

**Source:** One 2 One Personal Communications Limited, mm02  
**Title:** Revised CR to 22.011 – Rel99 and Rel4  
**Document for:** Decision  
**Agenda Item:** 7.1

---

# CHANGE REQUEST

⌘ **22.011 CR 043** ⌘ ev **1** ⌘ Current version: **3.5.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Interaction between ePLMN and manual mode		
<b>Source:</b>	⌘ One 2 One Personal Communications Limited, mmO2		
<b>Work item code:</b>	⌘	<b>Date:</b>	⌘ 02 – Nov 2001
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ R99
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)	<b>2</b> (GSM Phase 2)	
	<b>A</b> (corresponds to a correction in an earlier release)	<b>R96</b> (Release 1996)	
	<b>B</b> (addition of feature),	<b>R97</b> (Release 1997)	
	<b>C</b> (functional modification of feature)	<b>R98</b> (Release 1998)	
	<b>D</b> (editorial modification)	<b>R99</b> (Release 1999)	
	Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		<b>REL-4</b> (Release 4)
			<b>REL-5</b> (Release 5)

<b>Reason for change:</b>	⌘ At the moment the manual mode of network selection disables the ePLMN. If the user operates in manual mode there is the risk that only a reduced service can be offered since the mobile shall not reselect a network even if it has been declared equivalent. If for example an operator decides to use two different PLMN identities for the 2G and the 3G network, the two radio access technologies cannot be used seamlessly if the user has selected the manual mode.
<b>Summary of change:</b>	⌘ Added a clarification in the manual mode procedure specifying that the UE may reselect a PLMN equivalent to the one selected by the user
<b>Consequences if not approved:</b>	⌘ The manual selection mode disables the ePLMN functionality. The recent interest in network sharing as well as the future coexistence of two different radio access technologies, possibly identified by different PLMN identities, could generate situations in which the manual selection as defined today creates a barrier to the user to gain seamless service. If the CR is not approved the user that decides to switch to the manual mode will need to be aware of the different PLMN identities of the networks equivalent to the serving one in order to use all the services offered by the PLMN.

<b>Clauses affected:</b>	⌘ 3.2.2.2
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications ⌘
	<input type="checkbox"/> Test specifications
	<input type="checkbox"/> O&M Specifications
<b>Other comments:</b>	⌘

### 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 and no equivalent PLMN is available, 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 23.122 [3]), in the following order:

- i) HPLMN for preferred access technologies in the order specified. 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 23.122 [3]) in random order;
- iv) other PLMN/access technology combinations with sufficient received signal quality (see TS 23.122 [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 PLMN/access technology combinations 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.

In the case of a UE operating in UE operation mode A or B, 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). In the case of a UE operating in UE operation mode C, an allowable PLMN is one which is not in the "Forbidden PLMN" data field in the SIM or in the list of "forbidden PLMNs for GPRS service" in the ME.

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.

#### B) Manual network selection mode

The UE shall indicate PLMNs, including "Forbidden PLMNs", which are available. If there are none, this shall also be indicated.

Any available PLMN's shall be presented in the following order:

- i) HPLMN;
- ii) PLMNs contained in the "User Controlled PLMN Selector" data field in the SIM/USIM (in priority order);
- iii) PLMNs contained in the "Operator Controlled PLMN Selector" data field in the SIM/USIM (in priority order);

- iv) other PLMN/access technology combinations with sufficient received signal level (see TS 23.122 [3]) in random order;
- v) all other PLMN/access technology combinations in order of decreasing signal strength.

If a PLMN does not support voice services then this shall be indicated to the user.

The user may select his desired PLMN and the UE shall attempt registration on this PLMN. (This may take place at any time during the presentation of PLMNs.)

If the registration cannot be achieved on the selected PLMN, the UE shall indicate "No Service". The user may then select and attempt to register on another or the same PLMN following the above procedure. The UE shall not attempt to register on a PLMN which has not been selected by the user.

Once the UE has registered on a PLMN selected by the user, the UE shall not automatically register on a different PLMN unless:

- i) The new PLMN is declared as an equivalent PLMN by the ~~old~~ registered PLMN

Or

- ii) The user selects automatic mode

If a PLMN is selected but the UE cannot register on it because registration is rejected with the cause "PLMN not allowed", the UE shall not re-attempt to register on that network unless the same PLMN is selected again by the user.

If a PLMN is selected but the UE cannot register for PS services on it because registration is rejected with the cause "GPRS services not allowed in this PLMN", the UE shall not re-attempt to register for PS services if this PLMN is contained in the list "Forbidden PLMN's for GPRS services" unless the same PLMN is selected again by the user. The reception of the cause "GPRS services not allowed in this PLMN", does not affect the CS service.

If a PLMN is selected but the UE cannot register on it for other reasons, the UE shall, upon detection of a new LA (not in a forbidden LA list) of the selected PLMN, attempt to register on the PLMN.

If the UE is registered on a PLMN but loses coverage, different (discontinuous) carrier search schemes may be used to minimize the time to find a new valid BCCH carrier and maintain battery life, e.g. by prioritizing the search in favour of BCCH carriers of the registered PLMN.

# CHANGE REQUEST

⌘ **22.011 CR 042** ⌘ ev **2** ⌘ Current version: **4.4.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Interaction between ePLMN and manual mode		
<b>Source:</b>	⌘ One 2 One Personal Communications Limited, mmO2		
<b>Work item code:</b>	⌘	<b>Date:</b>	⌘ 02 – Nov 2001
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-4
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		REL-4 (Release 4)
			REL-5 (Release 5)

<b>Reason for change:</b>	⌘ At the moment the manual mode of network selection disables the ePLMN. If the user operates in manual mode there is the risk that only a reduced service can be offered since the mobile shall not reselect a network even if it has been declared equivalent. If for example an operator decides to use two different PLMN identities for the 2G and the 3G network, the two radio access technologies cannot be used seamlessly if the user has selected the manual mode.
<b>Summary of change:</b>	⌘ Added a clarification in the manual mode procedure specifying that the UE may reselect a PLMN equivalent to the one selected by the user
<b>Consequences if not approved:</b>	⌘ The manual selection mode disables the ePLMN functionality. The recent interest in network sharing as well as the future coexistence of two different radio access technologies, possibly identified by different PLMN identities, could generate situations in which the manual selection as defined today creates a barrier to the user to gain seamless service. If the CR is not approved the user that decides to switch to the manual mode will need to be aware of the different PLMN identities of the networks equivalent to the serving one in order to use all the services offered by the PLMN.

<b>Clauses affected:</b>	⌘ 3.2.2.2		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘	
	<input type="checkbox"/> Test specifications		
	<input type="checkbox"/> O&M Specifications		
<b>Other comments:</b>	⌘		

### 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 and no equivalent PLMN is available, 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 23.122 [3]), in the following order:

- i) HPLMN for preferred access technologies in the order specified. 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 23.122 [3]) in random order;
- iv) other PLMN/access technology combinations with sufficient received signal quality (see TS 23.122 [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 PLMN/access technology combinations 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.

In the case of a UE operating in UE operation mode A or B, 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). In the case of a UE operating in UE operation mode C, an allowable PLMN is one which is not in the "Forbidden PLMN" data field in the SIM or in the list of "forbidden PLMNs for GPRS service" in the ME.

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.

#### B) Manual network selection mode

The UE shall indicate PLMNs, including "Forbidden PLMNs", which are available. If there are none, this shall also be indicated.

Any available PLMN's shall be presented in the following order:

- i) HPLMN;
- ii) PLMNs contained in the "User Controlled PLMN Selector" data field in the SIM/USIM (in priority order);
- iii) PLMNs contained in the "Operator Controlled PLMN Selector" data field in the SIM/USIM (in priority order);

- iv) other PLMN/access technology combinations with sufficient received signal level (see TS 23.122 [3]) in random order;
- v) all other PLMN/access technology combinations in order of decreasing signal strength.

If a PLMN does not support voice services then this shall be indicated to the user.

The user may select his desired PLMN and the UE shall attempt registration on this PLMN. (This may take place at any time during the presentation of PLMNs.)

If the registration cannot be achieved on the selected PLMN, the UE shall indicate "No Service". The user may then select and attempt to register on another or the same PLMN following the above procedure. The UE shall not attempt to register on a PLMN which has not been selected by the user.

Once the UE has registered on a PLMN selected by the user, the UE shall not automatically register on a different PLMN unless:

- i) The new PLMN is declared as an equivalent PLMN by the ~~old~~-registered PLMN

Or

- ii) The user selects automatic mode

If a PLMN is selected but the UE cannot register on it because registration is rejected with the cause "PLMN not allowed", the UE shall not re-attempt to register on that network unless the same PLMN is selected again by the user.

If a PLMN is selected but the UE cannot register for PS services on it because registration is rejected with the cause "GPRS services not allowed in this PLMN", the UE shall not re-attempt to register for PS services if this PLMN is contained in the list "Forbidden PLMN's for GPRS services" unless the same PLMN is selected again by the user. The reception of the cause "GPRS services not allowed in this PLMN", does not affect the CS service.

If a PLMN is selected but the UE cannot register on it for other reasons, the UE shall, upon detection of a new LA (not in a forbidden LA list) of the selected PLMN, attempt to register on the PLMN.

If the UE is registered on a PLMN but loses coverage, different (discontinuous) carrier search schemes may be used to minimize the time to find a new valid BCCH carrier and maintain battery life, e.g. by prioritizing the search in favour of BCCH carriers of the registered PLMN.