TSG-RAN Meeting #15
Cheju, Korea, 5 - 8 March 2002

TSGRP#15(02) 0189

Title: **Change Requests for WI "IP Transport in UTRAN"**

Source: **TSG-RAN WG3**

RP_Num	Tdoc_Num	Specification	CR_Num	Revision_Num	3G_Release	CR_Subject	CR_Category	Cur_Ver_Num	Workitem
RP-020189	R3-020861	25.401	044	2	Rel-5	Introduction of IP Transport in UTRAN	B	5.1.0	ETRAN-IPTRANS
RP-020189	R3-020881	25.410	032	3	Rel-5	Introduction of IP transport option in UTRAN	B	4.3.0	ETRAN-IPTRANS
RP-020189	R3-020843	25.411	009	1	Rel-5	IP transport modifications to TS 25.411	B	4.1.0	ETRAN-IPTRANS
RP-020189	R3-020876	25.412	010	3	Rel-5	Introduction of IP Transport option in UTRAN	B	4.0.0	ETRAN-IPTRANS
RP-020189	R3-020866	25.413	419	3	Rel-5	Introduction of IP Transport option in UTRAN	B	4.3.0	ETRAN-IPTRANS
RP-020189	R3-020882	25.414	030	3	Rel-5	Introduction of IP transport option in UTRAN	B	4.2.0	ETRAN-IPTRANS
RP-020189	R3-020842	25.415	095	1	Rel-5	Introduction of IP Transport option in UTRAN	B	4.3.0	ETRAN-IPTRANS
RP-020189	R3-020883	25.420	024	4	Rel-5	Introduction of IP transport to UTRAN	B	4.1.0	ETRAN-IPTRANS
RP-020189	R3-020823	25.422	011	1	Rel-5	Introduction of IP transport in UTRAN	B	4.1.0	ETRAN-IPTRANS
RP-020189	R3-020872	25.423	555	2	Rel-5	Introduction of the IP Transport option into RNSAP	B	4.3.0	ETRAN-IPTRANS
RP-020189	R3-020824	25.424	020	1	Rel-5	Introduction of IP transport in UTRAN	B	4.1.0	ETRAN-IPTRANS
RP-020189	R3-020865	25.426	022	2	Rel-5	Introduction of IP transport option in UTRAN	B	4.1.0	ETRAN-IPTRANS
RP-020189	R3-020840	25.430	030	1	Rel-5	Introduction of IP Transport option in UTRAN	B	4.2.0	ETRAN-IPTRANS
RP-020189	R3-020877	25.432	001	2	Rel-5	Introduction of IP Transport UTRAN	B	4.0.0	ETRAN-IPTRANS
RP-020189	R3-020873	25.433	597	2	Rel-5	Introduction of the IP Transport option into NBAP	B	4.3.0	ETRAN-IPTRANS
RP-020189	R3-020878	25.434	021	5	Rel-5	Introduction of IP Transport UTRAN	B	4.2.0	ETRAN-IPTRANS
RP-020189	R3-020836	25.442	002	1	Rel-5	Introduction of IP transport option in UTRAN	B	4.0.0	ETRAN-IPTRANS

3GPP TSG-RAN WG3 Meeting #27
Orlando, USA, 18th – February22th, 2002

R3-020861

CR-Form-v3

CHANGE REQUEST

⌘ **25.401** **CR** **044** ⌘ rev **2** ⌘ Current version: **5.1.0** ⌘

*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 ☐ Radio Access Network **X** Core Network X

Title:	⌘	Introduction of IP Transport option in UTRAN
Source:	⌘	R-WG3
Work item code:	⌘	ETRAN-IPTRANS
Date:	⌘	18 February 2002
Category:	⌘	**B**
Release:	⌘	REL-5

Use one of the following categories:
F *(essential 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:	⌘	IP UTRAN option is introduced in release 5.
Summary of change:	⌘	The protocol stacks and the transport control plane identifiers have been updated with IP UTRAN option. Impact assessment towards the previous version of the specification (same release): No impact.
Consequences if not approved:	⌘	IP UTRAN option cannot be used in release 5.

Clauses affected:	⌘	2,3.2,6.18.2, 6.1.8.2, 6.1.8.3,6.2,11
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
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.

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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.

1 Scope

The present document describes the overall architecture of the UTRAN, including internal interfaces and assumptions on the radio and Iu interfaces.

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 TR 25.990: "Vocabulary".

[2] 3GPP TS 23.110: "UMTS Access Stratum Services and Functions".

[3] 3GPP TS 25.211: "Physical channels and mapping of transport channels onto physical channels (FDD)".

[4] 3GPP TS 25.442: "UTRAN Implementation Specific O&M Transport".

[5] 3GPP TS 25.402: "Synchronisation in UTRAN, Stage 2".

[6] 3GPP TS 23.003: "Numbering, Addressing and Identification".

[7] 3GPP TS 25.331: "RRC Protocol Specification".

[8] 3GPP TS 23.101: "General UMTS Architecture".

[9] 3GPP TS 25.414: " UTRAN Iu Interface Data Transport & Transport Signalling".

[10] 3GPP TS 25.424: "UTRAN Iur Interface Data Transport & Transport Signalling for Common Transport Channel Data Streams".

[11] 3GPP TS 25.434: "UTRAN Iub Interface Data Transport & Transport Signalling for Common Transport Channel Data Streams".

[12] IETF RFC 2460 “Internet Protocol, Version 6 (Ipv6) Specification”.

[13] IETF RFC 2474 “Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers ” December 1998

[14] IETF RFC 768 “User Datagram Protocol”, (8/1980)

[15] “Information technology – Open Systems Interconnection – Network service definition”, X.213, ISO/IEC 8348

[16] “Information technology – Open Systems Interconnection – Network service definition Amendment 1: Addition of the Internet protocol address format identifier”, X.213/Amd.1, ISO/IEC 8348

[17] IETF RFC 791 (1981): "Internet Protocol".

[18] 3GPP TS 25.426: "UTRAN Iur and Iub Interface Data Transport & Transport Signalling for DCH Data Streams".

[19] TBD.

3 Definitions and abbreviations

3.1 Definitions

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

ALCAP: generic name for the transport signalling protocols used to set-up and tear-down transport bearers

Cell: Radio Network object that can be uniquely identified by a User Equipment from a (cell) identification that is broadcasted over a geographical area from one *UTRAN Access Point*
A Cell is either FDD or TDD mode.

Iu: interface between an RNC and an MSC, SGSN or CBC, providing an interconnection point between the RNS and the Core Network. It is also considered as a reference point

Iub: interface between the RNC and the Node B

Iur: logical interface between two RNCs
Whilst logically representing a point to point link between RNCs, the physical realisation need not be a point to point link.

Logical Model: Logical Model defines an abstract view of a network or network element by means of information objects representing network element, aggregations of network elements, the topological relationship between the elements, endpoints of connections (termination points), and transport entities (such as connections) that transport information between two or more termination points

The information objects defined in the Logical Model are used, among others, by connection management functions. In this way, a physical implementation independent management is achieved.

Node B: logical node in the RNS responsible for radio transmission / reception in one or more cells to/from the UE
The logical node terminates the Iub interface towards the RNC.

Radio Resources: resources that constitute the radio interface in UTRAN, e.g. frequencies, scrambling codes, spreading factors, power for common and dedicated channels

Node B Application Part: Radio Network Signalling over the Iub

Radio Network Controller: logical node in the RNS in charge of controlling the use and the integrity of the radio resources

Controlling RNC: role an RNC can take with respect to a specific set of Node B's
There is only one Controlling RNC for any Node B. The Controlling RNC has the overall control of the logical resources of its node B's.

Radio Network Subsystem: RNS can be either a full UTRAN or only a part of a UTRAN
An RNS offers the allocation and release of specific radio resources to establish means of connection in between an UE and the UTRAN. A Radio Network Subsystem contains one RNC and is responsible for the resources and transmission/reception in a set of cells.

Serving RNS: role an RNS can take with respect to a specific connection between an UE and UTRAN
There is one Serving RNS for each UE that has a connection to UTRAN. The Serving RNS is in charge of the radio connection between a UE and the UTRAN. The Serving RNS terminates the Iu for this UE.

Drift RNS: role an RNS can take with respect to a specific connection between an UE and UTRAN
An RNS that supports the Serving RNS with radio resources when the connection between the UTRAN and the UE need to use cell(s) controlled by this RNS is referred to as Drift RNS.

Radio Access Network Application Part: Radio Network Signalling over the Iu

Radio Network Subsystem Application Part: Radio Network Signalling over the Iur

RRC Connection: point-to-point bi-directional connection between RRC peer entities on the UE and the UTRAN sides, respectively
An UE has either zero or one RRC connection.

Standalone A-GPS SMLC: logical node that interconnects to the RNC over the Iupc interface via the PCAP protocol This node provides GPS related data to the RNC and may perform the position calculation function.

User Equipment: Mobile Equipment with one or several UMTS Subscriber Identity Module(s)
A device allowing a user access to network services via the Uu interface. The UE is defined in ref. [8].

Universal Terrestrial Radio Access Network: UTRAN is a conceptual term identifying that part of the network which consists of RNCs and Node Bs between Iu an Uu
The concept of UTRAN instantiation is currently undefined.

UTRAN Access Point: conceptual point within the UTRAN performing radio transmission and reception
A UTRAN access point is associated with one specific *cell*, i.e. there exists one UTRAN access point for each cell. It is the UTRAN-side end point of a *radio link*.

Radio Link: "radio link" is a logical association between a single User Equipment and a single UTRAN access point Its physical realisation comprises one or more radio bearer transmissions.

Radio Link Set: set of one or more Radio Links that has a common generation of Transmit Power Control (TPC) commands in the DL

Uu: Radio interface between UTRAN and the User Equipment

RAB sub-flows: Radio Access Bearer can be realised by UTRAN through several sub-flows
These sub-flows correspond to the NAS service data streams that have QoS characteristics that differ in a predefined manner within a RAB e.g. different reliability classes.

RAB sub-flows have the following characteristics:

1) The sub-flows of a RAB are established and released at the RAB establishment and release, respectively.

2) The sub-flows of a RAB are submitted and delivered together at the RAB SAP.

3) The sub-flows of a RAB are carried over the same Iu transport bearer.

4) The sub-flows of a RAB are organised in a predefined manner at the SAP and over the Iu interface. The organisation is imposed by the NAS as part of its co-ordination responsibility.

Set of co-ordinated DCHs: set of co-ordinated DCHs is a set of dedicated transport channels that are always established and released in combination
Individual DCHs within a set of co-ordinated DCHs cannot be operated on individually e.g. if the establishment of one DCH fails, the establishment of all other DCHs in the set of co-ordinated DCHs shall be terminated unsuccessfully. A set of coordinated DCHs is transferred over one transport bearer. All DCHs in a set of co-ordinated DCHs shall have the same TTI.

3.2 Abbreviations

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

AAL	ATM Adaptation Layer
AAL2	ATM Adaptation Layer 2
ALCAP	Access Link Control Application Part
ATM	Asynchronous Transfer Mode
BM-IWF	Broadcast Multicast Interworking Function
BMC	Broadcast/Multicast Control
BSS	Base Station Subsystem
CBC	Cell Broadcast Centre
CBS	Cell Broadcast Service

CN	Core Network
CPCH	Common Packet Channel
CRNC	Controlling Radio Network Controller
DCH	Dedicated Channel
DL	Downlink
DRNS	Drift RNS
FACH	Forward Access Channel
FFS	For Further Study
GTP	GPRS Tunnelling Protocol
IPv4	Internet Protocol, version 4
IPv6	Internet Protocol, version 6
MAC	Medium Access Control
NAS	Non Access Stratum
NBAP	Node B Application Part
NSAP	Network Service Access Point
PCH	Paging Channel
QoS	Quality of Service
RAB	Radio Access Bearer
RACH	Random Access Channel
RANAP	Radio Access Network Application Part
RNC	Radio Network Controller
RNL	Radio Network Layer
RNS	Radio Network Subsystem
RNSAP	Radio Network Subsystem Application Part
RNTI	Radio Network Temporary Identity
SAB	Service Area Broadcast
SAS	Standalone A-GPS SMLC
SMLC	Serving Mobile Location Centre
SRNC	Serving Radio Network Controller
SRNS	Serving RNS
TEID	Tunnel Endpoint Identifier
TNL	Transport Network Layer
TTI	Transmission Time Interval
UDP	User Datagram Protocol
UE	User Equipment
UL	Uplink
UMTS	Universal Mobile Telecommunication System
USIM	UMTS Subscriber Identity Module
UTRAN	Universal Terrestrial Radio Access Network

3.3 Notation

Parts of the document apply only to one mode, FDD or TDD. Any such area will be tagged by [FDD — xxxxxxxxx] and [TDD — yyyyyyyyyy] respectively. The tag applies to the text until the closing bracket.

4 General principles

The general principles guiding the definition of UTRAN Architecture as well as the UTRAN interfaces are the following:

- Logical separation of signalling and data transport networks.
- UTRAN and CN functions are fully separated from transports functions. Addressing scheme used in UTRAN and CN shall not be tied to the addressing schemes of transport functions. The fact that some UTRAN or CN function resides in the same equipment as some transport functions does not make the transport functions part of the UTRAN or the CN.
- Macro diversity (FDD only) is fully handled in the UTRAN.

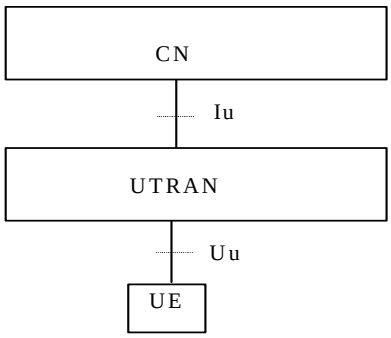
- Mobility for RRC connection is fully controlled by the UTRAN.
- When defining the UTRAN interfaces the following principles were followed: The functional division across the interfaces shall have as few options as possible.
- Interfaces should be based on a logical model of the entity controlled through this interface.
- One Physical Network Element can implement multiple Logical Nodes.

Transport Network Control Plane is a functional plane in the interfaces protocol structure that is used for the transport bearer management. The actual signalling protocol that is in use within the Transport Network Control Plane depends on the underlying transport layer technology. The intention is not to specify a new UTRAN specific Application Part for the Transport Network Control Plane but to use signalling protocols standardised in other groups (if needed) for the applied transport layer technology.

5 UMTS General architecture

5.1 Overview

Figure 1 shows a simplified UMTS architecture with the external reference points and interfaces to the UTRAN.



UTRAN UMTS Terrestrial Radio Access Network
CN Core Network
UE User Equipment

Figure 1: UMTS Architecture

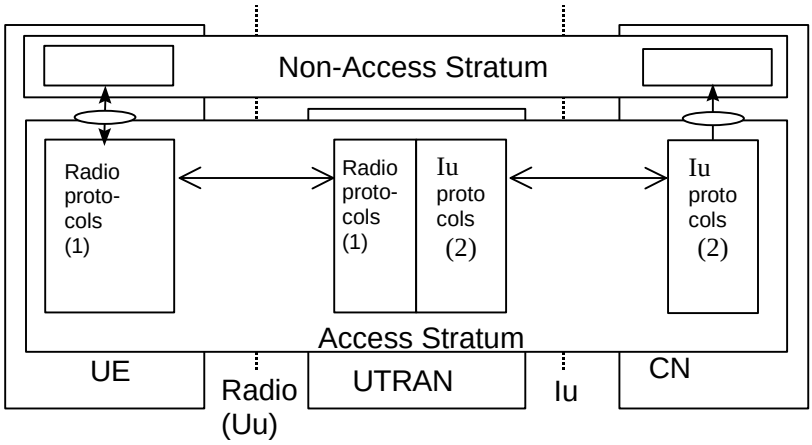
5.2 General protocols architecture

The protocols over Uu and Iu interfaces are divided into two structures:

- **User plane protocols**
  These are the protocols implementing the actual radio access bearer service, i.e. carrying user data through the access stratum.
- **Control plane protocols**
  These are the protocols for controlling the radio access bearers and the connection between the UE and the network from different aspects (including requesting the service, controlling different transmission resources, handover & streamlining etc.). Also a mechanism for transparent transfer of NAS messages is included.

5.2.1 User plane

The radio access bearer service is offered from SAP to SAP by the Access Stratum. Figure 2 shows the protocols on the Uu and Iu interfaces that linked together provide this radio access bearer service.

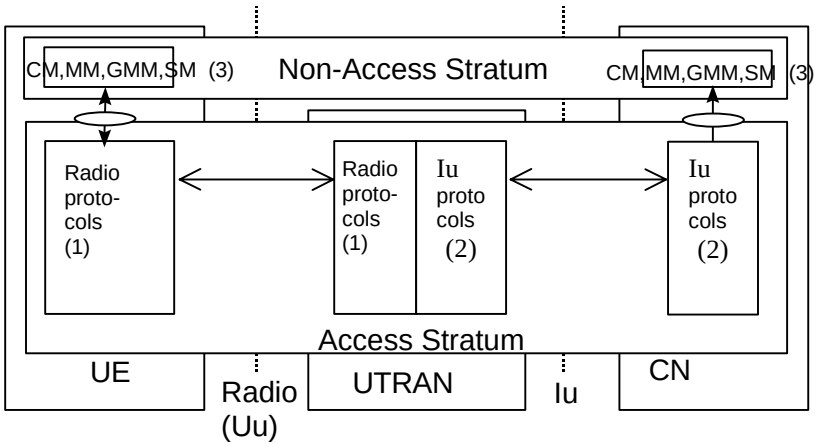


(1) The radio interface protocols are defined in documents TS 25.2xx and TS 25.3xx.
(2) The Iu interface protocols are defined in documents TS 25.41x.

Figure 2: Iu and Uu User plane

5.2.2 Control plane

Figure 3 shows the control plane (signalling) protocol stacks on Iu and Uu interfaces.



(1) The radio interface protocols are defined in documents TS 25.2xx and TS 25.3xx.
(2) The protocol is defined in documents TS 25.41x. (Description of Iu interface).
(3) **CM,MM,GMM,SM:** This exemplifies a set of NAS control protocols between UE and CN. There may be different NAS protocol stacks in parallel. The evolution of the protocol architecture for these protocols is outside the scope of the present document.

Figure 3: Iu and Uu Control plane

NOTE: Both the Radio protocols and the Iu protocols contain a mechanism to transparently transfer NAS messages.

6 UTRAN Architecture

The UTRAN consists of a set of Radio Network Subsystems connected to the Core Network through the Iu.

A RNS consists of a Radio Network Controller one or more Node Bs and optionally one SAS. A Node B is connected to the RNC through the Iub interface.

A Node B can support FDD mode, TDD mode or dual-mode operation.

There are two chip-rate options in the TDD mode: 3.84 Mcps TDD and 1.28 Mcps TDD. Each TDD cell supports either of these options.

A Node B which supports TDD cells can support one chip-rate option only, or both options.

A RNC which supports TDD cells can support one chip-rate option only, or both options.

The RNC is responsible for the Handover decisions that require signalling to the UE.

A RNC may include a combining/splitting function to support combination/splitting of information streams (see subclause 7.2.4.3).

Inside the UTRAN, the RNCs of the Radio Network Subsystems can be interconnected together through the Iur. Iu(s) and Iur are logical interfaces. Iur can be conveyed over direct physical connection between RNCs or virtual networks using any suitable transport network.

The UTRAN architecture is shown in figure 4.

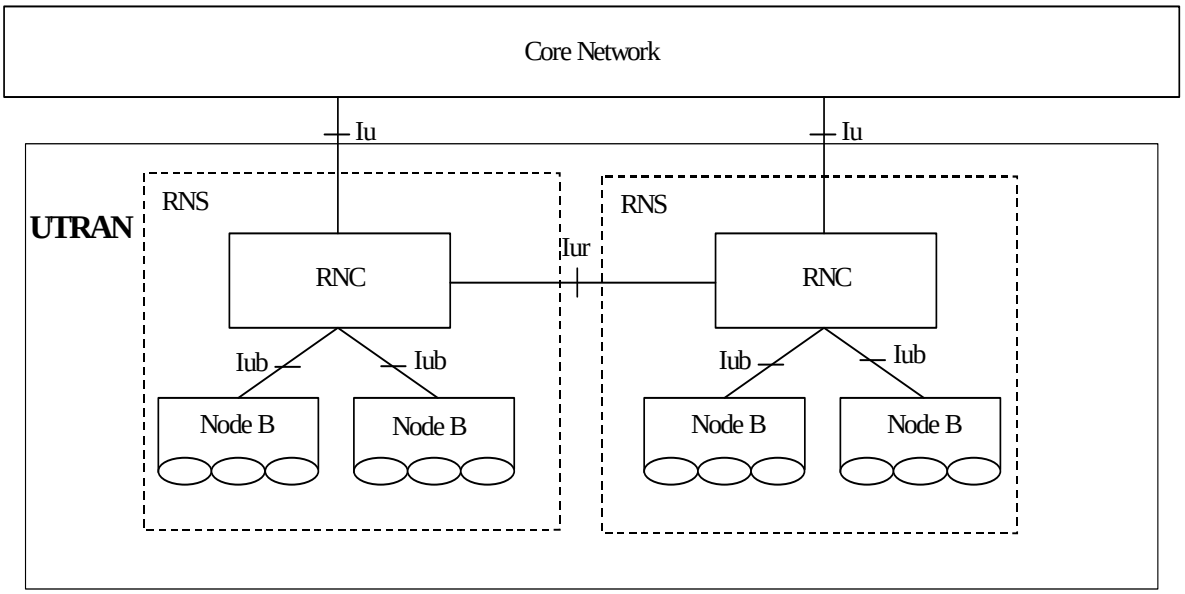


Figure 4: UTRAN Architecture

Regarding the A-GPS positioning method, the RNC may have full internal support for this function and/or may be connected to one SAS via the Iupc interface. The following picture illustrates the resulting UTRAN architecture when the Iupc interface is adopted.

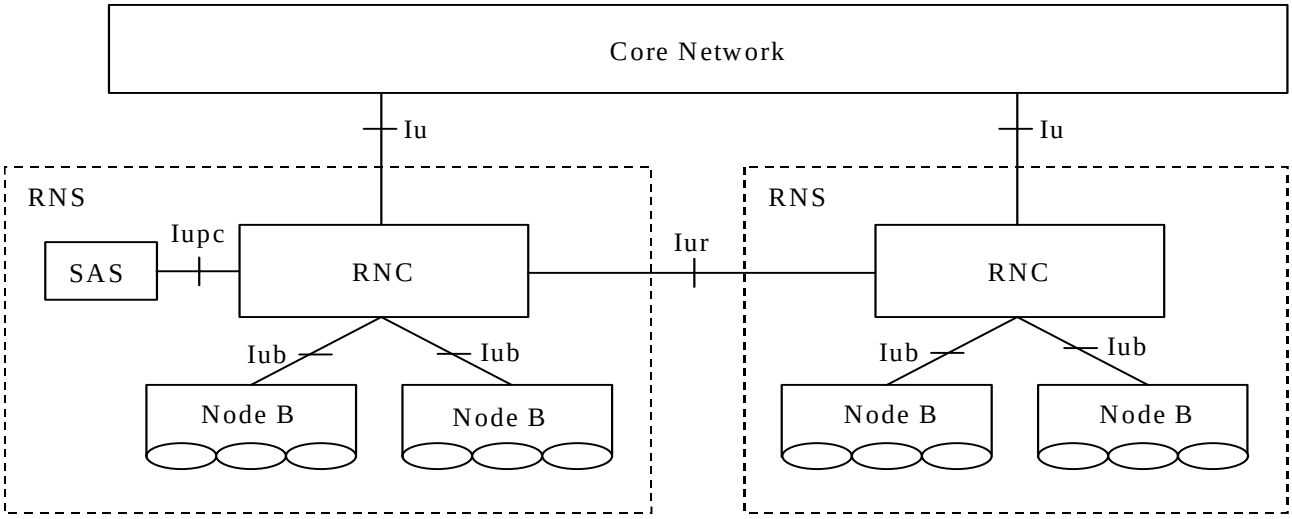


Figure 4a: UTRAN Architecture with the Iupc option

Each RNS is responsible for the resources of its set of cells.

For each connection between User Equipment and the UTRAN, One RNS is the Serving RNS. When required, Drift RNSs support the Serving RNS by providing radio resources as shown in figure 5. The role of an RNS (Serving or Drift) is on a per connection basis between a UE and the UTRAN.

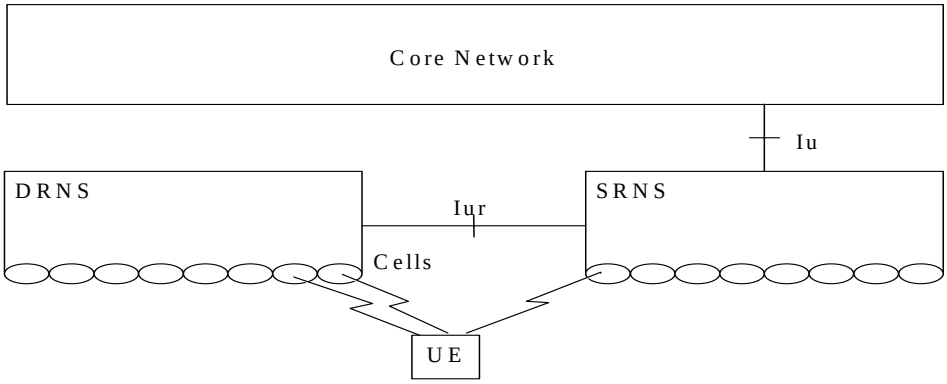


Figure 5: Serving and Drift RNS

The UTRAN is layered into a Radio Network Layer and a Transport Network Layer.

The UTRAN architecture, i.e. the UTRAN logical nodes and interfaces between them, are defined as part of the Radio Network Layer.

For each UTRAN interface (Iu, Iur, Iub, Iupc) the related transport network layer protocol and functionality is specified. The transport network layer provides services for user plane transport, signalling transport and transport of implementation specific O&M.

An implementation of equipment compliant with the specifications of a certain interface shall support the Radio Network Layer protocols specified for that interface. It shall also as a minimum, for interoperability, support the transport network layer protocols according to the transport network layer specifications for that interface.

The network architecture of the transport network layer is not specified by 3GPP and is left as an operator issue.

The equipment compliant to 3GPP standards shall at least be able to act as endpoints in the transport network layer, and may also act as a switch/router within the transport network layer.

For implementation specific O&M signalling to the Node B, only the transport network layer protocols are in the scope of UTRAN specifications.

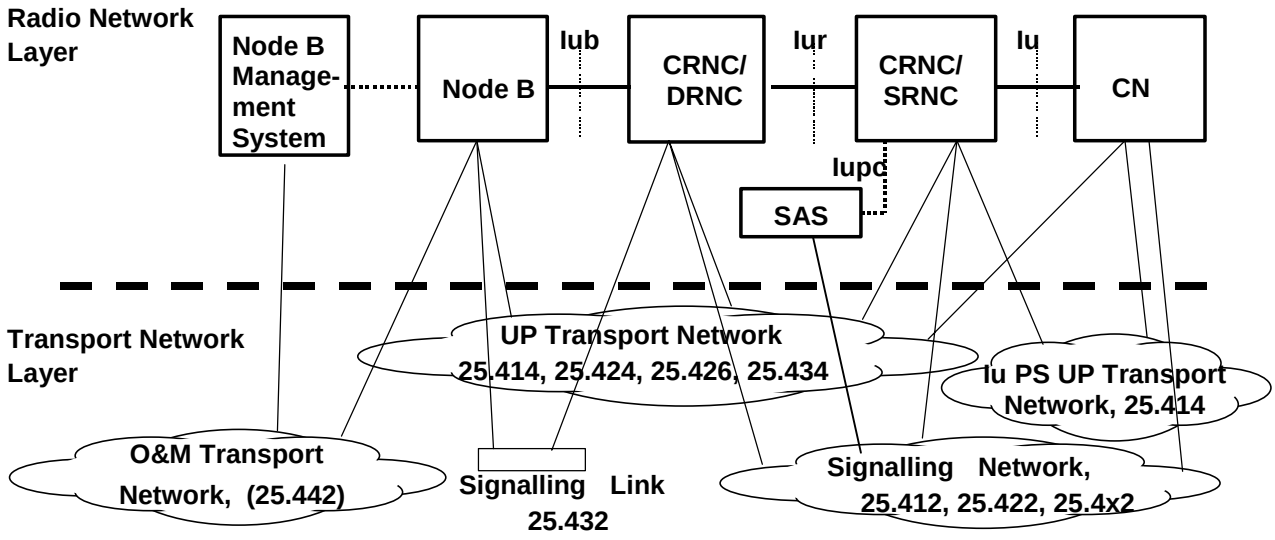


Figure 6: Protocol layering

Figure 6 illustrates which parts of the transport network layer that may be (but are not mandated to be) configured by the operator as transport networks, i.e. the radio network layer provides a destination address, namely:

- Transport network for implementation specific O&M traffic;
- Signalling network for Iu and Iur and Iupc;
- Transport network for Iub, Iur and Iu CS user plane connections;
- Transport network for Iu PS user plane connections.

The signalling link for Iub signalling as seen by the radio network layer cannot be configured as a network (no address provided).

A transport network for UTRAN may be configured by the operator to be used also for other traffic than UTRAN traffic.

6.1 UTRAN Identifiers

6.1.1 PLMN Identity

A Public Land Mobile Network is uniquely identified as define in [6] subclause 12.1.

6.1.2 CN Domain Identifier

A CN Domain Edge Node is identified as defined in [6] sub-clause 12.2.

6.1.3 RNC Identifier

An RNC node is uniquely identified within UTRAN as defined in [6] sub-clause 12.3.

6.1.4 Service Area Identifier

The Service Area Identifier (SAI) is defined in [6] sub-clause 12.4.

6.1.5 Cell Identifier

The Cell identifier (C-Id) is used to uniquely identify a cell within an RNS. The Cell-Id together with the identifier of the controlling RNC (CRNC-Id) constitutes the UTRAN Cell Identity (UC-Id) and is used to identify the cell uniquely within UTRAN. UC-Id or C-Id is used to identify a cell in UTRAN Iub and Iur interfaces.

- **UC-Id = RNC-Id + C-Id.**

The C-Id is defined by the operator, and set in the RNC via O&M. The C-Id is set in a Node B by its C-RNC.

6.1.6 Local Cell Identifier

The Local Cell identifier is used to uniquely identify the set of resources within a Node B required to support a cell (as identified by a C-Id). As a minimum it shall be unique within the Node B, but it is also capable of supporting uniqueness within the UTRAN for management system purposes.

The Local Cell Identifier is used for the initial configuration of a Node B when no C-Id is defined. The Local Cell identifier is defined by the operator, and set in both the Node B and its C-RNC via O&M. The relationship between the Local Cell Identifier and C-Id is set in the C-RNC via O&M.

6.1.7 UE Identifiers

Radio Network Temporary Identities (RNTI) are used as UE identifiers within UTRAN and in signalling messages between UE and UTRAN.

Four types of RNTI exist:

1) Serving RNC RNTI (s-RNTI);
2) Drift RNC RNTI (d-RNTI);
3) Cell RNTI (c-RNTI);
4) UTRAN RNTI (u-RNTI);

s-RNTI is used:

- by UE to identify itself to the Serving RNC;
- by SRNC to address the UE;
- by DRNC to identify the UE to Serving RNC.

s-RNTI is allocated for all UEs having a RRC connection, it is allocated by the Serving RNC and it is unique within the Serving RNC. s-RNTI is reallocated always when the Serving RNC for the RRC connection is changed.

d-RNTI is used:

- by serving RNC to identify the UE to Drift RNC.

NOTE: The d-RNTI is never used on Uu.

d-RNTI is allocated by drift RNC upon drift UE contexts establishment and it shall be unique within the drift RNC. Serving RNC shall know the mapping between s-RNTI and the d-RNTIs allocated in Drift RNCs for the same UE. Drift RNC shall know the s-RNTI and SRNC-ID related to existing d-RNTI within the drift RNC.

c-RNTI is used:

- by UE to identify itself to the controlling RNC;
- by controlling RNC to address the UE.

c-RNTI is allocated by controlling RNC upon UE accessing a new cell. C-RNTI shall be unique within the accessed cell. Controlling RNC shall know the d-RNTI associated to the c-RNTI within the same logical RNC (if any).

u-RNTI

The u-RNTI is allocated to an UE having a RRC connection and identifies the UE within UTRAN.

u-RNTI is composed of:

- SRNC identity;
- s-RNTI.

Each RNC has a unique identifier within the UTRAN part of the PLMN, denoted by RNC identifier (RNC-ID). This identifier is used to route UTRAN interface messages to correct RNC. RNC-ID of the serving RNC together with the s-RNTI is a unique identifier of the UE in the UTRAN part of the PLMN.

6.1.7.1 Usage of RNTI

u-RNTI is used as a UE identifier for the first cell access (at cell change) when a RRC connection exists for this UE and for UTRAN originated paging including associated response messages. RNC-ID is used by Controlling RNC to route the received uplink messages towards the Serving RNC.

NOTE: For the initial access a unique core network UE identifier is used.

c-RNTI is used as a UE identifier in all other DCCH/DTCH common channel messages on air interface.

6.1.8 Identifiers for dedicated resources within UTRAN

6.1.8.1 Radio Network Control Plane identifiers

Each addressable object in each reference point has an application part level identifier. This identifier is allocated autonomously by the entity responsible for initiation of the setup of the object. This application part identifier will be used as a reference to the object that is setup. Both ends of the reference point shall memorise the AP Identifier during the lifetime of the object. Application part identifier can be related to a specific ALCAP identifier and that relationship shall also be memorised by both ends.

Table 1 lists the basic AP level identifiers in each reference point.

Table 1: Basic AP level identifiers in each reference point

Object	Identifier	Abbreviation	Valid for
Radio Access Bearer	Radio Access Bearer ID	RAB-ID	Iu
Dedicated Transport channel	DCH-ID	DCH-ID	Iur, Iub
Downlink Shared Channel	DSCH-ID	DSCH-ID	Iur, Iub
[TDD Uplink Shared Channel]	USCH-ID	USCH-ID	Iur, Iub

6.1.8.2 Transport Network Control Plane identifiers

ALCAP identifiers ~~is~~are used ~~only~~ in ~~Transport Network~~the Control plane ~~(ALCAP protocol, if exist)~~ and may be used in User Plane in the actual data transmission using the transport link. The ALCAP identifier identifies the transport link according to the naming conventions defined for the transport link type in question. Both ends of the reference point of the ALCAP shall memorise the ALCAP identifier during the lifetime of the transport link. Each ALCAP identifier can be binded to an Application Part identifier.

The ALCAP identifiers vary depending on the transport link type.

Table 2 indicates examples of the identifiers used for different transmission link types.

Table 2: Examples of the identifiers used for different transmission link types

Transmission link type	ALCAP Identifier
AAL2	AAL2 Path ID + CID
GTP over IP	IP address + TEID
UDP over IP	IP address + UDP port

The communication of ALCAP identifiers is made in two ways:

When an ALCAP is used, the transport layer address is communicated via the Radio Network Layers protocols (NBAP, RNSAP, RANAP…) and the ALCAP identifiers are communicated through the Transport Network Control Plane only.

When no ALCAP is used, the ALCAP identifiers are communicated via the Radio Network Layers protocols (NBAP, RNSAP, RANAP…).

In both cases, the transport layer address (e.g. IP address) is passed transparently from the Radio Network Layer to the Transport Network Layer using the NSAP structure as defined in [Annex A of [15],[16] for Iub, Iur and Iu-CS]. The NSAP structure (encapsulation) is only used in the radio network layer, in order to provide explicit identification of the type of the TNL address that is being conveyed by the given RNL protocol. It is then the responsibility of the Transport Network Layer to interpret this structure (e.g. to determine accordingly if the requested network type is ATM or IP).

On the Iu-PS, the NSAP structure is not used in RANAP but the 'straight IP addressing' shall be used.

The following scheme depicts the encapsulation of a native IPv6 address in NSAP structure when conveyed in RANAP, RNSAP and NBAP.

Octet 1 octet 2 octet 3 octet 4

AFI=35 (IANA)	ICP=0 (embedded IPv6)	**IPv6 (byte 1)**
IPv6 (bytes 2-5)		
IPv6 (bytes 6-9)		
IPv6 (bytes 10-13)		
IPv6 (bytes 14-16)		0000 0000

IPv6 address embedded in NSAP structure in RANAP/RNSAP/NBAP.

6.1.8.3 Binding identifier

Binding Identifier (Binding ID) is used to initialise the linkage between ALCAP and Application Part (RANAP, RNSAP, NBAP) identifiers. Binding identifier can be used both in Radio Network Control plane Application Part protocols and in Transport Network Control Plane's ALCAP protocol. When no ALCAP is used, Binding ID may also be used to carry the UDP port on Iub, Iur and Iu-CS interfaces.

Binding ID binds the Radio and Transport Network Control plane identifiers together. To ensure maximal independence of those two planes, the binding ID should be used only when necessary: Binding ID shall thus be used only in Radio

Network Control plane Application Part messages in which a new association between the planes is created and in ALCAP messages creating new transport bearers.

Binding ID for each transport bearer shall be allocated before the setup of that transport bearer.

The Binding ID is sent on one direction using the Application Part protocol and is return in the other direction by the ALCAP protocol.

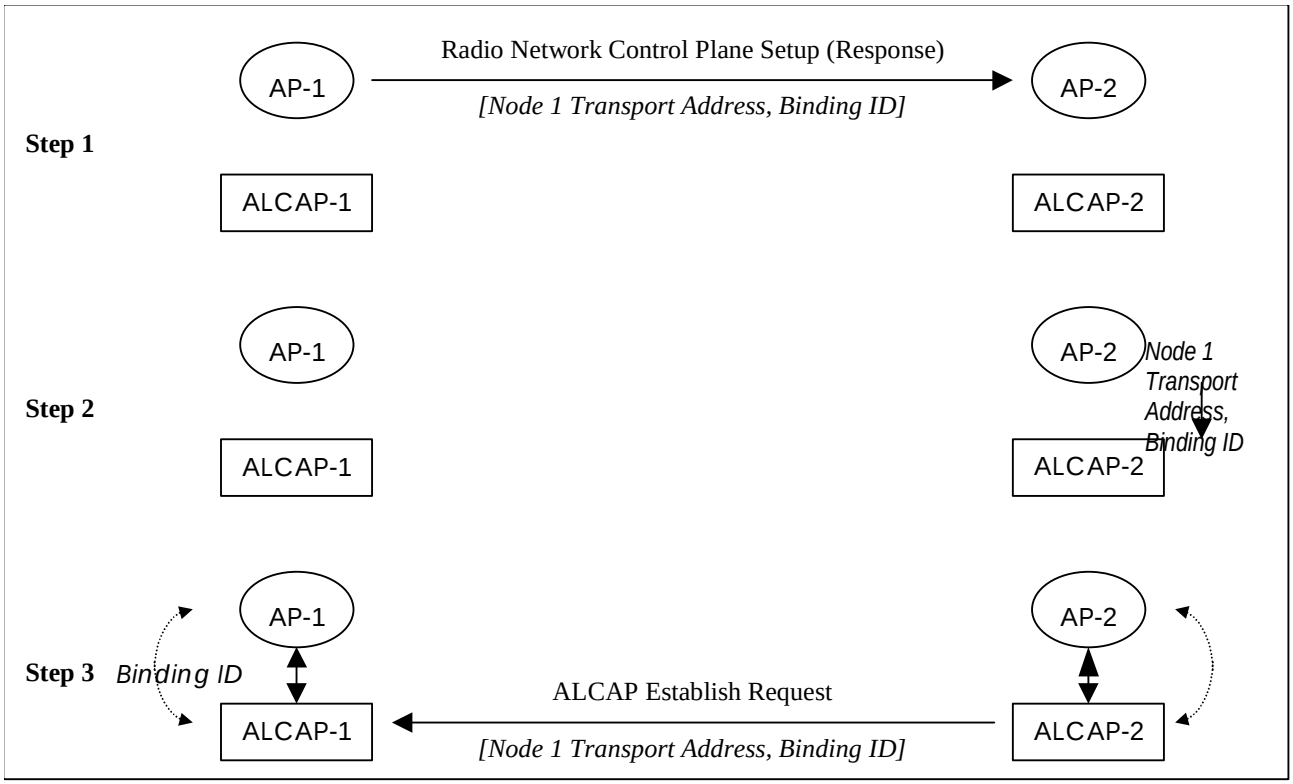
When an Application Part procedure with an allocated Binding ID is applied for modifying an existing Radio Network User Plane connection, the decision to use the Binding ID (and the ALCAP procedures) shall be done by that end of the reference point that decides whether to use the existing transport bearer or to set up a new transport bearer.

The Binding ID shall already be assigned and tied to a radio application procedure when the first ALCAP message is received in a node.

The association between the connection Id in the Application Part protocol (e.g. identifying a RAB) and the corresponding connection Id in the ALCAP protocol (e.g. identifying the AAL2 channel for that RAB) that was created with the help of Binding ID shall be memorised by both peers of each reference point for the lifetime of the corresponding transport bearer.

The Binding ID may be released and re-used as soon as both the Application Part procedure and the ALCAP procedure that used it are completed in both peers of the reference point.

Figure 6a illustrates how application instances of the Radio Network Control Plane and instances of the Transport Network Plane are linked together through the Binding Identifier in the set-up phase.



Step 1: Application Part AP-1 assigns the Binding Identifier and sends a Radio Network Control Plane Set-up (Response) message (which of the two messages depends on the involved interface - Iu/Iur or Iub). The message contains the originating node Transport layer address and the Binding Identifier.

Step 2: Among reception of the Radio Network Control Plane Set-up message, the peer entity AP-2 requests ALCAP-2 to establish a transport bearer. The Binding Identifier is passed to ALCAP-2.

Step 3: ALCAP-2 sends an ALCAP Establish Request to the peer entity ALCAP-1. The message contains the Binding Identifier. The Binding Identifier allows correlating the incoming transport connection with the Application Part transaction in step 1.

Figure 6a: Usage of Binding ID

Table 3 indicates the binding identifier allocating entity in each interface.

Table 3: Binding identifier allocating entity in each interface

Reference point	Allocating entity	Application part message including Binding-ID
Iu	CN	Request from CN
Iur	DRNC	Response to the request from SRNC
Iub	Node-B	Response to the request from DRNC

6.2 Transport Addresses

The transport layer address parameter is transported in the radio network application signalling procedures that result in establishment of transport bearer connections.

The transport layer address parameter shall not be interpreted in the radio network application protocols and reveal the addressing format used in the transport layer.

The formats of the transport layer addresses are further elaborated in [9], [10], [11], [18].

6.3 Function Distribution Principles

For radio resource management functionality, the following principles apply:

- The CRNC owns the radio resources of a cell.
- The SRNC handles the connection to one UE, and may borrow radio resources of a certain cell from the CRNC.
- Dynamical control of power for dedicated channels, within limits admitted by CRNC, is done by the SRNC.
- Dynamic control on smaller time-scale for some radio links of the UE connection may be done by the Node B. This “inner loop” control is controlled by an “outer loop”, for which the SRNC has overall responsibility.
- Scheduling of data for dedicated channels is done by the SRNC, while for common channels it is done by the CRNC.

For management of node-internal resources, the following principle apply:

- Each UTRAN node is considered a network element on its own. The knowledge about the equipment of a network element is kept within the network element itself and its management system. The node itself always manages node-internal resources.

For transport network resource management, the following principle apply:

- Management of transport network resources belong to the Transport Layer. Mechanisms relevant for the selected transport technology are used. No functional split between UTRAN nodes is specified what regards the Transport Layer.

As a general guideline, the UTRAN protocols should be designed in such a way that they minimise the need for a DRNC to interpret the user plane frame protocol information other than for the combining/splitting purpose.

7 UTRAN Functions description

7.1 List of functions

- Transfer of User Data.
- Functions related to overall system access control:
  - Admission Control;

  - Congestion Control;
  - System information broadcasting.
- Radio channel ciphering and deciphering.
- Integrity protection.
- Functions related to mobility:
  - Handover;
  - SRNS Relocation;
  - Paging support;
  - Positioning.
- Functions related to radio resource management and control:
  - Radio resource configuration and operation;
  - Radio environment survey;
  - Combining/splitting control;
  - Connection set-up and release;
  - Allocation and deallocation of Radio Bearers;
  - [TDD - Dynamic Channel Allocation (DCA)];
  - Radio protocols function;
  - RF power control;
  - [3.84 Mcps TDD - Timing Advance];
  - [1.28 Mcps TDD – Uplink Synchronisation];
  - Radio channel coding;
  - Radio channel decoding;
  - Channel coding control;
  - Initial (random) access detection and handling;
  - CN Distribution function for Non Access Stratum messages.
- Synchronisation.
- Functions related to broadcast and multicast services (see note) (broadcast/multicast interworking function BM-IWF).

NOTE: Only Broadcast is applicable for Release 99.

- Broadcast/Multicast Information Distribution.
- Broadcast/Multicast Flow Control.
- CBS Status Reporting.
- Tracing.
- Volume reporting.

7.2 Functions description

7.2.0 Transfer of user data

This function provides user data transfer capability across the UTRAN between the Iu and Uu reference points.

7.2.1 Functions related to overall system access control

System access is the means by which a UMTS user is connected to the UTRAN in order to use UMTS services and/or facilities. User system access may be initiated from either the mobile side, e.g. a mobile originated call, or the network side, e.g. a mobile terminated call.

7.2.1.1 Admission Control

The purpose of the admission control is to admit or deny new users, new radio access bearers or new radio links (for example due to handover). The admission control should try to avoid overload situations and base its decisions on interference and resource measurements. The admission control is employed at for example initial UE access, RAB assignment/reconfiguration and at handover. These cases may give different answers depending on priority and situation.

The Admission Control function based on UL interference and DL power is located in the Controlling RNC.

The Serving RNC is performing admission Control towards the Iu interface.

7.2.1.2 Congestion Control

The task of congestion control is to monitor, detect and handle situations when the system is reaching a near overload or an overload situation with the already connected users. This means that some part of the network has run out, or will soon run out of resources. The congestion control should then bring the system back to a stable state as seamless as possible.

NOTE: This admission Control function is related to Radio Resources.

Congestion control is performed within UTRAN.

7.2.1.3 System information broadcasting

This function provides the mobile station with the Access Stratum and Non Access Stratum information which are needed by the UE for its operation within the network.

The basic control and synchronisation of this function is located in UTRAN.

7.2.2 Radio channel ciphering and deciphering

This function is a pure computation function whereby the radio transmitted data can be protected against a non-authorised third-party. Ciphering and deciphering may be based on the usage of a session-dependent key, derived through signalling and/or session dependent information.

This function is located in the UE and in the UTRAN.

7.2.3 Functions related to Mobility

7.2.3.1 Handover

This function manages the mobility of the radio interface. It is based on radio measurements and it is used to maintains the Quality of Service requested by the Core Network.

Handover may be directed to/from another system (e.g. UMTS to GSM handover).

The handover function may be either controlled by the network, or independently by the UE. Therefore, this function may be located in the SRNC, the UE, or both.

7.2.3.2 SRNS Relocation

The SRNS Relocation function coordinates the activities when the SRNS role is to be taken over by another RNS. The SRNS relocation function manages the Iu interface connection mobility from an RNS to another.

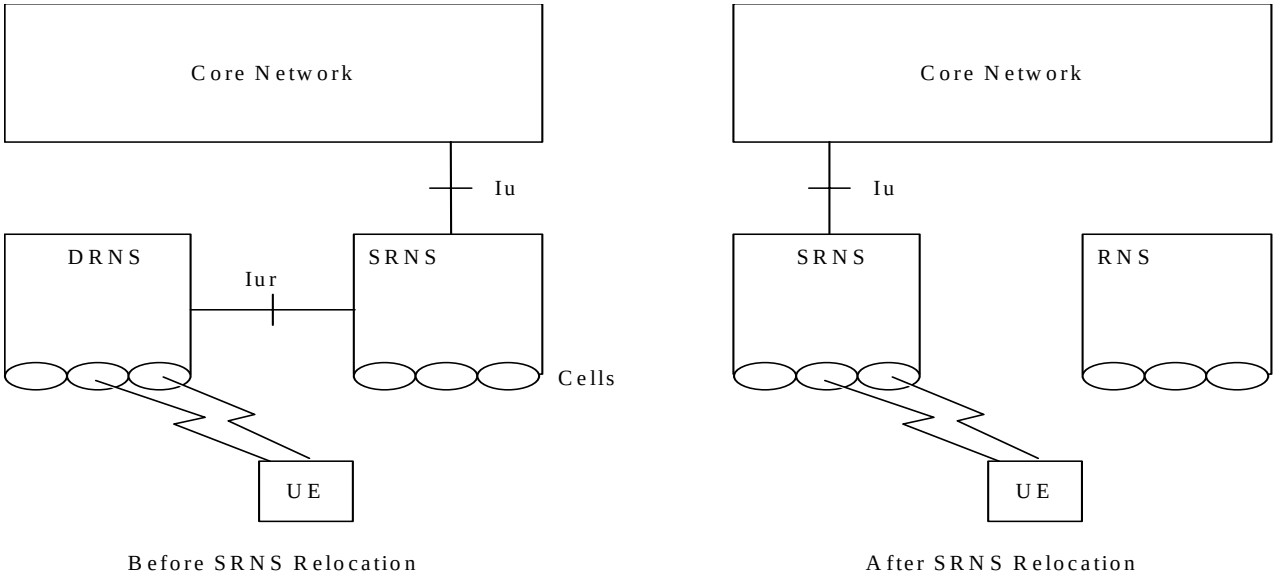


Figure 7: Serving RNS Relocation

The SRNS Relocation is initiated by the SRNC.

This function is located in the RNC and the CN.

7.2.3.3 Paging support

This function provides the capability to request a UE to contact the UTRAN when the UE is in Idle, CELL_PCH or URA PCH states [6]. This function also encompasses a coordination function between the different Core Network Domains onto a single RRC connection.

7.2.3.4 Positioning

This function provides the capability to determine the geographic position of a UE.

7.2.4 Functions related to radio resource management and control

Radio resource management is concerned with the allocation and maintenance of radio communication resources. UMTS radio resources must be shared between circuit transfer mode services and packet transfer modes services (i.e. Connection-oriented and/or connectionless-oriented services).

7.2.4.1 Radio resource configuration and operation

This function performs configures the radio network resources, i.e. cells and common transport channels, and takes the resources into or out of operation.

7.2.4.2 Radio environment survey

This function performs measurements on radio channels (current and surrounding cells) and translates these measurements into radio channel quality estimates. Measurements may include:

1) Received signal strengths (current and surrounding cells);
2) Estimated bit error ratios, (current and surrounding cells);
3) Estimation of propagation environments (e.g. high-speed, low-speed, satellite, etc.);
4) Transmission range (e.g. through timing information);
5) Doppler shift;
6) Synchronisation status;
7) Received interference level;
8) Total DL transmission power per cell.

This function is located in the UE and in the UTRAN.

7.2.4.3 Combining/splitting control

This function controls the combining/splitting of information streams to receive/ transmit the same information through multiple physical channels (possibly in different cells) from/ towards a single mobile terminal.

The UL combining of information streams may be performed using any suitable algorithm, for example:

- [FDD - based on maximum ratio algorithm (maximum ratio combining)];
- [FDD - based on quality information associated to each TBS (selection-combining)];
- [TDD - based on the presence/absence of the signal (selection)].

[FDD - combining/splitting control should interact with channel coding control in order to reduce the bit error ratio when combining the different information streams].

In some cases, depending on physical network configuration, there may be several entities which combine the different information streams, i.e. there may be combining/splitting at the SRNC, DRNC or Node B level.

This function is located in the UTRAN.

7.2.4.4 Connection set-up and release

This function is responsible for the control of connection element set-up and release in the radio access sub network. The purpose of this function is:

1) To participate in the processing of the end-to-end connection set-up and release;
2) And to manage and maintain the element of the end-to-end connection, which is located in the radio access sub network.

In the former case, this function will be activated by request from other functional entities at call set-up/release. In the latter case, i.e. when the end-to-end connection has already been established, this function may also be invoked to cater for in-call service modification or at handover execution.

This function is located both in the UE and in the RNC.

7.2.4.5 Allocation and deallocation of Radio Bearers

This function consists of translating the connection element set-up (resp. release) requests into physical radio channel allocation (resp. deallocation) accordingly to the QoS of the Radio Access Bearer.

This function may be activated during the call since e.g. the user service request may vary, or macro diversity may be used.

This function is located in the CRNC and SRNC.

7.2.4.6 [TDD - Dynamic Channel Allocation (DCA)]

DCA is used in the TDD mode. It includes Fast DCA and Slow DCA. Slow DCA is the process of assigning radio resources, including time slots, to different TDD cells according to the varying cell load. Fast DCA is the process of assigning resources to Radio Bearers, and is related to Admission Control.

7.2.4.7 Radio protocols function

This function provides user data and signalling transfer capability across the UMTS radio interface by adapting the services (according to the QoS of the Radio Access Bearer) to the Radio transmission. This function includes amongst other:

- Multiplexing of services and multiplexing of UEs on Radio bearers;
- Segmentation and reassembly;
- Acknowledged/Unacknowledged delivery according to the Radio Access Bearer QoS.

7.2.4.8 RF power control

This group of functions controls the level of the transmitted power in order to minimise interference and keep the quality of the connections. It consist of the following functions: UL Outer Loop Power Control, DL Outer Loop Power Control, UL Inner Loop Power Control, DL Inner Loop Power Control, UL Open Loop Power Control and DL Open Loop Power Control.

7.2.4.8.1 UL Outer Loop Power Control

The UL Outer Loop Power Control located in the SRNC [TDD – except for uplink shared channels where it is located in the CRNC] sets the target quality value for the UL Inner Loop Power Control which is located in Node B for FDD and 1.28 Mcps TDD and is located in the UE for 3.84 Mcps TDD. It receives input from quality estimates of the transport channel. The UL outer loop power control is mainly used for a long-term quality control of the radio channel.

In FDD and 1.28 Mcps TDD this function is located in the UTRAN, in 3.84 Mcps TDD the function is performed in UTRAN and the target quality value is sent to the UE by the SRNC or the CRNC, respectively.

In FDD and 1.28 Mcps TDD, if the connection involves both a SRNS and a DRNS the function UL Outer Loop Power Control (located in the SRNC [1.28 Mcps TDD – or in the CRNC, respectively]) sets the target quality for the UL Inner Loop Power Control function (located in Node B).

7.2.4.8.2 DL Outer Loop Power Control

The DL Outer Loop Power Control sets the target quality value for the DL inner loop power control. It receives input from quality estimates of the transport channel, measured in the UE. The DL outer loop power control is mainly used for a long-term quality control of the radio channel.

This function is located mainly in the UE, but some control parameters are set by the UTRAN.

The SRNC, regularly (or under some algorithms), sends the target down link power range based on the measurement report from UE.

7.2.4.8.3 UL Inner Loop Power Control

The UL Inner Loop Power Control sets the power of the uplink dedicated [TDD – and shared] physical channels.

In FDD, it is a closed loop process. It receives the quality target from UL Outer Loop Power Control and quality estimates of the uplink dedicated physical control channel. The power control commands are sent on the downlink dedicated physical control channel to the UE. This function is located in both the UTRAN and the UE.

In 3.84 Mcps TDD it is a open loop process, it receives the quality target from the UL Outer Loop Power Control and uses the quality target and quality estimates of downlink channels to set the transmit power. This function is located in the UE.

In 1.28 Mcps TDD, it is a closed loop process. It receives the quality target from UL Outer Loop Power Control, and quality estimates of the uplink dedicated physical channels as well as physical uplink shared channels, if any. The power control commands are sent on the downlink dedicated physical channels and physical downlink shared channels, if any, to the UE. This function is located in both the UTRAN and the UE.

7.2.4.8.4 DL Inner Loop Power Control

The DL Inner Loop Power Control sets the power of the downlink dedicated [TDD – and shared] physical channels. It receives the quality target from DL Outer Loop Power Control and quality estimates of the [FDD - downlink dedicated physical control channel] [TDD – downlink dedicated physical channels and physical downlink shared channels if any]. The power control commands are sent on the [FDD - uplink dedicated physical control channel] [TDD – downlink dedicated physical channels and physical downlink shared channels if any] to the UTRAN.

This function is located in both the UTRAN and the UE.

7.2.4.8.5 UL Open Loop Power Control

The UL Open Loop Power Control sets the initial power of the UE, i.e. at random access. The function uses UE measurements and broadcasted cell/system parameters as input.

This function is located in both the UTRAN and the UE.

7.2.4.8.6 DL Open Loop Power Control

The DL Open Loop Power Control sets the initial power of downlink channels. It receives downlink measurement reports from the UE.

This function is located in both the UTRAN and the UE.

7.2.4.9 Radio channel coding

This function introduces redundancy into the source data flow, increasing its rate by adding information calculated from the source data, in order to allow the detection or correction of signal errors introduced by the transmission medium. The channel coding algorithm(s) used and the amount of redundancy introduced may be different for the different types of logical channels and different types of data.

This function is located in both the UE and in the UTRAN.

7.2.4.10 Radio channel decoding

This function tries to reconstruct the source information using the redundancy added by the channel coding function to detect or correct possible errors in the received data flow. The channel decoding function may also employ a priori error likelihood information generated by the demodulation function to increase the efficiency of the decoding operation. The channel decoding function is the complement function to the channel coding function.

This function is located in both the UE and in the UTRAN.

7.2.4.11 Channel coding control

This function generates control information required by the channel coding/ decoding execution functions. This may include channel coding scheme, code rate, etc.

This function is located in both the UE and in the UTRAN.

7.2.4.12 Initial (random) access detection and handling

This function will have the ability to detect an initial access attempt from a mobile station and will respond appropriately. The handling of the initial access may include procedures for a possible resolution of colliding attempts, etc. The successful result will be the request for allocation of appropriate resources for the requesting mobile station.

This function is located in the UTRAN.

7.2.4.13 CN Distribution function for Non Access Stratum messages

In the RRC protocol, messages from the NAS shall be transparently transferred within the Access Stratum using the Direct Transfer procedure. A distribution function in the UE and the SRNC shall handle the CN domain indicator being part of the AS message to direct messages to the appropriate NAS entity i.e. the appropriate Mobility Management instance in the UE domain and the appropriate CN domain.

In the downlink direction the UE shall be provided by the SRNC with the information on the originating CN domain for the individual NAS message.

In the uplink direction, the process performed by the distribution function in the UE consists in inserting the appropriate values for the CN domain indicator in the AS message and the process performed by the SRNC consists in evaluating the CN domain indicator contained in the AS message and distribute the NAS message to the corresponding RANAP instance for transfer over Iu interface.

This distribution function is located in both the UE and in the SRNC.

7.2.4.14 [3.84 Mcps TDD - Timing Advance]

This function is used in uplink to align the uplink radio signals from the UE to the UTRAN. Timing Advance is based on uplink burst timing measurements performed by the Node B L1, and on Timing Advance commands sent downlink to the UE.

7.2.4.15 Service specific function for Non Access Stratum messages

A service specific function in the UE provides a SAP for a particular service (e.g. a given priority). In the downlink direction, the SRNC may base the routing on this SAP.

This service specific function is located in both the UE and the SRNC.

7.2.4.16 [1.28 Mcps TDD – Uplink Synchronisation]

This function is used in uplink to synchronise the uplink radio signals from the UE to the UTRAN. At the detection of uplink burst, the Node B will evaluate the received power level and timing, and reply by sending the adjustment information to UE to modify its timing and power level for next transmission and for establishment of the Uplink synchronisation procedure.

7.2.5 Functions related to broadcast and multicast services (broadcast/multicast interworking function BM-IWF)

See note.

7.2.5.1 Broadcast/Multicast Information Distribution

The broadcast/multicast information distribution function distributes received CBS messages towards the BMC entities configured per cell for further processing. The distribution of broadcast/multicast information relate on the mapping between service area and cells controlled by the RNC. The provision of this mapping information is an O&M function.

NOTE: Only Broadcast is applicable for Release 99.

7.2.5.2 Broadcast/Multicast Flow Control

When processing units of the RNC becomes congested, the Broadcast/Multicast Flow Control function informs the data source about this congestion situation and takes means to resolve the congestion.

7.2.5.3 CBS Status Reporting

The RNC collects status data per cell (e.g. No-of-Broadcast-Completed-List, Radio-Resource-Loading-List), and matches these data to Service Areas. The status data is transmitted to the CBC, if a query has been made by the CBC.

7.2.6 Tracing

This function allows tracing of various events related to the UE and its activities.

7.2.7 Volume Reporting

The data volume reporting function is used to report the volume of unacknowledged data to the CN for accounting purpose.

8 Mobility Management

8.1 Signalling connection

Based on [2], the UE may either have or not have a signalling connection:

1) When a signalling connection exists that is established over the Dedicated Control Service Access Point (DC-SAP) from the Access Stratum.
   Therefore, the CN can reach the UE by the dedicated connection SAP on the CN side, and the UTRAN has a context with the UE and CN for this particular connection. This context is erased when the connection is released. The *dedicated connection* can be initiated from the UE only.

NOTE: A dedicated connection is currently defined as Signalling Connection in [2]. Note that in the radio interface, dedicated or common channels can be used.

   Depending on the activity of a UE, the location of the UE is known either on cell level (higher activity) or in a larger area consisting of several cells (lower activity). This will (i) minimise the number of location update messages for moving UEs with low activity and (ii) remove the need for paging for UEs known on cell level.

2) When a dedicated connection does not exist, the CN must reach the UE via the Notification SAP. The message sent to the UE can be a request to the UE to establish a dedicated connection. The UE is addressed with a user/terminal identity and a "geographical area".

8.2 Consequences for Mobility Handling

It is generally agreed to contain radio access specific procedures within UTRAN. This means that all cell level mobility should be handled within UTRAN. Also the cell structure of the radio network should not necessarily be known outside the UTRAN.

When there exists a dedicated connection to the UE, the UTRAN shall handle the radio interface mobility of the UE. This includes procedures such as soft handover, and procedures for handling mobility in the CELL_PCH and URA_PCH state [7].

When a dedicated connection between the UTRAN and the UE does not exist, no UE information is needed in UTRAN. Therefore, the mobility is handled directly between UE and CN outside access stratum (e.g. by means of registration procedures). When paging the UE, the CN indicates a 'geographical area' that is translated within UTRAN to the actual cells that shall be paged. A 'geographical area' shall be identified in a cell-structure independent way. One possibility is the use of 'Location Area identities'.

During the lifetime of the dedicated connection, the registrations to the CN are suppressed by the UE. When a dedicated connection is released, the UE performs a new registration to the CN, when needed.

Thus, the UTRAN does not contain any permanent 'location registers' for the UE, but only temporary contexts for the duration of the dedicated connection. This context may typically contain location information (e.g. current cell(s) of the UE) and information about allocated radio resources and related connection references.

9 Synchronisation

9.1 SYNCHRONISATION MODEL

Different synchronisation issues are identified within UTRAN, i.e.:

- Network Synchronisation;
- Node Synchronisation;
- Transport Channel synchronisation;
- Radio Interface Synchronisation;
- Time Alignment handling.

The Nodes involved by the above mentioned synchronisation issues (with exception of Network and Node Synchronisation) are shown by the Synchronisation Issues Model of figure 8.

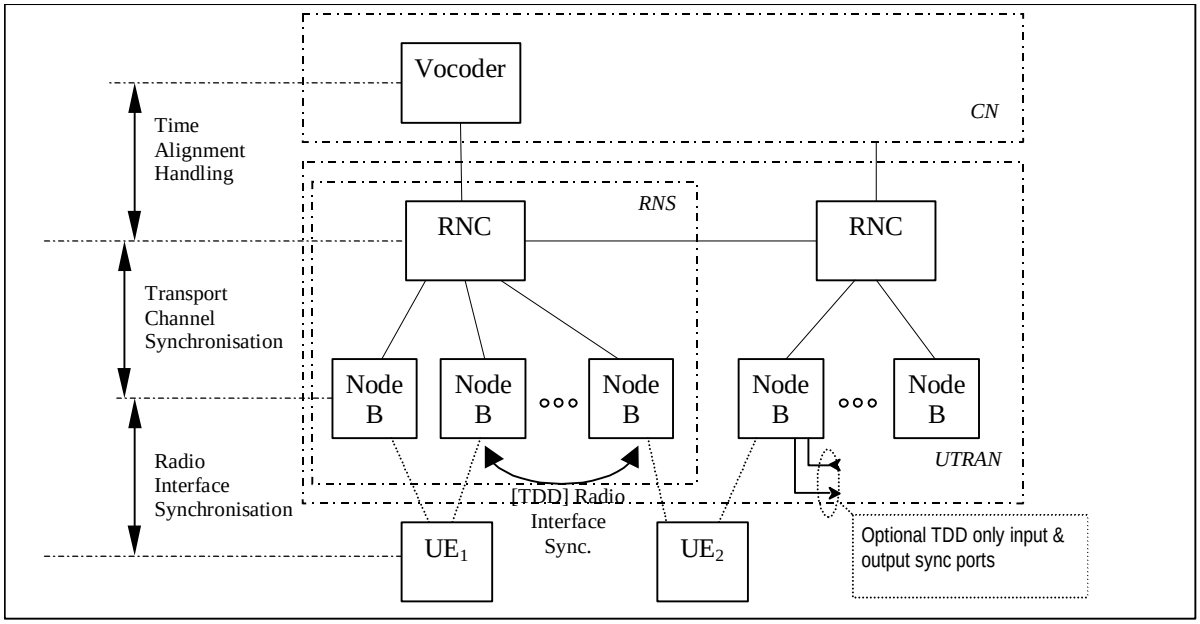


Figure 8: Synchronisation issues model

10 UTRAN O&M Requirements

10.1 O&M of Node B

The O&M of Node B is separated in two parts: the O&M linked to the actual implementation of Node B, denoted as Implementation Specific *O&M*, and the O&M which impacts on the traffic carrying resources in Node B controlled from the RNC, denoted *logical O&M*. The RNS architecture with the O&M interfaces is shown in figure 9.

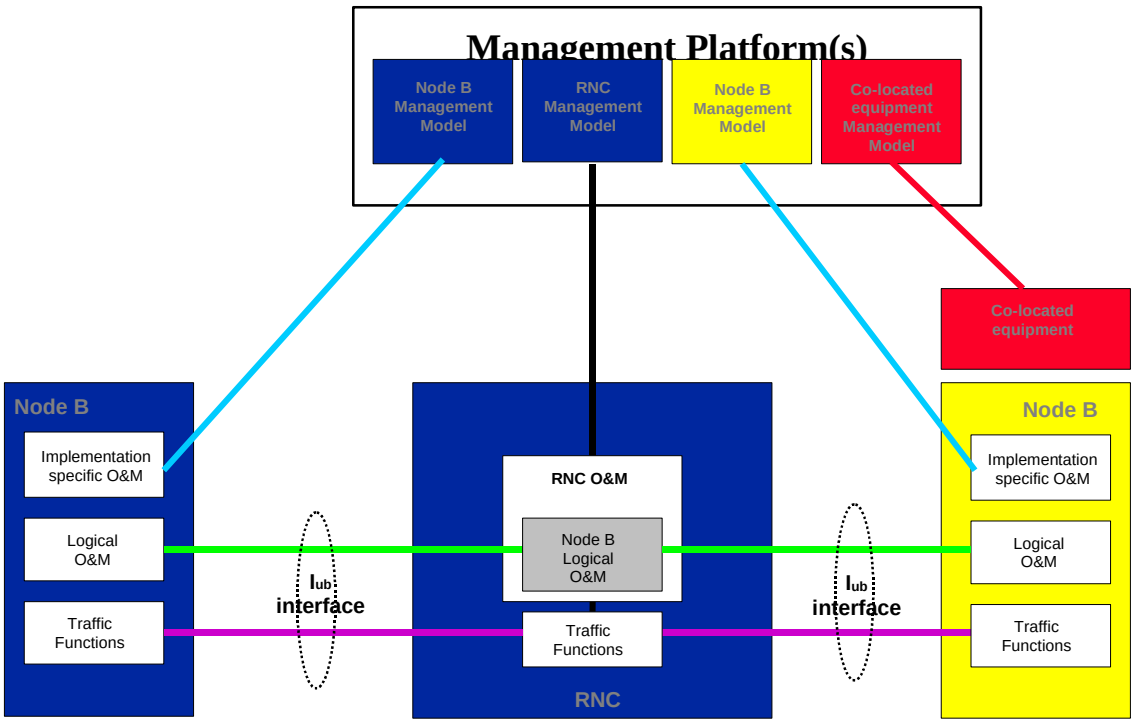


Figure 9: RNS architecture with O&M interfaces

NOTE 1: The concept of an interface from the RNC to the management system is shown for clarity only. It's definition is outside the scope of 3GPP-TSG-RAN-WG3.

NOTE 2: The presentation of the O&M functions within the management system is shown for clarity only. Their actual implementation is outside the scope of 3GPP-TSG-RAN-WG3.

NOTE 3: The standardisation of the Implementation Specific O&M is outside the scope of 3GPP-TSG-RAN-WG3. The 3GPP-TSG-RAN-WG3 should only address the bearer for the Implementation Specific O&M.

NOTE 4: The figure shows only logical connections and does not intend to mandate any physical interfaces.

10.1.1 Implementation Specific O&M

The Implementation Specific O&M functions are heavily dependent on the implementation of Node B, both for its hardware components and for the management of the software components. It needs therefore to be implementation dependent, and be performed between Node B and the management system.

One solution for the transport of Implementation Specific O&M is to route from Node B to the management system via the RNC. In this case, the Implementation Specific O&M interface and Iub interface share the same physical bearer, and [4] specifies the routing function and the transport bearer for this scenario. The deployment of the routing across the RNC in the UTRAN is optional. Where signalling between co-located equipment and its management system is required, this may be carried over the same bearer as Implementation Specific O&M.

10.1.2 Logical O&M

Logical O&M is the signalling associated with the control of logical resources (channels, cells,…) owned by the RNC but physically implemented in the Node B. The RNC controls these logical resources. A number of O&M procedures physically implemented in Node B impact on the logical resources and therefore require an information exchange between RNC and Node B. All messages needed to support this information exchange are classified as Logical O&M forming an integral part of NBAP.

11 UTRAN Interfaces

11.1 General Protocol Model for UTRAN Interfaces

11.1.1 General

The general protocol model for UTRAN Interfaces is depicted in figure 10, and described in detail in the following subclauses. The structure is based on the principle that the layers and planes are logically independent of each other. Therefore, as and when required, the standardisation body can easily alter protocol stacks and planes to fit future requirements.

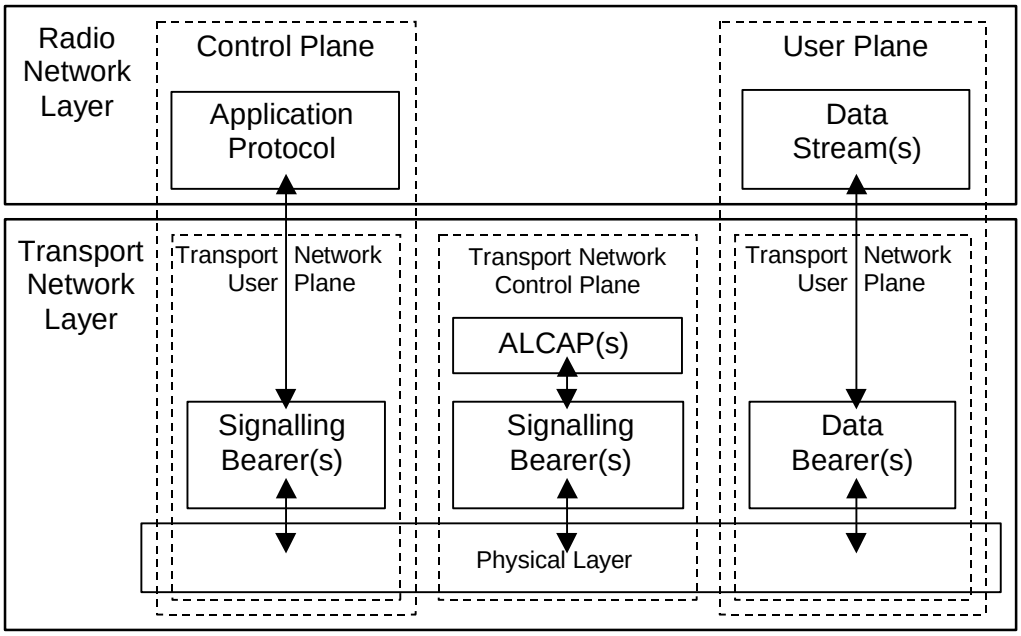


Figure 10: General Protocol Model for UTRAN Interfaces

11.1.2 Horizontal Layers

The Protocol Structure consists of two main layers, Radio Network Layer, and Transport Network Layer. All UTRAN related issues are visible only in the Radio Network Layer, and the Transport Network Layer represents standard transport technology that is selected to be used for UTRAN, but without any UTRAN specific requirements.

11.1.3 Vertical Planes

11.1.3.1 Control Plane

The Control Plane Includes the Application Protocol, i.e. RANAP, RNSAP or NBAP, and the Signalling Bearer for transporting the Application Protocol messages.

Among other things, the Application Protocol is used for setting up bearers for (i.e. Radio Access Bearer or Radio Link) in the Radio Network Layer. In the three plane structure the bearer parameters in the Application Protocol are not directly tied to the User Plane technology, but are rather general bearer parameters.

The Signalling Bearer for the Application Protocol may or may not be of the same type as the Signalling Protocol for the ALCAP. The Signalling Bearer is always set up by O&M actions.

11.1.3.2 User Plane

The User Plane Includes the Data Stream(s) and the Data Bearer(s) for the Data Stream(s). The Data Stream(s) is/are characterised by one or more frame protocols specified for that interface.

11.1.3.3 Transport Network Control Plane

The Transport Network Control Plane does not include any Radio Network Layer information, and is completely in the Transport Layer. It includes the ALCAP protocol(s) that is/are needed to set up the transport bearers (Data Bearer) for the User Plane. It also includes the appropriate Signalling Bearer(s) needed for the ALCAP protocol(s).

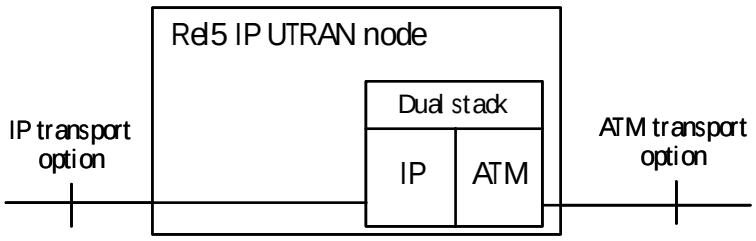
The Transport Network Control Plane is a plane that acts between the Control Plane and the User Plane. The introduction of Transport Network Control Plane makes it possible for the Application Protocol in the Radio Network Control Plane to be completely independent of the technology selected for Data Bearer in the User Plane.

When Transport Network Control Plane is used, the transport bearers for the Data Bearer in the User Plane are set up in the following fashion. First there is a signalling transaction by the Application Protocol in the Control Plane, which triggers the set up of the Data Bearer by the ALCAP protocol that is specific for the User Plane technology.

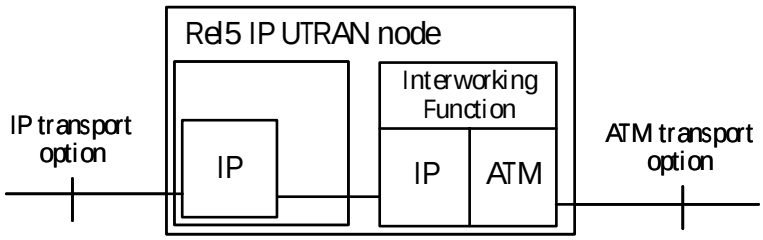
The independence of Control Plane and User Plane assumes that ALCAP signalling transaction takes place. It should be noted that ALCAP might not be used for all types Data Bearers. If there is no ALCAP signalling transaction, the Transport Network Control Plane is not needed at all. This is the case when pre-configured Data Bearers are used or when the IP UTRAN option is used between two IP UTRAN nodes or between an IP UTRAN node and an IP CN node.

For interworking of an IP UTRAN node with another UTRAN node using only the ATM transport option, an IP ALCAP protocol may be supported depending on the interworking solution selected:

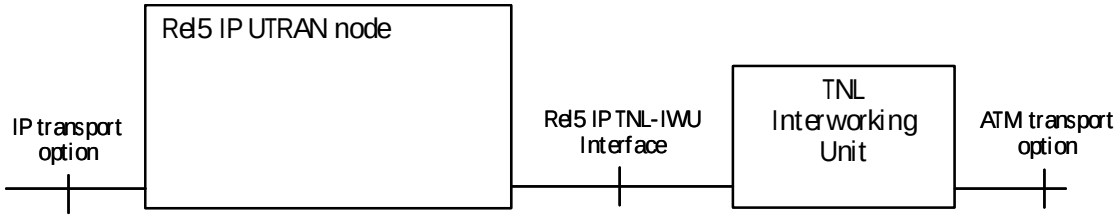
1) ATM/IP Dual Stack supported in the IP UTRAN node. When an ATM/IP dual stack is implemented in the IP UTRAN node, support of an IP ALCAP protocol is not required.



2) Use of an interworking function (IWF) as logical part of the IP UTRAN node. When the IWF is implemented in the IP UTRAN node, support of an IP ALCAP protocol is not required.



3) Use of an interworking unit (IWU) as a separate logical unit. When a separate logical IWU is used to perform the interworking, [19] shall be used as the signalling protocol to control the establishment of the connections between the IP UTRAN node and this IWU.



It should also be noted that the ALCAP protocol(s) in the Transport Network Control Plane is/are not used for setting up the Signalling Bearer for the Application Protocol or for the ALCAP during real time operation.

The Signalling Bearer for the ALCAP may or may not be of the same type as the Signalling Bearer for the Application Protocol. The Signalling Bearer for ALCAP is always set up by O&M actions.

11.1.3.4 Transport Network User Plane

The Data Bearer(s) in the User Plane, and the Signalling Bearer(s) for Application Protocol, belong also to Transport Network User Plane. As described in the previous subclause, the Data Bearers in Transport Network User Plane are directly controlled by Transport Network Control Plane during real time operation, but the control actions required for setting up the Signalling Bearer(s) for Application Protocol are considered O&M actions.

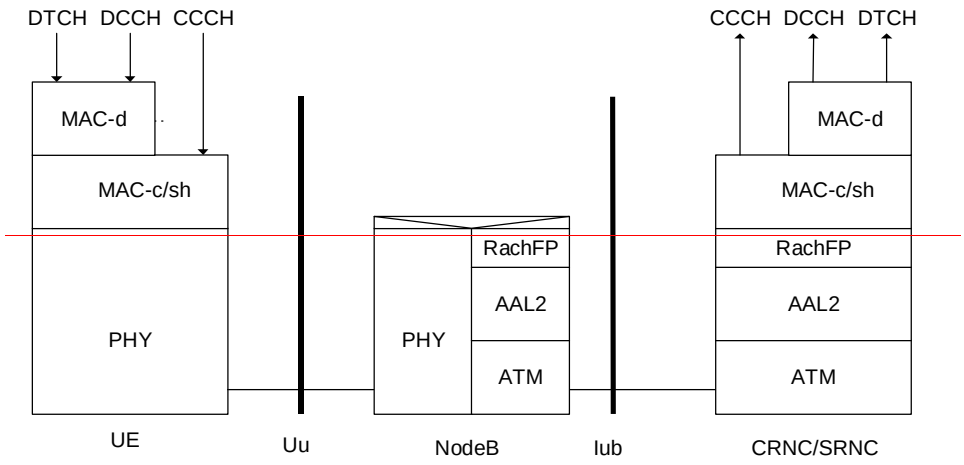
11.2 Protocol Model (Informative)

The following subclause is a informative subclause which aim is to provide an overall picture of how the MAC layer is distributed over Uu, Iub and Iur for the RACH, FACH, DCH, DSCH and [TDD USCH].

11.2.1 RACH Transport Channel

Figure 11 shows the protocol stack model for the RACH transport channel when the Controlling and Serving RNC are co-incident.

For the RACH transport channel, Dedicated MAC (MAC-d) uses the services of Common MAC (MAC-c/sh).



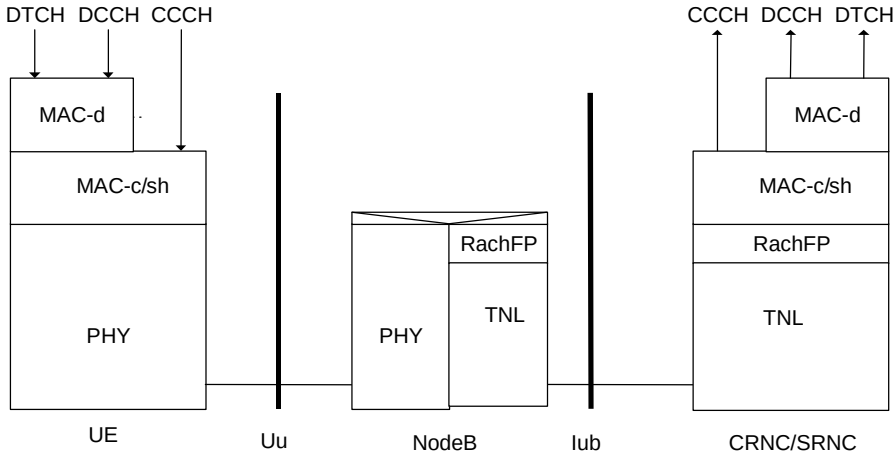


Figure 11: RACH: Coincident Controlling and Serving RNC

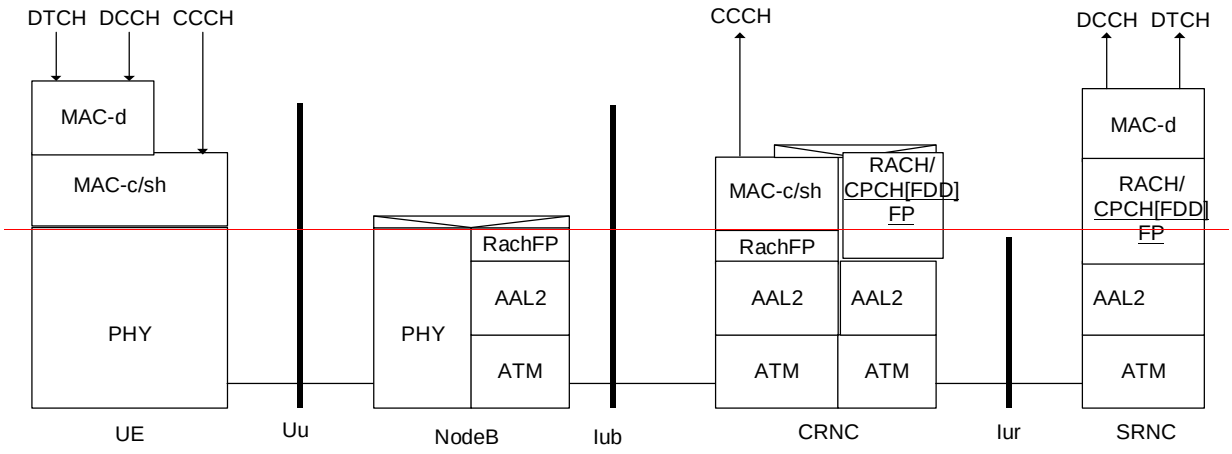
The Common MAC (MAC-c/sh) entity in the UE transfers MAC-c/sh PDU to the peer MAC-c/sh entity in the RNC using the services of the Physical Layer.

An Interworking Function (IWF) in the Node B interworks the RACH frame received by the PHY entity into the RACH Frame Protocol (RACH FP) entity.

The RACH Frame Protocol entity adds header information to form a RACH FP PDU that is transported to the RNC over an AAL2 connection.

At the RNC, the RACH FP entity delivers the MAC-c/sh PDU to the MAC-c/sh entity.

Figure 12 shows the protocol model for the RACH transport channel with separate Controlling and Serving RNC. In this case, Iur RACH Frame Protocol (RACH FP) is used to interwork the Common MAC (MAC-c/sh) at the Controlling RNC with the Dedicated MAC (MAC-d) at the Serving RNC.



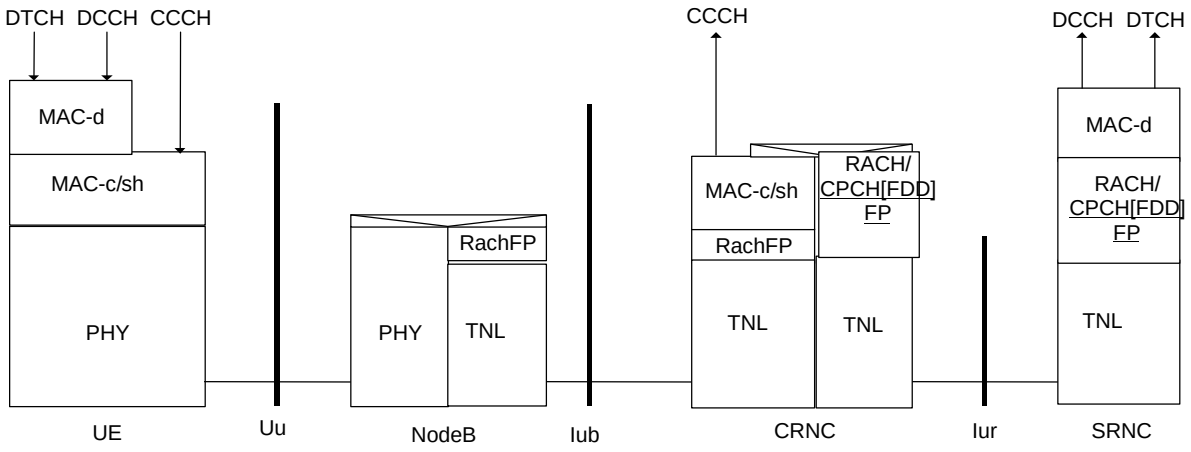
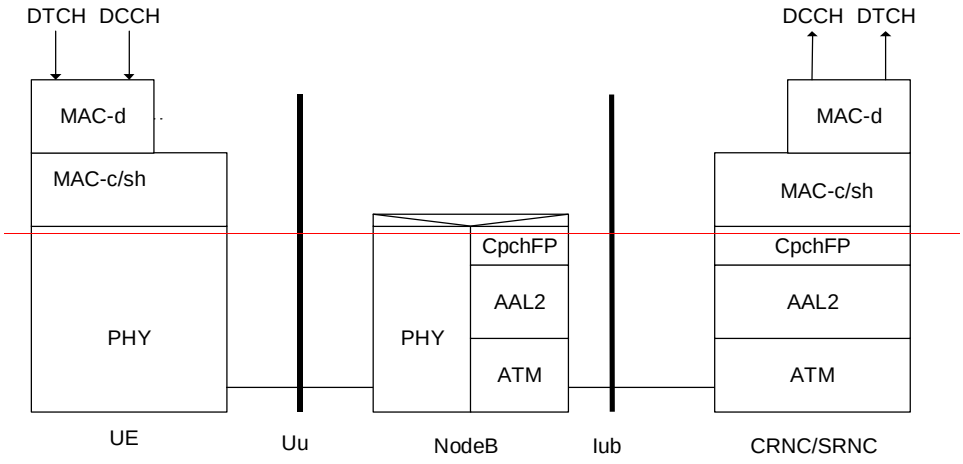


Figure 12: RACH: Separate Controlling and Serving RNC

11.2.2 CPCH [FDD] Transport Channel

Figure 13 shows the protocol model for the CPCH [FDD] transport channel when the Controlling and Serving RNC are co-incident.

For the CPCH [FDD] transport channel, Dedicated MAC (MAC-d) uses the services of Common MAC (MAC-c/sh).



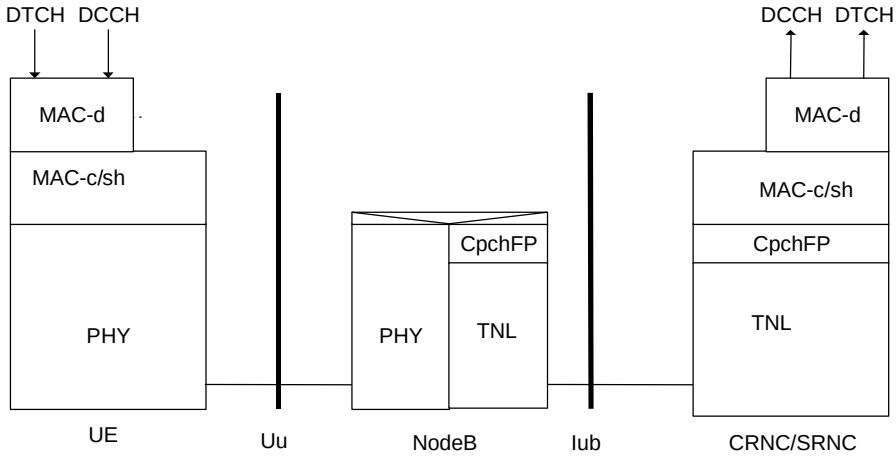


Figure 13: CPCH [FDD]: Coincident Controlling and Serving RNC

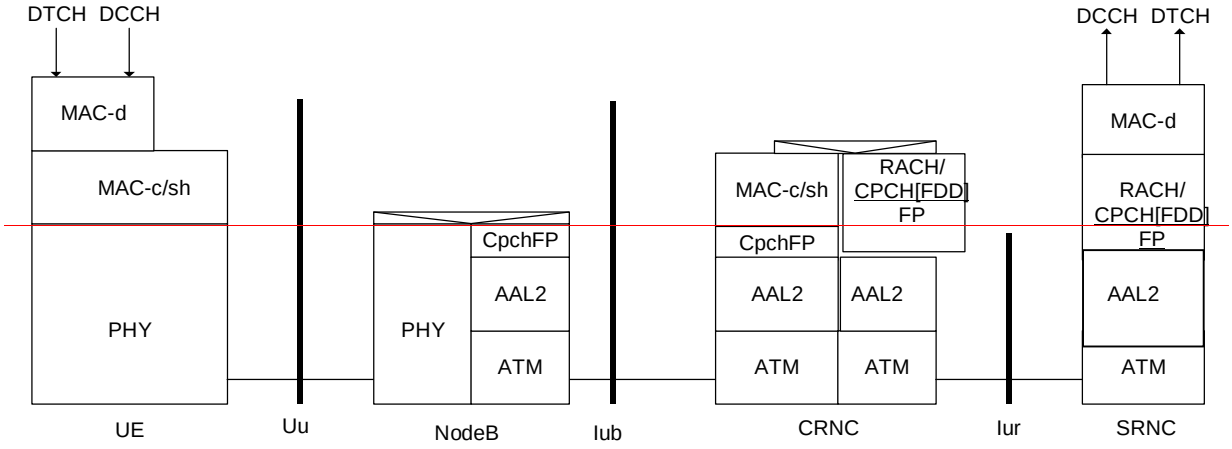
The Common MAC (MAC-c/ sh) entity in the UE transfers MAC-c PDU to the peer MAC-c entity in the RNC using the services of the Physical Layer.

An Interworking Function (IWF) in the Node B interworks the CPCH [FDD] frame received by the PHY entity into the CPCH [FDD] Frame Protocol (CPCH FP) entity.

The CPCH [FDD] Frame Protocol entity adds header information to form a CPCH [FDD] FP PDU which is transported to the RNC over an AAL2 connection.

At the RNC, the CPCH [FDD] FP entity delivers the MAC-c PDU to the MAC-c entity.

Figure 14 shows the protocol model for the CPCH [FDD] transport channel with separate Controlling and Serving RNC. In this case, Iur CPCH [FDD] Frame Protocol (CpchFP) is used to interwork the Common MAC (MAC-c/sh) at the Controlling RNC with the Dedicated MAC (MAC-d) at the Serving RNC.



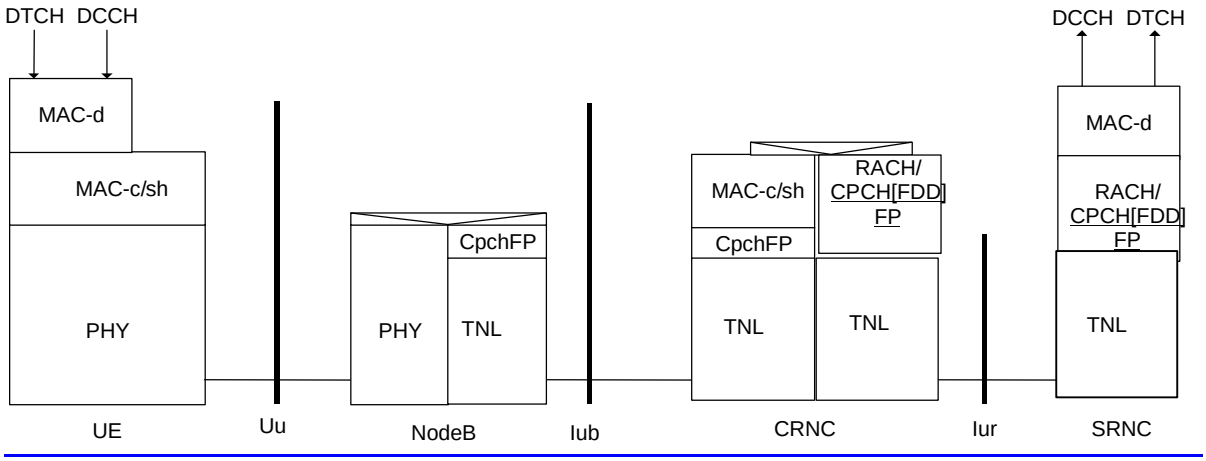


Figure 14: CPCH [FDD]: Separate Controlling and Serving RNC

11.2.3 FACH Transport Channel

Figure 15 shows the protocol model for the FACH transport channel when the Controlling and Serving RNC are co-incident.

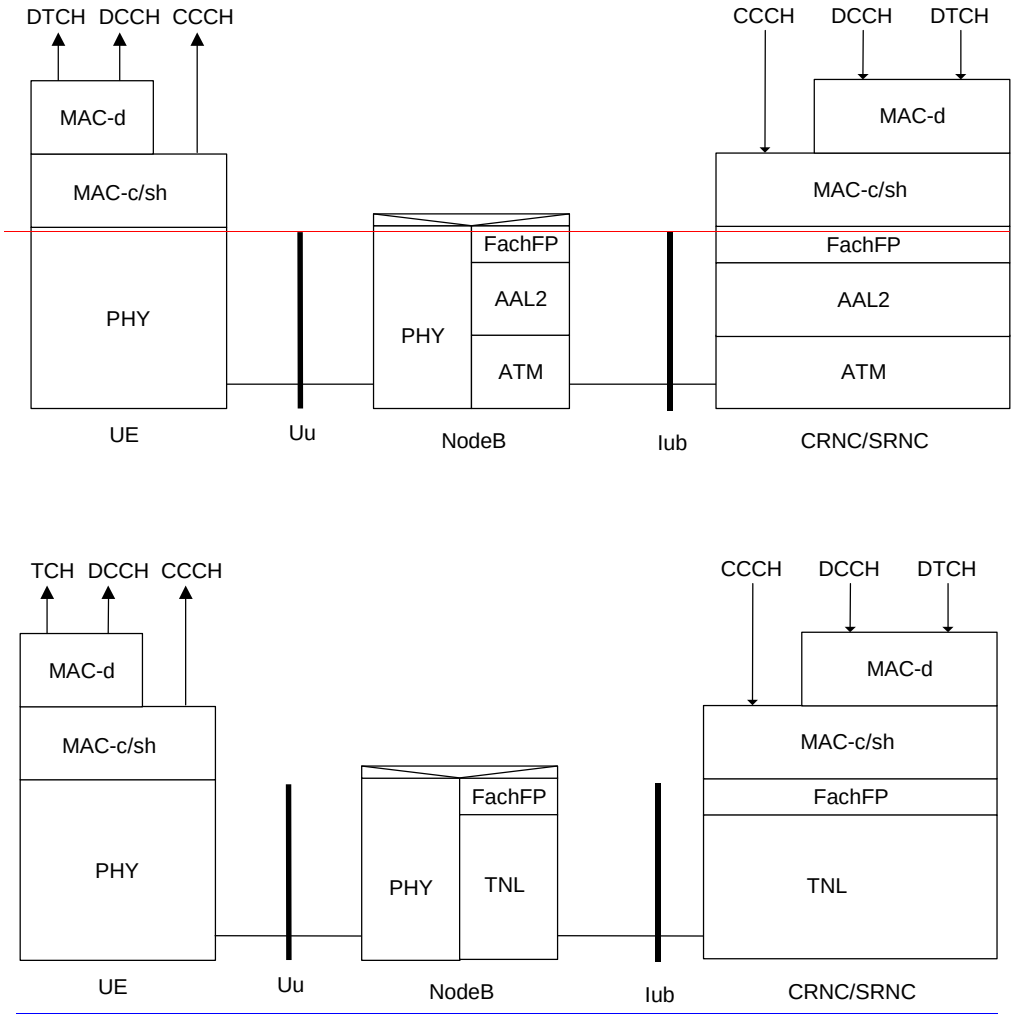


Figure 15: FACH Co-incident Controlling and Serving RNC

The Common MAC (MAC-c/sh) entity in the RNC transfers MAC-c PDU to the peer MAC-c entity in the UE using the services of the FACH Frame Protocol (FACH FP) entity.

The FACH Frame Protocol entity adds header information to form a FACH FP PDU which is transported to the Node B over an AAL2 connection.

An Interworking Function (IWF) in the Node B interworks the FACH frame received by FACH Frame Protocol (FACH FP) entity into the PHY entity.

FACH scheduling is performed by MAC-c/sh in the CRNC.

Figure 16 shows the protocol model for the FACH transport channel with separate Controlling and Serving RNC. In this case, Iur FACH Frame Protocol is used to interwork the Common MAC (MAC-c) at the Controlling RNC with the Dedicated MAC (MAC-d) at the Serving RNC.

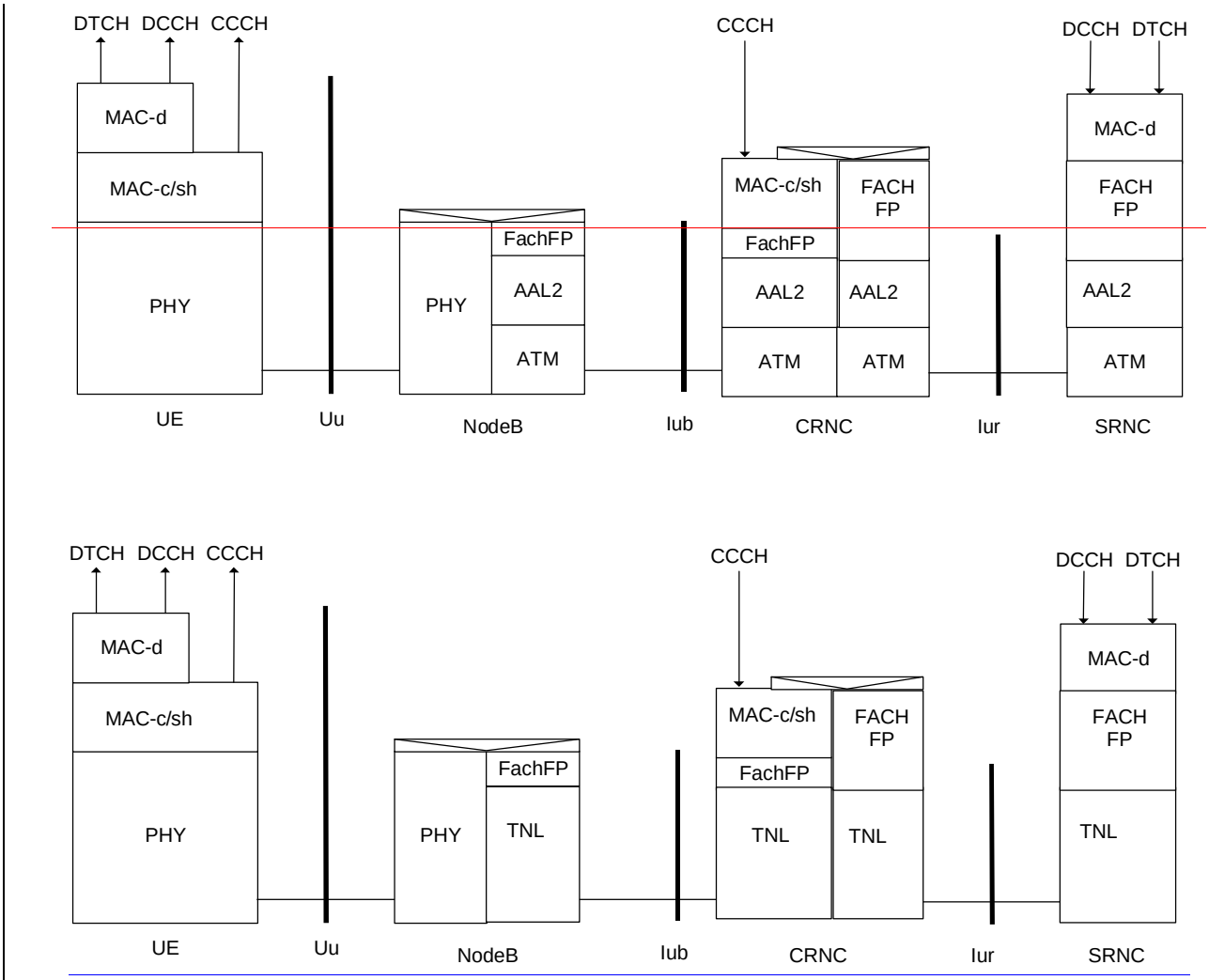


Figure 16: FACH: Separate Controlling and Serving RNC

11.2.4 DCH Transport Channel

Figure 17 shows the protocol model for the DCH transport channel when the Controlling and Serving RNC are co-incident.

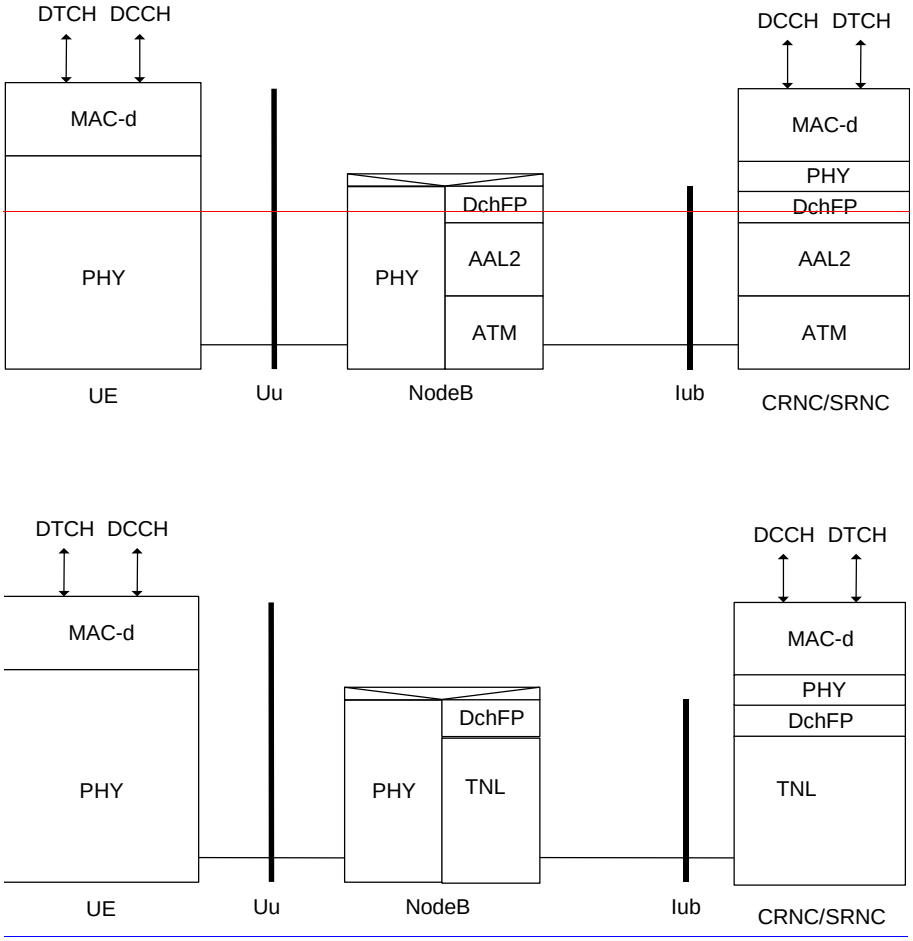


Figure 17: DCH: Co-incident Controlling and Serving RNC

The DCH transport channel introduces the concept of distributed PHY layer.

An Interworking Function (IWF) in the Node B interworks between the DCH Frame Protocol (DCH FP) entity and the PHY entity.

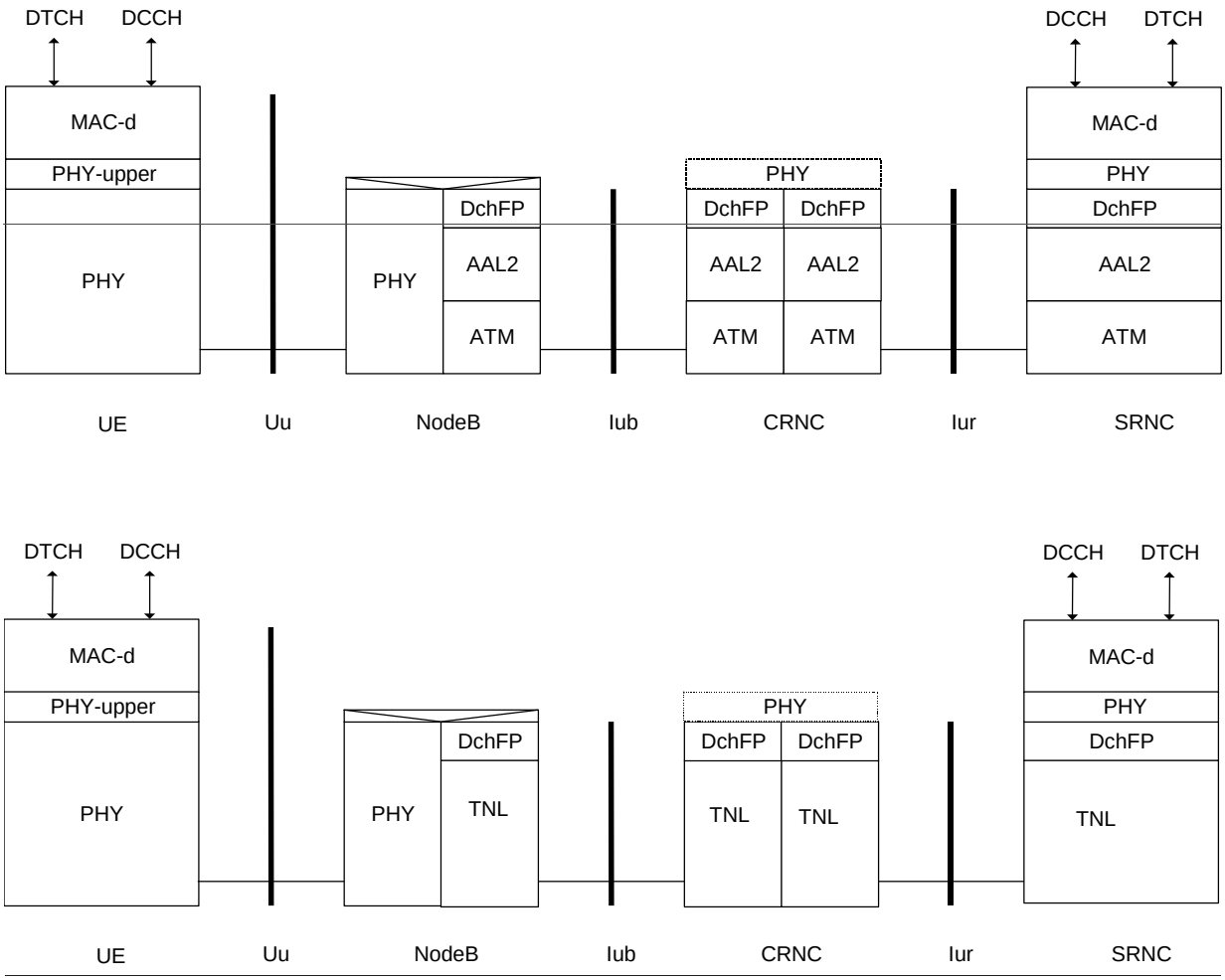


Figure 18: DCH: Separate Controlling and Serving RNC

Figure 18 shows the protocol model for the DCH transport channel with separate Controlling and Serving RNC. In this case, the Iub DCH FP is terminated in the CRNC and interworked with the Iur DCH FP through a PHY function. This function performs optional soft handover or can be a null function.

11.2.5 DSCH Transport Channel

Figure 19 shows the protocol model for the DSCH transport channel when the Controlling and Serving RNC are co-incident.

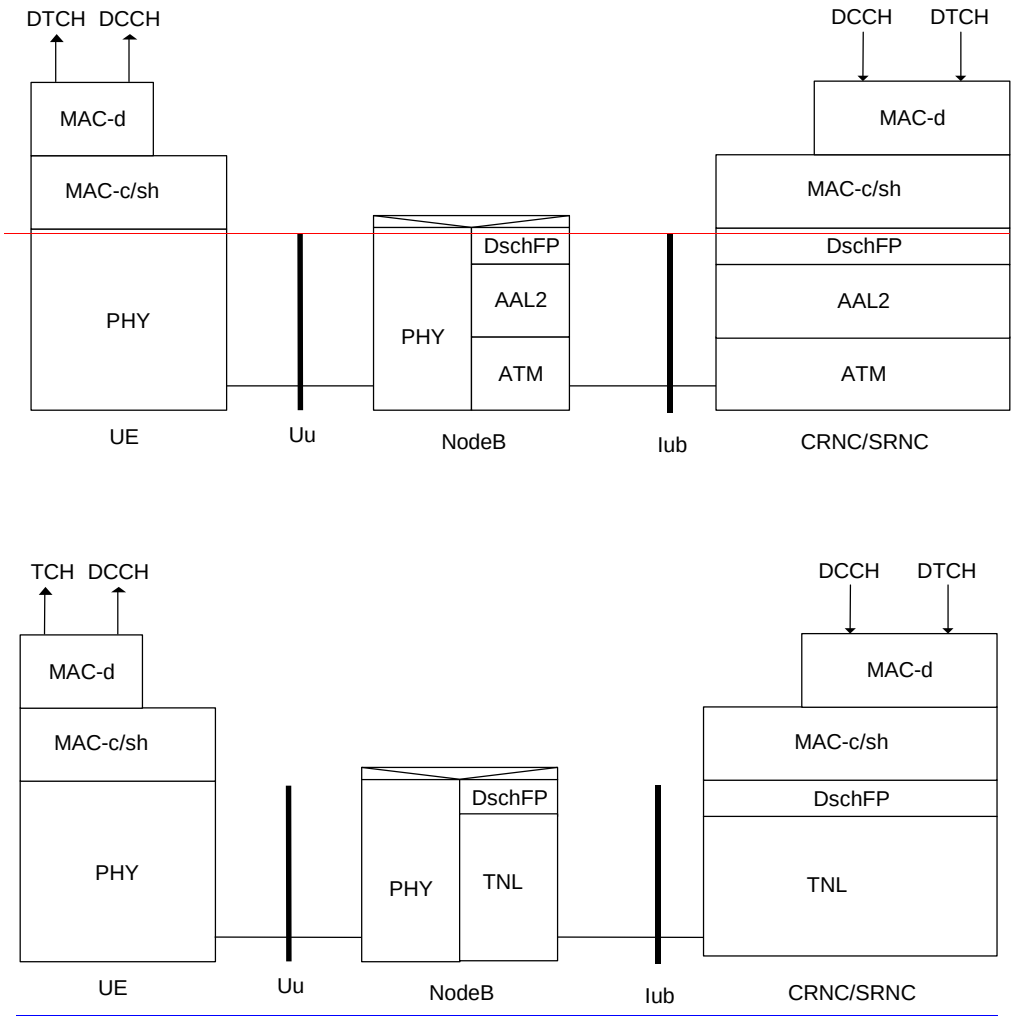


Figure 19: DSCH Co-incident Controlling and Serving RNC

The Shared MAC (MAC-c/sh) entity in the RNC transfers MAC-c/sh PDU to the peer MAC-c/sh entity in the UE using the services of the DSCH Frame Protocol (DSCH FP) entity. The DSCH FP entity adds header information to form a DSCH FP PDU that is transported to the Node B over an AAL2 connection.

An Interworking Function (IWF) in the Node B interworks the DSCH frame received by DSCH FP entity into the PHY entity. DSCH scheduling is performed by MAC-c/sh in the CRNC.

Figure 20 shows the protocol model for the DSCH transport channel with separate Controlling and Serving RNC. In this case, Iur DSCH Frame Protocol is used to interwork the MAC-c/sh at the Controlling RNC with the MAC-d at the Serving RNC.

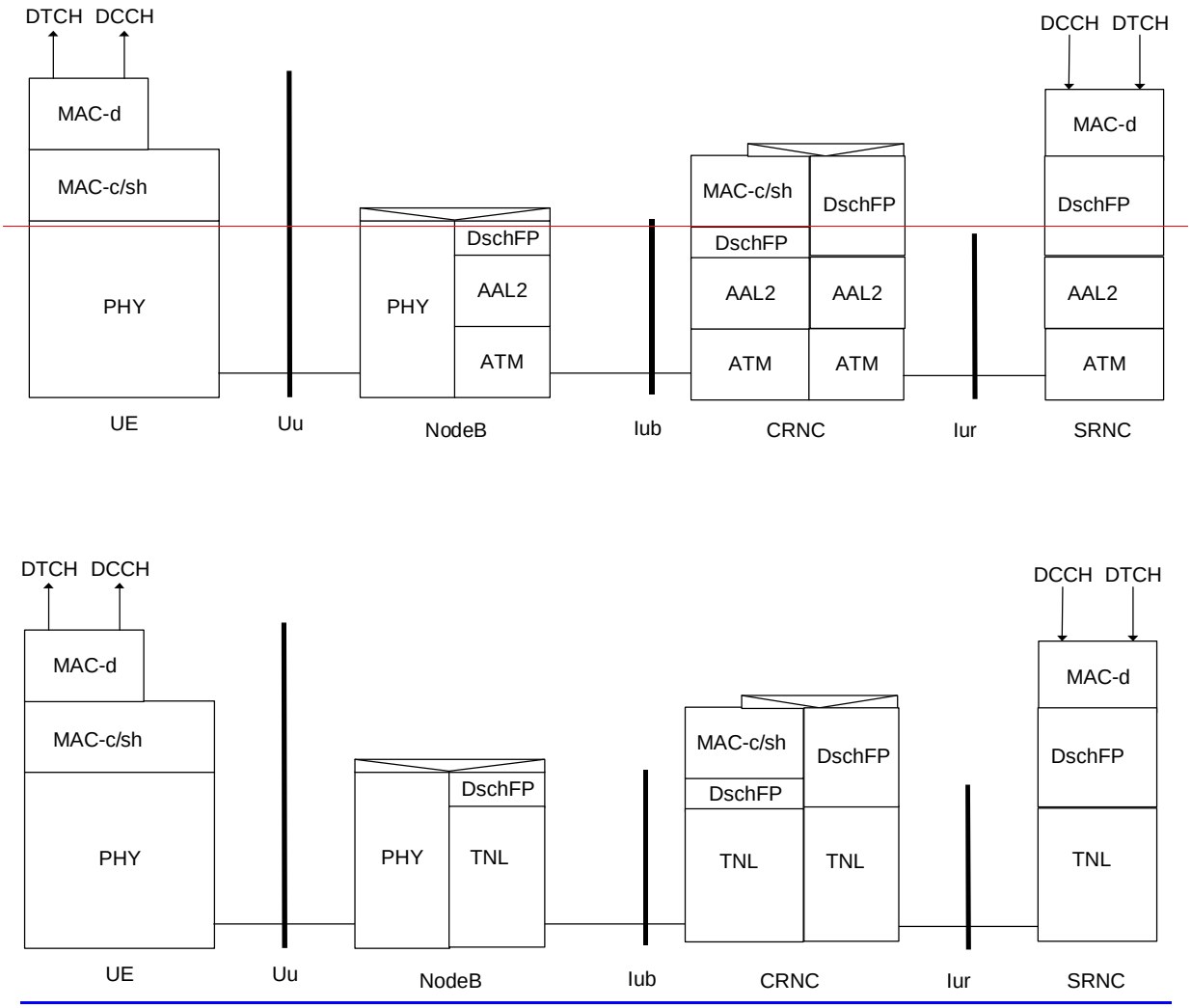
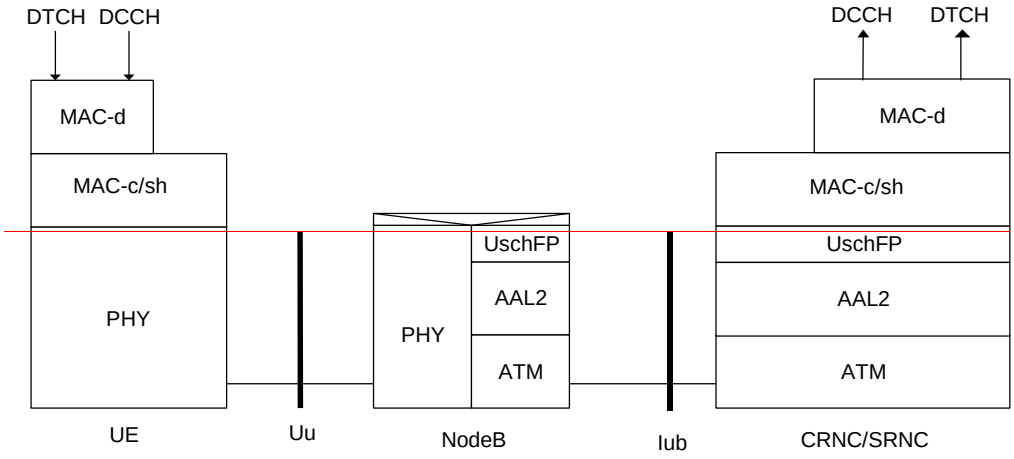


Figure 20: DSCH: Separate Controlling and Serving RNC

11.2.6 USCH Transport Channel [TDD]

Figure 21 shows the protocol model for the USCH transport channel when the Controlling and Serving RNC are co-incident.



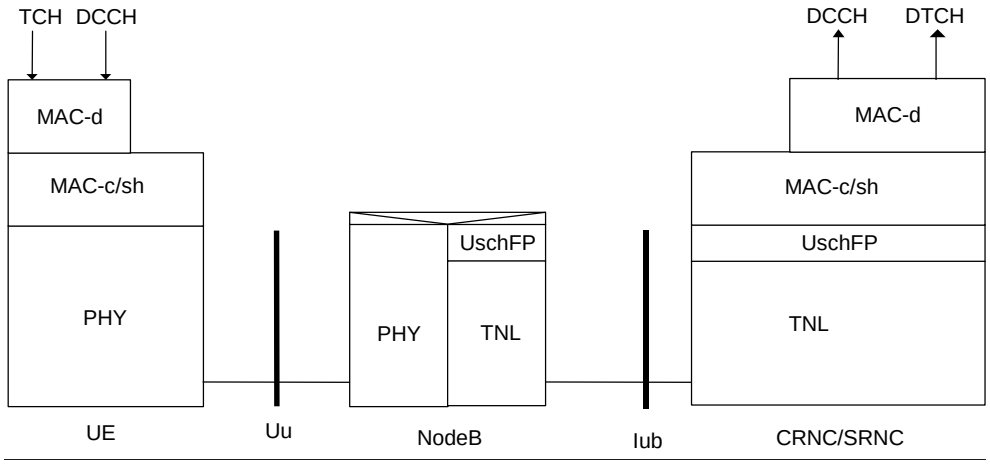
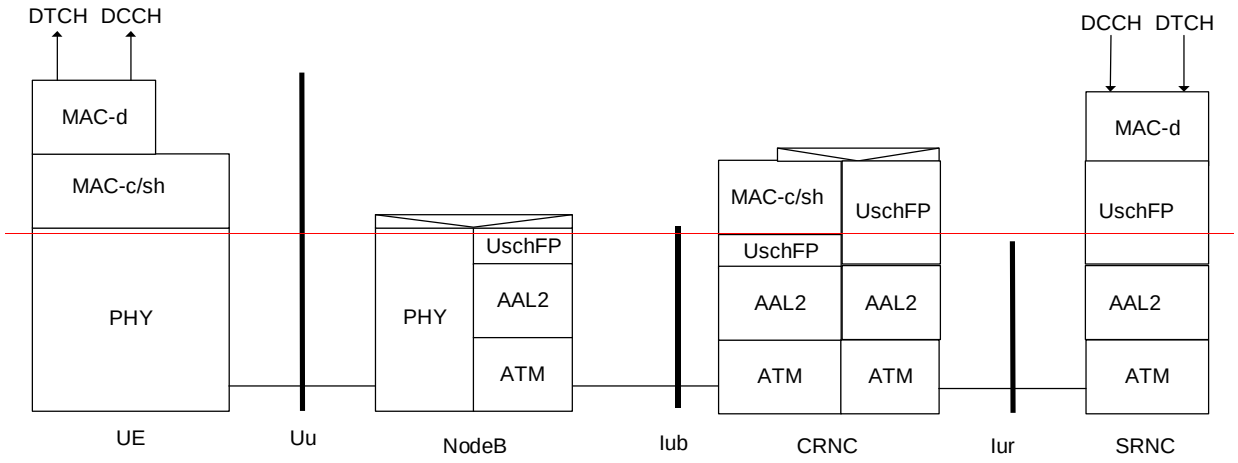


Figure 21: USCH Co-incident Controlling and Serving RNC

The Shared MAC (MAC-c/sh) entity in the RNC *receives* MAC-c/sh PDU *from* the peer MAC-c/sh entity in the UE using the services of the Interworking Function in the Node B, and the USCH Frame Protocol (USCH FP) entity. The USCH FP entity *in the Node B* adds header information to form a USCH FP PDU that is transported to the *RNC* over an AAL2 connection.

An Interworking Function (IWF) in the Node B interworks *the received USCH PHY entity into an USCH frame to be transmitted by the USCH FP entity over the Iub interface.* USCH scheduling is performed by MAC-c/sh in UE and by C-RRC in the CRNC.

Figure 22 shows the protocol model for the USCH transport channel with separate Controlling and Serving RNC. In this case, Iur USCH Frame Protocol is used to interwork the MAC-c/sh at the Controlling RNC with the MAC-d at the Serving RNC.



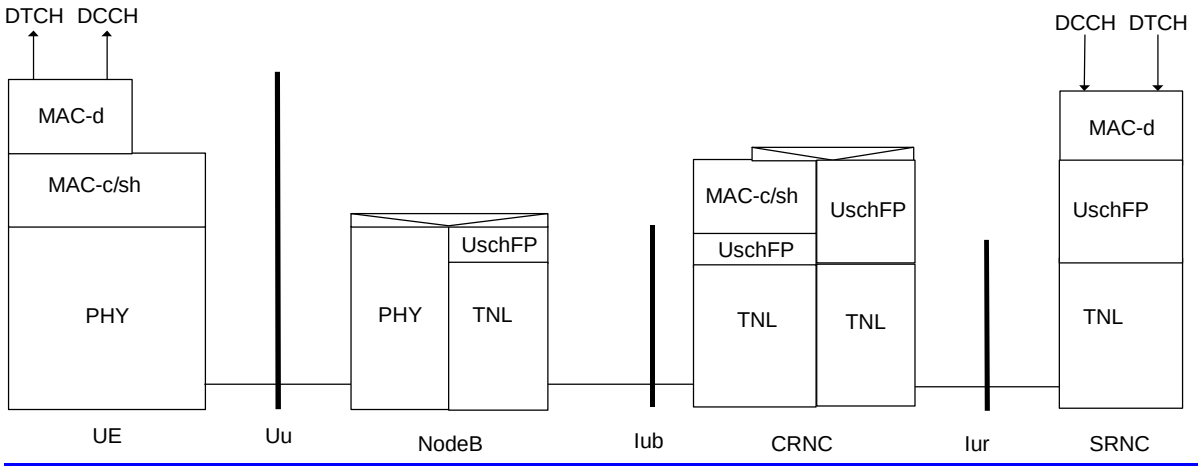


Figure 22: USCH: Separate Controlling and Serving RNC

12 UTRAN Performance Requirements

12.1 UTRAN delay requirements

Void.

Annex A (informative): Change history

Change history					
TSG RAN#	Version	CR	Tdoc RAN	New Version	Subject/Comment
RAN_05	-	-	-	3.0.0	Approved at TSG RAN #5 and placed under Change Control
RAN_06	3.0.0	-	RP-99735	3.1.0	Approved at TSG RAN #6
RAN_06	3.0.0	-	RP-99736	3.1.0	Approved at TSG RAN #6
RAN_06	3.0.0	-	RP-99737	3.1.0	Approved at TSG RAN #6
RAN_06	3.0.0	-	RP-99738	3.1.0	Approved at TSG RAN #6
RAN_07	3.1.0	-	RP-000073	3.2.0	Approved at TSG RAN #7
RAN_08	3.2.0	-	RP-000231	3.3.0	Approved at TSG RAN #8
RAN_09	3.3.0	013 014 015 016 017	RP-000370	3.4.0	Approved at TSG RAN #9
RAN_10	3.4.0	018 019	RP-000607	3.5.0	Approved at TSG RAN #10
RAN_11	3.5.0	020 021	RP-010107	3.6.0	Approved at TSG RAN #11

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
March 01	11	RP-010164	23	1	Approved at TSG RAN #11 and placed under Change Control	-	4.0.0
June 01	12	RP-010370	025, 028, 032		Approved at TSG RAN #12	4.0.0	4.1.0
June 01	12	RP-010389	026, 029		Approved at TSG RAN #12	4.0.0	4.1.0
June 01	12	RP-010403	030		Approved at TSG RAN #12 and placed under Change Control	4.1.0	5.0.0
09/2001	13	RP-010575	033		Uplink power control for LCR TDD	5.0.0	5.1.0
09/2001	13	RP-010575	038		Clarification of coordinated DCHs	5.0.0	5.1.0

3GPP TSG-RAN WG3 Meeting #27
Orlando, US, 18th – 22nd February 2002

Tdoc R3-020881

CR-Form-v5

CHANGE REQUEST

⌘ **25.410** **CR** **032** ⌘ **rev** **3** ⌘ Current version: **4.3.0** ⌘

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

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

Title:	⌘	Introduction of IP transport option in UTRAN
Source:	⌘	R-WG3
Work item code:	⌘	ETRAN-IPtrans
Date:	⌘	2002-02-07
Category:	⌘	**B**
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)

Reason for change:	⌘	The protocols stacks for user transport and transport signalling needs to be specified in case of the IP transport option to be able to setup IP bearers on Iu.
Summary of change:	⌘	The use of RTP is specified. The fact, that the CN selects the transport type is specified. The RTP Session Management function is introduced The protocols stacks are updated for the IP transport option. Impact Analysis: Impact assessment towards the previous version of the specification (same release): No previous version.
Consequences if not approved:	⌘	

Clauses affected:	⌘	2, 3.2, 4.5.2.1, 4.5.2.x (new), 5.2.1, 5.4.x(new), 6.2, 6.3, 6.4
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications
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.

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 TS 25.401: "UTRAN Overall Description".

[2] 3GPP TR 23.930: "Iu Principles".

[3] 3GPP TS 23.110: "UMTS Access Stratum Services and Functions".

[4] 3GPP TS 25.411: "UTRAN Iu Interface Layer 1".

[5] 3GPP TS 25.412: "UTRAN Iu Interface Signalling Transport".

[6] 3GPP TS 25.413: "UTRAN Iu Interface RANAP Signalling".

[7] 3GPP TS 25.414: "UTRAN Iu Interface Data Transport and Transport Signalling"

[8] 3GPP TS 25.415: "UTRAN Iu Interface User Plane Protocols".

[9] ITU-T Recommendation Q.711 (07/1996): "Functional description of the signalling connection control part".

[10] ITU-T Recommendation Q.712 (07/1996): "Definition and function of signalling connection control part messages".

[11] ITU-T Recommendation Q.713 (07/1996): "Signalling connection control part formats and codes".

[12] ITU-T Recommendation Q.714 (07/1996): "Signalling connection control part procedures".

[13] 3GPP TS 23.003: "Numbering, Addressing and Identification".

[14] 3GPP TS 25.419: "UTRAN Iu Interface: Service Area Broadcast Protocol SABP".

[15] 3GPP TS 23.153: "Out of Band Transcoder Control; Stage 2".

[16] ITU-T Recommendation Q.2630.1: "AAL type 2 signalling protocol - (Capability Set 1)".

[17] ITU-T Recommendation Q.2630.2: "AAL type 2 signalling protocol - Capability Set 2".

[x1] INTERNET-DRAFT, G. Sidebottom et al, "SS7 MTP3-User Adaptation Layer (M3UA)", draft-ietf-sigtran-m3ua-12.txt, February 2002.

[x2] IETF RFC 1889(01/1996): "RTP: A Transport Protocol for Real Time Applications"

[x3] IETF RFC 768 (08/1980): "User Datagram Protocol".

[x4] IETF RFC 793 (09/1981): "TCP, Transmission Control Protocol".

[x5] IETF RFC 791 (09/1981): "Internet Protocol".

[x6] IETF RFC 2460 (12/1998): "Internet Protocol, Version 6 (IPv6) Specification".

[x7] IETF RFC 2960 (10/2000): “Stream Control Transmission Protocol”

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in [1] apply.

3.2 Abbreviations

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

3G-MSC	3rd Generation Mobile Switching Centre
3G-SGSN	3rd Generation Serving GPRS Support Node
AAL	ATM Adaptation Layer
ATM	Asynchronous Transfer Mode
BC	Broadcast
BSSMAP	Base Station Subsystem Management Application Part
CBS	Cell Broadcast Service
CC	Connection Confirm
CN	Core Network
CR	Connection Release
CREF	Connection Refusal
CS	Circuit Switched
GT	Global Title
GTP-U	GPRS Tunnelling Protocol
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
ISDN	Integrated Services Digital Network
LA	Location Area
M3UA	MTP3 User Adaptation Layer
NAS	Non Access Stratum
O&M	Operation and Maintenance
PS	Packet Switched
PSTN	Public Switched Telephone Network
PVC	Permanent Virtual Circuit
QoS	Quality of Service
RA	Routing Area
RAB	Radio Access Bearer
RANAP	Radio Access Network Application Part
RLP	Radio Link Protocol
RNC	Radio Network Controller
RNL	Radio Network Layer
RRC	Radio Resource Control
RTCP	Real Time Control Protocol
RTP	Real Time Protocol
SA	Service Area
SABP	Service Area Broadcast Protocol
SAP	Service Access Point
SCCP	Signalling Connection Control Part
SCTP	Stream Control Transmission Protocol
SPC	Signalling Point Code
SRNS	Serving Radio Network Subsystem
SSN	Sub-System Number
SVC	Switched Virtual Circuit
TCP	Transmission Control Protocol
UE	User Equipment
UDP	User Datagram Protocol
UP	User Plane
URA	UTRAN Registration Area
UTRAN	UMTS Terrestrial Radio Access Network

VC Virtual Circuit

4.5.2 Use of Transport Network User Plane as User Data Bearer

4.5.2.1 Use of AAL2

In the ATM transport option AAL2 is used as the user data bearer towards the CS domain.

Q.2630.2 is used as the protocol for dynamically setup AAL-2 connections over Iu towards the CS domain. Q.2630.2 adds new optional capabilities to Q.2630.1.

4.5.2.2 Use of GTP-U

GTP-U is used as the user data bearer towards the PS domain.

RANAP Signalling is used to establish, modify and release the GTP-U tunnels towards the PS domain.

4.5.2.x Use of RTP

RTP/UDP/IP is used as the user data bearer towards the CS domain in the IP transport option. The use of RTCP [x2] is optional.

RANAP Signalling is used to establish, modify and release RTP sessions towards the CS domain.

5.2.1 RAB establishment, modification and release function

The RAB, Radio Access Bearer, is defined to be set-up between UE and CN. Depending on subscription, service, requested QoS etc. different types of RABs will be used. It is the CN that controls towards the UTRAN the establishment, modification or release of a RAB. Furthermore, the CN selects the type of the transport bearer, i.e. ATM or IP.

The RAB identity is allocated by CN by mapping the value for the NAS Binding information (from the actual protocol IE for the respective CN domain) to the RAB ID as specified in [3]. The RAB identity is globally significant on both the radio bearer and on the Iu bearer for a given UE in a particular CN domain.

RAB establishment, modification and release is a CN initiated function.

RAB establishment, modification and release is a UTRAN executed function.

RAB release request is a UTRAN initiated function, triggered when UTRAN e.g. fails to keep the RAB established with the UE.

5.4 I_u link Management functions

5.4.1 I_u Signalling Link Management function

The I_u signalling link management function provides a reliable transfer of the radio network signalling between UTRAN and CN. Both CN and UTRAN manage the function.

This function is in particular responsible for Iu signalling connection establishment, which can be established either by the CN or the RNC and for I_u signalling connection release, which is controlled by CN possibly upon UTRAN request.

5.4.2 ATM Virtual Connection Management function

This function refers to handling of ATM Virtual Connections (VCs) between CN and UTRAN.

This function shall be used to establish, maintain and release the ATM VCs. For permanent VCs, it is regarded to be an O&M function.

This function also includes the selection of a Virtual Circuit to be used for a particular RAB. The selection of ATM VC upon an Iu radio access bearer service request, shall be done by UTRAN. The selected VC shall fulfil the requirements of the request. The VC may consist of several sublinks: such as SCCP connections, AAL2 connections or IP flows.

5.4.3 AAL2 connection establish and release function

This function is used to establish and release the AAL type 2 connections between CN and UTRAN upon an Iu radio access bearer service request. Both UTRAN and CN are taking part in the establishment of AAL2 connection. UTRAN shall initiate both establishment and release of AAL2 connections. The use of AAL2 for Iu transmission bearers depends on type of CN.

5.4.4 AAL5 management function

AAL5 connections between CN and UTRAN shall be pre-configured at system initialisation. Basic configuration is PVCs. For user data, SVC is possible.

The AAL5 management is a function handled by both the CN and the UTRAN.

5.4.5 GTP-U tunnels management function

This function is used to establish and release GTP-U tunnels between CN and UTRAN upon a radio access bearer service request. This involves assigning a tunnel identifier for each direction and the creation of a context containing the tunnel information. The tunnel identifier for the downlink is allocated by the UTRAN, and the tunnel identifier for the uplink is allocated by the CN. Both CN and UTRAN should maintain the context. The use of GTP-U for I_u transport bearers depends on type of CN.

5.4.6 TCP Management Function

This function is used to establish and release the TCP connections between CN and UTRAN over I_u-BC.

The TCP management function exists in both UTRAN and CN.

5.4.7 Buffer Management

Congestion control shall be performed over the Iu user plane using buffer management and no flow control.

This function includes buffers to store received packet data units that at reception can not be processed due to e.g. congestion. In UTRAN, there must be a buffer management function handling received packets from the peer CN node.

The used mechanism is not in the scope of the present document and not relevant to be standardised.

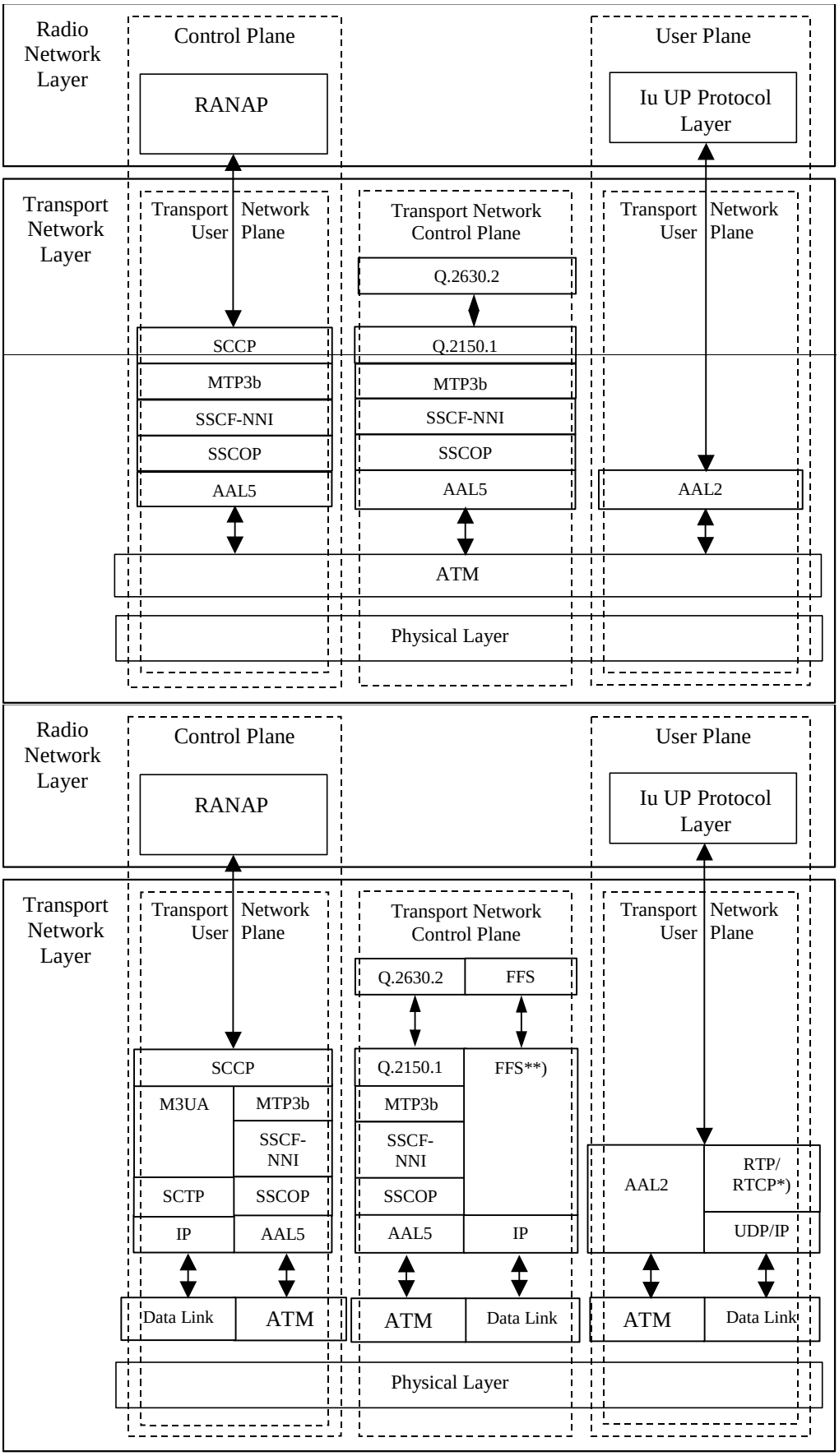
Buffer management is a UTRAN function.

5.4.x RTP Session Management Function

This function is used to establish and release RTP sessions between CN and UTRAN upon a radio access bearer service request. This involves assigning a RTP session identifier for each direction and the creation of a context containing the RTP session information. The RTP session identifier for the downlink is allocated by the UTRAN, and the RTP session identifier for the uplink is allocated by the CN. Both CN and UTRAN should maintain the RTP session context. The use of RTP for Iu transport bearers depends on type of CN.

6.2 Iu-CS

Figure 6.1 shows the protocol structure for I_u-CS, following the structure described in [1].



*) RTCP is optional
**) depends on the interworking alternative selected (see [7])

Figure 6.1: I_u –Interface Protocol Structure towards CS Domain

6.3 I_u-BC

Figure 6.2 shows the protocol structure for the I_u-BC.

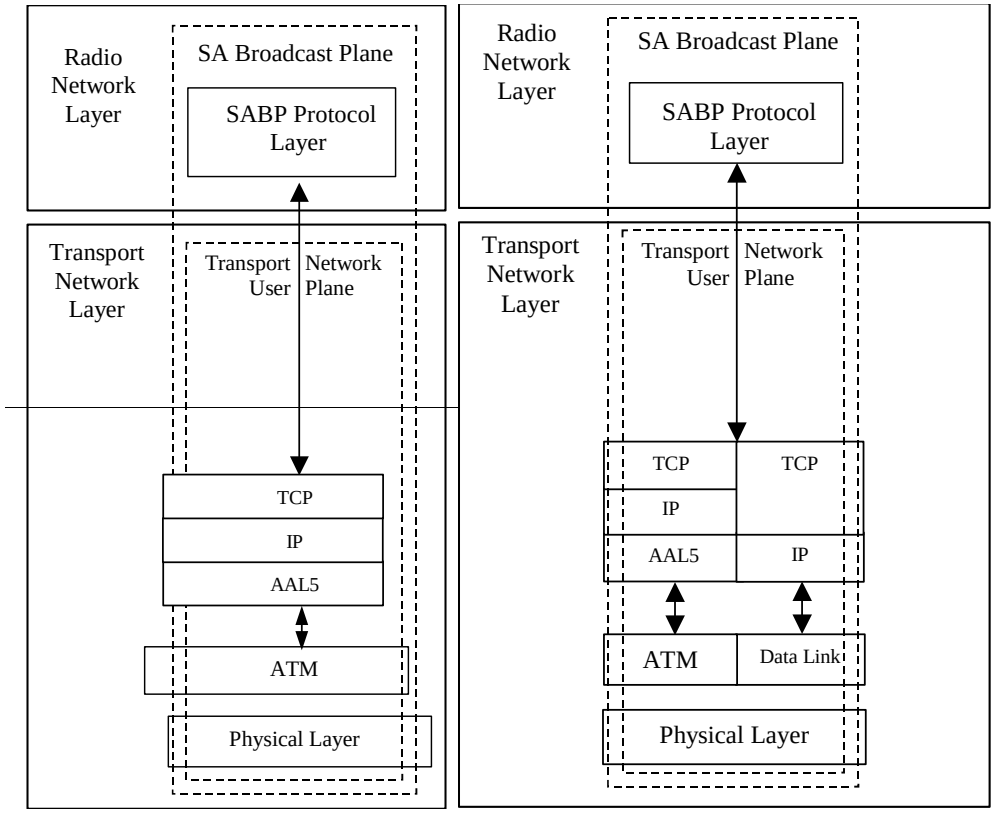


Figure 6.2: I_u Interface Protocol Structure towards Broadcast Domain

6.4 I_u-PS

Figure 6.3 shows the protocol structure for Iu-PS, following the structure described in [1].

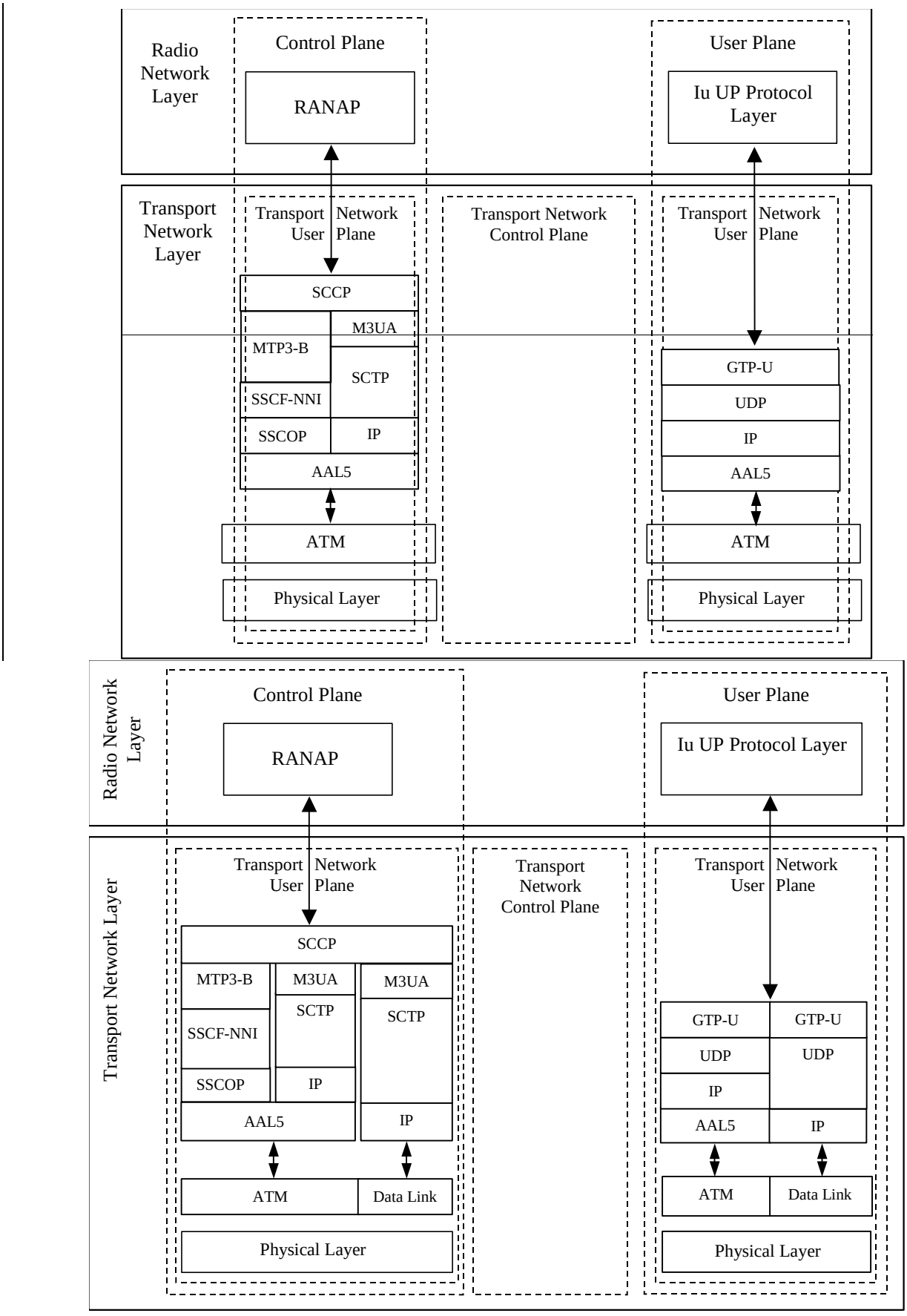


Figure 6.3: I_u Interface Protocol Structure towards PS Domain

3GPP TSG- RAN Working Group 3 Meeting #27
Orlando, FL, USA, 18nd-22th February 2002

Tdoc R3-020843

CR-Form-v4

CHANGE REQUEST

⌘ **25.411** **CR** **009** ⌘ ev **1** ⌘ Current version: **4.1.0** ⌘

*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 ☐ Radio Access Network **X** Core Network **X**

Title:	⌘	IP transport modifications to 25.411
Source:	⌘	R-WG3
Work item code:	⌘	ETRAN-IPTrans
Date:	⌘	Feb 2002
Category:	⌘	**B**
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)

Reason for change:	⌘	- IP transport option includes the capability for the use of a unsynchronised physical layer.
Summary of change:	⌘	- R1: - Work Item code added. - R0: - IP acronym has been included in the Abbreviation section. - Section 4 has been updated accordingly: cell delineation has been tagged as ATM. - The L1 description has been arranged to describe the requirements for the two types of L1 (synchronized: applicable for both ATM and IP transport options and unsynchronized: applicable for the IP transport option). - The section "services provided by L1" has been tagged to ATM only as it refers to a SAP available only in the synchronized case. Isolated impact analysis towards the previous version (same release) of the specification: There is no previous version available.
Consequences if not approved:	⌘	The use of an unsynchronised L1 for IP transport will not be allowed in R5.

Clauses affected:	⌘	3, 4.1, 4.2, 4.4,
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications

Other comments: ⌘	

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

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

3 Abbreviations

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

ATM	Asynchronous Transfer Mode
BER	Bit Error Rate
IMA	Inverse Multiplexing on ATM
IP	Internet Protocol
PDH	Plesiochronous Digital Hierarchy
PMD	Physical Media Dependent
SDH	Synchronous Digital Hierarchy
SDU	Service Data Unit
TC	Transmission Convergence

Next Change

4.1 Introduction

The main functions of Layer 1 are summarised in the following:

- Interface to physical medium;
- [ATM-Cell delineation];
- Line clock extraction capability;
- Layer 1 alarms extraction and generation;
- In-sequence delivery;
- Transmission quality control.

4.2 Layer 1 Description

4.2.1 Layer 1 Synchronised

When the Layer 1 Synchronised option is used (i.e. PDH/SDH/SONET links), the following requirements shall be met:

Layer 1 reference configuration shall be according to ITU-T Recommendation I.432.1 [6].

The physical layer is divided into:

- Physical Media Dependent (PMD) sublayer;
- Transmission Convergence (TC) sublayer defined according to ITU-T Recommendation I.432.1 [6].

The PMD shall comply with at least one of the following standards:

- ETSI STM-4 (622 Mb/s) interface according to I.432.2 [1] with optical S-1.1 interface according to G.957 [5].
- SONET STS-12c (622 Mb/s) interface according to ANSI, T1.105-1995 with optical multimode.
- SONET STS-3c (155 Mb/s) interface according to ANSI, T1.105-1995 with optical multimode.
- ETSI STM-1 (155 Mb/s) interface according to I.432.2 [1] with electrical interface (CMI) to G.703 [3].
- ETSI STM-1 (155 Mb/s) interface according to I.432.2 [1] with optical S-1.1 interface according to G.957 [5].
- ITU STS-1 (51 Mb/s) interface according to ANSI, T1.105-1995 with electrical interface.

- ITU STM-0 (51 Mb/s) interface according to ETSI/TTC with electrical interface.
- ITU STM-0 (51 Mb/s) interface according to ETSI/TTC with optical S-1.1 interface according G.957 [5].
- J2, 6.3 Mb/s interface according to Japanese standard JT-G.703 [3] and JT-G.704 [4] (75 Ohm).

NOTE: J2 requires that the ATM cells be mapped into the physical layer according to HEC based mapping in G.804.

- E2, 8Mb/s according to ETSI/ITU G.703 [3] and G.704 [4] (75 Ohm).
- E3, 34 Mb/s interface according to ETSI/ITU G.751 [15] (75 Ohm).
- T3, 45 Mb/s interface according to ANSI/ITU G.703 [3] and G.704 [4] (75 Ohm).
- E1, 2Mb/s interface balanced 120 Ohm symmetrical according to ETS 300 420, ITU-T G.704 [4] and TBR 013 (G.703) [3], and AF-PHY-0064.000 [13]
- E1, 2Mb/s according to ETSI/ITU G.703 [3] and G.704 [4] (75 Ohm), and AF-PHY-0064.000 [13].
- J1, 1.5 Mb/s interface according to Jt-431-a (100 Ohm).
- J1, 1.5 Mb/s interface according to JT-G.703 [3] and JT-G.704 [4] (110 Ohm).
- T1, 1.5 Mb/s interface according to AF-PHY-0016.000 [10] and ANSI/ITU G.703 [3] and G.704 [4] (100 Ohm).

Services provided to the upper layer shall be independent from the used underlying technology.

The support of intervening transport networks - like PDH or SDH terrestrial links, Point-to-point or Point-to-Multipoint radio links - shall not be prevented.

When using E1, T1, or J1, it shall be possible to use inverse multiplexing of ATM (IMA) [14] within suitable subsets of the physical ports on the respective Exchange Termination (ET).

The jitter and wander performance requirements on the interface shall be in accordance with either Reference [7], [8] or [9], whichever is applicable.

The synchronisation reference extracted from the I_u may be used as UTRAN synchronisation reference. A general recommendation is to supply a traceable synchronisation reference according to reference [16].

Transmission quality control shall be provided according to ITU-T Recommendation G.826 [10].

4.2.2 [IP – Layer 1 Unsynchronised]

When Layer 1 unsynchronised option is used, the following requirements shall be met:

The support of any suitable physical layer - like Ethernet L1 or other suitable point-to-point or point-to-multipoint techniques shall not be prevented.

Next Change

4.4 Services Provided by Layer 1

4.4.1 ATM Transport

The physical layer provides services to the upper layer via the Physical Service Access Point (PHY-SAP) according to ITU-T I.361 [11], as described in the following figure:

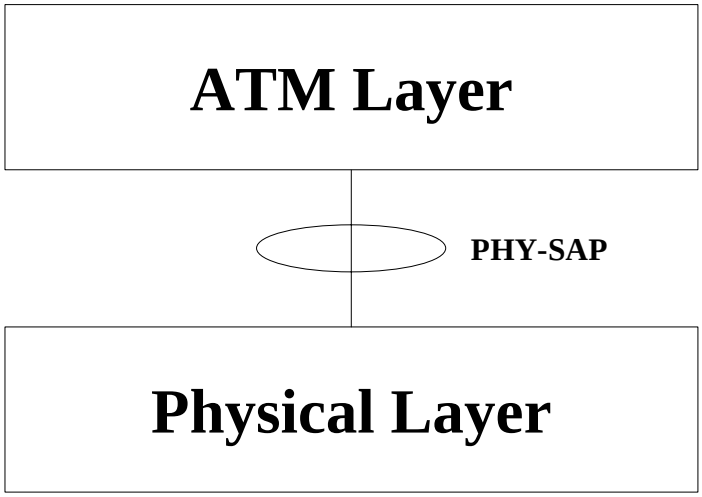

Figure 1: SAP between Physical Layer and ATM Layer

According to ITU-T I.361 [11], subclause 3.2, the following primitives are provided over PHY-SAP:

- PHY-DATA request (PHY-SDU);
- PHY-DATA indication (PHY-SDU).

The parameter PHY-SDU contains one ATM cell as defined in ITU-T I.361 [9] received or to be transferred over the physical medium.

3GPP TSG-RAN WG3 Meeting #27 ***R3-020876***
Orlando, USA, 18th – 22thFebruary, 2002

CR-Form-v3

CHANGE REQUEST

⌘ **25.412** **CR** **010** ⌘ rev **3** ⌘ Current version: **4.0.0** ⌘

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

Title:	⌘	Introduction of IP Transport option in UTRAN
Source:	⌘	R-WG3
Work item code:	⌘	ETRAN-IPTRANS
Date:	⌘	18 February 2002
Category:	⌘	**B**
Release:	⌘	REL-5

Use one of the following categories:
F *(essential 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:	⌘	IP UTRAN option is introduced in release 5.
Summary of change:	⌘	The protocol stacks on Iu-PS and Iu-CS together with the different data link options have been updated with the introduction of IP UTRAN transport option. Impact assessment towards the previous version of the specification (same release): No previous version. Compatibility Analysis towards previous release: No impact (new function).
Consequences if not approved:	⌘	IP UTRAN option cannot be used in release 5.

Clauses affected:	⌘	2,3,4,5.2,5.3		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
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.
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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.

3GPP TS 25.412 V4.0.0 (2001-03)

Technical Specification

3rd Generation Partnership Project;
Technical Specification Group Radio Access Network;
UTRAN Iu interface signalling transport
(Release 4)

Keywords
UMTS, radio

3GPP

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Contents

Foreword

This Technical Specification (TS) has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

1 Scope

The present document specifies the standards for Signalling Transport to be used across Iu Interface. Iu Interface is a logical interface between the RNC and the UTRAN Core Network. The present document describes how the RANAP signalling messages are transported over Iu.

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] ITU-T Recommendation Q.2100 (07/1994): "B-ISDN Signalling ATM Adaptation Layer (SAAL) - overview description".

[2] ITU-T Recommendation Q.2110 (07/1994): "B-ISDN ATM Adaptation Layer – Service Specific Connection Oriented Protocol (SSCOP)".

[3] ITU-T Recommendation Q.2140 (02/1995): "B-ISDN ATM adaptation layer – Service Specific Co-ordination Function for signalling at the Network Node Interface (SSCF AT NNI)".

[4] ITU-T Recommendation Q.2210 (07/1996): "Message transfer part level 3 functions and messages using the services of ITU-T Recommendation Q.2140".

[5] ITU-T Recommendation I.361 (11/1995): "B-ISDN ATM layer specification".

[6] ITU-T Recommendation I.363.5 (08/1996): "B-ISDN ATM Adaptation Layer Type 5".

[7] ITU-T Recommendation Q.711 (07/1996): "Functional description of the signalling connection control part".

[8] ITU-T Recommendation Q.712 (07/1996): "Definition and function of Signalling connection control part messages".

[9] ITU-T Recommendation Q.713 (07/1996): "Signalling connection control part formats and codes".

[10] ITU-T Recommendation Q.714 (07/1996): "Signalling connection control part procedures".

[11] ITU-T Recommendation Q.715 (07/1996): "Signalling connection control part user guide".

[12] ITU-T Recommendation Q.716 (03/1993): "Signalling Connection Control Part (SCCP) performance".

[13] IETF RFC 791 (09/1981): "Internet Protocol".

[14] IETF RFC 2684 (09/1999): "Multiprotocol Encapsulation over ATM Adaptation Layer 5".

[15] IETF RFC 2225 (04/1998): "Classical IP and ARP over ATM".

[16] IETF RFC 2960 (10/2000): "Stream Control Transmission Protocol".

[17] G. Sidebottom et al, "SS7 MTP3 – User Adaptation Layer", draft-ietf-sigtran-m3ua-~~04~~11.txt (Work In Progress), IETF, ~~September~~January 200~~2~~0.

[18] 3GPP TS 25.410: "UTRAN Iu Interface: General Aspects and Principles".

[19] IETF STD 51, RFC 1661, "The Point-To-Point Protocol (PPP)", July 1994

[20] IETF STD 51, RFC 1662 "PPP in HDLC-like Framing", July 1994.

[21] IETF RFC 2507, "IP header compression", February 1999.

[22] IETF RFC 1990 "The PPP Multilink Protocol (MP)".

[23] IETF RFC 2686 " The Multi-Class Extension to Multi-Link PPP". September99

[24] IETF RFC 2509, "IP Header Compression over PPP", February 1999.

[25] IETF RFC 2460 "Internet Protocol, Version 6 (Ipv6) Specification".

[26] IETF RFC 2474 "Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers " December 1998

[27] IETF RFC 768 "User Datagram Protocol", (8/1980)

[28] IETF RFC 3031 "MPLS", January 2001

[29] IETF RFC 3153 "PPPmultiplexing", August 2001

3 Abbreviations

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

AAL	ATM Adaptation Layer
AAL2	ATM Adaptation Layer 2
AAL5	ATM Adaptation Layer 5
ATM	Asynchronous Transfer Mode
CS	Circuit Switched
DiffServ	Differentiated Services
HDLC	High Level Data Link Control
IntServ	Integrated Services
IP	Internet Protocol
IPv4	Internet Protocol, version 4
IPv6	Internet Protocol, version 6
M3UA	SS7 MTP3 User Adaptation Layer
ML/MC-PPP	Muti-Link/Multi-Class PPP
MPLS	Multiprotocol Label Switching
MTP3-B	Message Transfer Part
PPP	Point-to-Point protocol
PPPMux	PPP Multiplexing
PS	Packet Switched
QoS	Quality of Service
RANAP	Radio Access Network Application Part
RNC	Radio Network Controller
SAAL-NNI	Signalling ATM Adaptation Layer – Network Node Interface
SCCP	Signalling Connection Control Part
SCTP	Stream Control Transmission Protocol
SSCF	Service Specific Co-ordination Function
SSCOP	Service Specific Connection Oriented Protocol
UDP	User Datagram Protocol

4 Data Link~~ATM~~ Layer

4.1 ATM Transport Option~~General~~

ATM shall be used in the radio network control plane according to I.361 [5]. The structure of the cell header used in the UTRAN Iu interface is the cell header format and encoding at NNI (see Figure 3/I.361).

4.2 IP Transport Option

An RNC using IP transport option shall support the PPP protocol with HDLC framing [19], [20].

Note: This does not preclude the single implementation and use of any other data link layer protocol (e.g. PPPMux[29]/AAL5/ATM, PPP/AAL2/ATM, Ethernet, MPLS[28]/ATM, etc.) fulfilling the UTRAN requirements toward the upper Layers.

An RNC using IP transport option having interfaces connected via slow bandwidth PPP links like E1/T1/J1 shall also support IP Header Compression [21] and the PPP extensions ML/MC-PPP [22], [23]. In this case, the negotiation of header compression [21] over PPP shall be performed via [24].

5 RANAP Signalling Bearer

5.1 Introduction

This subclause specifies the Signalling Bearer protocol stack that supports the RANAP signalling protocol.

The following requirements on the Signalling Bearer can be stated:

- provide reliable transfer of control plane signalling messages in both connectionless mode and connection-oriented mode;
- provide separate independent connections for distinguishing transactions with individual UE's;
- supervise the 'UE connections' and provide connection status information to the Upper Layers for individual UE's;
- provide networking and routing functions;
- provide redundancy in the signalling network;
- provide load sharing.

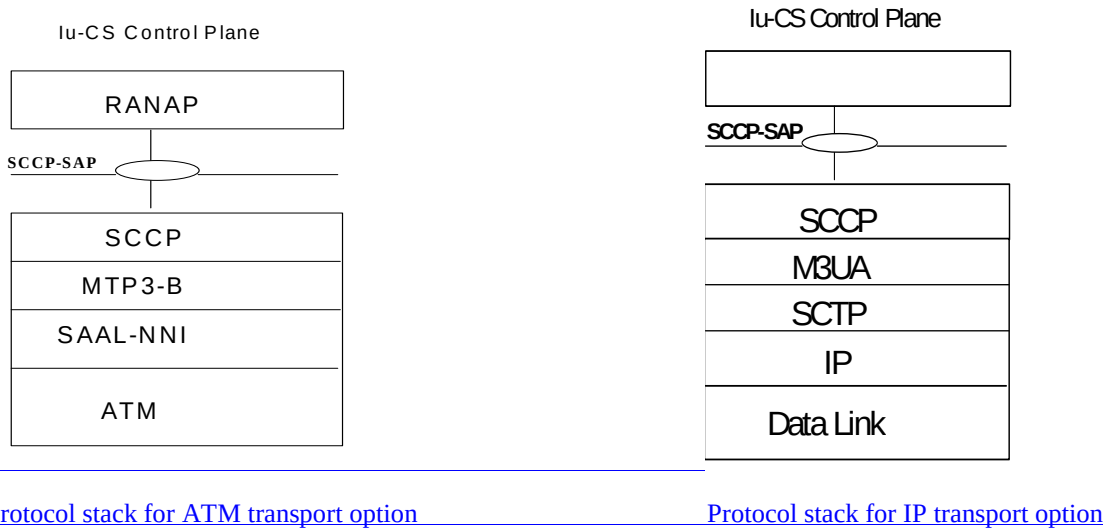
5.2 Signalling Bearer for Circuit Switched Domain

5.2.1 Protocol Stack for the CS Domain

The protocol stacks for the CS Domain are shown in figure 1. The standard allows operators to choose one out of two standardised protocol suites for transport of SCCP messages.

Figure 1 shows, for the Iu IP CS domain, the point at which the service primitives are invoked. A single SAP is defined independently of the signalling bearer. The SAP provides the SCCP primitives. The figure is not intended to constrain the architecture.

The following figure 1 also illustrates the protocol model having Broadband Signalling System No.7 as the signalling bearer for RANAP over the Iu interface that fulfils the requirements. Figure 1 shows, for the CS domain, the point at which the service primitives are invoked. The SAP provides the SCCP primitives.



Protocol stack for ATM transport option Protocol stack for IP transport option

Figure 1: SAP between RANAP and its transport for Iu - CS Domain

5.2.2 ATM Transport Option

1. **SCCP** [7] provides connectionless service, class 0, connection oriented service, class 2, separation of the connections mobile by mobile basis on the connection oriented link and establishment of a connection oriented link mobile by mobile basis. SCCP shall be used as specified in [18].
2. **MTP3-B** [4] provides message routing, discrimination and distribution (for point-to-point link only), signalling link management load sharing and changeover/back between link within one link-set. The need for multiple link-sets is precluded. MTB3-B shall comply with [4].
3. **SAAL-NNI** [1] consists of the following sub-layers: - **SSCF** [3], - **SSCOP** [2] and – **AAL5** [6]. The SSCF maps the requirements of the layer above to the requirements of SSCOP. Also SAAL connection management, link status and remote processor status mechanisms are provided. SSCOP provides mechanisms for the establishment and release of connections and the reliable exchange of signalling information between signalling entities. Adapts the upper layer protocol to the requirements of the Lower ATM cells. It shall be possible to use SAAL-NNI connections pre-configured as PVCs for signalling transport on the Iu-Interface.
4. **ATM** [5].

5.2.3 IP Transport Option

1. **SCCP** , see subclause 5.2.2.

2. **M3UA,** refers to the SCCP adaptation layer "SS7 MTP3 – User Adaptation Layer " [17] also developed by the Sigtran working group of the IETF.

3. **SCTP** refers to the Stream Control Transmission Protocol [16] developed by the Sigtran working group of the IETF for the purpose of transporting various signalling protocols over IP networks.

3. **IP**. IPv6 shall be supported according to [25]. IPv4 support [13] is optional.

   Note: This does not preclude the single implementation and use of Ipv4.

   Due to the possible transition from IPv4 to IPv6 the IP dual stack support is recommended.

An RNC using IP transport option shall support Diffserv code point marking [26]. The Diffserv code point may be determined from the application parameters.

~~5.2.1 Protocol Services~~

~~5.2.1.1 SCCP Services~~

~~SCCP shall be used as specified in [18].~~

~~5.2.1.2 MTP3-B Services~~

~~MTB3-B shall comply with [4].~~

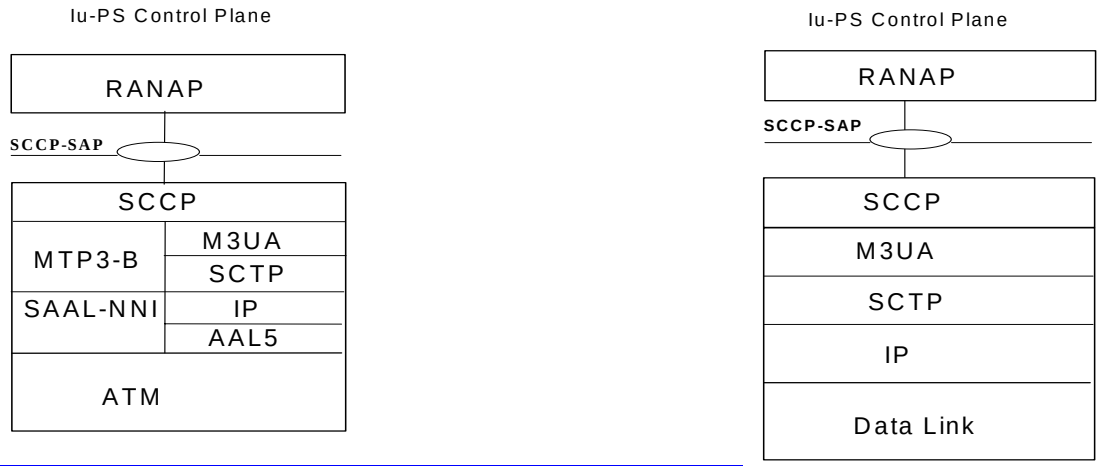
~~5.2.1.3 SAAL-NNI Services~~

~~It shall be possible to use SAAL-NNI connections pre-configured as PVCs for signalling transport on the Iu-Interface.~~

5.3 Signalling Bearer for Packet Switched Domain

5.3.1 Protocol Stack for the PS Domain

The protocol stacks for the PS Domain is shown in figure 2. The standard allows operators to choose one out of ~~two~~three standardised protocol ~~to~~ suites for transport of SCCP messages.



Protocol stacks for ATM transport options Protocol stack for IP transport option

Figure 2: SAP between RANAP and its transport for the Iu –IP domain

Figure 2 shows, for the Iu IP domain, the point at which the service primitives are invoked. A single SAP is defined independently of the signalling bearer. The SAP provides the SCCP primitives. The figure is not intended to constrain the architecture.

5.3.2 ATM Transport Option 1

1. **SCCP** [7] provides connectionless service, class 0, connection oriented service, class 2, separation of the connections mobile by mobile basis on the connection oriented link and establishment of a connection oriented link mobile by mobile basis. The SCCP shall be used as specified in [18].

2. **MTP3-B** [4] provides message routing, discrimination and distribution (for point-to-point link only), signalling link management load sharing and changeover/back between link within one link-set. The need for multiple link-sets is precluded. MTB3-B shall comply with [4].

3. **SAAL-NNI** [1] consists of the following sub-layers: - **SSCF-NNI** [3], - **SSCOP** [2] and – **AAL5** [6]. The SSCF maps the requirements of the layer above to the requirements of SSCOP. Also SAAL connection management, link status and remote processor status mechanisms are provided. SSCOP provides mechanisms for the establishment and release of connections and the reliable exchange of signalling information between signalling entities. Adapts the upper layer protocol to the requirements of the Lower ATM cells. It shall be possible to use SAAL-NNI connections pre-configured as PVCs for signalling transport on the Iu-interface.

4. **ATM** [5].

5.3.3 ATM Transport Option 2

1. **SCCP** , see subclause 5.3.2.

2. **M3UA** refers to the SCCP adaptation layer "SS7 MTP3 – User Adaptation Layer " [17] also developed by the Sigtran working group of the IETF. An RNC equipped with the M3UA stack option shall have client functionality. This enables the RNC to report to the SGSN when it is a newly introduced entity in the network.

3~~5~~. **SCTP** ~~[16]~~ refers to the Stream Control Transmission Protocol [16] developed by the Sigtran working group of the IETF for the purpose of transporting various signalling protocols over IP networks. The multi-homing services of SCTP shall be required at both ends of an SCTP-association to enable transport redundancy and reliability. ~~**M3UA** refers to the SCCP adaptation layer "SS7 MTP3 – User Adaptation Layer " [17] also developed by the Sigtran working group of the IETF.~~

4. **IP** [13] over ATM is defined in [14] and [15].

5. **AAL5** refers to [6]. It shall be possible to use AAL5 connections pre-configured as PVCs for signalling transport on the Iu-interface.

~~6. **IP** [13] over ATM is defined in [14] and [15].~~

5.3.4 IP Transport Option

1. **SCCP** , see subclause 5.3.2.

2. **M3UA**, refers to the SCCP adaptation layer "SS7 MTP3 – User Adaptation Layer " [17] also developed by the Sigtran working group of the IETF.

3. **SCTP**, refers to the Stream Control Transmission Protocol [16] developed by the Sigtran working group of the IETF for the purpose of transporting various signalling protocols over IP networks.

4. **IP**. IPv6 shall be supported according to [25]. IPv4 support [13] is optional.

   Note: This does not preclude the single implementation and use of IPv4.

   Due to the possible transition from IPv4 to IPv6, the IP dual stack support is recommended.

An RNC using IP transport option shall support Diffserv code point marking [26]. The Diffserv code point may be determined from the application parameters.

~~5.3.2 Protocol Services~~

~~5.3.2.1 SCCP Services~~

~~SCCP shall be used as specified in [18].~~

~~5.3.2.2 MTP3-B Services~~

~~MTB3-B shall comply with [4].~~

~~5.3.2.3 SAAL-NNI Services~~

~~It shall be possible to use SAAL-NNI connections pre-configured as PVCs for signalling transport on the Iu-Interface.~~

~~5.3.2.4 M3UA Services~~

~~An RNC equipped with the M3UA stack option shall have client functionality. This enables the RNC to report to the SGSN when it is a newly introduced entity in the network.~~

~~5.3.2.5 SCTP Services~~

~~The multi-homing services of SCTP shall be required at both ends of an SCTP-association to enable transport redundancy and reliability.~~

~~5.3.2.6 AAL5 Services~~

~~It shall be possible to use AAL5 connections pre-configured as PVCs for slgnalling transport on the Iu-Interface.~~

5.4 Services Provided by the Signalling Bearer

When considering the requirements that the upper layers, i.e. RANAP, have on the Signalling Bearer, there are a number of services it has to provide and a number of functions to perform. These numbers of services that the signalling bearer shall provide, to the upper layers, are stated in references [7] to [12].

Annex A (informative): Change History

Change history					
TSG RAN#	Version	CR	Tdoc RAN	New Version	Subject/Comment
RAN_04	-	-	-	3.0.0	Approved at TSG RAN #4 by correspondence and placed under Change Control
RAN_05	3.0.0	-	-	3.1.0	Approved at TSG RAN #5
RAN_06	3.1.0	001	RP-99744	3.2.0	Approved at TSG RAN #6
RAN_07	3.2.0	-	RP-000077	3.3.0	Approved at TSG RAN #7 (2 approved CRs)
RAN_07	3.3.0	-	RP-000233	3.4.0	Approved at TSG RAN #8
RAN_09	3.4.0	005	RP-000372	3.5.0	Approved at TSG RAN #9
RAN_10	3.5.0	006 007 008	RP-000611	3.6.0	Approved at TSG RAN #10

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
March 01	11	-	-		Approved at TSG RAN #11 and placed under Change Control	3.6.0	4.0.0

3GPP TSG-RAN WG3 Meeting #27 ***R3-020866***
Orlando, USA, 18th – February22th, 2002

CR-Form-v3

CHANGE REQUEST

⌘ **25.413** **CR** **419** ⌘ rev **3** ⌘ Current version: **4.3.0** ⌘

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

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

Title:	⌘	Introduction of IP Transport option in UTRAN
Source:	⌘	R-WG3
Work item code:	⌘	ETRAN-IPTRANS
Date:	⌘	18 February 2002
Category:	⌘	**B**
Release:	⌘	REL-5

Use one of the following categories:
F *(essential 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:	⌘	IP UTRAN option is introduced in release 5.
Summary of change:	⌘	The RAB assignment and relocation procedures take into account the potential use or not of an ALCAP on Iu-CS. The associated transport layer address and Iu transport association have been updated. Impact assessment towards the previous version of the specification (same release): No previous version. Compatibility Analysis towards previous release: No impact.
Consequences if not approved:	⌘	IP UTRAN option cannot be used in release 5.

Clauses affected:	⌘	8.2, 8.7, 9.2.2
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

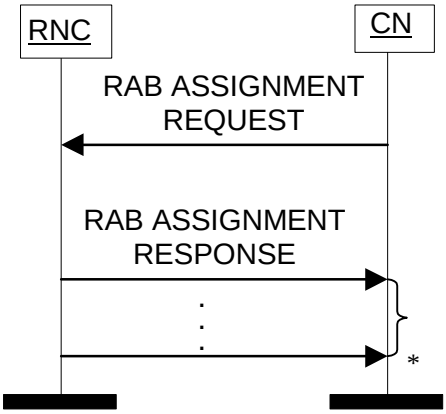
3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

8.2 RAB Assignment

8.2.1 General

The purpose of the RAB Assignment procedure is to establish new RABs and/or to enable modifications and/or releases of already established RABs for a given UE. The procedure uses connection oriented signalling.

8.2.2 Successful Operation



* it can be several responses

Figure 1: RAB Assignment procedure. Successful operation.

The CN shall initiate the procedure by sending a RAB ASSIGNMENT REQUEST message. When sending the RAB ASSIGNMENT REQUEST message, the CN shall start the $T_{RABAssgt}$ timer.

The CN may request UTRAN to:

- establish,
- modify,
- release

one or several RABs with one RAB ASSIGNMENT REQUEST message.

The CN shall include in the RAB ASSIGNMENT REQUEST message at least one request to either establish/modify or release a RAB.

The message shall contain the information required by the UTRAN to build the new RAB configuration, such as:

- list of RABs to establish or modify with their bearer characteristics;
- list of RABs to release.

For each RAB requested to establish, the message shall contain:

- RAB ID.
- NAS Synchronisation Indicator (only when available).
- RAB parameters (including e.g. Allocation/Retention Priority).
- User Plane Information (i.e required User Plane Mode and required UP Mode Versions).
- Transport Layer Information.

- PDP Type Information (only for PS)
- Data Volume Reporting Indication (only for PS).
- DL GTP-PDU sequence number (only when GTP-PDU sequence number is available in cases of handover from GPRS to UMTS or when establishing a RAB for an existing PDP context).
- UL GTP-PDU sequence number (only when GTP-PDU sequence number is available in cases of handover from GPRS to UMTS or when establishing a RAB for an existing PDP context).
- DL N-PDU sequence number (only when N-PDU sequence number is available in case of handover from GPRS to UMTS).
- UL N-PDU sequence number (only when N-PDU sequence number is available in case of handover from GPRS to UMTS).

For each RAB requested to modify, the message may contain:

- RAB ID (mandatory).
- NAS Synchronisation Indicator.
- RAB parameters.
- Transport Layer Information .
- User Plane Information.

The *Transport Layer Information* IE may only be present if at least one more IE than the *RAB ID* IE and the *NAS Synchronisation Indicator* IE is also included.

At a RAB modification, the *RAB parameter* IE and the *User Plane Information* IE shall be present in RAB ASSIGNMENT REQUEST message only when any previously set value is requested to be modified.

If, for a RAB requested to be modified, one (or more) of these IEs except *RAB ID* IE are not present in RAB ASSIGNMENT REQUEST message the RNC shall continue to use the value(s) currently in use for the not present IEs.

For each RAB request to release, the message shall contain:

- RAB ID.
- Cause.

Upon reception of the RAB ASSIGNMENT REQUEST message UTRAN shall execute the requested RAB configuration. The CN may indicate that RAB QoS negotiation is allowed for certain RAB parameters and in some cases also which alternative values to be used in the negotiation.

The same RAB ID shall only be present once in the whole RAB ASSIGNMENT REQUEST message.

The RAB ID shall identify uniquely the RAB for the specific CN domain for the particular UE, which makes the RAB ID unique over the Iu connection on which the RAB ASSIGNMENT REQUEST message is received. When a RAB ID already in use over that particular Iu instance is used, the procedure is considered as modification of that RAB.

The RNC shall pass the contents of *RAB ID* IE to the radio interface protocol for each RAB requested to establish or modify.

The RNC shall establish or modify the resources according to the values of the *Allocation/Retention Priority* IE (priority level, pre-emption indicators, queuing) and the resource situation as follows:

- The RNC shall consider the priority level of the requested RAB, when deciding on the resource allocation.
- If the requested RAB is allowed for queuing and the resource situation so requires, RNC may place the RAB in the establishment queue.
- The priority levels and the pre-emption indicators may (singularly or in combination) be used to determine whether the RAB assignment has to be performed unconditionally and immediately. If the requested RAB is marked as "may trigger pre-emption" and the resource situation so requires, RNC may trigger the pre-emption

procedure which may then cause the forced release of a lower priority RAB which is marked as "pre-emptable". Whilst the process and the extent of the pre-emption procedure is operator dependent, the pre-emption indicators, if given in the RAB ASSIGNMENT REQUEST message, shall be treated as follows:

1. The values of the last received *Pre-emption Vulnerability* IE and *Priority Level* IE shall prevail.
2. If the *Pre-emption Capability* IE is set to "may trigger pre-emption", then this allocation request may trigger the pre-emption procedure.
3. If the *Pre-emption Capability* IE is set to "shall not trigger pre-emption", then this allocation request shall not trigger the pre-emption procedure.
4. If the *Pre-emption Vulnerability* IE is set to "pre-emptable", then this connection shall be included in the pre-emption process.
5. If the *Pre-emption Vulnerability* IE is set to "not pre-emptable", then this connection shall not be included in the pre-emption process.
6. If the *Priority Level* IE is set to "no priority" the given values for the *Pre-emption Capability* IE and *Pre-emption Vulnerability* IE shall not be considered. Instead the values "shall not trigger pre-emption" and "not pre-emptable" shall prevail.

- If the *Allocation/Retention Priority* IE is not given in the RAB ASSIGNMENT REQUEST message, the allocation request shall not trigger the pre-emption process and the connection may be pre-empted and considered to have the value "lowest" as priority level. Moreover, queuing shall not be allowed.
- The UTRAN pre-emption process shall keep the following rules:
  1. UTRAN shall only pre-empt RABs with lower priority, in ascending order of priority.
  2. The pre-emption may be done for RABs belonging to the same UE or to other UEs.

If the *NAS Synchronisation Indicator* IE is contained in the RAB ASSIGNMENT REQUEST message, the RNC shall pass it to the radio interface protocol for the transfer to the UE.

If the RAB ASSIGNMENT REQUEST message includes the *PDP Type Information* IE, the UTRAN may use this to configure any compression algorithms.

If the *Service Handover* IE is included, this tells if the RAB

- should be handed over to GSM, i.e. from NAS point of view, the RAB should be handed over to GSM as soon as possible although the final decision whether to perform a handover to GSM is still made in UTRAN.
- should not be handed over to GSM, i.e. from NAS point of view, the RAB should remain in UMTS as long as possible although the final decision whether to perform a handover to GSM is still made in UTRAN.
- shall not be handed over to GSM, i.e. the RAB shall never be handed over to GSM. This means that UTRAN shall not initiate handover to GSM for the UE unless the RABs with this indication have first been released with the normal release procedures.

The value of the *Service Handover* IE is valid throughout the lifetime of the RAB or until changed by a RAB modification.

The *Service Handover* IE shall only influence decisions made regarding UTRAN initiated handovers.

If the *Service Handover* IE is not included, the decision whether to perform a handover to GSM is only an internal UTRAN matter.

UTRAN shall report to CN, in the first RAB ASSIGNMENT RESPONSE message, the result for all the requested RABs, such as:

- List of RABs successfully established or modified.
- List of RABs released.
- List of RABs queued.

- List of RABs failed to establish or modify.
- List of RABs failed to release.

The same RAB ID shall only be present once in the whole RAB ASSIGNMENT RESPONSE message.

For each RAB successfully established towards the PS domain, the RNC shall include the *Transport Layer Address* IE and the *Iu Transport Association* IE in the RAB ASSIGNMENT RESPONSE message.

For each RAB successfully modified or released towards the PS domain, for which data volume reporting has been requested, the RNC shall include the *DL Data Volumes* IE in the RAB ASSIGNMENT RESPONSE message.

For each RAB successfully released towards the PS domain, the RNC shall include in the RAB ASSIGNMENT RESPONSE message, if available, the *DL GTP-PDU Sequence Number* IE and the *UL GTP-PDU Sequence Number* IE, if the release was initiated by UTRAN.

The RNC shall report in the RAB ASSIGNMENT RESPONSE message at least one RAB

- setup/modified or
- released or
- queued or
- failed to setup/modify or
- failed to release.

If any alternative RAB parameter values have been used when establishing or modifying a RAB, these RAB parameter values shall be included in the RAB ASSIGNMENT RESPONSE message.

For the CS domain, when an ALCAP is used, UTRAN shall report the outcome of a specific RAB to establish or modify only after the transport network control plane signalling, which is needed for RAB establishment or modification, has been executed. At a RAB establishment, the transport network control plane signalling shall use the *Transport Layer Address* IE and *Iu Transport Association* IE. At a RAB modification, it is up to the RNC to decide if any transport network control plane signalling shall be performed or if the already existing transport bearer shall be used. If the RNC decides to establish a new transport bearer, the transport network control plane signalling shall use the possibly included *Transport Layer Address* IE and *Iu Transport Association* IE. Then the switch over to this new transport bearer shall be done immediately after transport bearer establishment and initialisation of the user plane mode. If the RNC decides to modify the already existing transport bearer, the transport network control plane signalling shall not use the possibly included *Transport Layer Address* IE and *Iu Transport Association* IE. That is, re-binding with *Iu Transport Association* IE shall not be done.

For the PS domain or for the CS domain when an ALCAP is not used, f~~F~~or each RAB successfully modified towards the PS domain, if the RNC has changed the *Transport Layer Address* IE and/or the *Iu Transport Association* IE, it shall include the new value(s) in the RAB ASSIGNMENT RESPONSE message.

Before reporting the successful outcome of a specific RAB to establish or modify, the RNC shall have executed the initialisation of the user plane mode as requested by the CN in the *User Plane Mode* IE. If the RNC is requested to execute the user plane initialisation for the *User Plane Mode* "support mode for predefined SDU sizes", it shall initialise all RAB subflow combinations on Iu as indicated in the *RAB parameters* IE. If not all of the indicated RAB subflow combinations can be initialised the RAB Assignment fails with the cause value "RNC unable to establish all RFCs". The user plane initialisation is described in ref.[6].

In case of establishment of a RAB for the PS domain, the CN must be prepared to receive user data before the RAB ASSIGNMENT RESPONSE message has been received.

If none of the RABs have been queued, the CN shall stop timer $T_{RABAssgt.}$ And the RAB Assignment procedure terminates. In that case, the procedure shall also be terminated in UTRAN.

When the request to establish or modify one or several RABs is put in the queue, UTRAN shall start the timer $T_{QUEUING}$. This timer specifies the maximum time for queuing of the request of establishment or modification. The same timer $T_{QUEUING}$ is supervising all RABs being queued.

For each RAB that is queued the following outcomes shall be possible:

- successfully established or modified;
- failed to establish or modify;
- failed due to expiry of the timer $T_{QUEUING}$.

For the queued RABs, indicated in the first RAB ASSIGNMENT RESPONSE message, UTRAN shall report the outcome of the queuing for every RAB individually or for several RABs in subsequent RAB ASSIGNMENT RESPONSE message(s). This is left to implementation. UTRAN shall stop $T_{QUEUING}$ when all RABs have been either successfully established or modified or failed to establish or modify. The RAB Assignment procedure is then terminated both in CN and UTRAN when all RABs have been responded to.

When CN receives the response that one or several RABs are queued, CN shall expect UTRAN to provide the outcome of the queuing function for each RAB before expiry of the $T_{RABAssgt}$ timer. In case the timer $T_{RABAssgt}$ expires, the CN shall consider the RAB Assignment procedure terminated and the RABs not reported shall be considered as failed.

In the case the timer $T_{QUEUING}$ expires, the RAB Assignment procedure terminates in UTRAN for all queued RABs, and UTRAN shall respond for all of them in one RAB ASSIGNMENT RESPONSE message. The RAB Assignment procedure shall also be terminated in CN.

In case a request to modify or release a RAB contains the RAB ID of a RAB being queued, the RAB shall be taken out of the queue and treated according to the second request. The first request shall be responded to as a RAB failed to setup or modify with the cause value "Request superseded".

When UTRAN reports unsuccessful establishment/modification of a RAB, the cause value should be precise enough to enable the core network to know the reason for unsuccessful establishment/modification. Typical cause values are: "Requested Traffic Class not Available", "Invalid RAB Parameters Value", "Requested Maximum Bit Rate not Available", "Requested Maximum Bit Rate for DL not Available", "Requested Maximum Bit Rate for UL not Available", "Requested Guaranteed Bit Rate not Available", "Requested Guaranteed Bit Rate for DL not Available", "Requested Guaranteed Bit Rate for UL not Available", "Requested Transfer Delay not Achievable", "Invalid RAB Parameters Combination", "Condition Violation for SDU Parameters", "Condition Violation for Traffic Handling Priority", "Condition Violation for Guaranteed Bit Rate", "User Plane Versions not Supported", "Iu UP Failure", “Iu Transport Connection Failed to Establish”.

If the RAB ID of a RAB requested to be released is unknown in the RNC, this shall be reported as a RAB failed to release with the cause value "Invalid RAB ID".

The RNC may indicate an impending directed retry attempt to GSM by sending RAB ASSIGNMENT RESPONSE message with a RAB ID included in the list of RABs failed to setup and a cause value of “Directed Retry”.

The RNC shall be prepared to receive a RAB ASSIGNMENT REQUEST message containing a *RABs To Be Released* IE at any time and shall always reply to it. If there is an ongoing RAB Assignment procedure for a RAB indicated within the *RABs To Be Released* IE, the RNC shall discard the preceding RAB Assignment procedure for that specific RAB, release any related resources and report the released RAB within the RAB ASSIGNMENT RESPONSE message.

After sending RAB ASSIGNMENT RESPONSE message containing RAB ID within the *RABs Released* IE, the RNC shall be prepared to receive new establishment request of a RAB identified by the same RAB ID

8.7 Relocation Resource Allocation

8.7.1 General

The purpose of the Relocation Resource Allocation procedure is to allocate resources from target RNS for a relocation of SRNS. Procedure shall be co-ordinated in all Iu signalling connections existing for the UE. The procedure uses connection oriented signalling.

8.7.2 Successful Operation

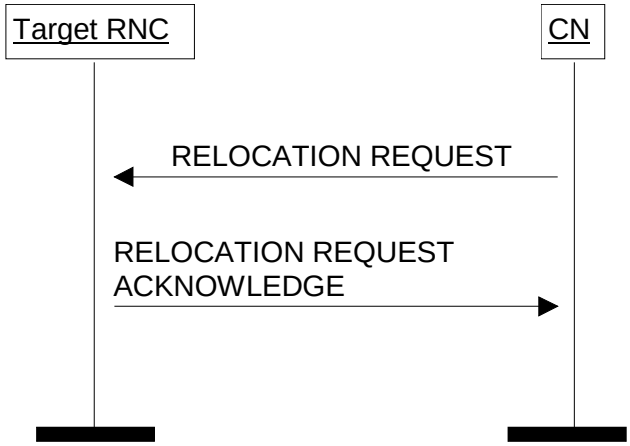


Figure 2: Relocation Resource Allocation procedure. Successful operation.

The CN shall initiate the procedure by generating RELOCATION REQUEST message. In a UTRAN to UTRAN relocation, this message shall contain the information (if any) required by the UTRAN to build the same RAB configuration as existing for the UE before the relocation.

The CN shall transmit the RELOCATION REQUEST message to target RNC and the CN shall start the timer $T_{RELOCalloc.}$

Upon reception of the RELOCATION REQUEST message, the target RNC shall initiate allocation of requested resources.

The RELOCATION REQUEST message shall contain following IEs

- *Permanent NAS UE Identity* (if available)
- *Cause*
- *CN Domain Indicator*
- *Source RNC To Target RNC Transparent Container*
- *Iu Signalling Connection Identifier*
- *Integrity Protection Information* (if available)

For each RAB requested to relocate, the message shall contain following IEs:

- *RAB-ID*
- *NAS Synchronisation Indicator* (if the relevant NAS information is provided by the CN)
- *RAB parameters*
- *User Plane Information*

- *Transport Layer Address*
- *Iu Transport Association*
- *Data Volume Reporting Indication* (only for PS)
- *PDP Type Information* (only for PS)

The RELOCATION REQUEST message may include following IEs:

- *Encryption Information*

For each RAB requested to relocate the message may include following IEs:

- *Service Handover*

The following information elements received in RELOCATION REQUEST message require the same special actions in the RNC as specified for the same IEs in the RAB Assignment procedure:

- RAB-ID
- User plane Information
- Priority level, queuing and pre-emption indication
- Service Handover

If the RELOCATION REQUEST message includes the *PDP Type Information* IE, the UTRAN may use this IE to configure any compression algorithms.

The *Cause* IE shall contain the same value as the one received in the related RELOCATION REQUIRED message.

The *Iu Signalling Connection Identifier* IE contains an Iu signalling connection identifier which is allocated by the CN, and which the RNC is required to store and remember for the duration of the Iu connection.

Following additional actions shall be executed in the target RNC during Relocation Resource Allocation procedure:

If the *Relocation Type* IE is set to "UE involved in relocation of SRNS":

- The target RNC may accept a requested RAB only if the RAB can be supported by the target RNC.
- Other RABs shall be rejected by the target RNC in the RELOCATION REQUEST ACKNOWLEDGE message with an appropriate value for *Cause* IE, e.g. "Unable to Establish During Relocation".
- The target RNC shall include information adapted to the resulting RAB configuration in the target to source RNC transparent container to be included in the RELOCATION REQUEST ACKNOWLEDGE message sent to the CN. If the target RNC supports triggering of the Relocation Detect procedure via the Iur interface, the RNC shall assign a d-RNTI for the context of the relocation and include it in the container. If two CNs are involved in the relocation of SRNS, the target RNC may, however, decide to send the container to only one CN.

If the *Relocation Type* IE is set to "UE not involved in relocation of SRNS":

- The target RNC may accept a RAB only if the radio bearer(s) for the RAB either exist(s) already, and can be used for the RAB by the target RNC, or does not exist before the relocation but can be established in order to support the RAB in the target RNC.
- If existing radio bearers are not related to any RAB that is accepted by target RNC, the radio bearers shall be ignored during the relocation of SRNS and the radio bearers shall be released by radio interface protocols after completion of relocation of SRNS.

After all necessary resources for accepted RABs including the initialised Iu user plane, are successfully allocated, the target RNC shall send RELOCATION REQUEST ACKNOWLEDGE message to the CN.

For each RAB successfully setup the RNC shall include following IEs:

- *RAB ID*
- *Transport Layer Address* (~~only for Ps~~when no ALCAP has been used)

- *Iu Transport Association* (~~only for Ps~~when no ALCAP has been used)

For each RAB the RNC is not able to setup during Relocation Resource Allocation the RNC shall include the *RAB ID* IE and the *Cause* IE within the *RABs Failed To Setup* IE. The resources associated with the RABs indicated as failed to set up shall not be released in the CN until the relocation is completed. This is in order to make a return to the old configuration possible in case of a failed or cancelled relocation.

The RELOCATION REQUEST ACKNOWLEDGE message sent to the CN shall, if applicable and if not sent via the other CN domain, include the *Target RNC To Source RNC Transparent Container* IE. This container shall be transferred by CN to the source RNC or the external relocation source while completing the Relocation Preparation procedure.

If the *Integrity Protection Information* IE was included in the RELOCATION REQUEST message, the RNC shall include the *Chosen Integrity Protection Algorithm* IE within the RELOCATION REQUEST ACKNOWLEDGE message, if the *Encryption Information* IE was included, the RNC shall include the *Chosen Encryption Algorithm* IE.

If one or more of the RABs that the target RNC has decided to support can not be supported by the CN, then these failed RABs shall not be released towards the target RNC until the relocation is completed.

If the *NAS Synchronisation Indicator* IE is contained in the RELOCATION REQUEST message, the target RNC shall pass it to the source RNC within the *RRC Container* IE contained in the *Target RNC to Source RNC Transparent Container* IE.

Transmission and reception of RELOCATION REQUEST ACKNOWLEDGE message terminates the procedure in the UTRAN and the CN respectively.

9.2.2 Transport Network Layer Related IEs

9.2.2.1 Transport Layer Address

For the PS domain, or for the CS domain in order to allow transport bearer establishment without ALCAP, this information element is an IP address to be used for the user plane transport. For the CS domain, in case of transport bearer establishment with ALCAP, this address is to be used for Transport Network Control Plane signalling to set up the transport bearer.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Transport Layer Address	M		BIT STRING (1..160, …)	The Radio Network layer is not supposed to interpret the address information. It should pass it to the transport layer for interpretation. For details on the Transport Layer Address, see ref. [9].

9.2.2.2 Iu Transport Association

This element is used to associate the RAB and the corresponding transport bearer. For the CS domain this information element is either the Binding ID to be used in Transport Network Control Plane signalling during set up of the transport bearer or it contains the UDP port in order to allow transport bearer establishment without ALCAP. In PS domain this information element is the GTP Tunnel Endpoint Identifier.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Choice **Iu Transport Association**				
>GTP TEID			OCTET STRING (4)	
>Binding ID			OCTET STRING (4)	If the Binding ID includes an UDP port, the UDP port is included in octet 1 and 2. The first octet of the UDP port field shall be included in the first octet of the Binding ID.

3GPP TSG-RAN WG3 #27
Orlando, US, 18th – 22nd February 2002

Tdoc R3-020882

CR-Form-v5

CHANGE REQUEST

⌘ **25.414** **CR** **030** ⌘ **rev** **3** ⌘ Current version: **4.2.0** ⌘

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

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

Title:	⌘	Introduction of IP transport option in UTRAN
Source:	⌘	R-WG3
Work item code:	⌘	ETRAN-IPtrans
Date:	⌘	2002-02-07
Category:	⌘	**B**
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)

Reason for change:	⌘	To introduce REL-5 IP transport option.
Summary of change:	⌘	The protocols stacks for the IP transport option have been added and described. A section for IP/ATM interworking has been added to the Iu-CS section (section 5). Impact Assessment: Impact assessment towards the previous version of the specification (same release): No previous version.
Consequences if not approved:	⌘	

Clauses affected:	⌘	2, 3.2, 4, 5, 6, 7		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
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.

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] ITU-T Recommendation I.361 (11/95): "B-ISDN ATM Layer Specification".

[2] ITU-T Recommendation I.363.2 (11/00): "B-ISDN ATM Adaptation Layer Type 2 Specification".

[3] ITU-T Recommendation I.363.5 (8/96): "B-ISDN ATM Adaptation Layer Type 5 Specification".

[4] ITU-T Recommendation I.366.1 (6/1998): "Segmentation and Reassembly Service Specific Convergence Sublayer for the AAL Type 2".

[5] ITU-T Recommendation E.164 (5/97): "Numbering Plan for the ISDN Era".

[6] ITU-T Recommendation Q.2110 (7/94): "B-ISDN ATM Adaptation Layer-Service Specific Connection Oriented Protocol (SSCOP)".

[7] ITU-T Recommendation Q.2140 (2/95): "B-ISDN ATM Adaptation Layer-Service Specific Coordination Function for Support of Signalling at the Network Node Interface (SSCF-NNI)".

[8] ITU-T Recommendation Q.2150.1 (12/99): "B-ISDN ATM Adaptation Layer-Signalling Transport Converter for the MTP3b".

[9] ITU-T Recommendation Q.2210 (7/96): "Message Transfer Part level 3 functions and messages using the services of ITU-T Recommendation Q.2140".

[10] ITU-T Recommendation Q.2630.1 (12/99): "AAL type 2 Signalling Protocol (Capability Set 1)".

[11] ITU-T Recommendation X.213 (8/97): "Information Technology-Open Systems Interconnection-Network Service Definitions".

[12] IETF RFC 768 (Auguest 1980): "User Datagram Protocol".

[13] IETF RFC 791 (September 1981): "Internet Protocol".

[14] IETF RFC 2684 (September 1999): "Multiprotocol Encapsulation over ATM Adaptation Layer 5".

[15] IETF RFC 2225 (April 1998): "Classical IP and ARP over ATM".

[16] IETF RFC 2460 (December 1998): "Internet Protocol, Version 6 (IPv6) Specification".

[17] 3GPP TS 29.060: "3GPP; TSG CN; GPRS; GPRS Tunnelling Protocol (GTP)".

[18] IETF RFC 793 (September 1981): "TCP, Transmission Control Protocol".

[19] IETF RFC 2474 (December 1998): "Definition of the Differentiated Services Field (DS Field) in the Ipv4 and Ipv6 Headers".

[20] ITU-T Implementor's guide (12/99) for recommendation Q.2210 (07/96).

[21] ITU-T Recommendation Q.2630.2 (12/00): "AAL Type 2 signalling protocol (Capability Set 2)".

[x1] IETF RFC 1889 (January 1996): "RTP: A Transport Protocol for Real Time Applications".

[x2] IETF RFC 1890 (January 1996): "RTP Profile for Audio and Video Conferences with Minimal Control".

[x3] 3G TS 25.415: "UTRAN Iu Interface User Plane Protocols"

[x4] IETF RFC 1661 (July 1994): "The Point-to-Point Protocol (PPP) ".

[x5] IETF RFC 1662 (July 1994): "PPP in HDLC-like Framing".

[x6] IETF RFC 2507 (February 1999): "IP header compression".

[x7] IETF RFC 1990 (August 1996): "The PPP Multilink Protocol (MP) ".

[x8] IETF RFC 2686 (September 1996): "The Multi-Class Extension to Multi-Link PPP".

[x9] IETF RFC 2509 (February 1999): "IP Header Compression over PPP".

[x10] IETF RFC 2474 (December 1998): "Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers".

[x11] "IP-ALCAP" [ffs.]

[x12] IETF RFC 3153 (August 2001): "PPP Multiplexing".

[x13] IETF RFC 2364 (July 1998): "PPP over AAL5".

[x14] IETF RFC 3031 (January 2001): "Multiprotocol Label Switching Architecture".

3 Definitions and abbreviations

3.1 Definitions

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

ALCAP: generic name for the transport signalling protocols used to set-up and teardown transport bearers.

3.2 Abbreviations

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

AAL	ATM Adaptation Layer
AESA	ATM End System Address
ALCAP	Access Link Control Application Part
ARP	Address Resolution Protocol
ATM	Asynchronous Transfer Mode
CN	Core Network
GTP	GPRS Tunnelling Protocol
HDLC	High-level Data Link Control
IP	Internet Protocol
LC	Link Characteristics
LIS	Logical IP Subnet
MTP3b	Message Transfer Part level 3 for Q.2140
NSAP	Network Service Access Point
PDU	Protocol Data Unit
PPP	Point-to-Point Protocol
RFC	Request For Comment
RNC	Radio Network Controller
RTCP	Real-time Transport Control Protocol
RTP	Real-time Transport Protocol
SA	Service Area
SABP	Service Area Broadcast Protocol

SABS	Service Area Broadcast Service
SAR	Segmentation and Reassembly
SCSF-NNI	Service Specific Coordination Function-Network Node Interface
SSCOP	Service Specific Connection Oriented Protocol
SSCS	Service Specific Convergence Sublayer
SSRC	Synchronisation Source
TCP	Transmission Control Protocol
TEID	Tunnel Endpoint Identifier
UDP	User Datagram Protocol
VC	Virtual Circuit

4 Data Link Layer~~ATM Layer~~

4.1 ATM Transport Option~~General~~

ATM shall be used in the transport network user plane and the transport network control plane according to I.361 [1]. The structure of the cell header used in the UTRAN Iu interface is the cell header format and encoding at NNI (see Figure 3/I.361).

4.2 IP Transport Option

An RNC/CN-node supporting IP transport option on the Iu interface shall support PPP protocol with HDLC framing [x4], [x5].

Note: This does not preclude the single implementation and use of any other protocols (e.g. PPPMux/AAL5/ATM, PPP/AAL2/ATM, Ethernet, MPLS/ATM, etc.) fulfilling the UTRAN requirements toward the upper layers.

An RNC/CN-node supporting IP transport option on the Iu interface and having interfaces connected via slow bandwidth PPP links like E1/T1/J1 shall also support IP Header Compression [x6] and the PPP extensions ML/MC-PPP [x7], [x8]. In this case the negotiation of header compression [x6] over PPP shall be performed via [x9].

5 Circuit switched domain

5.1 Transport network user plane

5.1.1 General

~~Figure 1 shows the protocol stack for the transport network user plane on the Iu interface towards the circuit switched domain.~~There are two options for the transport layer for data streams over Iu-CS:

1) ATM based Transport (ATM transport option)

2) IP based Transport (IP transport option)

The following figure shows the protocol stacks of the two options.

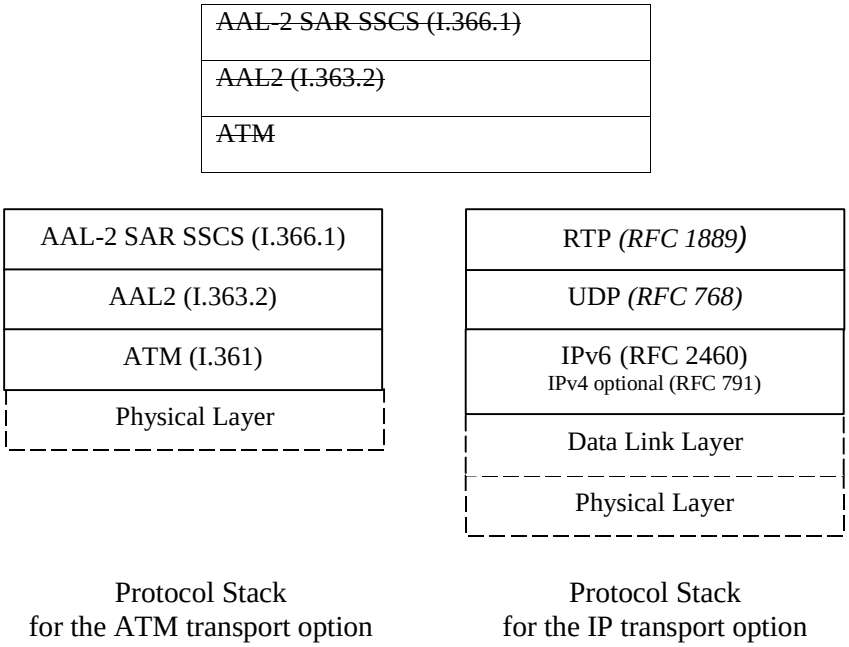


Figure 1. Transport network layer for data streams over Iu-CS.

5.1.2 ATM Transport Option

5.1.2.1 ATM Adaptation Layer 2

5.1.2.1.1 AAL2-Segmentation and Reassembly Service Specific Convergence Sublayer (I.366.1)

Service Specific Segmentation and Reassembly (SSSAR) sublayer of I.366.1 [4] is used for the segmentation and reassembly of AAL2 SDUs (i.e., only SSSAR is used from I.366.1).

5.1.2.1.2 AAL2-specification (I.363.2)

AAL2 shall be used according to I.363.2 [2].

5.1.3 IP Transport Option

5.1.3.1 General

In the IP transport option RTP over UDP over IP shall be supported as the transport for data streams on the Iu-CS interface. The data link layer is as specified in chapter 4.2.

The transport bearer is identified by the UDP port number and the IP address (source UDP port number, destination UDP port number, source IP address, destination IP address).

5.1.3.2 UDP/IP

The path protocol used shall be UDP [12].

An IP RNC/CN-node shall support IPv6. The support of IPv4 is optional.

Note: This does not preclude single implementation and use of IPv4.

IP dual stack support is recommended for the potential transition period from IPv4 to IPv6 in the transport network.

There may be one or several IP addresses in the RNC and in the CN. The packet processing function in the CN shall send downstream packets of a given RAB to the RNC IP address / UDP port (received in RANAP) associated to that particular RAB. The packet processing function in the RNC shall send upstream packets of a given RAB to the CN IP address / UDP port (received in RANAP) associated to that particular RAB.

The RNC/CN-node shall use two consecutive port numbers for the RTP bearer and for the optional RTCP connection that transport a single Iu UP connection. Two such consecutive port numbers are termed “port number block” in what follows. The first port number shall be even and shall be assigned to the RTP protocol. The next port number shall be assigned to the RTCP protocol. This port shall be reserved even if the optional RTCP protocol is not used.

Each RNC/CN-node shall administer the port numbers it intends to use for RTP/RTCP port number blocks.

5.1.3.3 RTP

RTP [x1] shall be applied.

5.1.3.3.1 RTP Header

The RTP Header Fields shall be used as described in the following subclauses:

5.1.3.3.1.1 Version

RTP Version 2 shall be used.

5.1.3.3.1.2 Padding

Padding shall not be used.

5.1.3.3.1.3 Extension

The RTP Header shall not have an extension.

5.1.3.3.1.4 Contributing Source (CSRC) count

There are zero CSRCs.

5.1.3.3.1.5 Marker Bit

The marker bit is ignored.

5.1.3.3.1.6 Payload Type

A dynamic Payload Type [x2] shall be used. Values in the Range between 96 and 127 shall be used. The value shall be ignored in the receiving entity.

5.1.3.3.1.7 Sequence Number

The sequence number shall be supplied by the source of an RTP PDU. The sink of an RTP PDU may ignore the sequence number or it may use it to obtain statistics about the link quality and / or to correct out-of-sequence delivery, e.g. by dropping out-of-sequence packets.

5.1.3.3.1.8 Timestamp

The timestamp shall be supplied by the source of an RTP PDU. A clock frequency of 16000 Hz or multiples of this value shall be used. The sink of an RTP PDU may ignore the timestamp or it may use it to obtain statistics about the link quality and / or to correct jitter.

5.1.3.3.1.9 Synchronisation Source (SSRC)

The source of an RTP PDU shall supply a SSRC. The sink of an RTP PDU may ignore the SSRC if it does not use RTCP.

5.1.3.3.1.10 CSRC list

This list is empty.

5.1.3.3.2 RTP Payload

A single Iu UP PDU, as described in [x3], shall be transported as RTP payload.

5.1.3.4 RTCP

RTCP [x1] may be applied. RTCP over UDP [12] over IPv6 [16] shall be used (IPv4 [13] may be used optionally). The use of the RTCP protocol is optional. The receiving entity may ignore incoming RTCP PDUs.

Figure x shows the protocol stack for the transport of RTCP. The above Sections about IP and UDP shall also apply for the transport of RTCP.

RTCP*(RFC 1889)*
UDP *(RFC 768)*
IPv6 (RFC2460) IPv4 optional (RFC 791)

Figure x. RTCP Protocol stack for data stream transport on Iu-CS.

5.1.3.5 Diffserv code point marking

IP Differentiated Services code point marking [x11] shall be supported. The Diffserv code point may be determined from the application parameters.

5.2 Transport network control plane

5.2.1 General

~~Figure 2 shows the protocol stack for the transport network control plane on the Iu interface towards the circuit switched domain.~~ There are two options for the transport layer for transport signalling over Iu-CS:

1) ATM based Transport (ATM transport option)

2) IP based Transport (IP transport option)

The following figure shows the protocol stacks of the two options.

~~AAL2 connection signalling (Q.2630.2)~~
~~AAL2 Signalling Transport Converter for MTP3b (Q.2150.1)~~
~~MTP3b~~
~~SSCF-NNI~~
~~SSCOP~~
~~AAL5~~
~~ATM~~

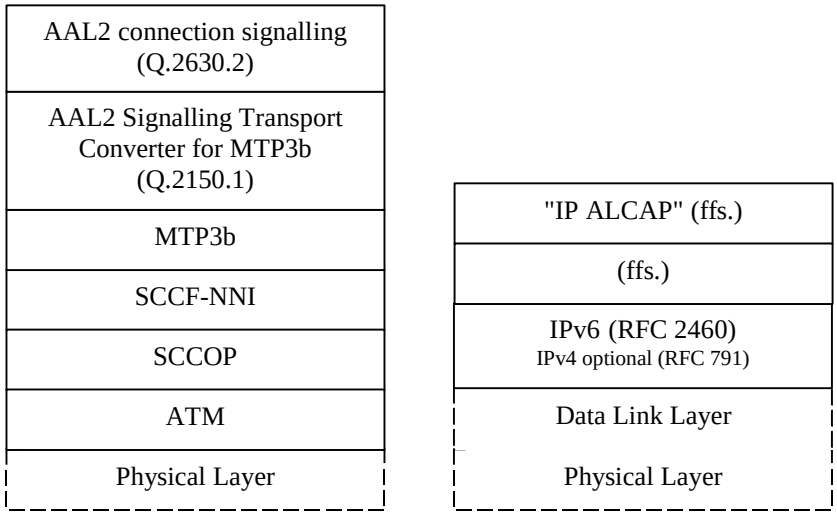


Figure 2. Signalling bearer for ALCAP on Iu-CS interface.

5.2.2 Transport Signalling for the ATM Transport Option

5.2.2.1 Signalling protocol (ALCAP)

5.2.2.1.1 AAL2 Signalling Protocol (Q.2630.2)

In the ATM transport option Q.2630.2 [21] shall be used for establishing AAL2 connections towards the circuit switched domain. Q.2630.2 [21] adds new optional capabilities to Q.2630.1 [10].

The AAL2 transport layer uses the embedded E.164 [5] or AESA variants of the NSAP addressing formats [11]. Native E.164 addressing shall not be used.

Binding ID provided by the radio network layer shall be copied in SUGR parameter of ESTABLISH request primitive of [21].

If there is an AAL2 switching function in the transport network layer of the interface, the Link Characteristics parameter (LC) shall be included in the Establish Request message and in the Modification Request message of AAL2 signalling protocol.

5.2.32.2 Signalling transport converter

5.2.32.2.1 AAL2 MTP3B Signalling Transport Converter (Q.2150.1)

The AAL2 MTP3b Signalling Transport Converter shall be used according to Q.2150.1 [8].

5.2.2.34 MTP3b (Q.2210)

MTP3b shall be used according to Q.2210 [9 and 20].

5.2.2.45 SSCF-NNI (Q.2140)

SSCF-NNI shall be used according to Q.2140 [7].

5.2.2.5~~6~~ SSCOP (Q.2110)

SSCOP shall be used according to Q.2110 [6].

5.2.2.6~~7~~ ATM Adaptation Layer Type 5 (I.363.5)

AAL5 shall be used according to I.363.5 [3].

5.y Interworking between ATM and IP Transport Options

5.y.1 Introduction

This clause specifies the interworking between IP and ATM transport options. An RNC/CN-node supporting IP transport option shall provide interworking to an CN-node/RNC supporting only ATM transport option.

5.y.2 Interworking Alternatives

For interworking with an CN-node/RNC supporting only ATM transport option, the RNC/CN-node supporting IP transport option shall additionally support at least one of the following interworking mechanisms:

1) ATM&IP dual stack. An IP-ALCAP protocol is not required in this interworking solution.

2) Interworking Function (IWF) as a logical part of the RNC/CN-node supporting IP transport option. An IP-ALCAP protocol is not required in this interworking solution.

3) Interworking Unit (IWU) as a logically separate unit. An IP-ALCAP protocol shall be used in the interface between the RNC/CN-node supporting IP transport option and the Interworking Unit.

5.y.3 IP-ALCAP for the Interworking

In the third interworking alternative as introduced in chapter 5.y.2, [x11] is used as the IP-ALCAP protocol between the RNC/CN-node supporting IP transport option and the Transport Network Layer Interworking Unit.

6 Packet switched domain

6.1 Transport network user plane

6.1.1 General

~~Figure 3 shows the protocol stack for the transport network user plane on the Iu interface towards the packet switched domain.~~ There are two options for the transport layer for data streams over Iu-PS:

1) ATM based Transport (ATM transport option)

2) IP based Transport (IP transport option)

The following figure shows the protocol stacks of the two options.

~~GTP-U~~
~~UDP~~
~~IP~~

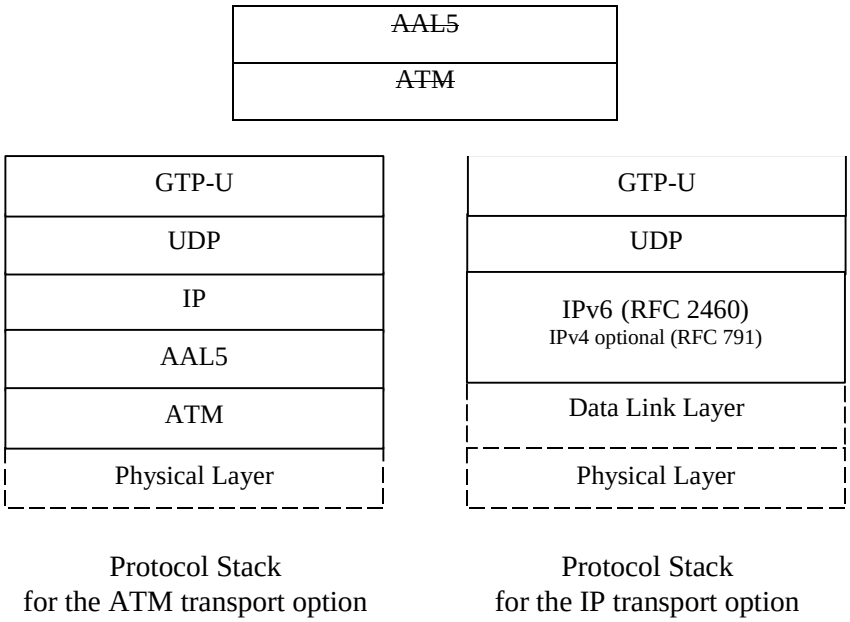


Figure 3. Transport network layer for data streams over Iu-PS.

6.1.2 ATM Transport Option

6.1.2.1 General

In the ATM transport option, tThe protocol architecture for the User Plane of the Iu interface towards the packet switched domain shall be GTP-U [17] over UDP over IP over AAL5 over ATM. One or several AAL5/ATM permanent VC's may be used as the common layer 2 resources between the UTRAN and the packet switched domain of the CN.

One switched VC may be used per user flow. The standardisation of the procedures and protocols for use of Switched VC is outside the scope of 3GPP.

Congestion control shall be performed over the Iu user plane toward the packet switched domain using buffer management and no flow control.

6.1.2.2 GTP-U

The GTP-U [17] protocol shall be used over the Iu interface toward the packet switched domain.

6.1.2.3 UDP /IP

The path protocol used shall be UDP [12], which is specified in RFC 768.

The UDP port number for GTP-U shall be as defined in [17].

IPv4 [13] (RFC 791) shall be supported, IPv6 [16] (RFC 2460) support is optional.

There may be one or several IP addresses in the RNC and in the CN. The packet processing function in the CN shall send downstream packets of a given RAB to the RNC IP address (received in RANAP) associated to that particular RAB. The packet processing function in the RNC shall send upstream packets of a given RAB to the CN IP address (received in RANAP) associated to that particular RAB.

6.1.2.4 ATM Adaptation Layer Type 5 (I.363.5)

AAL5 shall be used according to I.363.5 [3].

AAL5 virtual circuits shall be used to transport the IP packets across the Iu interface toward the packet switched domain. Multiple VCs may be used over the interface. An association shall be made between a VC and the IP addresses

that are related to this VC in the peer node side. This association shall be made using O&M or using ATM Inverse ARP according to Classical IP over ATM when PVCs are used.

When PVCs are used, quality of service differentiation shall only be performed at the IP layer using differentiated services [19].

6.1.2.5 IP/ATM

Classical IP over ATM protocols and Multiprotocol Encapsulation over AAL5 shall be used to carry the IP packets over the ATM transport network when PVCs are used. Classical IP over ATM is specified in RFC 2225 [15]. Multiprotocol Encapsulation over AAL5 is specified in RFC 2684 [14].

Classical IP over ATM allows routers to be members of one or more LISs. The CN side of the Iu interface shall provide IP routing functionalities. The RNC side of the Iu interface may provide routing functionalities. If the RNC side of the Iu interface does not provide routing functionalities, the RNC routing tables shall include default route entries.

6.1.3 IP Transport Option

6.1.3.1 General

In the IP transport option GTP-U [17] over UDP over IP shall be supported as the transport for data streams on the Iu-PS interface. The data link layer is as specified in chapter 4.2.

The transport bearer is identified by the GTP-U TEID [17] and the IP address (source TEID, destination TEID, source IP address, destination IP address).

6.1.3.2 GTP-U

The GTP-U [17] protocol shall be used over the Iu interface toward the packet switched domain.

6.1.3.3 UDP /IP

The path protocol used shall be UDP [12].

The UDP port number for GTP-U shall be as defined in [17].

An IP RNC/CN-node shall support IPv6. The support of IPv4 is optional.

Note: This does not preclude single implementation and use of IPv4.

IP dual stack support is recommended for the potential transition period from IPv4 to IPv6 in the transport network.

There may be one or several IP addresses in the RNC and in the CN. The packet processing function in the CN shall send downstream packets of a given RAB to the RNC IP address (received in RANAP) associated to that particular RAB. The packet processing function in the RNC shall send upstream packets of a given RAB to the CN IP address (received in RANAP) associated to that particular RAB.

6.1.3.4 Diffserv code point marking

IP Differentiated Services code point marking [x10] shall be supported. The Diffserv code point may be determined from the application parameters.

6.2 Transport network control plane

ALCAP is not required over the Iu interface towards the packet switched domain.

7 Broadcast Domain

7.1 Transport network user plane

7.1.1 General

~~Figure 4 shows the protocol stack for the transport network user plane on the Iu interface towards the Broadcast domain.~~There are two options for the transport layer for data streams over Iu-BC:

1) ATM based Transport (ATM transport option)

2) IP based Transport (IP transport option)

The following figure shows the protocol stacks of the two options.

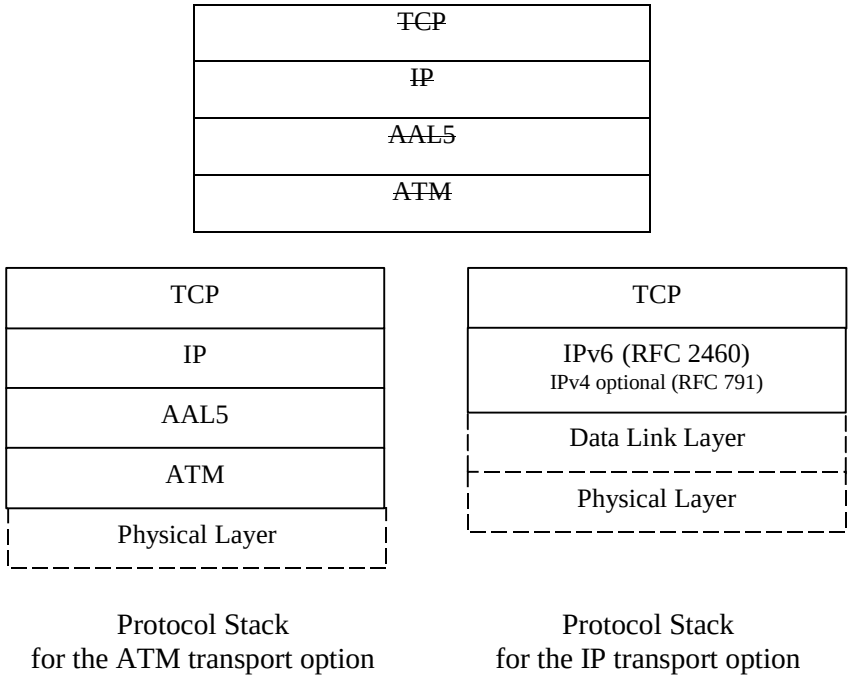


Figure 4. Transport network layer for data streams over Iu-BC.

7.1.2 ATM Transport Option

7.1.2.1 General

In the ATM transport option, ~~T~~the protocol architecture for the Service Area Broadcast Plane of the Iu interface shall be TCP over IP over AAL5 over ATM.

7.1.2.2 TCP/IP

The path protocol used shall be TCP, which is specified in RFC793 [18]. IPv4 [13] (RFC 791) shall be supported, IPv6 [16] (RFC 2460) support is optional.

7.1.2.3 ATM Adaptation Layer Type 5 (I.363.5)

AAL5 shall be used according to I.363.5.

AAL5 virtual circuits shall be used to transport the IP packets across the Iu interface toward the packet switched domain. Multiple VCs may be used over the interface. An association shall be made between a VC and the IP addresses that are related to this VC in the peer node side. This association shall be made using O&M or using ATM Inverse ARP according to Classical IP over ATM when PVCs are used.

7.1.2.4 IP/ATM

Classical IP over ATM protocols and Multiprotocol Encapsulation over AAL5 shall be used to carry the IP packets over the ATM transport network when PVCs are used. Classical IP over ATM is specified in RFC 2225 [15]. Multiprotocol Encapsulation over AAL5 is specified in RFC 2684 [14].

7.1.3 IP Transport Option

7.1.3.1 General

In the IP transport option TCP over IP shall be supported as the transport for data streams on the Iu-BC interface. The data link layer is as specified in chapter 4.2.

The transport bearer is identified by the TCP port number and the IP address (source TCP port number, destination TCP port number, source IP address, destination IP address).

7.1.3.3 TCP /IP

The path protocol used shall be TCP, which is specified in RFC 793 [18].

An IP RNC/CN-node shall support IPv6. The support of IPv4 is optional.

Note: This does not preclude single implementation and use of IPv4.

IP dual stack support is recommended for the potential transition period from IPv4 to IPv6 in the transport network.

7.1.3.4 Diffserv code point marking

IP Differentiated Services code point marking [x11] shall be supported. The Diffserv code point may be determined from the application parameters.

7.2 Transport network control plane

ALCAP is not required over the Iu interface towards the broadcast domain.

3GPP TSG-RAN WG3 Meeting #27 ***R3-020842***
Orlando, USA, 18th – February22th, 2002

CR-Form-v3

CHANGE REQUEST

⌘ **25.415** **CR** **095** ⌘ rev **1** ⌘ Current version: **4.3.0** ⌘

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

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

Title:	⌘	Introduction of IP Transport option in UTRAN
Source:	⌘	R-WG3
Work item code:	⌘	ETRAN-IPTRANS
Date:	⌘	18 February 2002
Category:	⌘	**B**
Release:	⌘	REL-5

Use one of the following categories:
F *(essential 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:	⌘	IP UTRAN option is introduced in release 5.
Summary of change:	⌘	The protocol stacks and the transport control plane identifiers have been updated with IP UTRAN option. Impact assessment towards the previous version of the specification (same release): This CR has no impact with the previous version of the specification (same release) since it is a new function.
Consequences if not approved:	⌘	IP UTRAN option cannot be used in release 5.

Clauses affected:	⌘	7.3.4
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
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.

3GPP TS 25.415 V4.3.0 (2001-12)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Radio Access Network; UTRAN Iu interface user plane protocols (Release 4)

Keywords
UMTS, radio

3GPP

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Contents

Foreword

This Technical Specification (TS) has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

1 Scope

The present document defines the Radio Network Layer user plane protocol being used over the Iu interface.

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 TS 25.401: "UTRAN Overall Description".

[2] 3GPP TS 25.410: "UTRAN Iu interface: General Aspects and Principles".

[3] 3GPP TS 25.413: "UTRAN Iu interface RANAP Signalling".

[4] 3GPP TS 25.414: "UTRAN Iu Interface Data Transport and Transport Signalling".

[5] 3GPP TS 23.110: "UMTS Access Stratum Services and Functions".

[6] 3GPP TS 23.121: "Architectural requirements for Release 1999".

[7] ITU-T Recommendation I.363.2 (11/2000): "B-ISDN ATM Adaptation Layer specification: Type 2 AAL".

[8] ITU-T Recommendation I.366.1 (6/98): "Segmentation and reassembly service specific convergence sublayer for the AAL type 2".

[9] 3GPP TR 25.990: "Vocabulary".

[10] 3GPP TS 25.321: "Medium Access Control (MAC) protocol specification".

[11] 3GPP TS 25.322: "Radio Link Control (RLC) protocol specification".

[12] 3GPP TS 26.102: "Mandatory speech codec; AMR speech codec; Interface to Iu and Uu".

[13] 3GPP TS 23.153: "Out of Band Transcoder Control; Stage 2".

[14] IETF RFC 1889: "RTP: A Transport Protocol for Real Time Applications"

[15] IETF RFC 1890: "RTP Profile for Audio and Video Conferences with Minimal Control"

3 Definitions and abbreviations

3.1 Definitions

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

Iu Timing Interval (ITI): Iu Timing Interval is the minimum time interval between sent Iu UP PDUs for a specific RAB. The ITI can be calculated for conversational and streaming traffic classes by the following formula:

$$ITI = \frac{MaxSDUsize}{MaxBitrate}$$

Inter PDU Transmission Interval (IPTI): inter PDU Transmission Interval is the actual interval at which Iu UP PDUs can be sent at a certain time for a specific RAB subflow combination. The IPTI of a RAB subflow combination is calculated based on the RAB subflow combination size and the RAB subflow combination bitrate by dividing the RAB subflow combination size with the RAB subflow combination bitrate.

$$IPTI_g = \frac{RFC\_size_g}{RFC\_Bitrate_g}, \quad g = 1,\ldots,n, \quad n = number\ of\ subflowcombinations$$

NOTE: If RFC_Bitrate is not defined then IPTI=ITI. If RFC_size is not defined then RFC_size=MaxSDUsize.

Non Access Stratum (NAS) Data Streams: non Access Stratum Data Streams is a generic term to identify these data streams exchanged at the Dedicated Service Access Points between the Non Access Stratum and the Access Stratum.

RAB sub-flows: RAB as defined in [9] is realised by UTRAN through one to several sub-flows. These sub-flows correspond to the NAS service data streams that have QoS characteristics that differ in a predefined manner within a RAB e.g. different reliability classes.

RAB sub-flows characteristics:

1) the sub-flows of a RAB are established and released together at the RAB establishment and release, respectively;
2) the sub-flows of a RAB are submitted and delivered together at the RAB SAP;
3) the sub-flows of a RAB are carried over the same Iu transmission connection;
4) the sub-flows of a RAB are organised in a predefined manner at the RAB SAP and over the Iu interface. The organisation is imposed by the NAS as part of its co-ordination responsibility.

RAB sub-flows numbering (applies to support mode for predefined SDU size only):

1) RAB sub-flows are numbered from 1 to N (N is the number of sub-flows);
2) RAB sub-flow number 1 corresponds to the highest reliability class and the RAB sub-flow number N corresponds to the lowest reliability class;
3) RAB sub-flows order inside the Iu frame is predefined so that RAB sub-flow number one comes first and the RAB sub-flow number N comes last.

RAB sub-Flow Combination (RFC): RAB sub-flow combination is defined as an authorised combination of the RAB sub-flows variable attributes (e.g. SDU sizes) of currently valid RAB sub-flows that can be submitted simultaneously to the Iu UP for transmission over Iu interface. Each combination is given by the CN and cannot be altered by the SRNC.

RAB sub-Flow Combination Indicator (RFCI): this indicator uniquely identifies a RAB sub-flow combination for the duration of the Iu UP peer protocol instances i.e. it is valid until the termination of the call or until a new initialisation is performed. Usage of RFCI applies only to Iu UP protocol operated in support mode for predefined SDU size.

Principles related to RFCI allocation and Initialisation procedure:

1) RFCI value is present in every Iu user frame;

2) in the Initialisation procedure in Iu UP, the size of every RAB sub-flow SDU for each RFCI is signalled.

Syntactical error: field is defined to be syntactically incorrect in a frame if it contains at least one value defined as "reserved", or if its value part violates syntactic rules given in the specification of the value part. However it is not a syntactical error that a value specified as "spare" is being used.

Semantical error: A frame is defined to have semantically incorrect contents if it contains information which, possibly dependant on the state of the receiver, is in contradiction to the resources of the receiver and/or to the procedural part.

3.2 Abbreviations

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

AMR	Adaptive Multi-Rate codec
AS	Access Stratum
BER	Bit Error Rate
CN	Core Network
DS	Data Service
DTX	Discontinuous Transmission
DU	Data Unit
GF	Galois Field
IPTI	Inter PDU Transmission Interval
ITI	Iu Timing Interval
NAS	Non Access Stratum
PCE	Procedure Control Extension
PDU	Protocol Data Unit
PME	Procedure Control Bitmap Extension
QoS	Quality of Service
RAB	Radio Access Bearer
RANAP	Radio Access Network Application Part
RFC	RAB sub Flow Combination
RFCI	RFC Indicator
RNL	Radio Network Layer
RTP	Real-time Transport Protocol
SAP	Service Access Point
SDU	Service Data Unit
SID	Silence Insertion Descriptor
SMpSDU	Support Mode for predefined SDU size
SRNC	Serving RNC
SRNS	Serving RNS
SSSAR	Service Specific Segmentation and Reassembly
TFCI	Transport Format Combination Indicator
TFI	Transport Format Identification
TFO	Tandem Free Operation
TNL	Transport Network Layer
TrFO	Transcoder Free Operation
TrM	Transparent Mode
UP	User Plane
UUI	User to User Information

7.3 Primitives towards the transport layers at TNL SAP

7.3.1 General

Access to the Transport network Layer is performed through a generic SAP: TNL-SAP.

When the Transport Network upper layer consists of AAL2, the TNL SAP maps onto the AAL-SAP through which communication is performed using specific AAL primitives.

When the Transport Network upper layer consists of GTP-U, the TNL SAP maps onto the GTP-U SAP through which communication is performed using generic primitives.

The choice of communication, specific or generic, through the TNL SAP is fixed by the Radio Network Layer control plane logic. This choice is based on the requirements placed by e.g. the RAB characteristics, the CN domain requesting the RAB establishment or other operator's choice.

7.3.2 ATM/AAL2 based Transport layer

7.3.2.1 General

When the Iu UP protocol layer uses the services of an ATM/AAL2 transport, it uses an established AAL2 connection for transferring frames between the peer TNL-SAPs at both ends of the Iu User plane access points. The Transport Network Control Plane over Iu handles the signalling to establish and release the AAL2 call connections.

7.3.2.2 AAL2 Service Primitives used by the Iu UP protocol

AAL2 services and primitives used at the Service Access Point from the AAL2 layer are shown in table 3.

Table 3: AAL2 primitives and parameters

Primitive	Type	Parameters	Comments
SSSAR-UNITDATA	Request	SSSAR-INFO	
		SSSAR-UUI	Not used (note)
SSSAR-UNITDATA	Indication	SSSAR-INFO	
		SSSAR-UUI	Not used (note)
NOTE: The setting of this field is set to not used i.e. decimal value 26 according to [8].			

The primitives of table 3 are the standard primitives of [8]. These primitives are intended to be used in the Iu UP.

7.3.3 GTP-U based Transport Layer

7.3.3.1 General

When the Iu UP protocol layer uses the services of a GTP-U transport, it uses an established GTP-U tunnel for transferring frames between the GTP-U tunnel endpoints at both ends of the Iu User plane access points. The RANAP Control Plane signalling over Iu handles the signalling to establish and release the GTP-U tunnels.

7.3.3.2 Generic Service Primitives used by the Iu UP protocol

Generic primitives are used at the GTP-U SAP. They are shown in table 4.

Table 4: Generic primitives and parameters to and from GTP-U layer

Primitive	Type	Parameters	Comments
Iu-UP-UNITDATA	Request	Iu-UP-payload	
Iu-UP-UNITDATA	Indication	Iu-UP-payload	

7.3.4 RTP based Transport Layer

7.3.4.1 General

When the Iu UP protocol layer uses the services of a RTP/UDP/IP transport, it uses an established RTP session for transferring frames between the two RTP endpoints at both ends of the Iu User plane access points as defined in [14]. A single Iu-UP PDU shall be transported as RTP payload. A dynamic Payload Type [15] shall be used (see [4]).

7.3.4.2 Generic Service Primitives used by the Iu UP protocol

Generic primitives are used at the RTP SAP. They are shown in table 5.

Table 5: Generic primitives and parameters to and from RTP layer

Primitive	Type	Parameters	Comments
Iu-UP-UNITDATA	Request	Iu-UP-payload	
Iu-UP-UNITDATA	Indication	Iu-UP-payload	

3GPP TSG-RAN WG3 Meeting #27 ***Tdoc R3-020883***
Orlando, Florida, U.S.A, February 18th – February 22nd, 2002

CR-Form-v3

CHANGE REQUEST

⌘ **25.420** **CR** **024** ⌘ rev **4** ⌘ Current version: **4.1.0** ⌘

*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 ☐ Radio Access Network **X** Core Network **X**

Title:	⌘	Introduction of IP transport to UTRAN.
Source:	⌘	R-WG3
Work item code:	⌘	ETRAN-IPtrans
Date:	⌘	February 2002
Category:	⌘	**B**
Release:	⌘	REL-5

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
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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: ⌘ To introduce IP transport option in 25.420

Summary of change: ⌘

Rev-4:

Added the comment that IP-ALCAP stack is optional and referred to 25.414. Also added the reference for 25.414.

Rev-3:

Added UDP to the user plane stack in Figure 4.

Rev-2:

Corrected the reference number for referring to 25.426; corrected Figure 4 for showing the correct extension to FFS; corrected Figure 4 to change 'L2' to 'data link'.

Rev-1:

Made the changes according to meeting discussions. Merged the two figures in Section 8 for ATM option and IP option into one figure. Added reference for 25.426.

Rev-0:

The main change to this document is in the **Iur Interface Protocol Structure**. Now, there are two options to this protocol structure, one for the ATM option and another for the IP option.

Isolated impact analysis towards the previous version (same release) of the specification:

There is no previous version available.

Consequences if not approved:	⌘	IP transport feature will not be available at R5 for the transport for the Iur interface.

Clauses affected:	⌘	2, 3.2, 8		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
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.

1 Scope

The present document is an introduction to the TSG RAN TS 25.42x series of UMTS Technical Specifications that define the Iur Interface. It is a logical interface for the interconnection of two Radio Network Controller (RNC) components of the UMTS Terrestrial Radio Access Network (UTRAN) for the UMTS system.

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 TS 25.427: "UTRAN Iub/Iur Interface User Plane Protocol for DCH Data Streams".

[2] 3GPP TS 25.425: "UTRAN Iur Interface: User Plane Protocols for Common Transport Channel Data Streams".

[3] 3GPP TS 25.421: "UTRAN Iur Interface: Layer 1".

[4] 3GPP TS 25.422: "UTRAN Iur Interface: Signalling Transport".

[5] 3GPP TS 25.423: "UTRAN Iur Interface: RNSAP Signalling ".

[6] 3GPP TS 25.424: "UTRAN Iur Interface: Data Transport & Transport Signalling ".

[7] 3GPP TS 25.401: "UTRAN Overall Description".

[8] 3GPP TS 25.426: "UTRAN Iur & Iub Interface: Data Transport & Transport Signalling for DCH Data Streams".

[9] ITU-T Recommendation Q.711 (7/96): "Functional description of the signalling connection control part".

[10] ITU-T Recommendation Q.712 (7/96): "Definition and function of signalling connection control part messages".

[11] ITU-T Recommendation Q.713 (7/96): "Signalling connection control part formats and codes".

[12] ITU-T Recommendation Q.714 (7/96): "Signalling connection control part procedures".

[13] 3GPP TS 23.003: "Numbering, Addressing and Identification".

[14] ITU-T Recommendation Q.2630.1 (12/99): "AAL type 2 Signalling Protocol (Capability Set 1)".

[15] 3GPP TS 25.426: "UTRAN Iur and Iub Interface Data Transport & Transport Signalling for DCH Data Streams ".

[16] 3GPP TS 25.414: "UTRAN Iu Interface Data Transport and Transport Signalling"

3 Definitions and abbreviations

3.1 Definitions

None

3.2 Abbreviations

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

AAL2	ATM Adaptation Layer type 2
AAL5	ATM Adaptation Layer type 5
ALCAP	Access Link Control Application Part
ATM	Asynchronous Transfer Mode
CPCH	Common Packet Channel
CRNC	Controlling RNC
CTP	Common Transport Protocol
DCH	Dedicated Transport Channel
DL	Downlink
DRNC	Drift Radio Network Controller
DRNS	Drift Radio Network Subsystem
DSCH	Downlink Shared Channel
FACH	Forward Access Channel
FFS	For Further Study
GT	Global Title
IP	Internet Protocol
MAC	Medium Access Control
MTP3-B	Message Transfer Part level 3 (for Q.2140)
PLMN	Public Land Mobile Network
QoS	Quality of Service
RACH	Random Access Channel
RF	Radio Frequency
RNC	Radio Network Controller
RNS	Radio Network Subsystem
RNSAP	Radio Network Subsystem Application Part
RRC	Radio Resource Control
SCCP	Signalling Connection Control Part
SPC	Signalling Point Code
SRNC	Serving Radio Network Controller
SRNS	Serving Radio Network Subsystem
SS7	Signalling System N° 7
SSCF-NNI	Service Specific Co-ordination Function – Network Node Interface
SSCOP	Service Specific Connection Oriented Protocol
SSN	Sub-System Number
STC	Signalling Transport Converter
UDP	User Datagram Protocol
UE	User Equipment
UL	Up-link
UMTS	Universal Mobile Telecommunication System
URA	UTRAN Registration Area
USCH	Uplink Shared Channel
UTRAN	UMTS Terrestrial Radio Access Network

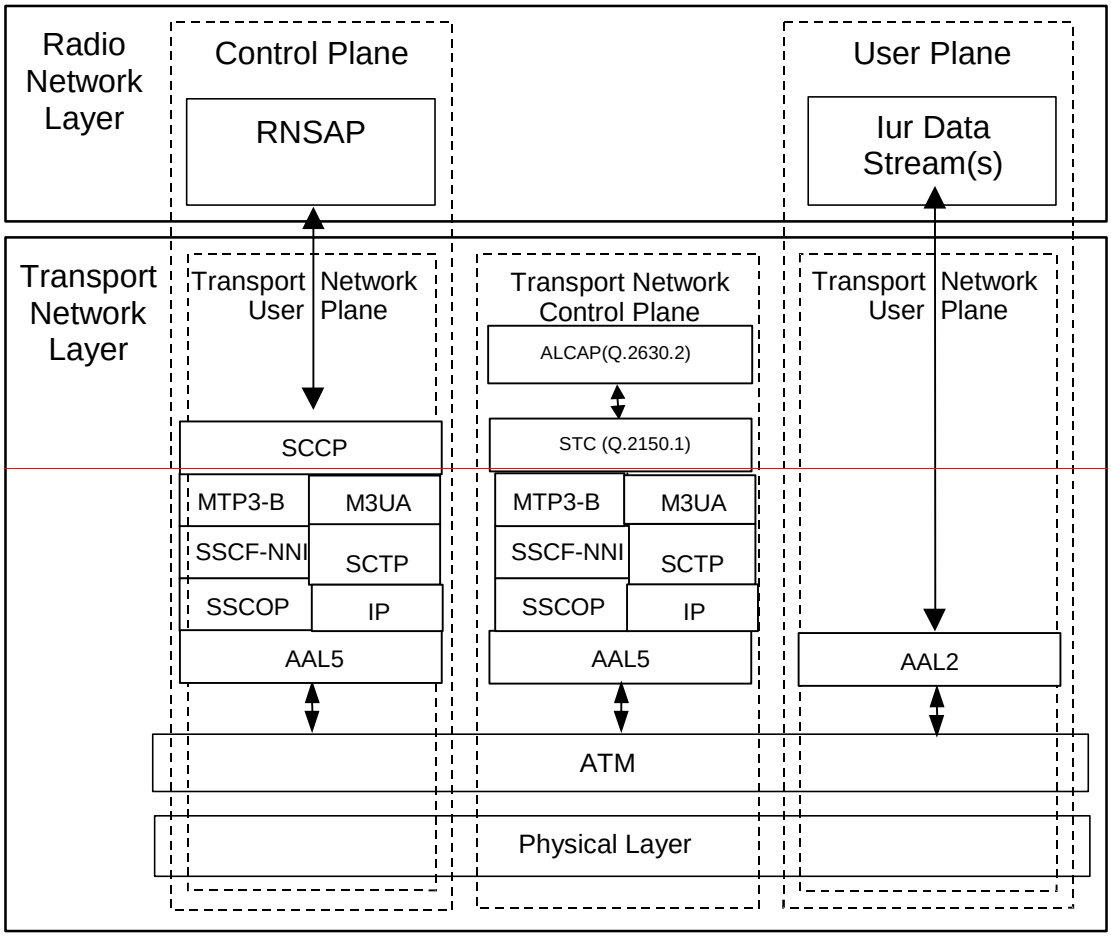
- It is created via administrative procedures when the Iur interface is created.

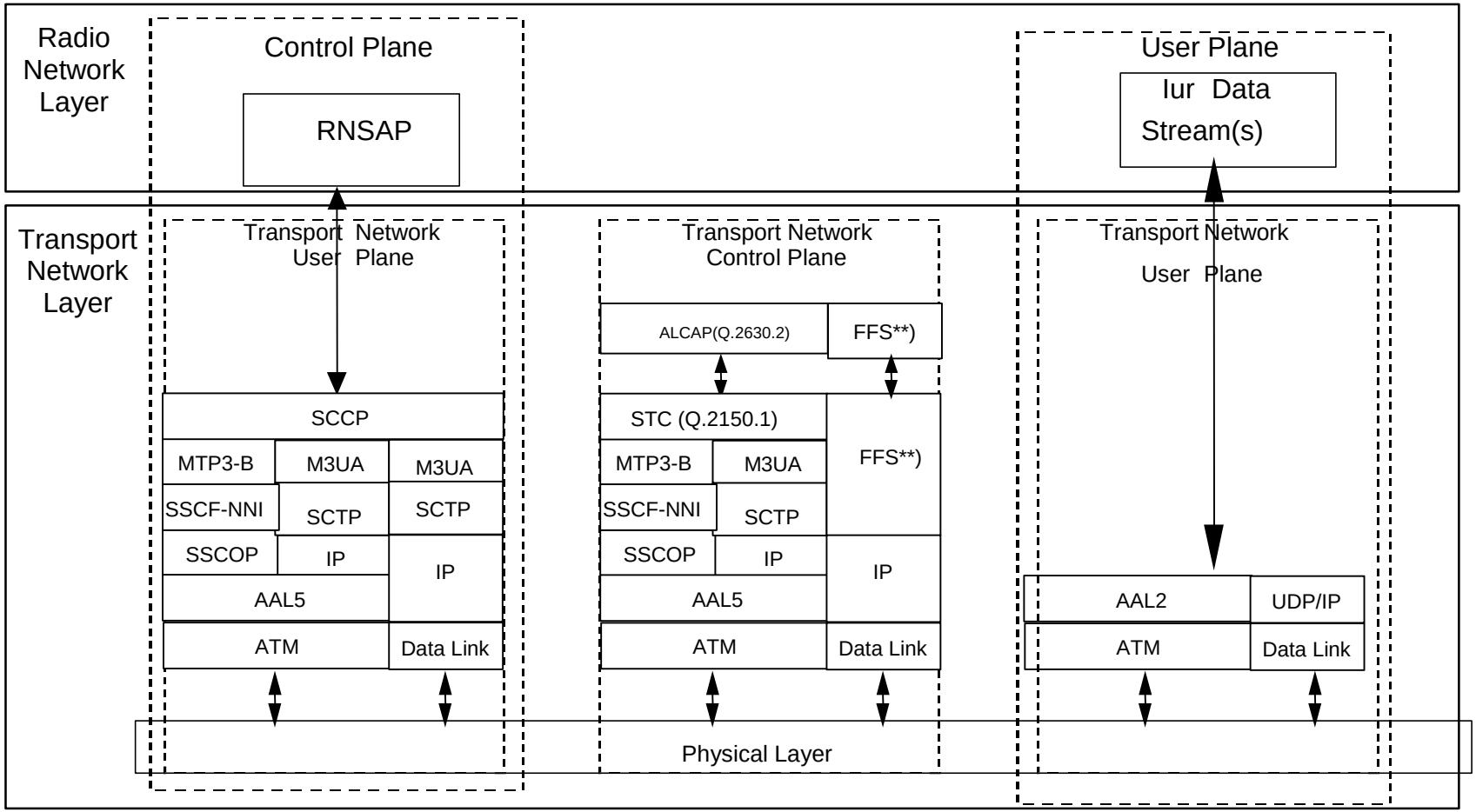
8 I_{ur} Interface Protocol Structure

The Iur interface protocol architecture consists of two functional layers:

- Radio Network Layer, defines the procedures related to the interaction of two RNCs within a PLMN. The radio network layer consists of a Radio Network Control Plane and a Radio Network User Plane.
- Transport layer, defines procedures for establishing physical connections between two RNCs within a PLMN.

An IP ALCAP protocol may be supported depending on the ATM - IP inter-working solution selected. Further information on the ATM - IP interworking is provided in the transport layer specifications [15].





**) optional- depends on the interworking alternative selected (see [16]).

Figure 4: Iur Interface Protocol Structure

3GPP TSG- RAN Working Group 3 Meeting #27
Orlando, FL, USA, 18nd-22th February 2002

Tdoc R3-020823

CR-Form-v5

CHANGE REQUEST

⌘ **25.422** **CR** **11** ⌘ **rev** **1** ⌘ Current version: **4.1.0** ⌘

*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 ☐ Radio Access Network **X** Core Network ☐

Title:	⌘	Introduction of IP transport in UTRAN.
Source:	⌘	R-WG3
Work item code:	⌘	ETRAN-IPtrans
Date:	⌘	February 2002
Category:	⌘	**B**
Release:	⌘	REL-5

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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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:	⌘	To introduce IP transport Option in 25.422
Summary of change:	⌘	R1: - Modified according to the meeting discussions: - Chapters 2, 3,4,5 updated R0: - References section updated. - Abbreviation section updated. - Section 4 modified to cover two options: ATM option and IP data link layer option. - Section 5 modified to show the signaling bearer options: ATM option 1, ATM Option 2 (IP/ATM) and IP Option (IP/L2). Isolated impact analysis towards the previous version (same release) of the specification: There is no previous version available.
Consequences if not approved:	⌘	IP transport feature will not be available at R5 for the signalling transport for the Iur interface.

Clauses affected:	⌘	
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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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.

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] ITU-T Recommendation Q.2100 (7/94): "B-ISDN Signalling ATM Adaptation Layer (SAAL) - overview description".

[2] ITU-T Recommendation Q.2110 (7/94): "B-ISDN ATM adaptation layer - Service Specific Connection Oriented Protocol (SSCOP)".

[3] ITU-T Recommendation Q.2140 (2/95): "B-ISDN ATM adaptation layer - Service Specific Co-ordination Function for signalling at the Network Node Interface (SSCF AT NNI)".

[4] ITU-T Recommendation Q.2210 (7/96): "Message transfer part level 3 functions and messages using the services of ITU-T Recommendation Q.2140".

[5] ITU-T Recommendation I.361 (11/95): "B-ISDN ATM layer specification".

[6] ITU-T Recommendation I.363.5 (8/96): "B-ISDN ATM Adaptation Layer Type 5".

[7] ITU-T Recommendation Q.711 (7/96): "Functional description of the signalling connection control part".

[8] ITU-T Recommendation Q.712 (7/96): "Definition and function of Signalling connection control part messages".

[9] ITU-T Recommendation Q.713 (7/96): Signalling connection control part formats and codes.

[10] ITU-T Recommendation Q.714 (7/96): "Signalling connection control part procedures".

[11] ITU-T Recommendation Q.715 (7/96): "Signalling connection control part user guide".

[12] ITU-T Recommendation Q.716 (3/93): "Signalling Connection Control Part (SCCP) performance".

[13] IETF RFC 791 (September 1981): "Internet Protocol".

[14] IETF RFC 1483 (July 1993): "Multi protocol Encapsulation over ATM Adaptation Layer 5".

[15] IETF RFC 2225 (April 1998): "Classical IP and ARP over ATM".

[16] IETF RFC 2960 (October 2000): "Stream Control Transmission Protocol".

[17] G. Sidebottom et al, "SS7 MTP3 - User Adaptation Layer", draft-ietf-sigtran-m3ua-~~04~~12.txt (Work In Progress), IETF, ~~September 2000~~February 2002.

[18] IETF STD 51, RFC 1661, "The Point-To-Point Protocol (PPP)", July 1994

[19] IETF STD 51, RFC 1662 "PPP in HDLC-like Framing", July 1994.

[20] IETF RFC 2507, "IP header compression", February 1999.

[21] IETF RFC 1990 "The PPP Multilink Protocol (MP)".

[22] IETF RFC 2686 " The Multi-Class Extension to Multi-Link PPP".

[23] IETF RFC 2509, “IP Header Compression over PPP”, February 1999.

[24] IETF RFC 2460 “Internet Protocol, Version 6 (Ipv6) Specification”.

[25] IETF RFC 2474 “Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers ” December 1998

[26] IETF RFC 768 “User Datagram Protocol”, (8/1980)

[27] IETF RFC 3153 “PPP Multiplexing”, (8/2001)

[28] IETF RFC 2364 “PPP over AAL5”, (7/1998)

[29] IETF RFC 3031 “Multiprotocol Label Switching Architecture”, (1/2001)

3 Abbreviations

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

AAL	ATM Adaptation Layer
AAL2	ATM Adaptation Layer 2
AAL5	ATM Adaptation Layer 5
ATM	Asynchronous Transfer Mode
DiffServ	Differentiated Services
HDLC	High level Data Link Control
IP	Internet Protocol
IPv4	Internet Protocol, version 4
IPv6	Internet Protocol, version 6
M3UA	SS7 MTP3 User Adaptation Layer
ML/MC-PPP	Muti-Link/Multi-Class PPP
MPLS	Multiprotocol Label Switching
MTP3-B	Message Transfer Part
PLMN	Public Land Mobil Network
PPP	Point-to-Point protocol
PPPMux	PPP Multiplexing
QoS	Quality of Service
RNC	Radio Network Controller
RNSAP	Radio Network Subsystem Application Part
SAAL-NNI	Signalling ATM Adaptation Layer - Network Node Interface
SCCP	Signalling Connection Control Part
SCTP	Stream Control Transmission Protocol
SSCF	Service Specific Co-ordination Function
SSCOP	Service Specific Connection Oriented Protocol
UDP	User Datagram Protocol
UE	User Equipment

4 ~~ATM Layer~~Data Link Layer

~~4.1 General~~4.1 ATM Transport Option

ATM shall be used in the radio network control plane according to [5]. The structure of the cell header used in the UTRAN Iur interface is the cell header format and encoding at NNI (see Figure 3 of [5]).

4.2 IP Transport Option

A UTRAN Node supporting IP transport option shall support PPP protocol with HDLC framing [18], [19].

Note: This does not preclude the single implementation and use of any other data link layer protocols (e.g. PPPMux/AAL5/ATM [27, 28], PPP/AAL2/ATM, Ethernet, MPLS/ATM [29], etc.) fulfilling the UTRAN requirements toward the upper layers.

An RNC using IP transport option having interfaces connected via slow bandwidth PPP links like E1/T1/J1 shall also support IP Header Compression [20] and the PPP extensions ML/MC-PPP [21], [22]. In this case, negotiation of header compression [20] over PPP shall be performed via [23].

5 RNSAP Signalling Bearer

5.1 Introduction

This subclause specifies the Signaling Bearer protocol stack that supports the RNSAP signaling protocol.

The following requirements on the RNSAP signalling bearer can be stated:

- provide reliable transfer of control plane signalling messages in both connectionless mode and connection-oriented mode;
- provide separate independent connections for distinguishing transactions with individual UEs;
- supervise the 'UE connections' and provide connection status information to the Upper Layers for individual UEs;
- provide networking and routing functions;
- provide redundancy in the signalling network;
- provide load sharing.

5.2 Signalling Bearer

This subclause refers to specifications of the Signalling Bearer for the Radio Network Layer protocols. As shown in figure 1, the standard allows operators to choose one out of ~~two~~ three protocol ~~to~~ suites for transport of SCCP messages.

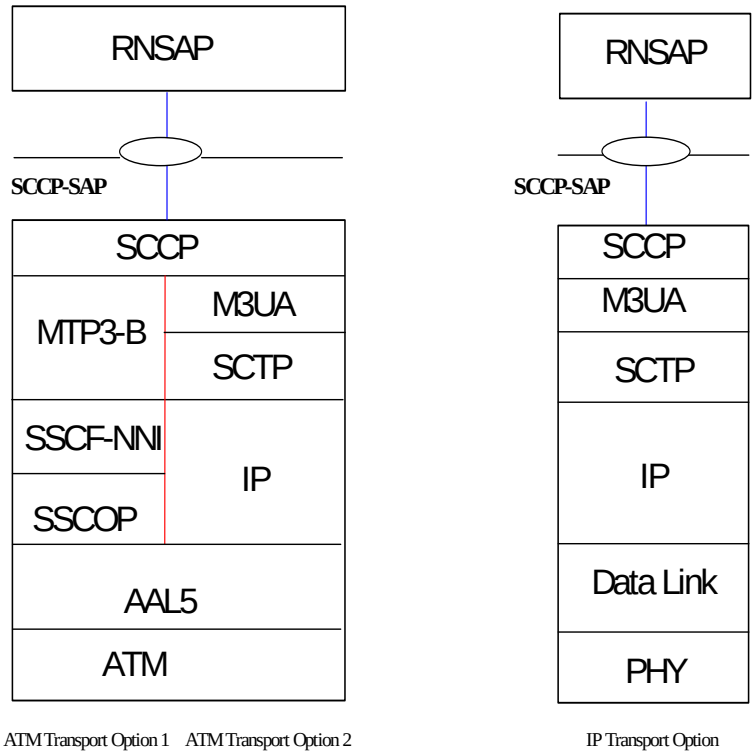
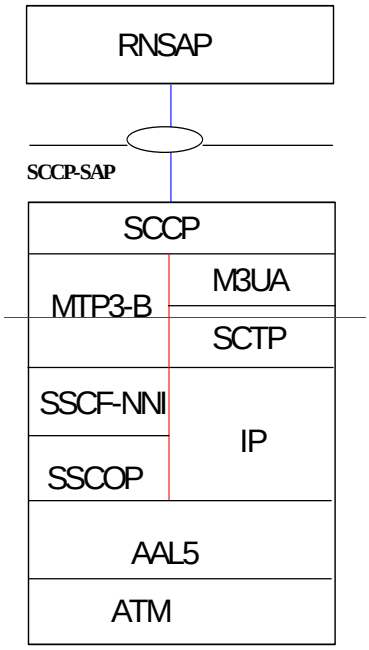


Figure 1: Signalling bearer options for RNSAP

5.2.1 ATM Option 1



~~Figure 1: Signalling bearer for RNSAP~~

1. **SCCP** [7] provides connectionless service, class 0, connection oriented service, class 2, separation of the connections mobile by mobile basis on the connection oriented link and establishment of a connection oriented link mobile by mobile basis.

2. **MTP3-B** [4] provides message routing, discrimination and distribution (for point-to-point link only), signalling link management load sharing and changeover/back between link within one link-set. The need for multiple link-sets is precluded.

3. **SAAL-NNI** [1] consists of the following sub-layers: - **SSCF** [3], - **SSCOP** [2] and - **AAL5** [6]. The SSCF maps the requirements of the layer above to the requirements of SSCOP. Also SAAL connection management, link status and remote processor status mechanisms are provided. SSCOP provides mechanisms for the establishment and release of connections and the reliable exchange of signalling information between signalling entities. Adapts the upper layer protocol to the requirements of the Lower ATM cells.

4. **ATM** [5].

~~5. **SCTP** refers to the Stream Control Transmission Protocol [16] developed by the Sigtran working group of the IETF for the purposes of transporting various signalling protocols over IP networks. M3UA refers to the SCCP adaptation layer "SS7 MTP3 - User Adaptation Layer" [17] also developed by the Sigtran working group of the IETF.~~

~~6. **IP** [13] over ATM is defined in [14] and [15].~~

5.2.2 ATM Option 2

1. **SCCP.** See subclause 5.2.1

2. **SCTP** refers to the Stream Control Transmission Protocol [16] developed by the Sigtran working group of the IETF for the purposes of transporting various signalling protocols over IP networks. M3UA refers to the SCCP adaptation layer "SS7 MTP3 - User Adaptation Layer" [17] also developed by the Sigtran working group of the IETF.

3. **IP** [13] over ATM is defined in [14] and [15].

4. **ATM** [5].

5.2.3 IP Transport Option

1. **SCCP.** See subclause 5.2.1.

2. **SCTP.** See subclause 5.2.2.

3. **IP**. An IP UTRAN Node shall support IPv6 [23]. The support of IPv4 [13] is optional.

Note: This does not preclude single implementation of IPv4.

IP dual stack support is recommended for the potential transition period from IPv4 to IPv6 in the transport network

IP Differentiated Services code point marking [25] shall be supported. The Diffserv code point may be determined from the application parameters.

4. Data link layer is as specified in chapter 4.2.

CR-Form-v4

CHANGE REQUEST

⌘ **25.423** **CR** **555** ⌘ ev **2** ⌘ Current version: **4.3.0** ⌘

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

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

Title:	⌘	Introduction of IP Transport option in UTRAN
Source:	⌘	R-WG3
Work item code:	⌘	ETRAN-IPTRANS
Date:	⌘	February 2002
Category:	⌘	**B**
Release:	⌘	Release 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)

Reason for change: ⌘ The change is needed to be able to set up IP transport bearers on Iur in both directions.

Summary of change: ⌘

The DRNC can include in the *Transport Layer Address* IE and *Binding ID* IE an IP address and a UDP port.

In the following procedures it has been made possible to include the *Transport Layer Address* IE and *Binding ID* IE to carry the IP address and UDP port of the SRNC:

Radio Link Setup, Radio Link Addition, Synchronised Radio Link Reconfiguration Preparation, Unsynchronised Radio Link Reconfiguration, Common Transport Channel Resources Initialisation.

For each RL and DCH and DSCH that need a transport bearer an IP transport bearer can be setup, modified or added.

In the following messages it has been made possible to include the *Transport Layer Address* IE and *Binding ID* IE to carry the IP address and UDP port of the SRNC:

RADIO LINK SETUP REQUEST, RADIO LINK ADDITION REQUEST, RADIO LINK RECONFIGURATION PREPARE, RADIO LINK RECONFIGURATION REQUEST, COMMON TRANSPORT CHANNEL RESOURCES REQUEST.

The following IEs have been changed:

Binding ID IE, *Transport Layer Address* IE, *DSCH FDD Information* IE, *DSCH TDD Information* IE, *USCH Information* IE.

The following IE has been added:

		RL specific DCH Information IE.
Consequences if not approved:	⌘	IP transport bearers will not be possible to setup on the Iur. Impact Analysis: Impact assessment towards the previous version of the specification (same release): No previous version. Compatibility Analysis towards previous release: No impact

Clauses affected:	⌘	3.3, 8.3.1.2, 8.3.1.4, 8.3.2.2, 8.3.2.4, 8.3.4.2, 8.3.4.4, 8.3.7.2, 8.3.7.4, 8.4.1.2, 8.4.1.4, 9.1.3.1, 9.1.3.2, 9.1.6.1, 9.1.6.2, 9.1.11.1, 9.1.11.2, 9.1.16.1, 9.1.16.2, 9.1.35, 9.2.1.3, 9.2.1.62, 9.2.1.XXX, 9.2.2.13A, 9.2.3.3a, 9.2.3.15
Other specs Affected:	⌘	[X] Other core specifications ⌘ [ ] Test specifications [ ] O&M Specifications
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.

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- 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 TS 23.003: "Numbering, addressing and identification".

[2] 3GPP TS 25.413: "UTRAN Iu Interface RANAP Signalling".

[3] 3GPP TS 25.426: "UTRAN Iur and Iub Interface Data Transport & Transport Layer Signalling for DCH Data Streams".

[4] 3GPP TS 25.427: "UTRAN Iur and Iub Interface User Plane Protocols for DCH Data Streams".

[5] 3GPP TS 25.435: "UTRAN Iub interface User Plane Protocols for Common Transport Channel Data Streams".

[6] 3GPP TS 25.104: "UTRA (BS) FDD; Radio transmission and Reception".

[7] 3GPP TS 25.105: "UTRA (BS) TDD; Radio Transmission and Reception".

[8] 3GPP TS 25.211: "Physical Channels and Mapping of Transport Channels onto Physical Channels (FDD)".

[9] 3GPP TS 25.212: "Multiplexing and Channel Coding (FDD)".

[10] 3GPP TS 25.214: "Physical Layer Procedures (FDD)".

[11] 3GPP TS 25.215: "Physical Layer – Measurements (FDD)".

[12] 3GPP TS 25.221: "Physical Channels and Mapping of Transport Channels onto Physical Channels (TDD)".

[13] 3GPP TS 25.223: "Spreading and Modulation (TDD)".

[14] 3GPP TS 25.225: "Physical Layer – Measurements (TDD)".

[15] 3GPP TS 25.304: "UE Procedures in Idle Mode"

[16] 3GPP TS 25.331: "RRC Protocol Specification".

[17] 3GPP TS 25.402: "Synchronisation in UTRAN, Stage 2".

[18] ITU-T Recommendation X.680 (12/97): "Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation".

[19] ITU-T Recommendation X.681 (12/97): "Information technology - Abstract Syntax Notation One (ASN.1): Information object specification".

[20] ITU-T Recommendation X.691 (12/97): "Information technology - ASN.1 encoding rules - Specification of Packed Encoding Rules (PER)".

[21] 3GPP TS 25.213: "Spreading and modulation (FDD)".

[22] 3GPP TS 25.224: "Physical Layer Procedures (TDD)".

[23] 3GPP TS 25.133 (V3.3): "Requirements for support of Radio Resource management (FDD)".

[24] 3GPP TS 25.123 (V3.5): "Requirements for support of Radio Resource management (TDD)".

[25] 3GPP TS 23.032: "Universal Graphical Area Description (GAD)".

[26] 3GPP TS 25.302: "Services Provided by the Physical Layer".

[27] 3GPP TS 25.213: "Spreading and modulation (FDD)".

[28] 3GPP TR 25.921: "Guidelines and Principles for Protocol Description and Error Handling".

[29] GSM TS 05.05: "Digital cellular telecommunications system (Phase 2+); Radio transmission and reception".

[30] ICD-GPS-200: "Navstar GPS Space Segment/Navigation User Interface".

[31] RTCM-SC104: "RTCM Recommended Standards for Differential GNSS Service (v.2.2)".

[32] 3GPP TS 25.425: "UTRAN Iur and Iub Interface User Plane Protocols for Common Transport Channel data streams ".

[33] IETF RFC 2460 “Internet Protocol, Version 6 (IPv6) Specification”.

[34] IETF RFC 768 “User Datagram Protocol”, (8/1980)

[35] 3GPP TS 25.424: " UTRAN Iur Interface Data Transport & Transport Signalling for Common Transport Channel Data Streams ".

3.3 Abbreviations

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

A-GPS	Assisted-GPS
ALCAP	Access Link Control Application Part
ASN.1	Abstract Syntax Notation One
BLER	Block Error Rate
CCCH	Common Control Channel
CCPCH	Common Control Physical Channel
CCTrCH	Coded Composite Transport Channel
CFN	Connection Frame Number
CM	Compressed Mode
CN	Core Network
CPCH	Common Packet Channel
CPICH	Common Pilot Channel
CRNC	Controlling RNC
DCH	Dedicated Channel
DGPS	Differential GPS
DL	Downlink
DPCCH	Dedicated Physical Control Channel
DPCH	Dedicated Physical Channel
DRNC	Drift RNC
DRNS	Drift RNS
D-RNTI	Drift Radio Network Temporary Identifier
DRX	Discontinuous Reception
DSCH	Downlink Shared Channel
EP	Elementary Procedure
FACH	Forward Access Channel
FDD	Frequency Division Duplex
FP	Frame Protocol
GPS	Global Positioning System
IE	Information Element
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
IPDL	Idle Period DownLink
ISCP	Interference Signal Code Power
LCS	Location Services
MAC	Medium Access Control
NAS	Non Access Stratum
O&M	Operation and Maintenance
P-CCPCH	Primary CCPCH
PCH	Paging Channel
P-CIPCH	Primary CIPCH
PCPCH	Physical Common Packet Channel
PDU	Protocol Data Unit
PICH	Paging Indication Channel
PRACH	Physical Random Access Channel
RACH	Random Access Channel
RL	Radio Link
RLC	Radio Link Control
RLS	Radio Link Set
RNS	Radio Network Subsystem
RNSAP	Radio Network Subsystem Application Part
RNTI	Radio Network Temporary Identifier
RRC	Radio Resource Control
RSCP	Received Signal Code Power
S-CCPCH	Secondary CCPCH
SCH	Synchronisation Channel
SCTD	Space Code Transmit Diversity
SDU	Service Data Unit

SFN	System Frame Number
SIR	Signal-to-Interference Ratio
SRNC	Serving RNC
SRNS	Serving RNS
SSDT	Site Selection Diversity Transmission
STTD	Space Time Transmit Diversity
TDD	Time Division Duplex
TFCI	Transport Format Combination Indicator
TFCS	Transport Format Combination Set
TFS	Transport Format Set
ToAWS	Time of Arrival Window Endpoint
TPC	Transmit Power Control
TrCh	Transport Channel
TSTD	Time Switched Transmit Diversity
UARFCN	UTRA Absolute Radio Frequency Channel Number
UDP	User Datagram Protocol
UE	User Equipment
UL	Uplink
URA	UTRAN Registration Area
USCH	Uplink Shared Channel
UTRA	Universal Terrestrial Radio Access
UTRAN	Universal Terrestrial Radio Access Network

8.3.1 Radio Link Setup

8.3.1.1 General

This procedure is used for establishing the necessary resources in the DRNS for one or more radio links.

The connection-oriented service of the signalling bearer shall be established in conjunction with this procedure.

8.3.1.2 Successful Operation

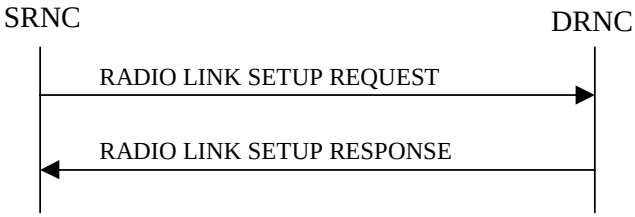

Figure 5: Radio Link Setup procedure: Successful Operation

When the SRNC makes an algorithmic decision to add the first cell or set of cells from a DRNS to the active set of a specific UE-UTRAN connection, the RADIO LINK SETUP REQUEST message is sent to the corresponding DRNC to request establishment of the radio link(s).

The DRNS shall prioritise resource allocation for the RL(s) to be established according to Annex A.

If the RADIO LINK SETUP REQUEST message includes the *Allowed Queuing Time* IE the DRNS may queue the request the time corresponding to the value of the *Allowed Queuing Time* IE before starting to execute the request.

If no *D-RNTI* IE was included in the RADIO LINK SETUP REQUEST message, the DRNC shall assign a new D-RNTI for this UE.

Transport Channels Handling:

DCH(s):

[TDD - If the *DCH Information* IE is present in RADIO LINK SETUP REQUEST message, the DRNS shall configure the new DCHs according to the parameters given in the message.]

If the RADIO LINK SETUP REQUEST message includes a *DCH Information* IE with multiple *DCH Specific Info* IEs then the DRNS shall treat the DCHs in the *DCH Information* IE as a set of co-ordinated DCHs.

[FDD - For DCHs which do not belong to a set of co-ordinated DCHs with the *QE-Selector* IE set to "selected", the Transport channel BER from that DCH shall be the base for the QE in the UL data frames. If no Transport channel BER is available for the selected DCH the Physical channel BER shall be used for the QE, ref. [4]. If the QE-Selector is set to "non-selected ", the Physical channel BER shall be used for the QE in the UL data frames, ref. [4].]

For a set of co-ordinated DCHs the Transport channel BER from the DCH with the *QE-Selector* IE set to "selected" shall be used for the QE in the UL data frames, ref. [4]. [FDD - If no Transport channel BER is available for the selected DCH the Physical channel BER shall be used for the QE, ref. [4]. If all DCHs have *QE-Selector* IE set to "non-selected" the Physical channel BER shall be used for the QE, ref. [4].]

The DRNS shall use the included *UL DCH FP Mode* IE for a DCH or a set of co-ordinated DCHs as the DCH FP Mode in the Uplink of the user plane for the DCH or the set of co-ordinated DCHs.

The DRNS shall use the included *ToAWS* IE for a DCH or a set of co-ordinated DCHs as the Time of Arrival Window Start Point in the user plane for the DCH or the set of co-ordinated DCHs.

The DRNS shall use the included *ToAWE* IE for a DCH or a set of co-ordinated DCHs as the Time of Arrival Window End Point in the user plane for the DCH or the set of co-ordinated DCHs.

The *Frame Handling Priority* IE defines the priority level that should be used by the DRNS to prioritise between different frames of the data frames of the DCHs in the downlink on the radio interface in congestion situations once the new RL(s) have been activated.

If the *DCH Specific Info* IE in the *DCH Information* IE includes the *Guaranteed Rate Information* IE, the DRNS shall treat the included IEs according to the following:

- If the *Guaranteed Rate Information* IE includes the *Guaranteed UL Rate* IE, the DRNS may decide to request the SRNC to limit the user rate of the uplink of the DCH at any point in time. The DRNS may request the SRNC to reduce the user rate of the uplink of the DCH below the guaranteed bit rate, however, whenever possible the DRNS should request the SRNC to reduce the user rate between the maximum bit rate and the guaranteed bit rate. If the *DCH Specific Info* IE in the *DCH Information* IE does not include the *Guaranteed UL Rate* IE, the DRNS shall not limit the user rate of the uplink of the DCH.

- If the *Guaranteed Rate Information* IE includes the *Guaranteed DL Rate* IE, the DRNS may decide to request the SRNC to limit the user rate of the downlink of the DCH at any point in time. The DRNS may request the SRNC to reduce the user rate of the downlink of the DCH below the guaranteed bit rate, however, whenever possible the DRNS should request the SRNC to reduce the user rate between the maximum bit rate and the guaranteed bit rate. If the *DCH Specific Info* IE in the *DCH Information* IE does not include the *Guaranteed DL Rate* IE, the DRNS shall not limit the user rate of the downlink of the DCH.

DSCH(s):

If the *DSCH Information* IE is included in the RADIO LINK SETUP REQUEST message, the DRNC shall establish the requested DSCHs [FDD - on the RL indicated by the PDSCH RL ID IE]. If the *Transport Layer Address* IE and *Binding ID* IE are included in the *DSCH Information* IE the DRNC may use the transport layer address and the binding identifier received from the SRNC when establishing a transport bearer for the DSCH. In addition, the DRNC shall send a valid set of *DSCH Scheduling Priority* IE and *MAC-c/sh SDU Length* IE parameters to the SRNC in the message RADIO LINK SETUP RESPONSE message.

[TDD - USCH(s)]:

[TDD – The DRNS shall use the list of RB Identities in the *RB Info* IE in the *USCH information* IE to map each *RB Identity* IE to the corresponding USCH. If the *Transport Layer Address* IE and *Binding ID* IE are included in the *USCH Information* IE the DRNC may use the transport layer address and the binding identifier received from the SRNC when establishing a transport bearer for the USCH.]

Physical Channels Handling:

[FDD - Compressed Mode]:

[FDD - If the RADIO LINK SETUP REQUEST message includes the *Transmission Gap Pattern Sequence Information* IE, the DRNS shall store the information about the Transmission Gap Pattern Sequences to be used in the Compressed Mode Configuration. This Compressed Mode Configuration shall be valid in the DRNS until the next Compressed Mode Configuration is configured in the DRNS or last Radio Link is deleted.]

[FDD - If the RADIO LINK SETUP REQUEST message includes the *Transmission Gap Pattern Sequence Information* IE and the *Active Pattern Sequence Information* IE, the DRNS shall use the information to activate the indicated Transmission Gap Pattern Sequences(s) in the new RL. The received *CM*

Configuration Change CFN IE refers to latest passed CFN with that value. The DRNS shall treat the received *TGCFN* IEs as follows:]

- [FDD - If any received *TGCFN* IE has the same value as the received *CM Configuration Change CFN* IE, the DRNS shall consider the concerning Transmission Gap Pattern Sequence as activated at that CFN.]

- [FDD - If any received *TGCFN* IE does not have the same value as the received *CM Configuration Change CFN* IE but the first CFN after the CM Configuration Change CFN with a value equal to the *TGCFN* IE has already passed, the DRNS shall consider the concerning Transmission Gap Pattern Sequence as activated at that CFN.]

- [FDD - For all other Transmission Gap Pattern Sequences included in the *Active Pattern Sequence Information* IE, the DRNS shall activate each Transmission Gap Pattern Sequence at the first CFN after the CM Configuration Change CFN with a value equal to the *TGCFN* IE for the Transmission Gap Pattern Sequence.]

[FDD- If the *Downlink Compressed Mode Method* IE in one or more Transmission Gap Pattern Sequence is set to 'SF/2' in the RADIO LINK SETUP REQUEST message, the DRNS shall include the *Transmission Gap Pattern Sequence Scrambling Code Information* IE in the RADIO LINK SETUP RESPONSE message indicating for each DL Channelisation Code whether the alternative scrambling code shall be used or not.]

[FDD - DL Code Information]:

[FDD – When more than one DL DPDCH are assigned per RL, the segmented physical channel shall be mapped on to DL DPDCHs according to [8]. When *p* number of DL DPDCHs are assigned to each RL, the first pair of DL Scrambling Code and FDD DL Channelisation Code Number corresponds to "*PhCH number 1*", the second to "*PhCH number 2*", and so on until the *p*th to "*PhCH number p*".]

General:

[FDD - If the *Propagation Delay* IE is included, the DRNS may use this information to speed up the detection of UL synchronisation on the Uu interface.]

[FDD – If the received *Limited Power Increase* IE is set to 'Used', the DRNS shall, if supported, use Limited Power Increase according to ref. [10] subclause 5.2.1 for the inner loop DL power control.]

Radio Link Handling:

Diversity Combination Control:

[FDD - The *Diversity Control Field* IE indicates for each RL except for the first RL whether the DRNS shall combine the RL with any of the other RLs or not on the Iur. If the *Diversity Control Field* IE is set to "May" (be combined with another RL), then the DRNS shall decide for any of the alternatives. If the *Diversity Control Field* IE is set to "Must", the DRNS shall combine the RL with one of the other RL. When an RL is to be combined, the DRNS shall choose which RL(s) to combine it with. If the *Diversity Control Field* IE is set to "Must not", the DRNS shall not combine the RL with any other existing RL.]

[FDD - In the case of combining one or more RLs the DRNC shall indicate in the RADIO LINK SETUP RESPONSE message with the *Diversity Indication* IE that the RL is combined with another RL RL for all RLs but the first RL. In this case the Reference *RL ID* IE shall be included to indicate with which RL the combination is performed. The Reference *RL ID* IE shall not be included for the first of the combined RLs, for which the *Transport Layer Address* IE and the *Binding ID* IE shall be included.]

[FDD - In the case of not combining an RL with another RL, the DRNC shall indicate in the RADIO LINK SETUP RESPONSE message with the *Diversity Indication* IE that no combining is performed. In this case

the DRNC shall include both the *Transport Layer Address* IE and the *Binding ID* IE for the transport bearer to be established for each DCH and DSCH of the RL in the RADIO LINK SETUP RESPONSE message.]

[TDD - The DRNC shall always include in the RADIO LINK SETUP RESPONSE message both the *Transport Layer Address* IE and the *Binding ID* IE for the transport bearer to be established for each DCH, DSCH and USCH of the RL.]

In case of a set of co-ordinated DCHs requiring a new transport bearer on Iur the *Binding ID* IE and the *Transport Layer Address* IE shall be included only for one of the DCHs in the set of co-ordinated DCHs.

[FDD-Transmit Diversity]:

[FDD – If the cell in which the RL is being set up is capable to provide Close loop Tx diversity, the DRNC shall include the *Closed Loop Timing Adjustment Mode* IE in the RADIO LINK SETUP RESPONSE message indicating the configured Closed loop timing adjustment mode of the cell.]

[FDD – When *Diversity Mode* IE is "STTD", "Closed loop mode1", or "Closed loop mode2", the DRNC shall activate/deactivate the Transmit Diversity to each Radio Link in accordance with *Transmit Diversity Indicator* IE].

DL Power Control:

[FDD - If both the *Initial DL TX Power* IE and *Uplink SIR Target* IE are included in the message, the DRNS shall use the indicated DL TX Power and Uplink SIR Target as initial value. If the value of the *Initial DL TX Power* IE is outside the configured DL TX power range, the DRNS shall apply these constrains when setting the initial DL TX power. The DRNS shall also include the configured DL TX power range defined by *Maximum DL TX Power* IE and *Minimum DL TX Power* IE in the RADIO LINK SETUP RESPONSE message. The DRNS shall not transmit with a higher power than indicated by the *Maximum DL TX Power IE* or lower than indicated by the *Minimum DL TX Power IE* on any DL DPCH of the RL except during compressed mode, when the $P_{SIR}(k)$, as described in ref.[10] subclause 5.2.1.3, shall be added to the maximum DL power in slot k.]

[FDD - If both the *Initial DL TX Power* and the *Uplink SIR Target* IEs are not included in the RADIO LINK SETUP REQUEST message, then DRNC shall determine the initial Uplink SIR Target and include it in the *Uplink SIR Target* IE in the RADIO LINK SETUP RESPONSE message.]

[FDD - If the *Primary CPICH Ec/No* IE is present, the DRNC should use the indicated value when deciding the Initial DL TX Power.]

[TDD - If the *Primary CCPCH RSCP* IE and/or the [3.84Mcps TDD - *DL Time Slot ISCP Info* IE] and/or the [1.28Mcps TDD - *DL Time Slot ISCP Info LCR* IE] are present, the DRNC should use the indicated values when deciding the Initial DL TX Power.]

[FDD – The DRNS shall start the DL transmission using the indicated DL TX power level (if received) or the decided DL TX power level on each DL channelisation code of a RL until UL synchronisation is achieved on the Uu interface for the concerning RLS or Power Balancing is activated. No inner loop power control or power balancing shall be performed during this period. The DL power shall then vary according to the inner loop power control (see ref.[10] subclause 5.2.1.2) and the power control procedure (see 8.3.7).]

[TDD – The DRNS shall start the DL transmission using the decided DL TX power level on each DL channelisation code and on each Time Slot of a RL until UL synchronisation is achieved on the Uu interface for the concerning RL. No inner loop power control shall be performed during this period. The DL power shall then vary according to the inner loop power control (see ref. [22] subclause 4.2.3.3).]

[FDD – If the received *Inner Loop DL PC Status* IE is set to "Active", the DRNS shall activate the inner loop DL power control for all RLs. If *Inner Loop DL PC Status* IE is set to "Inactive", the DRNS shall deactivate the inner loop DL power control for all RLs according to ref. [10].

[FDD - If the *DPC Mode* IE is present in the RADIO LINK SETUP REQUEST message, the DRNC shall apply the DPC mode indicated in the message, and be prepared that the DPC mode may be changed during the life time of the RL. If the *DPC Mode* IE is not present in the RADIO LINK SETUP REQUEST message, DPC mode 0 shall be applied (see ref. [10]).]

Neighbouring Cell Handling:

If there are UMTS neighbouring cell(s) to the cell in which a Radio Link was established then:

- The DRNC shall include the *Neighbouring FDD Cell Information* IE and/or *Neighbouring TDD Cell Information* IE in the *Neighbouring UMTS Cell Information* IE for each neighbouring FDD cell and/or TDD cell respectively. In addition, if the information is available, the DRNC shall include the *Frame Offset* IE, *Primary CPICH Power* IE, *Cell Individual Offset* IE, *STTD Support Indicator* IE, *Closed Loop Mode1 Support Indicator* IE and *Closed Loop Mode2 Support Indicator* IE in the *Neighbouring FDD Cell Information* IE, and the *Frame Offset* IE, *Cell Individual Offset* IE, *DPCH Constant Value* IE and the *PCCPCH Power* IE in the *Neighbouring TDD Cell Information* IE.

- If a UMTS neighbouring cell is not controlled by the same DRNC, the DRNC shall also include the *CN PS Domain Identifier* IE and/or *CN CS Domain Identifier* IE which are the identifiers of the CN nodes connected to the RNC controlling the UMTS neighbouring cell.

- [FDD - The DRNC shall include the *DPC Mode Change Support Indicator* IE if the DRNC is aware that the neighbouring cell supports DPC mode change.]

For the UMTS neighbouring cells which are controlled by the DRNC, the DRNC shall report in the RADIO LINK SETUP RESPONSE message the restriction state of those cells, otherwise *Restriction state indicator* IE may be absent. The DRNC shall include the *Restriction state indicator* IE for the neighbouring cells which are controlled by the DRNC in the *Neighbouring FDD Cell Information* IE, the *Neighbouring TDD Cell Information* IE and the *Neighbouring TDD Cell Information LCR* IE.

If there are GSM neighbouring cells to the cell(s) where a radio link is established, the DRNC shall include the *Neighbouring GSM Cell Information* IE in the RADIO LINK SETUP RESPONSE message for each of the GSM neighbouring cells. If available the DRNC shall include the *Cell Individual Offset* IE in the *Neighbouring GSM Cell Information* IE.

General:

If the RADIO LINK SETUP REQUEST message includes the *RL Specific DCH Information* IE, the DRNC may use the transport layer address and the binding identifier received from the SRNC when establishing a transport bearer for the DCH or the set of co-ordinated DCHs.

[FDD - If the RADIO LINK SETUP REQUEST message includes the *SSDT Cell Identity* IE and the *S-Field Length* IE, the DRNS shall activate SSDT, if supported, using the *SSDT Cell Identity* IE and *SSDT Cell Identity Length* IE.]

[FDD - If the RADIO LINK SETUP REQUEST message includes the *SSDT Cell Identity for EDSCHPC* IE, the DRNS shall activate enhanced DSCH power control, if supported, using the *SSDT Cell Identity for EDSCHPC* IE and *SSDT Cell Identity Length* IE as well as *Enhanced DSCH PC* IE in accordance with ref. [10] subclause 5.2.2. If the RADIO LINK SETUP REQUEST message includes both *SSDT Cell Identity* IE and *SSDT Cell Identity for EDSCHPC* IE, then the DRNS shall ignore the *SSDT Cell Identity for EDSCHPC* IE.]

[FDD - If the *DRAC Control* IE is set to "requested" in the RADIO LINK SETUP REQUEST message for at least one DCH and if the DRNS supports the DRAC, the DRNC shall indicate in the RADIO LINK SETUP RESPONSE message the *Secondary CCPCH Info* IE for the FACH where the DRAC information is sent, for each Radio Link established in a cell where DRAC is active. If the DRNS does not support DRAC, the DRNC shall not provide these IEs in the RADIO LINK SETUP RESPONSE message.]

If no *D-RNTI* IE was included in the RADIO LINK SETUP REQUEST message, the DRNC shall include the node identifications of the CN Domain nodes that the RNC is connected to (using LAC and RAC of the current cell), and the *D-RNTI* IE in the RADIO LINK SETUP RESPONSE message.

[FDD - If the *D-RNTI* IE was included the RADIO LINK SETUP REQUEST message the DRNC shall include the *Primary Scrambling Code* IE, the *UL UARFCN* IE and the *DL UARFCN* IE in the RADIO LINK SETUP RESPONSE message.]

[TDD – If the *D-RNTI* IE was included in the RADIO LINK SETUP REQUEST message the DRNC shall include the *UARFCN* IE, the *Cell Parameter ID* IE,[3.84Mcps TDD - the *Sync Case* IE, the *SCH Time Slot* IE,] the *SCTD Indicator* IE, and the *PCCPCH Power* IE in the RADIO LINK SETUP RESPONSE message.]

[TDD - The DRNC shall include the *Secondary CCPCH Info TDD* IE in the RADIO LINK SETUP RESPONSE message if at least one *DSCH Information Response* IE or *USCH Information Response* IE is included in the message and at least one DCH is configured for the radio link. The DRNC shall also include the [3.84Mcps TDD - *Secondary CCPCH Info TDD* IE] [1.28Mcps TDD – *Secondary CCPCH Info TDD LCR* IE] in the RADIO LINK SETUP RESPONSE message if at least one *DSCH Information Response* IE or *USCH Information Response* IE is included in the message and the SHCCH messages for this radio link will be transmitted over a different secondary CCPCH than selected by the UE from system information.]

For each Radio Link established in a cell where at least one URA Identity is being broadcast, the DRNC shall include a URA Identity for this cell in the *URA ID* IE, the *Multiple URAs Indicator* IE indicating whether or not multiple URA Identities are being broadcast in the cell, and the RNC Identity of all other RNCs that are having at least one cell within the URA in the cell in the *URA Information* IE in the RADIO LINK SETUP RESPONSE message.

Depending on local configuration in the DRNS, it may include the geographical co-ordinates of the cell, represented either by the *Cell GAI* IE or by the *Cell GA Additional Shapes* IE and the UTRAN access point position for each of the established RLs in the RADIO LINK SETUP RESPONSE message.

If the DRNS need to limit the user rate in the uplink of a DCH already when starting to utilise a new Radio Link, the DRNC shall include the *Allowed UL Rate* IE of the *Allowed Rate Information* IE in the *DCH Information Response* IE for this DCH in the RADIO LINK SETUP RESPONSE message for this Radio Link.

If the DRNS need to limit the user rate in the downlink of a DCH already when starting to utilise a new Radio Link, the DRNC shall include the *Allowed DL Rate* IE of the *Allowed Rate Information* IE in the *DCH Information Response* IE for this DCH in the RADIO LINK SETUP RESPONSE message for this Radio Link.

If the *Permanent NAS UE Identity* IE is included in the RADIO LINK SETUP REQUEST message, the DRNS shall store the information for the considered UE Context for the life-time of the UE Context.

If the RADIO LINK SETUP REQUEST message includes the *Permanent NAS UE Identity* IE and a *C-ID* IE corresponding to a cell reserved for operator use, the DRNC shall use this information to determine whether it can set up a Radio Link on this cell or not for the considered UE Context.

[FDD - Radio Link Set Handling]:

[FDD - The *First RLS Indicator* IE indicates if the concerning RL shall be considered part of the first RLS established towards this UE. The *First RLS Indicator* IE shall be used by the DRNS to determine the initial TPC pattern in the DL of the concerning RL and all RLs which are part of the same RLS, as described in [10], section 5.1.2.2.1.2.

[FDD – For each RL not having a common generation of the TPC commands in the DL with another RL, the DRNS shall assign the *RL Set ID* IE included in the RADIO LINK SETUP RESPONSE message a value that uniquely identifies the RL Set within the UE Context.]

[FDD – For all RLs having a common generation of the TPC commands in the DL with another RL, the DRNS shall assign the *RL Set ID* IE included in the RADIO LINK SETUP RESPONSE message the same value. This value shall uniquely identify the RL Set within the UE context.]

[FDD –The UL Uu synchronisation detection algorithm defined in ref. [10] subclause 4.3 shall for each of the established RL Set(s) use the maximum value of the parameters N_OUTSYNC_IND and T_RLFAILURE, and the minimum value of the parameters N_INSYNC_IND, that are configured in the cells supporting the radio links of the RL Set].

Response Message:

At the reception of the RADIO LINK SETUP REQUEST message, DRNS allocates requested type of channelisation codes and other physical channel resources for each RL and assigns a binding identifier and a transport layer address for each DCH or set of co-ordinated DCHs and for each DSCH [TDD – and USCH]. This information shall be sent to the SRNC in the message RADIO LINK SETUP RESPONSE when all the RLs have been successfully established.

After sending of the RADIO LINK SETUP RESPONSE message the DRNS shall continuously attempt to obtain UL synchronisation on the Uu interface and start reception on the new RL. [FDD - The DRNS shall start DL transmission on the new RL after synchronisation is achieved in the DL user plane as specified in ref. [4].] [TDD – The DRNS shall start transmission on the new RL immediately as specified in ref. [4].]

8.3.1.4 Abnormal Conditions

If the DRNC receives either an S-RNTI or a D-RNTI which already has RL(s) established the DRNC shall send the RADIO LINK SETUP FAILURE message to the SRNC, indicating the reason for failure.

[FDD - If the RADIO LINK SETUP REQUEST message includes the *Active Pattern Sequence Information* IE, but the *Transmission Gap Pattern Sequence Information* IE is not present, then the DRNC shall reject the procedure using the RADIO LINK SETUP FAILURE message.]

[FDD – If the RADIO LINK SETUP REQUEST message includes both the *Initial DL TX Power* IE and the *Primary CPICH Ec/No* IE or does not include either of these IEs, then the DRNC shall reject the procedure using the RADIO LINK SETUP FAILURE message.]

If more than one DCH of a set of co-ordinated DCHs has the *QE-Selector* IE set to "selected" [TDD – or no DCH of a set of co-ordinated DCHs has the *QE-Selector* IE set to “selected”] the DRNS shall regard the Radio Link Setup procedure as failed and shall respond with a RADIO LINK SETUP FAILURE message.

[FDD - If only the *Initial DL TX Power* IE or the *Uplink SIR Target* IE is included in the RADIO LINK SETUP REQUEST message, then DRNC shall regard the Radio Link Setup procedure as failed and shall respond with the RADIO LINK SETUP FAILURE message.]

If the RADIO LINK SETUP REQUEST message includes a *DCH Information* IE with multiple *DCH Specific Info* IEs, and if the DCHs in the *DCH Information* IE do not have the same *Transmission Time Interval* IE in the *Semi-static Transport Format Information* IE, then the DRNC shall reject the procedure using the RADIO LINK SETUP FAILURE message.

If the RADIO LINK SETUP REQUEST message includes the *Transport Layer Address* IE and the *Binding ID* IE in the *RL Specific DCH Information* IE included in the *RL Information* IE for a specific RL and the *Diversity Control Field* IE is set to “Must”, the DRNC shall regard the Radio Link Setup procedure as failed and the DRNC shall respond with the RADIO LINK SETUP FAILURE message.

If the RADIO LINK SETUP REQUEST message includes the *Transport Layer Address* IE or the *Binding ID* IE, and not both are present for a transport bearer intended to be established, the DRNC shall regard the Radio Link Setup procedure as failed and the DRNC shall respond with the RADIO LINK SETUP FAILURE message.

8.3.2 Radio Link Addition

8.3.2.1 General

This procedure is used for establishing the necessary resources in the DRNS for one or more additional RLs towards a UE when there is already at least one RL established to the concerning UE via this DRNS.

This procedure shall use the signalling bearer connection for the relevant UE context.

The Radio Link Addition procedure shall not be initiated if a Prepared Reconfiguration exists, as defined in subclause 3.1.

[FDD – The Radio Link Addition procedure serves to establish one or more new Radio Links which do not contain the DSCH. If the DSCH shall be moved into a new Radio Link, the Radio Link reconfiguration procedure shall be applied.]

[TDD – The Radio Link Addition procedure serves to establish a new Radio Link with the DSCH and USCH included, if they existed before.]

8.3.2.2 Successful Operation

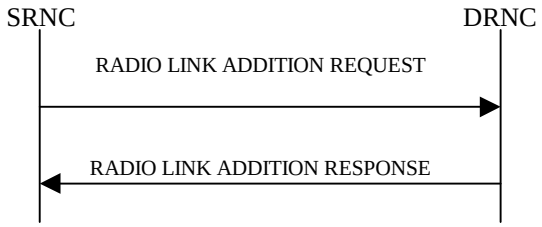

Figure 7: Radio Link Addition procedure: Successful Operation

The procedure is initiated with a RADIO LINK ADDITION REQUEST message sent from the SRNC to the DRNC.

Upon reception, the DRNS shall reserve the necessary resources and configure the new RL(s) according to the parameters given in the message. Unless specified below, the meaning of parameters is specified in other specifications.

The DRNS shall prioritise resource allocation for the RL(s) to be established according to Annex A.

Transport Channel Handling:

DSCH:

[TDD - If the radio link to be added includes a DSCH, the DRNC shall send a set of valid *DSCH Scheduling Priority* IE and *MAC-c/sh SDU Length* IE parameters to the SRNC in the message RADIO LINK ADDITION RESPONSE message.]

Physical Channels Handling:

[FDD-Compressed Mode]:

[FDD - If the RADIO LINK ADDITION REQUEST message includes the *Active Pattern Sequence Information* IE, the DRNS shall use the information to activate the indicated (all ongoing) Transmission Gap Pattern Sequence(s) in the new RL. The received *CM Configuration Change CFN* IE refers to the latest passed CFN with that value. The DRNS shall treat the received *TGCFN* IEs as follows:]

- [FDD - If any received *TGCFN* IE has the same value as the received *CM Configuration Change CFN* IE, the DRNS shall consider the concerning Transmission Gap Pattern Sequence as activated at that CFN.]

- [FDD - If any received *TGCFN* IE does not have the same value as the received *CM Configuration Change CFN* IE but the first CFN after the CM Configuration Change CFN with a value equal to the *TGCFN* IE has already passed, the DRNS shall consider the concerning Transmission Gap Pattern Sequence as activated at that CFN.]

- [FDD - For all other Transmission Gap Pattern Sequences included in the *Active Pattern Sequence Information* IE, the DRNS shall activate each Transmission Gap Pattern Sequence at the first CFN after the CM Configuration Change CFN with a value equal to the *TGCFN* IE for the Transmission Gap Pattern Sequence.]

FDD - If the *Active Pattern Sequence Information* IE is not included, the DRNS shall not activate the ongoing compressed mode pattern in the new RLs, but the ongoing pattern in the existing RL shall be maintained.]

[FDD - If some Transmission Gap Pattern sequences using SF/2 method are initialised in the DRNS, DRNS shall include the *Transmission Gap Pattern Sequence Scrambling Code Information IE* in the RADIO LINK ADDITION RESPONSE message to indicate the Scrambling code change method that it selects for each channelisation code.]

[FDD-DL Code Information]:

[FDD – When more than one DL DPDCH are assigned per RL, the segmented physical channel shall be mapped on to DL DPDCHs according to [8]. When *p* number of DL DPDCHs are assigned to each RL, the first pair of DL Scrambling Code and FDD DL Channelisation Code Number corresponds to "*PhCH number 1"*, the second to "*PhCH number 2"*, and so on until the *p*th to "*PhCH number p*".]

General:

[FDD - The DRNS shall use the provided Uplink SIR Target value as the current target for the inner-loop power control.]

Radio Link Handling:

Diversity Combination Control:

The *Diversity Control Field* IE indicates for each RL whether the DRNS shall combine the new RL with existing RL(s) or not on the Iur. If the *Diversity Control Field* IE is set to "May" (be combined with another RL), then the DRNS shall decide for any of the alternatives. If the *Diversity Control Field* IE is set to "Must", the DRNS shall combine the RL with one of the other RL. When a new RL is to be combined the DRNS shall choose which RL(s) to combine it with. If the *Diversity Control Field* IE is set to "Must not", the DRNS shall not combine the RL with any other existing RL.

In the case of combining an RL with existing RL(s) the DRNC shall indicate in the RADIO LINK ADDITION RESPONSE message with the *Diversity Indication* IE that the RL is combined. In this case the Reference RL ID shall be included to indicate one of the existing RLs that the new RL is combined with.

[FDD - In the case of combining one or more RLs being established by this procedure, the DRNC shall indicate in the RADIO LINK ADDITION RESPONSE message with the *Diversity Indication* IE that the RL is combined with another RL for all RLs but the first RL. In this case the Reference RL ID shall be included to indicate one of the other RLs being established by this procedure that the new RL is combined with. The Reference *RL ID* IE shall not be included for the first of the combined RLs, for which the *Transport Layer Address* IE and the *Binding ID* IE shall be included.]

In the case of not combining an RL with existing RL(s), the DRNC shall indicate in the RADIO LINK ADDITION RESPONSE message with the *Diversity Indication* IE that no combining is done. In this case the DRNC shall include both the *Transport Layer Address* IE and the *Binding ID* IE for the transport bearer to be established for each DCH, [TDD – and DSCH, USCH] of the RL in the RADIO LINK ADDITION RESPONSE message.

In case of a set of co-ordinated DCHs, the *Binding ID* IE and the *Transport Layer Address* IE shall be included for only one of the DCHs in the set of co-ordinated DCHs.

If the DRNS need to limit the user rate in the uplink of a DCH already when starting to utilise a new Radio Link, the DRNC shall include the *Allowed UL Rate* IE of the *Allowed Rate Information* IE in the *DCH Information Response* IE for this DCH in the RADIO LINK ADDITION RESPONSE message for this Radio Link.

If the DRNS need to limit the user rate in the downlink of a DCH already when starting to utilise a new Radio Link, the DRNC shall include the *Allowed DL Rate* IE of the *Allowed Rate Information* IE in the *DCH Information Response* IE for this DCH in the RADIO LINK ADDITION RESPONSE message for this Radio Link.

[FDD-Transmit Diversity]:

The DRNS shall activate any feedback mode diversity according to the received settings.

[FDD – If the cell in which the RL is being added is capable to provide Close loop Tx diversity, the DRNC shall include the *Closed Loop Timing Adjustment Mode* IE in the RADIO LINK ADDITION RESPONSE message indicating the Closed loop timing adjustment mode of the cell.]

[FDD – When *Transmit Diversity Indicator* IE is present the DRNS shall activate/deactivate the Transmit Diversity to each new Radio Link in accordance with the *Transmit Diversity Indicator* IE using the diversity mode of the existing Radio Link(s).]

DL Power Control:

[FDD - If the *Primary CPICH Ec/No* IE measured by the UE is included for an RL in the RADIO LINK ADDITION REQUEST message, the DRNS shall use this in the calculation of the Initial DL TX Power for this RL. If the *Primary CPICH Ec/No* IE is not present, the DRNS shall set the Initial DL TX Power based on the power relative to the Primary CPICH power used by the existing RLs.]

[TDD - If the *Primary CCPCH RSCP* IE and/or the [3.84Mcps TDD - *DL Time Slot ISCP Info* IE] and/or the [1.28Mcps TDD - *DL Time Slot ISCP Info LCR* IE] are included in the RADIO LINK ADDITION REQUEST message, the DRNS shall use them in the calculation of the Initial DL TX Power. If the *Primary CCPCH RSCP* IE and [3.84Mcps TDD - *DL Time Slot ISCP Info* IE] and [1.28Mcps TDD - *DL Time Slot ISCP Info LCR* IE] are not present, the DRNS shall set the Initial DL TX Power based on the power relative to the Primary CCPCH power used by the existing RL.]

[FDD - The Initial DL TX Power shall be applied until UL synchronisation is achieved on the Uu interface for that RLS or Power Balancing is activated. No inner loop power control or power balancing shall be performed during this period. The DL power shall then vary according to the inner loop power control (see ref. [10] subclause 5.2.1.2) and the power control procedure (see 8.3.7)].

[TDD – The Initial DL TX Power shall be applied until UL synchronisation is achieved on the Uu interface for that RL. No innerloop power control shall be performed during this period. The DL power shall then vary according to the inner loop power control (see ref. [22] subclause 4.2.3.3).].

[FDD - If the *DPC Mode* IE is present in the RADIO LINK ADDITION REQUEST message, the DRNC shall apply the DPC mode indicated in the message, and be prepared that the DPC mode may be changed during the life time of the RL. If the *DPC Mode* IE is not present in the RADIO LINK ADDITION REQUEST message, DPC mode 0 shall be applied (see ref. [10]).]

The DRNC shall also provide the configured UL Maximum SIR and UL Minimum SIR for every new RL to the SRNC in the RADIO LINK ADDITION RESPONSE message. These values are taken into consideration by DRNS admission control and shall be used by the SRNC as limits for the UL inner-loop power control target.

The DRNC shall provide the configured *Maximum DL TX Power* IE and *Minimum DL TX Power* IE for every new RL to the SRNC in the RADIO LINK ADDITION RESPONSE message. The DRNS shall not

transmit with a higher power than indicated by the *Maximum DL TX Power IE* or lower than indicated by the *Minimum DL TX Power IE* on any DL DPCH of the RL [FDD – except during compressed mode, when the $P_{SIR}(k)$, as described in ref.[10] subclause 5.2.1.3, shall be added to the maximum DL power in slot k].

DL Code Information:

The DRNC shall also provide the selected scrambling and channelisation codes of the new RLs in order to enable the SRNC to inform the UE about the selected codes.

Neighbouring Cell Handling:

If there are UMTS neighbouring cell(s) to the cell in which a Radio Link was established then:

- The DRNC shall include the *Neighbouring FDD Cell Information* IE and/or *Neighbouring TDD Cell Information* IE in the *Neighbouring UMTS Cell Information* IE for each neighbouring FDD cell and/or TDD cell respectively. In addition, if the information is available, the DRNC shall include the *Frame Offset* IE, *Primary CPICH Power* IE, *Cell Individual Offset* IE, *STTD Support Indicator* IE, *Closed Loop Mode1 Support Indicator* IE and *Closed Loop Mode2 Support Indicator* IE in the *Neighbouring FDD Cell Information* IE, and the *Frame Offset* IE, *Cell Individual Offset* IE, *DPCH Constant Value* IE and the *PCCPCH Power* IE in the *Neighbouring TDD Cell Information* IE.

- If a UMTS neighbouring cell is not controlled by the same DRNC, the DRNC shall also include the *CN PS Domain Identifier* IE and/or *CN CS Domain Identifier* IE which are the identifiers of the CN nodes connected to the RNC controlling the UMTS neighbouring cell.

- [FDD - The DRNC shall include the *DPC Mode Change Support Indicator* IE if the DRNC is aware that the neighbouring cell supports DPC mode change.]

For the UMTS neighbouring cells which are controlled by the DRNC, the DRNC shall report in the RADIO LINK SETUP RESPONSE message the restriction state of those cells, otherwise *Restriction state indicator* IE may be absent. The DRNC shall include the *Restriction state indicator* IE for the neighbouring cells which are controlled by the DRNC in the *Neighbouring FDD Cell Information* IE, the *Neighbouring TDD Cell Information* IE and the *Neighbouring TDD Cell Information LCR* IE.

If there are GSM neighbouring cells to the cell(s) where a radio link is established, the DRNC shall include the *Neighbouring GSM Cell Information* IE in the RADIO LINK ADDITION RESPONSE message for each of the GSM neighbouring cells. If available the DRNC shall include the *Cell Individual Offset* IE in the *Neighbouring GSM Cell Information* IE.

[FDD - The DRNS shall use the provided Uplink SIR Target value as the current target for the inner-loop power control.]

General:

If the RADIO LINK ADDITION REQUEST message includes the *RL Specific DCH Information* IE, the DRNC may use the transport layer address and the binding identifier received from the SRNC when establishing a transport bearer for the DCH or the set of co-ordinated DCHs.

[FDD - If the RADIO LINK ADDITION REQUEST message contains an *SSDT Cell Identity* IE, SSDT shall, if supported, be activated for the concerned new RL, with the indicated SSDT Cell Identity used for that RL.]

Depending on local configuration in the DRNS, it may include the geographical co-ordinates of the cell, represented either by the *Cell GAI* IE or by the *Cell GA Additional Shapes* IE, and the UTRAN access point position for each of the added RLs in the RADIO LINK ADDITION RESPONSE message.

For each Radio Link established in a cell where at least one URA Identity is being broadcast, the DRNC shall include a URA Identity for this cell in the *URA ID* IE, the *Multiple URAs Indicator* IE indicating whether or not multiple URA Identities are being broadcast in the cell, and the RNC Identity of all other

RNCs that are having at least one cell within the URA in the cell in the *URA Information* IE in the RADIO LINK ADDITION RESPONSE message.

[FDD - If the UE has been allocated one or several DCH controlled by DRAC and if the DRNS supports the DRAC, the DRNC shall indicate in the RADIO LINK ADDITION RESPONSE message the *Secondary CCPCH Info* IE for the FACH where the DRAC information is sent, for each Radio Link established in a cell where DRAC is active. If the DRNS does not support DRAC, the DRNC shall not provide these IEs in the RADIO LINK ADDITION RESPONSE message.]

[TDD - The DRNC shall include the [3.84Mcps TDD - *Secondary CCPCH Info TDD* IE] [1.28Mcps TDD – *Secondary CCPCH Info TDD LCR* IE] in the RADIO LINK ADDITION RESPONSE message if at least one *DSCH Information Response* IE or *USCH Information Response* IE is included in the message and at least one DCH is configured for the radio link. The DRNC shall also include the [3.84Mcps TDD - *Secondary CCPCH Info TDD* IE] [1.28Mcps TDD – *Secondary CCPCH Info TDD LCR* IE] in the RADIO LINK ADDITION RESPONSE message if at least one [3.84Mcps TDD - *DSCH Information Response* IE] [1.28Mcps TDD – *DSCH Information Response LCR* IE or *USCH Information Response LCR* IE] or *USCH Information Response* IE is included in the message and the SHCCH messages for this radio link will be transmitted over a different secondary CCPCH than selected by the UE from system information.]

If the *Permanent NAS UE Identity* IE is present in the RADIO LINK ADDITION REQUEST message, the DRNS shall store the information for the considered UE Context for the life-time of the UE Context.

If the RADIO LINK ADDITION REQUEST message includes a *C-ID* IE corresponding to a cell reserved for operator use and the Permanent NAS UE Identity is available in the DRNC for the considered UE Context, the DRNC shall use this information to determine whether it can add the Radio Link on this cell or not.

[FDD-Radio Link Set Handling]:

[FDD – For each RL not having a common generation of the TPC commands in the DL with another RL, the DRNS shall assign the *RL Set ID* IE included in the RADIO LINK ADDITION RESPONSE message a value that uniquely identifies the RL Set within the UE context.]

[FDD – For all RLs having a common generation of the TPC commands in the DL with another new or existing RL, the DRNS shall assign the *RL Set ID* IE included in the RADIO LINK ADDITION RESPONSE message the same value. This value shall uniquely identify the RL Set within the UE context.]

[FDD – After addition of the new RL(s), the UL Uu synchronisation detection algorithm defined in ref. [10] subclause 4.3 shall for each of the previously existing and newly established RL Set(s) use the maximum value of the parameters N_OUTSYNC_IND and T_RLFAILURE, and the minimum value of the parameters N_INSYNC_IND, that are configured in the cells supporting the radio links of the RL Set].

Response message:

If all requested RLs are successfully added, the DRNC shall respond with a RADIO LINK ADDITION RESPONSE message.

After sending of the RADIO LINK ADDITION RESPONSE message the DRNS shall continuously attempt to obtain UL synchronisation on the Uu interface and start reception on the new RL. [FDD - The DRNS shall start DL transmission on the new RL after synchronisation is achieved in the DL user plane as specified in ref. [4].] [TDD – The DRNS shall start transmission on the new RL immediately as specified in ref. [4].]

8.3.2.4 Abnormal Conditions

If the RADIO LINK ADDITION REQUEST message includes a *C-ID* IE corresponding to a cell reserved for operator use and the Permanent NAS UE Identity is not available in the DRNC for the considered UE Context, the DRNC shall consider the procedure as failed for this particular Radio Link and send the RADIO LINK ADDITION FAILURE message.

[FDD – If the RADIO LINK ADDITION REQUEST message includes the *Transmission Gap Pattern Sequence Status* IEs in the *Active Pattern Sequence Information* IE and it does not address exactly all ongoing compressed mode patterns the DRNS shall regard the Radio Link Addition procedure as failed and shall respond with a RADIO LINK ADDITION FAILURE message with the cause value "Invalid CM settings".]

[FDD - If the RADIO LINK ADDITION REQUEST is used to establish a new RL without compressed mode when compressed mode is active for the existing RL(s) (as specified in subclause 8.3.2.2), but at least one new RL is to be established in a cell that has the same UARFCN (both UL and DL) as at least one cell with an already existing RL, the DRNS shall regard the Radio Link Addition procedure as failed and shall respond with a RADIO LINK ADDITION FAILURE message with the cause value "Invalid CM settings".]

If the RADIO LINK ADDITION REQUEST message includes the *Transport Layer Address* IE and the *Binding ID* IE in the *RL Specific DCH Information* IE included in the *RL Information* IE for a specific RL and the *Diversity Control Field* IE is set to “Must”, the DRNC shall regard the Radio Link Addition procedure as failed and respond with the RADIO LINK ADDITION FAILURE message.

If the RADIO LINK ADDITION REQUEST message includes the *Transport Layer Address* IE or the *Binding ID* IE, and not both are present for a transport bearer intended to be established, the DRNC shall regard the Radio Link Addition procedure as failed and respond with the RADIO LINK ADDITION FAILURE message.

8.3.4 Synchronised Radio Link Reconfiguration Preparation

8.3.4.1 General

The Synchronised Radio Link Reconfiguration Preparation procedure is used to prepare a new configuration of Radio Link(s) related to one UE-UTRAN connection within a DRNS.

This procedure shall use the signalling bearer connection for the relevant UE context.

The Synchronised Radio Link Reconfiguration Preparation procedure shall not be initiated if a Prepared Reconfiguration exists, as defined in subclause 3.1.

8.3.4.2 Successful Operation

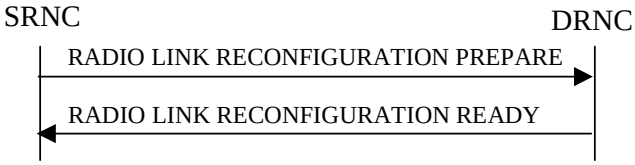

Figure 10: Synchronised Radio Link Reconfiguration Preparation procedure, Successful Operation

The Synchronised Radio Link Reconfiguration Preparation procedure is initiated by the SRNC by sending the RADIO LINK RECONFIGURATION PREPARE message to the DRNC.

Upon reception, the DRNS shall reserve necessary resources for the new configuration of the Radio Link(s) according to the parameters given in the message. Unless specified below, the meaning of parameters is specified in other specifications.

If the RADIO LINK RECONFIGURATION PREPARE message includes the *Allowed Queuing Time* IE the DRNS may queue the request the time corresponding to the value of the *Allowed Queuing Time* IE before starting to execute the request.

The DRNS shall prioritise resource allocation for the RL(s) to be modified according to Annex A.

DCH Modification:

If the RADIO LINK RECONFIGURATION PREPARE message includes any *DCHs to Modify* IEs then the DRNS shall treat them each as follows:

- If the *DCHs to Modify IE* includes multiple *DCH Specific Info* IEs then the DRNS shall treat the DCHs in the *DCHs to Modify* IE as a set of co-ordinated DCHs. The DRNS shall include these DCHs in the new configuration only if it can include all of them in the new configuration.

- If the *DCHs to Modify IE* includes the *UL FP Mode* IE for a DCH or a set of co-ordinated DCHs to be modified, the DRNS shall apply the new FP Mode in the Uplink of the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- If the *DCHs to Modify IE* includes the *ToAWS* IE for a DCH or a set of co-ordinated DCHs to be modified, the DRNS shall apply the new ToAWS in the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- If the *DCHs to Modify IE* includes the *ToAWE* IE for a DCH or a set of co-ordinated DCHs to be modified, the DRNS shall apply the new ToAWE in the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- If the *DCH Specific Info* IE includes the *Frame Handling Priority* IE for a DCH to be modified, the DRNS should store this information for this DCH in the new configuration. The received Frame Handling Priority

should be used when prioritising between different frames in the downlink on the radio interface in congestion situations within the DRNS once the new configuration has been activated.

- If the *DCH Specific Info* IE includes the *Transport Format Set* IE for the UL of a DCH to be modified, the DRNS shall apply the new Transport Format Set in the Uplink of this DCH in the new configuration.

- If the *DCH Specific Info* IE includes the *Transport Format Set* IE for the DL of a DCH to be modified, the DRNS shall apply the new Transport Format Set in the Downlink of this DCH in the new configuration.

- [FDD - If, in the *DCH Specific Info* IE, the *DRAC Control* IE is present and set to "requested" for at least one DCH and if the DRNS supports the DRAC, the DRNC shall indicate in the RADIO LINK RECONFIGURATION READY message the *Secondary CCPCH Info* IE for the FACH where the DRAC information is sent, for each Radio Link established in a cell where DRAC is active. If the DRNS does not support DRAC, DRNC shall not provide these IEs in the RADIO LINK RECONFIGURATION READY message.]

- [TDD - If the *DCH Specific Info* IE includes the *CCTrCH ID* IE for the UL, the DRNS shall map the DCH onto the referenced UL CCTrCH.]

- [TDD - If the *DCH Specific Info* IE includes the *CCTrCH ID* IE for the DL, the DRNS shall map the DCH onto the referenced DL CCTrCH.]

- If the *DCH Specific Info* IE includes the *Guaranteed Rate Information* IE, the DRNS shall treat the included IEs according to the following:

  - If the *Guaranteed Rate Information* IE includes the *Guaranteed UL Rate* IE, the DRNS shall apply the new Guaranteed Rate in the uplink of this DCH in the new configuration. The DRNS may decide to request the SRNC to limit the user rate in the uplink of the DCH at any point in time after activating the new configuration. The DRNS may request the SRNC to reduce the user rate of the uplink of the DCH below the guaranteed bit rate, however, whenever possible the DRNS should request the SRNC to reduce the user rate between the maximum bit rate and the guaranteed bit rate.

- If the *Guaranteed Rate Information* IE includes the *Guaranteed DL Rate* IE, the DRNS shall apply the new Guaranteed Rate in the downlink of this DCH in the new configuration. The DRNS may decide to request the SRNC to limit the user rate in the downlink of the DCH at any point in time after activating the new configuration. The DRNS may request the SRNC to reduce the user rate of the downlink of the DCH below the guaranteed bit rate, however, whenever possible the DRNS should request the SRNC to reduce the user rate between the maximum bit rate and the guaranteed bit rate.

DCH Addition:

If the RADIO LINK RECONFIGURATION PREPARE message includes any *DCHs to Add* IEs then the DRNS shall treat them each as follows:

- The DRNS shall reserve necessary resources for the new configuration of the Radio Link(s) according to the parameters given in the message and include these DCH in the new configuration.

- If the *DCHs to Add* IE includes a *DCHs to Add* IE with multiple *DCH Specific Info* IEs then the DRNS shall treat the DCHs in the *DCHs to Add* IE as a set of co-ordinated DCHs. The DRNS shall include these DCHs in the new configuration only if it can include all of them in the new configuration.

- [FDD - For DCHs which do not belong to a set of co-ordinated DCHs with the *QE-Selector* IE set to "selected", the Transport channel BER from that DCH shall be the base for the QE in the UL data frames. If no Transport channel BER is available for the selected DCH the Physical channel BER shall be used for the QE, ref. [4]. If the QE-Selector is set to "non-selected", the Physical channel BER shall be used for the QE in the UL data frames, ref. [4].]

- [FDD - For a set of co-ordinated DCHs the Transport channel BER from the DCH with the *QE-Selector* IE set to "selected" shall be used for the QE in the UL data frames, ref. [4]. [FDD - If no Transport channel BER is available for the selected DCH the Physical channel BER shall be used for the QE, ref. [4]. If all DCHs have *QE-Selector* IE set to "non-selected" the Physical channel BER shall be used for the QE, ref. [4].]

- The DRNS should store the *Frame Handling Priority* IE received for a DCH to be added in the new configuration. The received Frame Handling Priority should be used when prioritising between different frames in the downlink on the radio interface in congestion situations within the DRNS once the new configuration has been activated.

- The DRNS shall use the included *UL FP Mode* IE for a DCH or a set of co-ordinated DCHs to be added as the new FP Mode in the Uplink of the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- The DRNS shall use the included *ToAWS* IE for a DCH or a set of co-ordinated DCHs to be added as the new Time of Arrival Window Start Point in the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- The DRNS shall use the included *ToAWE* IE for a DCH or a set of co-ordinated DCHs to be added as the new Time of Arrival Window End Point in the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- [TDD - The DRNC shall include the *Secondary CCPCH Info TDD* IE in the RADIO LINK RECONFIGURATION READY message if at least one DSCH or USCH exists in the new configuration.]

- [FDD - If the *DRAC Control* IE is set to "requested" in the *DCH Specific Info* IE for at least one DCH and if the DRNS supports the DRAC, the DRNC shall indicate in the RADIO LINK RECONFIGURATION READY message the *Secondary CCPCH Info* IE for the FACH where the DRAC information is sent, for each Radio Link supported by a cell where DRAC is active. If the DRNS does not support DRAC, the DRNC shall not provide these IEs in the RADIO LINK RECONFIGURATION READY message.]

- If the *DCH Specific Info* IE includes the *Guaranteed Rate Information* IE, the DRNS shall treat the included IEs according to the following:

  - If the *Guaranteed Rate Information* IE includes the *Guaranteed UL Rate* IE, the DRNS shall apply the new Guaranteed Rate in the uplink of this DCH in the new configuration. The DRNS may decide to request the SRNC to limit the user rate of the uplink of the DCH at any point in time after activating the new configuration. The DRNS may request the SRNC to reduce the user rate of the uplink of the DCH below the guaranteed bit rate, however, whenever possible the DRNS should request the SRNC to reduce the user rate between the maximum bit rate and the guaranteed bit rate. If the *DCH Specific Info* IE in the *DCH Information* IE does not include the *Guaranteed UL Rate* IE, the DRNS shall not limit the user rate of the downlink of the DCH.

- If the *Guaranteed Rate Information* IE includes the *Guaranteed DL Rate* IE, the DRNS shall apply the new Guaranteed Rate in the downlink of this DCH in the new configuration. The DRNS may decide to request the SRNC to limit the user rate of the downlink of the DCH at any point in time after activating the new configuration. The DRNS may request the SRNC to reduce the user rate of the uplink of the DCH below the guaranteed bit rate, however, whenever possible the DRNS should request the SRNC to reduce the user rate between the maximum bit rate and the guaranteed bit rate. If the *DCH Specific Info* IE in the *DCH Information* IE does not include the *Guaranteed DL Rate* IE, the DRNS shall not limit the user rate of the uplink of the DCH.

DCH Deletion:

If the RADIO LINK RECONFIGURATION PREPARE message includes any *DCH to Delete*, the DRNS shall not include the referenced DCHs in the new configuration.

If all of the DCHs belonging to a set of co-ordinated DCHs are requested to be deleted, the DRNS shall not include this set of co-ordinated DCHs in the new configuration.

Physical Channel Modification:

[FDD - If the RADIO LINK RECONFIGURATION PREPARE message includes an *UL DPCH Information* IE then the DRNS shall apply the parameters to the new configuration as follows:]

- [FDD - If the *UL DPCH Information* IE includes the *Uplink Scrambling Code* IE, the DRNS shall apply this Uplink Scrambling Code to the new configuration.]

- [FDD - If the *UL DPCH Information* IE includes the *Min UL Channelisation Code Length* IE, the DRNS shall apply the new Min UL Channelisation Code Length in the new configuration. The DRNS shall apply the contents of the *Max Number of UL DPDCHs* IE (if it is included) in the new configuration.]

- [FDD - If the *UL DPCH Information* IE includes the *TFCS* IE, the DRNS shall use the *TFCS* IE for the UL when reserving resources for the uplink of the new configuration. The DRNS shall apply the new TFCS in the Uplink of the new configuration.]

- [FDD - If the *UL DPCH Information* IE includes the *UL DPCCH Slot Format* IE, the DRNS shall apply the new Uplink DPCCH *Slot Format* to the new configuration.]

- [FDD – If the *UL DPCH Information* IE includes the *UL SIR Target* IE, the DRNS shall set the UL inner loop power control to the UL SIR target when the new configuration is being used.]

- [FDD – If the *UL DPCH Information* IE includes the *Puncture Limit* IE, the DRNS shall apply the value in the uplink of the new configuration.]

- [FDD - If the *UL DPCH Information* IE includes the *Diversity Mode* IE, the DRNS shall apply diversity according to the given value.]

- [FDD – If the *UL DPCH Information* IE includes an *SSDT Cell Identity Length* IE and/or an *S-Field Length* IE, the DRNS shall apply the values in the new configuration.]

[FDD - If the RADIO LINK RECONFIGURATION PREPARE message includes a *DL DPCH Information* IE then the DRNS shall apply the parameters to the new configuration as follows:]

- [FDD - If the *DL DPCH Information* IE includes *Number of DL Channelisation Codes IE*, the DRNS shall allocate given number of Downlink Channelisation Codes per Radio Link and apply the new Downlink Channelisation Code(s) to the new configuration. Each Downlink Channelisation Code allocated for the new configuration shall be included as a FDD DL Channelisation Code Number IE in the RADIO LINK RECONFIGURATION READY message when sent to the SRNC. If some Transmission Gap Pattern sequences using 'SF/2' method are already initialised in the DRNS, DRNC shall include the *Transmission Gap Pattern Sequence Scrambling Code Information IE* in the RADIO LINK RECONFIGURATION READY message in case the DRNS selects to change the Scrambling code change method for one or more DL Channelisation Code.]

- [FDD – When more than one DL DPDCH are assigned per RL, the segmented physical channel shall be mapped on to DL DPDCHs according to [8]. When *p* number of DL DPDCHs are assigned to each RL, the first pair of DL Scrambling Code and FDD DL Channelisation Code Number corresponds to "*PhCH number 1*", the second to "*PhCH number 2"*, and so on until the *p*th to "*PhCH number p*".]

- [FDD - If the *DL DPCH Information* IE includes the *TFCS* IE, the DRNS shall use the *TFCS* IE for the DL when reserving resources for the downlink of the new configuration. The DRNS shall apply the new TFCS in the Downlink of the new configuration.]

- [FDD – If the *DL DPCH Information* IE includes the *DL DPCH Slot Format* IE, the DRNS shall apply the new slot format used in DPCH in DL.]

- [FDD – If the *DL DPCH Information* IE includes the *TFCI Signalling Mode* IE, the DRNS shall apply the new signalling mode of the TFCI.]

- [FDD – If the *DL DPCH Information* IE includes the *Multiplexing Position* IE, the DRNS shall apply the new parameter to define whether fixed or flexible positions of transport channels shall be used in the physical channel.]

- [FDD – If the *DL DPCH Information* IE includes the *Limited Power Increase* IE and the IE is set to 'Used', the DRNS shall, if supported, use Limited Power Increase according to ref. [10] subclause 5.2.1 for the inner loop DL power control in the new configuration.]

- [FDD – If the *DL DPCH Information* IE includes the *Limited Power Increase* IE and the IE is set to 'Not Used', the DRNS shall not use Limited Power Increase for the inner loop DL power control in the new configuration.]

[FDD – If the RADIO LINK RECONFIGURATION PREPARE message includes the *Transmission Gap Pattern Sequence Information* IE, the DRNS shall store the new information about the Transmission Gap Pattern Sequences to be used in the new Compressed Mode Configuration. This new Compressed Mode Configuration shall be valid in the DRNS until the next Compressed Mode Configuration is configured in the DRNS or last Radio Link is deleted.]

[FDD – If the RADIO LINK RECONFIGURATION PREPARE message includes the *Transmission Gap Pattern Sequence Information* IE and the *Downlink Compressed Mode Method* IE in one or more Transmission Gap Pattern Sequence within the *Transmission Gap Pattern Sequence Information* IE is set to 'SF/2', the DRNC shall include the *Transmission Gap Pattern Sequence Scrambling Code Information* IE to the RADIO LINK RECONFIGURATION READY message indicating for each Channelisation Code whether the alternative scrambling code shall be used or not].

[TDD - UL/DL CCTrCH Modification]

[TDD - If the RADIO LINK RECONFIGURATION PREPARE message includes any *UL CCTrCH to Modify* IEs or *DL CCTrCH to Modify* IEs, then the DRNS shall treat them each as follows:]

[TDD - If any of the *UL CCTrCH to Modify* IEs or *DL CCTrCH to Modify* IEs includes any of *TFCS* IE, *TFCI coding* IE, *Puncture limit* IE, or *TPC CCTrCH ID* IEs the DRNS shall apply these as the new values, otherwise the old values specified for this CCTrCH are still applicable.]

- [TDD – The DRNC shall include in the RADIO LINK RECONFIGURATION READY message DPCH information to be modified and the IEs modified if any of *Repetition Period* IE, *Repetition Length* IE, *TDD DPCH Offset* IE or timeslot information was modified. The DRNC shall include timeslot information and the IEs modified if any of *[3.84Mcps TDD - Midamble Shift and Burst Type* IE, *Time Slot* IE], [1.28Mcps TDD - *Midamble Shift LCR* IE, *Time Slot LCR* IE], *TFCI Presence* IE or Code information was modified. The DRNC shall include code information if [3.84Mcps TDD - *TDD Channelisation Code* IE] and/or [1.28Mcps TDD - *TDD Channelisation Code LCR* IE] was modified.]

- [1.28Mcps TDD – If the *UL CCTrCH to Modify* IE includes the *UL SIR Target* IE, the DRNS shall use the value for the UL inner loop power control according [12] and [22] when the new configuration is being used.]

[TDD – UL/DL CCTrCH Addition]

[TDD – If the RADIO LINK RECONFIGURATION PREPARE message includes any *UL CCTrCH to Add* IEs or *DL CCTrCH to Add* IEs, the DRNS shall include this CCTrCH in the new configuration.]

[TDD – If the DRNS has reserved the required resources for any requested DPCHs, the DRNC shall include the DPCH information within DPCH to be added in the RADIO LINK RECONFIGURATION READY message. [3.84Mcps TDD - If no DPCH was active before the reconfiguration, and if a valid Rx Timing Deviation measurement is known in DRNC, then the DRNC shall include the *Rx Timing Deviation* IE in the RADIO LINK RECONFIGURATION READY message.]]

[TDD – If the RADIO LINK RECONFIGURATION PREPARE message includes a *DL CCTrCH to Add* IE, the DRNS shall set the TPC step size of that CCTrCH to the same value as the lowest numbered DL CCTrCH in the current configuration.]

[1.28Mcps TDD – The DRNS shall use the *UL SIR Target* IE in the *UL CCTrCH to Add* IE as the UL SIR value for the inner loop power control for this CCTrCH according [12] and [22] in the new configuration.]

[TDD – UL/DL CCTrCH Deletion]

[TDD - If the RADIO LINK RECONFIGURATION PREPARE message includes any *UL CCTrCH to Delete* IEs *or DL CCTrCH to Delete* IEs, the DRNS shall remove this CCTrCH in the new configuration.]

SSDT Activation/Deactivation:

- [FDD - If the *RL Information* IE includes the *SSDT Indication* IE set to "SSDT Active in the UE", the DRNS shall activate SSDT, if supported, using the *SSDT Cell Identity* IE in *RL Information* IE, and the *SSDT Cell Identity Length* IE in *UL DPCH Information* IE, in the new configuration.

- [FDD - If the *RL Information* IE includes the *SSDT Indication* IE set to "SSDT not Active in the UE", the DRNS shall deactivate SSDT in the new configuration.]

DSCH Addition/Modification/Deletion:

If the RADIO LINK RECONFIGURATION PREPARE message includes any *DSCH to modify*, *DSCH to add* or *DSCH to delete* IEs, then the DRNS shall use this information to add/modify/delete the indicated DSCH channels to/from the radio link, in the same way as the DCH info is used to add/modify/release DCHs.

If the RADIO LINK RECONFIGURATION PREPARE message includes any *DSCH to Add* IE, then the DRNS shall use the *Allocation/Retention Priority* IE, *Scheduling Priority Indicator* IE and *TrCH Source Statistics Descriptor* IE to define a set of DSCH Priority classes each of which is associated with a set of supported MAC-c/sh SDU lengths.

[FDD - If the *DSCHs to Add* IE includes the *Enhanced DSCH PC* IE, the DRNS shall activate enhanced DSCH power control in accordance with ref. [10] subclause 5.2.2, if supported, using either:]

- [FDD - the *SSDT Cell Identity for EDSCHPC* IE in the *RL Information* IE, if the *SSDT Cell Identity* IE is not included in the *RL Information* IE or]

- [FDD - the *SSDT Cell Identity* IE in the *RL Information* IE, if both the *SSDT Cell Identity* IE and the *SSDT Cell Identity for EDSCHPC* are included in the *RL Information* IE.]

[FDD - together with the *SSDT Cell Identity Length* IE in *UL DPCH Information* IE, and *Enhanced DSCH PC* IE, in the new configuration.]

If the RADIO LINK RECONFIGURATION PREPARE message includes any *DSCH to Modify* IE, then the DRNS shall treat them each as follows:

- [FDD – If the *DSCH to Modify* IE includes any *DSCH Info* IEs, then the DRNS shall treat them each as follows:]

  - [FDD – If the *DSCH Info* IE includes any of the *Allocation/Retention Priority* IE, *Scheduling Priority Indicator* IE or *TrCH Source Statistics Descriptor* IE, the DNRS shall use them to update the set of DSCH Priority classes each of which is associated with a set of supported MAC-c/sh SDU lengths.]

  - [FDD – If the *DSCH Info* IE includes any of the *Transport Format Set* IE or *BLER* IE, the DRNS shall apply the parameters to the new configuration.]

- [FDD – If the *DSCH to Modify* IE includes the *PDSCH RL ID* IE, then the DRNS shall use it as the new DSCH RL identifier.]

- [FDD – If the *DSCH to Modify* IE includes the *Transport Format Combination Set* IE, then the DRNS shall use it as the new Transport Format Combination Set associated with the DSCH.]

- [TDD – If the *DSCHs to Modify* IE includes the *CCTrCH Id* IE, then the DRNS shall map the DSCH onto the referenced DL CCTrCH.]

- [TDD – If the *DSCHs to Modify* IE includes any of the *Allocation/Retention Priority* IE, *Scheduling Priority Indicator* IE or *TrCH Source Statistics Descriptor* IE, the DNRS shall use them to update the set of DSCH Priority classes each of which is associated with a set of supported MAC-c/sh SDU lengths.]

- [TDD – If the *DSCHs to Modify* IE includes any of the *Transport Format Set* IE or *BLER* IE, the DRNS shall apply the parameters to the new configuration.]

- [TDD – The DRNC shall include the *Secondary CCPCH Info TDD* IE in the RADIO LINK RECONFIGURATION READY message if a DSCH is added and at least one DCH exists in the new configuration. The DRNC shall also include the *Secondary CCPCH Info TDD* IE in the RADIO LINK RECONFIGURATION READY message if the SHCCH messages for this radio link will be transmitted over a different secondary CCPCH than selected by the UE from system information.]

- [FDD - If the *DSCHs to Modify* IE includes the *Enhanced DSCH PC Indicator* IE set to "Enhanced DSCH PC Active in the UE ", the DRNS shall activate enhanced DSCH power control in accordance with ref. [10] subclause 5.2.2, if supported, using either:]

  - [FDD - the *SSDT Cell Identity for EDSCHPC* IE in *RL Information* IE, if the *SSDT Cell Identity* IE is not included in the *RL Information* IE or]

  - [FDD - the *SSDT Cell Identity* IE in the *RL Information* IE, if both the *SSDT Cell Identity* IE and the *SSDT Cell Identity for EDSCHPC* are included in the *RL Information* IE.]

  [FDD - together with the *SSDT Cell Identity Length* IE in *UL DPCH Information* IE, and *Enhanced DSCH PC* IE, in the new configuration.]

- [FDD - If the *DSCHs to Modify* IE includes the *Enhanced DSCH PC Indicator* IE set to "Enhanced DSCH PC not Active in the UE", the DRNS shall deactivate enhanced DSCH power control in the new configuration.]

If the requested modifications are allowed by the DRNS and the DRNS has successfully reserved the required resources for the new configuration of the Radio Link(s), it shall respond to the SRNC with the RADIO LINK RECONFIGURATION READY message.

[TDD] USCH Addition/Modification/Deletion

If the RADIO LINK RECONFIGURATION PREPARE message includes any *USCH to modify*, *USCH to add* or *USCH to delete* IEs, then the DRNS shall use this information to add/modify/delete the indicated USCH channels to/from the radio link, in the same way as the DCH info is used to add/modify/release DCHs.

If the RADIO LINK RECONFIGURATION PREPARE message includes any *USCH to Add* IE, then, the DRNS shall use the *Allocation/Retention Priority* IE, *Scheduling Priority Indicator* IE and *TrCH Source Statistics Descriptor* IE to define a set of USCH Priority classes each of which is associated with a set of supported MAC-c/sh SDU lengths.

If the RADIO LINK RECONFIGURATION PREPARE message includes any *USCH to Modify* IE, then the DRNS shall treat them each as follows:

- If the USCH to Modify IE includes any of the Allocation/Retention Priority IE , Scheduling Priority Indicator IE or TrCH Source Statistics Descriptor IE, the DNRS shall use them to update the set of USCH Priority classes.

- If the USCH to Modify IE includes any of the CCTrCH Id IE, Transport Format Set IE, BLER IE or RB Info IE, the DRNS shall apply the parameters to the new configuration.

- [TDD - The DRNC shall include the *Secondary CCPCH Info TDD* IE in the RADIO LINK RECONFIGURATION READY message if a USCH is added and at least one DCH exists in the new configuration. The DRNC shall also include the *Secondary CCPCH Info TDD* IE in the RADIO LINK RECONFIGURATION READY message if the SHCCH messages for this radio link will be transmitted over a different secondary CCPCH than selected by the UE from system information.]

If the requested modifications are allowed by the DRNC and the DRNC has successfully reserved the required resources for the new configuration of the Radio Link(s), it shall respond to the SRNC with the RADIO LINK RECONFIGURATION READY message.

General

If the RADIO LINK RECONFIGURATION PREPARE message includes the *Transport Layer Address* IE and *Binding ID* IE in the *DSCHs to Modify , DSCHs to Add,* [TDD - *USCHs to Modify , USCHs to Add*] or in the *RL Specific DCH Information* IEs, the DRNC may use the transport layer address and the binding identifier received from the SRNC when establishing a transport bearer for any Transport Channel being added, or any Transport Channel being modified for which a new transport bearer was requested with the *Transport Bearer Request Indicator* IE.

The DRNS shall include in the RADIO LINK RECONFIGURATION READY message the *Transport Layer Address* IE and the *Binding ID* IE in the *DCH Information Response* IE for any Transport Channel being added, or any Transport Channel being modified for which a new transport bearer was requested with the *Transport Bearer Request Indicator* IE. In case of a set of co-ordinated DCHs requiring a new transport bearer on Iur, the *Transport Layer Address* IE and the *Binding ID* IE in the *DCH Information Response* IE shall be included only for one of the DCHs in the set of co-ordinated DCHs.

In case of a Radio Link being combined with another Radio Link within the DRNS, the *Transport Layer Address* IE and the *Binding ID* IE in the *DCH Information Response* IE shall be included only for one of the combined Radio Links.

Any allowed rate for the uplink of a DCH provided for the old configuration will not be valid for the new configuration. If the DRNS need to limit the user rate in the uplink of a DCH in the new configuration for a Radio Link, the DRNC shall include the *Allowed UL Rate* IE of the *Allowed Rate Information* IE in the *DCH Information Response* IE for this DCH in the RADIO LINK RECONFIGURATION READY message for this Radio Link.

Any allowed rate for the downlink of a DCH provided for the old configuration will not be valid for the new configuration. If the DRNS need to limit the user rate in the downlink of a DCH in the new configuration for a Radio Link, the DRNC shall include the *Allowed DL Rate* IE of the *Allowed Rate Information* IE in the *DCH Information Response* IE for this DCH in the RADIO LINK RECONFIGURATION READY message for this Radio Link.

If the requested modifications are allowed by the DRNS, and the DRNS has successfully reserved the required resources for the new configuration of the Radio Link(s) it shall respond to the SRNC with the RADIO LINK RECONFIGURATION READY message. When this procedure has been completed successfully there exist a Prepared Reconfiguration, as defined in subclause 3.1.

The DRNS decides the maximum and minimum SIR for the uplink of the Radio Link(s) and shall return this in the *Maximum Uplink SIR* IE and *Minimum Uplink SIR* IE for each Radio Link in the RADIO LINK RECONFIGURATION READY message.

If the DL TX power upper or lower limit has been re-configured the DRNC shall return this in the *Maximum DL TX Power* IE and *Minimum DL TX Power* IE respectively in the RADIO LINK RECONFIGURATION RESPONSE message. The DRNS shall not transmit with a higher power than indicated by the *Maximum DL TX Power IE* or lower than indicated by the *Minimum DL TX Power IE* on any DL DPCH of the RL [FDD – except during compressed mode, when the $P_{SIR}(k)$, as described in ref.[10] subclause 5.2.1.3, shall be added to the maximum DL power in slot k.]

8.3.4.4 Abnormal Conditions

If only a subset of all the DCHs belonging to a set of co-ordinated DCHs is requested to be deleted, the DRNS shall regard the Synchronised Radio Link Reconfiguration Preparation procedure as having failed and the DRNC shall send the RADIO LINK RECONFIGURATION FAILURE message to the SRNC.

If more than one DCH of a set of co-ordinated DCHs has the *QE-Selector* IE set to "selected" [TDD – or no DCH of a set of co-ordinated DCHs has the *QE-Selector* IE set to “selected”] the DRNS shall regard the Synchronised Radio Link Reconfiguration Preparation procedure as failed and the DRNC shall respond with a RADIO LINK RECONFIGURATION FAILURE message.

[FDD - If the *DSCHs to Add* IE includes *Enhanced DSCH PC* IE and *DSCH to Modify* IE include the *Enhanced DSCH PC Indicator* IE set to "Enhanced DSCH PC not Active in the UE", then the DRNS shall deactivate enhanced DSCH power control in the new configuration.]

[FDD - If both the *DSCHs to Add* IE and the *DSCH to Modify* IE include *Enhanced DSCH PC* IE, then the DRNS shall ignore the *Enhanced DSCH PC* IE in the *DSCH to Add* IE.]

If the RADIO LINK RECONFIGURATION PREPARE message includes a *DCHs to Modify* IE or *DCHs to Add* IE with multiple *DCH Specific Info* IEs, and if the DCHs in the *DCHs to Modify* IE or *DCHs to Add* IE do not have the same *Transmission Time Interval* IE in the *Semi-static Transport Format Information* IE, then the DRNC shall reject the procedure using the RADIO LINK RECONFIGURATION FAILURE message.

If the RADIO LINK RECONFIGURATION PREPARE message contains the *Transport Layer Address* IE or the *Binding ID* IE when establishing a transport bearer for any Transport Channel being added, or any Transport Channel being modified for which a new transport bearer was requested with the *Transport Bearer Request Indicator* IE., and not both are present for a transport bearer intended to be established, the DRNC shall regard the Synchronised Radio Link Reconfiguration Preparation procedure as failed and the DRNC shall respond with a RADIO LINK RECONFIGURATION FAILURE message.

8.3.7 Unsynchronised Radio Link Reconfiguration

8.3.7.1 General

The Unsynchronised Radio Link Reconfiguration procedure is used to reconfigure Radio Link(s) related to one UE-UTRAN connection within a DRNS.

The procedure is used when there is no need to synchronise the time of the switching from the old to the new radio link configuration in the cells used by the UE-UTRAN connection within the DRNS.

This procedure shall use the signalling bearer connection for the relevant UE context.

The Unsynchronised Radio Link Reconfiguration procedure shall not be initiated if a Prepared Reconfiguration exists, as defined in subclause 3.1.

8.3.7.2 Successful Operation

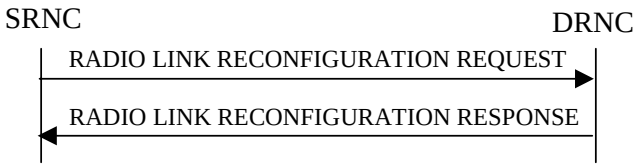

Figure 14: Unsynchronised Radio Link Reconfiguration procedure, Successful Operation

The Unsynchronised Radio Link Reconfiguration procedure is initiated by the SRNC by sending the RADIO LINK RECONFIGURATION REQUEST message to the DRNC.

Upon reception, the DRNS shall modify the configuration of the Radio Link(s) according to the parameters given in the message. Unless specified below, the meaning of parameters is specified in other specifications.

If the RADIO LINK RECONFIGURATION REQUEST message includes the *Allowed Queuing Time* IE the DRNS may queue the request the time corresponding to the value of the *Allowed Queuing Time* IE before starting to execute the request.

The DRNS shall prioritise resource allocation for the RL to be modified according to Annex A.

DCH Modification:

If the RADIO LINK RECONFIGURATION REQUEST message includes any *DCHs to Modify* IEs, then the DRNS shall treat them as follows:

- If the *DCHs to Modify* IE includes multiple *DCH Specific Info* IEs, then the DRNS shall treat the DCHs as a set of co-ordinated DCHs. The DRNS shall include these DCHs in the new configuration only if it can include all of them in the new configuration.

- If the *DCHs to Modify* IE includes the *UL FP Mode* IE for a DCH or a set of co-ordinated DCHs to be modified, the DRNS shall apply the new FP Mode in the Uplink of the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- If the *DCHs to Modify* IE includes the *ToAWS* IE for a DCH or a set of co-ordinated DCHs to be modified, the DRNS shall apply the new ToAWS in the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- If the *DCHs to Modify* IE includes the *ToAWE* IE for a DCH or a set of co-ordinated DCHs to be modified, the DRNS shall apply the new ToAWE in the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- If the *DCH Specific Info* IE includes on the *Transport Format Set* IE for the UL of a DCH to be modified, the DRNS shall apply the new Transport Format Set in the Uplink of this DCH in the new configuration.

- If the *DCH Specific Info* IE includes on the *Transport Format Set* IE for the DL of a DCH to be modified, the DRNS shall apply the new Transport Format Set in the Downlink of this DCH in the new configuration.

- If the *DCH Specific Info* IE includes the *Frame Handling Priority* IE, the DRNS should store this information for this DCH in the new configuration. The received Frame Handling Priority should be used when prioritising between different frames in the downlink on the radio interface in congestion situations within the DRNS once the new configuration has been activated.

- [FDD - If the *DRAC Control* IE is present and set to "requested" in *DCH Specific Info* IE for at least one DCH, and if the DRNS supports the DRAC, the DRNC shall indicate in the RADIO LINK RECONFIGURATION RESPONSE message the *Secondary CCPCH Info* IE for the FACH where the DRAC information is sent, for each Radio Link supported by a cell where DRAC is active. If the DRNS does not support DRAC, the DRNC shall not provide these IEs in the RADIO LINK RECONFIGURATION RESPONSE message.]

- [TDD - If the *DCH Specific Info* IE includes the *CCTrCH ID* IE for the UL, the DRNS shall map the DCH onto the referenced UL CCTrCH.]

- [TDD - If the *DCH Specific Info* IE includes the *CCTrCH ID* IE for the DL, the DRNS shall map the DCH onto the referenced DL CCTrCH.]

- If the *DCH Specific Info* IE includes the *Guaranteed Rate Information* IE, the DRNS shall treat the included IEs according to the following:

  - If the *Guaranteed Rate Information* IE includes the *Guaranteed UL Rate* IE, the DRNS shall apply the new Guaranteed Rate in the uplink of this DCH in the new configuration. The DRNS may decide to request the SRNC to limit the user rate in the uplink of the DCH at any point in time after activating the new configuration. The DRNS may request the SRNC to reduce the user rate of the uplink of the DCH below the guaranteed bit rate, however, whenever possible the DRNS should request the SRNC to reduce the user rate between the maximum bit rate and the guaranteed bit rate.

- If the *Guaranteed Rate Information* IE includes the *Guaranteed DL Rate* IE, the DRNS shall apply the new Guaranteed Rate in the downlink of this DCH in the new configuration. The DRNS may decide to request the SRNC to limit the user in the downlink of the DCH at any point in time after activating the new configuration. The DRNS may request the SRNC to reduce the user rate of the downlink of the DCH below the guaranteed bit rate, however, whenever possible the DRNS should request the SRNC to reduce the user rate between the maximum bit rate and the guaranteed bit rate.

DCH Addition:

If the RADIO LINK RECONFIGURATION REQUEST message includes any *DCHs to Add* IEs, then the DRNS shall treat them each as follows:

- The DRNS shall reserve necessary resources for the new configuration of the Radio Link(s) according to the parameters given in the message and include these DCH in the new configuration.

- If the *DCHs to Add* IE includes multiple DCH Specific Info IEs then the DRNS shall treat the DCHs in the *DCHs to Add* IE as a set of co-ordinated DCHs. The DRNS shall include these DCHs in the new configuration only if all of them can be in the new configuration.

- [FDD - For DCHs which do not belong to a set of co-ordinated DCHs with the *QE-Selector* IE set to "selected", the Transport channel BER from that DCH shall be the base for the QE in the UL data frames. If no Transport channel BER is available for the selected DCH the Physical channel BER shall be used for the QE, ref. [4]. If the QE-Selector is set to "non-selected", the Physical channel BER shall be used for the QE in the UL data frames, ref. [4].]

- For a set of co-ordinated DCHs the Transport channel BER from the DCH with the *QE-Selector* IE set to "selected" shall be used for the QE in the UL data frames, ref. [4]. [FDD - If no Transport channel BER is

available for the selected DCH the Physical channel BER shall be used for the QE, ref. [4]. If all DCHs have *QE-Selector* IE set to "non-selected" the Physical channel BER shall be used for the QE, ref. [4].]

- The DRNS should store the *Frame Handling Priority* IE received for a DCH to be added in the new configuration. The received Frame Handling Priority should be used when prioritising between different frames in the downlink on the radio interface in congestion situations within the DRNS once the new configuration has been activated.

- The DRNS shall use the included *UL FP Mode* IE for a DCH or a set of co-ordinated DCHs to be added as the new FP Mode in the Uplink of the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- The DRNS shall use the included *ToAWS* IE for a DCH or a set of co-ordinated DCHs to be added as the new Time of Arrival Window Start Point in the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- The DRNS shall use the included *ToAWE* IE for a DCH or a set of co-ordinated DCHs to be added as the new Time of Arrival Window End Point in the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- [FDD - If the *DRAC Control* IE is set to "requested" in *DCH Specific Info* IE for at least one DCH, and if the DRNS supports the DRAC, the DRNC shall indicate in the RADIO LINK RECONFIGURATION RESPONSE message the *Secondary CCPCH Info* IE for the FACH where the DRAC information is sent, for each Radio Link supported by a cell where DRAC is active. If the DRNS does not support DRAC, the DRNC shall not provide these IEs in the RADIO LINK RECONFIGURATION RESPONSE message.

- If the *DCH Specific Info* IE includes the *Guaranteed Rate Information* IE, the DRNS shall treat the included IEs according to the following:

  - If the *Guaranteed Rate Information* IE includes the *Guaranteed UL Rate* IE, the DRNS shall apply the new Guaranteed Rate in the uplink of this DCH in the new configuration. The DRNS may decide to request the SRNC to limit the user rate of the uplink of the DCH at any point in time after activating the new configuration. The DRNS may request the SRNC to reduce the user rate of the uplink of the DCH below the guaranteed bit rate, however, whenever possible the DRNS should request the SRNC to reduce the user rate between the maximum bit rate and the guaranteed bit rate. If the *DCH Specific Info* IE in the *DCH Information* IE does not include the *Guaranteed UL Rate* IE, the DRNS shall not limit the user rate of the uplink of the DCH.

- If the *Guaranteed Rate Information* IE includes the *Guaranteed DL Rate* IE, the DRNS shall apply the new Guaranteed Rate in the downlink of this DCH in the new configuration. The DRNS may decide to request the SRNC to limit the user rate of the downlink of the DCH at any point in time after activating the new configuration. The DRNS may request the SRNC to reduce the user rate of the downlink of the DCH below the guaranteed bit rate, however, whenever possible the DRNS should request the SRNC to reduce the user rate between the maximum bit rate and the guaranteed bit rate. If the *DCH Specific Info* IE in the *DCH Information* IE does not include the *Guaranteed DL Rate* IE, the DRNS shall not limit the user rate of the uplink of the DCH.

DCH Deletion:

If the RADIO LINK RECONFIGURATION REQUEST message includes any *DCH to delete* IE, the DRNS shall not include the referenced DCHs in the new configuration.

If all of the DCHs belonging to a set of co-ordinated DCHs are requested to be deleted, the DRNS shall not include this set of co-ordinated DCHs in the new configuration.

Physical Channel Modification:

[FDD - If the RADIO LINK RECONFIGURATION REQUEST message includes an *UL DPCH Information* IE, then the DRNS shall apply the parameters to the new configuration as follows:]

- [FDD - If the *UL DPCH Information* IE includes the *TFCS* IE for the UL, the DRNS shall apply the new TFCS in the Uplink of the new configuration.]

[FDD - If the RADIO LINK RECONFIGURATION REQUEST message includes a *DL DPCH Information* IE, then the DRNS shall apply the parameters to the new configuration as follows:]

- [FDD - If the *DL DPCH Information* IE includes the *TFCS* IE for the DL, the DRNS shall apply the new TFCS in the Downlink of the new configuration.]

- [FDD - If the *DL DPCH Information* IE includes the *TFCI Signalling Mode* IE for the DL, the DRNS shall apply the new TFCI Signalling Mode in the Downlink of the new configuration.]

- [FDD – If the *DL DPCH Information* IE includes the *Limited Power Increase* IE and the IE is set to 'Used', the DRNS shall, if supported, use Limited Power Increase according to ref. [10] subclause 5.2.1 for the inner loop DL power control in the new configuration.]

- [FDD – If the *DL DPCH Information* IE includes the *Limited Power Increase* IE and the IE is set to 'Not Used', the DRNS shall not use Limited Power Increase for the inner loop DL power control in the new configuration.]

[FDD - If the RADIO LINK RECONFIGURATION REQUEST message includes the *Transmission Gap Pattern Sequence Information* IE, the DRNS shall store the new information about the Transmission Gap Pattern Sequences to be used in the new Compressed Mode configuration This new Compressed Mode Configuration shall be valid in the DRNS until the next Compressed Mode Configuration is configured in the DRNS or last Radio Link is deleted.]

[FDD - If the RADIO LINK RECONFIGURATION REQUEST message includes the *Transmission Gap Pattern Sequence Information* IE, and if the *Downlink Compressed Mode Method* in one or more Transmission Gap Pattern Sequence within the *Transmission Gap Pattern Sequence Information* IE is set to 'SF/2', the DRNC shall include the *DL Code Information* IE in the RADIO LINK RECONFIGURATION RESPONSE message, without changing any of the DL Channelisation Codes or DL Scrambling Codes, indicating for each DL Channelisation Code whether the alternative scrambling code shall be used or not.]

[TDD - UL/DL CCTrCH Modification]

[TDD - If the RADIO LINK RECONFIGURATION REQUEST message includes any *UL CCTrCH Information to modify* IEs or */DL CCTrCH Information to modify* IEs and it includes *TFCS* IE, the DRNS shall apply the included *TFCS* IE as the new value to the referenced CCTrCH.]

[TDD – UL/DL CCTrCH Deletion]

[TDD - If the RADIO LINK RECONFIGURATION REQUEST message includes any *UL CCTrCH Information to delete* IEs or *DL CCTrCH Information to delete* IEs, the DRNS shall remove the referenced CCTrCH in the new configuration.]

General:

If the RADIO LINK RECONFIGURATION REQUEST message includes the *RL Specific DCH Information* IE, the DRNC may use the transport layer address and the binding identifier received from the SRNC when establishing a transport bearer for any Transport Channel being added, or any Transport Channel being modified for which a new transport bearer was requested with the *Transport Bearer Request Indicator* IE.

The DRNS shall include in the RADIO LINK RECONFIGURATION RESPONSE message the *Transport Layer Address* IE and the *Binding ID* IE in the *DCH Information Response* IE for any Transport Channel being added, or any Transport Channel being modified for which a new transport bearer was requested with the *Transport Bearer Request Indicator* IE. The detailed frame protocol handling during transport bearer replacement is described in [4], subclause 5.10.1.

In case of a set of co-ordinated DCHs requiring a new transport bearer on Iur, the *Transport Layer Address* IE and the *Binding ID* IE in the *DCH Information Response* IE shall be included only for one of the DCHs in the set of co-ordinated DCHs.

In case of a Radio Link being combined with another Radio Link within the DRNS, the DRNC shall return the *Transport Layer Address* IE and the *Binding ID* IE in the *DCH Information Response* IE in the RADIO LINK RECONFIGURATION RESPONSE message only for one of the combined Radio Links.

Any allowed rate for the uplink of a DCH provided for the old configuration will not be valid for the new configuration. If the DRNS need to limit the user rate in the uplink of a DCH in the new configuration for a Radio Link, the DRNC shall include the *Allowed UL Rate* IE of the *Allowed Rate Information* IE in the *DCH Information Response* IE for this DCH in the RADIO LINK RECONFIGURATION RESPONSE message for this Radio Link.

Any allowed rate for the downlink of a DCH provided for the old configuration will not be valid for the new configuration. If the DRNS need to limit the user rate in the downlink of a DCH in the new configuration for a Radio Link, the DRNC shall include the *Allowed DL Rate* IE of the *Allowed Rate Information* IE in the *DCH Information Response* IE for this DCH in the RADIO LINK RECONFIGURATION RESPONSE message for this Radio Link.

If the requested modifications are allowed by the DRNS, and if the DRNS has successfully allocated the required resources and changed to the new configuration, the DRNC shall respond to the SRNC with the RADIO LINK RECONFIGURATION RESPONSE message.

The DRNS decides the maximum and minimum SIR for the uplink of the Radio Link(s), and the DRNC shall return this in the IEs *Maximum Uplink SIR* and *Minimum Uplink SIR* for each Radio Link in the RADIO LINK RECONFIGURATION RESPONSE message.

If the DL TX power upper or lower limit has been re-configured, the DRNC shall return this in the *Maximum DL TX Power* IE and *Minimum DL TX Power* IE respectively in the RADIO LINK RECONFIGURATION READY message. The DRNS shall not transmit with a higher power than indicated by the *Maximum DL TX Power IE* or lower than indicated by the *Minimum DL TX Power IE* on any DL DPCH of the RL [FDD – except during compressed mode, when the $P_{SIR}(k)$, as described in ref.[10] subclause 5.2.1.3, shall be added to the maximum DL power in slot k].

8.3.7.4 Abnormal Conditions

If only a subset of all the DCHs belonging to a set of co-ordinated DCHs is requested to be deleted, the DRNS shall regard the Unsynchronised Radio Link Reconfiguration procedure as having failed, and the DRNC shall send the RADIO LINK RECONFIGURATION FAILURE message to the SRNC.

If more than one DCH of a set of co-ordinated DCHs has the *QE-Selector* IE set to "selected" [TDD – or no DCH of a set of co-ordinated DCHs has the *QE-Selector* IE set to "selected"] the DRNS shall regard the Unsynchronised Radio Link Reconfiguration procedure as failed, and the DRNC shall respond with a RADIO LINK RECONFIGURATION FAILURE message.

If the RADIO LINK RECONFIGURATION REQUEST message includes a *DCHs to Modify* IE or *DCHs to Add* IE with multiple *DCH Specific Info* IEs, and if the DCHs in the *DCHs to Modify* IE or *DCHs to Add* IE do not have the same *Transmission Time Interval* IE in the *Semi-static Transport Format Information* IE, then the DRNC shall reject the procedure using the RADIO LINK RECONFIGURATION FAILURE message.

If the RADIO LINK RECONFIGURATION REQUEST message contains the *Transport Layer Address* IE or the *Binding ID* IE when establishing a transport bearer for any Transport Channel being added, or any Transport Channel being modified for which a new transport bearer was requested with the *Transport Bearer Request Indicator* IE., and not both are present for a transport bearer intended to be established, the DRNC shall regard the Unsynchronised Radio Link Reconfiguration procedure as failed, and the DRNC shall respond with a RADIO LINK RECONFIGURATION FAILURE message.

8.4 Common Transport Channel Procedures

8.4.1 Common Transport Channel Resources Initialisation

8.4.1.1 General

The Common Transport Channel Resources Initialisation procedure is used by the SRNC for the initialisation of the Common Transport Channel user plane towards the DRNC and/or for the initialisation of the Common Transport Channel resources in the DRNC to be used by a UE.

This procedure shall use the connectionless mode of the signalling bearer.

8.4.1.2 Successful Operation

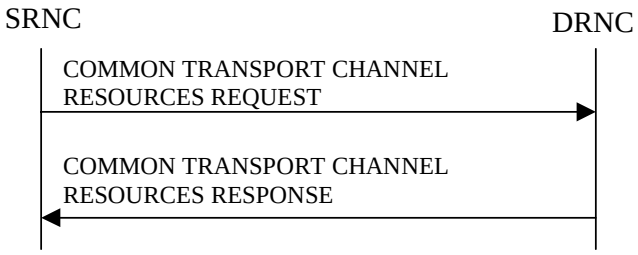

Figure 27: Common Transport Channel Resources Initialisation procedure, Successful Operation

The SRNC initiates the procedure by sending the message COMMON TRANSPORT CHANNEL RESOURCES REQUEST to the DRNC.

If the value of the *Transport Bearer Request Indicator* IE is set to "Bearer Requested", the DRNC shall store the received *Transport Bearer ID* IE. The DRNC may use the *Transport Layer Adress* and *Binding ID* IEs included in the COMMON TRANSPORT CHANNEL RESOURCES REQUEST message received from the SRNC when establishing a transport bearer for the common transport channel. In addition, the DRNC shall ~~and~~ include ~~the~~ its own *Binding ID* IE and *Transport Layer Address* IE in the COMMON TRANSPORT CHANNEL RESOURCES RESPONSE message.

If the value of the *Transport Bearer Request Indicator* IE is set to" Bearer not Requested", the DRNC shall use the transport bearer indicated by the *Transport Bearer ID* IE.

If the *C-ID* IE is included in the COMMON TRANSPORT CHANNEL RESOURCES REQUEST message, the DRNC shall allocate a C-RNTI for the indicated cell and include the *C-RNTI* IE in the COMMON TRANSPORT CHANNEL RESOURCES RESPONSE message.

If the *C-ID* IE is included in the COMMON TRANSPORT CHANNEL RESOURCES REQUEST message, the DRNC shall include the *FACH Info for UE Selected S-CCPCH* IE valid for the cell indicated by the *C-ID* IE and the corresponding *C-ID* IEin the COMMON TRANSPORT CHANNEL RESOURCES RESPONSE message. If the *C-ID* IE is not included in the COMMON TRANSPORT CHANNEL RESOURCES REQUEST message, the DRNC shall include the *FACH Info for UE Selected S-CCPCH* IE valid for the cell where the UE is located and the corresponding *C-ID* IE. The DRNC shall include the *FACH Scheduling Priority* IE and *FACH Initial Window Size* IE in the *FACH Flow Control Information* IE of the *FACH Info for UE Selected S-CCPCH* IE for each priority class that the DRNC has determined shall be used. The DRNC may include several *MAC-c/sh SDU Length* IEs for each priority class.

If the DRNS has any RACH, [FDD - CPCH,] and/or FACH resources previously allocated for the UE in another cell than the cell where resources are currently being allocated, the DRNS shall release the previously allocated RACH, [FDD - CPCH,] and/or FACH resources.

If the DRNS has successfully reserved the required resources, the DRNC shall respond to the SRNC with the COMMON TRANSPORT CHANNEL RESOURCES RESPONSE message.

If the *Permanent NAS UE Identity* IE is present in the COMMON TRANSPORT CHANNEL RESOURCES REQUEST message, the DRNS shall store the information for the considered UE Context for the life-time of the UE Context.

If the COMMON TRANSPORT CHANNEL RESOURCES REQUEST message includes a *C-ID* IE corresponding to a cell reserved for operator use and the Permanent NAS UE Identity is available in the DRNC for the considered UE Context, the DRNC shall use this information to determine whether it can reserve resources on a common transport channel in this cell or not.

8.4.1.4 Abnormal Conditions

If the COMMON TRANSPORT CHANNEL RESOURCES REQUEST message contains the *Transport Layer Address* IE or the *Binding ID* IE, and not both are present for a transport channel intended to be established, the DRNC shall reject the procedure using the COMMON TRANSPORT CHANNEL RESOURCES FAILURE message.

9.1.3 RADIO LINK SETUP REQUEST

9.1.3.1 FDD Message

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.1.40		YES	reject
Transaction ID	M		9.2.1.59		–	
SRNC-Id	M		RNC-Id 9.2.1.50		YES	reject
S-RNTI	M		9.2.1.53		YES	reject
D-RNTI	O		9.2.1.24		YES	reject
Allowed Queuing Time	O		9.2.1.2		YES	reject
UL DPCH Information		*1*			YES	reject
>UL Scrambling Code	M		9.2.2.53		–	
>Min UL Channelisation Code Length	M		9.2.2.25		–	
>Max Number of UL DPDCHs	C – CodeLen		9.2.2.24		–	
>Puncture Limit	M		9.2.1.46	For the UL.	–	
>TFCS	M		TFCS for the UL 9.2.1.63		–	
>UL DPCCH Slot Format	M		9.2.2.52		–	
>Uplink SIR Target	O		Uplink SIR 9.2.1.69		–	
>Diversity mode	M		9.2.2.8		–	
>SSDT Cell Identity Length	O		9.2.2.41		–	
>S Field Length	O		9.2.2.36		–	
>DPC Mode	O		9.2.2.12A		YES	reject
DL DPCH Information		*1*			YES	reject
>TFCS	M		TFCS for the DL. 9.2.1.63		–	
>DL DPCH Slot Format	M		9.2.2.9		–	
>Number of DL Channelisation Codes	M		9.2.2.26A		–	
>TFCI Signalling Mode	M		9.2.2.46		–	
>TFCI Presence	C-SlotFormat		9.2.1.55		–	
>Multiplexing Position	M		9.2.2.26		–	
>Power Offset Information		*1*			–	
>>PO1	M		Power Offset 9.2.2.30	Power offset for the TFCI bits.	–	
>>PO2	M		Power Offset 9.2.2.30	Power offset for the TPC bits.	–	
>>PO3	M		Power Offset 9.2.2.30	Power offset for the pilot bits.	–	
>FDD TPC Downlink Step Size	M		9.2.2.16		–	
>Limited Power Increase	M		9.2.2.21A		–	
>Inner Loop DL PC Status	M		9.2.2.21a		–	
DCH Information	M		DCH FDD Information 9.2.2.4A		YES	reject
DSCH Information	O		DSCH FDD Information 9.2.2.13A		YES	reject
RL Information		*1…<maxnoofRLs>*			EACH	notify

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
>RL ID	M		9.2.1.49		–	
>C-Id	M		9.2.1.6		–	
>First RLS Indicator	M		9.2.2.16A		-	
>Frame Offset	M		9.2.1.30		–	
>Chip Offset	M		9.2.2.1		–	
>Propagation Delay	O		9.2.2.33		–	
>Diversity Control Field	C – NotFirstRL		9.2.1.20		–	
>Initial DL TX Power	O		DL Power 9.2.1.21A		–	
>Primary CPICH Ec/No	O		9.2.2.32		–	
>SSDT Cell Identity	O		9.2.2.40		–	
>Transmit Diversity Indicator	C – Diversity mode		9.2.2.48		–	
>SSDT Cell Identity for EDSCHPC	C-EDSCHPC		9.2.2.40A		YES	ignore
>RL Specific DCH Information	O		9.2.1.XXX		YES	ignore
Transmission Gap Pattern Sequence Information	O		9.2.2.47A		YES	reject
Active Pattern Sequence Information	O		9.2.2.A		YES	reject
Permanent NAS UE Identity	O		9.2.1.73		YES	ignore

Condition	Explanation
CodeLen	The IE shall be present if *Min UL Channelisation Code length* IE equals to 4
SlotFormat	The IE shall be present if the *DL DPCH Slot Format* IE is equal to any of the values from 12 to 16.
NotFirstRL	The IE shall be present if the RL is not the first one in the *RL Information* IE.
Diversity mode	The IE shall be present if *Diversity Mode* IE in *UL DPCH Information* IE and is not equal to "none".
EDSCHPC	This IE shall be present if *Enhanced DSCH PC* IE is present in the *DSCH Information* IE.

Range bound	Explanation
MaxnoofRLs	Maximum number of RLs for one UE.

9.1.3.2 TDD Message

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.1.40		YES	reject
Transaction ID	M		9.2.1.59		–	
SRNC-Id	M		RNC-Id 9.2.1.50		YES	reject
S-RNTI	M		9.2.1.53		YES	reject
D-RNTI	O		9.2.1.24		YES	reject
Allowed Queuing Time	O		9.2.1.2		YES	reject
UL Physical Channel Information		*1*			YES	reject
>Maximum Number of Timeslots per Frame	M		9.2.3.3A	For the UL	–	
>Minimum Spreading Factor	M		9.2.3.4A	For the UL	–	
>Maximum Number of UL Physical Channels per Timeslot	M		9.2.3.3B		–	
DL Physical Channel Information		*1*			YES	reject
>Maximum Number of Timeslots per Frame	M		9.2.3.3A	For the DL	–	
>Minimum Spreading Factor	M		9.2.3.4A	For the DL	–	
>Maximum Number of DL Physical Channels per Frame	M		9.2.3.3C		–	
UL CCTrCH Information		*0..<maxnoofCCTrCHs>*		For DCH and USCH	EACH	notify
>CCTrCH ID	M		9.2.3.2		–	
>TFCS	M		9.2.1.63	For the UL.	–	
>TFCI Coding	M		9.2.3.11		–	
>Puncture Limit	M		9.2.1.46		–	
DL CCTrCH Information		*0..<maxnoofCCTrCHs>*		For DCH and DSCH	EACH	notify
>CCTrCH ID	M		9.2.3.2		–	
>TFCS	M		9.2.1.63	For the DL.	–	
>TFCI Coding	M		9.2.3.11		–	
>Puncture Limit	M		9.2.1.46		–	
>TDD TPC Downlink Step Size	M		9.2.3.10		–	
>TPC CCTrCH List		0 to <maxnoCCTrCH>		List of uplink CCTrCH which provide TPC	–	
>>TPC CCTrCH ID	M		CCTrCH ID 9.2.3.2		–	
DCH Information	O		DCH TDD Information 9.2.3.2A		YES	reject
DSCH Information	O		DSCH TDD Information 9.2.3.3a		YES	reject
USCH Information	O		9.2.3.15		YES	reject
RL Information		*1*			YES	reject
>RL ID	M		9.2.1.49		–	
>C-Id	M		9.2.1.6		–	
>Frame Offset	M		9.2.1.30		–	
>Special Burst Scheduling	M		9.2.3.7D		–	

>Primary CCPCH RSCP	O		9.2.3.5		–	
>DL Time Slot ISCP Info	O		9.2.3.2D	For 3.84Mcps TDD only	–	
>DL Time Slot ISCP Info LCR	O		9.2.3.2F	For 1.28Mcps TDD only	YES	reject
>TSTD Support Indicator	O		9.2.3.13F	For 1.28Mcps TDD only	YES	ignore
>RL Specific DCH Information	O		9.2.1.XXX		YES	ignore
Permanent NAS UE Identity	O		9.2.1.73		YES	ignore

Range bound	Explanation
MaxnoofCCTrCHs	Maximum number of CCTrCH for one UE.

9.1.6 RADIO LINK ADDITION REQUEST

9.1.6.1 FDD Message

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.1.40		YES	reject
Transaction ID	M		9.2.1.59		–	
Uplink SIR Target	M		Uplink SIR 9.2.1.69		YES	reject
RL Information		*1..<maxnoofRLs-1>*			EACH	notify
>RL ID	M		9.2.1.49		–	
>C-Id	M		9.2.1.6		–	
>Frame Offset	M		9.2.1.30		–	
>Chip Offset	M		9.2.2.1		–	
>Diversity Control Field	M		9.2.1.20		–	
>Primary CPICH Ec/No	O		9.2.2.32		–	
>SSDT Cell Identity	O		9.2.2.40			
>Transmit Diversity Indicator	O		9.2.2.48		–	
>RL Specific DCH Information	O		9.2.1.XXX		YES	ignore
Active Pattern Sequence Information	O		9.2.2A	Either all the already active Transmission Gap Sequence(s) are addressed (Transmission Gap Pattern sequence shall overlap with the existing one) or none of the transmission gap sequences is activated.	YES	reject
DPC Mode	O		9.2.2.12A		YES	reject
Permanent NAS UE Identity	O		9.2.1.73		YES	ignore

Range bound	Explanation
MaxnoofRLs	Maximum number of radio links for one UE.

9.1.6.2 TDD Message

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.1.40		YES	reject
Transaction ID	M		9.2.1.59		–	
RL Information		*1*			YES	reject
>RL ID	M		9.2.1.49		–	
>C-Id	M		9.2.1.6		–	
>Frame Offset	M		9.2.1.30		–	
>Diversity Control Field	M		9.2.1.20		–	
>Primary CCPCH RSCP	O		9.2.3.5		–	
>DL Time Slot ISCP Info	O		9.2.3.2D	For 3.84Mcps TDD only	–	
>DL Time Slot ISCP Info LCR	O		9.2.3.2F	For 1.28Mcps TDD only	YES	reject
>RL Specific DCH Information	O		9.2.1.XXX		YES	ignore
Permanent NAS UE Identity	O		9.2.1.73		YES	ignore

9.1.11 RADIO LINK RECONFIGURATION PREPARE

9.1.11.1 FDD Message

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Message Type	M		9.2.1.40		YES	reject
Transaction ID	M		9.2.1.59		–	
Allowed Queuing Time	O		9.2.1.2		YES	reject
UL DPCH Information		*0..1*			YES	reject
>UL Scrambling Code	O		9.2.2.53		–	
>UL SIR Target	O		Uplink SIR 9.2.1.69		–	
>Min UL Channelisation Code Length	O		9.2.2.25		–	
>Max Number of UL DPDCHs	C – CodeLen		9.2.2.24		–	
>Puncture Limit	O		9.2.1.46	For the UL.	–	
>TFCS	O		9.2.1.63	TFCS for the UL.	–	
>UL DPCCH Slot Format	O		9.2.2.52		–	
>Diversity Mode	O		9.2.2.8		–	
>SSDT Cell Identity Length	O		9.2.2.41		–	
>S-Field Length	O		9.2.2.36		–	
DL DPCH Information		*0..1*			YES	reject
>TFCS	O		9.2.1.63	TFCS for the DL.	–	
>DL DPCH Slot Format	O		9.2.2.9		–	
>Number of DL Channelisation Codes	O		9.2.2.26A		–	
>TFCI Signalling Mode	O		9.2.2.46		–	
>TFCI Presence	C-SlotFormat		9.2.1.55		–	
>Multiplexing Position	O		9.2.2.26		–	
>Limited Power Increase	O		9.2.2.21A		–	
DCHs to Modify	O		FDD DCHs to Modify 9.2.2.13C		YES	reject
DCHs to Add	O		DCH FDD Information 9.2.2.4A		YES	reject
DCHs to Delete		*0..<maxnoof DCHs>*			GLOBAL	reject
>DCH ID	M		9.2.1.16		–	
DSCHs to Modify		0..1			YES	reject
>DSCH Info		0..<maxnoof DSCHs>			–	
>>DSCH ID	M		9.2.1.26A		–	
>>TrCh Source Statistics Descriptor	O		9.2.1.65		–	
>>Transport Format Set	O		9.2.1.64	For DSCH	–	
>>Allocation/ Retention Priority	O		9.2.1.1		–	
>>Scheduling Priority Indicator	O		9.2.1.51A		–	
>>BLER	O		9.2.1.4		–	
>>Transport Bearer Request Indicator	M		9.2.1.61		–	
>>Binding ID	O		9.2.1.3	Shall be ignored if	YES	ignore

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
				bearer establishment with ALCAP.		
>>Transport Layer Address	O		9.2.1.62	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
>PDSCH RL ID	O		RL ID 9.2.1.49		–	
>TFCS	O		9.2.1.63	For DSCH	–	
>Enhanced DSCH PC Indicator	O		9.2.2.13F		YES	ignore
>Enhanced DSCH PC	C-EDSCHPCOn		9.2.2.13D		YES	ignore
DSCHs to Add	O		DSCH FDD Information 9.2.2.13A		YES	reject
DSCHs to Delete		0..1			YES	reject
>DSCH Info		1..<maxnoof DSCHs>			–	
>>DSCH ID	M		9.2.1.26A		–	
RL Information		*0..<maxnoof RLs>*			EACH	reject
>RL ID	M		9.2.1.49		–	
>SSDT Indication	O		9.2.2.42		–	
>SSDT Cell Identity	C - SSDTIndON		9.2.2.40		–	
>Transmit Diversity Indicator	C – Diversity mode		9.2.2.48		–	
>SSDT Cell Identity for EDSCHPC	C-EDSCHPC		9.2.2.40A		YES	ignore
>RL Specific DCH Information	O		9.2.1.XXX		YES	ignore
Transmission Gap Pattern Sequence Information	O		9.2.2.47A		YES	reject

Condition	Explanation
SSDTIndON	The IE shall be present if the *SSDT Indication* IE is set to "SSDT Active in the UE".
CodeLen	The IE shall be present only if the *Min UL Channelisation Code length* IE equals to 4.
SlotFormat	The IE shall only be present if the *DL DPCH Slot Format* IE is equal to any of the values from 12 to 16.
Diversity mode	The IE shall be present if *Diversity Mode* IE is present in the *UL DPCH Information* IE and is not equal to "none".
EDSCHPCOn	The IE shall be present if the *Enhanced DSCH PC Indicator* IE is set to "Enhanced DSCH PC Active in the UE".
EDSCHPC	The IE shall be present if *Enhanced DSCH PC* IE is present in either the *DSCHs to Modify* IE or the *DSCHs to Add* IE.

Range bound	Explanation
MaxnoofDCHs	Maximum number of DCHs for a UE.
MaxnoofDSCHs	Maximum number of DSCHs for one UE.
MaxnoofRLs	Maximum number of RLs for a UE.

9.1.11.2 TDD Message

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Message Type	M		9.2.1.40		YES	reject
Transaction ID	M		9.2.1.59		–	
Allowed Queuing Time	O		9.2.1.2		YES	reject
UL CCTrCH to Add		*0..<maxnoofCCTrCHs>*		For DCH and USCH	EACH	notify
>CCTrCH ID	M		9.2.3.2		–	
>TFCS	M		9.2.1.63	For the UL.	–	
>TFCI Coding	M		9.2.3.11		–	
>Puncture Limit	M		9.2.1.40		–	
> UL SIR Target	O		Uplink SIR 9.2.1.69	Mandatory for 1.28Mcps TDD; not applicable for 3.84Mcps TDD	YES	reject
UL CCTrCH to Modify		*0..<maxnoofCCTrCHs>*			EACH	notify
>CCTrCH ID	M		9.2.3.2		–	
>TFCS	O		9.2.1.63	For the UL.	–	
>TFCI Coding	O		9.2.3.11		–	
>Puncture Limit	O		9.2.1.46		–	
> UL SIR Target	O		Uplink SIR 9.2.1.69	For 1.28Mcps TDD only	YES	reject
UL CCTrCH toDdelete		*0..<maxnoofCCTrCHs>*			EACH	notify
>CCTrCH ID	M		9.2.3.2		–	
DL CCTrCH to Add		*0..<maxnoofCCTrCHs>*		For DCH and DSCH	EACH	notify
>CCTrCH ID	M		9.2.3.2		–	
>TFCS	M		9.2.1.63	For the DL.	–	
>TFCI Coding	M		9.2.3.11		–	
>Puncture Limit	M		9.2.1.46		–	
>TPC CCTrCH List		0 to <maxnoCCTrCH>		List of uplink CCTrCH which provide TPC	–	
>>TPC CCTrCH ID	M		CCTrCH ID 9.2.3.2		–	
DL CCTrCH to Modify		*0..<maxnoofCCTrCHs>*			EACH	notify
>CCTrCH ID	M		9.2.3.2		–	
>TFCS	O		9.2.1.63	For the DL.	–	
>TFCI Coding	O		9.2.3.11		–	
>Puncture Limit	O		9.2.1.46		–	
>TPC CCTrCH List		0 to <maxnoCCTrCH>		List of uplink CCTrCH which provide TPC	–	
>>TPC CCTrCH ID	M		CCTrCH ID 9.2.3.2		–	
DL CCTrCH to Delete		*0..<maxnoofCCTrCHs>*			EACH	notify

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
>CCTrCH ID	M		9.2.3.2		–	
DCHs to Modify	O		TDD DCHs to Modify 9.2.3.8B		YES	reject
DCHs to Add	O		DCH TDD Information 9.2.3.2A		YES	reject
DCHs to Delete		*0..<maxnoofDCHs>*			GLOBAL	reject
>DCH ID	M		9.2.1.16		–	
DSCHs to Modify		*0..<maxnoofDSCHs>*			GLOBAL	reject
>DSCH ID	M		9.2.1.26A		–	
>CCTrCH Id	O		9.2.3.2	DL CCTrCH in which the DSCH is mapped.	–	
>TrCh Source Statistics Descriptor	O		9.2.1.65		–	
>Transport Format Set	O		9.2.1.64		–	
>Allocation/Retention Priority	O		9.2.1.1		–	
>Scheduling Priority Indicator	O		9.2.1.51A		–	
>BLER	O		9.2.1.4		–	
>Transport Bearer Request Indicator	M		9.2.1.61		–	
>Binding ID	O		9.2.1.3	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
>Transport Layer Address	O		9.2.1.62	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
DSCHs to Add	O		DSCH TDD Information 9.2.3.3a		YES	reject
DSCHs to Delete		*0..<maxnoofDSCHs>*			GLOBAL	reject
>DSCH ID	M		9.2.1.26A		–	
USCHs to Modify		*0..<maxnoofUSCHs>*			GLOBAL	reject
>USCH ID	M		9.2.3.14		–	
>CCTrCH Id	O		9.2.3.2	UL CCTrCH in which the USCH is mapped.	–	
>TrCh Source Statistics Descriptor	O		9.2.1.65		–	
>Transport Format Set	O		9.2.1.64		–	
>Allocation/Retention Priority	O		9.2.1.1		–	
>Scheduling Priority Indicator	O		9.2.1.51A		–	
>BLER	O		9.2.1.4		–	
>Transport Bearer Request Indicator	M		9.2.1.61		–	

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
>Binding ID	O		9.2.1.3	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
>Transport Layer Address	O		9.2.1.62	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
>RB Info		0 to <maxnoof RB>		All Radio Bearers using this USCH	–	
>>RB Identity	M		9.2.3.5B		–	
USCHs to Add	O		USCH Information 9.2.3.15		YES	reject
USCHs to Delete		*0..<maxnoofUSCHs>*			GLOBAL	reject
>USCH ID	M		9.2.3.14		–	
RL Information		*0..1*			YES	ignore
>RL ID	M		9.2.1.49		-	-
>RL Specific DCH Information	O		9.2.1.XXX		-	-

Range bound	Explanation
MaxnoofDCHs	Maximum number of DCHs for a UE.
MaxnoofCCTrCHs	Maximum number of CCTrCHs for a UE.
MaxnoofDSCHs	Maximum number of DSCHs for one UE.
MaxnoofUSCHs	Maximum number of USCHs for one UE.

9.1.16 RADIO LINK RECONFIGURATION REQUEST

9.1.16.1 FDD Message

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Message Type	M		9.2.1.40		YES	reject
Transaction ID	M		9.2.1.59		–	
Allowed Queuing Time	O		9.2.1.2		YES	reject
UL DPCH Information		*0..1*			YES	reject
>TFCS	O		9.2.1.63	TFCS for the UL.	–	
DL DPCH Information		*0..1*			YES	reject
>TFCS	O		9.2.1.63	TFCS for the DL.	–	
>TFCI Signalling Mode	O		9.2.2.46		–	
>Limited Power Increase	O		9.2.2.21A		–	
DCHs to Modify	O		FDD DCHs to Modify 9.2.2.13C		YES	reject
DCHs to Add	O		DCH FDD Information 9.2.2.4A		YES	reject
DCHs to Delete		*0..<maxnoofDCHs>*			GLOBAL	reject
>DCH ID	M		9.2.1.16		–	
Transmission Gap Pattern Sequence Information	O		9.2.2.47A		YES	reject
RL Information		*0..<maxnoofRLs>*			EACH	ignore
>RL ID	M		9.2.1.49		-	-
>RL Specific DCH Information	O		9.2.1.XXX		-	-

9.1.16.2 TDD Message

IE/Group Name	Presence	Range	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Message Type	M		9.2.1.40		YES	reject
Transaction ID	M		9.2.1.59		–	
Allowed Queuing Time	O		9.2.1.2		YES	reject
UL CCTrCH Information to Modify		*0..<maxnoof CCTrCHs>*			EACH	notify
>CCTrCH ID	M		9.2.3.2		–	
>TFCS	O		9.2.1.63		–	
UL CCTrCH Information to Delete		*0..<maxnoof CCTrCHs>*			EACH	notify
>CCTrCH ID	M		9.2.3.2		–	
DL CCTrCH Information to Modify		*0..<maxnoof CCTrCHs>*			EACH	notify
>CCTrCH ID	M		9.2.3.2		–	
>TFCS	O		9.2.1.63		–	
DL CCTrCH Information to Delete		*0..<maxnoof CCTrCHs>*			EACH	notify
>CCTrCH ID	M		9.2.3.2		–	
DCHs to Modify	O		TDD DCHs to Modify 9.2.3.8B		YES	reject
DCHs to Add	O		DCH TDD Information 9.2.3.2A		YES	reject
DCHs to Delete		*0..<maxnoof DCHs>*			GLOBAL	reject
>DCH ID	M		9.2.1.16		–	
RL Information		*0..1*			YES	ignore
>RL ID	M		9.2.1.49		-	-
>RL Specific DCH Information	O		9.2.1.XXX		-	-

Range Bound	Explanation
MaxnoofCCTrCHs	Maximum number of CCTrCHs for a UE.

9.1.35 COMMON TRANSPORT CHANNEL RESOURCES REQUEST

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Type	M		9.2.1.40		YES	reject
Transaction ID	M		9.2.1.59		–	
D-RNTI	M		9.2.1.24		YES	reject
C-ID	O		9.2.1.6		YES	reject
Transport Bearer Request Indicator	M		9.2.1.61	Request a new transport bearer or to use an existing bearer for the user plane.	YES	reject
Transport Bearer ID	M		9.2.1.60	Indicates the Iur transport bearer to be used for the user plane.	YES	reject
Permanent NAS UE Identity	O		9.2.1.73		YES	ignore
Binding ID	O		9.2.1.3	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
Transport Layer Address	O		9.2.1.62	Shall be ignored if bearer establishment with ALCAP.	YES	ignore

9.2.1.3 Binding ID

The Binding ID is the identifier of a user data stream.

In case of transport bearer establishment with ALCAP [3][35], this IE contains the identifier ~~It~~ that is allocated at the DRNS and ~~it~~ that is unique for each transport bearer under establishment to/from the DRNS.

If the Transport Layer Address contains an IP address [33], this IE contains the UDP port [34] intended to be used for the user plane transport.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Binding ID			OCTET STRING (1..4,…)	If the Binding ID includes an UDP port, the UDP port is included in octet 1 and 2. The first octet of the UDP port field shall be included in the first octet of the Binding ID.

9.2.1.62 Transport Layer Address

In case of transport bearer establishment with ALCAP [3] [35], this IE contains the address to be used for Transport Network Control Plane signalling to establish the transport bearer according to [3] [35].

In order to allow transport bearer establishment without ALCAP, this IE contains the address of the transport bearer to be used for the user plane transport.

~~Transport Layer Address defines the transport address of the DRNS.~~ For details on the Transport Address used see [3] [35].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Transport Layer Address			BIT STRING(1…160, …)	

9.2.1.XXX RL Specific DCH Information

The *RL Specific DCH Information* IE provides RL Specific DCH Information for DCHs. In case of a set of co-ordinated DCHs requiring a new transport bearer on Iur, the *Transport Layer Address* IE and the *Binding ID* IE in the *RL Specific DCH Information* IE shall be included only for one of the DCHs in the set of co-ordinated DCHs.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
RL Specific DCH Information		*1..<maxnoofDCHs>*			–	
>DCH ID	M		9.2.1.16		–	
>Binding ID	O		9.2.1.3	Shall be ignored if bearer establishment with ALCAP.	–	
>Transport Layer Address	O		9.2.1.62	Shall be ignored if bearer establishment with ALCAP.	–	

Range bound	Explanation
MaxnoofDCHs	Maximum number of DCHs for one UE.

9.2.2.13A DSCH FDD Information

The *DSCH FDD Information* IE provides information for DSCHs to be established.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
DSCH Specific FDD Information		*1..<maxnoofDSCHs>*			–	
>DSCH ID	M		9.2.1.26A		–	
>TrCh Source Statistics Descriptor	M		9.2.1.65		–	
>Transport Format Set	M		9.2.1.64	For DSCH	–	
>Allocation/Retention Priority	M		9.2.1.1		–	
>Scheduling Priority Indicator	M		9.2.1.51A		–	
>BLER	M		9.2.1.4		–	
>Binding ID	O		9.2.1.3	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
>Transport Layer Address	O		9.2.1.62	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
PDSCH RL ID	M		RL ID 9.2.1.49		–	
TFCS	M		9.2.1.63	For DSCH	–	
>Enhanced DSCH PC	O		9.2.2.13D		YES	ignore

Range bound	Explanation
MaxnoofDSCHs	Maximum number of DSCHs for one UE.

9.2.3.3a DSCH TDD Information

The *DSCH TDD Information* IE provides information for DSCHs to be established.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
DSCH TDD Information		*1..<maxnoofDSCHs>*			–	
>DSCH ID	M		9.2.1.26A		–	
>CCTrCH ID	M		9.2.3.2	DL CCTrCH in which the DSCH is mapped.	–	
>TrCh Source Statistics Descriptor	M		9.2.1.65		–	
>Transport Format Set	M		9.2.1.64		–	
>Allocation/Retention Priority	M		9.2.1.1		–	
>Scheduling Priority Indicator	M		9.2.1.51A		–	
>BLER	M		9.2.1.4		–	
>Binding ID	O		9.2.1.3	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
>Transport Layer Address	O		9.2.1.62	Shall be ignored if bearer establishment with ALCAP.	YES	ignore

Range bound	Explanation
MaxnoofDSCHs	Maximum number of DSCHs for one UE.

9.2.3.15 USCH Information

The *USCH Information* IE provides information for USCHs to be established.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
USCH Information		*1 to <maxnoof USCHs>*			–	
>USCH ID	M		9.2.3.14		–	
>CCTrCH ID	M		9.2.3.2	UL CCTrCH in which the USCH is mapped	–	
>TrCh Source Statistics Descriptor	M		9.2.1.65		–	
>Transport Format Set	M		9.2.1.64	For USCH	–	
>Allocation/Retention Priority	M		9.2.1.1		–	
>Scheduling Priority Indicator	M		9.2.1.51A		–	
>BLER	M		9.2.1.4			
>RB Info		1 to <maxnoof RB>		All Radio Bearers using this USCH	–	
>>RB Identity	M		9.2.3.5B		–	
>Binding ID	O		9.2.1.3	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
>Transport Layer Address	O		9.2.1.62	Shall be ignored if bearer establishment with ALCAP.	YES	ignore

Range bound	Explanation
MaxnoofUSCHs	Maximum number of USCHs for one UE.
MaxnoofRBs	Maximum number of Radio Bearers for one UE.

9.3.3 PDU Definitions

```
-- **************************************************************
--
-- PDU definitions for RNSAP.
--
-- **************************************************************

RNSAP-PDU-Contents {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) rnsap (1) version1 (1) rnsap-PDU-Contents (1) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

-- **************************************************************
--
-- IE parameter types from other modules.
--
-- **************************************************************

IMPORTS
    Active-Pattern-Sequence-Information,
    AllocationRetentionPriority,
    AllowedQueuingTime,
    Allowed-Rate-Information,
    AlphaValue,
    BLER,
    SCTD-Indicator,
    BindingID,
    C-ID,
    C-RNTI,
    CCTrCH-ID,
    CFN,
    ClosedLoopMode1-SupportIndicator,
    ClosedLoopMode2-SupportIndicator,
    Closedlooptimingadjustmentmode,
    CN-CS-DomainIdentifier,
    CN-PS-DomainIdentifier,
    CNDomainType,
    Cause,
    CellParameterID,
    ChipOffset,
    CommonMeasurementAccuracy,
    CommonMeasurementType,
    CommonMeasurementValue,
```

```
    CommonMeasurementValueInformation,
    CongestionCause,
    CriticalityDiagnostics,
    D-RNTI,
    D-RNTI-ReleaseIndication,
    DCH-FDD-Information,
    DCH-ID,
    DCH-InformationResponse,
    DCH-TDD-Information,
    DL-DPCH-SlotFormat,
    DL-TimeslotISCP,
    DL-Power,
    DL-ScramblingCode,
    DL-Timeslot-Information,
    DL-TimeslotLCR-Information,
    DL-TimeSlot-ISCP-Info,
    DL-TimeSlot-ISCP-LCR-Information,
    DPC-Mode,
    DPC-Mode-Change-SupportIndicator,
    DPCH-ID,
    DRACControl,
    DRXCycleLengthCoefficient,
    DedicatedMeasurementType,
    DedicatedMeasurementValue,
    DedicatedMeasurementValueInformation,
    DiversityControlField,
    DiversityMode,
    DSCH-FDD-Information,
    DSCH-FDD-InformationResponse,
    DSCH-FlowControlInformation,
    DSCH-FlowControlItem,
    DSCH-TDD-Information,
    DSCH-ID,
    SchedulingPriorityIndicator,
    EnhancedDSCHPC,
    EnhancedDSCHPCCounter,
    EnhancedDSCHPCIndicator,
    EnhancedDSCHPCWnd,
    EnhancedDSCHPowerOffset,
    FACH-FlowControlInformation,
    FDD-DCHs-to-Modify,
    FDD-DL-ChannelisationCodeNumber,
    FDD-DL-CodeInformation,
    FDD-S-CCPCH-Offset,
    FDD-TPC-DownlinkStepSize,
    FirstRLS-Indicator,
    FNReportingIndicator,
    FrameHandlingPriority,
    FrameOffset,
    GA-AccessPointPosition,
    GA-Cell,
```

```
    GA-CellAdditionalShapes,
    IMSI,
    InformationExchangeID,
    InformationReportCharacteristics,
    InformationType,
    InnerLoopDLPCStatus,
    L3-Information,
    LimitedPowerIncrease,
    MaximumAllowedULTxPower,
    MaxNrDLPhysicalchannels,
    MaxNrOfUL-DPCHs,
    MaxNrTimeslots,
    MaxNrULPhysicalchannels,
    MeasurementFilterCoefficient,
    MeasurementID,
    MidambleAllocationMode,
    MidambleShiftAndBurstType,
    MidambleShiftLCR,
    MinimumSpreadingFactor,
    MinUL-ChannelisationCodeLength,
    MultiplexingPosition,
    NeighbouringFDDCellMeasurementInformation,
    NeighbouringTDDCellMeasurementInformation,
    Neighbouring-GSM-CellInformation,
    Neighbouring-UMTS-CellInformation,
    NrOfDLchannelisationcodes,
    PagingCause,
    PagingRecordType,
    PDSCHCodeMapping,
    PayloadCRC-PresenceIndicator,
    PCCPCH-Power,
    PC-Preamble,
    Permanent-NAS-UE-Identity,
    PowerAdjustmentType,
    PowerOffset,
    PrimaryCCPCH-RSCP,
    PrimaryCPICH-EcNo,
    PrimaryCPICH-Power,
    PrimaryScramblingCode,
    PropagationDelay,
    PunctureLimit,
    QE-Selector,
    RANAP-RelocationInformation,
    RB-Info,
    RL-ID,
    RL-Set-ID,
    RNC-ID,
    RepetitionLength,
    RepetitionPeriod,
    ReportCharacteristics,
    Received-total-wide-band-power,
```

```
    RequestedDataValue,
    RequestedDataValueInformation,
    RL-Specific-DCH-Info,
    RxTimingDeviationForTA,
    S-FieldLength,
    S-RNTI,
    SCH-TimeSlot,
    SAI,
    SFN,
    Secondary-CCPCH-Info,
    Secondary-CCPCH-Info-TDD,
    Secondary-LCR-CCPCH-Info-TDD,
    SpecialBurstScheduling,
    SSDT-CellID,
    SSDT-CellID-Length,
    SSDT-Indication,
    SSDT-SupportIndicator,
    STTD-Indicator,
    STTD-SupportIndicator,
    AdjustmentPeriod,
    ScaledAdjustmentRatio,
    MaxAdjustmentStep,
    SecondaryCCPCH-SlotFormat,
    SRB-Delay,
    SyncCase,
    SynchronisationConfiguration,
    TDD-ChannelisationCode,
    TDD-DCHs-to-Modify,
    TDD-DL-Code-Information,
    TDD-DPCHOffset,
    TDD-PhysicalChannelOffset,
    TDD-TPC-DownlinkStepSize,
    TDD-ChannelisationCodeLCR,
    TDD-DL-Code-LCR-Information,
    TDD-UL-Code-Information,
    TDD-UL-Code-LCR-Information,
    TFCI-Coding,
    TFCI-Presence,
    TFCI-SignallingMode,
    TimeSlot,
    TimeSlotLCR,
    TimingAdvanceApplied,
    ToAWE,
    ToAWS,
    TransmitDiversityIndicator,
    TransportBearerID,
    TransportBearerRequestIndicator,
    TFCS,
    Transmission-Gap-Pattern-Sequence-Information,
    TransportFormatManagement,
    TransportFormatSet,
```

```
    TransportLayerAddress,
    TrCH-SrcStatisticsDescr,
    TSTD-Indicator,
    TSTD-Support-Indicator,
    UARFCN,
    UC-ID,
    UL-DPCCH-SlotFormat,
    UL-SIR,
    UL-FP-Mode,
    UL-PhysCH-SF-Variation,
    UL-ScramblingCode,
    UL-Timeslot-Information,
    UL-TimeslotLCR-Information,
    UL-TimeSlot-ISCP-Info,
    UL-TimeSlot-ISCP-LCR-Info,
    URA-ID,
    URA-Information,
    USCH-ID,
    USCH-Information
FROM RNSAP-IEs

    PrivateIE-Container{},
    ProtocolExtensionContainer{},
    ProtocolIE-ContainerList{},
    ProtocolIE-ContainerPair{},
    ProtocolIE-ContainerPairList{},
    ProtocolIE-Container{},
    ProtocolIE-Single-Container{},
    RNSAP-PRIVATE-IES,
    RNSAP-PROTOCOL-EXTENSION,
    RNSAP-PROTOCOL-IES,
    RNSAP-PROTOCOL-IES-PAIR
FROM RNSAP-Containers

    maxNoOfDSCHs,
    maxNoOfUSCHs,
    maxNrOfCCTrCHs,
    maxNrOfDCHs,
    maxNrOfTS,
    maxNrOfDPCHs,
    maxNrOfRLs,
    maxNrOfRLSets,
    maxNrOfRLs-1,
    maxNrOfRLs-2,
    maxNrOfULTs,
    maxNrOfDLTs,
    maxNoOfDSCHsLCR,
    maxNoOfUSCHsLCR,
    maxNrOfCCTrCHsLCR,
    maxNrOfTsLCR,
    maxNrOfDLTsLCR,
```

```
    maxNrOfULTsLCR,
    maxNrOfDPCHsLCR,
    maxNrOfLCRTDDNeighboursPerRNC,
    maxNrOfMeasNCell,

    id-Active-Pattern-Sequence-Information,
    id-AdjustmentRatio,
    id-AllowedQueuingTime,
    id-BindingID,
    id-C-ID,
    id-C-RNTI,
    id-CFN,
    id-CFNReportingIndicator,
    id-CN-CS-DomainIdentifier,
    id-CN-PS-DomainIdentifier,
    id-Cause,
    id-CauseLevel-RL-AdditionFailureFDD,
    id-CauseLevel-RL-AdditionFailureTDD,
    id-CauseLevel-RL-ReconfFailure,
    id-CauseLevel-RL-SetupFailureFDD,
    id-CauseLevel-RL-SetupFailureTDD,
    id-CCTrCH-InformationItem-RL-FailureInd,
    id-CCTrCH-InformationItem-RL-RestoreInd,
    id-ClosedLoopMode1-SupportIndicator,
    id-ClosedLoopMode2-SupportIndicator,
    id-CNOriginatedPage-PagingRqst,
    id-CommonMeasurementAccuracy,
    id-CommonMeasurementObjectType-CM-Rprt,
    id-CommonMeasurementObjectType-CM-Rqst,
    id-CommonMeasurementObjectType-CM-Rsp,
    id-CommonMeasurementType,
    id-CongestionCause,
    id-CriticalityDiagnostics,
    id-D-RNTI,
    id-D-RNTI-ReleaseIndication,
    id-DCHs-to-Add-FDD,
    id-DCHs-to-Add-TDD,
    id-DCH-DeleteList-RL-ReconfPrepFDD,
    id-DCH-DeleteList-RL-ReconfPrepTDD,
    id-DCH-DeleteList-RL-ReconfRqstFDD,
    id-DCH-DeleteList-RL-ReconfRqstTDD,
    id-DCH-FDD-Information,
    id-DCH-TDD-Information,
    id-FDD-DCHs-to-Modify,
    id-TDD-DCHs-to-Modify,
    id-DCH-InformationResponse,
    id-DCH-Rate-InformationItem-RL-CongestInd,
    id-DL-CCTrCH-InformationAddItem-RL-ReconfPrepTDD,
    id-DL-CCTrCH-InformationDeleteItem-RL-ReconfPrepTDD,
    id-DL-CCTrCH-InformationModifyItem-RL-ReconfPrepTDD,
    id-DL-CCTrCH-InformationListIE-RL-ReconfReadyTDD,
```

```
    id-DL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD,
    id-DL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD,
    id-DL-CCTrCH-InformationItem-RL-SetupRqstTDD,
    id-DL-CCTrCH-InformationListIE-PhyChReconfRqstTDD,
    id-DL-CCTrCH-InformationListIE-RL-AdditionRspTDD,
    id-DL-CCTrCH-InformationListIE-RL-SetupRspTDD,
    id-DL-CCTrCH-InformationAddList-RL-ReconfPrepTDD,
    id-DL-CCTrCH-InformationDeleteList-RL-ReconfPrepTDD,
    id-DL-CCTrCH-InformationModifyList-RL-ReconfPrepTDD,
    id-DL-CCTrCH-InformationDeleteList-RL-ReconfRqstTDD,
    id-DL-CCTrCH-InformationModifyList-RL-ReconfRqstTDD,
    id-DL-CCTrCH-InformationList-RL-SetupRqstTDD,
    id-FDD-DL-CodeInformation,
    id-DL-DPCH-Information-RL-ReconfPrepFDD,
    id-DL-DPCH-Information-RL-SetupRqstFDD,
    id-DL-DPCH-Information-RL-ReconfRqstFDD,
    id-DL-DPCH-InformationItem-PhyChReconfRqstTDD,
    id-DL-DPCH-InformationItem-RL-AdditionRspTDD,
    id-DL-DPCH-InformationItem-RL-SetupRspTDD,
    id-DL-DPCH-InformationAddListIE-RL-ReconfReadyTDD,
    id-DL-DPCH-InformationDeleteListIE-RL-ReconfReadyTDD,
    id-DL-DPCH-InformationModifyListIE-RL-ReconfReadyTDD,
    id-DL-Physical-Channel-Information-RL-SetupRqstTDD,
    id-DLReferencePower,
    id-DLReferencePowerList-DL-PC-Rqst,
    id-DL-ReferencePowerInformation-DL-PC-Rqst,
    id-DRXCycleLengthCoefficient,
    id-DedicatedMeasurementObjectType-DM-Rprt,
    id-DedicatedMeasurementObjectType-DM-Rqst,
    id-DedicatedMeasurementObjectType-DM-Rsp,
    id-DedicatedMeasurementType,
    id-DPC-Mode,
    id-DPC-Mode-Change-SupportIndicator,
    id-DSCHs-to-Add-FDD,
    id-DSCHs-to-Add-TDD,
    id-DSCH-DeleteList-RL-ReconfPrepTDD,
    id-DSCH-Delete-RL-ReconfPrepFDD,
    id-DSCH-FDD-Information,
    id-DSCH-InformationListIE-RL-AdditionRspTDD,
    id-DSCH-InformationListIEs-RL-SetupRspTDD,
    id-DSCH-TDD-Information,
    id-DSCH-FDD-InformationResponse,
    id-DSCH-ModifyList-RL-ReconfPrepTDD,
    id-DSCH-Modify-RL-ReconfPrepFDD,
    id-DSCHsToBeAddedOrModified-FDD,
    id-DSCHToBeAddedOrModifiedList-RL-ReconfReadyTDD,
    id-EnhancedDSCHPC,
    id-EnhancedDSCHPCIndicator,
    id-FACH-InfoForUESelectedS-CCPCH-CTCH-ResourceRspFDD,
    id-FACH-InfoForUESelectedS-CCPCH-CTCH-ResourceRspTDD,
    id-GA-Cell,
```

```
    id-GA-CellAdditionalShapes,
    id-IMSI,
    id-InformationExchangeID,
    id-InformationExchangeObjectType-InfEx-Rprt,
    id-InformationExchangeObjectType-InfEx-Rqst,
    id-InformationExchangeObjectType-InfEx-Rsp,
    id-InformationReportCharacteristics,
    id-InformationType,
    id-InnerLoopDLPCStatus,
    id-L3-Information,
    id-AdjustmentPeriod,
    id-MaxAdjustmentStep,
    id-MeasurementFilterCoefficient,
    id-MeasurementID,
    id-PagingArea-PagingRqst,
    id-Permanent-NAS-UE-Identity,
    id-FACH-FlowControlInformation,
    id-PowerAdjustmentType,
    id-PropagationDelay,
    id-RANAP-RelocationInformation,
    id-RL-Information-PhyChReconfRqstFDD,
    id-RL-Information-PhyChReconfRqstTDD,
    id-RL-Information-RL-AdditionRqstFDD,
    id-RL-Information-RL-AdditionRqstTDD,
    id-RL-Information-RL-DeletionRqst,
    id-RL-Information-RL-FailureInd,
    id-RL-Information-RL-ReconfPrepFDD,
    id-RL-Information-RL-RestoreInd,
    id-RL-Information-RL-SetupRqstFDD,
    id-RL-Information-RL-SetupRqstTDD,
    id-RL-InformationItem-RL-CongestInd,
    id-RL-InformationItem-DM-Rprt,
    id-RL-InformationItem-DM-Rqst,
    id-RL-InformationItem-DM-Rsp,
    id-RL-InformationItem-RL-PreemptRequiredInd,
    id-RL-InformationItem-RL-SetupRqstFDD,
    id-RL-InformationList-RL-CongestInd,
    id-RL-InformationList-RL-AdditionRqstFDD,
    id-RL-InformationList-RL-DeletionRqst,
    id-RL-InformationList-RL-PreemptRequiredInd,
    id-RL-InformationList-RL-ReconfPrepFDD,
    id-RL-InformationResponse-RL-AdditionRspTDD,
    id-RL-InformationResponse-RL-ReconfReadyTDD,
    id-RL-InformationResponse-RL-ReconfRspTDD,
    id-RL-InformationResponse-RL-SetupRspTDD,
    id-RL-InformationResponseItem-RL-AdditionRspFDD,
    id-RL-InformationResponseItem-RL-ReconfReadyFDD,
    id-RL-InformationResponseItem-RL-ReconfRspFDD,
    id-RL-InformationResponseItem-RL-SetupRspFDD,
    id-RL-InformationResponseList-RL-AdditionRspFDD,
    id-RL-InformationResponseList-RL-ReconfReadyFDD,
```

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    id-RL-InformationResponseList-RL-ReconfRspFDD,
    id-RL-InformationResponseList-RL-SetupRspFDD,
    id-RL-ReconfigurationFailure-RL-ReconfFail,
    id-RL-ReconfigurationReadyTDD-RL-Information,
    id-RL-ReconfigurationRequestFDD-RL-InformationList,
    id-RL-ReconfigurationRequestFDD-RL-Information-IEs,
    id-RL-ReconfigurationRequestTDD-RL-Information,
    id-RL-Specific-DCH-Info,
    id-RL-Set-InformationItem-DM-Rprt,
    id-RL-Set-InformationItem-DM-Rqst,
    id-RL-Set-InformationItem-DM-Rsp,
    id-RL-Set-Information-RL-FailureInd,
    id-RL-Set-Information-RL-RestoreInd,
    id-ReportCharacteristics,
    id-Reporting-Object-RL-FailureInd,
    id-Reporing-Object-RL-RestoreInd,
    id-RxTimingDeviationForTA,
    id-S-RNTI,
    id-SAI,
    id-SFN,
    id-SFNReportingIndicator,
    id-SRNC-ID,
    id-SSDT-CellIDforEDSCHPC,
    id-STTD-SupportIndicator,
    id-SuccessfulRL-InformationResponse-RL-AdditionFailureFDD,
    id-SuccessfulRL-InformationResponse-RL-SetupFailureFDD,
    id-timeSlot-ISCP,
    id-TransportBearerID,
    id-TransportBearerRequestIndicator,
    id-TransportLayerAddress,
    id-UC-ID,
    id-Transmission-Gap-Pattern-Sequence-Information,
    id-UL-CCTrCH-AddInformation-RL-ReconfPrepTDD,
    id-UL-CCTrCH-DeleteInformation-RL-ReconfPrepTDD,
    id-UL-CCTrCH-ModifyInformation-RL-ReconfPrepTDD,
    id-UL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD,
    id-UL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD,
    id-UL-CCTrCH-InformationAddList-RL-ReconfPrepTDD,
    id-UL-CCTrCH-InformationDeleteList-RL-ReconfPrepTDD,
    id-UL-CCTrCH-InformationModifyList-RL-ReconfPrepTDD,
    id-UL-CCTrCH-InformationDeleteList-RL-ReconfRqstTDD,
    id-UL-CCTrCH-InformationModifyList-RL-ReconfRqstTDD,
    id-UL-CCTrCH-InformationItem-RL-SetupRqstTDD,
    id-UL-CCTrCH-InformationList-RL-SetupRqstTDD,
    id-UL-CCTrCH-InformationListIE-PhyChReconfRqstTDD,
    id-UL-CCTrCH-InformationListIE-RL-AdditionRspTDD,
    id-UL-CCTrCH-InformationListIE-RL-ReconfReadyTDD,
    id-UL-CCTrCH-InformationListIE-RL-SetupRspTDD,
    id-UL-DPCH-Information-RL-ReconfPrepFDD,
    id-UL-DPCH-Information-RL-ReconfRqstFDD,
    id-UL-DPCH-Information-RL-SetupRqstFDD,
```

```
    id-UL-DPCH-InformationItem-PhyChReconfRqstTDD,
    id-UL-DPCH-InformationItem-RL-AdditionRspTDD,
    id-UL-DPCH-InformationItem-RL-SetupRspTDD,
    id-UL-DPCH-InformationAddListIE-RL-ReconfReadyTDD,
    id-UL-DPCH-InformationDeleteListIE-RL-ReconfReadyTDD,
    id-UL-DPCH-InformationModifyListIE-RL-ReconfReadyTDD,
    id-UL-Physical-Channel-Information-RL-SetupRqstTDD,
    id-UL-SIRTarget,
    id-URA-Information,
    id-UnsuccessfulRL-InformationResponse-RL-AdditionFailureFDD,
    id-UnsuccessfulRL-InformationResponse-RL-AdditionFailureTDD,
    id-UnsuccessfulRL-InformationResponse-RL-SetupFailureFDD,
    id-UnsuccessfulRL-InformationResponse-RL-SetupFailureTDD,
    id-USCHs-to-Add,
    id-USCH-DeleteList-RL-ReconfPrepTDD,
    id-USCH-InformationListIE-RL-AdditionRspTDD,
    id-USCH-InformationListIEs-RL-SetupRspTDD,
    id-USCH-Information,
    id-USCH-ModifyList-RL-ReconfPrepTDD,
    id-USCHToBeAddedOrModifiedList-RL-ReconfReadyTDD,
    id-DL-Timeslot-ISCP-LCR-Information-RL-SetupRqstTDD,
    id-RL-LCR-InformationResponse-RL-SetupRspTDD,
    id-UL-CCTrCH-LCR-InformationListIE-RL-SetupRspTDD,
    id-UL-DPCH-LCR-InformationItem-RL-SetupRspTDD,
    id-DL-CCTrCH-LCR-InformationListIE-RL-SetupRspTDD,
    id-DL-DPCH-LCR-InformationItem-RL-SetupRspTDD,
    id-DSCH-LCR-InformationListIEs-RL-SetupRspTDD,
    id-USCH-LCR-InformationListIEs-RL-SetupRspTDD,
    id-DL-Timeslot-ISCP-LCR-Information-RL-AdditionRqstTDD,
    id-RL-LCR-InformationResponse-RL-AdditionRspTDD,
    id-UL-CCTrCH-LCR-InformationListIE-RL-AdditionRspTDD,
    id-UL-DPCH-LCR-InformationItem-RL-AdditionRspTDD,
    id-DL-CCTrCH-LCR-InformationListIE-RL-AdditionRspTDD,
    id-DL-DPCH-LCR-InformationItem-RL-AdditionRspTDD,
    id-DSCH-LCR-InformationListIEs-RL-AdditionRspTDD,
    id-USCH-LCR-InformationListIEs-RL-AdditionRspTDD,
    id-UL-DPCH-LCR-InformationAddListIE-RL-ReconfReadyTDD,
    id-UL-Timeslot-LCR-InformationModifyList-RL-ReconfReadyTDD,
    id-DL-DPCH-LCR-InformationAddListIE-RL-ReconfReadyTDD,
    id-DL-Timeslot-LCR-InformationModifyList-RL-ReconfReadyTDD,
    id-UL-Timeslot-LCR-InformationList-PhyChReconfRqstTDD,
    id-DL-Timeslot-LCR-InformationList-PhyChReconfRqstTDD,
    id-timeSlot-ISCP-LCR-List-DL-PC-Rqst-TDD,
    id-TSTD-Support-Indicator-RL-SetupRqstTDD

FROM RNSAP-Constants;

-- **************************************************************
--
-- RADIO LINK SETUP REQUEST FDD
--
```

```
-- **************************************************************

RadioLinkSetupRequestFDD ::= SEQUENCE {
    protocolIEs                     ProtocolIE-Container       {{RadioLinkSetupRequestFDD-IEs}},
    protocolExtensions              ProtocolExtensionContainer {{RadioLinkSetupRequestFDD-Extensions}}                  OPTIONAL,
    ...
}

RadioLinkSetupRequestFDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-SRNC-ID                 CRITICALITY reject  TYPE RNC-ID                     PRESENCE mandatory} |
    { ID id-S-RNTI                  CRITICALITY reject  TYPE S-RNTI                     PRESENCE mandatory } |
    { ID id-D-RNTI                  CRITICALITY reject  TYPE D-RNTI                  PRESENCE optional   } |
    { ID id-AllowedQueuingTime          CRITICALITY reject  TYPE AllowedQueuingTime             PRESENCE optional  } |
    { ID id-UL-DPCH-Information-RL-SetupRqstFDD CRITICALITY reject  TYPE UL-DPCH-Information-RL-SetupRqstFDD    PRESENCE mandatory   } |
    { ID id-DL-DPCH-Information-RL-SetupRqstFDD CRITICALITY reject  TYPE DL-DPCH-Information-RL-SetupRqstFDD    PRESENCE mandatory   } |
    { ID id-DCH-FDD-Information     CRITICALITY reject  TYPE DCH-FDD-Information        PRESENCE mandatory } |
    { ID id-DSCH-FDD-Information    CRITICALITY reject  TYPE DSCH-FDD-Information           PRESENCE optional   } |
    { ID id-RL-Information-RL-SetupRqstFDD      CRITICALITY notify  TYPE RL-InformationList-RL-SetupRqstFDD     PRESENCE mandatory   }|
    { ID id-Transmission-Gap-Pattern-Sequence-Information       CRITICALITY reject  TYPE Transmission-Gap-Pattern-Sequence-Information   PRESENCE
    optional } |
{ ID id-Active-Pattern-Sequence-Information CRITICALITY reject  TYPE Active-Pattern-Sequence-Information    PRESENCE optional },
    ...
}

UL-DPCH-Information-RL-SetupRqstFDD ::= SEQUENCE {
    ul-ScramblingCode               UL-ScramblingCode,
    minUL-ChannelisationCodeLength          MinUL-ChannelisationCodeLength,
    maxNrOfUL-DPCHs                 MaxNrOfUL-DPCHs         OPTIONAL
    -- This IE shall be present if minUL-ChannelisationCodeLength equals to 4 -- ,
    ul-PunctureLimit                PunctureLimit,
    ul-TFCS                         TFCS,
    ul-DPCCH-SlotFormat             UL-DPCCH-SlotFormat,
    ul-SIRTarget                    UL-SIR          OPTIONAL,
    diversityMode                   DiversityMode,
    sSDT-CellIdLength               SSDT-CellID-Length      OPTIONAL,
    s-FieldLength                   S-FieldLength           OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {UL-DPCH-Information-RL-SetupRqstFDD-ExtIEs} } OPTIONAL,
    ...
}

UL-DPCH-Information-RL-SetupRqstFDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-DPC-Mode                CRITICALITY reject      EXTENSION DPC-Mode  PRESENCE optional  },
    ...
}

DL-DPCH-Information-RL-SetupRqstFDD ::= SEQUENCE {
    tFCS                            TFCS,
    dl-DPCH-SlotFormat              DL-DPCH-SlotFormat,
    nrOfDLchannelisationcodes       NrOfDLchannelisationcodes,
    tFCI-SignallingMode             TFCI-SignallingMode,
    tFCI-Presence                   TFCI-Presence           OPTIONAL
```

```
    -- This IE shall be present if DL DPCH Slot Format IE is equal to any of the values from 12 to 16 --,
    multiplexingPosition                MultiplexingPosition,
    powerOffsetInformation              PowerOffsetInformation-RL-SetupRqstFDD,
    fdd-dl-TPC-DownlinkStepSize     FDD-TPC-DownlinkStepSize,
    limitedPowerIncrease            LimitedPowerIncrease,
    innerLoopDLPCStatus             InnerLoopDLPCStatus,
    iE-Extensions                   ProtocolExtensionContainer { {DL-DPCH-Information-RL-SetupRqstFDD-ExtIEs} } OPTIONAL,
    ...
}

DL-DPCH-Information-RL-SetupRqstFDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

PowerOffsetInformation-RL-SetupRqstFDD ::= SEQUENCE {
        po1-ForTFCI-Bits                PowerOffset,
        po2-ForTPC-Bits                 PowerOffset,
        po3-ForPilotBits                PowerOffset,
        iE-Extensions                   ProtocolExtensionContainer { { PowerOffsetInformation-RL-SetupRqstFDD-ExtIEs} } OPTIONAL,
        ...
}

PowerOffsetInformation-RL-SetupRqstFDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

RL-InformationList-RL-SetupRqstFDD          ::= SEQUENCE (SIZE (1..maxNrOfRLs)) OF ProtocolIE-Single-Container { {RL-InformationItemIEs-RL-
SetupRqstFDD} }

RL-InformationItemIEs-RL-SetupRqstFDD RNSAP-PROTOCOL-IES ::= {
    { ID id-RL-InformationItem-RL-SetupRqstFDD  CRITICALITY notify  TYPE RL-InformationItem-RL-SetupRqstFDD     PRESENCE mandatory   }
}

RL-InformationItem-RL-SetupRqstFDD ::= SEQUENCE {
    rL-ID                           RL-ID,
    c-ID                            C-ID,
    firstRLS-indicator              FirstRLS-Indicator,
    frameOffset                     FrameOffset,
    chipOffset                      ChipOffset,
    propagationDelay                PropagationDelay        OPTIONAL,
    diversityControlField           DiversityControlField       OPTIONAL
    -- This IE shall be present if the RL is not the first one in the RL-InformationList-RL-SetupRqstFDD --,
    dl-InitialTX-Power              DL-Power            OPTIONAL,
    primaryCPICH-EcNo               PrimaryCPICH-EcNo           OPTIONAL,
    sSDT-CellID                     SSDT-CellID         OPTIONAL,
    transmitDiversityIndicator      TransmitDiversityIndicator      OPTIONAL,
    -- This IE shall be present unless Diversity Mode IE in UL DPCH Information group is "none"
    iE-Extensions                   ProtocolExtensionContainer { {RL-InformationItem-RL-SetupRqstFDD-ExtIEs} } OPTIONAL,
    ...
}
```

```
RL-InformationItem-RL-SetupRqstFDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-SSDT-CellIDforEDSCHPC CRITICALITY ignore EXTENSION SSDT-CellID          PRESENCE conditional }|
    -- This IE shall be present if Enhanced DSCH PC IE is present in the DSCH Information IE.
    { ID id-RL-Specific-DCH-Info    CRITICALITY ignore      EXTENSION   RL-Specific-DCH-Info    PRESENCE   optional },
    ...
}

RadioLinkSetupRequestFDD-Extensions RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-Permanent-NAS-UE-Identity               CRITICALITY ignore          EXTENSION Permanent-NAS-UE-Identity    PRESENCE optional },
    ...
}

-- **************************************************************
--
-- RADIO LINK SETUP REQUEST TDD
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-- **************************************************************

RadioLinkSetupRequestTDD ::= SEQUENCE {
    protocolIEs                     ProtocolIE-Container       {{RadioLinkSetupRequestTDD-IEs}},
    protocolExtensions              ProtocolExtensionContainer {{RadioLinkSetupRequestTDD-Extensions}}                  OPTIONAL,
    ...
}

RadioLinkSetupRequestTDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-SRNC-ID                                     CRITICALITY reject  TYPE RNC-ID                                     PRESENCE mandatory} |
    { ID id-S-RNTI                                      CRITICALITY reject  TYPE S-RNTI                                     PRESENCE mandatory} |
    { ID id-D-RNTI                                      CRITICALITY reject  TYPE D-RNTI                                     PRESENCE optional } |
    { ID id-UL-Physical-Channel-Information-RL-SetupRqstTDD CRITICALITY reject  TYPE UL-Physical-Channel-Information-RL-SetupRqstTDD    PRESENCE
mandatory   } |
    { ID id-DL-Physical-Channel-Information-RL-SetupRqstTDD CRITICALITY reject  TYPE DL-Physical-Channel-Information-RL-SetupRqstTDD    PRESENCE
mandatory   } |
    { ID id-AllowedQueuingTime                          CRITICALITY reject  TYPE AllowedQueuingTime                         PRESENCE optional } |
    { ID id-UL-CCTrCH-InformationList-RL-SetupRqstTDD   CRITICALITY notify  TYPE UL-CCTrCH-InformationList-RL-SetupRqstTDD  PRESENCE optional } |
    { ID id-DL-CCTrCH-InformationList-RL-SetupRqstTDD   CRITICALITY notify  TYPE DL-CCTrCH-InformationList-RL-SetupRqstTDD  PRESENCE optional } |
    { ID id-DCH-TDD-Information         CRITICALITY reject  TYPE DCH-TDD-Information            PRESENCE optional  } |
    { ID id-DSCH-TDD-Information        CRITICALITY reject  TYPE DSCH-TDD-Information           PRESENCE optional  } |
    { ID id-USCH-Information        CRITICALITY reject  TYPE USCH-Information           PRESENCE optional  } |
    { ID id-RL-Information-RL-SetupRqstTDD              CRITICALITY reject  TYPE RL-Information-RL-SetupRqstTDD             PRESENCE mandatory},
    ...
}

UL-Physical-Channel-Information-RL-SetupRqstTDD ::= SEQUENCE {
    maxNrTimeslots-UL               MaxNrTimeslots,
    minimumSpreadingFactor-UL       MinimumSpreadingFactor,
    maxNrULPhysicalchannels         MaxNrULPhysicalchannels,
    iE-Extensions                   ProtocolExtensionContainer { {UL-Physical-Channel-InformationItem-RL-SetupRqstTDD-ExtIEs} } OPTIONAL,
    ...
}

UL-Physical-Channel-InformationItem-RL-SetupRqstTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
```

```
    ...
}

DL-Physical-Channel-Information-RL-SetupRqstTDD ::= SEQUENCE {
    maxNrTimeslots-DL               MaxNrTimeslots,
    minimumSpreadingFactor-DL       MinimumSpreadingFactor,
    maxNrDLPhysicalchannels         MaxNrDLPhysicalchannels,
    iE-Extensions                   ProtocolExtensionContainer { {DL-Physical-Channel-InformationItem-RL-SetupRqstTDD-ExtIEs} } OPTIONAL,
    ...
}

DL-Physical-Channel-InformationItem-RL-SetupRqstTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-CCTrCH-InformationList-RL-SetupRqstTDD           ::= SEQUENCE (SIZE (1..maxNrOfCCTrCHs)) OF ProtocolIE-Single-Container { {UL-CCTrCH-
InformationItemIEs-RL-SetupRqstTDD} }

UL-CCTrCH-InformationItemIEs-RL-SetupRqstTDD RNSAP-PROTOCOL-IES ::= {
    { ID id-UL-CCTrCH-InformationItem-RL-SetupRqstTDD   CRITICALITY notify  TYPE UL-CCTrCH-InformationItem-RL-SetupRqstTDD  PRESENCE mandatory   }
}

UL-CCTrCH-InformationItem-RL-SetupRqstTDD ::= SEQUENCE {
    cCTrCH-ID                   CCTrCH-ID,
    ul-TFCS                     TFCS,
    tFCI-Coding                 TFCI-Coding,
    ul-PunctureLimit                PunctureLimit,
    iE-Extensions                   ProtocolExtensionContainer { {UL-CCTrCH-InformationItem-RL-SetupRqstTDD-ExtIEs} } OPTIONAL,
    ...
}

UL-CCTrCH-InformationItem-RL-SetupRqstTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-CCTrCH-InformationList-RL-SetupRqstTDD           ::= SEQUENCE (SIZE (1..maxNrOfCCTrCHs)) OF ProtocolIE-Single-Container { {DL-CCTrCH-
InformationItemIEs-RL-SetupRqstTDD} }

DL-CCTrCH-InformationItemIEs-RL-SetupRqstTDD RNSAP-PROTOCOL-IES ::= {
    { ID id-DL-CCTrCH-InformationItem-RL-SetupRqstTDD   CRITICALITY notify  TYPE DL-CCTrCH-InformationItem-RL-SetupRqstTDD  PRESENCE mandatory    }
}

DL-CCTrCH-InformationItem-RL-SetupRqstTDD ::= SEQUENCE {
    cCTrCH-ID                   CCTrCH-ID,
    dl-TFCS                     TFCS,
    tFCI-Coding                 TFCI-Coding,
    dl-PunctureLimit                PunctureLimit,
    tdd-TPC-DownlinkStepSize        TDD-TPC-DownlinkStepSize,
    cCTrCH-TPCList                  CCTrCH-TPCList-RL-SetupRqstTDD  OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {DL-CCTrCH-InformationItem-RL-SetupRqstTDD-ExtIEs} } OPTIONAL,
    ...
```

```
}

DL-CCTrCH-InformationItem-RL-SetupRqstTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

CCTrCH-TPCList-RL-SetupRqstTDD ::= SEQUENCE (SIZE (1..maxNrOfCCTrCHs)) OF CCTrCH-TPCItem-RL-SetupRqstTDD

CCTrCH-TPCItem-RL-SetupRqstTDD   ::= SEQUENCE {
    cCTrCH-ID                       CCTrCH-ID,
    iE-Extensions                   ProtocolExtensionContainer { { CCTrCH-TPCItem-RL-SetupRqstTDD-ExtIEs} } OPTIONAL,
    ...
}

CCTrCH-TPCItem-RL-SetupRqstTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

RL-Information-RL-SetupRqstTDD ::= SEQUENCE {
    rL-ID                       RL-ID,
    c-ID                        C-ID,
    frameOffset                 FrameOffset,
    specialBurstScheduling      SpecialBurstScheduling,
    primaryCCPCH-RSCP               PrimaryCCPCH-RSCP       OPTIONAL,
    dL-TimeSlot-ISCP                DL-TimeSlot-ISCP-Info   OPTIONAL,
    --for 3.84Mcps TDD only
    iE-Extensions                   ProtocolExtensionContainer { {RL-Information-RL-SetupRqstTDD-ExtIEs} } OPTIONAL,
    ...
}

RL-Information-RL-SetupRqstTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-DL-Timeslot-ISCP-LCR-Information-RL-SetupRqstTDD    CRITICALITY reject      EXTENSION    DL-TimeSlot-ISCP-LCR-Information PRESENCE optional
    }|
    { ID id-TSTD-Support-Indicator-RL-SetupRqstTDD              CRITICALITY ignore      EXTENSION    TSTD-Support-Indicator           PRESENCE optional
    }|
    --for 1.28Mcps TDD only
    { ID id-RL-Specific-DCH-Info    CRITICALITY ignore      EXTENSION   RL-Specific-DCH-Info    PRESENCE   optional },
    ...
}

RadioLinkSetupRequestTDD-Extensions RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-Permanent-NAS-UE-Identity               CRITICALITY ignore          EXTENSION Permanent-NAS-UE-Identity    PRESENCE optional },
    ...
}
```

```
-- **************************************************************
--
-- RADIO LINK ADDITION REQUEST FDD
--
-- **************************************************************

RadioLinkAdditionRequestFDD ::= SEQUENCE {
    protocolIEs                     ProtocolIE-Container       {{RadioLinkAdditionRequestFDD-IEs}},
    protocolExtensions              ProtocolExtensionContainer {{RadioLinkAdditionRequestFDD-Extensions}}                    OPTIONAL,
    ...
}

RadioLinkAdditionRequestFDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-UL-SIRTarget                CRITICALITY reject  TYPE UL-SIR                PRESENCE mandatory } |
    { ID id-RL-InformationList-RL-AdditionRqstFDD   CRITICALITY notify  TYPE RL-InformationList-RL-AdditionRqstFDD  PRESENCE mandatory   }|
    { ID id-Active-Pattern-Sequence-Information CRITICALITY reject  TYPE Active-Pattern-Sequence-Information   PRESENCE optional },
    ...
}

RL-InformationList-RL-AdditionRqstFDD           ::= SEQUENCE (SIZE (1..maxNrOfRLs-1)) OF ProtocolIE-Single-Container { {RL-Information-RL-
AdditionRqstFDD-IEs} }

RL-Information-RL-AdditionRqstFDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-RL-Information-RL-AdditionRqstFDD   CRITICALITY notify  TYPE RL-Information-RL-AdditionRqstFDD    PRESENCE mandatory   }
}

RL-Information-RL-AdditionRqstFDD ::= SEQUENCE {
    rL-ID                           RL-ID,
    c-ID                            C-ID,
    frameOffset                     FrameOffset,
    chipOffset                      ChipOffset,
    diversityControlField           DiversityControlField,
    primaryCPICH-EcNo               PrimaryCPICH-EcNo       OPTIONAL,
    sSDT-CellID                     SSDT-CellID         OPTIONAL,
    transmitDiversityIndicator      TransmitDiversityIndicator      OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {RL-Information-RL-AdditionRqstFDD-ExtIEs} } OPTIONAL,
    ...
}

RL-Information-RL-AdditionRqstFDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
{ ID id-RL-Specific-DCH-Info        CRITICALITY ignore      EXTENSION   RL-Specific-DCH-Info    PRESENCE   optional },
    ...
}

RadioLinkAdditionRequestFDD-Extensions RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-DPC-Mode                CRITICALITY reject      EXTENSION   DPC-Mode        PRESENCE optional  }|
    { ID id-Permanent-NAS-UE-Identity               CRITICALITY ignore          EXTENSION Permanent-NAS-UE-Identity   PRESENCE optional },
    ...
}

-- **************************************************************
```

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--
-- RADIO LINK ADDITION REQUEST TDD
--
-- **************************************************************

RadioLinkAdditionRequestTDD ::= SEQUENCE {
    protocolIEs                     ProtocolIE-Container       {{RadioLinkAdditionRequestTDD-IEs}},
    protocolExtensions              ProtocolExtensionContainer {{RadioLinkAdditionRequestTDD-Extensions}}                   OPTIONAL,
    ...
}

RadioLinkAdditionRequestTDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-RL-Information-RL-AdditionRqstTDD   CRITICALITY reject  TYPE RL-Information-RL-AdditionRqstTDD   PRESENCE mandatory   },
    ...
}

RL-Information-RL-AdditionRqstTDD ::= SEQUENCE {
    rL-ID                           RL-ID,
    c-ID                            C-ID,
    frameOffset                     FrameOffset,
    diversityControlField           DiversityControlField,
    primaryCCPCH-RSCP               PrimaryCCPCH-RSCP       OPTIONAL,
    dL-TimeSlot-ISCP-Info           DL-TimeSlot-ISCP-Info   OPTIONAL,
    --for 3.84Mcps TDD only
    iE-Extensions                   ProtocolExtensionContainer { {RL-Information-RL-AdditionRqstTDD-ExtIEs} } OPTIONAL,
    ...
}

RL-Information-RL-AdditionRqstTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-DL-Timeslot-ISCP-LCR-Information-RL-AdditionRqstTDD CRITICALITY reject      EXTENSION    DL-TimeSlot-ISCP-LCR-Information    PRESENCE
optional    }|
    --for 1.28Mcps TDD only
    { ID id-RL-Specific-DCH-Info        CRITICALITY ignore      EXTENSION   RL-Specific-DCH-Info  PRESENCE    optional },
    ...
}

RadioLinkAdditionRequestTDD-Extensions RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-Permanent-NAS-UE-Identity               CRITICALITY ignore          EXTENSION Permanent-NAS-UE-Identity    PRESENCE optional },
    ...
}
```

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-- **************************************************************
--
-- RADIO LINK RECONFIGURATION PREPARE FDD
--
-- **************************************************************

RadioLinkReconfigurationPrepareFDD ::= SEQUENCE {
    protocolIEs                     ProtocolIE-Container       {{RadioLinkReconfigurationPrepareFDD-IEs}},
    protocolExtensions              ProtocolExtensionContainer {{RadioLinkReconfigurationPrepareFDD-Extensions}}                  OPTIONAL,
    ...
}

RadioLinkReconfigurationPrepareFDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-AllowedQueuingTime          CRITICALITY reject  TYPE AllowedQueuingTime             PRESENCE optional  } |
    { ID id-UL-DPCH-Information-RL-ReconfPrepFDD            CRITICALITY reject  TYPE UL-DPCH-Information-RL-ReconfPrepFDD      PRESENCE optional } |
    { ID id-DL-DPCH-Information-RL-ReconfPrepFDD            CRITICALITY reject  TYPE DL-DPCH-Information-RL-ReconfPrepFDD      PRESENCE optional } |
    { ID id-FDD-DCHs-to-Modify      CRITICALITY reject  TYPE FDD-DCHs-to-Modify     PRESENCE optional  } |
    { ID id-DCHs-to-Add-FDD     CRITICALITY reject  TYPE DCH-FDD-Information        PRESENCE optional  } |
    { ID id-DCH-DeleteList-RL-ReconfPrepFDD     CRITICALITY reject  TYPE DCH-DeleteList-RL-ReconfPrepFDD     PRESENCE optional } |
    { ID id-DSCH-Modify-RL-ReconfPrepFDD        CRITICALITY reject  TYPE DSCH-Modify-RL-ReconfPrepFDD     PRESENCE optional } |
    { ID id-DSCHs-to-Add-FDD            CRITICALITY reject  TYPE DSCH-FDD-Information           PRESENCE optional  } |
    { ID id-DSCH-Delete-RL-ReconfPrepFDD        CRITICALITY reject  TYPE DSCH-Delete-RL-ReconfPrepFDD     PRESENCE optional } |
    { ID id-RL-InformationList-RL-ReconfPrepFDD CRITICALITY reject  TYPE RL-InformationList-RL-ReconfPrepFDD  PRESENCE optional }|
    { ID id-Transmission-Gap-Pattern-Sequence-Information   CRITICALITY reject  TYPE Transmission-Gap-Pattern-Sequence-Information PRESENCE optional },
    ...
}

UL-DPCH-Information-RL-ReconfPrepFDD ::= SEQUENCE {
    ul-ScramblingCode               UL-ScramblingCode       OPTIONAL,
    ul-SIRTarget                    UL-SIR                  OPTIONAL,
    minUL-ChannelisationCodeLength  MinUL-ChannelisationCodeLength  OPTIONAL,
    maxNrOfUL-DPDCHs                MaxNrOfUL-DPCHs         OPTIONAL
    -- This IE shall be present if minUL-ChannelisationCodeLength equals to 4 --,
    ul-PunctureLimit                PunctureLimit           OPTIONAL,
    tFCS                            TFCS    OPTIONAL,
    ul-DPCCH-SlotFormat             UL-DPCCH-SlotFormat     OPTIONAL,
    diversityMode                   DiversityMode           OPTIONAL,
    sSDT-CellIDLength               SSDT-CellID-Length      OPTIONAL,
    s-FieldLength                   S-FieldLength           OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {UL-DPCH-Information-RL-ReconfPrepFDD-ExtIEs} } OPTIONAL,
    ...
}

UL-DPCH-Information-RL-ReconfPrepFDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-DPCH-Information-RL-ReconfPrepFDD ::= SEQUENCE {
    tFCS                            TFCS    OPTIONAL,
    dl-DPCH-SlotFormat              DL-DPCH-SlotFormat      OPTIONAL,
```

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    nrOfDLchannelisationcodes       NrOfDLchannelisationcodes   OPTIONAL,
    tFCI-SignallingMode             TFCI-SignallingMode     OPTIONAL,
    tFCI-Presence                   TFCI-Presence           OPTIONAL
    -- This IE shall be present if DL DPCH Slot Format IE is from 12 to 16 --,
    multiplexingPosition            MultiplexingPosition        OPTIONAL,
    limitedPowerIncrease            LimitedPowerIncrease        OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {DL-DPCH-Information-RL-ReconfPrepFDD-ExtIEs} } OPTIONAL,
    ...
}

DL-DPCH-Information-RL-ReconfPrepFDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DCH-DeleteList-RL-ReconfPrepFDD             ::= SEQUENCE (SIZE (0..maxNrOfDCHs)) OF DCH-DeleteItem-RL-ReconfPrepFDD

DCH-DeleteItem-RL-ReconfPrepFDD ::= SEQUENCE {
    dCH-ID                          DCH-ID,
    iE-Extensions                   ProtocolExtensionContainer { {DCH-DeleteItem-RL-ReconfPrepFDD-ExtIEs} } OPTIONAL,
    ...
}

DCH-DeleteItem-RL-ReconfPrepFDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DSCH-Modify-RL-ReconfPrepFDD ::= SEQUENCE {
    dSCH-Information                    DSCH-ModifyInfo-RL-ReconfPrepFDD    OPTIONAL,
    pdSCH-RL-ID                         RL-ID                       OPTIONAL,
    tFCS                                TFCS                        OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { {DSCH-Modify-RL-ReconfPrepFDD-ExtIEs} } OPTIONAL,
    ...
}

DSCH-Modify-RL-ReconfPrepFDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DSCH-ModifyInfo-RL-ReconfPrepFDD ::= SEQUENCE (SIZE(0..maxNoOfDSCHs)) OF DSCH-ModifyInformationItem-RL-ReconfPrepFDD

DSCH-ModifyInformationItem-RL-ReconfPrepFDD ::= SEQUENCE {
    dSCH-ID                             DSCH-ID,
    trChSourceStatisticsDescriptor      TrCH-SrcStatisticsDescr OPTIONAL,
    transportFormatSet                  TransportFormatSet              OPTIONAL,
    allocationRetentionPriority         AllocationRetentionPriority     OPTIONAL,
    schedulingPriorityIndicator         SchedulingPriorityIndicator     OPTIONAL,
    bLER                                BLER                            OPTIONAL,
    transportBearerRequestIndicator     TransportBearerRequestIndicator,
    iE-Extensions                       ProtocolExtensionContainer { {DSCH-ModifyInformationItem-RL-ReconfPrepFDD-ExtIEs} } OPTIONAL,
    ...
}
```

```
DSCH-ModifyInformationItem-RL-ReconfPrepFDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-EnhancedDSCHPCIndicator         CRITICALITY ignore  EXTENSION EnhancedDSCHPCIndicator         PRESENCE optional }|
    { ID id-EnhancedDSCHPC                  CRITICALITY ignore  EXTENSION EnhancedDSCHPC                  PRESENCE conditional }|
    -- The IE shall be present if the Enhanced DSCH PC Indicator IE is set to "Enhanced DSCH PC Active in the UE".
    { ID id-BindingID                       CRITICALITY ignore      EXTENSION   BindingID       PRESENCE            optional }|
    -- Shall be ignored if bearer establishment with ALCAP.
    { ID id-TransportLayerAddress           CRITICALITY ignore      EXTENSION   TransportLayerAddress      PRESENCE    optional },
    -- Shall be ignored if bearer establishment with ALCAP.
    ...
}

DSCH-Delete-RL-ReconfPrepFDD ::= SEQUENCE {
    dSCH-Information                    DSCH-Info-Delete-RL-ReconfPrepFDD,
    iE-Extensions                       ProtocolExtensionContainer { {DSCH-Delete-RL-ReconfPrepFDD-ExtIEs} } OPTIONAL,
    ...
}

DSCH-Delete-RL-ReconfPrepFDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DSCH-Info-Delete-RL-ReconfPrepFDD ::= SEQUENCE (SIZE(1..maxNoOfDSCHs)) OF DSCH-DeleteInformationItem-RL-REconfPrepFDD

DSCH-DeleteInformationItem-RL-REconfPrepFDD ::= SEQUENCE {
    dSCH-ID                             DSCH-ID,
    iE-Extensions                   ProtocolExtensionContainer { {DSCH-DeleteInformationItem-RL-ReconfPrepFDD-ExtIEs} } OPTIONAL,
    ...
}

DSCH-DeleteInformationItem-RL-ReconfPrepFDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

RL-InformationList-RL-ReconfPrepFDD         ::= SEQUENCE (SIZE (0..maxNrOfRLs)) OF ProtocolIE-Single-Container { {RL-Information-RL-ReconfPrepFDD-IEs}
}

RL-Information-RL-ReconfPrepFDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-RL-Information-RL-ReconfPrepFDD     CRITICALITY reject  TYPE RL-Information-RL-ReconfPrepFDD     PRESENCE mandatory   }
}

RL-Information-RL-ReconfPrepFDD ::= SEQUENCE {
    rL-ID                       RL-ID,
    sSDT-Indication                 SSDT-Indication     OPTIONAL,
    sSDT-CellIdentity               SSDT-CellID     OPTIONAL
    -- The IE shall be present if the sSDT-Indication is set to 'sSDT-active-in-the-UE' --,
    transmitDiversityIndicator      TransmitDiversityIndicator      OPTIONAL,
    -- This IE shall be present if Diversity Mode IE is present in UL DPCH Information IE and is not equal to "none"
    iE-Extensions                   ProtocolExtensionContainer { {RL-Information-RL-ReconfPrepFDD-ExtIEs} } OPTIONAL,
    ...
}
```

```
RL-Information-RL-ReconfPrepFDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-SSDT-CellIDforEDSCHPC CRITICALITY ignore EXTENSION SSDT-CellID          PRESENCE conditional }|
    -- This IE shall be present if Enhanced DSCH PC IE is present in either the DSCHs to Modify IE or the DSCHs to Add IE.
    { ID    id-RL-Specific-DCH-Info     CRITICALITY ignore      EXTENSION   RL-Specific-DCH-Info  PRESENCE    optional },
    ...
}

RadioLinkReconfigurationPrepareFDD-Extensions RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- RADIO LINK RECONFIGURATION PREPARE TDD
--
-- **************************************************************

RadioLinkReconfigurationPrepareTDD ::= SEQUENCE {
    protocolIEs                     ProtocolIE-Container       {{RadioLinkReconfigurationPrepareTDD-IEs}},
    protocolExtensions              ProtocolExtensionContainer {{RadioLinkReconfigurationPrepareTDD-Extensions}}                  OPTIONAL,
    ...
}

RadioLinkReconfigurationPrepareTDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-AllowedQueuingTime          CRITICALITY reject  TYPE AllowedQueuingTime             PRESENCE optional   } |
    { ID id-UL-CCTrCH-InformationAddList-RL-ReconfPrepTDD   CRITICALITY notify  TYPE UL-CCTrCH-InformationAddList-RL-ReconfPrepTDDPRESENCE optional } |
    { ID id-UL-CCTrCH-InformationModifyList-RL-ReconfPrepTDD    CRITICALITY notify  TYPE UL-CCTrCH-InformationModifyList-RL-ReconfPrepTDD  PRESENCE
optional    } |
    { ID id-UL-CCTrCH-InformationDeleteList-RL-ReconfPrepTDD    CRITICALITY notify  TYPE UL-CCTrCH-InformationDeleteList-RL-ReconfPrepTDD  PRESENCE
optional    } |
    { ID id-DL-CCTrCH-InformationAddList-RL-ReconfPrepTDD   CRITICALITY notify  TYPE DL-CCTrCH-InformationAddList-RL-ReconfPrepTDDPRESENCE optional } |
    { ID id-DL-CCTrCH-InformationModifyList-RL-ReconfPrepTDD    CRITICALITY notify  TYPE DL-CCTrCH-InformationModifyList-RL-ReconfPrepTDD  PRESENCE
optional    } |
    { ID id-DL-CCTrCH-InformationDeleteList-RL-ReconfPrepTDD    CRITICALITY notify  TYPE DL-CCTrCH-InformationDeleteList-RL-ReconfPrepTDD  PRESENCE
optional    } |
    { ID id-TDD-DCHs-to-Modify      CRITICALITY reject  TYPE TDD-DCHs-to-Modify     PRESENCE optional   } |
    { ID id-DCHs-to-Add-TDD     CRITICALITY reject  TYPE DCH-TDD-Information        PRESENCE optional   } |
    { ID id-DCH-DeleteList-RL-ReconfPrepTDD     CRITICALITY reject  TYPE DCH-DeleteList-RL-ReconfPrepTDD     PRESENCE optional }|
    { ID id-DSCH-ModifyList-RL-ReconfPrepTDD    CRITICALITY reject  TYPE DSCH-ModifyList-RL-ReconfPrepTDD    PRESENCE optional } |
    { ID id-DSCHs-to-Add-TDD        CRITICALITY reject  TYPE DSCH-TDD-Information           PRESENCE optional } |
    { ID id-DSCH-DeleteList-RL-ReconfPrepTDD    CRITICALITY reject  TYPE DSCH-DeleteList-RL-ReconfPrepTDD    PRESENCE optional } |
    { ID id-USCH-ModifyList-RL-ReconfPrepTDD    CRITICALITY reject  TYPE USCH-ModifyList-RL-ReconfPrepTDD    PRESENCE optional } |
    { ID id-USCHs-to-Add        CRITICALITY reject  TYPE USCH-Information           PRESENCE optional   } |
    { ID id-USCH-DeleteList-RL-ReconfPrepTDD    CRITICALITY reject  TYPE USCH-DeleteList-RL-ReconfPrepTDD    PRESENCE optional },
    ...
}

UL-CCTrCH-InformationAddList-RL-ReconfPrepTDD       ::= SEQUENCE (SIZE (0..maxNrOfCCTrCHs)) OF ProtocolIE-Single-Container { {UL-CCTrCH-AddInformation-
RL-ReconfPrepTDD-IEs} }
```

```
UL-CCTrCH-AddInformation-RL-ReconfPrepTDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-UL-CCTrCH-AddInformation-RL-ReconfPrepTDD   CRITICALITY notify  TYPE UL-CCTrCH-AddInformation-RL-ReconfPrepTDD  PRESENCE mandatory   }
}

UL-CCTrCH-AddInformation-RL-ReconfPrepTDD ::= SEQUENCE {
    cCTrCH-ID                   CCTrCH-ID,
    tFCS                        TFCS,
    tFCI-Coding                 TFCI-Coding,
    punctureLimit                   PunctureLimit,
    iE-Extensions                   ProtocolExtensionContainer { {UL-CCTrCH-AddInformation-RL-ReconfPrepTDD-ExtIEs} } OPTIONAL,
    ...
}

UL-CCTrCH-AddInformation-RL-ReconfPrepTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-UL-SIRTarget        CRITICALITY reject      EXTENSION       UL-SIR      PRESENCE optional},
    -- This IE shall be mandatory for 1.28Mcps TDD, not applicable for 3.84Mcps TDD.
    ...
}

UL-CCTrCH-InformationModifyList-RL-ReconfPrepTDD        ::= SEQUENCE (SIZE (0..maxNrOfCCTrCHs)) OF ProtocolIE-Single-Container { {UL-CCTrCH-
ModifyInformation-RL-ReconfPrepTDD-IEs} }

UL-CCTrCH-ModifyInformation-RL-ReconfPrepTDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-UL-CCTrCH-ModifyInformation-RL-ReconfPrepTDD    CRITICALITY notify  TYPE UL-CCTrCH-ModifyInformation-RL-ReconfPrepTDD PRESENCE mandatory
    }
}

UL-CCTrCH-ModifyInformation-RL-ReconfPrepTDD ::= SEQUENCE {
    cCTrCH-ID                   CCTrCH-ID,
    tFCS                        TFCS        OPTIONAL,
    tFCI-Coding                 TFCI-Coding             OPTIONAL,
    punctureLimit                   PunctureLimit               OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {UL-CCTrCH-ModifyInformation-RL-ReconfPrepTDD-ExtIEs} } OPTIONAL,
    ...
}

UL-CCTrCH-ModifyInformation-RL-ReconfPrepTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-UL-SIRTarget        CRITICALITY reject      EXTENSION       UL-SIR      PRESENCE optional},
    -- This IE shall be applicable for 1.28Mcps TDD only.
    ...
}

UL-CCTrCH-InformationDeleteList-RL-ReconfPrepTDD        ::= SEQUENCE (SIZE (0..maxNrOfCCTrCHs)) OF ProtocolIE-Single-Container { {UL-CCTrCH-
DeleteInformation-RL-ReconfPrepTDD-IEs} }

UL-CCTrCH-DeleteInformation-RL-ReconfPrepTDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-UL-CCTrCH-DeleteInformation-RL-ReconfPrepTDD    CRITICALITY notify  TYPE UL-CCTrCH-DeleteInformation-RL-ReconfPrepTDD PRESENCE mandatory
    }
}

UL-CCTrCH-DeleteInformation-RL-ReconfPrepTDD ::= SEQUENCE {
```

```
    cCTrCH-ID                   CCTrCH-ID,
    iE-Extensions                   ProtocolExtensionContainer { {UL-CCTrCH-DeleteInformation-RL-ReconfPrepTDD-ExtIEs} } OPTIONAL,
    ...
}

UL-CCTrCH-DeleteInformation-RL-ReconfPrepTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-CCTrCH-InformationAddList-RL-ReconfPrepTDD       ::= SEQUENCE (SIZE (0..maxNrOfCCTrCHs)) OF ProtocolIE-Single-Container { {DL-CCTrCH-AddInformation-
RL-ReconfPrepTDD-IEs} }

DL-CCTrCH-AddInformation-RL-ReconfPrepTDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-DL-CCTrCH-InformationAddItem-RL-ReconfPrepTDD   CRITICALITY notify  TYPE DL-CCTrCH-InformationAddItem-RL-ReconfPrepTDDPRESENCE mandatory
    }
}

DL-CCTrCH-InformationAddItem-RL-ReconfPrepTDD ::= SEQUENCE {
    cCTrCH-ID                   CCTrCH-ID,
    tFCS                        TFCS,
    tFCI-Coding                 TFCI-Coding,
    punctureLimit                   PunctureLimit,
    cCTrCH-TPCList                  CCTrCH-TPCAddList-RL-ReconfPrepTDD  OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {DL-CCTrCH-InformationAddItem-RL-ReconfPrepTDD-ExtIEs} } OPTIONAL,
    ...
}

DL-CCTrCH-InformationAddItem-RL-ReconfPrepTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

CCTrCH-TPCAddList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (1..maxNrOfCCTrCHs)) OF CCTrCH-TPCAddItem-RL-ReconfPrepTDD

CCTrCH-TPCAddItem-RL-ReconfPrepTDD   ::= SEQUENCE {
    cCTrCH-ID                   CCTrCH-ID,
    iE-Extensions               ProtocolExtensionContainer { { CCTrCH-TPCAddItem-RL-ReconfPrepTDD-ExtIEs} } OPTIONAL,
    ...
}

CCTrCH-TPCAddItem-RL-ReconfPrepTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-CCTrCH-InformationModifyList-RL-ReconfPrepTDD        ::= SEQUENCE (SIZE (0..maxNrOfCCTrCHs)) OF ProtocolIE-Single-Container { {DL-CCTrCH-
ModifyInformation-RL-ReconfPrepTDD-IEs} }

DL-CCTrCH-ModifyInformation-RL-ReconfPrepTDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-DL-CCTrCH-InformationModifyItem-RL-ReconfPrepTDD    CRITICALITY notify  TYPE DL-CCTrCH-InformationModifyItem-RL-ReconfPrepTDD  PRESENCE
mandatory   }
}
```

```
DL-CCTrCH-InformationModifyItem-RL-ReconfPrepTDD ::= SEQUENCE {
    cCTrCH-ID                   CCTrCH-ID,
    tFCS                        TFCS        OPTIONAL,
    tFCI-Coding                 TFCI-Coding             OPTIONAL,
    punctureLimit                   PunctureLimit               OPTIONAL,
    cCTrCH-TPCList                  CCTrCH-TPCModifyList-RL-ReconfPrepTDD       OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {DL-CCTrCH-InformationModifyItem-RL-ReconfPrepTDD-ExtIEs} } OPTIONAL,
    ...
}

DL-CCTrCH-InformationModifyItem-RL-ReconfPrepTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

CCTrCH-TPCModifyList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (1..maxNrOfCCTrCHs)) OF CCTrCH-TPCModifyItem-RL-ReconfPrepTDD

CCTrCH-TPCModifyItem-RL-ReconfPrepTDD    ::= SEQUENCE {
    cCTrCH-ID                       CCTrCH-ID,
    iE-Extensions                   ProtocolExtensionContainer { { CCTrCH-TPCModifyItem-RL-ReconfPrepTDD-ExtIEs} } OPTIONAL,
    ...
}

CCTrCH-TPCModifyItem-RL-ReconfPrepTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-CCTrCH-InformationDeleteList-RL-ReconfPrepTDD        ::= SEQUENCE (SIZE (0..maxNrOfCCTrCHs)) OF ProtocolIE-Single-Container { {DL-CCTrCH-
DeleteInformation-RL-ReconfPrepTDD-IEs} }

DL-CCTrCH-DeleteInformation-RL-ReconfPrepTDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-DL-CCTrCH-InformationDeleteItem-RL-ReconfPrepTDD    CRITICALITY notify  TYPE DL-CCTrCH-InformationDeleteItem-RL-ReconfPrepTDD  PRESENCE
mandatory   }
}

DL-CCTrCH-InformationDeleteItem-RL-ReconfPrepTDD ::= SEQUENCE {
    cCTrCH-ID                   CCTrCH-ID,
    iE-Extensions                   ProtocolExtensionContainer { {DL-CCTrCH-InformationDeleteItem-RL-ReconfPrepTDD-ExtIEs} } OPTIONAL,
    ...
}

DL-CCTrCH-InformationDeleteItem-RL-ReconfPrepTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DCH-DeleteList-RL-ReconfPrepTDD             ::= SEQUENCE (SIZE (0..maxNrOfDCHs)) OF DCH-DeleteItem-RL-ReconfPrepTDD

DCH-DeleteItem-RL-ReconfPrepTDD ::= SEQUENCE {
    dCH-ID                      DCH-ID,
    iE-Extensions               ProtocolExtensionContainer { {DCH-DeleteItem-RL-ReconfPrepTDD-ExtIEs} } OPTIONAL,
    ...
}
```

```
DCH-DeleteItem-RL-ReconfPrepTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DSCH-ModifyList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE(0..maxNoOfDSCHs)) OF DSCH-ModifyItem-RL-ReconfPrepTDD

DSCH-ModifyItem-RL-ReconfPrepTDD ::= SEQUENCE {
    dSCH-ID                         DSCH-ID,
    dl-ccTrCHID                     CCTrCH-ID                     OPTIONAL,
    trChSourceStatisticsDescriptor  TrCH-SrcStatisticsDescr OPTIONAL,
    transportFormatSet              TransportFormatSet            OPTIONAL,
    allocationRetentionPriority     AllocationRetentionPriority   OPTIONAL,
    schedulingPriorityIndicator     SchedulingPriorityIndicator   OPTIONAL,
    bLER                            BLER                          OPTIONAL,
    transportBearerRequestIndicator TransportBearerRequestIndicator,
    iE-Extensions                   ProtocolExtensionContainer { {DSCH-ModifyItem-RL-ReconfPrepTDD-ExtIEs} } OPTIONAL,
    ...
}

DSCH-ModifyItem-RL-ReconfPrepTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID    id-BindingID                    CRITICALITY ignore      EXTENSION   BindingID               PRESENCE    optional }|
    -- Shall be ignored if bearer establishment with ALCAP.
    { ID    id-TransportLayerAddress        CRITICALITY ignore      EXTENSION   TransportLayerAddress    PRESENCE    optional },
    -- Shall be ignored if bearer establishment with ALCAP.
    ...
}

DSCH-DeleteList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE(0..maxNoOfDSCHs)) OF DSCH-DeleteItem-RL-ReconfPrepTDD

DSCH-DeleteItem-RL-ReconfPrepTDD ::= SEQUENCE {
    dSCH-ID                         DSCH-ID,
    iE-Extensions                   ProtocolExtensionContainer { {DSCH-DeleteItem-RL-ReconfPrepTDD-ExtIEs} } OPTIONAL,
    ...
}

DSCH-DeleteItem-RL-ReconfPrepTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

USCH-ModifyList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE(0..maxNoOfUSCHs)) OF USCH-ModifyItem-RL-ReconfPrepTDD

USCH-ModifyItem-RL-ReconfPrepTDD ::= SEQUENCE {
    uSCH-ID                         USCH-ID,
    ul-ccTrCHID                     CCTrCH-ID                     OPTIONAL,
    trChSourceStatisticsDescriptor  TrCH-SrcStatisticsDescr OPTIONAL,
    transportFormatSet              TransportFormatSet            OPTIONAL,
    allocationRetentionPriority     AllocationRetentionPriority   OPTIONAL,
    schedulingPriorityIndicator     SchedulingPriorityIndicator   OPTIONAL,
    bLER                            BLER                          OPTIONAL,
    transportBearerRequestIndicator TransportBearerRequestIndicator,
```

```
    rb-Info                         RB-Info                         OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {USCH-ModifyItem-RL-ReconfPrepTDD-ExtIEs} } OPTIONAL,
    ...
}

USCH-ModifyItem-RL-ReconfPrepTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID    id-BindingID                    CRITICALITY ignore      EXTENSION   BindingID               PRESENCE    optional }|
    -- Shall be ignored if bearer establishment with ALCAP.
    { ID    id-TransportLayerAddress        CRITICALITY ignore      EXTENSION   TransportLayerAddress    PRESENCE    optional },
    -- Shall be ignored if bearer establishment with ALCAP.
    ...
}

USCH-DeleteList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE(0..maxNoOfUSCHs)) OF USCH-DeleteItem-RL-ReconfPrepTDD

USCH-DeleteItem-RL-ReconfPrepTDD ::= SEQUENCE {
    uSCH-ID                         USCH-ID,
    iE-Extensions                   ProtocolExtensionContainer { {USCH-DeleteItem-RL-ReconfPrepTDD-ExtIEs} } OPTIONAL,
    ...
}

USCH-DeleteItem-RL-ReconfPrepTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

RadioLinkReconfigurationPrepareTDD-Extensions RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- RADIO LINK RECONFIGURATION READY FDD
--
-- **************************************************************

RadioLinkReconfigurationReadyFDD ::= SEQUENCE {
    protocolIEs                     ProtocolIE-Container       {{RadioLinkReconfigurationReadyFDD-IEs}},
    protocolExtensions              ProtocolExtensionContainer {{RadioLinkReconfigurationReadyFDD-Extensions}}                  OPTIONAL,
    ...
}

RadioLinkReconfigurationReadyFDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-RL-InformationResponseList-RL-ReconfReadyFDD    CRITICALITY ignore  TYPE RL-InformationResponseList-RL-ReconfReadyFDD    PRESENCE optional
    } |
    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics      PRESENCE optional },
    ...
}

RL-InformationResponseList-RL-ReconfReadyFDD        ::= SEQUENCE (SIZE (0..maxNrOfRLs)) OF ProtocolIE-Single-Container { {RL-InformationResponse-RL-
ReconfReadyFDD-IEs} }
```

```
RL-InformationResponse-RL-ReconfReadyFDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-RL-InformationResponseItem-RL-ReconfReadyFDD    CRITICALITY ignore  TYPE RL-InformationResponseItem-RL-ReconfReadyFDD    PRESENCE mandatory
    }
}

RL-InformationResponseItem-RL-ReconfReadyFDD ::= SEQUENCE {
    rL-ID                           RL-ID,
    max-UL-SIR                      UL-SIR          OPTIONAL,
    min-UL-SIR                      UL-SIR          OPTIONAL,
    maximumDLTxPower                DL-Power        OPTIONAL,
    minimumDLTxPower                DL-Power        OPTIONAL,
    secondary-CCPCH-Info            Secondary-CCPCH-Info        OPTIONAL,
    dl-CodeInformationList          DL-CodeInformationList-RL-ReconfReadyFDD    OPTIONAL,
    dCHInformationResponse          DCH-InformationResponseList-RL-ReconfReadyFDD   OPTIONAL,
    dSCHsToBeAddedOrModified        DSCHsToBeAddedOrModified-RL-ReconfReadyFDD      OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {RL-InformationResponseItem-RL-ReconfReadyFDD-ExtIEs} } OPTIONAL,
    ...
}

RL-InformationResponseItem-RL-ReconfReadyFDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-CodeInformationList-RL-ReconfReadyFDD ::= ProtocolIE-Single-Container {{ DL-CodeInformationListIEs-RL-ReconfReadyFDD }}

DL-CodeInformationListIEs-RL-ReconfReadyFDD RNSAP-PROTOCOL-IES ::= {
    { ID id-FDD-DL-CodeInformation   CRITICALITY ignore TYPE FDD-DL-CodeInformation     PRESENCE mandatory }
}

DCH-InformationResponseList-RL-ReconfReadyFDD              ::= ProtocolIE-Single-Container { {DCH-InformationResponseListIEs-RL-ReconfReadyFDD} }

DCH-InformationResponseListIEs-RL-ReconfReadyFDD RNSAP-PROTOCOL-IES ::= {
    { ID id-DCH-InformationResponse     CRITICALITY ignore  TYPE DCH-InformationResponse        PRESENCE mandatory  }
}

DSCHsToBeAddedOrModified-RL-ReconfReadyFDD ::= ProtocolIE-Single-Container { {DSCHsToBeAddedOrModifiedIEs-RL-ReconfReadyFDD} }

DSCHsToBeAddedOrModifiedIEs-RL-ReconfReadyFDD RNSAP-PROTOCOL-IES ::= {
    { ID id-DSCHsToBeAddedOrModified-FDD    CRITICALITY ignore  TYPE DSCH-FDD-InformationResponse    PRESENCE mandatory   }
}

RadioLinkReconfigurationReadyFDD-Extensions RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- RADIO LINK RECONFIGURATION READY TDD
--
-- **************************************************************
```

```
RadioLinkReconfigurationReadyTDD ::= SEQUENCE {
    protocolIEs                     ProtocolIE-Container       {{RadioLinkReconfigurationReadyTDD-IEs}},
    protocolExtensions              ProtocolExtensionContainer {{RadioLinkReconfigurationReadyTDD-Extensions}}                  OPTIONAL,
    ...
}

RadioLinkReconfigurationReadyTDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-RL-InformationResponse-RL-ReconfReadyTDD
                           CRITICALITY ignore  TYPE RL-InformationResponse-RL-ReconfReadyTDD   PRESENCE optional  } |
    { ID id-CriticalityDiagnostics          CRITICALITY ignore  TYPE CriticalityDiagnostics      PRESENCE optional },
    ...
}

RL-InformationResponse-RL-ReconfReadyTDD ::= SEQUENCE {
    rL-ID                           RL-ID,
    max-UL-SIR                      UL-SIR          OPTIONAL,
    min-UL-SIR                      UL-SIR          OPTIONAL,
    maximumDLTxPower                DL-Power        OPTIONAL,
    minimumDLTxPower                DL-Power        OPTIONAL,
    secondary-CCPCH-Info-TDD        Secondary-CCPCH-Info-TDD    OPTIONAL,
    ul-CCTrCH-Information            UL-CCTrCH-InformationList-RL-ReconfReadyTDD     OPTIONAL,
    dl-CCTrCH-Information            DL-CCTrCH-InformationList-RL-ReconfReadyTDD OPTIONAL,
    dCHInformationResponse          DCH-InformationResponseList-RL-ReconfReadyTDD   OPTIONAL,
    dSCHsToBeAddedOrModified        DSCHToBeAddedOrModified-RL-ReconfReadyTDD   OPTIONAL,
    uSCHsToBeAddedOrModified        USCHToBeAddedOrModified-RL-ReconfReadyTDD   OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {RL-InformationResponse-RL-ReconfReadyTDD-ExtIEs} } OPTIONAL,
    ...
}

RL-InformationResponse-RL-ReconfReadyTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-CCTrCH-InformationList-RL-ReconfReadyTDD         ::= ProtocolIE-Single-Container {{UL-CCTrCHInformationListIEs-RL-ReconfReadyTDD}}

UL-CCTrCHInformationListIEs-RL-ReconfReadyTDD RNSAP-PROTOCOL-IES ::= {
    { ID id-UL-CCTrCH-InformationListIE-RL-ReconfReadyTDD   CRITICALITY ignore  TYPE UL-CCTrCHInformationListIE-RL-ReconfReadyTDD    PRESENCE mandatory
}
}

UL-CCTrCHInformationListIE-RL-ReconfReadyTDD ::= SEQUENCE (SIZE (0..maxNrOfCCTrCHs)) OF UL-CCTrCH-InformationItem-RL-ReconfReadyTDD

UL-CCTrCH-InformationItem-RL-ReconfReadyTDD ::= SEQUENCE {
    cCTrCH-ID                       CCTrCH-ID,
    ul-DPCH-AddInformation          UL-DPCH-InformationAddList-RL-ReconfReadyTDD            OPTIONAL,
    --For 3.84Mcps TDD only
    ul-DPCH-ModifyInformation       UL-DPCH-InformationModifyList-RL-ReconfReadyTDD             OPTIONAL,
    --For 3.84Mcps TDD only
    ul-DPCH-DeleteInformation       UL-DPCH-InformationDeleteList-RL-ReconfReadyTDD             OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {UL-CCTrCH-InformationItem-RL-ReconfReadyTDD-ExtIEs} } OPTIONAL,
    ...
```

```
}

UL-CCTrCH-InformationItem-RL-ReconfReadyTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-UL-DPCH-LCR-InformationAddListIE-RL-ReconfReadyTDD   CRITICALITY ignore     EXTENSION    UL-DPCH-LCR-InformationAddList-RL-ReconfReadyTDD
    PRESENCE optional },
    --For 1.28Mcps TDD only
    ...
}

UL-DPCH-LCR-InformationAddList-RL-ReconfReadyTDD ::= ProtocolIE-Single-Container {{UL-DPCH-LCR-InformationAddListIEs-RL-ReconfReadyTDD}}

UL-DPCH-LCR-InformationAddListIEs-RL-ReconfReadyTDD RNSAP-PROTOCOL-IES ::= {
    { ID id-UL-DPCH-LCR-InformationAddListIE-RL-ReconfReadyTDD   CRITICALITY ignore TYPE UL-DPCH-LCR-InformationAddListIE-RL-ReconfReadyTDD   PRESENCE
mandatory }
}

UL-DPCH-LCR-InformationAddListIE-RL-ReconfReadyTDD ::= SEQUENCE {
    repetitionPeriod                RepetitionPeriod,
    repetitionLength                RepetitionLength,
    tDD-DPCHOffset                  TDD-DPCHOffset,
    uL-TimeslotLCR-Info             UL-TimeslotLCR-Information,
    iE-Extensions                   ProtocolExtensionContainer { {UL-DPCH-LCR-InformationAddItem-RL-ReconfReadyTDD-ExtIEs} } OPTIONAL,
    ...
}

UL-DPCH-LCR-InformationAddItem-RL-ReconfReadyTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-DPCH-InformationAddList-RL-ReconfReadyTDD ::= ProtocolIE-Single-Container {{UL-DPCH-InformationAddListIEs-RL-ReconfReadyTDD}}

UL-DPCH-InformationAddListIEs-RL-ReconfReadyTDD RNSAP-PROTOCOL-IES ::= {
    { ID id-UL-DPCH-InformationAddListIE-RL-ReconfReadyTDD   CRITICALITY ignore TYPE UL-DPCH-InformationAddListIE-RL-ReconfReadyTDD     PRESENCE
optional }
}

UL-DPCH-InformationAddListIE-RL-ReconfReadyTDD ::= SEQUENCE {
    repetitionPeriod                RepetitionPeriod,
    repetitionLength                RepetitionLength,
    tDD-DPCHOffset                  TDD-DPCHOffset,
    rxTimingDeviationForTA          RxTimingDeviationForTA          OPTIONAL,
    uL-Timeslot-Information         UL-Timeslot-Information,
    iE-Extensions                   ProtocolExtensionContainer { {UL-DPCH-InformationAddItem-RL-ReconfReadyTDD-ExtIEs} } OPTIONAL,
    ...
}

UL-DPCH-InformationAddItem-RL-ReconfReadyTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-DPCH-InformationModifyList-RL-ReconfReadyTDD ::= ProtocolIE-Single-Container {{UL-DPCH-InformationModifyListIEs-RL-ReconfReadyTDD}}
```

```
UL-DPCH-InformationModifyListIEs-RL-ReconfReadyTDD RNSAP-PROTOCOL-IES ::= {
    { ID id-UL-DPCH-InformationModifyListIE-RL-ReconfReadyTDD   CRITICALITY ignore  TYPE UL-DPCH-InformationModifyListIE-RL-ReconfReadyTDD    PRESENCE
mandatory }
}

UL-DPCH-InformationModifyListIE-RL-ReconfReadyTDD::= SEQUENCE {
    repetitionPeriod                RepetitionPeriod            OPTIONAL,
    repetitionLength                RepetitionLength            OPTIONAL,
    tDD-DPCHOffset                  TDD-DPCHOffset              OPTIONAL,
    uL-Timeslot-InformationModifyList-RL-ReconfReadyTDD         UL-Timeslot-InformationModifyList-RL-ReconfReadyTDD      OPTIONAL,
    --For 3.84Mcps TDD only
    iE-Extensions                   ProtocolExtensionContainer { {UL-DPCH-InformationModifyItem-RL-ReconfReadyTDD-ExtIEs} } OPTIONAL,
    ...
}

UL-DPCH-InformationModifyItem-RL-ReconfReadyTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-UL-Timeslot-LCR-InformationModifyList-RL-ReconfReadyTDD   CRITICALITY ignore    EXTENSION  UL-TimeslotLCR-InformationModifyList-RL-
ReconfReadyTDD      PRESENCE optional },
    --For 1.28Mcps TDD only
    ...
}

UL-TimeslotLCR-InformationModifyList-RL-ReconfReadyTDD::= SEQUENCE ( SIZE (1..maxNrOfTsLCR)) OF UL-TimeslotLCR-InformationModifyItem-RL-ReconfReadyTDD

UL-TimeslotLCR-InformationModifyItem-RL-ReconfReadyTDD ::= SEQUENCE {
    timeSlotLCR                     TimeSlotLCR,
    midambleShiftLCR                MidambleShiftLCR            OPTIONAL,
    tFCI-Presence                   TFCI-Presence           OPTIONAL,
    tDD-uL-Code-LCR-Information         TDD-UL-Code-LCR-InformationModifyList-RL-ReconfReadyTDD     OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {UL-TimeslotLCR-InformationModifyItem-RL-ReconfReadyTDD-ExtIEs} } OPTIONAL,
    ...
}

TDD-UL-Code-LCR-InformationModifyList-RL-ReconfReadyTDD::= SEQUENCE ( SIZE (1..maxNrOfDPCHsLCR)) OF TDD-UL-Code-LCR-InformationModifyItem-RL-
ReconfReadyTDD

TDD-UL-Code-LCR-InformationModifyItem-RL-ReconfReadyTDD ::= SEQUENCE {
    dPCH-ID                         DPCH-ID,
    tDD-ChannelisationCodeLCR           TDD-ChannelisationCodeLCR       OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {TDD-UL-Code-LCR-InformationModifyItem-RL-ReconfReadyTDD-ExtIEs} } OPTIONAL,
    ...
}

TDD-UL-Code-LCR-InformationModifyItem-RL-ReconfReadyTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-TimeslotLCR-InformationModifyItem-RL-ReconfReadyTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
UL-Timeslot-InformationModifyList-RL-ReconfReadyTDD::= SEQUENCE ( SIZE (1..maxNrOfTS)) OF UL-Timeslot-InformationModifyItem-RL-ReconfReadyTDD

UL-Timeslot-InformationModifyItem-RL-ReconfReadyTDD ::= SEQUENCE {
    timeSlot                        TimeSlot,
    midambleShiftAndBurstType                   MidambleShiftAndBurstType           OPTIONAL,
    tFCI-Presence                   TFCI-Presence           OPTIONAL,
    uL-Code-Information         TDD-UL-Code-InformationModifyList-RL-ReconfReadyTDD         OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {UL-Timeslot-InformationModifyItem-RL-ReconfReadyTDD-ExtIEs} } OPTIONAL,
    ...
}

UL-Timeslot-InformationModifyItem-RL-ReconfReadyTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

TDD-UL-Code-InformationModifyList-RL-ReconfReadyTDD::= SEQUENCE ( SIZE (1..maxNrOfDPCHs)) OF TDD-UL-Code-InformationModifyItem-RL-ReconfReadyTDD

TDD-UL-Code-InformationModifyItem-RL-ReconfReadyTDD ::= SEQUENCE {
    dPCH-ID                         DPCH-ID,
    tDD-ChannelisationCode          TDD-ChannelisationCode      OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {TDD-UL-Code-InformationModifyItem-RL-ReconfReadyTDD-ExtIEs} } OPTIONAL,
    ...
}

TDD-UL-Code-InformationModifyItem-RL-ReconfReadyTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-DPCH-InformationDeleteList-RL-ReconfReadyTDD ::= ProtocolIE-Single-Container {{UL-DPCH-InformationDeleteListIEs-RL-ReconfReadyTDD}}

UL-DPCH-InformationDeleteListIEs-RL-ReconfReadyTDD RNSAP-PROTOCOL-IES ::= {
    { ID id-UL-DPCH-InformationDeleteListIE-RL-ReconfReadyTDD   CRITICALITY ignore  TYPE UL-DPCH-InformationDeleteListIE-RL-ReconfReadyTDD    PRESENCE
mandatory }
}

UL-DPCH-InformationDeleteListIE-RL-ReconfReadyTDD ::= SEQUENCE (SIZE (0..maxNrOfDPCHs)) OF UL-DPCH-InformationDeleteItem-RL-ReconfReadyTDD

UL-DPCH-InformationDeleteItem-RL-ReconfReadyTDD ::= SEQUENCE {
    dPCH-ID                     DPCH-ID,
    iE-Extensions                   ProtocolExtensionContainer { {UL-DPCH-InformationDeleteList-RL-ReconfReadyTDD-ExtIEs} } OPTIONAL,
    ...
}

UL-DPCH-InformationDeleteList-RL-ReconfReadyTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-CCTrCH-InformationList-RL-ReconfReadyTDD         ::= ProtocolIE-Single-Container {{DL-CCTrCHInformationListIEs-RL-ReconfReadyTDD}}

DL-CCTrCHInformationListIEs-RL-ReconfReadyTDD RNSAP-PROTOCOL-IES ::= {
```

```
    { ID id-DL-CCTrCH-InformationListIE-RL-ReconfReadyTDD   CRITICALITY ignore  TYPE DL-CCTrCHInformationListIE-RL-ReconfReadyTDD    PRESENCE mandatory
}
}

DL-CCTrCHInformationListIE-RL-ReconfReadyTDD ::= SEQUENCE (SIZE (0..maxNrOfCCTrCHs)) OF DL-CCTrCH-InformationItem-RL-ReconfReadyTDD

DL-CCTrCH-InformationItem-RL-ReconfReadyTDD ::= SEQUENCE {
    cCTrCH-ID                       CCTrCH-ID,
    dl-DPCH-AddInformation          DL-DPCH-InformationAddList-RL-ReconfReadyTDD            OPTIONAL,
    --For 3.84Mcps TDD only
    dl-DPCH-ModifyInformation       DL-DPCH-InformationModifyList-RL-ReconfReadyTDD         OPTIONAL,
    --For 3.84Mcps TDD only
    dl-DPCH-DeleteInformation       DL-DPCH-InformationDeleteList-RL-ReconfReadyTDD         OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {DL-CCTrCH-InformationItem-RL-ReconfReadyTDD-ExtIEs} } OPTIONAL,
    ...
}

DL-CCTrCH-InformationItem-RL-ReconfReadyTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-DL-DPCH-LCR-InformationAddListIE-RL-ReconfReadyTDD   CRITICALITY ignore         EXTENSION    DL-DPCH-LCR-InformationAddList-RL-
ReconfReadyTDD      PRESENCE  optional},
    --For 1.28Mcps TDD only
    ...
}

DL-DPCH-LCR-InformationAddList-RL-ReconfReadyTDD ::= ProtocolIE-Single-Container {{DL-DPCH-LCR-InformationAddListIEs-RL-ReconfReadyTDD}}

DL-DPCH-LCR-InformationAddListIEs-RL-ReconfReadyTDD RNSAP-PROTOCOL-IES ::= {
    { ID id-DL-DPCH-LCR-InformationAddListIE-RL-ReconfReadyTDD   CRITICALITY ignore TYPE DL-DPCH-LCR-InformationAddListIE-RL-ReconfReadyTDD   PRESENCE
mandatory }
}

DL-DPCH-LCR-InformationAddListIE-RL-ReconfReadyTDD ::= SEQUENCE {
    repetitionPeriod                RepetitionPeriod,
    repetitionLength                RepetitionLength,
    tDD-DPCHOffset                  TDD-DPCHOffset,
    dL-TimeslotLCR-Info             DL-TimeslotLCR-Information,
    iE-Extensions                   ProtocolExtensionContainer { {DL-DPCH-LCR-InformationAddItem-RL-ReconfReadyTDD-ExtIEs} } OPTIONAL,
    ...
}

DL-DPCH-LCR-InformationAddItem-RL-ReconfReadyTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-DPCH-InformationAddList-RL-ReconfReadyTDD ::= ProtocolIE-Single-Container {{DL-DPCH-InformationAddListIEs-RL-ReconfReadyTDD}}

DL-DPCH-InformationAddListIEs-RL-ReconfReadyTDD RNSAP-PROTOCOL-IES ::= {
    { ID id-DL-DPCH-InformationAddListIE-RL-ReconfReadyTDD   CRITICALITY ignore TYPE DL-DPCH-InformationAddListIE-RL-ReconfReadyTDD     PRESENCE
mandatory }
}
```

```
DL-DPCH-InformationAddListIE-RL-ReconfReadyTDD ::= SEQUENCE {
    repetitionPeriod                RepetitionPeriod,
    repetitionLength                RepetitionLength,
    tDD-DPCHOffset                  TDD-DPCHOffset,
    dL-Timeslot-Information         DL-Timeslot-Information,
    iE-Extensions                   ProtocolExtensionContainer { {DL-DPCH-InformationAddItem-RL-ReconfReadyTDD-ExtIEs} } OPTIONAL,
    ...
}

DL-DPCH-InformationAddItem-RL-ReconfReadyTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-DPCH-InformationModifyList-RL-ReconfReadyTDD ::= ProtocolIE-Single-Container {{DL-DPCH-InformationModifyListIEs-RL-ReconfReadyTDD}}

DL-DPCH-InformationModifyListIEs-RL-ReconfReadyTDD RNSAP-PROTOCOL-IES ::= {
    { ID id-DL-DPCH-InformationModifyListIE-RL-ReconfReadyTDD   CRITICALITY ignore  TYPE DL-DPCH-InformationModifyListIE-RL-ReconfReadyTDD    PRESENCE
mandatory }
}

DL-DPCH-InformationModifyListIE-RL-ReconfReadyTDD ::= SEQUENCE {
    repetitionPeriod                RepetitionPeriod            OPTIONAL,
    repetitionLength                RepetitionLength            OPTIONAL,
    tDD-DPCHOffset                  TDD-DPCHOffset              OPTIONAL,
    dL-Timeslot-InformationModifyList-RL-ReconfReadyTDD         DL-Timeslot-InformationModifyList-RL-ReconfReadyTDD      OPTIONAL,
    --For 3.84Mcps TDD only
    iE-Extensions                   ProtocolExtensionContainer { {DL-DPCH-InformationModifyItem-RL-ReconfReadyTDD-ExtIEs} } OPTIONAL,
    ...
}

DL-DPCH-InformationModifyItem-RL-ReconfReadyTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-DL-Timeslot-LCR-InformationModifyList-RL-ReconfReadyTDD   CRITICALITY ignore    EXTENSION  DL-TimeslotLCR-InformationModifyList-RL-
ReconfReadyTDD      PRESENCE optional },
    --For 1.28Mcps TDD only
    ...
}

DL-TimeslotLCR-InformationModifyList-RL-ReconfReadyTDD::= SEQUENCE ( SIZE (1..maxNrOfTsLCR)) OF DL-TimeslotLCR-InformationModifyItem-RL-ReconfReadyTDD

DL-TimeslotLCR-InformationModifyItem-RL-ReconfReadyTDD ::= SEQUENCE {
    timeSlotLCR                     TimeSlotLCR,
    midambleShiftLCR                MidambleShiftLCR            OPTIONAL,
    tFCI-Presence                   TFCI-Presence           OPTIONAL,
    tDD-dL-Code-LCR-Information     TDD-DL-Code-LCR-InformationModifyList-RL-ReconfReadyTDD      OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {DL-TimeslotLCR-InformationModifyItem-RL-ReconfReadyTDD-ExtIEs} } OPTIONAL,
    ...
}

TDD-DL-Code-LCR-InformationModifyList-RL-ReconfReadyTDD::= SEQUENCE ( SIZE (1..maxNrOfDPCHsLCR)) OF TDD-DL-Code-LCR-InformationModifyItem-RL-
ReconfReadyTDD
```

```
TDD-DL-Code-LCR-InformationModifyItem-RL-ReconfReadyTDD ::= SEQUENCE {
    dPCH-ID                         DPCH-ID,
    tDD-ChannelisationCodeLCR       TDD-ChannelisationCodeLCR       OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {TDD-DL-Code-LCR-InformationModifyItem-RL-ReconfReadyTDD-ExtIEs} } OPTIONAL,
    ...
}

TDD-DL-Code-LCR-InformationModifyItem-RL-ReconfReadyTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-TimeslotLCR-InformationModifyItem-RL-ReconfReadyTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-Timeslot-InformationModifyList-RL-ReconfReadyTDD::= SEQUENCE ( SIZE (1..maxNrOfTS)) OF DL-Timeslot-InformationModifyItem-RL-ReconfReadyTDD

DL-Timeslot-InformationModifyItem-RL-ReconfReadyTDD ::= SEQUENCE {
    timeSlot                        TimeSlot,
    midambleShiftAndBurstType       MidambleShiftAndBurstType           OPTIONAL,
    tFCI-Presence                   TFCI-Presence           OPTIONAL,
    dL-Code-Information             TDD-DL-Code-InformationModifyList-RL-ReconfReadyTDD         OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {DL-Timeslot-InformationModifyItem-RL-ReconfReadyTDD-ExtIEs} } OPTIONAL,
    ...
}

DL-Timeslot-InformationModifyItem-RL-ReconfReadyTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

TDD-DL-Code-InformationModifyList-RL-ReconfReadyTDD::= SEQUENCE ( SIZE (1..maxNrOfDPCHs)) OF TDD-DL-Code-InformationModifyItem-RL-ReconfReadyTDD

TDD-DL-Code-InformationModifyItem-RL-ReconfReadyTDD ::= SEQUENCE {
    dPCH-ID                         DPCH-ID,
    tDD-ChannelisationCode          TDD-ChannelisationCode      OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {TDD-DL-Code-InformationModifyItem-RL-ReconfReadyTDD-ExtIEs} } OPTIONAL,
    ...
}

TDD-DL-Code-InformationModifyItem-RL-ReconfReadyTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-DPCH-InformationDeleteList-RL-ReconfReadyTDD ::= ProtocolIE-Single-Container {{DL-DPCH-InformationDeleteListIEs-RL-ReconfReadyTDD}}

DL-DPCH-InformationDeleteListIEs-RL-ReconfReadyTDD RNSAP-PROTOCOL-IES ::= {
    { ID id-DL-DPCH-InformationDeleteListIE-RL-ReconfReadyTDD   CRITICALITY ignore  TYPE DL-DPCH-InformationDeleteListIE-RL-ReconfReadyTDD    PRESENCE
mandatory }
}

DL-DPCH-InformationDeleteListIE-RL-ReconfReadyTDD ::= SEQUENCE (SIZE (0..maxNrOfDPCHs)) OF DL-DPCH-InformationDeleteItem-RL-ReconfReadyTDD
```

```
DL-DPCH-InformationDeleteItem-RL-ReconfReadyTDD ::= SEQUENCE {
    dPCH-ID                     DPCH-ID,
    iE-Extensions                   ProtocolExtensionContainer { {DL-DPCH-InformationDeleteList-RL-ReconfReadyTDD-ExtIEs} } OPTIONAL,
    ...
}

DL-DPCH-InformationDeleteList-RL-ReconfReadyTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DCH-InformationResponseList-RL-ReconfReadyTDD              ::= ProtocolIE-Single-Container { {DCH-InformationResponseListIEs-RL-ReconfReadyTDD} }

DCH-InformationResponseListIEs-RL-ReconfReadyTDD RNSAP-PROTOCOL-IES ::= {
    { ID id-DCH-InformationResponse     CRITICALITY ignore  TYPE DCH-InformationResponse        PRESENCE mandatory }
}

DSCHToBeAddedOrModified-RL-ReconfReadyTDD           ::= ProtocolIE-Single-Container { {DSCHToBeAddedOrModifiedIEs-RL-ReconfReadyTDD} }

DSCHToBeAddedOrModifiedIEs-RL-ReconfReadyTDD RNSAP-PROTOCOL-IES ::= {
    { ID id-DSCHToBeAddedOrModifiedList-RL-ReconfReadyTDD   CRITICALITY ignore  TYPE DSCHToBeAddedOrModifiedList-RL-ReconfReadyTDD   PRESENCE mandatory
    }
}

DSCHToBeAddedOrModifiedList-RL-ReconfReadyTDD ::= SEQUENCE (SIZE (0..maxNoOfDSCHs)) OF DSCHToBeAddedOrModifiedItem-RL-ReconfReadyTDD

DSCHToBeAddedOrModifiedItem-RL-ReconfReadyTDD ::= SEQUENCE {
    dsch-ID                 DSCH-ID,
    transportFormatManagement   TransportFormatManagement,
    dSCH-FlowControlInformation DSCH-FlowControlInformation,
    bindingID               BindingID   OPTIONAL,
    transportLayerAddress   TransportLayerAddress   OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {DSCHToBeAddedOrModifiedItem-RL-ReconfReadyTDD-ExtIEs} } OPTIONAL,
    ...
}

DSCHToBeAddedOrModifiedItem-RL-ReconfReadyTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

USCHToBeAddedOrModified-RL-ReconfReadyTDD           ::= ProtocolIE-Single-Container { {USCHToBeAddedOrModifiedIEs-RL-ReconfReadyTDD}
}USCHToBeAddedOrModifiedIEs-RL-ReconfReadyTDD RNSAP-PROTOCOL-IES ::= {
    { ID id-USCHToBeAddedOrModifiedList-RL-ReconfReadyTDD   CRITICALITY ignore  TYPE USCHToBeAddedOrModifiedList-RL-ReconfReadyTDD   PRESENCE mandatory
    }
}

USCHToBeAddedOrModifiedList-RL-ReconfReadyTDD ::= SEQUENCE (SIZE (0..maxNoOfUSCHs)) OF USCHToBeAddedOrModifiedItem-RL-ReconfReadyTDD

USCHToBeAddedOrModifiedItem-RL-ReconfReadyTDD ::= SEQUENCE {
    uSCH-ID                 USCH-ID,
    transportFormatManagement   TransportFormatManagement,
```

```
    bindingID               BindingID   OPTIONAL,
    transportLayerAddress   TransportLayerAddress   OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {USCHToBeAddedOrModifiedItem-RL-ReconfReadyTDD-ExtIEs} } OPTIONAL,
    ...
}

USCHToBeAddedOrModifiedItem-RL-ReconfReadyTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

RadioLinkReconfigurationReadyTDD-Extensions RNSAP-PROTOCOL-EXTENSION ::= {
 { ID   id-RL-ReconfigurationReadyTDD-RL-Information    CRITICALITY ignore      EXTENSION   RL-ReconfigurationReadyTDD-RL-Information   PRESENCE
    optional},

    ...
}

RL-ReconfigurationReadyTDD-RL-Information ::= SEQUENCE {
    rL-ID                   RL-ID,
    rL-Specific-DCH-Info    RL-Specific-DCH-Info OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { RL-ReconfigurationReadyTDD-RL-Information-ExtIEs} } OPTIONAL,
    ...
}

RL-ReconfigurationReadyTDD-RL-Information-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
-- **************************************************************
--
-- RADIO LINK RECONFIGURATION REQUEST FDD
--
-- **************************************************************

RadioLinkReconfigurationRequestFDD ::= SEQUENCE {
    protocolIEs                     ProtocolIE-Container       {{RadioLinkReconfigurationRequestFDD-IEs}},
    protocolExtensions              ProtocolExtensionContainer {{RadioLinkReconfigurationRequestFDD-Extensions}}                    OPTIONAL,
    ...
}

RadioLinkReconfigurationRequestFDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-AllowedQueuingTime          CRITICALITY reject  TYPE AllowedQueuingTime             PRESENCE optional  } |
    { ID id-UL-DPCH-Information-RL-ReconfRqstFDD            CRITICALITY reject  TYPE UL-DPCH-Information-RL-ReconfRqstFDD PRESENCE optional } |
    { ID id-DL-DPCH-Information-RL-ReconfRqstFDD            CRITICALITY reject  TYPE DL-DPCH-Information-RL-ReconfRqstFDD PRESENCE optional } |
    { ID id-FDD-DCHs-to-Modify      CRITICALITY reject  TYPE FDD-DCHs-to-Modify     PRESENCE optional  } |
    { ID id-DCHs-to-Add-FDD     CRITICALITY reject  TYPE DCH-FDD-Information        PRESENCE optional  } |
    { ID id-DCH-DeleteList-RL-ReconfRqstFDD     CRITICALITY reject  TYPE DCH-DeleteList-RL-ReconfRqstFDD     PRESENCE optional }|
    { ID id-Transmission-Gap-Pattern-Sequence-Information   CRITICALITY reject  TYPE Transmission-Gap-Pattern-Sequence-Information PRESENCE optional },
    ...
}

UL-DPCH-Information-RL-ReconfRqstFDD ::= SEQUENCE {
    tFCS                            TFCS    OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {UL-DPCH-Information-RL-ReconfRqstFDD-ExtIEs} } OPTIONAL,
    ...
}

UL-DPCH-Information-RL-ReconfRqstFDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-DPCH-Information-RL-ReconfRqstFDD ::= SEQUENCE {
    tFCS                            TFCS    OPTIONAL,
    tFCI-SignallingMode             TFCI-SignallingMode OPTIONAL,
    limitedPowerIncrease            LimitedPowerIncrease    OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {DL-DPCH-Information-RL-ReconfRqstFDD-ExtIEs} } OPTIONAL,
    ...
}

DL-DPCH-Information-RL-ReconfRqstFDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DCH-DeleteList-RL-ReconfRqstFDD             ::= SEQUENCE (SIZE (0..maxNrOfDCHs)) OF DCH-DeleteItem-RL-ReconfRqstFDD

DCH-DeleteItem-RL-ReconfRqstFDD ::= SEQUENCE {
    dCH-ID                          DCH-ID,
    iE-Extensions                   ProtocolExtensionContainer { {DCH-DeleteItem-RL-ReconfRqstFDD-ExtIEs} } OPTIONAL,
    ...
```

```
}

DCH-DeleteItem-RL-ReconfRqstFDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

RadioLinkReconfigurationRequestFDD-Extensions RNSAP-PROTOCOL-EXTENSION ::= {
 { ID   id-RL-ReconfigurationRequestFDD-RL-InformationList  CRITICALITY ignore      EXTENSION   RL-ReconfigurationRequestFDD-RL-InformationList
    PRESENCE    optional},
    ...
}
RL-ReconfigurationRequestFDD-RL-InformationList ::= SEQUENCE (SIZE (0..maxNrOfRLs)) OF ProtocolIE-Single-Container {
    {RL-ReconfigurationRequestFDD-RL-Information-ListItem} }

RL-ReconfigurationRequestFDD-RL-Information-ListItem RNSAP-PROTOCOL-IES ::= {
    { ID id-RL-ReconfigurationRequestFDD-RL-Information-IEs CRITICALITY ignore  TYPE RL-ReconfigurationRequestFDD-RL-Information-IEs PRESENCE optional
    }
}

RL-ReconfigurationRequestFDD-RL-Information-IEs ::= SEQUENCE {
    rL-ID                   RL-ID,
    rL-Specific-DCH-Info    RL-Specific-DCH-Info OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { RL-ReconfigurationRequestFDD-RL-Information-ExtIEs} } OPTIONAL,
    ...
}

RL-ReconfigurationRequestFDD-RL-Information-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}



-- **************************************************************
--
-- RADIO LINK RECONFIGURATION REQUEST TDD
--
-- **************************************************************

RadioLinkReconfigurationRequestTDD ::= SEQUENCE {
    protocolIEs                     ProtocolIE-Container       {{RadioLinkReconfigurationRequestTDD-IEs}},
    protocolExtensions              ProtocolExtensionContainer {{RadioLinkReconfigurationRequestTDD-Extensions}}                  OPTIONAL,
    ...
}

RadioLinkReconfigurationRequestTDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-AllowedQueuingTime          CRITICALITY reject  TYPE AllowedQueuingTime             PRESENCE optional  } |
    { ID id-UL-CCTrCH-InformationModifyList-RL-ReconfRqstTDD    CRITICALITY notify  TYPE UL-CCTrCH-InformationModifyList-RL-ReconfRqstTDD  PRESENCE
optional    } |
    { ID id-UL-CCTrCH-InformationDeleteList-RL-ReconfRqstTDD    CRITICALITY notify  TYPE UL-CCTrCH-InformationDeleteList-RL-ReconfRqstTDD  PRESENCE
optional    } |
```

```
    { ID id-DL-CCTrCH-InformationModifyList-RL-ReconfRqstTDD    CRITICALITY notify  TYPE DL-CCTrCH-InformationModifyList-RL-ReconfRqstTDD  PRESENCE
optional    } |
    { ID id-DL-CCTrCH-InformationDeleteList-RL-ReconfRqstTDD    CRITICALITY notify  TYPE DL-CCTrCH-InformationDeleteList-RL-ReconfRqstTDD  PRESENCE
optional    } |
    { ID id-TDD-DCHs-to-Modify      CRITICALITY reject  TYPE TDD-DCHs-to-Modify     PRESENCE optional  } |
    { ID id-DCHs-to-Add-TDD     CRITICALITY reject  TYPE DCH-TDD-Information        PRESENCE optional  } |
    { ID id-DCH-DeleteList-RL-ReconfRqstTDD     CRITICALITY reject  TYPE DCH-DeleteList-RL-ReconfRqstTDD     PRESENCE optional },
    ...
}

UL-CCTrCH-InformationModifyList-RL-ReconfRqstTDD        ::= SEQUENCE (SIZE (0..maxNrOfCCTrCHs)) OF ProtocolIE-Single-Container { {UL-CCTrCH-
InformationModifyList-RL-ReconfRqstTDD-IEs} }

UL-CCTrCH-InformationModifyList-RL-ReconfRqstTDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-UL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD    CRITICALITY notify  TYPE UL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD  PRESENCE
mandatory   }
}

UL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD ::= SEQUENCE {
    cCTrCH-ID                   CCTrCH-ID,
    tFCS                        TFCS        OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {UL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD-ExtIEs} } OPTIONAL,
    ...
}

UL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-CCTrCH-InformationDeleteList-RL-ReconfRqstTDD        ::= SEQUENCE (SIZE (0..maxNrOfCCTrCHs)) OF ProtocolIE-Single-Container { {UL-CCTrCH-
InformationDeleteList-RL-ReconfRqstTDD-IEs} }

UL-CCTrCH-InformationDeleteList-RL-ReconfRqstTDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-UL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD    CRITICALITY notify  TYPE UL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD  PRESENCE
mandatory   }
}

UL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD ::= SEQUENCE {
    cCTrCH-ID                   CCTrCH-ID,
    iE-Extensions                   ProtocolExtensionContainer { {UL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD-ExtIEs} } OPTIONAL,
    ...
}

UL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-CCTrCH-InformationModifyList-RL-ReconfRqstTDD        ::= SEQUENCE (SIZE (0..maxNrOfCCTrCHs)) OF ProtocolIE-Single-Container { {DL-CCTrCH-
InformationModifyList-RL-ReconfRqstTDD-IEs} }

DL-CCTrCH-InformationModifyList-RL-ReconfRqstTDD-IEs RNSAP-PROTOCOL-IES ::= {
```

```
    { ID id-DL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD    CRITICALITY notify  TYPE DL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD  PRESENCE
mandatory   }
}

DL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD ::= SEQUENCE {
    cCTrCH-ID                   CCTrCH-ID,
    tFCS                        TFCS        OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {DL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD-ExtIEs} } OPTIONAL,
    ...
}

DL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-CCTrCH-InformationDeleteList-RL-ReconfRqstTDD        ::= SEQUENCE (SIZE (0..maxNrOfCCTrCHs)) OF ProtocolIE-Single-Container { {DL-CCTrCH-
InformationDeleteList-RL-ReconfRqstTDD-IEs} }

DL-CCTrCH-InformationDeleteList-RL-ReconfRqstTDD-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-DL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD    CRITICALITY notify  TYPE DL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD  PRESENCE
mandatory   }
}

DL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD ::= SEQUENCE {
    cCTrCH-ID                   CCTrCH-ID,
    iE-Extensions                   ProtocolExtensionContainer { {DL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD-ExtIEs} } OPTIONAL,
    ...
}

DL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DCH-DeleteList-RL-ReconfRqstTDD             ::= SEQUENCE (SIZE(0..maxNrOfDCHs)) OF DCH-DeleteItem-RL-ReconfRqstTDD

DCH-DeleteItem-RL-ReconfRqstTDD ::= SEQUENCE {
    dCH-ID                      DCH-ID,
    iE-Extensions                   ProtocolExtensionContainer { {DCH-DeleteItem-RL-ReconfRqstTDD-ExtIEs} } OPTIONAL,
    ...
}

DCH-DeleteItem-RL-ReconfRqstTDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

RadioLinkReconfigurationRequestTDD-Extensions RNSAP-PROTOCOL-EXTENSION ::= {
  { ID  id-RL-ReconfigurationRequestTDD-RL-Information  CRITICALITY ignore      EXTENSION   RL-ReconfigurationRequestTDD-RL-Information    PRESENCE
    optional},
    ...
}
```

```
RL-ReconfigurationRequestTDD-RL-Information ::= SEQUENCE {
    rL-ID                   RL-ID,
    rL-Specific-DCH-Info    RL-Specific-DCH-Info OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { RL-ReconfigurationRequestTDD-RL-Information-ExtIEs} } OPTIONAL,
    ...
}

RL-ReconfigurationRequestTDD-RL-Information-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
-- **************************************************************
--
-- COMMON TRANSPORT CHANNEL RESOURCES REQUEST
--
-- **************************************************************

CommonTransportChannelResourcesRequest ::= SEQUENCE {
    protocolIEs                     ProtocolIE-Container       {{CommonTransportChannelResourcesRequest-IEs}},
    protocolExtensions              ProtocolExtensionContainer {{CommonTransportChannelResourcesRequest-Extensions}}        OPTIONAL,
    ...
}

CommonTransportChannelResourcesRequest-IEs RNSAP-PROTOCOL-IES ::= {
    { ID id-D-RNTI                  CRITICALITY reject  TYPE D-RNTI                PRESENCE mandatory  } |
    { ID id-C-ID                    CRITICALITY reject  TYPE C-ID                  PRESENCE optional   } |
    { ID id-TransportBearerRequestIndicator     CRITICALITY reject  TYPE TransportBearerRequestIndicator     PRESENCE mandatory   } |
    { ID id-TransportBearerID           CRITICALITY reject  TYPE TransportBearerID              PRESENCE mandatory  },
    ...
}

CommonTransportChannelResourcesRequest-Extensions RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-Permanent-NAS-UE-Identity               CRITICALITY ignore          EXTENSION Permanent-NAS-UE-Identity   PRESENCE optional }|
    { ID    id-BindingID                        CRITICALITY ignore      EXTENSION   BindingID   PRESENCE            optional }|
    -- Shall be ignored if bearer establishment with ALCAP.
    { ID    id-TransportLayerAddress            CRITICALITY ignore      EXTENSION   TransportLayerAddress     PRESENCE    optional },
    -- Shall be ignored if bearer establishment with ALCAP.
    ...
}
```

9.3.4 Information Element Definitions

```
-- **************************************************************
--
-- Information Element Definitions
--
-- **************************************************************

RNSAP-IEs {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) rnsap (1) version1 (1) rnsap-IEs (2) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS
    maxCodeNumComp-1,
    maxNrOfFACHs,
    maxFACHCountPlus1,
    maxIBSEG,
    maxNoOfDSCHs,
    maxNoOfUSCHs,
    maxNoTFCIGroups,
    maxNoCodeGroups,
    maxNrOfDCHs,
    maxNrOfDL-Codes,
    maxNrOfDLTs,
    maxNrOfDLTsLCR,
    maxNrOfDPCHs,
    maxNrOfDPCHsLCR,
    maxNrOfErrors,
    maxNrOfFDDNeighboursPerRNC,
    maxNrOfMACcshSDU-Length,
    maxNrOfNeighbouringRNCs,
    maxNrOfTDDNeighboursPerRNC,
    maxNrOfLCRTDDNeighboursPerRNC,
    maxNrOfTS,
    maxNrOfULTs,
    maxNrOfULTsLCR,
    maxNrOfGSMNeighboursPerRNC,
    maxRateMatching,
    maxNrOfPoints,
    maxNoOfRB,
    maxNrOfTFCs,
    maxNrOfTFs,
    maxCTFC,
    maxRNCinURA-1,
    maxNrOfSCCPCHs,
```

```
    maxTFCI1Combs,
    maxTFCI2Combs,
    maxTFCI2Combs-1,
    maxTGPS,
    maxTTI-Count,
    maxNoGPSTypes,
    maxNoSat,

    id-Allowed-Rate-Information,
    id-BindingID,
    id-DPC-Mode-Change-SupportIndicator,
    id-Guaranteed-Rate-Information,
    id-Load-Value,
    id-Load-Value-IncrDecrThres,
    id-Neighbouring-GSM-CellInformation,
    id-Neighbouring-UMTS-CellInformationItem,
    id-neighbouring-LCR-TDD-CellInformation,
    id-OnModification,
    id-Received-Total-Wideband-Power-Value,
    id-Received-Total-Wideband-Power-Value-IncrDecrThres,
    id-SFNSFNMeasurementThresholdInformation,
    id-Transmitted-Carrier-Power-Value,
    id-Transmitted-Carrier-Power-Value-IncrDecrThres,
    id-TUTRANGPSMeasurementThresholdInformation,
    id-UL-Timeslot-ISCP-Value,
    id-UL-Timeslot-ISCP-Value-IncrDecrThres,
    maxNrOfLevels,
    maxNrOfMeasNCell,
    maxNrOfMeasNCell–1,
    id-MessageStructure,
    id-EnhancedDSCHPC,
    id-RestrictionStateIndicator,
    id-Rx-Timing-Deviation-Value-LCR,
    id-TransportLayerAddress,
    id-TypeOfError
FROM RNSAP-Constants

    Criticality,
    ProcedureID,
    ProtocolIE-ID,
    TransactionID,
    TriggeringMessage
FROM RNSAP-CommonDataTypes

    ProtocolIE-Single-Container{},
    ProtocolExtensionContainer{},
    RNSAP-PROTOCOL-IES,
    RNSAP-PROTOCOL-EXTENSION
FROM RNSAP-Containers;

-- A
```

```
Active-Pattern-Sequence-Information ::= SEQUENCE {
    cMConfigurationChangeCFN        CFN,
    transmission-Gap-Pattern-Sequence-Status    Transmission-Gap-Pattern-Sequence-Status-List    OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {Active-Pattern-Sequence-Information-ExtIEs} } OPTIONAL,
    ...
}

Active-Pattern-Sequence-Information-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

AdjustmentPeriod            ::= INTEGER(1..256)
-- Unit Frame

AllocationRetentionPriority ::= SEQUENCE {
    priorityLevel               PriorityLevel,
    pre-emptionCapability       Pre-emptionCapability,
    pre-emptionVulnerability    Pre-emptionVulnerability,
        iE-Extensions           ProtocolExtensionContainer { {AllocationRetentionPriority-ExtIEs} } OPTIONAL,
        ...
}

AllocationRetentionPriority-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

Allowed-Rate-Information    ::= SEQUENCE {
    allowed-UL-Rate         Allowed-Rate OPTIONAL,
    allowed-DL-Rate         Allowed-Rate OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {Allowed-Rate-Information-ExtIEs} } OPTIONAL,
    ...
}

Allowed-Rate-Information-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

Allowed-Rate            ::= INTEGER (1..maxNrOfTFs)

AllowedQueuingTime          ::= INTEGER (1..60)
-- seconds

AlphaValue                  ::= INTEGER (0..8)
-- Actual value = Alpha / 8

-- B

BadSatellites ::= SEQUENCE {
    badSatelliteInformation     SEQUENCE (SIZE (1..maxNoSat)) OF
        SEQUENCE {
```

```
            badSAT-ID                   SAT-ID,
            iE-Extensions               ProtocolExtensionContainer { { BadSatelliteInformation-ExtIEs} }     OPTIONAL,
            ...
        },
    iE-Extensions               ProtocolExtensionContainer { { BadSatellites-ExtIEs} }      OPTIONAL,
    ...
}

BadSatelliteInformation-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

BadSatellites-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

Band-Indicator ::= ENUMERATED {
    dcs1800Band,
    pcs1900Band,
    ...
}

BCC ::= BIT STRING (SIZE (3))

BCCH-ARFCN ::= INTEGER (0..1023)

BetaCD ::= INTEGER (0..15)

BindingID               ::= OCTET STRING (SIZE (1..4,...))
-- If the Binding ID includes an UDP port, the UDP port is included in octet 1 and 2.

BLER                    ::= INTEGER (-63..0)
-- Step 0.1 (Range -6.3..0). It is the Log10 of the BLER

SCTD-Indicator  ::= ENUMERATED {
    active,
    inactive
}

BSIC ::= SEQUENCE {
    nCC         NCC,
    bCC         BCC
}

BurstModeParameters ::= SEQUENCE {
    burstStart      INTEGER (0..15),
    burstLength     INTEGER (10..25),
    burstFreq       INTEGER (1..16),
    iE-Extensions               ProtocolExtensionContainer { { BurstModeParameters-ExtIEs} }     OPTIONAL,
    ...
}
```

```
BurstModeParameters-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- C

Cause ::= CHOICE {
    radioNetwork        CauseRadioNetwork,
    transport           CauseTransport,
    protocol            CauseProtocol,
    misc                CauseMisc,
    ...
}

CauseMisc ::= ENUMERATED {
    control-processing-overload,
    hardware-failure,
    om-intervention,
    not-enough-user-plane-processing-resources,
    unspecified,
    ...
}

CauseProtocol ::= ENUMERATED {
    transfer-syntax-error,
    abstract-syntax-error-reject,
    abstract-syntax-error-ignore-and-notify,
    message-not-compatible-with-receiver-state,
    semantic-error,
    unspecified,
    abstract-syntax-error-falsely-constructed-message,
    ...
}

CauseRadioNetwork ::= ENUMERATED {
    unknown-C-ID,
    cell-not-available,
    power-level-not-supported,
    ul-scrambling-code-already-in-use,
    dl-radio-resources-not-available,
    ul-radio-resources-not-available,
    measurement-not-supported-for-the-object,
    combining-resources-not-available,
    combining-not-supported,
    reconfiguration-not-allowed,
    requested-configuration-not-supported,
    synchronisation-failure,
    requested-tx-diversity-mode-not-supported,
    measurement-temporaily-not-available,
    unspecified,
```

```
    invalid-CM-settings,
    reconfiguration-CFN-not-elapsed,
    number-of-DL-codes-not-supported,
    dedicated-transport-channel-type-not-supported,
    dl-shared-channel-type-not-supported,
    ul-shared-channel-type-not-supported,
    common-transport-channel-type-not-supported,
    ul-spreading-factor-not-supported,
    dl-spreading-factor-not-supported,
    cm-not-supported,
    transaction-not-supported-by-destination-node-b,
    rl-already-activated-or-alocated,
    ...,
    number-of-UL-codes-not-supported,
    dpc-mode-change-not-supported,
    information-temporarily-not-available,
    information-provision-not-supported-for-the-object,
    cell-reserved-for-operator-use
}

CauseTransport ::= ENUMERATED {
    transport-resource-unavailable,
    unspecified,
    ...
}

C-ID                    ::= INTEGER (0..65535)

CCTrCH-ID               ::= INTEGER (0..15)

CellIndividualOffset    ::= INTEGER (-20..20)

CellParameterID             ::= INTEGER (0..127,...)

CFN                 ::= INTEGER (0..255)

CGI ::= SEQUENCE {
    lAI         SEQUENCE {
        pLMN-Identity   PLMN-Identity,
        lAC             LAC,
        iE-Extensions           ProtocolExtensionContainer { {LAI-ExtIEs} } OPTIONAL,
        ...
    },
    cI              CI,
    iE-Extensions           ProtocolExtensionContainer { {CGI-ExtIEs} } OPTIONAL
}

LAI-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
CGI-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

ChannelCodingType ::= ENUMERATED {
    no-coding,
    convolutional-coding,
    turbo-coding,
    ...
}

ChipOffset              ::= INTEGER (0..38399)

CI                  ::= OCTET STRING (SIZE (2))

ClosedLoopMode1-SupportIndicator    ::= ENUMERATED {
    closedLoop-Mode1-Supported,
    closedLoop-Mode1-not-Supported
}

ClosedLoopMode2-SupportIndicator    ::= ENUMERATED {
    closedLoop-Mode2-Supported,
    closedLoop-Mode2-not-Supported
}

Closedlooptimingadjustmentmode  ::= ENUMERATED {
    adj-1-slot,
    adj-2-slot,
    ...
}

CodeNumber ::= INTEGER (0..maxCodeNumComp-1)

CodingRate ::= ENUMERATED {
    half,
    third,
    ...
}

CommonMeasurementAccuracy ::= CHOICE {
    tUTRANGPSMeasurementAccuracyClass       TUTRANGPSAccuracyClass,
    ...
}

CommonMeasurementType ::= ENUMERATED {
    uTRAN-GPS-timing-of-cell-frames-for-LCS,
    sFN-SFN-observerd-time-difference,
    load,
    transmitted-carrier-power,
    received-total-wide-band-power,
    uplink-timeslot-iscp,
```

```
    ...
}

CommonMeasurementValue ::= CHOICE {
    tUTRANGPSMeasurementValueInformation    TUTRANGPSMeasurementValueInformation,
    sFNSFNMeasurementValueInformation       SFNSFNMeasurementValueInformation,
    loadValue                           LoadValue,
    transmittedCarrierPowerValue        INTEGER(0..100),
    receivedTotalWideBandPowerValue     INTEGER(0..621),
    uplinkTimeslotISCPValue             UL-TimeslotISCP,
    ...
}

CommonMeasurementValueInformation ::= CHOICE {
    measurementAvailable        CommonMeasurementAvailable,
    measurementnotAvailable     NULL
}

CommonMeasurementAvailable::= SEQUENCE {
    commonMeasurementValue      CommonMeasurementValue,
    iE-Extensions                   ProtocolExtensionContainer { { CommonMeasurementAvailableItem-ExtIEs} }     OPTIONAL,
    ...
}

CommonMeasurementAvailableItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

CongestionCause ::= ENUMERATED {
    uTRAN-dynamic-resources,
    uTRAN-semistatic-resources,
    ...
}

CRC-Size                ::= ENUMERATED {
    v0,
    v8,
    v12,
    v16,
    v24,
    ...
}

CriticalityDiagnostics ::= SEQUENCE {
    procedureID                 ProcedureID         OPTIONAL,
    triggeringMessage           TriggeringMessage       OPTIONAL,
    procedureCriticality        Criticality             OPTIONAL,
    transactionID               TransactionID           OPTIONAL,
    iEsCriticalityDiagnostics       CriticalityDiagnostics-IE-List  OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { {CriticalityDiagnostics-ExtIEs} } OPTIONAL,
    ...
```

```
}

CriticalityDiagnostics-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

CriticalityDiagnostics-IE-List ::= SEQUENCE (SIZE (1..maxNrOfErrors)) OF
    SEQUENCE {
        iECriticality           Criticality,
        iE-ID                   ProtocolIE-ID,
        repetitionNumber        RepetitionNumber0       OPTIONAL,
        iE-Extensions           ProtocolExtensionContainer { {CriticalityDiagnostics-IE-List-ExtIEs} } OPTIONAL,
        ...
    }

CriticalityDiagnostics-IE-List-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
{   ID id-MessageStructure      CRITICALITY ignore      EXTENSION MessageStructure      PRESENCE optional  }|
{   ID id-TypeOfError           CRITICALITY ignore      EXTENSION TypeOfError           PRESENCE mandatory },
    ...
}

MessageStructure ::= SEQUENCE (SIZE (1..maxNrOfLevels)) OF
    SEQUENCE {
        iE-ID                   ProtocolIE-ID,
        repetitionNumber        RepetitionNumber1       OPTIONAL,
        iE-Extensions           ProtocolExtensionContainer { {MessageStructure-ExtIEs} } OPTIONAL,
        ...
    }


MessageStructure-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

CN-CS-DomainIdentifier ::= SEQUENCE {
    pLMN-Identity       PLMN-Identity,
    lAC                 LAC,
    iE-Extensions       ProtocolExtensionContainer { {CN-CS-DomainIdentifier-ExtIEs} } OPTIONAL
}

CN-CS-DomainIdentifier-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

CN-PS-DomainIdentifier ::= SEQUENCE {
    pLMN-Identity       PLMN-Identity,
    lAC                 LAC,
    rAC                 RAC,
    iE-Extensions       ProtocolExtensionContainer { {CN-PS-DomainIdentifier-ExtIEs} } OPTIONAL
}
```

```
CN-PS-DomainIdentifier-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

CNDomainType    ::= ENUMERATED {
    cs-domain,
    ps-domain,
    dont-care,
    ...
}
-- See in [16]

C-RNTI                  ::= INTEGER (0..65535)

-- D
DCH-FDD-Information     ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF DCH-FDD-InformationItem

DCH-FDD-InformationItem ::= SEQUENCE {
    payloadCRC-PresenceIndicator        PayloadCRC-PresenceIndicator,
    ul-FP-Mode                          UL-FP-Mode,
    toAWS                               ToAWS,
    toAWE                               ToAWE,
    dCH-SpecificInformationList         DCH-Specific-FDD-InformationList,
    iE-Extensions                       ProtocolExtensionContainer { {DCH-FDD-InformationItem-ExtIEs} } OPTIONAL,
    ...
}

DCH-FDD-InformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DCH-Specific-FDD-InformationList ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF DCH-Specific-FDD-Item

DCH-Specific-FDD-Item ::=   SEQUENCE {
    dCH-ID                              DCH-ID,
    trCH-SrcStatisticsDescr             TrCH-SrcStatisticsDescr,
    ul-transportFormatSet               TransportFormatSet,
    dl-transportFormatSet               TransportFormatSet,
    ul-BLER                             BLER,
    dl-BLER                             BLER,
    allocationRetentionPriority         AllocationRetentionPriority,
    frameHandlingPriority               FrameHandlingPriority,
    qE-Selector                         QE-Selector,
    dRACControl                         DRACControl,
    iE-Extensions                       ProtocolExtensionContainer { {DCH-FDD-SpecificItem-ExtIEs} } OPTIONAL,
    ...
}

DCH-FDD-SpecificItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...,
    { ID id-Guaranteed-Rate-Information     CRITICALITY ignore  EXTENSION Guaranteed-Rate-Information     PRESENCE optional }
```

```
}

DCH-ID                  ::= INTEGER (0..255)

DCH-InformationResponse ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF DCH-InformationResponseItem

DCH-InformationResponseItem ::= SEQUENCE {
    dCH-ID                      DCH-ID,
    bindingID                   BindingID              OPTIONAL,
    transportLayerAddress       TransportLayerAddress  OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { {DCH-InformationResponseItem-ExtIEs} } OPTIONAL,
    ...
}

DCH-InformationResponseItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...,
    { ID id-Allowed-Rate-Information        CRITICALITY ignore  EXTENSION Allowed-Rate-Information     PRESENCE optional }
}

DCH-TDD-Information     ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF DCH-TDD-InformationItem

DCH-TDD-InformationItem ::= SEQUENCE {
    payloadCRC-PresenceIndicator        PayloadCRC-PresenceIndicator,
    ul-FP-Mode                          UL-FP-Mode,
    toAWS                               ToAWS,
    toAWE                               ToAWE,
    dCH-SpecificInformationList         DCH-Specific-TDD-InformationList,
    iE-Extensions                       ProtocolExtensionContainer { {DCH-TDD-InformationItem-ExtIEs} } OPTIONAL,
    ...
}

DCH-TDD-InformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DCH-Specific-TDD-InformationList ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF DCH-Specific-TDD-Item

DCH-Specific-TDD-Item ::=   SEQUENCE {
    dCH-ID                              DCH-ID,
    ul-cCTrCH-ID                        CCTrCH-ID, -- UL CCTrCH in which the DCH is mapped
    dl-cCTrCH-ID                        CCTrCH-ID, -- DL CCTrCH in which the DCH is mapped
    trCH-SrcStatisticsDescr             TrCH-SrcStatisticsDescr,
    ul-transportFormatSet               TransportFormatSet,
    dl-transportFormatSet               TransportFormatSet,
    ul-BLER                             BLER,
    dl-BLER                             BLER,
    allocationRetentionPriority         AllocationRetentionPriority,
    frameHandlingPriority               FrameHandlingPriority,
    qE-Selector                         QE-Selector         OPTIONAL,
    -- This IE shall be present if DCH is part of set of Co-ordinated DCHs
    iE-Extensions                       ProtocolExtensionContainer { {DCH-Specific-TDD-Item-ExtIEs} } OPTIONAL,
```

```
    ...
}

DCH-Specific-TDD-Item-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...,
    { ID id-Guaranteed-Rate-Information     CRITICALITY ignore  EXTENSION Guaranteed-Rate-Information     PRESENCE optional }
}

DedicatedMeasurementType ::= ENUMERATED {
    sir,
    sir-error,
    transmitted-code-power,
    rSCP,
    rx-timing-deviation,
    round-trip-time,
    ...,
    rx-timing-deviation-LCR
}

DedicatedMeasurementValue ::= CHOICE {
    sIR-Value           SIR-Value,
    sIR-ErrorValue          SIR-Error-Value,
    transmittedCodePowerValue   Transmitted-Code-Power-Value,
    rSCP                RSCP-Value, -- TDD only
    rxTimingDeviationValue  Rx-Timing-Deviation-Value,  -- 3.84Mcps TDD only
    roundTripTime       Round-Trip-Time-Value,  -- FDD only
    ...,
    extension-DedicatedMeasurementValue     Extension-DedicatedMeasurementValue
}

Extension-DedicatedMeasurementValue ::= ProtocolIE-Single-Container {{ Extension-DedicatedMeasurementValueIE }}

Extension-DedicatedMeasurementValueIE RNSAP-PROTOCOL-IES ::= {
    { ID id-Rx-Timing-Deviation-Value-LCR   CRITICALITY reject  TYPE Rx-Timing-Deviation-Value-LCR   PRESENCE mandatory },
    ...
}

DedicatedMeasurementValueInformation ::= CHOICE {
    measurementAvailable        DedicatedMeasurementAvailable,
    measurementnotAvailable     DedicatedMeasurementnotAvailable
}

DedicatedMeasurementAvailable::= SEQUENCE {
    dedicatedmeasurementValue       DedicatedMeasurementValue,
    cFN                             CFN                         OPTIONAL,
    ie-Extensions                   ProtocolExtensionContainer { { DedicatedMeasurementAvailableItem-ExtIEs} }     OPTIONAL,
    ...
}

DedicatedMeasurementAvailableItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
```

```
}

DedicatedMeasurementnotAvailable ::= NULL

DeltaSIR                ::= INTEGER (0..30)
-- Step 0.1 dB, Range 0..3 dB.

DGPSCorrections ::= SEQUENCE {
    gPSTOW                                  GPSTOW,
    gPS-Status-Health                       GPS-Status-Health,
    satellite-DGPSCorrections-Information   SEQUENCE (SIZE (1..maxNoSat)) OF
        SEQUENCE {
            sAT-ID                              SAT-ID,
            iode-dgps                           BIT STRING (SIZE (8)),
            uDRE                                UDRE,
            pRC                                 PRC,
            range-Correction-Rate               Range-Correction-Rate,
            iE-Extensions                       ProtocolExtensionContainer { { Satellite-DGPSCorrections-Information-ExtIEs} }    OPTIONAL,
            ...
        },
    iE-Extensions                   ProtocolExtensionContainer { { DGPSCorrections-ExtIEs} }      OPTIONAL,
    ...
}

Satellite-DGPSCorrections-Information-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DGPSCorrections-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DGPSThreshold ::= SEQUENCE {
    pRCDeviation        PRCDeviation,
    iE-Extensions       ProtocolExtensionContainer { { DGPSThreshold-ExtIEs} }      OPTIONAL,
    ...
}

DGPSThreshold-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DiversityControlField           ::= ENUMERATED {
    may,
    must,
    must-not
}
```

```
DiversityMode               ::= ENUMERATED {
    none,
    sTTD,
    closedLoopMode1,
    closedLoopMode2,
    ...
}

DL-DPCH-SlotFormat          ::= INTEGER (0..16,...)

DL-Power                ::= INTEGER (-350..150)
-- Value = DL-Power / 10
-- Unit dB, Range –35dB .. +15dB, Step 0.1dB

D-RNTI                  ::= INTEGER (0..1048575)

D-RNTI-ReleaseIndication ::= ENUMERATED {
    release-D-RNTI,
    not-release-D-RNTI
}

DL-ScramblingCode           ::= INTEGER (0..15)

DL-FrameType ::= ENUMERATED {
    typeA,
    typeB,
    ...
}

DL-Timeslot-Information ::= SEQUENCE ( SIZE (1..maxNrOfTS)) OF DL-Timeslot-InformationItem

DL-Timeslot-InformationItem ::= SEQUENCE {
    timeSlot                        TimeSlot,
    midambleShiftAndBurstType       MidambleShiftAndBurstType,
    tFCI-Presence                   TFCI-Presence,
    dL-Code-Information             TDD-DL-Code-Information,
    iE-Extensions                   ProtocolExtensionContainer { {DL-Timeslot-InformationItem-ExtIEs} } OPTIONAL,
    ...
}

DL-Timeslot-InformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-TimeslotLCR-Information ::= SEQUENCE (SIZE (1.. maxNrOfDLTsLCR)) OF DL-TimeslotLCR-InformationItem

DL-TimeslotLCR-InformationItem   ::= SEQUENCE {
    timeSlotLCR                         TimeSlotLCR,
    midambleShiftLCR                    MidambleShiftLCR,
    tFCI-Presence                       TFCI-Presence,
    dL-Code-LCR-Information            TDD-DL-Code-LCR-Information,
```

```
    iE-Extensions                       ProtocolExtensionContainer { { DL-TimeslotLCR-InformationItem-ExtIEs} }   OPTIONAL,
    ...
}

DL-TimeslotLCR-InformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-TimeSlot-ISCP-Info ::= SEQUENCE (SIZE (1..maxNrOfDLTs)) OF DL-TimeSlot-ISCP-InfoItem

DL-TimeSlot-ISCP-InfoItem ::= SEQUENCE {
    timeSlot                    TimeSlot,
    dL-TimeslotISCP             DL-TimeslotISCP,
    iE-Extensions               ProtocolExtensionContainer { { DL-TimeSlot-ISCP-InfoItem-ExtIEs} } OPTIONAL,
    ...
}

DL-TimeSlot-ISCP-InfoItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-TimeSlot-ISCP-LCR-Information ::= SEQUENCE (SIZE (1..maxNrOfDLTsLCR)) OF DL-TimeSlot-ISCP-LCR-InfoItem

DL-TimeSlot-ISCP-LCR-InfoItem ::= SEQUENCE {
    timeSlotLCR                     TimeSlotLCR,
    dL-TimeslotISCP                 DL-TimeslotISCP,
    iE-Extensions                   ProtocolExtensionContainer { { DL-TimeSlot-ISCP-LCR-InfoItem-ExtIEs} }   OPTIONAL,
    ...
 }

DL-TimeSlot-ISCP-LCR-InfoItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-TimeslotISCP         ::= INTEGER (0..91)
-- According to mapping in [24]

Downlink-Compressed-Mode-Method     ::= ENUMERATED {
    puncturing,
    sFdiv2,
    higher-layer-scheduling,
    ...
}

DPC-Mode ::= ENUMERATED {
   mode0,
   mode1,
   ...
}

DPC-Mode-Change-SupportIndicator ::= ENUMERATED {
```

```
   dPC-ModeChangeSupported
}

DPCH-ID                ::= INTEGER (0..239)

DPCHConstantValue ::= INTEGER (-10..10)
-- Unit dB, Step 1dB

DRACControl     ::= ENUMERATED {
    requested,
    not-requested
}

DRXCycleLengthCoefficient              ::= INTEGER (3..9)
-- See in [16]

DSCH-FDD-Information::= SEQUENCE {
    dSCH-Specific-Information          DSCH-Specific-FDD-Item,
    pdSCH-RL-ID                        RL-ID,
    tFCS                               TFCS,
    iE-Extensions                      ProtocolExtensionContainer { {DSCH-FDD-Information-ExtIEs} } OPTIONAL,
    ...
}

DSCH-FDD-Information-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-EnhancedDSCHPC             CRITICALITY ignore  EXTENSION EnhancedDSCHPC               PRESENCE optional },
    ...
}

DSCH-Specific-FDD-Item ::= SEQUENCE {
    dSCH-ID                            DSCH-ID,
    trChSourceStatisticsDescriptor     TrCH-SrcStatisticsDescr,
    transportFormatSet                 TransportFormatSet,
    allocationRetentionPriority        AllocationRetentionPriority,
    schedulingPriorityIndicator        SchedulingPriorityIndicator,
    bLER                               BLER,
    iE-Extensions                      ProtocolExtensionContainer { {DSCH-Specific-FDD-Item-ExtIEs} } OPTIONAL,
    ...
}

DSCH-Specific-FDD-Item-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID    id-BindingID                       CRITICALITY ignore      EXTENSION   BindingID                       PRESENCE    optional }|
    -- Shall be ignored if bearer establishment with ALCAP.
    { ID    id-TransportLayerAddress           CRITICALITY ignore      EXTENSION   TransportLayerAddress    PRESENCE    optional },
    -- Shall be ignored if bearer establishment with ALCAP.
    ...
}

DSCH-FDD-InformationResponse ::= SEQUENCE {
    dsch-Specific-InformationResponse  DSCH-Specific-FDD-InformationResponse,
    pdSCHCodeMapping                   PDSCHCodeMapping,
```

```
    iE-Extensions                       ProtocolExtensionContainer { { DSCH-FDD-InformationResponse-ExtIEs} } OPTIONAL,
    ...
}

DSCH-FDD-InformationResponse-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DSCH-Specific-FDD-InformationResponse ::= SEQUENCE (SIZE(1..maxNoOfDSCHs)) OF DSCH-Specific-FDD-Response-Item

DSCH-Specific-FDD-Response-Item ::= SEQUENCE {
    dsch-ID                         DSCH-ID,
    dSCH-FlowControlInformation     DSCH-FlowControlInformation,
    bindingID                       BindingID               OPTIONAL,
    transportLayerAddress           TransportLayerAddress   OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {DSCH-Specific-FDD-Response-Item-ExtIEs} } OPTIONAL,
    ...
}

DSCH-Specific-FDD-Response-Item-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DSCH-FlowControlInformation ::=  SEQUENCE (SIZE(1..16)) OF DSCH-FlowControlItem

DSCH-FlowControlItem ::= SEQUENCE {
    dSCH-SchedulingPriority             SchedulingPriorityIndicator,
    mAC-c-sh-SDU-Lengths                MAC-c-sh-SDU-LengthList,
    iE-Extensions                       ProtocolExtensionContainer { {DSCH-FlowControlItem-ExtIEs} } OPTIONAL,
    ...
}

DSCH-FlowControlItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

DSCH-ID                 ::= INTEGER (0..255)

DSCH-TDD-Information ::=  SEQUENCE (SIZE (1..maxNoOfDSCHs)) OF DSCH-TDD-InformationItem

DSCH-TDD-InformationItem ::= SEQUENCE {
    dSCH-ID                             DSCH-ID,
    dl-ccTrCHID                         CCTrCH-ID, -- DL CCTrCH in which the DSCH is mapped
    trChSourceStatisticsDescriptor      TrCH-SrcStatisticsDescr,
    transportFormatSet                  TransportFormatSet,
    allocationRetentionPriority         AllocationRetentionPriority,
    schedulingPriorityIndicator         SchedulingPriorityIndicator,
    bLER                                BLER,
    iE-Extensions                       ProtocolExtensionContainer { {DSCH-TDD-InformationItem-ExtIEs} } OPTIONAL,
    ...
}
```

```
DSCH-TDD-InformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
{ ID    id-BindingID                        CRITICALITY ignore      EXTENSION   BindingID      PRESENCE            optional }|
-- Shall be ignored if bearer establishment with ALCAP.
{ ID    id-TransportLayerAddress            CRITICALITY ignore      EXTENSION   TransportLayerAddress     PRESENCE    optional },
-- Shall be ignored if bearer establishment with ALCAP.
...
}

-- E

EnhancedDSCHPC ::= SEQUENCE {
    enhancedDSCHPCWnd   EnhancedDSCHPCWnd,
    enhancedDSCHPCCounter   EnhancedDSCHPCCounter,
    enhancedDSCHPowerOffset EnhancedDSCHPowerOffset,
    ...
}

EnhancedDSCHPCCounter ::= INTEGER (1..50)

EnhancedDSCHPCIndicator ::= ENUMERATED {
    enhancedDSCHPCActiveInTheUE,
    enhancedDSCHPCNotActiveInTheUE
}

EnhancedDSCHPCWnd ::= INTEGER (1..10)

EnhancedDSCHPowerOffset ::= INTEGER (-15..0)

EventA ::= SEQUENCE {
    measurementTreshold     MeasurementThreshold,
    measurementHysteresisTime   MeasurementHysteresisTime       OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {EventA-ExtIEs} } OPTIONAL,
    ...
}

EventA-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

EventB ::= SEQUENCE {
    measurementTreshold     MeasurementThreshold,
    measurementHysteresisTime   MeasurementHysteresisTime       OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {EventB-ExtIEs} } OPTIONAL,
    ...
}

EventB-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
EventC ::= SEQUENCE {
    measurementIncreaseDecreaseThreshold    MeasurementIncreaseDecreaseThreshold,
    measurementChangeTime       MeasurementChangeTime,
    iE-Extensions           ProtocolExtensionContainer { {EventC-ExtIEs} } OPTIONAL,
    ...
}

EventC-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

EventD ::= SEQUENCE {
    measurementIncreaseDecreaseThreshold    MeasurementIncreaseDecreaseThreshold,
    measurementChangeTime       MeasurementChangeTime,
    iE-Extensions           ProtocolExtensionContainer { {EventD-ExtIEs} } OPTIONAL,
    ...
}

EventD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

EventE ::= SEQUENCE {
    measurementThreshold1       MeasurementThreshold,
    measurementThreshold2       MeasurementThreshold            OPTIONAL,
    measurementHysteresisTime   MeasurementHysteresisTime       OPTIONAL,
    reportPeriodicity       ReportPeriodicity           OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {EventE-ExtIEs} } OPTIONAL,
    ...
}

EventE-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

EventF ::= SEQUENCE {
    measurementThreshold1       MeasurementThreshold,
    measurementThreshold2       MeasurementThreshold            OPTIONAL,
    measurementHysteresisTime   MeasurementHysteresisTime       OPTIONAL,
    reportPeriodicity       ReportPeriodicity           OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {EventF-ExtIEs} } OPTIONAL,
    ...
}

EventF-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- F
```

```
FACH-FlowControlInformation ::= SEQUENCE (SIZE (1..16)) OF FACH-FlowControlInformationItem

FACH-FlowControlInformationItem ::= SEQUENCE {
    fACH-SchedulingPriority         SchedulingPriorityIndicator,
    mAC-c-sh-SDU-Lengths            MAC-c-sh-SDU-LengthList,
    fACH-InitialWindowSize          FACH-InitialWindowSize,
    iE-Extensions                   ProtocolExtensionContainer { {FACH-FlowControlInformationItem-ExtIEs} } OPTIONAL,
    ...
}

FACH-FlowControlInformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

FACH-InitialWindowSize          ::= INTEGER { unlimited(255) } (0..255)
-- Number of frames MAC-c-sh SDUs.
-- 255 = Unlimited number of FACH data frames

FACH-InformationList ::= SEQUENCE (SIZE(0.. maxNrOfFACHs)) OF FACH-InformationItem

FACH-InformationItem ::= SEQUENCE {
    transportFormatSet              TransportFormatSet,
    iE-Extensions                   ProtocolExtensionContainer { { FACH-InformationItem-ExtIEs} } OPTIONAL,
    ...
}

FACH-InformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

FACH-PCH-InformationList ::= SEQUENCE (SIZE(1..maxFACHCountPlus1)) OF FACH-PCH-InformationItem

FACH-PCH-InformationItem ::= SEQUENCE {
    transportFormatSet              TransportFormatSet,
    iE-Extensions                   ProtocolExtensionContainer { { FACH-PCH-InformationItem-ExtIEs} } OPTIONAL,
    ...
}

FACH-PCH-InformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

FDD-DCHs-to-Modify              ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF FDD-DCHs-to-ModifyItem

FDD-DCHs-to-ModifyItem ::= SEQUENCE {
    ul-FP-Mode                          UL-FP-Mode      OPTIONAL,
    toAWS                               ToAWS       OPTIONAL,
    toAWE                               ToAWE       OPTIONAL,
    transportBearerRequestIndicator     TransportBearerRequestIndicator,
    dCH-SpecificInformationList         FDD-DCHs-to-ModifySpecificInformationList,
    iE-Extensions                       ProtocolExtensionContainer { {FDD-DCHs-to-ModifyItem-ExtIEs} } OPTIONAL,
```

```
    ...
}

FDD-DCHs-to-ModifyItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

FDD-DCHs-to-ModifySpecificInformationList ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF FDD-DCHs-to-ModifySpecificItem

FDD-DCHs-to-ModifySpecificItem ::=  SEQUENCE {
    dCH-ID                          DCH-ID,
    ul-TransportformatSet           TransportFormatSet      OPTIONAL,
    dl-TransportformatSet           TransportFormatSet      OPTIONAL,
    allocationRetentionPriority     AllocationRetentionPriority     OPTIONAL,
    frameHandlingPriority           FrameHandlingPriority       OPTIONAL,
    dRACControl                     DRACControl     OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {FDD-DCHs-to-ModifySpecificItem-ExtIEs} } OPTIONAL,
    ...
}

FDD-DCHs-to-ModifySpecificItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...,
    { ID id-Guaranteed-Rate-Information     CRITICALITY ignore  EXTENSION Guaranteed-Rate-Information     PRESENCE optional }
}

FDD-DL-ChannelisationCodeNumber     ::= INTEGER (0..511)
-- According to the mapping in [27]. The maximum value is equal to the DL spreading factor -1--

FDD-DL-CodeInformation ::= SEQUENCE (SIZE (1..maxNrOfDL-Codes)) OF FDD-DL-CodeInformationItem

FDD-DL-CodeInformationItem ::= SEQUENCE {
    dl-ScramblingCode                                   DL-ScramblingCode,
    fDD-DL-ChannelisationCodeNumber                     FDD-DL-ChannelisationCodeNumber,
    transmission-Gap-Pattern-Sequence-ScramblingCode-Information        Transmission-Gap-Pattern-Sequence-ScramblingCode-Information OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { {FDD-DL-CodeInformationItem-ExtIEs} } OPTIONAL,
    ...
}

FDD-DL-CodeInformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

FDD-S-CCPCH-Offset          ::= INTEGER (0..149)

FDD-TPC-DownlinkStepSize ::= ENUMERATED {
    step-size0-5,
    step-size1,
    step-size1-5,
    step-size2,
    ...
}
```

```
SchedulingPriorityIndicator             ::= INTEGER { lowest(0), highest(15) } (0..15)

FirstRLS-Indicator ::= ENUMERATED {
    first-RLS,
    not-first-RLS
}

FNReportingIndicator ::= ENUMERATED {
    fN-reporting-required,
    fN-reporting-not-required
}

FrameHandlingPriority           ::= INTEGER { lowest(0), highest(15) } (0..15)

FrameOffset             ::= INTEGER (0..255)
-- Frames

-- G

GapLength               ::= INTEGER (1..14)
-- Unit Slot

GapDuration             ::= INTEGER (1..144,...)
-- Unit Frame

GA-Cell ::= SEQUENCE (SIZE (1..maxNrOfPoints)) OF
    SEQUENCE {
        cell-GAIgeographicalCoordinate      GeographicalCoordinate,
        iE-Extensions           ProtocolExtensionContainer { {GA-Cell-ExtIEs} } OPTIONAL,
        ...
    }

GA-Cell-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

GA-CellAdditionalShapes ::= CHOICE {
    pointWithUncertainty                            GA-PointWithUnCertainty,
    pointWithUncertaintyEllipse                     GA-PointWithUnCertaintyEllipse,
    pointWithAltitude                               GA-PointWithAltitude,
    pointWithAltitudeAndUncertaintyEllipsoid        GA-PointWithAltitudeAndUncertaintyEllipsoid,
    ellipsoidArc                                    GA-EllipsoidArc,
    ...
    }

GA-AltitudeAndDirection ::= SEQUENCE {
    directionOfAltitude     ENUMERATED {height, depth},
    altitude                INTEGER (0..32767),
    ...
}
```

```
GA-EllipsoidArc ::= SEQUENCE {
    geographicalCoordinates     GeographicalCoordinate,
    innerRadius                 INTEGER (0..65535),
    uncertaintyRadius           INTEGER (0..127),
    offsetAngle                 INTEGER (0..179),
    includedAngle               INTEGER (0..179),
    confidence                  INTEGER (0..127),
    iE-Extensions               ProtocolExtensionContainer { { GA-EllipsoidArc-ExtIEs} } OPTIONAL,
    ...
}

GA-EllipsoidArc-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

GA-PointWithAltitude ::= SEQUENCE {
    geographicalCoordinates     GeographicalCoordinate,
    altitudeAndDirection        GA-AltitudeAndDirection,
    iE-Extensions               ProtocolExtensionContainer { { GA-PointWithAltitude-ExtIEs} } OPTIONAL,
    ...
}

GA-PointWithAltitude-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

GA-PointWithAltitudeAndUncertaintyEllipsoid ::= SEQUENCE {
    geographicalCoordinates     GeographicalCoordinate,
    altitudeAndDirection        GA-AltitudeAndDirection,
    uncertaintyEllipse          GA-UncertaintyEllipse,
    uncertaintyAltitude         INTEGER (0..127),
    confidence                  INTEGER (0..127),
    iE-Extensions               ProtocolExtensionContainer { { GA-PointWithAltitudeAndUncertaintyEllipsoid-ExtIEs} } OPTIONAL,
    ...
}

GA-PointWithAltitudeAndUncertaintyEllipsoid-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

GA-PointWithUnCertaintyEllipse ::= SEQUENCE {
    geographicalCoordinates     GeographicalCoordinate,
    uncertaintyEllipse          GA-UncertaintyEllipse,
    confidence                  INTEGER (0..127),
    iE-Extensions               ProtocolExtensionContainer { { GA-PointWithUnCertaintyEllipse-ExtIEs} } OPTIONAL,
    ...
}

GA-PointWithUnCertaintyEllipse-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
```

```
}

GA-UncertaintyEllipse ::= SEQUENCE {
    uncertaintySemi-major       INTEGER (0..127),
    uncertaintySemi-minor       INTEGER (0..127),
    orientationOfMajorAxis      INTEGER (0..179),
    ...
}

GA-PointWithUnCertainty ::=SEQUENCE {
    geographicalCoordinates     GeographicalCoordinate,
    iE-Extensions           ProtocolExtensionContainer { {GA-PointWithUnCertainty-ExtIEs} } OPTIONAL,
    uncertaintyCode         INTEGER (0..127)
}

GA-PointWithUnCertainty-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

GA-AccessPointPosition ::= SEQUENCE {
    geographicalCoordinate      GeographicalCoordinate,
    iE-Extensions           ProtocolExtensionContainer { {GA-AccessPoint-ExtIEs} } OPTIONAL,
    ...
}

GA-AccessPoint-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

GeographicalCoordinate ::= SEQUENCE {
    latitudeSign            ENUMERATED { north, south },
    latitude            INTEGER (0..8388607),
    longitude           INTEGER (-8388608..8388607),
    iE-Extensions           ProtocolExtensionContainer { {GeographicalCoordinate-ExtIEs} } OPTIONAL,
    ...
}

GeographicalCoordinate-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

GPS-Almanac ::= SEQUENCE {
    wn_a-alm                BIT STRING (SIZE (8)),
    satellite-Almanac-Information       SEQUENCE (SIZE (1..maxNoSat)) OF
        SEQUENCE {
            sAT-ID              SAT-ID,
            gps-e-alm           BIT STRING (SIZE (16)),
            gps-toa-alm         BIT STRING (SIZE (8)),
            gps-delta-I-alm     BIT STRING (SIZE (16)),
            omegadot-alm        BIT STRING (SIZE (16)),
            svhealth-alm        BIT STRING (SIZE (8)),
```

```
            gps-a-sqrt-alm      BIT STRING (SIZE (24)),
            omegazero-alm       BIT STRING (SIZE (24)),
            m-zero-alm          BIT STRING (SIZE (24)),
            gps-omega-alm       BIT STRING (SIZE (24)),
            gps-af-zero-alm     BIT STRING (SIZE (11)),
            gps-af-one-alm      BIT STRING (SIZE (11)),
            iE-Extensions       ProtocolExtensionContainer { { Satellite-Almanac-Information-ExtIEs} }    OPTIONAL,
            ...
        },
    iE-Extensions           ProtocolExtensionContainer { { GPS-Almanac-ExtIEs} }        OPTIONAL,
    ...
}

Satellite-Almanac-Information-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

GPS-Almanac-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

GPSInformation ::= SEQUENCE (SIZE (1..maxNoGPSTypes)) OF
    SEQUENCE {
        gPSInformationItem      ENUMERATED {
            gPS-NavigationModel-and-TimeRecovery,
            gPS-Ionospheric-Model,
            gPS-UTC-Model,
            gPS-Almanac,
            gPS-RealTime-Integrity,
            ...
        },
        iE-Extensions           ProtocolExtensionContainer { { GPSInformation-ExtIEs} }     OPTIONAL,
        ...
    }
-- This IE shall be present if the Information Type IE indicates ‘GPS Information’

GPSInformation-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

GPS-Ionospheric-Model ::= SEQUENCE {
    alpha-zero-ionos        BIT STRING (SIZE (8)),
    alpha-one-ionos         BIT STRING (SIZE (8)),
    alpha-two-ionos         BIT STRING (SIZE (8)),
    alpha-three-ionos       BIT STRING (SIZE (8)),
    beta-zero-ionos         BIT STRING (SIZE (8)),
    beta-one-ionos          BIT STRING (SIZE (8)),
    beta-two-ionos          BIT STRING (SIZE (8)),
    beta-three-ionos        BIT STRING (SIZE (8)),
    iE-Extensions           ProtocolExtensionContainer { { GPS-Ionospheric-Model-ExtIEs} }      OPTIONAL,
    ...
```

```
}

GPS-Ionospheric-Model-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

GPS-NavigationModel-and-TimeRecovery ::= SEQUENCE (SIZE (1..maxNoSat)) OF
    SEQUENCE {
        tx-tow-nav                      INTEGER (0..1048575),
        sAT-ID                          SAT-ID,
        tlm-message-nav                 BIT STRING (SIZE (14)),
        tlm-revd-c-nav                  BIT STRING (SIZE (2)),
        ho-word-nav                     BIT STRING (SIZE (22)),
        w-n-nav                         BIT STRING (SIZE (10)),
        ca-or-p-on-l2-nav               BIT STRING (SIZE (2)),
        user-range-accuracy-index-nav   BIT STRING (SIZE (4)),
        sv-health-nav                   BIT STRING (SIZE (6)),
        iodc-nav                        BIT STRING (SIZE (10)),
        l2-p-dataflag-nav               BIT STRING (SIZE (1)),
        sf1-reserved-nav                BIT STRING (SIZE (87)),
        t-gd-nav                        BIT STRING (SIZE (8)),
        t-oc-nav                        BIT STRING (SIZE (16)),
        a-f-2-nav                       BIT STRING (SIZE (8)),
        a-f-1-nav                       BIT STRING (SIZE (16)),
        a-f-zero-nav                    BIT STRING (SIZE (22)),
        c-rs-nav                        BIT STRING (SIZE (16)),
        delta-n-nav                     BIT STRING (SIZE (16)),
        m-zero-nav                      BIT STRING (SIZE (32)),
        c-uc-nav                        BIT STRING (SIZE (16)),
        gps-e-nav                       BIT STRING (SIZE (32)),
        c-us-nav                        BIT STRING (SIZE (16)),
        a-sqrt-nav                      BIT STRING (SIZE (32)),
        t-oe-nav                        BIT STRING (SIZE (16)),
        fit-interval-flag-nav           BIT STRING (SIZE (1)),
        aodo-nav                        BIT STRING (SIZE (5)),
        c-ic-nav                        BIT STRING (SIZE (16)),
        omega-zero-nav                  BIT STRING (SIZE (32)),
        c-is-nav                        BIT STRING (SIZE (16)),
        i-zero-nav                      BIT STRING (SIZE (32)),
        c-rc-nav                        BIT STRING (SIZE (16)),
        gps-omega-nav                   BIT STRING (SIZE (32)),
        omegadot-nav                    BIT STRING (SIZE (24)),
        idot-nav                        BIT STRING (SIZE (14)),
        spare-zero-fill                 BIT STRING (SIZE (20)),
        iE-Extensions                   ProtocolExtensionContainer { { GPS-NavigationModel-and-TimeRecoveryItem-ExtIEs} }   OPTIONAL,
        ...
    }

GPS-NavigationModel-and-TimeRecoveryItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
GPS-RealTime-Integrity ::= CHOICE {
    badSatellites               BadSatellites,
    noBadSatellite              NULL
}

GPS-RX-POS ::= SEQUENCE {
    geographicalCoordinate      GeographicalCoordinate,
    altitudeAndDirection        GA-AltitudeAndDirection,
    iE-Extensions               ProtocolExtensionContainer { { GPS-RX-POS-ExtIEs} } OPTIONAL,
    ...
}

GPS-RX-POS-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

GPS-Status-Health ::= ENUMERATED {
   udre-1-0,
   udre-0-75,
   udre-0-5,
   udre-0-3,
   udre-0-1,
   no-data,
   invalid-data
}

GPSTOW ::= INTEGER (0..604799)

GPS-UTC-Model ::= SEQUENCE {
    a-one-utc               BIT STRING (SIZE (24)),
    a-zero-utc              BIT STRING (SIZE (32)),
    t-ot-utc                BIT STRING (SIZE (8)),
    delta-t-ls-utc          BIT STRING (SIZE (8)),
    w-n-t-utc               BIT STRING (SIZE (8)),
    w-n-lsf-utc             BIT STRING (SIZE (8)),
    dn-utc                  BIT STRING (SIZE (8)),
    delta-t-lsf-utc         BIT STRING (SIZE (8)),
    iE-Extensions           ProtocolExtensionContainer { { GPS-UTC-Model-ExtIEs} }      OPTIONAL,
    ...
}

GPS-UTC-Model-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

Guaranteed-Rate-Information ::= SEQUENCE {
    guaranteed-UL-Rate          Guaranteed-Rate OPTIONAL,
    guaranteed-DL-Rate          Guaranteed-Rate OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { {Guaranteed-Rate-Information-ExtIEs} } OPTIONAL,
    ...
```

```
}

Guaranteed-Rate-Information-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

Guaranteed-Rate         ::= INTEGER (1..maxNrOfTFs)

-- H

-- I

IB-SchedulingInformation::= SEQUENCE {
    iB-SG-Rep                       IB-SG-REP,
    iB-segmentInformationList       IB-SegmentInformationList,
    iE-Extensions                   ProtocolExtensionContainer { { IB-SchedulingInformation-ExtIEs } } OPTIONAL,
        ...
}

IB-SchedulingInformation-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

IB-SegmentInformationList ::= SEQUENCE (SIZE(1..maxIBSEG)) OF IB-SegmentInformationItem

IB-SegmentInformationItem ::= SEQUENCE {
    iB-SG-POS                       IB-SG-POS,
    iE-Extensions                   ProtocolExtensionContainer { {  IB-SegmentInformationItem-ExtIEs } } OPTIONAL,
    ...
}

IB-SegmentInformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

IB-SG-POS   ::= INTEGER (0..4094)
-- Only even positions allowed

IB-SG-REP   ::= ENUMERATED {rep4, rep8, rep16, rep32, rep64, rep128, rep256, rep512, rep1024, rep2048, rep4096}

IMSI        ::= OCTET STRING (SIZE(3..8))

InformationAvailable::= SEQUENCE {
    requestedDataValue      RequestedDataValue,
    iE-Extensions           ProtocolExtensionContainer { { InformationAvailable-ExtIEs} }       OPTIONAL,
    ...
}

InformationAvailable-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
InformationExchangeID ::= INTEGER (0..1048575)

InformationNotAvailable ::= NULL

InformationReportCharacteristics ::= CHOICE {
    onDemand                NULL,
    periodic                PeriodicInformation,
    onModification          OnModificationInformation,
    ...
}

InformationReportPeriodicity ::= CHOICE {
    min             INTEGER (1..60,...),
-- Unit min, Step 1min
    hour            INTEGER (1..24,...),
-- Unit hour, Step 1hour
    ...
}

InformationThreshold ::= CHOICE {
    dGPSThreshold       DGPSThreshold,
    ...
}

InformationType ::= SEQUENCE {
    informationTypeItem     ENUMERATED {
        gA-AccessPointPositionwithAltitude,
        gA-AccessPointPosition,
        iPDLParameters,
        gPSInformation,
        dGPSCorrections,
        gPS-RX-POS,
        sFNSFN-GA-AccessPointPosition,
        ...
    },
    gPSInformation              GPSInformation          OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { { InformationType-ExtIEs} }        OPTIONAL,
    ...
}

-- The GPS Information IE shall be present if the Information Exchange Type IE indicates ‘GPS Information’

InformationType-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

InnerLoopDLPCStatus     ::= ENUMERATED {active, inactive}

IPDLParameters ::= CHOICE {
    iPDL-FDD-Parameters         IPDL-FDD-Parameters,
```

```
    iPDL-TDD-Parameters         IPDL-TDD-Parameters
}

IPDL-FDD-Parameters ::= SEQUENCE {
    iPSpacingFDD                IPSpacingFDD,
    iPLength                    IPLength,
    iPOffset                    IPOffset,
    seed                        Seed,
    burstModeParameters         BurstModeParameters     OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { { IPDL-FDD-Parameters-ExtIEs} }     OPTIONAL,
    ...
}

IPDL-FDD-Parameters-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

IPDL-TDD-Parameters ::= SEQUENCE {
    iPSpacingTDD                IPSpacingTDD,
    iPStart                     IPStart,
    iPSlot                      IPSlot,
    iP-P-CCPCH                  IP-P-CCPCH,
    burstModeParameters         BurstModeParameters     OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { { IPDL-TDD-Parameters-ExtIEs} }     OPTIONAL,
    ...
}

-- The BurstModeParameters IE shall be included if the Idle Periods are arranged in Burst Mode.

IPDL-TDD-Parameters-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

IPLength ::= ENUMERATED {
    ipl5,
    ipl10,
    ...
}

IPOffset ::= INTEGER (0..9)

IP-P-CCPCH ::= ENUMERATED {
    switchOff-1-Frame,
    switchOff-2-Frames
}

IPSlot ::= INTEGER (0..14)

IPSpacingFDD ::= ENUMERATED {
    ipsF5,
    ipsF7,
```

```
    ipsF10,
    ipsF15,
    ipsF20,
    ipsF30,
    ipsF40,
    ipsF50,
    ...
}

IPSpacingTDD ::= ENUMERATED {
    ipsT30,
    ipsT40,
    ipsT50,
    ipsT70,
    ipsT100,
    ...
}

IPStart ::= INTEGER (0..4095)

-- J
-- K
-- L

LAC                 ::= OCTET STRING (SIZE (2)) --(EXCEPT ('0000'H|'FFFF'H))

LimitedPowerIncrease ::= ENUMERATED {
    used,
    not-used
}

L3-Information              ::= BIT STRING

Load-Value-IncrDecrThres ::= INTEGER(0..9)

Load-Value ::= INTEGER(0..9)

LoadValue ::= SEQUENCE {
        uplinkLoadValue     INTEGER(0..9),
        downlinkLoadValue   INTEGER(0..9)
}

-- M

MaxNrOfUL-DPCHs             ::= INTEGER (1..6)

MAC-c-sh-SDU-Length         ::= INTEGER (1..5000)

MAC-c-sh-SDU-LengthList ::= SEQUENCE(SIZE(1..maxNrOfMACcshSDU-Length)) OF MAC-c-sh-SDU-Length

MaximumAllowedULTxPower     ::= INTEGER (-50..33)
```

```
MaxNrDLPhysicalchannels     ::= INTEGER (1..224)

MaxNrTimeslots              ::= INTEGER (1..14)

MaxNrULPhysicalchannels     ::= INTEGER (1..2)

MaxTFCIvalue                ::= INTEGER (1..1023)

MeasurementFilterCoefficient ::=  ENUMERATED{k0, k1, k2, k3, k4, k5, k6, k7, k8, k9, k11, k13, k15, k17, k19,...}
-- Measurement Filter Coefficient to be used for measurement

MeasurementID               ::= INTEGER (0..1048575)

MinimumSpreadingFactor      ::= INTEGER (1..16)

Multi-code-info             ::= INTEGER (1..16)

MultipleURAsIndicator ::= ENUMERATED {
    multiple-URAs-exist,
    single-URA-exists
}

MaxAdjustmentStep           ::= INTEGER(1..10)
-- Unit Slot

MeasurementChangeTime       ::= INTEGER (1..6000,...)
-- The MeasurementChangeTime  gives the MeasurementChangeTime
-- in number of 10 ms periods.
-- E.g. Value 6000 means 60000ms(1min)
-- Unit is ms, Step is 10 ms

MeasurementHysteresisTime       ::= INTEGER (1..6000,...)
-- The MeasurementHysteresisTime  gives the
-- MeasurementHysteresisTime in number of 10 ms periods.
-- E.g. Value 6000 means 60000ms(1min)
-- Unit is ms, Step is 10ms

MeasurementIncreaseDecreaseThreshold        ::= CHOICE {
    sir                             SIR-Value-IncrDecrThres,
    sir-error                       SIR-Error-Value-IncrDecrThres,
    transmitted-code-power          Transmitted-Code-Power-Value-IncrDecrThres,
    rscp                            RSCP-Value-IncrDecrThres,
    round-trip-time                 Round-Trip-Time-IncrDecrThres,
    ...,
    extension-MeasurementIncreaseDecreaseThreshold      Extension-MeasurementIncreaseDecreaseThreshold
}

Extension-MeasurementIncreaseDecreaseThreshold  ::= ProtocolIE-Single-Container {{ Extension-MeasurementIncreaseDecreaseThresholdIE }}

Extension-MeasurementIncreaseDecreaseThresholdIE RNSAP-PROTOCOL-IES ::= {
```

```
    { ID id-Load-Value-IncrDecrThres    CRITICALITY reject  TYPE Load-Value-IncrDecrThres   PRESENCE mandatory }|
    { ID id-Transmitted-Carrier-Power-Value-IncrDecrThres   CRITICALITY reject  TYPE Transmitted-Carrier-Power-Value-IncrDecrThres   PRESENCE mandatory
}|
    { ID id-Received-Total-Wideband-Power-Value-IncrDecrThres   CRITICALITY reject  TYPE Received-Total-Wideband-Power-Value-IncrDecrThres    PRESENCE
mandatory }|
    { ID id-UL-Timeslot-ISCP-Value-IncrDecrThres    CRITICALITY reject  TYPE UL-Timeslot-ISCP-Value-IncrDecrThres  PRESENCE mandatory }
}

MeasurementThreshold            ::= CHOICE {
    sir                             SIR-Value,
    sir-error                       SIR-Error-Value,
    transmitted-code-power          Transmitted-Code-Power-Value,
    rscp                            RSCP-Value,
    rx-timing-deviation             Rx-Timing-Deviation-Value,
    round-trip-time                 Round-Trip-Time-Value,
    ...,
    extension-MeasurementThreshold  Extension-MeasurementThreshold
}

Extension-MeasurementThreshold  ::= ProtocolIE-Single-Container {{ Extension-MeasurementThresholdIE }}

Extension-MeasurementThresholdIE RNSAP-PROTOCOL-IES ::= {
    { ID id-TUTRANGPSMeasurementThresholdInformation    CRITICALITY reject  TYPE TUTRANGPSMeasurementThresholdInformation   PRESENCE mandatory }|
    { ID id-SFNSFNMeasurementThresholdInformation   CRITICALITY reject  TYPE SFNSFNMeasurementThresholdInformation    PRESENCE mandatory }|
    { ID id-Load-Value  CRITICALITY reject  TYPE Load-Value     PRESENCE mandatory }|
    { ID id-Transmitted-Carrier-Power-Value     CRITICALITY reject  TYPE Transmitted-Carrier-Power-Value     PRESENCE mandatory }|
    { ID id-Received-Total-Wideband-Power-Value     CRITICALITY reject  TYPE Received-Total-Wideband-Power-Value   PRESENCE mandatory }|
    { ID id-UL-Timeslot-ISCP-Value      CRITICALITY reject  TYPE UL-Timeslot-ISCP-Value     PRESENCE mandatory }
}

MidambleConfigurationBurstType1And3 ::=     ENUMERATED {v4, v8, v16}

MidambleConfigurationBurstType2 ::=     ENUMERATED {v3, v6}

MidambleShiftAndBurstType ::=       CHOICE {
    type1                               SEQUENCE {
        midambleConfigurationBurstType1And3     MidambleConfigurationBurstType1And3,
        midambleAllocationMode              CHOICE {
            defaultMidamble                     NULL,
            commonMidamble                      NULL,
            ueSpecificMidamble                  MidambleShiftLong,
            ...
        },
        ...
    },
    type2                               SEQUENCE {
        midambleConfigurationBurstType2     MidambleConfigurationBurstType2,
        midambleAllocationMode              CHOICE {
            defaultMidamble                     NULL,
            commonMidamble                      NULL,
            ueSpecificMidamble                  MidambleShiftShort,
```

```
            ...
        },
        ...
    },
    type3                               SEQUENCE {
        midambleConfigurationBurstType1And3 MidambleConfigurationBurstType1And3,
        midambleAllocationMode          CHOICE {
            defaultMidamble                 NULL,
            ueSpecificMidamble              MidambleShiftLong,
            ...
        },
        ...
    },
    ...
}

MidambleShiftLong ::=               INTEGER (0..15)

MidambleShiftShort ::=              INTEGER (0..5)

MidambleShiftLCR ::= SEQUENCE {
    midambleAllocationMode      MidambleAllocationMode,
    midambleShift               MidambleShiftLong       OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { {MidambleShiftLCR-ExtIEs} }        OPTIONAL,
    ...
    }

MidambleAllocationMode ::= ENUMERATED {
    defaultMidamble,
    commonMidamble,
    uESpecificMidamble,
    ...
    }

MidambleShiftLCR-ExtIEs  RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

MinUL-ChannelisationCodeLength      ::= ENUMERATED {
    v4,
    v8,
    v16,
    v32,
    v64,
    v128,
    v256
}

Modulation ::= ENUMERATED {
    qPSK,
    eightPSK,
```

```
    ...
}

MultiplexingPosition ::= ENUMERATED {
    fixed,
    flexible
}

-- N

NCC ::= BIT STRING (SIZE (3))

Neighbouring-UMTS-CellInformation ::= SEQUENCE (SIZE (1..maxNrOfNeighbouringRNCs)) OF ProtocolIE-Single-Container {{ Neighbouring-UMTS-
CellInformationItemIE }}

Neighbouring-UMTS-CellInformationItemIE RNSAP-PROTOCOL-IES ::= {
    { ID id-Neighbouring-UMTS-CellInformationItem   CRITICALITY ignore  TYPE    Neighbouring-UMTS-CellInformationItem  PRESENCE mandatory }
}

Neighbouring-UMTS-CellInformationItem ::= SEQUENCE {
    rNC-ID                              RNC-ID,
    cN-PS-DomainIdentifier              CN-PS-DomainIdentifier      OPTIONAL,
    cN-CS-DomainIdentifier              CN-CS-DomainIdentifier      OPTIONAL,
    neighbouring-FDD-CellInformation    Neighbouring-FDD-CellInformation    OPTIONAL,
    neighbouring-TDD-CellInformation    Neighbouring-TDD-CellInformation    OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { {Neighbouring-UMTS-CellInformationItem-ExtIEs} } OPTIONAL,
    ...
}

Neighbouring-UMTS-CellInformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-neighbouring-LCR-TDD-CellInformation            CRITICALITY  ignore     EXTENSION   Neighbouring-LCR-TDD-CellInformation       PRESENCE
optional },
    ...
}

Neighbouring-FDD-CellInformation ::= SEQUENCE ( SIZE (1..maxNrOfFDDNeighboursPerRNC,...)) OF Neighbouring-FDD-CellInformationItem

Neighbouring-FDD-CellInformationItem ::= SEQUENCE {
    c-ID                            C-ID,
    uARFCNforNu                     UARFCN,
    uARFCNforNd                     UARFCN,
    frameOffset                     FrameOffset         OPTIONAL,
    primaryScramblingCode           PrimaryScramblingCode,
    primaryCPICH-Power              PrimaryCPICH-Power      OPTIONAL,
    cellIndividualOffset            CellIndividualOffset    OPTIONAL,
    txDiversityIndicator            TxDiversityIndicator,
    sTTD-SupportIndicator           STTD-SupportIndicator   OPTIONAL,
    closedLoopMode1-SupportIndicator    ClosedLoopMode1-SupportIndicator    OPTIONAL,
    closedLoopMode2-SupportIndicator    ClosedLoopMode2-SupportIndicator    OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { Neighbouring-FDD-CellInformationItem-ExtIEs} } OPTIONAL,
    ...
```

```
}

Neighbouring-FDD-CellInformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-RestrictionStateIndicator              CRITICALITY ignore          EXTENSION RestrictionStateIndicator   PRESENCE optional }|
    { ID id-DPC-Mode-Change-SupportIndicator    CRITICALITY ignore      EXTENSION   DPC-Mode-Change-SupportIndicator     PRESENCE optional },
    ...
}

NeighbouringFDDCellMeasurementInformation ::= SEQUENCE {
    uC-ID                               UC-ID,
    uARFCN                              UARFCN,
    primaryScramblingCode               PrimaryScramblingCode,
    iE-Extensions                       ProtocolExtensionContainer { { NeighbouringFDDCellMeasurementInformationItem-ExtIEs} } OPTIONAL,
    ...
}

NeighbouringFDDCellMeasurementInformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

Neighbouring-GSM-CellInformation ::= ProtocolIE-Single-Container {{ Neighbouring-GSM-CellInformationIE }}

Neighbouring-GSM-CellInformationIE RNSAP-PROTOCOL-IES ::= {
    { ID id-Neighbouring-GSM-CellInformation    CRITICALITY ignore  TYPE    Neighbouring-GSM-CellInformationIEs  PRESENCE mandatory }
}

Neighbouring-GSM-CellInformationIEs ::= SEQUENCE ( SIZE (1..maxNrOfGSMNeighboursPerRNC,...)) OF Neighbouring-GSM-CellInformationItem

Neighbouring-GSM-CellInformationItem ::= SEQUENCE {
    cGI                                 CGI,
    cellIndividualOffset                CellIndividualOffset    OPTIONAL,
    bSIC                                BSIC,
    band-Indicator                      Band-Indicator,
    bCCH-ARFCN                          BCCH-ARFCN,
    iE-Extensions                       ProtocolExtensionContainer { { Neighbouring-GSM-CellInformationItem-ExtIEs} } OPTIONAL,
    ...
}

Neighbouring-GSM-CellInformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

Neighbouring-TDD-CellInformation ::= SEQUENCE ( SIZE (1..maxNrOfTDDNeighboursPerRNC,...)) OF Neighbouring-TDD-CellInformationItem

Neighbouring-TDD-CellInformationItem ::= SEQUENCE {
    c-ID                            C-ID,
    uARFCNforNt                     UARFCN,
    frameOffset                     FrameOffset         OPTIONAL,
    cellParameterID                 CellParameterID,
    syncCase                        SyncCase,
```

```
    timeSlot                        TimeSlot            OPTIONAL
    -- This IE shall be present if Sync Case = Case1 -- ,
    sCH-TimeSlot                    SCH-TimeSlot            OPTIONAL
    -- This IE shall be present if Sync Case = Case2 -- ,
    sCTD-Indicator          SCTD-Indicator,
    cellIndividualOffset            CellIndividualOffset    OPTIONAL,
    dPCHConstantValue               DPCHConstantValue   OPTIONAL,
    pCCPCH-Power                    PCCPCH-Power            OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { Neighbouring-TDD-CellInformationItem-ExtIEs} } OPTIONAL,
    ...
}

Neighbouring-TDD-CellInformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    { ID id-RestrictionStateIndicator               CRITICALITY ignore          EXTENSION RestrictionStateIndicator   PRESENCE optional },
    ...
}

NeighbouringTDDCellMeasurementInformation ::= SEQUENCE {
    uC-ID                               UC-ID,
    uARFCN                              UARFCN,
    cellParameterID                     CellParameterID,
    timeSlot                            TimeSlot                    OPTIONAL,
    midambleShiftAndBurstType           MidambleShiftAndBurstType   OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { NeighbouringTDDCellMeasurementInformationItem-ExtIEs} } OPTIONAL,
    ...
}

NeighbouringTDDCellMeasurementInformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

Neighbouring-LCR-TDD-CellInformation ::= SEQUENCE (SIZE (1.. maxNrOfLCRTDDNeighboursPerRNC,...)) OF Neighbouring-LCR-TDD-CellInformationItem

Neighbouring-LCR-TDD-CellInformationItem ::= SEQUENCE {
    c-ID                            C-ID,
    uARFCNforNt                     UARFCN,
    frameOffset                     FrameOffset         OPTIONAL,
    cellParameterID                 CellParameterID,
    sCTD-Indicator          SCTD-Indicator,
    cellIndividualOffset            CellIndividualOffset    OPTIONAL,
    dPCHConstantValue               DPCHConstantValue   OPTIONAL,
    pCCPCH-Power                    PCCPCH-Power            OPTIONAL,
    restrictionStateIndicator       RestrictionStateIndicator       OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { Neighbouring-LCR-TDD-CellInformationItem-ExtIEs} } OPTIONAL,
    ...
}

Neighbouring-LCR-TDD-CellInformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
NrOfDLchannelisationcodes   ::= INTEGER (1..8)

NrOfTransportBlocks         ::= INTEGER (0..512)

-- O

OnModification ::= SEQUENCE {
    measurementThreshold    MeasurementThreshold,
    iE-Extensions           ProtocolExtensionContainer { {OnModification-ExtIEs} } OPTIONAL,
    ...
}

OnModification-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

OnModificationInformation ::= SEQUENCE {
    informationThreshold    InformationThreshold,
    iE-Extensions           ProtocolExtensionContainer { {OnModificationInformation-ExtIEs} } OPTIONAL,
    ...
}

OnModificationInformation-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- P

PagingCause ::= ENUMERATED {
    terminating-conversational-call,
    terminating-streaming-call,
    terminating-interactive-call,
    terminating-background-call,
    terminating-low-priority-signalling,
    ...,
    terminating-high-priority-signalling,
    terminating–cause-unknown
}
-- See in [16]

PagingRecordType ::= ENUMERATED {
    imsi-gsm-map,
    tmsi-gsm-map,
    p-tmsi-gsm-map,
    imsi-ds-41,
    tmsi-ds-41,
    ...
}
-- See in [16]
```

```
PayloadCRC-PresenceIndicator ::= ENUMERATED {
    crc-included,
    crc-not-included
}

PCCPCH-Power ::= INTEGER (-150..400,...)
-- PCCPCH-power = power * 10
-- If power <= -15 PCCPCH shall be set to -150
-- If power >= 40 PCCPCH shall be set to 400
-- Unit dBm, Range -15dBm .. +40 dBm, Step 0.1dBm

PCH-InformationList ::= SEQUENCE (SIZE(0..1)) OF PCH-InformationItem

PCH-InformationItem ::= SEQUENCE {
    transportFormatSet              TransportFormatSet,
    iE-Extensions                   ProtocolExtensionContainer { { PCH-InformationItem-ExtIEs} } OPTIONAL,
    ...
}

PCH-InformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

PC-Preamble ::= INTEGER(0..7,...)

PDSCHCodeMapping ::= SEQUENCE {
    dL-ScramblingCode       DL-ScramblingCode,
    signallingMethod        PDSCHCodeMapping-SignallingMethod,
    iE-Extensions           ProtocolExtensionContainer { { PDSCHCodeMapping-ExtIEs} } OPTIONAL,
    ...
}

PDSCHCodeMapping-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDSCHCodeMapping-SignallingMethod ::= CHOICE {
    pDSCHCodeMapping-SignallingMethod-CodeRange     PDSCHCodeMapping-SignallingMethod-CodeRange,
    pDSCHCodeMapping-SignallingMethod-TFCIRange     PDSCHCodeMapping-SignallingMethod-TFCIRange,
    pDSCHCodeMapping-SignallingMethod-Explicit      PDSCHCodeMapping-SignallingMethod-Explicit,
    ...,
    pDSCHCodeMapping-SignallingMethod-Replace       PDSCHCodeMapping-SignallingMethod-Replace
 }

PDSCHCodeMapping-SignallingMethod-CodeRange ::= SEQUENCE (SIZE (1..maxNoCodeGroups)) OF
    SEQUENCE {
        spreadingFactor         SpreadingFactor,
        multi-code-info         Multi-code-info,
        start-CodeNumber        CodeNumber,
        stop-CodeNumber         CodeNumber,
```

```
        iE-Extensions           ProtocolExtensionContainer { { PDSCHCodeMapping-SignallingMethod-CodeRange-ExtIEs} } OPTIONAL,
        ...
    }

PDSCHCodeMapping-SignallingMethod-CodeRange-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDSCHCodeMapping-SignallingMethod-TFCIRange ::= SEQUENCE (SIZE (1..maxNoTFCIGroups)) OF
    SEQUENCE {
        maxTFCIvalue            MaxTFCIvalue,
        spreadingFactor         SpreadingFactor,
        multi-code-info         Multi-code-info,
        codeNumber              CodeNumber,
        iE-Extensions           ProtocolExtensionContainer { { PDSCHCodeMapping-SignallingMethod-TFCIRange-ExtIEs} } OPTIONAL,
        ...
    }

PDSCHCodeMapping-SignallingMethod-TFCIRange-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDSCHCodeMapping-SignallingMethod-Explicit ::= SEQUENCE (SIZE (1..maxTFCI2Combs)) OF
    SEQUENCE {
        spreadingFactor         SpreadingFactor,
        multi-code-info         Multi-code-info,
        codeNumber              CodeNumber,
        iE-Extensions           ProtocolExtensionContainer { { PDSCHCodeMapping-SignallingMethod-Explicit-ExtIEs} } OPTIONAL,
        ...
    }

PDSCHCodeMapping-SignallingMethod-Explicit-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDSCHCodeMapping-SignallingMethod-Replace ::= SEQUENCE (SIZE (1..maxTFCI2Combs)) OF
    SEQUENCE {
        tfci-Field2                 TFCS-MaxTFCI-field2-Value,
        spreadingFactor             SpreadingFactor,
        multi-CodeInfo              Multi-code-info,
        codeNumber                  CodeNumber,
        iE-Extensions               ProtocolExtensionContainer { { PDSCHCodeMapping-SignallingMethod-Replace-ExtIEs} }   OPTIONAL,
    ...
}

PDSCHCodeMapping-SignallingMethod-Replace-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

Periodic ::= SEQUENCE {
    reportPeriodicity       ReportPeriodicity,
```

```
    iE-Extensions           ProtocolExtensionContainer { {Periodic-ExtIEs} } OPTIONAL,
    ...
}

Periodic-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

PeriodicInformation ::= SEQUENCE {
    informationReportPeriodicity        InformationReportPeriodicity,
    iE-Extensions                       ProtocolExtensionContainer { {PeriodicInformation-ExtIEs} } OPTIONAL,
    ...
}

PeriodicInformation-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

Permanent-NAS-UE-Identity ::= CHOICE {
    imsi        IMSI,
    ...
}

PLMN-Identity ::= OCTET STRING (SIZE(3))

PowerAdjustmentType ::= ENUMERATED {
    none,
    common,
    individual
}

PowerOffset             ::= INTEGER (0..24)

PRC ::= INTEGER (-2047..2047)
--pseudo range correction; scaling factor 0.32 meters

PRCDeviation ::= ENUMERATED {
    prcd1,
    prcd2,
    prcd5,
    prcd10,
    ...
}

Pre-emptionCapability ::= ENUMERATED {
    shall-not-trigger-pre-emption,
    may-trigger-pre-emption
}

Pre-emptionVulnerability ::= ENUMERATED {
    not-pre-emptable,
```

```
    pre-emptable
}

PredictedSFNSFNDeviationLimit ::= INTEGER (1..16384)

PredictedTUTRANGPSDeviationLimit ::= INTEGER (1..1048576)

PrimaryCPICH-Power          ::= INTEGER (-100..500)
-- step 0.1 (Range –10.0..50.0) Unit is dBm

PrimaryCPICH-EcNo           ::= INTEGER (-30..30)

PrimaryCCPCH-RSCP           ::= INTEGER (0..91)
-- According to maping in [14]

PrimaryScramblingCode           ::= INTEGER (0..511)

PriorityLevel               ::= INTEGER (0..15)
-- 0 = spare, 1 = highest priority, ...14 = lowest priority and 15 = no priority

PropagationDelay            ::= INTEGER (0..255)

PunctureLimit               ::= INTEGER (0..15)
-- 0: 40%; 1: 44%; ... 14: 96%; 15: 100

-- Q

QE-Selector ::= ENUMERATED {
    selected,
    non-selected
}


-- R

RAC                 ::= OCTET STRING (SIZE(1))

RANAP-RelocationInformation     ::= BIT STRING

Range-Correction-Rate ::= INTEGER (-127..127)
-- scaling factor 0.032 m/s

RateMatchingAttribute           ::= INTEGER (1..maxRateMatching)

RB-Identity                     ::= INTEGER (0..31)

RB-Info ::= SEQUENCE (SIZE(1..maxNoOfRB)) OF RB-Identity

Received-Total-Wideband-Power-Value ::= Received-total-wide-band-power

Received-Total-Wideband-Power-Value-IncrDecrThres ::= INTEGER(0..620)
```

```
-- Unit dB Step 0.1dB
-- e.g. value 100 means 10dB

RefTFCNumber ::= INTEGER (0..15)

RepetitionLength            ::= INTEGER (1..63)

RepetitionPeriod ::= ENUMERATED {
    v1,
    v2,
    v4,
    v8,
    v16,
    v32,
    v64
}

RepetitionNumber0 ::= INTEGER (0..255)

RepetitionNumber1 ::= INTEGER (1..256)

ReportCharacteristics ::= CHOICE {
    onDemand            NULL,
    periodic            Periodic,
    eventA              EventA,
    eventB              EventB,
    eventC              EventC,
    eventD              EventD,
    eventE              EventE,
    eventF              EventF,
    ...,
    extension-ReportCharacteristics     Extension-ReportCharacteristics
}

Extension-ReportCharacteristics ::= ProtocolIE-Single-Container {{ Extension-ReportCharacteristicsIE }}

Extension-ReportCharacteristicsIE RNSAP-PROTOCOL-IES ::= {
    { ID id-OnModification  CRITICALITY reject  TYPE OnModification     PRESENCE mandatory }
}

ReportPeriodicity ::= CHOICE {
    ten-msec                INTEGER (1..6000,...),
-- The Report Periodicity gives the reporting periodicity in number of 10 ms periods.
-- E.g. value 6000 means 60000ms (i.e. 1min)
-- Unit ms, Step 10ms
    min             INTEGER (1..60,...),
-- Unit min, Step 1min
    ...
}

RequestedDataValue ::= SEQUENCE {
```

```
    gA-AccessPointPositionwithAltitude          GA-AccessPointPositionwithOptionalAltitude  OPTIONAL,
    iPDLParameters                              IPDLParameters                              OPTIONAL,
    dGPSCorrections                             DGPSCorrections                             OPTIONAL,
    gPS-NavigationModel-and-TimeRecovery        GPS-NavigationModel-and-TimeRecovery        OPTIONAL,
    gPS-Ionospheric-Model                       GPS-Ionospheric-Model                       OPTIONAL,
    gPS-UTC-Model                               GPS-UTC-Model                               OPTIONAL,
    gPS-Almanac                                 GPS-Almanac                                 OPTIONAL,
    gPS-RealTime-Integrity                      GPS-RealTime-Integrity                      OPTIONAL,
    gPS-RX-POS                                  GPS-RX-POS                                  OPTIONAL,
    sFNSFN-GA-AccessPointPosition               GA-AccessPointPositionwithOptionalAltitude  OPTIONAL,
    iE-Extensions                               ProtocolExtensionContainer { { RequestedDataValue-ExtIEs} }     OPTIONAL,
    ...
}

RequestedDataValue-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

RequestedDataValueInformation ::= CHOICE {
    informationAvailable        InformationAvailable,
    informationNotAvailable     InformationNotAvailable
}

RestrictionStateIndicator   ::= ENUMERATED {
    cellNotResevedForOperatorUse,
    cellResevedForOperatorUse,
    ...
}

RL-ID                   ::= INTEGER (0..31)

RL-Set-ID               ::= INTEGER (0..31)


RL-Specific-DCH-Info ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF RL-Specific-DCH-Info-Item

RL-Specific-DCH-Info-Item ::= SEQUENCE {
    dCH-id                  DCH-ID,
    bindingID               BindingID OPTIONAL,
    -- Shall be ignored if bearer establishment with ALCAP.                                                    OPTIONAL,
    transportLayerAddress   TransportLayerAddress       OPTIONAL,
    -- Shall be ignored if bearer establishment with ALCAP.
    iE-Extensions           ProtocolExtensionContainer { { RL-Specific-DCH-Info-Item-ExtIEs} }  OPTIONAL,
    ...
}

RL-Specific-DCH-Info-Item-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
RNC-ID                  ::= INTEGER (0..4095)

Round-Trip-Time-IncrDecrThres ::= INTEGER(0..32766)

Round-Trip-Time-Value ::= INTEGER(0..32767)
-- According to mapping in [23]

RSCP-Value ::= INTEGER (0..127)
-- According to mapping in [24]

RSCP-Value-IncrDecrThres ::= INTEGER (0..126)

Received-total-wide-band-power              ::= INTEGER (0..621)
-- According to mapping in [23]

RxTimingDeviationForTA             ::= INTEGER (0..127)
-- As specified in [5], ch. 6.2.7.6
-- For 1.28Mcps TDD this IE must be set to 0.

Rx-Timing-Deviation-Value ::= INTEGER (0..8191)
--According to mapping in [24][3.84Mcps TDD only]

Rx-Timing-Deviation-Value-LCR ::= INTEGER (0..255)
--According to mapping in [24][1.28Mcps TDD only]

-- S

SAC                 ::= OCTET STRING (SIZE (2))

SAI ::= SEQUENCE {
    pLMN-Identity       PLMN-Identity,
    lAC                 LAC,
    sAC                 SAC,
    iE-Extensions       ProtocolExtensionContainer { {SAI-ExtIEs} } OPTIONAL
}

SAI-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

SAT-ID ::= INTEGER (0..63)

SCH-TimeSlot               ::= INTEGER (0..6)

ScaledAdjustmentRatio           ::= INTEGER(0..100)
-- AdjustmentRatio  = ScaledAdjustmentRatio / 100

Secondary-CCPCH-Info::= SEQUENCE {
    fDD-S-CCPCH-Offset                      FDD-S-CCPCH-Offset,
    dl-ScramblingCode                       DL-ScramblingCode,
```

```
    fDD-DL-ChannelisationCodeNumber         FDD-DL-ChannelisationCodeNumber,
    dl-TFCS                                 TFCS,
    secondaryCCPCH-SlotFormat               SecondaryCCPCH-SlotFormat,
    tFCI-Presence                           TFCI-Presence   OPTIONAL,
    -- This IE shall be present only if the Secondary CCPCH Slot Format IE is equal to any of the values from 8 to 17
    multiplexingPosition                    MultiplexingPosition,
    sTTD-Indicator                          STTD-Indicator,
    fACH-PCH-InformationList                FACH-PCH-InformationList,
    iB-schedulingInformation                IB-SchedulingInformation,
    iE-Extensions                           ProtocolExtensionContainer { { Secondary-CCPCH-Info-ExtIEs} } OPTIONAL,
    ...
}

Secondary-CCPCH-Info-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

Secondary-CCPCH-Info-TDD::= SEQUENCE {
    dl-TFCS                                 TFCS,
    tFCI-Coding                             TFCI-Coding,
    secondary-CCPCH-TDD-InformationList     Secondary-CCPCH-TDD-InformationList,
    fACH-InformationList                    FACH-InformationList,
    pCH-InformationList                     PCH-InformationList,
    iE-Extensions                           ProtocolExtensionContainer { { Secondary-CCPCH-Info-TDD-ExtIEs} } OPTIONAL,
    ...
}

Secondary-CCPCH-Info-TDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

Secondary-LCR-CCPCH-Info-TDD::= SEQUENCE {
    dl-TFCS                                 TFCS,
    tFCI-Coding                             TFCI-Coding,
    secondary-LCR-CCPCH-TDD-InformationList Secondary-LCR-CCPCH-TDD-InformationList,
    fACH-InformationList                    FACH-InformationList,
    pCH-InformationList                     PCH-InformationList,
    iE-Extensions                           ProtocolExtensionContainer { { Secondary-LCR-CCPCH-Info-TDD-ExtIEs} } OPTIONAL,
    ...
}

Secondary-LCR-CCPCH-Info-TDD-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

Secondary-CCPCH-TDD-InformationList ::= SEQUENCE (SIZE(0.. maxNrOfSCCPCHs)) OF Secondary-CCPCH-TDD-InformationItem

Secondary-CCPCH-TDD-InformationItem ::= SEQUENCE {
    timeSlot                        TimeSlot,
    midambleShiftAndBurstType       MidambleShiftAndBurstType,
    tFCI-Presence                   TFCI-Presence,
```

```
    secondary-CCPCH-TDD-Code-Information               Secondary-CCPCH-TDD-Code-Information,
    tDD-PhysicalChannelOffset       TDD-PhysicalChannelOffset,
    repetitionLength                RepetitionLength,
    repetitionPeriod                RepetitionPeriod,
    iE-Extensions                   ProtocolExtensionContainer { { Secondary-CCPCH-TDD-InformationItem-ExtIEs} } OPTIONAL,
    ...
}

Secondary-CCPCH-TDD-InformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

Secondary-LCR-CCPCH-TDD-InformationList ::= SEQUENCE (SIZE(0.. maxNrOfSCCPCHs)) OF Secondary-LCR-CCPCH-TDD-InformationItem

Secondary-LCR-CCPCH-TDD-InformationItem ::= SEQUENCE {
    timeSlotLCR                             TimeSlotLCR,
    midambleShiftLCR                        MidambleShiftLCR,
    tFCI-Presence                           TFCI-Presence,
    secondary-LCR-CCPCH-TDD-Code-Information    Secondary-LCR-CCPCH-TDD-Code-Information,
    tDD-PhysicalChannelOffset               TDD-PhysicalChannelOffset,
    repetitionLength                        RepetitionLength,
    repetitionPeriod                        RepetitionPeriod,
    iE-Extensions                           ProtocolExtensionContainer { { Secondary-LCR-CCPCH-TDD-InformationItem-ExtIEs} } OPTIONAL,
    ...
}

Secondary-LCR-CCPCH-TDD-InformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

Secondary-CCPCH-TDD-Code-Information ::= SEQUENCE ( SIZE (1..maxNrOfSCCPCHs)) OF Secondary-CCPCH-TDD-Code-InformationItem

Secondary-CCPCH-TDD-Code-InformationItem ::= SEQUENCE {
    tDD-ChannelisationCode          TDD-ChannelisationCode,
    iE-Extensions                   ProtocolExtensionContainer { {Secondary-CCPCH-TDD-Code-InformationItem-ExtIEs} } OPTIONAL,
    ...
}

Secondary-CCPCH-TDD-Code-InformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

Secondary-LCR-CCPCH-TDD-Code-Information ::= SEQUENCE ( SIZE (1..maxNrOfSCCPCHs)) OF Secondary-LCR-CCPCH-TDD-Code-InformationItem

Secondary-LCR-CCPCH-TDD-Code-InformationItem ::= SEQUENCE {
    tDD-ChannelisationCodeLCR       TDD-ChannelisationCodeLCR,
    iE-Extensions                   ProtocolExtensionContainer { {Secondary-LCR-CCPCH-TDD-Code-InformationItem-ExtIEs} } OPTIONAL,
    ...
}

Secondary-LCR-CCPCH-TDD-Code-InformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
```

```
    ...
}

SecondInterleavingMode ::= ENUMERATED {
    frame-related,
    timeslot-related,
    ...
}

Seed ::= INTEGER (0..63)

SFN ::= INTEGER (0..4095)

SFNSFN-FDD ::= INTEGER(0..614399)

SFNSFN-TDD ::= INTEGER(0..40961)

GA-AccessPointPositionwithOptionalAltitude ::= SEQUENCE {
    geographicalCoordinate                      GeographicalCoordinate,
    altitudeAndDirection                        GA-AltitudeAndDirection  OPTIONAL,
    iE-Extensions                               ProtocolExtensionContainer { { GA-AccessPointPositionwithOptionalAltitude-ExtIEs} } OPTIONAL,
    ...
}

GA-AccessPointPositionwithOptionalAltitude-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

SFNSFNChangeLimit ::= INTEGER (1..16384)

SFNSFNDriftRate ::= INTEGER (-100..100)

SFNSFNDriftRateQuality ::= INTEGER (0..100)

SFNSFNMeasurementThresholdInformation::= SEQUENCE {
    sFNSFNChangeLimit                   SFNSFNChangeLimit                   OPTIONAL,
    predictedSFNSFNDeviationLimit       PredictedSFNSFNDeviationLimit       OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { SFNSFNMeasurementThresholdInformation-ExtIEs} }    OPTIONAL,
    ...
}

SFNSFNMeasurementThresholdInformation-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

SFNSFNMeasurementValueInformation ::= SEQUENCE {
    successfullNeighbouringCellSFNSFNObservedTimeDifferenceMeasurementInformation      SEQUENCE (SIZE(1..maxNrOfMeasNCell)) OF
        SEQUENCE {
            uC-ID       UC-ID,
            sFNSFNValue                 SFNSFNValue,
```

```
            sFNSFNQuality               SFNSFNQuality       OPTIONAL,
            sFNSFNDriftRate             SFNSFNDriftRate,
            sFNSFNDriftRateQuality      SFNSFNDriftRateQuality,
            sFNSFNTimeStampInformation  SFNSFNTimeStampInformation,
            iE-Extensions               ProtocolExtensionContainer { {
SuccessfullNeighbouringCellSFNSFNObservedTimeDifferenceMeasurementInformationItem-ExtIEs} }     OPTIONAL,
            ...
        },
    unsuccessfullNeighbouringCellSFNSFNObservedTimeDifferenceMeasurementInformation     SEQUENCE (SIZE(0..maxNrOfMeasNCell-1)) OF
        SEQUENCE {
            uC-ID       UC-ID,
            iE-Extensions       ProtocolExtensionContainer { { UnsuccessfullNeighbouringCellSFNSFNObservedTimeDifferenceMeasurementInformationItem-
ExtIEs} }       OPTIONAL,
            ...
        },
    iE-Extensions       ProtocolExtensionContainer { { SFNSFNMeasurementValueInformationItem-ExtIEs} }     OPTIONAL,
    ...
}

SFNSFNMeasurementValueInformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

SuccessfullNeighbouringCellSFNSFNObservedTimeDifferenceMeasurementInformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

UnsuccessfullNeighbouringCellSFNSFNObservedTimeDifferenceMeasurementInformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

SFNSFNQuality ::= INTEGER (0..16383)


SFNSFNTimeStampInformation ::= CHOICE {
    sFNSFNTimeStamp-FDD     SFN,
    sFNSFNTimeStamp-TDD     SFNSFNTimeStamp-TDD,
    ...
}

SFNSFNTimeStamp-TDD::= SEQUENCE {
    sFN                 SFN,
    timeSlot            TimeSlot,
    iE-Extensions                   ProtocolExtensionContainer { { SFNSFNTimeStamp-ExtIEs}} OPTIONAL,
    ...
}
```

```
SFNSFNTimeStamp-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

SFNSFNValue ::= CHOICE {
    sFNSFN-FDD      SFNSFN-FDD,
    sFNSFN-TDD      SFNSFN-TDD,
    ...
}

SIR-Error-Value         ::= INTEGER (0..125)

SIR-Error-Value-IncrDecrThres           ::= INTEGER (0..124)

SIR-Value               ::= INTEGER (0..63)
-- According to mapping in 25.215/25.225

SIR-Value-IncrDecrThres ::= INTEGER (0..62)

SecondaryCCPCH-SlotFormat       ::= INTEGER (0..17,...)
-- refer to 25.211

S-FieldLength               ::= ENUMERATED {
    v1,
    v2,
    ...
}

SpecialBurstScheduling ::= INTEGER (1..256)

SpreadingFactor         ::= INTEGER (4| 8| 16| 32| 64| 128| 256)

S-RNTI                  ::= INTEGER (0..1048575)
-- From 0 to 2^20-1

SRB-Delay ::= INTEGER(0..7,...)

SSDT-CellID ::= ENUMERATED {
    a,
    b,
    c,
    d,
    e,
    f,
    g,
    h
}

SSDT-CellID-Length ::= ENUMERATED {
```

```
    short,
    medium,
    long
}

SSDT-Indication ::= ENUMERATED {
    sSDT-active-in-the-UE,
    sSDT-not-active-in-the-UE
}

SSDT-SupportIndicator ::= ENUMERATED {
    sSDT-supported,
    sSDT-not-supported
}

STTD-Indicator  ::= ENUMERATED {
    active,
    inactive
}

STTD-SupportIndicator   ::= ENUMERATED {
    sTTD-Supported,
    sTTD-not-Supported
}

SyncCase ::= INTEGER (1..2,...)

SynchronisationConfiguration ::= SEQUENCE {
    n-INSYNC-IND            INTEGER (1..256),
    n-OUTSYNC-IND           INTEGER (1..256),
    t-RLFAILURE             INTEGER (0..255),
-- Unit seconds, Range 0s .. 25.5s, Step 0.1s
    iE-Extensions           ProtocolExtensionContainer { { SynchronisationConfiguration-ExtIEs} }    OPTIONAL,
    ...
}

SynchronisationConfiguration-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- T

TDD-ChannelisationCode          ::= ENUMERATED {
    chCode1div1,
    chCode2div1,
    chCode2div2,
    chCode4div1,
    chCode4div2,
    chCode4div3,
    chCode4div4,
    chCode8div1,
```

```
    chCode8div2,
    chCode8div3,
    chCode8div4,
    chCode8div5,
    chCode8div6,
    chCode8div7,
    chCode8div8,
    chCode16div1,
    chCode16div2,
    chCode16div3,
    chCode16div4,
    chCode16div5,
    chCode16div6,
    chCode16div7,
    chCode16div8,
    chCode16div9,
    chCode16div10,
    chCode16div11,
    chCode16div12,
    chCode16div13,
    chCode16div14,
    chCode16div15,
    chCode16div16,
    ...
}

TDD-ChannelisationCodeLCR ::= SEQUENCE {
    tDD-ChannelisationCode          TDD-ChannelisationCode,
    modulation                      Modulation, -- Modulation options for 1.28Mcps TDD in contrast to 3.84Mcps TDD
    ...
}

TDD-DCHs-to-Modify ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF TDD-DCHs-to-ModifyItem

TDD-DCHs-to-ModifyItem ::= SEQUENCE {
    ul-FP-Mode                          UL-FP-Mode  OPTIONAL,
    toAWS                               ToAWS       OPTIONAL,
    toAWE                               ToAWE       OPTIONAL,
    transportBearerRequestIndicator     TransportBearerRequestIndicator,
    dCH-SpecificInformationList         TDD-DCHs-to-ModifySpecificInformationList,
    iE-Extensions                       ProtocolExtensionContainer { {TDD-DCHs-to-ModifyItem-ExtIEs} } OPTIONAL,
    ...
}

TDD-DCHs-to-ModifyItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

TDD-DCHs-to-ModifySpecificInformationList ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF TDD-DCHs-to-ModifySpecificItem

TDD-DCHs-to-ModifySpecificItem ::=  SEQUENCE {
```

```
    dCH-ID                          DCH-ID,
    ul-CCTrCH-ID                    CCTrCH-ID       OPTIONAL,
    dl-CCTrCH-ID                    CCTrCH-ID       OPTIONAL,
    ul-TransportformatSet           TransportFormatSet  OPTIONAL,
    dl-TransportformatSet           TransportFormatSet  OPTIONAL,
    allocationRetentionPriority     AllocationRetentionPriority OPTIONAL,
    frameHandlingPriority           FrameHandlingPriority   OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { {TDD-DCHs-to-ModifySpecificItem-ExtIEs} } OPTIONAL,
    ...
}

TDD-DCHs-to-ModifySpecificItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...,
    { ID id-Guaranteed-Rate-Information     CRITICALITY ignore  EXTENSION Guaranteed-Rate-Information     PRESENCE optional }
}

TDD-DL-Code-Information ::= SEQUENCE ( SIZE (1..maxNrOfDPCHs)) OF TDD-DL-Code-InformationItem

TDD-DL-Code-InformationItem ::= SEQUENCE {
    dPCH-ID                         DPCH-ID,
    tDD-ChannelisationCode          TDD-ChannelisationCode,
    iE-Extensions                   ProtocolExtensionContainer { {TDD-DL-Code-InformationItem-ExtIEs} } OPTIONAL,
    ...
}

TDD-DL-Code-InformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

TDD-DL-Code-LCR-Information ::= SEQUENCE (SIZE (1..maxNrOfDPCHsLCR)) OF TDD-DL-Code-LCR-InformationItem

TDD-DL-Code-LCR-InformationItem ::= SEQUENCE {
    dPCH-ID                             DPCH-ID,
    tdd-ChannelisationCodeLCR           TDD-ChannelisationCodeLCR,
    iE-Extensions                       ProtocolExtensionContainer { { TDD-DL-Code-LCR-InformationItem-ExtIEs} }     OPTIONAL,
    ...
}

TDD-DL-Code-LCR-InformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

TDD-DPCHOffset ::= CHOICE {
    initialOffset       INTEGER (0..255),
    noinitialOffset     INTEGER (0..63)
}

TDD-PhysicalChannelOffset       ::= INTEGER (0..63)

TDD-TPC-DownlinkStepSize ::= ENUMERATED {
    step-size1,
```

```
    step-size2,
    step-size3,
    ...
}

TDD-UL-Code-Information ::= SEQUENCE ( SIZE (1..maxNrOfDPCHs)) OF TDD-UL-Code-InformationItem

TDD-UL-Code-InformationItem ::= SEQUENCE {
    dPCH-ID                         DPCH-ID,
    tDD-ChannelisationCode          TDD-ChannelisationCode,
    iE-Extensions                   ProtocolExtensionContainer { {TDD-UL-Code-InformationItem-ExtIEs} } OPTIONAL,
    ...
}

TDD-UL-Code-InformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

TDD-UL-Code-LCR-Information ::= SEQUENCE (SIZE (1..maxNrOfDPCHsLCR)) OF TDD-UL-Code-LCR-InformationItem

TDD-UL-Code-LCR-InformationItem ::= SEQUENCE {
    dPCH-ID                             DPCH-ID,
    tdd-ChannelisationCodeLCR           TDD-ChannelisationCodeLCR,
    iE-Extensions                       ProtocolExtensionContainer { { TDD-UL-Code-LCR-InformationItem-ExtIEs} }     OPTIONAL,
    ...
}

TDD-UL-Code-LCR-InformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

TFCI-Coding ::= ENUMERATED {
    v4,
    v8,
    v16,
    v32,
    ...
}

TFCI-Presence ::= ENUMERATED {
    present,
    not-present
}

TFCI-SignallingMode ::= ENUMERATED {
    normal,
    split
}

TGD                 ::= INTEGER (0|15..269)
-- 0 = Undefined, only one transmission gap in the transmission gap pattern sequence
```

```
TGPRC               ::= INTEGER (0..511)
-- 0 = infinity

TGPSID              ::= INTEGER (1.. maxTGPS)

TGSN                ::= INTEGER (0..14)

TimeSlot                ::= INTEGER (0..14)

TimeSlotLCR ::= INTEGER (0..6)

TimingAdvanceApplied ::= ENUMERATED {
    yes,
    no
}

ToAWE                   ::= INTEGER (0..2559)

ToAWS                   ::= INTEGER (0..1279)

Transmission-Gap-Pattern-Sequence-Information ::= SEQUENCE (SIZE (1..maxTGPS)) OF
    SEQUENCE {
        tGPSID          TGPSID,
        tGSN            TGSN,
        tGL1            GapLength,
        tGL2            GapLength   OPTIONAL,
        tGD             TGD,
        tGPL1           GapDuration,
        tGPL2           GapDuration OPTIONAL,
        uL-DL-mode      UL-DL-mode,
        downlink-Compressed-Mode-Method     Downlink-Compressed-Mode-Method     OPTIONAL,
            -- This IE shall be present if the value of the UL/DL mode IE is "DL only" or "UL/DL"
        uplink-Compressed-Mode-Method       Uplink-Compressed-Mode-Method       OPTIONAL,
            -- This IE shall be present if the value of the UL/DL mode IE is "UL only" or "UL/DL"
        dL-FrameType        DL-FrameType,
        delta-SIR1      DeltaSIR,
        delta-SIR-after1    DeltaSIR,
        delta-SIR2      DeltaSIR    OPTIONAL,
        delta-SIR-after2    DeltaSIR    OPTIONAL,
        iE-Extensions           ProtocolExtensionContainer { {Transmission-Gap-Pattern-Sequence-Information-ExtIEs} } OPTIONAL,
        ...
    }

Transmission-Gap-Pattern-Sequence-Information-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

Transmission-Gap-Pattern-Sequence-ScramblingCode-Information    ::= ENUMERATED{
   code-change,
   nocode-change
```

```
}

Transmission-Gap-Pattern-Sequence-Status-List ::= SEQUENCE (SIZE (0..maxTGPS)) OF
    SEQUENCE {
        tGPSID          TGPSID,
        tGPRC           TGPRC,
        tGCFN           CFN,
        iE-Extensions       ProtocolExtensionContainer { { Transmission-Gap-Pattern-Sequence-Status-List-ExtIEs } } OPTIONAL,
        ...
}

Transmission-Gap-Pattern-Sequence-Status-List-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

TransmissionTimeIntervalDynamic ::= ENUMERATED {
    msec-10,
    msec-20,
    msec-40,
    msec-80,
    ...
}

TransmissionTimeIntervalSemiStatic ::= ENUMERATED {
    msec-10,
    msec-20,
    msec-40,
    msec-80,
    dynamic,
    ...
}

TransmitDiversityIndicator ::= ENUMERATED {
    active,
    inactive
}

Transmitted-Carrier-Power-Value ::= INTEGER(0..100)
-- according to mapping in [23] and [24]

Transmitted-Carrier-Power-Value-IncrDecrThres ::= INTEGER(0..100)
-- according to mapping in [23] and [24]

TUTRANGPS ::= INTEGER (0..37158911999999)

TUTRANGPSChangeLimit ::= INTEGER (1..1048576)

TUTRANGPSDriftRate ::= INTEGER (-50..50)

TUTRANGPSDriftRateQuality ::= INTEGER (0..50)
```

```
TUTRANGPSAccuracyClass ::= ENUMERATED {
    accuracy-class-A,
    accuracy-class-B,
    accuracy-class-C,
    ...
}

TUTRANGPSMeasurementThresholdInformation ::= SEQUENCE {
    tUTRANGPSChangeLimit                    TUTRANGPSChangeLimit                    OPTIONAL,
    predictedTUTRANGPSDeviationLimit        PredictedTUTRANGPSDeviationLimit        OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { TUTRANGPSMeasurementThresholdInformation-ExtIEs} }    OPTIONAL,
    ...
}

TUTRANGPSMeasurementThresholdInformation-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

TUTRANGPSMeasurementValueInformation ::= SEQUENCE {
        tUTRANGPS                       TUTRANGPS,
        tUTRANGPSQuality                TUTRANGPSQuality,
        tUTRANGPSDriftRate              TUTRANGPSDriftRate,
        tUTRANGPSDriftRateQuality       TUTRANGPSDriftRateQuality,
        iEe-Extensions                  ProtocolExtensionContainer { { TUTRANGPSMeasurementValueInformationItem-ExtIEs} }   OPTIONAL,
        ...
}

TUTRANGPSMeasurementValueInformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

TUTRANGPSQuality ::= INTEGER (0..1048575)

TransportBearerID       ::= INTEGER (0..4095)

TransportBearerRequestIndicator     ::= ENUMERATED {
    bearer-requested,
    bearer-not-requested,
    ...
}

TransportBlockSize          ::= INTEGER (0..5000)
-- Unit is bits

TransportFormatCombination-Beta ::= CHOICE {
    signalledGainFactors    SEQUENCE {
        betaC                   BetaCD,
        betaD                   BetaCD,
        refTFCNumber            RefTFCNumber    OPTIONAL,
```

```
        iE-Extensions           ProtocolExtensionContainer { { SignalledGainFactors-ExtIEs} } OPTIONAL,
        ...
    },
    refTFCNumber            RefTFCNumber,
    ...
}

SignalledGainFactors-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

TFCS ::= SEQUENCE {
    tFCSvalues          CHOICE {
        no-Split-in-TFCI            TFCS-TFCSList,
        split-in-TFCI               SEQUENCE {
            transportFormatCombination-DCH      TFCS-DCHList,
            signallingMethod                    CHOICE {
                tFCI-Range                      TFCS-MapingOnDSCHList,
                explicit                            TFCS-DSCHList,
                ...
            },
            iE-Extensions                       ProtocolExtensionContainer { { Split-in-TFCI-ExtIEs} } OPTIONAL,
        ...
        },
    ...
    },
    iE-Extensions       ProtocolExtensionContainer  { { TFCS-ExtIEs} }      OPTIONAL,
    ...
}

Split-in-TFCI-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

TFCS-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

TFCS-TFCSList ::= SEQUENCE (SIZE (1..maxNrOfTFCs)) OF
    SEQUENCE {
        cTFC                TFCS-CTFC,
        tFC-Beta        TransportFormatCombination-Beta     OPTIONAL,
        -- The IE shall be present if the TFCS concerns a UL DPCH [FDD – or PRACH channel in FDD]
        iE-Extensions       ProtocolExtensionContainer  { { TFCS-TFCSList-ExtIEs} }     OPTIONAL,
    ...
}

TFCS-TFCSList-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
TFCS-CTFC ::= CHOICE {
    ctfc2bit                        INTEGER (0..3),
    ctfc4bit                        INTEGER (0..15),
    ctfc6bit                        INTEGER (0..63),
    ctfc8bit                        INTEGER (0..255),
    ctfc12bit                       INTEGER (0..4095),
    ctfc16bit                       INTEGER (0..65535),
    ctfcmaxbit                      INTEGER (0..maxCTFC)
}

TFCS-DCHList ::= SEQUENCE (SIZE (1..maxTFCI1Combs)) OF
    SEQUENCE {
        cTFC                TFCS-CTFC,
        iE-Extensions       ProtocolExtensionContainer  { { TFCS-DCHList-ExtIEs} }      OPTIONAL,
    ...
}

TFCS-DCHList-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

TFCS-MapingOnDSCHList ::= SEQUENCE (SIZE (1..maxNoTFCIGroups)) OF
    SEQUENCE {
        maxTFCI-field2-Value        TFCS-MaxTFCI-field2-Value,
        cTFC-DSCH               TFCS-CTFC,
        iE-Extensions               ProtocolExtensionContainer  { { TFCS-MapingOnDSCHList-ExtIEs} }     OPTIONAL,
    ...
}

TFCS-MapingOnDSCHList-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

TFCS-MaxTFCI-field2-Value ::= INTEGER (1..maxTFCI2Combs-1)

TFCS-DSCHList ::= SEQUENCE (SIZE (1..maxTFCI2Combs)) OF
    SEQUENCE {
        cTFC-DSCH               TFCS-CTFC,
        iE-Extensions               ProtocolExtensionContainer  { { TFCS-DSCHList-ExtIEs} }     OPTIONAL,
    ...
}

TFCS-DSCHList-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

TransportFormatSet ::= SEQUENCE {
    dynamicParts            TransportFormatSet-DynamicPartList,
    semi-staticPart         TransportFormatSet-Semi-staticPart,
    iE-Extensions           ProtocolExtensionContainer { {TransportFormatSet-ExtIEs} } OPTIONAL,
    ...
```

```
}

TransportFormatSet-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

TransportFormatSet-DynamicPartList ::= SEQUENCE (SIZE (1..maxNrOfTFs)) OF
    SEQUENCE {
        nrOfTransportBlocks     NrOfTransportBlocks,
        transportBlockSize      TransportBlockSize      OPTIONAL
        -- This IE shall be present if nrOfTransportBlocks is greater than 0 --,
        mode                TransportFormatSet-ModeDP,
        iE-Extensions           ProtocolExtensionContainer { {TransportFormatSet-DynamicPartList-ExtIEs} } OPTIONAL,
        ...
    }

TransportFormatSet-DynamicPartList-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

TransportFormatSet-ModeDP ::= CHOICE {
    tdd                 TDD-TransportFormatSet-ModeDP,
    notApplicable       NULL,
    ...
}

TDD-TransportFormatSet-ModeDP ::= SEQUENCE {
    transmissionTimeIntervalInformation     TransmissionTimeIntervalInformation     OPTIONAL,
    -- This IE shall be present if the “Transmission Time Interval” of the “Semi-static Transport Format Information” is “dynamic”. Otherwise it is
absent.
    iE-Extensions                           ProtocolExtensionContainer { {TDD-TransportFormatSet-ModeDP-ExtIEs} } OPTIONAL,
        ...
    }

TDD-TransportFormatSet-ModeDP-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

TransmissionTimeIntervalInformation ::= SEQUENCE (SIZE (1..maxTTI-Count)) OF
    SEQUENCE {
        transmissionTimeInterval    TransmissionTimeIntervalDynamic,
        iE-Extensions           ProtocolExtensionContainer { {TransmissionTimeIntervalInformation-ExtIEs} } OPTIONAL,
        ...
    }

TransmissionTimeIntervalInformation-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

Transmitted-Code-Power-Value ::= INTEGER (0..127)
-- According to mapping in 25.215/25.225
```

```
Transmitted-Code-Power-Value-IncrDecrThres ::= INTEGER (0..112,...)

TransportFormatManagement ::= ENUMERATED {
    cell-based,
    ue-based,
    ...
}

TransportFormatSet-Semi-staticPart ::= SEQUENCE {
    transmissionTime        TransmissionTimeIntervalSemiStatic,
    channelCoding           ChannelCodingType,
    codingRate          CodingRate              OPTIONAL
    -- This IE shall be present if channelCoding is 'convolutional' or 'turbo' --,
    rateMatcingAttribute        RateMatchingAttribute,
    cRC-Size            CRC-Size,
    mode                TransportFormatSet-ModeSSP,
    iE-Extensions           ProtocolExtensionContainer { {TransportFormatSet-Semi-staticPart-ExtIEs} } OPTIONAL,
    ...
}

TransportFormatSet-Semi-staticPart-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

TransportFormatSet-ModeSSP ::= CHOICE {
    tdd             SecondInterleavingMode,
    notApplicable           NULL,
    ...
}

TransportLayerAddress           ::= BIT STRING (SIZE(1..160, ...))

TrCH-SrcStatisticsDescr     ::= ENUMERATED {
    speech,
    rRC,
    unknown,
    ...
}

TSTD-Indicator ::= ENUMERATED {
    active,
    inactive
}

TSTD-Support-Indicator ::= ENUMERATED {
    tSTD-supported,
    tSTD-not-supported
}

TxDiversityIndicator    ::= ENUMERATED {
```

```
    true,
    false
}

TypeOfError ::= ENUMERATED {
    not-understood,
    missing,
    ...
}

-- U

UARFCN                  ::= INTEGER (0..16383,...)
-- Corresponds to: 0.0Hz..3276.6Mhz. See 25.101, 25.105

UDRE ::= ENUMERATED {
    lessThan1,
    between1-and-4,
    between4-and-8,
    over8,
    ...
}

UL-DL-mode ::= ENUMERATED {
    ul-only,
    dl-only,
    both-ul-and-dl
}

UL-Timeslot-Information::= SEQUENCE ( SIZE (1..maxNrOfTS)) OF UL-Timeslot-InformationItem

UL-Timeslot-InformationItem ::= SEQUENCE {
    timeSlot                        TimeSlot,
    midambleShiftAndBurstType       MidambleShiftAndBurstType,
    tFCI-Presence                   TFCI-Presence,
    uL-Code-Information             TDD-UL-Code-Information,
    iE-Extensions                   ProtocolExtensionContainer { {UL-Timeslot-InformationItem-ExtIEs} } OPTIONAL,
    ...
}

UL-Timeslot-InformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-TimeslotLCR-Information ::= SEQUENCE (SIZE (1..maxNrOfULTsLCR)) OF UL-TimeslotLCR-InformationItem

UL-TimeslotLCR-InformationItem ::= SEQUENCE {
    timeSlotLCR                         TimeSlotLCR,
    midambleShiftLCR                    MidambleShiftLCR,
    tFCI-Presence                       TFCI-Presence,
    uL-Code-LCR-InformationList        TDD-UL-Code-LCR-Information,
```

```
    iE-Extensions                       ProtocolExtensionContainer { { UL-TimeslotLCR-InformationItem-ExtIEs} }   OPTIONAL,
    ...
}

UL-TimeslotLCR-InformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-TimeSlot-ISCP-Info ::= SEQUENCE (SIZE (1..maxNrOfULTs)) OF UL-TimeSlot-ISCP-InfoItem

UL-TimeSlot-ISCP-InfoItem ::= SEQUENCE {
    timeSlot                    TimeSlot,
    uL-TimeslotISCP             UL-TimeslotISCP,
    iE-Extensions               ProtocolExtensionContainer { { UL-TimeSlot-ISCP-InfoItem-ExtIEs} } OPTIONAL,
    ...
}

UL-TimeSlot-ISCP-InfoItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-TimeSlot-ISCP-LCR-Info ::= SEQUENCE (SIZE (1..maxNrOfULTsLCR)) OF    UL-TimeSlot-ISCP-LCR-InfoItem

UL-TimeSlot-ISCP-LCR-InfoItem ::= SEQUENCE {
    timeSlotLCR                     TimeSlotLCR,
    iSCP                            UL-Timeslot-ISCP-Value,
    iE-Extensions                   ProtocolExtensionContainer { { UL-TimeSlot-ISCP-LCR-InfoItem-ExtIEs} }   OPTIONAL,
    ...
 }

UL-TimeSlot-ISCP-LCR-InfoItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-Timeslot-ISCP-Value ::= UL-TimeslotISCP

UL-Timeslot-ISCP-Value-IncrDecrThres ::= INTEGER(0..126)
-- Unit dB. Step 0.5dB
-- e.g. Value 100 means 50dB

Uplink-Compressed-Mode-Method   ::= ENUMERATED {
    sFdiv2,
    higher-layer-scheduling,
    ...
}

UL-SIR                  ::= INTEGER (-82..173)
-- The UL-SIR gives the UL-SIR in number of 0.1 dB steps.
-- E.g. Value 173 means 17.3 dB
-- Unit dB. Step 0.1 dB.
```

```
UC-ID ::= SEQUENCE {
    rNC-ID              RNC-ID,
    c-ID                C-ID,
    iE-Extensions           ProtocolExtensionContainer { {UC-ID-ExtIEs} } OPTIONAL,
    ...
}

UC-ID-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-DPCCH-SlotFormat         ::= INTEGER (0..5,...)

UL-FP-Mode ::= ENUMERATED {
    normal,
    silent,
    ...
}

UL-PhysCH-SF-Variation ::= ENUMERATED {
    sf-variation-supported,
    sf-variation-not-supported
}

UL-ScramblingCode ::= SEQUENCE {
    ul-ScramblingCodeNumber     UL-ScramblingCodeNumber,
    ul-ScramblingCodeLength     UL-ScramblingCodeLength,
    iE-Extensions           ProtocolExtensionContainer { {UL-ScramblingCode-ExtIEs} } OPTIONAL
}

UL-ScramblingCode-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-ScramblingCodeLength ::= ENUMERATED {
    short,
    long
}

UL-ScramblingCodeNumber         ::= INTEGER (0..16777215)

UL-TimeslotISCP         ::= INTEGER (0..127)
-- According to mapping in [14]

URA-ID                  ::= INTEGER (0..65535)

URA-Information ::= SEQUENCE {
    uRA-ID                              URA-ID,
    multipleURAsIndicator               MultipleURAsIndicator,
    rNCsWithCellsInTheAccessedURA-List  RNCsWithCellsInTheAccessedURA-List  OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { {URA-Information-ExtIEs} } OPTIONAL,
```

```
    ...
}

URA-Information-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

RNCsWithCellsInTheAccessedURA-List ::= SEQUENCE (SIZE (1..maxRNCinURA-1)) OF RNCsWithCellsInTheAccessedURA-Item

RNCsWithCellsInTheAccessedURA-Item ::= SEQUENCE {
    rNC-ID                          RNC-ID,
    iE-Extensions                   ProtocolExtensionContainer { {RNCsWithCellsInTheAccessedURA-Item-ExtIEs} } OPTIONAL,
    ...
}

RNCsWithCellsInTheAccessedURA-Item-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
    ...
}

USCH-ID                ::= INTEGER (0..255)

USCH-Information ::=  SEQUENCE (SIZE (1..maxNoOfUSCHs)) OF USCH-InformationItem

USCH-InformationItem ::= SEQUENCE {
    uSCH-ID                             USCH-ID,
    ul-CCTrCH-ID                        CCTrCH-ID,
    trChSourceStatisticsDescriptor      TrCH-SrcStatisticsDescr,
    transportFormatSet                  TransportFormatSet,
    allocationRetentionPriority         AllocationRetentionPriority,
    schedulingPriorityIndicator         SchedulingPriorityIndicator,
    rb-Info                             RB-Info,
    iE-Extensions                       ProtocolExtensionContainer { {USCH-InformationItem-ExtIEs} } OPTIONAL,
    ...
}

USCH-InformationItem-ExtIEs RNSAP-PROTOCOL-EXTENSION ::= {
{ ID    id-BindingID                        CRITICALITY ignore      EXTENSION   BindingID   PRESENCE                optional }|
-- Shall be ignored if bearer establishment with ALCAP.
{ ID    id-TransportLayerAddress            CRITICALITY ignore      EXTENSION   TransportLayerAddress     PRESENCE    optional },
-- Shall be ignored if bearer establishment with ALCAP.
...
}

-- V
-- W
-- X
-- Y
-- Z

END
```

9.3.5 Common Definitions

```
-- **************************************************************
--
-- Common definitions
--
-- **************************************************************

RNSAP-CommonDataTypes {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) rnsap (1) version1 (1) rnsap-CommonDataTypes (3)  }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

-- **************************************************************
--
-- Extension constants
--
-- **************************************************************

maxPrivateIEs                                   INTEGER ::= 65535
maxProtocolExtensions                           INTEGER ::= 65535
maxProtocolIEs                                  INTEGER ::= 65535

-- **************************************************************
--
-- Common Data Types
--
-- **************************************************************

Criticality     ::= ENUMERATED { reject, ignore, notify }

Presence        ::= ENUMERATED { optional, conditional, mandatory }

PrivateIE-ID    ::= CHOICE {
    local               INTEGER (0.. maxPrivateIEs),
    global              OBJECT IDENTIFIER
}

ProcedureCode       ::= INTEGER (0..255)

ProcedureID ::= SEQUENCE {
    procedureCode           ProcedureCode,
    ddMode              ENUMERATED { tdd, fdd, common, ... }
}

ProtocolIE-ID       ::= INTEGER (0..maxProtocolIEs)
```

```
TransactionID       ::= CHOICE {
    shortTransActionId  INTEGER (0..127),
    longTransActionId   INTEGER (0..32767)
}

TriggeringMessage   ::= ENUMERATED { initiating-message, successful-outcome, unsuccessful-outcome, outcome }

END
```

9.3.6 Constant Definitions

```
-- **************************************************************
--
-- Constant definitions
--
-- **************************************************************

RNSAP-Constants {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) rnsap (1) version1 (1) rnsap-Constants (4) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS
    ProcedureCode,
    ProtocolIE-ID
FROM RNSAP-CommonDataTypes;

-- **************************************************************
--
-- Elementary Procedures
--
-- **************************************************************

id-commonTransportChannelResourcesInitialisation           ProcedureCode ::= 0
id-commonTransportChannelResourcesRelease                  ProcedureCode ::= 1
id-compressedModeCommand                                   ProcedureCode ::= 2
id-downlinkPowerControl                                    ProcedureCode ::= 3
id-downlinkPowerTimeslotControl                            ProcedureCode ::= 4
id-downlinkSignallingTransfer                              ProcedureCode ::= 5
id-errorIndication                                         ProcedureCode ::= 6
id-dedicatedMeasurementFailure                             ProcedureCode ::= 7
id-dedicatedMeasurementInitiation                          ProcedureCode ::= 8
id-dedicatedMeasurementReporting                           ProcedureCode ::= 9
id-dedicatedMeasurementTermination                         ProcedureCode ::= 10
id-paging                                                  ProcedureCode ::= 11
id-physicalChannelReconfiguration                          ProcedureCode ::= 12
id-privateMessage                                          ProcedureCode ::= 13
```

```
id-radioLinkAddition                                    ProcedureCode ::= 14
id-radioLinkCongestion                                  ProcedureCode ::= 34
id-radioLinkDeletion                                    ProcedureCode ::= 15
id-radioLinkFailure                                     ProcedureCode ::= 16
id-radioLinkPreemption                                  ProcedureCode ::= 17
id-radioLinkRestoration                                 ProcedureCode ::= 18
id-radioLinkSetup                                       ProcedureCode ::= 19
id-relocationCommit                                     ProcedureCode ::= 20
id-synchronisedRadioLinkReconfigurationCancellation     ProcedureCode ::= 21
id-synchronisedRadioLinkReconfigurationCommit           ProcedureCode ::= 22
id-synchronisedRadioLinkReconfigurationPreparation      ProcedureCode ::= 23
id-unSynchronisedRadioLinkReconfiguration               ProcedureCode ::= 24
id-uplinkSignallingTransfer                             ProcedureCode ::= 25
id-commonMeasurementFailure                             ProcedureCode ::= 26
id-commonMeasurementInitiation                          ProcedureCode ::= 27
id-commonMeasurementReporting                           ProcedureCode ::= 28
id-commonMeasurementTermination                         ProcedureCode ::= 29
id-informationExchangeFailure                           ProcedureCode ::= 30
id-informationExchangeInitiation                        ProcedureCode ::= 31
id-informationReporting                                 ProcedureCode ::= 32
id-informationExchangeTermination                       ProcedureCode ::= 33

-- **************************************************************
--
-- Lists
--
-- **************************************************************

maxCodeNumComp-1                        INTEGER ::= 255
maxRateMatching                         INTEGER ::= 256
maxNoCodeGroups                         INTEGER ::= 256
maxNoOfDSCHs                            INTEGER ::= 10
maxNoOfDSCHsLCR                         INTEGER ::= 10
maxNoOfRB                               INTEGER ::= 32
maxNoOfUSCHs                            INTEGER ::= 10
maxNoOfUSCHsLCR                         INTEGER ::= 10
maxNoTFCIGroups                         INTEGER ::= 256
maxNrOfTFCs                             INTEGER ::= 1024
maxNrOfTFs                              INTEGER ::= 32
maxNrOfCCTrCHs                          INTEGER ::= 16
maxNrOfCCTrCHsLCR                       INTEGER ::= 16
maxNrOfDCHs                             INTEGER ::= 128
maxNrOfDL-Codes                         INTEGER ::= 8
maxNrOfDPCHs                            INTEGER ::= 240
maxNrOfDPCHsLCR                         INTEGER ::= 240
maxNrOfErrors                           INTEGER ::= 256
maxNrOfMACcshSDU-Length                 INTEGER ::= 16
maxNrOfPoints                           INTEGER ::= 15
maxNrOfRLs                              INTEGER ::= 16
maxNrOfRLSets                           INTEGER ::= maxNrOfRLs
maxNrOfRLs-1                            INTEGER ::= 15  -- maxNrOfRLs – 1
```

```
maxNrOfRLs-2                          INTEGER ::= 14  -- maxNrOfRLs – 2
maxNrOfULTs                           INTEGER ::= 15
maxNrOfULTsLCR                        INTEGER ::= 6
maxNrOfDLTs                           INTEGER ::= 15
maxNrOfDLTsLCR                        INTEGER ::= 6
maxRNCinURA-1                         INTEGER ::= 15
maxTTI-Count                          INTEGER ::= 4
maxCTFC                               INTEGER ::= 16777215
maxNrOfNeighbouringRNCs               INTEGER ::= 10
maxNrOfFDDNeighboursPerRNC            INTEGER ::= 256
maxNrOfGSMNeighboursPerRNC            INTEGER ::= 256
maxNrOfTDDNeighboursPerRNC            INTEGER ::= 256
maxNrOfFACHs                          INTEGER ::= 8
maxNrOfLCRTDDNeighboursPerRNC         INTEGER ::= 256
maxFACHCountPlus1                     INTEGER ::= 10
maxIBSEG                              INTEGER ::= 16
maxNrOfSCCPCHs                        INTEGER ::= 8
maxTFCI1Combs                         INTEGER ::= 512
maxTFCI2Combs                         INTEGER ::= 1024
maxTFCI2Combs-1                       INTEGER ::= 1023
maxTGPS                               INTEGER ::= 6
maxNrOfTS                             INTEGER ::= 15
maxNrOfLevels                         INTEGER ::= 256
maxNrOfTsLCR                          INTEGER ::= 6
maxNoSat                              INTEGER ::= 16
maxNoGPSTypes                         INTEGER ::= 8
maxNrOfMeasNCell                      INTEGER ::= 96
maxNrOfMeasNCell-1                    INTEGER ::= 95  -- maxNrOfMeasNCell – 1

-- **************************************************************
--
-- IEs
--
-- **************************************************************

id-AllowedQueuingTime                                               ProtocolIE-ID ::= 4
id-Allowed-Rate-Information                                         ProtocolIE-ID ::= 42
id-BindingID                                                        ProtocolIE-ID ::= 5
id-C-ID                                                             ProtocolIE-ID ::= 6
id-C-RNTI                                                           ProtocolIE-ID ::= 7
id-CFN                                                              ProtocolIE-ID ::= 8
id-CN-CS-DomainIdentifier                                           ProtocolIE-ID ::= 9
id-CN-PS-DomainIdentifier                                           ProtocolIE-ID ::= 10
id-Cause                                                            ProtocolIE-ID ::= 11
id-CriticalityDiagnostics                                           ProtocolIE-ID ::= 20
id-D-RNTI                                                           ProtocolIE-ID ::= 21
id-D-RNTI-ReleaseIndication                                         ProtocolIE-ID ::= 22
id-DCHs-to-Add-FDD                                                  ProtocolIE-ID ::= 26
id-DCHs-to-Add-TDD                                                  ProtocolIE-ID ::= 27
id-DCH-DeleteList-RL-ReconfPrepFDD                                  ProtocolIE-ID ::= 30
id-DCH-DeleteList-RL-ReconfPrepTDD                                  ProtocolIE-ID ::= 31
```

```
id-DCH-DeleteList-RL-ReconfRqstFDD                          ProtocolIE-ID ::= 32
id-DCH-DeleteList-RL-ReconfRqstTDD                          ProtocolIE-ID ::= 33
id-DCH-FDD-Information                                      ProtocolIE-ID ::= 34
id-DCH-TDD-Information                                      ProtocolIE-ID ::= 35
id-FDD-DCHs-to-Modify                                       ProtocolIE-ID ::= 39
id-TDD-DCHs-to-Modify                                       ProtocolIE-ID ::= 40
id-DCH-InformationResponse                                  ProtocolIE-ID ::= 43
id-DCH-Rate-InformationItem-RL-CongestInd                   ProtocolIE-ID ::= 38
id-DL-CCTrCH-InformationAddItem-RL-ReconfPrepTDD            ProtocolIE-ID ::= 44
id-DL-CCTrCH-InformationListIE-RL-ReconfReadyTDD            ProtocolIE-ID ::= 45
id-DL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD         ProtocolIE-ID ::= 46
id-DL-CCTrCH-InformationItem-RL-SetupRqstTDD                ProtocolIE-ID ::= 47
id-DL-CCTrCH-InformationListIE-PhyChReconfRqstTDD           ProtocolIE-ID ::= 48
id-DL-CCTrCH-InformationListIE-RL-AdditionRspTDD            ProtocolIE-ID ::= 49
id-DL-CCTrCH-InformationListIE-RL-SetupRspTDD               ProtocolIE-ID ::= 50
id-DL-CCTrCH-InformationAddList-RL-ReconfPrepTDD            ProtocolIE-ID ::= 51
id-DL-CCTrCH-InformationDeleteList-RL-ReconfRqstTDD         ProtocolIE-ID ::= 52
id-DL-CCTrCH-InformationList-RL-SetupRqstTDD                ProtocolIE-ID ::= 53
id-FDD-DL-CodeInformation                                   ProtocolIE-ID ::= 54
id-DL-DPCH-Information-RL-ReconfPrepFDD                     ProtocolIE-ID ::= 59
id-DL-DPCH-Information-RL-SetupRqstFDD                      ProtocolIE-ID ::= 60
id-DL-DPCH-Information-RL-ReconfRqstFDD                     ProtocolIE-ID ::= 61
id-DL-DPCH-InformationItem-PhyChReconfRqstTDD               ProtocolIE-ID ::= 62
id-DL-DPCH-InformationItem-RL-AdditionRspTDD                ProtocolIE-ID ::= 63
id-DL-DPCH-InformationItem-RL-SetupRspTDD                   ProtocolIE-ID ::= 64
id-DLReferencePower                                         ProtocolIE-ID ::= 67
id-DLReferencePowerList-DL-PC-Rqst                          ProtocolIE-ID ::= 68
id-DL-ReferencePowerInformation-DL-PC-Rqst                  ProtocolIE-ID ::= 69
id-DPC-Mode                                                 ProtocolIE-ID ::= 12
id-DRXCycleLengthCoefficient                                ProtocolIE-ID ::= 70
id-DedicatedMeasurementObjectType-DM-Rprt                   ProtocolIE-ID ::= 71
id-DedicatedMeasurementObjectType-DM-Rqst                   ProtocolIE-ID ::= 72
id-DedicatedMeasurementObjectType-DM-Rsp                    ProtocolIE-ID ::= 73
id-DedicatedMeasurementType                                 ProtocolIE-ID ::= 74
id-FACH-InfoForUESelectedS-CCPCH-CTCH-ResourceRspFDD        ProtocolIE-ID ::= 82
id-FACH-InfoForUESelectedS-CCPCH-CTCH-ResourceRspTDD        ProtocolIE-ID ::= 83
id-Guaranteed-Rate-Information                              ProtocolIE-ID ::= 41
id-IMSI                                                     ProtocolIE-ID ::= 84
id-L3-Information                                           ProtocolIE-ID ::= 85
id-AdjustmentPeriod                                         ProtocolIE-ID ::= 90
id-MaxAdjustmentStep                                        ProtocolIE-ID ::= 91
id-MeasurementFilterCoefficient                             ProtocolIE-ID ::= 92
id-MessageStructure                                         ProtocolIE-ID ::= 57
id-MeasurementID                                            ProtocolIE-ID ::= 93
id-Neighbouring-GSM-CellInformation                         ProtocolIE-ID ::= 13
id-Neighbouring-UMTS-CellInformationItem                    ProtocolIE-ID ::= 95
id-PagingArea-PagingRqst                                    ProtocolIE-ID ::= 102
id-FACH-FlowControlInformation                              ProtocolIE-ID ::= 103
id-Permanent-NAS-UE-Identity                                ProtocolIE-ID ::= 17
id-PowerAdjustmentType                                      ProtocolIE-ID ::= 107
id-RANAP-RelocationInformation                              ProtocolIE-ID ::= 109
```

```
id-RL-Information-PhyChReconfRqstFDD                                ProtocolIE-ID ::= 110
id-RL-Information-PhyChReconfRqstTDD                                ProtocolIE-ID ::= 111
id-RL-Information-RL-AdditionRqstFDD                                ProtocolIE-ID ::= 112
id-RL-Information-RL-AdditionRqstTDD                                ProtocolIE-ID ::= 113
id-RL-Information-RL-DeletionRqst                                   ProtocolIE-ID ::= 114
id-RL-Information-RL-FailureInd                                     ProtocolIE-ID ::= 115
id-RL-Information-RL-ReconfPrepFDD                                  ProtocolIE-ID ::= 116
id-RL-Information-RL-RestoreInd                                     ProtocolIE-ID ::= 117
id-RL-Information-RL-SetupRqstFDD                                   ProtocolIE-ID ::= 118
id-RL-Information-RL-SetupRqstTDD                                   ProtocolIE-ID ::= 119
id-RL-InformationItem-RL-CongestInd                                 ProtocolIE-ID ::= 55
id-RL-InformationItem-DM-Rprt                                       ProtocolIE-ID ::= 120
id-RL-InformationItem-DM-Rqst                                       ProtocolIE-ID ::= 121
id-RL-InformationItem-DM-Rsp                                        ProtocolIE-ID ::= 122
id-RL-InformationItem-RL-PreemptRequiredInd                         ProtocolIE-ID ::= 2
id-RL-InformationItem-RL-SetupRqstFDD                               ProtocolIE-ID ::= 123
id-RL-InformationList-RL-CongestInd                                 ProtocolIE-ID ::= 56
id-RL-InformationList-RL-AdditionRqstFDD                            ProtocolIE-ID ::= 124
id-RL-InformationList-RL-DeletionRqst                               ProtocolIE-ID ::= 125
id-RL-InformationList-RL-PreemptRequiredInd                         ProtocolIE-ID ::= 1
id-RL-InformationList-RL-ReconfPrepFDD                              ProtocolIE-ID ::= 126
id-RL-InformationResponse-RL-AdditionRspTDD                         ProtocolIE-ID ::= 127
id-RL-InformationResponse-RL-ReconfReadyTDD                         ProtocolIE-ID ::= 128
id-RL-InformationResponse-RL-SetupRspTDD                            ProtocolIE-ID ::= 129
id-RL-InformationResponseItem-RL-AdditionRspFDD                     ProtocolIE-ID ::= 130
id-RL-InformationResponseItem-RL-ReconfReadyFDD                     ProtocolIE-ID ::= 131
id-RL-InformationResponseItem-RL-ReconfRspFDD                       ProtocolIE-ID ::= 132
id-RL-InformationResponseItem-RL-SetupRspFDD                        ProtocolIE-ID ::= 133
id-RL-InformationResponseList-RL-AdditionRspFDD                     ProtocolIE-ID ::= 134
id-RL-InformationResponseList-RL-ReconfReadyFDD                     ProtocolIE-ID ::= 135
id-RL-InformationResponseList-RL-ReconfRspFDD                       ProtocolIE-ID ::= 136
id-RL-InformationResponse-RL-ReconfRspTDD                           ProtocolIE-ID ::= 28
id-RL-InformationResponseList-RL-SetupRspFDD                        ProtocolIE-ID ::= 137
id-RL-ReconfigurationFailure-RL-ReconfFail                          ProtocolIE-ID ::= 141
id-RL-Set-InformationItem-DM-Rprt                                   ProtocolIE-ID ::= 143
id-RL-Set-InformationItem-DM-Rqst                                   ProtocolIE-ID ::= 144
id-RL-Set-InformationItem-DM-Rsp                                    ProtocolIE-ID ::= 145
id-RL-Set-Information-RL-FailureInd                                 ProtocolIE-ID ::= 146
id-RL-Set-Information-RL-RestoreInd                                 ProtocolIE-ID ::= 147
id-ReportCharacteristics                                            ProtocolIE-ID ::= 152
id-Reporting-Object-RL-FailureInd                                   ProtocolIE-ID ::= 153
id-Reporing-Object-RL-RestoreInd                                    ProtocolIE-ID ::= 154
id-S-RNTI                                                           ProtocolIE-ID ::= 155
id-SAI                                                              ProtocolIE-ID ::= 156
id-SRNC-ID                                                          ProtocolIE-ID ::= 157
id-SuccessfulRL-InformationResponse-RL-AdditionFailureFDD           ProtocolIE-ID ::= 159
id-SuccessfulRL-InformationResponse-RL-SetupFailureFDD              ProtocolIE-ID ::= 160
id-TransportBearerID                                                ProtocolIE-ID ::= 163
id-TransportBearerRequestIndicator                                  ProtocolIE-ID ::= 164
id-TransportLayerAddress                                            ProtocolIE-ID ::= 165
id-TypeOfError                                                      ProtocolIE-ID ::= 140
```

```
id-UC-ID                                                        ProtocolIE-ID ::= 166
id-UL-CCTrCH-AddInformation-RL-ReconfPrepTDD                    ProtocolIE-ID ::= 167
id-UL-CCTrCH-InformationAddList-RL-ReconfPrepTDD                ProtocolIE-ID ::= 169
id-UL-CCTrCH-InformationItem-RL-SetupRqstTDD                    ProtocolIE-ID ::= 171
id-UL-CCTrCH-InformationList-RL-SetupRqstTDD                    ProtocolIE-ID ::= 172
id-UL-CCTrCH-InformationListIE-PhyChReconfRqstTDD               ProtocolIE-ID ::= 173
id-UL-CCTrCH-InformationListIE-RL-AdditionRspTDD                ProtocolIE-ID ::= 174
id-UL-CCTrCH-InformationListIE-RL-ReconfReadyTDD                ProtocolIE-ID ::= 175
id-UL-CCTrCH-InformationListIE-RL-SetupRspTDD                   ProtocolIE-ID ::= 176
id-UL-DPCH-Information-RL-ReconfPrepFDD                         ProtocolIE-ID ::= 177
id-UL-DPCH-Information-RL-ReconfRqstFDD                         ProtocolIE-ID ::= 178
id-UL-DPCH-Information-RL-SetupRqstFDD                          ProtocolIE-ID ::= 179
id-UL-DPCH-InformationItem-PhyChReconfRqstTDD                   ProtocolIE-ID ::= 180
id-UL-DPCH-InformationItem-RL-AdditionRspTDD                    ProtocolIE-ID ::= 181
id-UL-DPCH-InformationItem-RL-SetupRspTDD                       ProtocolIE-ID ::= 182
id-UL-DPCH-InformationAddListIE-RL-ReconfReadyTDD               ProtocolIE-ID ::= 183
id-UL-SIRTarget                                                 ProtocolIE-ID ::= 184
id-URA-Information                                              ProtocolIE-ID ::= 185
id-UnsuccessfulRL-InformationResponse-RL-AdditionFailureFDD     ProtocolIE-ID ::= 188
id-UnsuccessfulRL-InformationResponse-RL-SetupFailureFDD        ProtocolIE-ID ::= 189
id-UnsuccessfulRL-InformationResponse-RL-SetupFailureTDD        ProtocolIE-ID ::= 190
id-Active-Pattern-Sequence-Information                          ProtocolIE-ID ::= 193
id-AdjustmentRatio                                              ProtocolIE-ID ::= 194
id-CauseLevel-RL-AdditionFailureFDD                             ProtocolIE-ID ::= 197
id-CauseLevel-RL-AdditionFailureTDD                             ProtocolIE-ID ::= 198
id-CauseLevel-RL-ReconfFailure                                  ProtocolIE-ID ::= 199
id-CauseLevel-RL-SetupFailureFDD                                ProtocolIE-ID ::= 200
id-CauseLevel-RL-SetupFailureTDD                                ProtocolIE-ID ::= 201
id-DL-CCTrCH-InformationDeleteItem-RL-ReconfPrepTDD             ProtocolIE-ID ::= 205
id-DL-CCTrCH-InformationModifyItem-RL-ReconfPrepTDD             ProtocolIE-ID ::= 206
id-DL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD             ProtocolIE-ID ::= 207
id-DL-CCTrCH-InformationDeleteList-RL-ReconfPrepTDD             ProtocolIE-ID ::= 208
id-DL-CCTrCH-InformationModifyList-RL-ReconfPrepTDD             ProtocolIE-ID ::= 209
id-DL-CCTrCH-InformationModifyList-RL-ReconfRqstTDD             ProtocolIE-ID ::= 210
id-DL-DPCH-InformationAddListIE-RL-ReconfReadyTDD               ProtocolIE-ID ::= 212
id-DL-DPCH-InformationDeleteListIE-RL-ReconfReadyTDD            ProtocolIE-ID ::= 213
id-DL-DPCH-InformationModifyListIE-RL-ReconfReadyTDD            ProtocolIE-ID ::= 214
id-DSCHs-to-Add-TDD                                             ProtocolIE-ID ::= 215
id-DSCHs-to-Add-FDD                                             ProtocolIE-ID ::= 216
id-DSCH-DeleteList-RL-ReconfPrepTDD                             ProtocolIE-ID ::= 217
id-DSCH-Delete-RL-ReconfPrepFDD                                 ProtocolIE-ID ::= 218
id-DSCH-FDD-Information                                         ProtocolIE-ID ::= 219
id-DSCH-InformationListIE-RL-AdditionRspTDD                     ProtocolIE-ID ::= 220
id-DSCH-InformationListIEs-RL-SetupRspTDD                       ProtocolIE-ID ::= 221
id-DSCH-TDD-Information                                         ProtocolIE-ID ::= 222
id-DSCH-FDD-InformationResponse                                 ProtocolIE-ID ::= 223
id-DSCH-Information-RL-SetupRqstFDD                             ProtocolIE-ID ::= 226
id-DSCH-ModifyList-RL-ReconfPrepTDD                             ProtocolIE-ID ::= 227
id-DSCH-Modify-RL-ReconfPrepFDD                                 ProtocolIE-ID ::= 228
id-DSCHsToBeAddedOrModified-FDD                                 ProtocolIE-ID ::= 229
id-DSCHToBeAddedOrModifiedList-RL-ReconfReadyTDD                ProtocolIE-ID ::= 230
```

```
id-EnhancedDSCHPC                                                ProtocolIE-ID ::= 29
id-EnhancedDSCHPCIndicator                                       ProtocolIE-ID ::= 34
id-GA-Cell                                                       ProtocolIE-ID ::= 232
id-GA-CellAdditionalShapes                                       ProtocolIE-ID ::= 3
id-SSDT-CellIDforEDSCHPC                                         ProtocolIE-ID ::= 35
id-Transmission-Gap-Pattern-Sequence-Information                 ProtocolIE-ID ::= 255
id-UL-CCTrCH-DeleteInformation-RL-ReconfPrepTDD                  ProtocolIE-ID ::= 256
id-UL-CCTrCH-ModifyInformation-RL-ReconfPrepTDD                  ProtocolIE-ID ::= 257
id-UL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD              ProtocolIE-ID ::= 258
id-UL-CCTrCH-InformationDeleteList-RL-ReconfPrepTDD              ProtocolIE-ID ::= 259
id-UL-CCTrCH-InformationModifyList-RL-ReconfPrepTDD              ProtocolIE-ID ::= 260
id-UL-CCTrCH-InformationModifyList-RL-ReconfRqstTDD              ProtocolIE-ID ::= 261
id-UL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD              ProtocolIE-ID ::= 262
id-UL-CCTrCH-InformationDeleteList-RL-ReconfRqstTDD              ProtocolIE-ID ::= 263
id-UL-DPCH-InformationDeleteListIE-RL-ReconfReadyTDD             ProtocolIE-ID ::= 264
id-UL-DPCH-InformationModifyListIE-RL-ReconfReadyTDD             ProtocolIE-ID ::= 265
id-UnsuccessfulRL-InformationResponse-RL-AdditionFailureTDD      ProtocolIE-ID ::= 266
id-USCHs-to-Add                                                  ProtocolIE-ID ::= 267
id-USCH-DeleteList-RL-ReconfPrepTDD                              ProtocolIE-ID ::= 268
id-USCH-InformationListIE-RL-AdditionRspTDD                      ProtocolIE-ID ::= 269
id-USCH-InformationListIEs-RL-SetupRspTDD                        ProtocolIE-ID ::= 270
id-USCH-Information                                              ProtocolIE-ID ::= 271
id-USCH-ModifyList-RL-ReconfPrepTDD                              ProtocolIE-ID ::= 272
id-USCHToBeAddedOrModifiedList-RL-ReconfReadyTDD                 ProtocolIE-ID ::= 273
id-DL-Physical-Channel-Information-RL-SetupRqstTDD               ProtocolIE-ID ::= 274
id-UL-Physical-Channel-Information-RL-SetupRqstTDD               ProtocolIE-ID ::= 275
id-ClosedLoopMode1-SupportIndicator                              ProtocolIE-ID ::= 276
id-ClosedLoopMode2-SupportIndicator                              ProtocolIE-ID ::= 277
id-STTD-SupportIndicator                                         ProtocolIE-ID ::= 279
id-CFNReportingIndicator                                         ProtocolIE-ID ::= 14
id-CNOriginatedPage-PagingRqst                                   ProtocolIE-ID ::= 23
id-InnerLoopDLPCStatus                                           ProtocolIE-ID ::= 24
id-PropagationDelay                                              ProtocolIE-ID ::= 25
id-RxTimingDeviationForTA                                        ProtocolIE-ID ::= 36
id-timeSlot-ISCP                                                 ProtocolIE-ID ::= 37
id-CCTrCH-InformationItem-RL-FailureInd                          ProtocolIE-ID ::= 15
id-CCTrCH-InformationItem-RL-RestoreInd                          ProtocolIE-ID ::= 16
id-CommonMeasurementAccuracy                                     ProtocolIE-ID ::= 280
id-CommonMeasurementObjectType-CM-Rprt                           ProtocolIE-ID ::= 281
id-CommonMeasurementObjectType-CM-Rqst                           ProtocolIE-ID ::= 282
id-CommonMeasurementObjectType-CM-Rsp                            ProtocolIE-ID ::= 283
id-CommonMeasurementType                                         ProtocolIE-ID ::= 284
id-CongestionCause                                               ProtocolIE-ID ::= 18
id-SFN                                                           ProtocolIE-ID ::= 285
id-SFNReportingIndicator                                         ProtocolIE-ID ::= 286
id-InformationExchangeID                                         ProtocolIE-ID ::= 287
id-InformationExchangeObjectType-InfEx-Rprt                      ProtocolIE-ID ::= 288
id-InformationExchangeObjectType-InfEx-Rqst                      ProtocolIE-ID ::= 289
id-InformationExchangeObjectType-InfEx-Rsp                       ProtocolIE-ID ::= 290
id-InformationReportCharacteristics                              ProtocolIE-ID ::= 291
id-InformationType                                               ProtocolIE-ID ::= 292
```

```
id-neighbouring-LCR-TDD-CellInformation                          ProtocolIE-ID ::= 58
id-DL-Timeslot-ISCP-LCR-Information-RL-SetupRqstTDD              ProtocolIE-ID ::= 65
id-RL-LCR-InformationResponse-RL-SetupRspTDD                     ProtocolIE-ID ::= 66
id-UL-CCTrCH-LCR-InformationListIE-RL-SetupRspTDD                ProtocolIE-ID ::= 75
id-UL-DPCH-LCR-InformationItem-RL-SetupRspTDD                    ProtocolIE-ID ::= 76
id-DL-CCTrCH-LCR-InformationListIE-RL-SetupRspTDD                ProtocolIE-ID ::= 77
id-DL-DPCH-LCR-InformationItem-RL-SetupRspTDD                    ProtocolIE-ID ::= 78
id-DSCH-LCR-InformationListIEs-RL-SetupRspTDD                    ProtocolIE-ID ::= 79
id-USCH-LCR-InformationListIEs-RL-SetupRspTDD                    ProtocolIE-ID ::= 80
id-DL-Timeslot-ISCP-LCR-Information-RL-AdditionRqstTDD           ProtocolIE-ID ::= 81
id-RL-LCR-InformationResponse-RL-AdditionRspTDD                  ProtocolIE-ID ::= 86
id-UL-CCTrCH-LCR-InformationListIE-RL-AdditionRspTDD             ProtocolIE-ID ::= 87
id-UL-DPCH-LCR-InformationItem-RL-AdditionRspTDD                 ProtocolIE-ID ::= 88
id-DL-CCTrCH-LCR-InformationListIE-RL-AdditionRspTDD             ProtocolIE-ID ::= 89
id-DL-DPCH-LCR-InformationItem-RL-AdditionRspTDD                 ProtocolIE-ID ::= 94
id-DSCH-LCR-InformationListIEs-RL-AdditionRspTDD                 ProtocolIE-ID ::= 96
id-USCH-LCR-InformationListIEs-RL-AdditionRspTDD                 ProtocolIE-ID ::= 97
id-UL-DPCH-LCR-InformationAddListIE-RL-ReconfReadyTDD            ProtocolIE-ID ::= 98
id-UL-Timeslot-LCR-InformationModifyList-RL-ReconfReadyTDD       ProtocolIE-ID ::= 100
id-DL-DPCH-LCR-InformationAddListIE-RL-ReconfReadyTDD            ProtocolIE-ID ::= 101
id-DL-Timeslot-LCR-InformationModifyList-RL-ReconfReadyTDD       ProtocolIE-ID ::= 104
id-UL-Timeslot-LCR-InformationList-PhyChReconfRqstTDD            ProtocolIE-ID ::= 105
id-DL-Timeslot-LCR-InformationList-PhyChReconfRqstTDD            ProtocolIE-ID ::= 106
id-timeSlot-ISCP-LCR-List-DL-PC-Rqst-TDD                         ProtocolIE-ID ::= 138
id-TSTD-Support-Indicator-RL-SetupRqstTDD                        ProtocolIE-ID ::= 139
id-RestrictionStateIndicator                                     ProtocolIE-ID ::= 142
id-Load-Value                                                    ProtocolIE-ID ::= 233
id-Load-Value-IncrDecrThres                                      ProtocolIE-ID ::= 234
id-OnModification                                                ProtocolIE-ID ::= 235
id-Received-Total-Wideband-Power-Value                           ProtocolIE-ID ::= 236
id-Received-Total-Wideband-Power-Value-IncrDecrThres             ProtocolIE-ID ::= 237
id-SFNSFNMeasurementThresholdInformation                         ProtocolIE-ID ::= 238
id-Transmitted-Carrier-Power-Value                               ProtocolIE-ID ::= 239
id-Transmitted-Carrier-Power-Value-IncrDecrThres                 ProtocolIE-ID ::= 240
id-TUTRANGPSMeasurementThresholdInformation                      ProtocolIE-ID ::= 241
id-UL-Timeslot-ISCP-Value                                        ProtocolIE-ID ::= 242
id-UL-Timeslot-ISCP-Value-IncrDecrThres                          ProtocolIE-ID ::= 243
id-Rx-Timing-Deviation-Value-LCR                                 ProtocolIE-ID ::= 293
id-DPC-Mode-Change-SupportIndicator                              ProtocolIE-ID ::= 19
id-RL-Specific-DCH-Info                                          ProtocolIE-ID ::= xxx
id-RL-ReconfigurationRequestFDD-RL-InformationList               ProtocolIE-ID ::= XXX
id-RL-ReconfigurationRequestFDD-RL-Information-IEs               ProtocolIE-ID ::= xxx
id-RL-ReconfigurationReadyTDD-RL-Information                     ProtocolIE-ID ::= xxx
id-RL-ReconfigurationRequestTDD-RL-Information                   ProtocolIE-ID ::= xxx


END
```

9.3.7 Container Definitions

```
-- **************************************************************
--
-- Container definitions
--
-- **************************************************************

RNSAP-Containers {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) rnsap (1) version1 (1) rnsap-Containers (5)  }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

-- **************************************************************
--
-- IE parameter types from other modules.
--
-- **************************************************************

IMPORTS
    maxPrivateIEs,
    maxProtocolExtensions,
    maxProtocolIEs,
    Criticality,
    Presence,
    PrivateIE-ID,
    ProtocolIE-ID
FROM RNSAP-CommonDataTypes;

-- **************************************************************
--
-- Class Definition for Protocol IEs
--
-- **************************************************************

RNSAP-PROTOCOL-IES ::= CLASS {
    &id             ProtocolIE-ID                   UNIQUE,
    &criticality            Criticality,
    &Value,
    &presence           Presence
}
WITH SYNTAX {
    ID              &id
    CRITICALITY         &criticality
    TYPE                &Value
    PRESENCE            &presence
}
```

```
-- **************************************************************
--
-- Class Definition for Protocol IEs
--
-- **************************************************************

RNSAP-PROTOCOL-IES-PAIR ::= CLASS {
    &id             ProtocolIE-ID                   UNIQUE,
    &firstCriticality       Criticality,
    &FirstValue,
    &secondCriticality      Criticality,
    &SecondValue,
    &presence           Presence
}
WITH SYNTAX {
    ID              &id
    FIRST CRITICALITY       &firstCriticality
    FIRST TYPE          &FirstValue
    SECOND CRITICALITY      &secondCriticality
    SECOND TYPE         &SecondValue
    PRESENCE            &presence
}

-- **************************************************************
--
-- Class Definition for Protocol Extensions
--
-- **************************************************************

RNSAP-PROTOCOL-EXTENSION ::= CLASS {
    &id             ProtocolIE-ID               UNIQUE,
    &criticality            Criticality,
    &Extension,
    &presence       Presence
}
WITH SYNTAX {
    ID              &id
    CRITICALITY         &criticality
    EXTENSION           &Extension
    PRESENCE            &presence
}

-- **************************************************************
--
-- Class Definition for Private IEs
--
-- **************************************************************

RNSAP-PRIVATE-IES ::= CLASS {
    &id             PrivateIE-ID,
```

```
    &criticality            Criticality,
    &Value,
    &presence       Presence
}
WITH SYNTAX {
    ID              &id
    CRITICALITY         &criticality
    TYPE            &Value
    PRESENCE            &presence
}

-- **************************************************************
--
-- Container for Protocol IEs
--
-- **************************************************************

ProtocolIE-Container {RNSAP-PROTOCOL-IES : IEsSetParam} ::=
    SEQUENCE (SIZE (0..maxProtocolIEs)) OF
    ProtocolIE-Field {{IEsSetParam}}

ProtocolIE-Single-Container {RNSAP-PROTOCOL-IES : IEsSetParam} ::=
    ProtocolIE-Field {{IEsSetParam}}

ProtocolIE-Field {RNSAP-PROTOCOL-IES : IEsSetParam} ::= SEQUENCE {
    id              RNSAP-PROTOCOL-IES.&id              ({IEsSetParam}),
    criticality         RNSAP-PROTOCOL-IES.&criticality         ({IEsSetParam}{@id}),
    value               RNSAP-PROTOCOL-IES.&Value               ({IEsSetParam}{@id})
}

-- **************************************************************
--
-- Container for Protocol IE Pairs
--
-- **************************************************************

ProtocolIE-ContainerPair {RNSAP-PROTOCOL-IES-PAIR : IEsSetParam} ::=
    SEQUENCE (SIZE (0..maxProtocolIEs)) OF
    ProtocolIE-FieldPair {{IEsSetParam}}

ProtocolIE-FieldPair {RNSAP-PROTOCOL-IES-PAIR : IEsSetParam} ::= SEQUENCE {
    id              RNSAP-PROTOCOL-IES-PAIR.&id         ({IEsSetParam}),
    firstCriticality        RNSAP-PROTOCOL-IES-PAIR.&firstCriticality   ({IEsSetParam}{@id}),
    firstValue          RNSAP-PROTOCOL-IES-PAIR.&FirstValue         ({IEsSetParam}{@id}),
    secondCriticality       RNSAP-PROTOCOL-IES-PAIR.&secondCriticality  ({IEsSetParam}{@id}),
    secondValue         RNSAP-PROTOCOL-IES-PAIR.&SecondValue            ({IEsSetParam}{@id})
}

-- **************************************************************
--
-- Container Lists for Protocol IE Containers
```

```
--
-- **************************************************************

ProtocolIE-ContainerList {INTEGER : lowerBound, INTEGER : upperBound, RNSAP-PROTOCOL-IES : IEsSetParam} ::=
    SEQUENCE (SIZE (lowerBound..upperBound)) OF
    ProtocolIE-Container {{IEsSetParam}}

ProtocolIE-ContainerPairList {INTEGER : lowerBound, INTEGER : upperBound, RNSAP-PROTOCOL-IES-PAIR : IEsSetParam} ::=
    SEQUENCE (SIZE (lowerBound..upperBound)) OF
    ProtocolIE-ContainerPair {{IEsSetParam}}

-- **************************************************************
--
-- Container for Protocol Extensions
--
-- **************************************************************

ProtocolExtensionContainer {RNSAP-PROTOCOL-EXTENSION : ExtensionSetParam} ::=
    SEQUENCE (SIZE (1..maxProtocolExtensions)) OF
    ProtocolExtensionField {{ExtensionSetParam}}

ProtocolExtensionField {RNSAP-PROTOCOL-EXTENSION : ExtensionSetParam} ::= SEQUENCE {
    id              RNSAP-PROTOCOL-EXTENSION.&id            ({ExtensionSetParam}),
    criticality         RNSAP-PROTOCOL-EXTENSION.&criticality       ({ExtensionSetParam}{@id}),
    extensionValue          RNSAP-PROTOCOL-EXTENSION.&Extension     ({ExtensionSetParam}{@id})
}

-- **************************************************************
--
-- Container for Private IEs
--
-- **************************************************************

PrivateIE-Container {RNSAP-PRIVATE-IES : IEsSetParam} ::=
    SEQUENCE (SIZE (1..maxPrivateIEs)) OF
    PrivateIE-Field {{IEsSetParam}}

PrivateIE-Field {RNSAP-PRIVATE-IES : IEsSetParam} ::= SEQUENCE {
    id              RNSAP-PRIVATE-IES.&id           ({IEsSetParam}),
    criticality         RNSAP-PRIVATE-IES.&criticality      ({IEsSetParam}{@id}),
    value           RNSAP-PRIVATE-IES.&Value        ({IEsSetParam}{@id})
}

END
```

3GPP TSG- RAN Working Group 3 Meeting #27
Orlando, FL, USA, 18nd-22th February 2002

Tdoc R3-020824

CR-Form-v5

CHANGE REQUEST

⌘ **25.424** **CR** **020** ⌘ **rev** **1** ⌘ Current version: **4.1.0** ⌘

*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 ☐ Radio Access Network **X** Core Network ☐

Title:	⌘	Introduction of IP transport in UTRAN.
Source:	⌘	R-WG3
Work item code:	⌘	ETRAN-IPtrans
Date:	⌘	February 2002
Category:	⌘	**B**
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)*

Reason for change:	⌘	To introduce IP transport Option in 25.424
Summary of change:	⌘	R1: - Modified according to the meeting discussions: - Chapters 2, 3,4,5,6,7 updated - Chapter 8 added. R0: - References section updated. - Abbreviation section updated. - Section 4 modified to cover two options: ATM and IP transport options. - Section 5 modified to show the user plane bearer options: ATM option, and IP Option (UDP/IP/L2). - Section 6 modified to show the transport signaling required for the two options. - Section 7 modified to show the signaling bearer required for the User plane transport signaling. - Section 8 added to define the interworking between ATM RNCs and IP RNCs. Isolated impact analysis towards the previous version (same release) of the specification: There is no previous version available.
Consequences if not approved:	⌘	IP transport feature will not be available at R5 for the transport for the Iur interface.

Clauses affected:	⌘	2, 3, 4, 5, 6, 7,8.

Other specs affected:	⌘	Other core specifications Test specifications O&M Specifications	⌘	
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.

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] ITU-T Recommendation I.361 (11/95): "B-ISDN ATM Layer Specification".

[2] ITU-T Recommendation I.363.2 (11/2000): "B-ISDN ATM Adaptation Layer type 2".

[3] ITU-T Recommendation I.366.1 (6/98): "Segmentation and Re-assembly Service Specific Convergence Sublayer for the AAL type 2".

[4] New ITU-T Recommendation Q.2630.1 (12/99): "AAL Type 2 signalling protocol (Capability Set 1)".

[5] ITU-T Recommendation E.191 (10/96): "B-ISDN numbering and addressing".

[6] 3GPP TS 25.426: "UTRAN I_{ur} and I_{ub} Interface Data Transport & Transport Signalling for DCH Data Streams".

[7] 3GPP TS 25.434: "UTRAN I_{ub} Interface Data Transport & Transport Signalling for Common Transport Channel Data Streams".

[8] ITU-T Recommendation Q.2630.2 (12/2000): "AAL Type 2 signalling protocol (Capability Set 2)".

[9] IETF STD 51, RFC 1661, "The Point-To-Point Protocol (PPP)", July 1994

[10] IETF STD 51, RFC 1662 "PPP in HDLC-like Framing", July 1994.

[11] IETF RFC 2507, "IP header compression", February 1999.

[12] IETF RFC 1990 "The PPP Multilink Protocol (MP)".

[13] IETF RFC 2686 " The Multi-Class Extension to Multi-Link PPP".

[14] IETF RFC 2509, "IP Header Compression over PPP", February 1999.

[15] IETF RFC 2460 "Internet Protocol, Version 6 (Ipv6) Specification".

[16] IETF RFC 791 (1981): "Internet Protocol".

[17] IETF RFC 2474 "Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers " December 1998

[18] IETF RFC 768 "User Datagram Protocol", (8/1980)

[19] IETF RFC 3153 "PPP Multiplexing", (8/2001)

[20] IETF RFC 2364 "PPP over AAL5", (7/1998)

[21] IETF RFC 3031 "Multiprotocol Label Switching Architecture", (1/2001)

3 Definitions and abbreviations

3.1 Definitions

Common Transport Channels are defined as transport channels that are shared by several users i.e. RACH, CPCH [FDD], FACH and DSCH.

3.2 Abbreviations

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

AAL2	ATM Adaptation Layer type 2
AAL5	ATM Adaptation Layer type 5
AESA	ATM End System Address
ALCAP	Access Link Control Application Part
ATM	Asynchronous Transfer Mode
CPCH	Common Packet Channel
CPS	Common Part Sublayer
DiffServ	Differentiated Services
DSCH	Downlink Shared Channel
FACH	Forward Access Channel
HDLC	High level Data Link Control
IP	Internet Protocol
IPv4	Internet Protocol, version 4
IPv6	Internet Protocol, version 6
IWF	Interworking Function
IWU	Interworking Unit
LC	Link Characteristics
ML/MC PPP	Multilink-Multiclass PPP
MPLS	Multiprotocol Label Switching
MTP	Message Transfer Part
NNI	Network-Node Interface
NSAP	Network Service Access Point
PPP	Point-to-Point Protocol
PPPMux	PPP Multiplexing
PT	Path Type
QoS	Quality of Service
RACH	Random Access Channel
SAAL	Signalling ATM Adaptation Layer
SDU	Service Data Unit
SSCOP	Service Specific Connection Oriented Protocol
SSCF	Service Specific Co-ordination Function
SSCS	Service Specific Convergence Sublayer
SSSAR	Service Specific Segmentation and Re-assembly sublayer
STC	Signalling Transport Converter
TNL	Transport Network Layer
UDP	User Datagram Protocol
UNI	User-Network Interface
USCH	Uplink Shared Channel

4 ~~ATM Layer~~Data Link Layer

~~4.1 General~~4.1 ATM Transport Option

ATM shall be used in the transport network user plane and the transport network control plane according to ITU-T Recommendation I.361 [1]. The structure of the cell header used in the UTRAN Iur interface is the cell header format and encoding at NNI (see Figure 3/I.361 [1]).

4.2 IP Transport Option

A UTRAN Node supporting IP transport option shall support PPP protocol with HDLC framing [9], [10].

Note: This does not preclude the single implementation and use of any other data link layer protocols (e.g. PPPMux/AAL5/ATM [19, 20], PPP/AAL2/ATM, Ethernet, MPLS/ATM [21], etc.) fulfilling the UTRAN requirements toward the upper layers.

An RNC using IP transport option having interfaces connected via slow bandwidth PPP links like E1/T1/J1 shall also support IP Header Compression [11] and the PPP extensions ML/MC-PPP [12], [13]. In this case, negotiation of header compression [11] over PPP shall be performed via [14].

5 I_{ur} Data Transport for Common Transport Channel Data Streams

5.1 Introduction

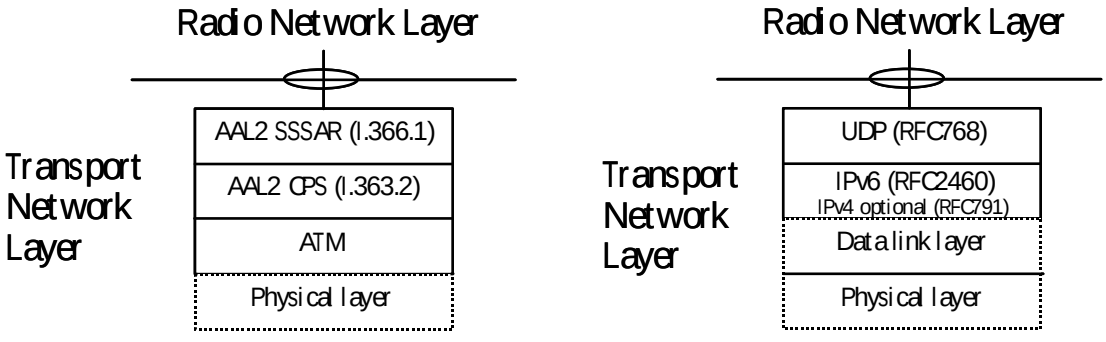
This clause specifies the transport layers that support Common Channels (FACH, RACH, CPCH [FDD], DSCH, USCH [TDD]) Iur data streams.

There are two options for the transport layer of the Common Channels data streams in Iur and Iub:

1) ATM based Transport (ATM transport option)

2) IP based Transport (IP transport option)

The following figure shows the protocol stacks of the two options



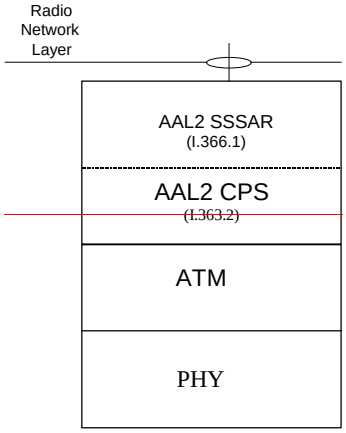
Protocol stack for ATM transport option Protocol stack for IP transport option

Figure 1: Transport network layer for DCH data streams over Iur and Iub interfaces

5.2 ~~5.2 Transport Layer~~ATM Transport Option

ATM [1], AAL type 2 (ITU-T Recommendations I.363.2 [2] and I.366.1 [3]) is used as the standard transport layer for RACH, CPCH [FDD], FACH, USCH [TDD] and DSCH Iur data streams.

These AAL2 connections are established via the transport signalling protocol described in clause 5.



~~**Figure 1: Protocol stack for RACH, CPCH [FDD], FACH, USCH [TDD] and DSCH data transport on Iur**~~

Figure 1 shows the protocol stack for the transport of RACH, CPCH [FDD], FACH, USCH [TDD] and DSCH Iur data streams using the ATM Transport Option. Service Specific Segmentation and Re-assembly (SSSAR) is used for the segmentation and re-assembly of AAL2 SDUs (i.e. SSSAR is only considered from ITU-T Recommendation I.366.1 [3]).

5.3 IP Option

UDP [18] over IP shall be used as the transport for DCH data streams on Iub and Iur interfaces. The data link layer is as specified in chapter 4.2.

An IP UTRAN Node shall support IPv6 [15]. The support of IPv4 [16] is optional.

Note: This does not preclude single implementation of IPv4.

IP dual stack support is recommended for the potential transition period from IPv4 to IPv6 in the transport network.

The transport bearer is identified by the UDP port number and the IP address (source UDP port number, destination UDP port number, source IP address, destination IP address).

IP Differentiated Services code point marking [17] shall be supported. The Diffserv code point may be determined from the application parameters.

6 I_{ur} Transport Signalling for Common Transport Channel Data Streams

6.1 Introduction

This clause specifies the transport signalling protocol(s) used to establish the user plane transport bearers. The protocol stack is shown in [6].

6.2 ~~6.2~~ Transport Signalling in case of ATM option

AAL2 signalling protocol Capability Set 2, ITU-T Recommendation Q.2630.2 [8], is the signalling protocol to control the AAL2 connections on Iur interfaces. Q.2630.2 [8] adds new optional capabilities to Q.2630.1 [4].

AAL2 transport layer addressing is based on embedded E.164 or AESA variants of the NSAP addressing format [5]. Native E.164 addressing shall not be used.

Binding ID provided by the radio network layer shall be copied in SUGR parameter of ESTABLISH.request primitive of [8].

The Link Characteristics parameter (LC) shall be included in the Establish Request message and in the Modification Request message of AAL2 signalling protocol.

If there is an AAL2 switching function in the transport network layer of the interface, the Path Type parameter (PT) may be included in the Establish Request message of AAL2 signalling protocol for prioritisation at ATM level.

6.3 Transport Signalling in case of IP Transport Option

An ALCAP protocol is not required in case both RNCs are using the IP transport option.

7 Signalling Bearer for Transport Signalling on Iur Interface

7.1 ATM Transport Option

The signalling bearer for the ALCAP on the Iur interface for common transport channels data streams is the same as the signalling bearer for the ALCAP on the Iur interface for DCH data streams, defined in [6].

7.2 IP Transport Option

An ALCAP protocol is not required in case both RNCs are using the IP transport option.

8 Interworking between ATM and IP Transport Options

An RNC supporting IP transport option shall provide interworking to an RNC supporting only ATM transport option. The interworking alternatives are defined in [6].

3GPP TSG-RAN WG3 Meeting #27
Orlando, Fl, USA, 18.-22. February, 2002

Tdoc R3-020865

CR-Form-v3

CHANGE REQUEST

⌘ **25.426** **CR** **022** ⌘ rev **2** ⌘ Current version: **4.1.0** ⌘

*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 ☐ Radio Access Network **X** Core Network ☐

Title:	⌘	Introduction of IP transport option in UTRAN
Source:	⌘	R-WG3
Work item code:	⌘	ETRAN-IPtrans
Date:	⌘	18. Feb. 2002
Category:	⌘	**B**
Release:	⌘	REL-5

Use one of the following categories:
F *(essential 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:	⌘	To introduce IP transport option in TS 25.426
Summary of change:	⌘	Rev.0: IP transport option has been incorporated into the specification. Rev.1: Modified according to the review comments in RAN WG3 plenary on 21-02-2002. Rev.2: Modified according to the review comments in RAN WG3 closing plenary on 22-02-2002 <u>Isolated impact analysis towards the previous version (same release) of the specification:</u> There is no previous version available.
Consequences if not approved:	⌘	IP transport feature will not be available in Rel5 for the transport in the Iur and Iub interfaces.

Clauses affected:	⌘	2, 3, 4, 5, 6, 7, 8, 9
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

1 Scope

The present document specifies the transport bearers for the DCH data streams on UTRAN Iur and Iub interfaces. The corresponding Transport Network Control plane is also specified. The physical layer for the transport bearers is outside the scope of the present document.

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] TS UMTS 25.427: "UTRAN Iur and Iub User plane Protocol for DCH Data Streams".

[2] ITU-T Recommendation I.361 (11/95): "B-ISDN ATM Layer Specification".

[3] ITU-T Recommendation I.363.2 (11/2000): "B-ISDN ATM Adaptation Layer type 2".

[4] ITU-T Recommendation I.366.1 (6/98): "Segmentation and Reassembly Service Specific Convergence Sublayer for the AAL type 2".

[5] ITU-T Recommendation Q.2630.1 (12/99): "AAL type 2 Signalling Protocol (Capability Set 1)".

[6] ITU-T Recommendation E.191 (10/96): "B-ISDN numbering and addressing".

[7] ITU-T Recommendation X.213 (11/95): "Information Technology - Open Systems Interconnection - Network Service Definition".

[8] ITU-T Recommendation Q.2110 (7/94): "B-ISDN ATM Adaptation layer - Service Specific Connection Oriented Protocol (SSCOP".

[9] ITU-T Recommendation Q.2130 (7/94): "B-ISDN Signalling ATM Adaptation Layer - Service Specific Coordination Function for Support of Signalling at the User Network Interface (SSCF at UNI".

[10] ITU-T Recommendation Q.2150.2 (12/99): "AAL type 2 signalling transport converter on SSCOP".

[11] ITU-T Recommendation Q.2210 (7/96): Message transfer part level 3 functions and messages using the services of the ITU-T Recommendation Q.2140".

[12] ITU-T Recommendation Q.2140 (2/95): "B-ISDN Signalling ATM Adaptation Layer - Service Specific Coordination Function for Support of Signalling at the Network Node Interface (SSCF at NNI)".

[13] New ITU-T Recommendation Q.2150.1 (12/99): "AAL Type 2 Signalling Transport Converter on MTP-3B".

[14] IETF RFC 791 (September 1981): "Internet Protocol".

[15] IETF RFC 1483 (July 1993): "Multiprotocol Encapsulation over ATM Adaptation Layer 5".

[16] IETF RFC 2225 (April 1998): "Classical IP and ARP over ATM".

[17] IETF RFC 768 (August 1980): "User Datagram Protocol".

[18] IETF RFC 2960 (October 2000): "Stream Control Transmission Protocol".

[19] G. Sidebottom et al, "SS7 MTP3 - User Adaptation Layer", draft-ietf-sigtran-m3ua-~~04~~12.txt (Work In Progress), IETF, ~~September~~ February ~~2000~~2002.

[20] ITU-T Recommendation I.630 (2/99): "ATM Protection Switching".

[21] ITU-T Implementor's guide (12/99) for recommendation Q.2210 (07/96).

[22] ITU-T Recommendation Q.2630.2 (12/2000): "AAL Type 2 signalling protocol (Capability Set 2)".

[23] IETF STD 51, RFC 1661, "The Point-To-Point Protocol (PPP)", July 1994

[24] IETF STD 51, RFC 1662 "PPP in HDLC-like Framing", July 1994.

[25] IETF RFC 2507, "IP header compression", February 1999.

[26] IETF RFC 1990 "The PPP Multilink Protocol (MP)".

[27] IETF RFC 2686 " The Multi-Class Extension to Multi-Link PPP".

[28] IETF RFC 2509, "IP Header Compression over PPP", February 1999.

[29] IETF RFC 2460 "Internet Protocol, Version 6 (IPv6) Specification".

[30] IETF RFC 2474 "Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers " December 1998

[31] IETF RFC 768 "User Datagram Protocol", (8/1980)

[32] IETF RFC 3153 "PPP Multiplexing", August 2001

[33] IETF RFC 2364 "PPP over AAL5", July 1998

[34] IETF RFC 3031 "Multiprotocol Label Switching Architecture" January 2001

[35] "IP-ALCAP" [ffs]

3 Definitions and abbreviations

3.1 Definitions

ALCAP is a generic name for the transport signalling protocol used to setup and tear down transport bearers.

3.2 Abbreviations

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

AAL2	ATM Adaptation Layer type 2
AESA	ATM End System Address
ATM	Asynchronous Transfer Mode
CPCS	Common Part Convergence Sublayer
CPS	Common Part Sublayer
DCH	Dedicated Channel
HDLC	High level Data Link Control

IP	Internet Protocol
LC	Link Characteristics
M3UA	SS7 MTP3 User Adaptation Layer
ML/MC	Multi-link / Multi-class
MPLS	Multiprotocol Label Switching
MTP	Message Transfer Part
NNI	Network-Node Interface
NSAP	Network Service Access Point
PPP	Point to Point Protocol
PT	Path Type
SAAL	Signalling ATM Adaptation Layer
SAR	Segmentation and Reassembly
SCTP	Stream Control Transmission Protocol
SSCF	Service Specific Co-ordination Function
SSCOP	Service Specific Connection Oriented Protocol
SSCS	Service Specific Convergence Sublayer
SSSAR	Service Specific Segmentation and Reassembly sublayer
STC	Signalling Transport Converter
TNL-IWU	Transport Network Layer Interworking Unit
UDP	User Datagram Protocol
UNI	User-Network Interface

4 ~~ATM Layer~~Data Link Layer

4.1 ATM Transport Option~~General~~

ATM shall be used in the transport network user plane and transport network control plane according to I.361 [2].

4.~~2~~1.1 Protection Switching at ATM Layer

If redundancy of pathways at ATM Layer between RNC and Node B is supported, it shall be implemented using ATM Protection Switching according to I.630 [20].

4.2 IP Transport Option

A UTRAN node supporting IP transport option shall support PPP protocol [23] with HDLC framing [24].

Note: This does not preclude the single implementation and use of any other L2/L1 protocols (e.g. PPPMux/AAL5/ATM [32], [33], PPP/AAL2/ATM, Ethernet, MPLS/ATM [34], etc.) fulfilling the UTRAN requirements towards the upper layers.

A UTRAN node supporting IP transport option and having interfaces connected via slow bandwidth PPP links like E1/T1/J1 shall also support IP Header Compression [25] and the PPP extensions ML/MC-PPP [26], [27]. In this case the negotiation of header compression [20] over PPP shall be performed via [28].

5 I_{ur} and I_{ub} Data Transport for DCH Data Streams

5.1 Introduction

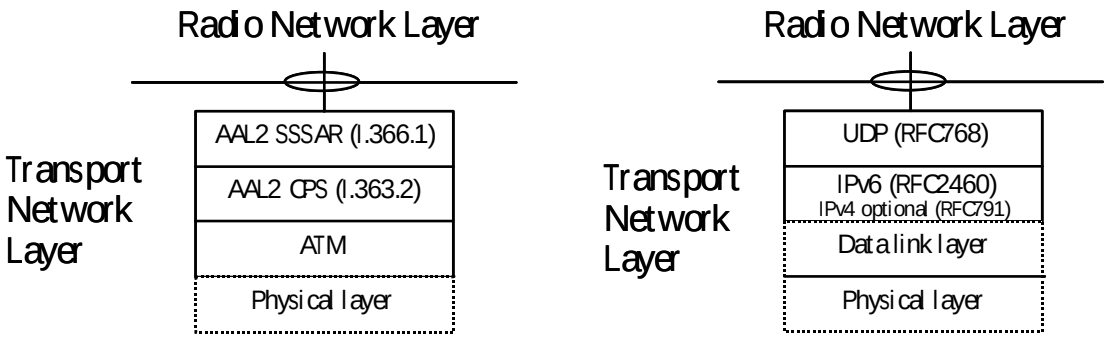
The Frame Protocol for DCH data streams [1] is the user of the transport layer specified in this Technical Specification.

There are two options for the transport layer of the DCH data streams in Iur and Iub:

1) ATM based transport (ATM Transport Option)

2) IP based transport (IP Transport Option)

The following figure shows the protocol stacks of the two options.



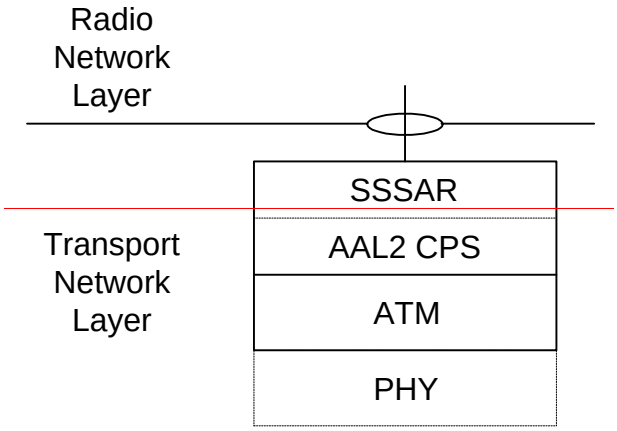
Protocol stack for ATM transport option

Protocol stack for IP transport option

Figure 1: Transport network layer for DCH data streams over Iur and Iub interfaces

5.2 ATM Transport Option

Asynchronous Transfer Mode (ATM) [2] and ATM Adaptation Layer type 2 (AAL2) [3, 4] are used as a transport layer for DCH data streams on Iur and Iub interfaces. Service Specific Segmentation and Reassembly (SSSAR) sublayer for AAL2 is used for the segmentation and reassembly of AAL2 SDUs.



~~**Figure 1: Transport network layer for DCH data streams over Iur and Iub interfaces**~~

5.3 IP Transport Option

UDP [17] over IP shall be supported as the transport for DCH data streams on Iub and Iur interfaces. The data link layer is as specified in chapter 4.2.

An IP UTRAN Node shall support IPv6. The support of IPv4 is optional.

Note: This does not preclude single implementation and use of IPv4.

IP dual stack support is recommended for the potential transition period from IPv4 to IPv6 in the transport network.

The transport bearer is identified by the UDP port number and the IP address (source UDP port number, destination UDP port number, source IP address, destination IP address).

IP Differentiated Services code point marking [30] shall be supported. The Diffserv code point may be determined from the application parameters.

6 Transport Signalling Application for DCH Data Streams

6.1 IntroductionALCAP

This chapter specifies the ALCAP protocol(s) to be used in Iur and Iub interfaces for DCH data streams.

6.2 ALCAP in ATM Transport Option

AAL2 signalling protocol Capability Set 2 [22] is the signalling protocol to control AAL2 connections on Iub and Iur interfaces. Q.2630.2 [22] adds new optional capabilities to Q.2630.1 [5].

Binding ID provided by the radio network layer shall be copied in SUGR parameter of ESTABLISH.request primitive of [22].

User Plane Transport bearers for Iur interface are established, released and optionally modified by the ALCAP in the Serving RNC. The binding identifier shall already be assigned and tied to a radio application procedure when the first ALCAP message is received over the Iur interface in the Drift RNC.

User Plane Transport bearers for Iub interface are established, released and optionally modified by the ALCAP in the Controlling RNC.

AAL2 transport layer addressing is based on embedded E.164 or AESA variants of the NSAP addressing format [6, 7]. Native E.164 addressing shall not be used.

The Link Characteristics parameter (LC) shall be included in the Establish Request message and in the Modification Request message of AAL2 signalling protocol.

If there is an AAL2 switching function in the transport network layer of the interface, the Path Type parameter (PT) may be included in the Establish Request message of AAL2 signalling protocol for prioritisation at ATM level.

6.3 ALCAP in IP Transport Option

An ALCAP protocol is not required in case both UTRAN nodes are using the IP transport option

Application of ALCAP in IP to ATM interworking case is defined in chapter 9 of this Technical Specification.

7 Signalling Bearer for ALCAP on I_{ub} Interface

7.1 Introduction

This clause specifies the signalling bearer for the ALCAP on Iub interface.

7.2 Signalling Bearer in ATM Transport Option

SAAL-UNI [8, 9] is used as ~~a~~ the signalling bearer for the AAL Type 2 Signalling protocol on Iub interface. Signalling Transport Converter for SSCOP is applied [10]. The following figure shows the signalling bearer protocol stack for the ALCAP on Iub interface.

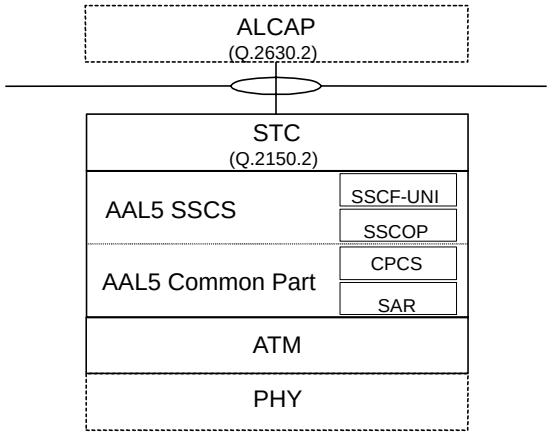


Figure 2: Signalling bearer for ALCAP on Iub interface

7.3 Signalling Bearer in IP Transport Option

An ALCAP protocol is not required in case both UTRAN nodes are using the IP transport option.

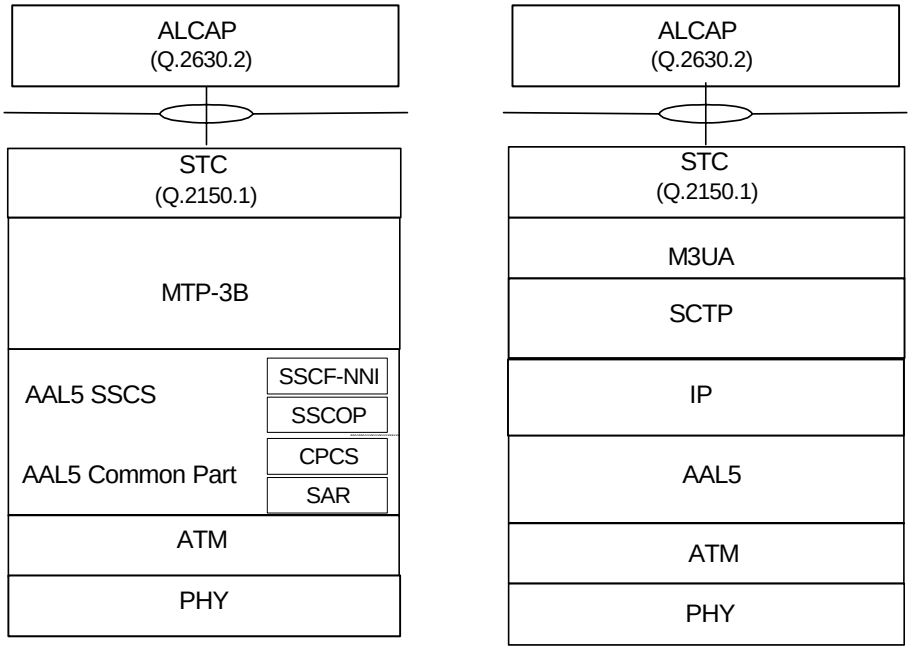
8 Signalling Bearer for ALCAP on I_{ur} Interface

8.1 Introduction

This clause specifies the signalling bearer for the ALCAP on the Iur interface.

8.2 Signalling Bearer in ATM Transport Option

There are two protocol stacks specified for Iur ALCAP Signalling Bearer in ATM option - one based on MTP-3B [11, 21] and SAAL-NNI [12, 8] and the other based on SCTP [18]. Signalling Transport Converter for MTP-3B is applied [13]. MTP-3 User Adaptation Layer (M3UA) for SCTP is applied [19]. Classical IP over ATM is specified in [16]. Multiprotocol Encapsulation over AAL5 is specified in [15]. The following figure shows the signalling bearer protocol stacks for the ALCAP on Iur interface.



MTP-3B based Iur ALCAP Signalling Bearer IP based Iur ALCAP Signalling Bearer

Figure 3: Signalling bearers for ALCAP on Iur interface

8.3 Signalling Bearer in IP Transport Option

An ALCAP protocol is not required in case both UTRAN nodes are using the IP transport option.

9 Interworking between ATM and IP Transport Options

9.1 Introduction

This clause specifies the interworking between IP and ATM transport options. A UTRAN node supporting IP transport option shall provide interworking to a UTRAN node supporting only ATM transport option.

9.2 Interworking Alternatives

For interworking with a UTRAN node supporting only ATM option, the UTRAN node supporting IP option shall additionally support at least one of the following interworking mechanisms:

1) ATM&IP dual stack. An ALCAP protocol is not required in this interworking solution

2) Interworking Function (IWF) as a logical part of the UTRAN node supporting IP option. AAL2 signalling protocol Capability Set 2 [22] shall be supported as ALCAP protocol between the Interworking Function and the UTRAN node supporting ATM transport option.

3) Interworking Unit (IWU) as a logically separate unit. An IP-ALCAP protocol shall be used in the interface between the UTRAN node supporting IP option and the Interworking Unit.

9.3 IP-ALCAP for the Interworking

In the third interworking alternative as introduced in chapter 9.2, IP-ALCAP protocol [35] is used as the IP-ALCAP protocol between the UTRAN node supporting IP option and the Transport Network Layer Interworking Unit.

[ffs]

10 Annex A (informative): Change history

Change history					
TSG RAN#	Version	CR	Tdoc RAN	New Version	Subject/Comment
RAN_04	-	-	-	3.0.0	Approved at TSG RAN #4 by correspondence and placed under Change Control
RAN_05	3.0.0	-	-	3.1.0	Approved at TSG RAN #5
RAN_07	3.1.0	-	-	3.2.0	Approved at TSG RAN #7
RAN_08	3.2.0	-	RP-000247	3.3.0	Approved at TSG RAN #8
RAN_09	3.3.0	003 004 006	RP-000383	3.4.0	Approved at TSG RAN #9
RAN_10	3.4.0	007 008 009	RP-000624	3.5.0	Approved at TSG RAN #10
RAN_11	3.5.0	010 011	RP-010121	3.6.0	Approved at TSG RAN #11

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
March 01	11	RP-010162	13		Approved at TSG RAN #11 and placed under Change Control	-	4.0.0
March 01	11	RP-010163	12		Approved at TSG RAN #11 and placed under Change Control	-	4.0.0
12/2001	14	RP-010859	015		Reference corrections	4.0.0	4.1.0
12/2001	14	RP-010859	017	1	Correction to Figure 3	4.0.0	4.1.0

TSG-RAN WG 3 meeting #27 ***R3-020840***
Orlando, USA, 18th – 22th February 2002

CR-Form-v4

CHANGE REQUEST

⌘ **25.430** **CR** **030** ⌘ ev **1** ⌘ Current version: **4.2.0** ⌘

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

Title:	⌘	Introduction of IP Transport option in UTRAN
Source:	⌘	R-WG3
Work item code:	⌘	ETRAN-IPTRANS
Date:	⌘	February 2002
Category:	⌘	**B**
Release:	⌘	REL- 5

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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:	⌘	The change is needed to be able to set up IP transport bearers on Iub in both directions.
Summary of change:	⌘	The protocol stacks for the IP transport has been added.
Consequences if not approved:	⌘	IP transport bearers will not be possible to setup on the Iub. Impact Analysis: Impact assessment towards the previous version of the specification (same release): No previous version. Compatibility Analysis towards previous release: No impact

Clauses affected:	⌘	3.2, 5.2.1, 7.		
Other specs	⌘	**X** Other core specifications	⌘	25.401, 25.410, 25.411, 25.412, 25.413, 25.414, 25.415, 25.420, 25.422, 25.423, 25.424, 25.426, 25.432, 25.433, 25.434, 25.442.
Affected:		☐ Test specifications ☐ O&M Specifications		
Other comments:	⌘			

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2 References

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- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
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- 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 TS 25.401: "UTRAN Overall Description".

[2] 3GPP TS 25.442: "UTRAN Implementation Specific O&M transport".

[3] 3GPP TS 25.432: "UTRAN Iub interface signalling transport".

[4] 3GPP TS 25.302: "Services Provided by the Physical Layer".

[5] 3GPP TS 25.431: "UTRAN Iub Interface: Layer 1".

[6] 3GPP TS 25.432: "UTRAN Iub Interface: Signalling Transport".

[7] 3GPP TS 25.433: "NBAP Specification".

[8] 3GPP TS 25.434: "UTRAN Iub Interface: Data Transport & Transport Signalling for Common Transport Channel Data Streams".

[9] 3GPP TS 25.435: "UTRAN Iub Interface: User Plane Protocols for Common Transport Channel Data Streams".

[10] 3GPP TS 25.426: "UTRAN Iur/Iub Interface: Data Transport & Transport Signalling for DCH Data Streams".

[11] 3GPP TS 25.427: "UTRAN Iur/Iub Interface: User Plane Protocol for DCH Data Streams".

[12] 3GPP TS 25.402: "Synchronization in UTRAN, Stage 2".

[13] ITU-T Recommendation Q.2630.1 (12/99): "AAL type 2 Signalling Protocol (Capability Set 1)".

3.2 Abbreviations

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

AAL2	ATM Adaptation Layer type 2
AAL5	ATM Adaptation Layer type 5
AICH	Acquisition Indication Channel
ALCAP	Access Link Control Application Part
AP-AICH	Access Preamble Acquisition Indication Channel
ATM	Asynchronous Transfer Mode
BCH	Broadcast Channel
BCCH	Broadcast Control Channel
CCH	Control Channel
CD/CA-ICH	Collision Detection/Channel Assignment Indication Channel
CPCH	Common Packet Channel
CPCId	Common Physical Channel Identifier
CPICH	Common Pilot Channel
CSICH	Common Packet Channel Status Indication Channel
CTCId	Common Transport Channel Identifier
CRNC	Controlling Radio Network Controller
DCH	Dedicated Transport Channel
DPCCH	Dedicated Physical Control Channel
DPCH	Dedicated Physical Channel
DRNC	Drift Radio Network Controller
DSCH	Down-link Shared Channel
FACH	Forward Access Channel
FAUSCH	Fast Up-link Signalling Channel
FDD	Frequency Division Duplex
FP	Frame Protocol
IP	Internet Protocol
NBAP	NodeB Application Part
O&M	Operation and Maintenance
PICH	Page Indication Channel
PCCH	Paging Control Channel
PCCPCH	Primary Common Control Physical Channel
PCPCH	Physical Common Packet Channel
PCPICH	Primary Common Pilot Channel
PCH	Paging Channel
PDSCH	Physical Downlink Shared Channel
PRACH	Physical Random Access Channel
PUSCH	Physical Uplink Shared Channel
RACH	Random Access Channel
RNC	Radio Network Controller
RNS	Radio Network Subsystem
SCCP	Signalling Connection Control Part
SCH	Synchronization Channel
SCCPCH	Secondary Common Control Physical Channel
SCPICH	Secondary Common Pilot Channel
SCTP	Stream Control Transmission Protocol
SRNC	Serving Radio Network Controller
SSCF-UNI	Service Specific Co-ordination Function - User Network Interface
SSCOP	Service Specific Connection Oriented Protocol
TDD	Time Division Duplex
UE	User Equipment
UC-ID	UTRAN Cell Identifier
UDP	User Datagram Protocol
UMTS	Universal Mobile Telecommunication System
USCH	Up-link Shared Channel
UTRAN	UMTS Terrestrial Radio Access Network

5.2 Functional split over Iub

5.2.1 Management of Iub Transport Resources

The underlying transport resources (AAL2 and UDP/IP transport bearers~~connections~~) shall be set up and controlled by the RNC. Further information on these functions is provided in the transport layer specifications [3], [8], [10].

7 Iub Interface Protocol Structure

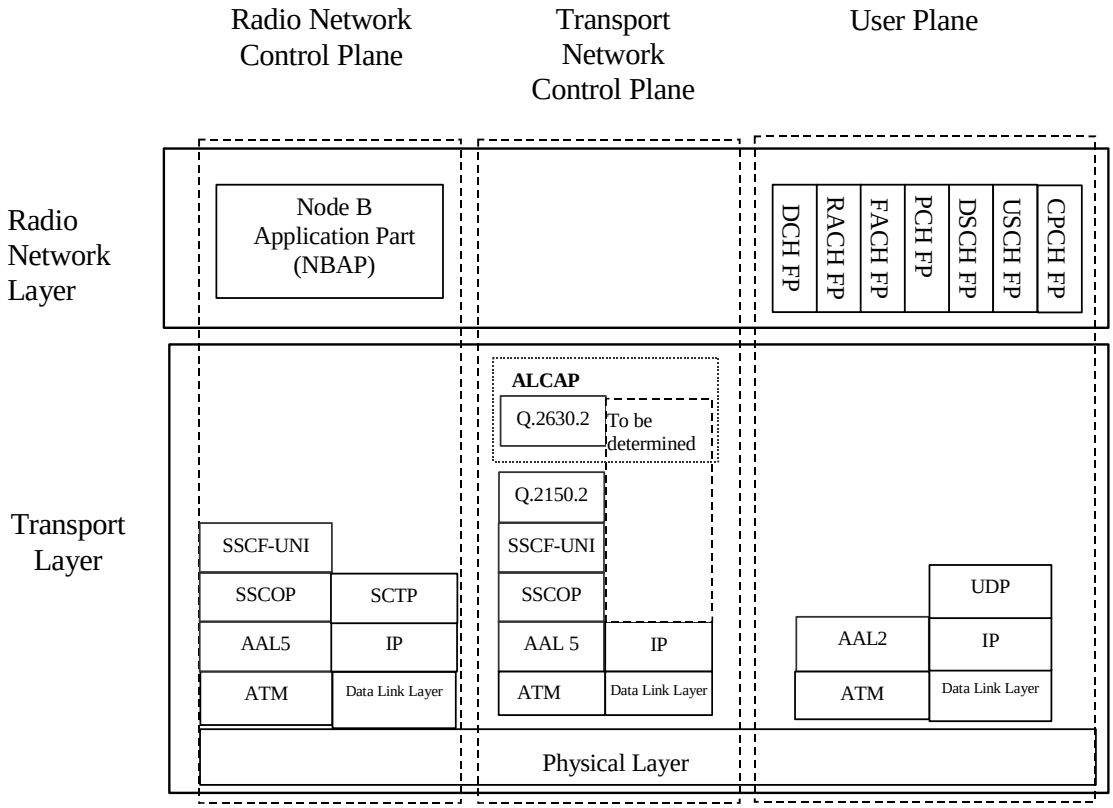
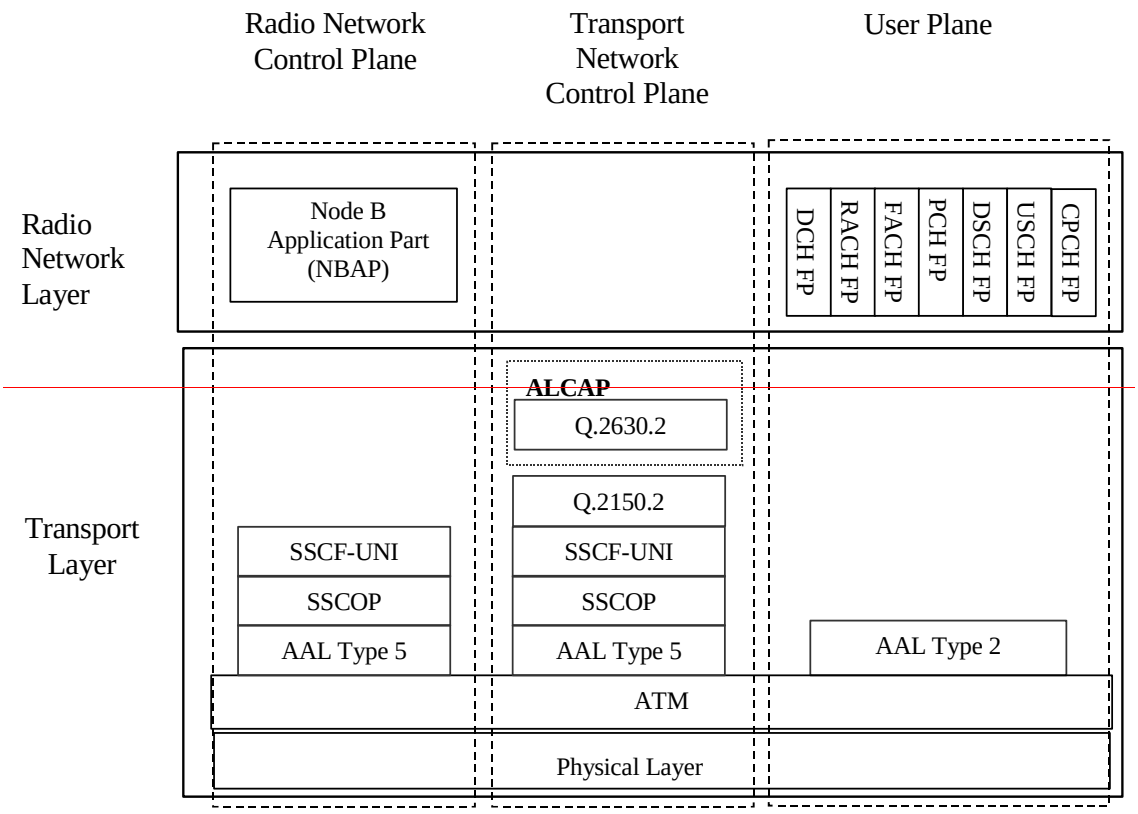


Figure 7: Iub Interface Protocol Structure



~~Figure 7: Iub Interface Protocol Structure.~~

The Iub interface protocol architecture consists of two functional layers:

1. Radio Network Layer, defines procedures related to the operation of Node B. The radio network layer consists of a radio network control plane and a radio network user plane.

2. Transport Layer, defines procedures for establishing physical connections between Node B and the RNC.

There shall be one dedicated AAL2 or UDP/IP transport bearer ~~connection~~ for each RACH, one for each FACH transport channel, and one for each CPCH [FDD].

An IP ALCAP protocol may be supported by an IP UTRAN node depending on the ATM - IP inter-working solution selected. Further information on the ATM - IP interworking is provided in the transport layer specification [10].

3GPP TSG-RAN WG3 Meeting #27
Orlando (Fl), US, 18th – 22nd February 2002

TDoc R3-020877

CR-Form-v5

CHANGE REQUEST

⌘ **25.432** **CR** **001** ⌘ **rev** **3** ⌘ Current version: **4.0.0** ⌘

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

Title:	⌘	Introduction of IP Transport Option in UTRAN
Source:	⌘	R-WG3
Work item code:	⌘	ETRAN-IPtrans
Date:	⌘	2002-Feb
Category:	⌘	**B**
Release:	⌘	REL-5

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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:	⌘	To introduce Rel5 IP Transport Option
Summary of change:	⌘	- A subsection for IP Transport Option has been added to section 4 on "Data Link Layer" - Figure 1 in section 5 has been adapted to reflect now both Transport Options - Subsection 5.3 "Signalling bearer in case of IP Transport Option" has been added - Abbreviations and References adapted Impact assessment towards the previous version of the specification (same release): This CR has no impact with the previous version of the specification (same release) due to no previous version is existing.
Consequences if not approved:	⌘	

Clauses affected:	⌘	2, 3, 4, 5		
Other specs affected:	⌘	☒ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

How to create CRs using this form:
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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.

1 Scope

The present document specifies the signalling transport related to NBAP signalling to be used across the Iub Interface. The Iub interface is a logical interface for the interconnection of Node B and Radio Network Controller (RNC) components of the UMTS Terrestrial Radio Access Network (UTRAN) for the UMTS system. The radio network control signalling between these nodes is based on the Node B application part (NBAP).

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.
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[1] ITU-T Recommendation Q.2100 (07/94): "B-ISDN signalling ATM adaptation layer (SAAL) overview description".

[2] ITU-T Recommendation Q.2130 (07/94): "B-ISDN signalling ATM adaptation layer – Service specific coordination function for support of signalling at the user network interface (SSCF–UNI)".

[3] ITU-T Recommendation Q.2110 (07/94): "B-ISDN ATM adaptation layer – Service specific connection oriented protocol (SSCOP)".

[4] ITU-T Recommendation I.363.5 (08/96): "B-ISDN ATM Adaptation Layer Type 5 Specification".

[5] ITU-T Recommendation I.361: B-ISDN ATM Layer Specification (11/95).

[6] ITU-T Rec. I.630 (2/99): ATM Protection Switching.

[7] IETF RFC 2960, “Stream Control Transmission Protocol”, October 2000

[8] IETF RFC 2460, “Internet Protocol, Version 6 (IPv6) Specification”, December 1998

[9] IETF RFC 791, "Internet Protocol", September 1981

[10] IETF RFC 2474, “Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers”, December 1998

[11] IETF RFC 1661, “The Point-to-Point Protocol (PPP)”, July 1994

[12] IETF RFC 1662, “PPP in HDLC-like Framing”, July 1994

[13] IETF RFC 2507, “IP header compression”, February 1999

[14] IETF RFC 1990, “The PPP Multilink Protocol (MP)”, August 1996

[15] IETF RFC 2686, “The Multi-Class Extension to Multi-Link PPP”, September 1999

[16] IETF RFC 2509, “IP Header Compression over PPP”, February 1999

[17] IETF RFC 3153, “PPP Multiplexing”, August 2001

[18] IETF RFC 2364, “PPP over AAL5”, July 1998

[19] IETF RFC 3031, “Multiprotocol Label Switching Architecture”, January 2001

3 Definitions, symbols and abbreviations

3.1 Definitions

~~(void)~~IP UTRAN node An UTRAN Node supporting the IP Transport Option

3.2 Symbols

(void)

3.3 Abbreviations

AAL	ATM Adaptation Layer
ATM	Asynchronous Transfer Mode
HDLC	High-level Data Link Control
IP	Internet Protocol
NBAP	Node B Application Part
PPP	Point-to-Point Protocol
RNC	Radio Network Controller
SAAL	Signalling ATM Adaptation Layer
SCTP	Stream Control Transmission Protocol
SSCF	Service Specific Coordination Function
SSCOP	Service Specific Connection Oriented Protocol
UNI	User-Network Interface

4 ~~ATM Layer~~Data Link Layer

4.1 ~~General~~ATM Transport Option

ATM shall be used in the radio network control plane according to I.361 [5].

4.~~2~~1.1 Protection switching at ATM Layer

If redundancy of pathways at ATM layer between RNC and Node B is supported, it shall be implemented using ATM Protection Switching according to I.630 [6].

4.2 Data Link Layer for IP Transport Option

A RNC or Node B supporting IP Transport Option shall support the PPP protocol with HDLC framing [11], [12].

Note: This does not preclude the single implementation and use of any other L2/L1 protocols (e.g. PPPMux/AAL5/ATM [17][18], PPP/AAL2/ATM, Ethernet, MPLS/ATM [19], etc.) fulfilling the UTRAN requirements towards the upper layers.

A RNC or Node B supporting IP transport option and having interfaces connected via slow bandwidth PPP links like E1/T1/J1 shall also support IP Header Compression [13] and the PPP extensions ML/MC-PPP [14], [15]. In this case, negotiation of header compression [13] over PPP shall be performed via [16].

5 NBAP signalling bearer

5.1 Introduction

The Signalling Bearer for NBAP is a point-to-point protocol. There may be multiple point-to-point links between an RNC and a Node B. As shown in figure 1, the standard allows operators to choose one out of two protocol suites for transporting the NBAP messages.

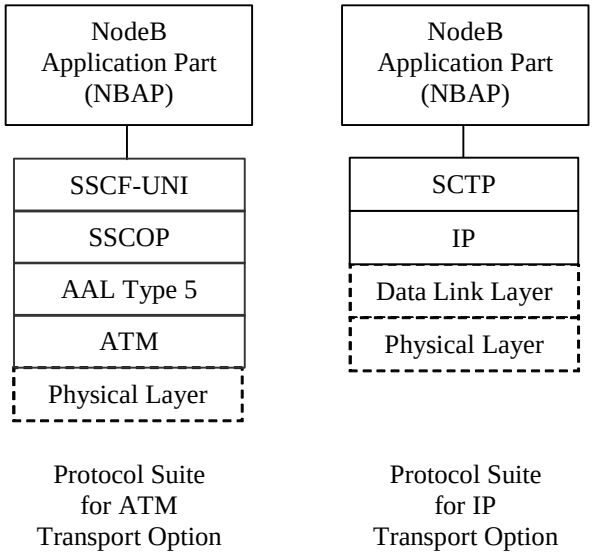
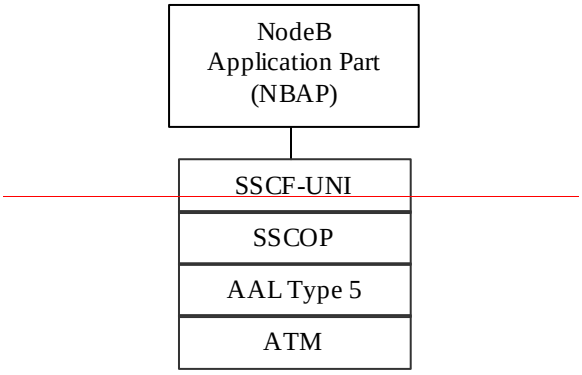


Figure 1: Iub NBAP Signalling Transport

5.2 Signalling bearer in case of ATM Transport Option

The signalling bearer in the Radio Network Control Plane is SAAL-UNI [1] over ATM. The ~~figure below shows the~~ protocols to be used to support NBAP signalling~~. These~~ are SSCF-UNI [2] on top of SSCOP [3] and AAL Type 5 [4].



~~**Figure 1: Iub NBAP Signalling Transport**~~

5.3 Signalling bearer in case of IP Transport Option

SCTP [7] over IP shall be supported as the transport for NBAP signalling bearer on Iub Interface. The data link layer is as specified in chapter 4.2

An IP UTRAN node shall support IPv6 [8]. The support of IPv4 [9] is optional.

Note: This does not preclude single implementation and use of IPv4.

IP dual stack is recommended for the potential transition period from IPv4 to IPv6 in the transport network.

Each signalling bearer between the RNC and Node B shall correspond to one single SCTP stream in UL and one single SCTP stream in DL direction, both streams belonging to the same SCTP association.

IP Differentiated Services code point marking [10] shall be supported. The Diffserv code point may be determined from the application parameters.

TSG-RAN WG 3 meeting #27 ***R3-020873***
Orlando, USA, 18th – 22th February 2002

CR-Form-v4

CHANGE REQUEST

⌘ **25.433** **CR** **597** ⌘ ev **2** ⌘ Current version: **4.3.0** ⌘

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

Title:	⌘	Introduction of IP Transport option in UTRAN
Source:	⌘	R-WG3
Work item code:	⌘	ETRAN-IPTRANS
Date:	⌘	February 2002
Category:	⌘	**B**
Release:	⌘	REL-5

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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: ⌘ The change is needed to be able to set up IP transport bearers on Iub in both directions.

Summary of change: ⌘ The Node B may include in the *Transport Layer Address* IE and *Binding ID* IE an IP address and a UDP port.

In the following procedures it has been made possible to include the *Transport Layer Address* IE and *Binding ID* IE to carry the IP address and UDP port of the CRNC:

Radio Link Setup, Radio Link Addition, Synchronised Radio Link Reconfiguration Preparation, Unsynchronised Radio Link Reconfiguration, Common Transport Channel Setup.

For each RL and DCH and DSCH that need a transport bearer an IP transport bearer can be setup, modified or added.

In the following messages it has been made possible to include the *Transport Layer Address* IE and *Binding ID* IE to carry the IP address and UDP port of the SRNC:

RADIO LINK SETUP REQUEST, RADIO LINK ADDITION REQUEST, RADIO LINK RECONFIGURATION PREPARE, RADIO LINK RECONFIGURATION REQUEST, COMMON TRANSPORT CHANNEL SETUP REQUEST.

The following IEs have been changed:

Binding ID IE, *Transport Layer Address* IE, *DSCH FDD Information* IE, *USCH Information* IE, *DSCH TDD Information* IE.

The following IE has been added:

		RL Specific DCH Information IE.
Consequences if not approved:	⌘	IP transport bearers will not be possible to setup on the Iub. <u>Impact Analysis:</u> Impact assessment towards the previous version of the specification (same release): No previous version. Compatibility Analysis towards previous release: No impact

Clauses affected:	⌘	3.3, 8.2.1.2, 8.2.1.4, 8.2.17.2, 8.2.17.4, 8.3.1.2, 8.3.1.4, 8.3.2.2, 8.3.2.4, 8.3.5.2, 8.3.5.4, 9.1.3.1, 9.1.3.2, 9.1.36.1, 9.1.36.2, 9.1.39.1, 9.1.39.2, 9.1.42.1, 9.1.42.2, 9.1.47.1, 9.1.47.2, 9.2.1.4, 9.2.1.63, 9.2.1.XXX, 9.2.2.13B, 9.2.3.5A, 9.2.3.28
Other specs affected:	⌘	[X] Other core specifications ⌘ [ ] Test specifications [ ] O&M Specifications
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.

2 References

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[1] 3GPP TS 25.401: "UTRAN Overall Description".

[2] 3GPP TS 25.426: "UTRAN Iur and Iub Interface Data Transport & Transport Signalling for DCH Data Streams".

[3] CCITT Recommendation X.731 (01/92): "Information Technology – Open Systems Interconnection – Systems Management: State Management function".

[4] 3GPP TS 25.215: "Physical layer – Measurements (FDD)".

[5] 3GPP TS 25.225: "Physical layer – Measurements (TDD)".

[6] 3GPP TS 25.430: "UTRAN Iub General Aspect and Principle".

[7] 3GPP TS 25.211: "Physical channels and mapping of transport channels onto physical channels (FDD)".

[8] 3GPP TS 25.212: "Multiplexing and channel coding (FDD)".

[9] 3GPP TS 25.213: "Spreading and modulation (FDD)".

[10] 3GPP TS 25.214: "Physical layer procedures (FDD)".

[11] ITU-T Recommendation X.691, (12/97) "Information technology - ASN.1 encoding rules - Specification of Packed Encoding Rules (PER)".

[12] ITU-T Recommendation X.680, (12/97) "Information Technology - Abstract Syntax Notation One (ASN.1):Specification of basic notation".

[13] ITU-T Recommendation X.681, (12/97) "Information Technology - Abstract Syntax Notation One (ASN.1): Information object specification".

[14] 3GPP TS 25.104: "UTRA (BS) FDD; Radio Transmission and Reception".

[15] 3GPP TS 25.105: "UTRA (BS) TDD; Radio Transmission and Reception".

[16] 3GPP TS 25.427: “UTRAN Iur/Iub Interface User Plane Protocol for DCH Data Stream”.

[17] 3GPP TS 25.402: “Synchronisation in UTRAN Stage2”.

[18] 3GPP TS 25.331: “RRC Protocol Specification”.

[19] 3GPP TS25.221: “Physical channels and mapping of transport channels onto physical channels[TDD]”.

[20] 3GPP TS 25.223: “Spreading and modulation (TDD)”.

[21] 3GPP TS 25.224: “Physical Layer Procedures (TDD)”.

[22] 3GPP TS 25.133 (V3.3): “Requirements for support of Radio Resource management (FDD)”.

[23] 3GPP TS 25.123 (V4.0): " Requirements for support of Radio Resource management (TDD)".

[24] 3GPP TS 25.435: "UTRAN Iub Interface: User Plane Protocols for Common Transport Channel Data Streams".

[25] 3GPP TS 25.302: "Services Provided by the Physical Layer".

[26] 3GPP TR 25.921: "Guidelines and Principles for Protocol Description and Error Handling".

[27 ICD-GPS-200: "Navstar GPS Space Segment/Navigation User Interface".

[28] RTCM-SC104: "RTCM Recommended Standards for Differential GNSS Service (v.2.2)".

[29] IETF RFC 2460 "Internet Protocol, Version 6 (IPv6) Specification".

[30] IETF RFC 768 "User Datagram Protocol", (8/1980)

[31] 3GPP TS 25.434: " UTRAN Iub Interface Data Transport & Transport Signalling for Common Transport Channel Data Streams ".

3.3 Abbreviations

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

A-GPS	Assisted GPS
AICH	Acquisition Indicator Channel
ALCAP	Access Link Control Application Part
AP-AICH	Access Preamble Acquisition Indicator Channel
ASN.1	Abstract Syntax Notation One
BCCH	Broadcast Control Channel
CCPCH	Common Control Physical Channel
CFN	Connection Frame Number
CM	Compressed Mode
CPCH	Common Packet Channel
CPICH	Common Pilot Channel
CRNC	Controlling Radio Network Controller
CSICH	CPCH Status Indicator Channel
DCH	Dedicated Channel
DGPS	Differential GPS
DL	Downlink
DPCCH	Dedicated Physical Control Channel
DPCH	Dedicated Physical Channel
DPDCH	Dedicated Physical Data Channel
DSCH	Downlink Shared Channel
FACH	Forward Access Channel
FDD	Frequency Division Duplex
FP	Frame Protocol
GPS	Global Positioning System
IP	Internet Protocol
IPDL	Idle Periods in the DownLink
ISCP	Interference Signal Code Power
L1	Layer 1
L2	Layer 2
MIB	Master Information Block
NBAP	Node B Application Part
O&M	Operation and Maintenance
PCCPCH	Primary Common Control Physical Channel
PCH	Paging Channel
PCPCH	Physical Common Packet Channel
PDSCH	Physical Downlink Shared Channel
PUSCH	Physical Uplink Shared Channel
RACH	Random Access Channel
RL	Radio Link
RLS	Radio Link Set
RNC	Radio Network Controller
RRC	Radio Resource Control
SB	Scheduling Block
SCCPCH	Secondary Common Control Physical Channel
SCH	Synchronisation Channel
SCTD	Space Code Transmit Diversity
SIB	System Information Block
SRNC	Serving Radio Network Controller
SSDT	Site Selection Diversity Transmission
STTD	Space Time Transmit Diversity
TDD	Time Division Duplex
TFC	Transport Format Combination
TFCI	Transport Format Combination Indicator
TFCS	Transport Format Combination Set
TFS	Transport Format Set
TPC	Transmit Power Control
TSTD	Time Switched Transmit Diversity

UARFCN	UTRA Absolute Radio Frequency Channel Number
UDP	User Datagram Protocol
UE	User Equipment
UL	Uplink
UMTS	Universal Mobile Telecommunications System
USCH	Uplink Shared Channel
UTRA	Universal Terrestrial Radio Access
UTRAN	Universal Terrestrial Radio Access Network

8.2 NBAP Common Procedures

8.2.1 Common Transport Channel Setup

8.2.1.1 General

This procedure is used for establishing the necessary resources in Node B, regarding Secondary CCPCH, PICH, PRACH, PCPCH [FDD], AICH [FDD], AP_AICH [FDD], CD/CA-ICH [FDD], FACH, PCH, RACH, FPACH[1.28Mcps TDD] and CPCH [FDD].

8.2.1.2 Successful Operation

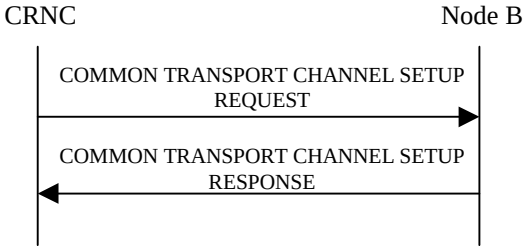

Figure 1: Common Transport Channel Setup procedure, Successful Operation

The procedure is initiated with a COMMON TRANSPORT CHANNEL SETUP REQUEST message sent from the CRNC to the Node B.

One message can configure only one of the following combinations:

- [FDD - one Secondary CCPCH, and FACHs, PCH and PICH related to that Secondary CCPCH], or
- [TDD - one CCTrCH consisting of Secondary CCPCHs and FACHes, PCH with the corresponding PICH related to that group of Secondary CCPCHs], or
- one [1.28Mcps TDD – or more] PRACH, one RACH and one AICH [FDD] and one FPACH[1.28Mcps TDD] related to that PRACH.
- [FDD-PCPCHs, one CPCH, one AP_AICH and one CD/CA-ICH related to that group of PCPCHs.]

Secondary CCPCH:

[FDD - When the COMMON TRANSPORT CHANNEL SETUP REQUEST message contains a Secondary CCPCH, the Node B shall configure and activate it according to the COMMON TRANSPORT CHANNEL SETUP REQUEST message.]

[TDD - When the COMMON TRANSPORT CHANNEL SETUP REQUEST message contains one or more Secondary CCPCHs, the Node B shall configure and activate them according to the COMMON TRANSPORT CHANNEL SETUP REQUEST message.]

[TDD- FACHs and PCH may be mapped onto a CCTrCH which may consist of several Secondary CCPCHs]

If the COMMON TRANSPORT CHANNEL SETUP REQUEST message contains one or several FACHs, the Node B shall configure and activate them according to the COMMON TRANSPORT CHANNEL SETUP REQUEST message.

If the COMMON TRANSPORT CHANNEL SETUP REQUEST message contains a PCH and a PICH, the Node B shall configure and activate them according to the COMMON TRANSPORT CHANNEL SETUP REQUEST message.

PRACH: When the COMMON TRANSPORT CHANNEL SETUP REQUEST message contains a PRACH, the Node B shall configure and activate it according to the COMMON TRANSPORT CHANNEL SETUP REQUEST message.

[1.28Mcps TDD – FPACH]: If the COMMON TRANSPORT CHANNEL SETUP REQUEST message contains a FPACH, the Node B shall configure and activate it according to the COMMON TRANSPORT CHANNEL SETUP REQUEST message.

[FDD-PCPCHs]: When the COMMON TRANSPORT CHANNEL SETUP REQUEST message contains PCPCHs, the Node B shall configure and activate it according to the COMMON TRANSPORT CHANNEL SETUP REQUEST message.

If the COMMON TRANSPORT CHANNEL SETUP REQUEST message includes *CD Signatures* IE, the Node B may use only the given CD signatures on CD/CA-ICH.

If the COMMON TRANSPORT CHANNEL SETUP REQUEST message includes Channel Request Parameters IE, the Node B shall use the parameters to distinguish the PCPCHs.

If the COMMON TRANSPORT CHANNEL SETUP REQUEST message includes *AP Sub Channel Number* IE in Channel Request Parameters IE, the Node B shall use AP sub channel number to distinguish the PCPCHs.

If the COMMON TRANSPORT CHANNEL SETUP REQUEST message includes *AP Sub Channel Number* IE in SF Request Parameters IE, the Node B shall use AP sub channel number to distinguish the requested Spreading Factors.

After successfully configuring the requested common transport channels and the common physical channels , the Node B shall store the value of *Configuration Generation ID* IE and it shall respond with the COMMON TRANSPORT CHANNEL SETUP RESPONSE message with the *Common Transport Channel ID* IE, the *Binding ID* IE and the *Transport Layer Address* IE for the configured common transport channels.

If the COMMON TRANSPORT CHANNEL SETUP REQUEST message includes the *Transport Layer Adress* and *Binding ID* IEs, the Node B may use the transport layer adress and the binding identifier received from the CRNC when establishing a transport bearer for the indicated common transport channels.

After a successful procedure and once the transport bearers are established, the configured common transport channels and the common physical channels shall adopt the state Enabled [6] in Node B and the common physical channels exist on the Uu interface.

8.2.1.4 Abnormal Conditions

If the COMMON TRANSPORT CHANNEL SETUP REQUEST message contains the *Secondary CCPCH* IE, and that IE contains [FDD – neither the *FACH Parameters* IE nor the *PCH Parameters* IE] [TDD – neither the *FACH* IE nor the *PCH* IE], the Node B shall reject the procedure using the COMMON TRANSPORT CHANNEL SETUP FAILURE message.

[FDD – If the COMMON TRANSPORT CHANNEL SETUP REQUEST message contains the *CD Sub Channel Numbers* IE, but the *CD Signatures* IE is not present, the Node B shall reject the procedure using the COMMON TRANSPORT CHANNEL SETUP FAILURE message.]

[TDD – If the *FACH CCTrCH id* IE or the *PCH CCTrCH id* IE does not equal the *SCCPCH CCTrCH id* IE the Node B shall regard the Common Transport Channel Setup procedure as having failed and the Node B shall send the COMMON TRANSPORT CHANNEL SETUP FAILURE message to the CRNC.]

[TDD – If the *TDD Physical Channel Offset* IE, the *Repetition Period* IE, and the *Repetition Length* IE are not equal for each SCCPCH configured within the CCTrCH the Node B shall regard the Common Transport Channel Setup procedure as having failed and the Node B shall send the COMMON TRANSPORT CHANNEL SETUP FAILURE message to the CRNC.]

If the state is already Enabled or Disabled [6] for at least one channel in the COMMON TRANSPORT CHANNEL SETUP REQUEST message which is received, the Node B shall reject the configuration of all channels with the *Cause* IE set to "Message not compatible with receiver state".

If the COMMON TRANSPORT CHANNEL SETUP REQUEST message contains the *Transport Layer Address* IE or the *Binding ID* IE, and not both are present for a transport channel intended to be established, the Node B shall reject the procedure using the COMMON TRANSPORT CHANNEL SETUP FAILURE message.

8.2.17 Radio Link Setup

8.2.17.1 General

This procedure is used for establishing the necessary resources for a new Node B Communication Context in the Node B.

[FDD – The RL Setup procedure is used to establish one or more radio links. The procedure establishes one or more DCHs on all radio links, and in addition, it can include the establishment of one or more DSCHs on one radio link.]

[TDD – The RL Setup procedure is used for establish one radio link including one or more transport channels. The transport channels can be a mixture of DCHs, DSCHs, and USCHs, including also combinations where one or more transport channel types are not present.]

8.2.17.2 Successful Operation

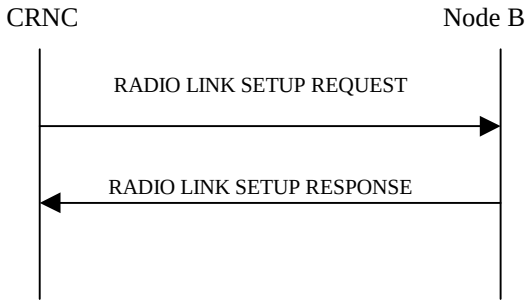

Figure 24: Radio Link Setup procedure, Successful Operation

The procedure is initiated with a RADIO LINK SETUP REQUEST message sent from the CRNC to Node B.

Upon reception of RADIO LINK SETUP REQUEST message, the Node B shall reserve necessary resources and configure the new Radio Link(s) according to the parameters given in the message.

The Node B shall prioritise resource allocation for the RL(s) to be established according to Annex A.

Transport Channels Handling:

DCH(s):

[TDD – If the *DCH Information* IE is present, the Node B shall configure the new DCH(s) according to the parameters given in the message.]

If the RADIO LINK SETUP REQUEST message includes a *DCH Information* IE with multiple *DCH Specific Info* IEs then, the Node B shall treat the DCHs in the *DCH Information* IE as a set of co-ordinated DCHs. The Node B shall include these DCHs in the new configuration only if it can include all of them in the new configuration.

[FDD – For DCHs which do not belong to a set of co-ordinated DCHs with the *QE-Selector* IE set to "selected", the Transport channel BER from that DCH shall be the base for the QE in the UL data frames. If no Transport channel BER is available for the selected DCH the Physical channel BER shall be used for the QE, ref. [16]. If the QE-Selector is set to "non-selected", the Physical channel BER shall be used for the QE in the UL data frames, ref. [16].]

For a set of co-ordinated DCHs the Transport channel BER from the DCH with the *QE-Selector* IE set to “selected” shall be used for the QE in the UL data frames, ref. [16]. [FDD - If no Transport channel BER is available for the selected DCH the Physical channel BER shall be used for the QE, ref. [16]. If all DCHs have *QE-Selector* IE set to "non-selected" the Physical channel BER shall be used for the QE, ref. [16]].

The Node B shall use the included *UL FP Mode* IE for a DCH or a set of co-ordinated DCHs to be added as the FP Mode in the Uplink of the user plane for the DCH or the set of co-ordinated DCHs in the configuration.

The Node B shall use the included *ToAWS* IE for a DCH or a set of co-ordinated DCHs to be added as the Time of Arrival Window Start Point in the user plane for the DCH or the set of co-ordinated DCHs in the configuration.

The Node B shall use the included *ToAWE* IE for a DCH or a set of co-ordinated DCHs to be added as the Time of Arrival Window End Point in the user plane for the DCH or the set of co-ordinated DCHs in the configuration.

The received *Frame Handling Priority* IE specified for each Transport Channel should be used when prioritising between different frames in the downlink on the radio interface in congestion situations within the Node B once the new RL(s) has been activated.

[FDD – The *Diversity Control Field* IE indicates for each RL (except the first RL in the message) whether the Node B shall combine the concerned RL or not. If the *Diversity Control Field* IE is set to"May", then Node B shall decide for either of the alternatives. If the *Diversity Control Field* IE is set to "Must", the Node B shall combine the RL with one of the other RL. Diversity combining is applied to Dedicated Transport Channels (DCH), i.e. it is not applied to the DSCHs. When a new RL is to be combined, the Node B shall choose which RL(s) to combine it with. If the *Diversity Control Field* IE is set to “Must not” , the Node B shall not combine the RL with any other existing RL.]

[FDD – In the RADIO LINK SETUP RESPONSE message the Node B shall indicate with the *Diversity Indication* IE whether the RL is combined or not. In case of combining, only the *Reference RL ID* IE shall be included to indicate one of the existing RLs that the concerned RL is combined with. In case of not combining the Node B shall include in the RL SETUP RESPONSE the *Binding ID* IE and *Transport Layer Address* IE for the transport bearer to be established for each DCH of this RL.]

[TDD – The Node B shall include in the RADIO LINK SETUP RESPONSE the *Binding ID* IE and *Transport Layer Address* IE for the transport bearer to be established for each DCH of this RL.]

In case of coordinated DCH, the *Binding ID* IE and the *Transport Layer Address* IE shall be specified for only one of the coordinated DCHs.

DSCH(s):

If the *DSCH Information* IE is present, the Node B shall configure the new DSCH(s) according to the parameters given in the message.

[FDD – If the RADIO LINK SETUP REQUEST message includes the *TFCI2 Bearer Information* IE then the Node B shall support the establishment of a transport bearer on which the DSCH TFCI Signaling control frames shall be received. The Node B shall manage the time of arrival of these frames according to the values of ToAWS and ToAWE specified in the IE’s. The *Binding ID* IE and *Transport Layer Address* IE for the new bearer to be set up for this purpose shall be returned in the RADIO LINK SETUP RESPONSE message.]

If the RADIO LINK SETUP REQUEST message includes the *Transport Layer Address* IE and *Binding ID* IE in the *DSCH Information* IE the Node B may use the transport layer address and the binding identifier received from the CRNC when establishing a transport bearer for the DSCH.

The Node B shall include in the RADIO LINK SETUP RESPONSE the *Binding ID* IE and *Transport Layer Address* IE for the transport bearer to be established for each DSCH of this RL.

[TDD – USCH(s)]:

[TDD – If the *USCH Information* IE is present, the Node B shall configure the new USCH(s) according to the parameters given in the message.]

[TDD - If the RADIO LINK SETUP REQUEST message includes the *Transport Layer Address* IE and *Binding ID* IE in the *USCH Information* IE the Node B may use the transport layer address and the binding identifier received from the CRNC when establishing a transport bearer for the USCH.]

[TDD – In case the *USCH Information* IE is present, the Node B shall include in the RADIO LINK SETUP RESPONSE the *Binding ID* IE and *Transport Layer Address* IE for the transport bearer to be established for each USCH of this RL.]

Physical Channels Handling:

[FDD – Compressed Mode]:

[FDD – If the RADIO LINK SETUP REQUEST message includes the *Transmission Gap Pattern Sequence Information* IE, the Node B shall store the information about the Transmission Gap Pattern Sequences to be used in the Compressed Mode Configuration. This Compressed Mode Configuration shall be valid in the Node B until the next Compressed Mode Configuration is configured in the Node B or Node B Communication Context is deleted.]

[FDD – If the *Downlink compressed mode method* IE in one or more Transmission Gap Pattern Sequence is set to 'SF/2' in the RADIO LINK SETUP REQUEST message, the Node B shall use or not the alternate scrambling code as indicated for each DL Channelisation Code in the *Transmission Gap Pattern Sequence Code Information* IE.]

[FDD – If the RADIO LINK SETUP REQUEST message includes the *Transmission Gap Pattern Sequence Information* IE and the *Active Pattern Sequence Information* IE, the Node B shall use the information to activate the indicated Transmission Gap Pattern Sequence(s) in the new RL.The received *CM Configuration Change CFN* refers to the latest passed CFN with that value The Node B shall treat the received *TGCFN* IEs as follows:]

- [FDD - If any received *TGCFN* IE has the same value as the received *CM Configuration Change CFN* IE, the Node B shall consider the concerning Transmission Gap Pattern Sequence as activated at that CFN.]
- [FDD - If any received *TGCFN* IE does not have the same value as the received *CM Configuration Change CFN* IE but the first CFN after the CM Configuration Change CFN with a value equal to the *TGCFN* IE has already passed, the Node B shall consider the concerning Transmission Gap Pattern Sequence as activated at that CFN.]
- [FDD - For all other Transmission Gap Pattern Sequences included in the *Active Pattern Sequence Information* IE, the Node B shall activate each Transmission Gap Pattern Sequence at the first CFN after the CM Configuration Change CFN with a value equal to the *TGCFN* IE for the Transmission Gap Pattern Sequence.]

[FDD – DL Code Information]:

[FDD – When more than one DL DPDCH are assigned per RL, the segmented physical channel shall be mapped on to DL DPDCHs according to [8]. When *p* number of DL DPDCHs are assigned to each RL, the first pair of DL Scrambling Code and FDD DL Channelisation Code Number corresponds to "*PhCH number 1"*, the second to "*PhCH number 2"*, and so on until the *p*th to "*PhCH number p*".]

General:

[FDD – If the *Propagation Delay* IE is included, the Node B may use this information to speed up the detection of L1 synchronisation.]

[FDD – The *UL SIR Target* IE included in the message shall be used by the Node B as initial UL SIR target for the UL inner loop power control.]

[1.28Mcps TDD – The *UL SIR Target* IE included in the message shall be used by the Node B as initial UL SIR target for the UL inner loop power control according [19] and [21].]

[FDD – If the received *Limited Power Increase* IE is set to 'Used', the Node B shall, if supported, use Limited Power Increase according to ref. [10] subclause 5.2.1 for the inner loop DL power control.]

[FDD – If the *TFCI Signalling Mode* IE within the RADIO LINK SETUP message indicates that there shall be a hard split on the TFCI field but the *TFCI2 Bearer Information* IE is not included in the message then the Node B shall transmit the TFCI2 field with zero power.]

[FDD - If the *TFCI Signalling Mode* IE within the RADIO LINK SETUP message indicates that there shall be a hard split on the TFCI and the *TFCI2 Bearer Information* IE is included in the message then the Node B shall transmit the TFCI2 field with zero power until Synchronization is achieved on the TFCI2 transport bearer and the first valid DSCH TFCI Signalling control frame is received on this bearer (see ref.[24]).]

Radio Link Handling:

[FDD – Transmit Diversity]:

[FDD – When *Diversity Mode* IE is "*STTD*", "*Closedloop mode1*", or "*Closedloop mode2*", the Node B shall activate/deactivate the Transmit Diversity to each Radio Link in accordance with *Transmit Diversity Indication* IE]

DL Power Control:

[FDD – The Node B shall start the DL transmission using the initial DL power specified in the message on each DL DPCH of the RL until either UL synchronisation on the Uu is achieved for the RLS or Power Balancing is activated. No inner loop power control or balancing shall be performed during this period. The DL power shall then vary according to the inner loop power control (see ref.[10], subclause 5.2.1.2) and the power control procedure (see subclause 8.3.7), but shall always be kept within the maximum and minimum limit specified in the RADIO LINK SETUP REQUEST message. During compressed mode, the $P_{SIR}(k)$, as described in ref.[10] subclause 5.2.1.3, shall be added to the maximum DL power in slot k.]

[FDD - If the *DPC Mode* IE is present in the RADIO LINK SETUP REQUEST message, the Node B shall apply the DPC mode indicated in the message, and be prepared that the DPC mode may be changed during the life time of the RL. If the *DPC Mode* IE is not present in the RADIO LINK SETUP REQUEST message, DPC mode 0 shall be applied (see ref. [10]).]]

[TDD – The Node B shall start the DL transmission using the initial DL power specified in the message on each DL DPCH and on each Time Slot of the RL until the UL synchronisation on the Uu is achieved for the RL. No inner loop power control shall be performed during this period. The DL power shall then vary according to the inner loop power control (see ref.[22], subclause 4.2.3.3), but shall always be kept within the maximum and minimum limit specified in the RL SETUP REQUEST message.]

[TDD – If the [3.84Mcps TDD - *DL Time Slot ISCPInfo* IE] or [1.28Mcps TDD - *DL Timeslot ISCP LCR* IE] is present, the Node B shall use the indicated value when deciding the initial DL TX Power for each timeslot as specified in [21], i.e. it shall reduce the DL TX power in those downlink timeslots of the radio link where the interference is low, and increase the DL TX power in those timeslots where the interference is high, while keeping the total downlink power in the radio link unchanged].

[FDD – If the received *Inner Loop DL PC Status* IE is set to "Active", the Node B shall activate the inner loop DL power control for all RLs. If *Inner Loop DL PC Status* IE is set to "Inactive", the Node B shall deactivate the inner loop DL power control for all RLs according to ref. [10]]

General:

If the RADIO LINK SETUP REQUEST message includes the *RL Specific DCH Information* IE,the Node B may use the transport layer address and the binding identifier received from the CRNC when establishing a transport bearer for the DCH or the set of co-ordinated DCHs.

[FDD – If the RADIO LINK SETUP REQUEST message includes the *SSDT Cell Identity* IE and the *S-Field Length* E, the Node B shall activate SSDT, if supported, using the *SSDT Cell Identity* IE and *SSDT Cell Identity Length* IE.]

[FDD – Irrespective of SSDT activation, the Node B shall include in the RADIO LINK SETUP RESPONSE message an indication concerning the capability to support SSDT on this RL. Only if the RADIO LINK SETUP REQUEST message requested SSDT activation and the RADIO LINK SETUP RESPONSE message indicates that the SSDT capability is supported for this RL, SSDT is activated in the Node B.]

[FDD - If the RADIO LINK SETUP REQUEST message includes the *SSDT Cell Identity for EDSCHPC* IE, the Node B shall activate enhanced DSCH power control, if supported, using the *SSDT Cell Identity for EDSCHPC* IE and *SSDT Cell Identity Length* IE as well as *Enhanced DSCH PC* IE in accordance with ref. [10] subclause 5.2.2. If the RADIO LINK SETUP REQUEST message includes both *SSDT Cell Identity* IE and *SSDT Cell Identity for EDSCHPC* IE, then the Node B shall ignore the value in *SSDT Cell Identity for EDSCHPC* IE]

[FDD – Radio Link Set Handling]:

[FDD – The *First RLS Indicator* IE indicates if the concerning RL shall be considered part of the first RLS established towards this UE. The *First RLS Indicator* IE shall be used by the Node B together with the value of the *DL TPC pattern*

01 count IE which the Node B has received in the Cell Setup procedure, to determine the initial TPC pattern in the DL of the concerning RL and all RLs which are part of the same RLS, as described in [10], section 5.1.2.2.1.2.]

[FDD – For each RL not having a common generation of the TPC commands in the DL with another RL, the Node B shall assign the *RL Set ID* IE included in the RADIO LINK SETUP RESPONSE message a value that uniquely identifies the RL Set within the Node B Communication context.]

[FDD – For all RLs having a common generation of the TPC commands in the DL with another RL, the Node B shall assign the *RL Set ID* IE included in the RADIO LINK SETUP RESPONSE message the same value. This value shall uniquely identify the RL Set within the Node B Communication context.]

[FDD – The UL out-of-sync algorithm defined in [10] shall for each of the established RL Set(s) use the maximum value of the parameters N_OUTSYNC_IND and T_RLFAILURE, and the minimum value of the parameters N_INSYNC_IND, that are configured in the cells supporting the radio links of the RL Set]

Response Message:

If the RLs are successfully established, the Node B shall start reception on the new RL(s) and respond with a RADIO LINK SETUP RESPONSE message.

After sending of the RADIO LINK SETUP RESPONSE message the Node B shall continuously attempt to obtain UL synchronisation on the Uu and start reception on the new RL. [FDD – The Node B shall start transmission on the new RL after synchronisation is achieved in the DL user plane as specified in [16].] [TDD – The Node B shall start transmission on the new RL immediately as specified in [16].]

8.2.17.4 Abnormal Conditions

[FDD – If the RADIO LINK SETUP REQUEST message contains the *Active Pattern Sequence Information* IE, but the *Transmission Gap Pattern Sequence Information* IE is not present, then the Node B shall reject the procedure using the RADIO LINK SETUP FAILURE message.]

If more than one DCH of a set of co-ordinated DCHs has the *QE-Selector* IE set to "selected" [TDD – or no DCH of a set of co-ordinated DCHs has the *QE-Selector* IE set to "selected"] the Node B shall regard the Radio Link Setup procedure as failed and shall respond with a RADIO LINK SETUP FAILURE message.

If the RADIO LINK SETUP REQUEST message includes a *DCH Information* IE with multiple *DCH Specific Info* IEs, and if the DCHs in the *DCH Information* IE do not have the same *Transmission Time Interval* IE in the *Semi-static Transport Format Information* IE, then the Node B shall reject the procedure using the RADIO LINK SETUP FAILURE message

If the RADIO LINK SETUP REQUEST message includes the *Transport Layer Address* IE and the *Binding ID* IE in the *RL Specific DCH Information* IE included in the *RL Information* IE for a specific RL and the *Diversity Control Field* IE is set to “Must”, the Node B shall regard the Radio Link Setup procedure as failed and respond with the RADIO LINK SETUP FAILURE message.

If the RADIO LINK SETUP REQUEST message contains the *Transport Layer Address* IE or the *Binding ID* IE, and not both are present for a transport bearer intended to be established, the Node B shall reject the procedure using the RADIO LINK SETUP FAILURE message.

8.3 NBAP Dedicated Procedures

8.3.1 Radio Link Addition

8.3.1.1 General

This procedure is used for establishing the necessary resources in the Node B for one or more additional RLs towards a UE when there is already a Node B communication context for this UE in the Node B.

The Radio Link Addition procedure shall not be initiated if a Prepared Reconfiguration exists, as defined in subclause 3.1.

8.3.1.2 Successful Operation

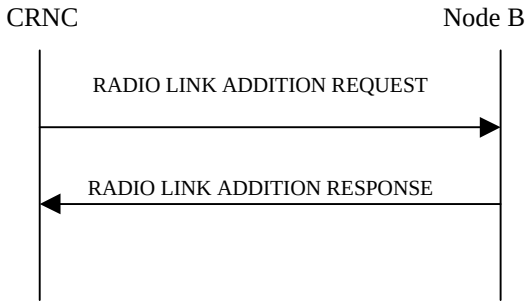

Figure: 28 Radio Link Addition procedure, Successful Operation

The procedure is initiated with a RADIO LINK ADDITION REQUEST message sent from the CRNC to the Node B.

Upon reception, the Node B shall reserve the necessary resources and configure the new RL(s) according to the parameters given in the message. Unless specified below, the meaning of parameters is specified in other specifications.

The Node B shall prioritise resource allocation for the RL(s) to be established according to Annex A.

Physical Channels Handling:

[TDD – If the *UL DPCH Information* IE is present, the Node B shall configure the new UL DPCH(s) according to the parameters given in the message.]

[TDD – If the *DL DPCH Information* IE is present, the Node B shall configure the new DL DPCH(s) according to the parameters given in the message.]

[FDD – Compressed Mode]:

[FDD – If the RADIO LINK ADDITION REQUEST includes the *Compressed Mode Deactivation Flag* IE with value "Deactivate", the Node B shall not activate any compressed mode pattern in the new RLs. In all the other cases (Flag set to "Maintain Active" or not present), the ongoing compressed mode (if existing) shall be applied also to the added RLs.]

[FDD- If the RADIO LINK ADDITION REQUEST contains the *Transmission Gap Pattern Sequence Code Information* IE for any of the allocated DL Channelisation Codes, the Node B shall apply the alternate scrambling code as indicated for each DL Channelisation Code for which the *Transmission Gap Pattern Sequence Code Information* IE is set to "Code Change".]

[FDD – DL Code Information]:

[FDD – When more than one DL DPDCH are assigned per RL, the segmented physical channel shall be mapped on to DL DPDCHs according to ref. [8]. When *p* number of DL DPDCHs are assigned to each RL, the first pair of DL Scrambling Code and FDD DL Channelisation Code Number corresponds to *"PhCH number 1"*, the second to "*PhCH number 2"*, and so on until the *p*th to "*PhCH number p*".]

[TDD – CCTrCH Handling]:

[TDD – If the *UL CCTrCH Information* IE is present, the Node B shall configure the new UL CCTrCH(s) according to the parameters given in the message.]

[TDD – If the *DL CCTrCH Information* IE is present, the Node B shall configure the new DL CCTrCH(s) according to the parameters given in the message.]

Radio Link Handling:

Diversity Combination Control:

The *Diversity Control Field* IE indicates for each RL whether the Node B shall combine the new RL with existing RL(s) or not. If the *Diversity Control Field* IE is set to "May", then Node B shall decide for any of the alternatives. If the *Diversity Control Field* IE is set to "Must", the Node B shall combine the RL with one of the other RL. When a new RL is to be combined, the Node B shall choose which RL(s) to combine it with. If the *Diversity Control Field* IE is set to "Must not" the Node B shall not combine the RL with any other existing RL.

In the case of combining an RL with existing RL(s) the Node B shall indicate in the RADIO LINK ADDITION RESPONSE message with the Diversity Indication that the RL is combined. In this case the Reference RL ID shall be included to indicate one of the existing RLs that the new RL is combined with.

In the case of not combining an RL with existing RL(s), the Node B shall indicate in the RADIO LINK ADDITION RESPONSE message with the Diversity Indication that no combining is done. In this case the Node B shall include both the Transport Layer Address and the binding ID for the transport bearer to be established for each DCH, [TDD – DSCH, USCH] of the RL in the RADIO LINK ADDITION RESPONSE message.

In case of coordinated DCH, the binding ID and the transport address shall be included for only one of the coordinated DCHs.

[TDD – The Node B shall include in the RADIO LINK ADDITION RESPONSE message both the *Transport Layer Address* IE and the *Binding ID* IE for the transport bearer to be established for each DSCH and USCH.]

[FDD – Transmit Diversity]:

[FDD – When *Diversity Mode* IE is "*STTD*", "*Closedloop mode1*", or "*Closedloop mode2*", the Node B shall activate/deactivate the Transmit Diversity to each Radio Link in accordance with *Transmit Diversity Indication* IE.]

[FDD – When *Transmit Diversity Indicator* IE is present Node B shall activate/deactivate the Transmit Diversity to each new Radio Link in accordance with the *Transmit Diversity Indicator* IE and the already known diversity mode.]

DL Power Control:

[FDD – If the RADIO LINK ADDITION REQUEST message includes the *Initial DL Transmission Power* IE, the Node B shall apply the given power to the transmission on each DL DPCH of the RL when starting transmission until either UL synchronisation on the Uu is achieved for the RLS or Power Balancing is activated. If no *Initial DL Transmission power* IE is included, the Node B shall use any transmission power level currently used on already existing RL's for this UE. No inner loop power control or balancing shall be performed during this period. The DL power shall then vary according to the inner loop power control (see ref.[10], subclause 5.2.1.2) with DPC MODE currently configured for the relevant Node B Communication Context and the downlink power control procedure (see 8.3.7).]

[TDD – If the RADIO LINK ADDITION REQUEST message includes the [3.84Mcps TDD - *Initial DL Transmission Power* IE] [1.28Mcps TDD – *DL Time Slot ISCP Info LCR* IE], the Node B shall apply the given power to the transmission on each DL DPCH and on each Time Slot of the RL when starting transmission until the UL synchronisation on the Uu is achieved for the RL. If no *Initial DL Transmission power* IE is included, the Node B shall use any transmission power level currently used on already existing RL's for this UE. No inner loop power control shall be performed during this period. The DL power shall then vary according to the inner loop power control (see ref.[22], subclause 4.2.3.3).]

If the RADIO LINK ADDITION REQUEST message includes the *Maximum DL power* IE, the Node B shall store this value and not transmit with a higher power on any DL DPCH of the RL. If no *Maximum DL power* IE is included, any Maximum DL power stored for already existing RLs for this UE shall be applied. [FDD - During compressed mode, the $P_{SIR}(k)$, as described in ref.[10] subclause 5.2.1.3, shall be added to the maximum DL power in slot k.]

If the RADIO LINK ADDITION REQUEST message includes the *Minimum DL power* IE, the Node B shall store this value and never transmit with a lower power on any DL DPCH of the RL. If no *Minimum DL power* IE is included, any Minimum DL power stored for already existing RLs for this UE shall be applied.

[TDD – If the RADIO LINK ADDITION REQUEST message includes the *DL Time Slot ISCP Info* IE, the Node B shall use the indicated value when deciding the DL TX Power for each timeslot as specified in ref. [21], i.e. it shall reduce the DL TX power in those downlink timeslots of the radio link where the interference is low, and increase the DL TX power in those timeslots where the interference is high, while keeping the total downlink power in the radio link unchanged].

General:

If the RADIO LINK ADDITION REQUEST message includes the *RL Specific DCH Information* IE, the Node B may use the transport layer address and the binding identifier received from the CRNC when establishing a transport bearer for the DCH or the set of co-ordinated DCHs.

[FDD – If the RADIO LINK ADDITION REQUEST message contains an *SSDT Cell Identity* IE the Node B shall activate SSDT, if supported, for the concerned new RL, with the indicated SSDT cell identity used for that RL.]

[FDD – Radio Link Set Handling]:

[FDD – For each RL not having a common generation of the TPC commands in the DL with another RL, the Node B shall assign the *RL Set ID* IE included in the RADIO LINK ADDITION RESPONSE message a value that uniquely identifies the RL Set within the Node B Communication context.]

[FDD – For all RLs having a common generation of the TPC commands in the DL with another new or existing RL, the Node B shall assign the *RL Set ID* IE included in the RADIO LINK ADDITION RESPONSE message the same value. This value shall uniquely identify the RL Set within the Node B Communication context.]

[FDD – After addition of the new RL(s), the UL out-of-sync algorithm defined in [10] shall for each of the previously existing and newly established RL Set(s) use the maximum value of the parameters N_OUTSYNC_IND and T_RLFAILURE, and the minimum value of the parameters N_INSYNC_IND, that are configured in the cells supporting the radio links of the RL Set.]

Response Message:

If all requested RLs are successfully added, the Node B shall respond with a RADIO LINK ADDITION RESPONSE message.

After sending of the RADIO LINK ADDITION RESPONSE message the Node B shall continuously attempt to obtain UL synchronisation on the Uu and start reception on the new RL. [FDD – The Node B shall start transmission on the new RL after synchronisation is achieved in the DL user plane as specified in [16].] [TDD – The Node B shall start transmission on the new RL immediately as specified in [16].]

8.3.1.4 Abnormal conditions

[FDD – If the RADIO LINK ADDITION REQUEST contains the *Compressed Mode Deactivation Flag* IE with the value "Deactivate" when compressed mode is active for the existing RL(s), and at least one of the new RL is added in a cell that has the same UARFCN (both UL and DL) of at least one cell with an already existing RL, the Node B shall regard the Radio Link Addition procedure as failed and shall respond with a RADIO LINK ADDITION FAILURE message with the cause value "Invalid CM settings".]

If the RADIO LINK ADDITION REQUEST message includes the *Transport Layer Address* IE and the *Binding ID* IE in the *RL Specific DCH Information* IE included in the *RL Information* IE for a specific RL and the *Diversity Control Field* IE is set to "Must", the Node B shall regard the Radio Link Addition procedure as failed and respond with the RADIO LINK ADDITION FAILURE message.

If the RADIO LINK ADDITION REQUEST message contains the *Transport Layer Address* IE or the *Binding ID* IE, and not both are present for a transport bearer intended to be established, the Node B shall reject the procedure using the RADIO LINK ADDITION FAILURE message.

8.3.2 Synchronised Radio Link Reconfiguration Preparation

8.3.2.1 General

The Synchronised Radio Link Reconfiguration Preparation procedure is used to prepare a new configuration of Radio Link(s) related to one UE-UTRAN connection within a Node B.

The Synchronised Radio Link Reconfiguration Preparation procedure shall not be initiated if a Prepared Reconfiguration exists, as defined in subclause 3.1.

8.3.2.2 Successful Operation

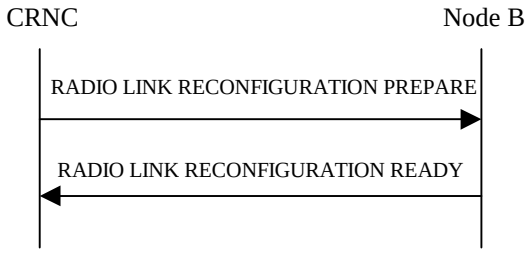

Figure 30: Synchronised Radio Link Reconfiguration Preparation procedure, Successful Operation

The Synchronised Radio Link Reconfiguration Preparation procedure is initiated by the CRNC by sending the message RADIO LINK RECONFIGURATION PREPARE to the Node B. The message shall use the Communication Control Port assigned for this Node B Communication Context.

Upon reception, the Node B shall reserve necessary resources for the new configuration of the Radio Link(s) according to the parameters given in the message. Unless specified below, the meaning of parameters is specified in other specifications.

The Node B shall prioritise resource allocation for the RL(s) to be modified according to Annex A.

DCH Modification:

If the RADIO LINK RECONFIGURATION PREPARE message includes any *DCHs to Modify* IEs then the Node B shall treat them each as follows:

- If the *DCHs to Modify* IE includes the *Frame Handling Priority* IE, the Node B should store this information for this DCH in the new configuration. The received Frame Handling Priority should be used when prioritising between different frames in the downlink on the radio interface in congestion situations within the Node B once the new configuration has been activated.

- If the *DCHs to Modify* IE includes the *Transport Format Set* IE for the UL of a DCH, the Node B shall apply the new Transport Format Set in the Uplink of this DCH in the new configuration.

- If the *DCHs to Modify* IE includes the *Transport Format Set* IE for the DL of a DCH, the Node B shall apply the new Transport Format Set in the Downlink of this DCH in the new configuration.

- If the *DCHs to Modify* IE includes multiple *DCH Specific Info* IEs then the Node B shall treat the DCHs in the *DCHs to Modify* IE as a set of co-ordinated DCHs. The Node B shall include these DCHs in the new configuration only if it can include all of them in the new configuration.

- If the *DCHs to Modify* IE includes the *UL FP Mode* IE for a DCH or a DCH which belongs to a set of co-ordinated DCHs, the Node B shall apply the new FP Mode in the Uplink of the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- If the *DCHs to Modify* IE includes the *ToAWS* IE for a DCH or a DCH which belongs to a set of co-ordinated DCHs, the Node B shall apply the new ToAWS in the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- If the *DCHs to Modify* IE includes the *ToAWE* IE for a DCH or a DCH which belongs to a set of co-ordinated DCHs, the Node B shall apply the new ToAWE in the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- [TDD – If the *DCHs to Modify* IE includes the *CCTrCH ID* IE for the DL of a DCH to be modified, the Node B shall apply the new CCTrCH ID in the Downlink of this DCH in the new configuration.]

- [TDD – If the *DCHs to Modify* IE includes the *CCTrCH ID* IE for the UL of a DCH to be modified, the Node B shall apply the new CCTrCH ID in the Uplink of this DCH in the new configuration.]

DCH Addition:

If the RADIO LINK RECONFIGURATION PREPARE message includes any *DCHs to Add* IEs then the Node B shall treat them each as follows:

- If the *DCHs to Add* IE includes multiple *DCH specific Info* IEs then, the Node B shall treat the DCHs in the *DCHs to Add* IE as a set of co-ordinated DCHs. The Node B shall include these DCHs in the new configuration only if it can include all of them in the new configuration.

- [FDD – For DCHs which do not belong to a set of co-ordinated DCHs with the *QE-Selector* IE set to "selected", the Transport channel BER from that DCH shall be the base for the QE in the UL data frames. If no Transport channel BER is available for the selected DCH the Physical channel BER shall be used for the QE, ref. [16]. If the QE-Selector is set to "non-selected", the Physical channel BER shall be used for the QE in the UL data frames, ref. [16].]

- For a set of co-ordinated DCHs the Transport channel BER from the DCH with the *QE-Selector* IE set to "selected" shall be used for the QE in the UL data frames, ref. [16]. [FDD – If no Transport channel BER is available for the selected DCH the Physical channel BER shall be used for the QE, ref. [16]. If all DCHs have *QE-Selector* IE set to ”non-selected” the Physical channel BER shall be used for the QE, ref. [16].]

- The Node B should store the *Frame Handling Priority* IE received for a DCH to be added in the new configuration The received Frame Handling Priority should be used when prioritising between different frames in the downlink on the radio interface in congestion situations within the Node B once the new configuration has been activated.

- The Node B shall use the included *UL FP Mode* IE for a DCH or a set of co-ordinated DCHs to be added as the new FP Mode in the Uplink of the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- The Node B shall use the included *ToAWS* IE for a DCH or a set of co-ordinated DCHs to be added as the new Time of Arrival Window Start Point in the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- The Node B shall use the included *ToAWE* IE for a DCH or a set of co-ordinated DCHs to be added as the new Time of Arrival Window End Point in the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- [TDD – The Node B shall apply the *CCTrCH ID* IE (for the DL) in the Downlink of this DCH in the new configuration.]

- [TDD – The Node B shall apply the *CCTrCH ID* IE (for the UL) in the Uplink of this DCH in the new configuration.]

DCH Deletion:

If the RADIO LINK RECONFIGURATION PREPARE message includes any *DCHs to Delete* IEs, the Node B shall not include the referenced DCHs in the new configuration.

If all of the DCHs belonging to a set of coordinated DCHs are requested to be deleted, the Node B shall not include this set of coordinated DCHs in the new configuration.

Physical Channel Modification:

[FDD – If the RADIO LINK RECONFIGURATION PREPARE message includes an *UL DPCH Information* IE then the Node B shall apply the parameters to the new configuration as follows:]

- [FDD – If the *UL DPCH Information* IE includes the *Uplink Scrambling Code* IE, the Node B shall apply this Uplink Scrambling Code to the new configuration.]

- [FDD – If the *UL DPCH Information* IE includes the *Min UL Channelisation Code Length* IE, the Node B shall apply the value in the new configuration. The Node B shall apply the contents of the *Max Number of UL DPDCHs* IE (if it is included) in the new configuration.]

- [FDD – If the *UL DPCH Information* IE includes the *UL SIR Target* IE, the Node B shall use the value for the UL inner loop power control when the new configuration is being used.]

- [FDD – If the *UL DPCH Information* IE includes the *Puncture Limit* IE, the Node B shall apply the value in the uplink of the new configuration.]

- [FDD – The Node B shall use the *TFCS* IE for the UL (if present) when reserving resources for the uplink of the new configuration. The Node B shall apply the new TFCS in the Uplink of the new configuration.]

- [FDD – If the *UL DPCH Information* IE includes the *UL DPCCH Slot Format* IE, the Node B shall set the new Uplink DPCCH Structure to the new configuration.]

- [FDD - If the *UL DPCH Information* IE includes the *Diversity Mode* IE, the Node B shall apply diversity according to the given value.]

- [FDD – If the *UL DPCH Information* IE includes an *SSDT Cell Identity Length* IE and/or an *S-Field Length* IE, the Node B shall apply the values in the new configuration.]

[FDD - If the RADIO LINK RECONFIGURATION PREPARE message includes a *DL DPCH Information* IE then the Node B shall apply the parameters to the new configuration as follows:]

- [FDD – The Node B shall use the *TFCS* IE for the DL (if it is present) when reserving resources for the downlink of the new configuration. The Node B shall apply the new TFCS in the Downlink of the new configuration.]

- [FDD – If the *DL DPCH Information* IE includes the *TFCI Signalling Mode* IE or the *TFCI Presence* IE, the Node B shall use the information when building TFCIs in the new configuration.]

- [FDD – If the *DL DPCH Information* IE includes the *DL DPCCH Slot Format* IE, group the Node B shall set the new Downlink DPCCH Structure to the new configuration.]

- [FDD – If the *DL DPCH Information* IE includes the *Multiplexing Position* IE, the Node B shall apply the indicated multiplexing type in the new configuration.]

- [FDD – If the *DL DPCH Information* IE includes the *Limited Power Increase* IE and the IE is set to 'Used', the Node B shall use Limited Power Increase ref. [10] subclause 5.2.1 for the inner loop DL power control in the new configuration.]

- [FDD – If the *DL DPCH Information* IE includes the *Limited Power Increase* IE and the IE is set to 'Not Used', the Node B shall not use Limited Power Increase for the inner loop DL power control in the new configuration.]

- [FDD – If the *DL DPCH Information* IE includes the *PDSCH code mapping* IE then the Node B shall apply the defined mapping between TFCI values and PDSCH channelisation codes.]

- [FDD – If the *DL DPCH Information* IE includes the *PDSCH RL ID* IE then the Node B shall infer that the PDSCH for the specified user will be transmitted on the defined radio link.]

[FDD – If the RADIO LINK RECONFIGURATION PREPARE message includes the *Transmission Gap Pattern Sequence Information* IE the Node B shall store the new information about the Transmission Gap Pattern Sequences to be used in the new Compressed Mode Configuration. This new Compressed Mode Configuration shall be valid in the Node B until the next Compressed Mode Configuration is configured in the Node B or Node B Communication Context is deleted.]

[TDD – UL/DL CCTrCH Modification]

[TDD – If the RADIO LINK RECONFIGURATION PREPARE message includes any *UL CCTrCH to Modify* or *DL CCTrCH to Modify* IEs, then the Node B shall treat them each as follows:]

- [TDD – If the IE includes any of *TFCS* IE, *TFCI coding* IE or *Puncture Limit* IE the Node B shall apply these as the new values, otherwise the old values specified for this CCTrCH are still applicable.]

- [TDD – If the IE includes any *UL DPCH to add* or *DL DPCH to add* IEs, the Node B shall include this DPCH in the new configuration.]

- [TDD – If the IE includes any *UL DPCH to delete* or *DL DPCH to delete* IEs, the Node B shall remove this DPCH in the new configuration.]

- [TDD – If the IE includes any UL *DPCH to modify* or *DL DPCH to modify* IEs, and includes any of *Repetition Period* IE, *Repetition Length* IE, or *TDD DPCH Offset* IE or the message includes UL/DL Timeslot Information and includes any of *[3.84Mcps TDD - Midamble shift and Burst Type* IE, *Time Slot* IE], [1.28Mcps TDD - *Midamble shift LCR* IE, *Time Slot LCR* IE], or *TFCI presence* IE or the message includes UL/DL Code information and includes [3.84Mcps TDD - *TDD Channelisation Code* IE], [1.28Mcps TDD - *TDD Channelisation Code LCR* IE], the Node B shall apply these specified information elements as the new values, otherwise the old values specified for this DPCH configuration are still applicable.]

- [1.28Mcps TDD – If the *UL CCTrCH to Modify* IE includes the *UL SIR Target* IE, the Node B shall use the value for the UL inner loop power control according [19] and [21] when the new configuration is being used.]

[TDD – UL/DL CCTrCH Addition]

[TDD – If the RADIO LINK RECONFIGURATION PREPARE message includes any *UL CCTrCH to Add* IE or *DL CCTrCH to Add* IE, the Node B shall include this CCTrCH in the new configuration.]

[TDD – If the *UL/DL CCTrCH to Add* IE includes any *UL/DL DPCH Information* IE, the Node B shall reserve necessary resources for the new configuration of the UL/DL DPCH(s) according to the parameters given in the message.]

[TDD – If the RADIO LINK RECONFIGURATION PREPARE message includes a *DL CCTrCH to Add* IE, the Node B shall set the TPC step size of that CCTrCH to the same value as the lowest numbered DL CCTrCH in the current configuration.]

[1.28Mcps TDD –The Node B shall use the *UL SIR Target* IE in the *UL CCTrCH to Add* IE as the UL SIR value for the inner loop power control for this CCTrCH according [19] and [21] in the new configuration.]

[TDD – UL/DL CCTrCH Deletion]

[TDD – If the RADIO LINK RECONFIGURATION PREPARE message includes any UL or DL CCTrCH to be deleted , the Node B shall remove this CCTrCH in the new configuration.]

DSCH Addition/Modification/Deletion:

If the RADIO LINK RECONFIGURATION PREPARE message includes any *DSCH to modify*, *DSCH to add* or *DSCH to delete* IEs, then the Node B shall use this information to add/modify/delete the indicated DSCH channels to/from the radio link, in the same way as the DCH info is used to add/modify/release DCHs.

The Node B shall include in the RADIO LINK RECONFIGURATION READY message both the *Transport Layer Address* IE and the *Binding ID* IE for the transport bearer to be established for each DSCH.

[FDD – If the RADIO LINK RECONFIGURATION PREPARE message includes the *TFCI2 Bearer Information* IE then the Node B shall support the establishment of a transport bearer on which the DSCH TFCI Signaling control frames shall be received if one does not already exist or shall apply the new values if such a bearer does already exist. The *Binding ID* IE and *Transport Layer Address* IE of any new bearer to be set up for this purpose shall be returned in the RADIO LINK RECONFIGURATION READY message. If the RADIO LINK RECONFIGURATION PREPARE message specifies that the TFCI2 transport bearer is to be deleted then the Node B shall release the resources associated with that bearer in the new configuration.

[FDD – If the *TFCI Signalling Mode* IE within the RADIO LINK RECONFIGURATION PREPARE message indicates that there shall be a hard split on the TFCI field but a TFCI2 transport bearer has not already been set up and *TFCI2 Bearer Information* IE is not included in the message then the Node B shall transmit the TFCI2 field with zero power in the new configuration.]

[FDD – If the *TFCI Signalling Mode* IE within the RADIO LINK RECONFIGURATION PREPARE message indicates that there shall be a hard split on the TFCI and the *TFCI2 Bearer Information* IE is included in the message then the Node B shall transmit the TFCI2 field with zero power until Synchronisation is achieved on the TFCI2 transport bearer and the first valid DSCH TFCI Signalling control frame is received on this bearer in the new configuration (see ref. [24]).]

[FDD - If the RADIO LINK RECONFIGURATION PREPARE message includes the *DSCH Common Information IE*, the Node B shall treat it as follows:]

- [FDD - If the *Enhanced DSCH PC Indicator* IE is included and set to "Enhanced DSCH PC Active in the UE ", the Node B shall activate enhanced DSCH power control in accordance with ref. [10] subclause 5.2.2, if supported, using either:]

  - [FDD - the *SSDT Cell Identity for EDSCHPC* IE in the *RL Information* IE, if the *SSDT Cell Identity* IE is not included in the *RL Information* IE or]

  - [FDD - the *SSDT Cell Identity* IE in the *RL Information* IE, if both the *SSDT Cell Identity* IE and the *SSDT Cell Identity for EDSCHPC* IE are included in the *RL Information* IE.]

  [FDD - together with the *SSDT Cell Identity Length* IE in *UL DPCH Information* IE, and *Enhanced DSCH PC* IE, in the new configuration.]

[FDD - If the RADIO LINK RECONFIGURATION PREPARE message includes the *Enhanced DSCH PC Indicator* IE set to "Enhanced DSCH PC not Active in the UE", the Node B shall deactivate enhanced DSCH power control in the new configuration.]

[TDD – USCH Addition/Modification/Deletion:]

- [TDD – If the RADIO LINK RECONFIGURATION PREPARE message includes USCH information for the USCHs to be added/modified/deleted then the Node B shall use this information to add/modify/delete the indicated USCH channels to/from the radio link, in the same way as the DCH info is used to add/modify/release DCHs.]

- [TDD – The Node B shall include in the RADIO LINK RECONFIGURATION READY message both the *Transport Layer Address* IE and the *Binding ID* IE for the transport bearer to be established for each USCH.]

RL Information:

If the RADIO LINK RECONFIGURATION PREPARE message includes the *RL Information* IE, the Node B shall treat it as follows:

- [FDD – When more than one DL DPDCH are assigned per RL, the segmented physical channel shall be mapped on to DL DPDCHs according to [8]. When *p* number of DL DPDCHs are assigned to each RL, the first pair of DL Scrambling Code and FDD DL Channelisation Code Number corresponds to "*PhCH number 1*", the second to "*PhCH number 2"*, and so on until the *p*th to "*PhCH number p*".]

- [FDD – If the *RL Information* IE includes the *SSDT Indication* IE set to "SSDT Active in the UE", the Node B may activate SSDT using the *SSDT Cell Identity* IE in the new configuration.]

- [FDD – If the *RL Information* IE includes the *SSDT Indication* IE set to "SSDT not Active in the UE", the Node B shall deactivate SSDT in the new configuration.]

- [FDD – If the *RL Information* IE includes a *DL Code Information* IE, the Node B shall apply the values in the new configuration.]

- [FDD – If the *RL Information* IE contains the *Transmission Gap Pattern Sequence Code Information* IE in the *DL Code Information* IE for any of the allocated DL Channelisation Codes, the Node B shall apply the alternate scrambling code as indicated whenever the downlink compressed mode method SF/2 is active in the new configuration.]

- If the *RL Information* IE includes the *Maximum DL Power* and/or the *Minimum DL Power* IEs, the Node B shall apply the values in the new configuration. [FDD - During compressed mode, the $P_{SIR}(k)$, as described in ref.[10] subclause 5.2.1.3, shall be added to the maximum DL power in slot k.].

- [TDD – If the *RL Information* IE includes the *Initial DL Transmission Power* IE, the Node B shall apply the given power to the transmission on each DPCH of the CCTrCH when starting transmission on a new CCTrCH.until the UL synchronisation on the Uu is achieved for the CCTrCH. If no *Initial DL Transmission power* IE is included with a new CCTrCH, the Node B shall use any transmission power level currently used on already existing CCTrCH's when starting transmission for a new CCTrCH. No inner loop power control shall be performed during this period. The DL power shall then vary according to the inner loop power control (see ref.[22], subclause 4.2.3.3).]

General

If the RADIO LINK RECONFIGURATION PREPARE message includes the *Transport Layer Address* IE and *Binding ID* IEs in the *DSCHs to Modify* , *DSCHs to Add*, [TDD - *USCHs to Modify* , *USCHs to Add*] or in the *RL Specific DCH Information* IEs, the Node B may use the transport layer address and the binding identifier received from the CRNC when establishing a transport bearer for any Transport Channel being added, or any Transport Channel being modified for which a new transport bearer was requested with the *Transport Bearer Request Indicator* IE.

If the requested modifications are allowed by the Node B and the Node B has successfully reserved the required resources for the new configuration of the Radio Link(s), it shall respond to the CRNC with the RADIO LINK RECONFIGURATION READY message. When this procedure has been completed successfully there exist a Prepared Reconfiguration, as defined in subclause 3.1.

In the RADIO LINK RECONFIGURATION READY message, the Node B shall include the *RL Information Response* IE for each affected Radio Link.

The Node B shall include in the RADIO LINK RECONFIGURATION READY message the Transport Layer Address and the Binding ID for any Transport Channel being added, or any Transport Channel being modified for which a new transport bearer was requested with the *Transport Bearer Request Indicator* IE.

In case of a DCH requiring a new transport bearer on Iub, the *Transport Layer Address* IE and the *Binding ID* shall be included in the IE *DCH Information Response* IE.

In case of a set of coordinated DCHs requiring a new transport bearer on Iub, the *Transport Layer Address* IE and the *Binding ID* IE in the *DCH Information Response* IE shall be included only for one of the DCH in the set of coordinated DCHs.

In case of a Radio Link being combined with another Radio Link within the Node B,the RL Information Response IE shall be included only for one of the combined RLs. The *Transport Layer Address* IE and the *Binding ID* IE in the *DCH Information Response* IE shall be included only for one of the combined Radio Links.

8.3.2.4 Abnormal Conditions

If only a subset of all the DCHs belonging to a set of co-ordinated DCHs is requested to be deleted, the Node B shall regard the Synchronised Radio Link Reconfiguration Preparation procedure as having failed and the Node B shall send the RADIO LINK RECONFIGURATION FAILURE message to the CRNC.

If more than one DCH of a set of co-ordinated DCHs has the *QE-Selector* IE set to "selected" [TDD – or no DCH of a set of co-ordinated DCHs has the *QE-Selector* IE set to “selected”] the Node B shall regard the Synchronised Radio Link Reconfiguration Preparation procedure as failed and shall respond with a RADIO LINK RECONFIGURATION FAILURE message.

[FDD - If the *RL Information* IE includes the *SSDT Indication* IE set to "SSDT Active in the UE" and SSDT is not active in the current configuration, the Node B shall regard the Synchronised Radio Link Reconfiguration Preparation procedure as failed if the *UL DPCH Information* IE does not include the *SSDT Cell Identity Length* IE. In this case, it shall respond with a RADIO LINK RECONFIGURATION FAILURE message.]

If the RADIO LINK RECONFIGURATION PREPARE message includes a *DCHs to Modify* IE or *DCHs to Add* IE with multiple *DCH Specific Info* IEs, and if the DCHs in the *DCHs to Modify* IE or *DCHs to Add* IE do not have the same *Transmission Time Interval* IE in the *Semi-static Transport Format Information* IE, then the Node B shall reject the procedure using the RADIO LINK SETUP FAILURE message.

If the RADIO LINK RECONFIGURATION PREPARE message contains the *Transport Layer Address* IE or the *Binding ID* IE when establishing a transport bearer for any Transport Channel being added, or any Transport Channel being modified for which a new transport bearer was requested with the *Transport Bearer Request Indicator* IE., and not both are present for a transport bearer intended to be established, the Node B shall reject the procedure using the RADIO LINK RECONFIGURATION FAILURE message.

8.3.5 Unsynchronised Radio Link Reconfiguration

8.3.5.1 General

The Unsynchronised Radio Link Reconfiguration procedure is used to reconfigure Radio Link(s) related to one UE-UTRAN connection within a Node B.

The Unsynchronised Radio Link Reconfiguration procedure is used when there is no need to synchronise the time of the switching from the old to the new configuration in one Node B used for a UE-UTRAN connection with any other Node B also used for the UE–UTRAN connection.

The Unsynchronised Radio Link Reconfiguration procedure shall not be initiated if a Prepared Reconfiguration exists, as defined in subclause 3.1.

8.3.5.2 Successful Operation

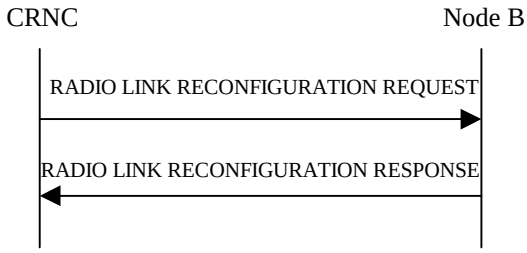

Figure 34: Unsynchronised Radio Link Reconfiguration Procedure, Successful Operation

The Unsynchronised Radio Link Reconfiguration procedure is initiated by the CRNC by sending the message RADIO LINK RECONFIGURATION REQUEST to the Node B. The message shall use the Communication Control Port assigned for this Node B Communication Context.

Upon reception, the Node B shall modify the configuration of the Radio Link(s) according to the parameters given in the message. Unless specified below, the meaning of parameters is specified in other specifications.

The Node B shall prioritise resource allocation for the RL(s) to be modified according to Annex A.

DCH Modification:

If the RADIO LINK RECONFIGURATION REQUEST message includes any *DCHs to Modify* IEs then the Node B shall treat them each as follows:

- If the *DCHs to Modify* IE includes on the *Frame Handling Priority* IE, the Node B should store this information for this DCH in the new configuration. The received Frame Handling Priority should be used when prioritising between different frames in the downlink on the radio interface in congestion situations within the Node B once the new configuration has been activated.

- If the *DCHs to Modify* IE includes the *Transport Format Set* IE for the UL, the Node B shall apply the new Transport Format Set in the Uplink of this DCH in the new configuration.

- If the *DCHs to Modify* IE includes the *Transport Format Set* IE for the DL, the Node B shall apply the new Transport Format Set in the Downlink of this DCH in the new configuration.

- If the *DCHs to Modify* IE includes multiple *DCH Specific Info* IEs then the Node B shall treat the DCHs in the *DCHs to Modify* IE as a set of co-ordinated DCHs. The Node B shall include these DCHs in the new configuration only if it can include all of them in the new configuration.

- If the *DCHs to Modify* IE includes the *UL FP Mode* IE for a DCH or a set of co-ordinated DCHs, the Node B shall apply the new FP Mode in the Uplink of the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- If the *DCHs to Modify* IE includes the *ToAWS* IE for a DCH or a set of co-ordinated DCHs, the Node B shall apply the new ToAWS in the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- If the *DCHs to Modify* IE includes the *ToAWE* IE for a DCH or a set of co-ordinated DCHs, the Node B shall apply the new ToAWE in the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- [TDD – If the RADIO LINK RECONFIGURATION REQUEST message includes the *CCTrCH ID* IE for the DL of a DCH to be modified, the Node B shall apply the new CCTrCH ID in the Downlink of this DCH in the new configuration.]

- [TDD – If the RADIO LINK RECONFIGURATION REQUEST message includes the *CCTrCH ID* IE for the UL of a DCH to be modified, the Node B shall apply the new CCTrCH ID in the Uplink of this DCH in the new configuration.]

DCH Addition:

If the RADIO LINK RECONFIGURATION REQUEST message includes any *DCH to Add* IEs, the Node B shall reserve necessary resources for the new configuration of the Radio Link(s) according to the parameters given in the message and include these DCHs in the new configuration. In particular:

- If a *DCHs to Add* IE includes multiple *DCH Specific Info* IEs for a DCH to be added, the Node B shall treat the DCHs in the *DCHs to Add* IE as a set of co-ordinated DCHs. The Node B shall include these DCHs in the new configuration only if it can include all of them in the new configuration.

- [FDD - For DCHs which do not belong to a set of co-ordinated DCHs with the *QE-Selector* IE set to "selected", the Node B shall use the Transport channel BER from that DCHas the base for the QE in the UL data frames. If no Transport channel BER is available for the selected DCH, the Physical channel BER shall be used for the QE [16]. If the QE-Selector is set to "non-selected", the Physical channel BER shall be used for the QE in the UL data frames, ref. [16].]

- For a set of co-ordinated DCHs, the Node B shall use the Transport channel BER from the DCH with the *QE-Selector* IE set to "selected" as the QE in the UL data frames [16]. [FDD – If no Transport channel BER is available for the selected DCH, the Physical channel BER shall be used for the QE [16]. If all DCHs have *QE-Selector* IE set to ”non-selected” the Physical channel BER shall be used for the QE [16].]

- The Node B should store the *Frame Handling Priority* IE received for a DCH to be added in the new configuration. The received Frame Handling Priority should be used when prioritising between different frames in the downlink on the radio interface in congestion situations within the Node B once the new configuration has been activated.

- The Node B shall use the included *UL FP Mode* IE for a DCH or a set of co-ordinated DCHs to be added as the new FP Mode in the Uplink of the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- The Node B shall use the included *ToAWS* IE for a DCH or a set of co-ordinated DCHs to be added as the new Time of Arrival Window Start Point in the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- The Node B shall use the included *ToAWE* IE for a DCH or a set of co-ordinated DCHs to be added as the new Time of Arrival Window End Point in the user plane for the DCH or the set of co-ordinated DCHs in the new configuration.

- [TDD – If the RADIO LINK RECONFIGURATION REQUEST message includes the *CCTrCH ID* IE for the DL of a DCH to be modified, the Node B shall apply the new CCTrCH ID in the downlink of this DCH in the new configuration.]

- [TDD – If the RADIO LINK RECONFIGURATION REQUEST message includes the *CCTrCH ID* IE for the UL of a DCH to be modified, the Node B shall apply the new CCTrCH ID in the Uplink of this DCH in the new configuration.]

DCH Deletion:

If the RADIO LINK RECONFIGURATION REQUEST message includes any DCH to be deleted from the Radio Link(s), the Node B shall not include this DCH in the new configuration.

If all of the DCHs belonging to a set of co-ordinated DCHs are requested to be deleted, the Node B shall not include this set of coordinated DCHs in the new configuration.

[FDD - Physical Channel Modification:]

[FDD - If the RADIO LINK RECONFIGURATION REQUEST message includes an *UL DPCH Information* IE, then the Node B shall apply the parameters to the new configuration as follows:]

- [FDD – If the *UL DPCH Information* IE includes the *TFCS* IE for the UL, the Node B shall apply the new TFCS in the Uplink of the new configuration.]

[FDD – If the RADIO LINK RECONFIGURATION REQUEST message includes a *DL DPCH Information* IE, then the Node B shall apply the parameters to the new configuration as follows:]

- [FDD – If the *DL DPCH Information* IE includes on the *TFCS* IE for the DL, the Node B shall apply the new TFCS in the Downlink of the new configuration.]

- [FDD – If the *DL DPCH Information* IE includes the *TFCI Signalling Mode* IE, the Node B shall use the use the information when building TFCIs in the new configuration.

- [FDD – If the *DL DPCH Information* IE includes the *Limited Power Increase* IE and the IE is set to 'Used', the Node B shall, if supported, use Limited Power Increase according to ref. [10] subclause 5.2.1 for the inner loop DL power control in the new configuration.]

- [FDD – If the *DL DPCH Information* IE message includes the *Limited Power Increase* IE and the IE is set to 'Not Used', the Node B shall not use Limited Power Increase for the inner loop DL power control in the new configuration.]

[FDD – If the RADIO LINK RECONFIGURATION REQUEST message includes the *Transmission Gap Pattern Sequence Information* IE the Node B shall store the new information about the Transmission Gap Pattern Sequences to be used in the new Compressed Mode Configuration. This new Compressed Mode Configuration shall be valid in the Node B until the next Compressed Mode Configuration is configured in the Node B or Node B Communication Context is deleted.]

[TDD – UL/DL CCTrCH Modification]

[TDD – If the RADIO LINK RECONFIGURATION REQUEST message includes any *UL CCTrCH to modify* IE or *DL CCTrCH to modify* IE in the Radio Link(s), the Node B shall reserve necessary resources for the new configuration of the Radio Link(s) according to the parameters given in the message.]

[TDD – If the *UL/DL CCTrCH to modify* IE includes *TFCS* IE, and/or *Puncture Limit* IE the Node B shall apply these as the new values, otherwise the old values specified for this CCTrCH are still applicable.]

[TDD – UL/DL CCTrCH Deletion]

[TDD – If the RADIO LINK RECONFIGURATION REQUEST message includes any *UL CCTrCH to delete* IE or *DL CCTrCH to delete* IE, the Node B shall not include this CCTrCH in the new configuration.]

RL Information:

If the RADIO LINK RECONFIGURATION REQUEST message includes the *RL Information* IE, the Node B shall treat it as follows:

- If the *RL Information* IE includes the *Maximum DL Power* IE, the Node B shall apply this value to the new configuration and not transmit with a higher power on any Downlink DPCH of the Radio Link once the new configuration is being used. [FDD - During compressed mode, the $P_{SIR}(k)$, as described in ref.[10] subclause 5.2.1.3, shall be added to the maximum DL power in slot k.]

- If the *RL Information* IE includes the *Minimum DL Power* IE, the Node B shall apply this value to the new configuration and never transmit with a lower power on any Downlink Channelisation Code of the Radio Link once the new configuration is being used.

- [FDD – If the *RL Information* IE contains the *Transmission Gap Pattern Sequence Code Information* IE in the *DL Code Information* IE for any of the allocated DL Channelisation Codes, the Node B shall apply the alternate scrambling code as indicated whenever the downlink compressed mode method SF/2 is active in the new configuration.]

General

If the RADIO LINK RECONFIGURATION REQUEST message includes the *RL Specific DCH Information* IE, the Node B may use the transport layer address and the binding identifier received from the CRNC when establishing a transport bearer for any Transport Channel being added, or any Transport Channel being modified for which a new transport bearer was requested with the *Transport Bearer Request Indicator* IE.

If the requested modifications are allowed by the Node B, the Node B has successfully allocated the required resources, and changed to the new configuration it shall respond to the CRNC with the RADIO LINK RECONFIGURATION RESPONSE message.

In the RADIO LINK RECONFIGURATION RESPONSE message, the Node B shall include the *RL Information Response* IE for each affected Radio Link.

The Node B shall include in the RADIO LINK RECONFIGURATION RESPONSE message the *Transport Layer Address* IE and the *Binding ID* IE in the *DCH Information Response* IE for any Transport Channel being added, or any Transport Channel being modified for which a new transport bearer was requested with the *Transport Bearer Request Indicator* IE. The detailed frame protocol handling during transport bearer replacement is described in [16], section 5.10.1.

In case of a set of coordinated DCHs requiring a new transport bearer on Iub, the *Transport Layer Address* IE and the *Binding ID* IE in the *DCH Information Response* IE shall be included only for one of the DCH in the set of coordinated DCHs.

In case of a Radio Link being combined with another Radio Link within the Node B, *RL Information Response* IE shall be included only for one of the combined Radio Links. The *Transport Layer Address* IE and the *Binding ID* IE in the *DCH Information Response* IE shall be included only for one of the combined Radio Links.

8.3.5.4 Abnormal Conditions

If only a subset of all the DCHs belonging to a set of co-ordinated DCHs is requested to be deleted, the Node B shall regard the Unsynchronised Radio Link Reconfiguration procedure as having failed and shall send the RADIO LINK RECONFIGURATION FAILURE message to the CRNC.

[FDD – If the *RL Information* IE contains the *DL Code Information* IE and this IE includes *DL Scrambling Code* and *FDD DL Channelisation Code Number* IEs not matching the DL Channelisation code(s) already allocated to the Radio Link identified by *RL ID* IE, then the Node B shall consider the Unsynchronised Radio Link Reconfiguration procedure as having failed and it shall send the RADIO LINK RECONFIGURATION FAILURE message to the CRNC.

If more than one DCH of a set of co-ordinated DCHs has the *QE-Selector* IE set to "selected" [TDD – or no DCH of a set of co-ordinated DCHs has the *QE-Selector* IE set to "selected"] the Node B shall regard the Unsynchronised Radio Link Reconfiguration Preparation procedure as failed and shall respond with a RADIO LINK RECONFIGURATION FAILURE message.

If the RADIO LINK RECONFIGURATION REQUEST message includes a *DCHs to Modify* IE or *DCHs to Add* IE with multiple *DCH Specific Info* IEs, and if the DCHs in the *DCHs to Modify* IE or *DCHs to Add* IE do not have the same *Transmission Time Interval* IE in the *Semi-static Transport Format Information* IE, then the Node B shall reject the procedure using the RADIO LINK SETUP FAILURE message.

If the RADIO LINK RECONFIGURATION REQUEST message contains the *Transport Layer Address* IE or the *Binding ID* IE when establishing a transport bearer for any Transport Channel being added, or any Transport Channel being modified for which a new transport bearer was requested with the *Transport Bearer Request Indicator* IE., and not both are present for a transport bearer intended to be established, the Node B shall reject the procedure using the RADIO LINK RECONFIGURATION FAILURE message.

9.1.3 COMMON TRANSPORT CHANNEL SETUP REQUEST

9.1.3.1 FDD Message

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Discriminator	M		9.2.1.45		–	
Message Type	M		9.2.1.46		YES	Reject
Transaction ID	M		9.2.1.62		–	
C-ID	M		9.2.1.9		YES	Reject
Configuration Generation ID	M		9.2.1.16		YES	Reject
CHOICE *Common Physical Channel To Be Configured*	M				YES	Ignore
>Secondary CCPCH					–	
>>Secondary CCPCH		*1*				
>>>Common Physical Channel ID	M		9.2.1.13		–	
>>>FDD SCCPCH Offset	M		9.2.2.15	Corresponds to [7]: $S_{CCPCH,k}$	–	
>>>DL Scrambling Code	C-PCH		9.2.2.13		–	
>>>FDD DL Channelisation Code Number	M		9.2.2.14		–	
>>>TFCS	M		9.2.1.58	For the DL.	–	
>>>Secondary CCPCH Slot Format	M		9.2.2.43		–	
>>>TFCI Presence	C – SlotFormat		9.2.1.57	Refer to TS [7]	–	
>>>Multiplexing Position	M		9.2.2.23		–	
>>>Power Offset Information		1			–	
>>>>PO1	M		Power Offset 9.2.2.29	Power offset for the TFCI bits	–	
>>>>PO3	M		Power Offset 9.2.2.29	Power offset for the pilot bits	–	
>>>STTD Indicator	M		9.2.2.48		–	
>>>FACH Parameters		*0..<maxnoofFACHs>*			GLOBAL	Reject
>>>>Common Transport Channel ID	M		9.2.1.14		–	
>>>>Transport Format Set	M		9.2.1.59	For the DL.	–	
>>>>ToAWS	M		9.2.1.61		–	
>>>>ToAWE	M		9.2.1.60		–	
>>>>Max FACH Power	M		DL Power 9.2.1.21	Maximum allowed power on the FACH.	–	
>>>> Binding ID	O		9.2.1.4	Shall be ignored if bearer establishment with	YES	ignore

				ALCAP.		
>>>> Transport Layer Address	O		9.2.1.63	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
>>>PCH Parameters		*0..1*			YES	Reject
>>>>Common Transport Channel ID	M		9.2.1.14		–	
>>>>Transport Format Set	M		9.2.1.59	For the DL.	–	
>>>>ToAWS	M		9.2.1.61		–	
>>>>ToAWE	M		9.2.1.60		–	
>>>>PCH Power	M		DL Power 9.2.1.21		–	
>>>>PICH Parameters		*1*			–	
>>>>>Common Physical Channel ID	M		9.2.1.13		–	
>>>>>FDD DL Channelisation Code Number	M		9.2.2.14		–	
>>>>>PICH Power	M		9.2.1.49A		–	
>>>>>PICH Mode	M		9.2.2.26	Number of PI per frame	–	
>>>>>STTD Indicator	M		9.2.2.48		–	
>>>> Binding ID	O		9.2.1.4	Shall be ignored if bearer establishment with ALCAP.	YES	Ignore
>>>> Transport Layer Address	O		9.2.1.63	Shall be ignored if bearer establishment with ALCAP.	YES	Ignore
>PRACH					–	
>>PRACH		*1*				
>>>Common Physical Channel ID	M		9.2.1.13		–	
>>>Scrambling Code Number	M		9.2.2.42		–	
>>>TFCS	M		9.2.1.58	For the UL.	–	
>>>Preamble Signatures	M		9.2.2.31		–	
>>>Allowed Slot Format Information		*1..<MaxnoofSlotFormatsPRACH>*			–	
>>>>RACH Slot Format	M		9.2.2.37		–	
>>>RACH Sub Channel Numbers	M		9.2.2.38		–	

>>>Puncture Limit	M		9.2.1.50	For the UL	–	
>>>Preamble Threshold	M		9.2.2.32		–	
>>>RACH Parameters		*1*			YES	Reject
>>>>Common Transport Channel ID	M		9.2.1.14		–	
>>>>Transport Format Set	M		9.2.1.59	For the UL.	–	
>>>> Binding ID	O		9.2.1.4	Shall be ignored if bearer establishment with ALCAP.	YES	Ignore
>>>> Transport Layer Address	O		9.2.1.63	Shall be ignored if bearer establishment with ALCAP.	YES	Ignore
>>AICH Parameters		*1*			–	
>>>Common Physical Channel ID	M		9.2.1.13		–	
>>>AICH Transmission Timing	M		9.2.2.1		–	
>>>FDD DL Channelisation Code Number	M		9.2.2.14		–	
>>>AICH Power	M		9.2.2.D		–	
>>>STTD Indicator	M		9.2.2.48		–	
>PCPCHes					–	
>>CPCH Parameters		*1*			–	
>>>Common Transport Channel ID	M		9.2.1.14		–	
>>>Transport Format Set	M		9.2.1.59	For the UL.	–	
>>>AP Preamble Scrambling Code	M		CPCH Scrambling Code Number 9.2.2.4B		–	
>>>CD Preamble Scrambling Code	M		CPCH Scrambling Code Number 9.2.2.4B		–	
>>>TFCS	M		9.2.1.58	For the UL	–	
>>>CD Signatures	O		Preamble Signatures 9.2.2.31	Note: When not present, all CD signatures are to be used.	–	
>>>CD Sub Channel Numbers			9.2.2.1C		–	
>>>Puncture Limit	M		9.2.1.50	For the UL	–	
>>>CPCH UL DPCCH Slot Format	M		9.2.2.4C	For UL CPCH message control part	–	
>>>UL SIR	M		UL SIR		–	

			9.2.1.67A			
>>>Initial DL transmission Power	M		DL Power 9.2.1.21		–	
>>>Maximum DL Power	M		DL Power 9.2.1.21		–	
>>>Minimum DL Power	M		DL Power 9.2.1.21		–	
>>>PO2	M		Power Offset 9.2.2.29	Power offset for the TPC bits relative to the pilot bits.	–	
>>>FDD TPC DL Step Size	M		9.2.2.16		–	
>>>N_Start_Message	M		9.2.2.23C		–	
>>>N_EOT	M		9.2.2.23A		–	
>>>Channel Assignment Indication	M		9.2.2.1D		–	
>>>CPCH Allowed Total Rate	M		9.2.2.4A		–	
>>>PCPCH Channel Information		*1..<maxnoofPCPCHs>*			–	
>>>>Common Physical Channel ID	M		9.2.1.13		–	
>>>>CPCH Scrambling Code Number	M		9.2.2.4B	For UL PCPCH	–	
>>>>DL Scrambling Code	M		9.2.2.13	For DL CPCH message part	–	
>>>>FDD DL Channelisation Code Number	M		9.2.2.14	For DL CPCH message part	–	
>>>>PCP Length	M		9.2.2.24A		–	
>>>>UCSM Information	C-NCA	*1*			–	
>>>>>Min UL Channelisation Code Length	M		9.2.2.22		–	
>>>>>NF_max	M		9.2.2.23B		–	
>>>>>Channel Request Parameters		*0..<maxAPSigNum>*			–	
>>>>>>AP Preamble Signature	M		9.2.2.1A		–	
>>>>>AP Sub Channel Number	O		9.2.2.1B		–	
>>>VCAM Mapping Information	C-CA	*1..<maxnoofLen>*		Refer to TS [18]	–	
>>>>Min UL Channelisation Code Length	M		9.2.2.22		–	
>>>>NF_max	M		9.2.2.23B		–	
>>>>Max Number of PCPCHes	M		9.2.2.20A		–	
>>>>SF Request		*1..<ma*			–	

Parameters		*xAPSig Num>*				
>>>>>AP Preamble Signature	M		9.2.2.1A		–	
>>>>>AP Sub Channel Number	O		9.2.2.1B		–	
>>>AP-AICH Parameters		*1*			–	
>>>>Common Physical Channel ID	M		9.2.1.13		–	
>>>>FDD DL Channelisation Code Number	M		9.2.2.14		–	
>>>>AP-AICH Power	M		AICH Power 9.2.2.D		–	
>>>>CSICH Power	M		AICH Power 9.2.2.D	For CSICH bits at end of AP-AICH slot	–	
>>>>STTD Indicator	M		9.2.2.48		–	
>>>CD/CA-ICH Parameters		*1*			–	
>>>>Common Physical Channel ID	M		9.2.1.13		–	
>>>>FDD DL Channelisation Code Number	M		9.2.2.14		–	
>>>>CD/CA-ICH Power	M		AICH Power 9.2.2.D		–	
>>>>STTD Indicator	M		9.2.2.48		–	
>>> Binding ID	O		9.2.1.4	Shall be ignored if bearer establishment with ALCAP.	YES	Ignore
>>> Transport Layer Address	O		9.2.1.63	Shall be ignored if bearer establishment with ALCAP.	YES	Ignore

Condition	Explanation
SlotFormat	The IE shall be present if the *Secondary CCPCH Slot Format* IE is set to any of the values from 8 to 17.
CA	The IE shall be present if the *Channel Assignment Indication* IE is set to ”CA Active”.
NCA	The IE shall be present if the *Channel Assignment Indication* IE is set to ”CA Inactive”.
PCH	The IE shall be present if the *PCH parameters* IE is not present.

Range bound	Explanation
MaxnoofFACHs	Maximum number of FACHs that can be defined on a Secondary CCPCH.
MaxnoofPCPCHs	Maximum number of PCPCHs for a CPCH
MaxnoofLen	Maximum number of Min UL Channelisation Code Length
MaxnoofSlotFormatsPRACH	Maximum number of SF for a PRACH
MaxAPSigNum	Maximum number of AP Signatures.

9.1.3.2 TDD Message

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Discriminator	M		9.2.1.45		–	
Message Type	M		9.2.1.46		YES	reject
Transaction ID	M		9.2.1.62		–	
C-ID	M		9.2.1.9		YES	reject
Configuration Generation ID	M		9.2.1.16		YES	reject
CHOICE *Common Physical Channel To Be Configured*	M				YES	ignore
>*Secondary CCPCHs*					–	
>>SCCPCH CCTrCH ID	M		CCTrCH ID 9.2.3.3	For DL CCTrCH supporting one or several Secondary CCPCHs	–	
>>TFCS	M		9.2.1.58	For DL CCTrCH supporting one or several Secondary CCPCHs	–	
>>TFCI Coding	M		9.2.3.22		–	
>>Puncture Limit	M		9.2.1.50		–	
>>Secondary CCPCH		*0..<maxnoofSCCPCHs>*		Mandatory For 3.84Mcps TDD only	GLOBAL	reject
>>>Common Physical Channel ID	M		9.2.1.13		–	
>>>TDD Channelisation Code	M		9.2.3.19		–	
>>>Time Slot	M		9.2.3.23		–	
>>>Midamble shift and Burst Type	M		9.2.3.7		–	
>>>TDD Physical Channel Offset	M		9.2.3.20		–	
>>>Repetition Period	M		9.2.3.16		–	
>>>Repetition Length	M		9.2.3.15		–	
>>>SCCPCH Power	M		DL Power 9.2.1.21		–	
>>FACH		*0..<maxnoofFACHs>*			GLOBAL	reject
>>>Common Transport Channel ID	M		9.2.1.14		–	
>>>FACH CCTrCH ID	M		CCTrCH ID 9.2.3.3		–	
>>>Transport Format Set	M		9.2.1.59	For the DL.	–	
>>>ToAWS	M		9.2.1.61		–	
>>>ToAWE	M		9.2.1.60		–	

>>>Max FACH Power	O		DL Power 9.2.1.21	For 1.28Mcps TDD only	YES	reject
>>>Binding ID	O		9.2.1.4	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
>>>Transport Layer Address	O		9.2.1.63	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
>>PCH		*0..1*			YES	reject
>>>Common Transport Channel ID	M		9.2.1.14		–	
>>>PCH CCTrCH ID	M		CCTrCH ID 9.2.3.3		–	
>>>Transport Format Set	M		9.2.1.59	For the DL.	–	
>>>ToAWS	M		9.2.1.61		–	
>>>ToAWE	M		9.2.1.60		–	
>>>PICH Parameters		*0..1*		Mandatory For 3.84Mcps TDD only	YES	reject
>>>>Common Physical Channel ID	M		9.2.1.13		–	
>>>>TDD Channelisation Code	M		9.2.3.19		–	
>>>>Time Slot	M		9.2.3.23		–	
>>>>Midamble shift and Burst Type	M		9.2.3.7		–	
>>>>TDD Physical Channel Offset	M		9.2.3.20		–	
>>>>Repetition period	M		9.2.3.16		–	
>>>>Repetition length	M		9.2.3.15		–	
>>>>Paging Indicator Length	M		9.2.3.8		–	
>>>>PICH Power	M		9.2.1.49A		–	
>>>PCH Power	O		DL Power 9.2.1.21	For 1.28Mcps TDD only	–	
>>>PICH Parameters LCR		*0..1*		Mandatory For 1.28Mcps TDD only	YES	reject
>>>>Common Physical Channel ID	M		9.2.1.13		–	
>>>>TDD Channelisation Code LCR	M		9.2.3.19a		–	
>>>>Time Slot LCR	M		9.2.3.24A		–	
>>>>Midamble shift LCR	M		9.2.3.7A		–	

>>>>TDD Physical Channel Offset	M		9.2.3.20		–	
>>>>Repetition period	M		9.2.3.16		–	
>>>>Repetition length	M		9.2.3.15		–	
>>>>Paging Indicator Length	M		9.2.3.8		–	
>>>>PICH Power	M		9.2.1.49A		–	
>>>Binding ID	O		9.2.1.4	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
>>>Transport Layer Address	O		9.2.1.63	Shall be ignored if bearer establishment with ALCAP.	YES	ignore

>>Secondary CCPCH LCR		*0..<maxnoofS-CCPCHLCRs>*		Mandatory For 1.28Mcps TDD only	GLOBAL	reject
>>>Common Physical Channel ID	M		9.2.1.13		–	
>>>TDD Channelisation Code LCR	M		9.2.3.19a		–	
>>>Time Slot LCR	M		9.2.3.24A		–	
>>>Midamble shift LCR	M		9.2.3.7A		–	
>>>TDD Physical Channel Offset	M		9.2.3.20		–	
>>>Repetition Period	M		9.2.3.16		–	
>>>Repetition Length	M		9.2.3.15		–	
>>>SCCPCH Power	M		DL Power 9.2.1.21		–	
>PRACH					–	
>>PRACH	M	*0..1*		Mandatory for 3.84Mcps TDD only	YES	reject
>>>Common Physical Channel ID	M		9.2.1.13		–	
>>>TFCS	M		9.2.1.58		–	
>>>Time Slot	M		9.2.3.23		–	
>>>TDD Channelisation Code	M		9.2.3.19		–	
>>>Max PRACH Midamble Shifts	M		9.2.3.6		–	
>>>PRACH Midamble	M		9.2.3.14		–	
>>>RACH		*1*			YES	reject
>>>>Common Transport Channel ID	M		9.2.1.14		–	
>>>>Transport Format Set	M		9.2.1.59	For the UL	–	
>>>>Binding ID	O		9.2.1.4	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
>>>>Transport Layer Address	O		9.2.1.63	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
>>PRACH LCR		*0 .. <maxnoofPRACHLCRs>*		Mandatory For 1.28Mcps TDD only	YES	reject
>>>Common Physical Channel ID	M		9.2.1.13		–	
>>>TFCS	M		9.2.1.58		–	
>>>Time Slot LCR	M		9.2.3.24A		–	

>>>TDD Channelisation Code LCR	M		9.2.3.19a		–	
>>>Max PRACH Midamble Shifts	M		9.2.3.6		–	
>>>PRACH Midamble	M		9.2.3.14		–	
>>>RACH		*1*			YES	reject
>>>>Common Transport Channel ID	M		9.2.1.14		–	
>>>>Transport Format Set	M		9.2.1.59	For the UL	–	
>>>>Binding ID	O		9.2.1.4	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
>>>>Transport Layer Address	O		9.2.1.63	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
>>FPACH		*0..1*		Mandatory for 1.28Mcps TDD only	GLOBAL	reject
>>>Common Physical Channel ID	M		9.2.1.13		–	
>>>TDD Channelisation Code LCR	M		9.2.3.19a		–	
>>>Time Slot LCR	M		9.2.3.24A		–	
>>>Midamble shift LCR	M		9.2.3.7A		–	
>>>Max FPACH Power	M		9.2.3.5^{E}		–	

Range bound	Explanation
MaxnoofSCCPCHs	Maximum number of Secondary CCPCHs per CCTrCH for 3.84Mcps TDD.
MaxnoofS-CCPCHLCRs	Maximum number of Secondary CCPCHs per CCTrCH for 1.28Mcps TDD.
MaxnoofCCTrCHs	Maximum number of CCTrCHs that can be defined in a cell.
MaxnoofFACHs	Maximum number of FACHs that can be defined on a Secondary CCPCH.
MaxnoofPRACHLCRs	Maximum number of PRACH LCR that can be defined on a RACH for 1.28Mcps TDD.

9.1.36 RADIO LINK SETUP REQUEST

9.1.36.1 FDD message

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Discriminator	M		9.2.1.45		–	
Message Type	M		9.2.1.46		YES	reject
CRNC Communication Context ID	M		9.2.1.18	The reserved value "All CRNCC C" shall not be used.	YES	reject
Transaction ID	M		9.2.1.62		–	
UL DPCH Information		1			YES	reject
>UL Scrambling Code	M		9.2.2.59		–	
>Min UL Channelisation Code length	M		9.2.2.22		–	
>Max Number of UL DPDCHs	C – CodeLen		9.2.2.21		–	
>puncture Limit	M		9.2.1.50	For UL	–	
>TFCS	M		9.2.1.58	for UL	–	
>UL DPCCH Slot Format	M		9.2.2.57		–	
> UL SIR Target	M		UL SIR 9.2.1.67A		–	
>Diversity mode	M		9.2.2.9		–	
>SSDT cell ID Length	O		9.2.2.45		–	
>S Field Length	O		9.2.2.40		–	
>DPC mode	O		9.2.2.13C		YES	reject
DL DPCH Information		1			YES	reject
>TFCS	M		9.2.1.58	For DL	–	
>DL DPCH Slot Format	M		9.2.2.10		–	
>TFCI signalling mode	M		9.2.2.50		–	
>TFCI presence	C-SlotFormat		9.2.1.57		–	
>Multiplexing Position	M		9.2.2.23		–	
>PDSCH RL ID	C-DSCH		RL ID 9.2.1.53		–	
>PDSCH code mapping	C-DSCH		9.2.2.25		–	
>Power Offset Information		1			–	
>>PO1	M		Power Offset 9.2.2.29	Power offset for the TFCI bits	–	
>>PO2	M		Power Offset 9.2.2.29	Power offset for the TPC bits	–	
>>PO3	M		Power Offset 9.2.2.29	Power offset for the pilot bits	–	
>FDD TPC DL Step Size	M		9.2.2.16		–	
>Limited Power Increase	M		9.2.2.18A		–	
>Inner Loop DL PC Status	M		9.2.2.18B		–	
DCH Information	M		DCH FDD Information 9.2.2.4D		YES	reject
DSCH Information	O		DSCH FDD Information 9.2.2.13B		YES	reject

TFCI2 bearer information		0..1			YES	ignore
>ToAWS	M		9.2.1.61		-	
>ToAWE	M		9.2.1.60		-	
RL Information		1 to <maxnoof RLs>			EACH	notify
>RL ID	M		9.2.1.53		–	
>C-ID	M		9.2.1.9		–	
>First RLS Indicator	M		9.2.2.16A		–	
>Frame Offset	M		9.2.1.31		–	
>Chip Offset	M		9.2.2.2		–	
>Propagation Delay	O		9.2.2.35		–	
>Diversity Control Field	C – NotFirstRL		9.2.1.25		–	
>DL Code Information	M		FDD DL Code Information 9.2.2.14A		–	
>Initial DL transmission Power	M		DL Power 9.2.1.21	Initial power on DPCH	–	
>Maximum DL power	M		DL Power 9.2.1.21	Maximum allowed power on DPCH	–	
>Minimum DL power	M		DL Power 9.2.1.21	Minimum allowed power on DPCH	–	
>SSDT Cell Identity	O		9.2.2.44		–	
>Transmit Diversity Indicator	C – Diversity mode		9.2.2.53		–	
>SSDT Cell Identity for EDSCHPC	C-EDSCHPC		9.2.2.44A		YES	ignore
>RL specific DCH Information	O		9.2.1.XXX		YES	ignore
Transmission Gap Pattern Sequence Information	O		9.2.2.53A		YES	reject
Active Pattern Sequence Information	O		9.2.2.A		YES	reject
DSCH Common Information	O		DSCH FDD Common Information 9.2.2.13D		YES	ignore

Condition	Explanation
CodeLen	The IE shall be present if *Min UL Channelisation Code Length* IE equals to 4.
NotFirstRL	The IE shall be present if the RL is not the first one in the *RL Information* IE.
DSCH	The IE shall be present if the *DSCH Information* IE is present.
SlotFormat	The IE shall be present if the *DL DPCH Slot Format* IE is equal to any of the values from 12 to 16.
Diversity mode	The IE shall be present if *Diversity Mode* IE in *UL DPCH Information* IE is not set to “none”.
EDSCHPC	The IE shall be present if *Enhanced DSCH PC* IE is present in the *DSCH Common Information* IE.

Range bound	Explanation
MaxnoofRLs	Maximum number of RLs for one UE.

9.1.36.2 TDD message

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Discriminator	M		9.2.1.45		–	
Message Type	M		9.2.1.46		YES	reject
CRNC Communication Context ID	M		9.2.1.18	The reserved value "All CRNCC C" shall not be used.	YES	reject
Transaction ID	M		9.2.1.62		–	
UL CCTrCH Information		0 to <maxno CCTrCH>			EACH	notify
>CCTrCH ID	M		9.2.3.3		–	
>TFCS	M		9.2.1.58		–	
>TFCI Coding	M		9.2.3.22		–	
>Puncture Limit	M		9.2.1.50		–	
> UL SIR Target	O		UL SIR 9.2.1.67A	Mandatory for 1.28Mcps TDD; not applicable for 3.84Mcps TDD	YES	reject
>UL DPCH Information		0..1		For 3.84Mcps TDD only	YES	notify
>>Repetition Period	M		9.2.3.16		–	
>>Repetition Length	M		9.2.3.15		–	
>>TDD DPCH Offset	M		9.2.3.19A		–	
>>UL Timeslot Information	M		9.2.3.26C		–	
>UL DPCH Information LCR		0..1		For 1.28Mcps TDD only	YES	notify
>>Repetition Period	M		9.2.3.16		–	
>>Repetition Length	M		9.2.3.15		–	
>>TDD DPCH Offset	M		9.2.3.19A		–	
>>UL Timeslot Information LCR	M		9.2.3.26E		–	
DL CCTrCH Information		0 to <maxno CCTrCH>			EACH	notify
>CCTrCH ID	M		9.2.3.3		–	
>TFCS	M		9.2.1.58		–	
>TFCI Coding	M		9.2.3.22		–	
>Puncture Limit	M		9.2.1.50		–	
>TDD TPC DL Step Size	M		9.2.3.21			
>TPC CCTrCH List		0 to <maxnoC CTrCH>		List of uplink CCTrCH which provide TPC	–	
>>TPC CCTrCH ID	M		CCTrCH ID 9.2.3.3		–	
>DL DPCH information		0..1		For 3.84Mcps TDD only	YES	notify
>>Repetition Period	M		9.2.3.16		–	
>>Repetition Length	M		9.2.3.15		–	

>>TDD DPCH Offset	M		9.2.3.19A		–	
>>DL Timeslot Information	M		9.2.3.4E		–	
>DL DPCH information LCR		0..1		For 1.28Mcps TDD only	YES	notify
>>Repetition Period	M		9.2.3.16		–	
>>Repetition Length	M		9.2.3.15		–	
>>TDD DPCH Offset	M		9.2.3.19A		–	
>>DL Timeslot Information LCR	M		9.2.3.4O		–	
>>TSTD Indicator	M		9.2.1.64		–	
DCH Information	O		DCH TDD Information 9.2.3.4C		YES	reject
DSCH Information	O		DSCH TDD Information 9.2.3.5A		YES	reject
USCH Information	O		9.2.3.28		YES	reject
RL Information		1			YES	reject
>RL ID	M		9.2.1.53		–	
>C-ID	M		9.2.1.9		–	
>Frame Offset	M		9.2.1.31		–	
>Special Burst Scheduling	M		9.2.3.18A		–	
>Initial DL transmission Power	M		DL Power 9.2.1.21	Initial power on DPCH	–	
>Maximum DL power	M		DL Power 9.2.1.21	Maximum allowed power on DPCH	–	
>Minimum DL power	M		DL Power 9.2.1.21	Minimum allowed power on DPCH	–	
>DL Time Slot ISCP Info	O		9.2.3.4F	For 3.84Mcps TDD only	–	
>DL Time Slot ISCP Info LCR	O		9.2.3.40A	For 1.28Mcps TDD only	YES	reject
>RL specific DCH Information	O		9.2.1.XXX		YES	ignore

Range bound	Explanation
MaxnoCCTrCH	Number of CCTrCH for one UE.

9.1.39 RADIO LINK ADDITION REQUEST

9.1.39.1 FDD Message

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Discriminator	M		9.2.1.45		–	
Message Type	M		9.2.1.46		YES	reject
Node B Communication Context ID	M		9.2.1.48	The reserved value "All NBCC" shall not be used.	YES	reject
Transaction ID	M		9.2.1.62		–	
Compressed Mode Deactivation Flag	O		9.2.2.3A		YES	reject
RL Information		*1..<maxnoofRL-1>*			EACH	notify
>RL ID	M		9.2.1.53		–	
>C-ID	M		9.2.1.9		–	
>Frame Offset	M		9.2.1.31		–	
>Chip Offset	M		9.2.2.2		–	
>Diversity Control Field	M		9.2.1.25		–	
>DL Code Information	M		FDD DL Code Information 9.2.2.14A		–	
>Initial DL transmission power	O		DL Power 9.2.1.21	Initial power on DPCH	–	
>Maximum DL power	O		DL Power 9.2.1.21	Maximum allowed power on DPCH	–	
>Minimum DL power	O		DL Power 9.2.1.21	Minimum allowed power on DPCH	–	
>SSDT Cell Identity	O		9.2.2.44		–	
>Transmit Diversity Indicator	O		9.2.2.53		–	
>RL specific DCH Information	O		9.2.1.XXX		YES	ignore

Range bound	Explanation
MaxnoofRL	Maximum number of RLs for one UE

9.1.39.2 TDD Message

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
Message Discriminator	M		9.2.1.45		–	
Message Type	M		9.2.1.46		YES	reject
Node B Communication Context ID	M		9.2.1.48	The reserved value "All NBCC" shall not be used.	YES	reject
Transaction ID	M		9.2.1.62		–	
UL CCTrCH Information		0 to <maxno CCTrCH>			GLOBAL	reject
>CCTrCH ID	M		9.2.3.3		–	
>UL DPCH Information		0..1		For 3.84Mcps TDD only	YES	notify
>>Repetition Period	M		9.2.3.16		–	
>>Repetition Length	M		9.2.3.15		–	
>>TDD DPCH Offset	M		9.2.3.19A		–	
>>UL Timeslot Information	M		9.2.3.26C		–	
>UL DPCH Information LCR		0..1		For 1.28Mcps TDD only	YES	notify
>>Repetition Period	M		9.2.3.16		–	
>>Repetition Length	M		9.2.3.15		–	
>>TDD DPCH Offset	M		9.2.3.19A		–	
>>UL Timeslot Information LCR	M		9.2.3.26E		–	
DL CCTrCH Information		0 to <maxno CCTrCH>			GLOBAL	reject
>CCTrCH ID	M		9.2.3.3		–	
>DL DPCH information		0..1		For 3.84Mcps TDD only	YES	notify
>>Repetition Period	M		9.2.3.16		–	
>>Repetition Length	M		9.2.3.15		–	
>>TDD DPCH Offset	M		9.2.3.19A		–	
>>DL Timeslot Information	M		9.2.3.4E		–	
>DL DPCH information LCR		0..1		For 1.28Mcps TDD only	YES	notify
>>Repetition Period	M		9.2.3.16		–	
>>Repetition Length	M		9.2.3.15		–	
>>TDD DPCH Offset	M		9.2.3.19A		–	
>>DL Timeslot Information LCR	M		9.2.3.4O		–	
RL Information		1			YES	reject
>RL ID	M		9.2.1.53		–	
>C-ID	M		9.2.1.9		–	
>Frame Offset	M		9.2.1.31		–	
>Diversity Control Field	M		9.2.1.25		–	
>Initial DL transmission Power	O		DL Power 9.2.1.21	Initial power on DPCH	–	
>Maximum DL power	O		DL Power	Maximum	–	

			9.2.1.21	allowed power on DPCH		
>Minimum DL power	O		DL Power 9.2.1.21	Minimum allowed power on DPCH	–	
>DL Time Slot ISCP Info	O		9.2.3.4F	For 3.84Mcps TDD only	–	
>DL Time Slot ISCP Info LCR	O		9.2.3.40A	For 1.28Mcps TDD only	YES	reject
>RL specific DCH Information	O		9.2.1.XXX		YES	ignore

Range bound	Explanation
MaxnoCCTrCH	Number of CCTrCH for one UE.

9.1.42 RADIO LINK RECONFIGURATION PREPARE

9.1.42.1 FDD Message

IE/Group Name	Presence	Range	IE Type and Reference	Semantic Description	Criticality	Assigned Criticality
Message Discriminator	M		9.2.1.45		–	
Message Type	M		9.2.1.46		YES	reject
Node B Communication Context ID	M		9.2.1.48	The reserved value "All NBCC" shall not be used.	YES	reject
Transaction ID	M		9.2.1.62		–	
UL DPCH Information		*0..1*			YES	reject
>UL Scrambling code	O		9.2.2.59		–	
>UL SIR Target	O		UL SIR 9.2.1.67A		–	
>Min UL Channelistion Code Length	O		9.2.2.22		–	
>Max Number of UL DPDCHs	C – CodeLen		9.2.2.21		–	
>Puncture Limit	O		9.2.1.50	For UL	–	
>TFCS	O		9.2.1.58		–	
>UL DPCCH Slot Format	O		9.2.2.57		–	
>Diversity mode	O		9.2.2.9		–	
>SSDT Cell Identity Length	O		9.2.2.45		–	
>S-Field Length	O		9.2.2.40		–	
DL DPCH Information		*0..1*			YES	reject
>TFCS	O		9.2.1.58		–	
>DL DPCH Slot Format	O		9.2.2.10		–	
>TFCI Signalling Mode	O		9.2.2.50		–	
>TFCI presence	C-Slot Format		9.2.1.57		–	
>Multiplexing Position	O		9.2.2.23		–	
>PDSCH code mapping	O		9.2.2.25		–	
>PDSCH RL ID	O		RL ID 9.2.1.53		–	
>Limited Power Increase	O		9.2.2.18A		–	
DCHs to Modify	O		DCHs FDD to Modify 9.2.2.4E		YES	reject
DCHs to Add	O		DCH FDD Information 9.2.2.4D		YES	reject
DCHs to Delete		*0..<maxnoofDCHs>*			GLOBAL	reject
>DCH ID	M		9.2.1.20		–	
DSCH to modify		*0..<maxnoofDSCHs>*			YES	reject
>DSCH ID	M		9.2.1.27		–	
>Transport Format Set	O		9.2.1.59	For the DL.	–	
>Allocation/Retention Priority	O		9.2.1.1A		–	
>Frame Handling Priority	O		9.2.1.30		–	
>ToAWS	O		9.2.1.61		–	
>ToAWE	O		9.2.1.60		–	

>Transport Bearer Request Indicator	M		9.2.1.62A		–	
>Binding ID	O		9.2.1.4	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
>Transport Layer Address	O		9.2.1.63	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
DSCH to add	O		DSCH FDD Information 9.2.2.13B		YES	reject
DSCH to Delete		*0..<maxnoofDSCHs>*			YES	reject
>DSCH ID	M		9.2.1.27		–	
TFCI2 bearer specific information		0..1			YES	reject
>CHOICE *TFCI2 bearer action*	M				–	
>>Add or modify					–	
>>>ToAWS	M		9.2.1.61		–	
>>>ToAWE	M		9.2.1.60		–	
>>Delete			NULL		–	
RL Information		*0..<maxnoofRLs>*			EACH	reject
>RL ID	M		9.2.1.53		–	
>DL Code Information	O		FDD DL Code Information 9.2.2.14A		–	
>Maximum DL Power	O		DL Power 9.2.1.21	Maximum allowed power on DPCH	–	
>Minimum DL Power	O		DL Power 9.2.1.21	Minimum allowed power on DPCH	–	
>SSDT Indication	O		9.2.2.47		–	
>SSDT Cell Identity	C–SSDTIndON		9.2.2.44		–	
>Transmit Diversity Indicator	C – Diversity mode		9.2.2.53		–	
>SSDT Cell Identity for EDSCHPC	C-EDSCHPC		9.2.2.44A		YES	ignore
> RL specific DCH Information	O		9.2.1.XXX		YES	ignore
Transmission Gap Pattern Sequence Information	O		9.2.2.53A		YES	reject
DSCH Common Information	O		DSCH FDD Common Information 9.2.2.13D		YES	ignore

Condition	Explanation
SSDTIndON	The IE shall be present if the *SSDT Indication* IE is set to ”SSDT Active in the UE”.
CodeLen	The IE shall be present if the *Min UL Channelisation Code Length* IE is equals to 4.
SlotFormat	The IE shall be present if the *DL DPCH Slot Format* IE is equal to any of the values from 12 to 16.
Diversity mode	The IE shall be present if *Diversity Mode* IE is present in the *UL DPCH Information* IEand is not set to “none”.
EDSCHPC	The IE shall be present if *Enhanced DSCH PC* IE is present in the *DSCH Common Information* IE.

Range Bound	Explanation
MaxnoofDCHs	Maximum number of DCHs for a UE.
MaxnoofDSCHs	Maximum number of DSCHs for a UE.
MaxnoofRLs	Maximum number of RLs for a UE.

9.1.42.2 TDD Message

IE/Group Name	Presence	Range	IE Type and Reference	Semantic Description	Criticality	Assigned Criticality
Message Discriminator	M		9.2.1.45		–	
Message Type	M		9.2.1.46		YES	reject
Node B Communication Context ID	M		9.2.1.48	The reserved value "All NBCC" shall not be used.	YES	reject
Transaction ID	M		9.2.1.62		–	
UL CCTrCH to Add		*0.. <maxno of CCTrCHs>*			GLOBAL	reject
>CCTrCH ID	M		9.2.3.3		–	
>TFCS	M		9.2.1.58		–	
>TFCI Coding	M		9.2.3.22		–	
>Puncture Limit	M		9.2.1.50		–	
> UL SIR Target	O		UL SIR 9.2.1.67A	Mandatory for 1.28Mcps TDD; not applicable for 3.84Mcps TDD	YES	reject
>UL DPCH Information		*0..1*		For 3.84Mcps TDD only	YES	reject
>>Repetition Period	M		9.2.3.16		–	
>>Repetition Length	M		9.2.3.15		–	
>>TDD DPCH Offset	M		9.2.3.19A		–	
>>UL Timeslot Information	M		9.2.3.26C		–	
>UL DPCH Information LCR		*0..1*		For 1.28Mcps TDD only	YES	reject
>>Repetition Period	M		9.2.3.16		–	
>>Repetition Length	M		9.2.3.15		–	
>>TDD DPCH Offset	M		9.2.3.19A		–	
>>UL Timeslot Information LCR	M		9.2.3.26E		–	
UL CCTrCH to Modify		*0.. <maxno of CCTrCHs>*			GLOBAL	reject
>CCTrCH ID	M		9.2.3.3		–	
>TFCS	O		9.2.1.58		–	
>TFCI Coding	O		9.2.3.22		–	
>Puncture Limit	O		9.2.1.50		–	
> UL SIR Target	O		UL SIR 9.2.1.67A	For 1.28Mcps TDD only	YES	reject
>UL DPCH to add		*0..1*		For 3.84Mcps TDD only	YES	reject
>>Repetition Period	M		9.2.3.16		–	
>>Repetition Length	M		9.2.3.15		–	
>>TDD DPCH Offset	M		9.2.3.19A		–	
>>UL Timeslot Information	M		9.2.3.26C		–	

>UL DPCH to modify		*0..1*			YES	reject
>>Repetition Period	O		9.2.3.16		–	
>>Repetition Length	O		9.2.3.15		–	
>>TDD DPCH Offset	O		9.2.3.19A		–	
>>UL Timeslot Information		0 to <maxnoofULts>		For 3.84Mcps TDD only	–	
>>>Time Slot	M		9.2.3.23		–	
>>>Midamble Shift and Burst Type	O		9.2.3.7		–	
>>>TFCI Presence	O		9.2.1.57		–	
>>>UL Code Information		0 to <maxnoOfDPCH>			–	
>>>>DPCH ID	M		9.2.3.5		–	
>>>>TDD Channelisation Code	O		9.2.3.19		–	
>>UL Timeslot Information LCR		0 to <MaxnoofULtsLCR>		For 1.28Mcps TDD only	GLOBAL	reject
>>>Time Slot LCR	M		9.2.3.24A		–	
>>>Midamble shift LCR	O		9.2.3.7A			
>>>TFCI Presence	O		9.2.1.57		–	
>>>UL Code Information LCR		0 to <maxnoOfDPCHLCR>			–	
>>>>DPCH ID	M		9.2.3.5		–	
>>>>TDD Channelisation Code LCR	O		9.2.3.19a		–	
>UL DPCH to delete		*0..* <maxnoof DPCHs>			GLOBAL	reject
>>DPCH ID	M		9.2.3.5		–	
>UL DPCH to add LCR		*0..1*		For 1.28Mcps TDD only	YES	reject
>>Repetition Period	M		9.2.3.16		–	
>>Repetition Length	M		9.2.3.15		–	
>>TDD DPCH Offset	M		9.2.3.19A		–	
>>UL Timeslot Information LCR	M		9.2.3.26E		–	
UL CCTrCH to Delete		*0..* <maxnoof CCTrCHs>			GLOBAL	reject
>CCTrCH ID	M		9.2.3.3		–	
DL CCTrCH to Add		*0..* <maxnoof CCTrCHs>			GLOBAL	reject
>CCTrCH ID	M		9.2.3.3		–	
>TFCS	M		9.2.1.58		–	
>TFCI Coding	M		9.2.3.22		–	
>PunctureLimit	M		9.2.1.50		–	

>TPC CCTrCH List		0 to <maxnoCCTrCHs>		List of uplink CCTrCH which provide TPC	–	
>>TPC CCTrCH ID	M		CCTrCH ID 9.2.3.3		–	
>DL DPCH Information		*0..1*		For 3.84Mcps TDD only	YES	reject
>>Repetition Period	M		9.2.3.16		–	
>>Repetition Length	M		9.2.3.15		–	
>>TDD DPCH Offset	M		9.2.3.19A		–	
>>DL Timeslot Information	M		9.2.3.4E		–	
>DL DPCH Information LCR		*0..1*		For 1.28Mcps TDD only	YES	reject
>>Repetition Period	M		9.2.3.16		–	
>>Repetition Length	M		9.2.3.15		–	
>>TDD DPCH Offset	M		9.2.3.19A		–	
>>DL Timeslot Information LCR	M		9.2.3.4O		–	
DL CCTrCH to Modify		*0..* <maxnoofCCTrCHs>			GLOBAL	reject
>CCTrCH ID	M		9.2.3.3.		–	
>TFCS	O		9.2.1.58		–	
>TFCI Coding	O		9.2.3.22		–	
>PunctureLimit	O		9.2.1.50		–	
>TPC CCTrCH List		0 to <maxnoCCTrCHs>		List of uplink CCTrCH which provide TPC	–	
>>TPC CCTrCH ID	M		CCTrCH ID 9.2.3.3		–	
>DL DPCH to add		*0..1*		For 3.84Mcps TDD only	YES	reject
>>Repetition Period	M		9.2.3.16		–	
>>Repetition Length	M		9.2.3.15		–	
>>TDD DPCH Offset	M		9.2.3.19A		–	
>>DL Timeslot Information	M		9.2.3.4E		–	
>DL DPCH to modify		*0..1*			YES	reject
>>Repetition Period	O		9.2.3.16		–	
>>Repetition Length	O		9.2.3.15		–	
>>TDD DPCH Offset	O		9.2.3.19A		–	
>>DL Timeslot Information		0 .. <maxnoofDLts>		For 3.84Mcps TDD only	–	
>>>Time Slot	M		9.2.3.23		–	
>>>Midamble Shift and Burst Type	O		9.2.3.7		–	
>>>TFCI Presence	O		9.2.1.57		–	
>>>DL Code Information		0 .. <maxnoOfDPCH>			–	
>>>>DPCH ID	M		9.2.3.5		–	
>>>>TDD	O		9.2.3.19		–	

Channelisation Code						
>>DL Timeslot Information LCR		0 .. <MaxnoofDLtsLCR>		For 1.28Mcps TDD only	GLOBAL	reject
>>>Time Slot LCR	M		9.2.3.24A		–	
>>>Midamble shift LCR	O		9.2.3.7A			
>>>TFCI Presence	O		9.2.1.57		–	
>>>DL Code Information LCR		0 .. <maxnoOfDPCHLCRs>			–	
>>>>DPCH ID	M		9.2.3.5		–	
>>>>TDD Channelisation Code LCR	O		9.2.3.19a		–	
>DL DPCH to delete		*0..* <maxnoof DPCHs>			GLOBAL	reject
>>DPCH ID	M		9.2.3.5		–	
>DL DPCH to add LCR		*0..1*		For 1.28Mcps TDD only	YES	reject
>>Repetition Period	M		9.2.3.16		–	
>>Repetition Length	M		9.2.3.15		–	
>>TDD DPCH Offset	M		9.2.3.19A		–	
>>DL Timeslot Information LCR	M		9.2.3.4O		–	
DL CCTrCH to Delete		*0..* <maxnoof CCTrCHs>			GLOBAL	reject
>CCTrCH ID	M		9.2.3.3		–	
DCHs to Modify	O		DCHs TDD to Modify 9.2.3.4D		YES	reject
DCHs to Add	O		DCH TDD Information 9.2.3.4C		YES	reject
DCHs to Delete		*0..<maxnoofDCHs>*			GLOBAL	reject
>DCH ID	M		9.2.1.20		–	
DSCH Information to modify		0 .. <Maxnoof DSCHs>			GLOBAL	reject
>DSCH ID	M		9.2.1.27		–	
>CCTrCH ID	O		9.2.3.3	DL CCTrCH in which the DSCH is mapped	–	
>Transport Format Set	O		9.2.1.59		–	
>Allocation/Retention Priority	O		9.2.1.1A		–	
>Frame Handling Priority	O		9.2.1.30		–	
>ToAWS	O		9.2.1.61		–	
>ToAWE	O		9.2.1.60		–	

>Transport Bearer Request Indicator	M		9.2.1.62A		–	
>Binding ID	O		9.2.1.4	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
>Transport Layer Address	O		9.2.1.63	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
DSCH Information to add	O		DSCH TDD Information 9.2.3.5A		YES	reject
DSCH Information to delete		0 .. <Maxno of DSCHs >			GLOBAL	reject
>DSCH ID	M		9.2.1.27		–	
USCH Information to modify		0 .. <Maxno of USCHs >			GLOBAL	reject
>USCH ID	M		9.2.3.27		–	
>Transport Format Set	O		9.2.1.59		–	
> Allocation/Retention Priority	O		9.2.1.1A		–	
>CCTrCH ID	O		9.2.3.2	UL CCTrCH in which the USCH is mapped	–	
>Transport Bearer Request Indicator	M		9.2.1.62A		–	
>Binding ID	O		9.2.1.4	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
>Transport Layer Address	O		9.2.1.63	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
USCH Information to add	O		USCH Information 9.2.3.28		YES	reject
USCH Information to delete		0 .. <Maxno of USCHs >			GLOBAL	reject
>USCH ID	M		9.2.3.27		–	
RL Information		*0..1*			YES	reject
>RL ID	M		9.2.1.53		–	
>Maximum Downlink Power	O		DL Power 9.2.1.21	Maximum allowed power on DPCH	–	

>Minimum Downlink Power	O		DL Power 9.2.1.21	Minimum allowed power on DPCH	–	
>Initial DL transmission Power	O		DL Power 9.2.1.21	Initial power on DPCH	YES	ignore
> RL specific DCH Information	O		9.2.1.XXX		YES	ignore

Range Bound	Explanation
MaxnoofDCHs	Maximum number of DCHs for a UE.
MaxnoofCCTrCHs	Maximum number of CCTrCHs for a UE.
Maxnoof DPCHs	Maximum number of DPCHs in one CCTrCH for 3.84Mcps TDD.
MaxnoOfDPCHLCRs	Maximum number of DPCHs in one CCTrCH for 1.28Mcps TDD.
MaxnoofDSCHs	Maximum number of DSCHs for one UE
MaxnoofUSCHs	Maximum number of USCHs for one UE
MaxnoofDLts	Maximum number of Downlink time slots per Radio Link for 3.84Mcps TDD.
MaxnoofDLtsLCR	Maximum number of Downlink time slots per Radio Link for 1.28Mcps TDD.
MaxnoofULts	Maximum number of Uplink time slots per Radio Link for 3.84Mcps TDD.
MaxnoofULtsLCR	Maximum number of Uplink time slots per Radio Link for 1.28Mcps TDD.

9.1.47 RADIO LINK RECONFIGURATION REQUEST

9.1.47.1 FDD Message

IE/Group Name	Presence	Range	IE Type and Reference	Semantic Description	Criticality	Assigned Criticality
Message Discriminator	M		9.2.1.45		–	
Message Type	M		9.2.1.46		YES	reject
Node B Communication Context ID	M		9.2.1.48	The reserved value "All NBCC" shall not be used.	YES	reject
Transaction ID	M		9.2.1.62		–	
UL DPCH Information		*0..1*			YES	reject
>TFCS	O		9.2.1.58	For the UL.	–	
DL DPCH Information		*0..1*			YES	reject
>TFCS	O		9.2.1.58	For the DL.	–	
>TFCI Signalling Mode	O		9.2.2.50		–	
>Limited Power Increase	O		9.2.2.18A		–	
DCHs to Modify	O		DCHs FDD to Modify 9.2.2.4E		YES	reject
DCHs to Add	O		DCH FDD Information 9.2.2.4D		YES	reject
DCHs to Delete		*0..<maxnoofDCHs>*			GLOBAL	reject
>DCH ID	M		9.2.1.20		–	
Radio Link Information		*0..<maxnoofRLs>*			EACH	reject
>RL ID	M		9.2.1.53		–	
>Maximum DL Power	O		DL Power 9.2.1.21	Maximum allowed power on DPCH	–	
>Minimum DL Power	O		DL Power 9.2.1.21	Minimum allowed power on DPCH	–	
>DL Code Information	C-SF/2		FDD DL Code Information 9.2.2.14A		–	
> RL specific DCH Information	O		9.2.1.XXX		YES	ignore
Transmission Gap Pattern Sequence Information	O		9.2.2.53A		YES	reject

Range Bound	Explanation
MaxnoofDCHs	Maximum number of DCHs for a UE.
MaxnoofRLs	Maximum number of RLs for a UE.

Condition	Explanation
SF/2	The IE shall be present if the *Transmission Gap Pattern Sequence Information* IE is included and the indicated Downlink Compressed Mode method for at least one of the included Transmission Gap Pattern Sequence is set to "SF/2".

9.1.47.2 TDD Message

IE/Group Name	Presence	Range	IE Type and Reference	Semantic Description	Criticality	Assigned Criticality
Message Discriminator	M		9.2.1.45		–	
Message Type	M		9.2.1.46		YES	reject
Node B Communication Context ID	M		9.2.1.48	The reserved value "All NBCC" shall not be used.	YES	reject
Transaction ID	M		9.2.1.62		–	
UL CCTrCH to modify		*0..<maxnoofCCTrCHs>*			EACH	notify
>CCTrCH ID	M		9.2.3.3		–	
>TFCS	O		9.2.1.58		–	
>Puncture Limit	O		9.2.1.50		–	
UL CCTrCH to delete		*0..<maxnoofCCTrCHs>*			EACH	notify
>CCTrCH ID	M		9.2.3.3		–	
DL CCTrCH to modify		*0..<maxnoofCCTrCHs>*			EACH	notify
>CCTrCH ID	M		9.2.3.3		–	
>TFCS	O		9.2.1.58		–	
>Puncture Limit	O		9.2.1.50		–	
DL CCTrCH to delete		*0..<maxnoofCCTrCHs>*			EACH	notify
>CCTrCH ID	M		9.2.3.3		–	
DCHs to Modify	O		DCHs TDD to Modify 9.2.3.4D		YES	reject
DCHs to Add	O		DCH TDD Information 9.2.3.4C		YES	reject
DCHs to Delete		*0..<maxnoofDSCHs>*			GLOBAL	reject
>DCH ID	M		9.2.1.20		–	
RL Information		*0..1*			YES	reject
>RL ID	M		9.2.1.53		–	
>Maximum Downlink Power	O		DL Power 9.2.1.21	Maximum allowed power on DPCH	–	
>Minimum Downlink Power	O		DL Power 9.2.1.21	Minimum allowed power on DPCH	–	
> RL specific DCH Information	O		9.2.1.XXX		YES	ignore

Range bound	Explanation
MaxnoofCCTrCHs	Maximum number of CCTrCHs for a UE.

9.2.1.4 Binding ID

The Binding ID is the identifier of a user data stream.

In case of transport bearer establishment with ALCAP [2][31], this IE contains the identifier ~~It~~ that is allocated at Node B and ~~it~~ that is unique for each transport bearer under establishment to/from the Node B.

If the Transport Layer Address contains an IP address [29], this IE contains the UDP port [30] intended to be used for the user plane transport.

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Binding ID			Octetstring (1..4,…)	If the Binding ID includes an UDP port, the UDP port is included in octet 1 and 2. The first octet of the UDP port field shall be included in the first octet of the Binding ID.

9.2.1.63 Transport Layer Address

In case of transport bearer establishment with ALCAP [2][31], this IE contains the address to be used for Transport Network Control Plane signalling to establish the transport bearer according to [2][31].

In order to allow transport bearer establishment without ALCAP, this IE contains the address of the transport bearer to be used for the user plane transport.

~~Transport Layer Address defines the transport address of the Node B.~~ For details on the Transport Address used see ref. [2][31].

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Transport Layer Address			Bit string(1…160, …)	

9.2.1.XXX RL Specific DCH Information

The *RL Specific DCH Information* IE provides RL specific DCH Information for DCHs. In case of a set of co-ordinated DCHs requiring a new transport bearer on Iub, the *Transport Layer Address* IE and the *Binding ID* IE in the *RL Specific DCH Information* IE shall be included only for one of the DCHs in the set of co-ordinated DCHs.

IE/Group Name	Presence	Range	IE type and reference	Semantics description	Criticality	Assigned Criticality
RL specific DCH Information		*1..<maxnoofDCHs>*			–	
>DCH ID	M		9.2.1.20		–	
>Binding ID	O		9.2.1.4	Shall be ignored if bearer establishment with ALCAP.	–	
>Transport Layer Address	O		9.2.1.63	Shall be ignored if bearer establishment with ALCAP.	–	

Range bound	Explanation
MaxnoofDCHs	Maximum number of DCHs for one UE.

9.2.2.13B DSCH FDD Information

The *DSCH FDD Information* IE provides information for DSCHs to be established.

IE/Group Name	Presence	Range	IE type and reference	Semantics descriptions	Criticality	Assigned Criticality
DSCH FDD Information		*1 to <maxnoof DSCHs>*			–	
>DSCH ID	M		9.2.1.27		–	
>Transport Format Set	M		9.2.1.59	For DSCH	–	
>Allocation/Retention Priority	M		9.2.1.1A		–	
>Frame Handling Priority	M		9.2.1.30		–	
>ToAWS	M		9.2.1.61		–	
>ToAWE	M		9.2.1.60		–	
>Binding ID	O		9.2.1.4	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
>Transport Layer Address	O		9.2.1.63	Shall be ignored if bearer establishment with ALCAP.	YES	ignore

Range bound	Explanation
MaxnoofDSCHs	Maximum number of DSCHs for one UE.

9.2.3.5A DSCH TDD Information

The *DSCH TDD Information* IE provides information for DSCHs to be established.

IE/Group Name	Presence	Range	IE type and reference	Semantics descriptions	Criticality	Assigned Criticality
DSCH TDD Information		*1 to <Maxnoof DSCHs>*			–	
>DSCH ID	M		9.2.1.27		–	
>CCTrCH ID	M		9.2.3.2	DL CCTrCH in which the DSCH is mapped	–	
>Transport Format Set	M		9.2.1.59	For DSCH	–	
>Allocation/Retention Priority	M		9.2.1.1A		–	
>Frame handling Priority	M		9.2.1.30		–	
>ToAWS	M		9.2.1.61		–	
>ToAWE	M		9.2.1.60		–	
>Binding ID	O		9.2.1.4	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
>Transport Layer Address	O		9.2.1.63	Shall be ignored if bearer establishment with ALCAP.	YES	ignore

Range bound	Explanation
MaxnoofDSCHs	Maximum number of DSCH for one UE

9.2.3.28 USCH Information

The *USCH Information* IE provides information for USCHs to be established.

IE/Group Name	Presence	Range	IE type and reference	Semantics descriptions	Criticality	Assigned Criticality
USCH Information		*1 to <Maxnoof USCHs>*			–	
>USCH ID	M		9.2.3.27		–	
>CCTrCH ID	M		9.2.3.3	UL CCTrCH in which the USCH is mapped	–	
>Transport Format Set	M		9.2.1.59	For USCH	–	
>Allocation/Retention Priority	M		9.2.1.1A		–	
>Binding ID	O		9.2.1.4	Shall be ignored if bearer establishment with ALCAP.	YES	ignore
>Transport Layer Address	O		9.2.1.63	Shall be ignored if bearer establishment with ALCAP.	YES	ignore

Range bound	Explanation
MaxnoofUSCHs	Maximum number of USCH for one UE

9.3.3 PDU Definitions

```
-- **************************************************************
--
-- PDU definitions for NBAP.
--
-- **************************************************************

NBAP-PDU-Contents {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) nbap (2) version1 (1) nbap-PDU-Contents (1) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

-- **************************************************************
--
-- IE parameter types from other modules.
--
-- **************************************************************

IMPORTS
    Active-Pattern-Sequence-Information,
    AddorDeleteIndicator,
    AICH-Power,
    AICH-TransmissionTiming,
    AllocationRetentionPriority,
    APPreambleSignature,
    APSubChannelNumber,
    AvailabilityStatus,
    BCCH-ModificationTime,
    BindingID,
    BlockingPriorityIndicator,
    SCTD-Indicator,
    Cause,
    CCTrCH-ID,
    CDSubChannelNumbers,
    CellParameterID,
    CellSyncBurstAvailabilityIndicator,
    CellSyncBurstCode,
    CellSyncBurstCodeShift,
    CellSyncBurstRepetitionPeriod,
    CellSyncBurstSIR,
    CellSyncBurstTiming,
    CellSyncBurstTimingThreshold,
    CFN,
    Channel-Assignment-Indication,
    ChipOffset,
```

```
    C-ID,
    Closedlooptimingadjustmentmode,
    CommonChannelsCapacityConsumptionLaw,
    Compressed-Mode-Deactivation-Flag,
    CommonMeasurementAccuracy,
    CommonMeasurementType,
    CommonMeasurementValue,
    CommonMeasurementValueInformation,
    CommonPhysicalChannelID,
    Common-PhysicalChannel-Status-Information,
    Common-TransportChannel-Status-Information,
    CommonTransportChannelID,
    CommonTransportChannel-InformationResponse,
    CommunicationControlPortID,
    ConfigurationGenerationID,
    ConstantValue,
    CriticalityDiagnostics,
    CPCH-Allowed-Total-Rate,
    CPCHScramblingCodeNumber,
    CPCH-UL-DPCCH-SlotFormat,
    CRNC-CommunicationContextID,
    CSBMeasurementID,
    CSBTransmissionID,
    DCH-FDD-Information,
    DCH-InformationResponse,
    DCH-ID,
    FDD-DCHs-to-Modify,
    TDD-DCHs-to-Modify,
    DCH-TDD-Information,
    DedicatedChannelsCapacityConsumptionLaw,
    DedicatedMeasurementType,
    DedicatedMeasurementValue,
    DedicatedMeasurementValueInformation,
    DiversityControlField,
    DiversityMode,
    DL-DPCH-SlotFormat,
    DL-or-Global-CapacityCredit,
    DL-Power,
    DLPowerAveragingWindowSize,
    DL-ScramblingCode,
    DL-TimeslotISCP,
    DL-Timeslot-Information,
    DL-TimeslotLCR-Information,
    DL-TimeslotISCPInfo,
    DL-TimeslotISCPInfoLCR,
    DL-TPC-Pattern01Count,
    DPC-Mode,
    DPCH-ID,
    DSCH-ID,
    DSCH-FDD-Common-Information,
    DSCH-FDD-Information,
    DSCH-InformationResponse,
    DSCH-TDD-Information,
```

```
    DwPCH-Power,
    End-Of-Audit-Sequence-Indicator,
    EnhancedDSCHPC,
    EnhancedDSCHPCCounter,
    EnhancedDSCHPCIndicator,
    EnhancedDSCHPCWnd,
    EnhancedDSCHPowerOffset,
    FDD-DL-ChannelisationCodeNumber,
    FDD-DL-CodeInformation,
    FDD-S-CCPCH-Offset,
    FDD-TPC-DownlinkStepSize,
    FirstRLS-Indicator,
    FNReportingIndicator,
    FPACH-Power,
    FrameAdjustmentValue,
    FrameHandlingPriority,
    FrameOffset,
    IB-OC-ID,
    IB-SG-DATA,
    IB-SG-POS,
    IB-SG-REP,
    IB-Type,
    IndicationType,
    InformationExchangeID,
    InformationReportCharacteristics,
    InformationType,
    InnerLoopDLPCStatus,
    IPDL-FDD-Parameters,
    IPDL-TDD-Parameters,
    IPDL-Indicator,
    LimitedPowerIncrease,
    Local-Cell-ID,
    MaximumDL-PowerCapability,
    MaximumTransmissionPower,
    Max-Number-of-PCPCHes,
    MaxNrOfUL-DPDCHs,
    MaxPRACH-MidambleShifts,
    MeasurementFilterCoefficient,
    MeasurementID,
    MidambleAllocationMode,
    MidambleShiftAndBurstType,
    MidambleShiftLCR,
    MinimumDL-PowerCapability,
    MinSpreadingFactor,
    MinUL-ChannelisationCodeLength,
    MultiplexingPosition,
    NEOT,
    NCyclesPerSFNperiod,
    NFmax,
    NRepetitionsPerCyclePeriod,
    N-INSYNC-IND,
    N-OUTSYNC-IND,
    NeighbouringCellMeasurementInformation,
```

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    NeighbouringFDDCellMeasurementInformation,
    NeighbouringTDDCellMeasurementInformation,
    NodeB-CommunicationContextID,
    NStartMessage,
    PagingIndicatorLength,
    PayloadCRC-PresenceIndicator,
    PCCPCH-Power,
    PCP-Length,
    PDSCH-CodeMapping,
    PDSCHSet-ID,
    PDSCH-ID,
    PICH-Mode,
    PICH-Power,
    PowerAdjustmentType,
    PowerOffset,
    PowerRaiseLimit,
    PRACH-Midamble,
    PreambleSignatures,
    PreambleThreshold,
    PredictedSFNSFNDeviationLimit,
    PredictedTUTRANGPSDeviationLimit,
    PrimaryCPICH-Power,
    PrimaryScramblingCode,
    PropagationDelay,
    SCH-TimeSlot,
    PunctureLimit,
    PUSCHSet-ID,
    PUSCH-ID,
    QE-Selector,
    RACH-SlotFormat,
    RACH-SubChannelNumbers,
    ReferenceClockAvailability,
    ReferenceSFNoffset,
    RepetitionLength,
    RepetitionPeriod,
    ReportCharacteristics,
    RequestedDataValue,
    RequestedDataValueInformation,
    ResourceOperationalState,
    RL-Set-ID,
    RL-ID,
    RL-Specific-DCH-Info,
    Received-total-wide-band-power-Value,
    AdjustmentPeriod,
    ScaledAdjustmentRatio,
    MaxAdjustmentStep,
    RNC-ID,
    ScramblingCodeNumber,
    SecondaryCCPCH-SlotFormat,
    Segment-Type,
    S-FieldLength,
    SFN,
    SFNSFNChangeLimit,
```

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    SFNSFNDriftRate,
    SFNSFNDriftRateQuality,
    SFNSFNQuality,
    ShutdownTimer,
    SIB-Originator,
    SpecialBurstScheduling,
    SSDT-Cell-Identity,
    SSDT-CellID-Length,
    SSDT-Indication,
    Start-Of-Audit-Sequence-Indicator,
    STTD-Indicator,
    SSDT-SupportIndicator,
    SyncCase,
    SYNCDlCodeId,
    SyncFrameNumber,
    SynchronisationReportCharacteristics,
    SynchronisationReportType,
    T-Cell,
    T-RLFAILURE,
    TDD-ChannelisationCode,
    TDD-ChannelisationCodeLCR,
    TDD-DL-Code-LCR-Information,
    TDD-DPCHOffset,
    TDD-TPC-DownlinkStepSize,
    TDD-PhysicalChannelOffset,
    TDD-UL-Code-LCR-Information,
    TFCI2-BearerInformationResponse,
    TFCI-Coding,
    TFCI-Presence,
    TFCI-SignallingMode,
    TFCS,
    TimeSlot,
    TimeSlotLCR,
    TimeSlotDirection,
    TimeSlotStatus,
    TimingAdjustmentValue,
    TimingAdvanceApplied,
    ToAWE,
    ToAWS,
    TransmissionDiversityApplied,
    TransmitDiversityIndicator,
    TransmissionGapPatternSequenceCodeInformation,
    Transmission-Gap-Pattern-Sequence-Information,
    TransportBearerRequestIndicator,
    TransportFormatSet,
    TransportLayerAddress,
    TSTD-Indicator,
    UARFCN,
    TUTRANGPS,
    TUTRANGPSChangeLimit,
    TUTRANGPSDriftRate,
    TUTRANGPSDriftRateQuality,
```

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    TUTRANGPSQuality,
    UARFCN,
    UC-Id,
    USCH-Information,
    USCH-InformationResponse,
    UL-CapacityCredit,
    UL-DPCCH-SlotFormat,
    UL-SIR,
    UL-FP-Mode,
    UL-PhysCH-SF-Variation,
    UL-ScramblingCode,
    UL-Timeslot-Information,
    UL-TimeslotLCR-Information,
    UL-TimeSlot-ISCP-Info,
    UL-TimeSlot-ISCP-LCR-Info,
    UL-TimeslotISCP-Value,
    UL-TimeslotISCP-Value-IncrDecrThres,
    USCH-ID
FROM NBAP-IEs

    PrivateIE-Container{},
    ProtocolExtensionContainer{},
    ProtocolIE-Container{},
    ProtocolIE-Single-Container{},
    ProtocolIE-ContainerList{},
    NBAP-PRIVATE-IES,
    NBAP-PROTOCOL-IES,
    NBAP-PROTOCOL-EXTENSION
FROM NBAP-Containers

    id-Active-Pattern-Sequence-Information,
    id-AdjustmentRatio,
    id-AICH-Information,
    id-AICH-ParametersListIE-CTCH-ReconfRqstFDD,
    id-AP-AICH-Information,
    id-AP-AICH-ParametersListIE-CTCH-ReconfRqstFDD,
    id-BCH-Information,
    id-BCCH-ModificationTime,
    id-bindingID,
    id-BlockingPriorityIndicator,
    id-Cause,
    id-CauseLevel-PSCH-ReconfFailureTDD,
    id-CauseLevel-RL-AdditionFailureFDD,
    id-CauseLevel-RL-AdditionFailureTDD,
    id-CauseLevel-RL-ReconfFailure,
    id-CauseLevel-RL-SetupFailureFDD,
    id-CauseLevel-RL-SetupFailureTDD,
    id-CauseLevel-SyncAdjustmntFailureTDD,
    id-CCP-InformationItem-AuditRsp,
    id-CCP-InformationList-AuditRsp,
    id-CCP-InformationItem-ResourceStatusInd,
    id-CCTrCH-InformationItem-RL-FailureInd,
    id-CCTrCH-InformationItem-RL-RestoreInd,
```

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    id-CDCA-ICH-Information,
    id-CDCA-ICH-ParametersListIE-CTCH-ReconfRqstFDD,
    id-CellAdjustmentInfo-SyncAdjustmntRqstTDD,
    id-CellAdjustmentInfoItem-SyncAdjustmentRqstTDD,
    id-Cell-InformationItem-AuditRsp,
    id-Cell-InformationItem-ResourceStatusInd,
    id-Cell-InformationList-AuditRsp,
    id-CellParameterID,
    id-CellSyncBurstTransInit-CellSyncInitiationRqstTDD,
    id-CellSyncBurstMeasureInit-CellSyncInitiationRqstTDD,
    id-cellSyncBurstRepetitionPeriod,
    id-CellSyncBurstTransReconfiguration-CellSyncReconfRqstTDD,
    id-CellSyncBurstTransReconfInfo-CellSyncReconfRqstTDD,
    id-CellSyncBurstMeasReconfiguration-CellSyncReconfRqstTDD,
    id-CellSyncBurstMeasInfoList-CellSyncReconfRqstTDD,
    id-CellSyncBurstInfoList-CellSyncReconfRqstTDD,
    id-CellSyncInfo-CellSyncReprtTDD,
    id-CFN,
    id-CFNReportingIndicator,
    id-C-ID,
    id-Closed-Loop-Timing-Adjustment-Mode,
    id-CommonMeasurementAccuracy,
    id-CommonMeasurementObjectType-CM-Rprt,
    id-CommonMeasurementObjectType-CM-Rqst,
    id-CommonMeasurementObjectType-CM-Rsp,
    id-CommonMeasurementType,
    id-CommonPhysicalChannelID,
    id-CommonPhysicalChannelType-CTCH-ReconfRqstFDD,
    id-CommonPhysicalChannelType-CTCH-SetupRqstFDD,
    id-CommonPhysicalChannelType-CTCH-SetupRqstTDD,
    id-CommunicationContextInfoItem-Reset,
    id-CommunicationControlPortID,
    id-CommunicationControlPortInfoItem-Reset,
    id-Compressed-Mode-Deactivation-Flag,
    id-ConfigurationGenerationID,
    id-CPCH-Information,
    id-CPCH-Parameters-CTCH-SetupRsp,
    id-CPCH-ParametersListIE-CTCH-ReconfRqstFDD,
    id-CRNC-CommunicationContextID,
    id-CriticalityDiagnostics,
    id-CSBTransmissionID,
    id-CSBMeasurementID,
    id-DCHs-to-Add-FDD,
    id-DCHs-to-Add-TDD,
    id-DCH-AddList-RL-ReconfPrepTDD,
    id-DCH-DeleteList-RL-ReconfPrepFDD,
    id-DCH-DeleteList-RL-ReconfPrepTDD,
    id-DCH-DeleteList-RL-ReconfRqstFDD,
    id-DCH-DeleteList-RL-ReconfRqstTDD,
    id-DCH-FDD-Information,
    id-DCH-TDD-Information,
    id-DCH-InformationResponse,
    id-FDD-DCHs-to-Modify,
```

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    id-TDD-DCHs-to-Modify,
    id-DedicatedMeasurementObjectType-DM-Rprt,
    id-DedicatedMeasurementObjectType-DM-Rqst,
    id-DedicatedMeasurementObjectType-DM-Rsp,
    id-DedicatedMeasurementType,
    id-DL-CCTrCH-InformationAddList-RL-ReconfPrepTDD,
    id-DL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD,
    id-DL-CCTrCH-InformationDeleteList-RL-ReconfPrepTDD,
    id-DL-CCTrCH-InformationDeleteList-RL-ReconfRqstTDD,
    id-DL-CCTrCH-InformationItem-RL-SetupRqstTDD,
    id-DL-CCTrCH-InformationList-RL-AdditionRqstTDD,
    id-DL-CCTrCH-InformationList-RL-SetupRqstTDD,
    id-DL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD,
    id-DL-CCTrCH-InformationModifyList-RL-ReconfPrepTDD,
    id-DL-CCTrCH-InformationModifyList-RL-ReconfRqstTDD,
    id-DL-DPCH-InformationAddListIE-RL-ReconfPrepTDD,
    id-DL-DPCH-InformationItem-RL-AdditionRqstTDD,
    id-DL-DPCH-InformationList-RL-SetupRqstTDD,
    id-DL-DPCH-InformationModify-AddListIE-RL-ReconfPrepTDD,
    id-DL-DPCH-InformationModify-DeleteListIE-RL-ReconfPrepTDD,
    id-DL-DPCH-InformationModify-ModifyListIE-RL-ReconfPrepTDD,
    id-DL-DPCH-Information-RL-ReconfPrepFDD,
    id-DL-DPCH-Information-RL-ReconfRqstFDD,
    id-DL-DPCH-Information-RL-SetupRqstFDD,
    id-DL-ReferencePowerInformationItem-DL-PC-Rqst,
    id-DLReferencePower,
    id-DLReferencePowerList-DL-PC-Rqst,
    id-DL-TPC-Pattern01Count,
    id-DPC-Mode,
    id-DPCHConstant,
    id-DSCH-AddItem-RL-ReconfPrepFDD,
    id-DSCHs-to-Add-FDD,
    id-DSCH-DeleteItem-RL-ReconfPrepFDD,
    id-DSCH-DeleteList-RL-ReconfPrepFDD,
    id-DSCHs-to-Add-TDD,
    id-DSCH-Information-DeleteList-RL-ReconfPrepTDD,
    id-DSCH-Information-ModifyList-RL-ReconfPrepTDD,
    id-DSCH-InformationResponse,
    id-DSCH-FDD-Information,
    id-DSCH-FDD-Common-Information,
    id-DSCH-TDD-Information,
    id-DSCH-ModifyItem-RL-ReconfPrepFDD,
    id-DSCH-ModifyList-RL-ReconfPrepFDD,
    id-End-Of-Audit-Sequence-Indicator,
    id-EnhancedDSCHPC,
    id-EnhancedDSCHPCIndicator,
    id-FACH-Information,
    id-FACH-ParametersList-CTCH-ReconfRqstTDD,
    id-FACH-ParametersList-CTCH-SetupRsp,
    id-FACH-ParametersListIE-CTCH-ReconfRqstFDD,
    id-FACH-ParametersListIE-CTCH-SetupRqstFDD,
    id-FACH-ParametersListIE-CTCH-SetupRqstTDD,
    id-IndicationType-ResourceStatusInd,
```

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    id-InformationExchangeID,
    id-InformationExchangeObjectType-InfEx-Rqst,
    id-InformationExchangeObjectType-InfEx-Rsp,
    id-InformationExchangeObjectType-InfEx-Rprt,
    id-InformationReportCharacteristics,
    id-InformationType,
    id-InitDL-Power,
    id-InnerLoopDLPCStatus,
    id-IntStdPhCellSyncInfoItem-CellSyncReprtTDD,
    id-IPDLParameter-Information-Cell-ReconfRqstFDD,
    id-IPDLParameter-Information-Cell-SetupRqstFDD,
    id-IPDLParameter-Information-Cell-ReconfRqstTDD,
    id-IPDLParameter-Information-Cell-SetupRqstTDD,
    id-LateEntranceCellSyncInfoItem-CellSyncReprtTDD,
    id-Limited-power-increase-information-Cell-SetupRqstFDD,
    id-Local-Cell-ID,
    id-Local-Cell-Group-InformationItem-AuditRsp,
    id-Local-Cell-Group-InformationItem-ResourceStatusInd,
    id-Local-Cell-Group-InformationItem2-ResourceStatusInd,
    id-Local-Cell-Group-InformationList-AuditRsp,
    id-Local-Cell-InformationItem-AuditRsp,
    id-Local-Cell-InformationItem-ResourceStatusInd,
    id-Local-Cell-InformationItem2-ResourceStatusInd,
    id-Local-Cell-InformationList-AuditRsp,
    id-AdjustmentPeriod,
    id-MaxAdjustmentStep,
    id-MaximumTransmissionPower,
    id-MeasurementFilterCoefficient,
    id-MeasurementID,
    id-MIB-SB-SIB-InformationList-SystemInfoUpdateRqst,
    id-NCyclesPerSFNperiod,
    id-NeighbouringCellMeasurementInformation,
    id-NodeB-CommunicationContextID,
    id-NRepetitionsPerCyclePeriod,
    id-P-CCPCH-Information,
    id-P-CPICH-Information,
    id-P-SCH-Information,
    id-PCCPCH-Information-Cell-ReconfRqstTDD,
    id-PCCPCH-Information-Cell-SetupRqstTDD,
    id-PCH-Parameters-CTCH-ReconfRqstTDD,
    id-PCH-Parameters-CTCH-SetupRsp,
    id-PCH-ParametersItem-CTCH-ReconfRqstFDD,
    id-PCH-ParametersItem-CTCH-SetupRqstFDD,
    id-PCH-ParametersItem-CTCH-SetupRqstTDD,
    id-PCH-Information,
    id-PCPCH-Information,
    id-PICH-ParametersItem-CTCH-ReconfRqstFDD,
    id-PDSCH-Information-AddListIE-PSCH-ReconfRqst,
    id-PDSCH-Information-ModifyListIE-PSCH-ReconfRqst,
    id-PDSCHSets-AddList-PSCH-ReconfRqst,
    id-PDSCHSets-DeleteList-PSCH-ReconfRqst,
    id-PDSCHSets-ModifyList-PSCH-ReconfRqst,
    id-PICH-Information,
```

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    id-PICH-Parameters-CTCH-ReconfRqstTDD,
    id-PICH-ParametersItem-CTCH-SetupRqstTDD,
    id-PowerAdjustmentType,
    id-PRACH-Information,
    id-PRACHConstant,
    id-PRACH-ParametersItem-CTCH-SetupRqstTDD,
    id-PRACH-ParametersListIE-CTCH-ReconfRqstFDD,
    id-PrimaryCCPCH-Information-Cell-ReconfRqstFDD,
    id-PrimaryCCPCH-Information-Cell-SetupRqstFDD,
    id-PrimaryCPICH-Information-Cell-ReconfRqstFDD,
    id-PrimaryCPICH-Information-Cell-SetupRqstFDD,
    id-PrimarySCH-Information-Cell-ReconfRqstFDD,
    id-PrimarySCH-Information-Cell-SetupRqstFDD,
    id-PrimaryScramblingCode,
    id-SCH-Information-Cell-ReconfRqstTDD,
    id-SCH-Information-Cell-SetupRqstTDD,
    id-PUSCH-Information-AddListIE-PSCH-ReconfRqst,
    id-PUSCH-Information-ModifyListIE-PSCH-ReconfRqst,
    id-PUSCHConstant,
    id-PUSCHSets-AddList-PSCH-ReconfRqst,
    id-PUSCHSets-DeleteList-PSCH-ReconfRqst,
    id-PUSCHSets-ModifyList-PSCH-ReconfRqst,
    id-RACH-Information,
    id-RACH-Parameters-CTCH-SetupRsp,
    id-RACH-ParametersItem-CTCH-SetupRqstFDD,
    id-RACH-ParameterItem-CTCH-SetupRqstTDD,
    id-ReferenceClockAvailability,
    id-ReferenceSFNoffset,
    id-ReportCharacteristics,
    id-Reporting-Object-RL-FailureInd,
    id-Reporting-Object-RL-RestoreInd,
    id-ResetIndicator,
    id-RL-InformationItem-DM-Rprt,
    id-RL-InformationItem-DM-Rqst,
    id-RL-InformationItem-DM-Rsp,
    id-RL-InformationItem-RL-AdditionRqstFDD,
    id-RL-informationItem-RL-DeletionRqst,
    id-RL-InformationItem-RL-FailureInd,
    id-RL-InformationItem-RL-PreemptRequiredInd,
    id-RL-InformationItem-RL-ReconfPrepFDD,
    id-RL-InformationItem-RL-ReconfRqstFDD,
    id-RL-InformationItem-RL-RestoreInd,
    id-RL-InformationItem-RL-SetupRqstFDD,
    id-RL-InformationList-RL-AdditionRqstFDD,
    id-RL-informationList-RL-DeletionRqst,
    id-RL-InformationList-RL-PreemptRequiredInd,
    id-RL-InformationList-RL-ReconfPrepFDD,
    id-RL-InformationList-RL-ReconfRqstFDD,
    id-RL-InformationList-RL-SetupRqstFDD,
    id-RL-InformationResponseItem-RL-AdditionRspFDD,
    id-RL-InformationResponseItem-RL-ReconfReady,
    id-RL-InformationResponseItem-RL-ReconfRsp,
    id-RL-InformationResponseItem-RL-SetupRspFDD,
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    id-RL-InformationResponseList-RL-AdditionRspFDD,
    id-RL-InformationResponseList-RL-ReconfReady,
    id-RL-InformationResponseList-RL-ReconfRsp,
    id-RL-InformationResponseList-RL-SetupRspFDD,
    id-RL-InformationResponse-RL-AdditionRspTDD,
    id-RL-InformationResponse-RL-SetupRspTDD,
    id-RL-Information-RL-AdditionRqstTDD,
    id-RL-Information-RL-ReconfRqstTDD,
    id-RL-Information-RL-ReconfPrepTDD,
    id-RL-Information-RL-SetupRqstTDD,
    id-RL-ReconfigurationFailureItem-RL-ReconfFailure,
    id-RL-Set-InformationItem-DM-Rprt,
    id-RL-Set-InformationItem-DM-Rsp,
    id-RL-Set-InformationItem-RL-FailureInd,
    id-RL-Set-InformationItem-RL-RestoreInd,
    id-RL-Specific-DCH-Info,
    id-S-CCPCH-Information,
    id-S-CPICH-Information,
    id-SCH-Information,
    id-S-SCH-Information,
    id-Secondary-CCPCHListIE-CTCH-ReconfRqstTDD,
    id-Secondary-CCPCH-parameterListIE-CTCH-SetupRqstTDD,
    id-Secondary-CCPCH-Parameters-CTCH-ReconfRqstTDD,
    id-SecondaryCPICH-InformationItem-Cell-ReconfRqstFDD,
    id-SecondaryCPICH-InformationItem-Cell-SetupRqstFDD,
    id-SecondaryCPICH-InformationList-Cell-ReconfRqstFDD,
    id-SecondaryCPICH-InformationList-Cell-SetupRqstFDD,
    id-SecondarySCH-Information-Cell-ReconfRqstFDD,
    id-SecondarySCH-Information-Cell-SetupRqstFDD,
    id-SegmentInformationListIE-SystemInfoUpdate,
    id-SFN,
    id-SFNReportingIndicator,
    id-ShutdownTimer,
    id-SSDT-CellIDforEDSCHPC,
    id-Start-Of-Audit-Sequence-Indicator,
    id-Successful-RL-InformationRespItem-RL-AdditionFailureFDD,
    id-Successful-RL-InformationRespItem-RL-SetupFailureFDD,
    id-Synchronisation-Configuration-Cell-ReconfRqst,
    id-Synchronisation-Configuration-Cell-SetupRqst,
    id-SyncCase,
    id-SyncCaseIndicatorItem-Cell-SetupRqstTDD-PSCH,
    id-SyncFrameNumber,
    id-SynchronisationReportType,
    id-SynchronisationReportCharacteristics,
    id-SyncReportType-CellSyncReprtTDD,
    id-T-Cell,
    id-TFCI2-Bearer-Information-RL-SetupRqstFDD,
    id-TFCI2-BearerInformationResponse,
    id-TFCI2-BearerSpecificInformation-RL-ReconfPrepFDD,
    id-Transmission-Gap-Pattern-Sequence-Information,
    id-TimeSlotConfigurationList-Cell-ReconfRqstTDD,
    id-TimeSlotConfigurationList-Cell-SetupRqstTDD,
    id-timeslotInfo-CellSyncInitiationRqstTDD,
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    id-TimeslotISCPInfo,
    id-TimingAdvanceApplied,
    id-TransmissionDiversityApplied,
    id-transportlayeraddress,
    id-UARFCNforNt,
    id-UARFCNforNd,
    id-UARFCNforNu,
    id-UL-CCTrCH-InformationAddList-RL-ReconfPrepTDD,
    id-UL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD,
    id-UL-CCTrCH-InformationDeleteList-RL-ReconfPrepTDD,
    id-UL-CCTrCH-InformationDeleteList-RL-ReconfRqstTDD,
    id-UL-CCTrCH-InformationItem-RL-SetupRqstTDD,
    id-UL-CCTrCH-InformationList-RL-AdditionRqstTDD,
    id-UL-CCTrCH-InformationList-RL-SetupRqstTDD,
    id-UL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD,
    id-UL-CCTrCH-InformationModifyList-RL-ReconfPrepTDD,
    id-UL-CCTrCH-InformationModifyList-RL-ReconfRqstTDD,
    id-UL-DPCH-InformationAddListIE-RL-ReconfPrepTDD,
    id-UL-DPCH-InformationItem-RL-AdditionRqstTDD,
    id-UL-DPCH-InformationList-RL-SetupRqstTDD,
    id-UL-DPCH-InformationModify-AddListIE-RL-ReconfPrepTDD,
    id-UL-DPCH-InformationModify-DeleteListIE-RL-ReconfPrepTDD,
    id-UL-DPCH-InformationModify-ModifyListIE-RL-ReconfPrepTDD,
    id-UL-DPCH-Information-RL-ReconfPrepFDD,
    id-UL-DPCH-Information-RL-ReconfRqstFDD,
    id-UL-DPCH-Information-RL-SetupRqstFDD,
    id-Unsuccessful-cell-InformationRespItem-SyncAdjustmntFailureTDD,
    id-Unsuccessful-PDSCHSetItem-PSCH-ReconfFailureTDD,
    id-Unsuccessful-PUSCHSetItem-PSCH-ReconfFailureTDD,
    id-Unsuccessful-RL-InformationRespItem-RL-AdditionFailureFDD,
    id-Unsuccessful-RL-InformationRespItem-RL-SetupFailureFDD,
    id-Unsuccessful-RL-InformationResp-RL-AdditionFailureTDD,
    id-Unsuccessful-RL-InformationResp-RL-SetupFailureTDD,
    id-USCH-Information-Add,
    id-USCH-Information-DeleteList-RL-ReconfPrepTDD,
    id-USCH-Information-ModifyList-RL-ReconfPrepTDD,
    id-USCH-InformationResponse,
    id-USCH-Information,
    id-DL-DPCH-LCR-Information-RL-SetupRqstTDD,
    id-DL-DPCH-LCR-InformationList-RL-SetupRqstTDD,
    id-DwPCH-LCR-Information,
    id-DwPCH-LCR-Information-AuditRsp,
    id-DwPCH-LCR-InformationList-AuditRsp,
    id-DwPCH-LCR-Information-Cell-SetupRqstTDD,
    id-DwPCH-LCR-Information-Cell-ReconfRqstTDD,
    id-DwPCH-LCR-Information-ResourceStatusInd,
    id-maxFACH-Power-LCR-CTCH-SetupRqstTDD,
    id-maxFACH-Power-LCR-CTCH-ReconfRqstTDD,
    id-FPACH-LCR-Information,
    id-FPACH-LCR-Information-AuditRsp,
    id-FPACH-LCR-InformationList-AuditRsp,
    id-FPACH-LCR-InformationList-ResourceStatusInd,
    id-FPACH-LCR-Parameters-CTCH-SetupRqstTDD,
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    id-FPACH-LCR-ParametersItem-CTCH-SetupRqstTDD,
    id-FPACH-LCR-Parameters-CTCH-ReconfRqstTDD,
    id-PCCPCH-LCR-Information-Cell-SetupRqstTDD,
    id-PCH-Power-LCR-CTCH-SetupRqstTDD,
    id-PCH-Power-LCR-CTCH-ReconfRqstTDD,
    id-PICH-LCR-Parameters-CTCH-SetupRqstTDD,
    id-PICH-LCR-ParametersItem-CTCH-SetupRqstTDD,
    id-PRACH-LCR-ParametersList-CTCH-SetupRqstTDD,
    id-PRACH-LCR-ParametersListIE-CTCH-SetupRqstTDD,
    id-RL-InformationResponse-LCR-RL-SetupRspTDD,
    id-Secondary-CCPCH-LCR-parameterListIE-CTCH-SetupRqstTDD,
    id-Secondary-CCPCH-LCR-parameterList-CTCH-SetupRqstTDD,
    id-TimeSlot,
    id-TimeSlotConfigurationList-LCR-Cell-ReconfRqstTDD,
    id-TimeSlotConfigurationList-LCR-Cell-SetupRqstTDD,
    id-TimeslotISCP-LCR-InfoList-RL-SetupRqstTDD,
    id-TimeSlotLCR-CM-Rqst,
    id-UL-DPCH-LCR-Information-RL-SetupRqstTDD,
    id-UL-DPCH-LCR-InformationList-RL-SetupRqstTDD,
    id-DL-DPCH-InformationItem-LCR-RL-AdditionRqstTDD,
    id-UL-DPCH-InformationItem-LCR-RL-AdditionRqstTDD,
    id-TimeslotISCP-InformationList-LCR-RL-AdditionRqstTDD,
    id-DL-DPCH-LCR-InformationAddList-RL-ReconfPrepTDD,
    id-DL-DPCH-LCR-InformationAddListIE-RL-ReconfPrepTDD,
    id-DL-DPCH-LCR-InformationModify-AddList-RL-ReconfPrepTDD,
    id-DL-DPCH-LCR-InformationModify-AddListIE-RL-ReconfPrepTDD,
    id-DL-Timeslot-LCR-InformationModify-ModifyList-RL-ReconfPrepTDD,
    id-TimeslotISCPInfoList-LCR-DL-PC-RqstTDD,
    id-UL-DPCH-LCR-InformationAddListIE-RL-ReconfPrepTDD,
    id-UL-DPCH-LCR-InformationModify-AddList,
    id-UL-DPCH-LCR-InformationModify-AddListIE-RL-ReconfPrepTDD,
    id-UL-TimeslotLCR-Information-RL-ReconfPrepTDD,
    id-UL-SIRTarget,
    id-PDSCH-AddInformation-LCR-PSCH-ReconfRqst,
    id-PDSCH-AddInformation-LCR-AddListIE-PSCH-ReconfRqst,
    id-PDSCH-ModifyInformation-LCR-PSCH-ReconfRqst,
    id-PDSCH-ModifyInformation-LCR-ModifyListIE-PSCH-ReconfRqst,
    id-PUSCH-AddInformation-LCR-PSCH-ReconfRqst,
    id-PUSCH-AddInformation-LCR-AddListIE-PSCH-ReconfRqst,
    id-PUSCH-ModifyInformation-LCR-PSCH-ReconfRqst,
    id-PUSCH-ModifyInformation-LCR-ModifyListIE-PSCH-ReconfRqst,
    id-PUSCH-Info-DM-Rqst,
    id-PUSCH-Info-DM-Rsp,
    id-PUSCH-Info-DM-Rprt,
    id-RL-InformationResponse-LCR-RL-AdditionRspTDD,

    maxNrOfCCTrCHs,
    maxNrOfCellSyncBursts,
    maxNrOfCodes,
    maxNrOfCPCHs,
    maxNrOfDCHs,
    maxNrOfDLTSs,
    maxNrOfDLTSLCRs,
```

```
    maxNrOfDPCHs,
    maxNrOfDSCHs,
    maxNrOfFACHs,
    maxNrOfRLs,
    maxNrOfRLs-1,
    maxNrOfRLs-2,
    maxNrOfRLSets,
    maxNrOfPCPCHs,
    maxNrOfPDSCHs,
    maxNrOfPUSCHs,
    maxNrOfPRACHLCRs,
    maxNrOfPDSCHSets,
    maxNrOfPUSCHSets,
    maxNrOfReceptsPerSyncFrame,
    maxNrOfSCCPCHs,
    maxNrOfSCCPCHLCRs,
    maxNrOfULTSs,
    maxNrOfULTSLCRs,
    maxNrOfUSCHs,
    maxAPSigNum,
    maxCPCHCell,
    maxFACHCell,
    maxFPACHCell,
    maxNoofLen,
    maxRACHCell,
    maxPCPCHCell,
    maxPRACHCell,
    maxSCCPCHCell,
    maxSCPICHCell,
    maxCellinNodeB,
    maxCCPinNodeB,
    maxCommunicationContext,
    maxLocalCellinNodeB,
    maxNrOfSlotFormatsPRACH,
    maxNrOfCellSyncBursts,
    maxNrOfReceptsPerSyncFrame,
    maxIB,
    maxIBSEG
FROM NBAP-Constants;

-- **************************************************************
--
-- COMMON TRANSPORT CHANNEL SETUP REQUEST FDD
--
-- **************************************************************

CommonTransportChannelSetupRequestFDD ::= SEQUENCE {
    protocolIEs             ProtocolIE-Container    {{CommonTransportChannelSetupRequestFDD-IEs}},
    protocolExtensions      ProtocolExtensionContainer  {{CommonTransportChannelSetupRequestFDD-Extensions}}     OPTIONAL,
    ...
}

CommonTransportChannelSetupRequestFDD-Extensions NBAP-PROTOCOL-EXTENSION ::= {
```

```
    ...
}

CommonTransportChannelSetupRequestFDD-IEs NBAP-PROTOCOL-IES ::= {
    { ID    id-C-ID                                         CRITICALITY     reject      TYPE                    C-ID
    PRESENCE    mandatory   }|
    { ID    id-ConfigurationGenerationID                    CRITICALITY     reject      TYPE                    ConfigurationGenerationID
            PRESENCE    mandatory   }|
    { ID    id-CommonPhysicalChannelType-CTCH-SetupRqstFDD      CRITICALITY     ignore      TYPE                    CommonPhysicalChannelType-CTCH-
SetupRqstFDD        PRESENCE    mandatory   },
    ...
}

CommonPhysicalChannelType-CTCH-SetupRqstFDD ::= CHOICE {
    secondary-CCPCH-parameters      Secondary-CCPCH-CTCH-SetupRqstFDD,
    pRACH-parameters                PRACH-CTCH-SetupRqstFDD,
    pCPCHes-parameters              PCPCH-CTCH-SetupRqstFDD,
    ...
}

Secondary-CCPCH-CTCH-SetupRqstFDD ::= SEQUENCE {
    commonPhysicalChannelID                 CommonPhysicalChannelID,
    fdd-S-CCPCH-Offset                      FDD-S-CCPCH-Offset,
    dl-ScramblingCode                       DL-ScramblingCode   OPTIONAL,
    -- This IE shall be present if the PCH parameters IE is not present
    fdd-DL-ChannelisationCodeNumber         FDD-DL-ChannelisationCodeNumber,
    tFCS            TFCS,
    secondary-CCPCH-SlotFormat              SecondaryCCPCH-SlotFormat,
    tFCI-Presence                           TFCI-Presence   OPTIONAL,
    -- This IE shall be present if the Secondary CCPCH Slot Format is set to any of the values from 8 to 17
    multiplexingPosition                    MultiplexingPosition,
    powerOffsetInformation                  PowerOffsetInformation-CTCH-SetupRqstFDD,
    sTTD-Indicator                          STTD-Indicator,
    fACH-Parameters                         FACH-ParametersList-CTCH-SetupRqstFDD       OPTIONAL,
    pCH-Parameters                          PCH-Parameters-CTCH-SetupRqstFDD            OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer  { { Secondary-CCPCHItem-CTCH-SetupRqstFDD-ExtIEs} }    OPTIONAL,
    ...
}

Secondary-CCPCHItem-CTCH-SetupRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

PowerOffsetInformation-CTCH-SetupRqstFDD ::= SEQUENCE {
    pO1-ForTFCI-Bits                        PowerOffset,
    pO3-ForPilotBits                        PowerOffset,
    iE-Extensions                           ProtocolExtensionContainer { { PowerOffsetInformation-CTCH-SetupRqstFDD-ExtIEs} }  OPTIONAL,
    ...
}

PowerOffsetInformation-CTCH-SetupRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
FACH-ParametersList-CTCH-SetupRqstFDD ::= ProtocolIE-Single-Container {{ FACH-ParametersListIEs-CTCH-SetupRqstFDD }}

FACH-ParametersListIEs-CTCH-SetupRqstFDD NBAP-PROTOCOL-IES ::= {
    { ID id-FACH-ParametersListIE-CTCH-SetupRqstFDD   CRITICALITY reject    TYPE FACH-ParametersListIE-CTCH-SetupRqstFDD PRESENCE mandatory }
}

FACH-ParametersListIE-CTCH-SetupRqstFDD ::= SEQUENCE (SIZE (1..maxNrOfFACHs)) OF FACH-ParametersItem-CTCH-SetupRqstFDD

FACH-ParametersItem-CTCH-SetupRqstFDD ::= SEQUENCE {
    commonTransportChannelID            CommonTransportChannelID,
    transportFormatSet                  TransportFormatSet,
    toAWS                               ToAWS,
    toAWE                               ToAWE,
    maxFACH-Power                       DL-Power,
    iE-Extensions                       ProtocolExtensionContainer  { { FACH-ParametersItem-CTCH-SetupRqstFDD-ExtIEs} }     OPTIONAL,
    ...
}

FACH-ParametersItem-CTCH-SetupRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
{ ID    id-bindingID                        CRITICALITY ignore      EXTENSION   BindingID       PRESENCE            optional }|
{ ID    id-transportlayeraddress            CRITICALITY ignore      EXTENSION   TransportLayerAddress                   PRESENCE    optional },
    ...
}

PCH-Parameters-CTCH-SetupRqstFDD ::= ProtocolIE-Single-Container {{ PCH-ParametersIE-CTCH-SetupRqstFDD }}

PCH-ParametersIE-CTCH-SetupRqstFDD NBAP-PROTOCOL-IES ::= {
    { ID id-PCH-ParametersItem-CTCH-SetupRqstFDD   CRITICALITY reject   TYPE PCH-ParametersItem-CTCH-SetupRqstFDD   PRESENCE mandatory }
}

PCH-ParametersItem-CTCH-SetupRqstFDD ::= SEQUENCE {
    commonTransportChannelID            CommonTransportChannelID,
    transportFormatSet                  TransportFormatSet,
    toAWS                               ToAWS,
    toAWE                               ToAWE,
    pCH-Power                           DL-Power,
    pICH-Parameters                         PICH-Parameters-CTCH-SetupRqstFDD,

    iE-Extensions                       ProtocolExtensionContainer  { { PCH-ParametersItem-CTCH-SetupRqstFDD-ExtIEs} }   OPTIONAL,
    ...
}

PCH-ParametersItem-CTCH-SetupRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    { ID    id-bindingID                        CRITICALITY ignore      EXTENSION   BindingID                   PRESENCE    optional }|
    { ID    id-transportlayeraddress            CRITICALITY ignore      EXTENSION   TransportLayerAddress           PRESENCE    optional },
    ...
}

PICH-Parameters-CTCH-SetupRqstFDD ::= SEQUENCE {
    commonPhysicalChannelID                 CommonPhysicalChannelID,
    fdd-dl-ChannelisationCodeNumber         FDD-DL-ChannelisationCodeNumber,
    pICH-Power                              PICH-Power,
```

```
    pICH-Mode                                   PICH-Mode,
    sTTD-Indicator                              STTD-Indicator,
    iE-Extensions                               ProtocolExtensionContainer { { PICH-Parameters-CTCH-SetupRqstFDD-ExtIEs} }     OPTIONAL,
    ...
}

PICH-Parameters-CTCH-SetupRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

PRACH-CTCH-SetupRqstFDD ::= SEQUENCE {
    commonPhysicalChannelID                     CommonPhysicalChannelID,
    scramblingCodeNumber                    ScramblingCodeNumber,
    tFCS                                        TFCS,
    preambleSignatures                          PreambleSignatures,
    allowedSlotFormatInformation                AllowedSlotFormatInformationList-CTCH-SetupRqstFDD,
    rACH-SubChannelNumbers                      RACH-SubChannelNumbers,
    ul-punctureLimit                            PunctureLimit,
    preambleThreshold                           PreambleThreshold,
    rACH-Parameters                             RACH-Parameters-CTCH-SetupRqstFDD,
    aICH-Parameters                             AICH-Parameters-CTCH-SetupRqstFDD,
    iE-Extensions                               ProtocolExtensionContainer { { PRACHItem-CTCH-SetupRqstFDD-ExtIEs} }     OPTIONAL,
    ...
}

PRACHItem-CTCH-SetupRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

AllowedSlotFormatInformationList-CTCH-SetupRqstFDD ::= SEQUENCE (SIZE (1.. maxNrOfSlotFormatsPRACH)) OF AllowedSlotFormatInformationItem-CTCH-
SetupRqstFDD

AllowedSlotFormatInformationItem-CTCH-SetupRqstFDD ::= SEQUENCE {
    rACHSlotFormat                              RACH-SlotFormat,
    iE-Extensions                               ProtocolExtensionContainer  { { AllowedSlotFormatInformationItem-CTCH-SetupRqstFDD-ExtIEs} }
    OPTIONAL,
    ...
}

AllowedSlotFormatInformationItem-CTCH-SetupRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

RACH-Parameters-CTCH-SetupRqstFDD ::= ProtocolIE-Single-Container {{ RACH-ParametersIE-CTCH-SetupRqstFDD }}

RACH-ParametersIE-CTCH-SetupRqstFDD NBAP-PROTOCOL-IES ::= {
    { ID id-RACH-ParametersItem-CTCH-SetupRqstFDD   CRITICALITY reject  TYPE RACH-ParametersItem-CTCH-SetupRqstFDD  PRESENCE mandatory }
}

RACH-ParametersItem-CTCH-SetupRqstFDD ::= SEQUENCE {
    commonTransportChannelID                    CommonTransportChannelID,
    transportFormatSet                          TransportFormatSet,
    iE-Extensions                               ProtocolExtensionContainer  { { RACH-ParametersItem-CTCH-SetupRqstFDD-ExtIEs} }   OPTIONAL,
```

```
    ...
 }

RACH-ParametersItem-CTCH-SetupRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    { ID    id-bindingID                    CRITICALITY ignore      EXTENSION   BindingID                   PRESENCE    optional }|
    { ID    id-transportlayeraddress        CRITICALITY ignore      EXTENSION   TransportLayerAddress       PRESENCE    optional },
    ...
}

AICH-Parameters-CTCH-SetupRqstFDD ::= SEQUENCE {
    commonPhysicalChannelID                 CommonPhysicalChannelID,
    aICH-TransmissionTiming                 AICH-TransmissionTiming,
    fdd-dl-ChannelisationCodeNumber         FDD-DL-ChannelisationCodeNumber,
    aICH-Power                              AICH-Power,
    sTTD-Indicator                          STTD-Indicator,
    iE-Extensions                           ProtocolExtensionContainer  { { AICH-Parameters-CTCH-SetupRqstFDD-ExtIEs} }    OPTIONAL,
    ...
}

AICH-Parameters-CTCH-SetupRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

PCPCH-CTCH-SetupRqstFDD ::= SEQUENCE {
    cPCH-Parameters             CPCH-Parameters-CTCH-SetupRqstFDD,
    iE-Extensions               ProtocolExtensionContainer { { PCPCHItem-CTCH-SetupRqstFDD-ExtIEs} }         OPTIONAL,
    ...
}

PCPCHItem-CTCH-SetupRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

CPCH-Parameters-CTCH-SetupRqstFDD ::= SEQUENCE {
    commonTransportChannelID    CommonTransportChannelID,
    transportFormatSet          TransportFormatSet,
    aPPreambleScramblingCode    CPCHScramblingCodeNumber,
    cDPreambleScramblingCode    CPCHScramblingCodeNumber,
    tFCS                        TFCS,
    cDSignatures                PreambleSignatures          OPTIONAL,
    cDSubChannelNumbers         CDSubChannelNumbers         OPTIONAL,
    punctureLimit               PunctureLimit,
    cPCH-UL-DPCCH-SlotFormat    CPCH-UL-DPCCH-SlotFormat,
    uL-SIR                      UL-SIR,
    initialDL-transmissionPower DL-Power,
    maximumDLPower              DL-Power,
    minimumDLPower              DL-Power,
    pO2-ForTPC-Bits             PowerOffset,
    fDD-TPC-DownlinkStepSize    FDD-TPC-DownlinkStepSize,
    nStartMessage               NStartMessage,
    nEOT                        NEOT,
    channel-Assignment-Indication   Channel-Assignment-Indication,
    cPCH-Allowed-Total-Rate     CPCH-Allowed-Total-Rate,
```

```
    pCPCHChannelInfomation          PCPCHChannelInformationList-CTCH-SetupRqstFDD,
    vCAMMapping-Information         VCAMMapping-InformationList-CTCH-SetupRqstFDD       OPTIONAL,
    -- this IE shall be present if the Channel Assignment Indication is set to “CA Active” --
    aP-AICH-Parameters              AP-AICH-Parameters-CTCH-SetupRqstFDD,
    cDCA-ICH-Parameters             CDCA-ICH-Parameters-CTCH-SetupRqstFDD,
    iE-Extensions                   ProtocolExtensionContainer  { { CPCH-Parameters-CTCH-SetupRqstFDD-ExtIEs} }       OPTIONAL,
    ...
}

CPCH-Parameters-CTCH-SetupRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    { ID    id-bindingID                    CRITICALITY ignore      EXTENSION   BindingID                   PRESENCE    optional }|
    { ID    id-transportlayeraddress        CRITICALITY ignore      EXTENSION   TransportLayerAddress       PRESENCE    optional },
    ...
}

PCPCHChannelInformationList-CTCH-SetupRqstFDD ::= SEQUENCE (SIZE (1..maxNrOfPCPCHs)) OF PCPCHChannelInformationItem-CTCH-SetupRqstFDD

PCPCHChannelInformationItem-CTCH-SetupRqstFDD ::= SEQUENCE {
    commonPhysicalChannelID             CommonPhysicalChannelID,
    cPCHScramblingCodeNumber            CPCHScramblingCodeNumber,
    dL-ScramblingCode                   DL-ScramblingCode,
    fdd-dl-ChannelisationCodeNumber     FDD-DL-ChannelisationCodeNumber,
    pCP-Length                          PCP-Length,
    uCSM-Information                    UCSM-Information-CTCH-SetupRqstFDD      OPTIONAL,
    -- this IE shall be present if the Channel Assignment Indication is equal to “CA Inactive” --
    iE-Extensions                       ProtocolExtensionContainer  { { PCPCHChannelInformationItem-CTCH-SetupRqstFDD-ExtIEs} }   OPTIONAL,
    ...
}

PCPCHChannelInformationItem-CTCH-SetupRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UCSM-Information-CTCH-SetupRqstFDD ::= SEQUENCE {
    minUL-ChannelisationCodeLength      MinUL-ChannelisationCodeLength,
    nFmax                               NFmax,
    channelRequestParameters            ChannelRequestParametersList-CTCH-SetupRqstFDD      OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer  { { UCSM-InformationItem-CTCH-SetupRqstFDD-ExtIEs} }    OPTIONAL,
    ...
 }

UCSM-InformationItem-CTCH-SetupRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

ChannelRequestParametersList-CTCH-SetupRqstFDD ::= SEQUENCE (SIZE (1..maxAPSigNum)) OF ChannelRequestParametersItem-CTCH-SetupRqstFDD

ChannelRequestParametersItem-CTCH-SetupRqstFDD ::= SEQUENCE {
    aPPreambleSignature         APPreambleSignature,
    aPSubChannelNumber          APSubChannelNumber      OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer  { { ChannelRequestParametersItem-CTCH-SetupRqstFDD-ExtIEs} }    OPTIONAL,
    ...
}
```

```
ChannelRequestParametersItem-CTCH-SetupRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

VCAMMapping-InformationList-CTCH-SetupRqstFDD ::= SEQUENCE (SIZE (1..maxNoofLen)) OF VCAMMapping-InformationItem-CTCH-SetupRqstFDD

VCAMMapping-InformationItem-CTCH-SetupRqstFDD  ::= SEQUENCE {
    minUL-ChannelisationCodeLength      MinUL-ChannelisationCodeLength,
    nFmax                               NFmax,
    max-Number-of-PCPCHes               Max-Number-of-PCPCHes,
    sFRequestParameters                 SFRequestParametersList-CTCH-SetupRqstFDD,
    iE-Extensions                       ProtocolExtensionContainer  { { VCAMMapping-InformationItem-CTCH-SetupRqstFDD-ExtIEs} }   OPTIONAL,
    ...
}

VCAMMapping-InformationItem-CTCH-SetupRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

SFRequestParametersList-CTCH-SetupRqstFDD ::= SEQUENCE (SIZE (1..maxAPSigNum)) OF SFRequestParametersItem-CTCH-SetupRqstFDD

SFRequestParametersItem-CTCH-SetupRqstFDD ::= SEQUENCE {
    aPPreambleSignature         APPreambleSignature,
    aPSubChannelNumber          APSubChannelNumber      OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer  { { SFRequestParametersItem-CTCH-SetupRqstFDD-ExtIEs} }   OPTIONAL,
    ...
}

SFRequestParametersItem-CTCH-SetupRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION::= {
    ...
}

AP-AICH-Parameters-CTCH-SetupRqstFDD ::= SEQUENCE {
    commonPhysicalChannelID                     CommonPhysicalChannelID,
    fdd-dl-ChannelisationCodeNumber             FDD-DL-ChannelisationCodeNumber,
    aP-AICH-Power                               AICH-Power,
    cSICH-Power                                 AICH-Power,
    sTTD-Indicator                              STTD-Indicator,
    iE-Extensions                               ProtocolExtensionContainer  { { AP-AICH-Parameters-CTCH-SetupRqstFDD-ExtIEs} }    OPTIONAL,
    ...
}

AP-AICH-Parameters-CTCH-SetupRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

CDCA-ICH-Parameters-CTCH-SetupRqstFDD ::= SEQUENCE {
    commonPhysicalChannelID                     CommonPhysicalChannelID,
    fdd-dl-ChannelisationCodeNumber             FDD-DL-ChannelisationCodeNumber,
    cDCA-ICH-Power                              AICH-Power,
    sTTD-Indicator                              STTD-Indicator,
    iE-Extensions                               ProtocolExtensionContainer  { { CDCA-ICH-Parameters-CTCH-SetupRqstFDD-ExtIEs} }   OPTIONAL,
```

```
    ...
}

CDCA-ICH-Parameters-CTCH-SetupRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- COMMON TRANSPORT CHANNEL SETUP REQUEST TDD
--
-- **************************************************************

CommonTransportChannelSetupRequestTDD ::= SEQUENCE {
    protocolIEs             ProtocolIE-Container    {{CommonTransportChannelSetupRequestTDD-IEs}},
    protocolExtensions      ProtocolExtensionContainer  {{CommonTransportChannelSetupRequestTDD-Extensions}}          OPTIONAL,
    ...
}

CommonTransportChannelSetupRequestTDD-IEs NBAP-PROTOCOL-IES ::= {
    { ID    id-C-ID                                             CRITICALITY reject      TYPE                    C-ID
    PRESENCE    mandatory   }|
    { ID    id-ConfigurationGenerationID                        CRITICALITY reject      TYPE                    ConfigurationGenerationID
            PRESENCE    mandatory   }|
    { ID    id-CommonPhysicalChannelType-CTCH-SetupRqstTDD      CRITICALITY ignore      TYPE                    CommonPhysicalChannelType-CTCH-
SetupRqstTDD        PRESENCE    mandatory   },
    ...
}

CommonTransportChannelSetupRequestTDD-Extensions NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

CommonPhysicalChannelType-CTCH-SetupRqstTDD ::= CHOICE {
    secondary-CCPCH-parameters                  Secondary-CCPCH-CTCH-SetupRqstTDD,
    pRACH-parameters                            PRACH-CTCH-SetupRqstTDD,
    ...
}

Secondary-CCPCH-CTCH-SetupRqstTDD ::= SEQUENCE {
    sCCPCH-CCTrCH-ID                            CCTrCH-ID,
    tFCS                                        TFCS,
    tFCI-Coding                                 TFCI-Coding,
    punctureLimit                               PunctureLimit,
    secondaryCCPCH-parameterList                Secondary-CCPCH-parameterList-CTCH-SetupRqstTDD,
    fACH-ParametersList                         FACH-ParametersList-CTCH-SetupRqstTDD       OPTIONAL,
    pCH-Parameters                              PCH-Parameters-CTCH-SetupRqstTDD            OPTIONAL,
    iE-Extensions                               ProtocolExtensionContainer  {{Secondary-CCPCHItem-CTCH-SetupRqstTDD-ExtIEs}}   OPTIONAL,
    ...
}

Secondary-CCPCHItem-CTCH-SetupRqstTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
```

```
    { ID    id-Secondary-CCPCH-LCR-parameterList-CTCH-SetupRqstTDD          CRITICALITY reject                    EXTENSION   Secondary-CCPCH-LCR-
parameterList-CTCH-SetupRqstTDD     PRESENCE    optional    },
    ...
}

Secondary-CCPCH-parameterList-CTCH-SetupRqstTDD ::= ProtocolIE-Single-Container {{ Secondary-CCPCH-parameterListIEs-CTCH-SetupRqstTDD }}

Secondary-CCPCH-parameterListIEs-CTCH-SetupRqstTDD NBAP-PROTOCOL-IES ::= {
    { ID id-Secondary-CCPCH-parameterListIE-CTCH-SetupRqstTDD   CRITICALITY reject  TYPE Secondary-CCPCH-parameterListIE-CTCH-SetupRqstTDD PRESENCE
mandatory } -- Mandatory for 3.84Mcps TDD only
}

Secondary-CCPCH-parameterListIE-CTCH-SetupRqstTDD ::= SEQUENCE (SIZE (1..maxNrOfSCCPCHs)) OF Secondary-CCPCH-parameterItem-CTCH-SetupRqstTDD

Secondary-CCPCH-parameterItem-CTCH-SetupRqstTDD ::= SEQUENCE {
    commonPhysicalChannelID                     CommonPhysicalChannelID,
    tdd-ChannelisationCode                      TDD-ChannelisationCode,
    timeslot                                    TimeSlot,
    midambleShiftandBurstType                   MidambleShiftAndBurstType,
    tdd-PhysicalChannelOffset                   TDD-PhysicalChannelOffset,
    repetitionPeriod                            RepetitionPeriod,
    repetitionLength                            RepetitionLength,
    s-CCPCH-Power                               DL-Power,
    iE-Extensions                               ProtocolExtensionContainer { { Secondary-CCPCH-parameterItem-CTCH-SetupRqstTDD-ExtIEs} }   OPTIONAL,
    ...
}

Secondary-CCPCH-parameterItem-CTCH-SetupRqstTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

FACH-ParametersList-CTCH-SetupRqstTDD ::= ProtocolIE-Single-Container {{ FACH-ParametersListIEs-CTCH-SetupRqstTDD }}

FACH-ParametersListIEs-CTCH-SetupRqstTDD NBAP-PROTOCOL-IES ::= {
    { ID id-FACH-ParametersListIE-CTCH-SetupRqstTDD   CRITICALITY reject    TYPE FACH-ParametersListIE-CTCH-SetupRqstTDD PRESENCE mandatory }
}

FACH-ParametersListIE-CTCH-SetupRqstTDD ::= SEQUENCE (SIZE (1..maxNrOfFACHs)) OF FACH-ParametersItem-CTCH-SetupRqstTDD

FACH-ParametersItem-CTCH-SetupRqstTDD ::= SEQUENCE {
    commonTransportChannelID                CommonTransportChannelID,
    fACH-CCTrCH-ID                          CCTrCH-ID,
    dl-TransportFormatSet                   TransportFormatSet,
    toAWS                                   ToAWS,
    toAWE                                   ToAWE,
    iE-Extensions                           ProtocolExtensionContainer  { { FACH-ParametersItem-CTCH-SetupRqstTDD-ExtIEs} }    OPTIONAL,
    ...
}

FACH-ParametersItem-CTCH-SetupRqstTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    { ID    id-maxFACH-Power-LCR-CTCH-SetupRqstTDD          CRITICALITY reject      EXTENSION   DL-Power              PRESENCE    optional },
    -- For 1.28Mcps TDD only
    { ID    id-bindingID                        CRITICALITY ignore      EXTENSION   BindingID                      PRESENCE    optional }
```

```
    { ID    id-transportlayeraddress            CRITICALITY ignore      EXTENSION   TransportLayerAddress            PRESENCE    optional },
    ...
}

PCH-Parameters-CTCH-SetupRqstTDD ::= ProtocolIE-Single-Container {{ PCH-ParametersIE-CTCH-SetupRqstTDD }}

PCH-ParametersIE-CTCH-SetupRqstTDD NBAP-PROTOCOL-IES ::= {
    { ID id-PCH-ParametersItem-CTCH-SetupRqstTDD   CRITICALITY reject   TYPE PCH-ParametersItem-CTCH-SetupRqstTDD   PRESENCE mandatory }
}

PCH-ParametersItem-CTCH-SetupRqstTDD ::= SEQUENCE {
    commonTransportChannelID                CommonTransportChannelID,
    pCH-CCTrCH-ID                           CCTrCH-ID,
    dl-TransportFormatSet                   TransportFormatSet,
    toAWS                                   ToAWS,
    toAWE                                   ToAWE,
    pICH-Parameters                         PICH-Parameters-CTCH-SetupRqstTDD,
    iE-Extensions                           ProtocolExtensionContainer  { { PCH-ParametersItem-CTCH-SetupRqstTDD-ExtIEs} }     OPTIONAL,
    ...
}

PCH-ParametersItem-CTCH-SetupRqstTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    { ID    id-PCH-Power-LCR-CTCH-SetupRqstTDD          CRITICALITY reject      EXTENSION   DL-Power                 PRESENCE    optional }|
    -- For 1.28Mcps TDD only
    { ID    id-PICH-LCR-Parameters-CTCH-SetupRqstTDD            CRITICALITY reject      EXTENSION                   PICH-LCR-Parameters-CTCH-
SetupRqstTDD        PRESENCE    optional    }| -- Mandatory for 1.28Mcps TDD only
    { ID    id-bindingID                        CRITICALITY ignore      EXTENSION   BindingID                   PRESENCE    optional }|
    { ID    id-transportlayeraddress            CRITICALITY ignore      EXTENSION   TransportLayerAddress            PRESENCE    optional },
    ...
}

PICH-Parameters-CTCH-SetupRqstTDD ::= ProtocolIE-Single-Container {{ PICH-ParametersIE-CTCH-SetupRqstTDD }}

PICH-ParametersIE-CTCH-SetupRqstTDD NBAP-PROTOCOL-IES ::= {
    { ID id-PICH-ParametersItem-CTCH-SetupRqstTDD   CRITICALITY reject  TYPE PICH-ParametersItem-CTCH-SetupRqstTDD  PRESENCE optional }
}   -- Mandatory for 3.84Mcps TDD only

PICH-ParametersItem-CTCH-SetupRqstTDD ::= SEQUENCE {
    commonPhysicalChannelID                 CommonPhysicalChannelID,
    tdd-ChannelisationCode                  TDD-ChannelisationCode,
    timeSlot                                TimeSlot,
    midambleshiftAndBurstType               MidambleShiftAndBurstType,
    tdd-PhysicalChannelOffset               TDD-PhysicalChannelOffset,
    repetitionPeriod                        RepetitionPeriod,
    repetitionLength                        RepetitionLength,
    pagingIndicatorLength                   PagingIndicatorLength,
    pICH-Power                              PICH-Power,
    iE-Extensions                           ProtocolExtensionContainer  { { PICH-ParametersItem-CTCH-SetupRqstTDD-ExtIEs} }    OPTIONAL,
    ...
}

PICH-ParametersItem-CTCH-SetupRqstTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
```

```
}

PICH-LCR-Parameters-CTCH-SetupRqstTDD ::= ProtocolIE-Single-Container {{ PICH-LCR-ParametersIE-CTCH-SetupRqstTDD }}

PICH-LCR-ParametersIE-CTCH-SetupRqstTDD NBAP-PROTOCOL-IES ::= {
    { ID id-PICH-LCR-ParametersItem-CTCH-SetupRqstTDD   CRITICALITY reject  TYPE PICH-LCR-ParametersItem-CTCH-SetupRqstTDD  PRESENCE mandatory }
} -- Mandatory for 1.28Mcps TDD

PICH-LCR-ParametersItem-CTCH-SetupRqstTDD ::= SEQUENCE {
    commonPhysicalChannelID                 CommonPhysicalChannelID,
    tdd-ChannelisationCodeLCR               TDD-ChannelisationCodeLCR,
    timeSlotLCR                             TimeSlotLCR,
    midambleShiftLCR                        MidambleShiftLCR,
    tdd-PhysicalChannelOffset               TDD-PhysicalChannelOffset,
    repetitionPeriod                        RepetitionPeriod,
    repetitionLength                        RepetitionLength,
    pagingIndicatorLength                   PagingIndicatorLength,
    pICH-Power                              PICH-Power,
    iE-Extensions                           ProtocolExtensionContainer  { { PICH-LCR-ParametersItem-CTCH-SetupRqstTDD-ExtIEs} }   OPTIONAL,
    ...
}

PICH-LCR-ParametersItem-CTCH-SetupRqstTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

Secondary-CCPCH-LCR-parameterList-CTCH-SetupRqstTDD ::= ProtocolIE-Single-Container {{ Secondary-CCPCH-LCR-parameterListIEs-CTCH-SetupRqstTDD }}

Secondary-CCPCH-LCR-parameterListIEs-CTCH-SetupRqstTDD NBAP-PROTOCOL-IES ::= {
    { ID id-Secondary-CCPCH-LCR-parameterListIE-CTCH-SetupRqstTDD   CRITICALITY reject  TYPE Secondary-CCPCH-LCR-parameterListIE-CTCH-SetupRqstTDD
    PRESENCE optional } -- Mandatory for 1.28Mcps TDD only
}

Secondary-CCPCH-LCR-parameterListIE-CTCH-SetupRqstTDD ::= SEQUENCE (SIZE (1..maxNrOfSCCPCHLCRs)) OF Secondary-CCPCH-LCR-parameterItem-CTCH-
SetupRqstTDD

Secondary-CCPCH-LCR-parameterItem-CTCH-SetupRqstTDD ::= SEQUENCE {
    commonPhysicalChannelID                     CommonPhysicalChannelID,
    tdd-ChannelisationCodeLCR                   TDD-ChannelisationCodeLCR,
    timeslotLCR                                 TimeSlotLCR,
    midambleShiftLCR                            MidambleShiftLCR,
    tdd-PhysicalChannelOffset                   TDD-PhysicalChannelOffset,
    repetitionPeriod                            RepetitionPeriod,
    repetitionLength                            RepetitionLength,
    s-CCPCH-Power                               DL-Power,
    iE-Extensions                               ProtocolExtensionContainer { { Secondary-CCPCH-LCR-parameterItem-CTCH-SetupRqstTDD-ExtIEs} }
    OPTIONAL,
    ...
}

Secondary-CCPCH-LCR-parameterItem-CTCH-SetupRqstTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
PRACH-CTCH-SetupRqstTDD ::= SEQUENCE {
    pRACH-Parameters-CTCH-SetupRqstTDD          PRACH-Parameters-CTCH-SetupRqstTDD,
    iE-Extensions                               ProtocolExtensionContainer  { { PRACH-CTCH-SetupRqstTDD-ExtIEs } }    OPTIONAL,
    ...
}

PRACH-CTCH-SetupRqstTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    { ID    id-PRACH-LCR-ParametersList-CTCH-SetupRqstTDD          CRITICALITY reject      EXTENSION              PRACH-LCR-ParametersList-CTCH-
SetupRqstTDD        PRESENCE    optional    }|  -- Mandatory for 1.28Mcps TDD only
    { ID    id-FPACH-LCR-Parameters-CTCH-SetupRqstTDD          CRITICALITY reject      EXTENSION                  FPACH-LCR-Parameters-CTCH-
SetupRqstTDD        PRESENCE    optional    },  -- Mandatory for 1.28Mcps TDD only
    ...
}

PRACH-Parameters-CTCH-SetupRqstTDD ::= ProtocolIE-Single-Container {{ PRACH-ParametersIE-CTCH-SetupRqstTDD }}

PRACH-ParametersIE-CTCH-SetupRqstTDD NBAP-PROTOCOL-IES ::= {
    { ID id-PRACH-ParametersItem-CTCH-SetupRqstTDD   CRITICALITY reject TYPE PRACH-ParametersItem-CTCH-SetupRqstTDD PRESENCE optional }
}   -- Mandatory for 3.84Mcps TDD only


PRACH-ParametersItem-CTCH-SetupRqstTDD ::= SEQUENCE {
    commonPhysicalChannelID                     CommonPhysicalChannelID,
    tFCS                                        TFCS,
    timeslot                                    TimeSlot,
    tdd-ChannelisationCode                      TDD-ChannelisationCode,
    maxPRACH-MidambleShifts                     MaxPRACH-MidambleShifts,
    pRACH-Midamble                              PRACH-Midamble,
    rACH                                        RACH-Parameter-CTCH-SetupRqstTDD,
    iE-Extensions                               ProtocolExtensionContainer  { { PRACH-ParametersItem-CTCH-SetupRqstTDD-ExtIEs} }     OPTIONAL,
    ...
}

PRACH-ParametersItem-CTCH-SetupRqstTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

RACH-Parameter-CTCH-SetupRqstTDD ::= ProtocolIE-Single-Container {{ RACH-ParameterIE-CTCH-SetupRqstTDD }}

RACH-ParameterIE-CTCH-SetupRqstTDD NBAP-PROTOCOL-IES ::= {
    { ID id-RACH-ParameterItem-CTCH-SetupRqstTDD   CRITICALITY reject   TYPE RACH-ParameterItem-CTCH-SetupRqstTDD   PRESENCE mandatory }
}

RACH-ParameterItem-CTCH-SetupRqstTDD ::= SEQUENCE {
    commonTransportChannelID                    CommonTransportChannelID,
    uL-TransportFormatSet                       TransportFormatSet,
    iE-Extensions                               ProtocolExtensionContainer  { { RACH-ParameterItem-CTCH-SetupRqstTDD-ExtIEs} }    OPTIONAL,
    ...
}

RACH-ParameterItem-CTCH-SetupRqstTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
        { ID    id-bindingID                        CRITICALITY ignore      EXTENSION   BindingID                   PRESENCE    optional }|
```

```
        { ID    id-transportlayeraddress          CRITICALITY ignore      EXTENSION   TransportLayerAddress         PRESENCE    optional },
    ...
}

PRACH-LCR-ParametersList-CTCH-SetupRqstTDD ::= ProtocolIE-Single-Container {{ PRACH-LCR-ParametersListIEs-CTCH-SetupRqstTDD }}

PRACH-LCR-ParametersListIEs-CTCH-SetupRqstTDD NBAP-PROTOCOL-IES ::= {
    { ID id-PRACH-LCR-ParametersListIE-CTCH-SetupRqstTDD   CRITICALITY reject   TYPE PRACH-LCR-ParametersListIE-CTCH-SetupRqstTDD PRESENCE
optional }
}

PRACH-LCR-ParametersListIE-CTCH-SetupRqstTDD ::= SEQUENCE (SIZE (1..maxNrOfPRACHLCRs)) OF PRACH-LCR-ParametersItem-CTCH-SetupRqstTDD

PRACH-LCR-ParametersItem-CTCH-SetupRqstTDD ::= SEQUENCE {
    commonPhysicalChannelID                     CommonPhysicalChannelID,
    tFCS                                        TFCS,
    timeslotLCR                                 TimeSlotLCR,
    tdd-ChannelisationCodeLCR                   TDD-ChannelisationCodeLCR,
    maxPRACH-MidambleShifts                     MaxPRACH-MidambleShifts,
    pRACH-Midamble                              PRACH-Midamble,
    rACH                                        RACH-Parameter-CTCH-SetupRqstTDD,
    iE-Extensions                               ProtocolExtensionContainer  { { PRACH-LCR-ParametersItem-CTCH-SetupRqstTDD-ExtIEs} }    OPTIONAL,
    ...
}

PRACH-LCR-ParametersItem-CTCH-SetupRqstTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

FPACH-LCR-Parameters-CTCH-SetupRqstTDD ::= ProtocolIE-Single-Container {{ FPACH-LCR-ParametersIE-CTCH-SetupRqstTDD }}

FPACH-LCR-ParametersIE-CTCH-SetupRqstTDD NBAP-PROTOCOL-IES ::= {
    { ID id-FPACH-LCR-ParametersItem-CTCH-SetupRqstTDD   CRITICALITY reject TYPE FPACH-LCR-ParametersItem-CTCH-SetupRqstTDD PRESENCE optional }
}

FPACH-LCR-ParametersItem-CTCH-SetupRqstTDD ::= SEQUENCE {
    commonPhysicalChannelID                     CommonPhysicalChannelID,
    tdd-ChannelisationCodeLCR                   TDD-ChannelisationCodeLCR,
    timeslotLCR                                 TimeSlotLCR,
    midambleShiftLCR                            MidambleShiftLCR,
    fPACH-Power                               FPACH-Power,
    iE-Extensions                               ProtocolExtensionContainer  { { FPACH-LCR-ParametersItem-CTCH-SetupRqstTDD-ExtIEs} }    OPTIONAL,
    ...
}

FPACH-LCR-ParametersItem-CTCH-SetupRqstTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
-- **************************************************************
--
-- RADIO LINK SETUP REQUEST FDD
--
-- **************************************************************

RadioLinkSetupRequestFDD ::= SEQUENCE {
    protocolIEs             ProtocolIE-Container    {{RadioLinkSetupRequestFDD-IEs}},
    protocolExtensions      ProtocolExtensionContainer  {{RadioLinkSetupRequestFDD-Extensions}}                      OPTIONAL,
    ...
}

RadioLinkSetupRequestFDD-IEs NBAP-PROTOCOL-IES ::= {
    { ID    id-CRNC-CommunicationContextID                  CRITICALITY reject              TYPE                    CRNC-CommunicationContextID
            PRESENCE    mandatory   }|
    { ID    id-UL-DPCH-Information-RL-SetupRqstFDD          CRITICALITY reject              TYPE                    UL-DPCH-Information-RL-
SetupRqstFDD            PRESENCE    mandatory   }|
    { ID    id-DL-DPCH-Information-RL-SetupRqstFDD          CRITICALITY reject              TYPE                    DL-DPCH-Information-RL-
SetupRqstFDD            PRESENCE    mandatory   }|
    { ID    id-DCH-FDD-Information          CRITICALITY reject              TYPE    DCH-FDD-Information                 PRESENCE mandatory   }|
    { ID    id-DSCH-FDD-Information         CRITICALITY reject              TYPE    DSCH-FDD-Information              PRESENCE optional }|
    { ID    id-TFCI2-Bearer-Information-RL-SetupRqstFDD     CRITICALITY ignore              TYPE                    TFCI2-Bearer-Information-RL-
SetupRqstFDD    PRESENCE    optional    }|
    { ID    id-RL-InformationList-RL-SetupRqstFDD           CRITICALITY notify              TYPE                    RL-InformationList-RL-
SetupRqstFDD            PRESENCE    mandatory   }|
   { ID id-Transmission-Gap-Pattern-Sequence-Information    CRITICALITY reject              TYPE Transmission-Gap-Pattern-Sequence-Information
   PRESENCE optional } |
{ ID id-Active-Pattern-Sequence-Information             CRITICALITY reject              TYPE Active-Pattern-Sequence-Information   PRESENCE
   optional },
    ...
}

RadioLinkSetupRequestFDD-Extensions NBAP-PROTOCOL-EXTENSION ::= {
    { ID id-DSCH-FDD-Common-Information                 CRITICALITY ignore  EXTENSION DSCH-FDD-Common-Information                PRESENCE optional
    },
    ...
}

UL-DPCH-Information-RL-SetupRqstFDD ::= SEQUENCE {
    ul-ScramblingCode                       UL-ScramblingCode,
    minUL-ChannelisationCodeLength          MinUL-ChannelisationCodeLength,
    maxNrOfUL-DPDCHs                        MaxNrOfUL-DPDCHs        OPTIONAL,
    -- This IE shall be present if Min UL Channelisation Code length IE is set to 4 --
    ul-PunctureLimit                        PunctureLimit,
    tFCS                                    TFCS,
    ul-DPCCH-SlotFormat                     UL-DPCCH-SlotFormat,
    ul-SIR-Target                           UL-SIR,
    diversityMode                           DiversityMode,
    sSDT-CellID-Length                      SSDT-CellID-Length      OPTIONAL,
    s-FieldLength                           S-FieldLength           OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { UL-DPCH-Information-RL-SetupRqstFDD-ExtIEs} } OPTIONAL,
    ...
```

```
}

UL-DPCH-Information-RL-SetupRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    {ID id-DPC-Mode         CRITICALITY reject  EXTENSION   DPC-Mode    PRESENCE optional   },
    ...
}

DL-DPCH-Information-RL-SetupRqstFDD ::= SEQUENCE {
    tFCS                                    TFCS,
    dl-DPCH-SlotFormat                      DL-DPCH-SlotFormat,
    tFCI-SignallingMode                     TFCI-SignallingMode,
    tFCI-Presence                           TFCI-Presence   OPTIONAL,
    -- this IE shall be present if the DL DPCH slot format IE is set to any of the values from 12 to 16 --
    multiplexingPosition                    MultiplexingPosition,
    pDSCH-RL-ID                             RL-ID           OPTIONAL,
    -- This IE shall be present if the DSCH Information IE is present --
    pDSCH-CodeMapping                       PDSCH-CodeMapping       OPTIONAL,
    -- This IE shall be present if the DSCH Information IE is present --
    powerOffsetInformation                  PowerOffsetInformation-RL-SetupRqstFDD,
    fdd-TPC-DownlinkStepSize                FDD-TPC-DownlinkStepSize,
    limitedPowerIncrease                    LimitedPowerIncrease,
    innerLoopDLPCStatus                     InnerLoopDLPCStatus,
    iE-Extensions                           ProtocolExtensionContainer { { DL-DPCH-Information-RL-SetupRqstFDD-ExtIEs} } OPTIONAL,
    ...
}

DL-DPCH-Information-RL-SetupRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

PowerOffsetInformation-RL-SetupRqstFDD ::= SEQUENCE {
    pO1-ForTFCI-Bits                        PowerOffset,
    pO2-ForTPC-Bits                         PowerOffset,
    pO3-ForPilotBits                        PowerOffset,
    iE-Extensions                           ProtocolExtensionContainer { { PowerOffsetInformation-RL-SetupRqstFDD-ExtIEs} } OPTIONAL,
    ...
}

PowerOffsetInformation-RL-SetupRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TFCI2-Bearer-Information-RL-SetupRqstFDD ::= SEQUENCE {
    toAWS                               ToAWS,
    toAWE                               ToAWE,
    iE-Extensions                       ProtocolExtensionContainer { { TFCI2-Bearer-Information-RL-SetupRqstFDD-ExtIEs} }   OPTIONAL,
    ...
}

TFCI2-Bearer-Information-RL-SetupRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
RL-InformationList-RL-SetupRqstFDD ::= SEQUENCE (SIZE (1..maxNrOfRLs)) OF
    ProtocolIE-Single-Container{{ RL-InformationItemIE-RL-SetupRqstFDD }}

RL-InformationItemIE-RL-SetupRqstFDD NBAP-PROTOCOL-IES ::= {
    { ID    id-RL-InformationItem-RL-SetupRqstFDD          CRITICALITY     notify          TYPE                    RL-InformationItem-RL-
SetupRqstFDD        PRESENCE    mandatory}
}

RL-InformationItem-RL-SetupRqstFDD ::= SEQUENCE {
    rL-ID                               RL-ID,
    c-ID                                C-ID,
    firstRLS-indicator                  FirstRLS-Indicator,
    frameOffset                         FrameOffset,
    chipOffset                          ChipOffset,
    propagationDelay                    PropagationDelay            OPTIONAL,
    diversityControlField               DiversityControlField       OPTIONAL,
    -- This IE shall be present if the RL is not the first one in the RL Information IE
    dl-CodeInformation                  FDD-DL-CodeInformation,
    initialDL-transmissionPower         DL-Power,
    maximumDL-power                     DL-Power,
    minimumDL-power                     DL-Power,
    sSDT-Cell-Identity                  SSDT-Cell-Identity          OPTIONAL,
    transmitDiversityIndicator          TransmitDiversityIndicator      OPTIONAL,
    -- This IE shall be present if Diversity Mode IE in UL DPCH Information group is not set to "none"
    iE-Extensions                       ProtocolExtensionContainer { { RL-InformationItem-RL-SetupRqstFDD-ExtIEs} }   OPTIONAL,
    ...
}

RL-InformationItem-RL-SetupRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    { ID id-SSDT-CellIDforEDSCHPC CRITICALITY ignore EXTENSION SSDT-Cell-Identity       PRESENCE conditional }|
    -- This IE shall be present if Enhanced DSCH PC IE is present in the DSCH Common Information IE.
    { ID    id-RL-Specific-DCH-Info CRITICALITY ignore      EXTENSION   RL-Specific-DCH-Info    PRESENCE            optional },
    ...
}

-- **************************************************************
--
-- RADIO LINK SETUP REQUEST TDD
--
-- **************************************************************

RadioLinkSetupRequestTDD ::= SEQUENCE {
    protocolIEs             ProtocolIE-Container    {{RadioLinkSetupRequestTDD-IEs}},
    protocolExtensions      ProtocolExtensionContainer  {{RadioLinkSetupRequestTDD-Extensions}}                 OPTIONAL,
    ...
}

RadioLinkSetupRequestTDD-IEs NBAP-PROTOCOL-IES ::= {
    { ID    id-CRNC-CommunicationContextID                  CRITICALITY reject          TYPE                    CRNC-CommunicationContextID
            PRESENCE    mandatory   }|
    { ID    id-UL-CCTrCH-InformationList-RL-SetupRqstTDD        CRITICALITY notify          TYPE                    UL-CCTrCH-InformationList-RL-
SetupRqstTDD        PRESENCE    optional    }|
```

```
    { ID    id-DL-CCTrCH-InformationList-RL-SetupRqstTDD        CRITICALITY notify          TYPE                    DL-CCTrCH-InformationList-RL-
SetupRqstTDD        PRESENCE    optional    }|
    { ID    id-DCH-TDD-Information              CRITICALITY reject          TYPE    DCH-TDD-Information                     PRESENCE optional }|
    { ID    id-DSCH-TDD-Information             CRITICALITY reject          TYPE    DSCH-TDD-Information                PRESENCE optional }|
    { ID    id-USCH-Information             CRITICALITY reject          TYPE    USCH-Information                        PRESENCE optional }|
    { ID    id-RL-Information-RL-SetupRqstTDD                   CRITICALITY reject          TYPE                    RL-Information-RL-SetupRqstTDD
                PRESENCE    mandatory   },
    ...
}

RadioLinkSetupRequestTDD-Extensions NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-CCTrCH-InformationList-RL-SetupRqstTDD ::= SEQUENCE (SIZE(1..maxNrOfCCTrCHs)) OF
    ProtocolIE-Single-Container{{ UL-CCTrCH-InformationItemIE-RL-SetupRqstTDD }}

UL-CCTrCH-InformationItemIE-RL-SetupRqstTDD NBAP-PROTOCOL-IES ::= {
    { ID    id-UL-CCTrCH-InformationItem-RL-SetupRqstTDD        CRITICALITY     notify          TYPE                UL-CCTrCH-InformationItem-RL-
SetupRqstTDD        PRESENCE    mandatory}
}

UL-CCTrCH-InformationItem-RL-SetupRqstTDD ::= SEQUENCE {
    cCTrCH-ID                               CCTrCH-ID,
    tFCS                                    TFCS,
    tFCI-Coding                             TFCI-Coding,
    punctureLimit                           PunctureLimit,
    uL-DPCH-Information                     UL-DPCH-Information-RL-SetupRqstTDD     OPTIONAL,   -- For 3.84Mcps TDD only
    iE-Extensions                           ProtocolExtensionContainer { { UL-CCTrCH-InformationItem-RL-SetupRqstTDD-ExtIEs} }    OPTIONAL,
    ...
}

UL-CCTrCH-InformationItem-RL-SetupRqstTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    { ID id-UL-DPCH-LCR-Information-RL-SetupRqstTDD CRITICALITY notify      EXTENSION   UL-DPCH-LCR-Information-RL-SetupRqstTDD   PRESENCE optional
    }|  -- For 1.28Mcps TDD only
    { ID id-UL-SIRTarget        CRITICALITY reject      EXTENSION       UL-SIR      PRESENCE optional               },
    -- This IE shall be mandatory for 1.28Mcps TDD, not applicable for 3.84Mcps TDD.
    ...
}

UL-DPCH-Information-RL-SetupRqstTDD ::= ProtocolIE-Single-Container{{ UL-DPCH-InformationIE-RL-SetupRqstTDD }}

UL-DPCH-InformationIE-RL-SetupRqstTDD NBAP-PROTOCOL-IES ::= {
    { ID id-UL-DPCH-InformationList-RL-SetupRqstTDD     CRITICALITY notify  TYPE UL-DPCH-InformationItem-RL-SetupRqstTDD    PRESENCE mandatory   }
}

UL-DPCH-InformationItem-RL-SetupRqstTDD ::= SEQUENCE {
    repetitionPeriod                        RepetitionPeriod,
    repetitionLength                        RepetitionLength,
    tdd-DPCHOffset                          TDD-DPCHOffset,
    uL-Timeslot-Information                 UL-Timeslot-Information,
    iE-Extensions                           ProtocolExtensionContainer { { UL-DPCH-InformationItem-RL-SetupRqstTDD-ExtIEs} }   OPTIONAL,
    ...
```

```
}

UL-DPCH-InformationItem-RL-SetupRqstTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-DPCH-LCR-Information-RL-SetupRqstTDD ::= ProtocolIE-Single-Container{{ UL-DPCH-LCR-InformationIE-RL-SetupRqstTDD }}

UL-DPCH-LCR-InformationIE-RL-SetupRqstTDD NBAP-PROTOCOL-IES ::= {
    { ID id-UL-DPCH-LCR-InformationList-RL-SetupRqstTDD     CRITICALITY notify  TYPE UL-DPCH-LCR-InformationItem-RL-SetupRqstTDD     PRESENCE
optional    }
}

UL-DPCH-LCR-InformationItem-RL-SetupRqstTDD ::= SEQUENCE {
    repetitionPeriod                        RepetitionPeriod,
    repetitionLength                        RepetitionLength,
    tdd-DPCHOffset                          TDD-DPCHOffset,
    uL-TimeslotLCR-Information              UL-TimeslotLCR-Information,
    iE-Extensions                           ProtocolExtensionContainer { { UL-DPCH-LCR-InformationItem-RL-SetupRqstTDD-ExtIEs} }     OPTIONAL,
    ...
}

UL-DPCH-LCR-InformationItem-RL-SetupRqstTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-CCTrCH-InformationList-RL-SetupRqstTDD ::= SEQUENCE (SIZE (1..maxNrOfCCTrCHs)) OF ProtocolIE-Single-Container{{ DL-CCTrCH-InformationItemIE-RL-
SetupRqstTDD }}

DL-CCTrCH-InformationItemIE-RL-SetupRqstTDD NBAP-PROTOCOL-IES ::= {
    { ID    id-DL-CCTrCH-InformationItem-RL-SetupRqstTDD           CRITICALITY     notify                          TYPE  DL-CCTrCH-InformationItem-
RL-SetupRqstTDD     PRESENCE    mandatory}
}

DL-CCTrCH-InformationItem-RL-SetupRqstTDD ::= SEQUENCE {
    cCTrCH-ID                               CCTrCH-ID,
    tFCS                                    TFCS,
    tFCI-Coding                             TFCI-Coding,
    punctureLimit                           PunctureLimit,
    tdd-TPC-DownlinkStepSize                TDD-TPC-DownlinkStepSize,
    cCTrCH-TPCList                          CCTrCH-TPCList-RL-SetupRqstTDD          OPTIONAL,
    dL-DPCH-Information                     DL-DPCH-Information-RL-SetupRqstTDD     OPTIONAL,   -- For 3.84Mcps TDD only
    iE-Extensions                           ProtocolExtensionContainer { { DL-CCTrCH-InformationItem-RL-SetupRqstTDD-ExtIEs} }    OPTIONAL,
    ...
}

DL-CCTrCH-InformationItem-RL-SetupRqstTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    { ID id-DL-DPCH-LCR-Information-RL-SetupRqstTDD CRITICALITY notify      EXTENSION   DL-DPCH-LCR-Information-RL-SetupRqstTDD   PRESENCE optional
    },  -- For 1.28Mcps TDD only
    ...
}

CCTrCH-TPCList-RL-SetupRqstTDD ::= SEQUENCE (SIZE (1..maxNrOfCCTrCHs)) OF CCTrCH-TPCItem-RL-SetupRqstTDD
```

```
CCTrCH-TPCItem-RL-SetupRqstTDD   ::= SEQUENCE {
    cCTrCH-ID                           CCTrCH-ID,
    iE-Extensions                       ProtocolExtensionContainer { { CCTrCH-TPCItem-RL-SetupRqstTDD-ExtIEs} }   OPTIONAL,
    ...
}

CCTrCH-TPCItem-RL-SetupRqstTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-DPCH-Information-RL-SetupRqstTDD ::= ProtocolIE-Single-Container{{ DL-DPCH-InformationIE-RL-SetupRqstTDD }}

DL-DPCH-InformationIE-RL-SetupRqstTDD NBAP-PROTOCOL-IES ::= {
    { ID id-DL-DPCH-InformationList-RL-SetupRqstTDD     CRITICALITY notify  TYPE DL-DPCH-InformationItem-RL-SetupRqstTDD    PRESENCE mandatory   }
}

DL-DPCH-InformationItem-RL-SetupRqstTDD  ::= SEQUENCE {
    repetitionPeriod                    RepetitionPeriod,
    repetitionLength                    RepetitionLength,
    tdd-DPCHOffset                      TDD-DPCHOffset,
    dL-Timeslot-Information            DL-Timeslot-Information,
    iE-Extensions                       ProtocolExtensionContainer { { DL-DPCH-InformationItem-RL-SetupRqstTDD-ExtIEs} }   OPTIONAL,
    ...
}

DL-DPCH-InformationItem-RL-SetupRqstTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-DPCH-LCR-Information-RL-SetupRqstTDD ::= ProtocolIE-Single-Container{{ DL-DPCH-LCR-InformationIE-RL-SetupRqstTDD }}

DL-DPCH-LCR-InformationIE-RL-SetupRqstTDD NBAP-PROTOCOL-IES ::= {
    { ID id-DL-DPCH-LCR-InformationList-RL-SetupRqstTDD     CRITICALITY notify  TYPE DL-DPCH-LCR-InformationItem-RL-SetupRqstTDD     PRESENCE
mandatory   }
}

DL-DPCH-LCR-InformationItem-RL-SetupRqstTDD ::= SEQUENCE {
    repetitionPeriod                    RepetitionPeriod,
    repetitionLength                    RepetitionLength,
    tdd-DPCHOffset                      TDD-DPCHOffset,
    dL-TimeslotLCR-Information          DL-TimeslotLCR-Information,
    tstdIndicator                       TSTD-Indicator,
    iE-Extensions                       ProtocolExtensionContainer { { DL-DPCH-LCR-InformationItem-RL-SetupRqstTDD-ExtIEs} }     OPTIONAL,
    ...
}

DL-DPCH-LCR-InformationItem-RL-SetupRqstTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

RL-Information-RL-SetupRqstTDD ::= SEQUENCE {
    rL-ID                               RL-ID,
```

```
    c-ID                                C-ID,
    frameOffset                         FrameOffset,
    specialBurstScheduling              SpecialBurstScheduling,
    initialDL-transmissionPower         DL-Power,
    maximumDL-power                     DL-Power,
    minimumDL-power                     DL-Power,
    dL-TimeSlotISCPInfo                 DL-TimeslotISCPInfo OPTIONAL,   -- For 3.84Mcps TDD only
    iE-Extensions                       ProtocolExtensionContainer { { RL-Information-RL-SetupRqstTDD-ExtIEs} }   OPTIONAL,
    ...
}

RL-Information-RL-SetupRqstTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    { ID id-TimeslotISCP-LCR-InfoList-RL-SetupRqstTDD   CRITICALITY reject      EXTENSION   TimeslotISCP-LCR-InfoList-RL-SetupRqstTDD   PRESENCE
optional    }|
    { ID    id-RL-Specific-DCH-Info CRITICALITY ignore      EXTENSION   RL-Specific-DCH-Info    PRESENCE            optional },
    ...
}

TimeslotISCP-LCR-InfoList-RL-SetupRqstTDD ::= SEQUENCE {
    dL-TimeslotISCP-LCR-Info    DL-TimeslotISCPInfoLCR,
    iE-Extensions               ProtocolExtensionContainer { {TimeslotISCP-LCR-InfoItem-RL-SetupRqstTDD-ExtIEs} }        OPTIONAL,
    ...
    }

TimeslotISCP-LCR-InfoItem-RL-SetupRqstTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
-- **************************************************************
--
-- RADIO LINK ADDITION REQUEST FDD
--
-- **************************************************************

RadioLinkAdditionRequestFDD ::= SEQUENCE {
    protocolIEs             ProtocolIE-Container    {{RadioLinkAdditionRequestFDD-IEs}},
    protocolExtensions      ProtocolExtensionContainer  {{RadioLinkAdditionRequestFDD-Extensions}}                      OPTIONAL,
    ...
}

RadioLinkAdditionRequestFDD-IEs NBAP-PROTOCOL-IES ::= {
    { ID    id-NodeB-CommunicationContextID                 CRITICALITY reject          TYPE    NodeB-CommunicationContextID            PRESENCE
    mandatory   } |
    { ID id-Compressed-Mode-Deactivation-Flag       CRITICALITY reject              TYPE Compressed-Mode-Deactivation-Flag   PRESENCE optional }|
    { ID    id-RL-InformationList-RL-AdditionRqstFDD            CRITICALITY notify          TYPE                    RL-InformationList-RL-
AdditionRqstFDD         PRESENCE    mandatory   },
    ...
}

RadioLinkAdditionRequestFDD-Extensions NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

RL-InformationList-RL-AdditionRqstFDD   ::= SEQUENCE (SIZE (1..maxNrOfRLs-1)) OF ProtocolIE-Single-Container {{ RL-InformationItemIE-RL-
AdditionRqstFDD}}

RL-InformationItemIE-RL-AdditionRqstFDD NBAP-PROTOCOL-IES ::= {
    { ID    id-RL-InformationItem-RL-AdditionRqstFDD            CRITICALITY     notify          TYPE                RL-InformationItem-RL-
AdditionRqstFDD         PRESENCE    mandatory}
}

RL-InformationItem-RL-AdditionRqstFDD ::= SEQUENCE {
    rL-ID                                   RL-ID,
    c-ID                                    C-ID,
    frameOffset                             FrameOffset,
    chipOffset                              ChipOffset,
    diversityControlField                   DiversityControlField,
    dl-CodeInformation                    FDD-DL-CodeInformation,
    initialDL-TransmissionPower             DL-Power                        OPTIONAL,
    maximumDL-Power                         DL-Power                        OPTIONAL,
    minimumDL-Power                         DL-Power                        OPTIONAL,
    sSDT-CellIdentity                       SSDT-Cell-Identity              OPTIONAL,
    transmitDiversityIndicator              TransmitDiversityIndicator      OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { RL-InformationItem-RL-AdditionRqstFDD-ExtIEs} }    OPTIONAL,
    ...
}

RL-InformationItem-RL-AdditionRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    { ID    id-RL-Specific-DCH-Info     CRITICALITY ignore      EXTENSION   RL-Specific-DCH-Info                    PRESENCE    optional },
    ...
}
```

```
-- **************************************************************
--
-- RADIO LINK ADDITION REQUEST TDD
--
-- **************************************************************

RadioLinkAdditionRequestTDD ::= SEQUENCE {
    protocolIEs             ProtocolIE-Container    {{RadioLinkAdditionRequestTDD-IEs}},
    protocolExtensions      ProtocolExtensionContainer  {{RadioLinkAdditionRequestTDD-Extensions}}                  OPTIONAL,
    ...
}

RadioLinkAdditionRequestTDD-IEs NBAP-PROTOCOL-IES ::= {
    { ID    id-NodeB-CommunicationContextID                         CRITICALITY     reject                          TYPE  NodeB-
CommunicationContextID                      PRESENCE    mandatory   }|
    { ID    id-UL-CCTrCH-InformationList-RL-AdditionRqstTDD         CRITICALITY     reject                          TYPE  UL-CCTrCH-InformationList-
RL-AdditionRqstTDD          PRESENCE    optional    }|
    { ID    id-DL-CCTrCH-InformationList-RL-AdditionRqstTDD         CRITICALITY     reject                          TYPE  DL-CCTrCH-InformationList-
RL-AdditionRqstTDD          PRESENCE    optional    }|
    { ID    id-RL-Information-RL-AdditionRqstTDD                    CRITICALITY     reject                          TYPE  RL-Information-RL-
AdditionRqstTDD                 PRESENCE    mandatory   },
    ...
}

RadioLinkAdditionRequestTDD-Extensions NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-CCTrCH-InformationList-RL-AdditionRqstTDD ::= SEQUENCE (SIZE (1..maxNrOfCCTrCHs)) OF UL-CCTrCH-InformationItem-RL-AdditionRqstTDD

UL-CCTrCH-InformationItem-RL-AdditionRqstTDD ::= SEQUENCE {
    cCTrCH-ID                               CCTrCH-ID,
    uL-DPCH-Information                     UL-DPCH-InformationList-RL-AdditionRqstTDD      OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { UL-CCTrCH-InformationItem-RL-AdditionRqstTDD-ExtIEs} }   OPTIONAL,
    ...
}

UL-CCTrCH-InformationItem-RL-AdditionRqstTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...,
    { ID    id-UL-DPCH-InformationItem-LCR-RL-AdditionRqstTDD           CRITICALITY     notify                          EXTENSION   UL-DPCH-
InformationItem-LCR-RL-AdditionRqstTDD          PRESENCE    optional }  -- For 1.28cps TDD only
}

UL-DPCH-InformationList-RL-AdditionRqstTDD ::= ProtocolIE-Single-Container {{ UL-DPCH-InformationItemIE-RL-AdditionRqstTDD }}

UL-DPCH-InformationItemIE-RL-AdditionRqstTDD NBAP-PROTOCOL-IES ::= {
    { ID    id-UL-DPCH-InformationItem-RL-AdditionRqstTDD           CRITICALITY     notify                          TYPE  UL-DPCH-InformationItem-RL-
AdditionRqstTDD         PRESENCE    optional}   -- For 3.84Mcps TDD only
}

UL-DPCH-InformationItem-RL-AdditionRqstTDD ::= SEQUENCE {
    repetitionPeriod                        RepetitionPeriod,
```

```
    repetitionLength                        RepetitionLength,
    tdd-DPCHOffset                          TDD-DPCHOffset,
    uL-Timeslot-Information             UL-Timeslot-Information,
    iE-Extensions                               ProtocolExtensionContainer { { UL-DPCH-InformationItem-RL-AdditionRqstTDD-ExtIEs} }     OPTIONAL,
    ...
}

UL-DPCH-InformationItem-RL-AdditionRqstTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-CCTrCH-InformationList-RL-AdditionRqstTDD ::= SEQUENCE (SIZE (1..maxNrOfCCTrCHs)) OF DL-CCTrCH-InformationItem-RL-AdditionRqstTDD

DL-CCTrCH-InformationItem-RL-AdditionRqstTDD ::= SEQUENCE {
    cCTrCH-ID                               CCTrCH-ID,
    dL-DPCH-Information                     DL-DPCH-InformationList-RL-AdditionRqstTDD      OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { DL-CCTrCH-InformationItem-RL-AdditionRqstTDD-ExtIEs} }   OPTIONAL,
    ...
}

DL-CCTrCH-InformationItem-RL-AdditionRqstTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...,
    { ID    id-DL-DPCH-InformationItem-LCR-RL-AdditionRqstTDD           CRITICALITY     notify                          EXTENSION   DL-DPCH-
InformationItem-LCR-RL-AdditionRqstTDD          PRESENCE    optional }  -- For 1.28Mcps TDD only
}

DL-DPCH-InformationList-RL-AdditionRqstTDD ::= ProtocolIE-Single-Container {{ DL-DPCH-InformationItemIE-RL-AdditionRqstTDD }}

DL-DPCH-InformationItemIE-RL-AdditionRqstTDD NBAP-PROTOCOL-IES ::= {
    { ID    id-DL-DPCH-InformationItem-RL-AdditionRqstTDD           CRITICALITY     notify                          TYPE  DL-DPCH-InformationItem-RL-
AdditionRqstTDD         PRESENCE    mandatory}  -- For 3.84Mcps TDD only
}

DL-DPCH-InformationItem-RL-AdditionRqstTDD ::= SEQUENCE {
    repetitionPeriod                        RepetitionPeriod,
    repetitionLength                        RepetitionLength,
    tdd-DPCHOffset                          TDD-DPCHOffset,
    dL-Timeslot-Information             DL-Timeslot-Information,
    iE-Extensions                               ProtocolExtensionContainer { { DL-DPCH-InformationItem-RL-AdditionRqstTDD-ExtIEs} }        OPTIONAL,
    ...
}

DL-DPCH-InformationItem-RL-AdditionRqstTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

RL-Information-RL-AdditionRqstTDD ::= SEQUENCE {
    rL-ID                                   RL-ID,
    c-ID                                    C-ID,
    frameOffset                             FrameOffset,
    diversityControlField                   DiversityControlField,
    initial-DL-Transmission-Power           DL-Power            OPTIONAL,
    maximumDL-Power                         DL-Power            OPTIONAL,
```

```
    minimumDL-Power                         DL-Power            OPTIONAL,
    dL-TimeSlotISCPInfo                     DL-TimeslotISCPInfo OPTIONAL,   -- For 3.84Mcps TDD only
    iE-Extensions                           ProtocolExtensionContainer { { RL-information-RL-AdditionRqstTDD-ExtIEs} }        OPTIONAL,
    ...
 }

RL-information-RL-AdditionRqstTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    { ID    id-TimeslotISCP-InformationList-LCR-RL-AdditionRqstTDD          CRITICALITY     notify                          EXTENSION   TIMESLOTISCP-
InformationList-LCR-RL-AdditionRqstTDD          PRESENCE    optional }| -- For 1.28Mcps TDD only
    { ID    id-RL-Specific-DCH-Info     CRITICALITY ignore      EXTENSION   RL-Specific-DCH-Info                    PRESENCE    optional },
    ...
    { ID    id-TimeslotISCP-InformationList-LCR-RL-AdditionRqstTDD          CRITICALITY     notify                          EXTENSION   TIMESLOTISCP-
InformationList-LCR-RL-AdditionRqstTDD          PRESENCE    optional }  -- For 1.28Mcps TDD only
}

UL-DPCH-InformationItem-LCR-RL-AdditionRqstTDD ::= SEQUENCE {
    repetitionPeriod                        RepetitionPeriod,
    repetitionLength                        RepetitionLength,
    tdd-DPCHOffset                          TDD-DPCHOffset,
    uL-TimeslotLCR-Information              UL-TimeslotLCR-Information,
    iE-Extensions                           ProtocolExtensionContainer { { UL-DPCH-InformationItem-LCR-RL-AdditionRqstTDD-ExtIEs} }     OPTIONAL,
    ...
}

UL-DPCH-InformationItem-LCR-RL-AdditionRqstTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-DPCH-InformationItem-LCR-RL-AdditionRqstTDD ::= SEQUENCE {
    repetitionPeriod                        RepetitionPeriod,
    repetitionLength                        RepetitionLength,
    tdd-DPCHOffset                          TDD-DPCHOffset,
    dL-TimeslotLCR-Information              DL-TimeslotLCR-Information,
    iE-Extensions                           ProtocolExtensionContainer { { DL-DPCH-InformationItem-LCR-RL-AdditionRqstTDD-ExtIEs} }     OPTIONAL,
    ...
}

DL-DPCH-InformationItem-LCR-RL-AdditionRqstTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TIMESLOTISCP-InformationList-LCR-RL-AdditionRqstTDD ::= SEQUENCE {
    dL-TimeslotISCP-LCR-Info    DL-TimeslotISCPInfoLCR,
    iE-Extensions               ProtocolExtensionContainer { {TimeslotISCPInfoList-LCR-RL-AdditionRqstTDD-ExtIEs} }      OPTIONAL,
    ...
    }

TimeslotISCPInfoList-LCR-RL-AdditionRqstTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
-- **************************************************************
--
-- RADIO LINK RECONFIGURATION PREPARE FDD
--
-- **************************************************************

RadioLinkReconfigurationPrepareFDD ::= SEQUENCE {
    protocolIEs             ProtocolIE-Container    {{RadioLinkReconfigurationPrepareFDD-IEs}},
    protocolExtensions      ProtocolExtensionContainer  {{RadioLinkReconfigurationPrepareFDD-Extensions}}             OPTIONAL,
    ...
}

RadioLinkReconfigurationPrepareFDD-IEs NBAP-PROTOCOL-IES ::= {
    { ID    id-NodeB-CommunicationContextID                 CRITICALITY     reject          TYPE                    NodeB-CommunicationContextID
        PRESENCE    mandatory   } |
    { ID    id-UL-DPCH-Information-RL-ReconfPrepFDD         CRITICALITY     reject          TYPE                    UL-DPCH-Information-RL-
ReconfPrepFDD       PRESENCE    optional    } |
    { ID    id-DL-DPCH-Information-RL-ReconfPrepFDD         CRITICALITY     reject          TYPE                    DL-DPCH-Information-RL-
ReconfPrepFDD       PRESENCE    optional    } |
    { ID    id-FDD-DCHs-to-Modify               CRITICALITY     reject          TYPE    FDD-DCHs-to-Modify                  PRESENCE optional } |
    { ID    id-DCHs-to-Add-FDD                  CRITICALITY     reject          TYPE    DCH-FDD-Information                 PRESENCE optional } |
    { ID    id-DCH-DeleteList-RL-ReconfPrepFDD              CRITICALITY     reject          TYPE                    DCH-DeleteList-RL-ReconfPrepFDD
            PRESENCE    optional    } |
    { ID    id-DSCH-ModifyList-RL-ReconfPrepFDD             CRITICALITY     reject          TYPE                    DSCH-ModifyList-RL-ReconfPrepFDD
            PRESENCE    optional    } |
    { ID    id-DSCHs-to-Add-FDD             CRITICALITY     reject          TYPE    DSCH-FDD-Information                    PRESENCE optional } |
    { ID    id-DSCH-DeleteList-RL-ReconfPrepFDD             CRITICALITY     reject          TYPE                    DSCH-DeleteList-RL-ReconfPrepFDD
            PRESENCE    optional    } |
    { ID    id-TFCI2-BearerSpecificInformation-RL-ReconfPrepFDD     CRITICALITY     reject      TYPE                TFCI2-BearerSpecificInformation-
RL-ReconfPrepFDD
    PRESENCE optional } |
    { ID    id-RL-InformationList-RL-ReconfPrepFDD          CRITICALITY     reject          TYPE                    RL-InformationList-RL-
ReconfPrepFDD           PRESENCE    optional    }|
    { ID id-Transmission-Gap-Pattern-Sequence-Information   CRITICALITY     reject          TYPE Transmission-Gap-Pattern-Sequence-Information
PRESENCE optional },
    ...
}

RadioLinkReconfigurationPrepareFDD-Extensions NBAP-PROTOCOL-EXTENSION ::= {
    { ID id-DSCH-FDD-Common-Information                 CRITICALITY ignore  EXTENSION DSCH-FDD-Common-Information                PRESENCE optional
    },
    ...
}

UL-DPCH-Information-RL-ReconfPrepFDD ::= SEQUENCE {
    ul-ScramblingCode                       UL-ScramblingCode                   OPTIONAL,
    ul-SIR-Target                           UL-SIR                              OPTIONAL,
    minUL-ChannelisationCodeLength          MinUL-ChannelisationCodeLength      OPTIONAL,
    maxNrOfUL-DPDCHs                        MaxNrOfUL-DPDCHs                    OPTIONAL,
    -- This IE shall be present if minUL-ChannelisationCodeLength Ie is set to 4
    ul-PunctureLimit                        PunctureLimit                       OPTIONAL,
    tFCS                                    TFCS        OPTIONAL,
    ul-DPCCH-SlotFormat                     UL-DPCCH-SlotFormat                 OPTIONAL,
```

```
    diversityMode                                DiversityMode                     OPTIONAL,
    sSDT-CellIDLength                            SSDT-CellID-Length                OPTIONAL,
    s-FieldLength                                S-FieldLength                     OPTIONAL,
    iE-Extensions                                ProtocolExtensionContainer { { UL-DPCH-Information-RL-ReconfPrepFDD-ExtIEs} }    OPTIONAL,
    ...
}

UL-DPCH-Information-RL-ReconfPrepFDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-DPCH-Information-RL-ReconfPrepFDD ::= SEQUENCE {
    tFCS                                         TFCS                              OPTIONAL,
    dl-DPCH-SlotFormat                           DL-DPCH-SlotFormat                OPTIONAL,
    tFCI-SignallingMode                          TFCI-SignallingMode               OPTIONAL,
    tFCI-Presence                                TFCI-Presence                     OPTIONAL,
    -- This IE shall be present if the DL DPCH Slot Format IE is set to any of the values from 12 to 16
    multiplexingPosition                         MultiplexingPosition              OPTIONAL,
    pDSCH-CodeMapping                            PDSCH-CodeMapping                 OPTIONAL,
    pDSCH-RL-ID                                  RL-ID                             OPTIONAL,
    limitedPowerIncrease                         LimitedPowerIncrease              OPTIONAL,
    iE-Extensions                                ProtocolExtensionContainer { { DL-DPCH-Information-RL-ReconfPrepFDD-ExtIEs} }    OPTIONAL,
    ...
}

DL-DPCH-Information-RL-ReconfPrepFDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DCH-DeleteList-RL-ReconfPrepFDD ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF DCH-DeleteItem-RL-ReconfPrepFDD

DCH-DeleteItem-RL-ReconfPrepFDD ::= SEQUENCE {
    dCH-ID                                       DCH-ID,
    iE-Extensions                                ProtocolExtensionContainer { { DCH-DeleteItem-RL-ReconfPrepFDD-ExtIEs} }   OPTIONAL,
    ...
}

DCH-DeleteItem-RL-ReconfPrepFDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DSCH-ModifyList-RL-ReconfPrepFDD ::= SEQUENCE (SIZE (1..maxNrOfDSCHs)) OF ProtocolIE-Single-Container {{DSCH-ModifyItemIE-RL-ReconfPrepFDD }}

DSCH-ModifyItemIE-RL-ReconfPrepFDD NBAP-PROTOCOL-IES ::= {
    { ID    id-DSCH-ModifyItem-RL-ReconfPrepFDD     CRITICALITY reject      TYPE    DSCH-ModifyItem-RL-ReconfPrepFDD  PRESENCE mandatory}
}

DSCH-ModifyItem-RL-ReconfPrepFDD ::= SEQUENCE {
    dSCH-ID                                      DSCH-ID,
    dl-TransportFormatSet                        TransportFormatSet          OPTIONAL,
    allocationRetentionPriority                  AllocationRetentionPriority OPTIONAL,
    frameHandlingPriority                        FrameHandlingPriority       OPTIONAL,
    toAWS                                        ToAWS                       OPTIONAL,
```

```
    toAWE                                   ToAWE                       OPTIONAL,
    transportBearerRequestIndicator         TransportBearerRequestIndicator,
    iE-Extensions                           ProtocolExtensionContainer { { DSCH-ModifyItem-RL-ReconfPrepFDD-ExtIEs} }     OPTIONAL,
    ...
}

DSCH-ModifyItem-RL-ReconfPrepFDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    { ID    id-bindingID                    CRITICALITY ignore      EXTENSION   BindingID                   PRESENCE    optional }|
    { ID    id-transportlayeraddress        CRITICALITY ignore      EXTENSION   TransportLayerAddress       PRESENCE    optional },
    ...
}

DSCH-DeleteList-RL-ReconfPrepFDD ::= SEQUENCE (SIZE (1..maxNrOfDSCHs)) OF ProtocolIE-Single-Container {{DSCH-DeleteItemIE-RL-ReconfPrepFDD }}

DSCH-DeleteItemIE-RL-ReconfPrepFDD NBAP-PROTOCOL-IES ::= {
    { ID    id-DSCH-DeleteItem-RL-ReconfPrepFDD     CRITICALITY reject      TYPE    DSCH-DeleteItem-RL-ReconfPrepFDD  PRESENCE mandatory}
}

DSCH-DeleteItem-RL-ReconfPrepFDD ::= SEQUENCE {
    dSCH-ID                                 DSCH-ID,
    iE-Extensions                           ProtocolExtensionContainer { { DSCH-DeleteItem-RL-ReconfPrepFDD-ExtIEs} }     OPTIONAL,
    ...
}

DSCH-DeleteItem-RL-ReconfPrepFDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TFCI2-BearerSpecificInformation-RL-ReconfPrepFDD ::= CHOICE {
    addOrModify             AddOrModify-TFCI2-RL-ReconfPrepFDD,
    delete                  NULL
}

AddOrModify-TFCI2-RL-ReconfPrepFDD ::= SEQUENCE {
    toAWS                               ToAWS,
    toAWE                               ToAWE,
    iE-Extensions                       ProtocolExtensionContainer { { AddOrModify-TFCI2-RL-ReconfPrepFDD-ExtIEs} }   OPTIONAL,
    ...
}

AddOrModify-TFCI2-RL-ReconfPrepFDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

RL-InformationList-RL-ReconfPrepFDD ::= SEQUENCE (SIZE (1..maxNrOfRLs)) OF ProtocolIE-Single-Container {{ RL-InformationItemIE-RL-ReconfPrepFDD }}

RL-InformationItemIE-RL-ReconfPrepFDD NBAP-PROTOCOL-IES ::= {
    { ID    id-RL-InformationItem-RL-ReconfPrepFDD          CRITICALITY     reject          TYPE                    RL-InformationItem-RL-
ReconfPrepFDD       PRESENCE    mandatory}
}

RL-InformationItem-RL-ReconfPrepFDD ::= SEQUENCE {
    rL-ID                                   RL-ID,
```

```
    dl-CodeInformation                      FDD-DL-CodeInformation      OPTIONAL,
    maxDL-Power                                 DL-Power                                    OPTIONAL,
    minDL-Power                                 DL-Power                                    OPTIONAL,
    sSDT-Indication                             SSDT-Indication                             OPTIONAL,
    sSDT-Cell-Identity                          SSDT-Cell-Identity                          OPTIONAL,
    -- The IE shall be present if the SSDT Indication IE is set to "SSDT Active in the UE"
    transmitDiversityIndicator                  TransmitDiversityIndicator                  OPTIONAL,
    -- This IE shall be present if Diversity Mode IE is present in UL DPCH Information IE and it is not set to "none"
    iE-Extensions                               ProtocolExtensionContainer { { RL-InformationItem-RL-ReconfPrepFDD-ExtIEs} }     OPTIONAL,
    ...
}

RL-InformationItem-RL-ReconfPrepFDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    { ID id-SSDT-CellIDforEDSCHPC CRITICALITY ignore EXTENSION SSDT-Cell-Identity       PRESENCE conditional }|
    -- This IE shall be present if Enhanced DSCH PC IE is present in the DSCH Common Information IE.
    { ID    id-RL-Specific-DCH-Info     CRITICALITY ignore      EXTENSION   RL-Specific-DCH-Info                    PRESENCE    optional },
    ...
}

-- **************************************************************
--
-- RADIO LINK RECONFIGURATION PREPARE TDD
--
-- **************************************************************

RadioLinkReconfigurationPrepareTDD ::= SEQUENCE {
    protocolIEs             ProtocolIE-Container    {{RadioLinkReconfigurationPrepareTDD-IEs}},
    protocolExtensions      ProtocolExtensionContainer  {{RadioLinkReconfigurationPrepareTDD-Extensions}}           OPTIONAL,
    ...
}

RadioLinkReconfigurationPrepareTDD-IEs NBAP-PROTOCOL-IES ::= {
    { ID    id-NodeB-CommunicationContextID                         CRITICALITY     reject      TYPE                NodeB-CommunicationContextID
                PRESENCE    mandatory   }|
    { ID    id-UL-CCTrCH-InformationAddList-RL-ReconfPrepTDD            CRITICALITY     reject                      TYPE  UL-CCTrCH-
InformationAddList-RL-ReconfPrepTDD         PRESENCE    optional        } |
    { ID    id-UL-CCTrCH-InformationModifyList-RL-ReconfPrepTDD         CRITICALITY     reject                      TYPE  UL-CCTrCH-
InformationModifyList-RL-ReconfPrepTDD          PRESENCE    optional        } |
    { ID    id-UL-CCTrCH-InformationDeleteList-RL-ReconfPrepTDD         CRITICALITY     reject                      TYPE  UL-CCTrCH-
InformationDeleteList-RL-ReconfPrepTDD          PRESENCE    optional        } |
    { ID    id-DL-CCTrCH-InformationAddList-RL-ReconfPrepTDD            CRITICALITY     reject                      TYPE  DL-CCTrCH-
InformationAddList-RL-ReconfPrepTDD         PRESENCE    optional        } |
    { ID    id-DL-CCTrCH-InformationModifyList-RL-ReconfPrepTDD         CRITICALITY     reject                      TYPE  DL-CCTrCH-
InformationModifyList-RL-ReconfPrepTDD          PRESENCE    optional        } |
    { ID    id-DL-CCTrCH-InformationDeleteList-RL-ReconfPrepTDD         CRITICALITY     reject                      TYPE  DL-CCTrCH-
InformationDeleteList-RL-ReconfPrepTDD          PRESENCE    optional        } |
    { ID    id-TDD-DCHs-to-Modify                       CRITICALITY     reject      TYPE    TDD-DCHs-to-Modify                  PRESENCE optional
    } |
    { ID    id-DCHs-to-Add-TDD                          CRITICALITY     reject      TYPE    DCH-TDD-Information                 PRESENCE optional
    } |
    { ID    id-DCH-DeleteList-RL-ReconfPrepTDD                      CRITICALITY     reject      TYPE                DCH-DeleteList-RL-ReconfPrepTDD
            PRESENCE    optional        } |
```

```
    { ID    id-DSCH-Information-ModifyList-RL-ReconfPrepTDD         CRITICALITY     reject      TYPE                DSCH-Information-ModifyList-RL-
ReconfPrepTDD       PRESENCE    optional        } |
    { ID    id-DSCHs-to-Add-TDD         CRITICALITY     reject      TYPE    DSCH-TDD-Information                    PRESENCE    optional    } |
    { ID    id-DSCH-Information-DeleteList-RL-ReconfPrepTDD         CRITICALITY     reject      TYPE                DSCH-Information-DeleteList-RL-
ReconfPrepTDD       PRESENCE    optional        } |
    { ID    id-USCH-Information-ModifyList-RL-ReconfPrepTDD         CRITICALITY     reject      TYPE                USCH-Information-ModifyList-RL-
ReconfPrepTDD       PRESENCE    optional        } |
    { ID    id-USCH-Information-Add         CRITICALITY     reject      TYPE    USCH-Information                    PRESENCE    optional    } |
    { ID    id-USCH-Information-DeleteList-RL-ReconfPrepTDD         CRITICALITY     reject      TYPE                USCH-Information-DeleteList-RL-
ReconfPrepTDD       PRESENCE    optional        } |
    { ID    id-RL-Information-RL-ReconfPrepTDD                      CRITICALITY     reject      TYPE                RL-Information-RL-ReconfPrepTDD
                PRESENCE    optional        },
    ...
}

RadioLinkReconfigurationPrepareTDD-Extensions NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-CCTrCH-InformationAddList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (1..maxNrOfCCTrCHs)) OF UL-CCTrCH-InformationAddItem-RL-ReconfPrepTDD

UL-CCTrCH-InformationAddItem-RL-ReconfPrepTDD ::= SEQUENCE {
    cCTrCH-ID                                   CCTrCH-ID,
    tFCS                                        TFCS,
    tFCI-Coding                                 TFCI-Coding,
    punctureLimit                               PunctureLimit,
    ul-DPCH-InformationList                     UL-DPCH-InformationAddList-RL-ReconfPrepTDD OPTIONAL,
    iE-Extensions                               ProtocolExtensionContainer { { UL-CCTrCH-InformationAddItem-RL-ReconfPrepTDD-ExtIEs} }     OPTIONAL,
    ...
}

UL-CCTrCH-InformationAddItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    { ID id-UL-DPCH-InformationAddListIE-RL-ReconfPrepTDD   CRITICALITY reject      EXTENSION UL-DPCH-InformationAddList-RL-ReconfPrepTDD
    PRESENCE optional }|    -- For 3.84Mcps TDD only
    { ID id-UL-SIRTarget        CRITICALITY reject      EXTENSION       UL-SIR      PRESENCE optional               },
    -- This IE shall be mandatory for 1.28Mcps TDD, not applicable for 3.84Mcps TDD.
    ...
}

UL-DPCH-InformationAddList-RL-ReconfPrepTDD ::= ProtocolIE-Single-Container {{ UL-DPCH-InformationAddListIEs-RL-ReconfPrepTDD }}

UL-DPCH-InformationAddListIEs-RL-ReconfPrepTDD NBAP-PROTOCOL-IES ::= {
    { ID id-UL-DPCH-InformationAddListIE-RL-ReconfPrepTDD   CRITICALITY reject      TYPE UL-DPCH-InformationAddItem-RL-ReconfPrepTDD    PRESENCE
mandatory }
}

UL-DPCH-InformationAddItem-RL-ReconfPrepTDD ::= SEQUENCE {
    repetitionPeriod                        RepetitionPeriod,
    repetitionLength                        RepetitionLength,
    tdd-DPCHOffset                          TDD-DPCHOffset,
    uL-Timeslot-Information                 UL-Timeslot-Information,
    iE-Extensions                           ProtocolExtensionContainer { { UL-DPCH-InformationAddItem-RL-ReconfPrepTDD-ExtIEs} }     OPTIONAL,
    ...
```

```
}

UL-DPCH-InformationAddItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-DPCH-LCR-InformationAddList-RL-ReconfPrepTDD ::= ProtocolIE-Single-Container {{ UL-DPCH-LCR-InformationAddListIEs-RL-ReconfPrepTDD }}

UL-DPCH-LCR-InformationAddListIEs-RL-ReconfPrepTDD NBAP-PROTOCOL-IES ::= {
    { ID id-UL-DPCH-LCR-InformationAddListIE-RL-ReconfPrepTDD   CRITICALITY reject      TYPE UL-DPCH-LCR-InformationAddItem-RL-ReconfPrepTDD
    PRESENCE mandatory }    -- For 1.28Mcps TDD only
}

UL-DPCH-LCR-InformationAddItem-RL-ReconfPrepTDD ::= SEQUENCE {
    repetitionPeriod                        RepetitionPeriod,
    repetitionLength                        RepetitionLength,
    tdd-DPCHOffset                          TDD-DPCHOffset,
    uL-Timeslot-InformationLCR              UL-TimeslotLCR-Information,
    iE-Extensions                           ProtocolExtensionContainer { { UL-DPCH-LCR-InformationAddItem-RL-ReconfPrepTDD-ExtIEs} }    OPTIONAL,
    ...
}

UL-DPCH-LCR-InformationAddItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-CCTrCH-InformationModifyList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (1..maxNrOfCCTrCHs)) OF UL-CCTrCH-InformationModifyItem-RL-ReconfPrepTDD

UL-CCTrCH-InformationModifyItem-RL-ReconfPrepTDD ::= SEQUENCE {
    cCTrCH-ID                                   CCTrCH-ID,
    tFCS                                        TFCS                                                                    OPTIONAL,
    tFCI-Coding                                 TFCI-Coding                                                             OPTIONAL,
    punctureLimit                               PunctureLimit                                                           OPTIONAL,
    ul-DPCH-InformationAddList                  UL-DPCH-InformationModify-AddList-RL-ReconfPrepTDD                    OPTIONAL,
    ul-DPCH-InformationModifyList               UL-DPCH-InformationModify-ModifyList-RL-ReconfPrepTDD               OPTIONAL,
    ul-DPCH-InformationDeleteList               UL-DPCH-InformationModify-DeleteList-RL-ReconfPrepTDD               OPTIONAL,
    iE-Extensions                               ProtocolExtensionContainer { { UL-CCTrCH-InformationModifyItem-RL-ReconfPrepTDD-ExtIEs} }
    OPTIONAL,
    ...
}

UL-CCTrCH-InformationModifyItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    { ID id-UL-DPCH-LCR-InformationModify-AddList    CRITICALITY reject     EXTENSION    UL-DPCH-LCR-InformationModify-AddList-RL-ReconfPrepTDD
    PRESENCE optional }|    -- For 1.28Mcps TDD only
    { ID id-UL-SIRTarget        CRITICALITY reject      EXTENSION       UL-SIR      PRESENCE optional              },
    -- This IE shall be applicable for 1.28Mcps TDD only.
    ...
}

UL-DPCH-InformationModify-AddList-RL-ReconfPrepTDD ::= ProtocolIE-Single-Container {{ UL-DPCH-InformationModify-AddListIEs-RL-ReconfPrepTDD }}

UL-DPCH-InformationModify-AddListIEs-RL-ReconfPrepTDD NBAP-PROTOCOL-IES ::= {
```

```
    { ID id-UL-DPCH-InformationModify-AddListIE-RL-ReconfPrepTDD   CRITICALITY reject       TYPE UL-DPCH-InformationModify-AddItem-RL-ReconfPrepTDD
    PRESENCE mandatory }
}

UL-DPCH-InformationModify-AddItem-RL-ReconfPrepTDD ::= SEQUENCE {
    repetitionPeriod                        RepetitionPeriod,
    repetitionLength                        RepetitionLength,
    tdd-DPCHOffset                          TDD-DPCHOffset,
    uL-Timeslot-Information             UL-Timeslot-Information,
    iE-Extensions                               ProtocolExtensionContainer { { UL-DPCH-InformationModify-AddItem-RL-ReconfPrepTDD-ExtIEs} }
    OPTIONAL,
    ...
}

UL-DPCH-InformationModify-AddItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-DPCH-LCR-InformationModify-AddList-RL-ReconfPrepTDD ::= ProtocolIE-Single-Container {{ UL-DPCH-LCR-InformationModify-AddListIEs-RL-
ReconfPrepTDD }}

UL-DPCH-LCR-InformationModify-AddListIEs-RL-ReconfPrepTDD NBAP-PROTOCOL-IES ::= {
    { ID id-UL-DPCH-LCR-InformationModify-AddListIE-RL-ReconfPrepTDD   CRITICALITY reject       TYPE UL-DPCH-LCR-InformationModify-AddItem-RL-
ReconfPrepTDD       PRESENCE mandatory }
}

UL-DPCH-LCR-InformationModify-AddItem-RL-ReconfPrepTDD ::= SEQUENCE {
    repetitionPeriod                        RepetitionPeriod,
    repetitionLength                        RepetitionLength,
    tdd-DPCHOffset                          TDD-DPCHOffset,
    uL-Timeslot-InformationLCR              UL-TimeslotLCR-Information,
    iE-Extensions                               ProtocolExtensionContainer { { UL-DPCH-LCR-InformationModify-AddItem-RL-ReconfPrepTDD-ExtIEs} }
    OPTIONAL,
    ...
}

UL-DPCH-LCR-InformationModify-AddItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-DPCH-InformationModify-ModifyList-RL-ReconfPrepTDD ::= ProtocolIE-Single-Container {{ UL-DPCH-InformationModify-ModifyListIEs-RL-ReconfPrepTDD }}

UL-DPCH-InformationModify-ModifyListIEs-RL-ReconfPrepTDD NBAP-PROTOCOL-IES ::= {
    { ID id-UL-DPCH-InformationModify-ModifyListIE-RL-ReconfPrepTDD   CRITICALITY reject        TYPE UL-DPCH-InformationModify-ModifyItem-RL-
ReconfPrepTDD       PRESENCE mandatory }
}

UL-DPCH-InformationModify-ModifyItem-RL-ReconfPrepTDD ::= SEQUENCE {
    repetitionPeriod                        RepetitionPeriod    OPTIONAL,
    repetitionLength                        RepetitionLength    OPTIONAL,
    tdd-DPCHOffset                          TDD-DPCHOffset      OPTIONAL,
    uL-Timeslot-InformationModify-ModifyList-RL-ReconfPrepTDD              UL-Timeslot-InformationModify-ModifyList-RL-ReconfPrepTDD      OPTIONAL,
```

```
    iE-Extensions                           ProtocolExtensionContainer { { UL-DPCH-InformationModify-ModifyItem-RL-ReconfPrepTDD-ExtIEs} }
    OPTIONAL,
    ...
}

UL-DPCH-InformationModify-ModifyItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    { ID id-UL-TimeslotLCR-Information-RL-ReconfPrepTDD     CRITICALITY reject      EXTENSION   UL-TimeslotLCR-InformationModify-ModifyList-RL-
ReconfPrepTDD       PRESENCE optional },    -- For 1.28Mcps TDD only
    ...
}

UL-Timeslot-InformationModify-ModifyList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (1..maxNrOfULTSs)) OF UL-Timeslot-InformationModify-ModifyItem-RL-
ReconfPrepTDD   -- For 3.84Mcps TDD only

UL-Timeslot-InformationModify-ModifyItem-RL-ReconfPrepTDD ::= SEQUENCE {
    timeSlot                            TimeSlot,
    midambleShiftAndBurstType           MidambleShiftAndBurstType       OPTIONAL,
    tFCI-Presence                       TFCI-Presence       OPTIONAL,
    uL-Code-InformationModify-ModifyList-RL-ReconfPrepTDD           UL-Code-InformationModify-ModifyList-RL-ReconfPrepTDD     OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { UL-Timeslot-InformationModify-ModifyItem-RL-ReconfPrepTDD-ExtIEs} }
    OPTIONAL,
    ...
}

UL-Timeslot-InformationModify-ModifyItem-RL-ReconfPrepTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-Code-InformationModify-ModifyList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (1..maxNrOfDPCHs)) OF UL-Code-InformationModify-ModifyItem-RL-ReconfPrepTDD

UL-Code-InformationModify-ModifyItem-RL-ReconfPrepTDD ::= SEQUENCE {
    dPCH-ID                             DPCH-ID,
    tdd-ChannelisationCode              TDD-ChannelisationCode      OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { UL-Code-InformationModify-ModifyItem-RL-ReconfPrepTDD-ExtIEs} }
    OPTIONAL,
    ...
}

UL-Code-InformationModify-ModifyItem-RL-ReconfPrepTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-TimeslotLCR-InformationModify-ModifyList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (1..maxNrOfULTSLCRs)) OF UL-Timeslot-LCR-InformationModify-
ModifyItem-RL-ReconfPrepTDD -- For 1.28Mcps TDD only
UL-Timeslot-LCR-InformationModify-ModifyItem-RL-ReconfPrepTDD ::= SEQUENCE {
    timeSlotLCR                         TimeSlotLCR,
    midambleShiftLCR            MidambleShiftLCR        OPTIONAL,
    tFCI-Presence                       TFCI-Presence       OPTIONAL,
    uL-Code-InformationModify-ModifyList-RL-ReconfPrepTDDLCR                UL-Code-InformationModify-ModifyList-RL-ReconfPrepTDDLCR    OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { UL-Timeslot-LCR-InformationModify-ModifyItem-RL-ReconfPrepTDD-ExtIEs} }
    OPTIONAL,
    ...
}
```

```
UL-Timeslot-LCR-InformationModify-ModifyItem-RL-ReconfPrepTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-Code-InformationModify-ModifyList-RL-ReconfPrepTDDLCR ::= SEQUENCE (SIZE (1..maxNrOfDPCHs)) OF UL-Code-InformationModify-ModifyItem-RL-
ReconfPrepTDD

UL-Code-InformationModify-ModifyItem-RL-ReconfPrepTDDLCR ::= SEQUENCE {
    dPCH-ID                                 DPCH-ID,
    tdd-ChannelisationCodeLCR               TDD-ChannelisationCodeLCR       OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { UL-Code-InformationModify-ModifyItem-RL-ReconfPrepTDDLCR-ExtIEs} }
    OPTIONAL,
    ...
}

UL-Code-InformationModify-ModifyItem-RL-ReconfPrepTDDLCR-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-DPCH-InformationModify-DeleteList-RL-ReconfPrepTDD ::= ProtocolIE-Single-Container {{ UL-DPCH-InformationModify-DeleteListIEs-RL-ReconfPrepTDD }}

UL-DPCH-InformationModify-DeleteListIEs-RL-ReconfPrepTDD NBAP-PROTOCOL-IES ::= {
    { ID id-UL-DPCH-InformationModify-DeleteListIE-RL-ReconfPrepTDD   CRITICALITY reject        TYPE UL-DPCH-InformationModify-DeleteListIE-RL-
ReconfPrepTDD       PRESENCE mandatory }
}

UL-DPCH-InformationModify-DeleteListIE-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (1..maxNrOfDPCHs)) OF UL-DPCH-InformationModify-DeleteItem-RL-
ReconfPrepTDD

UL-DPCH-InformationModify-DeleteItem-RL-ReconfPrepTDD ::= SEQUENCE {
    dPCH-ID                                 DPCH-ID,
    iE-Extensions                           ProtocolExtensionContainer { { UL-DPCH-InformationModify-DeleteItem-RL-ReconfPrepTDD-ExtIEs} }
    OPTIONAL,
    ...
}

UL-DPCH-InformationModify-DeleteItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-CCTrCH-InformationDeleteList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (1..maxNrOfCCTrCHs)) OF UL-CCTrCH-InformationDeleteItem-RL-ReconfPrepTDD

UL-CCTrCH-InformationDeleteItem-RL-ReconfPrepTDD ::= SEQUENCE {
    cCTrCH-ID                               CCTrCH-ID,
    iE-Extensions                           ProtocolExtensionContainer { { UL-CCTrCH-InformationDeleteItem-RL-ReconfPrepTDD-ExtIEs} }
    OPTIONAL,
    ...
}

UL-CCTrCH-InformationDeleteItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
DL-CCTrCH-InformationAddList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (1..maxNrOfCCTrCHs)) OF DL-CCTrCH-InformationAddItem-RL-ReconfPrepTDD

DL-CCTrCH-InformationAddItem-RL-ReconfPrepTDD ::= SEQUENCE {
    cCTrCH-ID                                   CCTrCH-ID,
    tFCS                                        TFCS,
    tFCI-Coding                                 TFCI-Coding,
    punctureLimit                               PunctureLimit,
    cCTrCH-TPCList                              CCTrCH-TPCAddList-RL-ReconfPrepTDD                          OPTIONAL,
    dl-DPCH-InformationList                     DL-DPCH-InformationAddList-RL-ReconfPrepTDD                 OPTIONAL,
    iE-Extensions                               ProtocolExtensionContainer { { DL-CCTrCH-InformationAddItem-RL-ReconfPrepTDD-ExtIEs} }
    OPTIONAL,
    ...
}

DL-CCTrCH-InformationAddItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...,
    { ID id-DL-DPCH-LCR-InformationAddList-RL-ReconfPrepTDD   CRITICALITY reject        EXTENSION                      DL-DPCH-LCR-
InformationAddList-RL-ReconfPrepTDD     PRESENCE optional } -- For 1.28Mcps TDD only
}

CCTrCH-TPCAddList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (1..maxNrOfCCTrCHs)) OF CCTrCH-TPCAddItem-RL-ReconfPrepTDD      -- For 3.84Mcps TDD only

CCTrCH-TPCAddItem-RL-ReconfPrepTDD   ::= SEQUENCE {
    cCTrCH-ID                               CCTrCH-ID,
    iE-Extensions                           ProtocolExtensionContainer { { CCTrCH-TPCAddItem-RL-ReconfPrepTDD-ExtIEs} }     OPTIONAL,
    ...
}

CCTrCH-TPCAddItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-DPCH-InformationAddList-RL-ReconfPrepTDD ::= ProtocolIE-Single-Container {{ DL-DPCH-InformationAddListIEs-RL-ReconfPrepTDD }}

DL-DPCH-InformationAddListIEs-RL-ReconfPrepTDD NBAP-PROTOCOL-IES ::= {
    { ID id-DL-DPCH-InformationAddListIE-RL-ReconfPrepTDD   CRITICALITY reject      TYPE DL-DPCH-InformationAddItem-RL-ReconfPrepTDD    PRESENCE
mandatory }
}

DL-DPCH-InformationAddItem-RL-ReconfPrepTDD ::= SEQUENCE {
    repetitionPeriod                        RepetitionPeriod,
    repetitionLength                        RepetitionLength,
    tdd-DPCHOffset                          TDD-DPCHOffset,
    dL-Timeslot-Information                 DL-Timeslot-Information,
    iE-Extensions                           ProtocolExtensionContainer { { DL-DPCH-InformationAddItem-RL-ReconfPrepTDD-ExtIEs} }     OPTIONAL,
    ...
}

DL-DPCH-InformationAddItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
DL-DPCH-LCR-InformationAddList-RL-ReconfPrepTDD ::= ProtocolIE-Single-Container {{ DL-DPCH-LCR-InformationAddListIEs-RL-ReconfPrepTDD }}

DL-DPCH-LCR-InformationAddListIEs-RL-ReconfPrepTDD NBAP-PROTOCOL-IES ::= {
    { ID id-DL-DPCH-LCR-InformationAddListIE-RL-ReconfPrepTDD   CRITICALITY reject      TYPE DL-DPCH-LCR-InformationAddItem-RL-ReconfPrepTDD
    PRESENCE mandatory }    -- For 1.28Mcps TDD only
}

DL-DPCH-LCR-InformationAddItem-RL-ReconfPrepTDD ::= SEQUENCE {
    repetitionPeriod                        RepetitionPeriod,
    repetitionLength                        RepetitionLength,
    tdd-DPCHOffset                          TDD-DPCHOffset,
    dL-Timeslot-InformationLCR              DL-TimeslotLCR-Information,
    iE-Extensions                           ProtocolExtensionContainer { { DL-DPCH-LCR-InformationAddItem-RL-ReconfPrepTDD-ExtIEs} }    OPTIONAL,
    ...
}

DL-DPCH-LCR-InformationAddItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-CCTrCH-InformationModifyList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (1..maxNrOfCCTrCHs)) OF DL-CCTrCH-InformationModifyItem-RL-ReconfPrepTDD

DL-CCTrCH-InformationModifyItem-RL-ReconfPrepTDD ::= SEQUENCE {
    cCTrCH-ID                                   CCTrCH-ID,
    tFCS                                        TFCS                                                                    OPTIONAL,
    tFCI-Coding                                 TFCI-Coding                                                             OPTIONAL,
    punctureLimit                               PunctureLimit                                                           OPTIONAL,
    cCTrCH-TPCList                              CCTrCH-TPCModifyList-RL-ReconfPrepTDD                                   OPTIONAL,
    dl-DPCH-InformationAddList                  DL-DPCH-InformationModify-AddList-RL-ReconfPrepTDD                 OPTIONAL,
    dl-DPCH-InformationModifyList               DL-DPCH-InformationModify-ModifyList-RL-ReconfPrepTDD          OPTIONAL,
    dl-DPCH-InformationDeleteList               DL-DPCH-InformationModify-DeleteList-RL-ReconfPrepTDD          OPTIONAL,
    iE-Extensions                               ProtocolExtensionContainer { { DL-CCTrCH-InformationModifyItem-RL-ReconfPrepTDD-ExtIEs} }
    OPTIONAL,
    ...
}

DL-CCTrCH-InformationModifyItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...,
    { ID id-DL-DPCH-LCR-InformationModify-AddList-RL-ReconfPrepTDD CRITICALITY reject       EXTENSION              DL-DPCH-LCR-InformationModify-
AddList-RL-ReconfPrepTDD        PRESENCE optional }
}

CCTrCH-TPCModifyList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (1..maxNrOfCCTrCHs)) OF CCTrCH-TPCModifyItem-RL-ReconfPrepTDD

CCTrCH-TPCModifyItem-RL-ReconfPrepTDD    ::= SEQUENCE {
    cCTrCH-ID                               CCTrCH-ID,
    iE-Extensions                           ProtocolExtensionContainer { { CCTrCH-TPCModifyItem-RL-ReconfPrepTDD-ExtIEs} }     OPTIONAL,
    ...
}

CCTrCH-TPCModifyItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
DL-DPCH-InformationModify-AddList-RL-ReconfPrepTDD ::= ProtocolIE-Single-Container {{ DL-DPCH-InformationModify-AddListIEs-RL-ReconfPrepTDD }}   --
For 3.84Mcps TDD only

DL-DPCH-InformationModify-AddListIEs-RL-ReconfPrepTDD NBAP-PROTOCOL-IES ::= {
    { ID id-DL-DPCH-InformationModify-AddListIE-RL-ReconfPrepTDD   CRITICALITY reject       TYPE DL-DPCH-InformationModify-AddItem-RL-ReconfPrepTDD
    PRESENCE mandatory }    -- For 1.28Mcps TDD only
}

DL-DPCH-InformationModify-AddItem-RL-ReconfPrepTDD ::= SEQUENCE {
    repetitionPeriod                        RepetitionPeriod,
    repetitionLength                        RepetitionLength,
    tdd-DPCHOffset                          TDD-DPCHOffset,
    dL-Timeslot-Information                 DL-Timeslot-Information,
    iE-Extensions                           ProtocolExtensionContainer { { DL-DPCH-InformationModify-AddItem-RL-ReconfPrepTDD-ExtIEs} }    OPTIONAL,
    ...
}

DL-DPCH-InformationModify-AddItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-DPCH-LCR-InformationModify-AddList-RL-ReconfPrepTDD ::= ProtocolIE-Single-Container {{ DL-DPCH-LCR-InformationModify-AddListIEs-RL-
ReconfPrepTDD }}

DL-DPCH-LCR-InformationModify-AddListIEs-RL-ReconfPrepTDD NBAP-PROTOCOL-IES ::= {
    { ID id-DL-DPCH-LCR-InformationModify-AddListIE-RL-ReconfPrepTDD   CRITICALITY reject       TYPE DL-DPCH-LCR-InformationModify-AddItem-RL-
ReconfPrepTDD       PRESENCE mandatory }
}

DL-DPCH-LCR-InformationModify-AddItem-RL-ReconfPrepTDD ::= SEQUENCE {
    repetitionPeriod                        RepetitionPeriod,
    repetitionLength                        RepetitionLength,
    tdd-DPCHOffset                          TDD-DPCHOffset,
    dL-Timeslot-InformationLCR              DL-TimeslotLCR-Information,
    iE-Extensions                           ProtocolExtensionContainer { { DL-DPCH-LCR-InformationModify-AddItem-RL-ReconfPrepTDD-ExtIEs} }
    OPTIONAL,
    ...
}

DL-DPCH-LCR-InformationModify-AddItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-DPCH-InformationModify-ModifyList-RL-ReconfPrepTDD ::= ProtocolIE-Single-Container {{ DL-DPCH-InformationModify-ModifyListIEs-RL-ReconfPrepTDD }}

DL-DPCH-InformationModify-ModifyListIEs-RL-ReconfPrepTDD NBAP-PROTOCOL-IES ::= {
    { ID id-DL-DPCH-InformationModify-ModifyListIE-RL-ReconfPrepTDD   CRITICALITY reject       TYPE DL-DPCH-InformationModify-ModifyItem-RL-
ReconfPrepTDD       PRESENCE mandatory }
}

DL-DPCH-InformationModify-ModifyItem-RL-ReconfPrepTDD ::= SEQUENCE {
    repetitionPeriod                        RepetitionPeriod           OPTIONAL,
```

```
    repetitionLength                        RepetitionLength            OPTIONAL,
    tdd-DPCHOffset                          TDD-DPCHOffset              OPTIONAL,
    dL-Timeslot-InformationAddModify-ModifyList-RL-ReconfPrepTDD        DL-Timeslot-InformationModify-ModifyList-RL-ReconfPrepTDD       OPTIONAL,
    iE-Extensions                               ProtocolExtensionContainer { { DL-DPCH-InformationModify-ModifyItem-RL-ReconfPrepTDD-ExtIEs} }
    OPTIONAL,
    ...
}

DL-DPCH-InformationModify-ModifyItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...,
    { ID id-DL-Timeslot-LCR-InformationModify-ModifyList-RL-ReconfPrepTDD   CRITICALITY reject                          EXTENSION       DL-Timeslot-
LCR-InformationModify-ModifyList-RL-ReconfPrepTDD       PRESENCE optional }
}

DL-Timeslot-InformationModify-ModifyList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (1..maxNrOfDLTSs)) OF DL-Timeslot-InformationModify-ModifyItem-RL-
ReconfPrepTDD

DL-Timeslot-InformationModify-ModifyItem-RL-ReconfPrepTDD    ::= SEQUENCE {
    timeSlot                                TimeSlot,
    midambleShiftAndBurstType               MidambleShiftAndBurstType           OPTIONAL,
    tFCI-Presence                           TFCI-Presence           OPTIONAL,
    dL-Code-InformationModify-ModifyList-RL-ReconfPrepTDD               DL-Code-InformationModify-ModifyList-RL-ReconfPrepTDD        OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { DL-Timeslot-InformationModify-ModifyItem-RL-ReconfPrepTDD-ExtIEs} }
    OPTIONAL,
    ...
}

DL-Timeslot-InformationModify-ModifyItem-RL-ReconfPrepTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
DL-Code-InformationModify-ModifyList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (0..maxNrOfDPCHs)) OF DL-Code-InformationModify-ModifyItem-RL-ReconfPrepTDD

DL-Code-InformationModify-ModifyItem-RL-ReconfPrepTDD    ::= SEQUENCE {
    dPCH-ID                                 DPCH-ID,
    tdd-ChannelisationCode                  TDD-ChannelisationCode      OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { DL-Code-InformationModify-ModifyItem-RL-ReconfPrepTDD-ExtIEs} }
    OPTIONAL,
    ...
}

DL-Code-InformationModify-ModifyItem-RL-ReconfPrepTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-Timeslot-LCR-InformationModify-ModifyList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (1..maxNrOfDLTSLCRs)) OF DL-Timeslot-InformationModify-ModifyItem-
RL-ReconfPrepTDD

DL-Timeslot-LCR-InformationModify-ModifyItem-RL-ReconfPrepTDD    ::= SEQUENCE {
    timeSlotLCR                             TimeSlotLCR,
    midambleShiftLCR            MidambleShiftLCR            OPTIONAL,
    tFCI-Presence                           TFCI-Presence           OPTIONAL,
    dL-Code-LCR-InformationModify-ModifyList-RL-ReconfPrepTDD               DL-Code-LCR-InformationModify-ModifyList-RL-ReconfPrepTDD      OPTIONAL,
```

```
    iE-Extensions                       ProtocolExtensionContainer { { DL-Timeslot-LCR-InformationModify-ModifyItem-RL-ReconfPrepTDD-ExtIEs} }
    OPTIONAL,
    ...
}

DL-Timeslot-LCR-InformationModify-ModifyItem-RL-ReconfPrepTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
DL-Code-LCR-InformationModify-ModifyList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (0..maxNrOfDPCHs)) OF DL-Code-InformationModify-ModifyItem-RL-
ReconfPrepTDD

DL-Code-LCR-InformationModify-ModifyItem-RL-ReconfPrepTDD    ::= SEQUENCE {
    dPCH-ID                             DPCH-ID,
    tdd-ChannelisationCodeLCR           TDD-ChannelisationCodeLCR       OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer { { DL-Code-LCR-InformationModify-ModifyItem-RL-ReconfPrepTDD-ExtIEs} }
    OPTIONAL,
    ...
}

DL-Code-LCR-InformationModify-ModifyItem-RL-ReconfPrepTDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-DPCH-InformationModify-DeleteList-RL-ReconfPrepTDD ::= ProtocolIE-Single-Container {{ DL-DPCH-InformationModify-DeleteListIEs-RL-ReconfPrepTDD }}

DL-DPCH-InformationModify-DeleteListIEs-RL-ReconfPrepTDD NBAP-PROTOCOL-IES ::= {
    { ID id-DL-DPCH-InformationModify-DeleteListIE-RL-ReconfPrepTDD   CRITICALITY reject        TYPE DL-DPCH-InformationModify-DeleteListIE-RL-
ReconfPrepTDD       PRESENCE mandatory }
}

DL-DPCH-InformationModify-DeleteListIE-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (1..maxNrOfDPCHs)) OF DL-DPCH-InformationModify-DeleteItem-RL-
ReconfPrepTDD

DL-DPCH-InformationModify-DeleteItem-RL-ReconfPrepTDD ::= SEQUENCE {
    dPCH-ID                                 DPCH-ID,
    iE-Extensions                           ProtocolExtensionContainer { { DL-DPCH-InformationModify-DeleteItem-RL-ReconfPrepTDD-ExtIEs} }
    OPTIONAL,
    ...
}

DL-DPCH-InformationModify-DeleteItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-CCTrCH-InformationDeleteList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (1..maxNrOfCCTrCHs)) OF DL-CCTrCH-InformationDeleteItem-RL-ReconfPrepTDD

DL-CCTrCH-InformationDeleteItem-RL-ReconfPrepTDD ::= SEQUENCE {
    cCTrCH-ID                               CCTrCH-ID,
    iE-Extensions                           ProtocolExtensionContainer { { DL-CCTrCH-InformationDeleteItem-RL-ReconfPrepTDD-ExtIEs} }
    OPTIONAL,
    ...
}
```

```
DL-CCTrCH-InformationDeleteItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DCH-DeleteList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF DCH-DeleteItem-RL-ReconfPrepTDD

DCH-DeleteItem-RL-ReconfPrepTDD ::= SEQUENCE {
    dCH-ID                                  DCH-ID,
    iE-Extensions                           ProtocolExtensionContainer { { DCH-DeleteItem-RL-ReconfPrepTDD-ExtIEs} }    OPTIONAL,
    ...
}

DCH-DeleteItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DSCH-Information-ModifyList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (1..maxNrOfDSCHs)) OF DSCH-Information-ModifyItem-RL-ReconfPrepTDD

DSCH-Information-ModifyItem-RL-ReconfPrepTDD ::= SEQUENCE {
    dSCH-ID                                 DSCH-ID,
    cCTrCH-ID                               CCTrCH-ID               OPTIONAL,
    transportFormatSet                      TransportFormatSet      OPTIONAL,
    allocationRetentionPriority             AllocationRetentionPriority OPTIONAL,
    frameHandlingPriority                   FrameHandlingPriority   OPTIONAL,
    toAWS                                   ToAWS                   OPTIONAL,
    toAWE                                   ToAWE                   OPTIONAL,
    transportBearerRequestIndicator         TransportBearerRequestIndicator,
    iE-Extensions                           ProtocolExtensionContainer { { DSCH-Information-ModifyItem-RL-ReconfPrepTDD-ExtIEs} }   OPTIONAL,
    ...
 }

DSCH-Information-ModifyItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    { ID    id-bindingID                    CRITICALITY ignore      EXTENSION   BindingID                   PRESENCE    optional }|
    { ID    id-transportlayeraddress        CRITICALITY ignore      EXTENSION   TransportLayerAddress       PRESENCE    optional },
    ...
}

DSCH-Information-DeleteList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (1..maxNrOfDSCHs)) OF DSCH-Information-DeleteItem-RL-ReconfPrepTDD

DSCH-Information-DeleteItem-RL-ReconfPrepTDD ::= SEQUENCE {
    dSCH-ID                                 DSCH-ID,
    iE-Extensions                           ProtocolExtensionContainer { { DSCH-Information-DeleteItem-RL-ReconfPrepTDD-ExtIEs} }   OPTIONAL,
    ...
}

DSCH-Information-DeleteItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

USCH-Information-ModifyList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (1..maxNrOfUSCHs)) OF USCH-Information-ModifyItem-RL-ReconfPrepTDD

USCH-Information-ModifyItem-RL-ReconfPrepTDD ::= SEQUENCE {
    uSCH-ID                                 USCH-ID,
```

```
    transportFormatSet                      TransportFormatSet      OPTIONAL,
    allocationRetentionPriority             AllocationRetentionPriority OPTIONAL,
    cCTrCH-ID                               CCTrCH-ID               OPTIONAL,
    transportBearerRequestIndicator         TransportBearerRequestIndicator,
    iE-Extensions                           ProtocolExtensionContainer { { USCH-Information-ModifyItem-RL-ReconfPrepTDD-ExtIEs} }   OPTIONAL,
    ...
}

USCH-Information-ModifyItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    { ID    id-bindingID                    CRITICALITY ignore      EXTENSION   BindingID                   PRESENCE    optional }|
    { ID    id-transportlayeraddress        CRITICALITY ignore      EXTENSION   TransportLayerAddress       PRESENCE    optional },
    ...
}

USCH-Information-DeleteList-RL-ReconfPrepTDD ::= SEQUENCE (SIZE (1..maxNrOfUSCHs)) OF USCH-Information-DeleteItem-RL-ReconfPrepTDD

USCH-Information-DeleteItem-RL-ReconfPrepTDD ::= SEQUENCE {
    uSCH-ID                                 USCH-ID,
    iE-Extensions                           ProtocolExtensionContainer { { USCH-Information-DeleteItem-RL-ReconfPrepTDD-ExtIEs} }   OPTIONAL,
    ...

}

USCH-Information-DeleteItem-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

RL-Information-RL-ReconfPrepTDD ::= SEQUENCE {
    rL-ID                                   RL-ID,
    maxDL-Power                             DL-Power            OPTIONAL,
    minDL-Power                             DL-Power            OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { RL-Information-RL-ReconfPrepTDD-ExtIEs} }    OPTIONAL,
    ...
}

RL-Information-RL-ReconfPrepTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    {   ID id-InitDL-Power      CRITICALITY ignore      EXTENSION DL-Power      PRESENCE optional               }|
    { ID    id-RL-Specific-DCH-Info     CRITICALITY ignore      EXTENSION   RL-Specific-DCH-Info               PRESENCE    optional },
    ...
}
```

```
-- **************************************************************
--
-- RADIO LINK RECONFIGURATION REQUEST FDD
--
-- **************************************************************

RadioLinkReconfigurationRequestFDD ::= SEQUENCE {
    protocolIEs             ProtocolIE-Container    {{RadioLinkReconfigurationRequestFDD-IEs}},
    protocolExtensions      ProtocolExtensionContainer  {{RadioLinkReconfigurationRequestFDD-Extensions}}             OPTIONAL,
    ...
}

RadioLinkReconfigurationRequestFDD-IEs NBAP-PROTOCOL-IES ::= {
    { ID    id-NodeB-CommunicationContextID                 CRITICALITY     reject      TYPE    NodeB-CommunicationContextID         PRESENCE
    mandatory   } |
    { ID    id-UL-DPCH-Information-RL-ReconfRqstFDD         CRITICALITY     reject      TYPE    UL-DPCH-Information-RL-ReconfRqstFDD       PRESENCE
    optional    } |
    { ID    id-DL-DPCH-Information-RL-ReconfRqstFDD         CRITICALITY     reject      TYPE    DL-DPCH-Information-RL-ReconfRqstFDD       PRESENCE
    optional    } |
    { ID    id-FDD-DCHs-to-Modify               CRITICALITY     reject      TYPE    FDD-DCHs-to-Modify                      PRESENCE optional } |
    { ID    id-DCHs-to-Add-FDD                  CRITICALITY     reject      TYPE    DCH-FDD-Information                        PRESENCE optional } |
    { ID    id-DCH-DeleteList-RL-ReconfRqstFDD              CRITICALITY     reject      TYPE    DCH-DeleteList-RL-ReconfRqstFDD         PRESENCE
    optional    } |
    { ID    id-RL-InformationList-RL-ReconfRqstFDD          CRITICALITY     reject      TYPE    RL-InformationList-RL-ReconfRqstFDD        PRESENCE
    optional    }|
    { ID id-Transmission-Gap-Pattern-Sequence-Information   CRITICALITY     reject      TYPE    Transmission-Gap-Pattern-Sequence-Information
PRESENCE optional },
    ...
}

RadioLinkReconfigurationRequestFDD-Extensions NBAP-PROTOCOL-EXTENSION ::= {
    ...
}


UL-DPCH-Information-RL-ReconfRqstFDD ::= SEQUENCE {
    ul-TFCS                                     TFCS            OPTIONAL,
    iE-Extensions                               ProtocolExtensionContainer { { UL-DPCH-Information-RL-ReconfRqstFDD-ExtIEs} }    OPTIONAL,
    ...
}

UL-DPCH-Information-RL-ReconfRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-DPCH-Information-RL-ReconfRqstFDD ::= SEQUENCE {
    dl-TFCS                                     TFCS            OPTIONAL,
    tFCI-SignallingMode                         TFCI-SignallingMode                 OPTIONAL,
    limitedPowerIncrease                        LimitedPowerIncrease                OPTIONAL,
    iE-Extensions                               ProtocolExtensionContainer { { DL-DPCH-Information-RL-ReconfRqstFDD-ExtIEs} }    OPTIONAL,
    ...
 }
```

```
DL-DPCH-Information-RL-ReconfRqstFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DCH-DeleteList-RL-ReconfRqstFDD ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF DCH-DeleteItem-RL-ReconfRqstFDD

DCH-DeleteItem-RL-ReconfRqstFDD ::= SEQUENCE {
    dCH-ID                                  DCH-ID,
    iE-Extensions                           ProtocolExtensionContainer { { DCH-DeleteItem-RL-ReconfRqstFDD-ExtIEs} }      OPTIONAL,
    ...

}

DCH-DeleteItem-RL-ReconfRqstFDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

RL-InformationList-RL-ReconfRqstFDD ::= SEQUENCE (SIZE (1..maxNrOfRLs)) OF ProtocolIE-Single-Container {{ RL-InformationItemIE-RL-ReconfRqstFDD}}

RL-InformationItemIE-RL-ReconfRqstFDD NBAP-PROTOCOL-IES ::= {
    { ID    id-RL-InformationItem-RL-ReconfRqstFDD              CRITICALITY     reject          TYPE                RL-InformationItem-RL-
ReconfRqstFDD           PRESENCE    mandatory}
}

RL-InformationItem-RL-ReconfRqstFDD ::= SEQUENCE {
    rL-ID                                   RL-ID,
    maxDL-Power                             DL-Power        OPTIONAL,
    minDL-Power                             DL-Power        OPTIONAL,
    dl-CodeInformation                    FDD-DL-CodeInformation      OPTIONAL,
-- The IE shall be present if the Transmission Gap Pattern Sequence Information IE is included and the indicated Downlink Compressed Mode method for
at least one of the included Transmission Gap Pattern Sequence is set to "SF/2".
    iE-Extensions                           ProtocolExtensionContainer { { RL-InformationItem-RL-ReconfRqstFDD-ExtIEs} }      OPTIONAL,
    ...
}

RL-InformationItem-RL-ReconfRqstFDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    { ID    id-RL-Specific-DCH-Info     CRITICALITY ignore      EXTENSION   RL-Specific-DCH-Info                    PRESENCE    optional },
    ...
}

-- **************************************************************
--
-- RADIO LINK RECONFIGURATION REQUEST TDD
--
-- **************************************************************

RadioLinkReconfigurationRequestTDD ::= SEQUENCE {
    protocolIEs             ProtocolIE-Container    {{RadioLinkReconfigurationRequestTDD-IEs}},
    protocolExtensions      ProtocolExtensionContainer  {{RadioLinkReconfigurationRequestTDD-Extensions}}            OPTIONAL,
    ...
}
```

```
RadioLinkReconfigurationRequestTDD-IEs NBAP-PROTOCOL-IES ::= {
    { ID    id-NodeB-CommunicationContextID                         CRITICALITY     reject                          TYPE  NodeB-
CommunicationContextID                  PRESENCE    mandatory   } |
    { ID    id-UL-CCTrCH-InformationModifyList-RL-ReconfRqstTDD         CRITICALITY     notify                          TYPE  UL-CCTrCH-
InformationModifyList-RL-ReconfRqstTDD      PRESENCE    optional    } |
    { ID    id-UL-CCTrCH-InformationDeleteList-RL-ReconfRqstTDD         CRITICALITY     notify                          TYPE  UL-CCTrCH-
InformationDeleteList-RL-ReconfRqstTDD      PRESENCE    optional    } |
    { ID    id-DL-CCTrCH-InformationModifyList-RL-ReconfRqstTDD         CRITICALITY     notify                          TYPE  DL-CCTrCH-
InformationModifyList-RL-ReconfRqstTDD      PRESENCE    optional    } |
    { ID    id-DL-CCTrCH-InformationDeleteList-RL-ReconfRqstTDD         CRITICALITY     notify                          TYPE  DL-CCTrCH-
InformationDeleteList-RL-ReconfRqstTDD      PRESENCE    optional    } |
    { ID    id-TDD-DCHs-to-Modify                       CRITICALITY     reject          TYPE    TDD-DCHs-to-Modify              PRESENCE optional } |
        { ID    id-DCHs-to-Add-TDD                          CRITICALITY     reject          TYPE                    DCH-TDD-Information
    PRESENCE    optional    } |
    { ID    id-DCH-DeleteList-RL-ReconfRqstTDD                      CRITICALITY     reject                          TYPE  DCH-DeleteList-RL-
ReconfRqstTDD                   PRESENCE    optional    } |
    { ID    id-RL-Information-RL-ReconfRqstTDD                  CRITICALITY     ignore          TYPE                RL-Information-RL-ReconfRqstTDD
            PRESENCE    optional    },
    ...
}

RadioLinkReconfigurationRequestTDD-Extensions NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-CCTrCH-InformationModifyList-RL-ReconfRqstTDD ::= SEQUENCE (SIZE (1..maxNrOfCCTrCHs)) OF ProtocolIE-Single-Container {{ UL-CCTrCH-
InformationModifyItemIE-RL-ReconfRqstTDD}}

UL-CCTrCH-InformationModifyItemIE-RL-ReconfRqstTDD NBAP-PROTOCOL-IES ::= {
    { ID    id-UL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD         CRITICALITY     notify                          TYPE  UL-CCTrCH-
InformationModifyItem-RL-ReconfRqstTDD      PRESENCE    mandatory}
}

UL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD ::= SEQUENCE {
    cCTrCH-ID                                   CCTrCH-ID,
    tFCS                                        TFCS            OPTIONAL,
    punctureLimit                               PunctureLimit   OPTIONAL,
    iE-Extensions                               ProtocolExtensionContainer { { UL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD-ExtIEs} }
    OPTIONAL,
    ...
}

UL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-CCTrCH-InformationDeleteList-RL-ReconfRqstTDD ::= SEQUENCE (SIZE (1..maxNrOfCCTrCHs)) OF ProtocolIE-Single-Container {{ UL-CCTrCH-
InformationDeleteItemIE-RL-ReconfRqstTDD}}

UL-CCTrCH-InformationDeleteItemIE-RL-ReconfRqstTDD NBAP-PROTOCOL-IES ::= {
    { ID    id-UL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD         CRITICALITY     notify                          TYPE  UL-CCTrCH-
InformationDeleteItem-RL-ReconfRqstTDD      PRESENCE    mandatory}
}
```

```
UL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD ::= SEQUENCE {
    cCTrCH-ID                                       CCTrCH-ID,
    iE-Extensions                                   ProtocolExtensionContainer { { UL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD-ExtIEs} }
    OPTIONAL,
    ...
}

UL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-CCTrCH-InformationModifyList-RL-ReconfRqstTDD ::= SEQUENCE (SIZE (1..maxNrOfCCTrCHs)) OF ProtocolIE-Single-Container {{ DL-CCTrCH-
InformationModifyItemIE-RL-ReconfRqstTDD}}

DL-CCTrCH-InformationModifyItemIE-RL-ReconfRqstTDD NBAP-PROTOCOL-IES ::= {
    { ID    id-DL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD         CRITICALITY     notify                          TYPE  DL-CCTrCH-
InformationModifyItem-RL-ReconfRqstTDD      PRESENCE    mandatory}
}

DL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD ::= SEQUENCE {
    cCTrCH-ID                                       CCTrCH-ID,
    tFCS                                            TFCS            OPTIONAL,
    punctureLimit                                   PunctureLimit   OPTIONAL,
    iE-Extensions                                   ProtocolExtensionContainer { { DL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD-ExtIEs} }
    OPTIONAL,
    ...
}

DL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-CCTrCH-InformationDeleteList-RL-ReconfRqstTDD ::= SEQUENCE (SIZE (1..maxNrOfCCTrCHs)) OF ProtocolIE-Single-Container {{ DL-CCTrCH-
InformationDeleteItemIE-RL-ReconfRqstTDD}}

DL-CCTrCH-InformationDeleteItemIE-RL-ReconfRqstTDD NBAP-PROTOCOL-IES ::= {
    { ID    id-DL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD         CRITICALITY     notify                          TYPE  DL-CCTrCH-
InformationDeleteItem-RL-ReconfRqstTDD      PRESENCE    mandatory}
}

DL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD ::= SEQUENCE {
    cCTrCH-ID                                       CCTrCH-ID,
    iE-Extensions                                   ProtocolExtensionContainer { { DL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD-ExtIEs} }
    OPTIONAL,
    ...
}

DL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DCH-DeleteList-RL-ReconfRqstTDD ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF DCH-DeleteItem-RL-ReconfRqstTDD
```

```
DCH-DeleteItem-RL-ReconfRqstTDD ::= SEQUENCE {
    dCH-ID                                  DCH-ID,
    iE-Extensions                           ProtocolExtensionContainer { { DCH-DeleteItem-RL-ReconfRqstTDD-ExtIEs} }      OPTIONAL,
    ...
}

DCH-DeleteItem-RL-ReconfRqstTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

RL-Information-RL-ReconfRqstTDD ::= SEQUENCE {
    rL-ID                                   RL-ID,
    maxDL-Power                             DL-Power        OPTIONAL,
    minDL-Power                             DL-Power        OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { RL-InformationItem-RL-ReconfRqstTDD-ExtIEs} }      OPTIONAL,
    ...
}

RL-InformationItem-RL-ReconfRqstTDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    { ID    id-RL-Specific-DCH-Info     CRITICALITY ignore      EXTENSION   RL-Specific-DCH-Info                    PRESENCE    optional },
    ...
}
```

9.3.4 Information Elements Definitions

```
--**************************************************************************
--
-- Information Element Definitions
--
--**************************************************************************

NBAP-IEs {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) nbap (2) version1 (1) nbap-IEs (2) }

DEFINITIONS AUTOMATIC TAGS ::=
BEGIN

IMPORTS
    maxNrOfTFCs,
    maxNrOfErrors,
    maxCTFC,
    maxNrOfTFs,
    maxTTI-count,
    maxRateMatching,
    maxCodeNrComp-1,
    maxNrOfCellSyncBursts,
    maxNrOfCodeGroups,
    maxNrOfMeasNCell,
    maxNrOfMeasNCell-1,
    maxNrOfReceptsPerSyncFrame,
    maxNrOfTFCIGroups,
    maxNrOfTFCI1Combs,
    maxNrOfTFCI2Combs,
    maxNrOfTFCI2Combs-1,
    maxNrOfSF,
    maxTGPS,
    maxNrOfUSCHs,
    maxNrOfULTSs,
    maxNrOfULTSLCRs,
    maxNrOfDPCHs,
    maxNrOfDPCHLCRs,
    maxNrOfCodes,
    maxNrOfDSCHs,
    maxNrOfDLTSs,
    maxNrOfDLTSLCRs,
    maxNrOfDCHs,
    maxNrOfLevels,
    maxNoGPSItems,
    maxNoSat,

    id-MessageStructure,
    id-ReportCharacteristicsType-OnModification,
```

```
    id-Rx-Timing-Deviation-Value-LCR,
    id-SFNSFNMeasurementValueInformation,
    id-SFNSFNMeasurementThresholdInformation,
    id-TUTRANGPSMeasurementValueInformation,
    id-TUTRANGPSMeasurementThresholdInformation,
    id-TypeOfError,
    id-transportlayeraddress,
    id-bindingID
FROM NBAP-Constants

    Criticality,
    ProcedureID,
    ProtocolIE-ID,
    TransactionID,
    TriggeringMessage
FROM NBAP-CommonDataTypes

    NBAP-PROTOCOL-IES,
    ProtocolExtensionContainer{},
    ProtocolIE-Single-Container{},
    NBAP-PROTOCOL-EXTENSION
FROM NBAP-Containers;

-- ==========================================
--  A
-- ==========================================

Acknowledged-PCPCH-access-preambles ::= INTEGER (0..15,...)

Acknowledged-PRACH-preambles-Value ::= INTEGER(0..240,...)
-- The number of L1 acknowledged random access tries per every 20 ms period.

AddorDeleteIndicator ::= ENUMERATED {
    add,
    delete
}

Active-Pattern-Sequence-Information ::= SEQUENCE {
    cMConfigurationChangeCFN                            CFN,
    transmission-Gap-Pattern-Sequence-Status    Transmission-Gap-Pattern-Sequence-Status-List   OPTIONAL,
    iE-Extensions                               ProtocolExtensionContainer { {Active-Pattern-Sequence-Information-ExtIEs} } OPTIONAL,
    ...
}

Active-Pattern-Sequence-Information-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

Transmission-Gap-Pattern-Sequence-Status-List ::= SEQUENCE (SIZE (0..maxTGPS)) OF
    SEQUENCE {
```

```
        tGPSID          TGPSID,
        tGPRC           TGPRC,
        tGCFN           CFN,
        iE-Extensions       ProtocolExtensionContainer { { Transmission-Gap-Pattern-Sequence-Status-List-ExtIEs } } OPTIONAL,
        ...
}


Transmission-Gap-Pattern-Sequence-Status-List-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

AICH-Power ::= INTEGER (-22..5)
-- Offset in dB.

AICH-TransmissionTiming ::= ENUMERATED {
    v0,
    v1
}

AllocationRetentionPriority ::= SEQUENCE {
    priorityLevel               PriorityLevel,
    pre-emptionCapability       Pre-emptionCapability,
    pre-emptionVulnerability    Pre-emptionVulnerability,
    iE-Extensions               ProtocolExtensionContainer { {AllocationRetentionPriority-ExtIEs} } OPTIONAL,
    ...
}

AllocationRetentionPriority-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

APPreambleSignature ::= INTEGER (0..15)

APSubChannelNumber ::= INTEGER (0..11)

AvailabilityStatus ::= ENUMERATED {
    empty,
    in-test,
    failed,
    power-off,
    off-line,
    off-duty,
    dependency,
    degraded,
    not-installed,
    log-full,
    ...
}

-- ==========================================
```

```
--  B
-- ========================================

BCCH-ModificationTime ::= INTEGER  (0..511)
-- Time = BCCH-ModificationTime * 8
-- Range 0 to 4088, step 8
-- All SFN values in which MIB may be mapped are allowed

BindingID ::= OCTET STRING (SIZE (1..4, ...))
--If the Binding ID includes a UDP port, the UDP port is included in octet 1 and 2.The first octet of
the UDP port field is included in the first octet of the the Binding ID.


BetaCD ::= INTEGER (0..15)

BlockingPriorityIndicator ::= ENUMERATED {
    high,
    normal,
    low,
    ...
}
-- High priority: Block resource immediately.
-- Normal priority: Block resource when idle or upon timer expiry.
-- Low priority: Block resource when idle.

SCTD-Indicator ::= ENUMERATED {
    active,
    inactive
}

-- ========================================
--  C
-- ========================================

Cause ::= CHOICE {
    radioNetwork            CauseRadioNetwork,
    transport           CauseTransport,
    protocol                CauseProtocol,
    misc                    CauseMisc,
    ...
}

CauseMisc ::= ENUMERATED {
    control-processing-overload,
    hardware-failure,
    oam-intervention,
    not-enough-user-plane-processing-resources,
    unspecified,
    ...
}

CauseProtocol ::= ENUMERATED {
    transfer-syntax-error,
```

```
    abstract-syntax-error-reject,
    abstract-syntax-error-ignore-and-notify,
    message-not-compatible-with-receiver-state,
    semantic-error,
    unspecified,
    abstract-syntax-error-falsely-constructed-message,
    ...
}

CauseRadioNetwork ::= ENUMERATED {
    unknown-C-ID,
    cell-not-available,
    power-level-not-supported,
    dl-radio-resources-not-available,
    ul-radio-resources-not-available,
    rl-already-ActivatedOrAlocated,
    nodeB-Resources-unavailable,
    measurement-not-supported-for-the-object,
    combining-resources-not-available,
    requested-configuration-not-supported,
    synchronisation-failure,
    priority-transport-channel-established,
    sIB-Origination-in-Node-B-not-Supported,
    requested-tx-diversity-mode-not-supported,
    unspecified,
    bCCH-scheduling-error,
    measurement-temporarily-not-available,
    invalid-CM-settings,
    reconfiguration-CFN-not-elapsed,
    number-of-DL-codes-not-supported,
    s-cipch-not-supported,
    combining-not-supported,
    ul-sf—not-supported,
    dl-SF-not-supported,
    common-transport-channel-type-not-supported,
    dedicated-transport-channel-type-not-supported,
    downlink-shared-channel-type-not-supported,
    uplink-shared-channel-type-not-supported,
    cm-not-supported,
    tx-diversity-no-longer-supported,
    unknown-Local-Cell-ID,
    ...,
    number-of-UL-codes-not-supported,
    information-temporarily-not-available,
    information-provision-not-supported-for-the-object,
    cell-synchronisation-not-supported,
    synchronisation-adjustment-not-supported,
    dpc-mode-change-not-supported,
    iPDL-already-activated,
    iPDL-not-supported,
    iPDL-parameters-not-available,
    frequency-acquisition-not-supported
}
```

```
CauseTransport ::= ENUMERATED {
    transport-resource-unavailable,
    unspecified,
    ...
}

CCTrCH-ID ::= INTEGER (0..15)

CDSubChannelNumbers ::= BIT STRING {
                                        subCh11(0),
                                        subCh10(1),
                                        subCh9(2),
                                        subCh8(3),
                                        subCh7(4),
                                        subCh6(5),
                                        subCh5(6),
                                        subCh4(7),
                                        subCh3(8),
                                        subCh2(9),
                                        subCh1(10),
                                        subCh0(11)
                                        } (SIZE (12))

CellParameterID ::= INTEGER (0..127,...)

CellSyncBurstAvailabilityIndicator ::= ENUMERATED {
    cellSyncBurstAvailable,
    cellSyncBurstNotAvailable
}

CellSyncBurstCode ::= INTEGER(0..7, ...)

CellSyncBurstCodeShift ::= INTEGER(0..7)

CellSyncBurstRepetitionPeriod ::= INTEGER (0..4095)

CellSyncBurstSIR ::= INTEGER (0..31)

CellSyncBurstTiming ::= CHOICE {
    initialPhase        INTEGER (0..1048575),
    steadyStatePhase        INTEGER (0..255)
}

CellSyncBurstTimingThreshold ::= INTEGER(0..254)

CFN ::= INTEGER (0..255)

Channel-Assignment-Indication ::= ENUMERATED {
    cA-Active,
    cA-Inactive
}
```

```
ChipOffset ::= INTEGER (0..38399)
-- Unit Chip

C-ID ::= INTEGER (0..65535)

Closedlooptimingadjustmentmode  ::= ENUMERATED {
    adj-1-slot,
    adj-2-slot,
    ...
}

CommonChannelsCapacityConsumptionLaw ::= SEQUENCE (SIZE(1..maxNrOfSF)) OF
    SEQUENCE {
        dl-Cost     INTEGER (0..65535),
        ul-Cost     INTEGER (0..65535),
        iE-Extensions       ProtocolExtensionContainer { { CommonChannelsCapacityConsumptionLaw-ExtIEs } }            OPTIONAL,
    ...
}

CommonChannelsCapacityConsumptionLaw-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

CommonMeasurementAccuracy ::= CHOICE {
    tUTRANGPSMeasurementAccuracyClass       TUTRANGPSAccuracyClass,
    ...
}

CommonMeasurementType ::= ENUMERATED  {
    received-total-wide-band-power,
    transmitted-carrier-power,
    acknowledged-prach-preambles,
    ul-timeslot-iscp,
    acknowledged-PCPCH-access-preambles,
    detected-PCPCH-access-preambles,
    ...,
    uTRAN-GPS-Timing-of-Cell-Frames-for-LCS,
    sFN-SFN-Observed-Time-Difference
}

CommonMeasurementValue ::= CHOICE {
    transmitted-carrier-power               Transmitted-Carrier-Power-Value,
    received-total-wide-band-power          Received-total-wide-band-power-Value,
    acknowledged-prach-preambles            Acknowledged-PRACH-preambles-Value,
    uL-TimeslotISCP                         UL-TimeslotISCP-Value,
    acknowledged-PCPCH-access-preambles     Acknowledged-PCPCH-access-preambles,
    detected-PCPCH-access-preambles         Detected-PCPCH-access-preambles,
    ...,
    extension-CommonMeasurementValue        Extension-CommonMeasurementValue
}

Extension-CommonMeasurementValue    ::= ProtocolIE-Single-Container {{ Extension-CommonMeasurementValueIE }}
```

```
Extension-CommonMeasurementValueIE NBAP-PROTOCOL-IES ::= {
    { ID id-TUTRANGPSMeasurementValueInformation    CRITICALITY ignore  TYPE TUTRANGPSMeasurementValueInformation  PRESENCE mandatory }|
    { ID id-SFNSFNMeasurementValueInformation   CRITICALITY ignore  TYPE SFNSFNMeasurementValueInformation    PRESENCE mandatory }
}

CommonMeasurementValueInformation ::= CHOICE {
    measurementAvailable        CommonMeasurementAvailable,
    measurementnotAvailable     CommonMeasurementnotAvailable
}


CommonMeasurementAvailable::= SEQUENCE {
    commonmeasurementValue      CommonMeasurementValue,
    ie-Extensions                   ProtocolExtensionContainer { { CommonMeasurementAvailableItem-ExtIEs} }           OPTIONAL,
    ...
}


CommonMeasurementAvailableItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
CommonMeasurementnotAvailable ::= NULL

CommonPhysicalChannelID ::= INTEGER (0..255)

Common-PhysicalChannel-Status-Information ::= SEQUENCE {
    commonPhysicalChannelID         CommonPhysicalChannelID,
    resourceOperationalState            ResourceOperationalState,
    availabilityStatus                  AvailabilityStatus,
    iE-Extensions                       ProtocolExtensionContainer  { { Common-PhysicalChannel-Status-Information-ExtIEs} }    OPTIONAL,
    ...
}

Common-PhysicalChannel-Status-Information-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

CommonTransportChannelID ::= INTEGER (0..255)

Common-TransportChannel-Status-Information ::= SEQUENCE {
    commonTransportChannelID            CommonTransportChannelID,
    resourceOperationalState            ResourceOperationalState,
    availabilityStatus                  AvailabilityStatus,
    iE-Extensions                       ProtocolExtensionContainer  { { Common-TransportChannel-Status-Information-ExtIEs} }   OPTIONAL,
    ...
}

Common-TransportChannel-Status-Information-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
CommunicationControlPortID ::= INTEGER (0..65535)

Compressed-Mode-Deactivation-Flag::= ENUMERATED {
    deactivate,
    maintain-Active
}
-- on=deactivate

ConfigurationGenerationID ::= INTEGER (0..255)
-- Value ’0’ means "No configuration"

ConstantValue ::= INTEGER (-10..10,...)
-- -10 dB - +10 dB
-- unit dB
-- step 1 dB

CPCH-Allowed-Total-Rate ::= ENUMERATED {
    v15,
    v30,
    v60,
    v120,
    v240,
    v480,
    v960,
    v1920,
    v2880,
    v3840,
    v4800,
    v5760,
    ...
}

CPCHScramblingCodeNumber ::= INTEGER (0..79)

CPCH-UL-DPCCH-SlotFormat ::= INTEGER (0..2,...)

CriticalityDiagnostics ::= SEQUENCE {
    procedureID                 ProcedureID             OPTIONAL,
    triggeringMessage           TriggeringMessage           OPTIONAL,
    procedureCriticality        Criticality             OPTIONAL,
    transactionID               TransactionID               OPTIONAL,
    iEsCriticalityDiagnostics   CriticalityDiagnostics-IE-List  OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { {CriticalityDiagnostics-ExtIEs} }                    OPTIONAL,
    ...
}

CriticalityDiagnostics-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
CriticalityDiagnostics-IE-List ::= SEQUENCE (SIZE (1..maxNrOfErrors)) OF
    SEQUENCE {
        iECriticality       Criticality,
        iE-ID               ProtocolIE-ID,
        repetitionNumber    RepetitionNumber0       OPTIONAL,
        iE-Extensions       ProtocolExtensionContainer { {CriticalityDiagnostics-IE-List-ExtIEs} }                  OPTIONAL,
        ...
    }

CriticalityDiagnostics-IE-List-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    {   ID id-MessageStructure      CRITICALITY ignore      EXTENSION MessageStructure      PRESENCE optional       }|
    {   ID id-TypeOfError           CRITICALITY ignore      EXTENSION TypeOfError           PRESENCE mandatory      },
    ...
}

MessageStructure ::= SEQUENCE (SIZE (1..maxNrOfLevels)) OF
    SEQUENCE {
        iE-ID                   ProtocolIE-ID,
        repetitionNumber        RepetitionNumber1       OPTIONAL,
        iE-Extensions           ProtocolExtensionContainer { {MessageStructure-ExtIEs} } OPTIONAL,
        ...
    }


MessageStructure-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

CRNC-CommunicationContextID ::= INTEGER (0..1048575)

CSBMeasurementID ::= INTEGER (0..65535)

CSBTransmissionID ::= INTEGER (0..65535)

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-- ========================================

DCH-ID ::= INTEGER (0..255)

DCH-FDD-Information ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF DCH-FDD-InformationItem

DCH-FDD-InformationItem ::= SEQUENCE {
    payloadCRC-PresenceIndicator        PayloadCRC-PresenceIndicator,
    ul-FP-Mode                          UL-FP-Mode,
    toAWS                               ToAWS,
    toAWE                               ToAWE,
    dCH-SpecificInformationList         DCH-Specific-FDD-InformationList,
    iE-Extensions                       ProtocolExtensionContainer { { DCH-FDD-InformationItem-ExtIEs} }        OPTIONAL,
    ...
}

DCH-FDD-InformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
```

```
    ...
}

DCH-Specific-FDD-InformationList ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF DCH-Specific-FDD-Item

DCH-Specific-FDD-Item ::=   SEQUENCE {
    dCH-ID                              DCH-ID,
    ul-TransportFormatSet               TransportFormatSet,
    dl-TransportFormatSet               TransportFormatSet,
    allocationRetentionPriority         AllocationRetentionPriority,
    frameHandlingPriority               FrameHandlingPriority,
    qE-Selector                         QE-Selector,
    iE-Extensions                       ProtocolExtensionContainer { { DCH-Specific-FDD-Item-ExtIEs} }             OPTIONAL,
    ...
}

DCH-Specific-FDD-Item-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DCH-InformationResponse ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF DCH-InformationResponseItem

DCH-InformationResponseItem ::= SEQUENCE {
    dCH-ID                                      DCH-ID,
    bindingID                                   BindingID               OPTIONAL,
    transportLayerAddress                       TransportLayerAddress   OPTIONAL,
    iE-Extensions                               ProtocolExtensionContainer { { DCH-InformationResponseItem-ExtIEs} }    OPTIONAL,
    ...
}

DCH-InformationResponseItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DCH-TDD-Information ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF DCH-TDD-InformationItem

DCH-TDD-InformationItem ::= SEQUENCE {
    payloadCRC-PresenceIndicator        PayloadCRC-PresenceIndicator,
    ul-FP-Mode                          UL-FP-Mode,
    toAWS                               ToAWS,
    toAWE                               ToAWE,
    dCH-SpecificInformationList         DCH-Specific-TDD-InformationList,
    iE-Extensions                           ProtocolExtensionContainer { { DCH-TDD-InformationItem-ExtIEs} }          OPTIONAL,
    ...
}

DCH-TDD-InformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DCH-Specific-TDD-InformationList ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF DCH-Specific-TDD-Item

DCH-Specific-TDD-Item ::=   SEQUENCE {
```

```
    dCH-ID                              DCH-ID,
    ul-CCTrCH-ID                        CCTrCH-ID,
    dl-CCTrCH-ID                        CCTrCH-ID,
    ul-TransportFormatSet               TransportFormatSet,
    dl-TransportFormatSet               TransportFormatSet,
    allocationRetentionPriority         AllocationRetentionPriority,
    frameHandlingPriority               FrameHandlingPriority,
    qE-Selector                         QE-Selector                     OPTIONAL,
    -- This IE shall be present if DCH is part of set of Coordinated DCHs
    iE-Extensions                       ProtocolExtensionContainer { { DCH-Specific-TDD-Item-ExtIEs} }          OPTIONAL,
    ...
}

DCH-Specific-TDD-Item-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

FDD-DCHs-to-Modify ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF FDD-DCHs-to-ModifyItem

FDD-DCHs-to-ModifyItem   ::= SEQUENCE {
    ul-FP-Mode                      UL-FP-Mode      OPTIONAL,
    toAWS                           ToAWS           OPTIONAL,
    toAWE                           ToAWE           OPTIONAL,
    transportBearerRequestIndicator TransportBearerRequestIndicator,
    dCH-SpecificInformationList     DCH-ModifySpecificInformation-FDD,
    iE-Extensions                   ProtocolExtensionContainer { { FDD-DCHs-to-ModifyItem-ExtIEs} }             OPTIONAL,
    ...
}

FDD-DCHs-to-ModifyItem-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DCH-ModifySpecificInformation-FDD::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF DCH-ModifySpecificItem-FDD

DCH-ModifySpecificItem-FDD::=   SEQUENCE {
    dCH-ID                                  DCH-ID,
    ul-TransportFormatSet                   TransportFormatSet          OPTIONAL,
    dl-TransportFormatSet                   TransportFormatSet          OPTIONAL,
    allocationRetentionPriority             AllocationRetentionPriority OPTIONAL,
    frameHandlingPriority                   FrameHandlingPriority       OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { DCH-ModifySpecificItem-FDD-ExtIEs} }     OPTIONAL,
    ...
}

DCH-ModifySpecificItem-FDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}


TDD-DCHs-to-Modify ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF DCH-ModifyItem-TDD

DCH-ModifyItem-TDD ::= SEQUENCE {
```

```
    ul-FP-Mode                          UL-FP-Mode      OPTIONAL,
    toAWS                               ToAWS           OPTIONAL,
    toAWE                               ToAWE           OPTIONAL,
    transportBearerRequestIndicator     TransportBearerRequestIndicator,
    dCH-SpecificInformationList         DCH-ModifySpecificInformation-TDD,
    iE-Extensions                       ProtocolExtensionContainer { { TDD-DCHs-to-ModifyItem-ExtIEs} }                 OPTIONAL,
    ...
}

TDD-DCHs-to-ModifyItem-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DCH-ModifySpecificInformation-TDD ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF DCH-ModifySpecificItem-TDD

DCH-ModifySpecificItem-TDD ::=  SEQUENCE {
    dCH-ID                                  DCH-ID,
    ul-CCTrCH-ID                            CCTrCH-ID                   OPTIONAL,
    dl-CCTrCH-ID                            CCTrCH-ID                   OPTIONAL,
    ul-TransportFormatSet                   TransportFormatSet          OPTIONAL,
    dl-TransportFormatSet                   TransportFormatSet          OPTIONAL,
    allocationRetentionPriority             AllocationRetentionPriority OPTIONAL,
    frameHandlingPriority                   FrameHandlingPriority       OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { DCH-ModifySpecificItem-TDD-ExtIEs} }        OPTIONAL,
    ...
}

DCH-ModifySpecificItem-TDD-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DedicatedChannelsCapacityConsumptionLaw ::= SEQUENCE ( SIZE(1..maxNrOfSF) ) OF
    SEQUENCE {
        dl-Cost-1       INTEGER (0..65535),
        dl-Cost-2       INTEGER (0..65535),
        ul-Cost-1       INTEGER (0..65535),
        ul-Cost-2       INTEGER (0..65535),
        iE-Extensions       ProtocolExtensionContainer { { DedicatedChannelsCapacityConsumptionLaw-ExtIEs } }         OPTIONAL,
    ...
}

DedicatedChannelsCapacityConsumptionLaw-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DedicatedMeasurementType ::= ENUMERATED {
    sir,
    sir-error,
    transmitted-code-power,
    rscp,
    rx-timing-deviation,
    round-trip-time,
    ...,
```

```
    rx-timing-deviation-LCR
}

DedicatedMeasurementValue ::= CHOICE {
    sIR-Value                       SIR-Value,
    sIR-ErrorValue                  SIR-Error-Value,
    transmittedCodePowerValue           Transmitted-Code-Power-Value,
    rSCP                                RSCP-Value,
    rxTimingDeviationValue              Rx-Timing-Deviation-Value,
    roundTripTime                       Round-Trip-Time-Value,
    ...,
    extension-DedicatedMeasurementValue     Extension-DedicatedMeasurementValue
}

Extension-DedicatedMeasurementValue ::= ProtocolIE-Single-Container {{ Extension-DedicatedMeasurementValueIE }}

Extension-DedicatedMeasurementValueIE NBAP-PROTOCOL-IES ::= {
    { ID id-Rx-Timing-Deviation-Value-LCR   CRITICALITY reject  TYPE Rx-Timing-Deviation-Value-LCR   PRESENCE mandatory }
}


DedicatedMeasurementValueInformation ::= CHOICE {
    measurementAvailable        DedicatedMeasurementAvailable,
    measurementnotAvailable     DedicatedMeasurementnotAvailable
}


DedicatedMeasurementAvailable::= SEQUENCE {
    dedicatedmeasurementValue       DedicatedMeasurementValue,
    cFN                             CFN                         OPTIONAL,
    ie-Extensions                   ProtocolExtensionContainer { { DedicatedMeasurementAvailableItem-ExtIEs} }        OPTIONAL,
    ...
}


DedicatedMeasurementAvailableItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DedicatedMeasurementnotAvailable ::= NULL

Detected-PCPCH-access-preambles ::= INTEGER (0..240,...)

DeltaSIR               ::= INTEGER (0..30)
-- Unit dB, Step 0.1 dB, Range 0..3 dB.

DGPSCorrections ::= SEQUENCE {
   gpstow               GPSTOW,
   status-health        GPS-Status-Health,
```

```
   satelliteinfo         SAT-Info-DGPSCorrections,
   ie-Extensions         ProtocolExtensionContainer { { DGPSCorrections-ExtIEs} }       OPTIONAL,
   ...
}

DGPSCorrections-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DGPSThresholds ::= SEQUENCE {
   prcdeviation          PRCDeviation,
   ie-Extensions         ProtocolExtensionContainer { { DGPSThresholds-ExtIEs} }     OPTIONAL,
   ...
}

DGPSThresholds-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DiversityControlField ::= ENUMERATED {
    may,
    must,
    must-not,
    ...
}

DiversityMode ::= ENUMERATED {
    none,
    sTTD,
    closed-loop-mode1,
    closed-loop-mode2,
    ...
}

DL-DPCH-SlotFormat ::= INTEGER (0..16,...)

DL-Timeslot-Information ::= SEQUENCE (SIZE (1.. maxNrOfDLTSs)) OF DL-Timeslot-InformationItem

DL-Timeslot-InformationItem  ::= SEQUENCE {
    timeSlot                              TimeSlot,
    midambleShiftAndBurstType             MidambleShiftAndBurstType,
    tFCI-Presence                         TFCI-Presence,
    dL-Code-Information                   TDD-DL-Code-Information,
    iE-Extensions                         ProtocolExtensionContainer { { DL-Timeslot-InformationItem-ExtIEs} }      OPTIONAL,
    ...
}

DL-Timeslot-InformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
DL-TimeslotLCR-Information ::= SEQUENCE (SIZE (1.. maxNrOfDLTSLCRs)) OF DL-TimeslotLCR-InformationItem

DL-TimeslotLCR-InformationItem   ::= SEQUENCE {
    timeSlotLCR                         TimeSlotLCR,
    midambleShiftLCR                    MidambleShiftLCR,
    tFCI-Presence                       TFCI-Presence,
    dL-Code-LCR-Information             TDD-DL-Code-LCR-Information,
    iE-Extensions                       ProtocolExtensionContainer { { DL-TimeslotLCR-InformationItem-ExtIEs} }   OPTIONAL,
    ...
}

DL-TimeslotLCR-InformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-FrameType ::= ENUMERATED {
    typeA,
    typeB,
    ...
}

DL-or-Global-CapacityCredit ::= INTEGER (0..65535)

DL-Power ::= INTEGER (-350..150)
-- DL-Power = power * 10
-- If Power <=-35 DL-Power shall be set to -350
-- if Power >=15 DL-Power shall be set to 150
-- Unit dB, Range -35dB .. +15dB, Step +0.1dB

DLPowerAveragingWindowSize ::= INTEGER (1..60)

DL-ScramblingCode ::= INTEGER (0..15)
-- 0= Primary scrambling code of the cell, 1..15= Secondary scrambling code --

DL-TimeslotISCP ::= INTEGER (0..91)

DL-TimeslotISCPInfo ::= SEQUENCE (SIZE (1..maxNrOfDLTSs)) OF DL-TimeslotISCPInfoItem

DL-TimeslotISCPInfoItem ::= SEQUENCE {
    timeSlot                    TimeSlot,
    dL-TimeslotISCP             DL-TimeslotISCP,
    iE-Extensions               ProtocolExtensionContainer { {DL-TimeslotISCPInfoItem-ExtIEs} }                     OPTIONAL,
    ...
    }

DL-TimeslotISCPInfoItem-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-TimeslotISCPInfoLCR ::= SEQUENCE (SIZE (1..maxNrOfDLTSLCRs)) OF DL-TimeslotISCPInfoItemLCR

DL-TimeslotISCPInfoItemLCR ::= SEQUENCE {
```

```
    timeSlotLCR                 TimeSlotLCR,
    dL-TimeslotISCP             DL-TimeslotISCP,
    iE-Extensions               ProtocolExtensionContainer { {DL-TimeslotISCPInfoItemLCR-ExtIEs} }                      OPTIONAL,
    ...
    }

DL-TimeslotISCPInfoItemLCR-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DL-TPC-Pattern01Count ::= INTEGER (0..30,...)

Downlink-Compressed-Mode-Method     ::= ENUMERATED {
    puncturing,
    sFdiv2,
    higher-layer-scheduling,
    ...
}

DPC-Mode ::= ENUMERATED {
                                                                                                    mode0,
                                                                                                    mode1,
                                                                                                    ...
}

DPCH-ID ::= INTEGER (0..239)

DSCH-ID ::= INTEGER (0..255)

DSCH-InformationResponse ::= SEQUENCE (SIZE (1..maxNrOfDSCHs)) OF DSCH-InformationResponseItem

DSCH-InformationResponseItem ::= SEQUENCE {
    dSCH-ID                                     DSCH-ID,
    bindingID                                   BindingID                   OPTIONAL,
    transportLayerAddress                       TransportLayerAddress       OPTIONAL,
    iE-Extensions                               ProtocolExtensionContainer { { DSCH-InformationResponseItem-ExtIEs } }     OPTIONAL,
    ...
}

DSCH-InformationResponseItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DSCH-FDD-Common-Information ::= SEQUENCE {
    enhancedDSCHPCIndicator         EnhancedDSCHPCIndicator     OPTIONAL,
    enhancedDSCHPC                  EnhancedDSCHPC              OPTIONAL,
    -- The IE shall be present if the Enhanced DSCH PC Indicator IE is set to "Enhanced DSCH PC Active in the UE".
```

```
    iE-Extensions                       ProtocolExtensionContainer { { DSCH-FDD-Common-Information-ExtIEs} }          OPTIONAL,
    ...
}

DSCH-FDD-Common-Information-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

DSCH-FDD-Information ::= SEQUENCE (SIZE (1..maxNrOfDSCHs)) OF DSCH-FDD-InformationItem

DSCH-FDD-InformationItem ::= SEQUENCE {
    dSCH-ID                             DSCH-ID,
    transportFormatSet                  TransportFormatSet,
    allocationRetentionPriority         AllocationRetentionPriority,
    frameHandlingPriority               FrameHandlingPriority,
    toAWS                               ToAWS,
    toAWE                               ToAWE,
    iE-Extensions                       ProtocolExtensionContainer { { DSCH-FDD-InformationItem-ExtIEs} }             OPTIONAL,
    ...
}

DSCH-FDD-InformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    { ID    id-bindingID                        CRITICALITY ignore      EXTENSION   BindingID                       PRESENCE    optional }|
    { ID    id-transportlayeraddress            CRITICALITY ignore      EXTENSION   TransportLayerAddress           PRESENCE    optional },
    ...
}

DSCH-TDD-Information ::= SEQUENCE (SIZE (1..maxNrOfDSCHs)) OF DSCH-TDD-InformationItem

DSCH-TDD-InformationItem ::= SEQUENCE {
    dSCH-ID                             DSCH-ID,
    cCTrCH-ID                           CCTrCH-ID,
    transportFormatSet                  TransportFormatSet,
    allocationRetentionPriority         AllocationRetentionPriority,
    frameHandlingPriority               FrameHandlingPriority,
    toAWS                               ToAWS,
    toAWE                               ToAWE,
    iE-Extensions                       ProtocolExtensionContainer { { DSCH-TDD-InformationItem-ExtIEs} }         OPTIONAL,
    ...
}

DSCH-TDD-InformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    { ID    id-bindingID                        CRITICALITY ignore      EXTENSION   BindingID                       PRESENCE    optional }|
    { ID    id-transportlayeraddress            CRITICALITY ignore      EXTENSION   TransportLayerAddress           PRESENCE    optional },
    ...
}

DwPCH-Power ::= ENUMERATED {minus10, minus9, minus8, minus7, minus6, minus5, minus4, minus3, minus2, minus1, zero, plus1, plus2, plus3, plus4,
plus5, ...}

-- ========================================
--  E
-- ========================================
```

```
End-Of-Audit-Sequence-Indicator ::= ENUMERATED {
    end-of-audit-sequence,
    not-end-of-audit-sequence
}

EnhancedDSCHPC ::= SEQUENCE {
    enhancedDSCHPCWnd   EnhancedDSCHPCWnd,
    enhancedDSCHPCCounter   EnhancedDSCHPCCounter,
    enhancedDSCHPowerOffset EnhancedDSCHPowerOffset,
    ...
}

EnhancedDSCHPCCounter ::= INTEGER (1..50)

EnhancedDSCHPCIndicator ::= ENUMERATED {
    enhancedDSCHPCActiveInTheUE,
    enhancedDSCHPCNotActiveInTheUE
}

EnhancedDSCHPCWnd ::= INTEGER (1..10)

EnhancedDSCHPowerOffset ::= INTEGER (-15..0)

-- ========================================
--  F
-- ========================================

FDD-DL-ChannelisationCodeNumber ::= INTEGER(0.. 511)
-- According to the mapping in [9]. The maximum value is equal to the DL spreading factor -1--

FDD-DL-CodeInformation ::= SEQUENCE (SIZE (1..maxNrOfCodes)) OF FDD-DL-CodeInformationItem

FDD-DL-CodeInformationItem ::= SEQUENCE {
    dl-ScramblingCode                       DL-ScramblingCode,
    fdd-DL-ChannelisationCodeNumber         FDD-DL-ChannelisationCodeNumber,
    transmissionGapPatternSequenceCodeInformation       TransmissionGapPatternSequenceCodeInformation               OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { FDD-DL-CodeInformationItem-ExtIEs} }    OPTIONAL,
    ...
}

FDD-DL-CodeInformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

FDD-S-CCPCH-Offset ::= INTEGER (0..149)
-- 0: 0 chip, 1: 256 chip, 2: 512 chip, .. ,149: 38144 chip [7] --

FDD-TPC-DownlinkStepSize ::= ENUMERATED {
    step-size0-5,
    step-size1,
    step-size1-5,
```

```
    step-size2,
    ...
}

FirstRLS-Indicator ::= ENUMERATED {
    first-RLS,
    not-first-RLS,
    ...
}

FNReportingIndicator ::= ENUMERATED {
 fN-reporting-required,
 fN-reporting-not-required
}

FrameHandlingPriority ::= INTEGER (0..15)
-- 0=lower priority, 15=higher priority --

FrameAdjustmentValue ::= INTEGER(0..4095)

FrameOffset ::= INTEGER (0..255)

FPACH-Power ::= ENUMERATED {minus10, minus9, minus8, minus7, minus6, minus5, minus4, minus3, minus2, minus1, zero, plus1, plus2, plus3, plus4,
plus5, ...}

-- ========================================
--  G
-- ========================================

GapLength               ::= INTEGER (1..14)
-- Unit slot

GapDuration             ::= INTEGER (1..144,...)
-- Unit frame

GPS-Almanac ::= SEQUENCE {
    wn_a-alm              BIT STRING (SIZE (8)),
    sat-info-almanac     SAT-Info-Almanac,
    ie-Extensions        ProtocolExtensionContainer { { GPS-Almanac-ExtIEs} }       OPTIONAL,
   ...
}

GPS-Almanac-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

GPS-Ionospheric-Model ::= SEQUENCE {
   alpha-zero-ionos      BIT STRING (SIZE (8)),
   alpha-one-ionos       BIT STRING (SIZE (8)),
```

```
   alpha-two-ionos       BIT STRING (SIZE (8)),
   alpha-three-ionos     BIT STRING (SIZE (8)),
   beta-zero-ionos       BIT STRING (SIZE (8)),
   beta-one-ionos        BIT STRING (SIZE (8)),
   beta-two-ionos        BIT STRING (SIZE (8)),
   beta-three-ionos      BIT STRING (SIZE (8)),
   ie-Extensions         ProtocolExtensionContainer { { GPS-Ionospheric-Model-ExtIEs} }     OPTIONAL,
   ...
}

GPS-Ionospheric-Model-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

GPS-Information ::= SEQUENCE (SIZE (0..maxNoGPSItems)) OF GPS-Information-Item
-- This IE shall be present if the Information Type Item IE indicates 'GPS Information'

GPS-Information-Item ::= ENUMERATED {
   gps-navigation-model-and-time-recovery,
   gps-ionospheric-model,
   gps-utc-model,
   gps-almanac,
   gps-rt-integrity,
   ...
}

GPS-RealTime-Integrity ::= CHOICE {
    bad-satellites              GPSBadSat-Info-RealTime-Integrity,
    no-bad-satellites           NULL
}


GPSBadSat-Info-RealTime-Integrity ::= SEQUENCE {
    sat-info                      SATInfo-RealTime-Integrity,
    ie-Extensions                 ProtocolExtensionContainer { { GPSBadSat-Info-RealTime-Integrity-ExtIEs} }        OPTIONAL,
    ...
}


GPSBadSat-Info-RealTime-Integrity-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

GPS-NavigationModel-and-TimeRecovery ::= SEQUENCE (SIZE (1..maxNoSat)) OF GPS-NavandRecovery-Item

GPS-NavandRecovery-Item ::= SEQUENCE {
  tx-tow-nav                    INTEGER (0..1048575),
  sat-id-nav                    SAT-ID,
```

```
  tlm-message-nav                BIT STRING (SIZE (14)),
  tlm-revd-c-nav                 BIT STRING (SIZE (2)),
  ho-word-nav                    BIT STRING (SIZE (22)),
  w-n-nav                        BIT STRING (SIZE (10)),
  ca-or-p-on-l2-nav              BIT STRING (SIZE (2)),
  user-range-accuracy-index-nav  BIT STRING (SIZE (4)),
  sv-health-nav                  BIT STRING (SIZE (6)),
  iodc-nav                       BIT STRING (SIZE (10)),
  l2-p-dataflag-nav              BIT STRING (SIZE (1)),
  sf1-reserved-nav               BIT STRING (SIZE (87)),
  t-gd-nav                       BIT STRING (SIZE (8)),
  t-oc-nav                       BIT STRING (SIZE (16)),
  a-f-2-nav                      BIT STRING (SIZE (8)),
  a-f-1-nav                      BIT STRING (SIZE (16)),
  a-f-zero-nav                   BIT STRING (SIZE (22)),
  c-rs-nav                       BIT STRING (SIZE (16)),
  delta-n-nav                    BIT STRING (SIZE (16)),
  m-zero-nav                     BIT STRING (SIZE (32)),
  c-uc-nav                       BIT STRING (SIZE (16)),
  gps-e-nav                      BIT STRING (SIZE (32)),
  c-us-nav                       BIT STRING (SIZE (16)),
  a-sqrt-nav                     BIT STRING (SIZE (32)),
  t-oe-nav                       BIT STRING (SIZE (16)),
  fit-interval-flag-nav          BIT STRING (SIZE (1)),
  aodo-nav                       BIT STRING (SIZE (5)),
  c-ic-nav                       BIT STRING (SIZE (16)),
  omega-zero-nav                 BIT STRING (SIZE (32)),
  c-is-nav                       BIT STRING (SIZE (16)),
  i-zero-nav                     BIT STRING (SIZE (32)),
  c-rc-nav                       BIT STRING (SIZE (16)),
  gps-omega-nav                  BIT STRING (SIZE (32)),
  omegadot-nav                   BIT STRING (SIZE (24)),
  idot-nav                       BIT STRING (SIZE (14)),
  spare-zero-fill                BIT STRING (SIZE (20)),
  ie-Extensions                  ProtocolExtensionContainer { { GPS-NavandRecovery-Item-ExtIEs} }   OPTIONAL,
   ...
}

GPS-NavandRecovery-Item-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}


GPS-RX-POS ::= SEQUENCE {
    latitudeSign            ENUMERATED {north, south},
    latitude                INTEGER (0..8388607),
    longitude               INTEGER (-8388608..8388607),
    directionOfAltitude     ENUMERATED {height, depth},
    altitude                INTEGER (0..32767),
    iE-Extensions           ProtocolExtensionContainer { { GPS-RX-POS-ExtIEs} } OPTIONAL,
    ...
```

```
}

GPS-RX-POS-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

GPS-Status-Health ::= ENUMERATED {
   udre-scale-1dot0,
   udre-scale-0dot75,
   udre-scale-0dot5,
   udre-scale-0dot3,
   udre-scale-0dot1,
   no-data,
   invalid-data
}

GPSTOW ::= INTEGER (0..604799)

GPS-UTC-Model ::= SEQUENCE {
   a-one-utc             BIT STRING (SIZE (24)),
   a-zero-utc            BIT STRING (SIZE (32)),
   t-ot-utc              BIT STRING (SIZE (8)),
   delta-t-ls-utc        BIT STRING (SIZE (8)),
   w-n-t-utc             BIT STRING (SIZE (8)),
   w-n-lsf-utc           BIT STRING (SIZE (8)),
   dn-utc                BIT STRING (SIZE (8)),
   delta-t-lsf-utc       BIT STRING (SIZE (8)),
   ie-Extensions         ProtocolExtensionContainer { { GPS-UTC-Model-ExtIEs} }     OPTIONAL,
   ...
}

GPS-UTC-Model-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

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IB-OC-ID ::= INTEGER (1..16)

IB-SG-DATA ::= BIT STRING
-- Contains SIB data fixed" or "SIB data variable" in segment as encoded in ref.[18].

IB-SG-POS ::= INTEGER (0..4094)
-- Only even positions allowed
```

```
IB-SG-REP ::= ENUMERATED {rep4, rep8, rep16, rep32, rep64, rep128, rep256, rep512, rep1024, rep2048, rep4096}

IB-Type ::= ENUMERATED {
    mIB,
    sB1,
    sB2,
    sIB1,
    sIB2,
    sIB3,
    sIB4,
    sIB5,
    sIB6,
    sIB7,
    sIB8,
    sIB9,
    sIB10,
    sIB11,
    sIB12,
    sIB13,
    sIB13dot1,
    sIB13dot2,
    sIB13dot3,
    sIB13dot4,
    sIB14,
    sIB15,
    sIB15dot1,
    sIB15dot2,
    sIB15dot3,
    sIB16,
    ...,
    sIB17,
    sIB15dot4,
    sIB18
}

IndicationType ::= ENUMERATED {
    noFailure,
    serviceImpacting,
    ...
}

InformationReportCharacteristics ::= CHOICE {
    onDemand                NULL,
    periodic                InformationReportCharacteristicsType-ReportPeriodicity,
    onModification          InformationReportCharacteristicsType-OnModification,
    ...
}

InformationReportCharacteristicsType-ReportPeriodicity ::= CHOICE {
    min                 ReportPeriodicity-Scaledmin,
    hours               ReportPeriodicity-Scaledhour,
    ...
```

```
}

InformationReportCharacteristicsType-OnModification ::= SEQUENCE {
    information-thresholds        InformationThresholds,
    ie-Extensions                 ProtocolExtensionContainer { { InformationReportCharacteristicsType-OnModification-ExtIEs} } OPTIONAL,
   ...
}

InformationReportCharacteristicsType-OnModification-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

InformationThresholds ::= CHOICE {
    dgps                DGPSThresholds,
    ...
}

InformationExchangeID ::= INTEGER (0..1048575)

InformationType ::= SEQUENCE {
    information-Type-Item       Information-Type-Item,
    gPSInformation              GPS-Information  OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { { Information-Type-ExtIEs} }       OPTIONAL,
...
}

Information-Type-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

Information-Type-Item ::= ENUMERATED {
    gpsinformation,
    dgpscorrections,
    gpsrxpos,
    ...
}

InnerLoopDLPCStatus ::= ENUMERATED {
    active,
    inactive
}

IPDL-Indicator ::= ENUMERATED {
    active,
    inactive
}
```

```
IPDL-FDD-Parameters ::= SEQUENCE {
    iP-SpacingFDD                   ENUMERATED{sp5,sp7,sp10,sp15,sp20,sp30,sp40,sp50,...},
    iP-Length                       ENUMERATED{len5, len10},
    seed                            INTEGER(1..63),
    burstModeParams                 BurstModeParams     OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { IPDLFDDParameter-ExtIEs} }   OPTIONAL,
    ...
}

IPDLFDDParameter-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

IPDL-TDD-Parameters ::= SEQUENCE {
    iP-SpacingTDD                   ENUMERATED{sp30,sp40,sp50,sp70,sp100,...},
    iP-Start                        INTEGER(0..4095),
    iP-Slot                         INTEGER(0..14),
    iP-PCCPCH                       ENUMERATED{switchOff-1-Frame,switchOff-2-Frames},
    burstModeParams                 BurstModeParams     OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { IPDLTDDParameter-ExtIEs} }   OPTIONAL,
    ...
}

BurstModeParams ::= SEQUENCE {
    burstStart                          INTEGER(0..15),
    burstLenth                          INTEGER(10..25),
    burstFreq                           INTEGER(1..16),
    ...
}

IPDLTDDParameter-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

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Local-Cell-ID ::= INTEGER (0..268435455)

-- ==========================================
--  M
```

```
-- ========================================

MaximumDL-PowerCapability ::=  INTEGER(0..500)
-- Unit dBm, Range 0dBm .. 50dBm, Step +0.1dB

MaximumTransmissionPower ::=  INTEGER(0..500)
-- Unit dBm, Range 0dBm .. 50dBm, Step +0.1dB

MaxNrOfUL-DPDCHs ::= INTEGER (1..6)

Max-Number-of-PCPCHes ::= INTEGER (1..64,...)

MaxPRACH-MidambleShifts ::= ENUMERATED {
    shift4,
    shift8,
    ...
}

MeasurementFilterCoefficient ::= ENUMERATED {k0, k1, k2, k3, k4, k5, k6, k7, k8, k9, k11, k13, k15, k17, k19,...}
-- Measurement Filter Coefficient to be used for measurement

MeasurementID ::= INTEGER (0..1048575)

MidambleConfigurationBurstType1And3 ::=     ENUMERATED {v4, v8, v16}

MidambleConfigurationBurstType2 ::=     ENUMERATED {v3, v6}

MidambleShiftAndBurstType ::=       CHOICE {
    type1                               SEQUENCE {
        midambleConfigurationBurstType1And3 MidambleConfigurationBurstType1And3,
        midambleAllocationMode              CHOICE {
            defaultMidamble                     NULL,
            commonMidamble                      NULL,
            ueSpecificMidamble                  MidambleShiftLong,
            ...
        },
    ...
    },
    type2                               SEQUENCE {
        midambleConfigurationBurstType2     MidambleConfigurationBurstType2,
        midambleAllocationMode              CHOICE {
            defaultMidamble                     NULL,
            commonMidamble                      NULL,
            ueSpecificMidamble                  MidambleShiftShort,
            ...
        },
        ...
    },
    type3                               SEQUENCE {
        midambleConfigurationBurstType1And3 MidambleConfigurationBurstType1And3,
        midambleAllocationMode              CHOICE {
            defaultMidamble                     NULL,
            ueSpecificMidamble                  MidambleShiftLong,
```

```
        ...
        },
        ...
    },
    ...
}

MidambleShiftLong ::=               INTEGER (0..15)

MidambleShiftShort ::=              INTEGER (0..5)

MidambleShiftLCR ::= SEQUENCE {
    midambleAllocationMode      MidambleAllocationMode,
    midambleShift               MidambleShiftLong       OPTIONAL,
    iE-Extensions               ProtocolExtensionContainer { {MidambleShiftLCR-ExtIEs} }        OPTIONAL,
    ...
    }

MidambleAllocationMode ::= ENUMERATED {
    defaultMidamble,
    commonMidamble,
    uESpecificMidamble,
    ...
    }

MidambleShiftLCR-ExtIEs  NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

MinimumDL-PowerCapability ::=  INTEGER(0..800)
-- Unit dBm, Range -30dBm .. 50dBm, Step +0.1dB

MinSpreadingFactor ::= ENUMERATED {
        v4,
        v8,
        v16,
        v32,
        v64,
        v128,
        v256,
        v512
}

Modulation ::= ENUMERATED {
    qPSK,
    eightPSK,
    ...
}

MinUL-ChannelisationCodeLength ::= ENUMERATED {
    v4,
    v8,
    v16,
```

```
    v32,
    v64,
    v128,
    v256,
    ...
}

MultiplexingPosition ::= ENUMERATED {
    fixed,
    flexible
}

-- ==========================================
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-- ==========================================

NCyclesPerSFNperiod ::= ENUMERATED {
    v1,
    v2,
    v4,
    v8,
    ...
}

NEOT ::= INTEGER (0..8)

NFmax ::= INTEGER (1..64,...)

NRepetitionsPerCyclePeriod ::= INTEGER (2..10)

N-INSYNC-IND ::= INTEGER (1..256)

N-OUTSYNC-IND ::= INTEGER (1..256)

NeighbouringCellMeasurementInformation ::= SEQUENCE (SIZE (1..maxNrOfMeasNCell)) OF
        CHOICE {
                neighbouringFDDCellMeasurementInformation       NeighbouringFDDCellMeasurementInformation,
                neighbouringTDDCellMeasurementInformation       NeighbouringTDDCellMeasurementInformation,
                ...
            }

NeighbouringFDDCellMeasurementInformation ::= SEQUENCE {
    uC-Id                               UC-Id,
    uARFCN                              UARFCN,
    primaryScramblingCode               PrimaryScramblingCode,
    iE-Extensions                       ProtocolExtensionContainer { { NeighbouringFDDCellMeasurementInformationItem-ExtIEs} } OPTIONAL,
    ...
}

NeighbouringFDDCellMeasurementInformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
NeighbouringTDDCellMeasurementInformation ::= SEQUENCE {
    uC-Id                               UC-Id,
    uARFCN                              UARFCN,
    cellParameterID                     CellParameterID,
    timeSlot                            TimeSlot,
    midambleShiftAndBurstType           MidambleShiftAndBurstType,
    iE-Extensions                       ProtocolExtensionContainer { { NeighbouringTDDCellMeasurementInformationItem-ExtIEs} } OPTIONAL,
    ...
}

NeighbouringTDDCellMeasurementInformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

NodeB-CommunicationContextID ::= INTEGER (0..1048575)

NStartMessage ::= INTEGER (1..8)

-- ========================================
--  O
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PagingIndicatorLength ::= ENUMERATED {
    v2,
    v4,
    v8,
    ...
}

PayloadCRC-PresenceIndicator ::= ENUMERATED {
    cRC-Included,
    cRC-NotIncluded,
    ...
}

PCCPCH-Power ::= INTEGER (-150..400,...)
-- PCCPCH-power = power * 10
-- If power <= -15 PCCPCH shall be set to -150
-- If power >= 40 PCCPCH shall be set to 400
-- Unit dBm, Range -15dBm .. +40 dBm, Step +0.1dB

PCP-Length ::= ENUMERATED{
    v0,
    v8
}

PDSCH-CodeMapping ::= SEQUENCE {
```

```
    dl-ScramblingCode               DL-ScramblingCode,
    signallingMethod                    CHOICE {
        code-Range                      PDSCH-CodeMapping-PDSCH-CodeMappingInformationList,
        tFCI-Range                      PDSCH-CodeMapping-DSCH-MappingInformationList,
        explicit                            PDSCH-CodeMapping-PDSCH-CodeInformationList,
        ...,
        replace                         PDSCH-CodeMapping-ReplacedPDSCH-CodeInformationList
    },
    iE-Extensions                           ProtocolExtensionContainer  { { PDSCH-CodeMapping-ExtIEs} }              OPTIONAL,
    ...
}

PDSCH-CodeMapping-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDSCH-CodeMapping-CodeNumberComp ::= INTEGER (0..maxCodeNrComp-1)

PDSCH-CodeMapping-SpreadingFactor ::= ENUMERATED {
    v4,
    v8,
    v16,
    v32,
    v64,
    v128,
    v256,
    ...
}

PDSCH-CodeMapping-PDSCH-CodeMappingInformationList ::= SEQUENCE (SIZE (1..maxNrOfCodeGroups)) OF
    SEQUENCE {
        spreadingFactor             PDSCH-CodeMapping-SpreadingFactor,
        multi-CodeInfo              PDSCH-Multi-CodeInfo,
        start-CodeNumber                PDSCH-CodeMapping-CodeNumberComp,
        stop-CodeNumber             PDSCH-CodeMapping-CodeNumberComp,
        iE-Extensions                   ProtocolExtensionContainer  { { PDSCH-CodeMapping-PDSCH-CodeMappingInformationList-ExtIEs} }    OPTIONAL,
    ...
}

PDSCH-CodeMapping-PDSCH-CodeMappingInformationList-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDSCH-CodeMapping-DSCH-MappingInformationList ::= SEQUENCE (SIZE (1..maxNrOfTFCIGroups)) OF
    SEQUENCE {
        maxTFCI-field2-Value            PDSCH-CodeMapping-MaxTFCI-Field2-Value,
        spreadingFactor             PDSCH-CodeMapping-SpreadingFactor,
        multi-CodeInfo              PDSCH-Multi-CodeInfo,
        codeNumber                  PDSCH-CodeMapping-CodeNumberComp,
        iE-Extensions                   ProtocolExtensionContainer  { { PDSCH-CodeMapping-DSCH-MappingInformationList-ExtIEs} }   OPTIONAL,
    ...
}
```

```
PDSCH-CodeMapping-DSCH-MappingInformationList-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDSCH-CodeMapping-MaxTFCI-Field2-Value ::= INTEGER (1..1023)

PDSCH-CodeMapping-PDSCH-CodeInformationList ::= SEQUENCE (SIZE (1..maxNrOfTFCI2Combs)) OF
    SEQUENCE {
        spreadingFactor             PDSCH-CodeMapping-SpreadingFactor,
        multi-CodeInfo              PDSCH-Multi-CodeInfo,
        codeNumber                  PDSCH-CodeMapping-CodeNumberComp,
        iE-Extensions                   ProtocolExtensionContainer  { { PDSCH-CodeMapping-PDSCH-CodeInformationList-ExtIEs} }     OPTIONAL,
    ...
}

PDSCH-CodeMapping-PDSCH-CodeInformationList-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDSCH-CodeMapping-ReplacedPDSCH-CodeInformationList ::= SEQUENCE (SIZE (1..maxNrOfTFCI2Combs)) OF
    SEQUENCE {
        tfci-Field2                 TFCS-MaxTFCI-field2-Value,
        spreadingFactor             PDSCH-CodeMapping-SpreadingFactor,
        multi-CodeInfo              PDSCH-Multi-CodeInfo,
        codeNumber                  PDSCH-CodeMapping-CodeNumberComp,
        iE-Extensions               ProtocolExtensionContainer { { PDSCH-CodeMapping-ReplacedPDSCH-CodeInformationList-ExtIEs} }     OPTIONAL,
    ...
}

PDSCH-CodeMapping-ReplacedPDSCH-CodeInformationList-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

PDSCH-Multi-CodeInfo ::= INTEGER (1..16)

PDSCH-ID ::= INTEGER (0..255)

PDSCHSet-ID ::= INTEGER (0..255)

PICH-Mode ::= ENUMERATED {
    v18,
    v36,
    v72,
    v144,
    ...
}

PICH-Power ::= INTEGER (-10..5)
-- Unit dB, Range -10dB .. +5dB, Step +1dB

PowerAdjustmentType ::= ENUMERATED {
    none,
    common,
```

```
    individual
}

PowerOffset ::= INTEGER (0..24)
-- PowerOffset = offset * 0.25
-- Unit dB, Range 0dB .. +6dB, Step +0.25dB

PowerRaiseLimit ::= INTEGER (0..10)

PRACH-Midamble ::= ENUMERATED {
    inverted,
    direct,
    ...
}

PRC ::= INTEGER (-2047..2047)
--pseudo range correction; scaling factor 0.32 meters

PRCDeviation ::= ENUMERATED {
   one,
   two,
   five,
   ten,
   ...
}

PreambleSignatures ::= BIT STRING {
                                    signature15(0),
                                    signature14(1),
                                    signature13(2),
                                    signature12(3),
                                    signature11(4),
                                    signature10(5),
                                    signature9(6),
                                    signature8(7),
                                    signature7(8),
                                    signature6(9),
                                    signature5(10),
                                    signature4(11),
                                    signature3(12),
                                    signature2(13),
                                    signature1(14),
                                    signature0(15)
                                    } (SIZE (16))

PreambleThreshold ::= INTEGER (0..72)
-- 0= -36.0dB, 1= -35.5dB, ... , 72= 0.0dB

PredictedSFNSFNDeviationLimit ::=INTEGER (0..16384)
PredictedTUTRANGPSDeviationLimit ::= INTEGER (0..1048575)

Pre-emptionCapability ::= ENUMERATED {
    shall-not-trigger-pre-emption,
```

```
    may-trigger-pre-emption
}

Pre-emptionVulnerability ::= ENUMERATED {
    not-pre-emptable,
    pre-emptable
}

PrimaryCPICH-Power ::= INTEGER(-100..500)
-- step 0.1 (Range –10.0..50.0) Unit is dBm

PrimaryScramblingCode ::= INTEGER (0..511)

PriorityLevel               ::= INTEGER (0..15)
-- 0 = spare, 1 = highest priority, ...14 = lowest priority and 15 = no priority

PropagationDelay ::= INTEGER (0..255)
-- Unit: chips, step size 3 chips
-- example: 0 = 0chip, 1 = 3chips

SCH-TimeSlot ::= INTEGER (0..6)

PunctureLimit ::= INTEGER (0..15)
-- 0: 40%; 1: 44%; ... 14: 96%; 15: 100%

PUSCH-ID ::= INTEGER (0..255)

PUSCHSet-ID ::= INTEGER (0..255)

-- ========================================
--  Q
-- ========================================

QE-Selector ::= ENUMERATED {
    selected,
    non-selected
}

-- ========================================
--  R
-- ========================================

RACH-SlotFormat ::= ENUMERATED {
    v0,
    v1,
    v2,
    v3,
    ...
}

RACH-SubChannelNumbers ::= BIT STRING {
                                    subCh11(0),
                                    subCh10(1),
```

```
                                    subCh9(2),
                                    subCh8(3),
                                    subCh7(4),
                                    subCh6(5),
                                    subCh5(6),
                                    subCh4(7),
                                    subCh3(8),
                                    subCh2(9),
                                    subCh1(10),
                                    subCh0(11)
                                    } (SIZE (12))

RL-Specific-DCH-Info ::= SEQUENCE (SIZE (1..maxNrOfDCHs)) OF RL-Specific-DCH-Info-Item

RL-Specific-DCH-Info-Item ::= SEQUENCE {
    dCH-id                  DCH-ID,
    bindingID               BindingID                                                   OPTIONAL,
    transportlayeraddress   TransportLayerAddress                                       OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { { RL-Specific-DCH-Info-Item-ExtIEs} }  OPTIONAL,
    ...
}

RL-Specific-DCH-Info-Item-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}


Range-Correction-Rate ::= INTEGER (-127..127)
-- scaling factor 0.032 m/s

ReferenceClockAvailability ::= ENUMERATED {
    available,
    notAvailable
}

ReferenceSFNoffset ::= INTEGER (0..255)

RepetitionLength ::= INTEGER (1..63)

RepetitionPeriod ::= ENUMERATED {
    v1,
    v2,
    v4,
    v8,
    v16,
    v32,
    v64,
    ...
}

RepetitionNumber0 ::= INTEGER (0..255)

RepetitionNumber1 ::= INTEGER (1..256)
```

```
RefTFCNumber ::= INTEGER (0..3)

ReportCharacteristics ::= CHOICE {
    onDemand                NULL,
    periodic                ReportCharacteristicsType-ReportPeriodicity,
    event-a             ReportCharacteristicsType-EventA,
    event-b             ReportCharacteristicsType-EventB,
    event-c             ReportCharacteristicsType-EventC,
    event-d             ReportCharacteristicsType-EventD,
    event-e             ReportCharacteristicsType-EventE,
    event-f             ReportCharacteristicsType-EventF,
    ...,
    extension-ReportCharacteristics     Extension-ReportCharacteristics
}

Extension-ReportCharacteristics ::= ProtocolIE-Single-Container {{ Extension-ReportCharacteristicsIE }}

Extension-ReportCharacteristicsIE NBAP-PROTOCOL-IES ::= {
    { ID id-ReportCharacteristicsType-OnModification    CRITICALITY reject  TYPE ReportCharacteristicsType-OnModification   PRESENCE mandatory }
}

ReportCharacteristicsType-EventA ::= SEQUENCE {
    measurementThreshold            ReportCharacteristicsType-MeasurementThreshold,
    measurementHysteresisTime       ReportCharacteristicsType-ScaledMeasurementHysteresisTime                       OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { ReportCharacteristicsType-EventA-ExtIEs} }       OPTIONAL,
        ...
    }

ReportCharacteristicsType-EventA-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

ReportCharacteristicsType-EventB ::= SEQUENCE {
    measurementThreshold            ReportCharacteristicsType-MeasurementThreshold,
    measurementHysteresisTime       ReportCharacteristicsType-ScaledMeasurementHysteresisTime                       OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { ReportCharacteristicsType-EventB-ExtIEs} }       OPTIONAL,
        ...
    }

ReportCharacteristicsType-EventB-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

ReportCharacteristicsType-EventC ::= SEQUENCE {
    measurementIncreaseThreshold    ReportCharacteristicsType-MeasurementIncreaseDecreaseThreshold,
    measurementChangeTime           ReportCharacteristicsType-ScaledMeasurementChangeTime,
    iE-Extensions                   ProtocolExtensionContainer { { ReportCharacteristicsType-EventC-ExtIEs} }       OPTIONAL,
        ...
    }

ReportCharacteristicsType-EventC-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
```

```
}

ReportCharacteristicsType-EventD ::= SEQUENCE {
    measurementDecreaseThreshold    ReportCharacteristicsType-MeasurementIncreaseDecreaseThreshold,
    measurementChangeTime           ReportCharacteristicsType-ScaledMeasurementChangeTime,
    iE-Extensions                   ProtocolExtensionContainer { { ReportCharacteristicsType-EventD-ExtIEs} }         OPTIONAL,
        ...
    }

ReportCharacteristicsType-EventD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

ReportCharacteristicsType-EventE ::= SEQUENCE {
    measurementThreshold1           ReportCharacteristicsType-MeasurementThreshold,
    measurementThreshold2           ReportCharacteristicsType-MeasurementThreshold              OPTIONAL,
    measurementHysteresisTime       ReportCharacteristicsType-ScaledMeasurementHysteresisTime   OPTIONAL,
    reportPeriodicity               ReportCharacteristicsType-ReportPeriodicity                 OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { ReportCharacteristicsType-EventE-ExtIEs} }         OPTIONAL,
        ...
    }

ReportCharacteristicsType-EventE-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

ReportCharacteristicsType-EventF ::= SEQUENCE {
    measurementThreshold1           ReportCharacteristicsType-MeasurementThreshold,
    measurementThreshold2           ReportCharacteristicsType-MeasurementThreshold              OPTIONAL,
    measurementHysteresisTime       ReportCharacteristicsType-ScaledMeasurementHysteresisTime   OPTIONAL,
    reportPeriodicity               ReportCharacteristicsType-ReportPeriodicity                 OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { ReportCharacteristicsType-EventF-ExtIEs} }         OPTIONAL,
        ...
    }

ReportCharacteristicsType-EventF-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

ReportCharacteristicsType-OnModification ::= SEQUENCE {
    measurementThreshold            ReportCharacteristicsType-MeasurementThreshold,
    iE-Extensions                   ProtocolExtensionContainer { { ReportCharacteristicsType-OnModification-ExtIEs} }    OPTIONAL,
        ...
    }

ReportCharacteristicsType-OnModification-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

ReportCharacteristicsType-MeasurementIncreaseDecreaseThreshold ::= CHOICE {
    received-total-wide-band-power                          Received-total-wide-band-power-Value-IncrDecrThres,
    transmitted-carrier-power       Transmitted-Carrier-Power-Value,
    ackowledged-prach-preambles         Acknowledged-PRACH-preambles-Value,
```

```
    uL-TimeslotISCP                 UL-TimeslotISCP-Value-IncrDecrThres,
    sir                         SIR-Value-IncrDecrThres,
    sir-error                   SIR-Error-Value-IncrDecrThres,
    transmitted-code-power          Transmitted-Code-Power-Value-IncrDecrThres,
    rscp                            RSCP-Value-IncrDecrThres,
    round-trip-time                 Round-Trip-Time-IncrDecrThres,
    acknowledged-PCPCH-access-preambles     Acknowledged-PCPCH-access-preambles,
    detected-PCPCH-access-preambles         Detected-PCPCH-access-preambles,
    ...
}

ReportCharacteristicsType-MeasurementThreshold ::= CHOICE {
    received-total-wide-band-power                          Received-total-wide-band-power-Value,
    transmitted-carrier-power       Transmitted-Carrier-Power-Value,
    ackowledged-prach-preambles         Acknowledged-PRACH-preambles-Value,
    uL-TimeslotISCP                 UL-TimeslotISCP-Value,
    sir                         SIR-Value,
    sir-error                   SIR-Error-Value,
    transmitted-code-power          Transmitted-Code-Power-Value,
    rscp                            RSCP-Value,
    rx-timing-deviation             Rx-Timing-Deviation-Value,
    round-trip-time                 Round-Trip-Time-Value,
    acknowledged-PCPCH-access-preambles     Acknowledged-PCPCH-access-preambles,
    detected-PCPCH-access-preambles         Detected-PCPCH-access-preambles,
    ...,
    extension-ReportCharacteristicsType-MeasurementThreshold        Extension-ReportCharacteristicsType-MeasurementThreshold
}

Extension-ReportCharacteristicsType-MeasurementThreshold    ::= ProtocolIE-Single-Container {{ Extension-ReportCharacteristicsType-
MeasurementThresholdIE }}

Extension-ReportCharacteristicsType-MeasurementThresholdIE NBAP-PROTOCOL-IES ::= {
    { ID id-TUTRANGPSMeasurementThresholdInformation    CRITICALITY reject  TYPE TUTRANGPSMeasurementThresholdInformation   PRESENCE mandatory }|
    { ID id-SFNSFNMeasurementThresholdInformation   CRITICALITY reject  TYPE SFNSFNMeasurementThresholdInformation    PRESENCE mandatory }
}

ReportCharacteristicsType-ScaledMeasurementChangeTime ::= CHOICE {
    msec                MeasurementChangeTime-Scaledmsec,
    ...
}

MeasurementChangeTime-Scaledmsec ::= INTEGER (1..6000,...)
-- MeasurementChangeTime-Scaledmsec = Time * 10
-- Unit ms, Range 10ms .. 60000ms(1min), Step 10ms

ReportCharacteristicsType-ScaledMeasurementHysteresisTime ::= CHOICE {
    msec                MeasurementHysteresisTime-Scaledmsec,
    ...
}

MeasurementHysteresisTime-Scaledmsec ::= INTEGER (1..6000,...)
-- MeasurementHysteresisTime-Scaledmsec = Time * 10
-- Unit ms, Range 10ms .. 60000ms(1min), Step 10ms
```

```
ReportCharacteristicsType-ReportPeriodicity ::= CHOICE {
    msec                ReportPeriodicity-Scaledmsec,
    min                 ReportPeriodicity-Scaledmin,
    ...
}

ReportPeriodicity-Scaledmsec ::= INTEGER (1..6000,...)
-- ReportPeriodicity-msec = ReportPeriodicity * 10
-- Unit ms, Range 10ms .. 60000ms(1min), Step 10ms

ReportPeriodicity-Scaledmin ::= INTEGER (1..60,...)
-- Unit min, Range 1min .. 60min(hour), Step 1min

ReportPeriodicity-Scaledhour ::= INTEGER (1..24,...)
-- Unit hour, Range 1hour .. 24hours(day), Step 1hour

ResourceOperationalState ::= ENUMERATED {
    enabled,
    disabled
}

CommonTransportChannel-InformationResponse ::= SEQUENCE {
    commonTransportChannelID            CommonTransportChannelID,
    bindingID                           BindingID               OPTIONAL,
    transportLayerAddress               TransportLayerAddress   OPTIONAL,
    iE-Extensions                       ProtocolExtensionContainer  { { CommonTransportChannel-InformationResponse-ExtIEs} }   OPTIONAL,
    ...
}

CommonTransportChannel-InformationResponse-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

LimitedPowerIncrease ::= ENUMERATED {
    used,
    not-used
}

RL-ID ::= INTEGER (0..31)

RL-Set-ID               ::= INTEGER (0..31)

Round-Trip-Time-IncrDecrThres ::= INTEGER(0..32766)

RNC-ID                  ::= INTEGER (0..4095)

Round-Trip-Time-Value ::= INTEGER(0..32767)
-- According to mapping in [22]

RSCP-Value ::= INTEGER (0..127)
-- According to mapping in [23]
```

```
RSCP-Value-IncrDecrThres ::= INTEGER (0..126)

Received-total-wide-band-power-Value ::= INTEGER(0..621)
-- According to mapping in [22]/[23]

Received-total-wide-band-power-Value-IncrDecrThres ::= INTEGER (0..620)

RequestedDataValueInformation ::= CHOICE {
    informationAvailable        InformationAvailable,
    informationnotAvailable     InformationnotAvailable
}

InformationAvailable::= SEQUENCE {
    requesteddataValue      RequestedDataValue,
    ie-Extensions           ProtocolExtensionContainer { { InformationAvailableItem-ExtIEs} }                    OPTIONAL,
    ...
}


InformationAvailableItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

InformationnotAvailable ::= NULL

RequestedDataValue ::= SEQUENCE {
    dgps-corrections     DGPSCorrections  OPTIONAL,
    gps-navandrecovery   GPS-NavigationModel-and-TimeRecovery   OPTIONAL,
    gps-ionos-model      GPS-Ionospheric-Model  OPTIONAL,
    gps-utc-model        GPS-UTC-Model          OPTIONAL,
    gps-almanac          GPS-Almanac            OPTIONAL,
    gps-rt-integrity     GPS-RealTime-Integrity  OPTIONAL,
    gpsrxpos             GPS-RX-POS              OPTIONAL,
    ...
}

Rx-Timing-Deviation-Value ::= INTEGER (0..8191)

Rx-Timing-Deviation-Value-LCR ::= INTEGER (0..255)

-- ========================================
--  S
-- ========================================

AdjustmentPeriod            ::= INTEGER(1..256)
-- Unit Frame

SAT-ID ::= INTEGER (0..63)
```

```
SAT-Info-Almanac ::= SEQUENCE (SIZE (1..maxNoSat)) OF SAT-Info-Almanac-Item

SAT-Info-Almanac-Item ::= SEQUENCE {
    sat-id             SAT-ID,
    gps-e-alm          BIT STRING (SIZE (16)),
    gps-toa-alm        BIT STRING (SIZE (8)),
    gps-delta-I-alm    BIT STRING (SIZE (16)),
    omegadot-alm       BIT STRING (SIZE (16)),
    svhealth-alm       BIT STRING (SIZE (8)),
    gps-a-sqrt-alm     BIT STRING (SIZE (24)),
    omegazero-alm      BIT STRING (SIZE (24)),
    m-zero-alm         BIT STRING (SIZE (24)),
    gps-omega-alm      BIT STRING (SIZE (24)),
    gps-af-zero-alm    BIT STRING (SIZE (11)),
    gps-af-one-alm     BIT STRING (SIZE (11)),
    ie-Extensions      ProtocolExtensionContainer { { SAT-Info-Almanac-Item-ExtIEs} }       OPTIONAL,
   ...
}

SAT-Info-Almanac-Item-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

SAT-Info-DGPSCorrections ::= SEQUENCE (SIZE (1..maxNoSat)) OF SAT-Info-DGPSCorrections-Item

SAT-Info-DGPSCorrections-Item ::= SEQUENCE {
    sat-id                              SAT-ID,
    iode-dgps                           BIT STRING (SIZE (8)),
    udre                                UDRE,
    prc                                 PRC,
    range-correction-rate               Range-Correction-Rate,
    ie-Extensions                       ProtocolExtensionContainer { { SAT-Info-DGPSCorrections-Item-ExtIEs} }  OPTIONAL,
   ...
}

SAT-Info-DGPSCorrections-Item-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

SATInfo-RealTime-Integrity ::= SEQUENCE (SIZE (1..maxNoSat)) OF SAT-Info-RealTime-Integrity-Item

SAT-Info-RealTime-Integrity-Item ::= SEQUENCE {
  bad-sat-id       SAT-ID,
  ie-Extensions    ProtocolExtensionContainer { { SAT-Info-RealTime-Integrity-Item-ExtIEs} }                      OPTIONAL,
   ...
}

SAT-Info-RealTime-Integrity-Item-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
ScaledAdjustmentRatio           ::= INTEGER(0..100)
-- AdjustmentRatio  = ScaledAdjustmentRatio / 100

MaxAdjustmentStep           ::= INTEGER(1..10)
-- Unit Slot

ScramblingCodeNumber ::= INTEGER (0..15)

SecondaryCCPCH-SlotFormat ::= INTEGER(0..17,...)

Segment-Type ::= ENUMERATED {
        first-segment,
        first-segment-short,
        subsequent-segment,
        last-segment,
        last-segment-short,
        complete-SIB,
        complete-SIB-short,
        ...
}

S-FieldLength ::= ENUMERATED {
        v1,
        v2,
        ...
}

SFN ::= INTEGER (0..4095)

SFNSFN-FDD ::= INTEGER (0..614399)

SFNSFN-TDD ::= INTEGER (0..40961)

SFNSFNChangeLimit ::= INTEGER (0..16384)

SFNSFNDriftRate ::= INTEGER (-100..100)

SFNSFNDriftRateQuality ::= INTEGER (0..100)

SFNSFNMeasurementThresholdInformation::= SEQUENCE {
    sFNSFNChangeLimit                   SFNSFNChangeLimit                   OPTIONAL,
    predictedSFNSFNDeviationLimit       PredictedSFNSFNDeviationLimit       OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { SFNSFNMeasurementThresholdInformation-ExtIEs} }    OPTIONAL,
    ...
}

SFNSFNMeasurementThresholdInformation-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
SFNSFNMeasurementValueInformation ::= SEQUENCE {
    successfullNeighbouringCellSFNSFNObservedTimeDifferenceMeasurementInformation      SEQUENCE (SIZE(1..maxNrOfMeasNCell)) OF
        SEQUENCE {
            uC-Id                       UC-Id,
            sFNSFNValue     SFNSFNValue,
            sFNSFNQuality       SFNSFNQuality                   OPTIONAL,
            sFNSFNDriftRate     SFNSFNDriftRate,
            sFNSFNDriftRateQuality      SFNSFNDriftRateQuality,
            sFNSFNTimeStampInformation              SFNSFNTimeStampInformation,
            iE-Extensions       ProtocolExtensionContainer { { SuccessfullNeighbouringCellSFNSFNObservedTimeDifferenceMeasurementInformationItem-
ExtIEs} }       OPTIONAL,
            ...
        },
    unsuccessfullNeighbouringCellSFNSFNObservedTimeDifferenceMeasurementInformation     SEQUENCE (SIZE(0..maxNrOfMeasNCell-1)) OF
        SEQUENCE {
            uC-Id                       UC-Id,
            iE-Extensions       ProtocolExtensionContainer { { UnsuccessfullNeighbouringCellSFNSFNObservedTimeDifferenceMeasurementInformationItem-
ExtIEs} }       OPTIONAL,
                ...
        },
    iE-Extensions       ProtocolExtensionContainer { { SFNSFNMeasurementValueInformationItem-ExtIEs} }                OPTIONAL,
    ...
}

SFNSFNMeasurementValueInformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

SuccessfullNeighbouringCellSFNSFNObservedTimeDifferenceMeasurementInformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UnsuccessfullNeighbouringCellSFNSFNObservedTimeDifferenceMeasurementInformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

SFNSFNQuality ::= INTEGER (0..1048575)

ShutdownTimer ::= INTEGER (1..3600)
-- Unit sec

SIB-Originator ::= ENUMERATED {
    nodeB,
    cRNC,
    ...
}

SIR-Error-Value ::= INTEGER (0..125)
```

```
SFNSFNTimeStampInformation ::= CHOICE {
    sFNSFNTimeStamp-FDD     SFN,
    sFNSFNTimeStamp-TDD     SFNSFNTimeStamp-TDD,
    ...}

SFNSFNTimeStamp-TDD::= SEQUENCE {
    sFN                 SFN,
    timeSlot            TimeSlot,
    iE-Extensions                   ProtocolExtensionContainer { { SFNSFNTimeStamp-ExtIEs} }                        OPTIONAL,
    ...
}

SFNSFNTimeStamp-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

SFNSFNValue ::= CHOICE {
    sFNSFN-FDD      SFNSFN-FDD,
    sFNSFN-TDD      SFNSFN-TDD,
    ...
}

SIR-Error-Value-IncrDecrThres ::= INTEGER (0..124)

SIR-Value ::= INTEGER (0..63)
-- According to mapping in [22]/[23]

SIR-Value-IncrDecrThres ::= INTEGER (0..62)

SpecialBurstScheduling ::= INTEGER (1..256)

SSDT-Cell-Identity ::= ENUMERATED {a, b, c, d, e, f, g, h}

SSDT-CellID-Length ::= ENUMERATED {
    short,
    medium,
    long
}

SSDT-Indication ::= ENUMERATED {
    ssdt-active-in-the-UE,
    ssdt-not-active-in-the-UE
}

Start-Of-Audit-Sequence-Indicator ::= ENUMERATED {
    start-of-audit-sequence,
    not-start-of-audit-sequence
}
```

```
STTD-Indicator ::= ENUMERATED {
    active,
    inactive,
    ...
}

SSDT-SupportIndicator ::= ENUMERATED {
    sSDT-Supported,
    sSDT-not-supported
}

SyncCase ::= INTEGER (1..2,...)

SYNCDlCodeId ::= INTEGER (1..32,...)

SyncFrameNumber ::= INTEGER (1..10)

SynchronisationReportCharacteristics ::= SEQUENCE {
    synchronisationReportCharacteristicsType    SynchronisationReportCharacteristicsType,
    synchronisationReportCharactThreExc SynchronisationReportCharactThreExc     OPTIONAL
        -- Thie IE shall be included if the synchronisationReportCharacteristicsType IE is set to “thresholdExceeding”.
}

SynchronisationReportCharactThreExc::=  SEQUENCE (SIZE (1..maxNrOfCellSyncBursts)) OF SynchronisationReportCharactThreInfoItem

SynchronisationReportCharactThreInfoItem ::= SEQUENCE {
    syncFrameNumber             SyncFrameNumber,
    cellSyncBurstInformation    SEQUENCE (SIZE (1.. maxNrOfReceptsPerSyncFrame)) OF SynchronisationReportCharactCellSyncBurstInfoItem,
    iE-Extensions               ProtocolExtensionContainer { { SynchronisationReportCharactThreInfoItem-ExtIEs } }    OPTIONAL,
    ...
}

SynchronisationReportCharactThreInfoItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

SynchronisationReportCharactCellSyncBurstInfoItem ::= SEQUENCE {
    cellSyncBurstCode               CellSyncBurstCode,
    cellSyncBurstCodeShift          CellSyncBurstCodeShift,
    cellSyncBurstTiming             CellSyncBurstTiming             OPTIONAL,
    cellSyncBurstTimingThreshold    CellSyncBurstTimingThreshold    OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { SynchronisationReportCharactCellSyncBurstInfoItem-ExtIEs } }   OPTIONAL,
    ...
}

SynchronisationReportCharactCellSyncBurstInfoItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

SynchronisationReportCharacteristicsType ::= ENUMERATED {
    frameRelated,
    sFNperiodRelated,
    cycleLengthRelated,
```

```
    thresholdExceeding,
    frequencyAcquisitionCompleted,
    ...
}

SynchronisationReportType ::= ENUMERATED {
    initialPhase,
    steadyStatePhase,
    lateEntrantCell,
    frequencyAcquisition,
    ...
}

-- ========================================
--  T
-- ========================================

T-Cell ::= ENUMERATED {
    v0,
    v1,
    v2,
    v3,
    v4,
    v5,
    v6,
    v7,
    v8,
    v9
}

T-RLFAILURE ::= INTEGER (0..255)
-- Unit seconds, Range 0s .. 25.5s, Step 0.1s

TDD-ChannelisationCode ::= ENUMERATED {
    chCode1div1,
    chCode2div1,
    chCode2div2,
    chCode4div1,
    chCode4div2,
    chCode4div3,
    chCode4div4,
    chCode8div1,
    chCode8div2,
    chCode8div3,
    chCode8div4,
    chCode8div5,
    chCode8div6,
    chCode8div7,
    chCode8div8,
    chCode16div1,
    chCode16div2,
    chCode16div3,
    chCode16div4,
```

```
    chCode16div5,
    chCode16div6,
    chCode16div7,
    chCode16div8,
    chCode16div9,
    chCode16div10,
    chCode16div11,
    chCode16div12,
    chCode16div13,
    chCode16div14,
    chCode16div15,
    chCode16div16,
    ...
}

TDD-ChannelisationCodeLCR ::= SEQUENCE {
    tDD-ChannelisationCode          TDD-ChannelisationCode,
    modulation                      Modulation, -- Modulation options for 1.28Mcps TDD in contrast to 3.84Mcps TDD
    ...
}

TDD-DL-Code-Information ::= SEQUENCE (SIZE (1..maxNrOfDPCHs)) OF TDD-DL-Code-InformationItem

TDD-DL-Code-InformationItem  ::= SEQUENCE {
    dPCH-ID                             DPCH-ID,
    tdd-ChannelisationCode              TDD-ChannelisationCode,
    iE-Extensions                       ProtocolExtensionContainer { { TDD-DL-Code-InformationItem-ExtIEs} }      OPTIONAL,
    ...
}

TDD-DL-Code-InformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TDD-DL-Code-LCR-Information ::= SEQUENCE (SIZE (1..maxNrOfDPCHLCRs)) OF TDD-DL-Code-LCR-InformationItem

TDD-DL-Code-LCR-InformationItem ::= SEQUENCE {
    dPCH-ID                             DPCH-ID,
    tdd-ChannelisationCodeLCR           TDD-ChannelisationCodeLCR,
    iE-Extensions                       ProtocolExtensionContainer { { TDD-DL-Code-LCR-InformationItem-ExtIEs} }     OPTIONAL,
    ...
}

TDD-DL-Code-LCR-InformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TDD-DPCHOffset ::= CHOICE {
    initialOffset       INTEGER (0..255),
    noinitialOffset     INTEGER (0..63)
}

TDD-PhysicalChannelOffset ::= INTEGER (0..63)
```

```
TDD-TPC-DownlinkStepSize ::= ENUMERATED {
    step-size1,
    step-size2,
    step-size3,
    ...
}

TransportFormatCombination-Beta ::= CHOICE {
    signalledGainFactors        SEQUENCE {
        gainFactor                  CHOICE {
            fdd                         SEQUENCE {
                betaC                       BetaCD,
                betaD                       BetaCD,
                iE-Extensions       ProtocolExtensionContainer { { GainFactorFDD-ExtIEs } }     OPTIONAL,
                ...
            },
            tdd                         BetaCD,
            ...
        },
        refTFCNumber                RefTFCNumber    OPTIONAL,
        iE-Extensions           ProtocolExtensionContainer { { SignalledGainFactors-ExtIEs } }                      OPTIONAL,
        ...
    },
    computedGainFactors             RefTFCNumber,
    ...
}

GainFactorFDD-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

SignalledGainFactors-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TDD-UL-Code-Information ::= SEQUENCE (SIZE (1..maxNrOfDPCHs)) OF TDD-UL-Code-InformationItem

TDD-UL-Code-InformationItem ::= SEQUENCE {
    dPCH-ID                                 DPCH-ID,
    tdd-ChannelisationCode                  TDD-ChannelisationCode,
    iE-Extensions                           ProtocolExtensionContainer { { TDD-UL-Code-InformationItem-ExtIEs} }      OPTIONAL,
    ...
}

TDD-UL-Code-InformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TDD-UL-Code-LCR-Information ::= SEQUENCE (SIZE (1..maxNrOfDPCHLCRs)) OF TDD-UL-Code-LCR-InformationItem

TDD-UL-Code-LCR-InformationItem ::= SEQUENCE {
    dPCH-ID                                 DPCH-ID,
```

```
    tdd-ChannelisationCodeLCR               TDD-ChannelisationCodeLCR,
    iE-Extensions                           ProtocolExtensionContainer { { TDD-UL-Code-LCR-InformationItem-ExtIEs} }     OPTIONAL,
    ...
}

TDD-UL-Code-LCR-InformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TFCI-Coding ::= ENUMERATED {
    v4,
    v8,
    v16,
    v32,
    ...
}

TFCI-Presence ::= ENUMERATED {
    present,
    not-present
}

TFCI-SignallingMode ::= SEQUENCE {
    tFCI-SignallingOption       TFCI-SignallingMode-TFCI-SignallingOption,
    splitType               TFCI-SignallingMode-SplitType               OPTIONAL,
    -- This IE shall be present if the TFCI signalling option is split --
    lengthOfTFCI2               TFCI-SignallingMode-LengthOfTFCI2           OPTIONAL,
    -- This IE shall be present if the split type is logical --
    iE-Extensions               ProtocolExtensionContainer { { TFCI-SignallingMode-ExtIEs} }                        OPTIONAL,
    ...
}

TFCI-SignallingMode-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TFCI-SignallingMode-LengthOfTFCI2 ::= INTEGER (1..10)

TFCI-SignallingMode-SplitType ::= ENUMERATED {
    hard,
    logical
}

TFCI-SignallingMode-TFCI-SignallingOption ::= ENUMERATED {
    normal,
    split
}

TFCI2-BearerInformationResponse ::= SEQUENCE {
    bindingID                                   BindingID,
    transportLayerAddress                       TransportLayerAddress,
    iE-Extensions                               ProtocolExtensionContainer { { TFCI2-BearerInformationResponse-ExtIEs} }   OPTIONAL,
    ...
```

```
}

TFCI2-BearerInformationResponse-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}


TGD                 ::= INTEGER (0|15..269)
-- 0 = Undefined, only one transmission gap in the transmission gap pattern sequence


TGPRC               ::= INTEGER (0..511)
-- 0 = infinity


TGPSID              ::= INTEGER (1.. maxTGPS)

TGSN                ::= INTEGER (0..14)

TimeSlot ::= INTEGER (0..14)

TimeSlotDirection ::= ENUMERATED {
    ul,
    dl,
    ...
}

TimeSlotLCR ::= INTEGER (0..6)

TimeSlotStatus ::= ENUMERATED {
    active,
    not-active,
    ...
}

TimingAdjustmentValue ::= CHOICE {
    initialPhase        INTEGER (0..255),
    steadyStatePhase    INTEGER (0..1048575)
}

TimingAdvanceApplied ::= ENUMERATED {
    yes,
    no
}
-- For 1.28Mcps TDD TimingAdvanceApplied = No

ToAWE ::= INTEGER (0..2559)
-- Unit ms

ToAWS ::= INTEGER (0..1279)
-- Unit ms
```

```
Transmission-Gap-Pattern-Sequence-Information ::= SEQUENCE (SIZE (1..maxTGPS)) OF
    SEQUENCE {
        tGPSID          TGPSID,
        tGSN            TGSN,
        tGL1            GapLength,
        tGL2            GapLength   OPTIONAL,
        tGD             TGD,
        tGPL1           GapDuration,
        tGPL2           GapDuration OPTIONAL,
        uL-DL-mode      UL-DL-mode,
        downlink-Compressed-Mode-Method     Downlink-Compressed-Mode-Method     OPTIONAL,
            -- This IE shall be present if the UL/DL mode IE is set to "DL only" or "UL/DL"
        uplink-Compressed-Mode-Method       Uplink-Compressed-Mode-Method       OPTIONAL,
            -- This IE shall be present if the UL/DL mode IE is set to "UL only" or "UL/DL"
        dL-FrameType        DL-FrameType,
        delta-SIR1          DeltaSIR,
        delta-SIR-after1    DeltaSIR,
        delta-SIR2          DeltaSIR    OPTIONAL,
        delta-SIR-after2    DeltaSIR    OPTIONAL,
        iE-Extensions           ProtocolExtensionContainer { {Transmission-Gap-Pattern-Sequence-Information-ExtIEs} } OPTIONAL,
        ...
    }

Transmission-Gap-Pattern-Sequence-Information-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TransmissionGapPatternSequenceCodeInformation   ::= ENUMERATED{
   code-change,
   nocode-change
}

Transmitted-Carrier-Power-Value ::= INTEGER(0..100)
-- According to mapping in [4]/[5]

Transmitted-Code-Power-Value ::= INTEGER (0..127)
-- According to mapping in [4]/[5]

Transmitted-Code-Power-Value-IncrDecrThres ::= INTEGER (0..112,...)

TransmissionDiversityApplied ::= BOOLEAN
-- true: applied, false: not applied
```

```
TransmitDiversityIndicator ::= ENUMERATED {
    active,
    inactive
}

TFCS ::= SEQUENCE {
    tFCSvalues                  CHOICE {
        no-Split-in-TFCI            TFCS-TFCSList,
        split-in-TFCI               SEQUENCE {
            transportFormatCombination-DCH      TFCS-DCHList,
            signallingMethod                    CHOICE {
                tFCI-Range                      TFCS-MapingOnDSCHList,
                explicit                            TFCS-DSCHList,
                ...
            },
            iE-Extensions                       ProtocolExtensionContainer { { Split-in-TFCI-ExtIEs } }             OPTIONAL,
            ...
        },
    ...
    },
    iE-Extensions       ProtocolExtensionContainer  { { TFCS-ExtIEs} }      OPTIONAL,
    ...
}

Split-in-TFCI-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TFCS-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TFCS-TFCSList ::= SEQUENCE (SIZE (1..maxNrOfTFCs)) OF
    SEQUENCE {
        cTFC                TFCS-CTFC,
        tFC-Beta        TransportFormatCombination-Beta     OPTIONAL,
        iE-Extensions       ProtocolExtensionContainer  { { TFCS-TFCSList-ExtIEs} }     OPTIONAL,
    ...
}

TFCS-TFCSList-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TFCS-CTFC ::= CHOICE {
    ctfc2bit                            INTEGER (0..3),
    ctfc4bit                            INTEGER (0..15),
    ctfc6bit                            INTEGER (0..63),
    ctfc8bit                            INTEGER (0..255),
    ctfc12bit                           INTEGER (0..4095),
    ctfc16bit                           INTEGER (0..65535),
    ctfcmaxbit                          INTEGER (0..maxCTFC)
}
```

```
TFCS-DCHList ::= SEQUENCE (SIZE (1..maxNrOfTFCI1Combs)) OF
    SEQUENCE {
        cTFC                TFCS-CTFC,
        iE-Extensions       ProtocolExtensionContainer  { { TFCS-DCHList-ExtIEs} }      OPTIONAL,
    ...
}

TFCS-DCHList-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TFCS-MapingOnDSCHList ::= SEQUENCE (SIZE (1..maxNrOfTFCIGroups)) OF
    SEQUENCE {
        maxTFCI-field2-Value        TFCS-MaxTFCI-field2-Value,
        cTFC-DSCH               TFCS-CTFC,
        iE-Extensions               ProtocolExtensionContainer  { { TFCS-MapingOnDSCHList-ExtIEs} }                    OPTIONAL,
    ...
}

TFCS-MapingOnDSCHList-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TFCS-MaxTFCI-field2-Value ::= INTEGER (1..maxNrOfTFCI2Combs-1)

TFCS-DSCHList ::= SEQUENCE (SIZE (1..maxNrOfTFCI2Combs)) OF
    SEQUENCE {
        cTFC-DSCH               TFCS-CTFC,
        iE-Extensions               ProtocolExtensionContainer  { { TFCS-DSCHList-ExtIEs} }     OPTIONAL,
    ...
}

TFCS-DSCHList-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TransportBearerRequestIndicator ::= ENUMERATED {
    bearerRequested,
    bearerNotRequested,
    ...
}

TransportFormatSet ::= SEQUENCE {
    dynamicParts            TransportFormatSet-DynamicPartList,
    semi-staticPart         TransportFormatSet-Semi-staticPart,
    iE-Extensions           ProtocolExtensionContainer  { { TransportFormatSet-ExtIEs} }        OPTIONAL,
    ...
}

TransportFormatSet-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
TransportFormatSet-DynamicPartList ::= SEQUENCE (SIZE (1..maxNrOfTFs)) OF
    SEQUENCE {
        nrOfTransportBlocks         TransportFormatSet-NrOfTransportBlocks,
        transportBlockSize          TransportFormatSet-TransportBlockSize       OPTIONAL,
        -- This IE shall be present if the Number of Transport Blocks IE is set to a value greater than 0
        mode                        TransportFormatSet-ModeDP,
        iE-Extensions               ProtocolExtensionContainer  { { TransportFormatSet-DynamicPartList-ExtIEs} }      OPTIONAL,
        ...
    }

TransportFormatSet-DynamicPartList-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TDD-TransportFormatSet-ModeDP ::= SEQUENCE {
    transmissionTimeIntervalInformation     TransmissionTimeIntervalInformation     OPTIONAL,
    -- This IE shall be present if the Transmission Time Interval IE in the Semi-static Transport Format Information IE is set to “dynamic”
    iE-Extensions                           ProtocolExtensionContainer { {TDD-TransportFormatSet-ModeDP-ExtIEs} } OPTIONAL,
        ...
    }

TDD-TransportFormatSet-ModeDP-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TransmissionTimeIntervalInformation ::= SEQUENCE (SIZE (1..maxTTI-count)) OF
    SEQUENCE {
        transmissionTimeInterval        TransportFormatSet-TransmissionTimeIntervalDynamic,
    iE-Extensions                       ProtocolExtensionContainer { { TransmissionTimeIntervalInformation-ExtIEs} }     OPTIONAL,
    ...
}

TransmissionTimeIntervalInformation-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TransportFormatSet-Semi-staticPart ::= SEQUENCE {
    transmissionTimeInterval            TransportFormatSet-TransmissionTimeIntervalSemiStatic,
    channelCoding                   TransportFormatSet-ChannelCodingType,
    codingRate                      TransportFormatSet-CodingRate               OPTIONAL,
    -- This IE shall be present if the Type of channel coding IE is set to 'convolutional' or 'turbo'
    rateMatcingAttribute            TransportFormatSet-RateMatchingAttribute,
    cRC-Size                        TransportFormatSet-CRC-Size,
    mode                            TransportFormatSet-ModeSSP  ,
    iE-Extensions                   ProtocolExtensionContainer { { TransportFormatSet-Semi-staticPart-ExtIEs} }       OPTIONAL,
    ...
}

TransportFormatSet-Semi-staticPart-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}
```

```
TransportFormatSet-ChannelCodingType ::= ENUMERATED {
    no-coding,
    convolutional-coding,
    turbo-coding,
    ...
}

TransportFormatSet-CodingRate ::= ENUMERATED {
    half,
    third,
    ...
}

TransportFormatSet-CRC-Size ::= ENUMERATED {
    v0,
    v8,
    v12,
    v16,
    v24,
    ...
}

TransportFormatSet-ModeDP ::= CHOICE {
    tdd                 TDD-TransportFormatSet-ModeDP,
    notApplicable               NULL,
    ...
}

TransportFormatSet-ModeSSP ::= CHOICE {
    tdd             TransportFormatSet-SecondInterleavingMode,
    notApplicable               NULL,
    ...
}

TransportFormatSet-NrOfTransportBlocks ::= INTEGER (0..512)

TransportFormatSet-RateMatchingAttribute ::= INTEGER (1..maxRateMatching)

TransportFormatSet-SecondInterleavingMode ::= ENUMERATED {
    frame-rlated,
    timeSlot-related,
    ...
}

TransportFormatSet-TransmissionTimeIntervalDynamic ::= ENUMERATED {
    msec-10,
    msec-20,
    msec-40,
    msec-80,
    ...
}

TransportFormatSet-TransmissionTimeIntervalSemiStatic ::= ENUMERATED {
```

```
    msec-10,
    msec-20,
    msec-40,
    msec-80,
    dynamic,
    ...,
    msec-5
}

TransportFormatSet-TransportBlockSize ::= INTEGER (0..5000)

TransportLayerAddress ::= BIT STRING (SIZE (1..160, ...))

TSTD-Indicator ::= ENUMERATED {
    active,
    inactive
}

TUTRANGPS ::= INTEGER (0..37158911999999)

TUTRANGPSChangeLimit ::= INTEGER (0..1048575)

TUTRANGPSDriftRate ::= INTEGER (-50..50)
TUTRANGPSDriftRateQuality ::= INTEGER (0..50)

TUTRANGPSAccuracyClass ::= ENUMERATED {
    accuracy-class-A,
    accuracy-class-B,
    accuracy-class-C,
    ...
}

TUTRANGPSMeasurementThresholdInformation ::= SEQUENCE {
    tUTRANGPSChangeLimit                    TUTRANGPSChangeLimit                    OPTIONAL,
    predictedTUTRANGPSDeviationLimit        PredictedTUTRANGPSDeviationLimit        OPTIONAL,
    iE-Extensions                   ProtocolExtensionContainer { { TUTRANGPSMeasurementThresholdInformation-ExtIEs} }    OPTIONAL,
    ...
}

TUTRANGPSMeasurementThresholdInformation-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TUTRANGPSMeasurementValueInformation ::= SEQUENCE {
        tUTRANGPS                       TUTRANGPS,
        tUTRANGPSQuality                TUTRANGPSQuality,
        tUTRANGPSDriftRate              TUTRANGPSDriftRate,
        tUTRANGPSDriftRateQuality       TUTRANGPSDriftRateQuality,
        iE-Extensions                   ProtocolExtensionContainer { {TUTRANGPSMeasurementValueInformationItem-ExtIEs} }    OPTIONAL,
        ...
}
```

```
TUTRANGPSMeasurementValueInformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

TUTRANGPSQuality ::= INTEGER (0..1048574)

TypeOfError ::= ENUMERATED {
    not-understood,
    missing,
    ...
}

-- ==========================================
--  U
-- ==========================================

UARFCN ::= INTEGER (0..16383, ...)
-- corresponds to 1885.2MHz .. 2024.8MHz

UC-Id ::= SEQUENCE {
    rNC-ID              RNC-ID,
    c-ID                C-ID,
    iE-Extensions           ProtocolExtensionContainer { {UC-Id-ExtIEs} } OPTIONAL,
    ...
}
UC-Id-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UDRE ::= ENUMERATED {
    udre-minusequal-one-m,
    udre-betweenoneandfour-m,
    udre-betweenfourandeight-m,
    udre-greaterequaleight-m
}

UL-CapacityCredit ::= INTEGER (0..65535)

UL-DL-mode ::= ENUMERATED {
    ul-only,
    dl-only,
    both-ul-and-dl
}

Uplink-Compressed-Mode-Method   ::= ENUMERATED {
    sFdiv2,
    higher-layer-scheduling,
    ...
}
```

```
UL-Timeslot-Information ::= SEQUENCE (SIZE (1..maxNrOfULTSs)) OF UL-Timeslot-InformationItem

UL-Timeslot-InformationItem ::= SEQUENCE {
    timeSlot                                TimeSlot,
    midambleShiftAndBurstType               MidambleShiftAndBurstType,
    tFCI-Presence                           TFCI-Presence,
    uL-Code-InformationList                 TDD-UL-Code-Information,
    iE-Extensions                           ProtocolExtensionContainer { { UL-Timeslot-InformationItem-ExtIEs} }      OPTIONAL,
    ...
}

UL-Timeslot-InformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-TimeslotLCR-Information ::= SEQUENCE (SIZE (1..maxNrOfULTSLCRs)) OF UL-TimeslotLCR-InformationItem

UL-TimeslotLCR-InformationItem ::= SEQUENCE {
    timeSlotLCR                             TimeSlotLCR,
    midambleShiftLCR                        MidambleShiftLCR,
    tFCI-Presence                           TFCI-Presence,
    uL-Code-InformationList                 TDD-UL-Code-LCR-Information,
    iE-Extensions                           ProtocolExtensionContainer { { UL-TimeslotLCR-InformationItem-ExtIEs} }   OPTIONAL,
    ...
}

UL-TimeslotLCR-InformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-DPCCH-SlotFormat ::= INTEGER (0..5,...)

UL-SIR ::= INTEGER (-82..173)
-- According to mapping in [16]

UL-FP-Mode ::= ENUMERATED {
    normal,
    silent,
    ...
}

UL-PhysCH-SF-Variation ::= ENUMERATED {
    sf-variation-supported,
    sf-variation-not-supported
}

UL-ScramblingCode ::= SEQUENCE {
    uL-ScramblingCodeNumber         UL-ScramblingCodeNumber,
    uL-ScramblingCodeLength         UL-ScramblingCodeLength,
    iE-Extensions                   ProtocolExtensionContainer { { UL-ScramblingCode-ExtIEs } }                   OPTIONAL,
    ...
}
```

```
UL-ScramblingCode-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-ScramblingCodeNumber ::= INTEGER (0..16777215)

UL-ScramblingCodeLength ::= ENUMERATED {
    short,
    long
}

UL-TimeSlot-ISCP-Info ::= SEQUENCE (SIZE (1..maxNrOfULTSs)) OF  UL-TimeSlot-ISCP-InfoItem

UL-TimeSlot-ISCP-InfoItem ::= SEQUENCE {
    timeSlot                        TimeSlot,
    iSCP                            UL-TimeslotISCP-Value,
    iE-Extensions                   ProtocolExtensionContainer { { UL-TimeSlot-ISCP-InfoItem-ExtIEs} }               OPTIONAL,
    ...
 }

UL-TimeSlot-ISCP-InfoItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-TimeSlot-ISCP-LCR-Info ::= SEQUENCE (SIZE (1..maxNrOfULTSLCRs)) OF   UL-TimeSlot-ISCP-LCR-InfoItem

UL-TimeSlot-ISCP-LCR-InfoItem ::= SEQUENCE {
    timeSlotLCR                     TimeSlotLCR,
    iSCP                            UL-TimeslotISCP-Value,
    iE-Extensions                   ProtocolExtensionContainer { { UL-TimeSlot-ISCP-LCR-InfoItem-ExtIEs} }           OPTIONAL,
    ...
 }

UL-TimeSlot-ISCP-LCR-InfoItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

USCH-Information ::= SEQUENCE (SIZE (1..maxNrOfUSCHs)) OF USCH-InformationItem

USCH-InformationItem ::= SEQUENCE {
    uSCH-ID                                 USCH-ID,
    cCTrCH-ID                               CCTrCH-ID,
    transportFormatSet                      TransportFormatSet,
    allocationRetentionPriority             AllocationRetentionPriority,
    iE-Extensions                           ProtocolExtensionContainer { { USCH-InformationItem-ExtIEs} }           OPTIONAL,
    ...
}

USCH-InformationItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    { ID    id-bindingID                    CRITICALITY ignore      EXTENSION   BindingID                   PRESENCE    optional }|
    { ID    id-transportlayeraddress        CRITICALITY ignore      EXTENSION   TransportLayerAddress       PRESENCE    optional },
    ...
```

```
}

USCH-InformationResponse ::= SEQUENCE (SIZE (1..maxNrOfUSCHs)) OF USCH-InformationResponseItem

USCH-InformationResponseItem ::= SEQUENCE {
    uSCH-ID                                 USCH-ID,
    bindingID                               BindingID               OPTIONAL,
    transportLayerAddress                   TransportLayerAddress   OPTIONAL,
    iE-Extensions                           ProtocolExtensionContainer { { USCH-InformationResponseItem-ExtIEs} }    OPTIONAL,
    ...
}

USCH-InformationResponseItem-ExtIEs NBAP-PROTOCOL-EXTENSION ::= {
    ...
}

UL-TimeslotISCP-Value ::= INTEGER (0..127)
-- According to mapping in [23]

UL-TimeslotISCP-Value-IncrDecrThres ::= INTEGER (0..126)

USCH-ID ::= INTEGER (0..255)

-- ==========================================
--  V
-- ==========================================

-- ==========================================
--  W
-- ==========================================

-- ==========================================
--  X
-- ==========================================

-- ==========================================
--  Y
-- ==========================================

-- ==========================================
--  Z
-- ==========================================

END
```

9.3.5 Common Definitions

```
-- ************************************************************
--
-- Common definitions
--
```

```
-- **************************************************************

NBAP-CommonDataTypes {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) nbap (2) version1 (1) nbap-CommonDataTypes (3)  }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

-- **************************************************************
--
-- Extension constants
--
-- **************************************************************

maxPrivateIEs                   INTEGER ::= 65535
maxProtocolExtensions           INTEGER ::= 65535
maxProtocolIEs                  INTEGER ::= 65535

-- **************************************************************
--
-- Common Data Types
--
-- **************************************************************

Criticality     ::= ENUMERATED { reject, ignore, notify }

MessageDiscriminator    ::= ENUMERATED { common, dedicated }

Presence        ::= ENUMERATED { optional, conditional, mandatory }

PrivateIE-ID    ::= CHOICE {
    local               INTEGER (0..maxPrivateIEs),
    global              OBJECT IDENTIFIER
}

ProcedureCode   ::= INTEGER (0..255)

ProcedureID     ::= SEQUENCE {
    procedureCode           ProcedureCode,
    ddMode                  ENUMERATED { tdd, fdd, common, ... }
}

ProtocolIE-ID       ::= INTEGER (0..maxProtocolIEs)

TransactionID       ::= CHOICE {
    shortTransActionId      INTEGER (0..127),
    longTransActionId       INTEGER (0..32767)
}

TriggeringMessage   ::= ENUMERATED { initiating-message, successful-outcome, unsuccessfull-outcome, outcome }
```

```
END
```

9.3.6 Constant Definitions

```
-- **************************************************************
--
-- Constant definitions
--
-- **************************************************************

NBAP-Constants {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) nbap (2) version1 (1) nbap-Constants (4)}

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS
    ProcedureCode,
    ProtocolIE-ID
FROM NBAP-CommonDataTypes;

-- **************************************************************
--
-- Elementary Procedures
--
-- **************************************************************

id-audit                                            ProcedureCode ::= 0
id-auditRequired                                    ProcedureCode ::= 1
id-blockResource                                    ProcedureCode ::= 2
id-cellDeletion                                     ProcedureCode ::= 3
id-cellReconfiguration                              ProcedureCode ::= 4
id-cellSetup                                        ProcedureCode ::= 5
id-cellSynchronisationInitiation                    ProcedureCode ::= 39
id-cellSynchronisationReconfiguration               ProcedureCode ::= 40
id-cellSynchronisationReporting                     ProcedureCode ::= 41
id-cellSynchronisationTermination                   ProcedureCode ::= 42
id-cellSynchronisationFailure                       ProcedureCode ::= 43
id-commonMeasurementFailure                         ProcedureCode ::= 6
id-commonMeasurementInitiation                      ProcedureCode ::= 7
id-commonMeasurementReport                          ProcedureCode ::= 8
id-commonMeasurementTermination                     ProcedureCode ::= 9
id-commonTransportChannelDelete                     ProcedureCode ::= 10
id-commonTransportChannelReconfigure                ProcedureCode ::= 11
id-commonTransportChannelSetup                      ProcedureCode ::= 12
id-compressedModeCommand                            ProcedureCode ::= 14
id-dedicatedMeasurementFailure                      ProcedureCode ::= 16
id-dedicatedMeasurementInitiation                   ProcedureCode ::= 17
id-dedicatedMeasurementReport                       ProcedureCode ::= 18
```

```
id-dedicatedMeasurementTermination                    ProcedureCode ::= 19
id-downlinkPowerControl                               ProcedureCode ::= 20
id-downlinkPowerTimeslotControl                       ProcedureCode ::= 38
id-errorIndicationForCommon                           ProcedureCode ::= 35
id-errorIndicationForDedicated                        ProcedureCode ::= 21
id-informationExchangeFailure                         ProcedureCode ::= 40
id-informationExchangeInitiation                      ProcedureCode ::= 41
id-informationExchangeTermination                     ProcedureCode ::= 42
id-informationReporting                               ProcedureCode ::= 43
id-physicalSharedChannelReconfiguration               ProcedureCode ::= 37
id-privateMessageForCommon                            ProcedureCode ::= 36
id-privateMessageForDedicated                         ProcedureCode ::= 22
id-radioLinkAddition                                  ProcedureCode ::= 23
id-radioLinkDeletion                                  ProcedureCode ::= 24
id-radioLinkFailure                                   ProcedureCode ::= 25
id-radioLinkPreemption                                ProcedureCode ::= 39
id-radioLinkRestoration                               ProcedureCode ::= 26
id-radioLinkSetup                                     ProcedureCode ::= 27
id-reset                                              ProcedureCode ::= 13
id-resourceStatusIndication                           ProcedureCode ::= 28
id-cellSynchronisationAdjustment                      ProcedureCode ::= 44
id-synchronisedRadioLinkReconfigurationCancellation   ProcedureCode ::= 29
id-synchronisedRadioLinkReconfigurationCommit         ProcedureCode ::= 30
id-synchronisedRadioLinkReconfigurationPreparation    ProcedureCode ::= 31
id-systemInformationUpdate                            ProcedureCode ::= 32
id-unblockResource                                    ProcedureCode ::= 33
id-unSynchronisedRadioLinkReconfiguration             ProcedureCode ::= 34

-- **************************************************************
--
-- Lists
--
-- **************************************************************

maxNrOfCodes                INTEGER ::= 10
maxNrOfDLTSs                INTEGER ::= 15
maxNrOfDLTSLCRs             INTEGER ::= 6
maxNrOfErrors               INTEGER ::= 256
maxNrOfTFs                  INTEGER ::= 32
maxNrOfTFCs                 INTEGER ::= 1024
maxNrOfRLs                  INTEGER ::= 16
maxNrOfRLs-1                INTEGER ::= 15  -- maxNrOfRLs – 1
maxNrOfRLs-2                INTEGER ::= 14  -- maxNrOfRLs – 2
maxNrOfRLSets               INTEGER ::= maxNrOfRLs
maxNrOfDPCHs                INTEGER ::= 240
maxNrOfDPCHLCRs             INTEGER ::= 240
maxNrOfSCCPCHs              INTEGER ::= 8
maxNrOfCPCHs                INTEGER ::= 16
maxNrOfPCPCHs               INTEGER ::= 64
maxNrOfDCHs                 INTEGER ::= 128
maxNrOfDSCHs                INTEGER ::= 32
maxNrOfFACHs                INTEGER ::= 8
maxNrOfCCTrCHs              INTEGER ::= 16
```

```
maxNrOfPDSCHs               INTEGER ::= 256
maxNrOfPUSCHs               INTEGER ::= 256
maxNrOfPDSCHSets            INTEGER ::= 256
maxNrOfPRACHLCRs            INTEGER ::= 8
maxNrOfPUSCHSets            INTEGER ::= 256
maxNrOfSCCPCHLCRs           INTEGER ::= 8
maxNrOfULTSs                INTEGER ::= 15
maxNrOfULTSLCRs             INTEGER ::= 6
maxNrOfUSCHs                INTEGER ::= 32
maxAPSigNum                 INTEGER ::= 16
maxNrOfSlotFormatsPRACH     INTEGER ::= 8
maxCellinNodeB              INTEGER ::= 256
maxCCPinNodeB               INTEGER ::= 256
maxCPCHCell                 INTEGER ::= maxNrOfCPCHs
maxCTFC                     INTEGER ::= 16777215
maxLocalCellinNodeB         INTEGER ::= maxCellinNodeB
maxNoofLen                  INTEGER ::= 7
maxFPACHCell                INTEGER ::= 8
maxRACHCell                 INTEGER ::= maxPRACHCell
maxPRACHCell                INTEGER ::= 16
maxPCPCHCell                INTEGER ::= 64
maxSCCPCHCell               INTEGER ::= 32
maxSCPICHCell               INTEGER ::= 32
maxTTI-count                INTEGER ::= 4
maxIBSEG                    INTEGER ::= 16
maxIB                       INTEGER ::= 64
maxFACHCell                 INTEGER ::= 256 -- maxNrOfFACHs * maxSCCPCHCell
maxRateMatching             INTEGER ::= 256
maxCodeNrComp-1             INTEGER ::= 256
maxNrOfCellSyncBursts       INTEGER ::= 10
maxNrOfCodeGroups           INTEGER ::= 256
maxNrOfReceptsPerSyncFrame  INTEGER ::= 16
maxNrOfMeasNCell            INTEGER ::= 96
maxNrOfMeasNCell-1          INTEGER ::= 95  -- maxNrOfMeasNCell – 1
maxNrOfTFCIGroups           INTEGER ::= 256
maxNrOfTFCI1Combs           INTEGER ::= 512
maxNrOfTFCI2Combs           INTEGER ::= 1024
maxNrOfTFCI2Combs-1         INTEGER ::= 1023
maxNrOfSF                   INTEGER ::= 8
maxTGPS                     INTEGER ::= 6
maxCommunicationContext     INTEGER ::= 1048575
maxNrOfLevels               INTEGER ::= 256
maxNoSat                    INTEGER ::= 16
maxNoGPSItems               INTEGER ::= 8

-- **************************************************************
--
-- IEs
--
-- **************************************************************

id-AICH-Information                                         ProtocolIE-ID ::= 0
id-AICH-InformationItem-ResourceStatusInd                   ProtocolIE-ID ::= 1
```

```
id-BCH-Information                                  ProtocolIE-ID ::= 7
id-BCH-InformationItem-ResourceStatusInd            ProtocolIE-ID ::= 8
id-BCCH-ModificationTime                            ProtocolIE-ID ::= 9
id-BlockingPriorityIndicator                        ProtocolIE-ID ::= 10
id-Cause                                            ProtocolIE-ID ::= 13
id-CCP-InformationItem-AuditRsp                     ProtocolIE-ID ::= 14
id-CCP-InformationList-AuditRsp                     ProtocolIE-ID ::= 15
id-CCP-InformationItem-ResourceStatusInd            ProtocolIE-ID ::= 16
id-Cell-InformationItem-AuditRsp                    ProtocolIE-ID ::= 17
id-Cell-InformationItem-ResourceStatusInd           ProtocolIE-ID ::= 18
id-Cell-InformationList-AuditRsp                    ProtocolIE-ID ::= 19
id-CellParameterID                                  ProtocolIE-ID ::= 23
id-CFN                                              ProtocolIE-ID ::= 24
id-C-ID                                             ProtocolIE-ID ::= 25
id-CommonMeasurementAccuracy                        ProtocolIE-ID ::= 39
id-CommonMeasurementObjectType-CM-Rprt              ProtocolIE-ID ::= 31
id-CommonMeasurementObjectType-CM-Rqst              ProtocolIE-ID ::= 32
id-CommonMeasurementObjectType-CM-Rsp               ProtocolIE-ID ::= 33
id-CommonMeasurementType                            ProtocolIE-ID ::= 34
id-CommonPhysicalChannelID                          ProtocolIE-ID ::= 35
id-CommonPhysicalChannelType-CTCH-SetupRqstFDD      ProtocolIE-ID ::= 36
id-CommonPhysicalChannelType-CTCH-SetupRqstTDD      ProtocolIE-ID ::= 37
id-CommunicationControlPortID                       ProtocolIE-ID ::= 40
id-ConfigurationGenerationID                        ProtocolIE-ID ::= 43
id-CRNC-CommunicationContextID                      ProtocolIE-ID ::= 44
id-CriticalityDiagnostics                           ProtocolIE-ID ::= 45
id-DCHs-to-Add-FDD                                  ProtocolIE-ID ::= 48
id-DCH-AddList-RL-ReconfPrepTDD                     ProtocolIE-ID ::= 49
id-DCHs-to-Add-TDD                                  ProtocolIE-ID ::= 50
id-DCH-DeleteList-RL-ReconfPrepFDD                  ProtocolIE-ID ::= 52
id-DCH-DeleteList-RL-ReconfPrepTDD                  ProtocolIE-ID ::= 53
id-DCH-DeleteList-RL-ReconfRqstFDD                  ProtocolIE-ID ::= 54
id-DCH-DeleteList-RL-ReconfRqstTDD                  ProtocolIE-ID ::= 55
id-DCH-FDD-Information                              ProtocolIE-ID ::= 56
id-DCH-TDD-Information                              ProtocolIE-ID ::= 57
id-DCH-InformationResponse                          ProtocolIE-ID ::= 59
id-FDD-DCHs-to-Modify                               ProtocolIE-ID ::= 62
id-TDD-DCHs-to-Modify                               ProtocolIE-ID ::= 63
id-DCH-ModifyList-RL-ReconfRqstTDD                  ProtocolIE-ID ::= 65
id-DedicatedMeasurementObjectType-DM-Rprt           ProtocolIE-ID ::= 67
id-DedicatedMeasurementObjectType-DM-Rqst           ProtocolIE-ID ::= 68
id-DedicatedMeasurementObjectType-DM-Rsp            ProtocolIE-ID ::= 69
id-DedicatedMeasurementType                         ProtocolIE-ID ::= 70
id-DL-CCTrCH-InformationItem-RL-SetupRqstTDD        ProtocolIE-ID ::= 72
id-DL-CCTrCH-InformationList-RL-AdditionRqstTDD     ProtocolIE-ID ::= 73
id-DL-CCTrCH-InformationList-RL-SetupRqstTDD        ProtocolIE-ID ::= 76
id-DL-DPCH-InformationItem-RL-AdditionRqstTDD       ProtocolIE-ID ::= 77
id-DL-DPCH-InformationList-RL-SetupRqstTDD          ProtocolIE-ID ::= 79
id-DL-DPCH-Information-RL-ReconfPrepFDD             ProtocolIE-ID ::= 81
id-DL-DPCH-Information-RL-ReconfRqstFDD             ProtocolIE-ID ::= 82
id-DL-DPCH-Information-RL-SetupRqstFDD              ProtocolIE-ID ::= 83
id-DL-ReferencePowerInformationItem-DL-PC-Rqst      ProtocolIE-ID ::= 84
id-DLReferencePower                                 ProtocolIE-ID ::= 85
```

```
id-DLReferencePowerList-DL-PC-Rqst                          ProtocolIE-ID ::= 86
id-DSCH-AddItem-RL-ReconfPrepFDD                            ProtocolIE-ID ::= 87
id-DSCHs-to-Add-FDD                                         ProtocolIE-ID ::= 89
id-DSCH-DeleteItem-RL-ReconfPrepFDD                         ProtocolIE-ID ::= 91
id-DSCH-DeleteList-RL-ReconfPrepFDD                         ProtocolIE-ID ::= 93
id-DSCHs-to-Add-TDD                                         ProtocolIE-ID ::= 96
id-DSCH-Information-DeleteList-RL-ReconfPrepTDD             ProtocolIE-ID ::= 98
id-DSCH-Information-ModifyList-RL-ReconfPrepTDD             ProtocolIE-ID ::= 100
id-DSCH-InformationResponse                                 ProtocolIE-ID ::= 105
id-DSCH-FDD-Information                                     ProtocolIE-ID ::= 106
id-DSCH-TDD-Information                                     ProtocolIE-ID ::= 107
id-DSCH-ModifyItem-RL-ReconfPrepFDD                         ProtocolIE-ID ::= 108
id-DSCH-ModifyList-RL-ReconfPrepFDD                         ProtocolIE-ID ::= 112
id-End-Of-Audit-Sequence-Indicator                          ProtocolIE-ID ::= 113
id-FACH-Information                                         ProtocolIE-ID ::= 116
id-FACH-InformationItem-ResourceStatusInd                   ProtocolIE-ID ::= 117
id-FACH-ParametersList-CTCH-ReconfRqstTDD                   ProtocolIE-ID ::= 120
id-FACH-ParametersListIE-CTCH-SetupRqstFDD                  ProtocolIE-ID ::= 121
id-FACH-ParametersListIE-CTCH-SetupRqstTDD                  ProtocolIE-ID ::= 122
id-IndicationType-ResourceStatusInd                         ProtocolIE-ID ::= 123
id-Local-Cell-ID                                            ProtocolIE-ID ::= 124
id-Local-Cell-Group-InformationItem-AuditRsp                ProtocolIE-ID ::= 2
id-Local-Cell-Group-InformationItem-ResourceStatusInd       ProtocolIE-ID ::= 3
id-Local-Cell-Group-InformationItem2-ResourceStatusInd      ProtocolIE-ID ::= 4
id-Local-Cell-Group-InformationList-AuditRsp                ProtocolIE-ID ::= 5
id-Local-Cell-InformationItem-AuditRsp                      ProtocolIE-ID ::= 125
id-Local-Cell-InformationItem-ResourceStatusInd             ProtocolIE-ID ::= 126
id-Local-Cell-InformationItem2-ResourceStatusInd            ProtocolIE-ID ::= 127
id-Local-Cell-InformationList-AuditRsp                      ProtocolIE-ID ::= 128
id-AdjustmentPeriod                                         ProtocolIE-ID ::= 129
id-MaxAdjustmentStep                                        ProtocolIE-ID ::= 130
id-MaximumTransmissionPower                                 ProtocolIE-ID ::= 131
id-MeasurementFilterCoefficient                             ProtocolIE-ID ::= 132
id-MeasurementID                                            ProtocolIE-ID ::= 133
id-MessageStructure                                         ProtocolIE-ID ::= 115
id-MIB-SB-SIB-InformationList-SystemInfoUpdateRqst          ProtocolIE-ID ::= 134
id-NodeB-CommunicationContextID                             ProtocolIE-ID ::= 143
id-NeighbouringCellMeasurementInformation                   ProtocolIE-ID ::= 455
id-P-CCPCH-Information                                      ProtocolIE-ID ::= 144
id-P-CCPCH-InformationItem-ResourceStatusInd                ProtocolIE-ID ::= 145
id-P-CPICH-Information                                      ProtocolIE-ID ::= 146
id-P-CPICH-InformationItem-ResourceStatusInd                ProtocolIE-ID ::= 147
id-P-SCH-Information                                        ProtocolIE-ID ::= 148
id-PCCPCH-Information-Cell-ReconfRqstTDD                    ProtocolIE-ID ::= 150
id-PCCPCH-Information-Cell-SetupRqstTDD                     ProtocolIE-ID ::= 151
id-PCH-Parameters-CTCH-ReconfRqstTDD                        ProtocolIE-ID ::= 155
id-PCH-ParametersItem-CTCH-SetupRqstFDD                     ProtocolIE-ID ::= 156
id-PCH-ParametersItem-CTCH-SetupRqstTDD                     ProtocolIE-ID ::= 157
id-PCH-Information                                          ProtocolIE-ID ::= 158
id-PDSCH-Information-AddListIE-PSCH-ReconfRqst              ProtocolIE-ID ::= 161
id-PDSCH-Information-ModifyListIE-PSCH-ReconfRqst           ProtocolIE-ID ::= 162
id-PDSCHSets-AddList-PSCH-ReconfRqst                        ProtocolIE-ID ::= 163
id-PDSCHSets-DeleteList-PSCH-ReconfRqst                     ProtocolIE-ID ::= 164
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id-PDSCHSets-ModifyList-PSCH-ReconfRqst                    ProtocolIE-ID ::= 165
id-PICH-Information                                        ProtocolIE-ID ::= 166
id-PICH-Parameters-CTCH-ReconfRqstTDD                      ProtocolIE-ID ::= 168
id-PowerAdjustmentType                                     ProtocolIE-ID ::= 169
id-PRACH-Information                                       ProtocolIE-ID ::= 170
id-PrimaryCCPCH-Information-Cell-ReconfRqstFDD             ProtocolIE-ID ::= 175
id-PrimaryCCPCH-Information-Cell-SetupRqstFDD              ProtocolIE-ID ::= 176
id-PrimaryCPICH-Information-Cell-ReconfRqstFDD             ProtocolIE-ID ::= 177
id-PrimaryCPICH-Information-Cell-SetupRqstFDD              ProtocolIE-ID ::= 178
id-PrimarySCH-Information-Cell-ReconfRqstFDD               ProtocolIE-ID ::= 179
id-PrimarySCH-Information-Cell-SetupRqstFDD                ProtocolIE-ID ::= 180
id-PrimaryScramblingCode                                   ProtocolIE-ID ::= 181
id-SCH-Information-Cell-ReconfRqstTDD                      ProtocolIE-ID ::= 183
id-SCH-Information-Cell-SetupRqstTDD                       ProtocolIE-ID ::= 184
id-PUSCH-Information-AddListIE-PSCH-ReconfRqst             ProtocolIE-ID ::= 185
id-PUSCH-Information-ModifyListIE-PSCH-ReconfRqst          ProtocolIE-ID ::= 186
id-PUSCHSets-AddList-PSCH-ReconfRqst                       ProtocolIE-ID ::= 187
id-PUSCHSets-DeleteList-PSCH-ReconfRqst                    ProtocolIE-ID ::= 188
id-PUSCHSets-ModifyList-PSCH-ReconfRqst                    ProtocolIE-ID ::= 189
id-RACH-Information                                        ProtocolIE-ID ::= 190
id-RACH-ParametersItem-CTCH-SetupRqstFDD                   ProtocolIE-ID ::= 196
id-RACH-ParameterItem-CTCH-SetupRqstTDD                    ProtocolIE-ID ::= 197
id-ReportCharacteristics                                   ProtocolIE-ID ::= 198
id-Reporting-Object-RL-FailureInd                          ProtocolIE-ID ::= 199
id-Reporting-Object-RL-RestoreInd                          ProtocolIE-ID ::= 200
id-RL-InformationItem-DM-Rprt                              ProtocolIE-ID ::= 202
id-RL-InformationItem-DM-Rqst                              ProtocolIE-ID ::= 203
id-RL-InformationItem-DM-Rsp                               ProtocolIE-ID ::= 204
id-RL-InformationItem-RL-AdditionRqstFDD                   ProtocolIE-ID ::= 205
id-RL-informationItem-RL-DeletionRqst                      ProtocolIE-ID ::= 206
id-RL-InformationItem-RL-FailureInd                        ProtocolIE-ID ::= 207
id-RL-InformationItem-RL-PreemptRequiredInd                ProtocolIE-ID ::= 286
id-RL-InformationItem-RL-ReconfPrepFDD                     ProtocolIE-ID ::= 208
id-RL-InformationItem-RL-ReconfRqstFDD                     ProtocolIE-ID ::= 209
id-RL-InformationItem-RL-RestoreInd                        ProtocolIE-ID ::= 210
id-RL-InformationItem-RL-SetupRqstFDD                      ProtocolIE-ID ::= 211
id-RL-InformationList-RL-AdditionRqstFDD                   ProtocolIE-ID ::= 212
id-RL-informationList-RL-DeletionRqst                      ProtocolIE-ID ::= 213
id-RL-InformationList-RL-PreemptRequiredInd                ProtocolIE-ID ::= 237
id-RL-InformationList-RL-ReconfPrepFDD                     ProtocolIE-ID ::= 214
id-RL-InformationList-RL-ReconfRqstFDD                     ProtocolIE-ID ::= 215
id-RL-InformationList-RL-SetupRqstFDD                      ProtocolIE-ID ::= 216
id-RL-InformationResponseItem-RL-AdditionRspFDD            ProtocolIE-ID ::= 217
id-RL-InformationResponseItem-RL-ReconfReady               ProtocolIE-ID ::= 218
id-RL-InformationResponseItem-RL-ReconfRsp                 ProtocolIE-ID ::= 219
id-RL-InformationResponseItem-RL-SetupRspFDD               ProtocolIE-ID ::= 220
id-RL-InformationResponseList-RL-AdditionRspFDD            ProtocolIE-ID ::= 221
id-RL-InformationResponseList-RL-ReconfReady               ProtocolIE-ID ::= 222
id-RL-InformationResponseList-RL-ReconfRsp                 ProtocolIE-ID ::= 223
id-RL-InformationResponseList-RL-SetupRspFDD               ProtocolIE-ID ::= 224
id-RL-InformationResponse-RL-AdditionRspTDD                ProtocolIE-ID ::= 225
id-RL-InformationResponse-RL-SetupRspTDD                   ProtocolIE-ID ::= 226
id-RL-Information-RL-AdditionRqstTDD                       ProtocolIE-ID ::= 227
```

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id-RL-Information-RL-ReconfRqstTDD                                  ProtocolIE-ID ::= 228
id-RL-Information-RL-ReconfPrepTDD                                  ProtocolIE-ID ::= 229
id-RL-Information-RL-SetupRqstTDD                                   ProtocolIE-ID ::= 230
id-RL-ReconfigurationFailureItem-RL-ReconfFailure                   ProtocolIE-ID ::= 236
id-RL-Set-InformationItem-DM-Rprt                                   ProtocolIE-ID ::= 238
id-RL-Set-InformationItem-DM-Rsp                                    ProtocolIE-ID ::= 240
id-RL-Set-InformationItem-RL-FailureInd                             ProtocolIE-ID ::= 241
id-RL-Set-InformationItem-RL-RestoreInd                             ProtocolIE-ID ::= 242
id-S-CCPCH-Information                                              ProtocolIE-ID ::= 247
id-S-CPICH-Information                                              ProtocolIE-ID ::= 249
id-SCH-Information                                                  ProtocolIE-ID ::= 251
id-S-SCH-Information                                                ProtocolIE-ID ::= 253
id-Secondary-CCPCHListIE-CTCH-ReconfRqstTDD                         ProtocolIE-ID ::= 257
id-Secondary-CCPCH-parameterListIE-CTCH-SetupRqstTDD                ProtocolIE-ID ::= 258
id-Secondary-CCPCH-Parameters-CTCH-ReconfRqstTDD                    ProtocolIE-ID ::= 259
id-SecondaryCPICH-InformationItem-Cell-ReconfRqstFDD                ProtocolIE-ID ::= 260
id-SecondaryCPICH-InformationItem-Cell-SetupRqstFDD                 ProtocolIE-ID ::= 261
id-SecondaryCPICH-InformationList-Cell-ReconfRqstFDD                ProtocolIE-ID ::= 262
id-SecondaryCPICH-InformationList-Cell-SetupRqstFDD                 ProtocolIE-ID ::= 263
id-SecondarySCH-Information-Cell-ReconfRqstFDD                      ProtocolIE-ID ::= 264
id-SecondarySCH-Information-Cell-SetupRqstFDD                       ProtocolIE-ID ::= 265
id-SegmentInformationListIE-SystemInfoUpdate                        ProtocolIE-ID ::= 266
id-SFN                                                              ProtocolIE-ID ::= 268
id-ShutdownTimer                                                    ProtocolIE-ID ::= 269
id-Start-Of-Audit-Sequence-Indicator                                ProtocolIE-ID ::= 114
id-Successful-RL-InformationRespItem-RL-AdditionFailureFDD          ProtocolIE-ID ::= 270
id-Successful-RL-InformationRespItem-RL-SetupFailureFDD             ProtocolIE-ID ::= 271
id-SyncCase                                                         ProtocolIE-ID ::= 274
id-SyncCaseIndicatorItem-Cell-SetupRqstTDD-PSCH                     ProtocolIE-ID ::= 275
id-T-Cell                                                           ProtocolIE-ID ::= 276
id-TimeSlotConfigurationList-Cell-ReconfRqstTDD                     ProtocolIE-ID ::= 277
id-TimeSlotConfigurationList-Cell-SetupRqstTDD                      ProtocolIE-ID ::= 278
id-TransmissionDiversityApplied                                     ProtocolIE-ID ::= 279
id-TypeOfError                                                      ProtocolIE-ID ::= 508
id-UARFCNforNt                                                      ProtocolIE-ID ::= 280
id-UARFCNforNd                                                      ProtocolIE-ID ::= 281
id-UARFCNforNu                                                      ProtocolIE-ID ::= 282
id-UL-CCTrCH-InformationItem-RL-SetupRqstTDD                        ProtocolIE-ID ::= 284
id-UL-CCTrCH-InformationList-RL-AdditionRqstTDD                     ProtocolIE-ID ::= 285
id-UL-CCTrCH-InformationList-RL-SetupRqstTDD                        ProtocolIE-ID ::= 288
id-UL-DPCH-InformationItem-RL-AdditionRqstTDD                       ProtocolIE-ID ::= 289
id-UL-DPCH-InformationList-RL-SetupRqstTDD                          ProtocolIE-ID ::= 291
id-UL-DPCH-Information-RL-ReconfPrepFDD                             ProtocolIE-ID ::= 293
id-UL-DPCH-Information-RL-ReconfRqstFDD                             ProtocolIE-ID ::= 294
id-UL-DPCH-Information-RL-SetupRqstFDD                              ProtocolIE-ID ::= 295
id-Unsuccessful-RL-InformationRespItem-RL-AdditionFailureFDD        ProtocolIE-ID ::= 296
id-Unsuccessful-RL-InformationRespItem-RL-SetupFailureFDD           ProtocolIE-ID ::= 297
id-Unsuccessful-RL-InformationResp-RL-AdditionFailureTDD            ProtocolIE-ID ::= 300
id-Unsuccessful-RL-InformationResp-RL-SetupFailureTDD               ProtocolIE-ID ::= 301
id-USCH-Information-Add                                             ProtocolIE-ID ::= 302
id-USCH-Information-DeleteList-RL-ReconfPrepTDD                     ProtocolIE-ID ::= 304
id-USCH-Information-ModifyList-RL-ReconfPrepTDD                     ProtocolIE-ID ::= 306
id-USCH-InformationResponse                                         ProtocolIE-ID ::= 309
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id-USCH-Information                                          ProtocolIE-ID ::= 310
id-Active-Pattern-Sequence-Information                       ProtocolIE-ID ::= 315
id-AICH-ParametersListIE-CTCH-ReconfRqstFDD                  ProtocolIE-ID ::= 316
id-AdjustmentRatio                                           ProtocolIE-ID ::= 317
id-AP-AICH-Information                                       ProtocolIE-ID ::= 320
id-AP-AICH-ParametersListIE-CTCH-ReconfRqstFDD               ProtocolIE-ID ::= 322
id-FACH-ParametersListIE-CTCH-ReconfRqstFDD                  ProtocolIE-ID ::= 323
id-CauseLevel-PSCH-ReconfFailureTDD                          ProtocolIE-ID ::= 324
id-CauseLevel-RL-AdditionFailureFDD                          ProtocolIE-ID ::= 325
id-CauseLevel-RL-AdditionFailureTDD                          ProtocolIE-ID ::= 326
id-CauseLevel-RL-ReconfFailure                               ProtocolIE-ID ::= 327
id-CauseLevel-RL-SetupFailureFDD                             ProtocolIE-ID ::= 328
id-CauseLevel-RL-SetupFailureTDD                             ProtocolIE-ID ::= 329
id-CDCA-ICH-Information                                      ProtocolIE-ID ::= 330
id-CDCA-ICH-ParametersListIE-CTCH-ReconfRqstFDD              ProtocolIE-ID ::= 332
id-Closed-Loop-Timing-Adjustment-Mode                        ProtocolIE-ID ::= 333
id-CommonPhysicalChannelType-CTCH-ReconfRqstFDD              ProtocolIE-ID ::= 334
id-Compressed-Mode-Deactivation-Flag                         ProtocolIE-ID ::= 335
id-CPCH-Information                                          ProtocolIE-ID ::= 336
id-CPCH-Parameters-CTCH-SetupRsp                             ProtocolIE-ID ::= 342
id-CPCH-ParametersListIE-CTCH-ReconfRqstFDD                  ProtocolIE-ID ::= 343
id-DL-CCTrCH-InformationAddList-RL-ReconfPrepTDD             ProtocolIE-ID ::= 346
id-DL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD          ProtocolIE-ID ::= 347
id-DL-CCTrCH-InformationDeleteList-RL-ReconfPrepTDD          ProtocolIE-ID ::= 348
id-DL-CCTrCH-InformationDeleteList-RL-ReconfRqstTDD          ProtocolIE-ID ::= 349
id-DL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD          ProtocolIE-ID ::= 350
id-DL-CCTrCH-InformationModifyList-RL-ReconfPrepTDD          ProtocolIE-ID ::= 351
id-DL-CCTrCH-InformationModifyList-RL-ReconfRqstTDD          ProtocolIE-ID ::= 352
id-DL-DPCH-InformationAddListIE-RL-ReconfPrepTDD             ProtocolIE-ID ::= 353
id-DL-DPCH-InformationModify-AddListIE-RL-ReconfPrepTDD      ProtocolIE-ID ::= 355
id-DL-DPCH-InformationModify-DeleteListIE-RL-ReconfPrepTDD   ProtocolIE-ID ::= 356
id-DL-DPCH-InformationModify-ModifyListIE-RL-ReconfPrepTDD   ProtocolIE-ID ::= 357
id-DL-TPC-Pattern01Count                                     ProtocolIE-ID ::= 358
id-DPC-Mode                                                  ProtocolIE-ID ::= 450
id-DPCHConstant                                              ProtocolIE-ID ::= 359
id-DSCH-FDD-Common-Information                               ProtocolIE-ID ::= 94
id-EnhancedDSCHPC                                            ProtocolIE-ID ::= 110
id-EnhancedDSCHPCIndicator                                   ProtocolIE-ID ::= 111
id-FACH-ParametersList-CTCH-SetupRsp                         ProtocolIE-ID ::= 362
id-Limited-power-increase-information-Cell-SetupRqstFDD      ProtocolIE-ID ::= 369
id-PCH-Parameters-CTCH-SetupRsp                              ProtocolIE-ID ::= 374
id-PCH-ParametersItem-CTCH-ReconfRqstFDD                     ProtocolIE-ID ::= 375
id-PCPCH-Information                                         ProtocolIE-ID ::= 376
id-PICH-ParametersItem-CTCH-ReconfRqstFDD                    ProtocolIE-ID ::= 380
id-PRACHConstant                                             ProtocolIE-ID ::= 381
id-PRACH-ParametersListIE-CTCH-ReconfRqstFDD                 ProtocolIE-ID ::= 383
id-PUSCHConstant                                             ProtocolIE-ID ::= 384
id-RACH-Parameters-CTCH-SetupRsp                             ProtocolIE-ID ::= 385
id-SSDT-CellIDforEDSCHPC                                     ProtocolIE-ID ::= 443
id-Synchronisation-Configuration-Cell-ReconfRqst             ProtocolIE-ID ::= 393
id-Synchronisation-Configuration-Cell-SetupRqst              ProtocolIE-ID ::= 394
id-Transmission-Gap-Pattern-Sequence-Information             ProtocolIE-ID ::= 395
id-UL-CCTrCH-InformationAddList-RL-ReconfPrepTDD             ProtocolIE-ID ::= 396
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id-UL-CCTrCH-InformationDeleteItem-RL-ReconfRqstTDD                ProtocolIE-ID ::= 397
id-UL-CCTrCH-InformationDeleteList-RL-ReconfPrepTDD                ProtocolIE-ID ::= 398
id-UL-CCTrCH-InformationDeleteList-RL-ReconfRqstTDD                ProtocolIE-ID ::= 399
id-UL-CCTrCH-InformationModifyItem-RL-ReconfRqstTDD                ProtocolIE-ID ::= 400
id-UL-CCTrCH-InformationModifyList-RL-ReconfPrepTDD                ProtocolIE-ID ::= 401
id-UL-CCTrCH-InformationModifyList-RL-ReconfRqstTDD                ProtocolIE-ID ::= 402
id-UL-DPCH-InformationAddListIE-RL-ReconfPrepTDD                   ProtocolIE-ID ::= 403
id-UL-DPCH-InformationModify-AddListIE-RL-ReconfPrepTDD            ProtocolIE-ID ::= 405
id-UL-DPCH-InformationModify-DeleteListIE-RL-ReconfPrepTDD         ProtocolIE-ID ::= 406
id-UL-DPCH-InformationModify-ModifyListIE-RL-ReconfPrepTDD         ProtocolIE-ID ::= 407
id-Unsuccessful-PDSCHSetItem-PSCH-ReconfFailureTDD                 ProtocolIE-ID ::= 408
id-Unsuccessful-PUSCHSetItem-PSCH-ReconfFailureTDD                 ProtocolIE-ID ::= 409
id-CommunicationContextInfoItem-Reset                              ProtocolIE-ID ::= 412
id-CommunicationControlPortInfoItem-Reset                          ProtocolIE-ID ::= 414
id-ResetIndicator                                                  ProtocolIE-ID ::= 416
id-TFCI2-Bearer-Information-RL-SetupRqstFDD                        ProtocolIE-ID ::= 417
id-TFCI2-BearerSpecificInformation-RL-ReconfPrepFDD                ProtocolIE-ID ::= 418
id-TFCI2-BearerInformationResponse                                 ProtocolIE-ID ::= 419
id-TimingAdvanceApplied                                            ProtocolIE-ID ::= 287
id-CFNReportingIndicator                                           ProtocolIE-ID ::= 6
id-SFNReportingIndicator                                           ProtocolIE-ID ::= 11
id-InnerLoopDLPCStatus                                             ProtocolIE-ID ::= 12
id-TimeslotISCPInfo                                                ProtocolIE-ID ::= 283
id-PICH-ParametersItem-CTCH-SetupRqstTDD                           ProtocolIE-ID ::= 167
id-PRACH-ParametersItem-CTCH-SetupRqstTDD                          ProtocolIE-ID ::= 20
id-CCTrCH-InformationItem-RL-FailureInd                            ProtocolIE-ID ::= 46
id-CCTrCH-InformationItem-RL-RestoreInd                            ProtocolIE-ID ::= 47
id-CauseLevel-SyncAdjustmntFailureTDD                              ProtocolIE-ID ::= 420
id-CellAdjustmentInfo-SyncAdjustmntRqstTDD                         ProtocolIE-ID ::= 421
id-CellAdjustmentInfoItem-SyncAdjustmentRqstTDD                    ProtocolIE-ID ::= 494
id-CellSyncBurstInfoList-CellSyncReconfRqstTDD                     ProtocolIE-ID ::= 482
id-CellSyncBurstTransInit-CellSyncInitiationRqstTDD                ProtocolIE-ID ::= 422
id-CellSyncBurstMeasureInit-CellSyncInitiationRqstTDD              ProtocolIE-ID ::= 423
id-CellSyncBurstTransReconfiguration-CellSyncReconfRqstTDD         ProtocolIE-ID ::= 424
id-CellSyncBurstMeasReconfiguration-CellSyncReconfRqstTDD          ProtocolIE-ID ::= 425
id-CellSyncBurstTransInfoList-CellSyncReconfRqstTDD                ProtocolIE-ID ::= 426
id-CellSyncBurstMeasInfoList-CellSyncReconfRqstTDD                 ProtocolIE-ID ::= 427
id-CellSyncBurstTransReconfInfo-CellSyncReconfRqstTDD              ProtocolIE-ID ::= 428
id-CellSyncInfo-CellSyncReprtTDD                                   ProtocolIE-ID ::= 429
id-CSBTransmissionID                                               ProtocolIE-ID ::= 430
id-CSBMeasurementID                                                ProtocolIE-ID ::= 431
id-IntStdPhCellSyncInfoItem-CellSyncReprtTDD                       ProtocolIE-ID ::= 432
id-NCyclesPerSFNperiod                                             ProtocolIE-ID ::= 433
id-NRepetitionsPerCyclePeriod                                      ProtocolIE-ID ::= 434
id-SyncFrameNumber                                                 ProtocolIE-ID ::= 437
id-SynchronisationReportType                                       ProtocolIE-ID ::= 438
id-SynchronisationReportCharacteristics                            ProtocolIE-ID ::= 439
id-Unsuccessful-cell-InformationRespItem-SyncAdjustmntFailureTDD   ProtocolIE-ID ::= 440
id-LateEntranceCellSyncInfoItem-CellSyncReprtTDD                   ProtocolIE-ID ::= 119
id-ReferenceClockAvailability                                      ProtocolIE-ID ::= 435
id-ReferenceSFNoffset                                              ProtocolIE-ID ::= 436
id-InformationExchangeID                                           ProtocolIE-ID ::= 444
id-InformationExchangeObjectType-InfEx-Rqst                        ProtocolIE-ID ::= 445
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id-InformationType                                                ProtocolIE-ID ::= 446
id-InformationReportCharacteristics                               ProtocolIE-ID ::= 447
id-InformationExchangeObjectType-InfEx-Rsp                        ProtocolIE-ID ::= 448
id-InformationExchangeObjectType-InfEx-Rprt                       ProtocolIE-ID ::= 449
id-IPDLParameter-Information-Cell-ReconfRqstFDD                   ProtocolIE-ID ::= 451
id-IPDLParameter-Information-Cell-SetupRqstFDD                    ProtocolIE-ID ::= 452
id-IPDLParameter-Information-Cell-ReconfRqstTDD                   ProtocolIE-ID ::= 453
id-IPDLParameter-Information-Cell-SetupRqstTDD                    ProtocolIE-ID ::= 454
id-DL-DPCH-LCR-Information-RL-SetupRqstTDD                        ProtocolIE-ID ::= 74
id-DL-DPCH-LCR-InformationList-RL-SetupRqstTDD                    ProtocolIE-ID ::= 75
id-DwPCH-LCR-Information                                          ProtocolIE-ID ::= 78
id-DwPCH-LCR-Information-AuditRsp                                 ProtocolIE-ID ::= 80
id-DwPCH-LCR-InformationList-AuditRsp                             ProtocolIE-ID ::= 90
id-DwPCH-LCR-Information-Cell-SetupRqstTDD                        ProtocolIE-ID ::= 97
id-DwPCH-LCR-Information-Cell-ReconfRqstTDD                       ProtocolIE-ID ::= 99
id-DwPCH-LCR-Information-ResourceStatusInd                        ProtocolIE-ID ::= 101
id-maxFACH-Power-LCR-CTCH-SetupRqstTDD                            ProtocolIE-ID ::= 154
id-maxFACH-Power-LCR-CTCH-ReconfRqstTDD                           ProtocolIE-ID ::= 174
id-FPACH-LCR-Information                                          ProtocolIE-ID ::= 290
id-FPACH-LCR-Information-AuditRsp                                 ProtocolIE-ID ::= 292
id-FPACH-LCR-InformationList-AuditRsp                             ProtocolIE-ID ::= 310
id-FPACH-LCR-InformationList-ResourceStatusInd                    ProtocolIE-ID ::= 311
id-FPACH-LCR-Parameters-CTCH-SetupRqstTDD                         ProtocolIE-ID ::= 312
id-FPACH-LCR-ParametersItem-CTCH-SetupRqstTDD                     ProtocolIE-ID ::= 313
id-FPACH-LCR-Parameters-CTCH-ReconfRqstTDD                        ProtocolIE-ID ::= 314
id-PCCPCH-LCR-Information-Cell-SetupRqstTDD                       ProtocolIE-ID ::= 456
id-PCH-Power-LCR-CTCH-SetupRqstTDD                                ProtocolIE-ID ::= 457
id-PCH-Power-LCR-CTCH-ReconfRqstTDD                               ProtocolIE-ID ::= 458
id-PICH-LCR-Parameters-CTCH-SetupRqstTDD                          ProtocolIE-ID ::= 459
id-PICH-LCR-ParametersItem-CTCH-SetupRqstTDD                      ProtocolIE-ID ::= 460
id-PRACH-LCR-ParametersList-CTCH-SetupRqstTDD                     ProtocolIE-ID ::= 461
id-PRACH-LCR-ParametersListIE-CTCH-SetupRqstTDD                   ProtocolIE-ID ::= 462
id-RL-InformationResponse-LCR-RL-SetupRspTDD                      ProtocolIE-ID ::= 463
id-Secondary-CCPCH-LCR-parameterListIE-CTCH-SetupRqstTDD          ProtocolIE-ID ::= 464
id-Secondary-CCPCH-LCR-parameterList-CTCH-SetupRqstTDD            ProtocolIE-ID ::= 465
id-TimeSlot                                                       ProtocolIE-ID ::= 495
id-TimeSlotConfigurationList-LCR-Cell-ReconfRqstTDD               ProtocolIE-ID ::= 466
id-TimeSlotConfigurationList-LCR-Cell-SetupRqstTDD                ProtocolIE-ID ::= 467
id-TimeslotISCP-LCR-InfoList-RL-SetupRqstTDD                      ProtocolIE-ID ::= 468
id-TimeSlotLCR-CM-Rqst                                            ProtocolIE-ID ::= 469
id-UL-DPCH-LCR-Information-RL-SetupRqstTDD                        ProtocolIE-ID ::= 470
id-UL-DPCH-LCR-InformationList-RL-SetupRqstTDD                    ProtocolIE-ID ::= 471
id-DL-DPCH-InformationItem-LCR-RL-AdditionRqstTDD                 ProtocolIE-ID ::= 472
id-UL-DPCH-InformationItem-LCR-RL-AdditionRqstTDD                 ProtocolIE-ID ::= 473
id-TimeslotISCP-InformationList-LCR-RL-AdditionRqstTDD            ProtocolIE-ID ::= 474
id-DL-DPCH-LCR-InformationAddList-RL-ReconfPrepTDD                ProtocolIE-ID ::= 475
id-DL-DPCH-LCR-InformationAddListIE-RL-ReconfPrepTDD              ProtocolIE-ID ::= 476
id-DL-DPCH-LCR-InformationModify-AddList-RL-ReconfPrepTDD         ProtocolIE-ID ::= 477
id-DL-DPCH-LCR-InformationModify-AddListIE-RL-ReconfPrepTDD       ProtocolIE-ID ::= 478
id-DL-Timeslot-LCR-InformationModify-ModifyList-RL-ReconfPrepTDD  ProtocolIE-ID ::= 479
id-TimeslotISCPInfoList-LCR-DL-PC-RqstTDD                         ProtocolIE-ID ::= 480
id-UL-DPCH-LCR-InformationAddListIE-RL-ReconfPrepTDD              ProtocolIE-ID ::= 481
id-UL-DPCH-LCR-InformationModify-AddList                          ProtocolIE-ID ::= 483
```

```
id-UL-DPCH-LCR-InformationModify-AddListIE-RL-ReconfPrepTDD        ProtocolIE-ID ::= 484
id-UL-TimeslotLCR-Information-RL-ReconfPrepTDD                     ProtocolIE-ID ::= 485
id-UL-SIRTarget                                                    ProtocolIE-ID ::= 510
id-PDSCH-AddInformation-LCR-PSCH-ReconfRqst                        ProtocolIE-ID ::= 486
id-PDSCH-AddInformation-LCR-AddListIE-PSCH-ReconfRqst              ProtocolIE-ID ::= 487
id-PDSCH-ModifyInformation-LCR-PSCH-ReconfRqst                     ProtocolIE-ID ::= 488
id-PDSCH-ModifyInformation-LCR-ModifyListIE-PSCH-ReconfRqst        ProtocolIE-ID ::= 489
id-PUSCH-AddInformation-LCR-PSCH-ReconfRqst                        ProtocolIE-ID ::= 490
id-PUSCH-AddInformation-LCR-AddListIE-PSCH-ReconfRqst              ProtocolIE-ID ::= 491
id-PUSCH-ModifyInformation-LCR-PSCH-ReconfRqst                     ProtocolIE-ID ::= 492
id-PUSCH-ModifyInformation-LCR-ModifyListIE-PSCH-ReconfRqst        ProtocolIE-ID ::= 493
id-timeslotInfo-CellSyncInitiationRqstTDD                          ProtocolIE-ID ::= 496
id-SyncReportType-CellSyncReprtTDD                                 ProtocolIE-ID ::= 497
id-PUSCH-Info-DM-Rqst                                              ProtocolIE-ID ::= 505
id-PUSCH-Info-DM-Rsp                                               ProtocolIE-ID ::= 506
id-PUSCH-Info-DM-Rprt                                              ProtocolIE-ID ::= 507
id-InitDL-Power                                                    ProtocolIE-ID ::= 509
id-cellSyncBurstRepetitionPeriod                                   ProtocolIE-ID ::= 511
id-ReportCharacteristicsType-OnModification                        ProtocolIE-ID ::= 512
id-SFNSFNMeasurementValueInformation                               ProtocolIE-ID ::= 513
id-SFNSFNMeasurementThresholdInformation                           ProtocolIE-ID ::= 514
id-TUTRANGPSMeasurementValueInformation                            ProtocolIE-ID ::= 515
id-TUTRANGPSMeasurementThresholdInformation                        ProtocolIE-ID ::= 516
id-Rx-Timing-Deviation-Value-LCR                                   ProtocolIE-ID ::= 520
id-RL-InformationResponse-LCR-RL-AdditionRspTDD                    ProtocolIE-ID ::= 51
id-bindingID                                                       ProtocolIE-ID ::= xxx
id-RL-Specific-DCH-Info                                            ProtocolIE-ID ::= xxx
id-transportlayeraddress                                           ProtocolIE-ID ::= xxx


END
```

9.3.7 Container Definitions

```
-- **************************************************************
--
-- Container definitions
--
-- **************************************************************

NBAP-Containers {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) nbap (2) version1 (1) nbap-Containers (5) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

-- **************************************************************
--
-- IE parameter types from other modules.
```

```
--
-- **************************************************************

IMPORTS
    maxProtocolExtensions,
    maxPrivateIEs,
    maxProtocolIEs,
    Criticality,
    Presence,
    PrivateIE-ID,
    ProtocolIE-ID
FROM NBAP-CommonDataTypes;

-- **************************************************************
--
-- Class Definition for Protocol IEs
--
-- **************************************************************

NBAP-PROTOCOL-IES ::= CLASS {
    &id     ProtocolIE-ID           UNIQUE,
    &criticality    Criticality,
    &Value,
    &presence   Presence
}
WITH SYNTAX {
    ID      &id
    CRITICALITY &criticality
    TYPE        &Value
    PRESENCE    &presence
}

-- **************************************************************
--
-- Class Definition for Protocol IEs
--
-- **************************************************************

NBAP-PROTOCOL-IES-PAIR ::= CLASS {
    &id         ProtocolIE-ID           UNIQUE,
    &firstCriticality   Criticality,
    &FirstValue,
    &secondCriticality  Criticality,
    &SecondValue,
    &presence       Presence
}
WITH SYNTAX {
    ID          &id
    FIRST CRITICALITY   &firstCriticality
    FIRST TYPE      &FirstValue
    SECOND CRITICALITY  &secondCriticality
    SECOND TYPE     &SecondValue
    PRESENCE        &presence
```

```
}

-- **************************************************************
--
-- Class Definition for Protocol Extensions
--
-- **************************************************************

NBAP-PROTOCOL-EXTENSION ::= CLASS {
    &id     ProtocolIE-ID       UNIQUE,
    &criticality    Criticality,
    &Extension,
    &presence       Presence
}
WITH SYNTAX {
    ID      &id
    CRITICALITY &criticality
    EXTENSION   &Extension
    PRESENCE    &presence
}

-- **************************************************************
--
-- Class Definition for Private IEs
--
-- **************************************************************

NBAP-PRIVATE-IES ::= CLASS {
    &id     PrivateIE-ID,
    &criticality    Criticality,
    &Value,
    &presence       Presence
}
WITH SYNTAX {
    ID      &id
    CRITICALITY &criticality
    TYPE    &Value
    PRESENCE    &presence
}

-- **************************************************************
--
-- Container for Protocol IEs
--
-- **************************************************************

ProtocolIE-Container {NBAP-PROTOCOL-IES : IEsSetParam} ::=
    SEQUENCE (SIZE (0..maxProtocolIEs)) OF
    ProtocolIE-Field {{IEsSetParam}}

ProtocolIE-Single-Container {NBAP-PROTOCOL-IES : IEsSetParam} ::=
    ProtocolIE-Field {{IEsSetParam}}
```

```
ProtocolIE-Field {NBAP-PROTOCOL-IES : IEsSetParam} ::= SEQUENCE {
    id      NBAP-PROTOCOL-IES.&id       ({IEsSetParam}),
    criticality     NBAP-PROTOCOL-IES.&criticality  ({IEsSetParam}{@id}),
    value       NBAP-PROTOCOL-IES.&Value     ({IEsSetParam}{@id})
}

-- **************************************************************
--
-- Container for Protocol IE Pairs
--
-- **************************************************************

ProtocolIE-ContainerPair {NBAP-PROTOCOL-IES-PAIR : IEsSetParam} ::=
    SEQUENCE (SIZE (0..maxProtocolIEs)) OF
    ProtocolIE-FieldPair {{IEsSetParam}}

ProtocolIE-FieldPair {NBAP-PROTOCOL-IES-PAIR : IEsSetParam} ::= SEQUENCE {
    id              NBAP-PROTOCOL-IES-PAIR.&id          ({IEsSetParam}),
    firstCriticality        NBAP-PROTOCOL-IES-PAIR.&firstCriticality    ({IEsSetParam}{@id}),
    firstValue          NBAP-PROTOCOL-IES-PAIR.&FirstValue  ({IEsSetParam}{@id}),
    secondCriticality       NBAP-PROTOCOL-IES-PAIR.&secondCriticality   ({IEsSetParam}{@id}),
    secondValue         NBAP-PROTOCOL-IES-PAIR.&SecondValue ({IEsSetParam}{@id})
}

-- **************************************************************
--
-- Container Lists for Protocol IE Containers
--
-- **************************************************************

ProtocolIE-ContainerList {INTEGER : lowerBound, INTEGER : upperBound, NBAP-PROTOCOL-IES : IEsSetParam} ::=
    SEQUENCE (SIZE (lowerBound..upperBound)) OF
    ProtocolIE-Container {{IEsSetParam}}

ProtocolIE-ContainerPairList {INTEGER : lowerBound, INTEGER : upperBound, NBAP-PROTOCOL-IES-PAIR : IEsSetParam} ::=
    SEQUENCE (SIZE (lowerBound..upperBound)) OF
    ProtocolIE-ContainerPair {{IEsSetParam}}

-- **************************************************************
--
-- Container for Protocol Extensions
--
-- **************************************************************

ProtocolExtensionContainer {NBAP-PROTOCOL-EXTENSION : ExtensionSetParam} ::=
    SEQUENCE (SIZE (1..maxProtocolExtensions)) OF
    ProtocolExtensionField {{ExtensionSetParam}}

ProtocolExtensionField {NBAP-PROTOCOL-EXTENSION : ExtensionSetParam} ::= SEQUENCE {
    id      NBAP-PROTOCOL-EXTENSION.&id ({ExtensionSetParam}),
    criticality NBAP-PROTOCOL-EXTENSION.&criticality    ({ExtensionSetParam}{@id}),
    extensionValue  NBAP-PROTOCOL-EXTENSION.&Extension  ({ExtensionSetParam}{@id})
}
```

```
-- **************************************************************
--
-- Container for Private IEs
--
-- **************************************************************

PrivateIE-Container {NBAP-PRIVATE-IES : IEsSetParam} ::=
    SEQUENCE (SIZE (1..maxPrivateIEs)) OF
    PrivateIE-Field {{IEsSetParam}}

PrivateIE-Field {NBAP-PRIVATE-IES : IEsSetParam} ::= SEQUENCE {
    id          NBAP-PRIVATE-IES.&id
    ({IEsSetParam}),
    criticality         NBAP-PRIVATE-IES.&criticality
    ({IEsSetParam}{@id}),
    value       NBAP-PRIVATE-IES.&Value
    ({IEsSetParam}{@id})
}

END
```

3GPP TSG-RAN WG3 Meeting #27
Orlando (Fl), US, 18th – 22nd February 2002

TDoc R3-020878

CR-Form-v5

CHANGE REQUEST

⌘ **25.434** **CR** **021** ⌘ **rev** **5** ⌘ Current version: **4.2.0** ⌘

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

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

Title:	⌘	Introduction of IP Transport Option in UTRAN
Source:	⌘	R-WG3
Work item code:	⌘	ETRAN-IPtrans
Date:	⌘	2002-Feb
Category:	⌘	**B**
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)

Reason for change:	⌘	To introduce Rel5 IP Transport Option
Summary of change:	⌘	- A subsection for IP Transport Option has been added to section 4 on "Data Link Layer" - Figure 1 in section 5 has been altered to reflect now both Transport Options - Subsection 5.3 "Signalling bearer in case of IP Transport Option" has been added - Subsections 6.3 and 7.3 on signalling in case of IP Transport Option have been added - Section 8 on Interworking between ATM and IP Options with reference to TS 25.426 has been added - Abbreviations and References adapted Impact assessment towards the previous version of the specification (same release): This CR has no impact with the previous version of the specification (same release) due to no previous version is existing.
Consequences if not approved:	⌘	

Clauses affected:	⌘	2, 3, 4, 5, 6, 7, 8		
Other specs Affected:	⌘	**X** Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
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.

1 Scope

The present document shall provide a specification of the UTRAN RNC-Node B (Iub) interface Data Transport and Transport Signalling for Common Transport Channel data streams.

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] ITU-T Recommendation I.363.2 (11/2000): "B-ISDN ATM Adaptation Layer type 2".

[2] ITU-T Recommendation I.366.1 (6/98): "Segmentation and Reassembly Service Specific Convergence Sublayer for the AAL type 2".

[3] ITU-T Recommendation Q.2630.1 (12/99): "AAL type 2 Signalling Protocol (Capability Set 1)".

[4] ITU-T Recommendation Q.2110 (7/94): "B-ISDN ATM Adaptation layer – Service Specific Connection Oriented Protocol (SSCOP)".

[5] ITU-T Recommendation Q.2130 (7/94): "B-ISDN Signalling ATM Adaptation Layer – Service Specific Coordination Function for Support of Signalling at the User Network Interface (SSCF at UNI)".

[6] ITU-T Recommendation Q.2150.2 (12/99): "AAL type 2 signalling transport converter on SSCOP".

[7] ITU-T Recommendation I.361 (11/95): "B-ISDN ATM Layer Specification".

[8] ITU-T Recommendation I.630 (2/99): "ATM Protection Switching"

[9] ITU-T Recommendation Q.2630.2 (12/2000): "AAL Type 2 signalling protocol (Capability Set 2)"

[10] IETF RFC 768, “User Datagram Protocol”, August 1980

[11] IETF RFC 2460, “Internet Protocol, Version 6 (IPv6) Specification”, December 1998

[12] IETF RFC 791, "Internet Protocol", September 1981

[13] IETF RFC 2474, “Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers”, December 1998

[14] IETF RFC 1661, “The Point-to-Point Protocol (PPP)”, July 1994

[15] IETF RFC 1662, “PPP in HDLC-like Framing”, July 1994

[16] IETF RFC 2507, “IP header compression”, February 1999

[17] IETF RFC 1990, “The PPP Multilink Protocol (MP)”, August 1996

[18] IETF RFC 2686, “The Multi-Class Extension to Multi-Link PPP”, September 1999

[19] IETF RFC 2509, “IP Header Compression over PPP”, February 1999.

[20] 3GPP TS 25.401, "UTRAN Overall Description"

[21] 3GPP TS 25.426, "UTRAN Iur and Iub Interface Data Transport & Transport Signalling for DCH Data Streams"

[22] IETF RFC 3153, "PPP Multiplexing", August 2001

[23] IETF RFC 2364, "PPP over AAL5", July 1998

[24] IETF RFC 3031, "Multiprotocol Label Switching Architecture", January 2001

3 Definitions, symbols and abbreviations

3.1 Definitions

ALCAP "ALCAP" is a generic name for the transport signalling protocol used to setup and tear down transport bearers.

IP UTRAN node An UTRAN Node supporting the IP Transport Option

3.2 Symbols

3.3 Abbreviations

AAL	ATM Adaption Layer
AAL2	AAL Type 2
ATM	Asynchronous Transfer Mode
CPCH	Common Packet Channel
CPCS	Common Part Convergence Sublayer
CPS	Common Part Sublayer
DSCH	Downlink Shared Channel
FACH	Forward Access Channel
FP	Frame Protocol
HDLC	High-level Data Link Control
IP	Internet Protocol
LC	Link Characteristics
PPP	Point-to-Point Protocol
PT	Path Type
RACH	Random Access Channel
RNC	Radio Network Controller
SAAL	Signalling ATM Adaption Layer
SAR	Segmentation and Reassembly
SSCF	Service Specific Co-ordination Function
SSCOP	Service Specific Connection Oriented Protocol
SSCS	Service Specific Convergence Sublayer
SSSAR	Service Specific Segmentation and Reassembly
STC	Signalling Transport Converter
UDP	User Datagram Protocol
UMTS	Universal Mobile Telecommunication Network
UNI	User-Network Interface
USCH	Uplink Shared Channel
UTRAN	UMTS Terrestrial Radio Access Network

4 ~~ATM Layer~~Data Link Layer

4.1 ~~General~~ATM Transport Option

ATM shall be used in the transport network user plane and the transport network control plane according to I.361 [7].

4.~~2~~1.1 Protection Switching at ATM Layer

If redundancy of pathways at ATM layer between RNC and Node B is supported, it shall be implemented using ATM Protection Switching according to I.630 [8].

4.2 Data Link Layer for IP Transport Option

An RNC or Node B supporting IP Transport Option shall support the PPP protocol with HDLC framing [14], [15].

Note: This does not preclude the single implementation and use of any other L2/L1 protocols (e.g. PPPMux/AAL5/ATM [22][23], PPP/AAL2/ATM, Ethernet, MPLS/ATM [24], etc.) fulfilling the UTRAN requirements towards the upper layers.

An RNC or Node B supporting IP transport option and having interfaces connected via slow bandwidth PPP links like E1/T1/J1 shall also support IP Header Compression [16] and the PPP extensions ML/MC-PPP [17], [18]. In this case, negotiation of header compression [16] over PPP shall be performed via [19].

5 I_{ub} Data Transport for Common Transport Channel Data Streams

5.1 Introduction

This chapter specifies the transport layers that support Common Transport Channel (FACH, RACH, CPCH [FDD], PCH, DSCH, USCH [TDD]) data streams.

There are two options for protocol suites for transport of RACH, CPCH [FDD], FACH, USCH [TDD] and DSCH Iub data streams:

1) ATM Transport Option

2) IP Transport Option

The following figure 1 shows the protocol stacks of these two options:

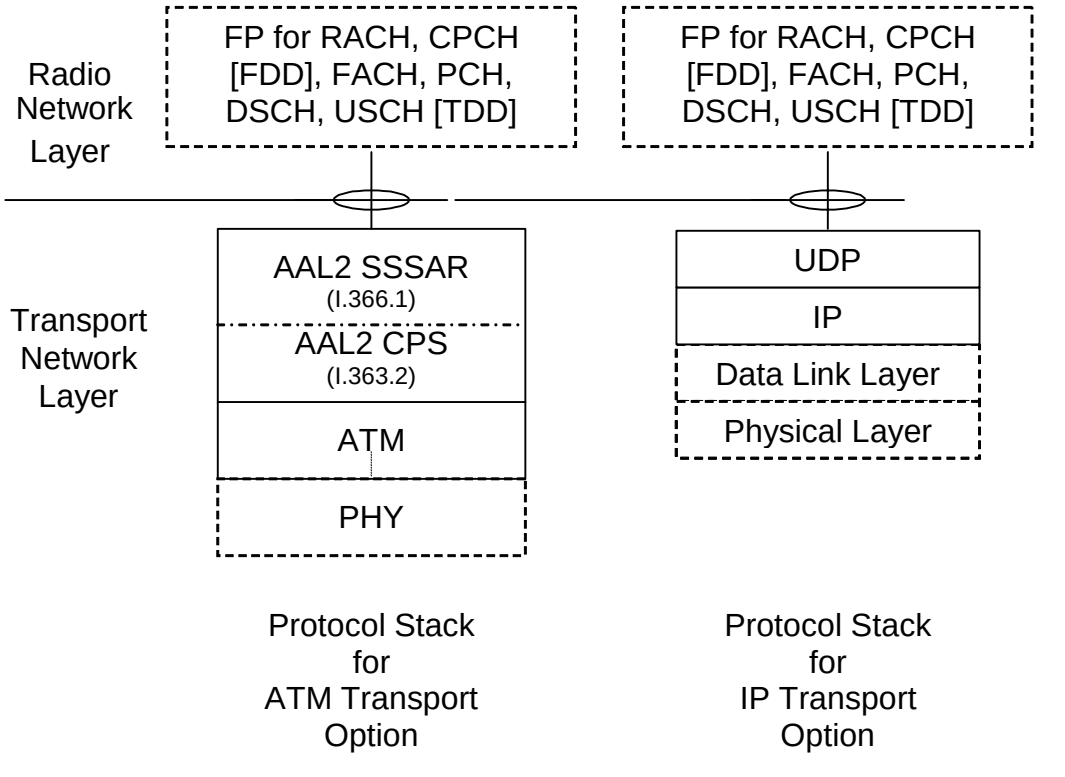
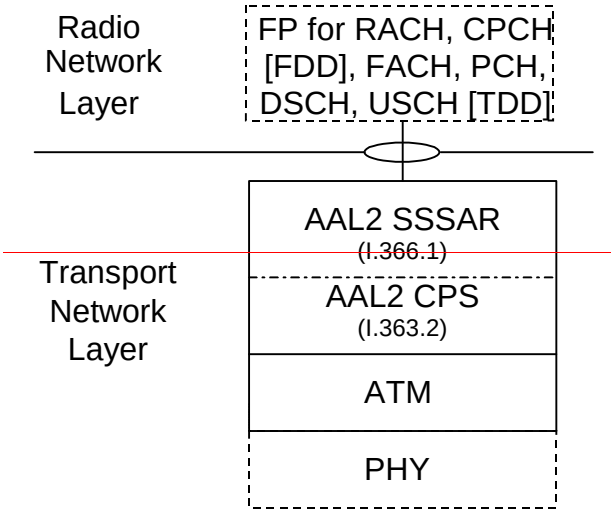


Figure 1: Protocol stack for the transport of RACH, CPCH [FDD], FACH, PCH, DSCH and USCH [TDD] Iub data streams

5.2 ~~Transport Layer~~ATM Transport Option

ATM and AAL2 (I363.2 [1] and I366.1 [2]) are used at the standard transport layer for Iub RACH, CPCH [FDD] FACH, PCH, DSCH, USCH [TDD] data streams.



~~Figure 1 shows the protocol stack for the transport of RACH, CPCH [FDD], FACH, PCH, DSCH and USCH [TDD] Iub data streams.~~

The Service Specific Segmentation and Reassembly (SSSAR) sublayer is used for the segmentation and reassembly of AAL2 SDUs (i.e. SSSAR is only considered from I366.1).

5.3 IP Transport Option

UDP [10] over IP shall be supported as the transport for RACH, CPCH [FDD], FACH, PCH, DSCH and USCH [TDD] data streams on Iub Interface. The data link layer is as specified in chapter 4.2

An IP UTRAN node shall support IPv6 [11]. The support of IPv4 [12] is optional.

Note: This does not preclude single implementation and use of IPv4.

IP dual stack is recommended for the potential transition period from IPv4 to IPv6 in the transport network.

The transport bearer is identified by the UDP port number and the IP address (source UDP port number, destination UDP port number, source IP address, destination IP address).

IP Differentiated Services code point marking [13] shall be supported. The Diffserv code point may be determined from the application parameters.

6 I_{ub} Transport Signalling for Common Transport Channel Data Streams

6.1 Introduction

This chapter specifies the transport signalling protocol(s) used to establish the user plane transport bearers. The protocol stack is shown in chapter 7 (Figure 2).

6.2 Transport Signalling in case of ATM Transport Option

Q.2630.2 as developed by ITU-T [9] is selected as the standard AAL2 signalling protocol for Iub. Q.2630.2 [9] adds new optional capabilities to Q.2630.1 [3].

If there is an AAL2 switching function in the transport network layer of the interface, the Link Characteristics parameter (LC) shall be included in the Establish Request message and in the Modification Request message of AAL2 signalling protocol.

If there is an AAL2 switching function in the transport network layer of the interface, the Path Type parameter (PT) may be included in the Establish Request message of AAL2 signalling protocol for prioritisation at ATM level.

6.3 Transport Signalling in case of IP Transport Option

An ALCAP protocol is not required in case both UTRAN Nodes (RNC and Node B) are using the IP Transport Option.

7 Signalling Bearer for Transport Signalling on I_{ub} Interface

7.1 Introduction

This chapter specifies the signalling bearer protocol stack which supports the transport signalling protocol.

7.2 Signalling Bearer in ATM Transport Option

SAAL-UNI is the standard signalling bearer for the AAL Type Signalling protocol (Q.2630.2) on Iub [4, 5]. The protocol stack is shown in Figure 2 below.

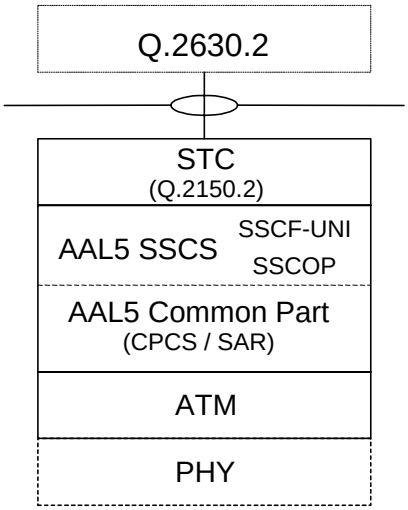


Figure 2: Transport Network Control plane protocol structure on Iub in case of ATM Transport Option

Binding ID provided by the radio network layer shall be copied in SUGR parameter of ESTABLISH.request primitive of [9].

The signalling transport converter (STC) relevant for Iub is Q.2150.2 [6]. The AAL5 Common Part contains CPCS and SAR.

7.3 Signalling Bearer in IP Transport Option

An ALCAP protocol is not required in case of both UTRAN Nodes (RNC and Node B) are using the IP Transport Option.

8 Interworking between ATM and IP Transport Options

An RNC or Node B supporting IP transport option shall provide interworking to an RNC or Node B supporting only ATM transport option. The interworking alternatives are defined in [21].

3GPP TSG-RAN WG3 Meeting #27
Orlando, Fl, USA, 18th – 22nd February 2002

TDoc R3-020836

CR-Form-v5

CHANGE REQUEST

⌘ **25.442** **CR** **002** ⌘ **rev** **1** ⌘ 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 ☐ Radio Access Network **X** Core Network ☐

Title:	⌘	Introduction of IP transport option in UTRAN
Source:	⌘	R-WG3
Work item code:	⌘	ETRAN-IPtrans
Date:	⌘	18. Feb. 2002
Category:	⌘	**B**
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)

Reason for change:	⌘	To introduce IP transport option in TS25.442
Summary of change:	⌘	Rev.0: IP transport option has been incorporated into the specification Rev.1: Chapter 4.3.2: Non-tunnelled ISO&M transport added. Isolated impact analysis towards the previous version (same release) of the specification: There is no previous version available.
Consequences if not approved:	⌘	IP transport feature will not be available in Rel5 for the transport in the Iur and Iub interfaces.

Clauses affected:	⌘	2, 3.2, 4.3		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
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.

1 Scope

The present document specifies the transport of implementation specific O&M signalling between Node B and the Management Platform in case that the transport is routed via the RNC.

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 TS 25.431: "UTRAN Iub interface Layer 1".

[2] 3GPP TS 25.401: "UTRAN Overall Description".

[3] ITU-T Recommendation I.363.5 (8/1996): "B-ISDN ATM Adaptation Layer Type 5 Specification".

[4] IETF RFC 2225 (4/1998): "Classical IP and ARP over ATM".

[5] IETF RFC 2684 (9/1999): "Multiprotocol Encapsulation over ATM Adaptation Layer 5".

[6] IETF RFC 791 (9/1981): "Internet Protocol".

[7] IETF RFC 2460 (12/1998): “Internet Protocol, Version 6 (IPv6) Specification”

[8] 3GPP TS 25.426: “UTRAN Iur and Iub Interface Data Transport&Transport Signalling for DCH”

3 Definitions and abbreviations

3.1 Definitions

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

Logical O&M: Logical O&M is the signalling associated with the control of logical resources owned by the RNC but physically implemented in Node B.

Implementation Specific O&M: Implementation Specific O&M functions depend on the implementation of the Node B, both for it’s hardware and software components.

3.2 Abbreviations

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

AAL5	ATM Adaptation Layer type 5
ATM	Asynchronous Transfer Mode
ARP	Address Resolution Protocol
RFC	Request For Comment

IP	Internet Protocol
O&M	Operation and Maintenance
RNC	Radio Network Controller
TNL	Transport Network Layer

4 Implementation Specific O&M Transport

4.1 Requirements

While this specification only addresses the transport of Node B Implementation Specific O&M signalling, many of the following requirements are derived from generic requirements for O&M of UMTS network elements:

- Common O&M infrastructure for all network elements.
- Independence from various data link protocols.
- Support of various higher layer protocols and applications.
- Secure transmission.
- No Impact of O&M transport on traffic transport and signalling.
- Re-use of existing transport facilities, i.e. co-existence of Iub and Implementation Specific O&M on the same bearer.

4.2 Routing

It is the responsibility of the RNC to route Implementation Specific O&M signalling traffic. The traffic exchanged over this signalling link is completely transparent to the RNC. Both RNC and Node B have to support the routing of Implementation specific O&M via the RNC.

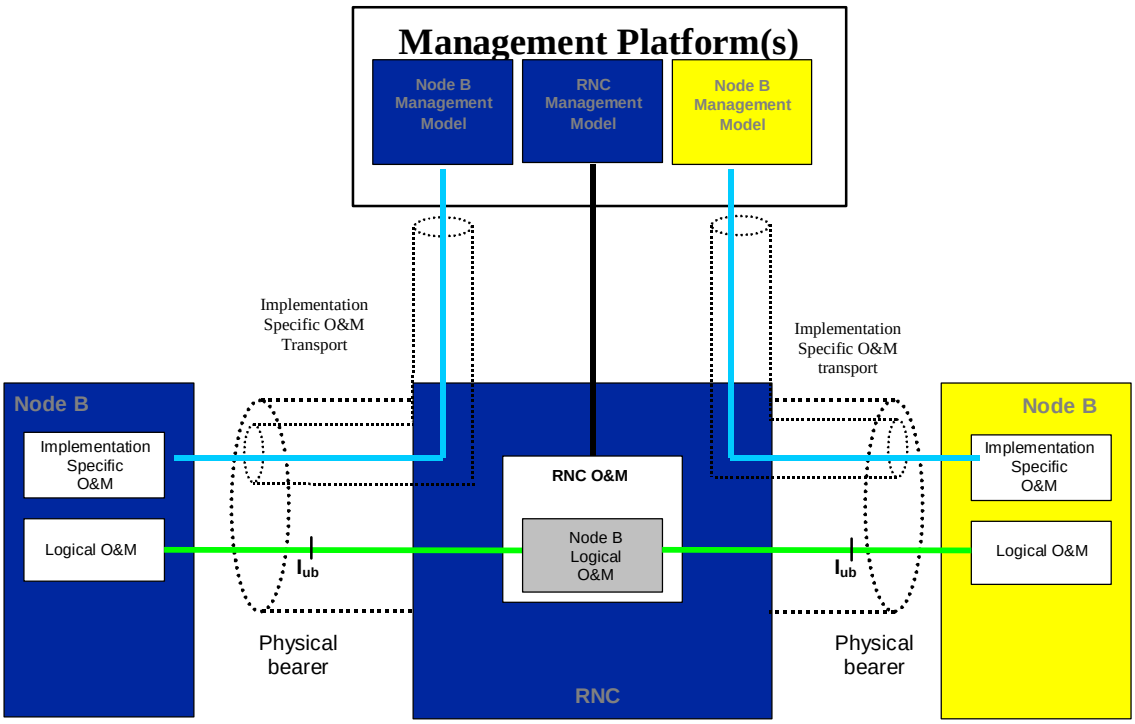


Figure 1: Implementation Specific O&M Transport via RNC

4.3 Transport Bearer

An appropriate transport bearer for Implementation Specific O&M should consider the requirements listed in subclause 4.1. IP [6] should be the transport mechanism in order to allow a data link independent support of a variety of O&M applications and protocols for the Implementation Specific O&M of the Node B.

IP datagrams containing O&M signalling have to be carried over the same bearer as Iub. ~~Since ATM will be used on Iub, IP over ATM should be the bearer for O&M signalling.~~ There are two options for the implementation specific O&M signalling bearer in Iub.

1) ATM Transport option

2) IP Transport option

4.3.1 ATM Transport Option

The following figure shows the protocol stack for Implementation Specific O&M transport between Node B and RNC in case of ATM transport option in Iub:

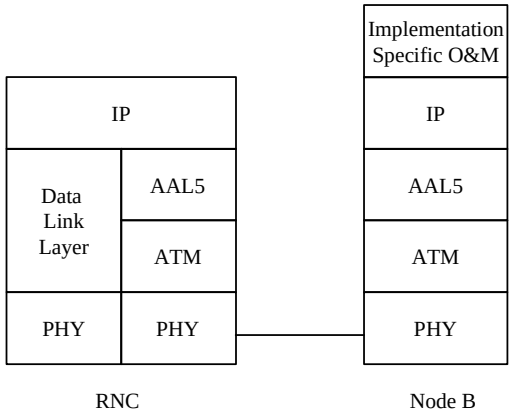


Figure 2: Protocol Stack for Implementation Specific O&M Transport (ATM transport option)

AAL5 shall be used according to ITU-T Recommendation I.363.5.

AAL5 virtual circuits are used to transport the IP packets containing Implementation Specific O&M signalling data between Node B and RNC. Multiple VCs can be used over the interface. An association shall be made between a VC and the IP addresses that are related to this VC in the peer node side. This association can be made using O&M or using ATM Inverse ARP according to Classical IP over ATM.

Classical IP over ATM protocols are used to carry the IP packets over the ATM transport network. Classical IP over ATM is specified in IETF RFC 2225. Multiprotocol Encapsulation over AAL5 is specified in IETF RFC 2684.

4.3.2 IP Transport Option

The following figure shows the protocol stack for Implementation Specific O&M transport between Node B and RNC in case of IP transport option in Iub:

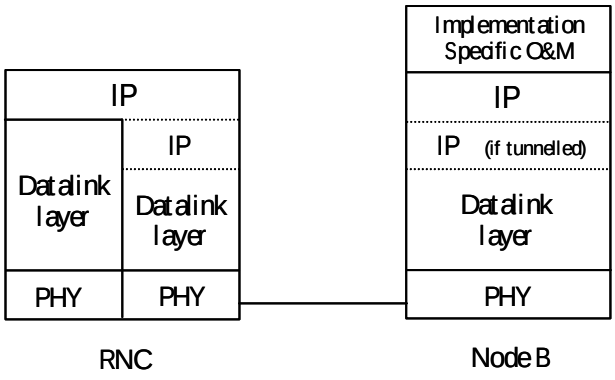


Figure 3: Protocol Stack for Implementation Specific O&M Transport (IP TNL)

Implementation specific O&M signalling is conveyed by IP between the NodeB and the RNC. IP-in-IP tunneling may be applied when the Iub Transport Network Layer is used.

IP based Transport Network Layer of Iub is further defined in [8].