

---

**Source:** SA1  
**Title:** CRs to 22.234 on WLAN (Rel-6)  
**Document for:** Approval  
**Agenda Item:** 7.1.3

---

Meeting	SA Doc	TS No.	CR No	Rev	Rel	Cat	Subject	Vers. Current	Vers New	SA1 Doc
SP-24	SP-040294	22.234	002	-	Rel-6	F	Addition of a definition of 3GPP PS based services	6.0.0	6.1.0	S1-040528
SP-24	SP-040294	22.234	003	-	Rel-6	C	TS 22.234 Addition of clause 4. General Description	6.0.0	6.1.0	S1-040531
SP-24	SP-040294	22.234	004	-	Rel-6	B	Selection of a PLMN accessed via an I-WLAN	6.0.0	6.1.0	S1-040549

CR-Form-v7
<b>CHANGE REQUEST</b>
⌘ <b>22.234 CR 002</b> ⌘ rev <b>-</b> ⌘ Current version: <b>6.0.0</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>	⌘ Addition of a definition of 3GPP PS based services		
<b>Source:</b>	⌘ SA1 (WLAN SWG (Samsung Electronics Co.) )		
<b>Work item code:</b>	⌘ WLAN <span style="float: right;"><b>Date:</b> ⌘ 03/05/2004</span>		
<b>Category:</b>	⌘ <b>F</b> <span style="float: right;"><b>Release:</b> ⌘ Rel-6</span> Use <u>one</u> of the following categories: <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <b>F</b> (correction)  <b>A</b> (corresponds to a correction in an earlier release)  <b>B</b> (addition of feature),  <b>C</b> (functional modification of feature)  <b>D</b> (editorial modification)                      Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a>.                 </td> <td style="width: 50%; vertical-align: top;">                     Use <u>one</u> of the following releases:                      2 (GSM Phase 2)                      R96 (Release 1996)                      R97 (Release 1997)                      R98 (Release 1998)                      R99 (Release 1999)                      Rel-4 (Release 4)                      Rel-5 (Release 5)                      Rel-6 (Release 6)                 </td> </tr> </table>	<b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .	Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)
<b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .	Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)		

<b>Reason for change:</b>	⌘ TS 22.234 uses the term “3GPP PS based services” when it groups WLAN interworking level without the definition. It only takes an “IMS” as a example of those services in TS. SA2 already considered the definition to clarify I-WLAN scenarios. Thus, not only to clarify the definition but also to help the understanding, SA1 should add the definition of “3GPP PS based services” to TS 22.234.
<b>Summary of change:</b>	⌘ Adding the following definition to TS 22.234. 3GPP PS based services: All services transported by the 3GPP PS domain.
<b>Consequences if not approved:</b>	⌘ Missing an important definiton

<b>Clauses affected:</b>	⌘											
<b>Other specs affected:</b>	<table style="border: none;"> <tr> <td style="border: 1px solid black; padding: 2px; text-align: center;">Y</td> <td style="border: 1px solid black; padding: 2px; text-align: center;">N</td> <td rowspan="3" style="padding-left: 10px;">Other core specifications</td> <td rowspan="3" style="padding-left: 10px;">⌘</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px; text-align: center;">X</td> <td style="border: 1px solid black; padding: 2px; text-align: center;">X</td> <td>Test specifications</td> <td rowspan="2" style="padding-left: 10px;">⌘</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px; text-align: center;">X</td> <td style="border: 1px solid black; padding: 2px; text-align: center;">X</td> <td>O&amp;M Specifications</td> </tr> </table>	Y	N	Other core specifications	⌘	X	X	Test specifications	⌘	X	X	O&M Specifications
Y	N	Other core specifications	⌘									
X	X					Test specifications	⌘					
X	X			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 Definitions and abbreviations

### 3.1 Definitions

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

**Environment:** The type of area to be covered by the WLAN network of a 3GPP-WLAN interworking; e.g. public, corporate and residential

**Home WLAN:** The WLAN that is interworking with the HPLMN of the 3GPP-WLAN interworking user

**Interworking WLAN:** WLAN that interworks with a 3GPP system.

**Online Charging:** See [1]

**Offline Charging:** See [1]

**3GPP PS based services:** [All services transported by the 3GPP PS domain.](#)

**Serving WLAN:** The interworking WLAN that the user is connected to, i.e. either a visited or a home WLAN.

**Visited WLAN:** An interworking WLAN that Interworks only with a visited PLMN.

**WLAN coverage:** an area where wireless local area network access services are provided for interworking by an entity in accordance with WLAN standards.

**WLAN roaming:** The ability for a 3GPP-WLAN interworking user (subscriber) to function in a serving WLAN different from the home WLAN

**3GPP-WLAN Interworking:** Used generically to refer to interworking between the 3GPP system and the WLAN family of standards

CR-Form-v7

## CHANGE REQUEST

⌘ **22.234 CR 003** ⌘ rev **-** ⌘ Current version: **6.0.0** ⌘

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>	⌘ TS 22.234 Addition of clause 4. General Description		
<b>Source:</b>	⌘ SA1 (Research In Motion)		
<b>Work item code:</b>	⌘ WLAN	<b>Date:</b>	⌘ 10/05/2004
<b>Category:</b>	⌘ <b>C</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>	⌘ Addition of text for blank clause 4.0		
<b>Summary of change:</b>	⌘ Provides general description of I-WLAN		
<b>Consequences if not approved:</b>	⌘ The stage 1 description would be missing one usually-included section. The "General description" assists the user by providing an overview, before the user reads the detailed requirements.		

<b>Clauses affected:</b>	⌘ 4. General description										
<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;">X</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	X	X	X	X	X	X	Other core specifications	⌘
Y	N										
X	X										
X	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:

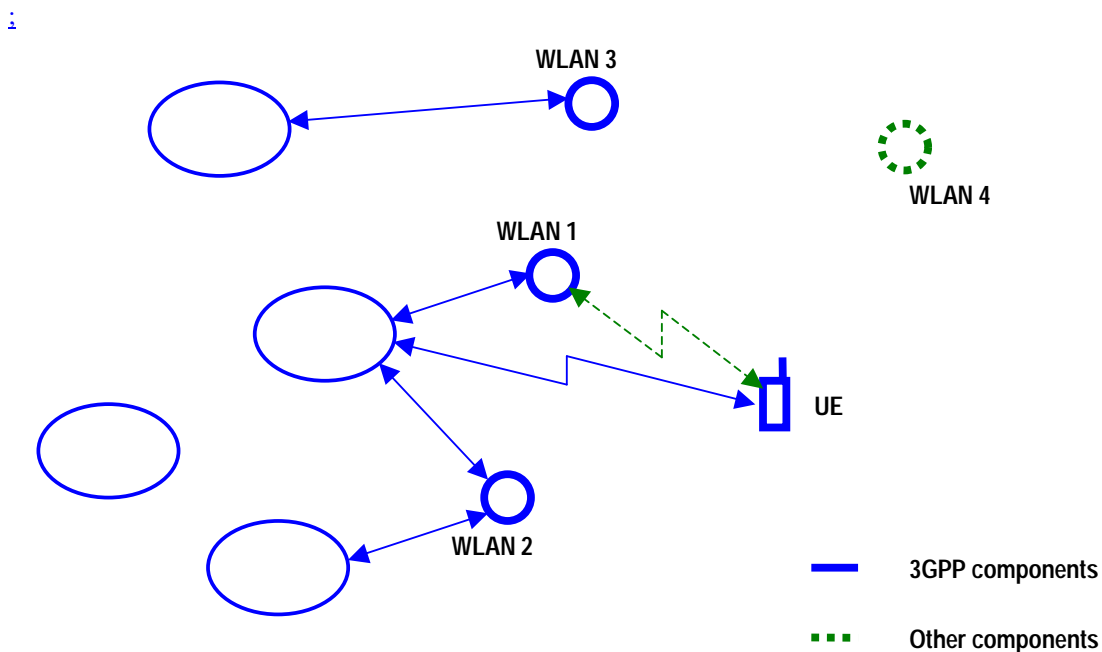
- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") 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.

## 4 General description

The growth of public WLANs provides an opportunity for appropriately-equipped UEs to access HPLMNs and VPLMNs via the WLANs. As shown in Figure 1, the WLANs that provides this functionality are referred to as I-WLANs. The I-WLANs (represented by WLAN 1 through WLAN 3) are connected to PLMNs, enabling UEs to access 3GPP services on HPLMNs and VPLMNs. Services provided by WLANs directly to UEs that do not involve PLMNs are outside the scope of this specification. The solid lines identify elements that are within the 3GPP scope and the dashed lines identify elements which are not specified by 3GPP.



**Figure 1: WLAN-3GPP system block diagram**

Network selection shall ensure that the user is connected to the highest priority PLMN when the HPLMN is not available. As a consequence the preference of an I-WLAN and connected PLMN may change from one country to another, even when the I-WLAN identity is unchanged.

Only UEs with WLAN capability are within the scope of this specification.

It is expected that the UEs with both WLAN and 3GPP radio access network capability will exist.

The access to the WLAN (as shown by the dashed line) is covered by specifications outside of 3GPP. Thus UEs must conform to those specifications to access the WLAN and to the 3GPP specifications in order to obtain 3GPP services from PLMNs through I-WLANs. The UE will have access to 3GPP services when its registration is confirmed by its HPLMN.

Note: Detailed background information is provided in clause 4 of [2].

[Note that the present Figure 1 is changed to Figure 2, when this section is added to the spec.]



CR-Form-v7
<b>CHANGE REQUEST</b>
⌘ <b>22.234 CR 004</b> ⌘ rev <b>-</b> ⌘ Current version: <b>6.0.0</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>	⌘ Selection of a PLMN accessed via an I-WLAN	
<b>Source:</b>	⌘ SA1 (WLAN SWG SA1)	
<b>Work item code:</b>	⌘ WLAN	<b>Date:</b> ⌘ 01/05/2004
<b>Category:</b>	⌘ <b>B</b> Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .	<b>Release:</b> ⌘ REL-6 Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

<b>Reason for change:</b>	⌘ Description of procedure for the selection of PLMN when connected via I-WLAN
<b>Summary of change:</b>	⌘ Reformatting of paragraph 6.1.1 in line with the PLMN selection procedure described in 22.011
<b>Consequences if not approved:</b>	⌘ No detailed requirement exist to perform a PLMN selection when connected via a I-WLAN

<b>Clauses affected:</b>	⌘ 6.1.1								
<b>Other specs affected:</b>	<table style="display: inline-table; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; padding: 2px;">Y</td> <td style="border: 1px solid black; padding: 2px;">N</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">X</td> <td style="border: 1px solid black; padding: 2px;"></td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;"></td> <td style="border: 1px solid black; padding: 2px;">X</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;"></td> <td style="border: 1px solid black; padding: 2px;">X</td> </tr> </table> Other core specifications ⌘ TS23.234, TS 24.234 Test specifications O&M Specifications	Y	N	X			X		X
Y	N								
X									
	X								
	X								
<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.

## 6.1.1 Network selection

The UE shall support both manual and automatic network selection mechanisms (modes) as standardized.

The UE shall use the last network selection mode used, as the default mode, at every switch-on.

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

When selecting a PLMN that is accessed via an interworked WLAN the UE shall be able to determine if the home or preferred PLMNs are available. The I-WLAN and PLMN selection shall adhere to operator and end user preferences using similar procedures as for Network Selection without WLAN interworking. This set of preferences may be different from the preferences used for direct 3GPP access. In manual network selection the user shall be able to request a list of available PLMNs via interworked WLANs. [The detailed procedures are described below.](#)

NOTE 1: The 3GPP operator may have agreements with multiple I-WLANs in the area and has preference over which WLAN to connect to based on the services supported.

NOTE 2: The adaptation of the Network Selection procedures to the WLAN interworking environment should take into account performance criteria (e.g. power consumption, network load).

NOTE 3: [The preference of a I-WLAN and connected PLMN may change from one country to another, even when the I-WLAN identity is unchanged.](#)

### 6.1.1.1 PLMN selection procedures

#### General

[For the purpose of selecting a PLMN two lists may be present in the UICC: the "User Controlled PLMN Selector list for I-WLAN" and the "Operator Controlled PLMN Selector list for I-WLAN". It is not mandatory for the UICC to support these lists, however if the "Operator Controlled PLMN Selector list for I-WLAN" is supported then the "User Controlled PLMN Selector list for I-WLAN" shall also be present. Both the lists contain the preferred PLMNs for I-WLAN in priority order, and the User Controlled PLMN Selector list for I-WLAN has higher priority than the Operator Controlled PLMN Selector list for I-WLAN.](#)

[The purpose of the procedure is to enable the UE to find a I-WLAN, however, in case no PLMN is found to be supported by any of the available WLANs, or if the UE cannot successfully register on any of the PLMNs found, the UE may display to the user a list of available WLANs by means of their identifier so that not interworking WLAN operations are still possible.](#)

#### A) Automatic selection mode

[In the automatic mode the UE shall perform the following procedure:](#)

1. [For each of the WLANs available the UE shall attempt to discover the PLMNs available via the particular WLAN. If the UE receives a list of available PLMNs, then](#)
  - 1a) [If the HPLMN is found then the procedure is stopped and the HPLMN is selected.](#)
  - 1b) [If the HPLMN is not found, the UE creates a list of PLMNs accessible over the particular WLAN](#)
2. [Among all the PLMNs obtained in step 1b\), select a PLMN following this order:](#)
  - i) [PLMNs contained in the "\[0\] User Controlled PLMN Selector list for I-WLAN" data file in the USIM in priority order, if the list is available;](#)
  - ii) [PLMNs contained in the "Operator Controlled PLMN Selector list for I-WLAN " data file in the USIM in priority order, if the list is available;](#)
  - iii) [PLMNs contained in the "User Controlled PLMN Selector list with access technology", if available;](#)
  - iv) [PLMNs contained in the "Operator Controlled PLMN Selector list with access technology", if available;](#)
  - v) [PLMNs contained in the optional "\[0\]User Controlled PLMN Selector list for I-WLAN " in the ME in priority order, if the list is available;](#)

vi) PLMNs contained in the optional "Operator Controlled PLMN Selector list for I-WLAN " in the ME in priority order, if the list is available;

vii) any other PLMN not included in the lists (randomly)

3. Attempt association with the WLAN AP providing connection to the PLMN selected in step 2 and attempt authentication with the selected PLMN.

NOTE: if more than one WLAN AP provides connection to the selected PLMN the UE choice of the WLAN AP to be used is left to the implementation.

## **B) Manual selection mode**

In manual selection mode the UE shall perform the following procedure:

1. For each of the available WLANs the UE shall attempt to discover the PLMNs available via the particular WLAN.

2. If the UE receives a list of available PLMNs, then the UE presents the available PLMNs in the following order:

i) HPLMN;

ii) PLMNs contained in the "[0] User Controlled PLMN Selector list for I-WLAN " data file in the USIM in priority order, if the list is available;

iii) PLMNs contained in the "Operator Controlled PLMN Selector list for I-WLAN " data file in the USIM in priority order, if the list is available;

iv) PLMNs contained in the "User Controlled PLMN Selector list with access technology", if available;

v) PLMNs contained in the "Operator Controlled PLMN Selector list with access technology", if available;

vi) PLMNs contained in the optional "[0]User Controlled PLMN Selector list for I-WLAN " in the ME in priority order, if the list is available;

vii) PLMNs contained in the optional "Operator Controlled PLMN Selector list for I-WLAN " in the ME in priority order, if the list is available;

viii) any other PLMN not included in the lists (in random order)

In case more than one WLAN AP gives access to the same PLMN, an indication of the WLAN identity should also be presented to the user.

NOTE: it is possible to have repetitions of the same PLMN in the list presented to the user

3. Upon user selection of the desired PLMN the UE shall attempt to register on this PLMN. If more than one WLAN access point offer connection to the selected PLMN[0], then the UE shall attempt registration via the selected WLAN access point. To do so, the UE associates with the AP supporting the PLMN selected by the user and attempt authentication.