3GPP TSG CN Plenary Meeting #21 **NP-030342**
17th - 19th September 2003. Frankfurt, Germany.

Source: TSG CN WG3

Title: CRs on Rel-5 Work Item TEI5.

Agenda item: 8.9

Document for: APPROVAL

Introduction:

This document contains **1** CRs on **Rel-5 Work Item TEI5** including the corresponding mirror CRs (as required).

These CRs have been agreed by TSG CN WG3 and are forwarded to TSG CN Plenary meeting for approval.

WG_tdoc	Title	Spec	CR	Rev	Cat	Rel	C_Ver	Work Item
N3-030653	Usage of RLP versions	24.022	012	2	F	Rel-5	5.3.0	TEI

3GPP TSG-CN WG3 Meeting #29 **Tdoc ⌘N3-030653**
Sophia Antipolis, France 25th – 29th August 2003.

CR-Form-v7

CHANGE REQUEST

⌘ **24.022** **CR** **012** ⌘ **rev** **2** ⌘ Current version: **5.3.0** ⌘

*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 ☒

Title:	⌘	Usage of RLP versions
Source:	⌘	TSG_CN WG3 [Ericsson]
Work item code:	⌘	TEI
Date:	⌘	27/08/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one 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)*

Reason for change:	⌘	The current TS 24.022 restricts the usage of RLP versions to version numbers 0 and 1, when the requested wanted air interface user rate (WAIUR) is 14.4 kbit/s or less. This means that even terminals and RLP IWFs operating in UTRAN Iu mode that requests a WAIUR of 14.4 kbit/s shall require RLP version 0 or 1 only. This restriction is a remnant from the GSM HSCSD era for single channel terminals and networks operating only with RLP versions 0 and 1. Today, the RLP version 2 is widely used, so the limitation of negotiating only version 0 or 1 is not valid any longer. Furthermore, Table 2 in the section 5.5. recommends negotiating version 2 always. The existing limitation of negotiating version 0 or 1 only at lower rates has no technical grounds for UTRAN Iu mode and is an unnecessary burden for UTRAN Iu mode terminals.
Summary of change:	⌘	The restriction for UTRAN Iu mode terminals and RLP IWF to only use an RLP version 0 or 1 when WAIUR is equal or less than 14.4 is removed.
Consequences if not approved:	⌘	The specification contains an artificial restriction for terminals and RLP IWF operating in UTRAN Iu mode. In addition, these terminals shall support RLP version 0 or 1 only for 14.4 kbit/s, when the current version of the RLP protocol is 2.

Clauses affected:	⌘	3

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	

Other comments: ⌘

3 Introduction

Three versions of RLP are defined:

- RLP version 0: single-link basic version;
- RLP version 1: single-link extended version (e.g. extended by data compression);
- RLP version 2: multi-link version.

RLP uses one physical link (single-link) or from 1 up to 4 (multi-link) substreams on one or more physical links. However, the RLP multi-link version is designed to be able to support up to 8 physical links.

In A/Gb and GERAN Iu mode:

- If, in the call set-up signalling, either end indicates that it cannot support multi-link operation, neither end shall require usage of RLP-versions higher than 1. If the BC negotiation during call set-up results in a possibility for multi-link operation during the call, both ends shall require and accept RLP version 2 only;
- If the BC-IE sent by the UE in the SETUP or CALL CONFIRM message indicates "maximum number of traffic channels" = "1 TCH" and WAIUR ≤ 14.4 kbit/s and the BC-IE sent by the UE in the CALL CONFIRM message (MT case) or by the MSC in the CALL PROCEEDING message (MO case) indicates UIMI = "User initiated modification not allowed/required/applicable " or "User initiated modification up to 1 TCH/F allowed/may be requested ", this shall be interpreted as if at least one end does not support multi-link operation, and neither end shall require an RLP version higher than 1. ~~The same interpretation shall apply if the octets containing the parameters "maximum number of traffic channels" or UIMI are not included in the respective BC-IE.~~

In UTRAN Iu mode, either end is allowed to request the usage of any RLP-version.

RLP makes use of an underlying FEC (Forward Error Correction) mechanism. For RLP to perform adequately it is assumed that the basic radio channel together with FEC provides for a block error rate of less than 10 %, where a block consists of 240 bits or 576 bits (Further study on the BLER for 576-bit blocks is needed). Furthermore, it is assumed that in case of multi-link RLP the difference of the delay between all physical links is less than timer T4.

In A/Gb mode and in GERAN Iu mode, RLP frames are of a fixed size of 240 (TCH/F4,8 and TCH/F9,6 channel codings) or 576 bits (TCH/F14,4, TCH/F28,8 and TCH/F43,2 channel codings). In UTRAN Iu mode, the RLP frame size does not depend on the channel coding, only 576 bit frames are used.

RLP entities running only in an UTRAN Iu mode environment need only to support the 576 bit frame length. The REMAP function is not necessary. RLP entities running in both of the systems have to support the REMAP function. In a handover from UTRAN Iu mode to A/Gb mode or GERAN Iu mode the frame either stays 576 bits long or changes from 576 bits to 240 bits incurring a REMAP. In a handover from A/Gb mode or GERAN Iu mode to UTRAN Iu mode the frame either stays 576 bits long or changes from 240 bits to 576 bits incurring a REMAP.

In A/Gb mode, RLP frames are sent in strict alignment with the radio transmission. (For details, see 3GPP TS 44.021 [2]). Whenever a frame is to be sent, the RLP entity has to provide the necessary protocol information to be contained in it.

Provision is made for Discontinuous Transmission (DTX).

RLP spans from the User Equipment (UE) to the interworking function (IWF), located at the nearest Mobile Switching Centre (MSC), or beyond. Depending on the exact location of the IWF, handover of the UE may result in link-reset or even total loss of the connection.

The UE shall initiate the RLP link. In addition the MSC/IWF may initiate the RLP link.

In the terminology of HDLC, RLP is used in a balanced configuration, employing asynchronous operation, i.e. either station has the right to set-up, reset, or disconnect a link at any time. Procedural means are provided for to deal with contentious situations, should they ever occur.

RLP is full-duplex in the sense that it allows for information to be transferred in both directions simultaneously.