

**Source:** TSG SA1  
**Title:** CRs to Access Control Classes & Network Selection (22.011)  
**Document for:** Approval  
**Agenda Item:** 6.1.3

Doc-1st-Level	Doc-2nd-Level	Spec	CR	Rev	Phase	Cat	Subject	Version-Current	Version-New
SP-000193	S1-000244	22.011	015	1	R99	B	Network Selection	3.2.0	3.3.3

**CHANGE REQUEST**

*Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.*

**22.011 CR 015 rev1** Current Version: **3.2.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ?

? CR number as allocated by MCC support team

For submission to: **TSG SA1#8**  
*list expected approval meeting # here ?*

for approval   
for information

strategic  (for SMG use only)  
non-strategic

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

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

**Source:** SA1 **Date:** 03/14/2000

**Subject:** Network selection

**Work item:**

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

**Reason for change:** Possibility for the user to select the priority of "User controlled PLMN selector" and "Operator controlled PLMN selector"

**Clauses affected:** 3.2.2.1, 3.2.2.2

<b>Other specs affected:</b>	Other 3G core specifications	<input type="checkbox"/>	? List of CRs:	
	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:	

**Other comments:**



help.doc

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

## 3.2 Network selection

### 3.2.1 General

The UE shall support both manual and automatic network selection mechanisms (modes). The UE shall select the last mode used, as the default mode, at every switch-on.

NOTE: By defaulting to the last mode used, e.g. manual network selection, the undesired automatic selection of an adjacent PLMN instead of the desired HPLMN in border areas, can be avoided at switch-on.

The user shall be given the opportunity to change mode at any time.

Except as defined below, the MMI shall be at the discretion of the UE manufacturer.

The UE shall contain display functions by which Available PLMNs and the Selected PLMN can be indicated.

### 3.2.2 Procedures

#### 3.2.2.1 General

In the following procedures the UE selects and attempts registration on PLMNs.

In this ETS, the term "PLMN Selection" defines an UE based procedure, whereby candidate PLMNs are chosen, one at a time, for attempted registration.

A User Controlled PLMN Selector data field exists on the USIM to allow the user to indicate a preference for network selection. It shall be possible for the user to update the User Controlled PLMN Selector data field, but it shall not be possible to update this data field over the radio interface, e.g. using SIM Application Toolkit.

It shall be possible to have an Operator Controlled PLMN Selector list and a User Controlled PLMN Selector list stored on the SIM/USIM card. Both PLMN Selector lists may contain a list of preferred PLMNs in priority order. It shall be possible to have an associated Access Technology identifier e.g., UTRA, GSM900 or GSM1800 associated with each entry in the PLMN Selector lists.

NOTE 1: A PLMN in a Selector list, including HPLMN, may have multiple occurrences, with different access technology identifiers.

The user shall be given the opportunity to change the order of priority in which the "User controlled PLMN Selector" and the "Operator controlled PLMN Selector" are processed. It shall not be possible to update this switch over the radio interface, e.g. using SIM Application Toolkit. This switch shall be stored as user related data on the USIM, with default value (for new USIMs) set to give priority to the "User controlled PLMN Selector".

If registration on a PLMN is successful, the UE shall indicate this PLMN (the "registered PLMN") and be capable of making and receiving calls on it. The identity of the registered PLMN shall be stored on the SIM/USIM. However, if registration is unsuccessful, the UE shall ensure that there is no registered PLMN stored in the SIM/USIM.

If a registration is unsuccessful because the IMSI is unknown in the home network, or the UE is illegal, then the UE shall not allow any further registration attempts on any network, until the UE is next powered-up or a SIM/USIM is inserted.

If the registration is unsuccessful due to the lack to service entitlement, specific behaviour by the UE may be required, see subclause 3.2.2.4.

To avoid unnecessary registration attempts, lists of forbidden PLMNs and LAs are maintained in the UE, see subclause 3.2.2.4 and TS 23.022 [3].

Registration attempts shall not be made by UEs without a SIM/USIM inserted.

An UE/ME which has not successfully registered shall nevertheless be able to make emergency call attempts on an available PLMN(which supports the emergency call teleservice), without the need for the user to select a PLMN. An available PLMN is determined by radio characteristics (TS 23.022 [3]).

#### 3.2.2.2 At switch-on or recovery from lack of coverage

If the UE is within coverage (at switch-on) or returns to coverage of the PLMN on which it is already registered (as indicated by the registered PLMN stored in the SIM/USIM), the UE shall perform a location update to a new location area if necessary.

If there is no registered PLMN stored in the SIM/USIM, or if this PLMN is unavailable, or the attempted registration fails, the UE shall follow one of the following procedures for network selection:

##### A) Automatic network selection mode

The UE shall select and attempt registration on other PLMNs, if available and allowable and the location area is not in the

list of "forbidden LSs for roaming" (see TS 23.022 [3]), in the following order listed under following section a) or b), depending on the users choice (see 3.2.2.1). If information on the users choice is not available, the order listed under section a) shall be used as default:

a) The user prefers the "User controlled PLMN selector"

- i) HPLMN for preferred access technologies in the order specified. (Note: Allowance shall be made for cases where the HPLMN uses different network IDs for different access networks). It shall be possible to configure a voice capable UE so that it shall not attempt registration on a PLMN if all cells identified as belonging to the PLMN do not support the corresponding voice service;
- ii) each PLMN in the " User Controlled PLMN Selector" data field in the USIM (in priority order) . It shall be possible to configure a voice capable UE so that it shall not attempt registration on a PLMN if all cells identified as belonging to the PLMN do not support the corresponding voice service;
- iii) each PLMN in the "Operator Controlled PLMN Selector" data field in the SIM/USIM (in priority order). It shall be possible to configure a voice capable UE so that it shall not attempt registration on a PLMN if all cells identified as belonging to the PLMN do not support the corresponding voice service;~~ii) other PLMNs with sufficient received signal level (see TS 23.022 [3]) in random order;~~
- iv) other PLMNs with sufficient received signal quality (see TS 23.022 [3]) in random order. It shall be possible to configure a voice capable UE so that it shall not attempt registration on a PLMN if all cells identified as belonging to the PLMN do not support the corresponding voice service;
- v) all other PLMNs in order of decreasing signal quality. It shall be possible to configure a voice capable UE so that it shall not attempt registration on a PLMN if all cells identified as belonging to the PLMN do not support the corresponding voice service.

b) The user prefers the " Operator controlled PLMN selector"

- i) HPLMN for preferred access technologies in the order specified. (Note: Allowance shall be made for cases where the HPLMN uses different network IDs for different access networks). It shall be possible to configure a voice capable UE so that it shall not attempt registration on a PLMN if all cells identified as belonging to the PLMN do not support the corresponding voice service;
- ii) each PLMN in the "Operator Controlled PLMN Selector" data field in the SIM/USIM (in priority order). It shall be possible to configure a voice capable UE so that it shall not attempt registration on a PLMN if all cells identified as belonging to the PLMN do not support the corresponding voice service;
- iii) each PLMN in the " User Controlled PLMN Selector" data field in the USIM (in priority order) . It shall be possible to configure a voice capable UE so that it shall not attempt registration on a PLMN if all cells identified as belonging to the PLMN do not support the corresponding voice service;
- iv) other PLMNs with sufficient received signal quality (see TS 23.022 [3]) in random order. It shall be possible to configure a voice capable UE so that it shall not attempt registration on a PLMN if all cells identified as belonging to the PLMN do not support the corresponding voice service;
- v) all other PLMNs in order of decreasing signal quality. It shall be possible to configure a voice capable UE so that it shall not attempt registration on a PLMN if all cells identified as belonging to the PLMN do not support the corresponding voice service.

An allowable PLMN is one which is not in the "Forbidden PLMN" data field in the SIM/USIM . This data field may be extended in the ME memory.(see subclause 3.2.2.4).

If successful registration is achieved, the UE shall indicate the selected PLMN.

If registration cannot be achieved on any PLMN, the UE shall indicate "no service" to the user, wait until a new PLMN is detected, or new location areas of an allowed PLMN are found which are not in the forbidden LA list(s), and then repeat the procedure. When registration cannot be achieved, different (discontinuous) PLMN search schemes may be used in order to minimize the access time while maintaining battery life, e.g. by prioritizing the search in favour of BCCH carriers which have a high probability of belonging to an available and allowable PLMN.