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**Source:** SA5 (Telecom Management)  
**Title:** 3 Rel-4/5/6 CR 32.403 (PM Performance measurements - UMTS and combined UMTS/GSM)  
**Document for:** Decision  
**Agenda Item:** 7.5.3

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Doc-1st-	Spec	CR	R	Phas	Subject	Cat	Ver	Doc-2nd-	Workitem
SP-040266	32.403	030	-	Rel-4	Correction of "Inter-RAT handover" measurements	F	4.6.0	S5-048462	OAM-PM
SP-040266	32.403	031	-	Rel-5	Correction of "Inter-RAT handover" measurements	A	5.6.0	S5-048463	OAM-PM
SP-040267	32.403	032	-	Rel-6	Correction of "Inter-RAT handover" measurements	A	6.3.0	S5-048464	OAM-PM

## CHANGE REQUEST

⌘ **32.403 CR 030** ⌘ rev - ⌘ Current version: **4.6.0** ⌘

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>	⌘ Correction of "Inter-RAT handover" measurements		
<b>Source:</b>	⌘ SA5 ( <a href="mailto:llrui@bupt.edu.cn">llrui@bupt.edu.cn</a> , <a href="mailto:liyewen@chinamobile.com">liyewen@chinamobile.com</a> )		
<b>Work item code:</b>	⌘ OAM-PM	<b>Date:</b>	⌘ 14/05/2004
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ Rel-4
	<i>Use one of the following categories:</i> <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> .		<i>Use one of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>Rel-4</b> (Release 4) <b>Rel-5</b> (Release 5) <b>Rel-6</b> (Release 6)

<b>Reason for change:</b>	⌘ Some measurements about "Circuit switched inter-RAT handover" and "Packet switched inter-RAT handover" contain non existent messages in the trigger conditions and an incorrect data type for measurement result.
<b>Summary of change:</b>	⌘ Modify the incorrect messages in the trigger conditions and data type for measurement result for the measurements on "Circuit switched inter-RAT handover" and "Packet switched inter-RAT handover".
<b>Consequences if not approved:</b>	⌘ Measurements can not be implemented according to the current definition.

<b>Clauses affected:</b>	⌘ 4.11, 4.12								
<b>Other specs affected:</b>	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px;">Y</td> <td style="width: 20px;">N</td> </tr> <tr> <td style="width: 20px;"> </td> <td style="width: 20px;">X</td> </tr> <tr> <td style="width: 20px;"> </td> <td style="width: 20px;">X</td> </tr> <tr> <td style="width: 20px;">X</td> <td style="width: 20px;"> </td> </tr> </table> Other core specifications      ⌘ Test specifications O&M Specifications      Rel-5/6 32.403	Y	N		X		X	X	
Y	N								
	X								
	X								
X									
<b>Other comments:</b>	⌘ Rel-5 Mirror CR in S5-048463. Rel-6 Mirror CR in S5-048464.								

## 4.11 Circuit switched inter-RAT handover

### 4.11.1 Relocation preparation for outgoing circuit switched inter-RAT handovers

The three measurement types defined in the subclause 4.11.1.n for relocation preparation for outgoing circuit switched inter-RAT handovers are subject to the "2 out of 3 approach".

#### 4.11.1.1 Attempted relocation preparation for outgoing circuit switched inter-RAT handovers

- a) This measurement provides the number of attempted relocation preparations for outgoing circuit switched inter-RAT handovers per neighbour cell.
- b) CC.
- c) Transmission of a RANAP message RELOCATION REQUIRED from the serving RNC to the CN, indicating an attempted relocation preparation of an outgoing inter-RAT handover (see TS 25.413).
- d) A single integer value.
- e) IRATHO.AttRelocPrepOutCS.
- f) UtranRelation.
- g) Valid for circuit switched traffic.
- h) UMTS.

#### 4.11.1.2 Successful relocation preparation for outgoing circuit switched inter-RAT handovers

- a) This measurement provides the number of successful relocation preparations for outgoing circuit switched inter-RAT handovers per neighbour cell.
- b) CC.
- c) Receipt of a RANAP message RELOCATION COMMAND sent from the CN to the serving RNC, indicating a successful relocation preparation of an inter-RAT handover (see TS 25.413).
- d) A single integer value.
- e) IRATHO.SuccRelocPrepOutCS.
- f) UtranRelation.
- g) Valid for circuit switched traffic.
- h) UMTS.

#### 4.11.1.3 Failed relocation preparation for outgoing circuit switched inter-RAT handovers

- a) This measurement provides number of failed relocation preparations for outgoing circuit switched inter-RAT handovers per neighbour cell per cause.
- b) CC.

- c) Receipt of a RANAP message RELOCATION PREPARATION FAILURE sent from the CN to the serving RNC, indicating a failed relocation preparation for outgoing inter-RAT handovers. Failure causes are defined within TS 25.413.  
The sum of all supported per cause measurements shall equal the total number of failed events. 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 IRATHO.FailRelocPrepOutCS.*Cause* where *Cause* identifies the failure cause.
- f) UtranRelation.
- g) Valid for circuit switched traffic.
- h) UMTS.

## 4.11.2 Outgoing circuit switched inter-RAT handovers

The three measurement types defined in the subclause 4.11.2.n for outgoing circuit switched inter-RAT handovers are subject to the "2 out of 3 approach".

### 4.11.2.1 Attempted outgoing circuit switched inter-RAT handovers

- a) This measurement provides the number of attempted outgoing circuit switched inter-RAT handovers per neighbour cell from UEs point of view.
- b) CC.
- c) Transmission of a RRC-message [HANDOVER FROM UTRAN COMMAND](#)~~INTER-RADIO-ACCESS TECHNOLOGY HANDOVER COMMAND~~ from serving RNC to the UE, indicating an attempted outgoing inter-RAT handover (see TS 25.331).
- d) A single integer value.
- e) IRATHO.AttOutCS.
- f) UtranRelation.
- g) Valid for circuit switched traffic.
- h) UMTS.

### 4.11.2.2 Successful outgoing circuit switched inter-RAT handovers

- a) This measurement provides the number of successful outgoing circuit switched inter-RAT handovers per neighbour cell from UEs point of view.
- b) CC.
- c) Receipt of a RANAP message [IU-~~ts~~ RELEASE COMMAND](#) sent from the CN to the serving RNC, indicating a successful inter-RAT handover (see TS 25.413).
- d) A single integer value.
- e) IRATHO.SuccOutCS.
- f) UtranRelation.
- g) Valid for circuit switched traffic.
- h) UMTS.

#### 4.11.2.3 Failed outgoing circuit switched inter-RAT handovers

- a) This measurement provides the number of failed outgoing circuit switched inter-RAT handovers per neighbour cell per cause from UEs point of view, where the UE returned to the original physical channel configuration.
- b) CC.
- c) Receipt of a RRC message ~~HANDOVER FROM UTRAN FAILURE~~~~INTER-RADIO ACCESS TECHNOLOGY~~ ~~HANDOVER FAILURE~~ sent from the UE to the serving RNC, indicating a failed inter-RAT handover. Failure causes are defined within TS 25.331.  
The sum of all supported per cause measurements shall equal the total number of failed events. 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 IRATHO.FailOutCS.*Cause* where *Cause* identifies the failure cause.
- f) UtranRelation.
- g) Valid for circuit switched traffic.
- h) UMTS.

#### 4.11.3 Incoming circuit switched inter-RAT handovers

The three measurement types defined in the subclause 4.11.3.n for incoming circuit switched inter-RAT handovers are subject to the "2 out of 3 approach".

##### 4.11.3.1 Attempted incoming circuit switched inter-RAT handovers

- a) This measurement provides the number of attempted incoming circuit switched inter-RAT handovers for each cell.
- b) CC.
- c) Receipt of a RANAP RELOCATION REQUEST message sent from the CN to the target RNC, indicating the attempt of an inter-RAT handover (see TS 25.413).
- d) A single integer value.
- e) IRATHO.AttIncCS.
- f) UtranCell.
- g) Valid for circuit switched traffic.
- h) UMTS.

##### 4.11.3.2 Successful incoming circuit switched inter-RAT handovers

- a) This measurement provides the number of successful incoming circuit switched interRAT handovers for each cell.
- b) CC.
- c) Receipt of a RRC HANDOVER TO UTRAN COMPLETE message sent from the UE to the target RNC, indicating a successful interRAT handover (see TS 25.331).
- d) A single integer value.
- e) IRATHO.SuccIncCS.
- f) UtranCell.

- g) Valid for circuit switched traffic.
- h) UMTS.

#### 4.11.3.3 Failed incoming circuit switched inter-RAT handovers

- a) This measurement provides the number of failed incoming circuit switched interRAT handovers per cell per cause.
- b) CC.
- c) ~~Transmission Receipt~~ of a RANAP message RELOCATION FAILURE ~~sent~~ from ~~the target RNC~~ ~~the CN~~ to ~~the CN~~ ~~the target RNC~~, indicating a failed ~~relocation preparation for incoming~~ inter-RAT handovers. Failure causes are defined within TS 25.413.  
The sum of all supported per cause measurements shall equal the total number of failed events. 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 IRATHO.FailIncCS.Cause where *Cause* identifies the failure cause.
- f) UtranCell.
- g) Valid for circuit switched traffic.
- h) UMTS.

<b>End of Change in Clause 4.11</b>
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<b>Change in Clause 4.12</b>
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## 4.12 Packet switched inter-RAT handover

### 4.12.1 Outgoing packet switched inter-RAT handovers, UTRAN controlled

The three measurement types defined in the subclause 4.12.1.n for outgoing packet switched inter-RAT handovers, UTRAN controlled are subject to the "2 out of 3 approach".

#### 4.12.1.1 Attempted outgoing packet switched inter-RAT handovers, UTRAN controlled

- a) This measurement provides the number of attempted outgoing, UTRAN controlled, Packet Switched interRAT handovers per cell.
- b) CC.
- c) Transmission of a RRC-message, CELL CHANGE ORDER FROM UTRAN, from source RNC to the UE, indicating an attempted outgoing Packet Switched inter-RAT handover (see TS 25.331).
- d) A single integer value.
- e) IRATHO.AttOutPSUTRAN.
- f) UtranCell.
- g) Valid for packet switched traffic.
- h) UMTS.

#### 4.12.1.2 Successful outgoing packet switched inter-RAT handovers, UTRAN controlled

- a) This measurement provides the number of successful outgoing, UTRAN controlled, Packet Switched interRAT handovers per cell.
- b) CC.
- c) ~~Receipt Transmission~~ of a RANAP message, ~~IUu~~ RELEASE COMMAND, ~~sent~~ from the PS CN to the source RNC, indicating a successful outgoing Packet Switched inter-RAT handover (see TS 25.413).
- d) A single integer value.
- e) IRATHO.SuccOutPSUTRAN.
- f) UtranCell.
- g) Valid for packet switched traffic.
- h) UMTS.

#### 4.12.1.3 Failed outgoing packet switched inter-RAT handovers UTRAN controlled

- a) This measurement provides the number of failed outgoing, UTRAN controlled, Packet Switched interRAT handovers per cause, where the UE resumes the connection to UTRAN using the same resources used before receiving the cell change order. This is measured per cell.
- b) CC.
- c) Receipt of an RRC message, ~~CELL CHANGE ORDER FROM UTRAN FAILURE~~ ~~CELL CHANGE FAILURE FROM UTRAN~~, sent from the UE to the source RNC, indicating a failed inter-RAT handover. Failure causes are defined within TS 25.331.  
The sum of all supported per cause measurements shall equal the total number of failed events. 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 IRATHO.FailOutPSUTRAN.*Cause* where *Cause* identifies the failure cause.
- f) UtranCell.
- g) Valid for packet switched traffic.
- h) UMTS.

### 4.12.2 Outgoing packet switched inter-RAT handovers, UE controlled

#### 4.12.2.1 Successful outgoing packet switched inter-RAT handovers, UE controlled

- a) This measurement provides the number of successful outgoing, UE controlled, Packet Switched inter-RAT handovers per cell.
- b) CC.
- c) Receipt of an RANAP message, SRNS CONTEXT REQUEST, sent from the PS CN to the serving RNC, indicating a successful outgoing UE controlled Packet Switched inter-RAT handover (see TS 25.413).
- d) ~~A single integer value~~ ~~Each measurement is an integer value. The number of measurements is equal to the number of causes supported.~~
- e) IRATHO.SuccOutPSUE.

- f) UtranCell.
- g) Valid for packet switched traffic.
- h) UMTS.

**End of Change in Clause 4.12**  
**End of Document**



## Annex B (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Jun 2001	S_12	SP-010237	--	--	Submitted to TSG SA #12 for Approval.	1.0.2	4.0.0
Sep 2001	S_13	SP-010468	001	--	Corrections on UMTS and combined UMTS/GSM measurements: Addition of family name for CN measurements, addition of the list of families, addition of Annex A: "(n-1) out of n" examples, application of the "(n-1) out of n" approach to all relevant measurements, enhancement of per cause measurements	4.0.0	4.1.0
Mar 2002	S_15	SP-020026	002	--	Correction of the measured object class for some SGSN MM measurement definitions	4.1.0	4.2.0
Mai 2002	--	--	--	--	MCC clean-up (Cosmetics based on EditHelp)	4.2.0	4.2.1
Mar 2003	S_19	SP-030146	011	--	Correction of the subscriber number measurement definitions	4.2.1	4.3.0
Jun 2003	S_20	SP-030292	013	--	Correction of the definition of the successful GPRS attach counters	4.3.0	4.4.0
Sep 2003	S_21	SP-030431	018	--	Correction of collection method for SGSN measurements	4.4.0	4.5.0
Sep 2003	S_21	SP-030431	021	--	Correction of "outgoing intra-cell hard handovers measurements"	4.4.0	4.5.0
Mar 2004	S_23	SP-040134	026	--	Correction of "Radio link addition" measurements	4.5.0	4.6.0

## CHANGE REQUEST

⌘ **32.403 CR 031** ⌘ rev **-** ⌘ Current version: **5.6.0** ⌘

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>	⌘ Correction of "Inter-RAT handover" measurements		
<b>Source:</b>	⌘ SA5 ( <a href="mailto:llrui@bupt.edu.cn">llrui@bupt.edu.cn</a> , <a href="mailto:liyewen@chinamobile.com">liyewen@chinamobile.com</a> )		
<b>Work item code:</b>	⌘ OAM-PM	<b>Date:</b>	⌘ 14/05/2004
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ Rel-5
	<i>Use one of the following categories:</i> <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> .		<i>Use one of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>Rel-4</b> (Release 4) <b>Rel-5</b> (Release 5) <b>Rel-6</b> (Release 6)

<b>Reason for change:</b>	⌘ Some measurements about "Circuit switched inter-RAT handover" and "Packet switched inter-RAT handover" contain non existent messages in the trigger conditions and an incorrect data type for measurement result.
<b>Summary of change:</b>	⌘ Modify the incorrect messages in the trigger conditions and data type for measurement result for the measurements on "Circuit switched inter-RAT handover" and "Packet switched inter-RAT handover".
<b>Consequences if not approved:</b>	⌘ Measurements can not be implemented according to the current definition.

<b>Clauses affected:</b>	⌘ 4.12, 4.13								
<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;"> </td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"> </td> </tr> </table> Other core specifications      ⌘ Test specifications O&M Specifications      Rel-6 32.403	Y	N		X		X	X	
Y	N								
	X								
	X								
X									
<b>Other comments:</b>	⌘ Rel-5 Mirror CR to S5-048462.								

## 4.12 Circuit switched inter-RAT handover

### 4.12.1 Relocation preparation for outgoing circuit switched inter-RAT handovers

The three measurement types defined in the subclause 4.12.1.n for relocation preparation for outgoing circuit switched inter-RAT handovers are subject to the "2 out of 3 approach".

#### 4.12.1.1 Attempted relocation preparation for outgoing circuit switched inter-RAT handovers

- a) This measurement provides the number of attempted relocation preparations for outgoing circuit switched inter-RAT handovers per neighbour cell.
- b) CC.
- c) Transmission of a RANAP message RELOCATION REQUIRED from the serving RNC to the CN, indicating an attempted relocation preparation of an outgoing inter-RAT handover (see TS 25.413).
- d) A single integer value.
- e) IRATHO.AttRelocPrepOutCS.
- f) UtranRelation.
- g) Valid for circuit switched traffic.
- h) UMTS.

#### 4.12.1.2 Successful relocation preparation for outgoing circuit switched inter-RAT handovers

- a) This measurement provides the number of successful relocation preparations for outgoing circuit switched inter-RAT handovers per neighbour cell.
- b) CC.
- c) Receipt of a RANAP message RELOCATION COMMAND sent from the CN to the serving RNC, indicating a successful relocation preparation of an inter-RAT handover (see TS 25.413).
- d) A single integer value.
- e) IRATHO.SuccRelocPrepOutCS.
- f) UtranRelation.
- g) Valid for circuit switched traffic.
- h) UMTS.

#### 4.12.1.3 Failed relocation preparation for outgoing circuit switched inter-RAT handovers

- a) This measurement provides number of failed relocation preparations for outgoing circuit switched inter-RAT handovers per neighbour cell per cause.
- b) CC.

- c) Receipt of a RANAP message RELOCATION PREPARATION FAILURE sent from the CN to the serving RNC, indicating a failed relocation preparation for outgoing inter-RAT handovers. Failure causes are defined within TS 25.413.  
The sum of all supported per cause measurements shall equal the total number of failed events. 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 IRATHO.FailRelocPrepOutCS.*Cause* where *Cause* identifies the failure cause.
- f) UtranRelation.
- g) Valid for circuit switched traffic.
- h) UMTS.

## 4.12.2 Outgoing circuit switched inter-RAT handovers

The three measurement types defined in the subclause 4.12.2.n for outgoing circuit switched inter-RAT handovers are subject to the "2 out of 3 approach".

### 4.12.2.1 Attempted outgoing circuit switched inter-RAT handovers

- a) This measurement provides the number of attempted outgoing circuit switched inter-RAT handovers per neighbour cell from UEs point of view.
- b) CC.
- c) Transmission of an RRC-message [HANDOVER FROM UTRAN COMMAND](#)~~INTER-RADIO ACCESS TECHNOLOGY HANDOVER COMMAND~~ from serving RNC to the UE, indicating an attempted outgoing inter-RAT handover (see TS 25.331).
- d) A single integer value.
- e) IRATHO.AttOutCS.
- f) UtranRelation.
- g) Valid for circuit switched traffic.
- h) UMTS.

### 4.12.2.2 Successful outgoing circuit switched inter-RAT handovers

- a) This measurement provides the number of successful outgoing circuit switched inter-RAT handovers per neighbour cell from UEs point of view.
- b) CC.
- c) Receipt of a RANAP message [IU-~~ts~~ RELEASE COMMAND](#) sent from the CN to the serving RNC, indicating a successful inter-RAT handover (see TS 25.413).
- d) A single integer value.
- e) IRATHO.SuccOutCS.
- f) UtranRelation.
- g) Valid for circuit switched traffic.
- h) UMTS.

#### 4.12.2.3 Failed outgoing circuit switched inter-RAT handovers

- a) This measurement provides the number of failed outgoing circuit switched inter-RAT handovers per neighbour cell per cause from UEs point of view, where the UE returned to the original physical channel configuration.
- b) CC.
- c) Receipt of a RRC message ~~HANDOVER FROM UTRAN FAILURE~~~~INTER-RADIO ACCESS TECHNOLOGY~~ ~~HANDOVER FAILURE~~ sent from the UE to the serving RNC, indicating a failed inter-RAT handover. Failure causes are defined within TS 25.331.  
The sum of all supported per cause measurements shall equal the total number of failed events. 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 IRATHO.FailOutCS.*Cause* where *Cause* identifies the failure cause.
- f) UtranRelation.
- g) Valid for circuit switched traffic.
- h) UMTS.

#### 4.12.3 Incoming circuit switched inter-RAT handovers

The three measurement types defined in the subclause 4.12.3.n for incoming circuit switched inter-RAT handovers are subject to the "2 out of 3 approach".

##### 4.12.3.1 Attempted incoming circuit switched inter-RAT handovers

- a) This measurement provides the number of attempted incoming circuit switched inter-RAT handovers for each cell.
- b) CC.
- c) Receipt of a RANAP RELOCATION REQUEST message sent from the CN to the target RNC, indicating the attempt of an inter-RAT handover (see TS 25.413).
- d) A single integer value.
- e) IRATHO.AttIncCS.
- f) UtranCell.
- g) Valid for circuit switched traffic.
- h) UMTS.

##### 4.12.3.2 Successful incoming circuit switched inter-RAT handovers

- a) This measurement provides the number of successful incoming circuit switched inter-RAT handovers for each cell.
- b) CC.
- c) Receipt of a RRC HANDOVER TO UTRAN COMPLETE message sent from the UE to the target RNC, indicating a successful inter-RAT handover (see TS 25.331).
- d) A single integer value.
- e) IRATHO.SuccIncCS.
- f) UtranCell.

- g) Valid for circuit switched traffic.
- h) UMTS.

#### 4.12.3.3 Failed incoming circuit switched inter-RAT handovers

- a) This measurement provides the number of failed incoming circuit switched inter-RAT handovers per cell per cause.
- b) CC.
- c) ~~Transmission Receipt~~ of a RANAP message RELOCATION FAILURE ~~sent~~ from ~~the target RNC~~ ~~the CN~~ to ~~the CN~~ ~~the target RNC~~, indicating a failed ~~relocation preparation for incoming~~ inter-RAT handovers. Failure causes are defined within TS 25.413.  
The sum of all supported per cause measurements shall equal the total number of failed events. 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 IRATHO.FailIncCS.Cause where *Cause* identifies the failure cause.
- f) UtranCell.
- g) Valid for circuit switched traffic.
- h) UMTS.

<b>End of Change in Clause 4.12</b>
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<b>Change in Clause 4.13</b>
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### 4.13 Packet switched inter-RAT handover

#### 4.13.1 Outgoing packet switched inter-RAT handovers, UTRAN controlled

The three measurement types defined in the subclause 4.13.1.n for outgoing packet switched inter-RAT handovers, UTRAN controlled are subject to the "2 out of 3 approach".

##### 4.13.1.1 Attempted outgoing packet switched inter-RAT handovers, UTRAN controlled

- a) This measurement provides the number of attempted outgoing, UTRAN controlled, Packet Switched interRAT handovers per cell.
- b) CC.
- c) Transmission of an RRC-message, CELL CHANGE ORDER FROM UTRAN, from source RNC to the UE, indicating an attempted outgoing Packet Switched inter-RAT handover (see TS 25.331).
- d) A single integer value.
- e) IRATHO.AttOutPSUTRAN.
- f) UtranCell.
- g) Valid for packet switched traffic.
- h) UMTS.

#### 4.13.1.2 Successful outgoing packet switched inter-RAT handovers, UTRAN controlled

- a) This measurement provides the number of successful outgoing, UTRAN controlled, Packet Switched interRAT handovers per cell.
- b) CC.
- c) ~~Receipt Transmission~~ of a RANAP message, ~~Uu~~ RELEASE COMMAND, from the PS CN to the source RNC, indicating a successful outgoing Packet Switched inter-RAT handover (see TS 25.413).
- d) A single integer value.
- e) IRATHO.SuccOutPSUTRAN.
- f) UtranCell.
- g) Valid for packet switched traffic.
- h) UMTS.

#### 4.13.1.3 Failed outgoing packet switched inter-RAT handovers UTRAN controlled

- a) This measurement provides the number of failed outgoing, UTRAN controlled, Packet Switched interRAT handovers per cause, where the UE resumes the connection to UTRAN using the same resources used before receiving the cell change order. This is measured per cell.
- b) CC.
- c) Receipt of an RRC message, ~~CELL CHANGE ORDER FROM UTRAN FAILURE~~ ~~CELL CHANGE FAILURE FROM UTRAN~~, sent from the UE to the source RNC, indicating a failed inter-RAT handover. Failure causes are defined within TS 25.331.  
The sum of all supported per cause measurements shall equal the total number of failed events. 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 IRATHO.FailOutPSUTRAN.*Cause* where *Cause* identifies the failure cause.
- f) UtranCell.
- g) Valid for packet switched traffic.
- h) UMTS.

### 4.13.2 Outgoing packet switched inter-RAT handovers, UE controlled

#### 4.13.2.1 Successful outgoing packet switched inter-RAT handovers, UE controlled

- a) This measurement provides the number of successful outgoing, UE controlled, Packet Switched inter-RAT handovers per cell.
- b) CC.
- c) Receipt of an RANAP message, SRNS CONTEXT REQUEST, sent from the PS CN to the serving RNC, indicating a successful outgoing UE controlled Packet Switched inter-RAT handover (see TS 25.413).
- d) ~~A single integer value~~ ~~Each measurement is an integer value. The number of measurements is equal to the number of causes supported.~~
- e) IRATHO.SuccOutPSUE.

- f) UtranCell.
- g) Valid for packet switched traffic.
- h) UMTS.

**End of Change in Clause 4.13**  
**End of Document**



## Annex C (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Jun 2001	S_12	SP-010237	--	--	Submitted to TSG SA #12 for Approval.	1.0.2	4.0.0
Sep 2001	S_13	SP-010468	001	--	Corrections on UMTS and combined UMTS/GSM measurements: Addition of family name for CN measurements, addition of the list of families, addition of Annex A: "(n-1) out of n" examples, application of the "(n-1) out of n" approach to all relevant measurements, enhancement of per cause measurements	4.0.0	4.1.0
Mar 2002	S_15	SP-020026	002	--	Correction of the measured object class for some SGSN MM measurement definitions	4.1.0	4.2.0
Mai 2002	--	--	--	--	MCC clean-up (Cosmetics based on EditHelp)	4.2.0	4.2.1
Jun 2002	S_16	SP-020291	003	2	Introduction of "Performance Measurements Definition Process" describing the repeatable, top-down process to define measurements for inclusion in future 3GPP Releases	4.2.0	5.0.0
Jun 2002	S_16	SP-020291	004	--	Adding performance measurement definitions related to GGSN	4.2.0	5.0.0
Jun 2002	S_16	SP-020291	005	--	Introduction of an optional "Purpose" clause in the measurement template	4.2.0	5.0.0
Jun 2002	S_16	SP-020291	006	--	Addition of explanatory text for Radio Access Bearer (RAB) measurements	4.2.0	5.0.0
Sep 2002	S_17	SP-020609	009	--	Introduction of Service Based Performance Measurement Definitions	5.0.0	5.1.0
Sep 2002	S_17	SP-020609	010	--	Add flexibility in the measurement template for the Measured Object Class (MOC)	5.0.0	5.1.0
Mar 2003	S_19	SP-030146	012	-	Correction of the subscriber number measurement definitions	5.1.0	5.2.0
Jun 2003	S_20	SP-030292	014	--	Correction of the definition of the successful GPRS attach counters	5.2.0	5.3.0
Jun 2003	S_20	SP-030292	015	--	Deletion of dual clause 4.1.2	5.2.0	5.3.0
Sep 2003	S_21	SP-030431	019	--	Correction of collection method for SGSN measurements	5.3.0	5.4.0
Sep 2003	S_21	SP-030431	022	--	Correction of "outgoing intra-cell hard handovers measurements"	5.3.0	5.4.0
Dec 2003	S_22	SP-030645	024	--	Correction of terms used for subcounter definitions	5.4.0	5.5.0
Mar 2004	S_23	SP-040134	027	--	Correction of "Radio link addition" measurements	5.5.0	5.6.0

## CHANGE REQUEST

⌘ **32.403 CR 032** ⌘ rev **-** ⌘ Current version: **6.3.0** ⌘

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

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

<b>Title:</b>	⌘ Correction of "Inter-RAT handover" measurements		
<b>Source:</b>	⌘ SA5 ( <a href="mailto:llrui@bupt.edu.cn">llrui@bupt.edu.cn</a> , <a href="mailto:liyewen@chinamobile.com">liyewen@chinamobile.com</a> )		
<b>Work item code:</b>	⌘ OAM-PM	<b>Date:</b>	⌘ 14/05/2004
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ Rel-6
	<i>Use one of the following categories:</i> <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> .		<i>Use one of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>Rel-4</b> (Release 4) <b>Rel-5</b> (Release 5) <b>Rel-6</b> (Release 6)

<b>Reason for change:</b>	⌘ Some measurements about "Circuit switched inter-RAT handover" and "Packet switched inter-RAT handover" contain non existent messages in the trigger conditions and an incorrect data type for measurement result.
<b>Summary of change:</b>	⌘ Modify the incorrect messages in the trigger conditions and data type for measurement result for the measurements on "Circuit switched inter-RAT handover" and "Packet switched inter-RAT handover".
<b>Consequences if not approved:</b>	⌘ Measurements can not be implemented according to the current definition.

<b>Clauses affected:</b>	⌘ 4.12, 4.13										
<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;"> </td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> </table> Other core specifications	Y	N		X		X		X	⌘	
Y	N										
	X										
	X										
	X										
			Test specifications								
			O&M Specifications								
<b>Other comments:</b>	⌘ Rel-6 Mirror CR to S5-048462.										

## 4.12 Circuit switched inter-RAT handover

### 4.12.1 Relocation preparation for outgoing circuit switched inter-RAT handovers

The three measurement types defined in the subclause 4.12.1.n for relocation preparation for outgoing circuit switched inter-RAT handovers are subject to the "2 out of 3 approach".

#### 4.12.1.1 Attempted relocation preparation for outgoing circuit switched inter-RAT handovers

- a) This measurement provides the number of attempted relocation preparations for outgoing circuit switched inter-RAT handovers per neighbour cell.
- b) CC.
- c) Transmission of a RANAP message RELOCATION REQUIRED from the serving RNC to the CN, indicating an attempted relocation preparation of an outgoing inter-RAT handover (see TS 25.413 [5]).
- d) A single integer value.
- e) IRATHO.AttRelocPrepOutCS.
- f) UtranRelation.
- g) Valid for circuit switched traffic.
- h) UMTS.

#### 4.12.1.2 Successful relocation preparation for outgoing circuit switched inter-RAT handovers

- a) This measurement provides the number of successful relocation preparations for outgoing circuit switched inter-RAT handovers per neighbour cell.
- b) CC.
- c) Receipt of a RANAP message RELOCATION COMMAND sent from the CN to the serving RNC, indicating a successful relocation preparation of an inter-RAT handover (see TS 25.413 [5]).
- d) A single integer value.
- e) IRATHO.SuccRelocPrepOutCS.
- f) UtranRelation.
- g) Valid for circuit switched traffic.
- h) UMTS.

#### 4.12.1.3 Failed relocation preparation for outgoing circuit switched inter-RAT handovers

- a) This measurement provides number of failed relocation preparations for outgoing circuit switched inter-RAT handovers per neighbour cell per cause.
- b) CC.

- c) Receipt of a RANAP message RELOCATION PREPARATION FAILURE sent from the CN to the serving RNC, indicating a failed relocation preparation for outgoing inter-RAT handovers. Failure causes are defined within TS 25.413 [5].  
The sum of all supported per cause measurements shall equal the total number of failed events. 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 IRATHO.FailRelocPrepOutCS.*Cause* where *Cause* identifies the failure cause.
- f) UtranRelation.
- g) Valid for circuit switched traffic.
- h) UMTS.

## 4.12.2 Outgoing circuit switched inter-RAT handovers

The three measurement types defined in the subclause 4.12.2.n for outgoing circuit switched inter-RAT handovers are subject to the "2 out of 3 approach".

### 4.12.2.1 Attempted outgoing circuit switched inter-RAT handovers

- a) This measurement provides the number of attempted outgoing circuit switched inter-RAT handovers per neighbour cell from UEs point of view.
- b) CC.
- c) Transmission of a RRC-message [HANDOVER FROM UTRAN COMMAND](#)~~INTER-RADIO-ACCESS TECHNOLOGY HANDOVER COMMAND~~ from serving RNC to the UE, indicating an attempted outgoing inter-RAT handover (see TS 25.331 [4]).
- d) A single integer value.
- e) IRATHO.AttOutCS.
- f) UtranRelation.
- g) Valid for circuit switched traffic.
- h) UMTS.

### 4.12.2.2 Successful outgoing circuit switched inter-RAT handovers

- a) This measurement provides the number of successful outgoing circuit switched inter-RAT handovers per neighbour cell from UEs point of view.
- b) CC.
- c) Receipt of a RANAP message [IU-~~ts~~ RELEASE COMMAND](#) sent from the CN to the serving RNC, indicating a successful inter-RAT handover (see TS 25.413 [5]).
- d) A single integer value.
- e) IRATHO.SuccOutCS.
- f) UtranRelation.
- g) Valid for circuit switched traffic.
- h) UMTS.

#### 4.12.2.3 Failed outgoing circuit switched inter-RAT handovers

- a) This measurement provides the number of failed outgoing circuit switched inter-RAT handovers per neighbour cell per cause from UEs point of view, where the UE returned to the original physical channel configuration.
- b) CC.
- c) Receipt of a RRC message ~~HANDOVER FROM UTRAN FAILURE~~~~INTER-RADIO ACCESS TECHNOLOGY~~ ~~HANDOVER FAILURE~~ sent from the UE to the serving RNC, indicating a failed inter-RAT handover. Failure causes are defined within TS 25.331 [4].  
The sum of all supported per cause measurements shall equal the total number of failed events. 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 IRATHO.FailOutCS.*Cause* where *Cause* identifies the failure cause.
- f) UtranRelation.
- g) Valid for circuit switched traffic.
- h) UMTS.

#### 4.12.3 Incoming circuit switched inter-RAT handovers

The three measurement types defined in the subclause 4.12.3.n for incoming circuit switched inter-RAT handovers are subject to the "2 out of 3 approach".

##### 4.12.3.1 Attempted incoming circuit switched inter-RAT handovers

- a) This measurement provides the number of attempted incoming circuit switched inter-RAT handovers for each cell.
- b) CC.
- c) Receipt of a RANAP RELOCATION REQUEST message sent from the CN to the target RNC, indicating the attempt of an inter-RAT handover (see TS 25.413 [5]).
- d) A single integer value.
- e) IRATHO.AttIncCS.
- f) UtranCell.
- g) Valid for circuit switched traffic.
- h) UMTS.

##### 4.12.3.2 Successful incoming circuit switched inter-RAT handovers

- a) This measurement provides the number of successful incoming circuit switched interRAT handovers for each cell.
- b) CC.
- c) Receipt of a RRC HANDOVER TO UTRAN COMPLETE message sent from the UE to the target RNC, indicating a successful interRAT handover (see TS 25.331 [4]).
- d) A single integer value.
- e) IRATHO.SuccIncCS.
- f) UtranCell.

- g) Valid for circuit switched traffic.
- h) UMTS.

#### 4.12.3.3 Failed incoming circuit switched inter-RAT handovers

- a) This measurement provides the number of failed incoming circuit switched interRAT handovers per cell per cause.
- b) CC.
- c) ~~Transmission Receipt~~ of a RANAP message RELOCATION FAILURE ~~sent~~ from ~~the target RNC~~ ~~the CN~~ to ~~the CN~~ ~~the target RNC~~, indicating a failed ~~relocation preparation for incoming~~ inter-RAT handovers. Failure causes are defined within TS 25.413 [5].  
The sum of all supported per cause measurements shall equal the total number of failed events. 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 IRATHO.FailIncCS.Cause where *Cause* identifies the failure cause.
- f) UtranCell.
- g) Valid for circuit switched traffic.
- h) UMTS.

<b>End of Change in Clause 4.12</b>
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<b>Change in Clause 4.13</b>
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### 4.13 Packet switched inter-RAT handover

#### 4.13.1 Outgoing packet switched inter-RAT handovers, UTRAN controlled

The three measurement types defined in the subclause 4.13.1.n for outgoing packet switched inter-RAT handovers, UTRAN controlled are subject to the "2 out of 3 approach".

##### 4.13.1.1 Attempted outgoing packet switched inter-RAT handovers, UTRAN controlled

- a) This measurement provides the number of attempted outgoing, UTRAN controlled, Packet Switched interRAT handovers per cell.
- b) CC.
- c) Transmission of a RRC-message, CELL CHANGE ORDER FROM UTRAN, from source RNC to the UE, indicating an attempted outgoing Packet Switched inter-RAT handover (see TS 25.331 [4]).
- d) A single integer value.
- e) IRATHO.AttOutPSUTRAN.
- f) UtranCell.
- g) Valid for packet switched traffic.
- h) UMTS.

#### 4.13.1.2 Successful outgoing packet switched inter-RAT handovers, UTRAN controlled

- a) This measurement provides the number of successful outgoing, UTRAN controlled, Packet Switched interRAT handovers per cell.
- b) CC.
- c) ~~Receipt Transmission~~ of a RANAP message, ~~Uu~~ RELEASE COMMAND, ~~sent~~ from the PS CN to the source RNC, indicating a successful outgoing Packet Switched inter-RAT handover (see TS 25.413 [5]).
- d) A single integer value.
- e) IRATHO.SuccOutPSUTRAN.
- f) UtranCell.
- g) Valid for packet switched traffic.
- h) UMTS.

#### 4.13.1.3 Failed outgoing packet switched inter-RAT handovers UTRAN controlled

- a) This measurement provides the number of failed outgoing, UTRAN controlled, Packet Switched interRAT handovers per cause, where the UE resumes the connection to UTRAN using the same resources used before receiving the cell change order. This is measured per cell.
- b) CC.
- c) Receipt of an RRC message, ~~CELL CHANGE ORDER FROM UTRAN FAILURE~~ ~~CELL CHANGE FAILURE FROM UTRAN~~, sent from the UE to the source RNC, indicating a failed inter-RAT handover. Failure causes are defined within TS 25.331 [4].  
The sum of all supported per cause measurements shall equal the total number of failed events. 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 IRATHO.FailOutPSUTRAN.*Cause* where *Cause* identifies the failure cause.
- f) UtranCell.
- g) Valid for packet switched traffic.
- h) UMTS.

### 4.13.2 Outgoing packet switched inter-RAT handovers, UE controlled

#### 4.13.2.1 Successful outgoing packet switched inter-RAT handovers, UE controlled

- a) This measurement provides the number of successful outgoing, UE controlled, Packet Switched inter-RAT handovers per cell.
- b) CC.
- c) Receipt of an RANAP message, SRNS CONTEXT REQUEST, sent from the PS CN to the serving RNC, indicating a successful outgoing UE controlled Packet Switched inter-RAT handover (see TS 25.413 [5]).
- d) ~~A single integer value~~ ~~Each measurement is an integer value. The number of measurements is equal to the number of causes supported.~~
- e) IRATHO.SuccOutPSUE.

- f) UtranCell.
- g) Valid for packet switched traffic.
- h) UMTS.

**End of Change in Clause 4.13**  
**End of Document**



## Annex C (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Jun 2001	S_12	SP-010237	--	--	Submitted to TSG SA #12 for Approval.	1.0.2	4.0.0
Sep 2001	S_13	SP-010468	001	--	Corrections on UMTS and combined UMTS/GSM measurements: Addition of family name for CN measurements, addition of the list of families, addition of Annex A: "(n-1) out of n" examples, application of the "(n-1) out of n" approach to all relevant measurements, enhancement of per cause measurements	4.0.0	4.1.0
Mar 2002	S_15	SP-020026	002	--	Correction of the measured object class for some SGSN MM measurement definitions	4.1.0	4.2.0
Mai 2002	--	--	--	--	MCC clean-up (Cosmetics based on EditHelp)	4.2.0	4.2.1
Jun 2002	S_16	SP-020291	003	2	Introduction of "Performance Measurements Definition Process" describing the repeatable, top-down process to define measurements for inclusion in future 3GPP Releases	4.2.0	5.0.0
Jun 2002	S_16	SP-020291	004	--	Adding performance measurement definitions related to GGSN	4.2.0	5.0.0
Jun 2002	S_16	SP-020291	005	--	Introduction of an optional "Purpose" clause in the measurement template	4.2.0	5.0.0
Jun 2002	S_16	SP-020291	006	--	Addition of explanatory text for Radio Access Bearer (RAB) measurements	4.2.0	5.0.0
Sep 2002	S_17	SP-020609	009	--	Introduction of Service Based Performance Measurement Definitions	5.0.0	5.1.0
Sep 2002	S_17	SP-020609	010	--	Add flexibility in the measurement template for the Measured Object Class (MOC)	5.0.0	5.1.0
Mar 2003	S_19	SP-030146	012	--	Correction of the subscriber number measurement definitions	5.1.0	5.2.0
Jun 2003	S_20	SP-030292	014	--	Correction of the definition of the successful GPRS attach counters	5.2.0	5.3.0
Jun 2003	S_20	SP-030292	015	--	Deletion of dual clause 4.1.2	5.2.0	5.3.0
Jun 2003	S_20	SP-030293	016	--	Addition of GPRS per cause measurement definitions	5.3.0	6.0.0
Jun 2003	S_20	SP-030293	017	--	Introduction of MMS Service Based Performance Measurement	5.3.0	6.0.0
Sep 2003	S_21	SP-030431	020	--	Correction of collection method for SGSN measurements	6.0.0	6.1.0
Sep 2003	S_21	SP-030431	023	--	Correction of "outgoing intra-cell hard handovers measurements"	6.0.0	6.1.0
Dec 2003	S_22	SP-030645	025	--	Correction of terms used for subcounter definitions	6.1.0	6.2.0
Mar 2004	S_23	SP-040134	028	--	Correction of "Radio link addition" measurements	6.2.0	6.3.0
Mar 2004	S_23	SP-040135	029	--	Add the measurements about lu connection release	6.2.0	6.3.0