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**TSG-SA WG1 #24**  
**Shenzhen, China, 10 - 14 May 2004**

**S1- 040444**  
**Agenda Item:**

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**Title:** PLMN selection and background scan  
**Release:** 6  
**Work Item:**

**Source:** SA1  
**To:** TSG-CN  
**Cc:** TSG-SA, CN1, GERAN1, RAN2

**Contact Person:**

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**Attachments:** S2-040438, S2-040439, S2-040440, S2-040442

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## Introduction

The LS from TSG-CN to TSG-SA (NP-040152) asked for answers to a number of questions (shown below). Also, in the document attached to the TSG-CN LS: "Some considerations on the use of RAT in PLMN selection" (NP-040129) from the CN 1 Chairman, there are a number of proposed conclusions.

This response covers our comments on the proposed conclusions in NP-040129 and answers to the questions asked by TSG-CN in NP040152.

The associated SA1 CRs are also summarised at the end of this response.

## High Level Requirements

There are currently two aspects regarding the use of RAT as part of the Network Selection that need to be considered:

- The use of the RAT by Release 6 UEs as a parameter for Network Selection during Background Scan; and
- The Network Selection processes that will be need to be used by UEs that can make use of a range of different modes/RATs – including those defined by other bodies (e.g. 3GPP2, WLAN etc).

SA1 requests that work be completed to ensure that the requirement in the first bullet is met in Release 6.

The requirement in the second bullet will need a longer study and SA1 believes that the appropriate specifications should be included in releases beyond Release 6.

## **Response to Conclusions in NP-040129**

Not all the sections are relevant to SA1. Responses to the relevant sections only are shown below. Associated CRs have been produced also and these are detailed below:

### **Section 3.1 - Impact on 2G and 2.5G mobiles**

SA1 agrees with the proposed conclusion that a single mode mobile shall ignore those PLMN + access technology entries on the PLMN selector list where the associated RAT is not supported by the ME. (see CR to 22.011 in S1-040438)

### **Section 3.4 - What about mobile behaviour in networks which are not coordinated?**

SA1 agrees that the stage 1 requirement not to change in background scan between the different RATs of the same PLMN does inhibit the possibility to guide the user back from nationwide GSM coverage to (patchy) UMTS coverage if the UMTS coverage has been lost momentarily. However, it is understood that this is only necessary to prevent a ping-pong effect in a case where the network uses cell reselection to change between RATs. Consequently we have written a CR in document S1-040439.

### **Section 3.7 - Need to break RAT into the different frequency bands**

CDMA2000 as another RAT in this respect is the subject of further discussion in SA1 but is not in Release-6. WLAN is not just another RAT either, since the WLAN PLMN selection uses a procedure separate from that in PLMN specifications 22.011 and 23.122. These considerations are outside the scope of Release 6.

SA1 also agrees that at the moment there are no requirements to distinguish between different frequency bands but there is a need to distinguish between TDD and FDD RATs. See CR to 22.101 in S1-040440

### **Section 3.8 - Mobile behaviour in case of manual selection**

SA1 notes that in current specifications, the RAT is part of the manual selection procedures but it is optional to display PLMN/RAT combination on the phone so it is optional for it to be considered by the user during the procedure.

### **Section 3.9.1 - Network Sharing**

SA1 agrees that network sharing will need to follow the PLMN selection rules, so whatever decision is made on the use of the RAT in PLMN selection procedures must apply to network sharing case as well.

### **Section 3.9.2 - WLAN**

SA1 agrees that background scan for network selection using Radio Access Technologies specified by other bodies or specifications (e.g. WLAN, CDMA2000) should be the subject of ongoing discussion in SA1 but is beyond the scope of Release 6.

### **Section 3.10.1 - User ability to enter RAT information**

SA1 agrees that the manipulation of the user controlled and operator controlled PLMN selector list with access technologies should be left outside of the scope of protocol specifications. However, we note that in specification 22.011 it says:

*“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., UTRAN, or GERAN associated with each entry in the PLMN Selector lists.”*

Our interpretation of this is that the User may be able to provide an access type in combination with the PLMN on the User controlled PLMN selector list, subject to user interface implementation.

### **Response to Questions in NP-040152**

1. Does a single mode UE ignore those entries on PLMN selector lists where the PLMN is associated with a non-supported RAT? (see 3.1 in the attached document NP-040129).  
**SA1 answer:** Yes, as explained above. See also the CR in document S1-040438.
2. Is it acceptable that the presence of a high priority PLMN + RAT combination can give a high priority for the other access technology of the same PLMN, even though this cell may be part of a forbidden LA? (see table 1 and 2 in NP-040129). It should be noted that this case falls in two alternatives, a cell in a forbidden LA which the UE knows to be forbidden, since it is on the forbidden LA list and a cell which the UE does not know whether it would be forbidden or not, since it is part of the other RAT of the same PLMN and the UE is not allowed to access it.  
**SA1 answer:** Our understanding is as follows: a mobile would only be aware that the LA is forbidden if it is already stored in one of the lists of forbidden LAs. If it is not stored in one of these lists, the mobile will attempt registration and will be rejected. Even though this implies unnecessary signalling, SA1 finds this acceptable.
3. Does the introduction of the mechanism to prevent ‘hopping’ between different RATs of the same PLMN lead to undesirable behaviour which means that it would be better to allow for the ‘hopping’ situation?  
**SA1 answer:** We believe that it is preferable to prevent "hopping" as explained above. See also the CR in document S1-040439.
4. For those items not included in the specification (e.g. comments in 3.12 in NP-040129) how will they be clearly documented to ensure that everyone is aware of the decisions taken by 3GPP?  
**SA1 answer:** We believe that the best way to document this is to produce an informative annex (e.g. to TS22.011)

## **Associated CRs**

SA1 has produced a number of CRs to update TS22.011 in line with the above requirements. These are as follows:

- SA1 document S1-040442 – The wording in the relevant section of TS 22.011 is amended to clearly specify that the periodic network selection attempts use a PLMN + RAT combination.
- SA1 document S1-040438 - Text is added to TS 22.011 to specify that a single mode mobile shall ignore those PLMN + access technology entries on the PLMN selector list where the associated RAT is not supported by the ME.
- SA1 document S1-040439 - Wording is added to TS 22.011 to allow for a mobile to move between RATs in the case that the network is un-coordinated.
- SA1 document S1-040440 - Text is added to TS 22.011 specify that it shall be possible to select a PLMN based on the different UMTS access technologies.

Note that these change requests have been conditionally approved in SA1 subject to CN1 being capable of devising a suitable technical solution in Rel-6.

CR-Form-v7

## CHANGE REQUEST

⌘ **22.011 CR 058** ⌘ rev **-** ⌘ Current version: **6.3.0** ⌘

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

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

<b>Title:</b>	⌘	Behaviour of Single Mode mobiles with regards to the use of access technology in the PLMN selector lists	
<b>Source:</b>	⌘	Motorola	
<b>Work item code:</b>	⌘	TEI6	<b>Date:</b> ⌘ 21/04/2004
<b>Category:</b>	⌘	<b>F</b>	<b>Release:</b> ⌘ Rel-6
		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)
			Rel-6 (Release 6)

<b>Reason for change:</b>	⌘	<p>For a GSM only mobile it would seem that the PLMN list to be used should only consist of those PLMNs which are on the GSM frequency. Assuming the following PLMN selector list on the USIM: PLMN A UMTS PLMN B UMTS PLMN B GSM PLMN A GSM</p> <p>In the above example it is assume that a GSM only mobile should use the priority: PLMN B PLMN A</p> <p>This needs to be clearly specified in TS 22.011</p>
<b>Summary of change:</b>	⌘	Text is added to specify that a single mode mobile shall ignore those PLMN + access technology entries on the PLMN selector list where the associated RAT is not supported by the ME.
<b>Consequences if not approved:</b>	⌘	There will be no clear requirement for how a single mode mobile should use the PLMN selector lists

<b>Clauses affected:</b>	⌘	3.2.2.1		
<table border="1" style="display: inline-table; margin: 0 auto;"> <tr> <td style="padding: 2px 5px;">Y</td> <td style="padding: 2px 5px;">N</td> </tr> </table>			Y	N
Y	N			

<b>Other specs affected:</b>	⌘	<input checked="" type="checkbox"/>	Other core specifications	⌘	TS 23.122
		<input checked="" type="checkbox"/>	Test specifications		
		<input checked="" type="checkbox"/>	O&M Specifications		
<b>Other comments:</b>	⌘				

### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
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- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

## 3.2.2 Procedures

### 3.2.2.1 General

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

In this TS, 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., UTRAN, or GERAN 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 UE shall ignore those PLMN + access technology entries in the User Controlled PLMN selector and Operator Controlled PLMN selector lists where the associated Access Technology is not supported by the UE. In the case that there are multiple associated Access Technology identifiers in an entry the UE shall not ignore the entry if it includes any associated Access Technology that is supported by the UE.

It shall be possible to handle cases where one network operator accepts access from access networks with different network IDs. It shall also be possible to indicate to the UE that a group of PLMNs are equivalent to the registered PLMN regarding PLMN selection, cell selection/re-selection and handover.

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 3GPP TS 23.122 [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 (3GPP TS 23.122 [3]).

CR-Form-v7
<b>CHANGE REQUEST</b>
⌘ <b>22.011 CR 065</b> ⌘ rev <b>-</b> ⌘ Current version: <b>6.3.0</b> ⌘

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

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

<b>Title:</b>	⌘	Mobile behaviour when performing Periodic Network Selection attempts in un-coordinated networks	
<b>Source:</b>	⌘	Motorola	
<b>Work item code:</b>	⌘	TEI6	<b>Date:</b> ⌘ 21/04/2004
<b>Category:</b>	⌘	<b>F</b>	<b>Release:</b> ⌘ Rel-6
		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)
			Rel-6 (Release 6)

<b>Reason for change:</b>	⌘	<p>The use of RAT was foreseen to potentially cause a UE to 'jump' between RATs of the same PLMN and a CR to TS 22.011 was agreed at the last SA meeting which inhibits this so called ping pong between the different RATs of a single PLMN.</p> <p>However, the introduction of the requirement that the presence of one RAT causes the mobile to stay on another RAT of the same PLMN will impact those operators who are effectively running independent networks (i.e. same PLMN code but no cell re-selection between the different RATs) and will prevent the behaviour that they might expect when the RAT is to be used as part of the periodic network selection attempt. In particular it is possible that in such an environment a 3G subscriber could end up 'sticking' on the 2G RAT even though 3G (and the corresponding services) is available.</p> <p>The current stage 1 requirement not to change in background scan between the different RATs of the same PLMN inhibit the possibility to guide the user back from nationwide GSM coverage to (patchy) UMTS coverage if the UMTS coverage has been lost momentarily.</p>
<b>Summary of change:</b>	⌘	Wording is added to TS 22.011 to allow for a mobile to move between RATs in the case that the network is un-coordinated.
<b>Consequences if not approved:</b>	⌘	Operators will not be able to guide their subscribers to the correct access technology and Users will not be able to access the services that they expect to be able to use.



<b>Clauses affected:</b>	⌘	3.2.2.5										
<b>Other specs affected:</b>		<table border="1"><tr><td>Y</td><td>N</td></tr><tr><td>X</td><td></td></tr><tr><td></td><td>X</td></tr><tr><td></td><td>X</td></tr></table>	Y	N	X			X		X	Other core specifications	⌘ TS 23.122
	Y	N										
	X											
	X											
	X											
		Test specifications										
		O&M Specifications										
<b>Other comments:</b>	⌘	The above mentioned problem of a network in areas effectively running independent networks has been experienced in Asia										

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### 3.2.2.5 Periodic network selection attempts

A UE in Automatic Mode shall make periodic attempts to look for a higher priority PLMN of the same country as the currently received PLMN. For the ranking of PLMNs the UE shall use the order used in subclause 3.2.2.2. Moreover, [if a network indicates \(see 3GPP TS 23.122 \[31\]\) it is using cell reselection to move UEs between Access Technologies supported by the PLMN](#), periodic network selection shall not lead to a change of access technology within the registered PLMN.

In the case that the UE has stored a list of equivalent PLMNs, the UE shall only select a PLMN if it has a higher priority than all the PLMNs, in the list of equivalent PLMNs, which are of the same country as the currently registered PLMN.

**NOTE:** In the context of this 3GPP TS, the term country is to be interpreted not as a political entity but as a single Mobile Country Code (MCC). For instance the USA has multiple MCC. The USA case is in fact treated as an exception in the 3GPP specifications. For all other countries, multiple MCCs may be used, however the specifications have not taken this into account and there could be adverse effects such as the UE being unable to detect that multiple MCCs are within the same country.

The UE shall only make reselection attempts while in idle mode for circuit services.

The interval between attempts shall be stored in the SIM/USIM. Only the service provider shall be able to select for which of the previous situations, periodic network selection shall be attempted and to set the interval, which shall be between 6 minutes and 8 hours, with a step size of 6 minutes. One value shall be designated to indicate that no periodic attempts shall be made.

In the absence of a permitted value in the SIM/USIM, or the SIM/USIM is phase 1 and therefore does not contain the datafield, then a default value of 60 minutes, shall be used by the UE.

**NOTE:** Use of values less than 60 minutes may result in excessive ME battery drain.

CR-Form-v7

## CHANGE REQUEST

⌘ **22.011 CR 059** ⌘ rev **-** ⌘ Current version: **6.3.0** ⌘

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

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

<b>Title:</b>	⌘ Identification of FDD and TDD in the PLMN selector lists		
<b>Source:</b>	⌘ Motorola		
<b>Work item code:</b>	⌘ TEI6	<b>Date:</b>	⌘ 21/04/2004
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ Rel-6
	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)
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	<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>Rel-6</b> (Release 6)

<b>Reason for change:</b>	⌘ Currently there is no way to identify between the different access technologies supported by UTRAN (i.e. no identifiers for FDD or TDD (high and low))
	As it has been specified that the access technology type is to be used in the periodic network selection attempts the RAT should be identified not just as UTRAN but rather as FDD, TDD high rate and TDD low rate.
	If this is not done then once TDD networks are launched there will be no way of selecting the associated access technology.
<b>Summary of change:</b>	⌘ Text is added to specify that it shall be possible to select a PLMN based on the different UMTS access technologies.
<b>Consequences if not approved:</b>	⌘ There will be no requirement for supporting the TDD access technology

<b>Clauses affected:</b>	⌘ 3.2.2.1										
<b>Other specs affected:</b>	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"> </td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	X			X		X	Other core specifications	⌘ TS 23.122, TS 31.102, TS 31.111
Y	N										
X											
	X										
	X										
		Test specifications									
		O&M Specifications									
<b>Other comments:</b>	⌘										

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## 3.2.2 Procedures

### 3.2.2.1 General

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

In this TS, 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., [UTRAN-FDD](#), [TDD high rate](#), [TDD low rate](#), or GERAN 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.

It shall be possible to handle cases where one network operator accepts access from access networks with different network IDs. It shall also be possible to indicate to the UE that a group of PLMNs are equivalent to the registered PLMN regarding PLMN selection, cell selection/re-selection and handover.

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 3GPP TS 23.122 [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 (3GPP TS 23.122 [3]).

CR-Form-v7	
<b>CHANGE REQUEST</b>	
⌘ <b>22.011 CR 060</b> ⌘ rev <b>-</b> ⌘ Current version: <b>6.3.0</b> ⌘	

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

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

<b>Title:</b>	⌘ Use of access technology in Periodic Network Selection attempts ⌘		
<b>Source:</b>	⌘ Motorola ⌘		
<b>Work item code:</b>	⌘ TEI6 ⌘	<b>Date:</b>	⌘ 21/04/2004 ⌘
<b>Category:</b>	⌘ <b>F</b> ⌘	<b>Release:</b>	⌘ Rel-6 ⌘
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
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	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>Rel-6</b> (Release 6)

<b>Reason for change:</b>	⌘ Following the discussion on the use of Radio Access Technology (RAT) by the UE in PLMN selection, and in particular background scan, it has been agreed that the RAT is to be used.  This needs to be clearly specified in TS 22.011
<b>Summary of change:</b>	⌘ The wording in the relevant section of TS 22.011 is amended to clearly specify that the periodic network selection attempts using a PLMN + RAT combination
<b>Consequences if not approved:</b>	⌘ There will be no clear requirement for the use of RAT in the periodic network selection attempts

<b>Clauses affected:</b>	⌘ 3.2.2.5 ⌘										
<b>Other specs affected:</b>	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr> <td style="padding: 2px;">Y</td> <td style="padding: 2px;">N</td> </tr> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;"></td> <td style="padding: 2px;">X</td> </tr> <tr> <td style="padding: 2px;"></td> <td style="padding: 2px;">X</td> </tr> </table>	Y	N	X			X		X	Other core specifications	⌘ TS 23.122 ⌘
Y	N										
X											
	X										
	X										
		Test specifications									
		O&M Specifications									
<b>Other comments:</b>	⌘										

**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

### 3.2.2.5 Periodic network selection attempts

A UE in Automatic Mode shall make periodic attempts to look for a higher priority PLMN [including associated Access Technology](#) of the same country as the currently received PLMN [including associated Access Technology](#). For the ranking of PLMNs the UE shall use the order used in subclause 3.2.2.2. [In the case that there is no associated Access Technology identifier the mobile shall assume that all Access Technologies provided by a PLMN are of equal priority.](#) Moreover, periodic network selection shall not lead to change of access technology within the registered PLMN.

In the case that the UE has stored a list of equivalent PLMNs, the UE shall only select a PLMN if it has a higher priority than all the PLMNs, in the list of equivalent PLMNs, which are of the same country as the currently registered PLMN.

NOTE: In the context of this 3GPP TS, the term country is to be interpreted not as a political entity but as a single Mobile Country Code (MCC). For instance the USA has multiple MCC. The USA case is in fact treated as an exception in the 3GPP specifications. For all other countries, multiple MCCs may be used, however the specifications have not taken this into account and there could be adverse effects such as the UE being unable to detect that multiple MCCs are within the same country.

The UE shall only make reselection attempts while in idle mode for circuit services.

The interval between attempts shall be stored in the SIM/USIM. Only the service provider shall be able to select for which of the previous situations, periodic network selection shall be attempted and to set the interval, which shall be between 6 minutes and 8 hours, with a step size of 6 minutes. One value shall be designated to indicate that no periodic attempts shall be made.

In the absence of a permitted value in the SIM/USIM, or the SIM/USIM is phase 1 and therefore does not contain the datafield, then a default value of 60 minutes, shall be used by the UE.

NOTE: Use of values less than 60 minutes may result in excessive ME battery drain.