TSG-RAN Meeting #26
Athen, Greece, 08-10 December 2004

RP-040543
Agenda item 8.2.1.3

Source: **TSG-RAN WG2.**

Title: **RAB Support enhancement: HS-DPCCH ACK/NACK enhancement (agenda item 8.2.1.3)**

The following CR is in RP-040543:

Spec	CR	Rev	Phase	Subject	Cat	Version-Current	Version-New	Doc-2nd-Level	Workitem
25.331	2496	2	Rel-6	Preamble and Postamble to reduce HS-DPCCH transmit power	B	6.3.0	6.4.0	-	RANimp-RABSE-ACKNACK

CR-Form-v7.1

CHANGE REQUEST

| ⌘ | **25.331** CR **2496** | ⌘rev | **2** | ⌘ | Current version: | **6.3.0** | ⌘ |

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

Proposed change affects: | UICC apps⌘ ☐ ME **X** Radio Access Network **X** Core Network ☐

Title:	⌘	Preamble and Postamble to reduce HS-DPCCH transmit power	
Source:	⌘	RAN WG2	
Work item code:⌘	RANimp-RABSE-ACKNACK	*Date:* ⌘	09/12/2004

Category:	⌘	**B**	*Release:* ⌘ Rel-6

Use <u>one</u> 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 <u>one</u> of the following releases:
 Ph2 *(GSM Phase 2)*
 R96 *(Release 1996)*
 R97 *(Release 1997)*
 R98 *(Release 1998)*
 R99 *(Release 1999)*
 Rel-4 *(Release 4)*
 Rel-5 *(Release 5)*
 Rel-6 *(Release 6)*
 Rel-7 *(Release 7)*

Reason for change:	⌘	The transmission of a layer 1 preamble and postamble on the HS-DPCCH can improve ACK/NACK decoding reliability, enabling a lower HS-DPCCH transmit power to be used, resulting in improved coverage for DCH or E-DCH.
Summary of change:⌘		Indication to use preamble and postamble on the HS-DPCCH is added. Revision1: - Alignment of term "HARQ_preamble_mode" with R1-041490 CR358r1 to 25.214. - ASN.1 update
Consequences if not approved:	⌘	Reduced HS-DPCCH transmit power and improved coverage for DCH or E-DCH would not be achieved.

Clauses affected:	⌘	8.6.6.11, 10.3.6.91, 11.2, 11.3

		Y	N			
Other specs	⌘	X		Other core specifications	⌘	25.212 CR195, 25.214 CR358r1, 25.423 CR1009, 25.433 CR1053
affected:			X	Test specifications		
			X	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/specs/CR.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.

8.6.6.11   Uplink DPCH power control info

The UE shall:

1> in FDD:

2> if the IE "Uplink DPCH power control info" is included:

3> if a synchronisation procedure A is performed according to [29]:

4> calculate and set an initial uplink transmission power;

4> start inner loop power control as specified in subclause 8.5.3;

4> for the UL inner loop power control:

5> use the parameters specified in the IE.

3> else:

4> ignore the IEs "DPCCH Power offset", "PC Preamble" and "SRB delay";

4> act on the IE "Power control algorithm" and the IE "TPC step size", if included.

3> act on the IEs "Δ_{ACK}", "Δ_{NACK}" and "Ack-Nack repetition factor", if included:.

3> use the procedure for transmitting HS-DPCCH preamble and postamble according to [29], if the IE "HARQ_preamble_mode" is set to 1.

1> in 3.84 Mcps TDD:

2> if the IE "Uplink DPCH power control info" is included:

3> use the parameters specified in the IE for open loop power control as defined in subclause 8.5.7.

2> else:

3> use the current uplink transmission power.

1> in 1.28 Mcps TDD:

2> if the CHOICE UL OL PC info is set to 'Broadcast UL OL PC info':

3> set the variable INVALID_CONFIGURATION to true.

2> if the IE "Uplink DPCH power control info"is included in the UPLINK PHYSICAL CHANNEL CONTROL message:

3> use the TPC step size for the closed loop power control of the CCTrCH identified in the message, replacing the existing value used for the CCTrCH.

3> if the IE " UL target SIR " is included:

4> use this value for parameter $PRX_{DPCHdes}$ for open loop power control of the CCTrCH identified in the message in the case of a transition from closed loop to open loop power control as specified in [33].

2> if the IE "Uplink DPCH power control info" is included in the IE "Uplink DPCH info":

3> use the TPC step size for the closed loop power control of all CCTrCH added or reconfigured by the IE replacing any existing values used for the CCTrCHs;

3> if the IE " UL target SIR " is included ignore the parameter.

1> both in FDD and TDD;

2> if the IE "Uplink DPCH power control info" is not included in a message used to enter CELL_DCH:

3> set the variable INVALID_CONFIGURATION to true.

1> determine the value for the HS_DSCH_RECEPTION variable and take the corresponding actions as described in subclause 8.5.25.

10.3.6.91　Uplink DPCH power control info

Parameters used by UE to set DPCH initial output power and to use for closed-loop power control in FDD and 1.28 Mcps TDD and parameters for uplink open loop power control in 3.84 Mcps TDD.

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
CHOICE *mode*	MP				
>FDD					
>>DPCCH Power offset	MP		Integer(-164,..-6 by step of 2)	In dB	
>>PC Preamble	MP		Integer (0..7)	In number of frames	
>>SRB delay	MP		Integer(0..7)	In number of frames	
>>Power Control Algorithm	MP		Enumerated (algorithm 1, algorithm 2)	Specifies algorithm to be used by UE to interpret TPC commands	
>>TPC step size	CV-*algo*		Integer (1, 2)	In dB	
>>Δ_{ACK}	OP		Integer (0..8)	Refer to quantization of the power offset in [28]	REL-5
>>Δ_{NACK}	OP		Integer (0..8)	refer to quantization of the power offset in [28]	REL-5
>>Ack-Nack repetition factor	OP		Integer(1..4)		REL-5
>>HARQ_preamble_mode	OP		Integer (0, 1)	1 indicates that preamble and postamble are used on the HS-DPCCH – see [29]	REL-6
>TDD					
>>>>UL target SIR	OP		Real (-11 .. 20 by step of 0.5dB)	In dB	
				For 1.28 Mcps TDD this parameter represents $PRX_{DPCHdes}$ with range Integer(-120…-58 by step of 1) dBm	REL-4
>>CHOICE *UL OL PC info*	MP				
>>>Broadcast UL OL PC info			Null	No data	
>>>Individually Signalled	OP				
>>>>CHOICE *TDD option*	MP				REL-4
>>>>>3.84 Mcps TDD					REL-4
>>>>>>Individual timeslot interference info	MP	1 to <maxTS>			
>>>>>>>Individual timeslot interference	MP		Individual timeslot interference 10.3.6.38		
>>>>>>DPCH Constant Value	OP		Constant Value TDD 10.3.6.11a	Quality Margin	
>>>>>1.28 Mcps TDD					REL-4
>>>>>>TPC step size	MP		Integer(1,2,3)		REL-4

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
>>>>Primary CCPCH Tx Power	OP		Primary CCPCH Tx Power 10.3.6.59	For Pathloss Calculation	

Condition	Explanation
Algo	The IE is mandatory present if the IE "Power Control Algorithm" is set to "algorithm 1", otherwise the IE is not needed

11.2   PDU definitions

```
--*****************************************************************
--
-- TABULAR: The message type and integrity check info are not
-- visible in this module as they are defined in the class module.
-- Also, all FDD/TDD specific choices have the FDD option first
-- and TDD second, just for consistency.
--
--*****************************************************************

PDU-definitions DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

--*****************************************************************
--
-- IE parameter types from other modules
--
--*****************************************************************

IMPORTS

-- Core Network IEs :
    CN-DomainIdentity,
    CN-InformationInfo,
    CN-InformationInfoFull,
    NAS-Message,
    PagingRecordTypeID,
-- UTRAN Mobility IEs :
    CellIdentity,
    CellIdentity-PerRL-List,
    URA-Identity,
-- User Equipment IEs :
    AccessStratumReleaseIndicator,
    ActivationTime,
    C-RNTI,
    CapabilityUpdateRequirement,
    CapabilityUpdateRequirement-r4,
    CapabilityUpdateRequirement-r4-ext,
    CapabilityUpdateRequirement-r5,
    CellUpdateCause,
    CipheringAlgorithm,
    CipheringModeInfo,
    DSCH-RNTI,
    EstablishmentCause,
    FailureCauseWithProtErr,
    FailureCauseWithProtErrTrId,
    GroupReleaseInformation,
    H-RNTI,
    UESpecificBehaviourInformation1idle,
    UESpecificBehaviourInformation1interRAT,
    InitialUE-Identity,
    IntegrityProtActivationInfo,
    IntegrityProtectionModeInfo,
    N-308,
    PagingCause,
    PagingRecordList,
    PagingRecord2List-r5,
    ProtocolErrorIndicator,
    ProtocolErrorIndicatorWithMoreInfo,
    RadioFrequencyBandTDDList,
    Rb-timer-indicator,
    RedirectionInfo,
    RedirectionInfo-r6,
    RejectionCause,
    ReleaseCause,
    RF-CapabilityComp,
    RRC-StateIndicator,
    RRC-TransactionIdentifier,
    SecurityCapability,
    START-Value,
    STARTList,
    SystemSpecificCapUpdateReq-v590ext,
    U-RNTI,
    U-RNTI-Short,
    UE-RadioAccessCapability,
```

```
        UE-RadioAccessCapability-v370ext,
        UE-RadioAccessCapability-v380ext,
        UE-RadioAccessCapability-v3a0ext,
        UE-RadioAccessCapability-v3g0ext,
        UE-RadioAccessCapability-v4b0ext,
        UE-RadioAccessCapability-v590ext,
        UE-RadioAccessCapabilityComp,
        DL-PhysChCapabilityFDD-v380ext,
        UE-ConnTimersAndConstants,
        UE-ConnTimersAndConstants-v3a0ext,
        UE-ConnTimersAndConstants-r5,
        UE-SecurityInformation,
        URA-UpdateCause,
        UTRAN-DRX-CycleLengthCoefficient,
        WaitTime,
-- Radio Bearer IEs :
        DefaultConfigIdentity,
        DefaultConfigIdentity-r4,
        DefaultConfigIdentity-r5,
        DefaultConfigMode,
        DL-CounterSynchronisationInfo,
        DL-CounterSynchronisationInfo-r5,
        PredefinedConfigIdentity,
        PredefinedConfigStatusList,
        PredefinedConfigStatusListComp,
        PredefinedConfigSetWithDifferentValueTag,
        RAB-Info,
        RAB-Info-Post,
        RAB-InformationList,
        RAB-InformationReconfigList,
        RAB-InformationSetupList,
        RAB-InformationSetupList-r4,
        RAB-InformationSetupList-r5,
        RB-ActivationTimeInfoList,
        RB-COUNT-C-InformationList,
        RB-COUNT-C-MSB-InformationList,
        RB-IdentityList,
        RB-InformationAffectedList,
        RB-InformationAffectedList-r5,
        RB-InformationReconfigList,
        RB-InformationReconfigList-r4,
        RB-InformationReconfigList-r5,
        RB-InformationReleaseList,
        RB-PDCPContextRelocationList,
        SRB-InformationSetupList,
        SRB-InformationSetupList-r5,
        SRB-InformationSetupList2,
        UL-CounterSynchronisationInfo,
-- Transport Channel IEs:
        CPCH-SetID,
        DL-AddReconfTransChInfo2List,
        DL-AddReconfTransChInfoList,
        DL-AddReconfTransChInfoList-r4,
        DL-AddReconfTransChInfoList-r5,
        DL-CommonTransChInfo,
        DL-CommonTransChInfo-r4,
        DL-DeletedTransChInfoList,
        DL-DeletedTransChInfoList-r5,
        DRAC-StaticInformationList,
        TFC-Subset,
        TFCS-Identity,
        UL-AddReconfTransChInfoList,
        UL-CommonTransChInfo,
        UL-CommonTransChInfo-r4,
        UL-DeletedTransChInfoList,
-- Physical Channel IEs :
        Alpha,
        CCTrCH-PowerControlInfo,
        CCTrCH-PowerControlInfo-r4,
        CCTrCH-PowerControlInfo-r5,
        ConstantValue,
        ConstantValueTdd,
        CPCH-SetInfo,
        DL-CommonInformation,
        DL-CommonInformation-r4,
        DL-CommonInformation-r5,
        DL-CommonInformationPost,
        DL-HSPDSCH-Information,
```

```
    DL-InformationPerRL-List,
    DL-InformationPerRL-List-r4,
    DL-InformationPerRL-List-r5,
    DL-InformationPerRL-List-r5bis,
    DL-InformationPerRL-ListPostFDD,
    DL-InformationPerRL-PostTDD,
    DL-InformationPerRL-PostTDD-LCR-r4,
    DL-PDSCH-Information,
    DL-TPC-PowerOffsetPerRL-List,
    DPC-Mode,
    DPCH-CompressedModeStatusInfo,
    FrequencyInfo,
    FrequencyInfoFDD,
    FrequencyInfoTDD,
    HARQ-Preamble-Mode,
    HS-SICH-Power-Control-Info-TDD384,
    MaxAllowedUL-TX-Power,
    OpenLoopPowerControl-IPDL-TDD-r4,
    PDSCH-CapacityAllocationInfo,
    PDSCH-CapacityAllocationInfo-r4,
    PDSCH-Identity,
    PrimaryCPICH-Info,
    PrimaryCCPCH-TX-Power,
    PUSCH-CapacityAllocationInfo,
    PUSCH-CapacityAllocationInfo-r4,
    PUSCH-Identity,
    PUSCH-SysInfoList-HCR-r5,
    PDSCH-SysInfoList-HCR-r5,
    RL-AdditionInformationList,
    RL-RemovalInformationList,
    SpecialBurstScheduling,
    SSDT-Information,
    TFC-ControlDuration,
    SSDT-UL,
    TimeslotList,
    TimeslotList-r4,
    TX-DiversityMode,
    UL-ChannelRequirement,
    UL-ChannelRequirement-r4,
    UL-ChannelRequirement-r5,
    UL-ChannelRequirementWithCPCH-SetID,
    UL-ChannelRequirementWithCPCH-SetID-r4,
    UL-ChannelRequirementWithCPCH-SetID-r5,
    UL-DPCH-Info,
    UL-DPCH-Info-r4,
    UL-DPCH-Info-r5,
    UL-DPCH-InfoPostFDD,
    UL-DPCH-InfoPostTDD,
    UL-DPCH-InfoPostTDD-LCR-r4,
    UL-SynchronisationParameters-r4,
    UL-TimingAdvance,
    UL-TimingAdvanceControl,
    UL-TimingAdvanceControl-r4,
-- Measurement IEs :
    AdditionalMeasurementID-List,
    DeltaRSCP,
    Frequency-Band,
    EventResults,
    Inter-FreqEventCriteriaList-v590ext,
    Intra-FreqEventCriteriaList-v590ext,
    IntraFreqReportingCriteria-1b-r5,
    IntraFreqEvent-1d-r5,
    InterFreqEventResults-LCR-r4-ext,
    InterRAT-TargetCellDescription,
    MeasuredResults,
    MeasuredResults-v390ext,
    MeasuredResults-v590ext,
    MeasuredResultsList,
    MeasuredResultsList-LCR-r4-ext,
    MeasuredResultsOnRACH,
    MeasurementCommand,
    MeasurementCommand-r4,
    MeasurementIdentity,
    MeasurementReportingMode,
    PrimaryCCPCH-RSCP,
    SFN-Offset-Validity,
    TimeslotListWithISCP,
    TrafficVolumeMeasuredResultsList,
    UE-Positioning-GPS-AssistanceData,
```

```
        UE-Positioning-Measurement-v390ext,
        UE-Positioning-OTDOA-AssistanceData,
        UE-Positioning-OTDOA-AssistanceData-r4ext,
        UE-Positioning-OTDOA-AssistanceData-UEB,
-- Other IEs :
    BCCH-ModificationInfo,
    CDMA2000-MessageList,
    GSM-TargetCellInfoList,
    GERANIu-MessageList,
    GERAN-SystemInformation,
    GSM-MessageList,
    InterRAT-ChangeFailureCause,
    InterRAT-HO-FailureCause,
    InterRAT-UE-RadioAccessCapabilityList,
    InterRAT-UE-RadioAccessCapability-v590ext,
    InterRAT-UE-SecurityCapList,
    IntraDomainNasNodeSelector,
    ProtocolErrorMoreInformation,
    Rplmn-Information,
    Rplmn-Information-r4,
    SegCount,
    SegmentIndex,
    SFN-Prime,
    SIB-Data-fixed,
    SIB-Data-variable,
    SIB-Type
FROM InformationElements

    maxSIBperMsg,
    maxURNTI-Group
FROM Constant-definitions;


-- **************************************************
--
-- CELL UPDATE CONFIRM
--
-- **************************************************

CellUpdateConfirm ::= CHOICE {
    r3                              SEQUENCE {
        cellUpdateConfirm-r3            CellUpdateConfirm-r3-IEs,
        v3a0NonCriticalExtensions          SEQUENCE {
            cellUpdateConfirm-v3a0ext          CellUpdateConfirm-v3a0ext,
            laterNonCriticalExtensions     SEQUENCE {
                -- Container for additional R99 extensions
                cellUpdateConfirm-r3-add-ext            BIT STRING  OPTIONAL,
                v4b0NonCriticalExtensions          SEQUENCE {
                    cellUpdateConfirm-v4b0ext          CellUpdateConfirm-v4b0ext-IEs,
                    v590NonCriticalExtenstions         SEQUENCE {
                        cellUpdateConfirm-v590ext          CellUpdateConfirm-v590ext-IEs,
                        v6xyNonCriticalExtensions              SEQUENCE {
                            cellUpdateConfirm-v6xyext          CellUpdateConfirm-v6xyext-IEs,
                            nonCriticalExtensions              SEQUENCE {} OPTIONAL
                        }      OPTIONAL
                    }      OPTIONAL
                }      OPTIONAL
            }      OPTIONAL
        }      OPTIONAL
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              CHOICE {
            r4                             SEQUENCE {
                cellUpdateConfirm-r4               CellUpdateConfirm-r4-IEs,
                v4d0NonCriticalExtensions          SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-5
                    cellUpdateConfirm-r4-add-ext       BIT STRING     OPTIONAL,
                    v590NonCriticalExtenstions         SEQUENCE {
                        cellUpdateConfirm-v590ext          CellUpdateConfirm-v590ext-IEs,
                        v6xyNonCriticalExtensions          SEQUENCE {
                            cellUpdateConfirm-v6xyext          CellUpdateConfirm-v6xyext-IEs,
                            nonCriticalExtensions              SEQUENCE {}     OPTIONAL
                        }      OPTIONAL
                    }      OPTIONAL
                }      OPTIONAL
            },
            criticalExtensions              CHOICE {
                r5                                 SEQUENCE {
                    cellUpdateConfirm-r5               CellUpdateConfirm-r5-IEs,
```

```
                        -- Container for adding non critical extensions after freezing REL-6
                        cellUpdateConfirm-r5-add-ext        BIT STRING        OPTIONAL,
                        v6xyNonCriticalExtensions        SEQUENCE {
                              cellUpdateConfirm-v6xyext        CellUpdateConfirm-v6xyext-IEs,
                              nonCriticalExtensions           SEQUENCE {}        OPTIONAL
                        }   OPTIONAL
                },
                criticalExtensions                  SEQUENCE {}
            }
        }
    }
}

CellUpdateConfirm-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        integrityProtectionModeInfo     IntegrityProtectionModeInfo       OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                 OPTIONAL,
        activationTime                  ActivationTime                    OPTIONAL,
        new-U-RNTI                      U-RNTI                            OPTIONAL,
        new-C-RNTI                      C-RNTI                            OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient  OPTIONAL,
        rlc-Re-establishIndicatorRb2-3or4       BOOLEAN,
        rlc-Re-establishIndicatorRb5orAbove     BOOLEAN,
    -- CN information elements
        cn-InformationInfo              CN-InformationInfo                OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                      OPTIONAL,
    -- Radio bearer IEs
        rb-InformationReleaseList       RB-InformationReleaseList         OPTIONAL,
        rb-InformationReconfigList      RB-InformationReconfigList        OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList        OPTIONAL,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo     OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo              OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList         OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList       OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonTransChInfo            DL-CommonTransChInfo              OPTIONAL,
        dl-DeletedTransChInfoList      DL-DeletedTransChInfoList         OPTIONAL,
        dl-AddReconfTransChInfoList    DL-AddReconfTransChInfoList       OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                     OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power             OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement             OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information             DL-PDSCH-Information       OPTIONAL
            },
            tdd                             NULL
        },
        dl-CommonInformation            DL-CommonInformation              OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List          OPTIONAL
}

CellUpdateConfirm-v3a0ext ::= SEQUENCE {
    new-DSCH-RNTI                   DSCH-RNTI                                     OPTIONAL
}

CellUpdateConfirm-v4b0ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- ssdt-UL extends SSDT-Information, which is included in
        -- DL-CommonInformation. FDD only.
        ssdt-UL-r4                      SSDT-UL                                   OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        -- in IE DL-InformationPerRL-List included in this message
        cell-id-PerRL-List              CellIdentity-PerRL-List                   OPTIONAL
}

CellUpdateConfirm-v590ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
```

```
            dl-TPC-PowerOffsetPerRL-List   DL-TPC-PowerOffsetPerRL-List        OPTIONAL
}

CellUpdateConfirm-v6xyext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        harq-Preamble-Mode              HARQ-Preamble-Mode         OPTIONAL
}

CellUpdateConfirm-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo    IntegrityProtectionModeInfo        OPTIONAL,
        cipheringModeInfo              CipheringModeInfo                  OPTIONAL,
        activationTime                 ActivationTime                     OPTIONAL,
        new-U-RNTI                     U-RNTI                             OPTIONAL,
        new-C-RNTI                     C-RNTI                             OPTIONAL,
        new-DSCH-RNTI                  DSCH-RNTI                          OPTIONAL,
        rrc-StateIndicator             RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff     UTRAN-DRX-CycleLengthCoefficient   OPTIONAL,
        rlc-Re-establishIndicatorRb2-3or4       BOOLEAN,
        rlc-Re-establishIndicatorRb5orAbove BOOLEAN,
    -- CN information elements
        cn-InformationInfo             CN-InformationInfo                 OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                   URA-Identity                       OPTIONAL,
    -- Radio bearer IEs
        rb-InformationReleaseList      RB-InformationReleaseList          OPTIONAL,
        rb-InformationReconfigList     RB-InformationReconfigList-r4      OPTIONAL,
        rb-InformationAffectedList     RB-InformationAffectedList         OPTIONAL,
        dl-CounterSynchronisationInfo  DL-CounterSynchronisationInfo      OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo           UL-CommonTransChInfo-r4            OPTIONAL,
        ul-deletedTransChInfoList      UL-DeletedTransChInfoList          OPTIONAL,
        ul-AddReconfTransChInfoList    UL-AddReconfTransChInfoList        OPTIONAL,
        modeSpecificTransChInfo        CHOICE {
            fdd                            SEQUENCE {
                cpch-SetID                     CPCH-SetID                 OPTIONAL,
                addReconfTransChDRAC-Info      DRAC-StaticInformationList OPTIONAL
            },
            tdd                            NULL
        },
        dl-CommonTransChInfo           DL-CommonTransChInfo-r4           OPTIONAL,
        dl-DeletedTransChInfoList      DL-DeletedTransChInfoList         OPTIONAL,
        dl-AddReconfTransChInfoList    DL-AddReconfTransChInfoList-r4    OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                  FrequencyInfo                     OPTIONAL,
        maxAllowedUL-TX-Power          MaxAllowedUL-TX-Power             OPTIONAL,
        ul-ChannelRequirement          UL-ChannelRequirement-r4          OPTIONAL,
        modeSpecificPhysChInfo         CHOICE {
            fdd                            SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information       OPTIONAL
            },
            tdd                            NULL
        },
        dl-CommonInformation           DL-CommonInformation-r4           OPTIONAL,
        dl-InformationPerRL-List       DL-InformationPerRL-List-r4       OPTIONAL
}

CellUpdateConfirm-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo    IntegrityProtectionModeInfo       OPTIONAL,
        cipheringModeInfo              CipheringModeInfo                 OPTIONAL,
        activationTime                 ActivationTime                    OPTIONAL,
        new-U-RNTI                     U-RNTI                            OPTIONAL,
        new-C-RNTI                     C-RNTI                            OPTIONAL,
        new-DSCH-RNTI                  DSCH-RNTI                         OPTIONAL,
        new-H-RNTI                     H-RNTI                            OPTIONAL,
        rrc-StateIndicator             RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff     UTRAN-DRX-CycleLengthCoefficient  OPTIONAL,
        rlc-Re-establishIndicatorRb2-3or4       BOOLEAN,
        rlc-Re-establishIndicatorRb5orAbove BOOLEAN,
    -- CN information elements
        cn-InformationInfo             CN-InformationInfo                OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                   URA-Identity                      OPTIONAL,
    -- Radio bearer IEs
        rb-InformationReleaseList      RB-InformationReleaseList         OPTIONAL,
        rb-InformationReconfigList     RB-InformationReconfigList-r5     OPTIONAL,
        rb-InformationAffectedList     RB-InformationAffectedList-r5     OPTIONAL,
```

```
            dl-CounterSynchronisationInfo    DL-CounterSynchronisationInfo-r5    OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo             UL-CommonTransChInfo-r4             OPTIONAL,
        ul-deletedTransChInfoList        UL-DeletedTransChInfoList           OPTIONAL,
        ul-AddReconfTransChInfoList      UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo          CHOICE {
            fdd                              SEQUENCE {
                cpch-SetID                       CPCH-SetID                      OPTIONAL,
                addReconfTransChDRAC-Info        DRAC-StaticInformationList  OPTIONAL
            },
            tdd                              NULL
        },
        dl-CommonTransChInfo             DL-CommonTransChInfo-r4             OPTIONAL,
        dl-DeletedTransChInfoList        DL-DeletedTransChInfoList-r5        OPTIONAL,
        dl-AddReconfTransChInfoList      DL-AddReconfTransChInfoList-r5      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                    FrequencyInfo                      OPTIONAL,
        maxAllowedUL-TX-Power            MaxAllowedUL-TX-Power              OPTIONAL,
        ul-ChannelRequirement            UL-ChannelRequirement-r5           OPTIONAL,
        modeSpecificPhysChInfo           CHOICE {
            fdd                              SEQUENCE {
                dl-PDSCH-Information              DL-PDSCH-Information         OPTIONAL
            },
            tdd                              NULL
        },
        dl-HSPDSCH-Information            DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation             DL-CommonInformation-r5            OPTIONAL,
        dl-InformationPerRL-List         DL-InformationPerRL-List-r5        OPTIONAL
}

-- **************************************************
--
-- CELL UPDATE CONFIRM for CCCH
--
-- **************************************************

CellUpdateConfirm-CCCH ::= CHOICE {
    r3                          SEQUENCE {
        -- User equipment IEs
        u-RNTI                       U-RNTI,
        -- The rest of the message is identical to the one sent on DCCH.
        cellUpdateConfirm-r3              CellUpdateConfirm-r3-IEs,
        laterNonCriticalExtensions       SEQUENCE {
            -- Container for additional R99 extensions
            cellUpdateConfirm-CCCH-r3-add-ext          BIT STRING  OPTIONAL,
            v4b0NonCriticalExtensions        SEQUENCE {
                cellUpdateConfirm-v4b0ext        CellUpdateConfirm-v4b0ext-IEs,
                v590NonCriticalExtensions        SEQUENCE {
                    cellUpdateConfirm-v590ext        CellUpdateConfirm-v590ext-IEs,
                    v6xyNonCriticalExtensions        SEQUENCE {
                        cellUpdateConfirm-v6xyext        CellUpdateConfirm-v6xyext-IEs,
                        nonCriticalExtensions            SEQUENCE {} OPTIONAL
                    } OPTIONAL
                } OPTIONAL
            } OPTIONAL
        } OPTIONAL
    },
    later-than-r3               SEQUENCE {
        u-RNTI                       U-RNTI,
        rrc-TransactionIdentifier    RRC-TransactionIdentifier,
        criticalExtensions           CHOICE {
            r4                           SEQUENCE {
                -- The rest of the message is identical to the one sent on DCCH.
                cellUpdateConfirm-r4             CellUpdateConfirm-r4-IEs,
                v4d0NonCriticalExtensions           SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-5
                    cellUpdateConfirm-CCCH-r4-add-ext       BIT STRING      OPTIONAL,
                    v590NonCriticalExtensions        SEQUENCE {
                        cellUpdateConfirm-v590ext        CellUpdateConfirm-v590ext-IEs,
                        v6xyNonCriticalExtensions        SEQUENCE {
                            cellUpdateConfirm-v6xyext        CellUpdateConfirm-v6xyext-IEs,
                            nonCriticalExtensions            SEQUENCE {}     OPTIONAL
                        } OPTIONAL
                    } OPTIONAL
                } OPTIONAL
            },
            criticalExtensions              CHOICE {
                r5                              SEQUENCE {
```

```
                            cellUpdateConfirm-r5              CellUpdateConfirm-r5-IEs,
                            cellUpdateConfirm-CCCH-r5-add-ext         BIT STRING      OPTIONAL,
                            v6xyNonCriticalExtensions        SEQUENCE {
                                    cellUpdateConfirm-v6xyext        CellUpdateConfirm-v6xyext-IEs,
                                    nonCriticalExtensions            SEQUENCE {}      OPTIONAL
                            }   OPTIONAL
                    },
                    criticalExtensions             SEQUENCE {}
            }
        }
    }
}

-- **************************************************
--
-- PHYSICAL CHANNEL RECONFIGURATION
--
-- **************************************************

PhysicalChannelReconfiguration ::= CHOICE {
    r3                                    SEQUENCE {
        physicalChannelReconfiguration-r3
                                          PhysicalChannelReconfiguration-r3-IEs,
        v3a0NonCriticalExtensions           SEQUENCE {
            physicalChannelReconfiguration-v3a0ext    PhysicalChannelReconfiguration-v3a0ext,
            laterNonCriticalExtensions      SEQUENCE {
                -- Container for additional R99 extensions
                physicalChannelReconfiguration-r3-add-ext          BIT STRING      OPTIONAL,
                v4b0NonCriticalExtenstions          SEQUENCE {
                    physicalChannelReconfiguration-v4b0ext
                                          PhysicalChannelReconfiguration-v4b0ext-IEs,
                    v590NonCriticalExtenstions          SEQUENCE {
                        physicalChannelReconfiguration-v590ext
                                          PhysicalChannelReconfiguration-v590ext-IEs,
                        v6xyNonCriticalExtensions          SEQUENCE {
                            physicalChannelReconfiguration-v6xyext
                                          PhysicalChannelReconfiguration-v6xyext-IEs,
                            nonCriticalExtensions                 SEQUENCE {} OPTIONAL
                        } OPTIONAL
                    } OPTIONAL
                } OPTIONAL
            } OPTIONAL
        } OPTIONAL
    },
    later-than-r3                  SEQUENCE {
        rrc-TransactionIdentifier     RRC-TransactionIdentifier,
        criticalExtensions            CHOICE {
            r4                                    SEQUENCE {
                physicalChannelReconfiguration-r4
                                          PhysicalChannelReconfiguration-r4-IEs,
                v4d0NonCriticalExtensions          SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-5
                    physicalChannelReconfiguration-r4-add-ext        BIT STRING      OPTIONAL,
                    v590NonCriticalExtenstions          SEQUENCE {
                        physicalChannelReconfiguration-v590ext
                                          PhysicalChannelReconfiguration-v590ext-IEs,
                        v6xyNonCriticalExtensions          SEQUENCE {
                            physicalChannelReconfiguration-v6xyext
                                          PhysicalChannelReconfiguration-v6xyext-IEs,
                            nonCriticalExtensions            SEQUENCE {}      OPTIONAL
                        } OPTIONAL
                    } OPTIONAL
                } OPTIONAL
            },
            criticalExtensions            CHOICE {
                r5                                    SEQUENCE {
                    physicalChannelReconfiguration-r5
                                          PhysicalChannelReconfiguration-r5-IEs,
                    -- Container for adding non critical extensions after freezing REL-6
                    physicalChannelReconfiguration-r5-add-ext        BIT STRING      OPTIONAL,
                    v6xyNonCriticalExtensions          SEQUENCE {
                        physicalChannelReconfiguration-v6xyext
                                          PhysicalChannelReconfiguration-v6xyext-IEs,
                        nonCriticalExtensions            SEQUENCE {}      OPTIONAL
                    } OPTIONAL
                },
                criticalExtensions            SEQUENCE {}
            }
```

```
        }
    }
}

PhysicalChannelReconfiguration-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
        rrc-TransactionIdentifier    RRC-TransactionIdentifier,
        integrityProtectionModeInfo  IntegrityProtectionModeInfo    OPTIONAL,
        cipheringModeInfo            CipheringModeInfo              OPTIONAL,
        activationTime               ActivationTime                 OPTIONAL,
        new-U-RNTI                   U-RNTI                         OPTIONAL,
        new-C-RNTI                   C-RNTI                         OPTIONAL,
        rrc-StateIndicator           RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff   UTRAN-DRX-CycleLengthCoefficient  OPTIONAL,
    -- Core network IEs
        cn-InformationInfo           CN-InformationInfo             OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                 URA-Identity                   OPTIONAL,
    -- Radio bearer IEs
        dl-CounterSynchronisationInfo  DL-CounterSynchronisationInfo  OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                FrequencyInfo                  OPTIONAL,
        maxAllowedUL-TX-Power        MaxAllowedUL-TX-Power          OPTIONAL,
        -- TABULAR: UL-ChannelRequirementWithCPCH-SetID contains the choice
        -- between UL DPCH info, CPCH SET info and CPCH set ID.
        ul-ChannelRequirement        UL-ChannelRequirementWithCPCH-SetID  OPTIONAL,
        modeSpecificInfo             CHOICE {
            fdd                          SEQUENCE {
                dl-PDSCH-Information          DL-PDSCH-Information    OPTIONAL
            },
            tdd                          NULL
        },
        dl-CommonInformation         DL-CommonInformation           OPTIONAL,
        dl-InformationPerRL-List     DL-InformationPerRL-List       OPTIONAL
}

PhysicalChannelReconfiguration-v3a0ext ::= SEQUENCE {
    new-DSCH-RNTI                    DSCH-RNTI                           OPTIONAL
}

PhysicalChannelReconfiguration-v4b0ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- ssdt-UL extends SSDT-Information, which is included in
        -- DL-CommonInformation. FDD only.
        ssdt-UL-r4                   SSDT-UL                             OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        -- in IE DL-InformationPerRL-List included in this message
        cell-id-PerRL-List           CellIdentity-PerRL-List             OPTIONAL
}

PhysicalChannelReconfiguration-v590ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        dl-TPC-PowerOffsetPerRL-List  DL-TPC-PowerOffsetPerRL-List       OPTIONAL
}

PhysicalChannelReconfiguration-v6xyext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        harq-Preamble-Mode           HARQ-Preamble-Mode         OPTIONAL
}

PhysicalChannelReconfiguration-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo  IntegrityProtectionModeInfo    OPTIONAL,
        cipheringModeInfo            CipheringModeInfo              OPTIONAL,
        activationTime               ActivationTime                 OPTIONAL,
        new-U-RNTI                   U-RNTI                         OPTIONAL,
        new-C-RNTI                   C-RNTI                         OPTIONAL,
        new-DSCH-RNTI                DSCH-RNTI                      OPTIONAL,
        rrc-StateIndicator           RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff   UTRAN-DRX-CycleLengthCoefficient  OPTIONAL,
    -- Core network IEs
        cn-InformationInfo           CN-InformationInfo             OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                 URA-Identity                   OPTIONAL,
    -- Radio bearer IEs
        dl-CounterSynchronisationInfo  DL-CounterSynchronisationInfo  OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                FrequencyInfo                  OPTIONAL,
```

```
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power          OPTIONAL,
        -- TABULAR: UL-ChannelRequirementWithCPCH-SetID-r4 contains the choice
        -- between UL DPCH info, CPCH SET info and CPCH set ID.
        ul-ChannelRequirement          UL-ChannelRequirementWithCPCH-SetID-r4  OPTIONAL,
        modeSpecificInfo               CHOICE {
            fdd                              SEQUENCE {
                dl-PDSCH-Information              DL-PDSCH-Information        OPTIONAL
            },
            tdd                              NULL
        },
        dl-CommonInformation           DL-CommonInformation-r4         OPTIONAL,
        dl-InformationPerRL-List       DL-InformationPerRL-List-r4     OPTIONAL
}

PhysicalChannelReconfiguration-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo    IntegrityProtectionModeInfo    OPTIONAL,
        cipheringModeInfo              CipheringModeInfo              OPTIONAL,
        activationTime                 ActivationTime                 OPTIONAL,
        new-U-RNTI                     U-RNTI                         OPTIONAL,
        new-C-RNTI                     C-RNTI                         OPTIONAL,
        new-DSCH-RNTI                  DSCH-RNTI                      OPTIONAL,
        new-H-RNTI                     H-RNTI                         OPTIONAL,
        rrc-StateIndicator             RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff     UTRAN-DRX-CycleLengthCoefficient   OPTIONAL,
    -- Core network IEs
        cn-InformationInfo             CN-InformationInfo             OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                   URA-Identity                   OPTIONAL,
    -- Radio bearer IEs
        dl-CounterSynchronisationInfo  DL-CounterSynchronisationInfo-r5   OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                  FrequencyInfo                  OPTIONAL,
        maxAllowedUL-TX-Power          MaxAllowedUL-TX-Power          OPTIONAL,
        -- TABULAR: UL-ChannelRequirementWithCPCH-SetID-r5 contains the choice
        -- between UL DPCH info, CPCH SET info and CPCH set ID.
        ul-ChannelRequirement          UL-ChannelRequirementWithCPCH-SetID-r5  OPTIONAL,
        modeSpecificInfo               CHOICE {
            fdd                              SEQUENCE {
                dl-PDSCH-Information              DL-PDSCH-Information        OPTIONAL
            },
            tdd                              NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information          OPTIONAL,
        dl-CommonInformation           DL-CommonInformation-r5        OPTIONAL,
        dl-InformationPerRL-List       DL-InformationPerRL-List-r5    OPTIONAL
}

-- ****************************************************
--
-- RADIO BEARER RECONFIGURATION
--
-- ****************************************************

RadioBearerReconfiguration ::= CHOICE {
    r3                              SEQUENCE {
        radioBearerReconfiguration-r3  RadioBearerReconfiguration-r3-IEs,
        -- Prefix "v3ao" is used (in one instance) to keep alignment with R99
        v3aoNonCriticalExtensions      SEQUENCE {
            radioBearerReconfiguration-v3a0ext  RadioBearerReconfiguration-v3a0ext,
            laterNonCriticalExtensions     SEQUENCE {
                -- Container for additional R99 extensions
                radioBearerReconfiguration-r3-add-ext      BIT STRING      OPTIONAL,
                v4b0NonCriticalExtensions          SEQUENCE {
                    radioBearerReconfiguration-v4b0ext
                                                    RadioBearerReconfiguration-v4b0ext-IEs,
                    v590NonCriticalExtensions          SEQUENCE {
                        radioBearerReconfiguration-v590ext
                                                    RadioBearerReconfiguration-v590ext-IEs,
                        v6xyNonCriticalExtensions          SEQUENCE {
                            radioBearerReconfiguration-v6xyext
                                                    RadioBearerReconfiguration-v6xyext-IEs,
                            nonCriticalExtensions              SEQUENCE {} OPTIONAL
                        } OPTIONAL
                    } OPTIONAL
                } OPTIONAL
            } OPTIONAL
        } OPTIONAL
```

```
    },
    later-than-r3                   SEQUENCE {
        rrc-TransactionIdentifier       RRC-TransactionIdentifier,
        criticalExtensions              CHOICE {
            r4                              SEQUENCE {
                radioBearerReconfiguration-r4   RadioBearerReconfiguration-r4-IEs,
                v4d0NonCriticalExtensions           SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-5
                    radioBearerReconfiguration-r4-add-ext      BIT STRING    OPTIONAL,
                    v590NonCriticalExtensions           SEQUENCE {
                        radioBearerReconfiguration-v590ext
                                                        RadioBearerReconfiguration-v590ext-IEs,
                        v6xyNonCriticalExtensions         SEQUENCE {
                            radioBearerReconfiguration-v6xyext
                                                        RadioBearerReconfiguration-v6xyext-IEs,
                            nonCriticalExtensions           SEQUENCE {}    OPTIONAL
                        } OPTIONAL
                    } OPTIONAL
                } OPTIONAL
            },
            criticalExtensions              CHOICE {
                r5                              SEQUENCE {
                    radioBearerReconfiguration-r5       RadioBearerReconfiguration-r5-IEs,
                    -- Container for adding non critical extensions after freezing REL-6
                    radioBearerReconfiguration-r5-add-ext      BIT STRING    OPTIONAL,
                    v6xyNonCriticalExtensions         SEQUENCE {
                        radioBearerReconfiguration-v6xyext
                                                        RadioBearerReconfiguration-v6xyext-IEs,
                        nonCriticalExtensions           SEQUENCE {}    OPTIONAL
                    } OPTIONAL
                },
                criticalExtensions              SEQUENCE {}
            }
        }
    }
}

RadioBearerReconfiguration-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
    rrc-TransactionIdentifier       RRC-TransactionIdentifier,
    integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
    cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
    activationTime                  ActivationTime                      OPTIONAL,
    new-U-RNTI                      U-RNTI                              OPTIONAL,
    new-C-RNTI                      C-RNTI                              OPTIONAL,
    rrc-StateIndicator              RRC-StateIndicator,
    utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
    cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
    ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
    rab-InformationReconfigList     RAB-InformationReconfigList         OPTIONAL,
    -- NOTE: IE rb-InformationReconfigList should be optional in later versions
    -- of this message
    rb-InformationReconfigList      RB-InformationReconfigList,
    rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
    -- Transport channel IEs
    ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
    ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
    ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
    modeSpecificTransChInfo         CHOICE {
        fdd                             SEQUENCE {
            cpch-SetID                      CPCH-SetID                  OPTIONAL,
            addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
        },
        tdd                             NULL
    }                                                                   OPTIONAL,
    dl-CommonTransChInfo            DL-CommonTransChInfo                OPTIONAL,
    dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
    dl-AddReconfTransChInfoList     DL-AddReconfTransChInfo2List        OPTIONAL,
    -- Physical channel IEs
    frequencyInfo                   FrequencyInfo                       OPTIONAL,
    maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
    ul-ChannelRequirement           UL-ChannelRequirement               OPTIONAL,
    modeSpecificPhysChInfo          CHOICE {
        fdd                             SEQUENCE {
            dl-PDSCH-Information             DL-PDSCH-Information         OPTIONAL
```

```
        },
        tdd                             NULL
    },
    dl-CommonInformation        DL-CommonInformation            OPTIONAL,
    -- NOTE: IE dl-InformationPerRL-List should be optional in later versions
    -- of this message
    dl-InformationPerRL-List    DL-InformationPerRL-List
}

RadioBearerReconfiguration-v3a0ext ::= SEQUENCE {
    new-DSCH-RNTI               DSCH-RNTI                       OPTIONAL
}

RadioBearerReconfiguration-v4b0ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- ssdt-UL extends SSDT-Information, which is included in
        -- DL-CommonInformation. FDD only.
        ssdt-UL-r4                      SSDT-UL                         OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        -- in IE DL-InformationPerRL-List included in this message
        cell-id-PerRL-List              CellIdentity-PerRL-List         OPTIONAL
}

RadioBearerReconfiguration-v590ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        dl-TPC-PowerOffsetPerRL-List    DL-TPC-PowerOffsetPerRL-List    OPTIONAL
}

RadioBearerReconfiguration-v6xyext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        harq-Preamble-Mode              HARQ-Preamble-Mode          OPTIONAL
}

RadioBearerReconfiguration-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo IntegrityProtectionModeInfo     OPTIONAL,
        cipheringModeInfo           CipheringModeInfo               OPTIONAL,
        activationTime              ActivationTime                  OPTIONAL,
        new-U-RNTI                  U-RNTI                          OPTIONAL,
        new-C-RNTI                  C-RNTI                          OPTIONAL,
        new-DSCH-RNTI               DSCH-RNTI                       OPTIONAL,
        rrc-StateIndicator          RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff  UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo          CN-InformationInfo              OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                URA-Identity                    OPTIONAL,
    -- Radio bearer IEs
        rab-InformationReconfigList RAB-InformationReconfigList     OPTIONAL,
        rb-InformationReconfigList  RB-InformationReconfigList-r4   OPTIONAL,
        rb-InformationAffectedList  RB-InformationAffectedList      OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo        UL-CommonTransChInfo-r4         OPTIONAL,
        ul-deletedTransChInfoList   UL-DeletedTransChInfoList       OPTIONAL,
        ul-AddReconfTransChInfoList UL-AddReconfTransChInfoList     OPTIONAL,
        modeSpecificTransChInfo     CHOICE {
            fdd                         SEQUENCE {
                cpch-SetID                  CPCH-SetID              OPTIONAL,
                addReconfTransChDRAC-Info   DRAC-StaticInformationList OPTIONAL
            },
            tdd                         NULL
        }                                                           OPTIONAL,
        dl-CommonTransChInfo        DL-CommonTransChInfo-r4         OPTIONAL,
        dl-DeletedTransChInfoList   DL-DeletedTransChInfoList       OPTIONAL,
        dl-AddReconfTransChInfoList DL-AddReconfTransChInfoList-r4  OPTIONAL,
    -- Physical channel IEs
        frequencyInfo               FrequencyInfo                   OPTIONAL,
        maxAllowedUL-TX-Power       MaxAllowedUL-TX-Power           OPTIONAL,
        ul-ChannelRequirement       UL-ChannelRequirement-r4        OPTIONAL,
        modeSpecificPhysChInfo      CHOICE {
            fdd                         SEQUENCE {
                dl-PDSCH-Information         DL-PDSCH-Information    OPTIONAL
            },
            tdd                         NULL
        },
        dl-CommonInformation        DL-CommonInformation-r4         OPTIONAL,
        dl-InformationPerRL-List    DL-InformationPerRL-List-r4     OPTIONAL
}
```

```
RadioBearerReconfiguration-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo    IntegrityProtectionModeInfo           OPTIONAL,
        cipheringModeInfo              CipheringModeInfo                      OPTIONAL,
        activationTime                 ActivationTime                         OPTIONAL,
        new-U-RNTI                     U-RNTI                                 OPTIONAL,
        new-C-RNTI                     C-RNTI                                 OPTIONAL,
        new-DSCH-RNTI                  DSCH-RNTI                              OPTIONAL,
        new-H-RNTI                     H-RNTI                                 OPTIONAL,
        rrc-StateIndicator             RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff     UTRAN-DRX-CycleLengthCoefficient       OPTIONAL,
    -- Core network IEs
        cn-InformationInfo             CN-InformationInfo                     OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                   URA-Identity                           OPTIONAL,
    -- Specification mode information
        specificationMode              CHOICE {
            complete                       SEQUENCE {
            -- Radio bearer IEs
                rab-InformationReconfigList    RAB-InformationReconfigList            OPTIONAL,
                rb-InformationReconfigList     RB-InformationReconfigList-r5          OPTIONAL,
                rb-InformationAffectedList     RB-InformationAffectedList-r5          OPTIONAL,
                rb-PDCPContextRelocationList   RB-PDCPContextRelocationList           OPTIONAL,
            -- Transport channel IEs
                ul-CommonTransChInfo           UL-CommonTransChInfo-r4                OPTIONAL,
                ul-deletedTransChInfoList      UL-DeletedTransChInfoList              OPTIONAL,
                ul-AddReconfTransChInfoList    UL-AddReconfTransChInfoList            OPTIONAL,
                modeSpecificTransChInfo        CHOICE {
                    fdd                            SEQUENCE {
                        cpch-SetID                     CPCH-SetID                     OPTIONAL,
                        addReconfTransChDRAC-Info      DRAC-StaticInformationList OPTIONAL
                    },
                    tdd                            NULL
                }                                                                     OPTIONAL,
                dl-CommonTransChInfo           DL-CommonTransChInfo-r4                OPTIONAL,
                dl-DeletedTransChInfoList      DL-DeletedTransChInfoList-r5           OPTIONAL,
                dl-AddReconfTransChInfoList    DL-AddReconfTransChInfoList-r5         OPTIONAL
            },
            preconfiguration               SEQUENCE {
            -- All IEs that include an FDD/TDD choice are split in two IEs for this message,
            -- one for the FDD only elements and one for the TDD only elements, so that one
            -- FDD/TDD choice in this level is sufficient.
                preConfigMode                  CHOICE {
                    predefinedConfigIdentity       PredefinedConfigIdentity,
                    defaultConfig                  SEQUENCE {
                        defaultConfigMode              DefaultConfigMode,
                        defaultConfigIdentity          DefaultConfigIdentity-r5
                    }
                }
            }
        },
    -- Physical channel IEs
        frequencyInfo                  FrequencyInfo                          OPTIONAL,
        maxAllowedUL-TX-Power          MaxAllowedUL-TX-Power                  OPTIONAL,
        ul-ChannelRequirement          UL-ChannelRequirement-r5               OPTIONAL,
        modeSpecificPhysChInfo         CHOICE {
            fdd                            SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information            OPTIONAL
            },
            tdd                            NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information                 OPTIONAL,
        dl-CommonInformation           DL-CommonInformation-r5                OPTIONAL,
        dl-InformationPerRL-List       DL-InformationPerRL-List-r5            OPTIONAL
}

-- **************************************************
--
-- RADIO BEARER RELEASE
--
-- **************************************************

RadioBearerRelease ::= CHOICE {
    r3                             SEQUENCE {
        radioBearerRelease-r3          RadioBearerRelease-r3-IEs,
        v3a0NonCriticalExtensions      SEQUENCE {
            radioBearerRelease-v3a0ext     RadioBearerRelease-v3a0ext,
```

```
            laterNonCriticalExtensions        SEQUENCE {
                -- Container for additional R99 extensions
                radioBearerRelease-r3-add-ext       BIT STRING     OPTIONAL,
                v4b0NonCriticalExtensions         SEQUENCE {
                    radioBearerRelease-v4b0ext     RadioBearerRelease-v4b0ext-IEs,
                    v590NonCriticalExtensions        SEQUENCE {
                        radioBearerRelease-v590ext     RadioBearerRelease-v590ext-IEs,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            radioBearerRelease-v6xyext     RadioBearerRelease-v6xyext-IEs,
                            nonCriticalExtensions             SEQUENCE {} OPTIONAL
                        } OPTIONAL
                    } OPTIONAL
                } OPTIONAL
            } OPTIONAL
        },
        later-than-r3                    SEQUENCE {
            rrc-TransactionIdentifier        RRC-TransactionIdentifier,
            criticalExtensions               CHOICE {
                r4                            SEQUENCE {
                    radioBearerRelease-r4          RadioBearerRelease-r4-IEs,
                    v4d0NonCriticalExtensions        SEQUENCE {
                        -- Container for adding non critical extensions after freezing REL-5
                        radioBearerRelease-r4-add-ext      BIT STRING     OPTIONAL,
                        v590NonCriticalExtensions        SEQUENCE {
                            radioBearerRelease-v590ext     RadioBearerRelease-v590ext-IEs,
                            v6xyNonCriticalExtensions       SEQUENCE {
                                radioBearerRelease-v6xyext     RadioBearerRelease-v6xyext-IEs,
                                nonCriticalExtensions             SEQUENCE {}     OPTIONAL
                            } OPTIONAL
                        } OPTIONAL
                    } OPTIONAL
                },
                criticalExtensions               CHOICE {
                    r5                            SEQUENCE {
                        radioBearerRelease-r5          RadioBearerRelease-r5-IEs,
                        -- Container for adding non critical extensions after freezing REL-6
                        radioBearerRelease-r5-add-ext      BIT STRING     OPTIONAL,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            radioBearerRelease-v6xyext     RadioBearerRelease-v6xyext-IEs,
                            nonCriticalExtensions             SEQUENCE {}     OPTIONAL
                        } OPTIONAL
                    },
                    criticalExtensions               SEQUENCE {}
                }
            }
        }
    }
}

RadioBearerRelease-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
    rrc-TransactionIdentifier        RRC-TransactionIdentifier,
    integrityProtectionModeInfo      IntegrityProtectionModeInfo         OPTIONAL,
    cipheringModeInfo                CipheringModeInfo                   OPTIONAL,
    activationTime                   ActivationTime                      OPTIONAL,
    new-U-RNTI                       U-RNTI                              OPTIONAL,
    new-C-RNTI                       C-RNTI                              OPTIONAL,
    rrc-StateIndicator               RRC-StateIndicator,
    utran-DRX-CycleLengthCoeff       UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
    cn-InformationInfo               CN-InformationInfo                  OPTIONAL,
    signallingConnectionRelIndication  CN-DomainIdentity                 OPTIONAL,
    -- UTRAN mobility IEs
    ura-Identity                     URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
    rab-InformationReconfigList      RAB-InformationReconfigList         OPTIONAL,
    rb-InformationReleaseList        RB-InformationReleaseList,
    rb-InformationAffectedList       RB-InformationAffectedList          OPTIONAL,
    dl-CounterSynchronisationInfo    DL-CounterSynchronisationInfo       OPTIONAL,
    -- Transport channel IEs
    ul-CommonTransChInfo             UL-CommonTransChInfo                OPTIONAL,
    ul-deletedTransChInfoList        UL-DeletedTransChInfoList           OPTIONAL,
    ul-AddReconfTransChInfoList      UL-AddReconfTransChInfoList         OPTIONAL,
    modeSpecificTransChInfo          CHOICE {
        fdd                          SEQUENCE {
            cpch-SetID                     CPCH-SetID                    OPTIONAL,
            addReconfTransChDRAC-Info      DRAC-StaticInformationList  OPTIONAL
        },
```

```
            tdd                          NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo         DL-CommonTransChInfo             OPTIONAL,
        dl-DeletedTransChInfoList    DL-DeletedTransChInfoList        OPTIONAL,
        dl-AddReconfTransChInfoList  DL-AddReconfTransChInfo2List     OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                FrequencyInfo                    OPTIONAL,
        maxAllowedUL-TX-Power        MaxAllowedUL-TX-Power            OPTIONAL,
        ul-ChannelRequirement        UL-ChannelRequirement            OPTIONAL,
        modeSpecificPhysChInfo       CHOICE {
            fdd                          SEQUENCE {
                dl-PDSCH-Information          DL-PDSCH-Information      OPTIONAL
            },
            tdd                          NULL
        },
        dl-CommonInformation         DL-CommonInformation             OPTIONAL,
        dl-InformationPerRL-List     DL-InformationPerRL-List         OPTIONAL
}

RadioBearerRelease-v3a0ext ::= SEQUENCE {
    new-DSCH-RNTI                DSCH-RNTI                            OPTIONAL
}

RadioBearerRelease-v4b0ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- IE ssdt-UL extends SSDT-Information, which is included in
        -- DL-CommonInformation. FDD only.
        ssdt-UL-r4                   SSDT-UL                              OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        --  in IE DL-InformationPerRL-List included in this message
        cell-id-PerRL-List           CellIdentity-PerRL-List          OPTIONAL
}

RadioBearerRelease-v590ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        dl-TPC-PowerOffsetPerRL-List DL-TPC-PowerOffsetPerRL-List         OPTIONAL
}

RadioBearerRelease-v6xyext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        harq-Preamble-Mode           HARQ-Preamble-Mode           OPTIONAL
}

RadioBearerRelease-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo    IntegrityProtectionModeInfo        OPTIONAL,
        cipheringModeInfo              CipheringModeInfo                  OPTIONAL,
        activationTime                 ActivationTime                     OPTIONAL,
        new-U-RNTI                     U-RNTI                             OPTIONAL,
        new-C-RNTI                     C-RNTI                             OPTIONAL,
        new-DSCH-RNTI                  DSCH-RNTI                          OPTIONAL,
        rrc-StateIndicator             RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff     UTRAN-DRX-CycleLengthCoefficient   OPTIONAL,
    -- Core network IEs
        cn-InformationInfo             CN-InformationInfo                 OPTIONAL,
        signallingConnectionRelIndication  CN-DomainIdentity              OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                   URA-Identity                       OPTIONAL,
    -- Radio bearer IEs
        rab-InformationReconfigList    RAB-InformationReconfigList        OPTIONAL,
        rb-InformationReleaseList      RB-InformationReleaseList,
        rb-InformationAffectedList     RB-InformationAffectedList         OPTIONAL,
        dl-CounterSynchronisationInfo  DL-CounterSynchronisationInfo      OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo           UL-CommonTransChInfo-r4            OPTIONAL,
        ul-deletedTransChInfoList      UL-DeletedTransChInfoList          OPTIONAL,
        ul-AddReconfTransChInfoList    UL-AddReconfTransChInfoList        OPTIONAL,
        modeSpecificTransChInfo        CHOICE {
            fdd                          SEQUENCE {
                cpch-SetID                   CPCH-SetID               OPTIONAL,
                addReconfTransChDRAC-Info    DRAC-StaticInformationList OPTIONAL
            },
            tdd                          NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo           DL-CommonTransChInfo-r4            OPTIONAL,
        dl-DeletedTransChInfoList      DL-DeletedTransChInfoList          OPTIONAL,
        dl-AddReconfTransChInfoList    DL-AddReconfTransChInfoList-r4    OPTIONAL,
    -- Physical channel IEs
```

```
    frequencyInfo                   FrequencyInfo                      OPTIONAL,
    maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power              OPTIONAL,
    ul-ChannelRequirement           UL-ChannelRequirement-r4           OPTIONAL,
    modeSpecificPhysChInfo          CHOICE {
        fdd                                 SEQUENCE {
            dl-PDSCH-Information             DL-PDSCH-Information        OPTIONAL
        },
        tdd                             NULL
    },
    dl-CommonInformation            DL-CommonInformation-r4            OPTIONAL,
    dl-InformationPerRL-List        DL-InformationPerRL-List-r4        OPTIONAL
}

RadioBearerRelease-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
    integrityProtectionModeInfo     IntegrityProtectionModeInfo        OPTIONAL,
    cipheringModeInfo               CipheringModeInfo                  OPTIONAL,
    activationTime                  ActivationTime                     OPTIONAL,
    new-U-RNTI                      U-RNTI                             OPTIONAL,
    new-C-RNTI                      C-RNTI                             OPTIONAL,
    new-DSCH-RNTI                   DSCH-RNTI                          OPTIONAL,
    new-H-RNTI                      H-RNTI                             OPTIONAL,
    rrc-StateIndicator              RRC-StateIndicator,
    utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient   OPTIONAL,
    -- Core network IEs
    cn-InformationInfo              CN-InformationInfo                 OPTIONAL,
    signallingConnectionRelIndication  CN-DomainIdentity               OPTIONAL,
    -- UTRAN mobility IEs
    ura-Identity                    URA-Identity                       OPTIONAL,
    -- Radio bearer IEs
    rab-InformationReconfigList     RAB-InformationReconfigList        OPTIONAL,
    rb-InformationReleaseList       RB-InformationReleaseList,
    rb-InformationAffectedList      RB-InformationAffectedList-r5      OPTIONAL,
    dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5   OPTIONAL,
    -- Transport channel IEs
    ul-CommonTransChInfo            UL-CommonTransChInfo-r4            OPTIONAL,
    ul-deletedTransChInfoList       UL-DeletedTransChInfoList          OPTIONAL,
    ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList        OPTIONAL,
    modeSpecificTransChInfo         CHOICE {
        fdd                                 SEQUENCE {
            cpch-SetID                      CPCH-SetID                 OPTIONAL,
            addReconfTransChDRAC-Info       DRAC-StaticInformationList OPTIONAL
        },
        tdd                             NULL
    }                                                                  OPTIONAL,
    dl-CommonTransChInfo            DL-CommonTransChInfo-r4           OPTIONAL,
    dl-DeletedTransChInfoList       DL-DeletedTransChInfoList-r5      OPTIONAL,
    dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5    OPTIONAL,
    -- Physical channel IEs
    frequencyInfo                   FrequencyInfo                      OPTIONAL,
    maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power              OPTIONAL,
    ul-ChannelRequirement           UL-ChannelRequirement-r5           OPTIONAL,
    modeSpecificPhysChInfo          CHOICE {
        fdd                                 SEQUENCE {
            dl-PDSCH-Information             DL-PDSCH-Information        OPTIONAL
        },
        tdd                             NULL
    },
    dl-HSPDSCH-Information          DL-HSPDSCH-Information             OPTIONAL,
    dl-CommonInformation            DL-CommonInformation-r5            OPTIONAL,
    dl-InformationPerRL-List        DL-InformationPerRL-List-r5        OPTIONAL
}

-- **************************************************
--
-- RADIO BEARER SETUP
--
-- **************************************************

RadioBearerSetup ::= CHOICE {
    r3                              SEQUENCE {
        radioBearerSetup-r3             RadioBearerSetup-r3-IEs,
        v3a0NonCriticalExtensions       SEQUENCE {
            radioBearerSetup-v3a0ext        RadioBearerSetup-v3a0ext,
            laterNonCriticalExtensions      SEQUENCE {
                -- Container for additional R99 extensions
                radioBearerSetup-r3-add-ext     BIT STRING      OPTIONAL,
                v4b0NonCriticalExtensions       SEQUENCE {
```

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                        radioBearerSetup-v4b0ext        RadioBearerSetup-v4b0ext-IEs,
                        v590NonCriticalExtensions       SEQUENCE {
                            radioBearerSetup-v590ext        RadioBearerSetup-v590ext-IEs,
                            v6xyNonCriticalExtensions       SEQUENCE {
                                radioBearerSetup-v6xyext        RadioBearerSetup-v6xyext-IEs,
                                nonCriticalExtensions           SEQUENCE {} OPTIONAL
                            } OPTIONAL
                        } OPTIONAL
                    } OPTIONAL
                } OPTIONAL
            } OPTIONAL
        },
        later-than-r3                   SEQUENCE {
            rrc-TransactionIdentifier       RRC-TransactionIdentifier,
            criticalExtensions              CHOICE {
                r4                              SEQUENCE {
                    radioBearerSetup-r4             RadioBearerSetup-r4-IEs,
                    v4d0NonCriticalExtensions       SEQUENCE {
                        -- Container for adding non critical extensions after freezing REL-5
                        radioBearerSetup-r4-add-ext     BIT STRING      OPTIONAL,
                        v590NonCriticalExtensions       SEQUENCE {
                            radioBearerSetup-v590ext        RadioBearerSetup-v590ext-IEs,
                            v6xyNonCriticalExtensions       SEQUENCE {
                                radioBearerSetup-v6xyext        RadioBearerSetup-v6xyext-IEs,
                                nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                            } OPTIONAL
                        } OPTIONAL
                    } OPTIONAL
                },
                criticalExtensions              CHOICE {
                    r5                              SEQUENCE {
                        radioBearerSetup-r5             RadioBearerSetup-r5-IEs,
                        -- Container for adding non critical extensions after freezing REL-6
                        radioBearerSetup-r5-add-ext     BIT STRING      OPTIONAL,
                        v6xyNonCriticalExtensions       SEQUENCE {
                            radioBearerSetup-v6xyext        RadioBearerSetup-v6xyext-IEs,
                            nonCriticalExtensions           SEQUENCE {}     OPTIONAL
                        } OPTIONAL
                    },
                    criticalExtensions              SEQUENCE {}
                }
            }
        }
    }
}

RadioBearerSetup-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
    rrc-TransactionIdentifier       RRC-TransactionIdentifier,
    integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
    cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
    activationTime                  ActivationTime                      OPTIONAL,
    new-U-RNTI                      U-RNTI                              OPTIONAL,
    new-C-RNTI                      C-RNTI                              OPTIONAL,
    rrc-StateIndicator              RRC-StateIndicator,
    utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- UTRAN mobility IEs
    ura-Identity                    URA-Identity                        OPTIONAL,
    -- Core network IEs
    cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- Radio bearer IEs
    srb-InformationSetupList        SRB-InformationSetupList            OPTIONAL,
    rab-InformationSetupList        RAB-InformationSetupList            OPTIONAL,
    rb-InformationAffectedList      RB-InformationAffectedList          OPTIONAL,
    dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo       OPTIONAL,
    -- Transport channel IEs
    ul-CommonTransChInfo            UL-CommonTransChInfo                OPTIONAL,
    ul-deletedTransChInfoList       UL-DeletedTransChInfoList           OPTIONAL,
    ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
    modeSpecificTransChInfo         CHOICE {
        fdd                             SEQUENCE {
            cpch-SetID                      CPCH-SetID                  OPTIONAL,
            addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
        },
        tdd                             NULL
    }                                                                   OPTIONAL,
    dl-CommonTransChInfo            DL-CommonTransChInfo                 OPTIONAL,
    dl-DeletedTransChInfoList       DL-DeletedTransChInfoList           OPTIONAL,
    dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList         OPTIONAL,
```

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    -- Physical channel IEs
        frequencyInfo                    FrequencyInfo                        OPTIONAL,
        maxAllowedUL-TX-Power            MaxAllowedUL-TX-Power                OPTIONAL,
        ul-ChannelRequirement            UL-ChannelRequirement                OPTIONAL,
        modeSpecificPhysChInfo           CHOICE {
            fdd                              SEQUENCE {
                dl-PDSCH-Information              DL-PDSCH-Information     OPTIONAL
            },
            tdd                              NULL
        },
        dl-CommonInformation             DL-CommonInformation                 OPTIONAL,
        dl-InformationPerRL-List         DL-InformationPerRL-List             OPTIONAL
}

RadioBearerSetup-v3a0ext ::= SEQUENCE {
    new-DSCH-RNTI                    DSCH-RNTI                            OPTIONAL
}

RadioBearerSetup-v4b0ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- ssdt-UL extends SSDT-Information, which is included in
        -- DL-CommonInformation. FDD only.
        ssdt-UL-r4                       SSDT-UL                             OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        -- in IE DL-InformationPerRL-List included in this message
        cell-id-PerRL-List               CellIdentity-PerRL-List             OPTIONAL
}

RadioBearerSetup-v590ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        dl-TPC-PowerOffsetPerRL-List   DL-TPC-PowerOffsetPerRL-List     OPTIONAL
}

RadioBearerSetup-v6xyext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        harq-Preamble-Mode              HARQ-Preamble-Mode          OPTIONAL
}

RadioBearerSetup-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo      IntegrityProtectionModeInfo          OPTIONAL,
        cipheringModeInfo                CipheringModeInfo                    OPTIONAL,
        activationTime                   ActivationTime                       OPTIONAL,
        new-U-RNTI                       U-RNTI                               OPTIONAL,
        new-C-RNTI                       C-RNTI                               OPTIONAL,
        new-DSCH-RNTI                    DSCH-RNTI                            OPTIONAL,
        rrc-StateIndicator               RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff       UTRAN-DRX-CycleLengthCoefficient     OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                     URA-Identity                         OPTIONAL,
    -- Core network IEs
        cn-InformationInfo               CN-InformationInfo                   OPTIONAL,
    -- Radio bearer IEs
        srb-InformationSetupList         SRB-InformationSetupList             OPTIONAL,
        rab-InformationSetupList         RAB-InformationSetupList-r4          OPTIONAL,
        rb-InformationAffectedList       RB-InformationAffectedList           OPTIONAL,
        dl-CounterSynchronisationInfo    DL-CounterSynchronisationInfo        OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo             UL-CommonTransChInfo-r4              OPTIONAL,
        ul-deletedTransChInfoList        UL-DeletedTransChInfoList            OPTIONAL,
        ul-AddReconfTransChInfoList      UL-AddReconfTransChInfoList          OPTIONAL,
        modeSpecificTransChInfo          CHOICE {
            fdd                              SEQUENCE {
                cpch-SetID                       CPCH-SetID              OPTIONAL,
                addReconfTransChDRAC-Info        DRAC-StaticInformationList OPTIONAL
            },
            tdd                              NULL
        }                                                                     OPTIONAL,
        dl-CommonTransChInfo             DL-CommonTransChInfo-r4              OPTIONAL,
        dl-DeletedTransChInfoList        DL-DeletedTransChInfoList            OPTIONAL,
        dl-AddReconfTransChInfoList      DL-AddReconfTransChInfoList-r4       OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                    FrequencyInfo                        OPTIONAL,
        maxAllowedUL-TX-Power            MaxAllowedUL-TX-Power                OPTIONAL,
        ul-ChannelRequirement            UL-ChannelRequirement-r4             OPTIONAL,
        modeSpecificPhysChInfo           CHOICE {
            fdd                              SEQUENCE {
                dl-PDSCH-Information              DL-PDSCH-Information     OPTIONAL
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        },
        tdd                             NULL
    },
    dl-CommonInformation            DL-CommonInformation-r4         OPTIONAL,
    dl-InformationPerRL-List        DL-InformationPerRL-List-r4     OPTIONAL
}

RadioBearerSetup-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo     OPTIONAL,
        cipheringModeInfo               CipheringModeInfo               OPTIONAL,
        activationTime                  ActivationTime                  OPTIONAL,
        new-U-RNTI                      U-RNTI                          OPTIONAL,
        new-C-RNTI                      C-RNTI                          OPTIONAL,
        new-DSCH-RNTI                   DSCH-RNTI                       OPTIONAL,
        new-H-RNTI                      H-RNTI                          OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo              OPTIONAL,
    -- Radio bearer IEs
        srb-InformationSetupList        SRB-InformationSetupList-r5     OPTIONAL,
        rab-InformationSetupList        RAB-InformationSetupList-r5     OPTIONAL,
        rb-InformationAffectedList      RB-InformationAffectedList-r5   OPTIONAL,
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5 OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4         OPTIONAL,
        ul-deletedTransChInfoList       UL-DeletedTransChInfoList       OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList     OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                               OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4         OPTIONAL,
        dl-DeletedTransChInfoList       DL-DeletedTransChInfoList-r5    OPTIONAL,
        dl-AddReconfTransChInfoList     DL-AddReconfTransChInfoList-r5  OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                   OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power           OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r5        OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information             DL-PDSCH-Information         OPTIONAL
            },
            tdd                             NULL
        },
        dl-HSPDSCH-Information           DL-HSPDSCH-Information          OPTIONAL,
        dl-CommonInformation            DL-CommonInformation-r5         OPTIONAL,
        dl-InformationPerRL-List        DL-InformationPerRL-List-r5     OPTIONAL
}

-- ***************************************************
--
-- TRANSPORT CHANNEL RECONFIGURATION
--
-- ***************************************************

TransportChannelReconfiguration ::= CHOICE {
    r3                              SEQUENCE {
        transportChannelReconfiguration-r3
                                        TransportChannelReconfiguration-r3-IEs,
        v3a0NonCriticalExtensions       SEQUENCE {
            transportChannelReconfiguration-v3a0ext
                                            TransportChannelReconfiguration-v3a0ext,
            laterNonCriticalExtensions      SEQUENCE {
                -- Container for additional R99 extensions
                transportChannelReconfiguration-r3-add-ext      BIT STRING      OPTIONAL,
                v4b0NonCriticalExtensions       SEQUENCE {
                    transportChannelReconfiguration-v4b0ext
                                                    TransportChannelReconfiguration-v4b0ext-IEs,
                    v590NonCriticalExtensions       SEQUENCE {
                        transportChannelReconfiguration-v590ext
                                                        TransportChannelReconfiguration-v590ext-IEs,
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                             v6xyNonCriticalExtensions        SEQUENCE {
                                 transportChannelReconfiguration-v6xyext
                                                     TransportChannelReconfiguration-v6xyext-IEs,
                                 nonCriticalExtensions           SEQUENCE {}    OPTIONAL
                             }        OPTIONAL
                     }        OPTIONAL
                 }        OPTIONAL
         }        OPTIONAL
    },
    later-than-r3                    SEQUENCE {
        rrc-TransactionIdentifier        RRC-TransactionIdentifier,
        criticalExtensions               CHOICE {
            r4                               SEQUENCE {
                transportChannelReconfiguration-r4
                                             TransportChannelReconfiguration-r4-IEs,
                v4d0NonCriticalExtensions        SEQUENCE {
                    -- Container for adding non critical extensions after freezing REL-5
                    transportChannelReconfiguration-r4-add-ext      BIT STRING    OPTIONAL,
                    v590NonCriticalExtensions        SEQUENCE {
                        transportChannelReconfiguration-v590ext
                                                 TransportChannelReconfiguration-v590ext-IEs,
                        v6xyNonCriticalExtensions        SEQUENCE {
                            transportChannelReconfiguration-v6xyext
                                                 TransportChannelReconfiguration-v6xyext-IEs,
                            nonCriticalExtensions           SEQUENCE {}    OPTIONAL
                        }    OPTIONAL
                    }    OPTIONAL
                }    OPTIONAL
            },
            criticalExtensions              CHOICE {
                r5                              SEQUENCE {
                    transportChannelReconfiguration-r5
                                                 TransportChannelReconfiguration-r5-IEs,
                    -- Container for adding non critical extensions after freezing REL-6
                    transportChannelReconfiguration-r5-add-ext      BIT STRING    OPTIONAL,
                    v6xyNonCriticalExtensions        SEQUENCE {
                        transportChannelReconfiguration-v6xyext
                                             TransportChannelReconfiguration-v6xyext-IEs,
                        nonCriticalExtensions           SEQUENCE {}    OPTIONAL
                    }    OPTIONAL
                },
                criticalExtensions              SEQUENCE {}
            }
        }
    }
}

TransportChannelReconfiguration-r3-IEs ::= SEQUENCE {
    -- User equipment IEs
    rrc-TransactionIdentifier        RRC-TransactionIdentifier,
    integrityProtectionModeInfo      IntegrityProtectionModeInfo            OPTIONAL,
    cipheringModeInfo                CipheringModeInfo                      OPTIONAL,
    activationTime                   ActivationTime                         OPTIONAL,
    new-U-RNTI                       U-RNTI                                 OPTIONAL,
    new-C-RNTI                       C-RNTI                                 OPTIONAL,
    rrc-StateIndicator               RRC-StateIndicator,
    utran-DRX-CycleLengthCoeff       UTRAN-DRX-CycleLengthCoefficient       OPTIONAL,
    -- Core network IEs
    cn-InformationInfo               CN-InformationInfo                     OPTIONAL,
    -- UTRAN mobility IEs
    ura-Identity                     URA-Identity                           OPTIONAL,
    -- Radio bearer IEs
    dl-CounterSynchronisationInfo    DL-CounterSynchronisationInfo          OPTIONAL,
    -- Transport channel IEs
    ul-CommonTransChInfo             UL-CommonTransChInfo                   OPTIONAL,
    ul-AddReconfTransChInfoList      UL-AddReconfTransChInfoList            OPTIONAL,
    modeSpecificTransChInfo          CHOICE {
        fdd                              SEQUENCE {
            cpch-SetID                       CPCH-SetID                       OPTIONAL,
            addReconfTransChDRAC-Info        DRAC-StaticInformationList       OPTIONAL
        },
        tdd                              NULL
    }                                                                        OPTIONAL,
    dl-CommonTransChInfo             DL-CommonTransChInfo                    OPTIONAL,
    dl-AddReconfTransChInfoList      DL-AddReconfTransChInfoList             OPTIONAL,
    -- Physical channel IEs
    frequencyInfo                    FrequencyInfo                          OPTIONAL,
```

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        maxAllowedUL-TX-Power          MaxAllowedUL-TX-Power              OPTIONAL,
        ul-ChannelRequirement          UL-ChannelRequirement             OPTIONAL,
        modeSpecificPhysChInfo         CHOICE {
            fdd                            SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information       OPTIONAL
            },
            tdd                        NULL
        },
        dl-CommonInformation           DL-CommonInformation              OPTIONAL,
        dl-InformationPerRL-List       DL-InformationPerRL-List          OPTIONAL
}

TransportChannelReconfiguration-v3a0ext ::= SEQUENCE {
    new-DSCH-RNTI                    DSCH-RNTI                           OPTIONAL
}

TransportChannelReconfiguration-v4b0ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        -- ssdt-UL extends SSDT-Information, which is included in
        -- DL-CommonInformation. FDD only.
        ssdt-UL-r4                     SSDT-UL                             OPTIONAL,
        -- The order of the RLs in IE cell-id-PerRL-List is the same as
        -- in IE DL-InformationPerRL-List included in this message
        cell-id-PerRL-List             CellIdentity-PerRL-List             OPTIONAL
}

TransportChannelReconfiguration-v590ext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        dl-TPC-PowerOffsetPerRL-List    DL-TPC-PowerOffsetPerRL-List       OPTIONAL
}

TransportChannelReconfiguration-v6xyext-IEs ::= SEQUENCE {
    -- Physical channel IEs
        harq-Preamble-Mode              HARQ-Preamble-Mode         OPTIONAL
}

TransportChannelReconfiguration-r4-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo    IntegrityProtectionModeInfo        OPTIONAL,
        cipheringModeInfo              CipheringModeInfo                   OPTIONAL,
        activationTime                 ActivationTime                     OPTIONAL,
        new-U-RNTI                     U-RNTI                             OPTIONAL,
        new-C-RNTI                     C-RNTI                             OPTIONAL,
        new-DSCH-RNTI                  DSCH-RNTI                          OPTIONAL,
        rrc-StateIndicator             RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff     UTRAN-DRX-CycleLengthCoefficient   OPTIONAL,
    -- Core network IEs
        cn-InformationInfo             CN-InformationInfo                 OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                   URA-Identity                       OPTIONAL,
    -- Radio bearer IEs
        dl-CounterSynchronisationInfo  DL-CounterSynchronisationInfo      OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo           UL-CommonTransChInfo-r4            OPTIONAL,
        ul-AddReconfTransChInfoList    UL-AddReconfTransChInfoList        OPTIONAL,
        modeSpecificTransChInfo        CHOICE {
            fdd                            SEQUENCE {
                cpch-SetID                     CPCH-SetID                 OPTIONAL,
                addReconfTransChDRAC-Info      DRAC-StaticInformationList OPTIONAL
            },
            tdd                        NULL
        }                                                                  OPTIONAL,
        dl-CommonTransChInfo           DL-CommonTransChInfo-r4            OPTIONAL,
        dl-AddReconfTransChInfoList    DL-AddReconfTransChInfoList-r4    OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                  FrequencyInfo                      OPTIONAL,
        maxAllowedUL-TX-Power          MaxAllowedUL-TX-Power              OPTIONAL,
        ul-ChannelRequirement          UL-ChannelRequirement-r4          OPTIONAL,
        modeSpecificPhysChInfo         CHOICE {
            fdd                            SEQUENCE {
                dl-PDSCH-Information            DL-PDSCH-Information       OPTIONAL
            },
            tdd                        NULL
        },
        dl-CommonInformation           DL-CommonInformation-r4           OPTIONAL,
        dl-InformationPerRL-List       DL-InformationPerRL-List-r4       OPTIONAL
}
```

```
TransportChannelReconfiguration-r5-IEs ::= SEQUENCE {
    -- User equipment IEs
        integrityProtectionModeInfo     IntegrityProtectionModeInfo         OPTIONAL,
        cipheringModeInfo               CipheringModeInfo                   OPTIONAL,
        activationTime                  ActivationTime                      OPTIONAL,
        new-U-RNTI                      U-RNTI                              OPTIONAL,
        new-C-RNTI                      C-RNTI                              OPTIONAL,
        new-DSCH-RNTI                   DSCH-RNTI                           OPTIONAL,
        new-H-RNTI                      H-RNTI                              OPTIONAL,
        rrc-StateIndicator              RRC-StateIndicator,
        utran-DRX-CycleLengthCoeff      UTRAN-DRX-CycleLengthCoefficient    OPTIONAL,
    -- Core network IEs
        cn-InformationInfo              CN-InformationInfo                  OPTIONAL,
    -- UTRAN mobility IEs
        ura-Identity                    URA-Identity                        OPTIONAL,
    -- Radio bearer IEs
        dl-CounterSynchronisationInfo   DL-CounterSynchronisationInfo-r5    OPTIONAL,
    -- Transport channel IEs
        ul-CommonTransChInfo            UL-CommonTransChInfo-r4             OPTIONAL,
        ul-AddReconfTransChInfoList     UL-AddReconfTransChInfoList         OPTIONAL,
        modeSpecificTransChInfo         CHOICE {
            fdd                             SEQUENCE {
                cpch-SetID                      CPCH-SetID                  OPTIONAL,
                addReconfTransChDRAC-Info       DRAC-StaticInformationList  OPTIONAL
            },
            tdd                             NULL
        }                                                                   OPTIONAL,
        dl-CommonTransChInfo            DL-CommonTransChInfo-r4             OPTIONAL,
        dl-AddReconfTransChInfoList    DL-AddReconfTransChInfoList-r5      OPTIONAL,
    -- Physical channel IEs
        frequencyInfo                   FrequencyInfo                       OPTIONAL,
        maxAllowedUL-TX-Power           MaxAllowedUL-TX-Power               OPTIONAL,
        ul-ChannelRequirement           UL-ChannelRequirement-r5            OPTIONAL,
        modeSpecificPhysChInfo          CHOICE {
            fdd                             SEQUENCE {
                dl-PDSCH-Information             DL-PDSCH-Information         OPTIONAL
            },
            tdd                             NULL
        },
        dl-HSPDSCH-Information          DL-HSPDSCH-Information              OPTIONAL,
        dl-CommonInformation           DL-CommonInformation-r5            OPTIONAL,
        dl-InformationPerRL-List       DL-InformationPerRL-List-r5        OPTIONAL
}
```

11.3   Information element definitions

```
-- **************************************************
--
--      PHYSICAL CHANNEL INFORMATION ELEMENTS (10.3.6)
--
-- **************************************************


HARQ-Preamble-Mode ::=                  INTEGER (0,1)

UL-ChannelRequirement-r5 ::=        CHOICE {
    ul-DPCH-Info                        UL-DPCH-Info-r5,
    cpch-SetInfo                        CPCH-SetInfo
}


UL-ChannelRequirementWithCPCH-SetID-r5 ::=  CHOICE {
    ul-DPCH-Info                        UL-DPCH-Info-r5,
    cpch-SetInfo                        CPCH-SetInfo,
    cpch-SetID                          CPCH-SetID
}


UL-DPCH-Info-r5 ::=                 SEQUENCE {
    ul-DPCH-PowerControlInfo            UL-DPCH-PowerControlInfo-r5         OPTIONAL,
    modeSpecificInfo                    CHOICE {
        fdd                                 SEQUENCE {
            scramblingCodeType                  ScramblingCodeType,
            scramblingCode                      UL-ScramblingCode,
            numberOfDPDCH                       NumberOfDPDCH               DEFAULT 1,
```

```
            spreadingFactor                     SpreadingFactor,
            tfci-Existence                       BOOLEAN,
            -- numberOfFBI-Bits is conditional based on history
            numberOfFBI-Bits                     NumberOfFBI-Bits          OPTIONAL,
            puncturingLimit                      PuncturingLimit
        },
        tdd                               SEQUENCE {
            ul-TimingAdvance                     UL-TimingAdvanceControl-r4  OPTIONAL,
            ul-CCTrCHList                        UL-CCTrCHList-r4            OPTIONAL,
            ul-CCTrCHListToRemove                UL-CCTrCHListToRemove       OPTIONAL
        }
    }
}

UL-DPCH-PowerControlInfo-r5 ::=     CHOICE {
    fdd                               SEQUENCE {
        dpcch-PowerOffset                    DPCCH-PowerOffset,
        pc-Preamble                          PC-Preamble,
        sRB-delay                            SRB-delay,
        -- TABULAR: TPC step size nested inside PowerControlAlgorithm
        powerControlAlgorithm                PowerControlAlgorithm,
        deltaACK                             DeltaACK   OPTIONAL,
        deltaNACK                            DeltaNACK   OPTIONAL,
        ack-NACK-repetition-factor           ACK-NACK-repetitionFactor   OPTIONAL
    },
    tdd                               SEQUENCE {
        -- The IE ul-TargetSIR corresponds to PRX-DPCHdes for 1.28Mcps TDD
        -- Actual value PRX-DPCHdes = (value of IE "ul-TargetSIR" – 120)
        ul-TargetSIR                         UL-TargetSIR               OPTIONAL,
        ul-OL-PC-Signalling                  CHOICE {
            broadcast-UL-OL-PC-info              NULL,
            individuallySignalled                SEQUENCE {
                tddOption                            CHOICE {
                    tdd384                               SEQUENCE {
                        individualTS-InterferenceList     IndividualTS-InterferenceList,
                        dpch-ConstantValue                ConstantValue
                    },
                    tdd128                               SEQUENCE {
                        tpc-StepSize                         TPC-StepSizeTDD
                    }
                },
                primaryCCPCH-TX-Power                PrimaryCCPCH-TX-Power
            }
        }
    }
}
```