TSGS#23(04)0134

Source: SA5 (Telecom Management)

Title: 3 Rel-4/5/6 CR 32.403 Radio link additions

Document for: Decision

Agenda Item: 7.5.3

Doc-1st-Level	Spec	CR	R	Phase	Subject	Cat	Vers.	Doc-2nd-L	Workitem
SP-040134	32.403	026	-	Rel-4	Correction of “Radio link addition” measurements	F	4.5.0	S5-048188	OAM-PM
SP-040134	32.403	027	-	Rel-5	Correction of “Radio link addition” measurements	A	5.5.0	S5-048189	OAM-PM
SP-040134	32.403	028	-	Rel-6	Correction of “Radio link addition” measurements	A	6.2.0	S5-048190	OAM-PM

CR-Form-v7

CHANGE REQUEST

⌘ 32.403 CR 026 ⌘rev - ⌘ Current version: 4.5.0 ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☒ Core Network ☐

Title:	⌘	Correction of "Radio link addition" measurements
Source:	⌘	**SA5** (llrui@bupt.edu.cn, liyewen@chinamobile.com)
Work item code:	⌘	OAM-PM
Date:	⌘	27/02/2004
Category:	⌘	**F**
Release:	⌘	Rel-4

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:	⌘	Radio links can be added by the "Radio Link Setup" procedure and the "Radio Link Addition" procedure of both NBAP(25.433) and RNSAP(25.423), but "Radio link additions" measurements currently only concerns two of the four procedures. Furthermore, when "RADIO LINK SETUP FAILURE" or "RADIO LINK ADDITION FAILURE" is received, some radio links may be established successfully, and they are not added to "Successful radio link additions" measurement at present. Thirdly, when Iur procedure is measured, the conditions of the measurements are inconsistent with the measurement object classes of those.
Summary of change:	⌘	Modify the conditions of "Radio link additions" measurements.
Consequences if not approved:	⌘	The conditions of the measurements will be inconsistent with the descriptions and the measurement object classes of that measurements.

Clauses affected:	⌘	4.8			
Other specs affected:	⌘	Y / N		⌘	
			X Other core specifications		
			X Test specifications		
		X	O&M Specifications		Rel-5/6 32.403
Other comments:	⌘	Rel-5 Mirror CR 32.403 in S5-048189. Rel-6 Mirror CR 32.403 in S5-048190.			

Change in Clause 4.8

4.8 Radio link addition procedure (UTRAN side)

4.8.1 Overview

4.8.1.1 Considered radio link management procedures

Performance Measurement definitions in this subclause are based on the TS 25.423 "UTRAN Iur interface RNSAP Signalling" document [6] and TS 25.433 " UTRAN Iub Interface NBAP signalling" document [7].

The following paragraphs are of interest for this purpose:

- Radio Link Setup (NBAP);
- Radio Link Addition (NBAP);
- Radio Link Deletion (NBAP);
- Radio Link Setup (RNSAP);
- Radio Link Addition (RNSAP);
- Radio Link Deletion (RNSAP);
- RADIO LINK SETUP REQUEST (NBAP);
- RADIO LINK SETUP RESPONSE (NBAP);
- RADIO LINK SETUP FAILURE (NBAP);
- RADIO LINK ADDITION REQUEST (NBAP);
- RADIO LINK ADDITION RESPONSE (NBAP);
- RADIO LINK ADDITION FAILURE (NBAP);
- RADIO LINK DELETION REQUEST (NBAP);
- RADIO LINK DELETION RESPONSE (NBAP);
- RADIO LINK SETUP REQUEST (RNSAP);
- RADIO LINK SETUP RESPONSE (RNSAP);
- RADIO LINK SETUP FAILURE (RNSAP);
- RADIO LINK ADDITION REQUEST (RNSAP);
- RADIO LINK ADDITION RESPONSE (RNSAP);
- RADIO LINK ADDITION FAILURE (RNSAP);
- RADIO LINK DELETION REQUEST (RNSAP);
- RADIO LINK DELETION RESPONSE (RNSAP);

These paragraphs show in particular the following diagrams:

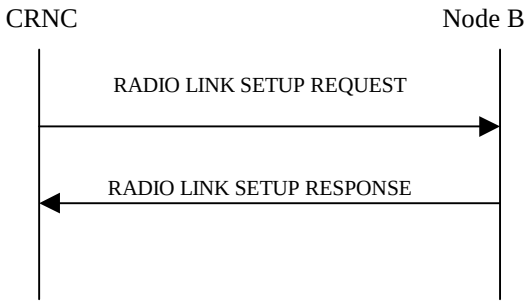

Figure: Radio Link Setup procedure on Iub, Successful Operation

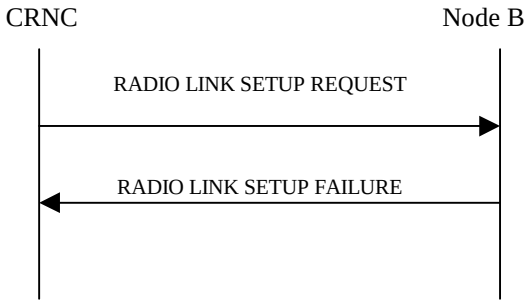

Figure: Radio Link Setup procedure on Iub, Unsuccessful Operation

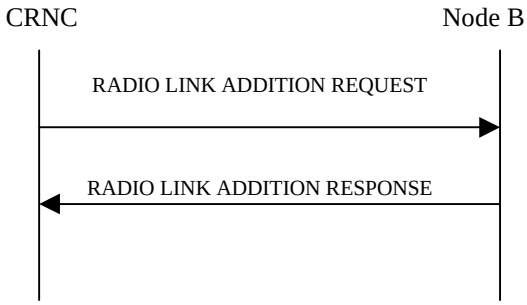

Figure: Radio Link Addition procedure on Iub, Successful Operation

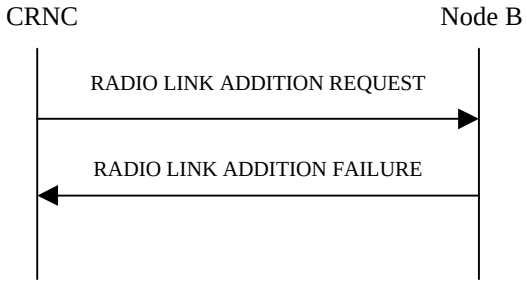

Figure: Radio Link Addition procedure on Iub, Unsuccessful Operation

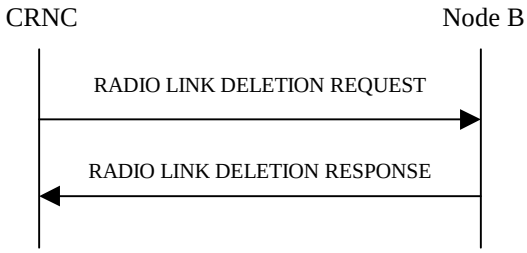

Figure: Radio Link Deletion procedure on Iub, Successful Operation

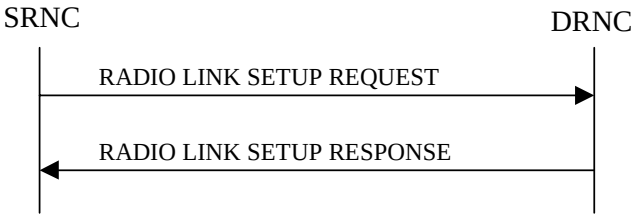

Figure: Radio Link Setup procedure on Iur, Successful Operation

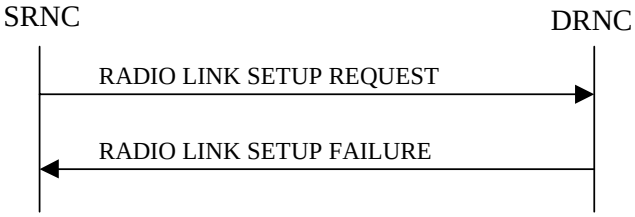

Figure: Radio Link Setup procedure on Iur, Unsuccessful Operation

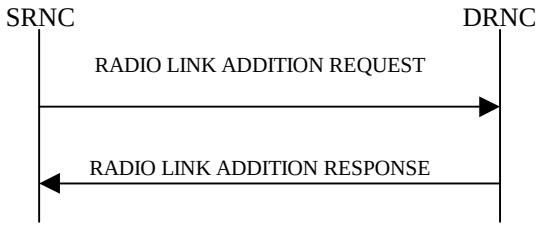

Figure: Radio Link Addition procedure on Iur, Successful Operation

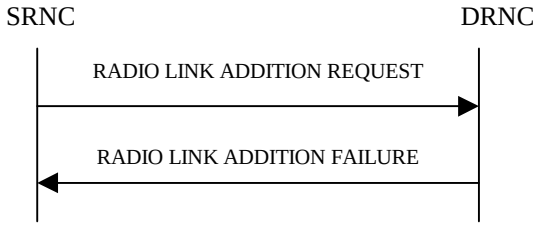

Figure: Radio Link Addition procedure on Iur, Unsuccessful Operation

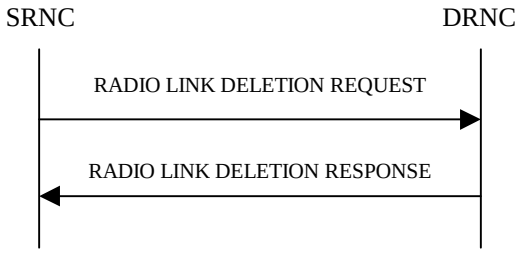

Figure: Radio Link Deletion procedure on Iur, Successful Operation

4.8.1.2 Relation between Iub measurements and Iur measurements

The following figure shows the relation between Iub interface and Iur interface. There are two cases for SRNC (CRNC1) to request radio link management activities in this figure.

In case (1), SRNC (CRNC1) sets up/adds/deletes radio links in NodeB1 and NodeB1 is directly controlled by SRNC (CRNC1).

In case (2/2bis), NodeB2 is directly controlled by DRNC (CRNC2). If SRNC (CRNC1) wants to set up/add/delete radio links in NodeB2, SRNC (CRNC1) will send request to DRNC (CRNC2), and DRNC (CRNC2) set up/add/delete radio links in NodeB2. In such case, if DRNC (CRNC2) fails to set up/add radio links in NodeB2 and receives failure message from NodeB2, DRNC (CRNC2) will send failure message back to SRNC (CRNC1). Furthermore if DRNC (CRNC2) has problem inside and fails to send request to NodeB2, it will send failure message back to the SRNC (CRNC1) directly.

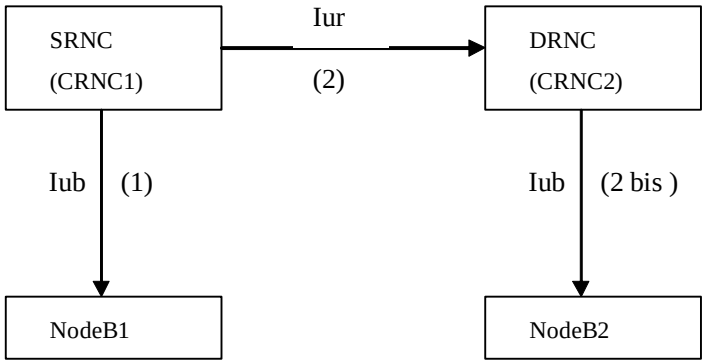

Figure: Relation between Iub interface and Iur interface

This subclause has separated measurements for both Iur interface and Iub interface. From the above figure and description, we can see that the Iub interface measurements and Iur interface measurements overlap in some degree. Based on maintenance requirements, these two kinds measurements are needed and they are useful for operators to evaluate both the Iub interface and Iur interface, and to analyze all the failure cases they concern.

4.8.2 Radio link setups on Iub (UTRAN side)

The three measurement types defined in the subclause 4.8.2.n for radio link setups on Iub (UTRAN side) are subject to the "2 out of 3 approach".

4.8.2.1 Attempted radio link setups on Iub (UTRAN side)

a) This measurement provides the number of attempted radio link setups on Iub (UTRAN side) for each cell. This measurement shall be increased for each attempted radio link setup on Iub (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Transmission of a RADIO LINK SETUP REQUEST message (NBAP) by the controlling RNC to the NodeB. Within a RADIO LINK SETUP REQUEST message more than one radio link can be set up. Each existing radio link information element shall be considered separately (see TS 25.433).

d) A single integer value.

e) SHO.AttRLSetupIubUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.8.2.2 Successful radio link setups on Iub (UTRAN side)

a) This measurement provides the number of successful radio link setups on Iub (UTRAN side) for each cell. This measurement shall be increased for each successful radio link setup on Iub (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) This measurement is based on two different events:

- Receipt of a RADIO LINK SETUP RESPONSE message (NBAP) sent by NodeB to the controlling RNC in response to a RADIO LINK SETUP REQUEST message with one or more existing radio link information elements. One RADIO LINK SETUP RESPONSE message can be related to more than one radio link . Each radio link that is set up successfully shall be considered separately (see TS 25.433).

- Receipt of a RADIO LINK SETUP FAILURE message (NBAP) sent by NodeB to the controlling RNC in response to a RADIO LINK SETUP REQUEST message with at least one Successful RL Information Response information element. One RADIO LINK SETUP FAILURE message can be related to more than one radio link. Each radio link that is set up successfully shall be considered separately (see TS 25.433).

d) A single integer value.

e) SHO.SuccRLSetupIubUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.8.2.3 Failed radio link setups on Iub (UTRAN side)

a) This measurement provides the number of failed radio link setups on Iub (UTRAN side) for each cell. This measurement shall be increased for each failed radio link setup on Iub (UTRAN side). For each failure cause a separate measurement is defined. Every failed radio link setup on Iub shall be considered separately. This measurement is valid for FDD and TDD mode.

b) CC.

c) Receipt of a RADIO LINK SETUP FAILURE message (NBAP) sent by NodeB to the controlling RNC in response to a RADIO LINK SETUP REQUEST message with one or more existing radio link information elements. One RADIO LINK SETUP FAILURE message can be related to more than one radio link. Each failed attempt to set up a radio link shall be considered separately. Failure causes are defined within TS 25.433.

Each expected RADIO LINK SETUP RESPONSE or RADIO LINK SETUP FAILURE not received by the controlling RNC is added to the measurement cause 'No Reply' (not specified in TS 25.433).

The sum of all supported per cause measurements shall equal the total number of failures. In case only a subset of per cause measurements is supported, a sum measurement subtype will be provided first.

d) Each measurement is an integer value. The number of measurements is equal to the number of causes supported plus a possible sum value identified by the *.sum* suffix.

e) The measurement name has the form SHO.FailRLSetupIubUTRANSide.*Cause*
where *Cause* identifies the failure cause.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.8.3 Radio link setups on Iur (UTRAN side)

The three measurement types defined in the subclause 4.8.3.n for radio link setups on Iur (UTRAN side) are subject to the "2 out of 3 approach".

4.8.3.1 Attempted radio link setups on Iur (UTRAN side)

a) This measurement provides the number of attempted radio link setups on Iur (UTRAN side) for each cell. This measurement shall be increased for each attempted radio link setup on Iur (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Receipt of a RADIO LINK SETUP REQUEST message (RNSAP) sent by the serving RNC to the drift RNC. Within a RADIO LINK SETUP REQUEST message more than one radio link can be set up. Each existing radio link information element shall be considered separately (see TS 25.423).

d) A single integer value.

e) SHO.AttRLSetupIurUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.8.3.2 Successful radio link setups on Iur (UTRAN side)

a) This measurement provides the number of successful radio link setups on Iur (UTRAN side) for each cell. This measurement shall be increased for each successful radio link setup on Iur (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) This measurement is based on two different events:

- Transmission of a RADIO LINK SETUP RESPONSE message (RNSAP) by the drift RNC to the serving RNC in response to a RADIO LINK SETUP REQUEST message with one or more existing radio link information elements. One RADIO LINK SETUP RESPONSE message can be related to more than one radio link. Each radio link that is set up successfully shall be considered separately (see TS 25.423).

- Transmission of a RADIO LINK SETUP FAILURE message (RNSAP) by the drift RNC to the serving RNC in response to a RADIO LINK SETUP REQUEST message with at least one Successful RL Information Response information element. One RADIO LINK SETUP FAILURE message can be related to more than one radio link. Each radio link that is set up successfully shall be considered separately (see TS 25.423).

d) A single integer value.

e) SHO.SuccRLSetupIurUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.8.3.3 Failed radio link setups on Iur (UTRAN side)

a) This measurement provides the number of failed radio link setups on Iur (UTRAN side) for each cell. This measurement shall be increased for each failed radio link setup on Iur (UTRAN side). For each failure cause a separate measurement is defined. Every failed radio link setup on Iur shall be considered separately. This measurement is valid for FDD and TDD mode.

b) CC.

c) Transmission of a RADIO LINK SETUP FAILURE message (RNSAP) by the drift RNC to the serving RNC in response to a RADIO LINK SETUP REQUEST message with one or more existing radio link information elements. One RADIO LINK SETUP FAILURE message can be related to more than one radio link. Each failed attempt to set up a radio link shall be considered separately. Failure causes are defined within TS 25.423.

The sum of all supported per cause measurements shall equal the total number of failures. In case only a subset of per cause measurements is supported, a sum measurement subtype will be provided first.

d) Each measurement is an integer value. The number of measurements is equal to the number of causes supported plus a possible sum value identified by the *.sum* suffix.

e) The measurement name has the form SHO.FailRLSetupIurUTRANSide.*Cause*
where *Cause* identifies the failure cause.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.8.4 Radio link additions on Iub (UTRAN side)

The three measurement types defined in the subclause 4.8.4.n for radio link additions on Iub (UTRAN side) are subject to the "2 out of 3 approach".

4.8.4.1 Attempted radio link additions on Iub (UTRAN side)

a) This measurement provides the number of attempted radio link additions on Iub (UTRAN side) for each cell. This measurement shall be increased for each attempted radio link addition on Iub (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Transmission of a RADIO LINK ADDITION REQUEST message (NBAP) by the controlling RNC to the NodeB. Within a RADIO LINK ADDITION REQUEST message more than one radio link can be added. Each existing radio link information element shall be considered separately (see TS 25.433).

d) A single integer value.

e) SHO.AttRLAddIubUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.8.4.2 Successful radio link additions on Iub (UTRAN side)

a) This measurement provides the number of successful radio link additions on Iub (UTRAN side) for each cell. This measurement shall be increased for each successful radio link addition on Iub (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) This measurement is based on two different events:

- Receipt of a RADIO LINK ADDITION RESPONSE message (NBAP) sent by NodeB to the controlling RNC in response to a RADIO LINK ADDITION REQUEST message with one or more existing radio link information elements. One RADIO LINK ADDITION RESPONSE message can be related to more than one added radio link. Each successful added radio link shall be considered separately (see TS 25.433).

- Receipt of a RADIO LINK ADDITION FAILURE message (NBAP) sent by NodeB to the controlling RNC in response to a RADIO LINK ADDITION REQUEST message with at least one Successful RL Information Response information element. One RADIO LINK ADDITION FAILURE message can be related to more than one radio link. Each successful added radio link shall be considered separately (see TS 25.433).

d) A single integer value.

e) SHO.SuccRLAddIubUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.8.4.3 Failed radio link additions on Iub (UTRAN side)

a) This measurement provides the number of failed radio link additions on Iub (UTRAN side) for each cell. This measurement shall be increased for each failed radio link addition on Iub (UTRAN side). For each failure cause a separate measurement is defined. Every failed radio link addition on Iub shall be considered separately. This measurement is valid for FDD and TDD mode.

b) CC.

c) Receipt of a RADIO LINK ADDITION FAILURE message (NBAP) sent by NodeB to the controlling RNC in response to a RADIO LINK ADDITION REQUEST message with one or more existing radio link information elements. One RADIO LINK ADDITION FAILURE message can be related to more than one radio link. Each failed attempt to add a radio link shall be considered separately. Failure causes are defined within TS 25.433.

Each expected RADIO LINK ADDITION RESPONSE or RADIO LINK ADDITION FAILURE not received by the controlling RNC is added to the measurement cause 'No Reply' (not specified in TS 25.433).

The sum of all supported per cause measurements shall equal the total number of failures. In case only a subset of per cause measurements is supported, a sum measurement subtype will be provided first.

d) Each measurement is an integer value. The number of measurements is equal to the number of causes supported plus a possible sum value identified by the *.sum* suffix.

e) The measurement name has the form SHO.FailRLAddIubUTRANSide.*Cause*
where *Cause* identifies the failure cause.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.8.5 Radio link additions on Iur (UTRAN side)

The three measurement types defined in the subclause 4.8.5.n for radio link additions on Iur (UTRAN side) are subject to the "2 out of 3 approach".

4.8.5.1 Attempted radio link additions on Iur (UTRAN side)

a) This measurement provides the number of attempted radio link additions on Iur (UTRAN side) for each cell. This measurement shall be increased for each attempted radio link addition on Iur (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Receipt of a RADIO LINK ADDITION REQUEST message (RNSAP) sent by the serving RNC to the drift RNC. Within a RADIO LINK ADDITION REQUEST message more than one radio link can be added. Each existing radio link information element shall be considered separately (see TS 25.423).

d) A single integer value.

e) SHO.AttRLAddIurUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.8.5.2 Successful radio link additions on Iur (UTRAN side)

a) This measurement provides the number of successful radio link additions on Iur (UTRAN side) for each cell. This measurement shall be increased for each successful radio link addition on Iur (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) This measurement is based on two different events:

- Transmission of a RADIO LINK ADDITION RESPONSE message (RNSAP) by the drift RNC to the serving RNC in response to a RADIO LINK ADDITION REQUEST message with one or more existing radio link information elements. One RADIO LINK ADDITION RESPONSE message can be related to more than one added radio link. Each successful added radio link shall be considered separately (see TS 25.423).

- Transmission of a RADIO LINK ADDITION FAILURE message (RNSAP) by the drift RNC to the serving RNC in response to a RADIO LINK ADDITION REQUEST message with at least one Successful RL Information Response information element. One RADIO LINK ADDITION FAILURE message can be related to more than one radio link. Each successful added radio link shall be considered separately (see TS 25.423).

d) A single integer value.

e) SHO.SuccRLAddIurUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.8.5.3 Failed radio link additions on Iur (UTRAN side)

a) This measurement provides the number of failed radio link additions on Iur (UTRAN side) for each cell. This measurement shall be increased for each failed radio link addition on Iur (UTRAN side). For each failure cause a

separate measurement is defined. Every failed radio link addition shall be considered separately. This measurement is valid for FDD and TDD mode.

b) CC.

c) Transmission of a RADIO LINK ADDITION FAILURE message (RNSAP) by the drift RNC to the serving RNC in response to a RADIO LINK ADDITION REQUEST message with one or more existing radio link information elements. One RADIO LINK ADDITION FAILURE message can be related to more than one radio link. Each failed attempt to add a radio link shall be considered separately. Failure causes are defined within TS 25.423.

The sum of all supported per cause measurements shall equal the total number of Failures. In case only a subset of per cause measurements is supported, a sum measurement subtype will be provided first.

d) Each measurement is an integer value. The number of measurements is equal to the number of causes supported plus a possible sum value identified by the *.sum* suffix.

e) The measurement name has the form SHO.FailRLAddIurUTRANSide.*Cause*
where *Cause* identifies the failure cause.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.8.6 Radio link deletions on Iub (UTRAN side)

4.8.6.1 Attempted radio link deletions on Iub (UTRAN side)

a) This measurement provides the number of attempted radio link deletions on Iub (UTRAN side) for each cell. This measurement shall be increased for each attempted radio link deletion on Iub (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Transmission of a RADIO LINK DELETION REQUEST message (NBAP) by the controlling RNC to the NodeB. Within a RADIO LINK DELETION REQUEST message more than one radio link can be removed. Each existing radio link information element shall be considered separately (see TS 25.433).

d) A single integer value.

e) SHO.AttRLDelIubUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.8.6.2 Successful radio link deletions on Iub (UTRAN side)

a) This measurement provides the number of successful radio link deletions on Iub (UTRAN side) for each cell. This measurement shall be increased for each successful radio link deletion on Iub (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Receipt of a RADIO LINK DELETION RESPONSE message (NBAP) sent by NodeB to the controlling RNC in response to a RADIO LINK DELETION REQUEST message with one or more existing radio link removal information element. One RADIO LINK DELETION RESPONSE message can be related to more than one deleted radio link. Each successful deleted radio link shall be considered separately (see TS 25.433).

d) A single integer value.

e) SHO.SuccRLDelIubUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS

4.8.7 Radio link deletions on Iur (UTRAN side)

4.8.7.1 Attempted radio link deletions on Iur (UTRAN side)

a) This measurement provides the number of attempted radio link deletions on Iur (UTRAN side) for each cell. This measurement shall be increased for each attempted radio link deletion on Iur (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Receipt of a RADIO LINK DELETION REQUEST message (RNSAP) sent by the serving RNC to the drift RNC. Within a RADIO LINK DELETION REQUEST message more than one radio link can be removed. Each existing radio link information element shall be considered separately (see TS 25.423).

d) A single integer value.

e) SHO.AttRLDelIurUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.8.7.2 Successful radio link deletions on Iur (UTRAN side)

a) This measurement provides the number of successful radio link deletions on Iur (UTRAN side) for each cell. This measurement shall be increased for each successful radio link deletion on Iur (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Transmission of a RADIO LINK DELETION RESPONSE message (RNSAP) by the drift RNC to the serving RNC in response to a RADIO LINK DELETION REQUEST message with one or more existing radio link removal information element. One RADIO LINK DELETION RESPONSE message can be related to more than one deleted radio link. Each successful deleted radio link shall be considered separately (see TS 25.423).

d) A single integer value.

e) SHO.SuccRLDelIurUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

End of Change in Clause 4.8
End of Document

CR-Form-v7

CHANGE REQUEST

⌘ 32.403 CR 027 ⌘rev - ⌘ Current version: 5.5.0 ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☒ Core Network ☐

Title:	⌘	Correction of "Radio link addition" measurements
Source:	⌘	**SA5** (llrui@bupt.edu.cn, liyewen@chinamobile.com)
Work item code:	⌘	OAM-PM
Date:	⌘	27/02/2004
Category:	⌘	**A**
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:	⌘	Radio links can be added by the "Radio Link Setup" procedure and the "Radio Link Addition" procedure of both NBAP(25.433) and RNSAP(25.423), but "Radio link additions" measurements currently only concerns two of the four procedures. Furthermore, when "RADIO LINK SETUP FAILURE" or "RADIO LINK ADDITION FAILURE" is received, some radio links may be established successfully, and they are not added to "Successful radio link additions" measurement at present. Thirdly, when Iur procedure is measured, the conditions of the measurements are inconsistent with the measurement object classes of those.
Summary of change:	⌘	Modify the conditions of "Radio link additions" measurements.
Consequences if not approved:	⌘	The conditions of the measurements will be inconsistent with the descriptions and the measurement object classes of that measurements.

Clauses affected:	⌘	4.9			
Other specs affected:	⌘	Y / N		⌘	
			X Other core specifications		
			X Test specifications		
		X	O&M Specifications		Rel-6 32.403
Other comments:	⌘	Rel-5 Mirror CR of S5-048188.			

Change in Clause 4.9

4.9 Radio link addition procedure (UTRAN side)

4.9.1 Overview

4.9.1.1 Considered radio link management procedures

Performance Measurement definitions in this subclause are based on the TS 25.423 "UTRAN Iur interface RNSAP Signalling" document [6] and TS 25.433 " UTRAN Iub Interface NBAP signalling" document [7].

The following paragraphs are of interest for this purpose:

- Radio Link Setup (NBAP);
- Radio Link Addition (NBAP);
- Radio Link Deletion (NBAP);
- Radio Link Setup (RNSAP);
- Radio Link Addition (RNSAP);
- Radio Link Deletion (RNSAP);
- RADIO LINK SETUP REQUEST (NBAP);
- RADIO LINK SETUP RESPONSE (NBAP);
- RADIO LINK SETUP FAILURE (NBAP);
- RADIO LINK ADDITION REQUEST (NBAP);
- RADIO LINK ADDITION RESPONSE (NBAP);
- RADIO LINK ADDITION FAILURE (NBAP);
- RADIO LINK DELETION REQUEST (NBAP);
- RADIO LINK DELETION RESPONSE (NBAP);
- RADIO LINK SETUP REQUEST (RNSAP);
- RADIO LINK SETUP RESPONSE (RNSAP);
- RADIO LINK SETUP FAILURE (RNSAP);
- RADIO LINK ADDITION REQUEST (RNSAP);
- RADIO LINK ADDITION RESPONSE (RNSAP);
- RADIO LINK ADDITION FAILURE (RNSAP);
- RADIO LINK DELETION REQUEST (RNSAP);
- RADIO LINK DELETION RESPONSE (RNSAP);

These paragraphs show in particular the following diagrams:

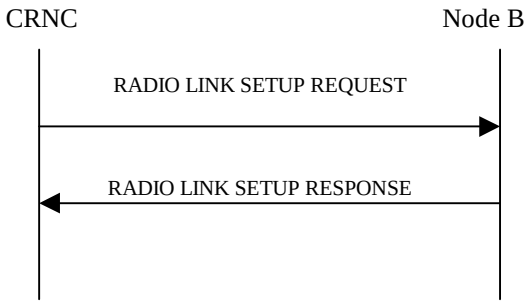

Figure: Radio Link Setup procedure on Iub, Successful Operation

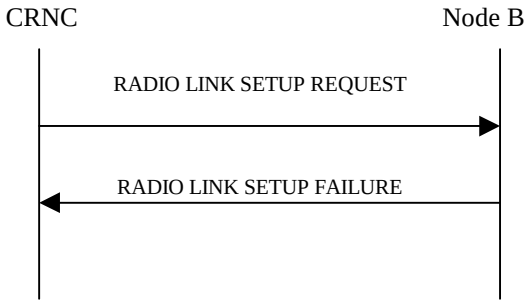

Figure: Radio Link Setup procedure on Iub, Unsuccessful Operation

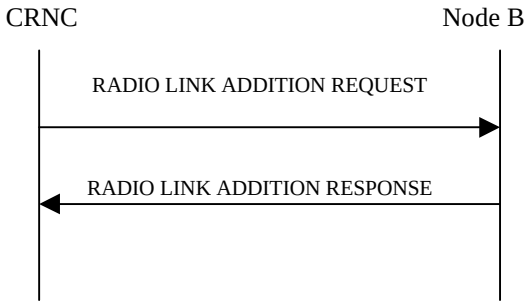

Figure: Radio Link Addition procedure on Iub, Successful Operation

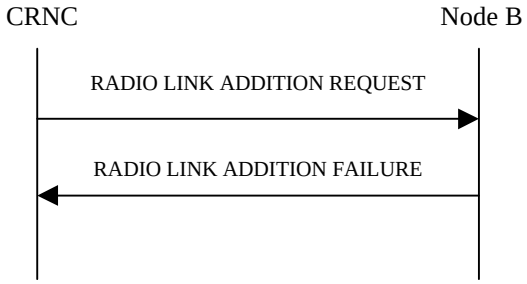

Figure: Radio Link Addition procedure on Iub, Unsuccessful Operation

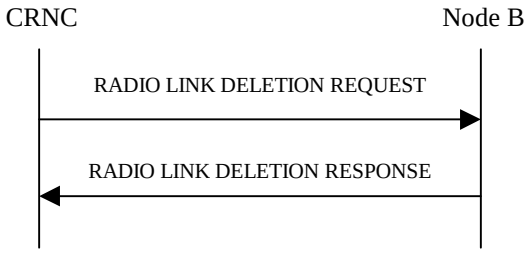

Figure: Radio Link Deletion procedure on Iub, Successful Operation

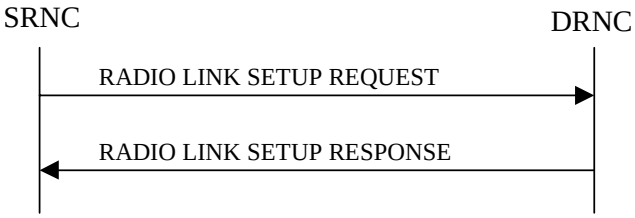

Figure: Radio Link Setup procedure on Iur, Successful Operation

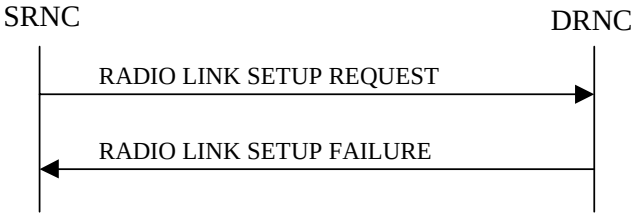

Figure: Radio Link Setup procedure on Iur, Unsuccessful Operation

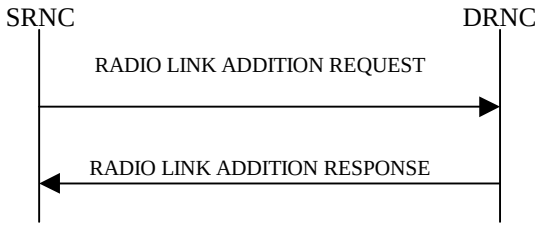

Figure: Radio Link Addition procedure on Iur, Successful Operation

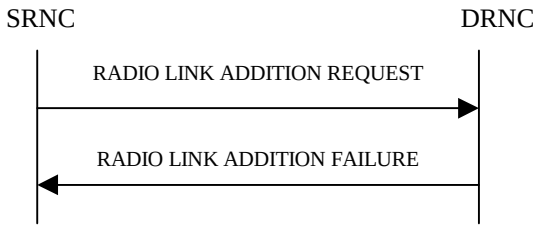

Figure: Radio Link Addition procedure on Iur, Unsuccessful Operation

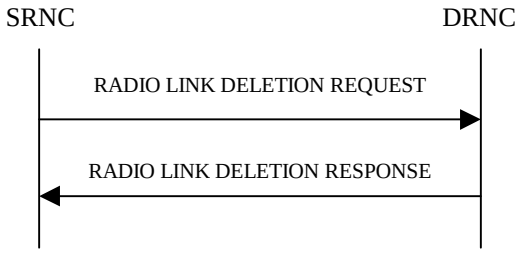

Figure: Radio Link Deletion procedure on Iur, Successful Operation

4.9.1.2 Relation between Iub measurements and Iur measurements

The following figure shows the relation between Iub interface and Iur interface. There are two cases for SRNC (CRNC1) to request radio link management activities in this figure.

In case (1), SRNC (CRNC1) sets up/adds/deletes radio links in NodeB1 and NodeB1 is directly controlled by SRNC (CRNC1).

In case (2/2bis), NodeB2 is directly controlled by DRNC (CRNC2). If SRNC (CRNC1) wants to set up/add/delete radio links in NodeB2, SRNC (CRNC1) will send request to DRNC (CRNC2), and DRNC (CRNC2) set up/add/delete radio links in NodeB2. In such case, if DRNC (CRNC2) fails to set up/add radio links in NodeB2 and receives failure message from NodeB2, DRNC (CRNC2) will send failure message back to SRNC (CRNC1). Furthermore if DRNC (CRNC2) has problem inside and fails to send request to NodeB2, it will send failure message back to the SRNC (CRNC1) directly.

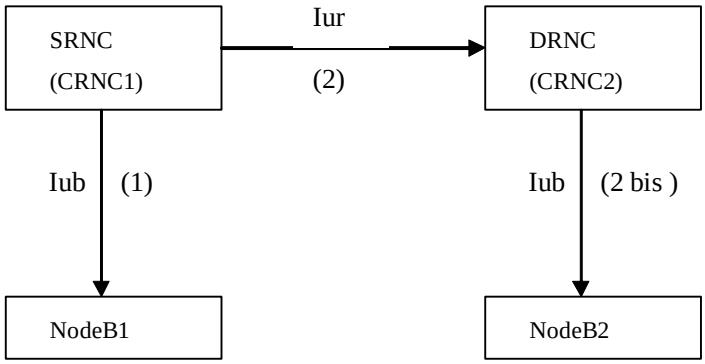

Figure: Relation between Iub interface and Iur interface

This subclause has separated measurements for both Iur interface and Iub interface. From the above figure and description, we can see that the Iub interface measurements and Iur interface measurements overlap in some degree. Based on maintenance requirements, these two kinds measurements are needed and they are useful for operators to evaluate both the Iub interface and Iur interface, and to analyze all the failure cases they concern.

4.9.2 Radio link setups on Iub (UTRAN side)

The three measurement types defined in the subclause 4.9.2.n for radio link setups on Iub (UTRAN side) are subject to the "2 out of 3 approach".

4.9.2.1 Attempted radio link setups on Iub (UTRAN side)

a) This measurement provides the number of attempted radio link setups on Iub (UTRAN side) for each cell. This measurement shall be increased for each attempted radio link setup on Iub (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Transmission of a RADIO LINK SETUP REQUEST message (NBAP) by the controlling RNC to the NodeB. Within a RADIO LINK SETUP REQUEST message more than one radio link can be set up. Each existing radio link information element shall be considered separately (see TS 25.433).

d) A single integer value.

e) SHO.AttRLSetupIubUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.2.2 Successful radio link setups on Iub (UTRAN side)

a) This measurement provides the number of successful radio link setups on Iub (UTRAN side) for each cell. This measurement shall be increased for each successful radio link setup on Iub(UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) This measurement is based on two different events:

- Receipt of a RADIO LINK SETUP RESPONSE message (NBAP) sent by NodeB to the controlling RNC in response to a RADIO LINK SETUP REQUEST message with one or more existing radio link information elements. One RADIO LINK SETUP RESPONSE message can be related to more than one radio link . Each radio link that is set up successfully shall be considered separately (see TS 25.433).

- Receipt of a RADIO LINK SETUP FAILURE message (NBAP) sent by NodeB to the controlling RNC in response to a RADIO LINK SETUP REQUEST message with at least one Successful RL Information Response information element. One RADIO LINK SETUP FAILURE message can be related to more than one radio link. Each radio link that is set up successfully shall be considered separately (see TS 25.433).

d) A single integer value.

e) SHO.SuccRLSetupIubUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.2.3 Failed radio link setups on Iub (UTRAN side)

a) This measurement provides the number of failed radio link setups on Iub (UTRAN side) for each cell. This measurement shall be increased for each failed radio link setup on Iub (UTRAN side). For each failure cause a separate measurement is defined. Every failed radio link setup on Iub shall be considered separately. This measurement is valid for FDD and TDD mode.

b) CC.

c) Receipt of a RADIO LINK SETUP FAILURE message (NBAP) sent by NodeB to the controlling RNC in response to a RADIO LINK SETUP REQUEST message with one or more existing radio link information elements. One RADIO LINK SETUP FAILURE message can be related to more than one radio link. Each failed attempt to set up a radio link shall be considered separately. Failure causes are defined within TS 25.433.

Each expected RADIO LINK SETUP RESPONSE or RADIO LINK SETUP FAILURE not received by the controlling RNC is added to the measurement cause 'No Reply' (not specified in TS 25.433).

The sum of all supported per cause measurements shall equal the total number of failures. In case only a subset of per cause measurements is supported, a sum measurement subtype will be provided first.

d) Each measurement is an integer value. The number of measurements is equal to the number of causes supported plus a possible sum value identified by the *.sum* suffix.

e) The measurement name has the form SHO.FailRLSetupIubUTRANSide.*Cause*
where *Cause* identifies the failure cause.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.3 Radio link setups on Iur (UTRAN side)

The three measurement types defined in the subclause 4.9.3.n for radio link setups on Iur (UTRAN side) are subject to the "2 out of 3 approach".

4.9.3.1 Attempted radio link setups on Iur (UTRAN side)

a) This measurement provides the number of attempted radio link setups on Iur (UTRAN side) for each cell. This measurement shall be increased for each attempted radio link setup on Iur (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Receipt of a RADIO LINK SETUP REQUEST message (RNSAP) sent by the serving RNC to the drift RNC. Within a RADIO LINK SETUP REQUEST message more than one radio link can be set up. Each existing radio link information element shall be considered separately (see TS 25.423).

d) A single integer value.

e) SHO.AttRLSetupIurUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.3.2 Successful radio link setups on Iur (UTRAN side)

a) This measurement provides the number of successful radio link setups on Iur (UTRAN side) for each cell. This measurement shall be increased for each successful radio link setup on Iur (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) This measurement is based on two different events:

- Transmission of a RADIO LINK SETUP RESPONSE message (RNSAP) by the drift RNC to the serving RNC in response to a RADIO LINK SETUP REQUEST message with one or more existing radio link information elements. One RADIO LINK SETUP RESPONSE message can be related to more than one radio link. Each radio link that is set up successfully shall be considered separately (see TS 25.423).

- Transmission of a RADIO LINK SETUP FAILURE message (RNSAP) by the drift RNC to the serving RNC in response to a RADIO LINK SETUP REQUEST message with at least one Successful RL Information Response information element. One RADIO LINK SETUP FAILURE message can be related to more than one radio link. Each radio link that is set up successfully shall be considered separately (see TS 25.423).

d) A single integer value.

e) SHO.SuccRLSetupIurUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.3.3 Failed radio link setups on Iur (UTRAN side)

a) This measurement provides the number of failed radio link setups on Iur (UTRAN side) for each cell. This measurement shall be increased for each failed radio link setup on Iur (UTRAN side). For each failure cause a separate measurement is defined. Every failed radio link setup on Iur shall be considered separately. This measurement is valid for FDD and TDD mode.

b) CC.

c) Transmission of a RADIO LINK SETUP FAILURE message (RNSAP) by the drift RNC to the serving RNC in response to a RADIO LINK SETUP REQUEST message with one or more existing radio link information elements. One RADIO LINK SETUP FAILURE message can be related to more than one radio link. Each failed attempt to set up a radio link shall be considered separately. Failure causes are defined within TS 25.423.

The sum of all supported per cause measurements shall equal the total number of failures. In case only a subset of per cause measurements is supported, a sum measurement subtype will be provided first.

d) Each measurement is an integer value. The number of measurements is equal to the number of causes supported plus a possible sum value identified by the *.sum* suffix.

e) The measurement name has the form SHO.FailRLSetupIurUTRANSide.*Cause*
where *Cause* identifies the failure cause.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.4 Radio link additions on Iub (UTRAN side)

The three measurement types defined in the subclause 4.9.4.n for radio link additions on Iub (UTRAN side) are subject to the "2 out of 3 approach".

4.9.4.1 Attempted radio link additions on Iub (UTRAN side)

a) This measurement provides the number of attempted radio link additions on Iub (UTRAN side) for each cell. This measurement shall be increased for each attempted radio link addition on Iub (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Transmission of a RADIO LINK ADDITION REQUEST message (NBAP) by the controlling RNC to the NodeB. Within a RADIO LINK ADDITION REQUEST message more than one radio link can be added. Each existing radio link information element shall be considered separately (see TS 25.433).

d) A single integer value.

e) SHO.AttRLAddIubUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.4.2 Successful radio link additions on Iub (UTRAN side)

a) This measurement provides the number of successful radio link additions on Iub (UTRAN side) for each cell. This measurement shall be increased for each successful radio link addition on Iub (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) This measurement is based on two different events:

- Receipt of a RADIO LINK ADDITION RESPONSE message (NBAP) sent by NodeB to the controlling RNC in response to a RADIO LINK ADDITION REQUEST message with one or more existing radio link information elements. One RADIO LINK ADDITION RESPONSE message can be related to more than one added radio link. Each successful added radio link shall be considered separately (see TS 25.433).

- Receipt of a RADIO LINK ADDITION FAILURE message (NBAP) sent by NodeB to the controlling RNC in response to a RADIO LINK ADDITION REQUEST message with at least one Successful RL Information Response information element. One RADIO LINK ADDITION FAILURE message can be related to more than one radio link. Each successful added radio link shall be considered separately (see TS 25.433).

d) A single integer value.

e) SHO.SuccRLAddIubUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.4.3 Failed radio link additions on Iub (UTRAN side)

a) This measurement provides the number of failed radio link additions on Iub (UTRAN side) for each cell. This measurement shall be increased for each failed radio link addition on Iub (UTRAN side). For each failure cause a separate measurement is defined. Every failed radio link addition on Iub shall be considered separately. This measurement is valid for FDD and TDD mode.

b) CC.

c) Receipt of a RADIO LINK ADDITION FAILURE message (NBAP) sent by NodeB to the controlling RNC in response to a RADIO LINK ADDITION REQUEST message with one or more existing radio link information elements. One RADIO LINK ADDITION FAILURE message can be related to more than one radio link. Each failed attempt to add a radio link shall be considered separately. Failure causes are defined within TS 25.433.

Each expected RADIO LINK ADDITION RESPONSE or RADIO LINK ADDITION FAILURE not received by the controlling RNC is added to the measurement cause 'No Reply' (not specified in TS 25.433).

The sum of all supported per cause measurements shall equal the total number of failures. In case only a subset of per cause measurements is supported, a sum measurement subtype will be provided first.

d) Each measurement is an integer value. The number of measurements is equal to the number of causes supported plus a possible sum value identified by the *.sum* suffix.

e) The measurement name has the form SHO.FailRLAddIubUTRANSide.*Cause*
where *Cause* identifies the failure cause.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.5 Radio link additions on Iur (UTRAN side)

The three measurement types defined in the subclause 4.9.5.n for radio link additions on Iur (UTRAN side) are subject to the "2 out of 3 approach".

4.9.5.1 Attempted radio link additions on Iur (UTRAN side)

a) This measurement provides the number of attempted radio link additions on Iur (UTRAN side) for each cell. This measurement shall be increased for each attempted radio link addition on Iur (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Receipt of a RADIO LINK ADDITION REQUEST message (RNSAP) sent by the serving RNC to the drift RNC. Within a RADIO LINK ADDITION REQUEST message more than one radio link can be added. Each existing radio link information element shall be considered separately (see TS 25.423).

d) A single integer value.

e) SHO.AttRLAddIurUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.5.2 Successful radio link additions on Iur (UTRAN side)

a) This measurement provides the number of successful radio link additions on Iur (UTRAN side) for each cell. This measurement shall be increased for each successful radio link addition on Iur (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) This measurement is based on two different events:

- Transmission of a RADIO LINK ADDITION RESPONSE message (RNSAP) by the drift RNC to the serving RNC in response to a RADIO LINK ADDITION REQUEST message with one or more existing radio link information elements. One RADIO LINK ADDITION RESPONSE message can be related to more than one added radio link. Each successful added radio link shall be considered separately (see TS 25.423).

- Transmission of a RADIO LINK ADDITION FAILURE message (RNSAP) by the drift RNC to the serving RNC in response to a RADIO LINK ADDITION REQUEST message with at least one Successful RL Information Response information element. One RADIO LINK ADDITION FAILURE message can be related to more than one radio link. Each successful added radio link shall be considered separately (see TS 25.423).

d) A single integer value.

e) SHO.SuccRLAddIurUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.5.3 Failed radio link additions on Iur (UTRAN side)

a) This measurement provides the number of failed radio link additions on Iur (UTRAN side) for each cell. This measurement shall be increased for each failed radio link addition on Iur (UTRAN side). For each failure cause a

separate measurement is defined. Every failed radio link addition shall be considered separately. This measurement is valid for FDD and TDD mode.

b) CC.

c) Transmission of a RADIO LINK ADDITION FAILURE message (RNSAP) by the drift RNC to the serving RNC in response to a RADIO LINK ADDITION REQUEST message with one or more existing radio link information elements. One RADIO LINK ADDITION FAILURE message can be related to more than one radio link. Each failed attempt to add a radio link shall be considered separately. Failure causes are defined within TS 25.423.

The sum of all supported per cause measurements shall equal the total number of Failures. In case only a subset of per cause measurements is supported, a sum measurement subtype will be provided first.

d) Each measurement is an integer value. The number of measurements is equal to the number of causes supported plus a possible sum value identified by the *.sum* suffix.

e) The measurement name has the form SHO.FailRLAddIurUTRANSide.*Cause*
where *Cause* identifies the failure cause.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.6 Radio link deletions on Iub (UTRAN side)

4.9.6.1 Attempted radio link deletions on Iub (UTRAN side)

a) This measurement provides the number of attempted radio link deletions on Iub (UTRAN side) for each cell. This measurement shall be increased for each attempted radio link deletion on Iub (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Transmission of a RADIO LINK DELETION REQUEST message (NBAP) by the controlling RNC to the NodeB. Within a RADIO LINK DELETION REQUEST message more than one radio link can be removed. Each existing radio link information element shall be considered separately (see TS 25.433).

d) A single integer value.

e) SHO.AttRLDelIubUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.6.2 Successful radio link deletions on Iub (UTRAN side)

a) This measurement provides the number of successful radio link deletions on Iub (UTRAN side) for each cell. This measurement shall be increased for each successful radio link deletion on Iub (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Receipt of a RADIO LINK DELETION RESPONSE message (NBAP) sent by NodeB to the controlling RNC in response to a RADIO LINK DELETION REQUEST message with one or more existing radio link removal information element. One RADIO LINK DELETION RESPONSE message can be related to more than one deleted radio link. Each successful deleted radio link shall be considered separately (see TS 25.433).

d) A single integer value.

e) SHO.SuccRLDelIubUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS

4.9.7 Radio link deletions on Iur (UTRAN side)

4.9.7.1 Attempted radio link deletions on Iur (UTRAN side)

a) This measurement provides the number of attempted radio link deletions on Iur (UTRAN side) for each cell. This measurement shall be increased for each attempted radio link deletion on Iur (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Receipt of a RADIO LINK DELETION REQUEST message (RNSAP) sent by the serving RNC to the drift RNC. Within a RADIO LINK DELETION REQUEST message more than one radio link can be removed. Each existing radio link information element shall be considered separately (see TS 25.423).

d) A single integer value.

e) SHO.AttRLDelIurUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.7.2 Successful radio link deletions on Iur (UTRAN side)

a) This measurement provides the number of successful radio link deletions on Iur (UTRAN side) for each cell. This measurement shall be increased for each successful radio link deletion on Iur (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Transmission of a RADIO LINK DELETION RESPONSE message (RNSAP) by the drift RNC to the serving RNC in response to a RADIO LINK DELETION REQUEST message with one or more existing radio link removal information element. One RADIO LINK DELETION RESPONSE message can be related to more than one deleted radio link. Each successful deleted radio link shall be considered separately (see TS 25.423).

d) A single integer value.

e) SHO.SuccRLDelIurUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

End of Change in Clause 4.9
End of Document

CR-Form-v7

CHANGE REQUEST

⌘ 32.403 CR 028 ⌘rev - ⌘ Current version: 6.2.0 ⌘

*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 [X] Core Network ☐

Title:	⌘	Correction of "Radio link addition" measurements
Source:	⌘	**SA5** (llrui@bupt.edu.cn, liyewen@chinamobile.com)
Work item code:	⌘	OAM-PM
Date:	⌘	27/02/2004
Category:	⌘	**A**
Release:	⌘	Rel-6

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:	⌘	Radio links can be added by the "Radio Link Setup" procedure and the "Radio Link Addition" procedure of both NBAP(25.433) and RNSAP(25.423), but "Radio link additions" measurements currently only concerns two of the four procedures. Furthermore, when "RADIO LINK SETUP FAILURE" or "RADIO LINK ADDITION FAILURE" is received, some radio links may be established successfully, and they are not added to "Successful radio link additions" measurement at present. Thirdly, when Iur procedure is measured, the conditions of the measurements are inconsistent with the measurement object classes of those.
Summary of change:	⌘	Modify the conditions of "Radio link additions" measurements.
Consequences if not approved:	⌘	The conditions of the measurements will be inconsistent with the descriptions and the measurement object classes of that measurements.

Clauses affected:	⌘	4.9

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

Other comments:	⌘	Rel-6 Mirror CR of S5-048188.

Change in Clause 4.9

4.9 Radio link management (UTRAN side)

4.9.1 Overview

4.9.1.1 Considered radio link management procedures

Performance Measurement definitions in this subclause are based on the TS 25.423 "UTRAN Iur interface RNSAP Signalling" document [6] and TS 25.433 " UTRAN Iub Interface NBAP signalling" document [7].

The following paragraphs are of interest for this purpose:

- Radio Link Setup (NBAP);
- Radio Link Addition (NBAP);
- Radio Link Deletion (NBAP);
- Radio Link Setup (RNSAP);
- Radio Link Addition (RNSAP);
- Radio Link Deletion (RNSAP);
- RADIO LINK SETUP REQUEST (NBAP);
- RADIO LINK SETUP RESPONSE (NBAP);
- RADIO LINK SETUP FAILURE (NBAP);
- RADIO LINK ADDITION REQUEST (NBAP);
- RADIO LINK ADDITION RESPONSE (NBAP);
- RADIO LINK ADDITION FAILURE (NBAP);
- RADIO LINK DELETION REQUEST (NBAP);
- RADIO LINK DELETION RESPONSE (NBAP);
- RADIO LINK SETUP REQUEST (RNSAP);
- RADIO LINK SETUP RESPONSE (RNSAP);
- RADIO LINK SETUP FAILURE (RNSAP);
- RADIO LINK ADDITION REQUEST (RNSAP);
- RADIO LINK ADDITION RESPONSE (RNSAP);
- RADIO LINK ADDITION FAILURE (RNSAP);
- RADIO LINK DELETION REQUEST (RNSAP);
- RADIO LINK DELETION RESPONSE (RNSAP);

These paragraphs show in particular the following diagrams:

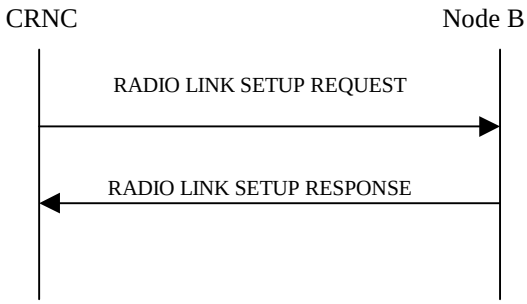

Figure: Radio Link Setup procedure on Iub, Successful Operation

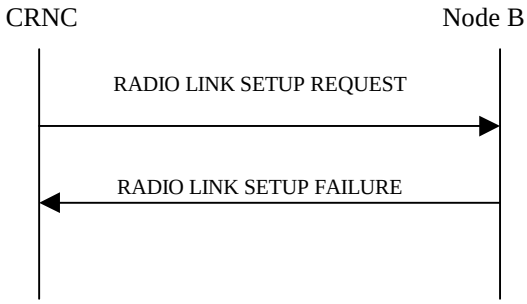

Figure: Radio Link Setup procedure on Iub, Unsuccessful Operation

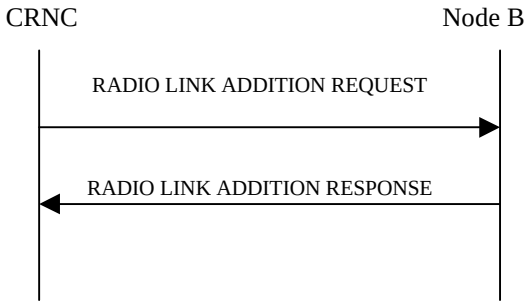

Figure: Radio Link Addition procedure on Iub, Successful Operation

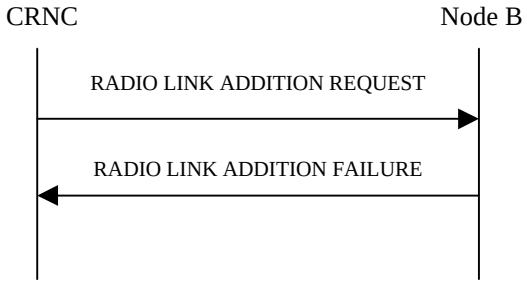

Figure: Radio Link Addition procedure on Iub, Unsuccessful Operation

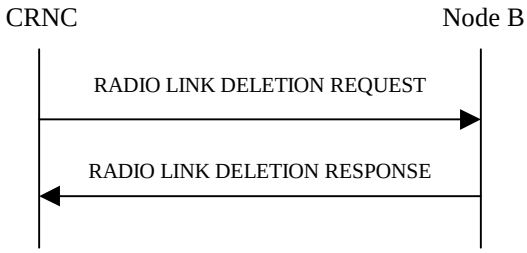

Figure: Radio Link Deletion procedure on Iub, Successful Operation

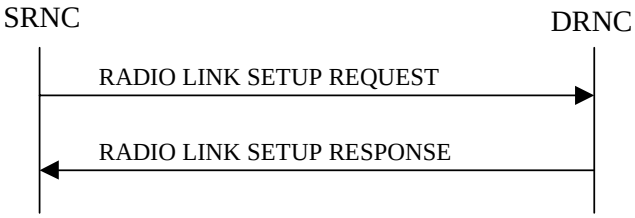

Figure: Radio Link Setup procedure on Iur, Successful Operation

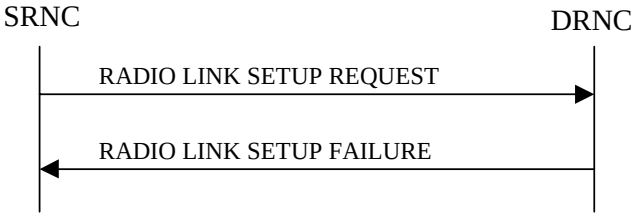

Figure: Radio Link Setup procedure on Iur, Unsuccessful Operation

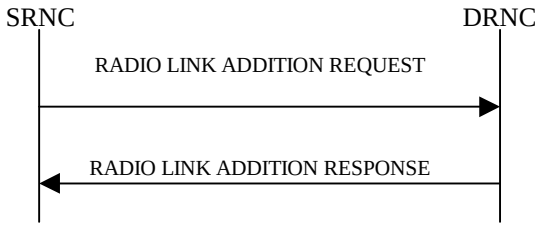

Figure: Radio Link Addition procedure on Iur, Successful Operation

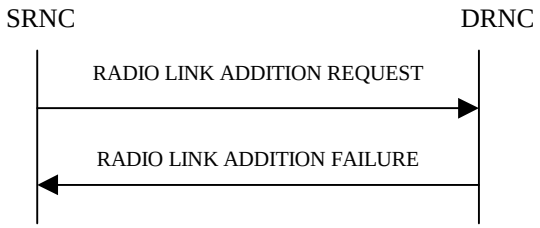

Figure: Radio Link Addition procedure on Iur, Unsuccessful Operation

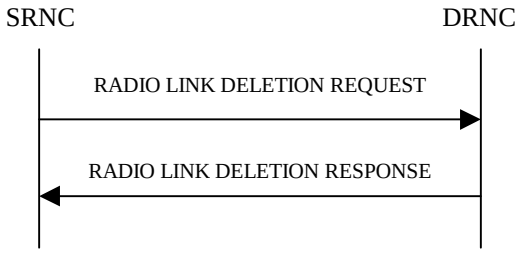

Figure: Radio Link Deletion procedure on Iur, Successful Operation

4.9.1.2 Relation between Iub measurements and Iur measurements

The following figure shows the relation between Iub interface and Iur interface. There are two cases for SRNC (CRNC1) to request radio link management activities in this figure.

In case (1), SRNC (CRNC1) sets up/adds/deletes radio links in NodeB1 and NodeB1 is directly controlled by SRNC (CRNC1).

In case (2/2bis), NodeB2 is directly controlled by DRNC (CRNC2). If SRNC (CRNC1) wants to set up/add/delete radio links in NodeB2, SRNC (CRNC1) will send request to DRNC (CRNC2), and DRNC (CRNC2) set up/add/delete radio links in NodeB2. In such case, if DRNC (CRNC2) fails to set up/add radio links in NodeB2 and receives failure message from NodeB2, DRNC (CRNC2) will send failure message back to SRNC (CRNC1). Furthermore if DRNC (CRNC2) has problem inside and fails to send request to NodeB2, it will send failure message back to the SRNC (CRNC1) directly.

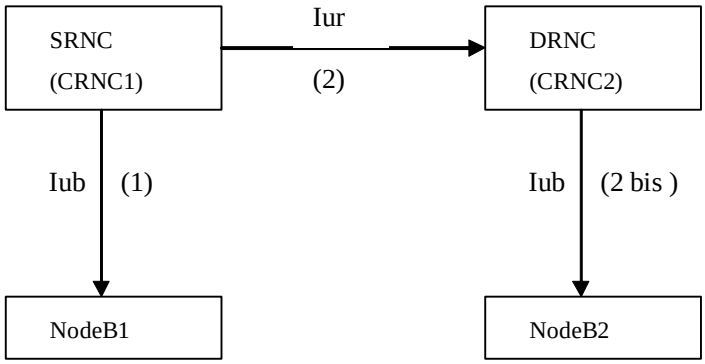

Figure: Relation between Iub interface and Iur interface

This subclause has separated measurements for both Iur interface and Iub interface. From the above figure and description, we can see that the Iub interface measurements and Iur interface measurements overlap in some degree. Based on maintenance requirements, these two kinds measurements are needed and they are useful for operators to evaluate both the Iub interface and Iur interface, and to analyze all the failure cases they concern.

4.9.2 Radio link setups on Iub (UTRAN side)

The three measurement types defined in the subclause 4.9.2.n for radio link setups on Iub (UTRAN side) are subject to the "2 out of 3 approach".

4.9.2.1 Attempted radio link setups on Iub (UTRAN side)

a) This measurement provides the number of attempted radio link setups on Iub (UTRAN side) for each cell. This measurement shall be increased for each attempted radio link setup on Iub (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Transmission of a RADIO LINK SETUP REQUEST message (NBAP) by the controlling RNC to the NodeB. Within a RADIO LINK SETUP REQUEST message more than one radio link can be set up. Each existing radio link information element shall be considered separately (see TS 25.433).

d) A single integer value.

e) SHO.AttRLSetupIubUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.2.2 Successful radio link setups on Iub (UTRAN side)

a) This measurement provides the number of successful radio link setups on Iub (UTRAN side) for each cell. This measurement shall be increased for each successful radio link setup on Iub(UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) This measurement is based on two different events:

- Receipt of a RADIO LINK SETUP RESPONSE message (NBAP) sent by NodeB to the controlling RNC in response to a RADIO LINK SETUP REQUEST message with one or more existing radio link information elements. One RADIO LINK SETUP RESPONSE message can be related to more than one radio link. Each radio link that is set up successfully shall be considered separately (see TS 25.433).

- Receipt of a RADIO LINK SETUP FAILURE message (NBAP) sent by NodeB to the controlling RNC in response to a RADIO LINK SETUP REQUEST message with at least one Successful RL Information Response information element. One RADIO LINK SETUP FAILURE message can be related to more than one radio link. Each radio link that is set up successfully shall be considered separately (see TS 25.433).

d) A single integer value.

e) SHO.SuccRLSetupIubUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.2.3 Failed radio link setups on Iub (UTRAN side)

a) This measurement provides the number of failed radio link setups on Iub (UTRAN side) for each cell. This measurement shall be increased for each failed radio link setup on Iub (UTRAN side). For each failure cause a separate measurement is defined. Every failed radio link setup on Iub shall be considered separately. This measurement is valid for FDD and TDD mode.

b) CC.

c) Receipt of a RADIO LINK SETUP FAILURE message (NBAP) sent by NodeB to the controlling RNC in response to a RADIO LINK SETUP REQUEST message with one or more existing radio link information elements. One RADIO LINK SETUP FAILURE message can be related to more than one radio link. Each failed attempt to set up a radio link shall be considered separately. Failure causes are defined within TS 25.433.

Each expected RADIO LINK SETUP RESPONSE or RADIO LINK SETUP FAILURE not received by the controlling RNC is added to the measurement cause 'No Reply' (not specified in TS 25.433).

The sum of all supported per cause measurements shall equal the total number of failures. In case only a subset of per cause measurements is supported, a sum measurement subtype will be provided first.

d) Each measurement is an integer value. The number of measurements is equal to the number of causes supported plus a possible sum value identified by the *.sum* suffix.

e) The measurement name has the form SHO.FailRLSetupIubUTRANSide.*Cause*
where *Cause* identifies the failure cause.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.3 Radio link setups on Iur (UTRAN side)

The three measurement types defined in the subclause 4.9.3.n for radio link setups on Iur (UTRAN side) are subject to the "2 out of 3 approach".

4.9.3.1 Attempted radio link setups on Iur (UTRAN side)

a) This measurement provides the number of attempted radio link setups on Iur (UTRAN side) for each cell. This measurement shall be increased for each attempted radio link setup on Iur (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Receipt of a RADIO LINK SETUP REQUEST message (RNSAP) sent by the serving RNC to the drift RNC. Within a RADIO LINK SETUP REQUEST message more than one radio link can be set up. Each existing radio link information element shall be considered separately (see TS 25.423).

d) A single integer value.

e) SHO.AttRLSetupIurUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.3.2 Successful radio link setups on Iur (UTRAN side)

a) This measurement provides the number of successful radio link setups on Iur (UTRAN side) for each cell. This measurement shall be increased for each successful radio link setup on Iur (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) This measurement is based on two different events:

- Transmission of a RADIO LINK SETUP RESPONSE message (RNSAP) by the drift RNC to the serving RNC in response to a RADIO LINK SETUP REQUEST message with one or more existing radio link information elements. One RADIO LINK SETUP RESPONSE message can be related to more than one radio link. Each radio link that is set up successfully shall be considered separately (see TS 25.423).

- Transmission of a RADIO LINK SETUP FAILURE message (RNSAP) by the drift RNC to the serving RNC in response to a RADIO LINK SETUP REQUEST message with at least one Successful RL Information Response information element. One RADIO LINK SETUP FAILURE message can be related to more than one radio link. Each radio link that is set up successfully shall be considered separately (see TS 25.423).

d) A single integer value.

e) SHO.SuccRLSetupIurUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.3.3 Failed radio link setups on Iur (UTRAN side)

a) This measurement provides the number of failed radio link setups on Iur (UTRAN side) for each cell. This measurement shall be increased for each failed radio link setup on Iur (UTRAN side). For each failure cause a separate measurement is defined. Every failed radio link setup on Iur shall be considered separately. This measurement is valid for FDD and TDD mode.

b) CC.

c) Transmission of a RADIO LINK SETUP FAILURE message (RNSAP) by the drift RNC to the serving RNC in response to a RADIO LINK SETUP REQUEST message with one or more existing radio link information elements. One RADIO LINK SETUP FAILURE message can be related to more than one radio link. Each failed attempt to set up a radio link shall be considered separately. Failure causes are defined within TS 25.423.

The sum of all supported per cause measurements shall equal the total number of failures. In case only a subset of per cause measurements is supported, a sum measurement subtype will be provided first.

d) Each measurement is an integer value. The number of measurements is equal to the number of causes supported plus a possible sum value identified by the *.sum* suffix.

e) The measurement name has the form SHO.FailRLSetupIurUTRANSide.*Cause*
where *Cause* identifies the failure cause.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.4 Radio link additions on Iub (UTRAN side)

The three measurement types defined in the subclause 4.9.4.n for radio link additions on Iub (UTRAN side) are subject to the "2 out of 3 approach".

4.9.4.1 Attempted radio link additions on Iub (UTRAN side)

a) This measurement provides the number of attempted radio link additions on Iub (UTRAN side) for each cell. This measurement shall be increased for each attempted radio link addition on Iub (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Transmission of a RADIO LINK ADDITION REQUEST message (NBAP) by the controlling RNC to the NodeB. Within a RADIO LINK ADDITION REQUEST message more than one radio link can be added. Each existing radio link information element shall be considered separately (see TS 25.433).

d) A single integer value.

e) SHO.AttRLAddIubUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.4.2 Successful radio link additions on Iub (UTRAN side)

a) This measurement provides the number of successful radio link additions on Iub (UTRAN side) for each cell. This measurement shall be increased for each successful radio link addition on Iub (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) This measurement is based on two different events:

- Receipt of a RADIO LINK ADDITION RESPONSE message (NBAP) sent by NodeB to the controlling RNC in response to a RADIO LINK ADDITION REQUEST message with one or more existing radio link information elements. One RADIO LINK ADDITION RESPONSE message can be related to more than one added radio link. Each successful added radio link shall be considered separately (see TS 25.433).

- Receipt of a RADIO LINK ADDITION FAILURE message (NBAP) sent by NodeB to the controlling RNC in response to a RADIO LINK ADDITION REQUEST message with at least one Successful RL Information Response information element. One RADIO LINK ADDITION FAILURE message can be related to more than one radio link. Each successful added radio link shall be considered separately (see TS 25.433).

d) A single integer value.

e) SHO.SuccRLAddIubUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.4.3 Failed radio link additions on Iub (UTRAN side)

a) This measurement provides the number of failed radio link additions on Iub (UTRAN side) for each cell. This measurement shall be increased for each failed radio link addition on Iub (UTRAN side). For each failure cause a separate measurement is defined. Every failed radio link addition on Iub shall be considered separately. This measurement is valid for FDD and TDD mode.

b) CC.

c) Receipt of a RADIO LINK ADDITION FAILURE message (NBAP) sent by NodeB to the controlling RNC in response to a RADIO LINK ADDITION REQUEST message with one or more existing radio link information elements. One RADIO LINK ADDITION FAILURE message can be related to more than one radio link. Each failed attempt to add a radio link shall be considered separately. Failure causes are defined within TS 25.433.

Each expected RADIO LINK ADDITION RESPONSE or RADIO LINK ADDITION FAILURE not received by the controlling RNC is added to the measurement cause 'No Reply' (not specified in TS 25.433).

The sum of all supported per cause measurements shall equal the total number of Failures. In case only a subset of per cause measurements is supported, a sum measurement subtype will be provided first.

d) Each measurement is an integer value. The number of measurements is equal to the number of causes supported plus a possible sum value identified by the *.sum* suffix.

e) The measurement name has the form SHO.FailRLAddIubUTRANSide.*Cause*
where *Cause* identifies the failure cause.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.5 Radio link additions on Iur (UTRAN side)

The three measurement types defined in the subclause 4.9.5.n for radio link additions on Iur (UTRAN side) are subject to the "2 out of 3 approach".

4.9.5.1 Attempted radio link additions on Iur (UTRAN side)

a) This measurement provides the number of attempted radio link additions on Iur (UTRAN side) for each cell. This measurement shall be increased for each attempted radio link addition on Iur (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Receipt of a RADIO LINK ADDITION REQUEST message (RNSAP) sent by the serving RNC to the drift RNC. Within a RADIO LINK ADDITION REQUEST message more than one radio link can be added. Each existing radio link information element shall be considered separately (see TS 25.423).

d) A single integer value.

e) SHO.AttRLAddIurUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.5.2 Successful radio link additions on Iur (UTRAN side)

a) This measurement provides the number of successful radio link additions on Iur (UTRAN side) for each cell. This measurement shall be increased for each successful radio link addition on Iur (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) This measurement is based on two different events:

- Transmission of a RADIO LINK ADDITION RESPONSE message (RNSAP) by the drift RNC to the serving RNC in response to a RADIO LINK ADDITION REQUEST message with one or more existing radio link information elements. One RADIO LINK ADDITION RESPONSE message can be related to more than one added radio link. Each successful added radio link shall be considered separately (see TS 25.423).

- Transmission of a RADIO LINK ADDITION FAILURE message (RNSAP) by the drift RNC to the serving RNC in response to a RADIO LINK ADDITION REQUEST message with at least one Successful RL Information Response information element. One RADIO LINK ADDITION FAILURE message can be related to more than one radio link. Each successful added radio link shall be considered separately (see TS 25.423).

d) A single integer value.

e) SHO.SuccRLAddIurUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.5.3 Failed radio link additions on Iur (UTRAN side)

a) This measurement provides the number of failed radio link additions on Iur (UTRAN side) for each cell. This measurement shall be increased for each failed radio link addition on Iur (UTRAN side). For each failure cause a

separate measurement is defined. Every failed radio link addition on Iur shall be considered separately. This measurement is valid for FDD and TDD mode.

b) CC.

c) Transmission of a RADIO LINK ADDITION FAILURE message (RNSAP) by drift RNC to the serving RNC in response to a RADIO LINK ADDITION REQUEST message with one or more existing radio link information elements. One RADIO LINK ADDITION FAILURE message can be related to more than one radio link. Each failed attempt to add a radio link shall be considered separately. Failure causes are defined within TS 25.423.

The sum of all supported per cause measurements shall equal the total number of Failures. In case only a subset of per cause measurements is supported, a sum subcounter will be provided first.

d) Each measurement is an integer value. The number of measurements is equal to the number of causes supported plus a possible sum value identified by the *.sum* suffix.

e) The measurement name has the form SHO.FailRLAddIurUTRANSide.*Cause*
where *Cause* identifies the failure cause.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.6 Radio link deletions on Iub (UTRAN side)

4.9.6.1 Attempted radio link deletions on Iub (UTRAN side)

a) This measurement provides the number of attempted radio link deletions on Iub (UTRAN side) for each cell. This measurement shall be increased for each attempted radio link deletion on Iub (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Transmission of a RADIO LINK DELETION REQUEST message (NBAP) by the controlling RNC to the NodeB. Within a RADIO LINK DELETION REQUEST message more than one radio link can be removed. Each existing radio link information element shall be considered separately (see TS 25.433).

d) A single integer value.

e) SHO.AttRLDelIubUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.6.2 Successful radio link deletions on Iub (UTRAN side)

a) This measurement provides the number of successful radio link deletions on Iub (UTRAN side) for each cell. This measurement shall be increased for each successful radio link deletion on Iub (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Receipt of a RADIO LINK DELETION RESPONSE message (NBAP) sent by NodeB to the controlling RNC in response to a RADIO LINK DELETION REQUEST message with one or more existing radio link removal information element. One RADIO LINK DELETION RESPONSE message can be related to more than one deleted radio link. Each successful deleted radio link shall be considered separately (see TS 25.433).

d) A single integer value.

e) SHO.SuccRLDelIubUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.7 Radio link deletions on Iur (UTRAN side)

4.9.7.1 Attempted radio link deletions on Iur (UTRAN side)

a) This measurement provides the number of attempted radio link deletions on Iur (UTRAN side) for each cell. This measurement shall be increased for each attempted radio link deletion on Iur (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Receipt of a RADIO LINK DELETION REQUEST message (RNSAP) sent by the serving RNC to the drift RNC. Within a RADIO LINK DELETION REQUEST message more than one radio link can be removed. Each existing radio link information element shall be considered separately (see TS 25.423).

d) A single integer value.

e) SHO.AttRLDelIurUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

4.9.7.2 Successful radio link deletions on Iur (UTRAN side)

a) This measurement provides the number of successful radio link deletions on Iur (UTRAN side) for each cell. This measurement shall be increased for each successful radio link deletion on Iur (UTRAN side). This measurement is valid for FDD and TDD mode.

b) CC.

c) Transmission of a RADIO LINK DELETION RESPONSE message (RNSAP) by the drift RNC to the serving RNC in response to a RADIO LINK DELETION REQUEST message with one or more existing radio link removal information element. One RADIO LINK DELETION RESPONSE message can be related to more than one deleted radio link. Each successful deleted radio link shall be considered separately (see TS 25.423).

d) A single integer value.

e) SHO.SuccRLDelIurUTRANSide.

f) UtranCell.

g) Valid for circuit switched and packet switched traffic.

h) UMTS.

End of Change in Clause 4.9
End of Document