TSG-RAN Meeting #13
Beijing, China, 18 - 21 September 2001

RP-010552

Title: **Agreed CRs (Release ’99 and Rel-4 category A) to TR 25.922**

Source: **TSG-RAN WG2**

Agenda item: **8.2.3**

Doc-1st-	Status-	Spec	CR	Rev	Phase	Subject	Cat	Version	Versio
R2-011952	agreed	25.922	015		R99	Update of preconfiguration description	F	3.5.0	3.6.0
R2-012018	agreed	25.922	016		Rel-4	Update of preconfiguration description	A	4.0.0	4.1.0
R2-011964	agreed	25.922	017		R99	Alignment with 25.304	F	3.5.0	3.6.0
R2-012144	agreed	25.922	018		Rel-4	Alignment with 25.304	A	4.0.0	4.1.0

3GPP TSG-RAN WG2 Meeting #23
Helsinki, Finland, 27.08. – 31.08.2001

Tdoc R2-011952

CR-Form-v4

CHANGE REQUEST

⌘ **25.922** **CR** **015** ⌘ ev **-** ⌘ Current version: **3.5.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	Update of preconfiguration description
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	21.08.2001
Category:	⌘	**F**
Release:	⌘	R99

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)*

Reason for change:	⌘	Default configurations have been succesfully introduced into the technical specifications. However, the introduction of these default configurations have not been included in the RRM TR. This CR corrects that omission.
Summary of change:	⌘	Update of preconfiguration description to include default configurations.
Consequences if not approved:	⌘	The TR will not be in line with the Technical Specifications.

Clauses affected:	⌘	5.1.5.2.2, 5.1.5.2.2a (new)		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.922 v4.0.0, CR 016
Other comments:	⌘			

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

5.1.5.2.2 Predefined radio configuration information

In order to reduce the size of certain size critical messages in UMTS, a network may download/ pre- define one or more radio configurations in a mobile. A predefined radio configuration mainly consists of radio bearer- and transport channel parameters. A network knowing that the UE has suitable predefined configurations stored can then refer to the stored configuration requiring only additional parameters to be transferred.

Predefined configurations may be applied when performing handover from another RAT to UTRAN. In the case of handover from GSM to UTRAN, the performance of handover to UTRAN is improved when it is possible to transfer the handover to UTRAN command within a non-segmented GSM air interface message.

Furthermore, it is important to note that it is a network option whether or not to use pre-configuration; the handover to UTRAN procedures also support transfer of a handover to UTRAN command including all parameters and the use of default configurations.

NOTE: In case segmentation is used, subsequent segments can only be transferred after acknowledgement of earlier transmitted segments. In case of handover however, the quality of the UL may be quite poor resulting in a failure to transfer acknowledgements. This implies that it may be impossible to quickly transfer a segmented handover message. Segmentation over more than two GSM air interface messages will have a significantly detrimental, and unacceptable, impact on handover performance.

The UE shall be able to store upto 16 different predefined configurations, each of which is identified with a separate pre-configuration identity. The UE need not defer accessing the network until it has obtained all predefined configurations. The network may use different configurations for different services e.g. speech, circuit switched data. Moreover, different configurations may be needed because different UTRAN implementations may require service configurations to be customised e.g. different for micro and macro cells.

The predefined configurations stored within the UE are valid within the scope of a PLMN; the UE shall consider these configurations to be invalid upon PLMN re-selection. Furthermore, a value tag is associated with each individual pre-defined configuration. This value tag, that can have 16 values, is used by the UE and the network to ensure the stored pre-defined configuration(s) is the latest/required version. The UE erases all pre-defined configurations upon switch off.

The current facilities in 25.331 have focused on the use of predefined configurations during handover from GSM to UTRAN. The same principles may also be applied for the handover procedures used within UTRAN although this would require an extension of the currently defined RRC procedures.

5.1.5.2.2a Default~~Predefined~~ configuration information

~~Besides using pre-defined configurations, the use of d~~Default radio bearer configurations ~~may also be used is considered~~. A default configuration is a set of radio bearer parameters for which the values are defined in the standard. While the network can configure the parameter values to be used in a predefined configuration in a flexible manner, the set of radio bearer parameter values for a default configuration are specified in the standard and hence fixed. The main advantage~~use~~ of default configurations is that they can be used at any time; they need not be downloaded into the UE. ~~The use of default configurations is FFS.~~

~~The current facilities in 25.331 have focused on the use of predefined configurations during handover from GSM to UTRAN. The same principles may also be applied for the handover procedures used within UTRAN e.g. handover including SRNC relocation. Use of predefined configurations in these cases may require extension of the currently defined RRC procedures.~~

5.1.5.2.3 Security and UE capability information

The security requirements concerning handover to UTRAN are specified in [14].

The initialisation parameters for ciphering are required to be transferred to the target RNC prior to the actual handover to UTRAN to ensure the immediate start of ciphering. For UEs involved in CS & PS domain services, R99 specifications support handover for the CS domain services while the PS domain services are re-established later. Consequently, in R99 only the START for the CS domain service needs to be transferred prior to handover. The START for the PS domain may be transferred at the end of the handover procedure, within the HANDOVER TO UTRAN COMPLETE message.

It should be noted that inter RAT handover normally involves a change of ciphering algorithm, in which case the new algorithm is included within the HANDOVER TO UTRAN COMMAND message.

Activation of integrity protection requires additional information transfer e.g. FRESH. Since the size of the HANDOVER TO UTRAN COMMAND message is critical, the required integrity protection information can not be included in this message. Instead, integrity protection is started immediately after handover by means of the security mode control procedure. Therefore, the HANDOVER TO UTRAN COMMAND and the HANDOVER TO UTRAN COMPLETE messages are not integrity protected.

3GPP TSG-RAN WG2 Meeting #23
Helsinki, Finland, 27.08. – 31.08.2001

Tdoc R2-012018

CR-Form-v4

CHANGE REQUEST

⌘ **25.922** **CR** **016** ⌘ ev **-** ⌘ Current version: **4.0.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	Update of preconfiguration description
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	30.08.2001
Category:	⌘	**A**
Release:	⌘	REL-4

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B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
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2	*(GSM Phase 2)*
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REL-4	*(Release 4)*
REL-5	*(Release 5)*

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Clauses affected:	⌘	5.1.5.2.2, 5.1.5.2.2a (new)		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.922 v3.5.0, CR 015
Other comments:	⌘			

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3GPP TSG-RAN WG2 Meeting #23 **Tdoc R2-011964**

Helsinki, Finland, 27 - 31 August 2001

CR-Form-v4

CHANGE REQUEST

⌘ **25.922** **CR** **017** ⌘ rev **-** ⌘ Current version: **3.5.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	Alignment with TS 25.304
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	August 27th, 2001
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
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R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change: ⌘

- There are inconsistencies between TR 25.922 and TS 25.304 concerning UE behavior in relation to barred cells.
- TR 25.922 discusses the use of mapping functions to compare measurements on FDD, TDD, and GSM cells. Since mapping functions are no longer used, this text is erroneous.
- The remark that dual receiver UEs are not possible due to low cost constraints is not appropriate in a 3GPP technical report.
- The text describing cell selection in Sec. 4.3.1 is erroneous. The UE must measure both CPICH Ec/N0 and CPICH RSCP for FDD cells in order to check if a cell satisfy the S criterion.
- ODMA and FAUSCH are not part of Release 99 and unnecessary references should be removed.

Summary of change: ⌘

- Text in Sec. 4.2 stating that UEs are allowed to camp on barred cells for limited services is removed.Text in Sec. 4.3.4 stating that UEs are allowed to select/reselect a barred cell to initiate emergency calls is removed. Clarification regarding UE behavior on cells reserved for operator use is also added.
- Text in Sec. 4.1 about the use of mapping functions is removed. Sec . 4.3.3 is changed to reflect the use of mapping of threshold parameters in HCS instead of the use of mapping functions.
- Text in Sec. 5.1.5.1 stating that dual receiver UEs are not viable due to low cost constraints is removed.
- Text in Sec. 4.3.1 is changed so that it reflects that UEs must measure both CPICH Ec/N0 and CPICH RSCP in cell selection.
- Unnecessary abbreviations in Sec. 3.2 related to ODMA and FAUSCH are removed.

		▪ Minor editorial corrections.
Consequences if not approved:	⌘	▪ There will be inconsistencies between TS 25.304 and TR 25.922. ▪ TR 25.922 indicates that dual receiver UEs are not possible, which is not true.

Clauses affected:	⌘	2, 3.2, 4.1, 4.2, 4.3.1, 4.3.3, 4.3.4, 5.1.5.1		
Other specs Affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.922 v4.0.0, CR 018
Other comments:	⌘			

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---------- FIRST CHANGE

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP Homepage: www.3GPP.org.

[2] 3GPP TS 25.212: "Multiplexing and channel coding".

[3] 3GPP TS 25.215: "Physical layer – Measurements (FDD)".

[4] 3GPP TS 25.301: "Radio Interface Protocol Architecture".

[5] 3GPP TS 25.302: "Services provided by the Physical Layer".

[6] 3GPP TS 25.303: "Interlayer Procedures in Connected Mode".

[7] 3GPP TS 25.304: "UE procedures in Idle Mode and Procedures for Cell Reselection in Connected Mode".

[8] 3GPP TS 25.322: "RLC Protocol Specification".

[9] 3GPP TS 25.331: "RRC Protocol Specification".

[10] 3GPP TS 25.921: "Guidelines and Principles for protocol description and error handling".

[11] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[12] 3GPP TS 26.010: "Mandatory Speech Codec speech processing functions AMR Speech Codec General Description".

[13] 3GPP TS 23.122: "Non-Access-Stratum functions related to Mobile Station (MS) in idle mode ".

[14] 3GPP TS 33.102: "3G Security; Security Architecture".

[15] 3GPP TS 25.123: "Requirements for support of radio resource management (TDD)".

[16] 3GPP TS 25.133: "Requirements for support of radio resource management (FDD)".

[17] 3GPP TS 25.224: "Physical Layer Procedures (TDD)".

[18] 3GPP TS 25.321: "MAC protocol specification".

[19] 3GPP TS 22.011: "Service accessibility".

---------- NEXT CHANGE

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

AC	Access Class of UE
AS	Access Stratum
ARQ	Automatic Repeat Request
BCCH	Broadcast Control Channel
BCH	Broadcast Channel
C-	Control-
CC	Call Control
CCCH	Common Control Channel
CCH	Control Channel
CCTrCH	Coded Composite Transport Channel
CN	Core Network
CRC	Cyclic Redundancy Check
DC	Dedicated Control (SAP)
DCA	Dynamic Channel Allocation
DCCH	Dedicated Control Channel
DCH	Dedicated Channel
DL	Downlink
DRNC	Drift Radio Network Controller
DSCH	Downlink Shared Channel
DTCH	Dedicated Traffic Channel
FACH	Forward Link Access Channel
~~FAUSCH~~	~~Fast Uplink Signalling Channel~~
FCS	Frame Check Sequence
FDD	Frequency Division Duplex
GC	General Control (SAP)
GSM	Global System for Mobile Communications
HCS	Hierarchical Cell Structure
HO	Handover
ITU	International Telecommunication Union
kbps	kilo-bits per second
L1	Layer 1 (physical layer)
L2	Layer 2 (data link layer)
L3	Layer 3 (network layer)
~~LAC~~	~~Link Access Control~~
LAI	Location Area Identity
MAC	Medium Access Control
MM	Mobility Management
NAS	Non-Access Stratum
Nt	Notification (SAP)
~~OCCCH~~	~~ODMA Common Control Channel~~
~~ODCCH~~	~~ODMA Dedicated Control Channel~~
~~ODCH~~	~~ODMA Dedicated Channel~~
~~ODMA~~	~~Opportunity Driven Multiple Access~~
~~ORACH~~	~~ODMA Random Access Channel~~
~~ODTCH~~	~~ODMA Dedicated Traffic Channel~~
PCCH	Paging Control Channel
PCH	Paging Channel
PDU	Protocol Data Unit
PHY	Physical layer
PhyCH	Physical Channels
PLMN	Public Land Mobile Network
RACH	Random Access Channel
RAT	Radio Access Technology
RLC	Radio Link Control
RNC	Radio Network Controller
RNS	Radio Network Subsystem
RNTI	Radio Network Temporary Identity
RRC	Radio Resource Control

SAP	Service Access Point
SCCH	Synchronisation Control Channel
SCH	Synchronisation Channel
SDU	Service Data Unit
SRNC	Serving Radio Network Controller
SRNS	Serving Radio Network Subsystem
TCH	Traffic Channel
TDD	Time Division Duplex
TFCI	Transport Format Combination Indicator
TFI	Transport Format Indicator
TMSI	Temporary Mobile Subscriber Identity
TPC	Transmit Power Control
U-	User-
UE	User Equipment
~~UE_R~~	~~User Equipment with ODMA relay operation enabled~~
UL	Uplink
UMTS	Universal Mobile Telecommunications System
URA	UTRAN Registration Area
UTRA	UMTS Terrestrial Radio Access
UTRAN	UMTS Terrestrial Radio Access Network

---------- NEXT CHANGE

4.1 Overview

When a UE is switched on, a public land mobile network (PLMN) is selected and the UE searches for a suitable cell of this PLMN to camp on. The PLMN selection procedures are specified in [13].

A PLMN may rely on several radio access technologies (RATs), e.g. UTRA and GSM. The non-access stratum can control the ~~radio access technology(ies)~~ RATs in which the cell selection should be performed, for instance by indicating ~~radio access technology(ies)~~RATs associated with the selected PLMN [13]. The UE shall select a suitable cell and the radio access mode based on idle mode measurements and cell selection criteria.

The UE will then register its presence, by means of a NAS registration procedure, in the registration area of the chosen cell, if necessary.

When camped on a cell, the UE shall regularly search for a better cell according to the cell re-selection criteria. If a better cell is found, that cell is selected.

Different types of measurements are used in different ~~radio access technologies~~ RATs and modes for the cell selection and re-selection. ~~Whenever a direct comparison of these measurements is required, mapping functions will be applied~~. The performance requirements for the measurements are specified in [15][16].

The description of cell selection and re-selection reported below applies to a multi-RAT UE with at least UTRA technology.

---------- NEXT CHANGE

4.2 Service type in Idle mode

Services are distinguished into categories defined in [7]; also the categorisation of cells according to services they can offer is provided in [7].

In the following, some typical examples of the use of the different types of cells are provided:

- Cell ~~B~~barred. In some cases (e.g. due to traffic load or maintenance reasons) it may be necessary to temporarily prevent the normal access in a cell. An UE shall not camp on a barred cell ~~for normal services, but may camp on this cell for limited service if no other suitable cell is available.~~, not even for limited services.

- Cell ~~R~~reserved for operator use. The aim of this type of cell is to allow the operator using and test newly deployed cells without being disturbed by normal traffic. For normal users (indicated by assigned AC 0 to 9) and special non-operator users (indicated by assigned AC 12 to 14), the UE shall behave as for the ~~C~~cell ~~B~~barred. UEs with AC 11 or 15 are allowed to reselect those cells while in HomePLMN.

The cell type is indicated in the system information [9].

---------- NEXT CHANGE

4.3.1 Cell Selection

The goal of the cell selection procedures is to fast find a cell to camp on. To speed up this process, when switched on or when returning from "out of coverage", the UE shall start with the stored information from previous network contacts. If the UE is unable to find any of those cells the ~~I~~initial cell search procedure will be initiated.

The UE shall measure CPICH Ec/No ~~or~~ and CPICH RSCP for FDD cells and P-CCPCH RSCP for TDD cells [7]. ~~The quantity to be used for a given cell is indicated in the system information.~~

If it is not possible to find a cell from a valid PLMN the UE will choose a cell in a forbidden PLMN and enter a "limited service state". In this state the UE regularly attempt to find a suitable cell on a valid PLMN. If a better cell is found the UE has to read the system information for that cell.

---------- NEXT CHANGE

4.3.3 ~~Measurement quantities and mapping functions~~Mapping of thresholds in cell reselection rules

When HCS is used, mapping of signalled values for the thresholds Qhcs shall be used. Different mapping is applied for CPICH Ec/N0 and CPICH RSCP for FDD cells, P-CCPCH RSCP for TDD cells, and ~~RXLEV~~ RSSI for GSM cells. The explicit mapping is indicated in system information [9].

~~Mapping functions are used for mapping a certain range of measurement values Qmeas_LEV (e.g. CPICH_Ec/N0 and CPICH_RSCP_LEV for UTRA FDD cells, P-CCPCH_RSCP_LEV for UTRA TDD cells, RXLEV for GSM cells) to a representing quality value Qmap.~~

~~For each radio access technology and mode (i.e. FDD or TDD), one mapping function is defined. It may be defined over one or several consecutive intervals of the measurement values Qmeas_LEV, as specified in [7]~~

~~If no mapping functionality is needed (e.g. in FDD- or TDD-only networks), an implicit mapping is used: Qmap= Qmeas_LEV. This is specified as default case.~~

---------- NEXT CHANGE

4.3.4 ~~Restricted~~ Reserved cells

When cell status "barred" is indicated [9] ~~or when the cell status "Operator only" is indicated and the Access class in the UE is 1-9,~~ the UE is not permitted to select/re-select this cell~~, except for emergency call when no other acceptable cell can be found and the cell is not barred for emergency call.~~, not even for limited services.

When the cell status "reserved for operator use" is indicated [9] and the access class of the UE is 11 or 15 the UE may select/re-select this cell if in HomePLMN [19].

In ~~any other case~~all these cases, the criteria for selection of another cell should take into account the effects of the interference generated towards the ~~restricted~~ reserved cell. For this reason, the reselection of any cell on the same frequency as the ~~restricted~~ reserved cell is prohibited and the UE enters a limited service state. In this state, ~~every period of T_{barred} seconds,~~ in order to detect a change of the ~~restriction~~ reservation status, the UE shall perform a periodic check every T_{barred} seconds.

When the neighbour cells use only the same frequency, the only way to provide the service in the area is to allow the UE to camp on another cell on the same frequency, regardless of the interference generated on the ~~restricted~~ reserved cell. This is done by setting the "Intra-frequency cell re-selection indicator" IE to "allowed".

When the UE still detect the ~~restricted~~ reserved cell as the "best" one, it will read the system information and evaluate again the availability of that cell, increasing the power consumption in the UE. The unnecessary evaluation may be avoided excluding the restricted cell from the neighbouring cell list for a time interval of T_{barred} seconds.

"Intra-frequency cell re-selection indicator" and "~~-~~T_{barred}" are indicated together with the cell access restriction in the system information [9].

---------- NEXT CHANGE

5.1.5.1 Handover 3G to 2G

The handover from UTRA to GSM (offering world-wide coverage already today) has been one of the main design criteria taken into account in the UTRA frame timing definition.

The handover from UTRA~~/~~FDD mode to GSM can also be implemented without simultaneous use of two receiver chains. Although the frame length is different from GSM frame length, the GSM traffic channel and UTRA FDD channels use similar multi-frame structure.

A UE can do the measurements by using idle periods in the downlink transmission, where such idle periods are created by using the downlink ~~C~~compressed ~~M~~mode as defined in ~~WG1 Specification~~[2]. The ~~C~~compressed ~~M~~mode is under the control of the UTRAN~~,~~ and the UTRAN ~~should~~ signals appropriate configurations of compressed mode pattern~~communicate~~ to the UE ~~which frame is slotted~~. For some measurements also uplink compressed mode is needed, depending on UE capablities and measurement objects.

Alternatively independent measurements not relying on the ~~C~~compressed ~~M~~mode, but using a dual receiver approach can be performed, where the GSM receiver branch can operate independently of the UTRA FDD receiver branch.

The ~~H~~handover from UTRA~~/~~TDD mode to GSM can be implemented without simultaneous use of two receiver chains. Although the frame length is different from GSM frame length, the GSM traffic channel and UTRA TDD channels rely on similar multi-frame structure.

A UE can do the measurements either by efficiently using idle slots or by getting assigned free continuous periods in the downlink part obtained by reducing the spreading factor and compressing in time TS occupation in a form similar to the FDD ~~C~~compressed ~~M~~mode. ~~The low-cost constraint excludes the dual receiver approach.~~

For smooth inter-operation, inter-system information exchanges are needed in order to allow the UTRAN to notify the UE of the existing GSM frequencies in the area and vice versa. Further more integrated operation is needed for the actual handover where the current service is maintained~~, taking naturally into account the lower data rate capabilities in GSM when compared to UMTS maximum data rates reaching all the way to 2 Mbits/s~~.

3GPP TSG-RAN WG2 Meeting #23 **Tdoc R2-012144**

Helsinki, Finland, 27 - 31 August 2001

CR-Form-v4

CHANGE REQUEST

⌘ **25.922** **CR** **018** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	Alignment with TS 25.304
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	August 30th, 2001
Category:	⌘	**A**
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)*

Reason for change: ⌘ Correction to R'99 version of TR was needed, this CR changes REL-4 version:

Necessary changes:

- There are inconsistencies between TR 25.922 and TS 25.304 concerning UE behavior in relation to barred cells.
- TR 25.922 discusses the use of mapping functions to compare measurements on FDD, TDD, and GSM cells. Since mapping functions are no longer used, this text is erroneous.
- The remark that dual receiver UEs are not possible due to low cost constraints is not appropriate in a 3GPP technical report.
- The text describing cell selection in Sec. 4.3.1 is erroneous. The UE must measure both CPICH Ec/N0 and CPICH RSCP for FDD cells in order to check if a cell satisfy the S criterion.
- ODMA and FAUSCH are not part of Release 99 and unnecessary references should be removed.

Summary of change: ⌘

- Text in Sec. 4.2 stating that UEs are allowed to camp on barred cells for limited services is removed.Text in Sec. 4.3.4 stating that UEs are allowed to select/reselect a barred cell to initiate emergency calls is removed. Clarification regarding UE behavior on cells reserved for operator use is also added.
- Text in Sec. 4.1 about the use of mapping functions is removed. Sec . 4.3.3 is changed to reflect the use of mapping of threshold parameters in HCS instead of the use of mapping functions.
- Text in Sec. 5.1.5.1 stating that dual receiver UEs are not viable due to low cost constraints is removed.
- Text in Sec. 4.3.1 is changed so that it reflects that UEs must measure both

		CPICH Ec/N0 and CPICH RSCP in cell selection. ▪ Unnecessary abbreviations in Sec. 3.2 related to ODMA and FAUSCH are removed. ▪ Minor editorial corrections.
Consequences if not approved:	⌘	▪ There will be inconsistencies between TS 25.304 and TR 25.922. ▪ TR 25.922 indicates that dual receiver UEs are not possible, which is not true.

Clauses affected:	⌘	2, 3.2, 4.1, 4.2, 4.3.1, 4.3.3, 4.3.4, 5.1.5.1			
Other specs Affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.922 v3.5.0, CR 017	
Other comments:	⌘				

How to create CRs using this form:

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

---------- FIRST CHANGE

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP Homepage: www.3GPP.org.

[2] 3GPP TS 25.212: "Multiplexing and channel coding".

[3] 3GPP TS 25.215: "Physical layer – Measurements (FDD)".

[4] 3GPP TS 25.301: "Radio Interface Protocol Architecture".

[5] 3GPP TS 25.302: "Services provided by the Physical Layer".

[6] 3GPP TS 25.303: "Interlayer Procedures in Connected Mode".

[7] 3GPP TS 25.304: "UE procedures in Idle Mode and Procedures for Cell Reselection in Connected Mode".

[8] 3GPP TS 25.322: "RLC Protocol Specification".

[9] 3GPP TS 25.331: "RRC Protocol Specification".

[10] 3GPP TS 25.921: "Guidelines and Principles for protocol description and error handling".

[11] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[12] 3GPP TS 26.010: "Mandatory Speech Codec speech processing functions AMR Speech Codec General Description".

[13] 3GPP TS 23.122: "Non-Access-Stratum functions related to Mobile Station (MS) in idle mode ".

[14] 3GPP TS 33.102: "3G Security; Security Architecture".

[15] 3GPP TS 25.123: "Requirements for support of radio resource management (TDD)".

[16] 3GPP TS 25.133: "Requirements for support of radio resource management (FDD)".

[17] 3GPP TS 25.224: "Physical Layer Procedures (TDD)".

[18] 3GPP TS 25.321: "MAC protocol specification".

[19] 3GPP TS 22.011: "Service accessibility".

---------- NEXT CHANGE

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

AC	Access Class of UE
AS	Access Stratum
ARQ	Automatic Repeat Request
BCCH	Broadcast Control Channel
BCH	Broadcast Channel
C-	Control-
CC	Call Control
CCCH	Common Control Channel
CCH	Control Channel
CCTrCH	Coded Composite Transport Channel
CN	Core Network
CRC	Cyclic Redundancy Check
DC	Dedicated Control (SAP)
DCA	Dynamic Channel Allocation
DCCH	Dedicated Control Channel
DCH	Dedicated Channel
DL	Downlink
DRNC	Drift Radio Network Controller
DSCH	Downlink Shared Channel
DTCH	Dedicated Traffic Channel
FACH	Forward Link Access Channel
~~FAUSCH~~	~~Fast Uplink Signalling Channel~~
FCS	Frame Check Sequence
FDD	Frequency Division Duplex
GC	General Control (SAP)
GSM	Global System for Mobile Communications
HCS	Hierarchical Cell Structure
HO	Handover
ITU	International Telecommunication Union
kbps	kilo-bits per second
L1	Layer 1 (physical layer)
L2	Layer 2 (data link layer)
L3	Layer 3 (network layer)
~~LAC~~	~~Link Access Control~~
LAI	Location Area Identity
MAC	Medium Access Control
MM	Mobility Management
NAS	Non-Access Stratum
Nt	Notification (SAP)
~~OCCCH~~	~~ODMA Common Control Channel~~
~~ODCCH~~	~~ODMA Dedicated Control Channel~~
~~ODCH~~	~~ODMA Dedicated Channel~~
~~ODMA~~	~~Opportunity Driven Multiple Access~~
~~ORACH~~	~~ODMA Random Access Channel~~
~~ODTCH~~	~~ODMA Dedicated Traffic Channel~~
PCCH	Paging Control Channel
PCH	Paging Channel
PDU	Protocol Data Unit
PHY	Physical layer
PhyCH	Physical Channels
PLMN	Public Land Mobile Network
RACH	Random Access Channel
RAT	Radio Access Technology
RLC	Radio Link Control
RNC	Radio Network Controller
RNS	Radio Network Subsystem
RNTI	Radio Network Temporary Identity
RRC	Radio Resource Control

SAP	Service Access Point
SCCH	Synchronisation Control Channel
SCH	Synchronisation Channel
SDU	Service Data Unit
SRNC	Serving Radio Network Controller
SRNS	Serving Radio Network Subsystem
TCH	Traffic Channel
TDD	Time Division Duplex
TFCI	Transport Format Combination Indicator
TFI	Transport Format Indicator
TMSI	Temporary Mobile Subscriber Identity
TPC	Transmit Power Control
U-	User-
UE	User Equipment
~~UE_R~~	~~User Equipment with ODMA relay operation enabled~~
UL	Uplink
UMTS	Universal Mobile Telecommunications System
URA	UTRAN Registration Area
UTRA	UMTS Terrestrial Radio Access
UTRAN	UMTS Terrestrial Radio Access Network

---------- NEXT CHANGE

4.1 Overview

When a UE is switched on, a public land mobile network (PLMN) is selected and the UE searches for a suitable cell of this PLMN to camp on. The PLMN selection procedures are specified in [13].

A PLMN may rely on several radio access technologies (RATs), e.g. UTRA and GSM. The non-access stratum can control the ~~radio access technology(ies)~~ RATs in which the cell selection should be performed, for instance by indicating ~~radio access technology(ies)~~RATs associated with the selected PLMN [13]. The UE shall select a suitable cell and the radio access mode based on idle mode measurements and cell selection criteria.

The UE will then register its presence, by means of a NAS registration procedure, in the registration area of the chosen cell, if necessary.

When camped on a cell, the UE shall regularly search for a better cell according to the cell re-selection criteria. If a better cell is found, that cell is selected.

Different types of measurements are used in different ~~radio access technologies~~ RATs and modes for the cell selection and re-selection. ~~Whenever a direct comparison of these measurements is required, mapping functions will be applied~~. The performance requirements for the measurements are specified in [15][16].

The description of cell selection and re-selection reported below applies to a multi-RAT UE with at least UTRA technology.

---------- NEXT CHANGE

4.2 Service type in Idle mode

Services are distinguished into categories defined in [7]; also the categorisation of cells according to services they can offer is provided in [7].

In the following, some typical examples of the use of the different types of cells are provided:

- Cell ~~B~~barred. In some cases (e.g. due to traffic load or maintenance reasons) it may be necessary to temporarily prevent the normal access in a cell. An UE shall not camp on a barred cell ~~for normal services, but may camp on this cell for limited service if no other suitable cell is available.~~, not even for limited services.

- Cell ~~R~~reserved for operator use. The aim of this type of cell is to allow the operator using and test newly deployed cells without being disturbed by normal traffic. For normal users (indicated by assigned AC 0 to 9) and special non-operator users (indicated by assigned AC 12 to 14), the UE shall behave as for the ~~C~~cell ~~B~~barred. UEs with AC 11 or 15 are allowed to reselect those cells while in HomePLMN.

The cell type is indicated in the system information [9].

---------- NEXT CHANGE

4.3.1 Cell Selection

The goal of the cell selection procedures is to fast find a cell to camp on. To speed up this process, when switched on or when returning from "out of coverage", the UE shall start with the stored information from previous network contacts. If the UE is unable to find any of those cells the ~~I~~initial cell search procedure will be initiated.

The UE shall measure CPICH Ec/No ~~or~~ and CPICH RSCP for FDD cells and P-CCPCH RSCP for TDD cells [7]. ~~The quantity to be used for a given cell is indicated in the system information.~~

If it is not possible to find a cell from a valid PLMN the UE will choose a cell in a forbidden PLMN and enter a "limited service state". In this state the UE regularly attempt to find a suitable cell on a valid PLMN. If a better cell is found the UE has to read the system information for that cell.

A cell is suitable if it fulfils the cell selection criterion S specified in [7]:

In order to define a minimum quality level for camping on the cell, a quality threshold different for each cell can be used. The quality threshold for cell selection is indicated in the system information.

---------- NEXT CHANGE

4.3.3 ~~Measurement quantities and mapping functions~~Mapping of thresholds in cell reselection rules

When HCS is used, mapping of signalled values for the thresholds Qhcs shall be used. Different mapping is applied for CPICH Ec/N0 and CPICH RSCP for FDD cells, P-CCPCH RSCP for TDD cells, and ~~RXLEV~~ RSSI for GSM cells. The explicit mapping is indicated in system information [9].

~~Mapping functions are used for mapping a certain range of measurement values Qmeas_LEV (e.g. CPICH_Ec/N0 and CPICH_RSCP_LEV for UTRA FDD cells, P-CCPCH_RSCP_LEV for UTRA TDD cells, RXLEV for GSM cells) to a representing quality value Qmap.~~

~~For each radio access technology and mode (i.e. FDD or TDD), one mapping function is defined. It may be defined over one or several consecutive intervals of the measurement values Qmeas_LEV, as specified in [7]~~

~~If no mapping functionality is needed (e.g. in FDD- or TDD-only networks), an implicit mapping is used: Qmap= Qmeas_LEV. This is specified as default case.~~

---------- NEXT CHANGE

4.3.4 ~~Restricted~~ Reserved cells

When cell status "barred" is indicated [9] ~~or when the cell status "Operator only" is indicated and the Access class in the UE is 1-9,~~ the UE is not permitted to select/re-select this cell~~, except for emergency call when no other acceptable cell can be found and the cell is not barred for emergency call.~~, not even for limited services.

When the cell status "reserved for operator use" is indicated [9] and the access class of the UE is 11 or 15 the UE may select/re-select this cell if in HomePLMN [19].

In ~~any other case~~all these cases, the criteria for selection of another cell should take into account the effects of the interference generated towards the ~~restricted~~ reserved cell. For this reason, the reselection of any cell on the same frequency as the ~~restricted~~ reserved cell is prohibited and the UE enters a limited service state. In this state, ~~every period of T_{barred} seconds,~~ in order to detect a change of the ~~restriction~~ reservation status, the UE shall perform a periodic check every T_{barred} seconds.

When the neighbour cells use only the same frequency, the only way to provide the service in the area is to allow the UE to camp on another cell on the same frequency, regardless of the interference generated on the ~~restricted~~ reserved cell. This is done by setting the "Intra-frequency cell re-selection indicator" IE to "allowed".

When the UE still detect the ~~restricted~~ reserved cell as the "best" one, it will read the system information and evaluate again the availability of that cell, increasing the power consumption in the UE. The unnecessary evaluation may be avoided excluding the restricted cell from the neighbouring cell list for a time interval of T_{barred} seconds.

"Intra-frequency cell re-selection indicator" and "~~-~~T_{barred}" are indicated together with the cell access restriction in the system information [9].

---------- NEXT CHANGE

5.1.5.1 Handover 3G to 2G

The handover from UTRA to GSM (offering world-wide coverage already today) has been one of the main design criteria taken into account in the UTRA frame timing definition.

The handover from UTRA~~/~~FDD mode to GSM can also be implemented without simultaneous use of two receiver chains. Although the frame length is different from GSM frame length, the GSM traffic channel and UTRA FDD channels use similar multi-frame structure.

A UE can do the measurements by using idle periods in the downlink transmission, where such idle periods are created by using the downlink ~~C~~compressed ~~M~~mode as defined in ~~WG1 Specification~~[2]. The ~~C~~compressed ~~M~~mode is under the control of the UTRAN~~,~~ and the UTRAN ~~should~~ signals appropriate configurations of compressed mode pattern~~communicate~~ to the UE ~~which frame is slotted~~. For some measurements also uplink compressed mode is needed, depending on UE capablities and measurement objects.

Alternatively independent measurements not relying on the ~~C~~compressed ~~M~~mode, but using a dual receiver approach can be performed, where the GSM receiver branch can operate independently of the UTRA FDD receiver branch.

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