

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

**RP-040493**  
**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-040493:

<b>Spec</b>	<b>CR</b>	<b>Rev</b>	<b>Phase</b>	<b>Subject</b>	<b>Cat</b>	<b>Version-Current</b>	<b>Version-New</b>	<b>Doc-2nd-Level</b>	<b>Workitem</b>
25.331	2496	1	Rel-6	Preamble and Postamble to reduce HS-DPCCH transmit power	B	6.3.0	6.4.0	R2-042724	RANimp-RABSE-ACKNACK

CR-Form-v7.1

## CHANGE REQUEST

# **25.331 CR 2496** # rev **1** # Current version: **6.3.0** #

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

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

<b>Title:</b>	# Preamble and Postamble to reduce HS-DPCCH transmit power		
<b>Source:</b>	# RAN WG2		
<b>Work item code:</b>	# RANimp-RABSE-ACKNACK	<b>Date:</b>	# 22/11/2004
<b>Category:</b>	# <b>B</b>	<b>Release:</b>	# Rel-6
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Use <u>one</u> of the following releases: <b>Ph2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>Rel-4</b> (Release 4) <b>Rel-5</b> (Release 5) <b>Rel-6</b> (Release 6) <b>Rel-7</b> (Release 7)

<b>Reason for change:</b>	# 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.
<b>Summary of change:</b>	# 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
<b>Consequences if not approved:</b>	# Reduced HS-DPCCH transmit power and improved coverage for DCH or E-DCH would not be achieved.

<b>Clauses affected:</b>	# 8.6.6.11, 10.3.6.91, 11.2, 11.3						
<b>Other specs</b>	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px;">Y</td> <td style="width: 20px;">N</td> </tr> <tr> <td style="width: 20px;">X</td> <td style="width: 20px;"></td> </tr> </table> Other core specifications	Y	N	X		#	25.212 CR195, 25.214 CR358r1, 25.423 CR1009, 25.433 CR1053
Y	N						
X							
<b>affected:</b>	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px;"></td> <td style="width: 20px;">X</td> </tr> <tr> <td style="width: 20px;"></td> <td style="width: 20px;">X</td> </tr> </table> Test specifications O&M Specifications		X		X		
	X						
	X						
<b>Other comments:</b>	#						

### 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 " $\Delta_{ACK}$ ", " $\Delta_{NACK}$ " 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 ~~DTX 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 <i>mode</i>	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- <i>algo</i>		Integer (1, 2)	In dB	
>> $\Delta_{ACK}$	OP		Integer (0..8)	Refer to quantization of the power offset in [28]	REL-5
>> $\Delta_{NACK}$	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 <del>DTX-mode</del>	OPMP		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 <i>UL OL PC info</i>	MP				
>>>Broadcast UL OL PC info			Null	No data	
>>>Individually Signalled	OP				
>>>>CHOICE <i>TDD option</i>	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
<i>Algo</i>	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,
  UESpecificBehaviourInformationIdle,
  UESpecificBehaviourInformationInterRAT,
  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,

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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,

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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-lb-r5,  
 IntraFreqEvent-lb-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,

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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
      v3a0NonCriticalExtensions
      cellUpdateConfirm-v3a0ext
      laterNonCriticalExtensions
      -- Container for additional R99 extensions
      cellUpdateConfirm-r3-add-ext
      v4b0NonCriticalExtensions
      cellUpdateConfirm-v4b0ext
      v590NonCriticalExtensions
      cellUpdateConfirm-v590ext
      v6xyNonCriticalExtensions
      cellUpdateConfirm-v6xyext
      nonCriticalExtensions
    }
  },
  later-than-r3
    SEQUENCE {
      rrc-TransactionIdentifier
      criticalExtensions
      r4
        SEQUENCE {
          cellUpdateConfirm-r4
          v4d0NonCriticalExtensions
          -- Container for adding non critical extensions after freezing REL-5
          cellUpdateConfirm-r4-add-ext
          v590NonCriticalExtensions
          cellUpdateConfirm-v590ext
          v6xyNonCriticalExtensions
          cellUpdateConfirm-v6xyext
          nonCriticalExtensions
        }
      },
    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

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        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
            } 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,
        v4b0NonCriticalExtensstions             SEQUENCE {
          physicalChannelReconfiguration-v4b0ext
          PhysicalChannelReconfiguration-v4b0ext-IEs,
        v590NonCriticalExtensstions             SEQUENCE {
          physicalChannelReconfiguration-v590ext
          PhysicalChannelReconfiguration-v590ext-IEs,
        } 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,
          v590NonCriticalExtensstions             SEQUENCE {
            physicalChannelReconfiguration-v590ext
            PhysicalChannelReconfiguration-v590ext-IEs,
          } 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,
      } 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
    } 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
  }
  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              OPTIONAL,
  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
  }
  },
  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
      }
      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,

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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
},
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
    } 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
    } 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
    }
  },
}

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        tdd                NULL
    }
    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
    }
    dl-CommonTransChInfo          DL-CommonTransChInfo-r4        OPTIONAL,
    dl-DeletedTransChInfoList      DL-DeletedTransChInfoList      OPTIONAL,
    dl-AddReconfTransChInfoList    DL-AddReconfTransChInfoList-r4    OPTIONAL,
-- Physical channel IEs

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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
    }
    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
}

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

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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
},
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
    }
    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
    }
    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
  },
  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
  }
  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
        nonCriticalExtensions SEQUENCE {} 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
            },
            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 {}
            }
        }
    }
}

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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,          OPTIONAL,
    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
    }
    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
  }
  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
        }
    }
}
}

```