11] 3GPP TS 51.011: "Specification of the Subscriber Identity Module – Mobile Equipment (SIM-ME) Interface".

[12] 3GPP TS 31.111: "USIM Application Toolkit (USAT)".

2.2 Informative references

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply.

Allowed localised service area: Localised Service Area where the subscriber has allowed service.

Current localised service area: Localised Service Area of the serving cell to which the mobile station has subscription.

Escape PLMN: specific PLMN code that may be broadcast for non SoLSA compatible mobile stations that do not understand the exclusive access indicator.

Localised Service Area: Localised Service Area consists of a cell or a number of cells. The cells constituting a LSA may not necessarily provide continuous coverage.

Network operator: entity that provides the network operating elements and resources for the execution of the LSA service.

Service provider: entity that offers the LSA services for subscription. The network operator may be the service provider.

Service subscriber: mobile subscriber, which subscribes to the LSA service. In principle, if a network provides LSA service, all users are able to subscribe to this service.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

LSA	Localised Service Area
LSA ID	Localised Service Area Identity
CSE	Camel Service Environment

4 Main concepts

4.1 Localised Service Area definition

The network operator can define a Localised Service Area, LSA, consisting of a cell or a number of cells. It is possible for the network operator to set certain characteristics/attributes per LSA. Some LSA related attributes may be managed as part of cell management, e.g. exclusive access.

The LSA is identified by a LSA ID. It shall be possible for the service subscriber to define a name on each of her allowed LSAs.

4.2 Subscriber information for Localised Service Area

For a subscriber, the network operator or the service provider can define one or more LSA(s) as allowed LSA(s). It shall be possible to establish an order of priority between the allowed LSAs for a given subscriber and if the subscriber shall have preferential access within these LSAs. It shall also be possible to define whether access outside the allowed LSA(s) is allowed for a subscriber.

Subscriber specific LSA information is stored and managed in the HLR. Application related LSA information is stored in appropriate service platform, e.g. in the CAMEL Service Environment (see annex A).

In addition to subscriber details in the HLR server, it is also necessary for subscriber specific LSA information to be stored and managed in the SIM.

Subscribers may receive SIM cards with the initial LSA data stored. The management of LSA data on SIM may be performed manually (in which case SIM has to be returned to the network operator or service provider for updating), or over the air interface as described in subclause 11.3.

4.3 Localised Service Area support in idle mode

4.3.1 Cell selection and reselection

A cell reselection mechanism as defined in subclause 11.4.2 shall be used so that when camping on a cell in idle mode, the subscriber"s mobile station favours the cells belonging to her LSA(s). The mobile station shall always attempt to reselect a cell in a higher priority LSA. Cells outside the allowed LSA(s) shall have the lowest priority.

4.3.2 Localised service area indication

The service subscriber can define a name (alphanumeric name, icon, etc) for each of her allowed LSAs. The MS will, in idle mode and if required by the user, indicate to the user the current LSA. The indication may be the name of the current LSA, as set by the user. The form of display and indication are left to manufacturer"s choice.

4.3.3 Exclusive access

An exclusive access cell is a cell belonging to one or more LSAs and with allowed access only for users having this exclusive access cell included in his/her allowed LSAs. Other user"s mobile stations must be prevented from using the cell to obtain any service, other than TS12 (Emergency Calls).

4.3.4 LSA only access

It shall be BSS-controlled functionality to prevent terminated and/or originated calls outside the subscriber"s allowed LSA(s). Emergency calls are however always allowed.

4.4 Localised Service Area support in active mode

4.4.1 Localised service area indication

As a network option, service subscribers may be notified at change of current LSA. This notification shall be performed as described in subclause 11.7. The form of display and indication are left to manufacturer"s choice.

4.4.2 Resource handling

As a network operator option it shall be possible to allow or prohibit connection set-up and handover depending on the subscriber"s LSA information.

Information to be made available to the radio resource allocation function and the handover function are as depicted in subclause 8.2.2.

NOTE: For the handling of an established connection, it is out of scope of the present document to describe how the network shall perform the resource allocation, handover, etc. depending on the subscriber"s LSA information. The following shall only be seen as examples.

Assignment of traffic resources in preferential access LSA"s may (network option) be favoured for subscribers having this cell as part of their allowed LSAs.

When the subscriber sets up a call in one of her LSAs, the cells belonging to that LSA can (network option) be favoured when handovers are carried out.

Handovers to exclusive access cells can (network option) be prevented for users not having the cell as part of their allowed LSA.

For a user with LSA only access, handovers as well as new originating and terminating calls may (network option) be allowed outside the allowed LSAs. Emergency calls are however always allowed.

4.5 Localised Service Area support in access control

4.5.1 Emergency Call setup

The Emergency Call setup shall always be accepted by the MSC.

4.5.2 Mobile Originating and Mobile Terminating Call setup

The MSC receives the LSA ID(s) of the current cell from the BSC before the call setup. The current LSA can be selected on the basis of the allowed LSA(s) in the subscriber data. Depending on the current LSA, the network may continue as follows:

- The MSC accepts the setup without Active mode support, if the active mode indicator flag for selected LSA is not set.
- The MSC accepts the setup with Active mode support, if the active mode indicator flag for selected LSA is set.
- The MSC starts charging activities for the current LSA.

4.5.3 Location Registration

The MSC/VLR shall reject a location registration if the cell is used for exclusive access and none of the LSA Ids of current cell corresponds to the LSA ID(s) stored in the subscriber record.

4.5.4 Call unrelated services (Short message transfer, USSD, Supplementary Service management)

The MSC receives the LSA ID(s) of the current cell from the BSC in the COMPLETE_L3_INFO. The current LSA can be selected on the basis of the allowed LSA(s) in the subscriber data and it can be used e.g. for the charging purposes. However, the service request is always accepted. Also, no active mode support is applied for the call unrelated services.

4.5.5 Routing Area Update

SGSN shall reject a routing area update if the cell is used for exclusive access and none of the LSA Ids of current cell corresponds to the LSA ID(s) stored in the subscriber record.